# Asset-Liability Study: Planning Update

## Colorado Public Employees' Retirement Association (PERA)

November 17, 2023

# Agenda

1. Progress report and updated timeline
2. Capital Market Assumptions
3. Portfolio analysis introduction
4. Next steps
5. Appendix

# Asset–Liability Study Progress

## Kicked off study, working meetings with PERA investment team

**Colorado PERA kicked off the asset-liability study during the September planning session**

**In the time since, Aon and PERA Investment team have collaborated on capital market assumptions and portfolio analysis**

- October 18 Meeting: Overview of Capital Market Assumptions ("CMAs") and introduction to portfolio analysis
- October 31 Meeting: CMA follow-up Q&A and initial portfolio analysis

**Goals for today's discussion include:**

- Report on progress
- Overview of initial portfolio analysis, including impact of updated CMAs
- Preview next steps

# Projected Timeline

## Present results to Board in June 2024

| Meeting | Key Decision Points | Participants | Target Dates |
|---|---|---|---|
| **Planning Meeting** | ▪ Set timeline<br>▪ Define key metrics<br>▪ Discuss Board objectives<br>▪ Assess initial portfolio ideas<br>▪ Discuss assumptions | ▪ Aon<br>▪ PERA Staff<br>▪ PERA Board | *September 2023* |
| **Portfolio Meeting(s)** | ▪ Refine constraints<br>▪ Determine portfolios for further study | ▪ Aon<br>▪ PERA Staff | *October 2023 – January 2024* |
| **Initial Results** | ▪ Identify "best ideas"<br>▪ Specify additional analysis | ▪ Aon<br>▪ PERA Staff<br>▪ PERA Board | *January 2024 – May 2024* |
| **Board of Trustees Presentation** | ▪ Strategic asset allocation recommendations and rationale<br>▪ Select strategy<br>▪ Implementation considerations | ▪ Aon<br>▪ PERA Staff<br>▪ PERA Board | *June 2024* |
| **Post-Study Process** | ▪ Review active risk management and incentive compensation<br>▪ Implementation details<br>▪ Transition portfolio | ▪ Aon<br>▪ PERA Staff | *Post-Study* |

*Subject to change

# Aon Capital Market Assumptions ("CMAs")

## Expected return increased 16 bps since 6/30/23, primarily due to higher interest rates

| | | *6/30/23 30-Year CMAs* | | *9/30/23 30-Year CMAs* | | *Change from 6/30/23* | |
|---|---|---|---|---|---|---|---|
| Asset Classes | Long-Term Asset Allocation | Expected Nominal Return | Expected Risk | Expected Nominal Return | Expected Risk | Expected Nominal Return | Expected Risk |
| Global Equity | *54.0%* | 7.4% | 18.6% | 7.4% | 18.7% | 0.0% | +0.1% |
| Real Estate[1] | *8.5* | 6.8 | 20.3 | 6.5 | 20.3 | -0.3% | 0.0% |
| Private Equity | *8.5* | 9.8 | 25.6 | 10.1 | 20.5 | +0.3% | -5.1% |
| Alternatives[2] | *6.0* | 6.8 | 9.2 | 6.6 | 8.1 | -0.2% | -1.1% |
| **Total Return-Seeking** | ***77.0*** | | | | | | |
| Core Fixed Income | *23.0* | 4.1 | 5.2 | 5.0 | 5.2 | +0.9% | 0.0% |
| **Total Risk-Reducing** | ***23.0*** | | | | | | |
| **Total Fund** | ***100.0*** | ***7.27%*** | **13.00%** | ***7.43%*** | **12.67%** | +0.16% | -0.33% |
| Cash | | *3.3%* | *2.2%* | *4.2%* | *2.2%* | *+1.1%* | *0.0%* |
| ***Sharpe Ratio*** | | ***0.31*** | | ***0.26*** | | ***-0.05*** | |

[1] Modeled as 50% core real estate / 50% non-core real estate

[2] Reflects allocation of Real Assets at 27.5% CPI+4% (modeled as 50% Infrastructure, 25% Timber, 25% Farmland) / Hedge Funds at 27.5% HFRI FOF Defensive Index / Opportunistic at 45% PERA Public Market + 1.5% (modeled as 76% Global Equity / 24% Fixed Income)

Percentages may not sum due to rounding

# Key Concepts for Asset-Liability Study

## 3 areas of focus: overall asset allocation, return-seeking portfolio, risk-reducing portfolio

| Strategy Component | Key Concepts |
|---|---|
| **Overall Asset Allocation (Return-Seeking vs. Risk-Reducing)** | • **Primary driver:** Believed to explain 90%+ of long-term investment performance volatility<br>• **Cost vs. risk management:** Using higher risk/return strategies can help reduce future pension costs, but also result in more volatility and uncertainty of outcomes. Using lower risk/return strategies can help reduce volatility and enhance certainty, but also result in higher expected pension costs |
| **Return-Seeking Portfolio** | • **Public equity:** Primary source of excess return<br>• **Diversification:** Inclusion of alternative investments- such as private equity, private debt, real estate, and credit- can enhance risk/return. Over-diversification can reduce liquidity and dilute returns |
| **Risk-Reducing Portfolio** | • **Investment grade fixed income:** Provides liquidity, diversification, and downside protection in stressed markets due to low/negative correlation with public equities<br>• **Diversification:** Generally prefer broad, diversified fixed income exposures. Long bonds may provide additional duration and downside protection in "flight to quality" scenario |

# Key Concepts for Asset-Liability Study

## Objective setting: potential objectives, constraints, and measures of success

### Objectives

- Achieve expected return threshold or expect plan(s) to reach fully funded within certain number of years
- Illiquid assets do not reach set allocation percentage in stressed market environment
- Reduced likelihood of setting automatic adjustment provision (AAP) events

### Constraints

- Restrict which asset classes to use in portfolio analysis
- Minimum/maximum allocation to certain asset classes
- Set a threshold of return-seeking assets

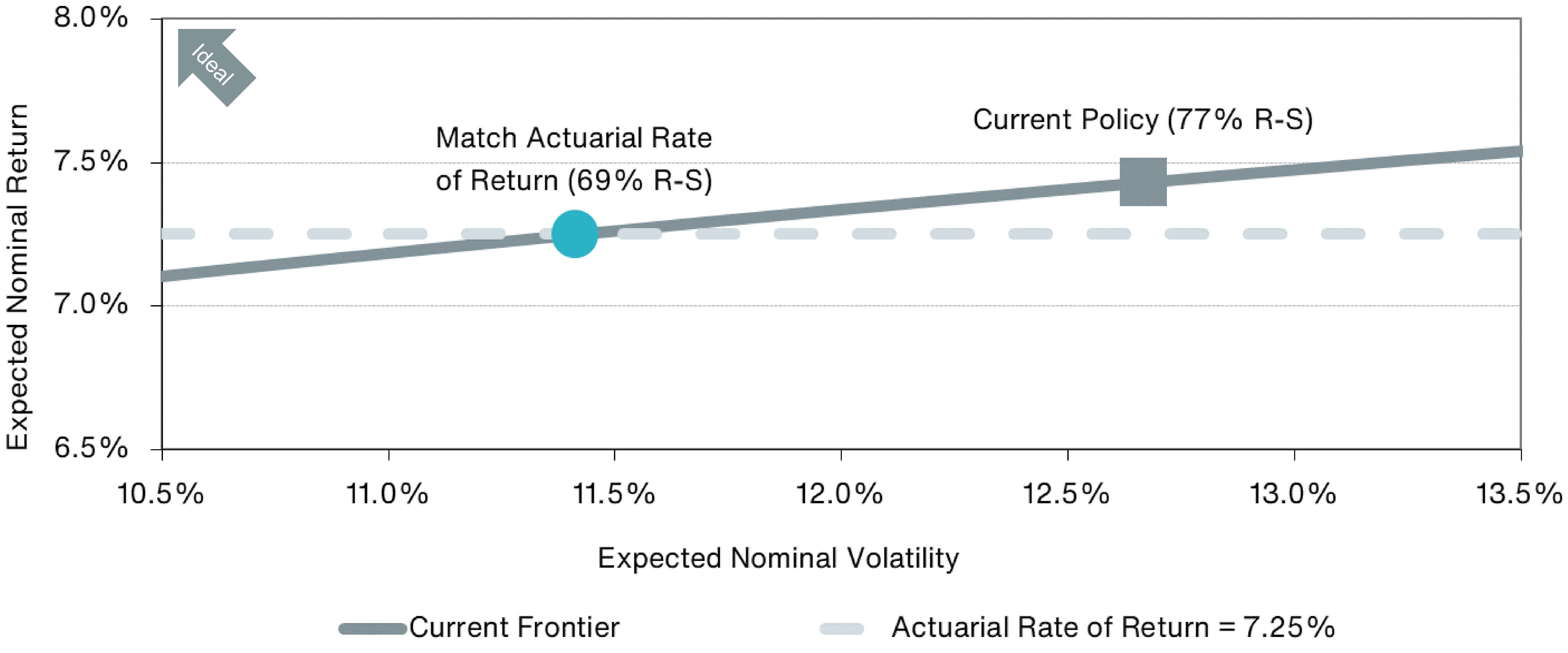
### Key Metrics

- Set importance to key metrics such as portfolio expected return/volatility, projected funded ratio, likelihood of AAP events, liquidity analysis
- Establish any other important metrics to include in study results

# Asset Allocation Analysis

## Opportunities up and down the risk/return frontier

**Exhibit below highlights the risk vs. reward impact of different asset allocations (scaling up/down the current return-seeking vs. risk-reducing portfolios)**




### Observations:

- Current Policy with 77% return-seeking ("R-S") assets expected return (7.43%) exceeds the actuarial rate of return of 7.25%
- Higher or lower allocations to return-seeking allocation could be considered; for example, reducing return-seeking assets to 69% (from 77%) can align Aon's expected return with the 7.25% actuarial assumption, while reducing volatility

