Investment Consulting Services

State Teachers Retirement System of Ohio (STRS Ohio)

September 20, 2023

STRS Ohio Investment Committee Discussion Topics

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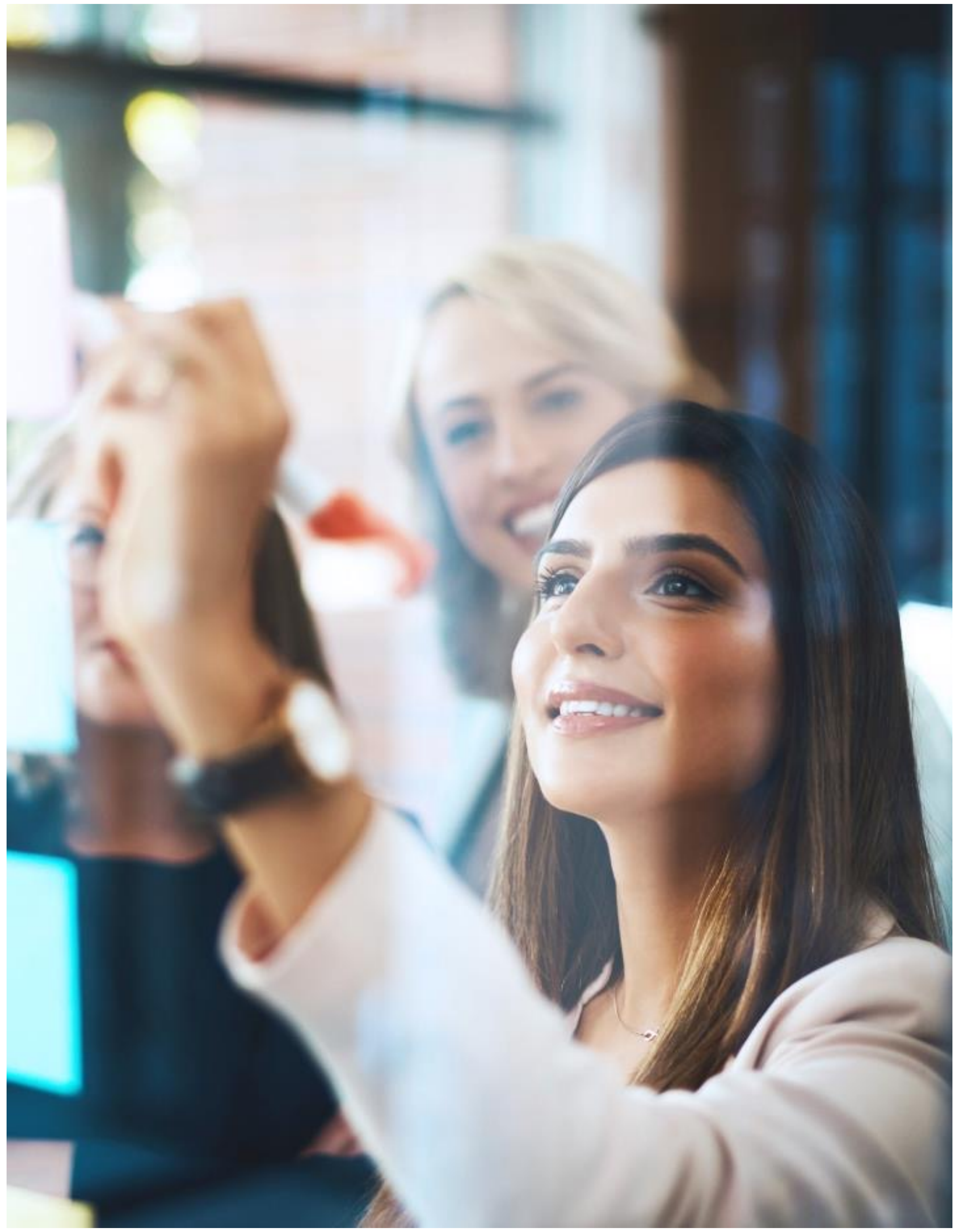


Introduction to Aon and The STRS Ohio Team

Aon Investments USA Inc.

$2.731T
in U.S. assets under advisement[1]

$120.4B in U.S. discretionary assets across **190** clients[2]

Global Footprint

$3.981 Trillion in global client assets[3]

$154.1 billion in global discretionary assets[4]

More than
320
U.S. colleagues[5]

140+
Professionals dedicated to Investment Manager Research, including **116** dedicated to alternative strategies[6]

9.2/10
Aon Client Experience Survey

520
U.S. client relationships[7] including

- Private & Public Pension Plans
- Defined Contribution Retirement Plans
- Endowments and Foundations
- Health Care
- Non-Profit
- Taft-Hartley Plans

Independent and objective advice – Revenue primarily derived from investment advisory services

Experience	Depth of Resources	Thought Leadership

[1] As of 12/31/2022, represents U.S. retainer non-discretionary assets
[2] As of 3/31/2023, total assets under management represents $120.4 B in U.S. discretionary assets under management advised by Aon Investments USA Inc.
[3] Combined figures which includes assets as of 6/30/2022, total assets under management represents $160.9B in global discretionary assets under management advised by AIUSA and its global affiliates. As of 6/30/2022, Townsend had assets under management of approximately $22.8B. When calculating assets under management, Townsend aggregates net asset values and unfunded commitments on a quarterly basis. Townsend relies on third parties to provide asset valuations, which typically takes in excess of 90 days after the quarter end. Therefore, assets under management have been calculated using 3/31/2022 figures where available but may also include 12/31/2021 figures. Assets under management are calculated quarterly. Non-US assets under advisement have been calculated as of 6/30/2022 where available but may also include 3/31/2022 or 12/31/2021 figures if 6/30 was unavailable. Non-US assets are calculated and provided to AIUSA by our non-US affiliates. Project asset values may not be as of 6/30/2022 and may reflect the value of the assets at the time the project was completed. Projects are included if Aon recorded positive revenue from the project client between 7/1/2021 – 6/30/2022.
[4] As of 3/31/2023, total assets under management represents $154.1 B in global discretionary assets under management advised by Aon Investments USA Inc ($120.4 B) and its global affiliates.
[5] As of 12/31/2022
[6] Total combined research staff as of 6/30/2023 includes GIC-I Manager Research Staff, and Townsend colleagues from advisory, portfolio management, and strategy teams. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes Aon Investments and its global Aon affiliates, including Townsend.
[7] As of 12/31/2022, contains both discretionary and non-discretionary U.S. retainer clients

Client Team

Mike McCormick, CFA

Lead Consultant

- Serves as a primary consultant and manages 12 consulting assignments. If retained there are plans to reduce client assignments.
- Member and manages a component of the firm's client advisory group.
- Clients range in size from ~$100 million to ~190 billion.
- Contributed content for the International Foundation of Employee Benefit Plans' Trustee Handbook.
- Attended Loyola University Chicago, B.B.A. in Finance and Economics.
- Currently pursuing a Master's in Finance from the Harvard Extension School.
- Volunteers on a student managed portfolio at Loyola University.
- 16+ years of experience in the investment industry; joined Aon in 2007.
- Based in Aon's Chicago, IL office.

Raneen Jalajel, CFA

Lead Consultant

- Serves as a primary consultant and manages 9 consulting assignments.
- Member and manages a component of the firm's client advisory group.
- Clients range in size from ~$65 million to ~100 billion.
- Works with public and corporate retirement systems, endowments, and foundation.
- Attended Lewis University, B.B.S. in Finance and Economics.
- Responsibilities include advising clients with all aspects of their investment programs including asset allocation strategy, investment policy development, manager selection, DC investment structure review, and peer fee benchmarking.
- Formerly served 7 years on the firm's trust and custody team.
- 12+ years' experience in the investment industry; joined the firm in 2011.
- Based in Aon's Chicago, IL office.

Steve Cummings, CFA

Executive Sponsor

- Steve has served in many capacities over his three decades plus with the firm including, most recently, as the Global Head of Aon Investments.
- Member of Client Advisory Team and manages a team of Consultants.
- Steve serves as the primary consultant for select retainer and project clients.
- Steve's client work has included the coordination and implementation of multiple defined benefit and defined contribution plans into a consolidated structure for a multi-billion-dollar corporate client and the oversight of complex alternatives programs for several large public funds.
- Steve joined EnnisKnupp (the predecessor firm to Aon Investments) in 1989 as a consulting and later rejoined in 2000 as the president and Chief Executive Officer.
- Based in Aon's Lincolnshire, IL office.

Bios as of January 2023

Our Resources: Delivering the Firm

Client Services
Steve Voss
Leader
80+ Professionals

Client Solutions & Sales
Bryan Ward
Leader
30+ Professionals

Investment Policy Services
Phil Kivarkis
Leader
14 Professionals

STRS Ohio Consulting Team

Steve Cummings, CFA Executive Sponsor

Mike McCormick, CFA Lead Consultant
Raneen Jalajel, CFA Lead Consultant

David Wernecke, CAIA Consultant

Analyst(s)

Global Asset Allocation
Derry Pickford
Leader
7 Professionals[1]

Fiduciary Services*
Julie Becker
Leader
3 Professionals

Custody & Lending*
Greg Korte
Leader
5 Professionals

Global Investment Manager Research[1]

Liquid Investment Manager Research

Equity
Chris Riley
Leader
16 Professionals

Fixed Income
Elijah Reese
Leader
14 Professionals

Liquid Alternatives
Chris Walvoord
Leader
13 Professionals

Private Asset Manager Research

Real Assets
Anthony Frammartino
Leader
87 Professionals

Private Equity
Karen Rode
Leader
16 Professionals

[1]Total combined research staff as of 6/30/2023 includes GIC-I Manager Research Staff, and Townsend colleagues from advisory, portfolio management, and strategy teams. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes Aon Investments and its global Aon affiliates.

*Fiduciary Services and Custody & Lending Services are provided by a separate business unit from Aon Investments USA Inc. Investment advice and consulting services are provided by Aon Investments USA Inc.

Aon’s Key Differentiators

01 Pension Investment/ALM Strategy Expertise

Market leading expertise with asset allocation and asset-liability management strategy to optimize the pension fund

02 Deep Investment Manager Research Capabilities

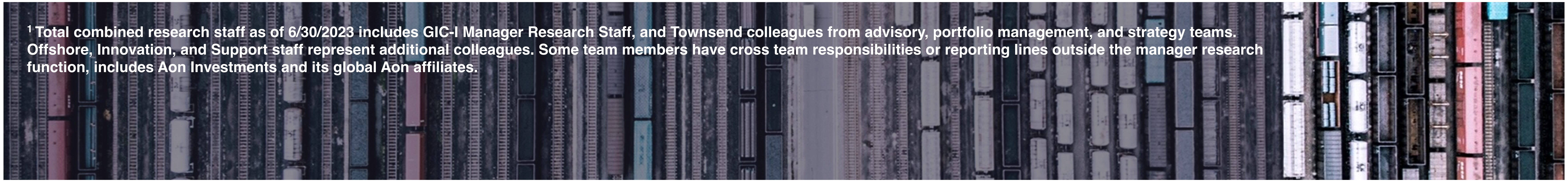
147 dedicated professionals[1] with a focus on identifying compelling investment opportunities

03 Our Consulting Approach and Experience

A Firm and consulting team with significant Public Fund consulting experience

04 Additional Oversight of the Entire Investment Program

Additional checks and balances in the oversight of your complex alternative investment program



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Depth of Client Experience

Service

Experienced team offering customized service
- call our references!

Representative Public Pension List

- Teacher Retirement System of Texas
- State Board of Administration of Florida
- State of Oregon
- Minnesota State Board of Investments
- Michigan Department of Treasury
- Colorado Public Employees' Retirement Association
- Nebraska Investment Council
- Teachers' Retirement System of Louisiana
- Kentucky Teachers' Retirement System
- Arkansas Teacher Retirement System
- Teachers’ Retirement System of Oklahoma
- San Diego County Employees Retirement Association

Representative Health and Welfare Plan List

- Michigan Department of Treasury
- Kaiser Foundation Health Plan, Inc.
- National Grid
- Kentucky Teachers' Retirement System
- American Electric Power Company
- Navistar
- MidAmerican Energy
- AstraZeneca - NA
- Ohio Operating Engineers Pension Fund
- Nv Energy, Inc.
- International Union of Operating Engineers Local 399

*Data as of: 12/31/2022, includes U.S. retainer clients
Representative Client list as of most recent quarter-end. Inclusion in this list does not represent a recommendation or endorsement of Firm’s products and/or services, nor are they exclusively representative of the product(s) discussed herein.
Clients included in this list are the institutional clients which have provided written consent to Firm to be named in marketing materials. It is not known whether all clients listed above approve or disapprove of Aon or the advisory services provided.

Our Experience: Public Fund Clients

$ 1,762 B

Assets in public sector

Over 50%

of public clients have been with us for 10 years

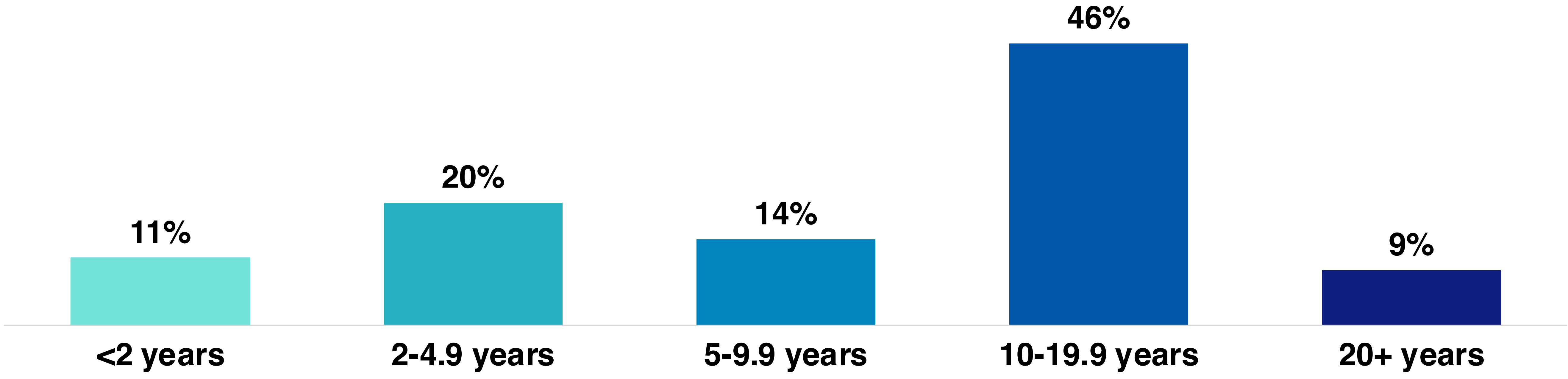
35

Public Clients

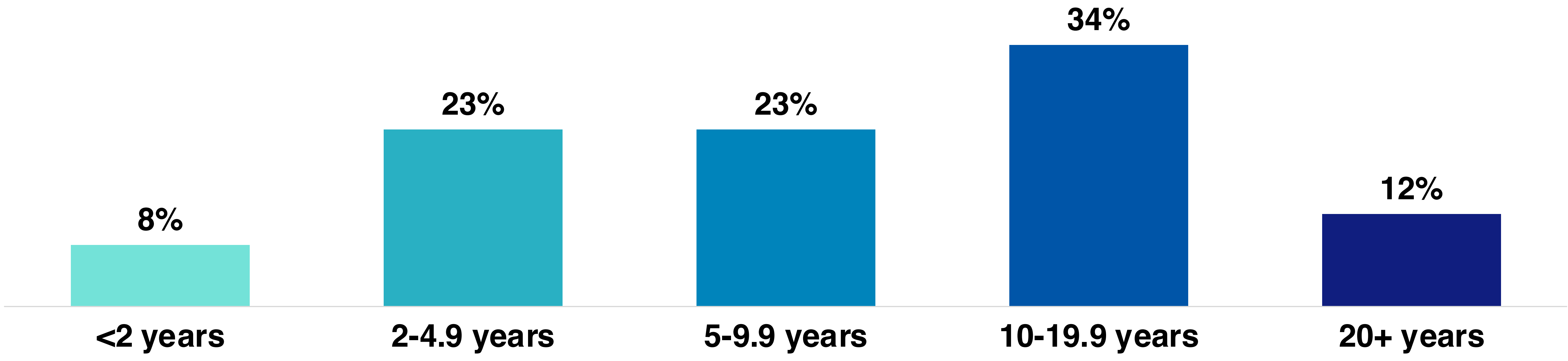
62%

Of total client assets in public sector

Longevity of Public Client Base*



Longevity of Total Client Base*



All data as of 12/31/2022, represents U.S. retainer clients

*Data as of 3/31/2023, includes U.S. retainer clients

Asset-Liability and Liquidity Analysis

Aon

Executive Summary

STRS Pension and OPEB Plans

Plan	Estimated Funded Position (as of June 30, 2023)	Portfolio Analysis	Future Trends	Initial Observations
STRS Pension Plan	• **80%** on a market value of asset basis	• **79%** return-seeking assets • **7.30%** expected return[1]	• Asset growth expected to outpace liabilities by **126 bps**	• Plan expected to move towards full funding • Adjustments to the portfolio can improve projected future outcomes • Sufficient liquidity in most economic scenarios; protracted downturn increases stress
STRS OPEB Plan	• **239%** on a market value of asset basis	• **79%** return-seeking assets • **7.30%** expected return[1]	• Asset growth expected to outpace liabilities by **432 bps**	• Consider disaggregating the OPEB asset allocation given its funded status and projected future growth (subject to any objectives for use of the surplus assets)

[1] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) 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 may differ from 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.

