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Dodge & Cox®
Investment Focus

Investment Perspectives

Long-Term Solutions for Overfunded Plans: Stay the Course, De-Risk, or Re-Risk?[1]

Key Takeaways

- As many frozen corporate pension plans become overfunded, plan termination and hibernation remain common end-game objectives. But it may also be advantageous to balance hibernation with surplus growth.
- Plan sponsors can use the so-called "trapped" surplus to achieve a range of strategic goals, in addition to offsetting administrative expenses and adverse plan experience.
- Plan sponsors may wish to re-assess whether maintaining the terminal glide path asset allocation is appropriate, or whether a more dynamic approach—such as further de-risking or eventual re-risking—may be more appropriate.
- At high levels of overfunding, allocating assets to liability-hedging and return-seeking assets in dollar (rather than percentage) terms may more clearly align with plan sponsor objectives.

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Overfunded Plans

The funded status of U.S. corporate defined benefit plans rose significantly over the last few years, positioning many in surplus for the first time since the Global Financial Crisis. At the end of 2022, nearly half of the largest 100 plans were overfunded and 1 in 8 were at least 120% funded.[2] Despite recent market volatility, given strong year-to-date equity market returns and higher discount rates, even more plans are likely overfunded as of September 30, 2023.

After reaching full funding, the next step for frozen plans has typically been either termination, possibly over a period of a few years with interim lump sum windows, buy-outs, and/or buy-ins[3], or hibernation.[4] However, the strategic benefits of a pension surplus have recently gained attention, suggesting that balancing hibernation with surplus growth could be attractive. Overfunded accruing plans have essentially adopted this approach, as they seek to generate asset returns to offset future benefit accruals, while still hedging accrued benefits.

From an investment perspective, many frozen plans have likely reached or will soon reach the terminal point of their de-risking glide paths. These plans are typically focused on refining their liability-hedging and return-seeking allocations (LHA and RSA, respectively). This includes, for example, matching LHA to the liabilities ever more closely; potentially preparing part or all of LHA for an in-kind pension risk transfer; and, possibly, reducing the complexity of the RSA. It may also be timely to reconsider the overall balance between LHA and RSA, as further de-risking or, possibly, re-risking could align more closely with plan sponsor objectives and risk tolerance.

Unless otherwise noted, in the rest of this paper we address end-game solutions for overfunded frozen plans that are ***not*** seeking near-term plan termination.

The "Not-So-Trapped" Surplus

The asset-liability surplus in corporate pension plans is often described as a "trapped surplus" because it cannot revert to the plan sponsor until the plan is terminated. After termination, it is subject to income and excise taxes. For this reason, many plan sponsors have not seen much upside to overfunding their plans, especially if the surplus cannot be used to offset future benefit accruals.

For plans that were underhedged in the recent rising interest rate environment, the surplus may have grown unintentionally, creating potentially unexpected strategic opportunities beyond the obvious benefits of offsetting administrative expenses and potential adverse plan experience. They include:

- Generating pension income (as opposed to pension expense) in the financial statements,
- Serving as a cushion in a corporate merger that includes an underfunded plan,
- Paying retiree medical benefit payments (if applicable and within certain limits), and
- Shifting or enhancing employee benefits, including possibly re-opening the plan.

Consequently, maintaining and growing the surplus—as long as there are no unfavorable impacts on liability hedging—may be attractive, depending on corporate objectives and the size of the plan relative to the balance sheet.

An Evolving Risk Tolerance

Of course, any deviation from pure liability hedging comes with funded status risk. Indeed, the underlying premise of de-risking glide paths is that plan sponsor risk tolerance decreases as funded status approaches 100% and the terminal point of the glide path. But what happens after that? For example, a funded status decline of 5%, or even 10%, for a plan that is 120% funded is likely to be much less painful than for a plan that is, say, 105% funded. The 120% funded plan still retains a healthy (if diminished) surplus, and there are, very likely, no required cash contributions or variable-rate Pension Benefit Guaranty Corporation (PBGC) premiums. In other words, not all funded status declines are created equal!

