

Maryland State Retirement and Pension System

Performance Report
December 31, 2022

Fund Evaluation Report

Agenda

1. Executive Summary
2. Performance Summary
3. Risk Dashboard
4. Activity Update
5. Economic and Market Update
6. Appendices
 - Corporate Update
 - Disclaimer, Glossary, and Notes

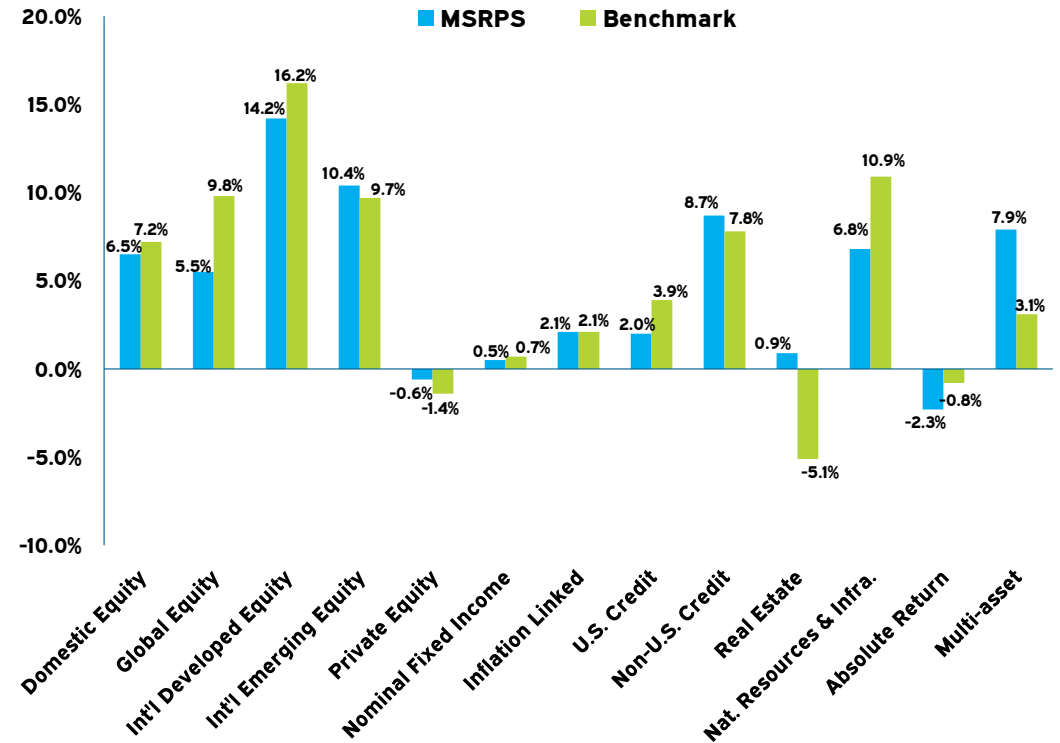
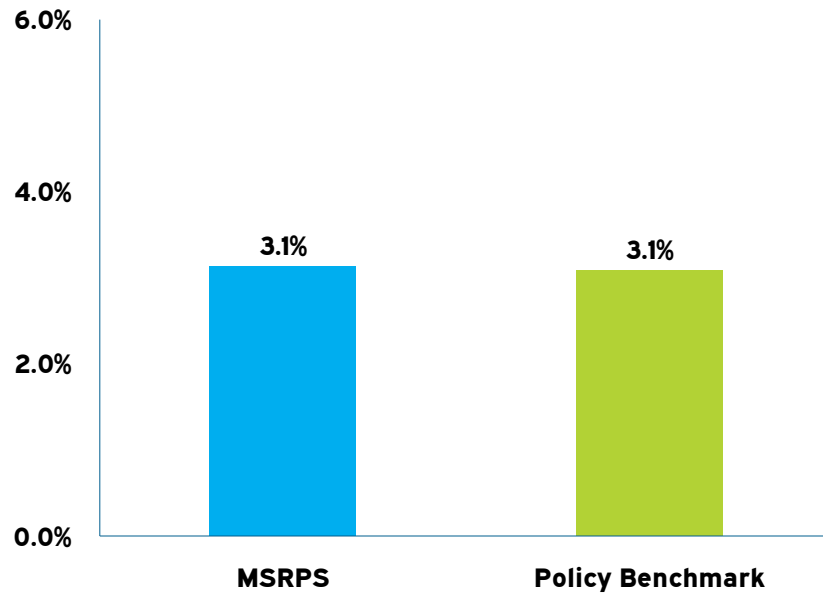
Executive Summary

Market Value & Performance

- At the end of the fourth quarter, the System was valued at \$62,917 million, an increase of \$1,566 million from the end of the third quarter.
 - The increase was the result of positive investment performance and negative cash outflows that totaled \$352.9 million for the quarter.
- The System returned 3.1%, net of fees, during the fourth quarter of 2022, outperforming the policy benchmark by 0.05%.
 - All asset class returns were positive for the quarter except for absolute return and private equity.
 - International developed equity had the strongest absolute return, up 14.2% for the quarter, while absolute return was the weakest performer in absolute terms, down 2.3%.
- At quarter end, all asset classes were within their respective target allocation ranges.

Q4 System and Asset Class Performance

→ The System outperformed the Policy Benchmark during the fourth quarter, returning 3.1%, net of fees.



→ During the quarter, international developed equity delivered the best absolute performance returning 14.2%.

→ On a relative basis, real estate was the best performing asset class, outpacing its benchmark by 6.0%. This outperformance is likely overstated due to the delayed NAVs reported by the system's managers.

Note: For some asset classes, there is a lack of publicly available index data which at times can introduce greater tracking error in the short-term (e.g. natural resources & infrastructure) when a market proxy is used.

Total System Q4 Attribution¹

	Total System			Policy Benchmark			Attribution Analysis Active			
	Average Weight	Total Return ²	Contribution to Return	Average Weight ³	Total Return ²	Contribution to Return	Allocation Effect	Management Effect ⁴	Interaction Effect	Total Effect
Public Equity	28.4	9.0	2.6	28.4	10.2	2.9	-0.09	-0.18	-0.16	-0.44
<i>Domestic Equity</i>	11.2	6.5	0.7	12.5	7.2	0.9	-0.09	-0.08	0.01	-0.16
<i>International Developed</i>	6.4	15.6	1.0	7.5	16.2	1.2	-0.14	-0.05	0.01	-0.18
<i>International Emerging</i>	7.5	9.3	0.7	8.4	9.7	0.8	-0.08	-0.05	0.01	-0.13
<i>Global Equity</i>	3.3	4.3	0.1	0.0	9.8	0.0	0.22	0.00	-0.18	0.04
Private Equity	21.6	-0.6	-0.1	21.6	-1.4	-0.3	0.00	0.16	0.00	0.16
Nominal Fixed Income	13.1	0.9	0.1	14.6	0.7	0.1	0.03	0.02	0.00	0.05
Inflation Linked	4.3	2.1	0.1	4.6	2.1	0.1	0.00	0.00	0.00	0.00
US Credit	7.1	2.0	0.1	7.0	3.9	0.3	0.00	-0.13	0.00	-0.14
Non- US Credit	0.9	8.7	0.1	1.0	7.8	0.1	-0.01	0.01	0.00	0.00
Real Estate	11.8	0.9	0.1	11.8	-5.1	-0.6	0.00	0.69	0.00	0.69
Natural Resources & Infrastructure	5.3	6.8	0.4	5.0	10.9	0.5	0.02	-0.20	-0.01	-0.19
Absolute Return	6.6	-2.3	-0.2	6.0	-0.8	0.0	-0.04	-0.09	-0.02	-0.15
Multi-Asset	0.4	7.9	0.0	0.0	3.1	0.0	0.00	0.00	0.02	0.02
Cash	0.5	1.9	0.0	0.0	0.9	0.0	-0.02	0.00	0.01	-0.01
Total (excl. overlay)	-	-	3.10	-	-	3.08	-0.11	0.28	-0.17	0.00
Currency Overlay							-0.07			
Structural/Tactical Overlay							0.11			
Total (incl. overlay)	100.0	-	3.13	100.0	-	3.08	-0.07	0.28	-0.17	0.04

¹ Numbers may not sum due to rounding. Attribution calculated on a monthly basis, using average month end market values and targets. As a result, there can be discrepancies from custodian data due to intra-month transfers.

² "Total Return" and "Contribution to Return" reflects asset class and System performance excluding the currency hedging and structural/tactical overlay programs.

³ Based on the transitional target allocations.

⁴ In cases where the policy weight is zero, the active management effect will in turn be zero. The interaction effect will capture any contributions made by active management where the policy weight is zero as it factors in the portfolio weight.

Total System 1-Year Attribution¹

	Total System			Policy Benchmark			Attribution Analysis Active			
	Average Weight	Total Return ²	Contribution to Return	Average Weight ³	Total Return ²	Contribution to Return	Allocation Effect	Management Effect ⁴	Interaction Effect	Total Effect
Public Equity	30.0	-20.4	-6.1	29.4	-18.2	-5.4	-0.28	-0.77	-0.12	-1.17
<i>Domestic Equity</i>	11.5	-20.8	-2.4	12.9	-19.2	-2.5	0.04	-0.26	0.02	-0.20
<i>International Developed</i>	6.8	-17.6	-1.2	7.8	-14.3	-1.1	0.01	-0.32	0.05	-0.27
<i>International Emerging</i>	8.1	-21.6	-1.7	8.7	-20.1	-1.7	-0.01	-0.20	0.01	-0.19
<i>Global Equity</i>	3.6	-21.8	-0.8	0.0	-18.4	0.0	-0.32	0.00	-0.20	-0.52
Private Equity	20.6	1.2	0.2	20.6	-1.2	-0.3	0.00	0.50	0.00	0.50
Nominal Fixed Income	13.4	-21.0	-2.8	15.7	-23.7	-3.7	0.41	0.53	-0.09	0.86
Inflation Linked	4.3	-12.5	-0.5	4.6	-12.6	-0.6	0.00	0.01	0.00	0.01
US Credit	7.2	-3.9	-0.3	7.0	-9.1	-0.6	-0.02	0.37	0.02	0.37
Non- US Credit	0.9	-13.6	-0.1	1.1	-15.7	-0.2	0.00	0.02	0.00	0.02
Real Estate	10.3	22.3	2.3	10.3	6.9	0.7	0.00	1.43	0.00	1.43
Natural Resources & Infrastructure	4.6	13.3	0.6	4.5	-1.4	-0.1	-0.05	0.54	0.04	0.53
Absolute Return	7.2	-1.7	-0.1	6.8	0.6	0.0	-0.07	-0.15	-0.03	-0.25
Multi-Asset	0.7	-26.8	-0.2	0.0	-10.8	0.0	0.00	0.00	-0.15	-0.15
Cash	0.8	2.2	0.0	0.0	1.5	0.0	0.08	0.00	0.00	0.08
Total (excl. overlay)	-	-	-8.30	-	-	-10.77	0.07	2.47	-0.32	2.23
Currency Overlay							0.16			
Structural/Tactical Overlay							-0.83			
Total (incl. overlay)	100.0	-	-8.94	100.0	-	-10.77	-0.60	2.47	-0.32	1.55

¹ Numbers may not sum due to rounding. Attribution calculated on a monthly basis, using average month end market values and targets. As a result, there can be discrepancies from custodian data due to intra-month transfers.

² "Total Return" reflects asset class performance excluding the currency hedging and structural/tactical overlay programs.

³ Based on the transitional target allocations.

⁴ In cases where the policy weight is zero, the active management effect will in turn be zero. The interaction effect will capture any contributions made by active management where the policy weight is zero as it factors in the portfolio weight.

Attribution Commentary

Fourth Quarter

- In the fourth quarter, the System outperformed the policy benchmark by 0.05%.
- Inclusive of the overlay programs, asset allocation had a slight negative effect on the relative performance.
- Active management was additive to performance while the interaction effect detracted to relative performance due to the underperformance of global equity.
 - Selection within natural resources and infrastructure, US credit, absolute return, and public equities detracted from relative performance, while manager performance within real estate and private equity were additive to the active management effect.

Trailing 1-Year

- Over the trailing one-year period, the System outperformed the Policy Benchmark by 1.84%.
- Inclusive of the overlay programs, the asset allocation effect detracted from relative performance.
- While interaction effects detracted from performance due to underperformance within global equity, manager selection (e.g., active management) contributed positively over the trailing year.
 - Manager selection within real estate, US credit, natural resources and infrastructure, private equity, and nominal fixed income were the most additive while selection within public equities and absolute return detracted.

Attribution Details

Returns Based Attribution Definition:

→ Attribution is an analytical evaluation of a portfolio's performance relative to its benchmark. Attribution can portray where portfolio decisions were additive or detracted from relative performance. The three main attribution effects are the following:

- *Allocation Effect*: how the overweight or underweight of an asset class relative to the benchmark contributes to or detracts from performance.
- *Active Management Effect*: attributes relative performance to managers' stock selection decisions, relative to the benchmark.
- *Interaction Effect*: captures the portion of active management that is responsible for the cross interaction between the allocation and active management effects.
 - For example, if the System is overweight an underperforming asset class, it will have a negative interaction effect.

