

Wilshire



Wilshire Advisors

Executive Summary of Investment Performance

As of September 30, 2024

IMRF's Performance Summary

- IMRF's market value as of September 2024 \$56.4 billion.
- IMRF's total fund return for 3Q 2024: 5.31% vs the Total Fund Benchmark return of 5.37%.
- U.S. equity markets posted positive returns for the quarter, sector performance was mostly positive for the quarter, with only the energy sector producing a loss.
- IMRF's U.S. Equity Portfolio underperformed the benchmark during the quarter, returning 6.13% versus 6.74%.
- Performance results within international equity markets were positive for the third quarter, with emerging markets outperforming developed.
- IMRF's International Equity Portfolio underperformed the benchmark during the quarter, returning 7.08% versus 8.06%.
- During the quarter, the U.S. Treasury yield curve was down across the maturity spectrum and credit spreads were modestly down with high yield bond spreads down -14 basis points, to end the quarter below 3%.
- IMRF's Fixed Income Portfolio underperformed the benchmark during the quarter, returning 4.82% versus 4.90%.
- All asset class allocations remain within the rebalancing range in the Investment Policy.

Performance referenced above is Net of Fees.

Market Commentary

U.S. Equity

The U.S. stock market was up 6.2% for the third quarter and is up 20.6% for the year-to-date. Sector performance was mostly positive for the quarter, with only the energy sector (-3.0%) producing a loss. The best performing were utilities (+18.7%) and real estate (+17.2%). Small-cap outperformed large-cap by 330 basis points while growth stocks generally underperformed value.

The FOMC reduced their overnight rate by 0.5% at their September meeting, the first decrease since the rate began to rise 2.5 years earlier. While markets expected a cut, the debate was whether it would be 25 or 50 basis points. During his press conference, Federal Reserve Chair Jerome Powell indicated that data released since their prior meeting – including weak employment numbers – may have played a part in the higher rate cut. Looking at job openings versus unemployed workers, the U.S. has recently reached pre-COVID levels. However, the trend has been noticeably and meaningfully negative. In fact, worsening employment conditions played a role in a large decline in consumer confidence near the end of September.

Non-U.S. Equity

Economic growth in the U.K. is modest, but positive, while inflation has moved back to target. Prospects in Germany, Europe's largest economy, are less promising. Recent data shows that German business activity contracted in September at the sharpest pace in seven months, this after economic growth fell during the second quarter. A surge in Chinese stocks followed several announcements from China's central bank and government. Among those is the possible removal of significant restrictions on home purchases.

Fixed Income

The U.S. Treasury yield curve was down across the maturity spectrum during the quarter. The 10-year Treasury yield stood at 3.78%, down -62 basis points. High yield bond spreads were down (-14 bps) to below 3%. The FOMC decreased their overnight rate by -0.50%. Defending the larger rate cut, Fed Chair Jerome Powell said the decision, "reflects our growing confidence that, with an appropriate recalibration of our policy stance, strength in the labor market can be maintained" while the economy continues to expand and inflation moves towards the Fed's target.

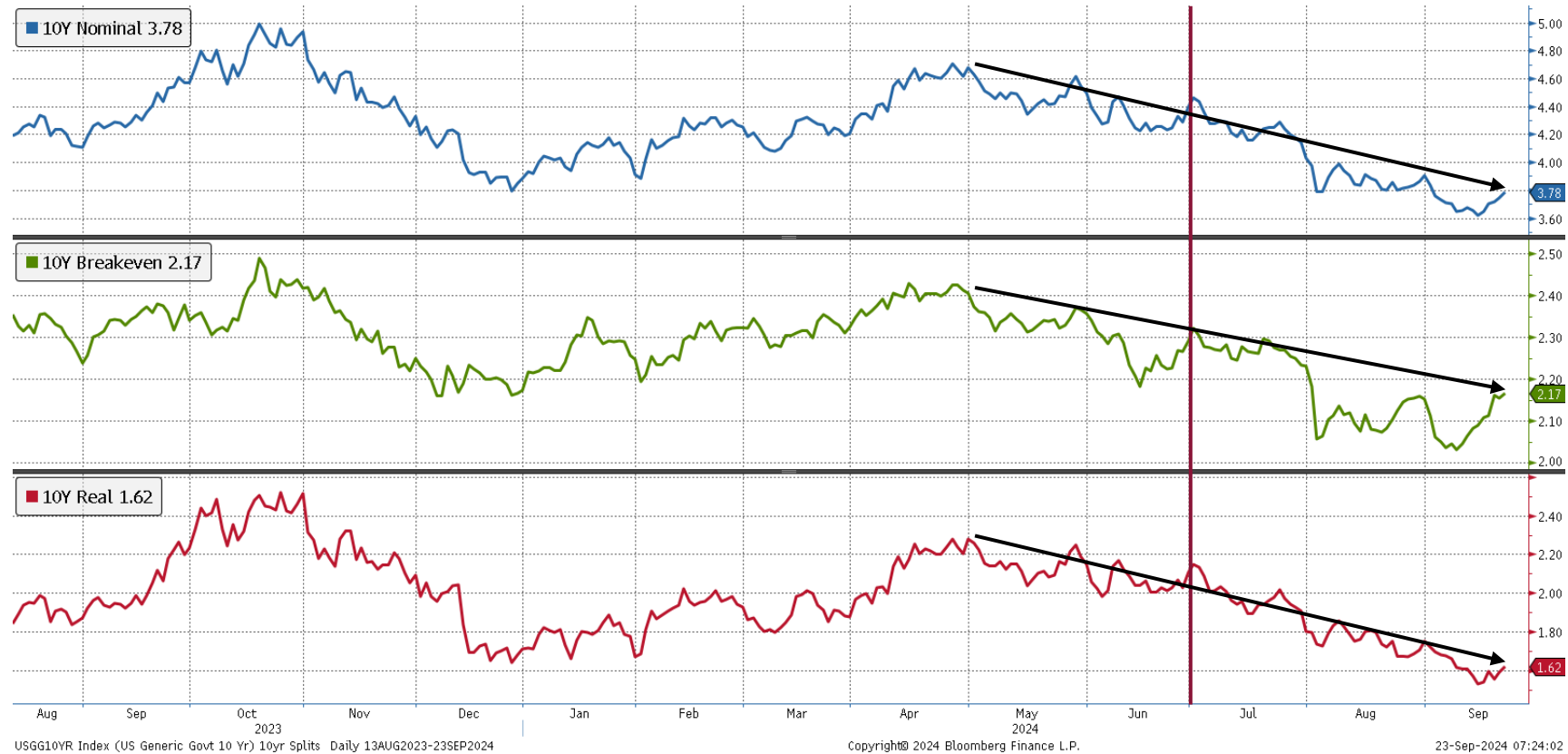
September 2024 Asset Class Assumptions

	Equity						Fixed Income							Real Assets						
	U.S. Stock	Dev ex-U.S. Stock	Emg Stock	Global ex-U.S. Stock	Global Stock	Private Equity	Cash	Core Bond	LT Core Bond	TIPS	High Yield	Private Credit	Dev ex-U.S. Bond (Hdg)	Real Estate			Cmdty	Real Assets	U.S. CPI	
														U.S. RES	Global RES	Private RE				
Compound Return (%)	4.25	5.25	5.50	5.60	4.85	7.15	3.40	4.60	4.70	4.00	5.95	7.80	2.80	5.25	5.40	6.25	5.40	6.75	2.25	
Arithmetic Return (%)	5.60	6.75	8.50	7.25	6.20	10.90	3.40	4.70	5.15	4.15	6.40	8.55	2.90	6.65	6.65	7.15	6.60	7.50	2.25	
Risk (%)	17.00	18.00	26.00	19.00	17.05	29.65	0.75	4.70	9.85	6.00	10.00	12.75	4.00	17.50	16.45	13.90	16.00	12.60	1.75	
Yield (%)	1.30	2.95	2.35	2.80	1.85	0.00	3.40	5.10	5.15	4.40	9.35	4.85	3.70	3.60	3.60	2.70	3.40	3.50	0.00	
Growth Factor Exposure	8.00	8.00	8.00	8.00	8.00	14.00	0.00	-0.90	-2.40	-3.00	4.00	5.10	-1.00	6.00	6.00	3.50	0.00	2.75	0.00	
Inflation Factor Exposure	-3.00	-1.00	3.00	0.10	-1.85	-4.25	0.00	-2.55	-6.85	2.50	-1.00	-1.50	-3.00	1.00	1.80	1.00	12.00	5.35	1.00	

Correlations

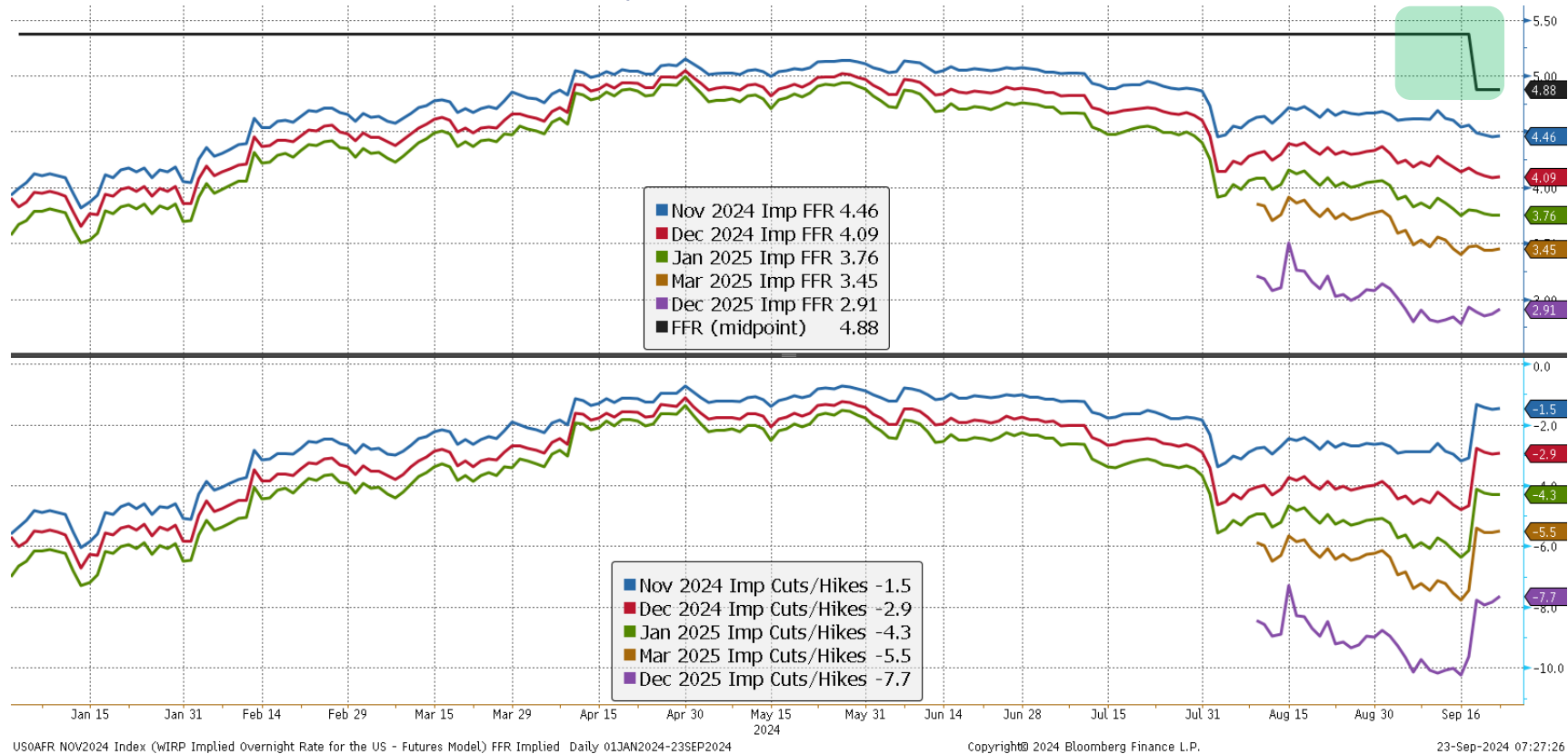
U.S. Stock	1.00																		
Dev ex-U.S. Stock (USD)	0.81	1.00																	
Emerging Mkt Stock	0.74	0.74	1.00																
Global ex-U.S. Stock	0.84	0.95	0.89	1.00															
Global Stock	0.95	0.91	0.84	0.94	1.00														
Private Equity	0.72	0.63	0.61	0.67	0.73	1.00													
Cash Equivalents	-0.05	-0.09	-0.05	-0.08	-0.06	0.00	1.00												
Core Bond	0.28	0.13	0.00	0.08	0.20	0.30	0.18	1.00											
LT Core Bond	0.31	0.15	0.01	0.11	0.24	0.31	0.11	0.94	1.00										
TIPS	-0.05	0.00	0.15	0.06	-0.01	-0.03	0.20	0.60	0.48	1.00									
High Yield Bond	0.54	0.39	0.49	0.46	0.53	0.31	-0.10	0.24	0.32	0.05	1.00								
Private Credit	0.67	0.55	0.57	0.59	0.67	0.44	0.00	0.24	0.30	0.00	0.75	1.00							
Dev ex-U.S. Bond (Hdg)	0.16	0.25	-0.01	0.16	0.17	0.26	0.10	0.67	0.65	0.39	0.26	0.22	1.00						
U.S. RE Securities	0.57	0.47	0.44	0.49	0.56	0.49	-0.05	0.17	0.22	0.10	0.56	0.61	0.05	1.00					
Global RE Securities	0.63	0.56	0.54	0.59	0.64	0.55	-0.05	0.17	0.21	0.11	0.60	0.67	0.04	0.97	1.00				
Private Real Estate	0.55	0.45	0.45	0.49	0.54	0.50	-0.05	0.19	0.25	0.09	0.57	0.62	0.05	0.78	0.77	1.00			
Commodities	0.25	0.34	0.39	0.38	0.32	0.28	0.00	-0.03	-0.03	0.25	0.29	0.29	-0.10	0.25	0.28	0.25	1.00		
Real Assets	0.61	0.62	0.66	0.68	0.66	0.56	-0.03	0.24	0.26	0.32	0.64	0.69	0.05	0.78	0.83	0.76	0.62	1.00	
Inflation (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	0.00	-0.08	0.05	0.04	0.05	0.44	0.21	1.00

Rates Down (Real & BEI)



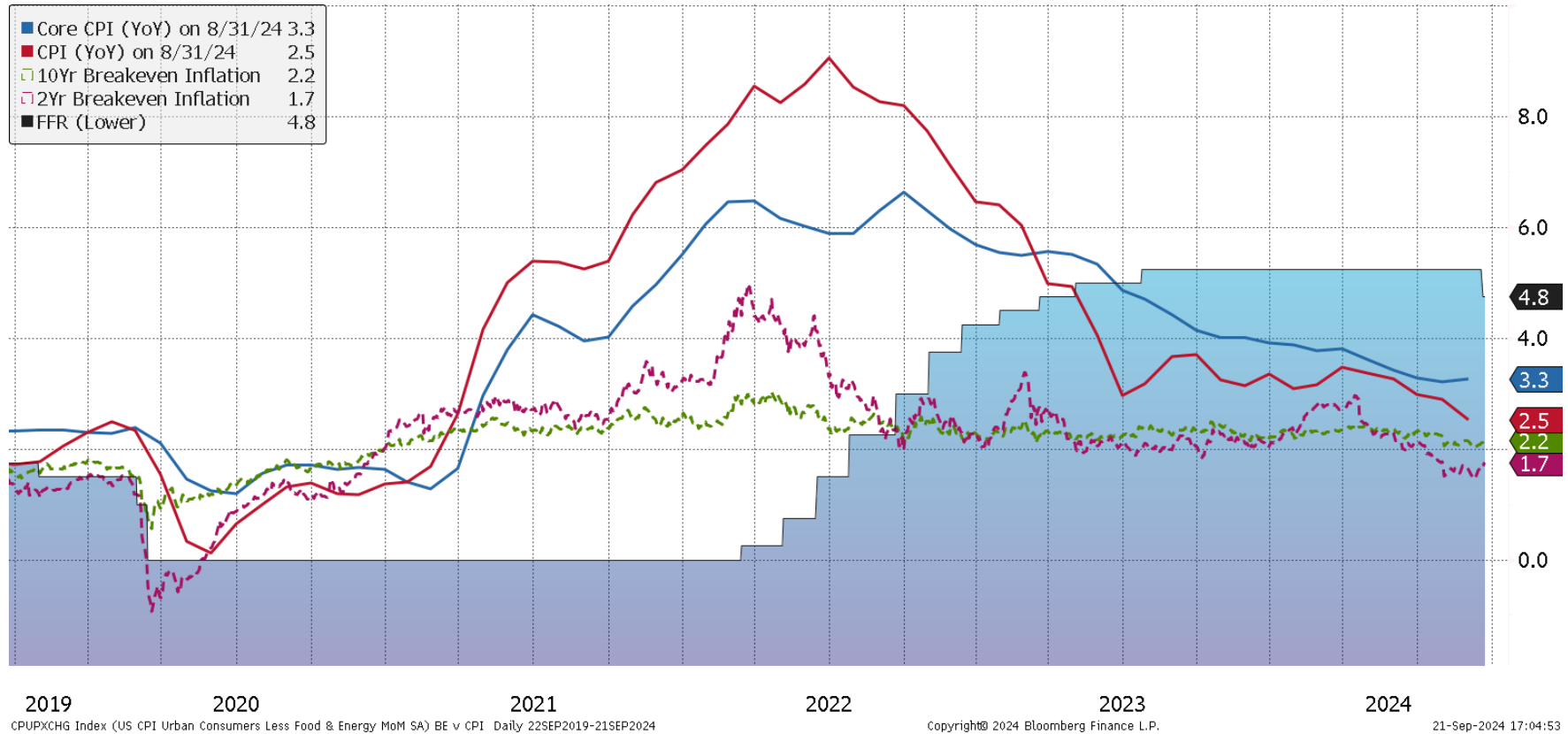
Data Source: Bloomberg

Fed Funds Rate: Markets Expectations



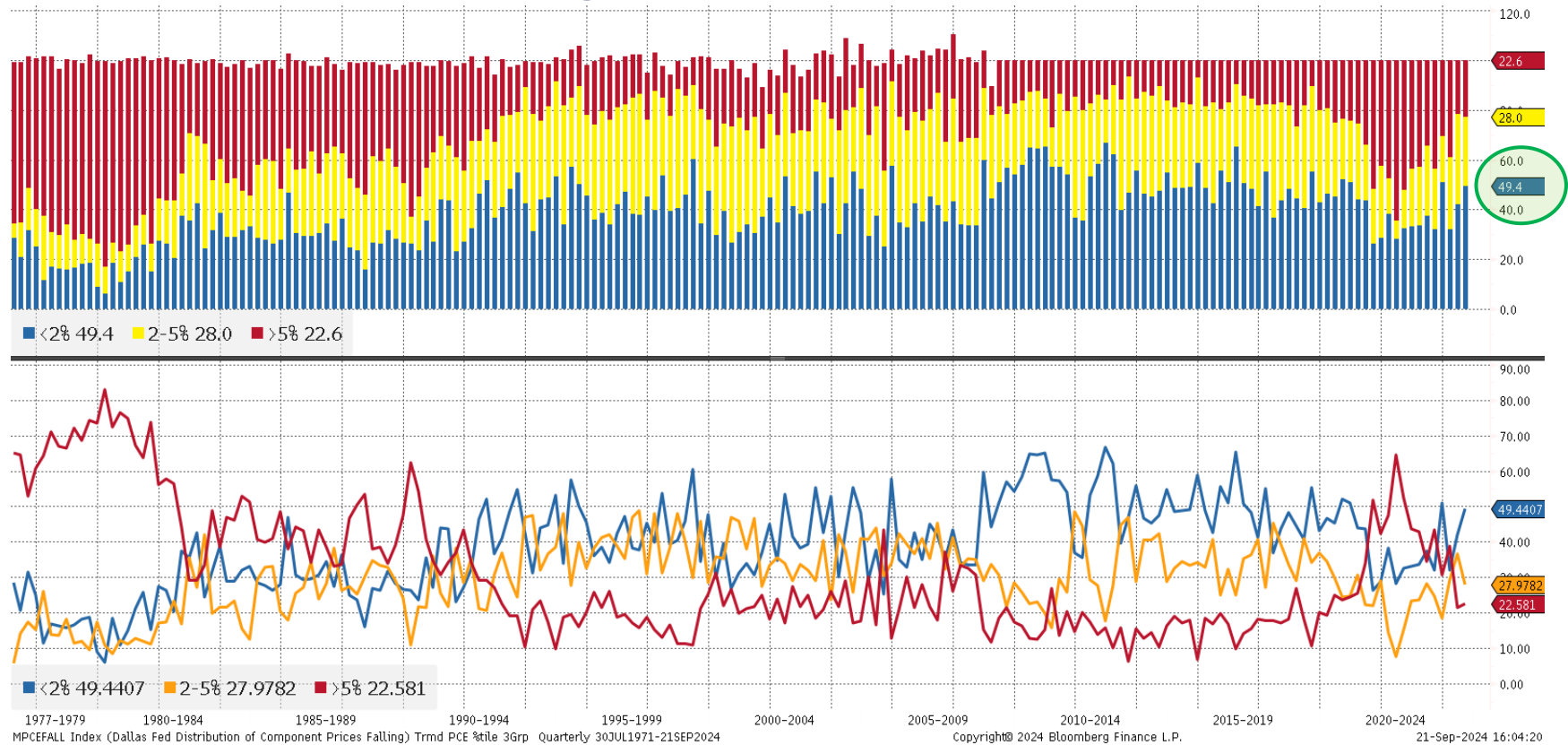
Data Source: Bloomberg

Inflation Summary



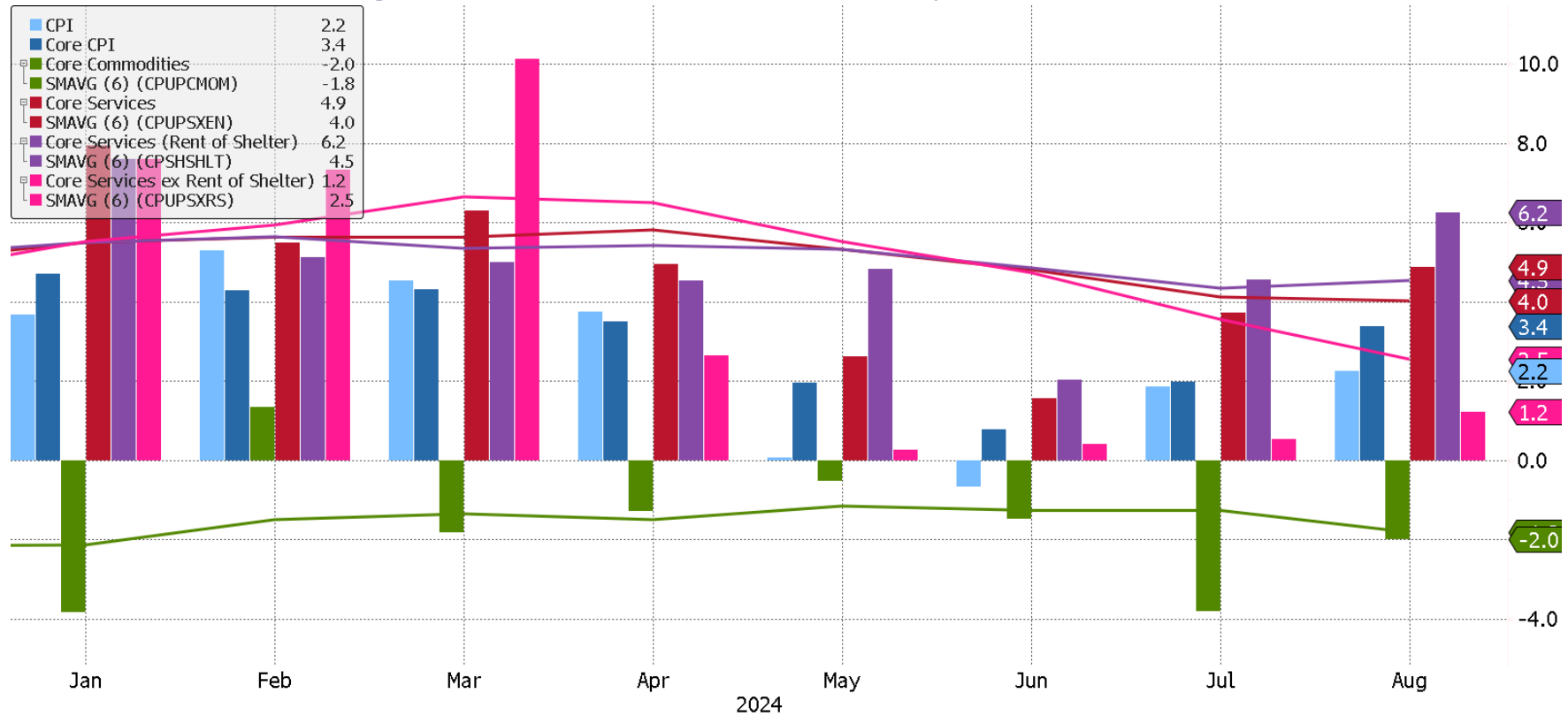
Data Source: Bloomberg

Inflation: Trimmed PCE Segmentation



Data Source: Bloomberg

Inflation: Housing Remains the One “Hot Spot”



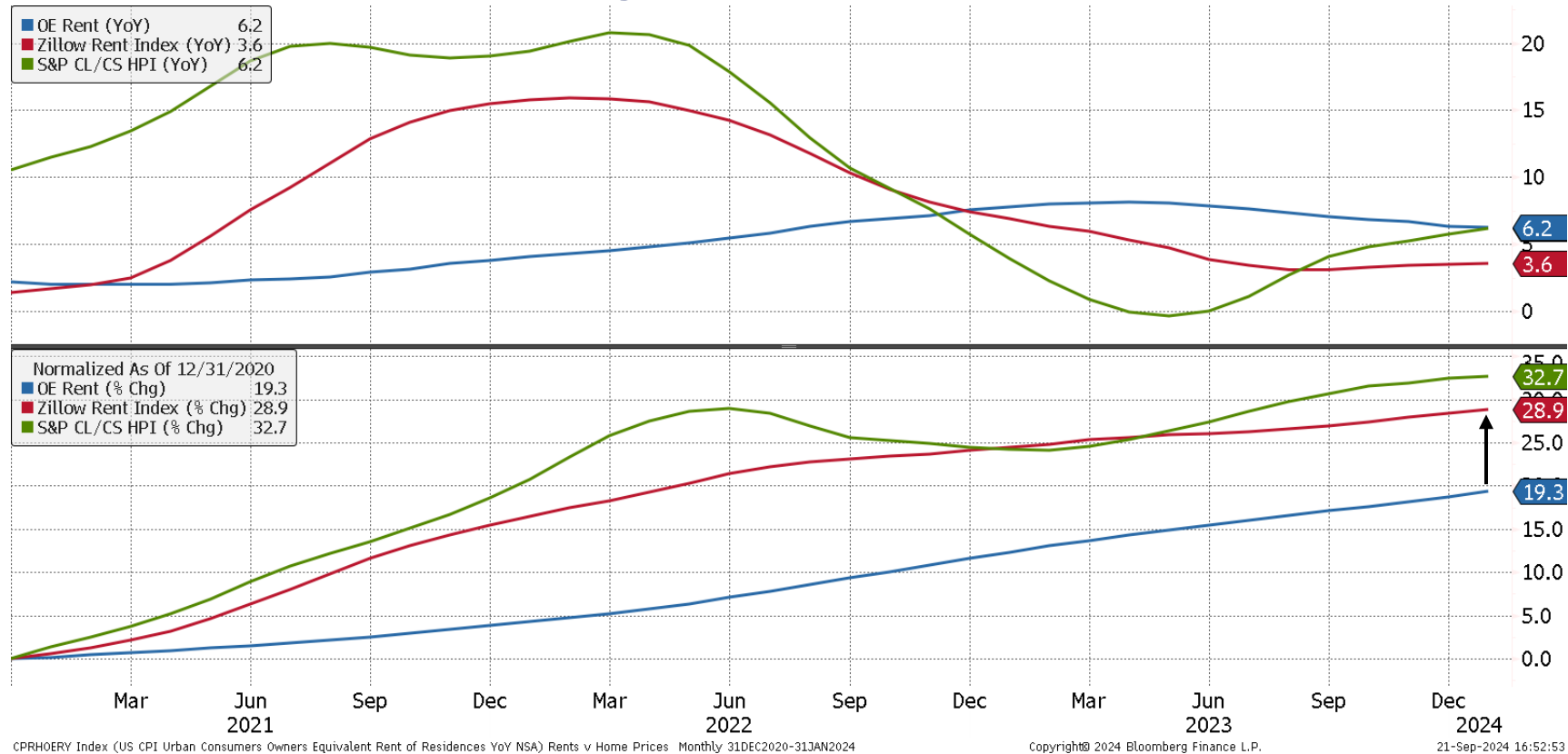
CPI CHNG Index (US CPI Urban Consumers MoM SA) CPI Breakdown Monthly 31JAN2024-31AUG2024

