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Research Paper

Target Date Funds: Evaluating and Selecting

An analysis of target date risks and alignment with Plan Sponsor objectives

by Bradford L. Long, Partner, Research Director - Global Public Markets February 2016

Key Observations

- *The Qualified Default Investment Alternative (QDIA) investment decision is among the most important investment-related decisions a Plan Sponsor will make on behalf of its participants. The selection of a target date fund is likely to have the greatest impact on the largest number of participants and their ability to achieve their retirement objectives. Target date products are relatively immune to participant inaction because they evolve as participants age. This characteristic makes target date funds the most attractive QDIA and the most complex alternative. Because the decision is so critical, it carries major fiduciary implications.*
- *To prudently select and monitor a target date fund, a Plan Sponsor must understand its unique characteristics and align those features with the objective set for participants. A Plan Sponsor may choose to prioritize one of two competing objectives: the probability and level of real income replacement during retirement or to reduce the volatility of account balances. In industry jargon, these two objectives are often referred to as longevity risk and market risk, respectively.*
- *No single target date fund can prioritize both of these objectives simultaneously. Therefore, the Plan Sponsor must decide which objective is most important for its unique participant base. Objective analysis of Plan demographic information can help inform this discussion, but the preferences of the Plan Sponsor should play a role in the decision. The efficacy of the target date fund selected will depend on aligning the Plan Sponsor's objective with that of the target date.*

Introduction

Historically, retirees with both a Defined Benefit Plan (DB) and Social Security could replace a reasonable portion of their final salary in retirement. Those income streams in retirement usually rose with inflation and paid the retiree in perpetuity. Unfortunately, that experience is unlikely to endure in the future. The secular decline in the use of DB retirement Plans has placed a larger and increasing saving and investment burden on individuals. Grasping this new and complicated responsibility is important for participants and Plan Sponsors alike because the Defined Contribution Plan (DC) will likely become the primary investment vehicle for the majority of future retirees.

Sufficient Retirement Income = Adequate Savings + Appropriate Investing

While we will focus on the "Appropriate Investing" component of the equation above, we cannot continue without first stressing that inadequate savings rates cannot be overcome by even the most successful investment strategies. Saving more and saving early has been and will likely always be the primary determinant of retirement success or failure. Plan design that encourages adequate savings early must be a priority.

QDIA

With a DB Plan, participants have little or no involvement in the allocation decisions for their retirement. The income received at retirement is formulaic and often based on years of service, final salary and other factors. When the DC Plan came into existence in 1978, the DB Plan was still the primary retirement vehicle. The proliferation of DC Plans over time coincided with a growing need for asset allocation advice for DC participants.

Target date portfolios came into existence in the early 1990's to help address this issue. In 2006, the Pension Protection Act solidified target date products as a primary DC investment vehicle when they were designated a Qualified Default Investment Alternative (QDIA). Assets in target date funds have grown by 17% from year-end 2009 to year-end 2014. Additionally, 88% of plan sponsors offered target date funds as of 2015. (Vanguard: How America Saves 2015)

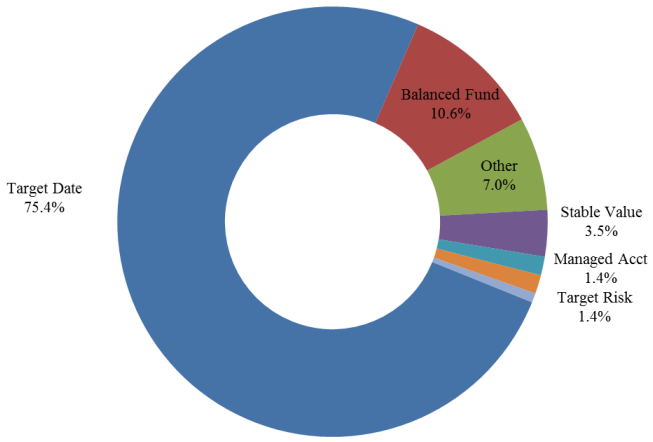
Selecting the QDIA can be the most important investment decision a Plan Sponsor makes on behalf of its participants. The reasons are multifaceted. First and foremost, the QDIA has the greatest impact on the largest number of participants and their subsequent ability to achieve retirement success. Secondly, a QDIA relieves the Plan Sponsor from the liability for decisions to invest all or part of a participant's account in the investment (29 C.F.R § 2550.404C-5(e)(3(i)(C))). However, it does not remove the liability for prudently selecting and monitoring the QDIA (29 C.F.R § 2550.404C-5(b)(3)). Achieving participant goals and managing fiduciary liability are critical aspects of any well-functioning DC Plan.

