BANK OF AMERICA

RETIREMENT & BENEFIT PLAN SERVICES

De-risking: A path to LDI for pension plans

A defined benefit issues brief for finance professionals

Executive summary

- Liability-driven investing (LDI) has been shown to be a more methodical way for pension plans to stabilize funding status throughout market cycles compared to traditional pension investing.
- But LDI can be problematic for underfunded plans. With the average plan in underfunded status following an extended period of declining interest rates, many plan sponsors fear they have lost the opportunity to reap the benefits of LDI.
- The de-risking strategy developed by Bank of America can allow underfunded plans to dynamically adopt LDI while striving to improve their funded status.

Although it has existed for decades, LDI has gained prominence as an effective strategy for investing pension plan funds. Its ability to help plans remain fully funded throughout market cycles makes it uniquely appropriate, in ways that asset-based or return-based investing does not. (See sidebar.)

But adopting the LDI approach has been complicated by the extended period of declining interest rates, which has pushed many plans into deficits. The great virtue of LDI — essentially, it locks in a plan's fully funded status — can work the other way for plans that are not fully funded unless the strategy is implemented thoughtfully.

For pension plan sponsors who are in the midst of moving to an LDI approach or are considering doing so, the question becomes, "How?" Bank of America, a practitioner of LDI strategies for nearly three decades, suggests a dynamic approach. Called "de-risking," our methodology can help virtually any pension plan transition to LDI, including those currently in deficit.

LDI versus traditional pension investing

LDI is a departure from the traditional "asset-only" approach to pension investing.

Traditionally, the overriding goal of most plan sponsors has been to maximize asset growth for a given level of investment risk. Investment decisions have been based on the expected returns and risk characteristics of specific asset classes. But little if any consideration has been given to the correlation between the asset classes and the plan's liabilities, which has led to large swings in funded status, required contributions and balance sheet liabilities.

LDI strategies seek to align the value of a plan's assets with its liabilities as both are affected by market performance and other factors. The goal is more stability in funded status, required contributions and balance sheet impact.