Calculations¹:

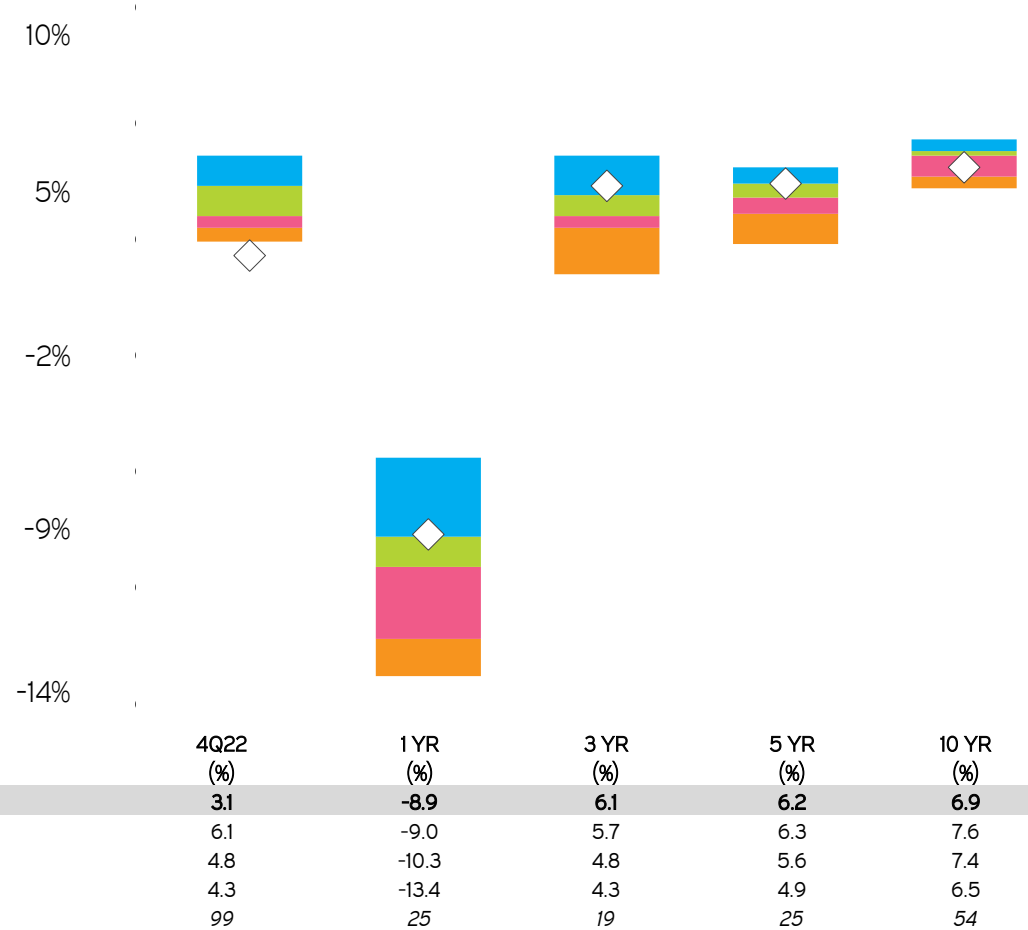
→ The Brinson Fachler attribution methodology is widely accepted within the industry. Using this methodology, the components are calculated as follows:

- *Allocation Effect*: $(R_{ab} - R_{pb}) \times (W_p - W_b)$
- *Active Management Effect²*: $W_b \times (R_p - R_{ab})$
- *Interaction Effect*: $(W_p - W_b) \times (R_p - R_{ab})$

¹Rpb= Policy Benchmark
 Rab = Asset Class Benchmark
 Wp = Portfolio Weight
 Wb = Policy Weight
 Rp = Asset Class Return
 Rb = Policy Benchmark Return

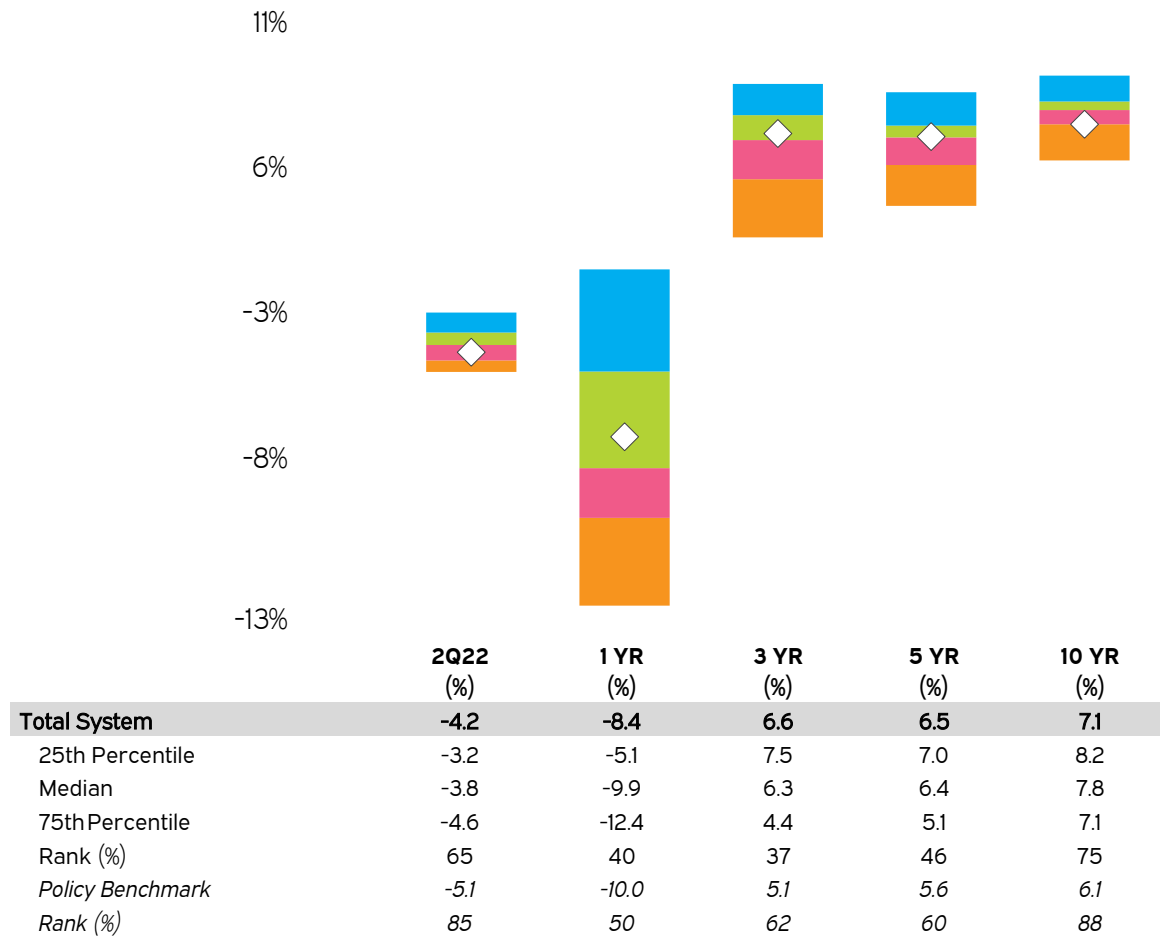
² In cases where the policy weight is zero, the active management effect will in turn be zero. The interaction effect will capture any contributions made by active management where the policy weight is zero as it factors in the portfolio weight.

Total System vs. Public Plans >\$1 Billion Universe¹ As of December 31, 2022



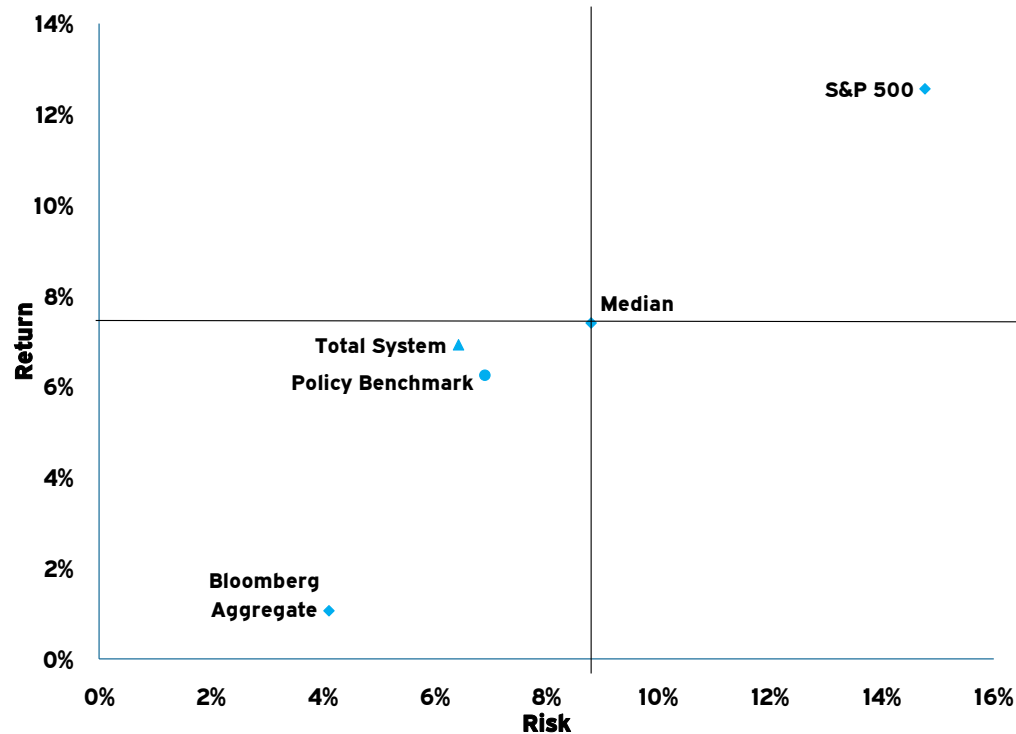
¹ Represents a final cut of the InvMetrics Public DB >\$1 bn peer group as of December 31, 2022. Total System performance is net of fees. Includes 34 plans.

Total System vs. Public Plans >\$25 Billion Universe¹ As of September 30, 2022



¹ Represents the TUCS Public >\$25 bn peer group as of September 30, 2022. Total System performance is gross of fees. Includes 32 plans.

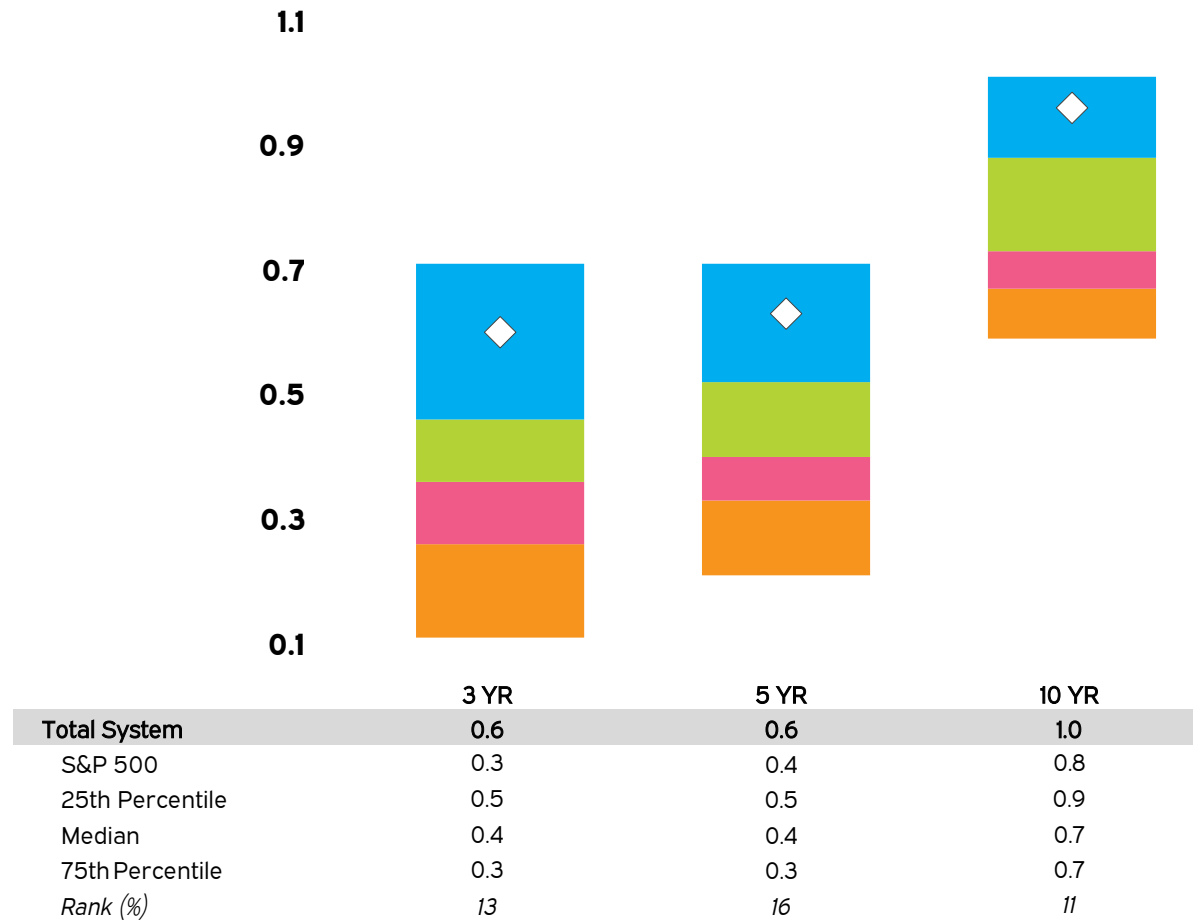
Total System Trailing 10-Year Risk vs Return¹ As of December 31, 2022



	Risk (%)	Return (%)
Total System	6.4	6.9
Policy Benchmark	6.9	6.3
Median	8.8	7.4

¹ Represents a final cut of InvMetrics Public DB >\$1 bn Net peer group as of December 31, 2022. Includes 34 plans.

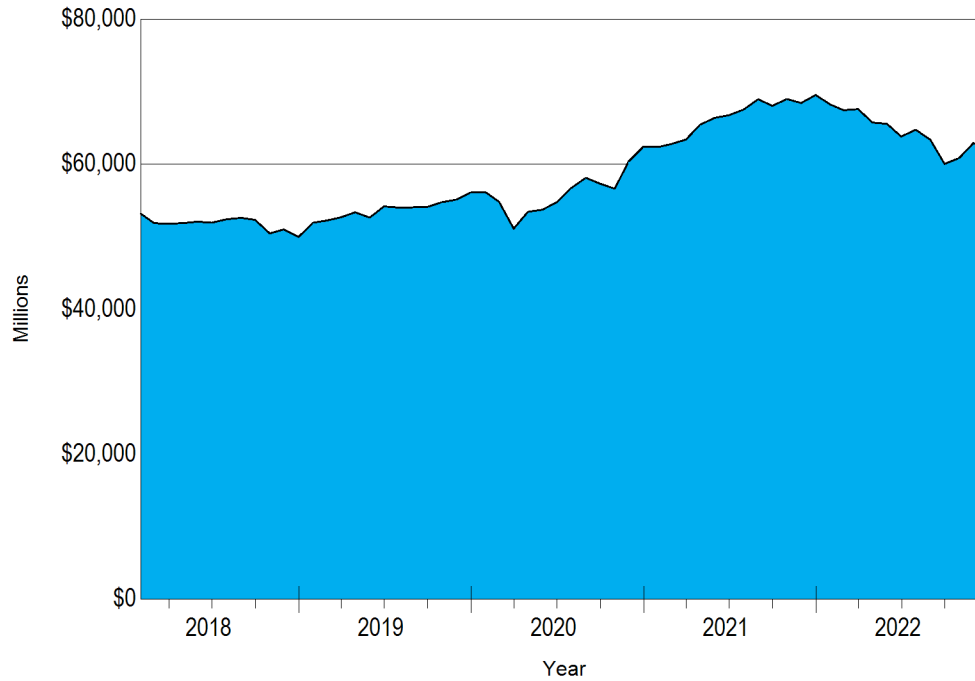
Total System vs. Public Plans >\$1 Billion Universe Sharpe Ratio Comparison¹ As of December 31, 2022



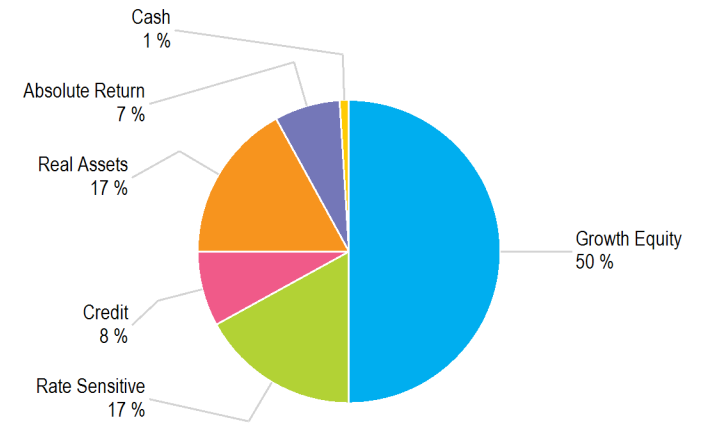
¹ Represents a final cut of Investor Force Public DB >\$1 bn Net peer group as of December 31, 2022. Includes 34 plans. The risk-free rate is the 91-day T-bill.

