



JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LIEUTENANT GOVERNOR

STATE OF HAWAII
HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND
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Toll Free 1(800) 295-0089
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ASSISTANT ADMINISTRATOR
DONNA A. TONAKI

February 28, 2024

NOTICE OF MEETING
HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND
INVESTMENT COMMITTEE

DATE: March 5, 2024, Tuesday
TIME: 9:00 a.m.
PLACE: HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND (EUTF)
CITY FINANCIAL TOWER
201 MERCHANT STREET, 17TH FLOOR BOARD ROOM
HONOLULU, HAWAII

A G E N D A

**OPEN SESSION PARTICIPATION IN PERSON, VIA TELECONFERENCE AND
TELEPHONE**
(see below for details)

- I. Call to Order
- II. Review of Minutes – December 11, 2023
- III. Executive Session
 - A. Private Equity Manager Evaluation [Authorized under HRS 92-5(a)(8) and HRS 87A-31(g)]
 - B. Private Credit Manager Evaluation [Authorized under HRS 92-5(a)(8) and HRS 87A-31(g)]
 - C. Private Real Assets Manager Evaluation [Authorized under HRS 92-5(a)(8) and HRS 87A-31(g)]
 - D. RFP No. 22-002 Investment Consulting Services [Authorized under HRS 92-5(a)(8) and HRS 103(d)]
 - E. Review of Minutes – December 11, 2023 [Authorized under HRS 92-5(a)(8) and 92-9(b)]
- IV. New Business
 - A. Quarterly Performance Report – Q4 2023
 - B. Manager Watch Status Recommendation

EUTF's Mission: We care for the health and well being of our beneficiaries by striving to provide quality benefit plans that are affordable, reliable, and meet their changing needs. We provide informed service that is excellent, courteous, and compassionate.

- C. Quarterly Real Assets Report and Annual Portfolio Review – Q3 2023
- D. Quarterly Private Equity Report – Q3 2023
- E. Quarterly Private Credit Report – Q3 2023
- F. OPEB Asset-Liability Study Part 2 – Capital Market Assumptions

V. Future Agenda Items Discussion and Possible Meeting Dates

VI. Adjournment

If you need an auxiliary aid/service or other accommodation due to a disability, please contact Ms. Desiree Yamauchi at (808) 587-5434 or eutfadmin@hawaii.gov, as soon as possible, preferably at least 3 business days prior to the meeting. Requests made as early as possible have a greater likelihood of being fulfilled.

Testimony may be submitted prior to the meeting via email to eutfadmin@hawaii.gov or via postal mail to: Hawaii Employer-Union Health Benefits Trust Fund, Attn: Investment Committee-Testimony, 201 Merchant Street, Suite 1700, Honolulu, HI 96813. Please include the word “testimony”, the agenda item number, and subject matter following the address line. There is no deadline for submission of testimony, however, the EUTF requests that all written testimony be received no later than 9:00 a.m., one (1) business day prior to the meeting date in order to afford Board members adequate time to review materials.

To view the meeting and provide live oral testimony during the meeting, following are the Microsoft Teams Meeting details:

- [Click here to join the meeting](https://teams.microsoft.com/l/meetup-join/19%3ameeting_MWY2NDQzNWItOTBIZS00OTE1LTkwNTktMGUxMWM0ODI1MTlk%40thread.v2/0?context=%7b%22Tid%22%3a%223847dec6-63b2-43f9-a6d0-58a40aaa1a10%22%2c%22Oid%22%3a%221ec28820-992a-428a-a6a0-44c156209163%22%7d) or copy and paste the following URL into your browser:
https://teams.microsoft.com/l/meetup-join/19%3ameeting_MWY2NDQzNWItOTBIZS00OTE1LTkwNTktMGUxMWM0ODI1MTlk%40thread.v2/0?context=%7b%22Tid%22%3a%223847dec6-63b2-43f9-a6d0-58a40aaa1a10%22%2c%22Oid%22%3a%221ec28820-992a-428a-a6a0-44c156209163%22%7d
 - For instructions to turn on live captions in Microsoft Teams, [please click here.](#)
- Dial-in number: [+1 808-829-4853](tel:+18088294853) United States, Honolulu (Toll)
- Phone Conference ID: 536 925 802#

The Board packet can be accessed at the EUTF website (eutf.hawaii.gov) through the Events Calendar forty-eight (48) hours prior to the meeting. A copy of the packet will also be available for public inspection in the EUTF office at that time.

Please contact Ms. Desiree Yamauchi at (808) 587-5434 or eutfadmin@hawaii.gov if you have any questions.

Upon request, an electronic copy of this notice can be provided.

HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND

Minutes of the Investment Committee Meeting

Monday, December 11, 2023

TRUSTEES PRESENT

Mr. Christian Fern, Chairperson

Ms. Maureen Wakuzawa

Mr. Robert Yu, Vice-Chairperson

Mr. James Wataru

Mr. Wesley Machida (via video conference, excused at 10:30 a.m.) Mr. Ryan Yamane (via video conference, excused at

Ms. Sabrina Nasir (via video conference, joined at 9:01 a.m.) 9:57 a.m.)

TRUSTEES ABSENT

Ms. Jacqueline Ferguson-Miyamoto

ATTORNEY

Mr. Michael Chambrella, Deputy Attorney General

EUTF STAFF

Mr. Derek Mizuno, Administrator

Ms. Debra Pfeffer

Mr. David Okamoto, Chief Investment Officer

Mr. Brett Tatsuno

Mr. Joao Marco Maffini

CONSULTANTS (via video conference, unless otherwise noted)

Mr. Colin Bebee, Meketa Investment Group (in person) Ms. Jan Mende, Callan LLC (in person)

Mr. Jonathan Camp, Meketa Investment Group Mr. Aaron Quach, Callan LLC

Mr. Tad Fergusson, Meketa Investment Group (in person) Mr. Avery Robinson, Callan LLC

Mr. Inwoo Hwang, Meketa Investment Group Ms. Stephanie Sorg, Meketa Investment Group

Mr. Pete Keliuotis, Callan LLC (in person)

I. CALL TO ORDER

The meeting of the Investment Committee was called to order at 9:00 a.m. by Trustee Christian Fern, Chairperson, in the Hawaii Employer-Union Health Benefits Trust Fund (EUTF) Board Room, City Financial Tower, 201 Merchant Street, Suite 1700, Honolulu, Hawaii, on Monday, December 11, 2023.

Trustee Sabrina Nasir joined the meeting at 9:01 a.m.

II. REVIEW OF MINUTES – NOVEMBER 13, 2023

The Investment Committee reviewed the draft minutes of November 13, 2023.

MOTION was made and seconded to approve the minutes of November 13, 2023, as circulated.

(Wataru/Yu) The motion passed unanimously. (Employer Trustees-4/Employee-Beneficiary Trustees-3)

III. EXECUTIVE SESSION

MOTION was made and seconded to move into Executive Session at 9:03 a.m. (Yu/Wataru) The motion passed unanimously. (Employer Trustees-4/Employee-Beneficiary Trustees-3)

Trustee Ryan Yamane was excused from the meeting during Executive Session at 9:57 a.m.

The regular meeting reconvened at 10:28 a.m.

Chairperson Fern reported that the following occurred during Executive Session:

- Approved recommendations to the Board to commit funds to two private equity funds, subject to contract negotiations.
- Reviewed and discussed the November 13, 2023 Executive Session Minutes.

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MOTION was made and seconded to approve the Executive Session minutes of November 13, 2023, as circulated. (Yu/Wakuzawa) The motion passed unanimously. (Employer Trustees-3/Employee-Beneficiary Trustees-3)

Trustee Wesley Machida was excused from the meeting at 10:30 a.m.

IV. NEW BUSINESS

A. Private Equity Pacing Update

Mr. Tad Fergusson of Meketa Investment Group (Meketa) presented a pacing plan update for Private Equity (PE). Pacing for private markets is determined based on projections of existing commitment deployment timing, investment performance, and overall OPEB plan growth. The result guides how much capital needs to be committed each year in order to reach and maintain strategic allocation targets. The study is performed annually to allow for timely calibrations.

As of June 30, 2023, EUTF's PE allocation is 10.8% versus an interim target of 10.5%. To continue ramping up towards the current long-term target allocation of 15%, the updated PE commitment pace for 2024 is \$300 million across 3-5 partnerships, ranging from \$30-100 million each. In addition, up to \$75 million in up to five co-investments, ranging from \$15-25 million each. This is unchanged from 2023.

MOTION was made and seconded to approve the 2024 Private Equity Pacing Plan. (Wataru/Yu) The motion passed unanimously. (Employer Trustees-2/Employee-Beneficiary Trustees-3)

B. Private Credit Pacing Update

Mr. Pete Keliuotis of Callan LLC (Callan) presented a pacing plan update for Private Credit (PC). As of June 30, 2023, EUTF's PC allocation is 7.2% versus an interim target of 7.0%. To continue ramping up towards the current long-term target allocation of 10%, the updated PC commitment pace for 2024 is \$300 million across 3-6 partnerships, ranging from \$50-125 million each. This represents an increase of \$50 million over the 2023 target.

MOTION was made and seconded to approve the 2024 Private Credit Pacing Plan. (Wataru/Yu) The motion passed unanimously. (Employer Trustees-2/Employee-Beneficiary Trustees-3)

C. Real Assets Pacing Update

Ms. Jan Mende of Callan presented a pacing plan update for Real Assets (RA). As of June 30, 2023, EUTF's RA allocation is 10% versus an interim target of 10.5%. To continue ramping up towards the current long-term target allocation of 12%, the updated RA commitment pace for 2024 is \$200 million across 2-4 partnerships, ranging from \$50-100 million each for real estate funds and \$50-75 million each for infrastructure funds. This represents an increase of \$60 million over the 2023 target.

After Callan's presentation, the Committee, Callan, and EUTF staff discussed how the long-term target allocations are decided upon and when adjustments are considered.

MOTION was made and seconded to approve the 2024 Real Assets Pacing Plan. (Wataru/Yu) The motion passed unanimously. (Employer Trustees-2/Employee-Beneficiary Trustees-3)

D. Meketa Investment Group – Introduction to OPEB Risk & Asset-Liability Studies

Mr. Colin Bebee and Mr. Jonathan Camp of Meketa presented an introduction to the upcoming asset-liability (A/L) study, which will be EUTF's first such study due to the plan's increasing funded status. An A/L study analyzes the plan's unique cash flow expectations (benefit payments, contributions, expenses, etc.) and attempts to quantify the risks associated with them. Key steps in

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the process are to 1) develop an understanding of how EUTF's financial condition might vary based on the outcomes of the investment portfolio, 2) set a consensus definition and view of the risks EUTF should bear, and 3) select an appropriate long-term investment strategy (i.e., a strategic allocation). The main risks to the OPEB system include investment volatility, medical cost inflation, medical claims experience volatility, and employer annual required contribution reliability.

Data and assumptions used in the A/L study will primarily come from GRS (EUTF's actuary) and Meketa's internal actuarial expertise. Meketa is also in the process of updating their Capital Market Assumptions, which establish long-term asset class return and volatility expectations. In 2024, the Board and EUTF staff should expect to spend a considerable amount of time discussing the A/L modeling exercise.

E. Investment Manager Due Diligence Update

Mr. David Okamoto presented a memorandum to provide an update on ongoing due diligence of existing investment managers. The Investment Policy Statement sets a guideline for this ongoing monitoring, including periodic onsite due diligence meetings. EUTF staff and our investment consultants continue to meet with managers within the required frequency. However, due to the pandemic and travel challenges, virtual due diligence sessions have replaced a number of traditional onsite visits over the last three years. Normal onsite visits are expected to resume in 2024. At the moment, staff does not anticipate taking a dedicated due diligence trip over the next six-to-twelve months. If the need for a trip arises, a request with details of the planned visit will be submitted to the Investment Committee/Board for prior approval.

V. FUTURE AGENDA ITEMS DISCUSSION AND POSSIBLE MEETING DATES

Mr. Okamoto reported that EUTF staff will poll the Committee members for a future meeting date ahead of the March 2024 Board meeting. The Committee also discussed a new agenda format to streamline future meetings. On a rotating basis each quarter, one private market consultant will present an annual review of their asset class and the other two private market consultants will submit their quarterly report for informational purposes only.

VI. ADJOURNMENT

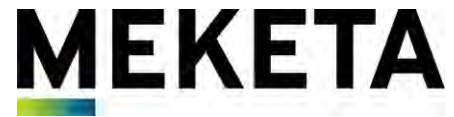
MOTION was made and seconded for the Investment Committee to adjourn the meeting at 11:30 a.m. (Wataru/Yu) The motion passed unanimously. (Employer Trustees-2/Employee-Beneficiary Trustees-3)

Respectfully submitted,

Christian Fern, Chairperson

Documents Distributed:

1. Draft November 13, 2023 Investment Committee Minutes. (3 pages)
2. EUTF 2024 Private Equity Investment Plan, prepared by Meketa Investment Group, dated December 2023. (8 pages)
3. EUTF Private Credit Pricing Review, prepared by Callan LLC, dated December 11, 2023. (6 pages)
4. EUTF Real Assets Pricing, prepared by Callan LLC, dated December 11, 2023. (8 pages)
5. EUTF Introduction to OPEB Risk & Asset-Liability Studies, prepared by Meketa Investment Group, dated December 2023. (28 pages)
6. Memorandum to Investment Committee from EUTF Chief Investment Officer Regarding Investment Manager Due Diligence Update, dated December 11, 2023. (2 pages)



Hawaii Employer-Union Health Benefits Trust Fund

March 5, 2024

Q4 2023 Quarterly Report

1. Introduction/Portfolio Review
2. Portfolio Detail
 - Managers/Funds on Watch – Performance Monitoring
 - Performance Attribution v. Policy Benchmark – Net-Of-Fees
 - Manager Fund/Fee Analysis
3. EUTF Trust Fund Portfolio Review
4. Economic & Market Update as of December 31, 2023
5. Appendix

Introduction/Portfolio Review

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	S.I.	Inception Date
<i>Policy Benchmark¹</i>	5.0	3.6	10.6	5.5	8.7	6.8	7.1	
Excess Return vs. Net ²	-0.5	-0.4	-1.3	0.0	0.2	0.0	0.1	
<i>InvMetrics All Public DB Plans > \$1B Median³</i>	6.6	4.5	11.4	4.5	8.3	6.3	6.8	
Population	95	92	86	74	70	64	61	
Reference								
Original 50/50 Benchmark	9.2	5.3	12.6	2.0	6.8	5.5	5.8	Jul-11
65/35 Bench (blend) ⁴	10.3	6.7	18.7	4.6	10.5	8.3	9.1	Jul-11

Summary of Cash Flows (\$'000's)				
	QTD	FYTD	Since Inception	Inception Date
Total Plan				07/01/2011
Beginning Market Value	6,785,671	6,309,001	--	
Net Cash Flow	128,069	689,381	5,198,003	
Net Investment Change	285,236	174,163	1,528,519	
Income	26,269	55,260	557,226	
Ending Market Value	7,222,104	7,222,104	7,222,104	

¹ See Appendix for Policy Benchmark (blend) definition.

² Net-of-fees vs Policy Benchmark.

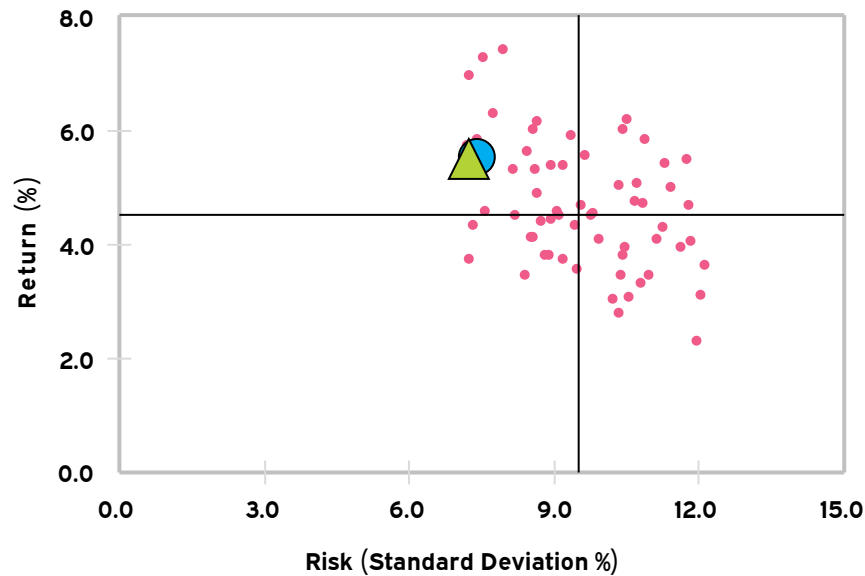
³ Investment Metrics (IM) - Public DB > \$1 Billion Universe includes BNY Mellon Public DB > \$1 Billion Universe and IM client data.

⁴ 65% MSCI US Broad Market Index and 35% BC Aggregate Bond Index as of 3/1/12; previously, 50% MSCI US Broad Market Index.

- The fourth quarter of 2023 saw gains across public equity and bond markets, largely driven by shifting expectations towards monetary policy rate cuts in 2024.
- The EUTF Total Portfolio ended the quarter with a value of approximately \$7.2 billion.
- The EUTF Total Portfolio, net of fees, matched or exceeded the Policy Benchmark over the trailing 3-, 5-, and 10-year periods as well as since inception, though the portfolio lagged over the most recent quarter and trailing 1-year periods. Over longer-term periods, outperformance within the Aggressive Growth class has been a meaningful contributor to the Total Portfolio's outperformance. The Total Portfolio trailed the benchmark over the trailing 1-year period, largely due to short-term benchmarking challenges within the Private Equity and Private Credit components. Similar to peers, the EUTF's Private Equity and Private Credit portfolios are benchmarked to public equity and credit indices plus illiquidity premium assumptions. While both private and public equity and credit markets share similar fundamental risk/return drivers, their responses to short-term economic conditions may vary. Private market strategies are long-term implementations (e.g., 10+ year horizons), and these portfolios are discussed in more detail in separate, dedicated reports.
- With respect to the Median Public Fund, the EUTF Total Portfolio, net of fees, outperformed over the trailing 3-, 5-, and 10-year periods as well as since inception. The Total Portfolio trailed the Median Public Fund over the trailing quarter and 1-year period, largely due to the extreme rally in the public equity markets during Q1, Q2, and Q4. The EUTF has a strategic asset allocation that differs from peers (i.e., less public equity, more private markets, and a customized Diversifying Strategies class), and as such, this short-term relative underperformance is aligned with expectations. As desired by the EUTF Board, the Total Portfolio is constructed to generate as smooth of a return pattern as possible, and this has been exhibited by the Total Portfolio in recent years and has culminated in modestly outperforming the Median Public Fund since inception.

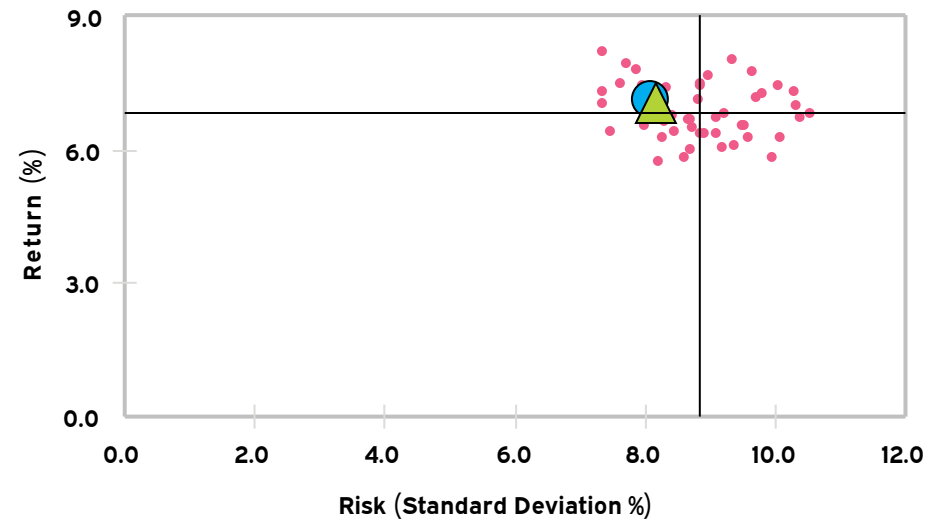
→ The most recent 2022 Strategic Allocation Review built off decisions from the 2020, 2018, and 2016 reviews. A common theme from each of these reviews was the build-out of private markets exposures. This evolution is in process and will continue over a multi-year period. The Total Portfolio is continually transitioning to new long-term policy targets as outlined in the approved Evolving Policy Plan. As of Q4 2023, the Total Portfolio allocation closely mirrored the policy targets but was slightly underweight in Stabilized Growth.

Annualized Return vs. Annualized Standard Deviation
3 Years Ending December 31, 2023



● InvMetrics All Public DB Plans > \$1B ● Total Plan
▲ Policy Benchmark

Annualized Return vs. Annualized Standard Deviation
Since Inception Ending December 31, 2023



● InvMetrics All Public DB Plans > \$1B ● Total Plan
▲ Policy Benchmark

Annualized Risk-Return

	3 Years Return	3 Years Standard Deviation	3 Years Sharpe Ratio
Total Plan	5.5	7.4	0.5
Policy Benchmark	5.5	7.2	0.5
InvMetrics All Public DB Plans > \$1B Median	4.5	9.5	0.3

Annualized Risk-Return

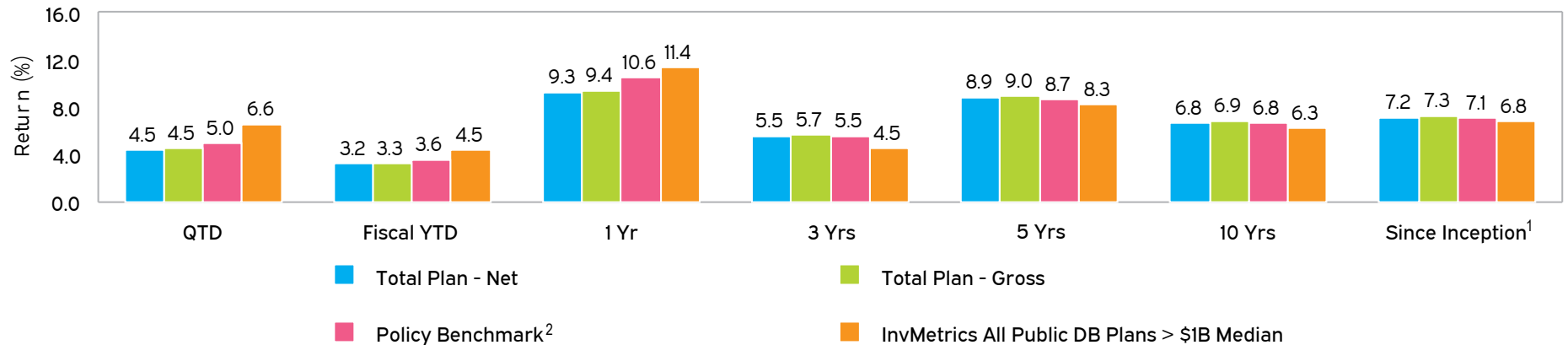
	S.I. Return	S.I. Standard Deviation	S.I. Sharpe Ratio	Inception Date
Total Plan	7.2	8.1	0.8	07/01/2011
Policy Benchmark	7.1	8.2	0.8	
InvMetrics All Public DB Plans > \$1B Median	6.8	8.8	0.7	

Growth Over Time - S.I. to Date (Net) As of December 31, 2023

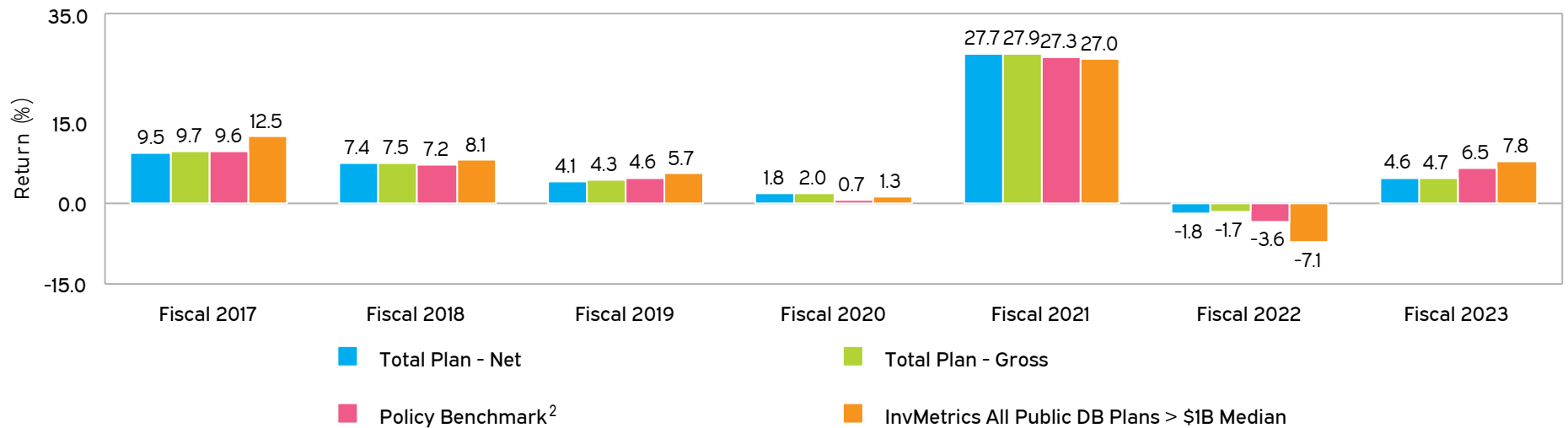


Portfolio Detail

Trailing Period Performance (annualized) Ending December 31, 2023



Fiscal Year - Periods Ending June 30, 2023



¹ 6/30/2011 for performance reporting (6/23/2011 actual).

² See Appendix for Policy Benchmark (blend) definition.

Strategic Class Performance (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	Policy(%)	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since 6/30/11
Total Plan	7,222,104,215	100.0	100.0	4.5	9.3	5.5	8.9	6.8	7.2
<i>Policy Benchmark</i>				<i>5.0</i>	<i>10.6</i>	<i>5.5</i>	<i>8.7</i>	<i>6.8</i>	<i>7.1</i>
Excess Return				-0.5	-1.3	0.0	0.2	0.0	0.1
Aggressive Growth	1,109,302,545	15.4	16.0	4.2	8.4	13.0	15.4	--	--
<i>Aggressive Growth Benchmark</i>				<i>3.8</i>	<i>19.4</i>	<i>6.7</i>	<i>11.4</i>	--	--
Excess Return				0.4	-11.0	6.3	4.0	--	--
Traditional Growth	2,149,623,151	29.8	30.0	11.1	21.2	5.8	11.2	--	--
<i>Traditional Growth Benchmark</i>				<i>11.1</i>	<i>21.6</i>	<i>6.0</i>	<i>11.3</i>	--	--
Excess Return				0.0	-0.4	-0.2	-0.1	--	--
Stabilized Growth	1,557,355,757	21.6	23.5	1.0	3.1	6.6	6.4	--	--
<i>Stabilized Growth Benchmark</i>				<i>1.6</i>	<i>2.6</i>	<i>7.2</i>	<i>6.4</i>	--	--
Excess Return				-0.6	0.5	-0.6	0.0	--	--
Diversifying Strategies	2,212,326,251	30.6	30.5	1.1	3.2	1.2	3.7	--	--
<i>Diversifying Strategies Benchmark</i>				<i>2.6</i>	<i>1.6</i>	<i>2.6</i>	<i>4.1</i>	--	--
Excess Return				-1.5	1.6	-1.4	-0.4	--	--

Strategic Class Performance

Takeaways:

- Initial funding of Plan assets took place on June 23, 2011.
- Since June 30, 2011, the EUTF has outperformed its Policy Benchmark and the actuarial rate (net).
- The Aggressive Growth class outperformed its benchmark over all applicable periods except the trailing 1-year period. Within the class, Private Equity has outperformed versus the benchmark in all periods except the trailing 1-year, whereas Micro Cap Equity outperformed over all applicable periods except for the most recent quarter. The Aggressive Growth class is currently being impacted by sharp underperformance in Private Equity over the trailing 1-year period which is largely the result of short-term benchmarking challenges. Similar to peers, the EUTF's Private Equity portfolio is benchmarked to a public equity index plus an illiquidity premium assumption (Russell 3000 + 3%). While both private and public equity share similar fundamental risk/return drivers, their responses to short-term economic conditions may vary. Private equity is a long-term class (e.g., 10+ year horizon) and the EUTF's Private Equity portfolio is discussed in detail in a separate, dedicated report.
- The Traditional Growth class has closely tracked its benchmark across all periods. As the class is entirely passively managed, any relative performance differences have been due to cash flows and/or Northern Trust's implementation of fair value fund pricing.
- The Stabilized Growth class has produced mixed returns relative to the benchmark, outperforming over the trailing 1-year while slightly underperforming over the trailing 3-year period and most recent quarter. Real Assets has outpaced the benchmark across all periods except for the recent quarter and Global Options has outperformed versus its benchmark across all periods. Private Credit has been a strong contributor since inception, though recently has struggled, trailing the index over the most recent quarter as well as the trailing 1-year period. This recent underperformance is due to a similar benchmarking challenge as with Private Equity.

→ The Diversifying Strategies class outpaced its benchmark over the trailing 1-year period, though it lagged its benchmark over all other periods. The underperformance over the most recent quarter is largely attributable to the Trend Following and Alternate Risk Premia sleeves.

Manager Performance (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
Total Plan	7,222,104,215	100.0	4.5	9.3	5.5	8.9	7.2	Jul-11
<i>Policy Benchmark</i>			<i>5.0</i>	<i>10.6</i>	<i>5.5</i>	<i>8.7</i>	<i>7.1</i>	
Excess Return			-0.5	-1.3	0.0	0.2	0.1	
Total Plan ex Overlay	7,216,722,166	99.9	4.5	9.5	--	--	3.3	May-22
Aggressive Growth	1,109,302,545	15.4	4.2	8.4	13.0	15.4	9.8	Jul-15
<i>Aggressive Growth Benchmark</i>			<i>3.8</i>	<i>19.4</i>	<i>6.7</i>	<i>11.4</i>	<i>7.5</i>	
Excess Return			0.4	-11.0	6.3	4.0	2.3	
Private Equity	713,954,449	9.9	0.8	4.6	18.3	12.6	11.0	Jul-18
<i>Private Equity Benchmark</i>			<i>-2.5</i>	<i>24.1</i>	<i>12.7</i>	<i>12.4</i>	<i>13.7</i>	
Excess Return			3.3	-19.5	5.6	0.2	-2.7	
Micro Cap Equity	395,348,096	5.5	11.2	15.3	7.9	13.3	8.2	Jan-15
<i>Russell Microcap Index</i>			<i>16.1</i>	<i>9.3</i>	<i>0.6</i>	<i>8.6</i>	<i>6.0</i>	
Excess Return			-4.9	6.0	7.3	4.7	2.2	
Acuitas - Active	395,348,096	5.5	11.2	15.3	7.9	13.3	10.2	Jan-15
<i>Russell Microcap Index</i>			<i>16.1</i>	<i>9.3</i>	<i>0.6</i>	<i>8.6</i>	<i>6.0</i>	
Excess Return			-4.9	6.0	7.3	4.7	4.2	
Traditional Growth	2,149,623,151	29.8	11.1	21.2	5.8	11.2	8.4	Jul-15
<i>Traditional Growth Benchmark</i>			<i>11.1</i>	<i>21.6</i>	<i>6.0</i>	<i>11.3</i>	<i>8.5</i>	
Excess Return			0.0	-0.4	-0.2	-0.1	-0.1	
NT ACWI ex US Trust Fund - Passive	912,394,468	12.6	9.7	15.3	1.6	7.1	4.6	Jul-15
<i>MSCI AC World ex USA (Net)</i>			<i>9.8</i>	<i>15.6</i>	<i>1.5</i>	<i>7.1</i>	<i>4.5</i>	
Excess Return			-0.1	-0.3	0.1	0.0	0.1	
NT Russell 3000 Index Fund - Passive	1,237,228,683	17.1	12.1	26.0	8.6	15.1	11.8	Jul-15
<i>Russell 3000 Index</i>			<i>12.1</i>	<i>26.0</i>	<i>8.5</i>	<i>15.2</i>	<i>11.8</i>	
Excess Return			0.0	0.0	0.1	-0.1	0.0	

Manager Performance (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
Stabilized Growth	1,557,355,757	21.6	1.0	3.1	6.6	6.4	6.3	Jan-17
<i>Stabilized Growth Benchmark</i>			<i>1.6</i>	<i>2.6</i>	<i>7.2</i>	<i>6.4</i>	<i>6.2</i>	
Excess Return			-0.6	0.5	-0.6	0.0	0.1	
Global Options	390,788,376	5.4	5.5	14.5	5.6	7.0	6.1	Jan-17
<i>Global Options Benchmark</i>			<i>5.1</i>	<i>12.5</i>	<i>5.5</i>	<i>6.6</i>	<i>5.5</i>	
Excess Return			0.4	2.0	0.1	0.4	0.6	
Gateway	193,267,404	2.7	5.6	15.0	--	--	2.3	Jul-21
<i>Global Options Benchmark</i>			<i>5.1</i>	<i>12.5</i>	<i>--</i>	<i>--</i>	<i>3.3</i>	
Excess Return			0.5	2.5	--	--	-1.0	
Geode	197,520,972	2.7	5.4	14.0	6.6	7.4	6.3	Jan-17
<i>Global Options Benchmark</i>			<i>5.1</i>	<i>12.5</i>	<i>5.5</i>	<i>6.6</i>	<i>5.5</i>	
Excess Return			0.3	1.5	1.1	0.8	0.8	
Real Assets	631,364,073	8.7	-2.6	-7.3	7.7	5.8	5.4	Jul-17
<i>NCREIF ODCE Index (Lagged)</i>			<i>-2.1</i>	<i>-12.9</i>	<i>6.2</i>	<i>4.7</i>	<i>5.3</i>	
Excess Return			-0.5	5.6	1.5	1.1	0.1	
Private Credit	535,203,308	7.4	2.2	8.7	8.5	--	9.0	Jul-19
<i>S&P LSTA Leveraged Loan +2% (Q Lag)</i>			<i>4.0</i>	<i>15.3</i>	<i>8.2</i>	<i>--</i>	<i>7.0</i>	
Excess Return			-1.8	-6.6	0.3	--	2.0	

Manager Performance (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
Diversifying Strategies	2,212,326,251	30.6	1.1	3.2	1.2	3.7	2.4	Jul-15
<i>Diversifying Strategies Benchmark</i>			2.6	1.6	2.6	4.1	2.8	
Excess Return			-1.5	1.6	-1.4	-0.4	-0.4	
Diversifying Strategies ex Overlay	2,206,944,202	30.6	1.2	3.5	1.3	3.8	--	Jan-16
Longtail - Tail Risk Overlay	5,382,049	0.1	-44.2	--	--	--	-74.7	May-23
BlackRock US Inflation Link Bond - Passive	363,771,890	5.0	4.6	4.1	-1.0	3.1	2.6	Feb-16
<i>Blmbg. U.S. TIPS</i>			4.7	3.9	-1.0	3.2	2.6	
Excess Return			-0.1	0.2	0.0	-0.1	0.0	
Sun Life - Enhanced Index	436,815,306	6.0	12.9	3.1	-11.3	-1.2	0.1	Dec-16
<i>Blmbg. U.S. Government: Long Term Bond Index</i>			12.7	3.1	-11.3	-1.2	-0.1	
Excess Return			0.2	0.0	0.0	0.0	0.2	
Capstone	127,296,601	1.8	-0.2	--	--	--	-2.4	Aug-23
<i>CBOE Eurekahedge Long Volatility Hedge Fund Index</i>			-3.5	--	--	--	-1.2	
Excess Return			3.3	--	--	--	-1.2	
Trend Following	721,555,820	10.0	-6.9	-6.6	9.0	7.6	4.4	Feb-17
<i>CS Mgd Futures 15% Vol</i>			-3.5	-10.7	10.0	4.6	2.2	
Excess Return			-3.4	4.1	-1.0	3.0	2.2	
AlphaSimplex - Active	360,485,090	5.0	-8.4	-12.5	10.7	12.0	7.4	Feb-17
<i>CS Mgd Futures 15% Vol</i>			-3.5	-10.7	10.0	4.6	2.2	
Excess Return			-4.9	-1.8	0.7	7.4	5.2	
Mount Lucas - Active	361,070,730	5.0	-5.5	-0.3	7.2	3.1	1.3	Feb-17
<i>CS Mgd Futures 15% Vol</i>			-3.5	-10.7	10.0	4.6	2.2	
Excess Return			-2.0	10.4	-2.8	-1.5	-0.9	

Manager Performance (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
Alternative Risk Premia	176,483,466	2.4	-0.7	8.5	1.5	-0.1	-1.0	Oct-18
<i>Custom ARP Benchmark</i>			<i>1.9</i>	<i>7.1</i>	<i>4.2</i>	<i>3.9</i>	<i>3.9</i>	
Excess Return			-2.6	1.4	-2.7	-4.0	-4.9	
Kepos - Active	176,483,466	2.4	-0.7	10.8	4.1	1.7	1.0	Nov-18
<i>Custom ARP Benchmark</i>			<i>1.9</i>	<i>7.1</i>	<i>4.2</i>	<i>3.9</i>	<i>3.9</i>	
Excess Return			-2.6	3.7	-0.1	-2.2	-2.9	
Reinsurance	381,021,119	5.3	2.8	18.2	1.3	--	0.6	Jul-20
<i>Reinsurance Benchmark</i>			<i>3.7</i>	<i>19.7</i>	<i>7.1</i>	<i>--</i>	<i>7.2</i>	
Excess Return			-0.9	-1.5	-5.8	--	-6.6	
Nephila	125,158,185	1.7	4.4	22.4	1.7	--	-0.3	Jul-20
<i>Reinsurance Benchmark</i>			<i>3.7</i>	<i>19.7</i>	<i>7.1</i>	<i>--</i>	<i>7.2</i>	
Excess Return			0.7	2.7	-5.4	--	-7.5	
Pillar	255,862,934	3.5	2.0	16.3	1.8	--	3.3	Jul-20
<i>Reinsurance Benchmark</i>			<i>3.7</i>	<i>19.7</i>	<i>7.1</i>	<i>--</i>	<i>7.2</i>	
Excess Return			-1.7	-3.4	-5.3	--	-3.9	
Cash and Cash Equivalents	193,496,511	2.7	1.4	4.7	2.0	1.7	0.9	Jul-11
<i>ICE BofA 0-1 Yr. U.S. Treasury Notes & Bonds</i>			<i>1.5</i>	<i>5.0</i>	<i>1.9</i>	<i>1.9</i>	<i>1.1</i>	
Excess Return			-0.1	-0.3	0.1	-0.2	-0.2	

Cash received an explicit allocation during Q1 2023, benchmark was updated to reflect this change effective as of July 1, 2023.

Manager Performance Commentary

- Individual managers had mixed results in terms of their relative performance in the fourth quarter of 2023. During the quarter, six of the EUTF's thirteen full-reporting managers (i.e., non-lagged performance) outperformed or matched their respective benchmarks.

Passive/Enhanced Mandates

- The EUTF's U.S. Equity, Non-U.S. Equity, and Fixed Income passive/enhanced strategies performed in-line with expectations during the quarter and across all trailing periods.

Active Mandates

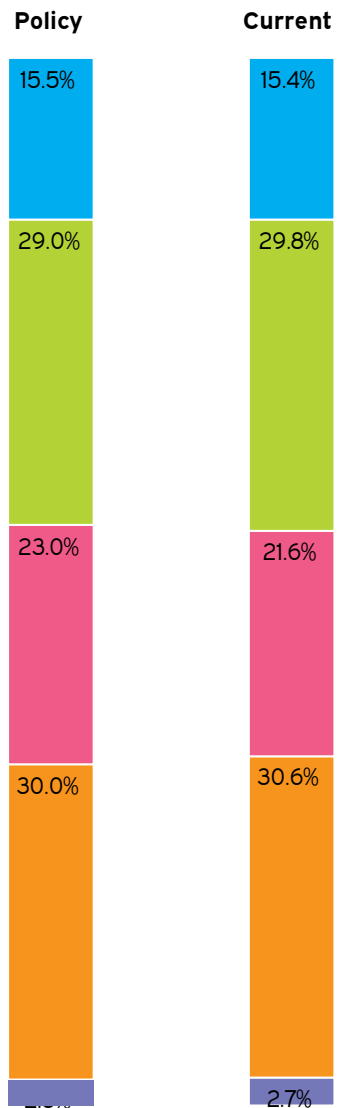
- Acuitas, the EUTF's sole Micro Cap Equity manager, despite strong absolute performance trailed its benchmark by (4.9%) over the quarter. Despite the most recent quarter's results, Acuitas meaningfully outperformed across all other trailing periods. The underperformance over the quarter was attributable to Acuitas's underweight allocations to financials and health care sectors. Acuitas has outperformed by 4.2% per annum since inception of the strategy.
- Geode outpaced the Custom Global Options benchmark over the most recent quarter, as well as across all longer trailing time periods. The recent outperformance is generally attributed to the portfolio's more diversified options portfolio, and in particular, their exposure to local index options when the US Dollar depreciated.
- Gateway marginally outperformed versus its benchmark over the most recent quarter and outpaced the benchmark over the trailing 1-year, though it has lagged since inception owing to its more diversified portfolio of option strikes and tenors (i.e., maturities) compared to the benchmark's more concentrated/less diversified option positions.

- The EUTF funded one Tail Risk Hedging manager (LongTail Alpha) and one Long Volatility manager (Capstone) in May and August 2023, respectively. These managers were funded in order to complement the portfolio's Long Treasury exposure as primary diversifiers during the initial legs of material market selloffs. At this point, the track records of both managers are still in their infancy. However, the primary takeaway is that there has not been a large enough market drawdown or increase in volatility to trigger any expected positive payoff.
- With respect to the EUTF's Systematic Trend Following managers, AlphaSimplex trailed its benchmark by (4.9%) over the quarter whereas Mount Lucas trailed by (2.0%). Both managers were negatively impacted by a shift in monetary policy expectations (declining interest rates in Q4 resulting in bond exposure losses from short positions) as well as long US Dollar positions during a period where the US Dollar depreciated relative to a basket of foreign currencies. The divergences between the managers simply represent relative position sizing differences across similar trades as well as timing differences of when the managers entered/exited similar positions. AlphaSimplex outperformed across the 3-year and longer periods, whereas Mount Lucas materially outperformed over the trailing 1-year period but has lagged across other periods (including by 90 basis points since inception). Throughout their tenures with the EUTF, both managers have tended to outperform the benchmark over longer periods of time, however, the benchmark's recent strong performance in 2022 and 2023 (relative to the universe of managers) has weighed on relative returns as of late. It is important to highlight that the benchmark is not a "passive" benchmark in the usual sense, but rather, it is a transparent rules-based index that is similar to another third-party manager's strategy. As systematic managers, the portfolios of AlphaSimplex and Mount Lucas are managed based on pre-set rules, very similar to an index. Relative performance is thus almost exclusively driven by slight variances in their rules versus the benchmark's rules. These rules primarily pertain to the trend periods/lookbacks that they follow, the markets that they trade, and the volatility levels that

they target. It is important to highlight that short-term performance differences between these managers and the index should not be overly scrutinized.

- The Inflation Linked Bond (TIPS) portfolio, managed by BlackRock, marginally trailed its benchmark performance over the most recent quarter. The portfolio, which transitioned to a passive implementation in mid-2023, has closely tracked the benchmark, net of fees, over all periods examined.
- With respect to Alternative Risk Premia, Kepos trailed the benchmark by (2.6%) over the quarter. Carry exposures across most asset classes, but particularly across Currencies and Commodities, were the largest detractors over the most recent quarter. Throughout 2023, Momentum within Equities and Commodities, as well as Carry within Currencies and Equities, were the primary contributors. As a reminder, Lombard Odier was terminated during the first quarter of 2023 and the proceeds were allocated to short-term Treasury Bills.
- Performance of Private Markets segments is addressed in their dedicated performance reports.
- The EUTF's Reinsurance portfolio was funded in July 2020 and now has over 3.5 years of history. In the most recent quarter, both managers produced positive absolute returns with Nephila outperforming the benchmark while Pillar marginally trailed. The composite returned 18.2% over the entire calendar year, and although this slightly trailed the benchmark, this provided a significant return contribution for the Diversifying Strategies class and the Total Portfolio in aggregate. The longer-term track records of both Pillar and Nephila remain impaired (compared to the benchmark), generally from the impacts of Hurricane Ian in Fall 2022. On a forward-looking basis, both managers entered 2024 with premium levels near 2023 levels which represented some of the highest levels in nearly two decades. This pricing phenomenon continues to allude to the attractiveness of the segment on a forward-looking basis.

Total Plan | As of December 31, 2023



	Current Balance (\$)	Current Allocation (%)	Policy (%)	Difference (%)	Policy Range (%)
Aggressive Growth	1,109,302,545	15.4	15.5	-0.1	14.0 - 18.0
Traditional Growth	2,149,623,151	29.8	29.0	0.8	22.0 - 38.0
Stabilized Growth	1,557,355,757	21.6	23.0	-1.4	21.5 - 25.5
Diversifying Strategies	2,212,326,251	30.6	30.0	0.6	20.5 - 40.5
Cash and Equivalents	193,496,511	2.7	2.5	0.2	0.0 - 3.0
Total	7,222,104,215	100.0	100.0	0.0	

Managers/Funds on Watch – Performance Monitoring

Manager/Funds on Watch – Performance Monitoring

Manager/Fund	Concern	Strategic Class	Next Review	Beg. Date of Watch Status	Months Since Beg. Date	Current Status	
						Net Performance Since Beg. Date	Net Performance vs. Benchmark
AlphaSimplex	Org Changes	Diversifying Strategies	2023 Q4	11/01/2022	14	-18.0%	-7.6%

N.A. = not applicable at this time

Manager Watch List Criteria¹

Asset Class	Short term (Rolling 12 month periods)	Medium term (Rolling 36 month periods)	Long term (Rolling 60 month periods)
US Microcap	Portfolio Return < Benchmark Return -4.8% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -2.0% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -1.1% at 2 consecutive calendar qtr end dates.
Passive Domestic Equity	Portfolio Return < Benchmark Return -0.2% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.1% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.1% at 2 consecutive calendar qtr end dates.
Passive International Equity	Portfolio Return < Benchmark Return -0.6% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.3% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.25% at 2 consecutive calendar qtr end dates.
Passive REITs	Portfolio Return < Benchmark Return -0.5% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.25% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.2% at 2 consecutive calendar qtr end dates.
Global Options	Portfolio Return < Benchmark Return -2.0% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.8% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.5% at 2 consecutive calendar qtr end dates.
Inflation Linked Securities	Portfolio Return < Benchmark Return -0.8% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.3% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.2% at 2 consecutive calendar qtr end dates.
Long Treasuries	Portfolio Return < Benchmark Return -0.4% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.2% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.1% at 2 consecutive calendar qtr end dates.
Alternative Risk Premia	Absolute Return < -7.2% at 2 consecutive calendar qtr end dates.	Absolute Return < -2.6% at 2 consecutive calendar qtr end dates.	Absolute Return < -1.1% at 2 consecutive calendar qtr end dates.
Systematic Trend Following	Absolute Return < -12.4% at 2 consecutive calendar qtr end dates.	Absolute Return < -5.8% at 2 consecutive calendar qtr end dates.	Absolute Return < -3.6% at 2 consecutive calendar qtr end dates.
Reinsurance	Absolute Return < -11.5% at 2 consecutive calendar qtr end dates.	Absolute Return < -4.5% at 2 consecutive calendar qtr end dates.	Absolute Return < -2.2% at 2 consecutive calendar qtr end dates.
Short-term IG Bonds	Portfolio Return < Benchmark Return -0.2% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.1% at 2 consecutive calendar qtr end dates.	Portfolio Return < Benchmark Return -0.05% at 2 consecutive calendar qtr end dates.

¹ Managers are evaluated net of manager fees

Performance Attribution v. Policy Benchmark – Net-Of-Fees

Performance Attribution – 4Q 2023¹

	Policy		Portfolio		Impact on Return			Total
	Allocation*	Return	Allocation**	Return	Weighting	Selection	Interaction	
Aggressive Growth	15.5%	3.8	15.4%	4.2	0.0	0.1	(0.0)	0.1
Traditional Growth	29.0%	11.1	30.5%	11.1	0.1	0.0	0.0	0.1
Stabilized Growth	23.0%	1.6	21.6%	1.0	0.0	(0.2)	0.0	(0.1)
Diversifying Strategies	30.0%	2.6	29.9%	1.1	0.0	(0.5)	0.0	(0.4)
Cash	2.5%	1.5	2.5%	1.4	(0.0)	(0.0)	(0.0)	(0.0)
Total	100.0%	5.0	100.0%	4.5	0.1	(0.5)	0.0	(0.4)

*Policy allocation calculated using average allocations during the quarter (month-end data).

**Portfolio allocation calculated using average allocations during the quarter (month-end data).

→ Over the most recent quarter, the Total Portfolio underperformed relative to its policy benchmark by (50) basis points, net of fees. The *Diversifying Strategies* class was the primary detractor to results over the period with Trend Following and Alternative Risk Premia's underperformance weighing on relative returns.

¹ The summation of attribution effects may not equal the actual portfolio excess return. This is a result of daily market movements vs. monthly market values and quarterly attribution calculations.