A QDIA must be an investment choice with a mix of underlying investments that reflects the long-term needs of a Plan participant. According to the Department of Labor, investment options that satisfy this definition include:

- Balanced
- Managed Account Programs
- Target Risk
- Target Date

Exhibit 1

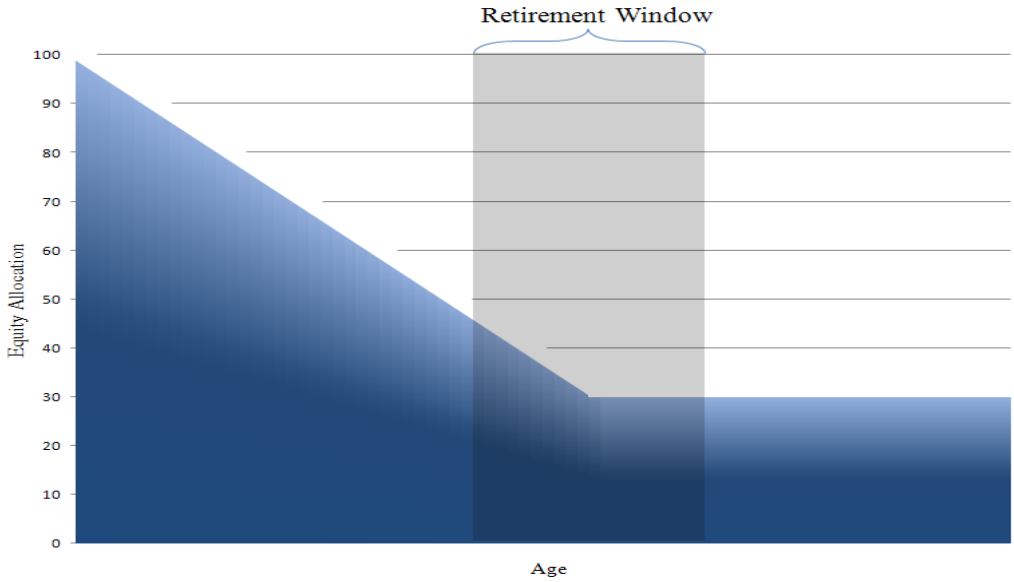
2014 Default Investment For Automatic Enrollment Deferrals Percentage



(PSCA 58th Annual Survey)

Target date investments have emerged as the preferred choice by Plan Sponsors. According to the 2012 Plan Sponsor Council of America's Annual Survey of Profit Sharing and 401(k) Plans, target date investments were the QDIA for 73.3% of Plans surveyed. With the clear and logical objective to reduce risk as retirement nears, these dynamic products simplify the role participants must play.

Exhibit 2

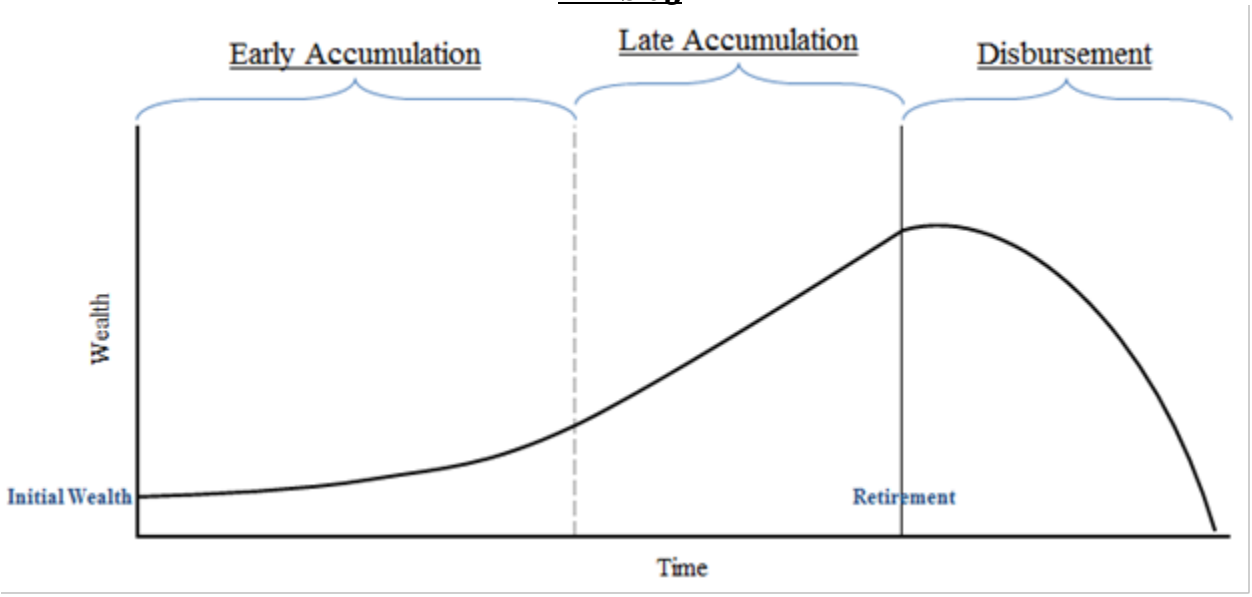


The graphic in Exhibit 2 provides an example of how a target date product reduces risk over time by reducing equity exposure as the investor nears retirement. This process of reducing market risk is known as a "glide path." The glide path serves as the road map for the Plan Sponsor when determining how the product will reduce risk.

Phases of Retirement Investing

Most investors go through a similar cycle when it comes to saving and spending in retirement, which is depicted below in Exhibit 3.

Exhibit 3



The first phase represents *early accumulation*. An investor begins with a low asset balance, but has a long time until retirement. The deferral or savings rate during this phase is generally lower. Participants in the *late accumulation* phase are still actively saving, but have accumulated meaningful assets from savings and investing over time. The savings rate is typically higher than during *early accumulation* as the investor nears retirement. At retirement, the investor enters the *disbursement phase* and starts to draw from the accumulated assets. In this phase the investor must live with the decisions they have made. How much they have saved and how well they have invested will impact their ability to spend in retirement.

Categorizing the Risks

There are three primary risks that investors should be concerned with during the savings and retirement cycle. How each concern is weighed should transition over time.

