

## Investment Board Meeting Agenda

Friday, March 22, 2024

8:30 a.m. – 11:45 a.m.

IPERS, 7401 Register Drive, Des Moines, IA 50321

Conference Telephone #: 646-558-8656 / Meeting ID: 846 8091 3693

- 8:30 a.m. Call to Order**
- 8:30 a.m. Approval of Previous Board Meeting Minutes**
- December 7, 2023
  - December 20, 2023
- 8:35 a.m. CEO Report**  
Greg Samorajski, IPERS
- 8:45 a.m. Legislative Session Update**  
Shawna Lode, IPERS
- 9:00 a.m. Calendar Year 2023 Investment Performance Review**  
Thomas Toth and Ali Kazemi, Wilshire
- 9:45 a.m. Investment Policy and Goal Statement – Proposed Revision to Securities Litigation Policy**  
Elizabeth Hennessey, IPERS
- 10:00 a.m. Closed Session for CIO Performance Evaluation and CEO Compensation**
- 10:30 a.m. Break**
- 10:45 a.m. Securities Lending**  
Jina Breeson, Treasurer of State’s Office
- 11:00 a.m. IPERS Investment Staff Reports**
- Beta Report – Sriram Lakshminarayanan
  - Alpha Report – Investment Team
  - Private Market Program – Investment Team
  - Risk Report – Sriram Lakshminarayanan
  - CIO Updates – Sriram Lakshminarayanan
- 11:30 a.m. Public Comments**
- 11:35 a.m. Other Business**
- Confirm Next Meeting Dates – Thursday, June 20, 2024
  - September 25 – 26, 2024
  - Next BAC Meeting – Monday, March 25, 2024
- 11:45 a.m. Adjourn**



INVESTMENT BOARD AND BENEFITS ADVISORY COMMITTEE MINUTES  
IPERS Headquarters  
7401 Register Drive, Des Moines, Iowa  
December 7, 2023

The following people attended the IPERS Investment Board Meeting held on Thursday, December 7, 2023.

**Members of the Board – Present**

Justin Kirchhoff, Chair  
Bill Bemis, Vice Chair  
Treasurer Roby Smith  
Tami Loge

Kris Rowley  
Representative Martin Graber  
Representative Amy Nielsen  
Senator Mark Lofgren

**Members of the Board – Absent**

Matt Watters  
Senator Molly Donahue

**Administration and Staff**

Greg Samorajski, Chief Executive Officer  
Sriram Lakshminarayanan, CIO  
John Fujiwara, Head of Strategy  
Sheldon Lien, Senior Investment Officer  
Pat Reinhardt, Senior Investment Officer  
Keith Scholten, Senior Investment Officer  
Marcus Dong, Investment Officer  
Kevin Terdal, Investment Officer

Kate Fishman, Investment Officer  
Melinda McElroy, Executive Assistant  
David Martin, Chief Benefits Officer  
Elizabeth Hennessey, General Counsel  
Shawna Lode, Director of Communications  
Rick Hindman, Chief Operations Officer  
Tara Hagan, Chief Financial Officer

**Benefits Advisory Committee - Present**

Len Cockman, Chair  
Lowell Dauenbaugh, Vice Chair  
Matt Carver  
Sue Cave  
Todd Copley  
Brian McDonough

Andrew Hennesy  
John Hieronymus  
Richard Hoffman  
Erin Mullenix  
Melissa Peterson  
Adam Steen

**Consultant – Wilshire**

Ali Kazemi

**Actuary – Cavanaugh Macdonald**

Brent Banister  
Bryan Hoge

## **Call to Order**

Investment Board Chair Justin Kirchhoff called the joint meeting of the IPERS Investment Board and Benefits Advisory Committee to order at 8:30 a.m.

## **Approval of Minutes from the Previous Meetings**

Tami Loge moved to approve the meeting minutes from the September 27, 2023, and September 28, 2023, Investment Board meetings. Kris Rowley seconded. The motion carried by unanimous voice vote.

## **CEO's Report**

Greg Samorajski reported that IPERS made its biennial presentation to the legislature's Public Retirement Systems Committee on December 6, 2023. The presentation included a review of the plan and its emerging goals, an investment performance summary and an actuarial valuation summary.

## **Securities Litigation Review and Recommendation**

Elizabeth Hennessey requested Board approval to file a claim in the securities litigation case Treasury Wine Estates Limited. Kris Rowley moved to approve the recommendation. Tami Loge seconded. The motion carried by unanimous voice vote.

## **IPERS Investment Staff Reports**

### ***Beta Report***

Sriram Lakshminarayanan reviewed the Fund's asset allocation and reported all asset classes were within their established policy ranges. The estimated market value of the IPERS Trust Fund is \$41.16 billion.

### ***Alpha Report***

The investment team reviewed the alpha report noting minor performance concerns for Columbia Management's EAFE strategy and minor performance concerns for PGIM Wadhvani.

### ***Private Markets Program Risk Report***

Pat Reinhardt noted material concerns for real estate manager Clarion Partners and minor performance concerns for Forest Investment Associates and UBS Farmland.

### ***Risk Report***

Sriram Lakshminarayanan reviewed IPERS' standard risk reports.

### ***FY2023 Investment Management Expenses***

IPERS' preliminary investment management expenses for FY2023 were \$56.4 million, a decrease of 1.6% from FY2022.

### ***CIO Updates***

Sriram Lakshminarayan discussed the role of IPERS' investment consultant and asked the Board members what services they would like provided. Sriram will follow up with each Board member to discuss.

### **Private Markets Investment Policy**

Bill Bemis and Kris Rowley reviewed the proposed revisions to the Private Markets Investment Policy. Bill Bemis moved that the Investment Board approve the policy with a January 1, 2024, effective date. Treasurer Smith seconded. The motion carried by unanimous roll call vote.

**Ayes:** Justin Kirchoff, Bill Bemis, Treasurer Smith, Tami Loge and Kris Rowley

**Nays:** None

**MOTION PASSED**

### **CY2024 Private Markets Commitments**

Pat Reinhardt and Marcus Dong reviewed the private markets program commitment plan, noting plans to make the following commitments: private equity to receive \$700 million, private credit to receive \$700 million and private real assets to receive \$500 million.

### **Closed Session for CEO Evaluation and Reappointment**

Bill Bemis moved that the IPERS Investment Board go into a closed session of this joint public meeting to discuss the performance evaluation and reappointment of IPERS' CEO as authorized by Iowa Code section 21.5(1)(i). Tami Loge seconded. The motion carried by unanimous voice vote.

Lowell Dauenbaugh moved that the Benefits Advisory Committee go into a closed session of this joint public meeting to discuss the performance evaluation and reappointment of IPERS' CEO as authorized by Iowa Code section 21.5(1)(i). Melissa Peterson seconded. The motion carried by unanimous voice vote.

Bill Bemis moved that the IPERS Investment Board end its closed session and resume the open session of this joint meeting. Treasurer Smith seconded. The motion carried by unanimous voice vote. The Board took no action during its closed session.

Lowell Dauenbaugh moved that the Benefits Advisory Committee end its closed session and resume the open session of this joint meeting. Matt Carver seconded. The motion carried by unanimous voice vote. The BAC took no action during its closed session.

Bill Bemis moved that the Investment Board recommends the reappointment of Gregory S. Samorajski as the chief executive officer of IPERS to Governor Reynolds. Tami Loge seconded. The motion carried by unanimous roll call vote.

**Ayes:** Justin Kirchoff, Bill Bemis, Treasurer Smith, Tami Loge and Kris Rowley

**Nays:** None

**MOTION PASSED**

Lowell Dauenbaugh moved that the Benefits Advisory Committee recommends the reappointment of Gregory S. Samorajski as the chief executive officer of IPERS to Governor Reynolds. Matt Carver seconded. The motion carried by unanimous roll call vote.

**Ayes:** Len Cockman, Lowell Dauenbaugh, Matt Carver, Todd Copley, Brian McDonough, Richard Hoffman, Erin Mullenix, Melissa Peterson and Adam Steen.

**Nays:** None

**MOTION PASSED**

### **2023 Actuarial Valuation Report**

Brent Banister and Bryan Hoge of Cavanaugh Macdonald presented the results of the 2023 actuarial valuation report. IPERS' funded status increased from 89.5% to 89.7% and the unfunded actuarial liability increased from \$4.62 billion to \$4.71 billion. The 2023 valuation report sets the required contribution rates for FY2025. Contribution rates for all three membership groups will remain unchanged.

### **Public Comments**

An IPERS member expressed her concerns to the Investment Board about public pension funds investing in Israel companies.

### **Confirm Next Meeting Date and Adjournment**

The Investment Board's next meeting date is Friday, March 22, 2024. The Benefits Advisory Committee's next meeting date is Monday, January 22, 2024. With no further business to come before the Board or BAC, the meeting adjourned at 11:55 a.m.



**INVESTMENT BOARD MEETING MINUTES**  
Virtual Video / Telephonic Meeting  
December 20, 2023

The following people participated in the virtual IPERS Investment Board meeting held on Wednesday, December 20, 2023.

**Members of the Board – Present**

Justin Kirchhoff, Chair  
Bill Bemis, Vice Chair  
Treasurer Roby Smith  
Kris Rowley  
Tami Loge

**Members of the Board – Absent**

Matt Watters  
Representative Martin Graber  
Representative Amy Nielsen  
Senator Molly Donahue  
Senator Mark Lofgren

**Administration and Staff**

Greg Samorajski, CEO  
Sriram Lakshminarayanan, CIO  
Elizabeth Hennessey, General Counsel  
Melinda McElroy, Executive Assistant

## **Proceedings**

Justin Kirchhoff, chair, called the meeting to order at 2:00 p.m.

## **Securities Litigation Review and Recommendation**

Justin Kirchhoff moved that the Investment Board approves IPERS filing a claim in the Boral Limited class action and in similar cases where the case has already been filed and is fully funded. Bill Bemis seconded. The motion carried by unanimous roll call vote.

**Ayes:** Justin Kirchhoff, Bill Bemis, Treasurer Roby Smith, Tami Loge and Kris Rowley

**Nays:** None

**MOTION PASSED**

## **Confirm Next Meeting Date**

The Investment Board's next meeting date of Friday, March 22, 2024, was confirmed.

## **Adjourn**

With no further business to come before the Investment Board, the meeting adjourned at 2:10 p.m.

Bill Number	Explanation	Passed Second Funnel
<b>IPERS Administration Bills</b>		
<a href="#">HF 2622</a>	A bill for an act relating to the powers, duties, and responsibilities of state government entities associated with the budget, financial control, and information technology, making penalties applicable, and making appropriations.(Formerly HSB 695.)	In Appropriations Committee; Not subject to funnel
<a href="#">SF 2375</a>	A bill for an act relating to the powers, duties, and responsibilities of state government entities associated with the budget, financial control, and information technology, making penalties applicable, and making appropriations.(Formerly SSB 3173; See SF 2409.)	In Appropriations Committee; Not subject to funnel
<a href="#">SSB 3038</a>	A bill for an act relating to state taxation and appropriations by combining special purpose funds, modifying individual income tax rates, placing assessment limitations for property tax purposes on commercial child care facilities, and modifying unemployment benefits, and including effective date and retroactive applicability provisions.(See SF 2398.)	In Appropriations Committee; Not subject to funnel
<a href="#">HSB 543</a>	A bill for an act relating to state taxation and appropriations by combining special purpose funds, modifying individual income tax rates, placing assessment limitations for property tax purposes on commercial child care facilities, and modifying unemployment benefits, and including effective date and retroactive applicability provisions.	In Appropriations Committee; Not subject to funnel
<a href="#">SF 2385</a>	A bill for an act relating to boards, commissions, committees, councils, and other entities of state government, and including effective date and transition provisions.(Formerly SSB 3172.)	Placed on Unfinished Business Calendar
<a href="#">HF 2574</a>	A bill for an act relating to boards, commissions, committees, councils, and other entities of state government, and including transition provisions.(Formerly HSB 710.)	Placed on Unfinished Business Calendar
<b>Benefits-Related Bills</b>		
<a href="#">HF 2630</a>	A bill for an act relating to teacher and education support professional compensation, including teacher salary supplement cost per pupil calculations, teacher minimum starting salary requirements, Iowa public employees' retirement system bona fide retirement requirements, and school district budget statement reporting, making appropriations, and including effective date provisions. (Formerly HF 2611, HSB 714.)	Passed House as Appropriations bill so technically not subject to funnel

HF 2533	A bill for an act relating to public safety personnel by modifying the retirement benefits of sheriffs and deputy sheriffs, restricting bail for murder in the first degree or felonious assaults committed upon public safety personnel, and providing for a tax credit for moving expenses available against the individual income tax for new public safety personnel moving to the state.(Formerly HF 2206.)	Yes
HF 2482	A bill for an act concerning benefits relating to members of the public safety peace officers' retirement, accident, and disability system, and the municipal fire and police retirement system. (Formerly HF 2183.)	No
<b>Investment-Related Bills</b>		
HSB 720	A bill for an act relating to state taxation by modifying future individual income tax rates, creating processes for reducing the individual income tax rate to zero, reducing future contingent corporate income tax rates, making appropriations, and including effective date, applicability, and retroactive applicability provisions.	In Ways and Means Committee; Not subject to funnel
SSB 3141	A bill for an act relating to state taxation by modifying future individual income tax rates, creating processes for reducing the individual income tax rate to zero, reducing future contingent corporate income tax rates, making appropriations, and including effective date, applicability, and retroactive applicability provisions.	In Ways and Means Committee; Not subject to funnel

**Wilshire**

# Iowa Public Employees' Retirement System

Calendar Year 2023 Investment Summary

December 2023

# Quarterly Market Review

December 31, 2023

## Market Commentary

### U.S. Equity

The U.S. stock market was up 12.1% for the fourth quarter and is up 26.1% for the past 12 months. The best performing sectors were real estate (+18.0%) and information technology (+17.0%). The worst performing – and only negative – sector was energy (-6.8%). From a size perspective, small-cap outperformed large-cap by 165 basis points. Large growth stocks outperformed large value during the third quarter and led by 35%-points for all of 2023.

One possible recession metric that is widely considered in the investing arena is the spread between long- and short-term Treasury bond yields. When this spread turns negative – known as an inverted yield curve – a recession typically follows. During the past 60+ years, there is really only one instance (in 1966) that such conditions did not precede a recession. Currently, the curve is inverted to a degree not seen since the early 1980's recession that was driven by high inflation and high unemployment. The Federal Reserve Bank of New York has a model that converts the term spread to a probability of recession during the next twelve months, which stands at 68%.

### Non-U.S. Equity

The eurozone likely fell into a mild recession in 2023 and recent data suggests that conditions are not improving. Business activity declined in December as new orders fell and job cuts were reported. Germany, the eurozone's largest economy, continues to suffer due to high energy prices and interest rate hikes. The outlook in China is complicated with recent data showing contraction in the factory and services sectors.

### Fixed Income

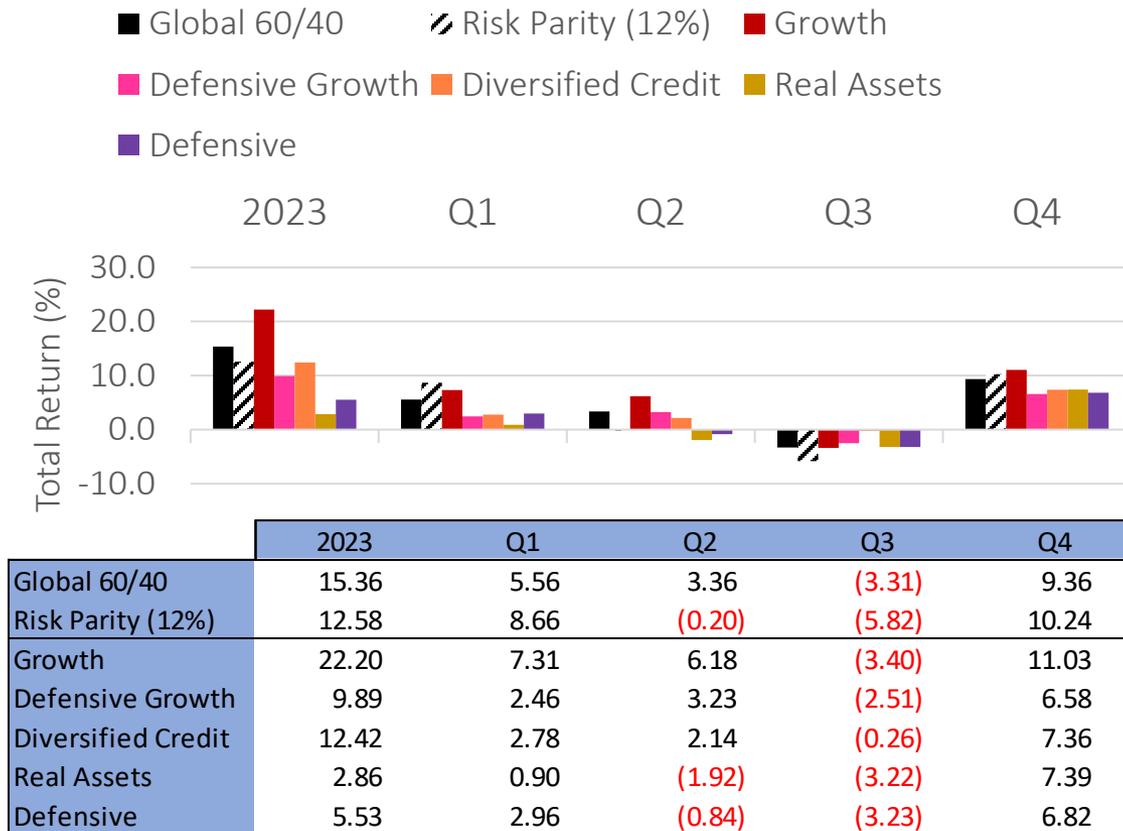
The U.S. Treasury yield curve was down across the maturity spectrum during the quarter, and to a greater degree in the long end of the curve. Credit spreads were down, as well, during the quarter. The FOMC left the overnight rate unchanged, targeting a range of 5.25% to 5.50%. During a recent speech, Fed Chair Jerome Powell reiterated the central bank's intent to be cautious, "Having come so far and so quickly, the FOMC is moving carefully forward, as the risks of under- and over-tightening are becoming more balanced.

# December 2023 Asset Class Assumptions

	EQUITY						FIXED INCOME / CREDIT						REAL ASSETS						
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Equity	Cash	Core Bond	LT Core Bond	TIPS	High Yield	Private Credit	Dev ex-US Bond (Hdg)	Real Estate US RES	Global RES	Private RE	Comdty	Real Assets	US CPI
<b>Compound Return (%)</b>	5.00	6.00	6.25	6.35	5.60	8.65	3.80	4.75	4.70	4.15	5.90	8.40	2.85	5.60	5.75	6.30	6.05	6.90	2.25
<b>Arithmetic Return (%)</b>	6.35	7.50	9.20	8.00	6.95	12.35	3.80	4.85	5.15	4.30	6.35	9.15	2.95	7.00	7.00	7.20	7.20	7.65	2.25
<b>Risk (%)</b>	17.00	18.00	26.00	19.00	17.05	29.65	0.75	4.70	9.85	6.00	10.00	12.75	4.00	17.50	16.45	13.90	16.00	12.60	1.75
<b>Cash Yield (%)</b>	1.45	3.10	2.50	2.95	2.00	0.00	3.80	5.10	5.25	4.35	9.20	4.95	3.65	3.90	3.90	2.50	3.80	3.40	0.00
<b>Growth Factor Exposure</b>	8.00	8.00	8.00	8.00	8.00	14.00	0.00	-0.90	-2.40	-3.00	4.00	5.10	-1.00	6.00	6.00	3.50	0.00	2.70	0.00
<b>Inflation Factor Exposure</b>	-3.00	0.00	5.00	1.40	-1.35	-3.75	0.00	-2.55	-6.85	2.50	-1.00	-1.50	-3.00	1.00	1.80	1.00	12.00	5.25	1.00
<b>CORRELATIONS</b>																			
<b>US Stock</b>	1.00																		
<b>Dev ex-US Stock (USD)</b>	0.81	1.00																	
<b>Emerging Mkt Stock</b>	0.74	0.74	1.00																
<b>Global ex-US Stock</b>	0.84	0.95	0.89	1.00															
<b>Global Stock</b>	0.95	0.91	0.84	0.94	1.00														
<b>Private Equity</b>	0.72	0.63	0.61	0.67	0.73	1.00													
<b>Cash Equivalents</b>	-0.05	-0.09	-0.05	-0.08	-0.06	0.00	1.00												
<b>Core Bond</b>	0.28	0.13	0.00	0.08	0.20	0.30	0.18	1.00											
<b>LT Core Bond</b>	0.31	0.15	0.01	0.11	0.24	0.31	0.11	0.94	1.00										
<b>TIPS</b>	-0.05	0.00	0.15	0.06	-0.01	-0.03	0.20	0.60	0.48	1.00									
<b>High Yield Bond</b>	0.54	0.39	0.49	0.46	0.53	0.31	-0.10	0.24	0.32	0.05	1.00								
<b>Private Credit</b>	0.67	0.55	0.57	0.59	0.67	0.44	0.00	0.24	0.30	0.00	0.75	1.00							
<b>Dev ex-US Bond (Hdg)</b>	0.16	0.25	-0.01	0.16	0.17	0.26	0.10	0.67	0.65	0.39	0.26	0.22	1.00						
<b>US RE Securities</b>	0.57	0.47	0.44	0.49	0.56	0.49	-0.05	0.17	0.22	0.10	0.56	0.61	0.05	1.00					
<b>Global RE Securities</b>	0.63	0.56	0.54	0.59	0.64	0.55	-0.05	0.17	0.21	0.11	0.60	0.67	0.04	0.97	1.00				
<b>Private Real Estate</b>	0.55	0.45	0.45	0.49	0.54	0.50	-0.05	0.19	0.25	0.09	0.57	0.62	0.05	0.78	0.77	1.00			
<b>Commodities</b>	0.25	0.34	0.39	0.38	0.32	0.28	0.00	-0.03	-0.03	0.25	0.29	0.29	-0.10	0.25	0.28	0.25	1.00		
<b>Real Assets</b>	0.61	0.62	0.66	0.68	0.66	0.56	-0.03	0.24	0.26	0.32	0.64	0.69	0.05	0.78	0.83	0.76	0.62	1.00	
<b>Inflation (CPI)</b>	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	0.00	-0.08	0.05	0.04	0.05	0.44	0.21	1.00

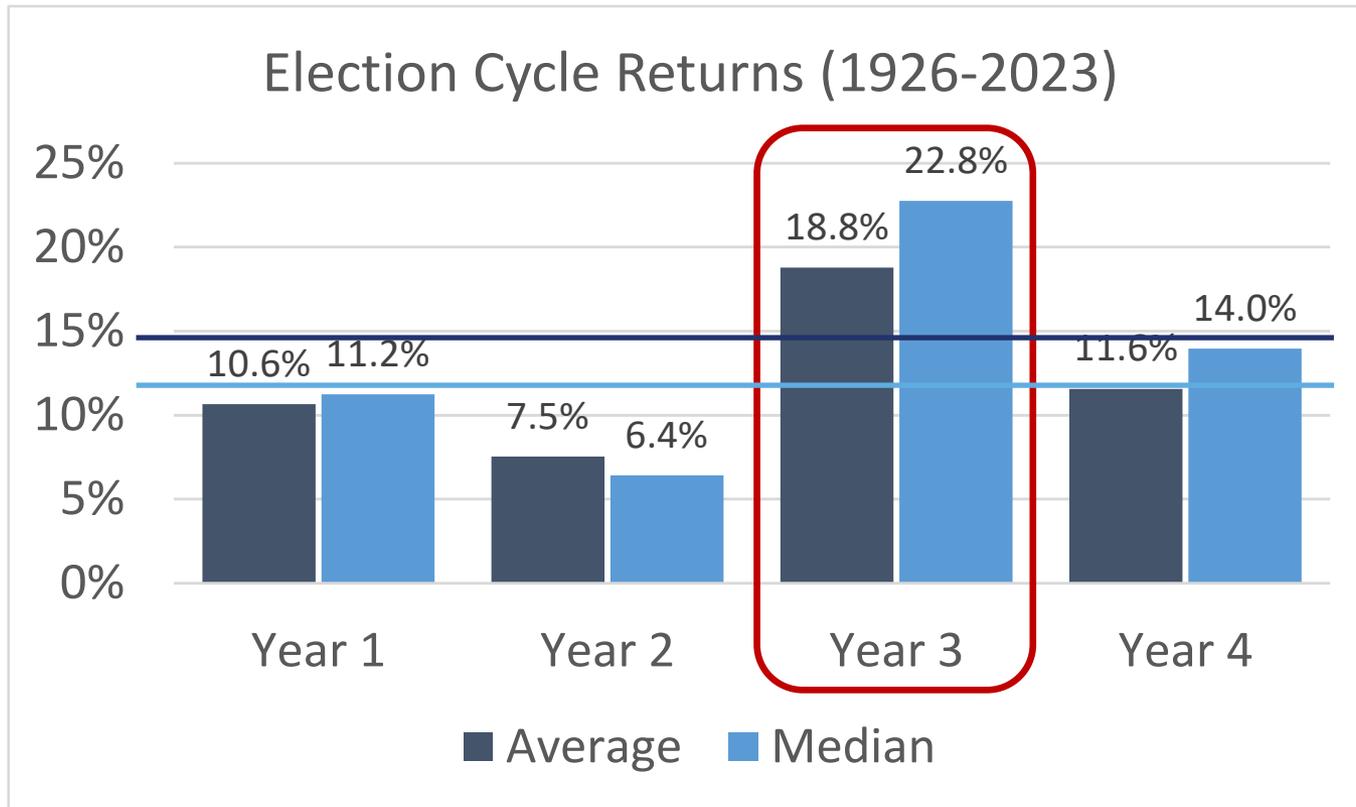
## Thematic Return Stacks

### Asset Allocation & Thematic Returns



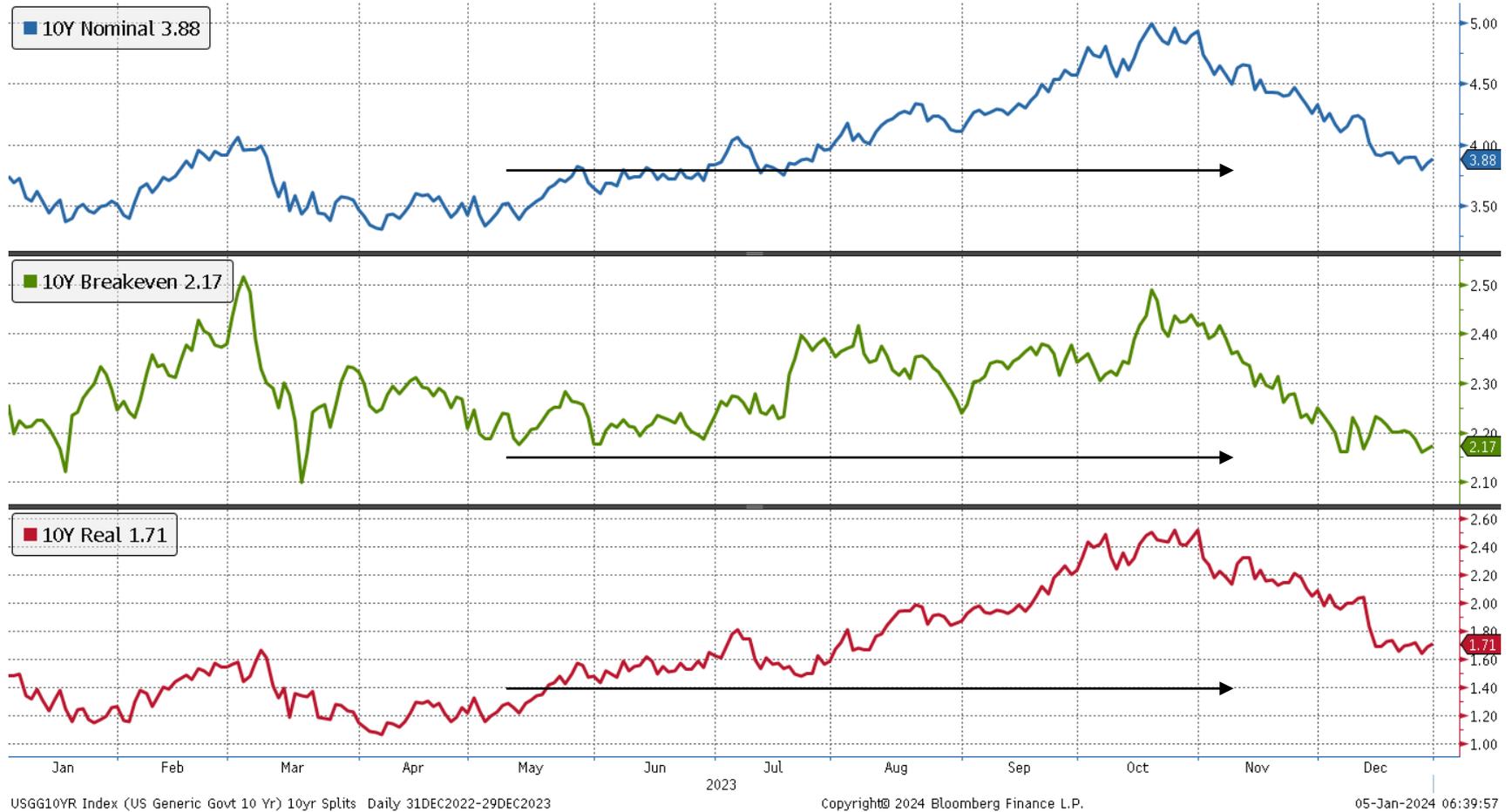
Data Source: Wilshire, Bloomberg

## Election Cycles



Data Source: Wilshire Compass

## Yield Whiplash



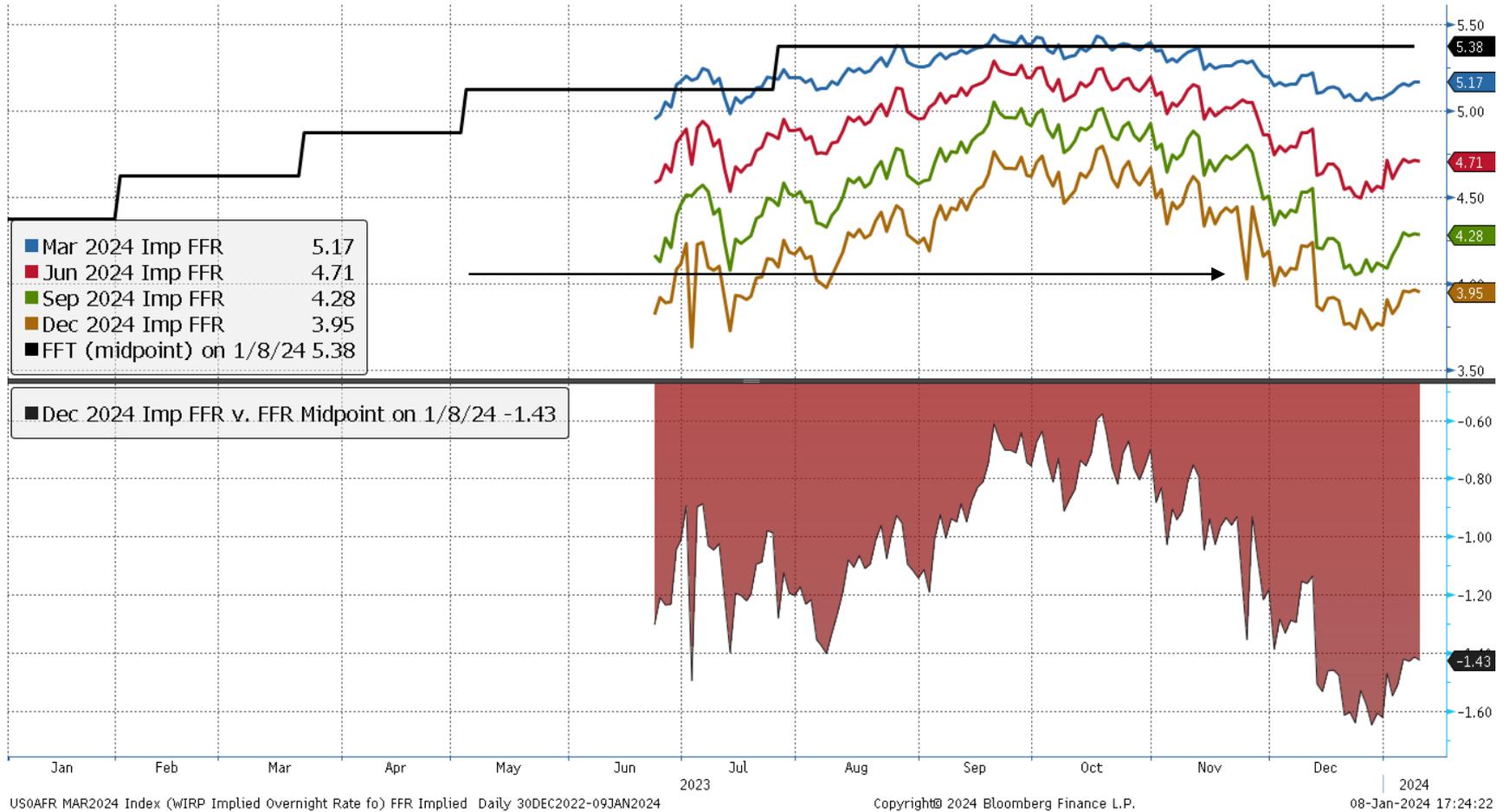
Data Source: Bloomberg

# Fed Pivot: Hinting at “Mission Accomplished”



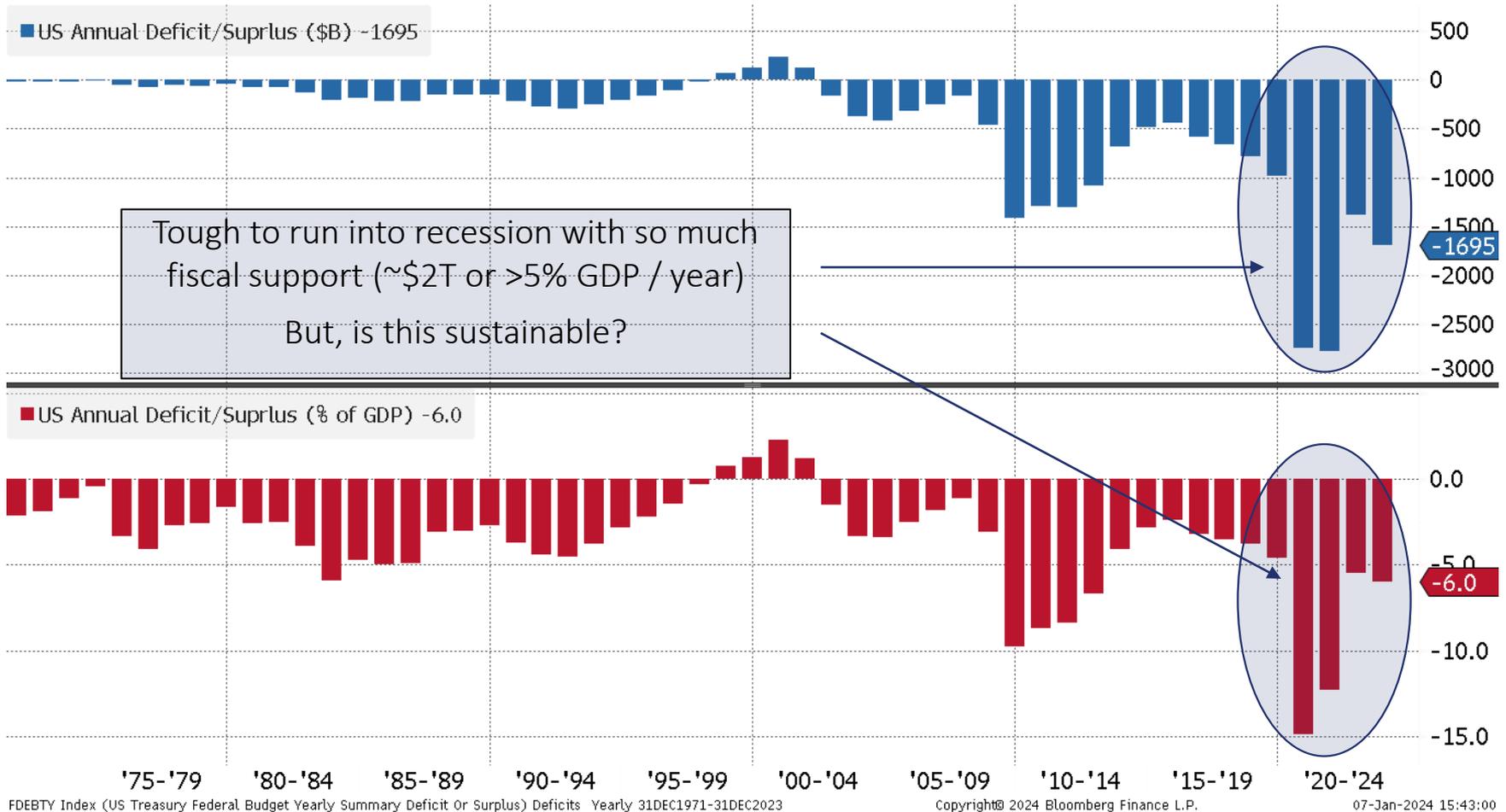
Data Source: Bloomberg

## Markets Expect More in Rate Cuts



Data Source: Bloomberg

## Recession Risks: How Did We All Get It So Wrong?



Data Source: Bloomberg

## Asset Class Performance

### Asset Class Returns - Best to Worst

2018	2019	2020	2021	2022	2023 YTD	Annualized 5-Year as of 12/23
T-Bills 1.9%	U.S. Equity 31.0%	U.S. Equity 20.8%	REITs 46.2%	Commodities 16.1%	U.S. Equity 26.1%	U.S. Equity 15.4%
Core Bond 0.0%	REITs 25.8%	Emrg Mrkts 18.7%	Commodities 27.1%	T-Bills 1.3%	Developed 18.9%	Developed 8.7%
U.S. TIPS -1.3%	Developed 22.7%	U.S. TIPS 11.0%	U.S. Equity 26.7%	High Yield -11.2%	REITs 16.1%	REITs 7.6%
High Yield -2.1%	Emrg Mrkts 18.9%	Developed 8.3%	Developed 11.8%	U.S. TIPS -11.8%	High Yield 13.4%	Commodities 6.1%
REITs -4.8%	High Yield 14.3%	Core Bond 7.5%	U.S. TIPS 6.0%	Core Bond -13.0%	Emrg Mrkts 10.3%	High Yield 5.4%
U.S. Equity -5.3%	Core Bond 8.7%	High Yield 7.1%	High Yield 5.3%	Developed -14.0%	Core Bond 5.5%	Emrg Mrkts 4.1%
Commodities -11.2%	U.S. TIPS 8.4%	T-Bills 0.7%	T-Bills 0.0%	U.S. Equity -19.0%	T-Bills 5.1%	U.S. TIPS 3.2%
Developed -13.4%	Commodities 7.7%	Commodities -3.1%	Core Bond -1.5%	Emrg Mrkts -19.7%	U.S. TIPS 3.9%	T-Bills 1.9%
Emrg Mrkts -14.2%	T-Bills 2.3%	REITs -7.9%	Emrg Mrkts -2.2%	REITs -26.8%	Commodities -1.3%	Core Bond 1.1%

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

# Total Fund

## Executive Summary (as of 12/31/2023)

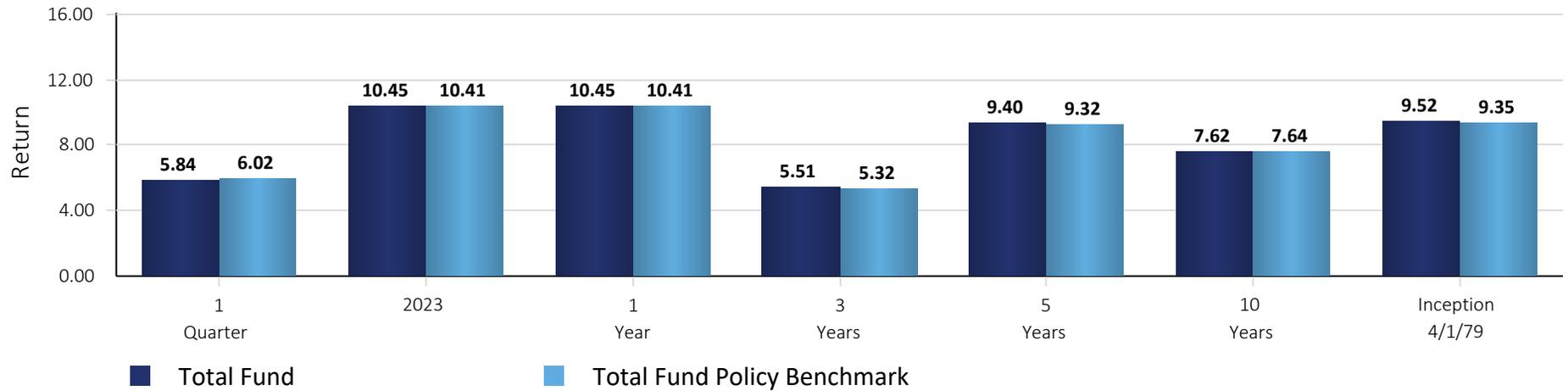
- Total Fund returned 10.5% during CY 2023, outperforming the Total Fund Policy Benchmark<sup>1</sup> (“policy”) return of 10.4% over the same period
- Manager alpha across public markets was mixed for the year. U.S. Equity and International Equity outperformed their policies, while Core Fixed Income and Public Credit trailed their respective indexes
- 10-year annualized returns were 7.6% for Total Fund, in line versus the policy return
- IPERS ranks very favorably versus peers across all time horizons. Total Fund return has ranked in the top quartile against all public plans with greater than \$1 billion in assets over the 3-, 5-, and 10-years
- IPERS’ 5-year risk-adjusted returns rank near the top-decile relative to all public plans greater than \$1 billion in Total Fund assets—outpacing 89% of peers

