July 2023

BUILDING THE TRUST

Investment Management

Teacher Retirement System of Texas
1000 Red River Street
Austin, Texas
78701-2698

TEACHER RETIREMENT SYSTEM OF TEXAS MEETING
BOARD OF TRUSTEES
AND
INVESTMENT MANAGEMENT COMMITTEE

(Committee Chair and Members: Mr. Corpus, Chair; Mr. Elliott, Mr. Hollingsworth, Ms. Sissney and Mr. Walls, Jr.)

All or part of the July 13, 2023, meeting of the TRS Investment Management Committee and Board of Trustees may be held by telephone or video conference call as authorized under Sections 551.130 and 551.127 of the Texas Government Code. The Board intends to have a quorum and the presiding officer of the meeting physically present at the following location, which will be open to the public during the open portions of the meeting: ***1000 Red River, Austin, Texas 78701 in the TRS East Building, 5th Floor, Boardroom.***

The open portions of the July 13, 2023, meeting are being broadcast over the Internet. Access to the Internet broadcast and agenda materials of the meeting is provided at www.trs.texas.gov. A recording of the meeting will be available at www.trs.texas.gov.

AGENDA
July 13, 2023 – 3:00 p.m.

1. Call roll of Committee members.

2. Consider the approval of the proposed minutes of the April 2023 committee meeting – Committee Chair.

3. CIO Update including Fleet Strategy; Talent Management; Accomplishments; Notices; Awards; Key Dates and Upcoming Events – Jase Auby.

4. Discuss the First Quarter 2023 Performance Review – Mike McCormick, AON.

5. Annual Review of External Private Markets – Eric Lang, Tim Koek, Ryan Zafereo, Neil Randall and Grant Walker.

6. Review of proposed modifications to Investment Policy Statement – Katy Hoffman and Brad Gilbert.

NOTE: The Board of Trustees (Board) of the Teacher Retirement System of Texas will not consider or act upon any item before the Investment Management Committee (Committee) at this meeting of the Committee. This meeting is not a regular meeting of the Board. However, because the full Committee constitutes a quorum of the Board, the meeting of the Committee is also being posted as a meeting of the Board out of an abundance of caution.

Minutes of the Investment Management Committee
April 28, 2023

The Investment Management Committee of the Board of Trustees of the Teacher Retirement System of Texas met on April 28, 2023, in the boardroom located on the Fifth Floor in the East Building of TRS' offices located at 1000 Red River Street, Austin, Texas, 78701.

Committee members present:
Mr. John Elliott, Acting Chair
Mrs. Nanette Sissney
Mr. Robert H. Walls, Jr.

Other TRS Board Members present:
Ms. Brittny Allred
Mr. Mike Ball
Mr. James D. Nance
Mr. Elvis Williams

Others present:
Brian Guthrie, TRS
Andrew Roth, TRS
Don Green, TRS
Amanda Jenami, TRS
Heather Traeger, TRS
Jase Auby, TRS
Katy Hoffman, TRS
James Nield, TRS
Stephen Kim, TRS
Dale West, TRS
Brad Gilbert, TRS
KJ VanAckeran, TRS
Steven Wilson, TRS
Ashley Baum, TRS
Katherine Farrell, TRS
Suzanne Dugan, Cohen Milstein
Dr. Keith Brown, Board Advisor
Steve Voss, Aon Hewitt
Mike McCormick, Aon Hewitt.

Investment Management Committee's Acting Chair, Mr. John Elliott, called the meeting to order at 8:00 a.m.

1. Call roll of Committee members.

Ms. Farrell called the roll. A quorum was present, Mr. Corpus and Mr. Hollingsworth were absent.

2. Consider the approval of the proposed minutes of the December 2022 Committee meeting – Chair David Corpus.

On a motion by Mr. Walls, seconded by Ms. Sissney, the committee voted to approve the proposed minutes for the December 2022 Investment Management Committee meeting as presented.

3. Receive an overview of the Investment Management Committee's Calendar Year 2023 Work Plan – Jase Auby.

Mr. Jase Auby provided an overview of the Investment Management Committee's Calendar Year 2023 Work Plan. He noted the plan has been well honed over the years. He said there are quarterly updates from the CIO, review of Trust performance from Aon. He said there are semi-annual reviews of the Risk Report and then annual reviews from each portfolio around the Trust. He noted the two most important items were the Investment Policy Statement to be adopted in September and the kick off of the strategic asset allocation in December.

4. CIO Update including Fleet Strategy; Talent Management; Accomplishments; Notices and Key Dates and Upcoming Events – Jase Auby.

Mr. Jase Auby reported calendar year 2022 ended with an absolute performance of -10.3 percent. He noted there was a 63 basis points of excess return to offset somewhat that negative absolute return. He said they were making the final preparation to move over to the new Headquarters, being highly focused to move over with no paper. He announced expanding the Trust financing capabilities by completing the first direct repo with a counterparty.

Mr. Auby reported attrition was .9 percent for the first quarter which was more in line with the normal run rate. He said the build the fleet initiative ended on December 31, 20222. He said in 2017 they started with 154 full time employees (FTEs) and hired in total 75 FTEs with the bulk in private markets. He said significant cost savings were realized even though the COVID pandemic reduced investment activity. He said at the beginning the cost savings target was $1.465 billion and they delivered $1.223 billion with costs savings to continue forward.

5. Discuss the Fourth Quarter 2022 Performance Review – Steve Voss and Mike McCormick, Aon Hewitt.

Mr. Mike McCormick provided an overview of the Trust's performance. He said 2022 was a very difficult year, three of the four components of the total Fund benchmark were materially negative during the period. He reported inflation affected the Fund's risk reduction assets as well as return-seeking assets. He said global equities were down about 20 percent, but that ENRI were up 21 percent. He noted an interesting context was the previous years were strong, over the three-year period, the investment earnings up to almost $30 billion and almost $50 billion over the pervious five years.

Mr. McCormick reported the assets of the plan were in line with the policy targets articulated in the Investment Policy Statement. He compared the Trust to peers regarding risk and return noting there was a negative tradeoff between risk and return. He said for the assumed rate of return over a 20 year period is right on, 7.8 versus 7.8.

6. Annual Review of Public Markets – Dale West, Brad Gilbert, KJ VanAckeran, Steven Wilson and Ashley Baum.

Mr. Dale West provided an overview reporting Public Markets manages about $80 billion across the Trust, little less than 45 percent across three asset classes.