Market Risk: The volatility or drawdown of a portfolio

- **Early Accumulation** - Given a long investment horizon and low asset balance, market risk is primarily a behavioral concern in which (irrational) panic may lead to destructive investment decisions near a bear market bottom.
- **Late Accumulation** - With a shorter time horizon and more capital at risk, the drawdown of the portfolio becomes more impactful.
- **Disbursement** - Portfolio volatility and drawdowns impact the investor's ability to fund a consistent real income in retirement.

Inflation Risk: Failing to maintain purchasing power of assets

- **Early Accumulation** - Inflation risk is lower in early years given the low level of assets accumulated.
- **Late Accumulation** - The need for inflation protection grows as retirement nears.
- **Disbursement** - The ability to generate a real income stream in retirement is paramount, so inflation risk is high.

Longevity Risk: Outliving accumulated assets

- **Early Accumulation**- Because asset balances start small, the levels of saving (versus levels of investment return) during this phase will have the greatest future impact, mitigating the likelihood of outliving accumulated assets.
- **Late Accumulation**- Levels of investment return catch up with and gradually surpass savings rates in importance. Concern for protecting accumulated assets and avoiding large drawdowns grow, particularly later in this phase.

- **Disbursement**- The level of longevity risk is dependent on the amount of assets accumulated, length of retirement, inflation and spending need.

The equity allocation contained in the glide path affects these risks in different ways. Over a longer period of time, equities have the greatest possibility of providing growth beyond inflation. Therefore, the more equity exposure in the glide path, the more likely a participant will limit inflation and longevity risk. However, the volatility associated with equity investments will produce greater variability in account balances. Each target date provider prioritizes and balances these risks differently; understanding how each target date product addresses these risks is crucial to selecting the optimal product.

Evaluating Target Date Products

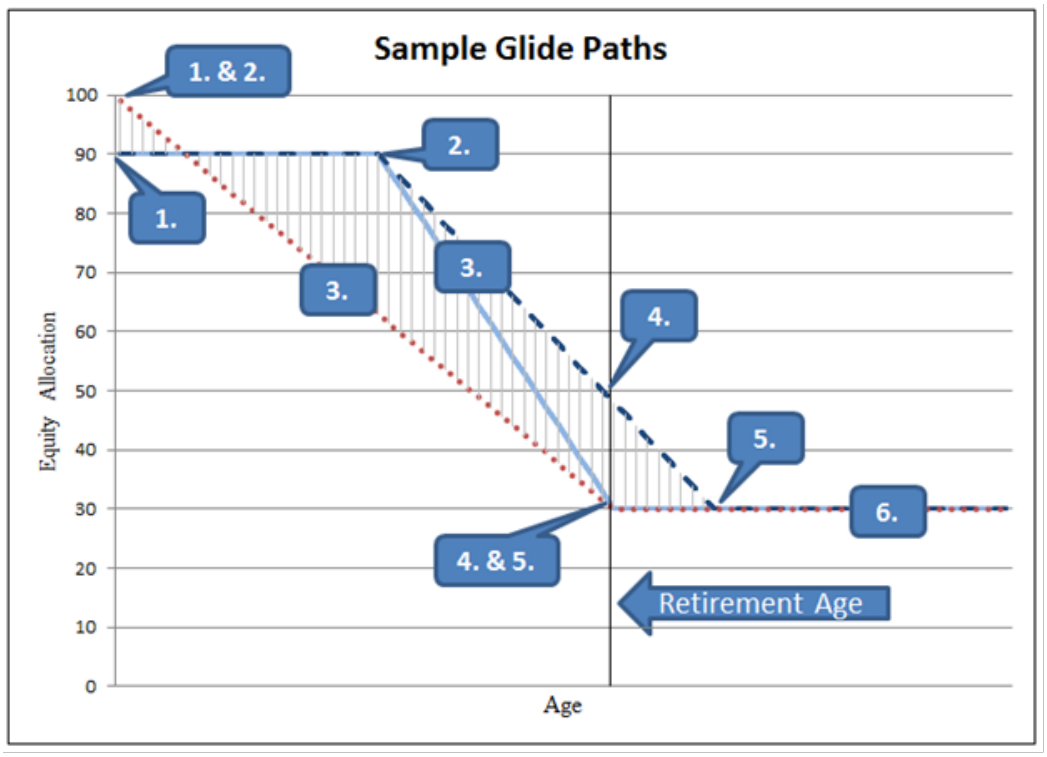
Target date investment products are easily the most complex investment found in DC Plans. Unlike all other investments, they combine broad asset allocation strategy, asset class diversification (with varying underlying investment strategies) and shifting investment objectives over time. While still important, traditional investment product analysis paradigms are insufficient. A full target date product vetting would include an evaluation of the organization's personnel, structure and operational risks, among (many) other factors. The scope of this paper is relatively narrow, so our focus is on the characteristics of target date products that have the greatest impact on *market, inflation and longevity risks*.

Despite target date products appearing on the surface to have similar objectives, the risks (and implicit prioritization of risks) vary widely among products. No single target date product can optimally address *longevity* and *market risk* simultaneously. The cure for *longevity risk* is the disease for *market risk* and vice versa. It is this inherent trade-off that makes evaluation even more imperative for Plan Sponsors. Aligning a Plan's distinct characteristics and objective with the QDIA is critical for prudent selection of a product.

