

Investment Board Meeting Agenda

Friday, March 24, 2023

8:30 a.m. – 11:45 a.m.

IPERS, 7401 Register Drive, Des Moines, IA 50321

Conference Telephone #: 646-558-8656 / Meeting ID: 853 6701 7970

- 8:30 a.m. Call to Order**
- 8:30 a.m. Approval of Previous Board Meeting Minutes – December 1, 2022**
- 8:35 a.m. CEO Report**
Greg Samorajski, IPERS
- 8:45 a.m. Legislative Session Update**
Shawna Lode, IPERS
- 9:00 a.m. Actuarial Consulting Services Hiring Recommendation**
Bill Bemis, Investment Board
- 9:10 a.m. Closed Session for CIO Performance Evaluation and CEO Compensation**
- 9:45 a.m. Break**
- 10:00 a.m. Calendar Year 2022 Investment Performance Review**
Thomas Toth and Ali Kazemi, Wilshire
- 10:30 a.m. Investment Policy and Goal Statement – Proposed Revision**
Sriram Lakshminarayanan
- 10:35 a.m. IPERS Investment Staff Reports**
- CIO Updates – Sriram Lakshminarayanan
 - Beta Report – Sriram Lakshminarayanan
 - Alpha Report – Investment Team
 - Private Market Program – Investment Team
 - Risk Report – Sriram Lakshminarayanan
- 11:35 a.m. Public Comments**
- 11:40 a.m. Other Business**
- Confirm Next Meeting Dates – Thursday, June 15, 2023
 - September 27 – 28, 2023
- 11:45 a.m. Adjourn**



INVESTMENT BOARD MEETING MINUTES
IPERS Headquarters
7401 Register Drive, Des Moines, Iowa
December 1, 2022

The following people attended the IPERS Investment Board Meeting held on Thursday, December 1, 2022.

Members of the Board – Present

Justin Kirchhoff, Chair
Bill Bemis, Vice Chair
Treasurer Michael Fitzgerald
Tami Loge

Kris Rowley
Lisa Stange
Representative Mary Mascher
Representative Brian Lohse

Members of the Board – Absent

Senator Tim Goodwin
Senator Pam Jochum

Administration and Staff

Greg Samorajski, Chief Executive Officer
Sriram Lakshminarayanan, CIO
Rich Wiggins, Risk & Operations Officer
Sheldon Lien, Senior Investment Officer
Pat Reinhardt, Senior Investment Officer
Keith Scholten, Senior Investment Officer
John Fujiwara, Retirement Investment Officer

Marcus Dong, Investment Officer
Kevin Terdal, 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

Consultant – Wilshire

Rose Dean

Actuary – Cavanaugh Macdonald

Patrice Beckham
Brent Banister
Bryan Hoge

Benefits Advisory Committee

Len Cockman
Lowell Dauenbaugh
Steve Hoffman
Erin Mullenix
Melissa Peterson
Phil Tetzloff

Call to Order

Chair Justin Kirchhoff called the meeting to order at 8:30 a.m.

Approval of Minutes from the Previous Meetings

Lisa Stange made the motion to approve the meeting minutes from the September 21, 2022, and September 22, 2022, Board meetings. Treasurer Fitzgerald seconded. The motion carried by unanimous voice vote.

CEO's Report

Greg Samorajski thanked Representative Mary Mascher and Treasurer Michael Fitzgerald for their years of dedicated service to IPERS, its members and the Investment Board.

Request to Issue an RFP for Actuarial Consulting Services

Greg Samorajski reported that state agencies must rebid contracts every six years. IPERS' contract with current actuary, Cavanaugh Macdonald, expires June 30, 2023. Kris Rowley moved to approve the issuance of an RFP for actuarial consulting services. Tami Loge seconded. The motion carried by unanimous roll call vote.

Ayes: Justin Kirchhoff, Bill Bemis, Treasurer Fitzgerald, Tami Loge, Kris Rowley and Lisa Stange

Nays: None

MOTION PASSED

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 \$39.84 billion.

Alpha Report

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

Private Markets Program Risk Report

Pat Reinhardt noted minor performance concerns for real estate manager, Clarion Partners, and other real assets managers Forest Investment Associates and UBS Farmland.

Risk Report

Rich Wiggins reviewed IPERS' standard risk reports.

CY2023 Private Markets Commitments

Pat Reinhardt reviewed the private market program commitment plan, noting in calendar year 2023, IPERS plans to make commitments of up to \$1.95 billion. Private equity to receive \$700 million, private credit to receive \$850 million and \$400 million to private real assets.

FY2022 Investment Management Expenses

Sriram Lakshminarayanan reported IPERS' preliminary investment management expenses for fiscal year 2022 were \$70.3 million, an increase of 3.1% from FY2021.

CIO Updates

Sriram Lakshminarayanan discussed how unprecedented the investment markets are with both stocks and bonds simultaneously producing double-digit negative returns. He next updated the Board on the alpha search RFP IPERS plans to issue and the recently launched internal ARP strategy.

Securities Lending Review

Jina Bresson of the State Treasurer's Office provided an overview of the securities lending program and its earnings.

2022 Actuarial Valuation Report

Patrice Beckham, Brent Banister and Bryan Hoge of Cavanaugh Macdonald presented the results of the 2022 actuarial valuation report. Despite assumption changes resulting from the previous years' Experience Study and an investment return of -3.9% in FY2022, IPERS' funded status increased from 88.3% to 89.5%, and the unfunded actuarial liability decreased to \$4.615 billion. The 2022 valuation report sets the required contribution rates for FY2024. Contribution rates will remain unchanged for Regular and Protection Occupation members. Contribution rates for Sheriffs and Deputy Sheriffs will decrease 0.50%.

Contribution Rate Funding Policy

Greg Samorajski reviewed proposed changes to the Contribution Rate Funding Policy, including when the favorable experience dividend and the supplemental account for active members programs will be funded. After discussions, Justin Kirchhoff moved for Greg Samorajski, as IPERS CEO, to establish a COLA working group consisting of Investment Board and BAC members. The group will study the issue and bring a recommendation to the Board and BAC for their endorsement. The recommendation may be presented to the legislature. Lisa Stange seconded. The motion carried by unanimous roll call vote.

Ayes: Justin Kirchhoff, Bill Bemis, Treasurer Fitzgerald, Tami Loge, Kris Rowley and Lisa Stange

Nays: None

MOTION PASSED

Public Comments

None

Confirm Next Meeting Date and Adjournment

The Investment Board's next meeting date is Friday, March 24, 2023. With no further business to come before the Board, the meeting adjourned at 11:55 a.m.

Bill Number	Description	Committee	Senate - Status/Last Action	House - Status/Last Action
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Bills that directly impact IPERS

PO definition broadening

HF 138	A bill for an act providing for membership in a protection occupation under the Iowa public employees' retirement system and including effective date and retroactive applicability provisions.(Formerly HSB 38/See SF 55.)	State Government	Passed subcommittee 3-8-23	Passed House 2-1-23
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Chinese investments

SF 418	A bill for an act relating to the investment of certain public funds in certain companies, concerning companies that are owned or controlled by Chinese military or government services and public fund review requirements.(Formerly SF 98.)	State Government	Passed committee 2-22-23	
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ESG Investing

HF 653	A bill for an act relating to public contracts, public fund investing, and lending practices with certain companies that engage in economic boycotts based on environmental, social, or governance criteria, and including effective date and applicability provisions. (Formerly HF 2)	State Government		Amended to conform to SF 507 3-15-23
SF 507	A bill for an act concerning public contracts with companies that boycott certain companies or that engage in nonpecuniary social investment policies.(Formerly SSB 1094.)	State Government	Passed Senate 3-7-23	Passed House with amendment 3-15-23

Government realignment

HF 579	A bill for an act relating to motor vehicle enforcement duties of the department of public safety and the department of transportation, making appropriations, and including effective date provisions.(formerly HSB 166.)	Public Safety		Passed committee 3-2-23
SF 513	A bill for an act relating to motor vehicle enforcement duties of the department of public safety and the department of transportation, making appropriations, and including effective date provisions.(See SSB 1175.)	Transportation	Passed Senate with amendment 3-15-23	

**Actuarial Consulting Services
RFP O-2023-1**

Evaluation Committee Recommendation

The Evaluation Committee recommends that the Investment Board approve the hiring of Cavanaugh Macdonald as the System's actuary, subject to final due diligence and successful contract and fee negotiations.

The Actuarial Consulting Services Request for Proposal (RFP) was issued on December 19, 2022. Four firms responded to the RFP, and all met the minimum qualifications: Cavanaugh Macdonald, Cheiron, Gabriel Roeder Smith & Company and Segal.

An Evaluation Committee (comprised of Greg Samorajski, David Martin, Bill Bemis, Lisa Stange and Lowell Dauenbaugh) read and individually scored the responses. A summary of the Committee's weighted average scores is provided below:

	Cavanaugh Macdonald	Cheiron	GRS	Segal
Services to be provided	.75	.70	.60	.45
Project team and firm experience	1.20	.73	1.0	.40
Fees	0.75	.45	.25	.55
Total	2.70	1.88	1.85	1.40

The Evaluation Committee interviewed Cavanaugh Macdonald and Gabriel Roeder Smith and reached a consensus recommendation that Cavanaugh Macdonald be awarded the contract.

WILSHIRE ADVISORS

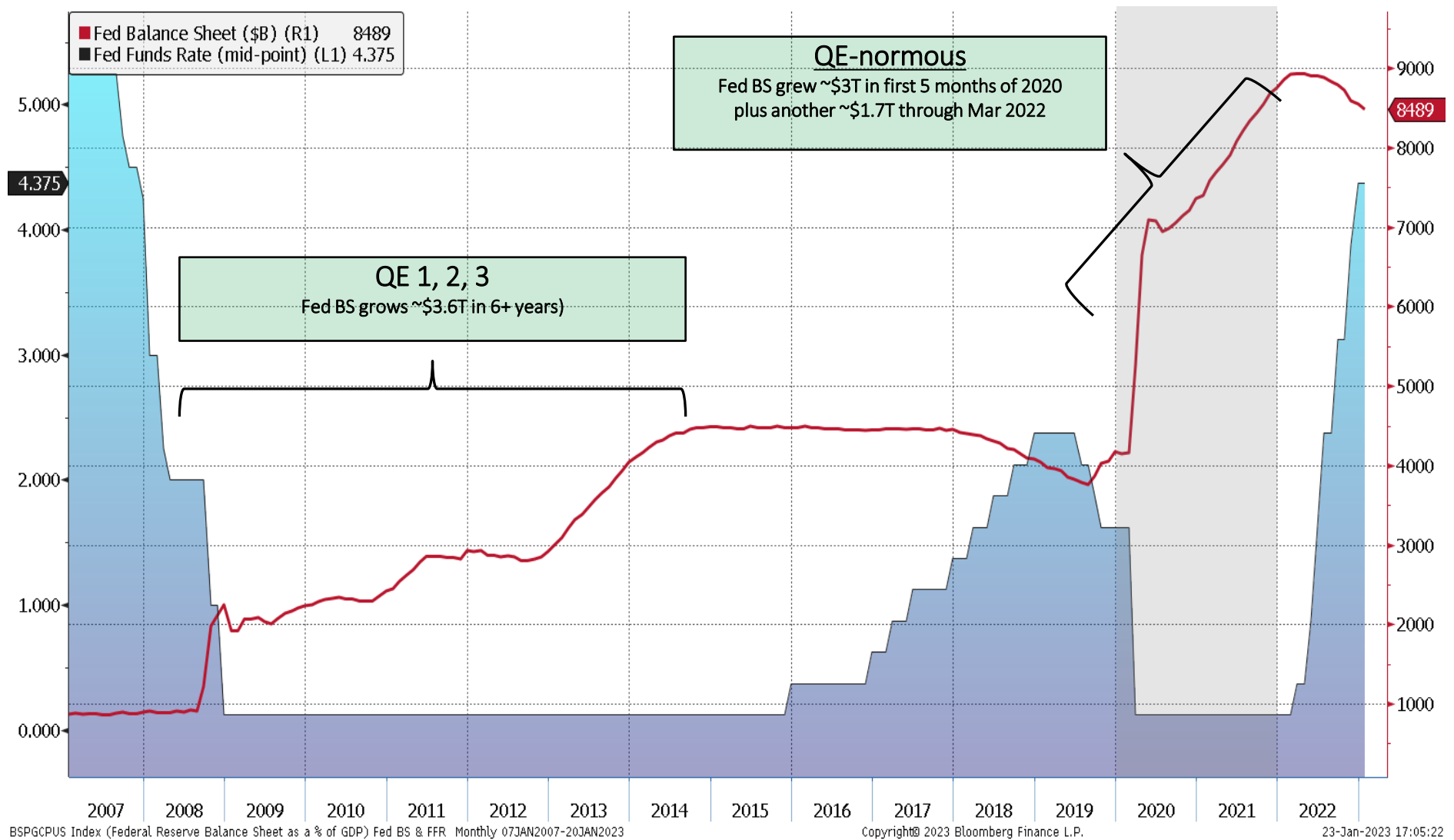
Iowa Public Employees' Retirement System
Calendar Year 2022 Performance Review

Rose Dean, CFA, Managing Director
Ali Kazemi, Managing Director

March 24, 2023

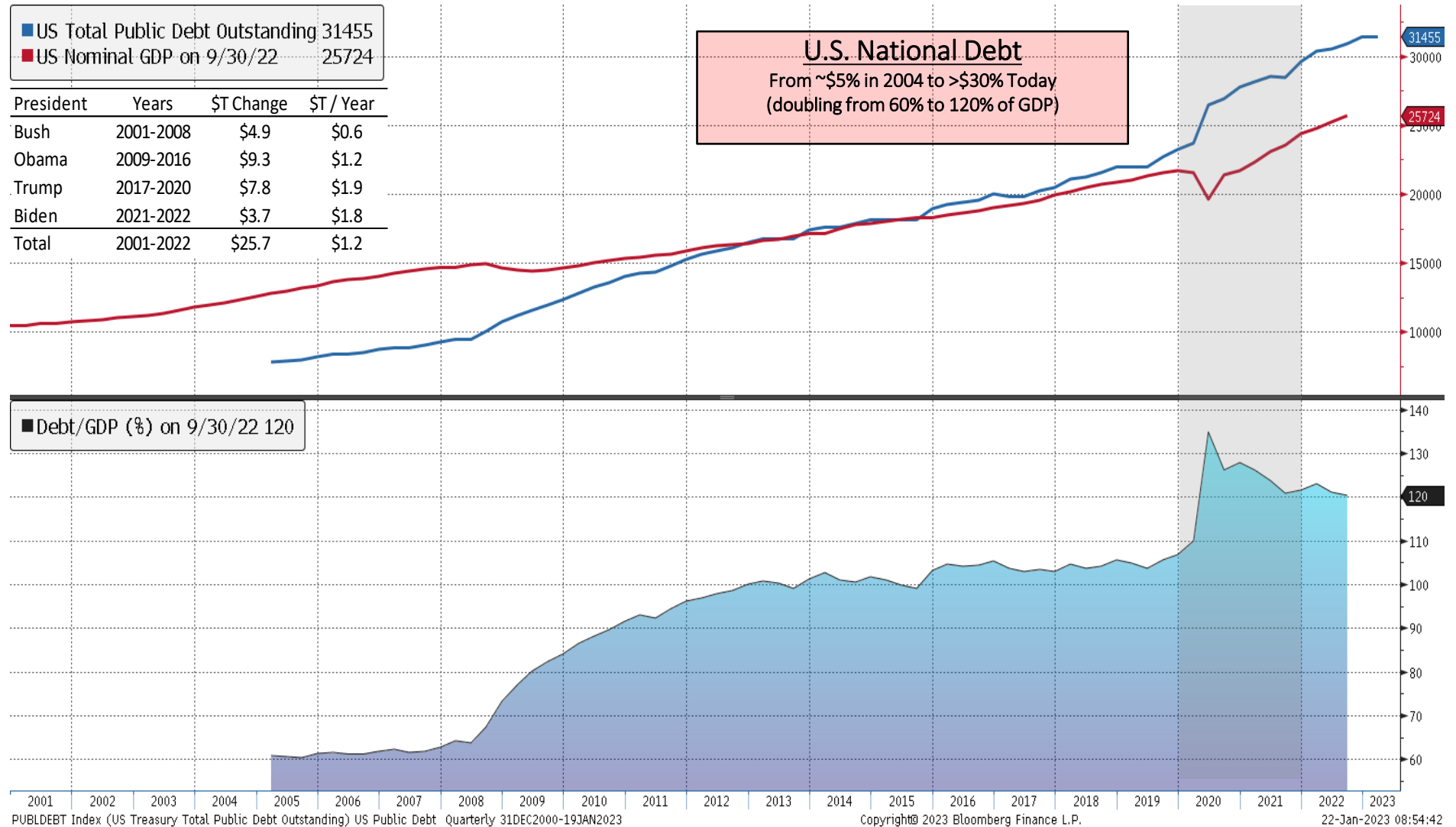
Market Overview

The Fed: Zero Rates & QE to \$8T and Beyond...



Data Source: Bloomberg

A Secular Explosion in National Debt: “We’re Not in Kansas Anymore”