Performance Summary

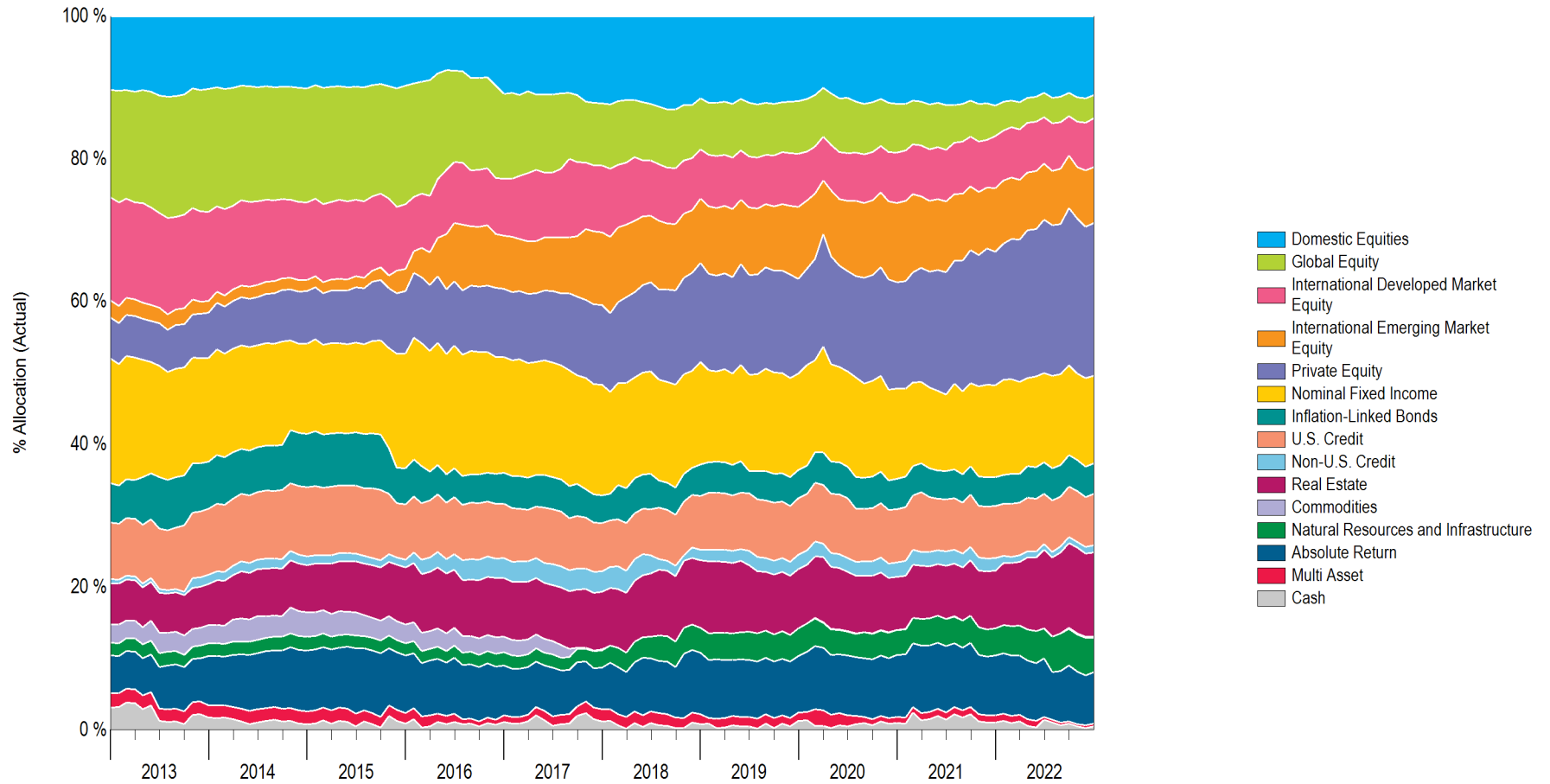
Market Value History
5 Years Ending December 31, 2022



Actual Allocation



Asset Allocation History
10 Years Ending December 31, 2022



Allocation vs. Targets and Policy						
	Current Balance	Current Allocation	Transitional Targets	Policy	Policy Range	
Growth Equity	\$31,728,778,997	50%	50%	50%	43% - 57%	
Domestic Equities	\$6,942,687,644	11%	13%	15%	--	
Global Equity	\$2,076,515,308	3%	0%	0%	--	
International Developed Market Equity	\$4,298,195,076	7%	8%	9%	--	
International Emerging Market Equity	\$4,919,560,704	8%	8%	10%	--	
Private Equity	\$13,477,158,286	21%	21%	16%	--	
Stock Distributions	\$14,661,980	0%	0%	0%	--	
Rate Sensitive	\$10,870,389,867	17%	19%	21%	16% - 26%	
Nominal Fixed Income	\$8,195,767,554	13%	15%	16%	--	
Inflation-Linked Bonds	\$2,674,622,313	4%	4%	5%	--	
Credit	\$5,147,846,901	8%	8%	8%	4% - 12%	
U.S. Credit	\$4,456,579,144	7%	7%	7%	--	
Non-U.S. Credit	\$4,551,238,958	1%	1%	1%	--	
Real Assets	\$10,568,119,966	17%	17%	15%	11% - 18%	
Real Estate	\$7,436,320,334	12%	12%	10%	--	
Commodities	\$83,007,940	0%	0%	0%	--	
Natural Resources and Infrastructure	\$3,048,791,692	5%	5%	5%	--	
Absolute Return	\$4,072,136,531	7%	6%	6%	2% - 10%	
Absolute Return	\$4,072,136,531	7%	6%	6%	--	
Multi Asset	\$225,973,881	0%	0%	0%	0% - 2%	
Multi Asset	\$225,973,881	0%	0%	0%	--	
Cash	\$303,751,342	1%	0%	0%	0% - 2%	
Cash	\$303,751,342	1%	0%	0%	--	
Total	\$62,916,997,485	100%	100%	100%		

Asset Class Performance Summary										
	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total System	62,916,997,485	100.0	3.1	-1.2	-8.9	6.1	6.2	6.9	7.9	Jul-86
System Policy Benchmark			<u>3.1</u>	<u>-2.2</u>	<u>-10.8</u>	<u>4.8</u>	<u>5.4</u>	<u>6.3</u>	--	Jul-86
Over/Under			0.0	1.0	1.9	1.3	0.8	0.6		
System Strategic Policy Benchmark			<u>3.1</u>	<u>-2.2</u>	<u>-10.5</u>	<u>5.1</u>	<u>5.6</u>	<u>6.4</u>	--	Jul-86
Growth Equity	31,728,778,998	50.4	4.8	-0.9	-11.9	9.5	8.8	10.5	6.7	Jan-98
Public Equity	18,236,958,733	29.0	9.2	1.3	-19.3	3.5	4.4	7.9	--	Apr-94
Public Equity Custom Benchmark			<u>10.5</u>	<u>1.9</u>	<u>-17.9</u>	<u>2.8</u>	<u>4.0</u>	<u>7.5</u>	--	Apr-94
Over/Under			-1.3	-0.6	-1.4	0.7	0.4	0.4		
Domestic Equity	6,942,687,644	11.0	6.5	2.1	-18.5	6.9	8.4	11.7	8.9	Apr-94
U.S. Equity Custom Benchmark			<u>7.2</u>	<u>2.4</u>	<u>-19.2</u>	<u>7.1</u>	<u>8.8</u>	<u>12.1</u>	--	Apr-94
Over/Under			-0.7	-0.3	0.7	-0.2	-0.4	-0.4		
Global Equity	2,076,515,308	3.3	5.5	1.7	-24.0	4.4	5.4	8.2	6.6	Oct-05
Global Equity Custom Benchmark			<u>9.8</u>	<u>2.3</u>	<u>-18.4</u>	<u>4.0</u>	<u>5.2</u>	<u>8.0</u>	<u>6.3</u>	Oct-05
Over/Under			-4.3	-0.6	-5.6	0.4	0.2	0.2	0.3	
International Developed Market Equity	4,298,195,076	6.8	14.2	5.0	-15.6	2.1	2.4	4.8	5.9	Jan-95
MSRA Custom International Index			<u>16.2</u>	<u>5.5</u>	<u>-14.3</u>	<u>1.3</u>	<u>1.8</u>	<u>3.9</u>	<u>5.0</u>	Jan-95
Over/Under			-2.0	-0.5	-1.3	0.8	0.6	0.9	0.9	
International Emerging Markets Equity	4,919,560,704	7.8	10.4	-3.1	-21.1	-1.9	-0.5	--	4.9	Nov-15
MSCI Emerging Markets			<u>9.7</u>	<u>-3.0</u>	<u>-20.1</u>	<u>-2.7</u>	<u>-1.4</u>	<u>1.4</u>	<u>4.1</u>	Nov-15
Over/Under			0.7	-0.1	-1.0	0.8	0.9		0.8	
Private Equity	13,477,158,286	21.4	-0.6	-3.7	1.2	21.0	18.3	16.6	9.5	Mar-94
State Street Private Equity Index			<u>-1.4</u>	<u>-6.0</u>	<u>-1.2</u>	<u>18.8</u>	<u>15.8</u>	<u>13.8</u>	--	Mar-94
Over/Under			0.8	2.3	2.4	2.2	2.5	2.8		

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Rate Sensitive	10,870,389,867	17.3	1.0	-6.8	-23.3	-4.1	-0.5	1.1	6.0	Jul-86
<i>Custom Rate Sensitive Benchmark</i>			<u>1.1</u>	<u>-6.3</u>	<u>-21.3</u>	<u>-4.1</u>	<u>-0.4</u>	<u>1.0</u>	--	<i>Jul-86</i>
Over/Under			-0.1	-0.5	-2.0	0.0	-0.1	0.1		
Nominal Fixed Income	8,195,767,554	13.0	0.5	-8.1	-26.4	-5.9	-1.4	0.7	5.9	Jul-86
<i>Custom Nominal Fixed Income Benchmark</i>			<u>0.7</u>	<u>-7.3</u>	<u>-23.7</u>	<u>-5.6</u>	<u>-1.2</u>	<u>0.7</u>	--	<i>Jul-86</i>
Over/Under			-0.2	-0.8	-2.7	-0.3	-0.2	0.0		
Inflation-Linked Bonds	2,674,622,313	4.3	2.1	-3.2	-12.4	1.3	2.1	1.5	3.3	Jul-08
<i>Custom Inflation Sensitive Benchmark</i>			<u>2.1</u>	<u>-3.3</u>	<u>-12.6</u>	<u>1.1</u>	<u>2.1</u>	<u>1.6</u>	<u>3.1</u>	<i>Jul-08</i>
Over/Under			0.0	0.1	0.2	0.2	0.0	-0.1	0.2	
Credit	5,147,846,901	8.2	2.7	2.1	-5.0	2.3	3.2	4.6	7.4	Mar-09
U.S. Credit	4,551,238,958	7.2	2.0	1.9	-3.8	3.7	4.5	5.7	7.8	Mar-09
<i>U.S. Credit Custom Benchmark</i>			<u>3.9</u>	<u>3.7</u>	<u>-9.1</u>	<u>0.6</u>	<u>2.5</u>	<u>3.7</u>	<u>6.7</u>	<i>Mar-09</i>
Over/Under			-1.9	-1.8	5.3	3.1	2.0	2.0	1.1	
Non-U.S. Credit	596,607,943	0.9	8.7	3.9	-13.6	-4.1	-1.3	-2.0	-0.5	Oct-10
<i>Non-U.S. Credit Custom Benchmark</i>			<u>7.8</u>	<u>2.5</u>	<u>-15.7</u>	<u>-5.4</u>	<u>-1.9</u>	<u>-1.8</u>	<u>-0.4</u>	<i>Oct-10</i>
Over/Under			0.9	1.4	2.1	1.3	0.6	-0.2	-0.1	
Real Assets	10,568,119,966	16.8	2.7	2.4	19.7	11.3	9.0	4.8	5.4	Feb-06
<i>Custom Real Assets Benchmark</i>			<u>3.8</u>	<u>1.1</u>	<u>8.9</u>	<u>10.2</u>	<u>8.6</u>	<u>4.6</u>	<u>4.8</u>	<i>Feb-06</i>
Over/Under			-1.1	1.3	10.8	1.1	0.4	0.2	0.6	
Real Estate	7,436,320,233	11.8	0.9	0.8	22.3	12.5	10.1	10.4	7.3	Jul-87
<i>Real Estate Custom Benchmark</i>			<u>-5.1</u>	<u>-4.7</u>	<u>6.9</u>	<u>10.0</u>	<u>8.8</u>	<u>9.7</u>	<u>8.3</u>	<i>Jul-87</i>
Over/Under			6.0	5.5	15.4	2.5	1.3	0.7	-1.0	
Commodities	83,007,940	0.1								