After a plan becomes sufficiently overfunded, plan sponsors may be able to generate higher asset returns by assuming marginally higher funded status risk without necessarily putting accrued benefits at risk or materially increasing the risk of cash contributions. That said, we recognize that some plan sponsors (e.g., those where the plan is large relative to the balance sheet) may prefer to preserve the existing surplus once any degree of overfunding is achieved.

A framework for evaluating an investment strategy for an overfunded plan could include the examination of expected return versus the hurdle rate (the minimum required return to maintain the current surplus), funded status volatility, and stress tests, among other metrics. To illustrate this approach, we consider three simplified potential end-game solutions for a sample plan: a fixed asset allocation, continued de-risking, and eventual re-risking.

Sample Plan

We consider a plan that has a liability (projected benefit obligation) of $1 billion, a duration[5] of 11.0 years, and a discount rate of 5.20%, which corresponds to the FTSE Pension Liability Index Short discounted with the FTSE Above Median AA Curve, as of June 30, 2023. We assume a margin for administrative expenses and adverse plan experience of $50 million, or 0.5% of liabilities. Thus, the hurdle rate is 5.7% if the plan is 100% funded and 5.2% if it is 110% funded. *Please see the Appendix for additional details and methodology.*

We first consider a glide path with a terminal point at 100% funded, 80% LHA/20% RSA, an interest rate hedge ratio of 100% in total and across the curve, and a credit spread hedge ratio (CSHR) of 80%. (The CSHR is less than 100% to account for the correlation of credit spread and equity market returns.) As long as funded status remains below 125%, the market value of LHA is less than the present value of liabilities,

Accruing Plans: Potentially Self-Sustaining?

In certain circumstances, a large enough surplus in an accruing plan can make the plan self-sustaining and materially reduce the need for cash contributions. For example, a closed plan that is 120% funded, has a service cost equal to 1% of liabilities, and has a 0.5% margin for administrative expenses has a hurdle rate that exceeds the liability discount rate by less than 0.5%! Alternatively, an open plan that is 150% funded and has a service cost equal to 4% of liabilities has a hurdle rate that is only 1.3% above the liability discount rate. *Please see Appendix for additional details.*

While beyond the scope of this paper, it is likely possible to develop an asset allocation that achieves these hurdle rates, a full interest rate hedge across the curve, and a high degree of credit spread hedging. However, implementation may require the use of derivatives, especially if market value of LHA is lower than the present value of liabilities and/or if liability duration is particularly long. As with frozen plans, sponsors of accruing plans may find a glide path beneficial, though the terminal glide path point or the re-risking point would likely lie well above 100% funded, perhaps at the point where the plan become self-sustaining.

meaning that derivatives would likely be required to ensure full hedging across the curve. Importantly, we assume that LHA are actively managed and generate sufficient value-add to offset downgrade headwinds and other unhedgeable aspects of the liability discount rate.[6] For illustrative purposes, we assume RSA are invested entirely in global equities.

Staying the Course

If the plan maintains its portfolio strategy and funded status continues to improve, the surplus and the RSA both increase. In turn, this means that the expected return over the hurdle rate and funded status risk both increase. As the plan is well hedged relative to the liability discount rate, much of the funded status risk derives from equity market risk, as shown in the stress scenario in Figure 1. Here, the stress scenario assumes equities fall 40%, Treasury yields decline 2%, and AA credit spreads widen 100bps. In light of this analysis (or other considerations, such as an estimate of the termination liability), many plan sponsors often set the terminal glide path point above 100%. But even then, as funded status moves above the terminal point, funded status risk increases if the asset allocation remains fixed.

De-Risking

To counteract this effect, risk-averse plan sponsors may wish to extend their glide paths, potentially all the way to zero allocation to RSA (see Figure 2). Here, as funded status increases, the excess return over the hurdle rate also increases, but by less than in the fixed-asset-allocation case. Funded status risk and the impact of adverse market scenarios decrease as RSA are reduced and the hedge ratios remain high.