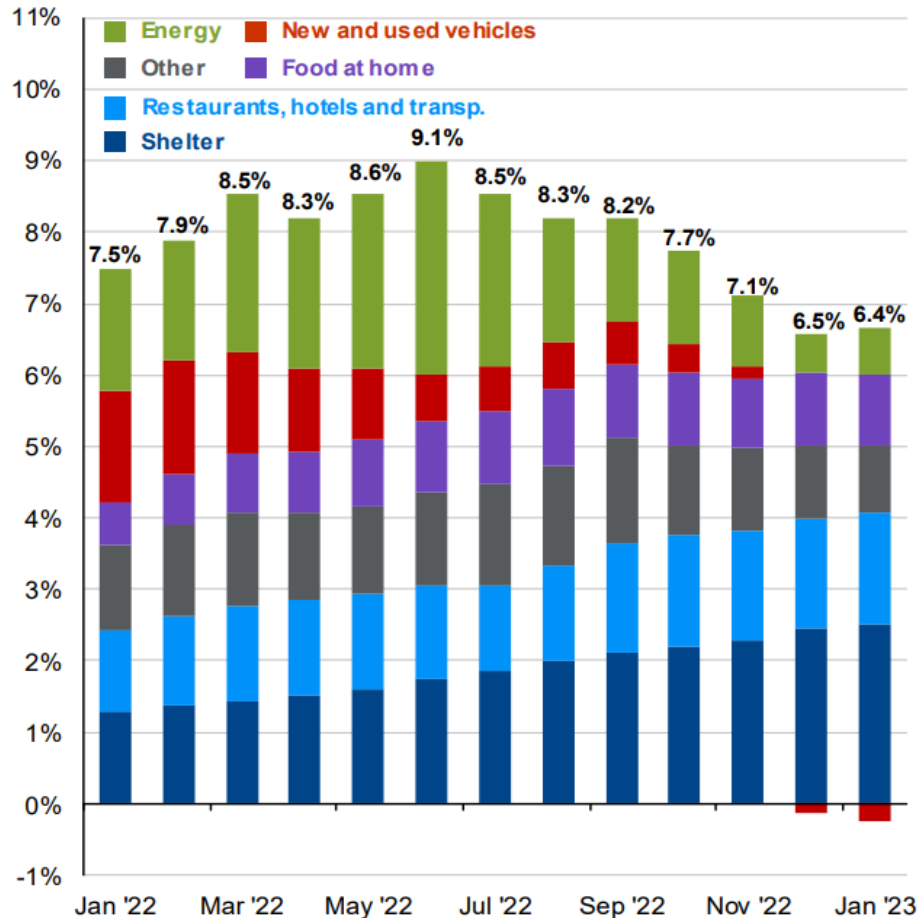


Data Source: Bloomberg

Inflation Drivers and Expectations

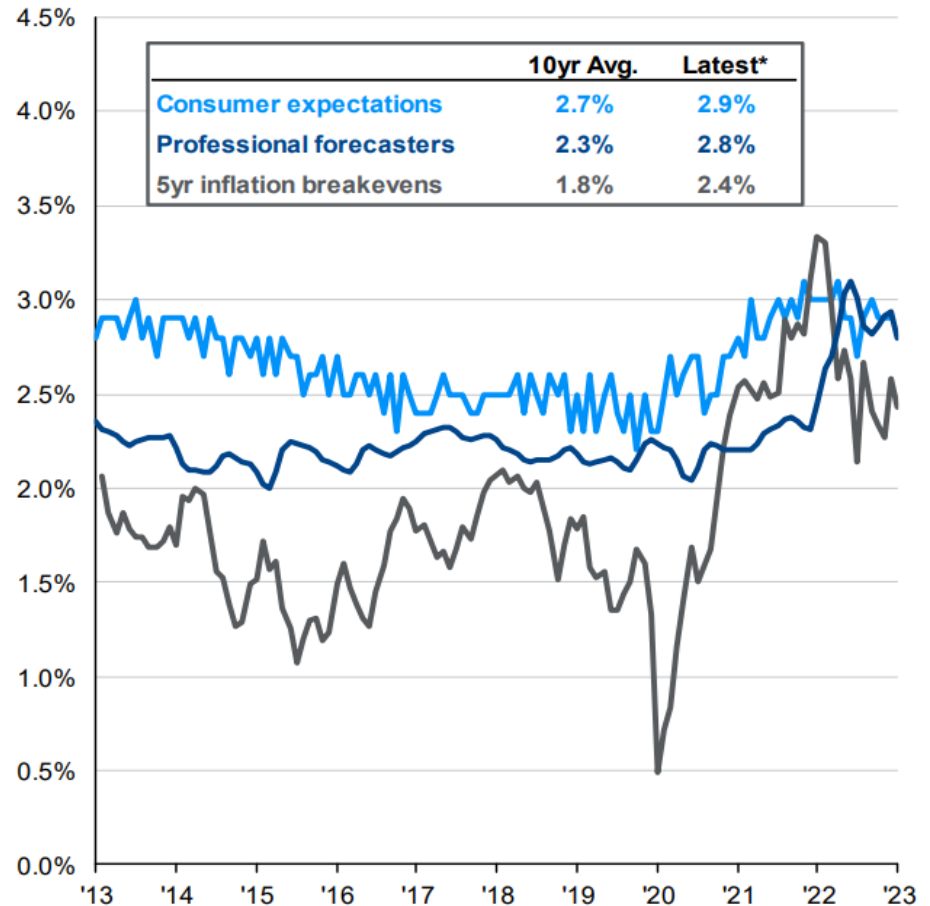
Contributors to headline inflation

Contribution to y/y % change in CPI, not seasonally adjusted



Inflation expectations, next 5 years

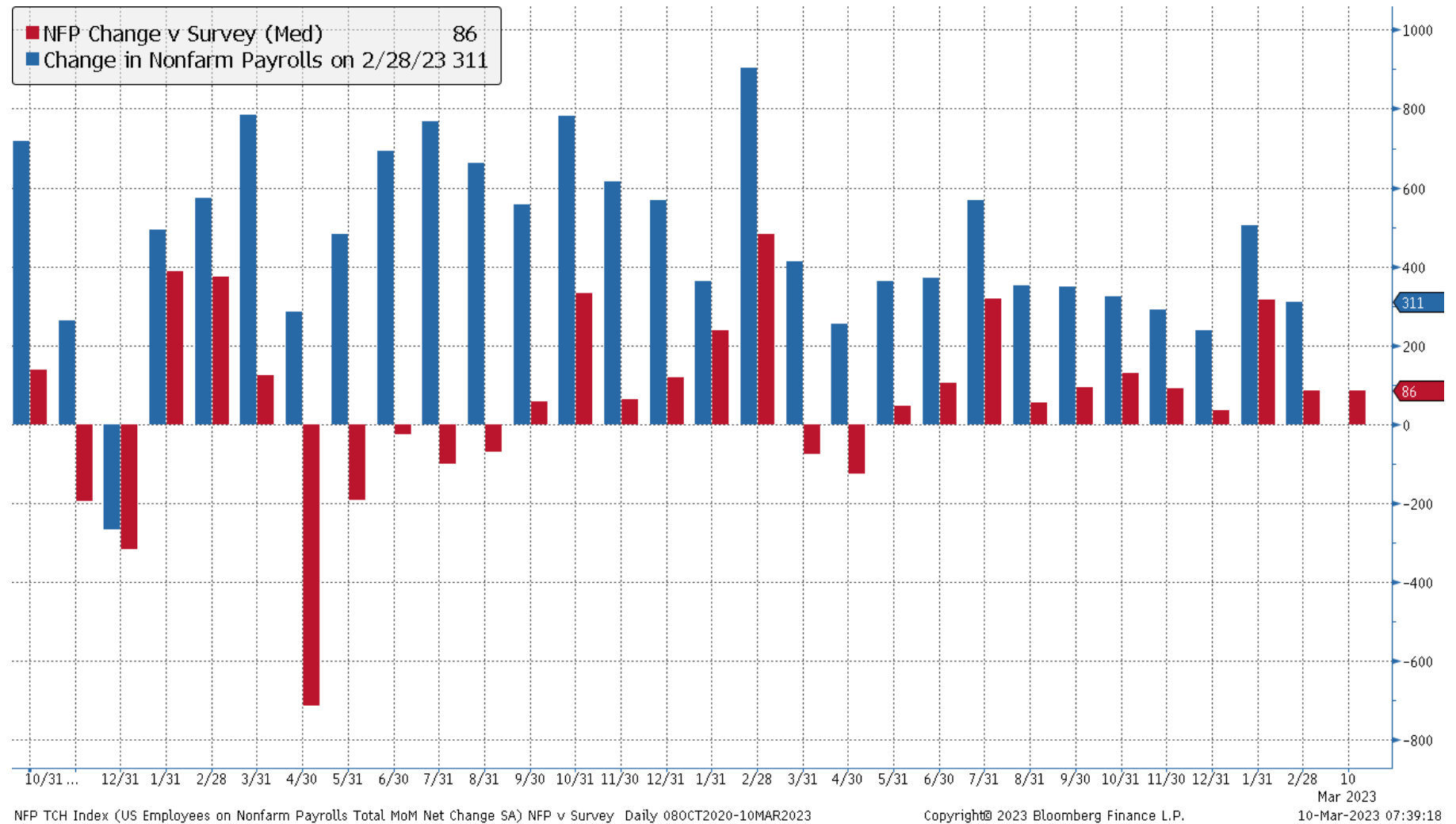
% change vs. prior year, non-seasonally adjusted



Source: Bureau of Labor Statistics, FactSet, Federal Reserve Bank of Philadelphia, University of Michigan, J.P. Morgan Asset Management. Contributions mirror the BLS methodology on Table 7 of the CPI report. Values may not sum to headline CPI figures due to rounding and underlying calculations. "Shelter" includes owner's equivalent rent and rent of primary residence. "Other" primarily reflects household furnishings, apparel, education and communication services, medical care services and other personal services. *Reflects the latest daily 5yr/5yr breakevens, preliminary or final Consumer Sentiment survey, and the quarterly Survey of Professional Forecasters interpolated to a monthly series. The Survey of Professional Forecasters reflects the median estimate by professional forecasters of average CPI inflation over the next 5 years. The series has been adjusted by J.P. Morgan Asset Management to exclude realized inflation readings within the forecast window. Guide to the Markets - U.S. Data are as of March 9, 2023.

Source: JP Morgan Guide to Markets 1Q 2023

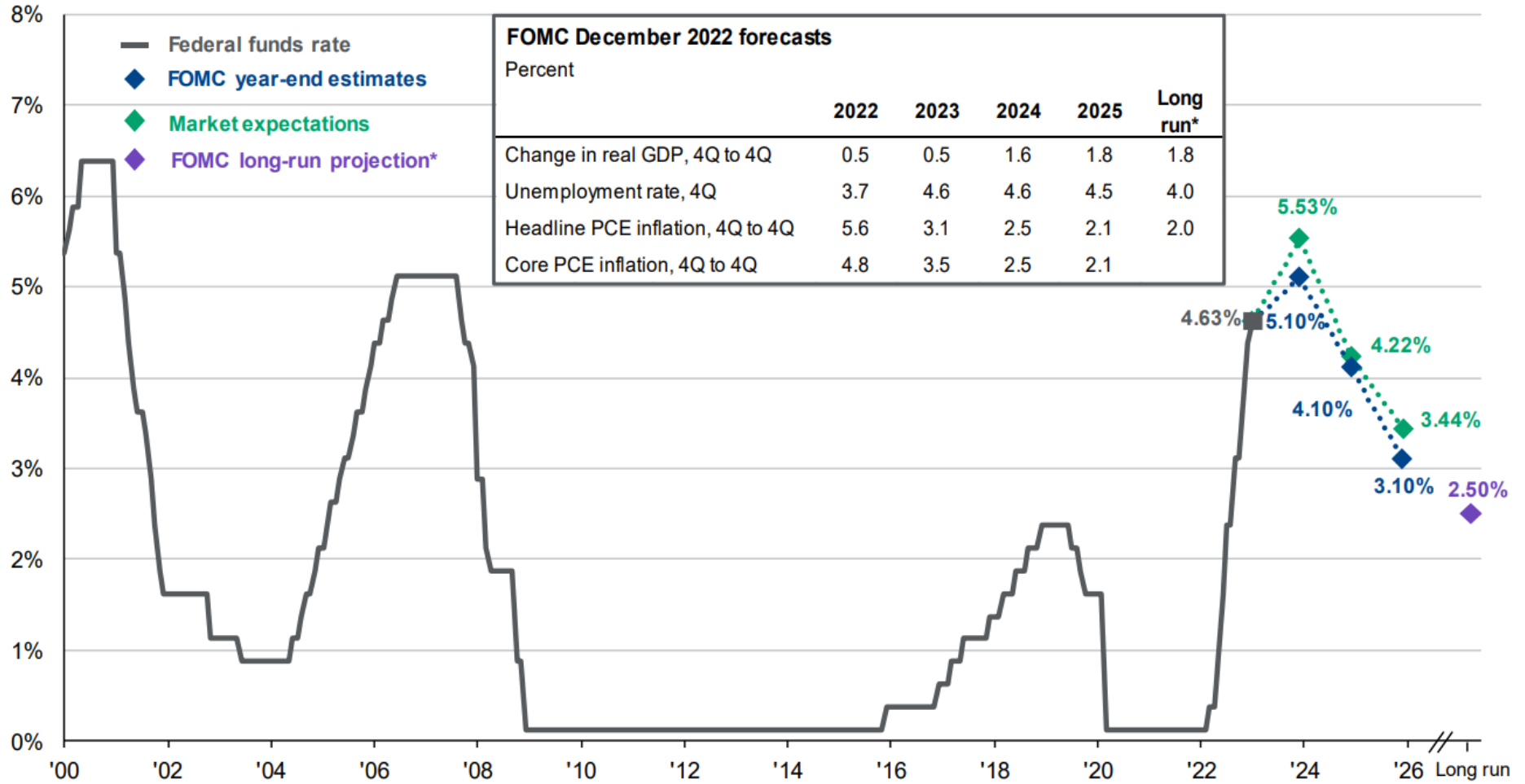
Strength in Job Market



Fed Funds Expectations

Federal funds rate expectations

FOMC and market expectations for the federal funds rate



Asset Class Performance

Asset Class Returns - Best to Worst

2017	2018	2019	2020	2021	2022 YTD
Emrg Mrkts 37.7%	T-Bills 1.9%	U.S. Equity 31.0%	U.S. Equity 20.8%	REITs 46.2%	Commodities 16.1%
Developed 25.6%	Core Bond 0.0%	REITs 25.8%	Emrg Mrkts 18.7%	Commodities 27.1%	T-Bills 1.3%
U.S. Equity 21.0%	U.S. TIPS -1.3%	Developed 22.7%	U.S. TIPS 11.0%	U.S. Equity 26.7%	High Yield -11.2%
High Yield 7.5%	High Yield -2.1%	Emrg Mrkts 18.9%	Developed 8.3%	Developed 11.8%	U.S. TIPS -11.8%
REITs 4.2%	REITs -4.8%	High Yield 14.3%	Core Bond 7.5%	U.S. TIPS 6.0%	Core Bond -13.0%
Core Bond 3.6%	U.S. Equity -5.3%	Core Bond 8.7%	High Yield 7.1%	High Yield 5.3%	Developed -14.0%
U.S. TIPS 3.0%	Commodities -11.2%	U.S. TIPS 8.4%	T-Bills 0.7%	T-Bills 0.0%	U.S. Equity -19.0%
Commodities 1.7%	Developed -13.4%	Commodities 7.7%	Commodities -3.1%	Core Bond -1.5%	Emrg Mrkts -19.7%
T-Bills 0.8%	Emrg Mrkts -14.2%	T-Bills 2.3%	REITs -7.9%	Emrg Mrkts -2.2%	REITs -26.8%

Annualized 5-Year as of 12/22

U.S. Equity 9.0%
Commodities 6.4%
REITs 3.4%
High Yield 2.3%
U.S. TIPS 2.1%
Developed 2.0%
T-Bills 1.2%
Core Bond 0.0%
Emrg Mrkts -1.0%

Total Fund Overview

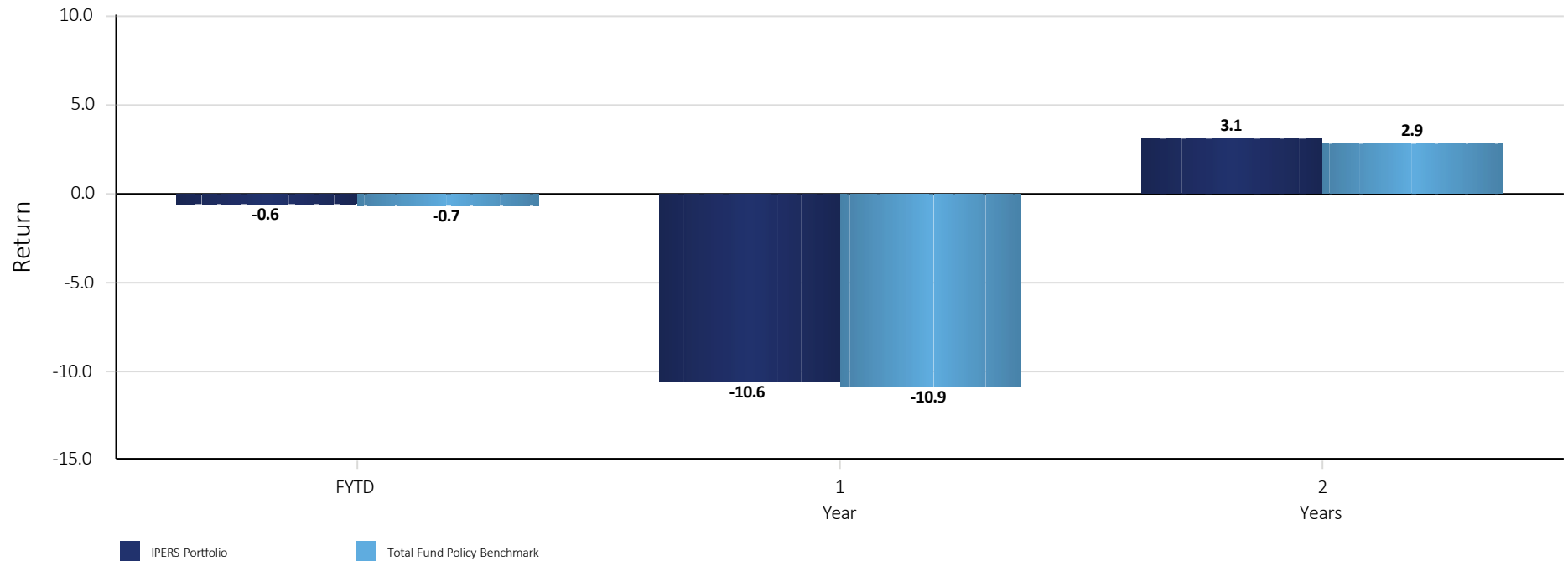
Executive Summary (as of 12-31-2022)

- Total Fund returned -10.6% during CY 2022, outperforming the Total Fund Policy Benchmark¹ (“policy”) return of -10.9% over the same period
- Manager alpha across public markets was mixed for the year. U.S. equity, Public Credit, and International Equity beat their policies, while Core Plus Fixed Income underperformed.
- LARS program added material excess value, approx. 0.10% contribution to total fund excess return
- 10-year annualized returns were 7.9% for Total Fund, matching the policy return
- IPERS ranks very favorably versus peers across all time horizons. Total Fund return has ranked top decile against all public plans with greater than 1 billion dollars in assets over 3, 5, and 10 years
- IPERS 10-year risk-adjusted returns remain top-quartile relative to all public plans greater than \$1 billion in Total Fund assets—outpacing 97% of peers over 20 years

Comparative Performance

IPERS Portfolio

Periods Ended December 31, 2022



Total Fund Policy Benchmark

Weight (%)

Oct-2022

Russell 3000 Index	19.68
Blmbg. U.S. Universal Index	21.56
MSCI AC World ex USA (Net)	15.46
Global Smart Beta Policy Index	4.69
Private Equity Policy Index	20.78
90 Day U.S. Treasury Bill	0.94

Total Fund Policy Benchmark

Weight (%)

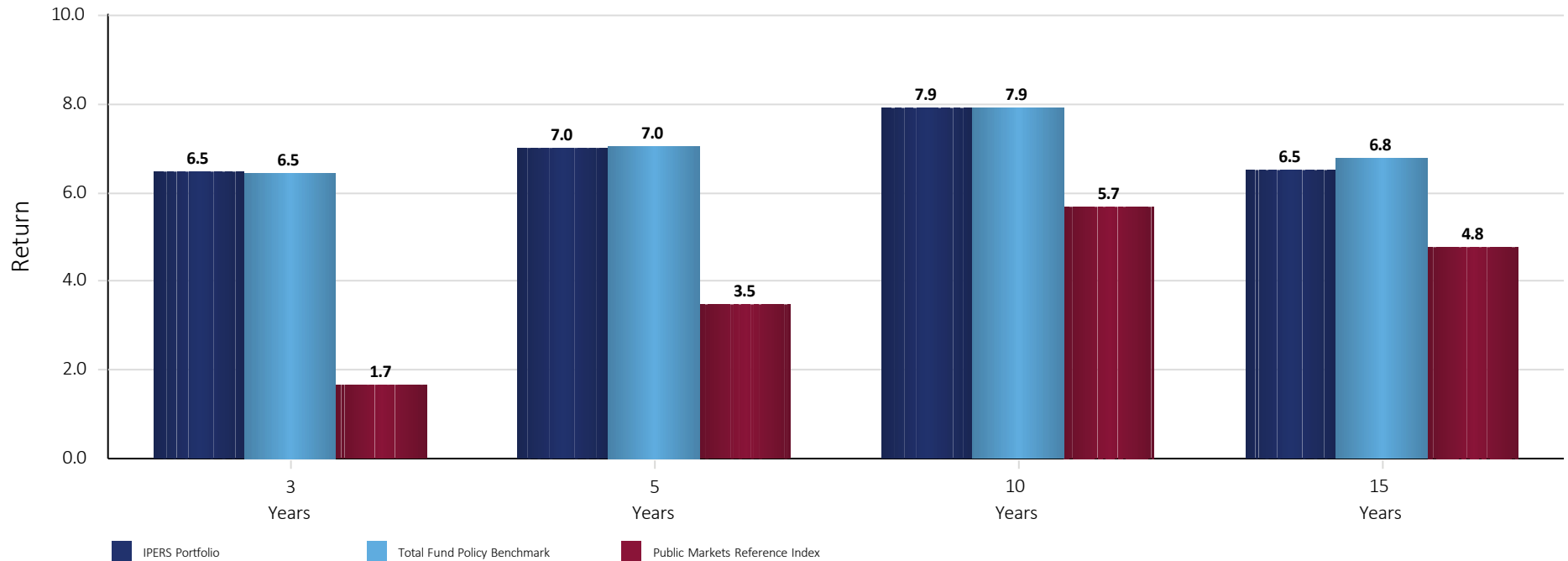
Private Credit Policy Index	4.66
Private Real Assets Policy Index	9.42
Public Credit Policy Index	2.81

Note: Total Fund Policy Benchmark Returns were revised for period Sept 2020 – June 2022

Comparative Performance

IPERS Portfolio

Periods Ended December 31, 2022



Public Markets Reference Index

Weight (%)

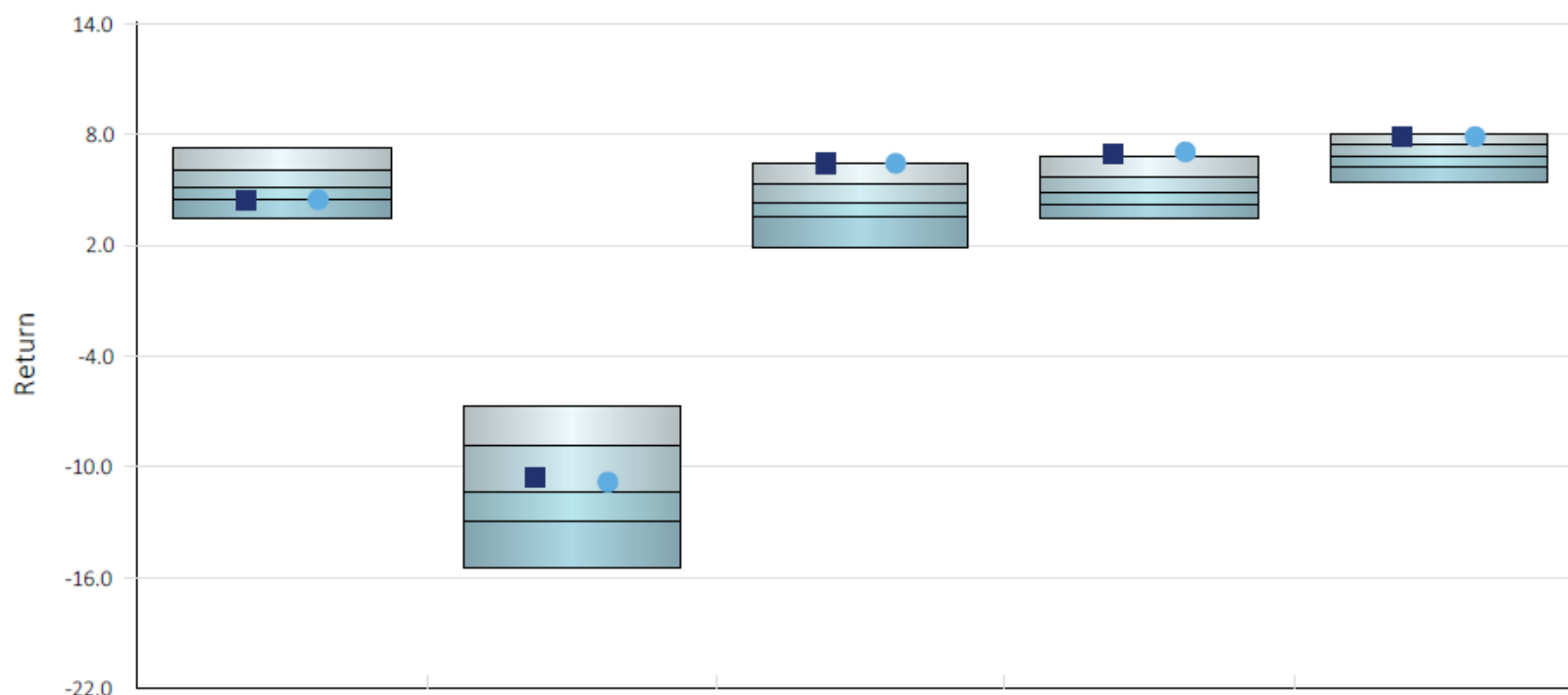
Jun-1994

MSCI AC World ex USA IMI (Net)	27.00
Russell 3000 Index	33.00
Blmbg. U.S. Aggregate Index	40.00