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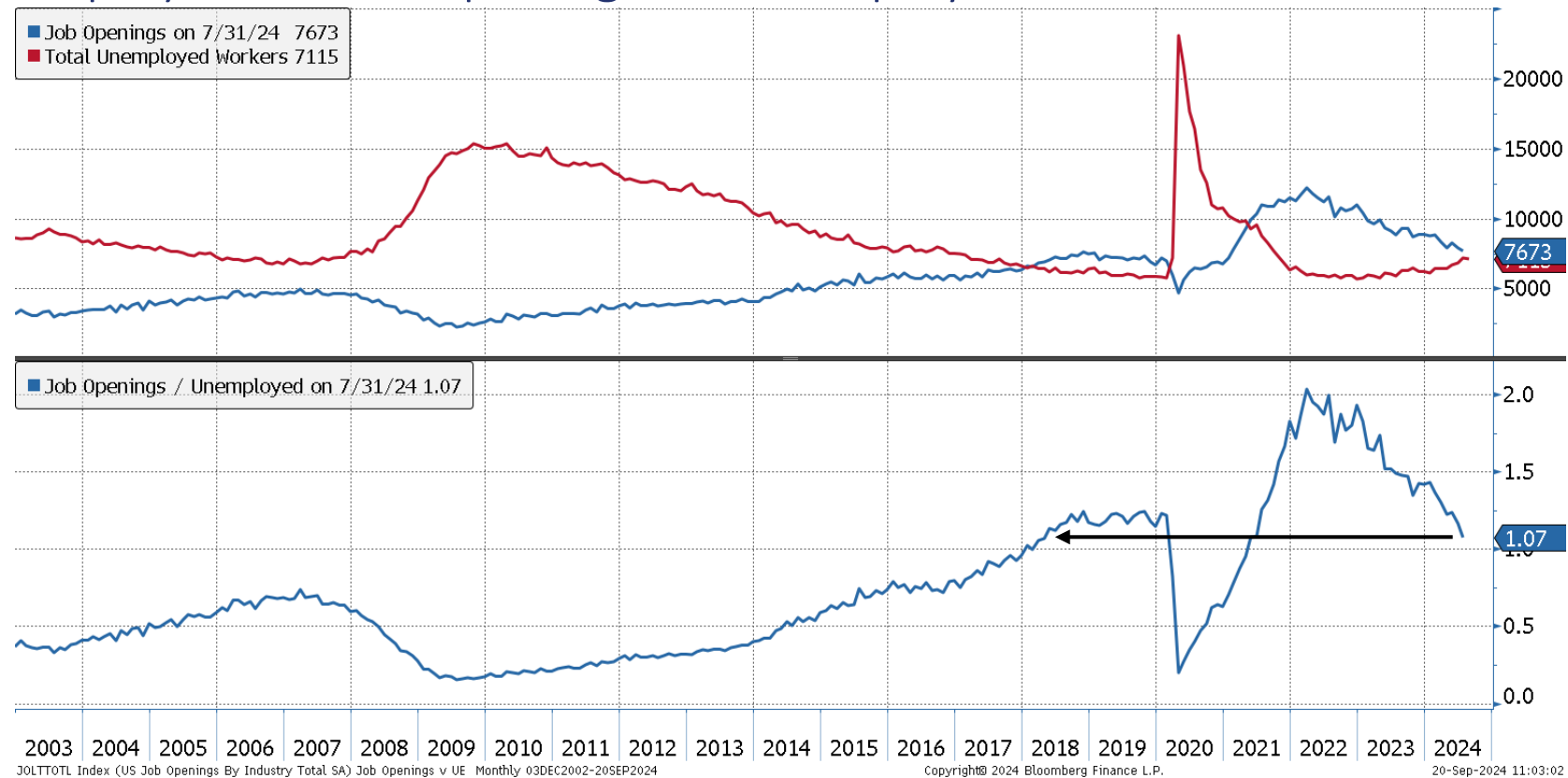
Data Source: Bloomberg

Inflation: Rent of Shelter Lags Other Relevant Price Indexes



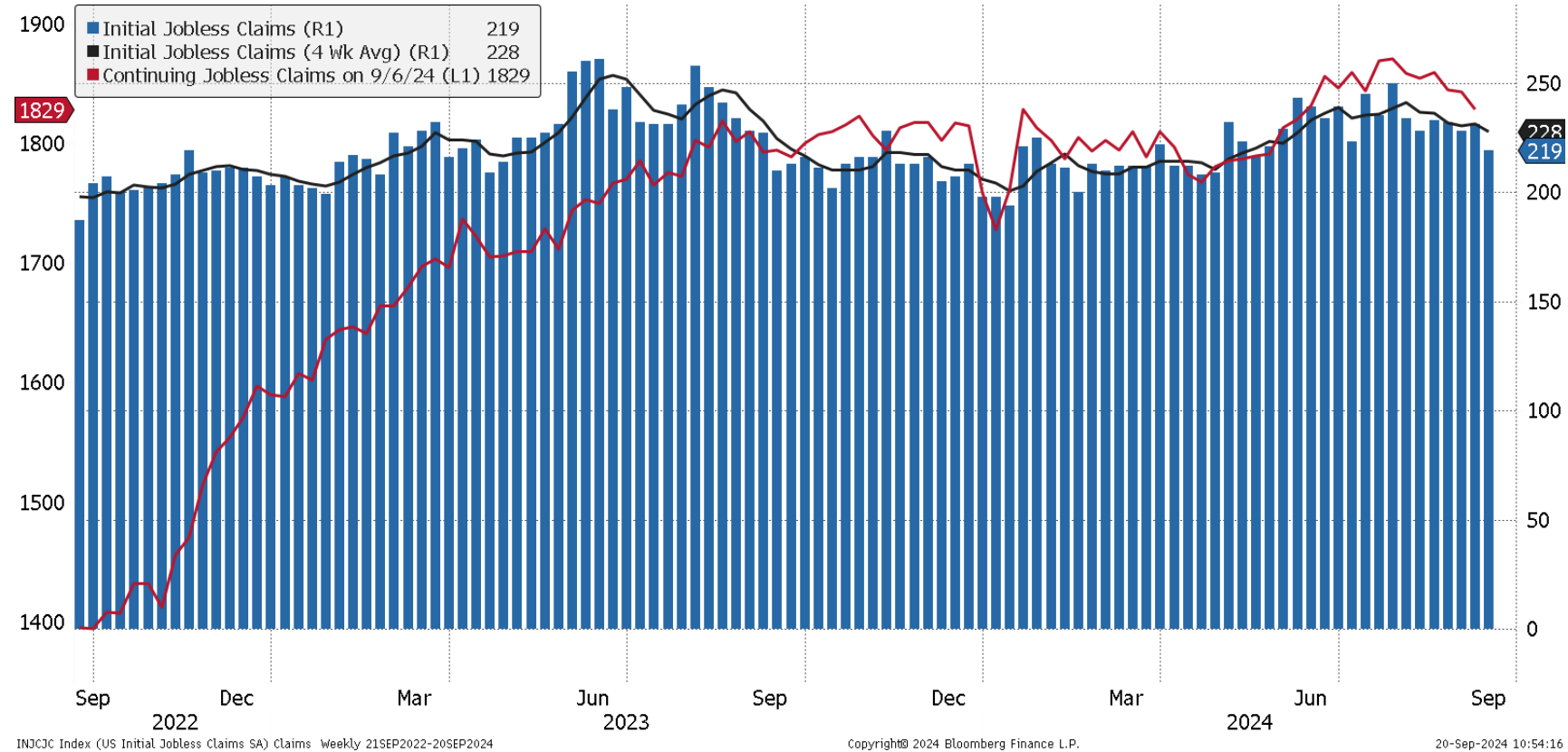
Data Source: Bloomberg

Employment: Job Openings vs. Unemployed



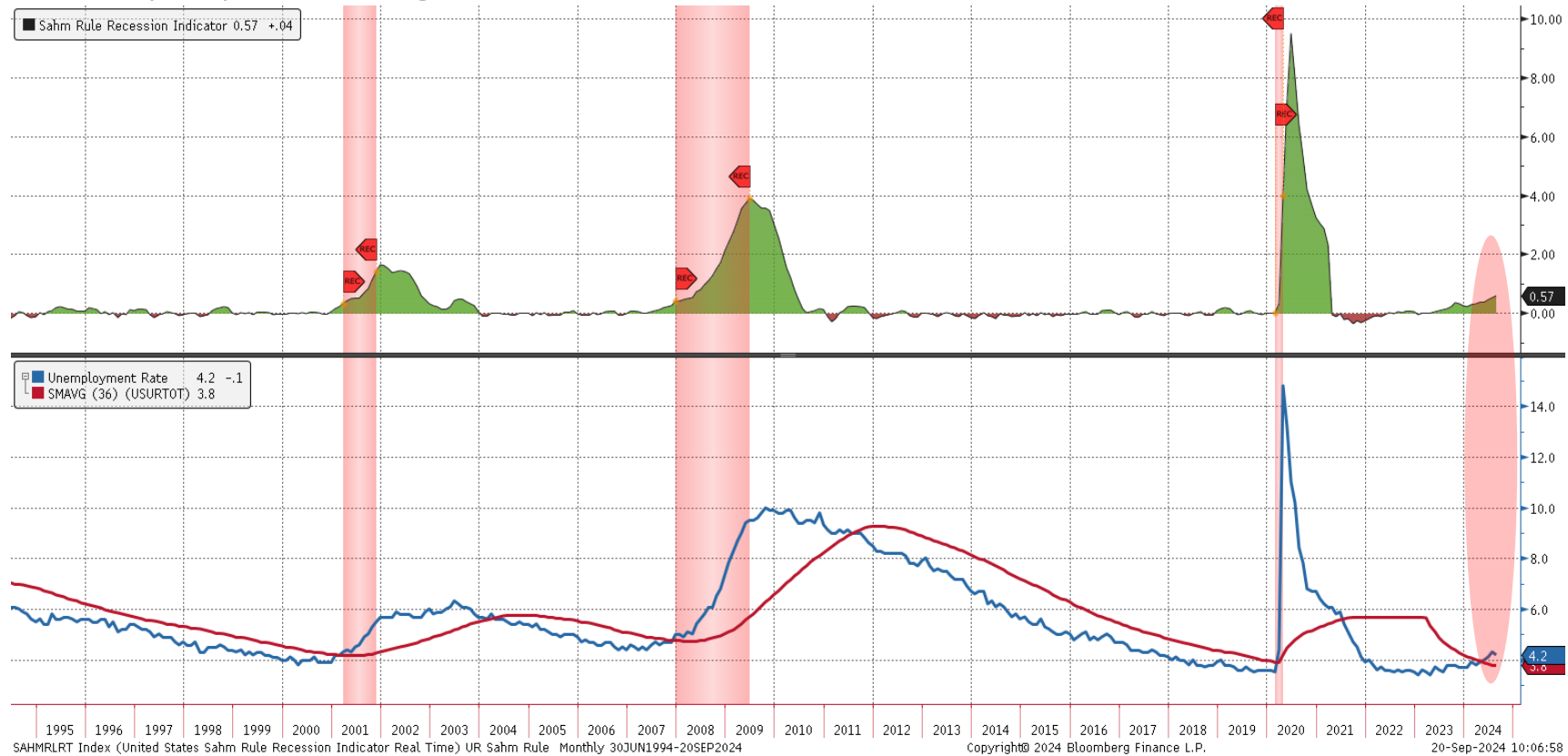
Data Source: Bloomberg

Employment: Claims Remain Contained



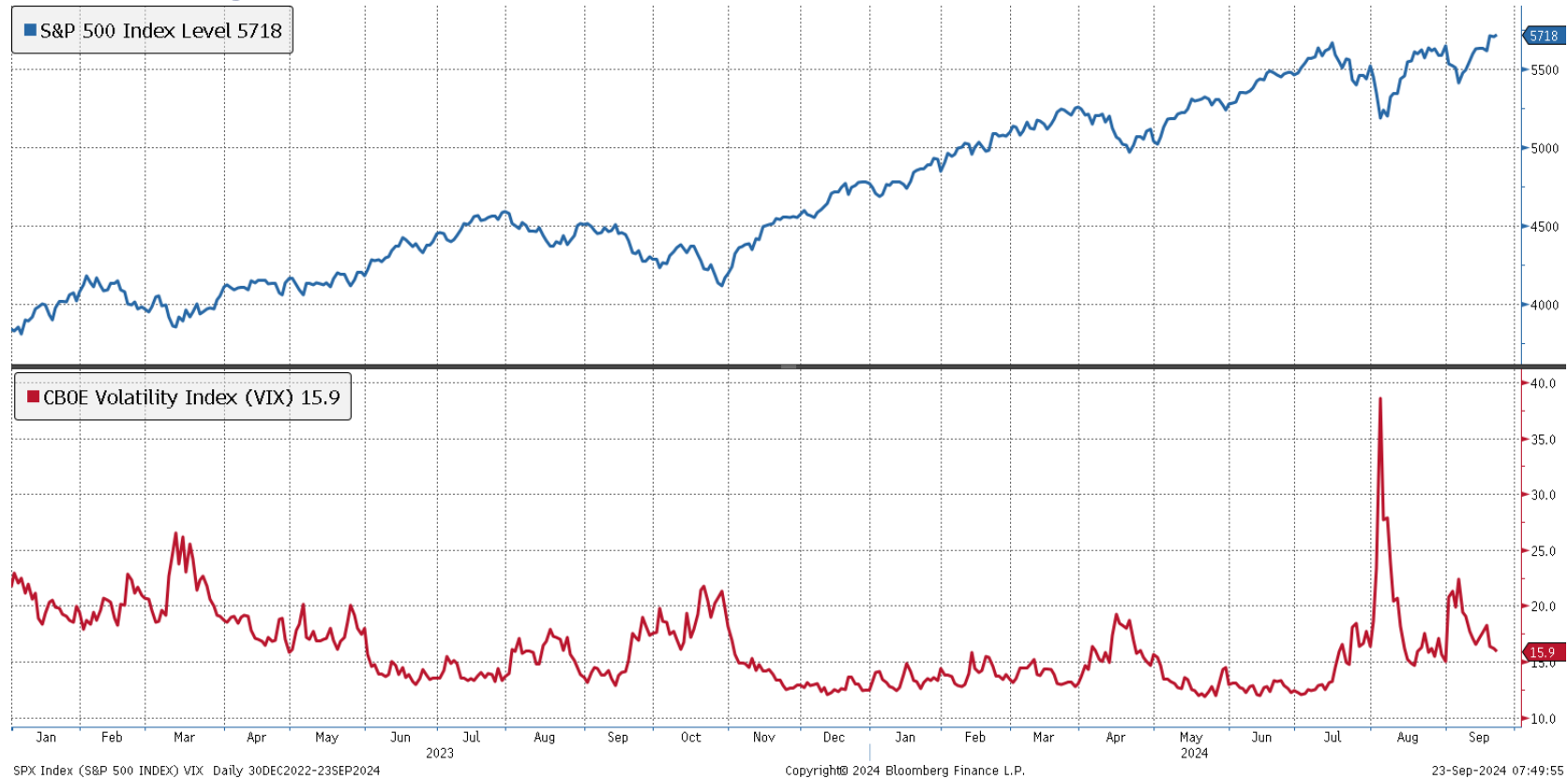
Data Source: Bloomberg

Unemployment Signals (Sahm & DoubleLine)



Data Source: Bloomberg

VIX Pricing

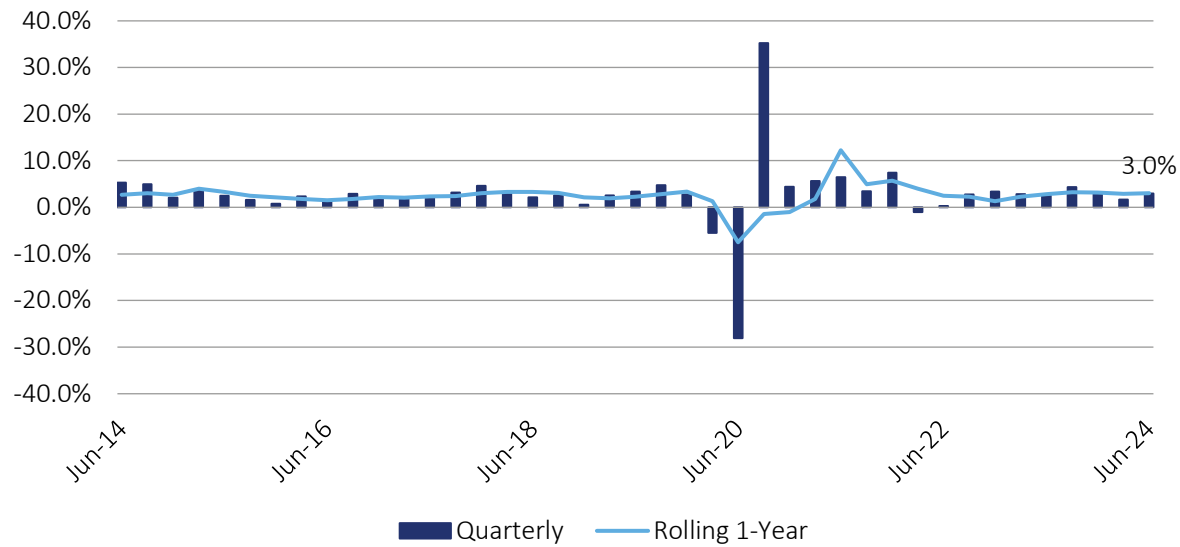


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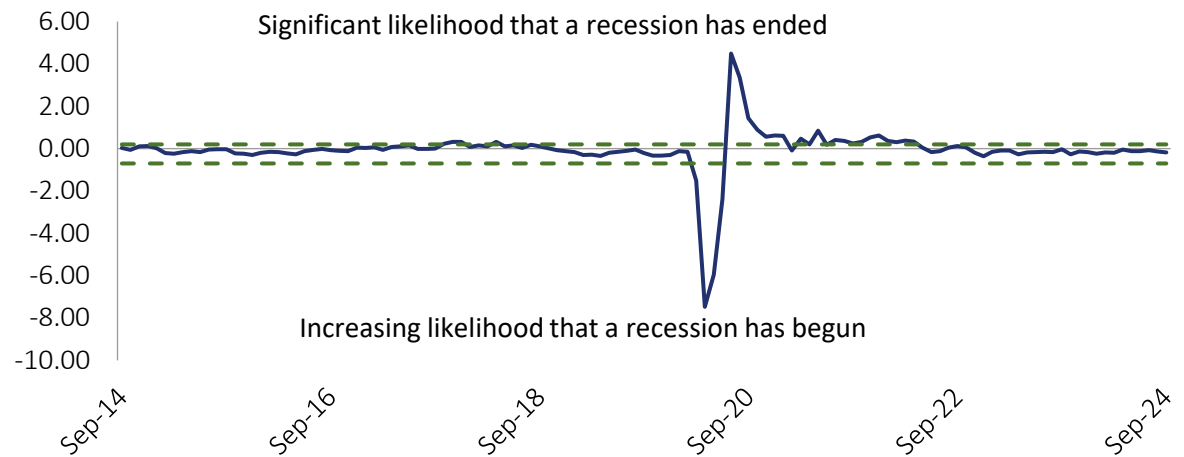
Economic/Market Activity

Economic Growth

Real GDP Growth



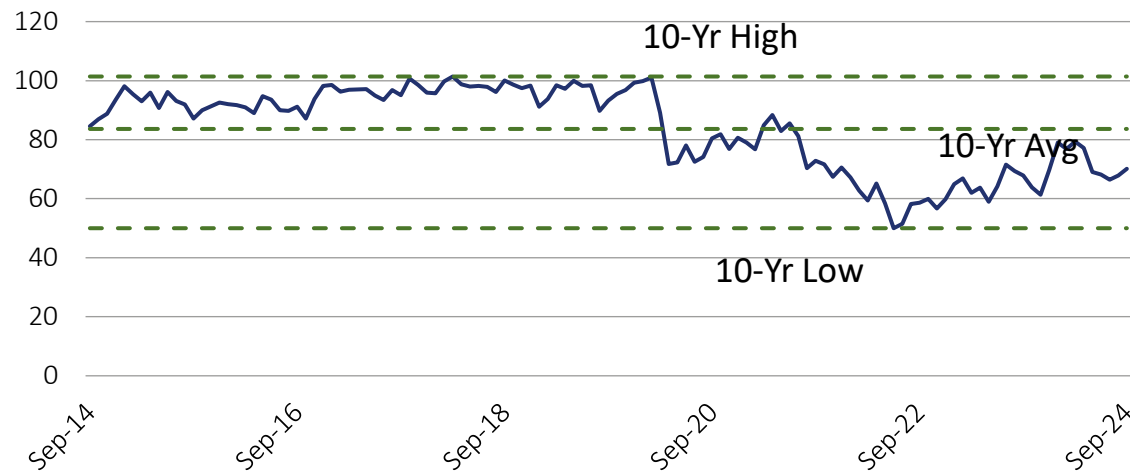
Chicago Fed. National Activity Index (3M MA)



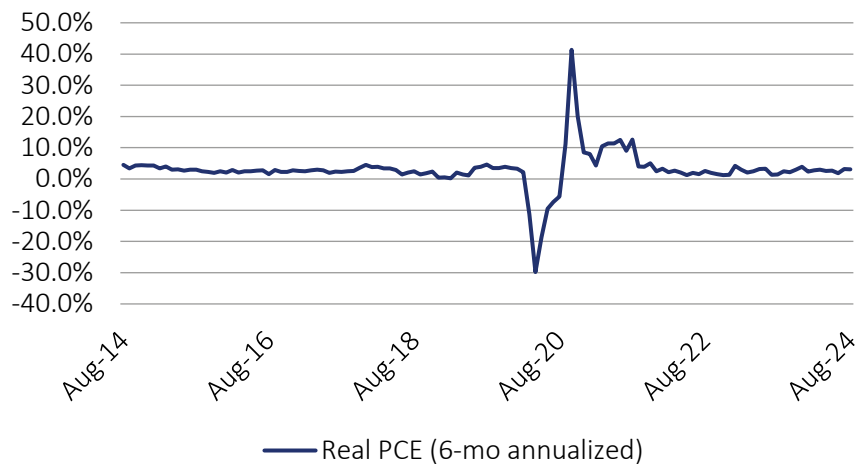
Data Source: Bloomberg

Consumer Activity

University of Michigan: Consumer Sentiment



Real Personal Consumption Expenditures

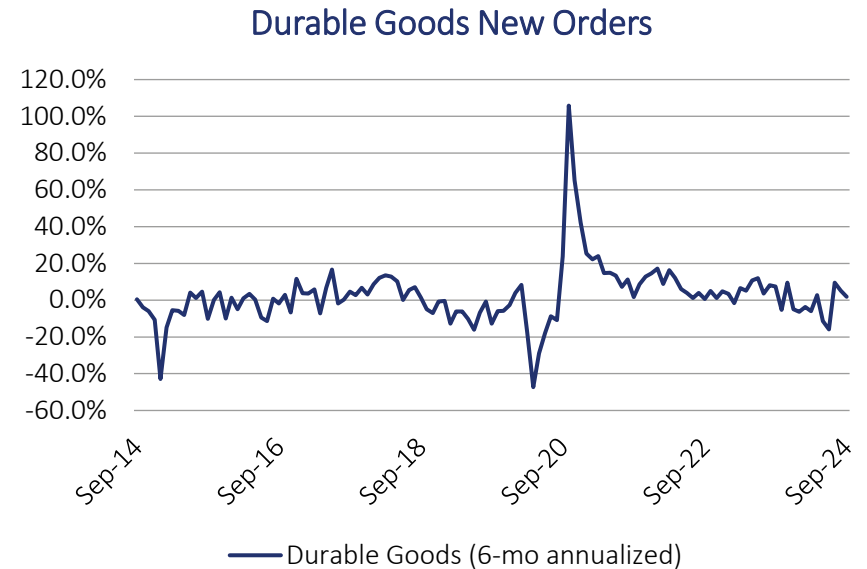
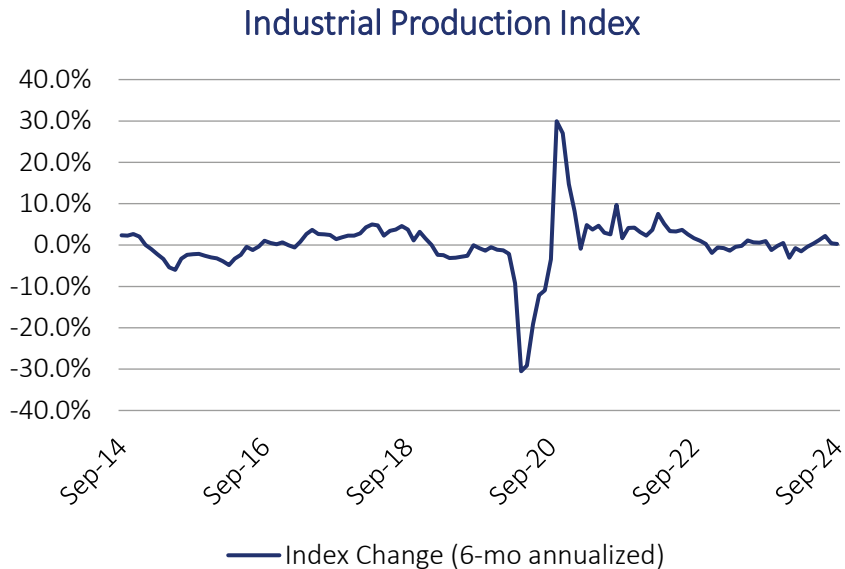
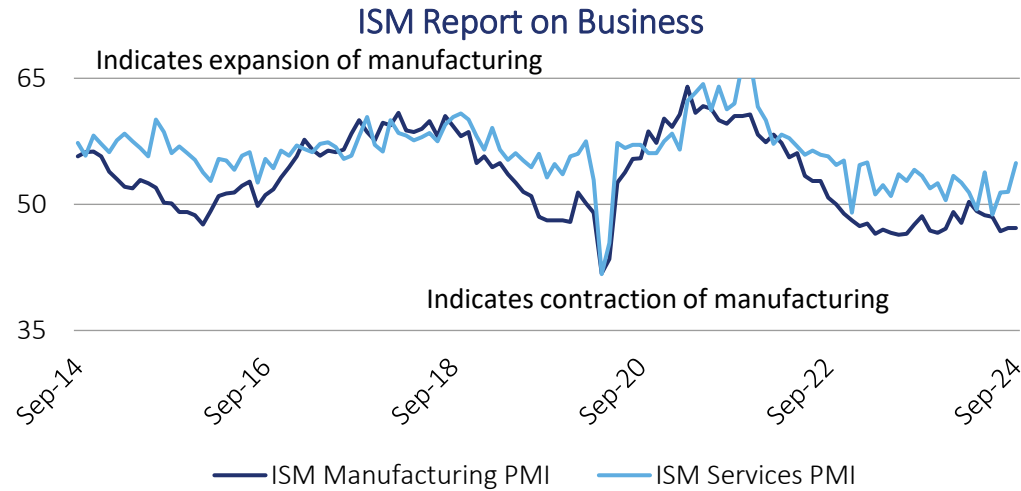


Average Hourly Earnings



Data Source: Bloomberg

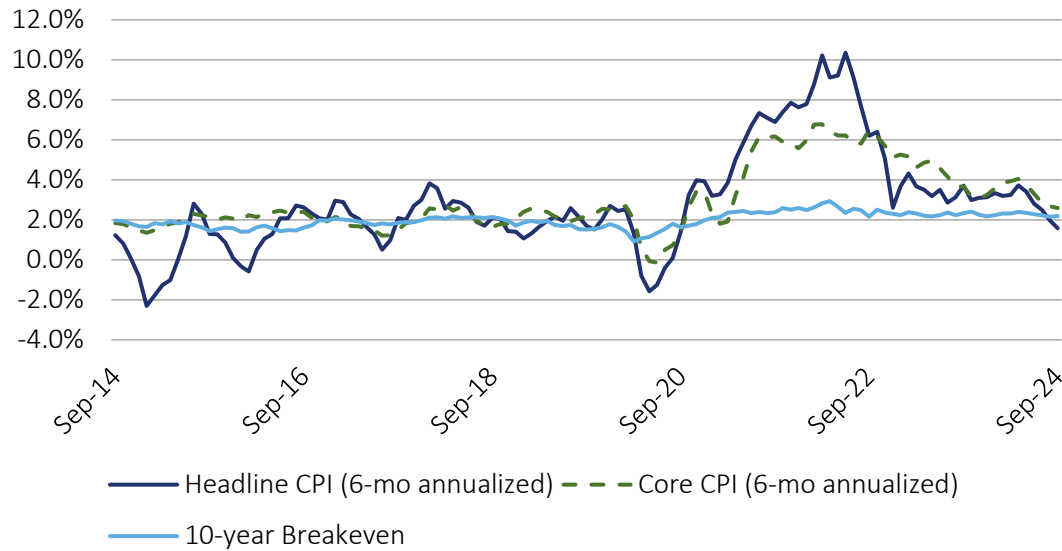
Business Activity



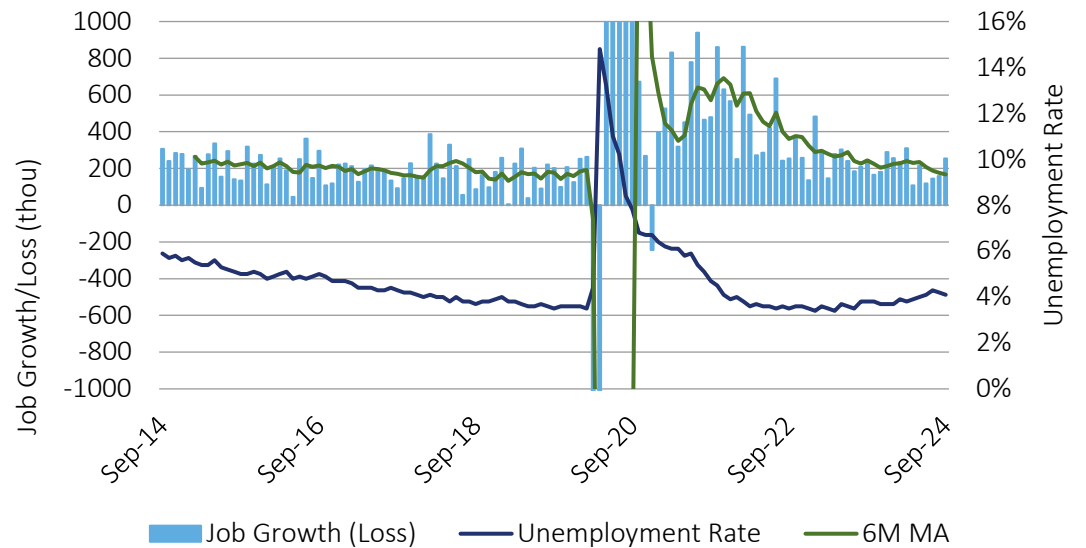
Data Source: Bloomberg

Inflation and Employment

Inflation: Actual & Expected



Employment Gains/Losses

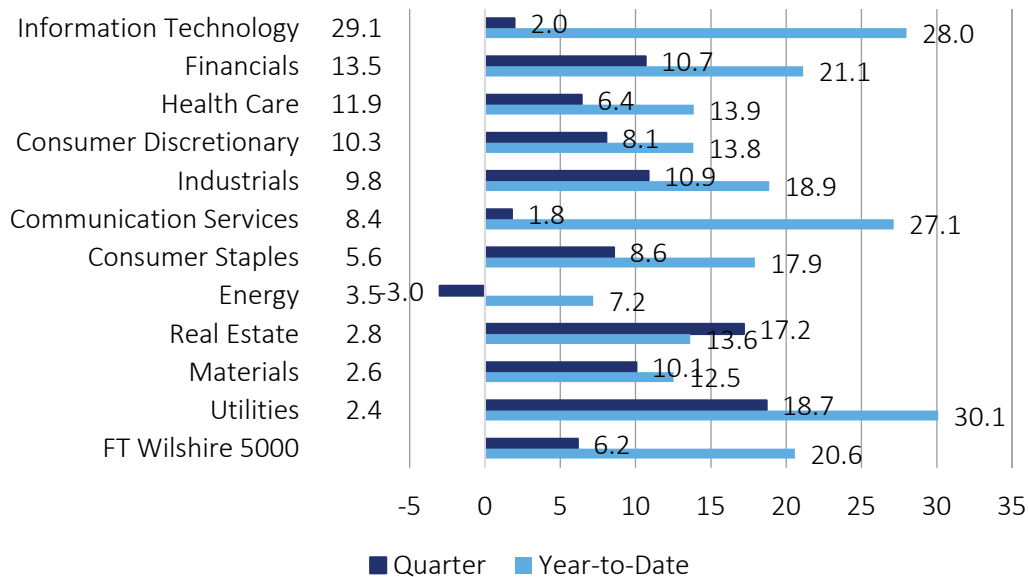


Data Source: Bloomberg

U.S. Equity Market

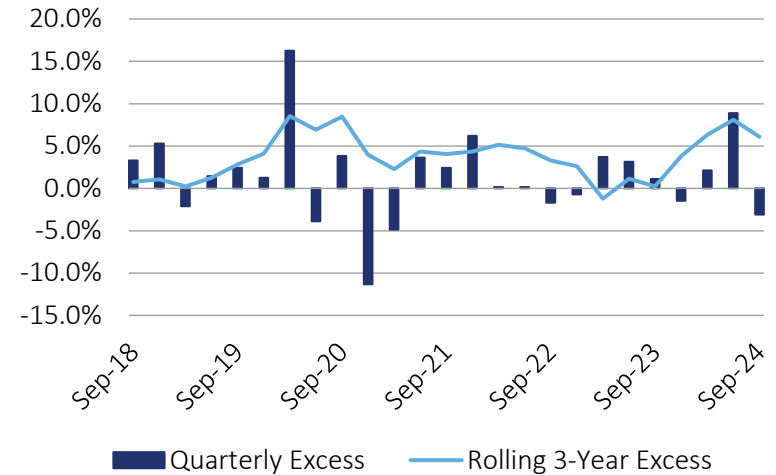
As of 9/30/2024	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
FT Wilshire 5000	6.2	20.6	35.2	10.5	15.5	13.0
FT Wilshire U.S. Large Cap	5.8	21.8	36.3	11.5	16.2	13.4
FT Wilshire U.S. Small Cap	9.1	13.0	28.3	5.1	11.0	9.8
FT Wilshire U.S. Large Growth	3.0	26.4	45.0	12.0	19.9	n/a
FT Wilshire U.S. Large Value	8.8	17.2	27.8	10.6	12.0	n/a
FT Wilshire U.S. Small Growth	8.5	12.8	27.3	2.1	10.0	n/a
FT Wilshire U.S. Small Value	9.8	13.2	29.2	7.9	11.6	n/a
Wilshire REIT Index	15.2	14.9	33.6	4.6	5.4	7.8
MSCI USA Min. Vol. Index	9.3	18.7	27.9	9.3	9.3	11.5
FTSE RAFI U.S. 1000 Index	7.7	17.5	30.6	11.2	14.2	11.4

