NORTHERN TRUST
ASSET MANAGEMENT

CMA FIVE-YEAR OUTLOOK COMPANION PAPER

HOW PENSION PLANS CAN CLEAR A HIGHER HURDLE

PENSION PLANS LIKELY WILL NEED TO FIND LESS CONVENTIONAL WAYS TO BOOST RETURNS IN THE COMING YEARS

The extraordinarily difficult market for investors in 2022 provided a direct benefit for pension plans. While plan sponsors saw assets decline, plan liabilities, on average, fell at an even faster rate, leading to improvements in their funding. But that's the past, and the future now becomes more complicated as pension plan sponsors must find ways to clear the likely higher hurdle rate[1] this market has delivered. Using our five-year capital market assumptions (CMA) research, we suggest some ideas on the path forward for pension plans for the challenges ahead.

Pensions Are Still Healthy After a Sour Market

Market events of 2022 have led to some remarkably unlikely results in the corporate pension universe. During one of the most severe risk-off environments we've seen in decades, the funded ratios[2] improved for many plans with greater risk-on posture. For those taking on less risk, funded ratios changed little.

We demonstrate this in Exhibit 1, where we show three model portfolios covering a range of risk levels through varying allocations. The model portfolios comprise two components: return-seeking assets (such as equities and real estate) and liability-hedging assets (government and corporate bonds). The variation in starting funded ratios is tied with the expected risk/return profile of each portfolio. That is, plans with lower funded ratios require higher returns to close the funding gap, so they typically have greater allocations to more volatile return seeking assets, whereas plans with higher funded ratios will have larger allocations to liability-hedging assets to maintain a healthy funded ratio.

We calculated the change in the funded ratio for each portfolio based on assumed asset returns and liability changes during 2022. Asset returns are based on market indices for each component asset class in the portfolio during the year. For all portfolios, we assumed a starting liability value of $1 billion. We derive the discount rate change from the Merrill Lynch AA Corporate Bond Curve[3] based on a liability duration of 12. This resulted in a 25.8% decline in liabilities for 2022.

Key Takeaways

- Despite steep losses from both stocks and bonds in 2022, pension plans on average experienced an increase in funded ratios.
- However, higher interest rates and inflation mean the return required for pension plans to maintain their current funded ratios — or the hurdle rate — has risen.
- Our Capital Market Assumptions research forecasts increasing, though still moderate, long-term investment returns, challenging plan sponsors to seek ways to clear the higher hurdle rate.

1 A hurdle rate is the return required for a pension plan to maintain current funded ratio.

2 The calculation to determine a plan's funded ratio is assets divided by liabilities, to represent the ability of a pension fund to pay its liabilities.

3 The average yield of the curve rose to 4.81% from 2.51% in 2022. The discount rate is used to calculate the present value of pension liabilities in the future. Duration is the sensitivity of the value of liabilities to changes in interest Rates. Higher duration means the value of liabilities will likely change more with changes in interest rates.

Exhibit 1 shows that funded ratios increased for all the model portfolios during a period of poor performance by both stocks and bonds. Perhaps most notably, funded ratios for those with higher allocations to return seeking assets saw greater improvements to funded ratios than those with greater allocations to liability-hedging assets. What explains these seeming contradictions? It's the same force that is wreaking havoc on both financial markets and the economy – inflation.

EXHIBIT 1: IN A DOWN 2022, RISKIER ASSETS IMPROVED FUNDED RATIOS

On average, pension plans with higher allocations to return-seeking assets such as stocks outperformed plans with higher allocations to liability-hedging assets such as long term government and corporate bonds.

