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CELEBRATING A MILESTONE

Maryland State Retirement and Pension System

Performance Report
September 30, 2023

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 third quarter, the System was valued at $63,269 million, a decrease of $1,935 million from the end of the second quarter.

- The decrease was the result of negative investment performance and net cash outflows that totaled $766.1 million for the quarter.

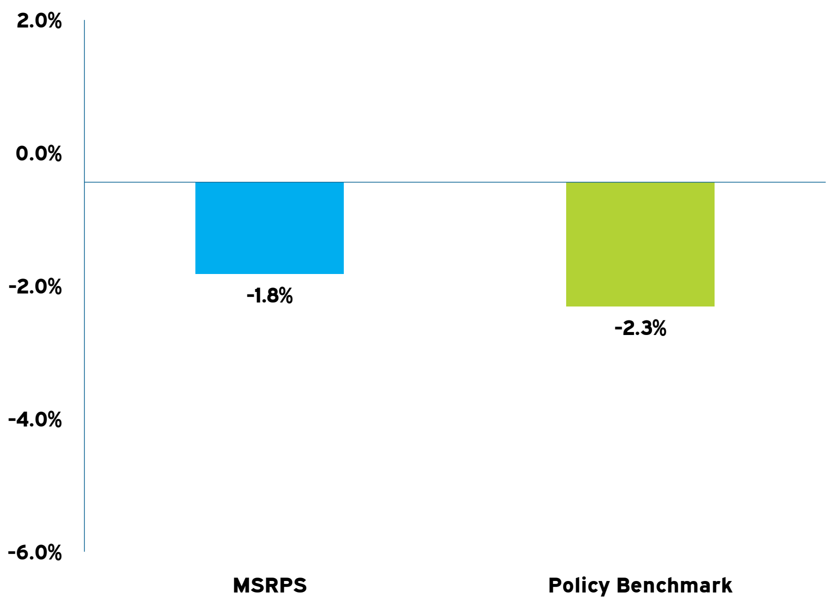
→ The System returned -1.8%, net of fees, during the third quarter of 2023, outperforming the policy benchmark by 0.5%.

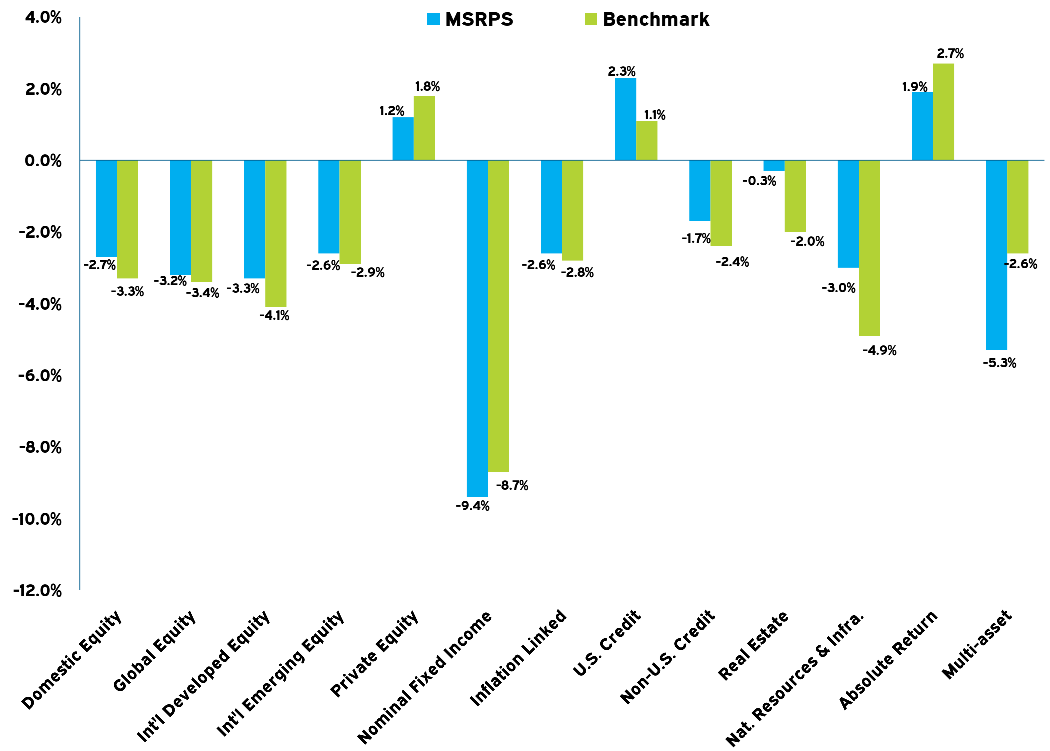
- Most asset class returns were negative for the quarter except for private equity, US credit, and absolute return.
- US credit had the strongest absolute return, up 2.3% for the quarter, while nominal fixed was the weakest performer in absolute terms, down 9.4%.

→ At quarter end, all asset classes were within their respective target allocation ranges.

Q3 System and Asset Class Performance

→ The System outperformed the Policy Benchmark during the third quarter, returning -1.8%, net of fees.





→ During the quarter, US credit delivered the best absolute performance returning 2.3%.

→ On a relative basis, natural resources and infrastructure was the best performing asset class, outpacing its benchmark by 1.9%.

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 Q3 Attribution[1]

	Total System			Policy Benchmark			Attribution Analysis			
	Average Weight	Total Return[2]	Contribution to Return	Average Weight[3]	Total Return[2]	Contribution to Return	Allocation Effect	Active Management Effect[4]	Interaction Effect	Total Effect
Public Equity	30.2	-3.1	-0.9	28.1	-3.4	-1.0	-0.04	0.05	0.03	0.05
Domestic Equity	12.4	-3.2	-0.4	13.1	-3.3	-0.4	0.01	0.01	0.00	0.02
International Developed	7.4	-3.7	-0.3	8.1	-4.1	-0.3	0.02	0.03	0.00	0.05
International Emerging	6.8	-2.8	-0.2	6.9	-2.9	-0.2	-0.04	0.00	0.00	-0.03
Global Equity	3.6	-2.5	-0.1	0.0	-3.4	0.0	-0.03	0.00	0.03	0.00
Private Equity	21.8	1.2	0.3	21.9	1.8	0.4	0.00	-0.13	0.00	-0.13
Nominal Fixed Income	13.6	-6.8	-0.9	15.7	-8.7	-1.4	0.13	0.31	-0.04	0.40
Inflation Linked	3.4	-2.6	-0.1	4.2	-2.8	-0.1	0.00	0.01	0.00	0.01
US Credit	7.9	2.2	0.2	7.7	1.1	0.1	0.01	0.08	0.01	0.10
Non- US Credit	1.0	-1.7	0.0	1.0	-2.4	0.0	0.00	0.01	0.00	0.01
Real Estate	10.4	-0.3	0.0	10.4	-2.0	-0.2	0.00	0.18	0.00	0.18
Natural Resources & Infrastructure	5.0	-3.0	-0.1	5.0	-4.9	-0.2	0.00	0.09	0.00	0.09
Absolute Return	5.9	1.9	0.1	6.0	2.7	0.2	0.00	-0.05	0.00	-0.05
Multi-Asset	0.4	-5.3	0.0	0.0	-2.6	0.0	0.00	0.00	-0.01	-0.01
Cash	0.4	2.0	0.0	0.0	1.4	0.0	0.01	0.00	0.00	0.01
Total (excl. overlay)	-	-	-1.52	-	-	-2.31	0.11	0.55	0.00	0.65
Currency Overlay							0.05			
Structural/Tactical Overlay							-0.35			
Total (incl. overlay)	100.0	-	-1.82	100.0	-	-2.31	-0.19	0.55	0.00	0.36

[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 Attribution[1]

	Total System			Policy Benchmark			Attribution Analysis			
	Average Weight	Total Return[2]	Contribution to Return	Average Weight[3]	Total Return[2]	Contribution to Return	Allocation Effect	Active Management Effect[4]	Interaction Effect	Total Effect
Public Equity	29.5	18.6	5.5	28.4	19.4	5.5	-0.04	0.00	-0.21	-0.25
Domestic Equity	11.7	19.9	2.3	12.8	20.5	2.6	-0.22	-0.06	0.01	-0.27
International Developed	7.0	24.4	1.7	7.8	24.0	1.9	-0.18	0.02	0.00	-0.15
International Emerging	7.4	12.6	0.9	7.8	11.7	0.9	-0.15	0.04	0.01	-0.10
Global Equity	3.4	13.7	0.5	0.0	20.8	0.0	0.50	0.00	-0.22	0.28
Private Equity	21.6	4.7	1.0	21.6	3.8	0.8	0.00	0.19	0.00	0.19
Nominal Fixed Income	13.4	-2.3	-0.3	15.1	-5.0	-0.8	0.17	0.41	-0.05	0.53
Inflation Linked	4.0	1.6	0.1	4.5	1.2	0.1	0.00	0.01	0.00	0.02
US Credit	7.4	8.2	0.6	7.3	10.9	0.8	0.01	-0.19	0.01	-0.17
Non- US Credit	1.0	10.8	0.1	1.0	8.7	0.1	0.00	0.02	0.00	0.01
Real Estate	11.1	-8.6	-1.0	11.1	-12.5	-1.4	0.00	0.48	0.00	0.48
Natural Resources & Infrastructure	5.1	6.0	0.3	5.0	7.0	0.3	0.02	-0.09	-0.01	-0.08
Absolute Return	6.1	-0.1	0.0	6.0	3.2	0.2	-0.06	-0.19	-0.02	-0.27
Multi-Asset	0.4	6.8	0.0	0.0	4.9	0.0	0.00	0.00	0.01	0.01
Cash	0.5	6.8	0.0	0.0	4.7	0.0	-0.01	0.00	0.01	0.00
Total (excl. overlay)	-	-	5.89	-	-	5.19	0.09	0.65	-0.26	0.48
Currency Overlay							-0.04			
Structural/Tactical Overlay							-0.11			
Total (incl. overlay)	**100.0**	**-**	**5.72**	**100.0**	**-**	**5.19**	**-0.06**	**0.65**	**-0.26**	**0.33**

[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

Third Quarter

→ In the third quarter, the System outperformed the policy benchmark by 0.49%.

→ Inclusive of the overlay programs, asset allocation had a negative effect on the relative performance.

→ Active management was additive, and the interaction effect had no impact to relative performance.

- Selection within nominal fixed income, real estate, and natural resources and infrastructure were most additive while selection within private equity detracted from relative performance. Selection within public equity was also slightly positive.

Trailing 1-Year

→ Over the trailing one-year period, the System outperformed the Policy Benchmark by 0.52%.

→ Inclusive of the overlay programs, the asset allocation effect detracted slightly from relative performance.

→ While interaction effects detracted from performance, manager selection (e.g., active management) contributed positively over the trailing year.

- Manager selection within real estate, nominal fixed income, and private equity were the most additive while selection within US credit, absolute return, and natural resources and infrastructure 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.

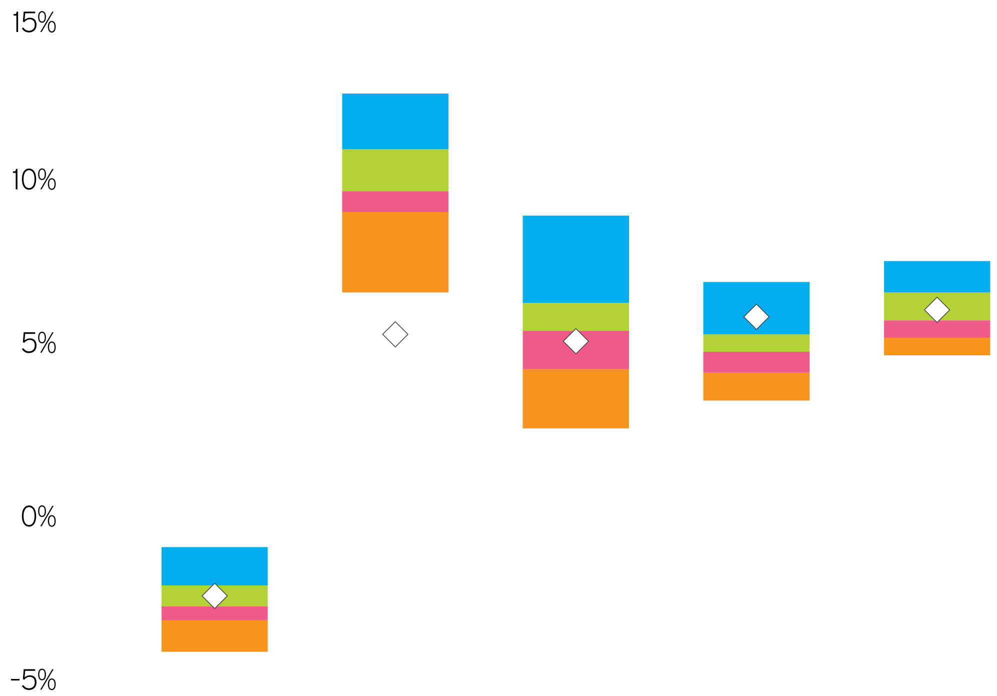
Calculations[1]:

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

- *Allocation Effect:* (Rab - Rpb) × (Wp - Wb)
- *Active Management Effect*[2]*:* Wb × (Rp - Rab)
- *Interaction Effect:* (Wp - Wb) x (Rp - Rab)

[1]Rpb= 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.

