Rethinking the pension plan endgame

Hibernation, termination or stabilization?

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In Brief

- U.S. pension investors have been actively de-risking their defined benefit plans since the global financial crisis, successfully reducing pension funding volatility to manageable levels. Further movement of portfolios toward long duration fixed income will be increasingly inefficient and unlikely to achieve long term objectives.
- Recent changes to the rules governing pension contributions make it unlikely that a decline in plan funding would impact future contributions, effectively removing a key operating risk that led many sponsors to initiate their de-risking programs. In response, plan sponsors should reconsider their bias toward pension hibernation and termination.
- Maintaining a plan with a modest level of excess return and low risk versus liabilities offers a durable and efficient endgame, with significant benefits to the plan sponsor. This approach looks to redirect glide path strategies away from highly concentrated liability-driven investment programs toward a more efficient low volatility strategic allocation.

In this special report for U.S. private pensions, we present *pension stabilization* as an alternative to the widely adopted industry model of glide path de-risking toward hibernation or eventual termination of existing plans. Central to the argument for hibernation and termination is the notion that a fully funded plan has no better purpose than to settle its existing claims and eventually shut down. This is not the case. By using a stabilization approach, a well-funded plan can expect to generate stable returns in excess of liability costs, preserving its funded status across time and ensuring the payment of benefits.

For a sponsor, a stabilized plan generates pension income and increases balance sheet flexibility. By expanding the scope of liability-hedging assets and making greater use of nontraditional diversified alternatives, pensions can achieve a more efficient combination of moderate surplus returns and low surplus volatility. Those investors currently focused on hibernation and termination of their pension funds may want to reconsider their glide path endgame compared with the benefits of maintaining a well-funded and stabilized pension portfolio.

Consider the following five observations, which are fundamental to our analysis:

Pension plans are no longer subject to strict funding rules. The gradual relaxation of once-stringent regulatory funding standards has reached a point that seemed unthinkable only a few years ago: A decline in funded status will no longer automatically result in higher mandatory contributions. This shift creates an opportunity for pension asset allocation to evolve away from a glide path model that focuses exclusively on risk reduction.

Reducing so-called last-mile risk in pension portfolios is highly inefficient. Most plan sponsors have already accomplished a great deal of de-risking. Without the threat of increased contributions, the argument for continuing to de-risk aggressively with low returning liability-driven investment (LDI) programs diminishes. Pension glide paths need an off-ramp to avoid the inefficiency of hibernation strategies.

The long-term effectiveness of hibernation strategies is overstated. The risks in the LDI model have been masked by exceptional bond market performance, but these risks will become visible and more difficult to surmount going forward as interest rates and credit spreads stop tightening and reverse course. Hibernation strategies will burn through capital over time, squandering hard-won pension funding gains.

Today's better-funded plans can have a positive impact on sponsors' financial performance and operational flexibility. There is a compelling case for the long-term continuation of well-funded and stabilized defined benefit programs—even those that are closed and frozen. The financial benefits can be material, and there are more ways to make use of surplus assets over time than commonly understood.

Pension portfolios can employ a broad investment opportunity set to deliver excess returns without taking excessive risk. Instead of using a two-factor barbell structure—built around a hedge portfolio of narrowly focused fixed income assets and a legacy return-seeking portfolio of equity-focused public and private assets—plan sponsors should consider adopting a four-factor stabilization model using traditional hedge assets, hedge asset diversifiers, traditional public and private return-seeking portfolios, and alternative asset diversifiers.

In this paper, we address each of these topics in depth and offer a competing vision for the future of pension asset management.

The evolution of pension regulation and strategy

History suggests that pension portfolio strategies are highly adaptable to prevailing regulatory and market environments. Although liability-driven investing has come to dominate pension portfolio strategies over the past decade, it is worth remembering that not that long ago liability hedging was considered unnecessary. Prior to the early 2000s, flexible funding rules and favorable accounting treatment provided a benign environment for risk-taking. Portfolios were dominated by equity allocations, with core bonds providing a measure of diversification. From today's perspective, this approach seems needlessly risky, but it was a logical response to the regulatory and market environment at the time.

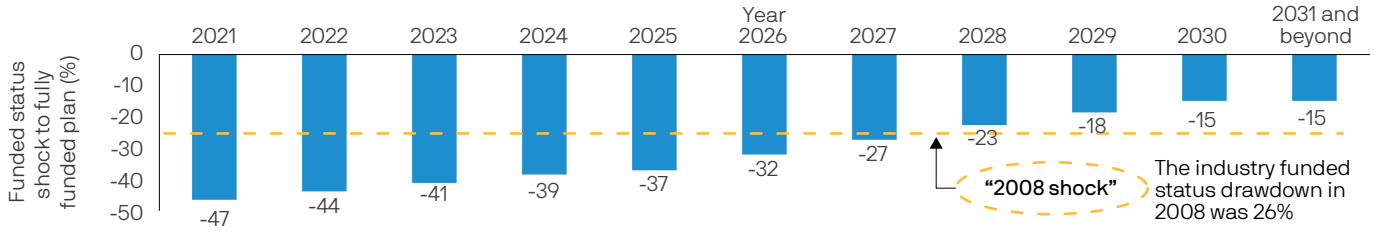
The catastrophic combination of the tech bubble's implosion in 2001 and rapid declines in interest rates laid bare the fundamental asset-liability mismatch within most defined benefit plans. Aggregate plan funding fell more than 30 percentage points in two years, destroying decades of progress. In response, the federal government tightened funding rules under the Pension Protection Act (PPA) of 2006. Stricter accounting treatment excavated pensions from the financial statement footnotes where they had been buried and forced corporations to recognize pension expenses on income statements and treat net liabilities as balance sheet debt.

Shortly thereafter, the global financial crisis (GFC) provided another powerful funding shock, but this time a strict regulatory and accounting framework imposed real costs on plan sponsors for pension fund volatility. The response was immediate: Sponsors replaced core fixed income allocations with long-duration bonds, established glide path programs to provide a road map for future de-risking and began closing and freezing plans in favor of defined contribution schemes. Today, we find sponsors proceeding with pre-planned glide paths toward further portfolio concentration in hibernation strategies—programs whose ultimate aim is to allow sponsors to exit the defined benefit business through an insurance settlement mechanism.