U.S. Sector Weight and Return (%)

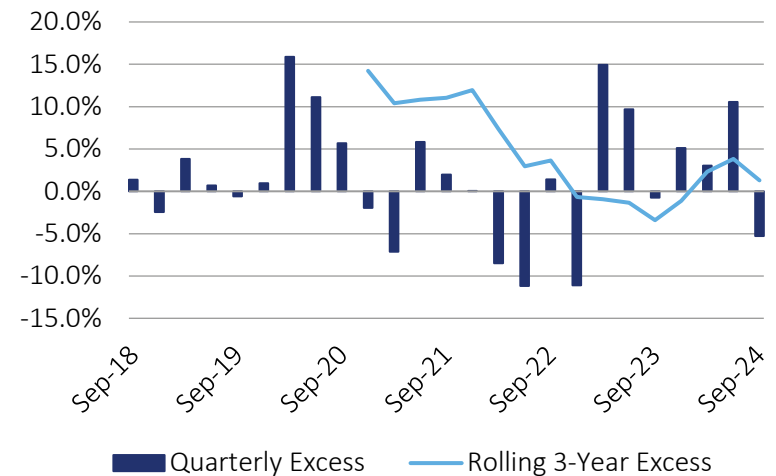


Data Sources: Bloomberg, Wilshire Atlas

Large Cap vs. Small Cap



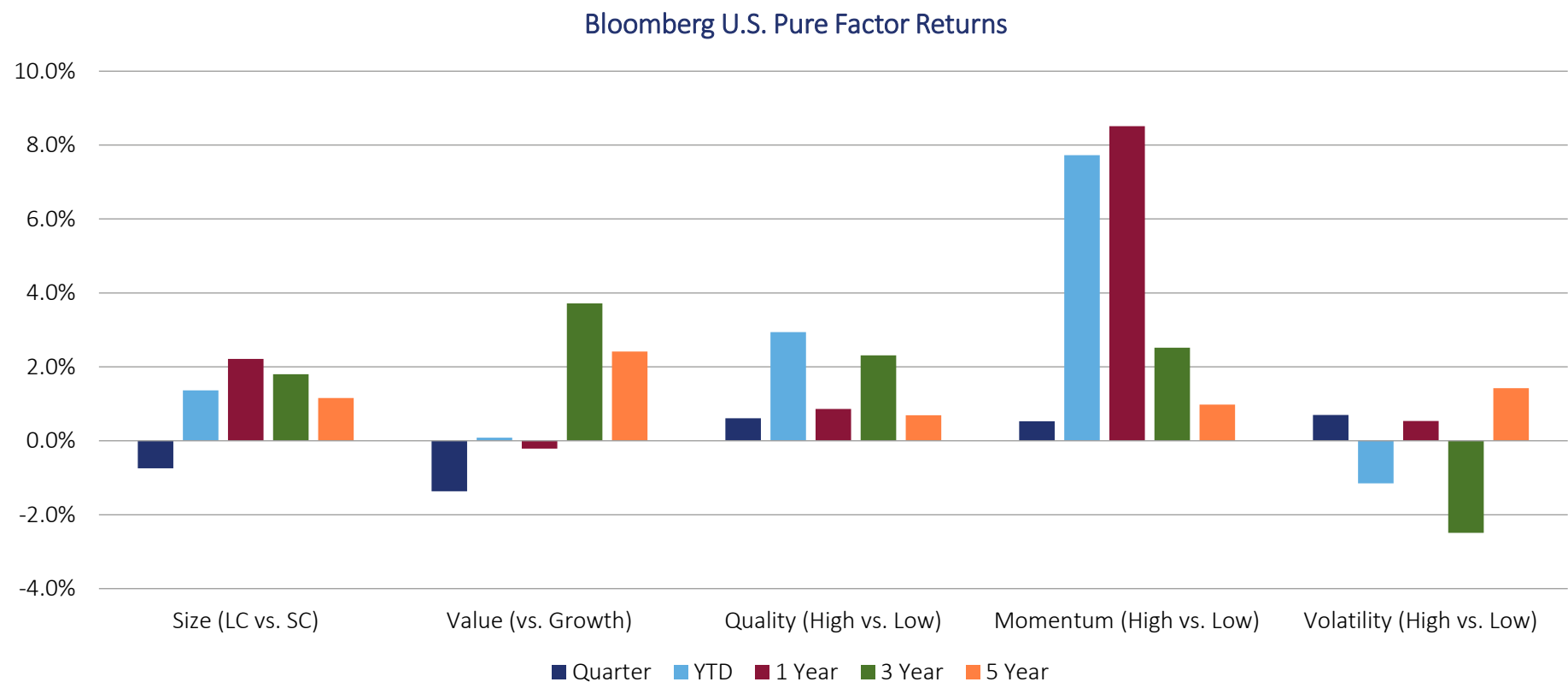
Large Growth vs Large Value



U.S. Factor Returns

Factor returns represent the contribution from large cap, value, etc. stocks within Bloomberg's Portfolio & Risk Analytics module

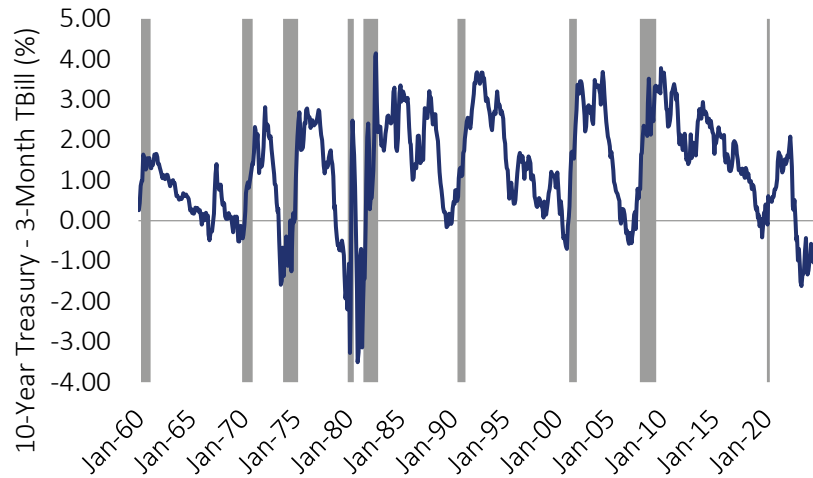
Value detracted from returns meaningfully for the quarter but is a positive contributor for the 3 and 5 year periods



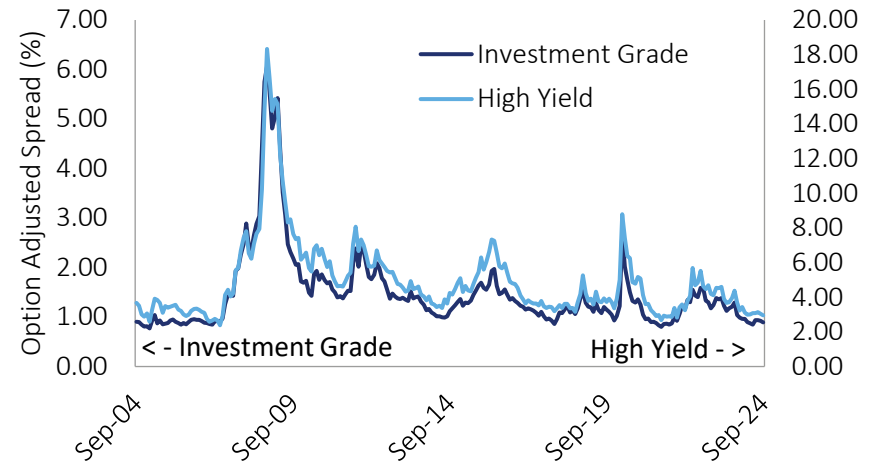
Data Source: Bloomberg

Risk Monitor

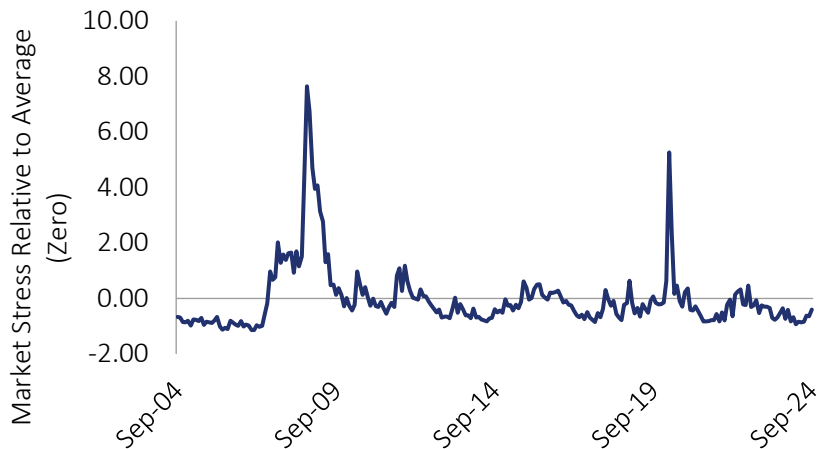
Yield Curve Slope vs Recessions (IN GRAY)



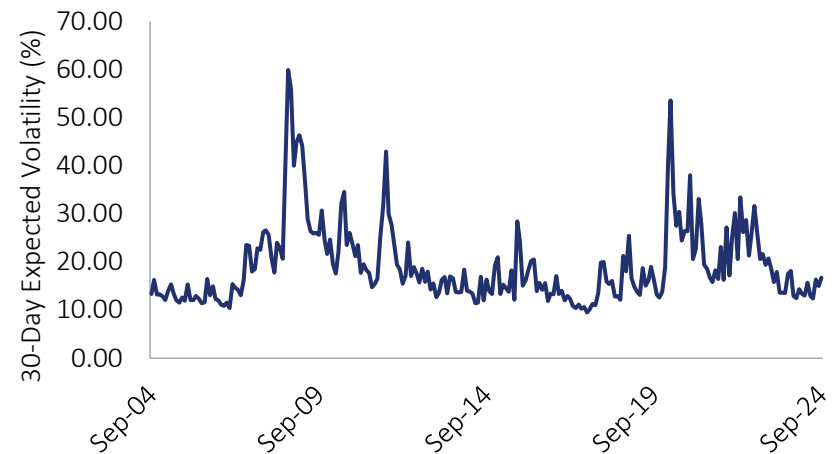
Bloomberg Credit Indexes



St. Louis Fed. Financial Stress Index



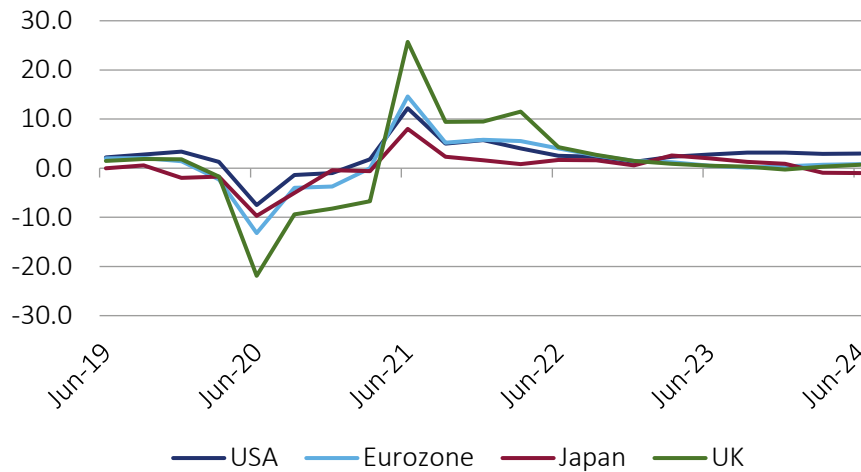
CBOE Volatility Index



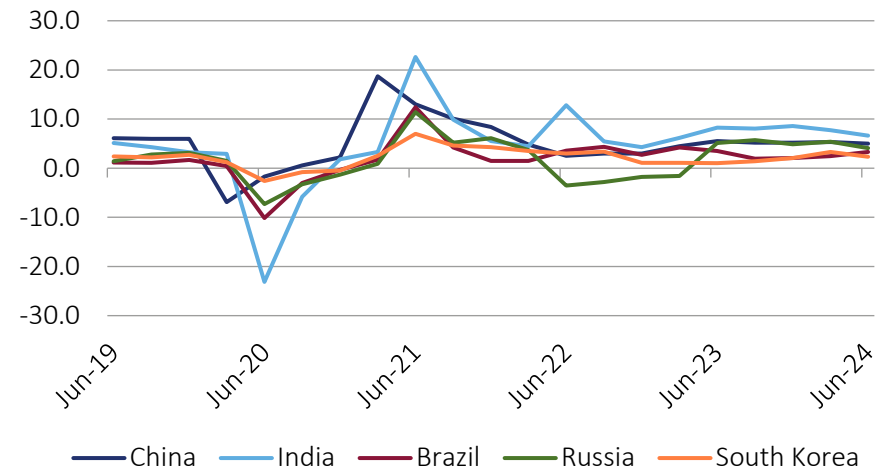
Data Source: Bloomberg

Non-U.S. Growth and Inflation

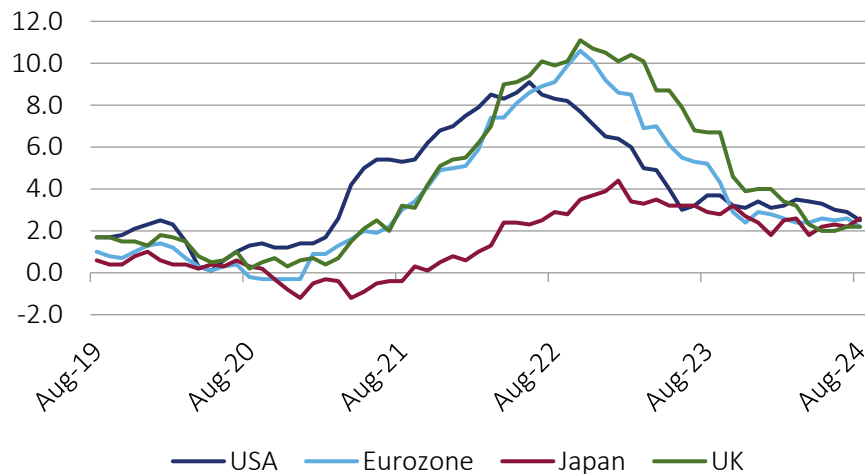
Developed Markets Real GDP Growth YoY (%)



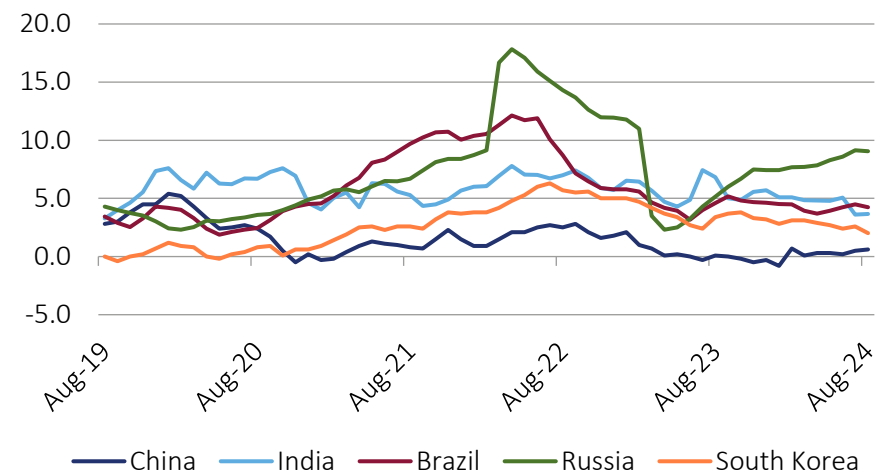
Emerging Markets Real GDP Growth YoY (%)



Developed Markets CPI Growth YoY (%)



Emerging Markets CPI Growth YoY (%)

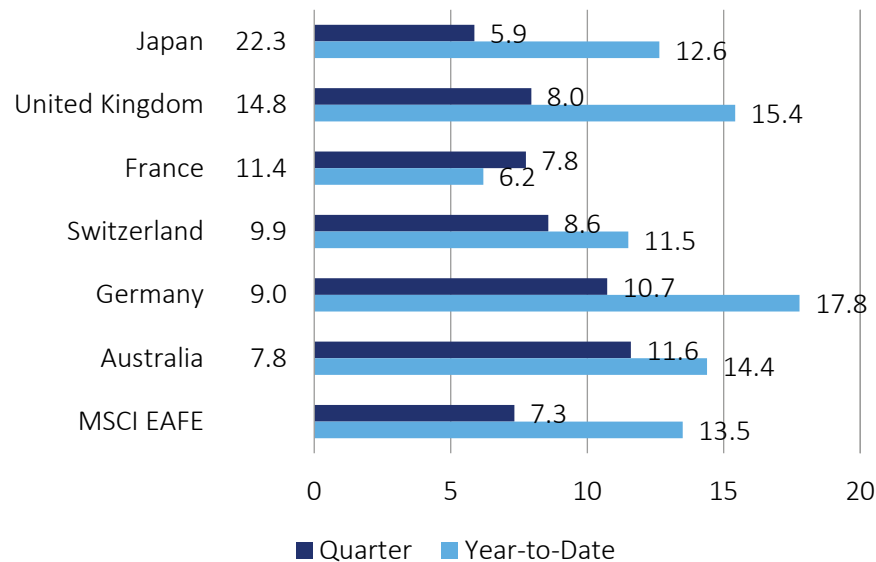


Data Source: Bloomberg

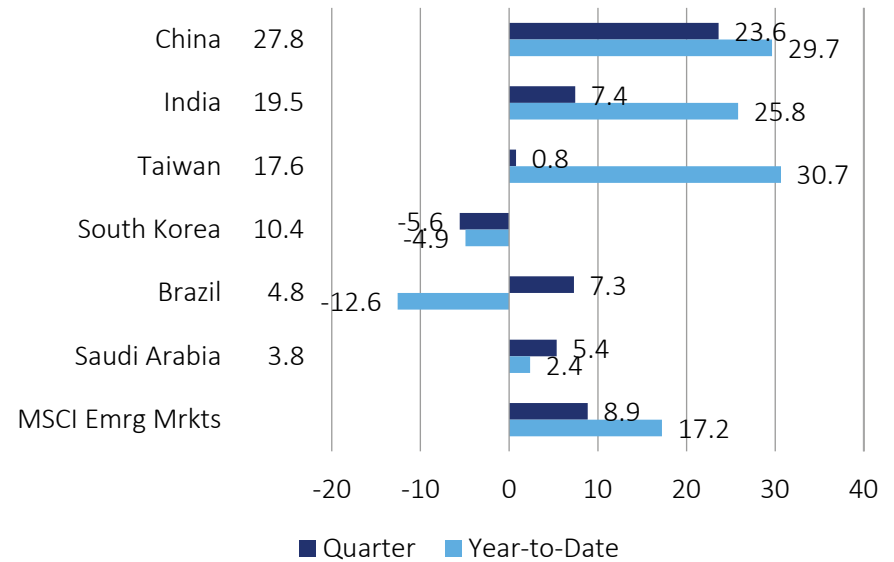
Non-U.S. Equity Market

As of 9/30/2024	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
MSCI ACWI ex-US (\$G)	8.2	14.7	26.0	4.7	8.1	5.7
MSCI EAFE (\$G)	7.3	13.5	25.4	6.0	8.7	6.2
MSCI Emerging Markets (\$G)	8.9	17.2	26.5	0.8	6.1	4.4
MSCI Frontier Markets (\$G)	8.5	12.5	21.0	2.0	2.5	0.2
MSCI ACWI ex-US Growth (\$G)	7.0	14.3	27.1	1.1	7.4	6.3
MSCI ACWI ex-US Value (\$G)	9.4	14.9	24.9	7.8	8.6	5.1
MSCI ACWI ex-US Small (\$G)	9.0	12.4	23.8	1.9	8.7	6.5
MSCI ACWI Minimum Volatility	10.0	15.9	23.5	6.4	6.7	8.4
MSCI EAFE Minimum Volatility	11.2	13.7	22.0	3.8	4.3	5.6
FTSE RAFI Developed ex-US	7.7	12.8	23.6	7.8	9.5	5.8
MSCI EAFE LC (G)	0.9	12.5	18.1	8.5	9.3	7.9
MSCI Emerging Markets LC (G)	6.8	18.7	25.4	3.3	7.8	6.9

Developed Markets Weight and Return (%)



Emerging Markets Weight and Return (%)

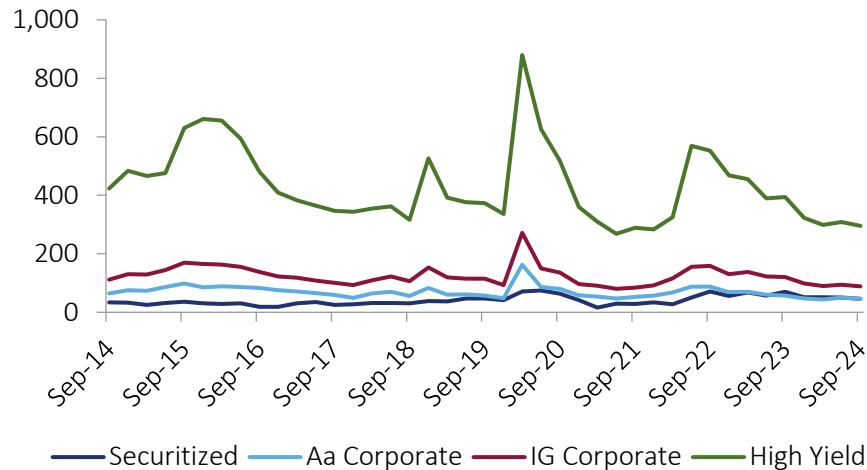


Data Source: Bloomberg

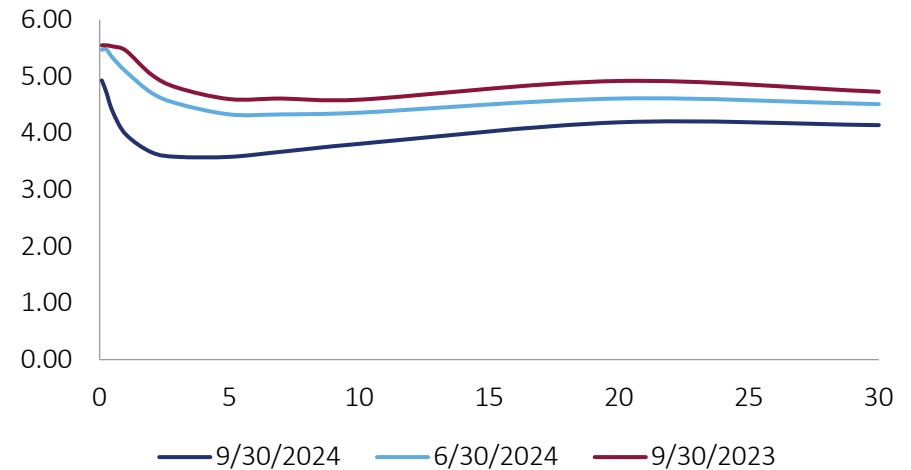
U.S. Fixed Income

As of 9/30/2024	YTW	Dur.	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg Aggregate	4.2	6.2	5.2	4.4	11.6	-1.4	0.3	1.8
Bloomberg Treasury	3.8	6.1	4.7	3.8	9.7	-1.8	-0.2	1.3
Bloomberg Gov't-Rel.	4.3	5.5	4.6	4.6	10.3	-0.5	0.6	2.0
Bloomberg Securitized	4.5	5.6	5.4	4.6	12.2	-1.1	0.1	1.5
Bloomberg Corporate	4.7	7.2	5.8	5.3	14.3	-1.2	1.2	2.9
Bloomberg LT Gov't/Credit	4.7	14.2	8.0	3.5	17.2	-6.2	-2.0	2.3
Bloomberg LT Treasury	4.2	15.4	7.8	2.4	15.4	-8.4	-4.3	1.1
Bloomberg LT Gov't-Rel.	5.2	11.9	7.2	4.5	16.3	-3.6	-1.1	2.7
Bloomberg LT Corporate	5.2	13.1	8.2	4.5	19.2	-4.3	-0.3	3.3
Bloomberg U.S. TIPS*	3.7	7.3	4.1	4.9	9.8	-0.6	2.6	2.5
Bloomberg High Yield	7.0	2.9	5.3	8.0	15.7	3.1	4.7	5.0
S&P/LSTA Leveraged Loan	8.9	0.3	2.0	6.5	9.6	6.5	5.7	4.9
Treasury Bills	4.6	0.3	1.4	4.1	5.6	3.5	2.3	1.7

Fixed Income Option Adjusted Spread (bps)



Treasury Yield Curve (%)



*Yield and Duration statistics are for a proxy index based on similar maturity, the Bloomberg Barclays U.S. Treasury 7-10 Year Index.