Performance Attribution – Trailing 12-Month¹

	Policy		Portfolio		Impact on Return			Total
	Allocation*	Return	Allocation**	Return	Weighting	Selection	Interaction	
Aggressive Growth	15.8%	19.4	16.0%	8.4	0.0	(1.7)	(0.0)	(1.7)
Traditional Growth	29.5%	21.6	30.5%	21.2	0.1	(0.1)	(0.0)	(0.0)
Stabilized Growth	23.3%	2.6	23.1%	3.1	0.0	0.1	(0.0)	0.1
Diversifying Strategies	30.3%	1.6	28.8%	3.2	0.1	0.5	(0.0)	0.6
Cash	1.3%	5.0	1.6%	4.7	(0.0)	(0.0)	(0.0)	(0.0)
Total	100.0%	10.6	100.0%	9.3	0.3	(1.2)	(0.1)	(1.0)

*Policy allocation calculated using average allocations during the year (month-end data).

**Portfolio allocation calculated using average allocations during the year (month-end data).

→ Over the trailing 1-year period, the Total Portfolio trailed its policy benchmark by (1.3%), net of fees. Private Equity within *Aggressive Growth* was the primary detractor, specifically selection within the Private Equity sub-class, although this is directly related to benchmarking a long-term asset class to a public market index that exhibits short-term volatility. Real Assets and Global Options within *Stabilized Growth*, along with Trend Following and Alternative Risk Premia within *Diversifying Strategies*, were the primary contributors to relative results for the period.

¹ The summation of attribution effects may not equal the actual portfolio excess return. This is a result of daily market movements vs. monthly market values and quarterly attribution calculations.

Manager Fund/Fee Analysis

Manager Fund/Fee Analysis

	Northern Trust Common Russell 3000 Index Fund	Northern Trust Common MSCI ACWI ex USA Index Fund	BlackRock Inflation Linked Bond Strategy	Acuitas Investments Micro Cap	Sun Life Long Treasuries	Geode Global Options	Gateway Global Options	Capstone
Investment Vehicle	Commingled	Commingled	Commingled	Separate	Separate	Separate	Separate	Separate
Annual Fee (bps)	2	5	12	85	2	14	20	143
Estimated Annual Fee	\$247,446	\$456,197	\$413,772	\$3,360,459	\$87,363	\$282,025	\$386,535	\$1,622,966
Quartile Rank	1st	1st	1st	1st	1st	1st	1st	N/A
Mandate & Universe								
Mandate Size	\$1,237 million	\$912 million	\$364 million	\$395 million	\$437 million	\$198 million	\$193 million	\$127 million
Universe Name	eA Passive US All Cap Equity Commingled Funds	eA Passive International Equity Commingled Funds	eA Inflation Protection Bond Commingled Funds	eA Micro Cap Equity Separate Acct	eA US Long Duration Govt/Credit	eA Covered Call / Buy-Write	eA Covered Call / Buy-Write	---
Percentiles								
Low	1	2	10	38	13	32	32	---
5th Percentile	1	2	13	64	16	33	33	---
25th Percentile	2	5	18	90	19	36	36	---
Median	3	6	25	100	22	50	50	---
75th Percentile	4	8	30	110	23	52	52	---
95th Percentile	11	15	53	144	27	102	102	---
High	59	28	61	151	35	110	110	---
# of Observations	109	15	13	66	56	17	17	---

Source: eVestment Alliance

	AlphaSimplex Systematic Trend Following	Mount Lucas Systematic Trend Following	Kepos Capital Alt. Risk Premia	Real Assets	Private Credit	Private Equity
Investment Vehicle	Commingled	Separate	Commingled	Commingled	Commingled	Commingled
Annual Fee (bps)	40*	25	85*	---	---	---
Estimated Annual Fee	\$1,441,940	\$902,677	\$1,500,109	6,042,655**	\$5,472,175**	\$8,453,300***
Quartile Rank	1st	1st	1st	---	---	---
Mandate & Universe						
Mandate Size	\$360 million	\$361 million	\$176 million	\$631 million	\$535 million	\$714 million
Universe Name	2019 STF Manager Survey		EUTF-specific 2018 ARP Search*	---	---	---
Percentiles						
Low	25	25	51	---	---	---
5th Percentile	25	25	70	---	---	---
25th Percentile	68	68	85	---	---	---
Median	88	88	108	---	---	---
75th Percentile	105	105	135	---	---	---
95th Percentile	170	170	165	---	---	---
High	200+	200+	165	---	---	---
# of Observations	21	21	19	---	---	---

Source: eVestment Alliance, Meketa surveys, etc.

*Includes various fund operating costs (i.e., total expense ratio).

**Does not include performance fees, fund operating costs, or potential fee offsets. Estimated based on fee schedules and committed vs. called capital parameters (where applicable).

Summary Analysis

	Nephila Reinsurance	Pillar Reinsurance	Tail Risk Hedge
Investment Vehicle	Commingled	Commingled	Separate
Annual Fee (bps)	150 ¹	110 ¹	8 ²
Estimated Annual Fee	\$1,877,373	\$2,814,492	\$830,087 ²
Quartile Rank	---	---	---
Mandate & Universe			
Mandate Size	\$125 million	\$255 million	\$5 million
Universe Name	---		
Percentiles			
Low	---	---	
5th Percentile	---	---	
25th Percentile	---	---	
Median	---	---	
75th Percentile	---	---	
95th Percentile	---	---	
High	---	---	
# of Observations	---	---	

→The EUTF's managers are highly competitive for the size and type of each mandate. All 10 of the EUTF's liquid managers rank in the top quartile (lowest fees).

→The EUTF's estimated aggregate annual fee³ at the total plan level as of December 31, 2023 is 50.1 basis points (or \$36,191,572). These figures do not include custodial⁴ (Northern Trust), investment consulting⁴ (Meketa and Callan), or potential private markets carry/performance fees. The actual paid fees will vary based on market value changes throughout a given year.

¹ Does not include performance fees, fund operating costs or potential fee offsets.

² Fee is based on targeted notional value (50% of Global Equity exposure) of Tail Risk Hedge program

³ Includes estimated private markets fees.

⁴ Combined annual fees for Northern Trust's accounting and performance measurement services, Meketa's all-in fee for General and Private Equity consulting, and Callan's all-in fee for Private Real Assets and Private Credit consulting is \$768,715. Each year, it is anticipated that Northern Trust's costs will be offset by revenue generated from securities lending.

Total Fund Peer Group Rankings (Net-of-Fees) | As of December 31, 2023

InvMetrics Public DB > \$1B Net Return Comparison
Ending December 31, 2023

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception
● Total Plan	4.5 (95)	9.3 (87)	5.5 (25)	8.9 (29)	6.8 (34)	7.2 (42)
▲ Policy Benchmark	5.0 (90)	10.6 (74)	5.5 (25)	8.7 (41)	6.8 (34)	7.1 (44)
5th Percentile	8.8	15.0	7.5	10.1	7.7	8.2
1st Quartile	7.4	12.9	5.5	8.9	6.9	7.5
Median	6.6	11.4	4.5	8.3	6.3	6.8
3rd Quartile	5.8	10.5	3.8	7.7	5.9	6.4
95th Percentile	4.4	8.1	2.2	6.7	5.4	5.8
Population	95	86	74	70	64	61

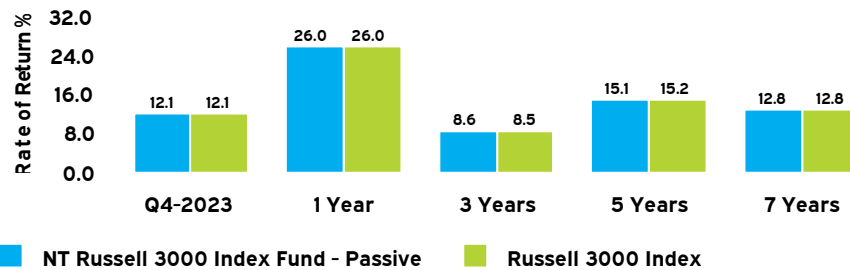
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

	Risk Return Statistics	
	3 Yrs	5 Yrs
	Total Plan	Total Plan
RETURN SUMMARY STATISTICS		
Maximum Return	3.6	7.4
Minimum Return	-4.6	-8.1
Return	5.5	8.9
Excess Return	3.5	7.1
Excess Performance	0.0	0.2
RISK SUMMARY STATISTICS		
Beta	1.0	1.0
Down Capture	101.7	98.9
Up Capture	101.3	100.5
RISK/RETURN SUMMARY STATISTICS		
Standard Deviation	7.4	9.0
Sortino Ratio	0.7	1.2
Alpha	0.1	0.4
Sharpe Ratio	0.5	0.8
Excess Risk	7.4	9.1
Tracking Error	2.0	1.6
Information Ratio	0.0	0.1
CORRELATION STATISTICS		
R-Squared	0.9	1.0
Actual Correlation	1.0	1.0

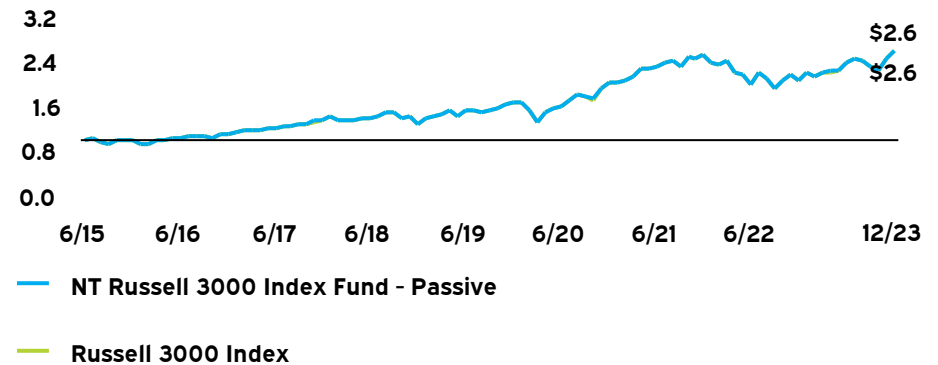
NT Russell 3000 Index Fund - Passive | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
NT Russell 3000 Index Fund - Passive	0.01	1.00	0.22	0.68	0.03	1.00	99.99	99.94
Russell 3000 Index	0.00	1.00	-	0.52	0.00	1.00	100.00	100.00

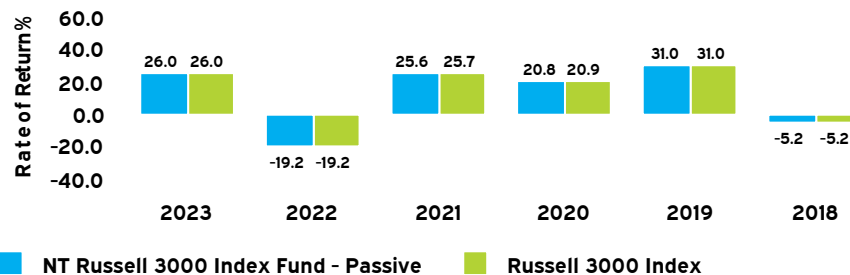
Trailing Performance



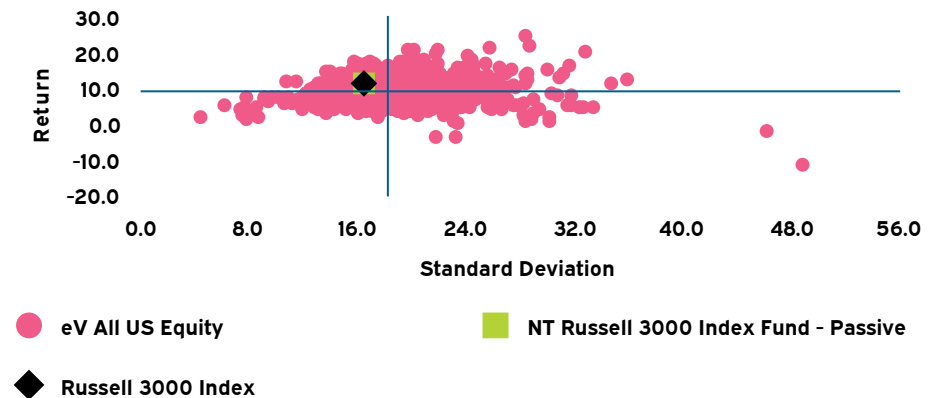
Growth of \$1 - Since Inception



Calendar Year Returns



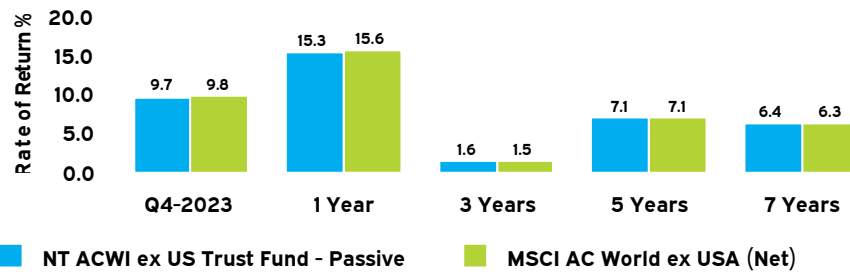
Risk/Return - Since Inception



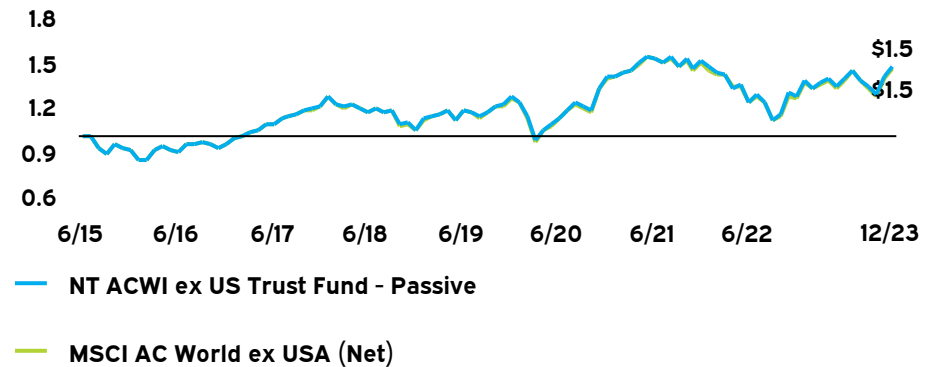
NT ACWI ex US Trust Fund - Passive | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
NT ACWI ex US Trust Fund - Passive	0.04	1.01	0.08	0.27	1.44	0.99	101.58	101.47

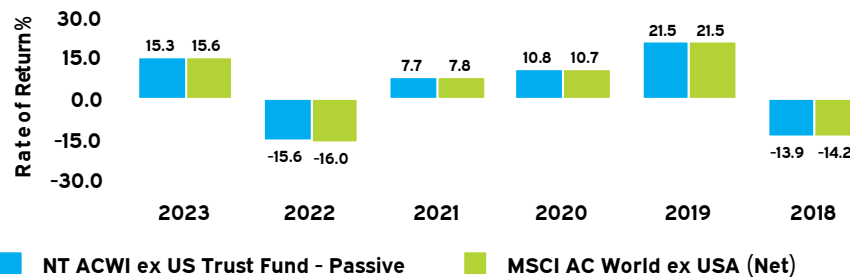
Trailing Performance



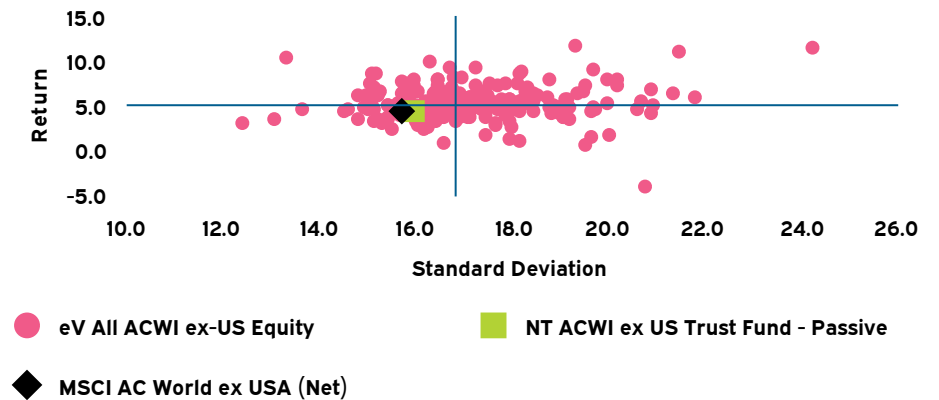
Growth of \$1 - Since Inception



Calendar Year Returns



Risk/Return - Since Inception

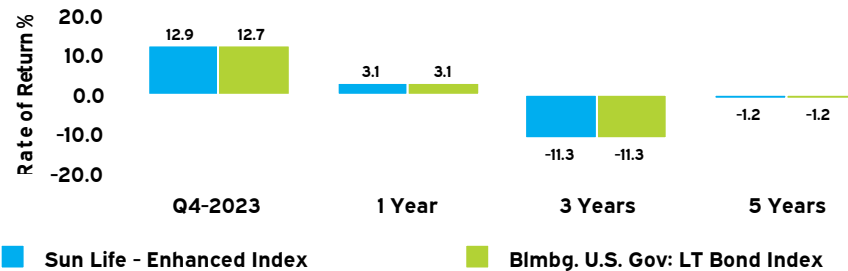


	SI Return	SI Standard Deviation
NT ACWI ex US Trust Fund - Passive	4.59	15.97
MSCI AC World ex USA (Net)	4.52	15.73

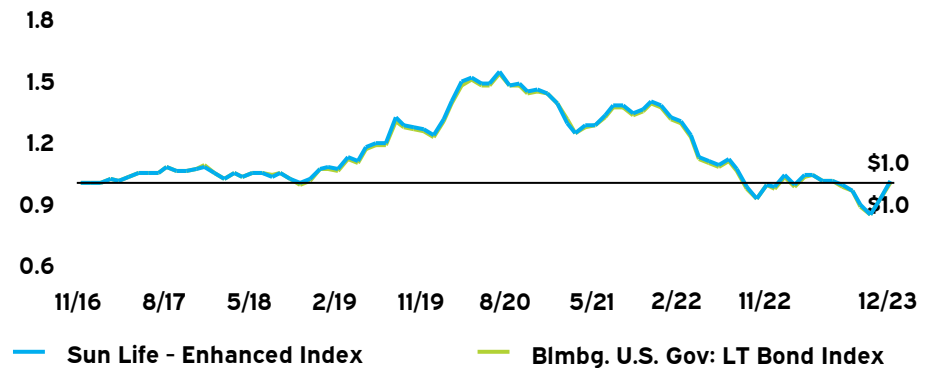
Sun Life - Enhanced Index | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Sun Life - Enhanced Index	0.12	1.01	0.15	-0.06	0.86	1.00	100.68	100.00

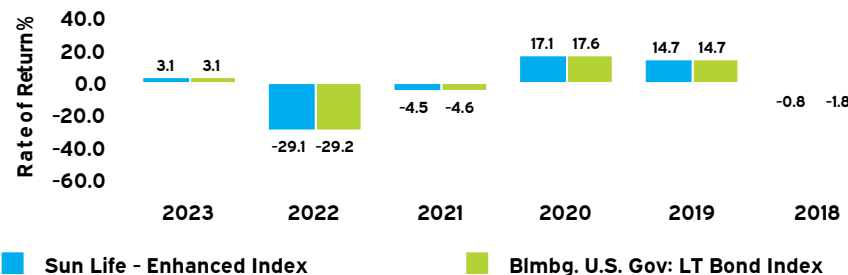
Trailing Performance



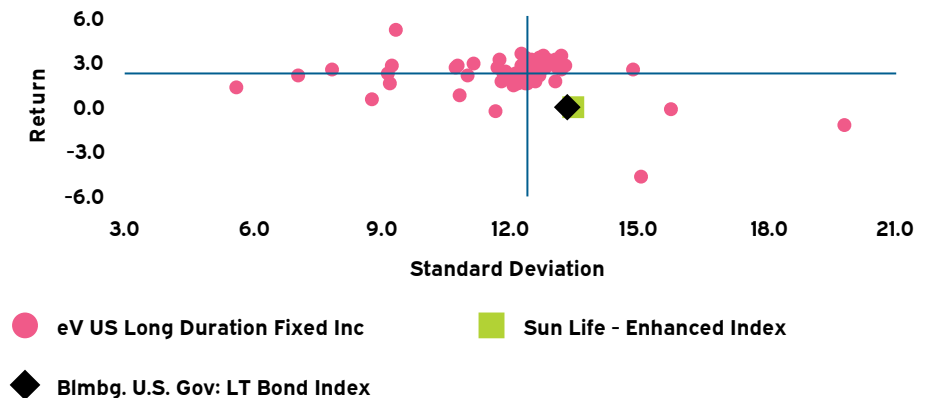
Growth of \$1 - Since Inception



Calendar Year Returns



Risk/Return - Since Inception

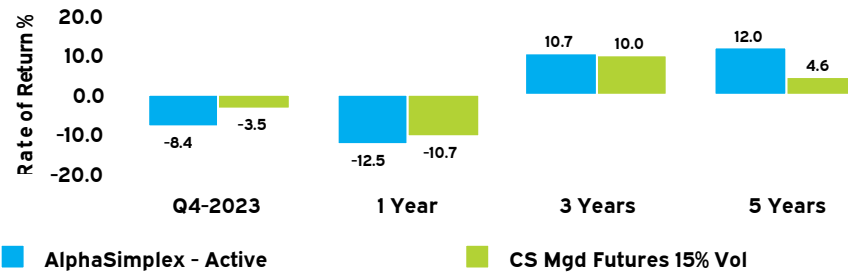


	SI Return	SI Standard Deviation
Sun Life - Enhanced Index	0.06	13.46
Blmbg. U.S. Gov: LT Bond Index	-0.05	13.35

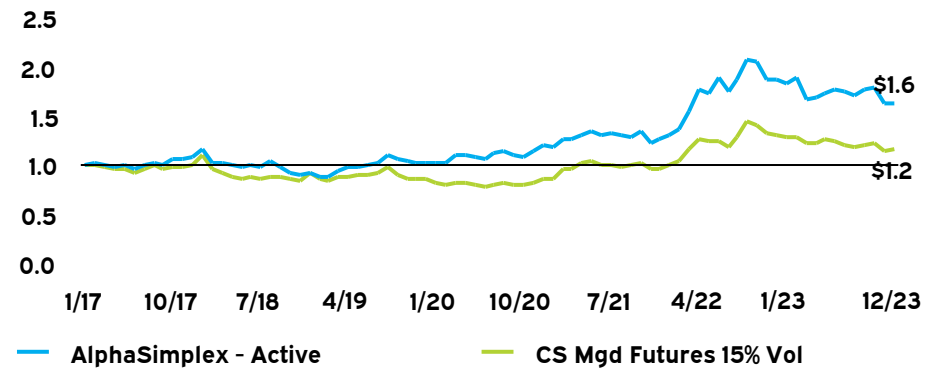
AlphaSimplex - Active | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
AlphaSimplex - Active	5.56	0.91	0.57	0.41	8.97	0.71	105.21	79.15

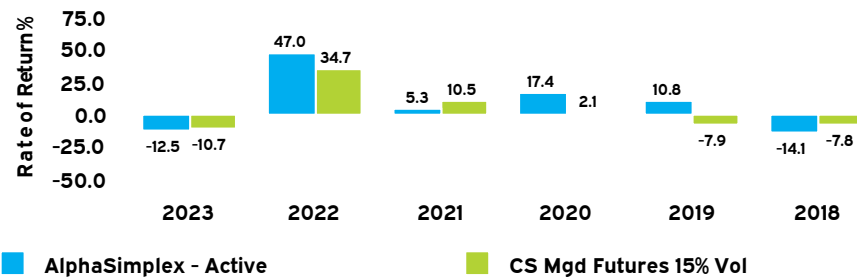
Trailing Performance



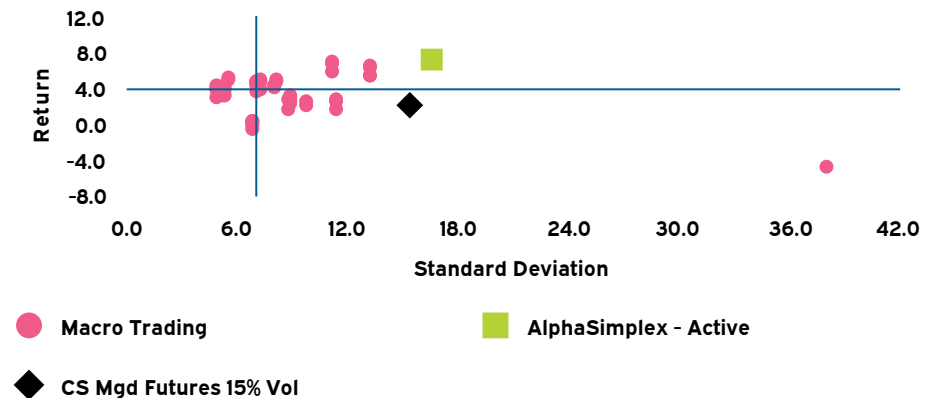
Growth of \$1 - Since Inception



Calendar Year Returns



Risk/Return - Since Inception

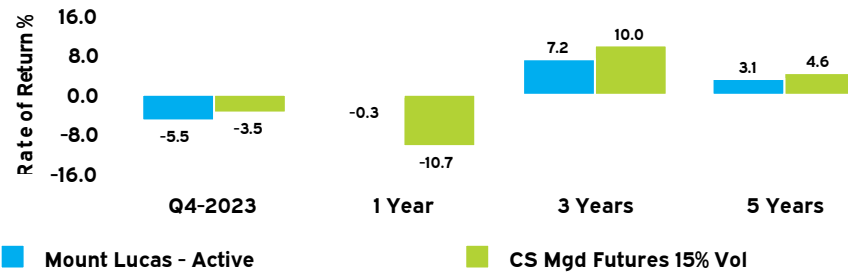


	SI Return	SI Standard Deviation
AlphaSimplex - Active	7.35	16.52
CS Mgd Futures 15% Vol	2.22	15.36

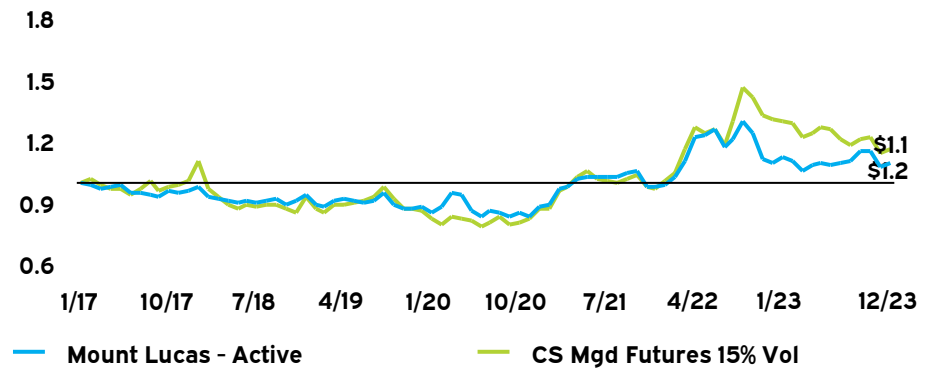
Mount Lucas - Active | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Mount Lucas - Active	-0.10	0.64	-0.14	0.02	9.52	0.62	61.17	61.27

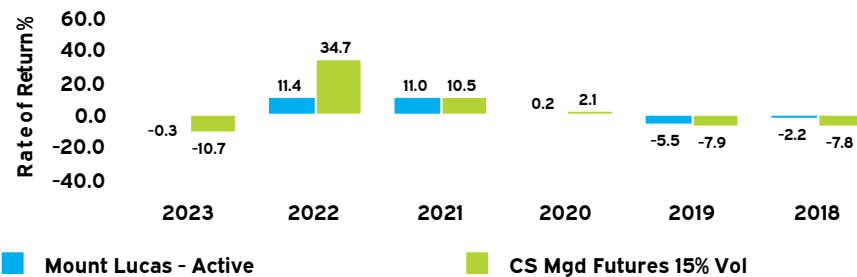
Trailing Performance



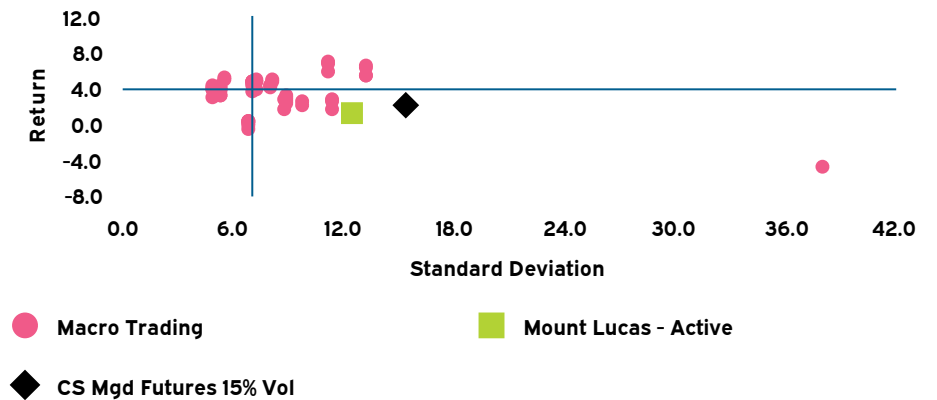
Growth of \$1 - Since Inception



Calendar Year Returns



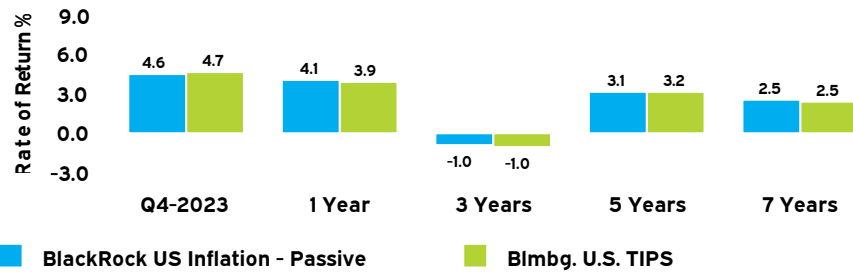
Risk/Return - Since Inception



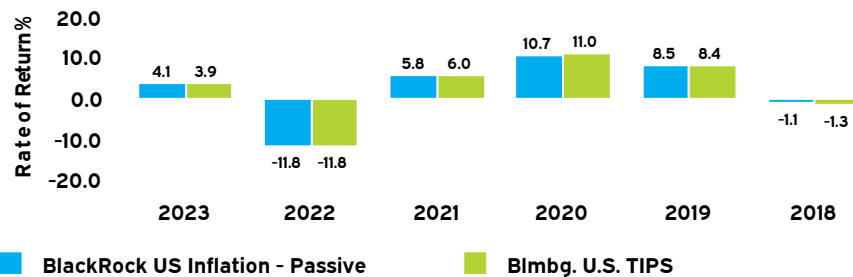
	SI Return	SI Standard Deviation
Mount Lucas - Active	1.27	12.45
CS Mgd Futures 15% Vol	2.22	15.36

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
BlackRock US Inflation - Passive	0.01	1.00	0.04	0.22	0.52	0.99	99.88	99.48

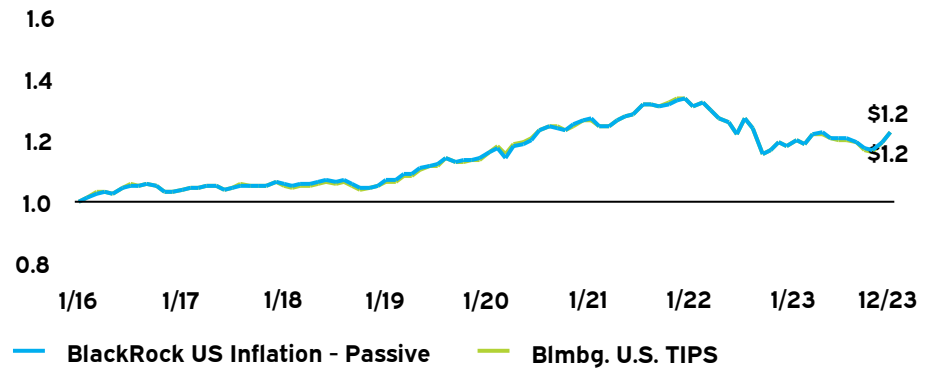
Trailing Performance



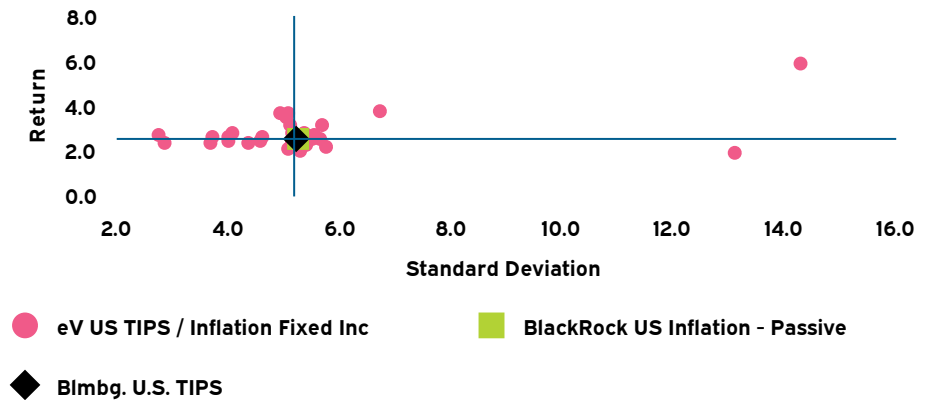
Calendar Year Returns



Growth of \$1 - Since Inception



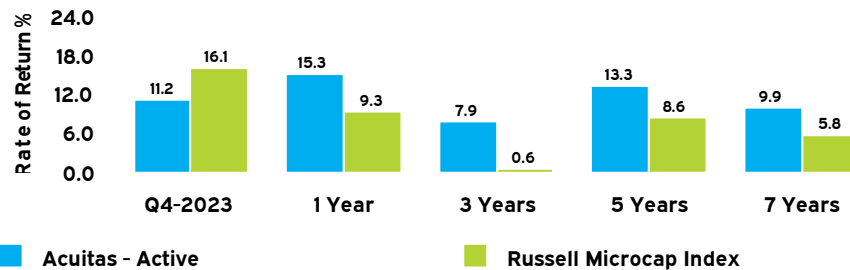
Risk/Return - Since Inception



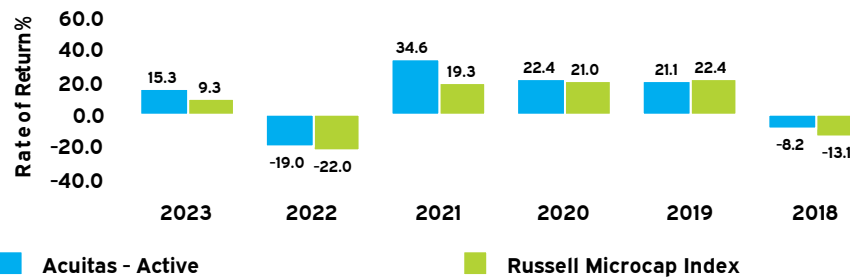
Acuitas - Active | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Acuitas - Active	4.34	0.96	0.62	0.49	6.41	0.92	101.02	85.69

Trailing Performance



Calendar Year Returns

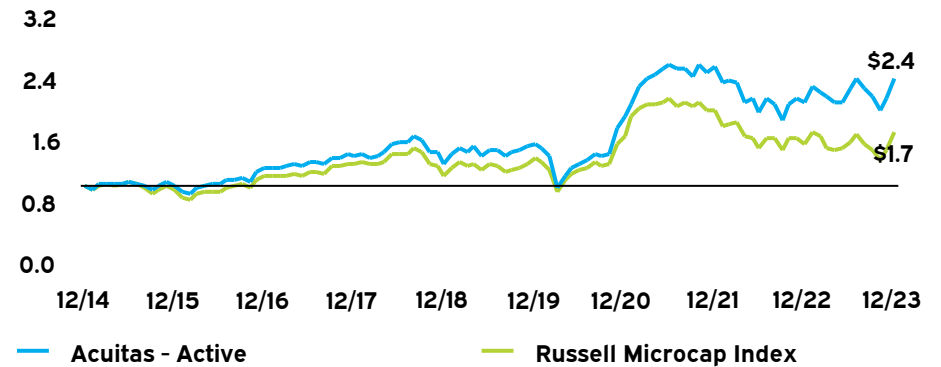


SI Return

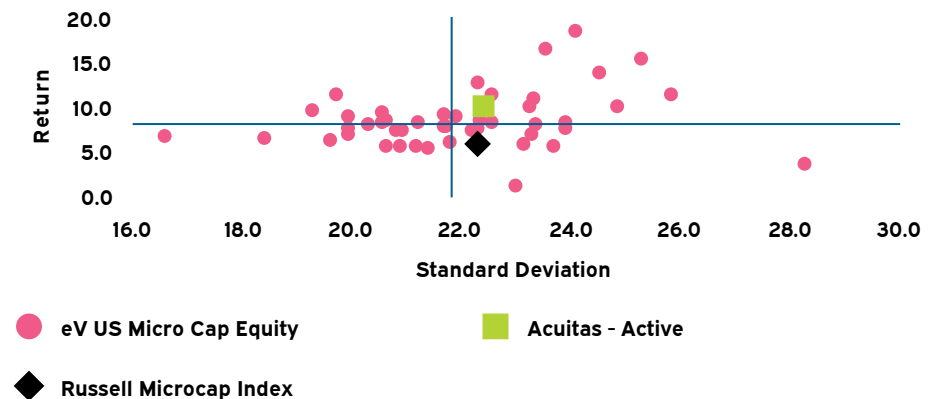
SI Standard Deviation

Acuitas - Active	10.20	22.41
Russell Microcap Index	6.03	22.28

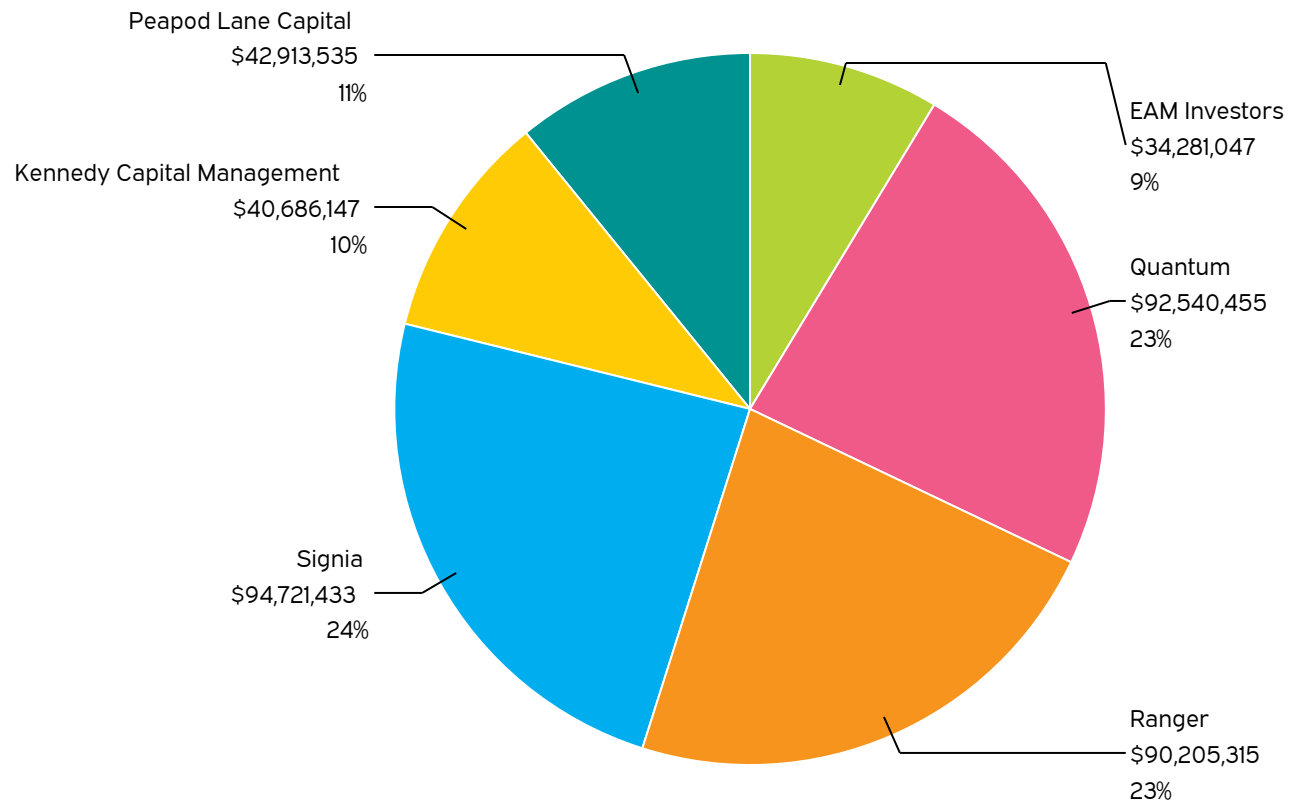
Growth of \$1 - Since Inception



Risk/Return - Since Inception



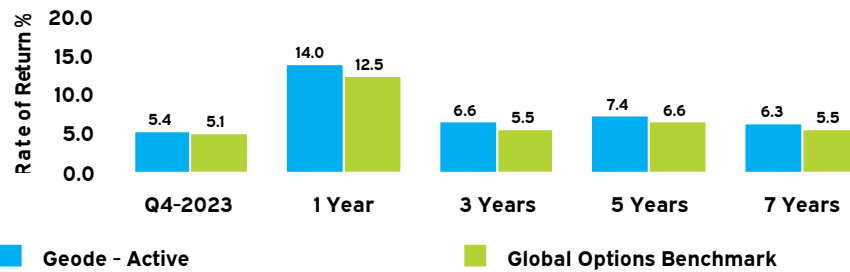
Dec-2023 : \$395,348,096



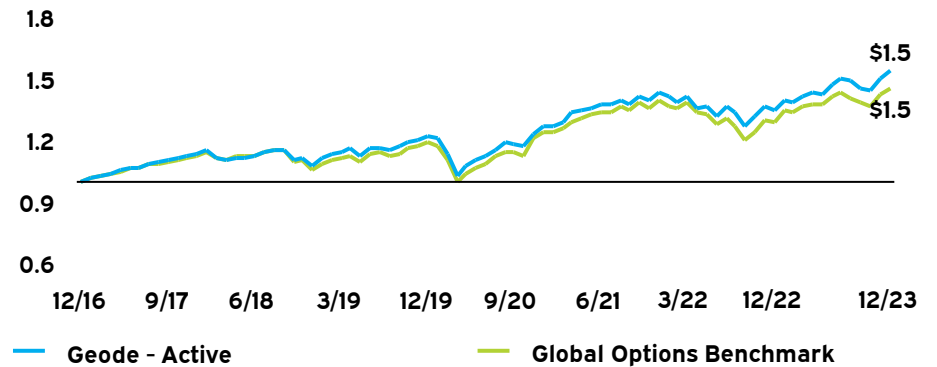
Geode - Active | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Geode - Active	1.06	0.95	0.40	0.54	1.97	0.95	102.23	95.23
Global Options Benchmark	0.00	1.00	-	0.47	0.00	1.00	100.00	100.00

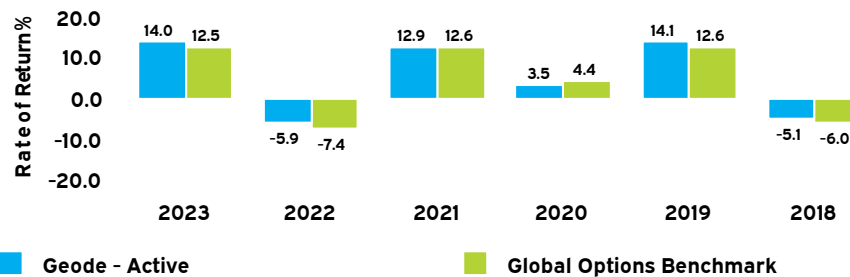
Trailing Performance



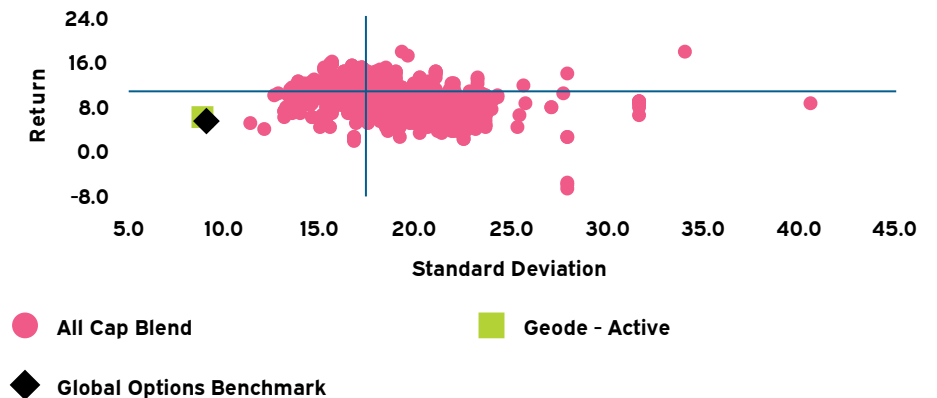
Growth of \$1 - Since Inception



Calendar Year Returns



Risk/Return - Since Inception



	SI Return	SI Standard Deviation
Geode - Active	6.31	8.83
Global Options Benchmark	5.47	9.05

EUTF Trust Fund Portfolio Review

EUTF Trust Fund Portfolio Review (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	S.I.	Inception Date
Total EUTF Trust Fund	561,358,933	100.0	5.0	8.1	1.7	5.0	3.5	Oct-13
<i>CPI - All Urban Consumers (Unadjusted)</i>			-0.3	3.4	5.6	4.1	2.7	
Excess Return			5.3	4.7	-3.9	0.9	0.8	
EUTF Trust Fund - Retirees	391,435,070	69.7	5.3	8.6	2.7	--	5.1	Jul-19
Northern Trust Intl	61,476,775	11.0	9.7	15.3	1.5	--	4.9	Jul-19
<i>MSCI AC World ex USA (Net)</i>			9.8	15.6	1.5	--	4.9	
Excess Return			-0.1	-0.3	0.0	--	0.0	
Northern Trust Total Stock	84,794,381	15.1	12.1	26.0	8.6	--	12.6	Jul-19
<i>Russell 3000 Index</i>			12.1	26.0	8.5	--	12.6	
Excess Return			0.0	0.0	0.1	--	0.0	
Alpha Simplex	62,208,846	11.1	-8.3	-12.4	10.7	--	11.4	Jul-19
<i>CS Mgd Futures 15% Vol</i>			-3.5	-10.7	10.0	--	5.6	
Excess Return			-4.8	-1.7	0.7	--	5.8	
Kepos	17,370,552	3.1	-0.7	10.8	4.1	--	1.1	Jul-19
<i>Custom ARP Benchmark</i>			1.9	7.1	4.2	--	3.8	
Excess Return			-2.6	3.7	-0.1	--	-2.7	
Sun Life	41,027,917	7.3	13.4	3.5	-11.3	--	-3.5	Jul-19
<i>Blmbg. U.S. Government: Long Term Bond Index</i>			12.7	3.1	-11.3	--	-3.6	
Excess Return			0.7	0.4	0.0	--	0.1	
Vanguard Short Term Bond Index - Passive	17,693,670	3.2	4.1	--	--	--	3.8	Jun-23
<i>Blmbg. U.S. Corporate 1-5 Year Index</i>			4.1	--	--	--	4.1	
Excess Return			0.0	--	--	--	-0.3	
Vanguard Short Term Bond Index - Passive	106,862,929	19.0	4.1	6.2	-0.1	--	1.6	Jul-19
<i>Blmbg. U.S. Corporate 1-5 Year Index</i>			4.1	6.2	-0.1	--	1.6	
Excess Return			0.0	0.0	0.0	--	0.0	

EUTF Trust Fund Portfolio Review (Net-of-Fees) | As of December 31, 2023

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	S.I.	Inception Date
EUTF Trust Fund - Actives	169,923,863	30.3	4.9	7.8	0.4	--	1.9	Jun-19
Northern Trust Intl	19,655,606	3.5	9.7	15.3	--	--	15.3	Jan-23
<i>MSCI ACWI ex US</i>			9.8	15.6	--	--	15.6	
Excess Return			-0.1	-0.3	--	--	-0.3	
Northern Trust Total Stock	26,617,817	4.7	12.1	26.0	--	--	26.0	Jan-23
<i>Russell 3000 Index</i>			12.1	26.0	--	--	26.0	
Excess Return			0.0	0.0	--	--	0.0	
Alpha Simplex	20,447,031	3.6	-8.3	-12.4	--	--	-12.4	Jan-23
<i>CS Mgd Futures 15% Vol</i>			-3.5	-10.7	--	--	-10.7	
Excess Return			-4.8	-1.7	--	--	-1.7	
Kepos	5,542,489	1.0	-0.7	10.8	--	--	10.8	Jan-23
<i>Custom ARP Benchmark</i>			1.9	7.1	--	--	7.1	
Excess Return			-2.6	3.7	--	--	3.7	
Lombard Odier	1,305	0.0	1.2	2.8	--	--	2.8	Jan-23
<i>Custom ARP Benchmark</i>			1.9	7.1	--	--	7.1	
Excess Return			-0.7	-4.3	--	--	-4.3	
Sun Life	12,744,411	2.3	13.5	4.0	--	--	4.0	Jan-23
<i>Blmbg. U.S. Government: Long Term Bond Index</i>			12.7	3.1	--	--	3.1	
Excess Return			0.8	0.9	--	--	0.9	
Vanguard Short Term Bond Index - Passive	6,244,834	1.1	4.1	--	--	--	3.8	Jun-23
<i>Blmbg. U.S. Corporate 1-5 Year Index</i>			4.1	--	--	--	4.1	
Excess Return			0.0	--	--	--	-0.3	
Vanguard Short Term Bond Index - Passive	78,670,370	14.0	4.1	6.2	-0.1	--	1.5	Jun-19
<i>Blmbg. U.S. Corporate 1-5 Year Index</i>			4.1	6.2	-0.1	--	1.8	
Excess Return			0.0	0.0	0.0	--	-0.3	

EUTF Trust Fund Portfolio Review (Net-of-Fees) | As of December 31, 2023

Excess Funds - Retirees		
	QTD	1 Yr
Retirees Cash Flow		
Net Contributions	-	50,000
Income	2,051	7,799

Excess Funds - Actives		
	QTD	1 Yr
Actives Cash Flow		
Net Contributions	-	-
Income	1,038	3,907

EUTF Trust Fund Retirees - Quarterly Asset Allocation		
	12/31/2023 (%)	09/30/2023 (%)
Alpha Simplex	15.9	17.3
Kepos	4.4	4.7
Northern Trust Intl	15.7	13.6
Northern Trust Total Stock	21.7	20.3
Sun Life	10.5	7.8
Vanguard Short Term Bond Index - Passive	4.5	4.6
Vanguard Short Term Bond Index - Passive	27.3	31.6

EUTF Trust Fund Actives - Quarterly Asset Allocation		
	12/31/2023 (%)	09/30/2023 (%)
Alpha Simplex	12.0	13.0
Kepos	3.3	3.4
Northern Trust Intl	11.6	11.0
Northern Trust Total Stock	15.7	15.2
Sun Life	7.5	5.7
Vanguard Short Term Bond Index - Passive	3.7	3.7
Vanguard Short Term Bond Index - Passive	46.3	47.9

Vanguard Short Term Bond Index - Passive | As of December 31, 2023

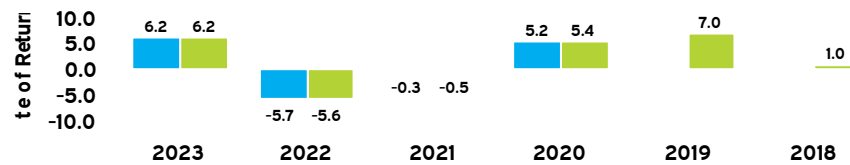
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Vanguard Short Term Bond Index - Passive	-0.05	1.01	-0.18	-0.04	0.21	1.00	99.46	100.13

Trailing Performance



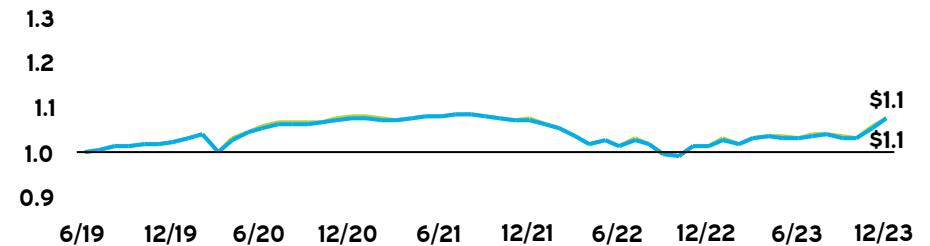
- Vanguard Short Term Bond Index - Passive
- Blmbg. U.S. Corporate 1-5 Year Index

Calendar Year Returns



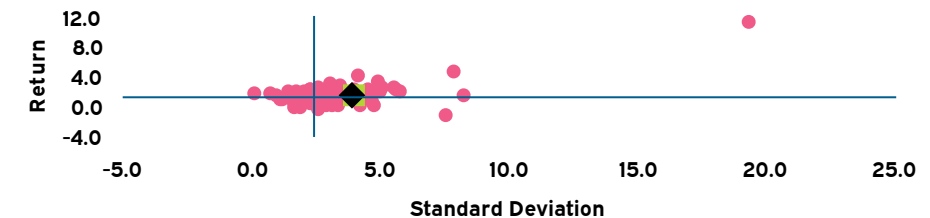
- Vanguard Short Term Bond Index - Passive
- Blmbg. U.S. Corporate 1-5 Year Index

Growth of \$1 - Since Inception



- Vanguard Short Term Bond Index - Passive
- Blmbg. U.S. Corporate 1-5 Year Index

Risk/Return - Since Inception



- eV US Short Duration Fixed Inc
- Vanguard Short Term Bond Index - Passive
- Blmbg. U.S. Corporate 1-5 Year Index

	SI Return	SI Standard Deviation
Vanguard Short Term Bond Index - Passive	1.56	3.96
Blmbg. U.S. Corporate 1-5 Year Index	1.60	3.92

Economic and Market Update

Data as of December 31, 2023

Commentary

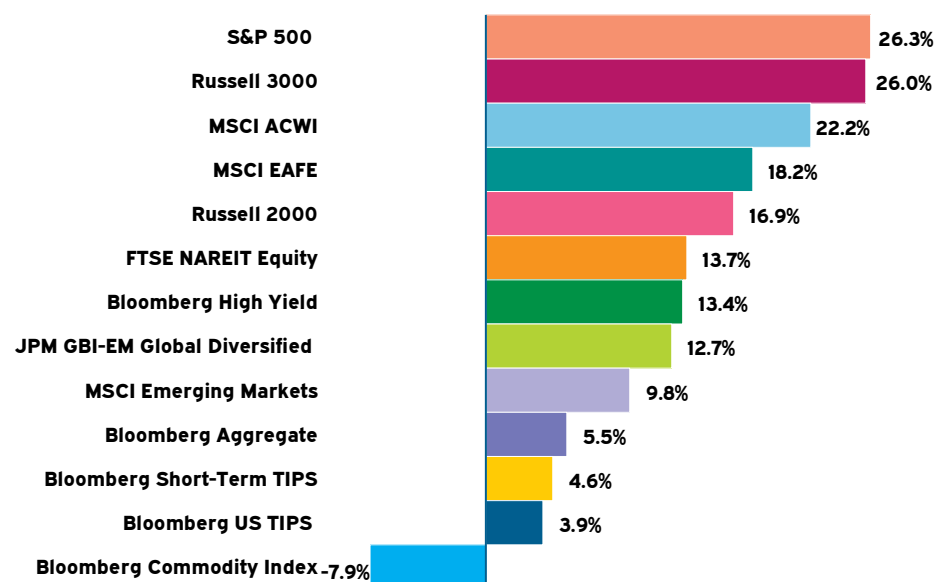
→ Most markets rallied in the fourth quarter in anticipation that policy rate cuts were ahead in 2024.