[2] Increased dollars determined by estimated market value of assets as of 6/30/23 ($81.5B)

Current State Asset-Liability Profiles

Estimated as of June 30, 2023

Plan		STRS Pension	STRS OPEB
Asset-Liability Snapshot	($ Figures in Billions)		
	Market Value of Assets (MVA)	$85.3	$4.8
	Actuarial Liability (AL)[1]	$106.6	$2.0
	Funded Surplus/(Deficit)	**($21.3)**	**$2.8**
Liability Growth Rate	AL Discount Cost / AL	7.00%	7.00%
	AL Normal Cost / AL	1.41%	1.38%
	Expected Expenses[2] / AL	0.07%	0.12%
	Expected Liability Growth	**8.48%**	**8.50%**
	Asset Hurdle Rate	**10.59%**	**3.56%**
	Expected Return on Assets[3]	7.30%	7.50%
	Expected Contributions / MVA	4.55%	0.58%
	Expected Asset Growth	**11.85%**	**7.88%**
	Hurdle Rate (Shortfall)/Surplus	**1.26%**	**4.32%**

Key Observations:

- The STRS Pension and OPEB plans have a hurdle rate surplus with expected asset growth exceeding expected liability growth
  - Pension: hurdle rate surplus will aid in closing the funding shortfall over time
  - OPEB: hurdle rate surplus expected to further increase the funded ratio

[1] Based on a 7.00% discount rate consistent with the 6/30/2022 actuarial valuation report, sourced online, and rolled forward to 6/30/2023

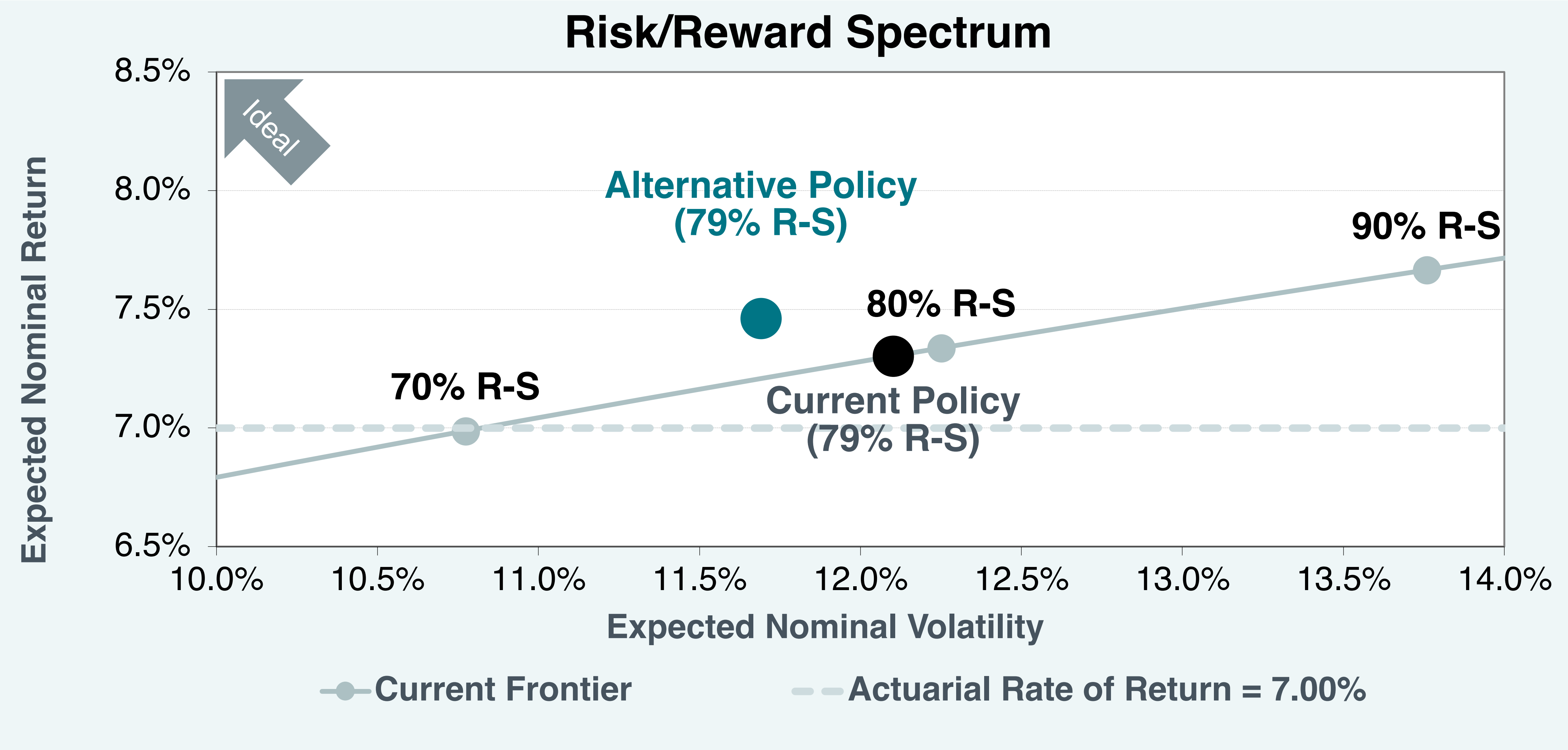
[2] Includes investment advisory fees paid from trust assets. Annual trust-payable expenses, assumed to be inclusive of investment management fees, are based on actual expenses paid in the prior fiscal year ($66.3 million for pension as stated in the 2022 Annual Comprehensive Financial Report and $2.41 million expected for the current fiscal year for OPEB as stated in the 6/30/2022 actuarial valuation report, sourced online). Actual fees and expenses may differ from those presented.

[3] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) 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 may differ from 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.

Portfolio Analysis I Risk/Reward Spectrum (STRS Pension)

Alternative portfolio can slightly increase expected return with lower volatility and similar illiquidity



Key Takeaways:

- Current portfolio is well-constructed with an expected return of 7.30%
- Potential to increase expected return and/or reduce volatility depending on degree of additional diversification
- Aon's Alternative Policy is projected to increase the expected return to 7.46%, representing annual expected savings of $136 million[2]

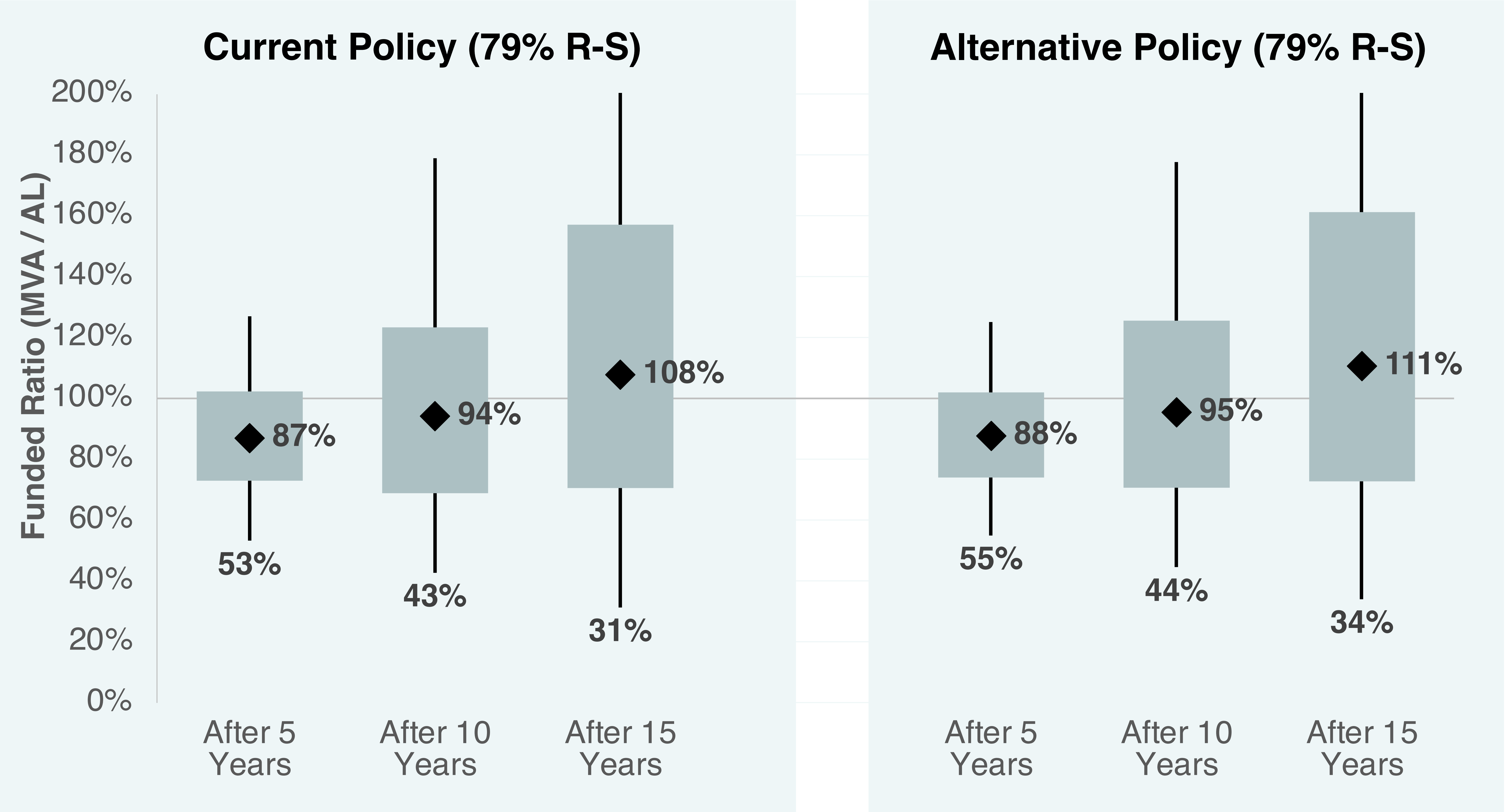
[1] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) as of 6/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using 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 may differ from 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.

[2] Increased dollars determined by estimated market value of assets as of 6/30/2023 ($85.3B)

Asset Class	Current Policy (79% R-S)	Alternative Policy (79% R-S)
Equity		
• Public Equity	48%	44%
• Private Equity	9%	10%
• Subtotal	57%	54%
Liquid Alternatives		
• Subtotal	5%	7%
Return-Seeking Fixed Income		
• High Yield Bonds	1%	0%
• Emerging Market Debt	1%	0%
• Multi-Asset Credit	0%	5%
• Private Debt	5%	2%
• Subtotal	7%	7%
Real Assets		
• - Real Estate (Core)	8%	5%
• - Real Estate (Non-Core)	1%	2%
• - REITs	2%	0%
• - Infrastructure	0%	2%
• Subtotal	10%	10%
Risk-Reducing		
• Cash	1%	1%
• Interm. Duration Gov't	5%	0%
• Core/Core Plus Fixed Income	15%	20%
• Subtotal	21%	21%
Expected Return[1]	**7.30%**	**7.46%**
• Expected Risk[1]	12.10%	11.69%
• Sharpe Ratio	0.33	0.36
Increase in Expected Return (%)	0.00%	0.16%
Increase in Expected Return ($ millions)[2]	$0.0	$136.0
Total Illiquid Assets	28%	30%

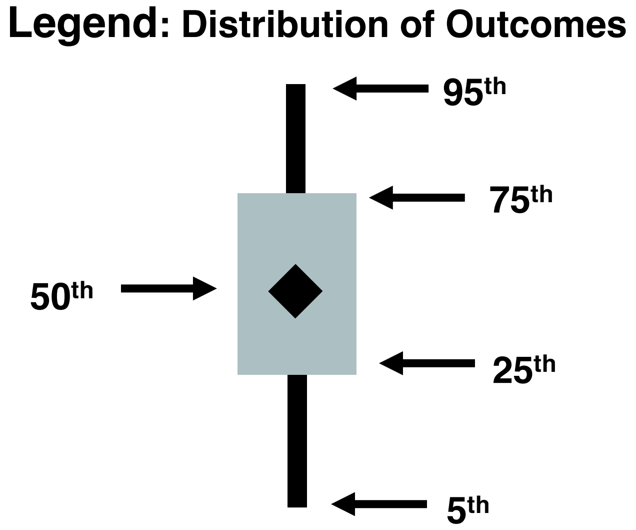
Funded Ratio Projections (STRS Pension)

Alternative portfolio can improve both expected and downside funded ratio outcomes



Key Takeaways:

- Under the Current Policy, the funded ratio is expected to increase to full funding in the central expectation (50th percentile outcome)
- Compared to the Current Policy, the Alternative Policy is projected to improve both the expected and downside (5th percentile outcome) funded ratios
- Downside risk across both strategies modeled represents the impact of the static contribution policy



* Projections assume constant 7.00% discount rate for pension liabilities for all investment policies studied. Includes investment advisory fees paid from trust assets. Annual trust-payable expenses, assumed to be inclusive of investment management fees, are based on actual expenses paid in the prior fiscal year ($66.3 million for pension as stated in the 2022 Annual Comprehensive Financial Report, sourced online). Actual fees and expenses may differ from those presented.

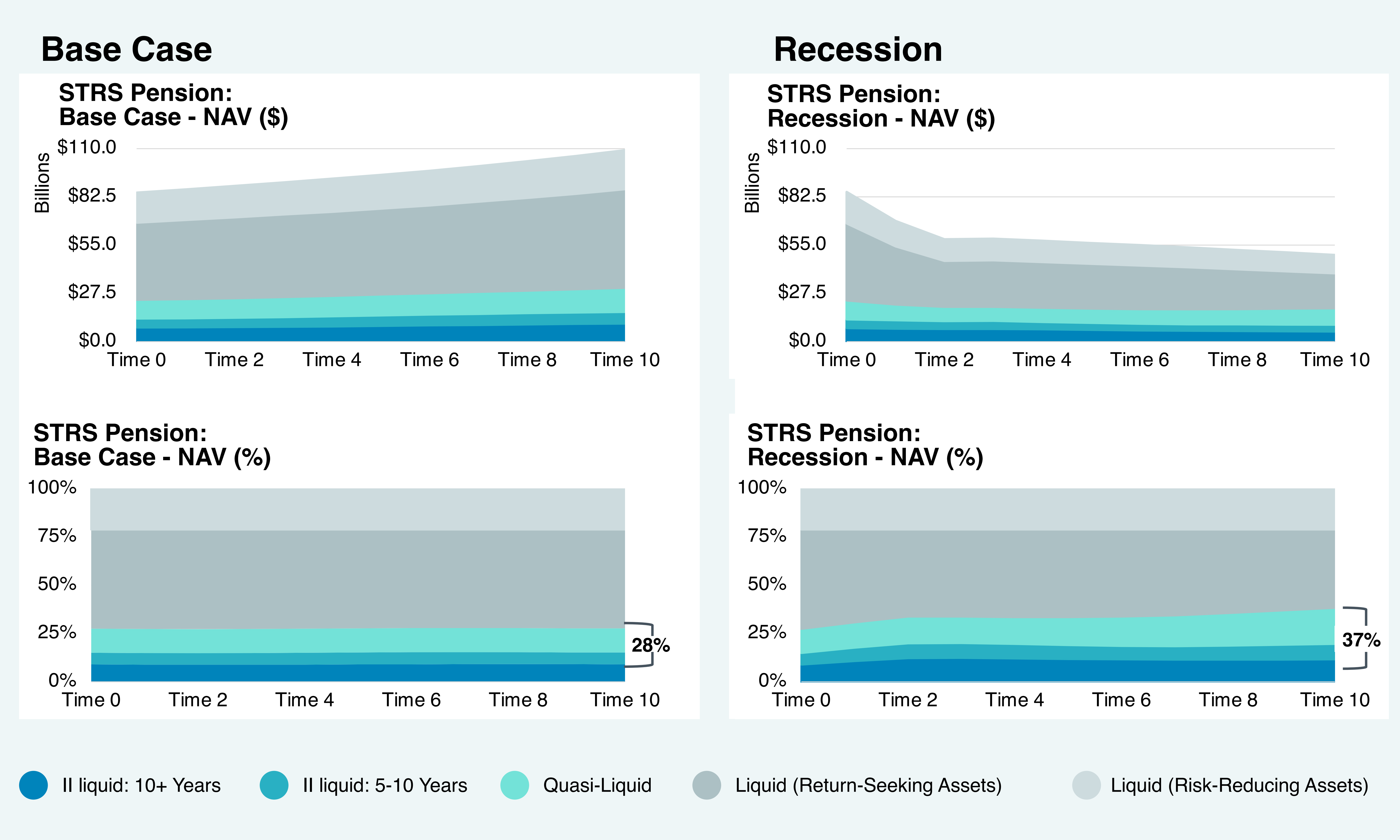
Liquidity Analysis I Current Policy (STRS Pension)

Sufficient liquidity in most economic scenarios; protracted downturn increases stress

Longer time horizons incentivize higher levels of risk and alternative assets can play a key role in the portfolio construction

The question becomes **"What level of alternative assets is too much?"**

- As alternative assets have various degrees of lock-ups or illiquidity, it is important to understand how much the portfolio could evolve in the future under different economic conditions and whether there is appropriate liquidity within the Plan



Note: Time 0 represents an estimated starting point of 6/30/2023

Asset Allocation/Asset-Liability Analysis

Key Observations

1 The plan is underfunded today, but projected to grow to 100% funded by 2035

Asset growth via contributions and investment performance will be critical to the long-term success of the fund

2 The portfolio is well-built today, but could be enhanced with subtle adjustments to diversify

The expected return can be increased by 0.16%[1] ($136 million[2]/year), and accelerate the path to 100% funding

3 Monitoring liquidity risk will be critically important

To help ensure the pension fund does not become overly illiquid in stressed markets

[1] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) 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 may differ from 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.