Mr. Brad Gilbert reviewed public equity at 40 percent making it the largest portfolio within the trust. He said the $65 billion is allocated across three teams: the External Manager Program; the Multi Asset Strategies Group and the Internal Fundamental Group. He reported the split between internal and external management was about 50/50. He said for 2019 to 2021 they were annualizing about 20 percent in the equity markets but last year global equities were down 18 percent due to inflation concerns, rising rates, and fears of recession. He reported the External Manager Program has been the top contributor to excess returns.

Mr. KJ VanAckeran reviewed the internal initiatives of his team, Internal Fundamental Management. He said the Internal Fundamental group began in 2017 with one portfolio called Global Best Ideas managing $21.5 billion. Now he said it is operating in a boutique structure with nine unique strategies and half the assets of five years prior. He said the group will continue to evolve towards focused strategies where opportunities for alpha can be exploited from the internal talent. He reviewed several initiatives to innovate, improve current strategies or discontinue strategies.

Mr. Gilbert provided an update on the Public Markets Strategic Partnership Group which joined the External Public Markets Group three years ago. He said this June will mark the 15-year anniversary of the Strategic Partnership Program with Morgan Stanley, JPMorgan and BlackRock being partners since the very beginning in 2008. He reported the dollar value add since inception now tops $1.3 billion, in additional dollars.

Mr. Steven Wilson provided an update on Stable Value Hedge Funds which sits inside the External Public Markets Group. He said there are two types of hedge funds at TRS: directional, which are market-sensitive; and stable value, which are designed to preserve value, regardless of the directions of the markets. He reported as of December 31, 2022, this portfolio as $9.7 billion and 5.4 percent of Trust assets. He said this portfolio saw 722 basis points of excess return relative to the benchmark. Since inception, he said this portfolio has delivered $1.5 billion in dollar value add. He concluded with one of the unstated goals of the portfolio is to send cash back to the Trust when it is outperforming other asset classes. He said they did just that by sending $1.6 billion back to the Trust, which included all of the $705 million in investment profits generated by the portfolio.

Ms. Ashley Baum reviewed the Special Opportunities Group and the objectives of this portfolio. She said starting in 2015, the portfolio has exceeded the 8 percent target five of the eight years. She said the portfolio scale is dependent upon opportunities and the team takes seriously the mandate to only invest when there is a truly compelling opportunity which is consistent with the zero percent target weight in the Strategic Asset Allocation (SAA). She noted this past year where U.S. equity was down 18 or 19 percent, the portfolio had a positive one percent, a massive amount of outperformance. She provided an update on Texas Debt Capital, a $2 billion credit portfolio alongside CIFC. She said the first CLO for 4400 million was issued under the Texas Debt Capital brand and within one month the second CLO was issued at $500 million. She said the expected return is somewhere between a 15 and 20 percent return on investments. She concluded with noting they are a team of six, growing to seven soon and have deployed over $14 billion into this area over the last 10 years.

7. Semi-Annual Risk Report – James Nield and Stephen Kim.

Mr. James Nield provided the semi-annual risk report. He reviewed the eight-risk metrics and noted they were all in compliance. He provided greater detail regarding three of the metrics: asset allocation; drawdown risk and counterparty risk.

Mr. Stephen Kim reported the Trust had 106.1 percent investment exposure, slightly more than the 104 outlined in policy. He said primary driver of this overweight was the closing out of the government bond and non-U.S. developed underweights, which had a corresponding impact and net asset allocation leverage. He stated the Trust was overweight stable value, which is the strongest diversifier, reducing the Trust risk by 5.3 percent.

Mr. Nield reviewed the counterparty risk management by a total Trust perspective. He said per policy, counterparties are required to be rated A- or higher from one of the three major rating agencies. He said ratings were not the only metric viewed when determining if preemptive action is needed to reduce exposure to a given counterparty. Mr. Nield concluded by summarizing that the Trust was overweight exposure, primarily driven by the stable value asset class, the drawdown risk or VaR, value-at-risk, did increase driven by market volatility and counterparty risk remains within policy limits.

There being no more business before the Investment Management Committee, the committee adjourned at 9:39 a.m.

Approved by the Investment Management Committee of the Board of Trustees of the Teacher Retirement System of Texas on July ____, 2023.

_______________________________ ___________________

Katherine H. Farrell Date

CIO Update

Jase Auby, Chief Investment Officer

July 2023

TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

CIO Update

IMD at a Glance

Priorities

- **Performance.** Trust ended the first quarter of 2023 with a 1-year return of -5.2% and 90 bp of excess return. The 3-year return is 10.3% with 106 bp of excess return.
- **Legislative.** Senate Bill 1246 officially passed the Texas Legislature offering new investment flexibility to the Trust
- **New Headquarters.** Successfully completed move to new building in Mueller
- **Compensation.** Completed compensation study and finalizing recommendations for the September board meeting

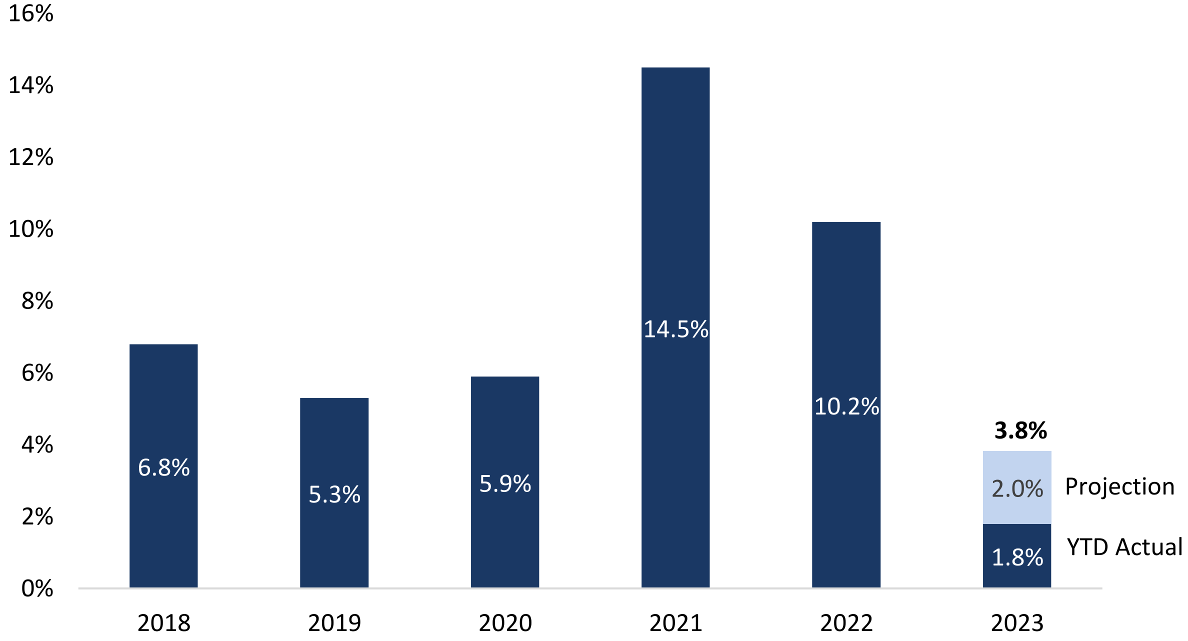
Key Dates and Upcoming Events

Event	Location	Dates
Public Strategic Partnership Network (SPN) Summit	New York City	July 20, 2023
Council of Institutional Investors (CII) Fall 2023 Conference	Long Beach, CA	September 11-13, 2023
Public Strategic Partnership Network (SPN) Summit	Austin, TX	November 16, 2023
Aon Wealth Insights Conference	Miami, FL	November 27-29, 2023