- Major central banks have largely paused interest rate hikes. Markets are now largely expecting the FOMC to maintain interest rates at the current levels and begin cutting rates as soon as Q1 2024.
- Inflation rose in December in the US and Europe, but both finished the year much lower than where they started. China remained in deflationary territory (-0.3%) at year-end.
- US equity markets (Russell 3000 index) posted strong gains for the quarter (12.1%), raising full year results to +26.0%. Most sectors rallied, with more defensive sectors lagging.
- Non-US developed equity markets also rallied in the fourth quarter (MSCI EAFE 10.4%), with the weakening of the US dollar contributing meaningfully (10.4% versus 5.0% ex-US dollar influence). The performance difference between US and international developed equities for the year remained wide (26.0% versus 18.2%).
- Emerging market equities were up 7.9% in the fourth quarter and 9.8% for calendar 2023 but trailed developed markets due to lagging returns in China (-4.2% Q4/-11.2% one-year). Emerging market equities ex-China returned 20% in 2023.
- Interest rates generally fell in the fourth quarter, particularly for longer-dated maturities. The broad US bond market rallied (6.8%) for the quarter, lifting 2023 returns into positive territory (5.5%).

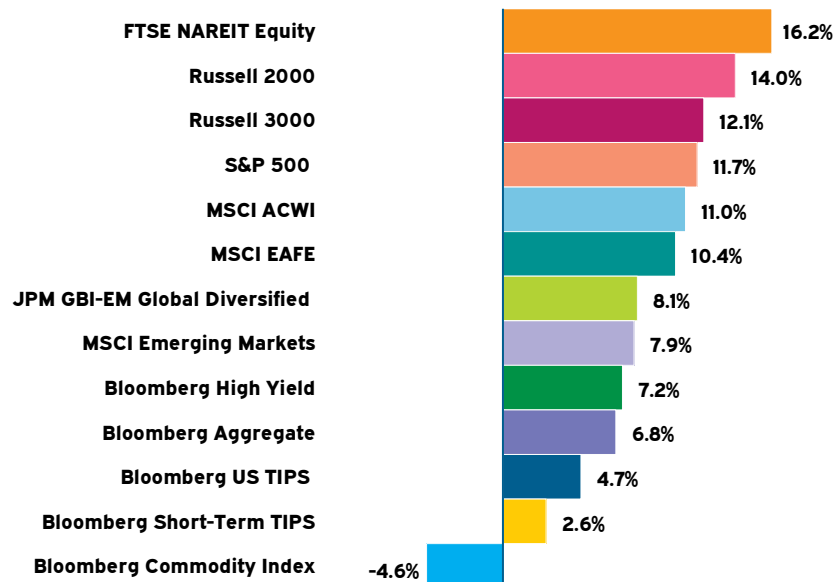
→ Looking to 2024, the paths of inflation and monetary policy, China's economic disorder and slowing economic growth, and the wars in Ukraine and Israel, will be key.

Index Returns¹

2023



Q4



- After a tough start to the quarter on lingering fears that the Federal Reserve might keep interest rates “higher for longer”, markets rallied in November and December. Economic data generally coming in below expectations sparked expectations that the Federal Reserve might really be done raising policy rates for this cycle.
- Strong results for the quarter built on gains for the year with all asset classes finishing in positive territory in 2023, except commodities.

¹ Source: Bloomberg. Data is as of December 31, 2023.

Domestic Equity Returns¹

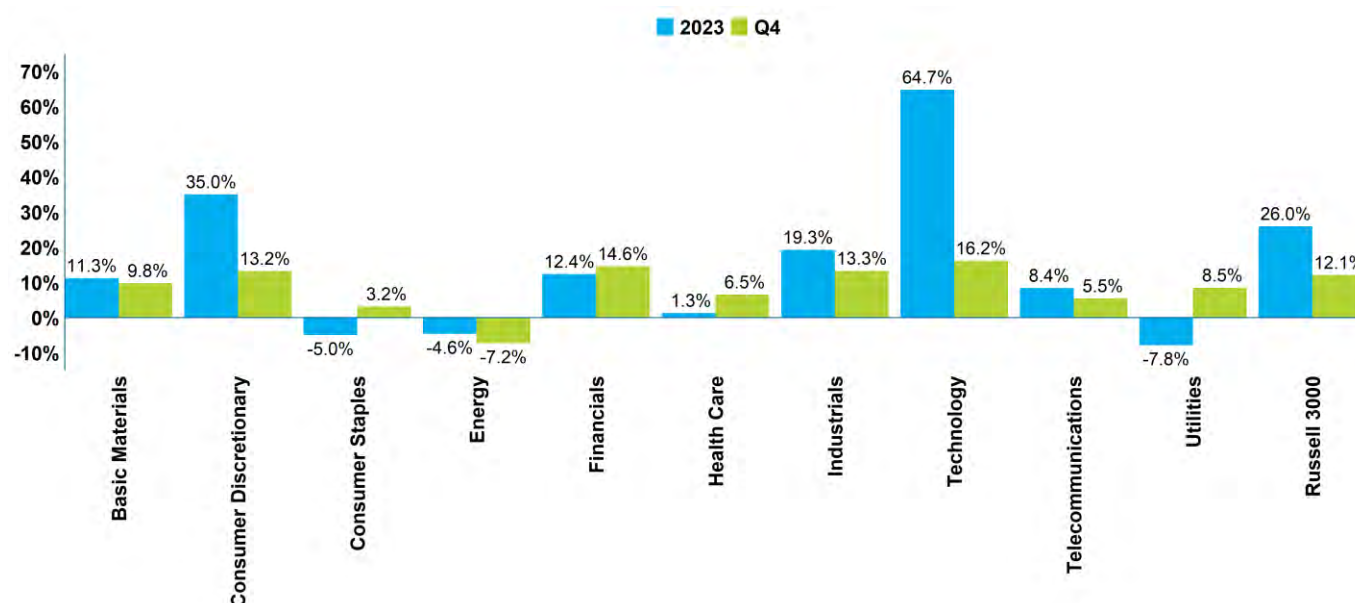
Domestic Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	4.5	11.7	26.3	10.0	15.7	12.0
Russell 3000	5.3	12.1	26.0	8.6	15.2	11.5
Russell 1000	4.9	12.0	26.5	9.0	15.5	11.8
Russell 1000 Growth	4.4	14.2	42.7	8.9	19.5	14.9
Russell 1000 Value	5.5	9.5	11.5	8.9	10.9	8.4
Russell MidCap	7.7	12.8	17.2	5.9	12.7	9.4
Russell MidCap Growth	7.6	14.5	25.9	1.3	13.8	10.6
Russell MidCap Value	7.8	12.1	12.7	8.4	11.2	8.3
Russell 2000	12.2	14.0	16.9	2.2	10.0	7.2
Russell 2000 Growth	12.0	12.7	18.7	-3.5	9.2	7.2
Russell 2000 Value	12.4	15.3	14.6	8.0	10.0	6.8

US Equities: The Russell 3000 rallied 5.3% in December, bringing fourth quarter results to +12.1%. US stocks were up 26.0% in 2023.

- US equities had a strong final quarter of the year, driven by expectations that rate cuts may be ahead in 2024.
- Small cap stocks outperformed their large cap peers for the quarter while growth outpaced value with the exception of small cap. Large cap stocks outperformed small cap stocks by a wide margin for the calendar year and growth outpaced value across market caps.
- Calendar year results were clearly driven by large cap technology stocks. Within the S&P 500 index, the “Magnificent 7” stocks generated more than 50% of the total gains.

¹ Source: Bloomberg. Data is as of December 31, 2023. Magnificent Seven stocks include: Apple, Microsoft, Alphabet, Amazon, Nvidia, Tesla, and Meta.

Russell 3000 Sector Returns¹



- All sectors posted gains for the fourth quarter, except for energy (-7.2%) given oil's recent declines. Technology (+16.2%) led the way for the quarter followed by financials (+14.6%).
- In 2023, technology (+64.7%) and consumer discretionary (+35.0%) sectors had the best results, helped respectively by artificial intelligence optimism and a healthy US consumer. Traditionally defensive sectors like utilities (-7.8%) and consumer staples (-5.0%) trailed.

¹ Source: Bloomberg. Data is as of December 31, 2023.

Foreign Equity Returns¹

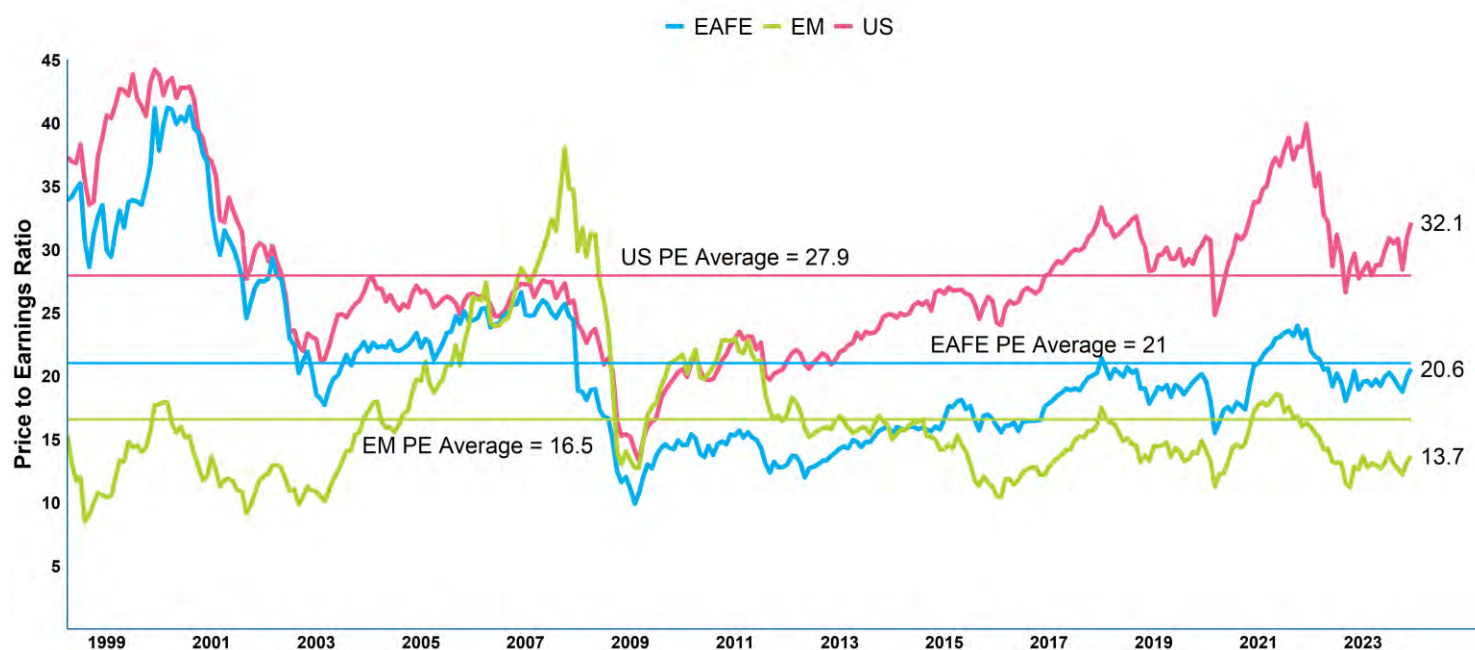
Foreign Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	5.0	9.8	15.6	1.5	7.1	3.8
MSCI EAFE	5.3	10.4	18.2	4.0	8.2	4.3
MSCI EAFE (Local Currency)	2.9	5.0	16.2	8.7	9.5	6.6
MSCI EAFE Small Cap	7.3	11.1	13.2	-0.7	6.6	4.8
MSCI Emerging Markets	3.9	7.9	9.8	-5.1	3.7	2.7
MSCI Emerging Markets (Local Currency)	3.1	5.6	9.9	-2.5	5.4	5.2
MSCI China	-2.4	-4.2	-11.2	-18.5	-2.8	0.9

Foreign Equity: Developed international equities (MSCI EAFE) gained 5.3% in December and 10.4% in the fourth quarter bringing calendar year results to 18.2%. Emerging market equities (MSCI EM) rose 3.9% in December, 7.9% for the quarter, and 9.8% for the year.

- Optimism around lower inflation and potentially peaking and declining policy rates drove gains in the UK and Europe. Japan had weaker results for the quarter as concerns over a strengthening yen weighed on returns in December. Overall weakness in the US dollar also contributed to quarterly and full year results across developed markets.
- Emerging markets also experienced strong performance in the fourth quarter but trailed developed markets. China weighed on relative results for the quarter and year, declining 4.2% and 11.2%, respectively. Slowing growth, issues in the property sector, and on-going tensions with the US all weighed on results.

¹ Source: Bloomberg. Data is as of December 31, 2023.

Equity Cyclically Adjusted P/E Ratios¹



- Given the strong technology-driven rally last year, the US equity price-to-earnings ratio increased above its 21st century average. Fourth quarter gains brought valuations to their highest level for the year.
- International market valuations also increased in the fourth quarter, but remain below the US. In the case of developed markets, valuations finished the year close to the their long-term average, while emerging markets remained well below their average.

¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of December 2023. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end respectively.

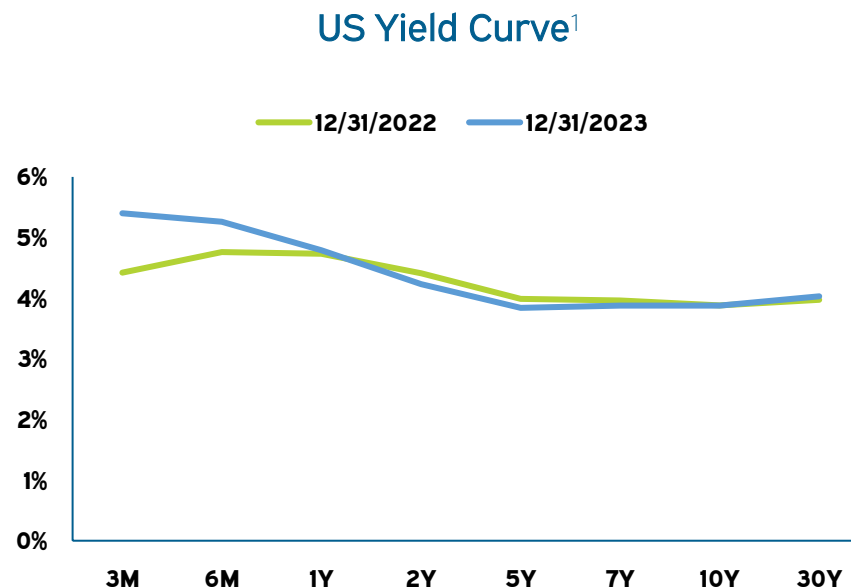
Fixed Income Returns¹

Fixed Income	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	3.8	6.8	6.2	-3.0	1.4	2.1	4.8	6.1
Bloomberg Aggregate	3.8	6.8	5.5	-3.3	1.1	1.8	4.5	6.3
Bloomberg US TIPS	2.7	4.7	3.9	-1.0	3.2	2.4	4.2	6.7
Bloomberg Short-term TIPS	1.1	2.6	4.6	2.3	3.4	2.0	4.5	2.4
Bloomberg High Yield	3.7	7.2	13.4	2.0	5.4	4.6	7.6	3.8
JPM GBI-EM Global Diversified (USD)	3.2	8.1	12.7	-3.2	1.1	0.1	6.5	5.0

Fixed Income: The Bloomberg Universal index rose 3.8% in December, 6.8% for the quarter, and 6.2% for the year.

- Policy rate expectations swung from pessimism to optimism in November and December. Signs of the labor market cooling and improving inflation led investors to bring forward expectations for interest rate cuts to early 2024, leading to one of the best quarterly results in over twenty years.
- The broad US bond market (Bloomberg Aggregate) rallied 6.8% for the quarter, lifting full-year performance into positive territory (+5.5%). The broader TIPS index rose 4.7% for the quarter and 3.9% for the year, while the less interest-rate-sensitive short-term TIPS index rose 2.6% and 4.6% over the same periods.
- High yield bonds rallied on better risk sentiment (+7.2%), as did emerging market bonds (+8.1%). Both asset classes produced double-digit results last year.

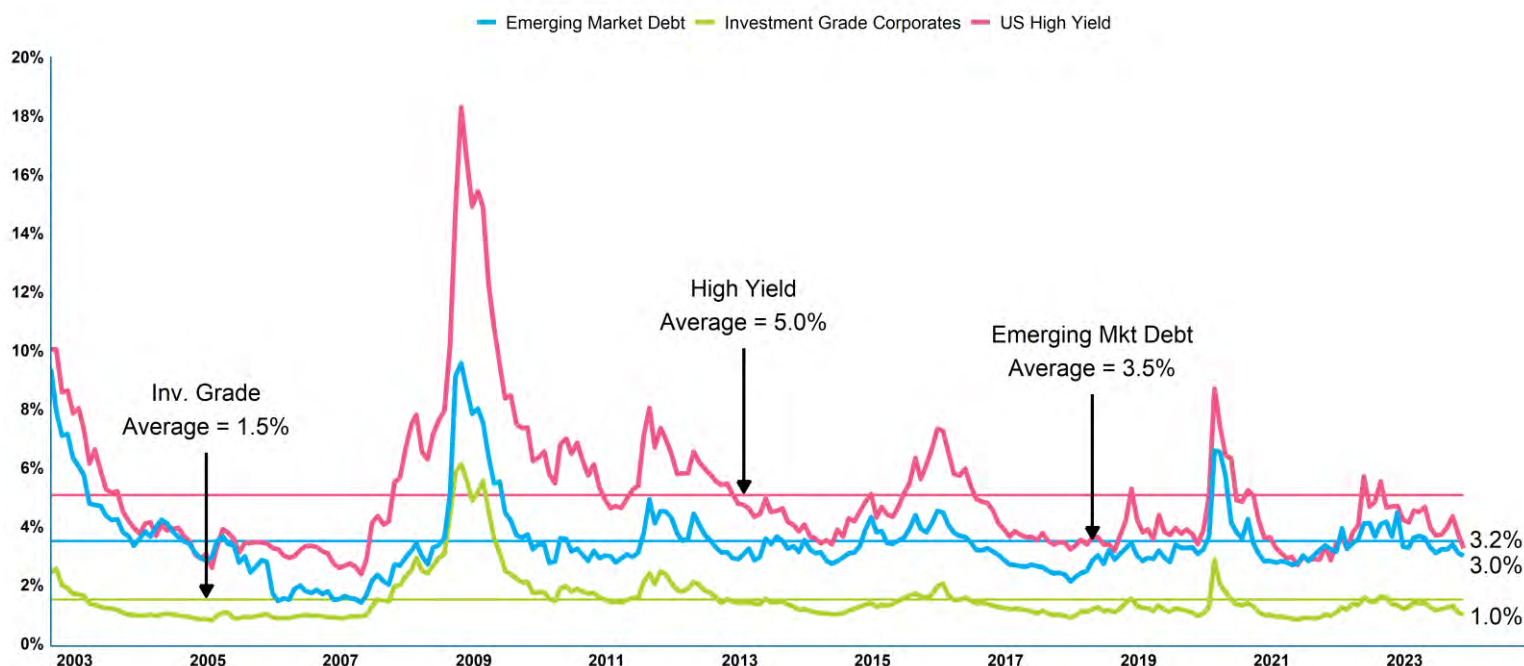
¹ Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of December 31, 2023. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.



- The more policy sensitive short-term maturities were higher this year while longer-term maturities finished the year where they started.
- Still, rates declined sharply over the quarter, particularly at the longer end of the yield curve on continued easing of inflation-related risks and speculation that the Federal Reserve is done with their policy rate increases for this cycle.
- For the quarter, two-year Treasury yields fell from 5.05% to 4.24% while ten-year Treasury yields declined from 4.56% to 3.88%.
- The yield curve remained inverted at year-end despite a recent flattening trend. The spread between the 2-year and 10-year Treasury was -0.37% at the end of December.

¹ Source: Bloomberg. Data is as of December 31, 2023.

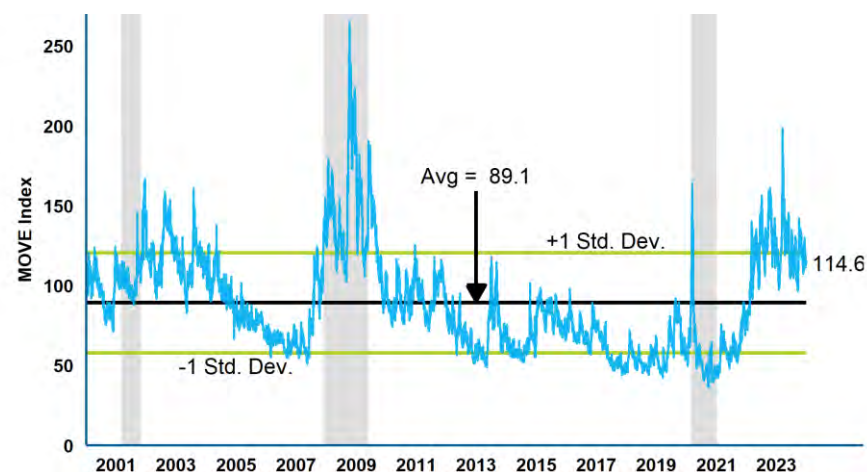
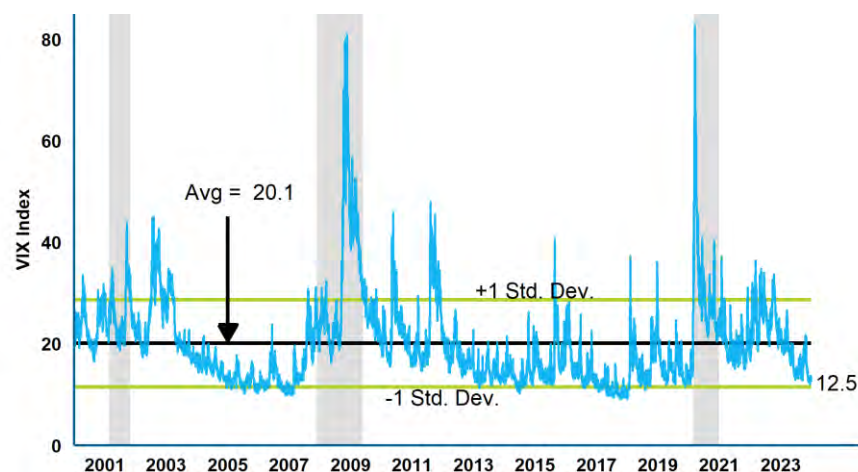
Credit Spreads vs. US Treasury Bonds¹



- Expectations of peaking policy rates and the corresponding increase in risk appetite benefited credit in the fourth quarter with spreads (the added yield above a comparable maturity Treasury) narrowing. All spreads remain below their respective long run averages.
- High yield spreads continue to be the furthest below their long-term average given the overall risk appetite last year and lower duration. Investment-grade corporate and emerging market spreads are also below their respective long-term averages, but by smaller margins.

¹ Sources: Bloomberg. Data is as of December 31, 2023. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.

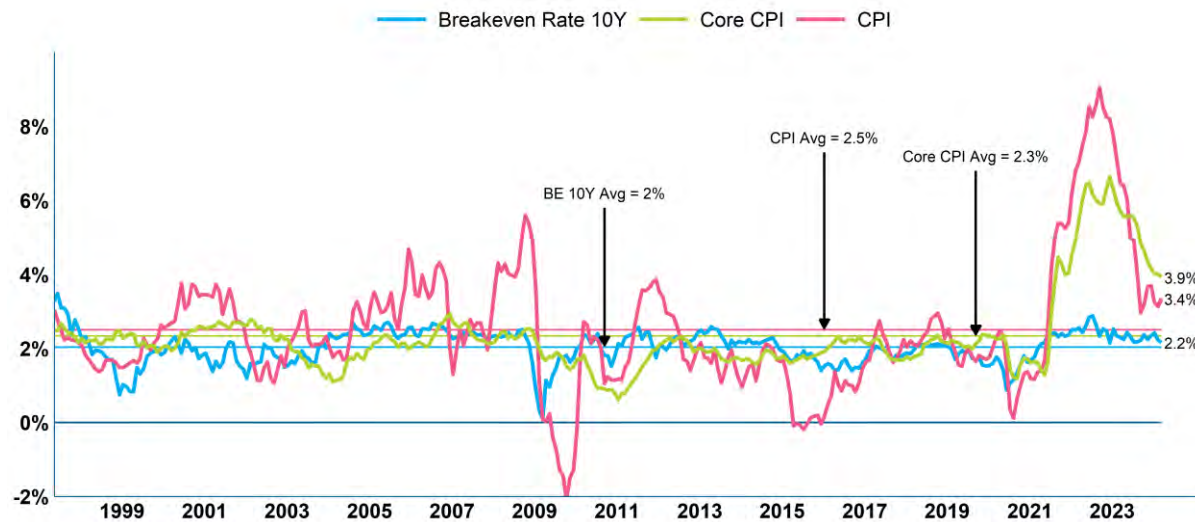
Equity and Fixed Income Volatility¹



- Volatility in equities (VIX) finished the year close to its lows, remaining well below the long-term average as the focus shifted to peaking policy rates and the potential for a soft landing.
- Volatility in the bond market (MOVE) remained elevated to close out 2023 and is well above its long-run average (89.1). The bond market remained on edge for most of 2024 largely driven by uncertainty about the ultimate path of monetary policy.

¹ Equity Volatility – Source: FRED. Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2023. The average line indicated is the average of the VIX and MOVE values between January 2000 and December 2023.

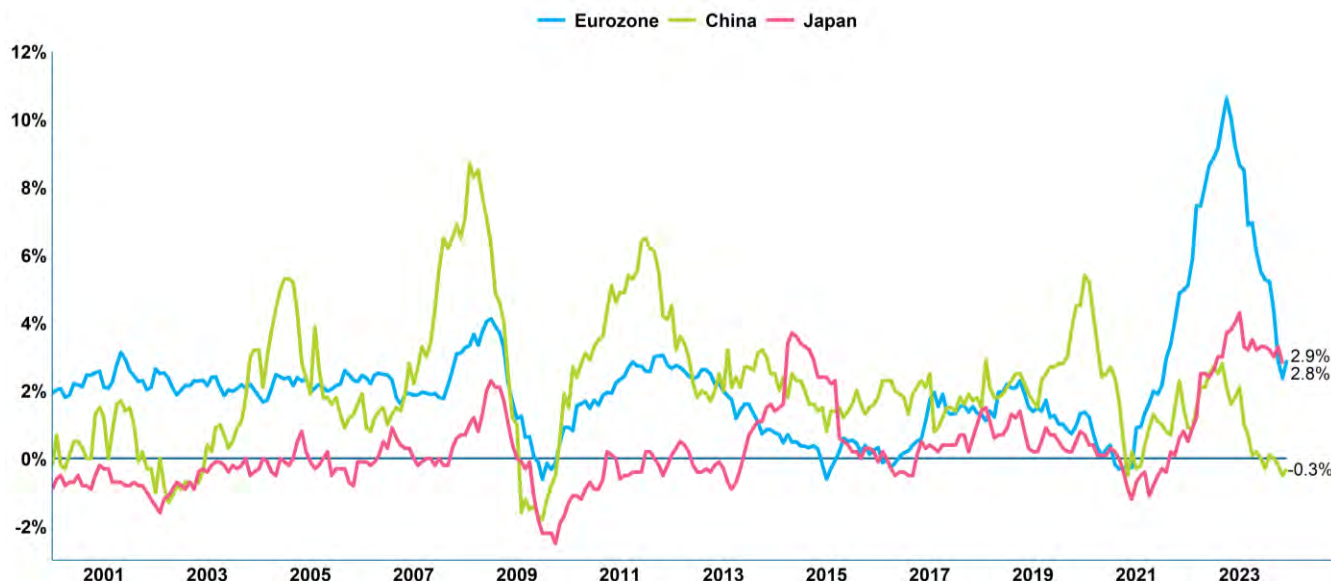
US Ten-Year Breakeven Inflation and CPI¹



- Year-over-year headline inflation rose from 3.1% to 3.4% in December, coming in above expectations of 3.2%. An increase in shelter (+6.2%) drove results, with food also increasing from a year prior (+2.7%) and energy prices falling (-2.0%). Month-over-month inflation came in at 0.3%, above expectations of 0.2% and the prior reading of 0.1%.
- Core inflation - excluding food and energy – declined in December (3.9% versus 4.0%) year-over-year, with shelter costs again driving the total core index increase.
- Inflation expectations (breakevens) have remained relatively stable despite the recent significant volatility in inflation.

¹ Source: FRED. Data is as December 2023. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

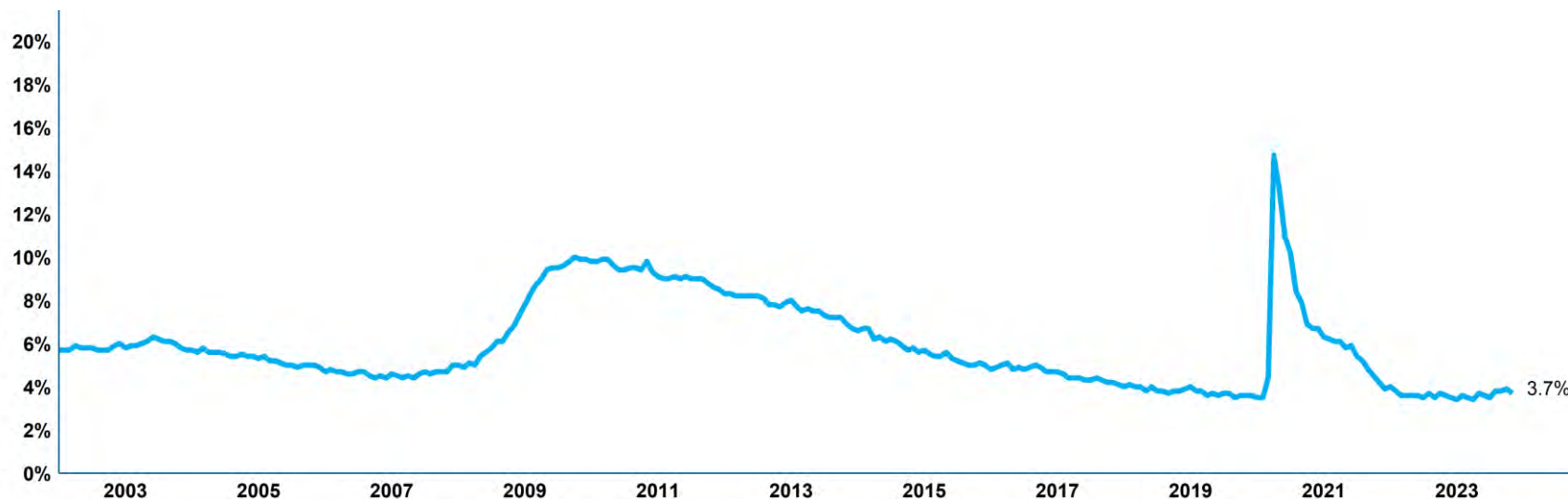
Global Inflation (CPI Trailing Twelve Months)¹



- Outside the US, inflation is also falling across major economies with China slipping into deflation.
- In the eurozone, inflation experienced a dramatic decline last year. Despite a small increase in December (2.9% versus 2.4%) it finished the year below the 3.4% year-over-year reading in the US.
- Inflation in Japan remains near levels not seen in almost a decade, driven by food and home related items.

¹ Source: FRED for United States CPI and Eurozone CPI. Source: Bloomberg for Japan CPI, China CPI, and Eurozone December flash estimate. Data is as December 31, 2023, except Japan which is as of November 30, 2023.

US Unemployment¹

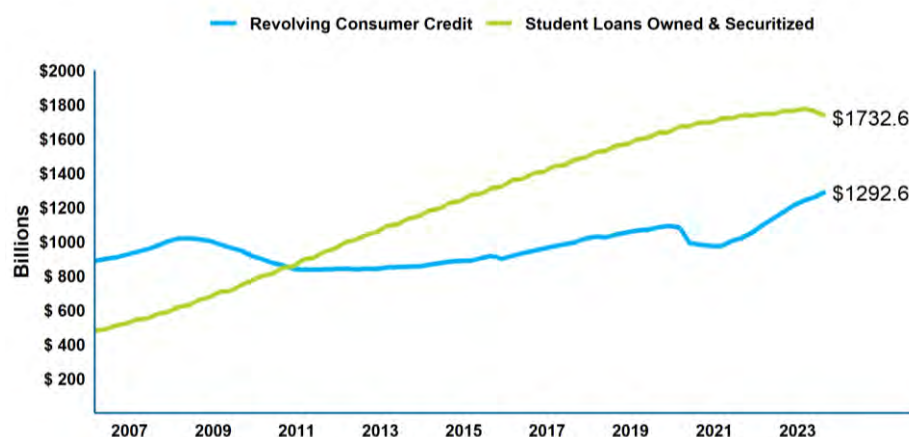


- Overall, the US labor market remains healthy with the unemployment rate relatively low, wage growth now positive in real terms, and initial claims for unemployment staying subdued.
- In December, US unemployment remained unchanged (3.7%) and came in slightly below expectations of an increase to 3.8%. The number of jobs added did come in above expectations (216k versus 175k) though with the most jobs added in the government, leisure and hospitality, and health care sectors.
- The labor force participation remained relatively stable at 62.5%, well off the lows of the pandemic (60.1%) but not back to pre-pandemic levels (63.3%).
- The pace of hourly wage growth has declined from its peak of close to 6.0% finishing 2023 at 4.1% yoy. Wage growth remains positive in real terms though.

Source: FRED. Data is as December 31, 2023.

US Consumer Under Stress?¹

Revolving Consumer Credit & Student Loans (\$B)

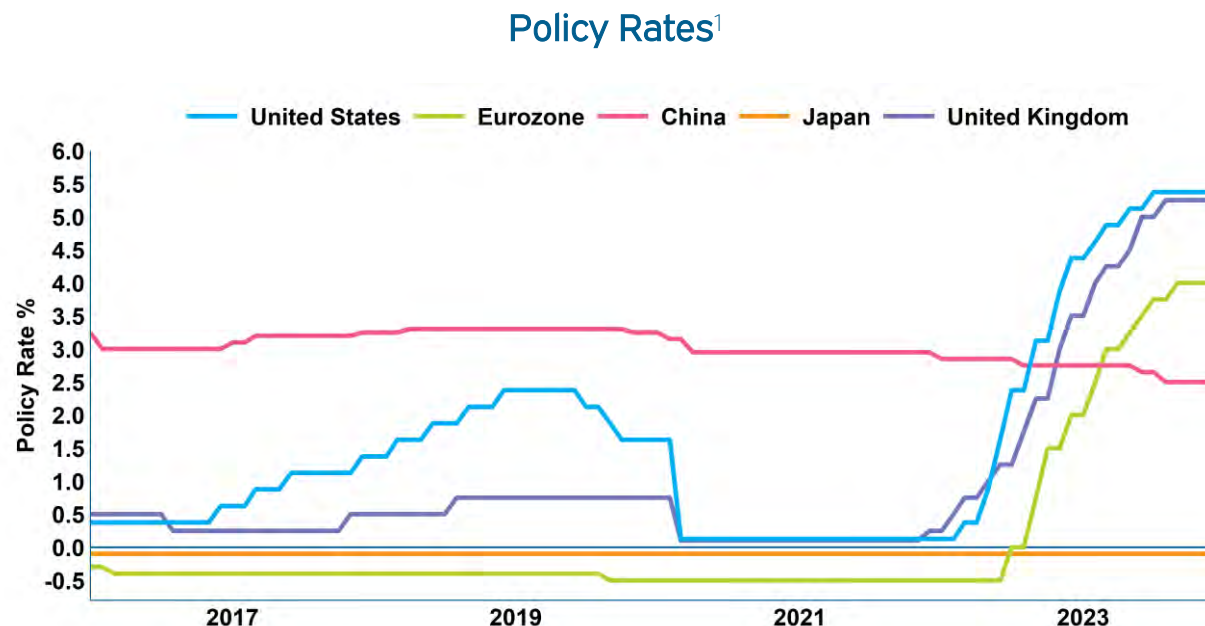


Consumer Credit Card Interest Rates (%)



- Despite the strong labor market and higher wages, pressures have started to build on the US consumer. This is an important consideration as consumer spending has been a key driver of economic growth.
- Revolving consumer credit surged to new highs in 2023 even as credit card interest rates hit levels not seen before (the prior peak was around 19% in the 1980s).
- The return of student loan repayments after a three-year pandemic-related reprieve could add to pressures on consumers' budgets. This might be partially mitigated by recently initiated repayment and forgiveness programs.
- As we look ahead, the strength of the US consumer will remain key as this sector makes up most of the domestic economy (GDP).

¹ Source: FRED. Data is as of September 30, 2023. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.



- Slowing inflation and growth have led to expectations for a reduction in the pace of aggressive policy tightening.
- The Fed has been on hold since July 2023 when it raised rates to a range of 5.25%-5.50%. Markets are pricing in six rate cuts next year given the track of economic data and recent comments from the Fed, while the Fed itself is only predicting three. How this discrepancy is resolved will be key this year.
- The European and UK central banks also recently paused their rate increases on slowing inflation. In Japan, the BoJ has further relaxed its yield curve control on the 10-year bond, and expectations for further policy normalization are rising.
- The central bank in China has maintained interest rates at record low levels and continues to inject liquidity into the banking system, as weaker than expected economic data appears to indicate a widespread slowdown.

¹ Source: Bloomberg. Data is as of December 2023.

US Dollar vs. Broad Currencies¹



- The US dollar declined around 5% in the fourth quarter as generally weaker economic data led investors to anticipate the end of FOMC tightening and interest rate cuts in 2024.
- Overall, the dollar finished the year only slightly below where it started but it was a volatile year for the US currency as expectations related to monetary policy evolved.

¹ Source: Bloomberg. Data as of December 31, 2023.

Summary

Key Trends:

- The impact of inflation still above policy targets will remain important, with bond market volatility likely to stay high.
- Global monetary policies could diverge going forward. The risk of policy errors remains elevated as central banks try to further reduce inflation toward targets while not tipping their economies into recession. In the case of the US the resolution of the disparity between market expectations for the path of interest rates versus the Fed's dot plot will be key.
- Global growth is expected to slow next year, with some economies forecasted to tip into recession. However, optimism has been building that certain economies could experience soft landings. Inflation, monetary policy, and geopolitical issues will remain key in 2024.
- US consumers could feel pressure as certain components of inflation (e.g., shelter), remain high, borrowing costs are elevated, and the job market may weaken.
- A focus for US equities going forward, will be whether earnings can remain resilient if growth continues to slow. Also, the future paths of the large technology companies that have driven market gains will be important.
- Equity valuations remain lower in emerging and developed markets, but risks remain, including the potential for China's economic slowdown and on-going weakness in the real estate sector could spill over into key trading partners' economies. Japan's recent hint at potentially tightening monetary policy along with changes in corporate governance in the country could influence relative results.
- Recent, heightened tensions in Israel could add to overall uncertainty and drive safe haven flows.

Appendix

Glossary of Terms

Alpha - The premium an investment earns above a set standard. This is usually measured in terms of a common index (i.e., how the stock performs independent of the market). An Alpha is usually generated by regressing a security's excess return on the market's excess return.

Annualized Performance - The annual rate of return that when compounded t times generates the same t -period holding return as actually occurred from period 1 to period t .

Attribution - a means to ascribe values to specific categories based on underlying characteristics.

Batting Average - Percentage of periods a portfolio outperforms a given index.

Beta - The measure of an asset's risk in relation to the Market (for example, the S&P 500) or to an alternative benchmark or factors. Roughly speaking, a security with a Beta of 1.5 will have moved, on average, 1.5 times the market return.

Bottom-up - A management style that de-emphasizes the significance of economic and market cycles, focusing instead on the analysis of individual stocks.

Breakeven Inflation - The difference between the yield of a nominal bond and an Inflation-linked bond of like maturity. It represents the amount of annualized inflation expected over the life of a bond by the marketplace, but it can also be thought of as the amount of annualized inflation required for being indifferent to holding the nominal or the ILB. If actual inflation turns out to be higher (lower) than the breakeven rate, the ILB will have a higher (lower) return than a nominal of like maturity. The market shortcut is to subtract the real yield from the nominal yield: Breakeven Inflation = Nominal Yield - Real Yield.

Breakeven Inflation Curve - The difference between nominal and real yields of like maturities at every available point along the yield curve.

Credit Quality - A measure of a bond issuer's ability to repay interest and principal in a timely manner.

Current Yield - Annual income (interest or dividends) divided by the current price of the security.

Dividend Yield - Annualized dividend rate divided by last closing price.

Down Market Capture Ratio - Is the portion of the market's performance that was captured by the manager using only periods where the market return is negative. A down market capture of less than 100% is considered desirable.

Duration - A measure of the price sensitivity of a fixed-income security to a change in interest rates. Calculation is based on the weighted average of the present value for all cash flows.

Earnings Growth Rate - rate of change in earnings over the latest 5-year period as expressed in an annual percentage.

Excess Standard Deviation (annualized) - The annualized standard deviation of the difference between the performance of a portfolio and its benchmark. Also referred to as tracking error.

Fair Value Pricing - Is a daily price adjustment made to the value of a security to more accurately reflect the true market value of a security. A fund will use fair value pricing if the value of a security is materially affected by events occurring before the fund's pricing time but after the close of the primary markets or exchanges on which the security is traded. It is an industry-wide practice required by the Securities and Exchange Commission.

Growth Stocks - Common stock of a company that has an opportunity to invest money and earn more than the opportunity cost of capital.

Inflation-linked Bonds (ILBs) - A bond whose principal is increased (decreased) in proportion to the amount of inflation (deflation) from the date of issue to the date of maturity, and whose coupons are paid on the inflation-adjusted principal. At maturity, the inflation-adjusted principal is redeemed. The mechanics of an ILB imply that its cash flows and principal at maturity are unknown and are determined by the path of inflation over its life.

Information Ratio - The ratio of annualized expected residual return to residual risk. A central measurement for active management, value added is proportional to the square of the information ratio.

Market Capitalization - Is calculated as the product of price and shares outstanding.

Median Market Capitalization - The midpoint of market capitalization (market price multiplied by the number of shares outstanding) of the stocks in a portfolio. Half the stocks in the portfolio will have higher market capitalizations; half will have lower.

Nominal Yield - The interest rate stated on the face of a bond, which represents the percentage of interest to be paid by the issuer on the face value of the bond. (Also known as the coupon rate.)

Price/Book (P/B) Ratio - The price per share of a stock divided by its book value (i.e. net worth) per share. For a portfolio, the ratio is the weighted average price/book ratio of the stocks it holds.

Price/Earnings (P/E) Ratio - The share price of a stock divided by its per-share earnings over the past year. For a portfolio, the weighted average P/E ratio of the stocks in the portfolio. P/E is a good indicator of market expectations about a company's prospects; the higher the P/E, the greater the expectations for a company's future growth.

R-Squared - Square of the correlation coefficient. The proportion of the variability in one series that can be explained by the variability of one or more other series a regression model. A measure of the quality of fit. 100% R-square means perfect predictability.

