Navigating the De-Risking Road

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All data presented are as of September 30, 2019, unless otherwise noted.
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Intro to NISA

25 YEARS
experience with liability-based strategies

Clients include
29 out of **50**
of the largest U.S. corporate retirement plans

$362 BILLION
in fixed income, equity, and derivatives notional under management

Over
$1 TRILLION
total liabilities of our pension clients

Assets under management (AUM) data represents $221 billion of physical assets and $141 billion in derivatives notional value as of 9/30/19. Largest U.S. corporate retirement plans based on data from *Pensions & Investments* online, as of September 30, 2018. Total client pension liability estimate based on NISA calculations and the latest available asset data from Standard and Poor's Money Market Directories. NISA's calculations incorporate NISA's Pension Surplus Risk Index, or PSRX®, and uses the average funded status estimate of the 100 largest US corporate defined benefit pension plans, as determined by NISA based on publicly available information.

AGENDA

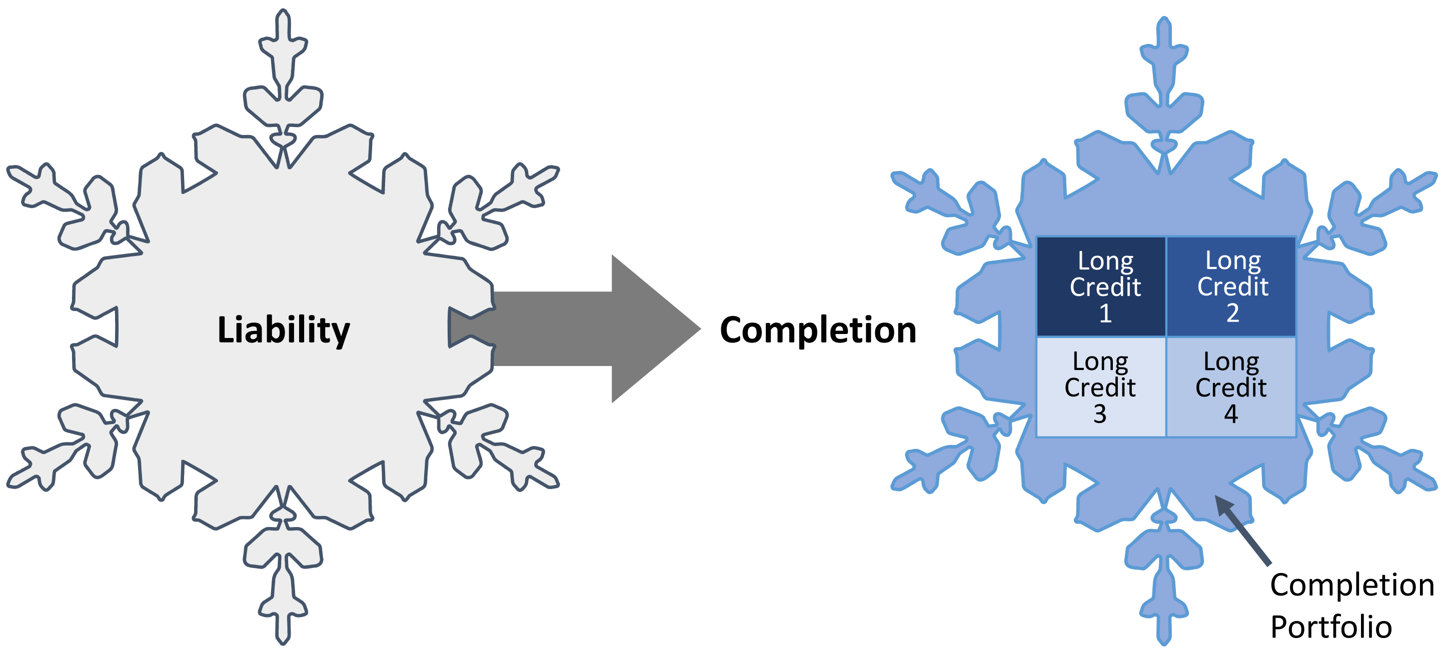
Objective: Examine key elements of hibernation strategies.