Our People

Snapshot as of June 2023	
IMD FTEs	225
Shared-Services	21
Contractors	12
Secondees	5

Attrition Trend 2018 – 2023 (As of June 2023)

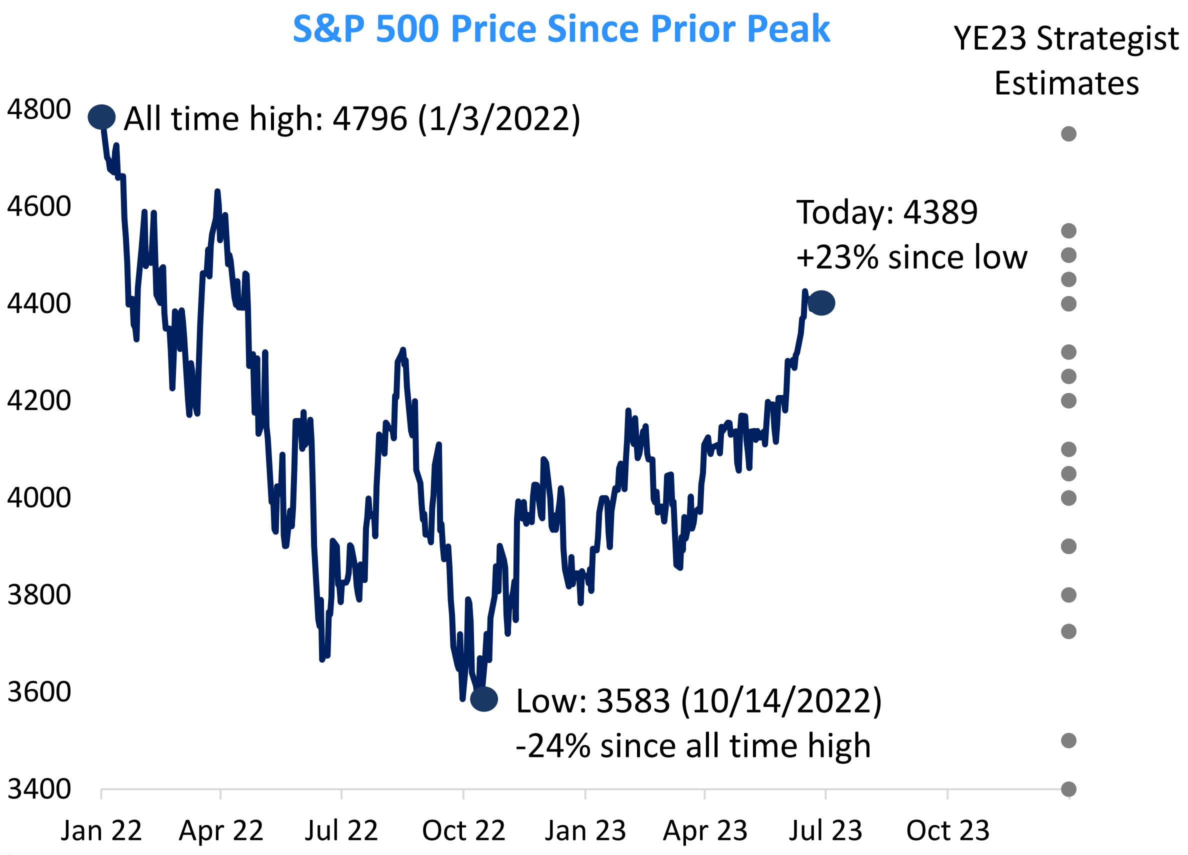


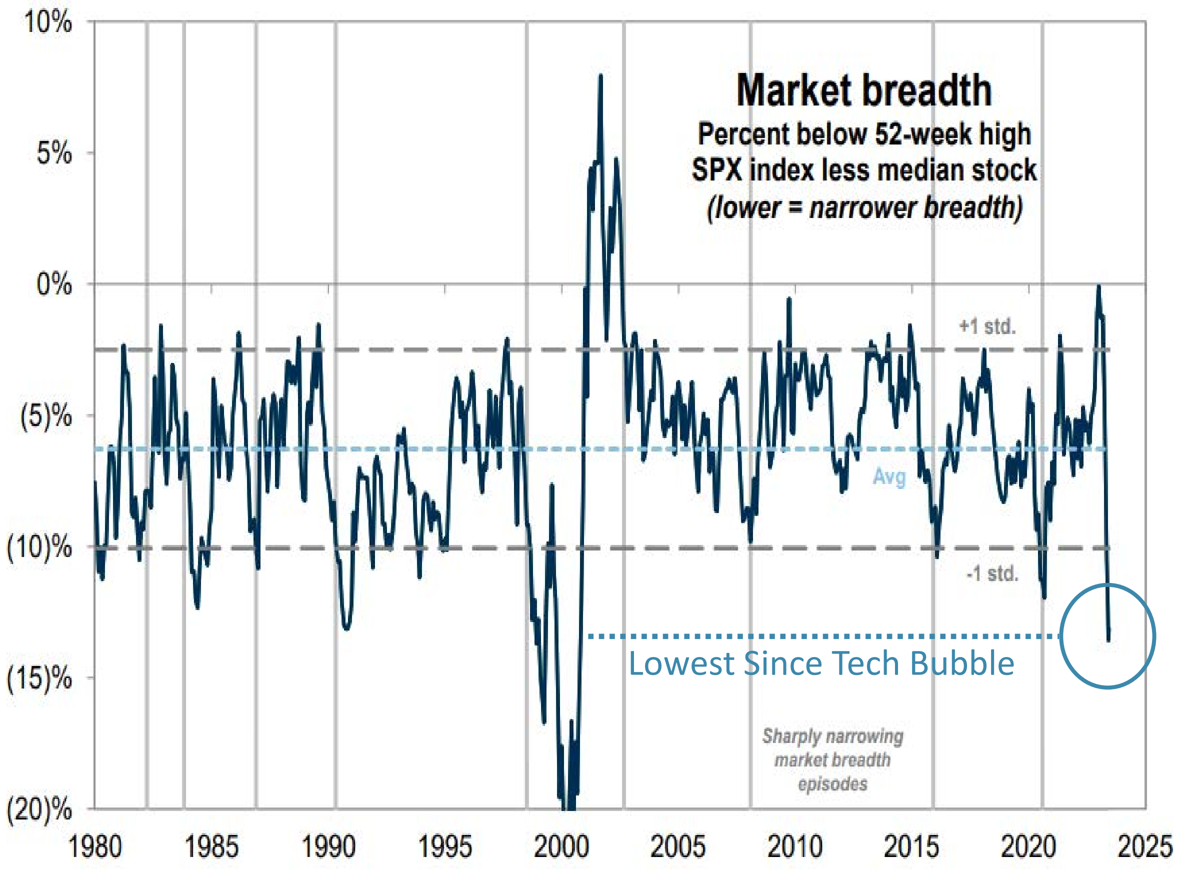
CIO Update

Markets entered a new bull market in June, but investors are still split on its future direction

The S&P 500 has risen over 20% since its October 2022 lows, marking the beginning of a new bull market…

…however, the recent rally has masked muted returns for most stocks within the index as market breadth has narrowed





Source: Bloomberg, Goldman Sachs

CIO Update

Returns were led by narrow market leadership and enthusiasm around artificial intelligence

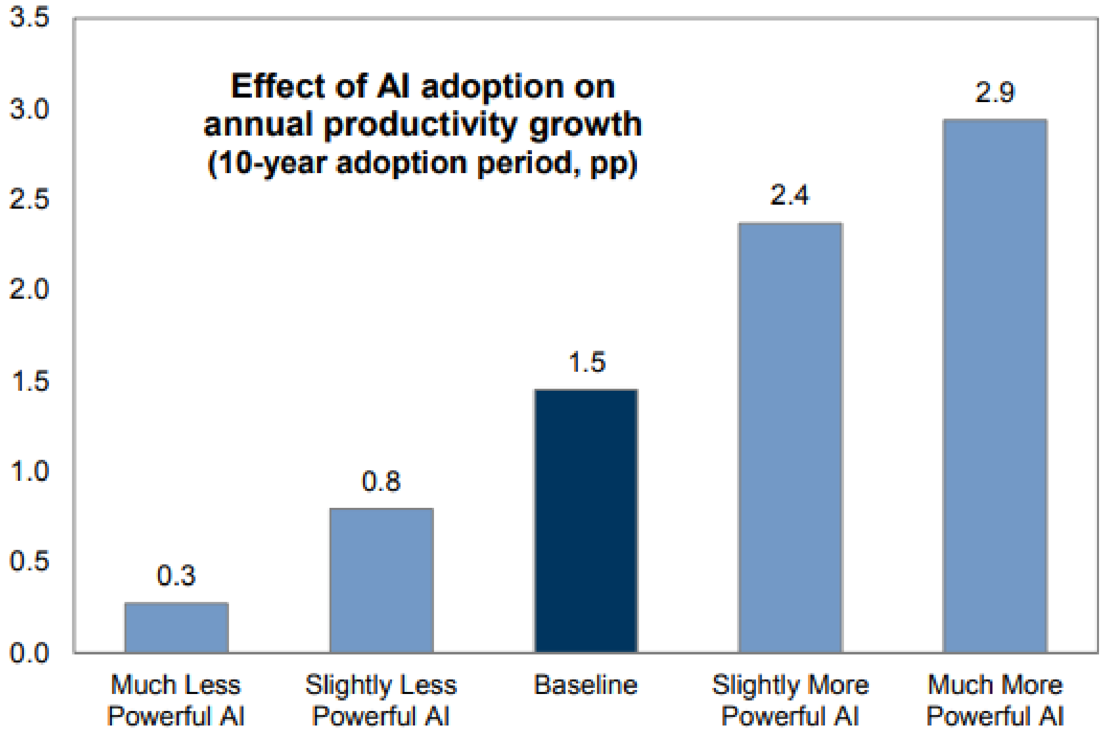