Real Yield - Return from an investment adjusted for the effects of inflation.

Semi Standard Deviation (Downside) - Is a measure of risk using only the variance of returns below a target rate, such as the benchmark.

Sharpe Ratio - A measure of a portfolio's excess return relative to the total variability of the portfolio. The higher the portfolio's Sharpe Ratio, the better the portfolio's returns have been relative to the risk it has taken on.

Standard Deviation - The square root of the variance. A measure of dispersion of a set of data from its mean.

Style Analysis - A returns-based analysis using a multi-factor attribution model. The model calculates a product's average exposure to particular investment styles over time (i.e., the product's normal style benchmark).

Top-down - Investment style that begins with an assessment of the overall economic environment and makes a general asset allocation decision regarding various sectors of the financial markets and various industries.

Tracking Error - The standard deviation of the difference between the performance of a portfolio and an appropriate benchmark.

Turnover - For mutual funds, a measure of trading activity during the previous year, expressed as a percentage of the average total assets of the fund. A turnover rate of 25% means that the value of trades represented one-fourth of the assets of the fund.

Up Market Capture Ratio - Is the portion of the market's performance that was captured by the manager using only periods where the market return is positive. An up market capture of greater than 100% is considered desirable.

Unrealized Gain/Loss - The increased or decreased market value of an asset that is still being held compared with its cost of acquisition.

Value Stocks - Stocks with low price/book ratios or price/earnings ratios. Historically, value stocks have enjoyed higher average returns than growth stocks (stocks with high price/book or P/E ratios) in a variety of countries.

Weighted Average Life (WAL) - The average number of years for which each dollar of unpaid principal on a loan or mortgage remains outstanding. Once calculated, WAL tells how many years it will take to pay half of the outstanding principal. The time weightings are based on the principal paydowns - the higher the dollar amount, the more weight that corresponding time period will have. For example, if the majority of the repayment amount is in 10 years the WAL will be closer to 10 years. Let's say there's an outstanding bond with five years of \$1,000 annual payments. The

weighted average life would be three years, assuming payment is made at the end of each year. This indicates that after three years over half of the payments will be made.

Yield Curve - A representation on a chart of the yields on bonds with identical credit ratings but different maturities. On the yield curve, the maturities are represented on the x-axis, and the yield is represented on the y-axis. That is, if the yield curve trends upward, it indicates that interest rates for long-term debt securities are higher than short-term debt securities; this is called a normal yield curve. A negative yield curve indicates that interest rates for short-term debt securities are higher, and a flat yield curve indicates that they are roughly the same. Yield curves are most commonly plotted with U.S. Treasuries with different maturities; this is used to predict future trends in interest rates.

Yield Curve Management - Any investment strategy that seeks to profit from changes in the yield curve of US Treasury securities. For example, one may buy a bond at a certain interest rate expecting prevailing interest rates to decline. If and when they do, the price of the bond one holds will increase, allowing one to sell the bond for a profit.

Yield to Maturity - The rate of return an investor would receive if the securities held by a portfolio were held to their maturity dates.

Definitions of Benchmarks

The Bloomberg Barclays Capital U.S. 1-5 Year Corporate Index includes US dollar-denominated, securities issued by industrial, utility and financial companies, with maturities between 1 and 5 years. Each security must be rated investment-grade (Baa3/BBB- or higher) in quality by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only one of the three ratings agencies rates a security, the rating must be investment grade. The index typically has a weighted average duration between three and five years which is considered to be intermediate-term in duration.

The Bloomberg Barclays Capital U.S. Aggregate Bond Index consists of taxable fixed income securities that are SEC-registered and US dollar denominated. The index covers the broad US investment grade fixed coupon rate bond market with index components for government and corporate securities, residential mortgage-backed securities, commercial mortgage-backed securities and asset-backed securities. Government and corporate securities include non-US issuers, although non-US issuers represent only a small portion of the index. Each security in the index must have at least one year to final maturity regardless of call features. Each security must be rated investment-grade (Baa3/BBB- or higher) in quality by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only one of the three ratings agencies rates a security, the rating must be investment grade. The index typically has a weighted average duration between three and five years which is considered to be intermediate-term in duration.

The Bloomberg Barclays Capital U.S. Government: Long Index is a subset of the Bloomberg Barclays Capital U.S. Aggregate Index. In particular, securities within the index must be issued and/or guaranteed by the U.S. Government and/or U.S. Agencies and have at least ten years until maturity. The index primarily consists of U.S. Treasury bonds.

The Bloomberg Barclays Capital U.S. TIPS Index (BC U.S. TIPS) consists of all publicly issued US dollar denominated Inflation-Protection securities (TIPS) issued by the US Treasury that have at least one year to final maturity. The principal value of a TIPS increases with inflation and decreases with deflation, as measured by changes in the urban, non-seasonally adjusted consumer price index (CPI-U) calculated by the Bureau of Labor Statistics. The CPI-U index is a measure of the average change in prices paid by urban consumers for a fixed basket of goods and services. The principal value of a TIPS security is adjusted by a published index ratio reflecting the changes in the reference CPI-U index. TIPS securities have a stated fixed coupon rate of interest payable semi-annually that is applied to the inflation-adjusted principal value. Over the past several years, approximately one-third of the weighted market value of the index has been represented by issues in each of the maturity ranges of one-to-five years, five-to-ten years, and in excess of ten years. The index is considered to be intermediate-term in duration.

The Credit Suisse Managed Futures Liquid Index (15% Volatility) was designed to exist as a relatively straight-forward index/representation for capturing trend following returns. The strategy utilizes 16 moving average crossover signals to detect trends across various time horizons and assets. The strategy includes allocations to global equity indices, currencies, commodities, and interest rates (18 instruments in total). The index targets an annualized volatility of 15% but will allow for up to 22.5% (upper limit) prior to rebalancing. Credit Suisse compiles this same index at alternative levels of volatility.

The CBOE S&P 500 PutWrite Index (PUT) sells S&P 500 Index (SPX) put options against collateralized cash reserves held in a money market account. The PUT strategy is designed to sell a sequence of one-month, at-the-money, S&P 500 Index puts and invest cash at one- and three-month U.S. Treasury bill rates. The number of puts sold varies from month to month, but is limited so that the amount held in U.S. Treasury bills can finance the maximum possible loss from final settlement of the SPX puts. The short positions in put options are held until expiration, at which point a new one-month put option is sold.

The Custom ARP Benchmark is 3-Month U.S. Treasury Bills + 2% per annum (i.e., cash + 2%).

The FTSE All-World ex US Index comprises large- and mid-cap stocks in Developed and Emerging Markets (46 countries) excluding the US. The index attempts to replicate the industry composition of each local market and includes representative sampling of large, medium, and small capitalization companies. The index is calculated with net dividends reinvested in US dollars.

The FTSE Global All Cap ex US Index comprises large, mid, and small cap stocks globally excluding the US. The index is derived from the FTSE Global Equity Index Series, which covers 98% of the world's investable market capitalization. The index attempts to replicate the industry composition of each local market and includes representative sampling of large, medium, and small capitalization companies. The index is calculated with net dividends reinvested in US dollars.

The ICE Bank of America Merrill Lynch 3-Month T-Bill Index is comprised of a single 3-month T-Bill issue purchased at the beginning of the month and held for a full month. At the end of the month that T-Bill is sold and rolled into a newly selected issue. The issue selected at each month-end rebalancing is the outstanding T-Bill that matures closest to, but not beyond, three months from the rebalancing date.

The MSCI All Country World ex USA Index ND (MSCI ACWI ex US ND) is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets excluding the US. The MSCI ACWI ex USA consists of 45 country indexes comprising 22 developed and 23 emerging market country indexes. The developed market country indexes included are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom. The emerging market country indexes included are: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan,

Thailand, Turkey and United Arab Emirates. Net total return indexes reinvest dividends after the deduction of withholding taxes, using (for international indexes) a tax rate applicable to non-resident institutional investors who do not benefit from double taxation treaties.

The MSCI U.S. Broad Market Index GD represents the universe of companies in the US equity market, including large-, mid-, small- and micro-cap companies. This index targets for inclusion 99.5% of the capitalization of the US equity market. The MSCI US Broad Market Index is the aggregation of the MSCI US Investable Market 2500 and Micro Cap Indices. Gross total return indexes reinvest as much as possible of a company's dividend distributions. The reinvested amount is equal to the total dividend amount distributed to persons residing in the country of the dividend-paying company. Gross total return indexes do not, however, include any tax credits.

The MSCI U.S. REIT Index is a free float-adjusted market capitalization weighted index that is comprised of equity REITs that are included in the MSCI US Investable Market 2500 Index, with the exception of specialty equity REITs that do not generate a majority of their revenue and income from real estate rental and leasing operations. The index represents approximately 85% of the US REIT universe.

The NCREIF ODCE Index: The NCREIF Fund Index - Open-End Diversified Core Equity ("NFI-ODCE") is a capitalization-weighted index of the leveraged performance of open-ended funds which invest in core real estate properties (office, retail, industrial, apartment, hotel, and other property types) on behalf of various institutional investors.

The Private Equity Benchmark is the Russell 3000 Index plus a 3% annual premium (i.e., illiquidity premium).

The Russell 3000 Index measures the performance of the largest 3,000 publicly held US companies based on total market capitalization, which represents approximately 98% of the investable US equity market.

The Russell Microcap Index measures the performance of the microcap segment of the US equity market. Microcap stocks make up less than 3% of the US equity market (by market cap) and consist of the smallest 1,000 securities in the small cap Russell 2000 Index, plus the next 1,000 smallest eligible securities by market cap.

The S&P/LSTA Leveraged Loan Index is a market capitalization-weighted index of the largest broadly syndicated leveraged loans (i.e., floating-rate bank loans to corporations) within the United States.

The Swiss Global Reinsurance Catastrophe Benchmark is a market value-weighted basket of natural catastrophe bonds tracked by Swiss Re Capital Markets, calculated on a weekly basis.

EUTF Benchmark Definitions

Total Fund Benchmark

Time Period	Total Fund Policy Benchmark
Through 2/29/12	25% MSCI U.S. Broad Market Index 15% FTSE All-World ex U.S. Index 35% Bloomberg Barclays Capital U.S. Aggregate Bond Index 15% Bloomberg Barclays Capital US TIPS Index 10% MSCI U.S. REIT Index
3/1/12 – 6/30/14	28% MSCI U.S. Broad Market Index 17% FTSE All-World ex U.S. Index 15% Bloomberg Barclays Capital U.S. Aggregate Bond Index 19% Bloomberg Barclays Capital U.S. TIPS Index 21% MSCI U.S. REIT Index
7/1/14 – 12/31/14	28% MSCI U.S. Broad Market Index 17% FTSE Global All Cap ex U.S. Index 15% Bloomberg Barclays Capital U.S. Aggregate Bond Index 19% Bloomberg Barclays Capital U.S. TIPS Index 21% MSCI U.S. REIT Index
1/1/15 – 5/31/2015	24% MSCI U.S. Broad Market Index 19% FTSE Global All Cap ex U.S. Index 15% Bloomberg Barclays Capital U.S. Aggregate Bond Index 17% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index

Time Period	Total Fund Policy Benchmark
6/1/15 – 10/31/2016	24% Russell 3000 Index 19% MSCI All Country World Index ex USA ND 15% Bloomberg Barclays Capital US Aggregate Bond Index 17% Bloomberg Barclays Capital US TIPS Index 16% MSCI US REIT Index 9% Russell Microcap Index
11/1/2016 – 11/30/2016	24% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 10.5% Bloomberg Barclays Capital U.S. Aggregate Bond Index 4.5% Bloomberg Barclays Capital U.S. Government: Long Index 17% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index
12/1/2016 – 12/31/2016	21% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 10.5% Bloomberg Barclays Capital U.S. Aggregate Bond Index 4.5% Bloomberg Barclays Capital U.S. Government: Long Index 16% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index 3% Custom Global Options Benchmark
1/1/2017 – 1/31/2017	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 10.5% Bloomberg Barclays Capital U.S. Aggregate Bond Index 4.5% Bloomberg Barclays Capital U.S. Government: Long Index 13% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index 7% Custom Global Options Benchmark

Time Period	Total Fund Policy Benchmark
2/1/2017 – 2/28/2017	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 4.5% Bloomberg Barclays Capital U.S. Aggregate Bond Index 4.5% Bloomberg Barclays Capital U.S. Government: Long Index 6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 13% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index 7% Custom Global Options Benchmark
3/1/2017 – 6/30/2017	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 13% Bloomberg Barclays Capital U.S. TIPS Index 16% MSCI U.S. REIT Index 9% Russell Microcap Index 7% Custom Global Options Benchmark
7/1/2017 – 7/31/17	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 13% Bloomberg Barclays Capital U.S. TIPS Index 13% MSCI U.S. REIT Index 3% Private Markets Transition Benchmark* 9% Russell Microcap Index 7% Custom Global Options Benchmark

Time Period	Total Fund Policy Benchmark
8/1/2017 – 9/30/2017	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 11% Bloomberg Barclays Capital U.S. TIPS Index 13% MSCI U.S. REIT Index 3% Private Markets Transition Benchmark* 9% Russell Microcap Index 7% Custom Global Options Benchmark
10/1/2017 – 12/31/2017	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 11% Bloomberg Barclays Capital U.S. TIPS Index 13% MSCI U.S. REIT Index 3% NCREIF ODCE Index Net (quarter lag) 3% Private Markets Transition Benchmark* 9% Russell Microcap Index 7% Custom Global Options Benchmark
4/1/2018 – 6/30/2018	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 10.5% Bloomberg Barclays Capital U.S. TIPS Index 9% MSCI U.S. REIT Index 7% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 0.5% Private Markets Transition Benchmark* 7% Custom Global Options Benchmark

Time Period	Total Fund Policy Benchmark
7/1/2018 – 9/30/2018	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 10.5% Bloomberg Barclays Capital U.S. TIPS Index 8% MSCI U.S. REIT Index 7% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 1.0% Private Markets Transition Benchmark* 0.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark
10/1/2018 – 10/31/2018	20% Russell 3000 Index 20% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8% Bloomberg Barclays Capital U.S. TIPS Index 8% MSCI U.S. REIT Index 8% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 0.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 2.5% Custom Alternative Risk Premia Benchmark

Time Period	Total Fund Policy Benchmark
11/1/2018 – 12/31/2018	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8% Bloomberg Barclays Capital U.S. TIPS Index 7% MSCI U.S. REIT Index 8% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 0.5% Private Markets Transition Benchmark* 0.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark
1/1/2019 – 3/31/2019	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8% Bloomberg Barclays Capital U.S. TIPS Index 7% MSCI U.S. REIT Index 8.5% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 0.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark

Time Period	Total Fund Policy Benchmark
4/1/2019 – 6/30/2019	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8% Bloomberg Barclays Capital U.S. TIPS Index 5% MSCI U.S. REIT Index 8.5% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 0.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 2.0% Private Markets Transition Benchmark*
7/1/2019 – 9/30/2019	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 7% Bloomberg Barclays Capital U.S. Government: Long Index 8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 7% Bloomberg Barclays Capital U.S. TIPS Index 4% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 1% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 1% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
10/1/2019 – 12/31/2019	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 7% Bloomberg Barclays Capital U.S. TIPS Index 4% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 1% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 1% Private Markets Transition Benchmark* 1% Custom Private Credit Index
1/1/2020- 3/31/20	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 6% Bloomberg Barclays Capital U.S. TIPS Index 4% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 9% Russell Microcap Index 2% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 1% Private Markets Transition Benchmark* 1% Custom Private Credit Index

Time Period	Total Fund Policy Benchmark
4/1/2020-6/30/2020	19% Russell 3000 Index 19% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 3% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 8% Russell Microcap Index 2% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 1% Private Markets Transition Benchmark* 2% Custom Private Credit Index
7/1/2020-9/30/2020	18.5% Russell 3000 Index 18.5% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 3% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 8% Russell Microcap Index 3% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3% Custom Private Credit Index 2% Reinsurance Benchmark

Time Period	Total Fund Policy Benchmark
10/1/2020-12/31/2020	18.0% Russell 3000 Index 18.0% MSCI ACWI ex U.S. Index ND 3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 6% Bloomberg Barclays Capital U.S. Government: Long Index 8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 3% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 8% Russell Microcap Index 3% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3% Custom Private Credit Index 2% Reinsurance Benchmark 1% Private Markets Transition Benchmark*
1/1/2021-3/31/2021	21.1% Russell 3000 Index 15.4% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 2% MSCI U.S. REIT Index 10% NCREIF ODCE Index Net (quarter lag) 7.5% Russell Microcap Index 4% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3.5% Custom Private Credit Index 4% Reinsurance Benchmark 0.5% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
4/1/2021-6/30/2021	20.8% Russell 3000 Index 15.2% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 2% MSCI U.S. REIT Index 9.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 7.5% Russell Microcap Index 4.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3.5% Custom Private Credit Index 4% Reinsurance Benchmark 0.5% Private Markets Transition Benchmark*
7/1/2021-9/30/2021	20.3% Russell 3000 Index 14.7% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 2% MSCI U.S. REIT Index 9.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 7.5% Russell Microcap Index 5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3.5% Custom Private Credit Index 4% Reinsurance Benchmark 1% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
10/01/2021-12/31/2021:	20.3% Russell 3000 Index 14.7% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 1.5% MSCI U.S. REIT Index 9.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 7.5% Russell Microcap Index 6% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3.5% Custom Private Credit Index 4% Reinsurance Benchmark 0.5% Private Markets Transition Benchmark*
1/1/2022-3/31/2022	19.1% Russell 3000 Index 13.9% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 1% MSCI U.S. REIT Index 9.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 7.5% Russell Microcap Index 6.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 3.5% Custom Private Credit Index 5% Reinsurance Benchmark 1.5% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
4/1/2022-6/30/2022	17.4% Russell 3000 Index 12.6% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 9.5% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 1% MSCI U.S. REIT Index 9.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 7.5% Russell Microcap Index 7.5% Russell 3000 + 3% (quarter lag) 7% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 4% Custom Private Credit Index 5% Reinsurance Benchmark 2.5% Private Markets Transition Benchmark*
7/1/2022-9/30/2022	17.4% Russell 3000 Index 12.6% MSCI ACWI ex U.S. Index ND 6% Bloomberg Barclays Capital U.S. Government: Long Index 10% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 0.5% MSCI U.S. REIT Index 8.5% NCREIF ODCE Index Net (quarter lag) 0.5% NCREIF ODCE Index net + 2% (quarter lag) 6% Russell Microcap Index 9% Russell 3000 + 3% (quarter lag) 6.5% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 5% Custom Private Credit Index 5% Reinsurance Benchmark 3% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
10/1/2022-12/31/2022	17.4% Russell 3000 Index 12.6% MSCI ACWI ex U.S. Index ND 5.5% Bloomberg Barclays Capital U.S. Government: Long Index 10% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 8% NCREIF ODCE Index Net (quarter lag) 1% NCREIF ODCE Index net + 2% (quarter lag) 6% Russell Microcap Index 9.5% Russell 3000 + 3% (quarter lag) 6.5% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 6% Custom Private Credit Index 1.5% CPI + 3% 5% Reinsurance Benchmark 1% Private Markets Transition Benchmark*
1/1/2023-3/31/2023	17.4% Russell 3000 Index 12.6% MSCI ACWI ex U.S. Index ND 5.5% Bloomberg Barclays Capital U.S. Government: Long Index 10% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 8% NCREIF ODCE Index Net (quarter lag) 1% NCREIF ODCE Index net + 2% (quarter lag) 6% Russell Microcap Index 10% Russell 3000 + 3% (quarter lag) 6.5% Custom Global Options Benchmark 5% Custom Alternative Risk Premia Benchmark 6.5% Custom Private Credit Index 1.5% CPI + 3% 5% Reinsurance Benchmark 0% Private Markets Transition Benchmark*

Time Period	Total Fund Policy Benchmark
4/1/2023-6/30/2023	17.4% Russell 3000 Index 12.6% MSCI ACWI ex U.S. Index ND 5.5% Bloomberg Barclays Capital U.S. Government: Long Index 10% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 8% NCREIF ODCE Index Net (quarter lag) 1% NCREIF ODCE Index net + 2% (quarter lag) 5.5% Russell Microcap Index 10% Russell 3000 + 3% (quarter lag) 6% Custom Global Options Benchmark 2.5% Custom Alternative Risk Premia Benchmark 2.5% ICE BofA 0-1 US Treasury Notes & Bonds 6.5% Custom Private Credit Index 1.5% CPI + 3% 5% Reinsurance Benchmark 0.5% Private Markets Transition Benchmark*
7/1/2023-Present	16.8% Russell 3000 Index 12.2% MSCI ACWI ex U.S. Index ND 5.5% Bloomberg Barclays Capital U.S. Government: Long Index 10% Credit Suisse Managed Futures Liquid Index (15% Volatility) 5% Bloomberg Barclays Capital U.S. TIPS Index 8% NCREIF ODCE Index Net (quarter lag) 1% NCREIF ODCE Index net + 2% (quarter lag) 5% Russell Microcap Index 10.5% Russell 3000 + 3% (quarter lag) 5.5% Custom Global Options Benchmark 2.5% Custom Alternative Risk Premia Benchmark 7% Custom Private Credit Index 1.5% CPI + 3% 5% Reinsurance Benchmark 2% CBOE EurekaHedge Long Volatility Index 2.5% ICE BofA 0-1 US Treasury Notes & Bonds

*Private Markets Transition Benchmark = a static 0% return during the initial funding quarter

Strategic Class Benchmarks

Time Period	Aggressive Growth Class Benchmark
1/1/2015 – 3/31/2018	100% Russell Microcap Index
4/1/2018 – 6/30/2018	94.7% Russell Microcap Index 5.3% Private Markets Transition Benchmark*
7/1/2018 – 3/31/2019	94.7% Russell Microcap Index 5.3% Russell 3000 + 3% (quarter lag)
4/1/2019 – 6/30/2019	90% Russell Microcap Index 5% Russell 3000 + 3% (quarter lag) 5% Private Markets Transition Benchmark*
7/1/2019 – 9/30/2019	90% Russell Microcap Index 10% Russell 3000 + 3% (quarter lag)
10/1/2019 – 12/31/2019	81.8% Russell Microcap Index 9.1% Russell 3000 + 3% (quarter lag) 9.1% Private Markets Transition Benchmark*
1/1/2020 – 6/30/2020	81.8% Russell Microcap Index 18.2% Russell 3000 + 3% (quarter lag)
7/1/2020 – 9/30/2020	72.7% Russell Microcap Index 27.3% Russell 3000 + 3% (quarter lag)
10/1/2020 – 12/31/2020	65.2% Russell Microcap Index 26.1% Russell 3000 + 3% (quarter lag) 8.7% Private Markets Transition Benchmark*
1/1/2021 – 3/31/2021	62.5% Russell Microcap Index 33.3% Russell 3000 + 3% (quarter lag) 4.2% Private Markets Transition Benchmark*
4/1/2021 – 6/30/2021	60.0% Russell Microcap Index 36.0% Russell 3000 + 3% (quarter lag) 4.0% Private Markets Transition Benchmark*
7/1/2021 – 9/30/2021	55.6% Russell Microcap Index 37.0% Russell 3000 + 3% (quarter lag) 7.4% Private Markets Transition Benchmark*

Time Period	Aggressive Growth Class Benchmark
10/01/2021 – 12/31/2021	53.57% Russell Microcap Index 42.86% Russell 3000 + 3% (quarter lag) 3.57% Private Markets Transition Benchmark*
1/1/2022 – 3/31/2022	50.0% Russell Microcap Index 43.33% Russell 3000 + 3% (quarter lag) 6.67% Private Markets Transition Benchmark*
4/1/2022 – 6/30/2022	45.45% Russell Microcap Index 45.45% Russell 3000 + 3% (quarter lag) 9.1% Private Markets Transition Benchmark*
7/1/2022 – 9/30/2022	38.71% Russell Microcap Index 58.06% Russell 3000 + 3% (quarter lag) 3.23% Private Markets Transition Benchmark*
10/1/2022 – 12/31/2022	37.5% Russell Microcap Index 59.375% Russell 3000 + 3% (quarter lag) 3.125% Private Markets Transition Benchmark*
1/1/2023 – 3/31/2023	37.5% Russell Microcap Index 62.5% Russell 3000 + 3% (quarter lag) 0% Private Markets Transition Benchmark*
4/1/2023 – 6/30/2023	34.38% Russell Microcap Index 62.5% Russell 3000 + 3% (quarter lag) 3.12% Private Markets Transition Benchmark*
7/1/2023-Present	32.26% Russell Microcap Index 67.74% Russell 3000 + 3% (quarter lag)

Time Period	Traditional Growth Class Benchmark
6/30/2011 – 2/28/2012	50% MSCI U.S. Broad Market Index 30% FTSE All-World ex U.S. Index 20% MSCI U.S. REIT Index
3/1/2012 – 6/30/2014	42.4% MSCI U.S. Broad Market Index 25.8% FTSE All-World ex U.S. Index 31.8% MSCI U.S. REIT Index
7/1/2014 – 12/31/2014	42.4% MSCI U.S. Broad Market Index 25.8% FTSE Global All Cap ex U.S. Index 31.8% MSCI U.S. REIT Index

Time Period	Traditional Growth Class Benchmark
1/1/2015 – 5/31/2015	40.7% MSCI U.S. Broad Market Index 32.2% FTSE Global All Cap ex U.S. Index 27.1% MSCI U.S. REIT Index
6/1/2015 – 11/30/2016	40.7% Russell 3000 Index 32.2% MSCI ACWI ex U.S. Index 27.1% MSCI U.S. REIT Index
12/1/2016 – 12/31/2016	36.8% Russell 3000 Index 35.1% MSCI ACWI ex U.S. Index 28.1% MSCI U.S. REIT Index
1/1/2017 – 6/30/2017	35.7% Russell 3000 Index 35.7% MSCI ACWI ex U.S. Index 28.6% MSCI U.S. REIT Index
7/1/2017 – 9/30/2017	37.7% Russell 3000 Index 37.7% MSCI ACWI ex U.S. Index 24.6% MSCI U.S. REIT Index
10/1/2017 – 12/31/2017	38.8% Russell 3000 Index 38.8% MSCI ACWI ex U.S. Index 22.4% MSCI U.S. REIT Index
1/1/2018 – 6/30/2018	40.8% Russell 3000 Index 40.8% MSCI ACWI ex U.S. Index 18.4% MSCI U.S. REIT Index
7/1/2018 – 10/31/2018	41.7% Russell 3000 Index 41.7% MSCI ACWI ex U.S. Index 16.6% MSCI U.S. REIT Index
11/1/2018 – 3/31/2019	42.2% Russell 3000 Index 42.2% MSCI ACWI ex U.S. Index 15.6% MSCI U.S. REIT Index
4/1/2019 – 6/30/2019	44.2% Russell 3000 Index 44.2% MSCI ACWI ex U.S. Index 11.6% MSCI U.S. REIT Index
7/1/2019 – 6/30/2020	45.2% Russell 3000 Index 45.2% MSCI ACWI ex U.S. Index 9.5% MSCI U.S. REIT Index

Time Period	Traditional Growth Class Benchmark
7/1/2020 - 9/30/2020	46.3% Russell 3000 Index 46.3% MSCI ACWI ex U.S. Index 7.5% MSCI U.S. REIT Index
10/1/2020 - 12/31/2020	46.2% Russell 3000 Index 46.2% MSCI ACWI ex U.S. Index 7.7% MSCI U.S. REIT Index
1/1/2021 - 3/31/2021	54.8% Russell 3000 Index 40.0% MSCI ACWI ex U.S. Index 5.2% MSCI U.S. REIT Index
4/1/2021 - 6/30/2021	54.7% Russell 3000 Index 40.0% MSCI ACWI ex U.S. Index 5.3% MSCI U.S. REIT Index
7/1/2021 - 9/30/2021	54.9% Russell 3000 Index 39.7% MSCI ACWI ex U.S. Index 5.4% MSCI U.S. REIT Index
10/01/2021 - 12/31/2021	55.6% Russell 3000 Index 40.3% MSCI ACWI ex U.S. Index 4.1% MSCI U.S. REIT Index
1/1/2022 - 3/31/2022	56.18% Russell 3000 Index 40.88% MSCI ACWI ex U.S. Index 2.94% MSCI U.S. REIT Index
4/1/2022 - 6/30/2022	56.13% Russell 3000 Index 40.645% MSCI ACWI ex U.S. Index 3.225% MSCI U.S. REIT Index
7/1/2022 - 9/30/2022	57.05% Russell 3000 Index 41.31% MSCI ACWI ex U.S. Index 1.64% MSCI U.S. REIT Index
10/1/2022 - 6/30/2023	58% Russell 3000 Index 42% MSCI ACWI ex U.S. Index 4.1% MSCI U.S. REIT Index
7/1/2023- Present	57.93% Russell 3000 Index 42.07% MSCI ACWI ex U.S. Index

Time Period	Stabilized Growth Class Benchmark
12/1/2016 – 6/30/2017	100.0% Custom Global Options Benchmark
7/1/2017 – 9/30/2017	70.0% Custom Global Options Benchmark 30.0% Private Markets Transition Benchmark*
10/1/2017 – 12/31/2017	60.9% Custom Global Options Benchmark 13.0% Private Markets Transition Benchmark* 26.1% NCREIF ODCE Index Net (quarter lag)
1/1/2018 – 3/31/2018	50.0% Custom Global Options Benchmark 17.9% Private Markets Transition Benchmark* 32.1% NCREIF ODCE Index Net (quarter lag)
4/1/2018 – 6/30/2018	50.0% Custom Global Options Benchmark 50.0% NCREIF ODCE Index Net (quarter lag)
7/1/2018 – 9/30/2018	46.7% Custom Global Options Benchmark 6.6% Private Markets Transition Benchmark* 46.7% NCREIF ODCE Index Net (quarter lag)
10/1/2018 – 10/31/2018	46.7% Custom Global Options Benchmark 53.3% NCREIF ODCE Index Net (quarter lag)
11/1/2018 – 12/31/2018	45.2% Custom Global Options Benchmark 3.2% Private Markets Transition Benchmark* 51.6% NCREIF ODCE Index Net (quarter lag)
1/1/2019 – 3/31/2019	45.2% Custom Global Options Benchmark 54.8% NCREIF ODCE Index Net (quarter lag)
4/1/2019 – 6/30/2019	41.2% Custom Global Options Benchmark 8.8% Private Markets Transition Benchmark* 50.0% NCREIF ODCE Index Net (quarter lag)
7/1/2019 – 9/30/2019	38.9% Custom Global Options Benchmark 5.6% Private Markets Transition Benchmark* 55.6% NCREIF ODCE Index Net (quarter lag)
10/1/2019 – 12/31/2019	38.9% Custom Global Options Benchmark 5.6% Custom Private Credit Benchmark 55.6% NCREIF ODCE Index Net (quarter lag)
1/1/2020 – 6/30/2020	36.8% Custom Global Options Benchmark 5.26% Custom Private Credit Benchmark 5.3% Private Markets Transition Benchmark* 52.6% NCREIF ODCE Index Net (quarter lag)

Time Period	Stabilized Growth Class Benchmark
7/1/2020 - 9/30/2020	35.0% Custom Global Options Benchmark 15.0% Custom Private Credit Benchmark 50.0% NCREIF ODCE Index Net (quarter lag)
10/1/2020 - 12/31/2020	34.2% Custom Global Options Benchmark 14.6% Custom Private Credit Benchmark 2.4% Private Markets Transition Benchmark* 48.8% NCREIF ODCE Index Net (quarter lag)
1/1/2021 - 3/31/2021	34.2% Custom Global Options Benchmark 17.1% Custom Private Credit Benchmark 48.8% NCREIF ODCE Index Net (quarter lag)
4/1/2021 - 12/31/2021	34.2% Custom Global Options Benchmark 17.1% Custom Private Credit Benchmark 46.3% NCREIF ODCE Index Net (quarter lag) 2.4% NCREIF ODCE Index Net + 2% (quarter lag)
1/1/2022 - 3/31/2022	33.3% Custom Global Options Benchmark 16.7% Custom Private Credit Benchmark 45.2% NCREIF ODCE Index Net (quarter lag) 2.4% NCREIF ODCE Index Net + 2% (quarter lag) 2.4% Private Markets Transition Benchmark
4/1/2022 - 6/30/2022	31.8% Custom Global Options Benchmark 18.2% Custom Private Credit Benchmark 43.2% NCREIF ODCE Index Net (quarter lag) 2.3% NCREIF ODCE Index Net + 2% (quarter lag) 4.6% Private Markets Transition Benchmark
7/1/2022 - 9/30/2022	28.3% Custom Global Options Benchmark 21.7% Custom Private Credit Benchmark 37% NCREIF ODCE Index Net (quarter lag) 2.2% NCREIF ODCE Index Net + 2% (quarter lag) 6.5% Private Markets Transition Benchmark
10/1/2022 - 12/31/2022	27.7% Custom Global Options Benchmark 25.5% Custom Private Credit Benchmark 34% NCREIF ODCE Index Net (quarter lag) 4.3% NCREIF ODCE Index Net + 2% (quarter lag) 6.4% Consumer Price Index + 3%

Time Period	Stabilized Growth Class Benchmark
1/1/2023 – 3/31/2023	27.7% Custom Global Options Benchmark 27.7% Custom Private Credit Benchmark 34% NCREIF ODCE Index Net (quarter lag) 4.3% NCREIF ODCE Index Net + 2% (quarter lag) 6.4% Consumer Price Index + 3%
4/1/2023 – 6/30/2023	25.53% Custom Global Options Benchmark 27.66% Custom Private Credit Benchmark 34.04% NCREIF ODCE Index Net (quarter lag) 4.26% NCREIF ODCE Index Net + 2% (quarter lag) 2.13% Private Markets Transition Benchmark 6.38% Consumer Price Index + 3%
7/1/2023 – Present	23.91% Custom Global Options Benchmark 30.43% Custom Private Credit Benchmark 34.78% NCREIF ODCE Index Net (quarter lag) 4.35% NCREIF ODCE Index Net + 2% (quarter lag) 6.52% Consumer Price Index + 3%

Time Period	Diversifying Class Benchmark
6/30/2011 – 2/28/2012	70.0% Bloomberg Barclays Capital U.S. Aggregate Bond Index 30.0% Bloomberg Barclays Capital U.S. TIPS Index
3/1/2012 – 12/31/2014	44.1% Bloomberg Barclays Capital U.S. Aggregate Bond Index 55.9% Bloomberg Barclays Capital U.S. TIPS Index
1/1/2015 – 10/31/2016	46.9% Bloomberg Barclays Capital U.S. Aggregate Bond Index 53.1% Bloomberg Barclays Capital U.S. TIPS Index
11/1/2016 – 11/30/2016	32.8% Bloomberg Barclays Capital U.S. Aggregate Bond Index 53.1% Bloomberg Barclays Capital U.S. TIPS Index 14.1% Bloomberg Barclays Capital U.S. Government Long Index
12/1/2016 – 12/31/2016	33.9% Bloomberg Barclays Capital U.S. Aggregate Bond Index 51.6% Bloomberg Barclays Capital U.S. TIPS Index 14.5% Bloomberg Barclays Capital U.S. Government Long Index
1/1/2017 – 1/31/2017	37.5% Bloomberg Barclays Capital U.S. Aggregate Bond Index 46.4% Bloomberg Barclays Capital U.S. TIPS Index 16.1% Bloomberg Barclays Capital U.S. Government Long Index
2/1/2017 – 2/28/2017	16.1% Bloomberg Barclays Capital U.S. Aggregate Bond Index 46.4% Bloomberg Barclays Capital U.S. TIPS Index 16.1% Bloomberg Barclays Capital U.S. Government Long Index 21.4% Credit Suisse Managed Futures Liquid Index (15% Volatility)
3/1/2017 – 7/31/2017	10.7% Bloomberg Barclays Capital U.S. Aggregate Bond Index 46.5% Bloomberg Barclays Capital U.S. TIPS Index 21.4% Bloomberg Barclays Capital U.S. Government Long Index 21.4% Credit Suisse Managed Futures Liquid Index (15% Volatility)
8/1/2017 – 3/31/2018	10.7% Bloomberg Barclays Capital U.S. Aggregate Bond Index 39.3% Bloomberg Barclays Capital U.S. TIPS Index 25.0% Bloomberg Barclays Capital U.S. Government Long Index 25.0% Credit Suisse Managed Futures Liquid Index (15% Volatility)
4/1/2018 – 9/30/2018	10.9% Bloomberg Barclays Capital U.S. Aggregate Bond Index 38.1% Bloomberg Barclays Capital U.S. TIPS Index 25.5% Bloomberg Barclays Capital U.S. Government Long Index 25.5% Credit Suisse Managed Futures Liquid Index (15% Volatility)

Time Period	Diversifying Class Benchmark
10/1/2018 – 10/31/2018	10.9% Bloomberg Barclays Capital U.S. Aggregate Bond Index 29.1% Bloomberg Barclays Capital U.S. TIPS Index 25.5% Bloomberg Barclays Capital U.S. Government Long Index 25.5% Credit Suisse Managed Futures Liquid Index (15% Volatility) 9.0% ICE BofA Merrill Lynch 3-month T-Bills + 2%
11/1/2018 – 6/30/2019	10.0% Bloomberg Barclays Capital U.S. Aggregate Bond Index 26.7% Bloomberg Barclays Capital U.S. TIPS Index 23.3% Bloomberg Barclays Capital U.S. Government Long Index 23.3% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.7% ICE BofA Merrill Lynch 3-month T-Bills + 2%
7/1/2019 – 9/30/2019	10.0% Bloomberg Barclays Capital U.S. Aggregate Bond Index 23.3% Bloomberg Barclays Capital U.S. TIPS Index 23.3% Bloomberg Barclays Capital U.S. Government Long Index 26.7% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.7% ICE BofA Merrill Lynch 3-month T-Bills + 2%
10/1/2019 – 12/31/2019	10.3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 24.1% Bloomberg Barclays Capital U.S. TIPS Index 20.7% Bloomberg Barclays Capital U.S. Government Long Index 27.6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 17.2% ICE BofA Merrill Lynch 3-month T-Bills + 2%
1/1/2020- 6/30/2020	10.7% Bloomberg Barclays Capital U.S. Aggregate Bond Index 21.4% Bloomberg Barclays Capital U.S. TIPS Index 21.4% Bloomberg Barclays Capital U.S. Government Long Index 28.6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 17.9% ICE BofA Merrill Lynch 3-month T-Bills + 2%
7/1/2020-12/31/2020	10.3% Bloomberg Barclays Capital U.S. Aggregate Bond Index 17.2% Bloomberg Barclays Capital U.S. TIPS Index 20.7% Bloomberg Barclays Capital U.S. Government Long Index 27.6% Credit Suisse Managed Futures Liquid Index (15% Volatility) 17.2% ICE BofA Merrill Lynch 3-month T-Bills + 2% 6.9% Swiss RE Global Cat Bond Index

Time Period	Diversifying Class Benchmark
1/1/2021- 12/31/2021	17.2% Bloomberg Barclays Capital U.S. TIPS Index 20.7% Bloomberg Barclays Capital U.S. Government Long Index 31.0% Credit Suisse Managed Futures Liquid Index (15% Volatility) 17.2% ICE BofA Merrill Lynch 3-month T-Bills + 2% 13.8% Swiss RE Global Cat Bond Index
1/1/2022 – 3/31/2022	16.7% Bloomberg Barclays Capital U.S. TIPS Index 20% Bloomberg Barclays Capital U.S. Government Long Index 30% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.7% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.7% Swiss RE Global Cat Bond Index
4/1/2022 – 9/30/2022	16.4% Bloomberg Barclays Capital U.S. TIPS Index 19.7% Bloomberg Barclays Capital U.S. Government Long Index 31.2% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.4% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.4% Swiss RE Global Cat Bond Index
10/1/2022 – 12/31/2022	16.1% Bloomberg Barclays Capital U.S. TIPS Index 19.4% Bloomberg Barclays Capital U.S. Government Long Index 32.3% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.1% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.1% Swiss RE Global Cat Bond Index
1/1/2023 – 3/31/2023	16.4% Bloomberg Barclays Capital U.S. TIPS Index 18% Bloomberg Barclays Capital U.S. Government Long Index 32.8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 16.4% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.4% Swiss RE Global Cat Bond Index
4/1/2023 – 6/30/2023	16.4% Bloomberg Barclays Capital U.S. TIPS Index 18% Bloomberg Barclays Capital U.S. Government Long Index 32.8% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8.2% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.4% Swiss RE Global Cat Bond Index 8.2% ICE BofA 0-1 US Treasury Notes & Bonds

Time Period	Diversifying Class Benchmark
7/1/2023 – Present	16.67% Bloomberg Barclays Capital U.S. TIPS Index 18.33% Bloomberg Barclays Capital U.S. Government Long Index 33.33% Credit Suisse Managed Futures Liquid Index (15% Volatility) 8.33% ICE BofA Merrill Lynch 3-month T-Bills + 2% 16.67% Swiss RE Global Cat Bond Index 6.67% CBOE EurekaHedge Long Volatility Index

*Private Markets Transition Benchmark = a static 0% return during the initial funding quarter

Custom Strategy/Mandate Benchmarks

Time Period	Custom Global Options Benchmark
12/1/2016 –Current	50.0% CBOE S&P 500 PutWrite Index (PUT) 25.0% MSCI ACWI Ex. U.S. Index ND 25.0% ICE BofA Merrill Lynch 3-month T-Bill Index

Time Period	Custom Alternative Risk Premia Benchmark
10/1/2018 – Current	100% ICE BofA Merrill Lynch 3-month T-Bills + 2%

Time Period	Custom Private Credit Benchmark
10/1/2019 – Current	S&P/LSTA Leveraged Loan Index + 2% (quarter lag)

Time Period	Custom Reinsurance Benchmark
7/1/2020 – Current	Swiss RE Global Catastrophe Index

Description of Funds/Managers

Northern Trust Common Russell 3000 Index Fund - Lending

Objective: The primary objective of the Northern Trust Russell 3000 Equity Index Fund is to approximate the risk and return characteristics of the Russell 3000 Index. This Index is commonly used to represent the broad U.S. equity market.

Strategy: To achieve its objective, the Fund employs a replication technique which generally seeks to hold each index constituent in its proportional index weight. The Fund may make limited use of futures and/or options for the purpose of maintaining equity exposure. This Fund may participate in securities lending.

Northern Trust Common ACWI Ex-US Index Fund - Lending

Objective: The primary objective of the Northern Trust All Country World ex-US Equity Index Fund is to approximate the risk and return characteristics of the MSCI All Country World ex-US (MSCI ACWI ex-US) Index. This Index is commonly used to represent the large and medium cap segment of the non-U.S. equity developed and emerging markets.

Strategy: To achieve its objective, the Fund employs a replication technique which generally seeks to hold each index constituent in its proportional index weight. The Fund may make limited use of futures and/or options for the purpose of maintaining equity exposure. This Fund may participate in securities lending.

BlackRock Inflation Linked Bond Fund

Objective: Seeks to approximate the risk and return characteristics of the Bloomberg US TIPS Index..

Strategy: Invests at least 80% of its assets in inflation-indexed bonds of varying maturities issued by U.S. and non-U.S. governments, their agencies or instrumentalities, and U.S. and non-U.S. corporations.

Vanguard Short-Term Corporate Bond Index Fund (VSTBX)

Objective: Seeks to provide current income with high credit quality while tracking the performance of a market-weighted corporate bond index with a short-term dollar-weighted average maturity.

Strategy: The Fund employs a passively managed and is diversified across the short-term investment-grade US corporate bond market. The Fund invests by sampling the index, meaning that it holds a range of securities that, in aggregate, approximates the full index in terms of key risk factors

and other characteristics. All of the Fund's investments will be selected through the sampling process and at least 80% of the Fund's assets will be invested in bonds included in the index. The Fund maintains a maturity, yield, and duration characteristics that are in-line with the benchmark.

[Acuitas Investments \(Separate Account\)](#)

Acuitas employs a multi-manager platform for investments in the microcap segment. The EUTF portfolio currently consists of 4 managers (Monarch, Signia, Ranger, and Quantum), with a mix of core, value, and growth strategies that ultimately lead to an overall core style (100-200 stocks). The team focuses on manager research, and in particular, seeks managers that have lower assets and are at the beginning of their performance cycle. Their process focuses on the underlying managers' discipline, preferred characteristics, trading style, and consistency. The team has real-time access to all underlying portfolio and is constantly monitoring positions for risk/return characteristics and factor exposures. The team proactively adjusts manager weights in order to avoid unintended bets and deviations. The strategy directly involves one portfolio manager and three analysts, but each underlying strategy involves additional teams.

[Gateway \(Separate Account\)](#)

Gateway manages a global equity-oriented options-based portfolio that provides exposure to global equities and the volatility risk premium. The strategy is solely cash-secured put writing, coupled with discretionary rebalancing as the markets/volatility change. Gateway sells a diversified basket of put options that are roughly at-the-money on average with a weighted average time-to-expiration of 30-50 days.

[Geode \(Separate Account\)](#)

Geode manages a global equity-oriented options-based portfolio that provides exposure to global equities and the volatility risk premium. The strategy can be considered half covered calls and half cash-secured put-writing. Geode sells put and call options on seven global indices, with either equities (calls) or cash (puts) serving as the collateral. The team sells options that are slightly out-of-the-money and diversifies the portfolio across maturities, with approximately 25% of the options positions expiring each week.

[Sun Life \(Separate Account\)](#)

Ryan Labs manages a long duration U.S. Treasury-based mandate. This is an enhanced strategy that is benchmarked to the Bloomberg Barclays Capital U.S. Government: Long Index. As an enhanced index strategy, Ryan Labs seeks to add value over time by allocating a larger portion of the portfolio to U.S. Agency bonds when their yields versus U.S. Treasuries (i.e., yield spread) is materially attractive. This is the only active management decision that Ryan Labs makes, as they seek to stay in-line with the benchmark on a duration basis and do not hold any sectors (e.g., credit) outside of the benchmark.

Lombard Odier (Commingled Fund)

Lombard Odier manages an Alternative Risk Premia mandate that targets a 10% long-term volatility level. The proposed strategy seeks to harvest value, carry, and momentum risk premia/factors across a diverse set of assets (e.g., fixed income, currencies, and commodities). The strategy does not gain exposure to each of these risk premia across every asset type but rather focuses on those risk premia within an asset class that are the most robust. Additionally, the strategy contains a single-stock-oriented portfolio that harvests value, momentum, quality, defensive, and ESG-related factors, among others, across the developed world.

Kepos (Commingled Fund)

Kepos manages an Alternative Risk Premia mandate that targets a 10% long-term volatility level. The proposed strategy seeks to harvest value, carry, and momentum across broad asset classes (e.g., equity, fixed income, currencies, and commodities). Additionally, Kepos incorporates a single-stock-oriented portfolio that harvests similar risk premia across developed public equities. Kepos generally utilizes a risk-balanced approach across the risk premia that they gain exposure to within the portfolio.

AlphaSimplex Group (Commingled Fund)

AlphaSimplex manages a systematic trend following mandate that targets a 15% long-term volatility level. The strategy varies its volatility target in the range of 9%-19% at any given time. AlphaSimplex utilizes short, medium, and long-term trends and incorporates models that adapt the risk budget according to the relative strength of underlying signals. The strategy primarily utilizes moving averages and regression-based approaches for measuring trends, but machine learning methods are also incorporated in order to modify trend horizon confidence levels. The strategy trades in more than 70 markets/assets across both futures and forwards and emphasizes diversification across the four major market segments (equities, commodities, currencies, and fixed income).

Mount Lucas Management (Separate Account)

Utilizing 3-month and 12-month moving averages of prices, Mount Lucas will buy (go long) a position if its price is above the relevant moving average and will sell (go short) a position if its price is below the relevant moving average. The strategy utilizes 28 futures markets across global fixed income, commodities, currencies, and stock indices. Each of these four market segments are approximately equally risk-weighted based on their historical volatilities. Mount Lucas does not target a specific volatility level but rather utilizes a notional exposure target of 3.5X (note: this target will vary at times if the 3-month and 12-month signals for a specific futures instrument are in opposite directions and thus cancel out). This methodology is expected to achieve a long-term average volatility near 15%.

Pillar Enso (Commingled Fund)

This manager invests in various forms of insurance-linked securities (e.g., catastrophe bonds, collateralized reinsurance, etc.) where returns/premiums are generally sourced from natural catastrophe insurance policies or derivatives thereof.

Nephila (Commingled Fund)

This manager invests in various forms of insurance-linked securities (e.g., catastrophe bonds, collateralized reinsurance, etc.) where returns/premiums are generally sourced from natural catastrophe insurance policies or derivatives thereof.

Longtail Alpha (Separate Account)

This manager seeks to provide diversification, and specifically protection, relative to the portfolio's public equity holdings. In particular, this manager invests in put options that are roughly 20-30% out-of-the-money with maturities of approximately 0-3 months. These instruments are expected to provide convex, positive returns during periods of material equity market volatility and/or drawdowns. These exposures are refreshed on a recurring basis subject to an annual premium/cost budget.

Capstone (Separate Account)

This manager provides a protection-oriented portfolio that consists of a diverse set of derivative positions that exhibit a "long volatility" bias. More specifically, this manager invests in a dynamic portfolio of positions with the goal of providing convex, positive returns during larger equity market drawdowns that occur over relatively compressed time periods. The portfolio seeks to minimize the cost of the insurance-like positions by rotating into the cheapest hedges on a continual basis.

Performance Attribution Glossary

Performance Attribution - The process of comparing a portfolio's performance with its benchmark, and identify and quantify sources of differential returns (also called active returns).

Differential Returns / Active Returns / Value Added – The difference between the return on a portfolio and the return on the benchmark.

