



**PRICE  
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## Targeting Outperformance of ASC Liabilities: **A CUSTOM BENCHMARK APPROACH**

### 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.
- We provide a hypothetical example of a sponsor seeking to outperform liabilities as valued using accounting standards codification discount rates. A custom benchmark enables sponsors, consultants, and managers to focus on performance relative to the plan liability, which in our view is ultimately how LDI mandates should be measured.

### 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.<sup>1</sup>

<sup>1</sup> For a fuller description of T. Rowe Price's methodology, please see the Appendix on page 4.

**SPONSOR OBJECTIVE:  
OUTPERFORMING ASC  
ACCOUNTING LIABILITIES**

Many corporate defined benefit plan sponsors are focused on improving balance sheet funded status, as defined by accounting standards codification (ASC), via fixed income allocations that create greater exposure to credit risk than the bonds used for liability calculations. In such cases, we believe that linking the outperformance target to liability returns is essential to achieving the desired objective.

To highlight the potential benefits of T. Rowe Price’s LDI customization process for these sponsors, we have created a benchmark for the hypothetical plan liability structure shown in Figure 1

(below). We assume the sponsor’s LDI objective is to outperform pension liability returns—based on U.S. ASC discount rates—by 100 basis points (bps) per year. In our view, such a benchmark might be appropriate for sponsors seeking to:

- outperform the liability in order to reduce funding deficits,
- maintain an open and ongoing plan,
- better align and attribute LDI investment manager performance,
- incorporate an active credit strategy designed to achieve the outperformance target.

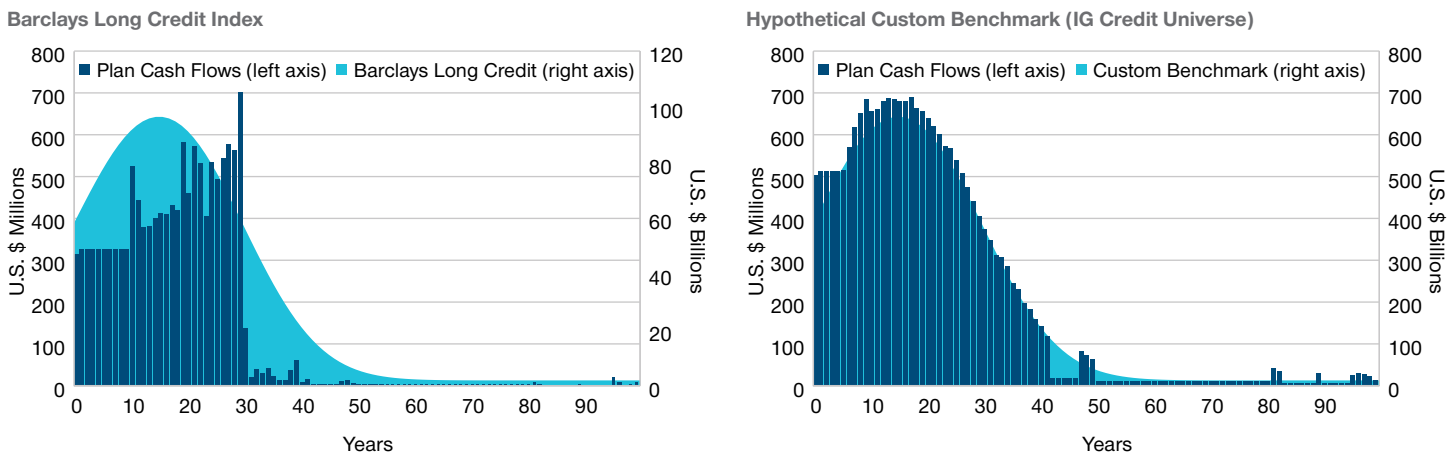
We believe the custom benchmark would provide a much more precise match of the liability structure than would be possible using a standard market-weighted index, such as the Barclays Long Credit Index (right, Figure 1). However, given the sponsor’s objectives, the opportunity set for the custom benchmark (left, Figure 1) can be broadened to include bonds of lower quality than would be used for liability calculations.

In our example, the investment universe incorporates the entire investment grade (IG) spectrum (AAA to BBB-), essentially matching the quality constraints for the Barclays Long Credit Index. This opportunity set reflects the fact that many LDI mandates currently use the Barclays Long Credit Index as a benchmark, which implies that some sponsors are willing to accept at least an equivalent degree of credit risk in other LDI portfolios. The 10 largest issues in our hypothetical custom benchmark are shown in Figure 2 (below).

A benchmark constructed in this manner will have similar duration, convexity, and cash flow characteristics as the liability, which should facilitate the attribution of LDI portfolio performance. The portfolio manager’s objective, then,

“We believe that linking the outperformance target to liability returns is essential to improving balance sheet funded status.”

**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.

<sup>2</sup> Please refer to the disclosures at the end of this material for important additional information.

would be to construct a portfolio with similar characteristics as the custom benchmark, while employing his or her skills in security selection to seek to generate a 100 bps yield advantage over the liability discount rate.

Figure 3 (below) shows some of the key characteristics of a hypothetical portfolio constructed using this approach. Such an LDI mandate could be used to complement and diversify from other LDI managers that have similar outperformance targets, but relative to published market-weighted benchmarks rather than an investible representation of the plan's liability.

## 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 allow sponsors to provide investment managers with more precise mandates and allow more granular performance attribution for both plan assets and plan liabilities.

**FIGURE 2: Ten Largest Issues in a Hypothetical Custom ASC Liability Benchmark<sup>2</sup>**

As of 30 Sept 2015

Issues	Index Weight
Port Authority NY & NJ 4.93 '51	2.06%
Verizon 4.9 '46	1.77
UC Medical Center 6.55 '48	1.61
Verizon 4.52 '48	1.59
Peru 5.63 '50	1.43
Uruguay 5.1 '50	1.25
Illinois 5.10 '33	1.24
Panama 4.30 '53	1.03
Ascension Health 4.85 '53	0.93
Port Authority NY & NJ 4.46 '61	0.69

Source: T. Rowe Price.

“Such an LDI mandate could be used to complement and diversify from other LDI managers that have similar outperformance targets.”

**FIGURE 3: Key Characteristics of Hypothetical Plan Cash Flows, Barclays Benchmarks, and a Hypothetical Custom ASC Liability Benchmark<sup>2</sup>**

As of 30 Sept 2015

	Duration	Convexity	Yield	Average Quality
Plan Cash Flows (ASC)	12.5	2.7	4.38%	AA
Plan Cash Flows (IRS)	12.5	2.8	4.39	AA
Barclays Long Credit Index	13.3	2.6	4.88	A
Custom Benchmark	12.2	2.4	5.78	A-

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

Past performance is no guarantee of future results. Custom benchmark and Sample Plan returns do not reflect the deduction of management fees.

<sup>2</sup> 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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