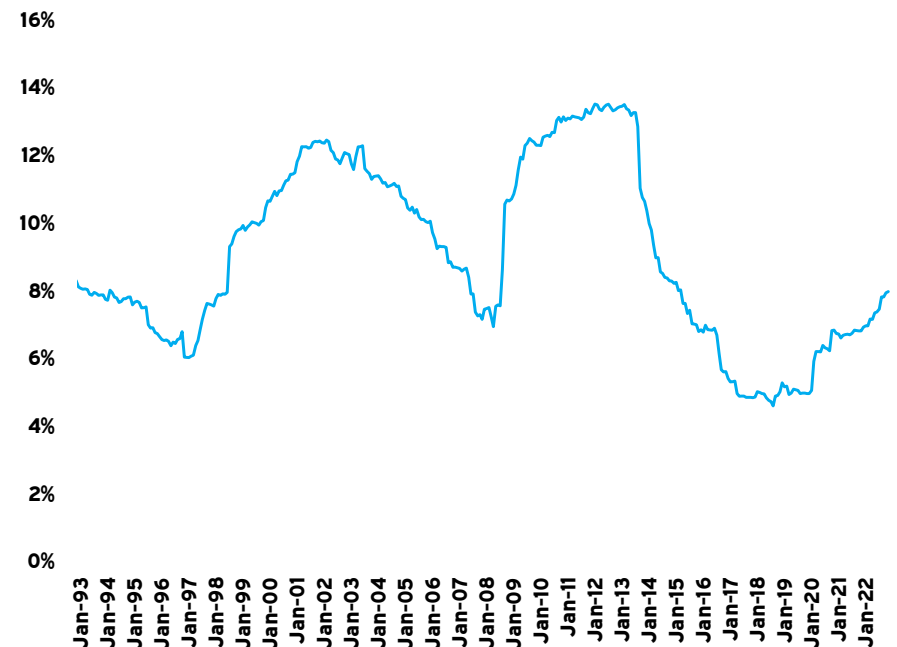
	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Natural Resources and Infrastructure	3,048,791,692	4.8	6.8	6.3	13.3	7.6	5.9	5.5	8.7	Aug-09
<i>Natural Resources and Infrastructure Benchmark</i>			<u>10.9</u>	<u>0.8</u>	<u>-1.4</u>	<u>5.3</u>	<u>4.6</u>	<u>7.2</u>	<u>7.1</u>	<i>Aug-09</i>
Over/Under			-4.1	5.5	14.7	2.3	1.3	-1.7	1.6	
Absolute Return	4,072,136,531	6.5	-2.3	-1.7	-1.7	3.4	3.2	2.5	3.2	Apr-08
<i>Absolute Return Custom Benchmark</i>			<u>-0.8</u>	<u>0.2</u>	<u>0.6</u>	<u>5.7</u>	<u>4.9</u>	<u>4.4</u>	<u>2.6</u>	<i>Apr-08</i>
Over/Under			-1.5	-1.9	-2.3	-2.3	-1.7	-1.9	0.6	
Multi Asset	225,973,881	0.4	7.9	-5.8	-26.8	-2.4	--	--	0.4	Jul-18
<i>System Policy Benchmark</i>			<u>3.1</u>	<u>-2.2</u>	<u>-10.8</u>	<u>4.8</u>	<u>5.4</u>	<u>6.3</u>	<u>6.0</u>	<i>Jul-18</i>
Over/Under			4.8	-3.6	-16.0	-7.2			-5.6	
Cash	303,751,340	0.5	1.9	2.5	2.2	1.1	3.5	3.5	3.5	Jul-08
<i>FTSE T-Bill 3 Months TR</i>			<u>0.9</u>	<u>1.3</u>	<u>1.5</u>	<u>0.7</u>	<u>1.2</u>	<u>0.7</u>	<u>0.6</u>	<i>Jul-08</i>
Over/Under			1.0	1.2	0.7	0.4	2.3	2.8	2.9	

Risk Dashboard

Total System Risk

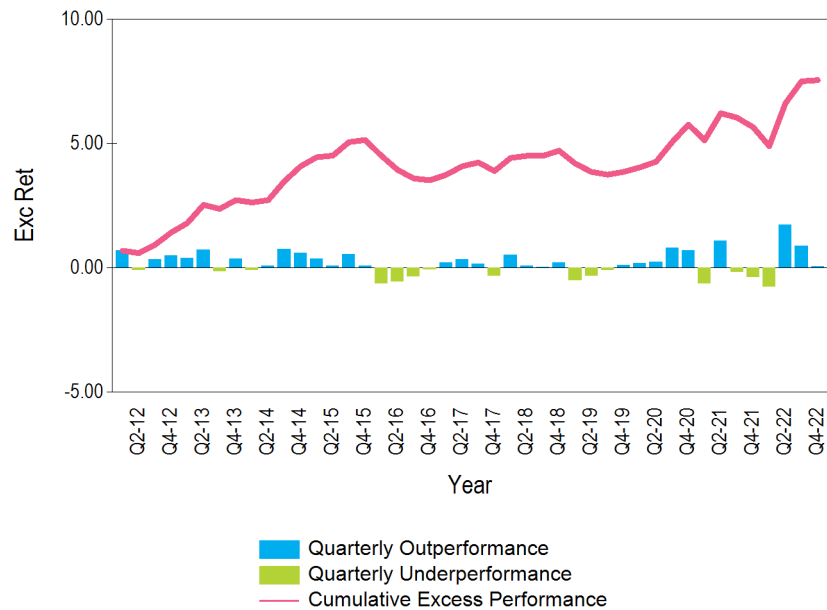
Risk: (sixty months)	Total System 12/31/2022	Policy Benchmark 12/31/2022
Annualized Return (%)	6.2	5.4
Standard Deviation (%)	8.0	8.4
Best Monthly Return (%)	6.9	6.9
Worst Monthly Return (%)	-6.4	-6.4
Beta	0.94	1.00
Correlation (R ²) to Index	0.98	NA
Sharpe Measure	0.63	0.51
Information Ratio	0.62	NA
Excess Return (%)	0.79	NA
Tracking Error (%)	1.27	NA

Rolling 5-Year Standard Deviation

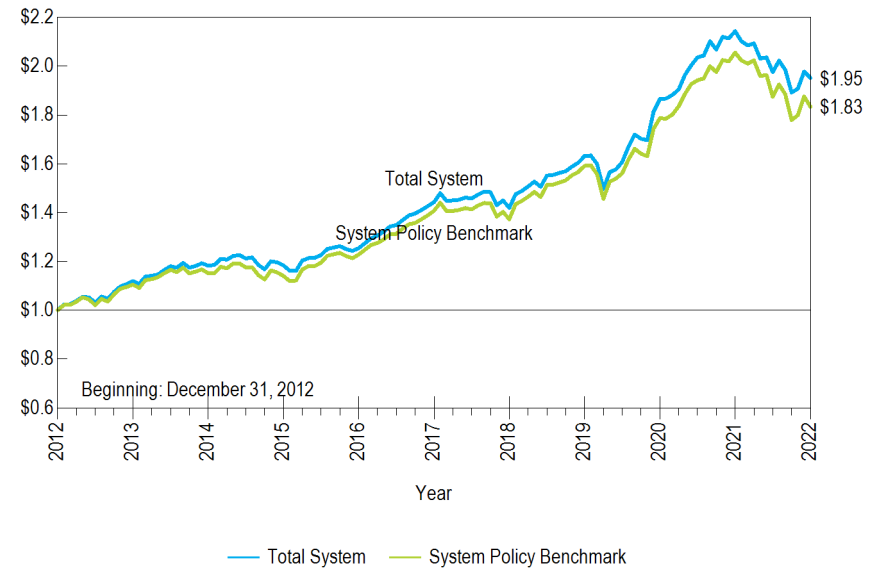


→ Over the trailing 5-years, the System has exhibited lower risk, as measured by standard deviation, than its Policy Benchmark while achieving slightly higher annualized returns.

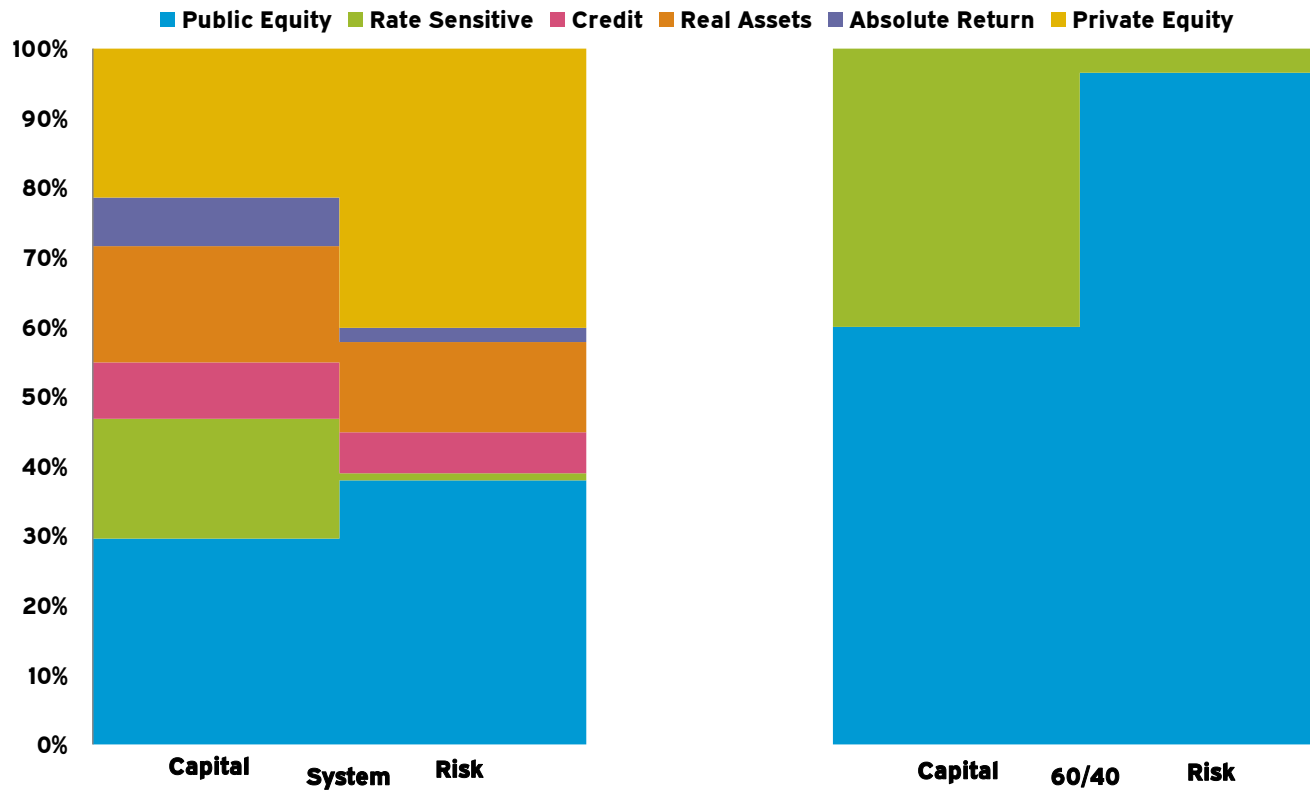
Quarterly and Cumulative Excess Performance