Lately, as sponsors' attention has been focused on de-risking, the pension regulatory system has shifted yet again, moving away from direct recognition of funding gaps and strict funding rules and returning to a model that shields sponsors from the impact of market volatility. In light of this change, plan sponsors need to

Plan sponsors tend to overestimate the probability of a market shock sufficiently large to force a fully funded plan to raise contributions

Exhibit 1: Maximum funded status drawdown for a fully funded pension plan



Source: J.P. Morgan Asset Management. Analysis projects 430(h)(2) 24-month smoothed segment rates under the American Rescue Plan Act (ARPA) by assuming that 417(e) segment rates as of June 2021 remain constant. We use a hypothetical plan with a liability duration of 13 years. In each year we calculate the regulatory funded status of a plan that is 100% funded on a U.S. GAAP basis and measure the surplus as the maximum drawdown before minimum required contributions would be triggered. We assume no credit balance or normal cost. This method may in fact underestimate the drawdown as falling corporate bond yields would raise U.S. GAAP liabilities but leave Regulatory Funding Target liabilities unchanged.

reconsider their approach before taking the final steps toward hibernation or termination. Many have already de-risked sufficiently to remove the possibility of triggering large contributions under current funding rules, and they should not unwind the de-risking that has been achieved already. Instead, they should recognize that the latter stages of the glide path may be costly, even counterproductive, and pivot to an approach that retains the benefits of de-risking while offering more potential for positive performance.

The world has changed (again), and strategy should change with it

A profound—and broadly underappreciated—change in pension funding rules has finally severed the link between movements in discount rates, which impact plan funding, and the size of required contributions. The various iterations of funding relief enacted by Congress since the GFC have culminated in a funding calculation that now bears almost no relation to the current level of interest rates and credit spreads. Considering that the fear of large, unanticipated funding requirements was responsible for driving corporate plan sponsors to allocate vast amounts of capital to long-duration bond portfolios, this change ought to give us pause. Are these allocations to long-duration bonds hedging a risk that no longer exists?

Under current regulations, the probability that a well-funded plan will have to make a required contribution in the coming decade is negligible. Exhibit 1 illustrates the improbability of such a massive funding shock: A drawdown of more than 30%—equivalent to the impact of the GFC—would have to occur over several years to trigger required contributions to a well-funded plan.

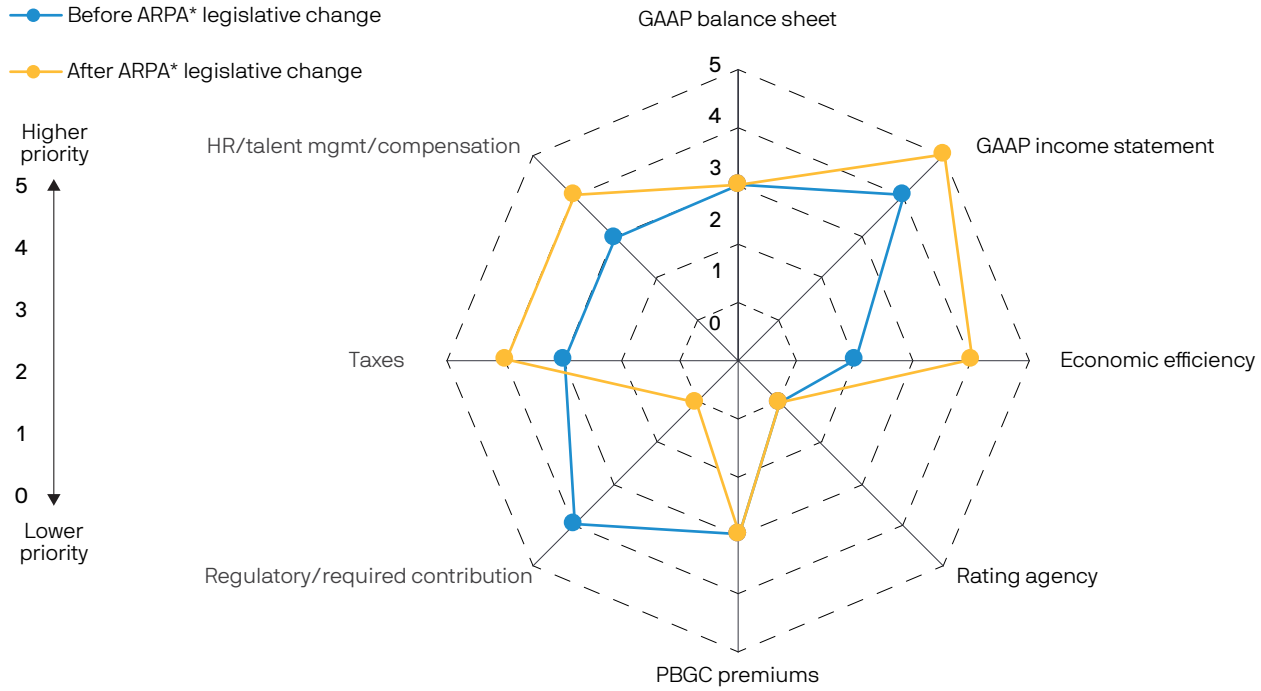
By comparison, most modestly de-risked pensions have an estimated annual surplus volatility of 10% or less. The implications are clear: Additional de-risking is unnecessary for the foreseeable future.

The removal of contribution risk does not mean that investors should withdraw capital from existing LDI programs—at least, not without careful consideration of their plan requirements. Plan sponsors still have competing frameworks, such as generally accepted accounting principles (GAAP) requirements and Pension Benefit Guaranty Corp. (PBGC) premiums, that shape overall pension strategy. Rather than abandoning LDI, we think plans ought to rebalance their focus toward other priorities with the easing of contribution requirements. Exhibit 2 provides an illustrative example of this priority shift both before and after the regulatory change. Broadly speaking, the new regime encourages a wider focus on objectives other than de-risking, such as economic efficiency, income statement benefits, and the efficiency of funding retirement benefits with a tax-advantaged investment vehicle.

Sponsors that have made a substantial commitment to LDI portfolios on the order of 40%–60% of plan assets have already accomplished a great deal of effective risk management while remaining well within the tolerances of a more diversified pension stabilization strategy. But considering that many glide paths envision LDI portfolios reaching 80%, 90% or even 100% of plan assets, *the time to adjust strategies is right now*, before the commitment to inefficient and ineffective hibernation programs robs plans of the returns they need to remain fully funded and stable across time (see Appendix 1).

