BEYOND TRADITIONAL LDI

THE ROLE OF LDI DIVERSIFIERS IN DB PLAN PORTFOLIOS

RUSSELL INVESTMENTS RESEARCH

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Beyond traditional LDI: The role of LDI diversifiers in DB plan portfolios

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In recent years, the funded status of corporate defined benefit (DB) plans has shown significant improvement. DB sponsors have advanced along their de-risking glidepaths,[1] allocating significant portions of their portfolio to various public investment grade (IG) fixed income assets, such as long credit and U.S Treasury bonds, as part of their liability-driven investing (LDI) strategy. While these asset classes effectively address many aspects of liability hedging, they do not eliminate all risks. Other asset classes may be advantageous for sustaining and enhancing funded status over the long term.

Sponsors may explore additional fixed income options to complement public IG fixed income, such as IG securitized fixed income and private placements, to enhance spread diversification and boost return potential. While it is essential for sponsors to consider factors like liquidity, complexity and fees, these LDI diversifiers can improve outcomes and expand the opportunity set within their overall portfolio strategy.

Introduction

By design, improvements in DB funded status have resulted in increased allocations to IG fixed income. This asset class has enabled DB sponsors to hedge a substantial portion of their economic liability risks, especially when employing a "hedge long first" approach to efficiently hedge the riskiest, longest-dated liabilities. Additionally, LDI overlays using interest rate derivatives have further helped sponsors to maximize the effectiveness of LDI programs.

For many, the largest and most important economic liability risks have been addressed, and they can now focus on fine-tuning the LDI program and optimizing any growth potential needed. As IG public fixed income becomes a larger portion of portfolios, some risks diminish while others become more pronounced.

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For instance, in underfunded DB plans, two primary risks tend to dominate the plan's "surplus risk," which is the risk of a decline in funded status due to asset and liability mismatches:

- **Equity risk**, which is held in portfolios to generate return to improve funded status, and
- **Interest rate risk** from the liabilities, which is the risk of rates falling, leading to higher liabilities and reduced funded status. This risk is at least partially hedged by fixed income in the plan's underfunded stage.

As a DB plan progresses along its glidepath by increasing allocations to fixed income, the sources of surplus risk shift away from equity and interest rate risk as these exposures are either reduced or hedged. Consequently, other risks like credit spread and non-market risks become more prominent.

Exhibit 1: Surplus volatility decomposition for various pension plan scenarios. See endnotes for assumptions.[2]

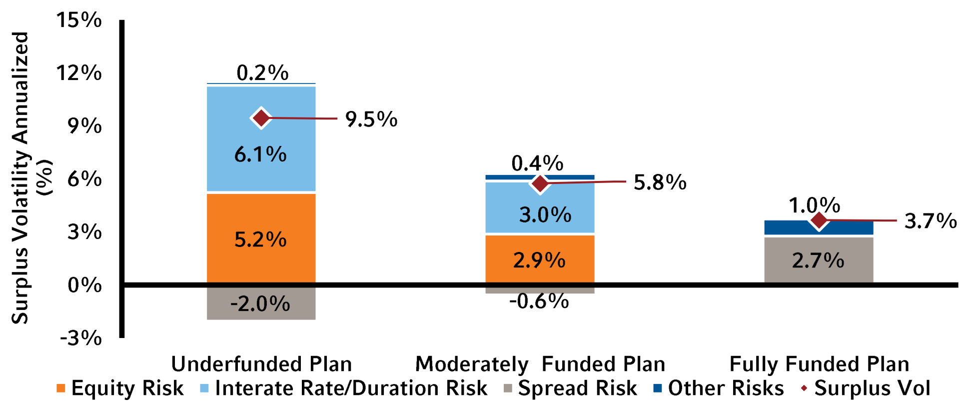

Exhibit 1 illustrates that early in a plan's lifecycle, equity risk and interest rate risks are the most prominent. However, as the funded status improves and more assets are allocated to fixed income, duration and equity risks diminish, while spread risk becomes more pronounced. Diversifying this risk becomes increasingly important as the plan matures. Although these and other risks may not be fully eliminated without pension risk transfer,[3] steps can be taken to mitigate them.