[2] Increased dollars determined by estimated market value of assets as of June 30, 2023 ($85.3B)

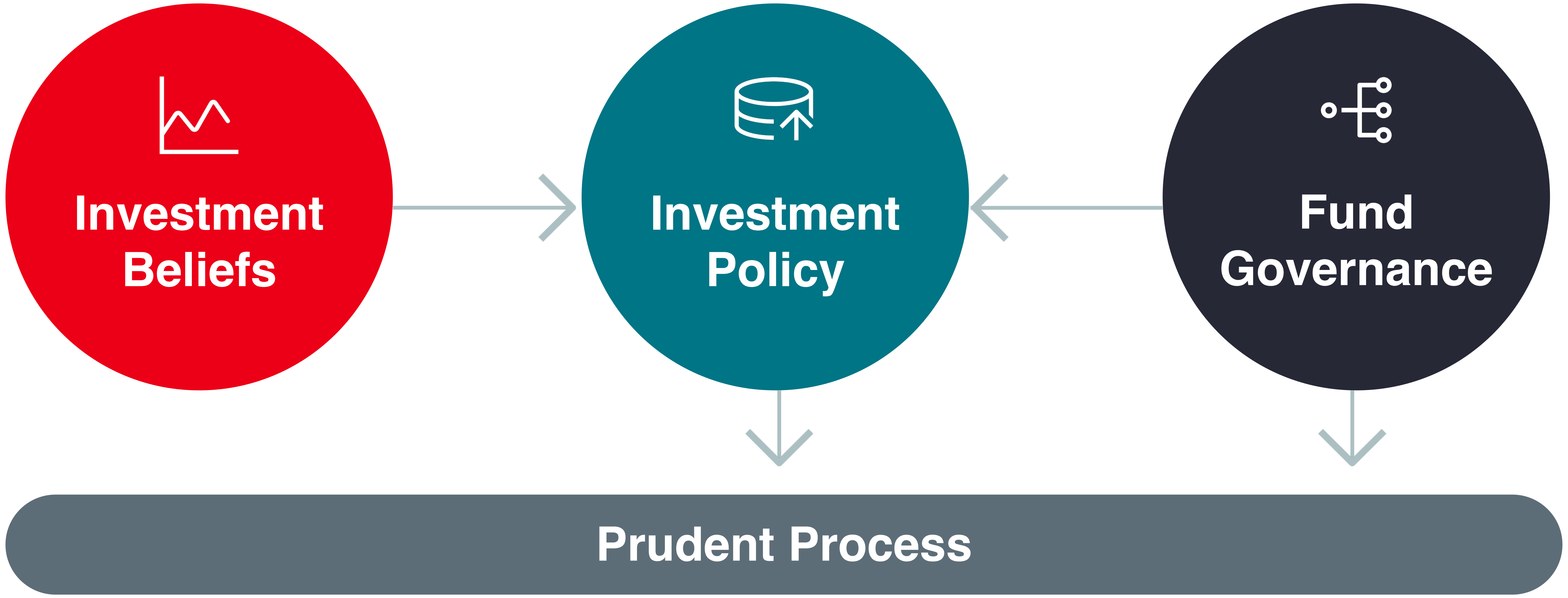
Diversification does not ensure a profit nor does it protect against loss of principal. Diversification among investment options and asset classes may help to reduce overall volatility.

Aon's Investment Philosophy on Various Requested Topics

Aon

Investment Beliefs, Investment Policy, & Fund Governance

Fiduciaries are measured by the **prudence of their process**. An investment process where Investment Beliefs and Fund Governance drive Investment Policy is reflective of a prudent process.



Our Investment Beliefs

Broad Diversification	Gain **exposure to the opportunity set** across and within asset classes
Efficient Exposures	**Pay little for beta**
Distinctive Skill	Focus manager selection efforts on **skill and not style**
Focused Risk	**Utilize active risk budgeting** as a risk control and allocation tool
Low Fees	**Spend fees effectively and wisely**

These beliefs are enduring and reflect decades of research on the theory and evidence of institutional investment management

Diversification does not ensure a profit nor does it protect against loss of principal. Diversification among investment options and asset classes may help to reduce overall volatility.

Elements of Good Governance

Fiduciaries are measured by the prudence of their process

- Monitoring
- Independence
- Transparency & Accountability
- Efficient Board Meetings
- Effective Leadership
- Committees
- Prudent Documentation
- Strategic Plan
- Orientation Ongoing Training & Education
- Culture of Conflicts of Interest Avoidance
- Speaking in One Voice
- Laws
- Court Cases
- Policies
- Minutes
- Agendas
- Annual Work Plan

Aon's Benchmarking Views (SAMURAI[1])

Characteristics of a Good Benchmark[1,2]

Specified in advance: the benchmark is specified prior to the start of an evaluation period and known to all interested parties

Appropriate: the benchmark is consistent with the manager's investment style or area of expertise

Measurable: the benchmark's return is readily calculable on a reasonably frequent basis

Unambiguous: the identities and weights of securities constituting the benchmark are clearly defined

Reflective of current investment opinions: the manager has current knowledge of the securities or factor exposures within the benchmark

Accountable: the manager is aware of and accepts accountability for the constituents and performance of the benchmark

Investable: it is possible to forgo active management and simply hold the benchmark

[1] As per CFA Institute's **SAMURAI** characteristics. The criteria commonly referenced as industry standard is based on research conducted by Jeffrey Bailey and others. Mr. Bailey published an initial paper titled "Are Manager Universes Acceptable Performance Benchmarks?" in the May-June, 1992, edition of the *Financial Analysts Journal*.

[2] The criteria listed above mostly apply to publicly traded asset classes. Existing benchmarks for private assets (private equity, private real estate, hedge funds, etc.) lack the attributes of good benchmarks due to the inherent nature of these assets

Direct Investment Management

A Potential Tool To Reduce Costs for Large Plans

Aon has worked with institutional investors managing internal assets for decades

In our role we have assisted Boards in evaluating opportunities to bring investment functions in house

We believe the use if internal asset management should be a reflection of an entities'

Desire from its Board to internally manage assets	Existing talent and proven track record at performing functions that are internalized	Ability to attract investment talent and create talent redundancy	Ability to delegate responsibilities internally to credible investment staff	Access to the required resources and tools to implement the applicable portfolio

The selection of internal vs external asset management varies significantly across institutional investors

We do not feel it is appropriate for all plans, but some entities have successfully reduced cost by moving investment functions to internal staff

There is no guarantee that the results or savings shown will be achieved if you should select AIUSA and/or its affiliated entities to provide services to you.

Investment Manager Research

Investment Manager Research – Aon's Dedicated Team

More than 135[1] dedicated research professionals covering traditional, emerging, and alternative strategies

Liquid Investment Manager Research			Private Asset Manager Research	
Equities **16 Professionals**	**Fixed Income** **14 Professionals**	**Liquid Alternatives** **13 Professionals**	**Private Equity** **16 Professionals**	**Real Assets** **87 Professionals**
• Global • Regional • Style • Size	• Government • IG Credit • Emerging Market Debt • Absolute Return • LDI • Cash	• Direct Hedge Funds • Fund of Hedge Funds • Currency • Commodities	• Private Equity	• Real Assets, Real Estate, Infrastructure • Advisory Solutions • Portfolio Management

Cross asset class research on emerging, minority, and responsible investing managers and strategies

[1]Total combined research staff as of 6/30/2023 includes GIC-I Manager Research Staff, and Townsend colleagues from advisory, portfolio management, and strategy teams. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes Aon Investments and its global Aon affiliates.

Our Manager Research Process Help Uncover New Ideas

Quantitative Screen	• InForm Assessment Score • 20,000+ products quarterly • Third party databases • Network of existing contacts • Referrals
Qualitative Due Diligence	• Identifies manager's edge • Seven plus criteria • In-person research meetings • Extensive review process, people, operations and fees
Assessment and Rating	• InView database houses research • Highest conviction buy-rated • Buy-rated recommended to clients • Client portal provides transparency
Portfolio Construction & Monitoring	• Specialized risk analysis tools • Benchmark & Peer comparisons • Custom portfolio construction & reporting via client risk/return framework

Manager Research – Operational Due Diligence

Our Operational Due Diligence (ODD) process is a multi-faceted review of:

- Corporate and organizational structure and governance
- Regulation, compliance, and audit/testing functions
- Risk management program
- Technology and BC/DR
- Service provider selection and monitoring
- **Strategy specific** trade and transaction controls
- **Strategy specific** administration and valuation
- Fund structures (when applicable)

Team of specialists responsible for ODD:

- ODD team of 15*
- Focus on experienced, senior professionals
- Core ODD team supported by data gathering and processing team

Global Operational Due Diligence Team:

- All new managers and/or products reviewed by dedicated core ODD team

*As of 6/30/2022. Includes onshore ODD and India ODD team members.
ODD is conducted by Operational Risk Solutions and Analytics Group, which is an independent business unit from Aon Investments USA Inc. Investment advice and consulting is provided by Aon Investments USA Inc.

Flexible Solution

Access to integrated alternative investment capabilities

$178B

Total invested client assets*

~2,000

Manager meetings conducted in 2022

- Venture Capital
- Growth Equity
- Corporate Finance Buyout
- Secondaries
- Co-Invest

- Listed and Private Infrastructure
- Natural Resources

- Distressed/ Turnaround

- Core Real Estate
- Timberland and Farmland
- REITs
- Value-Added Real Estate
- Opportunistic Real Estate

- Long/Short Equity
- Event Driven
- Global Macro
- Multi Strategy Funds
- Currencies
- Commodities
- Emerging Markets
- Relative Value
- Activist

- Sustainability
- Private Debt
- Emerging Managers
- MWBEs

- Mortgage/Securitized Real Estate

MWBEs = Minority and Women Business Enterprises
*As of 3/31/2023, total assets under management represents $154.1B in global discretionary assets under management advised by Aon Investments USA Inc ($120.4B) and its global affiliates. As of 9/30/2022, Townsend had assets under management of approximately $23.9 billion. When calculating assets under management, Townsend aggregates net asset values and unfunded commitments on a quarterly basis. Townsend relies on third parties to provide asset valuations, which typically takes in excess of 90 days after the quarter-end. Therefore, assets under management have been calculated using 9/30/2022 figures where available but may also include 6/30/2022 figures. Assets under management are calculated quarterly and includes discretionary assets under management and non-discretionary client assets where the client's contractual arrangement provides the client with the ability to opt out of or into particular transactions, or provides other ancillary control rights over investment decision-making (a/k/a "quasi-discretionary"). Regulatory AUM is calculated annually and can be made available upon request.

Ongoing Monitoring and Reporting

Performance Reporting

Key Information, Easy to Interpret

Performance Measurement

- Net of fees performance calculation
- Relative to key benchmarks, including peer analysis
- GIPS compliant for composite and benchmark (net and gross)

Performance Attribution

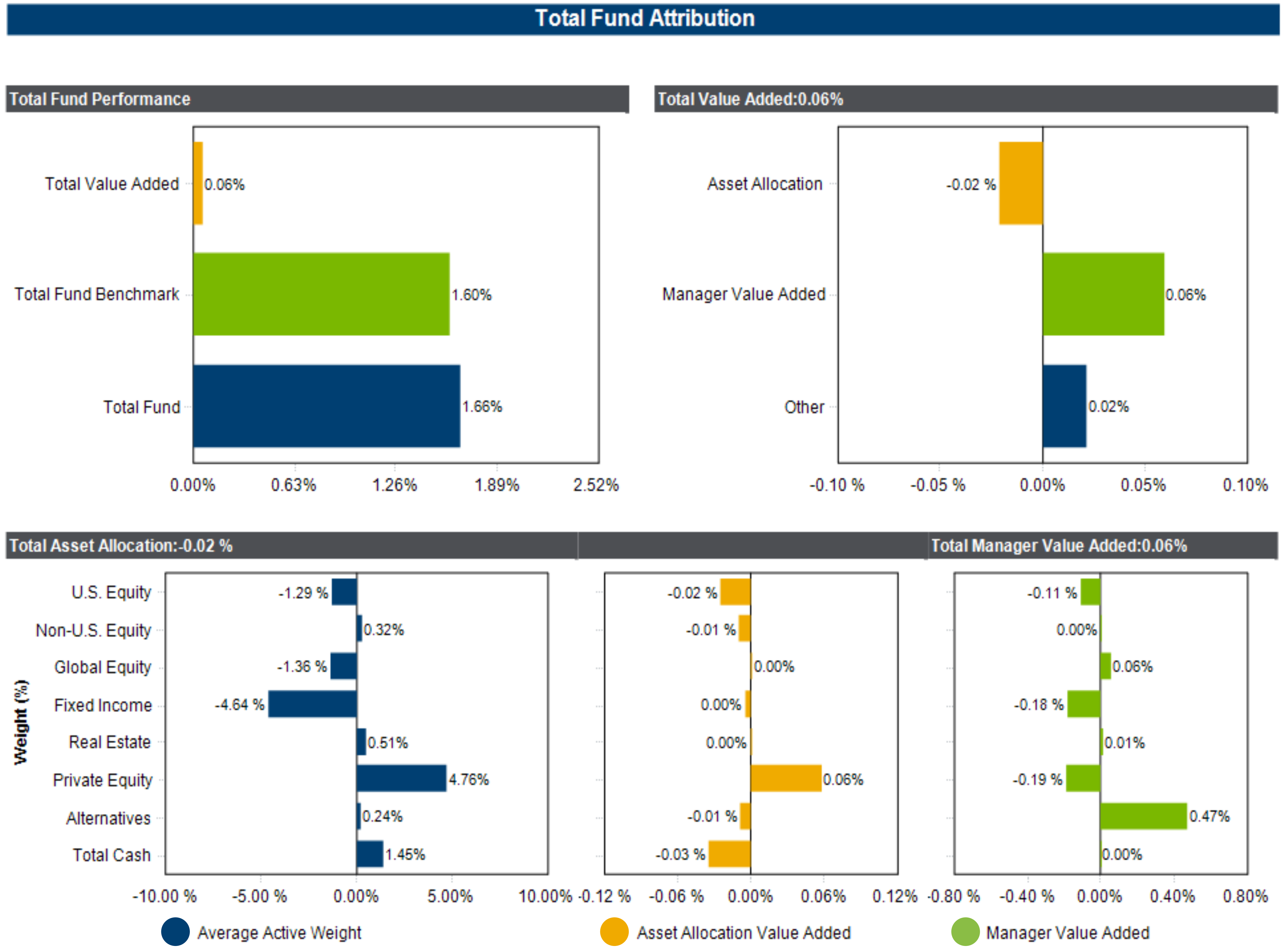
- Illustrate source of relative performance
- Evaluate mismatches

Integrated Reporting

- Library of more than 150 standard reports
- Ability to customize to your needs

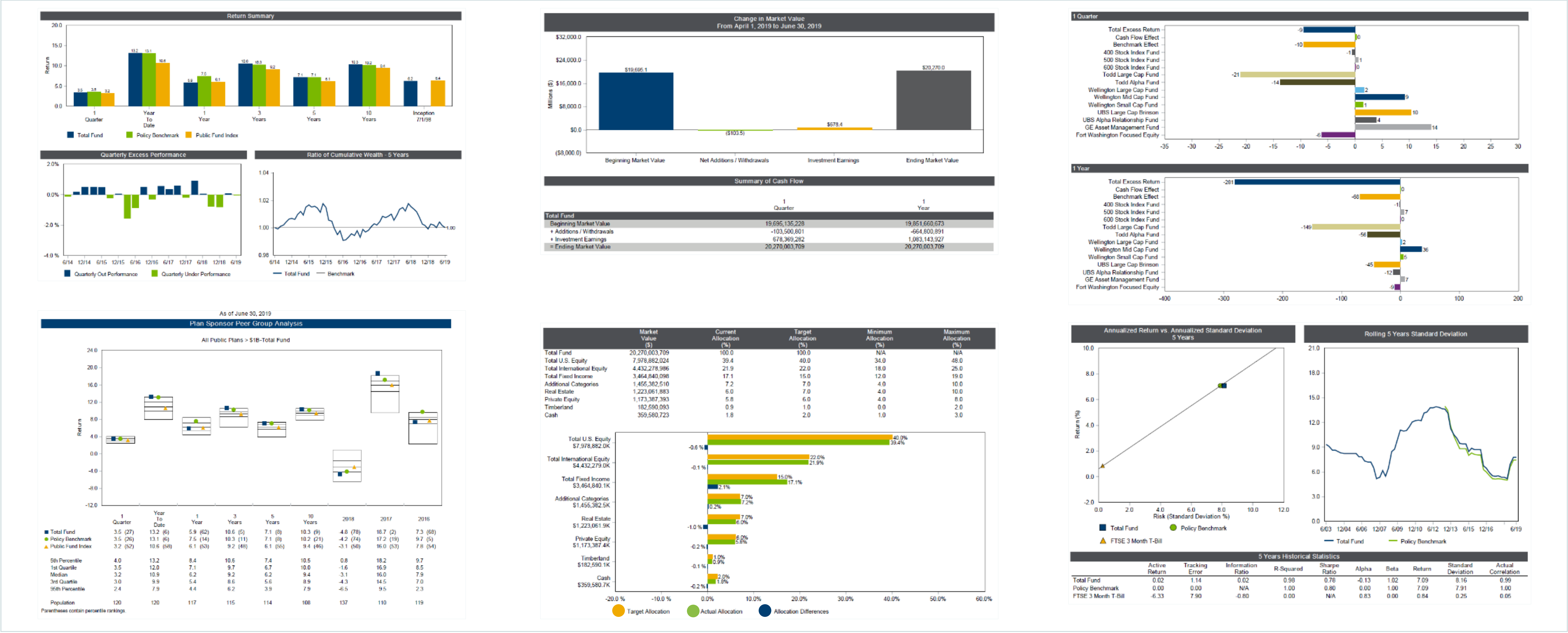
Compliance & Monitoring Features

- Asset allocation compliance against policy
- Portfolio scorecards based on client-specific portfolio metrics



Charts presented for illustrative purposes only.