Growth of a Dollar
10 Years Ending December 31, 2022

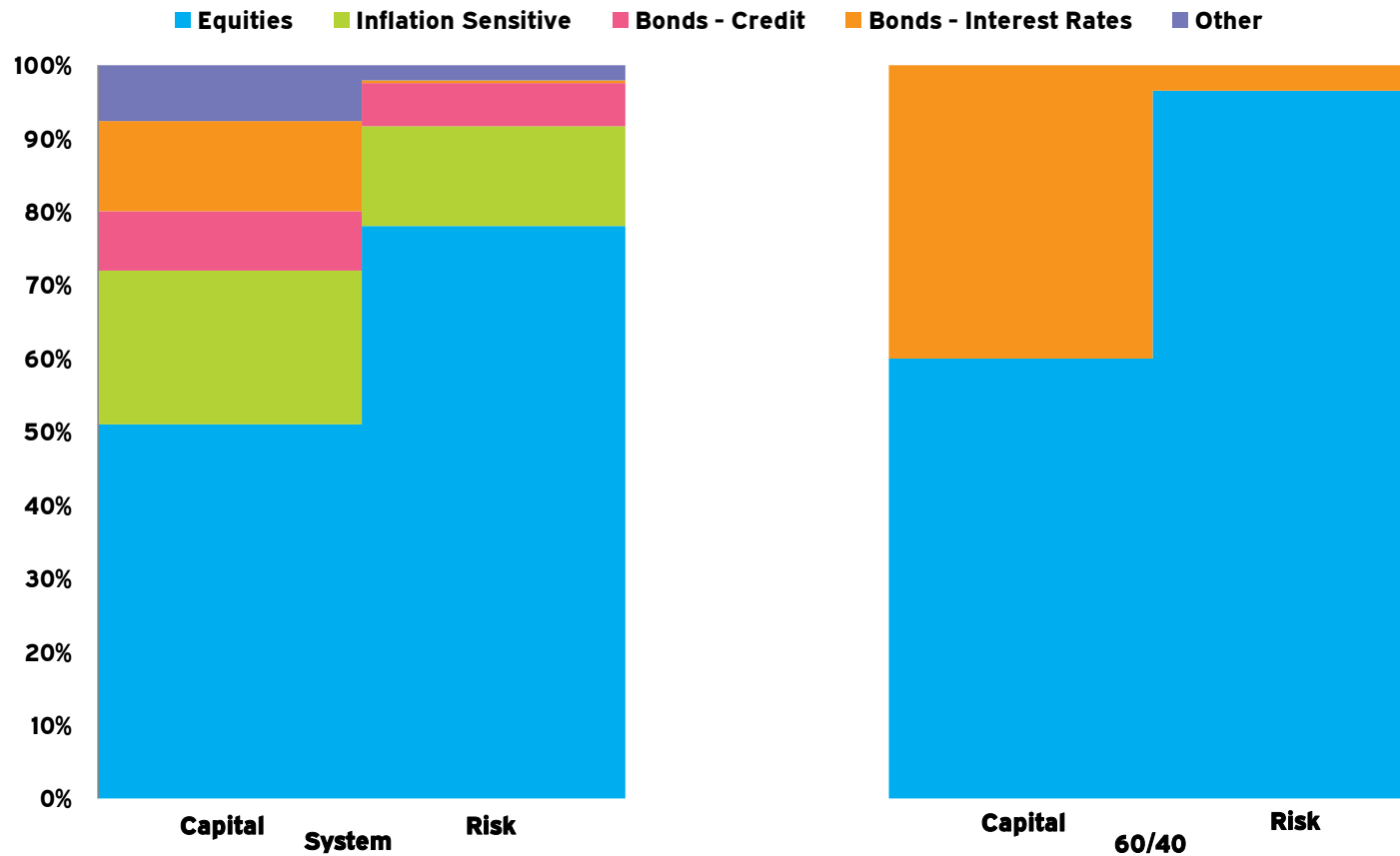


Capital Allocation vs. Risk Allocation By Asset Class



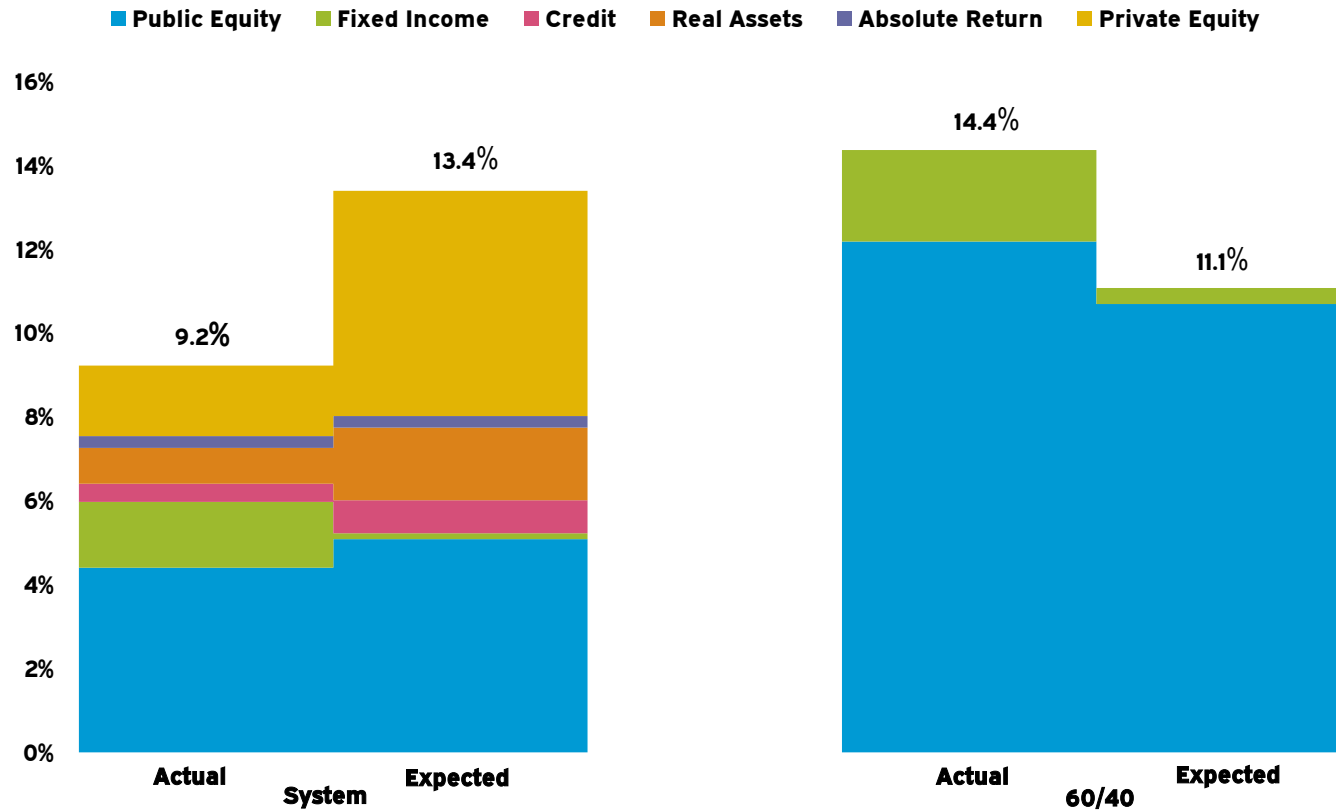
- Public equity makes up close to 30% of the current asset allocation; however, it comprises about 38% of the risk allocation.
- By contrast, in a 60/40 portfolio equity comprises 60% of the capital allocation but nearly 97% of the risk.

Capital Allocation vs. Risk Allocation By Factor Exposure



→ Based on five broad risk exposures, equity (i.e. growth) risk dominates the risk composition of the System.

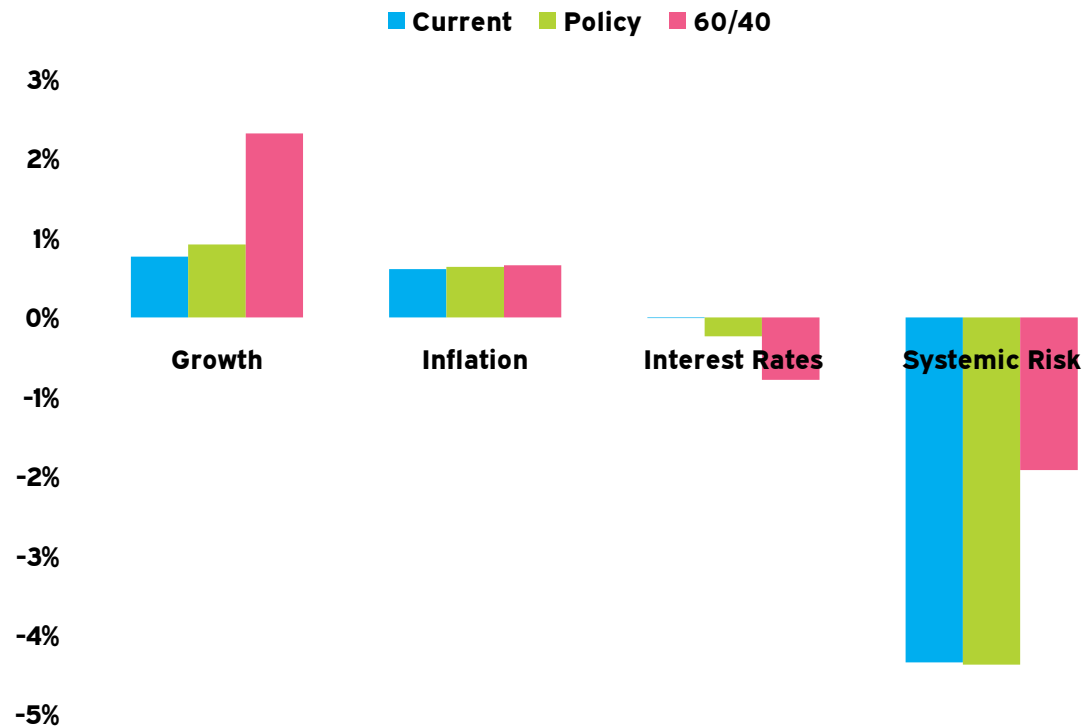
Risk Decomposition Actual vs. Expected



→ The System's trailing 3-year standard deviation, as a measure of risk, has been lower than expected.

- Public equities, which make up over 38% of the expected risk composition, have made up over 48% of the actual risk over the last three years.

Portfolio Sensitivity Comparison



- The chart above shows the resulting change in portfolio return given a one standard deviation event in the respective risk factor.
- There is more concentration in Growth and Systematic Risk because these sources of risk tend to pay better (have higher expected returns) than the other risk factors.

Look Through Analysis Matrix^{1,2}

	Manager Allocation	Public Equity	Fixed Income	Credit	Cash	Hedge Funds	Risk Parity/Multi-Asset	Closed-End Private Markets	Real Estate (Private)
Growth Equity	50%	28%				1%		21%	
Rate Sensitive	17%		16%			<1%			
Credit	8%			5%				3%	
Real Assets	17%	3%						2%	12%
Absolute Return	7%					7%			
Multi Asset	0%						<1%		
Cash	1%				1%				
Look Through Allocation	100%	31%	16%	5%	1%	9%	<1%	26%	12%

¹ Numbers may not sum to 100% due to rounding.

² Numbers do not reflect the impact of overlay investing.

Asset Allocation Target Range Compliance

Asset Class	Target Range (%)	In Compliance?
Growth Equity	+/- 7	Yes
Rate Sensitive	+/- 5	Yes
Credit	+/- 4	Yes
Real Assets	+/- 4	Yes
Absolute Return	+/- 4	Yes

Sub-Asset Class Allocation Target Range Compliance

Asset Class	Sub-Asset Class	Target Range (%)	In Compliance?
Public Equity	Hedge Funds	0-20	Yes
Private Equity	Buyout	60-90	Yes
	Venture/Growth	10-25	Yes
	Special Situations	10-30	Yes
Rate Sensitive	L-T Government	30-70	Yes
	Securitized Corp	10-50	Yes
	Inflation Linked	0-40	Yes
Credit	Hedge Funds	0-30	Yes
	Private Credit	0-80	Yes
Real Assets	Real Estate- Core	50-100	Yes
	Real Estate – Value Added	0-25	Yes
	Real Estate- Opportunistic	0-25	Yes
	REITS	0-30	Yes
	Commodities	0-25	Yes

Activity Update

Summary of Work to Date

Ongoing Work on Current Roster

- Completed and submitted comprehensive quarterly reporting for the System.
 - Collect and reconcile data from State Street Bank and investment managers, run holdings analysis and performance calculations.
 - Completed quarterly since second quarter 2014.
- Completed numerous System-related reporting requirements.
 - Iran/Sudan divestment analysis (semi-annually in January and July).
 - Attribution and cost analysis of identified companies and potential impact on performance resulting from divestment.
- Annually, meet and review all public market managers (video conference calls) and make recommendations to staff on potential changes. Initial review of all managers have been completed.
 - Annually, over 40 meetings completed via conference call or in person.
 - Comprehensive manager analyses written on:
 - Inflation-Linked Bonds, and MLP managers (included 6 strategies)
 - US and Global Equity managers (included 9 strategies)
 - International Equity managers (included 13 strategies)
 - Fixed Income and Credit managers (included 10 strategies)

Summary of Work to Date

Investment Topics

- Discussed general investment topics with Staff, and in some instances the Board.
- The topics listed are covered through sharing white papers, holding conference calls, or in person meetings:
 - Role of leverage in the System
 - Public manager peer ranking
 - Total fund fee analysis
 - Survey & presentation of asset allocation best practices
 - Emerging market sensitivity
 - Inflation risk
 - Benchmarking for private markets and hedge funds
 - Fund Governance survey of best practices
 - Annual risk reporting
 - TUCS peer analysis
 - Real estate and emerging market debt benchmarking
 - Asset allocation and the impact of the inability to rebalance private markets on long-term returns
 - Investing in a Low Interest Rate Environment
 - Chinese Restricted List Divestment Impact Analysis
 - Researching and drafting a responsible contractor policy
 - Involvement with the ad hoc committee in the assumed rate of return
 - Asset allocation including more detailed liability analysis and climate scenario analysis
 - Implementation of Asset Allocation Changes and Benchmark Changes
 - Absolute Return Program Overview
 - System Exposure to China

Current Agenda Topics

- Performance Review
- Asset Allocation Review

Meketa DEI Efforts

Diversity, Equity, and Inclusion

We deeply believe that diversity across many different attributes drives better outcomes for all of us, especially our clients.

We use a mosaic of committees to integrate DEI practices into all aspects of our business model and investment processes.



Organizational Initiatives

- Diverse representation on all internal committees
- Employee inclusivity training
- Formal networking and mentoring programs
- DEI learning library
- Hiring practices and diversity-focused internship program



Community Outreach

- Support of women, veteran, and diverse-owned businesses
- Support of organizations that promote social justice and/or underserved communities
- Employee volunteerism and charitable giving



Industry Involvement

- Semi-annual Emerging and Diverse Manager Research Day
- Evaluate investment management firms' DEI efforts, including benchmarking
- Annually publish results of DEI Questionnaire
- Active participation in organizations seeking to improve DEI in institutional investment

60%

total employees are female or racially diverse¹

52%

investment professionals are female or racially diverse¹

46%

firm shareholders are female or racially diverse¹

¹ As of December 31, 2022.

Diversity and Inclusion Initiatives

- Experience assisting numerous clients in establishing emerging and diverse manager programs as well as targeted investment programs across asset classes.
- Meketa regularly holds Emerging and Diverse Manager Days across our various offices to ensure broadest coverage of emerging and diverse managers across asset classes.
- Below are samples of clients with whom we have worked to initiate new, emerging, and diverse manager initiatives:
 - California Public Employees' Retirement System
 - California State Teachers' Retirement System
 - City of Baltimore Employees' & Elected Officials' Retirement Systems
 - City of Hartford Municipal Employees' Retirement Fund
 - District of Columbia Retirement Board
 - New York State Common Retirement Fund
- Meketa proactively encourages MWDBE manager participation in RFIs/RFPs.
- We participate in leading industry organizations such as AAAIM, NAA, NAIC, NASP, and the Toigo Foundation.

Emerging and Diverse Manager Research Day

- Hosting two Emerging & Diverse Manager Research days annually.
- Emerging & Diverse managers of all investment strategies are encouraged to register.
- Targeting 50 manager meetings at each event.



Meketa Investment Group
invites you to join our virtual:

**Public and Private Markets
Emerging & Diverse
Manager Research Day &
Roundtable Discussion**

October 26, 2022

**One-On-One
Interviews:**
All day

**Roundtable
Discussion:**
12 pm to 1 pm EST

To register for the event please go to:
<https://meketa.research.net/r/L89WHKS>
Registration closes October 5th



Economic and Market Update

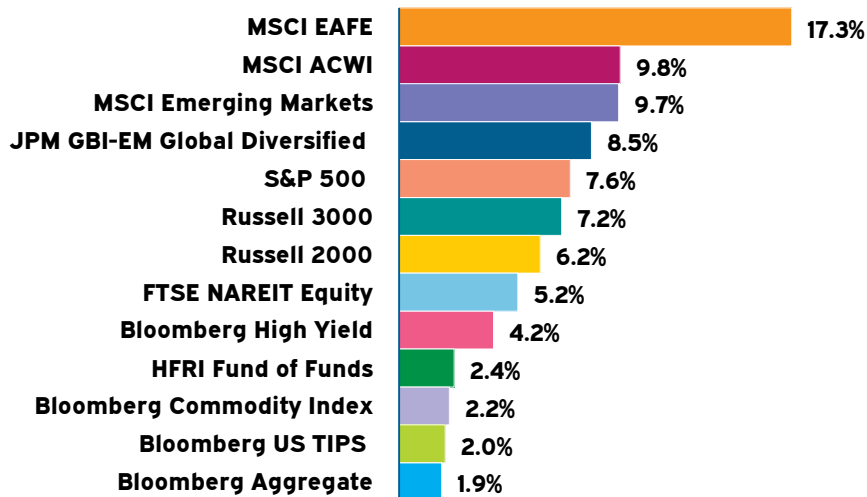
Data as of December 31, 2022

Commentary

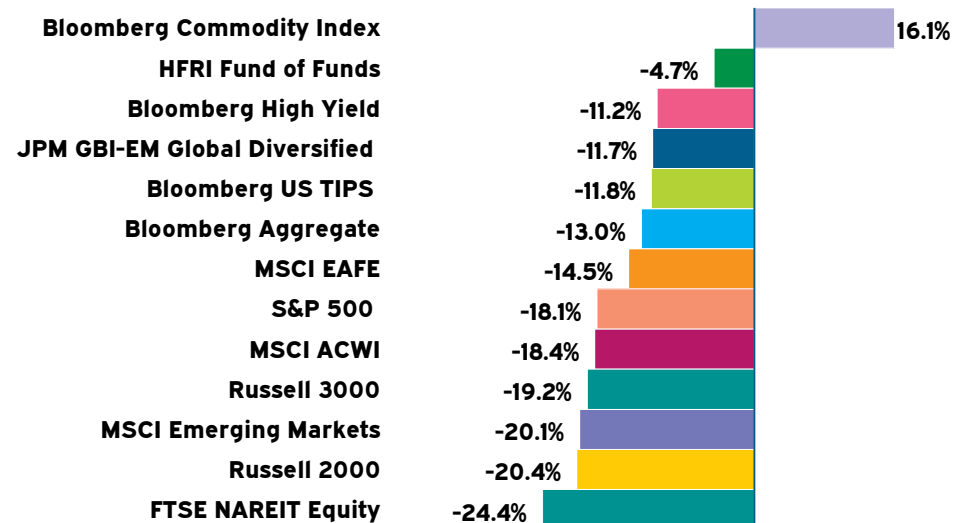
- Ending a very tough year, most asset classes posted gains in the fourth quarter on signs that policy tightening would slow given cooling inflation.
- Chairman Powell's testimony in November reiterated previous messaging on persistent and high inflation and the need for an extended period of monetary tightening weighing on assets in December. Markets remained focused though on signs that inflation is falling and that the size of future Fed rate hikes could be lower.
 - US equity markets sold off (-5.9%) in December but returned 7.2% in the fourth quarter as investors balanced the Fed's caution with improving inflation data.
 - In developed equity markets outside the US, sentiment deteriorated somewhat in December, but they posted a strong fourth quarter return of 17.3% driven by a falling US dollar and results in Europe where inflation started to slow.
 - Emerging market equities declined in December too (-1.4%) but less than the US and also had a strong fourth quarter (+9.7%). A weaker US dollar, declining inflation globally, and signs of China reopening its economy all contributed to the results.
 - Bonds experienced one of the worst years on record given inflation levels and the rapid rise in interest rates. Optimism over declining inflation and a slower pace of policy tightening benefited bonds overall in the fourth quarter though.
- Looking to 2023, the path of inflation and monetary policy, slowing growth globally, China reopening its economy, and the war in Ukraine will all be key.

