What makes a good LDI portfolio?

The art and science of an LDI program is to manage the tradeoff between return generation and surplus risk management. The key to success is to recognize two primary attributes that define a good LDI portfolio:

- It should be a **good liability matching portfolio** in that it should be capable of tracking the liability to the desired degree. In this way, asset-liability correlation can be increased as funded status comes closer to goal.
- It should be a **good asset portfolio**, i.e. it will have the hallmarks of an institutional-quality portfolio that can deliver on the desire to meet and/or outperform the liability return over time. This implies diversified exposure to a chosen set of risk exposures coupled with alpha generating active management.

While our LDI CITs are mainly aimed at the liability-hedging portion of a portfolio, they assist in the delivery of the above needs through their thoughtful design and effective portfolio management.

Traditional asset portfolios fail to meaningfully hedge liability risks

U.S. pension liabilities are most often valued using corporate credit spot curves, whose primary factor exposures can be decomposed into credit spread and Treasury rate duration risks.

**Figure 1: Relative credit and interest rate exposure of 60/40 portfolio**

Credit spread sensitivity of assets/sensitivity of liabilities:

Treasury yield sensitivity of assets/sensitivity of liabilities:

0% 20% 40% 60% 80% 100%

Interest rate hedge ratio

Credit spread hedge ratio

Traditional portfolio hedge ratios (30% rates, 20% credit)

Liability (accounting)
As we show in Figure 1, a traditional portfolio will fail to offer a complete hedge of these liability risk factors for three main reasons:

1) **Most plans are underfunded.** The degree of underfunding makes it difficult to match asset-liability factor risks on a dollar-weighted basis.

2) **Not all assets are invested in bonds.** In the quest for higher returns, most pension plans have significant allocations to equities and other assets, meaning less than full allocations to bonds.

3) **The duration of liabilities is high.** It is not easy to use physical bonds to create diversified portfolios that are meaningfully longer duration than the liabilities to offset for 1) and 2), above.

For those plan sponsors who wish to address this problem and separate their liability-hedging decision from their return-generation decision, it follows that some **new tools might be required. This is where capital efficiency comes to the fore** – enabling exposures to liability matching and return-generation to be achieved simultaneously and to varying degrees. For larger plans this can be done through separate accounts, but for medium to smaller sized plans, say those below $500M, the implementation can be difficult and costly. To meet this challenge, Wells Fargo has designed an **LDI CIT series to give these plans the convenience and ease of a collective fund structure.**

Furthermore, **traditional benchmarks offer inflexible and untargeted packages of risk exposures.** The benchmarks that are widely used came about via slices of the universe of bonds in issuance that were not specifically designed or tailored for pension plan LDI needs. This means it is difficult to precisely “dial-in” targeted exposures to credit spread and interest rate duration and term structure, and there can be higher than necessary transaction costs baked into the benchmarks due to their mechanical rebalancing rules.

As a package, our LDI CIT range addresses these various challenges:

- They are low cost vehicles that allow precise targeting of the relevant risk factors without sacrificing the characteristics that define a good asset portfolio.
- By blending the CITs together, they can be custom tailored around any given plan sponsor’s liabilities.
- They offer liability-oriented benchmark features, such as fixed maturity date bands to help offset transaction costs over time.
- They provide capital efficiency.
- They can be accessed via different operating models, with a greater or lesser degree of service provided by Wells Fargo.

In summary, our LDI CITs have been specifically designed for next generation LDI management.

**Managing to a changing need along the journey to full funding and derisking**

As discussed above, a good liability matching portfolio will allow movement toward higher asset-liability correlation over time. In the figure below, this strategic path is shown generically as the blue arrow. First generation glidepaths and many de-risking strategies follow this path, but it is not clear that this is preferred by all plans in all market environments. One advantage of having a more complete tool kit is the ability to custom-tailor a path towards the ultimate destination by accommodating specific views on relative exposure to credit risk and Treasury rate risk.

**Figure 2**

In our simple conceptual illustration, the red arrow favors a higher initial relative exposure to credit spread duration. A plan that pursues this pathway may deem that long dated credit spreads are relatively attractive at today’s levels and that additional Treasury exposure is relatively costly. Intertemporally, the plan can choose to boost its interest rate hedge ratio as market conditions evolve.

Conversely, the green arrow favors higher initial relative exposure to Treasury rate duration. A plan sponsor that has significant existing allocation to credit sensitive assets, particularly equities, or which has high business sensitivity to the economic cycle may prefer the downside protection that additional Treasury exposure can provide.

The key to implementing any desired pathway is to utilize investment vehicles that provide tailored asset factor exposures in a capital efficient manner. Below, we highlight the building blocks that can be used to accommodate any view.

**The Wells Fargo Bank LDI CIT series**

A combination of funds can be optimized to match overall plan preferences and accommodate existing asset portfolio exposures. The general features of each fund listed in Figure 3 are described below.

- **Core exposures** can form the nucleus of the LDI asset portfolio. They offer tilts toward credit exposure, interest rate exposure or a blend of exposures using plain vanilla instruments. Funds are actively managed to seek relative value opportunities in core fixed income markets.