# Total Fund Summary

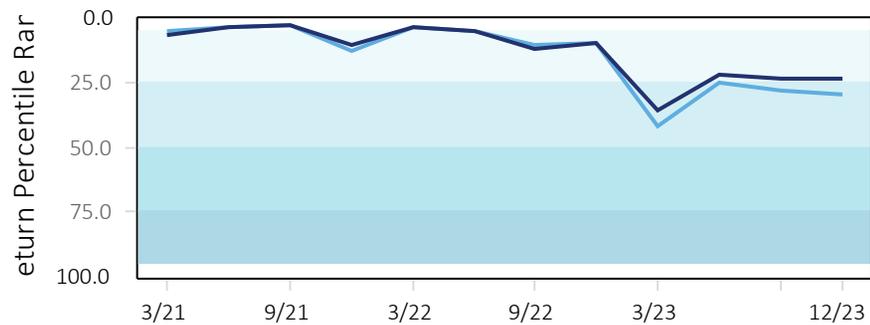
Total Fund

Periods Ended December 31, 2023

## Comparative Performance

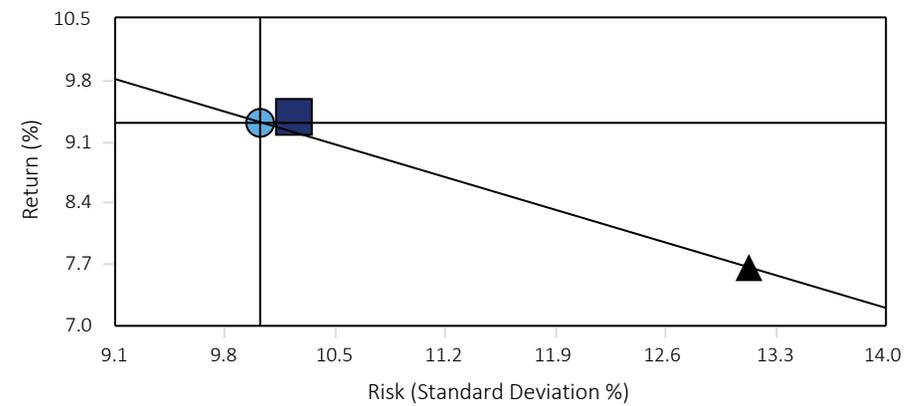


## Rolling Percentile Rank: All Public Plans >\$1B-Total Fund



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
— Total Fund	12	11 (92%)	1 (8%)	0 (0%)	0 (0%)
— Benchmark	12	9 (75%)	3 (25%)	0 (0%)	0 (0%)

## Risk and Return (5-year)



# Asset Allocation & Performance

## Total Fund

Periods Ended December 31, 2023

	Performance (%) net of fees										Market Value \$	%
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date		
<b>Total Fund</b>	<b>5.84</b>	<b>4.17</b>	<b>10.45</b>	<b>5.51</b>	<b>9.40</b>	<b>7.62</b>	<b>7.62</b>	<b>8.32</b>	<b>9.52</b>	<b>4/1/1979</b>	42,212,722,454	100.00
Total Fund Policy Benchmark	6.02	4.19	10.41	5.32	9.32	7.64	7.70	8.08	9.35			
Public Markets Reference Index	9.37	5.79	14.84	2.02	7.61	5.79	6.38					
CPI + 3%	0.40	2.03	6.45	8.77	7.20	5.87	5.66	5.58	6.46			
All Public Plans > \$1B-Total Fund Median	6.61	4.49	11.40	4.47	8.28	6.34	6.55	7.37				
Actuarial Rate	1.71	3.44	7.00	7.00	7.00	7.13	7.31	7.34	7.06			
<b>Public Markets Composite</b>	<b>8.93</b>	<b>5.76</b>	<b>14.93</b>	<b>2.75</b>	<b>7.79</b>				<b>6.46</b>	<b>10/1/2016</b>	28,880,073,263	68.42
Public Markets Reference Index	9.37	5.79	14.84	2.02	7.61				6.42			
<b>U.S. Equity Composite</b>	<b>12.01</b>	<b>8.59</b>	<b>26.08</b>	<b>9.26</b>	<b>15.38</b>	<b>11.52</b>	<b>9.31</b>	<b>9.98</b>	<b>11.35</b>	<b>4/1/1975</b>	8,720,929,715	20.66
U.S. Equity Composite Benchmark	12.07	8.43	25.96	8.97	15.42	11.68	9.80	10.06				
<b>International Equity Composite</b>	<b>9.22</b>	<b>5.58</b>	<b>16.36</b>	<b>2.28</b>	<b>7.39</b>	<b>4.00</b>	<b>5.84</b>	<b>5.29</b>	<b>5.36</b>	<b>10/1/1989</b>	5,524,119,803	13.09
International Equity Policy Index	9.75	5.61	15.62	1.55	7.08	4.06	6.03	5.20	5.26			
<b>Core Fixed Income Composite</b>	<b>6.59</b>	<b>3.19</b>	<b>5.45</b>	<b>-3.45</b>	<b>1.43</b>	<b>2.18</b>	<b>3.63</b>	<b>4.83</b>	<b>6.34</b>	<b>7/1/1985</b>	10,622,733,870	25.16
Core Fixed Income Policy Index	6.82	3.37	5.77	-3.09	1.36	2.04	3.44	4.62	5.96			
<b>Public Credit Composite</b>	<b>7.90</b>	<b>7.62</b>	<b>12.28</b>	<b>0.76</b>	<b>4.50</b>	<b>4.01</b>	<b>5.73</b>		<b>5.71</b>	<b>4/1/1998</b>	1,275,226,620	3.02
Public Credit Policy Index	7.86	7.24	12.45	0.28	4.25	3.98	5.78		5.62			
<b>Global Smart Beta Composite</b>	<b>10.73</b>	<b>7.86</b>	<b>16.39</b>	<b>6.76</b>	<b>10.38</b>				<b>7.55</b>	<b>8/1/2017</b>	2,154,857,779	5.10
Global Smart Beta Policy Index	10.68	7.98	16.57	6.97	10.50				7.65			
MSCI AC World Index (Net)	11.03	7.26	22.20	5.75	11.72				8.68			

# Asset Allocation & Performance

Total Fund

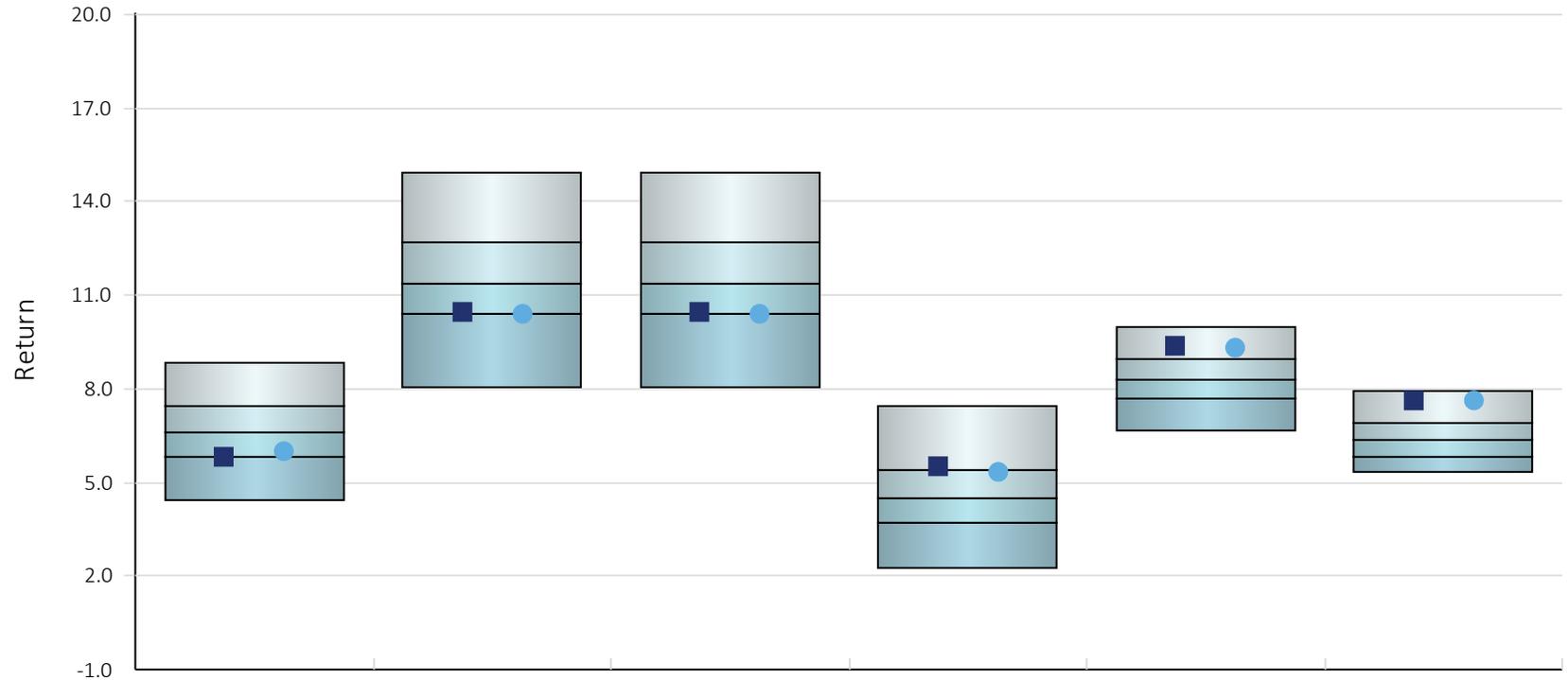
Periods Ended December 31, 2023

	Performance (%) net of fees										Market Value \$	%
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date		
<b>LARS</b>	<b>-9.67</b>	<b>-5.78</b>	<b>-5.48</b>	<b>11.71</b>	<b>12.78</b>				<b>6.91</b>	<b>1/1/2017</b>	212,021,305	0.50
LIBOR 3 Month	1.38	2.78	5.43	2.69	2.19				2.08			
<b>Cash Composite</b>	<b>-3.27</b>	<b>-0.74</b>	<b>0.87</b>	<b>4.83</b>	<b>5.40</b>	<b>3.23</b>	<b>2.70</b>		<b>3.32</b>	<b>7/1/1995</b>	582,205,476	1.38
90 Day U.S. Treasury Bill	1.37	2.70	5.02	2.15	1.88	1.24	1.43		2.29			
<b>Private Markets Composite</b>	<b>-0.39</b>	<b>0.82</b>	<b>1.46</b>	<b>14.05</b>	<b>14.16</b>				<b>14.74</b>	<b>10/1/2016</b>	13,332,649,192	31.58
<b>Private Equity/Debt</b>	<b>0.53</b>	<b>2.33</b>	<b>4.00</b>	<b>15.87</b>	<b>17.51</b>	<b>16.72</b>	<b>16.18</b>	<b>14.78</b>	<b>13.03</b>	<b>10/1/1985</b>	7,841,915,867	18.58
Private Equity Policy Index	0.53	2.33	4.00	15.87	17.51	16.72	13.42	13.57	14.64			
<b>Private Credit Composite</b>	<b>2.15</b>	<b>4.16</b>	<b>8.27</b>	<b>7.46</b>	<b>6.94</b>				<b>7.41</b>	<b>10/1/2016</b>	2,383,154,871	5.65
Private Credit Policy Index	2.15	4.16	8.27	7.46	6.94				7.41			
<b>Private Real Assets Composite</b>	<b>-4.41</b>	<b>-5.08</b>	<b>-8.54</b>	<b>10.35</b>	<b>8.11</b>				<b>8.26</b>	<b>10/1/2016</b>	3,107,578,454	7.36
Private Real Assets Policy Index	-4.41	-5.08	-8.54	10.35	8.11				8.26			

# Plan Sponsor Peer Group Analysis

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

Periods Ended December 31, 2023



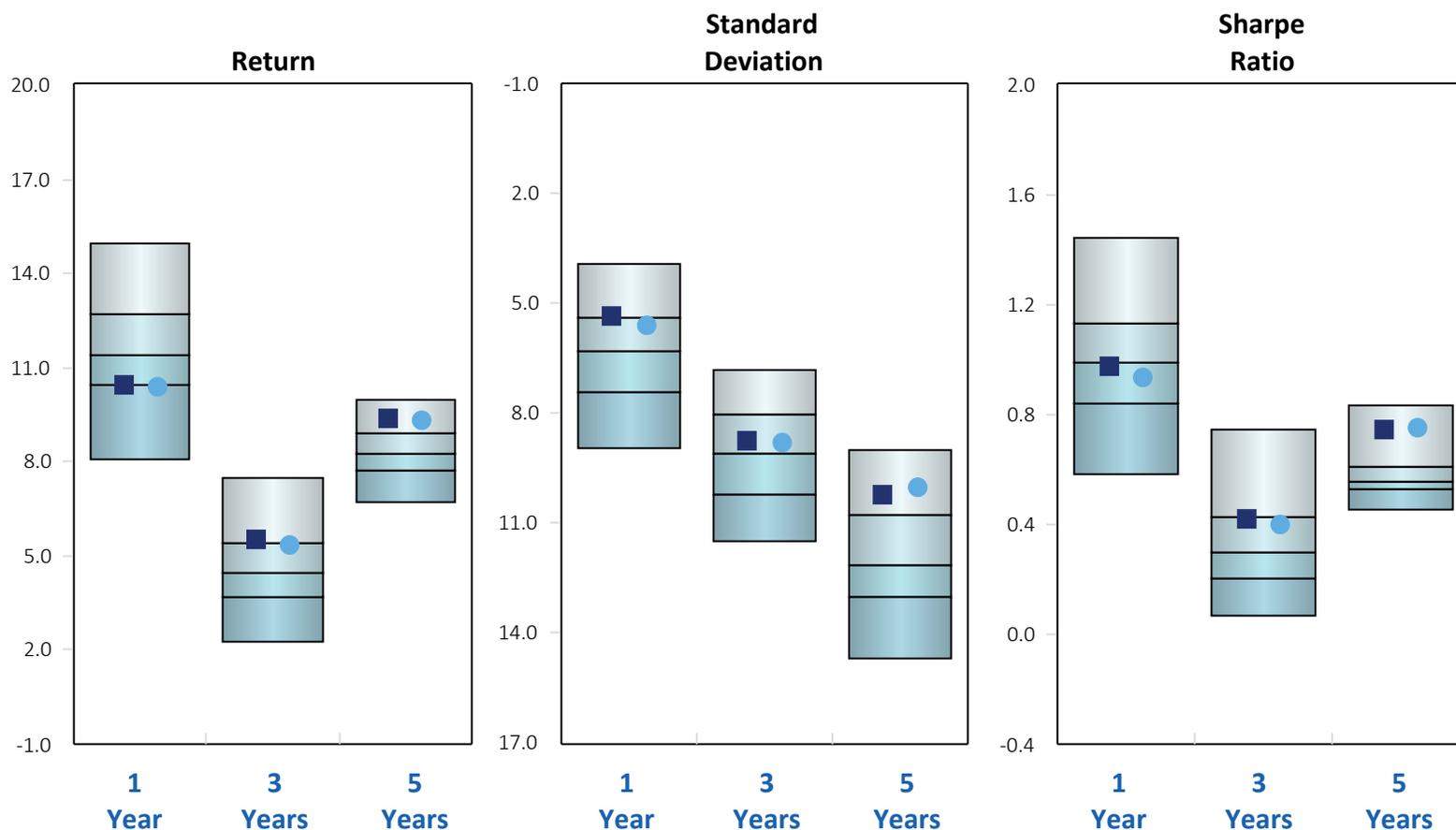
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ Total Fund	5.84 (73)	10.45 (75)	10.45 (75)	5.51 (24)	9.40 (15)	7.62 (8)
● Total Fund Policy Benchmark	6.02 (70)	10.41 (76)	10.41 (76)	5.32 (30)	9.32 (22)	7.64 (8)
5th Percentile	8.81	14.95	14.95	7.48	10.00	7.95
1st Quartile	7.48	12.71	12.71	5.42	8.93	6.88
Median	6.61	11.40	11.40	4.47	8.28	6.34
3rd Quartile	5.81	10.42	10.42	3.71	7.70	5.80
95th Percentile	4.42	8.08	8.08	2.26	6.69	5.36
Population	97	88	88	75	71	65

Parenteses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

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

Periods Ended December 31, 2023



	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ Total Fund	10.45 (75)	5.51 (24)	9.40 (15)	5.38 (24)	8.75 (33)	10.24 (17)	0.98 (52)	0.42 (27)	0.75 (11)
● Total Fund Policy Benchmark	10.41 (76)	5.32 (30)	9.32 (22)	5.59 (30)	8.80 (33)	10.02 (16)	0.94 (61)	0.40 (28)	0.75 (10)

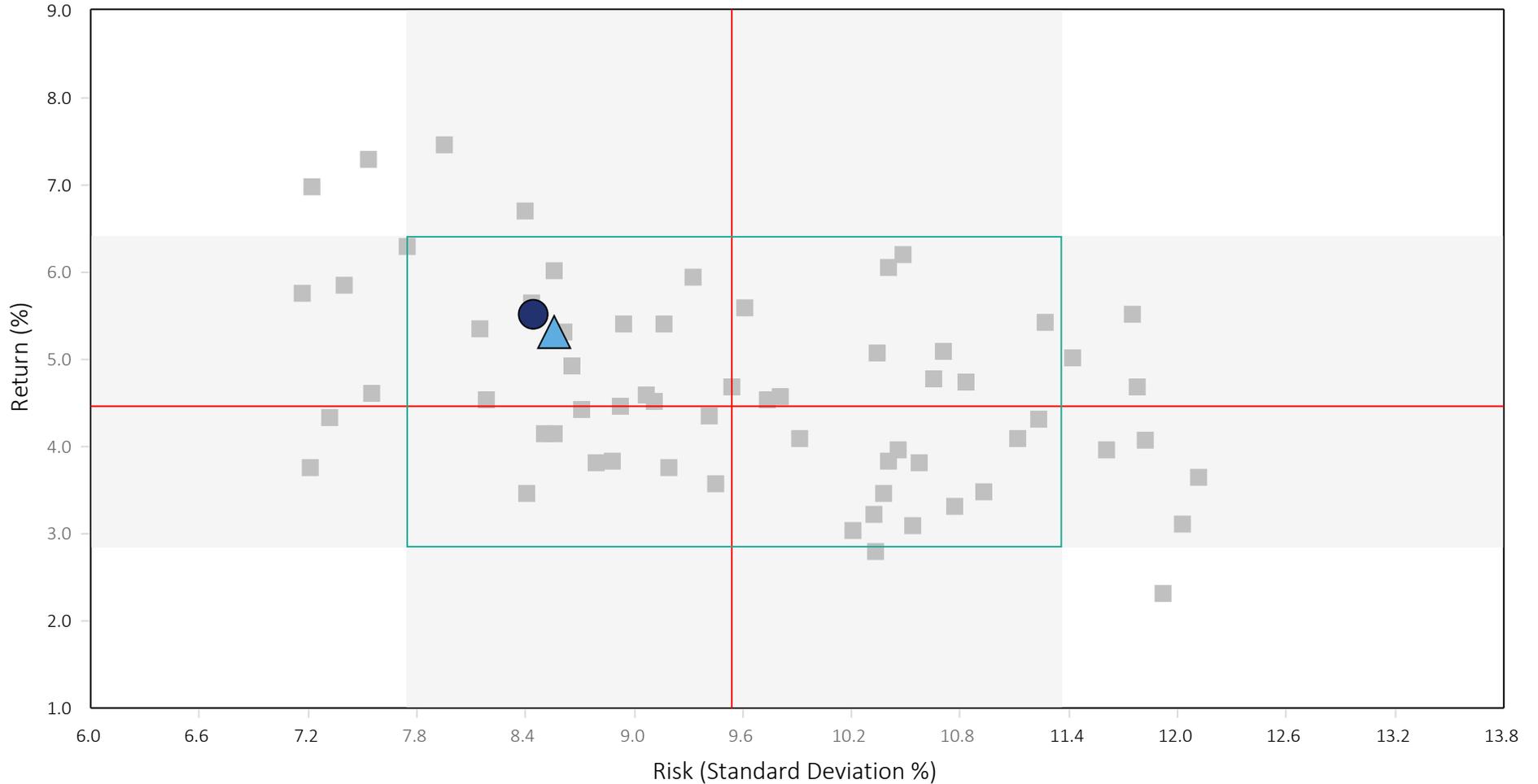
5th Percentile	14.95	7.48	10.00	3.95	6.81	9.00	1.45	0.75	0.83
1st Quartile	12.71	5.42	8.93	5.41	8.05	10.81	1.13	0.43	0.61
Median	11.40	4.47	8.28	6.33	9.12	12.15	0.99	0.30	0.56
3rd Quartile	10.42	3.71	7.70	7.45	10.21	13.06	0.84	0.20	0.53
95th Percentile	8.08	2.26	6.69	8.98	11.52	14.70	0.59	0.07	0.45

Parenteses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Plan Sponsor Scattergram

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

Periods Ended January 1, 2021 To December 31, 2023



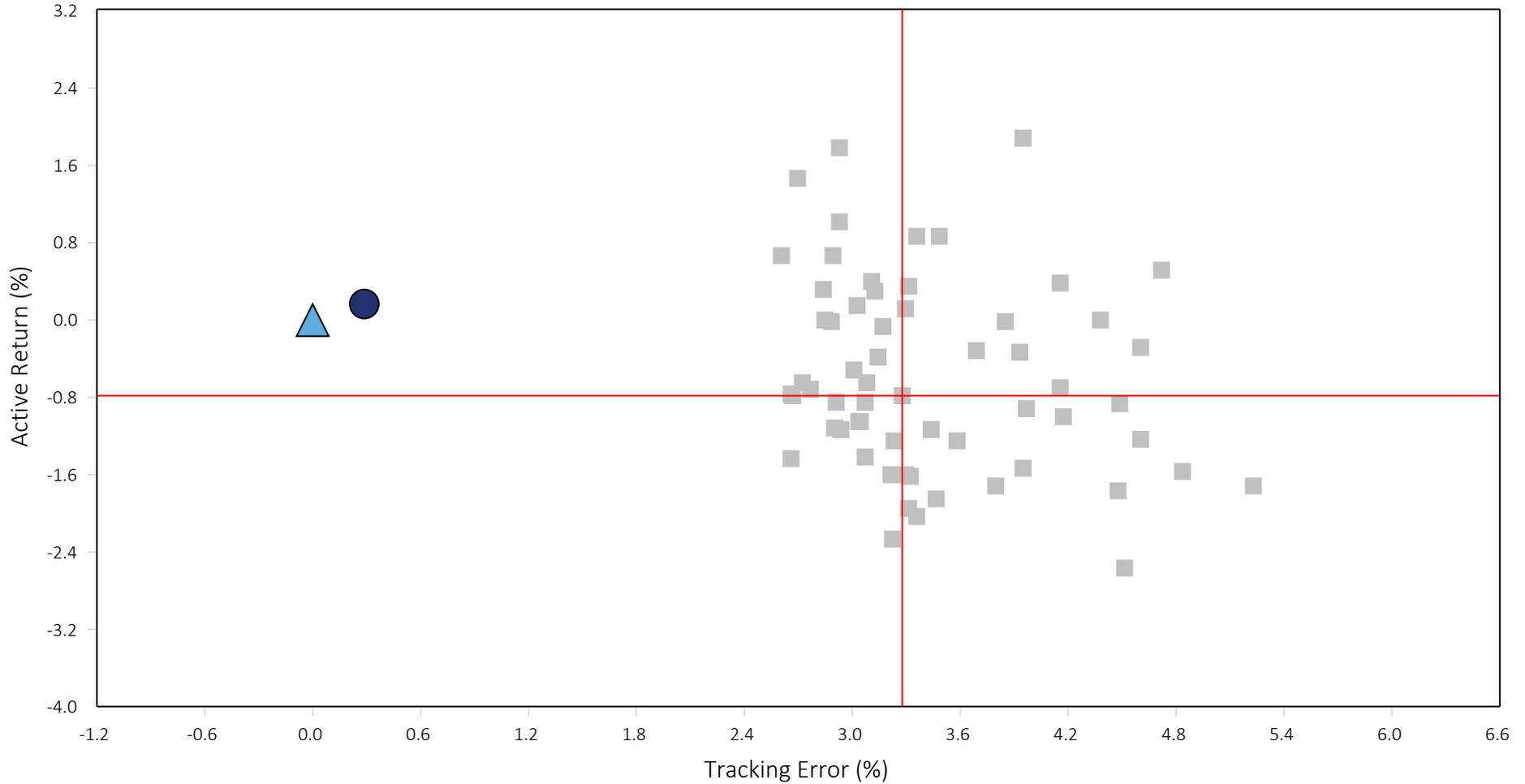
	Return	Standard Deviation
● Total Fund	5.51	8.44
▲ Total Fund Policy Benchmark	5.32	8.56
— Median	4.47	9.53

Calculation based on monthly periodicity.

# Plan Sponsor Scattergram

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

Periods Ended January 1, 2021 To December 31, 2023



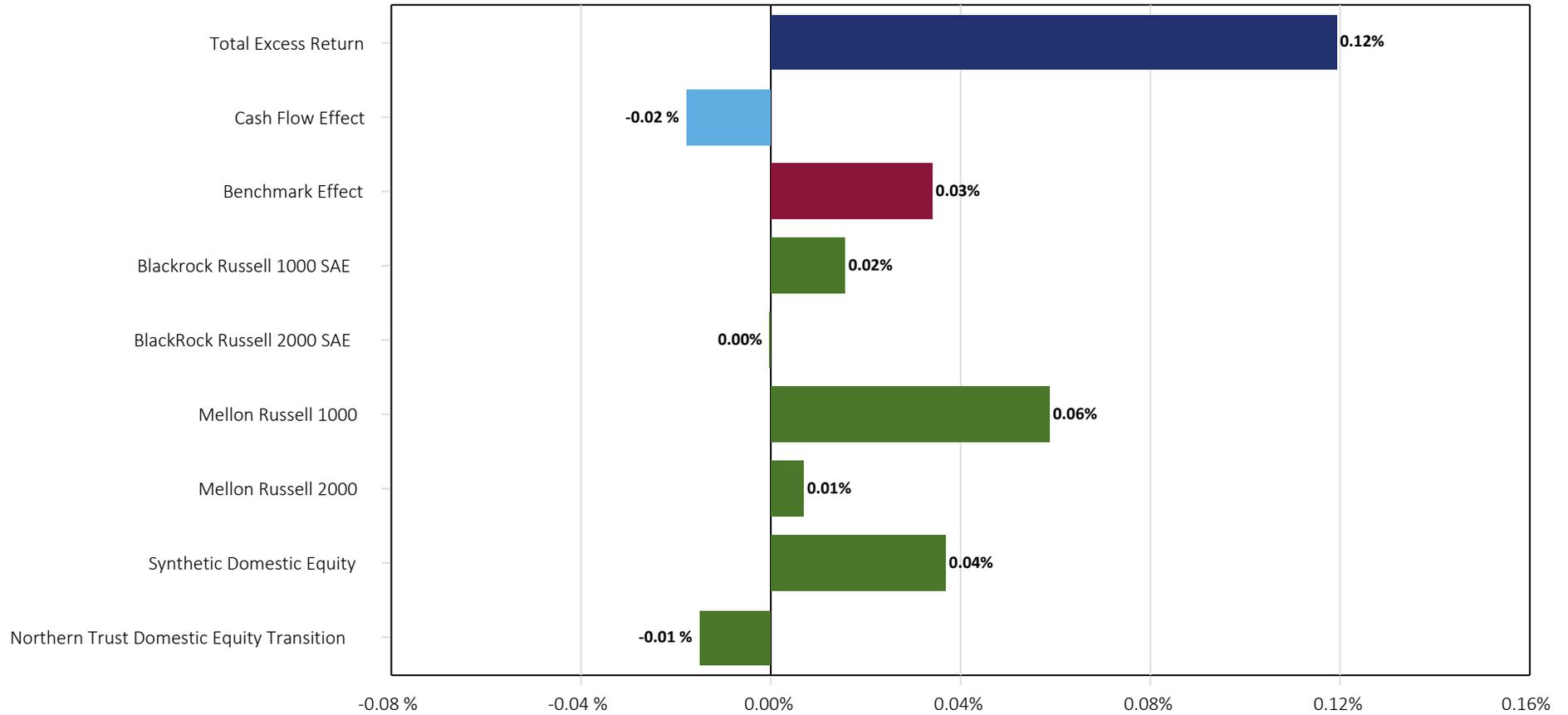
	Active Return	Tracking Error
● Total Fund	0.17	0.29
▲ Total Fund Policy Benchmark	0.00	0.00
— Median	-0.78	3.28

# Asset Class Attribution

U.S. Equity Composite

Periods Ended 1 Year Ending December 31, 2023

**1 Year**

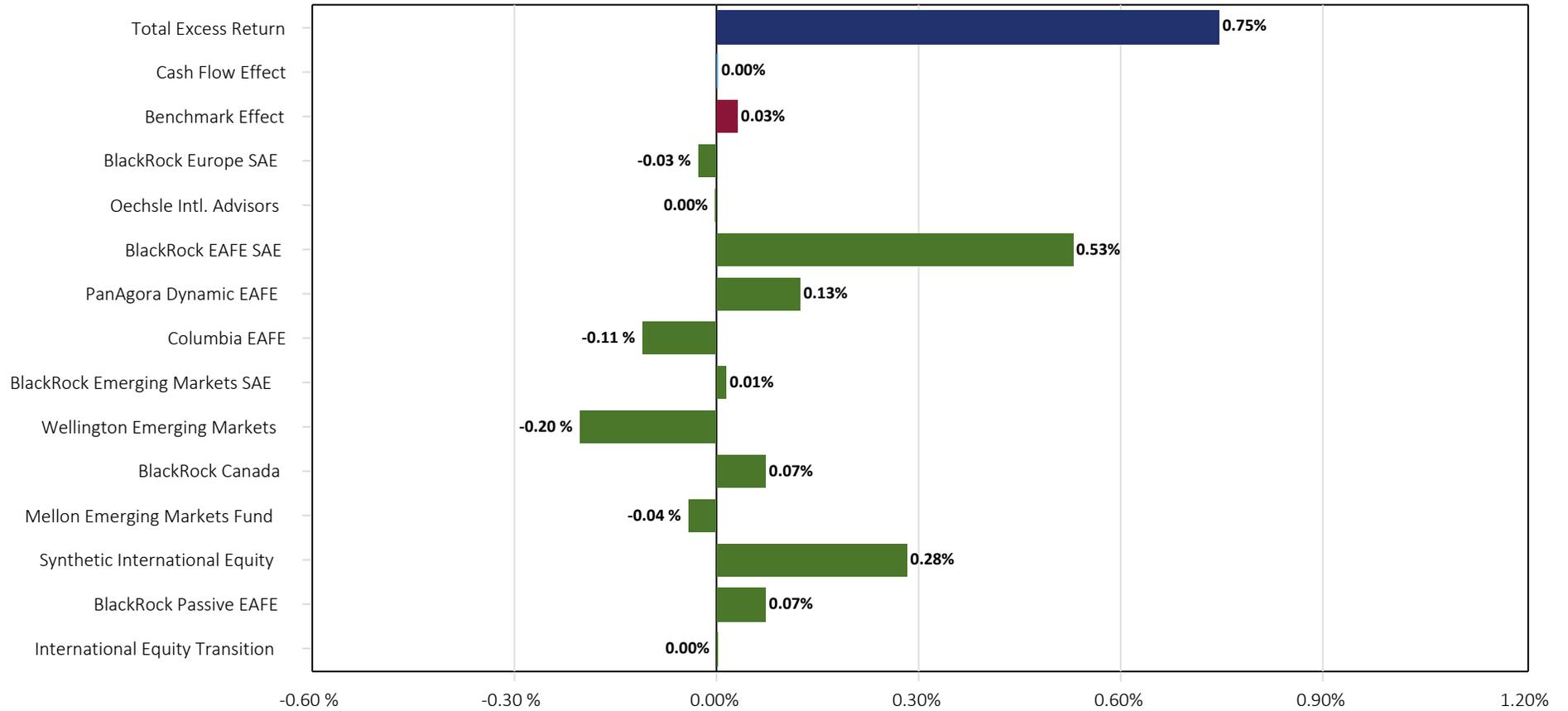


# Asset Class Attribution

## International Equity Composite

Periods Ended 1 Year Ending December 31, 2023

**1 Year**

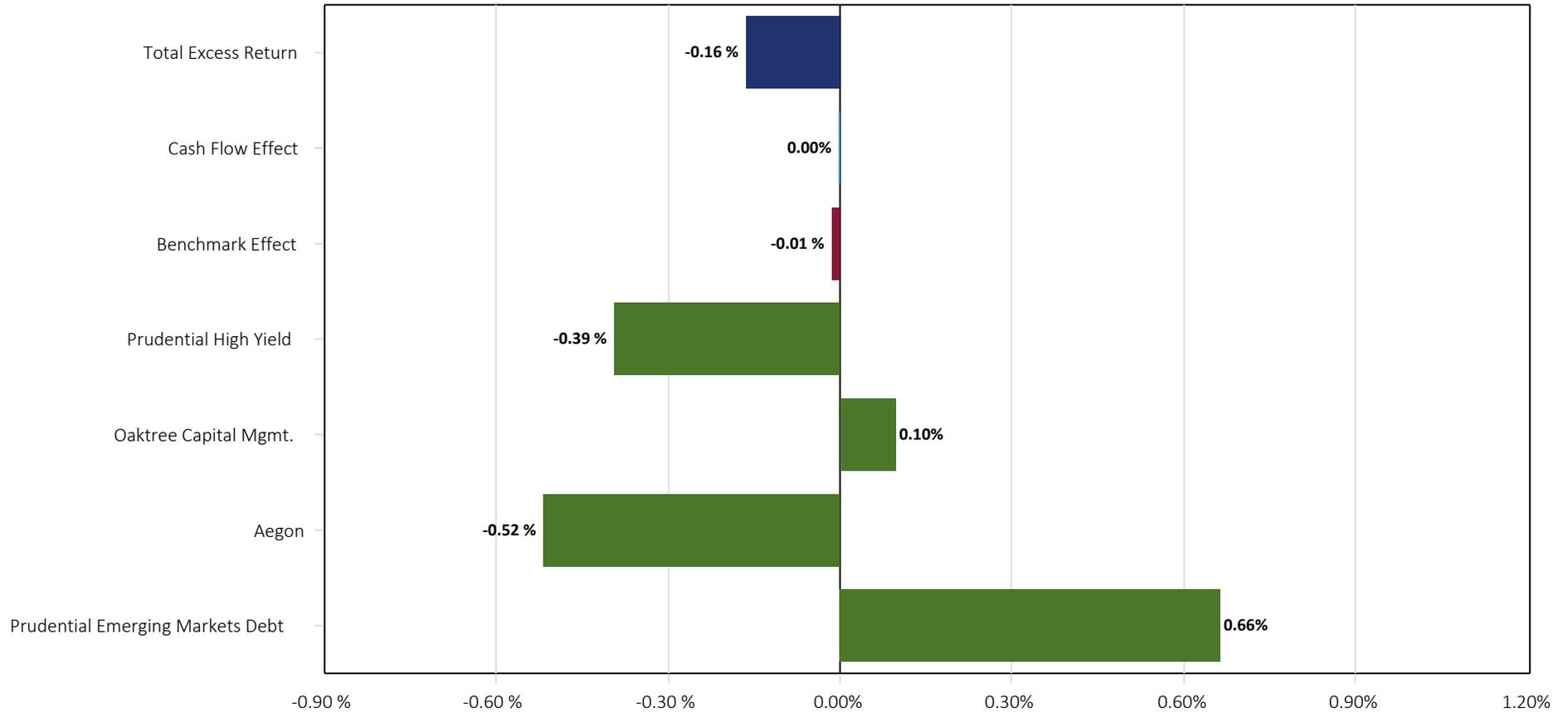


# Asset Class Attribution

Public Credit Composite

Periods Ended 1 Year Ending December 31, 2023

**1 Year**

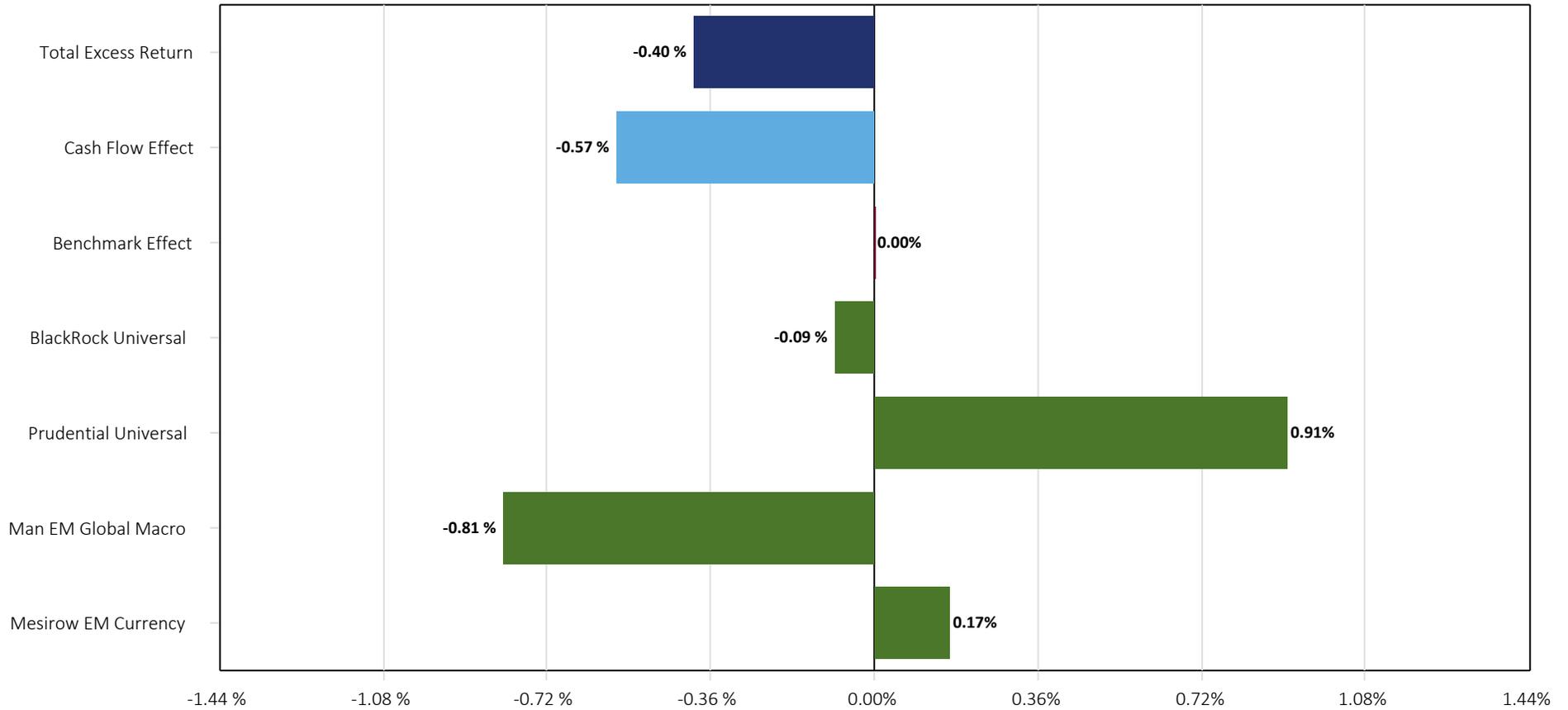


# Asset Class Attribution

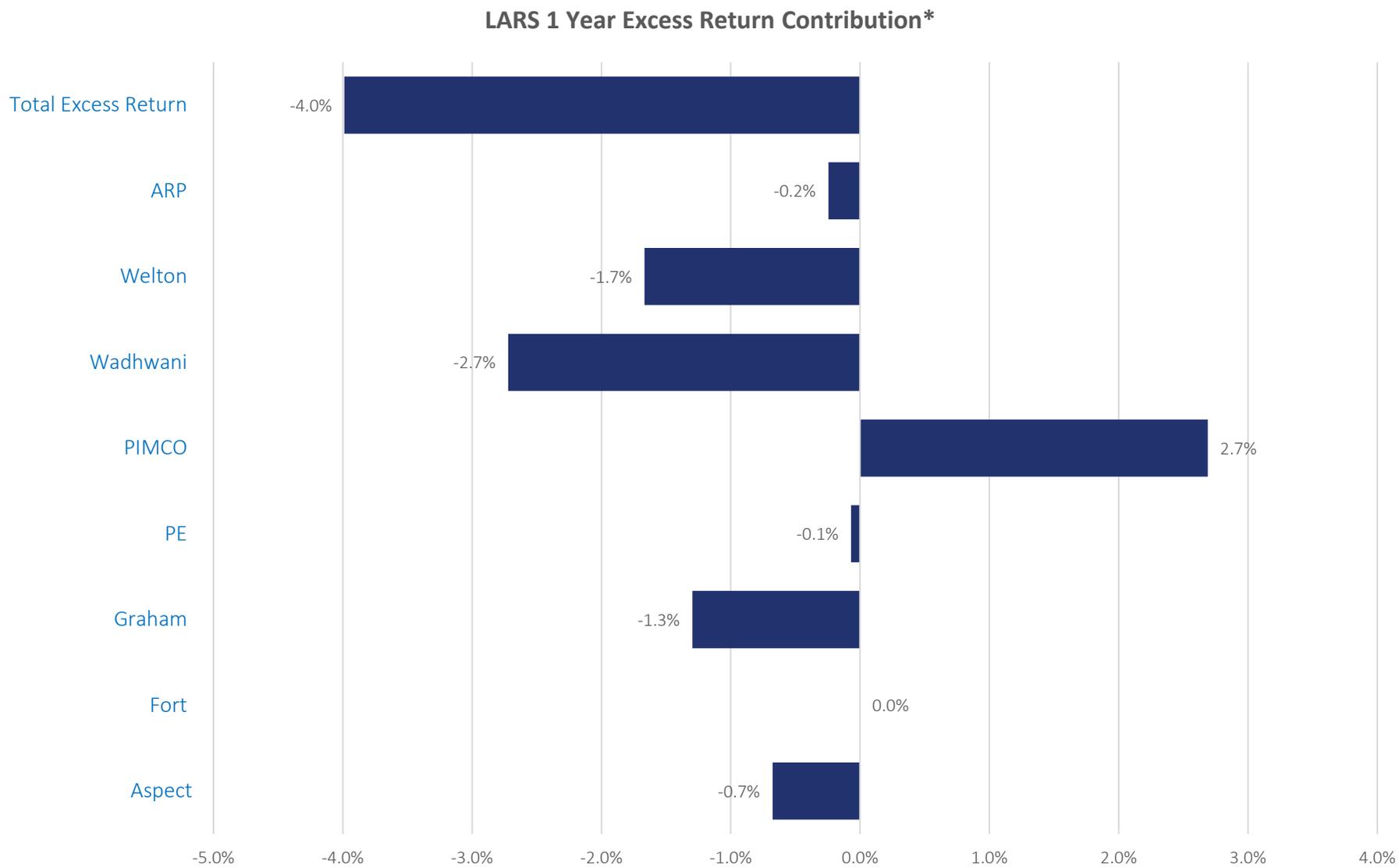
Relative Value Composite

Periods Ended 1 Year Ending December 31, 2023

1 Year



# LARS Program Attribution



# Public Markets Composite

# Asset Allocation & Performance

## U.S. Equity Composite

Periods Ended December 31, 2023

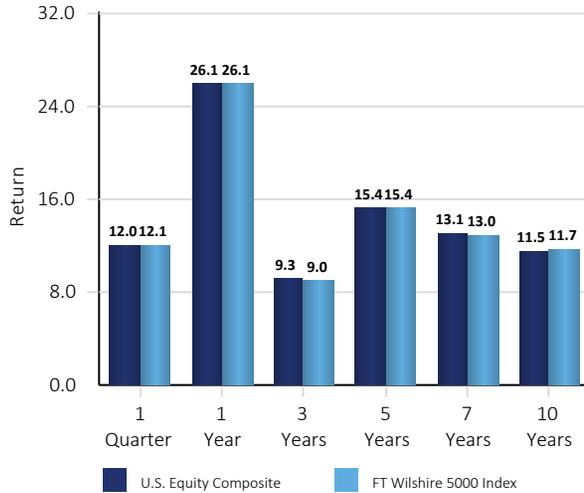
	Performance (%) net of fees									Market Value \$	%
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date		
<b>U.S. Equity Composite</b>	<b>12.01</b>	<b>8.59</b>	<b>26.08</b>	<b>9.26</b>	<b>15.38</b>	<b>11.52</b>	<b>9.31</b>	<b>11.35</b>	<b>4/1/1975</b>	8,720,929,715	100.00
U.S. Equity Composite Benchmark	12.07	8.43	25.96	8.97	15.42	11.68	9.80				
<b>Active Equity Composite</b>	<b>12.57</b>	<b>8.88</b>	<b>25.61</b>	<b>6.48</b>	<b>13.64</b>	<b>10.72</b>	<b>8.21</b>	<b>6.65</b>	<b>1/1/1999</b>	2,690,581,175	30.85
<b>Blackrock Russell 1000 SAE</b>	<b>12.34</b>	<b>8.81</b>	<b>26.58</b>					<b>10.74</b>	<b>5/1/2022</b>	2,441,653,556	28.00
Russell 1000 Index	11.96	8.44	26.53					10.68			
<b>BlackRock Russell 2000 SAE</b>	<b>14.79</b>	<b>9.65</b>	<b>16.83</b>	<b>3.08</b>				<b>8.34</b>	<b>5/1/2019</b>	248,927,620	2.85
Russell 2000 Index	14.03	8.18	16.93	2.22				6.77			
<b>Passive Equity Composite</b>	<b>11.78</b>	<b>8.46</b>	<b>26.29</b>	<b>8.63</b>	<b>15.00</b>	<b>11.23</b>	<b>9.99</b>	<b>8.24</b>	<b>1/1/1999</b>	6,030,348,540	69.15
<b>Mellon Russell 1000</b>	<b>12.02</b>	<b>8.50</b>	<b>26.62</b>					<b>10.75</b>	<b>5/1/2022</b>	5,780,928,016	66.29
Russell 1000 Index	11.96	8.44	26.53					10.68			
<b>Mellon Russell 2000</b>	<b>14.07</b>	<b>8.26</b>	<b>17.14</b>					<b>7.07</b>	<b>5/1/2022</b>	201,329,183	2.31
Russell 2000 Index	14.03	8.18	16.93					6.85			
<b>Synthetic Domestic Equity</b>	<b>-18.80</b>	<b>-2.95</b>	<b>22.71</b>	<b>12.94</b>	<b>40.70</b>			<b>32.48</b>	<b>4/1/2017</b>	48,091,341	0.55
<b>Northern Trust Domestic Equity Transition</b>											0.00
All Public Plans > \$1B-US Equity Segment Median	11.67	7.80	23.03	7.77	14.03	10.37	9.24				
Russell 3000 Index	12.07	8.43	25.96	8.54	15.16	11.48	9.67	11.89	1/1/1979		
Wilshire 4500 Completion Index	14.34	10.75	24.87	3.33	13.27	9.49	9.87	10.56	1/1/1984		
FT Wilshire 5000 Index	12.10	8.42	26.10	8.95	15.40	11.69	9.80	10.90	1/1/1971		