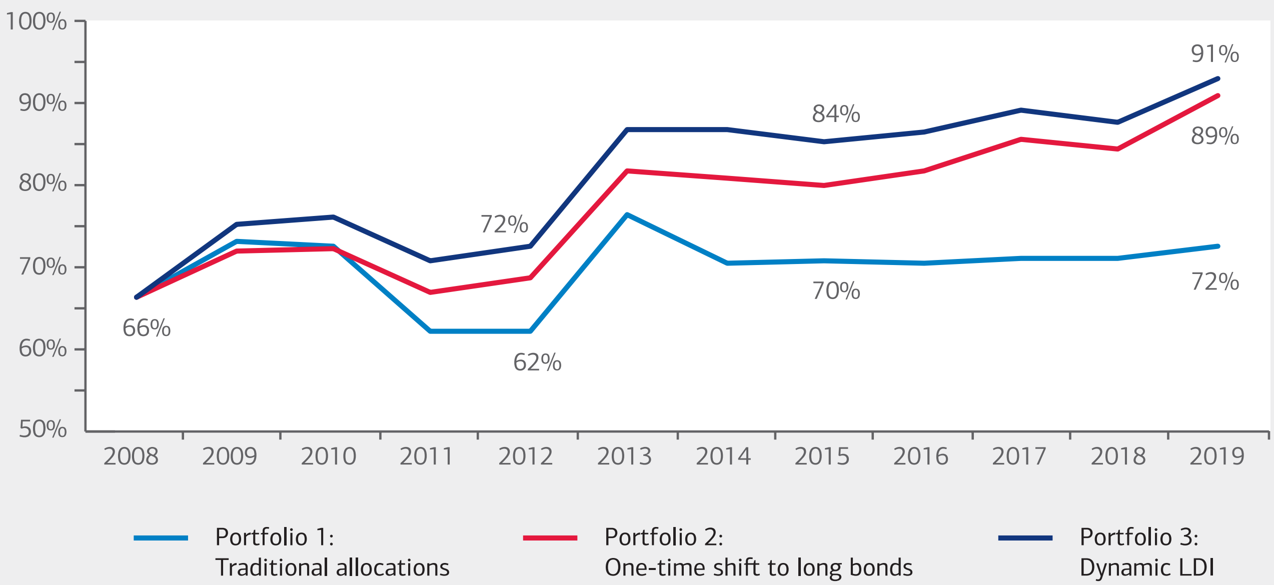
LDI in brief

Traditionally, pension plan investing has focused on maximizing returns. LDI reorients this traditional approach, and instead aims at reducing the risk to funded status through investment strategy and asset allocation. Its rationale: If the goal of a pension plan is to meet liabilities, then the investing goal should be focused on that larger plan goal.

There are no hard-and-fast rules on what qualifies as LDI; in some respects, it is still evolving. Furthermore, LDI objectives may differ from sponsor to sponsor, depending on objectives and risk tolerances. But all LDI strategies seek to quantify and more closely match plan investment returns to changes in benefit obligations — that is, liabilities. In doing so, all LDI strategies seek to limit the swings in funded status, changes in contribution requirements, and impact on the balance sheet.

Exhibit 1: A better path to funded status

LDI versus more traditional allocations, 2008–2019



The chart above shows a case study for a hypothetical pension plan that was frozen at the beginning of the time period (1996). We show the funded status movement based on annual level contributions and three asset allocations under the following assumptions: (1) Static 50/50: 50% S&P Index, 50% Barclays Capital Aggregate Bond Index, rebalanced annually; (2) Static 50/50 with liability-matched bonds: 50% S&P Index, 50% Barclays Capital Long Government/Credit Index, rebalanced annually; (3) Dynamic Allocation with liability-matched bonds: Annual asset allocation dependent on funded status, based on targets shown in Exhibit 2 on page 4 with equities based on S&P Index and fixed income based on Barclays Capital Long Government/Credit Index. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

	Portfolio 1: Traditional allocations Moderate risk profile (50/50 equities/short duration fixed income)	**Portfolio 2: One-time shift to long bonds** Moderate risk profile (50/50 equities/long duration fixed income)	**Portfolio 3: Dynamic LDI** Mimics the overall profile of a moderate risk allocation
Investment strategy	• Maximized return given the appropriate allocation	• Long bond matched with liability cash flow	• Dynamically changed asset allocation based on level of funded status • Incrementally increased to LDI with improved funded status
Result	• Funded status slightly improved • Funded status not materially improved	• Funded status significantly improved	• Funded status significantly improved • Reduced funded status volatility at higher funded status levels

LDI in action

The ultimate test of any investment strategy is how well it achieves the sponsor's goals. To gauge the effectiveness of LDI, Exhibit 1 on the preceding page compares three hypothetical plans, each plan with identical demographics but different investment strategies:

- A traditional investment strategy
- A one-time shift to long bonds
- A phased implementation of LDI based on funded status

At the end of the period:

- **Portfolio 1** — the traditional portfolio — would not have seen meaningful improvements in the funded status. The portfolio's volatility would have adversely affected shareholder earnings as well and may have affected debt covenants during down markets.
- **Portfolio 2** — the one-time shift to long bonds — resulted in less volatility than the 50/50 short bond portfolio with meaningful funded status improvement.
- **Portfolio 3** — the dynamic LDI approach — not only would have helped the plan get closer to fully funded status, but also would have significantly helped to reduce volatility.

  With the third portfolio, the plan's asset allocation was shifted in favor of fixed income at predetermined funded status trigger points to match the plan's liabilities. This approach did a better job of maintaining the plan's funding status within thresholds defined by a company's cost and risk profile.

  Allowing for a more dynamic approach to asset allocation lets plans reduce risk step by step, with the ultimate goal of completely de-risking the portfolio.