In this example, since the market value of LHA exceeds the present value of the liabilities above 110% funded, it may be necessary to allocate some assets to cash and/or ensure that any excess interest rate or credit spread exposures relative to the liabilities are sufficiently hedged out.

Figure 1. Sample Plan, Fixed Asset Allocation

Funded Status Initial Surplus ($mm)	100% 0	105% 50	110% 100	115% 150	120% 200
Credit	65%	65%	65%	65%	65%
Treasuries	15%	15%	15%	15%	15%
Return-Seeking Assets	20%	20%	20%	20%	20%
Interest Rate Hedge Ratio	100%	100%	100%	100%	100%
Credit Spread Hedge Ratio	80%	80%	80%	80%	80%
Expected Return Over Hurdle	0.2%	0.5%	0.7%	1.0%	1.2%
Funded Status Risk	2.8%	2.9%	3.1%	3.3%	3.5%
Impact of Stress Scenario					
Funded Status	96%	100%	104%	108%	112%
Surplus ($mm)	(49)	(3)	43	89	135

Source: Dodge & Cox.

Figure 2. Sample Plan, De-Risking Glide Path

Funded Status Initial Surplus ($mm)	100% 0	105% 50	110% 100	115% 150	120% 200
Credit	65%	70%	75%	80%	80%
Treasuries	15%	15%	15%	15%	20%
Return-Seeking Assets	20%	15%	10%	5%	0%
Interest Rate Hedge Ratio	100%	100%	100%	100%	100%
Credit Spread Hedge Ratio	80%	83%	87%	95%	100%
Expected Return Over Hurdle	0.2%	0.3%	0.4%	0.5%	0.5%
Funded Status Risk	2.8%	2.2%	1.5%	0.9%	0.4%
Impact of Stress Scenario					
Funded Status	96%	101%	107%	112%	118%
Surplus ($mm)	(49)	14	77	137	201

Source: Dodge & Cox.

Re-Risking

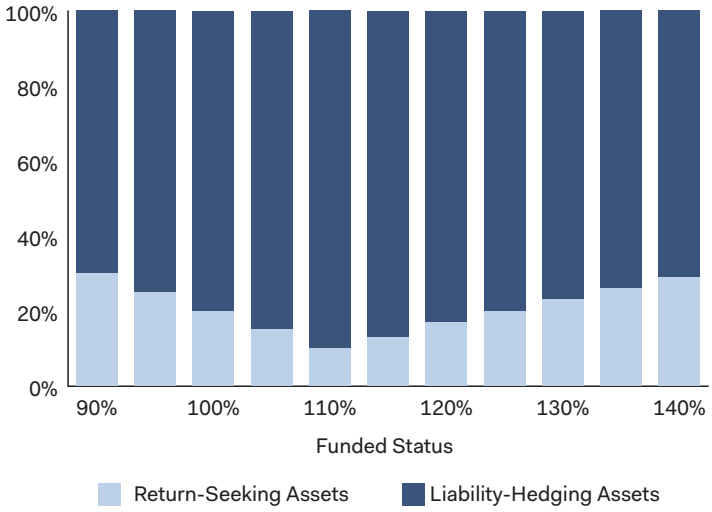
Finally, we consider a balanced approach that re-risks the asset allocation while fully hedging the liability once funded status reaches a certain threshold, such as 110% (see Figure 3).

Figure 3: Sample Plan, De- and Re-Risking Investment Strategy
Assumes Fixed Liability Present Value of $1 Billion

	Funded Status					
	90%	95%	100%	105%	110%	Above 110%
Liability-Hedging Assets	**70% $630mm**	**75% $713mm**	**80% $800mm**	**85% $893mm**	**90% $990mm**	**Equal to present value of liability**
Interest Rate Hedge Ratio	90%	95%	100%	100%	100%	100%
Credit Spread Hedge Ratio	70%	75%	80%	83%	87%	90%
Return-Seeking Assets	**30% $270mm**	**25% $237mm**	**20% $200mm**	**15% $157mm**	**10% $110mm**	**Assets in excess of present value of liability**