Strategic priorities will inevitably begin to shift under a new pension regime

Exhibit 2: Scaling the level of focus on key pension objectives



Source: J.P. Morgan Asset Management. For illustrative purposes only.
*American Rescue Plan Act of 2021

Avoiding high "last-mile" hedging costs

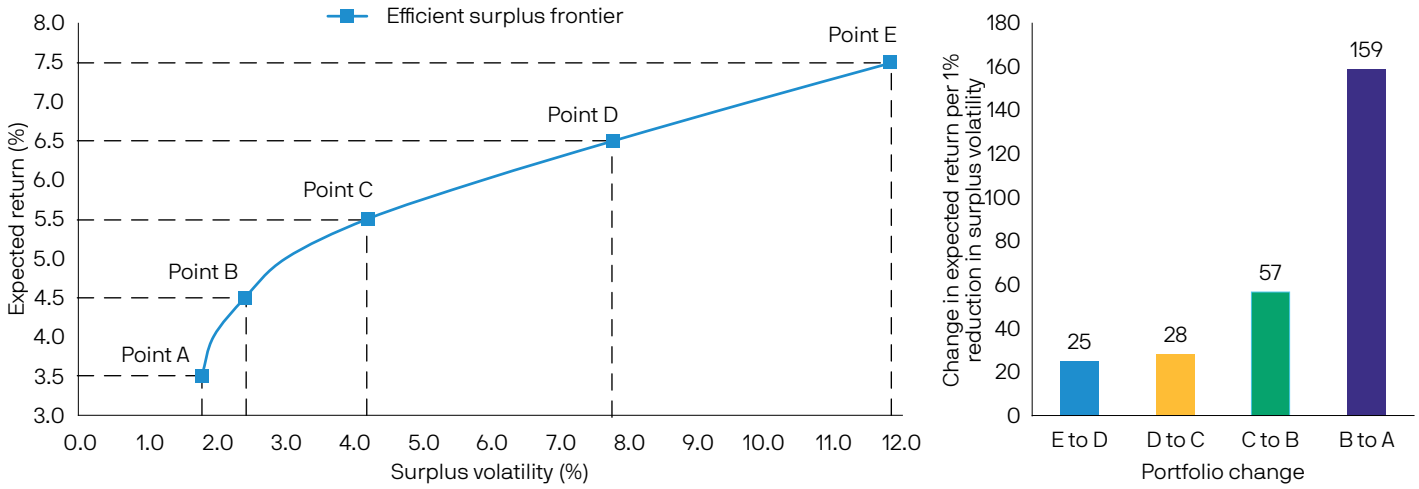
Plan sponsors currently intending to adopt hibernation strategies for pension fund portfolios in the latter stages of their glide paths should consider the inefficiency that they will have to accept to achieve the highest levels of volatility reduction. Similar to the high "last-mile" costs in the shipping business, the final reduction in funding volatility is increasingly costly in terms of reduced returns. Exhibit 3 provides a striking visualization of this problem: The early stages of pension de-risking offer a meaningful reduction in surplus volatility in exchange for modest reductions in returns (moving from Point E to Point D and then to Point C).

This data offers compelling evidence that the early stages of pension de-risking are unequivocally positive for the plan sponsor and participants, as the amount of risk reduction requires only a modest loss of expected return. Later in the de-risking process, however, the portfolio passes an inflection point and the risk-return calculus starts to shift. A plan that seeks to de-risk completely (moving from Point C to Point B and then Point A) achieves very little in the way of risk reduction while dramatically reducing expected returns.

We see no justification for following such an inefficient approach when the marginal benefit is so small. Hibernation-style de-risking might be reasonable if modest funding volatility carried extreme risks for the plan sponsor, but in most cases it does not. The regulatory change that severed the link between discount rates and contributions has taken away the single most compelling argument for hibernation strategies. Other possible rationales, such as those based on accounting volatility or PBGC premiums, simply address far less meaningful risks to the pension sponsor—particularly considering the already significant risk reduction that has taken place. We would suggest that the correct response to this change in the environment is to look for an off-ramp from the old glide path and tactically course-correct to a stabilization program.

Pension plan de-risking confers significant benefits by reducing surplus volatility in early-stage implementation, but the benefits fade with greater risk reduction

Exhibit 3: The impact of progressive de-risking on the potential returns of a plan moving toward hibernation

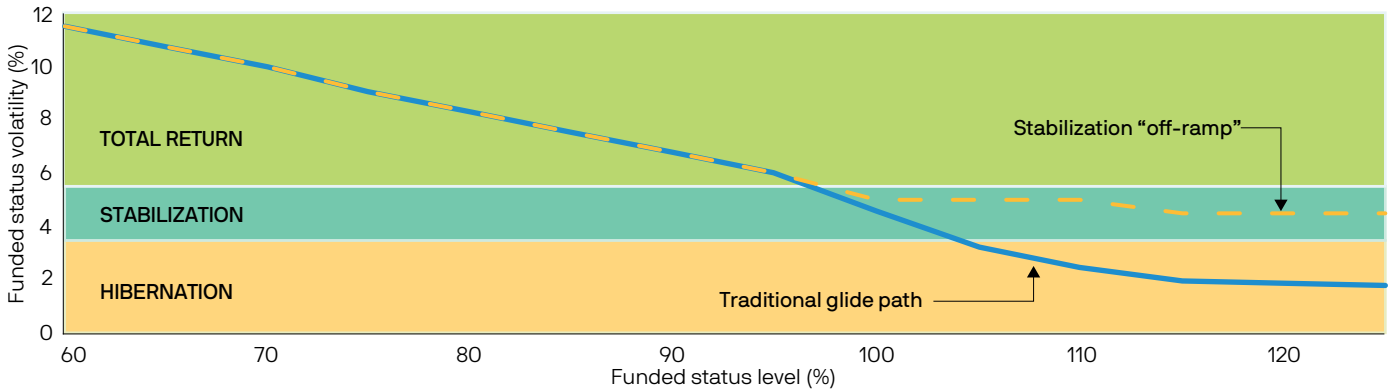


Source: J.P. Morgan Asset Management.

Exhibit 4 illustrates this point: The green line represents a traditional glide path, which begins with a total return-focused strategy exhibiting extremely high levels of surplus volatility. As noted above, the early stages of de-risking are efficient and the traditional glide path and the stabilization model are identical. As the plan approaches full funding, however, the traditional and stabilization approaches diverge. The stabilization strategy (purple dotted line) takes the off-ramp and volatility stabilizes at approximately 5%, which is a level that could easily be maintained in perpetuity. In the illustration, however, the plan undertakes a second, modest de-risking when plan funding crosses 110% (and volatility is fixed closer to 4%). The implication is that a low risk strategy can be achieved and maintained while avoiding the final, inefficient stages of a traditional glide path. The traditional glide path, however, continues to plow ahead in allocating to long-duration bonds even when marginal benefit has disappeared.

The potential benefits to a plan diverging from a hibernation glide path can be observed in the relative levels of plan volatility and funded status

Exhibit 4: Funded status volatility relative to funding level for stabilization vs. hibernation programs



Source: J.P. Morgan Asset Management.

Obviously, investors should expect some benefit from accepting even the slightly higher level of surplus volatility in a stabilization strategy. Indeed, the superiority of this model is its more efficient mix of risk and return. Exhibit 5 provides a visualization of three approaches to pension investing: total return, stabilization and hibernation. The distributions on the left illustrate the range of outcomes relative to the common baseline of pension cost. In broad strokes, the process of de-risking has two effects: It narrows the range of potential outcomes relative to liabilities, but it reduces the expected return of the strategy relative to the pension cost.