# Performance Summary

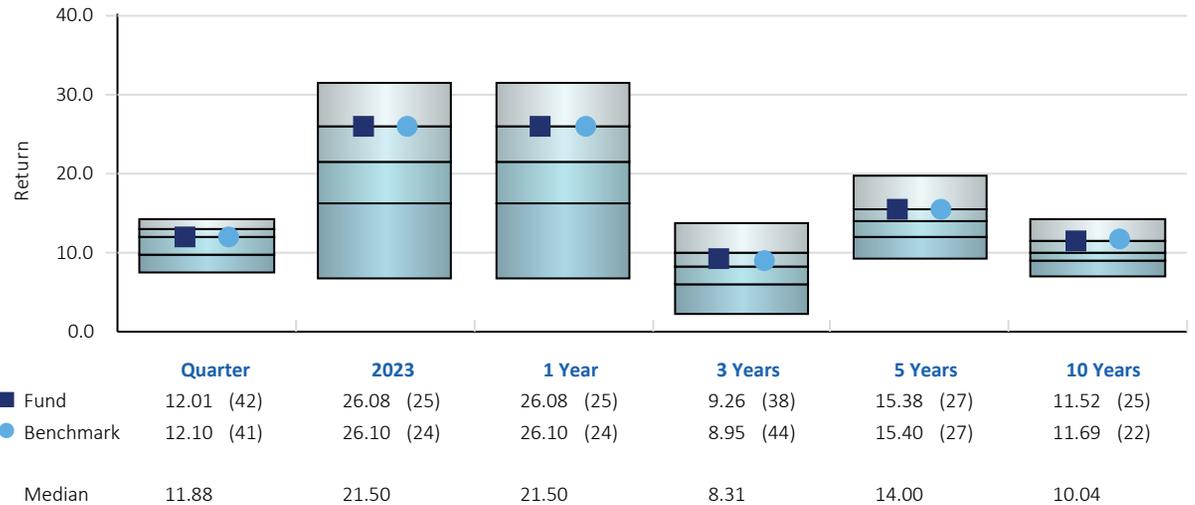
## U.S. Equity Composite

Periods Ended December 31, 2023

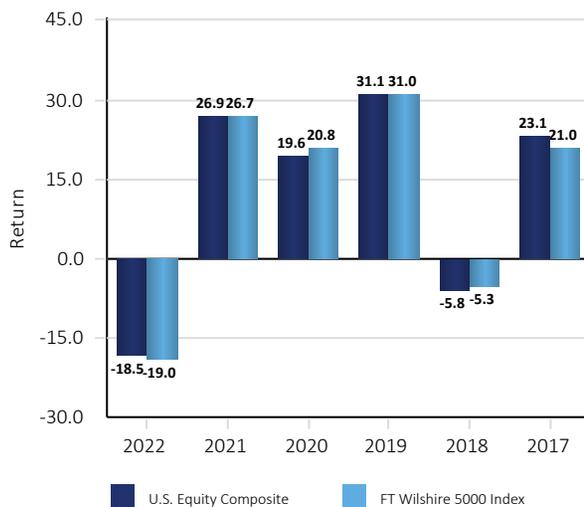
### Comparative Performance



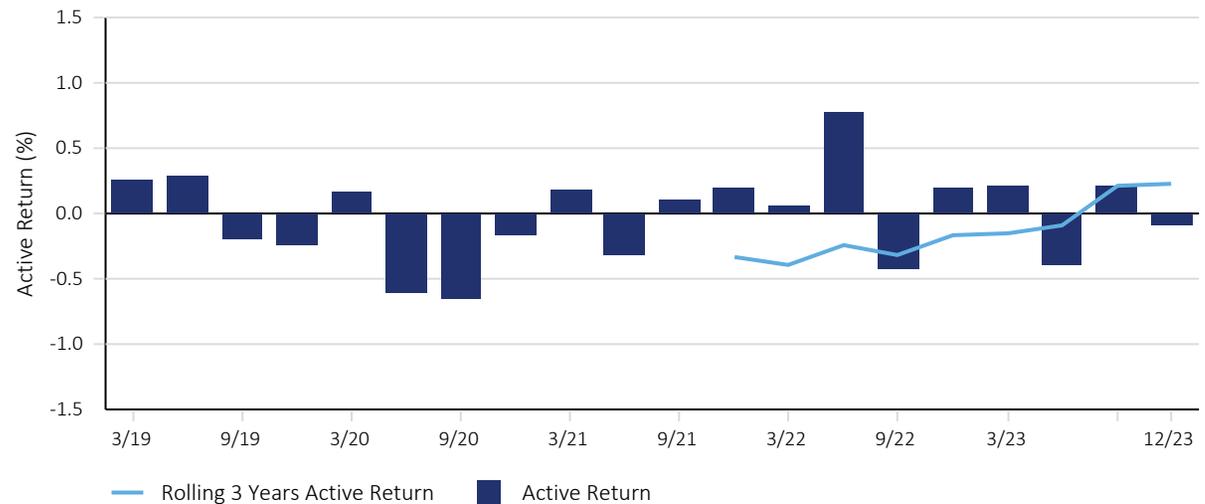
### Peer Group Analysis: IM U.S. All Cap Core Equity (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



# Asset Allocation & Performance

## International Equity Composite

Periods Ended December 31, 2023

	Performance (%) net of fees									Market Value \$	%
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date		
<b>International Equity Composite</b>	<b>9.22</b>	<b>5.58</b>	<b>16.36</b>	<b>2.28</b>	<b>7.39</b>	<b>4.00</b>	<b>5.84</b>	<b>5.36</b>	<b>10/1/1989</b>	<b>5,524,119,803</b>	<b>100.00</b>
International Equity Policy Index	9.75	5.61	15.62	1.55	7.08	4.06	6.03	5.26			
<b>BlackRock Canada</b>	<b>11.43</b>	<b>7.15</b>	<b>16.39</b>	<b>9.09</b>	<b>12.12</b>	<b>5.40</b>	<b>7.69</b>	<b>7.12</b>	<b>12/1/2000</b>	<b>435,114,828</b>	<b>7.88</b>
MSCI Canada (Net)	11.23	6.73	15.44	8.21	11.22	4.60	7.00	6.44			
<b>BlackRock Passive EAFE</b>	<b>10.36</b>	<b>5.86</b>	<b>18.64</b>	<b>4.43</b>				<b>6.87</b>	<b>4/1/2019</b>	<b>1,681,187,193</b>	<b>30.43</b>
MSCI EAFE (Net)	10.42	5.88	18.24	4.02				6.46			
<b>BlackRock EAFE SAE</b>	<b>10.08</b>	<b>5.93</b>	<b>20.14</b>	<b>5.83</b>				<b>7.09</b>	<b>5/1/2019</b>	<b>1,425,066,677</b>	<b>25.80</b>
MSCI EAFE (Net)	10.42	5.88	18.24	4.02				5.95			
<b>BlackRock Emerging Markets SAE</b>	<b>7.31</b>	<b>4.67</b>	<b>9.88</b>	<b>-5.82</b>				<b>0.83</b>	<b>5/1/2019</b>	<b>422,958,124</b>	<b>7.66</b>
MSCI Emerging Markets (Net)	7.86	4.71	9.83	-5.08				1.41			
<b>Columbia EAFE</b>	<b>5.18</b>	<b>3.65</b>	<b>15.97</b>	<b>3.11</b>				<b>3.85</b>	<b>5/1/2019</b>	<b>7,700,823</b>	<b>0.14</b>
MSCI EAFE (Net)	10.42	5.88	18.24	4.02				5.95			
<b>PanAgora Dynamic EAFE</b>	<b>9.54</b>	<b>6.18</b>	<b>19.32</b>	<b>5.69</b>				<b>6.28</b>	<b>5/1/2019</b>	<b>395,439,140</b>	<b>7.16</b>
MSCI EAFE (Net)	10.42	5.88	18.24	4.02				5.95			
<b>Wellington Emerging Markets</b>	<b>7.07</b>	<b>2.32</b>	<b>6.66</b>	<b>-6.38</b>	<b>5.05</b>	<b>3.44</b>		<b>7.65</b>	<b>3/1/2009</b>	<b>262,216,092</b>	<b>4.75</b>
Wellington EM Custom Benchmark	7.86	4.71	9.83	-5.08	3.68	2.66		7.69			
<b>Mellon Emerging Markets Fund</b>	<b>7.67</b>	<b>4.45</b>	<b>9.55</b>	<b>-5.24</b>	<b>3.58</b>			<b>3.01</b>	<b>7/1/2015</b>	<b>837,256,260</b>	<b>15.16</b>
MSCI Emerging Markets (Net)	7.86	4.71	9.83	-5.08	3.68			3.05			
<b>Synthetic International Equity</b>	<b>21.29</b>	<b>16.71</b>	<b>37.20</b>	<b>26.17</b>	<b>-123.32</b>			<b>-133.33</b>	<b>4/1/2017</b>	<b>44,613,610</b>	<b>0.81</b>
<b>Active International Equity</b>	<b>9.13</b>	<b>5.63</b>	<b>17.05</b>	<b>1.95</b>	<b>7.21</b>	<b>3.94</b>	<b>5.38</b>	<b>5.38</b>	<b>1/1/2004</b>	<b>2,525,623,781</b>	<b>45.72</b>
<b>Passive International Equity</b>	<b>9.81</b>	<b>5.96</b>	<b>15.89</b>	<b>2.98</b>	<b>7.68</b>	<b>4.10</b>	<b>5.94</b>	<b>5.94</b>	<b>1/1/2004</b>	<b>2,998,171,890</b>	<b>54.27</b>
All Public Plans > \$1B-Intl. Equity Segment Median	10.17	5.42	17.02	2.15	8.68	5.09	6.89				

# Asset Allocation & Performance

## International Equity Composite

*Periods Ended December 31, 2023*

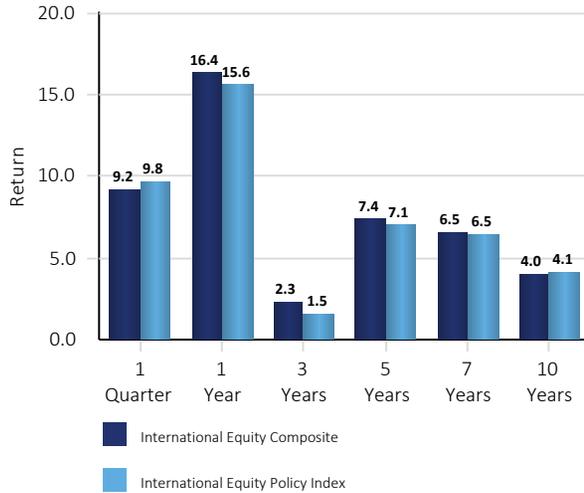
	Performance (%) net of fees									Market Value \$	%
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date		
MSCI AC World ex USA (Net)	9.75	5.61	15.62	1.55	7.08	3.83	5.68	4.78	1/1/1999		
MSCI EAFE (Net)	10.42	5.88	18.24	4.02	8.16	4.28	5.59	8.40	1/1/1970		
MSCI Emerging Markets (Net)	7.86	4.71	9.83	-5.08	3.68	2.66	6.83	7.55	1/1/1999		

# Performance Summary

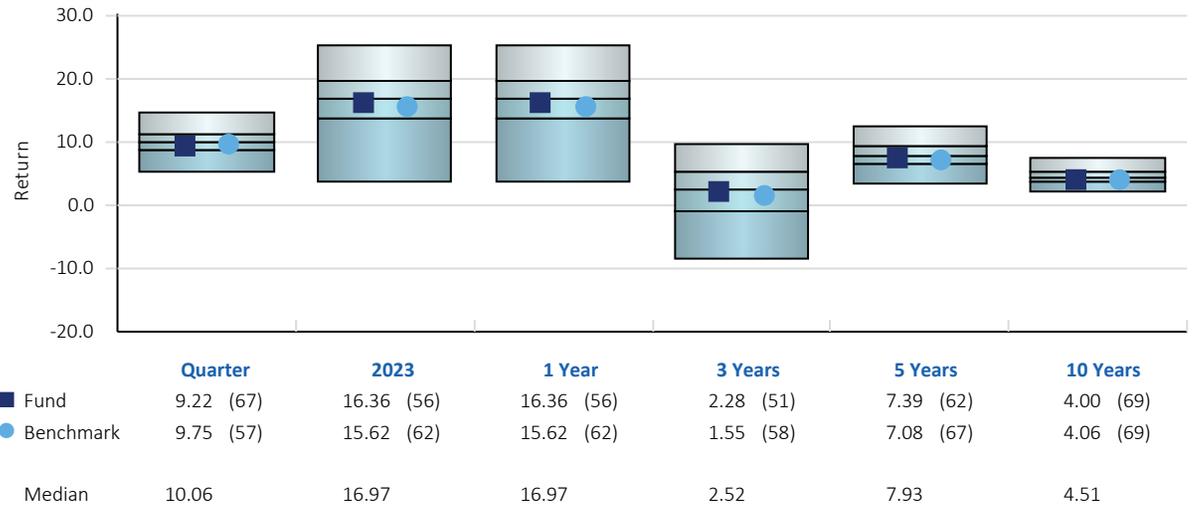
## International Equity Composite

Periods Ended December 31, 2023

### Comparative Performance



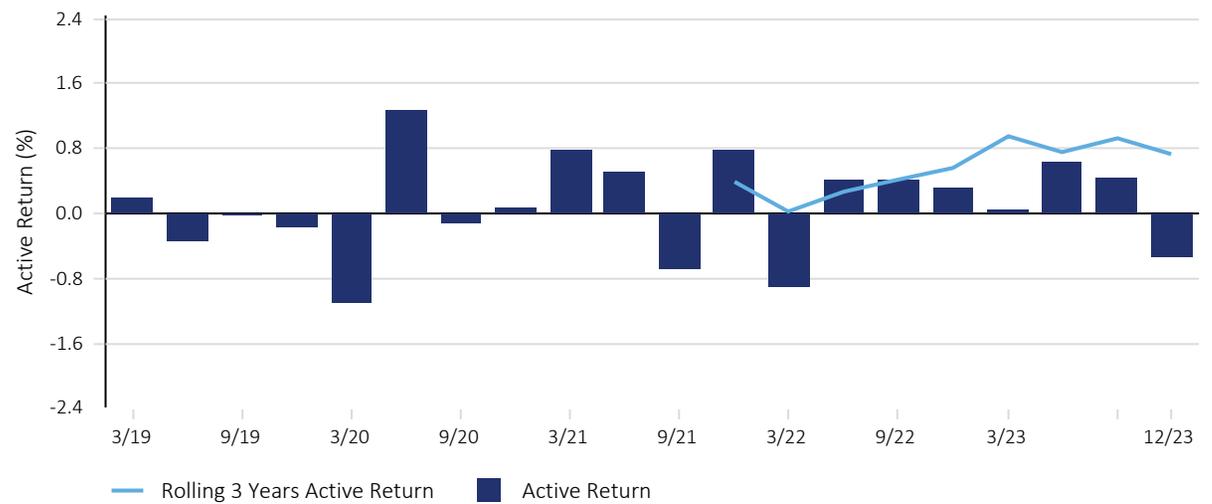
### Peer Group Analysis: IM International Equity (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



# Asset Allocation & Performance

## Total Fixed Composite

Periods Ended December 31, 2023

	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
<b>Total Fixed Composite</b>	<b>6.74</b>	<b>3.69</b>	<b>6.24</b>	<b>-2.94</b>	<b>1.83</b>	<b>2.42</b>	<b>3.91</b>	<b>6.55</b>	<b>7/1/1985</b>	<b>11,897,960,490</b>
Fixed Income Policy Index	6.93	3.81	6.22	-2.95	1.45	2.08	3.46	5.97		
<b>Total US Fixed Income Composite</b>	<b>6.60</b>	<b>3.54</b>	<b>6.00</b>	<b>-2.94</b>	<b>1.81</b>	<b>2.39</b>	<b>3.91</b>	<b>6.53</b>	<b>7/1/1985</b>	<b>11,466,940,695</b>
Fixed Income Policy Index	6.93	3.81	6.22	-2.95	1.45	2.08	3.46	5.97		
<b>Core Fixed Income Composite</b>	<b>6.59</b>	<b>3.19</b>	<b>5.45</b>	<b>-3.45</b>	<b>1.43</b>	<b>2.18</b>	<b>3.63</b>	<b>6.34</b>	<b>7/1/1985</b>	<b>10,622,733,870</b>
Core Fixed Income Policy Index	6.82	3.37	5.77	-3.09	1.36	2.04	3.44	5.96		
<b>Active Core Fixed Composite</b>	<b>5.48</b>	<b>2.47</b>	<b>4.82</b>	<b>-3.55</b>	<b>1.57</b>	<b>2.27</b>	<b>3.80</b>	<b>4.01</b>	<b>9/1/1995</b>	<b>1,528,650,860</b>
<b>Blackrock</b>										<b>-1,841</b>
<b>Principal Global Investors</b>										<b>10,582</b>
<b>Mackay Shields Core Plus</b>										<b>636,225</b>
<b>Prudential Fixed Income</b>										<b>1,044</b>
<b>TCW Asset Management</b>										<b>101,978</b>
<b>Western Asset Mgmt</b>										<b>355,115</b>
<b>Passive Fixed Composite</b>	<b>6.78</b>	<b>3.32</b>	<b>5.47</b>	<b>-3.76</b>	<b>0.45</b>	<b>1.49</b>	<b>3.03</b>	<b>5.03</b>	<b>7/1/1990</b>	<b>9,094,083,010</b>
<b>Mellon Aggregate</b>	<b>6.84</b>	<b>3.38</b>	<b>5.58</b>	<b>-3.29</b>	<b>1.12</b>	<b>1.83</b>	<b>3.21</b>	<b>5.15</b>	<b>7/1/1990</b>	<b>9,069,243,000</b>
Blmbg. U.S. Aggregate Index	6.82	3.37	5.53	-3.31	1.10	1.81	3.17	5.10		
<b>Synthetic Fixed Income</b>	<b>-7.08</b>	<b>-13.65</b>	<b>-25.64</b>	<b>-37.43</b>	<b>-23.16</b>			<b>-18.06</b>	<b>4/1/2017</b>	<b>24,840,010</b>
<b>Relative Value Composite</b>	<b>5.45</b>	<b>2.42</b>	<b>5.37</b>	<b>-3.20</b>				<b>-2.53</b>	<b>11/1/2020</b>	<b>1,527,547,757</b>
Relative Value Policy Index	6.82	3.37	5.77	-3.09				-2.43		

# Asset Allocation & Performance

## Total Fixed Composite

Periods Ended December 31, 2023

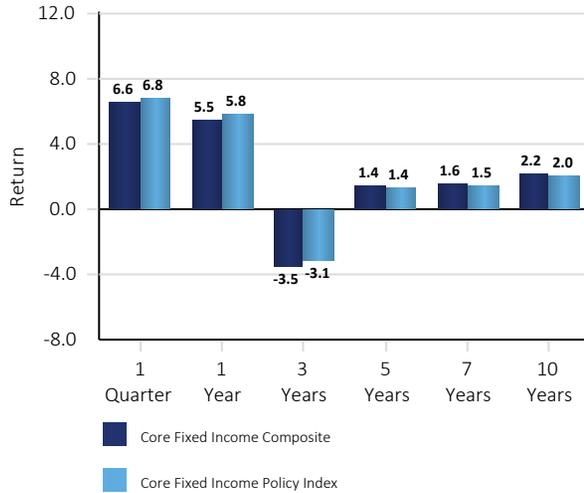
	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
<b>BlackRock Universal</b>	<b>7.30</b>	<b>4.20</b>	<b>5.94</b>	<b>-2.02</b>				<b>-1.40</b>	<b>11/1/2020</b>	<b>640,191,506</b>
Core Fixed Income Policy Index	6.82	3.37	5.77	-3.09				-2.43		
<b>Prudential Universal</b>	<b>6.14</b>	<b>3.02</b>	<b>7.54</b>					<b>-2.70</b>	<b>3/1/2021</b>	<b>522,061,186</b>
Core Fixed Income Policy Index	6.82	3.37	5.77					-2.61		
<b>Man EM Global Macro</b>	<b>-6.67</b>							<b>-6.67</b>	<b>10/1/2023</b>	<b>102,665,200</b>
Blmbg. U.S. Aggregate Index	6.82							6.82		
<b>Mesirow EM Currency</b>	<b>5.02</b>							<b>5.02</b>	<b>10/1/2023</b>	<b>262,629,864</b>
Blmbg. U.S. Aggregate Index	6.82							6.82		
<b>Public Credit Composite</b>	<b>7.90</b>	<b>7.62</b>	<b>12.28</b>	<b>0.76</b>	<b>4.50</b>	<b>4.01</b>	<b>5.73</b>	<b>5.71</b>	<b>4/1/1998</b>	<b>1,275,226,620</b>
Public Credit Policy Index	7.86	7.24	12.45	0.28	4.25	3.98	5.78	5.62		
<b>High Yield Composite</b>	<b>6.62</b>	<b>7.47</b>	<b>12.21</b>	<b>2.41</b>	<b>5.51</b>	<b>4.46</b>	<b>6.19</b>	<b>6.06</b>	<b>4/1/1998</b>	<b>844,206,826</b>
High Yield Policy Index	7.15	7.65	13.44	1.98	5.38	4.40	6.23	5.97		
<b>Aegon</b>	<b>6.66</b>	<b>7.43</b>	<b>11.87</b>	<b>2.01</b>	<b>5.15</b>	<b>4.66</b>		<b>5.52</b>	<b>2/1/2012</b>	<b>417,117,786</b>
High Yield Policy Index	7.15	7.65	13.44	1.98	5.38	4.40		5.25		
<b>Prudential High Yield</b>	<b>6.51</b>	<b>7.31</b>	<b>12.27</b>	<b>2.54</b>				<b>4.27</b>	<b>7/1/2019</b>	<b>425,750,367</b>
Blmbg. U.S. High Yield - 2% Issuer Cap	7.15	7.65	13.44	1.98				3.76		
<b>Emerging Market Debt Composite</b>	<b>10.50</b>	<b>7.90</b>	<b>12.42</b>	<b>-2.72</b>	<b>2.35</b>	<b>3.09</b>		<b>2.22</b>	<b>10/1/2012</b>	<b>431,019,795</b>
JPM EMBI Global Index (USD)	9.26	6.40	10.45	-3.14	1.94	3.06		2.39		
<b>Prudential Emerging Markets Debt</b>	<b>10.50</b>	<b>7.90</b>	<b>12.42</b>	<b>-2.72</b>	<b>2.35</b>			<b>2.98</b>	<b>5/1/2016</b>	<b>431,019,795</b>
JPM EMBI Global Index (USD)	9.26	6.40	10.45	-3.14	1.94			2.18		
<b>Active Fixed Composite</b>	<b>6.58</b>	<b>4.95</b>	<b>8.29</b>	<b>-2.18</b>	<b>2.51</b>	<b>2.78</b>	<b>4.12</b>	<b>6.71</b>	<b>7/1/1985</b>	<b>2,803,877,480</b>

# Performance Summary

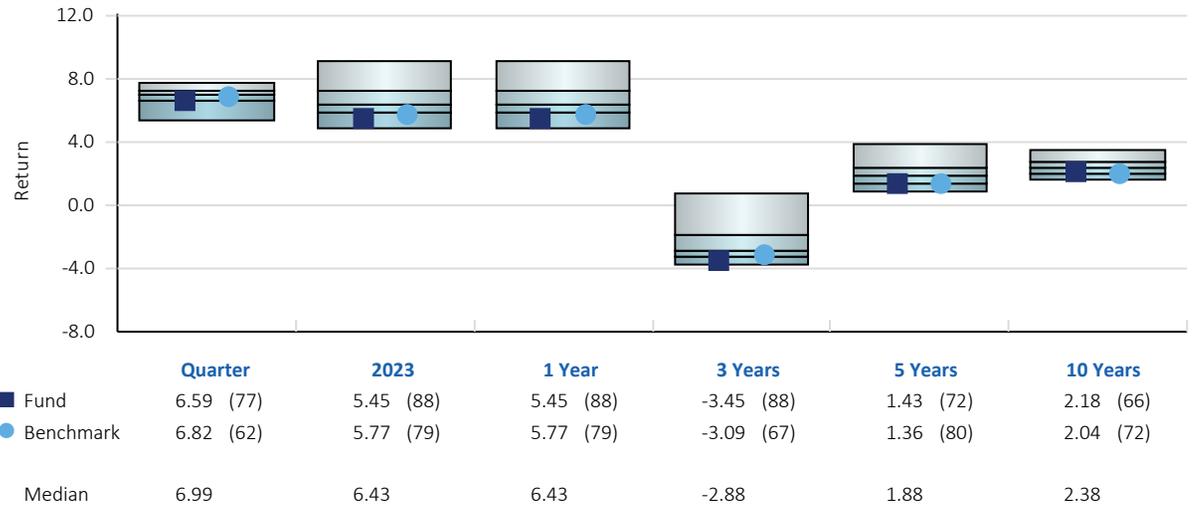
## Core Fixed Income Composite

Periods Ended December 31, 2023

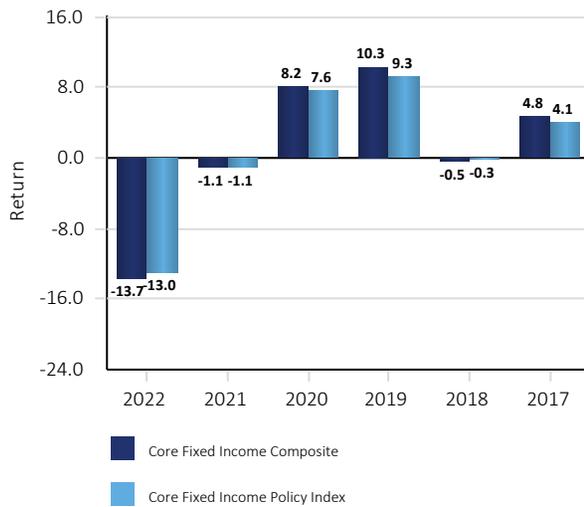
### Comparative Performance



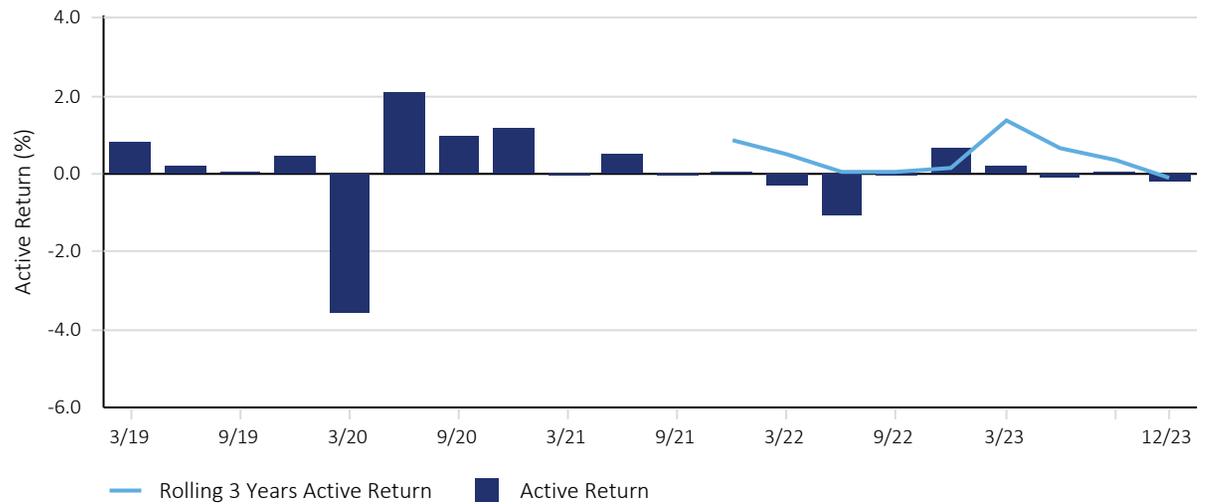
### Peer Group Analysis: IM U.S. Broad Market Core+ Fixed Income (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance

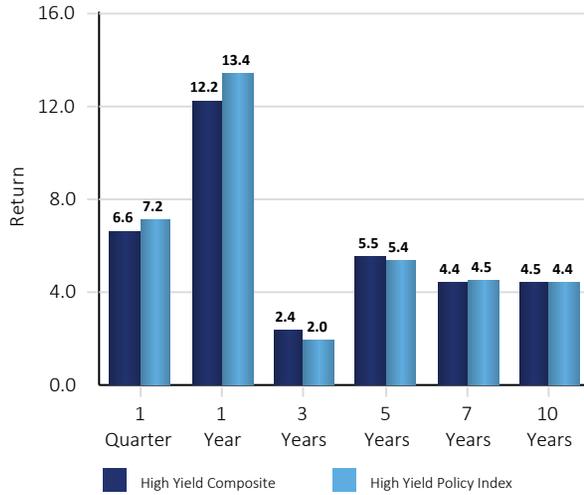


# Performance Summary

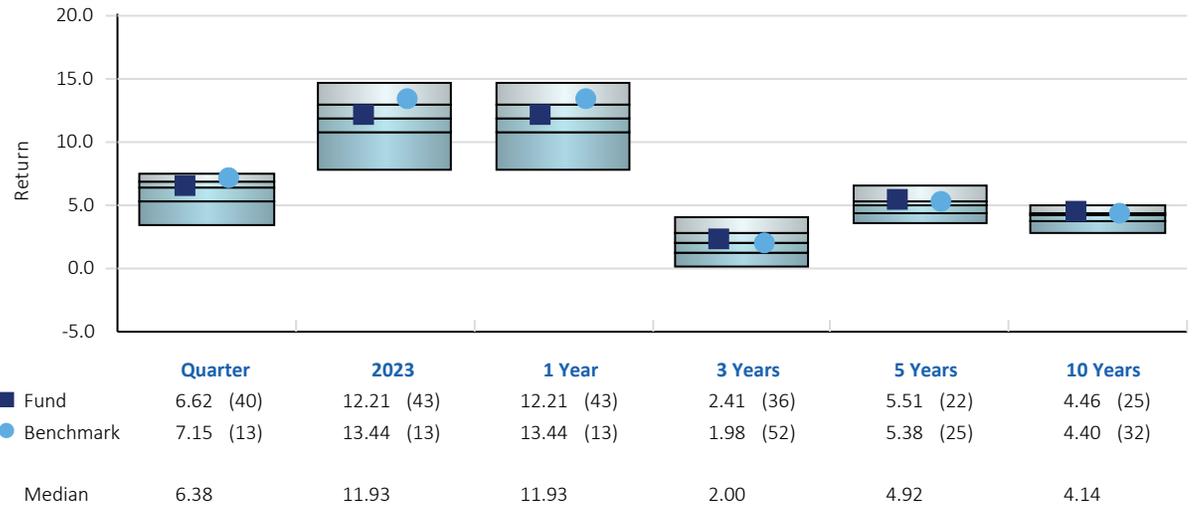
## High Yield Composite

Periods Ended December 31, 2023

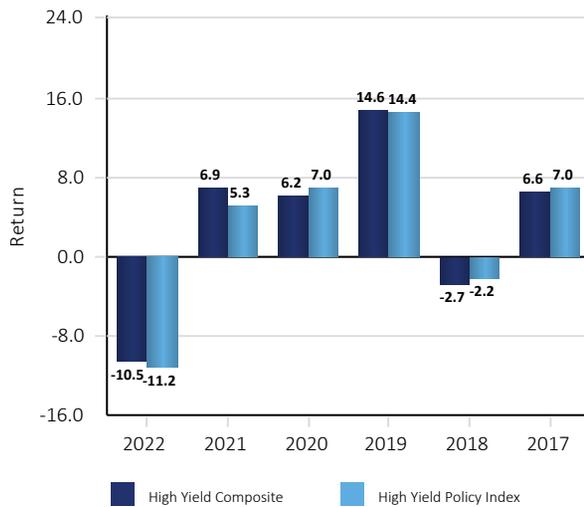
### Comparative Performance



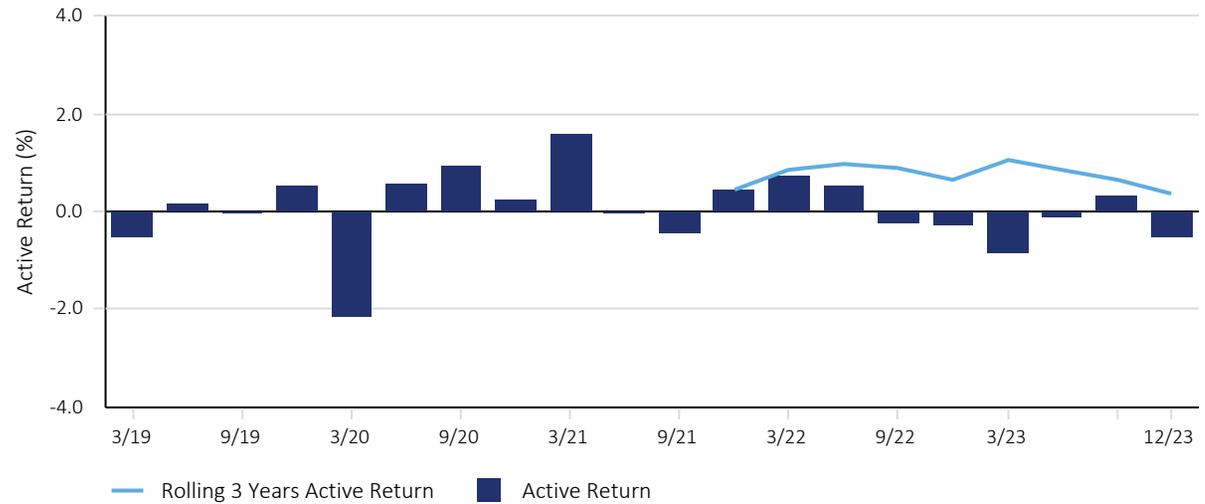
### Peer Group Analysis: IM U.S. High Yield Bonds (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



# Asset Allocation & Performance

## Global Smart Beta Composite

Periods Ended December 31, 2023

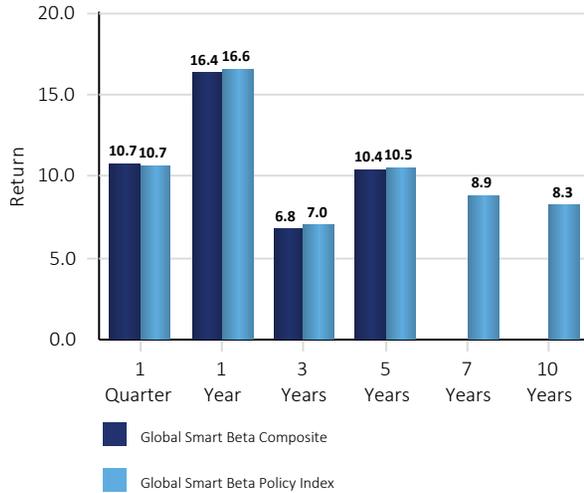
	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
<b>Global Smart Beta Composite</b>	<b>10.73</b>	<b>7.86</b>	<b>16.39</b>	<b>6.76</b>	<b>10.38</b>			<b>7.55</b>	<b>8/1/2017</b>	<b>2,154,857,779</b>
Global Smart Beta Policy Index	10.68	7.98	16.57	6.97	10.50			7.65		
MSCI AC World Index (Net)	11.03	7.26	22.20	5.75	11.72			8.68		
<b>U.S. Equity Smart Beta</b>	<b>11.22</b>	<b>7.10</b>	<b>14.95</b>	<b>9.03</b>	<b>12.63</b>			<b>9.67</b>	<b>8/1/2017</b>	<b>1,286,972,283</b>
Russell 1000 Comprehensive Factor Index	11.15	7.05	14.88	9.03	12.62			9.66		
<b>Developed Ex-U.S. Equity Smart Beta</b>	<b>10.20</b>	<b>7.85</b>	<b>17.30</b>	<b>2.37</b>	<b>6.80</b>			<b>4.36</b>	<b>8/1/2017</b>	<b>647,468,905</b>
FTSE Dev. Ex-U.S. Comprehensive Factor Index (N)	10.19	8.08	17.51	2.66	6.94			4.44		
<b>Emerging Markets Smart Beta</b>	<b>9.80</b>	<b>12.32</b>	<b>21.08</b>	<b>8.81</b>	<b>8.74</b>			<b>5.20</b>	<b>8/1/2017</b>	<b>220,416,591</b>
FTSE Emerging Comprehensive Factor Index (N)	9.35	12.40	22.04	9.32	9.14			5.56		
Russell 1000 Comprehensive Factor Index	11.15	7.05	14.88	9.03	12.62	10.18	11.41	11.13	8/1/2001	
FTSE Dev. Ex-U.S. Comprehensive Factor Index (N)	10.19	8.08	17.51	2.66	6.94	5.43	8.46	9.69	10/1/2001	
FTSE Emerging Comprehensive Factor Index (N)	9.35	12.40	22.04	9.32	9.14	5.30	11.23	13.77	10/1/2001	

# Performance Summary

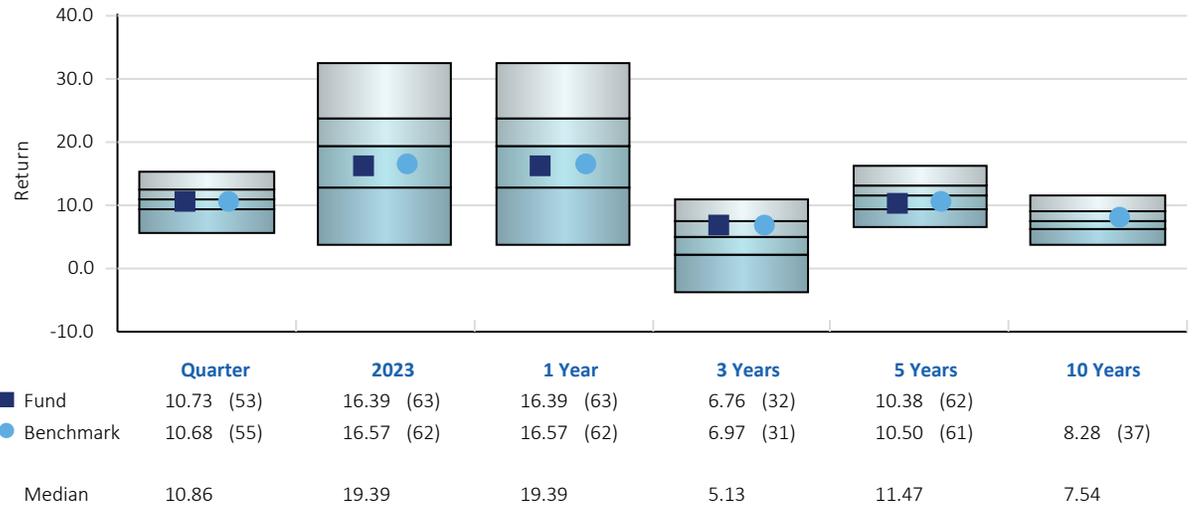
## Global Smart Beta Composite

Periods Ended December 31, 2023

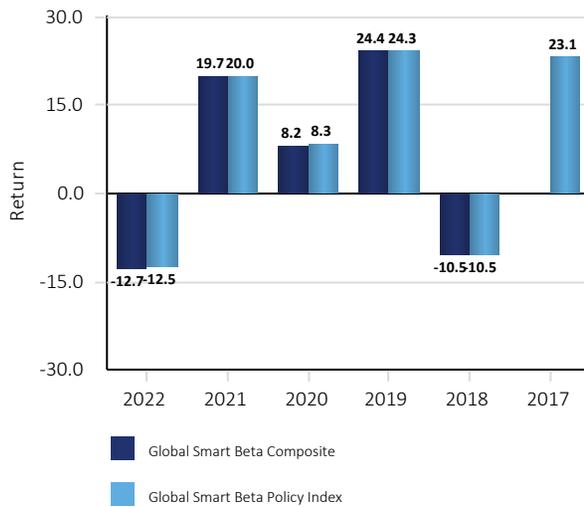
### Comparative Performance



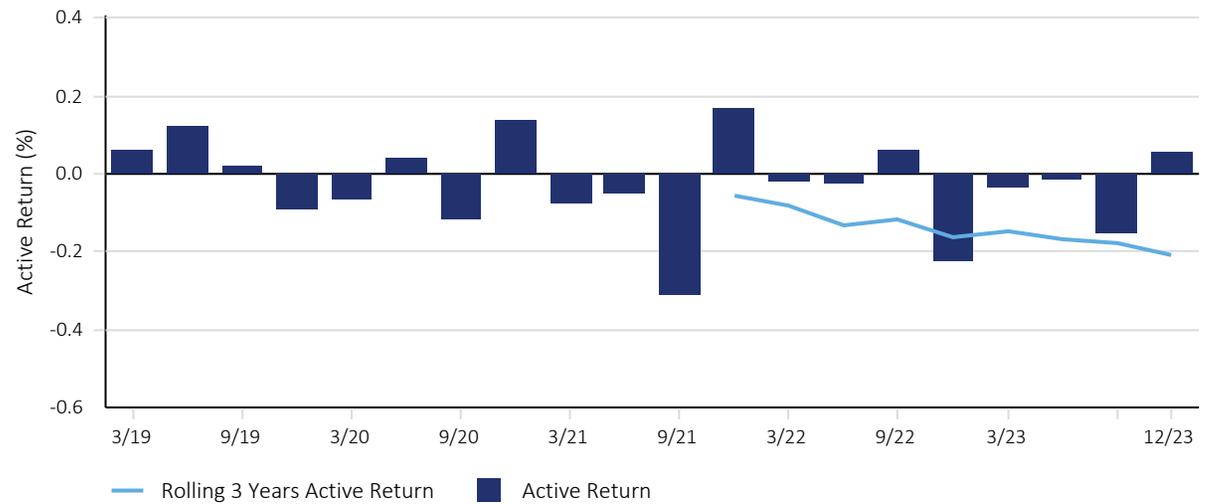
### Peer Group Analysis: IM Global Equity (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



