The danger of unintended volatility

The importance of understanding embedded risk in multi-asset class portfolio design

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Executive summary

No one knows how long the current 10-year-old bull market in U.S. equities will last, but history has shown that markets do not rise forever. Multi-asset class portfolios such as target date funds (TDFs), for instance, can help retirement savers better ride out the inevitable market ups and downs that come with investing. However, it is crucial to understand how different approaches to managing portfolio volatility may shape long-term outcome potential, particularly in less favorable market climates. While participation in "upside volatility" can help dial up returns when investors are bullish, it can also hide unintended volatility—too much risk exposure relative to an investor's tolerance and/or goals—should markets decline.

Key takeaways

- **A decade of rising U.S. equity prices may be masking the downside risks of many multi-asset class portfolios.**
- **Comparing TDFs can help illustrate how a heightened focus on accumulation can introduce too much embedded portfolio risk in a multi-asset class design.**
- **Time horizon and cash flows are important inputs into determining suitable portfolio volatility exposures.**
- **Ensuring both upside and downside volatility remain well aligned with investor goals and needs can help support positive investment behaviors and enhance potential full-cycle performance.**

Volatility: The good, the bad, and the unintended

In March 2019, the U.S. equity bull market that began as the economy started to recover from the 2008 financial crisis celebrated its 10-year anniversary—marking one of the longest in U.S. history. Over this period, and assuming reinvested dividends, the S&P 500® Index generated an impressive 17.5% annualized total return, well above the benchmark's average annualized total return of 9.4% over the past 90 years.

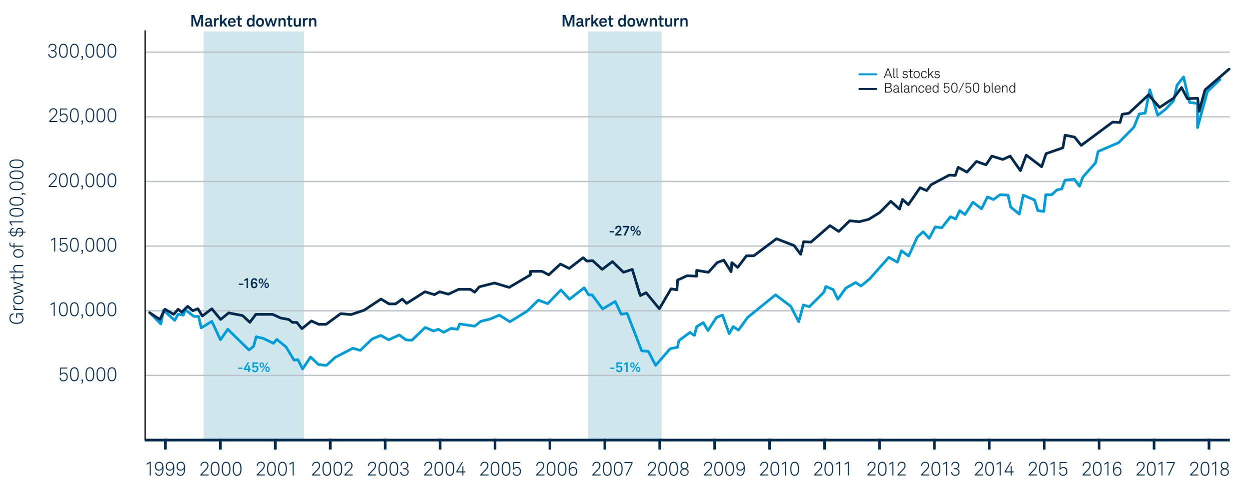
This highlights the benefits of "positive" volatility. While many investors might think of volatility as something best to avoid, on its own volatility is not necessarily a bad thing. It simply measures the range of price changes—both up and down—an investment experiences over a period of time; the more stable the price, the lower the relative volatility and vice versa. As such, volatility is often used as a measure of investment risk, because higher levels imply that a portfolio's returns may be less predictable. However, upside volatility can help amp up investment performance in strong markets, such as the incredibly attractive equity returns that have helped many multi-asset class portfolios deliver impressive gains over the past decade.

Of course, volatility can also cut both ways, a fact easily forgotten given how long equity markets have risen. As shown in Figure 1, over the past 20 years there have been two major market declines where the S&P 500 Index lost 45% or more of its value. Such an event could prove to be a devastating loss for retirement investors overexposed to equities and unlucky enough to have to redeem assets during the months when the index was falling or during the subsequent years it took to recover. Portfolios that included less volatile fixed income allocations could have helped protect assets during these downturns, providing a smoother long-term investment path.