Model Portfolio Return-Seeking (RS)/Liability-Hedging (LH) Scenarios

Assumes a discount rate increase from 2.51% to 4.81% during 2022						
		Dec 21	Return	Change in $M	Dec 22	Change in funded ratio
80% RS/20% LH	Assets ($M)	700	-13.4%	-94	606	-
	Liability ($M)	1,000	-25.8%	-258	742	-
	Funded Ratio	**70%**	-	-	**82%**	**+12%**
50% RS/50% LH	Assets ($M)	850	-18.1%	-154	696	-
	Liability ($M)	1,000	-25.8%	-258	742	-
	Funded Ratio	**85%**	-	-	**94%**	**+9%**
10% RS/90% LH	Assets ($M)	1,050	-25.3%	-266	784	-
	Liability ($M)	1,000	-25.8%	-258	742	-
	Funded Ratio	**105%**	-	-	**106%**	**+1%**

Sources: Northern Trust Asset Management, Bloomberg. Assumes starting liability value of $1 billion for all plans. Portfolio are based on a mix of long credit, long government bonds, MSCI ACWI Index, NCREIF ODCE Index (lagged by 1 month), S&P Global Infrastructure Index and JPM 50/50 GBI-EM Global Diversified Index. The 25.3% decrease in liability is based on an assumption a $1 billion liability with a duration of 12 and a commensurate discount rate derived from ML AA Corporate Bond Curve which increased from 2.51% to 4.81% in 2022. For purposes of this modeling, we did not include assumptions for benefit payments, expenses, ongoing service accruals, or other more marginal factors to illustrate the impact of market returns alone.

INFLATION: A PART-TIME FRIEND

While we have long known the potential impact of high inflation on funded ratios, this is the first time inflation of this magnitude has occurred with the more recent evolution of liability-driven investing. With liability-driven investing, investors primarily invest to generate enough assets to meet current and future liabilities, as distinguished from a total return objective. The discount rate — related to interest rates — determines how much liability values change year-to-year. A higher discount rate mathematically reduces liabilities all else equal while a lower discount rate increases liabilities. Inflation impacts market interest rates, and discount rates, and last year higher inflation increased the discount rate and reduced pension liabilities significantly.

Looking at the impact on liabilities, the first order and immediate effect, as highlighted in the above in Exhibit 1, is straightforward. All else equal, pension funded ratios will benefit as inflation pushes the discount rate up, reducing the present value of the liability.

The second order effects of inflation, however, may be more nuanced, and can occur over longer periods of time. For plans that continue to accrue benefits, we generally expect the immediate advantage of higher inflation to fade as actuarial assumptions around inflation-driven future salary increases make their way into liability projections. Plan provisions can be material when determining how quickly the advantage of higher inflation may fade. For example, those plans that use final average pay for the benefit calculation can expect to see the advantage fade more quickly whereas those that use career average would likely see the benefit fade more gradually as those calculations are less sensitive to salary inflation.

Frozen plans, which no longer take on new employees nor continue to accrue benefits, stand to benefit the most as there is no offsetting assumption on salary increases. For this reason, we remind plan sponsors that inflation is your friend, at least as it relates to first order impacts on the liability.

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WATCH FOR HIGHER HURDLES

On average, accounting-based liabilities have declined for defined benefit pension plans. However, the increasing discount rate doesn't impact annual cash benefit and other fixed cash payments. This potentially introduces problems because recent investment losses have lowered investable asset bases. With fewer assets available to cover the same fixed cash payments, plans may struggle to earn sufficient cash returns to maintain their current funded status. The return required to cover the benefit payments as a percentage of assets — along with the discount rate, normal costs, and fund administrative expenses — is referred to as the hurdle rate. Investment returns must sufficiently match this hurdle rate to maintain current funded ratio.

EXHIBIT 2: A HIGHER HURDLE

A higher discount rate means pensions must find new ways to generate returns to maintain their funding levels.

Hurdle Rate Component	Dec 21	Dec 22
Discount Rate	2.51%	4.81%
Normal Cost	0.00%	0.00%
Expenses as % of Assets*	0.25%	0.39%
Benefit Payment as % of Assets*	5.0%	7.9%
Funded Ratio	90%	90%
Final Hurdle Rate**	**3.3%**	**6.1%**

Source: Northern Trust Asset Management. * Assumed liabilities fell by approximately 25.8% due to higher discount rates, and the plan maintained their current funded status. Benefit payments and expenses were held constant at a fixed dollar amount. **Calculation: 2.51%÷ 90% + 0.0% +0.25% + Benefit Payment Drag and 4.81% ÷ 90% + 0.0% + 0.39% + Benefit Payment Drag.