Index Returns¹

Fourth Quarter



2022



→ After broad declines in Q3 driven by expectations for further policy tightening, most major asset classes were up in the fourth quarter on hopes of inflation and policy tightening peaking.

→ Outside of commodities, all other public market asset classes declined in 2022. It was the first time since the 1960s that both stocks and bonds declined together in a calendar year.

¹ Source: Bloomberg and FactSet. Data is as of December 31, 2022.

Domestic Equity Returns¹

Domestic Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-5.8	7.6	-18.1	7.7	9.4	12.6
Russell 3000	-5.9	7.2	-19.2	7.1	8.8	12.1
Russell 1000	-5.8	7.2	-19.1	7.3	9.1	12.4
Russell 1000 Growth	-7.7	2.2	-29.1	7.8	11.0	14.1
Russell 1000 Value	-4.0	12.4	-7.5	6.0	6.7	10.3
Russell MidCap	-5.4	9.2	-17.3	5.9	7.1	11.0
Russell MidCap Growth	-6.0	6.9	-26.7	3.9	7.6	11.4
Russell MidCap Value	-5.1	10.5	-12.0	5.8	5.7	10.1
Russell 2000	-6.5	6.2	-20.4	3.1	4.1	9.0
Russell 2000 Growth	-6.4	4.1	-26.4	0.6	3.5	9.2
Russell 2000 Value	-6.6	8.4	-14.5	4.7	4.1	8.5

US Equities: Russell 3000 Index declined 5.9% for December but gained 7.2% for the quarter. Historic inflation and rapidly rising interest rates led to significant declines (-19.2%) for the full year.

- US stocks fell broadly in December on the Federal Reserve signaling its continued resolve to raise rates but gained overall for the quarter on hopes that interest rates could be peaking soon given slowing inflation.
- All sectors declined during December, led by consumer discretionary and technology with defensive sectors declining less. For the quarter though, most sectors were up led by energy and industrials.
- In a continuation on the overall trend in 2022 value stocks outperformed growth stocks in the fourth quarter given higher interest rates and slowing growth.

¹ Source: Bloomberg. Data is as of December 31, 2022.

Foreign Equity Returns¹

Foreign Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-0.7	14.3	-16.0	0.1	0.9	3.8
MSCI EAFE	0.1	17.3	-14.5	0.9	1.5	4.7
MSCI EAFE (Local Currency)	-3.0	8.7	-7.0	3.6	3.8	7.6
MSCI EAFE Small Cap	1.1	15.8	-21.4	-0.9	0.0	6.2
MSCI Emerging Markets	-1.4	9.7	-20.1	-2.7	-1.4	1.4
MSCI Emerging Markets (Local Currency)	-2.0	6.6	-15.5	0.1	1.3	4.6
MSCI China	5.2	13.5	-21.9	-7.5	-4.5	2.4

Developed international equities (MSCI EAFE) rose 0.1% in December and an impressive 17.3% in the fourth quarter. Emerging markets (MSCI EM) fell -1.4% in December but gained 9.7% for the quarter. Inflation and rising rates also weighed on international equities last year, as well as a strong US dollar for most of the year.

- International developed market equities, specifically Europe, held up better relative to the rest of the world in December with the MSCI EAFE up 0.1%. In the fourth quarter, they returned a significant 17.3% due in part to the recent weakness in the US dollar (they returned only 8.7% in local terms) leading to lower declines for the year.
- In December emerging markets outperformed the US but trailed developed market equities as China’s rally was not enough to offset weakness elsewhere (e.g., India -5.5%). For the quarter, a weakening US dollar and China reopening led to strong results (+9.7%), but emerging markets remained the weakest for 2022 due to China.
- Like the US, value outpaced growth globally in 2022.

¹ Source: Bloomberg. Data is as of December 31, 2022.

Fixed Income Returns¹

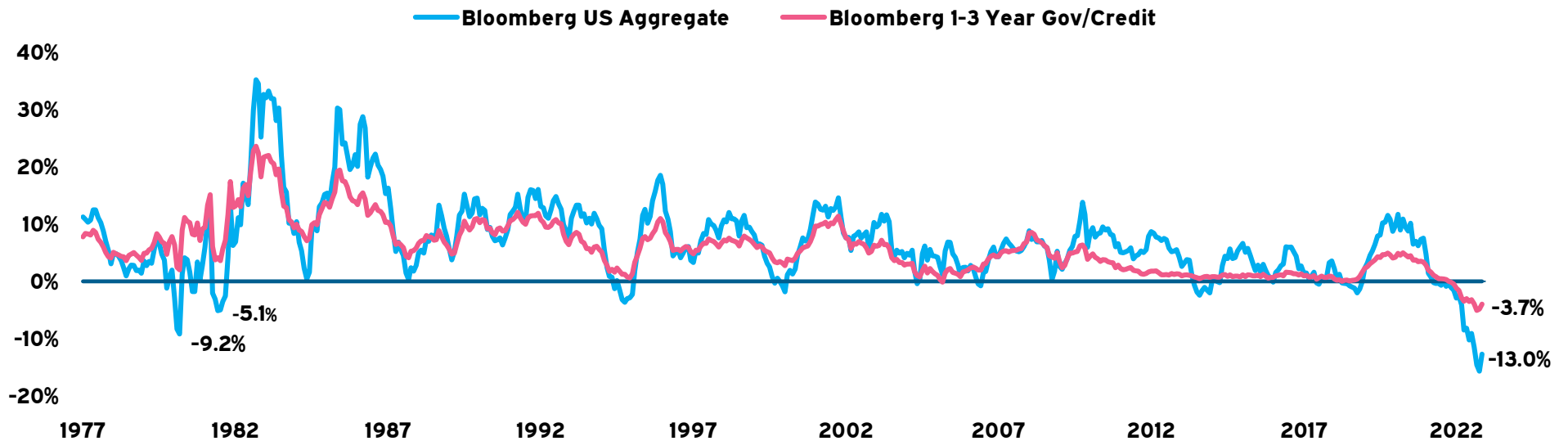
Fixed Income	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-0.3	2.2	-13.0	-2.5	0.2	1.3	5.1	6.2
Bloomberg Aggregate	-0.5	1.9	-13.0	-2.7	0.0	1.1	4.7	6.4
Bloomberg US TIPS	-1.0	2.0	-11.8	1.2	2.1	1.1	4.4	6.7
Bloomberg High Yield	-0.6	4.2	-11.2	0.0	2.3	4.0	9.0	4.4
JPM GBI-EM Global Diversified (USD)	2.2	8.5	-11.7	-6.1	-2.5	-2.0	5.8	4.9

Fixed Income: The Bloomberg Universal fell -0.3% in December but rose 2.2% for the fourth quarter. Last year was one of the worst on record, with the broad bond market declining 13%.

- The Federal Reserve reconfirming its commitment to tighten policy in the face of high inflation weighed on US fixed income in December. For the quarter though the broad US bond market (Bloomberg Aggregate) was up 1.9% on hopes that inflation would continue to decline and corresponding expectations for the slowing of policy rate hikes.
- TIPS produced similar results to the broad US bond market for the quarter but outperformed for the year given their inflation adjustment.
- Riskier bonds outperformed for the quarter due to improving risk sentiment with emerging market bonds performing particularly well.

¹ Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of December 31, 2022. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.

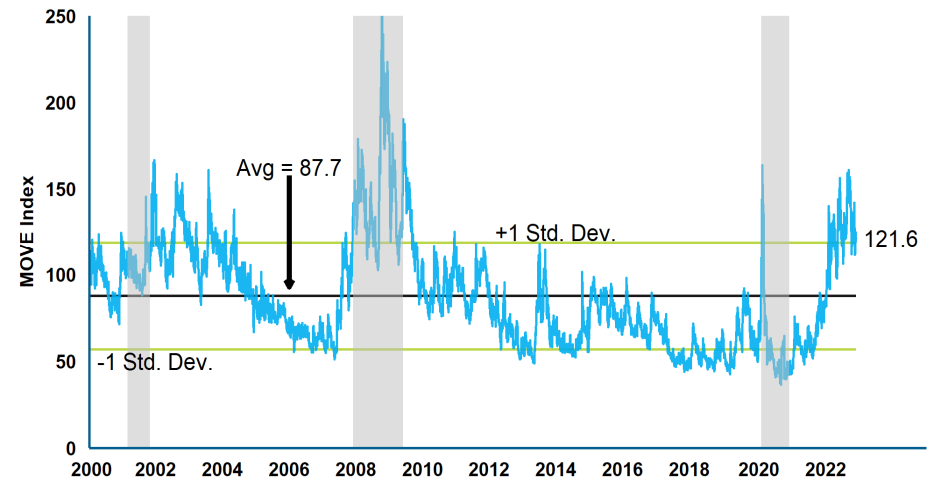
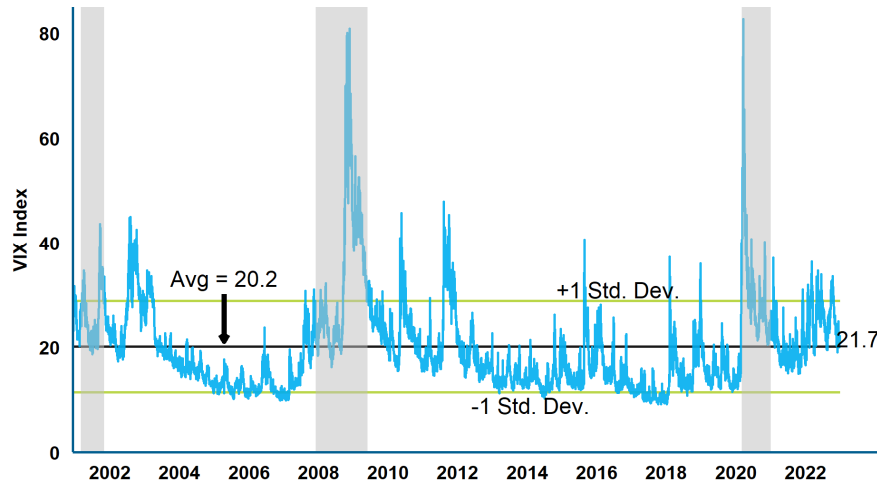
Fixed Income
Rolling One-year Returns¹



- Last year was one of the worst return periods for the US bond market given the historic inflation levels and the corresponding rapid rise in interest rates.
- The broad bond market (Bloomberg US Aggregate) declined 13% in 2022 making it one of the worst periods on record.
- Short-term bond declines were far smaller (-3.7%) last year, but also were one of the worst on record.

¹ Source: Bloomberg. Data is as of December 31, 2022.

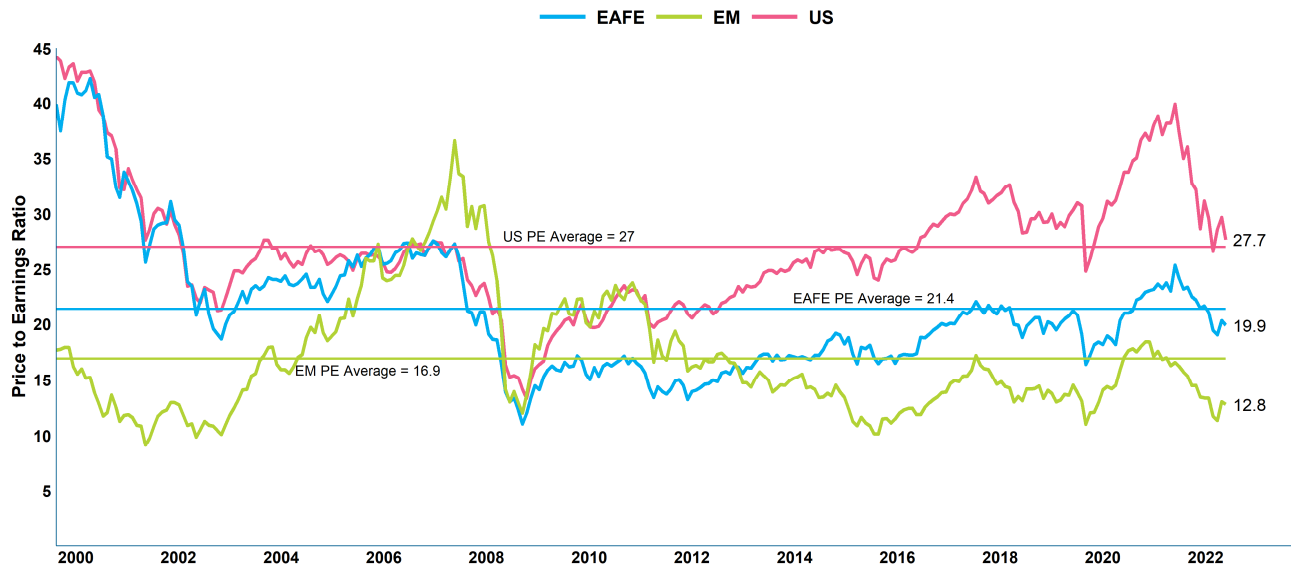
Equity and Fixed Income Volatility¹



- Volatility in equities (VIX) finished the year down from its highs and near its long run average as investors anticipated the potential end of Fed rate hikes this year.
- Fixed income (MOVE) remained elevated and well above its long-run average at year-end due to the uncertain path of US interest rates as the Federal Reserve continues its hawkish stance on inflation.