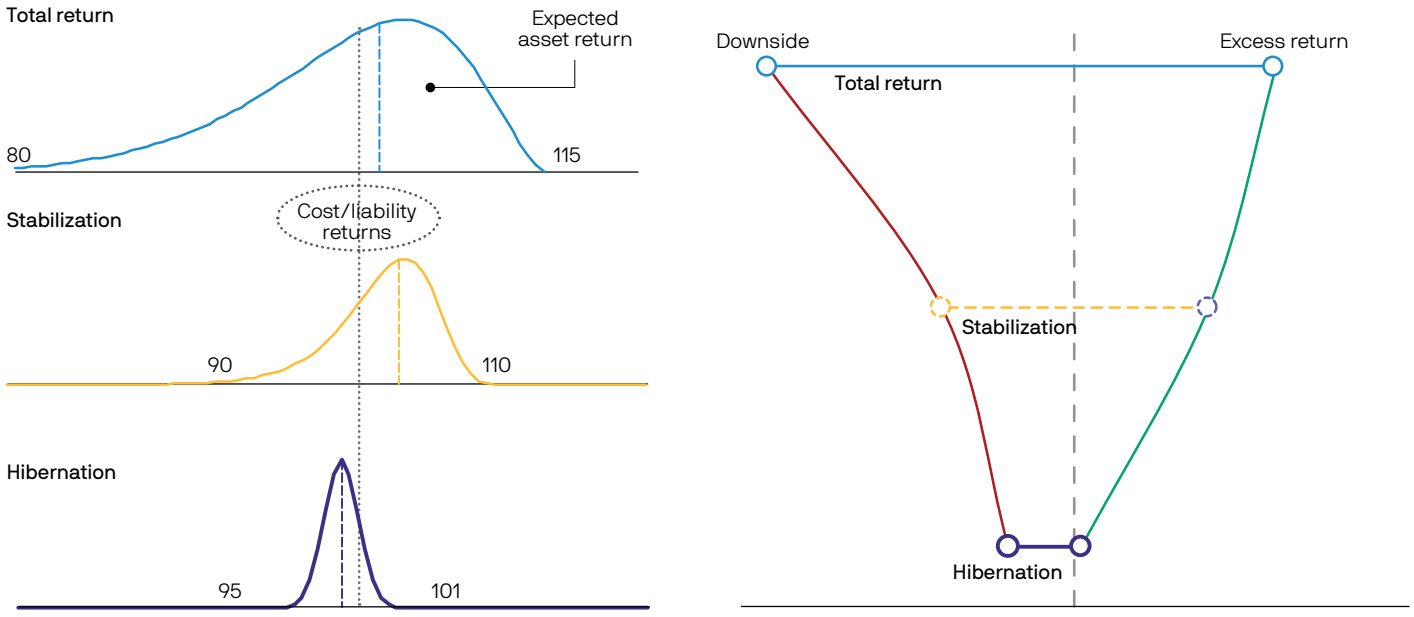
Closer observation, however, reveals the true benefit of a stabilization approach: It offers the most favorable combination of low risk and positive return relative to pension liabilities. The total return approach, by comparison, has a high expected return but also has an extremely wide range of outcomes, including some very negative left-tail scenarios. Conversely, the hibernation strategy offers the least downside risk, but at the price of an expected return that falls *below* the pension cost. The stabilization approach, positioned between these two extremes, retains a bias to positive expected returns relative to liabilities without the left-tail exposure and associated risks of a total return strategy.

The flawed nature of hibernation as an investment strategy

Investors seeking to reduce pension risk to the absolute minimum have placed their faith in the idea that a fully hedged pension plan will remain fully funded across time with little or no adjustment necessary. Although this is appealing in concept, the reality falls well short of the ideal. Structural impediments to maintaining full funding ensure that a fixed income strategy structured to precisely match liabilities will either fail to keep up with liabilities or require future infusions of capital (Exhibit 6).

The optimization made possible by deploying a stabilization strategy balances downside risk with the potential to realize excess return

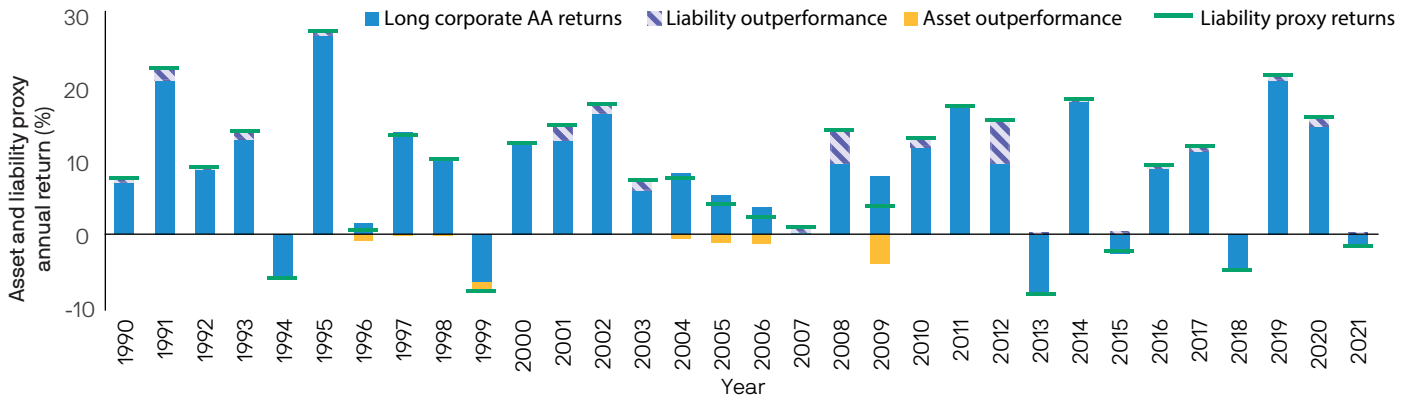
Exhibit 5: Examples of the range of potential outcomes for total return, stabilization and hibernation strategies relative to pension costs



Source: J.P. Morgan Asset Management. For illustrative purposes only.
*American Rescue Plan Act of 2021

The asymmetric vulnerability of bond portfolios to corporate debt downgrades belies the assumption that fixed income investments can precisely match plan liabilities

Exhibit 6: Plan liabilities have outperformed LDI assets by an average of 50bps per year



Source: J.P. Morgan Asset Management; Bloomberg U.S. Long Corporate Aa Index. Liability performance is measured as an estimate of the downgrade and default-free performance on the index.

