NORTHERN TRUST

WHAT'S THE FUNDING STATUS OF YOUR DC PLAN?

In the world of defined benefit (DB) plans, sponsors embrace a liability-based framework for measuring investment success. How can this approach be leveraged in the defined contribution (DC) space, to more meaningfully assess investment suitability and performance?

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RETIREMENT DISCOVERIES

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During DB investment committee meetings, the terms "funding status" and "funding ratio" are commonplace, though we would be hard-pressed to hear such talk during a review of a DC plan's investment options. Understandably, discussions related to DC investment performance typically revolve around returns relative to a market index or average. Though, this approach does not best represent the ultimate objective that a DC plan's investments serve, whereas the objective is not to outperform an index or generate higher total returns than other managers. In this paper, we offer suggestions to more meaningfully assess the 1) suitability and 2) performance of the primary investment vehicle within a DC plan – target date funds (TDFs). This assessment is ultimately designed to measure how well participants are doing relative to what really matters: *efficiently* investing to fund their retirement goal.

DEFINING THE DC RETIREMENT LIABILITY

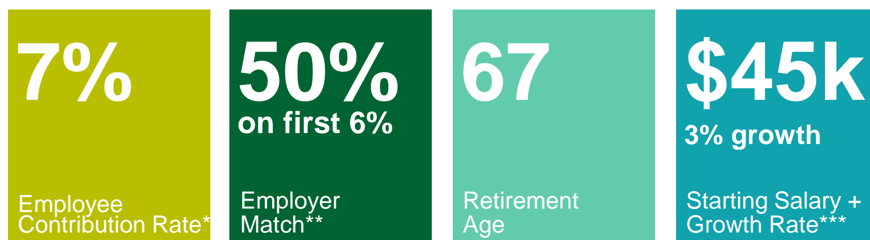
Plan sponsors overseeing closed or frozen DB plans are not only focused on funding their liability, but are equally concerned about "overshooting" with excess assets, which do not benefit participants and cost the plan given high excise taxes. On the other hand, an open DB plan has the ability to pool assets among different age workers to lower the company cost of future benefits accruals, thereby offering true benefits of upside return potential.

How should a DC plan's investment objective be viewed relative to a liability? Assets within a DC plan should serve a purpose, and that purpose is not to accumulate a large amount of excess assets over one's working career. A DC saver's excess assets may likely be used more effectively elsewhere during the accumulation phase (i.e. to pay down debt prior to retirement). Additionally, well-documented behavioral research studies indicate that the pain retirement savers experience from investment loss is greater than the joy derived from equal upside gain. Therefore,

TDF investments should aim to *meet* the retirement liability, as opposed to *exceed* the liability. Ultimately, the decision to take more risk than necessary should be borne by the individual participant and is not the role served by the default investment option. With this in mind, let's explore the liability for DC participants.

Very often, an understanding of the liability value for DC participants is limited; therefore it becomes difficult for plan sponsors to assess TDFs relative to the goal the portfolio is structured to accomplish – meeting the liability needs of participants. This is understandable for two primary reasons: 1) theoretically, every participant has a different set of circumstances and therefore has a different retirement liability, and 2) even with reliable assumptions, the calculation of an appropriate income replacement rate is complex given the many factors involved. The first challenge can be addressed by accepting that DC plan participants indeed have different circumstances, and that it's simply necessary to make broad assumptions for a specific plan population when measuring TDF's effectiveness in achieving strong outcomes for participants. To begin an illustration, let's consider the plan participant assumptions below:

Participant Demographic Assumptions



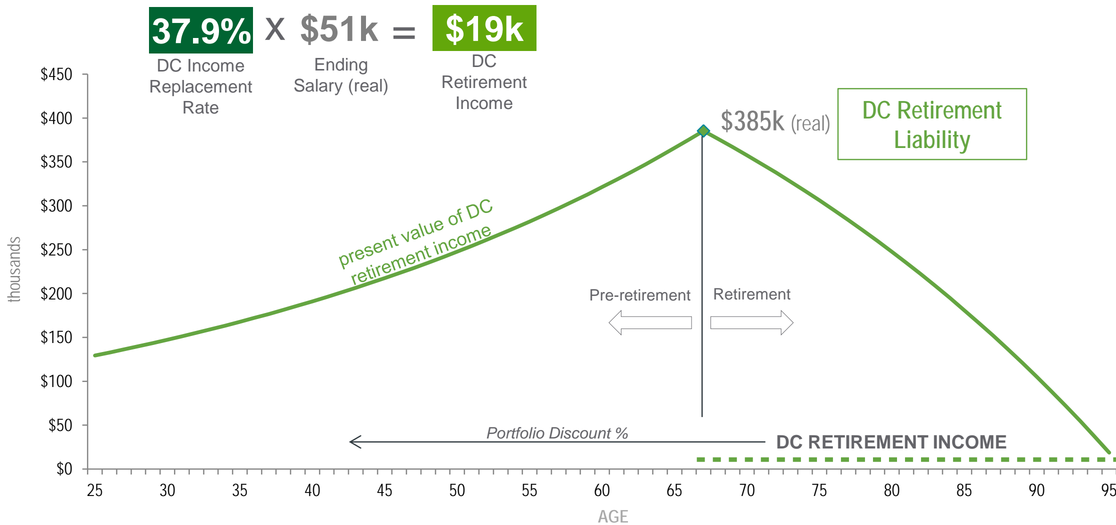
** Auto-enrolled at 3% salary deferral, auto-escalation of 0.5% per year up to 7% contribution*
*** Total Annual Contribution = 10%*
**** Salary growth rate is 3% to age 55, and 2.6% beyond, inflation rate assumption = 2.6%*

The solution to the second challenge necessitates a robust framework to calculate an appropriate DC Income Replacement Rate. Northern Trust's proprietary Income Replacement Rate Framework[1] allows us to determine the appropriate replacement rate for participants in a given DC plan. The goal of the replacement rate is to achieve an equal living standard in pre- and post-retirement for a specific DC plan population. The framework is a detailed reflection of law, regulation, and lifecycle spending, with four key components: 1) social security, 2) taxes, 3) healthcare expenses, and 4) lifestyle trends.

By multiplying the ending salary assumption by the DC Income Replacement Rate, we arrive at the annual income required from the participant's DC portfolio (excluding Social Security) to maintain a consistent lifestyle after retirement. We assume this annual income stream will be required from the age of retirement to age 95 (90-95th percentile of life expectancy) to conservatively account for longevity risk. Unlike DB plans, it is critical to account for a potentially longer life span as individuals don't benefit from the "law of large numbers". In our example, we have leveraged the Income Replacement Rate Framework to arrive at a DC Income Replacement Rate of 37.9% for the DC participant demographic detailed above. This represents $19,000 (real) in annual income payments. This stream of annual income can be discounted back to any point along the lifecycle to understand the

[1] Retirement Discoveries; *How Much Retirement Savings is Enough?, February 2017*

present value of the liability at any age; though for purpose of measuring the effectiveness of TDFs, we focus on the liability at retirement age; which is $385,000 (real). This value is the DC Retirement Liability for this hypothetical plan population and serves as the foundation for the portfolio objective.



Source - Northern Trust Retirement Solutions; For illustrative purposes only

WHAT ARE THE RIGHT INVESTMENTS? - ASSESSING SUITABILITY

Now that the liability has been established, we can forecast how efficiently the plan's TDF portfolio will fund the specific plan population's liability. To accomplish this goal, we developed a proprietary ratio, the Liability Coverage Ratio (LCR), which enables us to look at an alternative measure of TDF suitability for the plan. In order to calculate the ratio, we use the assumed contributions, TDF composition, and asset class return forecasts to arrive at a Planned Portfolio Value. For this illustration, we utilize Northern Trust's Capital Market Assumptions to calculate the TDF's Planned Portfolio Returns at each vintage, arriving at a Planned Portfolio Value of $413,000 at retirement. This value is divided by the DC Retirement Liability of $385,000, to produce a plan-specific LCR of 107%. This result should be viewed as an encouraging sign as it provides additional support for the TDF's suitability for the specific plan population.

LIABILITY COVERAGE RATIO (LCR)

$$\frac{\text{Planned Portfolio Value at retirement}}{\text{DC Retirement Liability}} = \frac{\$413\text{k (real)}}{\$385\text{k}} = \frac{\$1.21\text{mm (nominal)}}{\$1.13\text{mm}} = 107\%$$

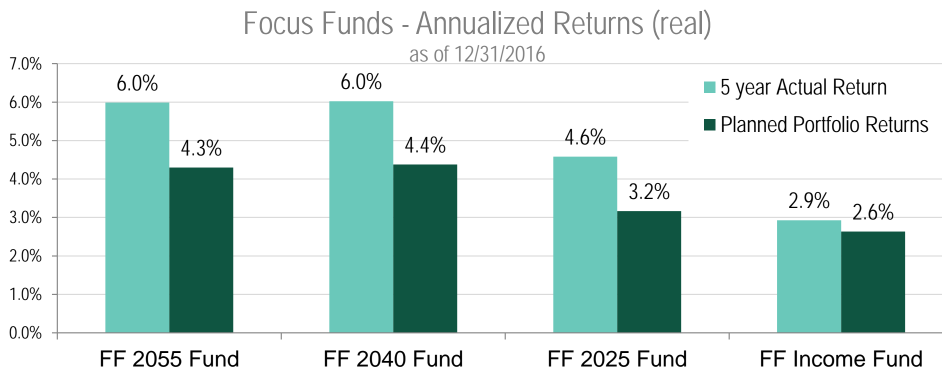
Source - Northern Trust Retirement Solutions; For illustrative purposes only

