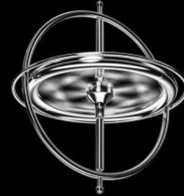
# LDI implementation

## One size does not fit all

Strategy Spotlight



**Greg Nordquist**, CFA, Director Overlay Strategies

### Customized LDI solutions

Defined benefit (DB) plans following a liability-driven investing (LDI) strategy often look to an LDI completion manager to oversee the program. In our experience, there is a wide range of suitable approaches depending on the plan's specific situation and objectives. A one-size-fits-all solution to liability hedging would be inappropriate and potentially more complex and/or costly than a customized program. Russell Investments' flexible implementation platform and broader actuarial and advisory capabilities offer clients a robust range of solutions in this space. Our approach is to provide a range of LDI solutions tailored to a client's current situation and to evolve as those needs progress.

## Different solutions for different stages

While the LDI completion manager has become a common role, it shouldn't be a one-size-fits-all deliverable. The portfolio needs of each DB plan sponsor are driven by specific client circumstances related to funded status, plan status, institution type and plan sponsor health. As we see it, there are three distinct stages that plan sponsors typically fall into, and each of these stages requires a customized LDI solution. For example, plans that are at the early stages of their LDI journey tend to be quite underfunded, therefore requiring substantial contributions from return-seeking assets to improve their funded status. Over time, these early stage plans will generally be interested in increasing their hedge ratio and designing a de-risking glidepath to implement as funded status improves. Contrast that with the needs of late stage plans. These plans are over-funded, de-risked and approaching a "hibernation" period. They have completed their glidepath and are starting to research exit strategies from pension liabilities. The late stage plans have a substantial amount of physical assets to allocate to liability hedging and ultimately building a portfolio for a pension buyout.

Most U.S. plans fall somewhere in between these two extremes. These middle stage plans have a desire to become late stage plans, but they need to follow a deliberate, risk-managed strategy to get there. Their respective LDI implementation needs are just as varied as the plans themselves.

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## Solutions for each stage

By detailing the comparative LDI needs of the three stages (i.e., early, middle and late), we're able to highlight an appropriate solution at each stage.

### Early stage

#### Need

At this stage, reducing interest rate risk through duration extension in a capital efficient manner is extremely important. This ensures that the high return needs of the total portfolio aren't compromised.

#### Solution

- Establish glidepath infrastructure and daily monitoring. Although at this point, the glidepath triggers may seem far away, funded status can move quickly from a combination of favorable markets, interest rate changes and contributions.
- Extend duration through a physical portfolio of long Treasury bonds or STRIPS, and synthetically using futures or swaps.[1] See sidebar on Hedge Long First (HLF).
- Construct a hedging portfolio to target the desired hedge ratio. The hedge portfolio should be based on benchmark exposures so as not to override the manager insights embedded in active portfolios. Ideally both actual and benchmark exposures will be available for analysis.
- Monitor the benchmark and actual hedge ratios daily but rebalance monthly or after material deviations (e.g., +/-2%) just as would be done in asset-only space.
  - Adjust asset allocation and hedge the liabilities using derivatives for efficiency and to avoid the higher transaction cost and disruption from trading physical manager portfolios.
- Introduce surplus-oriented reporting as a complement to traditional asset-based reporting. Additional elements should include funded status, surplus return and hedge ratio.

### Middle stage

#### Need

At this stage, monitoring and implementing the glidepath is key. To do this effectively, plan sponsors need the ability to act quickly when key funded status or interest rate levels are triggered.

#### Solution – building on the early stage

- Measure funded status daily with customized glidepath triggers based on funded status and/or interest rates. Shifts can be implemented automatically or left to sponsor approval.
- Create a risk-managed approach to implementing the glidepath and hedge ratio. It's generally prudent to make the asset allocation shift and increase the hedge ratio immediately using derivatives once a funded status trigger is activated. With the target risk profile now realized, the reduction of physical return-seeking assets to fund the hedge portfolio can be implemented using a more deliberate approach. The transition should be tightly coordinated to ensure a smooth outcome as the migration between synthetic and physical exposures occurs.