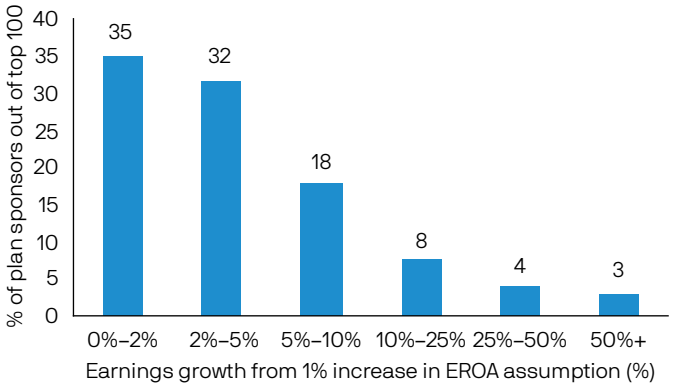
What are the structural impediments to the success of hedging portfolios? We identify a handful of them, each of which is individually modest. Collectively, they are difficult to overcome. These challenges include:

- **Downgrades and defaults:** The most material headwind facing hedge strategies is the asymmetric impact of downgrades and defaults on assets and liabilities. Investment grade (IG) bond portfolios fully absorb the costs associated with credit risk, while liabilities are immune. Historically, we estimate this headwind has cost approximately 50 basis points (bps) of return per year, on average. Active management and flexible credit guidelines can help to offset some of this risk, but strong evidence suggests that active management alone cannot eliminate this downgrade drag (see Appendix 2).
- **Longevity extension**: As science seeks ways to prolong life, the trend toward greater longevity amplifies plan liabilities. Over the long term, this trend results in additional costs, as liability valuations underestimate annuity values and duration measurements. This risk cannot be hedged with a hibernation strategy.
- **Experience losses**: Experience gains and losses outside of longevity reflect the difference between realized and assumed demographic experience (such as the pace of retirement) and serve as an additional source of noise between liabilities and hibernation portfolios.
- **Buyout premiums:** Balance sheet management strategies such as partial pension risk transfers to insurance companies or lump sum buyouts of specific categories of plan participants can crystallize differences in liability valuation due to discounting methodologies and actuarial assumptions. These risks cannot be hedged with a hibernation strategy.
- **Administrative costs**: Lawyers, accountants, pension actuaries and benefit administrators are costly. Even when plans are fully funded, flat rate PBGC premiums continue to accrue. Plan sponsors cannot budget for these expenses in a hibernation strategy.

The persistence of these various costs calls into question the viability of any hibernation strategy that does not begin with significant excess assets. Even if the necessary funding is available, however, the argument for burning through the surplus in the service of a modest additional reduction in volatility is quite weak, particularly when the risk from contributions has faded to the point of insignificance.

Contrary to current industry assumptions, pension surpluses can confer benefits to the plan's corporate sponsor

Exhibit 7: Pension plan earnings growth from a 1% increase in expected return on assets (EROA)



Source: J.P. Morgan Asset Management; data as of December 31, 2021.

The relationship between the pension and the plan sponsor

Plan sponsors may well have forgotten the benefits of a well-funded plan over the past 20 years, but a stabilized plan that seeks to generate modest returns above liabilities will create pension income (Exhibit 7), increase balance sheet flexibility and help protect the corporate sponsor from concerns around credit quality. Although pension surpluses have long been regarded as so-called trapped assets—inevitably falling subject to punitive excise taxes—this outcome is not necessarily true. Plan sponsors can effectively make use of surplus assets in a variety of ways (Exhibit 8). As a result, the argument for maintaining a moderate amount of investment risk, even in a closed or frozen plan, is much stronger than commonly understood.

Well-funded pension plans deliver a wealth of options

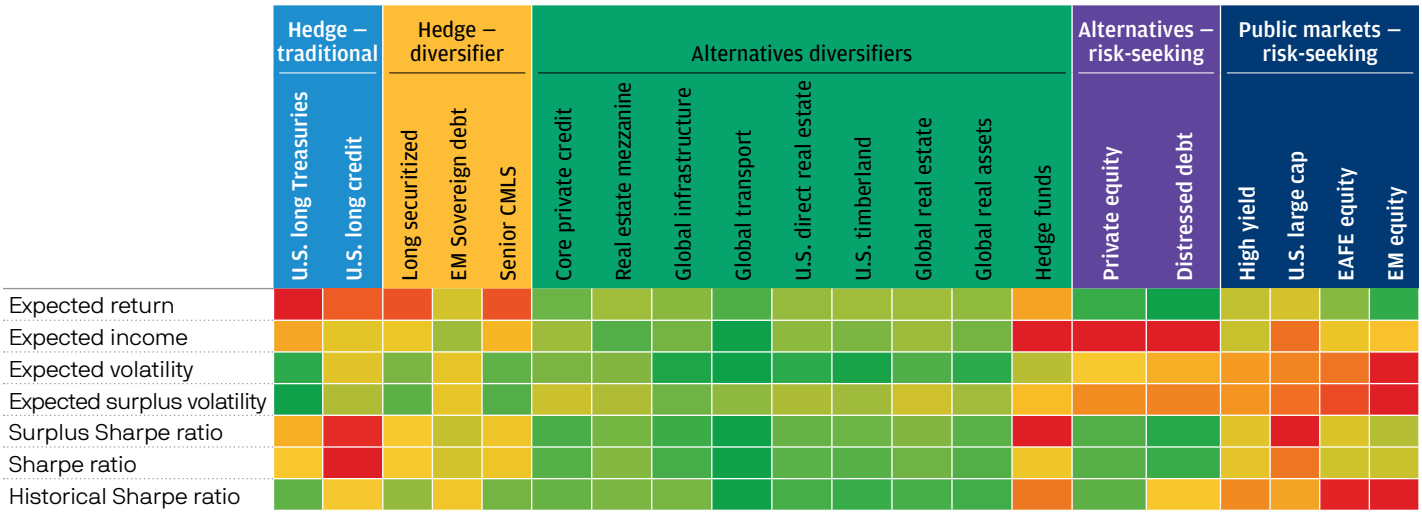
Exhibit 8: Examples of corporate goals facilitated by the application of surplus pension assets