Plan Sponsor Peer Group Analysis

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

Periods Ended December 31, 2022



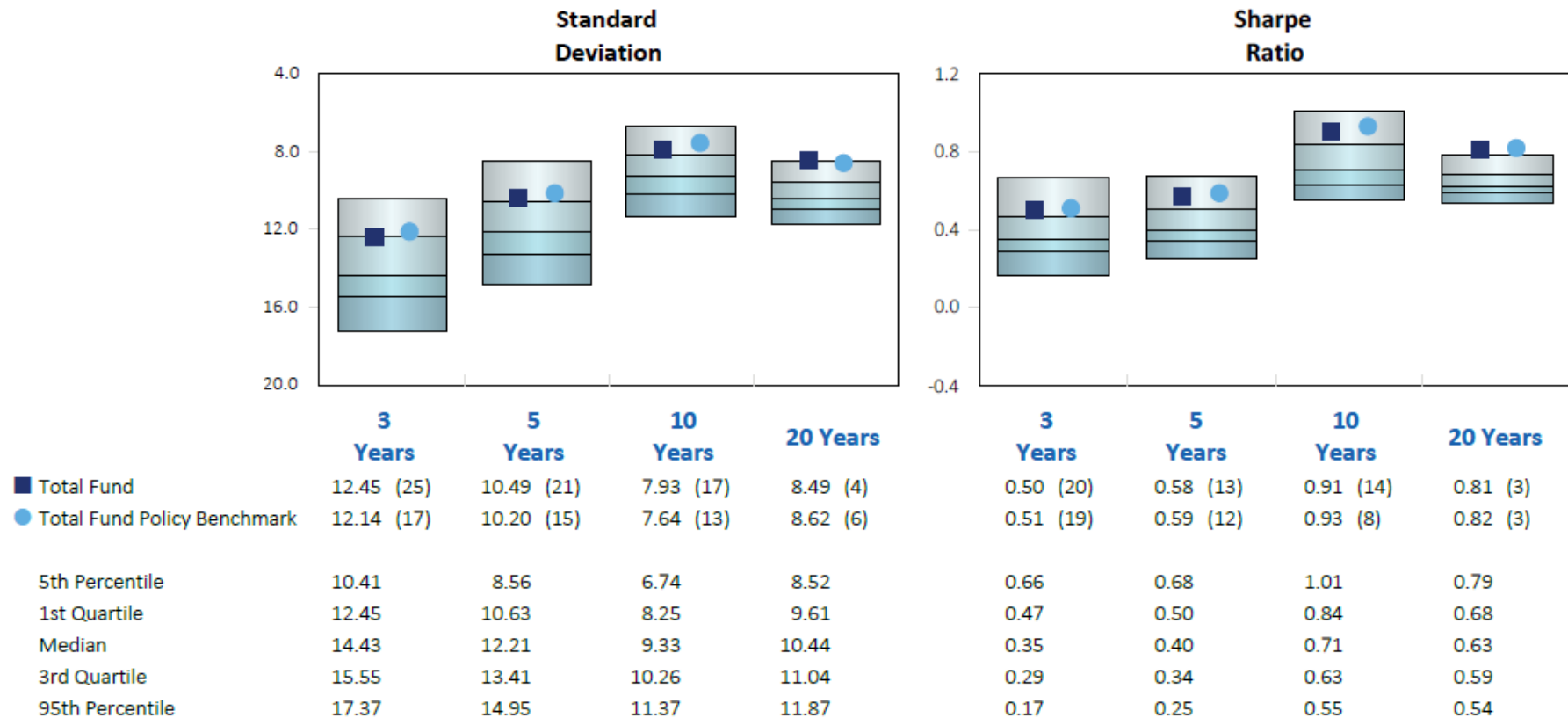
	QTD	1 Year	3 Years	5 Years	10 Years
■ Total Fund	4.49 (75)	-10.61 (42)	6.46 (7)	7.01 (4)	7.93 (6)
● Total Fund Policy Benchmark	4.46 (77)	-10.85 (44)	6.46 (7)	7.04 (2)	7.91 (7)
5th Percentile	7.27	-6.64	6.46	6.86	7.97
1st Quartile	6.01	-8.90	5.36	5.71	7.52
Median	5.14	-11.39	4.27	4.91	6.84
3rd Quartile	4.48	-13.03	3.56	4.19	6.20
95th Percentile	3.45	-15.53	1.89	3.47	5.40
Population	72	68	63	62	59

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, 2022

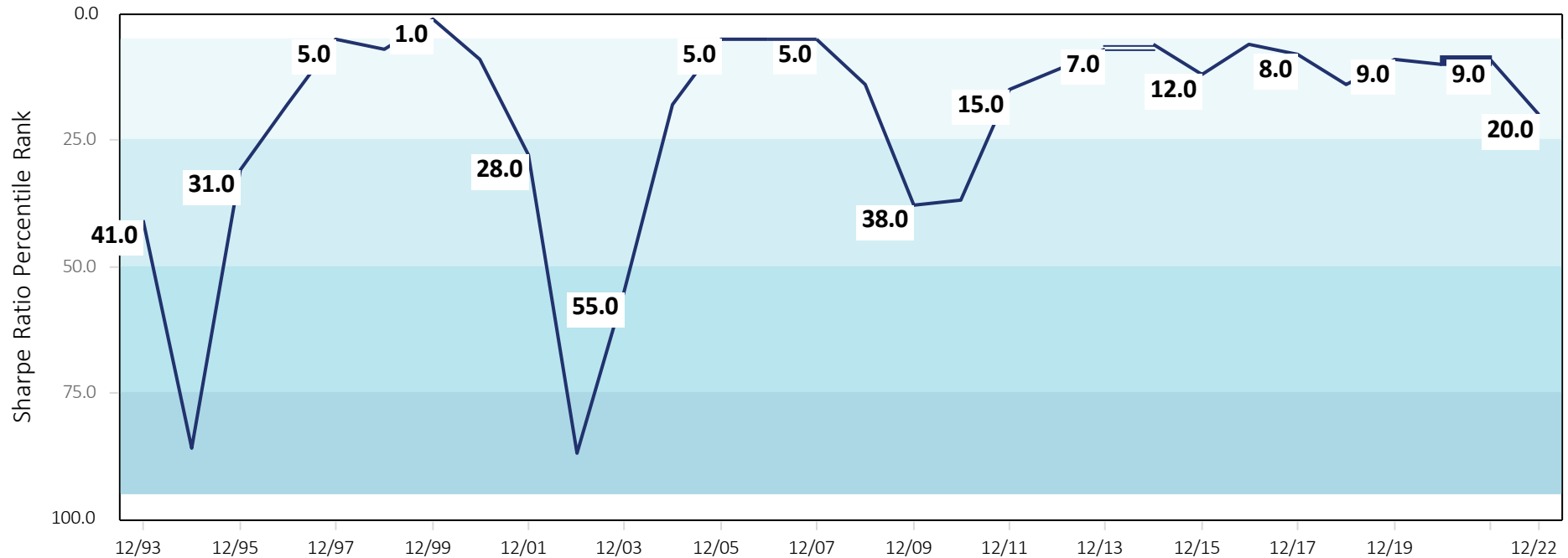


- The IPERS portfolio has tended to be less volatile than the peer group—with 20-year volatility in the top decile as measured by standard deviation (with lower risk representing a higher quartile)
- The IPERS portfolio Sharpe ratio has also maintained a top decile ranking

Rolling Percentile Ranking - Return/Risk

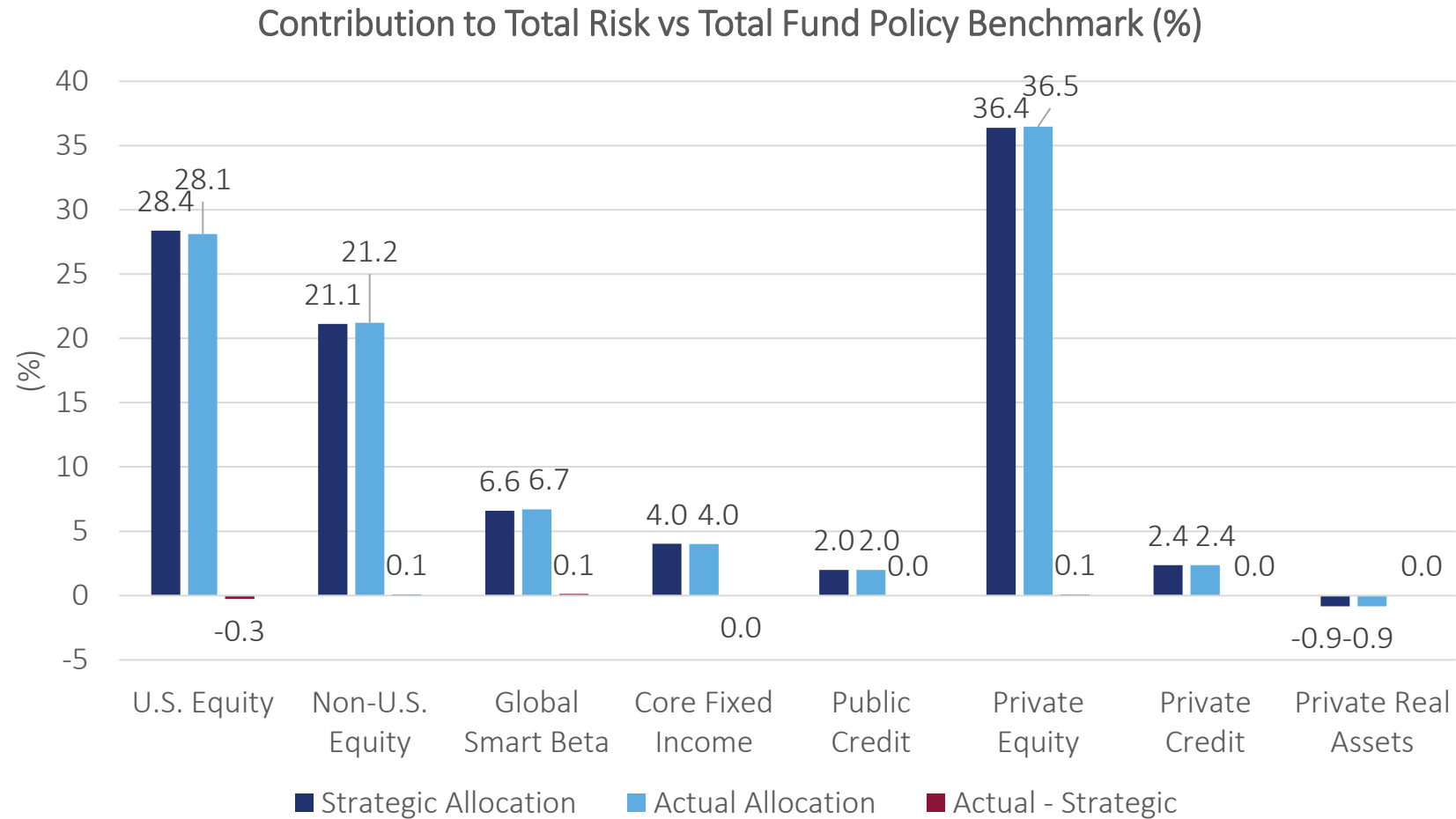
Total Fund

Rolling 3-Years vs All Public Plans > \$1B-Total Fund



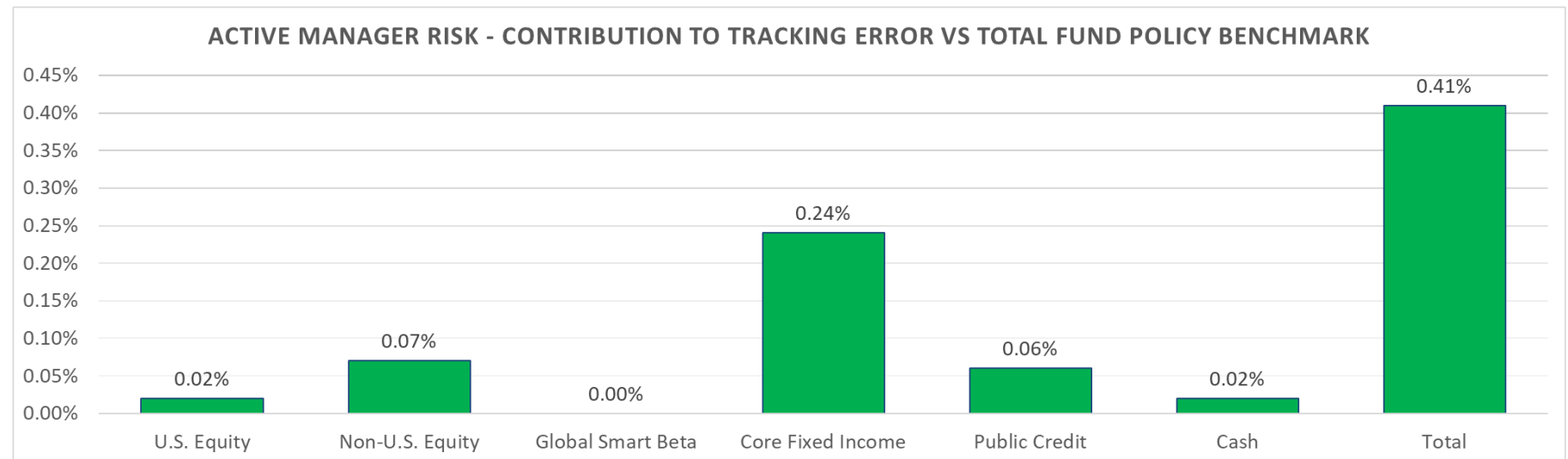
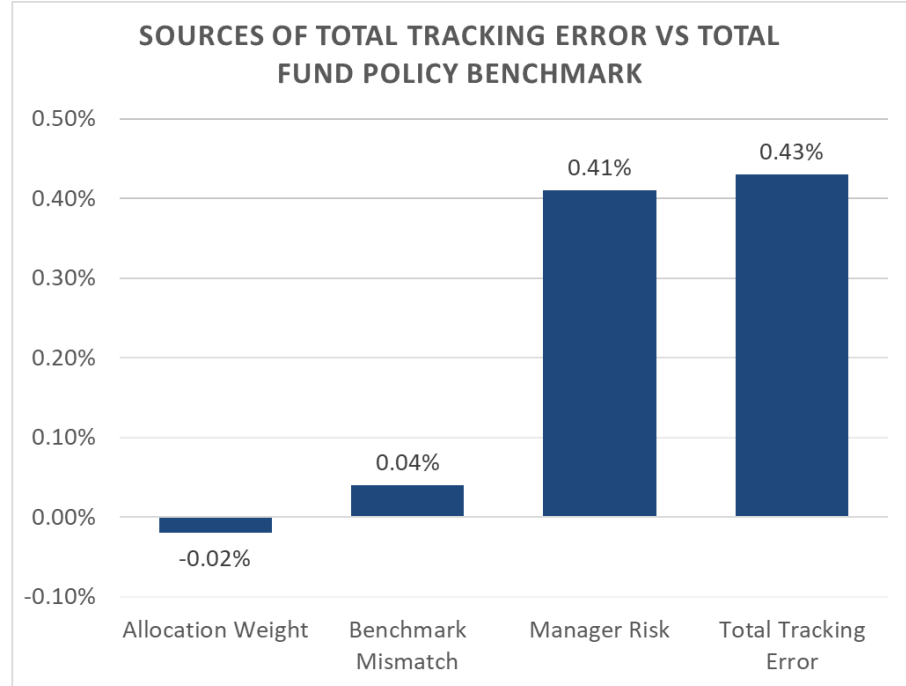
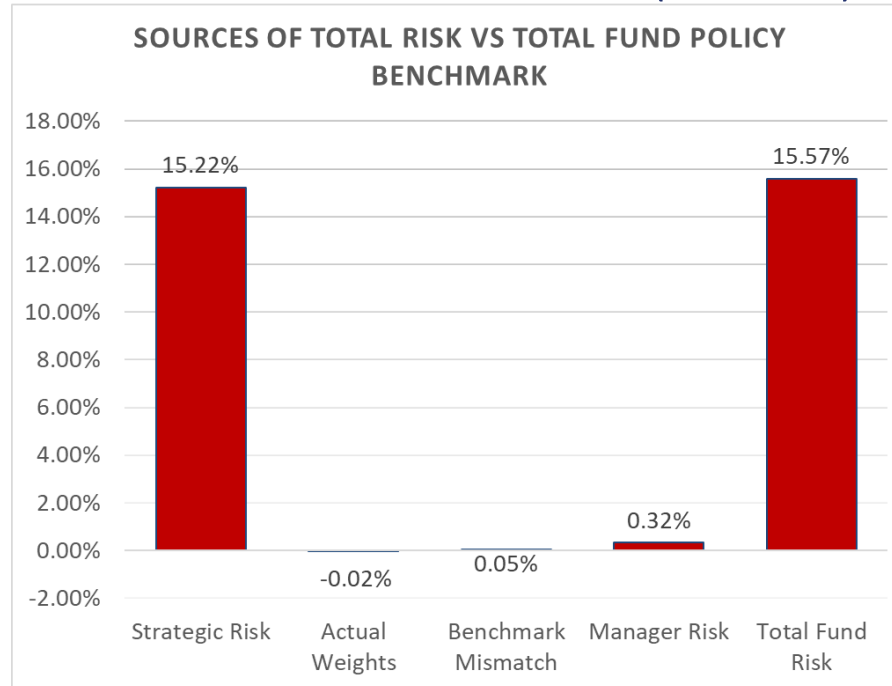
- Three-year risk-adjusted return profile of the IPERS portfolio is top quartile relative to peers, as the result of top-quartile return-generation and risk management (measured by standard deviation)

Contribution to Total Risk vs Total Fund Policy Index

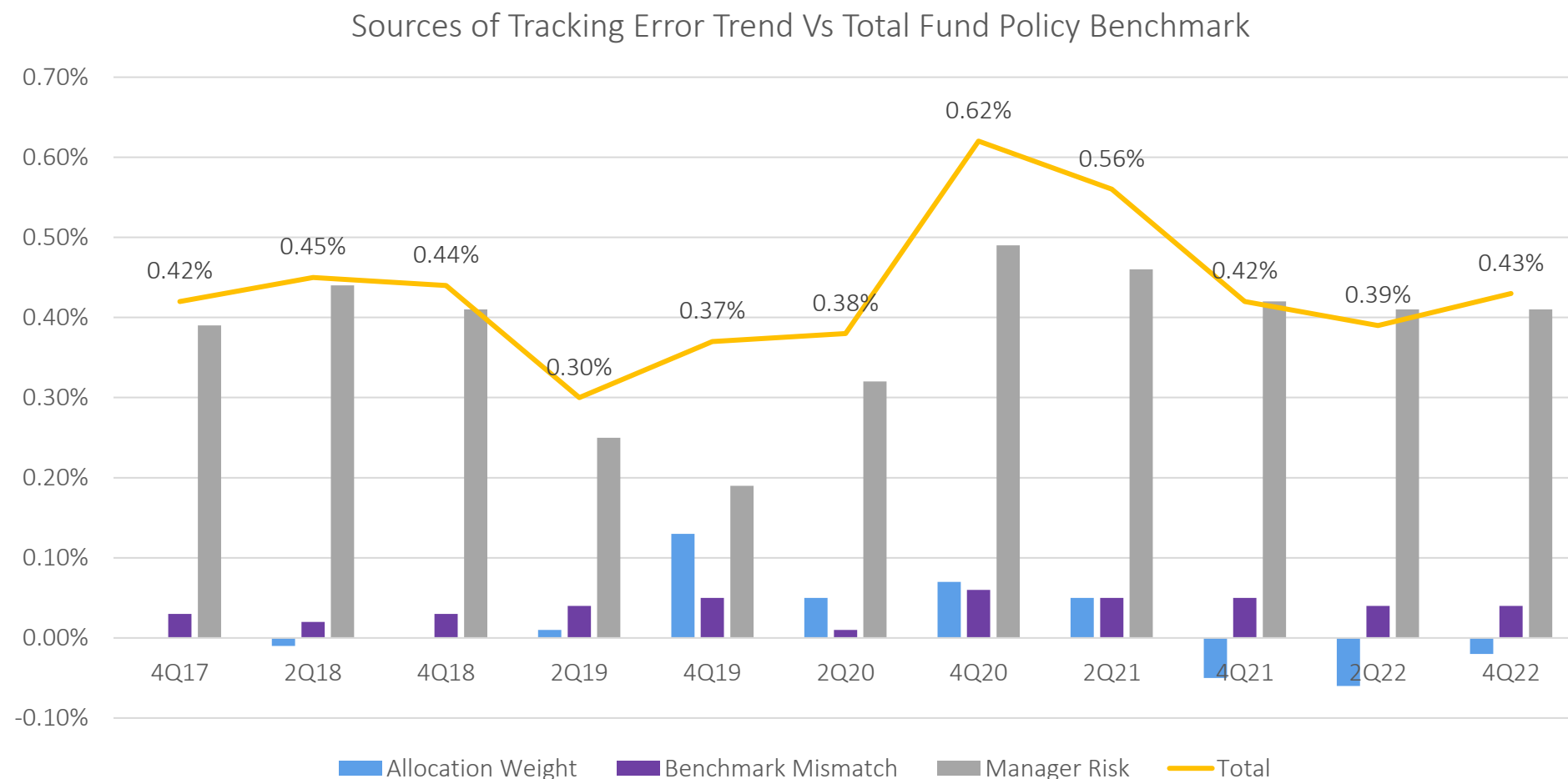


- 56% of plan volatility is driven by public equity assets (including smart beta). Including private equity, the total contribution to risk from equity related assets is 92%

Total Fund Sources of Risk (5 Years)