We consider a LCR of 100%-110% to be a reliable range for successful outcomes, which optimizes the efficiency of the savings and investing in the TDF to meet the

target liability. If a given off-the-shelf TDF has a forecasted LCR significantly below or above this range, we would encourage further evaluation of the TDF portfolio utilized within the plan. Now that we have an understanding that the TDF can deliver a Planned Portfolio Value which meets the needs of the participants, we can turn our attention to an assessment of how well the TDF manager is performing relative to that plan.

HOW WELL ARE WE DOING? - ASSESSING PERFORMANCE

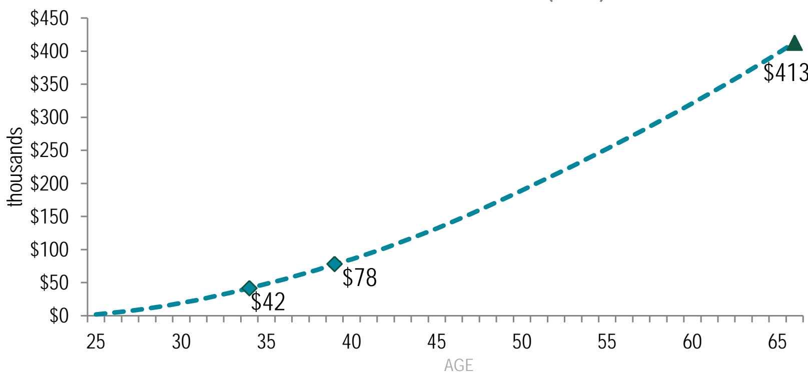
To assess performance, we can first compare the TDF's actual real returns to the Planned Portfolio Returns needed to deliver the Planned Portfolio Value and forecasted LCR. Using Northern Trust's TDF series (Focus Funds) as an example, the graph below summarizes annualized returns on a five year basis for four vintages across the target date glidepath, along with the Planned Portfolio Returns.



Source - Northern Trust Retirement Solutions; Past performance is no guarantee of future results. Returns are gross of fees.

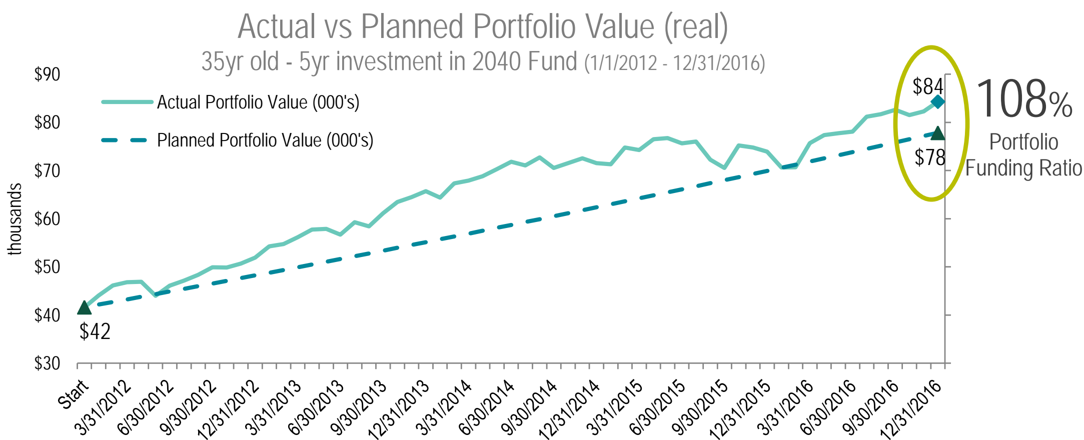
In our example, we note that any participant which has been invested in this TDF series for the last 5 years, has experienced returns *greater* than those needed to be on pace to achieve the Planned Portfolio Value at retirement (given savings are in-line with assumptions). Given that this plan's forecasted LCR value is close to 100%, we can also see that the realized TDF returns are sufficient in order to *meet* the DC Retirement Liability. In our example, when measuring the TDF returns relative to the specific plan population assumptions, we observe a portfolio which is *outperforming* on a 5-year basis.

