

PORTABLE ALPHA: A RISK-EFFICIENT APPROACH TO LDI

Portable alpha provides the building blocks to engineer more risk-efficient LDI strategies than traditional investment approaches.

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Managing assets to a defined benefit plan's liabilities offers many choices, each with a strategic tradeoff. For example, full immunization matches a pension plan's assets to its liabilities, but it generates no excess return. Moving further along the risk/

return spectrum, investors will find traditional allocations offering higher alpha potential along with added levels of risk, especially when benchmarked to the plan's liabilities. The challenge then is generating additional return in the most risk-efficient manner. The solution may be to implement portable alpha strategies within a Liability Driven Investing (LDI) framework.

Under an LDI framework, the key objective is to better manage the risk-return tradeoff between a defined benefit plan's assets and liabilities. When implementing an LDI approach, the initial steps are defining the liability, creating a suitable benchmark and quantifying the tracking error. Although a typical plan's liabilities have similar characteristics to those of long-duration (10+ years) bonds, many plans maintain substantial equity exposure and tend to concentrate fixed-income allocations in intermediate-duration



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– John L. Krieg, CFA, director of product management at Northern Trust

bonds. These mismatches of assets to liabilities (more specifically, asset-class mismatch and duration mismatch) are leading contributors to a defined benefit plan's tracking error.

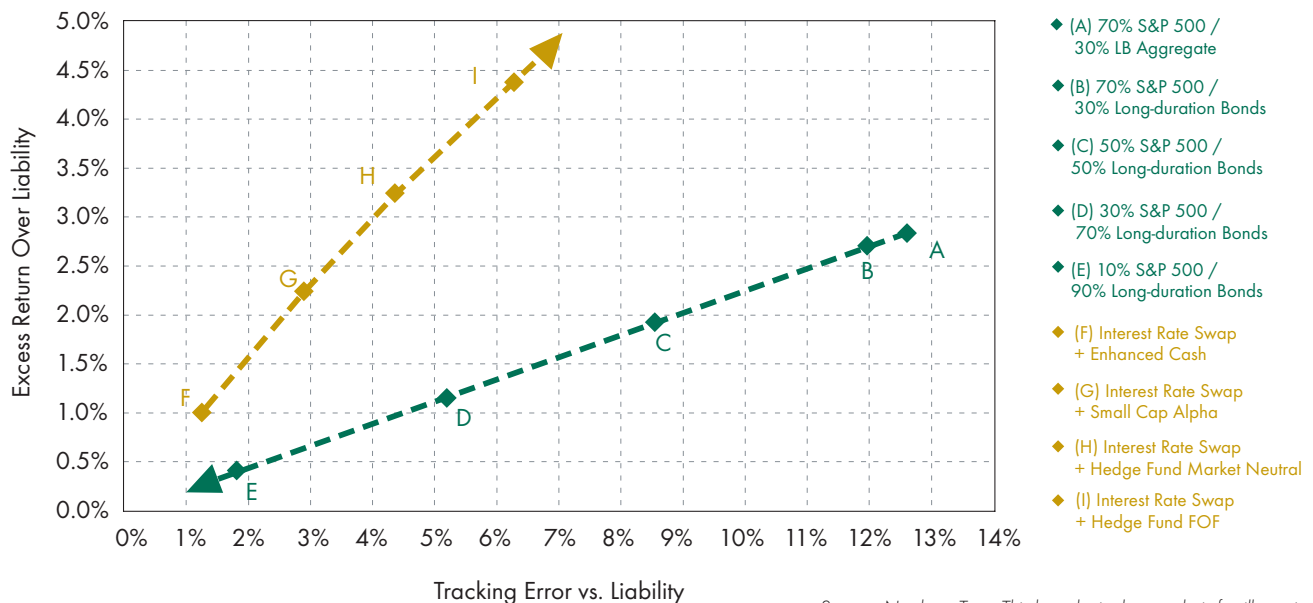
Investors wrestling with the asset/liability matching equation must consider several questions. First, what options exist to better manage tracking error? Second, do certain investment strategies fit better under an LDI framework? And third, which strategies offer the most risk-efficient returns?