Use of surplus assets	Description and implications
Create capital/cash buffer	Surplus assets protect the plan from the consequences of negative asset-liability performance and allow the sponsor to avoid cash contributions to fund benefit accruals during periods of stress.
Deliver accounting/ financial benefits	A well-funded pension plan with a modest level of expected return relative to liabilities should provide net pension income, balance sheet flexibility and enhanced credit quality.
Provide benefit enhancements	Whether a plan is open, closed or frozen, its sponsor can provide benefit enhancements to existing plan participants. In a period of inflation, rising wages and a competitive labor market, a sponsor's ability to enhance compensation via the pension provision may prove valuable.
Fund retiree medical expenses	Under the Internal Revenue Code (IRC) Section 420, employers may use surplus pension assets that meet certain conditions to pay retiree medical expenses through 401(h) accounts. Only "excess pension assets"* may be transferred, and only one transfer per year is permitted.
Fund a qualified replacement plan	If at least 25% of the surplus is transferred to a qualified replacement plan (QRP), the excise tax on reversion to the sponsor is reduced to 20% upon termination. A QRP must cover at least 95% of the active participants in the plan, and—in the case of a defined contribution QRP—the amounts transferred must be allocated over a period of (at most) seven years.
Facilitate mergers and acquisitions	Surpluses can be effectively monetized in the case of a merger between an overfunded and an underfunded plan, although regulatory restrictions exist.**
Revert assets to the plan sponsor	As a last resort, surplus assets reverted to the plan sponsor are subject to a 50% excise tax, in addition to the employer income tax (which can be as high as 80%–90% depending on the marginal tax rate). However, there is some potential for future tax and regulatory changes to surplus reversion rules that could make these transactions more palatable.

Source: J.P. Morgan Asset Management.
*Excess pension assets are defined as assets exceeding 125% of the sum of the PPA funding target and the target normal cost of the plan year. For a plan with a surplus on a U.S. GAAP basis, this standard should easily capture most of the underfunding, especially with the most recent regulatory discount rate changes under the American Rescue Plan Act of 2021.
**Under Revenue Ruling 2008-45, the transfer of a tax-qualified pension plan from an employer to an unrelated taxpayer when the transfer is not connected with a transfer of significant business assets, operations or employees is not permissible.

Adopting a four-factor stabilization model enables plan sponsors to fine-tune the level of risk relative to the expected return

Exhibit 9: The implications of applying the four-factor risk model and relevant securities to a model plan



Source J.P. Morgan Asset Management. The heat map ranges changes in each pension metric resulting from the addition of an asset class to the typical portfolio. Red boxes reflect deteriorations in the metric while green boxes reflect improvements in the metric.

Portfolio construction and pension stabilization

As noted above, a pension stabilization model is neither return maximizing nor risk minimizing. Instead, it seeks to deliver a more stable level of excess return above liabilities with a prudent level of risk. To achieve this objective, the stabilization framework expands the investment allocation from the current two-factor model that incorporates hedge and return-seeking portfolios. Four broad categories of assets populate a stabilized portfolio: traditional hedge assets, hedge asset diversifiers, traditional public and private return-seeking allocations, and alternatives diversifiers.

Exhibit 9 provides additional detail on the constituents of each category, along with their relative benefits and risks across key dimensions of pension risk. The range of outcomes, from most positive (dark green) to most negative (dark red), represents shifts in portfolio characteristics that arise from introducing each asset class independently to a heavily de-risked pension portfolio (70% LDI, 30% equity).

Hedge assets should be broadly aligned with liabilities but sufficiently diversified across major fixed income sectors to avoid credit risk concentrations that can lead to periodic underperformance. Return-seeking portfolios can retain traditional equity exposures while taking advantage of the full spectrum of public and private opportunities, with less emphasis on reaching the highest total returns and greater focus on risk diversification and income generation. Liquid and illiquid assets should be balanced to ensure that access to capital is maintained but opportunities to generate uncorrelated returns are captured effectively (Exhibit 10).

Implementing a four-factor stabilization program allows pension plans to tailor their asset exposures

Exhibit 10: The four factors required to implement a stabilization program by type, purpose and key constituent securities

Category	Purpose	Key constituents
Traditional hedge assets	To maintain close alignment with pension liabilities across multiple risk factors	● U.S. Treasuries ● IG corporate debt ● Futures/swaps overlays
Hedge asset diversifiers	To provide diversification and return potential in the hedge portfolio while reducing corporate credit concentration risk	● Long-duration securitized debt ● Securitized credit ● Emerging market sovereign debt
Public and private return-seeking portfolios	To generate high returns with higher volatility tolerance	● Public equity ● Private equity ● High yield (HY) bonds
Alternative asset diversifiers	To lower volatility by making use of alternative asset classes	● Private credit ● Mezzanine debt ● Core real assets ● Hedge funds

Source: J.P. Morgan Asset Management.

The following case study offers an example of how allocations can migrate toward the stabilization approach while remaining internally diversified and low risk relative to pension liabilities.

A stabilized pension case study

A stabilized portfolio generates expected returns in excess of liability growth while exhibiting only moderately higher funded status volatility than a traditional hibernation strategy. Achieving these dual objectives is impossible with a limited toolkit of traditional LDI and equity-heavy return-seeking strategies; investors also need to make meaningful allocations to both hedge portfolio diversifiers and alternative asset diversifiers to deliver a more flexible, efficient solution (Exhibit 11).

Stabilization portfolios allocate meaningfully to both alternative asset diversifiers and hedge portfolio diversifiers

Exhibit 11: Portfolio allocation ranges and parameters

	Total return	Stabilization	Hibernation
Hedge—traditional	10%–40%	40%–65%	80%–100%
Hedge—diversifier	–	10%–20%	0%–5%
Alternative—diversifier	0%–5%	10%–20%	–
Alternative—risk-seeking	0%–25%	0%–5%	–
Public markets — risk-seeking	40%–60%	0%–10%	0%–10%
Surplus return	100bps–300bps	50bps–100bps	(50)bps–0bps
Surplus volatility	6%–12%	4%–6%	2%–4%
Hedge ratio	20%–60%	60%–100%	95%–100%

Source: J.P. Morgan Asset Management.

These broad parameters tell only part of the story. To examine the value of stabilization in more detail, we constructed specific representative portfolios and produced both forward-looking and back-tested analytics (Exhibit 12). The results confirm that the stabilization portfolio achieves exactly what it was designed for: delivering modest surplus returns with low levels of volatility. Importantly, the portfolio maintains a 95% liability hedge ratio while reducing the risk concentration in long-duration corporate fixed income.