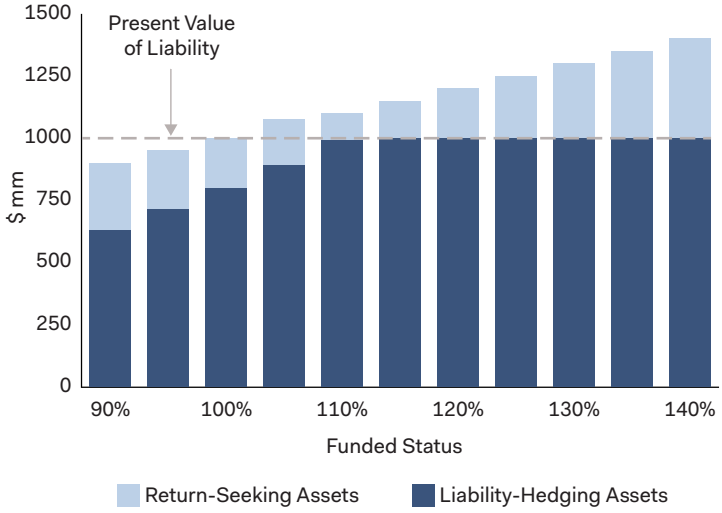
Source: Dodge & Cox.

Figure 4. A "U-Shaped" Glide Path



Source: Dodge & Cox.

Figure 5. A U-Shaped Glide Path in Dollar Terms
Assumes Fixed Liability Present Value of $1 Billion



Source: Dodge & Cox.

This strategy corresponds to a U-shaped glide path in the usual percentage terms (see Figure 4), but it may be more intuitive to view it in *dollar* terms (see Figure 5).

Taking the latter view, once funded status reaches 110%, LHA market value equals liability present value, LHA risk characteristics are fully aligned with those of the liabilities, and RSA market value is equal to the surplus. Assuming LHA performance closely matches that of the liabilities and the rebalancing bands are reasonable, there may be very little need to rebalance between LHA and RSA going forward, unlike in the other two approaches. Since LHA market value equals the present value of liabilities, while still helpful, derivatives are not as essential in achieving a full interest rate hedge across the curve.

As expected, given an increasing allocation to RSA, as funded status increases beyond 110%, excess return over the hurdle rate and funded status risk both increase, but still provide a large surplus cushion (see Figure 6). Depending on plan sponsor objectives and risk tolerance and to build in a greater cushion for adverse experience, the re-risking trigger and the target LHA value may be set higher (e.g., 115% funded and 105% of liability present value, respectively). Another approach for setting these parameters may include Monte Carlo simulations that seek to ensure a certain floor for the surplus under a broad range of market scenarios. Other implementation considerations include the evolution of the target credit spread hedge ratio, given the correlation between RSA and the credit portion of LHA, and the structure of RSA, including, potentially, an increasing ability to consider alternative and less liquid investments.

Figure 6. Sample Plan, U-Shaped Glide Path

Funded Status **Initial Surplus ($mm)**	**100%** **0**	**105%** **50**	**110%** **100**	**115%** **150**	**120%** **200**
Credit	65%	70%	75%	70%	67%
Treasuries	15%	15%	15%	17%	17%
Return-Seeking Assets	20%	15%	10%	13%	17%
Interest Rate Hedge Ratio	100%	100%	100%	100%	100%
Credit Spread Hedge Ratio	80%	83%	87%	90%	90%
Expected Return Over Hurdle	0.2%	0.3%	0.4%	0.8%	1.1%
Funded Status Risk	2.8%	2.2%	1.5%	2.2%	3.1%
Impact of Stress Scenario					
Funded Status	96%	101%	107%	110%	112%
Surplus ($mm)	(49)	14	77	107	137

Source: Dodge & Cox.

Conclusion

For many years, plan sponsors have been laser-focused on pension de-risking, seeking to lock in funded status gains as their plans neared full funding. Now that many are enjoying pension surpluses, it may be worthwhile to reassess strategic objectives and the de-risking mindset. A balanced approach that effectively hedges the liabilities while also seeking to grow the surplus may merit consideration. Depending on the end-game objective, the investment strategy may evolve to include further de-risking or eventual re-risking, but in all cases liability hedging is likely to remain top of mind.

