



City of Milwaukee
Employees' Retirement System

Bernard J. Allen
Executive Director

David M. Silber, CFA, CAIA
Chief Investment Officer

Melody Johnson
Deputy Director

March 7, 2025

Mr. Jim Owczarski
City Clerk
Room 205, City Hall

Dear Mr. Owczarski:

Please be advised that an Investment Committee Meeting of the Annuity and Pension Board has been scheduled for **Thursday, March 13, 2025 at 10:00 a.m.** This meeting will be conducted via teleconference.

Special Notice: Instructions for the public on how to observe the meeting will be available on the ERS's website (www.cmers.com) prior to the meeting.

The agenda is as follows:

- I. Election of Vice Chair.
- II. Callan Glide Path Presentation Phase III – Scenario Analysis.
- III. Approval of Glide Path.
- IV. Chief Investment Officer Report.
- V. Informational.
 - a. Callan 4th Quarter Performance Report.

Sincerely,



Bernard J. Allen
Executive Director

BJA:jmw

March 13, 2025



City of Milwaukee Employees' Retirement System

Phase III – Scenario Analysis

John P. Jackson, CFA
Senior Vice President

Michael Joecken
Senior Vice President

Jason Ellement, FSA, CFA
Senior Vice President

Adam Lozinski, CFA
Senior Vice President

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Outline

- Background
- Phase III Scope & Objective
- Historical Scenario Construction
 - 70s Stagflation
 - Tech Bubble
 - Global Financial Crisis (GFC)
 - Calendar Year 2022
- Scenario Analysis
- Summary

Background

- Callan completed an asset/liability study in June 2023 which led to approval of a new asset allocation target
 - The new target was designed to meet a long-term return objective of 7.5%
- Act 12 was subsequently passed and significantly modified the funding policy of the Plan as well as closing it to new entrants
- Given significant changes from Act 12, we agreed to complete a new asset-liability study focused on de-risking approaches (Glide Paths)
 - A Glide Path changes the asset allocation over time to reduce variability between assets and liabilities as funded status improves
 - Typically reduce return seeking assets and increase cash and fixed income as the Plan approaches full funding
 - Gradually wind down illiquid assets

Phase I

- Six glide paths were presented and discussed in the December 5, 2024, Board Meeting
 - Three funding policies were explored as well – No cap, \$250M Cap and \$350M Cap

Phase II

- Five more Glide Paths (A,B,C,D and E) were presented and discussed in the February 13, 2025, Board Meeting
 - Three funding policies are explored as well – No cap, \$250M Cap and \$300M Cap
 - Consensus was building around adopting Glide Paths A, B or D
 - GP_D looked superior to GP_C and GP_E in Ultimate Net Cost space

Phase III Scope & Objective

	Funded Status Node					
	Initial	80%	85%	90%	95%	100%
GlidePath A	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
GlidePath B	Mix 1		Mix 2	Mix 3	Mix 4	Mix 5
GlidePath C	Mix 2		Mix 3	Mix 4	Mix 5	
GlidePath D	Mix 2			Mix 3	Mix 4	Mix 5
GlidePath E	Mix 2		Mix 4		Mix 5	

- 1/1/2024 Market Value Funded Ratio = 74.0%
 - **Glide Path A** remains at the **Target Mix** until 80% funded
 - **Glide Path B** de-risks immediately to **Mix 1** and stays there until 85% funded
 - **Glide Path D** de-risks immediately to **Mix 2** and stays there until 90% funded
- In Phase III, the Target Mix, Mix 1 and Mix 2 are contrasted
 - **Goal is to determine whether immediate de-risking is appropriate which will assist in selecting Glide path A, B or D**
 - Focus is on the next 5-10 years (Phase I and II analyzed 30-year projections)
 - There is no de-risking in Phase III so that static mixes are easier to compare
- Upon Glide Path approval, it would be subject to assessing current conditions when a funded status threshold is breached
 - The Glide Path is not a “set it and forget it” asset allocation strategy

Three Static Asset Mixes Examined

	Target	Mix 1	Mix 2
Public Equity	39%	36%	34%
Fixed Income + Cash	29%	32%	36%
- Core	18%	20%	23%
- High Yield	10%	11%	12%
- Cash	1%	1%	1%
Real Assets	13%	12%	11%
- Liquid Real Assets	3%	3%	3%
- Private Real Estate	10%	9%	8%
Private Equity	12%	11%	10%
Absolute Return	<u>7%</u>	<u>9%</u>	<u>9%</u>
	100%	100%	100%
30-Year Expected Return	7.5%	7.4%	7.3%
10-Year Expected Return	7.2%	7.1%	7.0%
Actuarial Discount Rate	6.8%	6.8%	6.8%
Standard Deviation	12.2%	11.5%	11.0%
Public & Private Equity	51%	47%	44%
Illiquid Investments	29%	29%	27%

- Relative to the Target mix, Mix 1 and Mix 2 lower public & private equity exposure by 4% and 7% respectively
 - Return-risk profile is slightly lowered as you get more conservative
 - **Discount rate does not change**

Historical Worse Case Scenarios by Asset Class

Asset Class Cumulative Returns		1970s Stagflation	Tech Bubble	GFC	CY 2022
Asset Class	Benchmark Proxy	10 Qtrs. Ending 12/31/74	9 Qtrs. Ending 9/30/02	5 Qtrs. Ending 3/31/09	4 Qtrs. Ending 12/31/22
Broad US Equity	90% Ibbotson S&P 500 / 10% Ibbotson Small Company through Dec 1978 Russell 3000 thereafter	-31%	-41%	-44%	-19%
Global ex-US Equity	MSCI World ex-US through May 1994 MSCI ACWI ex-US IMI thereafter	-17%	-44%	-52%	-17%
Fixed Income	65% Ibbotson Int Gov / 35% Ibbotson Corporate through Dec 1975 Blmbg Aggregate thereafter	8%	26%	5%	-13%
Liquid Real Assets	Historical Beta to US Equity through Feb 1997 50% FTSE NAREIT All Equity / 25% Blmbg TIPS / 25% Blmbg Commodity thereafter	-20%	27%	-40%	-12%
Real Estate	Historical Beta to US Equity through Dec 1977 NCREIF ODCE thereafter	-1%	15%	-23%	7%
Private Equity	Historical Beta to US Equity through Dec 1980 Cambridge Private Equity thereafter	-18%	-33%	-30%	-8%
Hedge Funds	Historical Beta to US Equity through Dec 1988 Callan Abs Rtn Hedge FoF thereafter	-10%	14%	-19%	3%
Cash	Ibbotson T-Bills through Dec 1972 3 Month T-Bill thereafter	19%	9%	2%	1%

Static Mix Cumulative Returns	1970s Stagflation	Tech Bubble	GFC	CY 2022
Current Target	-11.0%	-9.6%	-25.5%	-11.1%
Mix 1	-10.0%	-7.1%	-23.7%	-10.9%
Mix 2	-8.9%	-5.0%	-22.0%	-11.0%

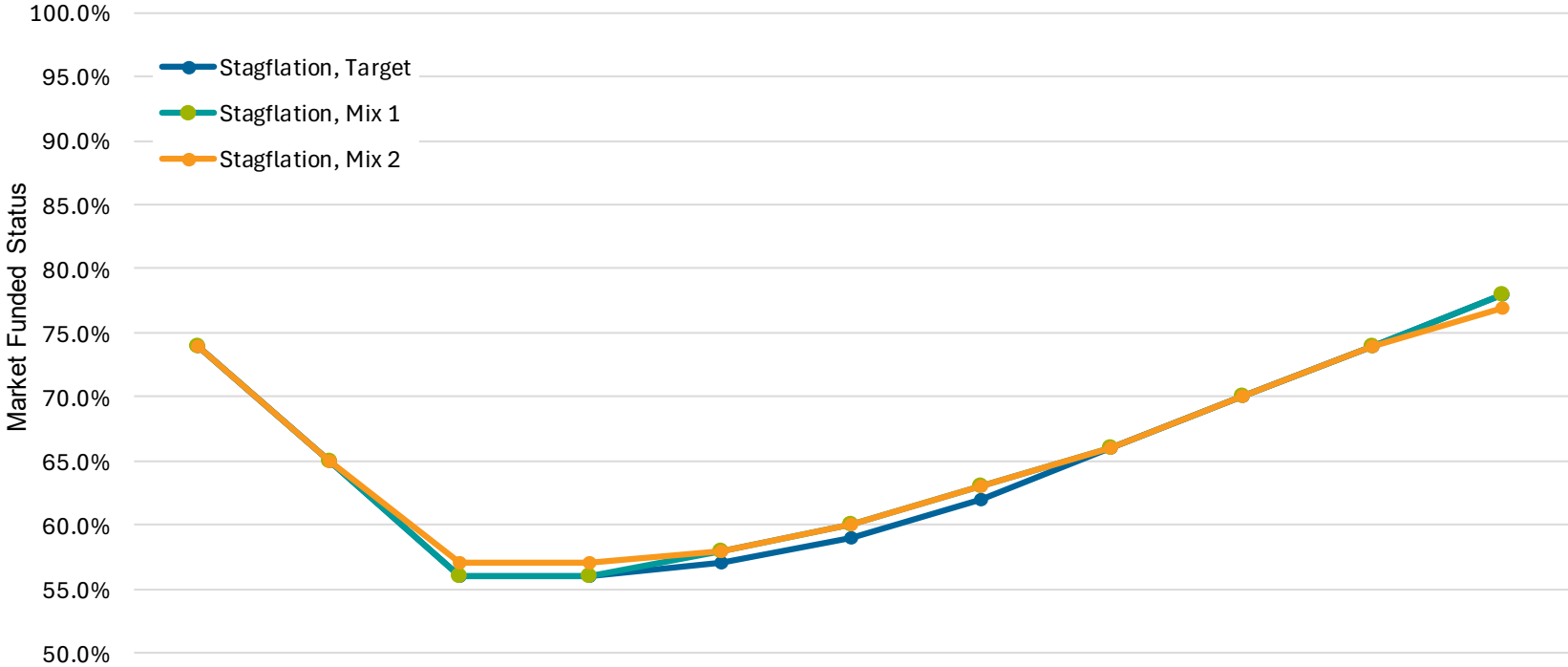
- Four **Worse Case** historical scenarios are examined in lieu of Monte Carlo simulation:
 - **1970s Stagflation**: Bear equity market, high inflation, alternative investments do poorly
 - **2000 – 2002 Tech Bubble**: Bear equity market, declining rates a tailwind for fixed income and real assets
 - **2008 Global Financial Crisis (GFC)**: Bear equity market, poor alternative returns, some protection in cash and fixed income
 - **Calendar Year 2022**: Bear equity market, spike in rates resulting in poor fixed income return results, real estate and hedge funds protect on the downside

Historical Worse Case Scenarios by Asset Mix

Current Target Annual Returns for 10 Year Forecast	1970s Stagflation	Tech Bubble	GFC	CY 2022
Year 1	-5.6%	-4.9%	-25.5%	-11.1%
Year 2	-5.6%	-4.9%	7.2%	7.2%
Year 3	7.2%	7.2%	7.2%	7.2%
Year 4	7.2%	7.2%	7.2%	7.2%
Year 5	7.2%	7.2%	7.2%	7.2%
Year 6	7.2%	7.2%	7.2%	7.2%
Year 7	7.2%	7.2%	7.2%	7.2%
Year 8	7.2%	7.2%	7.2%	7.2%
Year 9	7.2%	7.2%	7.2%	7.2%
Year 10	7.2%	7.2%	7.2%	7.2%
10-Year Annualized	4.50%	4.7%	3.4%	5.2%
Mix 1 Annual Returns for 10 Year Forecast	1970s Stagflation	Tech Bubble	GFC	CY 2022
Year 1	-5.1%	-3.6%	-23.7%	-10.9%
Year 2	-5.1%	-3.6%	7.1%	7.1%
Year 3	7.1%	7.1%	7.1%	7.1%
Year 4	7.1%	7.1%	7.1%	7.1%
Year 5	7.1%	7.1%	7.1%	7.1%
Year 6	7.1%	7.1%	7.1%	7.1%
Year 7	7.1%	7.1%	7.1%	7.1%
Year 8	7.1%	7.1%	7.1%	7.1%
Year 9	7.1%	7.1%	7.1%	7.1%
Year 10	7.1%	7.1%	7.1%	7.1%
10-Year Annualized	4.5%	4.9%	3.5%	5.1%
Mix 2 Annual Returns for 10 Year Forecast	1970s Stagflation	Tech Bubble	GFC	CY 2022
Year 1	-4.6%	-2.5%	-22.0%	-11.0%
Year 2	-4.6%	-2.5%	7.0%	7.0%
Year 3	7.0%	7.0%	7.0%	7.0%
Year 4	7.0%	7.0%	7.0%	7.0%
Year 5	7.0%	7.0%	7.0%	7.0%
Year 6	7.0%	7.0%	7.0%	7.0%
Year 7	7.0%	7.0%	7.0%	7.0%
Year 8	7.0%	7.0%	7.0%	7.0%
Year 9	7.0%	7.0%	7.0%	7.0%
Year 10	7.0%	7.0%	7.0%	7.0%
10-Year Annualized	4.6%	5.0%	3.7%	5.0%

- Above table illustrates calendar year returns for the three mixes and four scenarios
 - Historical periods were rounded to whole calendar years

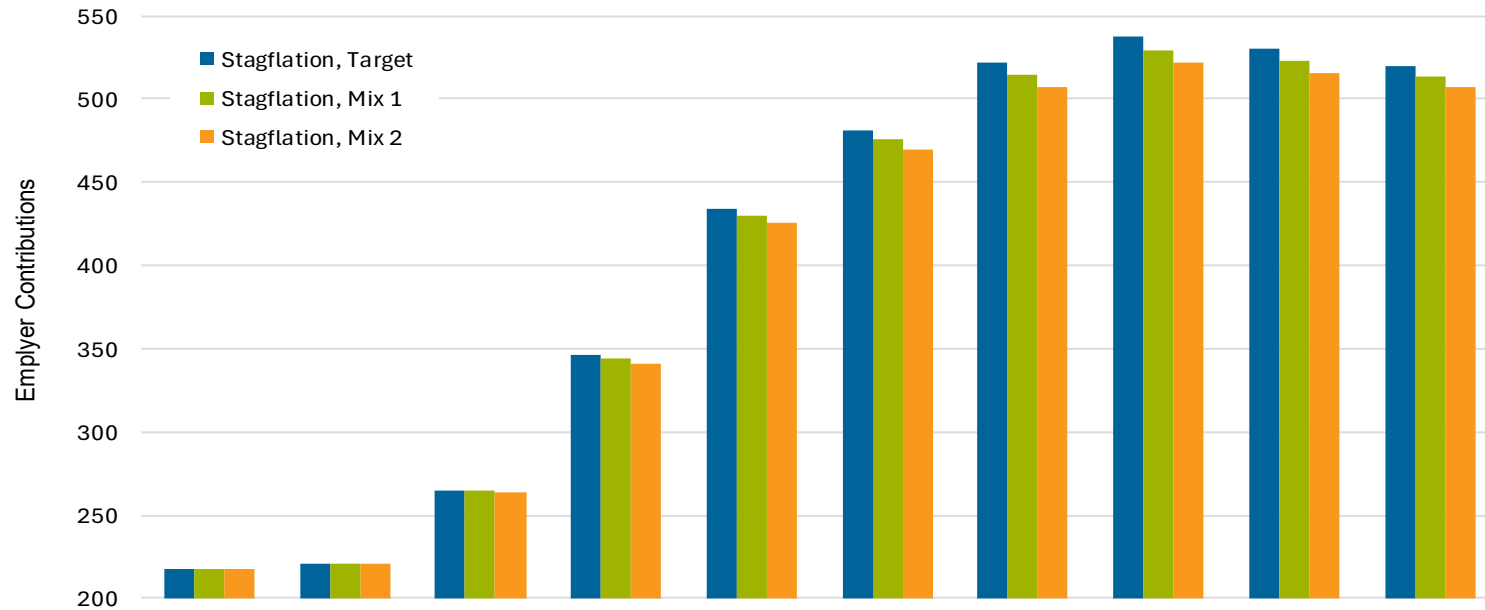
Stagflation: Funded Status



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Stagflation, Target	74%	65%	56%	56%	57%	59%	62%	66%	70%	74%	78%
Stagflation, Mix 1	74%	65%	56%	56%	58%	60%	63%	66%	70%	74%	78%
Stagflation, Mix 2	74%	65%	57%	57%	58%	60%	63%	66%	70%	74%	77%

- Funded status projection is similar across the Mixes

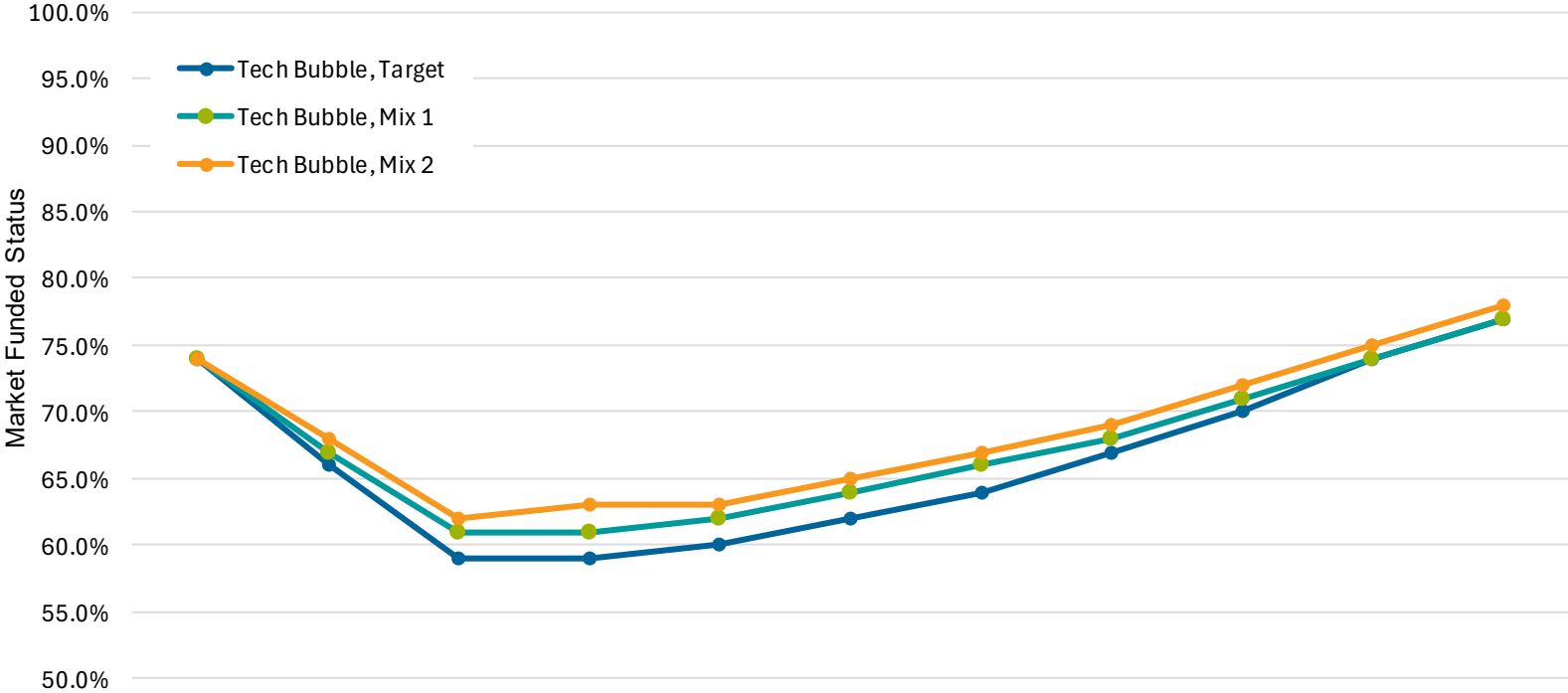
Stagflation: Contributions



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Sum
Stagflation, Target	217	220	265	346	434	482	522	537	530	520	4,074
Stagflation, Mix 1	217	220	264	344	430	475	515	530	523	513	4,031
Stagflation, Mix 2	217	220	263	341	425	469	507	522	516	507	3,989
Change											
Mix 1 - Target Mix	0	0	(1)	(3)	(5)	(6)	(7)	(8)	(7)	(6)	(43)
Mix 2 - Target Mix	0	0	(2)	(5)	(9)	(12)	(15)	(15)	(14)	(13)	(86)

- Mix 1 and Mix 2 lower contributions slightly over the next ten years
- Contributions exceed \$500M per year in 2030 – 2033
- Contributions exceed \$250M in 8 out of 10 years

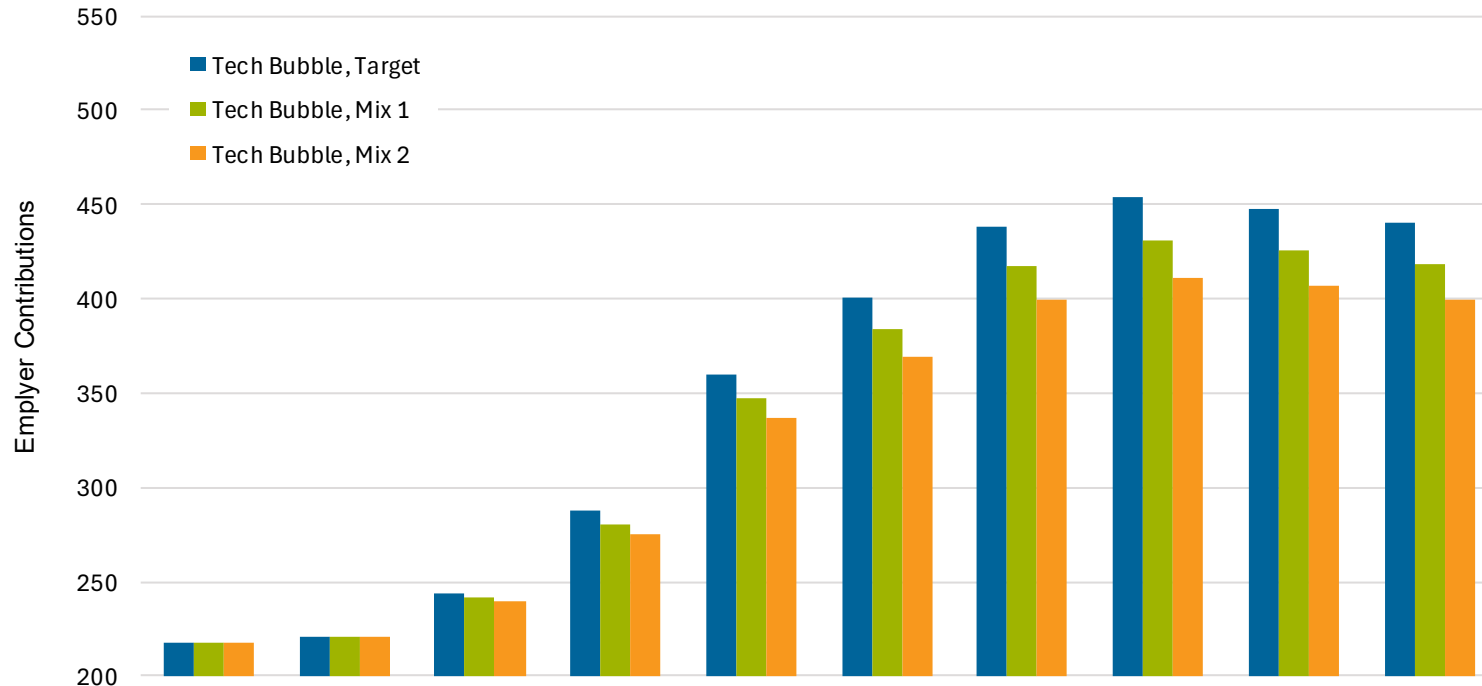
Tech Bubble: Funded Status



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Tech Bubble, Target	74%	66%	59%	59%	60%	62%	64%	67%	70%	74%	77%
Tech Bubble, Mix 1	74%	67%	61%	61%	62%	64%	66%	68%	71%	74%	77%
Tech Bubble, Mix 2	74%	68%	62%	63%	63%	65%	67%	69%	72%	75%	78%

- More aggressive mixes see more funded status deterioration in 2-7 years

Tech Bubble: Contributions



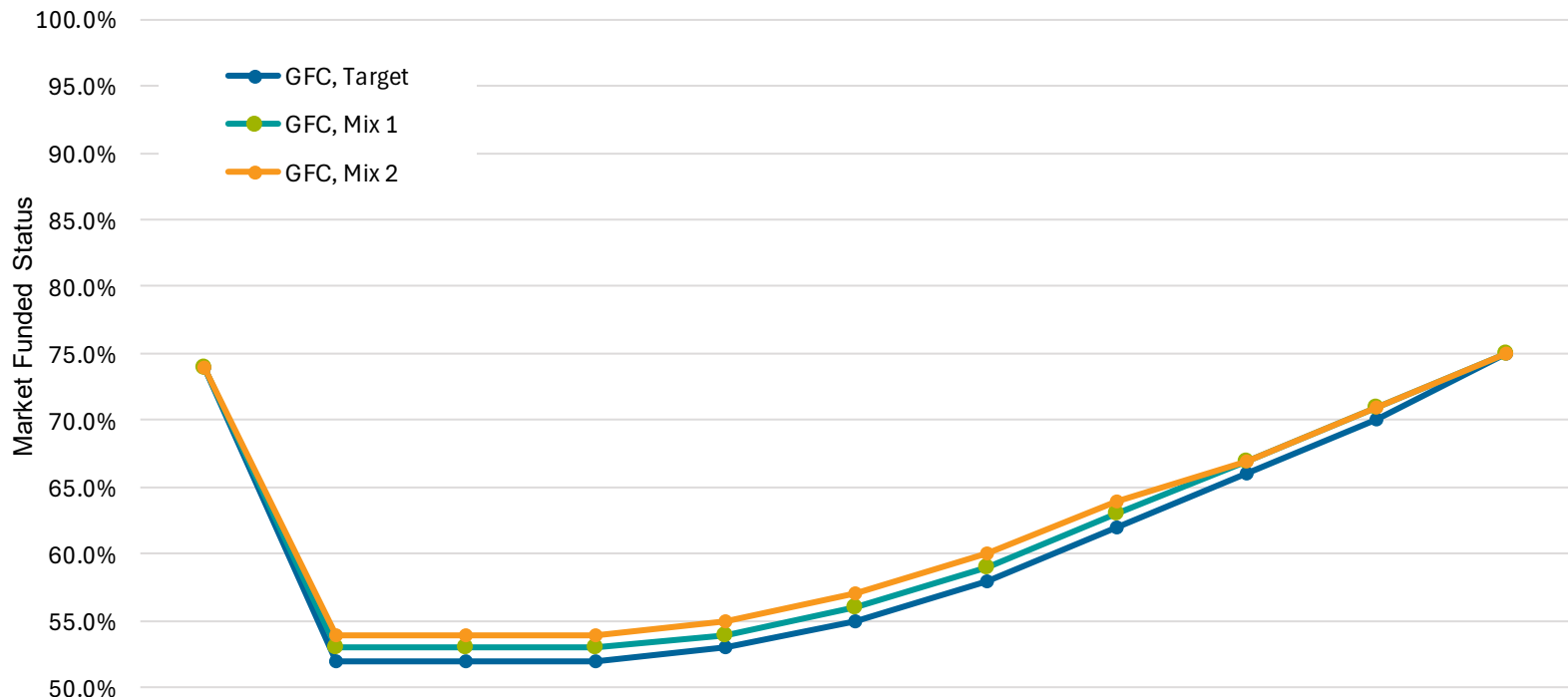
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Sum
Tech Bubble, Target	217	220	244	287	359	400	438	454	448	440	3,508
Tech Bubble, Mix 1	217	220	242	281	347	383	417	431	425	418	3,382
Tech Bubble, Mix 2	217	220	240	275	337	369	399	411	407	400	3,276

Change

Mix 1 - Target Mix	0	0	(2)	(7)	(12)	(17)	(21)	(23)	(22)	(22)	(126)
Mix 2 - Target Mix	0	0	(4)	(13)	(22)	(31)	(39)	(42)	(41)	(40)	(233)

- Mix 1 and Mix 2 lower contributions materially over the next ten years
- Contributions exceed \$250M in 7 out of 10 years