To make this analysis come to life, we model an average plan participant's investment experience and compare it relative to the Planned Portfolio Value at any point during one's working years. In the chart below, we use our example assumptions to plot the forecasted value at every age along the lifecycle.



Source - Northern Trust Retirement Solutions

We can then use those same assumptions, and apply the TDF's actual real returns to derive the Actual Portfolio Value. Below, we see an example for a 35 year-old that began investing in 2012, for 5 years (2012-2016). From 2012 to 2014, the 2030 fund returns produced a higher value than was needed to meet that Planned Portfolio Value and forecasted LCR. In 2015, due to lower returns, some of that excess value was reduced, though the Actual Portfolio Value never fell below that Planned Portfolio Value. With an Actual Portfolio Value of $84,000, relative to the $78,000 Planned Portfolio Value at the end of 5 years, this signals a positive story of strong retirement accumulation success, indicating the plan's participants are likely on track to reach their retirement goal.



Source - Northern Trust Retirement Solutions; Past performance is no guarantee of future results. Returns are gross of fees

By dividing the Actual Portfolio Value by the Planned Portfolio Value at the same point on the lifecycle, we arrive at the Portfolio Funding Ratio (PFR) – with a value of 108% in this example. We developed the PFR to easily identify where the realized performance of a TDF portfolio stands, relative the portfolio's planned objective. Given that the present value of the liability is typically far greater than the portfolio value during most of the working years, measuring the actual value relative to the planned value is more useful than directly measuring relative to the liability. The PFR is one of the most meaningful ways to measure and assess performance for a

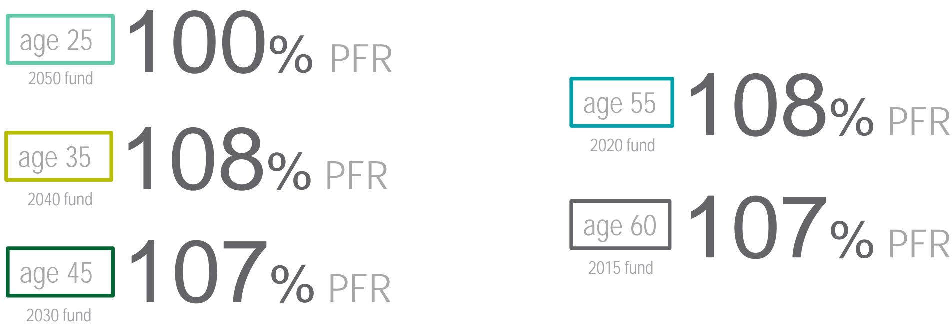
DC plan's TDF offering, as it aligns the performance measurement with the true goal of the portfolio.

$$\textbf{PORTFOLIO FUNDING RATIO (PFR)} = \frac{\text{Actual Portfolio Value}}{\text{Planned Portfolio Value}}$$

Source - Northern Trust Retirement Solutions; For illustrative purposes only

As shown below, the PFR can be calculated with the assumption of any start age, or any investment horizon (to the extent that the TDF has historical returns). Below we assume a 5-year investment in the TDF, starting in 2012, at various ages or vintages.

Example Participant invests in TDF for 5 years (2012-2016) beginning at…



Source - Northern Trust Retirement Solutions
For illustrative purposes only

CONCLUDING REMARKS

Retirement success in a DC plan can be meaningfully measured. We offer these tools as a way to identify a DC plan's 'funding status' and evaluate performance of target date funds to ensure proper alignment with the plan's portfolio goals. We believe the concepts outlined in this paper are well aligned with the DOL's "Tips for ERISA Plan Fiduciaries" and should be part of the recommended establishment of a process for comparing and selecting TDFs. Just as plan sponsors evaluate the suitability and performance of their DB plan investments relative to the stated liability, DC plans need to approach evaluation in the same manner by measuring target date fund performance relative to the stated objectives of the portfolio. With measures such as the Liability Coverage Ratio (LCR) and Portfolio Funding Ratio (PFR), plan sponsors can begin to assess target date fund suitability and align target date performance measurement in a more insightful way, tying directly back to the objectives of the fund. The objective for any target date fund should simply be to efficiently fund the retirement liability, enabling participants to reach those goals – not to outperform an index, generate higher total returns than other managers, or take unnecessary risk to grow assets in excess of the liability.

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For more information, contact one of our Retirement Solutions experts at 312-444-7272.

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[2] Represents total asset managed by Northern Trust as of March 31, 2017.

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