LIABILITY DRIVEN INVESTING: FAQ

1. Why should my organization consider LDI (Liability-Driven Investing)?

The Pension Protection Act of 2006 ushered in new reporting requirements for corporate pension plans. Plan sponsors were suddenly required to report the underfunded (or overfunded) status of their pension plans, whereas in the past this was typically shown in the footnotes of financials. This created the need for companies to be more aware of the potential mismatch between assets and liabilities and the impact they could have on financial statements. For many investors, particularly not-for-profit (NFP) healthcare organizations, changes in pension plan funded status can contribute as much as 25%-35% to overall net asset volatility. More recently, rising PBGC premiums (particularly the variable component tied to funded status) have created another incentive for plans to reexamine their strategy. Controlling funded-status volatility is now paramount for plan sponsors.

Simply put, Liability-Driven Investing (more commonly known as LDI) is a de-risking strategy for plan sponsors. It shifts the plan's investment focus to one that seeks to minimize funded-status volatility, as opposed to one that is purely returns-based. It aims to address the potential duration mismatch between assets and liabilities, which is the greatest risk to a plan sponsor's funded status. For instance, assume a pension plan's liability has a duration of 15 years. This means for every 1% increase/decrease in the plan's discount rate, the liability will decrease/increase by 15% (plan liabilities are inversely correlated to interest rates).

The goal of LDI is to hedge against changes in interest rates by matching the duration of the plan assets to those of the liability. This is typically done by utilizing longer-duration bonds to mirror the longer duration of the plan's liabilities. As funded status improves over time, plan sponsors are poorly compensated for bearing equity market risk. As excess funds cannot be used for other purposes, sponsors get little economic benefit from further improvement in funded status.

TRANSFORMING PORTFOLIOS. ADVANCING MISSIONS.

Highland Associates, Inc. is an independent institutional investment advisor headquartered in Birmingham, Alabama. Highland was founded specifically to help develop, implement and maintain investment management programs for institutions. We serve a national client base of investors including not-for-profit healthcare organizations, foundations, endowments, defined benefit plans, defined contribution plans, and high-net worth individuals. As of March 31, 2018, we serve as investment consultant on approximately $23 billion in assets. Please visit the website at www.highlandassoc.com to learn more.

HIGHLAND ASSOCIATES
2545 HIGHLAND AVENUE SOUTH
SUITE 200
BIRMINGHAM, ALABAMA 35205
P. 1-800-405-7729 / (205) 933-8664
F. (205) 933-7688

2. Does LDI involve only investing in bonds?

This may be true for some plans that are fully immunized or in hibernation mode (plans greater than 100% funded). In its most simplistic form, a fully immunized portfolio would be invested 100% in fixed-income securities that match the duration profile and underlying cash flows of the liability. However, the vast majority of pension plans are not that fortunate and are only in the beginning stages of de-risking their plans. Most newly implemented LDI strategies maintain allocations to broad asset classes. Most LDI strategies consist of two elements: a hedging allocation that consists of predominantly long-duration bonds that match the overall duration of the liabilities and a return-seeking strategy that aims to generate growth. The hedging allocation seeks to mimic moves in the liability by investing in fixed-income securities with similar durations. Therefore, a portion of the liability risk of the plan is "hedged out." Meanwhile, the return-seeking allocation will typically consist of equities, real return assets, hedged equity, and private investments. The goal of the return-seeking allocation is to generate growth in assets, as interest rate movements alone will not bring a plan closer to a fully funded status.

3. How does my organization begin the de-risking process?

The first step in the de-risking process (sometimes referred to as LDI 1.0) commonly starts with shifting the portfolio's fixed-income exposure from a core/intermediate mandate (duration of 5-6 years on average) to a longer-duration strategy utilizing both government and corporate bonds. This move will allow the portfolio's hedging allocation to more closely mimic the plan's liabilities, which are much longer duration in nature. The goal is to increase the portfolio's liability hedge ratio, which measures the percentage of assets that are effectively hedged against the plan's liabilities. A liability hedge ratio of 50% would imply that the portfolio's assets capture 50% of the change in liabilities resulting from interest rate movements. This is perhaps the easiest way to de-risk the portfolio initially because it does not involve major asset allocation changes. In fact, implementing long-duration fixed income can increase the portfolio's overall expected return due to their higher yields when compared to core bonds. Plan sponsors wishing to hedge a portion of their liability should take steps to shift their bond allocation to a longer-duration mandate.