LDI in the aftermath of declining interest rates

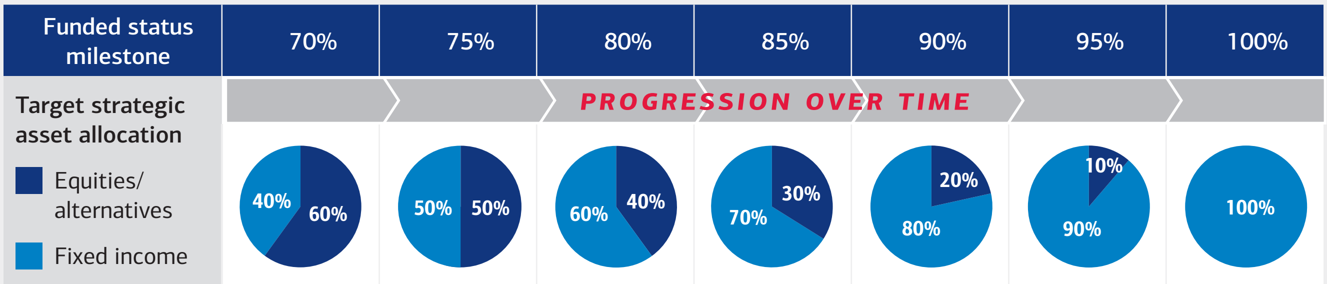
As demonstrated in Exhibit 1, LDI is a potentially superior approach to meeting pension plan goals. But what about the many pension plans that have not yet adopted LDI prior to the significant decline in interest rates over the last several years?

Many plan sponsors either did not implement robust LDI programs prior to interest rates declining or implemented modest changes such as lengthening bond duration at a single point in time and today find themselves with a severely underfunded plan. Those underfunded plans that seek to adopt LDI programs may face several risks, including:

- **Opportunity cost.** Prevailing interest rates have a significant effect on LDI results. All things being equal, for an underfunded pension plan, rising rates will help funded status; if interest rates rise, liabilities will shrink, and funded status will improve. An underfunded pension plan that uses a fully hedged LDI portfolio may miss this potential benefit of increasing interest rates, resulting in opportunity cost and potential regret risk.
- **Complexities with matching interest rates.** An LDI program typically seeks to hedge the interest rate of a pension plan, which is based on the yield curve for high-quality corporate bonds. The yield curve can be broken down into a U.S. Treasury curve plus a premium for credit risk. First, the interest rate is difficult to replicate since the specific bonds used in the yield curve may change frequently as rating agencies upgrade or downgrade corporate bonds. Second, changes in credit spreads can cause problems if hedging is done through instruments other than corporate bonds. LDI programs need to therefore address both interest rate sensitivity and credit spread risk when determining the specific investments to be used.

Exhibit 2: De-risking a pension plan over time

As each funding milestone is achieved over time, the plan is increasingly de-risked by shifting its asset allocation gradually from equity to fixed income.



For illustrative purposes only.

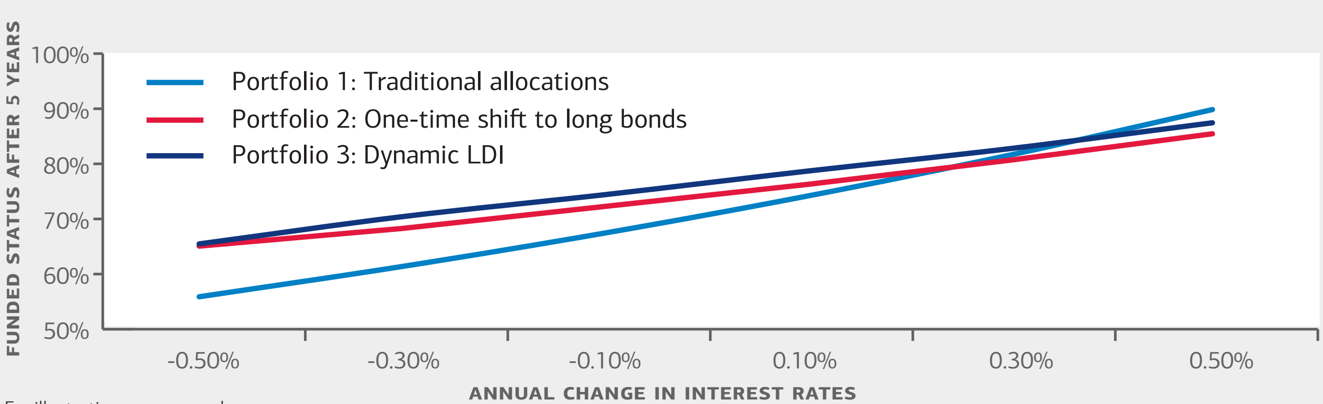
De-risking as a methodical path to LDI

Very simply, a de-risking plan prepares for periods when a plan's assets and liabilities, prevailing rates and other factors align to create an opportunity to help immunize part of the portfolio with fixed-income assets.