This chart shows how volatility can be deceiving for those overly focused on shorter-term returns. During the equity market upswings, dialing up volatility exposures would have been highly additive to performance, while incredibly corrosive if left unchecked before prices fell during the two bear markets. Taking a longer-term perspective shows how a more balanced approach to managing volatility on both the upside and downside may lead to steadier and potentially stronger portfolio outcomes across

Figure 1: The importance of diversification

Equity markets do not always go up, as shown by the 20-year cumulative returns of the S&P 500 Index versus a 50/50 balanced portfolio.



Sources: Charles Schwab Investment Management, Inc.; Bloomberg. Data represents the cumulative total returns of $100,000. The all stocks category represents the cumulative total returns of the S&P 500 Index, with dividends reinvested. The balanced 50/50 blend index represents the hypothetical performance of a portfolio comprised of 50% S&P 500 Index and 50% in the Bloomberg Barclays US Aggregate Bond Index. Data from 12/31/1997 to 03/29/2019.

Indexes are unmanaged, do not incur management fees, costs and expenses, and cannot be invested in directly.

full market cycles. In multi-asset class portfolios, these volatility exposures can be much more nuanced than in the simple 50/50 example used in the chart, usually extending into a broader set of asset classes as well as different types of securities and investment styles used to build each allocation.

This is why it is critical for investors and those who advise them to re-examine risk exposures periodically. While equities and other risk assets could certainly continue to rise for the foreseeable future, many multi-asset class portfolios have been riding a wave of upside volatility for so long it can mask their potential downside risk in less favorable markets. This can conceal unintended volatility—too much downside risk and potential loss exposure relative to an investor's tolerance and/or goals—in two pivotal ways:

- **Downside volatility exposure may be masked by extended upside outperformance.** Portfolios with greater volatility exposures have generally outperformed similar but more conservative allocations over the past 3-, 5-, and 10-year periods. These gains fail to indicate how volatile these portfolios may be on the downside should markets begin to experience less constructive investment climates for extended periods.
- **Additional volatility exposure may have crept into the portfolio.** As markets move higher, the degree of potential downside volatility exposure in a portfolio can increase as well, which can introduce inappropriate amounts of volatility. Inadequate portfolio rebalancing can distort risk levels, as allocations that are more volatile grow in proportion during rising markets. Loftier equity valuations also need to be supported by consistently stronger company results, and higher-priced securities simply have further to fall in downturns.

Unintended volatility can lead to both negative emotional reactions and disruptions to financial outcomes over the short term that can have a significant impact on investors over the long term. Ill-timed, steeper-than-expected declines during tumultuous markets can easily derail a portfolio from achieving its goals. Additionally, any declines beyond an investor's risk tolerance may prompt poor behaviors such as selling assets at the worst possible times when prices are depressed, locking in losses.

When it comes to investing, volatility is inevitable. However, if potential exposure is clearly understood on both the upside and downside, it can lead to stronger long-term portfolio outcomes. The key is to ensure that a portfolio's volatility profile remains well aligned to investor needs and objectives through intentional risk/reward design decisions across the full investment lifecycle—from portfolio inception to goal end date.

Case study: TDF glide paths

TDFs offer good examples to compare volatility exposures in multi-asset class portfolios, since they all share several important characteristics:

- They are designed to be long term in nature with a common high-level goal of building retirement savings.
- They have a significant transitional milestone: the retirement target date.

Understanding embedded portfolio risk

Asset allocation remains one of the most effective ways to control volatility exposure. Every allocation decision in a multi-asset class portfolio brings a level of potential volatility to the overall design, embedding a degree of market risk into it. This embedded portfolio risk should be properly aligned with investor risk tolerance and needs, and regularly evaluated as investment timeframes and market conditions evolve.

- All start off focused on maximizing accumulation with generally higher risk levels in early working years and then becoming progressively conservative as the retirement date approaches, though how this is expressed in glide path design can be significantly different, especially in terms of embedded portfolio risk leading up to and through the retirement years.
- Ongoing contributions before retirement and then ongoing withdrawals in retirement help illustrate how risk exposures can interact with cash flows.

Appropriately designed TDF glide paths should align the needs and risk tolerance of investors with the right equity market allocation and level of volatility as investors move through various life stages.

At Charles Schwab Investment Management, our glide path design is drawn from extensive research and real-world insights into how investors tend to experience and respond to volatility. The goal is to help investors secure a successful retirement by supporting lifelong wealth accumulation without unduly placing savings at risk. To achieve this outcome, our glide path design is based on a framework that carefully quantifies the amount of risk investors can tolerate and benefit from as they continually move closer to and through retirement. We strive to holistically manage the notable, interconnected risks that investors may encounter across a lifetime of investing, being mindful of volatility and downside risk controls so that investors stay invested and continue contributions, even in difficult market climates.