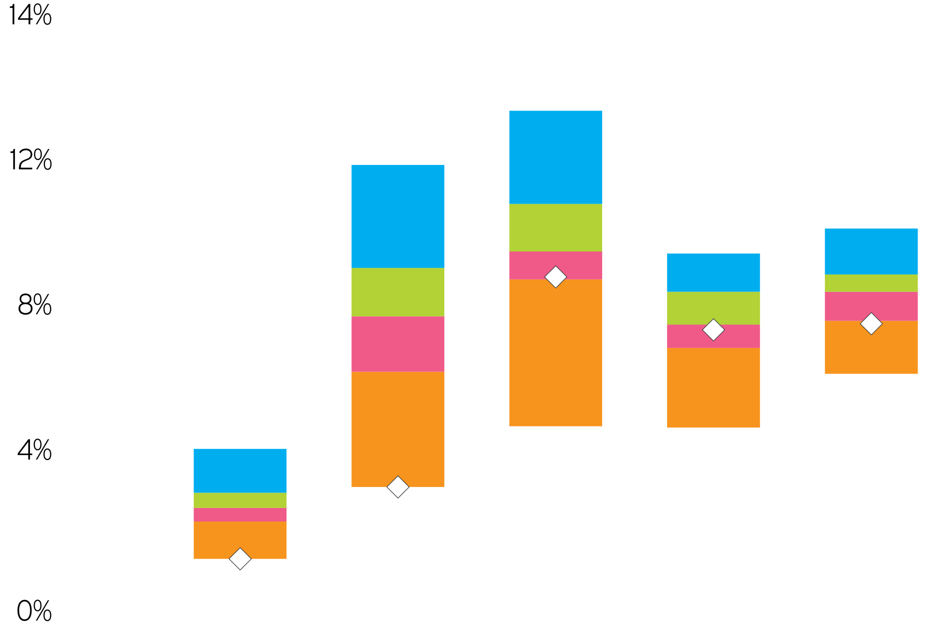
Total System vs. Public Plans >$1 Billion Universe[1]
As of September 30, 2023



	3Q23 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Total System	-1.8	5.7	5.5	6.2	6.4
25th Percentile	-1.5	11.0	6.6	5.7	6.9
Median	-2.1	9.8	5.8	5.2	6.1
75th Percentile	-2.5	9.2	4.7	4.6	5.6
Rank (%)	*33*	*98*	*57*	*20*	*40*

[1] Represents a preliminary release of the InvMetrics Public DB >$1 bn peer group as of September 30, 2023. Total System performance is net of fees. Includes 70 plans.

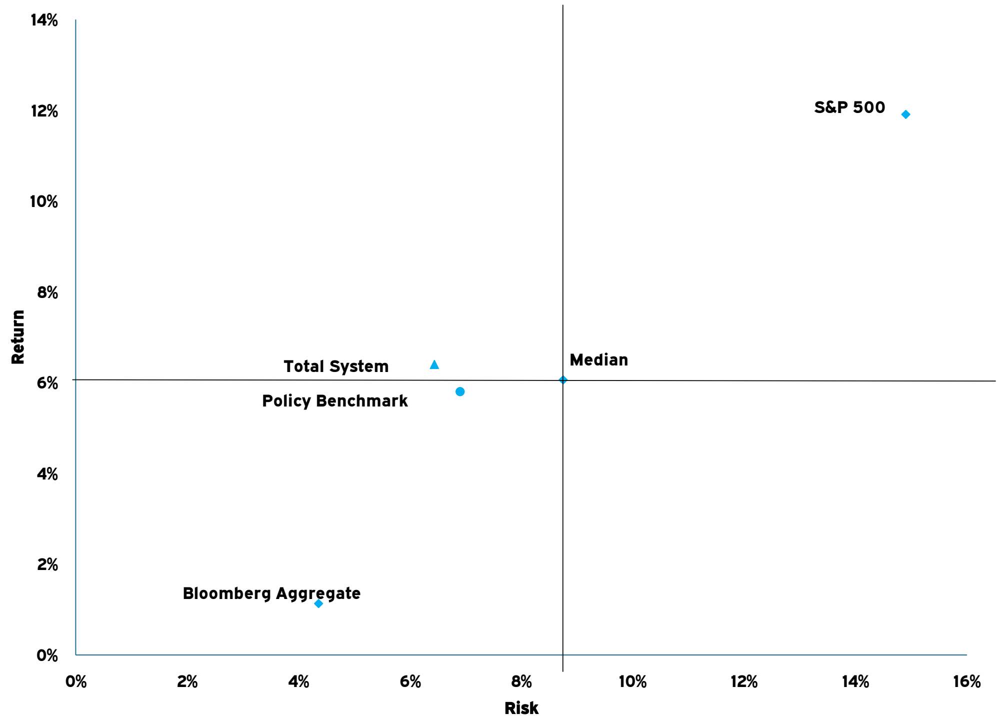
Total System vs. Public Plans >$25 Billion Universe[1]
As of June 30, 2023



	2Q23 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Total System	1.5	3.3	8.4	7.1	7.3
25th Percentile	3.1	8.6	10.2	8.0	8.5
Median	2.8	7.4	9.0	7.2	8.0
75th Percentile	2.4	6.1	8.3	6.7	7.3
Rank (%)	96	96	71	59	78
Policy Benchmark	*1.4*	*2.2*	*7.1*	*6.3*	*6.5*
Rank (%)	*96*	*96*	*90*	*85*	*92*

[1] Represents the TUCS Public >$25 bn peer group as of June 30, 2023. Total System performance is gross of fees. Includes 34 plans.

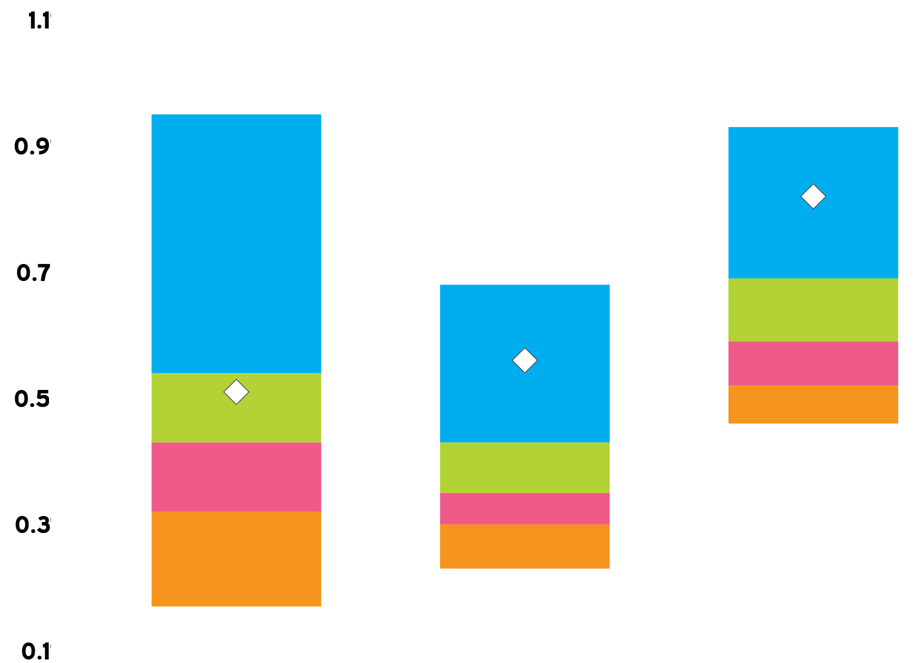
Total System Trailing 10-Year Risk vs Return[1]
As of September 30, 2023



	Risk (%)	Return (%)
Total System	6.4	6.4
Policy Benchmark	6.9	5.8
Median	8.8	6.1

[1] Represents a preliminary cut of InvMetrics Public DB >$1 bn Net peer group as of September 30, 2023. Includes 70 plans.

Total System vs. Public Plans >$1 Billion Universe Sharpe Ratio Comparison[1]
As of September 30, 2023

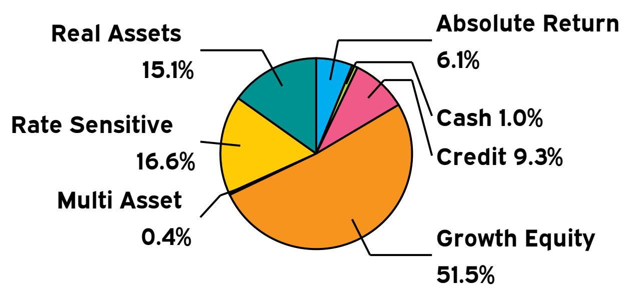


	3 YR	5 YR	10 YR
Total System	0.5	0.6	0.8
S&P 500	0.5	0.5	0.7
25th Percentile	0.5	0.4	0.7
Median	0.4	0.4	0.6
75th Percentile	0.3	0.3	0.5
Rank (%)	*30*	*12*	*10*

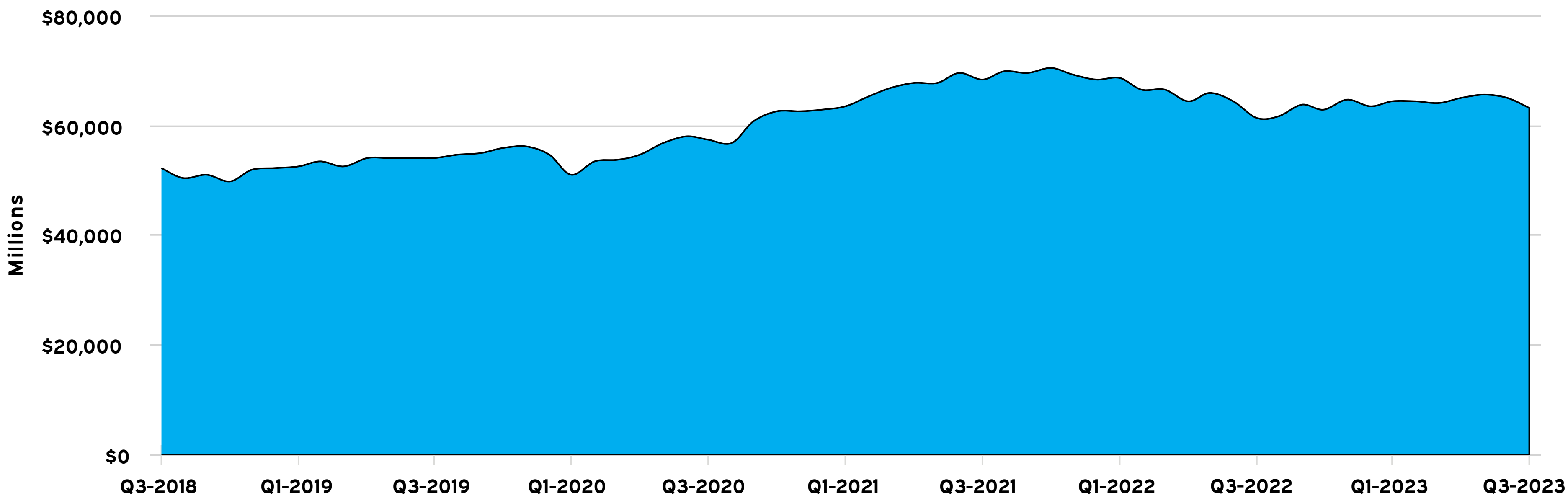
[1] Represents a preliminary cut of Investor Force Public DB >$1 bn Net peer group as of September 30, 2023. Includes 70 plans. The risk-free rate is the 91-day T-bill.

Performance Summary

Actual Allocation



Market Value History
5 Years Ending September 30, 2023



Allocation vs. Targets and Policy					
	Current Balance	Current Allocation	Transitional Targets	Policy	Policy Range
Growth Equity	**$32,571,036,287**	**52%**	**50%**	**50%**	**43% - 57%**
Domestic Equities	$7,643,797,254	12%	13%	16%	--
Global Equity	$2,057,968,759	3%	0%	0%	--
International Developed Market Equity	$4,534,635,445	7%	8%	10%	--
International Emerging Market Equity	$4,031,880,892	6%	6%	8%	--
Private Equity	$14,289,628,940	23%	23%	16%	--
Stock Distributions	$13,124,997	0%	0%	0%	--
Rate Sensitive	**$10,517,156,508**	**17%**	**19%**	**20%**	**15% - 25%**
Nominal Fixed Income	$8,358,153,903	13%	15%	16%	--
Inflation-Linked Bonds	$2,159,002,605	4%	4%	4%	--
Credit	**$5,913,799,412**	**9%**	**9%**	**9%**	**5% - 13%**
U.S. Credit	$5,260,162,901	8%	8%	8%	--
Non-U.S. Credit	$653,636,511	1%	1%	1%	--
Real Assets	**$9,575,457,517**	**15%**	**16%**	**15%**	**11% - 19%**
Real Estate	$6,852,292,336	11%	11%	10%	--
Commodities	$174,729,348	0%	0%	0%	--
Natural Resources and Infrastructure	$2,548,135,833	4%	5%	5%	--
Absolute Return	**$3,874,933,059**	**6%**	**6%**	**6%**	**2% - 10%**
Absolute Return	$3,874,933,059	6%	6%	6%	--
Multi Asset	**$233,620,097**	**0%**	**0%**	**0%**	**0% - 2%**
Multi Asset	$233,620,097	0%	0%	0%	--
Cash	**$592,876,748**	**1%**	**0%**	**0%**	**0% - 2%**
Cash	$592,876,748	1%	0%	0%	--
Total	**63,268,879,629**	**100%**	**100%**	**0%**	