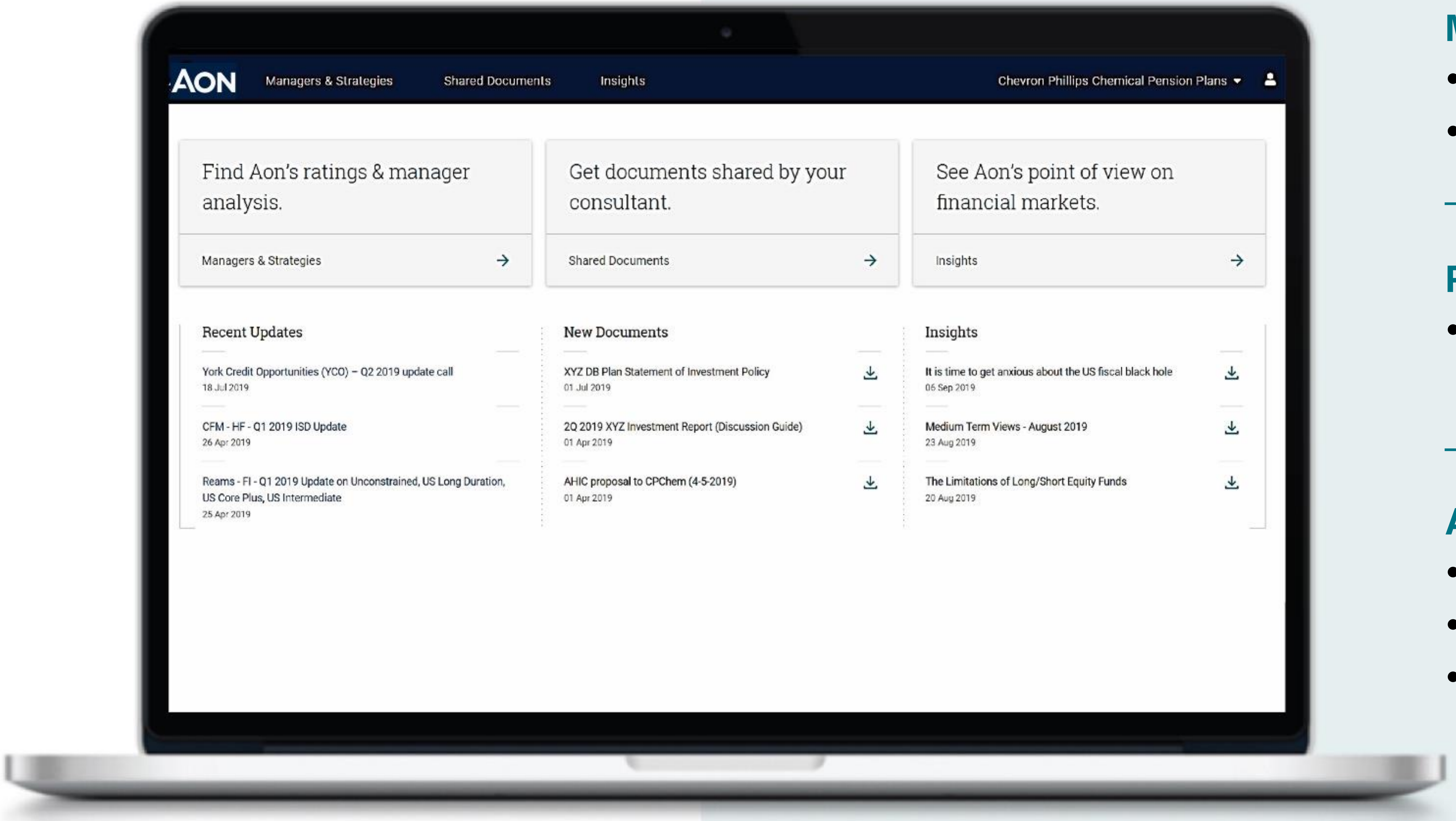
Performance Reporting



Charts presented for illustrative purposes only.

Client Portal

The Aon Investment client portal provides users with real time insights on managers, access to Aon's thought leadership and easy access to all of your shared documents.



Screenshots presented for illustrative purposes only.

Manager Research

- Qualitative views on plan managers
- Flash reports; meeting notes

Plan Related Documents

- Policy, meeting materials and performance reports

Aon Investments Thought Leadership

- CIO Insights
- Newsletters
- White Papers

Role of Investment Consultant

Aon

Our Consulting Approach

Coin Gate	"Don't focus on that, we have other priorities"	"Doing the work makes it clear"	Liabilities Matter!	"Saving the Free World"	"That's not how our Peers are doing it"

Fee Proposal

Fee Proposal

General Consulting Services Fees	Defined Benefit and Health Care	Defined Contribution	Bundled
Year 1*	$400,000	$85,000	$475,000

*Annual Escalator Fee is 3%

Bundled Fee Proposal

- The table above reflects the total annual fee for all services outlined in section 3.0 Scope of Engagement from the RFP

01 Pension Investment/ALM Strategy Expertise

Market leading expertise with asset allocation and asset-liability management strategy to optimize the pension fund

02 Deep Investment Manager Research Capabilities

136 dedicated professionals[1] with a focus on identifying compelling investment opportunities

03 Our Consulting Approach and Experience

A Firm and consulting team with significant Public Fund consulting experience

04 Additional Oversight of the Entire Investment Program

Additional checks and balances in the oversight of your complex alternative investment program

[1]Total combined research staff as of 6/30/2023 includes GIC-I Manager Research Staff, and Townsend colleagues from advisory, portfolio management, and strategy teams. Offshore, Innovation, and Support staff represent additional colleagues. Some team members have cross team responsibilities or reporting lines outside the manager research function, includes Aon Investments and its global Aon affiliates.

Appendix

Additional Discussion Slides

Section: Appendix

Competitive Advantage: Thought Leadership

1981 - 1983
- **Use of indexation in institutional investment portfolios**
- Advocacy of small cap stocks
- Inclusion of real estate and international stocks
- First DOL expert witness project

1988 - 1991
- Initiation of global Capital Asset Pricing Model (CAPM) asset allocation
- **Advocacy of private equity**
- *Real Estate Investment Under a Simple Equilibrium Pricing Model* (Graham & Dodd Award)

1993
- **Neutralization of style bias**

1999
- **Analytic framework for measuring and monitoring active risk**
- Factor risk modeling

2001 - 2002
- *Case for whole stock portfolios*
- **Published article cautioning about the use of hedge fund-of-funds (Bernstein/Fabozzi award)**

2003
- Advocacy of global strategies
- ***Small Cap Alpha Myth* (Bernstein/Fabozzi award)**

2007- 2008
- Advocated global market weighted equities
- Recommended infrastructure
- **Retained by US Treasury Dept**

2009 - 2010
- Advocacy of new approach to fixed income investing
- First OCIO client

2012 - 2013
- Opportunity allocations
- **Increased use of Alternatives, less reliance on traditional active management**
- ***Go Big or Go Home***
- Public funds can compete
- Stress-testing liquidity risk from alts
- *Conviction in equity investing*

2014 - 2016
- Multi-asset credit
- Asset allocation rotation with Medium-Term Views
- Fallen Angels
- Insurance-linked securities
- *Putting watch lists on watch?*
- Aon center for innovation and Analytics (Singapore)

2017 - 2022
- ***Making portfolios more fee-efficient***
- Alternative risk premia
- *Public funds can still compete*
- Launch of private credit and opportunistic credit fund solutions
- Client portal

Our clients look to us for market research, intelligence, and seeking to identify current, as well as emerging best practices for their portfolios

The Bernstein/Fabozzi Award is given annually highlight the most innovative and compelling research published in the *Journal of Portfolio Management*. The Graham and Dodd Award is given annual by the CFA Institute to recognize excellence in research and financial writing. It is not known whether the client listed approves or disapproves of Aon or the advisory services provided.

Aon's Approach to Diversity, Equity & Inclusion (DEI)

Aon works to drive diversity internally, to our clients' portfolios, and to society

Aon's Core Belief: Diversity and inclusion across many dimensions is likely to improve decision-making and performance

Company

- Senior leadership representation on Aon's Inclusion & Diversity Council
- Unconscious bias training
- Multiple Employee Resource Groups (BRGs)
  - Aon Pride Alliance (LGBT), Asian Americans, BPN (Black Professional Network, LEAD (Latinos Embracing Aon Diversity), People with Disabilities, WIN (Woman's International Network)

Client Work

- Partner with clients to;
  - Achieve diversity goals/targets
  - Increase diverse manager exposure
  - Implement multi-year diversity goals
- Diverse Manager Initiative survey
- Work with multiple clients with increased attention on DEI in past few years. Aon provides education to staff, board and key committees, provide assistance in policy development and identification of investment opportunities

Manager Engagement

- Founding member of the Institutional Investor Diversity Cooperative (IIDC)
- Member of Diversity Project North America
- Council member for the in-state Illinois Growth and Innovation Fund
- Cover over 240 MWBE firms
- Open-door research policy
- Participate in emerging and diverse manager events (10-15/yr on avg)
- Ongoing relationships with dozens of diverse investment managers for inclusion in client and OCIO portfolios

Society

- Founding member of the Investment Consultants Sustainability Working Group (ICSWG)
- Founding Member of the OneTen Coalition
- Member of Investment Diversity Advisory Council (IDAC)
- $30M committed to pioneering apprenticeship program
- Participated in CFA Institute Experimental Partners Program
- Toigo Foundation – Board Member

Customized Approach to Risk Management

Risk Management Tool	Risks Addressed
1. Asset-Liability Study (every 2-4 years)	• Ability to pay promised benefits • Assets (return + contributions) do not keep pace with liabilities • Liquidity
2. Asset Allocation Study (Annually)	• Return shortfall • Diversification/Concentration risk • Left tail risk
3. Structure Review (Annually)	• Unintended biases • Concentration risk • Active management • Cost structure
4. Ongoing Review (Monthly/Quarterly)	• Adherence to policies • Performance as planned, no surprises

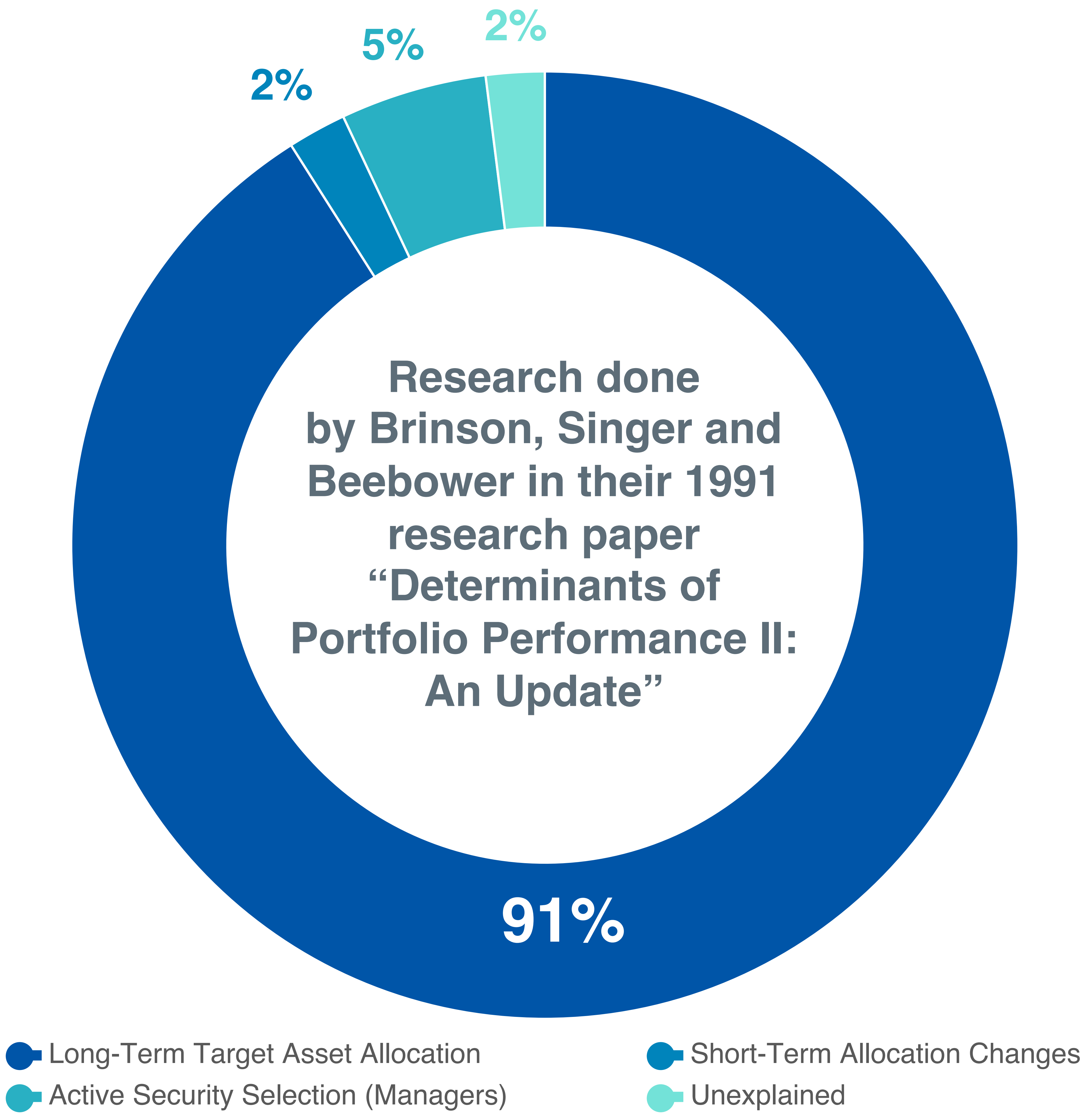
Diversification does not ensure a profit, nor does it protect against loss of principal. Diversification among investment options and asset classes may help to reduce overall volatility.

Asset Allocation

Principal driver of long-term returns for most investors

Our asset allocation/asset liability analysis is a meaningful component of the risk management process, but it isn’t the only component.

Our asset we also address risk through asset class structure and investment manager selection, reviewed on the following slides.

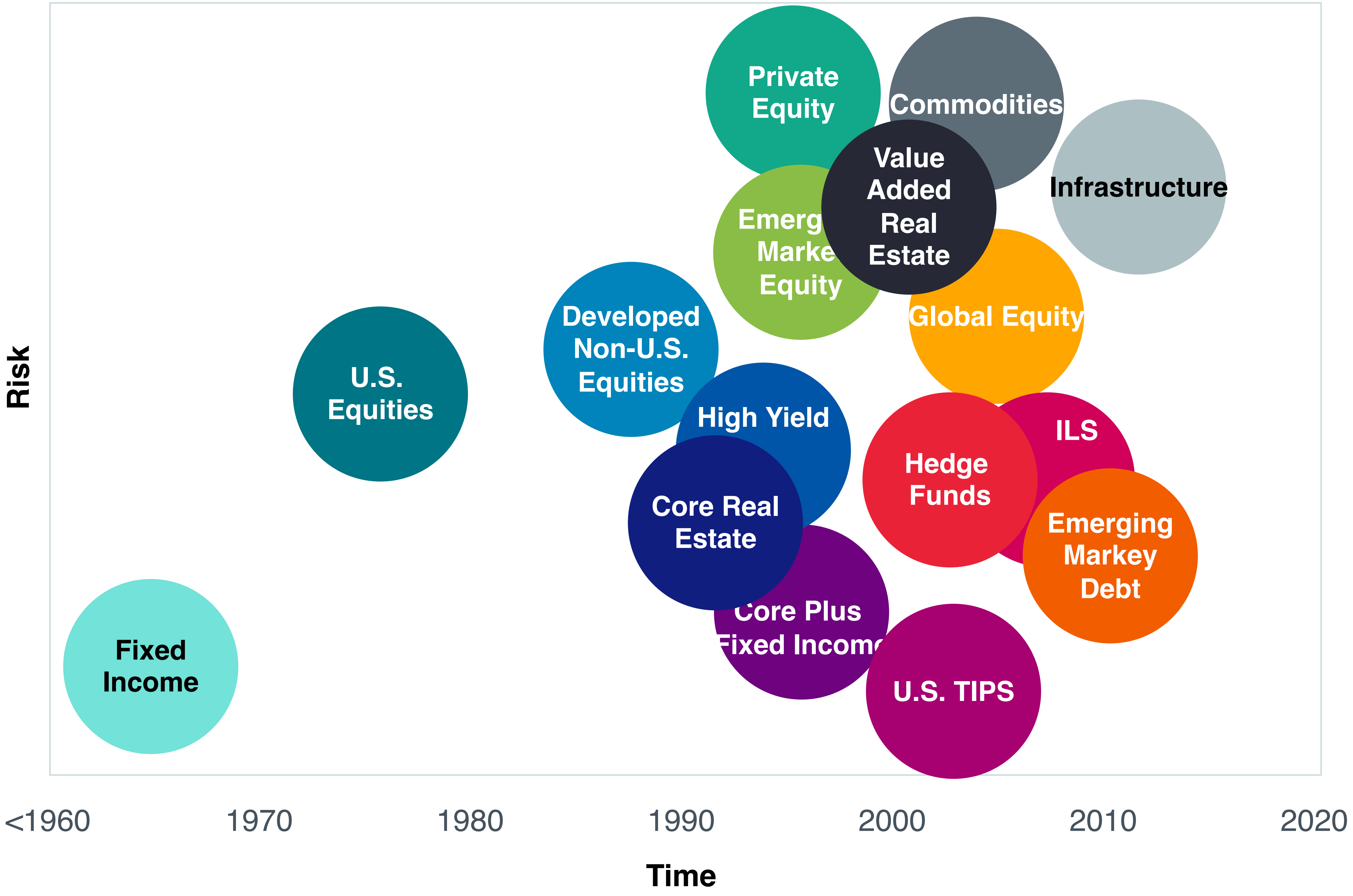


AON

Direct Investment Management

History and background of internal asset management

The "Institutionalization" of Various Asset Classes



There is no guarantee that the results or savings shown will be achieved if you should select AIUSA and/or its affiliated entities to provide services to you.

