

LDI Is Everything: The Parametric Approach to Building Institutional Assets

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Liability-driven investing (LDI) is a risk-mitigation strategy designed to invest assets in a manner that seeks to offset some or all of the changes in value of the liabilities resulting from changes in discount rates as markets adjust through time. Parametric's LDI solutions are designed for pension plans and other institutional investors with liabilities that represent future expected payouts discounted using market yields. LDI strategies have traditionally focused on fixed income assets, including cash bonds and derivatives, and their relationship to liabilities. Parametric's approach broadens that view to include return-seeking investments and exposure-management overlays. Return-seeking assets likely have some relationship to credit spreads, while exposure overlays seek to preserve consistent adherence to target allocations along an asset-allocation glide path. Only by considering the entire plan can investors fully realize the transparency and efficiency of their LDI approach.

Key takeaways

- » An LDI portfolio is constructed with a transparent relationship to liabilities, allowing an investor to understand the risk exposure.
- » Liabilities change with movements of Treasury rates and corporate spreads. Widening spreads and increasing Treasury rates lead to lower liability values, which brings overall plan exposures back into a strategic balance when added to an existing portfolio of physical securities.
- » A comprehensive LDI solution includes fund-wide exposure management, which is an underused investment tool for most pensions.

What is LDI?

To begin with a bold yet simplistic statement, LDI is LDI. An obligation to pay something in the future represents a liability. An asset pool exists to fund that future liability. Assets need to be invested to reflect changes in value of liabilities through time to ensure promised payments.

The value of liabilities can be precisely known in some cases and is uncertain in others. An outright promise to pay a fixed amount at a fixed time is a very specific obligation with a very specific present value. If conditions are added to the payout, the liability value becomes murkier with probabilities surrounding the likelihood and size of payments.

Pension plans are a common source of liabilities, but there are others to consider, such as insurance annuities and prepaid college plans. Assets on hand to cover those liabilities—fully or partially—need to be invested in a way that best achieves desired goals by knowing how liabilities behave through time and how investments might move with them.

In corporate pension plans, LDI is traditionally a fixed income solution with very little consideration for anything else involved in managing pension assets. As yields change, fixed income values and liability values mostly move together. But other aspects of the plan's investment strategy impact the results as well. Return-seeking assets have some relationship to both fixed income and liabilities, and plan goals evolve according to inevitable changes in funding status, plan size, and plan sponsor health. LDI is an exercise in investing assets to ensure the funding of future liabilities while balancing the resulting risk exposures on a total plan basis. Said another way, LDI is about managing surplus risk where surplus is defined as the difference between the value of the assets and the value of the liabilities.

How it works: Liabilities

An LDI strategy begins with understanding liabilities. At the simplest level, liabilities are the present value of projected future payout obligations discounted using a market-based yield curve. Projected pension cash flows are calculated by the plan's actuary. Actuaries usually create multiple legitimate sets of projected cash flows for the same plan, which differ by purpose due to regulations, standards

of practices, actuarial assumptions, funding approaches, and—for practical purposes—the actuary's own liability calculations. For LDI purposes, we're interested in a liability that provides a market-based present value related to market asset valuation.

Actuaries use software that allows them to combine benefit provisions described in the plan document with funding methods and assumptions of projected liabilities. Some assumptions are mandated by federal law and/or governed by actuarial standards of practice. These assumptions represent an estimation of future conditions, including but not limited to the following, for expected future cash flows:

- Mortality
- Disability
- Termination
- Retirement
- Salary scale
- Interest crediting
- Early retirement subsidies
- Lump sum selection

These assumptions can change depending on the purpose for the liability calculation. Cash flows created for accounting statements—*projected benefit obligation*, or PBO—are usually used for LDI instead of cash flows created for funding rules to determine required contributions prescribed by law. An LDI strategy manager must understand cash flows, since assumptions can be hidden in the results that make a big difference in how the assets should be invested. This is particularly the case with cash-balance plans or lump-sum provisions. In these cases, cash flows need to be examined carefully, since discount-curve exposure may not be fully transparent.

Another critical assumption in liability calculations is the selection of a yield curve used to discount projected cash flows into a present value. The discount curve for funding liability is prescribed by law. Minimum and maximum funding requirements must fall within government rules for deductible contributions for a qualified pension plan. The discount curve used for liabilities for the calculation of Pension Benefit Guaranty Corporation (PBGC) premiums are also prescribed by the government. These yields are smoothed and therefore don't precisely follow market rates. The discount curve used for accounting numbers that represent market values aren't prescribed; however, there are rules surrounding the creation and selection of curves. The curve must be based on current market yields from underlying high-quality corporate

bonds, which are typically rated AA on average. Market discount curves are published by various providers on a daily or monthly basis. Actuaries often build their own curves based on a different set of bonds. The underlying bonds can change from period to period when yield curves are calculated. Curves built on a larger and more diverse constituency will usually be more stable and consistent with the overall market.