Year to date, the top 5 names in the S&P 500 index accounted for nearly two thirds of its total return...

...as a major catalyst driving these stocks has been the estimated impact of generative artificial intelligence on growth

Contribution to Year To Date S&P 500 Total Return

Company	Stock Return	Contribution to S&P 500
NVIDIA	199.9%	2.3%
Amazon.com	49.7%	1.2%
Apple	42.8%	2.6%
Microsoft	41.6%	2.3%
Alphabet	39.5%	0.7%
Top 5 Names		**9.1%**
Rest of S&P 500		**6.1%**
S&P 500 Total Return		**15.2%**

Potential Effect of AI on Productivity



Source: Bloomberg, Goldman Sachs

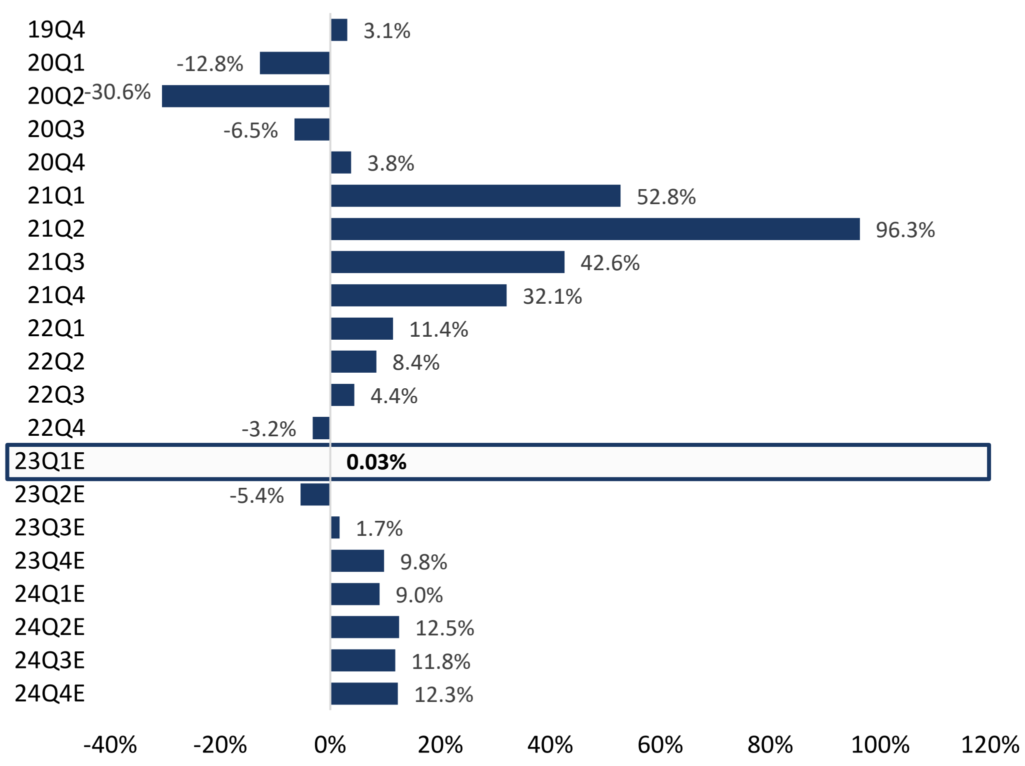
CIO Update

While earnings surprised on the positive side, mixed economic signals still have markets unsettled

