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PRICE PERSPECTIVE
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Fourth in a Continuing Series

Minimizing Insurance Risk Transfer Costs:
A CUSTOM BENCHMARK APPROACH

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EXECUTIVE SUMMARY

- Recent improvements in the funded status of many corporate defined benefit plans have accelerated interest in liability-driven investing (LDI) and led many sponsors to more clearly articulate their LDI objectives. However, the fixed income benchmarks typically used to measure the performance of LDI strategies can be improved.
- T. Rowe Price has developed a methodology for constructing custom LDI benchmarks at the most granular level—from the individual cash flows, both principal and coupon, derived from a given fixed income opportunity set.
- Sponsors may be able to better monitor and attribute changes in pension risk transfer costs using a custom benchmark that has the same cash flow, duration, convexity, yield, and maturity characteristics as their liability as it would be valued by an insurance company.

THE NEXT STEP IN LDI EVOLUTION

As corporate defined benefit plans increasingly have shifted their focus to portfolio de-risking, many have sought fixed income benchmarks that are better aligned with the specific objectives they hope to achieve through liability-driven investing (LDI).

Some sponsors have shifted to longer-duration measures, such as the Barclays Long Credit Index or Barclays Long Government/Credit Index, while others have adopted compound benchmarks or duration-targeted indexes.

T. Rowe Price believes an even higher level of customization is both necessary and feasible. Accordingly, we have developed a methodology for constructing custom fixed income benchmarks at the most granular level possible—the individual cash flows, both principal and coupon, derived from a given fixed income opportunity set.

Based on the bonds in the relevant opportunity set, we create a benchmark that matches, as precisely as possible, a plan's projected liability cash flows. To ensure continuous liability matching, this investible benchmark is then reset each year to reflect the plan's actuarial experience, new pension cash flow accruals, and bond market developments.[1]

[1] For a fuller description of T. Rowe Price's methodology, please see the Appendix on page 4

SPONSOR OBJECTIVE: MINIMIZE THE VOLATILITY AND OVERALL LEVEL OF INSURANCE RISK TRANSFER COSTS

To highlight the potential benefits of T. Rowe Price's LDI customization process, we have created a benchmark for the hypothetical plan liability structure shown in Figure 1 (below, right). We assume the sponsor's LDI objective is to minimize the volatility and overall level of insurance risk transfer costs, which a has two components: reducing portfolio tracking error relative to liabilities and ensuring the portfolio is attractive to insurance companies, allowing an in-kind asset transfer. In our view, creating a benchmark that reflects these considerations might be appropriate for plan sponsors who are considering:

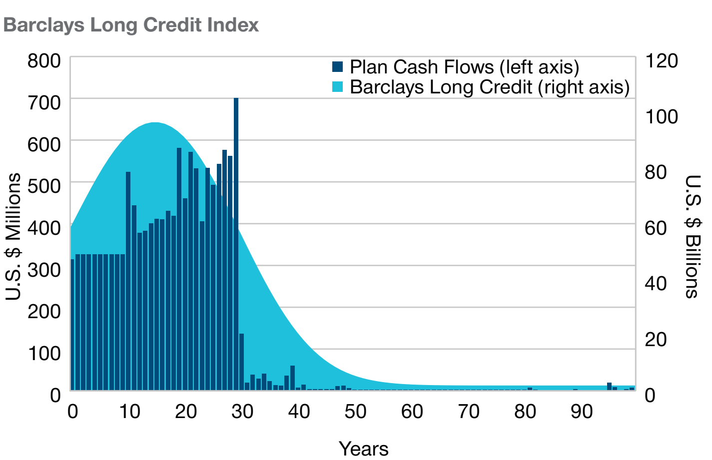
- terminating the entire plan within some defined period,
- transferring a portion of the plan's liabilities to an insurance company via a group annuity contract (buyout),
- purchasing annuity coverage that matches some segment of the plan's liabilities (buy-in).

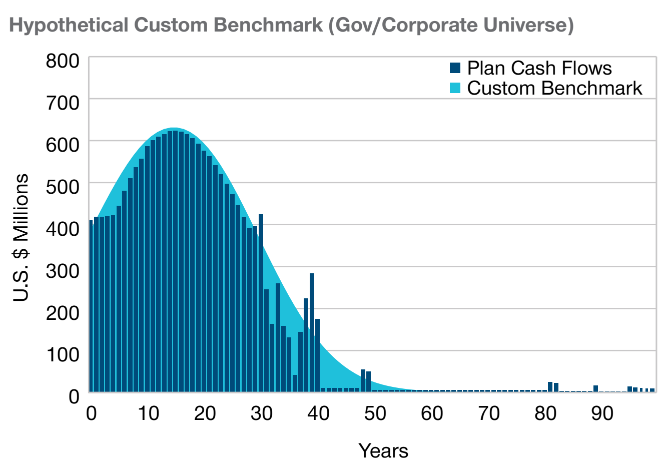
"Our hypothetical custom benchmark is designed to provide a much more precise match of the liability structure than would be possible using a standard market-weighted index."