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Liability risk factors

In a separate white paper,[4] we identified that U.S. DB economic liability risks can be largely categorized into three areas: 1) government interest rate changes, 2) credit spread changes, and 3) yield curve shifts.

Government interest rate changes represent the largest and most critical risk and should be prioritized when hedging liabilities. These changes account for 75-80% of the overall economic liability risk on average over time. For well-funded plans, this risk is often fully hedged through both physical and synthetic fixed income instruments.

Yield curve shifts, while smaller, remain significant, comprising 5-10% of the economic liability risk on average over time. LDI managers can hedge curve risk exposure with considerable precision using fixed income instruments (both physical and synthetic) of various durations.

Although interest rate risk and curve risk are relatively straightforward to hedge, given a sufficiently large LDI allocation tailored to the liability key rate duration profile, credit spread risk—which constitutes 15-20% of economic liability risk—is more nuanced and challenging to hedge with precision.

Credit spread risk for DB plans can be categorized into three areas.

1. The risk of the credit spreads tightening in liability discount rates, which increases liabilities and negatively impacts funded status unless portfolio assets increase by an equal or greater amount.
2. The risk of credit fixed income losses due to downgrades and defaults, leading to a decline in LDI assets relative to liabilities.
3. The risk of asset returns underperforming liability returns.

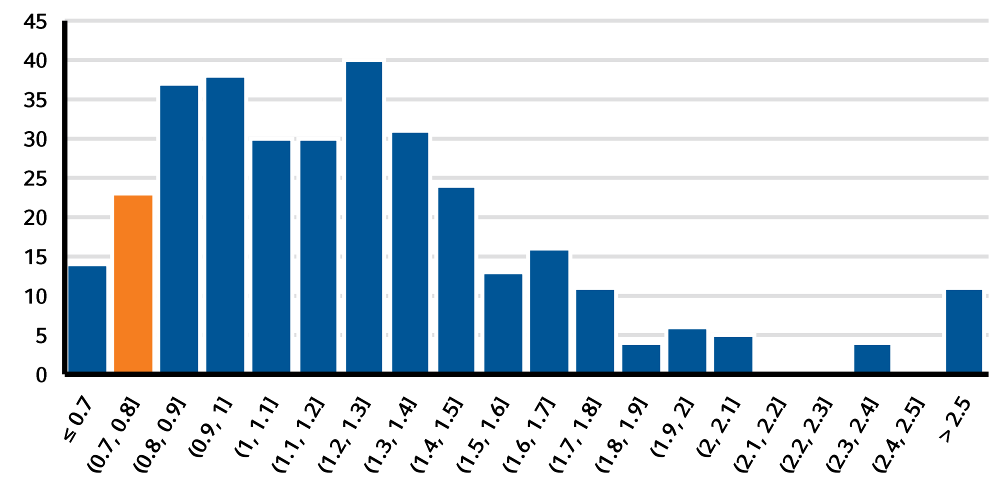
We will discuss each of these risks next.

Risk of credit spreads tightening

Liabilities increase when credit spreads tighten, all else being equal. This is a significant risk for DB sponsors, but the magnitude of this risk can vary over time. As of early 2025, credit spreads are quite low. Historical data suggest the likelihood of spreads widening at this time is greater than that of spreads tightening, especially with current spreads hovering near the ultimate lower bound of zero. In other words, this risk is asymmetric, with the current risk of spreads tightening much lower than it has been in the past and likely will be in the future.

Exhibit 2 shows the level of current spreads, in the 0.7 to 0.8 range in early 2025, with very few months since 1996 below current spread levels.

Exhibit 2: Historical frequency of AAA-A3 corporate spread since 12/31/1996. The current spread as of early 2025 is highlighted.



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Sponsors can hedge this risk by gaining exposure to assets correlated with the spreads of liability yield curves. These curves are based on high-quality corporate bond yields, such as those rated AA-only or A and above. Naturally, IG credit fixed income is considered the closest hedge to this spread exposure. However, other asset classes like high yield fixed income and public equities are also correlated to spread. These asset classes should be considered when designing an LDI portfolio as they can influence the funded status sensitivity to spread movements. Exhibit 3 shows the correlations of U.S. public credit spread returns to other asset classes.