- ☐ How to select a hibernation strategy
- ☐ How to evaluate risk/return tradeoffs in the end-state
- ☐ How hibernation strategies and buyouts can work together

Comparing Completion and Custom Credit

	Completion	Custom Credit
1) Customization		
2) Centralized risk management		
3) Generally results in lower funded status volatility		
4) Accounts for spread exposure originating from return-seeking assets		
5) Allows diversified sources of alpha		
6) Easier manager consolidation		
7) Scalability		
8) Annuity buyout integration		

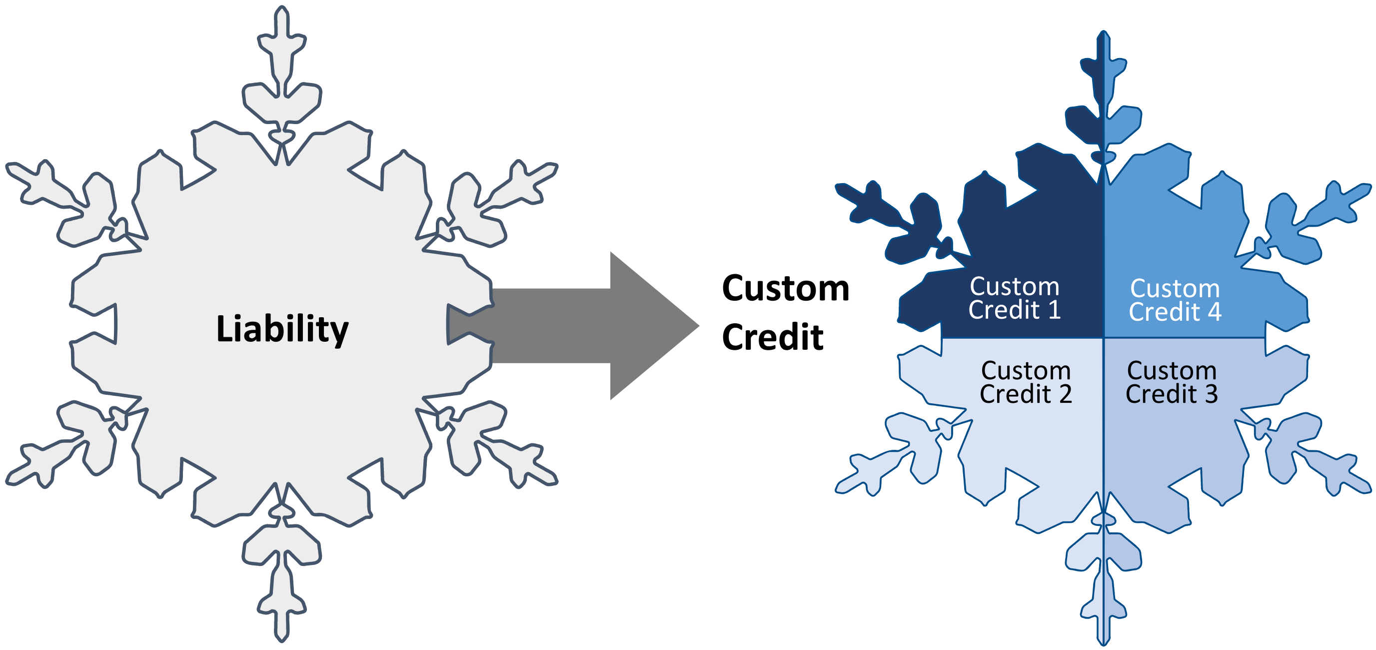
Comparison of Completion and Custom Credit Strategies