In the 1980s institutional investment programs were largely allocated to fixed income and large cap US equity

These mandates were often managed internally

Over time investment programs became move diverse and complex, and internal management began to decline

Many midsized ($10 billion) and larger programs continued to manage stocks and bonds internally

Typically, at a relatively low level of active risk

Large investors are increasingly managing private asset classes internally to reduce investment costs and increase net of fee returns

Direct Investment Management

Paths to success in building out internal asset management

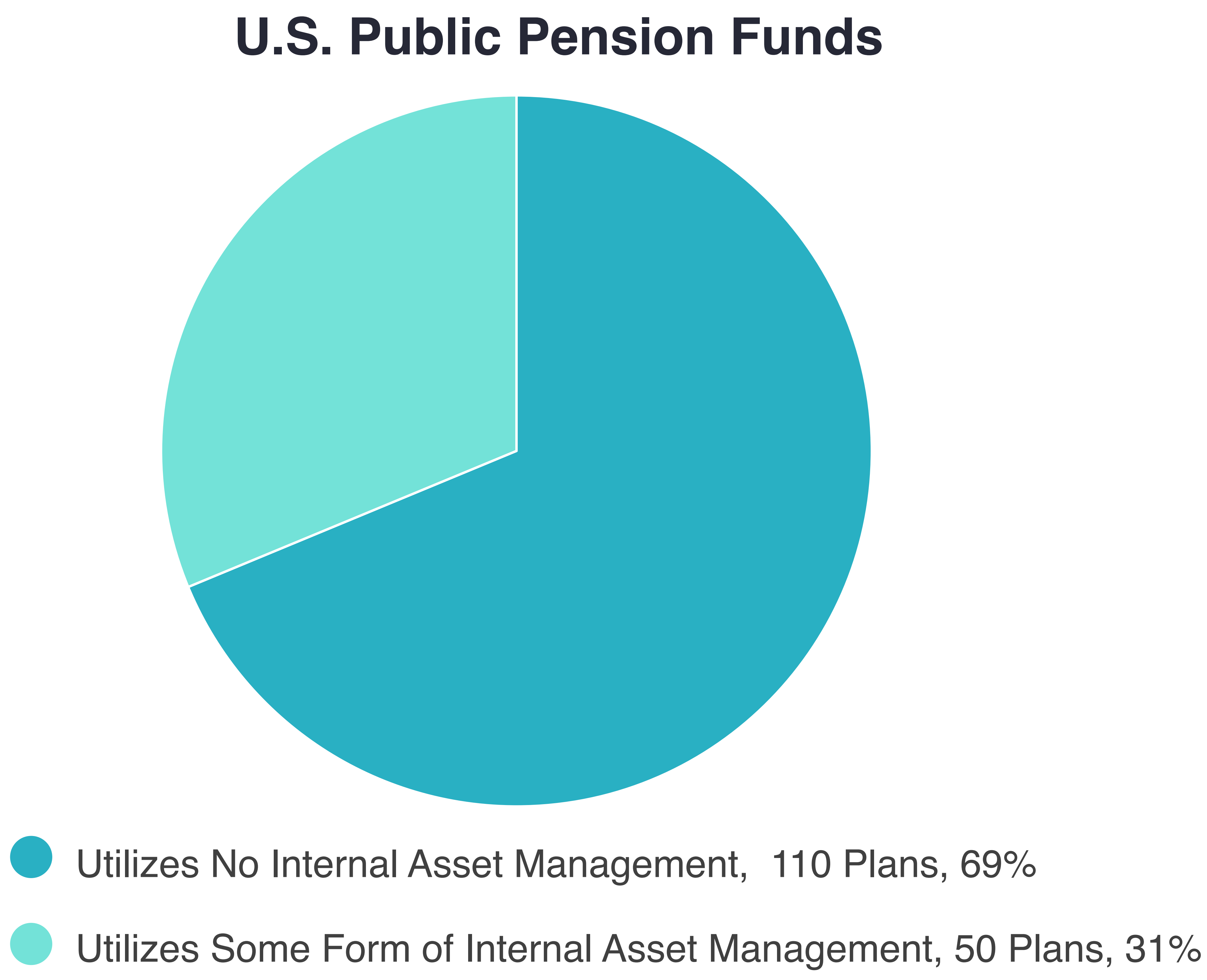
We have worked with many institutions which manage public and private assets internally and we have insight into what has worked, and what hasn't

Below are the important steps we have seen clients take in building out their internal management capabilities

1. **Talent** – Attract, reward and retain redundant talent. The key is getting access to people and building a competitive compensation model. This requires a desire from the Board to internally manage assets.
2. **Established Strategic Relationships with Well Resourced Investors** – Create an intimate relationship between internal staff and the staff of the strategic partners. Learn and understand their process for portfolio development and investment diligence. Our clients have had their staff work out of the strategic partner's office in an effort to understand their culture and diligence process (1-year periods).
3. **Institutionalize the Diligence Process and Make it part of KIC Culture** – Staff members who work with the strategic partner need to be tasked with institutionalizing what they have learned. The culture and diligence process needs to be institutionalized among redundant staff.
4. **Take on Components of the Diligence** – Identify opportunities to build out internal talent and reach a level of competence to perform baseline functions of the investment process internally.
5. **Develop Team Competency** – Take advantage of co-investment opportunities and opportunities to diligence investments along side the strategic partners. Understand and review internal vs external research and findings.
6. **Further Develop and Deepen Relationships with Strategic Partners as an Investor** – It's essential to have access to deals. Strong strategic partner relationships can help ensure access to transactions and unique investment opportunities.
7. **Establish Internal Strategies** – Start internally managing the least complex components of the portfolio. Core investment mandates.
8. **Evaluate Success of Implementation** – Maintain external mandates for strategies brought internal for diversification and performance appraisal.

Direct Investment Management

How much do U.S. public plans invest internally?



Many US Public pension funds utilize internal asset management

Most Plans managing assets internally are managing stocks and bonds (mid and large plans), but some large plans also manage across alternative asset classes

There are many large public pension plans that have an investment staff with less than 10 people, and manage the program utilizing external investment strategies

*Public Plans Data 2023 (https://publicplansdata.org/)

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Additional Information On Performance Reporting and Monitoring

Section: Appendix

Chapter 48

The Basics of Performance Measurement

Michael W. McCormick and Patrick J. Kelly

A critical trustee duty is to review, monitor and evaluate fund investment performance. Performance evaluation is the measurement and assessment of the outcomes that result from investment management decisions. Performance evaluation can be broken out into three components:

1. Measurement (calculation of investment results)
2. Attribution (sources of absolute returns and returns relative to a benchmark)
3. Appraisal (assessing investment skill).

This chapter focuses on each of these areas as well as evaluating investment program success in general.

What Is a Rate of Return?

A *rate of return* is a mathematical measure of the change in the value of an investment adjusted for flows into and out of the investment. This return includes the gain or loss that results from the investment's capital appreciation or depreciation as well as any income associated with the investment (i.e., interest or dividends). There are two methods for calculating a fund's rate of return:

1. ***Time-weighted rate of return*** measures the investment performance of a pool of assets, removing the impact of cash flows. This is generally considered the most acceptable measure of investment performance for traditional investment (i.e., stock and bond) managers because it removes the impact of cash flows over which a portfolio manager typically has no control. For the average trustee, time-weighted rates of return are used most frequently. This measure provides a tool to assess the performance of the total fund, underlying asset classes and a majority of underlying investment strategies.
2. ***Dollar-weighted rate of return*** (aka ***internal rate of return***) is one of the possible measures used to evaluate private equity and private real estate investments.[1] It is the average growth rate in the value of all funds in the account over a period of time and is sensitive to the size and timing of cash flows. This measure of return is most appropriately used when managers have discretion as to when cash enters and exits a portfolio—this occurs, for example, with private market investments where a dollar commitment is made to the investment pool then the manager, or general partner, determines when the committed capital is drawn from the investor and subsequently returned.

Returns for a period greater than one year are generally expressed as *annualized returns.* This rate of return can be thought of as the average annual return for a given period. A return that is not annualized is typically referred to as *cumulative.*

What Is Risk?

Trustees quickly realize that there is a relationship between return and risk. Higher returns involve higher risk, while lower returns should have a lower risk over time. Trustees have a responsibility to monitor the risk taken to achieve a fund's return objectives.

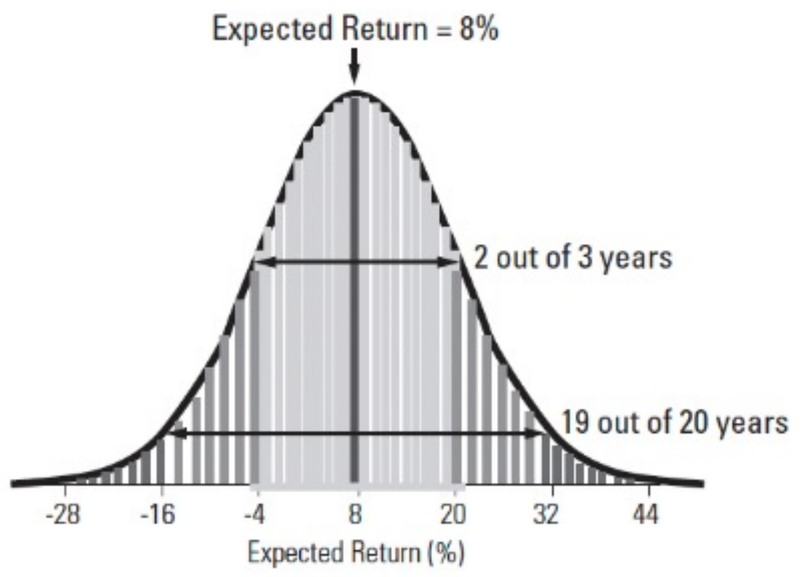
In the investment world, risk is most commonly defined as uncertainty of future returns, the volatility of historical returns, or the possibility that a fund will be unable to make the payments promised. Other commonly referenced risks include:

- Risk of losing money (negative returns)
- Risk of erosion in purchasing power value (returns less than inflation)
- Risk of a shortfall relative to liabilities (inability to make benefit payments)
- Risk of underperforming a benchmark
- Risk of poor performance relative to other funds with similar characteristics and goals.

All of these risks are important, but in the context of performance measurement the focus is on risk as *standard deviation*—a measure widely used to evaluate the degree of fluctuation in a portfolio's historic or future return. The larger the standard deviation, the greater the magnitude of the fluctuations around the portfolio's average (mean) return. An investment with an average return of 8% and a standard deviation of 12% would expect returns to fall between -4% and 20% in 2 of 3 years (+/-one standard deviation) and between -16% and 32% in 19 of 20 years. This is depicted in Exhibit 1. Stocks have a higher standard deviation than bonds.

Exhibit 1

Standard Deviations



What Is a Benchmark?

Benchmarks provide a standard of performance for the return on the total fund, underlying asset classes and individual investment managers over various time periods and across methodologies. There are many types of benchmarks that can be used to analyze relative performance of an investment:

- Broad market (e.g., MSCI All Country World Investable Market Index)
- Style-specific (e.g., S&P 500 Value Index)
- Risk adjusted returns (e.g., benchmark Sharpe ratio)
- Absolute return metric (e.g., 7% Actuarially Assumed Rate of Return)
- Real return target (e.g., inflation based on the Consumer Price Index + 3%)
- Peer universe (e.g., Taft-Hartley pension funds).

Careful attention should be given to appropriateness when selecting performance benchmarks. Criteria commonly used to judge the appropriateness of a benchmark for publicly traded securities are the following:

- **Broad Coverage.** Benchmarks are a market capitalization based representation of a portfolio's investable opportunity set and include the widest coverage of countries, sectors and number of securities possible. If a benchmark is too broad (i.e., includes securities outside the portfolio's opportunity set) or too narrow, it is difficult to determine what performance is due to skill and what is due to good/bad fortune.
- **Investable.** The benchmarks returns are achievable through a passively managed portfolio, liquid and easily replicated.
- **Appropriate.** Benchmark holdings should be similar to those in the portfolio being assessed and used by similar institutions (i.e., U.S. large cap equity managers are being benchmarked against a U.S. large cap equity benchmark).
- **Transparent.** Benchmark components and their weights are known in advance.

For alternative investments (i.e., private equity, real estate and hedge funds), style-specific indices do not exist so a different approach must be taken. In these cases, the most common practice is to use an index comprised of other similar managers or an *opportunity cost benchmark.* The latter is a broad market benchmark with a premium added to compensate for reduced liquidity. Investment consultants often supplement this primary benchmark data with other analysis to determine if the manager has met their performance objectives.

When measuring the performance of the total fund, best practice is to use the broadest available investable market index. The ideal total fund benchmark is a weighted average of the policy targets and the asset class benchmarks. Exhibit 2 provides an example of such a benchmark.

If the structure of fund investments does not cover the broad market, it is important for trustees to understand the opportunity cost (or benefit) that results from not being invested in certain areas. Exhibit 3 illustrates a plan only invested in large cap stocks for the three periods preceding September 2016. Five years ago, the plan had been advised that small cap stocks were unattractively priced. The impact of this decision cannot be determined unless one looks at the overall market. In this instance, when compared to the broad stock index, investing only in large cap stock resulted in 0.6% (12.1% minus 11.5%) higher return for the five-year period. Over other periods, however, this decision may have detracted value and left the plan less diversified.

For the portfolio of an individual investment manager, a style-specific benchmark is most appropriate—especially when the manager has specialized mandates and is not investing in the broad market. It's not fair to a manager to include areas of the market they are prohibited from investing in or perhaps have no expertise. There must be agreement in advance between the fund and the manager as to the benchmark(s) that should be used for assessing performance. Furthermore, any and all benchmarks should be specified in (1) the guidelines established for the manager and (2) the contract between the fund and the manager.

How Is Investment Success Evaluated?

Once the rates of return and benchmarks for an investment program have been established, trustees can start to evaluate investment performance in terms of the overall portfolio, asset classes and specific managers. A series of questions can help trustees better understand the relative success of plan investments.

- **Was the return higher or lower than its benchmark?** Review nominal performance of the portfolio, asset class(es), and manager(s) over various time periods to see whether investments have outperformed or underperformed the appropriate benchmark. *Nominal performance* is the return prior to making any adjustments for inflation. As shown in Exhibit 4's hypothetical returns for one fund, trailing periods include the most recent one, three, five and ten years as well as the since-inception period. More specifically, ask:
  - Have the nominal returns outperformed or underperformed the benchmarks?
  - Has there been a consistency among returns?
  - Does outperformance seem to happen when markets are rising or falling?
  - Was the interaction between investments and markets consistent with what was expected?

Actively managed investments are expected to produce returns higher or lower than the benchmark over different periods, but should be higher over longer periods of time. Passively managed investments (index funds) are expected to produce returns in line with the benchmark over all periods.

In Exhibit 4, it appears performance for the hypothetical Fund X has been above the benchmark over longer term periods. However, performance tends to be good during rising markets and not so good when markets are falling.

- **Why was the return higher or lower than its benchmark? Are there trends over time regarding what is adding or detracting value?** Performance attribution is used to provide trustees an understanding of investment outperformance and underperformance. This analysis should be performed at the total fund and asset class level. Fund X outperformed its benchmark by 1.2% (120 basis points or bps) over a five year period. Exhibit 5 reveals how much of this 1.2% can be attributed to various sources. Examples of the sources that may be provided by the consultant are:
  - **Manager Outperformance.** The amount a plan outperformed/underperformed an investment benchmark as the result of an investment manager outperforming/underperforming management benchmarks
  - **Tactical Allocation.** The amount the fund outperformed/underperformed due to the actual allocation differing from the policy allocation.
  - **Asset Class Structure.** The amount the fund outperformed/underperformed due to the underlying asset class managers not fully replicating the total asset class benchmark. (i.e., the impact of being overweight in small cap stocks relative to the broad market or including high yield bonds in an investment grade bond portfolio.
  - **Cash Flow Effect.** The amount the fund outperformed/underperformed due to the timing of cash contributions, withdrawals and asset movements between accounts.