Exhibit 3: Correlations between the returns of public credit spreads and other asset classes[5]

ASSET CLASS	CORRELATION TO U.S. PUBLIC CREDIT SPREAD RETURNS
Global High Yield Credit	0.67
Global Equity	0.51
U.S. Large Cap Equity	0.47
U.S. Long Credit	0.19
U.S. Aggregate Fixed Income	(0.15)
U.S. Long-term Government Fixed Income	(0.30)

If credit spread changes are appropriately hedged, then when spreads tighten, both assets and liabilities in the portfolio will increase, offsetting the impact on funded status. However, in practice, this hedge may not be precise over the long term due to inherent differences in the yield curve and LDI portfolio. Therefore, sponsors will need to generate sufficient incremental returns to compensate for any mismatches leading to funded status deterioration. LDI diversifiers can help to fill this role.

Risk of bond downgrades and defaults in LDI portfolios

The risk of bond downgrades and defaults is more cyclical than other liability risks and may not be as intuitive as spreads tightening, particularly since it often occurs when spreads are widening, which in isolation benefits a DB plan. Bond downgrades and defaults hurt the LDI portfolio returns, causing credit fixed income to underperform relative to liabilities, leading to funded status deterioration.

The credit yield curves used by actuaries to calculate liabilities maintain a certain credit quality, regardless of credit migration (rating changes) experienced in actual fixed income. This means that liabilities do not bear the losses of downgrades and defaults in the same way actual fixed income investments would. The impact of credit migration on funded status will vary over time, but we estimate that at least 50 basis points on average of funded ratio per year could be lost.

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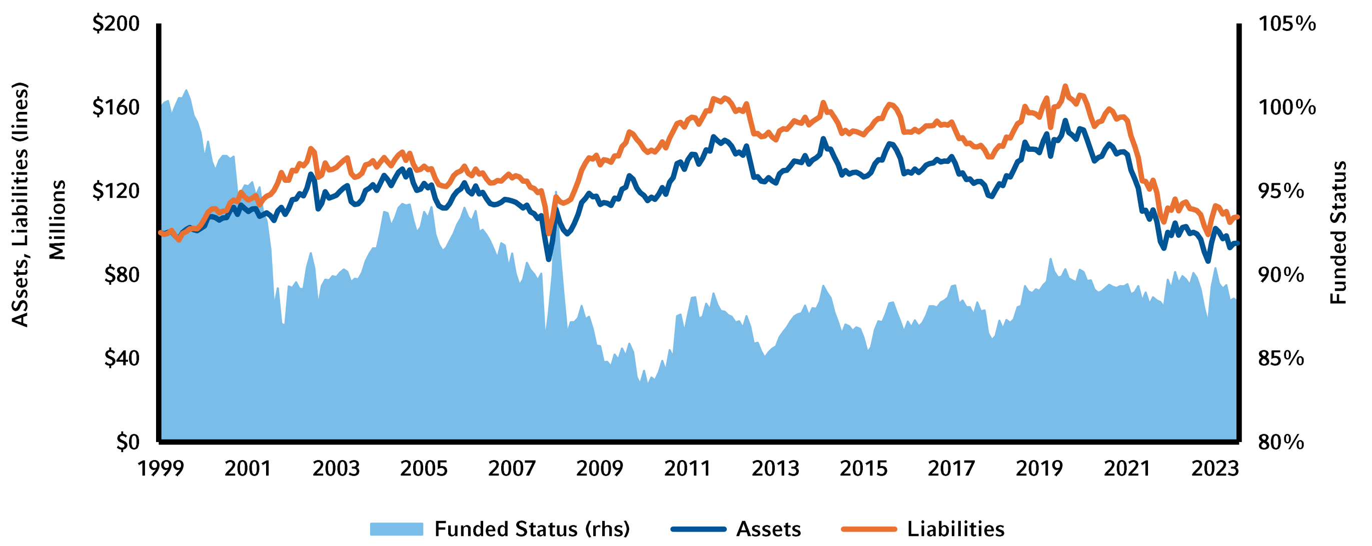
To illustrate this impact, Exhibit 4 models a fully funded frozen $100 million DB plan as of December 31, 1999, invested in 100% duration-matched long credit with the same credit quality as the liabilities (AAA-A3). Over time, the funded ratio deteriorates by more than 10%, primarily caused during stressed credit events such as the Tech Bubble in 2001/2002 and the Global Financial Crisis in 2008/2009.