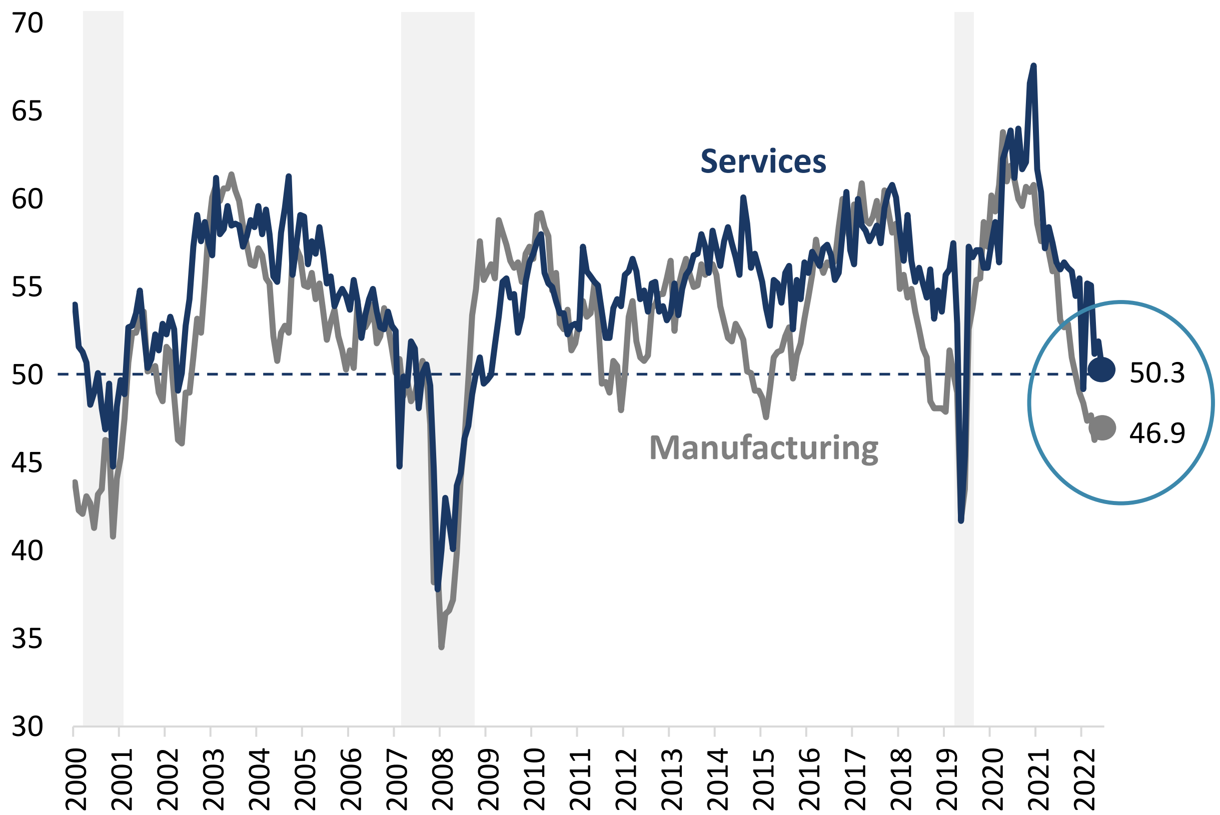
Despite negative analyst forecasts, earnings were better than predicted and ended up flat for Q1 2023…

…but certain indictors continue to flash signs of slowing demand and consumption that could put pressure on earnings

S&P 500 Earnings Growth (% Year over Year)



ISM Purchasing Managers Index (PMI)



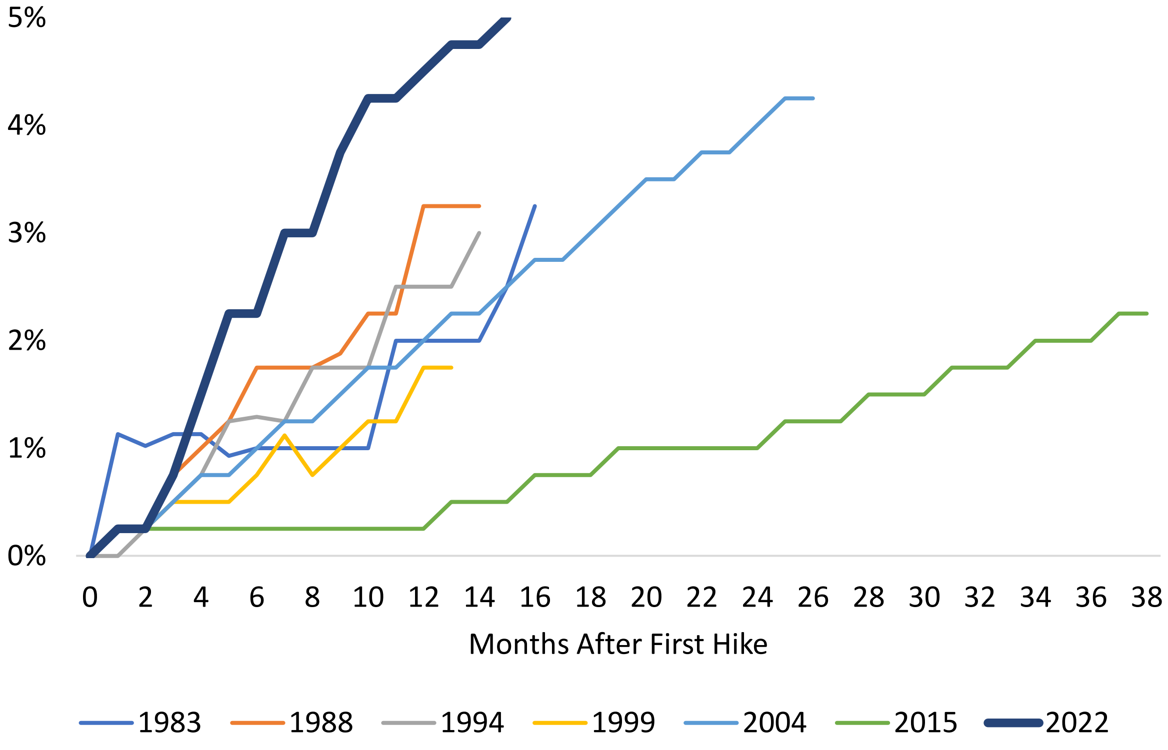
Source: Refinitiv I/B/E/S, Bloomberg, Institute for Supply Management (ISM)