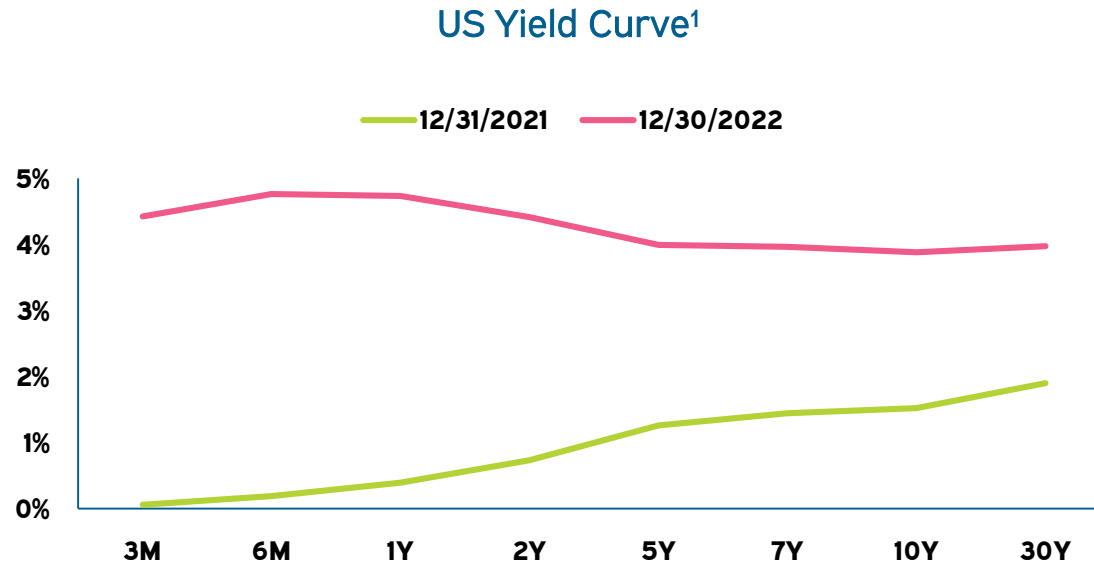
¹ Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the recent month-end respectively.

Equity Cyclically Adjusted P/E Ratios¹



- After December’s sell-off, US equity price-to-earnings ratio finished the year near its long-term (21st century) average.
- International developed market valuations rose but remain below their own long-term average, with those for emerging markets the lowest and well under the long-term average.
- Price declines have been the main driver of recent multiple compression as earnings have remained resilient. Concerns remain over whether earnings strength will continue in the face of slowing growth.

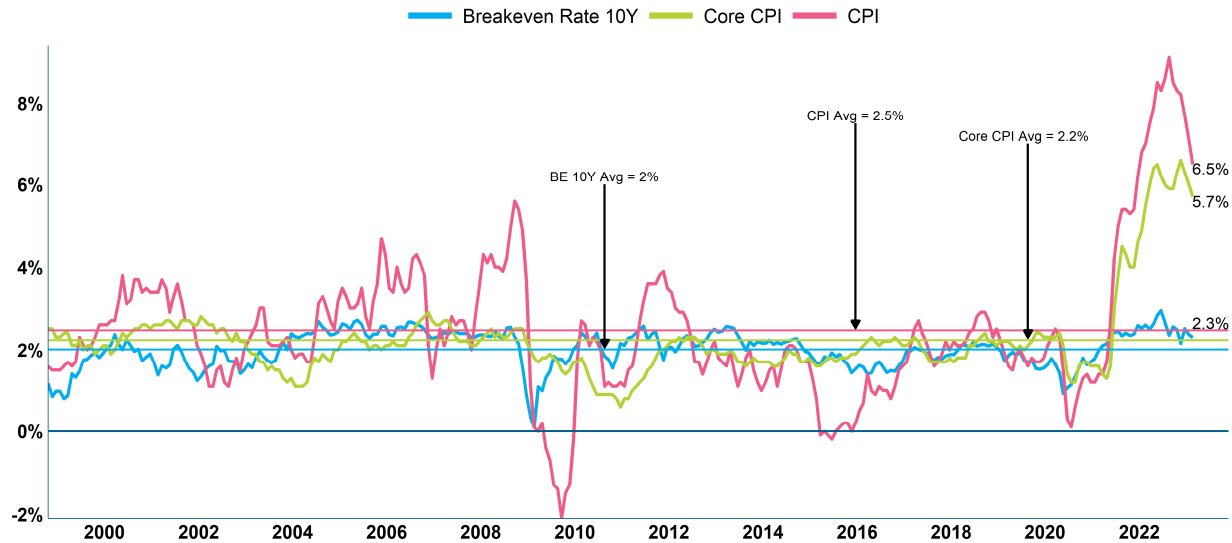
¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of December 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to the recent month-end respectively.



- In December, policy-sensitive interest rates at the front-end of the curve continued to rise with the two-year Treasury yield increasing from 4.3% to 4.4%. Longer dated ten-year Treasury yields also increased (3.6% to 3.9%). For the year, the yield curve rose dramatically across maturities and moved from steep to inverted.
- The Fed remains strongly committed to fighting inflation, as it increased rates another 50 basis points to a range of 4.0% to 4.5% at its December meeting. This brought the total number of increases for 2022 to seven.
- The yield spread between two-year and ten-year Treasuries narrowed somewhat to -0.54% after finishing November at -0.70%. The more closely watched measure by the Fed of three-month and ten-year Treasuries also remained inverted. Historically, inversions in the yield curve have often preceded recessions.

¹ Source: Bloomberg. Data is as of December 31, 2022.

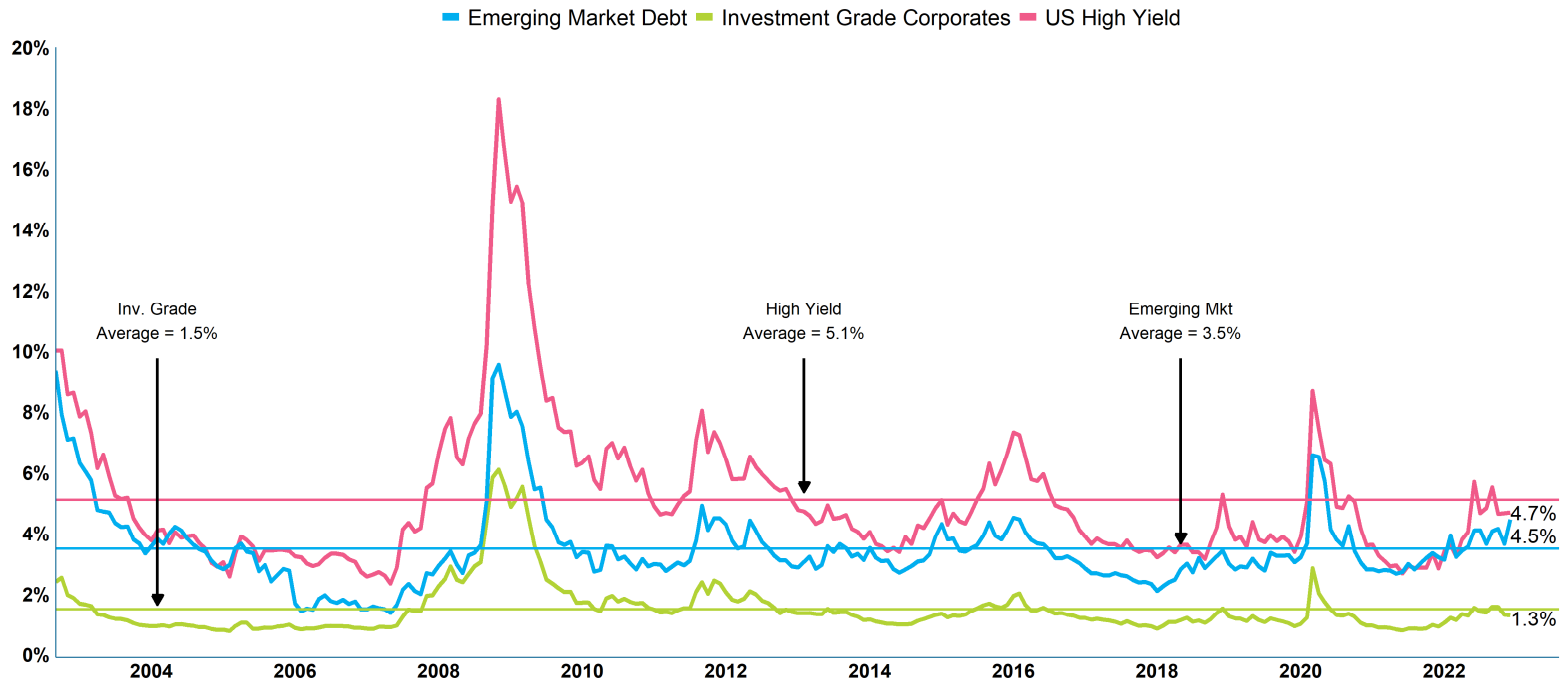
Ten-Year Breakeven Inflation and CPI¹



- In December inflation continued to decline (6.5% versus 7.1%) matching expectations and providing support for the Fed to slow the pace of policy tightening. Energy prices fell again for the month but remain up 7.3% from a year prior, while food prices fell slightly, and stickier service prices continued to increase.
- Core inflation – excluding food and energy – also continued to decline in December (5.7% versus 6.0%) and matched estimates.
- Inflation expectations (breakevens) declined slightly for the month (2.3% versus 2.4%) and remain well below current inflation levels as investors anticipate a significant moderation in inflation.

¹ Source: Bloomberg. Data is as of December 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

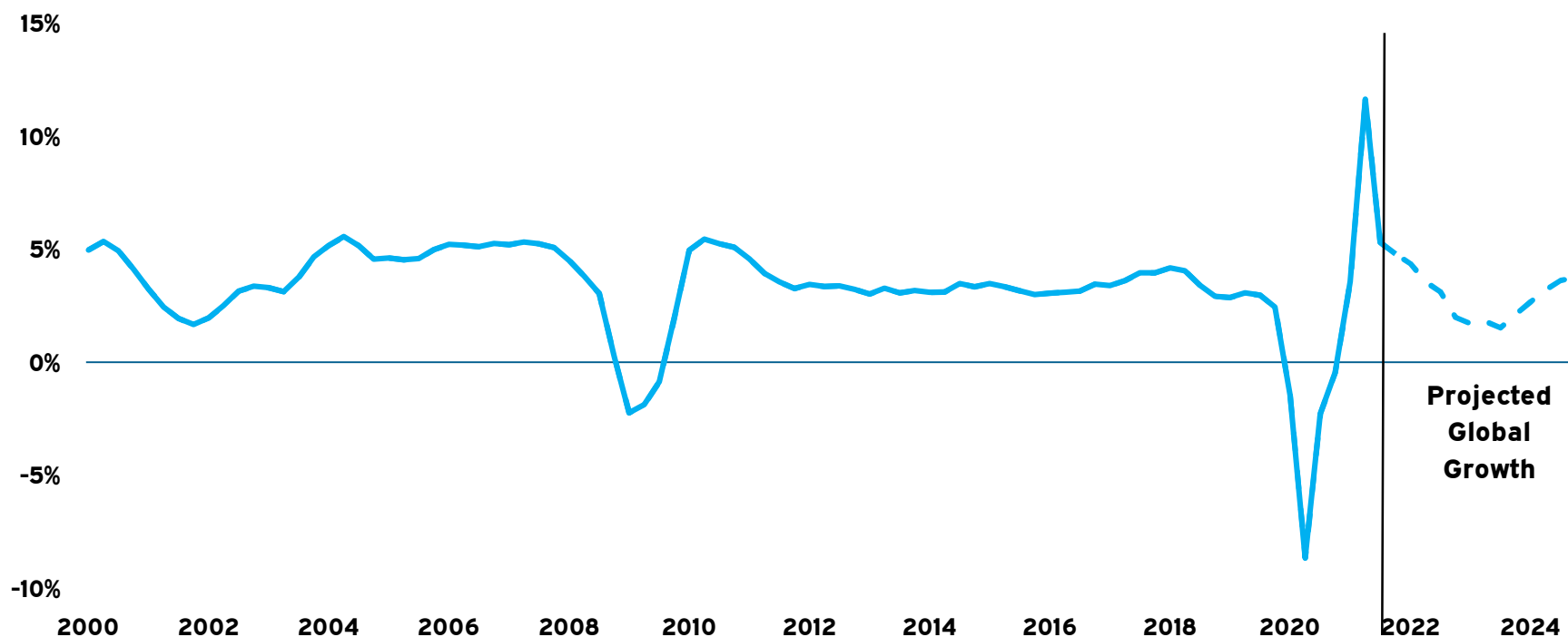
Credit Spreads vs. US Treasury Bonds¹



- High yield spreads (the added yield above a comparable maturity Treasury) finished December at 4.7% (the same as the end of November) remaining below their long-run average.
- Investment grade spreads also held steady at 1.3% as attractive yields and strong balance sheets continued to attract investors, while emerging market spreads rose (4.5% versus 3.6%) due to concerns regarding slower growth and lower commodity prices.

¹ Sources: Bloomberg. Data is as of December 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the recent month-end respectively.

Global Real Gross Domestic Product (GDP) Growth¹

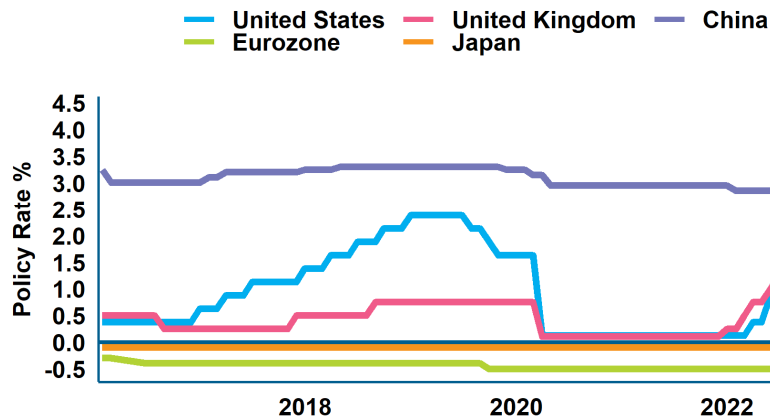


- Global economies are expected to slow in 2023 compared to 2022, with risks of recession increasing given persistently high inflation and related tighter monetary policy.
- The delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

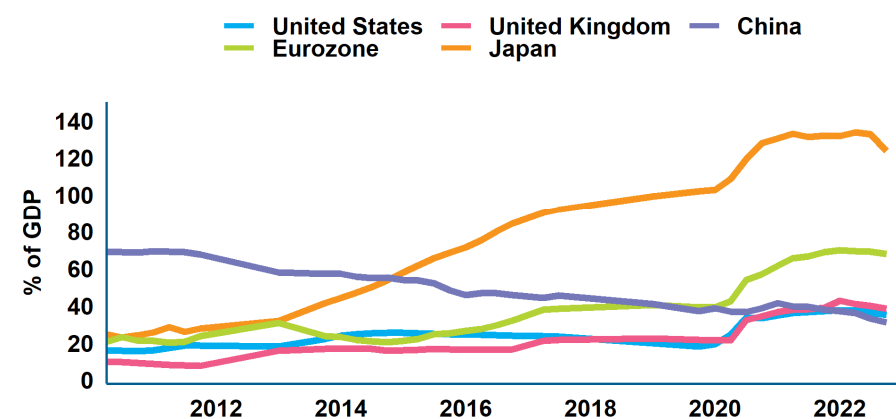
¹ Source: Oxford Economics (World GDP, US\$ prices & PPP exchange rate, real, % change YoY). Updated December 2022.