Benefits

- All customization is concentrated in one specialty manager
- Most managers have a published benchmark
- Focus on maintaining hedge target and reducing yield curve risk
- Typically has higher return-seeking allocation than other end-state solutions
- When completion manager also manages credit it allows for strategic adjustments to spread hedge

Comparison of Completion and Custom Credit Strategies



Benefits

- Manager is responsible for the entirety of the liability profile
- Easier to adjust spread hedge target
- Lower expected tracking error due to credit customization
- Allows for integrated portfolio and strategy management for plans seeking one provider

Comparing Completion and Custom Credit

	Completion	Custom Credit
1) Customization	↔	
2) Centralized risk management	↔	
3) Generally results in lower funded status volatility	→	
4) Accounts for spread exposure originating from return-seeking assets	←	
5) Allows diversified sources of alpha	←	
6) Easier manager consolidation	→	
7) Scalability	←	
8) Annuity buyout integration	→	

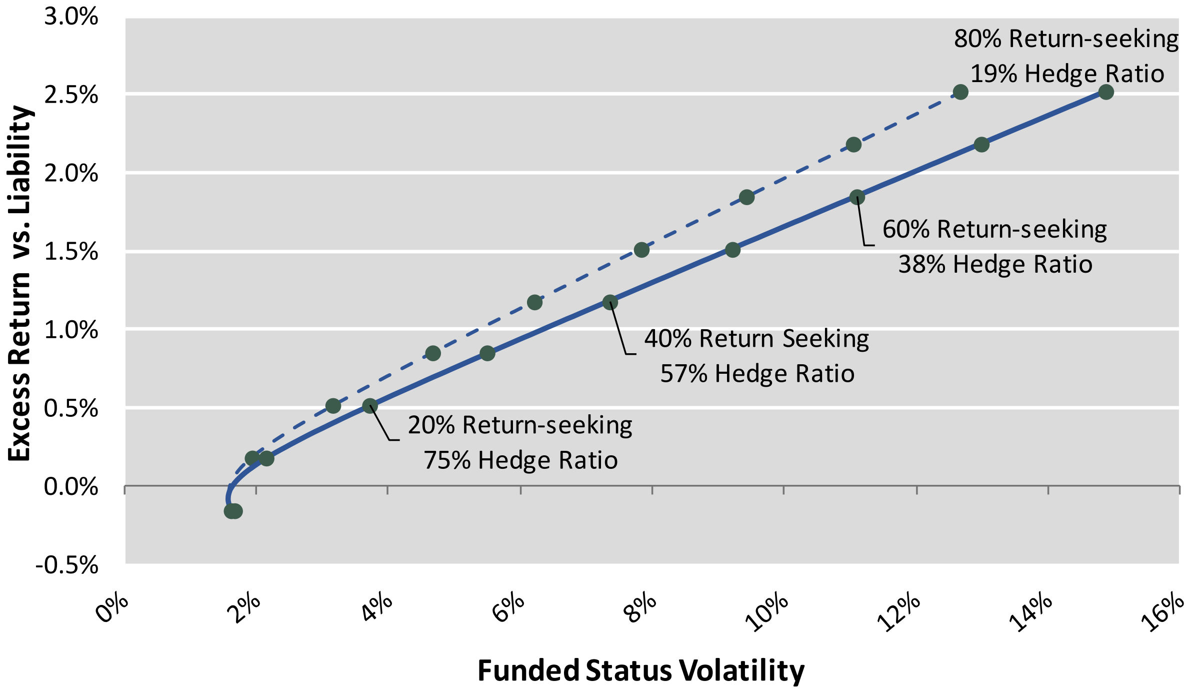
Two Metrics for Measuring a Hibernation Portfolio

Funded Status Volatility (FSV)
An effective hibernation portfolio will seek to minimize funded status volatility by managing the general rate risk, spread risk and yield curve risk inherent in the liability.

Expected Return (ER)
To maintain funded status, the plan's assets will need to earn the return of the AA-discounted liability and any additional expenses.