Impact on Return

Attribution Segment	Definition	Formula	Where:
Weighting (also called allocation, sector allocation, or pure sector allocation)	The effects of portfolio manager decisions to over/underweight each sector	Allocation $(w_i - W_i) \times (b_i - b)$	w_i = portfolio segment weight W_i = benchmark segment weight b_i = benchmark segment return b = total benchmark return
Selection (also called within-sector selection)	The effects of portfolio manager decision to buy specific securities	Selection $(r_i - b_i) \times W_i$	r_i = portfolio segment return b_i = benchmark segment return W_i = benchmark segment weight
Interaction (also called allocation/selection interaction)	The effects of portfolio managers decisions to security selection can inadvertently cause sector over/underweighting.	Interaction $(r_i - b_i) \times (w_i - W_i)$	r_i = portfolio segment return b_i = benchmark segment return w_i = portfolio segment weight W_i = benchmark segment weight

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

MEMORANDUM

TO: Hawaii Employer-Union Health Benefits Trust Fund ("EUTF")
FROM: Colin Bebee, CFA; Stephanie Sorg, CAIA
Meketa Investment Group ("Meketa")
DATE: March 5, 2024
RE: AlphaSimplex Group ("AlphaSimplex") – Watch Status Update

Recommendation and Summary

Meketa recommends that the EUTF remove AlphaSimplex from Watch Status. AlphaSimplex manages approximately \$443 million (\$360.5 million OPEB Trust and \$82.7 million EUTF Trust) as of 12/31/23 in an active Systematic Trend Following strategy within the EUTF's Diversifying Strategies class. The EUTF is invested in the strategy via a commingled fund (LP).

On October 19, 2022, AlphaSimplex notified Meketa that the firm would be acquired by Virtus Partners, a publicly traded asset manager that operates a multi-boutique structure. At the time of the announcement, AlphaSimplex was wholly owned by Natixis, a large French financial services firm. The transaction was completed in April 2023 and AlphaSimplex is now wholly owned by Virtus. Meketa recommended that the EUTF place AlphaSimplex on watch at the Investment Committee meeting on November 16, 2022, and the fund was placed on watch effective November 1, 2022. Meketa monitored the transaction and AlphaSimplex's operations throughout 2023 and believes the new ownership arrangement with Virtus had no material impact on the team nor strategy at AlphaSimplex.

Overview

As highlighted above, AlphaSimplex was acquired by Virtus Partners, a firm with roughly \$172 billion in assets under management in a multi-boutique structure. Virtus, via affiliated managers and select sub-advisors, offers a diverse set of strategies across asset classes and market segments. This was the second transition in ownership, as AlphaSimplex was previously acquired by Natixis, a French financial services firm, in 2007. Meketa has monitored the transition process and as previously anticipated, AlphaSimplex retained autonomy over its branding, staff, and investment process/philosophy. Additionally, the affiliation with Virtus has already shown to be beneficial as the Virtus network has been a resource for AlphaSimplex across multiple facets including operations, marketing, and recruitment.

The original placement on Watch Status was precautionary due to the change in ownership on a broad basis, not necessarily due to concerns regarding the transaction specifically. After monitoring the transition of ownership and AlphaSimplex as a whole throughout 2023, Meketa's belief is that there were no material changes to AlphaSimplex's team, investment philosophy/strategy, or critical operations.



AlphaSimplex Group
Systematic Trend Following Watch Status Recommendation

Product and Organization Review Summary

Reason for Review/Update		Investment process (client portfolio)	Investment Team	Performance Track Record	Team/ Firm Culture
<input type="checkbox"/> Failed Performance Criteria					
<input checked="" type="checkbox"/> Organizational Changes	Level of Concern^				
<input type="checkbox"/> Scheduled Watch Update					
Product					
Key people changes	None				
Changes to team structure/individual roles	None				
Product client gain/losses	None				
Changes to the investment process	None				
Personnel turnover	None				
Organization					
Ownership changes	Low				X
Key people changes	None				
Firm wide client gain/losses	None				

^ None, low, or high

Review and Recommendation History

Date	MIG Findings and Recommendation	Board
05/2019	Meketa recommends Watch Status due to organizational changes (portfolio manager departure). Monitor and review over the next 12-18 months.	Approved
08/2020	Meketa recommends removal from Watch Status.	Approved
11/2022	Meketa recommends Watch Status due to organizational changes (new ownership).	Approved
3/2024	Meketa recommends removal from Watch Status	Pending

**Performance Results¹, Net of Fees**

Performance	Performance as of 12/31/23 ²					Calendar Years (12/31)			
	Qtr	1 Yr	3 Yrs	5 Yrs	Inception (2/1/2017)	2020	2021	2022	2023
AlphaSimplex	-8.4	-12.5	10.7	12.0	7.4	17.4	5.3	47.0	-12.5
Credit Suisse Managed Futures 15% Vol Index	-3.5	-10.7	10.0	4.6	2.2	2.1	10.5	34.7	-10.7
Difference	-4.9	1.8	0.7	7.4	5.1	15.3	5.2	12.3	-1.8

¹ Annualized for periods greater than one year.

² Source: Northern Trust.

Firm Summary

AlphaSimplex, based in Boston, MA, is, as highlighted in this memorandum, an indirect, wholly owned subsidiary of Virtus Partners, with the transition of ownership having been completed in April 2023. AlphaSimplex was founded in 1999 by Dr. Andrew Lo and was purchased by Natixis in 2007. At the time of the purchase, AlphaSimplex was only managing roughly \$300 million. As of December 2023, AlphaSimplex has approximately \$7.1 billion in assets under management (\$6.8 billion in Systematic Trend Following). Over the years, AlphaSimplex has maintained a small lineup of strategies (~two to four), and Systematic Trend Following has always been the foundation and core of the firm's DNA. All of the firm's strategies utilize systematic/quantitative approaches that are developed by their deep bench of researchers and portfolio managers. All of the investment professionals have extremely strong academic and/or industry backgrounds. The firm continues to recruit from (and work with) the top Boston colleges (e.g., MIT, Harvard, etc.) and heavily invests in their human capital. AlphaSimplex consisted of ten individuals when it was founded in 1999, and the firm now employs 44 employees including 18 investment professionals.

Strategy Summary

AlphaSimplex's Systematic Trend Following strategy seeks to take advantage of trends (time series momentum) across the global capital markets. The strategy trades over 90 futures/forwards contracts across equity indices, interest rates/bonds, commodities, and currencies. The strategy consists of three approaches/sleeves: Basic Multi-Trend Approach, Specialized Short-Horizon Approach, and Adaptive Approach. The Basic Multi-Trend Approach is focused on traditional methods/models with a bias towards medium- and longer-term trends. This is the core trend following sleeve. The Specialized Short-Horizon Approach is focused on increasing the reactivity of the strategy and it places a strong emphasis on confirming evidence in order to avoid whipsaws. The Adaptive Approach seeks to allocate risk across different time horizon models based on output from machine learning processes. These processes focus on which time horizon model is best given a specific market environment/event, but not necessarily whether to be long or short. The final portfolio receives roughly 40% of the risk from long-term signals, 40% from short-term signals, and 20% from medium-term signals over a full-cycle. The trends that they follow vary from roughly five days to one year in length.

Callan

March 5, 2024



**Hawaii Employer-Union Health
Benefits Trust Fund (EUTF)**

Real Assets

Annual Performance Review

Avery Robinson

Senior Vice President

Jan Mende

Senior Vice President

Aaron Quach

Vice President

Hawaii EUTF Real Assets Portfolio Review

- Real Assets Market Overview
- Real Assets Annual Performance Review and 2024 Expected Activity

Callan

Market Overview

U.S. Private Real Estate Performance: 3Q23

Income returns remain positive but appreciation returns negative once again

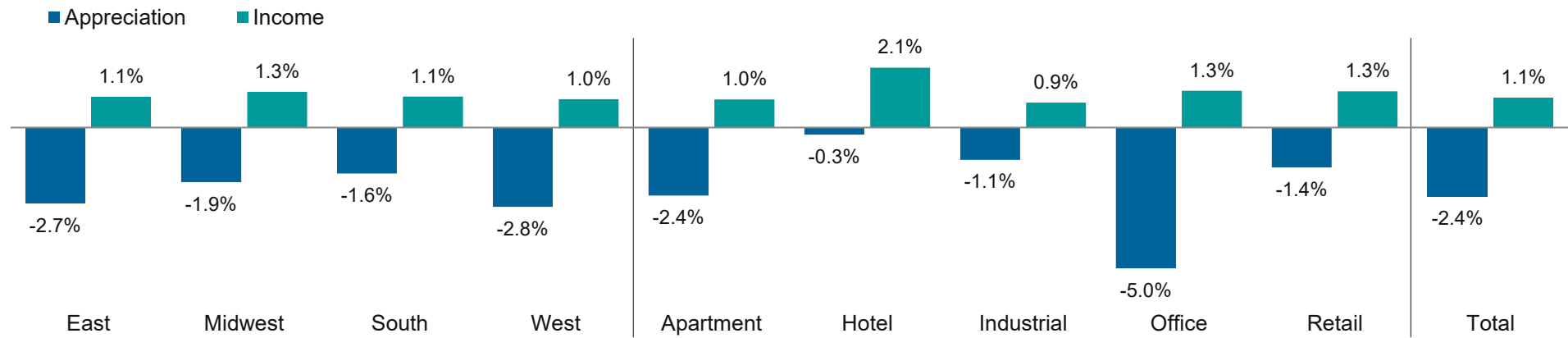
Valuations reflect higher interest rates

- Income returns were positive across sectors and regions.
- All property sectors and regions experienced negative appreciation.
- Valuations are reflective of higher interest rates, which have put upward pressure on capitalization rate and discount rate assumptions.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	-2.1%	-12.9%	6.2%	4.7%	7.2%
Income	0.7%	2.0%	2.8%	3.0%	3.3%
Appreciation	-2.8%	-15.2%	3.3%	1.7%	3.8%
NCREIF Property Index	-1.4%	-8.4%	6.0%	5.3%	7.4%
Income	1.1%	4.1%	4.1%	4.2%	4.6%
Appreciation	-2.4%	-12.1%	1.9%	1.0%	2.7%

Returns are geometrically linked

NCREIF Property Index Quarterly Returns by Region and Property Type



Source: NCREIF, ODCE return is net

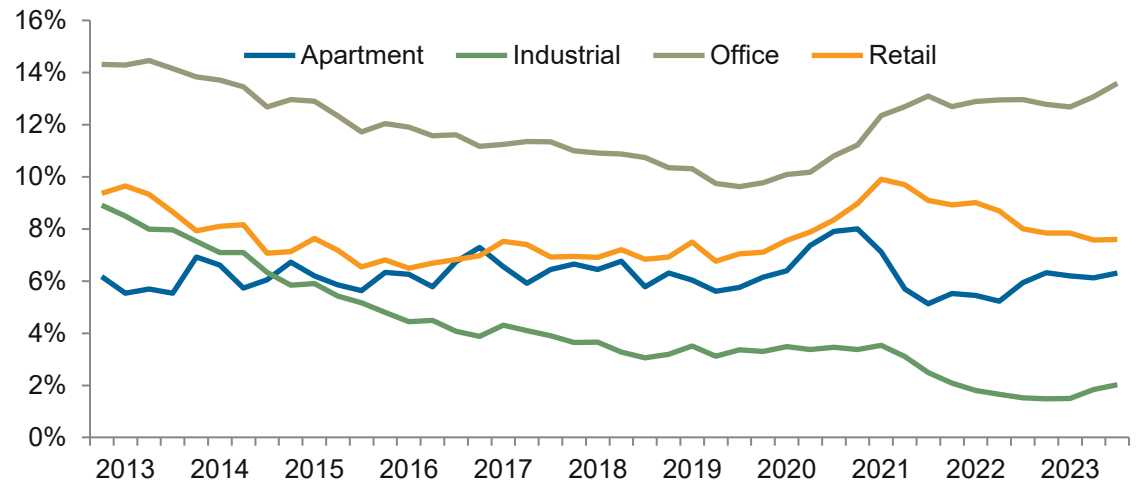
U.S. Private Real Estate Market Trends

Vacancy rates and NOI growth remain mixed

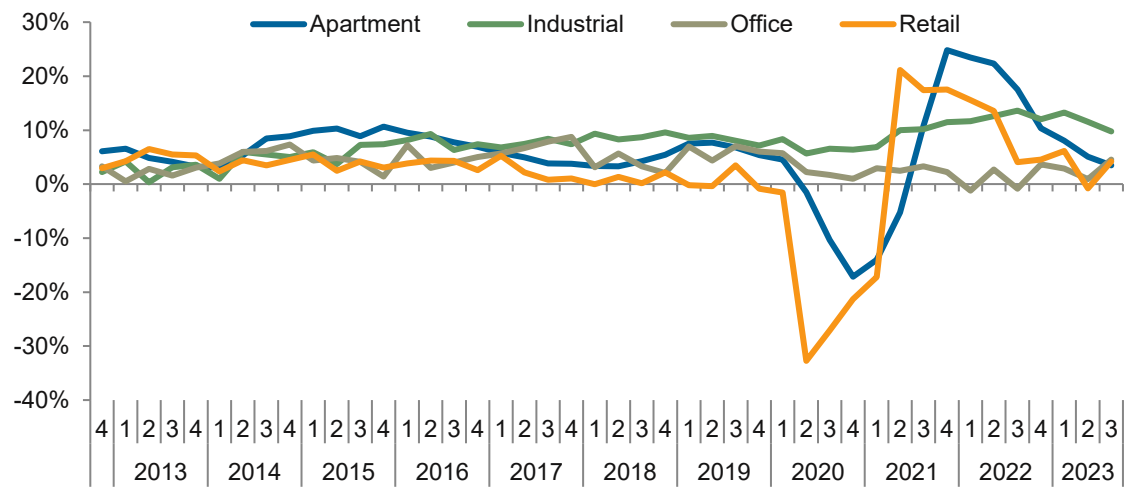
Mixed vacancy and NOI growth results

- Vacancy rates increased slightly in Apartment, Industrial, Office, and Retail.
- Vacancy rates are above long-term averages for Apartment and Office, but below long-term averages for Industrial and Retail.
- Net operating income growth decreased slightly in Apartment and Industrial, while rebounding a bit in Office and Retail.
- Overall, fundamentals remain relatively strong in Apartment, Industrial, Grocery Anchored Retail, and alternative sectors.

Vacancy by Property Type



Rolling 4-Quarter NOI Growth by Property Type

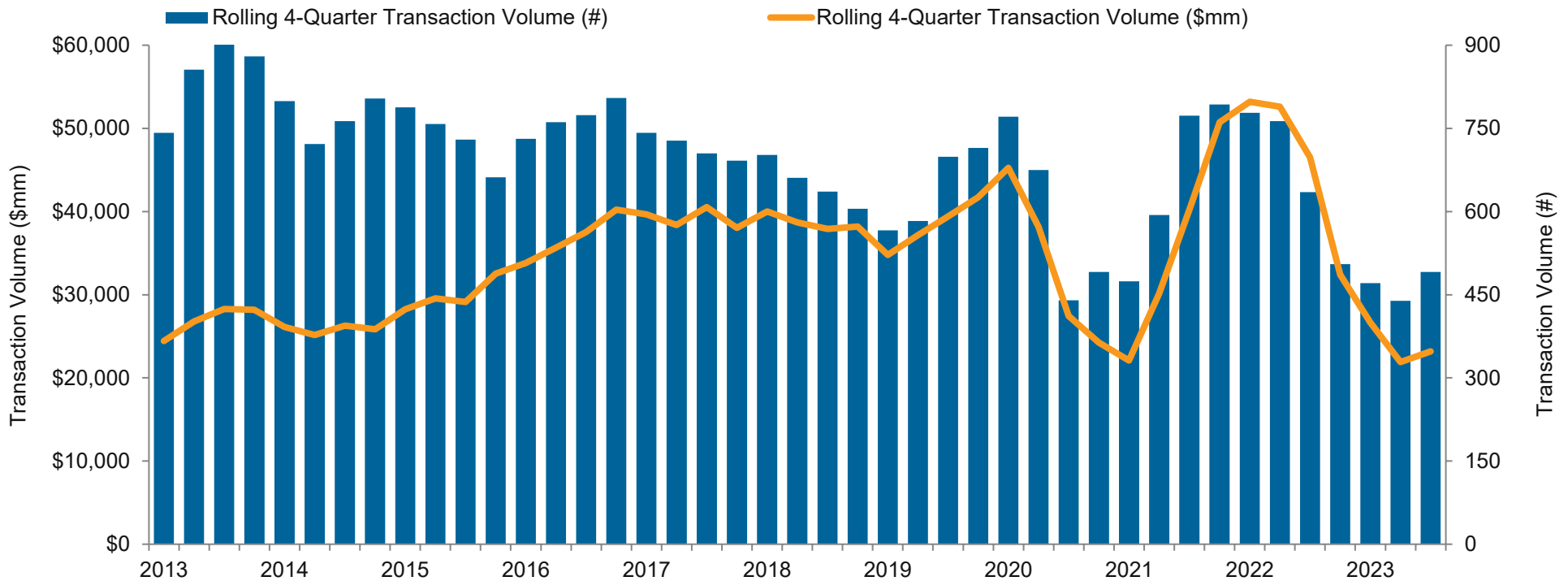


Source: NCREIF

U.S. Private Real Estate Market Trends

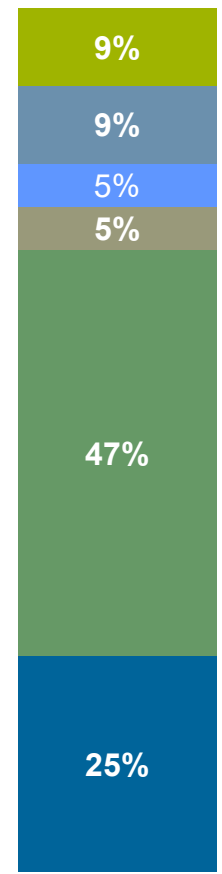
Pricing and transaction volumes decline through 3Q23

NCREIF Rolling 4-Quarter Transaction Totals Through 9/30/23



- Transaction volume continues to flatten on a rolling four-quarter basis and remains well below five-year averages.
- In 3Q23 transaction volume increased slightly on a quarter-over-quarter basis; however, transaction volume remains significantly lower compared to 3Q22.
- The rise in interest rates is the driving force behind the slowdown in transactions. A bid-ask spread remains and price discovery continues to occur among market participants.

Source: NCREIF



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Annual Performance Review

Hawaii EUTF Real Assets Allocation – September 30, 2023

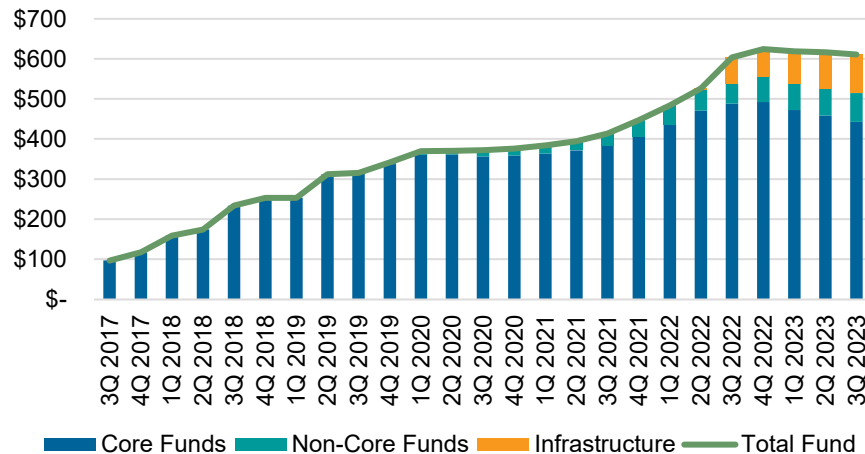
Core real estate anchors the program, unfunded commitments in non-core real estate & infrastructure

EUTF has a 12% Real Assets target (adopted June 2022).

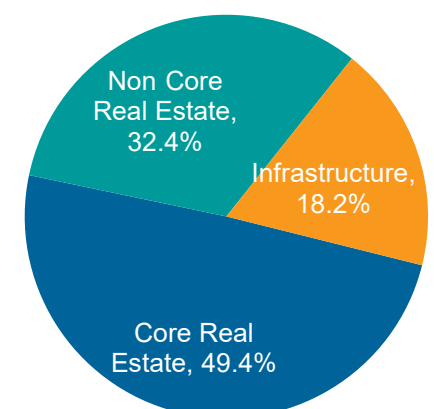
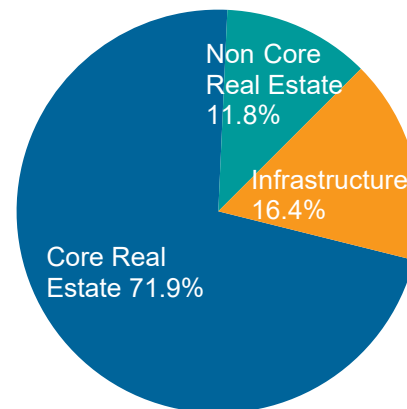
- Within Real Assets, there are three sub-categories, with target allocations as follows:
- 50% Core Real Estate
- 25% Non-Core Real Estate
- 25% Infrastructure

As of September 30, 2023	\$ Millions	(%)
Total Plan Assets	\$6,785.7	100.0%
Target Real Assets Allocation	\$814.3	12.0%
Plan's Real Assets Market Value	\$606.2	8.9%
Unfunded Commitments*	\$275.9	4.1%
Market Value & Unfunded Commitments	\$882.1	13.0%

Historical Market Values by Strategy
(in \$ millions)



Hawaii EUTF Market Value Q3 2023 Hawaii EUTF NAV + Unfunded as of Q3 2023



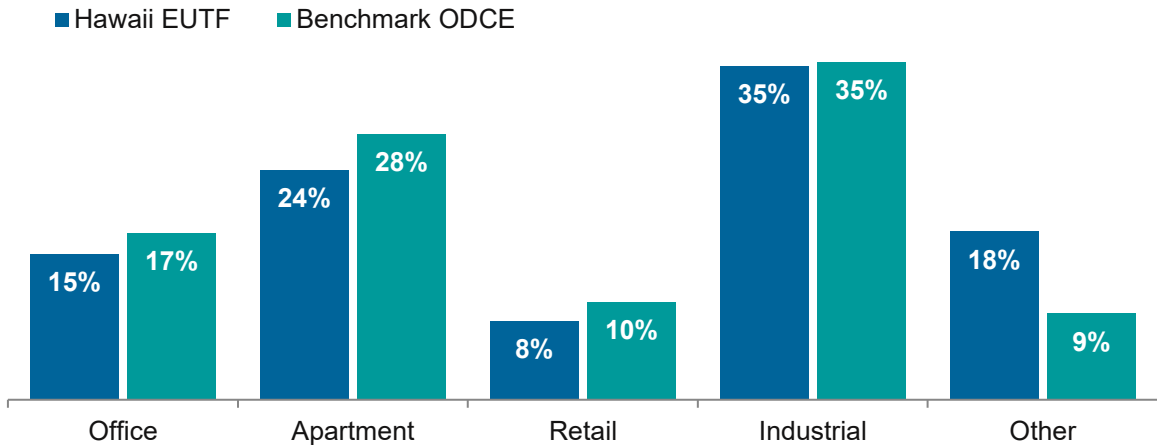
*In November of 2023, EUTF approved a commitment of \$50 million to Pantheon Global Infrastructure Fund IV, which is not reflected here as the commitment was documented in 4Q 2023.

Hawaii EUTF Real Estate Portfolio Diversification

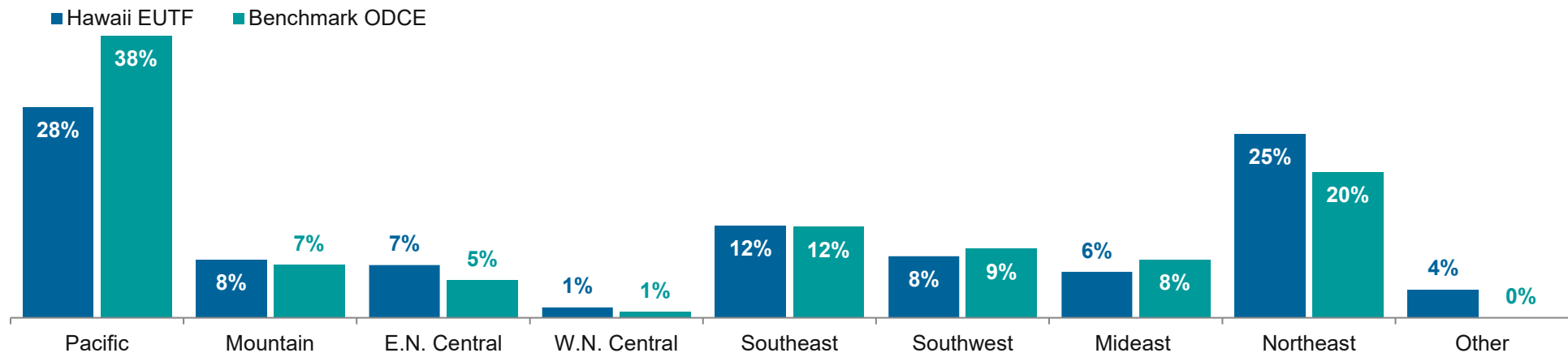
As of September 30, 2023

- The portfolio is well-diversified by geographic region, although there is an underweight to Pacific and overweight to Northeast.
- Overall, the property type allocations are generally in line with the benchmark, except for a 400 bps underweight to Apartments. Hawaii EUTF has a larger allocation to alternative property sectors relative to the benchmark.
- “Other” property types for Hawaii EUTF include Self-Storage at 8.7%, Health Care at 4.1%, Hotels at 1.9%, Student Housing at 1.4%, and Mixed Use, Diversified, and Data Center at below 1% each.

Property Type Diversification



Geographic Diversification

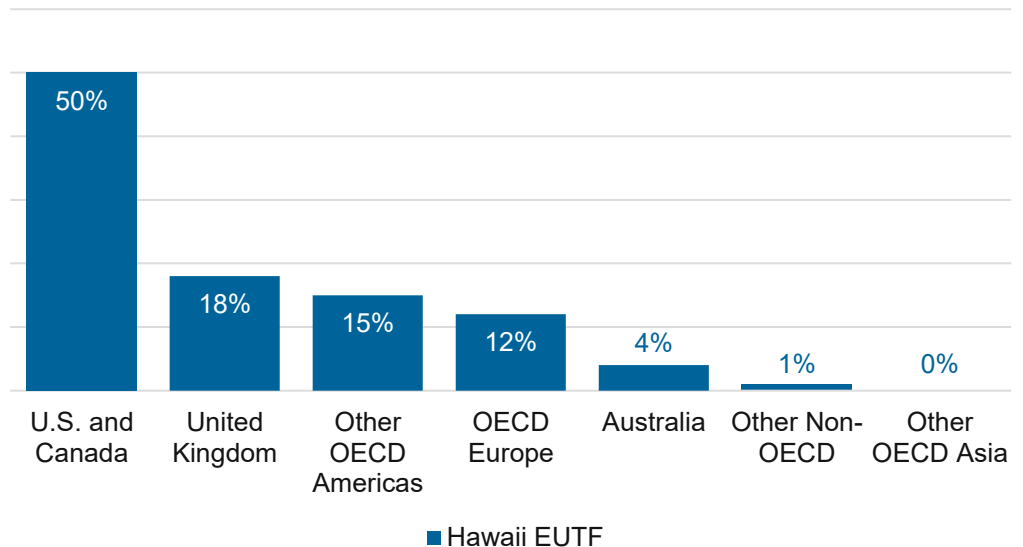


Hawaii EUTF Infrastructure Portfolio Diversification

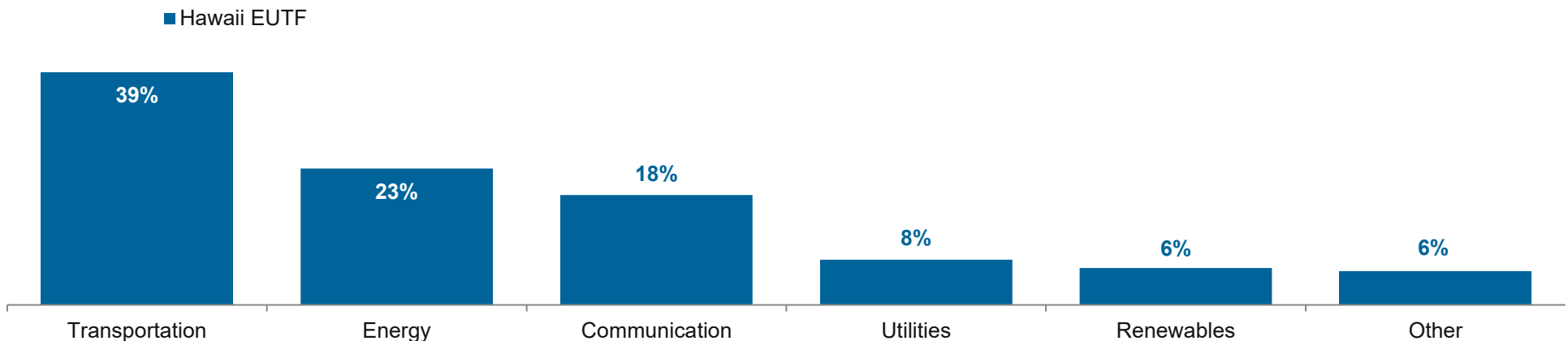
As of September 30, 2023

- All funds target global exposure in OECD* markets. I Squared Infrastructure Fund III also includes some emerging markets exposure.
- IFM Global Infrastructure Fund is an open-end fund; it invests primarily across transport, utility, energy and midstream sectors.
- I Squared Infrastructure Fund III and Tiger Infrastructure Fund III are closed-end funds; both are completing their investment periods.
- Tiger and I Squared invest primarily across energy transition, communication, power, transport and energy infrastructure sectors.

Geographic Diversification



Sector Diversification



*Organisation for Economic Co-operation and Development ("OECD"): 38 member countries that represent circa 80% of world trade.

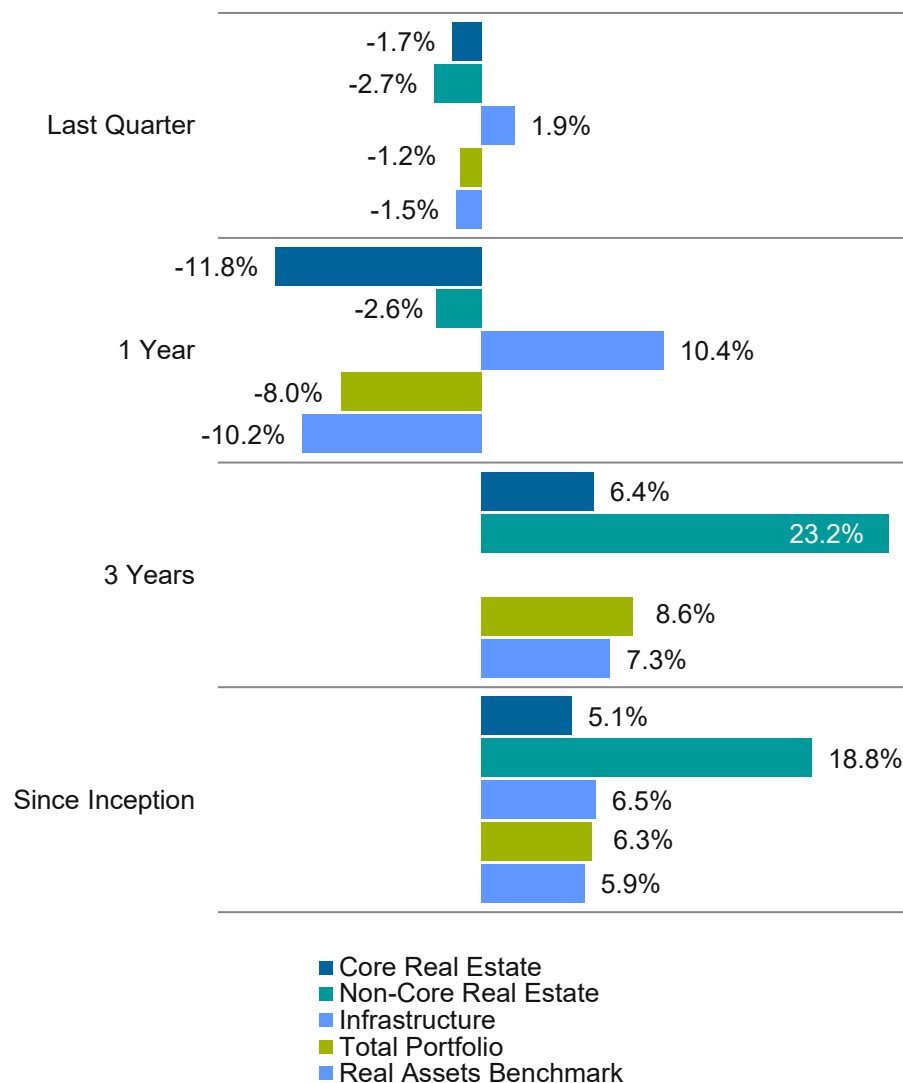
Geography: Other Non-OECD includes investments in Taiwan and India

Sector: Other includes cold storage, marine terminals, waste and utility-locating services

Real Assets Time-Weighted Returns

Periods Ending September 30, 2023

- In the Core Real Estate Portfolio, ASB Allegiance underperformed the benchmark over the past year, while Heitman HART and Morgan Stanley Prime outperformed. The portfolio continued to experience write-downs across sectors, led by office.
- The Non-Core Real Estate Portfolio generated a slightly negative return over the past year, with Blackstone Real Estate Partners IX valuations reflecting broader capital market headwinds across sectors. The depreciation was partially offset by continued strong operating performance across logistics and student housing. Performance for Artemis Fund IV and Blackstone Real Estate Partners X is considered not meaningful; however, both funds were active with new investments during the year.
- The Infrastructure portfolio generated a positive return of 10.4% over the past year. Infrastructure valuations have been less impacted by market volatility than real estate valuations.



Performance numbers in this presentation are based on quarterly data collected from EUTF investment managers and calculated by Callan beginning in the first quarter of 2022. Quarterly performance history prior to the first quarter of 2022 was calculated and provided to Callan by the previous consultant, Meketa.

Since Inception data is as of 7/2017 for Core Real Estate, 7/2019 for Non-Core Real Estate, 1/2022 for Infrastructure, 7/2017 for Total Portfolio, and 7/2017 for Real Assets Benchmark. Benchmark is the NFI-ODCE Value-Weight Index, a time-weighted return Index with an inception date of 12/31/1977. Full definition is contained in the Appendix.

Investment Performance

Time-Weighted Returns for Periods Ending September 30, 2023

Fund Name	Last Quarter	Last Year	Last 3 Years	Since Inception*
Core Portfolio	-1.7%	-11.8%	6.4%	5.1% (7/17)
NCREIF ODCE Index	-2.1%	-12.9%	6.2%	5.3% (7/17)
ASB Allegiance	-4.1%	-19.0%	2.2%	3.1% (7/17)
Heitman HART	-2.0%	-12.4%	8.4%	4.9% (7/18)
Morgan Stanley PRIME	-0.2%	-7.2%	8.0%	6.4% (7/17)
Non-Core Portfolio	-2.7%	-2.6%	23.2%	18.8% (7/19)
NCREIF ODCE Index + 2.0%	-1.6%	-10.9%	8.2%	6.7% (7/19)
Artemis Fund IV	N/M	-	-	N/M (1/23)
Blackstone Real Estate Partners IX	-2.0%	0.5%	24.4%	19.6% (7/19)
Blackstone Real Estate Partners X	N/M	-	-	N/M (4/23)
Infrastructure Portfolio	1.9%	10.4%	-	6.5% (1/22)
CPI + 3%	1.7%	6.6%	9.0%	8.8% (1/22)
IFM Global Infrastructure Fund	0.9%	10.2%	-	8.9% (4/22)
I Squared Fund III	3.3%	25.0%	-	16.3% (1/22)
Tiger TIP III	3.2%	5.9%	-	7.3% (4/22)
Total Fund	-1.2%	-8.0%	8.6%	6.3% (7/17)
Total Real Assets Benchmark*	-1.5%	-10.2%	7.3%	5.9% (7/17)

The Total Real Estate Benchmark returns are calculated by weighting the benchmark returns for each asset class. * Current Quarter Target = 72.5% NCREIF NFI-ODCE Val Wt Nt, 15.8% CPI-W+3.0% and 11.7% NCREIF NFI-ODCE Val WtNt+2.0%. Note: N/M is not meaningful and used for funds with less than one year of investment performance for EUTF.

*Since inception performance represents the first full quarter of performance

Real Assets Portfolio Performance

As of September 30, 2023

	Vintage Year*	Capital Commitments (\$mm)	Paid-In Capital** (\$mm)	Uncalled Capital (\$mm)	% Paid-In	Distributed Capital (\$mm)	Net Asset Value (\$mm)	DPI	RVPI	TVPI	Net IRR
Core Real Estate		\$333.0	\$401.7	\$0.0	100%	\$65.0	\$435.7	0.2x	1.1x	1.3x	5.0%
ASB Allegiance	2017	\$95.0	\$109.7	\$0.0	100%	\$11.0	\$117.6	0.1x	1.1x	1.2x	3.0%
Heitman HART	2018	\$71.5	\$86.7	\$0.0	100%	\$15.2	\$91.5	0.2x	1.1x	1.2x	4.9%
Morgan Stanley PRIME	2017	\$166.5	\$205.3	\$0.0	100%	\$38.8	\$226.6	0.2x	1.1x	1.3x	6.5%
Non-Core Real Estate		\$270.0	\$69.6	\$214.2	25%	\$20.5	\$71.6	0.3x	1.0x	1.3x	18.4%
Blackstone Real Estate IX	2019	\$55.0	\$59.4	\$8.7	100%	\$19.8	\$64.1	0.3x	1.1x	1.5x	23.6%
Artemis Fund IV	2022	\$70.0	\$6.9	\$63.1	10%	\$0.7	\$4.9	N/M	N/M	N/M	N/M
Blackstone Real Estate X	2023	\$70.0	\$3.2	\$67.4	5%	\$0.0	\$2.6	N/M	N/M	N/M	N/M
TA Realty Fund XIII	2023	\$75.0	\$0.0	\$75.0	0%	\$0.0	\$0.0	N/M	N/M	N/M	N/M
Infrastructure		\$150.0	\$89.7	\$1.7	59%	\$1.4	\$98.9	0.0x	1.1x	1.1x	9.2%
IFM Global Infrastructure	2022	\$50.0	\$51.1	\$0.0	100%	\$1.1	\$56.8	0.0x	1.1x	1.1x	8.9%
I Squared Fund III	2020	\$50.0	\$14.3	\$35.7	29%	\$0.0	\$15.3	0.0x	1.1x	1.1x	7.8%
Tiger TIP III	2022	\$50.0	\$24.3	\$26.07	47%	\$0.3	\$26.8	0.0x	1.1x	1.1x	10.8%
Total		\$753.0	\$560.9	\$275.9	68%	\$86.9	\$606.2	0.2x	1.1x	1.2x	5.9%

Initial Capital Call Activity: During the quarter, the Real Assets Program did not fund any initial capital calls.

New Commitments: In the fourth quarter of 2023, the Real Assets Program approved a new infrastructure commitment of \$50 million to Pantheon Global Infrastructure Fund IV.

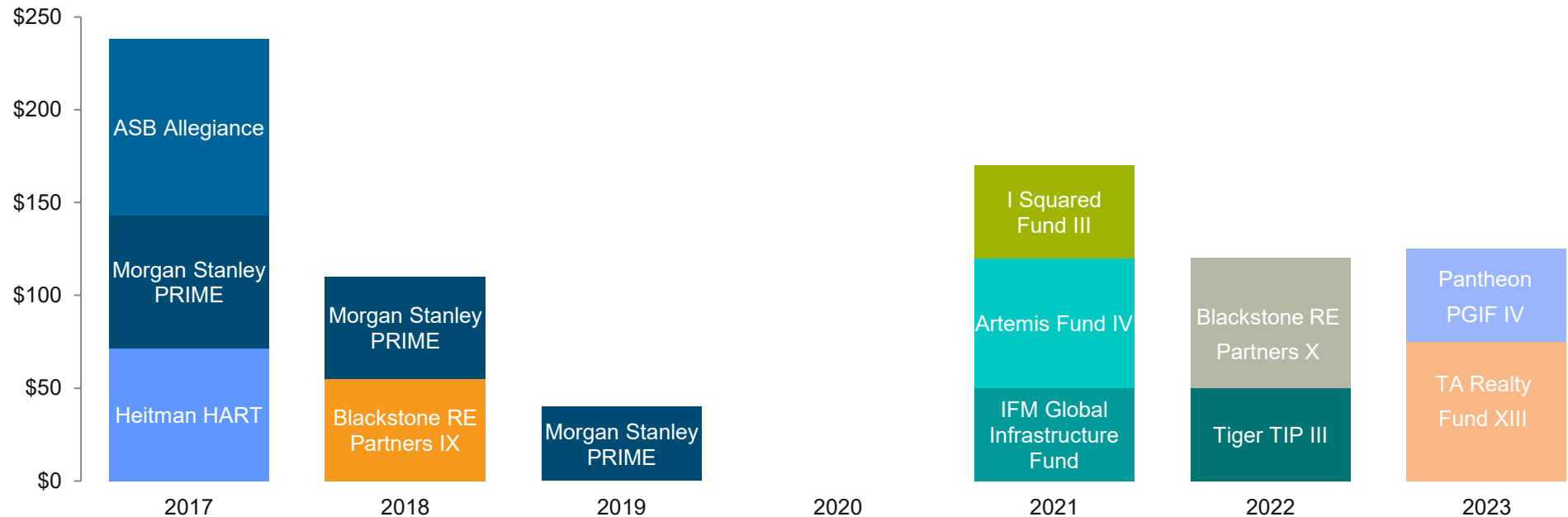
*Vintage Year represents first year EUTF's capital was called

**Paid-In Capital includes reinvestment of distributed capital N/M: Not Meaningful. Please refer to Appendix for definitions.

Hawaii EUTF Real Assets Commitments Through 2023

EUTF began investing in Real Estate in 2017; in 2021 the program expanded to include Real Assets

EUTF Commitment Activity, by year, in \$m



- EUTF made its first two core real estate investments in 2017 with commitments to ASB Allegiance (\$95M), Heitman HART (\$71.5M) and Morgan Stanley PRIME (\$71.5M). The plan made follow-on commitments to Morgan Stanley PRIME in 2018 (\$55M) and 2019 (\$40M).
- The plan made its first non-core real estate investment in 2018 with a commitment to Blackstone IX (\$55M). EUTF committed to Artemis IV (\$70M) in 2021. In 2022, EUTF made a commitment to Blackstone X (\$70M).
- EUTF made its first infrastructure investments in 2021 with a commitment to I Squared Fund III (\$50M) and IFM Global Infrastructure Fund (\$50M). EUTF committed to Tiger TIP III (\$50M) in 2022.
- 2023 activity: EUTF made a non-core real estate commitment to TA Realty Fund XIII (\$75M) and committed to Pantheon Global Infrastructure Fund IV (\$50M).

2024 Pacing and Expected Commitment Activity

2024 Activity	
Commitment Target:	\$200 million for 2024
Commitment Sizing:	Real estate: \$50 to \$100 million per opportunity
	Infrastructure: \$50 to \$75 million per opportunity
Number of Investments:	2-4 partnerships

- Target \$200 million in commitments for 2024.
- Two to four commitments expected.
 - One to two real estate partnership commitments are likely. Priorities include review of the core portfolio, then potential for new names in the non-core sector with housing expertise. No re-ups are expected to be in the market in 2024.
 - One to two infrastructure commitments are likely. Priorities include review of re-ups, then consideration of new names that are additive to the existing portfolio.

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Appendix and Glossary

Definitions

Capitalization rate: Commonly known as cap rate, is a rate that helps in evaluating a real estate investment. $\text{Cap rate} = \text{Net operating income} / \text{Current market value (Sales price) of the asset}$.

Net operating income: Commonly known as NOI, is the annual income generated by an income-producing property after taking into account all income collected from operations, and deducting all expenses incurred from operations.

NCREIF ODCE Index: time-weighted return Index with an inception date of 12/31/1977. The Index is comprised of 36 open-end commingled funds. Inclusion within the Index requires (a) minimum of 80% of net fund assets invested in the multifamily, retail, industrial, office, or hotel property type, (b) maximum of 20% of net fund assets invested in real estate debt or private/public company equity, (c) at least 80% of net assets invested in properties with a minimum occupancy of 60%, (d) no more than 70% of real estate net assets invested in a single property type or region, (e) maximum of 40% leverage, and (f) at least 95% of net real estate assets invested within the U.S. market. In this report, the version of the NCREIF ODCE Index being used is the value weighted and net of fees.

NCREIF Property Index: time-weighted return Index with an inception date of 12/31/1977. The Index is comprised of over 10,000 individual properties. Inclusion within the Index requires (a) operating properties only, (b) property types apartments, hotels, industrial, office, and retail, (c) owned/controlled by a qualified tax-exempt institutional investor or its designated agent. The Index is reported on a non-leveraged basis even if the property is leveraged.

Definitions – Investment Styles

Core: Direct investments in operating, fully leased, office, retail, industrial, or multifamily properties using little or no leverage (normally less than 30%).

Value-Added: Core returning investments that take on moderate additional risk from one or more of the following sources: leasing, re-development, exposure to non-traditional property types, the use of leverage.

Opportunistic: Investments that take on additional risk in order to achieve a higher return. Typical sources of risks are: development, land investing, operating company investing, international exposure, high leverage, distressed properties.

Non Core: Includes both value added and opportunistic strategies

Closed-End Fund: A commingled fund with a stated maturity (termination) date with few or no additional investors after the initial formation of the fund. Closed-end funds typically purchase a portfolio of properties to hold for the duration of the fund and, as sales occur, typically do not invest the sales proceeds. (Source: NCREIF PREA Reporting Standards).

Commingled Funds: A term applied to all open-end and closed-end pooled investment vehicles designed for institutional tax-exempt investors. A commingled fund may be organized as a group trust, a partnership, a corporation, an insurance company separate account, or another multiple ownership entity.

Open-End Fund: A commingled fund with no finite life that allows continuous entry and exit of investors, typically on a quarterly basis, and engages in ongoing property operations as well as investment purchase and sale activities.

Real Estate Investment Trust (REIT): A corporation or business trust that combines the capital of many investors to acquire or provide financing for all forms of income-producing real estate. (Source: National Association of Real Estate Investment Trusts)

Definitions – Performance Monitoring

Vintage Year: Year of first drawdown

Paid-In Capital: Cash funded to the investment for acquisition and capital items (i.e., initial investment cost or significant capital improvements).

Uncalled Capital: Capital allocated to managers which remains to be called for investment. Amounts are as reported by managers.

Distributed Capital: Actual cash returned from the investment, representing distributions of income from operations. Withdrawals: Cash returned from the investment, representing returns of capital or net sales proceeds.

Net Asset Value: The value of an investment as determined by actual sales dollars invested and withdrawn plus the effects of appreciation and reinvestment; market value is equal to the ending cumulative balance of the cash flow statement (NAV).

Net IRR: IRR after advisory fees, incentive and promote. This includes actual cash flows and a reversion representing the LP Net Assets at market value as of the period end reporting date.

TVPI Multiple: The ratio of Total Value to Paid-in-Capital (TVPIC). It represents the Total Return of the investment to the original investment not taking into consideration the time invested. Total Value is computed by adding the Residual Value and Distributions. It is calculated net of all investment advisory and incentive fees and promote.