**Hedge Long First (HLF) strategy**

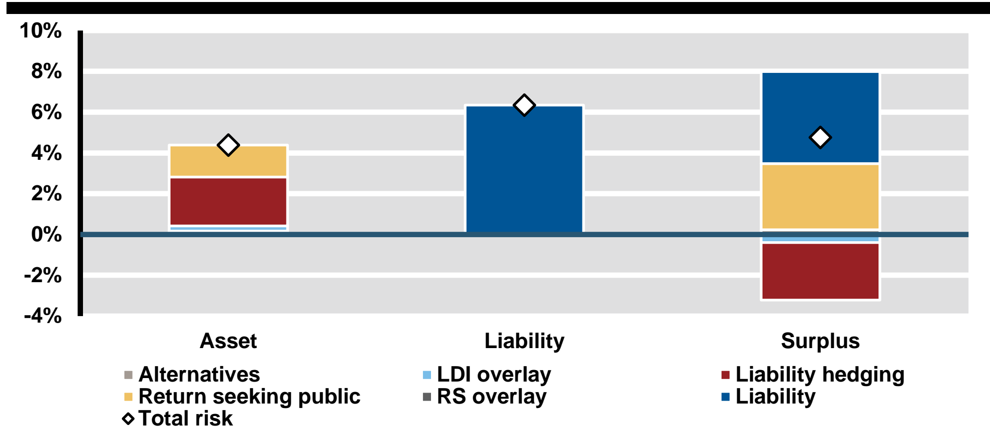
HLF is a capital efficient hedging strategy that uses a combination of long Treasury STRIPS and derivatives. (See Related reading.) This strategy maximizes the risk reduction benefits of the hedge by focusing on the longest dated cash flows first. The longest cashflows contribute a much greater share of the risk than shorter cash flows, which have very little duration sensitivity. For a typical plan, the longest 40% of cash flows can make up 75% of the total liability risk profile. Using the HLF strategy on early stage portfolios can often double the hedge ratio for a given level of assets, providing overall surplus risk reduction and tail risk protection.

See **Exhibits 4-6** in the appendix for example liability risk profile and HLF strategy implementation.

- Implement enhanced surplus focused reporting, which clearly shows the impact of the overall pension plan and hedging portfolio on surplus return and risk. Reporting should de-emphasize asset orientation in proportion to the reduction in return seeking assets, while adding more detailed monitoring of the contribution to risk and the performance of the hedge portfolio and the overall fund. See **Exhibits 1 and 2**.

### Exhibit 1: Surplus risk modeling

The transition from an asset-only focus to LDI requires a change in reporting to capture both surplus risk and return relative to the liability.




For illustrative purposes only.

### Exhibit 2: Surplus return attribution

Funded status attribution details how the surplus is impacted by interest rates, credit spreads, return seeking assets and cash flows.

**Quarter to date**

| | Assets | Liabilities | Impact on surplus | Surplus Δ |
|---|---|---|---|---|
| Beginning of quarter (3/31/2019) | 2,469.8 | 2,274.6 | | 195.3 |
| Treasury yield change | 78.3 | 108.3 | | -30.0 |
| Credit spread change | 11.6 | 22.9 | | -11.3 |
| Yield during the period | 15.9 | 30.2 | | -14.3 |
| | | | | |
| Return-seeking asset returns | 32.5 | 0.0 | | 32.5 |
| Contributions | 0.0 | 0.0 | | 0.0 |
| Benefit accruals | 0.0 | 15.1 | | -15.1 |
| Benefit payments | -79.7 | -79.7 | | 0.0 |
| Other | -1.0 | 0.0 | | -1.0 |
| Current date (6/30/2019) | 2,527.4 | 2,371.3 | | 156.1 |

Increases surplus | Decreases surplus

For illustrative purposes only.

## Late stage

### Need

Build a portfolio with very low surplus volatility to maintain funded status in preparation to potentially hibernate the plan or prepare for a possible risk transfer to an insurance provider.

### Solution

- Since risk is no longer dominated by the return-seeking assets, the hedge portfolio must be dialed in to match the plan's liabilities. Derivative usage continues to be a critical component for reducing key rate duration risks and reaching the targeted hedge ratio. The physical portfolio becomes increasingly focused on credit, although retention of Treasury exposure remains appropriate.
- As with Middle stage, there is detailed reporting on the fully hedged portfolio, liability returns and risk attribution. Additional granularity on the non-investable aspects of the liability is also useful.