SOME TAILWIND: INCREASING EXPECTED RETURNS

In the coming years, financial markets may provide investors some means to combat higher hurdle rates, based on our research. Every year, our asset allocation team publishes our CMA outlook, where we introduce investment themes that drive our detailed global return forecasts across equities, bonds, real assets and alternatives. Based on these forecasts, we develop a pension frontier, which represents the risk-return tradeoffs across the spectrum for our model portfolios. We define risk as volatility of funded ratio, and use the terms liability hedging (LH) and return seeking (RS) in discussing assets.

For the first time in several years, our pension frontier's expected returns have risen across all allocations, providing a potential tailwind to combat those higher hurdle rates. Bond forecasts increased as rising interest rates boosted bond yields to their highest point since 2007. Lower valuations aided our equity forecasts, though a slowing global economy might prove a challenge. However, the average return in our pension frontier increased just 1.4% across the spectrum from a year earlier. This still sits 1.2% below the 2.6% rise in the hurdle rate we calculated above. As a result, plan sponsors may have to take on additional investment risk or contribute more cash to their plans in order to achieve their short and long term objectives.

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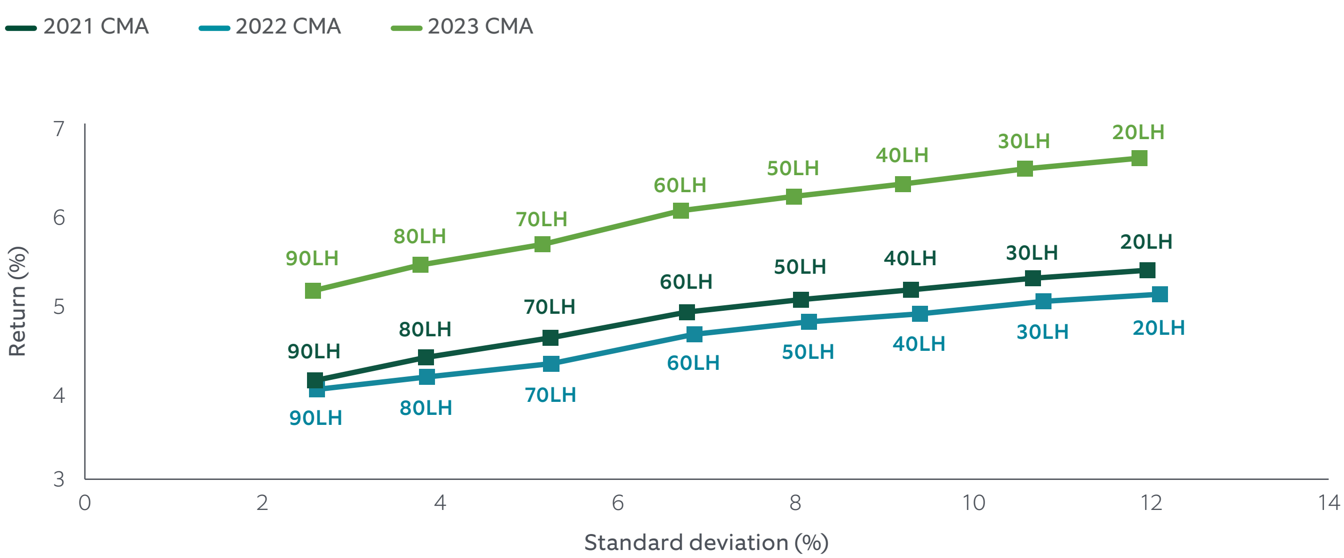
EXHIBIT 3: UPWARD SHIFTING PENSION FRONTIER

Expected returns increased by 1.4% on average across the pension frontier, providing some tailwind for pension investors who need to clear a higher hurdle rate.

NTAM Outsourced CIO Pension Frontiers from CMA Forecasts (LH numbers = % liability-hedging assets)



Source: Northern Trust, based on returns forecasts as of June 30, 2022. Northern Trust CMA five-year outlooks are published in the years before their edition years. For example the 2023 edition was published in 2022.