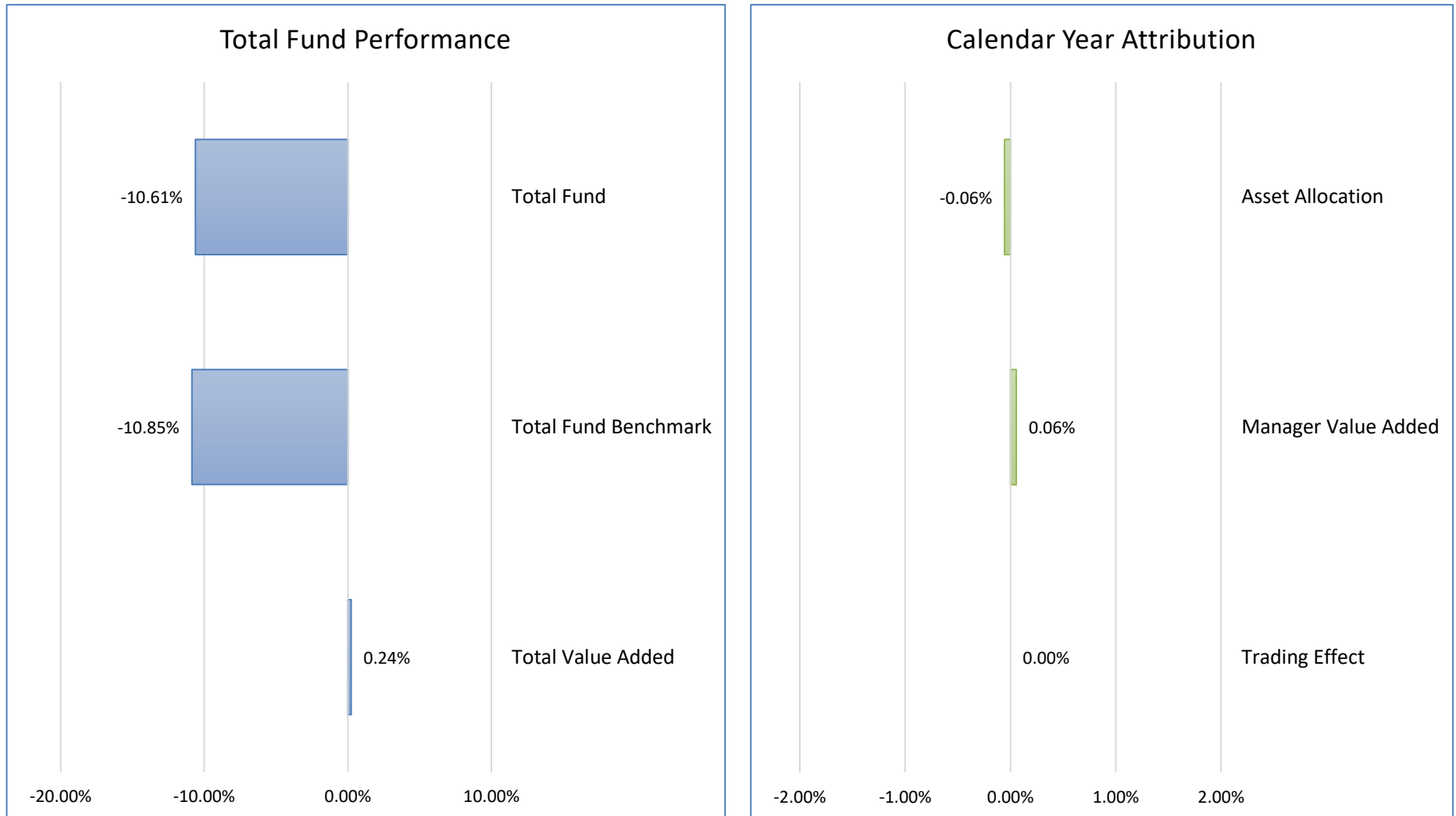
Total Fund Sources of T.E. Trends (Rolling 5 Years)



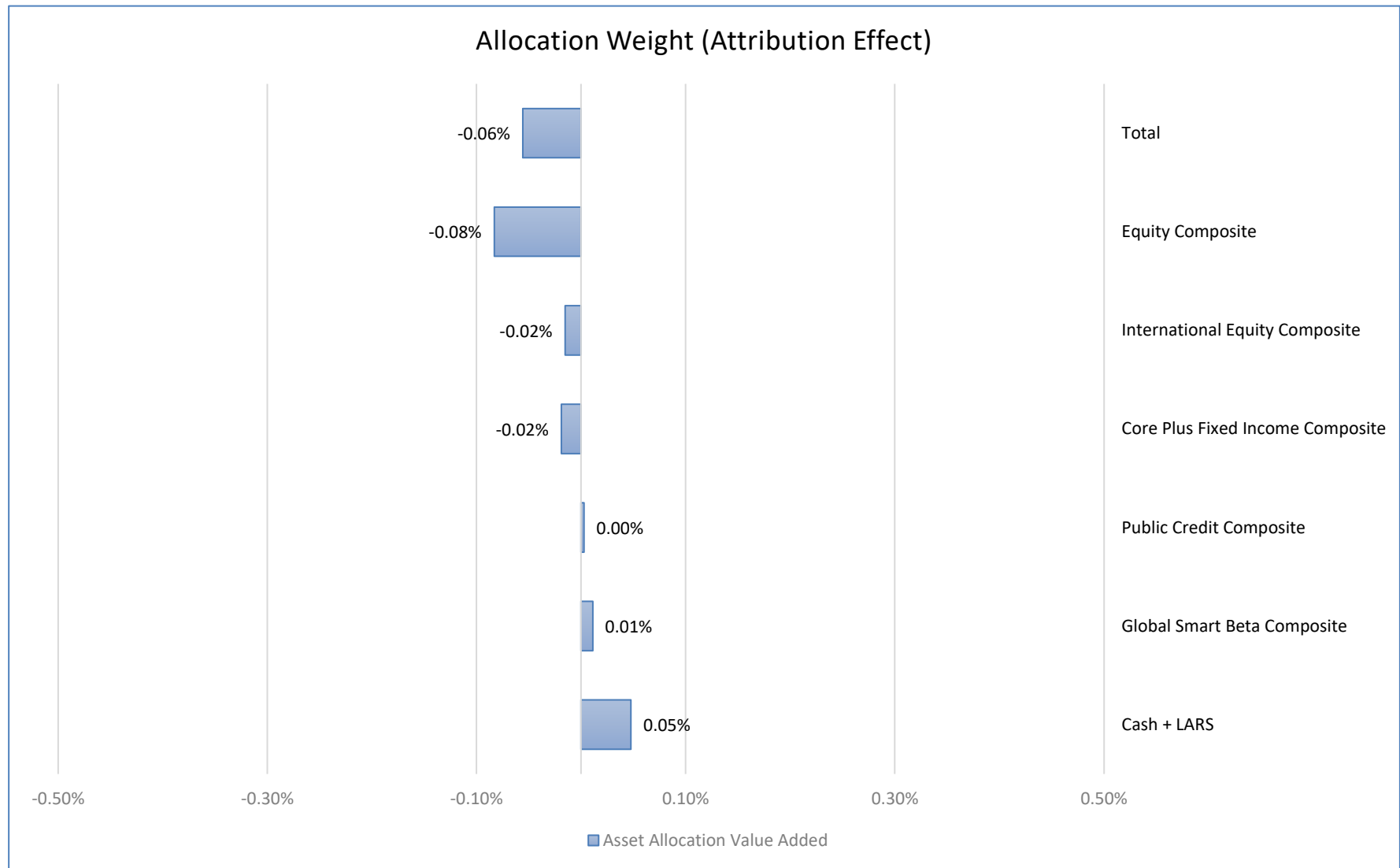
- Consistent trend of manager risk driving vast majority of the total Tracking Error
- IPERS Tracking Error continues to be low relative to peers

Return-Based Attribution

Total Fund Attribution vs IPERS Total Fund Benchmark

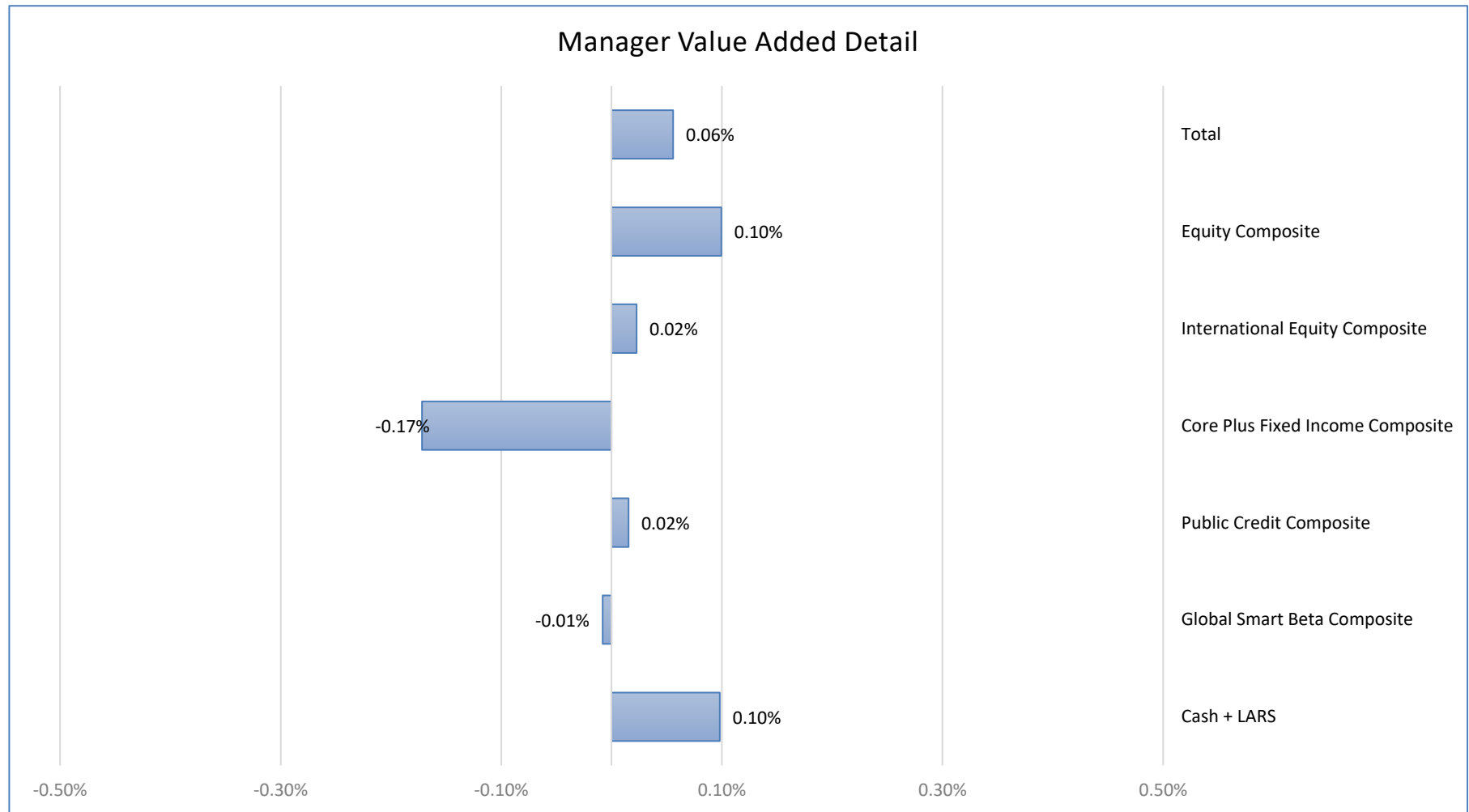


Attribution Allocation Effect

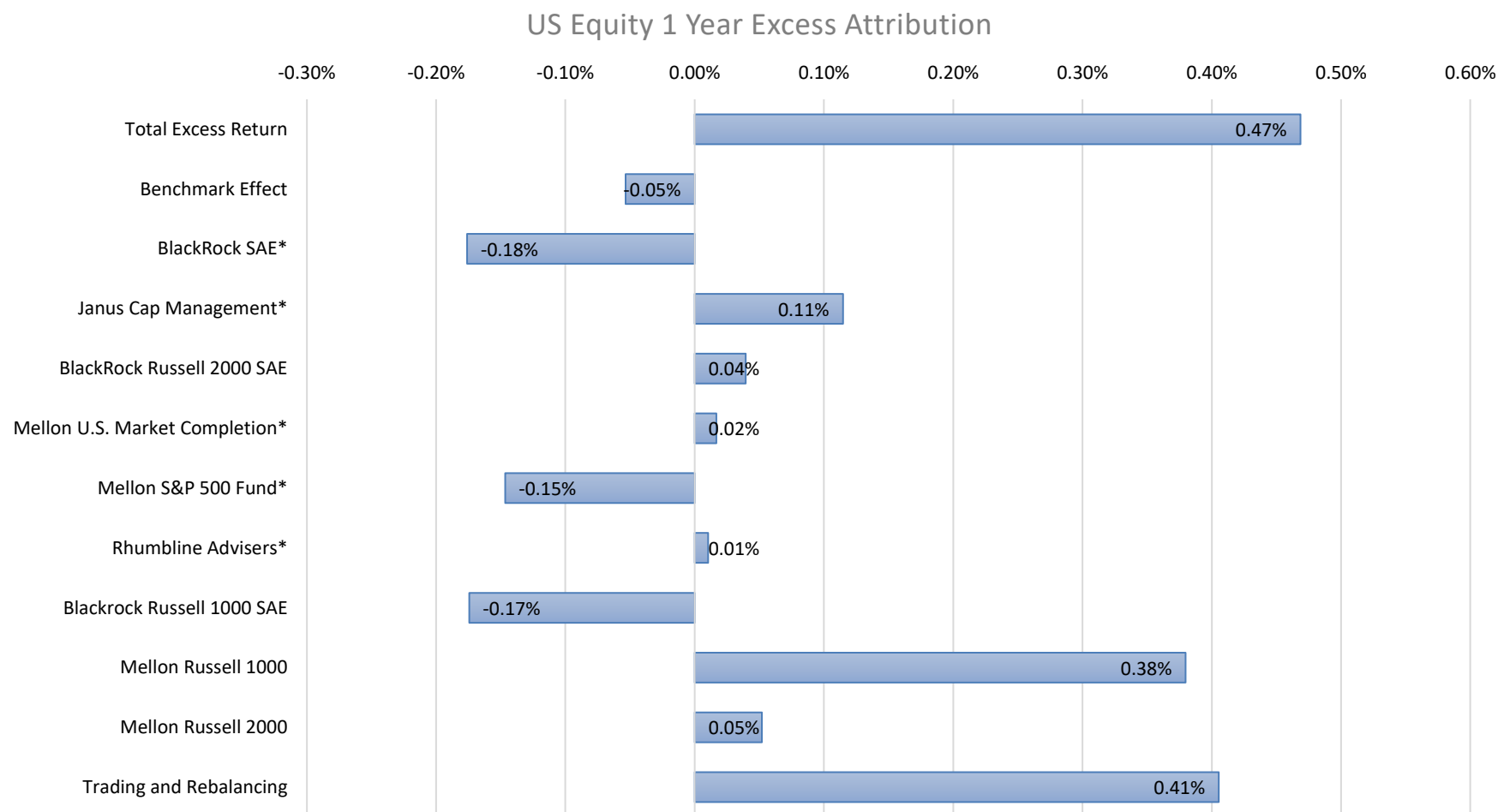


- Allocation effect is intended to capture the contribution to excess returns due to deviations of the portfolio asset class weights relative to IPERS total fund policy asset class weights
- Given IPERS tight management of allocation mismatch via overlay program these contributions should be small, and indeed are confirmed to be so based on this analysis

Manager Attribution (Contribution Per Composite)



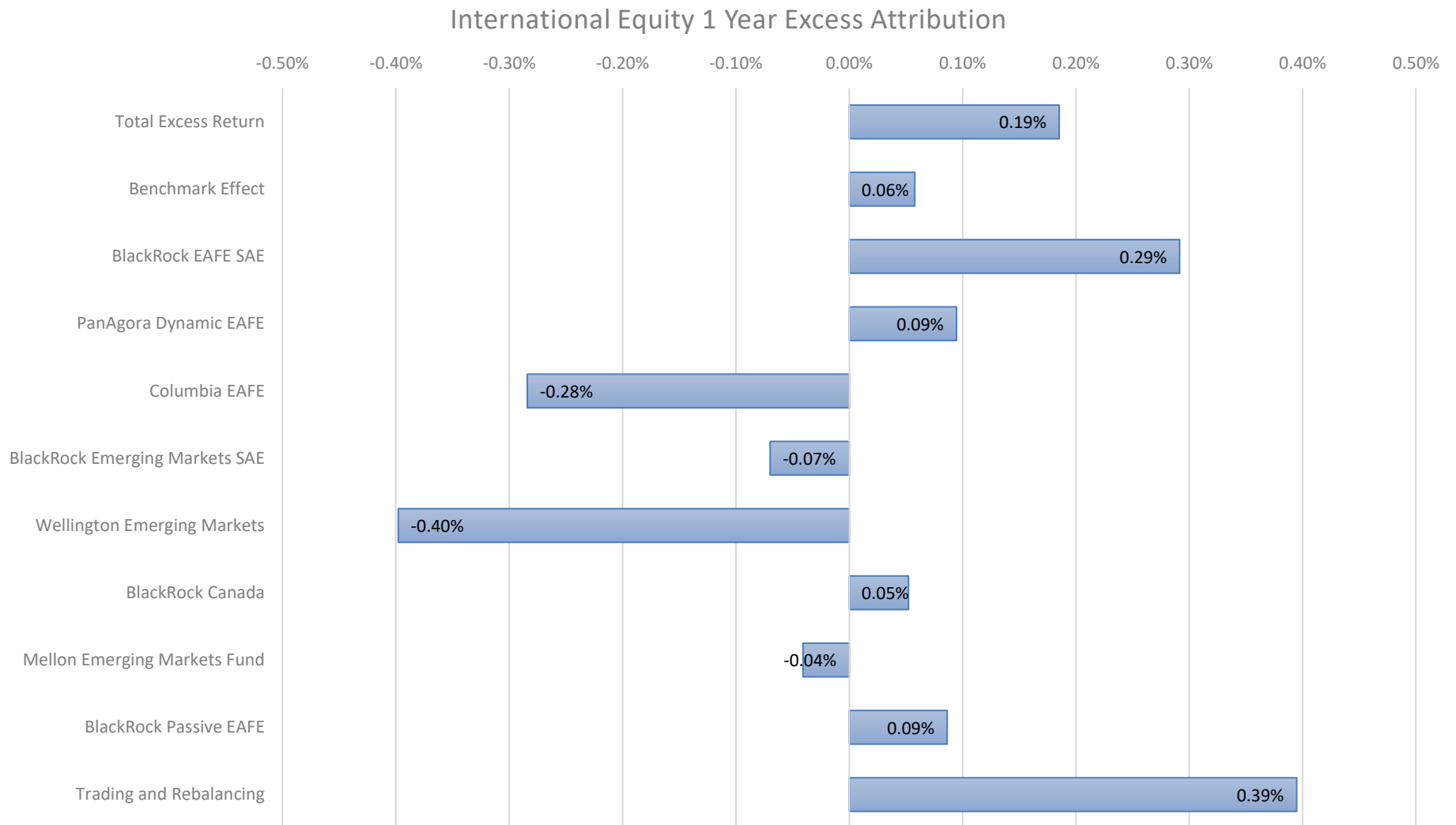
US Equity Return Attribution



- These are legacy products that were terminated and will eventually be removed from attribution

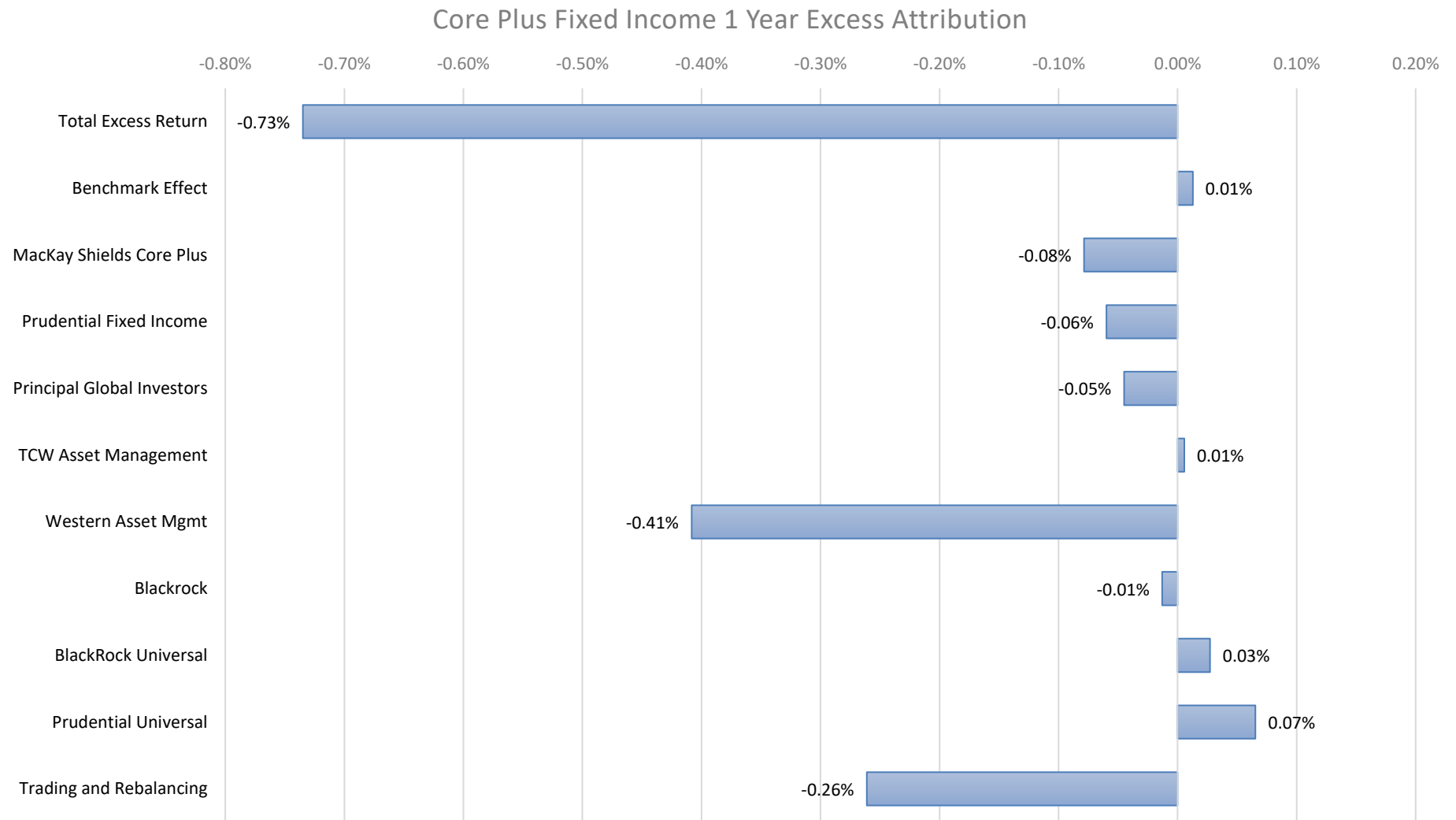
Trading and Rebalancing effect captures the effects of manager changes as well as return effect from synthetic rebalancing accounts