Exhibit 4: Funded Status change since 12/31/1999, 100% funded and 100% IG Credit[6]



Mitigating this risk is challenging to do with precision, but several approaches can help address it:

- **Active management of credit fixed income** can reduce this risk over time, although consistently achieving at least 50 basis points of excess returns net of fees each year is unlikely.
- **Diversification of credit spread** may also help to mitigate this risk, as some challenges with bond downgrades and defaults in stressed credit environments could be specific to a concentrated universe of public credit bond issuers. All forms of LDI diversifiers can help to fill this role.
- **Generating additional spread** on other assets in the portfolio can help compensate for the expected funded ratio deterioration over time. Certain LDI diversifiers can help with this role as well.

Underperforming liability returns

This risk is related to the previous two risks but differs in that it is present even if spreads do not change. Liabilities increase with yields of both government interest rates and spreads. Over time, the portfolio must generate sufficient return to cover this liability return to avoid deterioration of the funded ratio. Matching this return with precision can be difficult.

Early in the lifecycle of a DB plan, with high equity allocations, LDI portfolios may maintain high government fixed income allocations due to their capital efficiency at hedging interest rate risk. While these LDI assets typically do not keep up with liability returns (since they have no spread), other assets such as equities can outperform liability returns over the long term.

As the plan allocates a higher portion to physical LDI and thus a lower portion to equities, the ability of the LDI portfolio to generate sufficient return to keep up with liability return becomes more important. While maintaining a high liability hedge, other asset classes can be considered to outperform liability returns to improve the funded ratio over time. These other asset classes can include LDI diversifiers.

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LDI diversifier options

We recommend that public IG fixed income continue to serve as the core of the LDI strategy. However, sponsors should consider diversifying beyond this asset class to complement their core LDI strategy and effectively address the risk and return challenges mentioned above.

Sponsors have several options for diversifying credit exposure and generating additional spread return. Each has potential benefits and downsides. While none is a perfect match, they can help mitigate funded ratio deterioration and improve funded ratios over time, even in a portfolio with very high fixed income exposure.

Here we focus on investment grade fixed income assets. While high yield versions of these assets exist and may also be present in the portfolio, we believe maintaining investment grade in LDI diversifiers helps reduce some of the basis risk relative to the liabilities. Compared to public IG fixed income, we can expect some variation in issuer type and construction.

Public securitized fixed income

Public securitized fixed income includes residential and commercial mortgage-backed securities (MBS), asset-backed securities (like auto, student, and credit card loans) and collateralized loan obligations (CLOs). The opportunity set in this asset class is wide and varied, offering a range of options across credit qualities, collateral types, and liquidity profiles.

LDI funds in this asset class typically focus on niche segments of the securitized markets to achieve diversified spread profiles relative to corporate credit, as well as longer duration profiles. These longer-duration securitized assets tend to be "agency-backed" (i.e., have a government guarantee). Their excellent creditworthiness makes them a compelling alternative to corporate credit concentration. However, the spread premium is relatively low, between Treasuries and IG corporate credit.

See the Appendix for more details on this asset class.

IG private placement fixed income

IG private placements are similar to IG public credit in that they are debt issued by a company, but the debt is not publicly listed. These corporate debt issuers prefer to access funds privately either through syndication, club deals, or direct origination, which tends to provide a modest liquidity and complexity premium compared to publicly issued credit.

A primary benefit for LDI programs investing in IG private placements is the issuer-level diversification compared to the public long credit universe. A common concern among LDI investors is the elevated level of concentration across a limited number of corporate issuers. Private placements directly address this concern as the overlap in names across public long credit and IG private placement issuers is negligible.

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A key point of debate regarding allocations to IG private placements is the overall return impact relative to public corporate debt. While IG private credit typically offers 40-150 bps of excess spread over credit-quality equivalent public credit bonds (currently on the lower end of the range), we have observed that public long credit asset managers often deliver similar levels of excess return through a combination of security selection and structural overweights to the credit risk premium. Therefore, the overall return enhancement argument associated with private credit is not the main driver for an allocation.