We would welcome the opportunity to speak with you or your advisor about our pension risk management solutions as you proceed on your pension journey.

Appendix

Overall Disclosure. For illustrative purposes only. The hypothetical information presented does not represent actual results of any client and is based upon the hypothetical assumptions described below. While we believe the assumptions and methods used in this analysis are reasonable, other assumptions may also be reasonable and may lead to results that differ significantly from those shown here. Some assumptions have been made for modeling purposes and are unlikely to be realized; not all assumptions have been stated or fully considered; and changes in assumptions may have a material impact on the hypothetical results presented. Actual results for investors will differ from the results contained in this analysis. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment.

Frozen Plan Analysis

Plan characteristics: Present value of liabilities: $1 billion, duration: 11.00 years, convexity: 2.15. Discount rate: 5.20%, FTSE Above Median AA, as of June 30, 2023. Credit beta of investment-grade credit to the liability discount rate: 1.25. For purposes of funded status risk (i.e., the volatility of funded status), liabilities are represented as the following blend of market indices: 63% Bloomberg U.S. Long Credit Index, 17% Bloomberg U.S. Intermediate Credit Index, 12% Bloomberg Long Treasury Index, 8% Bloomberg Intermediate Treasury Index. This blend of indices was selected to match liability duration and credit beta.

Hurdle rate assuming 100% funded status, 5.20% discount rate, and $5mm load for administrative expenses and adverse actuarial experience: ($52mm + $5mm)/($1,000mm) = 5.7%.

Hurdle rate assuming 110% funded status, 5.20% discount rate, and $5mm load for administrative expenses and adverse actuarial experience: ($52mm + $5mm)/($1,100mm) = 5.2%.

Hypothetical portfolios: Liability-hedging assets consist of Long Credit, Intermediate Credit, and a Treasury completion portfolio represented, respectively, by the Bloomberg U.S. Long Credit Index, the Bloomberg U.S. Intermediate Credit index, and a blend of the Bloomberg Long Treasury Index, the Bloomberg Intermediate Treasury Index, and the Bloomberg 3-Month T-Bill index, that achieve the target interest rate and credit spread hedge ratios. Index fixed income characteristics are calculated using PORT+. Return-seeking assets consist of global equities as represented by the MSCI All Country World Index (Net) Index.

Stress test: Stress test assumes an instantaneous return of -40% for the return-seeking assets, a 2% decrease in Treasury yields across all maturities, and a 1% increase in AA credit spreads across all maturities. Asset and liability returns are calculated based on these assumptions and index and liability durations, convexities, and credit beta, respectively.

Capital market assumptions. These assumptions are hypothetical and provided for illustrative purposes only. Actual returns may be materially different from those shown. While we believe these assumptions to be reasonable, other assumptions may be reasonable and may lead to results that differ significantly from those derived using these assumptions. Some assumptions have been made for modeling purposes and are unlikely to be realized; not all assumptions have been stated or fully considered; and changes in assumptions may have a material impact on the hypothetical results presented. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. These assumptions do not represent actuarial, accounting, or legal advice.

	Compound Return	Arithmetic Return	Standard Deviation
Cash	5.3%	5.3%	0.5%
Long Credit	5.4%	6.0%	10.5%
Intermediate Credit	5.4%	5.5%	4.0%
Long Treasuries	4.0%	4.7%	12.0%
Intermediate Treasuries	4.5%	4.5%	3.0%
Global Equities	8.3%	9.7%	17.0%

	Correlation Matrix					
	Cash	Long Credit	Interm. Credit	Long Treasuries	Interm. Treasuries	Global Equities
Cash	1.00	0.03	0.02	0.12	0.16	-0.08
Long Credit	0.03	1.00	0.93	0.73	0.63	0.48
Intermediate Credit	0.02	0.93	1.00	0.61	0.68	0.49
Long Treasuries	0.12	0.73	0.61	1.00	0.86	-0.02
Intermediate Treasuries	0.16	0.63	0.68	0.86	1.00	0.03
Global Equities	-0.08	0.48	0.49	-0.02	0.03	1.00

Fees. Assumptions are for broad market indices. You cannot invest directly in an index; actual investments will be subject to investment management fees and other investment-related expenses.