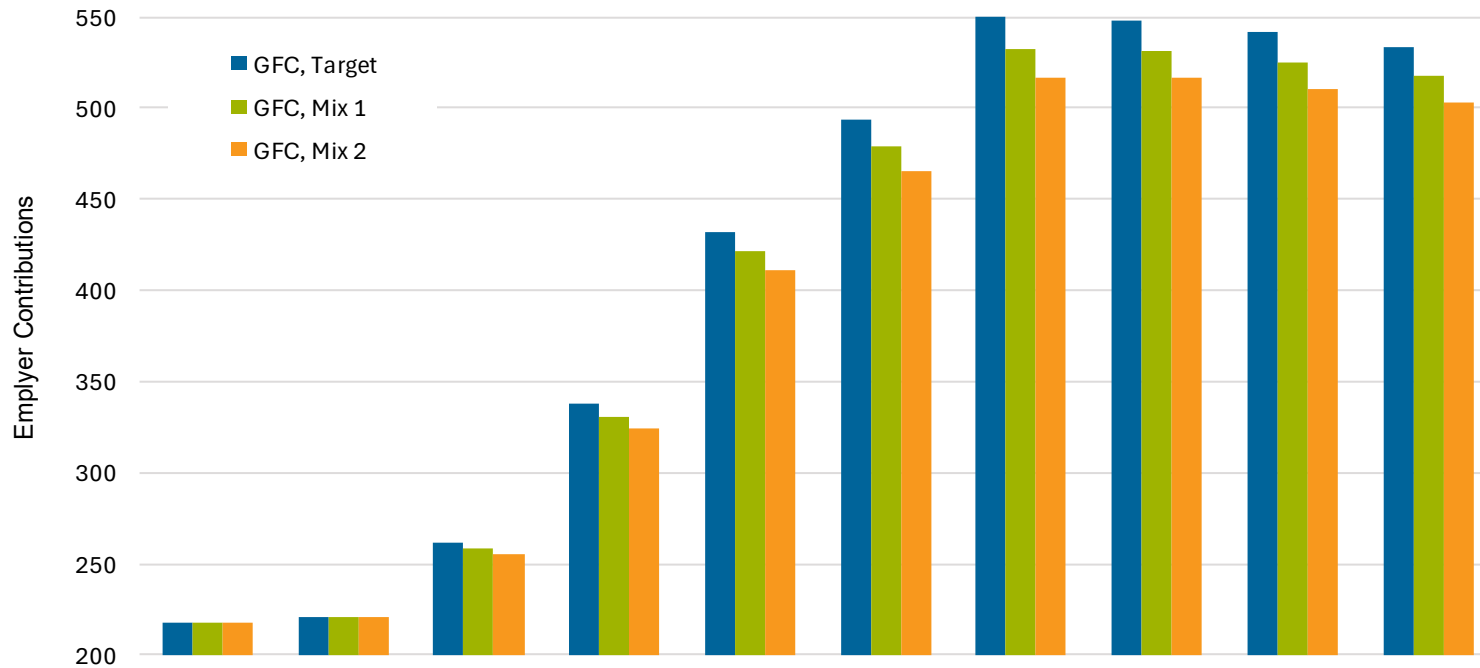
Global Financial Crisis (GFC): Funded Status



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
GFC, Target	74%	52%	52%	52%	53%	55%	58%	62%	66%	70%	75%
GFC, Mix 1	74%	53%	53%	53%	54%	56%	59%	63%	67%	71%	75%
GFC, Mix 2	74%	54%	54%	54%	55%	57%	60%	64%	67%	71%	75%

- Funded status plummets to 52-54% in one year
 - Funded status definition is mark-to-market and does not reflect asset smoothing (Actuarial Value of Assets)
- More aggressive mixes see more funded status deterioration in 1-6 years

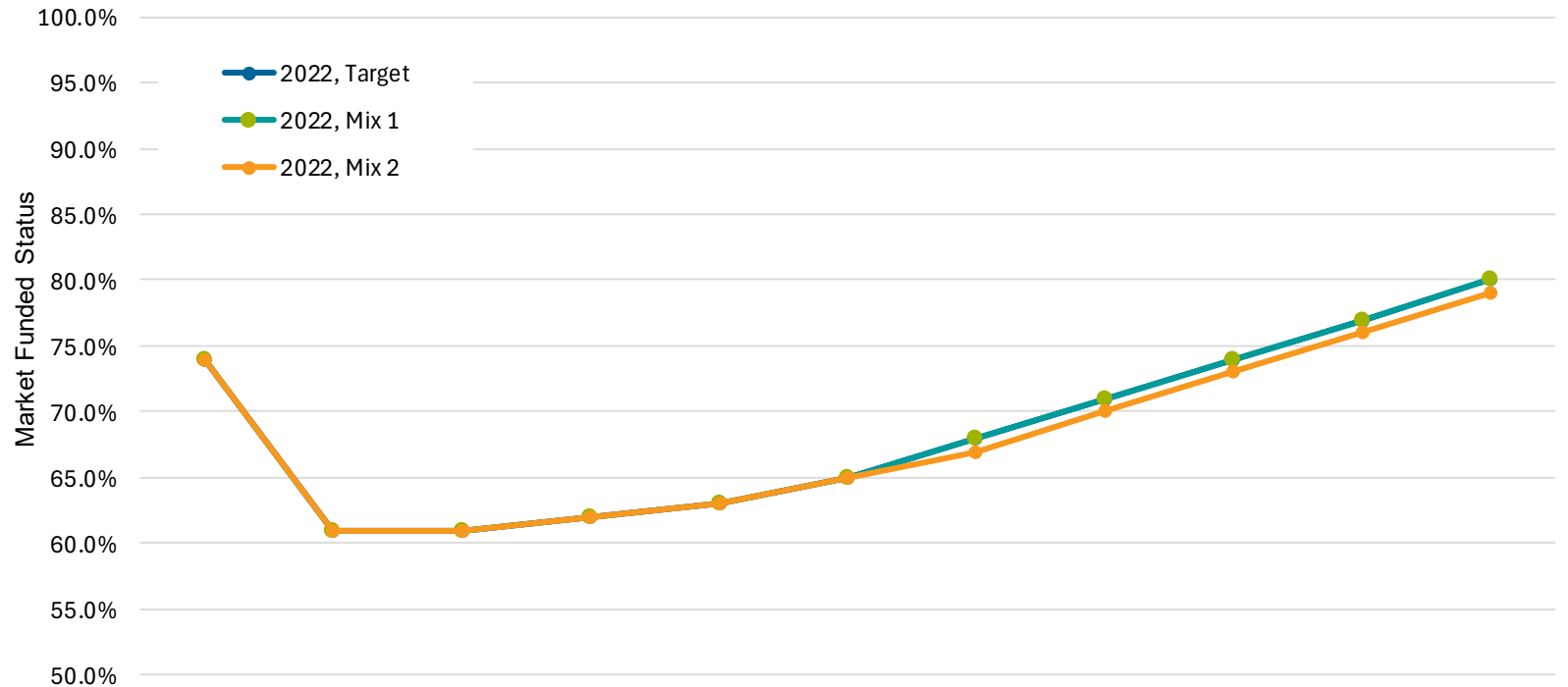
Global Financial Crisis (GFC): Contributions



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Sum
GFC, Target	217	220	261	337	432	493	550	549	541	533	4,135
GFC, Mix 1	217	220	258	330	422	479	533	532	525	517	4,034
GFC, Mix 2	217	220	256	324	412	466	517	516	510	503	3,940
Change											
Mix 1 - Target Mix	0	0	(3)	(7)	(11)	(14)	(17)	(17)	(16)	(16)	(100)
Mix 2 - Target Mix	0	0	(6)	(13)	(21)	(27)	(33)	(32)	(31)	(30)	(194)

- Mix 1 and Mix 2 lower contributions materially over the next ten years
- Contributions exceed \$500M per year in 2030 – 2033
- Contributions exceed \$250M in 8 out of 10 years

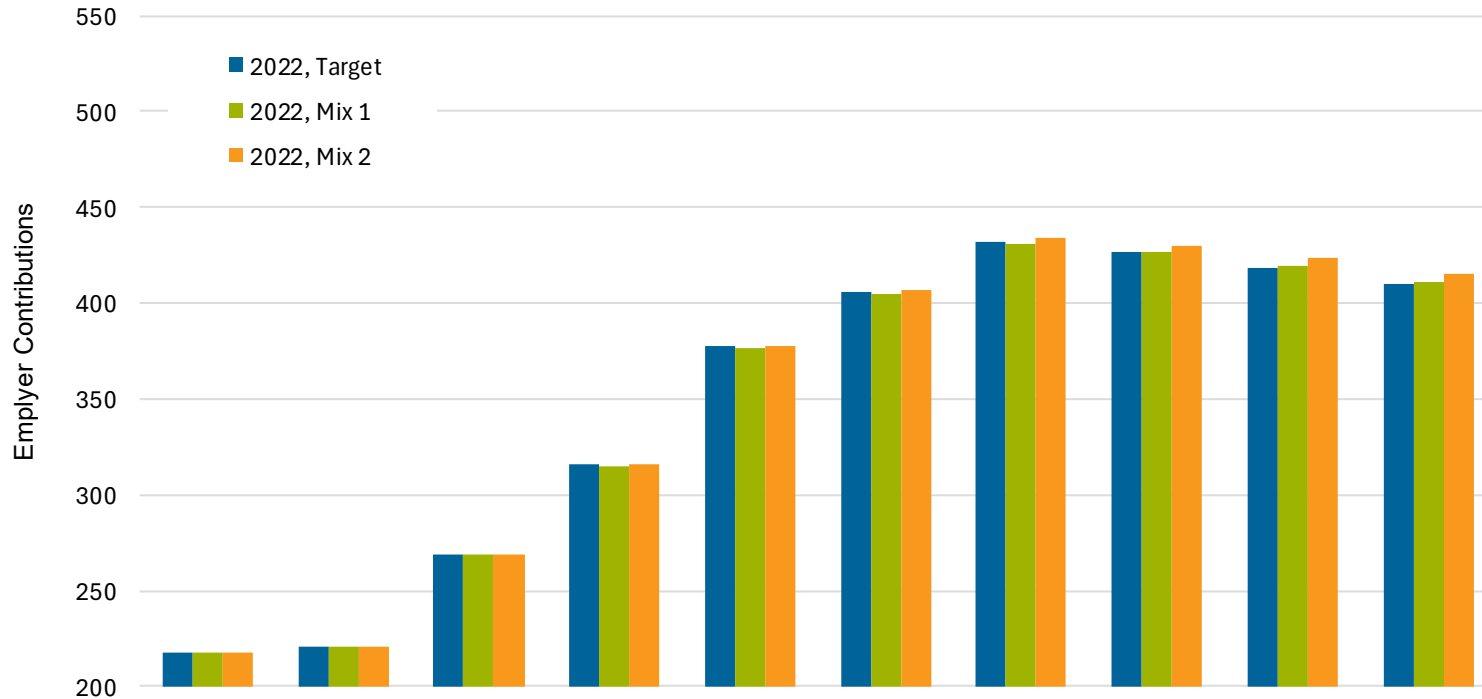
Calendar Year 2022: Funded Status



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
2022, Target	74%	61%	61%	62%	63%	65%	68%	71%	74%	77%	80%
2022, Mix 1	74%	61%	61%	62%	63%	65%	68%	71%	74%	77%	80%
2022, Mix 2	74%	61%	61%	62%	63%	65%	67%	70%	73%	76%	79%

- Funded status declines to 61% in one year
- Funded status projection is similar across the mixes
- More aggressive mixes do slightly better in the long run due to higher expected return after Year 1

Calendar Year 2022: Contributions



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Sum
2022, Target	217	220	269	316	377	406	432	427	418	410	3,492
2022, Mix 1	217	220	268	315	377	405	431	427	419	411	3,491
2022, Mix 2	217	220	269	316	378	407	434	430	423	416	3,510
Change											
Mix 1 - Target Mix	0	0	(0)	(1)	(1)	(1)	(0)	0	1	1	(0)
Mix 2 - Target Mix	0	0	(0)	(0)	0	1	2	4	5	6	18

- Contribution outlay is similar across the Mixes
- Contributions exceed \$250M in 8 out of 10 years

5-Year Ultimate Net Cost

Stagflation	Target Mix	Mix 1	Mix 2
5-Year Unfunded Liability	3,609	3,568	3,527
5-Year Cumulative Contributions	<u>1,483</u>	<u>1,475</u>	<u>1,467</u>
5-Year Ultimate Net Cost	5,092	5,043	4,994
Change			
5-Year Unfunded Liability		(41)	(82)
5-Year Cumulative Contributions		<u>(8)</u>	<u>(16)</u>
5-Year Ultimate Net Cost		(49)	(98)

GFC	Target Mix	Mix 1	Mix 2
5-Year Unfunded Liability	3,743	3,649	3,562
5-Year Cumulative Contributions	1,469	1,448	1,429
5-Year Ultimate Net Cost	5,212	5,097	4,991
Change			
5-Year Unfunded Liability		(94)	(181)
5-Year Cumulative Contributions		<u>(21)</u>	<u>(40)</u>
5-Year Ultimate Net Cost		(115)	(221)

Tech Bubble	Target Mix	Mix 1	Mix 2
5-Year Unfunded Liability	3,197	3,064	2,952
5-Year Cumulative Contributions	1,328	1,307	1,290
5-Year Ultimate Net Cost	4,526	4,371	4,242
Change			
5-Year Unfunded Liability		(134)	(245)
5-Year Cumulative Contributions		<u>(21)</u>	<u>(39)</u>
5-Year Ultimate Net Cost		(154)	(284)

CY 2022	Target Mix	Mix 1	Mix 2
5-Year Unfunded Liability	2,959	2,969	2,998
5-Year Cumulative Contributions	1,400	1,398	1,400
5-Year Ultimate Net Cost	4,359	4,367	4,397
Change			
5-Year Unfunded Liability		10	38
5-Year Cumulative Contributions		<u>(2)</u>	<u>0</u>
5-Year Ultimate Net Cost		8	38

- Over five years, impact of stress test scenarios is absorbed more through Unfunded Liability than Contributions
 - 5-year Ultimate Net Cost emphasizes the short-intermediate horizon which is a concern for the Plan Sponsor
- Scenarios offer varying levels of downside protection
 - CY 2022 - none
 - Stagflation - slight downside protection
 - GFC - moderate downside protection
 - Tech Bubble - moderate downside protection

Summary

		Stagflation	Tech Bubble	GFC	CY 2022
5-Year Cumulative Contributions	Target	1,483	1,328	1,469	1,400
	Mix 1	1,475	1,307	1,448	1,398
	Mix 2	1,467	1,290	1,429	1,400
Change to Mix 1		(8)	(21)	(21)	(2)
Change to Mix 2		(16)	(39)	(40)	0
5-Year Ultimate Net Cost	Target	5,092	4,526	5,212	4,359
	Mix 1	5,043	4,371	5,097	4,367
	Mix 2	4,994	4,242	4,991	4,397
Change to Mix 1		(49)	(154)	(115)	8
Change to Mix 2		(98)	(284)	(221)	38
# Calendar Years breach \$500M	Target	4	0	4	0
	Mix 1	4	0	4	0
	Mix 2	4	0	4	0
# Calendar Years breach \$250M	Target	8	7	8	8
	Mix 1	8	7	8	8
	Mix 2	8	7	8	8

- The Stagflation and Tech Bubble scenarios are painful
 - Both Mix 1 and Mix 2 offer downside protection although CY contributions are still very high
 - More downside protection comes through in the GFC scenario as the bear equity market was more severe
- Mix 1 and Mix 2 offer meaningful downside protection in the Tech Bubble scenario
 - Fixed income fulfills its role as “low risk anchor”. The performance between equities and bonds is stark.
- Mix 1 and Mix 2 do not offer downside protection in CY 2022
 - Both equities and fixed income are down dramatically
 - Real estate and Hedge Funds eke out positive performance. However, Real Estate is reduced while Hedge Funds are increased in Mix 1 and Mix 2



Appendix

Callan 2025 Capital Market Assumptions

Asset Class	Index	10-Year Expected Return *	30-Year Expected Return *	Standard Deviation
Equities				
Broad U.S. Equity	Russell 3000	7.35%	7.75%	17.35%
Large Cap U.S. Equity	S&P 500	7.25%	7.65%	17.00%
Small/Mid Cap U.S. Equity	Russell 2500	7.45%	7.85%	22.00%
Global ex-U.S. Equity	MSCI ACWI ex USA	7.45%	7.85%	21.25%
Developed ex-U.S. Equity	MSCI World ex USA	7.25%	7.65%	20.15%
Emerging Market Equity	MSCI Emerging Markets	7.45%	7.85%	25.65%
CMERS Public Equity	Custom Blend ¹	7.60%	7.95%	17.95%
Fixed Income				
Core U.S. Fixed	Bloomberg Aggregate	4.75%	4.90%	4.40%
TIPS	Bloomberg TIPS	4.55%	4.55%	5.40%
High Yield	Bloomberg High Yield	6.00%	6.40%	11.75%
Bank Loans	S&P/LSTA Leveraged Loan Index	6.10%	6.15%	9.90%
EMD	EMBI Global Diversified	5.35%	5.65%	10.65%
CMERS Fixed Income	Custom Blend ²	5.35%	5.55%	5.40%
Alternatives				
Core Real Estate	NCREIF ODCE	6.25%	6.65%	14.00%
Private Equity	Cambridge Private Equity	8.50%	8.90%	27.60%
Absolute Return	Callan Hedge FoF Database	5.70%	5.90%	8.20%
Commodities	Bloomberg Commodity	3.90%	3.80%	18.05%
CMERS Liquid Real Assets	Custom Blend ³	6.30%	6.50%	9.55%
Cash Equivalents				
	90-Day T-Bill	3.00%	3.00%	0.90%
Inflation				
	CPI-U	2.50%	2.35%	1.60%

*Annualized return

¹ 44% Large Cap U.S. Equity / 11% Small/Mid Cap U.S. Equity / 34% Developed ex-U.S. Equity / 11% Emerging Market Equity

² 64.5% Core Fixed Income / 35.5% High Yield

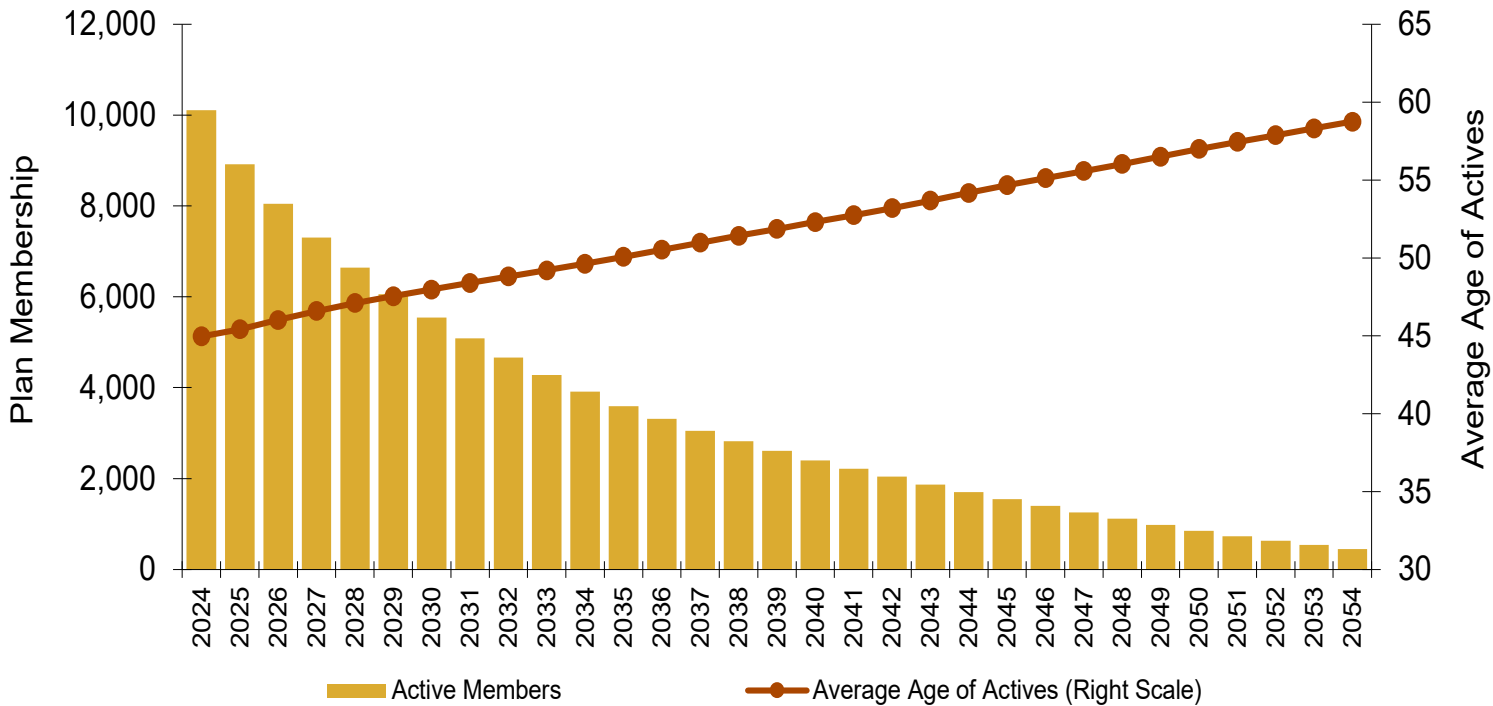
³ 50% Large Cap US Equity / 35% TIPS / 15% Commodities

- Capital market expectations represent passive exposure (beta only) with the exception of privately-traded asset classes
 - All return projections are net of fees

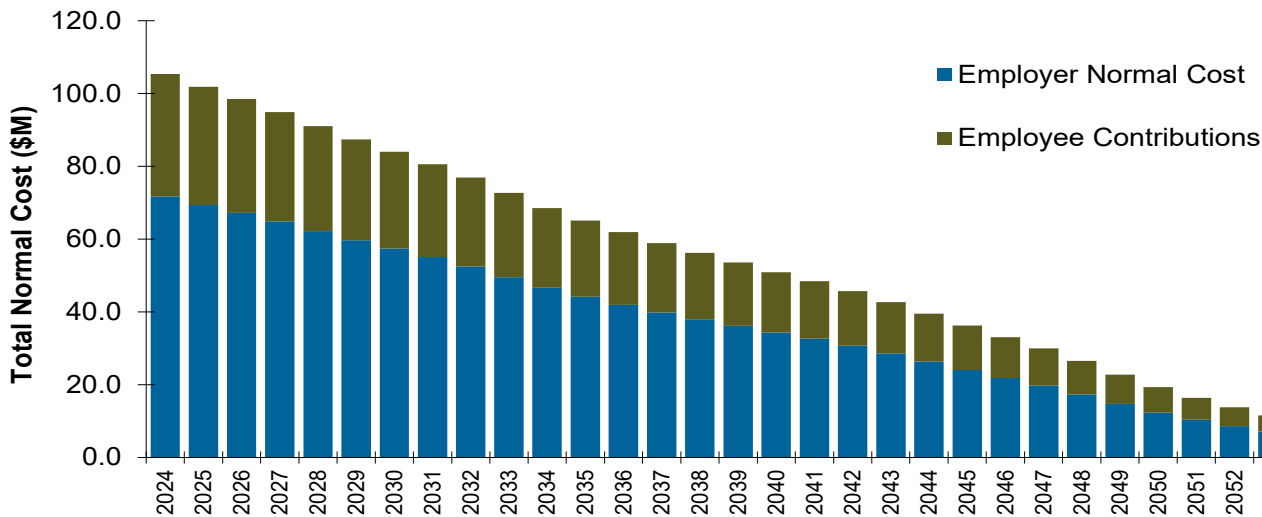
Summary of Act 12 Changes

	Prior Framework	Act 12
Discount Rate	7.50%	6.80%
Plan Status	Open to new hires	Plan closed, effective 1.1.2024
Contribution Setting	5-year Employer Stable Contribution Policy	Contributions determined annually
Funding Policy	<ul style="list-style-type: none"> Effective 1/1/2019, 25-year closed amortization of UAAL After 2019, annual change in UAAL amortized over a closed 15-year period After 2019, changes in assumptions or benefits amortized over closed 25 years Amortization payments increase 2.0% per year 	<ul style="list-style-type: none"> 1/1/2024 UAAL is amortized over 30 years Future increases in the UAAL are amortized over 10 years Future decreases in the UAAL are amortized over the remaining amortization period for the 1/1/2024 UAAL, or 10 years if greater. The UAAL payments will be calculated as level-dollar amounts.
Lag	No Lag	One-year contribution lag
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Actuarial Value of Assets	5-year average	5-year average Return differential phased-in over 5 years

Plan is Closed

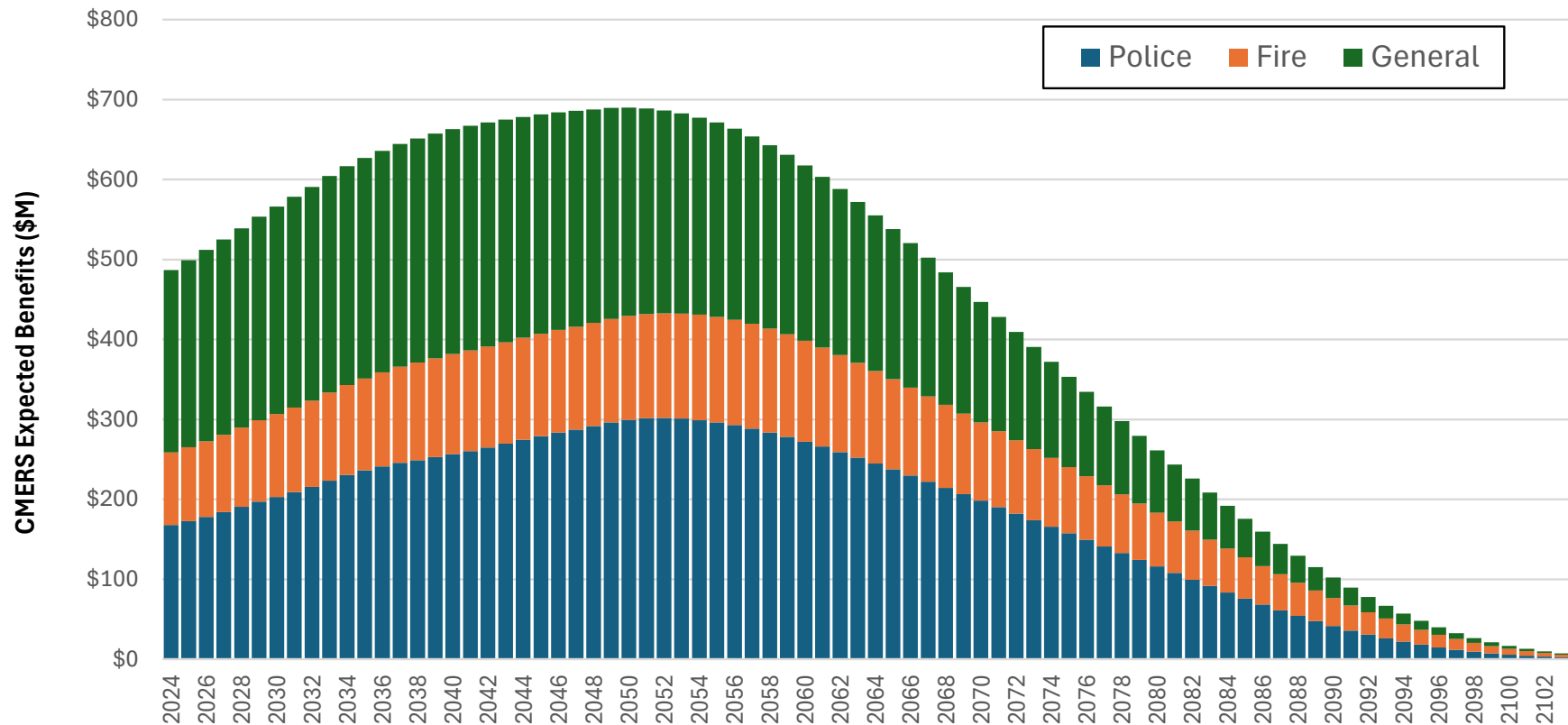


- Plan is closed to new hires
- In just 10 years, there is expected to be only 3,900 employees accruing a benefit with an average age of 50