See the Appendix for more details on this asset class.

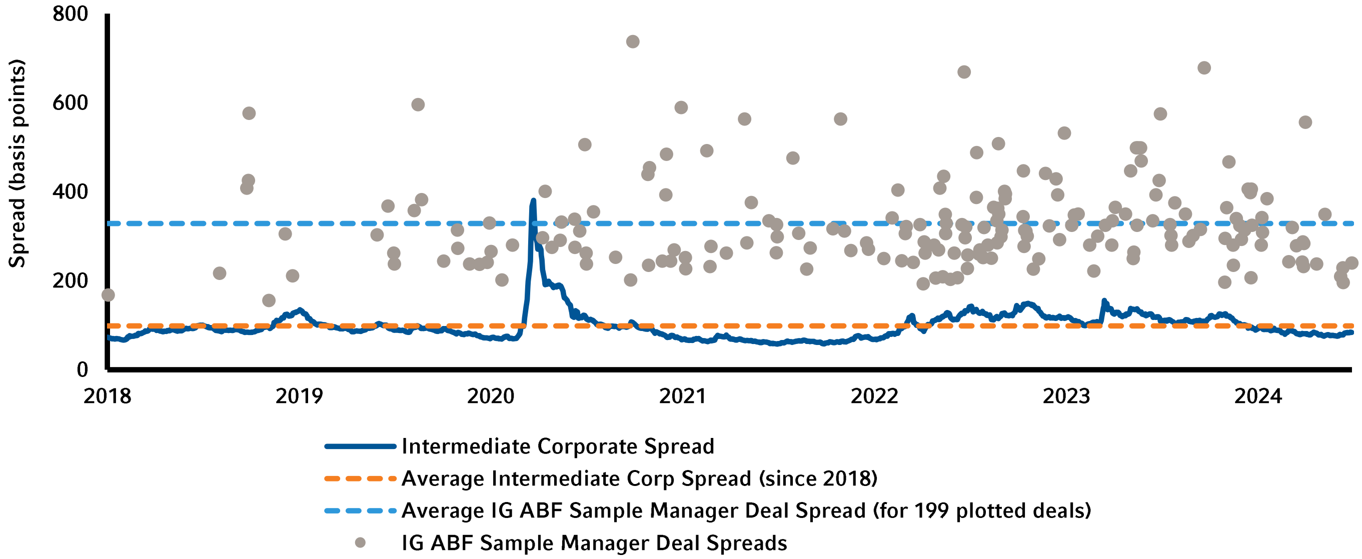
IG asset-based finance (IG ABF)

Private IG asset-based finance offers a high spread asset class with highly diversified collateral pool types, which are typically more consumer balance-sheet oriented. This space creates an attractive overall diversification profile to corporate fundamentals and corporate issuers. We view this as among the best sources of durable excess spread in the IG universe.

Similar to broader securitized credit, IG ABF consists of investments secured by large, diversified collateral pools of assets that generate consistent cash flows. These are privately negotiated and privately originated assets backed by a wide variety of collateral types, including consumer, residential mortgage, infrastructure, hard assets, commercial finance, and contractual cash flows.

The IG ABF asset class typically offers the most significant spread enhancement of the LDI diversifier options, with a meaningful margin at around 150-250 basis points of spread compared to comparable duration public corporate credit, as shown in Exhibit 5. Unlike the public long securitized and IG corporate private placement strategies, IG ABF does not possess long duration, presenting a core trade-off between spread/overall return enhancement and accessing an allocation with longer duration. LDI managers can pair this asset class with an LDI overlay to achieve the desired duration in the portfolio.

Exhibit 5: Comparison of IG ABF spreads to intermediate corporate spreads



The primary challenge with IG ABF is its liquidity profile. This asset class should be viewed as a buy-and-hold investment type and not the first line of liquidity for benefit payments. Among manager fund vehicles in the market, most offer some form of quarterly liquidity, with either a 5% investor-level cap per quarter or a 5% fund-level cap per quarter. Hence, while some liquidity is available quarterly, this is still a private credit investment.