Initial Investment Choices

Assume a fully funded pension plan has a policy allocation of 70% U.S. stocks and 30% bonds, as in Portfolio A in the chart titled "Extended Duration and Portable Alpha Strategies." This allocation

Extended Duration and Portable Alpha Strategies

Portable alpha strategies can reduce risk while maintaining return potential similar to that of traditional asset allocations.



Source: Northern Trust. This hypothetical example is for illustrative purposes only. See End Notes for data used in this example.



“Portable alpha strategies...offer the ability to reduce risk while maintaining return potential similar to that of traditional asset allocations.”

– Laura L. Lawson, CFA, product manager at Northern Trust

is poised to generate nearly 300 basis points in excess return over its liability. (See End Notes on page 13 for assumptions.) Although this appears to be a fairly conservative asset mix, it actually exhibits a high degree of tracking error relative to a liability benchmark. Under an LDI framework, managing excessive tracking error usually begins with reallocating assets to a long-duration fixed-income strategy. Portfolios B - E show what some possible allocations might look like as equity holdings are reduced and longer-duration bonds are added to the investment mix.

While converting to a long-duration bond strategy is an appropriate method to better manage tracking error, it comes

at the expense of excess return. The allocation to long-duration bonds in this example has a dual objective: to act as an interest rate hedge vs. the liabilities and to serve as a source of excess return. This is a lofty goal for any security or strategy. Long-duration bonds can function as an excellent interest-rate hedge to the liabilities, especially in an immunized strategy. However, they tend not to provide the level of excess returns that plan sponsors expect and, depending on funded status, require. That’s where portable alpha strategies come in.

New Approaches to Consider

Portable alpha strategies can be viewed as aggressive from a risk perspective. Under an LDI framework, however, they offer the ability to reduce risk while maintaining return potential similar to that of traditional asset allocations. Portfolios F - I illustrate how portable alpha strategies can transport alpha onto interest rate swaps. (See “Portable Alpha in Action,” page 13.) In each portfolio, the various alpha components generate the desired excess return, while the interest rate swaps hedge the interest-rate risk relative to the liabilities. The structure of these portfolios enable them to accomplish both goals — something the long-duration bond portfolios aren’t structured to do.



COMPARISON OF INFORMATION RATIOS

Portable alpha strategies present higher LDI information ratios.

STRATEGY	EXCESS RETURN OVER LIABILITY	TRACKING ERROR TO LIABILITY ⁽¹⁾	LDI INFORMATION RATIO ⁽²⁾
(A) 70% S&P 500/30% LB Aggregate	2.9%	12.7%	0.23
(H) Interest Rate Swap + Hedge Fund Market Neutral	3.3%	4.4%	0.76
(C) 50% S&P 500/50% Long-duration Bonds	2.0%	8.5%	0.23
(G) Interest Rate Swap + Small Cap Alpha	2.3%	2.9%	0.78
(D) 30% S&P 500/70% Long-duration Bonds	1.2%	5.1%	0.23
(F) Interest Rate Swap + Enhanced Cash	1.0%	1.3%	0.80

Notes:

(1) A risk measure of the variability of a strategy's total return around the liability, or the standard deviation of the excess return.

(2) A measure of risk-adjusted return relative to the liability. It is calculated by dividing excess return over the liability by tracking error to the liability.

Note that the tracking error vs. the liability in Portfolio A was caused by asset-class and duration mismatch. Tracking error in Portfolios C - E was reduced as the equity allocation was trimmed, but that came at the opportunity cost of lowered excess return. The portable alpha approaches applied in Portfolios F - I can decrease the tracking error caused by the duration mismatch by using interest rate swaps to hedge the liabilities. The tracking error caused by the asset-class mismatch is reduced as these portable alpha strategies have less beta exposure than traditional allocations, leaving only the tracking error contributed through the alpha component.