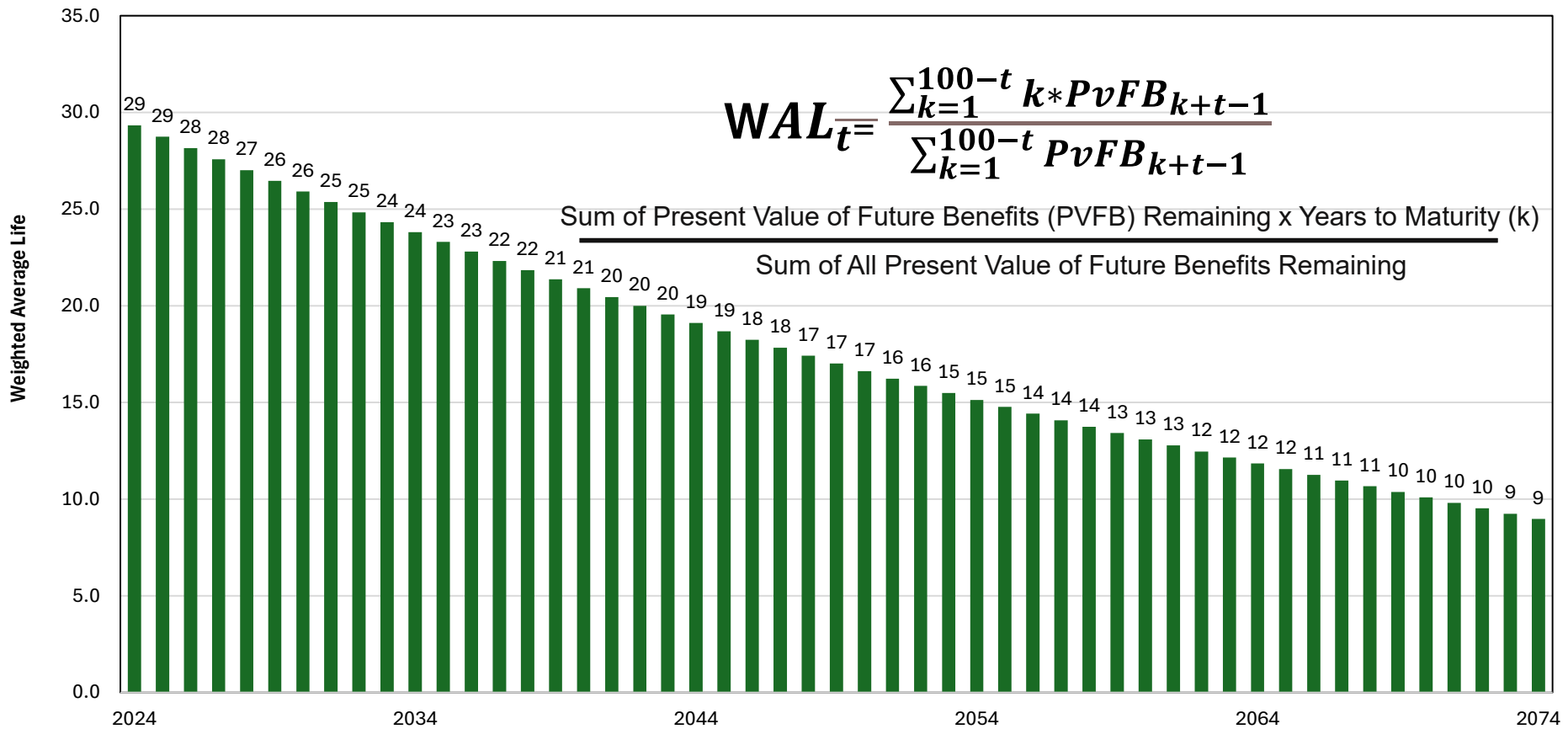
- Total Normal Cost (ongoing benefit accrual) will decrease as actives decrement from the Plan

Expected Benefit Payments Stretch For Many Years



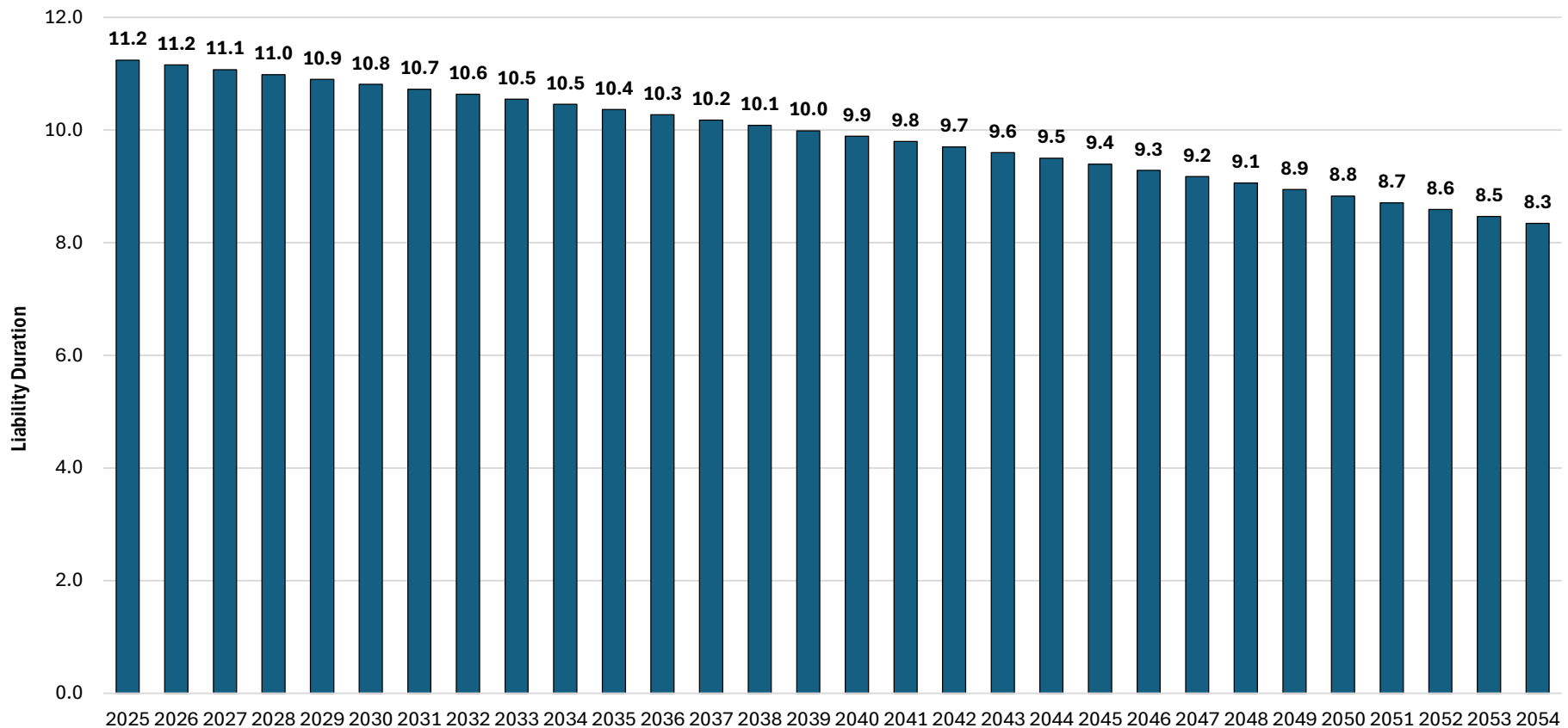
- Despite the Plan being closed, benefit payments are expected to increase for the next 25 years

Time Horizon is Still Sufficiently Long to Take Investment Risk



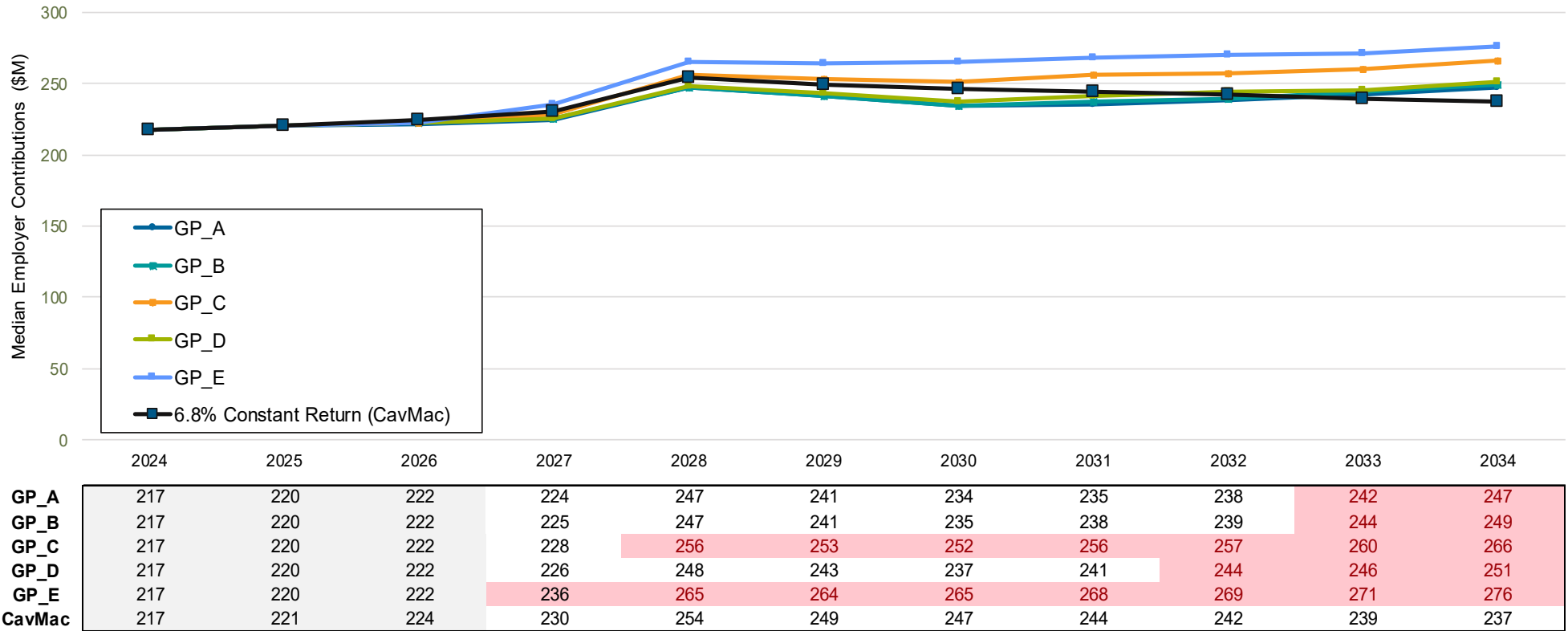
- Weighted Average Life (WAL) is an estimate of the expected time horizon of a Plan
 - Time horizon is gradually shortening
- Time horizon is still long while the WAL > 20
 - WAL declines to 20 in 2042 (18 years from now)

Liability Duration



- Liability Duration measures how sensitive the liability is to a change in the discount rate, i.e., it is the approximate percentage change in value for a 1.0% change in the discount rate
- Future de-risking to a more conservative asset allocation may result in a drop in the discount rate which will cause the liability to increase (funded status to fall)
- CMERS liability duration is long but it will gradually decline as the Plan winds down

Median Projected Contributions by Calendar Year



- Median employer contributions are compared to a scenario where the Fund earns a constant 6.8% return per year (CavMac)

*CavMac total estimated employer contributions based on the January 1, 2024 valuation.

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Past performance is no guarantee of future results.

Memorandum

To: CMERS Investment Committee

From: David M. Silber, CFA, CAIA

Date: March 13, 2025

Re: Callan Glide Path Presentation Thoughts

High Level Thoughts

- At 50% probability, Callan projects all 5 Glide Paths (GP) will achieve fully funded status at a 5.5% discount rate, with lower required contribution amounts over 30-years than projected by the Actuary;
- The Glide Paths are highly vulnerable (i.e., contributions significantly rise) to scenarios where the Fund significantly underperforms its 6.8% discount rate in the early years of this analysis;
- At 50% probability, Callan projects higher required contribution amounts for GP-C & GP-E over the next 10-years than projected by the Actuary, likely because GP-C & GP-E lower the discount rate when the Fund reaches an 85% funded status while the other Glide Paths don't lower the discount rate until the Fund reaches a 90% funded status;
- GP-A, GP-B, & GP-D are exactly the same once the Fund reaches an 85% funded status;
- The main difference between GP-A, GP-B, & GP-D is whether to de risk immediately, and if yes, by how much;
- Callan & Staff believe the Glide Paths analyzed in the presentation are representative of the range of options available. In other words, there does not appear to be a way to further reduce investment volatility and avoid paying more in projected contributions than GP-E;
- Some Pros & Cons of GP-A & GP-D are below; GP-B plots somewhere in between GP-A and GP-D, so its comments are not included below even though it merits serious consideration along with GP-A & GP-D.

	Glide Path A (GP-A)	Glide Path D (GP-D)
Pros:		
1.	At 50% probability, projected to achieve the highest return, result in the lowest required contributions, and achieve the highest funded status.	At 50% probability, projected to lower investment risk the most immediately, lower required contributions below what Actuary estimates, & achieve full funded status.
2.	Long time horizon before the Fund's liabilities and benefit payments peak supports taking investment risk.	Mix 2 has a higher Sharpe Ratio than the Target & Mix 1. Since GP-D invests in Mix 2 immediately, this Glide Path is expected to have a better risk-adjusted return.
3.	May be preferential option if Callan data is not compelling enough in terms of the risk & return trade-off between Target, Mix 1, & Mix 2 to make an immediate change.	Higher allocation to bonds and lower allocation to alternatives results in improved Fund liquidity, which is helpful during times of market stress.
4.		Lowers allocation to stocks right away in an environment where Callan explains stocks are historically expensive.
Cons:		
1.	Highest contribution volatility; Largest required contributions projected in bad stock market scenarios.	Contributions projected to rise above what Actuary currently predicts at 67 th percentile probability for all GPs, including GP-D.

*Projected data for all Glide Paths (GPs) come from Callan's respective 2025 Phase II & Phase III Glide Path Analysis and Scenario Analysis presentations. Contributions reflect employer contributions only.

**CavMac total estimated employer contributions come from CavMac and are based on the January 1, 2024 valuations. Contributions reflect employer contributions only.

Callan Glide Path Presentation Thoughts Continued

	Target	Mix 1	Mix 2		CavMac
30-year Expected Return	7.5%	7.4%	7.3%		6.8%
10-year Expected Return	7.2%	7.1%	7.0%		6.8%
Expected Standard Deviation	12.2%	11.5%	11.0%		
Sharpe Ratio (10-yr. Return / Standard Deviation)	58.9%	61.1%	63.1%		
Illiquidity (Real Estate + Private Equity Target)	21.7%	19.7%	17.7%		
Fixed Income Target	29.0%	32.0%	36.0%		
Public Equity Target	39.0%	36.0%	34.0%		

	GP-A	GP-B	GP-D	GP-C	GP-E	CavMac
Initial Mix (Below 80%)	Target	Mix 1	Mix 2	Mix 2	Mix 2	
Mix @ 80% Funded	Mix 1	Mix 1	Mix 2	Mix 2	Mix 2	
Mix @ 85% Funded	Mix 2	Mix 2	Mix 2	Mix 3	Mix 4	
Mix @ 90% Funded	Mix 3	Mix 3	Mix 3	Mix 4	Mix 4	
Mix @ 95% Funded	Mix 4	Mix 4	Mix 4	Mix 5	Mix 5	
Discount Rate @ 80% Funded	6.80%	6.80%	6.80%	6.80%	6.80%	6.80%
Discount Rate @ 85% Funded	6.80%	6.80%	6.80%	6.50%	6.00%	6.80%
Discount Rate @ 90% Funded	6.50%	6.50%	6.50%	6.00%	6.00%	6.80%
Discount Rate @ 95% Funded	6.00%	6.00%	6.00%	5.50%	5.50%	6.80%


	GP-A	GP-B	GP-D	GP-C	GP-E	CavMac
Funded Status in 30-years (50%) (Funded Status for all GPs measured using 5.50% discount rate)	119%	119%	117%	117%	116%	100% (with 6.80% discount rate)
Probability of achieving a 100% Funded Status with \$250m/year constraint (Funded Status for all GPs measured using 5.50% discount rate)	55%	54%	53%	52%	52%	50% (with 6.80% discount rate and no contribution constraint)
Probability of reaching 100% Funded Status at some point within 30 years with \$250m/year constraint @ 6.00% discount rate	72.7%	72.0%	70.7%			
30-Year Contributions (50%)	\$5.42b	\$5.48b	\$5.52b	\$5.75b	\$5.84b	\$6.03b
10-Year Contributions (50%)	\$2.31b	\$2.32b	\$2.35b	\$2.41b	\$2.49b	\$2.37b
10-Year Contributions (67%)	\$2.68b	\$2.67b	\$2.67b	\$2.71b	\$2.74b	
Median Projected Contribution in a single calendar year > CavMac from 2025 to 2030	No	No	No	Yes	Yes	

	Target	Mix 1	Mix 2
10-Year Contributions – Tech Bubble Scenario	\$3.51b	\$3.38b	\$3.28b
10-Year Contributions – Calendar Year 2022	\$3.49b	\$3.49b	\$3.51b
10-Year Contributions – Global Financial Crisis	\$4.14b	\$4.03b	\$3.94b
10-Year Contributions – 1970s Stagflation Scenario	\$4.07b	\$4.03b	\$3.99b

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December 31, 2024



City of Milwaukee Employees' Retirement System

Investment Measurement Service
Quarterly Review

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The Recession Never Came, so Now What?

ECONOMY

2 Economists were convinced that a recession would hit the U.S. economy, but it never came. Instead, growth held up, and consumers became more confident. Now what? With mass deportations and tariffs potentially leading to inflation, the fate of the economy is uncertain.

Inflation Worries Drag Most Indices Lower

FIXED INCOME

8 The Bloomberg US Aggregate Bond Index fell 3.1% due to the rise in interest rates, and credit spreads tightened. The yield curve steepened, with rates rising for Treasuries one year and longer. The U.S. dollar surged.

Gains in 3Q24 but Lags Benchmarks

PRIVATE CREDIT

12 Private credit rose 2.0% in 3Q24, lagging two benchmarks. But over longer time periods it has held up well and performed better than either leveraged loans or high yield bonds. Fundraising for private debt was the strongest since 4Q23, with \$51 billion raised.

Gains for 2024 but Concerns Over 2025

INSTITUTIONAL INVESTORS

4 Institutional investors saw gains over 2024, but struggled against a 60% stocks/40% bonds benchmark. The new administration was the focus of many discussions, and inflation, interest rates, and the Fed continued to dominate asset-allocation decisions.

Valuations May Have Bottomed; REITs Fall

REAL ESTATE/REAL ASSETS

10 Valuations appear to have bottomed and now reflect higher borrowing costs. Income returns for private real estate were positive across sectors and regions. REITs fell, both in the U.S. and globally. Redemption queues are starting to decline.

Strong Finish but Choppy Outlook

HEDGE FUNDS/MACs

13 Hedge funds finished strong to end the year; the median Callan Institutional Hedge Fund Peer Group rose 2.4%. Within the HFRI indices, the best-performing strategy was event-driven, which was up 2.1% as current M&A deals reacted positively to the new administration.

U.S. Stocks Hit High After Volatility Spike

EQUITY

6 U.S. stocks ended up roughly 2% after a volatile quarter. Sector performance was mixed, while large cap stocks outperformed small cap, again. Tariffs threatened by the Trump administration weighed on global equity markets, with Europe one of the worst performers.

Fundraising Back; Activity Struggles

PRIVATE EQUITY

11 Fundraising by dollar is nearing the highs of 2021. Buyout activity is flat, while venture capital activity is significantly depressed. Short-term performance continues to lag, but over longer time periods, private equity maintains a premium.

Index Gains 5.6%; Turnover at Low

DEFINED CONTRIBUTION

15 The Callan DC Index™ gained 5.6% in 3Q24. Balances in the index rose entirely due to investment gains, as net flows were negative. Turnover as measured by the index hit its lowest level ever, while fixed income saw the most flows, outpacing even target date funds.

Broad Market Quarterly Returns

U.S. Equity
Russell 3000



2.6%

Global ex-U.S. Equity
MSCI ACWI ex USA



-7.6%

U.S. Fixed Income
Bloomberg Agg



-3.1%

Global ex-U.S. Fixed Income
Bloomberg Global Agg ex US



-6.8%

Sources: Bloomberg, FTSE Russell, MSCI

The Recession Never Came, so Now What?

ECONOMY | Jay Kloepfer

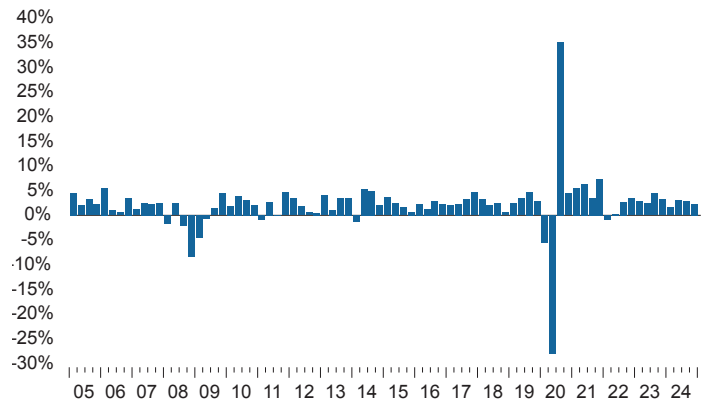
Economists and market prognosticators were all so sure that a recession was in the cards, if not in 2023, then surely in 2024. But one never came, and now we are left scratching our collective heads as to what is in store for the global economy. The U.S. economy showed a few signs of slowing during 2024, scattered across indicators like inventories and consumer debt levels, especially for autos, and exports and imports. In the end solid GDP growth persisted, and the job market proved resilient despite some head fakes during the year. The hurricanes in the Southeast took a bite out of consumer optimism and the job market in the fall, when new jobs fell precipitously in October to recessionary readings (below 50,000). But hiring came bouncing back in November and December, and the U.S. economy clocked consecutive months with greater than 200,000 new jobs, a level associated with continued economic expansion. The unemployment rate remains low at 4.1%. GDP grew 2.5% over the course of 2024, after a gain of 2.9% the previous year.

The Federal Reserve's process of rate hikes to tackle elevated inflation, in which the Fed Funds rate and mortgage rates and credit card and auto loan rates all rose dramatically within a very concentrated period of about six quarters, barely dented the U.S. economic growth engine. A tumultuous federal election year and spreading geopolitical turmoil around the globe has not hurt consumer confidence much. We can trace the consumer optimism in broad strokes to the strong, steady job market, and wages and salaries that have risen fast enough to finally outpace inflation, a reversal that took hold when the rate of inflation dropped sharply from its peak in 2022. Real average hourly earnings increased 1% over the course of 2024 (in other words, nominal wages outpaced inflation by 1%). Real wage growth has sustained confidence and boosted disposable income and spending.

The Fed signaled that it completed its mission to raise interest rates to fight inflation in mid-2024 and began cutting rates in September 2024. The Fed cut a total of 1% in 2024, and the current target range for the Fed Funds rate is 4.25%–4.50%. Longer term, the midpoint of the Fed's target for short rates is 3.0%,

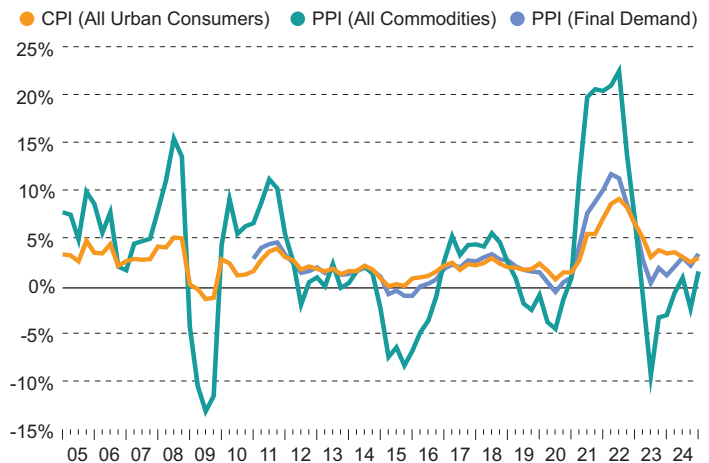
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

but the size of the range around this midpoint is unprecedented, 2.4% to 4%, suggesting a wide range of opinions at the Federal Open Market Committee (FOMC). The debt market is pricing in a halt to the Fed's rate cuts at 4%, suggesting belief that inflation and therefore short rates may have to settle in at levels higher than previously thought.

Despite the gains in real wages, the shadow of inflation still looms. The effects of this once-in-a-generation inflation spike will hang over companies and consumers for years. Inflation is a rate of increase in general prices; even if we hit the Federal Reserve's

articulated goal of 2% long term, it still means prices continue to rise, every year. More importantly, that 9% spike in inflation is now baked in. Prices are “permanently” higher, and they are continuing to rise, just at a lower rate. Simple daily indicators abound that remind households and companies and governments that everything is substantially more expensive. None are more prevalent than the cost of food, both at home and at restaurants: How much did I just pay for those eggs?

Strong GDP growth suggests little easing in tight labor markets; the prospect for continued inflationary pressure from the labor market is high. Getting inflation down to the Fed’s stated goal of 2% will take time and some discomfort. Squeezing out the last of excess inflation will require a period of below trend growth, a loosening of the labor market, and the pain of a rise in unemployment. In the face of this labor market tightness, deporting undocumented workers has the potential, most mainstream economists agree, to greatly restrict the supply of labor in agriculture across the country and could result in substantial upward pressure on the cost of food either from reduced supply (more likely) or increased wages to lure American workers to do these jobs (less likely). Other sectors including construction and services could see similar severe tightening in their supply of labor and upward pressure on prices.

The other part of the inflation shadow is the prospect of trade wars, namely the imposition of tariffs by the U.S., with potential retaliation from its trading partners. Within the complex web of global sourcing, assembly, and delivery of goods and services by U.S. companies, it is not clear what or who will be subject to a tariff. American automakers source parts, including computer chips, and assemble vehicles outside of the U.S. American tech companies make much of their hardware either entirely overseas or with

The Long-Term View

Index	4Q24	Periods Ended 12/31/24			
		1 Yr	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	2.6	23.8	13.9	12.5	7.8
S&P 500	2.4	25.0	14.5	13.1	7.7
Russell 2000	0.3	11.5	7.4	7.8	7.6
Global ex-U.S. Equity					
MSCI EAFE	-8.1	3.8	4.7	5.2	3.6
MSCI ACWI ex USA	-7.6	5.5	4.1	4.8	--
MSCI Emerging Markets	-8.0	7.5	1.7	3.6	--
MSCI ACWI ex USA Small Cap	-7.7	3.4	4.3	5.7	6.2
Fixed Income					
Bloomberg Agg	-3.1	1.3	-0.3	1.3	3.9
90-Day T-Bill	1.2	5.3	2.5	1.8	1.9
Bloomberg Long G/C	-7.4	-4.2	-3.3	1.0	5.4
Bloomberg GI Agg ex US	-6.8	-4.2	-3.4	-0.9	2.4
Real Estate					
NCREIF Property	0.9	0.4	3.1	5.7	7.6
FTSE Nareit Equity	-6.2	8.7	4.3	5.7	9.8
Alternatives					
Cambridge PE*	2.5	9.2	16.4	15.4	13.3
Cambridge Senior Debt*	3.3	10.2	7.9	7.3	4.6
HFRI Fund Weighted	1.5	9.8	7.0	5.3	5.6
Bloomberg Commodity	-0.4	5.4	6.8	1.3	2.1
Inflation – CPI-U	0.1	2.9	4.2	3.0	2.5

*Data for most recent period lags. Data as of 3Q24.
Sources: Bloomberg, Bureau of Economic Analysis, FTSE Russell, Hedge Fund Research, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

components from overseas. Auto companies from Germany and Japan assemble autos in the U.S. How do we define an import car, exactly? Tariffs raise the prices to the end buyer, leading to more inflationary pressures. Spiraling prices may be the catalyst of the long-awaited recession, finally killing growth in the current economic cycle.

Recent Quarterly Economic Indicators

	4Q24	3Q24	2Q24	1Q24	4Q23	3Q23
Employment Cost: Total Compensation Growth	3.8%	3.9%	4.1%	4.2%	4.2%	4.3%
Nonfarm Business: Productivity Growth	1.2%	2.3%	2.1%	0.7%	3.1%	3.8%
GDP Growth	2.3%	2.8%	3.0%	1.6%	3.2%	4.4%
Manufacturing Capacity Utilization	76.3%	76.7%	77.2%	77.1%	77.6%	78.1%
Consumer Sentiment Index (1966=100)	72.1	68.1	71.1	78.4	64.9	69.6

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Gains for 2024 but Concerns Over 2025

INSTITUTIONAL INVESTORS

- Public defined benefit (DB) plans and nonprofits gained 10% over the last year, easily topping U.S. fixed income and global ex-U.S. stocks.
- Corporate plans, with their heavier allocations to bonds, only rose 6%.
- But extraordinary stock gains easily outpaced those returns, and all institutional investor types lagged a 60% S&P 500/40% Bloomberg Aggregate benchmark.
- Over 5-, 10-, and 20-year time periods, the same pattern held: public DB plans and nonprofits outpaced corporate plans, but all lagged the benchmark.
- The margin of that outperformance narrowed over time.