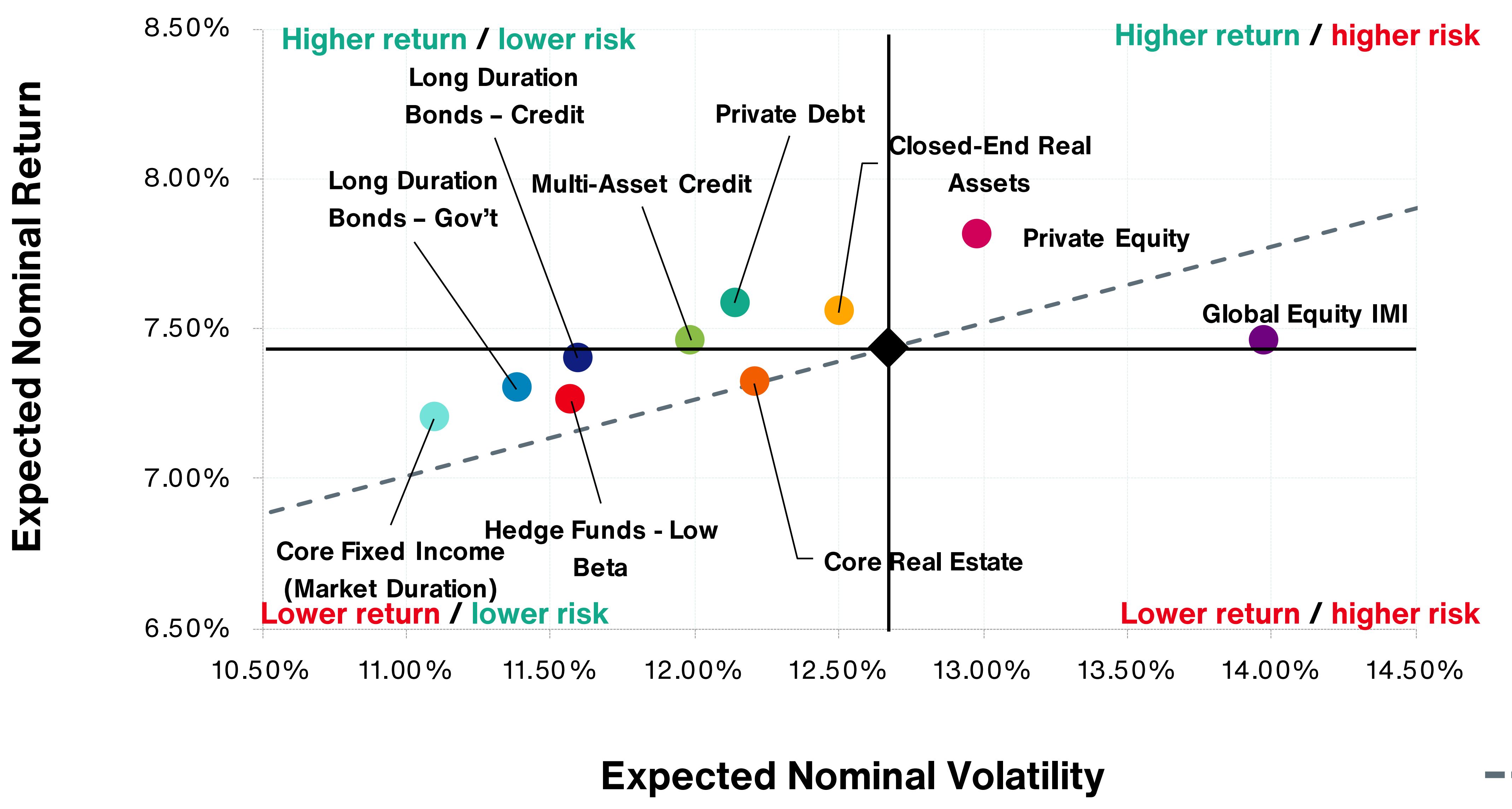
[1] Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

Percentages may not sum to 100% due to rounding.

# Diversification Analysis

## Additional allocations to diversifying asset classes can improve expected risk/return

### Risk/Return Impact of Marginal (10%) Allocations, by Asset Class




| Asset Class to Add | Expected Nominal Return | Expected Nominal Volatility | Sharpe Ratio |
|---|---|---|---|
| Current | 7.43% | 12.67% | 0.255 |
| Core Fixed Income (Market Duration) | 7.20% | 11.10% | 0.271 |
| Long Duration Bonds – Credit | 7.40% | 11.59% | 0.276 |
| Long Duration Bonds – Gov't | 7.30% | 11.38% | 0.272 |
| Global Equity IMI | 7.46% | 13.98% | 0.233 |
| Private Equity | 7.81% | 12.98% | 0.278 |
| Core Real Estate | 7.32% | 12.21% | 0.256 |
| Closed-End Real Assets | 7.55% | 12.50% | 0.268 |
| Multi-Asset Credit | 7.46% | 11.98% | 0.272 |
| Private Debt | 7.58% | 12.14% | 0.279 |
| Hedge Funds - Low Beta | 7.26% | 11.57% | 0.264 |

Sharpe Ratio = .255

### Observations

- Analysis demonstrates portfolio risk/return impact of additional 10% allocation to asset class, assuming remaining portfolio is rebalanced ratably
- Based on preliminary analysis, additional allocations to diversifying assets like **private debt**, **multi-asset credit**, and **long duration bonds** may reduce risk while enhancing (or maintaining) expected return

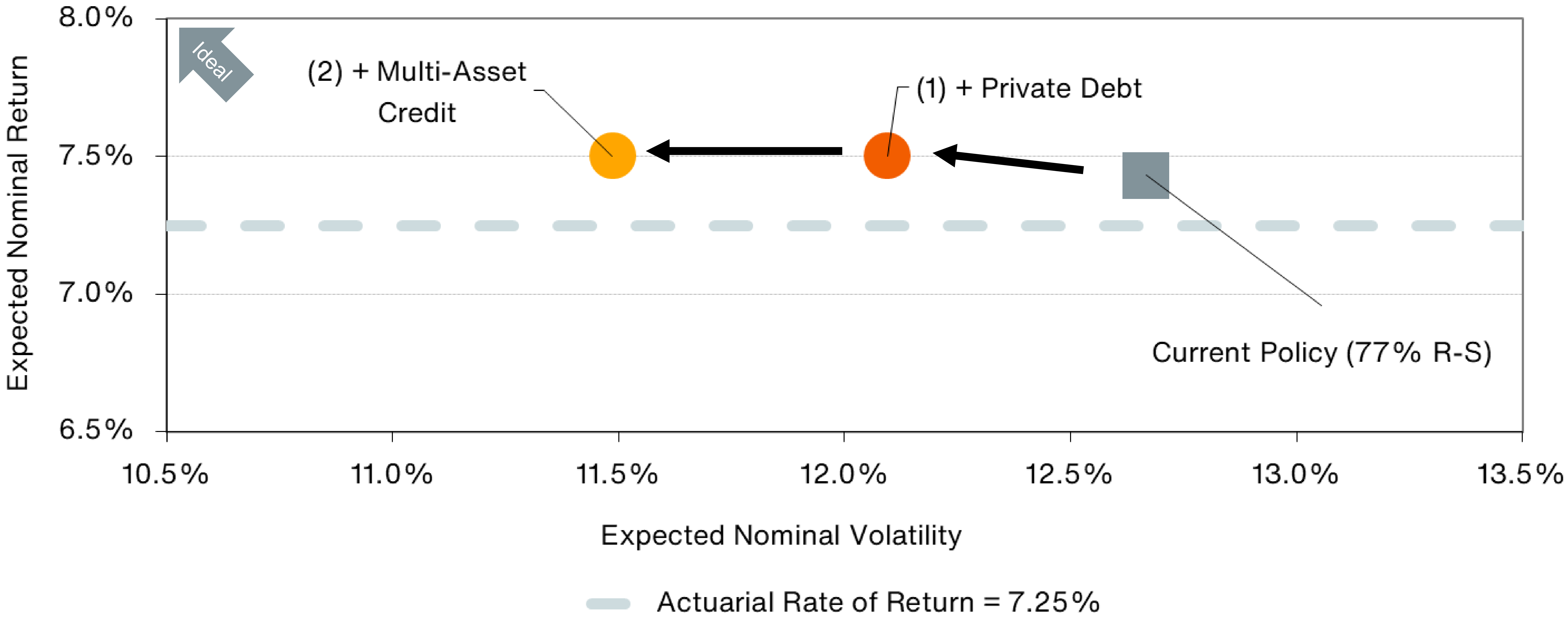
Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages. Percentages may not sum to 100% due to rounding.

# Additional Diversification Analysis

## Additional allocations to diversifying asset classes can improve expected risk/return

**Exhibit below highlights the risk vs. reward impact of adding diversifying assets into the return-seeking portfolio**

**Specifically, private debt and multi-asset credit strategies have been identified in preliminary analysis to offer enhanced diversification in the context of PERA's portfolio**




**Observations:**

- Analysis demonstrates risk/return impacts of adding private debt and multi-asset credit
- These strategies, and others, may be studied further to determine suitability for PERA