However, the structures have short average life profiles due to the amortizing nature of the asset class, providing ongoing liquidity through income and principal paydowns. We believe the elevated level of excess spread compared to corporates and relative to the other diversifiers makes this a worthwhile tradeoff, given that most well-funded DB plans can manage this level of illiquidity.

Case Study

In Exhibit 6 we demonstrate the impact of allocating a portion of the portfolio to private IG ABF, evaluating both the expected return and risk from various perspectives. We have assumed this plan is frozen and 100% funded, with $100 million in assets and $100 million in liabilities. We assume that IG ABF replaces about 20-25% of the public credit assets.

Exhibit 6: Portfolio examples with LDI diversifiers[7]

ASSET CLASS	20/80 BASELINE	20/80 PRIVATE IG ABF	CHANGE	10/90 BASELINE	10/90 PRIVATE IG ABF	CHANGE
Global equity	20%	20%		10%	10%	
U.S. Government Bonds	20%	20%		22.5%	22.5%	
U.S. Public Credit	60%	45%	(15%)	67.5%	52.5%	(15%)
Private IG Asset Based Finance	-	15%	15%	-	15%	15%
TOTAL	**100%**	**100%**		**100%**	**100%**	

OUTCOME METRICS	20/80 BASELINE	20/80 PRIVATE IG ABF	CHANGE	10/90 BASELINE	10/90 PRIVATE IG ABF	CHANGE
Expected Return (10-year)	6.15%	6.29%	14bps	5.72%	5.85%	13bps
Expected Volatility (10-year)	6.45%	6.03%	(42bps)	6.30%	5.77%	(53bps)
Interest Rate Hedge Ratio	80%	80%	None	90%	90%	None
Surplus Volatility	4.0%	4.0%	None	3.3%	3.4%	1bp
Expected Shortfall (1-month)	$2.2M	$2.2M	None	$1.9M	$1.9M	none

STRESS TESTS (CHANGE IN FUNDED RATIO %)	20/80 BASELINE	20/80 PRIVATE IG ABF	CHANGE	10/90 BASELINE	10/90 PRIVATE IG ABF	CHANGE
Global Financial Crisis	(3.9%)	(3.4%)	50bps	0.0%	0.6%	60bps
Sovereign Debt Crisis	(1.0%)	(0.7%)	30bps	(0.7%)	(0.4%)	30bps
Spread +100bps	(7.3%)	(7.1%)	20bps	(5.3%)	(5.1%)	20bps

The most notable results of this analysis are:

1. Key surplus risk metrics (hedge ratio, surplus vol, expected shortfall) are very similar to a traditional LDI allocation, maintaining the existing liability hedge.
2. Portfolios with private IG ABF improve the expected asset return while reducing asset volatility, which helps reduce funded status risk in liability measures that are not directly tied to discount rate changes, such as stabilized Funded Target measures used for contribution requirements.
3. Portfolios with private IG ABF perform better in stressed credit events, where bond downgrades and defaults are more common.

In summary

Choosing how to allocate to various LDI asset classes requires a delicate balance of desirable LDI characteristics. In Exhibit 7, we present seven attractive characteristics of an LDI building block and how each asset class measures up to them. Three circles in this exhibit indicate the highest ability among the asset class to meet the need, while fewer circles show more limited or absent ability.

No single LDI building block can check all the boxes of desirable characteristics. However, through thoughtful analysis of the plan sponsor's objectives and needs, an appropriate combination of these assets can fine-tune LDI strategies, helping to reduce long-term risk and improve funded status over time.

Exhibit 7: Comparison of potential LDI building blocks

	U.S. GOVERNMENT BONDS	IG PUBLIC CREDIT	INTEREST RATE DERIVATIVES[8]	PRIVATE IG PLACEMENT FIXED INCOME	PUBLIC IG SECURITIZED FIXED INCOME	PRIVATE IG ASSET BASED FINANCE
Duration	●●●	●●	●●●	●	●●	●
Spread Hedge		●●●		●●	●●	●●
Spread Return		●●		●●	●	●●●
Spread Diversification[9]		●		●●	●●	●●●
Liquidity	●●●	●●	●●●	●	●●	●
Simplicity	●●●	●●	●	●	●●	●
Low Cost	●●●	●●	●●	●	●●	●