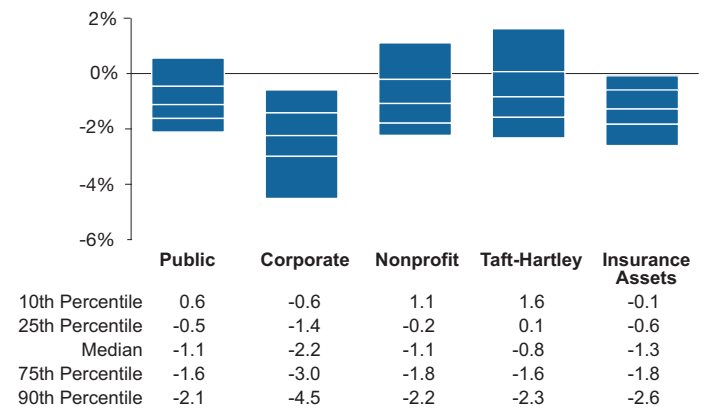
Macroeconomic Issues

- Not surprisingly, the new administration was a major topic of discussions, with investors trying to understand its impact on inflation, trade, taxes, and deregulation.
- Global ex-U.S. markets continue to be a source of consternation, with their underperformance compared to U.S. equities a sore spot.
- At the same time, the excessive concentration within U.S. large cap stocks is a concern, as active managers struggle to outpace benchmarks.

Public DB plans

- Asset-allocation decisions drive many conversations for these plans.
- Fixed income, especially its performance compared to other asset classes, has been a pain point. However, increased capital markets expectations for the asset class, especially compared to two years ago, has led some plans to reconsider bonds.
- Interest rates and the Fed's actions continue to be a top-of-mind issue.

Quarterly Returns, Callan Database Groups (12/31/24)



Source: Callan

Callan Database Median and Index Returns* for Periods Ended 12/31/24

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	-1.1	10.0	3.0	7.2	7.3	6.9
Corporate Database	-2.2	6.0	-0.7	3.9	5.5	6.2
Nonprofit Database	-1.1	10.1	2.9	7.2	7.0	6.7
Taft-Hartley Database	-0.8	9.7	2.8	6.8	7.0	6.7
Insurance Assets Database	-1.3	6.4	1.5	3.4	4.1	4.5
All Institutional Investors	-1.3	9.4	2.5	6.6	6.7	6.7
Large (>\$1 billion)	-1.1	8.6	2.6	7.0	7.1	6.9
Medium (\$100mm - \$1bn)	-1.3	9.5	2.5	6.7	6.8	6.8
Small (<\$100 million)	-1.4	10.0	2.5	6.5	6.6	6.5
60% S&P 500/40% Bloomberg Agg	0.2	15.1	4.5	8.8	8.6	7.7

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, insurance assets, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

Corporate DB plans

- Funded status improvements are leading plans to discuss changes to asset allocation to protect the gains, or to derisk, or to examine pension risk transfer.
- Allocation issues touch a range of asset classes, including hedge funds and growth assets.
- Investors ranked artificial intelligence as the most topical issue they are addressing, followed by geopolitical uncertainty.
- With the pandemic and related lockdowns firmly in the rear-view mirror for many, firm culture after COVID-19 was last in their rankings.

DC plans

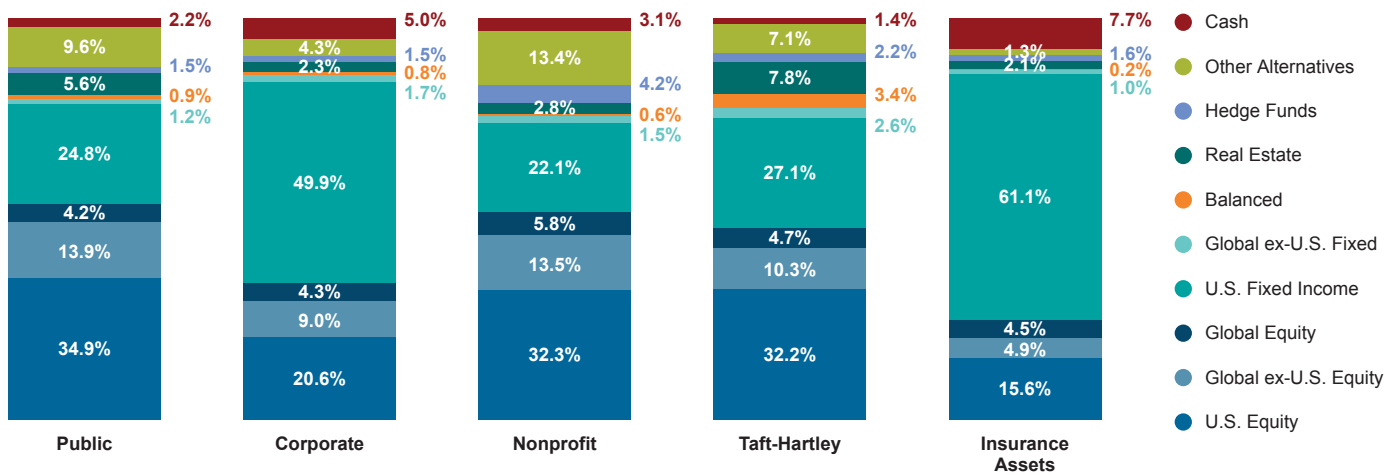
- Retirement income is still under discussion by sponsors, to help participants with the “decumulation” phase of their careers and post-career lives.

- Target date funds are attracting scrutiny. They are quite popular, but some plans wonder if they have the “right” ones.
- The implications of SECURE 2.0 and other regulatory changes are uncertain, but sponsors are trying to assess what if any changes they need to make in response.

Nonprofits

- These investors are also weighing critical asset-allocation decisions, including how much to allocate to alternative investments, what to do with fixed income, and whether to overweight U.S. equities vs. global ex-U.S. equities.
- Return enhancement is another area of focus, with a desire to assure the growth of the portfolio.
- Interest in diversity, equity, and inclusion continues to be low, even compared to other types of institutional investors, with only 6% of clients this quarter planning future action and 26% taking no steps to implement DEI policies.

Average Asset Allocation, Callan Database Groups



Note: Charts may not sum to 100% due to rounding. Other alternatives include but is not limited to: diversified multi-asset, private credit, private equity, and real assets. Source: Callan

Equity

U.S. Equities

U.S. market reaches record high after spike in volatility

- The U.S. equity market ended with the S&P 500 Index up over 2%. However, the quarter was marked by volatility, particularly during October and December.
- Negative returns in October were driven by investor anxiety around the U.S. presidential election, uncertainty with the Fed’s approach to interest rate cuts, and some misses to corporate earnings expectations. December returns, while initially buoyed by the Fed’s third consecutive rate cut, cooled after the Fed announced no additional rate cuts until the second half of 2025.
- Sector performance was mixed; only four (Communication Services, Consumer Discretionary, Financials, and Information Technology) posted gains.
- During 4Q24, large cap stocks outperformed small caps. Growth outperformed value across the market cap spectrum.

Large caps continue to drive narrow markets

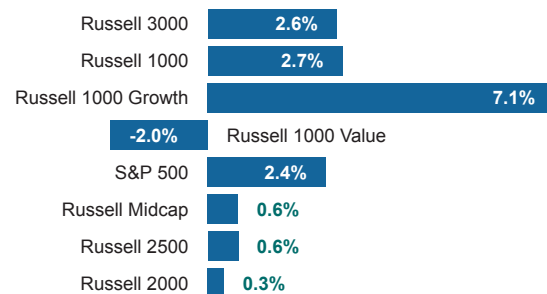
- Concentration and performance contribution of the Magnificent Seven stocks within the large cap benchmarks remain outsized relative to the aggregate of benchmark constituents. In 2024, the S&P 500’s return was 25%; the S&P 500 ex-Mag 7 return was 16%.
- For the second year in a row, less than 30% of S&P 500 stocks have outperformed the S&P 500 itself.

Fundamentals critical to success of large caps

- In recent years, themes—like “work from home” stocks and AI—as well as momentum have been attributed to the prolonged success of the Magnificent Seven.
- However, Magnificent Seven valuations have been supported by strong earnings, low debt, and high cash levels. Consensus and forward-looking EPS growth expectations also remain high for large cap companies.

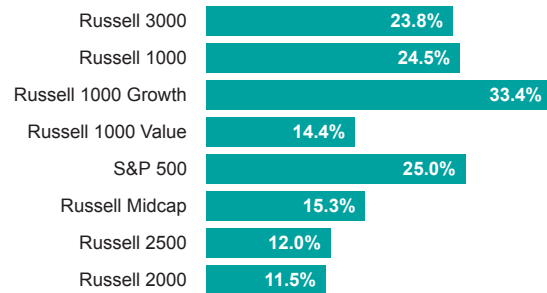
U.S. Equity: Quarterly Returns

(12/31/24)



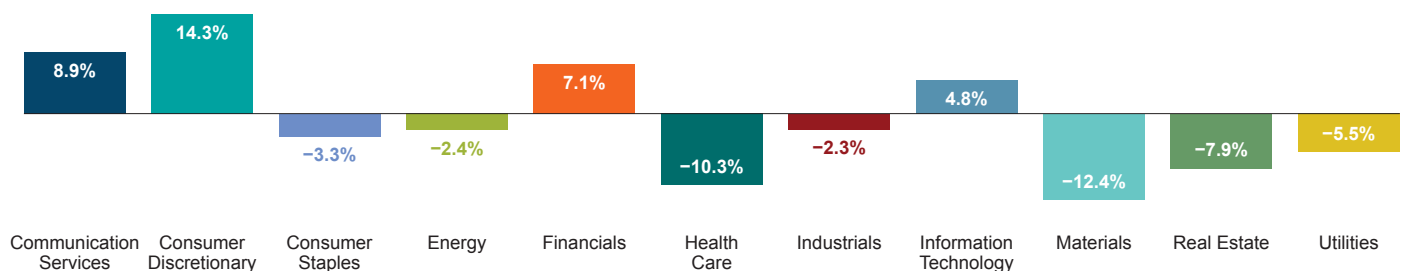
U.S. Equity: One-Year Returns

(12/31/24)



Sources: FTSE Russell and S&P Dow Jones Indices

Quarterly Performance of Industry Sectors (12/31/24)



Source: S&P Dow Jones Indices

Global Equities

Trump tariffs weigh on markets

- Global equity markets had a rough end to the year as proposed Trump tariffs weighed on Europe and China.
- Europe was one of the worst-performing regions, plagued by political uncertainty and continued economic woes.
- While still negative, Japan's decline over the quarter was stemmed by the approval of a new economic stimulus plan focused on issues such as wage stability and deflation.

Emerging markets: China, India fall short

- Emerging markets declined on the heels of poor results out of China and India. Although Chinese stocks initially gained from the announced stimulus, they later declined due to expected tariffs. Economic growth in India fell short of expectations.

Growth vs. value: Muted tech influence on growth

- In developed ex-U.S. markets, the influence of technology and AI is comparatively more muted, which makes the trend of growth stocks, especially those from the Magnificent Seven, outperforming value stocks less pronounced.

U.S. dollar: Strength from beneficial effects of Trump

- The U.S. dollar shifted direction from the last quarter as expectations for interest rate cuts faded, along with the anticipated beneficial effects of the Trump administration on the U.S. economy; in total the U.S. Dollar Index rose over 7% during the quarter.

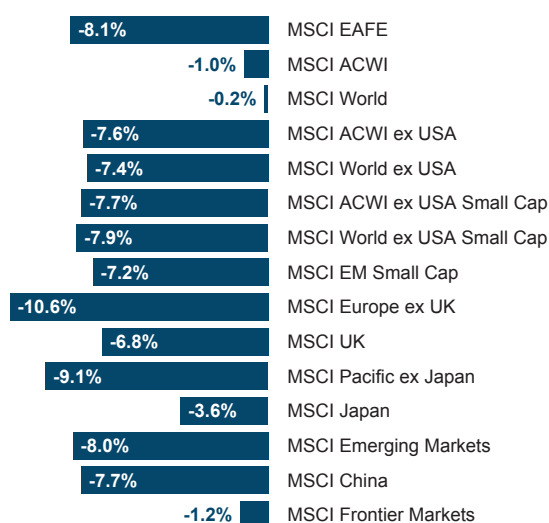
Global equity market concentration continues higher

- The U.S. share of global market capitalization in global indices is at all-time highs as U.S. technology companies lead markets higher.
- Market capitalization-weighted global benchmarks are providing lower diversification benefits than historically at not only the country level but also the security level as the top five constituents of the MSCI ACWI Index currently comprise over 17% of the benchmark.

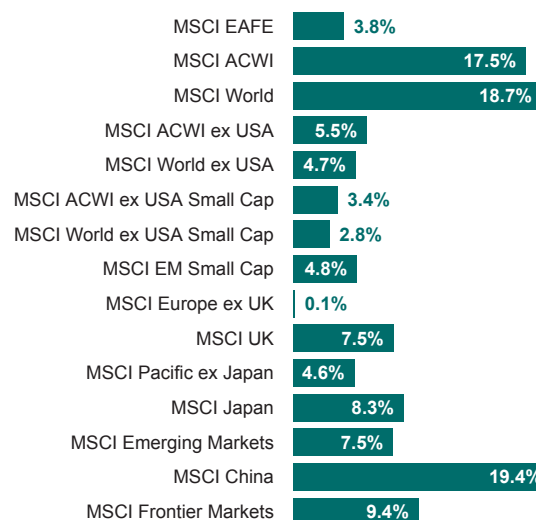
U.S. dollar strength has been a headwind

- Recent U.S. dollar strength has been a notable headwind for non-U.S. equities as local currency revenues of companies continue to weaken against the U.S. dollar.
- Some contributing factors to U.S. dollar strength have been higher interest rate policy by the Federal Reserve compared to other central banks, U.S. economic and market strength, and recent rhetoric regarding potentially higher tariff rates on U.S. imports.

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar, 12/31/24)



Global ex-U.S. Equity: One-Year Returns (U.S. Dollar, 12/31/24)



Source: MSCI

Fixed Income

U.S. Fixed Income

Inflation concerns resurface

- The Fed continued the rate cutting cycle, most recently in December, bringing the target range to 4.25%-4.50%.
- The yield curve steepened, with rates rising for Treasuries one year and longer. The 10-year rose 77 bps to 4.58%.
- Inflation concerns resurfaced, with the breakeven inflation rate rising by 19 bps to 2.30% over the course of the quarter.

Performance drivers

- The Bloomberg US Aggregate Bond Index fell 3.1% due to the rise in rates.
- With the steepening yield curve, long government bonds fared the worst among sectors.
- Leveraged finance sectors (High yield: +0.2%, leveraged loans: +2.3%) were the only positive fixed income sectors as spreads tightened.

Credit spreads tighten

- Corporate credit spreads across both investment grade and leveraged finance tightened, with both being “priced to perfection.”
- New issuance continued to be strong, with 2024 totals for both IG and HY outpacing 2023.

Municipal Bonds

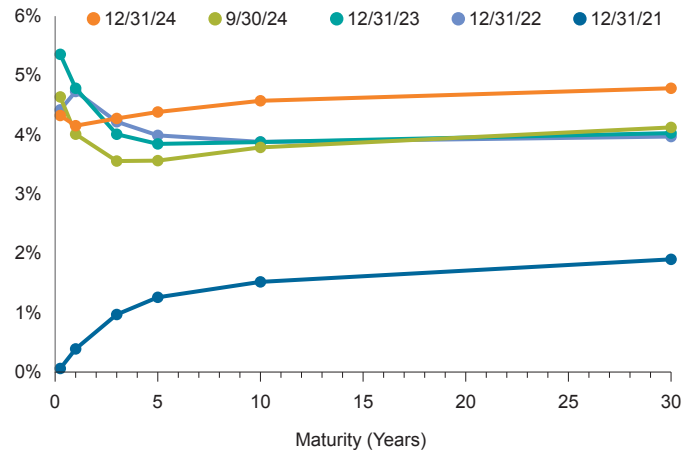
Negative returns in 4Q

- The muni AAA-rated curve shifted upward across the curve and the curve steepened.
- The spreads between the AAA 2s/10s key rates (24 bps) ended the year slightly tighter than Treasuries (33 bps).

Low dispersion across quality in 4Q and for the year

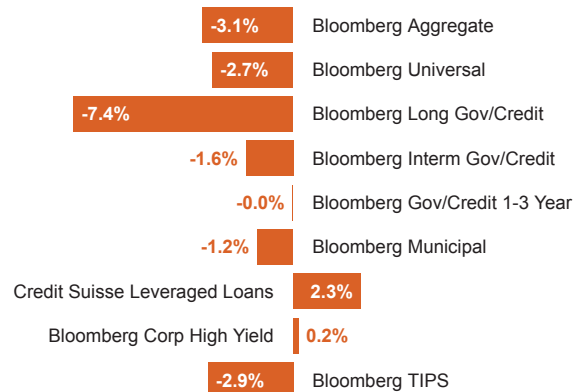
- AAA: -1.3%; +1.4%
- AA: -1.2%; +1.5%
- A: -1.2%; +1.5%
- BBB: -1.3%; +1.6%

U.S. Treasury Yield Curves

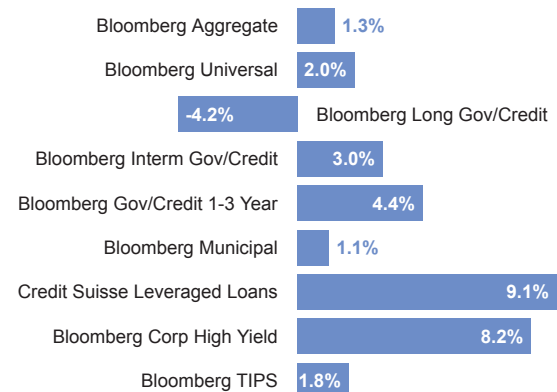


Source: Bloomberg

U.S. Fixed Income: Quarterly Returns (12/31/24)



U.S. Fixed Income: One-Year Returns (12/31/24)



Sources: Bloomberg and Credit Suisse

Robust issuance through 4Q, demand softened slightly

- Total issuance in 2024 was \$508 billion, beating the previous high of \$485 billion in 2020 and up 32% year over year.
- Demand absorbed issuance most of the quarter, but December exhibited three weeks of fund outflows, after 23 weeks of consecutive net inflows.

Muni valuations vs. U.S. Treasuries remain rich

- 10-year AAA muni/10-year U.S. Treasury yield ratio was rich relative to the 10-year median (67% now vs. 80% historical).

Global Fixed Income

Political controversy dogs euro zone

- The euro zone was marred with political controversy in 4Q, specifically in Germany and France.
- GDP growth in the euro zone rose modestly (+0.4%), while the ECB cut rates in December.
- Japan’s GDP grew 1.2% on the back of strong exports and a weaker yen.

U.S. dollar surges

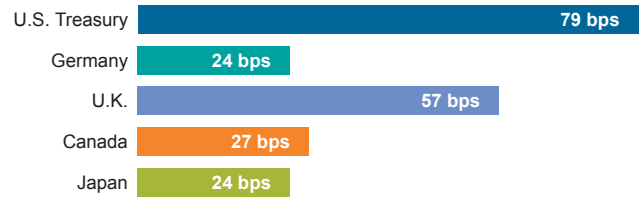
- The U.S. dollar rose 8% versus a basket of six developed market currencies.
- Global fixed income returns varied based on currency exposure, with the Bloomberg Global Aggregate ex US Hedged Index rising 0.7%, while the Bloomberg Global Aggregate ex US Unhedged Index fell by 6.8%.

Emerging market debt faced similar challenges

- Both EM local and hard currency bonds posted negative returns on the quarter, weighed down by the strength of the dollar and geopolitical risk. Hard currency spreads narrowed at the tail end of the quarter, partially offsetting an early quarter drawdown.
- Brazil increased its policy rate by 150 bps in 4Q, resulting in the Brazilian real depreciating by 13.4% versus the U.S. dollar.

Change in 10-Year Global Government Bond Yields

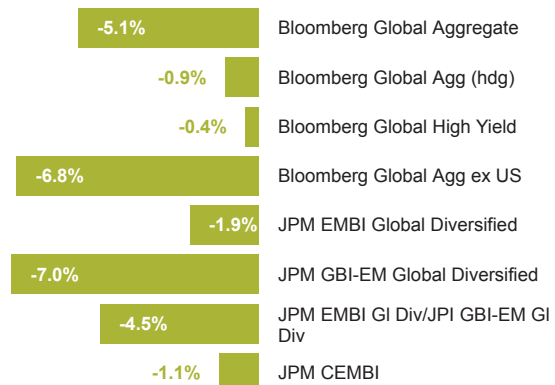
3Q24 to 4Q24



Source: Bloomberg

Global Fixed Income: Quarterly Returns

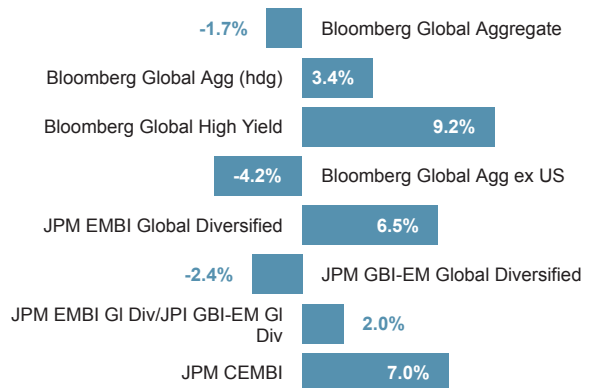
(12/31/24)



Sources: Bloomberg and JPMorgan Chase

Global Fixed Income: One-Year Returns

(12/31/24)



Sources: Bloomberg and JPMorgan Chase

Valuations May Have Bottomed; REITs Fall

REAL ESTATE/REAL ASSETS | Munir Iman

Valuations reflect higher interest rates

- Valuations appear to have bottomed and now reflect higher borrowing costs.
- Income returns were positive across sectors and regions.
- Property sectors were mixed; Office and Hotel experienced negative appreciation, and the remaining sectors had flat or positive appreciation.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios.

REITs fall and trade at a discount to NAV

- Global REITs underperformed in 4Q24, down 9.7% compared to a 0.2% decline for global equities (MSCI World).
- U.S. REITs fell 6.2% in 4Q24, in contrast with the S&P 500 Index, which rose 2.4%.
- Global REITs are trading at a discount to NAV (-7.0%).
- Historically, global REITs have traded at a 3.9% discount to NAV.

Redemption queues are falling

- ODCE redemption queues are 16.4% of net asset value (NAV), with a median queue of 13.4%. This compares to the GFC, when queues peaked at approximately 15% of NAV.
- Outstanding redemption requests for most large ODCE funds are approximately 6% to 33% of NAV (one outlier at 56%).

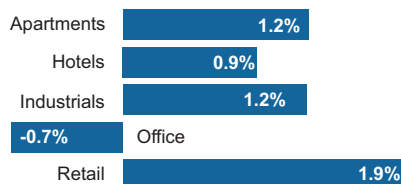
Callan Database Median and Index Returns* for Periods Ended 12/31/24

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	20 Years
Real Estate ODCE Style	0.7	-2.2	-2.2	-3.0	2.4	5.4	5.5
NFI-ODCE (value-weighted, net)	1.0	-2.3	-2.3	-3.1	2.0	4.9	5.5
NCREIF Property	0.9	0.4	0.4	-0.8	3.1	5.7	7.0
NCREIF Farmland	-1.3	-1.0	-1.0	4.4	4.8	5.9	11.2
NCREIF Timberland	1.4	7.0	7.0	9.7	7.8	5.4	6.9
Public Real Estate							
Global Real Estate Style	-9.3	2.7	2.7	-4.8	1.4	4.5	6.1
FTSE EPRA Nareit Developed	-5.1	9.3	9.3	1.7	3.1	5.3	--
Global ex-U.S. Real Estate Style	-15.8	-7.9	-7.9	-9.0	-3.9	3.1	--
FTSE EPRA Nareit Dev ex US	-15.2	-8.4	-8.4	-9.7	-5.8	-0.2	--
U.S. REIT Style	-6.6	8.0	8.0	-2.5	5.0	6.4	7.7
FTSE EPRA Nareit Equity REITs	-6.2	8.7	8.7	-2.2	4.3	5.7	7.0

*Returns less than one year are not annualized. Sources: Callan, FTSE Russell, NCREIF

Sector Quarterly Returns by Property Type

(12/31/24)



Source: NCREIF

- Redemption queues are now sharply decreasing after having peaked at 19.3% of NAV in 1Q24. This has been driven primarily by rescissions of redemption requests within a handful of managers with large queues. In certain cases, this has been due to loyalty fee programs being instituted.

Pricing, transaction volumes increasing

- Transaction volume is increasing on a rolling four-quarter basis yet remains below five-year averages.
- In 4Q24, transaction volume increased on a quarter-over-quarter basis. Volume remains lower compared to 2022.
- The volatile rise in interest rates is the driving force behind the slowdown in transactions. Increasing transactions are driven by increasing confidence in multi-family and industrial values. Valuations have largely adjusted to increased borrowing costs.

Fundraising Rebounds but Activity Struggles

PRIVATE EQUITY | Ashley Kahn

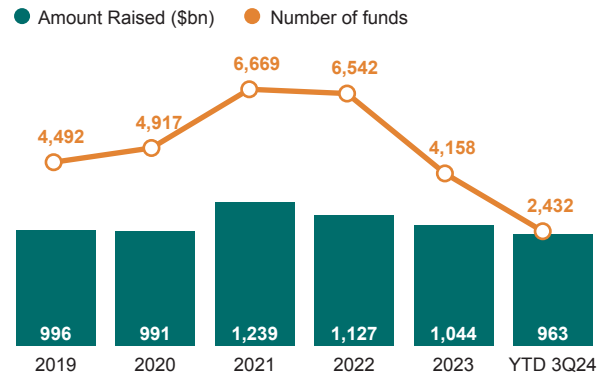
Fundraising ► By volume, 2024 fundraising has been creeping toward the highs of 2021 (only 3% off). And compared to the same time last year, volume is up by 7%. On the other hand, fundraising by count was down significantly: 23% fewer funds raised in YTD 3Q24 compared to the same time last year.

Buyouts ► Buyout activity in 2024 was essentially flat compared to 2023, by both count and volume. Buyout valuations have started to creep back up, although still off by about a turn from the highs of 2021. They exhibited a large uptick in 3Q24, reflecting the Fed’s first interest rate cut that quarter.

Venture Capital and Growth Equity ► Deal volume in 2024 was up from 2023 but still significantly depressed compared to the highs of 2021-22. Deal activity by count has declined each year, with the average deal size increasing. Early-stage valuations have reached record highs, up 28% from last year and 44% from 2021. This has been driven by today’s AI “supercycle,” with greater competition for AI startups pushing up valuations.

Exits ► Volume has remained significantly depressed through 3Q24, down 13% from last year and at 43% of 2021 levels.

Annual Fundraising (9/30/24)



Source: Pitchbook

Exit count is also down by 14% from last year and at 67% of 2021 levels.

Returns ► Short-term performance continues to lag public equity (driven by the “Magnificent Seven”). Due to the smoothed nature of its returns, private equity doesn’t outperform when public equity is at record highs (it likewise doesn’t drop as sharply when public equity drops). By strategy type, venture capital and growth equity are still recovering after losses in 2022-23, while buyouts have proven to be much more resilient.

Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/24*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
All Venture	1.4	2.4	-5.3	14.9	14.8	12.2
Growth Equity	2.8	7.7	-0.5	13.9	13.2	13.5
All Buyouts	3.3	10.1	6.3	15.2	14.0	14.0
Mezzanine	3.0	10.4	9.1	11.7	10.9	11.4
Credit Opportunities	2.5	9.9	7.6	9.2	7.6	9.2
Control Distressed	0.9	3.3	6.7	13.3	10.8	11.2
All Private Equity	2.7	7.9	2.8	14.4	13.4	13.1

Note: Private equity returns are net of fees. Sources: LSEG/Cambridge and S&P Dow Jones Indices
*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of the *Capital Markets Review* and other Callan publications.

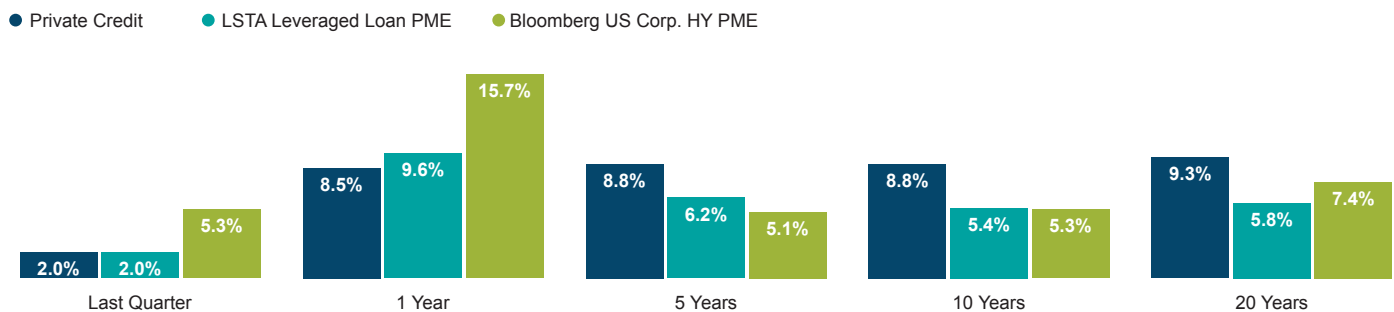
Private Credit Gains in 3Q24 but Lags Benchmarks

PRIVATE CREDIT | Cos Braswell

Private credit gained 2.0% in 3Q24, the most recent quarter available. That matched the LSTA Leveraged Loan PME Index but significantly trailed the Bloomberg US Corporate High Yield PME Index. Results over the trailing one year were roughly the same, but over 5-, 10-, and 20-year time periods private credit topped the two benchmarks.