International Equity Return Attribution



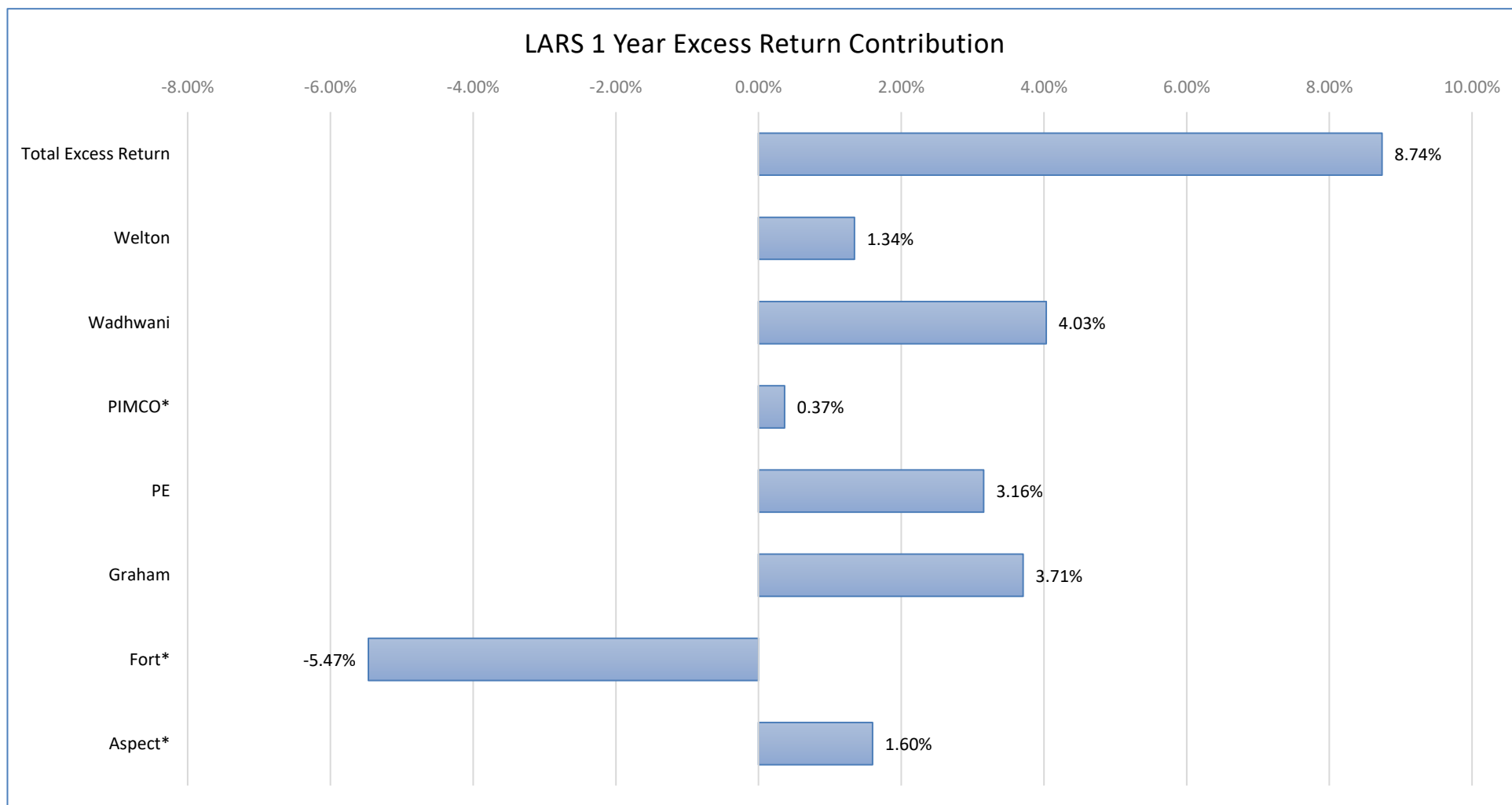
Trading and Rebalancing effect captures the effects of manager changes as well as return effect from synthetic rebalancing accounts

Core Plus FI Return Attribution



Trading and Rebalancing effect captures the effects of manager changes as well as return effect from synthetic rebalancing accounts

LARS Program Attribution



* These are partial year returns products Fort was terminated in July 2022 while PIMCO and Aspect were funded during CY 2022

Attribution Glossary

- 1. Allocation Effect** – Contribution to excess returns coming from any overweight and underweights at asset class level relative to Total Fund Benchmark
- 2. Manager Value Added** – Contribution to excess returns coming from products within each asset class
- 3. Trading Effect** – Captures the effects of intra quarter cashflows and other trading to ensure the private market weights in the policy benchmark align with actual allocations
- 4. Trading and Rebalancing** – Asset class specific contribution that captures the effects of manager changes as well as return effect from synthetic rebalancing accounts

Appendix

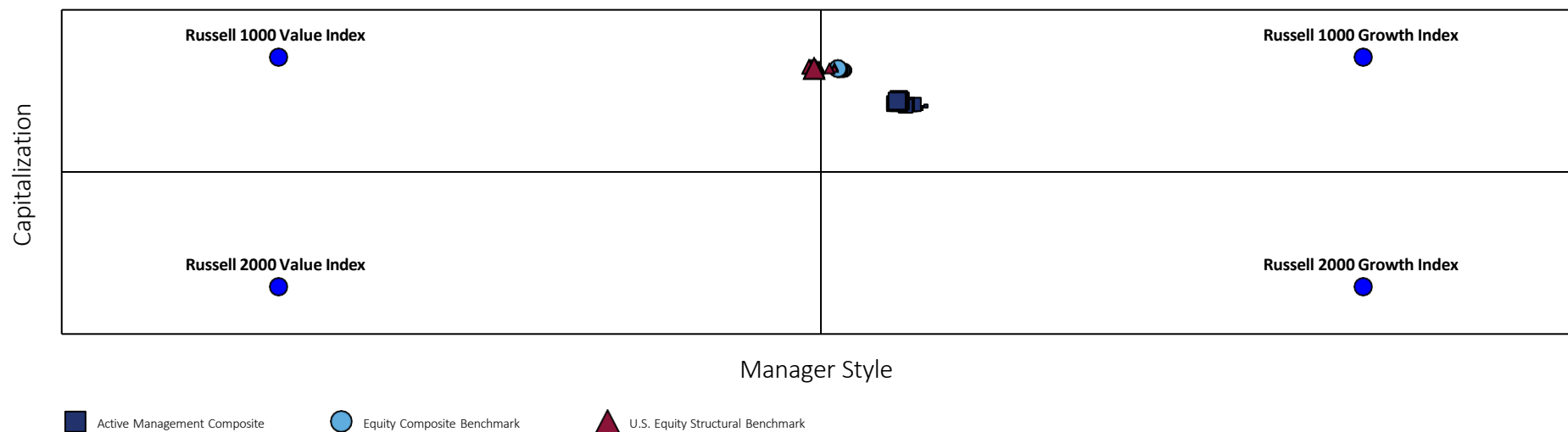
Investment Structure Review by Composite

U.S. Equity Style Analysis

IPERS Portfolio

Periods Ended December 31, 2022

Style Map(36 Months)



U.S. Equity Structural Benchmark

Weight (%)

Dec-2022

Russell 2000 Index	6.04
Russell 1000 Index	93.35
Russell 3000 Index	0.61

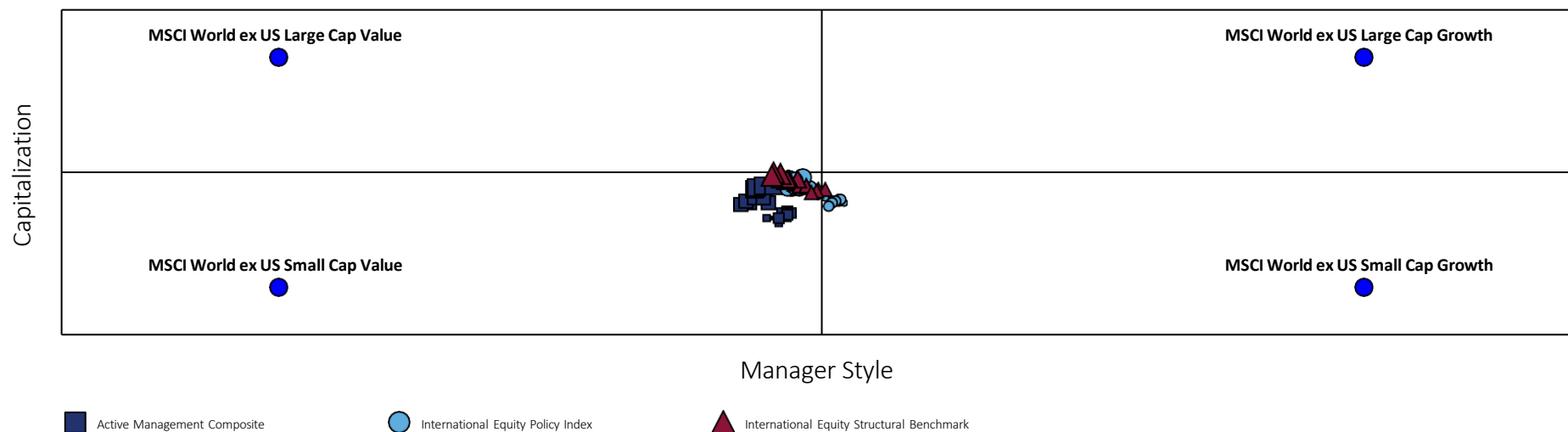
- U.S. Equity Structural Benchmark closely matches the style and market capitalization of the Equity Policy Index, which transitioned from Wilshire 5000 to Russell 3000 on April 1st. These two data points should continue to converge each quarter, since this is a rolling 36-month analysis
- Active managers have exhibited a smaller market capitalization and a growth tilt relative to the structural benchmark

International Equity Style Analysis

IPERS Portfolio

Periods Ended December 31, 2022

Style Map(36 Months)



International Equity Structural Benchmark

Weight (%)

Dec-2022

MSCI Europe (Net)	62.89
MSCI Pacific (Net)	0.00
MSCI Emerging Markets (Net)	28.02
MSCI Canada (Net)	7.89
MSCI AC World ex USA (Net)	1.20

- International Equity Structural Benchmark has tracked the International Policy Index from value-styled equity back to core
- Active managers have also tracked this trend but retained a tilt towards value while consistently tilting towards smaller-capitalization equity

Core Plus Fixed Income Style Analysis

IPERS Portfolio

Periods Ended December 31, 2022

Style Map(36 Months)



Core Plus Fixed Income Structural Benchmark

Weight (%)

Dec-2022

Blmbg. U.S. Universal Index	82.33
Blmbg. U.S. Aggregate Index	17.67

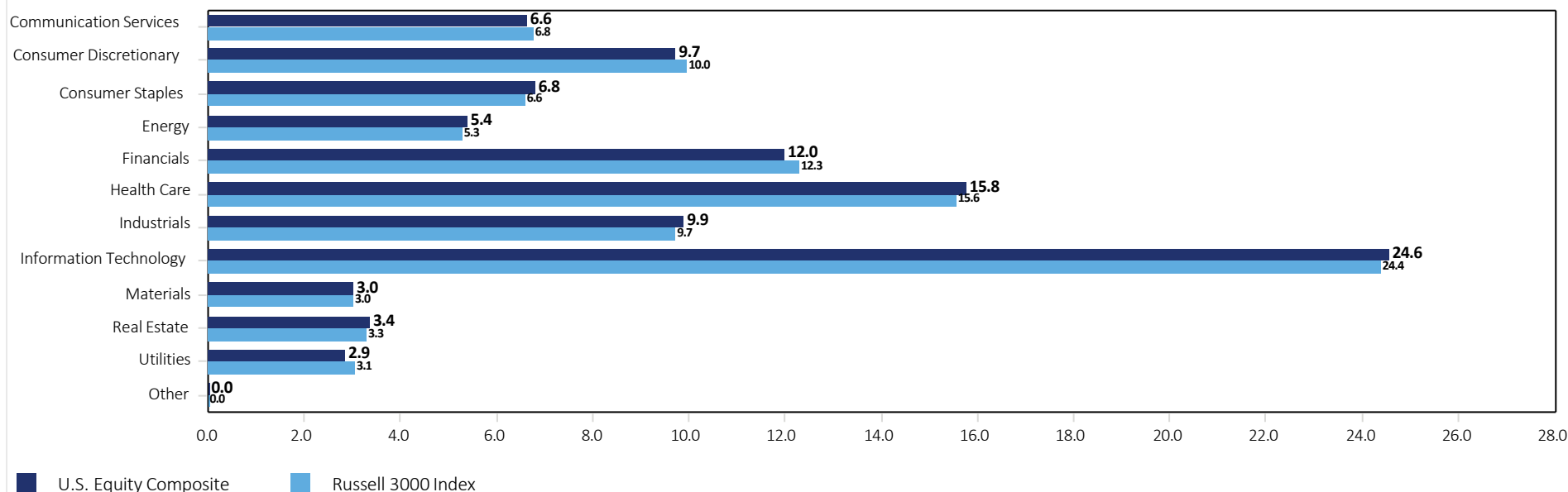
- Core Plus FI Structural Benchmark is clustered similarly to the Core Plus Fixed Income Policy Index across aggregate quality and duration
- Active management has tilted towards lower quality securities with a comparable duration

U.S. Equity Portfolio Characteristics

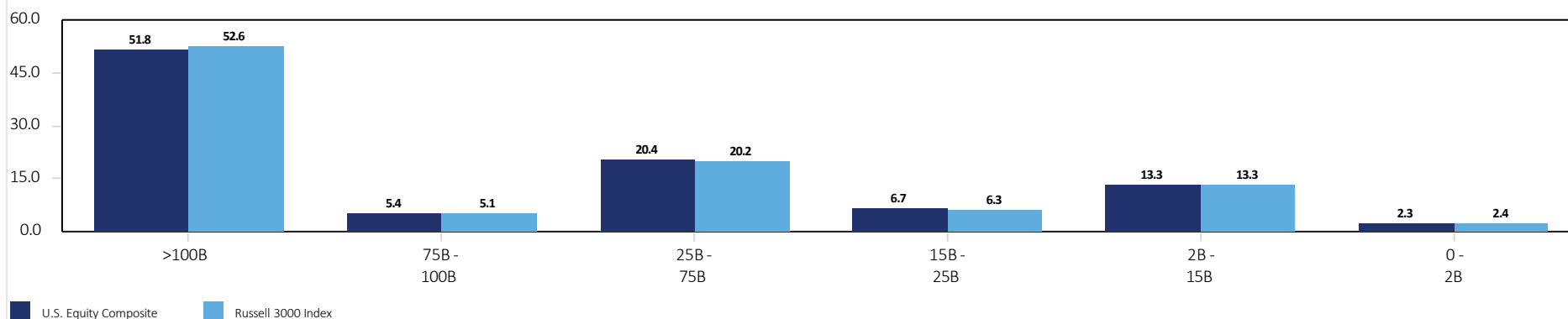
IPERS Portfolio

Periods Ended As of December 31, 2022

Sector Weights (%)



Distribution of Market Capitalization (%)

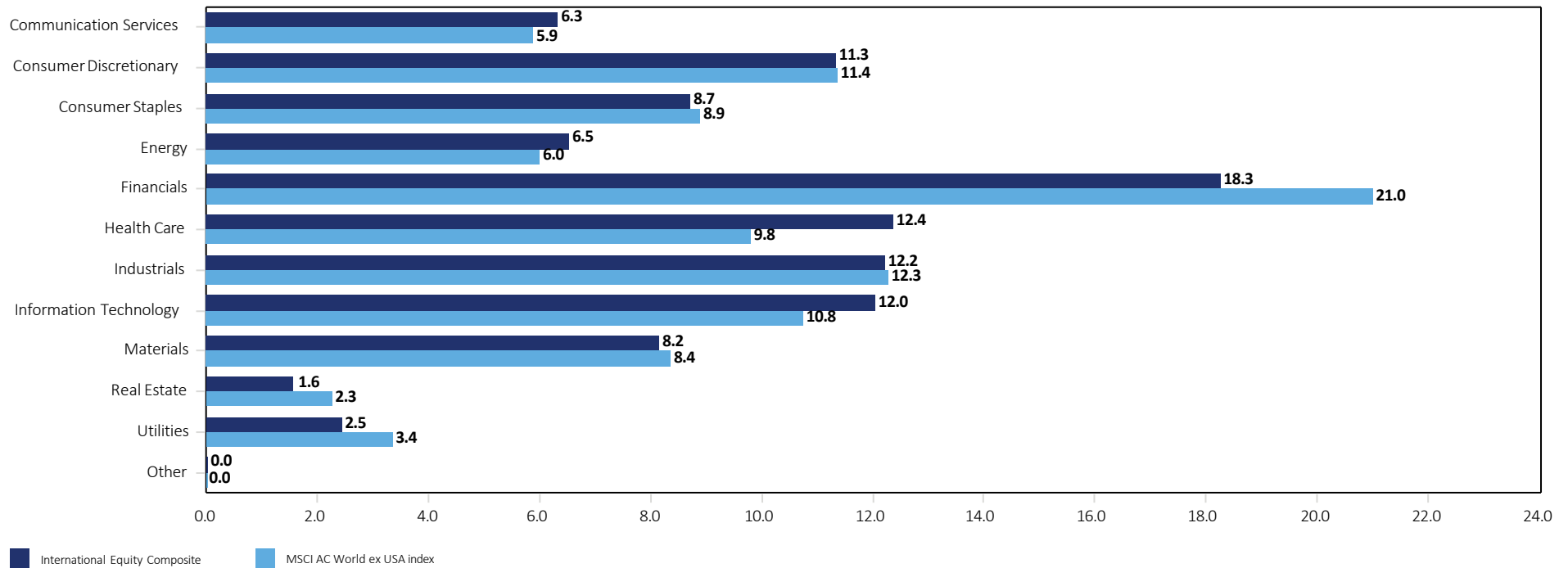


International Equity Portfolio Characteristics

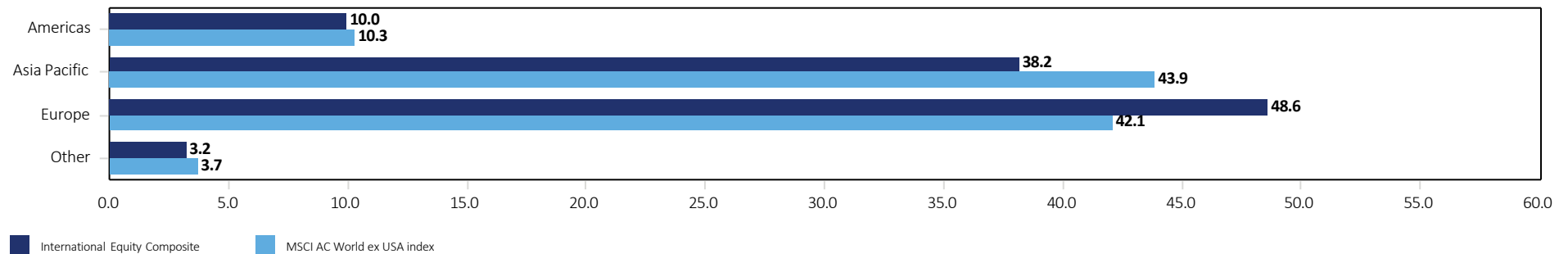
IPERS Portfolio

Periods Ended December 31, 2022

Sector Weights (%)



Region Allocation

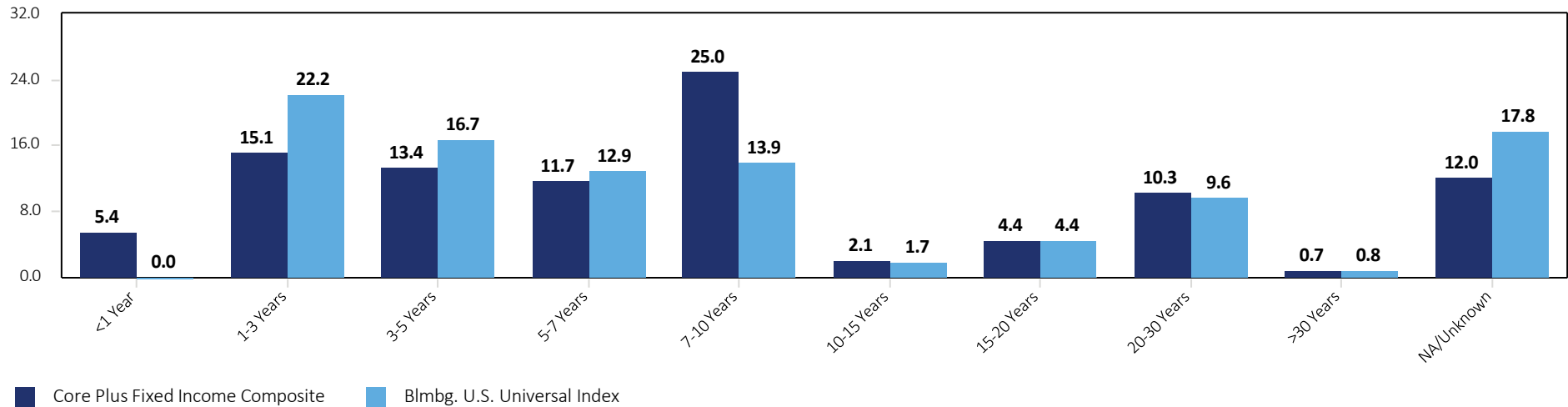


Core Plus Fixed Income Portfolio Characteristics

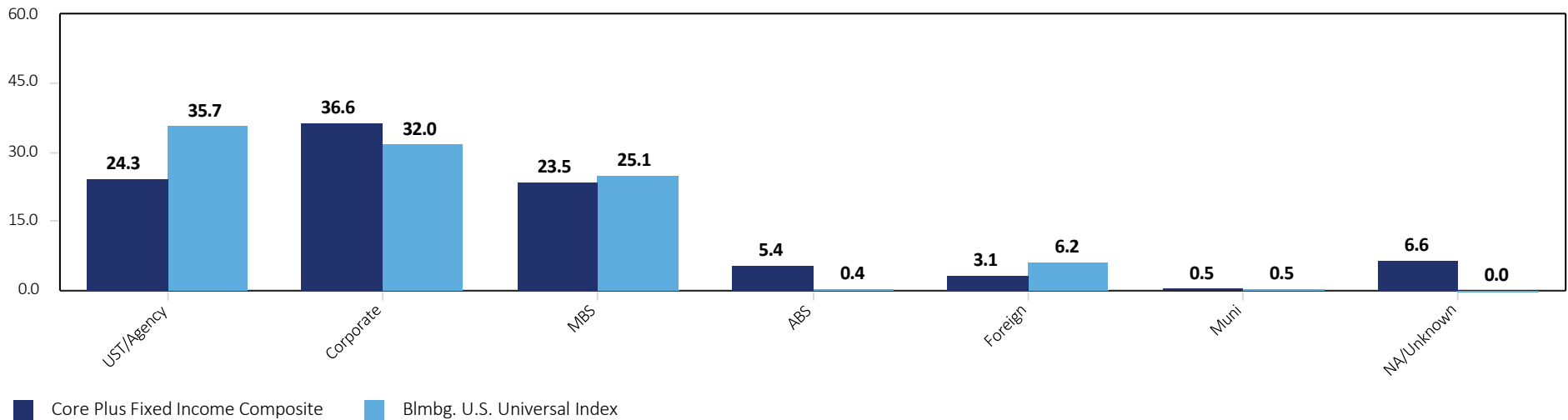
IPERS Portfolio

Periods Ended As of December 31, 2022

Maturity Distribution (%)