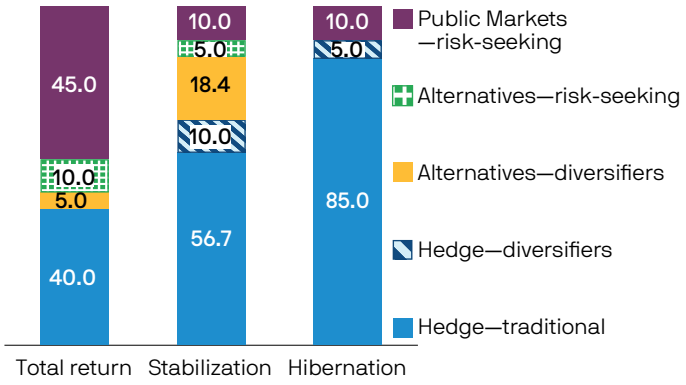
To ground this analysis in real-world experience, we ran a back-test from 2001 through 2020.[1] The results were compelling:

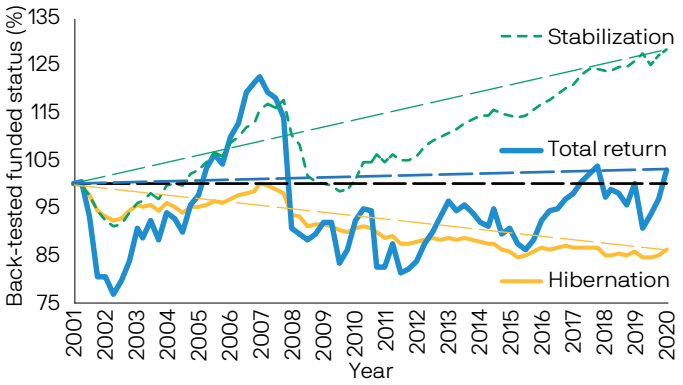
- The stabilization portfolio gradually built a healthy surplus, then experienced a moderate drawdown during the GFC (though only back to full funding); it subsequently regained its prior peak funding within a few years.
- As expected, the total return strategy hit a higher level of peak funding but experienced a much more severe drawdown during the GFC, leaving the plan in a deficit. The plan didn't regain full funding for nearly a decade, despite subsequent positive returns.
- The hibernation portfolio experienced a lower level of peak funding and a less significant percentage drawdown during the GFC, but, critically, it never recovered from the loss of capital; its funded status declined continuously for the following 10 years.

[1] If we had instead started in 2000, the total return portfolio would have ended the projection below 75%, and if we had started in 1999, the total return portfolio would have ended the projection at 55%. Most importantly, stabilization outperforms hibernation over every inception date.

Stabilization can provide a smoother ride than total return while outperforming liabilities over market cycles

Exhibit 12: Stabilization case study





		Total return	Hibernation	Stabilization
Allocation	Public equity	45.0	5.6	10.0
	HY/bank loans	—	4.4	—
	Private equity	10.0	—	5.0
	Real assets	5.0	—	9.2
	Private credit	—	—	9.2
	Securitized/EMD	—	5.0	10.0
	Treasury/STRIPS	16.0	8.7	18.6
	U.S. Corp A+	11.9	61.2	28.3
	U.S. Corp BBB	12.1	15.1	9.7
Portfolio statistics	Surplus return (%)	1.92	-0.42	0.94
	Surplus volatility (%)	10.16	2.62	4.57
	Surplus Sharpe ratio	0.248	0.07	0.338
	Hedge ratio (%)	49	100	95
	World equity beta	0.45	0.06	0.03
	Funded status VaR95 (%)	-16.7	-4.3	-7.5
Funded status back-test	Ending funded status (%)	103%	86%	129%
	Avg annual MTM pension expense/(income) ($mn)*	($0.4mn)	$1.9mn	($4.0mn)
	Avg annual PBGC premiums and admin costs (bps of assets)**	27	32	10
	Worst quarter funding drawdown (%)	-20.10%	-4.60%	-6.40%
	Realized funded status volatility (%)	10.00%	2.20%	3.40%

Source: J.P. Morgan Asset Management. *Pension expense calculations assume mark-to-market (MTM) accounting and immediate recognition of asset and actuarial gains or losses. The plan size is assumed to be $100mn. **PBGC premiums at the start of the projection are set at 2021 actual levels and estimated in subsequent years by applying inflation indexing of 2.5% per year. Analysis assumes an average projected benefit obligation (PBO) per participant of $115k based on analysis of 5500 regulatory filings. Additionally, administrative costs of $40 per participant per year are paid out of plan assets. Quarterly portfolio rebalancing is assumed.

Conclusion

The long transition from a risky model of total return investing to a more prudent style of asset-liability management has brought real benefits to pension plans, their participants and their sponsors. But the pension industry's extreme focus on volatility reduction—sometimes at the expense of broader investment objectives—only made sense within a regulatory framework that attached harsh penalties to underfunding in the wake of the GFC. For better or worse, that type of regime no longer exists. What investors need now is a course correction to a more stable and effective long-term solution. Today, with ample funding and an abundant set of investment opportunities available to them, pension practitioners should adapt by setting a new long-term strategic goal: stability.

APPENDIX 1: Setting appropriate return targets

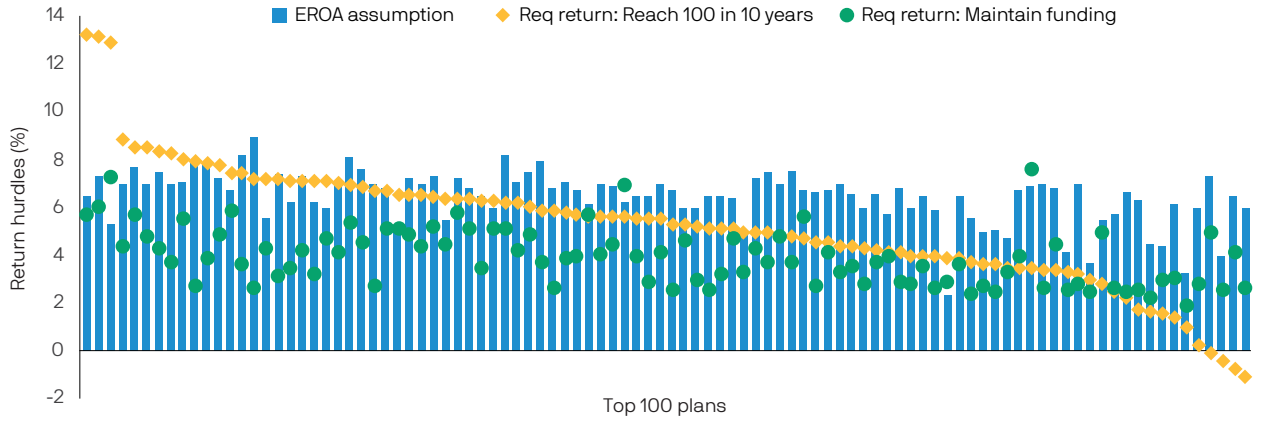
How much return is enough? The answer to this question will vary plan by plan, as each case offers a somewhat unique set of circumstances. However, for the vast majority of plans, a real benefit accrues from taking some risk in order to outperform liabilities while avoiding the excessive risks associated with an undiversified exposure to higher volatility investment strategies.