CIO Update

A historic monetary tightening cycle has been put on pause as the Fed continues to assess the economy

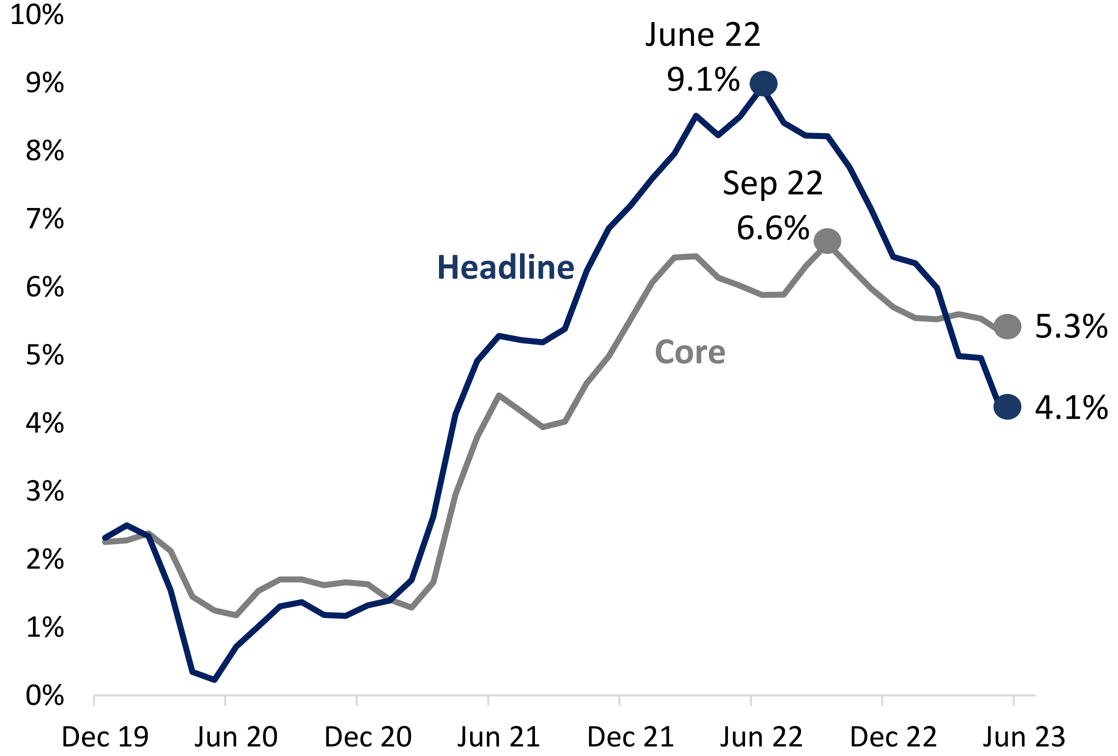
The Fed paused rates in June, but signaled the potential for more hikes ahead…

Federal Funds Target Upper Bound (Change in %)



…inflation appears to be under better control but is still running above the Fed's goal of 2%

Headline vs. Core CPI (Year Over Year Change in %)

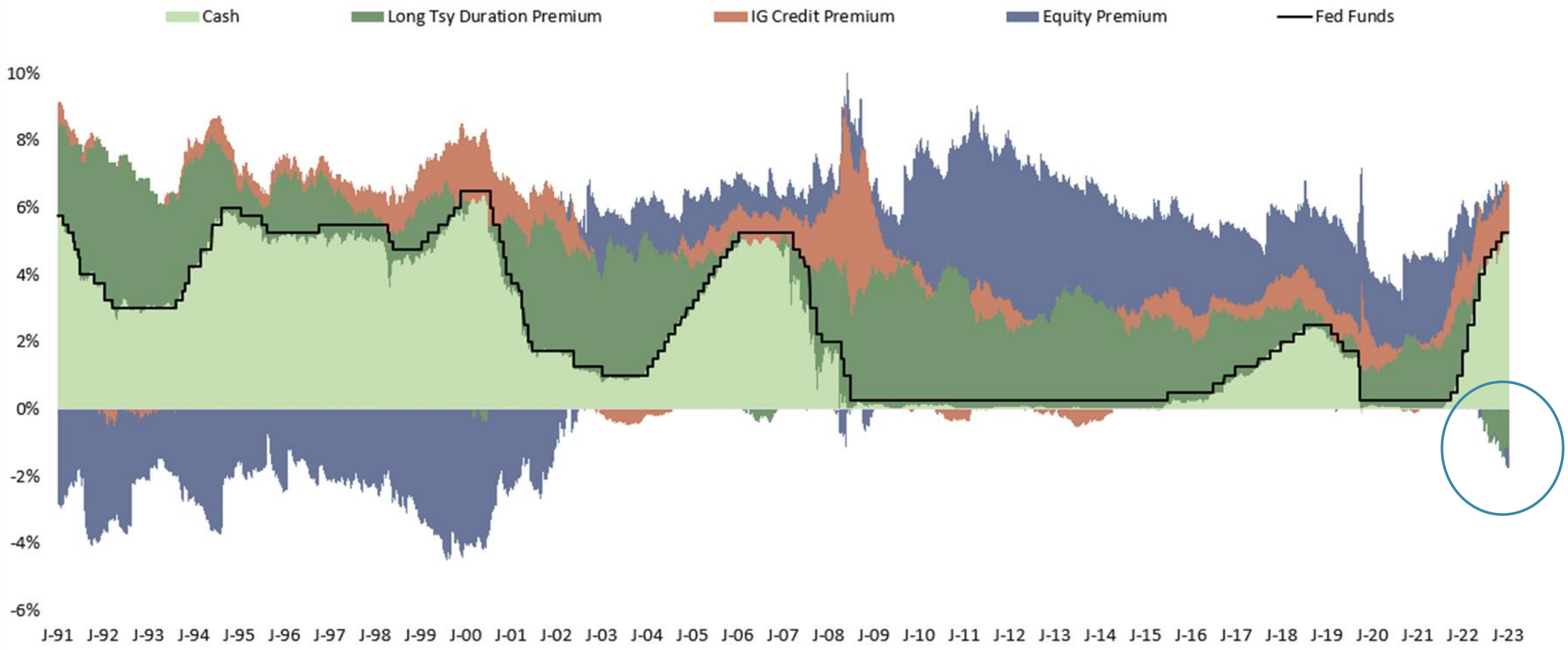


TRS Teacher Retirement System of Texas Investment Management Division

Source: Bloomberg, FRED

CIO Update

With elevated rates, US equity risk premium is at negative levels not seen in over a decade