We balance risk from multiple angles:

- **Overall equity/fixed income mix:** Higher risk asset allocations early in the glide path seek to maximize long-term gain and compounding potential, with tighter volatility controls and reduced risk of losses as the glide path progresses in order to keep savers invested and avoid fear-based selling.
- **Underlying asset class exposures:** A wide range of sub-asset classes help enhance the risk/return profile across the glide path, based on long-term risk/return expectations, diversification benefits, accessibility, liquidity, market segment exposures, cost, downside risk, and overall appropriateness.
- **Fixed income for safety and stability:** A conservative, blended approach of both active and passive strategies offers a strong anchor to help protect assets in difficult markets and pursue more optimized outcomes across full market cycles. Extra risk-taking in fixed income may cause these assets to behave more like equities, which can markedly increase volatility exposure.
- **A holistic risk management approach:** In addition to market volatility risks, our glide path design also actively strives to address a full range of risks investors can be vulnerable to at different life stages, such as longevity risk, sequence risk, inflation risk, tail risk, and interest rate risk.

This highly intentional use of risk exposures seeks to help better position investors to secure a safe, sustainable income source in retirement. A core philosophical component of this design is to help avoid outsized losses, especially as retirement approaches, without overly curtailing the ability to prudently participate in gains when markets are rising.

Examples of how this translates into our actual glide path approach are presented in Table 1. For instance, we reduce risk in our equity exposures as retirement approaches, not only from smaller overall allocations, but also from shifts to more passive and less active underlying strategies, more large-cap and fewer small-cap assets, and more international developed markets and less emerging markets investments. Similar changes are also made within the glide path's fixed income allocations.

Table 1: Managing risk within broad asset class allocations

We seek to reduce embedded portfolio risk as retirement moves closer through smaller equity and larger fixed income allocations, as well as how those exposures are achieved.

	Less — As retirement approaches — More	
Equity Portfolio	Active Strategies	Passive Strategies
	Domestic Small-Cap	Domestic Large-Cap
	International	Domestic
	Emerging Markets[1]	International (Developed)[2]
	Commodities	Domestic
Fixed Income and Cash Equivalents Portfolio	Active Strategies	Passive Strategies
	Credit Risk	Inflation-Protection (U.S. TIPS)
	Duration	Short-Term Bonds & Cash Equivalents
	International	Domestic

Sources: Charles Schwab Investment Management, Inc. For illustrative purposes only.

[1] Represents dedicated emerging markets exposure only. Indirect emerging markets exposure may be present through other underlying international strategies.

[2] As the glide path progresses, the allocation to emerging markets direction exposure rolls into international (developed) markets, resulting in a higher international (developed) to total international equity, including emerging market allocation. Additionally, international allocation declines relative to total equity to reduce risk.

In our opinion, too many TDF designs overly focus on maximizing accumulation across their glide paths, thus exposing investors of all ages to too much embedded portfolio risk. As mentioned earlier, this risk can be masked by the current long-term bull market, as more aggressive glide paths have delivered generally stronger performance during the overall highly favorable investment climate.

Markets do not rise forever, however, and those that enjoyed the rise up most may feel the greatest pain of loss in corrections. Investors and their advisors should remain aware of these embedded portfolio risks and look beyond performance comparisons alone to ensure overall volatility exposures are in line with their risk appetites, expectations, and needs through all types of market cycles.

Volatility, time horizons, and cash flows

Two critical considerations for portfolio volatility exposures are time horizon and cash flows. Time horizon is crucial to evaluate since the shorter the horizon, the higher the potential risk of disruption from market volatility. Cash flows into or out of a portfolio directly influence the dollar-weighted return that is generated over time as markets fluctuate. Generally, TDF investors just starting their careers with long time horizons and limited savings can benefit from significant market volatility exposure, as this will help them accumulate wealth over time and benefit from the ups and downs of the market through dollar cost averaging.

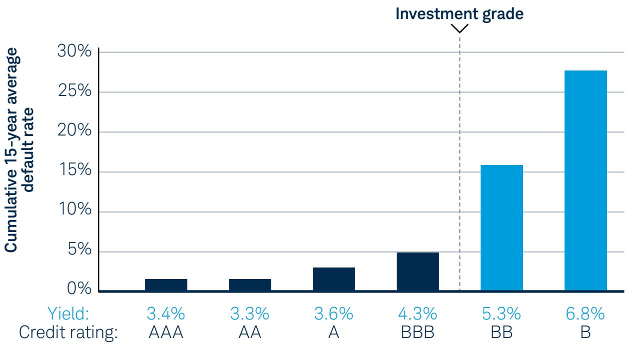
As investors accumulate wealth and approach and enter retirement, however, higher levels of TDF volatility can work against them in a number of ways.