	Market Value $	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total System	**63,268,879,629**	**100.0**	**-1.8**	**2.5**	**5.7**	**5.5**	**6.2**	**6.4**	**7.8**	**Jul-86**
System Policy Benchmark			*-2.3*	*2.0*	*5.2*	*4.5*	*5.4*	*5.8*	--	
Over/Under			0.5	0.5	0.5	1.0	0.8	0.6	--	
System Strategic Policy Benchmark			*-2.3*	*2.2*	*5.4*	*4.8*	*5.6*	*6.0*	--	
Over/Under			0.5	0.3	0.3	0.7	0.6	0.4	--	
Growth Equity	**32,571,036,287**	**51.5**	**-1.1**	**7.5**	**12.7**	**10.6**	**9.4**	**9.8**	**6.8**	**Jan-98**
Public Equity	**18,268,282,350**	**28.9**	**-2.9**	**9.1**	**19.1**	**5.4**	**5.8**	**7.3**	**7.8**	**Apr-94**
Public Equity Custom Benchmark			*-3.4*	*7.9*	*19.2*	*5.4*	*5.2*	*6.9*	--	
Over/Under			0.5	1.2	-0.1	0.0	0.6	0.4	--	
Domestic Equity	**7,643,797,254**	**12.1**	**-2.7**	**13.6**	**21.0**	**9.6**	**9.0**	**10.9**	**9.2**	**Apr-94**
U.S. Equity Custom Benchmark			*-3.3*	*12.4*	*20.5*	*9.4*	*9.1*	*11.3*	--	
Over/Under			0.6	1.2	0.5	0.2	-0.1	-0.4	--	
Global Equity	**2,057,968,759**	**3.3**	**-3.2**	**9.5**	**15.6**	**3.4**	**6.1**	**7.6**	**6.8**	**Oct-05**
Global Equity Custom Benchmark			*-3.4*	*10.1*	*20.8*	*6.9*	*6.5*	*7.6*	*6.6*	
Over/Under			0.2	-0.6	-5.2	-3.5	-0.4	0.0	0.2	
International Developed Market Equity	**4,534,635,445**	**7.2**	**-3.3**	**7.4**	**22.7**	**5.7**	**4.0**	**4.4**	**6.0**	**Jan-95**
MSRA Custom International Index			*-4.1*	*6.7*	*24.0*	*6.1*	*3.4*	*3.6*	*5.1*	
Over/Under			0.8	0.7	-1.3	-0.4	0.6	0.8	0.9	
International Emerging Markets Equity	**4,031,880,892**	**6.4**	**-2.6**	**3.6**	**14.4**	**-0.2**	**1.9**	**--**	**4.9**	**Nov-15**
MSCI Emerging Markets (Net)			*-2.9*	*1.8*	*11.7*	*-1.7*	*0.6*	*2.1*	*4.0*	
Over/Under			0.3	1.8	2.7	1.5	1.3	--	0.9	

	Market Value $	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Private Equity	**14,289,628,940**	**22.6**	**1.2**	**5.3**	**4.7**	**20.3**	**16.4**	**16.2**	**9.5**	**Mar-94**
State Street Private Equity Index			*1.8*	*5.2*	*3.8*	*19.7*	*14.4*	*13.3*	--	
Over/Under			-0.6	0.1	0.9	0.6	2.0	2.9	--	
Rate Sensitive	**10,517,156,508**	**16.6**	**-8.0**	**-4.9**	**-4.0**	**-10.4**	**-0.9**	**0.7**	**5.7**	**Jul-86**
Custom Rate Sensitive Benchmark			*-7.5*	*-4.8*	*-3.7*	*-9.8*	*-0.7*	*0.7*	--	
Over/Under			-0.5	-0.1	-0.3	-0.6	-0.2	0.0	--	
Nominal Fixed Income	**8,358,153,903**	**13.2**	**-9.4**	**-6.0**	**-5.5**	**-12.8**	**-1.9**	**0.3**	**5.6**	**Jul-86**
Custom Nominal Fixed Income Benchmark			*-8.7*	*-5.7*	*-5.0*	*-11.8*	*-1.5*	*0.2*	--	
Over/Under			-0.7	-0.3	-0.5	-1.0	-0.4	0.1	--	
Inflation-Linked Bonds	**2,159,002,605**	**3.4**	**-2.6**	**-0.3**	**1.8**	**-2.0**	**2.3**	**2.2**	**3.1**	**Jul-08**
Custom Inflation Sensitive Benchmark			*-2.8*	*-0.9*	*1.2*	*-2.3*	*2.1*	*2.1*	*2.9*	
Over/Under			0.2	0.6	0.6	0.3	0.2	0.1	0.2	
Credit	**5,913,799,412**	**9.3**	**1.8**	**5.7**	**8.6**	**4.4**	**4.3**	**4.5**	**7.4**	**Mar-09**
U.S. Credit	**5,260,162,901**	**8.3**	**2.3**	**6.2**	**8.3**	**5.9**	**5.0**	**5.6**	**7.9**	**Mar-09**
U.S. Credit Custom Benchmark			*1.1*	*6.7*	*10.8*	*2.6*	*3.3*	*4.3*	*6.8*	
Over/Under			1.2	-0.5	-2.5	3.3	1.7	1.3	1.1	
Non-U.S. Credit	**653,636,511**	**1.0**	**-1.7**	**2.0**	**10.8**	**-3.1**	**0.2**	**-0.9**	**-0.3**	**Oct-10**
Non-U.S. Credit Custom Benchmark			*-2.4*	*0.9*	*8.7*	*-5.0*	*-0.9*	*-0.9*	*-0.3*	
Over/Under			0.7	1.1	2.1	1.9	1.1	0.0	0.0	
Real Assets	**9,575,457,517**	**15.1**	**-0.8**	**-6.4**	**-4.0**	**11.5**	**6.4**	**4.4**	**4.8**	**Feb-06**
Custom Real Assets Benchmark			*-2.9*	*-6.5*	*-7.0*	*8.0*	*5.2*	*4.0*	*3.9*	
Over/Under			2.1	0.1	3.0	3.5	1.2	0.4	0.9	

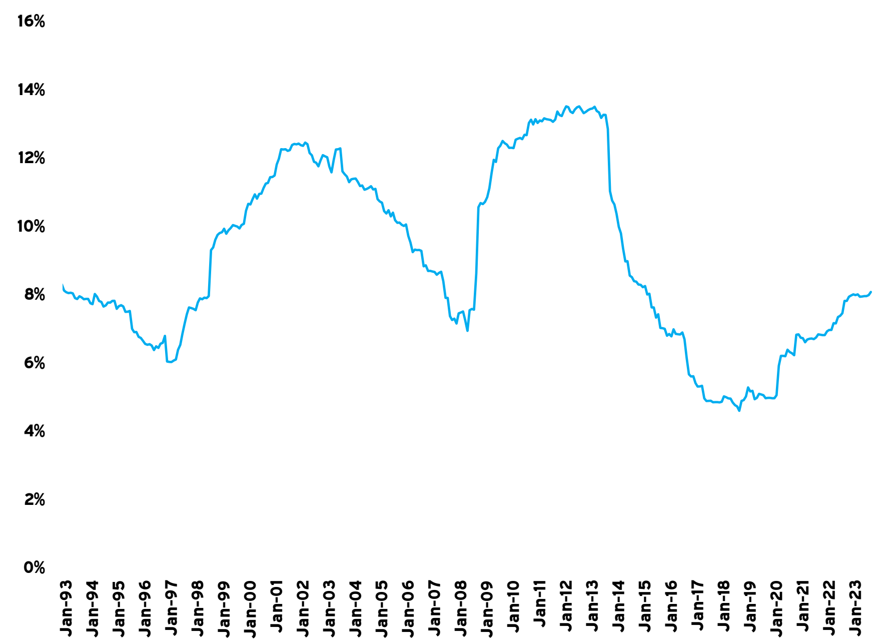
	Market Value $	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Real Estate	**6,852,592,230**	**10.8**	**-0.3**	**-9.5**	**-8.6**	**9.1**	**6.8**	**8.5**	**6.8**	**Jul-87**
Real Estate Custom Benchmark			*-2.0*	*-7.8*	*-12.5*	*6.6*	*5.9*	*7.9*	*7.9*	
Over/Under			1.7	-1.7	3.9	2.5	0.9	0.6	-1.1	
Commodities	**174,729,348**	**0.3**								
Natural Resources and Infrastructure	**2,548,135,833**	**4.0**	**-3.0**	**-0.8**	**6.0**	**15.5**	**4.7**	**4.1**	**8.1**	**Aug-09**
Natural Resources and Infrastructure Benchmark			*-4.9*	*-3.5*	*7.0*	*10.8*	*3.4*	*6.2*	*6.4*	
Over/Under			1.9	2.7	-1.0	4.7	1.3	-2.1	1.7	
Absolute Return	**3,874,933,059**	**6.1**	**1.9**	**2.3**	**-0.1**	**4.7**	**3.1**	**2.7**	**3.2**	**Apr-08**
Absolute Return Custom Benchmark			*2.7*	*3.9*	*3.2*	*6.6*	*5.0*	*4.3*	*2.8*	
Over/Under			-0.8	-1.6	-3.3	-1.9	-1.9	-1.6	0.4	
Multi Asset	**223,620,097**	**0.4**	**-5.3**	**-1.0**	**6.8**	**-3.6**	**0.0**	**--**	**0.1**	**Jul-18**
System Policy Benchmark			*-2.3*	*2.0*	*5.2*	*4.5*	*5.4*	*5.8*	*5.5*	
Over/Under			-3.0	-3.0	1.6	-8.1	-5.4	--	-5.4	
Cash	**592,876,748**	**0.9**	**2.0**	**4.8**	**6.8**	**2.9**	**3.7**	**3.9**	**3.6**	**Jul-08**
FTSE 3 Month T-Bill			*1.4*	*3.8*	*4.7*	*1.8*	*1.7*	*1.1*	*0.8*	
Over/Under			0.6	1.0	2.1	1.1	2.0	2.8	2.8	

Risk Dashboard

Total System Risk

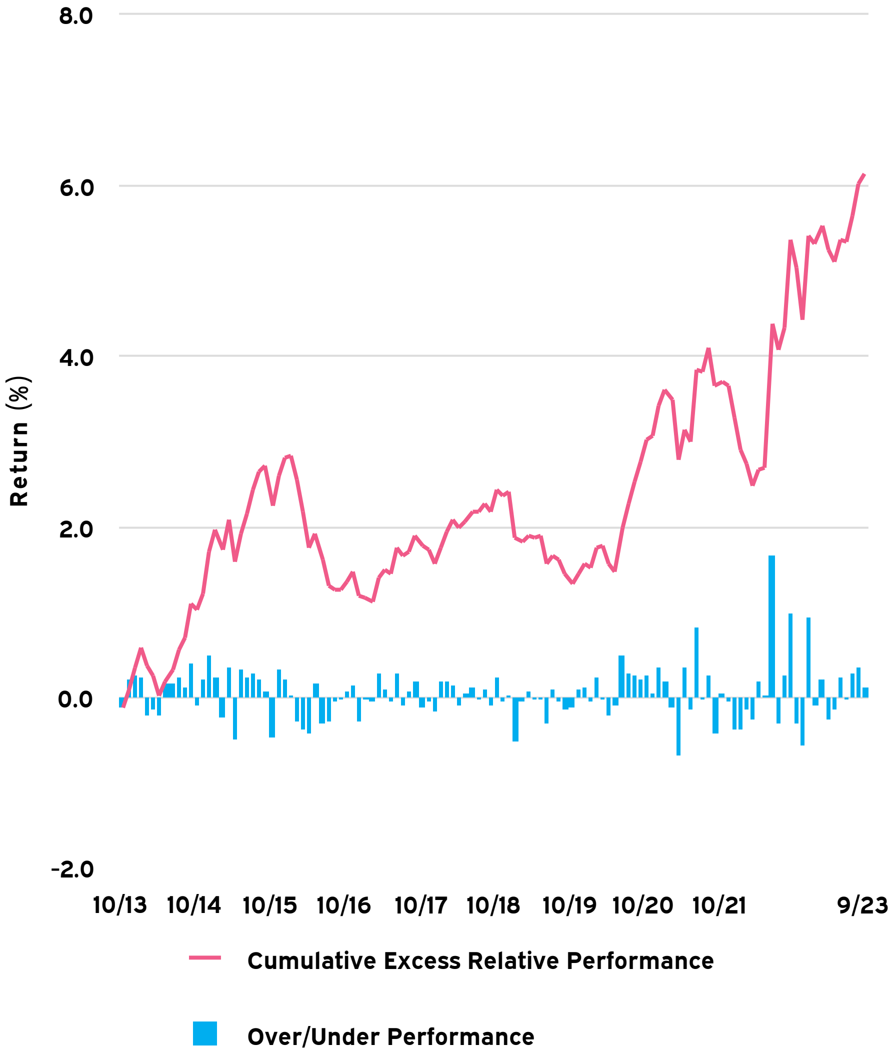
Risk: (sixty months)	Total System 9/30/2023	Policy Benchmark 9/30/2023
Annualized Return (%)	6.2	5.4
Standard Deviation (%)	8.1	8.5
Best Monthly Return (%)	6.9	6.9
Worst Monthly Return (%)	-6.4	-6.4
Beta	0.93	1.00
Correlation (R^2) to Index	0.98	NA
Sharpe Measure	0.56	0.46
Information Ratio	0.53	NA
Excess Return (%)	0.75	NA
Tracking Error (%)	1.28	NA

Rolling 5-Year Standard Deviation

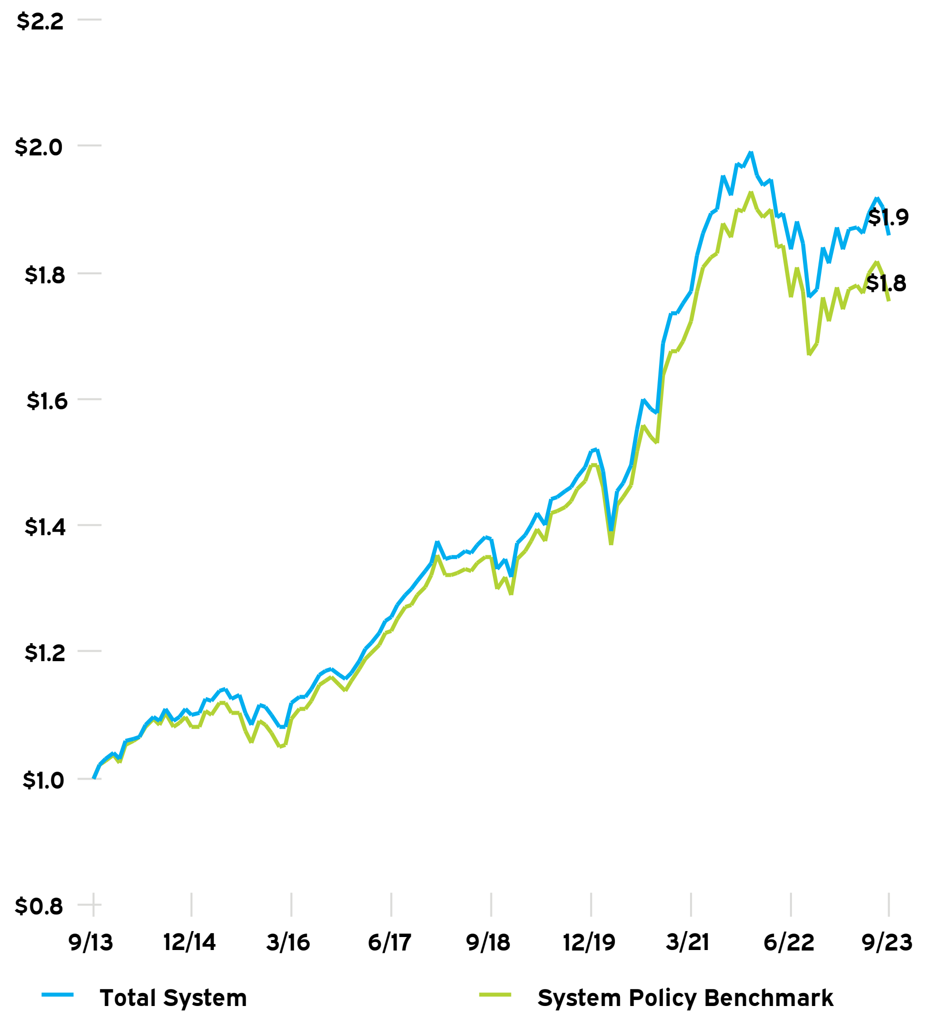


→ Over the trailing 5-years, the System has exhibited lower risk, as measured by standard deviation, than its Policy Benchmark while achieving slightly higher annualized returns.