# Appendix

# Cash Flow Summary

Total Fund

1 Quarter Ending December 31, 2023

	Begin Value	Contributions	Distributions	Net Transfers	Fees	Expenses	Capital Apprec./ Deprec.	End Value
<b>Total Fund</b>	<b>40,161,603,673</b>	<b>541,387,988</b>	<b>-824,651,415</b>		<b>-12,163,378</b>	<b>-50,761</b>	<b>2,346,596,348</b>	<b>42,212,722,454</b>
<b>Public Markets Composite</b>	<b>26,739,857,598</b>	<b>582,846,058</b>	<b>-781,833,570</b>	<b>-47,473,617</b>	<b>-678,463</b>	<b>-50,761</b>	<b>2,387,406,018</b>	<b>28,880,073,263</b>
<b>U.S. Equity Composite</b>	<b>8,192,511,180</b>	<b>19,758</b>		<b>-440,000,000</b>	<b>-19,758</b>		<b>968,418,535</b>	<b>8,720,929,715</b>
<b>Active Equity Composite</b>	<b>2,390,182,983</b>	<b>64,031</b>			<b>-64,031</b>		<b>300,398,192</b>	<b>2,690,581,175</b>
Blackrock Russell 1000 SAE	2,173,343,483	56,819			-56,819		268,310,072	2,441,653,556
BlackRock Russell 2000 SAE	216,839,500	7,212			-7,212		32,088,120	248,927,620
<b>Passive Equity Composite</b>	<b>5,802,328,196</b>	<b>-44,272</b>		<b>-440,000,000</b>	<b>44,272</b>		<b>668,020,343</b>	<b>6,030,348,540</b>
Mellon Russell 1000	5,530,780,769	-60,665		-400,000,000	60,665		650,147,248	5,780,928,016
Mellon Russell 2000	212,332,917	3,164		-40,000,000	-3,164		28,996,265	201,329,183
Synthetic Domestic Equity	59,214,510	13,229			-13,229		-11,123,170	48,091,341
Northern Trust Domestic Equity Transition								
<b>International Equity Composite</b>	<b>5,503,945,346</b>	<b>466,695</b>		<b>-456,150,423</b>	<b>-466,695</b>	<b>-2,416</b>	<b>476,327,295</b>	<b>5,524,119,803</b>
<b>Active International Equity</b>	<b>3,178,176,019</b>	<b>410,438</b>		<b>-881,150,423</b>	<b>-410,438</b>	<b>-2,416</b>	<b>228,600,600</b>	<b>2,525,623,781</b>
BlackRock Europe SAE	10,809,706						682,658	11,492,364
Oechsle Intl. Advisors	719,374						31,187	750,561
BlackRock EAFE SAE	1,694,475,845	106,375		-399,900,423	-106,375		130,491,255	1,425,066,677
PanAgora Dynamic EAFE	360,938,316	62,390			-62,390	-111	34,500,936	395,439,140
Columbia EAFE	372,405,603			-381,250,000		-14	16,545,234	7,700,823
<b>Active Emerging Markets Equity Composite</b>	<b>738,827,176</b>	<b>241,674</b>		<b>-100,000,000</b>	<b>-241,674</b>	<b>-2,291</b>	<b>46,349,331</b>	<b>685,174,216</b>
BlackRock Emerging Markets SAE	494,103,326	60,323		-100,000,000	-60,323		28,854,798	422,958,124
Wellington Emerging Markets	244,723,850	181,351			-181,351	-2,291	17,494,533	262,216,092
<b>Passive International Equity</b>	<b>2,325,450,961</b>	<b>56,257</b>		<b>425,000,000</b>	<b>-56,257</b>		<b>247,720,930</b>	<b>2,998,171,890</b>
BlackRock Canada	390,459,750	23,929			-23,929		44,655,078	435,114,828
Mellon Emerging Markets Fund	777,635,516	-39,576			39,576		59,620,743	837,256,260

# Cash Flow Summary

Total Fund

1 Quarter Ending December 31, 2023

	Begin Value	Contributions	Distributions	Net Transfers	Fees	Expenses	Capital Apprec./ Deprec.	End Value
Synthetic International Equity	36,773,861	9,743			-9,743		7,839,748	44,613,610
BlackRock Passive EAFE	1,120,581,834	62,162		425,000,000	-62,162		135,605,360	1,681,187,193
International Equity Transition	318,367						5,765	324,132
<b>Active Fixed Composite</b>	<b>2,634,212,174</b>	<b>120,945</b>		<b>-3,179,658</b>	<b>-120,945</b>	<b>-3,998</b>	<b>172,848,962</b>	<b>2,803,877,480</b>
<b>Total US Fixed Income Composite</b>	<b>9,810,750,328</b>	<b>25,244</b>		<b>946,820,342</b>	<b>-25,244</b>	<b>-2,135</b>	<b>709,372,160</b>	<b>11,466,940,695</b>
<b>Total Fixed Composite</b>	<b>10,200,813,883</b>	<b>25,244</b>		<b>946,820,342</b>	<b>-25,244</b>	<b>-3,998</b>	<b>750,330,262</b>	<b>11,897,960,490</b>
<b>Core Fixed Income Ex RV</b>	<b>7,930,231,775</b>	<b>-92,918</b>		<b>947,137,719</b>	<b>92,918</b>	<b>-191</b>	<b>583,111,874</b>	<b>9,460,481,177</b>
<b>Core Fixed Income Composite</b>	<b>9,018,737,996</b>	<b>-92,918</b>		<b>947,137,719</b>	<b>92,918</b>	<b>-191</b>	<b>656,858,346</b>	<b>10,622,733,870</b>
<b>Passive Fixed Composite</b>	<b>7,566,601,710</b>	<b>-95,701</b>		<b>950,000,000</b>	<b>95,701</b>		<b>577,481,300</b>	<b>9,094,083,010</b>
Mellon Aggregate	7,539,882,834	-107,476		950,000,000	107,476		579,360,166	9,069,243,000
Synthetic Fixed Income	26,718,876	11,775			-11,775		-1,878,866	24,840,010
<b>Active Core Fixed Composite</b>	<b>1,452,136,286</b>	<b>2,783</b>		<b>-2,862,281</b>	<b>-2,783</b>	<b>-191</b>	<b>79,377,046</b>	<b>1,528,650,860</b>
MacKay Shields Core Plus	676,463			-108,876			68,638	636,225
Prudential Fixed Income	405,870			-405,606			779	1,044
Principal Global Investors	12,635			-1,030			-1,023	10,582
TCW Asset Management	1,807,283			-1,714,196			8,892	101,978
Western Asset Mgmt	161,533			-140,424		-191	334,197	355,115
Blackrock	491,496	2,783		-492,149	-2,783		-1,188	-1,841
<b>Relative Value Composite</b>	<b>1,448,581,006</b>						<b>78,966,751</b>	<b>1,527,547,757</b>
BlackRock Universal	596,624,200						43,567,307	640,191,506
Prudential Universal	491,882,021						30,179,165	522,061,186
Man EM Global Macro	110,000,000						-7,334,800	102,665,200
Mesirow EM Currency	250,074,785						12,555,079	262,629,864
<b>Public Credit Composite</b>	<b>1,182,075,887</b>	<b>118,162</b>		<b>-317,377</b>	<b>-118,162</b>	<b>-3,806</b>	<b>93,471,916</b>	<b>1,275,226,620</b>
<b>High Yield Composite</b>	<b>792,012,332</b>	<b>118,162</b>		<b>-317,377</b>	<b>-118,162</b>	<b>-1,944</b>	<b>52,513,814</b>	<b>844,206,826</b>

# Cash Flow Summary

Total Fund

1 Quarter Ending December 31, 2023

	Begin Value	Contributions	Distributions	Net Transfers	Fees	Expenses	Capital Apprec./ Deprec.	End Value
Prudential High Yield	399,730,814					-1,944	26,021,497	425,750,367
Oaktree Capital Mgmt.	1,332,952			-317,377			323,097	1,338,673
Aegon	390,948,566	118,162			-118,162		26,169,220	417,117,786
<b>Emerging Market Debt Composite</b>	<b>390,063,555</b>					<b>-1,862</b>	<b>40,958,101</b>	<b>431,019,795</b>
Prudential Emerging Markets Debt	390,063,555					-1,862	40,958,101	431,019,795
<b>Global Smart Beta Composite</b>	<b>1,964,945,570</b>	<b>166,765</b>		<b>-20,000,000</b>	<b>-166,765</b>	<b>-44,312</b>	<b>209,956,522</b>	<b>2,154,857,779</b>
Developed Ex-U.S. Equity Smart Beta	653,976,048	55,128		-65,000,000	-55,128	-805	58,493,662	647,468,905
Emerging Markets Smart Beta	205,600,089	17,195		-5,000,000	-17,195	-43,507	19,860,010	220,416,591
U.S. Equity Smart Beta	1,105,369,433	94,443		50,000,000	-94,443		131,602,850	1,286,972,283
<b>Managed Short Term Cash Composite</b>	<b>877,641,619</b>	<b>582,167,595</b>	<b>-781,833,570</b>	<b>-78,143,536</b>		<b>-35</b>	<b>-17,626,596</b>	<b>582,205,476</b>
STIF	642,933,947	582,167,595	-781,833,570	-77,953,748		-35	4,869,983	370,184,171
LARS	234,707,672						-22,686,367	212,021,305
Cash - Securities Lending Income				-189,788			189,788	
<b>Private Markets Composite</b>	<b>13,421,746,075</b>	<b>-41,458,070</b>	<b>-42,817,845</b>	<b>47,473,617</b>	<b>-11,484,915</b>		<b>-40,809,670</b>	<b>13,332,649,192</b>
<b>Private Equity/Debt</b>	<b>7,917,679,337</b>	<b>-117,634,008</b>			<b>-2,875,110</b>		<b>44,745,648</b>	<b>7,841,915,867</b>
Pathway Fund of Funds	6,902,046,863	-67,207,233			-2,656,175		52,279,685	6,884,463,140
<b>Private Equity/Debt Long Perf</b>	<b>1,015,632,474</b>	<b>-50,426,775</b>			<b>-218,935</b>		<b>-7,534,037</b>	<b>957,452,727</b>
LBO Composite	586,711,112	-38,452,976			-148,124		-5,595,613	542,514,399
Venture Capital Composite	428,921,362	-11,973,799			-70,811		-1,938,424	414,938,328
<b>Private Credit Composite</b>	<b>2,285,569,785</b>			<b>47,473,617</b>	<b>-5,099,236</b>		<b>55,210,705</b>	<b>2,383,154,871</b>
<b>Private Corporate Debt Composite</b>	<b>938,710,358</b>			<b>-42,036,409</b>	<b>-2,129,903</b>		<b>19,018,253</b>	<b>913,562,298</b>
Tennenbaum CP Direct Lending	346,075,844			-10,657,371	-827,428		9,461,446	344,052,491
Monroe Capital	452,499,850			-52,359,034	-1,133,400		7,453,523	406,460,939

# Cash Flow Summary

Total Fund

1 Quarter Ending December 31, 2023

	Begin Value	Contributions	Distributions	Net Transfers	Fees	Expenses	Capital Apprec./ Deprec.	End Value
PPEF XXV B	140,134,664			20,979,995	-169,075		2,103,284	163,048,868
<b>Private Real Asset Debt Composite</b>	<b>562,796,865</b>			<b>53,866,108</b>	<b>-1,083,178</b>		<b>11,451,070</b>	<b>627,030,866</b>
Principal Real Estate Debt II	11,296,599			-2,702,243	-25,615		270,383	8,839,124
PGIM Real Estate Global Debt	186,419,669			-76,204,733	-356,157		3,968,843	113,827,621
Kayne Anderson Real Estate Debt IV	105,122,332			-4,321,974	-212,955		2,793,893	103,381,296
Heitman Credit	80,960,853			-1,743,770	-166,763		1,307,710	80,358,030
IFM US Infrastructure Debt Fund	61,935,342			4,110,233	-70,257		1,767,262	67,742,579
JP Morgan Global Transport Income Fund	100,646,575			-2,237,452	-251,430		1,342,979	99,500,672
ITE Rail Fund IA	16,415,495			63,584,505				80,000,000
PGIM PREDS				73,381,543				73,381,543
<b>Opportunistic Credit Composite</b>	<b>784,062,562</b>			<b>35,643,918</b>	<b>-1,886,155</b>		<b>24,741,382</b>	<b>842,561,707</b>
KKR Global Corporate Debt	276,649,057			4,056,205	-698,014		9,281,568	289,288,816
Crestline Opportunistic Credit	198,498,065			7,673,268	-562,447		5,726,647	211,335,533
ARES PCS II	64,891,513			2,189,891	-251,331		2,952,431	69,782,504
Audax Mezzanine Coinvest	12,118,111			2,358,794			405,396	14,882,301
Marathon SPS	110,324,960			20,250,000	-318,900		2,463,803	132,719,863
Arrowmark	98,962,136			-3,587,613			2,989,660	98,364,183
Audax Mezzanine V	22,618,719			2,703,373	-55,463		921,877	26,188,506
<b>Private Real Assets Composite</b>	<b>3,218,496,953</b>	<b>76,175,938</b>	<b>-42,817,845</b>		<b>-3,510,569</b>		<b>-140,766,024</b>	<b>3,107,578,454</b>
<b>Private Other Real Assets Composite</b>	<b>649,382,641</b>		<b>-19,901,206</b>		<b>-1,162,864</b>		<b>22,335,911</b>	<b>650,654,481</b>
UBS Farmland Investors	106,381,579		-1,600,000		-225,713		1,507,930	106,063,796
Forest Investment Associates	227,456,024		-14,367,646		-364,123		12,688,057	225,412,311
Brookfield Super-Core Infrastructure	315,545,038		-3,933,561		-573,027		8,139,924	319,178,374
<b>Private Real Estate Composite</b>	<b>2,569,114,312</b>	<b>76,175,938</b>	<b>-22,916,638</b>		<b>-2,347,705</b>		<b>-163,101,934</b>	<b>2,456,923,973</b>
UBS	534,012,452		-3,750,000		-539,110		-15,507,330	514,216,013
Clarion Partners	408,508,237	25,250,000	-4,500,000				-44,928,187	384,330,050

# Cash Flow Summary

Total Fund

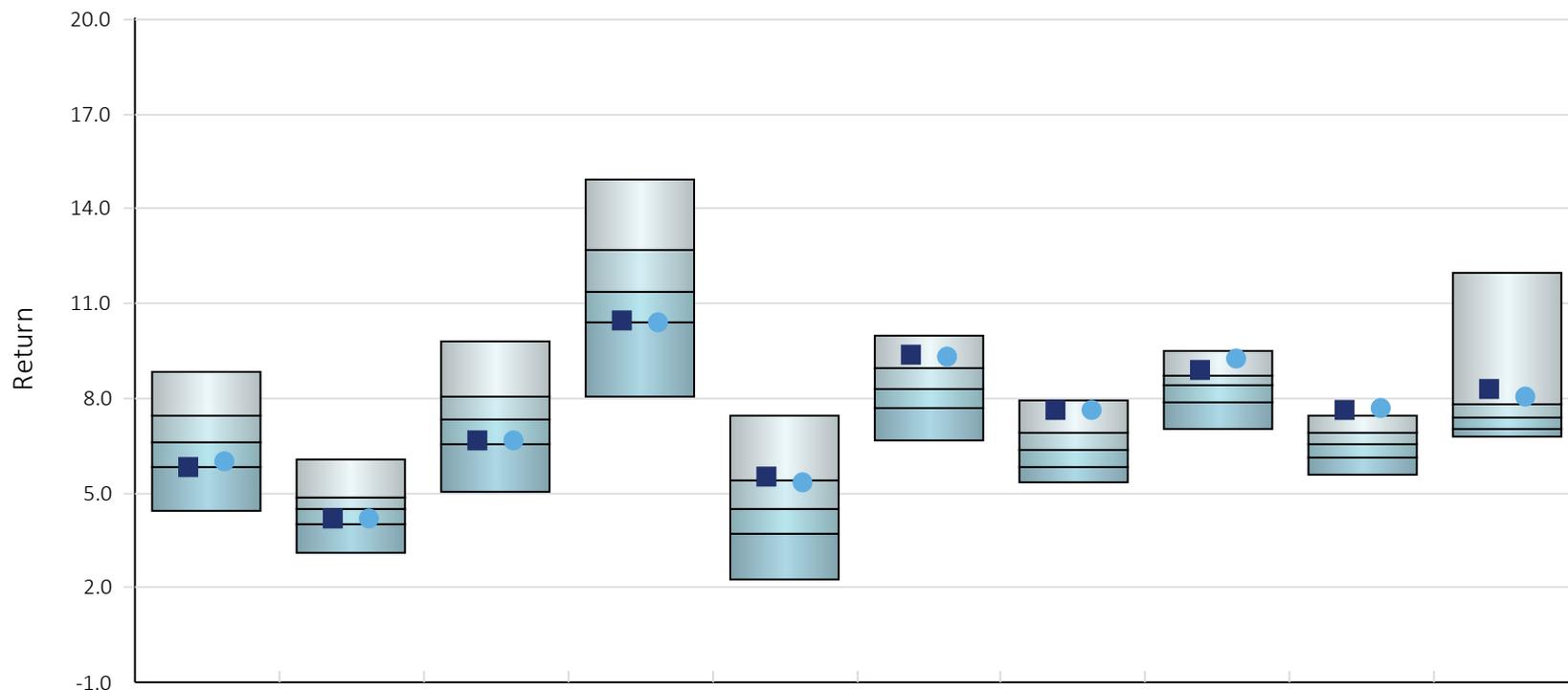
1 Quarter Ending December 31, 2023

	<b>Begin Value</b>	<b>Contributions</b>	<b>Distributions</b>	<b>Net Transfers</b>	<b>Fees</b>	<b>Expenses</b>	<b>Capital Apprec./ Deprec.</b>	<b>End Value</b>
RREEF America LLC	777,115,899	26,037,962	-6,244,662		-844,371		-20,736,078	775,328,750
Invesco Separate Account	849,477,724	24,887,976	-8,421,976		-964,225		-81,930,339	783,049,160
Settlement Proceeds								

# Plan Sponsor Peer Group Analysis

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

Periods Ended December 31, 2023



	<b>1 Quarter</b>	<b>2 Quarters</b>	<b>3 Quarters</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>	<b>30 Years</b>
■ Total Fund	5.84 (73)	4.17 (70)	6.64 (69)	10.45 (75)	5.51 (24)	9.40 (15)	7.62 (8)	8.91 (18)	7.62 (2)	8.32 (10)
● Total Fund Policy Benchmark	6.02 (70)	4.19 (69)	6.66 (69)	10.41 (76)	5.32 (30)	9.32 (22)	7.64 (8)	9.25 (12)	7.70 (2)	8.08 (10)
5th Percentile	8.81	6.07	9.80	14.95	7.48	10.00	7.95	9.50	7.43	11.98
1st Quartile	7.48	4.86	8.03	12.71	5.42	8.93	6.88	8.70	6.91	7.78
Median	6.61	4.49	7.30	11.40	4.47	8.28	6.34	8.39	6.55	7.37
3rd Quartile	5.81	4.02	6.57	10.42	3.71	7.70	5.80	7.85	6.09	7.01
95th Percentile	4.42	3.09	5.04	8.08	2.26	6.69	5.36	7.00	5.60	6.76
Population	97	94	91	88	75	71	65	58	53	21

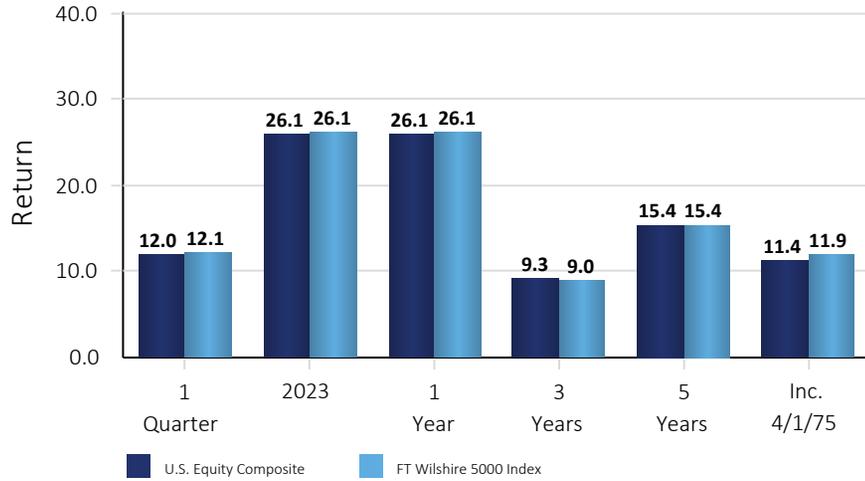
Parenteses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Manager Summary

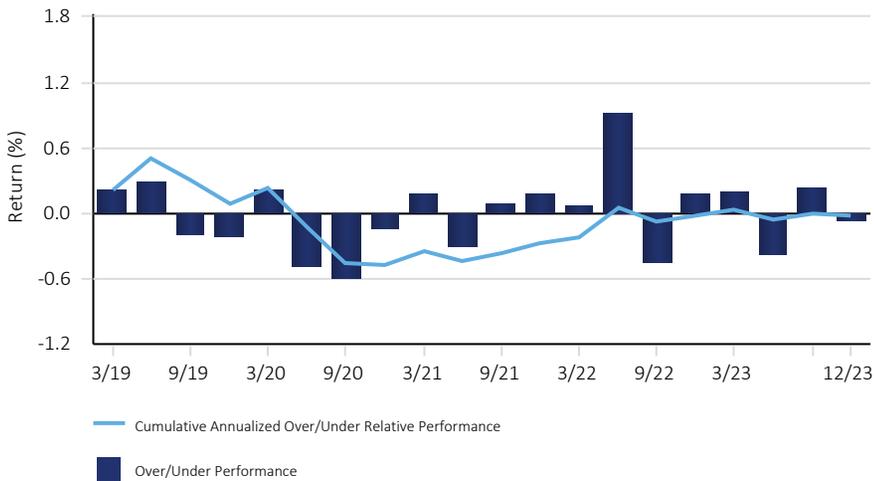
U.S. Equity Composite vs IM U.S. All Cap Equity (SA+CF)

Periods Ended December 31, 2023

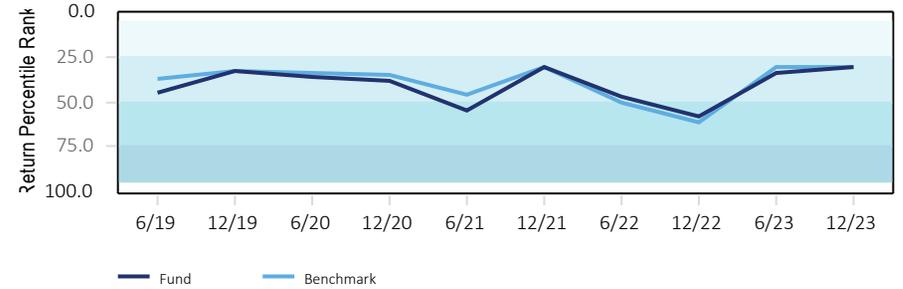
## Comparative Performance



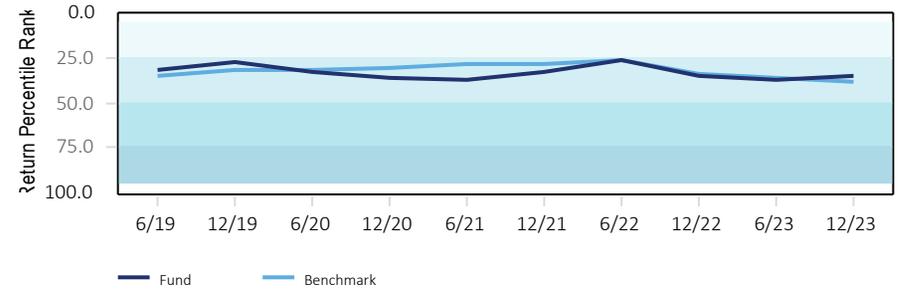
## Relative Performance



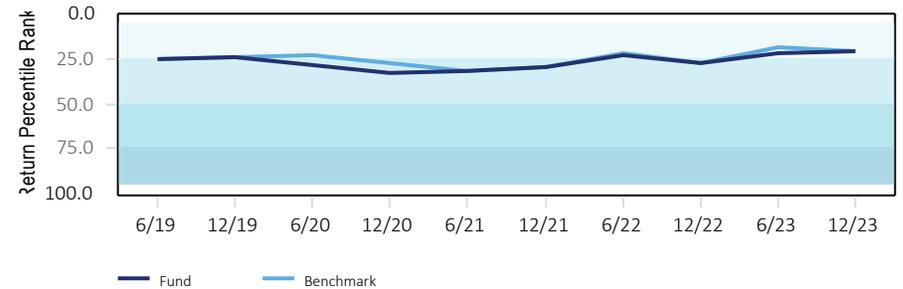
## 1 Year Rolling Percentile Ranking



## 3 Year Rolling Percentile Ranking



## 5 Year Rolling Percentile Ranking

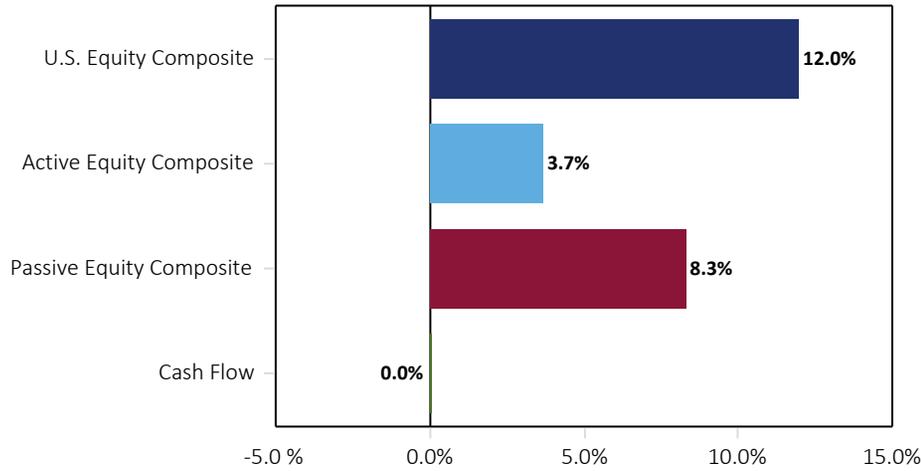


# Return and Risk Contribution

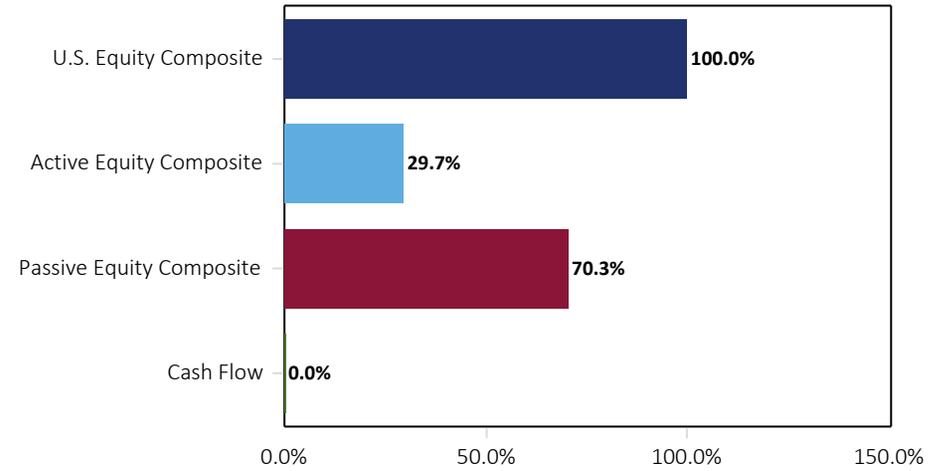
U.S. Equity Composite

Periods Ended 1 Quarter December 31, 2023

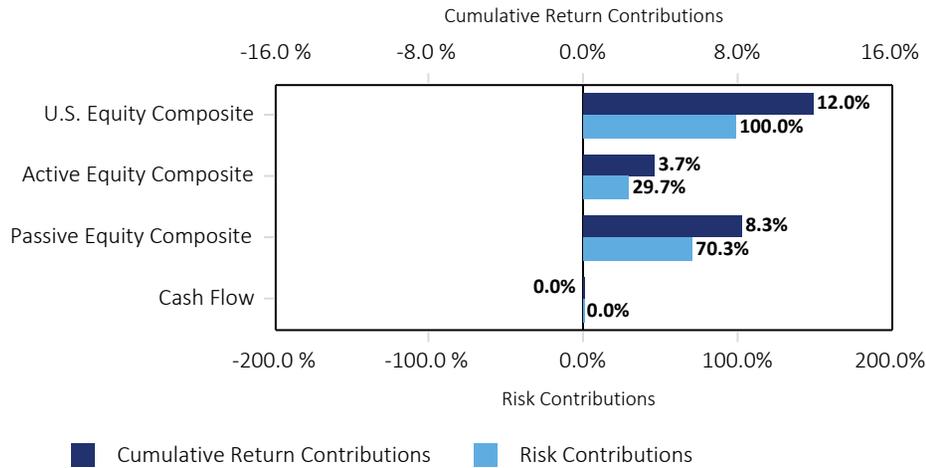
## Cumulative Return Contributions



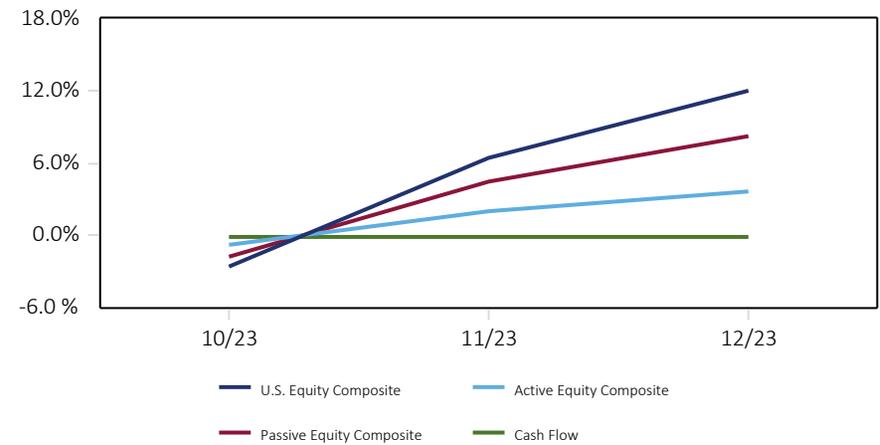
## Risk Contributions



## Cumulative Return and Risk Contributions



## Cumulative Return Contributions History

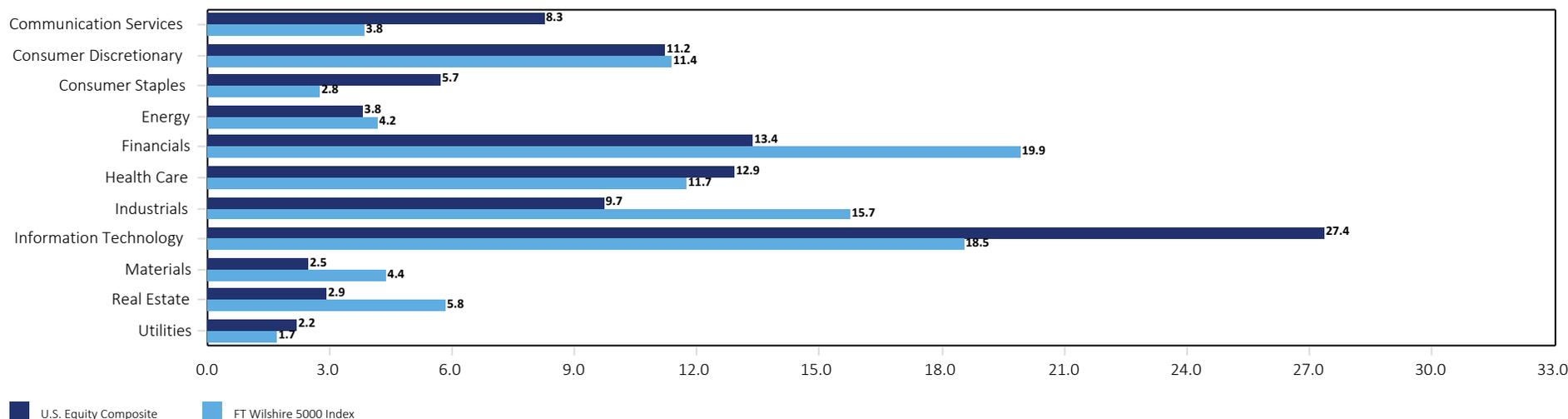


# Portfolio Characteristics

## U.S. Equity Composite

Periods Ended As of December 31, 2023

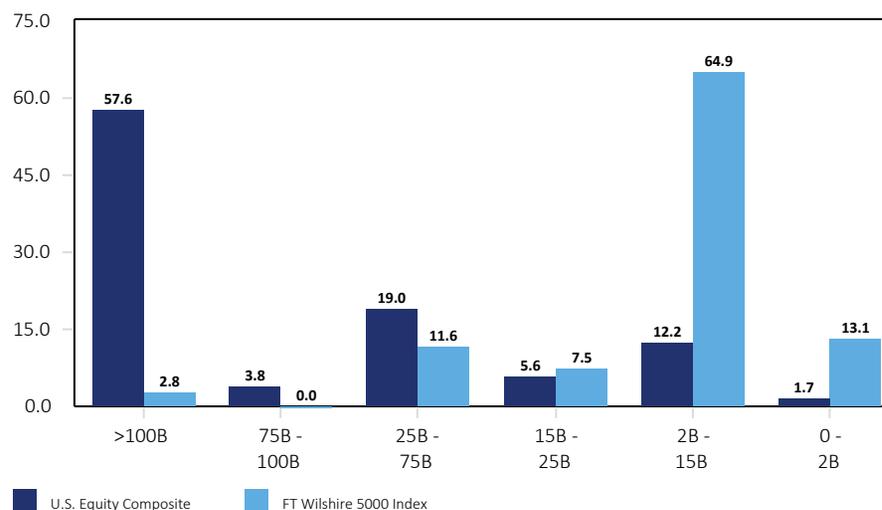
### Sector Weights (%)



### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	634,400,550,741	33,357,525,984
Median Mkt. Cap \$	2,120,033,645	939,181,425
Price/Earnings ratio	22.4	15.7
Price/Book ratio	4.2	2.8
5 Yr. EPS Growth Rate (%)	16.9	12.8
Current Yield (%)	1.5	1.2
Beta (5 Years, Monthly)	0.98	1.00
Number of Stocks	3,047	2,908

### Distribution of Market Capitalization (%)

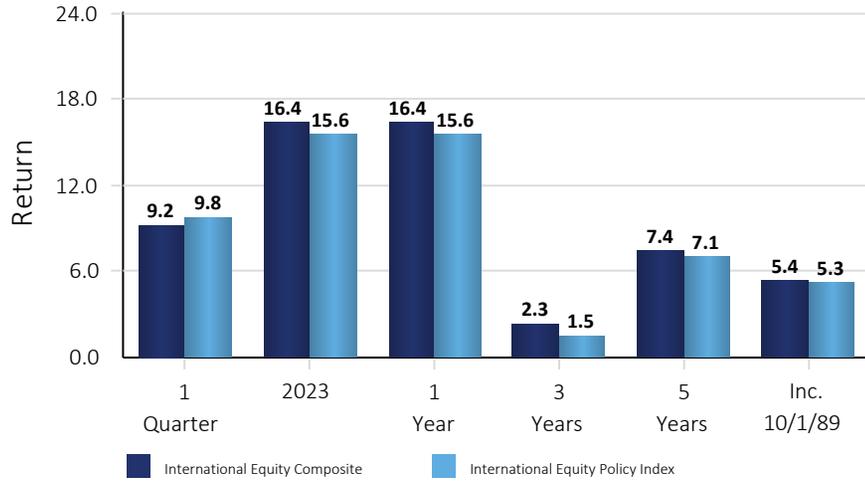


# Manager Summary

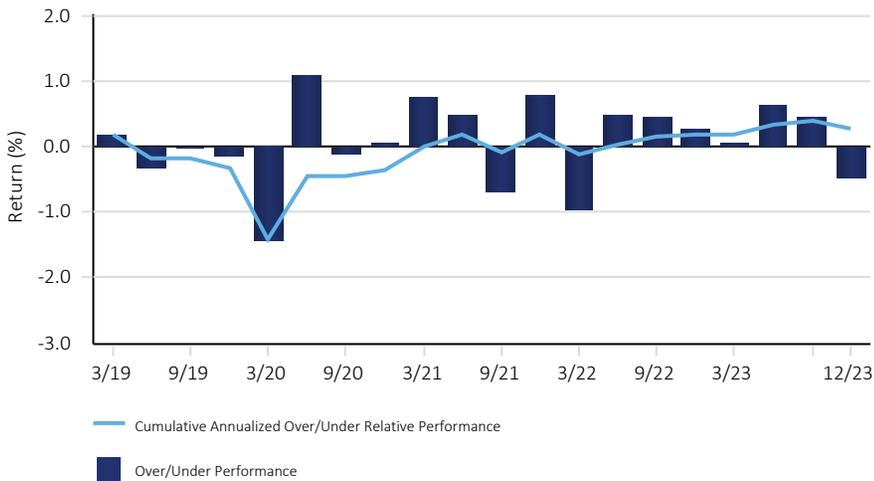
International Equity Composite vs IM International Equity (SA+CF)

