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Mitigating behavioral and market risk through glide path design

By Wells Fargo Funds Management, LLC

A well-constructed target date glide path can help mitigate key behavioral and market risks that can jeopardize investors' abilities to meet their retirement goals. This paper examines certain controllable and noncontrollable factors that can negatively affect a successful retirement investing outcome—including investor behavior, such as chasing strong returns and not remaining invested through full market cycles, and market risks, including how the timing of market events relative to the retirement date can affect a portfolio balance. While many of these factors cannot be controlled by plan sponsors, employing a target date suite with a more conservative glide path in the years approaching retirement can help reduce the effect of these potential behavioral and market risks.

Our research will illustrate that:

- Investors often react emotionally to significant market movements by making ill-timed trading decisions that can result in forgone returns and a permanent loss of capital over a retirement time horizon.
- It is important to consider the sequence of returns relative to an investor's time horizon. By observing more than 75 years of equity market performance, we explore the extent to which varying market conditions in the 10 years prior to retirement can lead to significant fluctuations in retirement assets and, more specifically, in the value of an account at the time of retirement.
- Various glide path designs led to significantly different outcomes for investors during the volatile 2008–2009 market environment. We focused on the returns of different target date funds during this financial crisis and the subsequent market recovery.

Ultimately, we conclude that a more conservative glide path in the years approaching retirement can help mitigate behavioral and market risks and protect investors from potential volatility and loss of capital, thus helping them reach their financial goals.

Introduction

The primary objective of most retirement plan participants is to accumulate sufficient assets to meet their financial needs in retirement. This objective is generally pursued by attempting to generate adequate returns on investable assets and meaningful capital preservation as the retirement age approaches. Determining the right investment strategy or portfolio construction to achieve these goals can be overwhelming, especially during times of heightened market volatility and economic uncertainty.

In this paper, we discuss several behavioral biases and market risks that may affect retirement savings and offer a rationale for why we believe a more conservative target date glide path near retirement can mitigate potential pitfalls.

Target date funds are designed to simplify this process for plan sponsors, as they seek to offer investment options for participants across a wide range of risk tolerances, investment knowledge, and time horizons. Since the Pension Protection Act of 2006, which classified target date funds as "qualified default investment alternatives" (QDIA) to help encourage plan participation rates, the use of target date funds has increased and so has the responsibility of plan sponsors to fulfill their fiduciary duty by selecting an appropriate target date solution.

No target date series can overcome counterproductive participant behavior such as low contribution rates or ill-timed buying and selling decisions. However, understanding the various behavioral biases and market risks that may affect a participant's investment decisions and their effect on retirement account balances can help plan sponsors recommend an appropriate solution. In this paper, we discuss several behavioral biases and market risks that may affect retirement savings and offer a rationale for why we believe a more conservative target date glide path near retirement can mitigate potential pitfalls.

Behavioral risks: Buying high and selling low

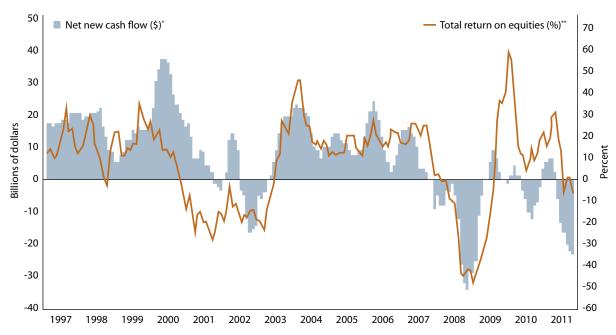
Investors are exposed to the peaks and troughs of many market cycles throughout a long-term investment time horizon. During times of shortterm volatility, investors often allow emotions to govern their investment decisions and can lose sight of their long-terms goals. A common example of this market-driven behavior is when investors move into asset classes with strong recent returns and then sell those assets after performance fades—in effect, buying high and selling low. Chart 1 illustrates the tendency of some investors to chase returns by examining asset flows into equity mutual funds relative to equity performance during the time period from 1997 through 2011. For example, on December 31, 1999, the MSCI All Country World Index (ACWI) returned an average 11.4% annually over the previous 10 years. The