Corporate curves used for discounting consist of two elements: Treasury rates and corporate spreads. Treasury rates are relatively straightforward, since accurate values can be found across all maturities out to 30 years. Credit spreads are the difference between the corporate curve and Treasury curve. Spreads are more complicated to describe because they depend on the constituency of bonds used to develop the curve. This means different curves can have different exposure to sectors and issues, which means each spread change from different discount curves will be unique. Liabilities change with movements of Treasury rates and corporate spreads. Widening spreads and increasing Treasury rates lead to lower liability values, while narrowing spreads and decreasing Treasury rates lead to higher liabilities. Spreads and Treasury rates often move in opposite directions; however, this doesn't mean the liabilities haven't changed. It means that the liability changes have offset each other, which is important to remember as we explore the function and value of LDI strategies.

How it works: Investments

Investors with projected liabilities commonly split investments into two categories: return seeking and liability hedging. Liability-hedging assets are the traditional LDI investments that focus on the influence of corporate yields on liabilities, typically including fixed income assets that behave similarly to liabilities. Investors may try to squeeze some extra return from these assets, although their main purpose is to temper surplus risk by matching liabilities. The other investments are considered return-seeking assets, intended to close funding gaps or cover future benefit accruals and losses that may come from experience that differs from actuarial assumptions. Public equities, private equity, real estate, infrastructure, commodities, emerging market debt, high yield, and similar assets are usually categorized as return-seeking assets.

Return-seeking assets aren't described as having interest rate or credit spread exposure measured by duration or DV01 (dollar value of one basis point). As a result, they're often overlooked in terms of their relationship to liabilities. We argue that they shouldn't be ignored, even if their relationship to Treasury rates and credit spreads can't be expressed in the usual terms. For example, US equity returns exhibit strong correlation with corporate spread returns. The question is how much "credit spread beta" they have and how it should impact the amount of credit exposure carried in the hedging portfolio.

LDI strategies have traditionally been managed around yield curve exposure for liabilities. Liability-hedging assets commonly consist of government bonds, including Treasury bonds and STRIPS, credit (including corporate bonds of different credit quality), and derivatives such as Treasury futures or interest-rate swaps. All of these allow investors to manage Treasury exposure to offset liabilities, and some have credit spread exposure as well. All have returns consisting of an actual or implied accruing yield and price changes associated with changing yields across relevant maturities. The trick to allocating assets to these instruments is achieving capital efficiency in terms of using available resources to match key rate duration and credit spread exposure for specific investment objectives.

A comprehensive LDI solution includes fund-wide exposure management, which is an underused investment tool for most pensions. It consists of a systematically determined array of derivatives or physical securities, like ETFs, that bring overall plan exposures back into a strategic balance when added to an existing portfolio of physical securities. As allocations change with markets or investor decisions, total exposure can be realigned by securitizing cash and employing a beta overlay with broad-based equity and fixed income tools. Another vital investment tool is glide path management, which provides for nimble shifts as new targets are met and a new allocation is triggered. The desired asset allocation is immediately implemented while providing time for less liquid assets to be transitioned.

How it works: Liabilities *and* investments

An LDI strategy is an exercise in investing assets with the goal of funding future liabilities according to the surplus risk tolerance of the sponsor. Every sponsor's circumstances are different, ranging from benefit provisions to funding levels to the sponsoring organization's health and resources. A significantly underfunded plan may feel the need to invest in a riskier portfolio in an attempt to close a funding gap—if the sponsoring organization can accept the risk. A well-funded plan can invest conservatively to clamp down risk. A plan sponsor that's very sensitive to changes in the economy is likely more averse to risk than one that grows in most environments. A glide path is usually implemented to reflect a sponsor's changing risk tolerance as the level of funding changes over time.

Many factors need to be considered when building a successful investment portfolio. The investor must understand the characteristics of the liabilities and how they move with changes in market variables. An LDI portfolio is constructed with a transparent relationship to those liabilities, allowing the investor to understand the risk exposure and become comfortable with it. This process entails the following:

- › Quantifying exposure to Treasury rates and credit spreads on the liability side
- › Investing in instruments with similar qualities where taking risk is expected to be unrewarded
- › Taking deliberately mismatching positions to liabilities where risk is expected to be rewarded

Treasury rate exposure is usually viewed as uncompensated, unless a strong view on future rates is expressed. Depending on plan circumstances and investment choices, spread exposure is often thought to be worth the risk to a point. Staying on track throughout the glide path through exposure management keeps the plan invested according to changing risk tolerance. A total plan view maintains focus on the ultimate objective of measuring and evaluating the suitability of surplus risk.

Conclusion

For corporate defined-benefit plans, we believe LDI is everything. An LDI strategy that encompasses the entire plan provides efficiency and transparency beyond traditional approaches. Investors have different growth needs and risk-tolerance constraints depending on their unique circumstances. Comprehensive understanding of the relationship of assets to other assets, and ultimately the liabilities, empowers the investor with knowledge of possible outcomes and more effectively eliminates surprises before they occur. Parametric is uniquely positioned to partner with investors to best realize their most appropriate goals at any point during their LDI life cycle, going beyond what more traditional LDI strategy managers can offer.

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