Anatomy of a Glide Path

All glide paths have six basic components that are adjusted given the objective, assumptions and modeling methodology used to construct them.

Exhibit 4



1. **Initial Equity**- Virtually all target date providers agree that individuals in their 20's have significant capacity for market risk. However, a QDIA cannot be 100% equity and must be diversified. The Department of Labor has done little to illuminate what "diversified" means, so some providers follow the letter of the law by starting with 99% equity. Others choose to start with lower equity allocations for various reasons. At this point on the glide path, there is the greatest similarity among target date providers.

2. **Initial Equity Pivot Point**- Some providers decide to start reducing equity right away while others choose to keep the equity allocation flat for some time. Alleviating *longevity risk* is served by equity allocations staying flatter longer. *Market risk* is alleviated by beginning the glide path roll down earlier.

3. **Slope of Equity Reduction**- The slope of reduction is important. Having a prescribed allocation that is built without consideration for current market conditions may impact returns. For example, the steeper the slope, the greater the risk of meaningfully increasing fixed income allocations coming off of a bear market. This is known as *sequencing of returns risk*. While all glide paths are downward sloping, a more gradual glide path alleviates sequencing risk. *Longevity risk* is combated by maintaining a higher equity allocation longer, but the consequence is a steeper slope of reduction nearing retirement.

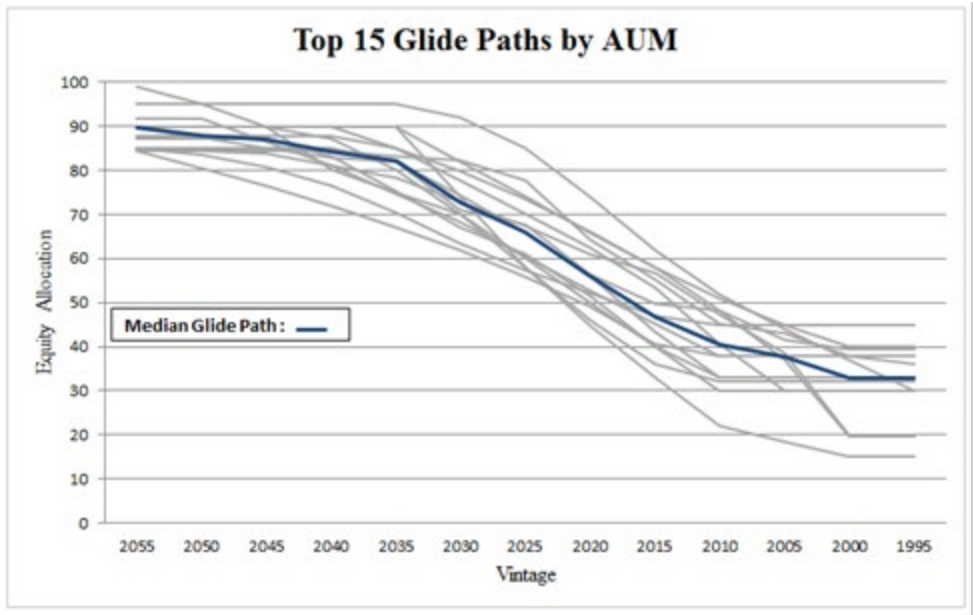
4. & 5. **Equity at Retirement & Final Equity Allocation**- In some cases, the lowest equity allocation is at the retirement date. In others, the glide paths continue to reduce equity exposure for a period of time following retirement. The industry commonly refers to this glide path distinction as "*To Versus Through*". The amount of equity at retirement and the slope of the glide path are important when considering a glide path's risk exposures. Whether or not the glide path is *to or through* is of little consequence by comparison.

6. **Income Fund**- This is the ending allocation for an investor in the target date fund. It can occur as early as the retirement date or may occur many years after.

Heterogenous Assumptions

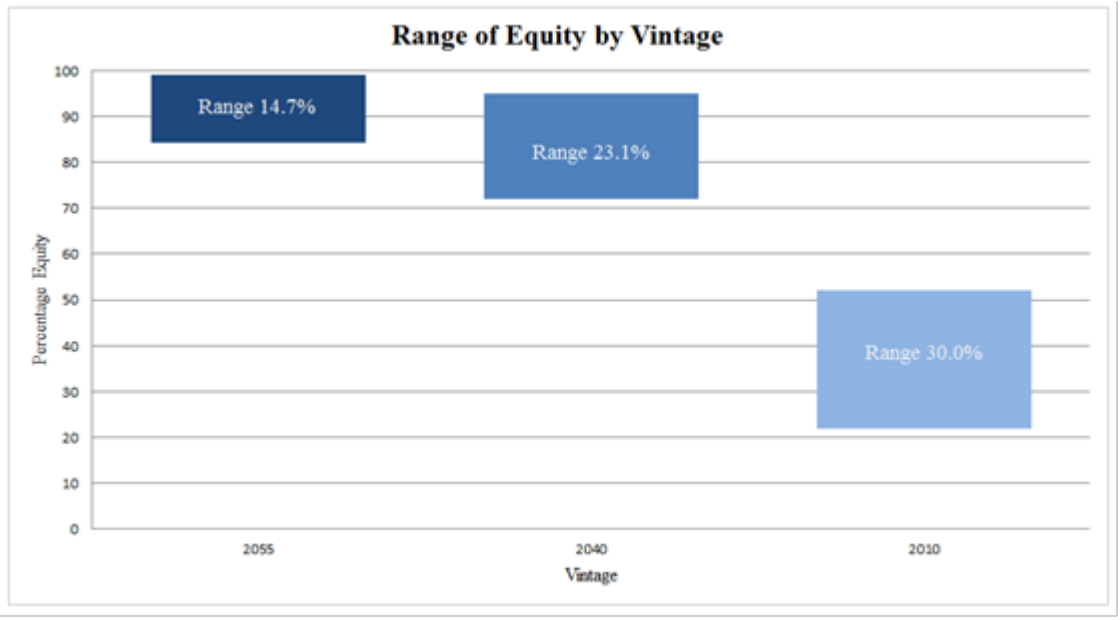
While all glide paths have similarities in anatomy, each comes together in its own unique way. Every target date provider builds the glide path to achieve a stated goal and address the three risks previously discussed. Not only do the objectives of target date products differ from one another, but different assumptions and processes are used by each. When evaluating the equity exposure of various target date products at different stages in the glide path in Exhibit 5, the differences are evident.