chart below shows cash flows into global equities peaking in late 1999 and early 2000 as the 10-year equity bull market came to an end and the largest net outflows occurring immediately after the financial crisis of 2008. The ACWI rebounded strongly in 2009, but investors who sold at the bottom missed the rally (see Chart 1). Since then, on the heels of the financial crisis, investors continue to direct assets into bond investments (not pictured), despite record-low yields and record-high prices.

The impact of the investor behavior observed in Chart 1 can be quantified across different asset classes by comparing the time-weighted returns and money-weighted returns of mutual funds over the past 10 years.

Chart 1 | Investors tend to buy and sell at the wrong times

Net new cash flow to equity funds related to global stock price performance



^{*}Net new cash flow to equity funds is plotted as a six-month moving average.

^{**}The total return on equities is measured as the year-over-year change in the MSCI All Country World Daily Total Return Index. Source: Investment Company Institute (ici.org)

Past performance is no guarantee of future results.

Most investors are familiar with time-weighted returns, which represent a fund's investment results over a set period of time, regardless of asset flows in or out of the fund. In contrast, moneyweighted returns incorporate the impact of asset flows in and out of the fund during a certain time period and thus convey the returns experienced by the average investor in the fund. Performance that occurs during periods when asset levels in the fund are higher will have a greater impact on moneyweighted returns than performance that occurs when asset levels are lower.

Chart 2 shows the difference between time-weighted returns and money-weighted returns across major asset classes over the past 10 years. The table contains a list of common Morningstar categories—including long-only equity funds, bond funds, and asset allocation funds—and the performance of the 20 largest funds in each category. In each case, regardless of category, money-weighted returns were lower than time-weighted returns. This demonstrates that while fund managers may exhibit strong performance (time-weighted returns), fund investors do not

always share that same experience (money-weighted returns).

The prospect theory is a well-known behavioral finance theory introduced in 1979 that provides further insight into why investors make irrational investment decisions based on emotion. The study suggests that people fear financial losses more strongly than they appreciate gains, which could contribute to decisions to sell at the bottom of a market decline or as a result of a short-term swing in the market. This spontaneous reaction can be compounded as the size of the potential loss grows or the retirement time horizon shortens. A retirement plan participant who sees their account balance fall from \$5,000 to \$4,000 may not react as dramatically as a participant who sees their account balance fall from \$500,000 to \$400,000. The larger the loss in dollar terms, the more tempted an investor may be to sell at the wrong time. A disciplined asset allocation approach that offers an appropriate level of risk relative to an investor's time horizon should help offset some behavioral risks.

Chart 2 | In mutual funds, money-weighted returns have trailed time-weighted returns

	10-year annualized returns (%)				
Morningstar category	Time-weighted return	Money-weighted return	Difference		
Asset allocation funds	8.1	5.8	-2.3		
World stock funds	9.5	7.3	-2.2		
U.S. large-cap funds	7.8	7.2	-0.5		
Foreign large-cap funds	9.9	5.9	-4.1		
Emerging markets equity funds	16.1	13.2	-2.9		
Intermediate-term bond funds	6.2	5.4	-0.8		
High-yield bond funds	9.4	8.0	-1.5		
Short-term bond funds	4.0	3.0	-1.0		

Source: Wells Fargo Funds Management, LLC. Results reflect the average of the 20 largest funds with data available within each category. Funds with less than a 10-year track record or that were merged within the past 10 years were not included.

All data as of 12-31-12. Past performance is no guarantee of future results.