The next step in the de-risking process involves establishing a glidepath framework to gradually increase the plan's hedging allocation as funded status improves. This process allows the plan sponsor to retain exposure to higher-return asset classes when needed, while also preserving gains in funded status over time. The figure below illustrates a sample glidepath based on a current funded status of 80%. The organization begins by shifting its entire fixed-income allocation to long-duration fixed income in an effort to increase its liability hedge ratio. Over time the portfolio gradually decreases its exposure to return-seeking assets in favor of more long-duration fixed income. Notice that even at 100% funded, many plans still maintain exposure to a small return-seeking allocation to hedge against "unknowns" such as longevity risk or potential costs to annuitize or fully terminate the plan.

Sample Glidepath

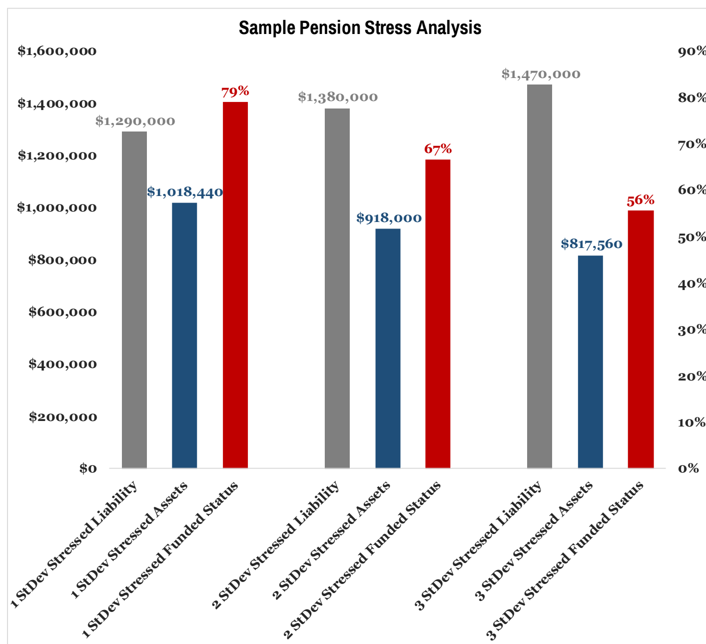
Asset Class	Current (80%)	85% Funded	90% Funded	95% Funded	100% Funded	105% Funded
Cash	5%	5%	5%	4%	4%	3%
Core Fixed Income	0%	0%	0%	0%	0%	0%
Long-Duration Fixed Income	55%	58%	62%	74%	80%	86%
Equities	20%	18%	16%	12%	8%	6%
Inflation Sensitive	10%	9%	8%	5%	3%	2%
Hedged Equity	10%	10%	8%	5%	5%	3%
Expected Return	4.7%	4.7%	4.7%	4.4%	4.0%	3.5%
Volatility	8.2%	8.0%	7.2%	6.0%	4.0%	3.0%
Liability Hedge Ratio	40%	48%	58%	69%	80%	95%

For illustrative purposes only

4. *What risk does my organization take by not de-risking my plan?*

To fully grasp the scale of risk created by the duration mismatch between assets and liabilities, consider a plan with a traditional asset allocation of 60% equities and 40% core fixed income. The plan has a funded status of 90%, and the duration of its liabilities is 15 years. We can stress test the portfolio based one 1, 2, and 3 standard deviation market movements that impact both the liability (through discount rate declines) and assets (through equity market drawdowns, see Figure 1) . The drop in equities combined with a decline in discount rates reduces the funded status to 79%, all the way to 56%. A drop of this magnitude could have a detrimental impact on the balance sheet and could require significant cash contributions that could hamper ratios such as day's cash on hand and cash-to-debt.