In our 2021 Corporate Pension Peer Analysis, we highlight a visible disconnect between pension plan return needs and return targets, as evidenced by U.S. GAAP expected return assumptions[2] (Exhibit A). In order to construct a resilient stabilization portfolio, plan sponsors must carefully gauge their return needs and risk tolerances, which will be unique to each plan's circumstances. Exhibit B outlines the factors that drive a given level of required return for a particular plan.

[2] We acknowledge that for some sponsors, accounting expected return assumptions may be somewhat divorced from portfolio construction. However, the lack of alignment across the pension universe is pervasive.

Most pension plans demonstrate a pronounced misalignment between return needs and return targets

Exhibit a: Top 100 plans—2020 return hurdles vs. return targets



Source: J.P. Morgan Asset Management, Company 10-K filings; data as December 31, 2020.

Plan sponsors must carefully gauge their return needs and risk tolerances, which will be unique to each plan's circumstances

Exhibit B: Considerations in determining return target and risk tolerance

Consideration	Description and implications
Starting funded status	All else equal, better-funded plans can target a lower level of expected return than poorly funded plans. In our view, the stabilization model begins when a plan is close enough to full funding that a lower risk strategy is viable. Unlike hibernation, the stabilization opportunity set is broad enough to accommodate different levels of target returns.
Liability assumption aggressiveness	The most critical element of pension financial statements is funded status, which is a key component of both balance sheet and income statement metrics. A well-funded, stabilized plan makes good use of the balance sheet asset by allowing it the flexibility to generate income while avoiding drawdowns that could impact the balance sheet.
Administrative and downgrade/default costs	We estimate an average of 50bps per year of downgrade and default costs, but PBGC premium costs will vary based on average benefit size. For the vast majority of plans, at full funding flat rate premiums will run 10bps per year (or less) but will increase with inflation as premium rates rise. Premium optimization exercises, such as buying out small-balance participants, can bring this figure down over time.
Probability of triggering required contributions	With the recent U.S. pension regulatory relief implemented under the American Rescue Plan Act of 2021 (ARPA), required contributions should not be a binding constraint on pension asset allocation. The highly concentrated and low yielding aspects of a hibernation strategy may be unjustifiable under the circumstances.
Financial statement volatility tolerance	The most critical element of pension financial statements is funded status, which is a key component of both balance sheet and income statement metrics. A well-funded, stabilized plan makes good use of the balance sheet asset by allowing it the flexibility to generate income while avoiding drawdowns that could impact the balance sheet.

Source: J.P. Morgan Asset Management.

Useful insights can be gleaned from the relationship between a plan's expected returns, which are derived from its asset allocation mapped against market return expectations, and its required returns, which are a mechanical output of the plan's funding and demographics:

- On average, they are similar, suggesting that the aggregate asset allocation today is broadly sufficient to allow plans to reach full funding—if allocations remain stable and expected returns can be realized.
- These returns may not, however, be realistic in a world of low market return expectations and heavily de-risked pension plans. Reaching levels of return consistent with either expectations or required returns will likely necessitate a more balanced and thoughtful asset allocation than a hibernation strategy will allow.

APPENDIX 2: Observing liability outperformance in the real world

We have several concerns regarding the long-term viability of hibernation strategies:

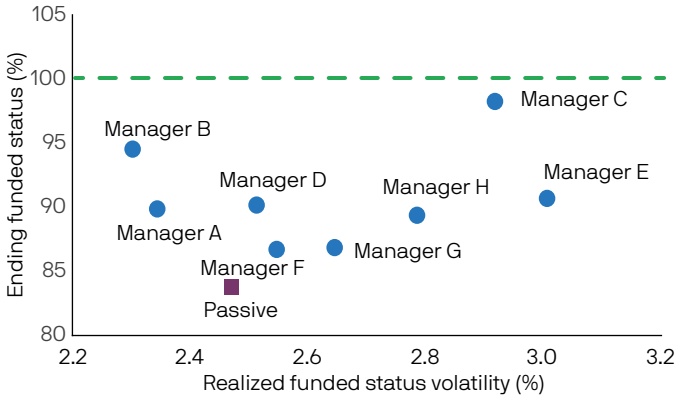
- They ignore persistent costs associated with pension liabilities.
- They are inefficient from a risk-return standpoint.
- They do not appear to meet expectations for preserving funded status.

A common defense of late-stage LDI and hibernation strategies is the suggestion that active management will offset the costs described above. Earlier in this paper, we outlined the various headwinds to matching liability performance and provided a rough estimate for their individual costs over time. But we can approach the evaluation of hibernation investing from a different angle, by using the observed performance of active and passive fixed income managers relative to a liability benchmark.

In Exhibit C, we run funded status back-tests using 13 years of historical returns for a hypothetical plan that hibernated while 100% funded, using a variety of active and passive fixed income strategies. The passive strategy performed worst of all, erasing 16.5% of funded status, or approximately 1.2% per year—even before allowing for additional plan losses from longevity extension or experience change. The analysis clearly shows that active management can help offset some costs, although the performance improvement comes with higher funded status volatility and does not eliminate the loss of funded status over time.

Back-testing active and passive fixed income strategies for a hypothetical pension plan in hibernation reveals the potential impact on funded status

Exhibit C: Funding status volatility of hypothetical 100% funded plan



Source: eVestment; eight U.S. long credit managers with longest performance history from December 31, 2007, through June 30, 2021. Analysis assumes a split of 80% active long credit and 20% custom passive Treasury, rebalanced each month to achieve a 100% interest rate hedge ratio. Each data point indicates a sample plan that was 100% funded on a U.S. GAAP basis at the start of the projection. Liabilities are valued on the FTSE Aa Corporate Pension Discount Curve. Active fees are assumed to be 20bps per annum, while passive fees are assumed to be 5bps per annum. PBGC premiums at the start of the projection are set at 2021 actual levels and estimated in subsequent years by applying inflation indexing of 2.5%. Analysis assumes an average projected benefit obligation (PBO) per participant of $115,000 based on analysis of Form 5500 data. Additionally, administrative costs of $40 per participant per year are paid out of plan assets.

While this analysis does not directly incorporate all of the costs described above, it does provide a real-world illustration of the difficulty in keeping pace with liabilities even when using active management. If we were to incorporate all costs into the liability benchmark, the prospects for success would become even more remote.

This analysis is not an argument against LDI-style fixed income investing. Instead, it provides visible evidence that investing all of a plan's assets in LDI is unlikely to be successful over the long run—if success is defined as maintaining funded status. Absent a strong tactical view on movements in rates or spreads, a traditional LDI portfolio should be the natural home base for the fixed income allocation of a pension plan. The key takeaway here is that something else—quite apart from LDI fixed income—is needed if plan sponsors are going to meet their objective of achieving pension stability, and that search necessarily leads us away from the hibernation model to a new concept: pension stabilization.

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