[1] Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.
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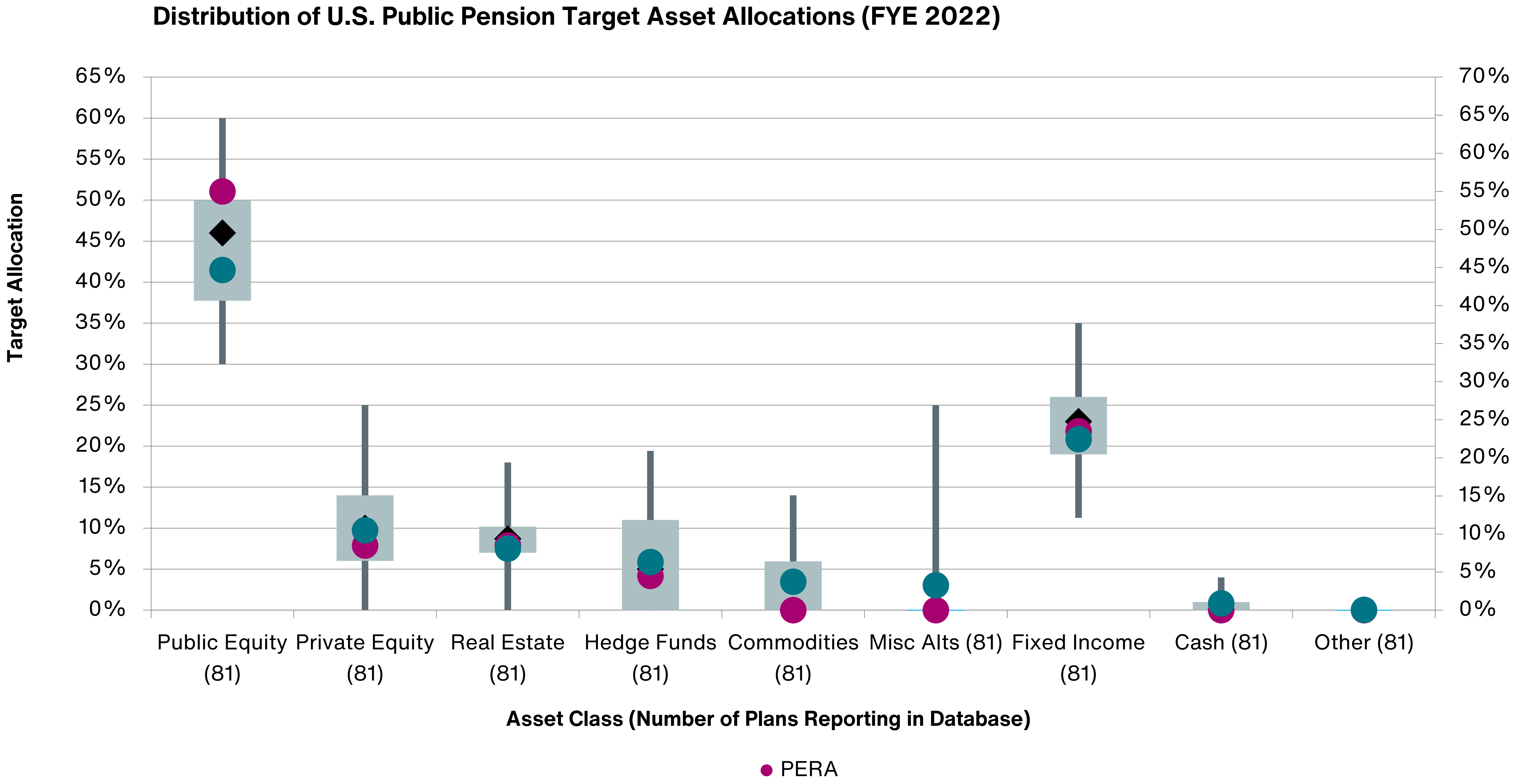
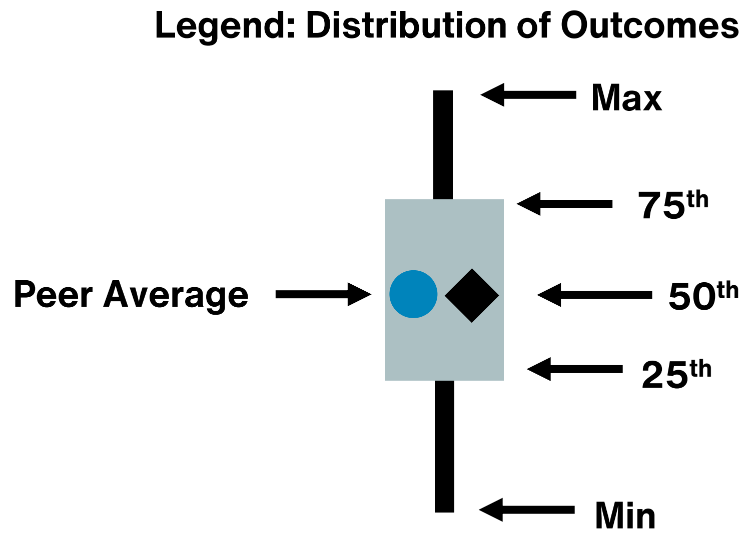
# Peer Comparisons

## Asset allocation peer[1] analysis (greater than $10B in Plan assets)




### Key Comments:

- Data sourced from annual financial report; thus, PERA alternatives allocation is re-allocated across equity, fixed income and hedge funds
- PERA public equity exposure is between the 75th and 95th percentile relative to public peers, likely due to preference for low cost internal management




Source: Public Plans Data (publicplansdata.org) as of September 2023

[1] Peers defined as public plans published within publicplansdata.org as of September 2023; Number of plans per year are shown in parentheses

Note: Publicplansdata.org spreads the alternatives allocation across global equity (1%), fixed income (0.5%), and hedge funds (4.5%) based on the annual financial report

# Next Steps

Confirm capital market assumptions as inputs into the Study, including timing for locking in the date of the CMAs

Continue to discuss with PERA Investment Team potential constraints and portfolios to study; seek Board input/approval at January meeting

Continue objective setting discussion

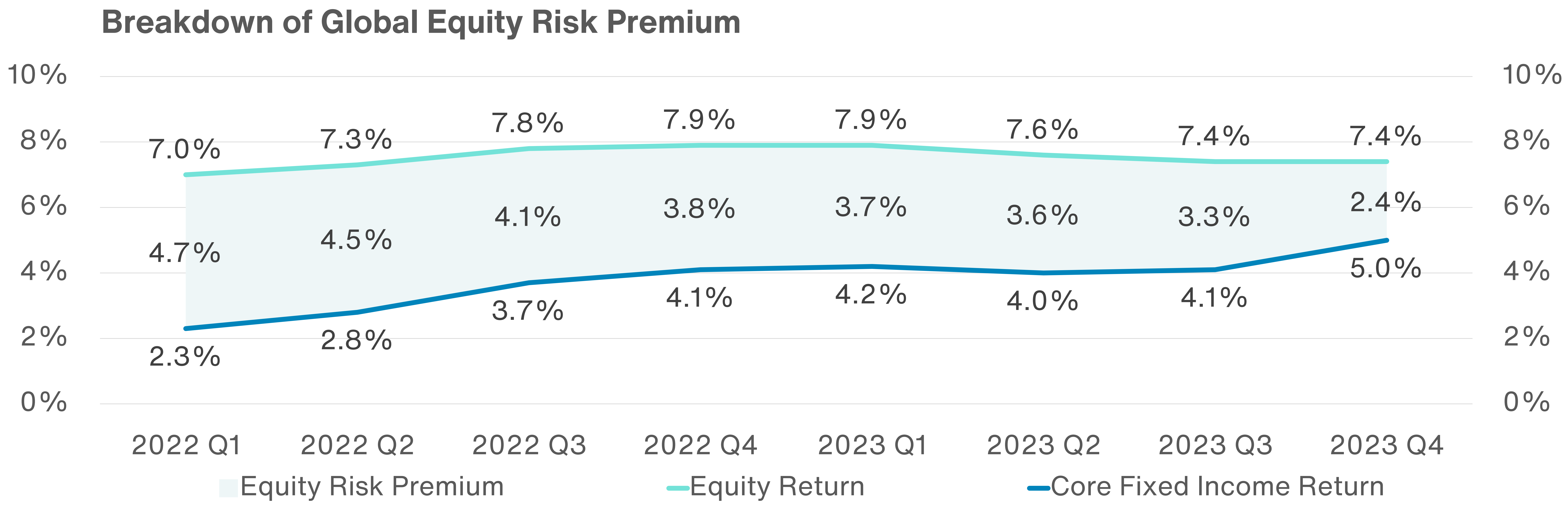
Initiate asset-liability modeling

# Appendix

# Aon Capital Market Assumptions ("CMAs")

Equity risk premium[1] has decreased, due to increased fixed income return expectations

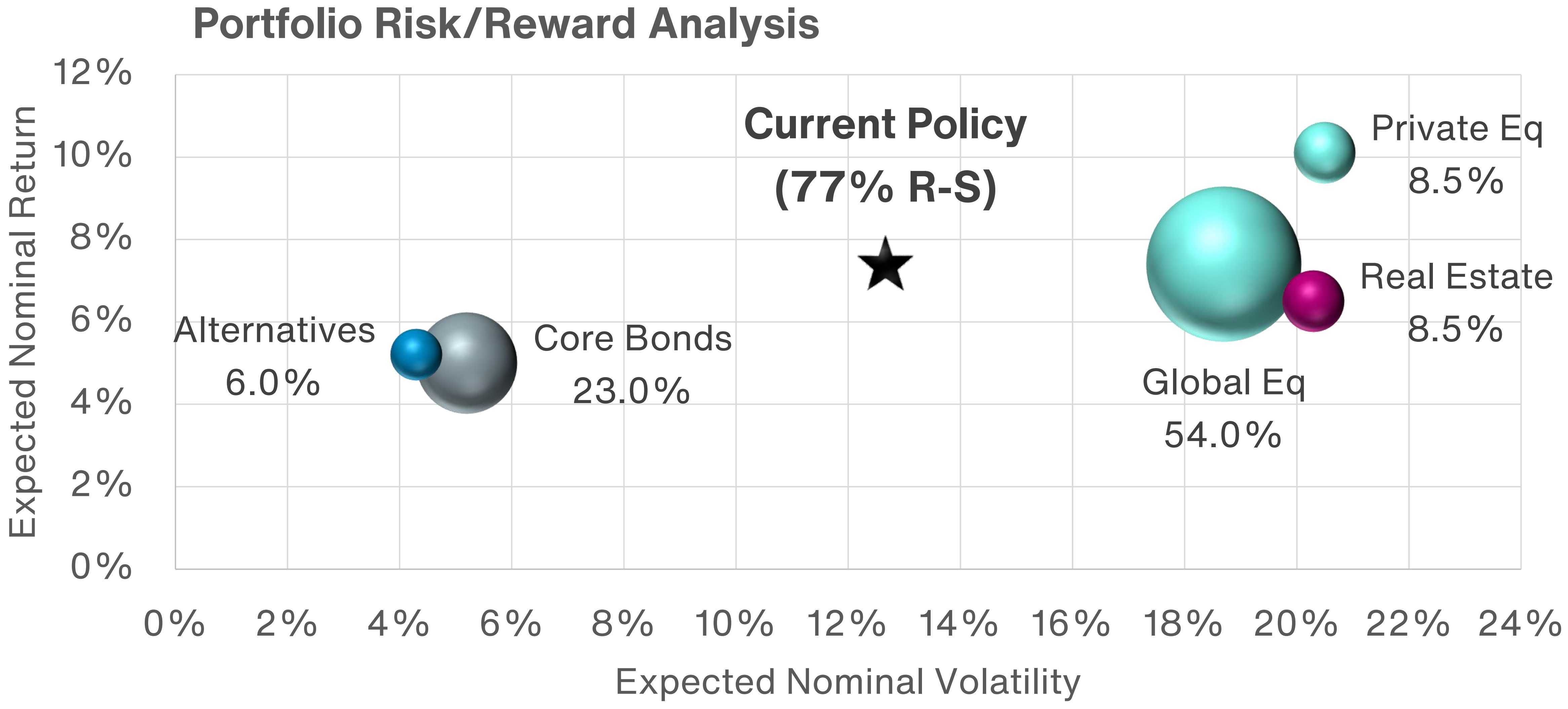
**Below is a quarter-over-quarter historical look at the breakdown of the global equity risk premium[1] (defined as global public equity less core fixed income) using Aon's 30-year CMAs**