Exhibit 2

Example of Total Fund Policy Benchmark

Asset Class	Policy Target	Asset Class Benchmark
U.S. Equity	30%	Russell 3000 Index
Non-U.S. Equity	20%	MSCI All Country World Ex-U.S.
Fixed Income	30%	Barclays Aggregate Bond Index
Real Estate	10%	NCREIF ODCE Index
Private Equity	10%	Russell 3000 Index + 300 basis points
Total Fund Policy Benchmark	**100%**	**Weighted Average**

Exhibit 3

Returns for Periods Ending 8/31/2016

Benchmark	One-Year	Three-Year	Five-Year
Large Cap U.S. Stock Index	4.0%	11.7%	12.1%
Small Cap U.S. Stock Index	-6.7%	7.1%	8.4%
Broad U.S. Stock Index	2.0%	11.1%	11.5%

Exhibit 4

Fund X: Trailing Returns

	Trailing Returns						
	1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
Total Fund	-2.3	3.8	-1.0	6.8	8.4	6.1	7.6
Total Fund Benchmark	*-2.0*	*3.8*	*0.6*	*6.8*	*7.2*	*6.0*	*7.5*
Difference	-0.3	0.0	-1.6	0.0	1.2	0.1	0.1

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Total Fund	-4.0	8.4	16.5	15.7	2.8	14.8	25.9	-31.3	6.8	13.2
Total Fund Benchmark	*-1.6*	*7.2*	*15.2*	*14.6*	*3.0*	*14.6*	*22.8*	*-27.1*	*6.8*	*12.9*
Difference	-2.4	1.2	1.3	1.1	-0.2	0.2	3.1	-4.2	0.0	0.3

Exhibit 5

Fund X: Total Fund Attribution Analysis—5 Years

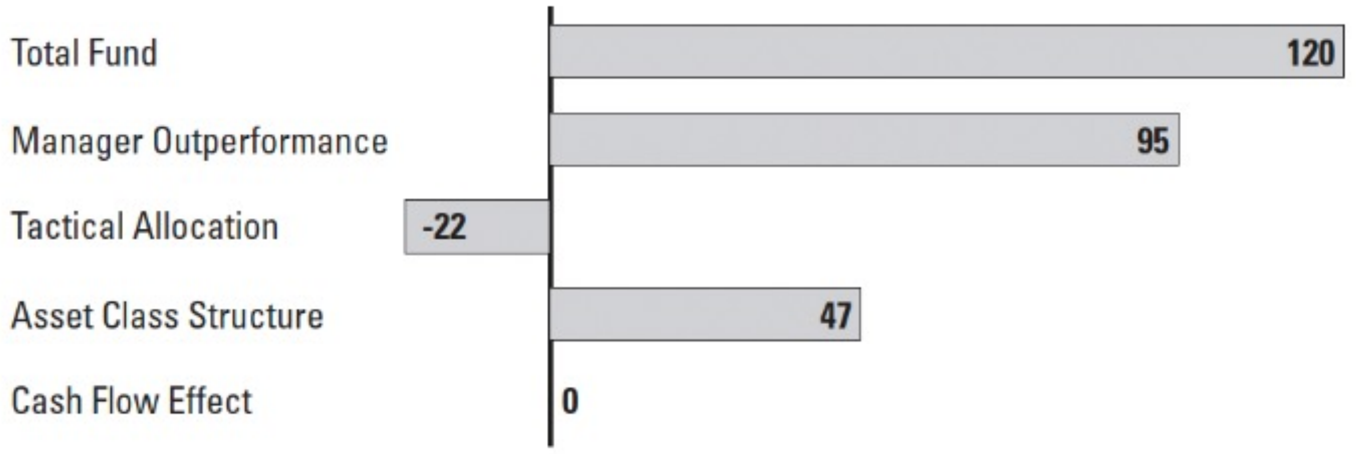
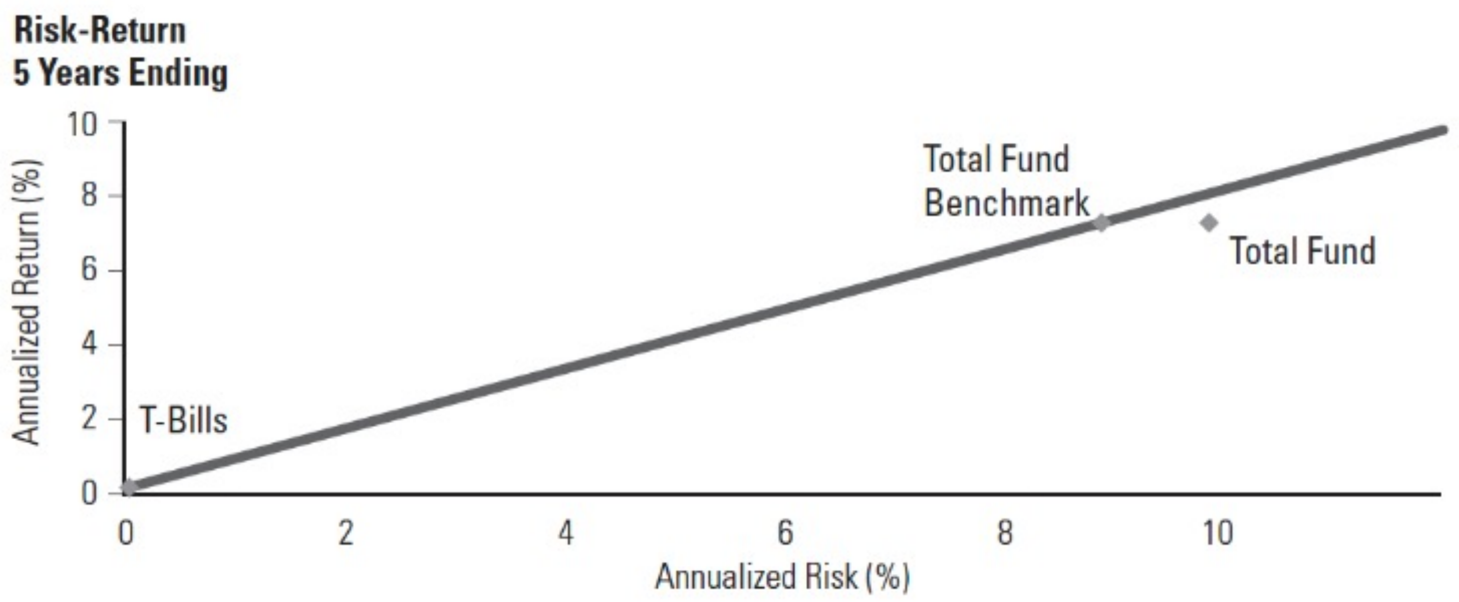


Exhibit 5 shows that investment managers selected by the plan trustees added 95 basis points (bps) of value during the five-year period—a great result. In contrast, the trustees' decision to implement tactical market timing relative to their policy targets was unsuccessful and detracted 22 bps on average over the same period. The fund's asset class structure, which involved an underweighting of small cap stocks in the U.S. equity portfolio and an out of benchmark exposure to high yield bonds within the bond portfolio, added an average of 47 bps. Trustees may conclude from these results that they should focus their efforts on manager selection and asset class structure rather than attempting to time the markets.

- **Is the level of risk being taken appropriate?** This question is answered by evaluating risk-adjusted performance over various time periods. This analysis should be performed at the total fund, asset class, and individual manager level.
  - **Sharpe Ratio.** One strategy is to evaluate the Sharpe Ratio of a fund versus the Sharpe Ratio of the benchmark. The *Sharpe Ratio* is the return achieved for every unit of risk (standard deviation) incurred. If the Sharpe Ratio of a fund is higher than the benchmark's, the fund has received more return for every unit of risk being incurred, and the fund is being appropriately compensated for the risk being taken. If an investment has achieved a higher return but a lower Sharpe Ratio, this means that the investment is taking on extra risk to achieve the return.
  - **Standard deviation.** Another approach is to compare the standard deviation of a fund and its investment benchmark. If the fund's standard deviation is greater than that of the benchmark, the fund is probably invested more aggressively than the benchmark. The fund should be expected to outperform in rising markets and underperform in falling markets. Exhibit 6 shows the risk/return tradeoff of a hypothetical fund's total investments relative to its benchmark over a five-year period. The bottom left corner represents low risk and low return. The top right corner represents high risk and high return. The top left corner is preferred (higher return with lower risk). The line represents the risk/return tradeoff offered in the market. It represents the level of return an investor should expect for varying levels of risk. If the total fund falls above the "Market Line" the portfolio is considered to be achieving superior risk adjusted returns (Sharpe Ratio). As shown, the hypothetical total fund achieved a slightly higher return than the benchmark, but incurred a disproportionately higher level of risk (volatility).
- **How does performance compare to similar funds?** The performance of the fund is compared to peers over various periods. This analysis can be performed at the total fund, asset class, and individual manager level. Peer performance is fraught with issues that make it a less than desirable benchmark for assessing fund performance. The data often includes biases, and peer funds can have materially different circumstances that necessitate a different asset allocation and, ultimately, a different return profile. Being aware of why and how a fund's investment program is different from that of its peers and accounting for these differences can make this comparison insightful. Reviewing risk-adjusted performance (Sharpe Ratio) relative to peers can also be informative—showing how much return the fund has received for every unit of risk relative to peers.

Exhibit 6

Fund X: Total Fund Risk/Return Tradeoff



There is no single statistic or perfect time period to review to determine whether an investment program is successful. Reviewing the items outlined above over various time periods, however, should lead to an understanding of the risk profile of the fund relative to its benchmarks and peers. Using shorter term analysis to understand investment results and longer term analysis to evaluate success and for decision making increases the likelihood of attaining investment objectives. Over long periods of time (10+ years), trustees may also evaluate the performance of the fund relative to the assumed actuarial rate of return. But be aware, that returns achieved historically may not be consistent with forward looking investment expectations.

What Special Considerations Apply When Evaluating the Performance of Investment Managers?

From a hiring and monitoring perspective, investment returns should always be net of investment management fees! It is difficult to compare gross of fee return information amongst multiple managers with different fee levels and structures. Moreover, if a manager is unable to meet established long-term objectives on a net of fee basis, trustees should consider replacing the manager and/or using low cost passive investment options. A fund cannot pay benefits with gross of fee investment results.

Despite using the appropriate and agreed upon in advance benchmark, sometimes circumstances arise where benchmark and peer group comparisons do not tell the entire performance story. Even though managers may be generically grouped in the same category, there are occasions when a manager's approach or style may still be dramatically different. Having a strong fundamental knowledge of an investment manager's style, nuances and so forth may prevent poor hire and fire decisions. Consider this example:

- Large Cap Value Manager A completely avoids the utility, energy and materials sectors due to these investments' low growth prospects and commodity-like portfolio exposures. This manager prefers to invest in growing companies that are trading at a deep discount to their intrinsic value.
- For risk control, Large Cap Value Manager B invests in the utility, energy and materials sectors at similar levels to that of the index to provide broad exposure to value stocks.

If past measurement periods were dominated by strong performance of the utilities, energy and materials sectors, it would be reasonable to expect Manager A to underperform. Despite this expectation, it may not be a good decision to fire Manager A and hire Manager B. The market leadership of these sectors will inevitably change. Past performance is not indicative of future results.

The key is to understand and consider this before hiring managers so it doesn't come as a surprise or disappointment when it occurs. Many trustees and consultants are whipsawed if they do not have the insight and expertise to differentiate between a manager performing poorly and one falling prey to unavoidable market circumstances.

Conclusion

Performance measurement and appraisal is the process by which trustees review the success of investment policy implementation. Success can be defined as creating an investment portfolio with a risk and return exposure commensurate or superior to that required to meet a plan's long term objectives.

Receiving high-quality performance measurement materials that are easy to understand and interpret increase the likelihood of success. Such materials should have:

- Returns calculated and presented in an accurate and fair manner
- Benchmarks that are appropriate and fair
- Analysis that facilitates the interpretation of investment results.

Use these materials to understand and monitor short term investment results (i.e., quarter and one year). Longer term results provide the basis for evaluation and decision making. Trustees and others reviewing performance measurement data are encouraged to keep a broad focus, and not allow one statistic or time period to overly impact one's perspective. Furthermore, no one should feel the need to make changes simply for the sake of change.

Endnotes

1. It is possible to calculate a public market equivalent return for private managers. The cash flows into and out of the fund are multiplied by the return of a public equity benchmark to determine if the private investment yielded higher results than the equivalent public market investment.

Additional Asset-Liability Analysis

Section: Appendix

Current State Asset-Liability Profile (As of June 30, 2023)

STRS Pension projects a hurdle rate surplus, improving the near-term funded ratio

Asset-Liability Snapshot				
	As of 6/30/2022		Est. as of 6/30/2023	
Metric ($, Billions)	**Value**	**Fund %**	**Value**	**Fund %**
Market Value of Assets	$83.0	78.9%	$85.3	80.0%
Actuarial Value of Assets	$85.1	80.9%	$0.0	
Liability Metrics				
Actuarial Liability (AL)[1]	$105.3		$106.6	

Asset-Liability Growth Metrics			
Metric ($, Billions)	**Value**	**% Liability**	**% Assets**
AL Discount Cost	$7.5	7.00%	8.75%
AL Normal Cost	$1.5	1.41%	1.76%
Plan Expenses	$0.1	0.07%	0.08%
Total Liability Hurdle Rate	**$9.0**	**8.48%**	**10.59%**
Expected Return on Assets[2]	$6.2	5.84%	7.30%
Total Contributions	$3.9	3.64%	4.55%
Total Exp. Asset Growth	**$10.1**	**9.48%**	**11.85%**
Hurdle Rate (Shortfall)/Surplus	**$1.1**	**1.00%**	**1.26%**
Est. Benefit Payments	$7.8	7.31%	9.14%

Key Takeaways:

- Pension plan was estimated to be **80.0%** funded on a market value of assets basis as of June 30, 2023
- Asset hurdle rate of **10.59%**, via cash funding and investment returns, needed to maintain or improve funded status
- The Total Expected Asset Growth rate (expected return plus contributions) exceeds the Liability Hurdle Rate by **126 bps** which is expected to increase the Plan's near-term funded ratio

Target Asset Allocation as of 6/30/2023		
Metric ($, Billions)	**Value**	**Alloc %**
Return-Seeking		
• Public Equity	$40.9	48%
• Private Equity	$7.7	9%
• Liquid Alternatives	$4.3	5%
• Liquid Return-Seeking Fixed Income	$1.7	2%
• Illiquid Return-Seeking Fixed Income	$4.3	5%
• Open-End Real Assets	$7.7	9%
• Closed-End Real Assets	$0.9	1%
• **Total**	**$67.4**	**79%**
Risk-Reducing		
• Cash & Short Duration Fixed Income	$0.9	1%
• Core Bonds	$12.8	15%
• Intermediate Duration Fixed Income	$4.3	5%
• **Total**	**$17.9**	**21%**
Total	$85.3	100%

[1] Based on a 7.00% discount rate consistent with the June 30, 2022 actuarial valuation report, sourced online, and rolled forward to June 30, 2023
[2] Includes investment advisory fees paid from trust assets. Annual trust-payable expenses, assumed to be inclusive of investment management fees, are based on actual expenses paid in the prior fiscal year ($66.3 million for pension as stated in the 2022 Annual Comprehensive Financial Report, sourced online). Actual fees and expenses may differ from those presented.
[3] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) 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 may differ from 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.

Current State Asset-Liability Profile (As of June 30, 2023)

STRS OPEB is overfunded and projects to have a hurdle rate surplus further improving funded ratio

Asset-Liability Snapshot				
	As of 6/30/2022		Est. as of 6/30/2023	
Metric ($, Millions)	**Value**	**Fund %**	**Value**	**Fund %**
Market Value of Assets	$4,570.0	230.7%	$4,793.2	239.0%
Liability Metrics				
Actuarial Liability (AL)[1]	$1,980.7		$2,005.2	

Asset-Liability Growth Metrics			
Metric ($, Millions)	**Value**	**% Liability**	**% Assets**
AL Discount Cost	$140.4	7.00%	2.93%
AL Normal Cost	$27.7	1.38%	0.58%
Plan Expenses[2]	$2.4	0.12%	0.05%
Total Liability Hurdle Rate	**$170.5**	**8.50%**	**3.56%**
Expected Return on Assets[3]	$350.0	17.46%	7.30%
Total Contributions	$27.7	1.38%	0.58%
Total Exp. Asset Growth	**$377.8**	**18.84%**	**7.88%**
Hurdle Rate (Shortfall)/Surplus	**$207.2**	**10.34%**	**4.32%**
Est. Benefit Payments	$146.6	7.31%	3.06%

Key Takeaways:

- OPEB plan was estimated to be **239.0%** funded on a market value of assets basis as of June 30, 2023
- Asset hurdle rate of **3.56%**, via cash funding and investment returns, needed to maintain or improve funded status
- The Total Expected Asset Growth rate (expected return plus contributions) exceeds the Liability Hurdle Rate by **432 bps** which is expected to increase the Plan's near-term funded ratio

Target Asset Allocation as of 6/30/2023		
Metric ($, Millions)	**Value**	**Alloc %**
Return-Seeking		
• Public Equity	$2,300.7	48%
• Private Equity	$431.4	9%
• Liquid Alternatives	$239.7	5%
• Liquid Return-Seeking Fixed Income	$95.9	2%
• Illiquid Return-Seeking Fixed Income	$239.7	5%
• Open-End Real Assets	$431.4	9%
• Closed-End Real Assets	$47.9	1%
• Total	**$3,786.6**	**79%**
Risk-Reducing		
• Cash & Short Duration Fixed Income	$47.9	1%
• Core Bonds	$719.0	15%
• Intermediate Duration Fixed Income	$239.7	5%
• Total	**$1,006.6**	**21%**
Total	**$4,793.2**	**100%**

[1] Based on a 7.00% discount rate consistent with the June 30, 2022 actuarial valuation report, sourced online, and rolled forward to June 30, 2023
[2] Includes investment advisory fees paid from trust assets. Annual trust-payable expenses, assumed to be inclusive of investment management fees, are based on actual expenses paid in the prior fiscal year ($66.3 million for pension as stated in the 2022 Annual Comprehensive Financial Report, sourced online). Actual fees and expenses may differ from those presented.
[3] Expected returns are using AIUSA Q3 2023 30-Year Capital Market Assumptions (CMAs) 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 may differ from 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.