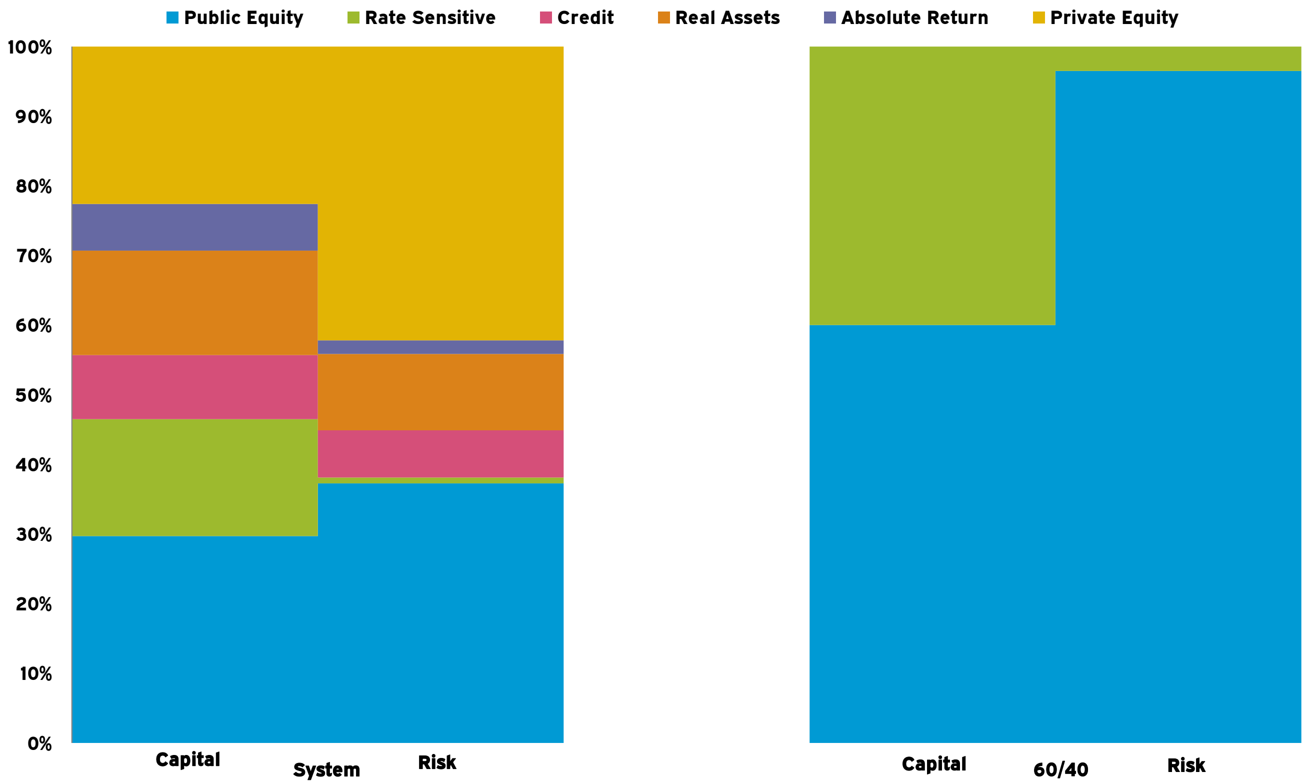
Quarterly and Cumulative Excess Performance



Growth of a Dollar
10 Years Ending September 30, 2023



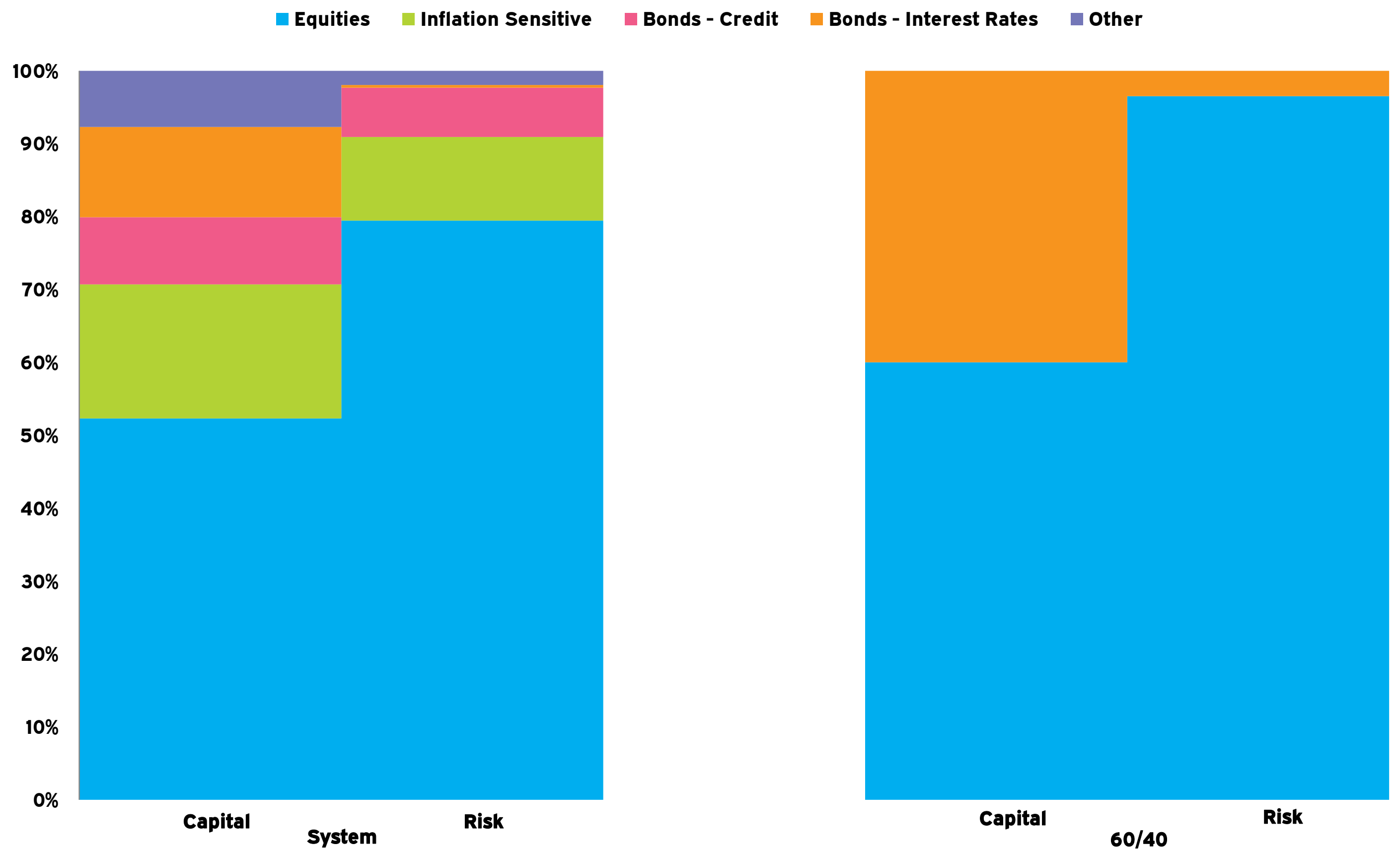
Capital Allocation vs. Risk Allocation
By Asset Class



→ Public equity makes up close to 30% of the current asset allocation; however, it comprises about 37% of the risk allocation.

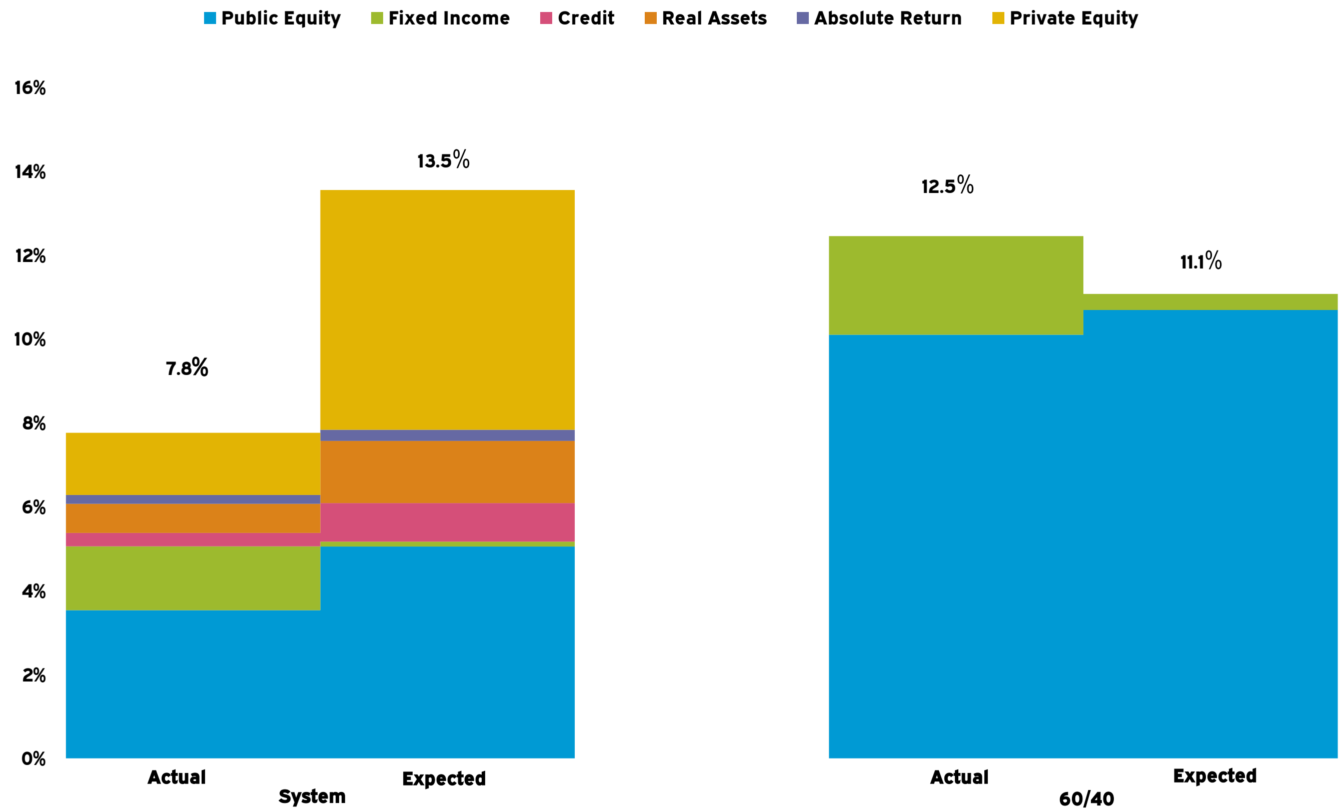
→ By contrast, in a 60/40 portfolio equity comprises 60% of the capital allocation but nearly 97% of the risk.

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.

