WESTERN ASSET

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LDI INSIGHTS

Current Topics in Pension Management and Long Duration

Liability Driven Investing

# Duration Is a ZIP Code, Not an Address

Recently, we presented a client with a range of LDI options, each with different allocations providing different levels of expected improvement in funded status and, thus, different tracking error levels. Upon viewing the options, they asked why some of the options were "over-hedged." That is, why did some have hedge ratios in excess of 100%? Our reply was that none of those options were over-hedged in any meaningful sense. A hedge ratio above 100% was necessary to fully hedge the risks the plan faced.

This highlights a theme that pops up time and again in our LDI work. Duration is not an end-target when we craft LDI solutions, but rather an occasionally useful guidepost. The best solution available to a DB client will typically not be one that sports exactly the same duration as the client's liabilities.

The reasons for this are long-standing and well-known. DB liabilities are evaluated using AA yields, so their duration measures sensitivity to changes in AA yields. DB assets, however, are typically invested in fixed-income assets ranging from Treasuries to BBB corporates, or even to high-yield, so their duration measures sensitivity to quite different yields from AA. Because credit spreads inevitably fluctuate when Treasury yields move, DB assets will move differently from DB liabilities, even if they feature the same "on-paper" duration. So, on-paper duration calculations will not fully reflect the possible basis risk between DB assets and liabilities.

Furthermore, DB liabilities exhibit no credit risk, even while they sport a credit yield. As a result, DB assets will typically have to be lower in average quality than AA in order to be able to match the realized return on DB liabilities. This increases the "basis risk" between DB assets and liabilities still more and further reduces relevance of strict duration-matching.

An LDI approach that focuses exclusively on duration-matching—or even key-rate duration-matching—cannot properly hedge all the various risks DB liabilities face, so a solution seeking primarily to achieve a 100% hedge ratio will typically be deficient.

This is not to say that duration is a useless concept. Being mindful of asset duration versus liability duration can get you in the right "neighborhood" for an LDI solution, at which point proper analysis can take you the rest of the way. For example, when constructing a solution for a client whose liabilities have duration of 16 years, that solution will inevitably be longer in average maturity (thus duration) than the solution for a client whose liabilities have duration of nine years.

What exactly each of those respective solutions will look like, of course, depends on the specific time pattern of the liability cash flows for the two plans, their respective funded status levels, the speed at

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which each plan sponsor wants to improve funded status (or not), the percentages of DB assets allocated to fixed-income and the willingness of the respective plan sponsors to engage in active management.

(The more aggressive an active alpha target the plan sponsor is willing to seek, the less aggressive the strategic solution needs to be in attempting to match the realized returns of the liabilities, and vice versa.)

In terms of the metaphor used in the title, knowing the duration (and key-rate durations) of a plan's liabilities will get you in the right ZIP code of a proper LDI solution, but you will require other information and analysis to get to the exact address of a solution.

If you would like to delve further into these issues, feel free to peruse the LDI white papers listed on our website at www.westernasset.com/us/en/ldi/research.cfm.