Given the insurance company preferences for in-kind asset transfers, the most appropriate opportunity set for such an investor would be a fixed rate Gov/Corporate universe consisting of U.S. Treasury obligations as well as investment grade (IG) corporate bonds. This universe has a sufficiently high average quality relative to insurer discount rates and satisfies insurance companies' preferences for in-kind transfers. Based on our conversations with insurance companies, sponsors who prepare their portfolios for an in-kind transfer receive better overall pricing because the insurer doesn't incur transactional costs on the deal.

The sponsor's strategic objective would be to minimize portfolio tracking error relative to the benchmark—and thus to the returns on the liability as measured by insurance companies. Our hypothetical custom benchmark (right, Figure 1) is designed to provide a much more precise match of the liability structure than would be possible using a standard market-weighted index, such as the Barclays Long Credit Index (left, Figure 1). The 10 largest non-Treasury issues in the custom benchmark are shown in Figure 2 (Page 3). Because Treasuries are highly liquid and present

FIGURE 1: Custom LDI Benchmarks Can Provide More Precise Matching of Plan Liability Cash Flows
Hypothetical Plan Cash Flows Valued Using ASC Discount Rates





Data as of 30 Sept 2015

Sources: Barclays, T. Rowe Price; data analysis by T. Rowe Price.

minimal default risk, taking large positions in specific issues does not raise the same concentration concerns as it would in an investment grade corporate issue.

Aligning portfolio construction with insurance company asset standards for in-kind transfer is particularly important, given that many insurers may provide lower rate quotes due to the desirability of the assets they would assume. In order to facilitate an in-kind risk-transfer, the proposed custom benchmark meets insurer preferences for credit quality and sector allocations, as shown in Figure 3 (below, right). By constructing portfolios in this manner, sponsors can potentially limit the volatility and overall level of the final costs of a risk transfer.

CONCLUSIONS

T. Rowe Price believes LDI performance benchmarks should reflect each plan sponsor's specific investment goals and objectives. To that end, we have developed a customization methodology that we believe will enable sponsors to align their fixed income allocations and their LDI objectives with far greater precision than either standard market benchmarks or more specialized duration-targeted or compound indexes.

Customized benchmarks also should enable sponsors to provide investment managers with more precise mandates, improve performance attribution for both plan assets and plan liabilities, and potentially reduce tracking error relative to liabilities.

By monitoring investment performance using a custom benchmark composed of the same universe of bonds that an insurance company would use to value the plan, we believe sponsors can minimize the likelihood of unexpected surprises when the time comes to complete a risk transfer.

FIGURE 2: **Ten Largest Issues non-Treasury in a Hypothetical Insurance Risk Transfer Custom Benchmark**[2]

As of 30 Sept 2015

Issues
CSX 3.95 '50
Mayo Clinic 4.00 '47
Northwestern 3.87 '48
Ford 7.40 '46
Verizon 4.52 '48
Sloan-Kettering 4.13 '52
Johns Hopkins 4.08 '53
Ascension Health 4.85 '53
Stanford 3.46 '47
Oglethorpe Power 5.25 '50

Source: T. Rowe Price.

FIGURE 3: **Sector and Quality breakdown for Hypothetical Insurance Risk Transfer Custom Benchmark**

As of 30 Sept 2015

Quality Breakdown	Benchmark Weight
AAA	35%
AA	9
A	25
BBB	31

Sector Breakdown	Benchmark Weight
Industrials	49%
Financials	11
Utilities	9
US Treasury	31

Source: T. Rowe Price.

[2] Please refer to the disclosures at the end of this material for important additional information.

Appendix: Constructing Custom LDI Benchmarks

T. Rowe Price has developed its own custom LDI benchmark methodology, which we believe has the potential to:

- reduce liability tracking error compared with market cap-weighted benchmarks and composites,
- allow managers to tailor their investment process more closely to sponsor objectives in terms of spread, duration, and curve sensitivities,
- demonstrate their performance relative to plan liabilities more precisely.

STEP ONE: DEFINE THE OPPORTUNITY SET BASED ON THE SPONSOR'S LDI OBJECTIVES

Hedging asset performance should be monitored as closely as possible against the liability measurement most meaningful to the sponsor. Because different regulatory and accounting regimes use different discount rates, the optimal opportunity set will depend on the sponsor's de-risking priorities.

STEP TWO: CONSTRUCT A YIELD CURVE

Once the relevant fixed income opportunity set has been defined, bonds are broken down into their discrete coupon and maturity cash flows. In essence, this procedure treats every cash flow as if it were a separate zero-coupon bond, then uses those flows to construct a zero-coupon yield curve that can be matched against the plan's cash flows.

STEP THREE: ESTIMATE THE PRESENT VALUE OF LIABILITIES

Discounting plan cash flows using the model curve provides the yields needed to determine the plan's interest rate sensitivity at each point on the curve. The curve is stressed by incrementally increasing and decreasing the yields at each point in order to determine key rate durations (KRD).

STEP FOUR: OPTIMIZE THE BENCHMARK

Asset cash flows are matched to liability KRDs, taking into account how much impact each point on the curve has on the overall present value of plan liabilities. The result is a customized benchmark in which asset and liability weights are matched relatively precisely, especially in the most interest rate sensitive portion of the curve.

With the structure in place, the mandate to the asset manager becomes relatively straightforward: either replicate or outperform the liability-matching cash flow benchmark, while also matching spread and curve sensitivities as closely as possible using instruments that are actively traded and have a reasonable degree of market liquidity.

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