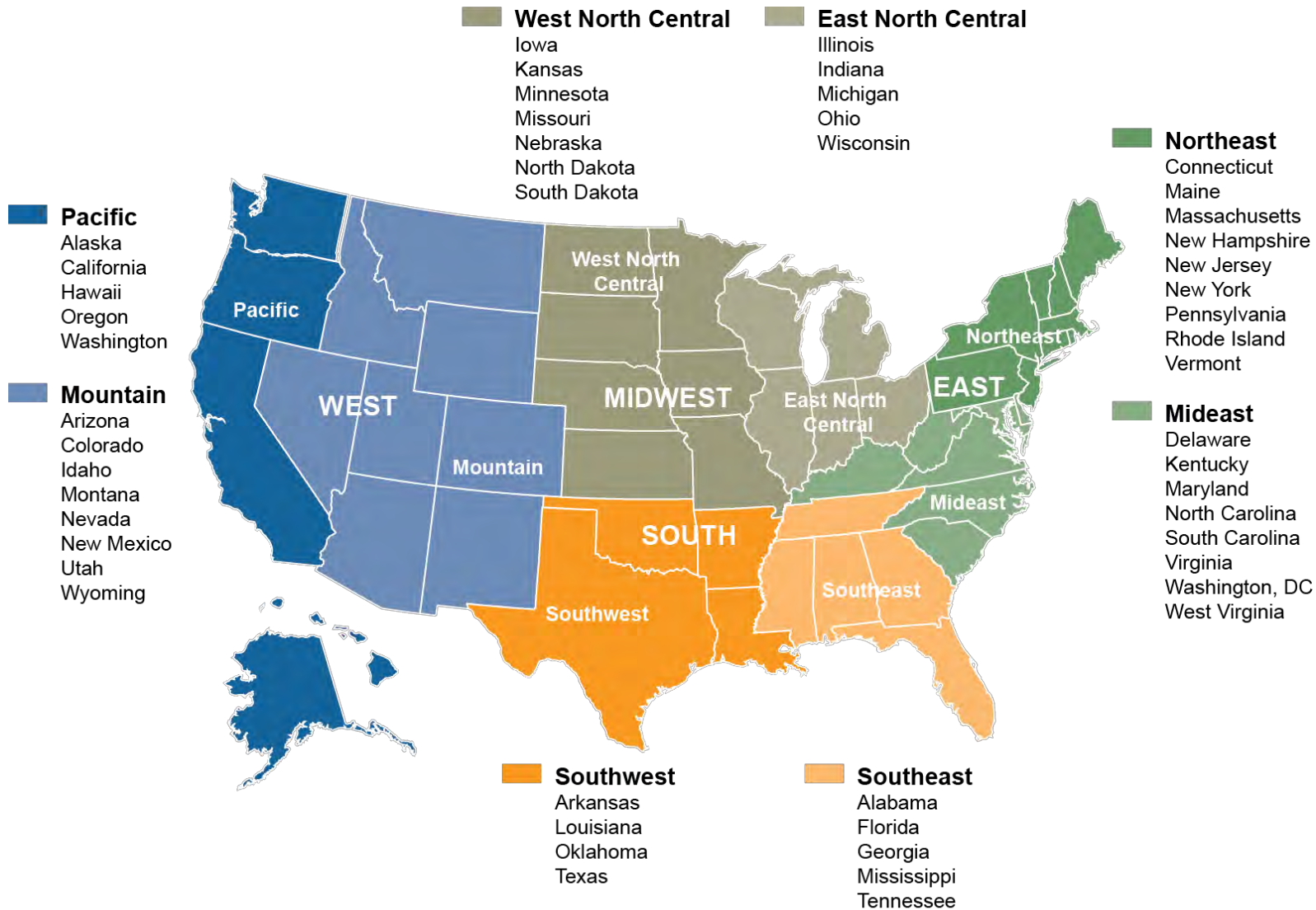
DPI Multiple: The ratio of distributions paid to the investor divided by the amount of contributions paid by the investor. It is calculated net of all investment advisory and incentive fees and promote. It is calculated net of all investment advisory and incentive fees and promote

RVPI Multiple: The ratio of net asset value divided by the amount of contributions paid by the investor.

Net IRR: The total net return for an investment or portfolio over the period of time the client has funds invested. Total portfolio Inception Returns include returns from investments no longer held in the current portfolio.

NCREIF Region Map

Geographic Regions and Divisions



Source: NCREIF

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Hawaii Employer-Union Health Benefits Trust Fund (EUTF)

March 5, 2024

Private Equity Q3 2023
Quarterly Report

The data within this report is as of the date referenced above and is not lagged. All returns within this report are net of fund level asset management fees unless otherwise noted.

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In the course of preparing this report, Meketa has relied upon the accuracy and completeness of the data provided by the Hawaii Employer-Union Health Benefits Trust Fund (EUTF) investment managers. Meketa makes no representations or guarantees with respect to the accuracy of information provided to us by the managers. Meketa's conclusions do not constitute an audit of any investment, and are based on conditions prevailing at the date of this report and known to Meketa.

1. Private Equity Performance
2. Industry Trends

Private Equity Overview

Private equity is a long-term asset class with performance results influenced by various factors. While this report highlights several key exposures that contribute to performance, the EUTF Private Equity Program (the “Private Equity Program”) will continue to evolve.

As of September 30, 2023, the Private Equity Program had \$1.3 billion in commitments across 21 partnerships and one co-investment, generating a net since inception Internal Rate of Return (IRR) of 15.0%. While posting attractive absolute results to date, this performance reflects continued market slowing with the net since inception IRR declining from 16.4% in the prior quarter and from 22.3% one year earlier.

The Private Equity Program’s reported value represented 10.2% of total Plan assets as of Q3 2023. EUTF is utilizing evolving asset allocation targets to achieve the long-term target of 15.0% for private equity over a multi-year period with the current target allocation at 10.5%. Continued commitment activity is required to achieve and maintain the long-term target allocation on a market value basis while diversifying the portfolio across economic cycles.

EUTF Private Equity Program – One Year Change as of September 30, 2023

	Committed	Contributed	Distributed	Market Value	% of Total Assets	Target PE Allocation	Multiple	Since Inception IRR*
Beginning of Period	\$1,021.9	\$446.9	\$75.4	\$535.6	9.3	9.5	1.4x	22.3
End of Period	\$1,266.9	\$601.1	\$98.7	\$691.8	10.2	10.5	1.3x	15.0
Change	\$245.0	\$154.2	\$23.2	\$156.2	0.9	1.0	(0.1x)	(7.3)

*initial capital call was on April 20, 2018.

Horizon Performance

EUTF's policy benchmark for the private equity asset class is the Russell 3000 Index plus 300 basis points. The Private Equity Program has generated strong absolute and relative results over longer periods as of Q3 2023, outperforming the policy benchmark over the latest three-year, five-year and since inception periods. Shorter term results are reflective of the benchmark mismatch of utilizing a public equity index for private equity performance, as the Program underperformed the policy benchmark by 11.4% over the latest one-year period as of September 30, 2023. Public equity markets posted a rebound over the latest year, while private equity market valuations have remained relatively flat. Performance volatility and benchmark mismatch is expected for a private equity program, particularly over shorter time periods and when compared to a public equity benchmark.

EUTF Private Equity Program Performance Russell 3000 + 300 bps (Benchmark)

	One Year (%)	Three Year (%)	Five Year (%)	Ten Year (%)	Since Inception*
EUTF Private Equity	4.0	15.4	15.1	---	15.0
Russell 3000 + 300 bps**	15.4	6.3	7.7	---	7.8
Difference	(11.4)	9.1	7.4	---	7.2

* Program inception date is April 20, 2018.

**Utilizing the PME+ framework, which represents a net IRR value based on the actual timing and size of the private market program's daily cash flows and the daily appreciation or depreciation of an equivalent public market index.

Private Equity Portfolio Detail

As of September 30, 2023, approximately 47% of the Plan's committed capital for closed partnerships had been drawn down. All of the partnerships with at least one year of history are generating positive IRRs to date, despite recent market volatility. Less mature funds may exhibit the traditional private equity j-curve as initial investments are commonly held at cost (while representing a relatively small proportion of aggregate commitments) and management fees are assessed on aggregate commitments.

Active Program Partnerships: As of September 30, 2023

Partnership	Type	Vintage Year	Committed Capital (\$mm)	Invested Capital (\$mm)	Distributed Capital (\$mm)	Reported Value* (\$mm)	Investment Multiple	Since Inception Net IRR** (%)
Landmark Equity Partners XVI	Secondaries	07-19	75.0	54.8	30.7	45.3	1.4x	18.4
Strategic Value Special Situations Fund IV	Distressed Debt	2017	50.0	45.0	10.0	63.8	1.6x	14.7
Wellspring Capital Partners VI	Buyout	2018	50.0	49.2	11.4	67.0	1.6x	17.7
Apollo Investment Fund IX	Buyout	2018	42.0	37.9	15.7	40.8	1.5x	21.8
StepStone VC Global Partners IX-B	Venture Capital	2019	39.9	34.0	2.1	51.1	1.6x	15.8
Welsh, Carson, Anderson & Stowe XIII	Buyout	2019	50.0	44.8	18.0	47.8	1.5x	24.5
Warburg Pincus China-Southeast Asia II	Growth Equity	2019	50.0	26.0	4.1	24.6	1.1x	5.7
Apax X	Buyout	2019	50.0	43.0	5.0	48.1	1.2x	14.7
Veritas Capital Fund VII	Buyout	2020	50.0	47.5	0.0	66.0	1.4x	15.6
Kohlberg Investors IX	Buyout	2020	50.0	41.8	1.5	59.0	1.4x	27.0
K5 Private Investors	Buyout	2020	50.0	27.5	0.0	30.5	1.1x	7.2
StepStone VC Global Partners X	Venture Capital	2020	40.0	27.2	0.0	27.3	1.0x	0.2
Strategic Value Special Situations Fund V	Distressed Debt	2021	50.0	25.0	0.2	30.2	1.2x	13.7
Reverence Opportunities Fund V	Buyout	2021	75.0	26.5	0.1	26.9	1.0x	1.8
Welsh, Carson, Anderson & Stowe XIV	Buyout	2022	75.0	10.3	0.0	6.8	0.7x	NM
Veritas Capital Fund VIII	Buyout	2022	75.0	33.1	0.0	31.2	0.9x	NM
Apax XI	Buyout	2022	75.0	---	---	-1.4	NM	NM
StepStone VC Global Partners XI	Venture Capital	2022	75.0	7.5	0.0	6.7	0.9x	NM
Kohlberg Investors X	Buyout	---	75.0	---	---	-0.7	---	---
EUTF Co-Investment Program	Buyout	2022	20.0	20.2	---	21.0	1.0x	NM
K6 Private Investors	Buyout	2023	75.0	---	---	---	---	---
Nexus Special Situations IV	Debt Related	2023	75.0	---	---	---	---	---
Total Private Equity Program	---	---	1,266.9	601.1	98.7	691.8	1.3x	15.0

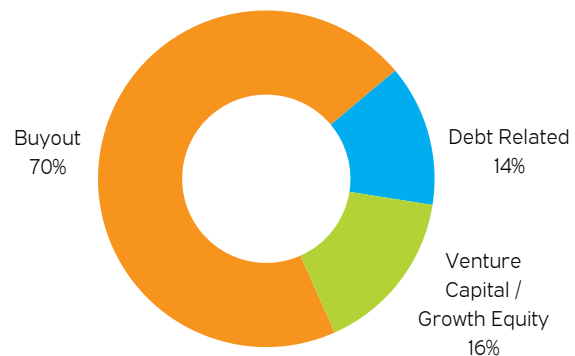
* Negative market value due to management fees and the initial use of a subscription line of credit.

** Since inception IRRs for less mature partnerships (approximately one year from the initial capital call) are listed as "NM".

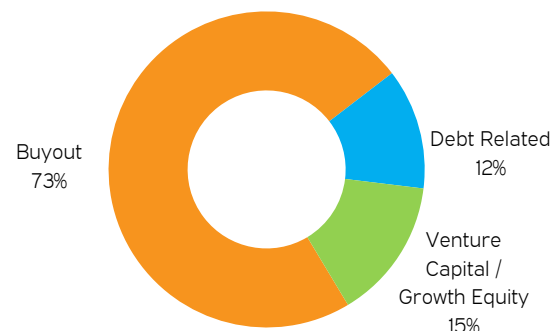
Portfolio Sector Diversification

The EUTF Private Equity Program is slightly above target for buyout exposure, while underweight debt related and venture capital/growth equity as of September 30, 2023. Deviations are to be expected with sector diversification continuing to evolve as additional commitments are made and capital is invested.

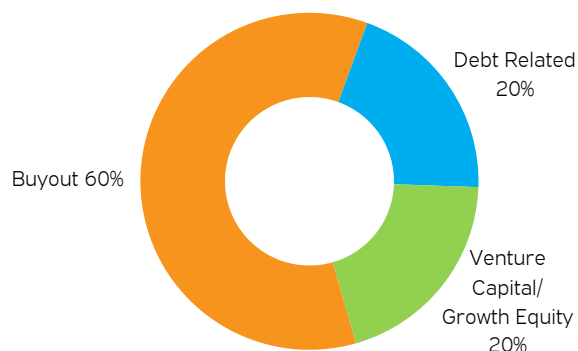
Sector Diversification: Market Value



Sector Diversification: Committed



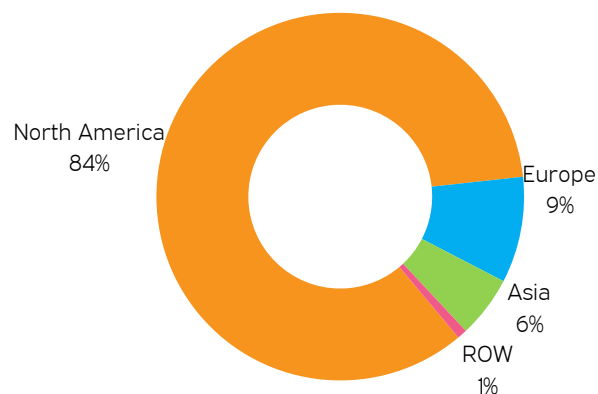
Sector Diversification: Target



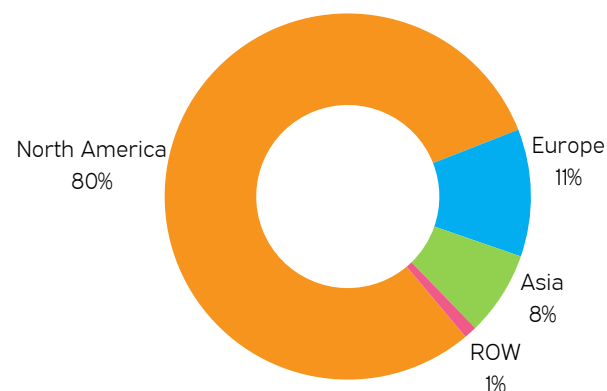
Portfolio Geographic Diversification

On a geographic basis, the Portfolio is domestically oriented with 84% of capital deployed in partnerships targeting North America but is diversified globally with 9% in Europe, and 7% in Asia/Rest of the World (ROW). Although there is no explicit target for geographic diversification, the expectation is to have meaningful exposure in North America with diversification across Europe and Asia.

Geographic Diversification: Market Value



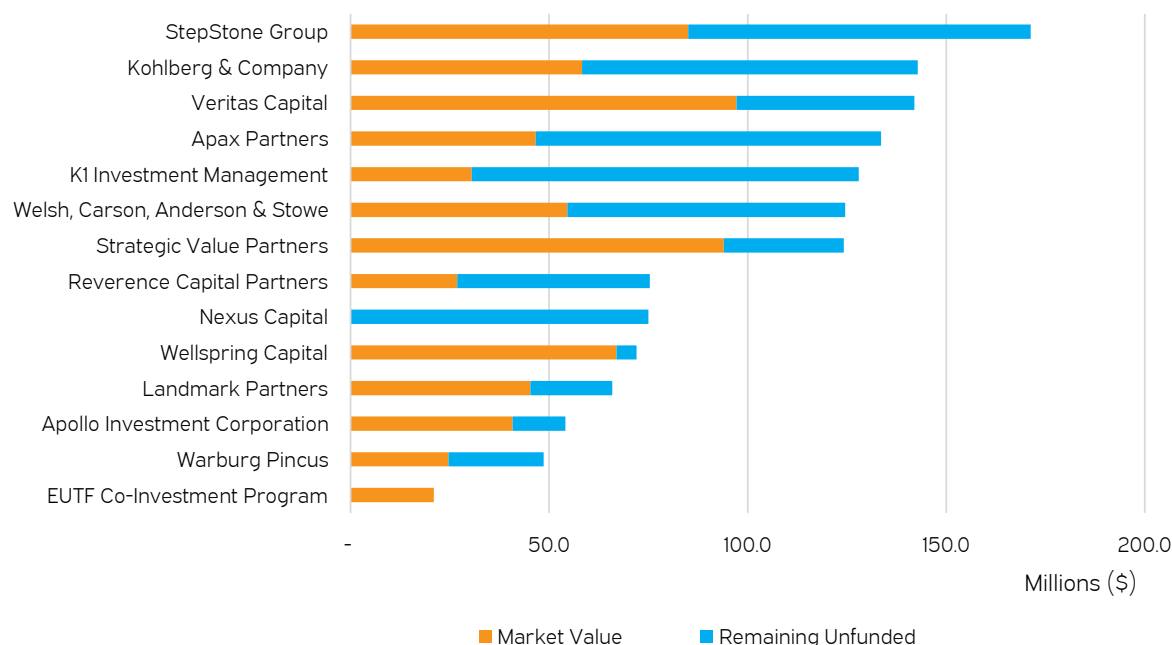
Geographic Diversification: Committed



Firm Diversification

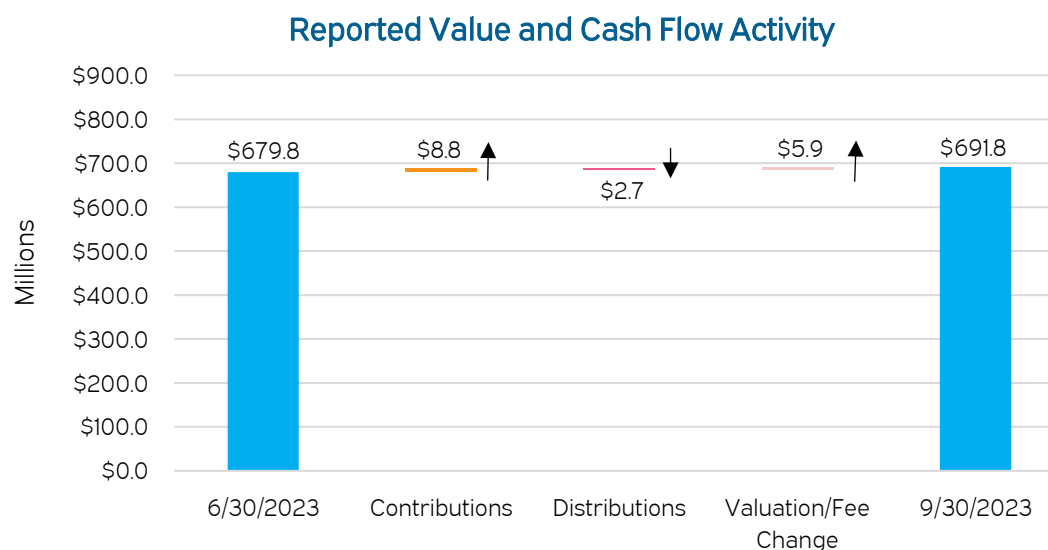
As of September 30, 2023, the Private Equity Program is constructed with 21 partnerships and one co-investment across 13 firms. On a total exposure basis (market value plus unfunded commitments), Stepstone Group, with three venture capital fund-of-funds commitments, is the largest exposure at \$171 million. Kohlberg & Company, with two buyout commitments, is the second largest exposure at \$143 million followed by Veritas Capital, with two buyout commitments, as the third largest exposure at \$142 million. These exposures represent 12.4%, 10.3%, and 10.3% of the Private Equity Program's total exposure, respectively.

Total Exposure



Private Equity Cash Flows

The value of the portfolio increased by \$12 million over the latest quarter driven by contributions and appreciation. During the quarter, \$8.8 million of contributions were made to underlying managers and \$5.9 million of valuation increases were reflected while \$2.7 million was distributed. Consistent with the broader private equity market, transaction activity was rather slow within the EUTF Private Equity Program during Q3 2023.



Private Equity Program Construction

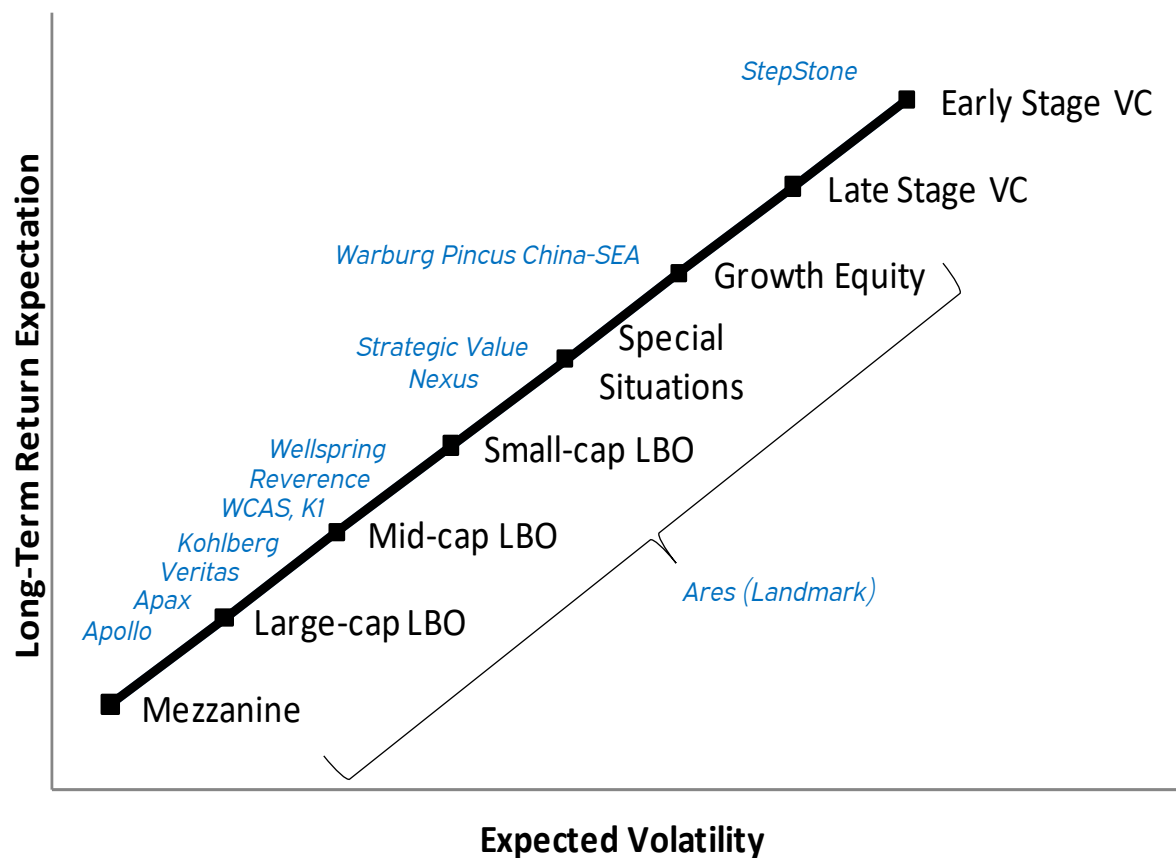
As private equity is a self-liquidating asset class, ongoing commitment activity is necessary to meet and maintain the target asset allocation level. As of September 30, 2023, \$1,266.9 million of commitments have been closed across 21 partnerships and one co-investment. The table below lists commitment activity over the past three years.

Private Equity Program Commitments: Trailing Three Years

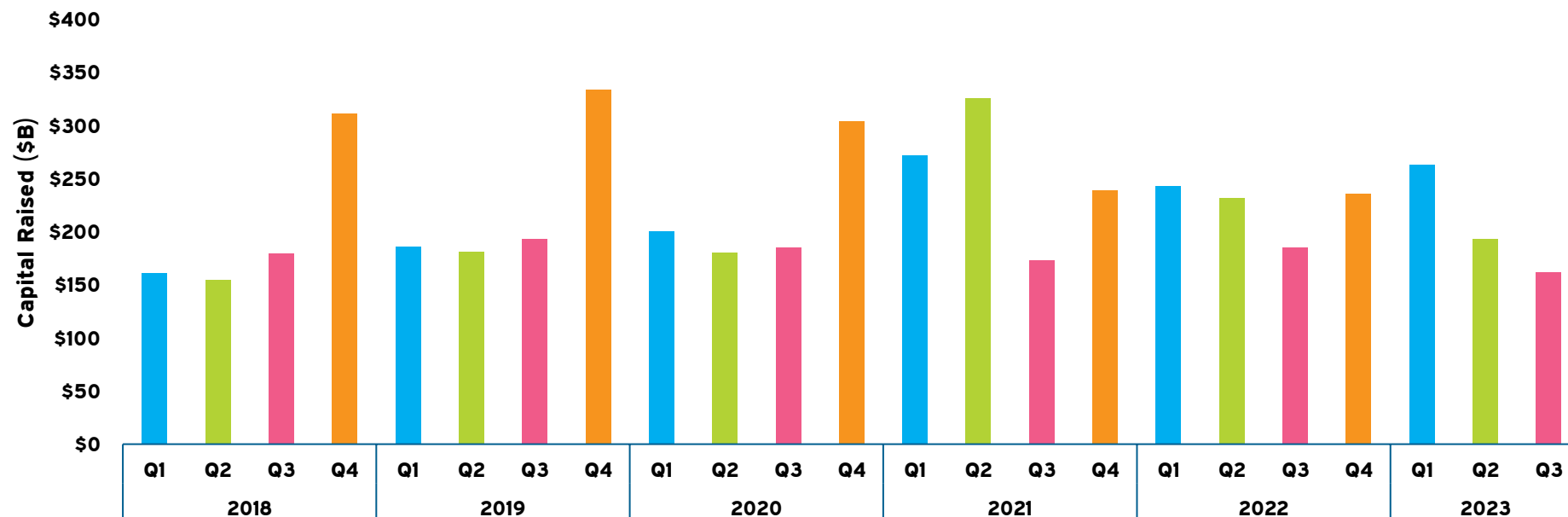
Fund	Type	Commitment (\$mm)	Approval Date	Initial Funding
Strategic Value Special Situations Fund V	Distressed Debt/Special Situations	50	2/16/2021	5/13/2021
Reverence Capital Opportunities V	Middle-market Buyout, Financial Services	75	10/18/2021	6/7/2022
Welsh, Carson, Anderson Stowe XIV	Middle-market Buyout	75	12/20/2021	12/27/2022
Veritas Capital Fund VIII	Middle-market Buyout	75	3/31/2022	7/1/2022
Apax XI	Large Buyout	75	5/17/2022	---
StepStone VC Global Partners XI	Venture Capital Fund of Funds	75	6/28/2022	10/14/2022
Kohlberg Investors X	Middle-market Buyout	75	10/19/2022	---
EUTF Co-Investment Program	Buyout	20	5/17/2022	12/9/2022
K6 Private Investors	Buyout	75	9/8/23	---
Nexus Special Situations IV	Debt Related	75	9/8/23	---

Subsequent to quarter end, \$150 million of additional commitments were approved. A \$75 million commitment to FS Equity Partners IX, targeting middle-market investments in consumer and distribution companies, and a \$75 million commitment to Wynnchurch Capital Partners VI, implementing a value-oriented buyout investment strategy, were approved.

Commitments to date have been diversified across investment strategy and partnership size with varying risk and return expectations as graphically portrayed below by firm name.



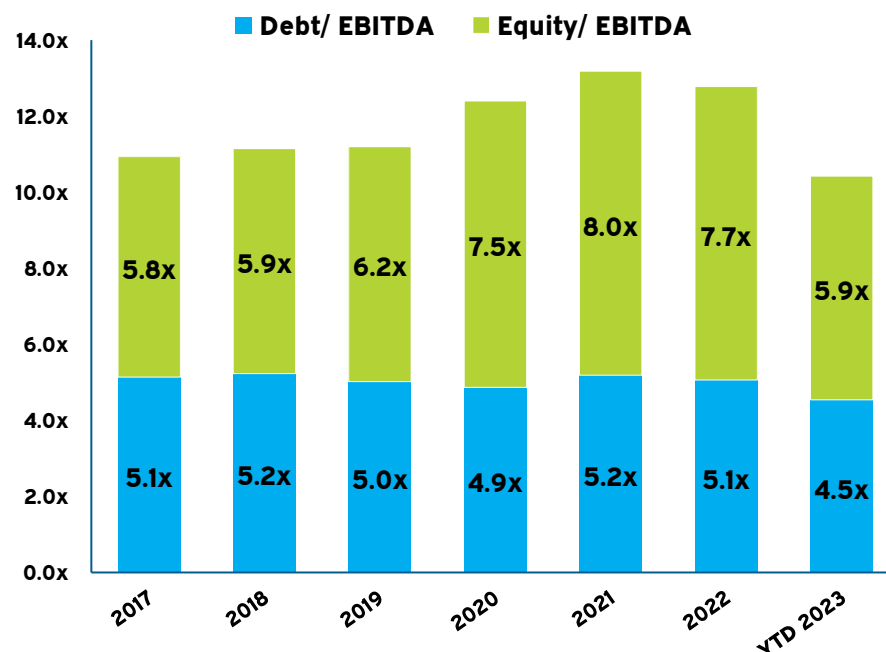
Private Equity Global Fundraising¹



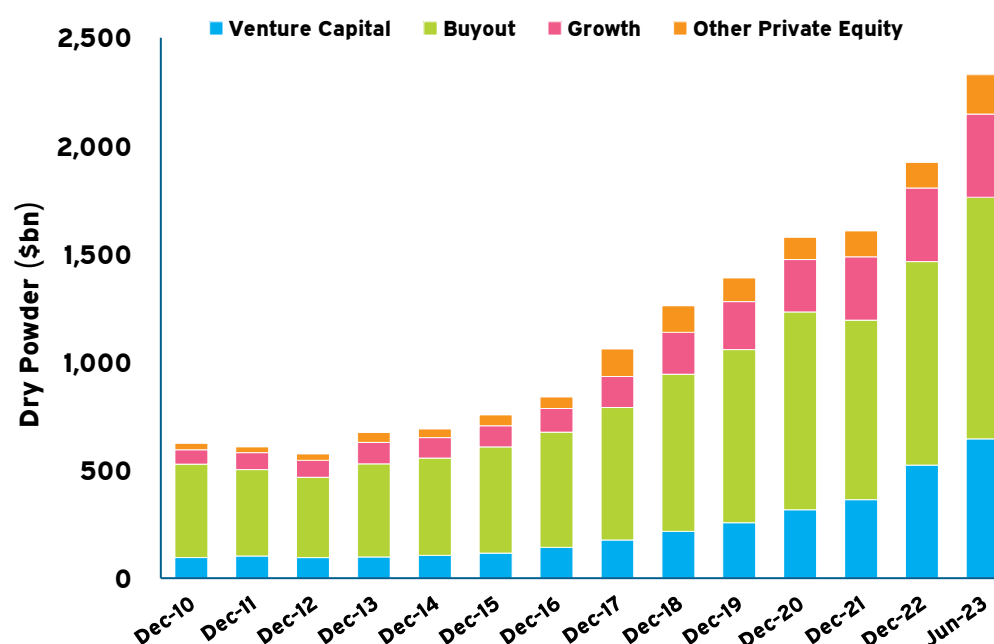
Fundraising activity for private equity funds in the third quarter of 2023 decreased by 16% compared to the previous quarter, with \$161.8 billion raised, and represents the lowest amount of capital raised for a quarter in over five years. The third quarter showed continued signs of moderation in the private equity fundraising market as allocators continued to digest market expectations of “higher-for-longer” environment as it relates to interest rates. According to Preqin, the fact that fewer funds closed larger amounts of capital points to a continuation of the recent trend for consolidation. Along with the denominator effect, a slowdown in private equity exit volumes has weighed on the amount of capital that some LPs have available to deploy. This comes despite most investors intending either to increase the pace of their deployment (34%) or maintain the current pace (50%) suggesting that market conditions are affecting their ability, but less so their willingness, to invest. According to Preqin data, there were over 10,000 funds raising in the market as of October 2023, with aggregate capital targeted of over \$1.7 trillion. Both metrics are pushing record highs, and therefore, paint a continued picture of highly competitive fundraising. As a result, funds have been spending more time on the road than ever, with 62% of private equity funds (and 61% of venture capital funds) closed through Q3 in 2023 having been in market for more than 18 months compared to an average of 42% (and 38% for venture capital) from 2018-2022.

¹ Preqin

Purchase Price Breakdown, All LBOs¹



Dry Powder by Fund Type²

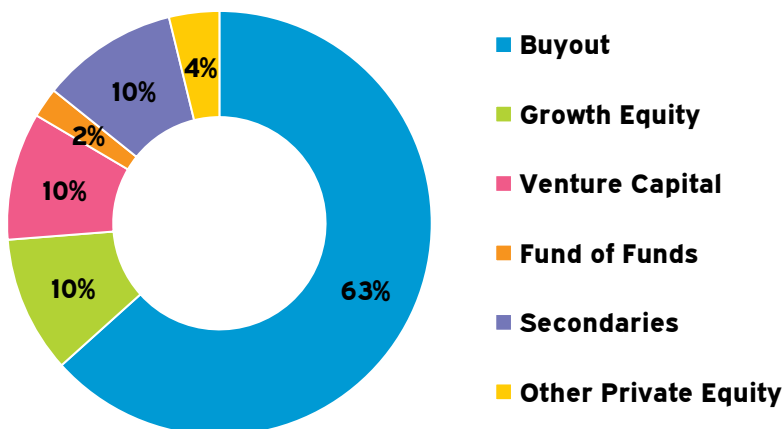


Relative to 2022, the median private equity buyout purchase price multiple has decreased from 12.8x EBITDA to 10.4x EBITDA year-to-date in 2023. This represents an 18% decrease from 2022 relative to the 3% decrease observed in 2022 from 2021. The decrease in purchase price multiples on a year to date basis shows signs of downward pressure on private equity valuations resulting from rising interest rates and an imbalance between expectations of buyers and sellers. Furthermore, global buyout deal flow slowed further in the third quarter, representing a 19% slowdown compared with the same period last year and is the slowest quarter for deal flow since Q2 2020. Exit activity continues to show signs of gradual recovery as public market pressures begin to ease. Private equity exit value increased to \$91 billion, or by 13%, in the third quarter relative to the same period last year. Dry powder levels as of Q2 2023, have increased by approximately 21% from Q4 2022 and remain at all-time highs. Despite macroeconomic worries, GPs still have ample dry powder to deploy, which helps support deal flow even if debt financing becomes more expensive and more restrictive.

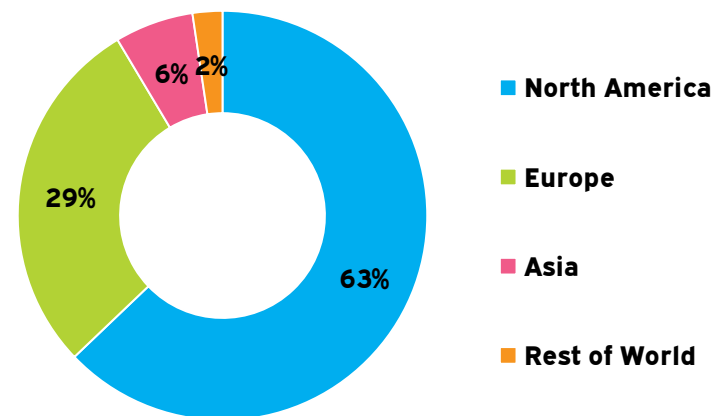
¹ Preqin. Data pulled on January 8, 2024.

² Global Private Equity Dry Powder Split by Strategy. Provided by Preqin on January 15, 2024. There is a six-month lag with Preqin's dry powder analysis with June 30, 2023, being the latest figures, which were released in January 2024.

Capital Raised by Strategy¹



Capital Raised by Geography²



Buyout (63% of all private equity capital raised), Growth Equity (10%), Venture Capital (10%), and Secondaries (10%) represented the most popular private equity sub-strategies during the third quarter of 2023. Buyout funds increased from 59% of capital raised in Q2 2023 to 63% in the third quarter of 2023. Growth Equity and Venture Capital both decreased from 15% to 10% of capital raised. Secondaries, as a percentage of total capital raised, increased the most of any strategy over Q3 2023 from 3% of capital raised in Q2 to 10% in Q3 2023 as the denominator effect and subdued private equity exit environment has increased the number of LPs looking to trim allocations in the secondaries market. As of the third quarter of 2023, some investors anticipate higher returns for secondaries given the heightened demand for liquidity and 28% of investors were planning to target secondaries strategies over the next 12-month period, a 5% increase since the same quarter last year. However, secondaries funds in market still make up a relatively small percentage of the overall offering at 3% of all funds in market (but tend to be among the largest by capital). Fund of Funds and Other Private Equity, which includes co-investment and hybrid vehicles, remained relatively consistent as a percentage of total capital raised through the third quarter compared to the previous quarter.

North America-focused vehicles continued to represent the majority of funds raised during the third quarter, representing 63% of total capital. This remains in line with the 67% of aggregate capital raised in the prior quarter. As a percentage of total capital raised, commitments to Europe increased slightly from 25% to 29%. However, Europe only represents 18% of the total number of funds closed in Q3 2023. Asia-focused funds remained low, only representing 6% of total capital raised. As China-focused funds had made up the lion's share of funds raised in the region in recent years, the limited capital raised by Asia-focused funds recently highlights investors' risk aversion toward China amid geopolitical and economic challenges. Investor appetite for Rest of World remained low with \$3.8 billion of aggregate capital raised across 21 funds during the quarter.

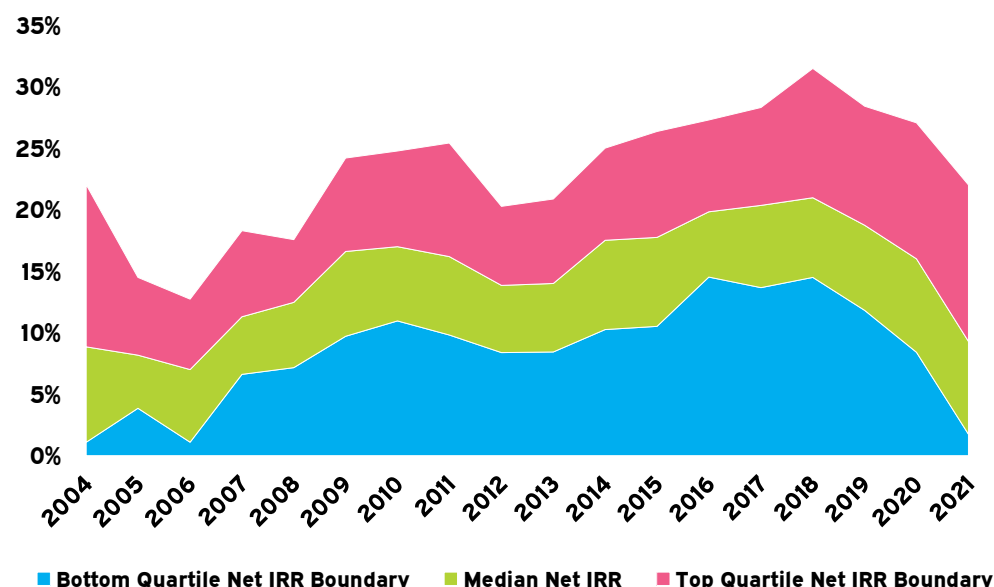
¹ Preqin

² Preqin

Private Equity Performance by Horizon¹

Horizon	Private Equity	Buyout	Venture Capital	Growth Equity
1 Year to 6/2023	4.6%	6.2%	(9.5)%	0.7%
3 Years to 6/2023	22.7	24.1	13.0	13.3
5 Years to 6/2023	17.9	19.1	13.0	12.1
10 Years to 6/2023	16.7	17.7	13.4	15.7

Private Equity Performance by Vintage Year²



As of June 30, 2023, private equity returns increased from the prior quarter, generating a 4.6% IRR over the trailing 12 months through Q2 2023. This compares to the trailing 12-month return of -4.7% as of Q1 2023 and a one-year return of 14.4% at Q2 2022. Overall, private equity returns have rebounded but still remain far below the highs of recent years. One-year returns remain negative for Venture funds at a -9.5% IRR but have turned back positive for Buyout and Growth Equity strategies. In general, however, performance has been strong in each vintage year since the Global Financial Crisis. Buyout, Venture, and Growth funds have all generally performed well over the various time horizons on an absolute basis, with Buyout outperforming both Growth Equity and Venture funds across longer time periods as of Q2 2023. Lastly, the spread between first and third quartile performance in private equity has increased since the Global Financial Crisis; 2007 vintage funds reported a 11.7% spread while 2021 vintage funds reported a 20.3% spread.

¹ Preqin Horizon IRRs as of 6/30/2023. Data as of 9/30/2023 is not yet available.

² Preqin, Private Equity – All, Quartile Returns as of 9/30/2023. Data pulled on January 4, 2024.

March 5, 2024



Hawaii Employer-Union Benefits Trust Fund (EUTF)

3Q 2023

Private Credit Portfolio Review

Pete Keliuotis

Alternatives Consulting

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Alternatives Consulting

Cos Braswell

Alternatives Consulting

Daniel Brown

Alternatives Consulting

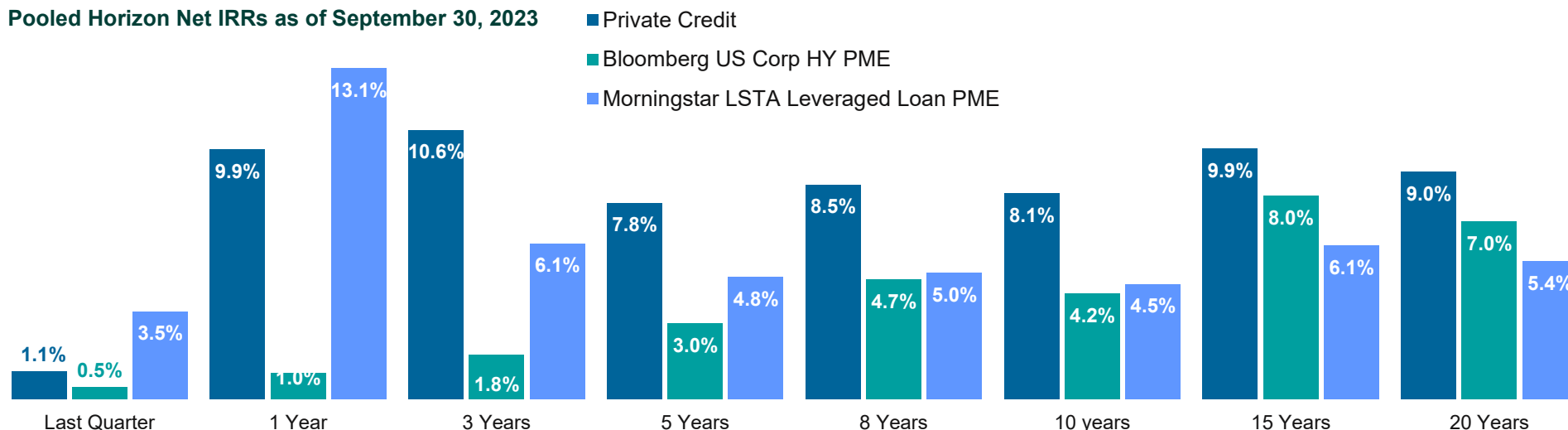
Callan

Private Credit Market Environment

Private Credit Market Overview

Performance over time and compared to relevant indices

Pooled Horizon Net IRRs as of September 30, 2023



Pooled Horizon Net IRRs by Strategy as of September 30, 2023

Strategy	Last Quarter	1 Year	3 Years	5 Years	8 Years	10 Years	15 Years	20 Years
Senior Debt	0.1	11.4	6.5	5.9	6.8	6.6	6.9	6.8
Subordinated Credit	1.8	13.0	13.5	11.0	11.3	11.1	10.9	10.6
Credit Opportunities	1.2	8.2	11.1	7.1	7.9	7.5	10.1	8.9
Total Private Credit	1.1	9.9	10.6	7.8	8.5	8.1	9.9	9.0

Private credit performance varies across sub-asset class and underlying return drivers. Over the past three years, the asset class has generated a net IRR of 10.6%, outperforming leveraged loans as of September 30, 2023. Higher-risk strategies have performed better than lower-risk strategies.

Source: LSEG/Cambridge; index definitions provided in the Appendix.

3Q 2023 Private Credit Fundraising Landscape

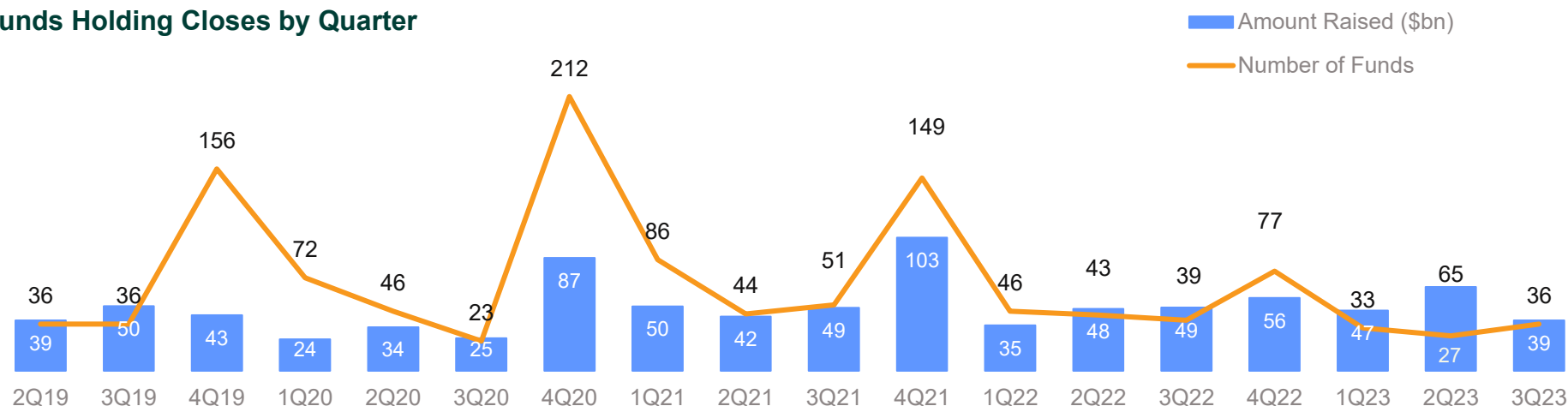
Activity remains strong through 3Q23

- ▶ Private credit fundraising was robust leading into the Covid dislocation with a particular focus on direct lending, asset-based lending and distressed strategies.
- ▶ In the current rising rate environment, a renewed focus has been placed on relative value, downside protection and managers' internal workout resources.
- ▶ Renewed interest in strategies with strong collateral protection such as asset-based lending as well as capital solutions and distressed strategies.
- ▶ Larger sponsor-backed lending seeing a new focus due to the high yield/BSL disintermediation by private debt.

Largest Funds Holding Closes in 3Q23

Name	Amount (\$millions)	Strategy
HPS Strategic Investment Partners V	\$17,000	Mezzanine Debt
GS Mezzanine Partners VIII	\$11,700	Mezzanine Debt
HPS Core Senior Lending Fund II	\$10,000	Direct Lending
Crescent Credit Solutions VIII	\$8,000	Mezzanine Debt

Funds Holding Closes by Quarter



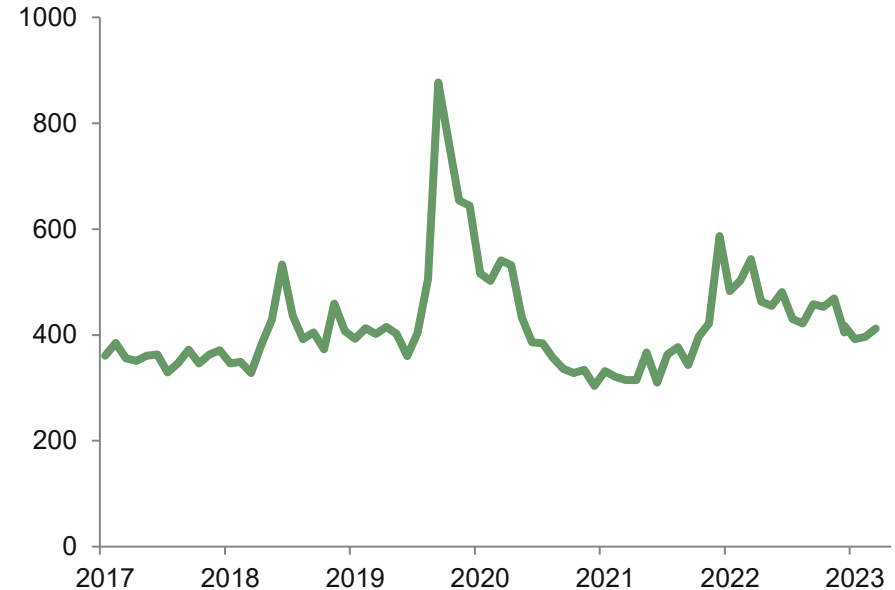
Source: Pitchbook

3Q 2023 Yield Spreads

High Yield Effective Yields Ended 9/30/23



US Corporate High Yield Spreads Ended 9/30/23

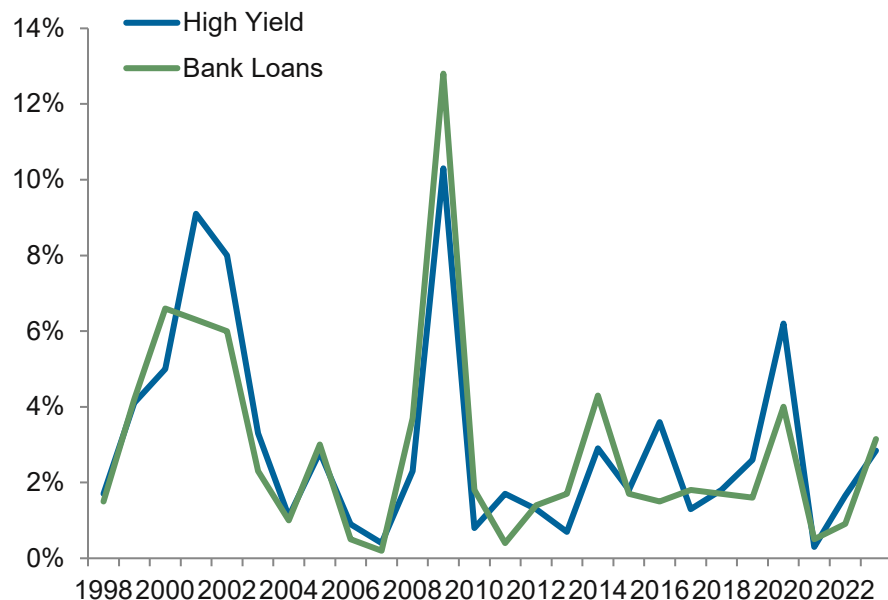


- U.S. sub-investment grade corporate yields rose dramatically at the beginning of 2022 with yields peaking in September. This was a combination of higher interest rates due to tighter Fed policy and a widening of high yield spreads. While yields have come down, they have since risen towards the end of the third quarter of 2023.
- Spreads contracted during the first half of 2023 due to stronger credit conditions as the U.S. economic outlook improved. This has since stabilized in the third quarter of 2023.