Data Source: Bloomberg

Federal Reserve

The Federal Open Market Committee decreased their overnight rate by 0.50% at their September meeting

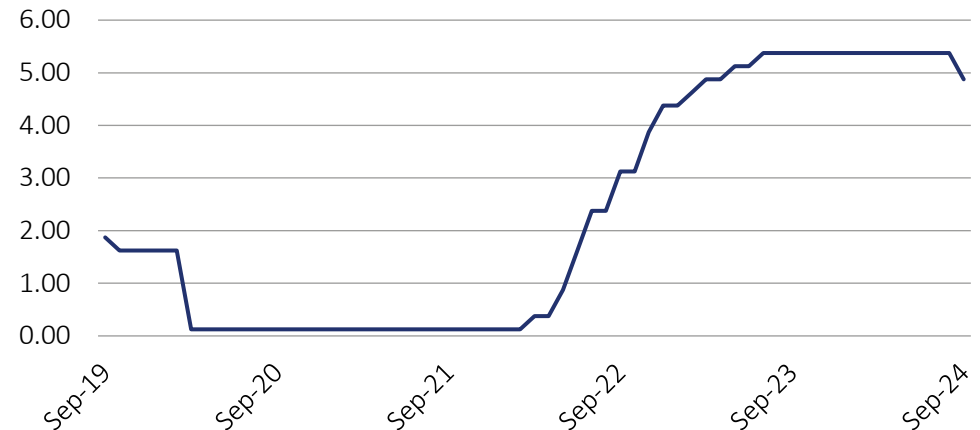
QE4 was larger than the 3 phases of quantitative easing – combined – following the global financial crisis

The Fed's balance sheet has begun to shrink again during the past year

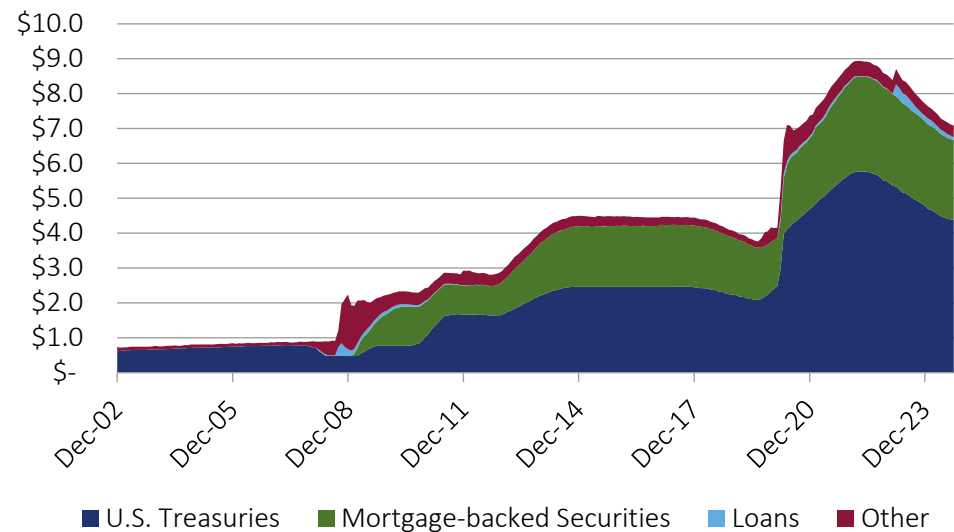
	Announced	Closed	Amount (bil)
QE1	11/25/2008	3/31/2010	\$1,403
QE2	11/3/2010	6/29/2012	\$568
QE3	9/13/2012	10/29/2014	\$1,674
QE4	3/23/2020	3/15/2022	\$4,779

Data Source: Bloomberg

Federal Funds Rate (Mid %)



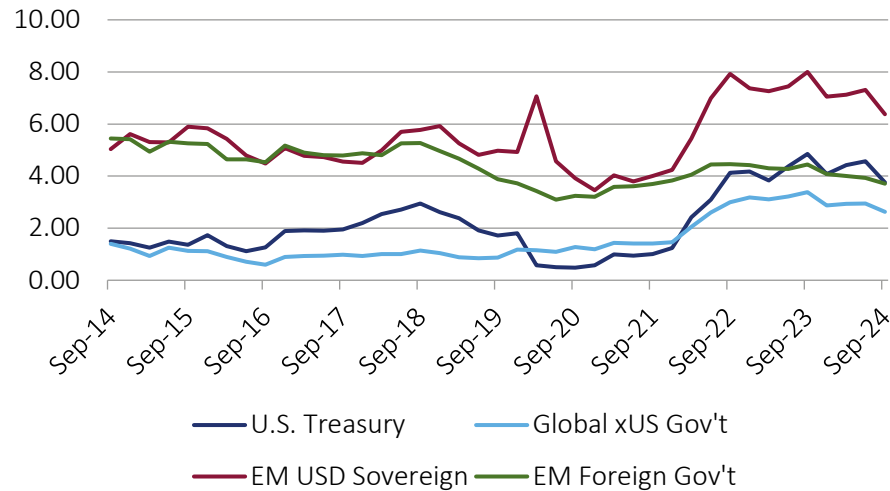
Federal Reserve Balance Sheet (\$T)



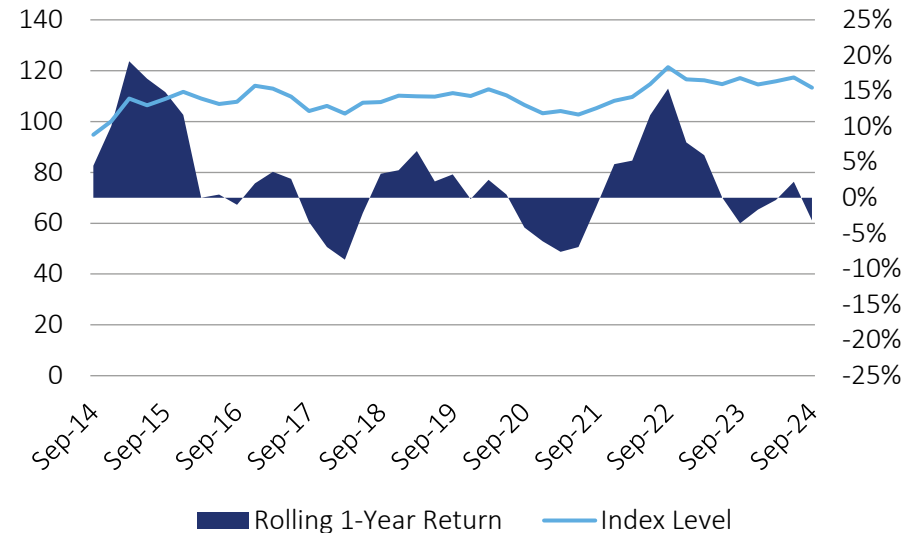
Non-U.S. Fixed Income

As of 9/30/2024	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
Developed Markets						
Bloomberg Global Aggregate xUS	8.5	2.8	12.3	-4.4	-1.9	-0.5
Bloomberg Global Aggregate xUS*	3.5	4.2	9.8	0.6	0.6	2.6
Bloomberg Global Inflation Linked xUS	7.5	1.8	13.9	-7.5	-2.7	-0.4
Bloomberg Global Inflation Linked xUS*	2.5	0.1	7.6	-4.9	-2.1	2.4
Emerging Markets (Hard Currency)						
Bloomberg EM USD Aggregate	5.8	8.2	16.9	-0.2	1.4	3.2
Emerging Markets (Foreign Currency)						
Bloomberg EM Local Currency Gov't	7.0	5.7	13.0	1.3	2.2	1.7
Bloomberg EM Local Currency Gov't*	3.2	7.0	11.2	4.0	2.9	3.3
Euro vs. Dollar	3.9	0.9	5.3	-1.3	0.4	-1.3
Yen vs. Dollar	12.0	-1.8	4.0	-8.2	-5.5	-2.7
Pound vs. Dollar	5.8	5.1	9.6	-0.2	1.7	-1.9

Global Fixed Income Yield to Worst (%)



U.S. Dollar Index: Advanced Economies

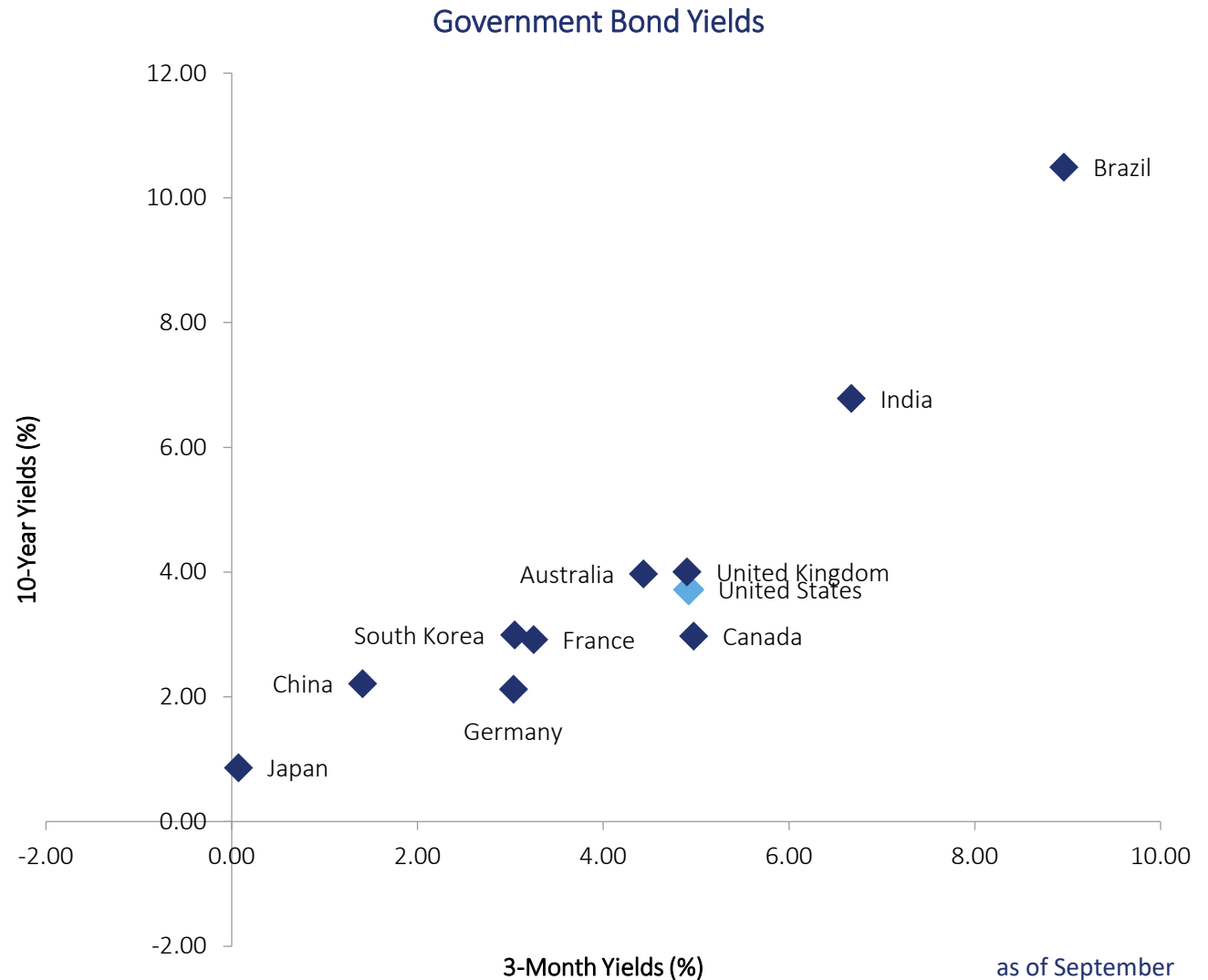


*Returns are reported in terms of local market investors, which removes currency effects.

Data Source: Bloomberg

Global Interest Rates

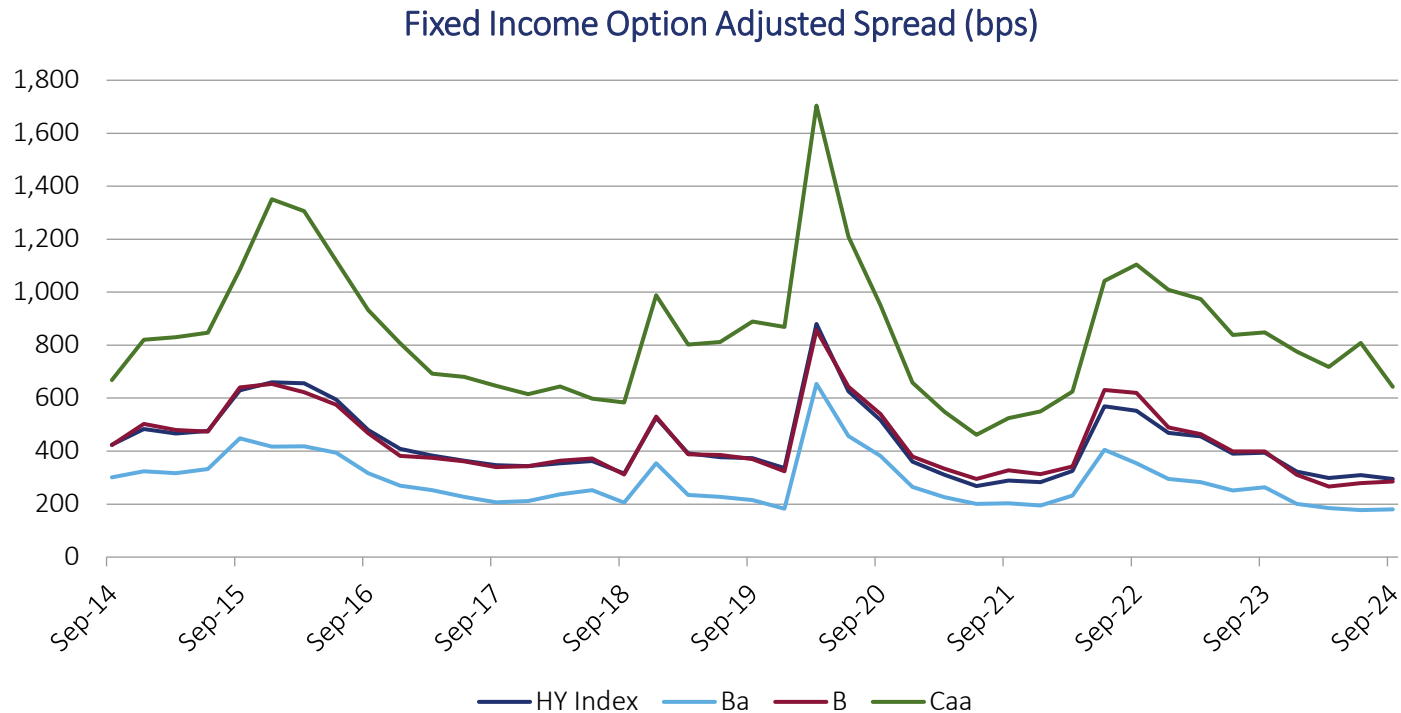
Short-term rates have turned positive across the globe; longer-term rates near 4.0% in the U.K. and Australia



Data Source: Bloomberg

High Yield Bond Market

As of 9/30/2024	Weight	YTW	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg High Yield		7.0	5.3	8.0	15.7	3.1	4.7	5.0
S&P LSTA Leveraged Loan		8.9	1.9	6.1	9.5	6.2	5.4	4.5
High Yield Quality Distribution								
Ba U.S. High Yield	50.5%	5.8	4.3	6.8	14.7	2.3	4.7	5.3
B U.S. High Yield	36.4%	7.0	4.5	7.0	14.5	3.3	4.2	4.6
Caa U.S. High Yield	11.9%	10.4	10.2	12.5	20.3	4.3	5.4	4.9
Ca to D U.S. High Yield	1.2%	24.0	22.4	45.1	52.5	9.6	10.1	1.8



Data Source: Bloomberg

Asset Class Performance

Asset Class Returns - Best to Worst

2019	2020	2021	2022	2023	2024 YTD	Annualized 5-Year as of 9/24
U.S. Equity 31.0%	U.S. Equity 20.8%	REITs 46.2%	Commodities 16.1%	U.S. Equity 26.1%	U.S. Equity 20.6%	U.S. Equity 15.5%
REITs 25.8%	Emrg Mrkts 18.7%	Commodities 27.1%	T-Bills 1.3%	Developed 18.9%	Emrg Mrkts 17.2%	Developed 8.7%
Developed 22.7%	U.S. TIPS 11.0%	U.S. Equity 26.7%	High Yield -11.2%	REITs 16.1%	REITs 14.9%	Commodities 7.8%
Emrg Mrkts 18.9%	Developed 8.3%	Developed 11.8%	U.S. TIPS -11.8%	High Yield 13.4%	Developed 13.5%	Emrg Mrkts 6.1%
High Yield 14.3%	Core Bond 7.5%	U.S. TIPS 6.0%	Core Bond -13.0%	Emrg Mrkts 10.3%	High Yield 8.0%	REITs 5.4%
Core Bond 8.7%	High Yield 7.1%	High Yield 5.3%	Developed -14.0%	Core Bond 5.5%	Commodities 5.9%	High Yield 4.7%
U.S. TIPS 8.4%	T-Bills 0.7%	T-Bills 0.0%	U.S. Equity -19.0%	T-Bills 5.1%	U.S. TIPS 4.9%	U.S. TIPS 2.6%
Commodities 7.7%	Commodities -3.1%	Core Bond -1.5%	Emrg Mrkts -19.7%	U.S. TIPS 3.9%	Core Bond 4.4%	T-Bills 2.3%
T-Bills 2.3%	REITs -7.9%	Emrg Mrkts -2.2%	REITs -26.8%	Commodities -1.3%	T-Bills 4.1%	Core Bond 0.3%

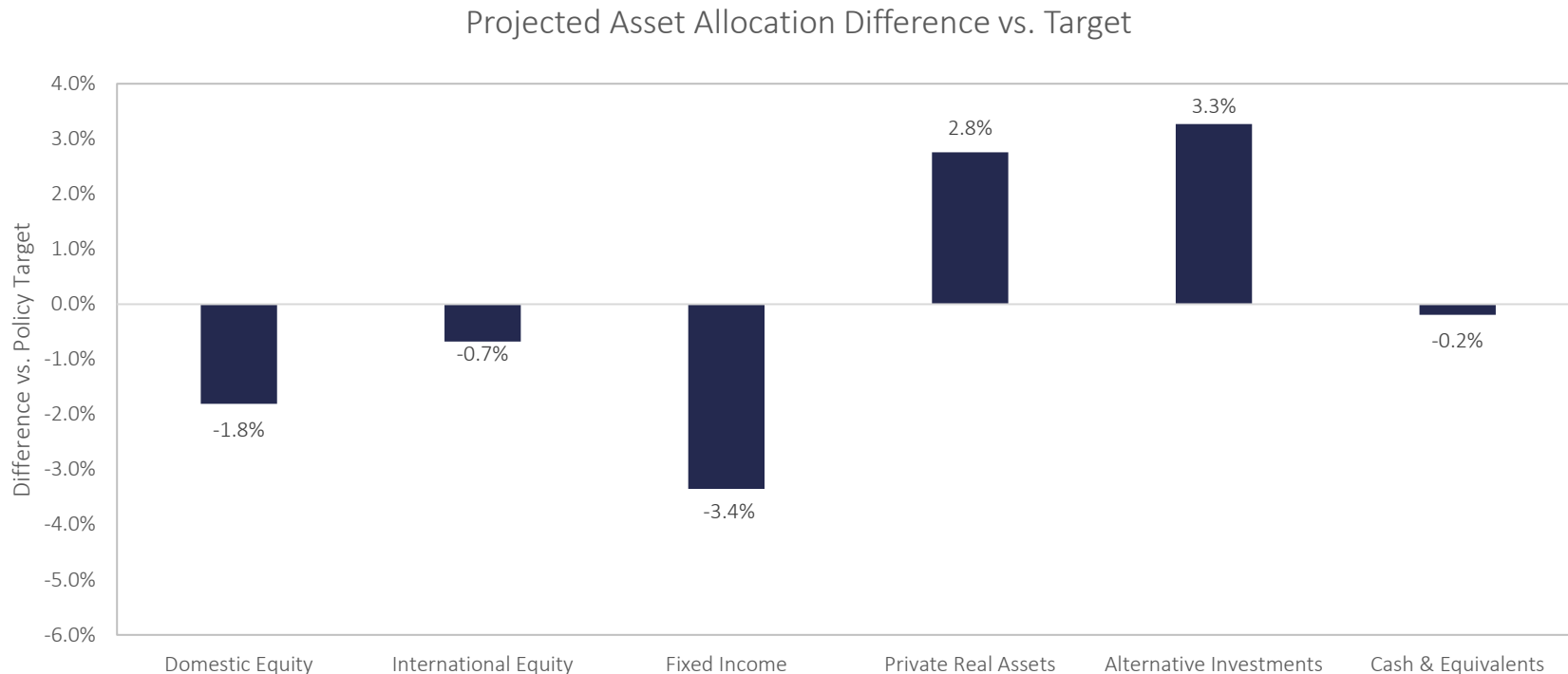
Data Sources: Bloomberg

Note: Developed asset class is developed equity markets ex-U.S., ex-Canada

Total Fund

Projected Deviations from the Benchmark

As of September 30, 2024



- Includes committed, but unfunded amounts for Real Assets (\$2.24billion) and Alternatives (\$3.39 billion). Assumes Real Assets and Alternatives allocations are fully funded as of month-end.
- Assumes that outstanding commitments are funded from a basket of public markets asset classes (Domestic Equity, International Equity and/or Fixed Income) that best reflects the expectations of risk, yield and regional allocations of the asset class.

Alternatives Proxy: 60% Domestic Equity, 40% International Equity

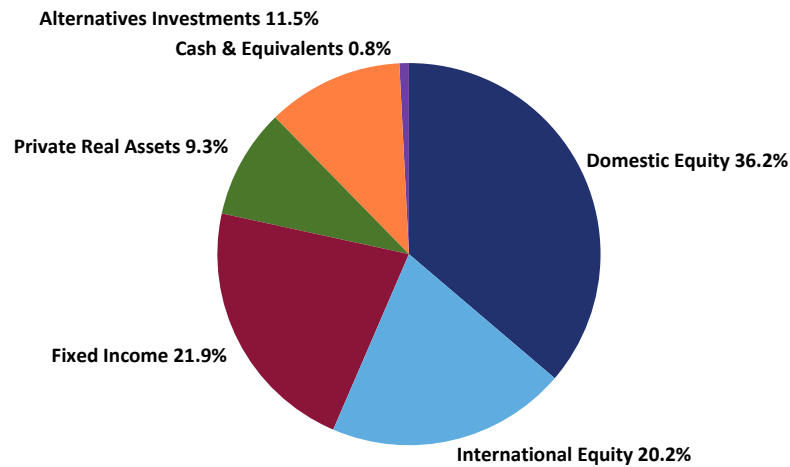
Real Assets Proxy: 50% Domestic Equity, 30% International Equity, 20% Fixed Income

Asset Allocation

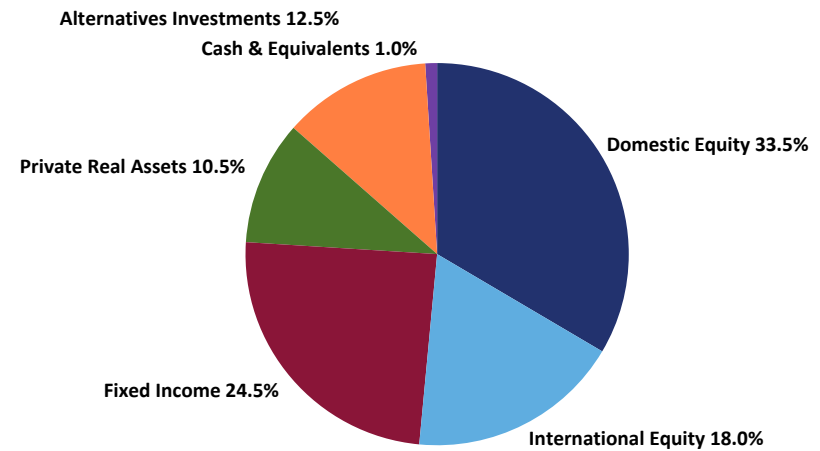
Total Fund

Periods Ended As of September 30, 2024

Actual Allocation



Target Allocation



Domestic Equity International Equity Fixed Income Private Real Assets Alternatives Investments Cash & Equivalents

	Actual Allocation \$Millions	Actual Allocation %	Target Allocation %	Differences %	Differences \$Millions
Total Fund	56,364	100.0	100.0	0.0	
Domestic Equity	20,431	36.2	33.5	2.7	1,549
International Equity	11,401	20.2	18.0	2.2	1,256
Fixed Income	12,369	21.9	24.5	-2.6	-1,440
Private Real Assets	5,228	9.3	10.5	-1.2	-690
Alternatives Investments	6,480	11.5	12.5	-1.0	-565
Cash & Equivalents	454	0.8	1.0	-0.2	-109

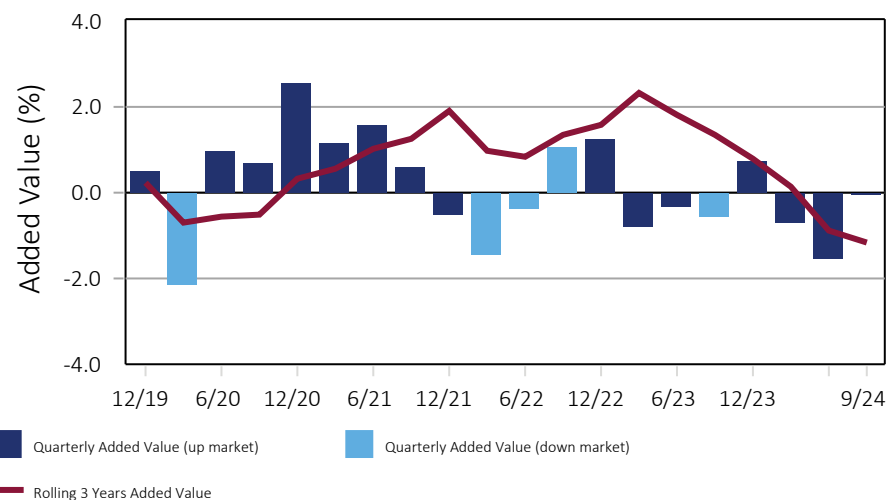
Composite Performance Summary

Total Fund

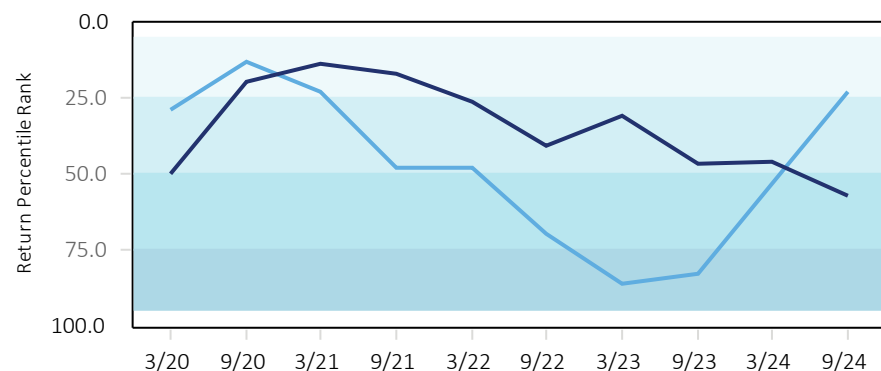
Periods Ended September 30, 2024

Comparative Performance

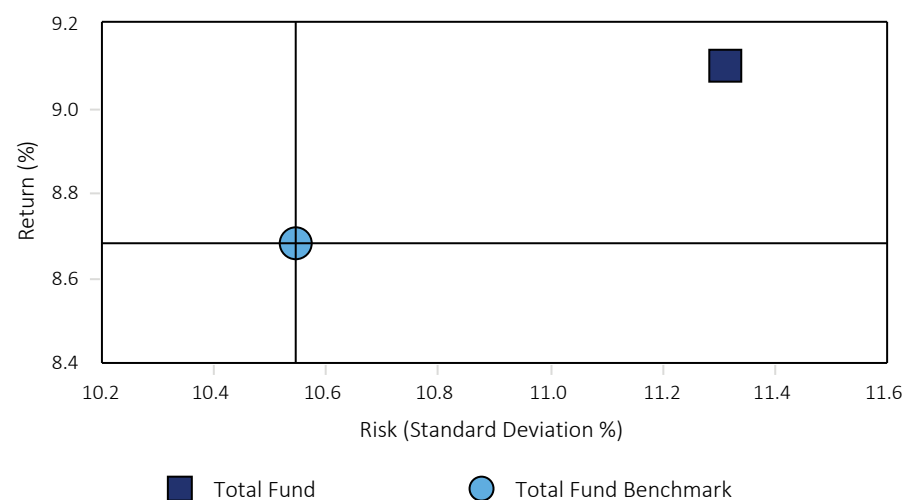
Added Value History



Rolling Percentile Rank : All Public Plans > \$1B - Total Fund



Risk and Return 10/01/19 - 09/30/24

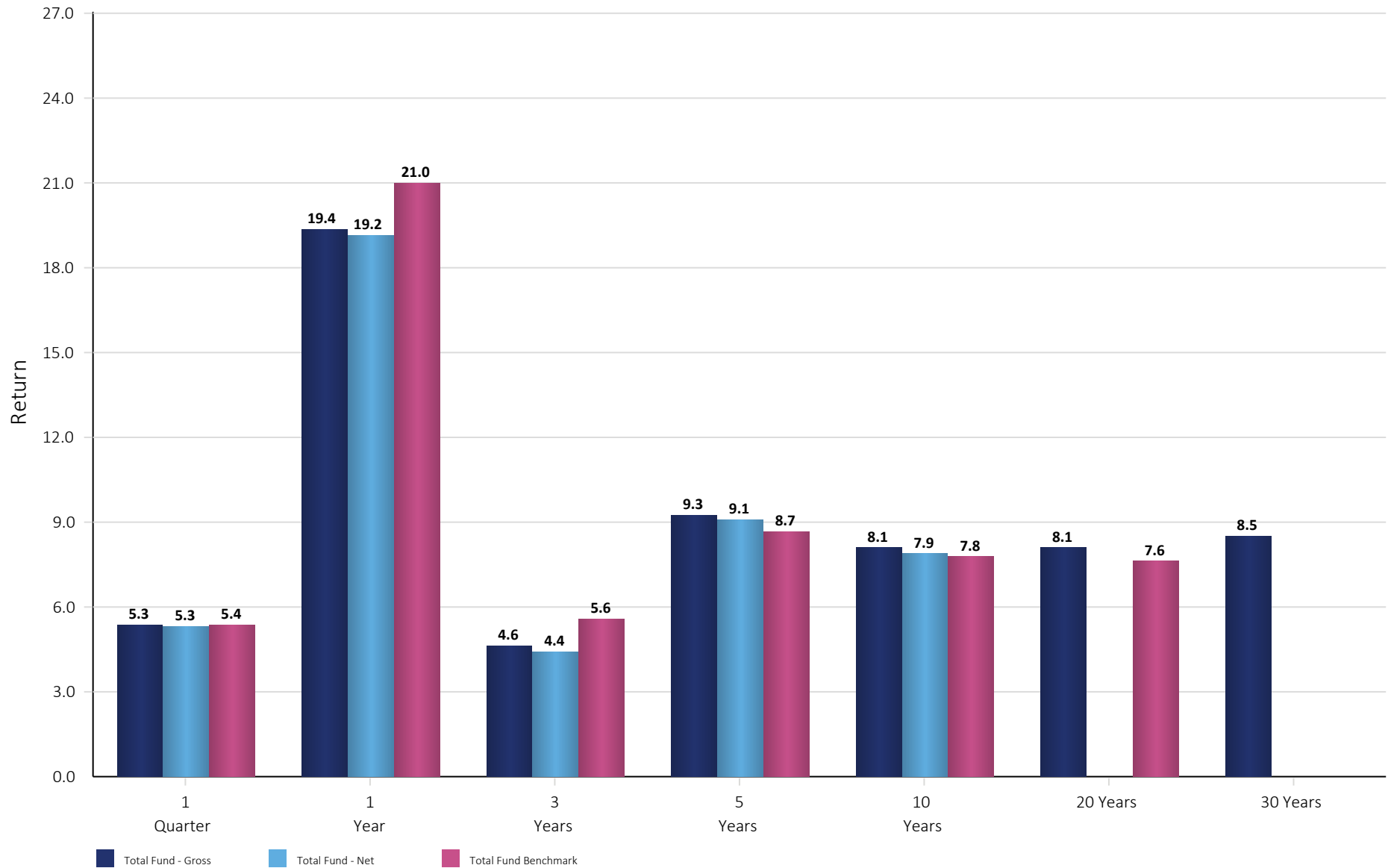


	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
— Total Fund	10	3 (30%)	6 (60%)	1 (10%)	0 (0%)
— Total Fund Benchmark	10	3 (30%)	3 (30%)	2 (20%)	2 (20%)

Comparative Performance

Total Fund - Gross

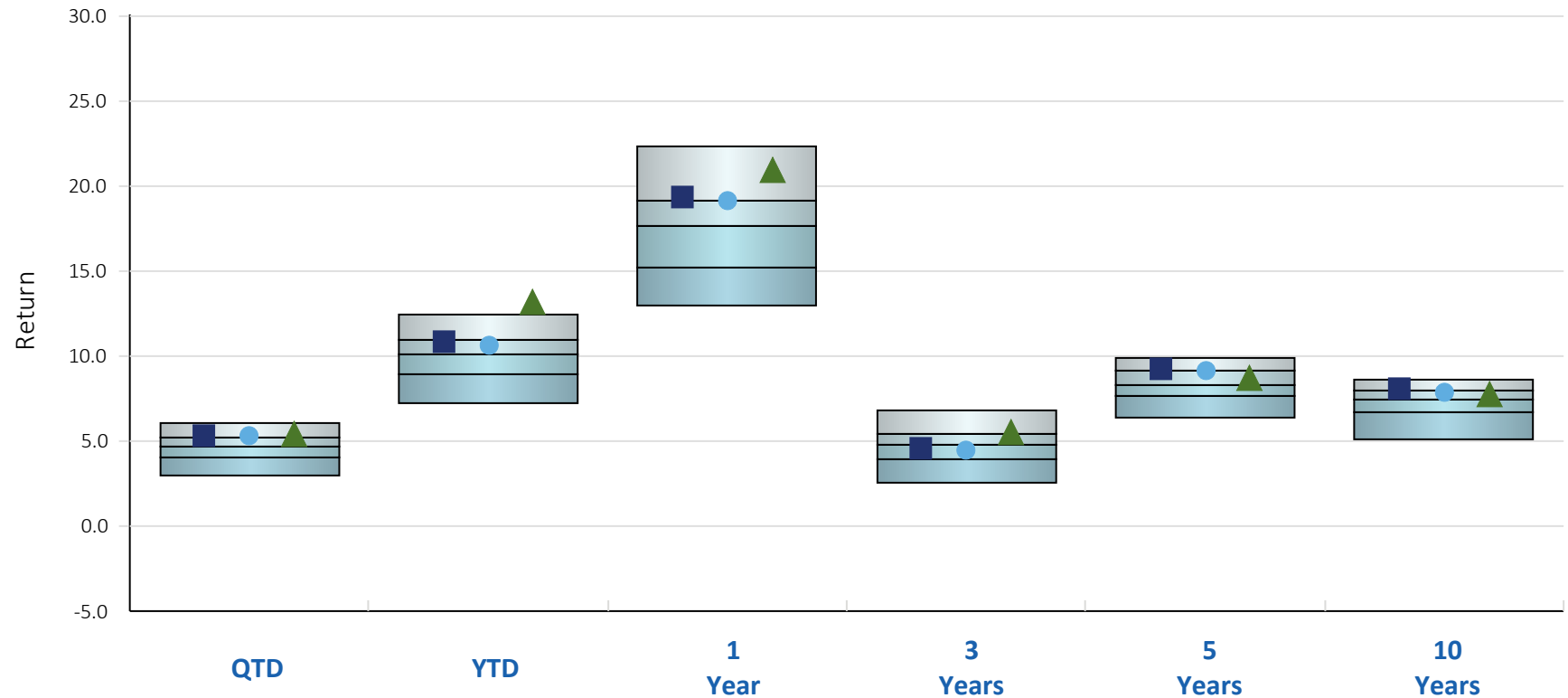
Periods Ended September 30, 2024



Plan Sponsor Peer Group Analysis

Total Fund vs All Public Plans > \$1B-Total Fund(Gross)

Periods Ended September 30, 2024



■ Total Fund	5.34 (18)	10.80 (29)	19.36 (22)	4.61 (53)	9.28 (20)	8.10 (16)
● Total Fund - Net	5.31 (19)	10.67 (32)	19.16 (25)	4.44 (57)	9.10 (29)	7.90 (27)
▲ Total Fund Benchmark	5.37 (17)	13.18 (2)	21.00 (10)	5.58 (23)	8.68 (37)	7.79 (31)
5th Percentile	6.10	12.48	22.31	6.85	9.90	8.60
1st Quartile	5.19	10.99	19.12	5.41	9.17	7.94
Median	4.68	10.05	17.67	4.74	8.33	7.40
3rd Quartile	4.05	8.99	15.27	3.92	7.67	6.75
95th Percentile	3.03	7.20	12.97	2.53	6.42	5.07
Population	167	167	167	164	163	161

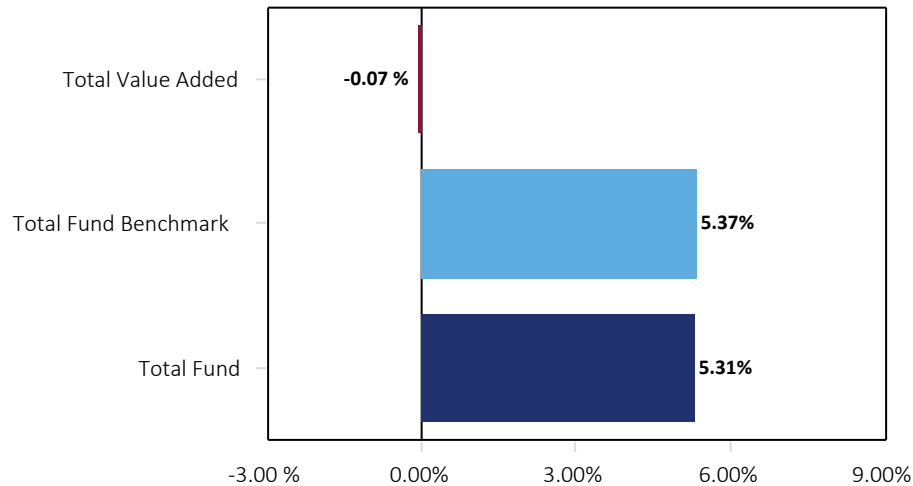
Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI ACWI ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1.0% 90 Day US Treasury Bill.