Exhibit 5



The largest variations in glide paths occur at the retirement date, which is the point at which the investor is exposed to the greatest amount of longevity, inflation and market risk. Exhibit 6 shows the ranges of glide path equity allocations across three different vintages.

Exhibit 6



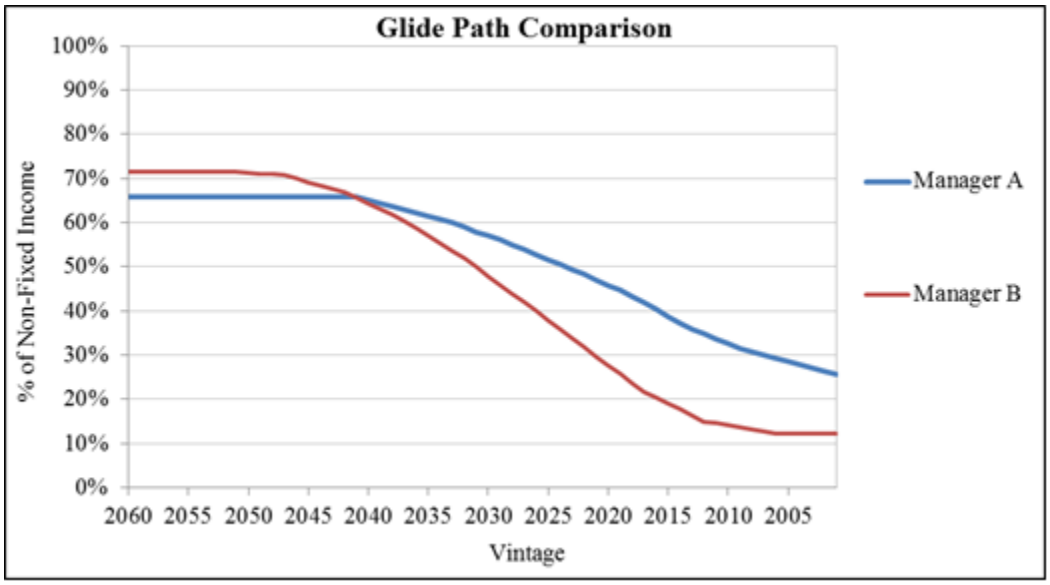
Comparing one glide path to another cannot be done properly with only the information supplied by the target date provider. It is necessary to build a comparison framework that corrects for different input assumptions. DiMeo Schneider & Associates, L.L.C. developed a proprietary tool to analyze target date products that uses proprietary capital market assumptions and our asset allocation framework as inputs. The Glide Path Navigator™ breaks down a glide path into its components and reconstructs each glide path under the same conditions. This allows us to not only better assess how a particular glide path prioritizes each risk we have discussed, but also compare glide paths to one another on an apples-to-apples basis.

Sample Glide Path Analysis

The Glide Path Navigator™ simulates all three phases of retirement investing from *early accumulation* to *disbursement* for an *average investor*. The *average investor* is derived from demographic data gathered from retirement Plans nationwide. The purpose is to simulate various probable outcomes for a typical investor during each of the retirement phases. This analysis can be performed for an individual Plan as well, where we redefine the *average investor* to reflect the typical participant in a specific Plan. Such Plan-level demographic information is readily available from the recordkeeper. We then construct the risk and return profile of the glide path for each target date provider using our propriety capital market assumptions. The Glide Path Navigator™ then runs a Monte Carlo simulation producing 5,000 different market returns for each year of the glide path. This tool allows us to stress test and analyze each glide path to ultimately develop a better understanding of the risks associated with each. The