Portfolios F - I present several potential strategic choices. Each represents a 100% allocation to an alpha-generating strategy that is transported onto an interest rate swap hedging the liability. These strategies generate from 100 to 450 basis points (bps) of excess return. On the conservative end, Portfolio F combines an enhanced cash strategy and an interest rate swap for an excess return objective of 100 bps. Midway up the portable alpha continuum is the separated alpha element of an active small-cap portfolio — Portfolio G — in which a small-cap manager could generate a net 230 bps of alpha while taking on 300 bps of tracking error. A more aggressive strategy — Portfolio I — has a 100% allocation to a hedge fund-of-funds that looks to create 450 bps of alpha with a corresponding tracking error of 630 bps.

Compared with the strategy of increasing long-duration bond exposure, portable alpha strategies present a more risk-efficient way to generate return. Portfolios F - I offer the ability to equal or exceed the return of Portfolios A - E with a significant reduction in tracking error.

A natural concern of investors would be evaluating the performance efficiency of different portable alpha strategies in an LDI framework. An expanded view of the information ratio equation can help accomplish this task. Examining an LDI information ratio allows investors to compare LDI strategies with similar excess return targets. Keys to look for are *excess return over a liability* and *tracking error to the liability*.

The table, "Comparison of Information Ratios," matches up strategies with similar excess-return goals. Both Portfolios A and H in the example seek to generate around 300 bps of excess return over the plan's liabilities. The higher information ratio indicates that the portable alpha strategy — Portfolio H — is more efficient than the traditional 70/30 approach. The same outcome can be seen across the other excess return segments.

Practical Implementation

Although portable alpha can offer efficient risk-adjusted returns, shifting to a 100% portable alpha strategy may seem a bit extreme as a first step under an LDI framework. Perhaps it would be more practical to introduce portable alpha for a portion

of a plan's assets. This would reduce tracking error without sacrificing potential excess return.