Total Fund Attribution

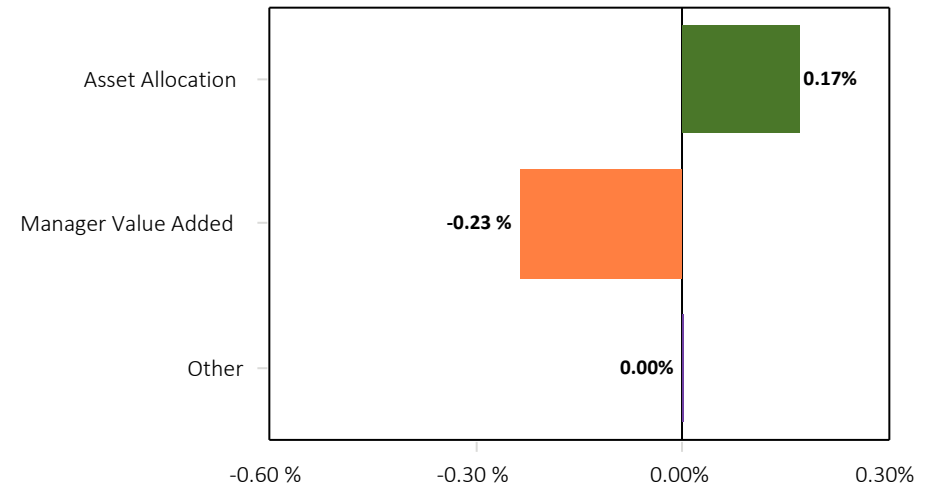
Total Fund

1 Quarter Ending September 30, 2024

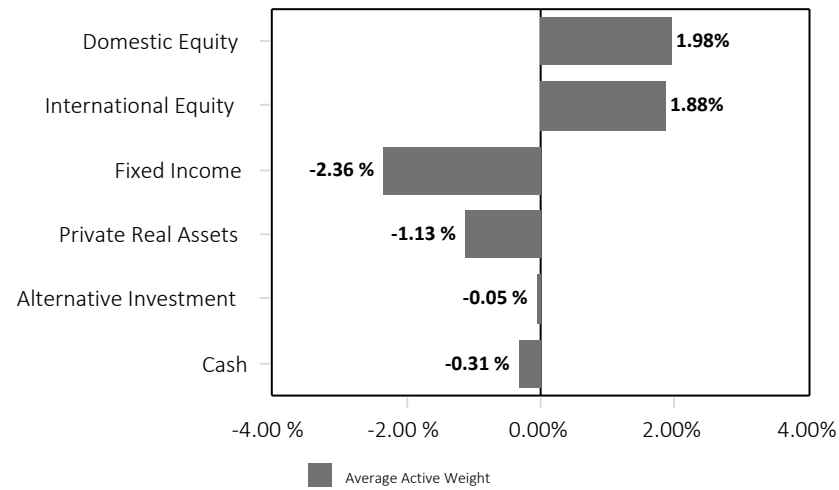
Total Fund Performance



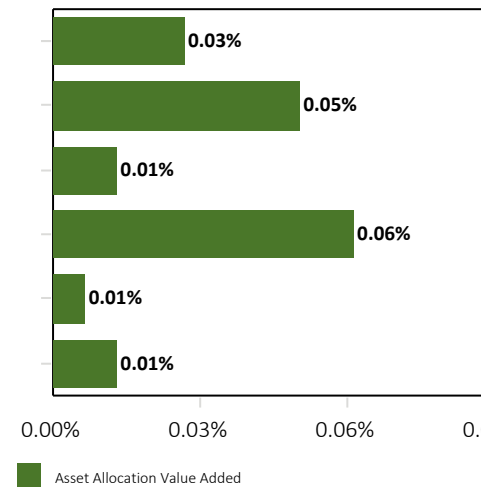
Total Value Added:-0.07 %



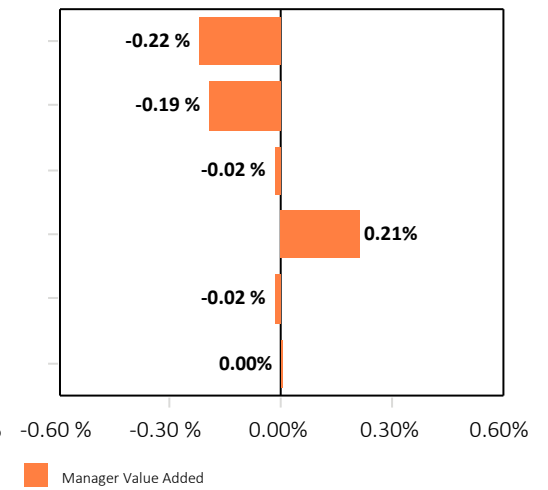
Asset Class Under or Overweighting



Asset Allocation Value Added:0.17%



Total Manager Value Added:-0.23 %



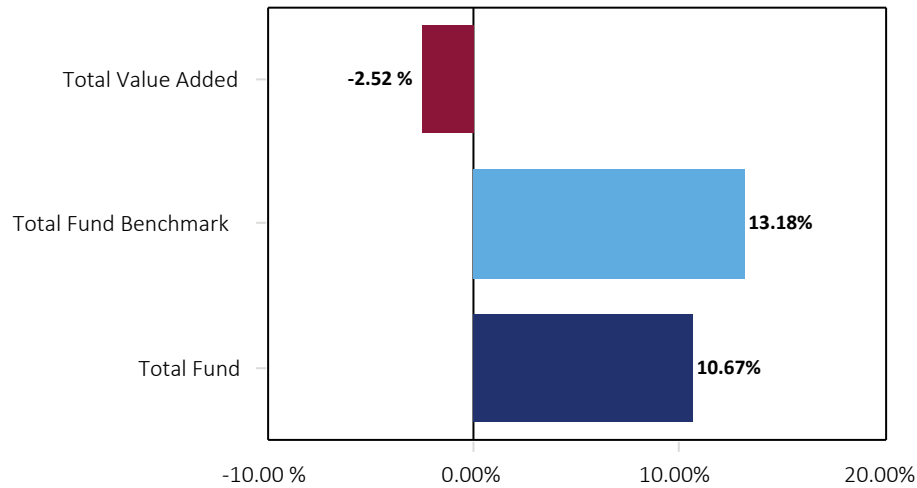
Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI ACWI ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1.0% 90 Day US Treasury Bill.

Total Fund Attribution

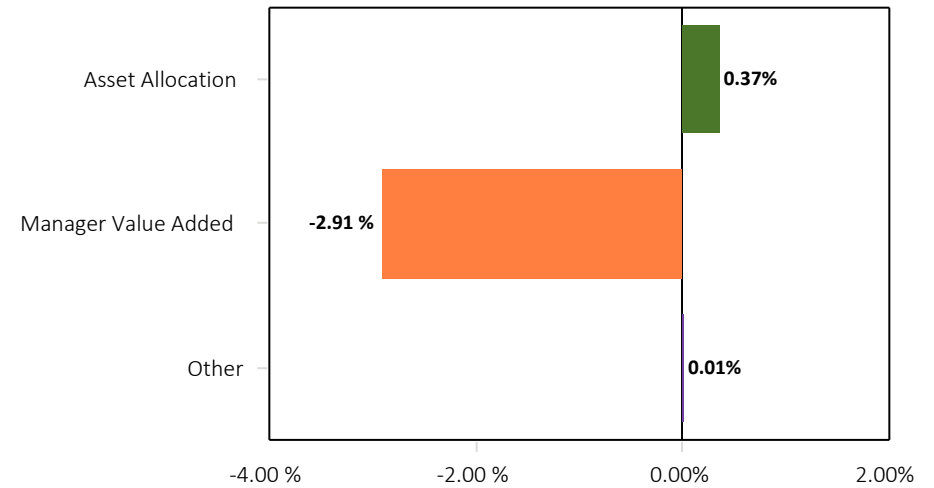
Total Fund

Year To Date Ending September 30, 2024

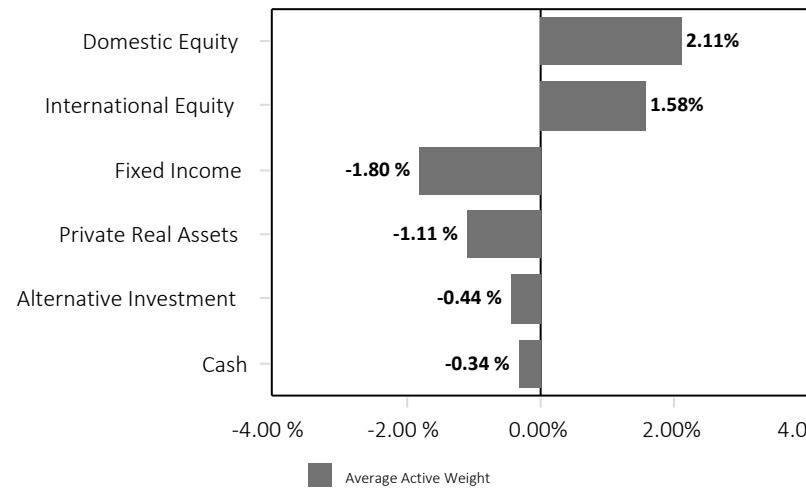
Total Fund Performance



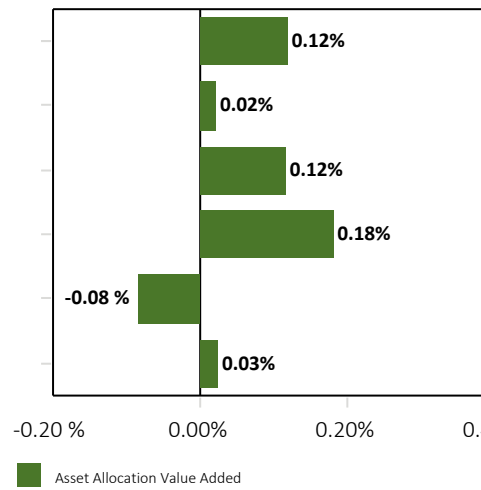
Total Value Added:-2.52 %



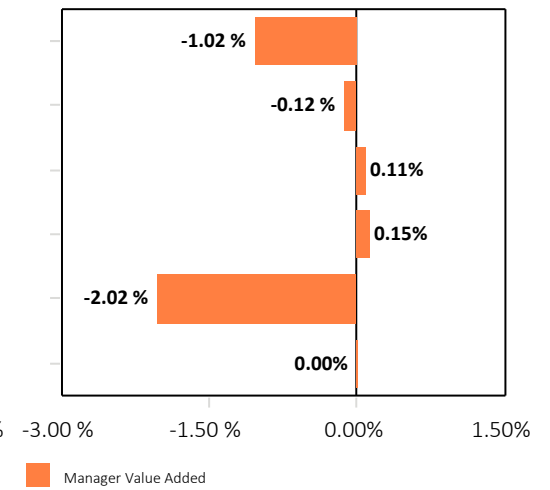
Asset Class Under or Overweighting



Asset Allocation Value Added:0.37%



Total Manager Value Added:-2.91 %



Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI ACWI ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1.0% 90 Day US Treasury Bill.

Asset Class Returns

Periods Ended September 30, 2024

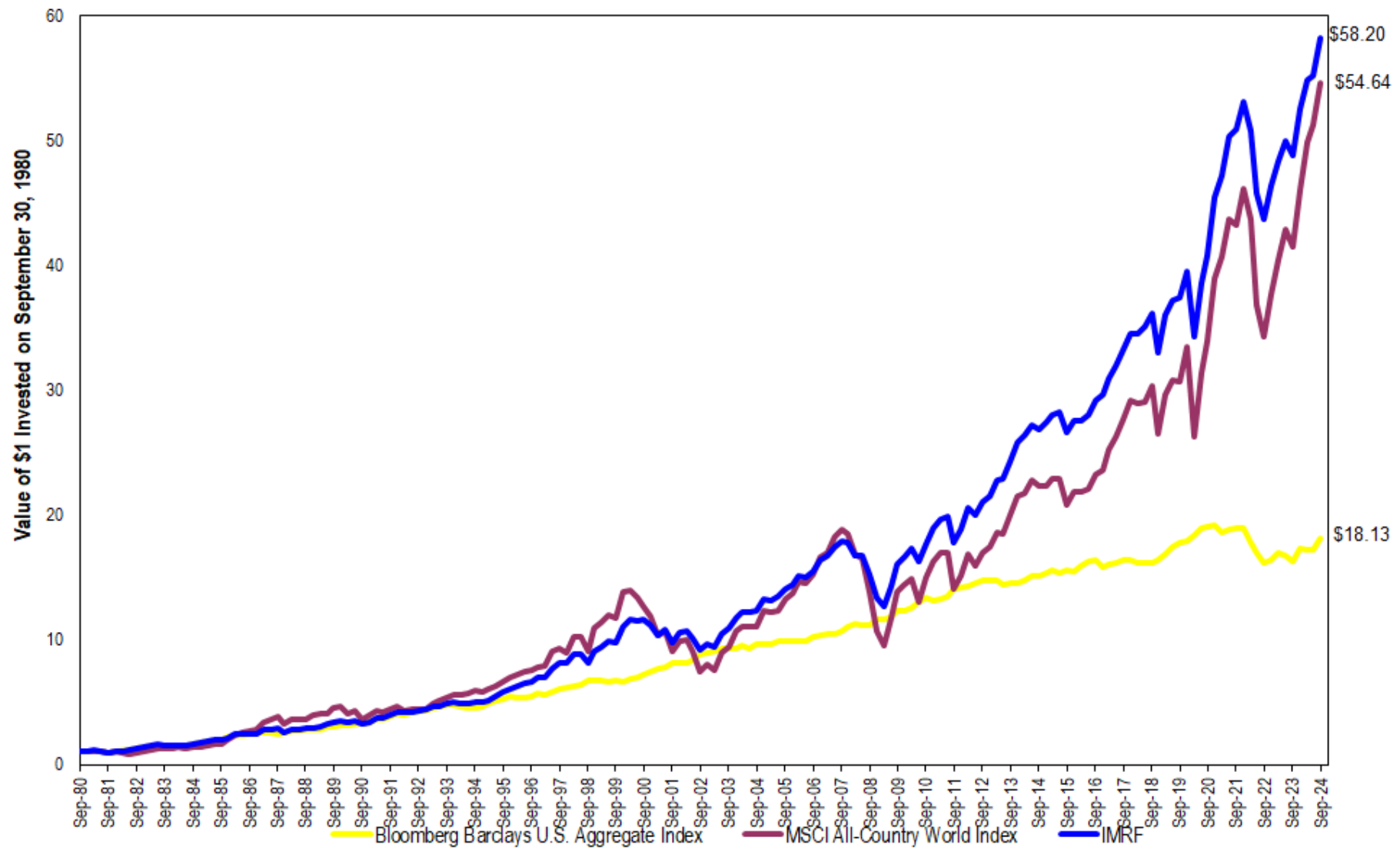
	Performance (%)									
	1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Total Fund	5.34	10.80	19.36	4.61	9.28	8.10	8.10	8.52	9.74	1/1/1982
Total Fund - Net	5.31	10.67	19.16	4.44	9.10	7.90				
Total Fund Benchmark	5.37	13.18	21.00	5.58	8.68	7.79	7.65			
Domestic Equity	6.16	17.53	32.45	7.94	14.28	11.97	10.43	10.79	11.81	1/1/1982
Domestic Equity - Net	6.13	17.39	32.25	7.77	14.09	11.76				
Custom Benchmark (U.S. Equity)	6.74	20.35	34.78	9.98	15.07	12.73	10.64	10.67		
U.S. Equity IMRF Custom Benchmark	7.16	18.36	32.78	8.73	13.63					
International Equity	7.15	13.94	25.77	4.04	8.83	6.42	7.17	6.93	7.79	9/1/1986
International Equity - Net	7.08	13.66	25.31	3.67	8.45	6.06				
MSCI AC World ex USA (Net)	8.06	14.21	25.35	4.14	7.59	5.22	6.14	5.44		
International Equity IMRF Custom Benchmark	8.10	14.15	25.17	3.51	7.38					
Fixed Income	4.85	5.52	12.33	0.08	1.60	2.75	4.16	5.28	7.44	1/1/1982
Fixed Income - Net	4.82	5.41	12.17	-0.06	1.47	2.61				
Custom Benchmark (Fixed Income)	4.90	4.97	11.55	-0.14	1.09	2.23	3.42	4.81	6.92	
Fixed Income IMRF Custom Benchmark	4.86	5.14	11.73	-0.22	1.18					
Private Real Assets	2.34	-1.20	-2.12						0.79	3/1/2022
Private Real Assets - Net	2.32	-1.26	-2.20						0.72	
Custom Benchmark (Private Real Assets)	0.09	-2.76	-7.34						-3.40	
Real Estate	1.99	-1.81	-2.74	3.99	6.57	8.32	7.28	7.61	5.65	5/1/1985
Real Estate - Net	1.96	-1.87	-2.82	3.92	6.51	8.28				
Blended Benchmark (Real Estate)	0.03	-3.19	-8.03	-1.04	2.05	5.16	6.09	6.51	6.98	
Agriculture	4.77	-2.57	-12.42	-0.85	-0.70	2.43	6.82		5.71	10/1/1997
NCREIF Farmland Index	-0.24	0.29	2.57	6.15	5.56	6.72	12.01		10.65	
Timberland	3.14	1.59	21.87	14.01	7.96	4.33	4.29	6.49	7.48	10/1/1992
NCREIF Timberland Index	1.53	5.45	10.02	10.86	7.47	5.90	7.09	7.40	8.51	

Asset Class Returns

Periods Ended September 30, 2024

	Performance (%)									
	1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Unlisted Infrastructure	6.28	11.29	16.82	13.79	13.97				13.07	4/1/2018
Blended Benchmark (Unlisted Infrastructure)	1.35	5.86	6.54	8.43	8.66				8.74	
Alternatives Investments	3.32	6.06	5.31	7.28	13.90	12.10	10.21	12.58	11.25	2/1/1986
Alternatives Investments - Net	3.31	6.06	5.31	7.28	13.88	11.96				
Custom Benchmark (Alternative Investments)	3.29	24.65	21.64	9.30	9.18	9.09	9.90	11.43	12.22	
Private Equity	2.75	4.98	4.38	7.46	15.68	14.24	12.80	15.19	13.41	2/1/1986
Blended Benchmark (Private Equity)	3.39	27.29	23.80	9.72	9.43	9.22	9.96			
Cash	1.40	4.26	5.70	4.44	3.78	2.62	1.35	3.09	3.81	7/1/1986
90 Day U.S. Treasury Bill	1.37	4.03	5.46	3.49	2.32	1.64	1.59	2.45	3.17	

Growth of a Dollar - As of September 30, 2024



Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
Domestic Equity	19,699,374,157	36.45	20,430,738,079	36.25
Large Cap Growth	4,360,355,122	8.07	4,263,230,474	7.56
Sands Capital	1,878,471,607	3.48	1,857,839,519	3.30
Xponance Russell 1000 G	2,481,883,516	4.59	2,405,390,956	4.27
Large Cap Value	3,783,925,336	7.00	3,940,400,504	6.99
Dodge & Cox	1,466,820,660	2.71	1,565,113,468	2.78
LSV Asset	1,032,307,902	1.91	1,107,742,124	1.97
NTGI S&P 500 Value	1,284,796,773	2.38	1,267,544,913	2.25
Large Cap Pass. Core	1,797,162,661	3.33	1,775,598,576	3.15
NTGI MarketCap Idx.	1,797,162,661	3.33	1,775,598,576	3.15
Factor Diversity Strategies	3,313,613,456	6.13	3,509,100,730	6.23
U.S. Large Cap FDP-GSAM	3,313,613,456	6.13	3,509,100,730	6.23
Quantitative Factor Strategies	2,682,957,866	4.96	2,869,366,425	5.09
Quantitative US Equity - SciBeta	2,682,957,866	4.96	2,869,366,425	5.09
Small Cap Multi-Factor Strategies	604,845,020	1.12	663,184,399	1.18
U.S. Small Cap Equity Multi-Factor - S&P	604,845,020	1.12	663,184,399	1.18
Small Cap Growth	771,783,395	1.43	794,482,145	1.41
Frontier Capital	771,783,395	1.43	794,482,145	1.41

Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
Small Cap Value	886,369,259	1.64	903,975,429	1.60
Channing	357,661,972	0.66	386,295,920	0.69
William Blair Small Cap Value	528,707,286	0.98	517,679,509	0.92
Public Real Assets	1,498,362,042	2.77	1,711,398,930	3.04
Brookfield	425,620,151	0.79	479,406,100	0.85
Cohen & Steers	1,072,741,891	1.98	1,231,992,830	2.19
Domestic Equity Transition		0.00	466	0.00
International Equity	10,642,885,348	19.69	11,401,111,144	20.23
Intl Large Cap Growth	1,752,596,963	3.24	1,841,440,268	3.27
EARNEST Part. Intl	737,697,434	1.37	774,605,561	1.37
William Blair	1,014,899,529	1.88	1,066,834,707	1.89
Intl Large Cap Value	1,669,614,736	3.09	1,856,742,937	3.29
Brandes Investment	796,096,626	1.47	886,080,395	1.57
Mondrian	722,819,628	1.34	804,932,896	1.43
Lazard	150,698,483	0.28	165,729,646	0.29
Intl Large Cap Core	5,934,358,185	10.98	6,346,263,571	11.26
Arrowstreet Capital	1,383,371,274	2.56	1,432,280,568	2.54
Brown Capital	624,020,992	1.15	662,545,869	1.18
GlobeFlex Capital	989,336,188	1.83	1,079,612,136	1.92
Xponance Intl EQ	108,445,480	0.20	116,311,747	0.21
Transition Account		0.00		0.00
Progress Intl Equity	350,499	0.00	364,791	0.00

Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
NTGI ACWI ex US Index Fund	2,828,833,751	5.23	3,055,148,462	5.42
Intl All Cap Developed	180,156,734	0.33	191,170,628	0.34
Ativo International	180,156,734	0.33	191,170,628	0.34
International Small Cap	590,055,565	1.09	639,147,026	1.13
Franklin Templeton	239,590,659	0.44	258,922,901	0.46
William Blair IntSC	350,464,906	0.65	380,224,125	0.67
Emerging Mkt Equity	516,103,165	0.95	526,346,715	0.93
Genesis Investment Management, LLP.	1,089,538	0.00		0.00
Arrowstreet EME	515,013,627	0.95	526,346,715	0.93

Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
Fixed Income	12,041,493,687	22.28	12,368,878,428	21.94
Domestic Fixed Core	3,738,176,427	6.92	3,909,975,018	6.94
Attucks Fixed Income	91,626,897	0.17	96,517,771	0.17
Brandes FI Core	332,449,097	0.62	345,720,713	0.61
EARNEST Partners	887,326,806	1.64	927,009,174	1.64
Garcia Hamilton	943,114,864	1.75	991,673,092	1.76
Ramirez Asset Management	513,175,744	0.95	535,959,734	0.95
Xponance Yield Advantage Agg.	970,483,019	1.80	1,013,094,534	1.80
Domestic Fixed Passive Core	2,833,088,972	5.24	2,980,571,113	5.29
NTGI Blmbg Agg.	1,153,220,323	2.13	1,213,284,095	2.15
BlackRock US Debt I	1,679,868,648	3.11	1,767,287,018	3.14
Domestic Fixed Core Plus	2,910,249,284	5.38	3,037,780,297	5.39
LM Capital Group FI	832,887,406	1.54	868,116,406	1.54
Progress Inv. FI		0.00		0.00
Loop Capital Management	575,290,219	1.06	601,047,099	1.07
Western Asset	933,030,855	1.73	973,752,204	1.73
Longfellow Core Plus	569,040,804	1.05	594,864,588	1.06
Bank Loans	1,435,690,076	2.66	1,286,225,139	2.28
Barings Global Loan Fund	1,435,690,076	2.66	1,286,225,139	2.28
Emerging Markets Debt	262,996	0.00	246,051	0.00
Standish-Mellon EMD	262,996	0.00	246,051	0.00
High Yield	1,124,025,931	2.08	1,154,080,811	2.05
MacKay Shields	1,124,025,931	2.08	1,154,080,811	2.05

Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
Private Real Assets	5,083,364,820	9.41	5,228,045,513	9.28
Real Estate	4,533,397,609	8.39	4,655,544,264	8.26
Real Estate Core Cmp	2,090,491,829	3.87	2,078,470,308	3.69
TA Assoc. Buckhead	905,666,983	1.68	884,850,944	1.57
Barings Euro Core Property	96,295,019	0.18	100,907,337	0.18
Blackstone Property Euro	168,570,549	0.31	176,123,482	0.31
INVESCO Core Real Estate	202,966,279	0.38	198,677,073	0.35
INVESCO European real estate	53,257,038	0.10	55,451,485	0.10
AEW Core Property Tr	243,805,184	0.45	241,218,568	0.43
CBRE Core Partners	271,102,756	0.50	272,901,725	0.48
JPM Strategic Property Fund	148,828,022	0.28	148,339,694	0.26
RE Non-Core Cmp	2,442,905,780	4.52	2,577,073,956	4.57
Artemis MWBE Spruce	401,891,714	0.74	426,216,911	0.76
Franklin T. EMREFF	1,066,392	0.00	213,361	0.00
Security Capital	101,001,431	0.19	112,669,772	0.20
Dune II	6,955,701	0.01	7,019,901	0.01
Non-Core Real Estate Funds	1,622,485,265	3.00	1,706,480,453	3.03
Non-Core Intl Real Estate	309,449,746	0.57	324,422,618	0.58
Almanac ARS V	55,532	0.00	50,940	0.00
Agriculture	221,660,429	0.41	222,590,110	0.39
Premiere Partners IV	221,660,429	0.41	222,590,110	0.39
Timberland	69,103,553	0.13	70,770,974	0.13
Forest Investment	69,103,553	0.13	70,770,974	0.13
Unlisted Infrastructure	259,203,229	0.48	279,140,165	0.50
Unlisted Infrastructure Funds	259,203,229	0.48	279,140,165	0.50