[1] Equity Risk Premium is defined as the excess return earned over bonds that compensates investors for taking on higher risk

# Asset Allocation Analysis | Current Portfolio

## Current diversification results in an expected return of 7.43%[1]




**Legend:**

Bubble size proportional to current asset allocation (i.e., larger bubbles = larger allocations); Asset classes are color coded:

- Equities (teal), Alternatives (blue), Real Assets (purple), Safety (grey)

| Asset Class – Target % | Expected Real Return[1] | Expected Nominal Return[1] | Expected Nominal Volatility |
|---|---|---|---|
| **Equity** | | | |
| Global Equity – 54% | 5.0% | 7.4% | 18.7% |
| **Fixed Income** | | | |
| Core Bonds – 23% | 2.6% | 5.0% | 5.2% |
| **Alternatives** | | | |
| Private Equity – 8.5% | 7.6% | 10.1% | 20.5% |
| Real Estate – 8.5% | 4.1% | 6.5% | 20.3% |
| Alternatives – 6% | 4.2% | 6.6% | 8.1% |
| **Portfolio Metrics (30-Year Assumptions)** | | | |
| **Total Fund[1]** | **5.04%** | **7.43%** | **12.67%** |

[1] Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

# Multi-Asset Credit
## Description and Opportunities

### Description

Return-seeking fixed income assets that serve as an equity and core fixed income diversifier. The strategy focuses on the “high-yielding” segment of the fixed income universe, including, but not limited to, high yield, corporate bonds, leveraged loans, structured credit, multi-sector securitized, emerging market debt, convertible bonds, and stressed debt.

### Opportunities and Considerations

Opportunity: Strategic exposure to diversified credit premia. Multi-asset credit approach provides flexibility for managers not constrained by the market or the benchmark, via public and private securities, to generate value across the credit premia opportunity set via both security selection and sector rotation.

Considerations: Subject to credit cycle; return-seeking in nature thus associated risk to credit events. Potential overlap to any “plus” exposure within core risk-reducing fixed income portfolio.

### Modelling Assumptions

1/3 each to High Yield, Bank Loans and EMD -

30Y Return = 7.3% p.a., Volatility 9.0% p.a

Modeling assumptions are using Aon Q3 2023 30 Year Capital Market Assumptions as of 06/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

# Multi-Asset Credit

## Sub-Asset Class Diversification Benefits

Differentiation across securities within a MAC strategy should allow for diversification benefits in portfolios composed primarily of equity and traditional investment-grade fixed income securities

The below table displays broad sector indices which may be present in a MAC strategy, along with other asset classes typically found in a portfolio

| 5 Year Correlations (through Sept 2023) | US High Yield | US Bank Loans | US Convertibles | US Securitized | Emerging Markets Debt | US Corporate Fixed Income | US Core Fixed Income | US Equities | Global Equities | Commodities |
|---|---|---|---|---|---|---|---|---|---|---|
| US High Yield | 1.00 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| US Bank Loans | 0.81 | 1.00 | --- | --- | --- | --- | --- | --- | --- | --- |
| US Convertibles | 0.83 | 0.72 | 1.00 | --- | --- | --- | --- | --- | --- | --- |
| US Securitized | 0.42 | 0.05 | 0.29 | 1.00 | --- | --- | --- | --- | --- | --- |
| Emerging Markets Debt | 0.86 | 0.73 | 0.73 | 0.53 | 1.00 | --- | --- | --- | --- | --- |
| US Corporate Fixed Income | 0.76 | 0.55 | 0.63 | 0.75 | 0.86 | 1.00 | --- | --- | --- | --- |
| US Core Fixed Income | 0.49 | 0.15 | 0.37 | 0.94 | 0.62 | 0.88 | 1.00 | --- | --- | --- |
| US Equities | 0.83 | 0.62 | 0.87 | 0.38 | 0.71 | 0.62 | 0.41 | 1.00 | --- | --- |
| Global Equities | 0.86 | 0.67 | 0.90 | 0.40 | 0.77 | 0.66 | 0.43 | 0.98 | 1.00 | --- |
| Commodities | 0.58 | 0.62 | 0.50 | -0.13 | 0.45 | 0.16 | -0.13 | 0.48 | 0.54 | 1.00 |

Source: eVestment; US High Yield = ICE BofAML US High Yield Constrained, US Bank Loans = Credit Suisse Leveraged Loan, US Convertibles = ICE BofAML All US Convertible, US Securitized = Bloomberg US Securitized, Emerging Markets Debt = JPM EMBI Global Diversified, US Corporate Fixed Income = ICE BofAML US Corporate, US Core Fixed Income = Bloomberg US Aggregate, US Equities = S&P 500, Global Equities = MSCI ACWI IMI-ND, Commodities = S&P Goldman Sachs Commodity Index

# MAC: Credit Sectors Perform Differently Year on Year

## No one sector consistently outperforms others over time; there is value in sector rotation

| Credit Sector | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Investment Grade Credit | 3.57 | 3.15 | -5.09 | 16.60 | 7.25 | 4.79 | 10.92 | 0.07 | 7.59 | -0.23 | 6.22 | 5.70 | -0.99 | 12.51 | 8.26 | -0.79 | -14.11 |
| Global High Yield | 12.02 | 1.73 | -27.01 | 60.70 | 15.39 | 3.18 | 18.89 | 7.10 | 2.53 | -2.03 | 16.21 | 8.02 | -1.90 | 14.54 | 6.61 | 3.04 | -11.39 |
| Loans | 7.33 | 1.88 | -28.75 | 44.87 | 9.97 | 1.82 | 9.43 | 6.15 | 2.06 | -0.38 | 9.88 | 4.25 | 1.14 | 8.17 | 2.78 | 5.40 | -1.06 |
| EMD HC | 9.86 | 6.16 | -12.03 | 29.82 | 12.24 | 7.34 | 17.44 | -5.25 | 7.43 | 1.18 | 10.15 | 10.26 | -4.26 | 15.04 | 5.26 | -1.80 | -17.78 |
| | | | | | | | | | | | | | | | | | |
| *Highest Vs Lowest Difference* | *8.45* | *4.43* | *23.66* | *44.09* | *8.15* | *5.53* | *9.45* | *12.35* | *5.54* | *3.22* | *9.99* | *6.01* | *5.40* | *6.86* | *5.48* | *7.19* | *16.73* |

| Key | Best performing sector | Worst performing sector |
|---|---|---|

Source: eVestment; Global Investment Grade Credit = Bloomberg Global Aggregate Corporate Hedged (USD) Index, Global High Yield = ICE BofAML Global High Yield Hedged (USD), Loans = Credit Suisse Leveraged Loan Index, EMD HC = JPM EMBI Global Diversified Index

# Private Debt
## Description and Opportunities

### Description

Illiquid Fixed Income focuses on privately traded debt which is predominantly sub-investment grade and floating rate debt. It covers a wide range of strategies from direct lending through to opportunistic credit investments. These loans are typically made in closed end structures and the vehicles are not liquid. The funds available to invest in are dictated to by which managers are raising funds in a particular vintage year.

### Opportunities and Considerations

Opportunity: Diversified source of return, capturing illiquidity premium over public loans and offering complementary access to economic activity. Focus on current income and potential for capital appreciation over different market cycles. Structuring the portfolio to benefit from a wide range of strategies and capturing illiquidity and complexity premia.

Considerations: Increased illiquidity, higher fees (than public markets) and greater complexity

### Opportunities and Considerations

Private Debt - Direct Lending

30Y Return = 7.7% p.a., Volatility 17.5% p.a.

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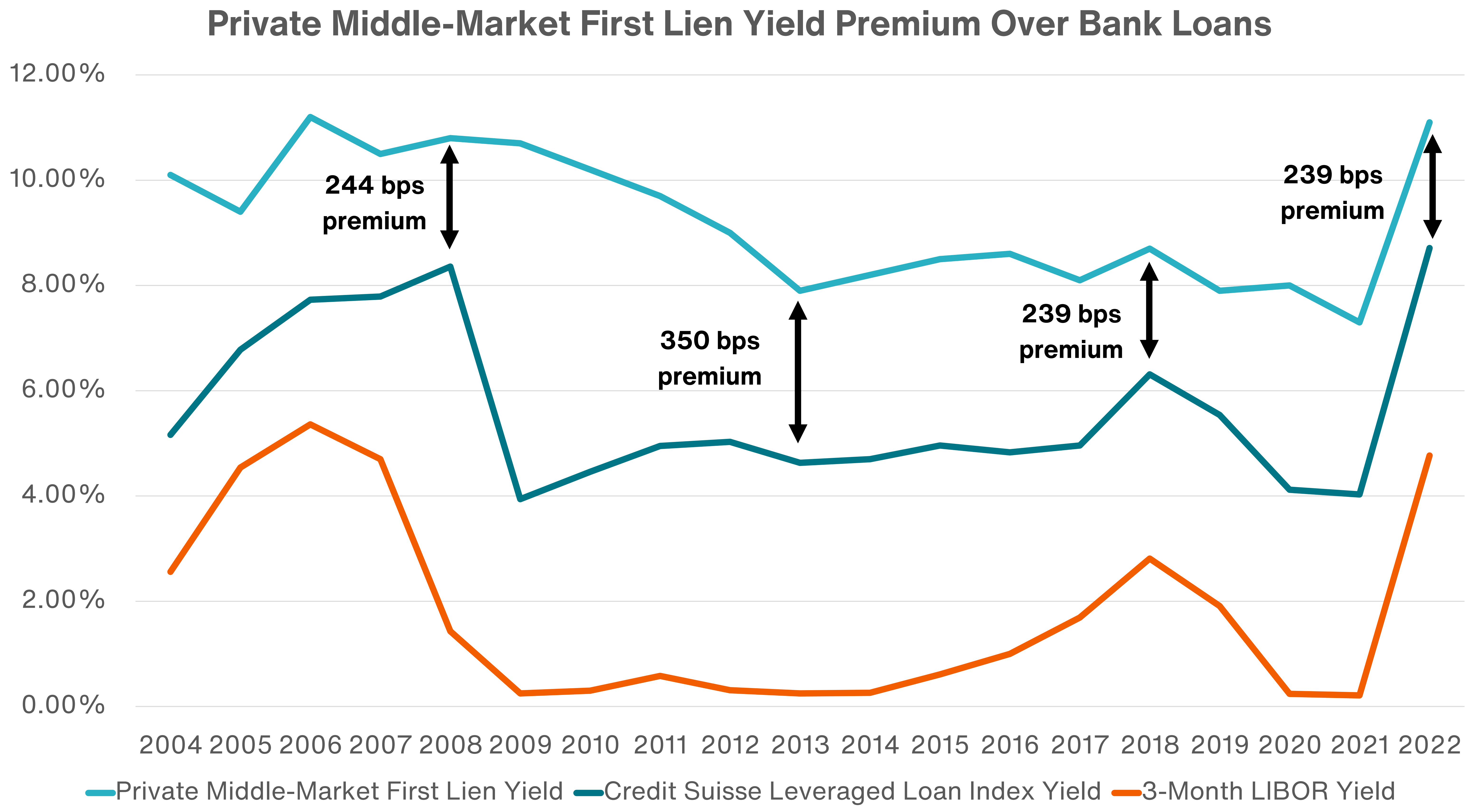
# Private Debt

## Offers an Attractive Yield




- Private middle-market loans, with comparable risk to broadly syndicated loans, display an average illiquidity premium of more than 200 bps historically with current levels around 239 bps.
- Private middle-market loans are typically structured as floating rate and therefore as interest rates rise the yields will increase.
- Modest leverage applied can increase expected yield advantages further.