Periods Ended December 31, 2023

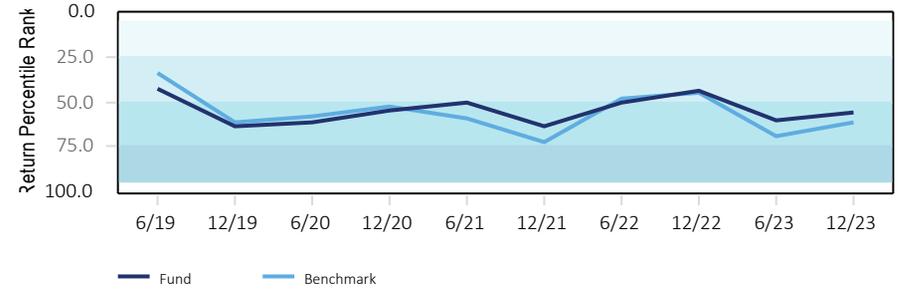
## Comparative Performance



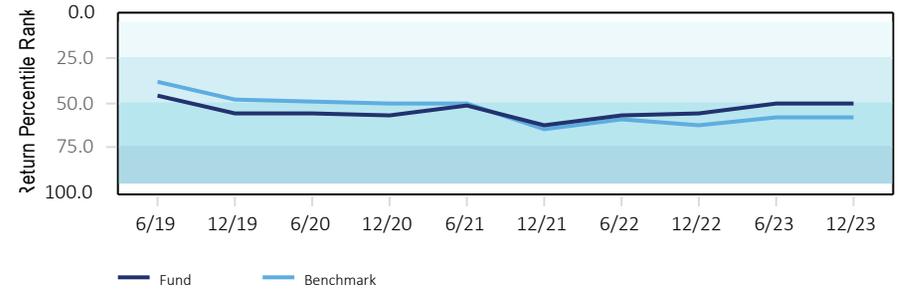
## Relative Performance



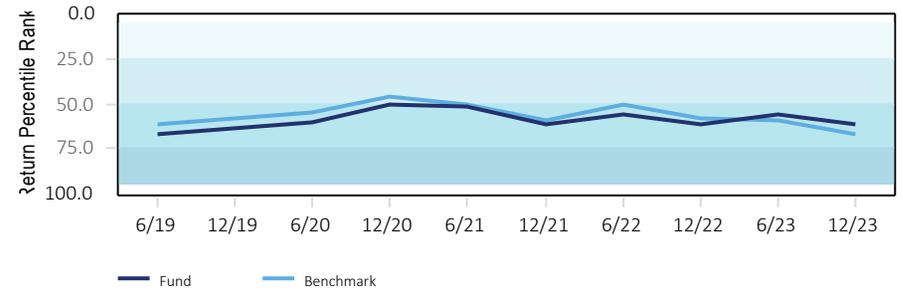
## 1 Year Rolling Percentile Ranking



## 3 Year Rolling Percentile Ranking



## 5 Year Rolling Percentile Ranking

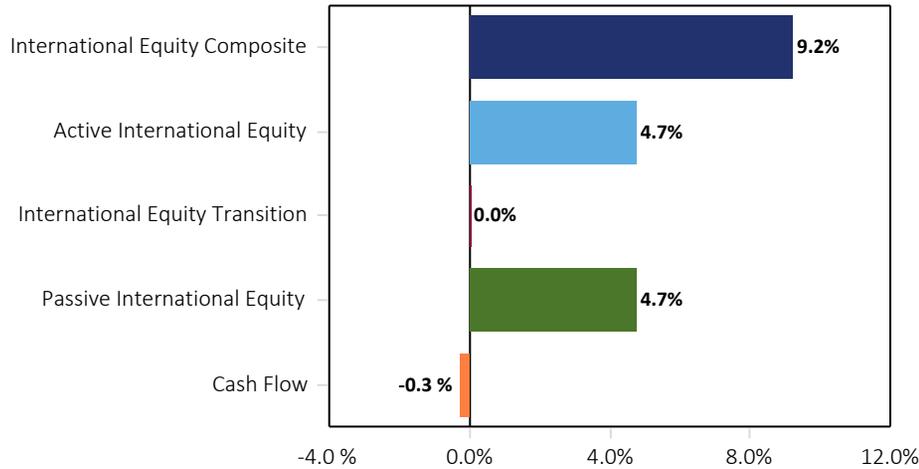


# Return and Risk Contribution

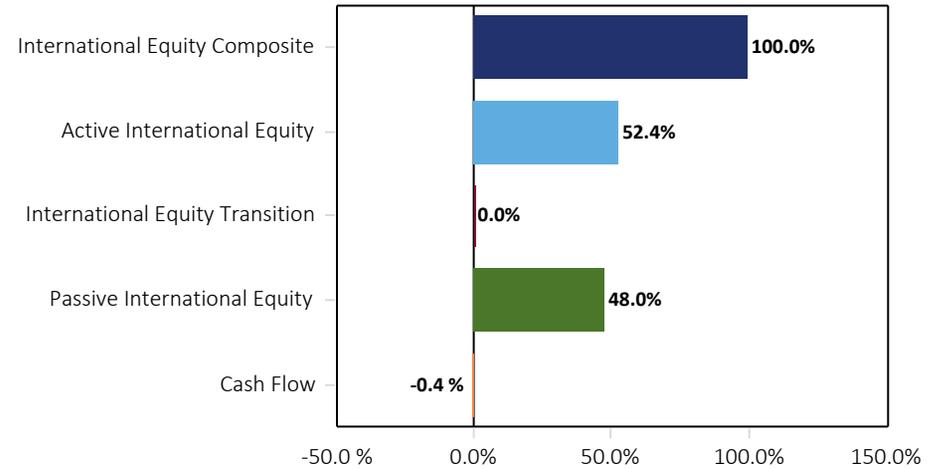
## International Equity Composite

Periods Ended 1 Quarter December 31, 2023

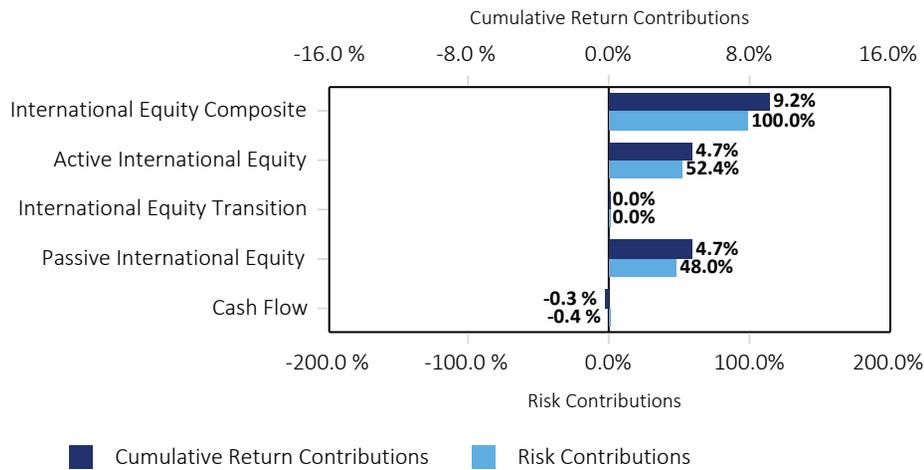
### Cumulative Return Contributions



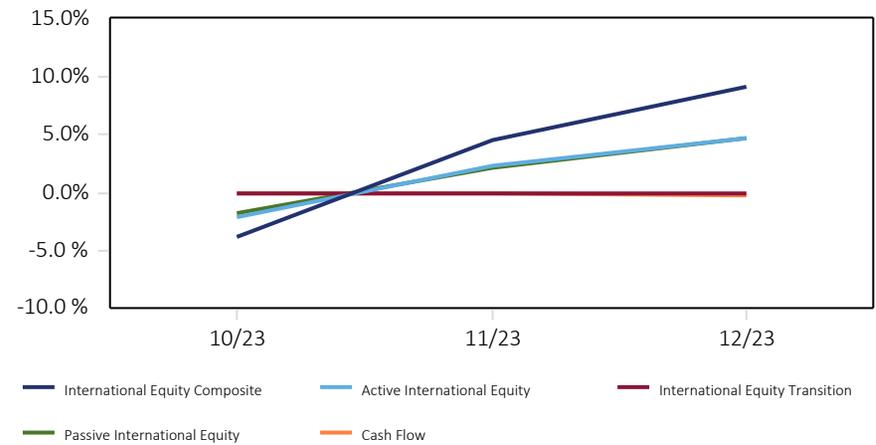
### Risk Contributions



### Cumulative Return and Risk Contributions



### Cumulative Return Contributions History

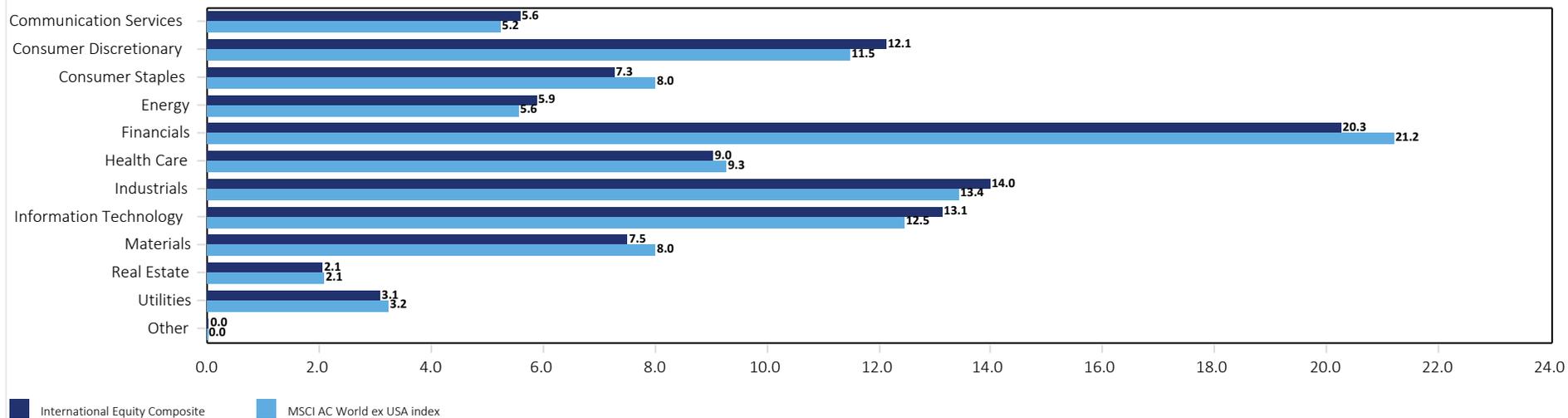


# Portfolio Characteristics

## International Equity Composite

Periods Ended As of December 31, 2023

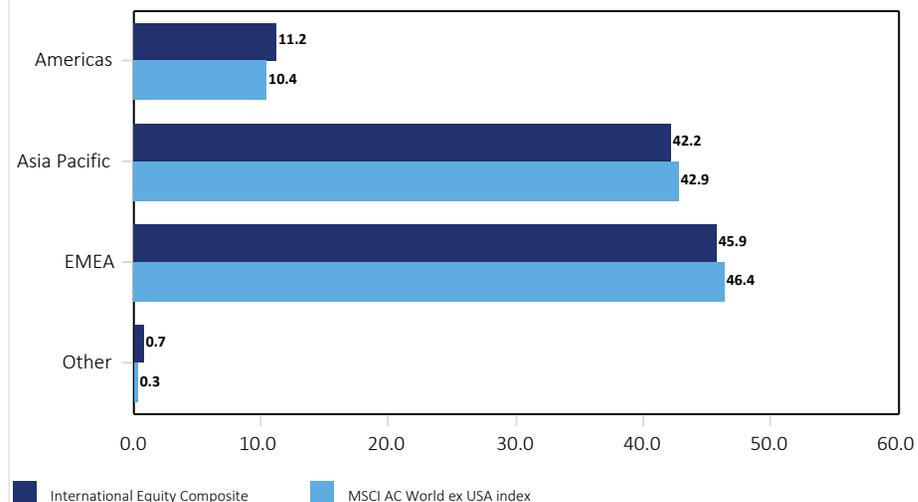
### Sector Weights (%)



### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	111,393,646,607	90,265,995,733
Median Mkt. Cap \$	9,951,462,766	9,827,879,669
Price/Earnings ratio	12.3	13.6
Price/Book ratio	2.5	2.5
5 Yr. EPS Growth Rate (%)	9.9	10.4
Current Yield (%)	2.6	3.1
Beta (5 Years, Monthly)	1.01	1.00
Number of Stocks	2,724	2,312

### Region Allocation



# Country/Region Allocation

## International Equity Composite

Periods Ended December 31, 2023

	International Equity Composite	MSCI AC World ex USA index		International Equity Composite	MSCI AC World ex USA index
Canada	8.15	7.68	Brazil	1.87	1.63
United States	0.23	0.08	Chile	0.28	0.14
<b>Americas</b>	<b>8.38</b>	<b>7.76</b>	Colombia	0.02	0.03
Australia	4.30	4.66	Mexico	0.57	0.77
Hong Kong	1.70	1.87	Peru	0.08	0.05
Japan	14.22	14.43	<b>Americas</b>	<b>2.82</b>	<b>2.63</b>
New Zealand	0.13	0.16	China	6.17	6.50
Singapore	1.01	0.90	India	4.71	4.70
<b>Asia Pacific</b>	<b>21.36</b>	<b>22.02</b>	Indonesia	0.58	0.53
Austria	0.21	0.12	Korea	3.47	3.64
Belgium	0.77	0.52	Malaysia	0.51	0.37
Denmark	2.40	2.15	Philippines	0.12	0.17
Finland	0.46	0.69	Taiwan	4.67	4.50
France	6.62	7.12	Thailand	0.61	0.49
Germany	5.39	5.48	<b>Asia Pacific</b>	<b>20.83</b>	<b>20.90</b>
Ireland	0.99	1.18	Czech Republic	0.02	0.04
Israel	0.37	0.44	Egypt	0.02	0.03
Italy	1.70	1.45	Greece	0.14	0.13
Netherlands	3.54	3.60	Hungary	0.16	0.07
Norway	0.53	0.43	Kuwait	0.18	0.21
Portugal	0.06	0.12	Poland	0.28	0.25
Spain	1.89	1.66	Qatar	0.19	0.25
Sweden	1.99	2.06	Saudi Arabia	1.18	1.16
Switzerland	6.32	6.90	South Africa	0.68	0.80
United Kingdom	8.81	9.02	Turkey	0.17	0.17
<b>EMEA</b>	<b>42.04</b>	<b>42.96</b>	United Arab Emirates	0.27	0.35
<b>Developed Markets</b>	<b>71.78</b>	<b>72.73</b>	<b>EMEA</b>	<b>3.29</b>	<b>3.48</b>
			<b>Emerging Markets</b>	<b>26.95</b>	<b>27.00</b>
			<b>Frontier Markets</b>	<b>0.56</b>	<b>0.00</b>

# Country/Region Allocation

International Equity Composite

*Periods Ended December 31, 2023*

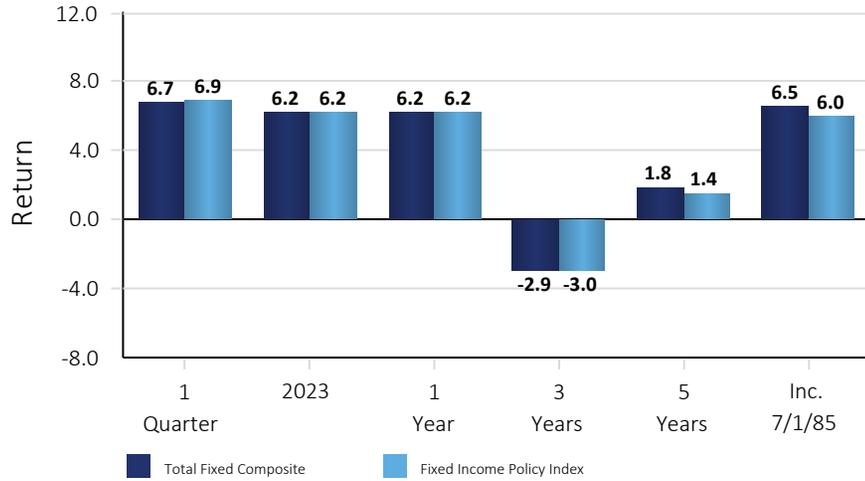
	<b>International Equity Composite</b>	<b>MSCI AC World ex USA index</b>
Cash	0.00	0.00
Other	0.71	0.27
<b>Total</b>	<b>100.00</b>	<b>100.00</b>

# Manager Summary

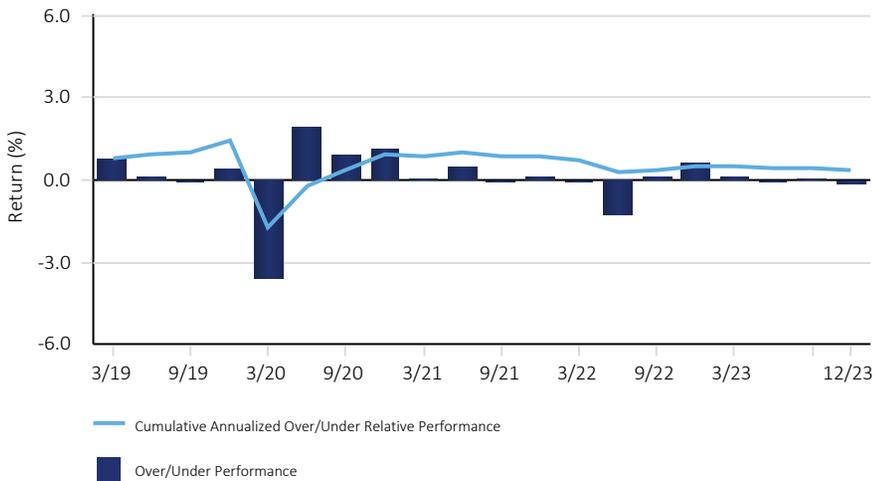
Total Fixed Composite vs IM U.S. Fixed Income (SA+CF)

Periods Ended December 31, 2023

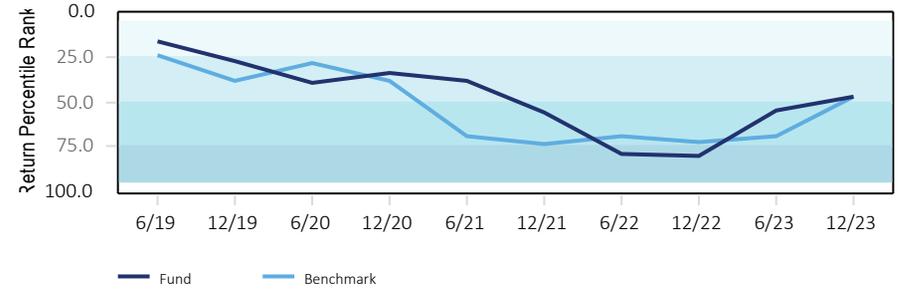
## Comparative Performance



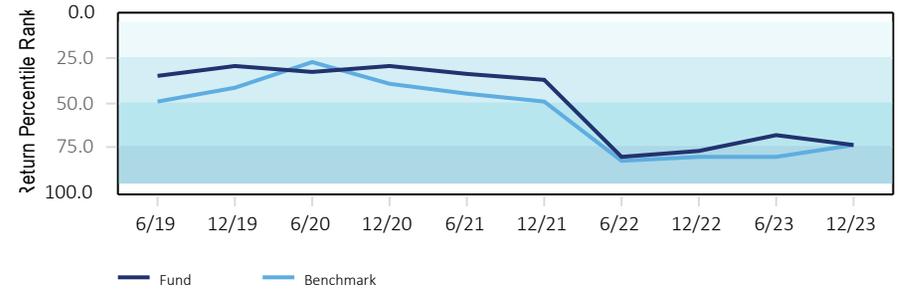
## Relative Performance



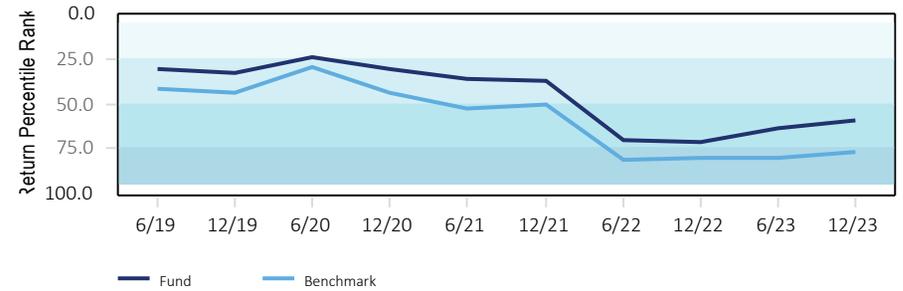
## 1 Year Rolling Percentile Ranking



## 3 Year Rolling Percentile Ranking



## 5 Year Rolling Percentile Ranking

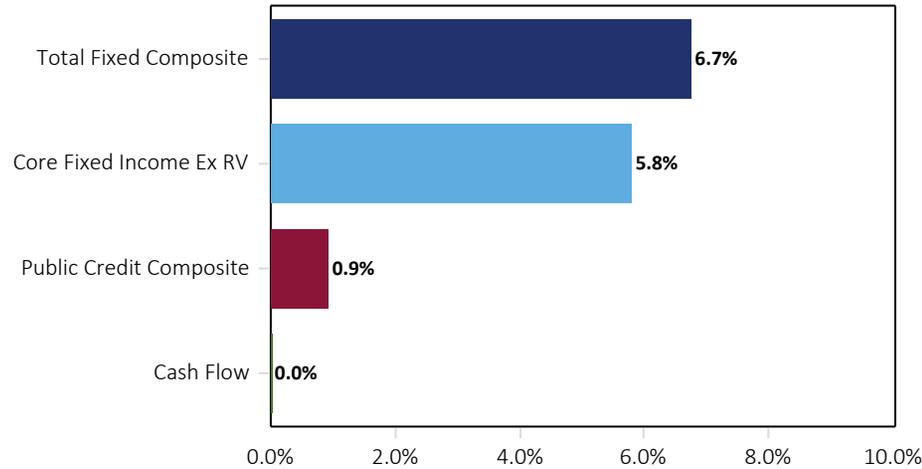


# Return and Risk Contribution

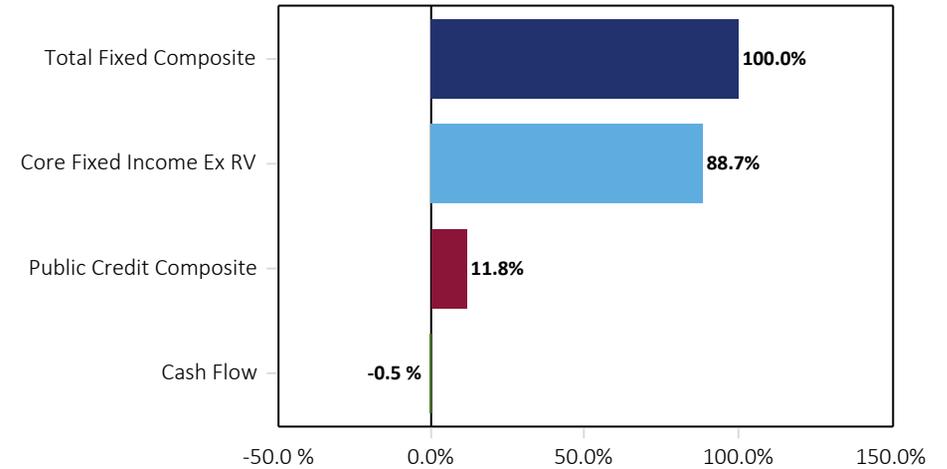
## Total Fixed Composite

Periods Ended 1 Quarter December 31, 2023

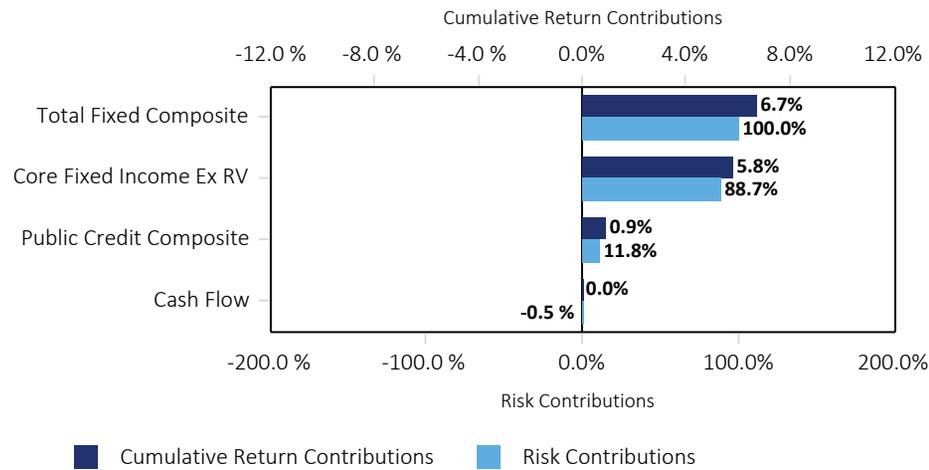
### Cumulative Return Contributions



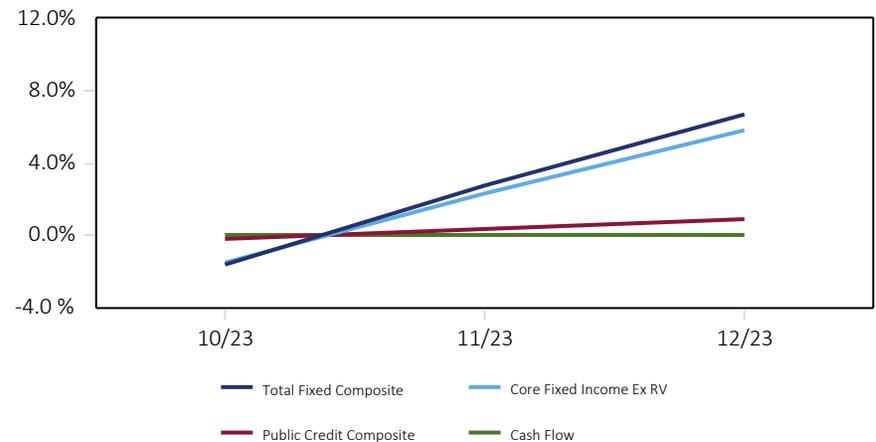
### Risk Contributions



### Cumulative Return and Risk Contributions



### Cumulative Return Contributions History



# Portfolio Characteristics

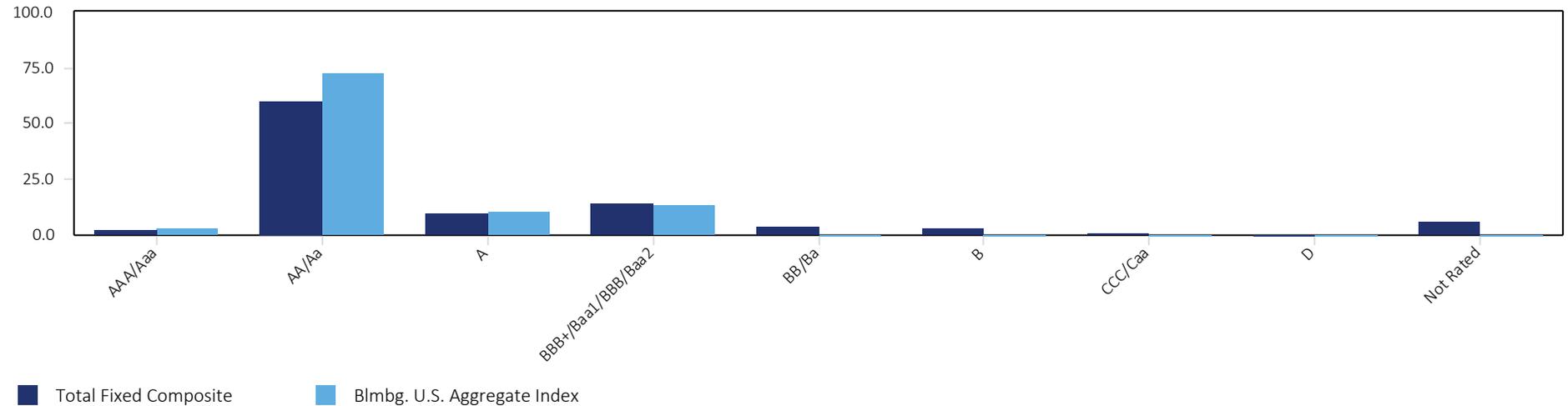
Total Fixed Composite vs Blmbg. U.S. Aggregate Index

Periods Ended As of December 31, 2023

## Portfolio Characteristics

	Portfolio	Benchmark
Avg. Quality	AA	AA
Convexity	0.28	0.29
Coupon Rate (%)	3.44	3.19
Current Yield	3.87	4.52
Effective Duration	6.11	6.08
Yield To Maturity (%)	4.80	4.52
Years to Maturity	8.40	8.43
Holdings Count	14,812	13,334

## Credit Quality Distribution (%)

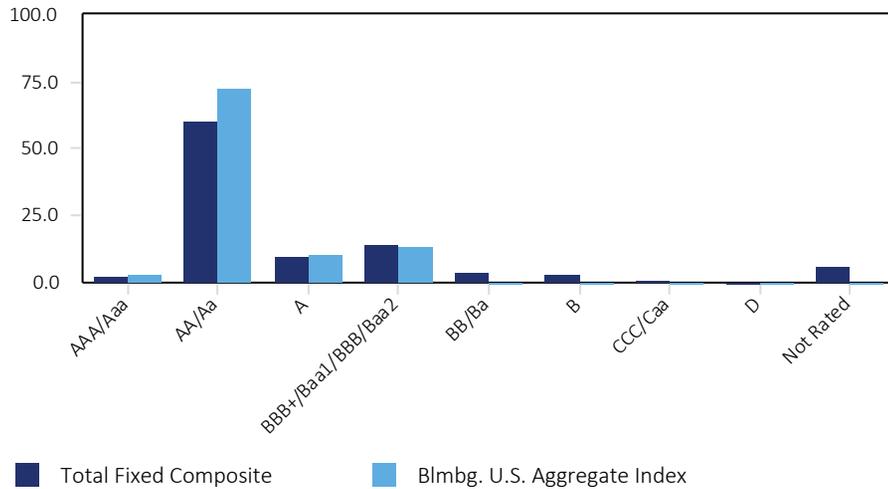


# Portfolio Characteristics

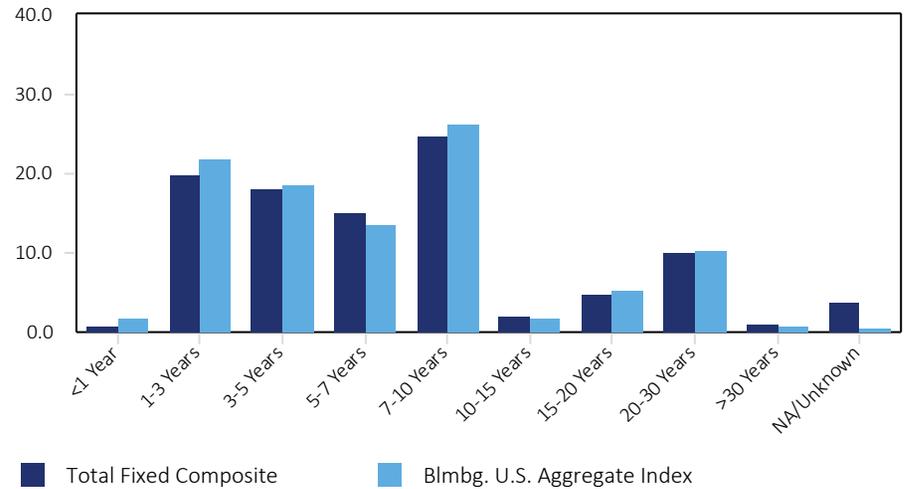
## Total Fixed Composite vs Blmbg. U.S. Aggregate Index

Periods Ended As of December 31, 2023

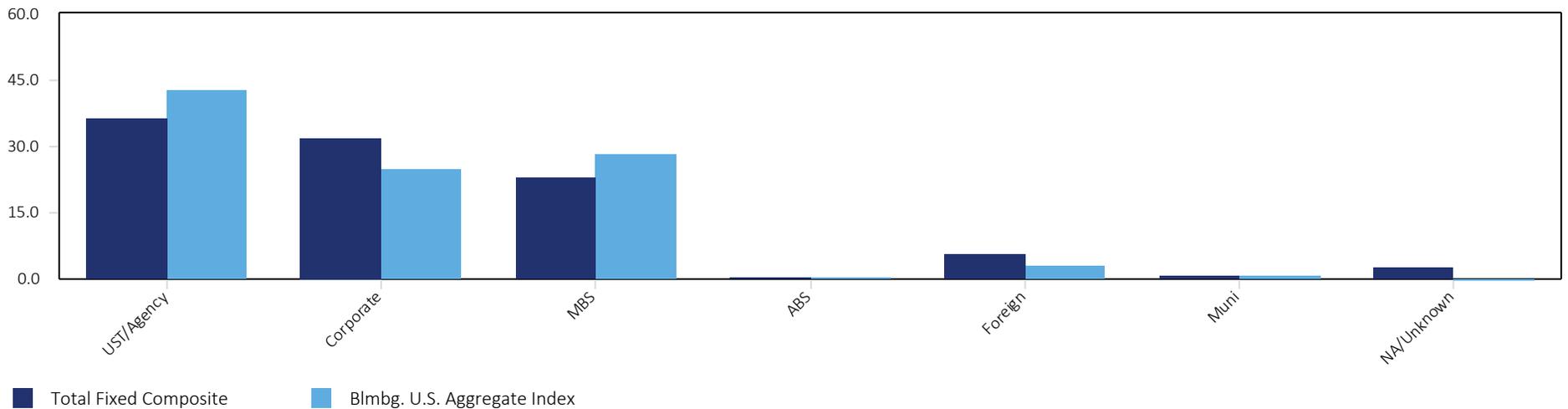
### Credit Quality Distribution (%)



### Maturity Distribution (%)



### Sector Distribution (%)

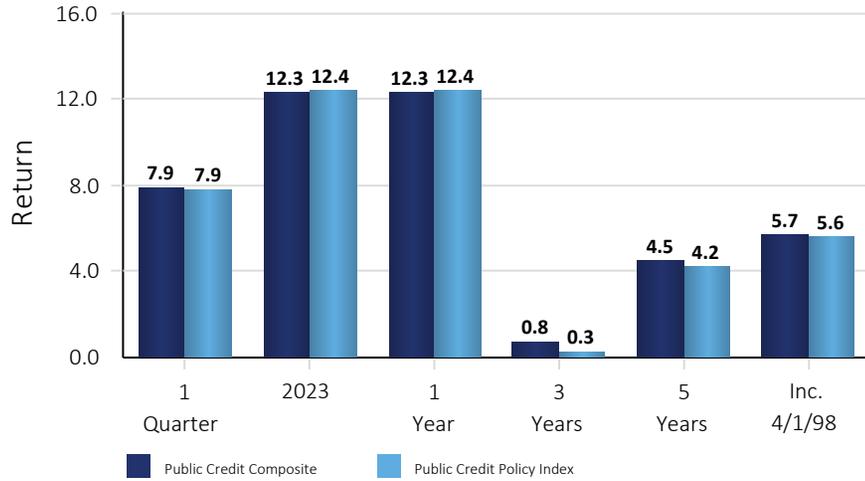


# Manager Summary

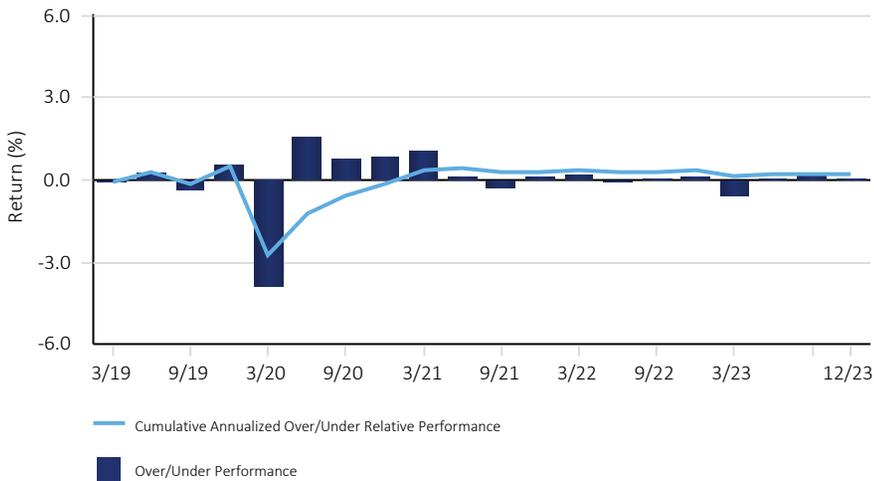
Public Credit Composite vs IM U.S. High Yield Bonds (SA+CF)

Periods Ended December 31, 2023

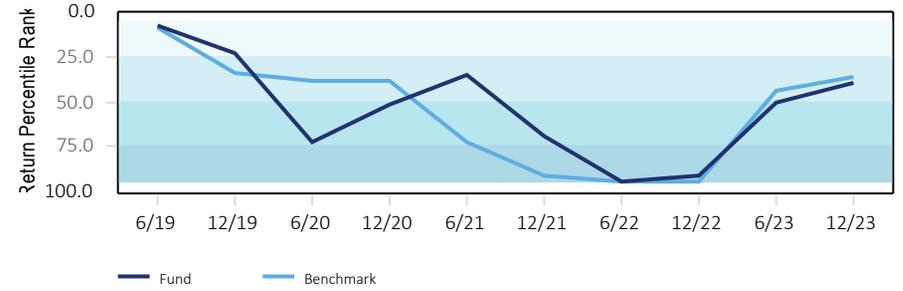
## Comparative Performance



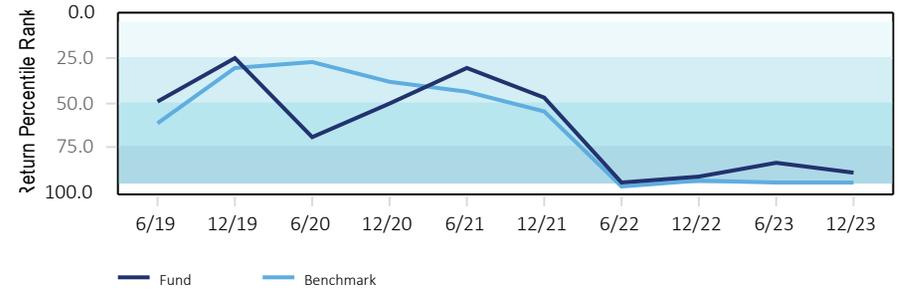
## Relative Performance



## 1 Year Rolling Percentile Ranking



## 3 Year Rolling Percentile Ranking



## 5 Year Rolling Percentile Ranking

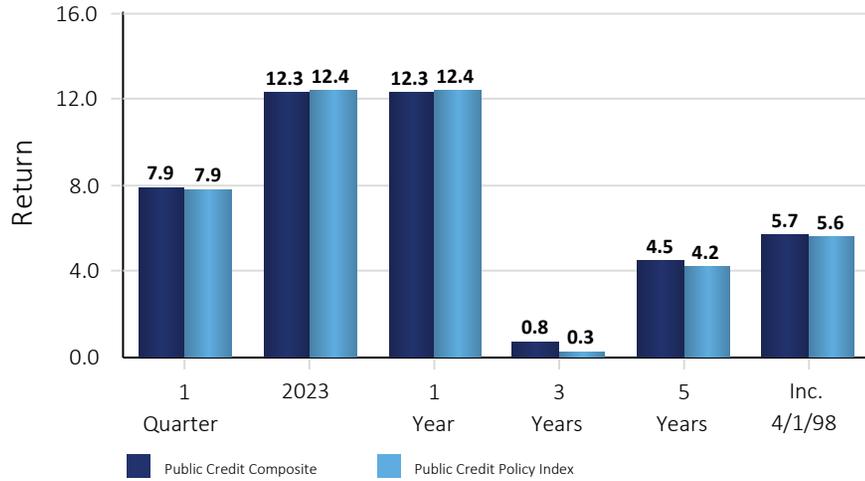


# Manager Summary

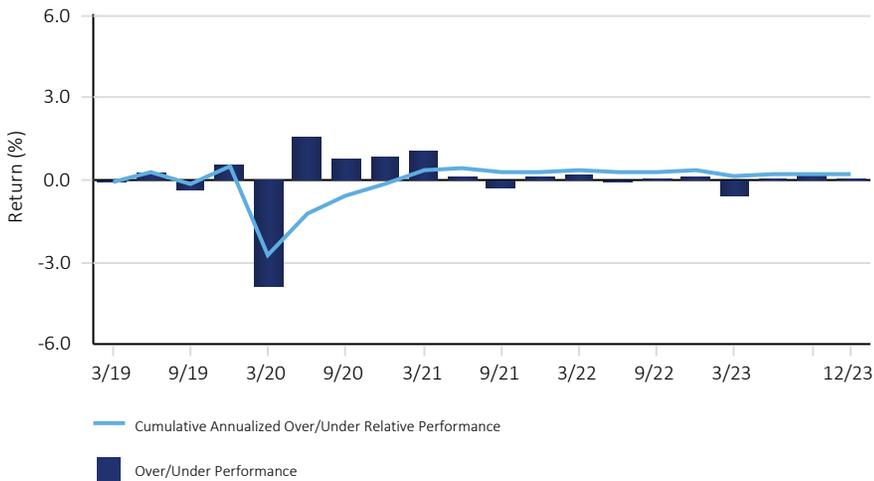
## Public Credit Composite vs IM Emerging Markets Debt (SA+CF)

Periods Ended December 31, 2023

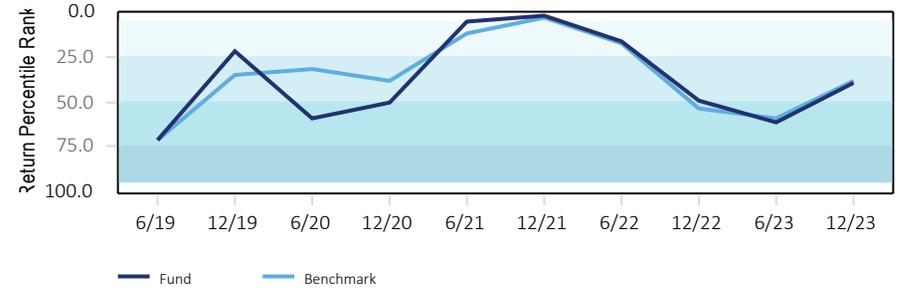
### Comparative Performance



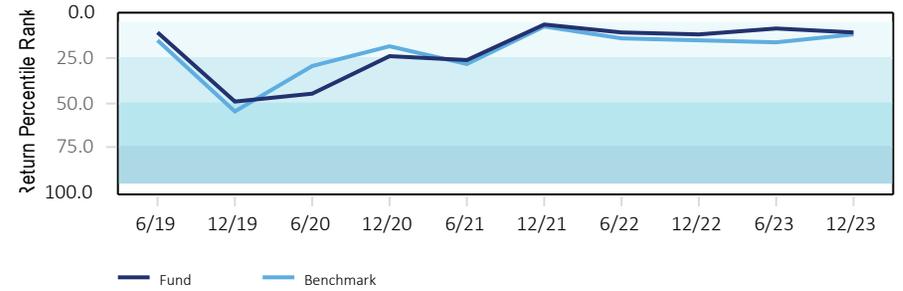
### Relative Performance



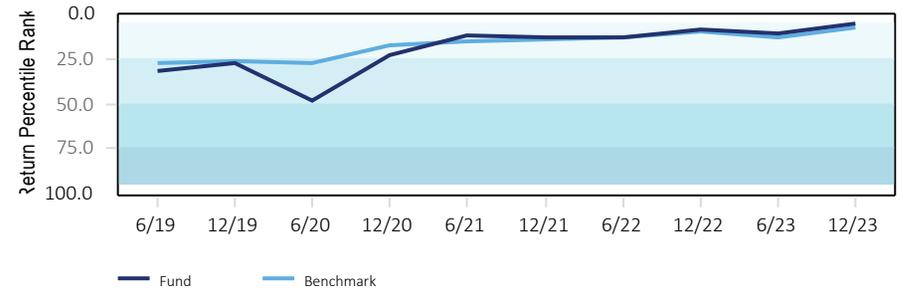
### 1 Year Rolling Percentile Ranking



### 3 Year Rolling Percentile Ranking



### 5 Year Rolling Percentile Ranking

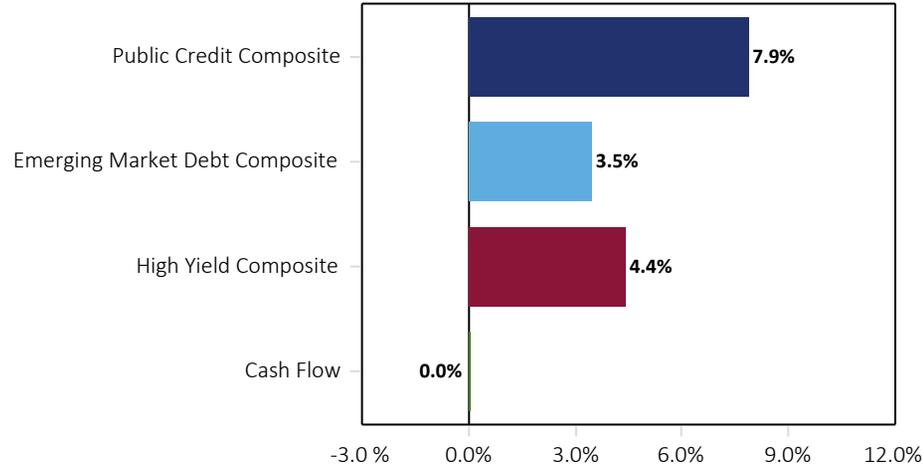


# Return and Risk Contribution

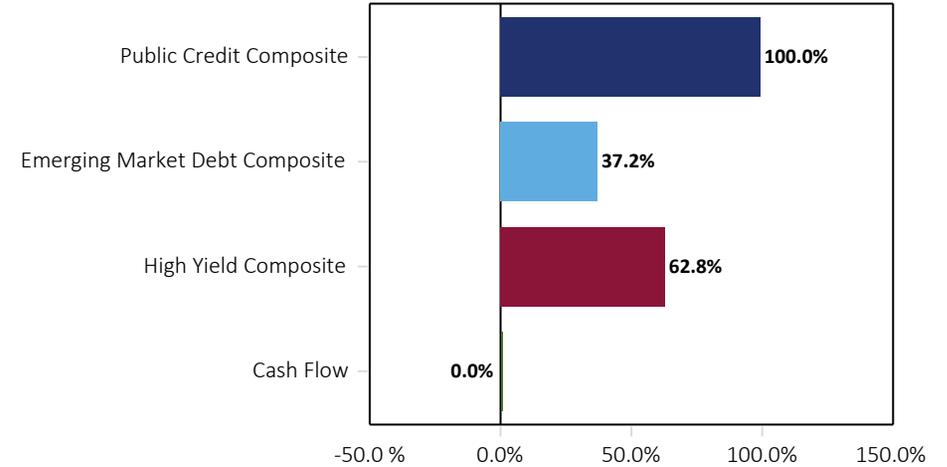
Public Credit Composite

Periods Ended 1 Quarter December 31, 2023

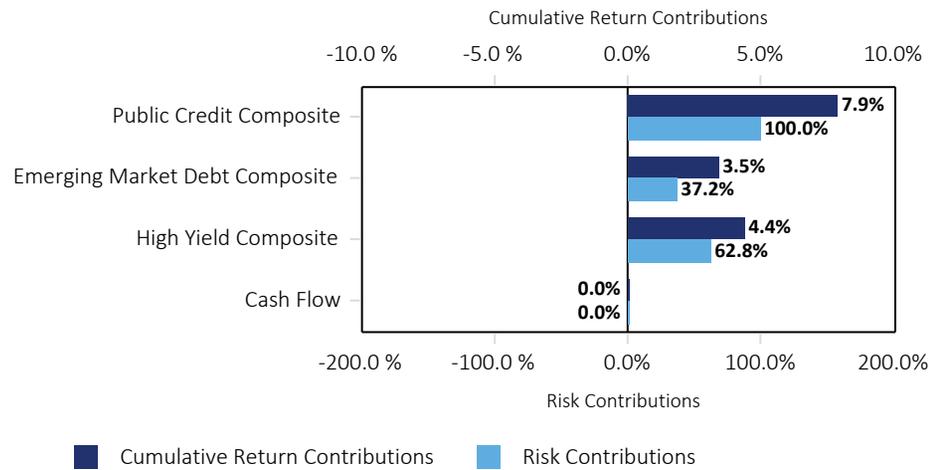
## Cumulative Return Contributions



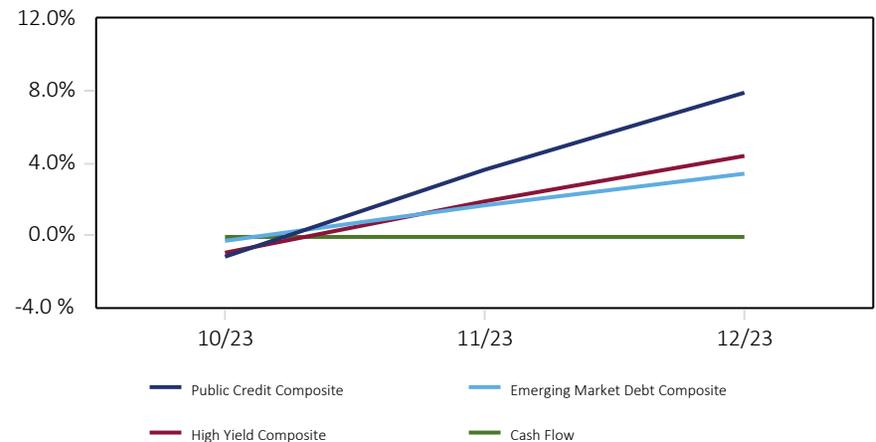
## Risk Contributions



## Cumulative Return and Risk Contributions



## Cumulative Return Contributions History



# Asset Allocation & Performance

## Private Markets Composite

Periods Ended December 31, 2023

	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
<b>Private Markets Composite</b>	-0.39	0.82	1.46	14.05	14.16			14.74	10/1/2016	13,332,649,192
<b>Private Equity/Debt</b>	0.53	2.33	4.00	15.87	17.51	16.72	16.18	13.03	10/1/1985	7,841,915,867
Private Equity Policy Index	0.53	2.33	4.00	15.87	17.51	16.72	13.42	14.64		
<b>Private Credit Composite</b>	2.15	4.16	8.27	7.46	6.94			7.41	10/1/2016	2,383,154,871
Private Credit Policy Index	2.15	4.16	8.27	7.46	6.94			7.41		
<b>Private Real Assets Composite</b>	-4.41	-5.08	-8.54	10.35	8.11			8.26	10/1/2016	3,107,578,454
Private Real Assets Policy Index	-4.41	-5.08	-8.54	10.35	8.11			8.26		
Russell 3000 + 3%	12.90	10.04	29.74	11.80	18.62	14.82	12.96	15.25	1/1/1979	
Morningstar LSTA US Leveraged Loan + 1%	3.12	6.95	14.44	6.81	6.85	5.46	5.88	6.01	1/1/1997	
CPI + 5%	0.88	3.02	8.52	10.88	9.28	7.92		7.68	7/1/2012	