### Exhibit 3: Comparing LDI stages

The following table summarizes the key features of an LDI Completion strategy across the three stages.

| CONSIDERATION | EARLY STAGE | MIDDLE STAGE | LATE STAGE |
|---|---|---|---|
| **Top priority** | Extend duration with capital efficiency and tail risk protection | Efficient glidepath management and de-risking implementation; improve surplus reporting | Maintain funded status, minimize surplus volatility and manage to a precise hedge ratio |
| **Glidepath** | Set up capability and monitor (but likely a distant need) | Daily monitoring of glidepath triggers with swift implementation | Completely de-risk |
| **Hedge strategy** | HLF, mostly via Treasury exposure; utilize leverage to the extent comfortable | Evolve from pure duration to key rate duration matching. Utilize combination of credit and Treasury solutions | Full curve match on Treasury, high credit hedge but <100% to offset residual return-seeking exposure and tail-risk scenarios |
| **Reporting needs** | Return oriented, supplemented with funded status, surplus return and hedge ratio | Primarily surplus oriented, with a strong emphasis on LDI hedge portfolio and total fund surplus risk and detailed attribution | Purely surplus oriented with detailed attribution, including non-investable elements of the liability |

# Conclusion

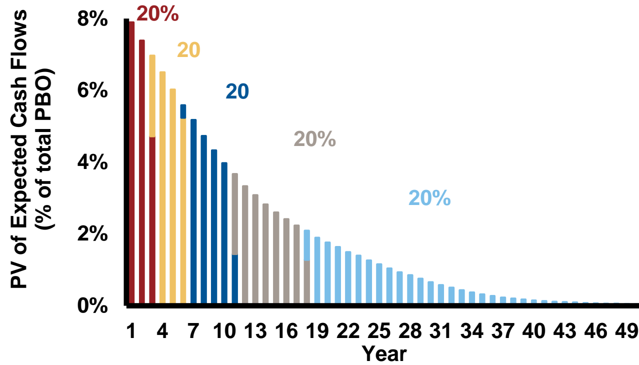
Early, middle and late stage LDI programs all focus on effectively managing surplus risk and the efficient use of capital. Yet the necessary oversight, reporting, complexity and associated costs are quite different based on how a client's individual situation progresses. In the early stage, significant benefits can be obtained from a simple, capital-efficient approach to interest rate management. Clients in the middle stage should be well prepared to implement de-risking moves caused by contributions and fast-moving markets. This middle stage often requires daily oversight and a multi-faceted approach to risk management, with reporting that provides insight into the strategy and the results. With the finish line in sight, late stage LDI programs require thoughtful risk management, implementation and reporting to help ensure that the plan remains positioned for the sponsor's desired outcomes. These shifts can be more efficiently managed and implemented with the help of an LDI completion manager.

[1] The STRIPS acronym stands for Separate Trading of Registered Interest and Principal of Securities.