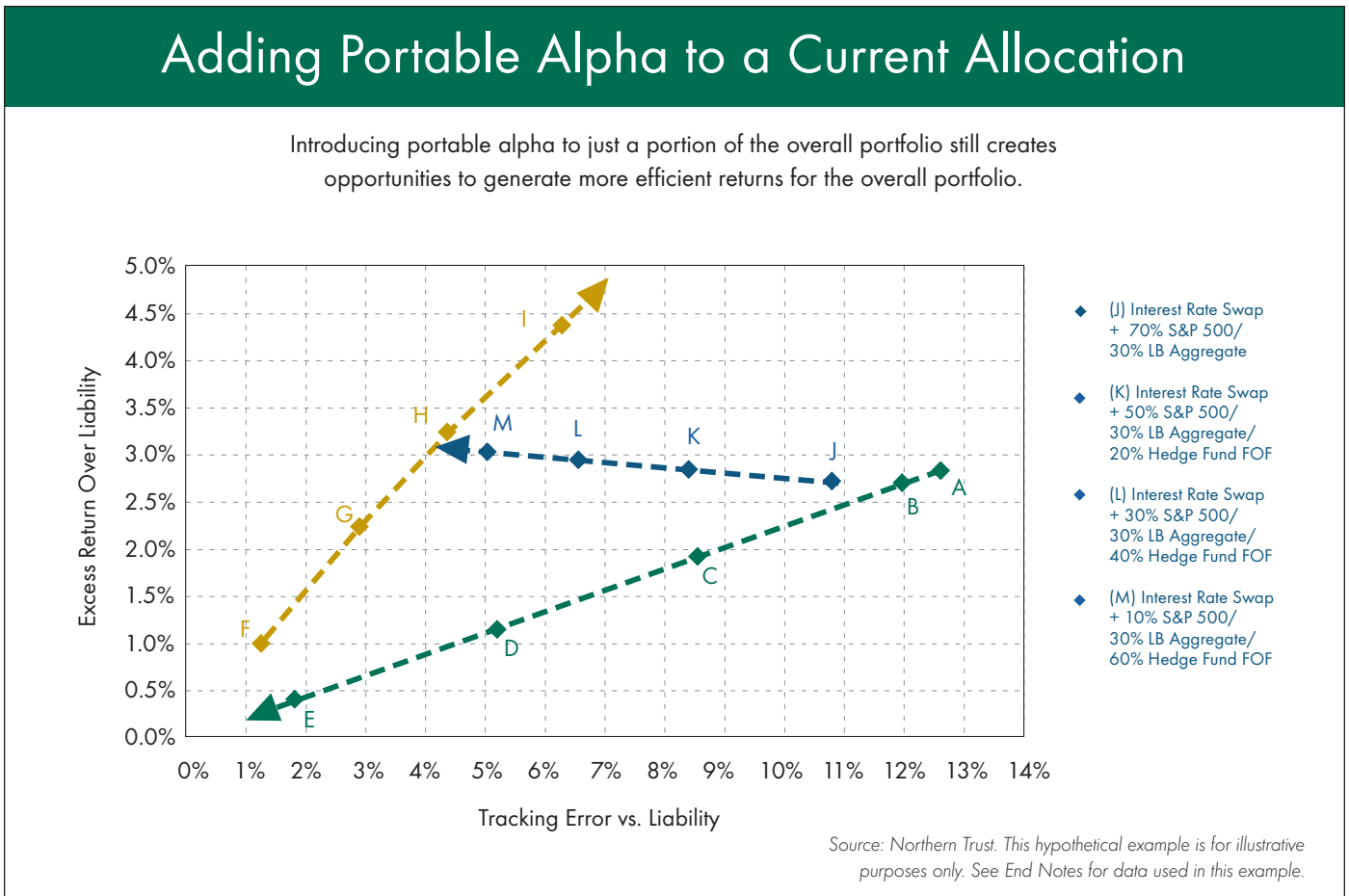
The chart, "Adding Portable Alpha to a Current Allocation," compares the original 70% equity / 30% fixed income allocation (Portfolio A) with several partial portable alpha strategies (Portfolios J - M). Each of these examples uses two similar elements. First, an interest rate swap overlay manages the interest rate risk of the assets vs. the liabilities. Second, alpha is generated through a hedge fund-of-funds strategy. Each plot point along the blue curve represents an increased allocation to hedge fund-of-funds and a decreased allocation to equities. Each of the steps reduces tracking error while maintaining the potential for excess return. Substituting other alpha strategies, as presented in the previous section, would generate a similar result at various excess return levels. These partial strategies all demonstrate improved information ratios compared with the investment allocations in Portfolios A - E.

Conclusion

Although this example offers a strong case for portable alpha, it is important to recognize the inherent risks of this strategy.

The use of derivatives and leverage is often cited as a primary risk. In reality, however, these perceived risks are quite low, as the depth and liquidity of derivatives markets has grown substantially during recent years. We believe that identifying and generating consistent sources of alpha is one of the major challenges of portable alpha strategies. However, these alpha sources do exist, and managers are increasingly finding them through nontraditional approaches.

Liability Driven Investing presents a continuum of choices, and the investment management industry is responding to the changing landscape by developing new and creative strategies. Unique investment goals are becoming the norm as defined benefit plans place greater emphasis on managing assets relative to their liabilities. Portable alpha works particularly well within an LDI framework because it provides the flexibility to structure customized strategies. These approaches give defined benefit plans the ability to separate the hedging and alpha decisions. With the proliferation of new investment strategies and increased acceptance of derivatives in the institutional marketplace, we believe embracing portable alpha strategies is critical to generating risk-efficient alpha. ❖