[1] See "Pension De-risking glide paths", Russell Research, 2023
[2] Liabilities and discount rates based on FTSE Pension Liability Index. "Underfunded" plan is 80% funded with 60% in Global Equity, 20% in Long Credit and 20% in 29-30 year STRIPS. "Moderately Funded" plan is 90% funded with 40% in Global Equity, 30% in Long Credit and 30% in 29-30 year STRIPS. "Fully Funded" plan is 100% funded with 20% Global Equity, 40% Long Credit and 40% in 29-30 year STRIPS.
[3] See Owens, "Pension Risk Transfer Options and Considerations", Russell Research, 2023
[4] See Owens, Frick, Singh, "LDI: Our approach to the design, construction and management of liability-hedging portfolios for U.S. DB plans", Russell Research, 2024.
[5] Source: MSCI World Index, Merrill Developed Markets High Yield Index, Bloomberg Barclays LDI 14 Index, U.S. Aggregate Index and U.S. STRIPS 25+ Yr. Russell Investments calculations as of May 31, 2024. Spread returns proxied with credit default swaps, AA rates, 5-year.
[6] Source: ICE AAA-A3 corporate yield curve and AAA-A3 Long Credit Fixed Income Index; Russell calculations
[7] Based on Russell Investments calculations, 12/31/2024 strategic planning capital market forecasts and Risk Metrics data as of 12/31/2024
[8] Showing characteristics of derivatives of U.S. government bonds including treasury futures, interest rate swaps, etc. Other derivatives such as credit default swaps (CDS) may also be used in an LDI strategy, but it less common
[9] Spread diversification relative to public A-AAA corporate fixed income, considering correlation to issuers

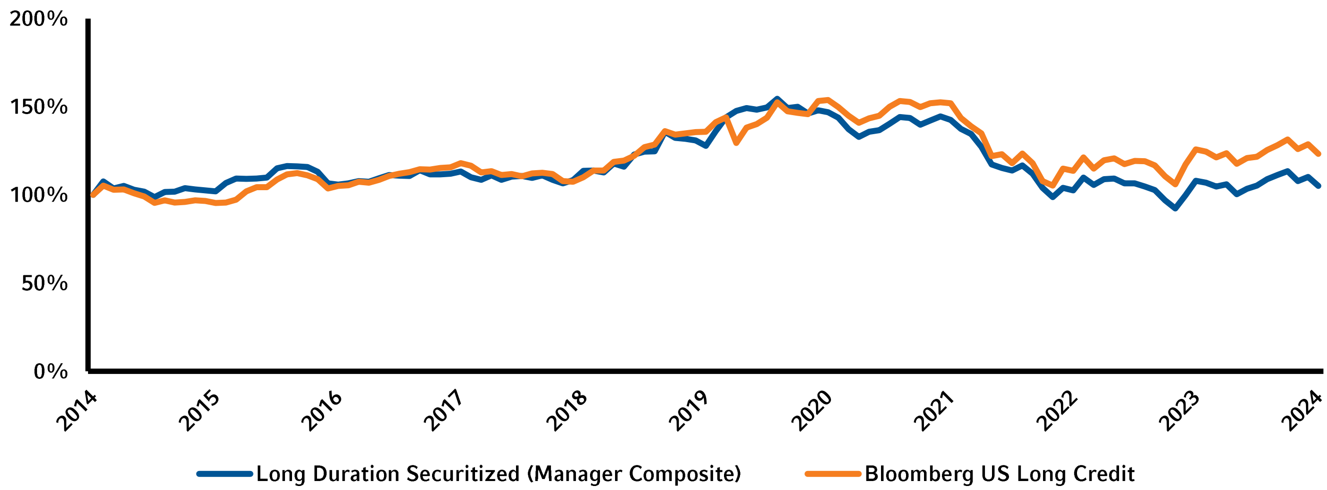
Appendix

Additional detail on each asset class shown below.

