CA ANSWERS

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Should Fixed Income Derivatives Play a Role in Liability Hedging for Pension Plans?

Yes. Since fixed income derivatives are more capital efficient and flexible than physical bonds, they can play a key role in liability hedging for many corporate and other single-employer pension plans. Derivatives can help plan sponsors hedge interest rate risk more effectively and with fewer assets than a portfolio composed of bonds, freeing up capital to pursue growth investments. At the same time, derivatives can significantly sharpen the precision of the liability hedge, protecting well-funded plans from overall movements in interest rates and from any steepening, flattening, or kinking of the yield curve. Plan sponsors should weigh these benefits against derivatives' operational and reporting complexities, but, when managed properly, derivatives can be helpful to many liability-hedging strategies.

Under US accounting standards, corporate pension liabilities are marked to market using high-quality corporate bond yields, exposing plan sponsors to interest rate risk, curve risk (i.e., the risk that interest rates do not move in parallel across all maturities), and credit spread risk. Because pension plans typically have long durations (e.g., 12–16 years), to mitigate these risks with physical securities requires investments in long-duration Treasuries, Treasury STRIPS, and corporate bonds. But, interest rate derivatives can provide effective long duration and yield curve exposures, often with more liquidity (e.g., compared to STRIPS), precision (e.g., targeting non-standard maturities), and capital efficiency. Credit default swaps, the most common form of credit derivatives, are not as effective in hedging credit spread risk as they have relatively short duration (e.g., five years) and often embed a fair amount of basis risk (i.e., deviation in their valuation relative to the underlying corporate bond valuation). Thus, while derivatives are an important part of a pension's hedging toolkit, physical bonds cannot be eschewed entirely.

All derivatives have distinct features, risks, and complexities (such as collateral management) that bear close evaluation. Detailed below are the derivatives commonly used in liability-hedging portfolios:

- **TREASURY FUTURES** provide investors synthetic exposure to changes in 2-, 5-, 10-, and 30-year Treasury yields, but require only a small portion of capital as margin (as low as 3%–5% in some instances). These futures are actively traded, extremely liquid, and exchange listed, meaning that they entail daily margin settlement and minimal counterparty risk.
- **TOTAL RETURN SWAPS** on Treasuries allow investors to receive the return of a specific Treasury bond, e.g., a 17-year maturity Treasury or a 30-year Treasury STRIPS, in return for paying a floating rate. The swaps are based on some notional amount over some pre-determined period of time. Unlike futures, total return swaps offer the advantage of being able to match specific maturities, but these over-the-counter

instruments also involve counterparty risk and greater operational complexity, such as ISDA (International Swaps and Derivatives Association) agreements.

- **INTEREST RATE SWAPS**, in their most common form, allow investors to receive a fixed rate in exchange for a floating rate based on some notional amount over some pre-determined period of time. Like futures, interest rate swaps provide duration exposure, but because swaps reflect swap rates—rather than Treasury yields—they create some basis risk relative to liabilities. Still, they can provide some duration exposure beyond 30 years and may be more liquid and cost effective than futures. Their operational complexity lies somewhere between that of futures and total return swaps on Treasuries.

How these derivatives are used varies. Since it is practically impossible to match the maturity profile of liabilities with physical bonds, a well-funded plan would typically buy (sell) Treasury futures and go long (short) total return swaps on Treasuries to fill any gaps (overages) of the physical bond portfolio relative to the liabilities. A poorly funded plan, on the other hand, would typically go long one or more of these derivatives to gain cheap duration exposure and may be willing to take on the basis risk of interest rate swaps to hedge overall interest rate risk. By taking on moderate leverage with derivatives, both well-funded and poorly funded plans can allocate a smaller level of assets than would otherwise have been used to hedge a greater amount of liability interest rate and curve risk.

Over the last two years, many plan sponsors have seen the funded status of their plans improve, thanks to rising interest rates, strong equity markets, and large plan sponsor contributions. A more nuanced strategy that uses fixed income derivatives can help plan sponsors, at various stages of their de-risking journeys, protect their hard-earned progress.

For a complete exploration of liability-hedging strategies, including the role of derivatives, see Cambridge Associates' Liability-Hedging Handbook: A Guide to Best Practices for US Pension Plans.

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