# Asset Allocation & Performance

## Private Credit Composite

Periods Ended December 31, 2023

	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
Private Credit Composite	2.15	4.16	8.27	7.46	6.94			7.41	10/1/2016	2,383,154,871
Private Corporate Debt Composite	1.84	4.00	9.18	7.81	7.12			7.29	1/1/2017	913,562,298
Tennenbaum CP Direct Lending	2.52	5.44	8.71	7.47	7.21			7.34	1/1/2017	344,052,491
Monroe Capital	1.52	3.44	9.92	7.85	6.87			7.37	4/1/2017	406,460,939
PPEF XXV B	1.23	2.17	7.39					7.44	3/1/2022	163,048,868
Private Real Asset Debt Composite	1.70	2.98	4.98	5.76	6.01	7.15		7.47	7/1/2013	627,030,866
Principal Real Estate Debt II	2.20	4.48	1.65	3.17	4.75			5.90	10/1/2017	8,839,124
PGIM Real Estate Global Debt	1.94	4.01	5.93	6.51	6.37			6.40	10/1/2018	113,827,621
Kayne Anderson Real Estate Debt IV	2.54	4.51	9.98					7.07	6/1/2022	103,381,296
Heitman Credit	1.44	1.85	0.32					0.26	10/1/2022	80,358,030
IFM US Infrastructure Debt Fund	2.57	2.34	5.26					5.26	1/1/2023	67,742,579
JP Morgan Global Transport Income Fund	1.11	1.76						1.76	5/1/2023	99,500,672
ITE Rail Fund IA	0.00							0.00	9/1/2023	80,000,000
PGIM PREDS								0.00	12/1/2023	73,381,543
Opportunistic Credit Composite	2.83	5.19	9.08					7.54	8/1/2021	842,561,707
KKR Global Corporate Debt	3.08	4.30	7.09	7.61				7.38	4/1/2019	289,288,816
Crestline Opportunistic Credit	2.54	5.20	10.65					7.83	8/1/2021	211,335,533
ARES PCS II	4.03	8.09	10.64					4.37	10/1/2021	69,782,504
Audax Mezzanine Coinvest	2.80	6.41	10.09					10.93	11/1/2021	14,882,301
Marathon SPS	1.74	3.35	10.10					6.34	11/1/2021	132,719,863
Arrowmark	3.13	7.84	11.59					7.92	1/1/2022	98,364,183
Audax Mezzanine V	3.42	5.98	6.58					22.57	6/1/2022	26,188,506
Morningstar LSTA US Leveraged Loan + 1%	3.12	6.95	14.44	6.81	6.85	5.46	5.88	6.01	1/1/1997	

# Asset Allocation & Performance

## Private Real Assets Composite

Periods Ended December 31, 2023

	Performance (%) net of fees									Market Value \$
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date	
<b>Private Real Assets Composite</b>	<b>-4.41</b>	<b>-5.08</b>	<b>-8.54</b>	<b>10.35</b>	<b>8.11</b>			<b>8.26</b>	<b>10/1/2016</b>	3,107,578,454
Private Real Assets Policy Index	-4.41	-5.08	-8.54	10.35	8.11			8.26		
<b>Private Real Estate Composite</b>	<b>-6.30</b>	<b>-7.59</b>	<b>-12.55</b>	<b>9.69</b>	<b>7.91</b>	<b>9.37</b>	<b>8.33</b>	<b>6.92</b>	<b>4/1/1987</b>	2,456,923,973
Private Real Estate Policy Index	-5.00	-7.00	-12.73	4.01	3.34	6.33	7.56	8.30		
<b>Private Other Real Assets Composite</b>	<b>3.31</b>	<b>5.53</b>	<b>10.14</b>	<b>8.94</b>	<b>5.76</b>			<b>5.35</b>	<b>10/1/2016</b>	650,654,481
CPI + 5%	0.88	3.02	8.52	10.88	9.28			8.53		
NCREIF Fund Index-ODCE (VW) (Net)	-5.00	-7.00	-12.73	4.01	3.34	6.33	6.25	7.17	1/1/1978	
CPI - All Urban Consumers (Unadjusted)	-0.34	0.54	3.35	5.60	4.07	2.79	2.58	3.15	2/1/1913	
CPI + 5%	0.88	3.02	8.52	10.88	9.28	7.92	7.71	8.31	2/1/1913	

# Asset Allocation & Performance

Private Real Estate Composite (G)

Periods Ended December 31, 2023

	Performance (%) gross of fees								
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date
Private Real Estate Composite (G)	-6.21	-7.40	-12.17	10.17	8.41	9.94	9.21	7.76	4/1/1987
Private Real Estate Composite (N)	-6.30	-7.59	-12.55	9.69	7.91	9.37	8.33	6.92	
Private Real Estate Policy Index	-5.00	-7.00	-12.73	4.01	3.34	6.33	7.56	8.30	
Clarion Partners (G)	-10.43	-22.37	-29.86	-4.51	-2.98	3.73		5.30	7/1/2005
Clarion Partners (N)	-10.43	-22.50	-30.15	-4.93	-3.46	3.13		4.51	
Invesco Separate Account (G)	-9.42	-8.12	-8.74	17.38	13.62	14.00	11.73	11.56	7/1/1996
Invesco Separate Account (N)	-9.53	-8.34	-9.16	16.84	13.08	13.40	10.83	10.59	
RREEF America LLC (G)	-2.61	-1.18	-9.05	10.86	9.19	10.26	10.27	10.57	4/1/1997
RREEF America LLC (N)	-2.72	-1.39	-9.44	10.39	8.70	9.72	9.22	9.61	
UBS (G)	-2.91	-1.74	-5.27	14.54	12.53	12.20	10.58	10.78	10/1/1998
UBS (N)	-3.01	-1.94	-5.63	14.09	12.05	11.70	9.94	10.16	
NCREIF Fund Index-ODCE (VW) (Net)	-5.00	-7.00	-12.73	4.01	3.34	6.33	6.25	7.17	1/1/1978

# Asset Allocation & Performance

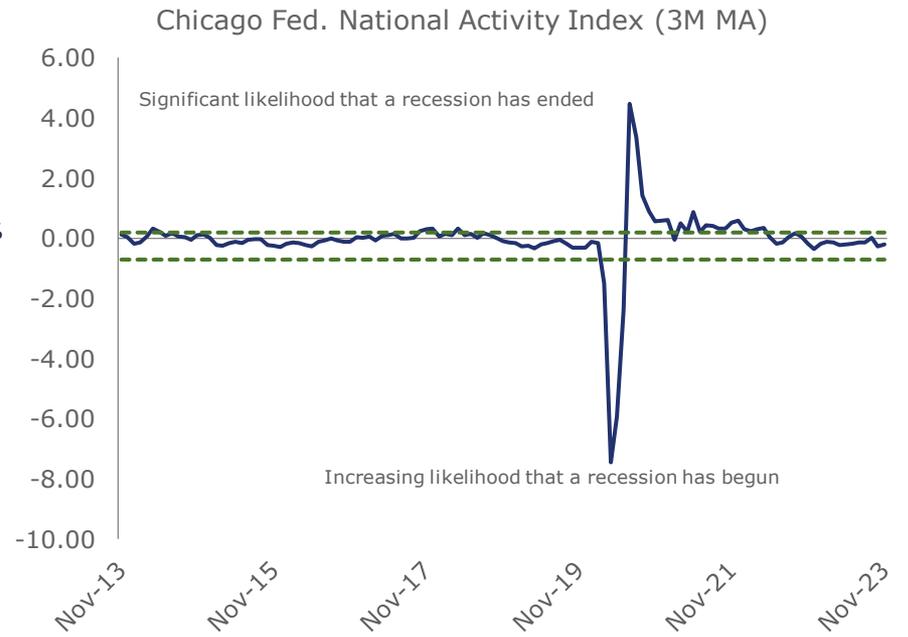
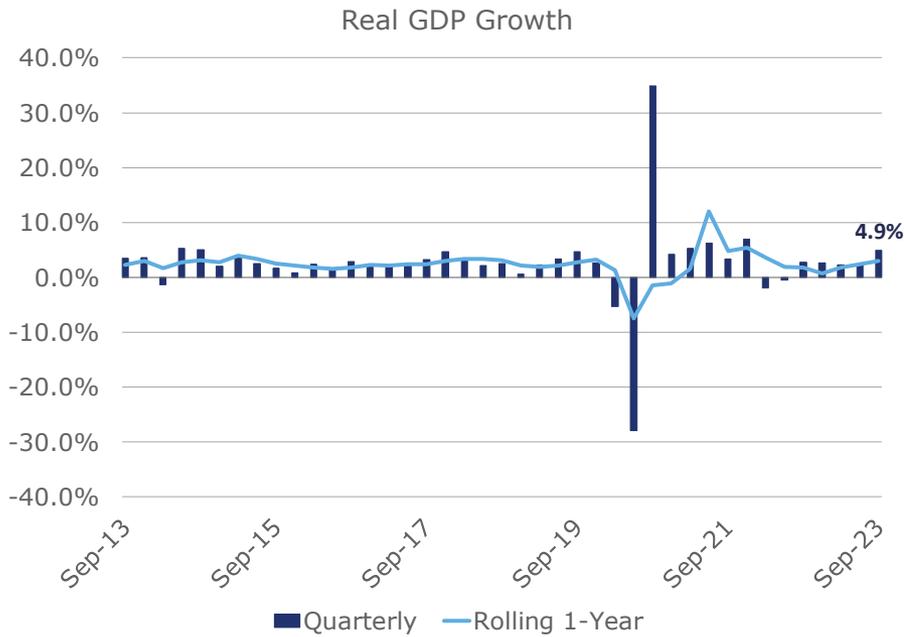
## Private Other Real Assets Composite

Periods Ended December 31, 2023

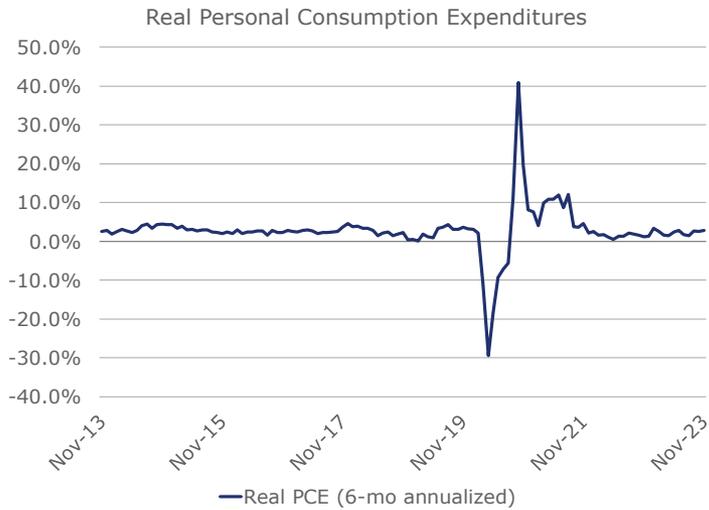
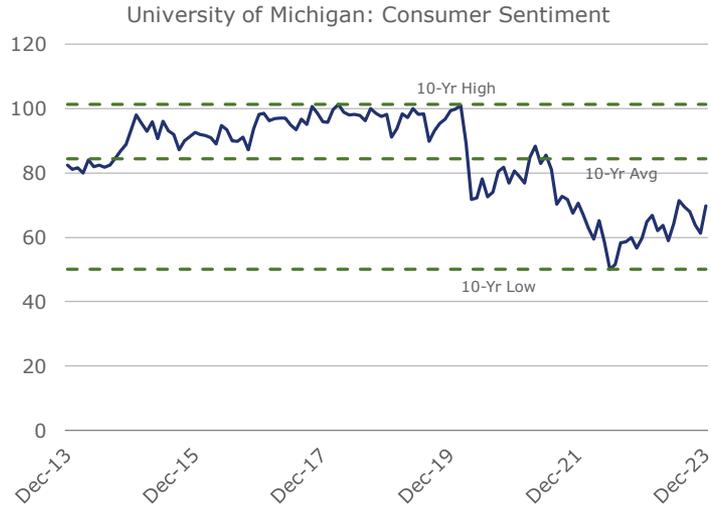
	Performance (%) net of fees								
	1 Quarter	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	Since Inception	Inception Date
<b>Private Other Real Assets Composite</b> CPI + 5%	<b>3.31</b> 0.88	<b>5.53</b> 3.02	<b>10.14</b> 8.52	<b>8.94</b> 10.88	<b>5.76</b> 9.28			<b>5.35</b> 8.53	<b>10/1/2016</b>
<b>Forest Investment Associates</b> CPI + 5%	<b>5.59</b> 0.88	<b>8.51</b> 3.02	<b>14.08</b> 8.52	<b>11.83</b> 10.88	<b>7.33</b> 9.28	<b>5.80</b> 7.92		<b>6.39</b> 7.68	<b>7/1/2012</b>
<b>UBS Farmland Investors</b> CPI + 5%	<b>1.21</b> 0.88	<b>2.62</b> 3.02	<b>6.21</b> 8.52	<b>5.72</b> 10.88	<b>4.18</b> 9.28			<b>6.95</b> 8.43	<b>7/1/2016</b>
<b>Brookfield Super-Core Infrastructure</b> CPI + 5%	<b>2.41</b> 0.88	<b>4.42</b> 3.02	<b>8.67</b> 8.52					<b>7.10</b> 8.96	<b>4/1/2022</b>
NCREIF Farmland Index	2.27	2.00	4.96	7.46	6.04	7.30	12.28	7.76	10/1/1980
NCREIF Timberland Index	4.34	5.76	9.45	10.50	6.62	5.77	7.07	10.84	4/1/1987

# Economic/Market Activity

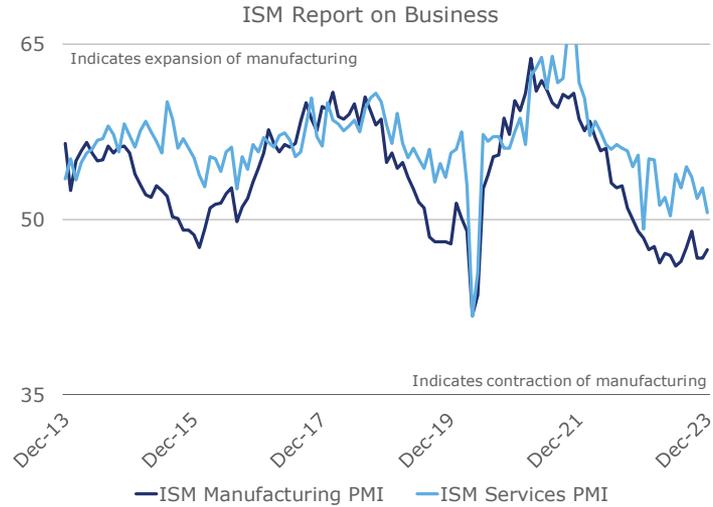
## Economic Growth



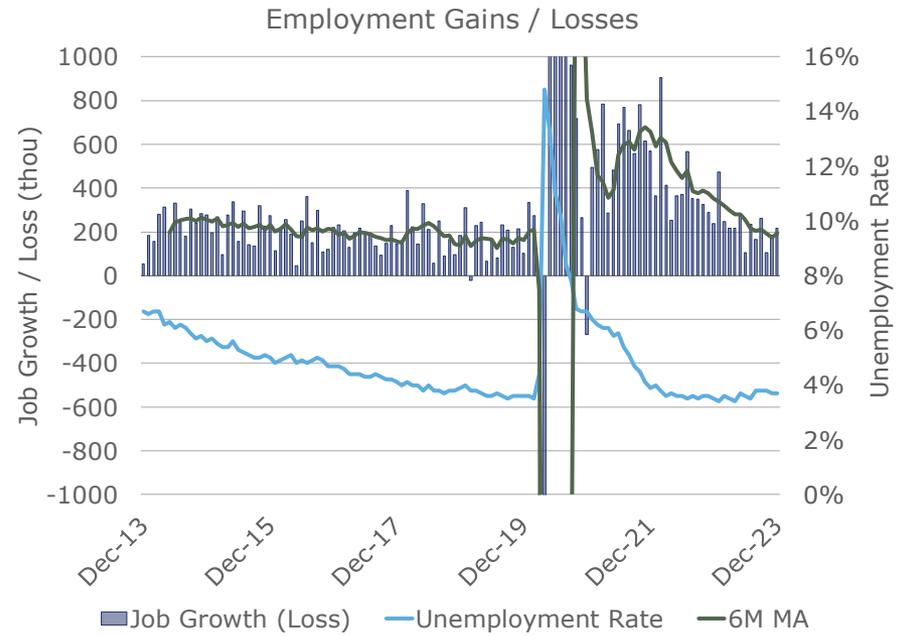
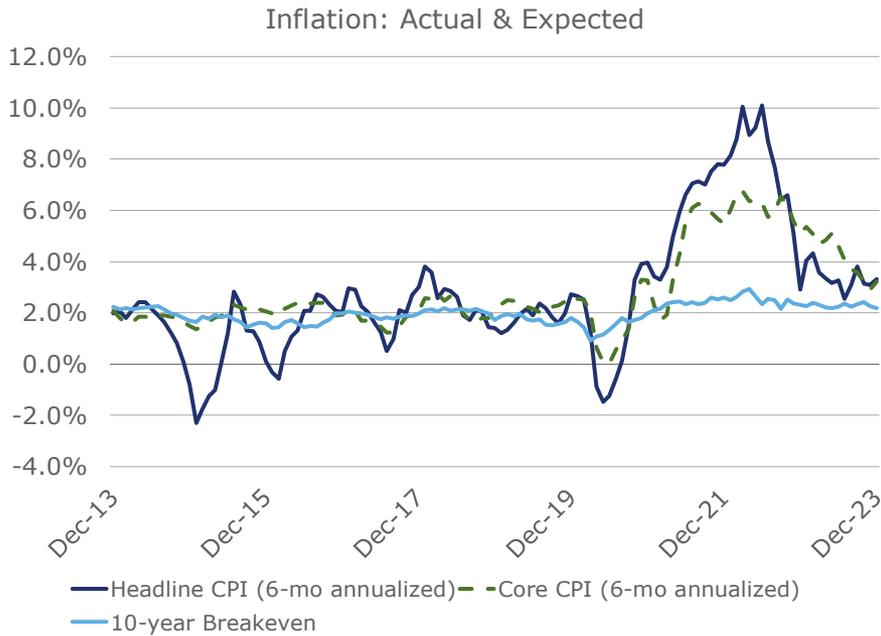
## Consumer Activity



## Business Activity



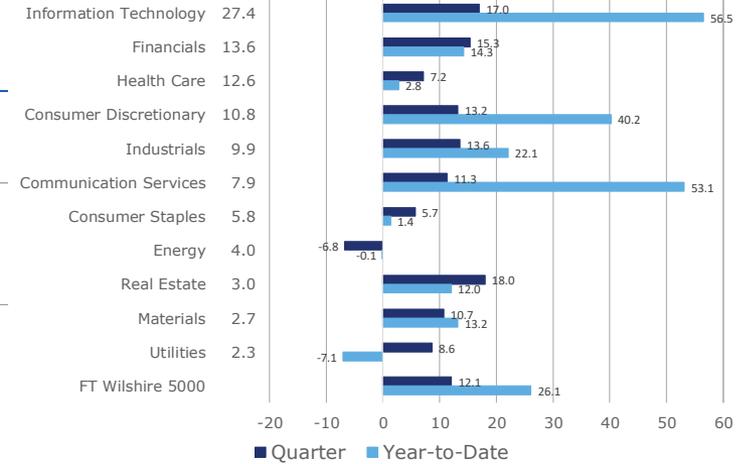
## Inflation and Employment



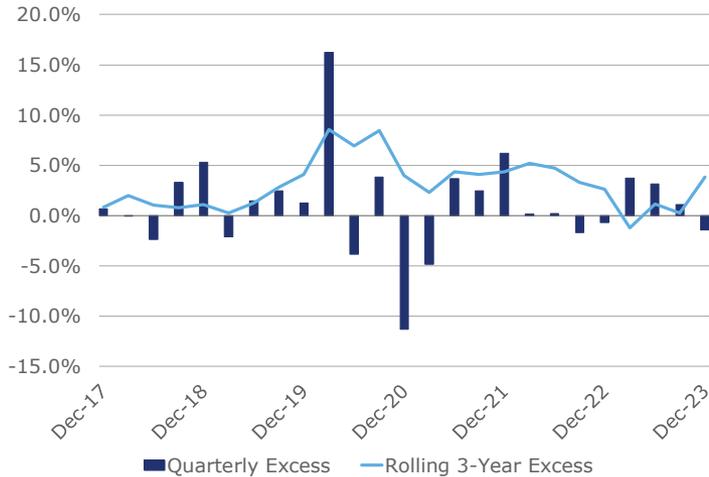
## U.S. Equity Market

As of 12/31/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
FT Wilshire 5000	12.1	26.1	26.1	9.0	15.4	11.7
Wilshire U.S. Large Cap	11.9	27.3	27.3	9.5	15.9	12.2
Wilshire U.S. Small Cap	13.5	19.5	19.5	5.5	12.0	8.7
Wilshire U.S. Large Growth	14.7	46.1	46.1	8.7	19.2	n/a
Wilshire U.S. Large Value	9.1	11.1	11.1	10.0	12.2	n/a
Wilshire U.S. Small Growth	12.9	21.8	21.8	0.6	11.6	n/a
Wilshire U.S. Small Value	14.2	17.2	17.2	10.3	12.1	n/a
Wilshire REIT Index	16.3	16.1	16.1	7.5	7.6	7.7
MSCI USA Min. Vol. Index	7.8	9.8	9.8	6.5	10.3	10.4
FTSE RAFI U.S. 1000 Index	11.2	16.1	16.1	12.3	14.3	10.4

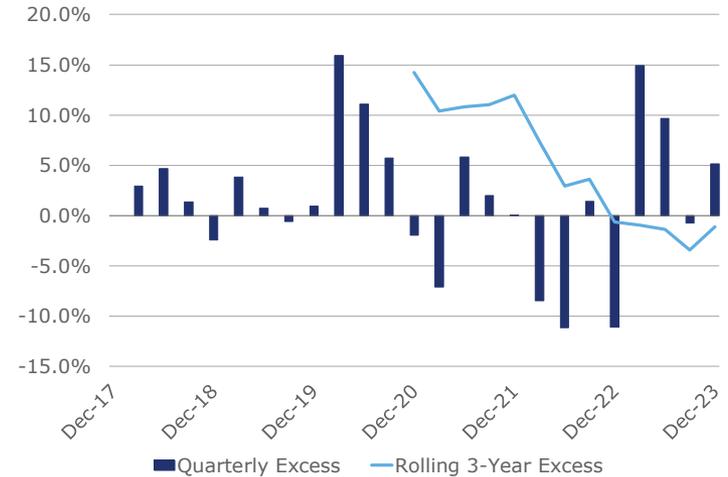
U.S. Sector Weight and Return (%)



Large Cap vs Small Cap



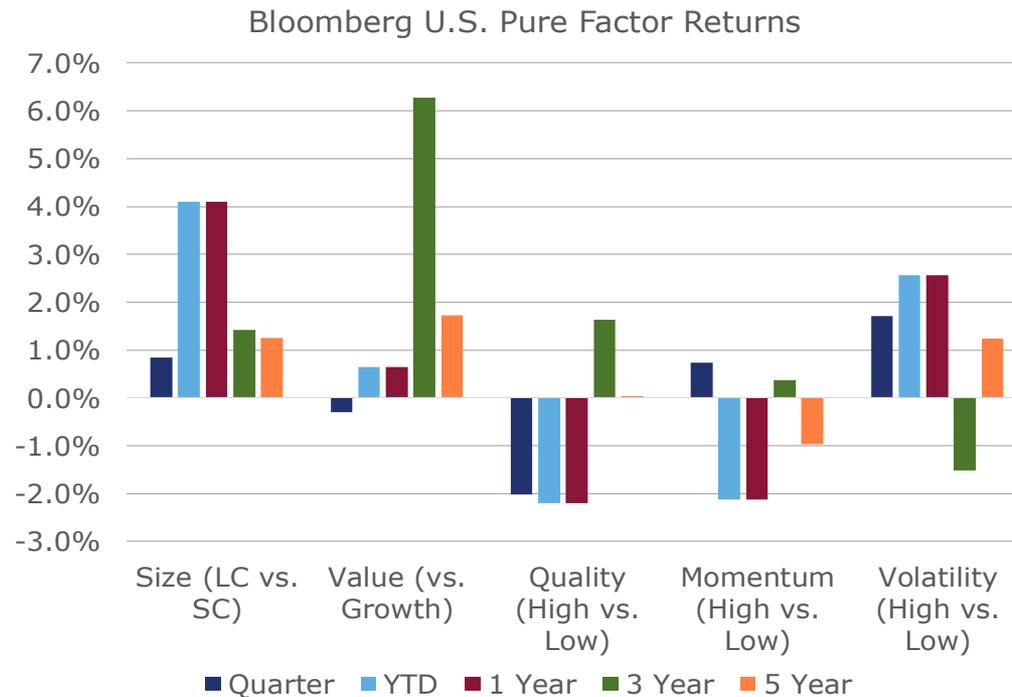
Large Growth vs Large Value



Data Sources: Bloomberg, Wilshire Atlas

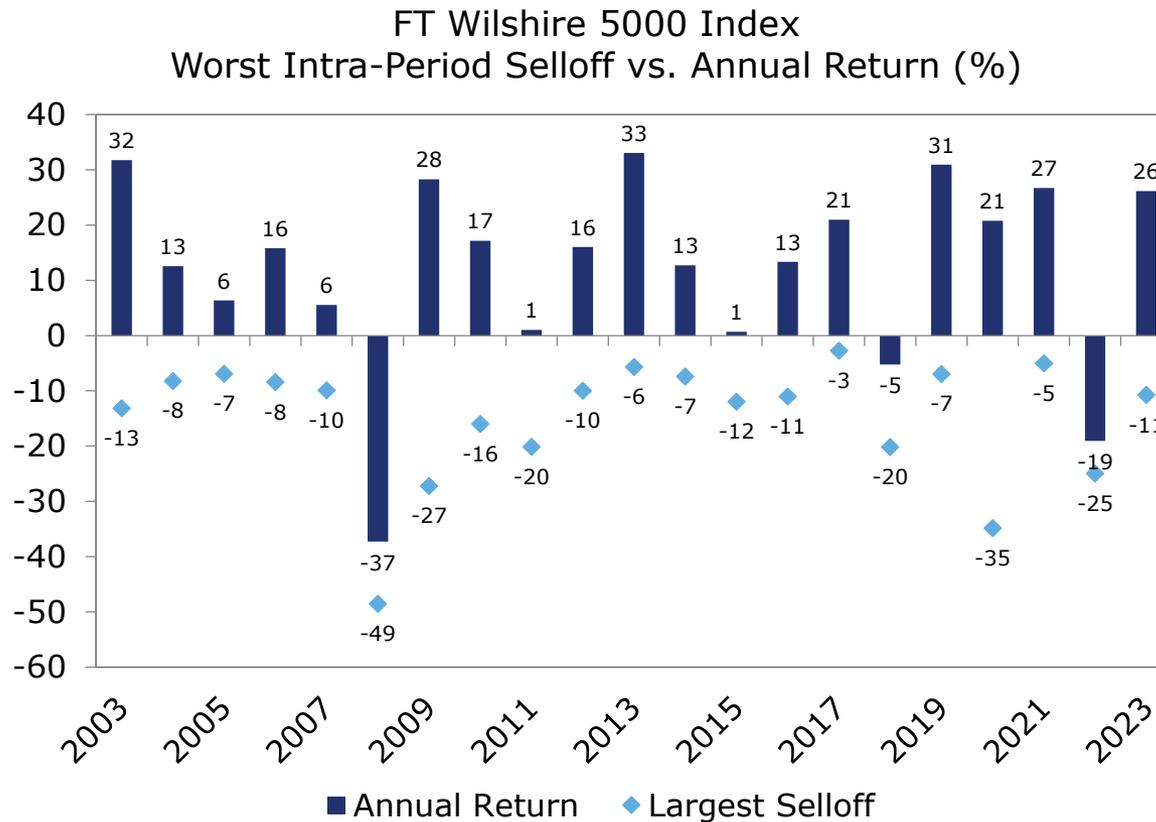
## U.S. Factor Returns

- Factor returns represent the contribution from large cap, value, etc. stocks within Bloomberg's Portfolio & Risk Analytics module
- Large cap and high volatility have mostly outperformed this year



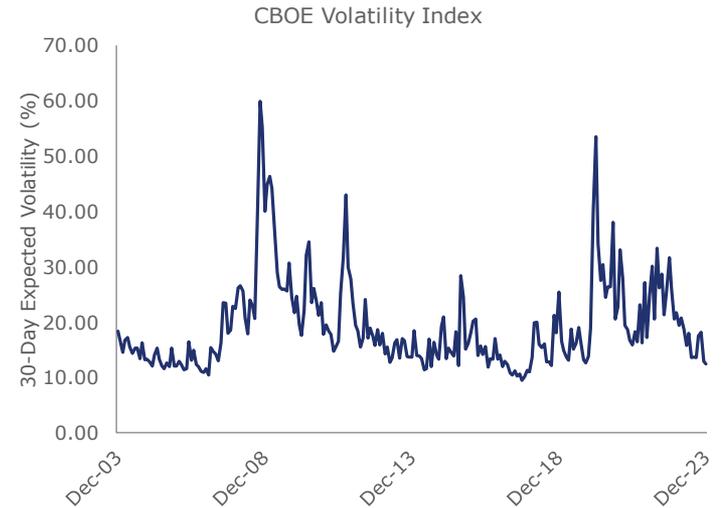
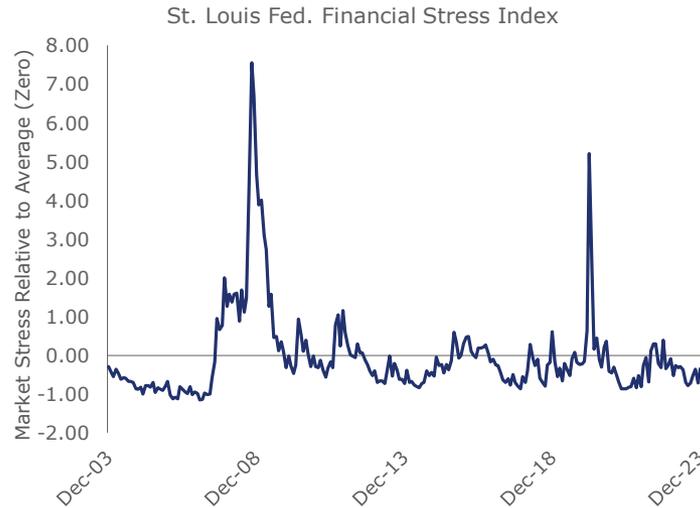
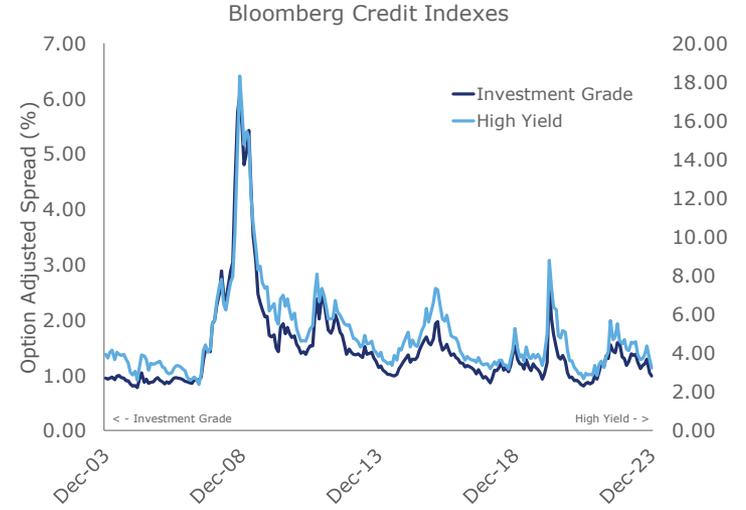
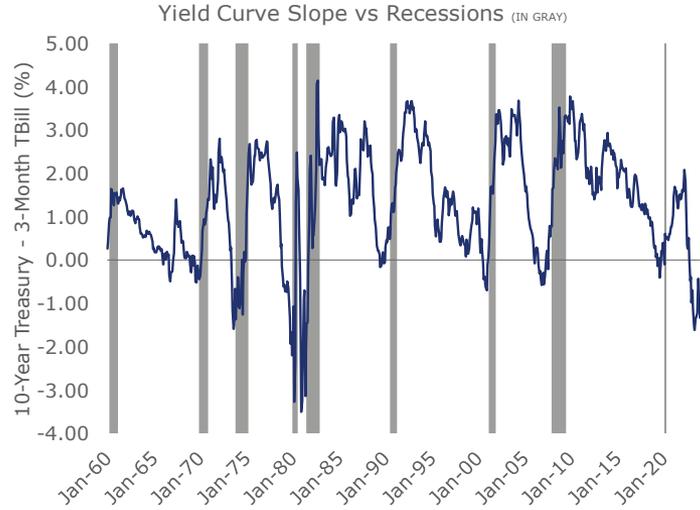
# Annual Equity Market Selloffs

U.S. equity suffered a meaningful selloff in Feb.-Mar. but generally rebounded strongly from 2022



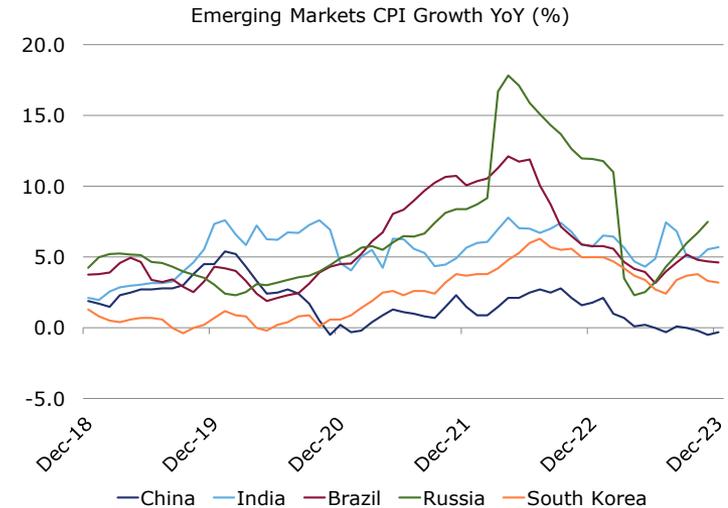
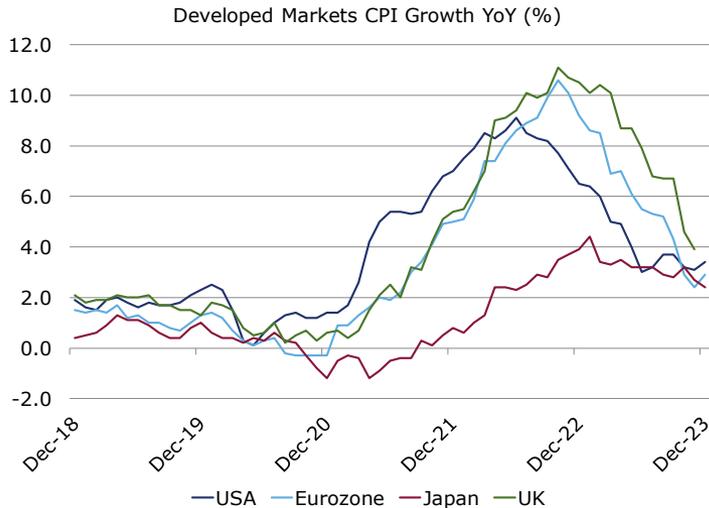
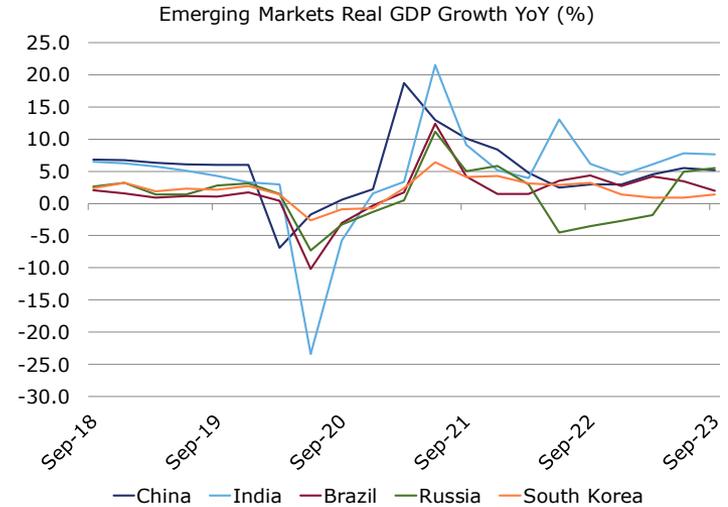
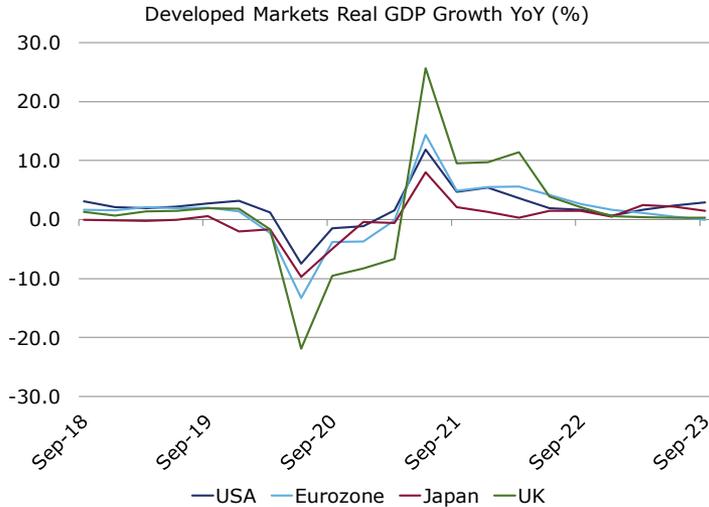
Data Sources: Wilshire Web, Bloomberg