Objective: Obtain the lowest funded status volatility that allows the plan to keep up with the liability.

Plan Risk Return Tradeoff



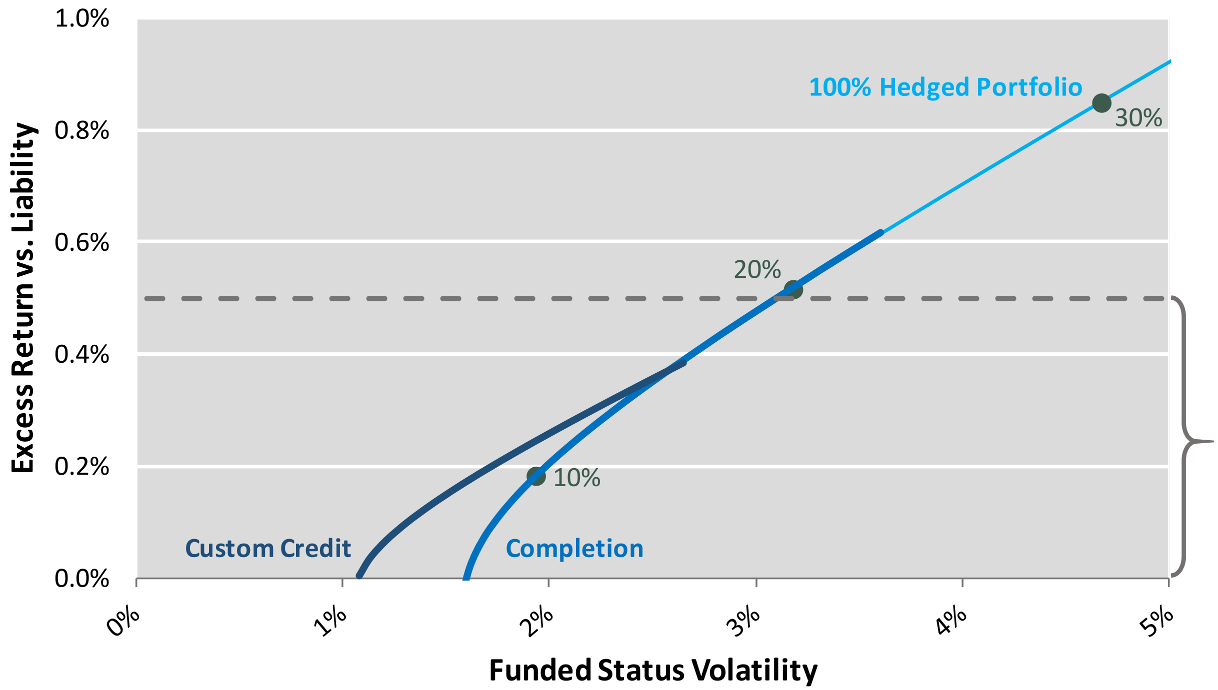
What is Hibernation?

- Return-Seeking: < 25%
- Hedge Ratio: > 75%
- Funded Status: Any, but generally ≥ 95%

Based on an illustrative plan that is 100% funded on a FTSE AA basis versus a 12-year duration liability as of 7/31/2019. Return-seeking allocation is 100% MSCI ACWI. Equity risk premium is assumed to be 4%. Fixed income asset allocation is 37% Bloomberg Barclays Long Treasury, 40% Bloomberg Barclays Intermediate Credit, and 23% Bloomberg Barclays Long Credit. The asset allocation that includes an overlay utilizes derivatives to achieve a 100% general interest rate hedge. The use of derivatives introduces additional requirements and risks to the portfolio. Volatility figures are calculated by NISA based on historical index correlations and option implied prospective volatilities. Correlation estimates use 180 months of data exponentially weighted.

Sources: Bloomberg Index Services Ltd., FTSE Russell, NISA calculations.