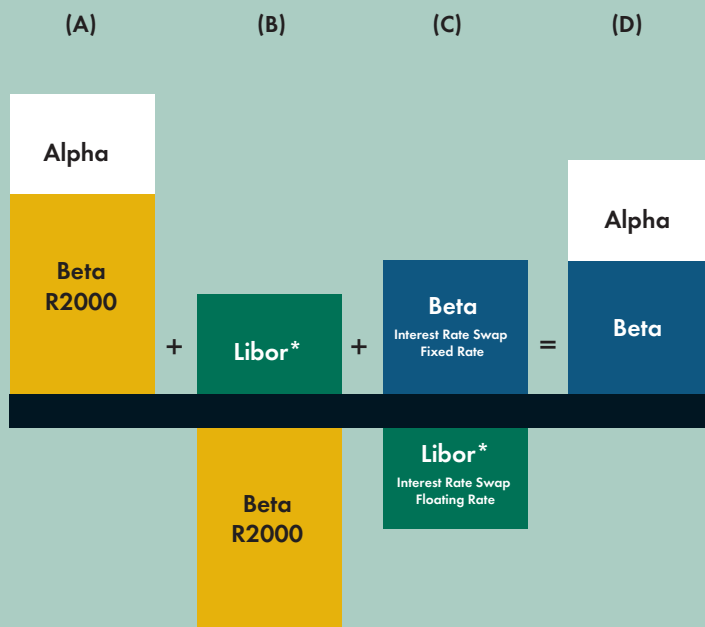


Portable Alpha in Action

Generally, an investment portfolio generates its return through two primary sources: 1) Beta: exposure to a particular market, and 2) Alpha: a portfolio manager's ability to exceed the market return. Capturing market exposure (Beta) can be achieved through passive investment strategies including index funds, exchange-traded funds or synthetic instruments such

as index futures or swaps. A skilled portfolio manager generates alpha through security selection, sector allocation or other active investment decisions. Portable alpha involves transporting this alpha component to another distinct market index or portfolio. The illustration below demonstrates how alpha can be transported in an LDI framework.

TRANSPORTING SMALL CAP EQUITY ALPHA IN AN LDI FRAMEWORK



*LIBOR is the London Inter-Bank Offer Rate. This example assumes no trading costs.

END NOTES:

Hypothetical portfolio allocations were constructed using a surplus optimization approach. This analysis assumes a fully funded plan with the liability modeled as a negative asset. Additional data sources used in this article include the following:

- Northern Trust's Investment Policy Committee's forward-looking capital market assumptions to forecast the S&P 500, Lehman Brothers Aggregate, Russell 2000, 3-month T-Bill and Lehman Brothers Long Government/Credit returns.
- Historical monthly return data (from 10/1/1991 - 9/30/2006) to derive the standard deviations and correlations for each asset class.
- The Lehman Brothers Long Government/Credit as a proxy for the defined benefit plan's liability. The interest rate swap that hedges the liability was approximated using the same return, risk and correlation assumptions as the liability.
- Callan PEP database's 25th percentile Active Cash Fixed Income quarterly return data (from 10/1/1991 - 9/30/2006) to approximate an Enhanced Cash strategy. The Callan Active Cash Fixed Income style universe consists of nine managers whose objective is to achieve a maximum return on short-term financial instruments, with the average portfolio duration of less than one year.

- Northern Trust's Quantitative Active Structured Small Cap monthly return data (from 10/1/1999 - 9/30/2006) as a proxy for a small-cap manager.
- Hedge Fund Research Inc.'s indices (HFRI Fund of Funds and HFRI Market Neutral) monthly return data (from 10/1/1991 - 9/30/2006) to approximate the hedge fund-of-funds and hedge fund market neutral strategies. The HFRI Fund of Funds Index includes 800+ constituents (in a fund-of-funds structure) that are equal weighted. The HFRI Market Neutral Index includes equal-weighted constituents that seek to exploit pricing inefficiencies between related equity securities, neutralizing exposure to market risk by combining long and short positions. Hypothetical returns and risk measures are simulated, do not reflect actual trading, and were achieved retroactively based on portfolios designed with the benefit of hindsight. The assumptions are estimates and are intended solely for illustrative purposes. No guarantees can be given about future performance, which may differ substantially.