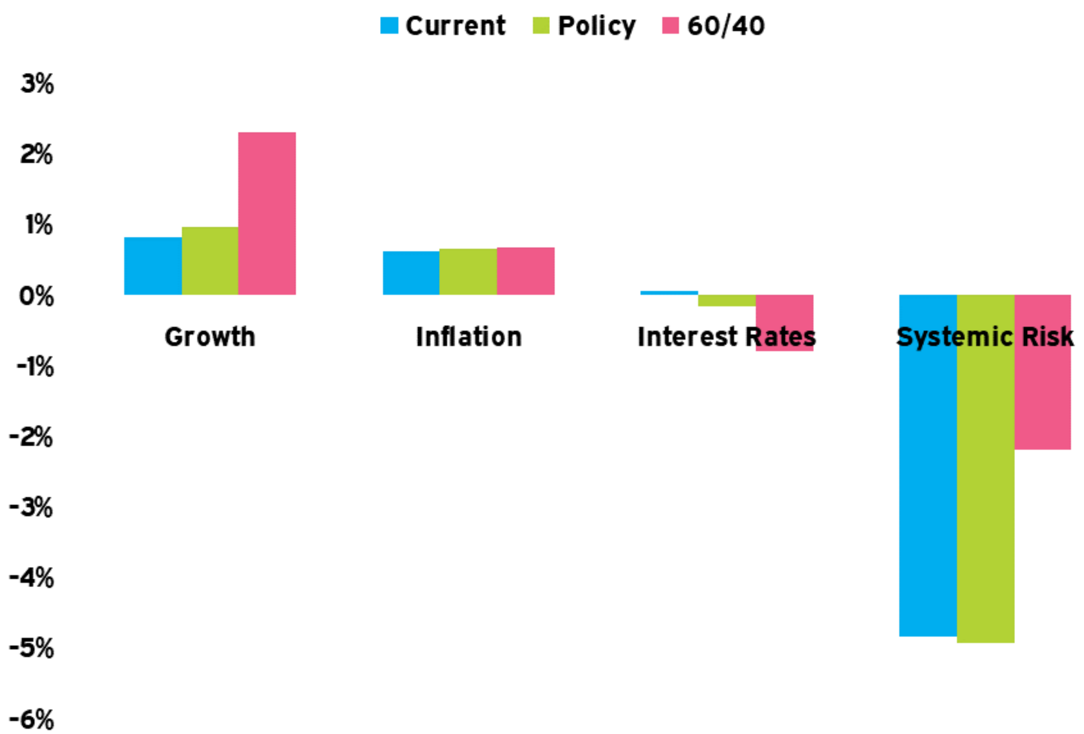
Risk Decomposition
Actual vs. Expected



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

- Public equities, which make up over 37% of the expected risk composition, have made up over 45% 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	52%	28%				1%		23%	
Rate Sensitive	17%		16%			<1%			
Credit	9%			5%				4%	
Real Assets	15%	2%						2%	11%
Absolute Return	6%					6%			
Multi Asset	0%						<1%		
Cash	1%				<1%				
Look Through Allocation	100%	30%	16%	5%	<1%	7%	<1%	29%	11%

[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

→ 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.
  – Manager analyses written on all public market managers.

→ Annually, work with investment staff to assist with the Maryland Pension Risk Mitigation Act assessment report.

→ Regularly participate and contribute to the annual Board education sessions.

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:

- 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
- Emerging managers

Current Agenda Topics

→ Performance Review

Economic and Market Update

Data as of September 30, 2023

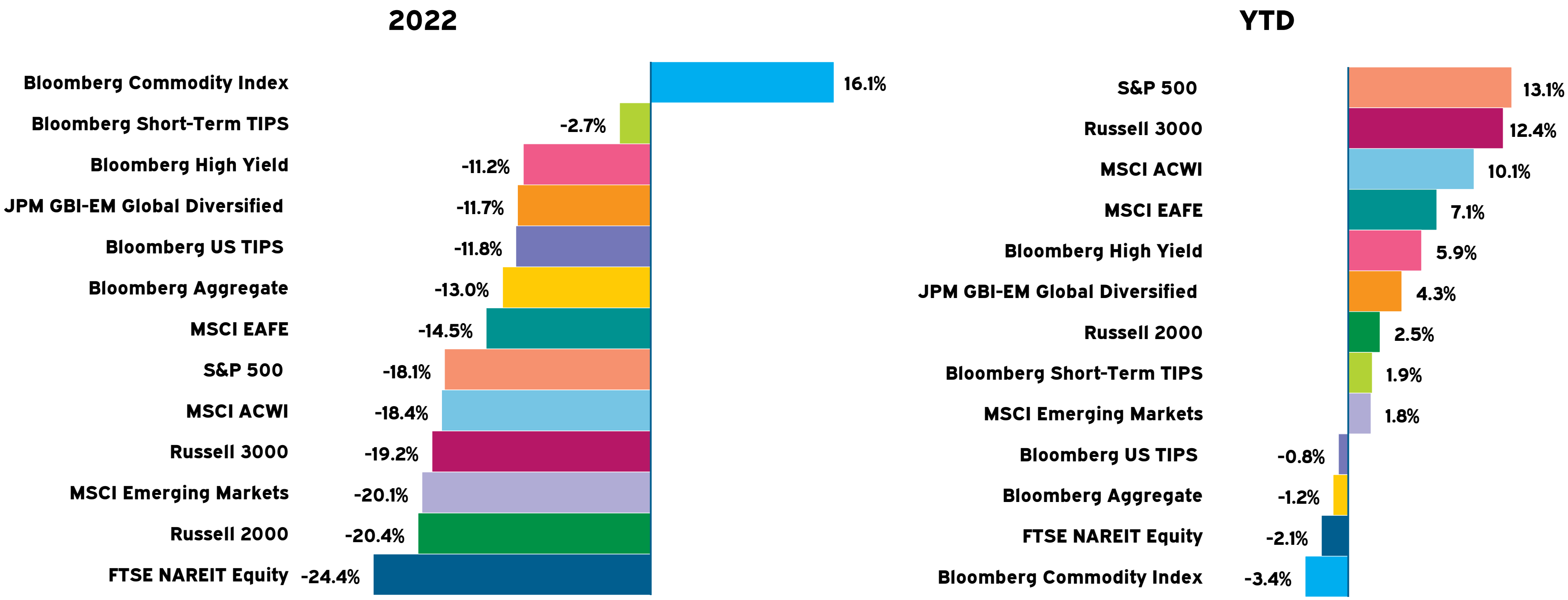
Commentary

→ After a strong July, global assets turned negative in August and September as expectations shifted to the Fed keeping interest rates higher for longer. Weakening economic data from Europe and China, as well as further instability in the Chinese real estate sector and a strong US dollar, weighed on results.

- The Federal Open Markets Committee (FOMC) increased policy rates in July by 0.25% to a range of 5.25% - 5.5% and kept rates at that level at their September meeting. Markets are now largely expecting the FOMC to maintain interest rates at this level through the first half of next year.
- US equity markets (Russell 3000 index) fell in the third quarter (-3.3%), bringing the year-to-date gains to 12.4%. The technology sector remains the key driver of results this year, helped by artificial intelligence optimism.
- Non-US developed equity markets declined more than the US in the third quarter (MSCI EAFE -4.1%) with the strength of the US dollar adding 2.8% to the quarterly declines. This widened the gap between US and international developed equities for the year (12.4% versus 7.1%).
- Emerging market equities experienced the smallest declines in the third quarter (-2.9%). Negative results were driven by China and again the strong US dollar. Emerging markets continue to significantly trail developed market equities year-to-date, returning just 1.8%, again driven by China.
- Interest rates generally rose over the quarter, particularly for longer-dated maturities. The broad US bond market fell (-3.2%) for the quarter and turned negative (-1.2%) year-to-date, as higher income has offset capital losses from rising rates.

→ For the rest of this year, the paths of inflation and monetary policy, slowing global growth, and the wars in Ukraine and Israel will all be key.

Index Returns[1]



→ After a particularly difficult 2022, most public market assets are up thus far in 2023, led by developed market equities.

→ While hopes for a soft landing remain in place, the prospect of higher interest rates for longer weighed on market sentiment in August and September.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Domestic Equity Returns[1]

Domestic Equity	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-4.8	-3.3	13.1	21.6	10.2	9.9	11.9
Russell 3000	-4.8	-3.3	12.4	20.5	9.4	9.1	11.3
Russell 1000	-4.7	-3.1	13.0	21.2	9.5	9.6	11.6
Russell 1000 Growth	-5.4	-3.1	25.0	27.7	8.0	12.4	14.5
Russell 1000 Value	-3.9	-3.2	1.8	14.4	11.1	6.2	8.4
Russell MidCap	-5.0	-4.7	3.9	13.4	8.1	6.4	9.0
Russell MidCap Growth	-4.9	-5.2	9.9	17.5	2.6	7.0	9.9
Russell MidCap Value	-5.1	-4.5	0.5	11.0	11.0	5.2	7.9
Russell 2000	-5.9	-5.1	2.5	8.9	7.2	2.4	6.6
Russell 2000 Growth	-6.6	-7.3	5.2	9.6	1.1	1.6	6.7
Russell 2000 Value	-5.2	-3.0	-0.5	7.8	13.3	2.6	6.2

US Equities: The Russell 3000 Index fell 3.3% in the third quarter but is up 12.4% YTD.

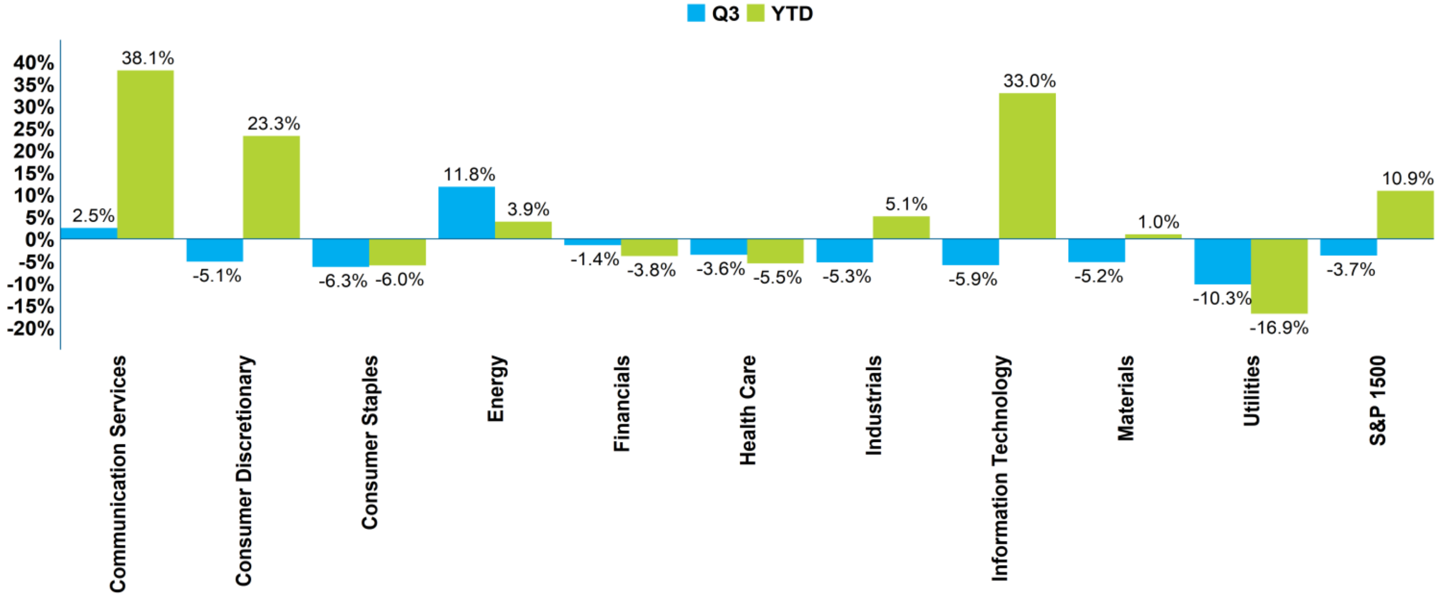
→ US stocks fell 3.3% in the third quarter as healthy economic data and comments from the Fed caused investors to expect interest rates to remain higher for longer.

→ Large cap stocks outperformed small cap stocks during the quarter, bringing their year-to-date outperformance to over 10%. The so called "Magnificent Seven" within the large cap market drove most of this outperformance despite a weak third quarter.

→ Energy strongly led the way during the quarter posting double-digit gains while most other sectors declined. Oil prices rose after Saudi Arabia and Russia extended output cuts.

[1] Source: Bloomberg. Data is as of September 30, 2023.

S&P 1500 Sector Returns[1]



→ Except for energy, which benefited from rising oil prices, all sectors were down in the third quarter.

→ So far in 2023, the communication services (+38.1%) and technology (+33.0%) sectors had the best results on artificial intelligence optimism. Given the continued strength in the US consumer the consumer discretionary sector followed (+23.3%), while more defensive sectors like utilities (-16.9%) and consumer staples (-6.0%) have trailed.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Foreign Equity Returns[1]

Foreign Equity	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-3.2	-3.8	5.3	20.4	3.7	2.6	3.3
MSCI EAFE	-3.4	-4.1	7.1	25.6	5.8	3.2	3.8
MSCI EAFE (Local Currency)	-1.1	-1.3	10.7	20.3	10.8	5.7	6.8
MSCI EAFE Small Cap	-4.4	-3.5	1.8	17.9	1.1	0.8	4.3
MSCI Emerging Markets	-2.6	-2.9	1.8	11.7	-1.7	0.6	2.1
MSCI Emerging Markets (Local Currency)	-1.8	-1.4	4.0	10.9	0.6	2.7	4.9
MSCI China	-2.8	-1.9	-7.3	5.2	-14.3	-4.2	1.7

Foreign Equity: Developed international equities (MSCI EAFE) fell 4.1% in the third quarter bringing the YTD gain to 7.1%. Emerging market equities (MSCI EM) fell 2.9% in the period, rising 1.8% YTD.

→ Outside of the US, equities were also weak during the third quarter with the continued strength of the US dollar being a key driver.

→ Eurozone shares felt pressure from slowing GDP growth and an interest rate hike by the ECB, although inflation continued to ease. By contrast, the UK saw modest gains amid promising economic data including slowing inflation and GDP back around pre-pandemic levels. Japan outperformed regional peers for the quarter due in part to strong earnings.

→ Emerging market performance, while negative, outpaced developed peers. Chinese markets saw losses in-line with other emerging market countries, driven largely by unease surrounding property company Evergrande and a continued lackluster reopening of the economy.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Fixed Income Returns[1]

Fixed Income	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-2.4	-2.9	-0.6	1.6	-4.7	0.3	1.4	5.7	6.0
Bloomberg Aggregate	-2.5	-3.2	-1.2	0.6	-5.2	0.1	1.1	5.4	6.2
Bloomberg US TIPS	-1.8	-2.6	-0.8	1.2	-2.0	2.1	1.7	5.0	6.6
Bloomberg Short-term TIPS	-0.2	0.4	1.9	3.2	1.9	2.8	1.7	5.4	2.5
Bloomberg High Yield	-1.2	0.5	5.9	10.3	1.8	3.0	4.2	8.9	4.0
JPM GBI-EM Global Diversified (USD)	-3.4	-3.3	4.3	13.1	-2.7	0.0	-0.8	6.9	4.9

Fixed Income: The Bloomberg Universal index declined 2.9% in the third quarter and -0.6% YTD.