- Private credit performance varies across sub-asset class and underlying return drivers. Higher-risk strategies have performed better than lower-risk strategies.
- Fundraising for private debt was the strongest since 4Q23, with \$51 billion raised.
- Direct lending was responsible for 76% of 3Q fundraising, with \$39 billion raised.
- While direct lending continues to dominate fundraises, we are noticing increased interest in specialty finance strategies for more mature PC portfolios.
- Private credit stayed in high demand among Callan clients, and a number of large DB plans are looking to increase their allocations from 2%–3% to 5%–10%.
- North American private debt AUM is expected to grow significantly, from \$1.01 trillion in 2024 to \$1.74 trillion in 2029, representing an annualized growth rate of 11%. European private debt AUM is projected to grow at a slower pace of 8%, reflecting resilience despite a more challenging economic environment.
- Fundraising in Europe is forecast to remain static, which could create upside potential as reduced competition for deals may improve investment opportunities.
- The private debt market is positioned to maintain strong growth, particularly in North America, while Europe’s steadier trajectory still offers attractive prospects in a less crowded landscape.

Private Credit Performance (%) (Pooled Horizon IRRs through 9/30/24*)



Private Credit Performance (%) (Pooled Horizon IRRs by Strategy through 9/30/24*)

Strategy	Quarter	1 Year	5 Years	10 Years	20 Years
Senior Debt	2.3	9.1	7.8	8.2	8.4
Subordinated	0.8	7.5	10.1	10.3	10.3
Credit Opportunities	1.6	8.1	8.8	8.7	9.4
Total Private Credit	2.0	8.5	8.8	8.8	9.3

Source: LSEG/Cambridge

*Most recent data available at time of publication

Strong Finish to the Year but Choppy Outlook Ahead

HEDGE FUNDS/MACs | Joe McGuane

U.S. equity markets ended 4Q24 in positive territory, following the U.S. election, the Federal Reserve interest rate cut, and reports of strong economic data. Markets gave back some of that performance in December, as investors grew concerned about inflation and the potential slowdown in future rate cuts. Credit indices generated mixed returns during the quarter, with high yield outperforming investment grade bonds. The 10-year Treasury yield rose throughout the quarter and ended the year at 4.6%.

The S&P 500 gained 2.4%, with performance driven by earnings growth as rising rates caused the market's price-to-earnings ratio to modestly decline despite the Fed cutting interest rates 50 basis points. Index performance was led by Discretionary and Communication Services, which benefited from a better growth outlook, offset by declines in Materials, Health Care and REITs, due to a weaker China outlook and higher rates.

Hedge funds finished strong to end the year, and relative value strategies finished higher, as managers were able to profit off rising bond yields. Equity hedge strategies had strong

Hedge Fund Style Group Returns

(12/31/24)



Sources: Callan, Credit Suisse, Federal Reserve

momentum, as managers profited on both the long and short side during the quarter as stock dispersion remained elevated. Event-driven managers soared in November, on the expectation of a strong M&A cycle in 2025. Macro strategies had a strong November, as managers were able to profit off rates moving higher in the final quarter of the year.

Callan Peer Group Median and Index Returns* for Periods Ended 12/31/24

Hedge Fund Universe	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years
Callan Institutional Hedge Fund Peer Group	2.3	9.7	6.7	7.3	6.7	7.0
Callan Fund-of-Funds Peer Group	2.9	10.7	4.8	6.1	4.7	5.1
Callan Absolute Return FOF Style	2.1	9.5	5.8	6.0	4.6	4.7
Callan Core Diversified FOF Style	2.9	10.9	4.7	6.4	4.7	5.1
Callan Long/Short Equity FOF Style	3.2	12.3	2.6	5.8	5.7	5.5
HFRI Fund Weighted Index	1.4	9.8	4.4	7.0	5.3	5.0
HFRI Fixed Convertible Arbitrage	1.4	10.9	4.8	6.9	5.7	5.5
HFRI Distressed/Restructuring	3.4	12.0	5.0	8.4	5.5	5.8
HFRI Emerging Markets	-0.4	9.2	1.0	4.5	4.3	3.4
HFRI Equity Market Neutral	2.4	10.5	5.8	4.8	3.7	3.3
HFRI Event-Driven	2.1	9.8	4.9	7.2	5.5	5.7
HFRI Relative Value	1.9	8.6	4.9	5.1	4.5	5.2
HFRI Macro	0.6	5.5	4.6	5.4	3.1	2.6
HFRI Equity Hedge	1.4	11.9	3.8	8.1	6.3	5.8
HFRI Multi-Strategy	5.0	13.7	4.3	7.0	4.2	4.2
HFRI Merger Arbitrage	1.7	5.6	4.5	5.8	5.0	4.4
90-Day T-Bill + 5%	2.4	10.3	8.9	7.5	6.8	6.2

*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

Serving as a proxy for large, broadly diversified hedge funds with low-beta exposure to equity markets, the median manager in the Callan Institutional Hedge Fund Peer Group rose 2.3%. Within this style group of 50 peers, the average hedge credit manager gained 2.5%, driven by interest rate volatility in November following the U.S. election. Meanwhile, the average hedge equity manager added 2.1%, as managers were able to profit off elevated dispersion across sectors.

Within the HFRI indices the best-performing strategy was multi-strategy, which gained 5.0%, followed by distressed/restructuring, which took advantage of deal activity and was up 3.4%. Equity market neutral gained 2.4%.

Across the Callan Hedge FOF database, the median Callan Long-Short Equity FOF ended 3.2% higher, as managers profited off the dispersion across sectors. Meanwhile, the median Callan Core Diversified FOF ended 2.9% higher, as equity hedge and event-driven strategies drove performance for the quarter. The Callan Absolute Return FOF ended 2.1% higher, as an overweight to relative value strategies drove performance.

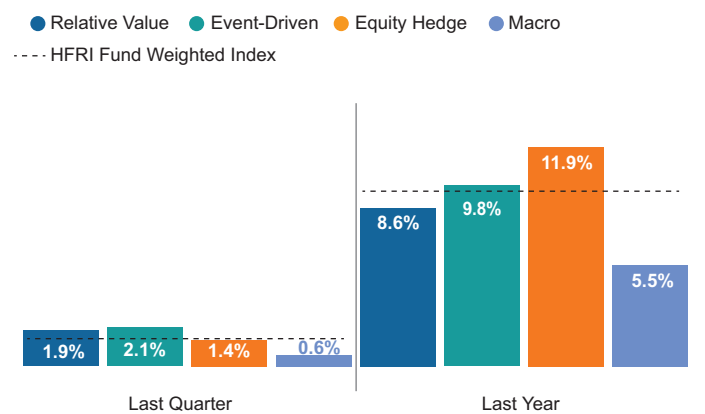
Since the Global Financial Crisis, liquid alternatives to hedge funds have become popular among investors due to their attractive risk-adjusted returns that are similarly uncorrelated

with traditional stock and bond investments but offered at a lower cost. Much of that interest is focused on rules-based, long-short strategies that isolate known risk premia such as value, momentum, and carry found across the various capital markets. These alternative risk premia are often embedded, to varying degrees, in hedge funds as well as other actively managed investment products.

Within Callan’s database of liquid alternative solutions, the Callan MAC Risk Parity peer group fell 3.6%, as fixed income and commodities were a drag on performance, while U.S. equities were able to offset some of that negative performance. The Callan Long Biased MAC peer group fell 2.7%, as negative performance from fixed income pushed the strategy into negative territory.

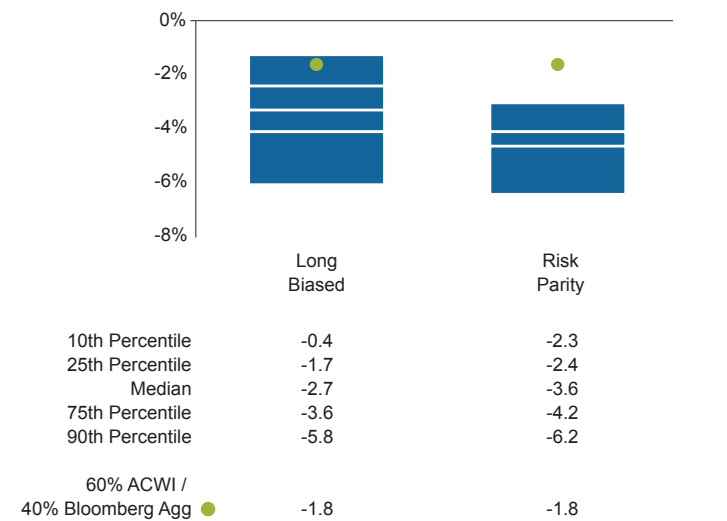
After a strong run for hedge funds in 2024, the market environment outlook appears to be choppy in 2025. While economic growth remains strong and recession probabilities seem low, market expectations remain high, valuations are at all-time highs in equities and spreads are tight in credit markets, leaving investors with limited margin for errors. With a new administration in the White House, change seems the most likely outcome, and uncertainty should be expected for market participants. In this environment, hedge funds should be able to profit off this dispersion.

HFRI Hedge Fund-Weighted Strategy Returns (12/31/24)



Source: HFRI

MAC Style Group Returns (12/31/24)



Sources: Bloomberg, Callan, Eurekahedge, S&P Dow Jones Indices

Index Gains 5.6%; Turnover at All-Time Low

DEFINED CONTRIBUTION | [Scotty Lee](#)

Performance: Index gains for fourth straight quarter

- The Callan DC Index™ gained 5.6% in 3Q24. The Age 45 Target Date Fund (analogous to the 2045 vintage) had a higher quarterly return (6.5%).

Growth sources: Balances rise due to investment gains

- Balances within the DC Index rose by 4.7% after a 1.1% increase in the previous quarter. Investment gains (5.6%) were the sole driver of the gain as net flows (-0.9%) had a contrary effect.

Turnover: Lowest since index inception

- Turnover (i.e., net transfer activity levels within DC plans) in the DC Index decreased to 0.02%, the lowest ever, from the previous quarter's measure of 0.17%.

Net cash flow analysis: U.S. fixed income ousts TDFs

- Automatic features and their appeal to “do-it-for-me” investors typically result in target date funds (TDFs) receiving the largest net inflows in the DC Index. But in 3Q24, as turnover reached the lowest level since the DC Index inception, U.S. fixed income outpaced the asset allocation funds, earning 68.3% of quarterly net flows.

Equity allocation: Exposure rises

- The Index's overall allocation to equity (74.0%) rose slightly from the previous quarter's level (73.7%).

Asset allocation: Smid cap equity gains

- U.S. small/mid cap equity (7.1%) and target date funds (35.7%) were among the asset classes with the largest percentage increases in allocation, while stable value (6.1%) had the largest decrease in allocation from the previous quarter due to net outflows.

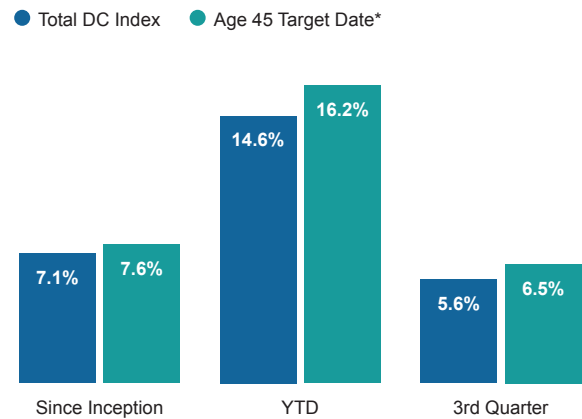
Prevalence of asset class: Global equity funds rise

- The prevalence of global equity funds (18.6%) rose by 0.7 percentage points, matching the increase in the prevalence of emerging markets (18.6%), which also rose by 0.7 percentage points. Other notable movements included a 1.4 percentage point increase in the prevalence of U.S. small/mid cap equity offerings (94.3%).

Underlying fund performance, asset allocation, and cash flows of more than 100 large defined contribution plans representing approximately \$400 billion in assets are tracked in the Callan DC Index.

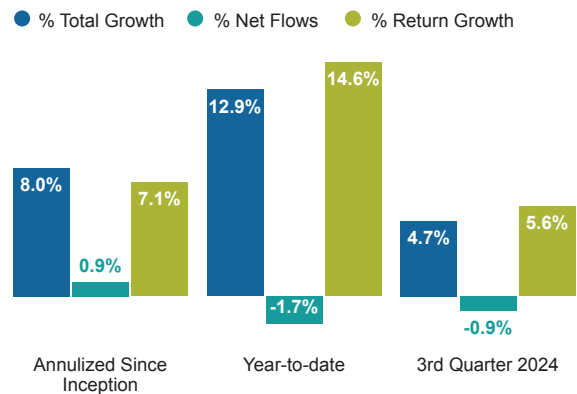
Investment Performance

(9/30/24)



Growth Sources

(9/30/24)



Net Cash Flow Analysis 3Q24

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
U.S. Fixed Income	68.3%
High Yield Fixed Income	5.3%
U.S. Small/Mid Cap	-15.2%
U.S. Large Cap	-38.6%
Total Turnover**	0.02%

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

* The Age 45 Fund transitioned from the average 2040 TDF to the 2045 TDF in June 2023.

** Total Index “turnover” measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2024, with the distribution as of September 30, 2024. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

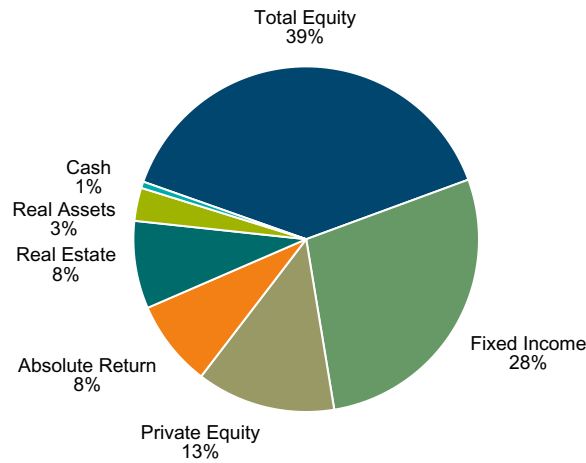
Asset Distribution Across Investment Managers

	December 31, 2024			September 30, 2024		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Total Domestic Equity	\$1,041,184,793	17.78%	\$(24,200,000)	\$(1,700,830)	\$1,067,085,622	17.60%
BlackRock Russell 1000 Value	196,105,423	3.35%	(7,300,000)	(3,985,737)	207,391,160	3.42%
DFA Large Cap Value	143,227,630	2.45%	(5,300,000)	(2,742,626)	151,270,256	2.49%
Northern Trust Global	205,786,867	3.52%	(7,400,000)	4,921,132	208,265,735	3.44%
Polen Capital Management	121,382,608	2.07%	(4,200,000)	5,319,759	120,262,849	1.98%
Earnest Partners LLC	175,663,089	3.00%	0	(5,118,201)	180,781,290	2.98%
DFA Small Cap Value	199,019,176	3.40%	0	(95,157)	199,114,333	3.28%
Total Global Equity	\$458,858,494	7.84%	\$(9,200,000)	\$(8,847,547)	\$476,906,041	7.87%
BlackRock Global Alpha Tilts	251,236,458	4.29%	(9,200,000)	(2,171,988)	262,608,446	4.33%
MFS Investment Management	207,622,037	3.55%	0	(6,675,559)	214,297,595	3.53%
Total International Equity	\$785,023,680	13.41%	\$(491,360)	\$(64,036,155)	\$849,551,195	14.01%
AQR Emerging Markets	101,764,018	1.74%	(197,669)	(7,330,746)	109,292,433	1.80%
Brandes Investment Partners	299,163,859	5.11%	0	(30,715,179)	329,879,038	5.44%
William Blair & Company	223,629,860	3.82%	(119,193)	(15,033,944)	238,782,997	3.94%
DFA International Small Cap	160,465,943	2.74%	(174,498)	(10,956,286)	171,596,727	2.83%
Total Fixed Income	\$1,638,238,042	27.98%	\$0	\$(44,088,133)	\$1,682,326,175	27.75%
BlackRock US Govt Bond	416,665,326	7.12%	0	(13,204,683)	429,870,009	7.09%
Reams Asset Management	740,998,802	12.66%	0	(23,097,358)	764,096,160	12.60%
Loomis, Sayles & Company, L.P.	480,573,914	8.21%	0	(7,786,093)	488,360,007	8.05%
Total Private Equity	\$758,553,511	12.96%	\$(23,577,278)	\$13,147,049	\$768,983,740	12.68%
Abbott Capital Management 2010	13,397,083	0.23%	(2,098,930)	(283,643)	15,779,656	0.26%
Abbott Capital Management 2011	28,271,594	0.48%	(3,833,172)	(136,924)	32,241,690	0.53%
Abbott Capital Management 2012	26,611,606	0.45%	(2,798,794)	33,419	29,376,981	0.48%
Abbott Capital Management 2013	26,189,299	0.45%	(3,495,582)	85,545	29,599,336	0.49%
Abbott Capital Management 2014	30,665,215	0.52%	(2,578,630)	(19,475)	33,263,320	0.55%
Abbott Capital Management 2015	27,664,578	0.47%	(1,087,500)	566,207	28,185,871	0.46%
Abbott Capital Management 2016	25,111,756	0.43%	(1,350,000)	583,931	25,877,825	0.43%
Abbott Capital Management 2018	25,490,037	0.44%	0	827,326	24,662,711	0.41%
Abbott Capital Management 2019	23,121,181	0.39%	0	649,223	22,471,958	0.37%
Abbott Capital Management 2020	32,688,332	0.56%	1,440,000	623,998	30,624,334	0.51%
Abbott Capital Management 2021	11,861,803	0.20%	1,060,000	224,886	10,576,917	0.17%
Abbott Capital Management 2022	14,022,546	0.24%	1,677,812	237,076	12,107,658	0.20%
Abbott Capital Management 2023	5,868,375	0.10%	2,276,250	160,715	3,431,410	0.06%
Abbott Capital Management 2024	5,133,509	0.09%	1,400,000	165,340	3,568,169	0.06%
Mesirow V	26,943,804	0.46%	(5,700,000)	402,015	32,241,789	0.53%
Mesirow VI	54,119,175	0.92%	(2,940,000)	1,163,754	55,895,421	0.92%
Mesirow VII	122,881,180	2.10%	(6,100,000)	2,929,829	126,051,351	2.08%
Mesirow VIII	81,496,820	1.39%	4,200,000	5,503,259	75,793,561	1.25%
NB Secondary Opp Fund III	6,573,045	0.11%	(321,468)	119,443	6,775,070	0.11%
NB Secondary Opp Fund IV	16,513,667	0.28%	(464,673)	203,883	16,774,457	0.28%
NB Secondary Opp Fund V	50,924,528	0.87%	(640,566)	1,376,801	50,188,293	0.83%
Private Advisors VI	18,719,291	0.32%	0	31,264	18,688,027	0.31%
Private Advisors VII	11,648,234	0.20%	(1,543,024)	370,940	12,820,318	0.21%
Private Advisors VIII	19,088,717	0.33%	(1,465,340)	198,066	20,355,991	0.34%
Private Advisors IX	37,428,410	0.64%	(1,063,591)	978,383	37,513,618	0.62%
Apogem Capital X	16,119,726	0.28%	1,849,929	151,789	14,118,008	0.23%
Absolute Return	\$473,547,652	8.09%	\$0	\$15,773,487	\$457,774,165	7.55%
Aptitude	194,540,011	3.32%	0	7,579,133	186,960,878	3.08%
UBS A & Q	279,007,641	4.77%	0	8,194,354	270,813,287	4.47%
Real Assets	\$181,360,830	3.10%	\$(292,655)	\$(10,074,478)	\$191,727,963	3.16%
Principal DRA	181,360,830	3.10%	(292,655)	(10,074,478)	191,727,963	3.16%
Total Real Estate	\$482,103,849	8.23%	\$5,772,106	\$4,603,161	\$471,728,582	7.78%
Real Estate	482,103,849	8.23%	5,772,106	4,603,161	471,728,582	7.78%
Total Cash	\$35,479,862	0.61%	\$(62,392,629)	\$929,457	\$96,943,034	1.60%
Cash	35,479,862	0.61%	(62,392,629)	929,457	96,943,034	1.60%
Total Fund	\$5,854,350,712	100.0%	\$(114,381,816)	\$(94,293,989)	\$6,063,026,517	100.0%

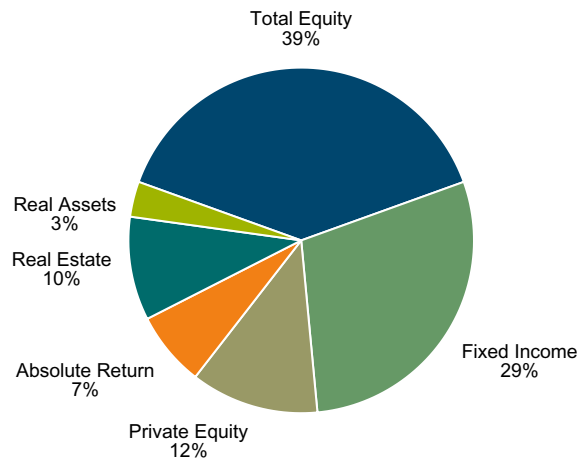
Actual vs Target Asset Allocation As of December 31, 2024

The first chart below shows the Fund's asset allocation as of December 31, 2024. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

Actual Asset Allocation



Target Asset Allocation



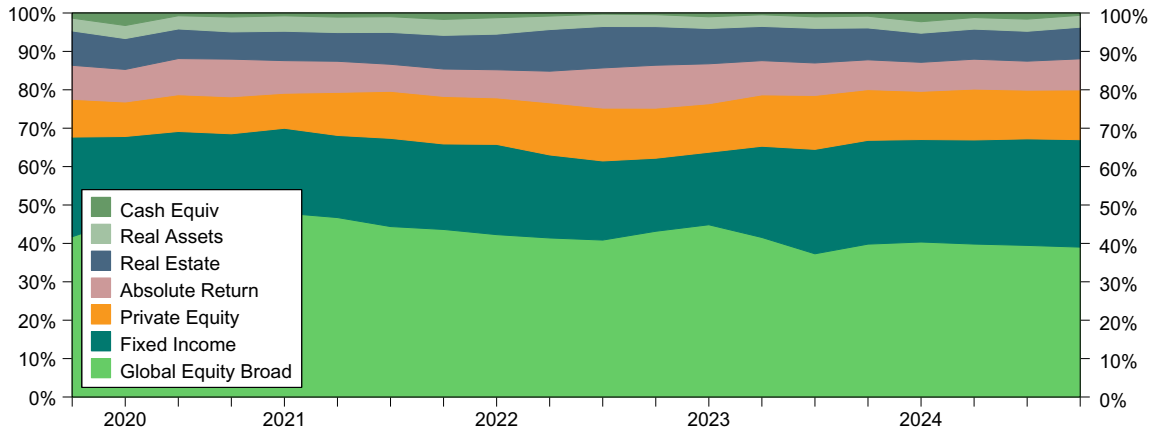
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Total Equity	2,285,067	39.0%	39.0%	0.0%	1,870
Fixed Income	1,638,238	28.0%	29.0%	(1.0%)	(59,524)
Private Equity	758,554	13.0%	12.0%	1.0%	56,031
Absolute Return	473,548	8.1%	7.0%	1.1%	63,743
Real Estate	482,104	8.2%	9.7%	(1.5%)	(85,768)
Real Assets	181,361	3.1%	3.3%	(0.2%)	(11,833)
Cash	35,480	0.6%	0.0%	0.6%	35,480
Total	5,854,351	100.0%	100.0%		

* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

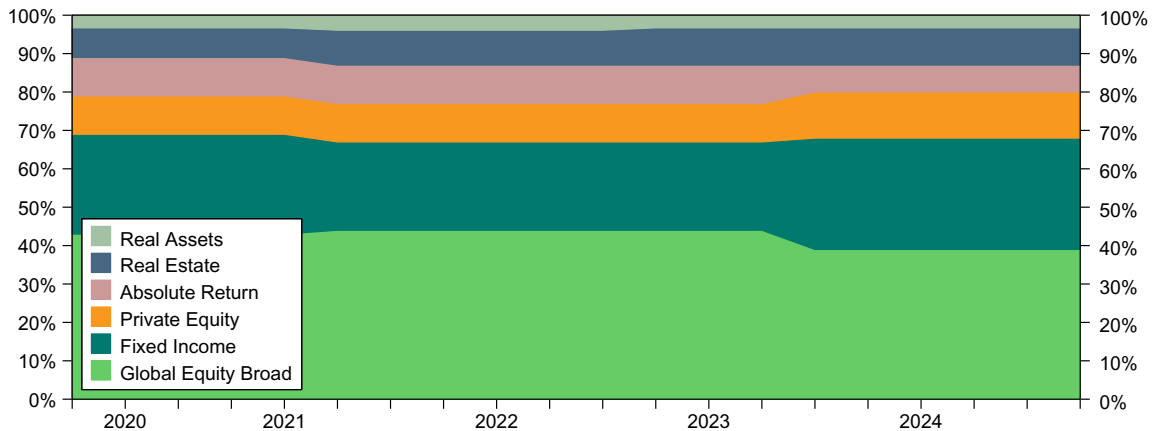
Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Sponsor Database.

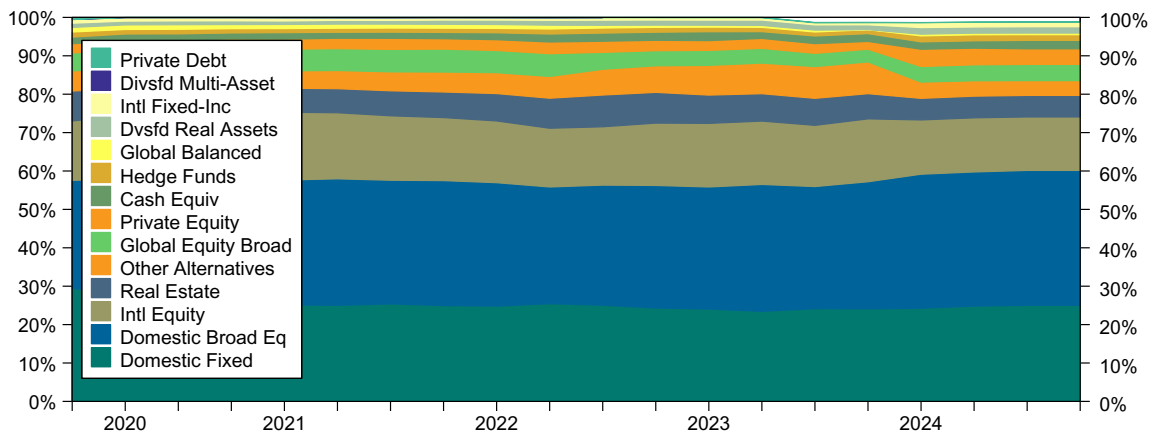
Actual Historical Asset Allocation



Target Historical Asset Allocation



Average Callan Public Fund Sponsor Database Historical Asset Allocation



* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

Total Fund

Period Ended December 31, 2024

Investment Philosophy

The Public Fund Sponsor Database consists of public employee pension total funds including both Callan Associates client and surveyed non-client funds. Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 7.0% 3-month Treasury Bill+3.0%, 9.7% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.3% Principal Blended Benchmark.