Market Indices. Indices used in the development of the assumptions are as follows: Bloomberg 3-Month T-Bill Index, Bloomberg U.S. Long Credit Index, Bloomberg U.S. Intermediate Credit Index, Bloomberg Long Treasury Index, Bloomberg Intermediate Treasury Index, and MSCI All Country World Index net of international dividend taxes when available, and gross otherwise.

Equity expected returns. Returns for equities reflect Dodge & Cox's expectations for dividend yield, EPS growth, and change in valuations (P/E ratios) for the relevant market indices over a 10-year time horizon, as of June 30, 2023.

Cash and fixed income returns. Compound returns for cash and fixed income reflect the yield on the respective market indices as of June 30, 2023.

Standard deviations and correlation. Standard deviation and correlations reflect monthly observations for the 10-year period ending June 30, 2023; standard deviations are rounded to the nearest 0.5%.

Funded status risk accounts only for the investment component of funded status risk, does not reflect any potential alpha in excess of index returns, potential tracking error to the index, and deduction of any investment management fees.

Accruing Plan Analysis

Plan characteristics: Present value of liabilities: $1 billion, duration: 13.49 years, convexity: 4.31. Discount rate: 5.22%, FTSE Above Median AA, as of June 30, 2023.

Hurdle rate assuming 120% funded status, 1% service cost, and $5mm load for administrative expense and adverse actuarial experience: ($52mm + $10mm + $5mm)/($1,200mm) = 5.6%.

Hurdle rate for 150% funded status, 4% service cost, and $5mm load for administrative expense and adverse actuarial experience: ($52mm + $40mm + $5mm)/($1,500mm) = 6.5%.

1. The information in this paper should not be considered fiduciary investment advice under the Employee Retirement Income Security Act. This paper provides general information not individualized to the particular needs of any plan and should not be relied on as a primary basis for investment decisions. The fiduciaries of a plan should consult with their advisers as needed before making investment decisions. The information in this paper should not be considered actuarial, accounting, legal, or tax advice.
2. Source: Milliman 2023 Corporate Pension Funding Study, https://www.milliman.com/en/insight/2023-corporate-pension-funding-study.
3. In a buy-out, a plan sponsor pays a premium (in cash or with assets-in-kind) and transfers the pension liabilities associated with all or a portion of plan participants to an insurance company; those liabilities are no longer part of the plan sponsor's balance sheet and the plan sponsor is no longer responsible for payments to those participants or the associated Pension Benefit Guaranty Corporate (PBGC) premiums. In a buy-in, the plan sponsors purchases an insurance contract (with cash or with assets-in-kind) to cover payments to all or a portion of plan participants, but the contract is part of the plan sponsor balance sheet, and the plan sponsor retains responsibility for paying benefit payments and the associated PBGC premiums. A buy-in can often be converted to a buy-out and may be an interim step toward plan termination.
4. In hibernation, a plan sponsor maintains a frozen pension plan with assets invested primarily in liability-hedging assets to minimize contribution and funded status risks.
5. Duration is a measure of a bond's (or a bond portfolio's) price sensitivity to changes in interest rates.
6. A downgrade headwind occurs when a high-yielding AA-rated bond is downgraded to A or lower and thus falls out of the discount curve universe. In this case, the discount rate is likely to fall and the liabilities are likely to post a positive return. On the other hand, a portfolio holding the exact same bonds as the discount curve universe prior to the downgrade will hold the down-graded bond after the downgrade and therefore will not experience the same up-lift as the liabilities and may, in fact, experience a negative return if the bond's yield rises further on the downgrade. Other unhedgeable aspects of the liability discount rate include specific bond selection criteria to determine key yield curve points and curve construction methods, such as smoothing, interpolation, and extrapolation.