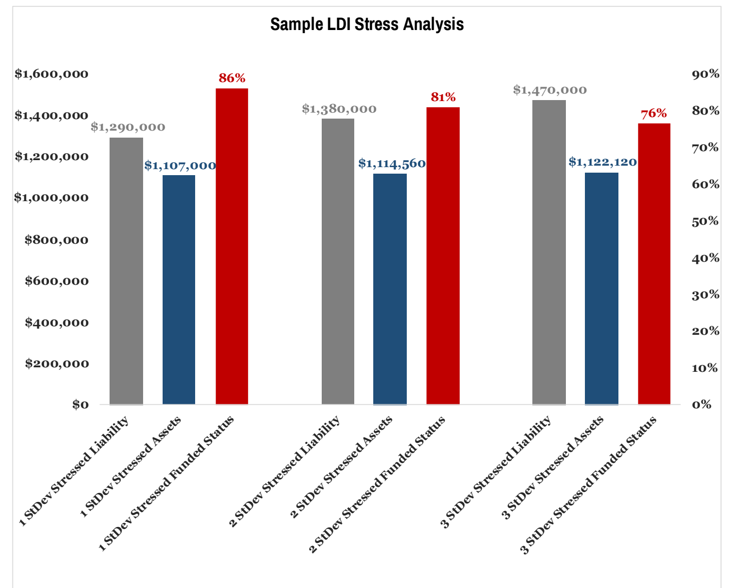
Figure 1.



Assume discount rates decline 50bps (1 standard deviation), 100bps (2 standard deviation), and 150 bps (3 standard deviation). Assumes equity portion of portfolio declines 12% (1 standard deviation), 29% (2 standard deviation), and 47% (3 standard deviation). Source: Highland Associates.

Compare this to a plan that has begun the de-risking process by shifting assets to longer-duration fixed income and reducing equities. This plan's asset allocation now stands at 70% long-duration fixed income and 30% equities. Even with the large move to fixed income, it still maintains equity exposure for growth and its expected long-term return is only slightly below the initial portfolio (4.4% versus 4.9%). As shown in Figure 2, potential funded status volatility has been significantly reduced.

Figure 2.



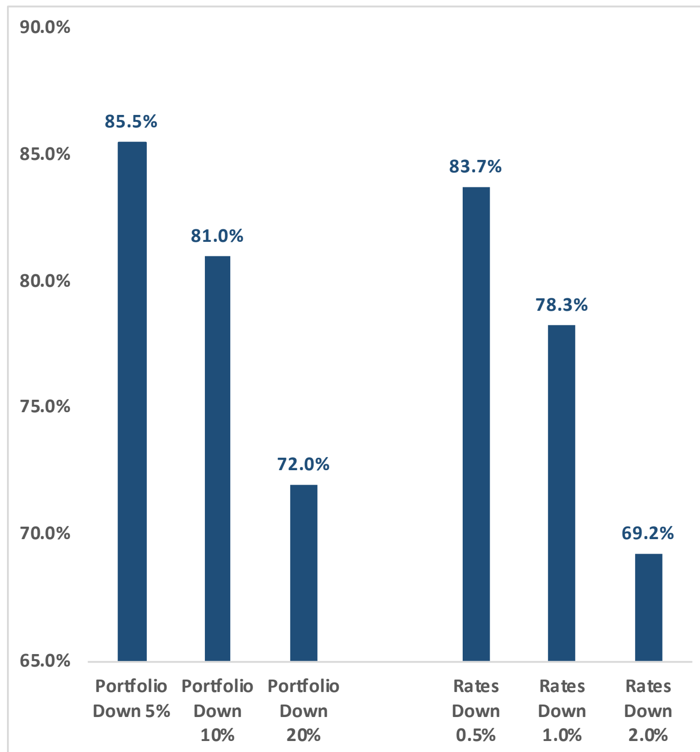
Assume discount rates decline 50bps (1 standard deviation), 100bps (2 standard deviation), and 150 bps (3 standard deviation). Assumes equity portion of portfolio declines 12% (1 standard deviation), 29% (2 standard deviation), and 47% (3 standard deviation). Source: Highland Associates.