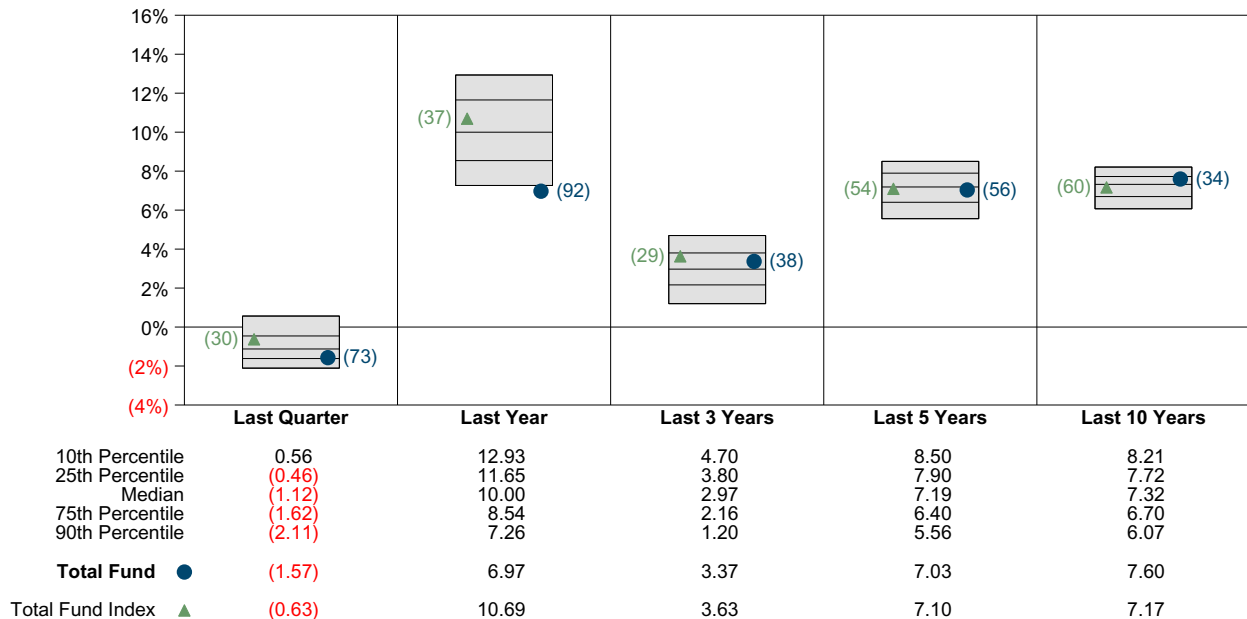
Quarterly Summary and Highlights

- Total Fund's portfolio posted a (1.57)% return for the quarter placing it in the 73 percentile of the Callan Public Fund Sponsor Database group for the quarter and in the 92 percentile for the last year.
- Total Fund's portfolio underperformed the Total Fund Index by 0.94% for the quarter and underperformed the Total Fund Index for the year by 3.72%.

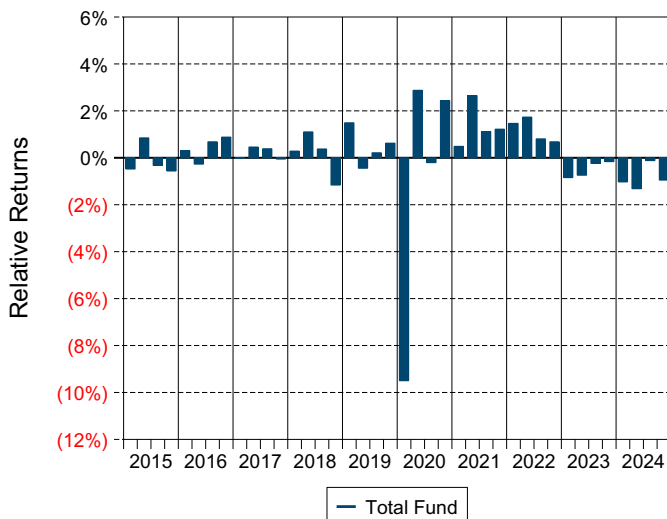
Quarterly Asset Growth

Beginning Market Value	\$6,063,026,517
Net New Investment	\$-114,381,816
Investment Gains/(Losses)	\$-94,293,989
Ending Market Value	\$5,854,350,712

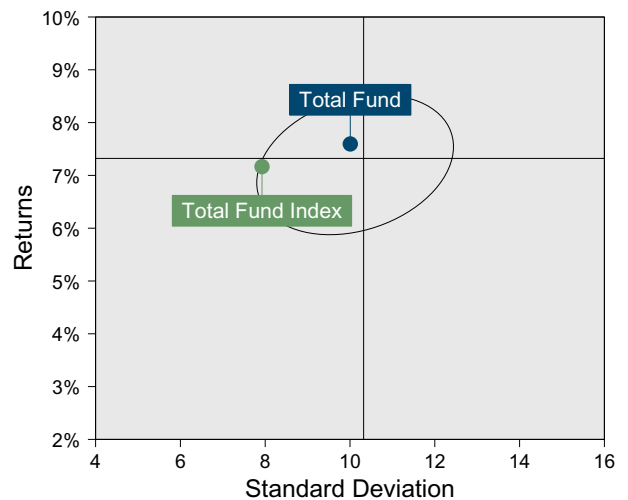
Performance vs Callan Public Fund Sponsor Database (Gross)



Relative Return vs Total Fund Index



Callan Public Fund Sponsor Database (Gross) Annualized Ten Year Risk vs Return

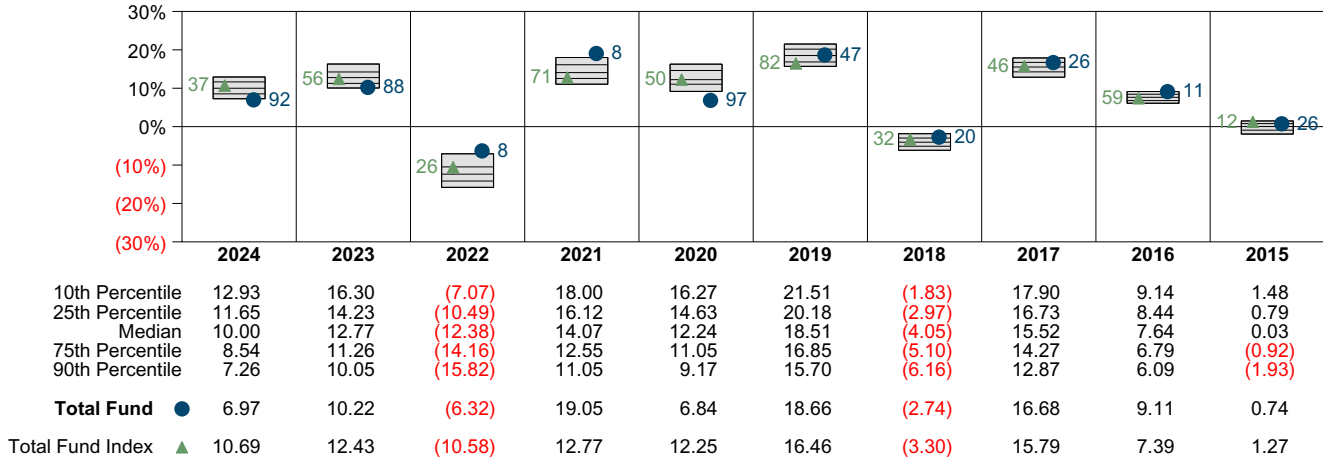


Total Fund Return Analysis Summary

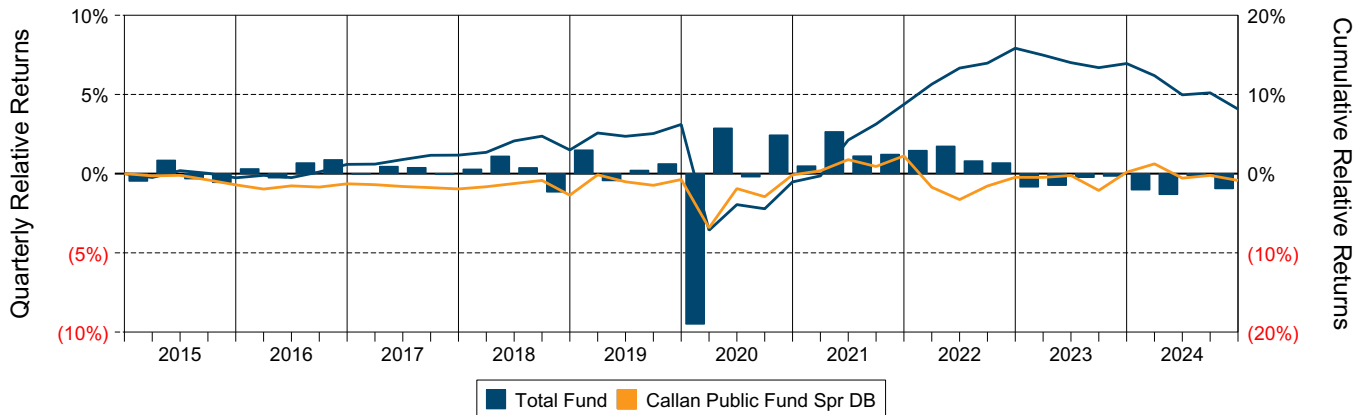
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

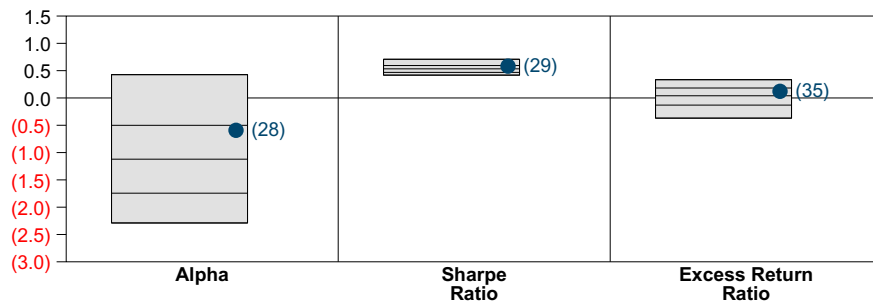
Performance vs Callan Public Fund Sponsor Database (Gross)



Cumulative and Quarterly Relative Returns vs Total Fund Index



Risk Adjusted Return Measures vs Total Fund Index Rankings Against Callan Public Fund Sponsor Database (Gross) Ten Years Ended December 31, 2024



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.43	0.71	0.33
25th Percentile	(0.50)	0.59	0.18
Median	(1.12)	0.53	0.04
75th Percentile	(1.74)	0.47	(0.13)
90th Percentile	(2.29)	0.42	(0.37)
Total Fund	● (0.59)	0.58	0.12

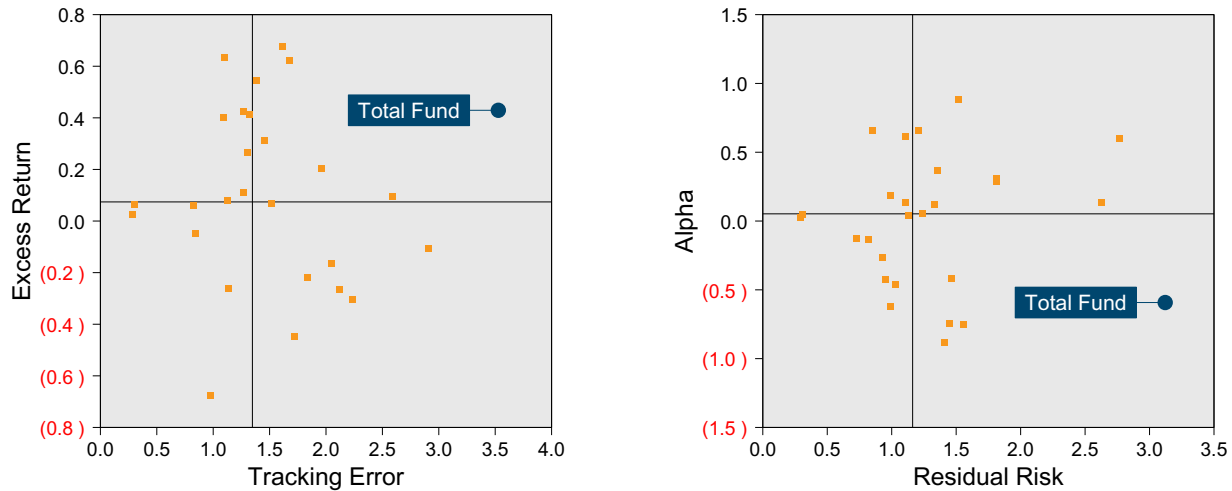
Total Fund

Total Fund vs Target Risk Analysis

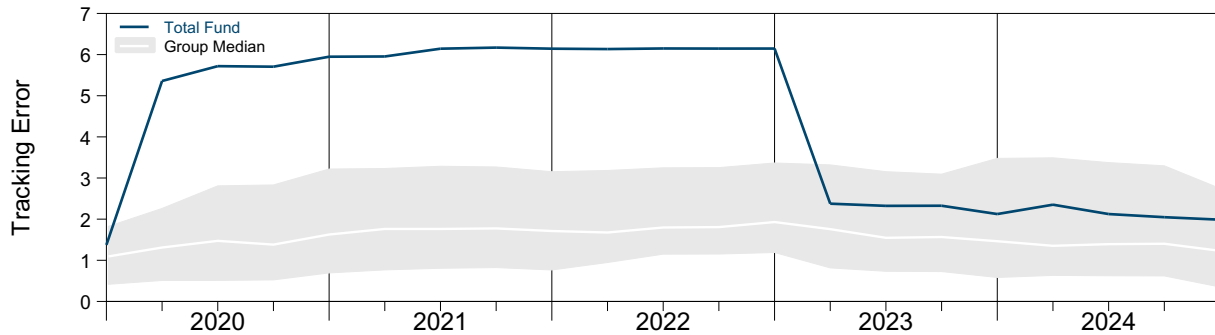
Risk Analysis

The graphs below analyze the performance and risk of the fund relative to the appropriate target mix. This relative performance is compared to a peer group of funds wherein each member fund is measured against its own target mix. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the target. The second scatter chart displays the relationship, sometimes called Information Ratio, between alpha (market-risk or "beta" adjusted return) and residual risk (non-market or "unsystematic" risk). The third chart shows tracking error patterns over time compared to the range of tracking error patterns for the peer group. The last two charts show the ranking of the fund's risk statistics versus the peer group.

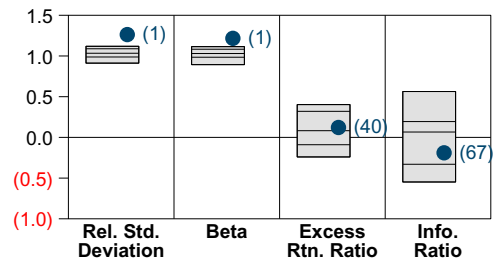
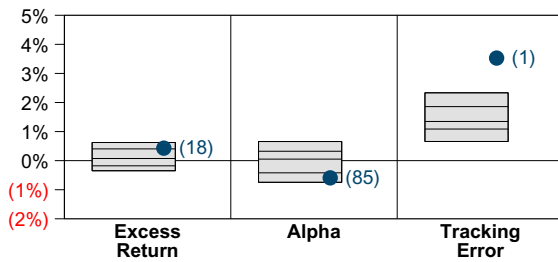
Risk Analysis vs Callan Public Fund Sponsor Database Ten Years Ended December 31, 2024



Rolling 12 Quarter Tracking Error vs Targets Compared to Callan Public Fund Sponsor Database



Risk Statistics Rankings vs Targets Rankings Against Callan Public Fund Sponsor Database Ten Years Ended December 31, 2024



10th Percentile 0.62
25th Percentile 0.40
Median 0.07
75th Percentile (0.18)
90th Percentile (0.35)

10th Percentile 0.66
25th Percentile 0.32
Median 0.05
75th Percentile (0.42)
90th Percentile (0.74)

10th Percentile 2.33
25th Percentile 1.86
Median 1.35
75th Percentile 1.09
90th Percentile 0.66

10th Percentile 1.12
25th Percentile 1.09
Median 1.03
75th Percentile 0.99
90th Percentile 0.91

10th Percentile 1.11
25th Percentile 1.08
Median 1.03
75th Percentile 0.98
90th Percentile 0.89

10th Percentile 0.40
25th Percentile 0.32
Median 0.08
75th Percentile (0.09)
90th Percentile (0.24)

10th Percentile 0.56
25th Percentile 0.19
Median 0.07
75th Percentile (0.33)
90th Percentile (0.55)

Total Fund ● 0.43

Total Fund ● (0.59)

Total Fund ● 3.53

Total Fund ● 1.26

Total Fund ● 1.22

Total Fund ● 0.12

Total Fund ● (0.19)

Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods ended December 31, 2024. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns and Rankings for Periods Ended December 31, 2024

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception				
Total Public Equity	(3.14%)	12.05%	4.63%	9.72%	10.66% (1/16)				
MSCI ACWI IMI	(1.24%)	16.37%	4.90%	9.67%	10.32% (1/16)				
Total Domestic Equity	(0.17%)	98	14.70%	97	5.01%	90	11.54%	86	8.33% (7/98)
Russell 3000 Index	2.63%	7	23.81%	12	8.01%	21	13.86%	20	8.46% (7/98)
Pub Pln- Dom Equity	1.88%		21.55%		7.45%		13.12%		-
BlackRock Russell 1000 Value	(1.98%)	72	14.39%	55	5.64%	77	8.79%	83	9.04% (4/17)
Russell 1000 Value Index	(1.98%)	72	14.37%	55	5.63%	77	8.68%	85	8.91% (4/17)
Callan Large Cap Value	(1.25%)		15.41%		7.24%		10.45%		-
DFA Large Cap Value	(1.89%)	71	13.84%	58	6.72%	58	8.82%	81	8.65% (11/17)
Russell 1000 Value Index	(1.98%)	72	14.37%	55	5.63%	77	8.68%	85	8.89% (11/17)
Callan Large Cap Value	(1.25%)		15.41%		7.24%		10.45%		-
Northern Trust Global	2.41%	46	25.00%	49	8.95%	67	14.53%	50	11.17% (8/88)
S&P 500 Index	2.41%	46	25.02%	48	8.94%	67	14.53%	51	11.12% (8/88)
Callan Large Cap Core	2.29%		24.87%		9.32%		14.58%		-
Polen Capital Management	4.55%	63	16.07%	90	(0.03%)	98	11.00%	97	15.10% (7/12)
S&P 500 Index	2.41%	82	25.02%	69	8.94%	36	14.53%	74	14.55% (7/12)
Callan Large Cap Growth	5.32%		29.91%		8.42%		16.43%		-
Earnest Partners LLC	(2.83%)	85	8.20%	87	2.59%	60	10.61%	40	11.12% (5/05)
Russell MidCap Index	0.62%	39	15.34%	31	3.79%	45	9.92%	52	9.96% (5/05)
Callan Mid Capitalization	(0.35%)		13.28%		3.23%		10.09%		-
DFA Small Cap Value	(0.05%)	37	7.87%	64	8.92%	11	13.54%	7	11.85% (11/96)
Russell 2000 Value Index	(1.06%)	64	8.05%	63	1.94%	89	7.29%	84	9.01% (11/96)
Callan Small Cap Value	(0.32%)		9.03%		4.33%		9.51%		-
Total Global Equity	(1.85%)	46	15.82%	44	5.39%	42	10.60%	38	9.86% (4/10)
MSCI World	(0.16%)	24	18.67%	34	6.34%	33	11.17%	32	9.97% (4/10)
Callan Global Equity	(2.22%)		14.40%		4.85%		9.66%		-
BlackRock Global Alpha Tilts	(0.80%)	35	19.03%	32	6.88%	25	11.05%	34	12.64% (3/16)
MSCI ACWI Gross	(0.89%)	36	18.02%	36	5.94%	38	10.58%	38	12.25% (3/16)
Callan Global Equity	(2.22%)		14.40%		4.85%		9.66%		-
MFS Investment Management	(3.11%)	64	11.87%	60	3.48%	62	10.15%	44	12.16% (12/12)
MSCI ACWI Gross	(0.89%)	36	18.02%	36	5.94%	38	10.58%	38	10.56% (12/12)
Callan Global Equity	(2.22%)		14.40%		4.85%		9.66%		-
Total International Equity	(7.54%)	34	6.58%	19	3.48%	3	6.79%	8	7.06% (5/96)
MSCI EAFE	(8.11%)	77	3.82%	80	1.65%	34	4.73%	57	4.73% (5/96)
Pub Pln- Intl Equity	(7.70%)		4.95%		1.05%		4.90%		-
AQR Emerging Markets	(6.71%)	41	7.37%	52	0.55%	28	4.00%	32	6.16% (8/16)
MSCI EM Gross	(7.84%)	69	8.05%	44	(1.48%)	46	2.10%	60	5.37% (8/16)
Callan Emerging Broad	(6.91%)		7.47%		(1.76%)		2.50%		-
Brandes Investment Partners	(9.31%)	93	7.12%	37	9.46%	1	8.17%	6	8.02% (2/98)
MSCI EAFE	(8.11%)	70	3.82%	69	1.65%	51	4.73%	68	4.79% (2/98)
Callan NonUS Eq	(7.35%)		5.96%		1.72%		5.49%		-
William Blair & Company	(6.30%)	24	3.93%	69	(4.84%)	95	5.11%	59	7.30% (12/03)
MSCI ACWIxUS Gross	(7.50%)	53	6.09%	47	1.35%	57	4.61%	70	6.50% (12/03)
Callan NonUS Eq	(7.35%)		5.96%		1.72%		5.49%		-
DFA International Small Cap	(6.38%)	36	8.35%	26	5.03%	9	6.48%	14	5.29% (5/06)
MSCI EAFE Small	(8.36%)	62	1.82%	61	(3.25%)	58	2.30%	72	4.09% (5/06)
Callan Intl Small Cap	(7.47%)		3.06%		(1.97%)		4.62%		-

Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods ended December 31, 2024. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns and Rankings for Periods Ended December 31, 2024

	Last Quarter		Last Year		Last 3 Years		Last 5 Years		Since Inception	
Total Fixed Income	(2.62%)	66	2.49%	56	0.60%	9	(0.08%)	88	6.48%	(12/87)
Blmbg Aggregate	(3.06%)	85	1.25%	87	(2.41%)	89	(0.33%)	96	5.35%	(12/87)
Pub Pln- Dom Fixed	(2.40%)		2.69%		(1.19%)		0.92%		-	
BlackRock US Govt Bond	(3.07%)	80	0.79%	98	(2.74%)	97	-		(2.77%)	(12/21)
Blmbg Government	(3.10%)	82	0.62%	98	(2.80%)	98	(0.63%)	99	(2.89%)	(12/21)
Callan Core Bond FI	(2.94%)		1.93%		(1.95%)		0.30%		-	
Reams Asset Management	(3.02%)	78	1.76%	86	(1.26%)	28	2.20%	4	4.88%	(1/01)
Blmbg Aggregate	(3.06%)	80	1.25%	95	(2.41%)	88	(0.33%)	98	3.63%	(1/01)
Callan Core Plus FI	(2.76%)		2.74%		(1.59%)		0.78%		-	
Loomis, Sayles & Company, L.P.	(1.59%)	1	5.26%	1	0.14%	1	1.90%	8	8.04%	(12/87)
Blmbg Aggregate	(3.06%)	80	1.25%	95	(2.41%)	88	(0.33%)	98	5.35%	(12/87)
Callan Core Plus FI	(2.76%)		2.74%		(1.59%)		0.78%		-	
Total Private Equity	1.74%		5.67%		1.13%		16.19%		12.17%	(6/10)
Private Equity Benchmark (3)	6.64%		37.37%		12.71%		17.76%		-	
Abbott Capital Management 2010	(2.05%)		(4.74%)		(9.60%)		8.76%		0.61%	(6/10)
Abbott Capital Management 2011	(0.48%)		(3.37%)		(10.22%)		10.50%		3.60%	(6/11)
Abbott Capital Management 2012	0.12%		(3.47%)		(6.93%)		12.45%		9.94%	(7/12)
Abbott Capital Management 2013	0.32%		(1.99%)		(5.91%)		12.78%		10.69%	(5/13)
Abbott Capital Management 2014	(0.06%)		(2.66%)		(5.39%)		13.46%		10.00%	(4/14)
Abbott Capital Management 2015	2.06%		4.16%		2.30%		17.03%		12.81%	(4/15)
Abbott Capital Management 2016	2.33%		8.60%		5.55%		19.28%		12.56%	(3/16)
Abbott Capital Management 2018	3.35%		7.54%		6.30%		16.74%		13.44%	(7/18)
Abbott Capital Management 2019	2.89%		8.63%		6.51%		15.89%		15.89%	(1/20)
Abbott Capital Management 2020	1.94%		7.88%		3.41%		-		16.29%	(1/21)
Abbott Capital Management 2021	1.93%		5.84%		3.17%		-		5.27%	(2/21)
Abbott Capital Management 2022	1.79%		(0.81%)		-		-		(1.06%)	(2/22)
Abbott Capital Management 2023	2.39%		5.80%		-		-		3.64%	(7/23)
Abbott Capital Management 2024	3.33%		-		-		-		2.06%	(6/24)
Mesirow V	1.40%		2.53%		(6.48%)		12.12%		13.40%	(6/10)
Mesirow VI	2.15%		4.28%		(3.51%)		16.90%		12.34%	(7/13)
Mesirow VII	2.39%		7.72%		4.21%		16.12%		4.26%	(6/17)
Mesirow VIII	1.88%		6.43%		1.44%		-		0.06%	(9/20)
NB Secondary Opp Fund III	1.85%		7.67%		7.26%		10.88%		11.76%	(12/13)
NB Secondary Opp Fund IV	1.24%		7.46%		4.09%		14.00%		17.66%	(4/17)
NB Secondary Opp Fund V	2.78%		19.22%		-		-		53.48%	(3/22)
Private Advisors VI	0.17%		11.63%		8.72%		22.45%		13.63%	(4/15)
Private Advisors VII	2.98%		9.22%		12.54%		17.72%		14.20%	(1/17)
Private Advisors VIII	1.05%		13.69%		16.79%		22.12%		18.44%	(8/18)
Private Advisors IX	2.69%		8.98%		15.27%		-		21.43%	(2/20)
Apogem Capital X	0.92%		4.59%		-		-		19.79%	(5/23)
Absolute Return	3.45%		11.53%		14.38%		6.97%		6.46%	(6/14)
90 Day T-Bill + 3%	1.89%		8.25%		6.89%		5.46%		4.67%	(6/14)
Aptitude	4.05%	14	13.13%	13	-		-		9.08%	(9/22)
30-Day Average SOFR +4%	2.21%	46	9.44%	51	-		-		8.93%	(9/22)
Callan Abs Rtn Hedge FoF	2.09%		9.46%		5.80%		6.05%		-	
UBS A & Q	3.03%	22	10.48%	35	8.59%	11	9.20%	11	6.78%	(12/14)
(Libor thru 2/22) SOFR +4%	2.21%	46	9.44%	51	7.93%	13	6.49%	30	5.84%	(12/14)
Callan Abs Rtn Hedge FoF	2.09%		9.46%		5.80%		6.05%		-	
Real Assets	(5.25%)		3.92%		0.77%		4.84%		5.32%	(1/16)
Principal DRA	(5.25%)	97	3.92%	91	0.77%	84	4.84%	74	5.32%	(1/16)
Principal DRA Blend Index (1)	(5.52%)	97	4.21%	89	1.06%	83	4.07%	76	4.86%	(1/16)
Callan Alternative Inv DB	1.80%		8.14%		5.85%		7.74%		-	
Total Real Estate	0.96%		(2.36%)		(0.06%)		4.49%		6.41%	(7/86)
Real Estate	0.96%	28	(2.36%)	65	(0.06%)	40	4.49%	29	6.41%	(7/86)
Blended Benchmark (2)	(0.07%)	80	(8.44%)	93	(1.06%)	52	2.33%	57	-	
Callan Tot Real Est DB	0.61%		(0.83%)		(0.77%)		2.67%		-	
Total Fund	(1.57%)	73	6.97%	92	3.37%	38	7.03%	56	-	
Total Fund Index*	(0.63%)	30	10.69%	37	3.63%	29	7.10%	54	-	
Callan Public Fund Spr DB	(1.12%)		10.00%		2.97%		7.19%		-	

* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

(1) Current Principal DRA Blend Index = 15% Bloomberg US TIPS Idx, 15% Bloomberg Commodity Idx, 30% S&P Global Infrastructure Idx, 15% S&P Global Natural Resources Idx and 25% FTSE EPRA/NAREIT Developed Market Idx.

(2) Blended Benchmark = NCREIF (NPI) through 6/30/06, NCREIF (NPI 1 Qtr Arrears) through 12/31/13 and NFI-ODCE (1 Qtr Arrears) thereafter.

(3) Private Equity Benchmark = Russell 3000 Index lagged 3 months+3.0% through 12/31/19, Russell 3000 Index lagged 3 months+2.0% thereafter.

Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	2024		2023		2022		2021		2020	
Total Public Equity	12.05%		21.40%		(15.78%)		20.92%		14.78%	
MSCI ACWI IMI	16.37%		21.58%		(18.40%)		18.22%		16.25%	
Total Domestic Equity	14.70%	97	19.73%	89	(15.68%)	12	28.12%	16	16.35%	72
Russell 3000 Index	23.81%	12	25.96%	17	(19.21%)	79	25.66%	55	20.89%	24
Pub Pln- Dom Equity	21.55%		23.70%		(17.91%)		25.88%		18.58%	
BlackRock Russell 1000 Value	14.39%	55	11.47%	63	(7.54%)	80	25.18%	79	3.28%	47
Russell 1000 Value Index	14.37%	55	11.46%	63	(7.54%)	80	25.16%	79	2.80%	52
Callan Large Cap Value	15.41%		12.85%		(4.93%)		28.35%		3.04%	
DFA Large Cap Value	13.84%	58	12.33%	53	(4.95%)	50	27.52%	64	(1.56%)	90
Russell 1000 Value Index	14.37%	55	11.46%	63	(7.54%)	80	25.16%	79	2.80%	52
Callan Large Cap Value	15.41%		12.85%		(4.93%)		28.35%		3.04%	
Northern Trust Global	25.00%	49	26.30%	48	(18.08%)	58	28.69%	54	18.42%	52
S&P 500 Index	25.02%	48	26.29%	48	(18.11%)	59	28.71%	54	18.40%	52
Callan Large Cap Core	24.87%		26.16%		(17.42%)		29.05%		18.84%	
Polen Capital Management	16.07%	90	38.20%	61	(37.72%)	89	24.84%	44	35.13%	56
S&P 500 Index	25.02%	69	26.29%	89	(18.11%)	6	28.71%	21	18.40%	98
Callan Large Cap Growth	29.91%		40.56%		(30.21%)		24.31%		35.61%	
Earnest Partners LLC	8.20%	87	17.57%	52	(15.13%)	52	26.09%	48	21.61%	41
Russell MidCap Index	15.34%	31	17.23%	53	(17.32%)	58	22.58%	58	17.10%	48
Callan Mid Capitalization	13.28%		17.82%		(14.34%)		25.38%		16.17%	
DFA Small Cap Value	7.87%	64	21.85%	13	(1.69%)	10	40.61%	16	3.85%	45
Russell 2000 Value Index	8.05%	63	14.65%	65	(14.48%)	84	28.27%	64	4.63%	37
Callan Small Cap Value	9.03%		16.41%		(10.51%)		31.82%		2.88%	
Total Global Equity	15.82%	44	22.29%	47	(17.35%)	47	19.03%	53	18.78%	43
MSCI World	18.67%	34	23.79%	35	(18.14%)	52	21.82%	28	15.90%	55
Callan Global Equity	14.40%		21.74%		(17.81%)		19.42%		17.13%	
BlackRock Global Alpha Tilts	19.03%	32	23.27%	40	(16.80%)	43	18.73%	56	16.53%	52
MSCI ACWI Gross	18.02%	36	22.81%	43	(17.96%)	51	19.04%	53	16.82%	51
Callan Global Equity	14.40%		21.74%		(17.81%)		19.42%		17.13%	
MFS Investment Management	11.87%	60	21.00%	53	(18.14%)	52	19.56%	49	22.42%	32
MSCI ACWI Gross	18.02%	36	22.81%	43	(17.96%)	51	19.04%	53	16.82%	51
Callan Global Equity	14.40%		21.74%		(17.81%)		19.42%		17.13%	
Total International Equity	6.58%	19	22.82%	3	(15.36%)	23	13.08%	14	10.84%	70
MSCI EAFE	3.82%	80	18.24%	20	(14.45%)	18	11.26%	24	7.82%	90
Pub Pln- Intl Equity	4.95%		16.71%		(16.86%)		8.95%		12.71%	
AQR Emerging Markets	7.37%	52	18.78%	12	(20.29%)	38	1.23%	36	18.26%	49
MSCI EM Gross	8.05%	44	10.27%	59	(19.74%)	35	(2.22%)	55	18.69%	44
Callan Emerging Broad	7.47%		11.91%		(21.94%)		(0.59%)		18.17%	
Brandes Investment Partners	7.12%	37	31.34%	1	(6.79%)	5	14.42%	18	(1.30%)	96
MSCI EAFE	3.82%	69	18.24%	48	(14.45%)	43	11.26%	54	7.82%	65
Callan NonUS Eq	5.96%		18.14%		(15.20%)		11.56%		11.76%	
William Blair & Company	3.93%	69	16.06%	75	(28.57%)	95	13.27%	31	31.44%	6
MSCI ACWIxUS Gross	6.09%	47	16.21%	73	(15.57%)	51	8.29%	72	11.13%	51
Callan NonUS Eq	5.96%		18.14%		(15.20%)		11.56%		11.76%	
DFA International Small Cap	8.35%	26	18.04%	22	(9.42%)	5	16.47%	14	1.47%	91
MSCI EAFE Small	1.82%	61	13.16%	66	(21.39%)	52	10.10%	72	12.34%	46
Callan Intl Small Cap	3.06%		15.18%		(20.63%)		12.78%		11.29%	

Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	2024		2023		2022		2021		2020	
Total Fixed Income	2.49%	56	6.63%	43	(6.83%)	9	(0.36%)	45	(1.82%)	98
Blmbg Aggregate	1.25%	87	5.53%	81	(13.01%)	71	(1.54%)	91	7.51%	67
Pub Plin- Dom Fixed	2.69%		6.40%		(12.26%)		(0.57%)		8.53%	
BlackRock US Govt Bond	0.79%	98	4.24%	100	(12.43%)	22	-		-	
Blmbg Government	0.62%	98	4.09%	100	(12.32%)	16	(2.28%)	100	7.94%	85
Callan Core Bond FI	1.93%		6.17%		(12.91%)		(1.03%)		8.71%	
Reams Asset Management	1.76%	86	6.76%	57	(11.39%)	13	(1.23%)	91	17.28%	2
Blmbg Aggregate	1.25%	95	5.53%	96	(13.01%)	41	(1.54%)	97	7.51%	93
Callan Core Plus FI	2.74%		6.90%		(13.27%)		(0.27%)		9.27%	
Loomis, Sayles & Company, L.P.	5.26%	1	8.56%	2	(12.12%)	18	2.13%	5	7.14%	94
Blmbg Aggregate	1.25%	95	5.53%	96	(13.01%)	41	(1.54%)	97	7.51%	93
Callan Core Plus FI	2.74%		6.90%		(13.27%)		(0.27%)		9.27%	
Total Private Equity	5.67%		2.89%		(4.88%)		67.66%		22.14%	
Private Equity Benchmark (3)	37.37%		22.76%		(15.10%)		34.08%		17.99%	
Abbott Capital Management 2010	(4.74%)		(6.70%)		(16.87%)		65.55%		24.43%	
Abbott Capital Management 2011	(3.37%)		(7.55%)		(18.97%)		76.29%		29.13%	
Abbott Capital Management 2012	(3.47%)		(3.85%)		(13.14%)		72.85%		29.04%	
Abbott Capital Management 2013	(1.99%)		(2.85%)		(12.51%)		70.21%		28.65%	
Abbott Capital Management 2014	(2.66%)		(3.96%)		(9.41%)		75.52%		26.51%	
Abbott Capital Management 2015	4.16%		3.60%		(0.79%)		75.81%		16.62%	
Abbott Capital Management 2016	8.60%		5.24%		2.90%		71.04%		20.02%	
Abbott Capital Management 2018	7.54%		3.96%		7.44%		47.06%		22.73%	
Abbott Capital Management 2019	8.63%		3.43%		7.54%		57.22%		10.04%	
Abbott Capital Management 2020	7.88%		1.70%		0.81%		65.36%		-	
Abbott Capital Management 2021	5.84%		2.00%		1.72%		-		-	
Abbott Capital Management 2022	(0.81%)		4.87%		-		-		-	
Abbott Capital Management 2023	5.80%		-		-		-		-	
Mesirow V	2.53%		(0.80%)		(19.60%)		78.52%		21.39%	
Mesirow VI	4.28%		(0.52%)		(13.41%)		88.26%		29.10%	
Mesirow VII	7.72%		5.78%		(0.68%)		60.27%		16.43%	
Mesirow VIII	6.43%		0.22%		(2.15%)		10.14%		-	
NB Secondary Opp Fund III	7.67%		17.34%		(2.34%)		30.34%		4.23%	
NB Secondary Opp Fund IV	7.46%		4.64%		0.29%		48.73%		14.80%	
NB Secondary Opp Fund V	19.22%		21.41%		-		-		-	
Private Advisors VI	11.63%		4.68%		9.97%		83.78%		16.54%	
Private Advisors VII	9.22%		7.32%		21.61%		52.55%		3.97%	
Private Advisors VIII	13.69%		9.80%		27.61%		47.25%		15.78%	
Private Advisors IX	8.98%		13.33%		24.00%		37.25%		-	
Apogem Capital X	4.59%		-		-		-		-	
Absolute Return	11.53%		6.09%		26.46%		8.87%		(14.04%)	
90 Day T-Bill + 3%	8.25%		8.01%		4.46%		3.05%		3.67%	
Aptitude	13.13%	13	5.24%	59	-		-		-	
30-Day Average SOFR +4%	9.44%	51	9.09%	1	-		-		-	
Callan Abs Rtn Hedge FoF	9.46%		5.87%		3.34%		6.76%		4.03%	
UBS A & Q	10.48%	35	6.48%	30	8.85%	13	8.08%	45	12.18%	14
(Libor thru 2/22) SOFR +4%	9.44%	51	9.09%	1	5.32%	25	4.11%	77	4.63%	45
Callan Abs Rtn Hedge FoF	9.46%		5.87%		3.34%		6.76%		4.03%	
Real Assets	3.92%		3.95%		(5.29%)		18.24%		4.69%	
Principal DRA	3.92%	91	3.95%	49	(5.29%)	85	18.24%	44	4.69%	24
Principal DRA Blend Index (1)	4.21%	89	4.31%	48	(5.06%)	85	15.87%	46	2.08%	33
Callan Alternative Inv DB	8.14%		3.41%		9.02%		13.64%		(0.22%)	
Total Real Estate	(2.36%)		(10.23%)		13.88%		23.85%		0.76%	
Real Estate	(2.36%)	65	(10.23%)	71	13.88%	29	23.85%	38	0.76%	56
Blended Benchmark (2)	(8.44%)	93	(13.08%)	79	21.68%	19	14.83%	61	0.89%	55
Callan Tot Real Est DB	(0.83%)		(2.69%)		8.53%		19.66%		1.50%	
Total Fund	6.97%	92	10.22%	88	(6.32%)	8	19.05%	8	6.84%	97
Total Fund Index*	10.69%	37	12.43%	56	(10.58%)	26	12.77%	71	12.25%	50
Callan Public Fund Spr DB	10.00%		12.77%		(12.38%)		14.07%		12.24%	

* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

(1) Current Principal DRA Blend Index = 15% Bloomberg US TIPS Idx, 15% Bloomberg Commodity Idx, 30% S&P Global Infrastructure Idx, 15% S&P Global Natural Resources Idx and 25% FTSE EPRA/NAREIT Developed Market Idx.

(2) Blended Benchmark = NCREIF (NPI) through 6/30/06, NCREIF (NPI 1 Qtr Arrears) through 12/31/13 and NFI-ODCE (1 Qtr Arrears) thereafter.

(3) Private Equity Benchmark = Russell 3000 Index lagged 3 months+3.0% through 12/31/19, Russell 3000 Index lagged 3 months+2.0% thereafter.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2024. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended December 31, 2024

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Net of Fee Returns					
Total Domestic Equity	(0.24%)	14.38%	4.73%	11.26%	10.90%
Russell 3000 Index	2.63%	23.81%	8.01%	13.86%	12.55%
BlackRock Russell 1000 Value	(1.98%)	14.37%	5.63%	8.78%	-
Russell 1000 Value Index	(1.98%)	14.37%	5.63%	8.68%	8.49%
DFA Large Cap Value	(1.93%)	13.64%	6.53%	8.62%	-
Russell 1000 Value Index	(1.98%)	14.37%	5.63%	8.68%	8.49%
Northern Trust Global	2.40%	24.99%	8.94%	14.52%	13.12%
S&P 500 Index	2.41%	25.02%	8.94%	14.53%	13.10%
Polen Capital Management	4.45%	15.61%	(0.41%)	10.58%	13.88%
S&P 500 Index	2.41%	25.02%	8.94%	14.53%	13.10%
Earnest Partners LLC	(2.96%)	7.62%	2.04%	10.05%	11.31%
Russell MidCap Index	0.62%	15.34%	3.79%	9.92%	9.63%
DFA Small Cap Value	(0.20%)	7.19%	8.29%	13.09%	9.11%
Russell 2000 Value Index	(1.06%)	8.05%	1.94%	7.29%	7.14%
Total Global Equity	(1.95%)	15.34%	5.04%	10.28%	10.41%
MSCI World	(0.16%)	18.67%	6.34%	11.17%	9.95%
BlackRock Global Alpha Tilts	(0.90%)	18.55%	6.60%	10.84%	-
MSCI ACWI Gross	(0.89%)	18.02%	5.94%	10.58%	9.79%
MFS Investment Management	(3.22%)	11.41%	3.04%	9.68%	11.19%
MSCI ACWI Gross	(0.89%)	18.02%	5.94%	10.58%	9.79%
Total International Equity	(7.65%)	6.09%	3.00%	6.29%	6.05%
MSCI EAFE Index	(8.11%)	3.82%	1.65%	4.73%	5.20%
AQR Emerging Markets	(6.89%)	6.62%	(0.20%)	3.23%	-
MSCI EM Gross	(7.84%)	8.05%	(1.48%)	2.10%	4.04%
Brandes Investment Partners	(9.40%)	6.70%	9.03%	7.75%	6.45%
MSCI EAFE Index	(8.11%)	3.82%	1.65%	4.73%	5.20%
William Blair & Company	(6.41%)	3.44%	(5.30%)	4.62%	5.72%
MSCI ACWI ex-US Index	(7.50%)	6.09%	1.35%	4.61%	5.31%
DFA International Small Cap	(6.49%)	7.89%	4.57%	5.97%	5.95%
MSCI EAFE Small	(8.36%)	1.82%	(3.25%)	2.30%	5.52%

*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2024. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended December 31, 2024

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Net of Fee Returns					
Total Fixed Income	(2.63%)	2.42%	0.51%	(0.17%)	1.92%
Bimbg Aggregate	(3.06%)	1.25%	(2.41%)	(0.33%)	1.35%
BlackRock US Govt Bond Bimbg Government	(3.08%) (3.10%)	0.77% 0.62%	(2.76%) (2.80%)	- (0.63%)	- 0.85%
Reams Asset Management Bimbg Aggregate	(3.02%) (3.06%)	1.70% 1.25%	(1.36%) (2.41%)	2.08% (0.33%)	2.85% 1.35%
Loomis, Sayles & Company, L.P. Bimbg Aggregate	(1.63%) (3.06%)	5.10% 1.25%	(0.01%) (2.41%)	1.75% (0.33%)	3.49% 1.35%
Total Private Equity	1.74%	5.67%	1.13%	16.19%	15.74%
Private Equity Benchmark	6.64%	37.37%	12.71%	17.76%	-
Abbott Capital Management 2010	(2.05%)	(4.74%)	(9.60%)	8.76%	12.91%
Abbott Capital Management 2011	(0.48%)	(3.37%)	(10.22%)	10.50%	13.64%
Abbott Capital Management 2012	0.12%	(3.47%)	(6.93%)	12.45%	13.31%
Abbott Capital Management 2013	0.32%	(1.99%)	(5.91%)	12.78%	13.45%
Abbott Capital Management 2014	(0.06%)	(2.66%)	(5.39%)	13.46%	12.46%
Abbott Capital Management 2015	2.06%	4.16%	2.30%	17.03%	-
Abbott Capital Management 2016	2.33%	8.60%	5.55%	19.28%	-
Abbott Capital Management 2018	3.35%	7.54%	6.30%	16.74%	-
Abbott Capital Management 2019	2.89%	8.63%	6.51%	15.89%	-
Abbott Capital Management 2020	1.94%	7.88%	3.41%	-	-
Abbott Capital Management 2021	1.93%	5.84%	3.17%	-	-
Abbott Capital Management 2022	1.79%	(0.81%)	-	-	-
Abbott Capital Management 2023	2.39%	5.80%	-	-	-
Abbott Capital Management 2024	3.33%	-	-	-	-
Mesirow V	1.40%	2.53%	(6.48%)	12.12%	14.69%
Mesirow IV	2.15%	4.28%	(3.51%)	16.90%	14.08%
Mesirow VII	2.39%	7.72%	4.21%	16.12%	-
Mesirow VIII	1.88%	6.43%	1.44%	-	-
NB Secondary Opp Fund III	1.85%	7.67%	7.26%	10.88%	14.82%
NB Secondary Opp Fund IV	1.24%	7.46%	4.09%	14.00%	-
NB Secondary Opp Fund V	2.78%	19.22%	-	-	-
Private Advisors VI	0.17%	11.63%	8.72%	22.45%	-
Private Advisors VII	2.98%	9.22%	12.54%	17.72%	-
Private Advisors VIII	1.05%	13.69%	16.79%	22.12%	-
Private Advisors IX	2.69%	8.98%	15.27%	-	-
Apogem Capital X	0.92%	4.59%	-	-	-
Absolute Return	3.45%	11.53%	14.38%	6.90%	6.44%
90 Day T-Bill + 3%	1.89%	8.25%	6.89%	5.46%	4.77%
Aptitude	4.05%	13.13%	-	-	-
30-Day Average SOFR +4%	2.21%	9.44%	-	-	-
UBS A & Q	3.03%	10.48%	8.59%	9.20%	6.84%
(Libor thru 2/22) SOFR +4%	2.21%	9.44%	7.93%	6.49%	5.86%
Real Assets	(5.41%)	3.28%	0.13%	4.18%	-
Principal DRA	(5.41%)	3.28%	0.13%	4.18%	-
Principal DRA Blend Index	(5.52%)	4.21%	1.06%	4.07%	-
Total Real Estate	0.87%	(2.67%)	(0.37%)	4.15%	6.83%
Real Estate	0.87%	(2.67%)	(0.37%)	4.15%	6.83%
Blended Benchmark	(0.07%)	(8.44%)	(1.06%)	2.33%	5.46%
Total Fund	(1.62%)	6.74%	3.15%	6.80%	7.33%
Total Fund Index	(0.63%)	10.69%	3.63%	7.10%	7.17%

*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	2024	2023	2022	2021	2020
Net of Fee Returns					
Total Domestic Equity	14.38%	19.38%	(15.89%)	27.88%	16.09%
Russell 3000 Index	23.81%	25.96%	(19.21%)	25.66%	20.89%
BlackRock Russell 1000 Value	14.37%	11.46%	(7.55%)	25.17%	3.27%
Russell 1000 Value Index	14.37%	11.46%	(7.54%)	25.16%	2.80%
DFA Large Cap Value	13.64%	12.12%	(5.12%)	27.35%	(1.78%)
Russell 1000 Value Index	14.37%	11.46%	(7.54%)	25.16%	2.80%
Northern Trust Global	24.99%	26.29%	(18.09%)	28.68%	18.41%
S&P 500 Index	25.02%	26.29%	(18.11%)	28.71%	18.40%
Polen Capital Management	15.61%	37.75%	(37.97%)	24.34%	34.59%
S&P 500 Index	25.02%	26.29%	(18.11%)	28.71%	18.40%
Earnest Partners LLC	7.62%	16.95%	(15.58%)	25.59%	20.96%
Russell MidCap Index	15.34%	17.23%	(17.32%)	22.58%	17.10%
DFA Small Cap Value	7.19%	21.04%	(2.12%)	40.38%	3.74%
Russell 2000 Value Index	8.05%	14.65%	(14.48%)	28.27%	4.63%
Total Global Equity	15.34%	21.88%	(17.55%)	18.80%	18.48%
MSCI World	18.67%	23.79%	(18.14%)	21.82%	15.90%
BlackRock Global Alpha Tilts	18.55%	22.93%	(16.89%)	18.67%	16.39%
MSCI ACWI Gross	18.02%	22.81%	(17.96%)	19.04%	16.82%
MFS Investment Management	11.41%	20.50%	(18.50%)	19.05%	21.88%
MSCI ACWI Gross	18.02%	22.81%	(17.96%)	19.04%	16.82%
Total International Equity	6.09%	22.25%	(15.75%)	12.57%	10.28%
MSCI EAFE Index	3.82%	18.24%	(14.45%)	11.26%	7.82%
AQR Emerging Markets	6.62%	17.92%	(20.93%)	0.47%	17.38%
MSCI EM Gross	8.05%	10.27%	(19.74%)	(2.22%)	18.69%
Brandes Investment Partners	6.70%	30.84%	(7.15%)	14.00%	(1.69%)
MSCI EAFE Index	3.82%	18.24%	(14.45%)	11.26%	7.82%
William Blair & Company	3.44%	15.50%	(28.91%)	12.77%	30.84%
MSCI ACWI ex-US Index	6.09%	16.21%	(15.57%)	8.29%	11.13%
DFA International Small Cap	7.89%	17.52%	(9.80%)	15.89%	0.81%
MSCI EAFE Small	1.82%	13.16%	(21.39%)	10.10%	12.34%

*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

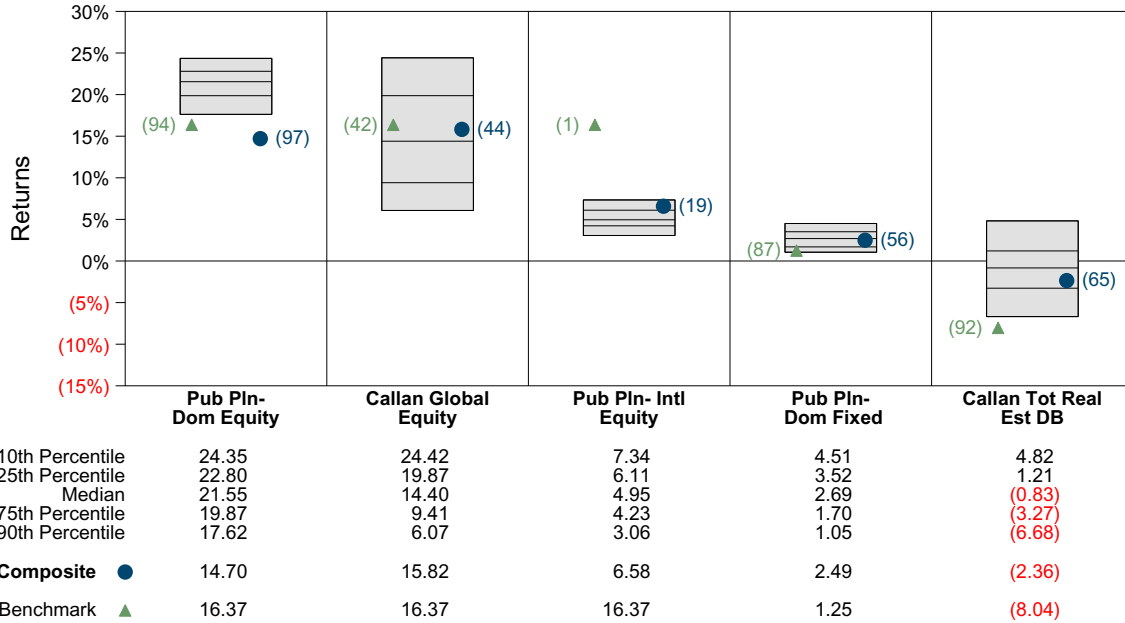
	2024	2023	2022	2021	2020
Net of Fee Returns					
Total Fixed Income	2.42%	6.52%	(6.93%)	(0.45%)	(1.91%)
Bimbg Aggregate	1.25%	5.53%	(13.01%)	(1.54%)	7.51%
BlackRock US Govt Bond	0.77%	4.22%	(12.44%)	-	-
Bimbg Government	0.62%	4.09%	(12.32%)	(2.28%)	7.94%
Reams Asset Management	1.70%	6.62%	(11.50%)	(1.36%)	17.11%
Bimbg Aggregate	1.25%	5.53%	(13.01%)	(1.54%)	7.51%
Loomis, Sayles & Company, L.P.	5.10%	8.41%	(12.26%)	1.98%	6.99%
Bimbg Aggregate	1.25%	5.53%	(13.01%)	(1.54%)	7.51%
Total Private Equity	5.67%	2.89%	(4.88%)	67.66%	22.14%
Private Equity Benchmark	37.37%	22.76%	(15.10%)	34.08%	17.99%
Abbott Capital Management 2010	(4.74%)	(6.70%)	(16.87%)	65.55%	24.43%
Abbott Capital Management 2011	(3.37%)	(7.55%)	(18.97%)	76.29%	29.13%
Abbott Capital Management 2012	(3.47%)	(3.85%)	(13.14%)	72.85%	29.04%
Abbott Capital Management 2013	(1.99%)	(2.85%)	(12.51%)	70.21%	28.65%
Abbott Capital Management 2014	(2.66%)	(3.96%)	(9.41%)	75.52%	26.51%
Abbott Capital Management 2015	4.16%	3.60%	(0.79%)	75.81%	16.62%
Abbott Capital Management 2016	8.60%	5.24%	2.90%	71.04%	20.02%
Abbott Capital Management 2018	7.54%	3.96%	7.44%	47.06%	22.73%
Abbott Capital Management 2019	8.63%	3.43%	7.54%	57.22%	10.04%
Abbott Capital Management 2020	7.88%	1.70%	0.81%	65.36%	-
Abbott Capital Management 2021	5.84%	2.00%	1.72%	-	-
Abbott Capital Management 2022	(0.81%)	4.87%	-	-	-
Abbott Capital Management 2023	5.80%	-	-	-	-
Mesirow V	2.53%	(0.80%)	(19.60%)	78.52%	21.39%
Mesirow IV	4.28%	(0.52%)	(13.41%)	88.26%	29.10%
Mesirow VII	7.72%	5.78%	(0.68%)	60.27%	16.43%
Mesirow VIII	6.43%	0.22%	(2.15%)	10.14%	-
NB Secondary Opp Fund III	7.67%	17.34%	(2.34%)	30.34%	4.23%
NB Secondary Opp Fund IV	7.46%	4.64%	0.29%	48.73%	14.80%
NB Secondary Opp Fund V	19.22%	21.41%	-	-	-
Private Advisors VI	11.63%	4.68%	9.97%	83.78%	16.54%
Private Advisors VII	9.22%	7.32%	21.61%	52.55%	3.97%
Private Advisors VIII	13.69%	9.80%	27.61%	47.25%	15.78%
Private Advisors IX	8.98%	13.33%	24.00%	37.25%	-
Apogem Capital X	4.59%	-	-	-	-
Absolute Return	11.53%	6.09%	26.46%	8.77%	(14.21%)
90 Day T-Bill + 3%	8.25%	8.01%	4.46%	3.05%	3.67%
Aptitude	13.13%	5.24%	-	-	-
30-Day Average SOFR +4%	9.44%	9.09%	-	-	-
UBS A & Q	10.48%	6.48%	8.85%	8.08%	12.18%
(Libor thru 2/22) SOFR +4%	9.44%	9.09%	5.32%	4.11%	4.63%
Real Assets	3.28%	3.31%	(5.91%)	17.51%	4.02%
Principal DRA	3.28%	3.31%	(5.91%)	17.51%	4.02%
Principal DRA Blend Index	4.21%	4.31%	(5.07%)	15.87%	2.08%
Total Real Estate	(2.67%)	(10.54%)	13.58%	23.45%	0.39%
Real Estate	(2.67%)	(10.54%)	13.58%	23.45%	0.39%
Blended Benchmark	(8.44%)	(13.08%)	21.68%	14.83%	0.89%
Total Fund	6.74%	9.97%	(6.51%)	18.80%	6.59%
Total Fund Index	10.69%	12.43%	(10.58%)	12.77%	12.25%

*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

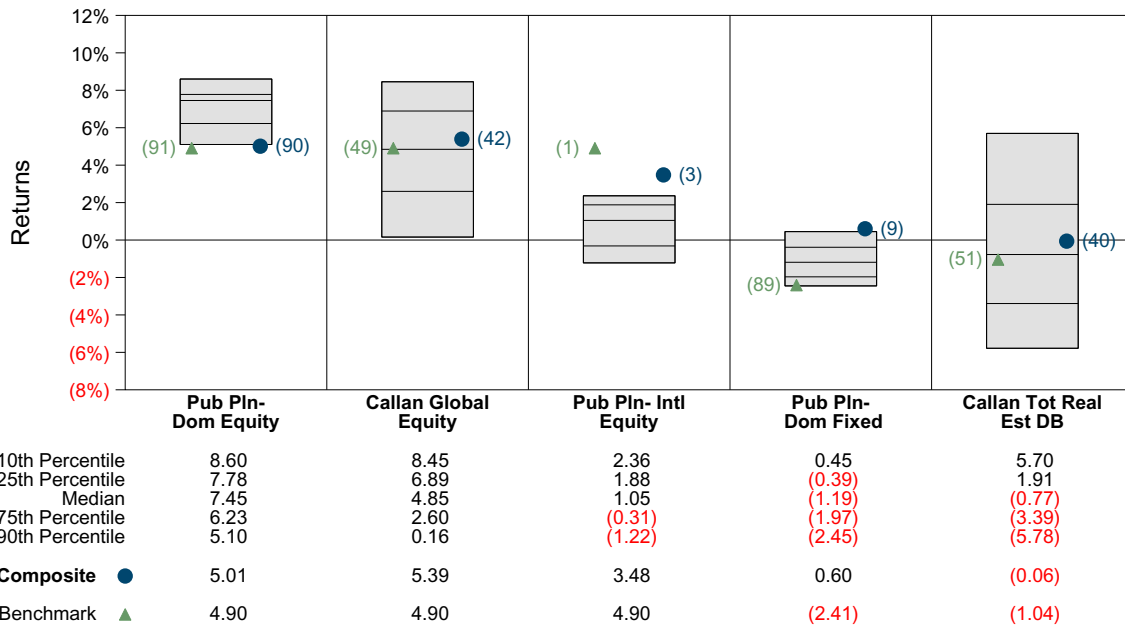
Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases.