Investment Manager Asset Allocation

Periods Ended September 30, 2024

	Jun-2024		Sep-2024	
	\$	%	\$	%
Alternatives Investments	6,128,125,580	11.34	6,480,483,306	11.50
Absolute Return	15,652	0.00	13,243	0.00
Aurora Investment	15,652	0.00	13,243	0.00
Private Equity	5,604,811,669	10.37	5,806,945,205	10.30
Abbott S/A Comp.	490,534,261	0.91	475,159,344	0.84
Muller Monroe MPEFF		0.00		0.00
Pantheon S/A Comp.	429,685,655	0.80	417,034,912	0.74
Private Equity Fund - Domestic	3,628,345,975	6.71	3,755,330,986	6.66
Private Equity Fund - International	772,683,132	1.43	859,733,013	1.53
Oakbrook Opportunities Fund	283,562,645	0.52	299,686,950	0.53
Private Credit	523,298,259	0.97	673,524,857	1.19
Private Credit Fund - Domestic	491,085,939	0.91	628,924,979	1.12
Private Credit Fund - International	32,212,320	0.06	44,599,878	0.08
Cash & Equivalents	448,413,524	0.83	454,262,743	0.81
Total Fund	54,043,657,115	100.00	56,363,519,214	100.00

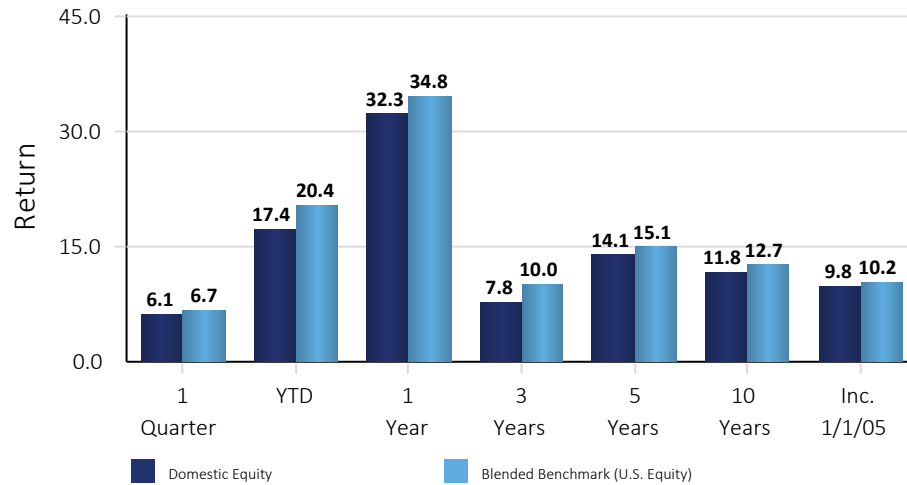
Domestic Equity

Composite Performance Summary

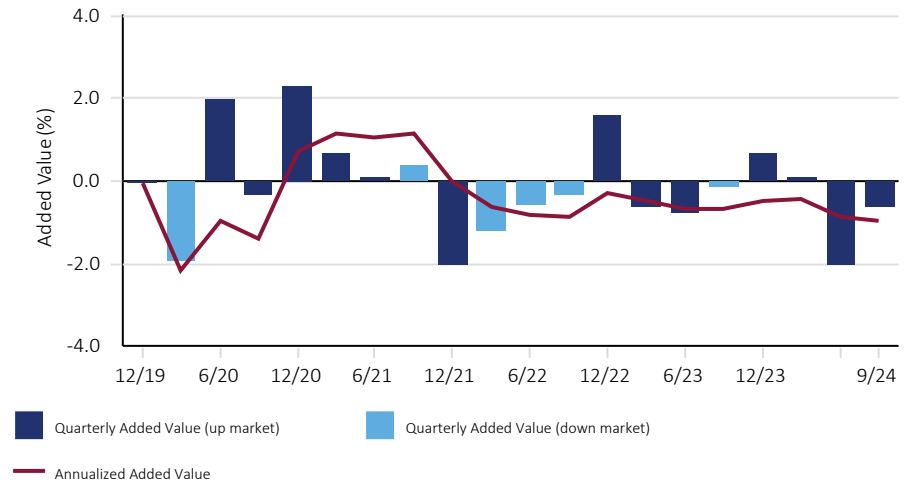
Domestic Equity

Periods Ended September 30, 2024

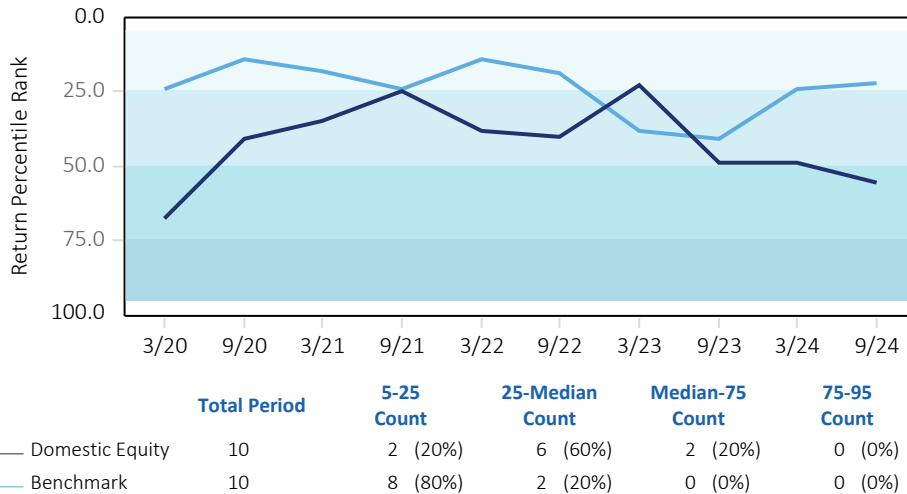
Comparative Performance



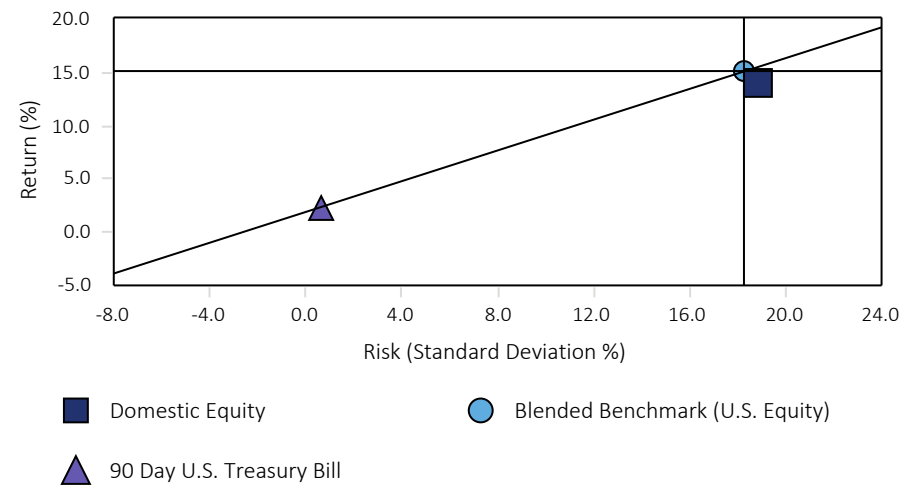
Added Value History



Rolling Percentile Rank: All Public Plans > \$1B-US Equity Segment



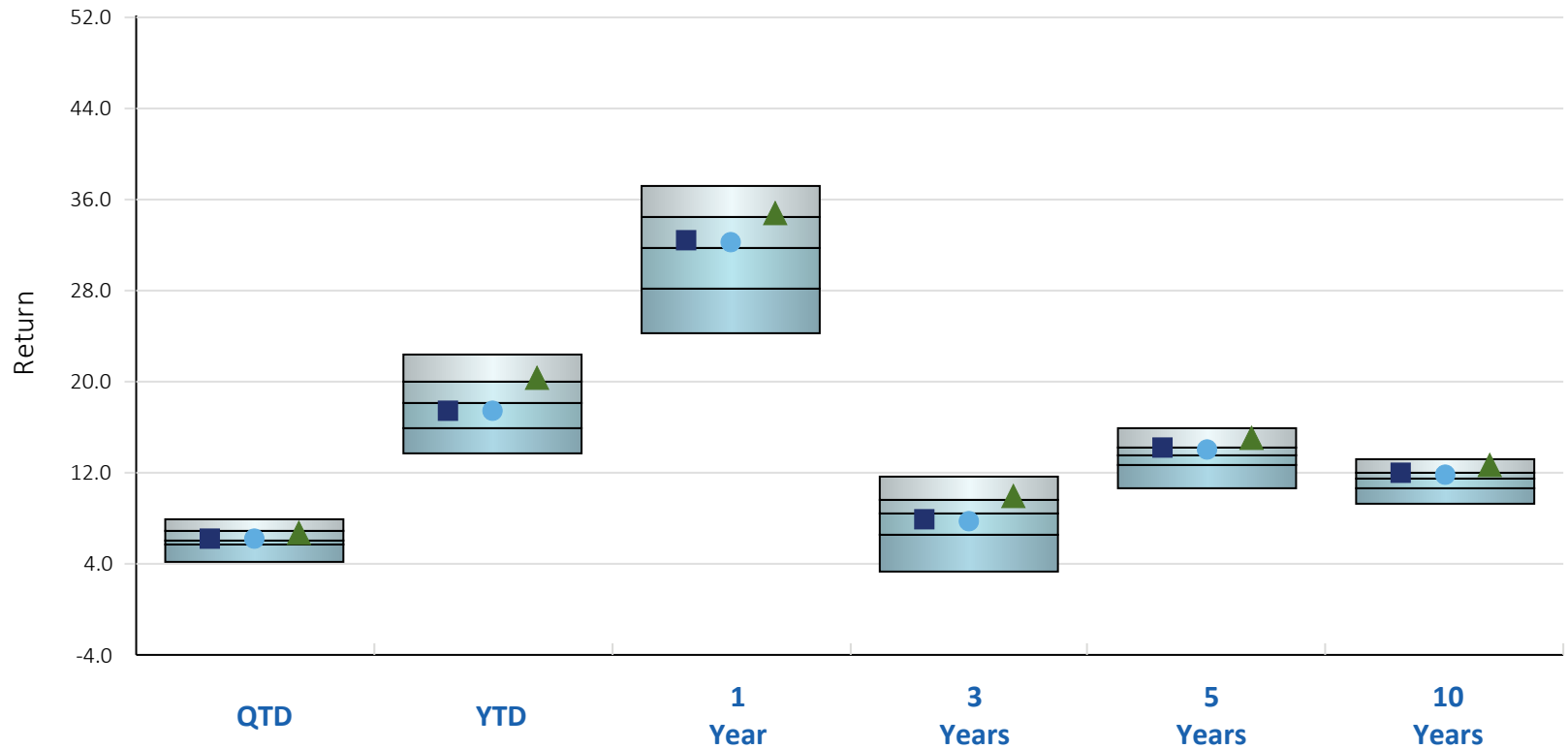
Risk and Return 10/1/19 - 09/30/24



Plan Sponsor Peer Group Analysis

Domestic Equity vs All Public Plans > \$1B-US Equity Segment(Gross)

Periods Ended September 30, 2024



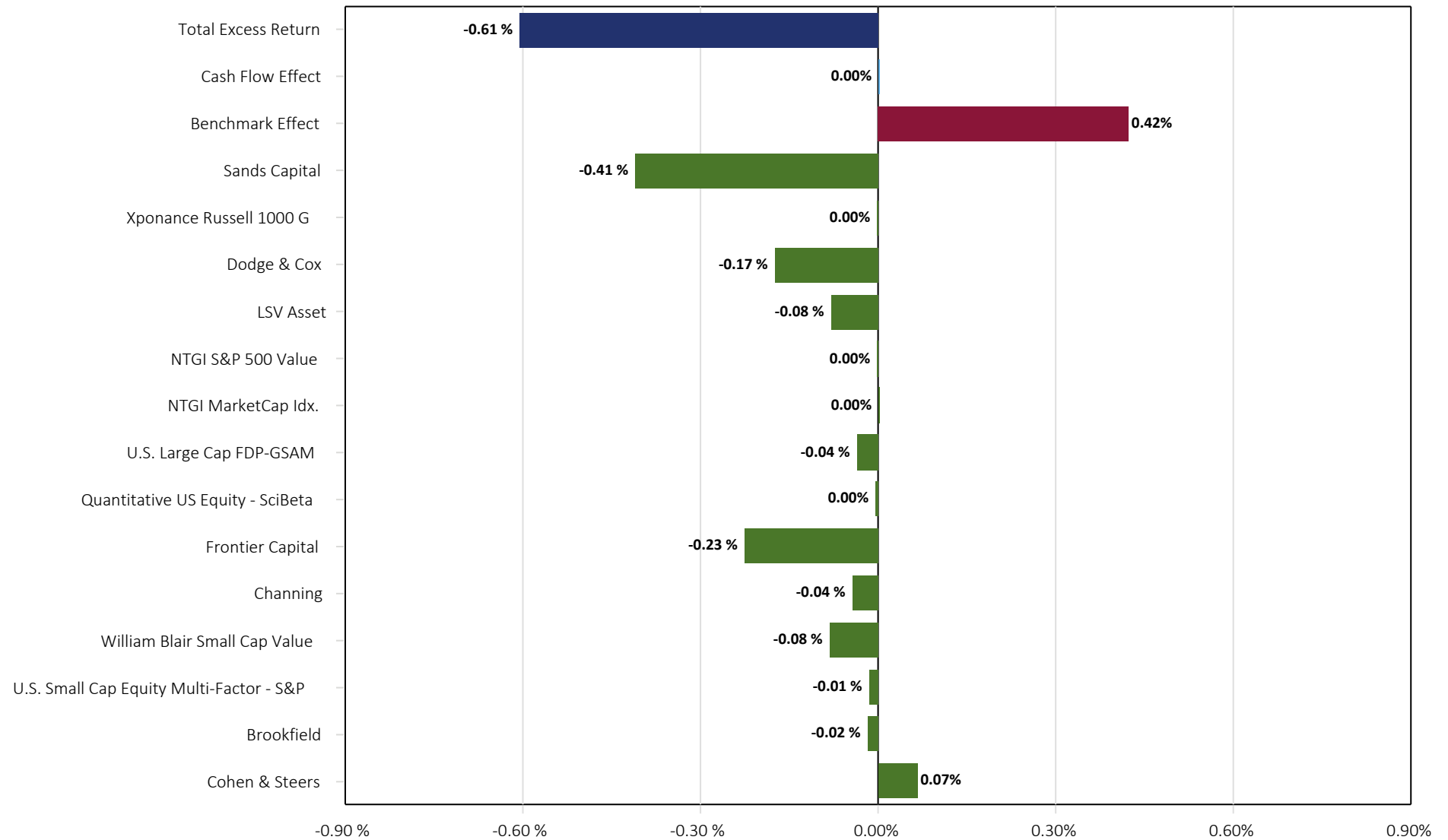
Domestic Equity	6.16 (49)	17.53 (57)	32.45 (46)	7.94 (55)	14.28 (25)	11.97 (29)
Domestic Equity - Net	6.13 (50)	17.39 (57)	32.25 (48)	7.77 (56)	14.09 (33)	11.76 (37)
Blended Benchmark (U.S. Equity)	6.74 (28)	20.35 (23)	34.78 (20)	9.98 (22)	15.07 (15)	12.73 (13)
5th Percentile	8.00	22.40	37.27	11.70	15.97	13.18
1st Quartile	6.90	20.08	34.55	9.60	14.28	12.09
Median	6.12	18.09	31.80	8.35	13.60	11.49
3rd Quartile	5.62	15.97	28.24	6.54	12.69	10.65
95th Percentile	4.20	13.76	24.25	3.38	10.56	9.23
Population	51	50	50	47	41	37

Asset Class Attribution

Domestic Equity

Periods Ended 1 Quarter Ending September 30, 2024

1 Quarter

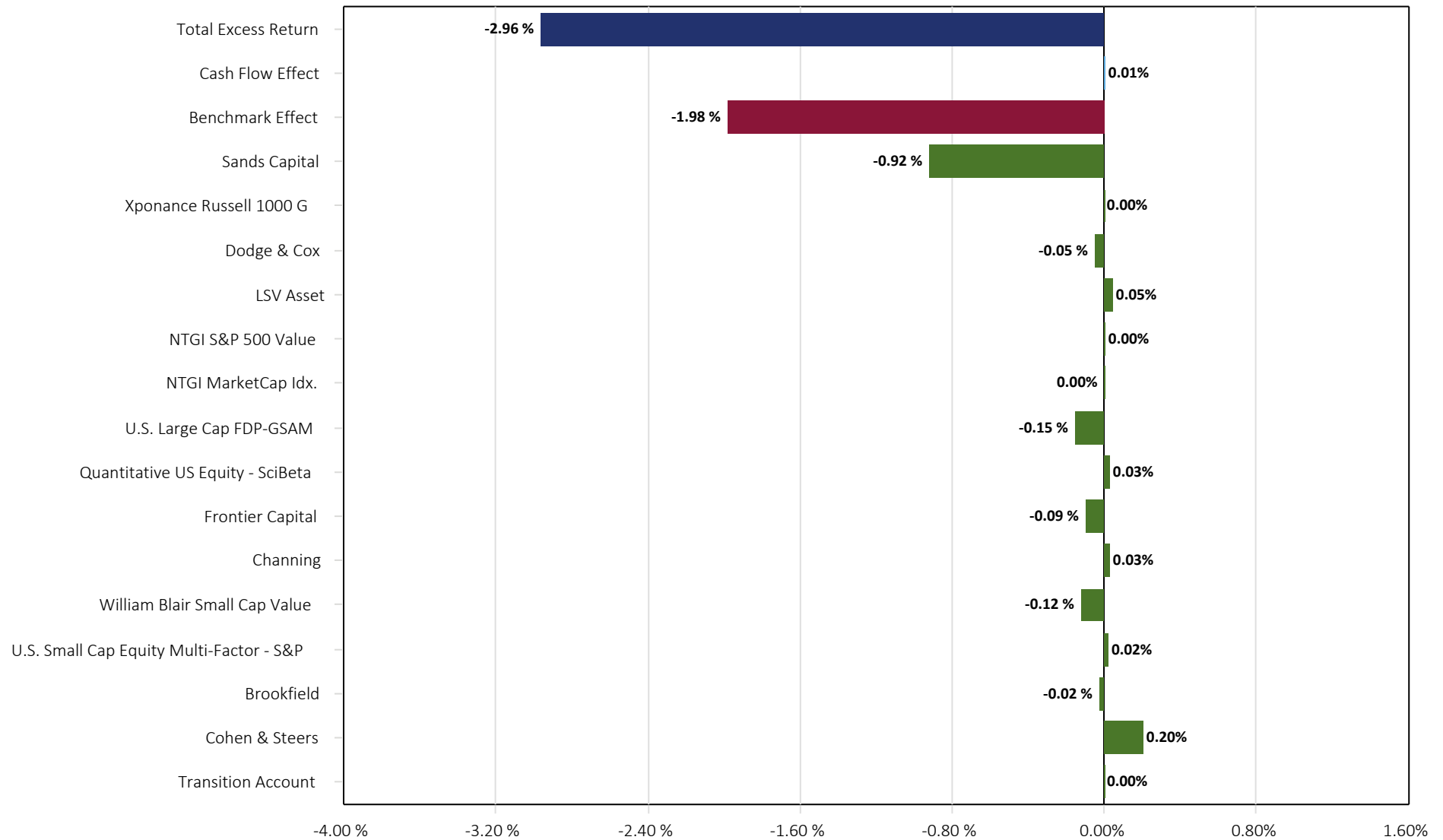


Asset Class Attribution

Domestic Equity

Periods Ended Year To Date Ending September 30, 2024

Year To Date



Performance

Domestic Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Domestic Equity	20,430,738,079	6.16	17.53	32.45	7.94	14.28	11.97	11.81	1/1/1982
Domestic Equity - Net		6.13	17.39	32.25	7.77	14.09	11.76		
Blended Benchmark (U.S. Equity)		6.74	20.35	34.78	9.98	15.07	12.73		
Russell 3000 Index		6.23	20.63	35.19	10.29	15.26	12.83	11.86	
U.S. Equity IMRF Custom Benchmark		7.16	18.36	32.78	8.73	13.63			
Large Cap Equity	13,488,330,285	5.03	19.06	35.20	8.75	15.34	12.66	11.64	1/1/1982
Large Cap Equity - Net		5.01	18.99	35.09	8.66	15.24	12.55		
Russell 1000 Index		6.08	21.18	35.68	10.83	15.64	13.10	12.03	
Large Cap Growth	4,263,230,474	1.34	20.08	41.18	7.08	18.02	15.15	12.56	1/1/1982
Large Cap Growth - Net		1.31	19.99	41.04	6.98	17.91	15.03		
LCG Blended Benchmark*		3.19	24.55	42.19	12.02	19.74	16.52		
Russell 1000 Growth Index		3.19	24.55	42.19	12.02	19.74	16.52	12.08	
Xponance Russell 1000 G	2,405,390,956	3.18	24.59	42.28	12.05	19.75		16.91	10/1/2018
Xponance Russell 1000 G - Net		3.18	24.57	42.25	12.03	19.73		16.89	
Russell 1000 Growth Index		3.19	24.55	42.19	12.02	19.74		16.91	
Sands Capital	1,857,839,519	-1.10	14.54	40.35	-6.08	12.16	12.05	12.00	11/1/2003
Sands Capital - Net		-1.15	14.35	40.05	-6.30	11.91	11.80		
LCG Blended Benchmark*		3.19	24.55	42.19	12.02	19.74	16.52	12.14	
Russell 1000 Growth Index		3.19	24.55	42.19	12.02	19.74	16.52	12.17	
Large Cap Value	3,940,400,504	8.02	16.35	29.47	11.44	13.31	10.68	10.60	10/1/1982
Large Cap Value - Net		7.98	16.22	29.27	11.27	13.15	10.51		
LCV Blended Benchmark**		9.43	16.68	27.76	9.03	10.69	9.23		
Russell 1000 Value Index		9.43	16.68	27.76	9.03	10.69	9.23	11.67	

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*** Public Real Assets benchmark is 1/3 Dow Jones Global Infrastructure Composite Index + 2/3 FTSE Global Core Infrastructure 50/50 Net Tax Index.

Performance

Domestic Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Dodge & Cox	1,565,113,468	7.17	16.38	28.17	10.69	14.73	11.52	10.57	9/1/2003
Dodge & Cox - Net		7.12	16.19	27.89	10.46	14.49	11.29		
LCV Blended Benchmark**		9.43	16.68	27.76	9.03	10.69	9.23	8.86	
Russell 1000 Value Index		9.43	16.68	27.76	9.03	10.69	9.23	8.99	
LSV Asset	1,107,742,124	7.98	17.95	29.22	10.67	12.07	10.07	11.05	2/1/2003
LSV Asset - Net		7.92	17.73	28.89	10.40	11.80	9.81		
LCV Blended Benchmark**		9.43	16.68	27.76	9.03	10.69	9.23	9.56	
Russell 1000 Value Index		9.43	16.68	27.76	9.03	10.69	9.23	9.56	
NTGI S&P 500 Value	1,267,544,913	9.02	15.42	31.15	13.11	13.26	10.88	7.34	8/1/1999
NTGI S&P 500 Value - Net		9.02	15.42	31.15	13.11	13.25	10.87		
S&P 500 Value		9.05	15.36	31.09	13.12	13.21	10.82	7.31	
Large Cap Pass. Core	1,775,598,576	6.15	20.60	35.26	10.15	15.17	12.80	11.60	1/1/1985
Large Cap Pass. Core - Net		6.15	20.60	35.26	10.15	15.17	12.80		
Dow Jones U.S. Total Stock Market Index		6.16	20.61	35.24	10.12	15.15	12.75		
NTGI MarketCap Idx.	1,775,598,576	6.15	20.60	35.26	10.15	15.17	12.80	11.40	2/1/1985
NTGI MarketCap Idx. - Net		6.15	20.60	35.26	10.15	15.17	12.80		
Dow Jones U.S. Total Stock Market Index		6.16	20.61	35.24	10.12	15.15	12.75		
Factor Diversity Strategies	3,509,100,730	5.90	20.40	34.92	10.72			14.61	8/18/2020
U.S. Large Cap FDP-GSAM	3,509,100,730	5.90	20.40	34.92	10.72			14.61	8/18/2020
U.S. Large Cap FDP-GSAM - Net		5.90	20.38	34.89	10.69			14.57	
Solactive GBS U.S. 1000 Index		6.10	21.29	35.78	10.62			14.70	
GSAM Active Beta US. Large Cap FDC Index		5.89	20.45	34.93	10.73			14.60	

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*** Public Real Assets benchmark is 1/3 Dow Jones Global Infrastructure Composite Index + 2/3 FTSE Global Core Infrastructure 50/50 Net Tax Index.

Performance

Domestic Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Quantitative Factor Strategies	2,869,366,425	6.95	15.85	27.35	9.04	11.32		11.22	9/17/2019
Quantitative US Equity - SciBeta	2,869,366,425	6.95	15.85	27.35	9.04	11.32		11.22	9/17/2019
Quantitative US Equity - SciBeta - Net		6.94	15.81	27.30	8.98	11.18		11.07	
SciBeta US Hi-Fctr-Intst Div Multi-Beta Multi-Strat Index		6.97	15.56	27.33	8.30	10.51		10.33	

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Performance

Domestic Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Small Cap	2,361,641,973	6.58	10.06	22.48	6.05	12.61	10.29	12.01	7/1/1988
Small Cap Composite - Net		6.46	9.55	21.78	5.37	11.91	9.65		
Russell 2000 Index		9.27	11.17	26.76	1.84	9.39	8.78	9.26	
Small Cap Multi-Factor Strategies	663,184,399	9.65	9.99	26.30				12.28	8/1/2023
U.S. Small Cap Equity Multi-Factor - S&P	663,184,399	9.65	9.99	26.30				12.28	8/1/2023
U.S. Small Cap Equity Multi-Factor - S&P		9.65	9.99	26.30				12.28	
S&P SmallCap 600 QVML Top 90% Multi-Factor Index		9.65	10.00	26.43				12.36	
S&P SmallCap 600 Index		10.13	9.33	25.86				11.39	
Small Cap Growth	794,482,145	2.94	12.44	22.30	4.23	14.42	12.04	12.98	7/1/1988
Small Cap Growth - Net		2.82	11.40	20.96	3.03	13.25	11.17		
Russell 2000 Growth Index		8.41	13.22	27.66	-0.35	8.82	8.95	8.07	
Frontier Capital	794,482,145	2.94	12.44	22.30	4.20	15.07	13.03	13.32	8/1/1988
Frontier Capital - Net		2.82	11.40	20.96	3.03	13.85	12.09		
Russell 2000 Growth Index		8.41	13.22	27.66	-0.35	8.82	8.95	8.14	
Small Cap Value	903,975,429	7.65	8.19	20.25	6.85	11.67	9.67	11.57	9/1/1989
Small Cap Value - Net		7.47	7.78	19.64	6.33	11.14	9.13		
Russell 2000 Value Index		10.15	9.22	25.88	3.77	9.29	8.22	9.75	
Channing	386,295,920	8.01	11.75	24.07	5.81	11.48	9.21	10.34	7/1/2011
Channing - Net		7.88	11.36	23.47	5.29	10.93	8.69	9.76	
Russell 2000 Value Index		10.15	9.22	25.88	3.77	9.29	8.22	8.74	
William Blair Small Cap Value	517,679,509	7.41	5.90	17.77	4.26	9.07	9.80	10.90	5/1/1999
Inv. Couns. Maryland - Net		7.19	5.48	17.15	3.71	8.52	9.25		
Russell 2000 Value Index		10.15	9.22	25.88	3.77	9.29	8.22	8.88	

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*** Public Real Assets benchmark is 1/3 Dow Jones Global Infrastructure Composite Index + 2/3 FTSE Global Core Infrastructure 50/50 Net Tax Index.