Source: Ares Management
1 Includes all unrealized first lien investments of the Ares Credit Group's U.S. direct lending team, including investments made through Ares Capital Corporation (NASDAQ: ARCC) and from separately managed accounts and other funds. Yield reflects the weighted average yield on debt and other income producing securities and is computed as (a) annual stated interest rate of yield earned plus the net annual amortization of original issue discount and market discount of premium earned on accruing debt and other income producing securities, divided by (b) total accruing debt and other income producing securities at fair value.
2 Reflects annual current yield of first lien assets in the Credit Suisse Leveraged Loan Index (CSLLI).

# Aon's Capital Market Assumptions
## Background

- Long-term (10- and 30-year forecasts) forward-looking assumptions (asset class geometric return, volatility, and correlations)
- Building Block approach, primarily based on consensus expectations and market-based inputs
- Best estimates of annualized returns (50/50 better or worse)
- Market returns: no active management value added (except for certain assets classes, such as hedge funds)
- Net of investment fees
- Updated quarterly
- We show Aon's long-term (i.e., 30-year) capital market assumptions throughout this material

# Aon's Capital Market Assumption Framework

## Building block approach

### Expected return estimates for equity and fixed income are developed using a building block approach

Expected returns based on observable information in the equity and fixed income markets and consensus estimates for major economic and capital market inputs, such as earnings and inflation

Where necessary, judgment-based modifications are made to these inputs

### Return assumptions for other asset classes are based on historical results, current market characteristics, and professional judgment from our specialist research teams

Example: Public Equities

| INCOME (Earnings Yield x Sustainable Payout Ratio) | + | GROWTH (Real EPS Growth) | + | INFLATION | = | TOTAL (Equity Return) |
|---|---|---|---|---|---|---|
| Earnings yield moves directly with market; Sustainable payout ratio is a constant and based on Aon's assumptions | | Based on Aon's in-house trend analysis, I/B/E/S estimates and Consensus Economics | | Based on consensus forecasts; Primary source is Consensus Economics | | FORWARD LOOKING ASSUMPTION |

# Summary of Capital Market Assumptions

## As of September 30, 2023

| | | 10-Year CMAs | | | | 30-Year CMAs | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Expected Real Return[1] | Expected Nominal Return[1] | Expected Nominal Volatility | Assumed Global Equity Beta | Expected Real Return[1] | Expected Nominal Return[1] | Expected Nominal Volatility | Assumed Global Equity Beta |
| | **Equity** | | | | | | | | |
| 1 | Large Cap U.S. Equity | 4.3% | 6.7% | 18.0% | 0.96 | 4.6% | 7.0% | 18.5% | 0.97 |
| 2 | Small Cap U.S. Equity | 4.5% | 6.9% | 24.0% | 1.23 | 5.1% | 7.5% | 24.8% | 1.24 |
| 3 | Global Equity IMI | 4.5% | 6.9% | 18.2% | 1.00 | 5.0% | 7.4% | 18.7% | 1.00 |
| 4 | International Equity (Developed) | 4.3% | 6.7% | 19.2% | 0.94 | 4.6% | 7.0% | 19.7% | 0.94 |
| 5 | Emerging Markets Equity | 4.5% | 6.9% | 22.0% | 0.99 | 4.9% | 7.3% | 22.5% | 0.98 |
| | **Fixed Income** | | | | | | | | |
| 6 | Cash (Gov't) | 2.2% | 4.6% | 1.4% | 0.01 | 1.9% | 4.2% | 2.2% | 0.01 |
| 7 | Core Fixed Income | 2.9% | 5.3% | 5.0% | 0.00 | 2.6% | 5.0% | 5.2% | 0.00 |
| 8 | Long Duration Bonds – Credit | 4.0% | 6.4% | 9.7% | 0.03 | 3.8% | 6.2% | 10.1% | 0.03 |
| 9 | Long Duration Bonds – Gov't | 3.1% | 5.5% | 10.2% | -0.08 | 2.6% | 5.0% | 9.9% | -0.07 |
| 10 | Multi-Asset Credit[2] | 5.0% | 7.4% | 8.8% | 0.30 | 4.9% | 7.3% | 9.0% | 0.30 |
| | **Alternatives** | | | | | | | | |
| 11 | Hedge Funds – Low Beta[3] | 3.2% | 5.6% | 4.0% | 0.09 | 2.8% | 5.2% | 4.3% | 0.09 |
| 12 | Core Real Estate | 3.2% | 5.6% | 15.0% | 0.30 | 3.1% | 5.5% | 15.4% | 0.30 |
| 13 | Non-Core Real Estate | 5.1% | 7.5% | 25.0% | 0.65 | 4.8% | 7.2% | 25.5% | 0.65 |
| 14 | Private Equity | 6.7% | 9.2% | 20.0% | 0.69 | 7.6% | 10.1% | 20.5% | 0.69 |
| 15 | Infrastructure | 4.8% | 7.2% | 14.5% | 0.28 | 4.7% | 7.1% | 15.0% | 0.28 |
| 16 | Closed-End Real Assets | 5.6% | 8.0% | 15.7% | 0.47 | 5.6% | 8.0% | 16.2% | 0.47 |
| 17 | Farmland | 3.1% | 5.5% | 15.0% | 0.01 | 3.1% | 5.5% | 15.5% | 0.01 |
| 18 | Timber | 2.4% | 4.8% | 11.9% | 0.01 | 2.4% | 4.8% | 12.3% | 0.01 |
| 19 | Private Debt | 5.8% | 8.2% | 16.5% | 0.33 | 5.3% | 7.7% | 17.5% | 0.34 |
| | **Inflation** | | | | | | | | |
| 20 | Inflation | 0.0% | 2.3% | 1.7% | | 0.0% | 2.3% | 1.8% | |

[1] Expected returns are using Aon's 10/30-Year Capital Market Assumptions as of 6/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

[2] Alpha incorporated in Expected Nominal Return

[3] Represents diversified portfolio of Direct hedge fund investments.

# Summary of Capital Market Assumptions

## As of September 30, 2023

| | Nominal Correlations | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Large Cap U.S. Equity | **1.00** | 0.93 | 0.98 | 0.79 | 0.73 | 0.09 | 0.00 | 0.06 | -0.13 | 0.58 | 0.40 | 0.35 | 0.46 | 0.62 | 0.35 | 0.52 | 0.01 | 0.01 | 0.34 | 0.09 |
| 2 | Small Cap U.S. Equity | 0.93 | **1.00** | 0.93 | 0.74 | 0.69 | 0.08 | 0.00 | 0.05 | -0.13 | 0.54 | 0.38 | 0.33 | 0.44 | 0.60 | 0.34 | 0.50 | 0.01 | 0.01 | 0.33 | 0.08 |
| 3 | Global Equity IMI | 0.98 | 0.93 | **1.00** | 0.89 | 0.82 | 0.09 | -0.01 | 0.06 | -0.14 | 0.62 | 0.41 | 0.36 | 0.48 | 0.63 | 0.35 | 0.54 | 0.01 | 0.02 | 0.37 | 0.10 |
| 4 | International Equity (Developed) | 0.79 | 0.74 | 0.89 | **1.00** | 0.75 | 0.05 | -0.01 | 0.05 | -0.13 | 0.58 | 0.36 | 0.34 | 0.44 | 0.55 | 0.31 | 0.49 | 0.01 | 0.03 | 0.34 | 0.11 |
| 5 | Emerging Markets Equity | 0.73 | 0.69 | 0.82 | 0.75 | **1.00** | 0.07 | 0.00 | 0.07 | -0.13 | 0.61 | 0.34 | 0.33 | 0.41 | 0.53 | 0.30 | 0.46 | 0.01 | 0.02 | 0.37 | 0.09 |
| 6 | Cash (Gov't) | 0.09 | 0.08 | 0.09 | 0.05 | 0.07 | **1.00** | 0.43 | 0.23 | 0.23 | 0.04 | 0.20 | 0.16 | 0.15 | 0.10 | 0.14 | 0.18 | 0.06 | 0.09 | -0.23 | 0.41 |
| 7 | Core Fixed Income | 0.00 | 0.00 | -0.01 | -0.01 | 0.00 | 0.43 | **1.00** | 0.88 | 0.80 | 0.19 | 0.11 | 0.05 | 0.04 | 0.01 | 0.04 | 0.05 | 0.00 | 0.00 | -0.03 | -0.01 |
| 8 | Long Duration Bonds – Credit | 0.06 | 0.05 | 0.06 | 0.05 | 0.07 | 0.23 | 0.88 | **1.00** | 0.81 | 0.33 | 0.16 | 0.05 | 0.05 | 0.06 | 0.05 | 0.06 | -0.01 | -0.02 | 0.15 | -0.11 |
| 9 | Long Duration Bonds – Gov't | -0.13 | -0.13 | -0.14 | -0.13 | -0.13 | 0.23 | 0.80 | 0.81 | **1.00** | -0.15 | -0.07 | -0.04 | -0.06 | -0.11 | -0.04 | -0.06 | -0.02 | -0.04 | -0.28 | -0.16 |
| 10 | Multi-Asset Credit | 0.58 | 0.54 | 0.62 | 0.58 | 0.61 | 0.04 | 0.19 | 0.33 | -0.15 | **1.00** | 0.44 | 0.21 | 0.28 | 0.38 | 0.21 | 0.32 | 0.01 | 0.02 | 0.68 | 0.10 |
| 11 | Hedge Funds – Low Beta | 0.40 | 0.38 | 0.41 | 0.36 | 0.34 | 0.20 | 0.11 | 0.16 | -0.07 | 0.44 | **1.00** | 0.19 | 0.23 | 0.29 | 0.18 | 0.26 | 0.01 | 0.03 | 0.29 | 0.11 |
| 12 | Core Real Estate | 0.35 | 0.33 | 0.36 | 0.34 | 0.33 | 0.16 | 0.05 | 0.05 | -0.04 | 0.21 | 0.19 | **1.00** | 0.96 | 0.32 | 0.19 | 0.85 | 0.01 | 0.01 | 0.12 | 0.09 |
| 13 | Non-Core Real Estate | 0.46 | 0.44 | 0.48 | 0.44 | 0.41 | 0.15 | 0.04 | 0.05 | -0.06 | 0.28 | 0.23 | 0.96 | **1.00** | 0.38 | 0.22 | 0.89 | 0.02 | 0.02 | 0.16 | 0.10 |
| 14 | Private Equity | 0.62 | 0.60 | 0.63 | 0.55 | 0.53 | 0.10 | 0.01 | 0.06 | -0.11 | 0.38 | 0.29 | 0.32 | 0.38 | **1.00** | 0.33 | 0.45 | 0.01 | 0.02 | 0.27 | 0.08 |
| 15 | Infrastructure | 0.35 | 0.34 | 0.35 | 0.31 | 0.30 | 0.14 | 0.04 | 0.05 | -0.04 | 0.21 | 0.18 | 0.19 | 0.22 | 0.33 | **1.00** | 0.64 | 0.01 | 0.02 | 0.13 | 0.08 |
| 16 | Closed-End Real Assets | 0.52 | 0.50 | 0.54 | 0.49 | 0.46 | 0.18 | 0.05 | 0.06 | -0.06 | 0.32 | 0.26 | 0.85 | 0.89 | 0.45 | 0.64 | **1.00** | 0.01 | 0.02 | 0.19 | 0.12 |
| 17 | Farmland | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.06 | 0.00 | -0.01 | -0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | **1.00** | 0.32 | 0.00 | 0.13 |
| 18 | Timber | 0.01 | 0.01 | 0.02 | 0.03 | 0.02 | 0.09 | 0.00 | -0.02 | -0.04 | 0.02 | 0.03 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.32 | **1.00** | 0.01 | 0.21 |
| 19 | Private Debt | 0.34 | 0.33 | 0.37 | 0.34 | 0.37 | -0.23 | -0.03 | 0.15 | -0.28 | 0.68 | 0.29 | 0.12 | 0.16 | 0.27 | 0.13 | 0.19 | 0.00 | 0.01 | **1.00** | -0.01 |
| 20 | Inflation | 0.09 | 0.08 | 0.10 | 0.11 | 0.09 | 0.41 | -0.01 | -0.11 | -0.16 | 0.10 | 0.11 | 0.09 | 0.10 | 0.08 | 0.08 | 0.12 | 0.13 | 0.21 | -0.01 | **1.00** |