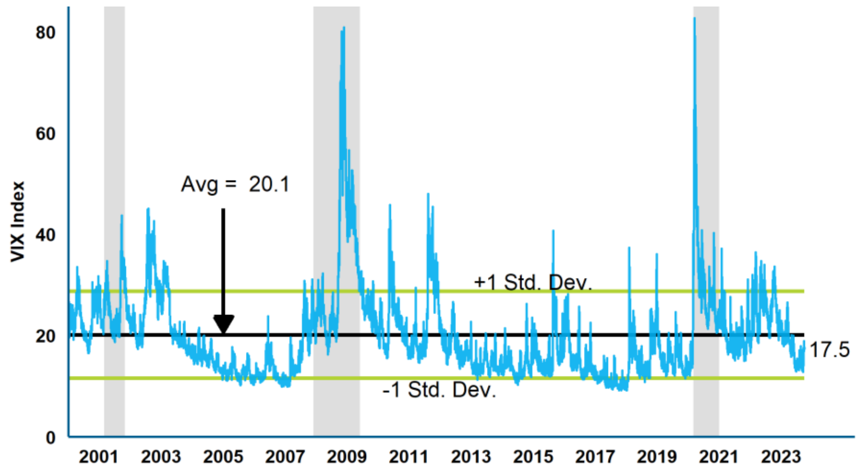
→ The downgrade of US government debt from AAA to AA+ by Fitch combined with expectations for higher borrowing put upward pressure on longer-term rates for the quarter and weighed on overall results. Expectations for policy rates to remain higher for longer than previously expected also contributed to the decline in bonds.

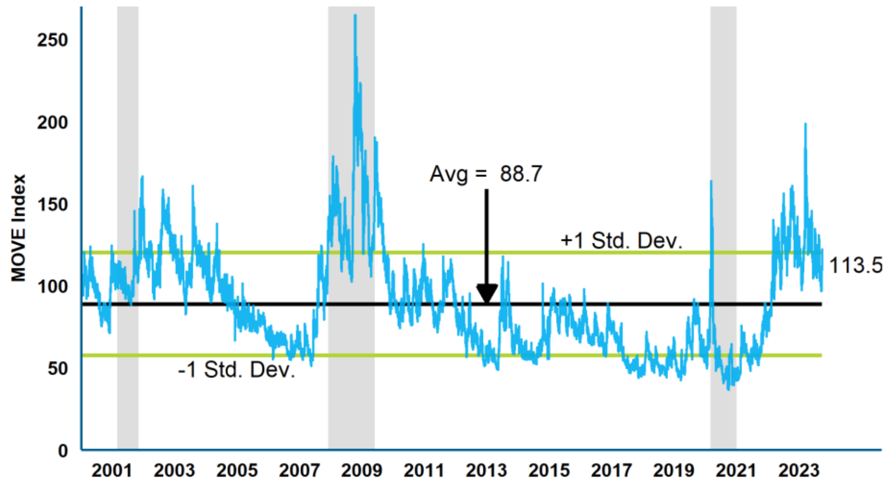
→ The broad US bond market (Bloomberg Aggregate) fell 3.2% for the quarter bringing YTD results into negative territory. The broader TIPS index fell by 2.6%, while the less interest-rate-sensitive short-term TIPS index outperformed most sectors, up 0.4%.

→ High yield bonds were the strongest quarterly performers, up 0.5%, while emerging market bonds were the weakest performer, falling 3.3%. The two asset classes remain the top performers for the year as risk appetite in credit markets remains robust.

[1] Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of September 30, 2023. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.

Equity and Fixed Income Volatility[1]



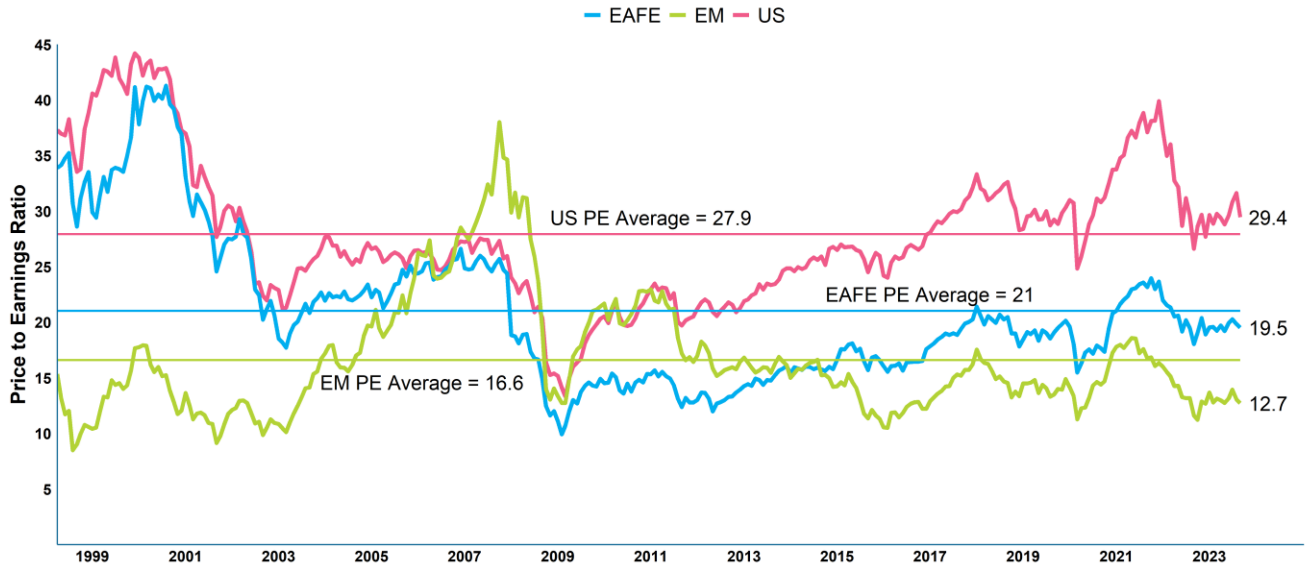


→ Volatility in equities (VIX) increased over the quarter but finished at a level below the long-term average. The recent increase in equity volatility has largely been driven by investors coming to terms that interest rates might remain higher for a longer period.

→ In comparison, volatility in the bond market (MOVE) remains well above its long-run average (88.7) after last year's historic losses and due to continued policy uncertainty. Over the quarter, fixed income volatility finished slightly higher compared to where it started, like equities, driven by expectations for rates to stay higher for longer.

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

Equity Cyclically Adjusted P/E Ratios[1]

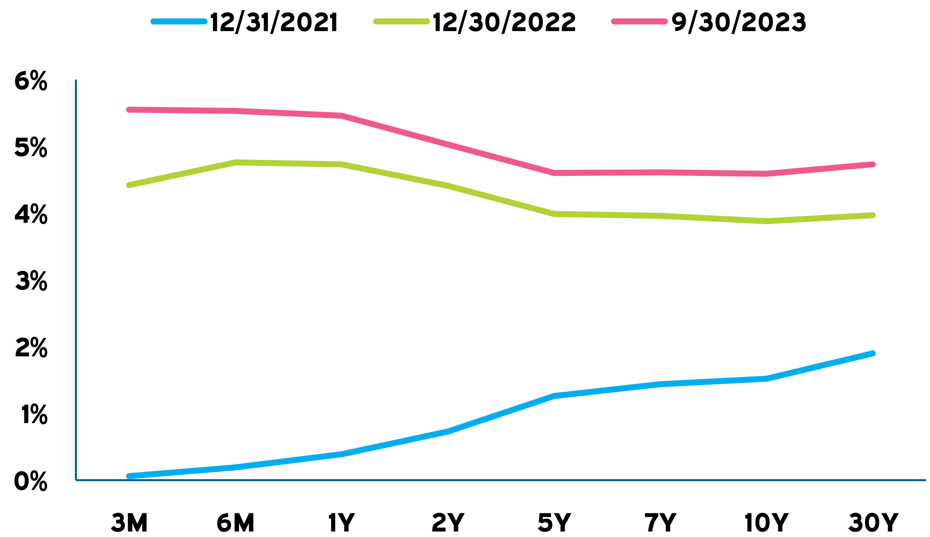


→ Given the strong technology-driven rally this year, the US equity price-to-earnings ratio increased above its long-run (21st century) average. With the equity market decline in August and September the P/E ratio fell from its recent peak.

→ International developed market valuations are below their own long-term average, with those for emerging markets the lowest and well under the long-term average (close to one standard deviation below).

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

US Yield Curve[1]



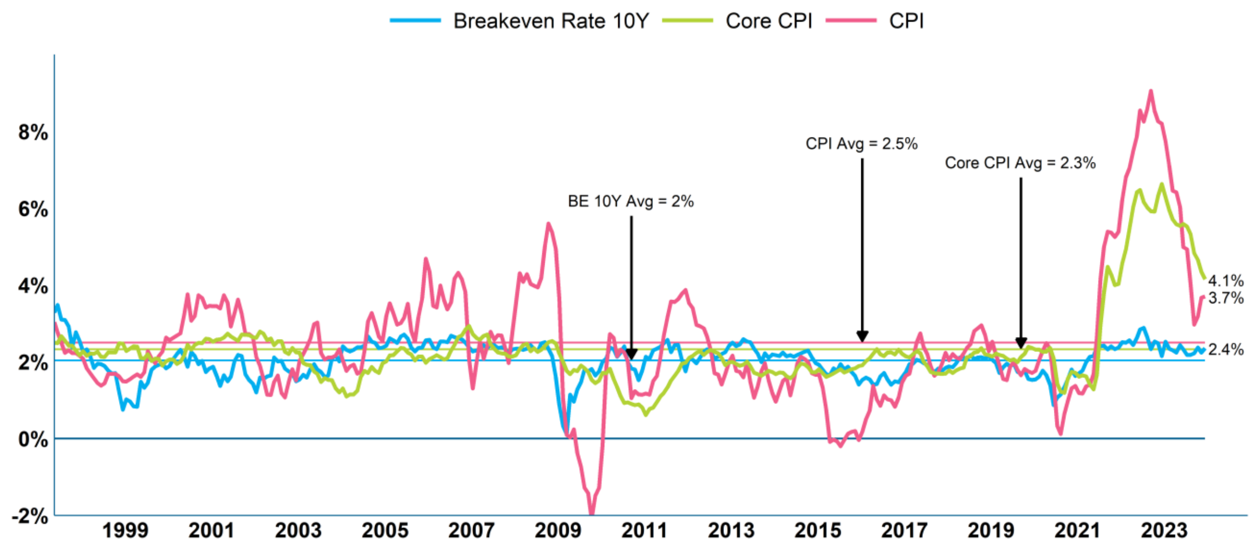
→ Overall rates have continued to increase this year, particularly at the policy sensitive front-end of the yield curve, but at much slower pace compared to last year.

→ Over the quarter, very short-term interest rates (two years or less) increased only slightly as monetary policy has likely reached close to its terminal rate for this cycle. By contrast, longer-term rates rose dramatically as US debt was downgraded and investors came to terms with rates remaining higher for longer. The ten-year Treasury yield increased from 3.8% to 4.6% over the quarter.

→ Because of the dynamic above, the yield curve's inversion decreased with the spread between two-year and ten-year Treasuries finishing the quarter at -0.47% (it started the quarter at -1.05%).

[1] Source: Bloomberg. Data is as of September 30, 2023.

Ten-Year Breakeven Inflation and CPI[1]

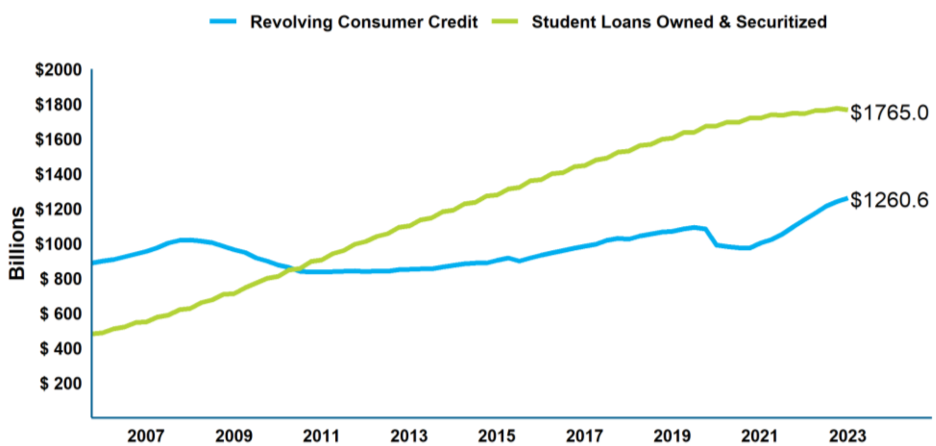


- → After the steady decline in inflation from the June 2022 peak, consumer prices recently increased driven by energy prices.
- → Year-over-year headline inflation was flat at 3.7% coming in slightly higher than expectations as improvements in energy prices were offset by higher shelter costs.
- → Core inflation – excluding food and energy – continued its decline (4.3% to 4.1%) year-over-year. It remains stubbornly high, though, driven by shelter costs (+7.2%), particularly owners' equivalent rent, and transportation services (+9.1%).
- → Inflation expectations (breakevens) remain well below current inflation as investors continue to expect inflation to track back toward the Fed's 2% average target.