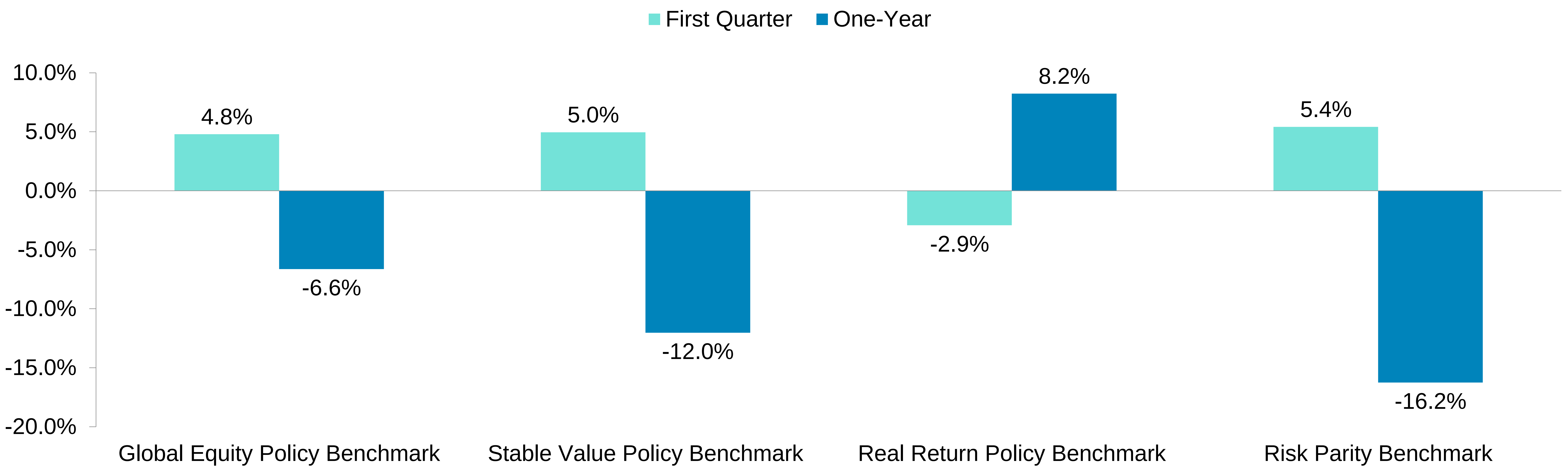
Source: Bloomberg
Note: Cash rate is US 3 month treasury bill

Teacher Retirement System of Texas

Performance Review:

First Quarter 2023

Summary



In Q1 2023, equity markets rose as high-interest rate concerns abated against the back drop of contagion within the backing sector

Global equities rose 4.8% for the quarter but remain down -6.6% over a trailing 1-year period

The U.S. Federal Reserve (Fed) increased its benchmark interest rate by 50bps to a range of 4.75%-5.00% over the quarter. The FOMC dropped its previous warning that "ongoing increases" would be needed to bring soaring inflation under control, instead noting that "some additional policy firming may be appropriate"

TRS returned 3.7% for the quarter which was 0.5 percentage points above its benchmark

- Outperformance at the asset class level for Risk Parity and Real Return were the primary drivers for relative results.

For the trailing twelve months, TRS returned -5.2% versus the benchmark return of -6.1%

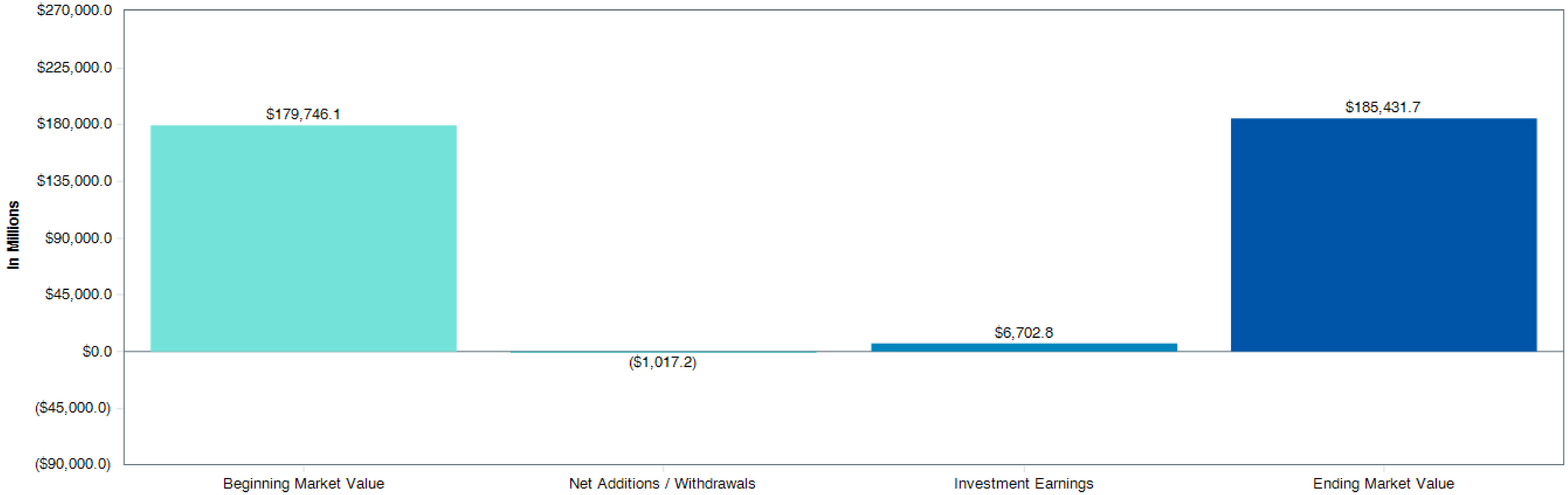
- Outperformance from the Stable Value and Risk Parity asset classes were the primary drivers of relative performance