Comparing Hibernation Solutions



Plans may choose to target higher excess return to account for additional cost considerations:

- Fixed rate PBGC Premiums
- Operational Expenses

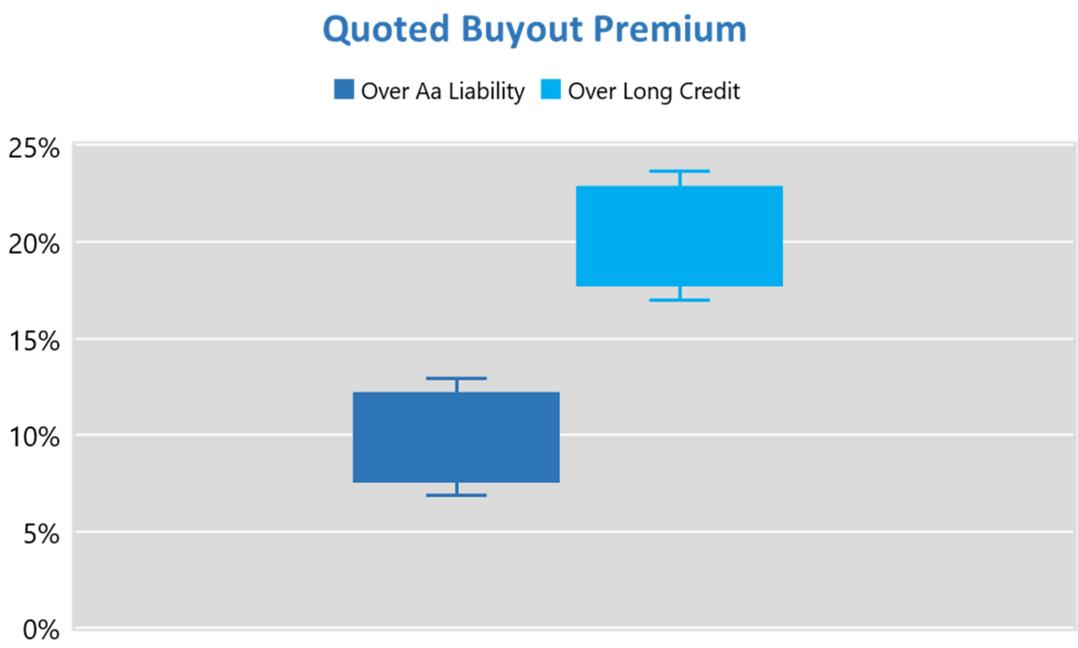
Hibernation portfolios seek to minimize funded status volatility by maintaining a material general interest rate hedge, spread hedge and yield curve match to the liability.

Based on an illustrative plan that is 100% funded on a FTSE AA basis versus a 12-year duration liability as of 7/31/2019. Return-seeking allocation is 100% MSCI ACWI. Equity risk premium is assumed to be 4%. Completion fixed income asset allocation is 37% Bloomberg Barclays Long Treasury, 40% Bloomberg Barclays Intermediate Credit, and 23% Bloomberg Barclays Long Credit. The asset allocation that includes an overlay utilizes derivatives to achieve a 100% general interest rate hedge. The use of derivatives introduces additional requirements and risks to the portfolio. Custom Credit fixed income asset allocation is a blend of custom credit and treasury securities that is assumed to keep up with the liability. Volatility figures are calculated by NISA based on historical index correlations and option implied prospective volatilities. Correlation estimates use 180 months of data, exponentially weighted.
Sources: Bloomberg Index Services Ltd., FTSE Russell, NISA calculations.