## Risk Monitor



Data Sources: Bloomberg

## Non-U.S. Growth and Inflation

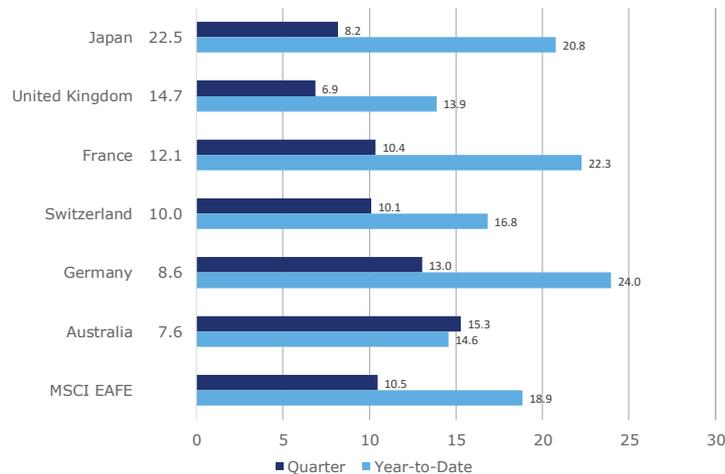


Data Sources: BLS, BEA, IHS Markit

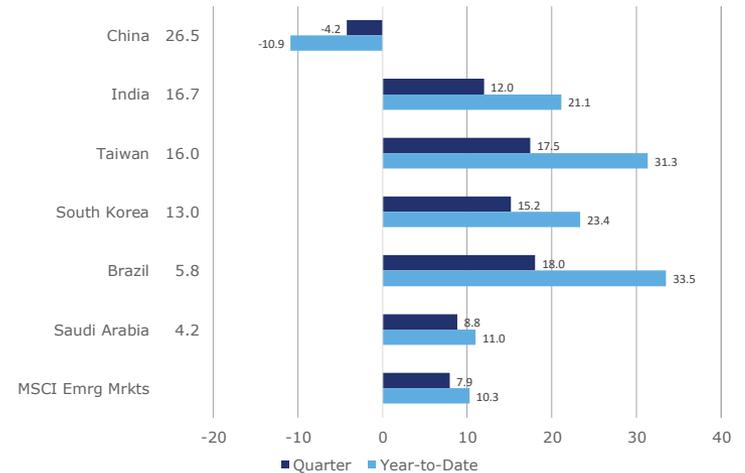
## Non-U.S. Equity Market

As of 12/31/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
MSCI ACWI ex-US (\$G)	9.8	16.2	16.2	2.0	7.6	4.3
MSCI EAFE (\$G)	10.5	18.9	18.9	4.5	8.7	4.8
MSCI Emerging Markets (\$G)	7.9	10.3	10.3	-4.7	4.1	3.0
MSCI Frontier Markets (\$G)	7.6	12.5	12.5	-1.1	1.6	0.9
MSCI ACWI ex-US Growth (\$G)	11.2	14.4	14.4	-2.4	7.8	4.9
MSCI ACWI ex-US Value (\$G)	8.7	18.1	18.1	6.4	7.2	3.8
MSCI ACWI ex-US Small (\$G)	10.2	16.2	16.2	2.0	8.4	5.3
MSCI ACWI Minimum Volatility	6.6	8.4	8.4	3.8	7.1	7.5
MSCI EAFE Minimum Volatility	7.3	12.4	12.4	1.1	4.1	4.7
FTSE RAFI Developed ex-US	9.5	19.0	19.0	7.7	8.8	4.5
MSCI EAFE LC (G)	5.0	16.8	16.8	9.2	10.0	7.1
MSCI Emerging Markets LC (G)	5.6	10.3	10.3	-2.1	5.8	5.6

Developed Markets Weight and Return (%)



Emerging Markets Weight and Return (%)

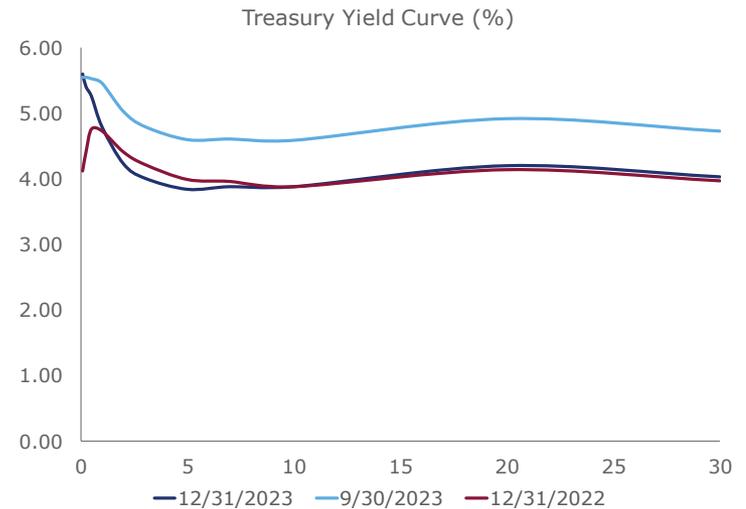
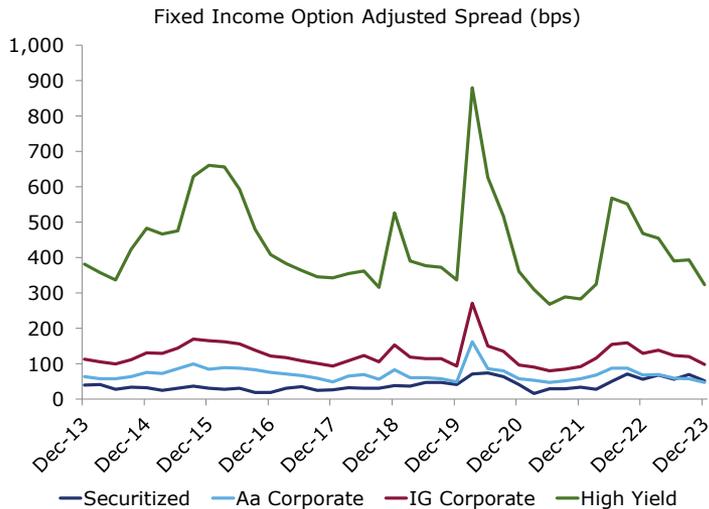


Data Sources: Bloomberg

## U.S. Fixed Income

As of 12/31/2023	YTW	DUR.	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg Aggregate	4.5	6.2	6.8	5.5	5.5	-3.3	1.1	1.8
Bloomberg Treasury	4.1	6.2	5.7	4.1	4.1	-3.8	0.5	1.3
Bloomberg Gov't-Rel.	4.6	5.3	5.5	5.8	5.8	-2.4	1.4	2.0
Bloomberg Securitized	4.7	5.8	7.3	5.1	5.1	-2.8	0.4	1.4
Bloomberg Corporate	5.1	7.1	8.5	8.5	8.5	-3.3	2.6	3.0
Bloomberg LT Gov't/Credit	4.7	14.3	13.2	7.1	7.1	-8.7	1.1	3.2
Bloomberg LT Treasury	4.1	15.7	12.7	3.1	3.1	-11.4	-1.2	2.3
Bloomberg LT Gov't-Rel.	5.2	11.8	11.2	8.9	8.9	-6.1	1.5	3.5
Bloomberg LT Corporate	5.2	13.1	14.0	10.9	10.9	-6.6	2.9	3.9
Bloomberg U.S. TIPS *	3.9	7.3	4.7	3.9	3.9	-1.0	3.2	2.4
Bloomberg High Yield	7.6	3.2	7.2	13.4	13.4	2.0	5.4	4.6
S&P/LSTA Leveraged Loan	9.4	0.3	2.9	13.3	13.3	5.8	5.8	4.4
Treasury Bills	5.2	0.3	1.4	5.1	5.1	2.1	1.9	1.3

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

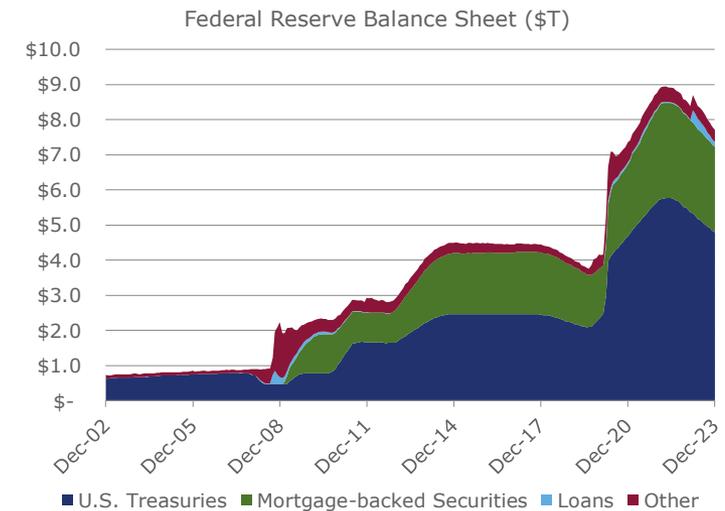
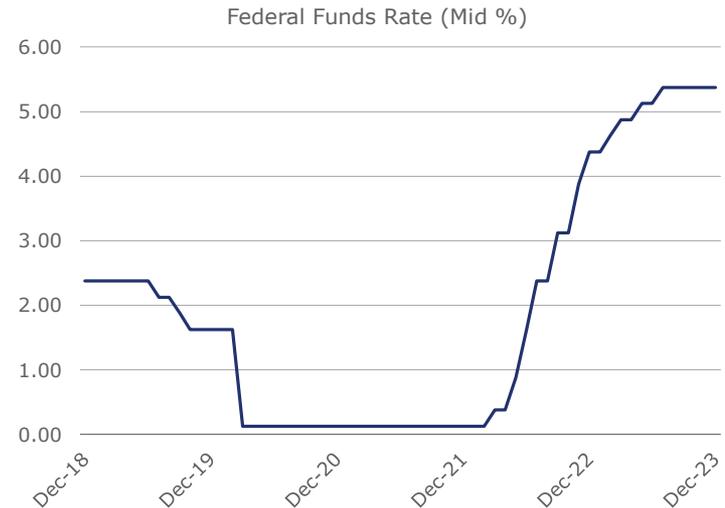


Data Sources: Bloomberg

## Federal Reserve

- The Federal Open Market Committee has left their overnight rate unchanged since July of 2023
- QE4 was larger than the 3 phases of quantitative easing – combined – following the global financial crisis
- The Fed’s balance sheet has begun to shrink again during the past nine months

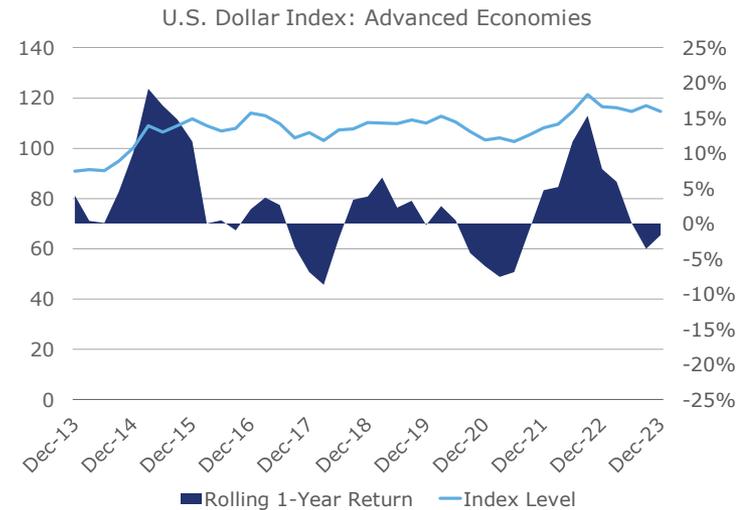
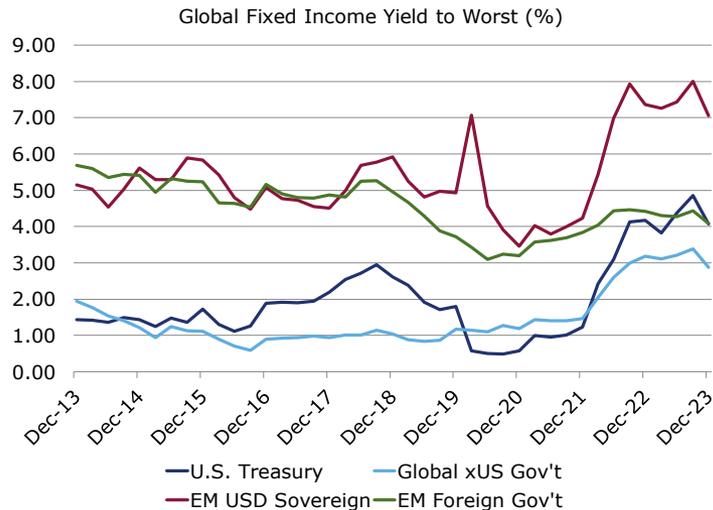
	Announced	Closed	Amount (bil)
QE1	11/25/2008	3/31/2010	\$1,403
QE2	11/3/2010	6/29/2012	\$568
QE3	9/13/2012	10/29/2014	\$1,674
QE4	3/23/2020	3/15/2022	\$4,779



## Non-U.S. Fixed Income

As of 12/31/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
<b>Developed Markets</b>						
Bloomberg Global Aggregate xUS	9.2	5.7	5.7	-7.2	-1.6	-0.8
Bloomberg Global Aggregate xUS *	5.4	8.3	8.3	-1.2	1.5	2.8
Bloomberg Global Inflation Linked xUS	11.9	7.4	7.4	-8.7	-1.4	-0.2
Bloomberg Global Inflation Linked xUS *	7.6	5.3	5.3	-4.5	0.4	3.3
<b>Emerging Markets (Hard Currency)</b>						
Bloomberg EM USD Aggregate	8.1	9.1	9.1	-3.1	1.8	3.0
<b>Emerging Markets (Foreign Currency)</b>						
Bloomberg EM Local Currency Gov't	7.0	6.9	6.9	-1.2	2.1	1.3
Bloomberg EM Local Currency Gov't *	3.9	8.6	8.6	1.4	3.1	3.0
Euro vs. Dollar	4.4	3.1	3.1	-3.3	-0.8	-2.2
Yen vs. Dollar	5.9	-7.0	-7.0	-9.9	-4.9	-2.9
Pound vs. Dollar	4.4	5.4	5.4	-2.3	0.0	-2.6

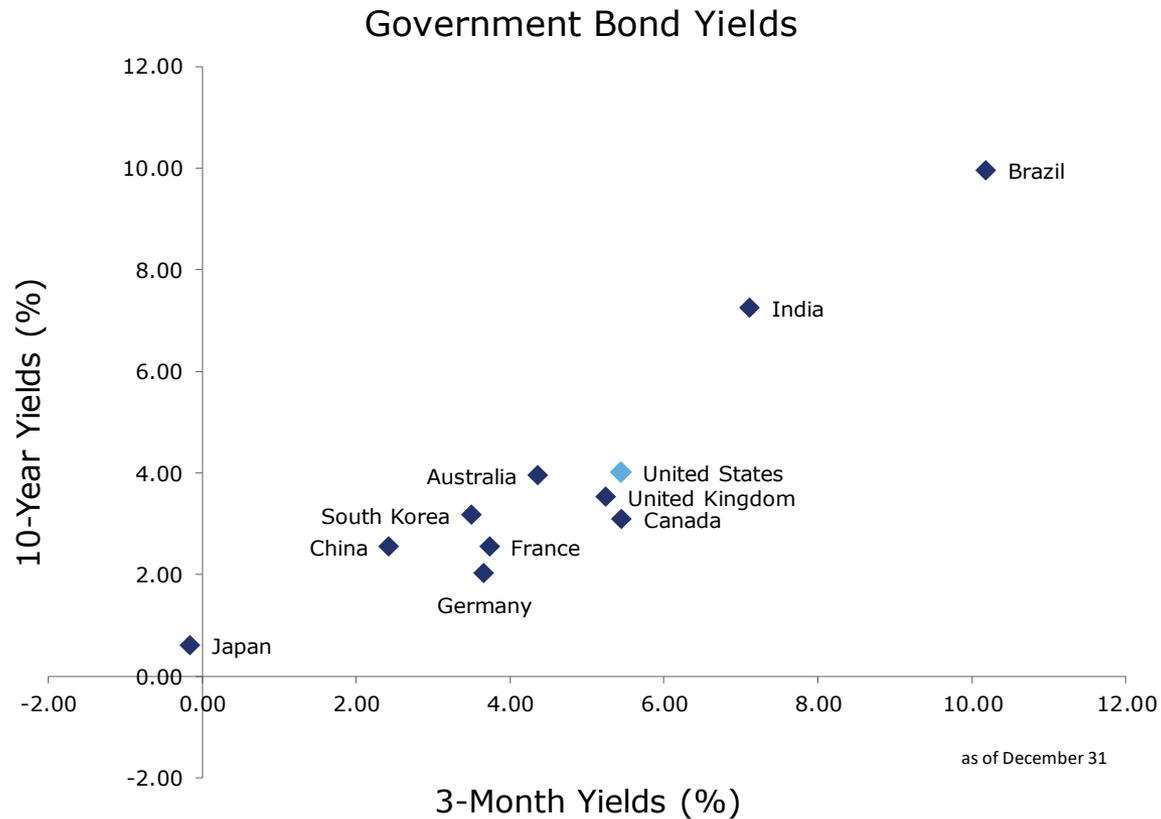
\* Returns are reported in terms of local market investors, which removes currency effects.



Data Sources: Bloomberg

# Global Interest Rates

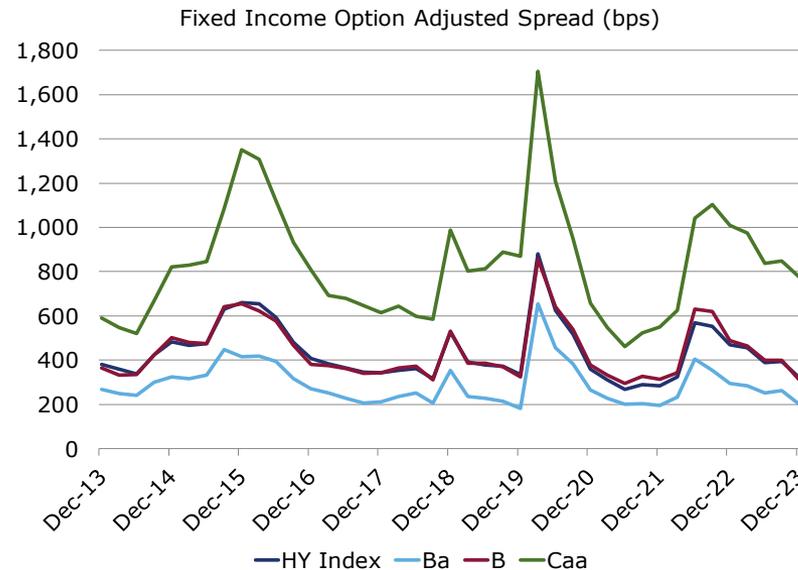
Short-term rates have turned positive in most larger countries; longer-term rates near 4.0% in the U.K. and Australia



# High Yield Bond Market

As of 12/31/2023

	YTW	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg High Yield	7.6	7.2	13.4	13.4	2.0	5.4	4.6
S&P LSTA Leveraged Loan	9.4	3.2	13.2	13.2	5.2	5.8	4.0
<b>High Yield Quality Distribution</b>	<b>Weight</b>						
Ba U.S. High Yield	46.1%	6.3	7.4	11.6	11.6	1.4	5.8
B U.S. High Yield	41.1%	7.5	7.0	13.8	13.8	2.3	5.1
Caa U.S. High Yield	11.7%	12.1	6.9	19.8	19.8	2.9	4.1
Ca to D U.S. High Yield	1.1%	15.3	5.1	16.4	16.4	5.5	-4.0



Data Sources: Bloomberg

# Policy Definitions

# Historical Hybrid Composition

## Total Fund Policy Benchmark

*Periods Ended December 31, 2023*

<b>Policy Index</b>	<b>Weight (%)</b>
<b>Oct-2023</b>	
Russell 3000 Index	20.41
Blmbg. U.S. Aggregate Index	24.79
MSCI AC World ex USA (Net)	12.64
Global Smart Beta Policy Index	4.86
Private Equity Policy Index	19.71
90 Day U.S. Treasury Bill	0.97
Private Credit Policy Index	5.69
Private Real Assets Policy Index	8.01
Public Credit Policy Index	2.92
<b>Jul-2023</b>	
Russell 3000 Index	20.75
Blmbg. U.S. Aggregate Index	21.74
MSCI AC World ex USA (Net)	16.30
Global Smart Beta Policy Index	4.94
Private Equity Policy Index	19.12
90 Day U.S. Treasury Bill	0.99
Private Credit Policy Index	5.30
Private Real Assets Policy Index	7.90
Public Credit Policy Index	2.96

<b>Policy Index</b>	<b>Weight (%)</b>
<b>Apr-2023</b>	
Russell 3000 Index	20.42
Blmbg. U.S. Universal Index	22.36
MSCI AC World ex USA (Net)	16.04
Global Smart Beta Policy Index	4.86
Private Equity Policy Index	19.22
90 Day U.S. Treasury Bill	0.97
Private Credit Policy Index	4.86
Private Real Assets Policy Index	8.35
Public Credit Policy Index	2.92
<b>Jan-2023</b>	
Russell 3000 Index	20.16
Blmbg. U.S. Universal Index	22.09
MSCI AC World ex USA (Net)	15.84
Global Smart Beta Policy Index	4.80
Private Equity Policy Index	19.81
90 Day U.S. Treasury Bill	0.96
Private Credit Policy Index	4.69
Private Real Assets Policy Index	8.77
Public Credit Policy Index	2.88

# Historical Hybrid Composition

## Total Fund Policy Benchmark

*Periods Ended December 31, 2023*

<b>Policy Index</b>	<b>Weight (%)</b>	<b>Policy Index</b>	<b>Weight (%)</b>
<b>Oct-2022</b>		<b>Apr-2022</b>	
Russell 3000 Index	19.68	Russell 3000 Index	20.17
Blmbg. U.S. Universal Index	21.56	Blmbg. U.S. Universal Index	23.84
MSCI AC World ex USA (Net)	15.46	MSCI AC World ex USA (Net)	16.04
Global Smart Beta Policy Index	4.69	Global Smart Beta Policy Index	5.50
Private Equity Policy Index	20.78	Private Equity Policy Index	19.65
90 Day U.S. Treasury Bill	0.94	90 Day U.S. Treasury Bill	0.92
Private Credit Policy Index	4.66	Private Credit Policy Index	3.39
Private Real Assets Policy Index	9.42	Private Real Assets Policy Index	6.82
Public Credit Policy Index	2.81	Public Credit Policy Index	3.67
<b>Jul-2022</b>		<b>Jan-2022</b>	
Russell 3000 Index	19.35	Wilshire 5000 Total Market Index	20.77
Blmbg. U.S. Universal Index	21.54	Blmbg. U.S. Universal Index	24.55
MSCI AC World ex USA (Net)	15.39	MSCI AC World ex USA (Net)	16.52
Global Smart Beta Policy Index	5.28	Global Smart Beta Policy Index	5.67
Private Equity Policy Index	21.03	Private Equity Policy Index	18.60
90 Day U.S. Treasury Bill	0.88	90 Day U.S. Treasury Bill	0.94
Private Credit Policy Index	4.15	Private Credit Policy Index	3.04
Private Real Assets Policy Index	8.86	Private Real Assets Policy Index	6.13
Public Credit Policy Index	3.52	Public Credit Policy Index	3.78

# Historical Hybrid Composition

## Total Fund Policy Benchmark

*Periods Ended December 31, 2023*

Policy Index	Weight (%)
<b>Oct-2021</b>	
Wilshire 5000 Total Market Index	20.84
Blmbg. U.S. Universal Index	24.63
MSCI AC World ex USA (Net)	16.58
Global Smart Beta Policy Index	5.68
Private Equity Policy Index	18.90
90 Day U.S. Treasury Bill	0.95
Private Credit Policy Index	2.91
Private Real Assets Policy Index	5.72
Public Credit Policy Index	3.79

<b>Jul-2021</b>	
Wilshire 5000 Total Market Index	21.37
Blmbg. U.S. Universal Index	25.25
MSCI AC World ex USA (Net)	17.00
Global Smart Beta Policy Index	5.83
Private Equity Policy Index	17.51
90 Day U.S. Treasury Bill	0.97
Private Credit Policy Index	2.68
Private Real Assets Policy Index	5.51
Public Credit Policy Index	3.88

Policy Index	Weight (%)
<b>Apr-2021</b>	
Wilshire 5000 Total Market Index	21.63
Blmbg. U.S. Universal Index	25.56
MSCI AC World ex USA (Net)	17.21
Global Smart Beta Policy Index	5.90
Private Equity Policy Index	16.74
90 Day U.S. Treasury Bill	0.98
Private Credit Policy Index	2.75
Private Real Assets Policy Index	5.30
Public Credit Policy Index	3.93

<b>Jan-2021</b>	
Wilshire 5000 Total Market Index	21.94
Blmbg. U.S. Universal Index	25.93
MSCI AC World ex USA (Net)	17.45
Global Smart Beta Policy Index	5.98
Private Equity Policy Index	15.49
90 Day U.S. Treasury Bill	1.00
Private Credit Policy Index	2.86
Private Real Assets Policy Index	5.36
Public Credit Policy Index	3.99

# Historical Hybrid Composition

## Total Fund Policy Benchmark

*Periods Ended December 31, 2023*

<b>Policy Index</b>	<b>Weight (%)</b>
<b>Oct-2020</b>	
Wilshire 5000 Total Market Index	21.78
Blmbg. U.S. Universal Index	25.74
MSCI AC World ex USA (Net)	17.32
Global Smart Beta Policy Index	5.94
Private Equity Policy Index	15.37
90 Day U.S. Treasury Bill	0.99
Private Credit Policy Index	3.04
Private Real Assets Policy Index	5.86
Public Credit Policy Index	3.96
<b>Jul-2020</b>	
Wilshire 5000 Total Market Index	21.38
Blmbg. U.S. Universal Index	27.22
MSCI AC World ex USA (Net)	17.01
Global Smart Beta Policy Index	5.83
Private Equity Policy Index	14.44
90 Day U.S. Treasury Bill	0.97
Private Credit Policy Index	3.15
Private Real Assets Policy Index	6.11
Public Credit Policy Index	3.89
<b>Apr-1979</b>	
Total Fund Policy Benchmark	100.00

\* Policy weights prior to July 2020 available on following page

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**APPENDIX - D -****SECURITIES MONITORING AND LITIGATION POLICY****I. GENERAL PROVISION**

Pursuant to Iowa Code chapter 97B, the Investment Board of IPERS (Board) is authorized to establish policy and review its implementation in matters relating to the investment of the retirement fund. Pursuant to Iowa Code chapter 97B, the chief executive officer (CEO) is the administrator of IPERS. The Board, through the establishment of policy, and the CEO as the administrator of IPERS, except as otherwise indicated, jointly exercise the statutory authority related to this policy.

**II. PROCEDURES AND GUIDELINES FOR DOMESTIC LITIGATION**

Chapter 97B and common law principles create a fiduciary responsibility to manage IPERS' assets in a prudent manner for the exclusive benefit of IPERS' beneficiaries. Inherent in this fiduciary responsibility is the duty to use reasonable care and skill to preserve IPERS' assets, including the duty to take possession and control of IPERS' assets such as litigation claims, and the duty to take reasonable steps to realize on such claims that the IPERS Trust Fund may hold in its favor. In recognition of this fiduciary responsibility, the Board establishes the following procedures and guidelines for monitoring and participating in domestic securities class actions:

- A. As a large institutional investor, IPERS' assets include investments in publicly traded companies. Frequently, these investments are the subject of individual and class-action securities litigation under state and federal law. It is necessary for IPERS to understand the ramifications of legal actions impacting publicly traded securities. For the purposes of this paragraph, investments include public securities held in a commingled fund in which IPERS has invested.
- B. Because IPERS exists to provide retirement income to its members, the goal of this policy is the preservation of assets to meet the needs of IPERS members. IPERS will prudently select the best means to preserve Trust Fund assets. While IPERS may have a fiduciary duty to pursue legal action to recover on a claim, it must also take into consideration that most (if not all) of these actions will be prosecuted by the class-action bar whether or not IPERS takes an active role. Further, the recovery, whether IPERS assumes an active role or passive role in litigation, is ratably allocated for all class members. Consequently, IPERS will consider the active role in class-action litigation only when a case is identified where active involvement can add value on a long-term portfolio-wide basis. For

the purposes of this policy, an “active role” means seeking to serve as lead plaintiff, co-lead plaintiff, named plaintiff, or file an individual action.

- C. All litigation in which the potential loss to IPERS is under \$1,500,000 will be “passively monitored.” Passively monitored means that cases will be tracked for any notices of settlement and IPERS will participate in the litigation as a member of the class. Passively monitored also means that as notices of settlement are issued, proposed settlements will be evaluated and, absent any reasonable objections to unusual terms, IPERS will file a proof of claim so that it will receive its pro rata share of the recovery.
- D. Cases in which IPERS’ potential losses are between \$1,500,000 and \$3,000,000 will be “actively monitored” by IPERS. “Active monitoring” includes evaluation of the pattern of losses, settlement notices, viable objections, opt-out periods, and deadlines for filing, as well as monitoring the appointment of lead plaintiff and counsel, and class counsel fee submissions.
- E. Cases in which IPERS’ potential losses are \$3,000,000 or greater will receive a detailed analysis to determine the appropriate course of action—including but not limited to a motion to become lead plaintiff or co-lead plaintiff, named plaintiff, or to opt out and file an action on an individual basis in federal or state court as set out below. The criteria to be used in this analysis will include, but not be limited to, the following:
  - 1. Whether IPERS has, or had, substantial or significant holdings in the defendant company or security during the most plausible class period and sustained damages surpassing its threshold for considering action.
  - 2. Whether there is a very strong factual and legal basis for the action, including an analysis of any unique issues or defenses to which IPERS might be subject, indicating that it is highly probable that a successful verdict would be achieved by IPERS if the case was fully litigated.
  - 3. The availability of potential witnesses, and the ability of the investment manager, investment consultants, and custodian to respond to requested discovery.
  - 4. The probability that the defendant or an insurer is able to pay a reasonable recovery to the class.
  - 5. The potential prospective positive impact that corporate governance changes required as a result of legal action may have on the value of IPERS’ current holdings in the defendant corporation’s securities.

6. Whether to function as a co-lead plaintiff for the purpose of aggregating damages.
  7. Whether to serve as a lead or co-lead plaintiff for the purpose of modifying the claims time period to include IPERS' transactions.
  8. Whether to function as a lead or co-lead plaintiff with the purpose of disqualifying a law firm or lead plaintiff that will not represent the best interest of class members.
  9. Whether IPERS has any knowledge that another institutional investor is considering lead plaintiff or co-lead plaintiff status.
  10. Whether it would be prudent to take action to oppose or dismiss a lawsuit that is deemed not in the best interest of shareholders.
  11. Whether there is any other information that would be relevant to IPERS to aid it in deciding the position to take.
  12. Whether there are staffing or resource constraints that might make it difficult to effectively pursue the case actively, as a lead plaintiff, co-lead plaintiff, or through an independent legal action.
- F. A decision to seek an active role in litigation is based on the totality of the circumstances. The dollar loss thresholds referenced above are guidelines and are not intended to be the sole factor in making the determination to seek an active or maintain a passive role.

### **III. PROCEDURES AND GUIDELINES FOR FOREIGN LITIGATION**

- A. The landscape of securities laws has drastically changed with the Supreme Court's decision in *Morrison v National Australia Bank Ltd*, 561 US 247 (2010). After *Morrison*, investors no longer have the protection of U.S. securities laws with respect to securities of foreign entities purchased on a foreign exchange (irrespective of such foreign entities' presence in the U.S.). In such cases, IPERS may consider whether to bring a state law action or opt into participation in an action in a foreign jurisdiction.
- B. Unlike the U.S. class action process (where investors can remain absent, receive notice of a settlement, and then decide to make a claim or opt out of the class), in foreign actions, investors are generally required to join as named plaintiffs or "opt in" at the commencement of the case. This "opt in" process requires affirmative

decisions early in the process to join the case in order to recover losses. In many cases, investors may be required to make these decisions before a foreign action is filed. In many foreign jurisdictions, costs for both litigants are borne by the losing party. Accordingly, participating in foreign litigation can result in substantial costs in the event of defeat. Frequently, third party investors agree to fund such litigation in exchange for a share of the award.

~~C. Because there is rarely an option for passive participation in foreign securities actions, the review for participation in these actions differs from those explained in Part II of this Policy. IPERS may file claims in Fforeign actions without Board discussion or approval if the action is fully funded and there are no material adverse costs to IPERS. These types of claims are not subject to the threshold or case by case analysis set forth in subparagraph D below.~~

~~C.D.~~ All other Fforeign actions will be evaluated on a case by case basis. Cases in which IPERS' potential losses are \$3,000,000 or greater will receive a detailed analysis to determine the appropriate course of action, if any. The criteria to be used in this analysis will include, but not be limited to, the following:

1. Funding questions, including:
  - a. How is the action being funded? Are the funders reliable? Who are the funders? What is the funder's fee? Is the fee all-inclusive, or is the funder also entitled to reimbursement of expenses and any costs award? What law will apply to the relationship between IPERS and the funder?
  - b. Is the funding agreement sufficient? In particular, are attorneys' fees, litigation expenses, and potential costs covered by the funder without recourse to IPERS?
  - c. Can the funder cease to fund the litigation and, if so, under what conditions? Will the funder have any input or control over the prosecution of the litigation?
  - d. Does the funder have a minimum loss threshold?
2. What are the merits of the case in light of the law in the jurisdiction?
3. What is the process/cost for opting in?
4. Who is the foreign counsel, reputation of foreign counsel, and how are they being paid?

5. What risks are there to IPERS (i.e., to what extent is adverse party fees and costs risk covered)? What are the potential discovery burdens?
6. How are litigation decisions made?
7. What is IPERS loss? Even if IPERS' first in first out (FIFO) or last in first out (LIFO) losses are large, will IPERS be entitled to recoverable damages under the foreign law?
8. In the event of a favorable judgment, how is payment made?
9. What time and resources will IPERS have to devote to the foreign litigation?

~~D.E.~~ IPERS can consider a state law action to address a foreign securities claim. There are numerous issues and obstacles that must be considered before bringing a state law action against a foreign entity. Such considerations include questions of federal preemption, many procedural and technical issues, and whether IPERS' potential recoverable damages justify pursuing state law claims.

~~E.F.~~ A decision to participate in foreign litigation is based on the totality of the circumstances. The dollar loss threshold referenced above is a guideline and is not intended to be the sole factor in making the determination regarding participation.

#### IV. AUTHORITY AND RESPONSIBILITY

Prior approval of the Board shall be required to proceed with any individual or class-action litigation pursuant to this policy except as otherwise noted herein. At the call of the Board's chair or IPERS' CEO, the Board shall meet to consider recommendations to proceed with litigation.

The CEO retains the authority related to the conduct of the litigation and settlement pursuant to this policy in recognition of the CEO's statutory authority to administer IPERS. The CEO may consult with the Board on any matter related to the initiation of or conduct of any suit pursuant to this policy. The CEO shall have full authority to execute all contracts, legal documents, certifications, and authorizations required hereunder to pursue authorized litigation. The CEO can delegate the exercise of the CEO's statutory authority and responsibility to any IPERS staff member.

The CEO is authorized to hire one or more consultants to serve as the Securities Monitoring and Litigation Counsel (Counsel), monitoring consultant, or in another capacity related to this policy.

The Board shall receive periodic regular reports regarding the implementation of this policy. Reports shall include information related to the passive and active monitoring activity authorized in this policy, including but not limited to the status of any litigation in which IPERS has assumed the role of lead plaintiff or co-lead plaintiff, or has initiated individual action; the name of the security and/or defendant corporation; the estimated market loss to IPERS; action recommended and/or taken against the security or defendant corporation; status of the action; amount of claimed loss forwarded to the claims administrator; date claim was filed; and the amounts recovered. The Board may request additional information in advance of its next regularly scheduled meeting.

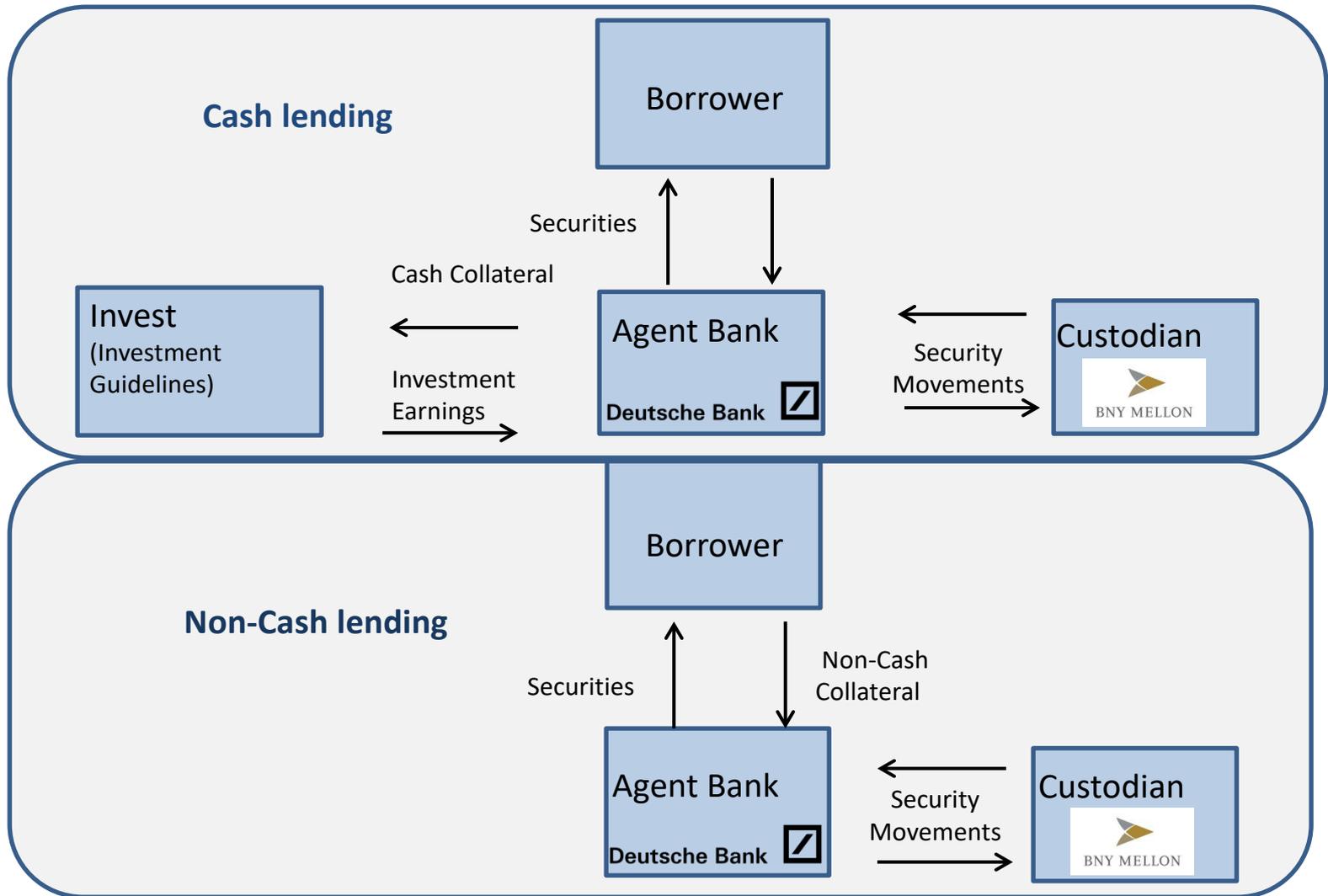


# State of Iowa Treasurer's Office

Securities Lending Presentation  
FY 23 and FY 24 YTD  
Jina Bresson



# State of Iowa Treasurer's Office





## Overview

- Lend only securities in actively managed accounts

	FY 23	FY 24 YTD
Active Funds	16 Funds	12 Funds
Lendable Balance	\$8,667,444.45	\$5,043,134,029
On Loan	\$258,552,233	\$363,661,232

- Provide incremental income to the portfolio
- Maximize investment return on existing securities
- Increase earnings without interrupting trade activities
- Split is 90/10 with IPERS/Deutsche Bank



# State of Iowa Treasurer's Office

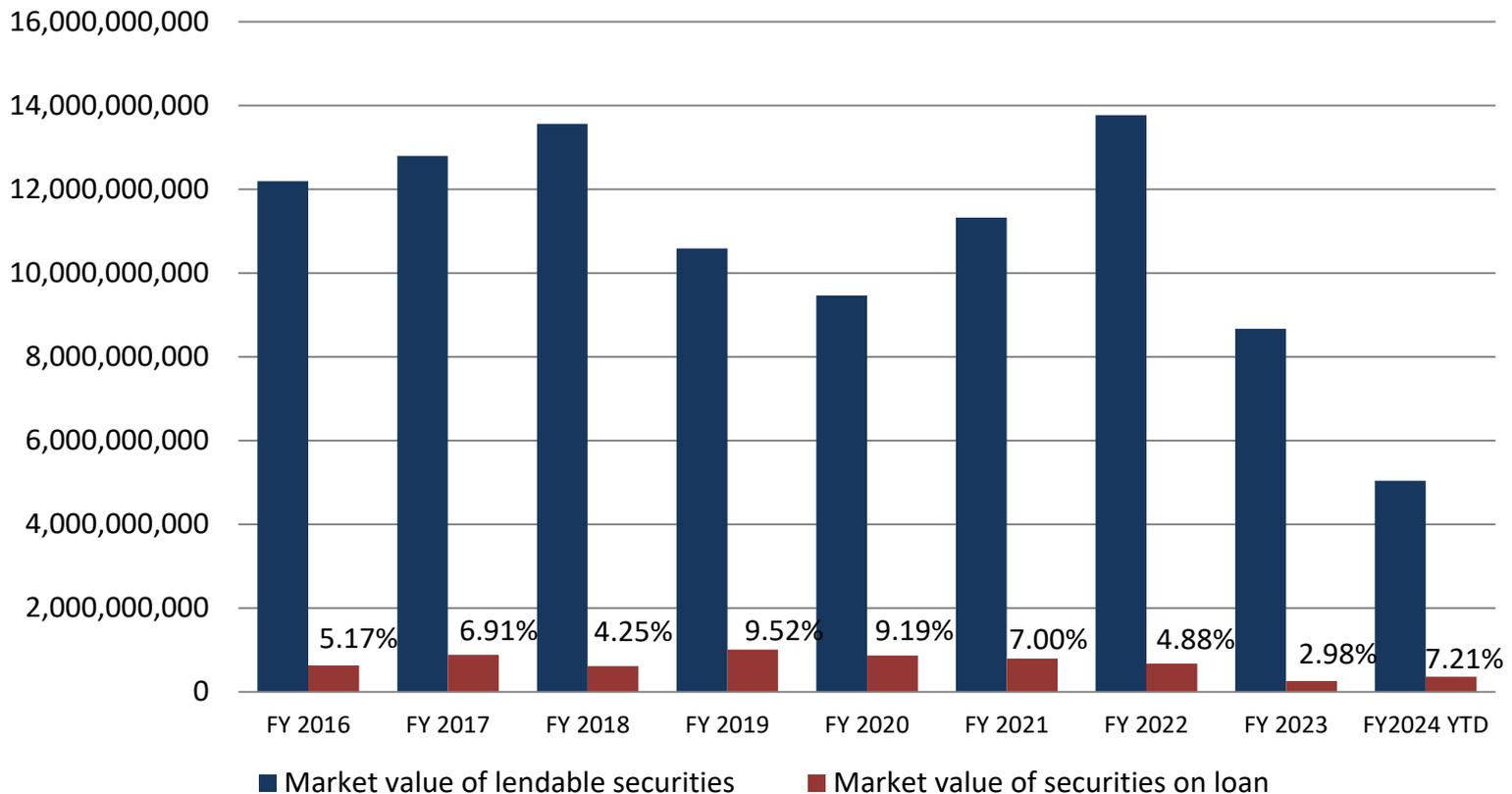
## Investment Guidelines

- Invest according to IPERS' current low-risk investment strategy.
- Cash collateral is invested in:
  - Government money market funds
  - Overnight repurchase agreements collateralized with obligations issued by the United States Treasury or obligations issued by agencies or government-sponsored entities of the United States government
- Non-cash collateral
  - Treasuries