# Aon Investments’ Capital Market Assumptions

## Explanation of Capital Market Assumptions—09/30/2023

The following capital market assumptions were developed by Aon’s Global Asset Allocation Team and represent the long-term capital market outlook (i.e., 30 years) based on data at the end of the third quarter of 2023. The assumptions were developed using a building block approach, reflecting observable inflation and interest rate information available in the fixed income markets as well as Consensus Economics forecasts. Our long-term assumptions for other asset classes are based on historical results, current market characteristics, and our professional judgment. Expected returns are using Aon 30 Year Capital Market Assumptions as of 09/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

### Inflation – Expected Level (2.3%)

Based on Consensus Economics long-term estimates and our near-term economic outlook, we expect U.S. consumer price inflation to be approximately 2.3% during the next 30 years.

### Real Returns for Asset Classes

| **Fixed Income** | | |
|---|---|---|
| **Cash** | 1.9% | Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 1.9% in a moderate to low-inflationary environment. |
| **TIPS** | 2.2% | We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 2.2%. |
| **Core Fixed Income (i.e., Market Duration)** | 2.6% | We expect intermediate duration Treasuries to produce a real return of about 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.7%, resulting in a long-term real return of 1.8%. |

# Aon Investments' Capital Market Assumptions

## Explanation of Capital Market Assumptions—09/30/2023

| Fixed Income | | |
|---|---|---|
| **Core Plus Bonds** | 3.0% | Modeled as 20% 5 duration gov't with real return of 1.9% and 80% 5 duration corporate bonds with real return of 3.3%. |
| **Long Duration Bonds – Government and Credit** | 3.1% | We expect Treasuries with a duration of ~14 years to produce a real return of 2.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.5%, resulting in an expected real return of 3.1%. |
| **Long Duration Bonds – Credit** | 3.8% | We expect Treasuries with a duration of ~12 years to produce a real return of 2.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 1.2%, resulting in an expected real return of 3.8%. |
| **Long Duration Bonds – Government** | 2.6% | We expect Treasuries with a duration of ~16 years to produce a real return of 2.6% during the next 30 years. |
| **High Yield Bonds** | 3.9% | We expect intermediate duration Treasuries to produce a real return of about 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 2.0%, resulting in an expected real return of 3.9%. |
| **Bank Loans** | 4.1% | We expect LIBOR to produce a real return of about 2.5%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 1.6%, resulting in an expected real return of 4.1%. |
| **Non-U.S. Developed Bonds: 50% Hedged** | 2.1% | We forecast real returns for non-US developed market bonds to be 2.1% over a 30-year period after adjusting for a 50% currency hedge. We assume a blend of one-third investment grade corporate bonds and two-thirds government bonds. We also produce assumptions for 0% hedged and 100% hedged non-US developed bonds. |
| **Emerging Market Bonds (Sovereign; USD)** | 4.2% | We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 4.2% over a 30-year period. |
| **Emerging Market Bonds (Corporate; USD)** | 3.9% | We forecast real returns for emerging market corporate bonds denominated in US dollars to be 3.9% over a 30-year period. |

# Aon Investments’ Capital Market Assumptions

## Explanation of Capital Market Assumptions—09/30/2023

| | | |
|---|---|---|
| **Emerging Market Bonds (Sovereign; Local)** | 3.7% | We forecast real returns for emerging market sovereign bonds denominated in local currency to be 3.7% over a 30-year period. |
| **Multi-Asset Credit (MAC)** | 4.9% | We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 4.1% plus 0.8% from alpha (net of fees) over a 30-year period. |
| **Private Debt-Direct Lending** | 5.3% | The base building block is bank loans 4.1% + spread 1.2% (net of management fees and performance incentives). There is 100% leverage included in the assumption with the nominal cost of financing at LIBOR + 2.5%. |
| **Equities** | | |
| **Large Cap US. Equity** | 4.6% | This assumption is based on our 30-year outlook for large cap U.S. company dividends and real earnings growth. Adjustments are made for valuations as needed. |
| **Small Cap U.S. Equity** | 5.1% | Adding a 0.5% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 5.1%. This return premium is theoretically justified by the higher risk inherent in small cap U.S. equity versus large cap U.S. equity and is also justified by historical data. |
| **Global Equity (Developed & Emerging Markets** | 5.0% | We employ a building block process similar to the U.S. equity model using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 5.0% for global equity. |
| **International (Non-U.S.) Equity, Developed Markets** | 4.6% | We employ a building block process similar to the U.S. equity model using the non-U.S. developed equity markets that comprise the MSCI EAFE Index. |
| **Emerging Market Stocks** | 4.9% | We employ a building block process similar to the U.S. equity model using the non-U.S. emerging equity markets that comprise the MSCI Emerging Markets Index. |
| **Equity Risk Insurance Premium Strategies-High Beta** | 3.6% | We expect real returns from 50% equity + 50% cash beta plus insurance risk premium over the next 30 years. |

# Aon Investments’ Capital Market Assumptions

## Explanation of Capital Market Assumptions—09/30/2023

| Alternative Asset Classes | | |
|---|---|---|
| **Low Beta (Defensive) Hedge Funds** | 2.8% | Encompasses defensive/low volatility hedge fund strategies with low correlations to risk assets. This assumption represents median manager performance. 1% base fee + 10% performance fee is deducted from the return expectation. |
| **Low Beta (Defensive) Hedge Funds Buy List** | 3.8% | Represent top-tier defensive/low volatility hedge fund strategies with low correlations to risk assets. 1% base fee + 7% performance fee is deducted from return expectations. To use this category the funds must be buy rated or we advise on manager selection. |
| **High Beta (Return Enhancing) Hedge Funds** | 3.8% | Encompasses return enhancing/higher volatility hedge fund strategies with higher correlations to risk assets. The assumption represents median manager performance. 1% base fee + 10% performance fee is deducted from the return expectations. |
| **High Beta (Return Enhancing) Hedge Funds Buy List** | 5.8% | Represents top-tier return enhancing/higher volatility hedge fund strategies with higher correlations to risk assets. 1% base fee + 7% performance fee is deducted from return expectations. To use this category the funds must be buy rated or we advise on manager selection. |
| **Broad Hedge Funds Universe** | 3.3% | Generic hedge fund investments which represents a portfolio of diversified strategies. We assume 50% defensive/50% return enhancing strategies. 1% base fee + 10% performance fee is deducted from the return expectations. |
| **Broad Hedge Funds Buy List** | 4.8% | Generic hedge fund investments which represents a portfolio of top-tier diversified strategies. We assume 50% defensive buy list/50% return enhancing buy list strategies. To use this category the funds must be buy rated or we advise on manager selection. 1% base fee + 7% performance fee is deducted from the return expectations. |
| **Core Real Estate** | 3.1% | Our real return assumption for core real estate is based a gross income of about 3.6%, management fees of roughly 1%, 25% leverage and future capital appreciation near the rate of inflation during the next 30 years. We assume a portfolio of equity real estate holdings that is diversified by property and by geographic region. |
| **Non-Core Real Estate** | 4.8% | Core real estate is levered approximately 100% as the base building block for this assumption. We subtract financing costs for the leverage and 2% management costs. We also assume nominal alpha of 2% over core real estate. We assume a 50/50 mix of value-add and opportunistic investments. |
| **U.S. REITs** | 4.2% | Our real return assumption for U.S. REITs is based on income of about 4.4% and future capital appreciation near the rate of inflation during the next 30 years. REITs are a sub-set of U.S. small/mid cap equity universe. |