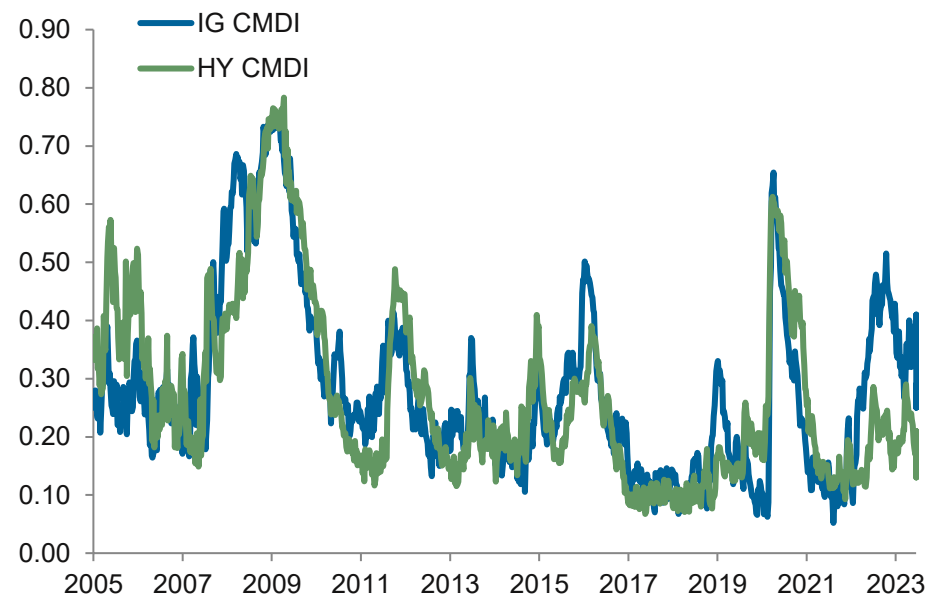
Sources: Bank of America, Federal Reserve Bank of St. Louis, Bloomberg Barclays

3Q 2023 Distressed and Opportunistic Debt

US Corporate Default Rates Ended 9/30/23



Corporate Bond Market Distress Index (CMDI) Ended 9/30/23



- ▶ Default rates for U.S. corporate bonds and loans ticked up in 2023 but remain slightly below the historical average of 3%–4%.
- ▶ The Corporate Bond Market Distress Index (CMDI) rose rapidly during 2022, especially for investment grade bonds, but has fallen since then. In 2023, both the IG distress and HY bond indicator noticed a sharp rise midyear but has since fallen.

Source: Federal Reserve Bank of New York, JPM

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**3Q 2023 Private Credit Portfolio
Performance Review**

Hawaii EUTF Horizon Returns

As of September 30, 2023

Horizon Net IRRs

As of 09/30/23

Strategy	1 Year	3 Years	Since Inception
Hawaii EUTF Private Credit	10.7%	9.0%	9.5%
LSTA Leveraged Loan Benchmark+200 bps	15.2%	8.7%	8.7%

- The EUTF Private Credit portfolio posted a positive return during the most recent year, underperforming the benchmark by 450 bps. The index outperformance was due to a sharp rally in liquid below-investment grade bonds over the past year, from which private credit strategies also benefited, but private loan values do not adjust as quickly as traded credit, causing a performance lag during market fluctuations.
- Three-year performance has been strong, with the Hawaii EUTF portfolio outperforming its benchmark by 27 bps annually.
- Since inception, the portfolio has generated a net IRR of 9.5%, 81 bps above the benchmark and exceeding the long-term expected return of the portfolio.

3Q 2023 Hawaii EUTF Private Credit Performance Summary

- Hawaii EUTF has a 10% long-term (7.0% short-term) allocation to Private Credit
 - As of September 30, 2023 the actual allocation to Private Credit was **7.2%**.
- The Private Credit portfolio NAV ended the second quarter at \$489 million, an increase of \$141 million from 09/30/22. Commitments totaled \$900 million, up \$250 million year-over-year.
- The portfolio is in its investment period, with 56.3% of capital paid-in, vs. 56.0% on 09/30/22. Distributions were up 76.4% over the past year.
- The Private Credit portfolio is performing in line with expectations, generating an 9.5% net IRR since inception, an improvement of 0.9% from a year ago.

Total Private Credit

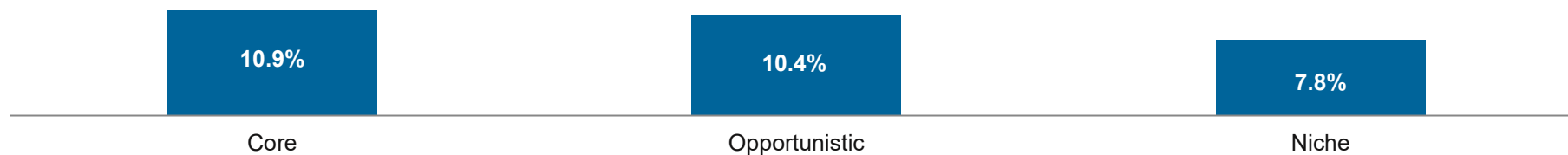
	09/30/2022	09/30/2023	YoY Change
Committed*	\$650,000,000	\$900,000,000	\$250,000,000
Paid-In	\$364,117,948	\$506,695,753	\$142,577,805
Uncalled	\$329,525,346	\$456,130,108	\$126,604,761
Distributed	\$58,370,189	\$102,982,684	\$44,612,495
NAV	\$347,953,976	\$489,106,276	\$141,152,300
DPI	0.16x	0.20x	0.04x
RVPI	0.96x	0.97x	0.01x
TVPI	1.12x	1.17x	0.05x
IRR	8.7%	9.5%	0.85%

Private Credit Performance By Strategy

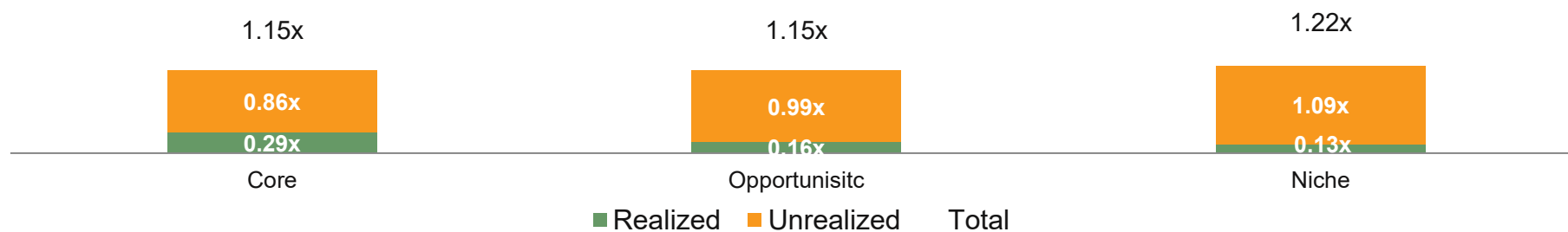
As of September 30, 2023

Portfolio Performance by Strategy Type	Commitments	Contributions	Unfunded Commitments	Distributions	Net Asset Value	Total Value	Net DPI	Net TVPI	Net IRR	S&P LSTA + 200 PME
Opportunistic	\$400	\$196	\$225	\$31	\$194	\$226	0.16x	1.15x	10.4%	9.4%
Private Credit	\$900	\$507	\$456	\$103	\$489	\$592	0.20x	1.17x	9.5%	8.7%

Net IRR by Strategy



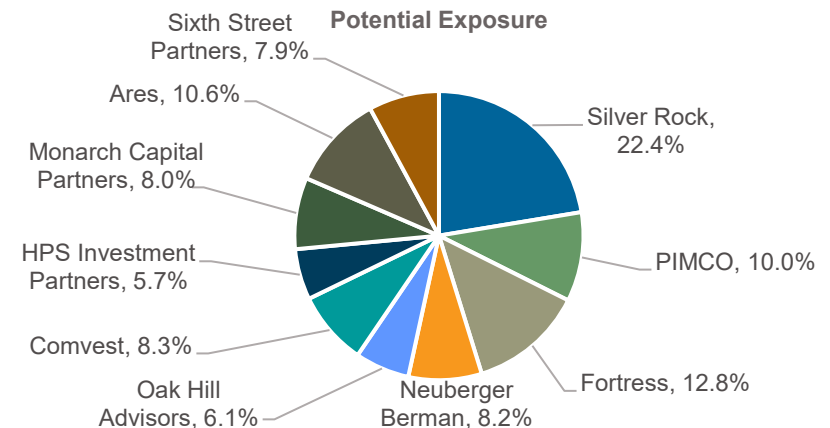
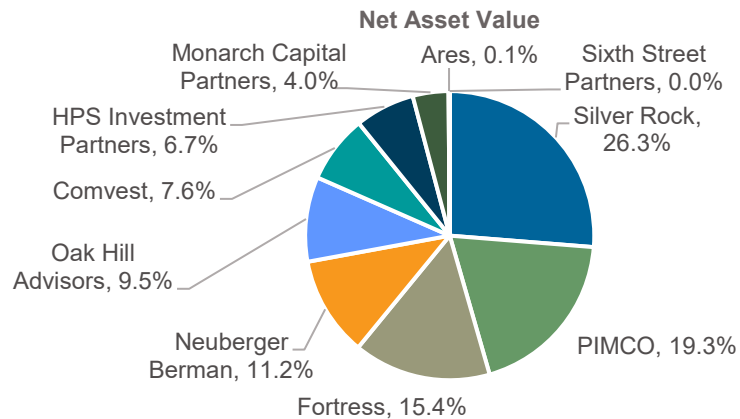
Net TVPI by Strategy



Portfolio Diversification By GP

As of September 30, 2023

Portfolio Exposure By GP	Net Asset Value	%	Unfunded Commitments	%	Potential Exposure	%
Silver Rock	\$129	26.3%	\$83	18.3%	\$212	22.4%
PIMCO	\$94	19.3%	\$0	0.0%	\$94	10.0%
Fortress	\$75	15.4%	\$46	10.0%	\$121	12.8%
Neuberger Berman	\$55	11.2%	\$23	5.1%	\$78	8.2%
Oak Hill Advisors	\$47	9.5%	\$11	2.4%	\$57	6.1%
Comvest	\$37	7.6%	\$41	9.0%	\$78	8.3%
HPS Investment Partners	\$33	6.7%	\$21	4.6%	\$54	5.7%
Monarch Capital Partners	\$19	4.0%	\$56	12.3%	\$76	8.0%
Ares	\$1	0.1%	\$100	21.9%	\$101	10.6%
Sixth Street Partners	\$-0	(0.0%)	\$75	16.4%	\$75	7.9%
Private Credit Portfolio	\$489		\$456		\$945	



2022-2023 Private Credit Commitment Summary

As of September 30, 2023

2022 Vintage Private Credit Commitments*

2022 Commitment Total:	\$275 million
Silver Rock Tactical Allocation Fund – 2022	\$100 million
Comvest Credit Partners Fund VI	\$75 million
Ares Pathfinder Fund II	\$100 million

2023 Vintage Private Credit Commitments*

2023 Commitment Total:	\$150 million
Sixth Street Partners TAO	\$75 million
Monarch Capital Partners VI	\$75 million

- In 2021, \$200 million in commitments were closed, including to two existing GPs (Silver Rock co-investment and Fortress Lending Fund III) and one new GP (Neuberger Berman IV).
- In 2022, \$275 million in commitments were closed, including a re-investment with the Silver Rock Tactical Allocation Fund and a commitment to a new lower-middle market focused direct lending manager, Comvest Credit Partners Fund VI. A \$100 million commitment to Ares Pathfinder II was approved late in the year to further diversify the specialty finance (non-corporate) debt portion of the portfolio.
- In 2023, two \$75 million commitments were approved for Sixth Street Partners TAO, a multi-strategy credit fund, and Monarch Capital Partners VI, a diversified distressed debt fund. These strategies will provide exposure to both corporate and non-corporate credit opportunities.

*Commitment timing based on board approval date, not legal closing date. In November a \$100 million commitment was approved for Fortress Lending Fund IV, a re-up with a diversified lending strategy providing exposure to both corporate direct lending and asset-based finance opportunities.

Performance Summary Table

As of September 30, 2023

	Vintage Year	Capital Commitments (\$000s)	Paid In Capital* (\$000s)	Uncalled Capital (\$000s)	% Paid In	Distributed Capital (\$000s)	Net Asset Value (\$000s)	Net TVPI	Net IRR
Fortress Lending Fund I	2019	\$50,000	\$54,014	\$13,107	108.03%	\$37,993	\$27,798	1.22x	9.8%
Fortress Lending Fund III	2022	\$75,000	\$48,000	\$32,528	64.00%	\$5,528	\$47,680	1.11x	9.4%
Neuberger Berman Fund IV	2021	\$75,000	\$52,500	\$23,024	70.00%	\$7,212	\$54,663	1.18x	13.8%
Comvest Credit Partners VI	2022	\$75,000	\$40,165	\$41,250	53.55%	\$6,396	\$36,975	1.08x	NM
Core		\$275,000	\$194,679	\$109,910	70.79%	\$57,129	\$167,115	1.15x	10.9%
Silver Rock TAF 2019	2019	\$75,000	\$86,703	\$6,034	115.60%	\$27,495	\$77,098	1.21x	10.3%
Silver Rock TAF 2019 B	2021	\$25,000	\$7,817	\$19,755	31.27%	\$3,079	\$5,510	1.10x	8.7%
Silver Rock TAF 2022	2022	\$100,000	\$42,517	\$57,483	42.52%	\$0	\$45,964	1.08x	NM
OHA Tactical Investment Fund	2020	\$50,000	\$39,919	\$10,752	79.84%	\$646	\$46,606	1.17x	9.5%
Sixth Street TAO	2023	\$75,000	\$123	\$74,877	0.16%	\$0	\$-72	0.58x	NM
Monarch CP VI	2023	\$75,000	\$18,750	\$56,250	25.00%	\$0	\$19,321	1.03x	NM
Opportunistic		\$400,000	\$195,830	\$225,150	48.96%	\$31,220	\$194,426	1.15x	10.43%
PIMCO Private Income Fund**	2019	\$75,000	\$75,000	\$0	100.00%	\$0	\$94,327	1.26x	7.2%
HPS European Asset Value Fund II	2020	\$50,000	\$41,187	\$21,070	82.37%	\$14,633	\$32,730	1.15x	9.3%
Ares Pathfinder Fund II	2022	\$100,000	\$0	\$100,000	0.00%	\$0	\$508	0.00x	NM
Niche		\$225,000	\$116,187	\$121,070	51.64%	\$14,633	\$127,565	1.22x	7.8%
Private Credit Portfolio		\$900,000	\$506,696	\$456,130	56.30%	\$102,983	\$489,106	1.17x	9.5%

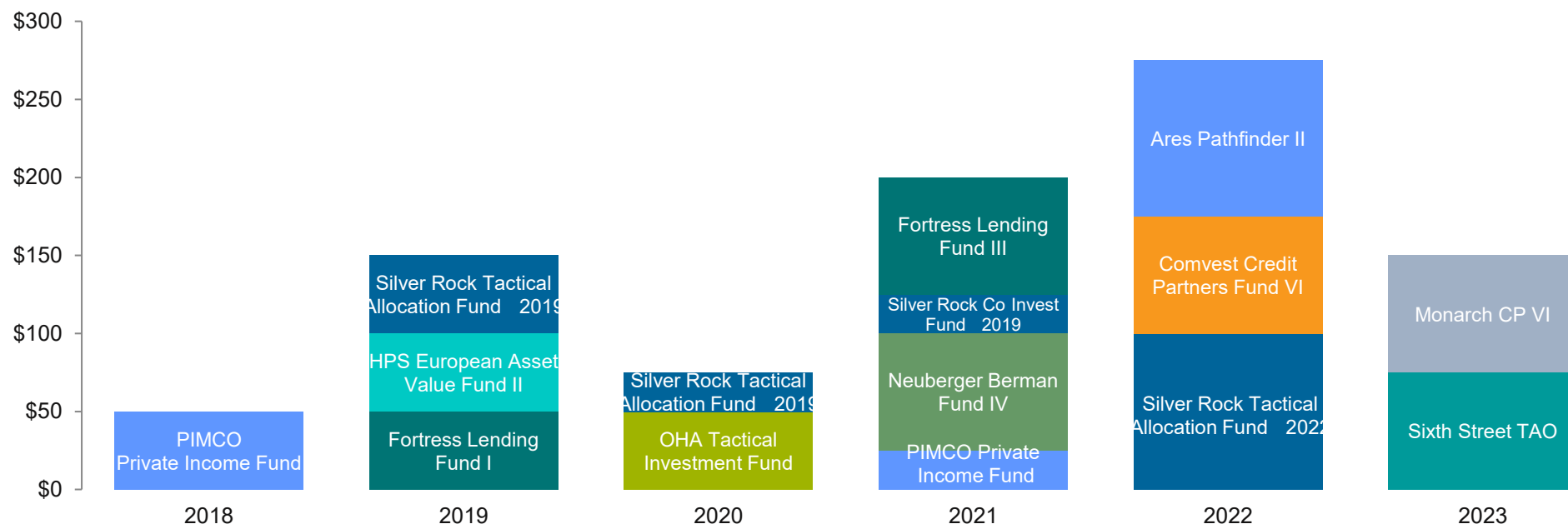
- Private credit strategies had positive performance over the past twelve months. The inception-to-date net IRR of the portfolio increased from 8.7% to 9.5%. Performance over the past three years is in line with expectations.
- Top contributors to EUTF's portfolio performance have been Neuberger Berman's 2021 fund and Silver Rock's 2019 vintage fund. Performance for recent vintage year funds (2021-23) has generally been strong out of the gate.
- The Silver Rock 2019 B co-investment fund has had improved performance but has been slow to deploy capital (31.3%). PIMCO's performance has been hampered by exposure to traditional real estate loans in the office sector.

*Note: Includes reinvestment of distributed capital **PIMCO PIF includes re-up commitment in 2021 of \$25 million

N/M: Not Meaningful – commitments too recent to generate meaningful performance

Hawaii EUTF Private Credit Commitment History

As of September 30, 2023



- EUTF made its first Private Credit commitment in 2018, to Specialty Finance (\$50m to PIMCO PIF). Subsequently EUTF allocated to Silver Rock, a globally diversified strategy that invests across Private Credit. In addition to Silver Rock, EUTF further diversified the portfolio with 2019 commitments to Specialty Finance (\$50m to HPS EAVF II) and Direct Lending (\$50m to Fortress LF I).
- EUTF invested opportunistically into Distressed through OHA during the early stages of the Covid-19 dislocation. More recently, EUTF added to the Distressed allocation with a \$75m commitment to Monarch Capital Partners VI in June 2023.
- EUTF re-invested with existing managers to add Specialty Finance exposure in 2021 with PIMCO PIF (\$25m); Diversified Credit in 2020, 2021, and 2022 with Silver Rock; and Direct Lending in 2021 with Fortress (\$75m) and Neuberger Berman IV (\$75m).
- EUTF diversified its corporate Direct Lending exposure with a commitment to Comvest Credit Partners VI in 2022, and more recently, with an approved commitment to Fortress Lending Fund IV (\$100m) in November 2023. In November 2022, EUTF made a new commitment to Ares Pathfinder II to further diversify its Specialty Finance exposure. In 2023 EUTF added to opportunistic credit portfolio with \$75m commitments to Sixth Street TAO (May) and Monarch Capital Partners VI (June).

Commitment timing based on board approval date, not legal closing date. In November a \$100 million commitment was approved for Fortress Lending Fund IV, a re-up with a diversified lending strategy providing exposure to both corporate direct lending and asset-based finance opportunities.

Callan

Appendix: Glossary of Terms

Private Credit Terms and Glossary

General Terms

Private Credit: Refers to credit and credit-related investments in companies and assets that are not quoted on the stock exchange. Investments are typically illiquid in nature. Ownership is typically accessed through limited partnership interests.

Vintage Year: The year in which a private credit partnership makes its first investment.

J Curve Effect: A common phenomenon associated with a developing private equity program where the return during the first several years can be moderately negative prior to larger positive returns developing (hence the “J” representation). The actual curve is depicted by plotting the return generated by a private credit fund against time (from inception to termination). In the early years of a developing program the payment of management fees out of drawn down capital does not produce an equivalent book value. Consequently, a private credit fund will initially show a negative return. For more detailed information on the “J-Curve Effect” ask to see Callan’s Whitepaper on the topic.

Bloomberg US Corporate High Yield Bond Index: Produced by Bloomberg, it measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody’s, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on the indices’ EM country definition, are excluded. The US Corporate High Yield Index is a component of the US Universal and Global High Yield Indices. The index was created in 1986.

Morningstar LSTA Leveraged Loan Index: Produced by Morningstar, Inc., it measures the 100 largest facilities in the US leveraged loan market. Using a market-value weighting, the constituents have a weight cap of 2%.

Private Credit performance represents horizon period IRR calculations comprised of Senior Debt, Subordinated Credit, and Credit Opportunities strategies from the Refinitiv/Cambridge database.

Private Credit Terms and Glossary

Cash Flow and Valuation Definitions

Commitment: The amount of a limited partner's obligation to a private equity fund.

Capital Contribution: The amount of the commitment that has been called by the general partner for company investments and also fees and expenses. Capital contributed is also referred to as paid-in capital.

Recycling/Reinvestment and Recallable Cash Flows: Private equity vehicles are usually characterized by the prohibition (unless stipulated by agreement) to reinvest proceeds or allow redemptions. This means that unless otherwise agreed to, private equity funds must distribute proceeds from investments to limited partners and cannot reinvest that capital. In some cases, distributions are "recallable", that is, after the fund distributes proceeds to its investors, it can draw down the same capital again, which makes it possible for the fund to draw capital in excess of its total committed capital.

Distributions include both recallable and non-recallable distributions. This means that a recallable distribution must be treated as an actual distribution and, if and when that distribution is called again, it must be treated as additional paid-in capital but must not reduce unfunded commitments or change cumulative committed capital.

It should be noted that recallable distributions have an impact on the metric calculations. For example, this recallable feature means that cumulative paid-in capital can be higher than cumulative committed capital. It also means that, all other things being equal, the DPI, RVPI, and TVPI multiples will be lower for funds with recallable distributions as the denominator will be increased. It also means that the PIC multiple (paid-in capital to cumulative committed capital) will be higher for funds with recallable distributions, all other things being equal. *(Source: GIPS Guidance Statement on Private Equity, January 2011)*

Distribution: The returns of cash or securities that an investor in a private equity fund receives.

Market Value or Net Asset Value (NAV): The carrying value of the investments as determined by the general partner of a partnership in accordance with a limited partnership's valuation policy.

Private Credit Terms and Glossary

Major Categories

Direct Lending: Origination or purchase of commercial loans used to finance general business operations, projects, or growth; often bilateral (single lender and borrower) or may involve a small group of lenders, as distinct from broadly syndicated loans

Mezzanine (Subordinated debt): An investment strategy that involves providing capital or financing that is below the senior debt and above the equity in terms of liquidation priority. Mezzanine is analogous to private high yield debt and typically includes preferred stock and warrants. The majority of return is provided through coupon payments and equity rights typically increase the return. Mezzanine debt is commonly structured as part of a Buyout transaction.

Distressed Credit: Investing in corporate bonds of companies that have either filed for bankruptcy or appear likely to do so in the near future. The strategy of distressed debt involves first becoming a major creditor of the target company by buying up a company's bonds at a deep discount to par. Securing a position as a key creditor allows for influence regarding the plan for reorganization of the company. In the event of liquidation distressed debt investors have a senior position to the equity holders for priority of repayment and normally recover the full par value of debt securities. Usually a reorganization allows the company to avoid or emerge from bankruptcy protection. In some instances distressed debt firms convert the debt obligations to equity in the company, and gain majority control of the newly capitalized business.

Multistrategy/Multi-Sector: Diversified approach across private credit subcategories, with allocations potentially changing opportunistically over time; requires deep resources across multiple credit sectors and geographies.

Private Credit Terms and Glossary

Performance Metrics

Internal Rate of Return (IRR): The CFA Institute GIPS approved methodology to calculate return performance of private equity investments. The IRR calculates the rate of return since inception (implied interest rate earned) of an investment based on the amount and timing of capital contributions (money invested), distributions (money returned from investments), and the current unrealized value of investments. The IRR is a capital- or dollar- weighted calculation and accounts for the timing and size of flows. IRR differs from the time-weighted return (TWR) calculation employed with equity and fixed income investments, where a series of interim period (e.g., quarterly) returns are linked together in an equal-weighted manner to derive a percentage return unaffected by cash flows.

TVPI: Total Value (Distributions + Net Asset Value) as a ratio of (divided by) paid-in capital. Notionally a TVPI ratio of 1.30 means that the investment has created a total gain of 30 cent for every dollar contributed. TVPI is composed of both returned capital and residual value (e.g., DPI of 0.60 + RVPI of 0.70 = TVPI of 1.30).

Public Market Equivalent (PME) TVPI: A TVPI calculated by applying the called capital and distributed capital of the private equity investment as an equivalent purchase and sale of the chosen benchmark. The calculated net asset value (NAV) is then used to calculate the benchmark's RVPI, which is subsequently added to the investors actual DPI to get a benchmark TVPI. The figure is intended to evaluate the investor's total value if they had moved money in and out of the chose benchmark instead of the partnership.

DPI: Distributions as a ratio of (divided by) paid-in capital (notionally a DPI ratio of 0.60 means that 60 cents has been distributed back to investors for every dollar contributed).

RVPI: Residual Value (NAV) as a ratio of (divided by) paid-in capital (notionally a RVPI ratio of 0.70 means that the remaining investment(s) is currently valued at 70 cents for every dollar contributed).

Private Credit Terms and Glossary

Performance Metrics (cont'd)

Public Market Equivalent (PME) IRR: An internal rate of return (IRR) calculated by applying the called capital and distributed capital of the private equity investment as an equivalent purchase and sale of the chosen benchmark. The calculated net asset value (NAV) is then used to calculate the benchmark's IRR. The figure is intended to evaluate the investor's return if they had moved money in and out of the chose benchmark instead of the partnership.

Cash Yield: Quarter's Distributed capital change divided by the quarter's beginning Net Asset Value. It values the percentage of realized appreciation/depreciation embedded in the NAV. For example, a cash yield of 5% means every dollar of residual value (NAV) has paid 5 cents to the investor this quarter.

\$ Unrealized Appreciation/ Depreciation: Quarter's Total Value change minus the quarter's Distribution capital change minus the quarter's Paid-In capital change. The dollar amount values the unrealized appreciation/depreciation embedded in the Net Asset Value.

% Unrealized Appreciation/Depreciation: Unrealized Appreciation/Depreciation in dollars divided by the quarter's starting Net Asset Value. It values the percentage of unrealized appreciation/depreciation embedded in the NAV. For example, unrealized appreciation of 2% means every dollar of residual value (NAV) has a gain of 2 cents that has yet to be paid to investors.

\$ Total Valuation Change: Quarter's Distributed capital change minus the quarter's Pain-In capital during the quarter plus the quarter's change in Net Asset Value. It values the total dollar amount of both realized and unrealized gains/losses that the investor received over the quarter.

Private Credit Terms and Glossary

Performance Metrics (cont'd)

% Total Valuation Change: Total Valuation Change in dollars divided by the quarter's starting Net Asset Value. It values the percentage of both realized and unrealized gains/ losses that the investor received over the quarter.

For example, total valuation change of 4% means every dollar of residual value (NAV) has a gain of 4 cents of which a portion has and a portion has not been paid to investors.

Pooled IRR: An IRR calculation that treats a database of multiple private credit partnerships (such as Thomson Reuters/Cambridge) as a single portfolio. The initial flow in the calculation represents the total market value of the database (if any). The subsequent cash inflows and outflows are incorporated, and the final cash flow is the ending valuation of the database holdings.

IRR Quartile: Drawn from a database of multiple private credit partnerships, the quartile is a breakpoint return that separates the partnerships' IRRs in a selected sample into 25% increments ranked from highest to lowest, e.g. 1st quartile is the highest 25% performing funds. Members may be separated into by specific vintage years and strategies.

TVPI Quartile: Drawn from a database of multiple private credit partnerships, the quartile is a breakpoint return that separates the partnerships' TVPIs in a selected sample into 25% increments ranked from highest to lowest, e.g. 1st quartile is the highest 25% performing funds. Members may be separated into by specific vintage years and strategies.

Hawaii Employer-Union Health Benefits Trust Fund

March 5, 2024

EUTF Asset-Liability Study
Part 1B



1. Process Review
2. Progress Update
3. Capital Market Assumptions
4. Basic Preliminary A/L Output
5. Next Steps

Process Review



Strategic Allocation: The foundation for long-term portfolio structure

Key aspect:

Define risk & determine Board's tolerance for that risk

Tolerance for risk:

Heavily influences policy selection

Plan Assets

Heavily influence overall plan risk

90%

% of Investment Risk explained by asset allocation policy

EUTF has never completed an integrated asset-liability study*

* This is due to the evolution of the EUTF's funded status, particularly the change from pay-as-you-go to pre-funding.

3 key high-level steps to the A/L process:

1.

Develop an understanding of how the financial condition of the EUTF might vary based on outcomes of the investment portfolio.

2.

Set a consensus definition and view of the risk(s) the EUTF should bear.

3.

Once a view/tolerance for risk has been established, select an appropriate long-term investment strategy (i.e., a policy portfolio / strategic allocation).

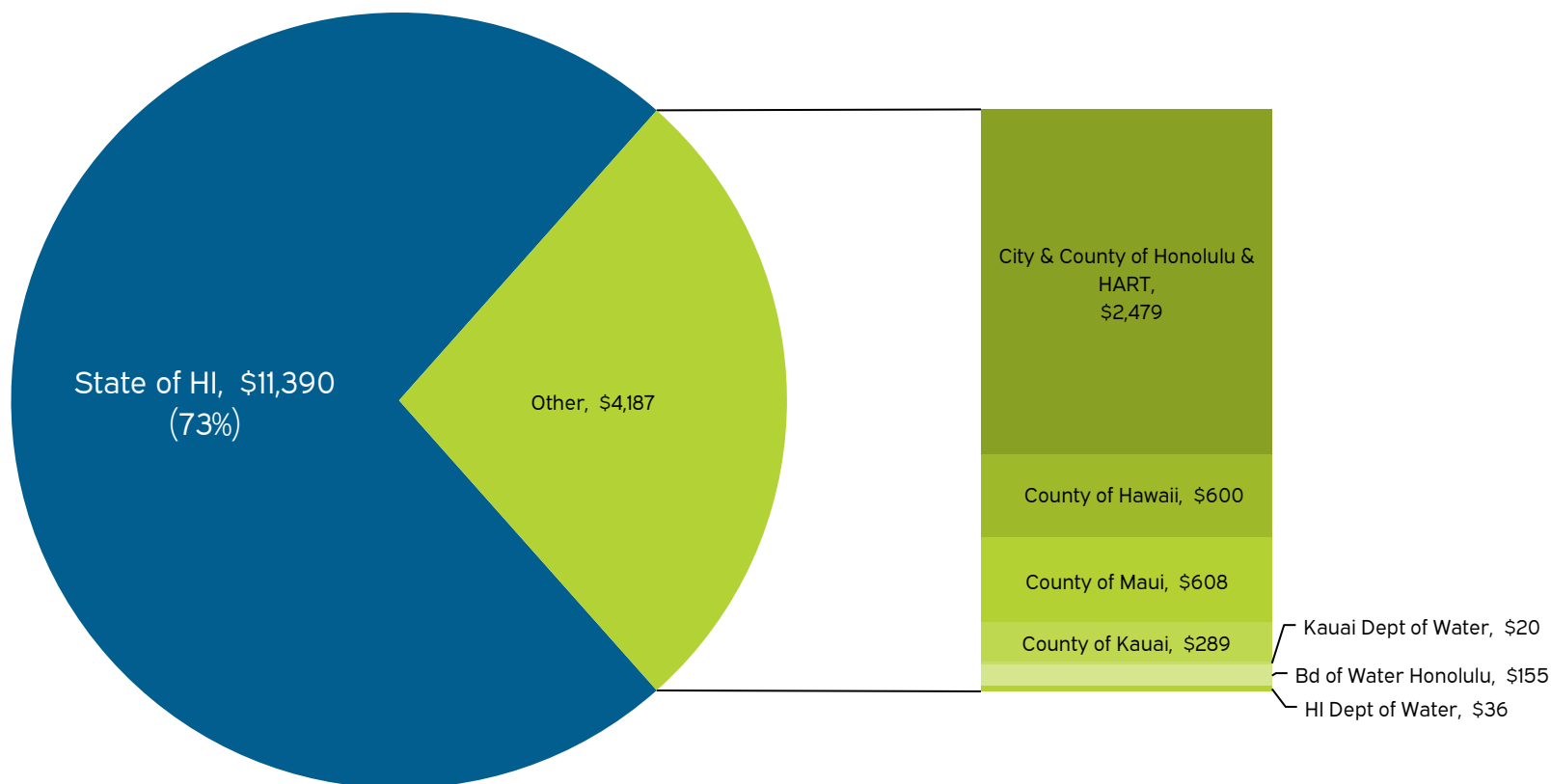


Hawaii Employer-Union Health Benefits Trust Fund

Review of Financial Condition

Review of Financial Condition

Total Actuarial Accrued Liability
\$15,576 Million



Source: Gabriel Roeder Smith & Company (GRS) – July 1, 2023 Actuarial Valuation Report



Hawaii Employer-Union Health Benefits Trust Fund

Review of Financial Condition

Review of Financial Condition

Actuarial Valuation July 1, 2023									
\$ (millions)	State of Hawaii	City & County of Honolulu & HART	County of Hawaii	County of Maui	County of Kauai	Kauai Dept of Water	Board of Water Honolulu	Hawaii Dept of Water	Total
Discount Rate	7%	7%	7%	7%	7%	7%	7%	7%	7%
AAL	\$11,390	\$2,479	\$600	\$608	\$289	\$20	\$155	\$36	\$15,576
Actuarial Assets	\$4,479	\$1,230	\$328	\$464	\$214	\$16	\$124	\$28	\$6,882
Unfunded AAL	\$6,912	\$1,249	\$272	\$145	\$75	\$4	\$31	\$7	\$8,695
7/2015 Funded Ratio	2.4%	12.1%	19.6%	33.4%	32.0%	40.4%	37.0%	40.2%	6.7%
7/2017 Funded Ratio	8.6%	16.6%	24.4%	39.3%	40.1%	49.0%	49.0%	46.9%	12.8%
7/2019 Funded Ratio	16.1%	23.8%	30.7%	46.0%	48.1%	54.1%	53.9%	54.5%	20.1%
7/2021 Funded Ratio	30.0%	36.0%	42.2%	60.2%	60.2%	66.4%	65.1%	63.5%	33.6%
7/2022 Funded Ratio	35.0%	45.1%	50.4%	72.2%	71.2%	77.2%	76.5%	74.7%	39.9%
7/2023 Funded Ratio	39.3%	49.6%	54.7%	76.2%	74.2%	80.0%	79.9%	79.3%	44.2%
ARC – FY 2026	\$839	\$195	\$45	\$38	\$18	\$1	\$8	\$2	\$1,146

→ While significant improvement has occurred, EUTF's long-term commitments (liabilities) are still materially larger than Fund assets.

→ The State of Hawaii represents the majority of total liabilities.

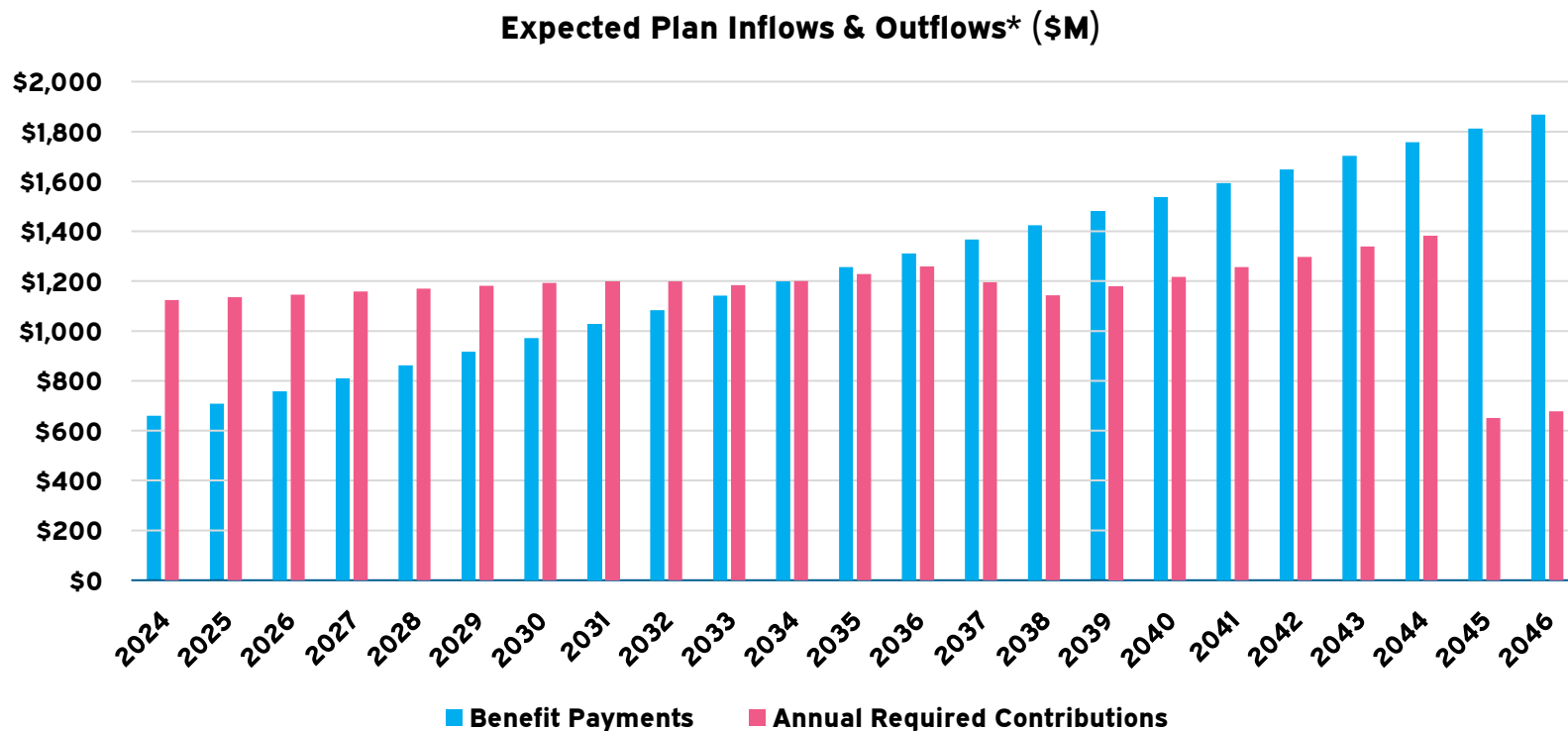
Source: Gabriel Roeder Smith & Company (GRS) – July 1, 2023 Actuarial Valuation Report



Hawaii Employer-Union Health Benefits Trust Fund

What is an asset-liability model?

- An asset-liability model (ALM) analyzes the plan's unique cash flow expectations (benefit payments, contributions, expenses, etc.) and attempts to quantify the risks associated with these expectations.



* Expected benefit payments provided by GRS



Liability Structure

- Using GRS data and internal actuarial expertise, we model the main components of the EUTF's liability structure.¹
- As asset/portfolio returns are simulated, our liability model will replicate the EUTF's funding policy, cash flows, and other inputs.
- This process allows for the optimization/objective function to directly incorporate the liability structure.

¹ Note that Meketa's modeling is not expected to produce the same results as any forecasting GRS has completed with the primary reason being our asset forecasts/simulations are stochastically modeled and use Meketa's capital market assumptions. Other less material modeling differences exist and can be discussed.

Progress Update



January-February 2024 Work

→ Two major activities were completed since the December 2023 meeting:

1. Meketa finalized 2024 Capital Market Assumptions (“CMAs”) and worked with Staff to verify their appropriateness for the EUTF.
2. In tandem with GRS, we have built the full asset-liability model that incorporates the EUTF’s specific liability/cash-flow projections.¹

→ We will review each of these activities in the next two sections.

¹ Note that Meketa’s modeling is not expected to produce the same results as any forecasting GRS has completed with the primary reason being our asset forecasts/simulations are stochastically modeled and use Meketa’s capital market assumptions. Other less material modeling differences exist and can be discussed.

Capital Market Assumptions



CMAs Executive Summary

- We update our capital markets assumptions each year in January.
 - Changes are driven by many factors, including interest rates, credit spreads, cap rates, and equity prices.
- 2023 was a volatile year for most investors, but ultimately most asset classes experienced positive returns, including double-digit gains for many risky assets.
- With the notable exception of China's markets, global bond and equity markets rallied at the end of the year, posting strong gains as inflation pressures eased and central banks appeared to be turning away from tightening policies.
 - Despite short-term interest rates climbing, the yield on most Treasury bonds finished the year near where they started it.
 - Credit spreads tightened, especially for lower quality credit such as high yield. The result is lower expected returns for many credit-oriented assets.
 - Most equity markets rallied in 2023, generally at a much faster pace than the gain in earnings. Hence many equity markets were trading at higher valuations at year-end, thus reducing their forward-looking returns



Setting Capital Market Assumptions

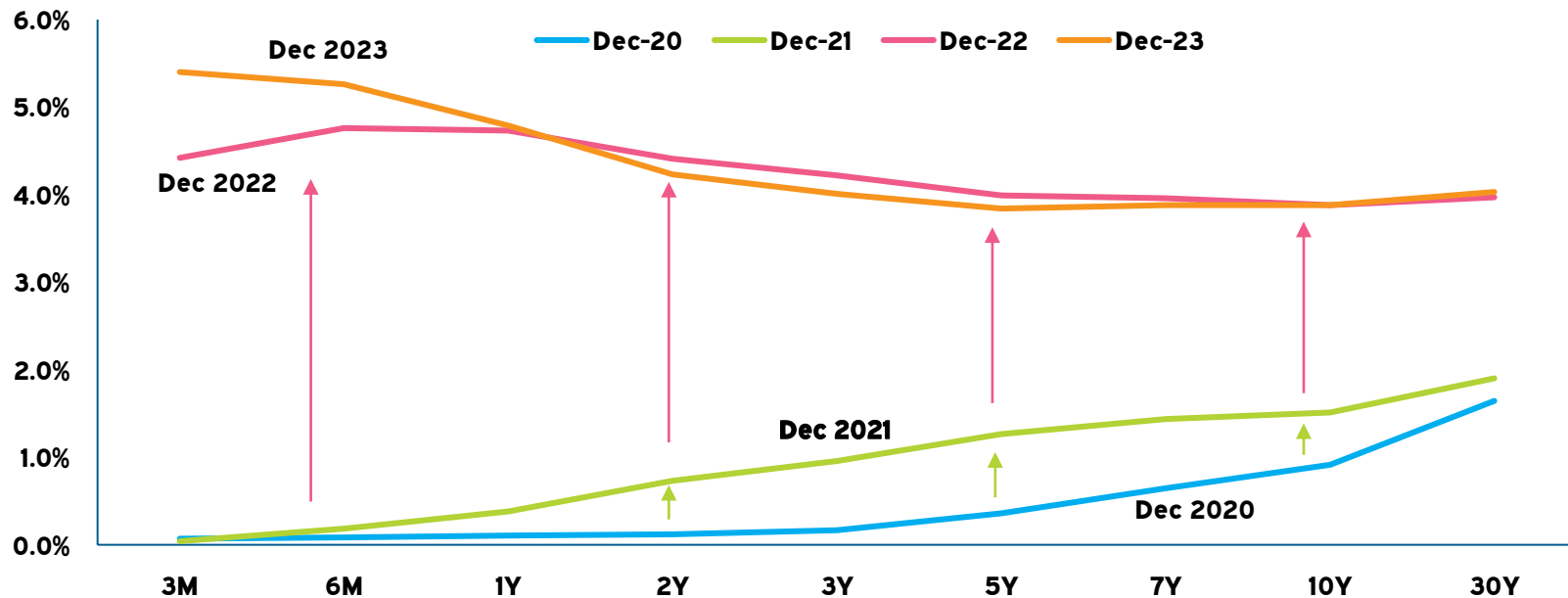
- CMAs are the inputs needed to calculate a portfolio's expected return, volatility, and relationships (i.e., correlations) to the broader markets.
 - CMAs are also used in mean-variance optimization, simulation-based optimization, asset-liability modeling, and every other technique for finding "optimal" portfolios.
- Consultants (including Meketa) generally set them once per year.
 - Our results are published in January based on December 31 data.
- This involves setting long-term expectations for a variety of asset class/strategy attributes:
 - Returns
 - Standard Deviations
 - Correlations
- Our process relies on both quantitative and qualitative methodologies.



Interest Rate Volatility

- Interest rate changes were a dominant storyline of 2023. While short-term rates increased throughout 2023, intermediate and long-term rates experienced significant volatility but ultimately finished the year at similar yields to where they started.
- Rates remained materially higher as of 12/31/2023 compared to 2020 and 2021.

US Yield Curve



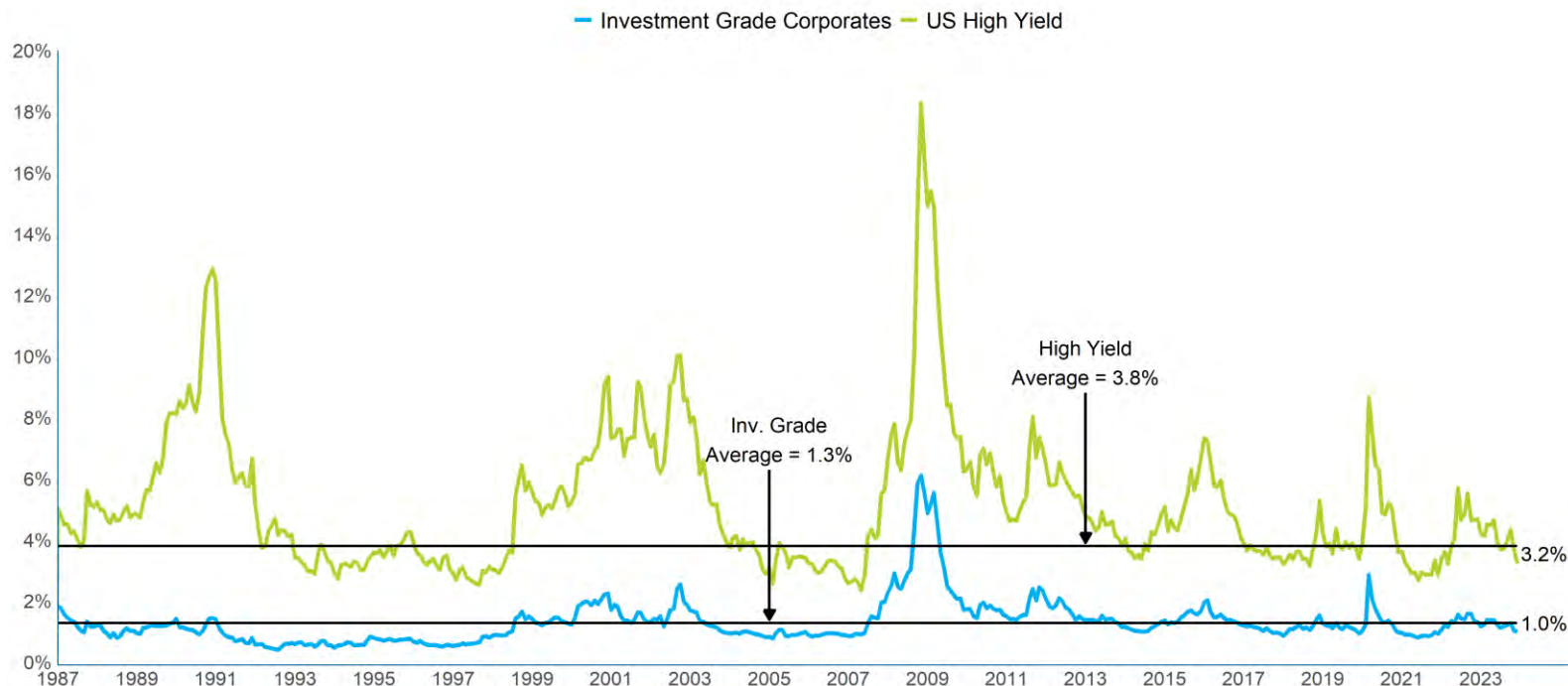
Source: Bloomberg. Data is as of December 31, 2023.



Narrower Credit Spreads

- Credit spreads tightened slightly in 2023, though they remain close to their long-term averages.
- Lower quality credit spreads experienced a more substantial tightening. The spread for high yield bonds declined from 469 bp to 323 bp.

Credit Spreads



Source: Bloomberg. High Yield is proxied by the Bloomberg High Yield Index and Investment Grade Corporates are proxied by the Bloomberg US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year US Treasury yield. Data is as of December 31, 2023.



Hawaii Employer-Union Health Benefits Trust Fund

Capital Market Assumptions – Market Review

Similar or Lower Yields (12/23 vs. 12/22)

- Short-term interest rates were higher than one year ago, while the 10-year Treasury yield ended the year where it started it.
- Similar levels of interest rates combined with tighter credit spreads results in slightly lower yields for most sectors of the global bond market.