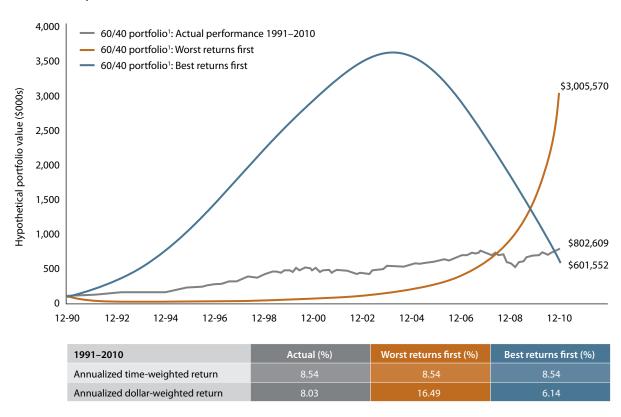
Market risks have a powerful effect on account balances

Investor behavior is just one risk factor that may influence the realized gains or losses in a participant's retirement portfolio. A more obvious one is market risk—in particular, the increasing vulnerability investors have to adverse market conditions and events as they near retirement.

In the years preceding retirement, the sequence of returns is as important as the average return. Participants in 401(k) plans making systematic investment contributions will likely have a growing balance as they near retirement and, as previously noted, will need to consider the impact of moneyweighted returns as their time horizon narrows. The illustration in Chart 3 includes the actual

monthly returns over 20 years for a 60/40¹ index investor and then presents a hypothetical scenario that shows how the sequence of returns can affect the account value by arranging the same monthly returns from best to worst and worst to best. The chart confirms that the money-weighted rate of return, rather than the time-weighted rate of return, drives the ending account balances for investors who are systematically investing. The sequence of returns has a significant impact on an investor's portfolio, particularly when the largest gains or losses occur near the retirement date.

Chart 3 | Investors can experience wide variation in retirement account balances depending on sequence of returns relative to retirement date



 ${\it Source: Wells Fargo\ Asset\ Management.}\ {\it \textbf{Past\ performance\ is\ no\ guarantee\ of\ future\ results.}}$

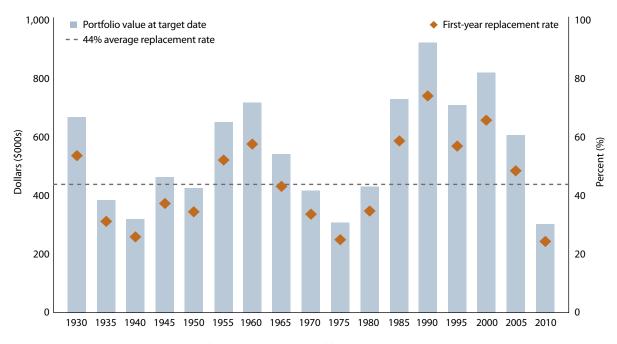
^{1. 60/40} portfolio consists of 60% S&P 500 Index and 40% Barclays Aggregate U.S. Bond Index, rebalanced monthly.

When we use actual historical returns prior to retirement, the results are the same. Chart 4 shows the wide variation in market conditions that retirees have faced in 10-year periods prior to retirement dating back to 1930 and their effect on the level of available retirement income. Each bar in the chart assumes a 60/40² portfolio, beginning with a \$200,000 account balance and subsequent annual contributions of \$3,000 that are increased 3% annually. Even with the same starting account value, retirees with the best-performing portfolios had more than three times the account value at retirement than those with the worst-performing portfolios. In terms of income replacement, an important measurement for retirement plan participants, the average portfolio replaced 44% of a \$50,000 final-year salary. In the worst market conditions, portfolios replaced less than 25% of income (assuming 4% distribution at retirement).

In the best—and extremely rare—market conditions, the portfolio replaced more than 90% of final-year income. The wide variance in historical results in Chart 4 demonstrates the significant impact that market conditions can have on account balances at retirement.

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Chart 4 | Market performance ahead of retirement is critical to a retiree's account balance and available retirement income



Source: Wells Fargo Asset Management. Past performance is no guarantee of future results.