Sector Distribution (%)



Total Fund Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees			
	1 Quarter	FYTD	1 Year	2 Years
Total Fund	4.49	-0.60	-10.61	3.12
Total Fund Policy Benchmark	4.46	-0.67	-10.85	2.86

	Performance (%) net of fees				
	3 Years	5 Years	10 Years	20 Years	30 Years
Total Fund	6.46	7.01	7.93	8.07	8.32
Total Fund Policy Benchmark	6.46	7.04	7.91	8.26	8.12
Public Markets Reference Index	1.68	3.47	5.69	6.73	

U.S. Equity Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Equity Composite	2.07	-18.46	7.36	8.84	12.22	11.06	4/1/1975
Equity Composite Benchmark*	2.40	-18.92	7.46	9.02	12.30		
Russell 3000 Index	2.40	-19.21	7.07	8.79	12.13		

Equity Composite Benchmark	Weight (%)
Apr-2022	
Russell 3000 Index	100.00
Jun-1975	
FT Wilshire 5000 Index	100.00

U.S. Equity Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Equity Composite	2.07	-18.46	7.36	8.84	12.22	11.06	4/1/1975
<i>U.S. Equity Composite Benchmark</i>	2.40	-18.92	7.46	9.02	12.30		
<i>Passive</i>							
Mellon Russell 1000	2.32					-6.38	5/1/2022
<i>Russell 1000 Index</i>	2.30					-6.41	
Mellon Russell 2000	4.05					-4.34	5/1/2022
<i>Russell 2000 Index</i>	3.91					-4.50	
<i>Active</i>							
Blackrock Russell 1000 SAE	2.16					-6.35	5/1/2022
<i>Russell 1000 Index</i>	2.30					-6.41	
BlackRock Russell 2000 SAE	5.46	-19.12	4.12			6.13	5/1/2019
<i>Russell 2000 Index</i>	3.91	-20.44	3.10			4.16	
Synthetic Domestic Equity	-29.73	29.07	51.63	41.58		34.26	4/1/2017

International Equity Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						Inception Date
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
International Equity Composite	3.71	-15.82	0.44	0.87	4.16	5.04	10/1/1989
International Equity Policy Index*	2.96	-16.00	0.07	0.97	4.08	4.97	
MSCI AC World ex USA (Net)	2.96	-16.00	0.07	0.88	3.80		

International Equity Policy Index	Weight (%)
Oct-2018	
MSCI AC World ex USA (Net)	100.00
Oct-2001	
MSCI AC World ex USA index	100.00
Oct-1989	
Historical Intl Equity Policy Index	100.00

International Equity Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Passive Developed							
BlackRock Passive EAFE	6.49	-14.05	1.26			3.93	4/1/2019
<i>MSCI EAFE (Net)</i>	6.36	-14.45	0.87			3.52	
BlackRock Canada	-0.70	-12.17	5.80	4.89	4.45	6.72	12/1/2000
<i>MSCI Canada (Net)</i>	-1.11	-12.87	4.95	4.06	3.68	6.05	
Passive Emerging							
Mellon Emerging Markets Fund	-3.11	-20.45	-2.77	-1.43		2.17	7/1/2015
<i>MSCI Emerging Markets (Net)</i>	-2.99	-20.09	-2.69	-1.40		2.18	
Synthetic International Equity	34.28	35.87	-110.14	-121.19		-126.06	4/1/2017
Active Developed							
BlackRock EAFE SAE	8.02	-13.18	1.82			3.78	5/1/2019
<i>MSCI EAFE (Net)</i>	6.36	-14.45	0.87			2.82	
Columbia EAFE	5.35	-17.87	-1.17			0.77	5/1/2019
<i>MSCI EAFE (Net)</i>	6.36	-14.45	0.87			2.82	
PanAgora Dynamic EAFE	6.25	-13.35	1.81			2.98	5/1/2019
<i>MSCI EAFE (Net)</i>	6.36	-14.45	0.87			2.82	
Active Emerging							
Wellington Emerging Markets	-1.68	-22.64	-1.42	0.44	2.84	7.72	3/1/2009
<i>Wellington EM Custom Benchmark</i>	-2.99	-20.09	-2.69	-1.40	1.44	7.54	
BlackRock Emerging Markets SAE	-2.99	-21.00	-3.73			-1.50	5/1/2019
<i>MSCI Emerging Markets (Net)</i>	-2.99	-20.09	-2.69			-0.77	

Global Smart Beta Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Global Smart Beta Composite	5.33	-12.68	4.20	4.72		5.99	8/1/2017
Global Smart Beta Policy Index*	5.47	-12.53	4.37	4.82		6.08	
MSCI AC World Index (Net)	2.28	-18.36	4.00	5.23		6.35	8/1/2017

Global Smart Beta Policy Index

Weight (%)

Jan-2020

Russell 1000 Comprehensive Factor Index	56.00
FTSE Dev. Ex-U.S. Comprehensive Factor Index (N)	34.00
FTSE Emerging Comprehensive Factor Index (N)	10.00

Oct-2001

Russell 1000 Comprehensive Factor Index	60.00
FTSE Dev. Ex-U.S. Comprehensive Factor Index (N)	30.00
FTSE Emerging Comprehensive Factor Index (N)	10.00

Global Smart Beta Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Equity Smart Beta	6.91	-11.01	6.95	7.58		8.72	8/1/2017
<i>Russell 1000 Comprehensive Factor Index</i>	7.03	-10.92	6.95	7.57		8.72	
<i>Russell 1000 Index</i>	2.30	-19.13	7.35	9.13		10.18	
Developed Ex-U.S. Equity Smart Beta	2.26	-16.72	-0.23	0.57		2.13	8/1/2017
<i>FTSE Dev. Ex-U.S. Comprehensive Factor Index (N)</i>	2.20	-16.82	0.00	0.68		2.20	
<i>MSCI AC World ex USA (Net)</i>	2.96	-16.00	0.07	0.88		2.17	
Emerging Markets Smart Beta	6.83	-8.27	3.55	1.49		2.51	8/1/2017
<i>FTSE Emerging Comprehensive Factor Index (N)</i>	6.53	-7.86	4.00	1.72		2.77	
<i>MSCI Emerging Markets (Net)</i>	-2.99	-20.09	-2.69	-1.40		0.36	

Core Plus Fixed Income Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						Inception Date
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Core Plus Fixed Income Composite	-2.34	-13.73	-2.64	0.26	1.49	6.36	7/1/1985
Core Plus Fixed Income Policy Index*	-2.31	-12.99	-2.54	0.18	1.33	5.97	
Blmbg. U.S. Universal Index	-2.31	-12.99	-2.54	0.18	1.33		
Blmbg. U.S. Aggregate Index	-2.97	-13.01	-2.71	0.02	1.06	5.81	

Core Plus Fixed Income Policy Index

Weight (%)

Oct-1999

Blmbg. U.S. Universal Index

100.00

Apr-1985

Blmbg. U.S. Aggregate Index

100.00

Core Plus Fixed Income Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Passive Core							
Mellon Aggregate	-2.93	-12.92	-2.70	0.04	1.06	5.14	7/1/1990
<i>Blmbg. U.S. Aggregate Index</i>	-2.97	-13.01	-2.71	0.02	1.06	5.09	
Synthetic Fixed Income	5.61	-64.33	-31.34	-18.86		-16.66	4/1/2017
Relative Value							
BlackRock Universal	-1.40	-12.60				-4.61	11/1/2020
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99				-5.99	
Prudential Universal	0.44	-11.98				-7.87	3/1/2021
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99				-6.89	
Active Core							
Blackrock	-1.93	-13.20	-2.34	0.35	1.49	4.51	1/1/2000
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18	1.33	4.22	
Principal Global Investors	-2.91	-13.31	-1.80	0.65	1.66	3.27	7/1/2005
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18	1.33	3.17	
Western Asset Mgmt	-2.76	-15.47	-2.96	0.27	1.86	5.05	1/1/2000
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18	1.33	4.22	
MacKay Shields Core Plus	-2.48	-13.62	-2.02	0.55	1.63	2.37	12/1/2011
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18	1.33	1.80	
Prudential Fixed Income	-1.82	-13.76	-2.36	0.52		1.82	7/1/2015
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18		1.19	
TCW Asset Management	-2.79	-12.93	-1.89	0.79		1.60	7/1/2015
<i>Blmbg. U.S. Universal Index</i>	-2.31	-12.99	-2.54	0.18		1.19	

Public Credit Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						Inception Date
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Public Credit Composite	3.60	-12.49	-1.18	1.35	3.09	5.45	4/1/1998
Public Credit Policy Index*	3.36	-12.91	-1.46	1.21	3.01	5.35	

Public Credit Policy Index	Weight (%)
Apr-2019	
Blmbg. U.S. High Yield - 2% Issuer Cap	66.67
JPM EMBI Global Index (USD)	33.33
Oct-2012	
FTSE High Yield Market Capped Index	66.67
JPM EMBI Global Index (USD)	33.33
Apr-2003	
FTSE High Yield Market Capped Index	100.00
Jan-1998	
FTSE High Yield Cash Pay	100.00

Public Credit Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						Inception Date
	FYTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Prudential High Yield	2.86	-10.55	0.77			2.10	7/1/2019
<i>Blmbg. U.S. High Yield - 2% Issuer Cap</i>	<i>3.50</i>	<i>-11.18</i>	<i>0.03</i>			<i>1.15</i>	
Aegon	2.81	-10.73	0.16	2.37	4.22	4.96	2/1/2012
<i>High Yield Policy Index*</i>	<i>3.50</i>	<i>-11.18</i>	<i>0.03</i>	<i>2.29</i>	<i>3.81</i>	<i>4.53</i>	
Prudential Emerging Markets Debt	4.78	-16.87	-4.77	-1.13		1.63	5/1/2016
<i>JPM EMBI Global Index (USD)</i>	<i>2.93</i>	<i>-16.45</i>	<i>-4.49</i>	<i>-1.00</i>		<i>1.00</i>	

High Yield Policy Index	Weight (%)
Apr-2019	
Blmbg. U.S. High Yield - 2% Issuer Cap	100.00
Apr-2003	
FTSE High Yield Market Capped Index	100.00
Jan-1998	
FTSE High Yield Cash Pay	100.00

Private Markets Composite Performance

Periods Ended December 31, 2022

	Performance (%) net of fees						
	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years
Private Markets Composite	-4.49	0.32	19.47	17.40			
Private Equity/Debt (TWR)	-7.25	-5.63	23.20	20.82	18.16	16.56	15.03
Private Equity Policy Index	-7.25	-5.63	23.20	20.82	18.49	14.79	13.85
Private Credit Composite (TWR)	1.49	4.80	6.56	6.97			
Private Credit Policy Index	1.49	4.80	6.56	6.97			
Private Real Assets Composite (TWR)	-0.93	13.60	14.67	12.00			
Private Real Assets Policy Index	-0.93	13.60	14.67	12.00			

Comparative Performance - Net IRR

Private Markets

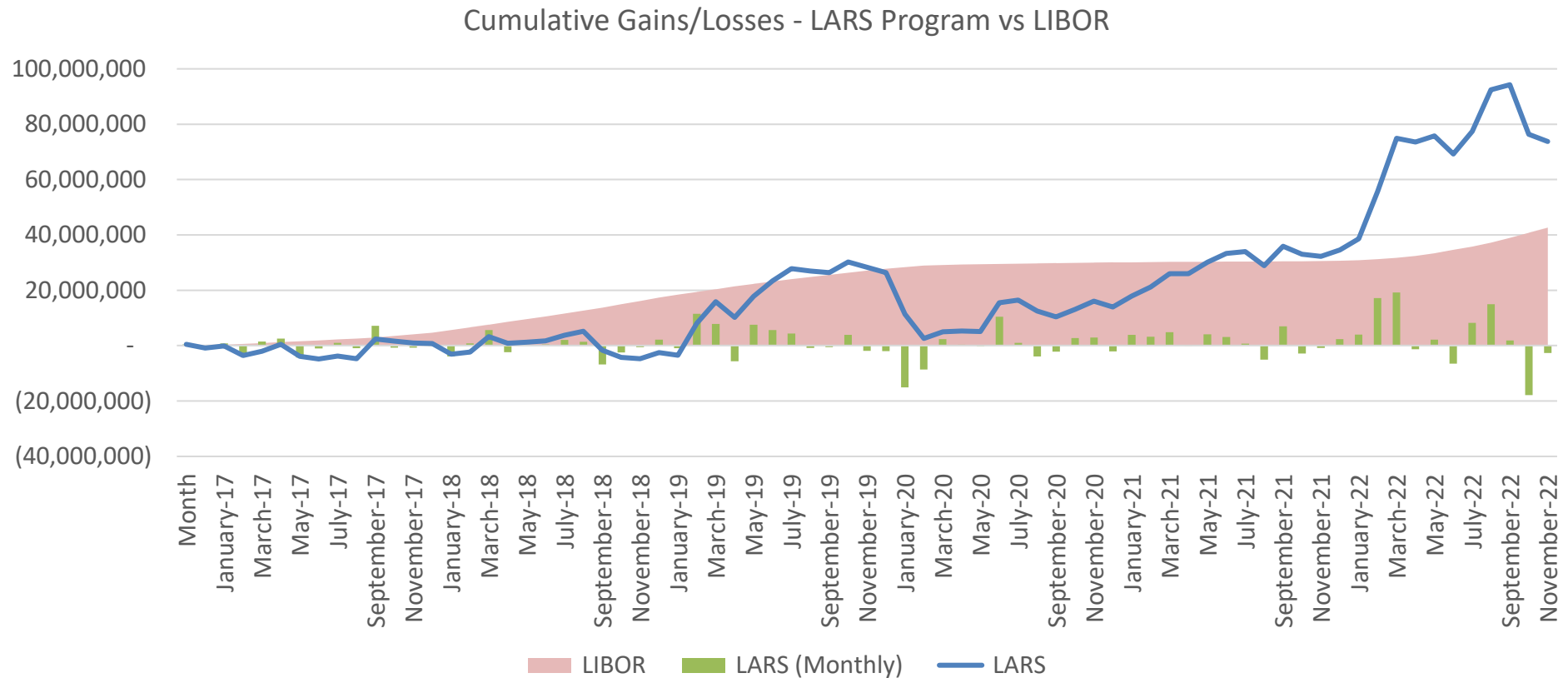
Periods Ended December 31, 2022

	5 Years	10 Years	Since Inception	Inception Date
Private Markets	17.25	15.21	13.30	9/30/1985
Private Markets Policy Index *	11.88	14.20	13.45	9/30/1985
Private Equity	21.42	18.08	14.62	9/30/1985
Russell 3000 + 3%**	13.20	16.73	14.71	9/30/1985
Private Credit	6.71		6.98	6/30/2013
S&P/LSTA Leveraged Loan Index + 1%	5.36		5.35	6/30/2013
Private Real Assets	11.90	10.74	8.99	9/30/1996
CPI + 5%	8.86	7.58	7.54	9/30/1996

* Benchmark Internal Rate of Return (IRR) assumes identical gross cash flows as respective composite

** Private Equity secondary benchmark switched from Wilshire 5000+ 3% to Russell 3000 + 3% on October 1, 2022.

LARS Performance Analysis (Since Inception)



- Even with small allocation the program has contributed positively since inception (approx. 70 million dollars)

Footnotes

Historical Hybrid Composition

Total Fund Policy Benchmark

Periods Ended December 31, 2022

Policy Index	Weight (%)
Oct-2022	
Russell 3000 Index	19.68
Blmbg. U.S. Universal Index	21.56
MSCI AC World ex USA (Net)	15.46
Global Smart Beta Policy Index	4.69
Private Equity Policy Index	20.78
90 Day U.S. Treasury Bill	0.94
Private Credit Policy Index	4.66
Private Real Assets Policy Index	9.42
Public Credit Policy Index	2.81
Jul-2022	
Russell 3000 Index	19.35
Blmbg. U.S. Universal Index	21.54
MSCI AC World ex USA (Net)	15.39
Global Smart Beta Policy Index	5.28
Private Equity Policy Index	21.03
90 Day U.S. Treasury Bill	0.88
Private Credit Policy Index	4.15
Private Real Assets Policy Index	8.86
Public Credit Policy Index	3.52

Policy Index	Weight (%)
Apr-2022	
Russell 3000 Index	20.17
Blmbg. U.S. Universal Index	23.84
MSCI AC World ex USA (Net)	16.04
Global Smart Beta Policy Index	5.50
Private Equity Policy Index	19.65
90 Day U.S. Treasury Bill	0.92
Private Credit Policy Index	3.39
Private Real Assets Policy Index	6.82
Public Credit Policy Index	3.67
Jan-2022	
FT Wilshire 5000 Index	20.77
Blmbg. U.S. Universal Index	24.55
MSCI AC World ex USA (Net)	16.52
Global Smart Beta Policy Index	5.67
Private Equity Policy Index	18.60
90 Day U.S. Treasury Bill	0.94
Private Credit Policy Index	3.04
Private Real Assets Policy Index	6.13
Public Credit Policy Index	3.78

Historical Hybrid Composition

Total Fund Policy Benchmark

Periods Ended December 31, 2022

Policy Index	Weight (%)
Oct-2021	
FT Wilshire 5000 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
Jul-2021	
FT Wilshire 5000 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 (%)
Apr-2021	
FT Wilshire 5000 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
Jan-2021	
FT Wilshire 5000 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, 2022

Policy Index	Weight (%)
Oct-2020	
FT Wilshire 5000 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
Jul-2020	
FT Wilshire 5000 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
Apr-1979	
Total Fund Policy Benchmark	100.00

* Policy weights prior to July 2020 available on following page

OBJECTIVES & BENCHMARKS FOR IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

TOTAL FUND

Total Fund Benchmark

10/1/2021-12/31/2021

20.3%* Domestic Equity - Wilshire 5000

25.9%* Fixed Income - Bloomberg Universal

16.2%* International Equity - MSCI ACWI x US

5.5%* Global Smart Beta - 60% Russell 1000 CF, 30% FTSE Dev X-US CF (N), 10% FTSE EM CF (N)

18.9%** Private Equity - Private Equity Portfolio

2.9%** Private Credit - Private Credit Portfolio

3.7%* Public Credit - 66.67% Bloomberg US HY 2% Issuer Capped, 33.33% JPM EMBI Global

0.9%* 91-Day Treasury Bill

5.7%** Private Real Assets - Private Real Assets Portfolio

1/1/2020-9/30/2021

20.5-21.8%* Domestic Equity - Wilshire 5000

26.1-27.7%* Fixed Income - Bloomberg Universal

16.3-17.3%* International Equity - MSCI ACWI x US

5.6-5.9%* Global Smart Beta - 60% Russell 1000 CF, 30% FTSE Dev X-US CF (N), 10% FTSE EM CF (N)

14.2-17.5%** Private Equity - Private Equity Portfolio

2.0-3.3%** Private Credit - Private Credit Portfolio

3.7-4.0%* Public Credit - 66.67% Bloomberg US HY 2% Issuer Capped, 33.33% JPM EMBI Global

0.9-1%* 91-Day Treasury Bill

5.3-6.5%** Private Real Assets - Private Real Assets Portfolio

7/1/17-12/31/19

21.7-22.7%* Domestic Equity - Wilshire 5000

26.6-27.9%* Fixed Income - Bloomberg Universal

14.8-15.5%* International Equity - MSCI ACWI x US

3.0-3.1%* Global Smart Beta - 60% Russell 1000 CF, 30% FTSE Dev X-US CF (N), 10% FTSE EM CF (N)

11.9-14.6%** Private Equity - Private Equity Portfolio

6.9-7.2%* Public Real Assets - 33.5% Bloomberg U.S. TIPS, 33.5% 1-10 yrs TIPS, 22% Wilshire REIT, 11% S&P MLP

0.8-2.1%** Private Credit - Private Credit Portfolio

3.4-3.6%* Public Credit - 66.67% HY Index (Citigroup HY Cash Pay Capped until 3/31/19, Bloomberg US HY 2% Issuer Capped after), 33.33% JPM EMBI Global

1% 91-Day Treasury Bill

6.0-6.5%** Private Real Assets - Private Real Assets Portfolio

*Weights of public markets composite were adjusted based on actual weights of private markets composites

**Weights of private markets composites were their beginning % of total fund market value

10/1/16-6/30/17

24.8-24.9%* Domestic Equity - Wilshire 5000

27.9-28%* Fixed Income - Bloomberg Universal

16.5-16.6%* International Equity - MSCI ACWI x US

11.7-11.8%** Private Equity - Private Equity Portfolio

7.2-7.3%* Public Real Assets - 33.5% Bloomberg U.S. TIPS, 33.5% 1-10 yrs TIPS, 22% Wilshire REIT, 11% S&P MLP

0.4-0.7%** Private Credit - Private Credit Portfolio

3.6%* Public Credit - 66.67% Citigroup HY Cash Pay Capped, 33.33% JPM EMBI Global

1%* 91-Day Treasury Bill

6.4-6.6%** Private Real Assets - Private Real Assets Portfolio

*Weights of public markets composite were adjusted based on actual weights of private markets composites