Performance

Domestic Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Public Real Assets	1,711,398,930	14.24	18.08	32.50	9.09	7.14		7.84	8/1/2017
Public Real Assets - Net		14.16	17.82	32.11	8.76	6.77		7.45	
Public Real Assets Benchmark***		13.53	15.37	28.02	6.83	5.28		5.80	
Brookfield	479,406,100	12.64	13.04	26.99	9.99	7.12		6.91	8/1/2017
Brookfield - Net		12.53	12.71	26.48	9.54	6.63		6.41	
Dow Jones Brookfield Global Infrastructure Composi		13.40	13.71	26.43	7.02	5.28		5.23	
Cohen & Steers	1,231,992,830	14.88	20.16	34.78	8.92	7.36		8.43	8/1/2017
Cohen & Steers - Net		14.81	19.94	34.44	8.63	7.03		8.07	
FTSE Global Core Infrastructure 50/50 Index (Net)		13.59	16.20	28.80	6.71	5.24		6.06	

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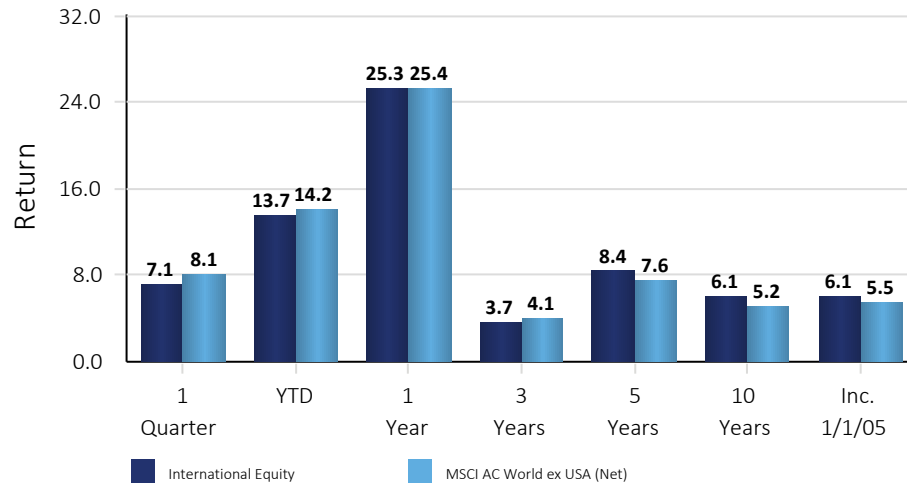
International Equity

Composite Performance Summary

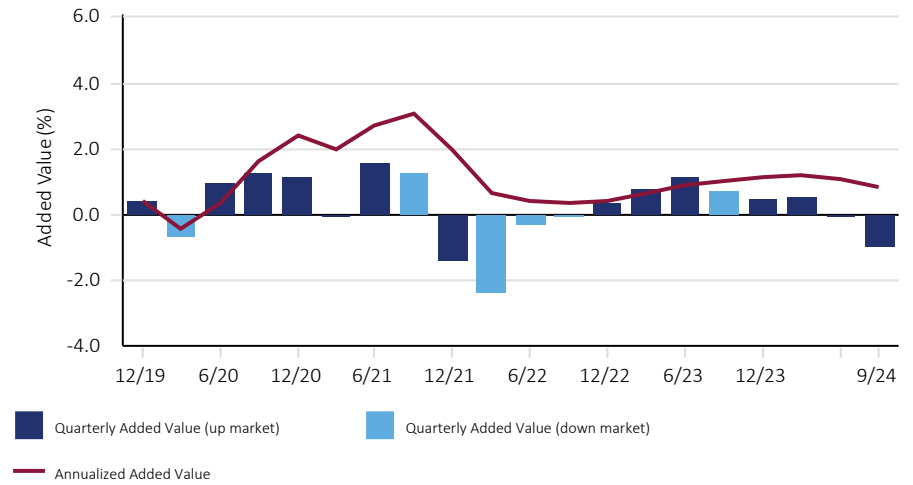
International Equity

Periods Ended September 30, 2024

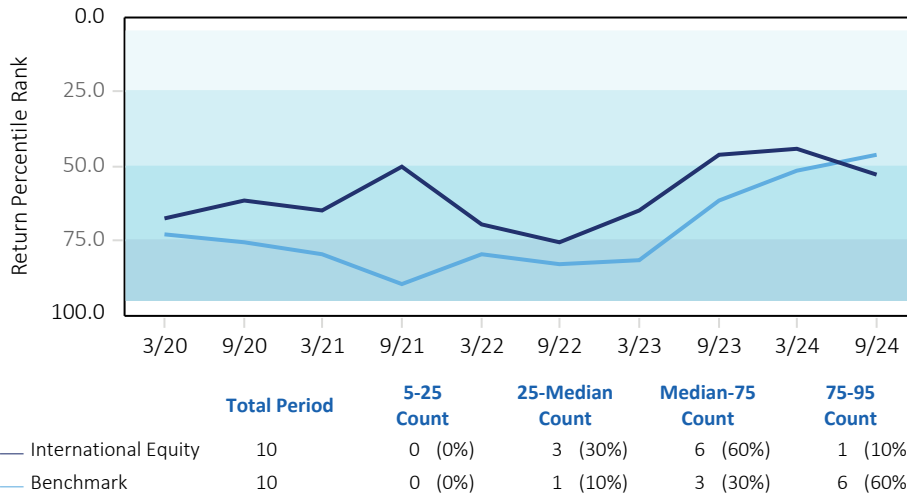
Comparative Performance



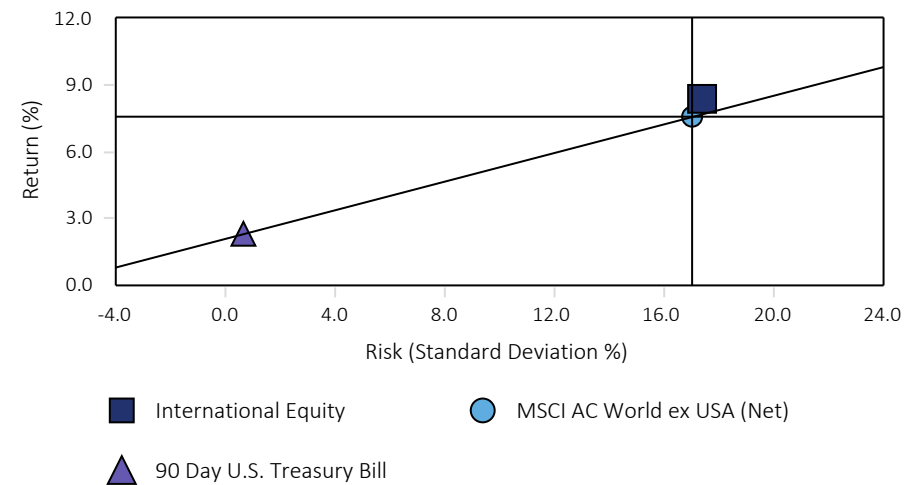
Added Value History



Rolling Percentile Rank: All Public Plans > \$1B-Intl. Equity Segment



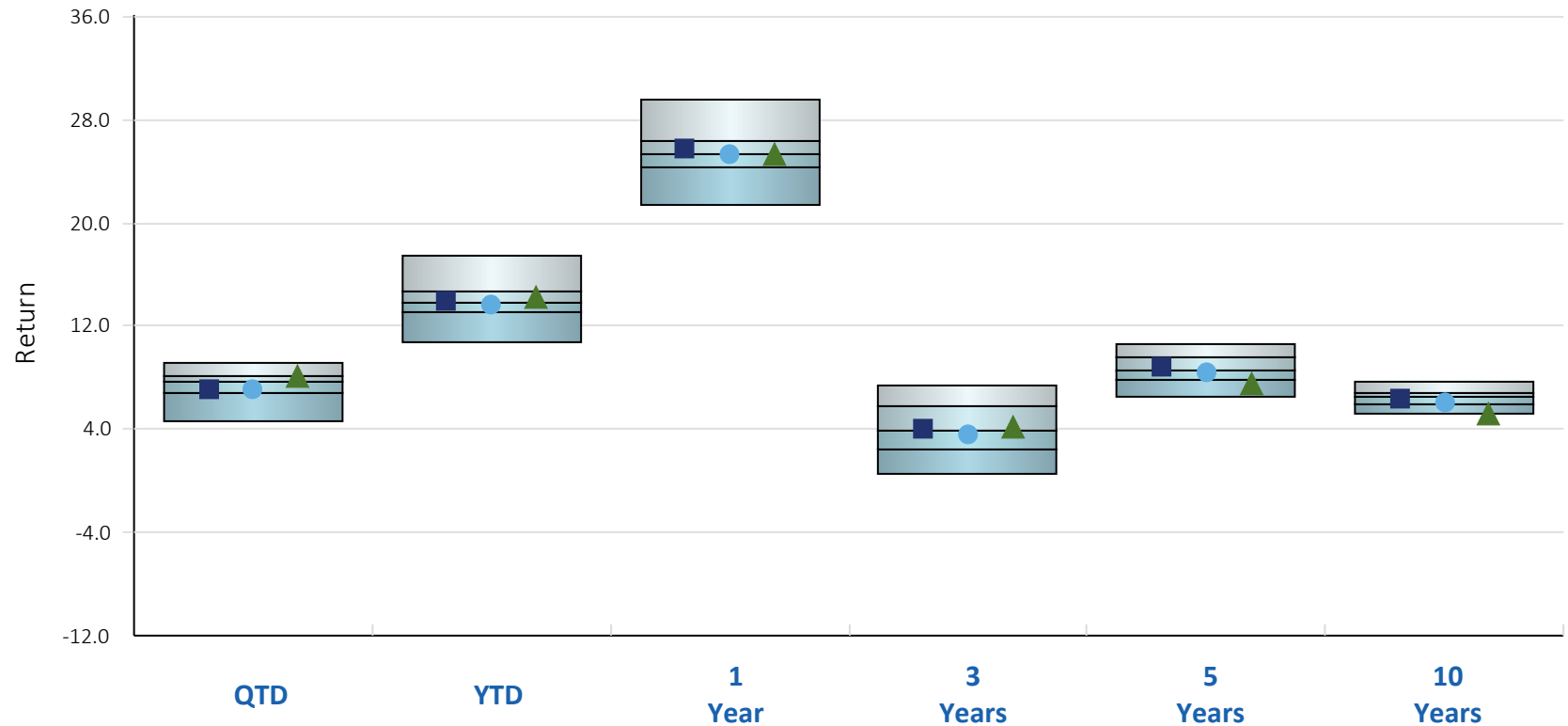
Risk and Return 10/1/19 - 09/30/24



Plan Sponsor Peer Group Analysis

International Equity vs All Public Plans > \$1B-Intl. Equity Segment(Gross)

Periods Ended September 30, 2024



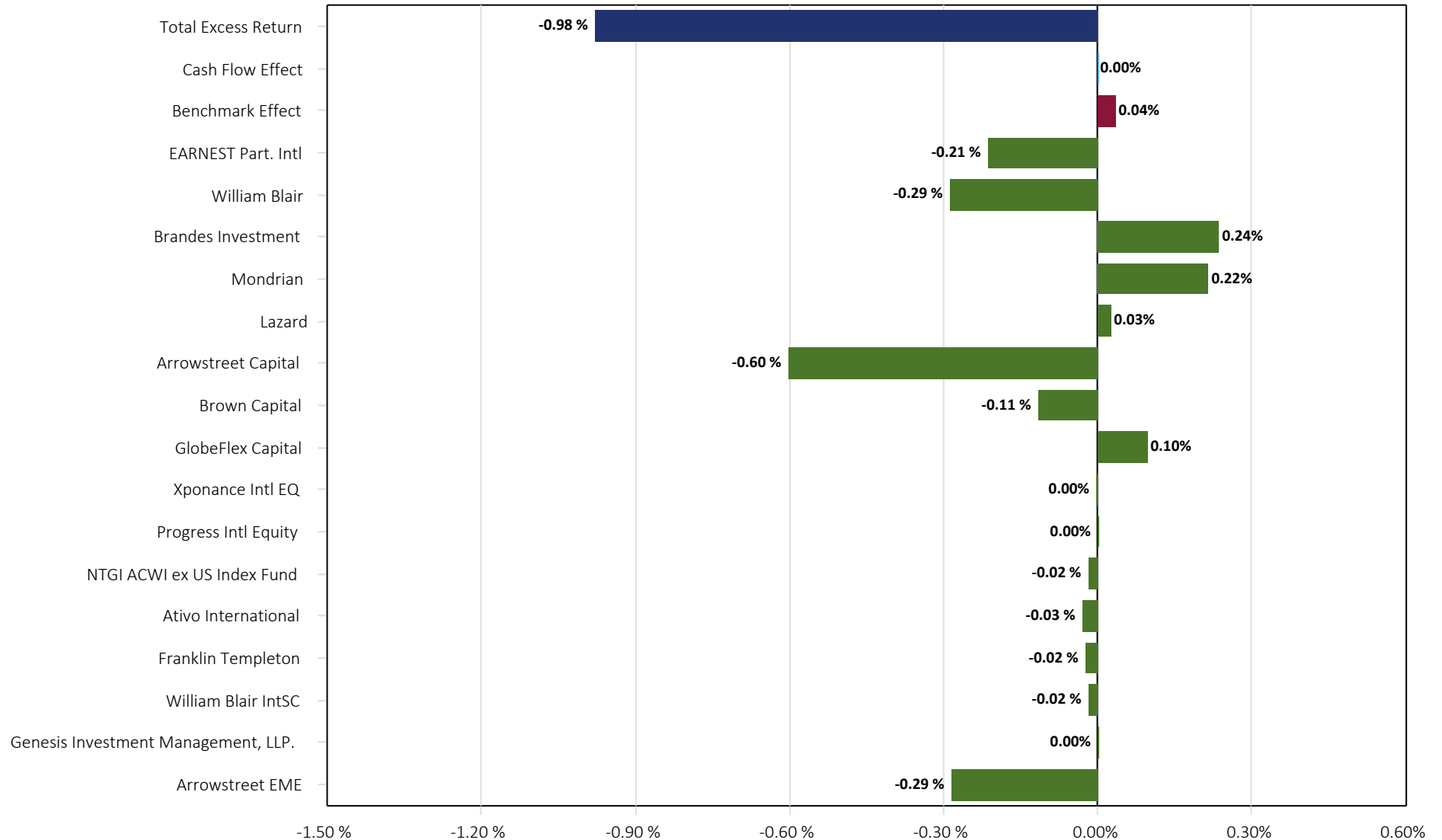
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
International Equity	7.15 (73)	13.94 (48)	25.77 (36)	4.04 (47)	8.83 (46)	6.42 (55)
International Equity - Net	7.08 (73)	13.66 (60)	25.31 (54)	3.67 (53)	8.45 (58)	6.06 (74)
MSCI AC World ex USA (Net)	8.06 (28)	14.21 (47)	25.35 (53)	4.14 (46)	7.59 (81)	5.22 (96)
5th Percentile	9.12	17.42	29.65	7.47	10.61	7.72
1st Quartile	8.09	14.72	26.43	5.78	9.53	6.88
Median	7.74	13.86	25.39	3.87	8.64	6.50
3rd Quartile	6.81	13.08	24.39	2.40	7.90	5.98
95th Percentile	4.64	10.80	21.46	0.56	6.50	5.23
Population	51	51	51	50	45	42

Asset Class Attribution

International Equity

Periods Ended 1 Quarter Ending September 30, 2024

1 Quarter



Performance

International Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)								
		1 Quarter	QTD	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
International Equity	11,401,111,144	7.15	7.15	13.94	25.77	4.04	8.83	6.42	7.79	9/1/1986
International Equity - Net		7.08	7.08	13.66	25.31	3.67	8.45	6.06		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22		
International Equity IMRF Custom Benchmark		8.10	8.10	14.15	25.17	3.51	7.38			
Intl Large Cap Equity	10,044,446,775	7.36	7.36	14.39	26.22	5.61	9.84	6.86	7.92	9/1/1986
Intl LargeCap Equity - Net		7.30	7.30	14.12	25.81	5.29	9.52	6.56		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22		
Intl Large Cap Grwth	1,841,440,268	5.07	5.07	11.37	25.50	1.60	9.69	6.74	8.47	9/1/2002
Intl Large Cap Grwth - Net		5.00	5.00	10.91	24.68	1.16	9.27	6.40		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	7.19	
EARNEST Part. Intl	774,605,561	5.01	5.01	12.44	24.56	7.35	10.95	6.73	9.23	10/1/2004
EARNEST Part. Intl - Net		4.96	4.96	11.72	23.20	6.81	10.52	6.42		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	6.14	
MSCI AC World ex USA Growth (Net)		6.92	6.92	14.06	26.75	0.81	7.09	5.97	6.56	
William Blair	1,066,834,707	5.12	5.12	10.61	26.19	-1.89	8.82	6.89	9.26	10/1/2002
William Blair - Net		5.03	5.03	10.34	25.77	-2.26	8.43	6.50		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	7.77	
MSCI AC World ex USA Growth (Net)		6.92	6.92	14.06	26.75	0.81	7.09	5.97	7.77	
Intl Large Cap Val.	1,856,742,937	11.21	11.21	16.74	28.06	10.35	10.08	6.48	8.76	10/1/1995
Intl Large Cap Val. - Net		11.13	11.13	16.29	27.48	9.96	9.72	6.10		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	5.51	
Brandes Investment	886,080,395	11.30	11.30	17.38	29.93	13.48	12.10	7.37	9.23	1/1/1996
Brandes Investment - Net		11.25	11.25	16.79	29.21	13.11	11.78	7.09		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	5.43	
MSCI AC World ex USA Value		9.41	9.41	15.10	24.90	8.25	8.49	4.93		

* Custom benchmark is calculated as a weighted average of each funds respective benchmark until 12/2017. After 12/2017 the benchmark is MSCI ACWI ex US - Net.

** Genesis is NOF NAV commingled fund.

Performance

International Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)								
		1 Quarter	QTD	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Mondrian	804,932,896	11.36	11.36	16.70	26.94	8.34	8.74	5.87	6.50	4/1/2012
Mondrian - Net		11.26	11.26	16.37	26.44	7.94	8.33	5.41	6.03	
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	5.76	
MSCI AC World ex USA Value		9.41	9.41	15.10	24.90	8.25	8.49	4.93	5.72	
Lazard	165,729,646	9.98	9.98	13.58	23.88	5.24	7.53	5.56	6.68	4/1/2012
Lazard - Net		9.91	9.91	13.38	23.57	5.00	7.28	5.23	6.26	
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	5.76	
MSCI AC World ex USA Value		9.41	9.41	15.10	24.90	8.25	8.49	4.93	5.72	
Intl Large Cap Active Core	3,291,115,109	6.01	6.01	14.93	26.24	6.37	11.46	8.28	6.60	2/1/2008
Intl Large Cap Active Core - Net		5.91	5.91	14.63	25.78	5.91	10.95	7.75		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	3.70	
Arrowstreet Capital	1,432,280,568	3.54	3.54	15.88	24.38	9.25	15.59	10.45	7.95	3/1/2008
Arrowstreet Capital - Net		3.42	3.42	15.50	23.84	8.75	15.07	9.95	7.45	
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	3.55	
Brown Capital	662,545,869	6.17	6.17	8.33	28.76	0.14	7.71	6.48	7.73	10/1/2004
Brown Capital - Net		6.11	6.11	8.14	28.45	-0.34	7.16	5.73		
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	6.14	
GlobeFlex Capital	1,079,612,136	9.21	9.21	18.53	27.69	7.51	10.55	7.47	6.12	3/1/2006
GlobeFlex Capital - Net		9.13	9.13	18.27	27.30	7.16	10.17	7.07	5.69	
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14	7.59	5.22	4.57	
Xponance Intl EQ	116,311,747	7.26	7.26	11.11	22.31	2.94			5.39	2/1/2021
Xponance Intl EQ - Net		7.10	7.10	10.62	21.57	2.29			4.77	
MSCI EAFE (Net)		7.26	7.26	12.99	24.77	5.48			7.09	
Progress Intl Equity*	364,791									
Intl Large Cap Passive Core	3,055,148,462	8.00	8.00	14.27	25.41	4.52	7.78	5.70	4.51	2/1/2000
Intl Large Cap Passive Core - Net		8.00	8.00	14.26	25.41	4.51	7.78	5.69		
International Large Cap Passive Core Benchmark		8.06	8.06	14.21	25.35	4.14	7.37	5.30	4.12	

* Custom benchmark is calculated as a weighted average of each funds respective benchmark until 12/2017. After 12/2017 the benchmark is MSCI ACWI ex US - Net.

** Genesis is NOF NAV commingled fund.

Performance

International Equity

Periods Ended September 30, 2024

	Market Value \$	Performance (%)								
		1 Quarter	QTD	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
NTGI ACWI ex US Index Fund	3,055,148,462	8.00	8.00	14.27	25.41	4.51			4.51	10/1/2021
NTGI ACWI ex US Index Fund - Net		8.00	8.00	14.26	25.41	4.51			4.51	
MSCI AC World ex USA (Net)		8.06	8.06	14.21	25.35	4.14			4.14	
Intl All Cap Developed	191,170,628	6.11	6.11	10.07	22.17	4.09	6.74		7.19	2/1/2019
Intl All Cap Developed - Net	191,170,628	5.99	5.99	9.67	21.57	3.57	6.21		6.68	2/1/2019
MSCI EAFE + Canada (Net)		7.76	7.76	13.10	24.98	5.65	8.36		8.45	
Ativo International		6.11	6.11	10.07	22.17	4.09	6.74		7.19	
Ativo International - Net	191,170,628	5.99	5.99	9.67	21.57	3.57	6.21		6.68	2/1/2019
MSCI EAFE + Canada (Net)		7.76	7.76	13.10	24.98	5.65	8.36		8.45	
Intl Small Cap Eqty	639,147,026	8.38	8.38	7.84	22.20	-3.88	6.75	5.90	5.06	12/1/2005
Intl Small Cap Eqty - Net	639,147,026	8.19	8.19	7.27	21.30	-4.61	5.96	5.11		
MSCI AC World ex USA Small Cap (Net)		8.90	8.90	11.93	23.25	1.39	8.21	6.08	6.32	
Custom Benchmark (Intl Small Cap)		8.90	8.90	11.93	23.25	1.39	8.21	6.08	5.78	
Franklin Templeton	258,922,901	8.08	8.08	9.58	21.78	0.46	6.59	5.75	6.08	8/1/2011
Franklin Templeton - Net		7.90	7.90	9.02	20.92	-0.25	5.83	4.98	5.32	
MSCI AC World ex USA Small Cap (Net)		8.90	8.90	11.93	23.25	1.39	8.21	6.08	5.62	
William Blair IntSC	380,224,125	8.58	8.58	6.69	22.48	-6.44	6.87	6.03	7.90	9/1/2010
William Blair IntSC - Net		8.39	8.39	6.11	21.56	-7.17	6.06	5.22	7.08	
MSCI AC World ex USA Small Cap (Net)		8.90	8.90	11.93	23.25	1.39	8.21	6.08	7.01	
Custom Benchmark (Intl Small Cap)	380,224,125	8.90	8.90	11.93	23.25	1.39	8.21	6.08	7.22	
Emerging Mkt Equity	526,346,715	2.20	2.20	14.74	23.31	-1.84	3.94	4.07	8.16	2/1/1992
Emerging Mkt Equity - Net	526,346,715	2.20	2.20	14.55	22.74	-2.35	3.37	3.47		
MSCI Emerging Markets Index		8.88	8.88	17.24	26.54	0.82	6.15	4.41	6.72	
Genesis Investment Management, LLP.**	526,346,715									3/1/2023
Arrowstreet EME		2.20	2.20	15.85	22.79				19.36	
Arrowstreet EME - Net		2.20	2.20	15.85	22.79				19.36	
MSCI Emerging Markets IMI (Net)		8.24	8.24	16.26	25.59				17.07	

* Custom benchmark is calculated as a weighted average of each funds respective benchmark until 12/2017. After 12/2017 the benchmark is MSCI ACWI ex US - Net.

** Genesis is NOF NAV commingled fund.

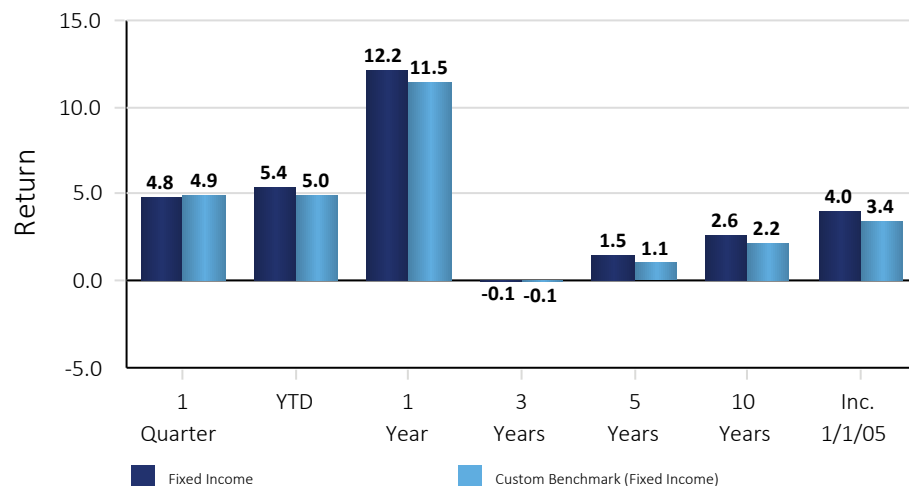
Fixed Income

Composite Performance Summary

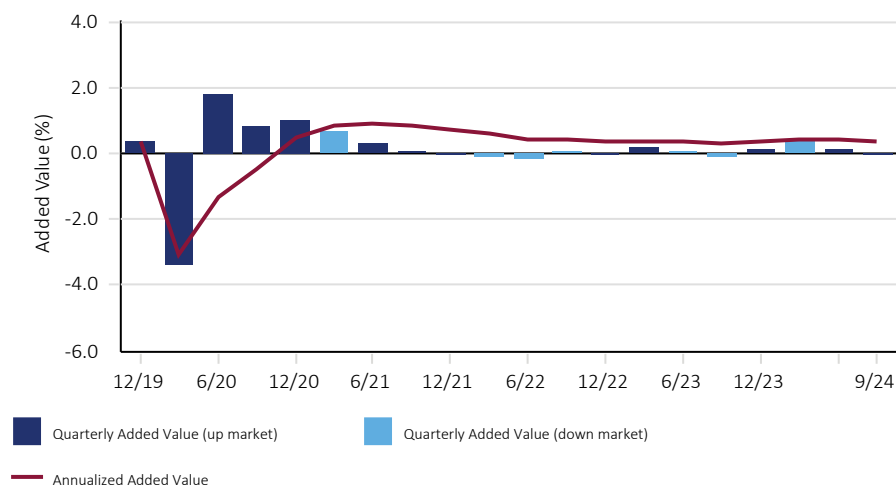
Fixed Income

Periods Ended September 30, 2024

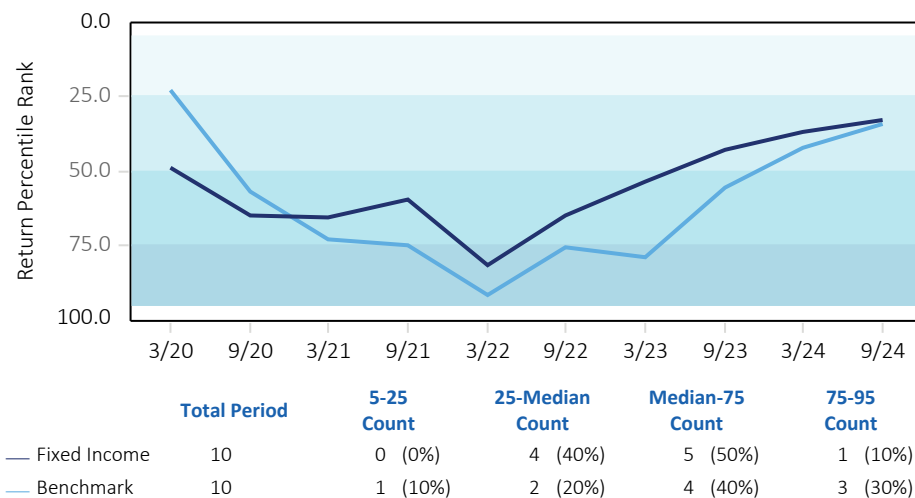
Comparative Performance



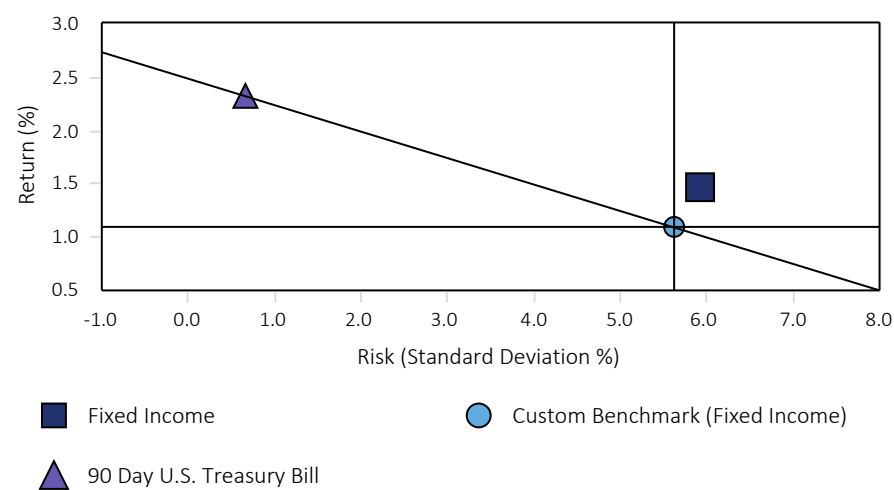
Added Value History



Rolling Percentile Rank: All Public Plans > \$1B-US Fixed Income Segment



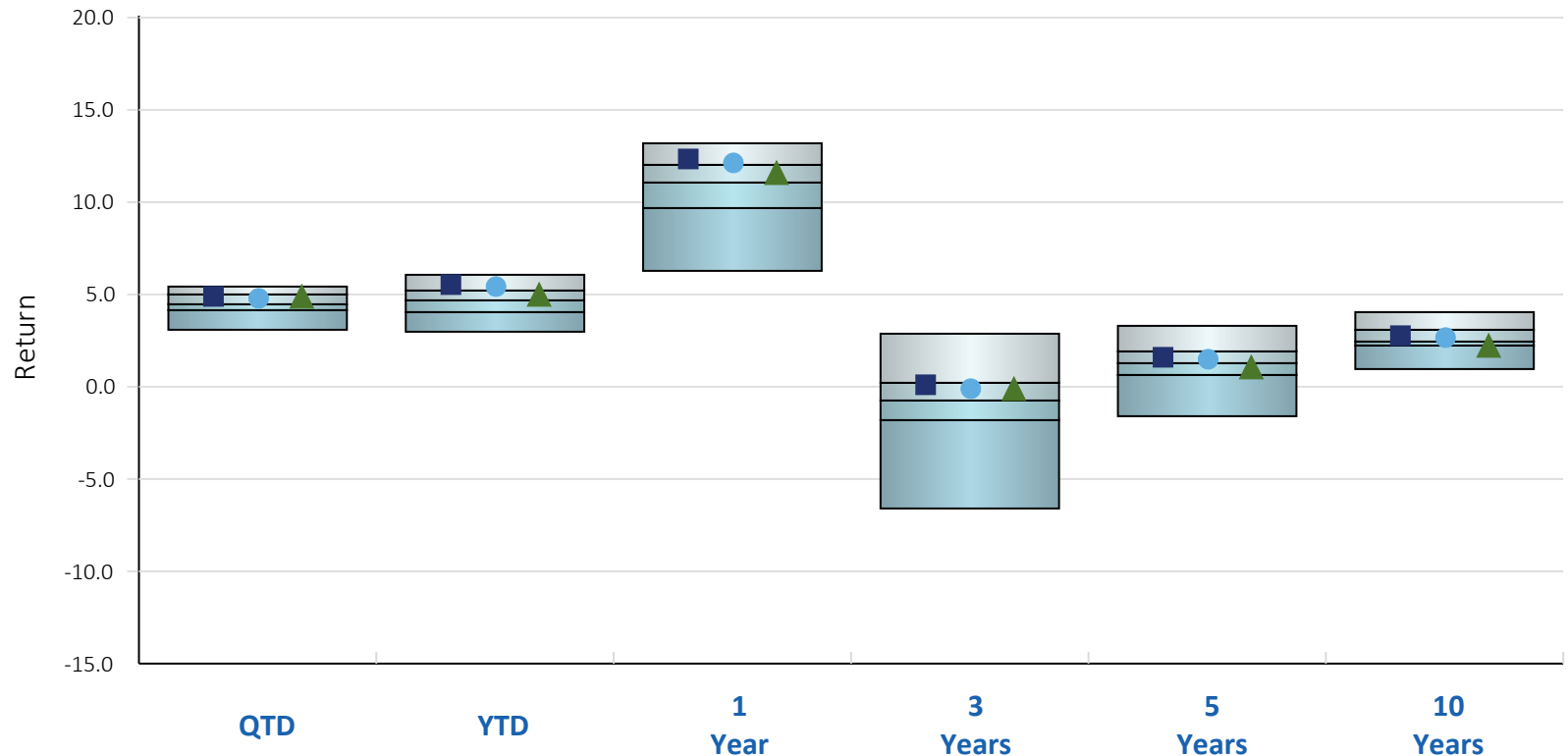
Risk and Return 10/1/19 - 09/30/24



Plan Sponsor Peer Group Analysis

Fixed Income vs All Public Plans > \$1B-US Fixed Income Segment(Gross)