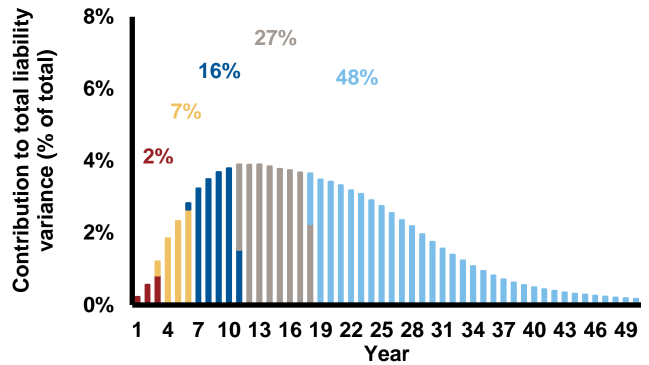
# Appendix

## Exhibit 4: Liability cash flow vs. risk profile

Liabilities

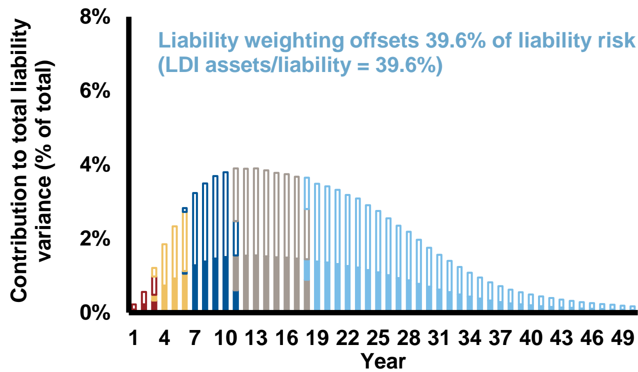



Risk (i.e., contribution to liability variance)

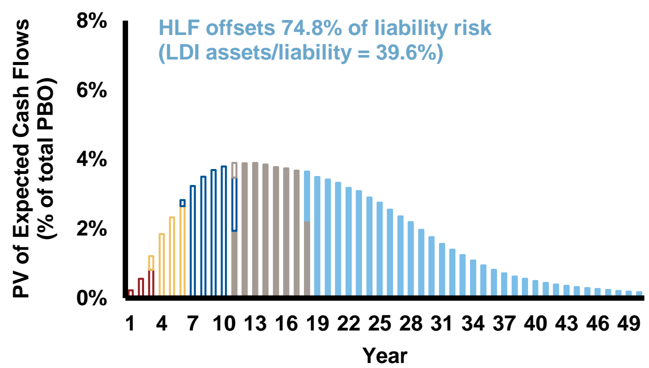



## Exhibit 5: Liability risk reduction – Traditional vs. Hedge Long First

Liability weight

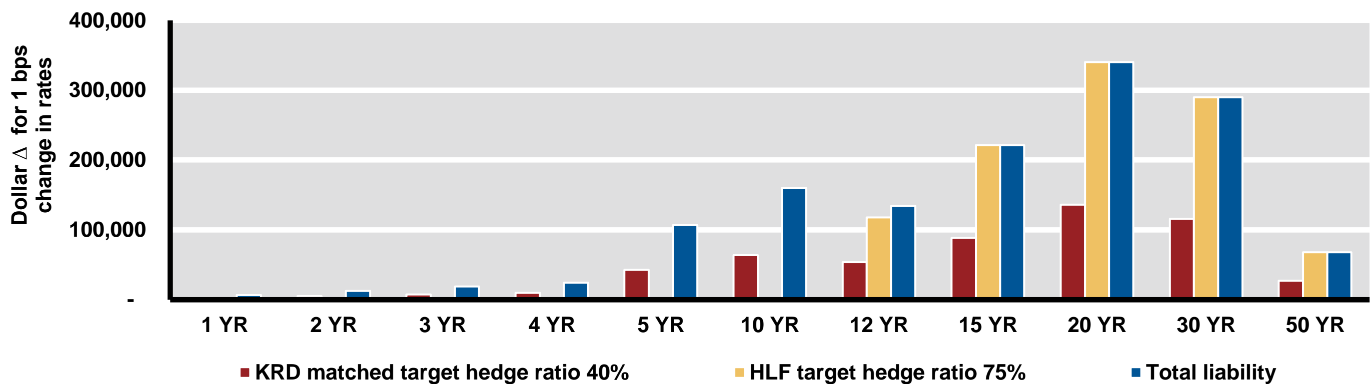



Hedge Long First




## Exhibit 6: Liability risk reduction – Traditional key rate duration (KRD) approach vs. Hedge Long First

For a fully funded plan, this means that a 40% allocation to LDI fixed income can hedge an additional 35% relative to a key rate duration matched strategy. Using derivatives in addition to physicals allows for further risk reduction for a given allocation.

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## Related reading

The LDI Quarterback – Dec 2014

Hedge Long First: An Alternative Approach to LDI – April 2015

HLF Implementation Examples – January 2016

Guide to Plan Hibernation – April 2016

Liability-responsive asset allocation – Feb 2017

Simplifying the LDI story through hedge ratio levers – Feb 2017

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## For more information

Call Russell Investments at **800-426-8506** or

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