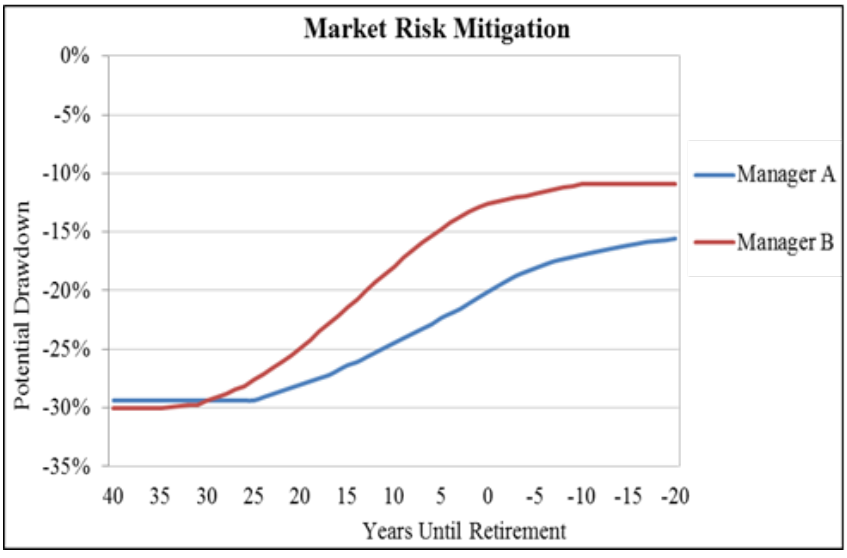
following exhibits reflect the process outlined above. Manager A and Manager B represent glide paths from two target date products on the market.

Exhibit 7



Manager A maintains a greater equity allocation throughout the glide path until after retirement when it dips below Manager B. To better understand what that equity allocation means for an investor's *market risk* exposure along the glide path, we stress each allocation and show the potential drawdown the investor could experience over time. Exhibit 8 highlights the greater *market risk* that a participant could experience by investing in Manager A instead of Manager B.

Exhibit 8



How to Read This Graph

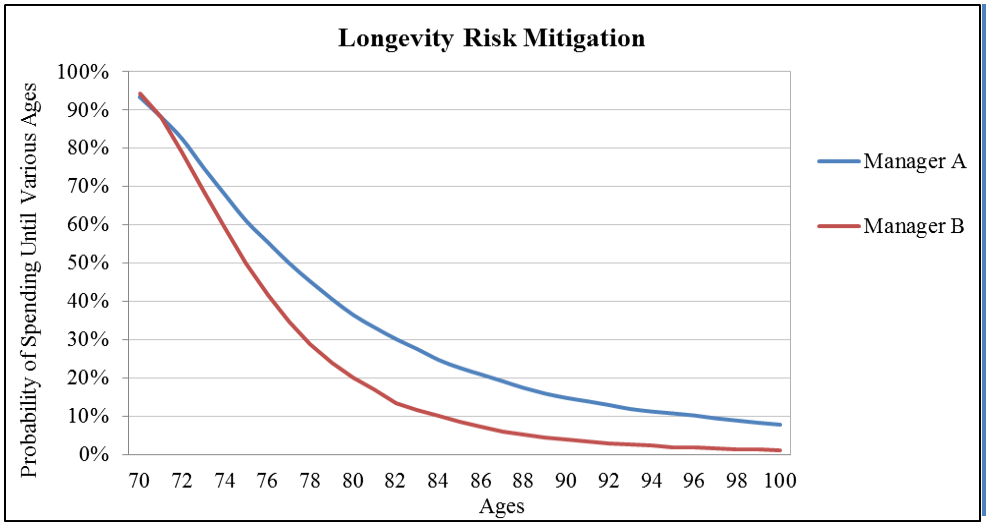
The amount of potential loss a participant could experience changes across the glide path and from one product to the next.

Ex: An investor in Manager A could potentially lose 27% of their assets approximately 15 years before retirement.

The vertical y-axis is Value at Risk (VaR). This metric describes what the anticipated loss could be with a certain level of confidence and over a specific time period. One Year 99% VaR means that with 99% confidence, the investor could lose a certain percentage of their portfolio's value over a one year period. With this information, a Plan Sponsor may conclude that the *market risk* associated with Manager A is too great for their participants. However, it is also important to understand the trade-off for mitigating *market risk*.

Exhibit 9 depicts the probability that a participant will have the capacity to replace 50% of his/her final salary at various ages. In this case, Manager A exhibits lower *longevity risk* because the participant has a greater probability of spending for a longer period of time. Another Plan Sponsor may view *longevity risk* as the greater risk and choose Manager A.

Exhibit 9



How to Read this Graph

A participant's savings has a probability of lasting for a period of time after retirement. The longer that period of time, the lower the probability the money will last.

Ex: After retiring at age 65, a participant invested in Manager A that spends 50% of their final salary has a 54% chance of living off of those assets until age 90.

Reducing *longevity risk* comes at the cost of increasing *market risk*. It is the trade-off between these opposing risks that is the primary differentiator of one glide path from another and there is no one product that can simultaneously address both optimally. Therefore, it is necessary to understand the efficiency and capability of various glide paths in gauging these competing risks.

Redefining Metrics

As we mentioned previously, traditional investment product analysis is insufficient to conduct the necessary analysis on target date investments. This also applies to the metrics used to evaluate target date products. In a traditional risk and return graph, the y-axis reflects the return of the investment and the x-axis signifies the risk often depicted by standard deviation of the investment. While these metrics may be useful for a single point on the glide path, they do not capture the risk and return dynamic for an entire glide path. To take a holistic view of the glide path, we must

redefine risk and return around Plan Sponsor objectives. This includes the risk of not achieving objectives over multiple retirement phases.