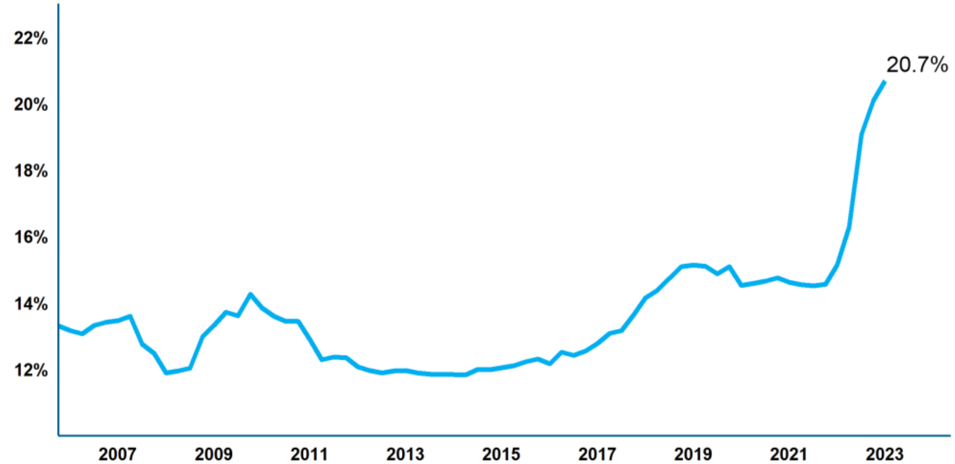
[1] Source: FRED. Data is as September 30, 2023. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

US Consumer Under Stress[1]

Revolving Consumer Credit & Student Loans ($B)



Consumer Credit Card Interest Rates (%)



→ Despite the strong labor market and higher wages, pressures have started to build on the US consumer. This is an important consideration as consumer spending has been an important driver of economic growth.

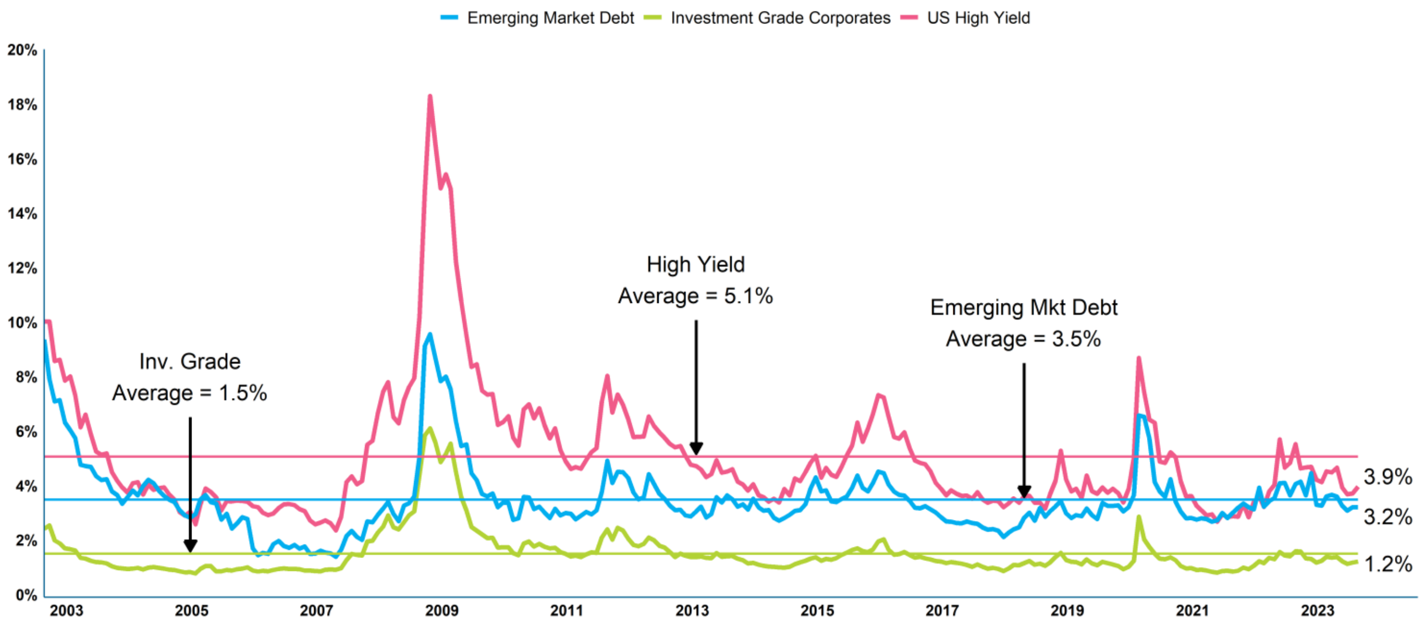
→ Revolving consumer credit surged to new highs in 2023 even as credit card interest rates hit levels not seen before (the prior peak was around 19% in the 1980s).

→ The return of student loan repayments after a three-year pandemic-related reprieve could add to pressures on consumers' budgets. This might be partially balanced by recently initiated repayment and forgiveness programs.

→ As we look ahead, the strength of the US consumers will remain key as they make up most of domestic growth (GDP).

[1] Source: FRED. The most recent data is as June 30, 2023. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.

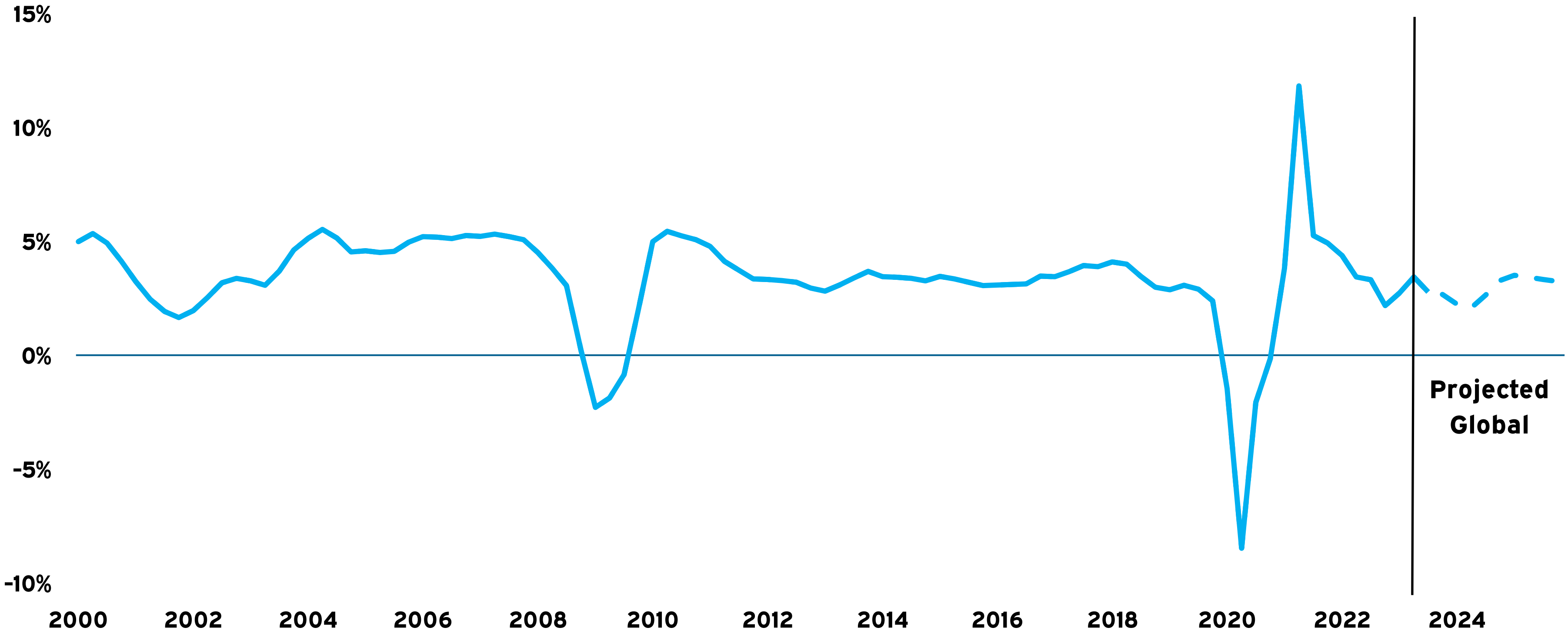
Credit Spreads vs. US Treasury Bonds[1]



- → Credit spreads (the added yield above a comparable maturity Treasury) largely remained unchanged over the quarter.
- → High yield spreads remain well below the long-term average given the overall risk appetite this year. Investment grade and emerging market spreads are also below their respective long-term averages, but by smaller margins.

[1] Sources: Bloomberg. Data is as of September 30, 2023. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.

Global Real Gross Domestic Product (GDP) Growth[1]



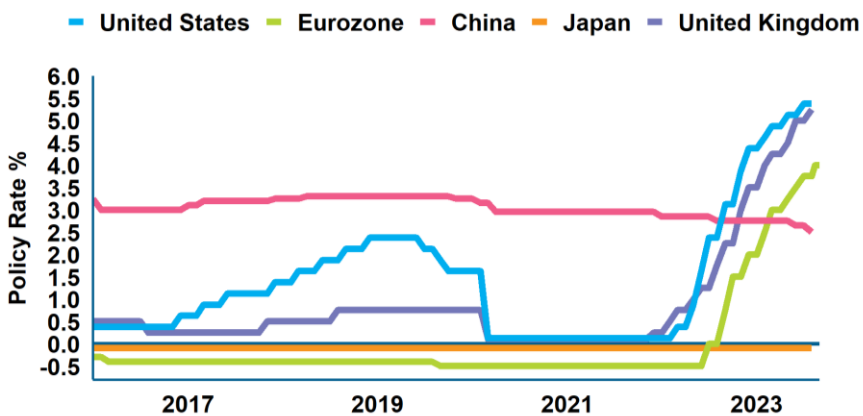
→ Global economies are expected to slow this year compared to 2022. The risk of recession remains elevated given policymakers' aggressive tightening, but optimism has started to grow over some central banks potentially navigating a soft landing.

→ The delicate balancing act of central banks trying to reduce inflation without dramatically disrupting labor markets and depressing economic growth, will remain key.

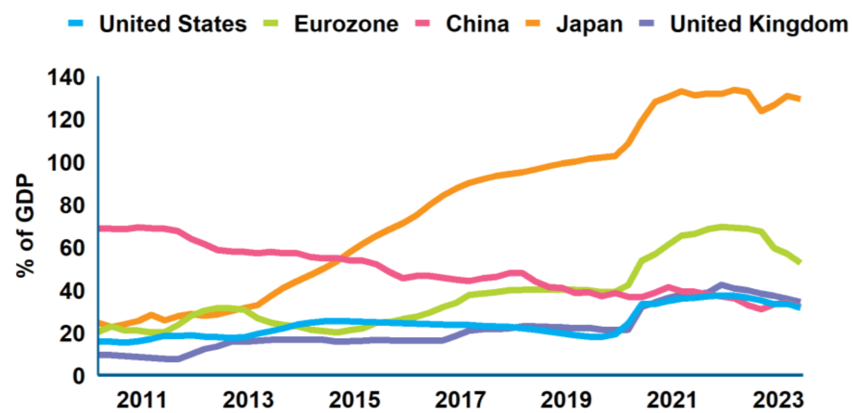
[1] Source: Oxford Economics (World GDP, US$ prices & PPP exchange rate, real, % change YoY). Updated September 2023.

Central Bank Response[1]

Policy Rates



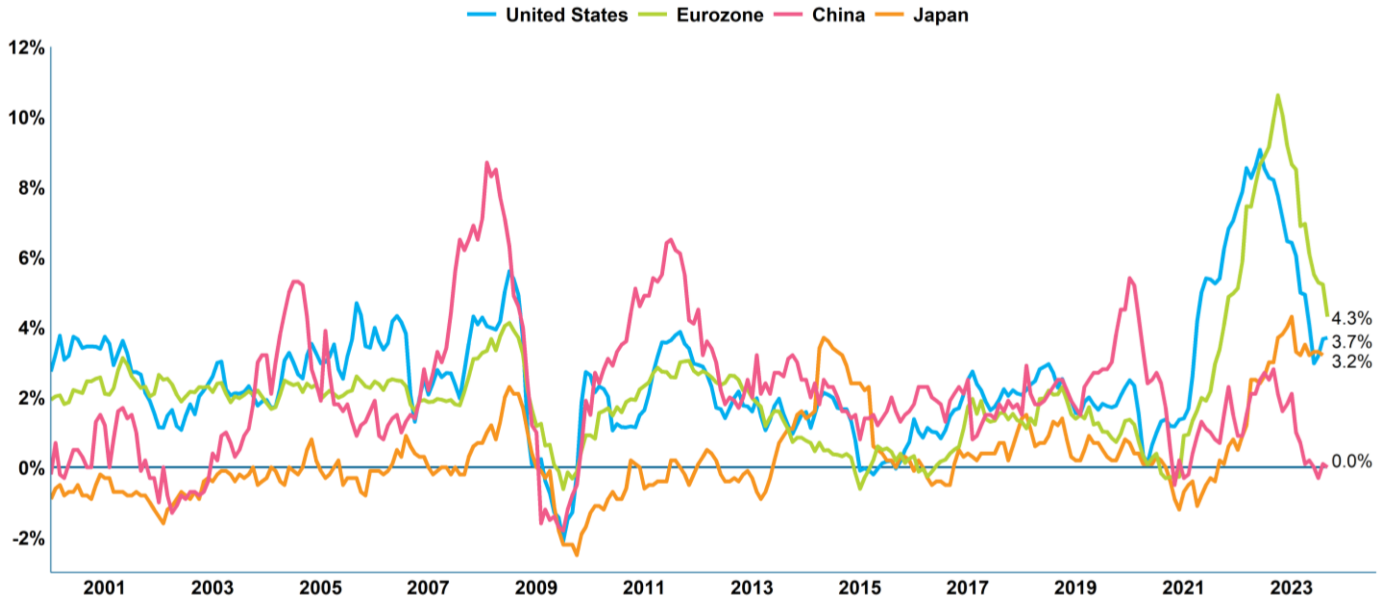
Balance Sheet as % of GDP



- → Slowing inflation and growth have led to expectations for a reduction in the pace of aggressive policy tightening.
- → In July the Fed raised rates another 25 basis points to a range of 5.25% to 5.50% and then kept rates at this level at their September meeting. Markets are expecting at most one more hike later this year.
- → The European Central Bank also increased rates in July, with an additional hike in September, but rates remain lower than in the US. In Japan, expectations have increased that the BOJ will end its negative interest rate policy due to rising inflation.
- → The central bank in China has continued to cut interest rates and inject liquidity into the banking system, as weaker than expected economic data appears to indicate a widespread slowdown.
- → Risks remain for a policy error as central banks attempt to balance bringing down inflation, maintaining financial stability, and supporting growth.