# Aon Investments’ Capital Market Assumptions

## Explanation of Capital Market Assumptions—09/30/2023

| | | |
|---|---|---|
| **Commodities** | 4.1% | Our assumption is for a diversified portfolio of commodity futures contracts. Commodity futures returns are composed of three parts: spot price appreciation, collateral return, and roll return (positive or negative change implied by the shape of the future curve). We believe that spot prices will converge with CPI over the long run (i.e., 2.3%). Collateral is assumed to be Gov’t cash (1.9%). Also, we believe the roll effect will be near zero, resulting in a real return of about 4.1% for commodities. |
| **Private Equity** | 7.6% | Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt. |
| **Infrastructure** | 4.7% | Our infrastructure assumption is formulated using a cash flow-based approach that projects cash flows (on a diversified portfolio of assets) over a 30-year period. Income and capital growth as well as gearing levels, debt costs and terms, relevant tax and management expenses are all taken into consideration. Our approach produces an expected real return of 4.7% for infrastructure. |
| **Equity Risk Insurance Premium Strategies-Low Beta** | 4.3% | We assume real returns from cash of 1.9% + 2.4% from alpha. |
| **eLDI** | 4.0% | Combination of various long credit strategies (1/6 real estate debt, 1/3 securitized debt, 1/6 CMOs, 1/3 private placements) |
| **Closed-end Real Assets** | 6.1% | Modeled as 50% Non-Core Real Estate and 50% Infrastructure |

### Volatility/Correlation Assumptions

Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we “de-smooth” historical returns before calculating volatilities. Importantly, we consider expected volatility trends in the future – in recent years we assumed the re-emergence of an economic cycle and a loss of confidence in central bankers would lead to an increase in volatility. Correlation assumptions are generally similar to actual historical results; however, we do make adjustments to reflect our forward-looking views as well as current market fundamentals.

# Summary of Capital Market Assumptions

As of June 30, 2023

| | | 10-Year CMAs | | | | 30-Year CMAs | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Expected Real Return[1] | Expected Nominal Return[1] | Expected Nominal Volatility | Assumed Global Equity Beta | Expected Real Return[1] | Expected Nominal Return[1] | Expected Nominal Volatility | Assumed Global Equity Beta |
| | **Equity** | | | | | | | | |
| **1** | Large Cap U.S. Equity | 3.8% | 6.2% | 17.0% | 0.91 | 4.4% | 6.8% | 17.4% | 0.91 |
| **2** | Small Cap U.S. Equity | 4.0% | 6.4% | 23.0% | 1.18 | 4.9% | 7.3% | 23.7% | 1.18 |
| **3** | Global Equity IMI | 4.3% | 6.7% | 18.1% | 1.00 | 5.0% | 7.4% | 18.6% | 1.00 |
| **4** | International Equity (Developed) | 4.4% | 6.8% | 20.3% | 1.01 | 4.9% | 7.3% | 20.8% | 1.01 |
| **5** | Emerging Markets Equity | 4.7% | 7.1% | 24.0% | 1.09 | 5.3% | 7.7% | 24.5% | 1.09 |
| | **Fixed Income** | | | | | | | | |
| **6** | Cash (Gov't) | 1.4% | 3.7% | 1.6% | 0.01 | 1.0% | 3.3% | 2.2% | 0.01 |
| **7** | Core Fixed Income | 2.2% | 4.5% | 5.0% | 0.00 | 1.8% | 4.1% | 5.2% | 0.00 |
| **8** | Long Duration Bonds – Credit | 3.3% | 5.7% | 10.3% | 0.03 | 3.0% | 5.4% | 10.6% | 0.03 |
| **9** | Long Duration Bonds – Gov't | 2.4% | 4.8% | 10.8% | -0.08 | 1.9% | 4.2% | 10.6% | -0.08 |
| **10** | Multi-Asset Credit[2] | 4.6% | 7.0% | 8.9% | 0.32 | 4.5% | 6.9% | 9.1% | 0.32 |
| | **Alternatives** | | | | | | | | |
| **11** | Direct Hedge Funds[2] [3] | 3.8% | 6.2% | 9.0% | 0.32 | 3.7% | 6.1% | 9.6% | 0.33 |
| **12** | Core Real Estate | 3.4% | 5.8% | 15.0% | 0.30 | 3.2% | 5.6% | 15.4% | 0.30 |
| **13** | Non-Core Real Estate | 5.5% | 7.9% | 25.0% | 0.66 | 5.3% | 7.7% | 25.5% | 0.65 |
| **14** | Private Equity | 6.4% | 8.8% | 25.0% | 0.87 | 7.3% | 9.8% | 25.6% | 0.87 |
| **15** | Infrastructure | 4.7% | 7.1% | 14.5% | 0.28 | 4.7% | 7.1% | 15.0% | 0.29 |
| **16** | Closed-End Real Assets | 5.8% | 8.2% | 15.7% | 0.47 | 5.8% | 8.2% | 16.1% | 0.47 |
| **17** | Farmland | 3.1% | 5.5% | 15.0% | 0.01 | 3.1% | 5.5% | 15.5% | 0.01 |
| **18** | Timber | 2.4% | 4.8% | 12.0% | 0.02 | 2.4% | 4.8% | 12.3% | 0.02 |
| **19** | Private Debt | 5.9% | 8.3% | 16.5% | 0.35 | 5.3% | 7.7% | 17.5% | 0.36 |
| | **Inflation** | | | | | | | | |
| **20** | Inflation | 0.0% | 2.3% | 1.7% | | 0.0% | 2.3% | 1.7% | |

1 Expected returns are using Aon's 10/30-Year Capital Market Assumptions as of 6/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

2 Alpha incorporated in Expected Nominal Return

3 Represents diversified portfolio of Direct hedge fund investments.

# Summary of Capital Market Assumptions

## As of June 30, 2023

| Nominal Correlations | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Large Cap U.S. Equity | **1.00** | 0.93 | 0.97 | 0.81 | 0.73 | 0.10 | 0.00 | 0.05 | -0.12 | 0.60 | 0.65 | 0.35 | 0.46 | 0.62 | 0.35 | 0.52 | 0.02 | 0.02 | 0.35 | 0.09 |
| 2 Small Cap U.S. Equity | 0.93 | **1.00** | 0.93 | 0.75 | 0.69 | 0.09 | 0.00 | 0.05 | -0.12 | 0.56 | 0.61 | 0.33 | 0.43 | 0.60 | 0.34 | 0.50 | 0.01 | 0.02 | 0.34 | 0.09 |
| 3 Global Equity IMI | 0.97 | 0.93 | **1.00** | 0.90 | 0.82 | 0.09 | 0.00 | 0.05 | -0.13 | 0.64 | 0.64 | 0.37 | 0.48 | 0.63 | 0.35 | 0.54 | 0.02 | 0.02 | 0.38 | 0.11 |
| 4 International Equity (Developed) | 0.81 | 0.75 | 0.90 | **1.00** | 0.76 | 0.06 | -0.01 | 0.04 | -0.13 | 0.60 | 0.55 | 0.35 | 0.44 | 0.56 | 0.31 | 0.50 | 0.02 | 0.02 | 0.36 | 0.11 |
| 5 Emerging Markets Equity | 0.73 | 0.69 | 0.82 | 0.76 | **1.00** | 0.08 | 0.00 | 0.06 | -0.12 | 0.63 | 0.47 | 0.33 | 0.41 | 0.53 | 0.30 | 0.46 | 0.01 | 0.02 | 0.38 | 0.09 |
| 6 Cash (Gov't) | 0.10 | 0.09 | 0.09 | 0.06 | 0.08 | **1.00** | 0.45 | 0.23 | 0.23 | 0.06 | -0.02 | 0.17 | 0.16 | 0.10 | 0.15 | 0.20 | 0.06 | 0.09 | -0.25 | 0.44 |
| 7 Core Fixed Income | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.45 | **1.00** | 0.87 | 0.79 | 0.18 | -0.01 | 0.05 | 0.05 | 0.01 | 0.05 | 0.06 | 0.00 | 0.00 | -0.07 | 0.01 |
| 8 Long Duration Bonds – Credit | 0.05 | 0.05 | 0.05 | 0.04 | 0.06 | 0.23 | 0.87 | **1.00** | 0.83 | 0.30 | 0.16 | 0.04 | 0.05 | 0.05 | 0.05 | 0.06 | -0.01 | -0.02 | 0.12 | -0.11 |
| 9 Long Duration Bonds – Gov't | -0.12 | -0.12 | -0.13 | -0.13 | -0.12 | 0.23 | 0.79 | 0.83 | **1.00** | -0.15 | -0.21 | -0.04 | -0.06 | -0.11 | -0.04 | -0.06 | -0.02 | -0.03 | -0.29 | -0.15 |
| 10 Multi-Asset Credit | 0.60 | 0.56 | 0.64 | 0.60 | 0.63 | 0.06 | 0.18 | 0.30 | -0.15 | **1.00** | 0.70 | 0.22 | 0.29 | 0.39 | 0.22 | 0.33 | 0.01 | 0.02 | 0.67 | 0.10 |
| 11 Direct Hedge Funds | 0.65 | 0.61 | 0.64 | 0.55 | 0.47 | -0.02 | -0.01 | 0.16 | -0.21 | 0.70 | **1.00** | 0.21 | 0.29 | 0.41 | 0.22 | 0.33 | 0.01 | 0.01 | 0.58 | 0.06 |
| 12 Core Real Estate | 0.35 | 0.33 | 0.37 | 0.35 | 0.33 | 0.17 | 0.05 | 0.04 | -0.04 | 0.22 | 0.21 | **1.00** | 0.96 | 0.32 | 0.19 | 0.85 | 0.02 | 0.02 | 0.11 | 0.10 |
| 13 Non-Core Real Estate | 0.46 | 0.43 | 0.48 | 0.44 | 0.41 | 0.16 | 0.05 | 0.05 | -0.06 | 0.29 | 0.29 | 0.96 | **1.00** | 0.38 | 0.22 | 0.89 | 0.02 | 0.02 | 0.16 | 0.11 |
| 14 Private Equity | 0.62 | 0.60 | 0.63 | 0.56 | 0.53 | 0.10 | 0.01 | 0.05 | -0.11 | 0.39 | 0.41 | 0.32 | 0.38 | **1.00** | 0.33 | 0.45 | 0.01 | 0.02 | 0.27 | 0.08 |
| 15 Infrastructure | 0.35 | 0.34 | 0.35 | 0.31 | 0.30 | 0.15 | 0.05 | 0.05 | -0.04 | 0.22 | 0.22 | 0.19 | 0.22 | 0.33 | **1.00** | 0.64 | 0.01 | 0.02 | 0.13 | 0.09 |
| 16 Closed-End Real Assets | 0.52 | 0.50 | 0.54 | 0.50 | 0.46 | 0.20 | 0.06 | 0.06 | -0.06 | 0.33 | 0.33 | 0.85 | 0.89 | 0.45 | 0.64 | **1.00** | 0.02 | 0.02 | 0.19 | 0.13 |
| 17 Farmland | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.06 | 0.00 | -0.01 | -0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | **1.00** | 0.33 | -0.01 | 0.14 |
| 18 Timber | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.09 | 0.00 | -0.02 | -0.03 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.33 | **1.00** | 0.00 | 0.21 |
| 19 Private Debt | 0.35 | 0.34 | 0.38 | 0.36 | 0.38 | -0.25 | -0.07 | 0.12 | -0.29 | 0.67 | 0.58 | 0.11 | 0.16 | 0.27 | 0.13 | 0.19 | -0.01 | 0.00 | **1.00** | -0.01 |
| 20 Inflation | 0.09 | 0.09 | 0.11 | 0.11 | 0.09 | 0.44 | 0.01 | -0.11 | -0.15 | 0.10 | 0.06 | 0.10 | 0.11 | 0.08 | 0.09 | 0.13 | 0.14 | 0.21 | -0.01 | **1.00** |