Total Asset Class Performance One Year Ended December 31, 2024



Total Asset Class Performance Three Years Ended December 31, 2024

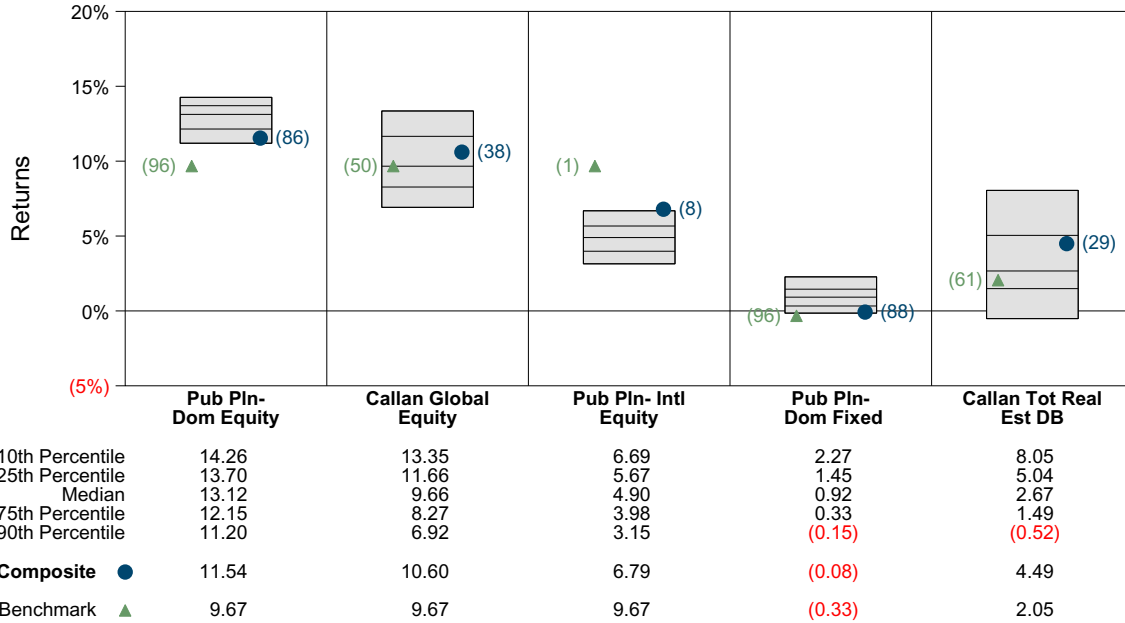


* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

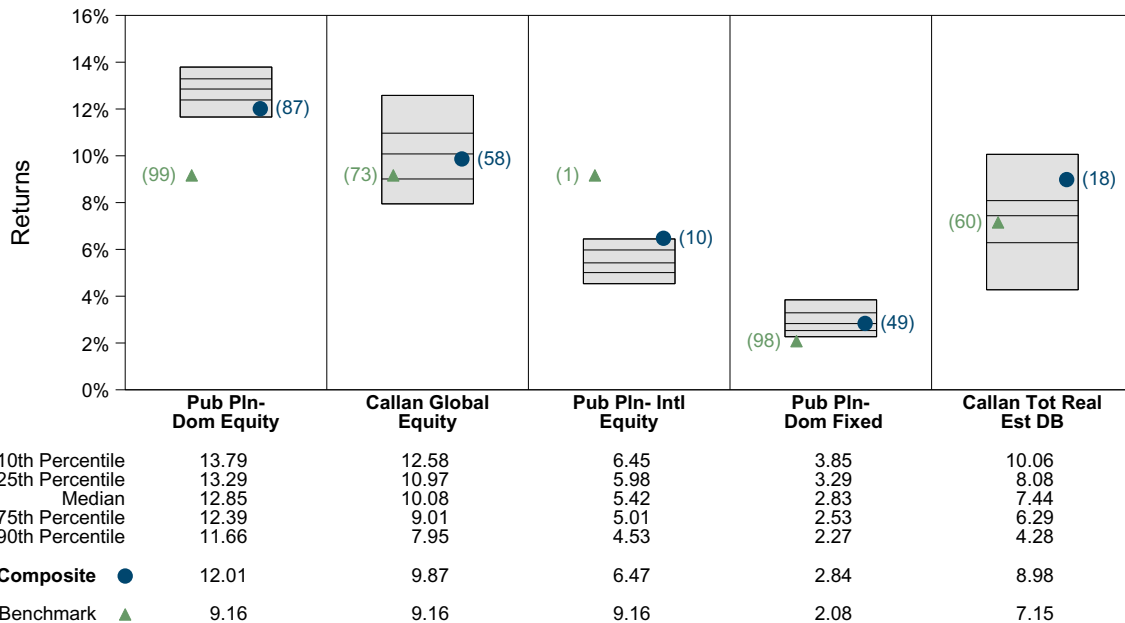
Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases.

Total Asset Class Performance Five Years Ended December 31, 2024



Total Asset Class Performance Fourteen Years Ended December 31, 2024

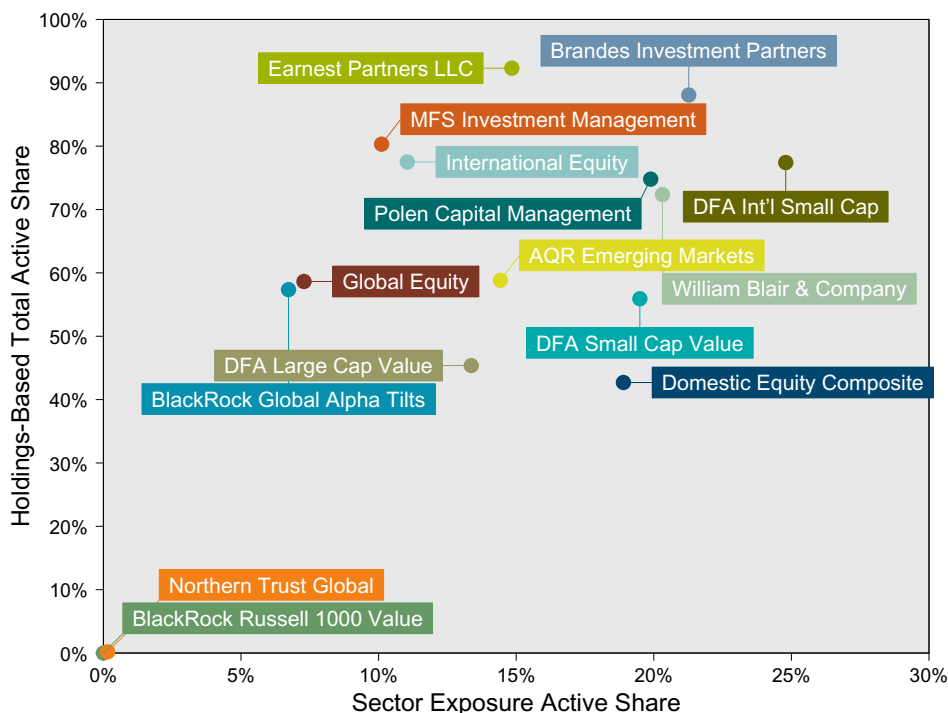


* Current Quarter Target = 39.0% MSCI ACWI IMI, 29.0% Blmbg:Aggregate, 12.0% Russell 3000 Index lagged 3 months+2.0%, 9.7% NCREIF NFI-ODCE Val Wt Nt lagged 3 months, 7.0% 3-month Treasury Bill+3.0% and 3.3% Principal DRA Blend Index.

Active Share Structure Analysis For One Quarter Ended December 31, 2024

This analysis compares multiple portfolios and composites in an active share context, illustrating the varying degrees of active risk taken by individual portfolios, and how they combine into active risk profiles for composites and the equity structure. Two sources of active share (active risk) are shown: 1) Total Holdings-Based Active Share based on individual position comparisons to the index (and the subcomponent from holding non-index securities), and 2) Sector Exposure Active Share that quantifies the more macro-level sector differences from the index.

Active Share Analysis Ended December 31, 2024



	Index	Total Act Share	Non-Idx Act Share	Sector Act Share	Number Securities	Security Diverse
Domestic Equity Composite	Russell 3000	42.70%	0.95%	18.90%	1763	98.13
BlackRock Russell 1000 Value	Russell 1000 Value	0.00%	0.00%	0.00%	869	74.09
DFA Large Cap Value	Russell 1000 Value	45.37%	0.76%	13.37%	341	51.61
Northern Trust Global	S&P 500	0.19%	0.00%	0.16%	502	24.42
Polen Capital Management	S&P 500	74.79%	3.23%	19.89%	24	7.88
Earnest Partners LLC	Russell MidCap	92.30%	9.19%	14.84%	58	22.14
DFA Small Cap Value	Russell 2000 Value	55.92%	20.15%	19.49%	943	126.67
Global Equity	MSCI World	58.64%	6.86%	7.29%	396	42.13
BlackRock Global Alpha Tilts	MSCI ACWI GD	57.36%	4.19%	6.73%	345	32.29
MFS Investment Management	MSCI ACWI GD	80.32%	1.77%	10.11%	72	20.40
International Equity	MSCI EAFE	77.51%	28.57%	11.04%	2425	86.60
AQR Emerging Markets	MSCI EM GD	58.83%	3.17%	14.43%	329	29.98
Brandes Investment Partners	MSCI EAFE	88.08%	15.76%	21.27%	68	24.92
William Blair & Company	MSCI ACWI xUS GD	72.37%	8.14%	20.31%	279	50.79
DFA Int'l Small Cap	MSCI EAFE Small	77.41%	18.67%	24.79%	1800	141.30

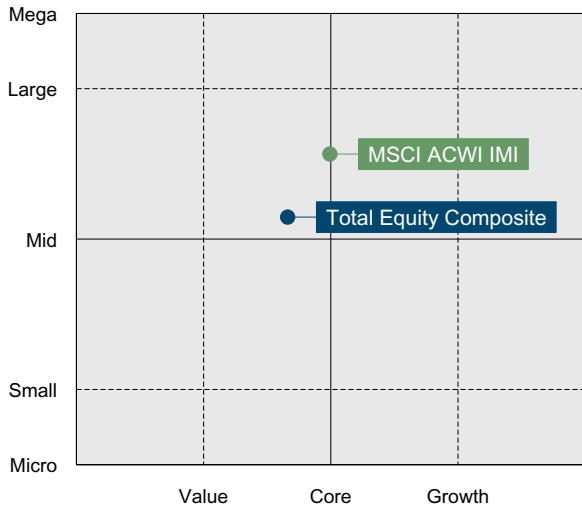
Current Holdings Based Style Analysis

Total Equity Composite

As of December 31, 2024

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left chart illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

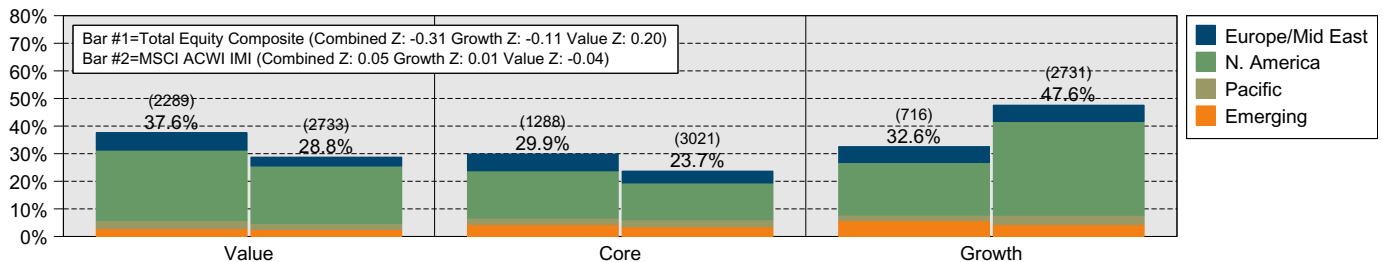
Style Map vs Callan Public Fund Spr DB Holdings as of December 31, 2024



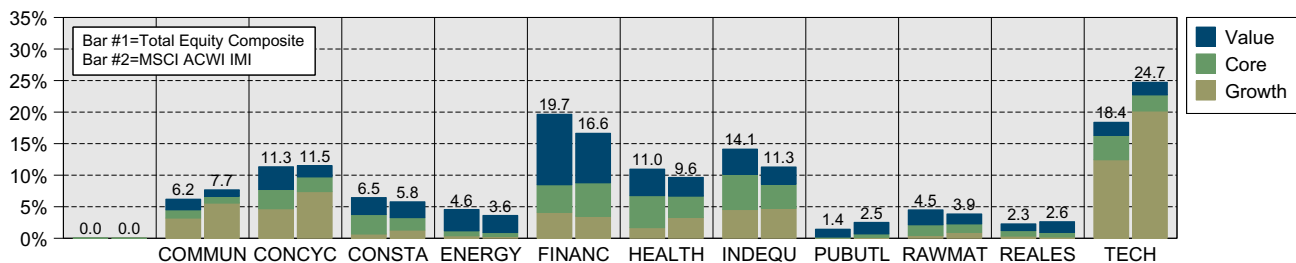
Style Exposure Matrix Holdings as of December 31, 2024

	Value	Core	Growth	Total
Europe/ Mid East	6.3% (387)	6.1% (279)	5.8% (124)	18.1% (790)
	3.2% (406)	4.3% (486)	5.9% (453)	13.4% (1345)
N. America	25.5% (1014)	17.1% (578)	19.1% (286)	61.7% (1878)
	20.7% (918)	13.3% (928)	34.0% (698)	68.0% (2544)
Pacific	3.0% (742)	2.2% (259)	2.0% (116)	7.1% (1117)
	2.3% (447)	2.6% (508)	3.3% (452)	8.2% (1407)
Emerging	2.9% (146)	4.5% (172)	5.7% (190)	13.1% (508)
	2.5% (962)	3.5% (1099)	4.4% (1128)	10.4% (3189)
Total	37.6% (2289)	29.9% (1288)	32.6% (716)	100.0% (4293)
	28.8% (2733)	23.7% (3021)	47.6% (2731)	100.0% (8485)

Combined Z-Score Style Distribution Holdings as of December 31, 2024



Sector Weights Distribution Holdings as of December 31, 2024



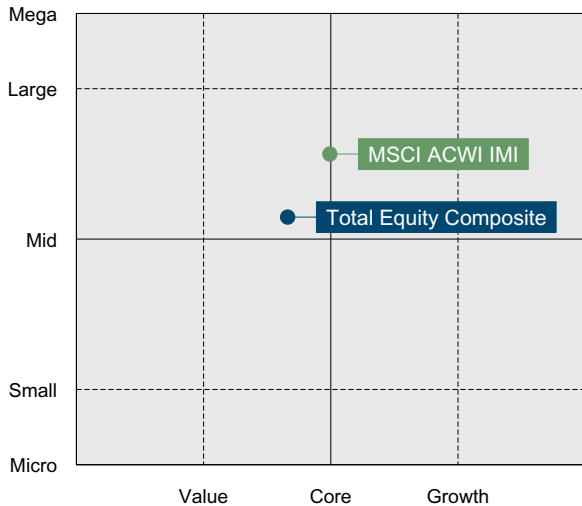
Current Holdings Based Style Analysis

Total Equity Composite

As of December 31, 2024

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

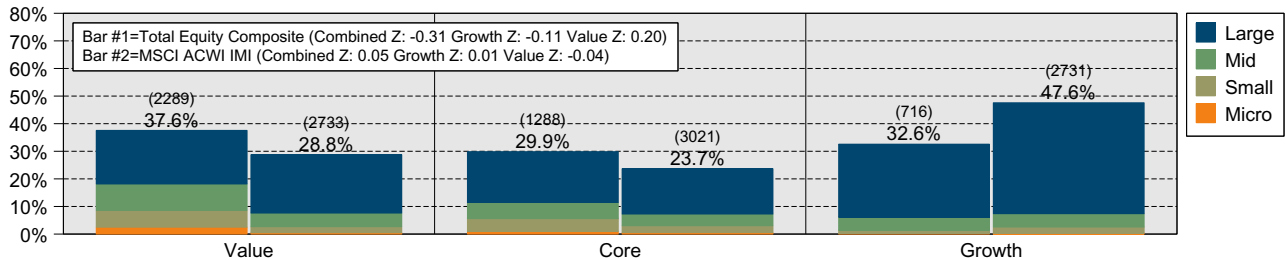
Style Map vs Callan Public Fund Spr DB Holdings as of December 31, 2024



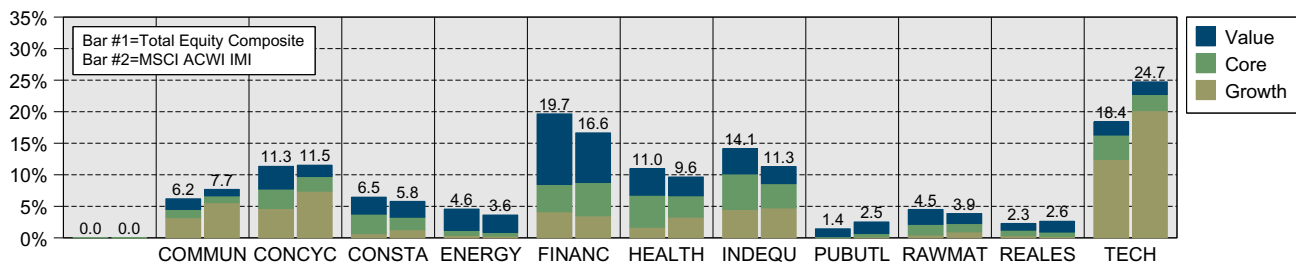
Style Exposure Matrix Holdings as of December 31, 2024

	Value	Core	Growth	Total
Large	19.4% (224)	18.4% (202)	26.5% (193)	64.3% (619)
	21.1% (294)	16.4% (276)	40.2% (277)	77.7% (847)
Mid	9.6% (310)	5.8% (264)	4.7% (249)	20.1% (823)
	4.9% (525)	4.3% (531)	4.8% (642)	14.0% (1698)
Small	6.1% (425)	4.7% (418)	1.2% (152)	11.9% (995)
	2.2% (1018)	2.5% (1253)	2.2% (1124)	6.9% (3395)
Micro	2.5% (1330)	1.0% (404)	0.2% (122)	3.6% (1856)
	0.5% (896)	0.5% (961)	0.4% (688)	1.4% (2545)
Total	37.6% (2289)	29.9% (1288)	32.6% (716)	100.0% (4293)
	28.8% (2733)	23.7% (3021)	47.6% (2731)	100.0% (8485)

Combined Z-Score Style Distribution Holdings as of December 31, 2024



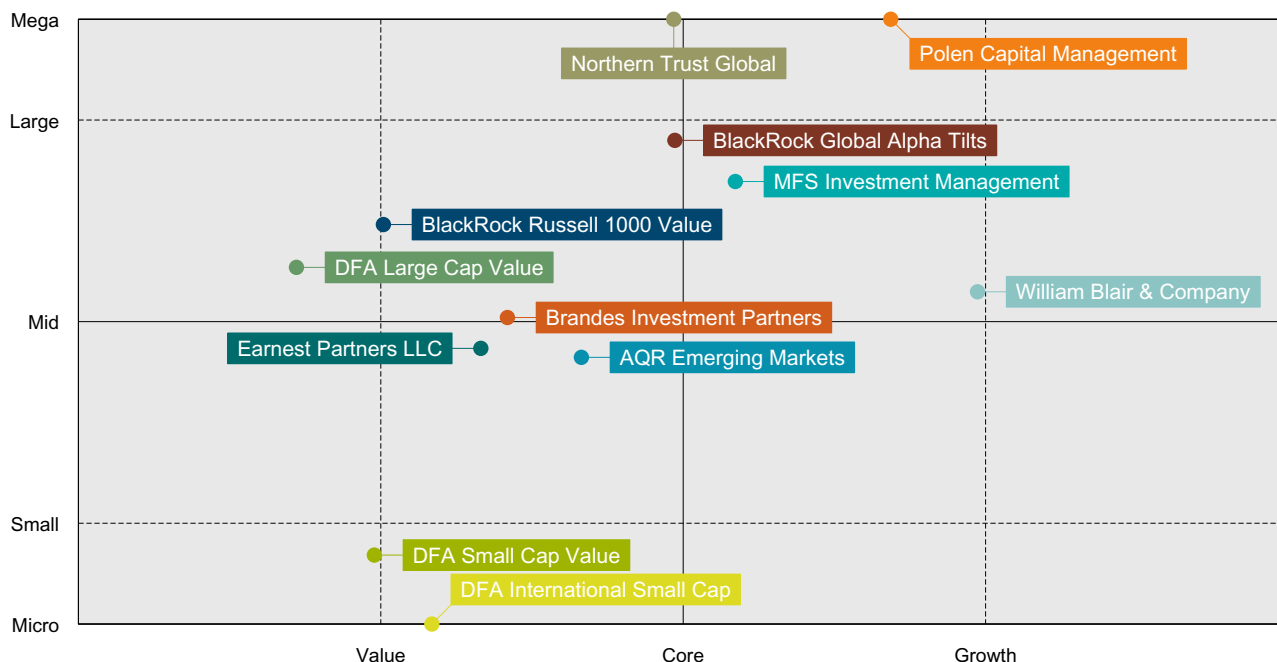
Sector Weights Distribution Holdings as of December 31, 2024



Global Holdings Based Style Analysis For One Quarter Ended December 31, 2024

This page analyzes and compares the investment styles of multiple portfolios using a detailed holdings-based style analysis methodology. The size component of style is measured by the weighted median market capitalization of the holdings. The value/core/growth style dimension is captured by the "Combined Z-Score" of the portfolio. This score is based on eight fundamental factors used in the MSCI stock style scoring system. The table below gives a more detailed breakdown of several relevant style metrics on the portfolios.

Style Map Holdings for One Quarter Ended December 31, 2024



	Weight %	Wtd Median Mkt Cap	Combined Z-Score	Growth Z-Score	Value Z-Score	Number of Securities	Security Diversification
BlackRock Russell 1000 Value	8.58%	83.69	(1.01)	(0.44)	0.57	869	74.09
DFA Large Cap Value	6.27%	57.51	(1.32)	(0.43)	0.90	341	51.61
Northern Trust Global	9.01%	326.68	0.02	(0.00)	(0.02)	502	24.42
Polen Capital Management	5.31%	465.66	0.72	0.22	(0.50)	24	7.88
Earnest Partners LLC	7.69%	21.63	(0.67)	(0.31)	0.36	58	22.14
DFA Small Cap Value	8.71%	3.41	(1.05)	(0.24)	0.80	943	126.67
MFS Investment Management	9.09%	110.00	0.22	(0.08)	(0.30)	72	20.40
BlackRock Global Alpha Tilts	10.99%	135.18	0.02	0.05	0.02	345	32.29
AQR Emerging Markets	4.45%	20.72	(0.31)	(0.00)	0.30	329	29.98
Brandes Investment Partners	13.09%	26.82	(0.57)	(0.16)	0.41	68	24.92
William Blair & Company	9.79%	42.56	1.00	0.32	(0.67)	279	50.79
DFA International Small Cap	7.02%	2.01	(0.84)	(0.19)	0.65	1800	141.30

List of Callan's Investment Manager Clients

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The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database, or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g., attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group, and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance department.

Manager Name
abrdn
Acadian Asset Management LLC
ACR Alpine Capital Research
Adams Street Partners, LLC
Aegon Asset Management
AEW Capital Management, L.P.
AllianceBernstein
Allspring Global Investments, LLC
Altrinsic Global Advisors, LLC
American Century Investments
Amundi US, Inc.
Antares Capital LP
Apollo Global Management, Inc.
AQR Capital Management
Ares Management LLC
ARGA Investment Management, LP
Ariel Investments, LLC
Aristotle Capital Management, LLC

Manager Name
Atlanta Capital Management Co., LLC
Audax Private Debt
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Barings LLC
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
BentallGreenOak
Beutel, Goodman & Company Ltd.
BlackRock
Blackstone Group (The)
Blue Owl Capital, Inc.
BNY Mellon Asset Management
Boston Partners
Brandes Investment Partners, L.P.
Brandywine Global Investment Management, LLC
Brookfield Asset Management Inc.

Manager Name

Brown Brothers Harriman & Company
Brown Investment Advisory & Trust Company
Capital Group
CastleArk Management, LLC
Cercano Management LLC
Champlain Investment Partners, LLC
CIBC Asset Management Inc.
CIM Group, LP
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Comvest Partners
Cooke & Bieler, L.P.
Crescent Capital Group LP
Dana Investment Advisors, Inc.
D.E. Shaw Investment Management, LLC
DePrince, Race & Zollo, Inc.
Dimensional Fund Advisors L.P.
Doubleline
DWS
EARNEST Partners, LLC
Fayez Sarofim & Company
Federated Hermes, Inc.
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Fred Alger Management, LLC
GAMCO Investors, Inc.
Glenmeade Investment Management, LP
GlobeFlex Capital, L.P.
Goldman Sachs
Golub Capital
GW&K Investment Management
Harbor Capital Group Trust
HarbourVest Partners, LLC
Hardman Johnston Global Advisors LLC
Heitman LLC

Manager Name

Hotchkis & Wiley Capital Management, LLC
HPS Investment Partners, LLC
IFM Investors
Impax Asset Management LLC
Income Research + Management
Insight Investment
Intercontinental Real Estate Corporation
Invesco
J.P. Morgan
Janus
Jennison Associates LLC
Jobs Peak Advisors
Kayne Anderson Rudnick Investment Management, LLC
King Street Capital Management, L.P.
Kohlberg Kravis Roberts & Co. L.P. (KKR)
Lazard Asset Management
LGIM America
Lincoln National Corporation
Longview Partners
Loomis, Sayles & Company, L.P.
Lord, Abbett & Company
LSV Asset Management
MackKay Shields LLC
Macquarie Asset Management
Manulife Investment Management
Manulife | CQS Investment Management
Marathon Asset Management, L.P.
Maverick Real Estate Partners
Mawer Investment Management Ltd.
MetLife Investment Management
MFS Investment Management
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mount Lucas Management LP
MUFG Bank, Ltd.
Natixis Investment Managers
Neuberger Berman
Newmarket Capital
Newton Investment Management

Manager Name

Nipun Capital, L.P.

NISA Investment Advisors LLC

Northern Trust Asset Management

Nuveen

Oaktree Capital Management, L.P.

Orbis Investment Management Limited

P/E Investments

Pacific Investment Management Company

Parametric Portfolio Associates LLC

Partners Group (USA) Inc.

Pathway Capital Management, LP

Peavine Capital

Peregrine Capital Management, LLC

PGIM DC Solutions

PGIM Fixed Income

PGIM Quantitative Solutions LLC

Pictet Asset Management

PineBridge Investments

Polen Capital Management, LLC

PPM America, Inc.

Pretium Partners, LLC

Principal Asset Management

Raymond James Investment Management

RBC Global Asset Management

Red Cedar Investment Management

Regions Financial Corporation

S&P Dow Jones Indices

Sands Capital Management

Manager Name

Schroder Investment Management North America Inc.

Segall Bryant & Hamill

SLC Management

Star Mountain Capital, LLC

State Street Global Advisors

Strategic Global Advisors, LLC

T. Rowe Price Associates, Inc.

TD Global Investment Solutions – TD Epoch

The TCW Group, Inc.

Thompson, Siegel & Walmsley LLC

TPG Angelo Gordon

Tweedy, Browne Company LLC

UBS Asset Management

VanEck

Vaughan Nelson Investment Management

Versus Capital Group

Victory Capital Management Inc.

Virtus Investment Partners, Inc.

Vontobel Asset Management

Voya

Walter Scott & Partners Limited

WCM Investment Management

Wellington Management Company LLP

Western Asset Management Company LLC

Westfield Capital Management Company, LP

William Blair & Company LLC

Xpionance, Inc.

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