Index	Yield to Worst 12/31/23 (%)	Yield to Worst 12/31/22 (%)	Yield to Worst 12/31/21 (%)	Yield to Worst 12/31/20 (%)
Fed Funds Rate	5.25-5.50	4.25-4.50	0-0.25	0-0.25
10-year Treasury	3.88	3.88	1.52	0.93
Bloomberg Aggregate	4.53	4.68	1.75	1.12
Bloomberg Corporate	5.06	5.42	2.33	1.74
Bloomberg Securitized	4.72	4.75	1.98	1.25
Bloomberg Global Aggregate	3.51	3.73	1.31	0.83
Bloomberg EM Local Currency Government	4.08	4.42	3.83	3.20
Bloomberg EM Hard Currency Aggregate	6.77	7.26	3.96	3.20
Bloomberg US Corporate High Yield	7.59	8.96	4.21	4.18

Source: Bloomberg.



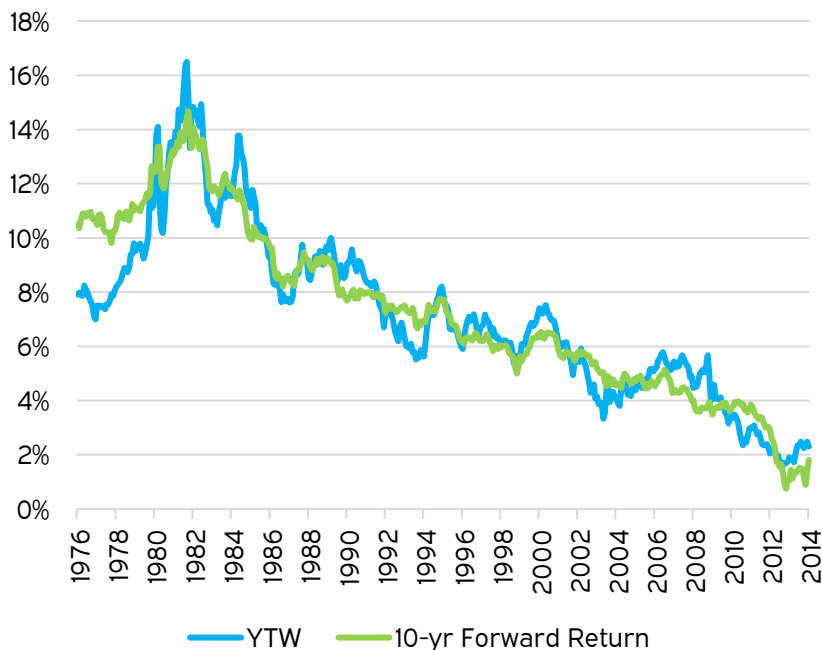
Hawaii Employer-Union Health Benefits Trust Fund

Capital Market Assumptions – Market Review

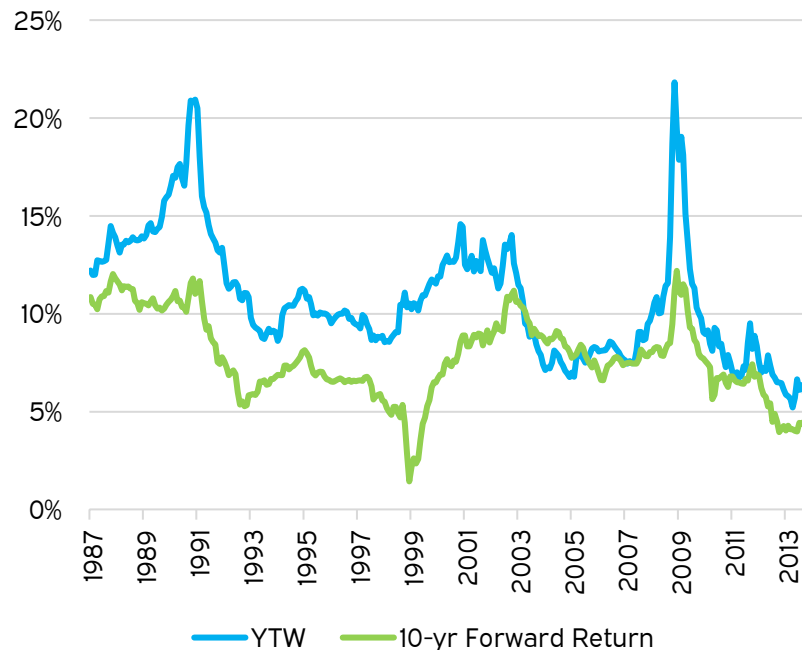
Yields Drive Future Returns

→ Changes in interest rates matter because yields are a very good predictor of future returns for bonds¹, at least over a 10-year horizon.

YTW and Returns for Investment Grade Bonds



YTW and Returns for High Yield Bonds



¹When predicting returns for bonds, default risk should also be taken into account. For example, defaults are why the return for high yield bonds have generally been below the starting yield.

Source: Bloomberg Aggregate and Bloomberg High yield indices. Data is as of December 31, 2023. YTW = yield-to-worst (a measure of yield that accounts for bond provisions).

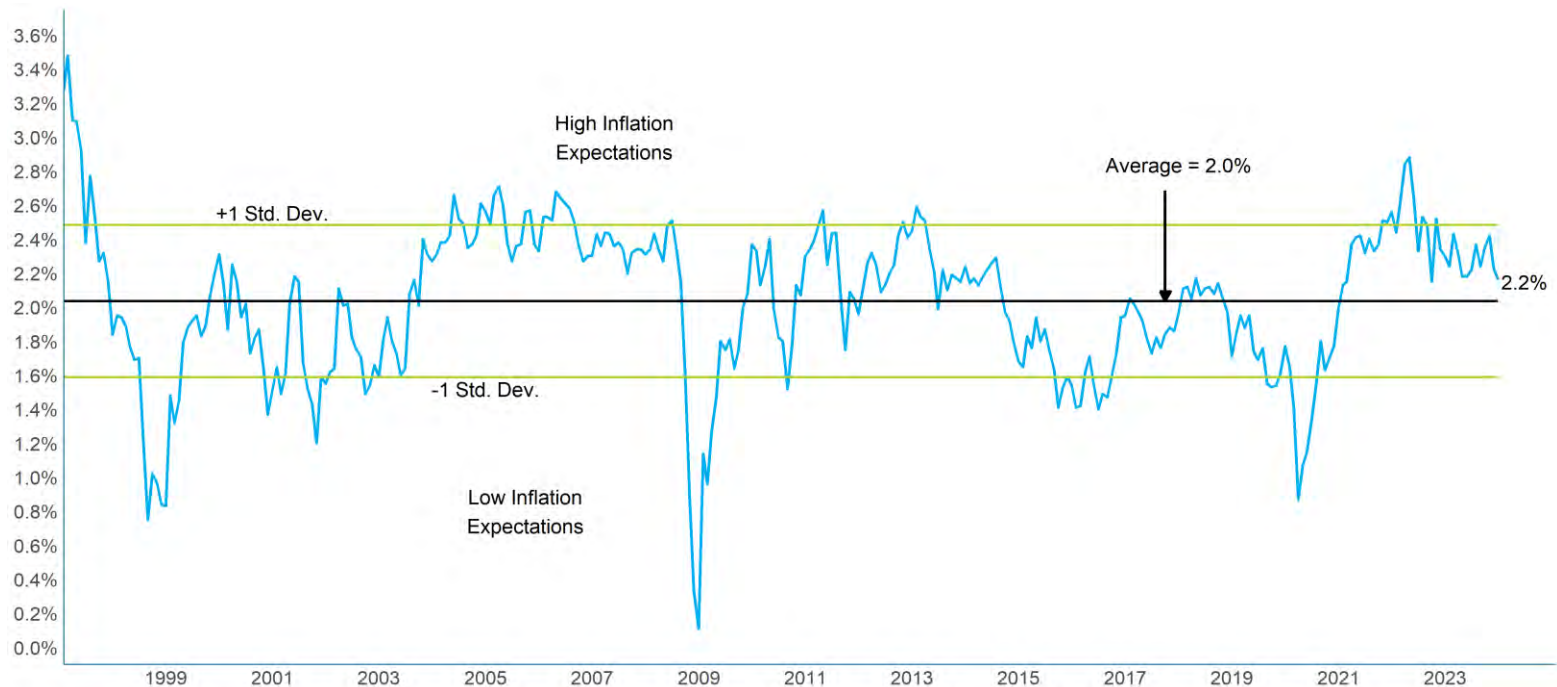


Slightly Lower Inflation Expectations

→ After substantial changes in inflation expectations in recent years, the market's expectations for inflation were little changed at the end of 2023.

- The 10-year BEI rate dropped from 2.3% to 2.2%. The 5-year BEI was slightly lower, at 2.1%.

Ten-Year Breakeven Inflation ("BEI")

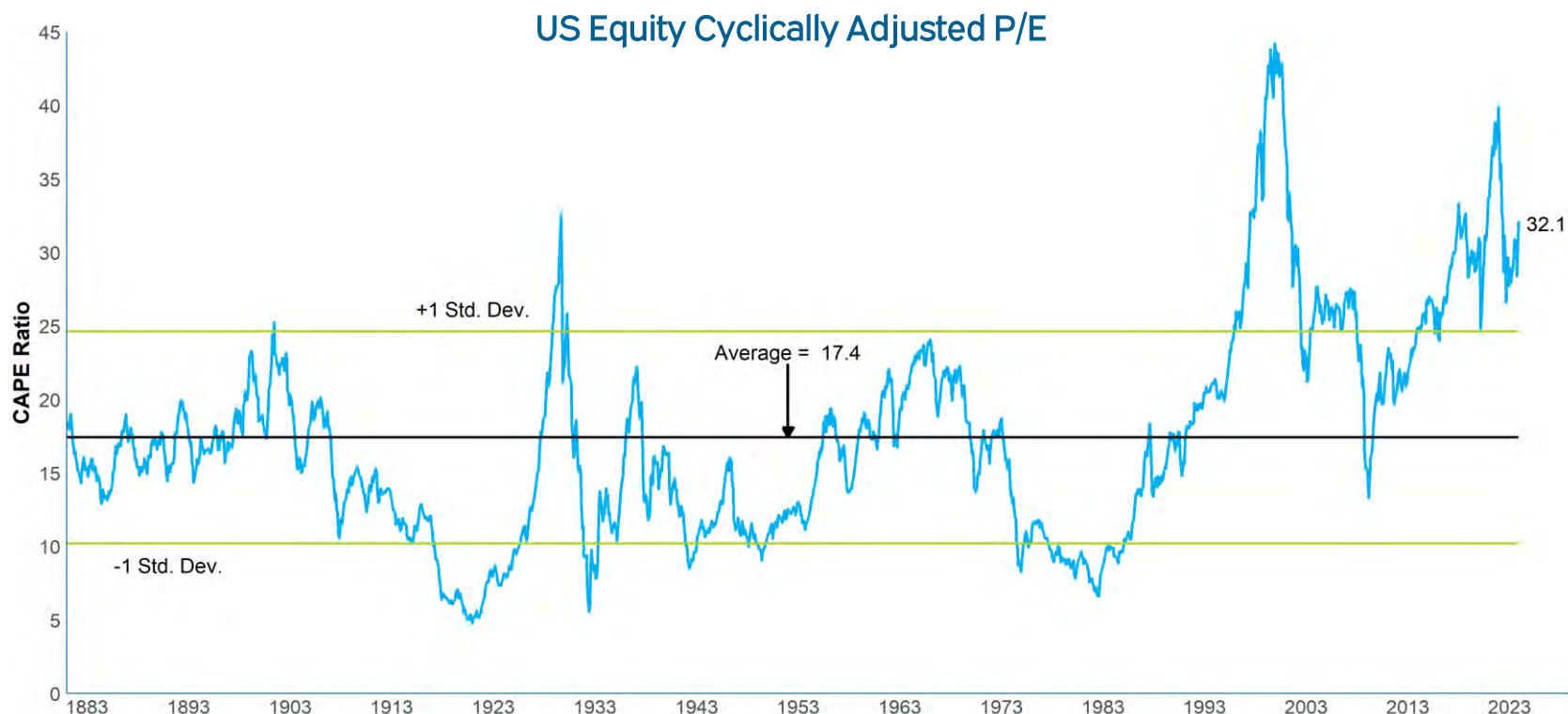


Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA). Data is as of December 31, 2023.



Higher Valuations for US Equities

- US stocks had a very good year, with the S&P 500 index gaining 26.3% in 2023.
- Valuations increased and remain elevated relative to their long-term history, though they are much nearer their average for the past 30 years.



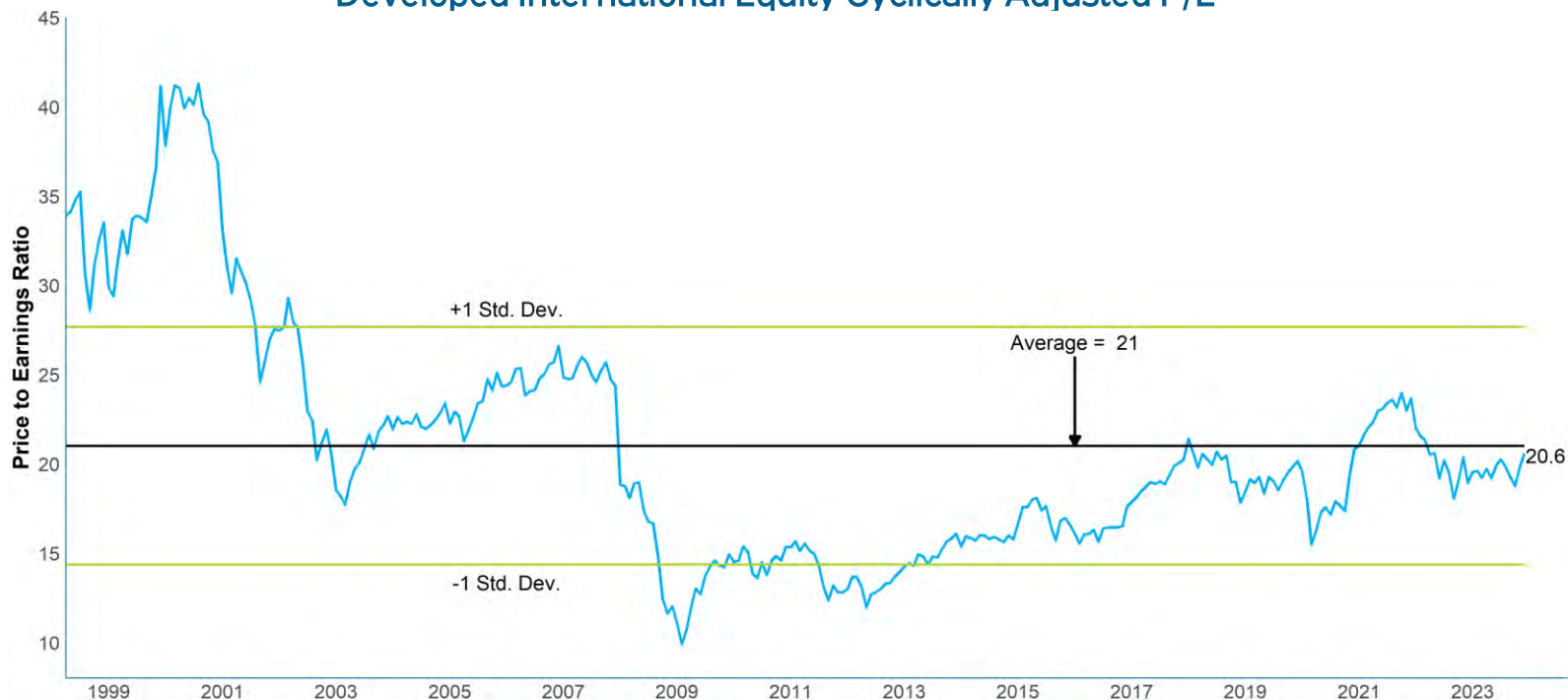
Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is as of December 31, 2023.



Slightly Higher Prices in Non-US Equities, too

- EAFE equities gained 18.2% in USD terms in 2023, benefiting slightly from a currency tailwind.
- Despite increasing from one year ago, EAFE valuations remain close to their 25-year historical average.

Developed International Equity Cyclically Adjusted P/E



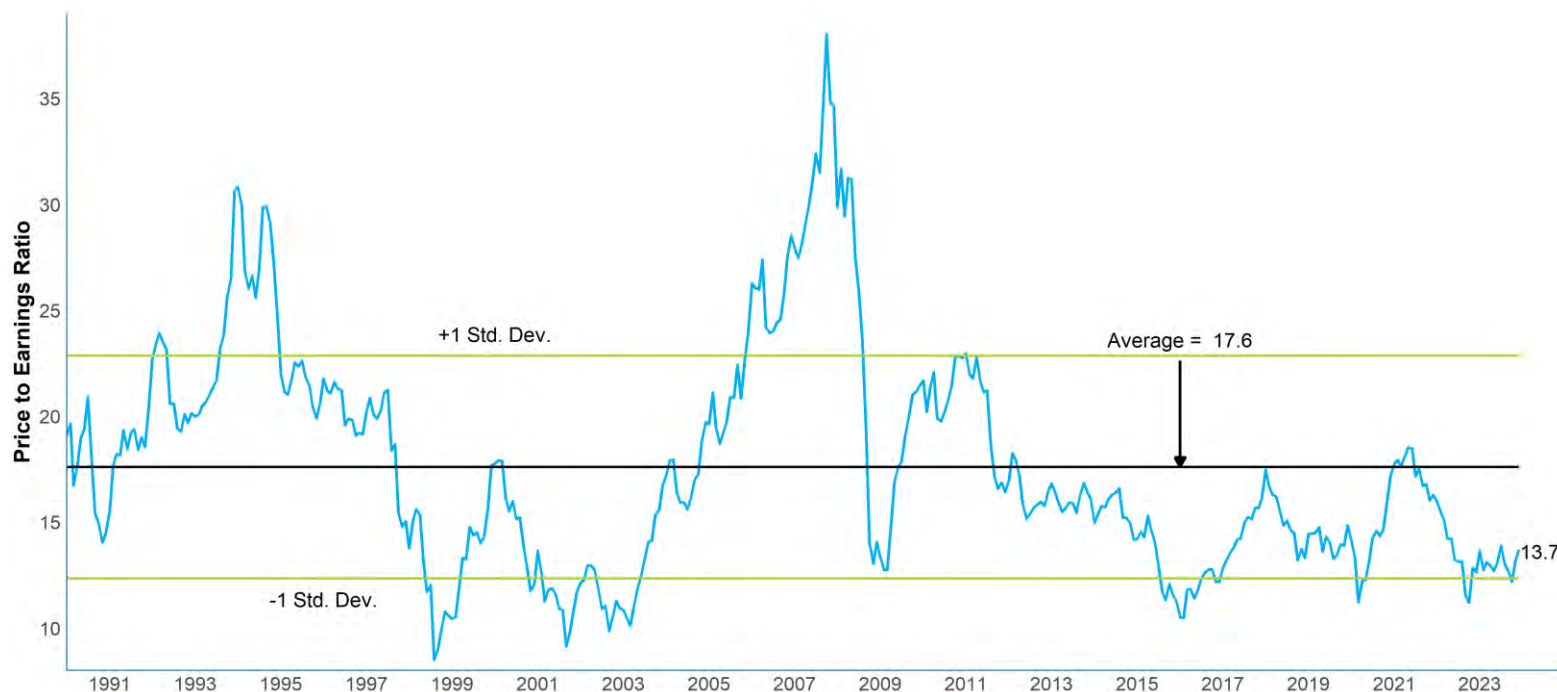
Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of December 31, 2023.



And Slightly Higher Prices in Emerging Market Equities

- Emerging market equities gained 9.8% in 2023, despite Chinese equities declining -11.2%.
- EM equity valuations remain well below their long-term average, though there is a significant difference between EM ex-China and China valuations.

Emerging Market Equity Cyclically Adjusted P/E



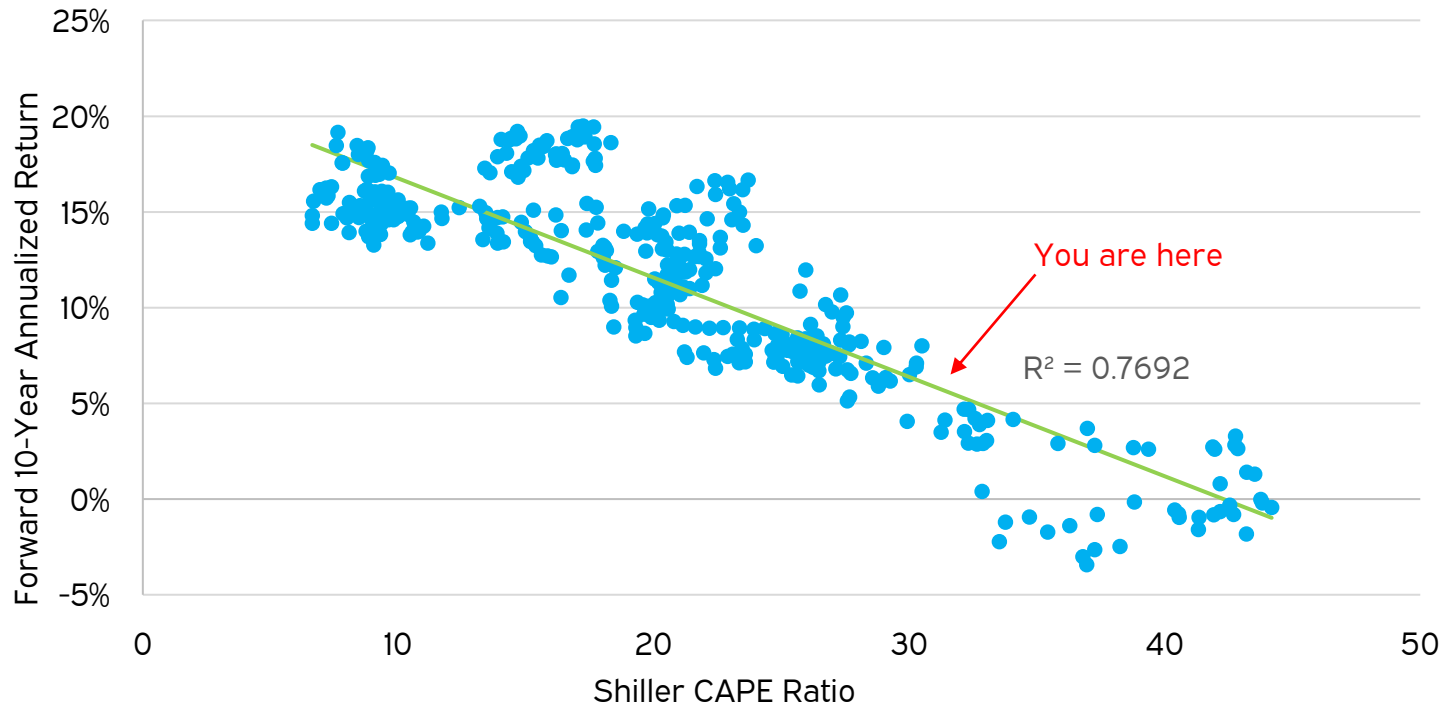
Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of December 31, 2023.



Higher Prices Imply Lower Returns for Equities

- Relative prices have been indicative of future equity returns.
- Higher prices have led to lower future returns, and vice versa.

US Equities: Shiller CAPE vs. Forward 10-Year Returns



Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is based on monthly returns and Cyclically Adjusted P/E ratio on S&P 500 Index for the period from January 1980 through December 2023.

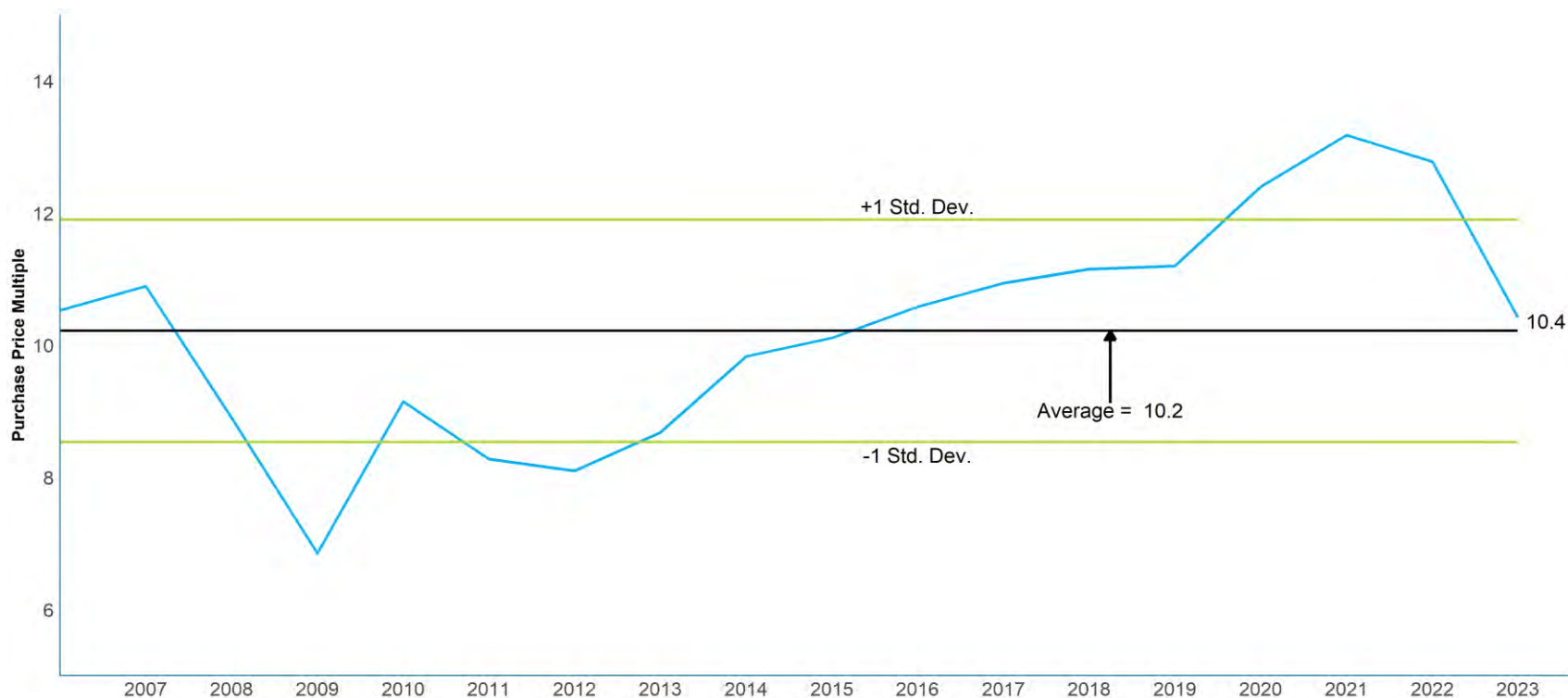


Private Equity Prices Coming Back Down

→ EBITDA multiples fell in the first half of 2023 for buyouts.

- Valuations remained above their post-GFC average.

Private Equity Multiples



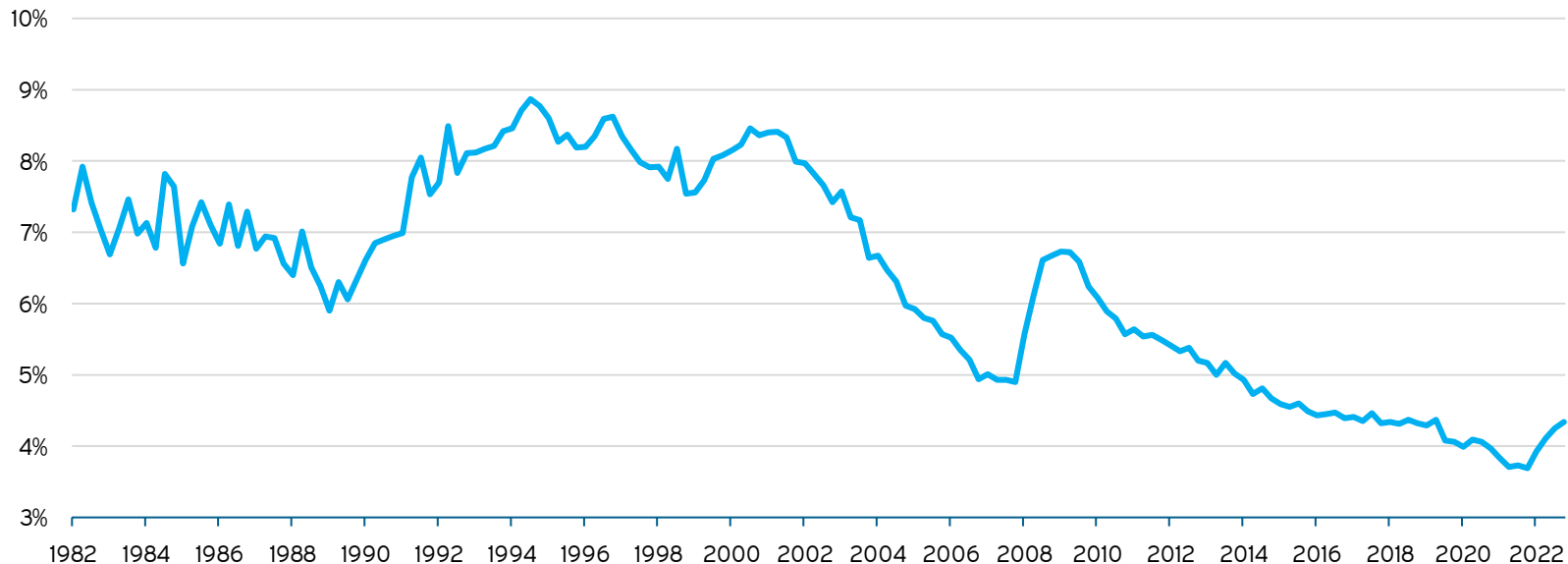
Source: Preqin Median EBITDA Multiples Paid in All LBOs, as of June 30, 2023.



Increasing Real Estate Yields

- Real estate cap rates are similar to an earnings yield (the inverse of the P/E ratio) for equities.
 - Cap rates are indicative of future returns.
- While cap rates have been gradually declining for decades, they have recently increased largely due to lower core real estate prices.

Core Real Estate Cap Rates



Source: NCREIF NPI value-weighted cap rates. As of September 30, 2023.



2024 vs. 2023 Summary

- Many investors achieved returns in calendar year 2023 that were above their target return.
 - Much of the strong performance was driven by a rebound in public equity markets.
- Short-term interest rates increased or remained relatively stable in 2023.
- Longer-term interest rates experienced material volatility in 2023 but ended the year at similar yields as they began the period.
 - However, credit spreads for many fixed income assets generally tightened during the year.

- With increasing public equity prices and relatively stable fixed income yields (in aggregate due to offsetting effects), our 2024 CMAs are anticipated to project lower total portfolio returns over the next decade compared to early-2023.
 - Additionally, due to lower private markets activity in 2023 (e.g., real estate transactions, private equity exits, etc.), there is additional uncertainty regarding private markets projections.



Developing Expected Returns

- Market practitioners generally make use of three methods for developing long-term expected returns:
 - Historical average returns
 - Financial/economic theory (e.g., higher risk = higher returns, capital structures, etc.)
 - Current measures (e.g., starting valuations relative to history)
- In addition to the above, practitioners also incorporate general projections for macroeconomic metrics such as GDP and inflation, among others.
- Meketa's methods are in-line with industry standards and represent a mixture of the three mechanisms.
 - Historical average returns play the smallest role in our assumptions.



Building Expected Return Forecasts

→ Our primary approach is based on fundamental models.

- Each model is based on the most important factors that drive returns for that asset class:

Asset Class Category	Major Factors
Equities	Dividend Yield, GDP Growth, Valuation
Bonds	Yield to Worst, Default Rate, Recovery Rate
Commodities	Collateral Yield, Roll Yield, Inflation
Infrastructure	Public IS Valuation, Income, Growth
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth
Private Equity	EBITDA Multiple, Debt Multiple, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

- The common components are income, growth, and valuation.
- Leverage (and cost of debt) is also directly incorporated, where applicable.



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Capital Market Assumptions – EUTF Portfolio

EUTF Asset Class Expected Returns and Volatilities

- Compared to 2022, changes in expected returns are mixed, particularly for *Growth* assets.
- Excluding Cash and Systematic Trend Following, *Diversifying Strategies* exhibit higher expected returns.
- Volatilities are generally the same or slightly lower than in 2022.

		Expected Compound Return			Expected Volatility		
Component	Asset Class/Strategy	2024	2022	2020	2024	2022	2020
Aggressive Growth	Private Equity	9.9	10.0	9.1	25.0	28.0	26.0
	US Microcap	8.7	7.6	8.0	22.0	24.0	22.0
Traditional Growth	Global Equity	7.2	7.2	7.6	17.0	18.0	17.0
Stabilized Growth	Global Options	5.8	5.8	6.1	13.0	13.0	13.0
	Real Assets*	6.5	7.7	7.4	14.4	14.4	13.45
	Private Credit	9.2	7.3	6.7	15.0	16.0	15.0
Diversifying Strategies	US TIPS	4.3	3.3	2.1	7.0	7.0	7.0
	Cash	2.4	3.1	1.1	1.0	1.0	1.0
	Long US Bonds	4.3	3.8	2.4	12.0	12.0	12.0
	ILS/Reinsurance	7.0	6.4	6.0	11.0	11.0	11.0
	Alternative Risk Premia	5.8	5.4	3.3	10.0	10.0	10.0
	Systematic Trend Following	3.8	5.6	3.3	15.0	15.0	15.0
	Long Volatility/Tail Risk						
Modeled conditionally based on global equity simulations.							

*50% Core RE / 12.5% Value-add RE / 12.5% Opportunistic RE / 12.5% Core Infrastructure / 12.5% Non-core Infrastructure
Font colors pertain to 2024 expectations being **higher** or **lower** compared to 2022. Black font implies no change.



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Capital Market Assumptions – EUTF Portfolio

Total Portfolio Expected Return (Asset-only metrics)

- The current long-term policy portfolio was approved in August 2022 with a marginal change in February 2023 (2.5% was shifted from Alternative Risk Premia to Cash).
- With 2024 CMAs, the long-term expected return of the long-term policy portfolio is (20) bps lower than in August 2022 and (10) bps lower than in February 2023.
- Due to lower volatility assumptions, the two risk metrics (annual standard deviation and expected max drawdown) are projected to be lower as well.

EUTF Long term Policy Portfolio: Asset only Metrics			
Long term Simulation Statistics	As of August 2022	As of February 2023	As of January 2024
Expected Compound Return	7.5%	7.4%	
Annual Standard Deviation	11.3%	11.2%	10.7%
Expected Max Drawdown	37.5%	37.5%	

Basic Preliminary A/L Output



Executive Summary

- Meketa has built the integrated asset-liability model and has begun examining simulation output.
- At this point, we have been focused on the current long-term policy portfolio and its interactions with the liability structure over thousands of 20-year simulations.

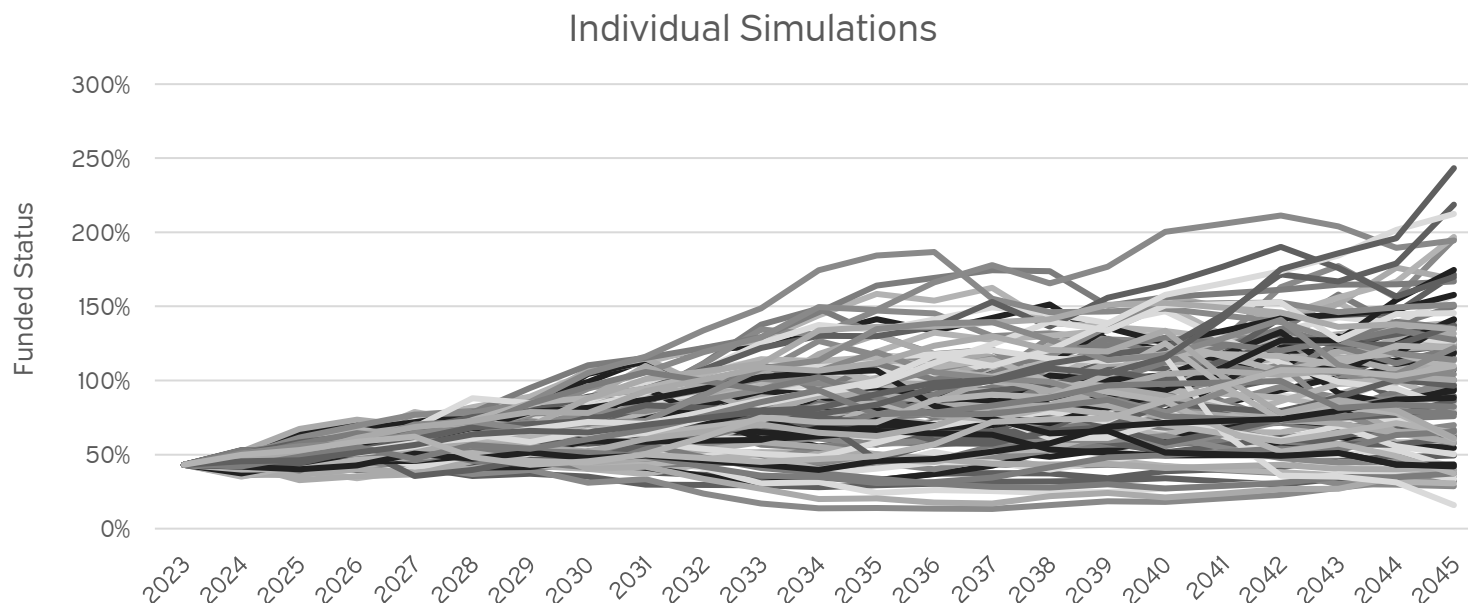
Key Takeaways

- EUTF is currently well positioned to make progress towards full funding.
- Contributions (particularly large projected contributions relative to assets) remain the primary determinant of funding ratio success.
 - Even with asset volatility, the EUTF's funding policy results in low contribution volatility for the foreseeable future.
- Given the cash-flow position, it is still appropriate for the EUTF to maintain a relatively high allocation to illiquid assets.
- If desired, the EUTF could assume a higher risk/return portfolio.



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Stochastic Forecast of the Current Policy Portfolio



→ Funded Status (assets divided by liabilities) are simulated in a variety of market environments.

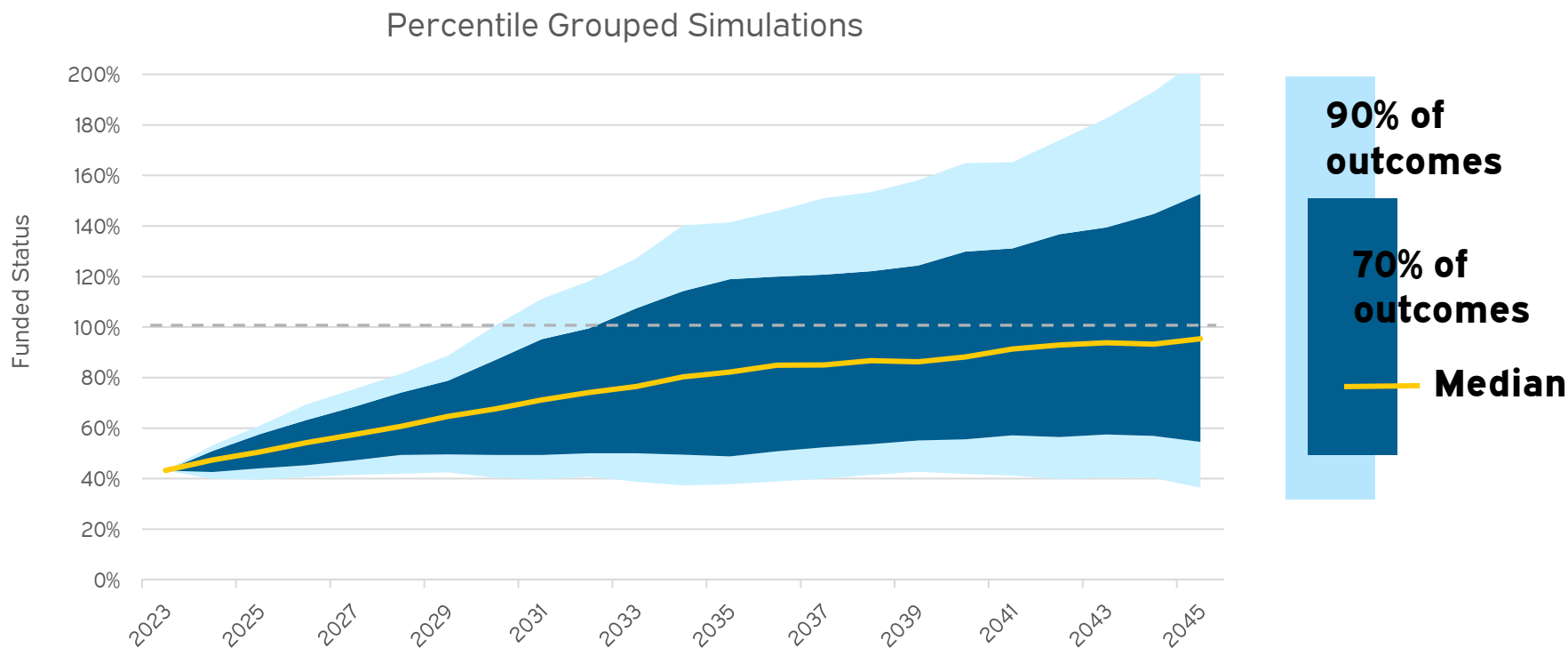
→ Analysis reflects the current:

- Asset allocation
- Actuarial funded status
- Projected benefit payments
- Funding policy
- Hawaii EUTF plan provisions
- Statutory requirements
- Actuarial assumptions
- Meketa 2024 Capital Market Assumptions



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Stochastic Forecast of the Current Asset Allocation (cont.)



- The results of the “simulations” are used to develop percentiles of information.
- These percentiles guide the understanding of **Funded Status Risk**, given the current asset allocation.
- As an example, the median (50th Percentile) Funded Status in 2033 is 76% -> there is a 50% probability the Funded Status will be greater than 76% and 50% probability it will be less than 76%.



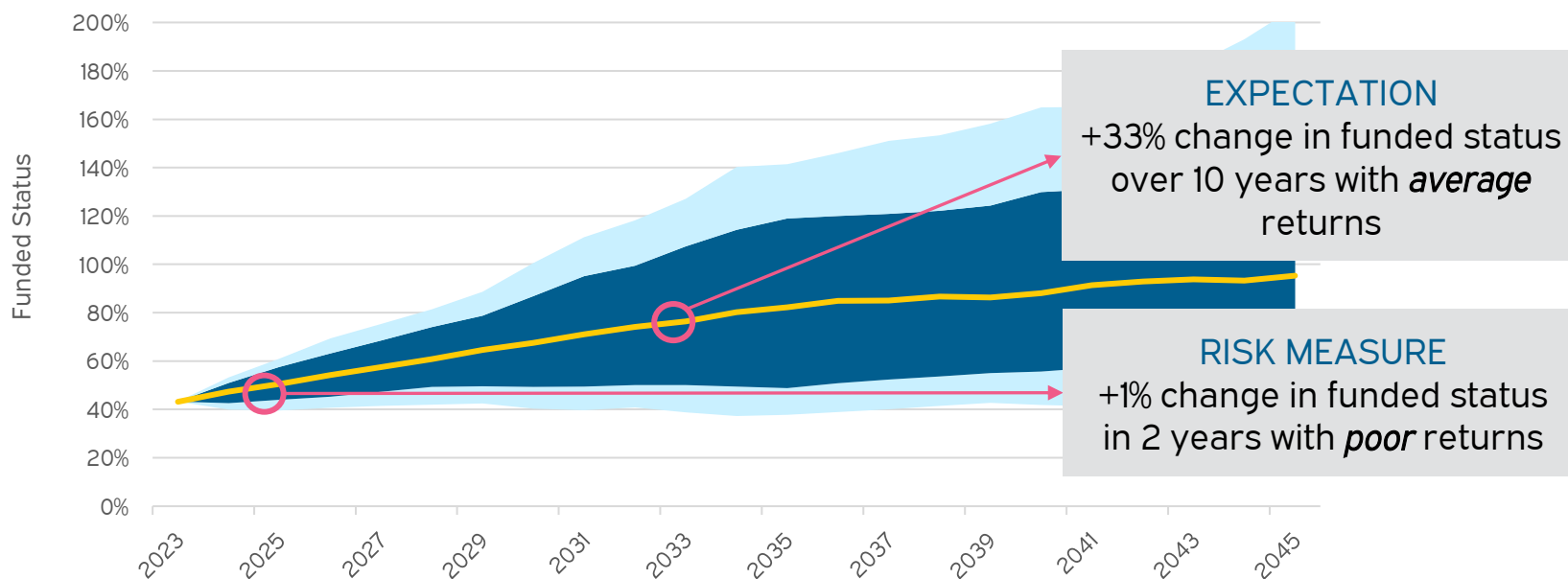
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Funded Status Impacts

→ Key observations are determined during objective setting discussion and analyzed in a “Expectation/Risk Measure” framework.

- **Expectation** – Outcome where all the underlying assumptions prove to be accurate over the long-term (Example: 50th percentile over a 10-year time horizon).
- **Risk Measure** – Outcome with a lower probability (Ex: 85th percentile) but a more detrimental impact, especially when that outcome occurs in the short-term (Ex: 2-year time horizon)

Percentile Grouped Simulations

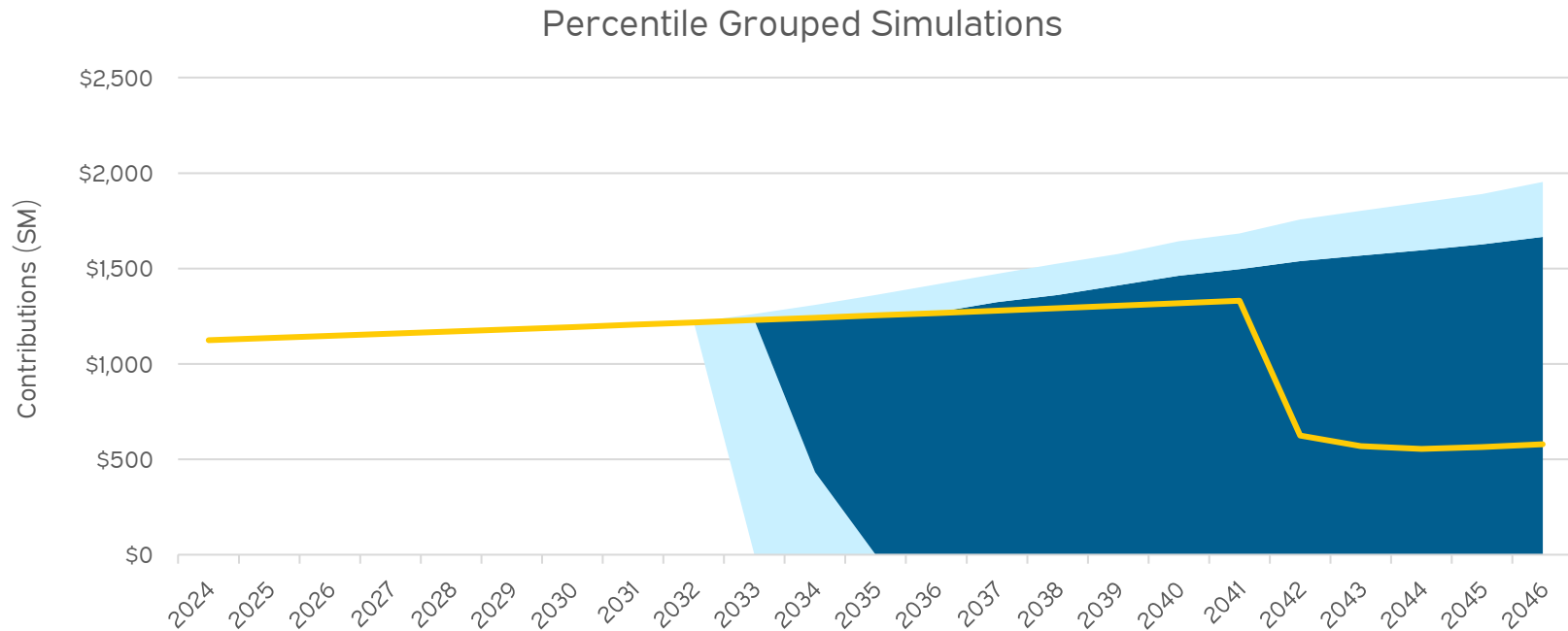




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Contribution Impacts

- The funding policy determines that annual contributions to the plan are between +1% and +5% of the prior year contributions, regardless of asset/liability gains/losses.
- As such, contributions expected to steadily increase over the next decade, at which point contributions will decrease if the plan achieves 100% funding.





How does Meketa optimize the asset allocation?

1 – Plot the Baseline

Plot the primary expectation and risk measures for the current long-term policy portfolio.

2 – Create Constraints

Asset classes are constrained to a minimum and maximum allocation to prevent impractical allocation recommendations

3 – Compare Alternatives

The Board agrees on tolerance for allocation levels for each existing or new asset classes

4 – Produce Samples

Meketa will provide samples of asset allocations that reflect the feedback received from the Board with regards to risk tolerance and return expectations

5 – Analyze Additional Risks

Repeat the process for additional risk measures that are important to the Board's decision making

Next Steps



- Meketa and EUTF Staff will continue to discuss reasonable asset class constraints for the optimization process.
- Both asset-only and integrated asset-liability metrics will be examined.
- Optimization output and corresponding potential asset allocations will be presented to the Investment Committee in May for further discussion.
- Based on the discussion with the Investment Committee in May, a new long-term portfolio will be recommended for approval at that meeting or a subsequent meeting.



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