Exhibit 2 illustrates the de-risking "roadmap" for a sample frozen plan whose sponsor intends to contribute the minimum required contributions, de-risk the plan over time and ultimately terminate the pension plan. This roadmap provides for funded status thresholds which, when reached, will trigger strategic asset allocation changes to reduce program risk and help lock in improvements in funded status. Although market shifts are unpredictable, this strategy can prepare for when they do happen.

Exhibit 3 shows the impact of discount rate changes on a plan's funded ratio under the three asset allocation strategies described in Exhibit 1. The exhibit models the funded status of a hypothetical plan under various changes in discount rates over a five-year period. As discount rates fall, a long bond or dynamic LDI strategy outperforms a short bond strategy. As discount rates increase, the short bond strategy would be expected to outperform. However, as discount rates increase, all three strategies result in increasing funded ratios. This is due to the fact that the entire liability decreases as discount rates increase, while only a portion of the assets (those allocated to LDI) experience a similar decrease in value. The portfolios holding long bonds also benefit from increased yields further boosting the plan's funded status. This shows that an LDI strategy protects the plan's funded ratio when plan sponsors need it most — decreasing interest rate environments. While this protection comes at the cost of decreased upside potential, many plan sponsors are concluding that this lost opportunity cost is worth the downside risk protection provided in a dynamic LDI strategy.

Exhibit 3: A potentially better path to funded status



For illustrative purposes only.

A dynamic LDI strategy should be structured to reflect the unique needs and characteristics of the plan sponsor. These include risk tolerance, initial funded status, plan demographics, and plan size relative to the sponsor's financial capacity.

De-risking can be fairly easy to map out, since, with the exception of interest rates, the factors that go into liabilities for a frozen plan are fairly predictable. Successfully implementing de-risking, on the other hand, is far from easy, as it presents a logistical challenge, relying heavily on mechanics.

Implementing LDI: A fiduciary approach

Above all, de-risking requires the ability to identify trigger points and to act quickly on them. The approach at Bank of America aims to accomplish both — through the investment policy statement, which provides the discretion to make changes, and through the firm's advanced reporting system, which detects potential trigger points.

The de-risking process begins with projections of actual plan cash flows in the context of a full range of asset performance and interest rate scenarios, to show clients how funded status could move similar to Exhibit 3. The goal is for clients to determine what would be acceptable outcomes for their plans. Once this is achieved, an optimal asset allocation can be determined, and hedges for interest rate sensitivity can be structured.

To give plans and their managers the leeway to act quickly, the Bank of America team maps the de-risking path in advance and advises the plan on making this part of its investment policy statement. This map spells out trigger points and expresses allocations not just in terms of broad asset classes, but also of subclasses (for example, equity capitalization and subclass alternatives).

Trigger points occur quickly and are often short-lived. For the average plan, a 1% change in the plan's discount rate has a corresponding 12%–20% change in liability in the opposite direction. And yet, changes of this magnitude can happen in a matter of weeks. Therefore, it is no longer reasonable to wait for a quarterly review to decide to make changes — it must be done in real time.

The firm's reporting system measures clients' assets and liabilities based on prevailing interest and credit rates, providing the team with the insight needed to know when to make moves. As the plan's funding status improves, the team continues to phase in an LDI approach. Once the plan is fully funded, LDI can be fully implemented, with the plan sponsor realizing the benefits.

A de-risking strategy can help plan sponsors see how LDI can play out for them in the future, getting them back on track in terms of funding status, and ultimately helping them realize the LDI opportunity, once their plan is better funded.