[1] Source: Bloomberg. Policy rate data is as of September 30, 2023. 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 June 30, 2023.

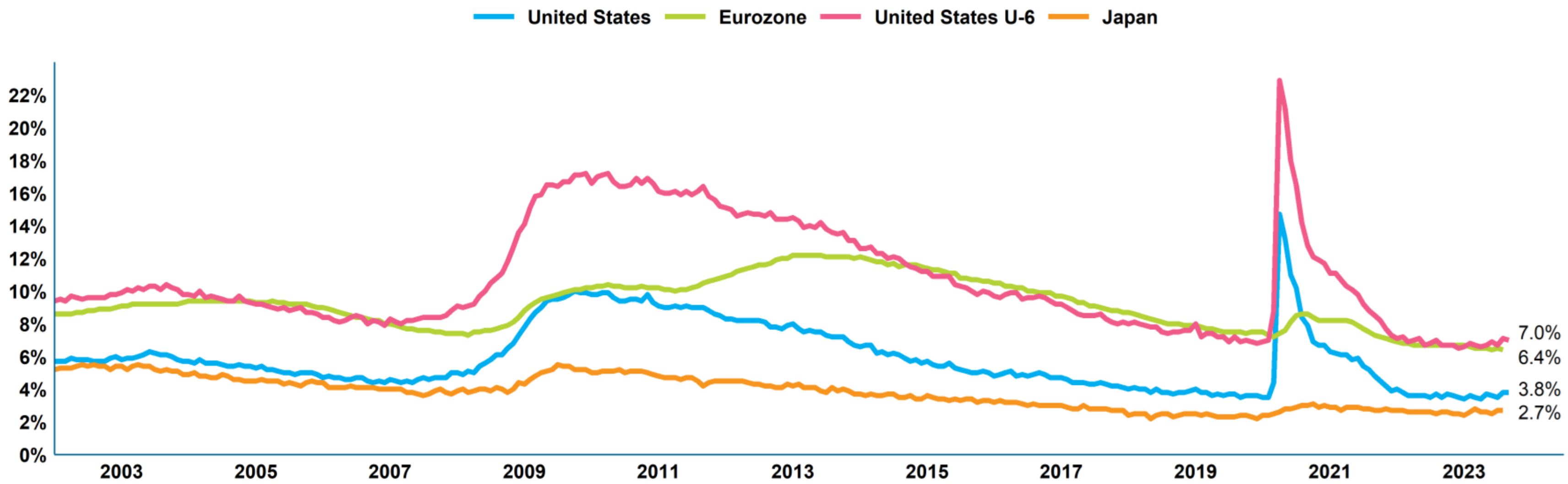
Inflation (CPI Trailing Twelve Months)[1]



- → The inflation picture remains mixed across the major economies.
- → In the US, inflation was flat at 3.7%, influenced by rising shelter costs, while eurozone inflation remained higher than the US at 4.3%, a level well off its peak, however. Despite 2023's significant declines in the US and Europe, inflation levels remain elevated compared to central bank targets.
- → Inflation in Japan has increased to levels not seen in almost a decade largely driven by food and home related items. In China, deflationary pressures eased but prices were flat from a year prior.

[1] United States CPI and Eurozone CPI – Source: FRED. Japan CPI and China CPI - Source: Bloomberg. Data is as September 30, 2023. The most recent data for Japanese and Eurozone inflation is as of August 2023.

Unemployment[1]



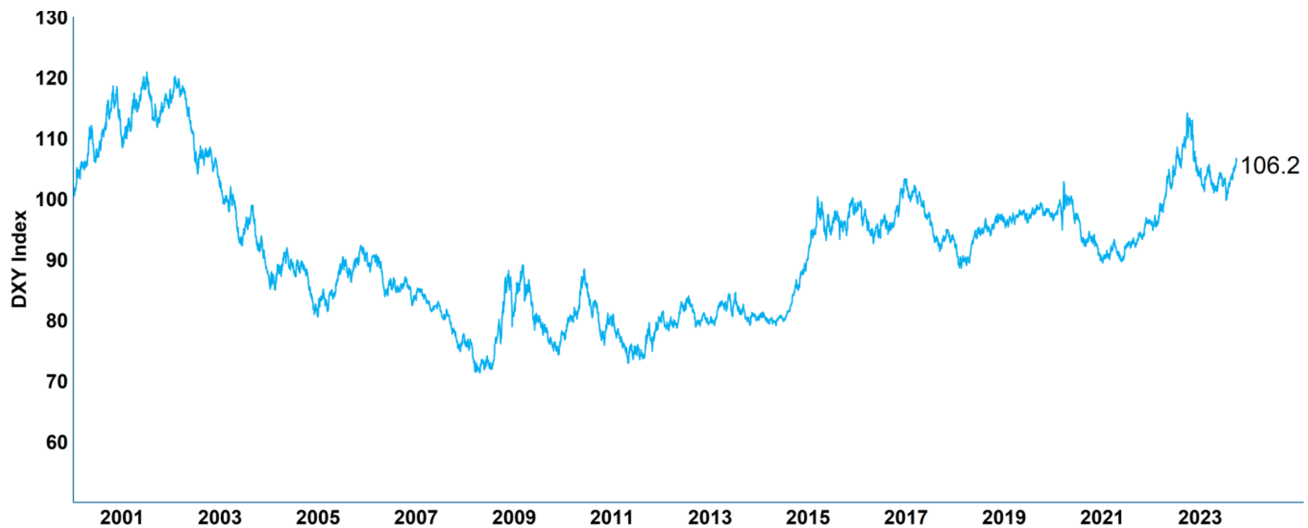
→ Overall, the US labor market remains healthy with the unemployment rate relatively low, wage growth now positive in real terms, and initial claims for unemployment staying subdued. The pace of wage growth has slowed though, and despite remaining elevated, the number of job openings has declined from recent highs.

→ In September, unemployment remained at 3.8%, a level only 0.2% higher than the start of the quarter. The labor force participation rate remained at 62.8% well off the lows of the pandemic (60.1%) but not back to pre-pandemic levels (63.3%). Broader measures of unemployment (U-6) finished the quarter at 7.0% up only slightly from the end of June (6.9%).

→ Unemployment in Europe has also declined but remains higher than the US, while levels in Japan have been flat through the pandemic given less layoffs.

[1] Eurozone Unemployment - Source: Bloomberg. Japan, United States, United States U-6 Unemployment – Source: FRED. Data is as September 30, 2023, for the US. The most recent data for Eurozone unemployment is as of August 2023 and Japanese unemployment is as of August 2023.

US Dollar versus Broad Currencies[1]



- → After a strong 2022, the US dollar declined late last year and into early this year as weaker economic data and lower inflation led to investors anticipating the end of FOMC tightening.
- → Recently though, the dollar reversed course and appreciated against major currencies as relative growth remains strong and investors anticipate the FOMC keeping interest rates higher for longer.
- → For the rest of this year, the track of inflation across economies and the corresponding monetary policies will be key drivers of currency moves.

[1] Source: Bloomberg. Data as of September 30, 2023.

Summary

Key Trends:

→ The impact of inflation still above policy targets will remain key, with bond market volatility likely to stay high.

→ Global monetary policies could diverge going forward. The risk of policy errors remains elevated as central banks try to reduce persistent inflation while not tipping their economies into recession.

→ Growth is expected to slow globally this year, with many economies forecasted to tip into recession. However, optimism has been building that some economies could experience a soft landing. Inflation, monetary policy, and the war will all be key.

→ In the US, consumers could feel pressure as certain components of inflation remain high (e.g., shelter), borrowing costs are elevated, and the job market may weaken.

→ The key for US equities going forward will be whether earnings can remain resilient if growth continues to slow. Also, the future paths of the large technology companies that have driven market gains will be important.

→ Equity valuations remain lower in emerging and developed markets, but risks remain, including the potential for recent strength in the US dollar to persist, higher inflation weighing particularly on Europe, and China's sluggish economic reopening and on-going weakness in the real estate sector. Japan's recent hint at potentially tightening monetary policy along with changes in corporate governance in the country could influence relative results.

→ After month-end, heightened tensions in Israel could add to overall uncertainty and drive safe haven flows.

Appendices

Corporate Update

7
Offices

240+
Employees

240+
Clients

$1.8T
Assets Under Advisement

$200B
Assets in Alternative Investments

99%
Client Retention Rate

5:1
Client | Consultant Ratio

Meketa Investment Group is proud to work for over 15 million American families everyday!

UPCOMING EVENTS

Q4 Investment Perspectives Webcast
January 2024

Mission Driven Investing Manager Research Day
December 2023

Client and employee counts as of September 30, 2023; assets as of June 30, 2023.
Client retention rate is one minus the number of clients lost divided by the number of clients at prior year-end.

THOUGHT LEADERSHIP

Read our July Connectives "Your Plan is 100% Funded, Now What?"

Continuing in our newest series of "Meketa Connectives", our July issue covers the effect high interest rates are having on the funded status of plans. For well over a decade, low fixed income yields have suppressed discount rates and increased the value of liabilities on an accounting basis. As the Federal Reserve hikes interest rates to fight inflation, the corporate discount rate has started to rise. As a result, plans are finding that their funded status has improved on an accounting basis, which in turn broadens the range of options available to them.

Read more here:
https://meketa.com/news/meketa-connectives-your-plan-is-100-funded-now-what/

Read our recent white paper "Venture Capital Primer"

Venture capital has been an attention-grabbing, headline generating asset class from its very beginning. Many household names started out as (or still are) venture backed investments, including Apple, Microsoft, Google, Facebook, SpaceX, Uber, Airbnb, DoorDash, and Peloton. Recently, venture capital has become a dominating presence in the cryptocurrency and AI industries, driving innovation through investments in companies such as Coinbase and OpenAI.

The primary allure of venture capital is its risk/reward potential. Investors are drawn by possibly generating some of the highest returns of any asset class but should also be aware of the increased risks. This primer provides an overview of the venture capital asset class and contrasts it to other private markets strategies, particularly buyouts.

Read more here:
https://meketa.com/leadership/venture-capital-primer/

Watch our recent webinar "Navigating Investment Risks Through Modeling Climate Scenario Analysis"

Watch our fireside chat on using climate scenario analysis to navigate investment risks.

Moderated by research consultant, Alison Adams, and accompanied by Meketa's own climate scenario experts, Stephen MacLellan, consultant, and Zach Stevens, senior quantitative research analyst, the panel discussed how modeling climate scenarios to analyze the impact on portfolios may provide a deeper understanding of broad investment risks.

Read more here:
https://meketa.com/leadership/navigating-investment-risks-through-modeling-climate-scenario-analysis/

MEKETA VALUES COMMUNITY

Habitat Build Days

As part of Meketa's volunteer opportunities, each employee is given 8 hours to volunteer in their local communities. During the summer our Carlsbad office in San Diego and our Boston office in Westwood hosts Habitat for Humanity Build Days.

In Carlsbad, employees traveled to San Diego to help a homeowner with repairs and maintenance through a government program that pairs with Habitat for Humanity. In Boston, our employees traveled to Malden to help with the building of 3 homes for qualifying families.

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MEKETA IN THE NEWS

Pensions&Investments

Investors cooling on China ahead of Biden executive order

By Brian Croce & Arleen Jacobius
August 11, 2023

While Washington legislators cheered President Joe Biden's executive order restricting new U.S. private equity and venture capital investments in certain Chinese technology companies, investor sentiment on the country had already been starting to cool.

On Aug. 9, the president signed an executive order barring U.S. investment including joint ventures in Chinese companies focused on semiconductors and microelectronics, quantum information technologies and artificial intelligence. It also requires Americans to notify the Treasury Department of direct investments in those sectors.

"China is the second largest economy in the world and it is important to global supply chains and a major importer of commodities, which makes China an unavoidable presence in the global economy and global capital markets," said **Alison Adams**, Portland, Ore.-based managing principal and a research consultant on the capital markets research team at **Meketa Investment Group** in an emailed response to questions.

"But how U.S. investors think about how to allocate global capital appears to be changing," Ms. Adams said. Prior to the pandemic, investors were more willing to place a big bet on China and may have sought out direct investment, she said.

"Now the risk/return balance appears to be shifting to a more cautious approach where a big bet on direct China may be less likely" possibly due to the political risks of direct investment in China shifting inside China and in the U.S., Ms. Adams said.

Politics was less of a factor before the pandemic when China's GDP was growing 7% to 10% a year, and investors were interested in increasing their investment allocations to take advantage of China's rise, she said.

"Now that China's growth is only a couple of a percent above the U.S. — that risk/return analysis has shifted," Ms. Adams said.

Private Debt Investor

Yes, banks and private debt can co-exist

The maritime world is trying to figure out a new sustainable fuel mix, which ought to inspire elevator pitches *to private debt managers.*

By Christopher Faille | August 31, 2023

Private debt funds in the US have for years now made their case to potential investors with some version of the following narrative: "This fund relies upon strategy X. Strategy X is solid, but for various reasons (practical and/or regulatory) banks have largely withdrawn from the field of X lending. This has created an opportunity for private debt funds, which can step in and do the work the banks used to do."

Much the same risk spectrum is sometimes described as a distinction between "core" infrastructure and "non-core" or "core plus". As **Lisa Bacon**, of the private markets team at **Meketa Investment Group**, says: "Core includes low-risk assets that are operational and have predictable cashflows. Examples of non-core assets with higher risk-return profiles include those in the development, permitting, construction and early operations stages."

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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. Portfolio Return- [Risk Free Rate+Beta*(market return-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 is 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%.

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

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

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.