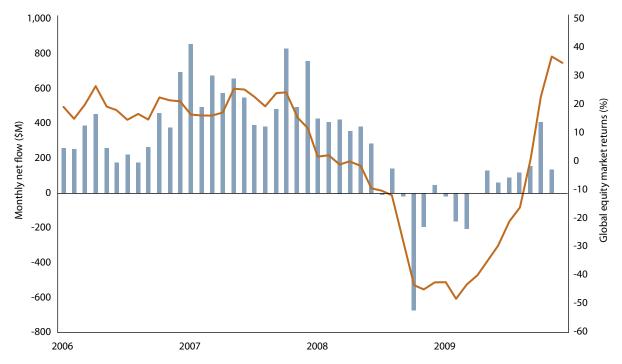
2. Portfolio is 60% Ibbotson Associates S&P 500, 40% Ibbotson Associates Intermediate Term Government Bond, rebalanced monthly.

While market conditions and sequence of returns in the 10 years prior to retirement are out of an investor's control, they affect overall investor outcomes. To help manage this uncertainty, we believe that a target date series should offer an appropriate balance of risk and return potential in the years leading up to retirement. This is crucial in allowing retirement plan participants to participate in bull markets and grow their nest eggs during favorable market conditions (such as the market experienced by 1990 retirees) but in a manner that is risk-appropriate and potentially limits volatility in the case of a choppy market (such as the market by 2010 retirees).

Target date funds are not immune to bad investor behavior

Risk aversion and anxiety stemming from market and account balance volatility can cause target date investors to abandon their investment strategies and sell near the bottom of market corrections, missing out on the market rallies that generally follow. Examining flows in the Morningstar Target 2000–2010 fund category during the most recent market downturn in 2008, we observed a pattern similar to the global equity market trends illustrated in Chart 1. As equity markets continued to move lower in the wake of the global financial crisis, target date funds in the category experienced significant outflows in 2008 and early 2009, even as the markets began to trend higher in 2009.

Chart 5 | History repeats itself as target date investors abandoned their investment strategies during 2008 market downturn



Sources: Strategic Insight and Wells Fargo Asset Management

Past performance is no guarantee of future results.

Global equity market returns are measured as the rolling 12-month return on the MSCI All Country World Index.

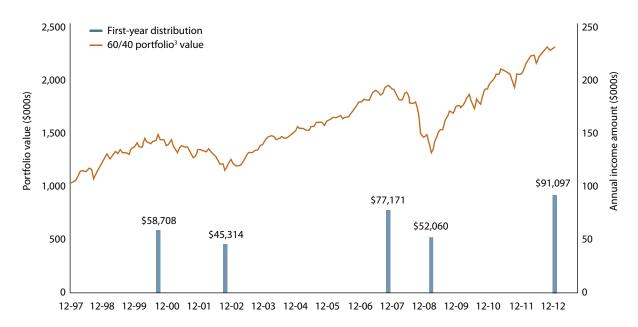


Chart 6 | The timing of retirement can significantly alter income potential

Source: Wells Fargo Asset Management

Past performance is no guarantee of future results.

Selling out at the bottom of the market can have several negative effects on an investor near retirement—the immediate effect of the loss of capital and the potential ongoing effect of having less income available in retirement. Since 1998, there have been two major shocks to the U.S. equity markets—the bursting of the technology bubble in early 2000 and the global financial crisis of 2008.

Chart 6 illustrates the effects on an investor's retirement at various points over the past 15 years—which encompass these two market events—had they sold out of the market and used their accounts to create an income stream.

Scared investors can wreak havoc on their future if they stray from their long-term strategy.

In Chart 6, we assumed the investor began with a \$1 million 60/40³ portfolio at the beginning of 1998 (for simplicity, this example ignores contributions). We also assumed that the investor took a 4% income distribution at retirement. Clearly, timing has a major effect on potential retirement income. Scared investors can wreak havoc on their future if they stray from their long-term strategy.