All else equal, the greater the return of a target date product, the lower the risk of outliving the retirement assets a participant has accumulated. When we evaluate a metric for return we want to equate it to *longevity risk*. In The Glide Path Navigator™ we produce 5,000 returns for each year of the glide path from ages 25 to 100. From the 375,000 results we can build a probability distribution of how likely it is that an investor in a particular target date product will achieve a certain outcome. We chose a 50% income replacement as the objective in our analysis because we assume a Social Security benefit will replace approximately 30% of pre-retirement income. In total, we believe 80% is a reasonable replacement assumption for modeling purposes. We can then analyze the likelihood an individual is able to spend 50% of their pre-retirement income. We also adjust this income up each year to reflect the impact of inflation. These probabilities of spending give us a clearer picture of longevity risk for the entire glide path than would the return for any particular vintage year of a single target date glide path.

In traditional analysis, market risk can be defined as the volatility or drawdown of an investment. If this framework is applied to a target date glide path it fails to capture an important dynamic; risk is time variant. The timing of drawdowns rather than just the level of drawdowns is critical. As we have shown, an investor accumulates assets over time from saving and investing. Therefore, the closer an investor gets to retirement, the greater the asset balance. If a loss occurs closer to retirement, it is more detrimental in two ways. First, there may not be sufficient time to recover from the loss before needing to draw on the portfolio. Secondly, losses in later years generally fall on a larger base of assets, therefore, the same percentage loss with more assets equates to a larger dollar loss. The next exhibit illustrates the impact to an investor's final balance at retirement after experiencing losses of 30% at different phases in the retirement cycle.

Exhibit 10

The hypothetical individual starts saving at age 25 and invests in a glide path for their entire career until they retire at age 65. The expected return is higher in early years and lower as the individual nears retirement, reflecting the risk reduction of a glide path. A 30% loss occurs at different points during the investor's career.

Starting Salary: $40,000

Inflation Rate: 3%

Real Wage Growth Rate: 1%

Return: Gradual reduction from 10% to 5.26% simulating a glide path

Savings (Including Company Match):

Ages 25 – 34: 8.60%

Ages 35 – 44: 9.30%

Ages 45 – 54: 10.30%

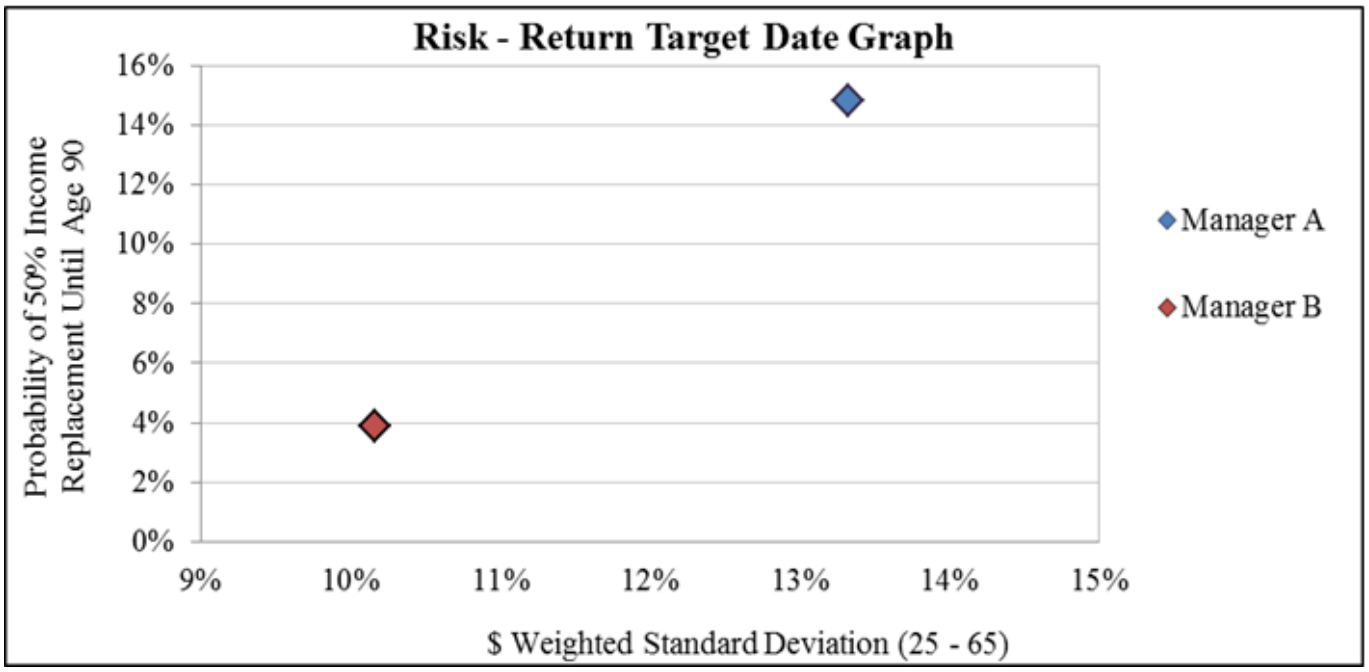
Years Until Retirement When Loss Occurs	40	30	20	10	0
Final Value (thousands)	$1,720	$1,482	$1,332	$1,230	$1,161

Hypothetical example for illustrative purposes only

A loss later when there are more assets at risk and less time to recover has a more damaging impact on the ability to spend in retirement. To address time variant risk, the amount of capital at various periods in time is the integral component. Dollar-weighted standard deviation allows us to consider the volatility of a glide path when volatility is of the greatest concern. By dollar-weighting expected standard deviation over the entire period we put more emphasis on market risk closer to retirement. Scaling risk in this manner offers a better metric for an entire glide path's market risk.