When to do a Buyout

A hibernation portfolio allows flexibility to

- Wait for the right price
- Allow assets the potential to grow to target level



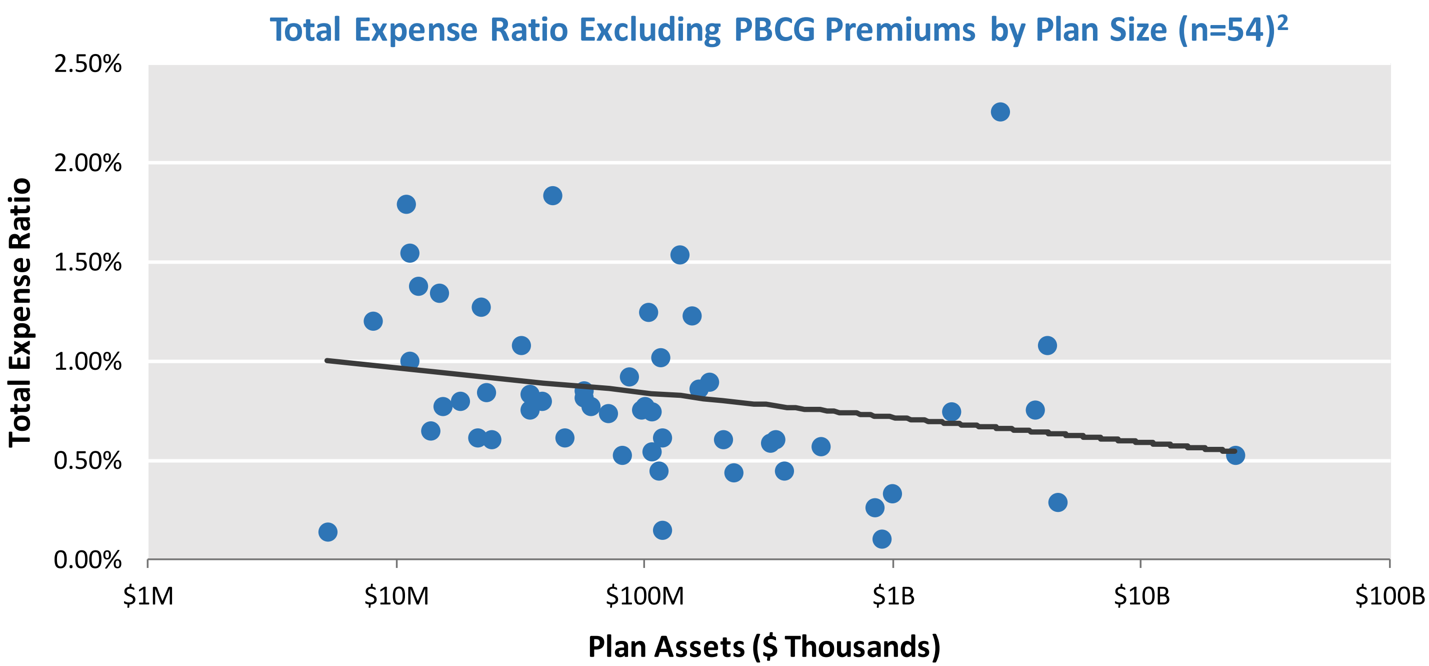
Buyout Premiums ranged from 7% to 13% over a Aa Liability, and 17% to 24% over Long Credit spreads over the prior 7 year observation period.

Data shown for an illustrative liability with a duration of 12.0 years based on the FTSE AA discount curve as of 07/31/19. NISA calculations based on data from Bloomberg Index Services Ltd., FTSE Russell, and Penbridge Advisors. Middle lines reflect average premium and upper and lower boundaries reflect the average of one standard deviation range. Annuity buyout liability discount rates are derived from buyout rates for large plans of various durations collected monthly by Penbridge Advisors from a select group of insurers. The average rates at each duration are interpolated to match the duration of the plan's cash flows. The annuity buyout liability discount interest rates are inclusive of the insurers' contract and administration expenses. The rates do not reflect insurance pricing adjustments for mortality, early retirement or optional forms, which would require underwriting of plan-specific design elements and census characteristics.

While you wait – Reduce Costs

BCG Defined Benefit Expense Survey – Rolling Period Results[1]

- Most plans' total expense ratios are between 0.50% and 1.00%.