Periods Ended September 30, 2024



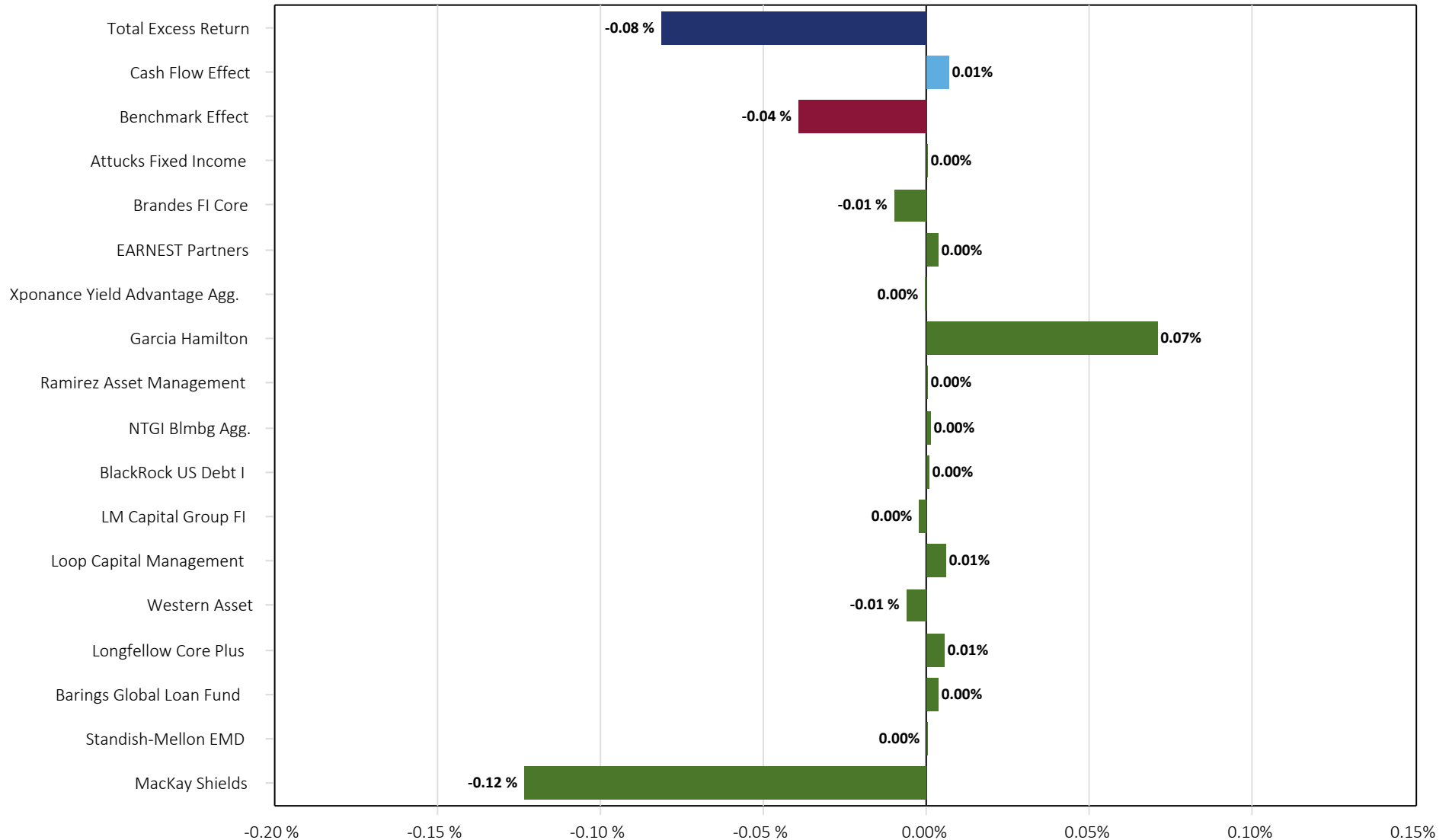
Fixed Income	4.85 (28)	5.52 (20)	12.33 (14)	0.08 (26)	1.60 (38)	2.75 (37)
Fixed Income - Net	4.82 (29)	5.41 (21)	12.17 (21)	-0.06 (33)	1.47 (44)	2.61 (41)
Custom Benchmark (Fixed Income)	4.90 (27)	4.97 (32)	11.55 (44)	-0.14 (34)	1.09 (59)	2.23 (75)
5th Percentile	5.42	6.07	13.18	2.90	3.33	4.00
1st Quartile	4.96	5.18	12.03	0.17	1.90	3.04
Median	4.51	4.68	11.07	-0.79	1.26	2.46
3rd Quartile	4.12	4.00	9.71	-1.76	0.63	2.20
95th Percentile	3.08	3.03	6.31	-6.58	-1.56	0.95
Population	53	53	53	51	44	40

Asset Class Attribution

Fixed Income

Periods Ended 1 Quarter Ending September 30, 2024

1 Quarter



Performance

Fixed Income

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Fixed Income	12,368,878,428	4.85	5.52	12.33	0.08	1.60	2.75	7.44	1/1/1982
Fixed Income - Net		4.82	5.41	12.17	-0.06	1.47	2.61		
Custom Benchmark (Fixed Income)		4.90	4.97	11.55	-0.14	1.09	2.23	6.92	
Fixed Income IMRF Custom Benchmark		4.86	5.14	11.73	-0.22	1.18			
Active Fixed Core	3,909,975,018	5.44	5.14	12.61	-0.76	0.90	2.30	3.84	4/1/2001
Active Fixed Core - Net		5.41	5.05	12.48	-0.88	0.79	2.18		
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.71	
Attucks Fixed Income	96,517,771	5.34	5.01	12.62	-1.09			-0.94	2/1/2021
Attucks Fixed Income - Net		5.26	4.76	12.26	-1.41			-1.25	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39			-1.36	
Brandes FI Core	345,720,713	4.84	4.61	11.46	-0.25	1.07		1.88	3/1/2016
Brandes FI Core - Net		4.84	4.59	11.43	-0.28	1.05		1.87	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33		1.63	
EARNEST Partners	927,009,174	5.28	5.35	12.40	-0.80	0.84	2.32	3.69	5/1/2005
EARNEST Partners - Net		5.25	5.24	12.25	-0.94	0.71	2.16	3.51	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.23	
Xponance Yield Advantage Agg.	1,013,094,534	5.22	5.76	13.10	-0.62	1.21	2.41	3.61	6/1/2005
Xponance Yield Advantage Agg. - Net		5.19	5.66	12.95	-0.75	1.08	2.27	3.44	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.18	
Garcia Hamilton	991,673,092	6.12	4.63	13.11	-0.88	0.59		2.02	6/1/2015
Garcia Hamilton - Net		6.10	4.56	13.02	-0.96	0.51		1.94	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33		1.67	

Loop Capital, Canada, Habacht switched from core to core plus effective 10/01/2010.

* Custom Benchmark is Credit Suisse US Leveraged Loan Index and the Credit Suisse Western European Leveraged Loan Index, weighted by the portfolio's market value to each sector.

Performance

Fixed Income

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Ramirez Asset Management	535,959,734	5.24	4.94	11.90	-1.05			0.68	5/1/2020
Ramirez Asset Management - Net		5.21	4.83	11.75	-1.17			0.54	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39			-0.76	
Pass. Core Fixed Income	2,980,571,113	5.21	4.54	11.59	-1.33	0.39	1.90	5.15	1/1/1990
Pass. Core Fixed Income - Net		5.20	4.54	11.58	-1.34	0.38	1.90		
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	5.13	
BlackRock US Debt I	1,767,287,018	5.20	4.58	11.61	-1.32	0.41	1.93	2.14	10/1/2013
BlackRock US Debt I - Net		5.20	4.58	11.61	-1.32	0.41	1.93	2.14	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	2.03	
NTGI Blmbg Agg.	1,213,284,095	5.21	4.47	11.55	-1.35	0.36	1.87	5.19	2/1/1990
NTGI Blmbg Agg. - Net		5.21	4.47	11.55	-1.36	0.36	1.87		
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	5.18	
Core Plus Fixed Income	3,037,780,297	5.25	5.07	12.95	-1.08	1.17	2.57	7.26	1/1/1982
Core Plus Fixed Income - Net		5.21	4.95	12.78	-1.23	1.01	2.40		
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	6.83	
LM Capital Group FI	868,116,406	5.20	5.47	12.35	-0.44	1.61	2.65	4.07	5/1/2005
LM Capital Group FI - Net		5.16	5.35	12.17	-0.60	1.44	2.49	3.90	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.23	
Loop Capital Management	601,047,099	5.35	5.63	13.69	-0.52	1.41	2.73	4.12	5/1/2005
Loop Capital Management - Net		5.32	5.52	13.54	-0.66	1.27	2.59	3.99	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.23	

Loop Capital, Canada, Habacht switched from core to core plus effective 10/01/2010.

* Custom Benchmark is Credit Suisse US Leveraged Loan Index and the Credit Suisse Western European Leveraged Loan Index, weighted by the portfolio's market value to each sector.

Performance

Fixed Income

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Western Asset	973,752,204	5.15	3.99	12.72	-2.19	0.52	2.54	4.45	11/1/2001
Western Asset - Net		5.12	3.88	12.56	-2.33	0.38	2.41		
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39	0.33	1.84	3.49	
Longfellow Core Plus	594,864,588	5.35	5.70	13.45	-0.64			0.84	5/1/2020
Longfellow Core Plus - Net		5.31	5.59	13.28	-0.78			0.69	
Blmbg. U.S. Aggregate Index		5.20	4.45	11.57	-1.39			-0.76	
Bank Loans	1,286,225,139	2.16	6.83	9.91	5.44	5.19	4.96	4.86	8/1/2014
Bank Loans - Net		2.20	6.98	10.11	5.58	5.27	4.73	4.63	
Barings Custom Benchmark		2.17	6.83	9.74	6.50	5.76	5.04	4.94	
Barings Global Loan Fund	1,286,225,139	2.28	7.24	10.45	5.88	5.59	5.16	5.06	8/1/2014
Barings Global Loan Fund - Net		2.20	6.98	10.11	5.58	5.27	4.73	4.63	
Barings Custom Benchmark*		2.17	6.83	9.74	6.50	5.76	5.04	4.94	
Emerging Markets Debt	246,051								
Standish-Mellon EMD	246,051								
High Yield	1,154,080,811	4.03	7.52	14.06	4.09	5.59	5.94	9.03	4/1/1986
High Yield - Net		3.95	7.27	13.72	3.78	5.25	5.59		
ICE BofA U.S. High Yield, Cash Pay Index		5.27	7.90	15.55	3.09	4.53	4.94	7.80	
MacKay Shields	1,154,080,811	4.03	7.52	14.06	4.09	5.59	6.03	8.16	11/1/2000
MacKay Shields - Net		3.95	7.27	13.72	3.78	5.25	5.69		
ICE BofA U.S. High Yield, Cash Pay Index		5.27	7.90	15.55	3.09	4.53	4.94	6.92	

Loop Capital, Canada, Habacht switched from core to core plus effective 10/01/2010.

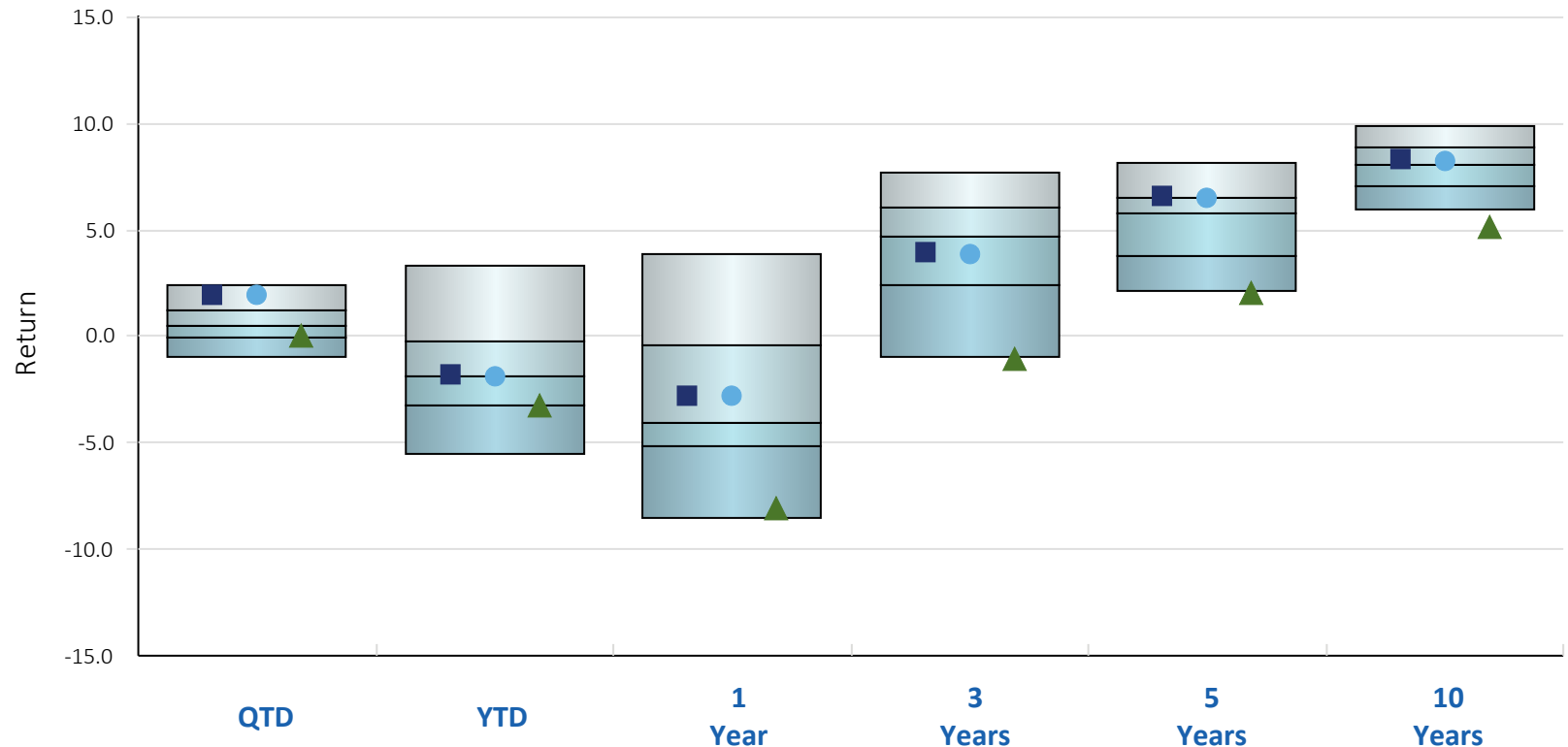
* Custom Benchmark is Credit Suisse US Leveraged Loan Index and the Credit Suisse Western European Leveraged Loan Index, weighted by the portfolio's market value to each sector.

Private Real Assets

Plan Sponsor Peer Group Analysis

Real Estate vs All Public Plans > \$1B-Real Estate Segment(Gross)

Periods Ended September 30, 2024



Real Estate	1.99 (14)	-1.81 (49)	-2.74 (39)	3.99 (63)	6.57 (24)	8.32 (47)
Real Estate - Net	1.96 (14)	-1.87 (51)	-2.82 (39)	3.92 (64)	6.51 (25)	8.28 (48)
Blended Benchmark (Real Estate)	0.03 (73)	-3.19 (74)	-8.03 (94)	-1.04 (96)	2.05 (97)	5.16 (100)
5th Percentile	2.41	3.30	3.87	7.71	8.20	9.94
1st Quartile	1.25	-0.27	-0.40	6.04	6.51	8.86
Median	0.51	-1.87	-4.03	4.69	5.81	8.10
3rd Quartile	-0.07	-3.26	-5.19	2.40	3.75	7.03
95th Percentile	-0.99	-5.49	-8.53	-0.99	2.16	5.95
Population	45	40	40	36	29	15

Asset Allocation & Performance

Private Real Assets

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Private Real Assets	5,228,045,513	2.34	-1.20	-2.12				0.79	3/1/2022
Private Real Assets- Net		2.32	-1.26	-2.20				0.72	
Custom Benchmark (Private Real Assets)		0.09	-2.76	-7.34				-3.40	
Real Estate	4,655,544,264	1.99	-1.81	-2.74	3.99	6.57	8.32	5.65	5/1/1985
Real Estate - Net		1.96	-1.87	-2.82	3.92	6.51	8.28		
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05	5.16	6.98	
Real Estate Core Cmp	2,078,470,308	1.12	-3.47	-4.56	3.91	7.08	8.52	7.31	4/1/1999
TA Assoc. Buckhead	884,850,944	1.08	-0.75	1.89	9.03	13.46	12.65	11.18	8/1/1995
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05	5.16	6.48	
Barings Euro Core Property	100,907,337	4.79	-23.76	-22.63	-11.43	-3.34		3.59	3/1/2017
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05		3.45	
Blackstone Property Euro	176,123,482	4.48	-3.54	-1.65	3.00	7.34		5.93	12/1/2017
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05		3.11	
INVESCO Core Real Estate	198,677,073	-1.52	-5.25	-11.25	0.10	1.36	4.81	6.37	4/1/2011
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05	5.16	7.04	
INVESCO European real estate	55,451,485	4.12	0.99	-0.50	-1.47	0.25		-1.10	4/1/2018
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05		2.86	
AEW Core Property Tr	241,218,568	-0.08	-0.11	-3.94	3.21	3.78	5.88	6.32	10/1/2013
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05	5.16	5.71	
CBRE Core Partners	272,901,725	0.66	-0.66	-8.76	5.91	6.69	8.24	8.34	12/1/2013
Blended Benchmark (Real Estate)		0.03	-3.19	-8.03	-1.04	2.05	5.16	5.61	

Returns are time-weighted and are reported net of fee for all real estate managers.

The Blended Benchmark (Real Estate) is currently the NCREIF ODCE VW Net Index. Prior to January 1, 2013, it was the NCREIF Property Index + 1%. Returns prior to January, 2007, reflect those of Consumer Price Index + 5%.

Asset Allocation & Performance

Private Real Assets

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
JPM Strategic Property Fund Blended Benchmark (Real Estate)	148,339,694	0.46 0.03	-11.35 -3.19	-13.66 -8.03	-3.06 -1.04			0.62 2.31	1/1/2021
RE Non-Core Cmp	2,577,073,956	2.72	-0.27	-1.04	3.92	5.92	8.07	9.79	1/1/2010
Artemis MWBE Spruce Blended Benchmark (Real Estate)	426,216,911	4.09 0.03	1.80 -3.19	-0.39 -8.03	3.62 -1.04	5.83 2.05		4.55 3.80	6/1/2016
Franklin T. EMREFF Blended Benchmark (Real Estate)	213,361	-79.99 0.03	-79.99 -3.19	-91.11 -8.03	-64.01 -1.04	-49.39 2.05	-23.98 5.16	-17.82 6.75	9/1/2011
Security Capital Blended Benchmark (Real Estate)	112,669,772	12.78 0.03	17.08 -3.19	36.82 -8.03	2.85 -1.04	8.81 2.05	6.83 5.16		7/1/1997
Dune II Blended Benchmark (Real Estate)	7,019,901	0.92 0.03	0.83 -3.19	2.94 -8.03	3.78 -1.04	2.78 2.05	6.96 5.16	5.46 6.17	2/1/2009
Non-Core Real Estate Funds Blended Benchmark (Real Estate)	1,706,480,453	1.80 0.03	-1.19 -3.19	-2.62 -8.03	5.56 -1.04	7.02 2.05	9.39 5.16	9.60 6.70	10/1/2011
Almanac ARS V	50,940								
Non-Core Intl Real Estate Blended Benchmark (Real Estate)	324,422,618	2.89 0.03	-3.07 -3.19	-3.28 -8.03	-3.40 -1.04	0.86 2.05	-0.62 5.16	-1.60 5.27	8/1/2014

Returns are time-weighted and are reported net of fee for all real estate managers.

The Blended Benchmark (Real Estate) is currently the NCREIF ODCE VW Net Index. Prior to January 1, 2013, it was the NCREIF Property Index + 1%. Returns prior to January, 2007, reflect those of Consumer Price Index + 5%.

Asset Allocation & Performance

Private Real Assets

Periods Ended September 30, 2024

	Market Value \$	Performance (%)							
		1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Agriculture	222,590,110	4.77	-2.57	-12.42	-0.85	-0.70	2.43	5.71	10/1/1997
NCREIF Farmland Index		-0.24	0.29	2.57	6.15	5.56	6.72	10.65	
Premiere Partners IV	222,590,110	4.77	-2.57	-12.42	-0.85	-0.70		0.81	3/1/2015
Timberland	70,770,974	3.14	1.59	21.87	14.01	7.96	4.33	7.48	10/1/1992
NCREIF Timberland Index		1.53	5.45	10.02	10.86	7.47	5.90	8.51	
Forest Investment	70,770,974	3.14	1.59	21.87	14.01	7.96	4.33	7.62	10/1/1992
Blended Benchmark (Timberland)		1.35	5.86	6.54	8.74	6.23	5.29	8.31	
Unlisted Infrastructure	279,140,165	6.28	11.29	16.82	13.79	13.97		13.07	4/1/2018
Blended Benchmark (Unlisted Infrastructure)		1.35	5.86	6.54	8.43	8.66		8.74	
Unlisted Infrastructure Funds	279,140,165	6.28	11.29	16.82	13.79	13.97		13.07	4/1/2018
Blended Benchmark (Unlisted Infrastructure)		1.35	5.86	6.54	8.43	8.66		8.74	

Returns are time-weighted and are reported net of fee for all real estate managers.

The Blended Benchmark (Real Estate) is currently the NCREIF ODCE VW Net Index. Prior to January 1, 2013, it was the NCREIF Property Index + 1%. Returns prior to January, 2007, reflect those of Consumer Price Index + 5%.

Alternative Investments

Asset Allocation & Performance

Alternatives Investments

Periods Ended September 30, 2024

	Allocation	Performance (%)							
	Market Value \$	1 Quarter	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Alternatives Investments	6,480,483,306	3.32	6.06	5.31	7.28	13.90	12.10	11.25	2/1/1986
Custom Benchmark (Alternative Investments)		3.29	24.65	21.64	9.30	9.18	9.09	12.22	
Absolute Return	13,243								
Aurora Investment	13,243								
Private Equity	5,806,945,205	2.75	4.98	4.38	7.46	15.68	14.24	13.41	2/1/1986
Blended Benchmark (Private Equity)		3.39	27.29	23.80	9.72	9.43	9.22		
Abbott S/A Comp.	475,159,344	0.32	1.37	1.18	4.77	16.50	14.13	14.10	6/1/1987
Muller Monroe MPEFF									
Pantheon S/A Comp.	417,034,912	-0.07	2.69	3.53	3.81	15.08	13.44	10.90	10/1/2000
Private Equity Fund - Domestic	3,755,330,986	1.59	3.51	1.47	7.07	15.33	15.58	13.39	6/1/2012
Private Equity Fund - International	859,733,013	10.29	15.22	20.89	14.99	17.26		2.57	7/1/2015
Oakbrook Opportunities Fund	299,686,950	5.69	6.68	7.49	6.93	8.24		7.71	6/1/2019
Private Credit	673,524,857	8.51	19.58	13.05	2.44	2.78		2.78	10/1/2019
Private Credit Fund - Domestic	628,924,979	8.98	20.89	14.28	2.81	3.00		3.00	10/1/2019
Private Credit Fund - International	44,599,878	1.89	-18.06					-18.06	1/1/2024

Manager Watch List

As of September 30, 2024

Investment Manager	Asset Class	Effective Date	Resolution
Ativo	International Equity – All Cap	August 2023	
Brown	International Equity – Large Cap	March 2024	
Western Assets	Fixed Income – Core Plus	August 2024	
Franklin Templeton	International Equity - Small Cap	September 2024	

Appendix

Asset Class Returns

Periods Ended September 30, 2024

	Performance (%)										
	YTD	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Fund	10.80	13.43	-12.76	16.83	14.99	19.77	-4.23	16.02	8.01	0.53	6.15
Total Fund - Net	10.67	13.24	-12.90	16.63	14.79	19.57	-4.40	15.78	7.77	0.29	5.90
Total Fund Benchmark	13.18	14.28	-13.26	13.48	13.16	18.68	-3.12	14.37	7.89	1.37	7.33
Domestic Equity	17.53	23.30	-19.12	24.89	22.07	29.23	-6.08	19.83	12.62	0.04	9.81
Domestic Equity - Net	17.39	23.10	-19.25	24.69	21.86	29.00	-6.25	19.59	12.35	-0.22	9.54
Blended Benchmark (U.S. Equity)	20.35	24.16	-18.53	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.47
U.S. Equity IMRF Custom Benchmark	18.36	21.36	-18.21	25.68	18.00	29.67	-6.79	18.08	15.43		
International Equity	13.94	19.64	-17.86	9.78	13.52	23.76	-14.13	27.95	3.56	-1.90	-2.80
International Equity - Net	13.66	19.22	-18.14	9.37	13.08	23.39	-14.41	27.52	3.21	-2.23	-3.10
MSCI AC World ex USA (Net)	14.21	15.62	-16.00	7.82	10.65	21.51	-14.20	27.19	4.50	-5.66	-3.87
International Equity IMRF Custom Benchmark	14.15	15.11	-16.70	7.30	11.30	21.37	-14.36	27.79	3.92		
Fixed Income	5.52	7.69	-11.79	-0.42	7.88	9.50	-0.24	4.82	4.87	0.25	5.97
Fixed Income - Net	5.41	7.53	-11.90	-0.53	7.75	9.37	-0.39	4.66	4.71	0.10	5.81
Blmbg. U.S. Aggregate Index	4.45	5.53	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97
Fixed Income IMRF Custom Benchmark	5.14	7.27	-11.98	-0.85	7.29	9.14	-0.08	3.98	3.89		
Private Real Assets	-1.26	-3.50									
Custom Benchmark (Private Real Assets)	-2.76	-11.80									
Real Estate	-1.81	-4.15	11.77	21.95	4.20	9.81	8.36	10.03	8.97	12.54	13.02
Real Estate - Net	-1.87	-4.21	11.71	21.88	4.16	9.76	8.36	10.03	8.97	12.46	13.02
Blended Benchmark (Real Estate)	-3.19	-12.73	6.54	21.02	0.34	4.39	7.36	6.66	7.79	13.95	11.46
Agriculture	-2.57	-8.09	3.98	2.69	4.69	-5.82	0.28	-4.58	-0.47	20.18	24.73
NCREIF Farmland Index	0.29	4.96	9.47	7.83	3.08	4.81	6.74	6.19	7.09	10.35	12.63
Timberland	1.59	26.14	11.94	-2.72	4.51	1.00	-3.62	4.68	-4.58	4.99	12.83
NCREIF Timberland Index	5.45	9.45	12.90	9.17	0.81	1.30	3.21	3.63	2.59	4.97	10.48
Unlisted Infrastruct	11.29	16.38	11.76	11.68	15.90	9.65					
Blended Benchmark (Unlisted Infrastructure)	5.86	7.49	9.65	9.00	9.00	9.00					

Benchmark definitions are in the glossary.

Private Equity, Agriculture, Timberland, Unlisted Infrastructure returns shown are gross of fees.

Asset Class Returns

Periods Ended September 30, 2024

	Performance (%)										
	YTD	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Alternatives Investments	6.06	2.60	4.39	46.46	12.31	9.48	17.32	12.09	5.32	6.90	11.63
Alternative Investments - Net	6.06	2.60	4.38	46.44	12.27	9.43	17.14	11.91	5.00	6.47	11.16
Custom Benchmark (Alternative Investments)	24.65	25.15	-18.08	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Private Equity	4.98	2.61	5.36	54.15	14.50	11.78	21.46	15.61	8.60	8.41	13.72
Blended Benchmark (Private Equity)	27.29	25.61	-19.14	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Cash	4.26	5.23	3.18	2.44	2.56	3.59	2.36	1.67	0.63	0.29	0.17
90 Day U.S. Treasury Bill	4.03	5.02	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04

Benchmark definitions are in the glossary.

Private Equity, Agriculture, Timberland, Unlisted Infrastructure returns shown are gross of fees.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Domestic Equity Custom	3/1/2022	Present	93% Russell 3000 Index, 7% FTSE Global Core Infrastructure 50/50 Index (Net)
Benchmark	1/1/2015	2/28/2022	100% Russell 3000 Index
	1/1/1982	12/31/2014	100% Dow Jones US Total Stock Market Index
Real Estate Blended	1/1/2013	Present	100% NCREIF Fund Index-ODCE (VW) (Net)**
Benchmark	1/1/2007	12/31/2012	100% NPI + 1%
	1/1/2005	12/31/2016	100% Consumer Price Index + 5%
Alternatives Custom	1/1/2024	Present	87% MSCI World World Index (Net) 1 Qtr Lagged +3%, 13% S&P LSTA Leveraged Loan 100 Index +2%
Benchmark	3/1/2022	12/31/2023	95% MSCI World World Index (Net) 1 Qtr Lagged +3%, 5% S&P LSTA Leveraged Loan 100 Index +2%
	7/1/2010	2/28/2022	100% Annualized rate of 9.0%
	1/1/2004	6/30/2010	100% Annualized rate of 12.0%
	1/1/2003	12/31/2003	100% Annualized rate of 13.0%
U.S. Equity IMRF Custom Benchmark			Blend of the U.S. Equity Style benchmarks returns, dollar weighted by the actual allocation at pervious month end.
International Equity IMRF Custom Benchmark			Blend of the the International Equity Style benchmarks returns, dollar weighted by the actual allocation at previous month end.
Fixed Income IMRF Custom Benchmark			Blend of the the Fixed Income Style benchmarks returns, dollar weighted by the actual allocation at previous month end.

**ODCE returns are updated quarterly.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Fixed Income Custom Benchmark	1/1/2024	Present	82% Bloomberg U.S. Aggregate, 10% Custom Barings Global Loan Benchmark, 8% ICE BofAML U.S. High Yield Cash Pay
	3/1/2022	12/31/2023	78% Bloomberg U.S. Aggregate, 14% Custom Barings Global Loan Benchmark, 8% ICE BofAML U.S. High Yield Cash Pay Index
	1/1/1976	2/28/2022	100% Bloomberg U.S. Aggregate
Private Real Assets Custom Benchmark	3/1/2022	Present	95% NCREIF Fund Index-ODCE (VW) (Net)**, 5% Consumer Price Index +4%
Unlisted Infrastructure Blended Benchmark	3/1/2022	Present	100% Consumer Price Index +4%
	4/1/2018	2/28/2022	100% Alternatives Custom Benchmark
Private Equity Blended Benchmark	3/1/2022	Present	100% MSCI World World Index (Net) 1 Qtr Lagged +3%
	2/1/1996	2/28/2022	100% Alternatives Custom Benchmark

**ODCE returns are updated quarterly.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Total Fund Benchmark	1/1/2024	Present	34.5% Blended Benchmark (U.S. Equity), 18.0% MSCI AC World ex USA (Net), 24.5% Custom Benchmark (Fixed Income), 10.5% Custom Benchmark (Private Real Assets), 11.5% Custom Benchmark (Alternative Investments), 1.0% 90 Day U.S. Treasury Bill
	3/1/2022	1/1/2024	35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	1/1/2021	2/28/2022	39% Russell 3000 Index, 25% Blmbg. Barc. U.S. Aggregate, 15% MSCI AC World ex USA (Net), 10% NCREIF Fund Index-ODCE (VW) (Net), 10% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	3/1/2018	12/31/2020	37% Russell 3000 Index, 28% Blmbg. Barc. U.S. Aggregate, 18% MSCI AC World ex USA (Net), 9% NCREIF Fund Index-ODCE (VW) (Net), 7% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.