Public securitized fixed income

MBS managers typically access collateralized mortgage obligations (agency CMOs) known as "last cash flow" or Z-tranche CMOs. CMBS managers focus on longer duration agency CMBS securities. Given the agency-backed nature of these assets, the creditworthiness is excellent, which makes for a compelling alternative to corporate credit concentration. However, the spread premium is relatively low between Treasuries and IG corporate credit. Therefore, an allocation here will tend to provide a defensive profile that performs well relative to corporate credit mostly in a sell-off market for credit assets. In flat or rallying markets, this allocation tends to underperform the corporate credit exposure. See Exhibit 8.

Exhibit 8: Comparison of Public Long Securitized versus Long Credit since 2014



Considering the lower spread, some managers will use broader exposure of securitized credit to create additional spread and return enhancement via broader allocations to non-agency RMBS, non-agency CMBS, CLOs, or ABS.

Among the hurdles for the long duration securitized solution are the concepts of prepayment/extension risk and convexity. For strategies that use agency mortgages, movements in interest rates will impact the ability to refinance the underlying mortgages, which in turn leads to duration profile changes over time. Thus, the manager will need to carefully maintain the desired duration profile with hedges. Without hedging, the duration of the mortgage bonds could decline when interest rates fall due to increased prepayments, which means the duration of the strategy could decline when you need it most to match the growth of the liabilities.

These strategies typically aim to maintain positive or at least neutral convexity profiles, which is most achievable in the mortgage space after periods of rising rates (when the mortgage bonds trade at discounts). When the opportunity set is not ripe with positively convex bonds, managers will tend to rely on Treasuries as placeholders.

Finally, as intermediate IG credit allocations have become more meaningful in LDI programs (as liabilities shorten), we have also seen broader utilization of shorter duration return-enhancing segments of public securitized credit. Much of the securitized credit landscape can provide comparable duration and curve profiles to intermediate credit while adding significant spread enhancement and maintaining an IG credit risk profile.

IG private placement fixed income

While the issuer diversification in IG private placements is positive, ideally an LDI diversification solution would also include broader diversification relative to the overall corporate credit fundamental landscape. Some of the other LDI diversifiers offer exposure to more consumer-oriented fundamentals or specific collateral pools that might be less sensitive to broad-based corporate spread weakness.

In addition to the spread pickup, another benefit to IG private placement space is a smoother performance pattern due to the less-frequent portfolio valuation. While this is probably beneficial from a total portfolio perspective—especially when the rest of the portfolio is experiencing market turmoil—this could be problematic in the short term for an LDI program trying to match liabilities closely, unless the public fixed income is deteriorating relative to liabilities due to downgrades and defaults.

The IG private placement universe encompasses a combination of corporate and infrastructure debt, typically fixed rate, with some asset managers also incorporating specialty finance/structured credit. This segment of the private debt market proves advantageous for issuers seeking swift access to capital markets while circumventing standard regulatory and reporting requirements. Deal structuring remains flexible and highly customizable, appealing to a diverse range of entities.

Private placements also offer compelling downside protection as part of their case to diversify the public corporate credit allocation. The private nature of these instruments allows lenders to structure stronger covenant protections as additional safeguards. Relative to public credit investors' typical credit loss experience over time, we found that the credit loss experiences among the IG private credit asset managers have been several basis points better than that of their public counterparts.

IG asset-based finance (IG ABF)

The manager landscape for IG ABF tends to have high barriers to entry as the space often requires scale to enact forward flow arrangements or even equity stakes in a variety of niche originators across a diversified base of different collateral types. These originator partnerships afford managers ongoing access to loan flow at pre-agreed-upon credit underwriting standards.

The managers in the private IG ABF space enjoy significant flexibility to customize structures to include self-correcting measures and embed meaningful downside protections. The IG ABF structures will typically include performance/financial covenants which enact what is known as "full turbo" amortization if any number of triggers occur (i.e., delinquencies increasing or different coverage metrics falling below a certain level), whereby the structure will accelerate repayment of the IG facility ahead of more junior tranches and deleverage the overall structure through repayment to senior lenders. The high credit quality and strong structural protections make this a popular asset class with insurers who utilize this asset class widely in their liability-aware general account portfolios. Compared to comparable public securitized credit, IG ABF tends to have better credit metrics and structural protections such as higher levels of credit enhancement/subordination, better covenants, and lower LTVs.

QUESTIONS?

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