Notably, the pension frontier curve in Exhibit 3 remains flat. This may tempt some investors to focus on reducing risk, as the flat curve allows them to do so without a significant sacrifice in return. Standard portfolio theory would certainly suggest optimizing around efficiency, or positioning to achieve the most return per unit of risk. However, we would encourage certain pension plans to resist this temptation as optimized efficiency doesn't necessarily translate into higher returns which pension plans may need to meet their obligations. Those plans that are less well-funded, or with a longer time horizon, may reasonably accept the higher volatility and thus greater upside potential that comes with larger allocations to return seeking assets.

As we explain in further detail in our CMA report, our research suggests that high yield debt may deliver attractive risk-adjusted returns and certain private investments may provide attractive return premiums over public markets to help meet higher return requirements.

REAL ASSETS AS INFLATION HEDGES

To enhance performance amid inflation risks and higher hurdle rates, plan sponsors may look at traditional inflation-hedging through real asset investments such as real estate, infrastructure and natural resources. Differing economic factors drive these asset classes, so they provide divergent flavors of inflation hedges. Generally speaking, we expect real assets to perform well over the five-year forecasts from our CMA research. Even so, as we move through the economic cycle, there will likely be sub periods where conditions are more favorable to some of these asset classes over the others.

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Let's take a closer look at each of these asset classes and factors that could influence returns:

- **Real estate**: While more work-from-home arrangements and e-commerce activities challenge businesses related to office buildings and shopping centers, we expect developers to find opportunities to repurpose buildings into spaces such as fulfillment centers, residential units and medical offices. While this can take time, we expect that the regular income generation and ability to reprice expiring leases will continue to allow real estate investments to provide benefits to a diversified portfolio in an inflationary environment.
- **Infrastructure**: Historically, infrastructure has provided a measure of downside protection, which investors may value in this higher-volatility market. These businesses are largely energy, communications, transportation and utility companies, some of which may benefit from higher commodity prices. Importantly, infrastructure businesses are well-positioned to cushion the impact of inflation as many sit in places of monopoly or oligopoly with contractual abilities to increase prices commensurate with inflation.

- **Natural resources**: The war in Ukraine removed a significant portion of the energy supply, causing countries to scramble to secure energy and increasing demand globally. We expect this will support commodity prices for years to come. Further, we acknowledge the potential for reduced longer term investment in traditional natural resources due to pressures to invest in green energy production. This may provide further price support through artificial caps on supply of more available, traditional sources.

To the extent a plan's time horizon and cash flow needs allow, we recommend implementing these investments through the private markets to capture the associated illiquidity premium as shown in Exhibit 4. A liquid real assets portfolio composed of real estate, infrastructure and natural resources can also allow for tactical allocations between the three buckets, though at a lower expected return. We prefer natural resource exposures through equity, rather than commodity futures, in order to gain exposure to the investment in human capital that creates the commodity value.

While inflation expectations have come down, we expect the risk to remain elevated. A diversified implementation of various real assets can provide a more stable return pattern as the economic cycle evolves.

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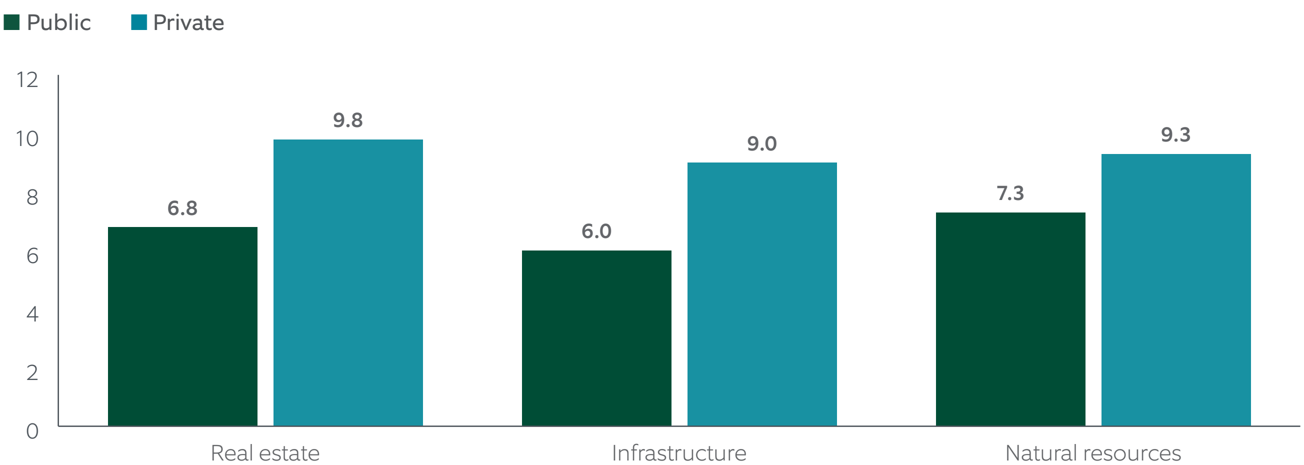
EXHIBIT 4: THE PRIVATE INVESTMENT ADVANTAGE