- **Credit duration.** Actively-managed long corporate funds offer targeted coverage along the credit spread spectrum while seeking to maximize issuer diversification. Both credit duration funds age to track the maturing liability as time passes, reducing the need to rebalance in markets characterized by high turnover costs. This feature, combined with the collective fund structure, can allow a cost effective way to achieve a chosen credit spread hedge ratio.
**Objective** | **Fund name** | **Fund description**
--- | --- | ---
**Core exposures** | Investment Grade Credit CIT (LDSI) | Actively manages broad maturity investment grade credit bonds
| Long Government Credit CIT (LDSII) | Actively managed long dated blend of U.S. Treasury and Investment grade credit bonds
| Long Duration CIT (LDSIII) | Actively managed long dated U.S. Treasury strips and Investment grade credit

**Credit duration**
- CORPORATE 30-40 CIT* | Actively managed portfolio of investment grade corporate bonds with maturity dates between 2030 and 2040
- CORPORATE 40-50 CIT* | Actively managed portfolio of investment grade corporate bonds with maturity dates between 2040 and 2050

**Treasury duration**
- DEF20 (Duration Extension Fund) CIT* | Passively managed portfolio of zero coupon interest rate swaps with maturity terms between 10 and 20 years, with 45 years duration
- DEF30 (Duration Extension Fund) CIT* | Passively managed portfolio of zero coupon interest rate swaps with maturity terms between 20 and 30 years, with 45 years duration

**Core exposure extension**
- Liability Plus Equity CIT* | Blend of 100% S&P 500 futures, 50% long dated investment grade credit, actively managed, 50% Long dated U.S. Treasury futures and 50% Cash

*Not funded

- **Treasury duration.** Extended rate duration funds incorporate synthetic instruments to act as a rate overlay that is conveniently housed in a collective fund structure. The two funds allow key rate duration matching by focusing on distinct term segments of the curve. The funds are passively managed in recognition of relative efficiency in Treasury markets.

- **Core exposure extension.** The LPE fund is designed to increase overall exposure to credit and interest rate duration without sacrificing equity market participation. The use of derivative instruments allows for more efficient use of capital in creating an asset allocation that has less surplus risk when compared to a more traditional, physical-only investment approach.

Used together, these funds can effectively expand the opportunity set for an LDI program. In Figure 4, the triangle illustrates the range of joint factor exposures that can be achieved using various combinations of our LDI CITs.

**Illustrative examples**
With this concept in mind, we turn our attention to how the funds may be deployed to achieve desired outcomes in real world situations. To do so, we set up some baseline assumptions that will underpin each of the three scenarios.

**Base assumptions**
Our example pension plan has $250M in total assets against a $300M plan liability, implying a funded status of approximately 83%. Total assets, $100M (40%) is currently allocated to fixed income. This fixed income allocation will be used to target credit spread and interest rate hedge ratios for a $100M “slice” of the total plan liability of $300M.

**Example 1 – Full hedge**
In the first example, the plan seeks a full hedge of the slice, implying equal emphasis in matching interest rate and credit spread duration. In other words, $100M of fixed income assets will be deployed to hedge $100M of the liability (i.e. 1/3 of the total liability). Optimization would generate the following allocation among the collective funds with the resulting portfolio characteristics (Figure 5).

**Figure 3 – LDI collective investment funds**

**Figure 4**

**Figure 5**

<table>
<thead>
<tr>
<th>Portfolio characteristics</th>
<th>Liability</th>
<th>Asset</th>
<th>Hedge ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate duration</td>
<td>12.0</td>
<td>12.0</td>
<td>33.3%</td>
</tr>
<tr>
<td>Credit spread duration*</td>
<td>18.0</td>
<td>18.0</td>
<td>33.3%</td>
</tr>
</tbody>
</table>

*Spread adjusted

As of 9/30/2015
The allocation provides a full hedge of liability risk factors with favorable yield and spread characteristics. Moreover, the allocation between the two CORP CITs and between the two DEF CITs allows close fitment to key rates along the credit curve.

**Example 2 – Credit spread hedge emphasis**

The investor favors a higher credit spread hedge ratio based on relative value assessment of current credit spread and Treasury rate levels. Optimization generates focused exposures to the credit sensitive LDSI and CORP CITs, producing the associated portfolio characteristics.

**Example 3 – Interest rate hedge emphasis**

The investor favors a significant interest rate hedge due to interest rate sensitivity of the sponsor or a benign view of interest rate movements in the near to medium term. It is possible to achieve a full hedge of total liability interest rate risk with only $100M of capital. The leverage inherent in the DEF CITs generates significantly extended rate duration, allowing a full rate ‘overlay’ implementation.

**Summary**

The above analysis demonstrates that relatively low cost tools are available for DB pension plans to target desired exposures to specific liability risk factors. Wells Fargo has the capabilities and expertise to deliver a customized solution to accommodate various pension plan investment models. This includes state-of-the-art reporting to the plan and its external partners as well as full service LDI outsourcing capabilities.

**Figure 6**

<table>
<thead>
<tr>
<th>Portfolio characteristics</th>
<th>Liability</th>
<th>Asset</th>
<th>Hedge ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate duration</td>
<td>12.0</td>
<td>10.8</td>
<td>30%</td>
</tr>
<tr>
<td>Credit spread duration*</td>
<td>18.0</td>
<td>20.5</td>
<td>38%</td>
</tr>
</tbody>
</table>

*Spread adjusted

Note that the capital efficiency of the collective funds allows a $100M of assets to hedge $114M of liability credit spread risk and $90M of Treasury rate risk. Moreover, the credit emphasis allows favorable yield and spread characteristics.

**Figure 7**

<table>
<thead>
<tr>
<th>Portfolio characteristics</th>
<th>Liability</th>
<th>Asset</th>
<th>Hedge ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate duration</td>
<td>12.0</td>
<td>32.2</td>
<td>100%</td>
</tr>
<tr>
<td>Credit spread duration*</td>
<td>18.0</td>
<td>8.1</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Spread adjusted

Other examples that could be targeted include a lower credit spread hedge ratio if non-fixed income assets have significant credit exposure or if plans have equity heavy asset allocations. In addition, the end mix of collective funds could be designed to account for existing assets held elsewhere.
We have recently published an insight paper discussing why institutional supply/demand characteristics that govern segments of the credit yield curve supports this view.

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