**Weights of private markets composites were their beginning % of total fund market value

10/1/14-9/30/16

24.4-24.7%* Domestic Equity - Wilshire 5000

28% Fixed Income - Barclays Universal

16% International Equity - MSCI ACWI x US

11% Private Equity - Private Equity Portfolio

5% TIPS - 50% Barclays U.S. TIPS, 50% 1-10 yrs TIPS

8% Real Estate - 75% NCREIF/25% Wilshire REIT

5% Credit Opp. - 66.67% Citigroup HY Cash Pay Capped, 33.33% JPM EMBI Global

1% 91-Day Treasury Bill

1.3-1.6%** Real Assets - 25.72-41.63% CPI5 , 58.37-74.28% S&P MLP***

*Domestic Equity allocation was 26% minus Real Assets allocation

**Real Assets allocation was based on its beginning % of Total Fund market value

***Weights of CPI5 and S&P MLP were based on beginning weights of Harvest and Forest within the composite

OBJECTIVES & BENCHMARKS FOR IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

TOTAL FUND		
Total Fund Benchmark	<p>10/1/12 - 9/30/14</p> <p>23.3-24.2%* Domestic Equity - Wilshire 5000</p> <p>28% Fixed Income - Barclays Universal</p> <p>15% International Equity - MSCI ACWI x US</p> <p>13% Private Equity - Wilshire 5000 Lagged + 300 bp annually</p> <p>5% TIPS - 50% Barclays U.S. TIPS, 50% 1-10 yrs TIPS</p> <p>8% Real Estate - 75% NCREIF/25% Wilshire REIT</p> <p>5% Credit Opp. - 66.67% Citigroup HY Cash Pay Capped, 33.33% JPM EMBI Global</p> <p>1% 91-Day Treasury Bill</p> <p>0.8-1.7%** Real Assets - 9.22-32.82% CPI5, 67.18-90.78% S&P MLP***</p> <p>*Domestic Equity allocation was 25% minus Real Assets allocation</p> <p>**Real Assets allocation was based on its beginning % of total fund market value</p> <p>***Weights of CPI5 and S&P MLP were based on beginning weights of Harvest and Forest within the composite</p> <p>10/1/10 - 9/30/12</p> <p>25% Domestic Equity - Wilshire 5000</p> <p>28% Fixed Income - Barclays Universal</p> <p>15% International Equity - MSCI ACWI x US</p> <p>13% Private Equity - Wilshire 5000 Lagged + 300 bp annually</p> <p>5% TIPS - Barclays U.S. TIPS</p> <p>8% Real Estate - 75% NCREIF/25% Wilshire REIT</p> <p>5% High Yield Bonds - Citigroup HY Cash Pay Capped</p> <p>1% 91-Day Treasury Bill</p> <p>1/1/10 - 9/30/10</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>33% Fixed Income - Barclays Universal</p> <p>15% International Equity - MSCI ACWI x US</p> <p>10% Private Equity - Wilshire 5000 Lagged + 300 bp annually</p> <p>8% Real Estate = 85% NCREIF/15% Wilshire REIT + 25bp</p> <p>3% High Yield Bonds - Citigroup HY Cash Pay Capped</p> <p>1% 91-Day Treasury Bill</p> <p>10/1/04 - 12/31/09</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>34% Fixed Income - Barclays Universal</p> <p>15% International Equity - MSCI ACWI x US</p> <p>10% Private Equity - Wilshire 5000 Lagged + 300 bp annually</p> <p>8% Real Estate = 85% NCREIF/15% Wilshire REIT + 25bp</p> <p>3% High Yield Bonds - Citigroup HY Cash Pay Capped</p>	<p>4/1/99 - 9/30/04</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>34% Fixed Income - Barclays Universal</p> <p>15% International Equity - MSCI ACWI x US</p> <p>10% Private Equity - Wilshire 5000 + 300 bp annually</p> <p>5% Tactical - 80% Mellon Benchmark/20% Baring Benchmark</p> <p>5% Real Estate - CPI + 600 bp annually</p> <p>3% High Yield Bonds - Citigroup HY Cash Pay Capped</p> <p>1/1/99 - 3/31/99</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>37% Fixed Income - Barclays Aggregate</p> <p>15% International Equity - MSCI ACWI x US</p> <p>10% Private Equity - Wilshire 5000 + 500 bp annually</p> <p>5% Tactical - 80% Mellon Benchmark/20% Baring Benchmark</p> <p>5% Real Estate - CPI + 600 bps annually</p> <p>10/1/98 - 12/31/98</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>37% Fixed Income - Barclays Aggregate</p> <p>15% International Equity - 10% MSCI EMF/ 90% of the 50% Europe/50% Pacific Idx</p> <p>10% Private Equity - Wilshire 5000 + 500 bp annually</p> <p>5% Tactical - 80% Mellon Benchmark/20% Baring Benchmark</p> <p>5% Real Estate - CPI + 600 bp annually</p> <p>7/1/98 - 9/30/98</p> <p>28% Domestic Equity - Wilshire 5000</p> <p>34% Fixed Income - Barclays Aggregate</p> <p>13% International Equity - 10% MSCI EMF/ 90% of the 50% Europe/50% Pacific Idx</p> <p>10% Private Equity - Wilshire 5000 + 500 bp annually</p> <p>5% Tactical - 80% Mellon Benchmark/20% Baring Benchmark</p> <p>5% Real Estate - CPI + 600 bp annually</p> <p>2% Emerging Mkts. - MSCI EMF</p> <p>3% High Yield - Sal. High Yield Cash Pay</p> <p>12/31/96 - 6/30/98</p> <p>30% Domestic Equity - Wilshire 5000</p> <p>28% Fixed Income - Barclays Aggregate</p> <p>9% International Equity - 10% MSCI EMF / 90% of the 50% Europe/50% Pacific Index</p> <p>9% Private Equity - Wilshire 5000 + 500 bp annually</p> <p>10% Tactical - 80% Mellon Benchmark/20% Baring Benchmark</p> <p>6% Real Estate - CPI + 600 bp annually</p> <p>1% Emerging Mkts. - MSCI EMF</p> <p>7% International Fixed - JP Morgan Global Hedged</p>

OBJECTIVES & BENCHMARKS FOR IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

EQUITY MANAGERS

Active		
	BlackRock Russell 1000 SAE	Russell 1000 Index
	BlackRock Russell 2000 SAE	Russell 2000 Index
Passive		
	Mellon Russell 1000 Index Fund	Russell 1000 Index
	Mellon Russell 2000 Index Fund	Russell 2000 Index
Domestic Equity Composite Benchmark		

INTERNATIONAL EQUITY MANAGERS

Active	Wellington Emerging Markets	Prior to 2Q10:	MSCI Emerging Markets (N)
			MSCI EM Investables Market Index (N)
	BlackRock Emerging Markets Tilts		MSCI Emerging Markets (N)
	BlackRock EAFE Tilts		MSCI EAFE (N)
	Columbia EAFE		MSCI EAFE (N)
	PanAgora Dynamic EAFE		MSCI EAFE (N)
Passive			
	BlackRock Canada		MSCI Canada Index (N)
	BlackRock Passive EAFE		MSCI EAFE Index (N)
	Mellon Emerging Markets		MSCI EM Index (N)
Int'l Equity Composite Benchmark			MSCI ACWI x US (N)
		Prior to 4Q18:	MSCI ACWI x US (G)
		Prior to 4Q01:	MSCI ACWI x US old
		Prior to 1Q99:	90% IPERS EAFE 50/50, 10% MSCI EMF Index (G)
		Prior to 1Q98:	10% MSCI EM Free ex-Malaysia/ 90% (60% Hedged MSCI 50% Europe/50% Pacific)

SHORT TERM CASH

STIF	91-Day Treasury Bill
Western Asset Liquidation	91-Day Treasury Bill
Westridge Liquidation	91-Day Treasury Bill
Smith Breeden Liquidation	91-Day Treasury Bill

GLOBAL FIXED MANAGERS

Active Core Plus Managers		
Principal Global	Bloomberg	Universal
Blackrock Asset Mgmt	Bloomberg	Universal
Western Asset Mgmt	Bloomberg	Universal
MacKay Shields	Bloomberg	Universal
Prudential	Bloomberg	Universal
TCW Asset Mgmt	Bloomberg	Universal
Prudential Universal	Bloomberg	Universal
BlackRock Universal	Bloomberg	Universal
Passive		
Mellon Aggregate	Bloomberg	Aggregate
Core Plus Fixed Composite Benchmark		
	Bloomberg	Universal
	Prior to 4Q99:	Bloomberg Aggregate
High Yield		
Aegon	Bloomberg U.S. High Yield 2% Capped	
	Prior to 2Q19:	FTSE Hi Yld Cash Pay Capped
PGIM High Yield	Bloomberg U.S. High Yield 2% Capped	
Public Credit		
	66.67% Bloomberg U.S. HY 2% Capped, 33.33% JPM EMBGI	
	Prior to 2Q19	66.67% FTSE HY Cash Pay Capped, 33.33% JPM EMBGI
Prudential Emerging Markets	JP EMBGI Global Index	
High Yield Composite Benchmark		
	Bloomberg U.S. High Yield 2% Capped	
	Prior to 2Q19:	FTSE High Yield Cash Pay Capped Index
	Prior to 2Q03:	Citigroup High Yield Cash Pay Index

OBJECTIVES & BENCHMARKS FOR IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

GLOBAL SMART BETA

U.S. Smart Beta	Russell 1000 Comprehensive Factor
Developed Ex-U.S. Smart Beta	FTSE Developed Ex-U.S. Comprehensive Factor (N)
Emerging Markets Smart Beta	FTSE Emerging Markets Comprehensive Factor (N)
Global Smart Beta Composite Benchmark	
1Q20	56% Russell 1000 CF, 34% FTSE Dev. X-US CF (N), 10% FTSE EM CF (N)
Prior to 1Q20	60% Russell 1000 CF, 30% FTSE Dev. X-US CF (N), 10% FTSE EM CF (N)

PRIVATE MARKETS

Private Equity/Debt Composite Benchmark:	Private Equity Portfolio
3Q04-3Q13:	Wilshire 5000 Lagged plus 300 bp annually
Prior to 3Q04:	Wilshire 5000 plus 300 bp annually
Private Credit Composite Benchmark:	Private Credit Portfolio
Private Real Assets Composite Benchmark:	Private Real Assets Portfolio
Private Other Real Assets Composite Benchmark:	Private Other Real Assets Portfolio
Forest Investment	CPI + 5%
UBS Farmland Investors	CPI + 5%
Private Real Estate Composite Benchmark	Private Real Estate Portfolio
Prior to 4Q16:	NCREIC ODCE NOF
Prior to 4Q10:	85% NCREIF/15% Wilshire REIT + 25bp
Prior to 3Q04:	CPI+6%

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IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Gregory S. Samorajski, CFA
Chief Executive Officer

Kim Reynolds
Governor

Adam Gregg
Lt. Governor

March 17, 2023

TO: Investment Board

FR: Sriram Lakshminarayanan, Chief Investment Officer

RE: Proposed Revision to Investment Policy & Goal Statement (IPGS)

IPERS has used the Bloomberg U.S. Universal Index (Universal) as its core-plus fixed-income asset class benchmark since 1999. The Universal was a better representation of the market that IPERS was then investing in. This index includes the “plus” sectors, such as high yield and emerging market debt, that the Bloomberg U.S. Aggregate Index (Aggregate) does not include. Even though it is less utilized in the market, using the Universal has helped benchmark our active managers equitably.

More recently, IPERS has instituted public and private credit asset classes as dedicated allocations targeting credit/plus beta. IPERS staff is currently migrating active core-plus managers to passive management, benchmarked to a more readily available Aggregate product.

Most passive products in this space are benchmarked against the Aggregate Index. As indicated, this index does not include the “plus” sectors, such as high yield and emerging market debt. If IPERS continues to use the Universal as the policy benchmark, a significant benchmark misfit risk might be created.

The goal for the core-plus asset class is to reduce the active management to somewhere close to zero by June 30, 2023. As indicated, we have already begun the transition and will continue to proceed at a measured pace. During the transition phase, we are attempting to limit any mismatch from the benchmark by allocating assets to other sectors and asset classes in a risk adjusted manner.

It is staff’s recommendation that the Investment Board revise the Asset Allocation Policy contained in Appendix B of the IPGS to make the Bloomberg U.S. Aggregate Index the Policy Benchmark Index for the core-plus asset class, effective July 1, 2023. In addition, the core-plus fixed-income asset class should be renamed to the core fixed-income asset class.

Investment Policy and Goal Statement

I. INTRODUCTION

The Iowa Public Employees' Retirement System (IPERS or System) is governed by Iowa Code chapter 97B. System assets are held in trust and invested for the exclusive purposes of providing benefits to participants and their beneficiaries, minimizing contributions, and defraying reasonable expenses of administering the System. The investment activities of the System are governed by the "prudent person" rules as defined in §97B.7A. The investment policy and the investment strategies will be periodically reviewed to ensure they conform to §§97B.7A and 97B.8A.

The Investment Board (Board) is the trustee of the IPERS Trust Fund (Fund). The Board shall establish the System's tolerance for investment risk, and shall diversify the System's investments to minimize the risk of unacceptable large losses and to maximize the rate of return, unless under the circumstances it is clearly not prudent to do so. The Board also adopts the actuarial assumptions and methods, approves the retention of service providers in matters relating to the actuarial valuation of the System's assets and liabilities, and adopts the System's contribution rate funding policy. A list of the statutory and administrative duties of Board and staff is provided in Appendix A.

The chief investment officer (CIO), under the supervision of the chief executive officer (CEO), is responsible for the administration of the System's investment program pursuant to the policies of the Board.

II. INVESTMENT OBJECTIVES

The investment activities will be designed to provide a return on the Fund that, when coupled with the periodic contributions of the membership and employers, will meet or exceed the benefit funding requirements of the plan over time while staying within the Board's tolerance for risk expressed in this policy.

The objective of the CIO is to execute the asset allocation policy established by the Board (the policy benchmark defined in this policy), and to attempt to add value relative to the policy benchmark while staying within the Board's tolerance for active risk.

III. DECISION MAKING

The Board is responsible for establishing broad policy guidelines and benchmarks that will enable the Fund to achieve its investment objectives. Board decisions are required in the following areas:

1. Establish asset allocation targets through adoption of a policy benchmark
2. Establish acceptable ranges around the policy benchmark targets

3. Establish the Fund- and program-level benchmarks
4. Establish the active risk budget

Beyond these broad policy decisions, the Board delegates to the CIO all other decision-making relating to the investment of IPERS assets, subject to the guidelines established in this policy and any statutory requirements or prohibitions.

The Board may utilize the services of investment consultants to assist them in their decision-making. Such services include, but are not limited to, conducting asset-liability and asset allocation studies, investment performance reviews, policy reviews and topical studies.

IV. ASSET ALLOCATION

The Board's asset allocation policy is established in the policy benchmark and the asset class ranges specified in Appendix B. The policy benchmark weights set the Board's target exposure to each asset class, measured on a market value basis, while the asset class ranges establish the ranges within which actual weights may fluctuate. Positioning within a specified asset class range is acceptable and constitutes compliance with the policy benchmark.

IPERS' assets are divided into two groups for allocation purposes: *private markets* and *public markets*. Private market assets are generally illiquid, infrequently priced investments with long horizons. The Board has established a private markets investment policy specifying investment objectives, benchmarks, etc. for these types of assets. (See Appendix C)

It is the responsibility of the CIO to manage the allocation weights within the public market asset class ranges and keep them close to target, unless the CIO decides to tactically over- or under-weight a particular public market asset class. However, staff cannot quickly rebalance private markets to target weights due to the illiquid nature of private market assets, so any excess or deficiency between actual and target allocation for private market assets as a whole will be proportionately reallocated across all public market asset classes when rebalancing occurs.

The policy benchmark return is the sum of the products of the policy benchmark weights and the respective policy benchmark index returns for the period, with the exception that IPERS' actual weights and actual returns for each private market asset class shall be used in the calculation. If staff utilizes derivatives for rebalancing or tactical allocation decisions, the notional amount of derivatives contracts shall be used in calculating compliance with policy benchmark weights and asset class ranges.

V. ACTIVE RISK ALLOCATION AND MANAGEMENT

“Alpha” is the excess return resulting from active management decisions. IPERS believes positive alpha can be earned by employing a combination of active strategies that have low return correlation with one another, exhibit low correlation with beta returns and higher correlation to liability returns.

The Board has established an active risk budget in Appendix B as a means of controlling the active risk in the IPERS Trust Fund. The active risk budget consists of two components: risk allocated for external active management and risk allocated for internal active management through tactical allocation decisions. Active risk is measured as tracking error, which is the standard deviation of excess returns.

IPERS will seek to maintain a diversified alpha portfolio, and may utilize any strategy that in the discretion of the CIO will enhance the risk-adjusted return of the alpha portfolio, including but not limited to traditional long-only, long/short, portable alpha, derivative overlay and leveraged strategies. The CIO must formally authorize any tactical allocation decisions, and each decision shall be documented and tracked for performance evaluation purposes. Tactical allocation decisions by staff shall not result in allocations that would violate the asset class ranges set by the Board.

IPERS’ investment in an investment manager’s actively managed strategies shall not exceed 20 percent of the manager’s total actively managed assets under management. The CIO shall have discretion to determine what types of similar products offered by a manager can be included in the definition of “actively managed strategies” for purposes of this calculation.

Cost efficiency is important, and the CIO should seek to implement active strategies with a high conversion ratio of active return (after fees) to the risk deployed. Active strategies shall use performance incentive fee structures, where appropriate, to ensure the economic interests of IPERS and the manager are properly aligned.

Investment staff has authority to buy and sell exchange-traded futures contracts and exchange traded funds (ETFs) for the purpose of implementing risk management or tactical asset allocation strategies. Investment staff is also authorized to invest in swaps for an Alternative Risk Premia internal investment program (the “ARP Program”), and may create or utilize limited liability corporations (LLCs) for the purpose of implementing the ARP Program.

VI. EXTERNAL INVESTMENT MANAGEMENT

The Board shall approve the hiring of investment management and investment consulting services. The CIO has full authority to terminate investment manager contracts provided the Board is notified of the termination prior to the effective date of

the termination. The CIO also has full authority to negotiate and renegotiate contract terms and fees.

The CIO is responsible for ensuring that adequate due diligence is being performed in the evaluation of potential and existing investment managers. The CIO may hire operational due diligence consultants, attorneys, auditors and other service providers as needed to assist in the due diligence and performance evaluation of external investment management firms.

External investment managers shall have full discretion to direct and manage the investment and reinvestment of assets allocated to their accounts in accordance with this document, applicable federal and state statutes and regulations, and the executed contracts. Each contract for a public market active management strategy shall clearly define investment objectives, permitted investments, concentration limits, risk budgeting parameters and performance benchmarks.

Investment managers shall have full discretion to establish and execute trades through accounts with one or more securities broker/dealers as the managers may select. However, the System may require investment managers to clear trades through clearing brokers that are under contract to IPERS in order to control risk and costs. Investment managers will attempt to obtain “best execution” with respect to all transactions. Best execution is defined as the process and price that results in the best overall performance impact, taking into account market conditions at the time of the trade. IPERS will generally discourage a manager’s use of soft dollar arrangements for IPERS’ account, but may allow it if the usage is regularly monitored for reasonableness.

The CIO will provide the Board a summary of active management performance at least quarterly, and will highlight any concerns regarding performance, personnel turnover, or changes in the organization or investment process. The investment consultant will provide the Board semi-annual performance reviews of total Fund, asset class, and manager performance. To the extent possible, investment results will be reviewed in the context of risk-adjusted returns.

Any voting rights of securities held in any separate account, or any collective, common, or pooled fund will be exercised by the manager, trustees, or agents of said account or fund in accordance with their own proxy voting policies, provided that such policies have been reviewed by the System and deemed to be in the best economic interests of IPERS. The System shall periodically review each investment manager’s proxy voting policy and its compliance with such policies.

VII. RISK MANAGEMENT

The Fund’s risk management objectives are to: (1) maintain the asset allocation as close to the policy benchmark as possible through rebalancing, and (2) manage the active risk

of the alpha portfolio such that its tracking error does not exceed the upper limit established in the active risk budget in Appendix B.

The CIO and Chief Risk Officer (CRO) shall develop appropriate policies and procedures for the measurement, monitoring, management and reporting of risk to the Board, CEO and staff. The CRO is responsible for obtaining and/or developing the appropriate systems, models, tools and reporting processes that will allow for the timely and efficient management of investment risk. The CRO shall report any breach of risk limits established in this policy to the Board as soon as possible after the discovery of any material breach.

VIII. CUSTODY

The Treasurer of the State of Iowa (Treasurer) is the custodian of the Fund. The Treasurer will hold the System's assets in a custody/recordkeeping account in a master custody bank located in a national money center and in the international sub-custodian banks under contract to the custodian bank. The Treasurer shall consult with the Board prior to selecting the master custody bank. A formal written agreement shall be established between the Treasurer and any third-party custodian. The custodian bank agreement shall be reviewed periodically by the CIO and Board.

Certain strategies involving derivatives may require the use of a prime broker or clearing broker who will hold the System's cash or securities per the terms of a collateral agreement or futures clearing agreement. IPERS shall seek to ensure that such brokers do not require IPERS to post margin amounts that materially exceed the minimum required margin amounts set by an exchange or the terms of a collateral agreement.

IX. SECURITIES LENDING

The primary objective of the securities lending program shall be to safely generate income from lending the System's securities to qualified borrowers. The program will only utilize lending agents that agree to indemnification provisions in the event of a counterparty insolvency.

Cash collateral received against loans of securities shall be prudently invested in a low-risk investment strategy that invests only in: (1) commingled funds or money market funds managed in accordance with the regulations and criteria specified in Rule 2(a)(7) promulgated under the Investment Company Act of 1940, or (2) separate accounts that have investment guidelines identical to those required of a 2(a)(7) fund, or (3) 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. The key investment objectives for investing the cash collateral shall be to: (1) safeguard principal; (2) maintain adequate liquidity; and (3)

consistent with the foregoing objectives, optimize the spread between the collateral earnings and the rebate paid to the borrower of securities.

The Investment Board may select its own securities lending agent or authorize the Treasurer to manage the securities lending program in accordance with the risk guidelines established herein. Staff shall execute a formal written agreement between any lending agent (or the Treasurer, as the case may be) and IPERS stipulating the risk parameters and performance benchmarks of the program, which shall be in accordance with these guidelines. The securities lending program will be annually reviewed by the Board, and the ongoing operation of such program shall be subject to periodic reauthorization by the Board.

X. DERIVATIVES

The System recognizes that derivative instruments can be useful tools in portfolio and risk management, but can also introduce unique risks. The CIO shall develop written policies and procedures to control the risks associated with derivatives, but at a minimum such procedures shall require: (1) a counterparty credit rating equivalent to at least “A” for over-the-counter derivatives; (2) payment netting arrangements; (3) daily marking-to-market; and (4) collateralization of net amounts owed under the contracts after meeting minimum threshold for transfers.