# Aon Investments' Capital Market Assumptions

## Explanation of Capital Market Assumptions—06/30/2023

The following capital market assumptions were developed by Aon's Global Asset Allocation Team and represent the long-term capital market outlook (i.e., 30 years) based on data at the end of the second quarter of 2023. The assumptions were developed using a building block approach, reflecting observable inflation and interest rate information available in the fixed income markets as well as Consensus Economics forecasts.  Our long-term assumptions for other asset classes are based on historical results, current market characteristics, and our professional judgment. Expected returns are using Aon 30 Year Capital Market Assumptions as of 06/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

### Inflation – Expected Level (2.3%)

Based on Consensus Economics long-term estimates and our near-term economic outlook, we expect U.S. consumer price inflation to be approximately 2.3% during the next 30 years.

### Real Returns for Asset Classes

| Fixed Income | | |
|---|---|---|
| **Cash** | 1.0% | Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 1.0% in a moderate to low-inflationary environment. |
| **TIPS** | 1.5% | We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 1.5%. |
| **Core Fixed Income (i.e., Market Duration)** | 1.8% | We expect intermediate duration Treasuries to produce a real return of about 1.1%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.7%, resulting in a long-term real return of 1.8%. |

# Aon Investments' Capital Market Assumptions

## Explanation of Capital Market Assumptions—06/30/2023

| Fixed Income | | |
|---|---|---|
| **Core Plus Bonds** | 2.2% | Modeled as 20% 5 duration gov't with real return of 1.1% and 80% 5 duration corporate bonds with real return of 2.5%. |
| **Long Duration Bonds – Government and Credit** | 2.3% | We expect Treasuries with a duration of ~14 years to produce a real return of 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.4%, resulting in an expected real return of 2.3%. |
| **Long Duration Bonds – Credit** | 3.0% | We expect Treasuries with a duration of ~12 years to produce a real return of 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 1.1%, resulting in an expected real return of 3.0%. |
| **Long Duration Bonds – Government** | 1.9% | We expect Treasuries with a duration of ~16 years to produce a real return of 1.9% during the next 30 years. |
| **High Yield Bonds** | 3.5% | We expect intermediate duration Treasuries to produce a real return of about 1.1%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 2.4%, resulting in an expected real return of 3.5%. |
| **Bank Loans** | 3.6% | We expect LIBOR to produce a real return of about 1.7%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 1.9%, resulting in an expected real return of 3.6%. |
| **Non-U.S. Developed Bonds: 50% Hedged** | 1.4% | We forecast real returns for non-US developed market bonds to be 1.4% over a 30-year period after adjusting for a 50% currency hedge. We assume a blend of one-third investment grade corporate bonds and two-thirds government bonds. We also produce assumptions for 0% hedged and 100% hedged non-US developed bonds. |
| **Emerging Market Bonds (Sovereign; USD)** | 3.7% | We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 3.7% over a 30-year period. |
| **Emerging Market Bonds (Corporate; USD)** | 3.2% | We forecast real returns for emerging market corporate bonds denominated in US dollars to be 3.2% over a 30-year period. |

# Aon Investments' Capital Market Assumptions

## Explanation of Capital Market Assumptions—06/30/2023

| | | |
|---|---|---|
| **Emerging Market Bonds (Sovereign; Local)** | 3.3% | We forecast real returns for emerging market sovereign bonds denominated in local currency to be 3.3% over a 30-year period. |
| **Multi-Asset Credit (MAC)** | 4.5% | We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 3.7% plus 0.8% from alpha (net of fees) over a 30-year period. |
| **Private Debt-Direct Lending** | 5.3% | The base building block is bank loans 3.6% + spread 1.1% (net of management fees and performance incentives). There is 100% leverage included in the assumption with the nominal cost of financing at LIBOR + 2.5%. |
| **Equities** | | |
| **Large Cap US. Equity** | 4.4% | This assumption is based on our 30-year outlook for large cap U.S. company dividends and real earnings growth. Adjustments are made for valuations as needed. |
| **Small Cap U.S. Equity** | 4.9% | Adding a 0.5% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 4.9%. This return premium is theoretically justified by the higher risk inherent in small cap U.S. equity versus large cap U.S. equity and is also justified by historical data. |
| **Global Equity (Developed & Emerging Markets** | 5.0% | We employ a building block process similar to the U.S. equity model using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 5.0% for global equity. |
| **International (Non-U.S.) Equity, Developed Markets** | 4.9% | We employ a building block process similar to the U.S. equity model using the non-U.S. developed equity markets that comprise the MSCI EAFE Index. |
| **Emerging Market Stocks** | 5.3% | We employ a building block process similar to the U.S. equity model using the non-U.S. emerging equity markets that comprise the MSCI Emerging Markets Index. |
| **Equity Risk Insurance Premium Strategies-High Beta** | 3.5% | We expect real returns from 50% equity + 50% cash beta of 3.0% plus 0.5% insurance risk premium over the next 30 years. |

# Aon Investments’ Capital Market Assumptions

## Explanation of Capital Market Assumptions—06/30/2023

| Alternative Asset Classes | | |
|---|---|---|
| **Hedge Fund-of-Funds Universe** | 2.2% | The generic category “hedge funds” encompasses a wide range of strategies accessed through “fund-of-funds” vehicles. We also assume the median manager is selected and also allow for the additional costs associated with Fund-of-Funds management. A top-tier portfolio of funds (hedge fund-of-funds buy-list) could add an additional 1.2% in return at similar volatility based on alpha, lower fees and better risk management. |
| **Hedge Fund-of-Funds Buy List** | 3.5% | The generic category of top-tier “hedge funds” encompasses a wide range of strategies accessed through “fund-of-funds” vehicles. We assume additional costs associated with Funds-of-Funds management. To use this category the funds must be buy rated or we advise on manager selection. |
| **Broad Hedge Funds Universe** | 3.7% | Represents a diversified portfolio of direct hedge fund investments. This investment will tend to be less diversified than a typical “fund-of-funds” strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure. |
| **Broad Hedge Funds Buy List** | 5.1% | Represents a diversified portfolio of top-tier direct hedge fund investments. This investment will tend to be less diversified than a typical “fund-of-funds” strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure. To use this category the funds must be buy rated or we advise on manager selection. |
| **Core Real Estate** | 3.2% | Our real return assumption for core real estate is based a gross income of about 3.5%, management fees of roughly 1%, 25% leverage and future capital appreciation near the rate of inflation during the next 30 years. We assume a portfolio of equity real estate holdings that is diversified by property and by geographic region. |
| **Non-Core Real Estate** | 5.3% | Core real estate is levered approximately 100% as the base building block for this assumption. We subtract financing costs for the leverage and 2% management costs. We also assume nominal alpha of 2% over core real estate. We assume a 50/50 mix of value-add and opportunistic investments. |
| **U.S. REITs** | 4.4% | Our real return assumption for U.S. REITs is based on income of about 4.1% and future capital appreciation near the rate of inflation during the next 30 years. REITs are a sub-set of U.S. small/mid cap equity universe. |

# Aon Investments' Capital Market Assumptions

## Explanation of Capital Market Assumptions—06/30/2023

| | | |
|---|---|---|
| **Commodities** | 3.9% | Our assumption is for a diversified portfolio of commodity futures contracts. Commodity futures returns are composed of three parts: spot price appreciation, collateral return, and roll return (positive or negative change implied by the shape of the future curve). We believe that spot prices will converge with CPI over the long run (i.e., 2.3%). Collateral is assumed to be LIBOR cash (1.7%). Also, we believe the roll effect will be near zero, resulting in a real return of about 3.9% for commodities. |
| **Private Equity** | 7.3% | Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt. |
| **Infrastructure** | 4.7% | Our infrastructure assumption is formulated using a cash flow-based approach that projects cash flows (on a diversified portfolio of assets) over a 30-year period. Income and capital growth as well as gearing levels, debt costs and terms, relevant tax and management expenses are all taken into consideration. Our approach produces an expected real return of 4.7% for infrastructure. |
| **Equity Risk Insurance Premium Strategies-Low Beta** | 3.4% | We assume real returns from cash of 1.0% + 2.4% from alpha. |
| **Alternative Risk Premia (ARP)** | 5.6% | Real return target LIBOR 1.7% plus 3.9% alpha (net of fees) |
| **eLDI** | 3.2% | Combination of various long credit strategies (1/6 real estate debt, 1/3 securitized debt, 1/6 CMOs, 1/3 private placements) |
| **Closed-end Real Assets** | 5.8% | Modeled as 50% Non-Core Real Estate and 50% Infrastructure |

### Volatility/Correlation Assumptions

Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we "de-smooth" historical returns before calculating volatilities. Importantly, we consider expected volatility trends in the future – in recent years we assumed the re-emergence of an economic cycle and a loss of confidence in central bankers would lead to an increase in volatility. Correlation assumptions are generally similar to actual historical results; however, we do make adjustments to reflect our forward-looking views as well as current market fundamentals.

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Aon Investments USA Inc.
200 E. Randolph Street
Suite 700
Chicago, IL 60601
ATTN: Aon Investments Compliance Officer



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