While a 3-standard deviation event represents a 2008-type "perfect storm", a 1 and 2 standard deviation event represent equity market declines of 12% and 29%, respectively, which have occurred with much more regularity. With the current equity bull market entering its 10th year and valuations elevated, plan sponsors would be well served by taking steps to reduce funded status volatility through LDI

5. *Is now the right time to invest in longer-duration bonds?*

In our view, LDI should be viewed as a risk management tool, not a timing strategy. Many plan sponsors believe they should delay de-risking and wait for further interest rate increases before investing in longer-duration bonds. This could prove costly, as it is extremely difficult to time interest rate moves. For example, many investors anticipated interest rates to rise in 2017 on the heels of continued Federal Reserve monetary tightening. While short-term rates did rise, longer-term rates decreased, meaning plan sponsors that delayed LDI implementation likely witnessed their funded status deteriorate. This was on the back of strong equity market gains. This is due to the fact that interest rate movements typically have larger impacts on liabilities (compared to asset gains) because of their much longer duration. This is demonstrated in Figure 3 below by taking our sample pension plan and reducing the assets through portfolio drawdowns, versus increasing the liability via interest rate increases.

Figure 3.



The above change in funded status is based on either 5%, 10% or 20% change in market value or 5%, 10% or 20% change in discount rate changes. Source: Highland Associates.

implementation. The strategic decision to implement LDI is based on a plan sponsor's tolerance to funded status volatility, not the current level of interest rates. Implementation, however, can be based on interest rate levels, as many LDI participants utilize interest rate triggers to allocate more to longer-duration bonds as certain interest rate milestones are reached. For example, if the Citi Pension Liability Index reaches 4.5% (currently at 3.9%), a plan sponsor may increase long-duration fixed income from 50% to 60%. We encourage clients implementing LDI to include language in their Investment Policy Statement specifying trigger points for increasing the hedging allocation.

Additionally, LDI is just one tool plan sponsors can utilize to address pension plan risks. Plans that are sub-80% funded are highly unlikely to earn their way to a fully funded status. Adjusting the plan's contribution rate is the most straightforward way to address an underfunded plan. Several NFP healthcare investors have also explored issuing debt to fund plans. When doing this, organizations should analyze the potential impacts to debt levels and rating agency implications (which have recently been viewed as negative). Finally, participant buyouts have come into favor as a way to reduce future liabilities and PBGC premiums. These typically involve former or terminated employees who have vested benefits.

6. *At what point can my organization fully immunize our plan?*

Once the assets of a plan approach a level to cover the liabilities without the need for further contributions and/or investment returns, a plan sponsor can begin the process of full immunization (also known as plan hibernation). This usually occurs when a plan's funded status ranges from 100%-110%. This is the point where a pension plan has the best chance of being self-sustaining (i.e., its assets can be fully matched to liabilities). During the hibernation phase, the focus on risk management intensifies as plan sponsors no longer need to focus on investment returns (or rate increases) to close the funding gap. Due to the complexities of successfully implementing a fully immunized portfolio, many plan sponsors utilize a completion manager to better assist with LDI management. The completion manager will typically aid with detailed liability analysis, portfolio construction, and ongoing management/monitoring of the plan.

Plan sponsors should be aware that full immunization (or hibernation) is not as simple as matching assets to liabilities and walking away. Sponsors should be aware of other factors such as distribution and contribution rates, potential changes in mortality tables, or legal contingencies that could potentially impact the plan's funded status. Any notable change to these factors could trigger a change in overall strategy and asset allocation. Through Highland's enterprise risk management approach, we explore different scenarios and the potential organizational impact resulting from any plan modification.

IMPORTANT DISCLOSURES: The information provided herein is for informational purposes only. While Highland has tried to provide accurate and timely information, there may be inadvertent technical or factual inaccuracies or typographical errors for which we apologize. The information provided herein does not constitute a solicitation or offer by Highland or its affiliates, to buy or sell any securities or other financial instrument, or to provide investment advice or service. Nothing contained herein should be construed as investment advice or a recommendation to purchase or sell a particular security. Investing involves a high degree of risk, and all investors should carefully consider their investment objective and the suitability of any investments. Past performance is not indicative of future results. Investments are subject to loss.

Author:

J. MICHAEL THOMAS,CFA
DIRECTOR

HIGHLAND ASSOCIATES

BIRMINGHAM: 2545 HIGHLAND AVENUE SOUTH
SUITE 200
BIRMINGHAM, ALABAMA 35205
P. 1-800-405-7729 / (205) 933-8664
F. (205) 933-7688

ST. LOUIS: 7733 FORSYTH BLVD., SUITE 1103
ST. LOUIS, MO 63105
P. (314) 296-6171