The CIO shall ensure that the derivatives policies and procedures are addressed in any external management services contract, as necessary. The CIO shall develop procedures for monitoring the use and exposure of derivatives within an investment manager’s account. Mortgage-backed and asset-backed securities are not derivatives for the purpose of this policy.

XI. OTHER POLICIES

A. Social Investing

As fiduciaries, the IPERS Investment Board, staff and investment managers must perform their duties for the exclusive benefit and in the best economic interest of the System’s members and beneficiaries. The System and the Board will not support investment policies or strategies which seek to promote specific social issues or agendas through investment or divestment of IPERS’ assets. To act otherwise could be construed as a violation of fiduciary duty and could endanger the System’s tax-exempt status.

B. Securities Monitoring and Litigation

IPERS has a fiduciary duty to preserve trust assets to meet the retirement promises made to its members. Included in this duty is the obligation to recover investments in public securities that incur losses as a result of corporate mismanagement and/or fraud. To preserve trust assets, the Board has adopted a securities monitoring and

litigation policy to guide the System's involvement in and monitoring of securities litigation. (See Appendix D)

C. Confidential Investment Information

Iowa Code §22.7 and §97B.17(2)e provide that certain records and information in IPERS' possession are considered confidential and thus are exceptions to Iowa's Open Records (chapter 22) laws. Included in the exceptions is information which, if released:

1. Could result in a loss to the System or to the provider of the information.
2. Would give advantage to competitors and serve no public purpose.
3. Would violate trade secrets which are recognized and protected by law.

While the staff shall provide the Board with all essential information about the investment program, communication of information that is confidential under the above Iowa Code provisions will be identified as such in the communication.

Iowa Code §97B.8A(5), an explicit exception to Iowa's Open Meetings (chapter 21) laws, reinforces the need and obligation to maintain the confidentiality of such information by expressly authorizing the Board to hold closed sessions for discussion of this information.

D. Ethics

Fiduciaries of the System must exercise the highest standards of care in acting for the exclusive benefit of the plan participants. IPERS has adopted an ethics policy to govern the activities of Board members, staff, consultants and managers as it relates to the System. (See Appendix E)

If the CEO, CIO, CRO, any investment officer, or any IPERS attorney is in possession of information which would lead a reasonable person familiar with such matters to conclude that an investment, a commitment to an investment, or a decision to engage or terminate a contracted service provider, contradicts the fiduciary duties of the party or parties having the final authority to take such actions, it is the Board's expectation that the issue will be placed on a Board meeting agenda for review.

E. Leverage

The CIO may utilize leverage within staff tactical decisions up to the maximum negative allocation allowed by the asset class ranges for cash as specified in Appendix B. The CIO may also allow the use of leverage within external active investment management strategies and products consistent with the active risk budget. The private markets investment policy in Appendix C addresses the use of leverage for private market investments.

F. Board Meetings

Board meeting dates for the fiscal year shall be set by members of the Board at the first meeting of the fiscal year. At the first meeting in each fiscal year, the voting Board members shall elect a chair and vice chair.

Parties wishing to present items for the Board's next meeting agenda shall file a written request with the chair at least five business days prior to the meeting. To the extent there is no law, statute, or administrative rule governing a procedure, Board meetings shall be governed by the procedural rules established in the latest version of *Robert's Rules of Order*.

APPENDIX A
STATUTORY RESPONSIBILITIES OF THE INVESTMENT BOARD AND STAFF

1. The Board shall annually adopt an Investment Policy and Goal Statement. *Iowa Code §§97B.7A and 97B.8A*
2. The Board shall at least annually conduct a review of the investment policies and procedures utilized by the System. *Iowa Code §97B.8A.2(a)*
3. The Board shall at least annually conduct a public meeting to review the policies and the investment performance of the Fund. *Iowa Code §97B.8A.2(a)*
4. With the approval of the Board, the Treasurer of State may conduct a program of lending securities in the IPERS portfolio. *Iowa Code §12.8.3*
5. The Board shall review and approve the hiring of each investment manager and investment consultant. *Iowa Code §97B.4.3(f)*
6. The Board shall select the actuary for the System, and shall adopt the mortality tables and actuarial assumptions and methods the actuary will use for the annual actuarial valuation. *Iowa Code §§97B.4.3(c) and 97B.8A.3*
7. The CEO will consult with the Board prior to employing a CIO. *Iowa Code §97B.4.3(a)*
8. The Board shall participate in the annual performance evaluation of the CIO. *Iowa Code §97B.8A.2(c)*
9. The CEO shall consult with the Board on the budget program for the System. *Iowa Code §97B.4.2(c)*
10. The Treasurer of State shall consult with the Board prior to selecting any bank or other third party for purposes of investment asset safekeeping, other custody, or settlement services. *Iowa Code §97B.7.2*
11. The Board shall consist of seven voting members and four nonvoting members. Four voting members of the Board shall constitute a quorum. *Iowa Code §97B.8A*
12. Staff shall provide advance notice to the public of the time, date, tentative agenda and place of each Board meeting in compliance with Iowa Code chapter 21.
13. The Board shall set the salary of the CEO. *Iowa Code §97B.3.1*

APPENDIX B

ASSET ALLOCATION POLICY AND ACTIVE RISK BUDGET

I. Asset Allocation Policy¹

Asset Class	Asset Class Ranges	Policy Benchmark Weights	Policy Benchmark Index
Equities		42.5%	
Domestic Equities	19%–25%	21%	Russell 3000
International Equities	14.5%–20.5%	16.5%	MSCI ACWI ex-U.S. (Net)
Global Smart Beta Equities	5%–7%	5%	Custom Index ²
Fixed Income		26%	
Core- Plus Fixed Income	21.5%–27.5%	23%	Bloomberg Barclays U.S. <u>Universal Aggregate</u>
Public Credit	3%–7%	3%	Custom Index ³
Cash	-2%–4%	1%	Merrill Lynch 91-Day T-Bill
TOTAL PUBLIC MARKETS		69.5%	
	Asset Class Targets	Policy Benchmark Weights	Policy Benchmark Index
Private Equity	17%	Actual ⁴	Portfolio ⁵
Private Credit	4.5%	Actual ⁴	Portfolio ⁵
Private Real Assets	9%	Actual ⁴	Portfolio ⁵
TOTAL PRIVATE MARKETS		30.5%	

¹On September 17, 2020, and September 22, 2022, the Investment Board revised the Asset Allocation Policy, as reflected in the table below. However, the Board stipulated that core-~~plus~~ fixed-income assets should be reduced as needed to fund new allocations to the private markets. Therefore, beginning October 1, 2020, and revised as of October 1, 2022, the target weight for private equity will be increased to 17 percent and core-~~plus~~ fixed income will be lowered to 19 percent, with target weights being adjusted quarterly in the future to reflect the progress in funding the increased allocations to private credit and private real assets.

Asset Class	Current Weight	Target Weight	Change
Core- Plus Fixed Income	23%	19%	-4%
Private Credit	4.5%	8%	+3.5%
Private Real Assets	9%	9.5%	+0.5%

²This benchmark index is defined as 56 percent Russell 1000 Comprehensive Factor Index + 34 percent FTSE Developed ex U.S. Comprehensive Factor Index + 10 percent FTSE Emerging Comprehensive Factor Index.

³This benchmark index is defined as 67 percent Bloomberg ~~Barclays~~ U.S. High Yield 2% Issuer Capped Index + 33 percent JP Morgan EMBI Global Index.

⁴The benchmark weight for each private market asset class is the actual percentage of each asset class relative to the total fund portfolio.

⁵The benchmark index for each private market asset class is the return of the portfolio itself.

II. Active Risk Budget

	Target ⁶	Upper Limit ⁶
Total Fund	1.50%	3.00%
External Managers	1.00%	2.50%
Investment Staff	1.00%	2.50%

⁶Measured as tracking error (the standard deviation of excess return) at the Total Fund level.

BETA REPORT
IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM PORTFOLIO
PRELIMINARY (Unreconciled) MARKET VALUES AT
3/17/2023

	Actual	Overlay	Total	Policy	Difference
PUBLIC MARKETS					
Domestic	\$ 7,761,947,646	\$ 358,323,472	\$ 8,120,271,118	\$ 8,053,330,657	\$ 66,940,461
International	\$ 6,074,689,522	\$ 84,257,831	\$ 6,158,947,353	\$ 6,326,480,111	\$ (167,532,758)
Global Smart Beta	\$ 1,907,606,986		\$ 1,907,606,986	\$ 1,917,838,625	\$ (10,231,639)
Total Equities	\$ 15,744,244,155		\$ 16,186,825,457	\$ 16,297,649,392	\$ (110,823,935)
Core Plus	\$ 8,943,235,224	\$ (30,025,470)	\$ 8,913,209,754	\$ 8,821,261,890	\$ 91,947,864
Public Credit	\$ 1,151,630,534		\$ 1,151,630,534	\$ 1,149,907,391	\$ 1,723,143
Cash	\$ 779,273,193	\$ (412,555,833)	\$ 366,717,361	\$ 381,976,158	\$ (15,258,797)
PRIVATE MARKETS	\$ 13,170,799,980		\$ 13,170,799,980	\$ 13,138,388,255	\$ 32,411,725
Private Equity	\$ 7,768,571,199		\$ 7,768,571,199	\$ 7,758,890,702	\$ 9,680,497
Private Credit	\$ 1,994,783,640		\$ 1,994,783,640	\$ 1,989,459,154	\$ 5,324,485
Private Real Assets	\$ 3,407,445,141		\$ 3,407,445,141	\$ 3,390,038,399	\$ 17,406,742
TOTAL FUND	\$ 39,789,183,087			\$ 39,789,183,087	\$ -

	Actual	Overlay	Total	Policy	Difference
PUBLIC MARKETS					
Domestic	19.51%	0.90%	20.41%	20.24%	0.17%
International	15.27%	0.21%	15.48%	15.90%	-0.42%
Global Smart Beta	4.79%		4.79%	4.82%	-0.03%
Total Equities	39.57%		40.68%	40.96%	-0.28%
Core Plus	22.48%	-0.08%	22.40%	22.17%	0.23%
Public Credit	2.89%		2.89%	2.89%	0.00%
Cash	1.96%	-1.04%	0.92%	0.96%	-0.04%
PRIVATE MARKETS	33.10%		33.10%	33.02%	0.08%
Private Equity	19.52%		19.52%	19.50%	0.02%
Private Credit	5.01%		5.01%	5.00%	0.01%
Private Real Assets	8.56%		8.56%	8.52%	0.04%
TOTAL FUND	100.00%			100.00%	0.00%

IPERS Portfolio Structure and Allocations
Quarter End December 31, 2022
\$39.3 Billion

Public Markets – 67% of Total Fund (Equities 41%)				
Domestic Equity \$7.8 Billion 19.9%		International Equity \$6.3 Billion 15.9%		Global Smart Beta \$1.9 Billion 4.9%
Active \$2.1 Billion 27.3%	Passive \$5.7 Billion 72.7%	Active \$3.5 Billion 56.3%	Passive \$2.7 Billion 43.7%	Passive \$1.9 Billion 100.0%
BlackRock (R1000 SAE) \$1.9 billion	BNY Mellon (R1000) \$5.4 billion	BlackRock (EAFE SAE) \$1.5 billion	BlackRock (EAFE) \$1.3 billion	UBS (U.S. Equity Smart Beta) \$1.1 billion
BlackRock (R2000 SAE) \$212.7 million	BNY Mellon (R2000) \$260.2 million	Columbia (EAFE) \$520.8 million	BlackRock (Canada) \$492.9 million	UBS (Developed ex U.S. Smart Beta) \$665.4 million
	Parametric (Synthetic) \$49.1 million	Panagora (Dynamic EAFE) \$560.7 million	BNY Mellon (Emerging) \$875.5 million	UBS (Emerging Market Smart Beta) \$187.3 million
		BlackRock (Emerging SAE) \$481.6 million	Parametric (Synthetic) \$75.2 million	
		Wellington (Emerging) \$394.5 million		

IPERS Portfolio Structure and Allocations
Quarter End December 31, 2022
\$39.3 Billion

Public Markets – 67% of Total Fund (Fixed Income and Cash 26%)				
Core-Plus Fixed Income \$8.6 Billion 22.0%			Public Credit \$1.1 Billion 2.9%	Cash \$459.3 Million 1.2%
Active \$7.1 Billion 82.3%		Passive \$1.5 Billion 17.7%	Active \$1.1 Billion 100.0%	
BlackRock (Core Plus) \$583.3 million	Western Asset (Core Plus) \$1.4 billion	BNY Mellon Agg (Core) \$1.5 billion	Aegon USA (High Yield) \$372.4 million	BNY Mellon (Cash) \$235.0 million
Principal Global (Core Plus) \$1.1 billion	MacKay Shields (Core Plus) \$1.1 billion	Parametric (Synthetic) \$33.3 million	PGIM (High Yield) \$379.2 million	LARS Liquid Assets (Cash) \$224.3 million
PGIM (Core Plus) \$693.1 million	TCW (Core Plus) \$1.1 billion		PGIM (Emerging Market Debt) \$383.4 million	
BlackRock Universal (Relative Value) \$603.9 million	PGIM Universal (Relative Value) \$485.5 million			

IPERS Portfolio Structure and Allocations
Quarter End December 31, 2022
\$39.3 Billion

Private Markets – 33% of Total Fund			
Private Equity \$7.8 Billion 19.8%	Private Real Assets \$3.4 Billion 8.8%	Private Credit \$1.8 Billion 4.7%	
Pathway Capital (Private Equity) \$7.8 billion	Clarion Partners (RE Equity) \$530.2 million	Tennenbaum Capital (Corporate Debt) \$349.7 million	Monroe Capital (Corporate Debt) \$500.0 million
	Invesco (RE Equity) \$872.4 million	KKR Goldfinch (Corporate Debt) \$259.6 million	Pathway Capital (Corporate Debt) \$76.5 million
	RREEF (RE Equity) \$879.1 million	Principal Global II (Real Assets Credit) \$13.2 million	PGIM RE Global Debt (Real Assets Credit) \$168.3 million
	UBS Realty (RE Equity) \$563.2 million	Kayne Anderson IV (Real Assets Credit) \$72.2 million	Heitman Credit (Real Asset Credit) \$4.4 million
	Forest Investment (Timber) \$212.8 million	Audax Mezz Coinvest (Opportunistic Credit) \$10.2 million	Crestline Opp Credit (Opportunistic Credit) \$145.3 million
	UBS Farmland Investors (Farmland) \$86.3 million	Audax Mezz V (Opportunistic Credit) \$15.9 million	Marathon SPS IA (Opportunistic Credit) \$74.8 million
	Brookfield (Infrastructure) \$305.1 million	Arrowmark (Opportunistic Credit) \$98.3 million	ARES PCS II (Opportunistic Credit) \$57.0 million

Alpha Report

For periods ending December 31, 2022

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IPERS' Active Manager Alpha Scorecard

Net of Fees as of 4Q22	4Q22	1 Year	3 Year	5 Year	SI	Perf	Org	People	Process
Domestic Equity									
BlackRock Russell 1000 SAE	0.53%	NA	NA	NA	0.06%				
BlackRock Russell 2000 SAE	1.41%	1.32%	1.02%	NA	1.97%				
International Equity									
BlackRock – EAFE SAE	0.15%	1.27%	0.95%	NA	0.96%				
Columbia EAFE	-2.28%	-3.42%	-2.04%	NA	-2.05%				
PanAgora Dynamic EAFE	0.06%	1.10%	0.94%	NA	0.16%				
Wellington EM	0.38%	-2.55%	1.27%	1.84%	0.18%				
BlackRock Emerging Markets SAE	0.25%	-0.91%	-1.04%	NA	-0.73%				
Core Plus Fixed Income									
Western	0.52%	-2.48%	-0.42%	0.09%	0.83%				
BlackRock	0.46%	-0.21%	0.20%	0.17%	0.29%				
Principal Global Investors	-0.33%	-0.32%	0.74%	0.47%	0.10%				
TCW	0.01%	0.06%	0.65%	0.61%	0.41%				
Prudential	0.74%	-0.77%	0.18%	0.34%	0.63%				
Mackay Shields	0.23%	-0.63%	0.52%	0.37%	0.57%				
BlackRock Universal	-0.10%	0.39%	NA	NA	1.38%				
Prudential Universal	3.25%	1.01%	NA	NA	-0.98%				
Public Credit									
Prudential High Yield	-0.69%	0.63%	0.74%	NA	0.95%				
Aegon USA	-0.08%	0.45%	0.13%	0.08%	0.43%				
Prudential EMD	1.15%	-0.42%	-0.28%	-0.13%	0.63%				
LARS									
Aspect Capital	-1.11%	NA	NA	NA	1.52%				
Graham Capital Management, L.P.	-3.70%	23.49%	8.86%	0.48%	5.26%				
P/E Global LLC	-8.75%	14.99%	6.71%	0.64%	4.42%				
PIMCO	4.10%	NA	NA	NA	2.87%				
Wadhvani Asset Management LLP	-2.10%	19.15%	12.60%	0.80%	8.65%				
Welton Global	-10.11%	8.51%	NA	NA	5.44%				



No Concerns



Minor Concerns



Material Concerns

IPERS' Active Manager Listing

MANAGER	INCEPTION DATE	MANDATE	BENCHMARK
Domestic Equity			
BlackRock Russell 1000 SAE	May 2022	Large Cap	Russell 1000
BlackRock Russell 2000 SAE	May 2019	Small Cap	Russell 2000
International Equity			
BlackRock – EAFE SAE	May 2019	Developed EAFE	MSCI EAFE Index (net)
Columbia EAFE	May 2019	Developed EAFE	MSCI EAFE Index (net)
PanAgora Dynamic EAFE	May 2019	Developed EAFE	MSCI EAFE Index (net)
Wellington EM	February 2009	Global Emerging Markets	MSCI Emerging Markets (net)
BlackRock Emerging Markets SAE	May 2019	Global Emerging Markets	MSCI Emerging Markets (net)
Core-Plus Fixed Income			
Western	October 1999	Core Plus	Bloomberg Barclays U.S. Universal
BlackRock	October 1999	Core Plus	Bloomberg Barclays U.S. Universal
Principal Global Investors	May 2005	Core Plus	Bloomberg Barclays U.S. Universal
TCW	July 2015	Core Plus	Bloomberg Barclays U.S. Universal
Prudential	July 2015	Core Plus	Bloomberg Barclays U.S. Universal
Mackay Shields	November 2011	Core Plus	Bloomberg Barclays U.S. Universal
BlackRock Universal	November 2020	Relative Value	Bloomberg Barclays U.S. Universal
Prudential Universal	March 2021	Relative Value	Bloomberg Barclays U.S. Universal
Public Credit			
Prudential High Yield	June 2019	High Yield	Bloomberg US HY 2% Capped Index
Aegon USA	February 2012	High Yield	High Yield Policy Index
Prudential EMD	April 2016	Emerging Market Debt	JP Morgan EMBI Global
LARS			
Aspect Capital	March 2022	Diversified Trend	Absolute Return
Graham Capital Management, L.P.	December 2016	Tactical Trend	Absolute Return
P/E Global LLC	December 2016	FX Strategy	Absolute Return
PIMCO	June 2022	Commodity Alpha	Absolute Return
Wadhvani Asset Management LLP	March 2017	Keynes Leveraged Quantitative Strategy	Absolute Return
Welton Global	June 2021	Welton Global	Absolute Return

Private Market Program Manager Updates

For periods ending December 31, 2022

IPERS' PMP Manager Scorecard

	1 Year	5 Year	10 Year	SI	Performance	Organization	People	Process
Private Equity								
Multi-Strategy								
Pathway Capital Management	-5.6%	20.8%	18.2%	13.2%				
Private Credit								
Direct Lending								
BlackRock / TCP VIII	4.5%	7.1%	N/A	7.1%				
Monroe Capital Management	3.8%	6.7%	N/A	6.9%				
PPEF XXV – B	N/A	N/A	N/A	N/A				
Opportunistic								
Arrowmark	4.4%	N/A	N/A	4.4%				
Ares Private Credit Solutions II	-1.2%	N/A	N/A	-0.4%				
Audax Mezzanine Fund V	N/A	N/A	N/A	N/A				
Audax V Co-Investment Fund	13.7%	N/A	N/A	11.7%				
Crestline SMA	8.0%	N/A	N/A	5.9%				
KKR Goldfinch	4.7%	N/A	N/A	7.5%				
Marathon	3.8%	N/A	N/A	3.2%				
Real Assets								
Heitman Credit	N/A	N/A	N/A	N/A				
PGIM Global Real Estate Debt	7.3%	N/A	N/A	6.5%				
Principal Real Estate Debt II	-0.6%	6.5%	N/A	6.7%				
Kayne Anderson Real Estate Debt IV	N/A	N/A	N/A	N/A				
Private Real Assets								
Real Estate								
Clarion Partners	7.5%	4.5%	7.9%	7.0%				
Invesco	13.4%	18.6%	15.7%	11.4%				
RREEF	19.3%	13.2%	12.9%	10.4%				
UBS Realty	16.1%	15.7%	13.5%	10.9%				
Other Real Assets								
Brookfield	N/A	N/A	N/A	N/A				
Forest Investment Associates	8.7%	5.4%	5.2%	5.7%				
UBS Farmland	7.8%	4.4%	N/A	7.1%				

Active Risk –180 Days (Mar 2023)

	Active	Passive	Misfit	Total
Equities				
Domestic Equities	0.07%	0.04%	0.00%	0.08%
International Equities	0.12%	0.03%	0.00%	0.13%
Global Smart Beta Equities	-	0.01%	0.00%	0.01%
Fixed Income				
Core-Plus Fixed Income	0.24%	0.05%	0.00%	0.25%
Public Credit	0.04%	-	0.00%	0.04%
Cash/LARS	0.08%	-	-	0.08%
Asset Allocation	-	0.16%	-	0.16%
Total Public Markets	0.29%	0.18%	0.00%	0.32%

Target	1.50%
Upper Limit	3.00%

- Active Manager Risk is relatively stable.
- Expect Core-Plus Fixed Income active risk to drop considerably in the coming months.
- Plan-level Total Active Risk dropped four basis points from 0.36 to 0.32% remaining well below target (1.50%).

External Active Risk –180 Days (Mar 2023)