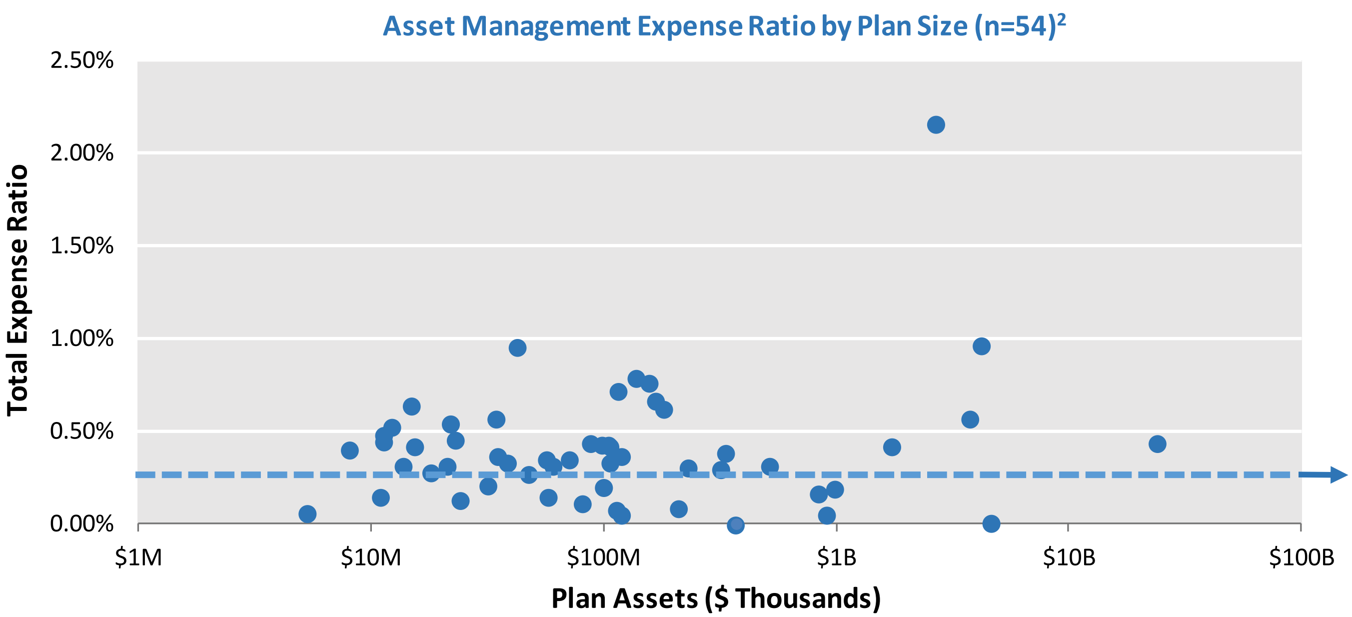
[1] Source: BCG Pension Risk Consultants I BCG Penbridge.

[2] Total Expense Ratio is defined as total DB plan expenses divided by assets. Excludes survey respondents that did not supply a response for all expense categories. Expense categories include Trust and Custody, Administration, Actuarial, Investment Management, Investment Advisory (discretionary and nondiscretionary), Legal, Plan Audit, Insurance (operational) and Other. Responses of "NA" were treated as zero expense.

While you wait – Reduce Costs

BCG Defined Benefit Expense Survey – Rolling Period Results[1]

- Asset management expenses vary depending upon asset allocation.



By moving to hibernation, asset management fees can be reduced to less than 25 basis points.

Please note that reported plans with asset management expenses less than 0.25% may have asset allocations differing from that of Hibernation.

[1] Source: BCG Pension Risk Consultants I BCG Penbridge.

[2] Asset Management Expense Ratio is defined as total DB asset management expenses divided by assets. Excludes survey respondents that did not supply a response for all expense categories. Expense categories include Investment Management. Responses of “NA” were treated as zero expense.

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Q & A

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