^{3. 60/40} portfolio consists of 60% S&P 500 and 40% Barclays Aggregate U.S. Bond Index, rebalanced monthly.

Glide path design can encourage better investor behavior

As target date funds become a more popular investment option for retirement plans, the plan sponsor's fiduciary responsibility to select an appropriate target date offering becomes increasingly important. In the target date funds space, a wide variety of glide paths offer a broad range of risk/return profiles for participants nearing retirement. Targeted equity allocation at retirement among leading target date providers ranges from 28% to 55%, resulting from vast differences in glide path design philosophies. Chart 7 observes the growth of \$100,000 across eight prominent target 2010 funds and illustrates how different risk exposures can lead to different outcomes for target date investors during volatile time periods. We chose the five-year period from October 2007 through September 2012 because it encompasses a full market cycle. In this case, funds with more conservative glide paths gave up less principal in

the downturn and recovered previous highs faster than more aggressive funds.

Chart 7 also illustrates how the variation in glide path design across fund families can make selecting an appropriate target date solution challenging. The magnitude of losses experienced during the downturn, as well as the time it took for funds to recover to their previous highs, varied greatly across the spectrum of 2010 funds. The data represented in Chart 7 should encourage plan sponsors to consider the appropriate level of risk that plan participants should be exposed to in the years prior to retirement. Based on our observations about market and behavioral risk in combination with the varying risk/return profiles available in the target date marketplace, we believe that a conservative glide path is the more prudent choice.

130 120 110 100 Dollars (\$00s) 90 80 Fund A Fund F 70 Fund B Fund G Fund C - Fund H 60 - Fund D - S&P 500 50 Fund E 40 9-07 9-08 9-09 9-10 9-11 9-12 Ε S&P 500 Fund Α B C D F G Н Months of recovery 18 38 36 38 42 42 38 35 53

Chart 7 | Not all target date funds are created equal

 $Source: Wells\ Fargo\ Asset\ Management.\ \textbf{Past\ performance\ is\ no\ guarantee\ of\ future\ results.}$

Conclusion

Behavioral risks and market risks can have a significant effect on the ability of retirement plan participants to reach their financial goals. History has shown that investors often make emotional investment decisions based on short-term market activity. Further, participants often underestimate the effect that the timing of market events and the sequence of returns can have on their investment portfolios. Plan sponsors can mitigate the effect of these risks with a target date suite employing a conservative glide path.

Investors tend to buy and sell at the wrong times, which can transform a temporary account balance decline into a permanent loss of capital.

This type of emotional response to a down market can be devastating for participants approaching retirement.

We believe in a more conservative glide path for several reasons. First, evidence suggests that investors tend to buy and sell at the wrong times, which can transform a temporary account balance decline into a permanent loss of capital. This type of emotional response to a down market can be devastating for participants approaching retirement. A more conservative glide path may limit volatility and the magnitude of potential loss near retirement, which can help encourage investors to stay invested through full market cycles.

Second, even investors who commit to a long-term strategy are at the mercy of the markets. While a conservative glide path may underperform a more aggressive glide path during a bull market, we do not believe the risk associated with an aggressive glide path is appropriate in the years immediately preceding retirement. A negative shock close to retirement can have a detrimental psychological and financial effect on the investor.

Statistical approaches to glide path design, like Monte Carlo simulation, often call for relatively high exposure to market risk, even near retirement. But statistical success for the average investor is not universal. While most scenarios in Chart 4 seem acceptable, several outlying scenarios would be extremely painful. In addition, statistical simulations do not incorporate behavioral risks. We believe a more conservative approach near retirement creates a greater level of confidence for the typical investor.

Ultimately, the goal of a target date suite is to create the largest possible nest egg for the widest group of plan participants. In our opinion, the best way to pursue this goal is with a glide path that appropriately balances market risk and the associated behavioral implications for participants approaching retirement.

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