Be aware of hidden risks in fixed income

Equity levels are not the only place unintended volatility can reside. Some TDFs use fixed income allocations to add veiled equity beta through greater exposures to non-government securities such as high-yield corporate bonds. Figure 2 helps illustrate this risk by demonstrating the substantially greater default risk associated with lower credit-quality fixed-income securities.

Figure 2: Higher-yielding credit securities are more at risk of default

Increased credit exposure in TDFs could potentially subject investors to default-related losses.



Sources: Charles Schwab Investment Management, Inc., with data from Bloomberg Barclays U.S. Corporate and U.S. High Yield Indices, as of 02/04/2019, and the S&P Global "2017 Annual Global Corporate Default Study and Rating Transitions."

Past performance is no indication of future results.

First, it can cause significant stress when balances fluctuate given the larger dollar impact and generally shorter recovery times before investors need to tap into assets.

Table 2 illustrates how a hypothetical 20% portfolio loss might affect two TDF investors, one at age 25 and one at age 60. The younger investor, Amanda, has recently started to invest $1,000 on a semiannual basis and has only saved $5,000, while the older investor, Todd, has accumulated $500,000 and is contributing $5,000 every six months.

Although the percentage loss suffered by both is the same, Amanda experiences a much smaller actual dollar loss (-$1,000 versus -$100,000) given her much smaller portfolio balance. Her $1,000 semiannual contributions, while well below Todd's semiannual contributions of $5,000, are also proportionately much larger relative to her dollar loss and remaining portfolio balance. Hence, she is able to recover her full original balance with one contribution, investing at lower security prices and with a 30-year-plus time horizon for markets to recover before needing to access assets.

In contrast, Todd has lost tremendous wealth that will likely take much longer to recoup, if ever. As Todd moves into retirement, he also will no longer be able to benefit from dollar cost averaging when the market falls. Indeed, the opposite is usually the case, since this is when withdrawals tend to begin, and the negative one-two punch of selling assets as values are declining can be devastating to a portfolio.

Unfortunately, too many TDF glide paths keep equity allocations at higher levels near and into retirement, justifying the higher risk exposures with a need to help support a multi-decade spending horizon. Yet the example below highlights how this approach risks exposing investors to too much unintended volatility at the absolute worst time.

Table 2: Downside volatility and time horizon

How a 20% portfolio loss might affect TDF investors at different ages.

Investor	Amanda	Todd
Age	25	60
Portfolio balance	$5,000	$500,000
Impact of 20% loss	($1,000)	($100,000)
Next semiannual contribution	$1,000	$5,000
Contribution as % of loss	100%	5%
Too much risk?	No—benefits from lower entry and dollar cost averaging	Yes—now considering delaying retirement, changing investments at worst time, etc.

Sources: Charles Schwab Investment Management, Inc. For illustrative purposes only.

Behavioral considerations

Higher levels of volatility can often prompt poor investor behaviors, such as chasing returns or, conversely, selling at the worst times when valuations are depressed. Properly aligning volatility exposures with overall risk tolerances can encourage more constructive behaviors, helping to keep retirement savers invested and on track through changing market cycles.

Further, industry research has consistently shown that many investors are saving too little for retirement, and many TDF managers often argue that relatively higher equity allocations are necessary at all life stages in an effort to help solve for this potential shortfall, in essence trying to offset poor behavior by doubling down on rising equity markets. In our view, this is similar to going to a casino with your last $20 hoping to make up for next month's rent—a very risky gamble that may potentially derail retirement savings. The reality is that no TDF design or amount of equity exposure can offset decades of poor savings behavior.

Conclusions

Given how much and how long U.S. equity markets have risen over the past decade, investors and their advisors may want to review and carefully understand the potential risk exposures currently embedded in asset allocations. Years of mostly upside volatility have been incredibly additive for many multi-asset class portfolios, but this may have also created increased levels of unintended volatility on the downside.

To help evaluate portfolios, we suggest considering the following:

- Recognize that upside volatility and downside exposures tend to be closely linked—the strongest investment performers in up markets may fall the most in down markets.
- Be mindful of this volatility and make deliberate decisions around appropriate exposure levels based on risk tolerance, time horizon, and investment objective.
- Look beyond past investment performance alone, as a rising equity tide can lift all riskier portfolios.

Above all, investors should be prepared for the reality of volatility. A well-structured multi-asset class portfolio that matches expected risk to investor goals and behaviors across a broad range of possible market scenarios can minimize the danger of unintended volatility, offering a more positive overall investment experience and helping to optimize performance outcome potential over full market cycles.

Charles Schwab Investment Management

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