Central Bank Response¹

Policy Rates



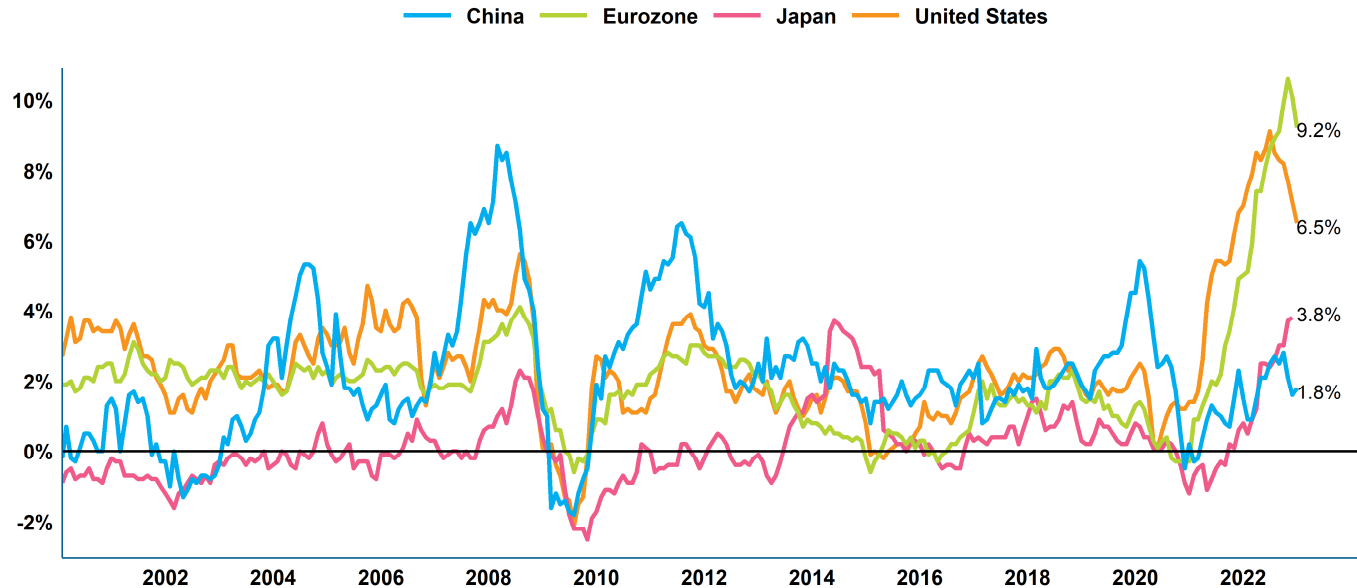
Balance Sheet as % of GDP



- In 2022 many central banks aggressively reduced pandemic-era policy support in the face of high inflation with the US taking a more aggressive approach.
- In December, the Bank of Japan relaxed its target yield for the 10-year bond which may mark an incremental step toward policy normalization after eight years of quantitative easing.
- The one notable central bank outlier is China, where the central bank has lowered rates and reserve requirements in response to slowing growth.
- The risk remains for a policy error, particularly overtightening, as record inflation and aggressive tightening to date could heavily weigh on global growth. The Federal Reserve's policy rate path could diverge from others this year given their strong early start to tightening.

¹ Source: Bloomberg. Policy rate data is as of December 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of December 31, 2022.

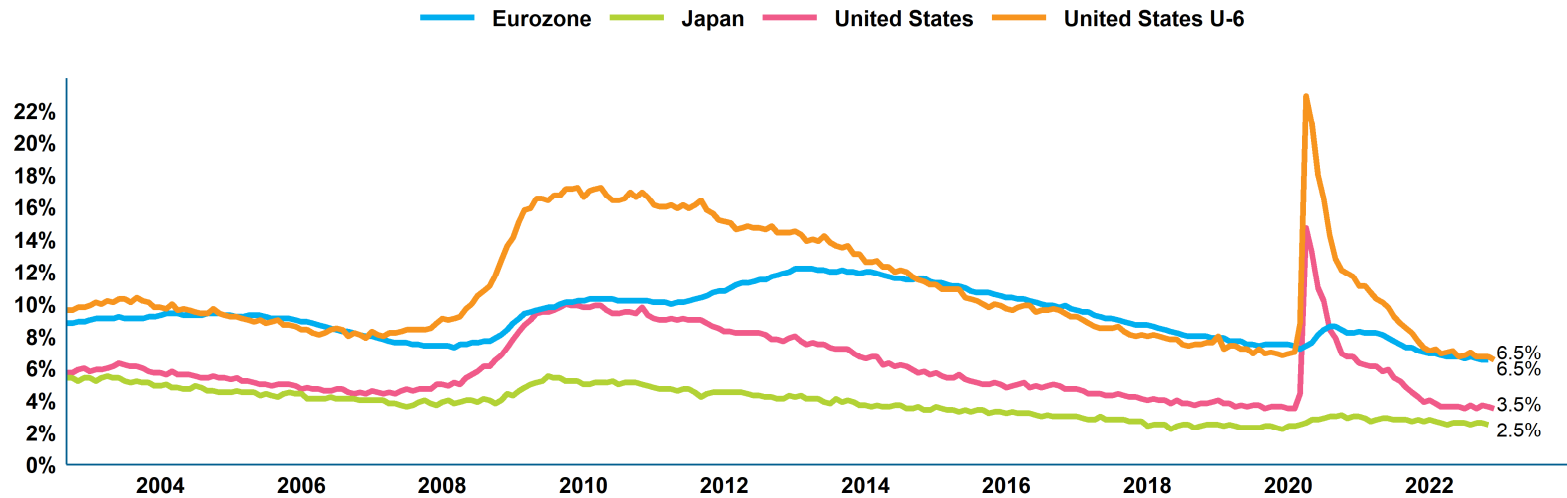
Inflation (CPI Trailing Twelve Months)¹



- Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it has reached levels not seen in many decades.
- Inflation pressures are slowly declining in the US, but they remain elevated, while in Europe they have reached historic levels due to skyrocketing energy prices and a weak euro.
- Supply issues related to the pandemic, record monetary and fiscal stimulus, strict COVID-19 restrictions in China, and higher commodity prices driven by the war in Ukraine have been key global drivers of inflation.

¹ Source: Bloomberg. Data is as of December 2022. The most recent Japanese inflation data is as of November 2022.

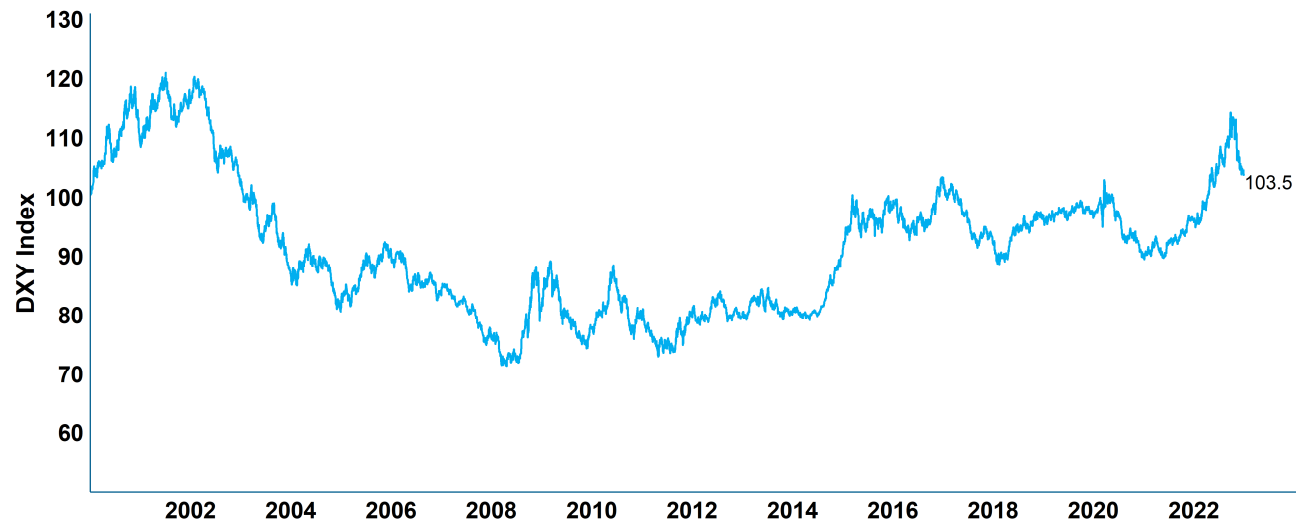
Unemployment¹



- As economies have largely reopened, helped by vaccines for the virus, improvements have been seen in the labor market.
- Despite slowing growth and high inflation, the US labor market remains a bright spot. Unemployment in the US, which experienced the steepest rise from the pandemic, has remained in a tight 3.5%-3.7% range for most of the year.
- The strong labor market and higher wages, although beneficial for workers, motivates the Fed's efforts to fight inflation, likely leading to higher unemployment.

¹ Source: Bloomberg. Data is as December 31, 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of November 30, 2022.

US Dollar versus Broad Currencies¹



- Overall, the US dollar continued to weaken from its recent peak in December as declining inflation supported the case for the Federal Reserve to slow its tightening.
- The dollar finished the year much higher than it started though due to the increased pace of policy tightening, stronger relative growth, and safe-haven flows.
- As we look to 2023, the track of inflation across economies and the corresponding monetary policy will likely be key drivers of currency moves.

¹ Source: Bloomberg. Data as of December 31, 2022.

Summary

Key Trends:

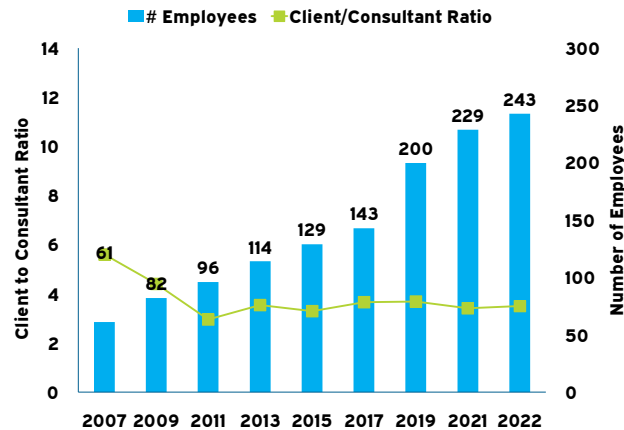
- The impacts of record high inflation will remain key, with market volatility likely to stay high.
- Monetary policy could diverge in 2023 with the Fed pausing and others continuing to tighten. The risk of policy errors in both directions remains.
- Growth will continue to slow globally next year, with many economies likely falling into recessions. Inflation, monetary policy, and the war will all be key.
- In the US the end of many fiscal programs is expected to put the burden of continued growth on consumers. Higher energy and food prices could weigh on consumer spending.
- Valuations have significantly declined in the US to around long-term averages, largely driven by price declines. The key going forward will be whether earnings can remain resilient if growth continues to slow.
- Outside the US, equity valuations remain lower in both emerging and developed markets, but risks remain, including potential continued strength in the US dollar, higher inflation particularly weighing on Europe, and China's rushed exit from COVID-19 restrictions and on-going weakness in the real estate sector.

Appendices

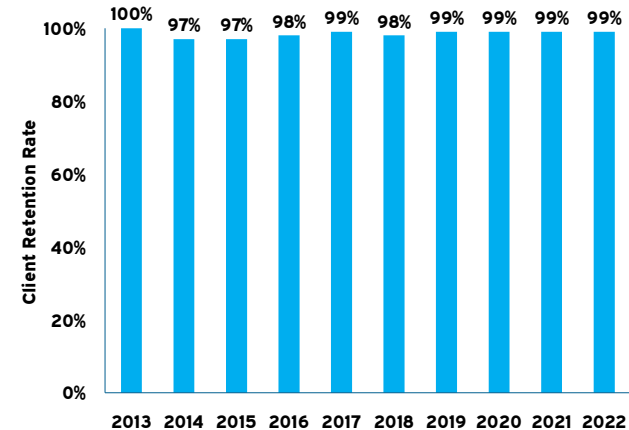
**Meketa Investment Group
Corporate Update**

- Staff of 243, including 162 investment professionals and 48 CFA Charterholders¹
- More than 240 clients, with over 400 funds throughout the United States
- Significant investment in staff and resources
- Offices in Boston, Chicago, Miami, New York, Portland (OR), San Diego, and London
- We advise on \$1.6 trillion in client assets¹
 - Over \$150 billion in assets committed to alternative investments
 - Private Equity
 - Infrastructure
 - Natural Resources
 - Real Estate
 - Hedge Funds
 - Commodities

Client to Consultant Ratio²



Client Retention Rate³



Meketa Investment Group is proud to work for over 5 million American families everyday.

¹ Client and employee counts as of December 31, 2022; assets as of September 30, 2022.

² On March 15, 2019, 31 employees joined the firm as part of the merger of Meketa Investment Group and Pension Consulting Alliance.

³ Client Retention Rate is one minus the number of clients lost divided by the number of clients at prior year-end.

Asset Classes Followed Intensively by Meketa Investment Group

Domestic Equities	International Equities	Private Equity	Real Assets	Fixed Income	Hedge Funds
<ul style="list-style-type: none"> → Passive → Enhanced Index → Large Cap → Midcap → Small Cap → Microcap → 130/30 	<ul style="list-style-type: none"> → Large Cap Developed → Small Cap Developed → Emerging Markets → Frontier Markets 	<ul style="list-style-type: none"> → Buyouts → Venture Capital → Private Debt → Special Situations → Secondaries → Fund of Funds 	<ul style="list-style-type: none"> → Public REITs → Core Real Estate → Value Added Real Estate → Opportunistic Real Estate → Infrastructure → Timber → Natural Resources → Commodities 	<ul style="list-style-type: none"> → Short-Term → Core → Core Plus → TIPS → High Yield → Bank Loans → Distressed → Global → Emerging Markets 	<ul style="list-style-type: none"> → Long/Short Equity → Event Driven → Relative Value → Fixed Income Arbitrage → Multi Strategy → Market Neutral → Global Macro → Fund of Funds → Portable Alpha

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

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: [Investment Terminology](#), International Foundation of Employee Benefit Plans, 1999.
[The Handbook of Fixed Income Securities](#), Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.