We recommend that pension plans implement real assets investments through the private markets to capture the associated illiquidity premium.

Real Asset Five-Year Annualized Return Expectations (%)



Source: Northern Trust CMA Five-Year Outlook, 2023 Edition, forecasts as of June 30, 2022

HIGH YIELD AND CAPITAL EFFICIENCY

For some time, we have favored high yield bonds because of their diversification benefits and strong risk-adjusted returns. Our CMA five-year forecasts expect high yield to return 7.3% a year on average, outpacing our global equity forecast of 6.1%. High yield also offers liability-hedging characteristics because of its credit factor exposure.

We believe capital efficiency can be a key consideration when constructing a hedging portfolio. Whether implementation is via bonds or derivatives (such as interest rate futures or swaps) the objective is the same: Increase the duration per dollar invested in order to free up assets for investment elsewhere. We can extend the same concept to the credit factor embedded in high yield to achieve much more exposure per dollar than is available from investment grade bonds.

When credit spreads decline, as they have historically, the credit component of the discount rate comes down as well. While an investment grade credit portfolio will likely capture some of that upside of lower credit spreads, we expect high yield to capture even more and outperform due to the quality mismatch. High yield's credit beta to intermediate investment grade credit is approximately 2.4. In other words, $1 of high yield is equal to approximately $2.40 of intermediate credit exposure — a shining example of capital efficiency. In short, we expect high yield to provide some of the highest returns of any public market asset class, yet also provide a measure of risk control for pension plans due to the credit factor exposure. We find this an attractive combination for those seeking higher returns and lower risk.

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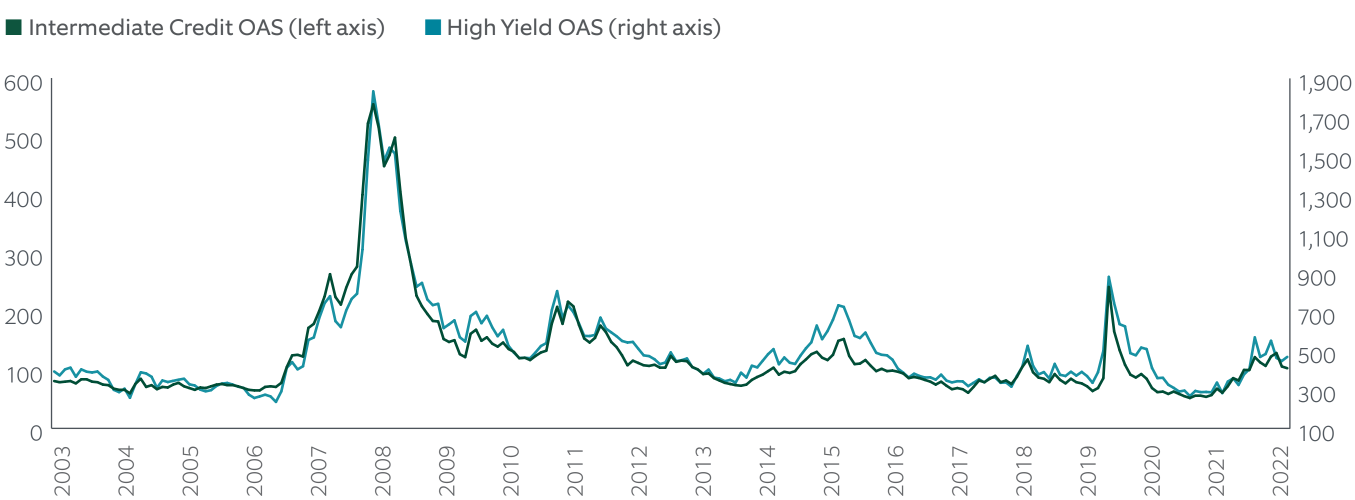
EXHIBIT 5: GAINING OUTSIZED CREDIT EXPOSURE THROUGH HIGH YIELD BONDS