# State of Iowa Treasurer's Office

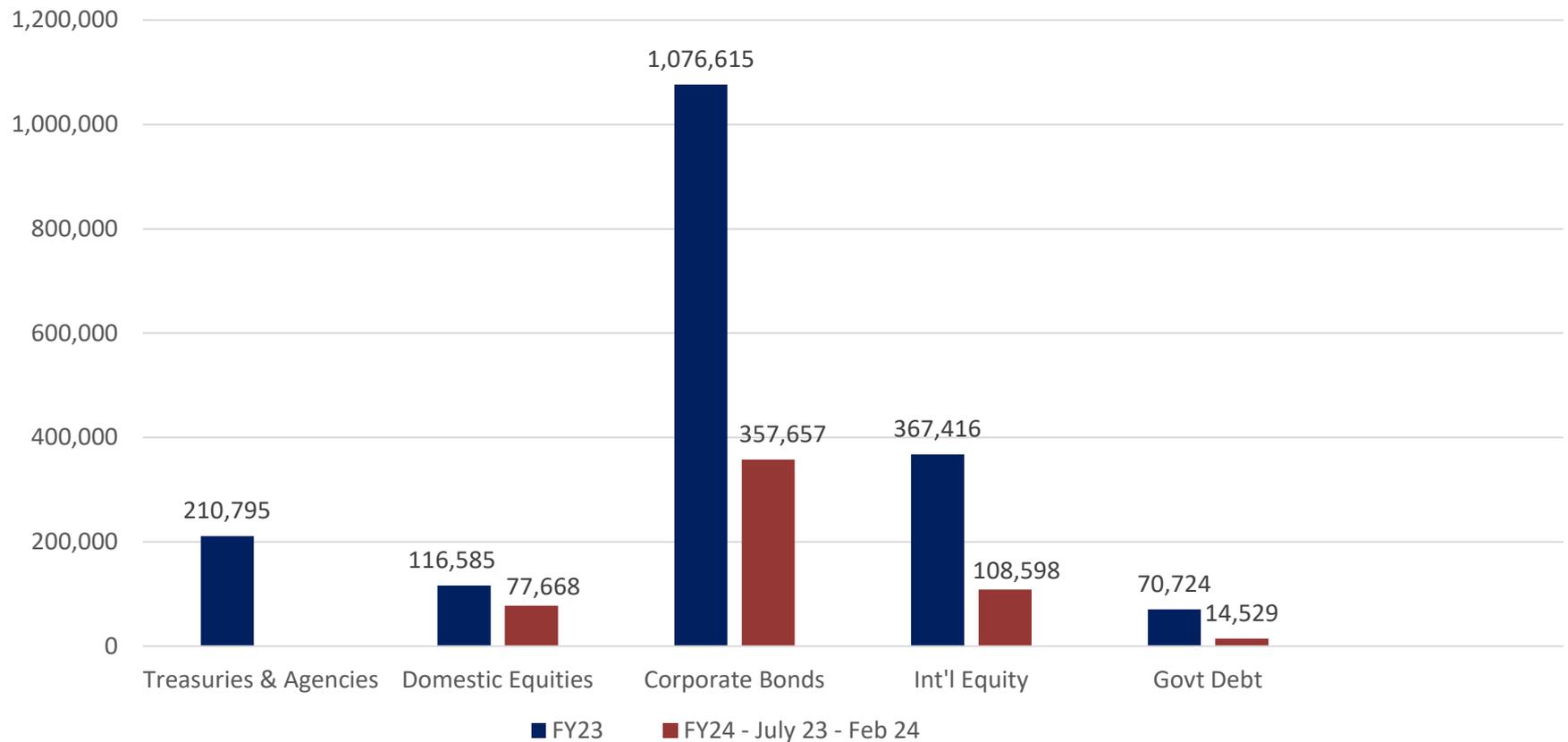
## Percent of Lendable Securities on Loan





# State of Iowa Treasurer's Office

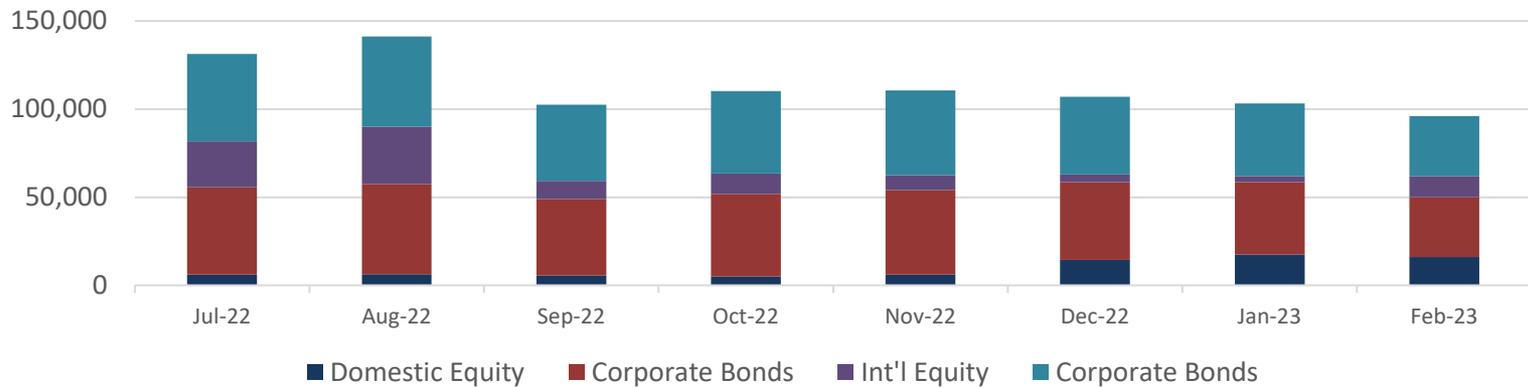
## Earnings by Asset Class



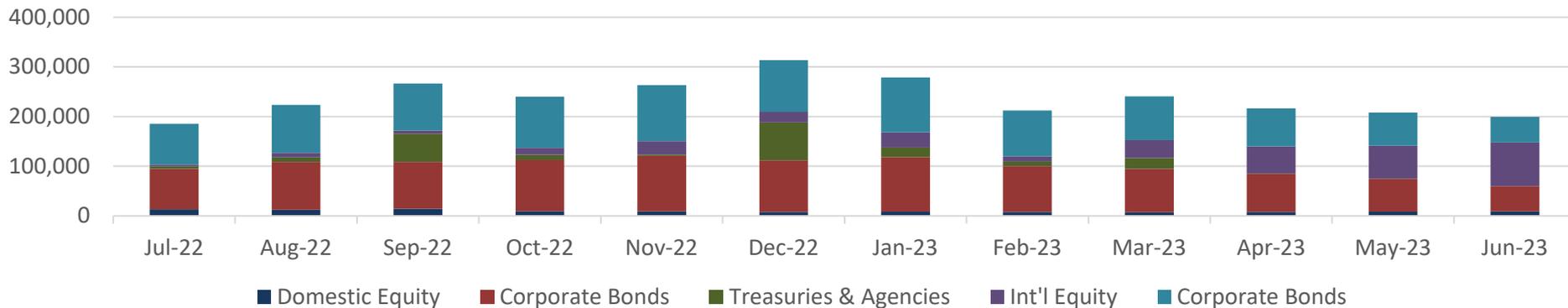


# Monthly Earnings by Asset Class

FY 24  
Jan 23 - Feb 24



FY 23

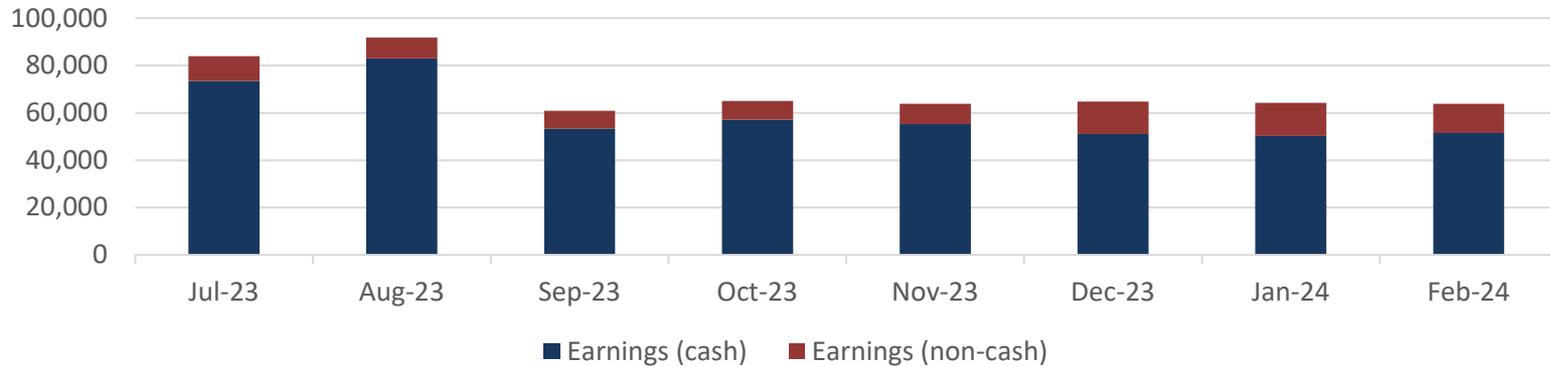




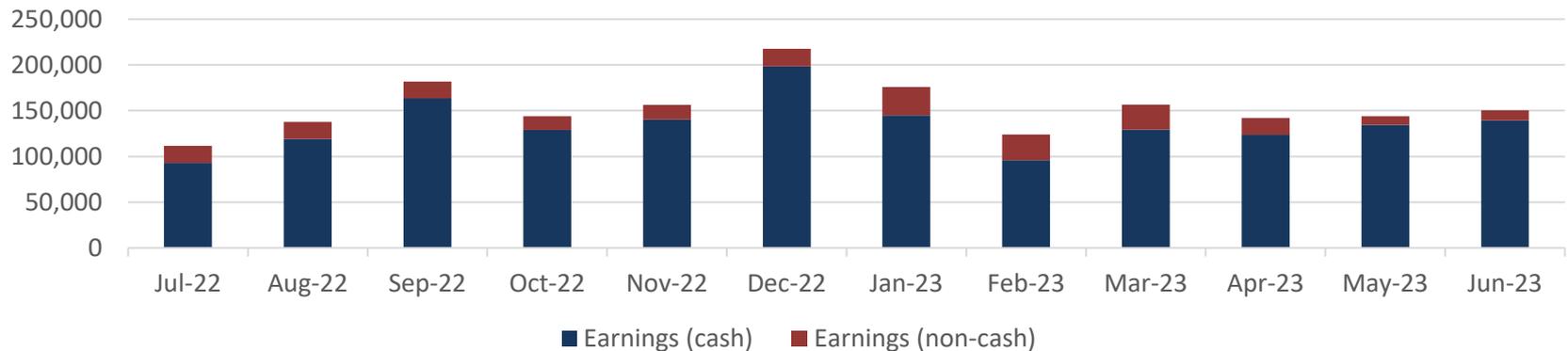
# State of Iowa Treasurer's Office

## Cash and Non-Cash Earnings

FY 24  
July 23 - Feb 24



FY 23





# State of Iowa Treasurer's Office

## Top Earning Securities

Security	Asset Type	Client Earnings – FY 24 YTD
Equinor Asa	Equity	\$55,705
GLT 4 3/4 11/15/29	Bond	\$37,936
CAR 5 3/8 03/01/29	Bond	\$31,505
Intel 9 3/4 07/15/25	Bond	\$29,573
SAMHALLSBYGGNADSBOLAGET	Equity	\$24,470

Security	Asset Type	Client Earnings – FY 23
RPLLLC 6 04/01/22	Bond	\$116,216
T 4 11/15/42	Gov	\$81,410
Engie	Equity	\$78,119
Yara International	Equity	\$72,527
Car 5 3/8 03/01/29	Bond	70,915



# State of Iowa Treasurer's Office

## Borrower Attribution

<b>Borrower – FY 24 YTD</b>	<b>Average On Loan</b>	<b>% of Total</b>
JP Morgan	\$136,868,579	36.73%
Goldman Sachs	\$85,745,587	23.01%
Barclays	\$39,075,184	10.49%
Citigroup	\$21,898,700	5.88%
Pershing	\$15,560,043	4.18%
<b>Borrower – FY 23</b>	<b>Average On Loan</b>	<b>% of Total</b>
Credit Suisse	\$70,394,887	26.53%
Barclays	\$54,184,022	20.42%
Goldman Sachs	\$23,426,639	8.83%
JP Morgan	\$18,642,964	7.03%
Citigroup	\$15,992,044	6.03%



# State of Iowa Treasurer's Office

## Top Earnings by Fund

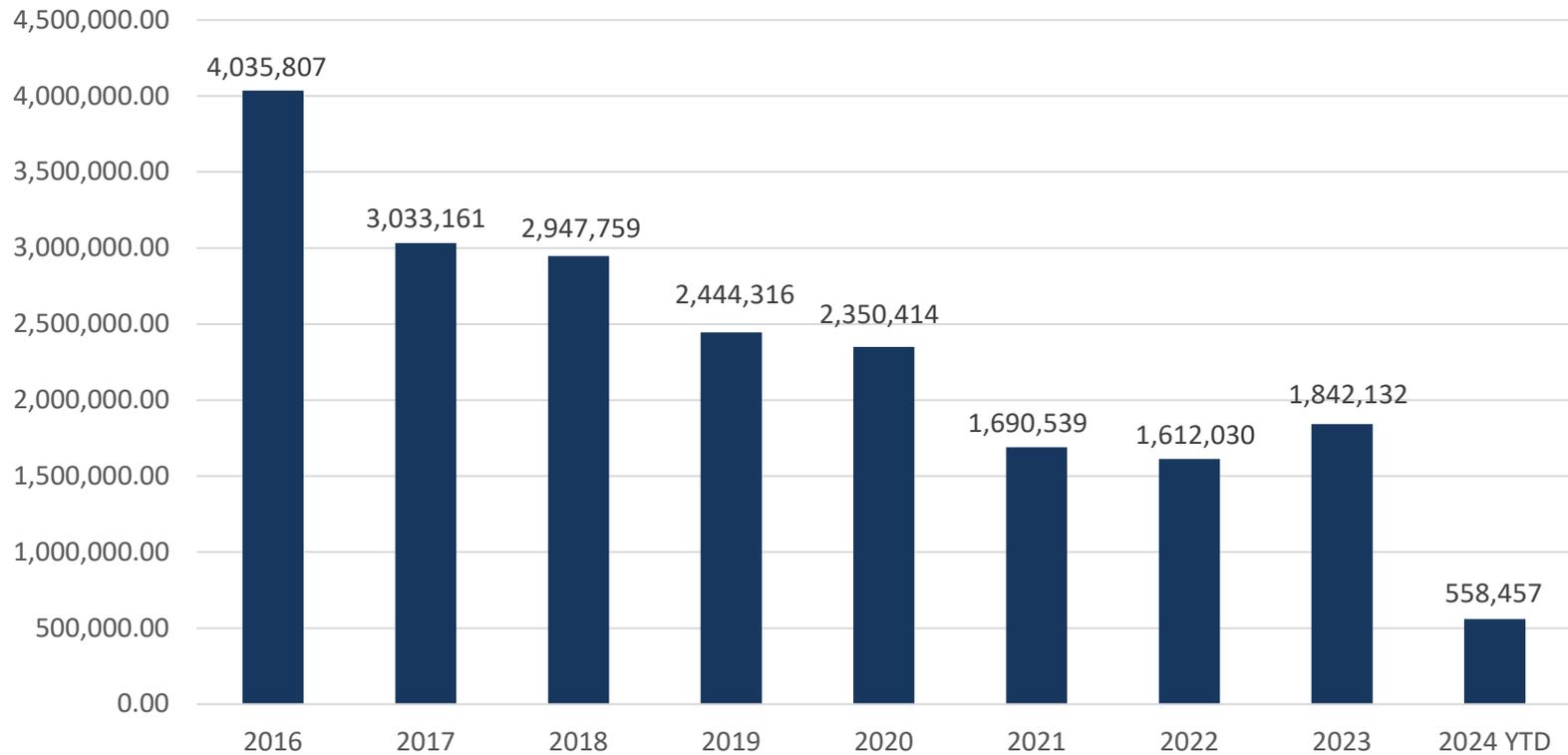
Fund Name	Client Earnings – FY 24
Aegon	\$209,847
PGIM High Yield	\$103,523
US Smart Beta	\$62,780
Panagora EAFE	\$60,987
Prudential EMD	\$38,868

Fund Name	Client Earnings – FY 23
Aegon	\$434,927
TCW Asset Mgmt	\$233,918
Mackay Shields	\$198,016
PGIM High Yield	\$163,257
Western	\$129,598



# State of Iowa Treasurer's Office

## Earnings by Fiscal Year



**BETA REPORT**  
**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM PORTFOLIO**  
**PRELIMINARY (Unreconciled) MARKET VALUES AT**  
**3/15/2024**

	Actual	Overlay	Total	Policy	Difference
<b>PUBLIC MARKETS</b>					
Domestic	\$ 9,019,544,272	\$ 16,134,889	\$ 9,035,679,161	\$ 8,974,060,606	\$ 61,618,555
International	\$ 5,623,131,975	\$ (12,035,116)	\$ 5,611,096,859	\$ 5,555,778,810	\$ 55,318,050
Global Smart Beta	\$ 2,178,507,043		\$ 2,178,507,043	\$ 2,137,497,013	\$ 41,010,030
<b>Total Equities</b>	<b>\$ 16,821,183,290</b>		<b>\$ 16,825,283,064</b>	<b>\$ 16,667,336,429</b>	<b>\$ 157,946,635</b>
Core Fixed Income	\$ 10,755,778,676	\$ 30,322,576	\$ 10,786,101,252	\$ 10,897,379,562	\$ (111,278,309)
Public Credit	\$ 1,283,125,816		\$ 1,283,125,816	\$ 1,280,784,783	\$ 2,341,032
Cash	\$ 528,251,919	\$ (34,422,350)	\$ 493,829,569	\$ 428,356,115	\$ 65,473,454
<b>PRIVATE MARKETS</b>	<b>\$ 13,447,271,784</b>		<b>\$ 13,447,271,784</b>	<b>\$ 13,561,754,596</b>	<b>\$ (114,482,812)</b>
Private Equity	\$ 7,751,832,740		\$ 7,751,832,740	\$ 7,851,767,585	\$ (99,934,845)
Private Credit	\$ 2,470,176,589		\$ 2,470,176,589	\$ 2,467,331,222	\$ 2,845,367
Private Real Assets	\$ 3,225,262,456		\$ 3,225,262,456	\$ 3,242,655,789	\$ (17,393,334)
<b>TOTAL FUND</b>	<b>\$ 42,835,611,484</b>			<b>\$ 42,835,611,484</b>	<b>\$ -</b>

	Actual	Overlay	Total	Policy	Difference
<b>PUBLIC MARKETS</b>					
Domestic	21.06%	0.04%	21.09%	20.95%	0.14%
International	13.13%	-0.03%	13.10%	12.97%	0.13%
Global Smart Beta	5.09%		5.09%	4.99%	0.10%
<b>Total Equities</b>	<b>39.27%</b>		<b>39.28%</b>	<b>38.91%</b>	<b>0.37%</b>
Core Plus	25.11%	0.07%	25.18%	25.44%	-0.26%
Public Credit	3.00%		3.00%	2.99%	0.01%
Cash	1.23%	-0.08%	1.15%	1.00%	0.15%
<b>PRIVATE MARKETS</b>	<b>31.39%</b>		<b>31.39%</b>	<b>31.66%</b>	<b>-0.27%</b>
Private Equity	18.10%		18.10%	18.33%	-0.23%
Private Credit	5.77%		5.77%	5.76%	0.01%
Private Real Assets	7.53%		7.53%	7.57%	-0.04%
<b>TOTAL FUND</b>	<b>100.00%</b>			<b>100.00%</b>	<b>0.00%</b>

BETA REPORT				
IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM PORTFOLIO				
PRELIMINARY (Unreconciled) MARKET VALUES AT				
3/15/2024				
<b>PUBLIC PORTFOLIO</b>		68.61%	\$	29,388,339,701
<b>Manager Name</b>	<b>Manager % of Asset Class</b>	<b>Total Market Value</b>	<b>Manager Name</b>	<b>Manager % of Asset Class</b>
Blackrock R2000 SAE	2.81%	\$ 253,769,445	Western	0.00%
Blackrock Russell 1000 Alpha Tilts	29.29%	\$ 2,641,909,933	IPERS MESIROW EM CURRENCY	2.26%
<b>DOMESTIC EQUITY - ACTIVE</b>	<b>6.76%</b>	<b>\$ 2,895,679,377</b>	IPERS MAN EM GLOBAL MACRO	1.39%
Mellon - Russell 1000 Index	65.05%	\$ 5,866,953,510	Blackrock	0.00%
Mellon - Russell 2000 Index	2.25%	\$ 203,177,024	Principal Global Investors	0.00%
Rhumblin Advisers	0.00%	\$ -	TCW	0.00%
Parametric - Domestic Equity	0.60%	\$ 53,734,361	Prudential	0.00%
NT Transition Manager	0.00%	\$ -	BlackRock Universal Alpha	2.78%
<b>DOMESTIC EQUITY - PASSIVE</b>	<b>14.30%</b>	<b>\$ 6,123,864,895</b>	BlackRock Universal Beta	3.13%
<b>TOTAL DOMESTIC EQUITY</b>	<b>21.06%</b>	<b>\$ 9,019,544,272</b>	Mackay Shields	0.01%
Blackrock - Canada	7.59%	\$ 426,986,332	PGIM GLRV Alpha	2.44%
Passive - Blackrock EAFE	30.69%	\$ 1,725,685,909	PGIM GLRV Beta	2.33%
Parametric - Int'l Equity	0.75%	\$ 42,304,409	<b>CORE PLUS - ACTIVE</b>	<b>3.60%</b>
Mellon Passive Emerging	14.18%	\$ 797,155,769	Parametric - Fixed Income	0.25%
<b>INTERNATIONAL EQUITY - PASSIVE</b>	<b>6.99%</b>	<b>\$ 2,992,132,420</b>	Mellon SLH Agg	85.42%
Blackrock EAFE SAE	26.43%	\$ 1,486,203,510	<b>CORE PLUS - PASSIVE</b>	<b>21.51%</b>
Blackrock EM SAE	7.76%	\$ 436,230,556	<b>TOTAL CORE PLUS</b>	<b>25.11%</b>
Blackrock Europe Alpha Tilt	0.20%	\$ 11,150,841	Oaktree Capital Management	0.10%
BMO EAFE	0.04%	\$ 2,509,839	Aegon USA	32.69%
International Equity Transition	0.01%	\$ 326,126	Prudential EMD	33.67%
Oechsle	0.01%	\$ 739,791	PGIM High Yield	33.53%
PanAgora Dynamic EAFE	7.43%	\$ 417,974,637	<b>TOTAL PUBLIC CREDIT</b>	<b>3.00%</b>
Columbia EAFE Equity	0.09%	\$ 5,011,455	UBS - US	60.33%
Wellington EM	4.82%	\$ 270,852,801	UBS - Developed ex US	29.79%
<b>INTERNATIONAL EQUITY - ACTIVE</b>	<b>6.14%</b>	<b>\$ 2,630,999,555</b>	UBS - EM	9.88%
<b>TOTAL INTERNATIONAL EQUITY</b>	<b>13.13%</b>	<b>\$ 5,623,131,975</b>	<b>TOTAL GLOBAL SMART BETA EQUITIES</b>	<b>5.09%</b>
			Cash Account	55.67%
			LARS Liquid Assets	44.33%
			Parametric - Directed Trades	0.00%
			Parametric - Synthetic Cash	0.00%
			Public Real Assets Cash	0.00%
			Pending Cash	0.00%
			<b>CASH ACCOUNT</b>	<b>1.23%</b>
				\$ 294,092,071
				\$ 234,159,848
				\$ -
				\$ -
				\$ -
				\$ -
				\$ 528,251,919
<b>PRIVATE PORTFOLIO</b>		31.39%	\$	13,447,271,784
<b>Manager Name</b>	<b>Manager % of Asset Class</b>	<b>Total Market Value</b>	<b>Manager Name</b>	<b>Manager % of Asset Class</b>
Legacy Portfolio	11.51%	\$ 892,504,510	RREEF	30.11%
Pathway PE Fund XXV	88.49%	\$ 6,859,328,229	Clarion Partners	19.69%
<b>PRIVATE EQUITY</b>	<b>18.10%</b>	<b>\$ 7,751,832,740</b>	Invesco	30.34%
BlackRock	36.75%	\$ 344,052,491	UBS Realty	19.86%
Pathway XXV-B	19.83%	\$ 185,684,476	<b>REAL ESTATE</b>	<b>6.01%</b>
Monroe Capital	43.42%	\$ 406,460,939	Brookfield Super Core Infrastructure	49.05%
<b>DIRECT LENDING</b>	<b>2.19%</b>	<b>\$ 936,197,906</b>	Forest Invest	34.64%
ArrowMark	11.43%	\$ 94,799,073	UBS Farmland Investors	16.30%
Crestline Opps Credit IA	24.06%	\$ 199,652,364	<b>OTHER REAL ASSETS</b>	<b>1.52%</b>
Audax Mezzanine Fund V	3.82%	\$ 31,704,004	<b>PRIVATE REAL ASSETS</b>	<b>7.53%</b>
Marathon SPS IA Fund, L.P.	16.00%	\$ 132,719,863		\$ 319,178,376
KKR Goldfinch	34.86%	\$ 289,288,816		\$ 225,412,311
Ares Private Credit Solutions II	7.94%	\$ 65,920,394		\$ 106,063,794
Audax Mezzanine Coinvest IA	1.89%	\$ 15,658,190		\$ 650,654,481
<b>OPPORTUNISTIC</b>	<b>1.94%</b>	<b>\$ 829,742,703</b>		\$ 3,225,262,456
Oaktree RECIF	3.62%	\$ 25,500,000		
IPERS Principal OEDF	0.97%	\$ 6,800,000		
ITE	11.32%	\$ 79,751,744		
IFM USIDF	12.78%	\$ 90,036,370		
PGIM RE Global Debt	16.16%	\$ 113,827,621		
IPERS PGIM PREDS	10.27%	\$ 72,330,895		
Principal RE Debt II	1.26%	\$ 8,839,124		
KARED IV	14.15%	\$ 99,654,425		
IPERS GTIF	13.82%	\$ 97,344,602		
Heitman Credit	15.64%	\$ 110,151,199		
<b>REAL ASSETS CREDIT</b>	<b>1.64%</b>	<b>\$ 704,235,979</b>		
<b>PRIVATE CREDIT</b>	<b>5.77%</b>	<b>\$ 2,470,176,589</b>		
<b>GRAND TOTAL</b>		<b>\$ 42,835,611,484</b>		
	<b>PERCENT</b>	<b>DOLLARS</b>	<b>RECENT MARKET VALUES</b>	
<b>PUBLIC MARKET</b>	68.61%	\$ 29,388,339,701	3/15/2024	\$ 42,835,611,484
<b>PRIVATE MARKET</b>	31.39%	\$ 13,447,271,784	3/8/2024	\$ 43,060,890,374
<b>TOTAL</b>	100.00%	\$ 42,835,611,484	3/1/2024	\$ 42,815,576,698
			2/23/2024	\$ 42,756,155,579
			2/16/2024	\$ 42,458,609,453
			2/9/2024	\$ 42,393,476,929
			2/2/2024	\$ 42,191,770,236
			1/26/2024	\$ 42,362,626,045
			1/19/2024	\$ 42,081,441,896

**IPERS Portfolio Structure and Allocations**  
**Quarter End December 31, 2023**  
**\$42.2 Billion**

<b>Public Markets – 68% of Total Fund (Equities 39%)</b>				
<b>Domestic Equity</b> \$8.7 Billion 20.7%		<b>International Equity</b> \$5.5 Billion 13.1%		<b>Global Smart Beta</b> \$2.2 Billion 5.1%
Active \$2.7 Billion 30.9%	Passive \$6.0 Billion 69.1%	Active \$2.5 Billion 45.7%	Passive \$3.0 Billion 54.3%	Passive \$2.2 Billion 100.0%
BlackRock (R1000 SAE) \$2.4 billion	BNY Mellon (R1000) \$5.8 billion	BlackRock (EAFE SAE) \$1.4 billion	BlackRock (EAFE) \$1.7 billion	UBS (U.S. Equity Smart Beta) \$1.3 billion
BlackRock (R2000 SAE) \$248.9 million	BNY Mellon (R2000) \$201.3 million	Panagora (Dynamic EAFE) \$395.4 million	BlackRock (Canada) \$435.1 million	UBS (Developed ex U.S. Smart Beta) \$647.5 million
	Parametric (Synthetic) \$48.1 million	BlackRock (Emerging SAE) \$423.0 million	BNY Mellon (Emerging) \$837.3 million	UBS (Emerging Market Smart Beta) \$220.4 million
		Wellington (Emerging) \$262.2 million	Parametric (Synthetic) \$44.6 million	

Terminated managers with residual amounts in their accounts are not included.

**IPERS Portfolio Structure and Allocations**  
**Quarter End December 31, 2023**  
**\$42.2 Billion**

<b>Public Markets – 68% of Total Fund (Fixed Income and Cash 29%)</b>				
<b>Core Fixed Income</b> \$10.6 Billion 25.2%		<b>Public Credit</b> \$1.3 Billion 3.0%		<b>Cash</b> \$582.2 Million 1.4%
<b>Active</b> \$1.5 Billion 14.4%		<b>Passive</b> \$9.1 Billion 85.6%	<b>Active</b> \$1.3 Billion 100.0%	
BlackRock Universal (Relative Value) \$640.2 million	PGIM Universal (Relative Value) \$522.1 million	BNY Mellon Agg (Core) \$9.1 billion	Aegon USA (High Yield) \$417.1 million	BNY Mellon (Cash) \$370.2 million
Man EM Global Macro (Relative Value) \$102.7 million	Mesirow EM Currency (Relative Value) \$262.6 million	Parametric (Synthetic) \$24.8 million	PGIM (High Yield) \$425.8 million	LARS Liquid Assets (Cash) \$212.0 million
			PGIM (Emerging Market Debt) \$431.0 million	

Terminated managers with residual amounts in their accounts are not included.

**IPERS Portfolio Structure and Allocations**  
**Quarter End December 31, 2023**  
**\$42.2 Billion**

<b>Private Markets – 32% of Total Fund</b>				
<b>Private Equity</b> \$7.8 Billion 18.6%	<b>Private Real Assets</b> \$3.1 Billion 7.4%	<b>Private Credit</b> \$2.4 Billion 5.6%		
Pathway Capital (Private Equity) \$7.8 billion	Clarion Partners (RE Equity) \$384.3 million	Tennenbaum Capital (Direct Lending) \$344.1 million	PGIM PREDS (Real Assets Credit) \$73.4 million	Audax Mezz Coinvest (Opportunistic Credit) \$14.9 million
	Invesco (RE Equity) \$783.0 million	Monroe Capital (Direct Lending) \$406.5 million	Heitman Credit (Real Asset Credit) \$80.4 million	Audax Mezz V (Opportunistic Credit) \$26.2 million
	RREEF (RE Equity) \$775.3 million	Pathway Capital (Direct Lending) \$163.0 million	IFM USIDF (Real Asset Credit) \$67.7 million	Arrowmark (Opportunistic Credit) \$98.4 million
	UBS Realty (RE Equity) \$514.2 million		PGIM RE Global Debt (Real Assets Credit) \$113.8 million	Crestline Opp Credit (Opportunistic Credit) \$211.3 million
	Forest Investment (Timber) \$225.4 million		Kayne Anderson IV (Real Assets Credit) \$103.4 million	Marathon SPS IA (Opportunistic Credit) \$132.7 million
	UBS Farmland Investors (Farmland) \$106.1 million		JP Morgan GTIF (Real Asset Credit) \$99.5 million	ARES PCS II (Opportunistic Credit) \$69.8 million
	Brookfield (Infrastructure) \$319.2 million		ITE Rail Fund (Real Asset Credit) \$80.0 million	KKR Goldfinch (Opportunistic Credit) \$289.3 million
			Principal Global II (Real Assets Credit) \$8.8 million	

# Alpha Report

For periods ending December 31, 2023

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# IPERS' Active Manager Alpha Scorecard

Net of Fees as of 4Q23	4Q23	1 Year	3 Year	5 Year	SI	Perf	Org	People	Process
<b>Domestic Equity</b>									
BlackRock - Russell 1000 SAE	0.38%	0.05%	NA	NA	0.06%				
BlackRock - Russell 2000 SAE	0.76%	-0.10%	0.86%	NA	1.57%				
<b>International Equity</b>									
BlackRock - EAFE SAE	-0.34%	1.90%	1.81%	NA	1.14%				
PanAgora - Dynamic EAFE	-0.88%	1.08%	1.67%	NA	0.33%				
Wellington - Emerging Markets	-0.79%	-3.17%	-1.30%	1.37%	-0.04%				
BlackRock - Emerging Markets SAE	-0.55%	0.05%	-0.74%	NA	-0.58%				
<b>Core Fixed Income</b>									
BlackRock - Universal	0.48%	0.17%	1.07%	NA	1.03%				
PGIM - Universal	-0.68%	1.77%	NA	NA	-0.09%				
Man EM Global Macro	-13.49%	NA	NA	NA	-13.49%				
Mesirow EM Currency	-1.80%	NA	NA	NA	-1.80%				
<b>Public Credit</b>									
PGIM - High Yield	-0.64%	-1.17%	0.56%	NA	0.51%				
Aegon USA - High Yield	-0.49%	-1.57%	0.03%	-0.23%	0.27%				
PGIM - Emerging Market Debt	1.24%	1.97%	0.42%	0.41%	0.80%				
<b>LARS</b>									
Aspect Capital	-6.45%	-5.08%	NA	NA	0.46%				
Graham Capital Management	-13.30%	-10.16%	4.94%	0.42%	3.08%				
P/E Global	-7.92%	-0.41%	8.11%	0.43%	3.74%				
PIMCO	3.90%	19.26%	NA	NA	22.13%				
PGIM Wadhvani	-0.95%	-15.99%	5.52%	0.63%	5.04%				
Welton Global	-5.24%	-13.06%	-1.96%	NA	-1.96%				
ARP	-2.04%	-1.63%	NA	NA	-3.82%				

 No Concerns

 Minor Concerns

 Material Concerns

# IPERS' Active Manager Listing

MANAGER	INCEPTION DATE	MANDATE	BENCHMARK
<b>Domestic Equity</b>			
BlackRock - Russell 1000 SAE	May 2022	Large Cap	Russell 1000
BlackRock - Russell 2000 SAE	May 2019	Small Cap	Russell 2000
<b>International Equity</b>			
BlackRock – EAFE SAE	May 2019	Developed EAFE	MSCI EAFE Index (net)
PanAgora - Dynamic EAFE	May 2019	Developed EAFE	MSCI EAFE Index (net)
Wellington - Emerging Markets	February 2009	Global Emerging Markets	MSCI Emerging Markets (net)
BlackRock - Emerging Markets SAE	May 2019	Global Emerging Markets	MSCI Emerging Markets (net)
<b>Core Fixed Income</b>			
BlackRock - Universal	November 2020	Relative Value	Bloomberg Barclays U.S. Aggregate
PGIM - Universal	March 2021	Relative Value	Bloomberg Barclays U.S. Aggregate
Man EM Global Macro	October 2023	Relative Value	Bloomberg Barclays U.S. Aggregate
Mesirow EM Currency	October 2023	Relative Value	Bloomberg Barclays U.S. Aggregate
<b>Public Credit</b>			
PGIM - High Yield	June 2019	High Yield	Bloomberg US HY 2% Capped Index
Aegon USA - High Yield	February 2012	High Yield	High Yield Policy Index
PGIM - Emerging Market Debt	April 2016	Emerging Market Debt	JP Morgan EMBI Global
<b>LARS</b>			
Aspect Capital	March 2022	Diversified Trend	Absolute Return
Graham Capital Management	December 2016	Tactical Trend	Absolute Return
P/E Global	December 2016	FX Strategy	Absolute Return
PIMCO	July 2022	Commodity Alpha	Absolute Return
PGIM Wadhvani	March 2017	Keynes Leveraged Quantitative Strategy	Absolute Return
Welton Global	June 2021	Welton Global	Absolute Return
ARP	November 2022	Alternative Risk Premium	Absolute Return

# Private Market Program Manager Updates

For periods ending December 31, 2023

# IPERS' PMP Manager Scorecard

	1 Year	5 Year	10 Year	SI	Performance	Organization	People	Process
<b>Private Equity</b>								
Multi-Strategy								
Pathway	4.0%	17.5%	16.7%	13.0%				
<b>Private Credit</b>								
Direct Lending								
BlackRock	8.7%	7.2%	N/A	7.3%				
Monroe	9.9%	6.9%	N/A	7.4%				
Pathway	7.4%	N/A	N/A	7.4%				
Opportunistic								
Arrowmark	11.6%	N/A	N/A	7.9%				
Ares Private Credit Solutions II	10.6%	N/A	N/A	4.4%				
Audax Mezzanine Fund V	6.6%	N/A	N/A	22.6%				
Audax Mezzanine Co-Invest Fund	10.1%	N/A	N/A	10.9%				
Crestline	10.7%	N/A	N/A	7.8%				
KKR	7.1%	N/A	N/A	7.4%				
Marathon	10.1%	N/A	N/A	6.3%				
Real Assets								
Heitman CREDIT	0.3%	N/A	N/A	0.3%				
IFM USIDF	5.3%	N/A	N/A	5.3%				
PGIM Global Real Estate Debt	5.9%	6.4%	N/A	6.4%				
Principal Real Estate Debt II	1.7%	4.8%	N/A	5.9%				
Kayne Anderson Real Estate Debt IV	10.0%	N/A	N/A	7.1%				
JP Morgan GTIF	N/A	N/A	N/A	1.8%				
<b>Private Real Assets</b>								
Real Estate								
Clarion Partners	-30.2%	-3.5%	3.1%	4.5%				
Invesco	-9.2%	13.1%	13.4%	10.6%				
RREEF	-9.4%	8.7%	9.7%	9.6%				
UBS Realty	-5.6%	12.1%	11.7%	10.2%				
Other Real Assets								
Brookfield	8.7%	N/A	N/A	7.1%				
Forest Investment Associates	14.1%	7.3%	5.8%	6.4%				
UBS Farmland	6.2%	4.2%	N/A	7.0%				

 No Concerns

 Minor Concerns

 Material Concerns

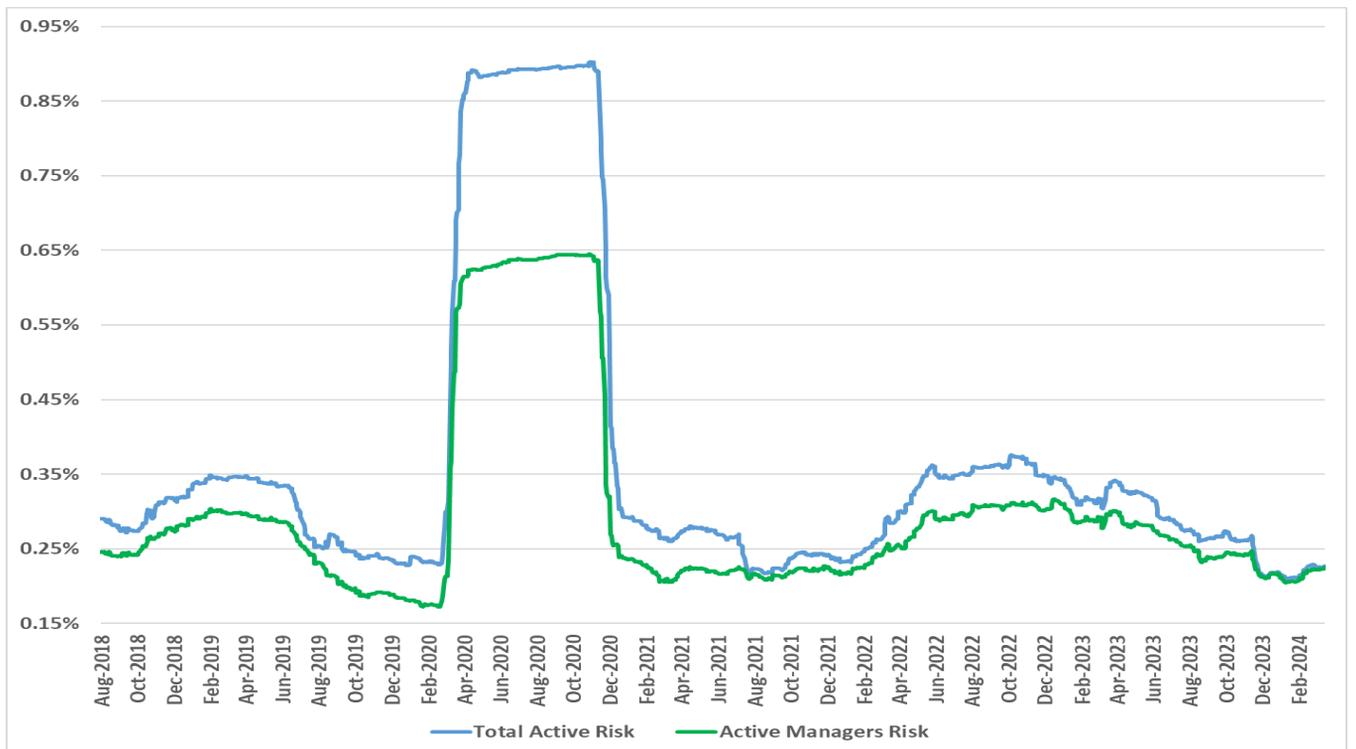
## Active Risk –180 Days (Mar 2024)

	Active	Passive	Misfit	Total
<b>Equities</b>				
Domestic Equities	0.09%	0.01%	0.00%	0.09%
International Equities	0.10%	0.01%	0.00%	0.11%
Global Smart Beta Equities	-	0.01%	0.00%	0.01%
<b>Fixed Income</b>				
Core-Plus Fixed Income	0.11%	0.03%	0.00%	0.11%
Public Credit	0.03%	-	0.00%	0.03%
<b>Cash/LARS</b>	0.08%	-	-	0.08%
<b>Asset Allocation</b>	-	0.06%	-	0.06%
<b>Total Public Markets</b>	<b>0.22%</b>	<b>0.08%</b>	<b>0.00%</b>	<b>0.23%</b>

- Plan-level Total Active Risk stable at 0.23%
- Active risk expected to remain stable for the next few months
- Addition of absolute return strategies will increase the active risk depending on the rate of onboarding

<b>Target</b>	1.50%
<b>Upper Limit</b>	3.00%

## External Active Risk –180 Days (Mar 2024)



# 2024

## Board Meetings

JANUARY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

MARCH						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

APRIL						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

JULY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

### March 22, 2024

CY2023 Investment Performance

### June 20, 2024

Private Markets Program Review

### September 25-26, 2024

Continuing Education Session

FY2024 Investment Performance Review

Asset Allocation

Investment Policy and Goal Statement

### December

12/5/24 - Investment Board & BAC Mtg

(Actuarial Valuation Presentation)