Liquidity Analysis

Asset allocation and liquidity category

Current Policy	
Liquid (Risk-Reducing Assets)	
Core Fixed Income	15.0%
Intermediate Government	5.0%
Cash	1.0%
Subtotal	**21.0%**
Liquid (Return-Seeking Assets)	
Public Equity	48.0%
REITs	1.5%
High Yield Bonds	1.0%
Emerging Market Debt	1.0%
Subtotal	**51.5%**
Quasi-Liquid Assets	
Core Real Estate	7.5%
Hedge Funds	5.0%
Subtotal	**12.5%**
Illiquid 5-10 Years	
Private Debt	5.0%
Non-Core Real Estate	1.0%
Subtotal	**6.0%**
Illiquid 10+ Years	
Private Equity	9.0%
Subtotal	**9.0%**
Total	**100.0%**

27.5% in Illiquid

+

Quasi-Liquid Assets

Methods & Assumptions

Section: Appendix

Actuarial Assumptions and Methods

Data

- Actuarial information taken from the STRS Pension and OPEB actuarial valuation reports as of June 30, 2022, sourced online

Actuarial assumptions:

- Valuation Rate of Interest = 7.00% as of June 30, 2022
- All other assumptions as documented in the Actuarial Valuation Report as of June 30, 2022, unless noted otherwise

Contribution Policy

- Pension: statutory contribution policy: 14% employer contributions; 13.52% employee contributions per the June 30, 2022 actuarial valuation report
- OPEB: Plan contributes based on a 30-year open level percent of pay amortization of the unfunded actuarial liability plus normal cost

Other

- Actual asset experience through June 30, 2023 was factored in using return information sourced online
- Assumes investment advisory fees paid from trust assets. Annual trust-payable expenses, assumed to be inclusive of investment management fees, are based on actual expenses paid in the prior fiscal year ($66.3 million for pension as stated in the 2022 Annual Comprehensive Financial Report and $2.41 million expected for the current fiscal year for OPEB as stated in the June 30, 2022 actuarial valuation report, sourced online). Actual fees and expenses may differ from those presented.

Aon's Capital Market Assumptions

As of June 30, 2023

Aon's Capital Market Assumptions	10-Year CMAs Expected Real Return[1]	10-Year CMAs Expected Nominal Return[1]	10-Year CMAs Expected Nominal Volatility	10-Year CMAs Assumed Global Equity Beta	30-Year CMAs Expected Real Return[1]	30-Year CMAs Expected Nominal Return[1]	30-Year CMAs Expected Nominal Volatility	30-Year CMAs 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 International Equity (Developed)	4.4%	6.8%	20.3%	1.01	4.9%	7.3%	20.8%	1.01
4 Emerging Markets Equity	4.7%	7.1%	24.0%	1.09	5.3%	7.7%	24.5%	1.09
Fixed Income								
5 Cash (Gov't)	1.4%	3.7%	1.6%	0.01	1.0%	3.3%	2.2%	0.01
6 Core Fixed Income	2.2%	4.5%	5.0%	0.00	1.8%	4.1%	5.2%	0.00
7 Core Plus Fixed Income	2.5%	4.9%	5.4%	0.01	2.2%	4.5%	5.8%	0.01
8 Intermediate Gov't Bonds (4-Year Duration)	1.5%	3.8%	4.0%	-0.01	1.1%	3.4%	4.2%	-0.01
9 High Yield Bonds	3.5%	5.9%	10.5%	0.38	3.5%	5.9%	10.3%	0.36
10 Emerging Market Bonds	4.5%	6.9%	11.0%	0.29	3.7%	6.1%	11.5%	0.30
11 Emerging Market Bonds (Corporate USD)	3.5%	5.9%	11.0%	0.28	3.2%	5.6%	11.2%	0.28
12 Emerging Market Bonds (Sov. Local)	3.3%	5.7%	13.0%	0.46	3.3%	5.7%	13.3%	0.46
13 Multi-Asset Credit[2]	4.6%	7.0%	8.9%	0.32	4.5%	6.9%	9.1%	0.32
Alternatives								
14 Direct Hedge Funds[2,3]	5.2%	7.6%	9.0%	0.25	5.1%	7.5%	9.4%	0.26
15 US REITs	4.4%	6.8%	18.5%	0.66	4.4%	6.8%	18.9%	0.66
16 Core Real Estate	3.4%	5.8%	15.0%	0.30	3.2%	5.6%	15.4%	0.30
17 Non-Core Real Estate	5.5%	7.9%	25.0%	0.66	5.3%	7.7%	25.5%	0.65
18 Private Equity	6.4%	8.8%	25.0%	0.87	7.3%	9.8%	25.6%	0.87
19 Closed-End Real Assets	5.8%	8.2%	15.7%	0.47	5.8%	8.2%	16.1%	0.47
20 Private Debt	5.9%	8.3%	16.5%	0.35	5.3%	7.7%	17.5%	0.36
Inflation								
21 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.

Aon's 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	21
1 Large Cap U.S. Equity	**1.00**	0.93	0.81	0.73	0.10	0.00	0.04	-0.05	0.61	0.45	0.43	0.60	0.60	0.52	0.65	0.35	0.46	0.62	0.52	0.35	0.09
2 Small Cap U.S. Equity	0.93	**1.00**	0.75	0.69	0.09	0.00	0.04	-0.06	0.57	0.42	0.40	0.54	0.56	0.49	0.61	0.33	0.43	0.60	0.50	0.34	0.09
3 International Equity (Developed)	0.81	0.75	**1.00**	0.76	0.06	-0.01	0.03	-0.08	0.60	0.44	0.43	0.62	0.60	0.44	0.55	0.35	0.44	0.56	0.50	0.36	0.11
4 Emerging Markets Equity	0.73	0.69	0.76	**1.00**	0.08	0.00	0.04	-0.06	0.67	0.48	0.46	0.56	0.63	0.37	0.50	0.33	0.41	0.53	0.46	0.38	0.09
5 Cash (Gov't)	0.10	0.09	0.06	0.08	**1.00**	0.45	0.41	0.55	0.15	0.19	0.08	0.03	0.06	-0.02	0.10	0.17	0.16	0.10	0.20	-0.25	0.44
6 Core Fixed Income	0.00	0.00	-0.01	0.00	0.45	**1.00**	0.98	0.94	0.24	0.46	0.13	0.12	0.18	-0.01	0.02	0.05	0.05	0.01	0.06	-0.07	0.01
7 Core Plus Fixed Income	0.04	0.04	0.03	0.04	0.41	0.98	**1.00**	0.87	0.34	0.55	0.20	0.18	0.29	0.08	0.04	0.07	0.07	0.05	0.08	0.06	0.01
8 Intermediate Gov't Bonds (4-Year Duration)	-0.05	-0.06	-0.08	-0.06	0.55	0.94	0.87	**1.00**	0.04	0.27	0.02	0.01	-0.03	-0.17	-0.02	0.04	0.02	-0.04	0.03	-0.31	0.07
9 High Yield Bonds	0.61	0.57	0.60	0.67	0.15	0.24	0.34	0.04	**1.00**	0.80	0.61	0.62	0.91	0.52	0.41	0.26	0.33	0.46	0.39	0.64	0.18
10 Emerging Market Bonds	0.45	0.42	0.44	0.48	0.19	0.46	0.55	0.27	0.80	**1.00**	0.68	0.63	0.80	0.45	0.30	0.19	0.24	0.33	0.28	0.44	0.08
11 Emerging Market Bonds (Corporate USD)	0.43	0.40	0.43	0.46	0.08	0.13	0.20	0.02	0.61	0.68	**1.00**	0.59	0.71	0.44	0.28	0.16	0.22	0.28	0.24	0.45	0.08
12 Emerging Market Bonds (Sov. Local)	0.60	0.54	0.62	0.56	0.03	0.12	0.18	0.01	0.62	0.63	0.59	**1.00**	0.74	0.43	0.37	0.12	0.21	0.22	0.22	0.38	0.00
13 Multi-Asset Credit	0.60	0.56	0.60	0.63	0.06	0.18	0.29	-0.03	0.91	0.80	0.71	0.74	**1.00**	0.56	0.39	0.22	0.29	0.39	0.33	0.67	0.10
14 Direct Hedge Funds	0.52	0.49	0.44	0.37	-0.02	-0.01	0.08	-0.17	0.52	0.45	0.44	0.43	0.56	**1.00**	0.34	0.17	0.23	0.33	0.27	0.47	0.05
15 US REITs	0.65	0.61	0.55	0.50	0.10	0.02	0.04	-0.02	0.41	0.30	0.28	0.37	0.39	0.34	**1.00**	0.44	0.47	0.44	0.49	0.22	0.08
16 Core Real Estate	0.35	0.33	0.35	0.33	0.17	0.05	0.07	0.04	0.26	0.19	0.16	0.12	0.22	0.17	0.44	**1.00**	0.96	0.32	0.85	0.11	0.10
17 Non-Core Real Estate	0.46	0.43	0.44	0.41	0.16	0.05	0.07	0.02	0.33	0.24	0.22	0.21	0.29	0.23	0.47	0.96	**1.00**	0.38	0.89	0.16	0.11
18 Private Equity	0.62	0.60	0.56	0.53	0.10	0.01	0.05	-0.04	0.46	0.33	0.28	0.22	0.39	0.33	0.44	0.32	0.38	**1.00**	0.45	0.27	0.08
19 Closed-End Real Assets	0.52	0.50	0.50	0.46	0.20	0.06	0.08	0.03	0.39	0.28	0.24	0.22	0.33	0.27	0.49	0.85	0.89	0.45	**1.00**	0.19	0.13
20 Private Debt	0.35	0.34	0.36	0.38	-0.25	-0.07	0.06	-0.31	0.64	0.44	0.45	0.38	0.67	0.47	0.22	0.11	0.16	0.27	0.19	**1.00**	-0.01
21 Inflation	0.09	0.09	0.11	0.09	0.44	0.01	0.01	0.07	0.18	0.08	0.08	0.00	0.10	0.05	0.08	0.10	0.11	0.08	0.13	-0.01	**1.00**

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

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., 10 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 10 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 10 years.

Real Returns for Asset Classes

Fixed Income		
Cash	**1.4%**	Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 1.4% in a moderate to high-inflationary environment.
TIPS	**1.7%**	We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 1.7%.
Core Fixed Income (i.e., Market Duration)	**2.2%**	We expect intermediate duration Treasuries to produce a real return of about 1.5%. 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 2.2%.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—06/30/2023

Fixed Income		
Core Plus Bonds	**2.5%**	Modeled as 20% 5 duration gov't bonds real return of 1.5% and 80% 5 duration corporate bonds real return of 2.8%.
Long Duration Bonds – Government and Credit	**2.8%**	We expect Treasuries with a duration of ~14 to produce a real return of 2.4%. 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 2.8%.
Long Duration Bonds – Credit	**3.3%**	We expect Treasuries with a duration of ~12 years comparable to produce a real return of 2.4%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.9%, resulting in an expected real return of 3.3%.
Long Duration Bonds – Government	**2.4%**	We expect Treasuries with a duration of ~16 years to produce a real return of 2.4% during the next 10 years.
High Yield Bonds	**3.5%**	We expect intermediate duration Treasuries to produce a real return of about 1.5%. 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 3.5%.
Bank Loans	**4.2%**	We expect LIBOR to produce a real return of about 2.1%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 2.1%, resulting in an expected real return of 4.2%.
Non-U.S. Developed Bonds: 50% Hedged	**1.5%**	We forecast real returns for non-US developed market bonds to be 1.5% over a 10-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)	**4.5%**	We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 4.5% over a 10-year period.
Emerging Market Bonds (Corporate; USD)	**3.5%**	We forecast real returns for emerging market corporate bonds denominated in US dollars to be 3.5% over a 10-year period.
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 10-year period.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—06/30/2023

Fixed Income		
Multi-Asset Credit (MAC)	**4.6%**	We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 3.8% plus 0.8% from alpha (net of fees) over a 10-year period.
Private Debt-Direct Lending	**5.9%**	The base building block is bank loans 4.2% + spread 1.7% (net of management fees and performance incentives). There is 100% leverage included in the assumption with the cost of financing at LIBOR +1.7%.
Equities		
Large Cap US. Equity	**3.8%**	This assumption is based on our 10-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	**4.0%**	Adding a 0.2% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 4.0%. 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. In recent years, higher small cap valuations relative to large cap equity has reduced the small cap premium.
Global Equity (Developed & Emerging Markets	**4.3%**	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 4.3% for global equity.
International (Non-U.S.) Equity, Developed Markets	**4.4%**	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	**4.7%**	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	**3.0%**	We expect real returns from 50% equity + 50% cash of 2.7% plus 0.3% insurance risk premium over the next 10 years.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—06/30/2023

Alternative Asset Classes		
Hedge Fund-of-Funds Universe	2.3%	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	3.8%	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	5.2%	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	3.4%	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 10 years. We assume a portfolio of equity real estate holdings that is diversified by property and by geographic region.
Non-Core Real Estate	5.5%	**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 10 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

Alternative Asset Classes		
Commodities	**4.3%**	**Our commodity 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 (2.1%). Also, we believe the roll effect will be near zero, resulting in a real return of about 4.3% for commodities**.
Private Equity	**6.4%**	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 10-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	**3.8%**	We assume real returns from cash 1.4% + 2.4% alpha.
Alternative Risk Premia (ARP)	**6.0%**	Real LIBOR 2.1% plus 3.9% alpha (net of fees)
eLDI	**3.5%**	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%**	Combination of 50% Non-Core Real Estate and 50% Infrastructure.

Volatility/Correlation Assumptions

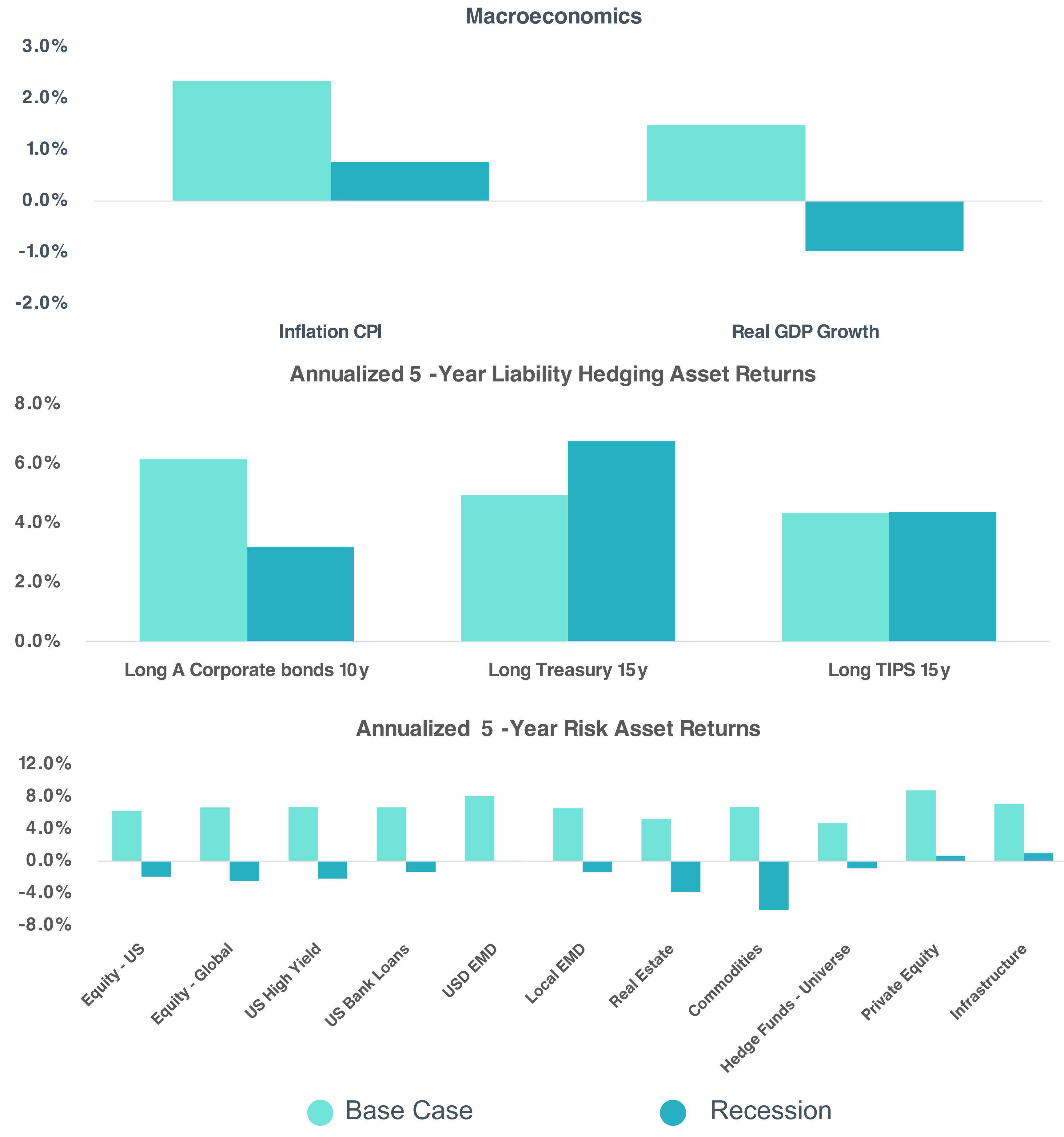
Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we "de-smooth" historical returns before calculating 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.

