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Liability-Driven Investing

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What is liability-driven **investing** (LDI)? **Investors** in general are concerned with the trade-off between return and risk. Commonly, risk is regarded simply as the potential volatility of asset returns. With this view, cash would represent the least risky **investment**, with bonds and stocks being higher risk **investments** because of their potential for loss of capital in adverse markets.

By contrast, LDI is an **investment** approach that views a portfolio's level of risk, not in terms of its own volatility, but in relative terms to the liabilities that the portfolio is intended to satisfy. Liabilities may be viewed as a series of cash flows that must be paid in the future. In this regard, they are mirror images of fixed income assets which pay their holders specified amounts at future dates. To the extent the value of assets moves in tandem with the value of liabilities, risk, under the LDI paradigm, is minimized. With the LDI perspective, the least risky asset is not cash, but rather a fixed income portfolio matched to the liability cash flows.

Why LDI Now?

The interest in LDI can largely be attributed to developments in both financial accounting and in the pension regulatory environment. In both realms, there have been changes that favour better matching of pension assets and liabilities. In the United States, the recently adopted FAS 158 will require that pension assets and liabilities be carried at their market or fair values on the balance sheet. There is also the expectation that the Financial Accounting Standards Board (FASB) will implement rules requiring changes in the net value to flow through income.

Approaches To LDI

While the appeal of LDI is that it is designed to reduce the volatility of a plan's surplus, this benefit will usually come at the cost of a reduction in the portfolio's expected return. Typical Defined Benefit pension fund asset allocations include fixed income at only 30 per cent or 40 per cent of assets, with the remainder in equities and other historically higher returning asset classes such as hedge funds. Therefore, the decision to move to an LDI framework does not necessarily signal a decision to move entirely into a matching fixed income portfolio. This is particularly true for funds that remain underfunded, and where the corporate sponsor is not immediately prepared to close the funding gap with cash contributions. Two common approaches that sponsors have taken are:

- Approach 1 – Maintaining current asset allocations, and seeking to reduce or eliminate the interest rate risk of the plan's surplus through a combination of increasing the duration of the current fixed income allocation and the use of interest rate derivatives, commonly swaps, to synthetically add additional duration to the portfolio. If the desire is to largely eliminate all rate risk, the objective would be to have a portfolio where the 'dollar duration' matches the liability's dollar-duration. A
- Approach 2 – Increasing the allocation to fixed income by some amount, for example to 50 per cent from 30 per cent, and then pursuing the policies described in Approach 1.

Each approach may eliminate interest rate risk, but interest rate risk is only one component of the total risk to the plan's surplus. Even with no rate risk, equity and other risks remain. Thus, as shown in Chart 1, the second approach results in a greater reduction in surplus volatility because of the reduced equity position. In each case the liability's interest rate risk is fully hedged at the point where the surplus volatility curve reaches its minimum. These minimums are 7.9 per cent and 5.8 per cent for Approach 1 and Approach 2, respectively.

One additional feature of our curves is worth noting. There is clearly a diminishing marginal benefit in volatility reduction with progressively larger swap overlay positions. For example, looking at Approach 1, 90 per cent of the maximum potential benefit can be garnered (from 13.8 per cent surplus volatility at Point A to 8.5 per cent at Point B) with only 64 per cent of the minimum interest

rate risk swap position (180 per cent at Point B versus 280 per cent at Point C). Given the relatively minor incremental benefit, it may be advisable in these contexts not to fully eliminate interest rate risk by overlaying much larger swap positions. Swap positions carry with them certain risks, for example, the risk of an increase in the short LIBOR rates that must be paid. Increasing these risks may not be warranted for the marginal benefits achieved. ■

The opinions expressed above are as of May 1, 2007 and are subject to change as market conditions vary.

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