Once we collect the information to perform this analysis, we can produce a risk and return chart with our restated metrics as shown in Exhibit 11.

Exhibit 11



This gives us a basis for comparing the entre glide path and how it functions trading off longevity risk with market risk. Manager A in the analysis has lower *longevity risk* at the cost of greater market risk. The reconfigured target date risk and return chart shows this dynamic in one data point for the entire glide path. There is a higher probability of meeting a 50% income replacement objective (until age 90) and a higher dollar-weighted standard deviation. Manager B displays the opposite characteristics. It exhibits lower *market risk*, but higher *longevity risk*. This

consolidated risk and return framework allows us to categorize managers best at addressing various risks and more appropriately incorporate the client's objective with the correct product.

Aligning Preference with Product

When a Plan Sponsor asks "What target date product is best for our Plan?" the subsequent question should be "What are the goals you have for your participants?" We think of these questions as analogous to knowing your destination and route (the goal and glide path, respectively) before you get into the car that will take you there (the target date product). Without first establishing the destination and mapping an appropriate course, you are less likely to get to your final destination. As we have previously discussed, target date products address risks differently. Some put more emphasis on minimizing market risk while others prioritize *longevity risk*. No target date product focuses solely on one of these risks while ignoring the other, but how they choose to address these risks differs. The efficacy of a particular target date product depends on how a Plan Sponsor ultimately prioritizes these same risks for their participants.

The process each Plan Sponsor uses to prioritize these risks will differ. Some have a clear objective of what they want to achieve based on corporate culture or other guiding factors. Others may utilize Plan demographic information to create a more objective understanding of what risks they believe their participants are most susceptible to experiencing. This review should consider, but is not limited to, the following factors.

Exhibit 12

Metric	Consideration
Expected Retirement Date	Length of retirement and investment period impacts the need for equity
Real Wage Growth	Higher real wage growth sets a higher threshold for income replacement at retirement
Volatility of Income	An income with a higher correlation to the equity market impacts the ability of an investor to bear risk
Ending Salary	Impacts the threshold for income replacement at retirement
Defined Benefit Plan	Depending on the status and expected benefit to a participant, this income supplement can impact the ability or need to bear equity risk

Company Stock	Single stock risk impacts a participant's risk profile
Initial Balances	Can impact the ability or need to bear equity risk
Contribution Rate	Can impact the ability or need to bear equity risk

Once gathered and analyzed, this demographic information may factor into the selection and evaluation of a target date product. The alignment of a Plan Sponsor's risk preferences with that of the selected target date suite is critical. We believe this process creates a solid foundation for the prudent selection and prudent ongoing monitoring of target date investments.

Custom Target Date

While our focus has been on evaluating off-the-shelf target date investment products, Plan Sponsors can create their own customized target investment vehicles tailored to their unique objectives and priorities. In certain instances, a customized target date investment option may be superior to what is offered in the off-the-shelf marketplace. The U.S. Department of Labor's recent "Target Date Retirement Funds-Tips for ERISA Plan Fiduciaries" provided explicit guidance for Plan Sponsors to "*inquire about whether a custom or non-proprietary target fund would be a better fit for you plan*".

A custom target date investment has certain advantages over off-the-shelf peers. The advantages include a custom glide path that can better address instances where a Plan Sponsor has a unique objective outside of the norm or the demographics of the Plan are significantly different from other Plans. Additionally, a Plan Sponsor retains authority over the underlying investment options utilized in a custom target date portfolio. This increased level of control allows for customizable decisions on active versus passive management, choice in the selection of investments and access to asset classes potentially not utilized by off-the-shelf products. Finally, there may also be an opportunity to reduce fees with a custom target date portfolio compared to similar off-the-shelf target date products.

Customized target date vehicles can also have drawbacks. Often custom vehicles entail more cumbersome administrative complexities. Additionally, smaller Plans may not be large enough to achieve sufficient scale to lower costs. These benefits and drawbacks must be considered when choosing the Plan's optimal target date investment option.

Conclusion

Target date products are the most complex investment vehicles in a Defined Contribution Plan. In order to properly evaluate each product, it is vital to create an evaluation framework that removes the variability from differing assumptions and then establish which risks a target date product is most apt to address. We have demonstrated that target date products address various risks differently, and the efficacy of any one target date product will be contingent on its alignment with the preferences of the Plan Sponsor. We also believe it is prudent for a Plan Sponsor to consider a custom target date structure. Such a framework will lead a Plan Sponsor to choose a target date option that is more likely to achieve their desired outcome while also helping to mitigate the Plan's overall fiduciary risk.

About the Author

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Brad joined DiMeo Schneider in 2012. As Partner and Research Director, he oversees the firm's Global Public Markets research efforts with responsibility for global equity, global fixed income and global real assets. He is also a voting member of the firm's Investment Committee, member of the firm's Discretionary Committee, Research Forum, Capital Markets Team and Mission-Aligned Investing Team. In 2019, Brad was name named a "Rising Star" in City Wire's annual Professional Buyer publication for his contributions in the investment manager research industry. Prior to joining the firm, Brad worked in various research capacities at Citigroup and Wells Fargo in New York. He received a BA in Finance and Minor in Economics from The University of Colorado and is a CFA® charterholder and member of the CFA Society of Chicago and CFA Institute. Additionally, he is active with Greenhouse Scholars, a nonprofit providing financial and personal support to underresourced college students. In his free time, Brad loves cooking and spending time with his wife and young sons.