High yield bonds tend to gain more than investment grade bond when spreads tighten, providing a potential advantage to high yield.

Credit Spreads: High Yield vs. Intermediate Bonds Option Adjusted Spread (OAS, basis points)



Source: Bloomberg. We chose intermediate credit due to the similar duration with high yield. Results are substantially the same if run against long credit. Data is from December 2003 to December 2022.

CASH STILL REIGNS (THE FED WON'T MAKE IT RAIN)

A key theme from our CMA research is Monetary Drought, referring to the notion that the flood of monetary support from central banks likely has ended. Further, we believe the era of the Federal Reserve reflexively easing financial conditions at the first sign of economic trouble, sometimes called the central bank put, has disappeared. The Fed has replaced this behavior with a near singular focus on reducing inflation by tightening financial conditions through interest rate hikes.

The Fed's actions put cash in shorter supply, making cash more valuable. Given that we expect the Fed funds rate to top out at over 5%, it is worth considering a deliberate strategic allocation to cash for upcoming liquidity needs such as benefit payments, lump sum payments and capital calls. Cash also provides optionality around tactical opportunities.

Plan sponsors may want to pay particular attention to projected lump sum payments. The rates at which lump sum payments are calculated are most often based on a discount rate from a prior period. As a result, those lump sum payments are no longer exposed to market spot rates, so raising cash to cover payments in advance provides the better hedge. Given our expectation of a practically flat yield curve over the next five years, holding cash or reducing duration no longer carries the steep price in terms of opportunity cost that it used to.

CONSIDER ACCELERATING CONTRIBUTIONS

We believe increasing cash contributions can make sense in this environment. With lower liabilities, deficits measured in dollar terms are as low as they have been in over a decade. This makes it especially cheap to fully fund the plan and significantly de-risk. Even modest increases in cash contributions can make sense as each marginal dollar represents larger percentage of the deficit today that it would have a year ago. Additionally, forecasted returns over the next five years are the highest they've been in several years, providing more opportunity for return on cash contributions made today. Finally, larger cash contributions alleviate some of the uncertainty over clearing the higher hurdle rate.

A key question for any plan sponsor when determining contribution levels is one of opportunity cost, or if cash may be better spent on alternative projects that may offer a higher return than is expected of tax-free pension assets. It is important to understand how much future contributions may increase if they are deferred. On the other hand, there is nothing inherently wrong with deferring contributions as returns may exceed expectations, reducing the need for future cash contributions. However, all else equal, the cost of deferring contributions may be more significant than it has been in the past due to the factors discussed above.

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SUMMARY: THE PATH FORWARD FOR PENSION PLANS

Market movement over the past year has revolved around inflation, rising rates and significant losses in value for most asset classes. Corporate pensions, however, have taken the markets' best punches and escaped with funded ratios largely intact and in many cases improved.

Looking forward, as the economy continues its transition to slower growth, we expect continued interest rate volatility and significant market sensitivity to inflation, leading to knock-on effects of equity volatility as well as the higher hurdle rates noted above.

To help match these challenges, we recommend considering an increase in allocation to high yield bonds because of our expectations that they will outperform equities and their credit hedging attributes against liabilities. We also recommend that pension plans pay special attention to creating or further diversifying their real assets portfolio to help withstand the everchanging sources of inflation risk as the cycle evolves. Finally, we suggest that pension plan sponsors consider increasing or accelerating cash contributions to their plans to take advantage of higher expected returns as well as alleviate some of the concerns around higher hurdle rates.

We expect continued interest rate volatility and significant market sensitivity to inflation, leading to knock-on effects of equity volatility as well as the higher hurdle rates.

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