Recession Scenario

Description

The US economy slips into a deep recession in 2023/24

- Global growth is much weaker than the base case. Concerns that inflation will remain high for longer lead to central banks rapidly tightening monetary policies.
- Tightening financial conditions, combined with spill over effects from geopolitical volatility and reduced consumer and business spending, as real incomes are squeezed by high inflation, lead to a deep recession in the US in 2023/24.
- The economic slowdown leads to developed economies implementing modest fiscal stimulus measures and monetary policy becomes more accommodative as central banks are forced to reverse rate hikes within the next 12 months. Policy actions are only partially effective as they are tackling the demand side of the equation.
- Inflation is lower than the base case. However, inflation starts to rise in later years as the post-recession recovery gets underway.
- Treasury yields fall while TIPS yields remain at low levels as the US enters recession. Yields rise in later years as a recovery gets underway. Corporate spreads rise significantly due to the poor economic situation and increased risks of downgrades or defaults.
- Most risk assets make losses in the first two years but rebound in later years as the economy recovers.



Returns from 30 June 2023

Source: Aon

The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Recession Scenario

Data

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Yields (BOY)											
Treasury yield 5y	4.1%	1.2%	0.8%	1.5%	1.8%	2.2%	2.3%	2.4%	2.6%	2.7%	2.9%
Long Treasury yield 15y	4.0%	1.3%	1.1%	2.1%	2.4%	2.6%	2.8%	2.8%	2.9%	3.0%	3.0%
TIPS yield 5y	2.0%	-0.2%	-0.3%	0.3%	0.4%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%
Long TIPS yield 15y	1.6%	-0.3%	-0.4%	0.3%	0.4%	0.5%	0.7%	0.8%	0.9%	1.0%	1.1%
Breakeven price inflation 15y	2.4%	1.7%	1.6%	1.9%	2.0%	2.1%	2.1%	2.1%	2.0%	2.0%	1.9%
A Corporate bond yield 5y	5.4%	5.2%	5.5%	5.6%	5.2%	5.2%	5.1%	5.0%	4.9%	4.9%	4.8%
Long A Corporate bond yield 10y	5.1%	4.6%	4.9%	5.5%	5.2%	5.2%	5.2%	5.3%	5.2%	5.3%	5.2%
A Corporate spread 5y	1.2%	4.1%	4.7%	4.1%	3.4%	3.0%	2.8%	2.6%	2.4%	2.1%	1.9%
Long A Corporate spread 10y	1.1%	3.4%	3.9%	3.5%	3.1%	2.8%	2.7%	2.5%	2.3%	2.2%	2.0%
Expected nominal return on assets											
Equity - US		-18.2%	-10.1%	10.5%	5.6%	5.6%	5.7%	5.7%	5.8%	5.9%	5.9%
Equity - Global		-20.7%	-11.7%	11.1%	5.7%	5.7%	5.7%	5.8%	5.9%	5.9%	6.0%
A Corporate bonds 5y		6.2%	3.0%	4.5%	6.6%	5.3%	5.9%	5.9%	5.9%	5.8%	5.9%
Long A Corporate bonds 10y		7.8%	-0.1%	-1.5%	6.4%	3.8%	4.3%	4.7%	5.1%	5.2%	5.6%
Treasury 5y		17.6%	2.9%	-1.0%	1.1%	1.4%	2.8%	2.8%	2.8%	2.9%	3.0%
Long Treasury 15y		50.2%	5.1%	-11.2%	-0.2%	-0.7%	1.7%	1.9%	2.1%	2.1%	2.3%
TIPS 5y		11.1%	0.8%	-1.7%	0.8%	1.3%	2.1%	2.3%	2.5%	2.6%	2.8%
Long TIPS 15y		33.7%	1.7%	-8.7%	0.0%	-0.2%	0.9%	1.1%	1.2%	1.3%	1.6%
US High Yield		-10.9%	-11.1%	7.3%	5.6%	3.9%	5.4%	5.6%	5.6%	5.9%	6.0%
Bank Loans		-10.0%	-8.0%	5.8%	3.3%	3.2%	3.5%	3.8%	4.1%	4.5%	4.8%
USD Emerging Market Debt		-11.7%	-8.2%	9.6%	6.4%	6.0%	6.6%	6.7%	6.7%	6.8%	6.9%
Local Emerging Market Debt		-13.1%	-9.6%	8.1%	5.0%	4.6%	5.2%	5.3%	5.3%	5.4%	5.4%
Real Estate		-12.9%	-7.9%	-2.7%	0.8%	4.6%	4.7%	4.8%	4.8%	4.9%	4.9%
Commodities		-25.6%	-19.7%	9.3%	5.9%	5.9%	6.0%	6.1%	6.1%	6.2%	6.3%
Hedge Funds - FoHF - Universe		-13.2%	-8.0%	7.5%	6.4%	4.6%	4.6%	4.6%	4.6%	4.6%	4.7%
Private Equity		-20.7%	-10.9%	13.5%	8.0%	8.0%	8.1%	8.2%	8.3%	8.3%	8.4%
Private Equity Smoothed		-13.7%	-7.2%	4.2%	6.0%	6.6%	7.3%	7.9%	8.6%	8.3%	8.4%
Private Credit Unsmoothed		-11.9%	-9.6%	7.0%	4.1%	3.9%	4.3%	4.7%	5.1%	5.5%	5.9%
Infrastructure - US		-5.6%	-1.2%	2.3%	3.1%	6.7%	6.7%	6.8%	6.8%	6.9%	6.9%
Cash		5.1%	1.0%	0.8%	1.0%	1.2%	1.4%	1.6%	1.8%	2.0%	2.2%

Scenario information as of June 30, 2023

2023 Horizon Survey Results

Section: Appendix

2023 Horizon Survey Results

What is the Horizon Survey?

Since 2010, Horizon Actuarial Services, LLC has conducted a capital market assumption survey of investment firms to aid in determining reasonable assumptions for a pension plan's expected return on assets

- While Aon does not seek to change our approach based on how we stack up to peers, it is a helpful double-check to make sure we are not too far off from others in the industry

For the 2023 survey, 42 investment advisors participated.

How does Aon compare to the 2023 survey results?

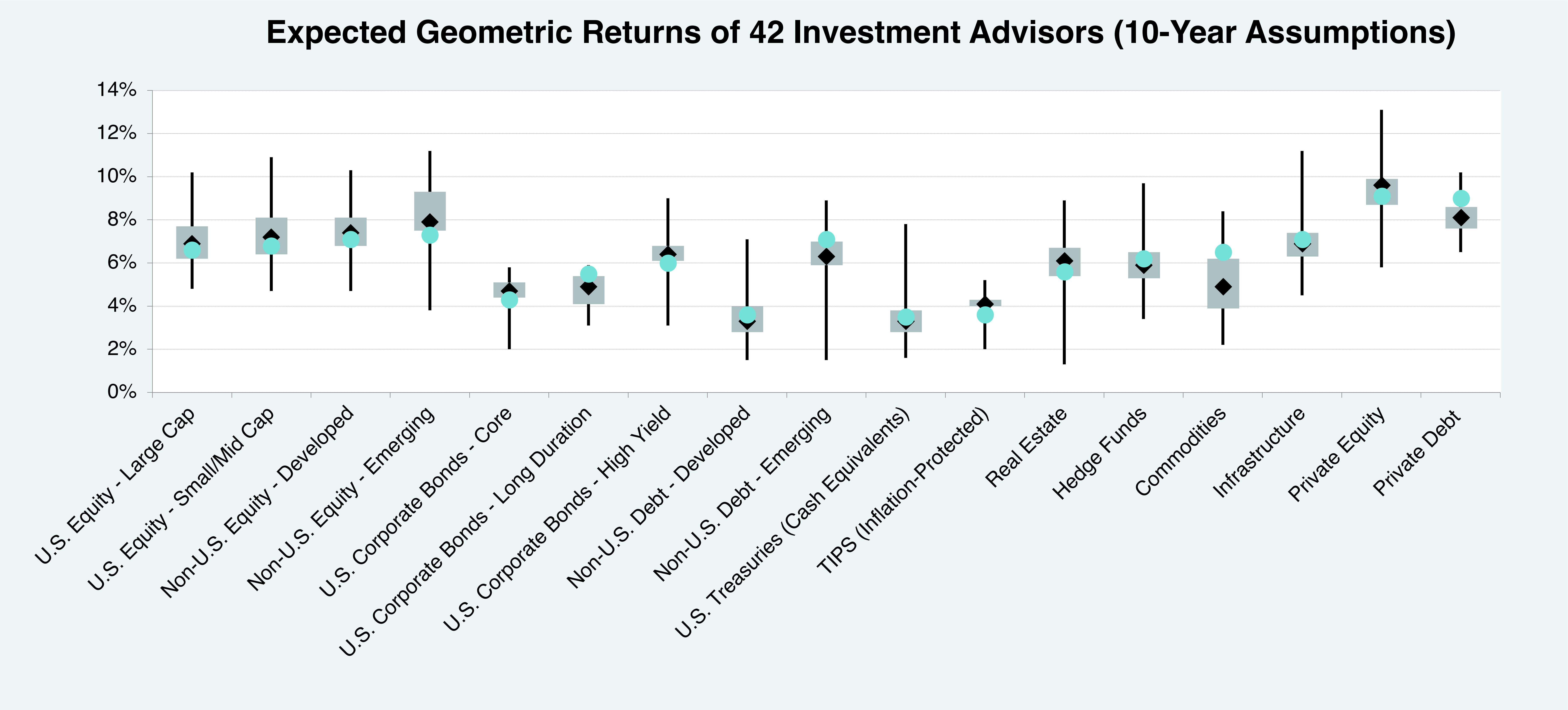
Aon Investments' 2023 10-year assumptions for expected returns (as of March 31, 2023)

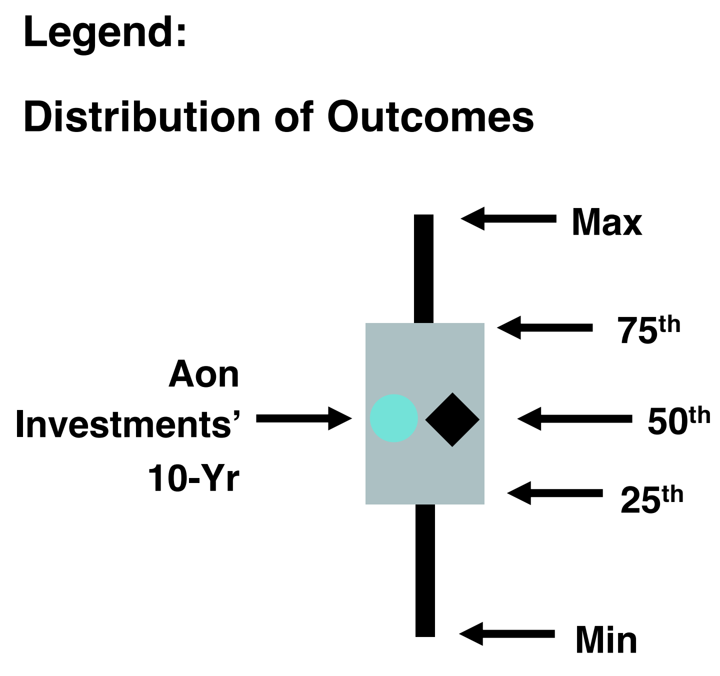
- ***Equities:*** approximately middle of the pack for U.S. and Non-U.S. Developed equities; lower for Non-U.S. Emerging
- ***Fixed Income:*** approximately middle of the pack relative to the survey's median level; lower for TIPS; higher for Long Duration Credit and Non-US Debt - Emerging
- ***Alternatives:*** approximately middle of the pack relative to the survey's median level; higher for Commodities and
- Private Debt

Source: Horizon Actuarial Solutions, LLC survey of 2023 capital market assumptions from 42 independent investment advisors

Aon Investments' Capital Market Assumptions vs. Horizon Survey

10-Year Assumptions





Source: Horizon Actuarial Solutions, LLC survey of 2023 capital market assumptions from 42 independent investment advisors
Aon Investments' expected returns are annualized over 10-years as of 2Q 2023 (3/31/2023). CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Not a guarantee of future results. Additional information regarding our capital market assumptions can be made available upon request.

Aon Investments vs. Peers (2023 Horizon Survey)

10-Year Assumptions

	Horizon Survey		Aon Investments		Difference	
	10-Year Assumptions		10-Year Assumptions		Aon Investments – Horizon Survey	
Asset Class	**Expected Return**	**Expected Risk**	**Expected Return**	**Expected Risk**	**Expected Return**	**Expected Risk**
U.S. Equity - Large Cap	6.9%	16.6%	6.6%	17.0%	-0.3%	0.4%
U.S. Equity - Small/Mid Cap	7.2%	20.5%	6.8%	23.0%	-0.4%	2.5%
Non-U.S. Equity – Developed	7.4%	18.3%	7.1%	20.5%	-0.3%	2.2%
Non-U.S. Equity – Emerging	7.9%	23.9%	7.3%	24.0%	-0.6%	0.1%
U.S. Fixed Income – Core	4.7%	5.9%	4.3%	5.0%	-0.4%	-0.9%
U.S. Fixed Income - Long Duration Corp	4.9%	10.9%	5.5%	10.5%	0.6%	-0.4%
U.S. Fixed Income - High Yield	6.4%	10.0%	6.0%	10.5%	-0.4%	0.5%
Non-U.S. Fixed Income – Developed	3.3%	7.3%	3.6%	6.0%	0.3%	-1.3%
Non-U.S. Fixed Income – Emerging	6.3%	10.9%	7.1%	11.0%	0.8%	0.1%
Treasuries (Cash Equivalents)	3.3%	1.1%	3.5%	1.5%	0.2%	0.4%
TIPS (Inflation-Protected)	4.1%	6.2%	3.6%	4.5%	-0.5%	-1.7%
Real Estate	6.1%	16.7%	5.6%	15.0%	-0.5%	-1.7%
Hedge Funds	5.9%	8.1%	6.2%	9.0%	0.3%	0.9%
Commodities	4.9%	18.0%	6.5%	17.0%	1.6%	-1.0%
Infrastructure	6.9%	17.1%	7.1%	14.5%	0.2%	-2.6%
Private Equity	9.6%	22.6%	9.1%	25.0%	-0.5%	2.4%
Private Debt	8.1%	11.7%	9.0%	16.5%	0.9%	4.8%
Inflation	2.5%	1.9%	2.3%	1.5%	-0.2%	-0.4%

Notes (Horizon Survey):

Source: Horizon Actuarial survey of 2023 capital market assumptions from 42 independent investment advisors

Expected returns are median annualized (geometric).

Notes (Aon Investments' Assumptions):

Aon Investments' assumptions are for Q2 2023

- U.S. Equity - Small/Mid Cap assumptions represents Aon Investments' assumptions for US Small Cap
- U.S. Fixed Income - Long Duration assumptions represents Aon Investments' assumptions for Long Duration Credit
- Non-U.S. Fixed Income - Developed assumptions represents Aon Investments' assumptions for Non-U.S. Fixed Income - Developed (50% Hedged)
- Non-U.S. Fixed Income - Emerging assumptions represents Aon Investments' assumptions for Emerging Market Bonds - Sovereign USD
- Real Estate assumptions represents Aon Investments' assumptions for Core Real Estate
- Hedge Fund assumptions represents Aon Investments' assumptions for Direct Hedge Funds (Universe)

Aon Investments' expected returns are annualized over 10-years as of 2Q 2023 (3/31/2023). CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Not a guarantee of future results. Additional information regarding our capital market assumptions can be made available upon request.

Leading Methodologies & Reasons for Differences

Leading Methodologies

- Building block
- Global capital asset pricing model (Global CAPM)
- Surveys
- Historical data (as a guide to future)
- Black-Litterman (combination of building block and CAPM)

Reasons for differences

- Methodology
- Time horizon
- Timing of assumptions
- Arithmetic vs. geometric forecasts*
- Alpha (active management)*
- Inflation
- Investment Fees*
- Asset class definition

* While some firms in the Horizon survey responded with arithmetic forecasts, the results have been converted to geometric forecasts for comparison purposes. Additionally, the return expectations included in the Horizon survey are generally market returns that do not reflect active management. Returns for asset classes where passive investments are not available (e.g., hedge funds and private equity) are net of fees.

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