1. Market Summary – First Quarter 2023

	First Quarter	One Year	Three Years	Five Years	Ten Years
Global Equity:					
TF USA Benchmark	7.4%	-8.5%	18.8%	10.6%	11.9%
TRS Non-US Developed Benchmark	8.2	-2.9	13.4	3.8	4.9
TRS Emerging Markets Benchmark	3.8	-13.2	6.8	-1.4	1.7
HFRI Fund of Funds Composite Index	0.7	-1.9	7.2	3.1	3.2
State Street Private Equity Index (quarter lagged)	1.2	-5.5	17.6	15.0	13.6
Global Equity Policy Benchmark	4.8	-6.6	15.9	8.3	8.8
Stable Value:					
Bloomberg Barclays Long Treasury Index	6.2%	-16.0%	-11.3%	-0.4%	1.5%
HFRI Fund of Funds Conservative Index	0.8	0.8	7.6	3.9	3.4
Absolute Return Benchmark	2.1	7.1	4.1	4.2	3.4
90 Day U.S. Treasury Bill	1.1	2.6	1.0	1.4	0.9
Stable Value Policy Benchmark	5.0	-12.0	-7.0	0.8	2.0
Real Return:					
Bloomberg Barclays U.S. TIPS Index	3.3%	-6.1%	1.8%	2.9%	1.5%
NCREIF ODCE (quarter lagged)	-5.2	6.5	9.0	7.7	9.1
Energy, Natural Resources & Infrastructure Benchmark	3.0	12.5	10.2	7.1	--
Goldman Sachs Commodities Index	-4.9	-10.0	30.5	4.9	-3.8
Real Return Policy Benchmark	-2.9	8.2	9.3	7.5	7.3
Risk Parity:					
Risk Parity Benchmark	5.4%	-16.2%	4.0%	2.4%	3.5%
TRS Policy Benchmark	3.2%	-6.1%	9.2%	6.4%	7.1%

2. Market Value Change

From January 1,2023 to Match 31,2023



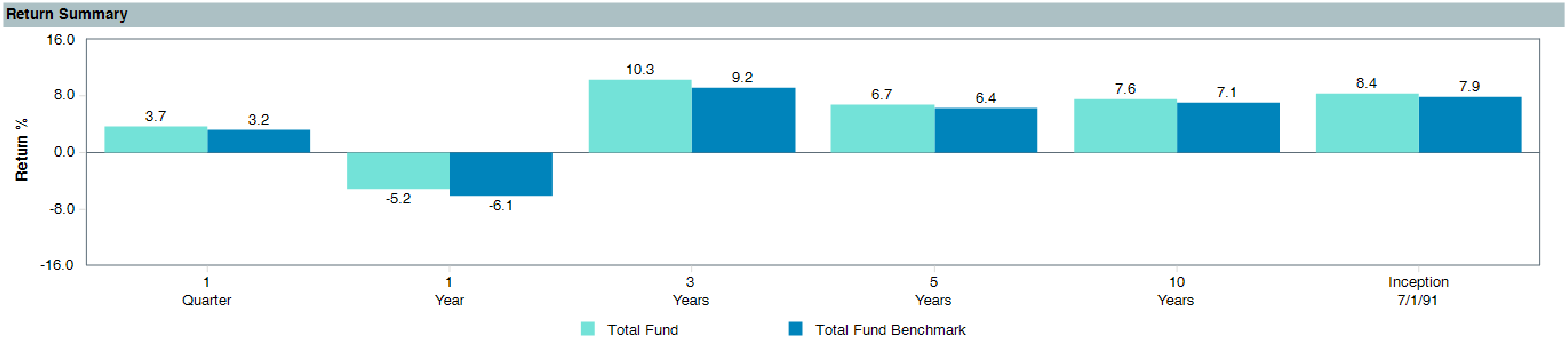
Summary of Cash Flows	1 Quarter	1 Year	3 Years	5 Years
Total Fund				
Beginning Market Value	179,746,129,720	199,892,433,403	148,082,042,325	151,438,006,376
+ Additions / Withdrawals	-1,017,196,511	-4,050,459,464	-12,486,019,634	-20,746,019,796
+ Investment Earnings	6,702,783,368	-10,410,257,363	49,835,693,884	54,739,729,996
= Ending Market Value	**185,431,716,576**	**185,431,716,576**	**185,431,716,576**	**185,431,716,576**

3. Asset Allocation Detail

	Market Value $ in millions) as of 3/31/2023		Interim Policy Target	Relative to Interim Policy Target	Long Term Policy Target	Long Term Policy Ranges
	($)	(%)				
Investment Exposure	**--**	**105.7%**	**104.0%**	**+1.7%**	**104.0%**	**99-115%**
Total U.S.A.	$29,061	15.7%	16.5%	-0.8%	18.0	13-23%
Non-U.S. Developed	$22,083	11.9%	11.9%	0.0%	13.0	8-18%
Emerging Markets	$15,340	8.3%	8.2%	+0.1%	9.0	4-14%
Private Equity	$31,845	17.2%	17.4%	-0.2%	14.0	9-24%*
Global Equity	**$98,329**	**53.0%**	**54.0%**	**-1.0%**	**54.0**	**47-61%**
Government Bonds	$26,729	14.4%	14.6%	-0.2%	16.0	0-21%
Stable Value Hedge Funds	$8,850	4.8%	4.5%	+0.3%	5.0	0-10%
Absolute Return	$5,427	2.9%	0.0%	+2.9%	0.0	0-20%
Stable Value	**$41,006**	**22.1%**	**19.1%**	**+3.0%**	**21.0**	**14-28%**
Real Estate	$30,592	16.5%	17.2%	-0.7%	15.0	10-20%
Energy, Natural Resource and Inf.	$12,051	6.5%	6.5%	0.0%	6.0	1-11%
Commodities	$1,016	0.5%	0.0%	+0.5%	0.0	0-5%
Real Return	**$43,659**	**23.5%**	**23.7%**	**-0.2%**	**21.0**	**14-28%**
Risk Parity	$12,948	7.0%	7.3%	-0.3%	8.0	0-13%
Risk Parity	**$12,948**	**7.0%**	**7.3%**	**-0.3%**	**8.0**	**0-13%**
Cash	$3,281	1.8%	2.0%	-0.2%	2.0	0-7%
Asset Allocation Leverage	-$13,791	-7.4%	-6.0%	-1.4%	-6.0	--
Net Asset Allocation	**-$10,510**	**-5.7%**	**-4.0%**	**-1.7%**	**-4.0**	**--**
Total Fund	**$185,432**	**100.0%**		**---**	**100.0%**	**--**

Note: Asset allocation information shown above is based upon MOPAR reporting. The excess returns shown above may not be a perfect difference between the actual and benchmark returns due entirely to rounding.
**Reverts to 9-19% on 7/31/23*

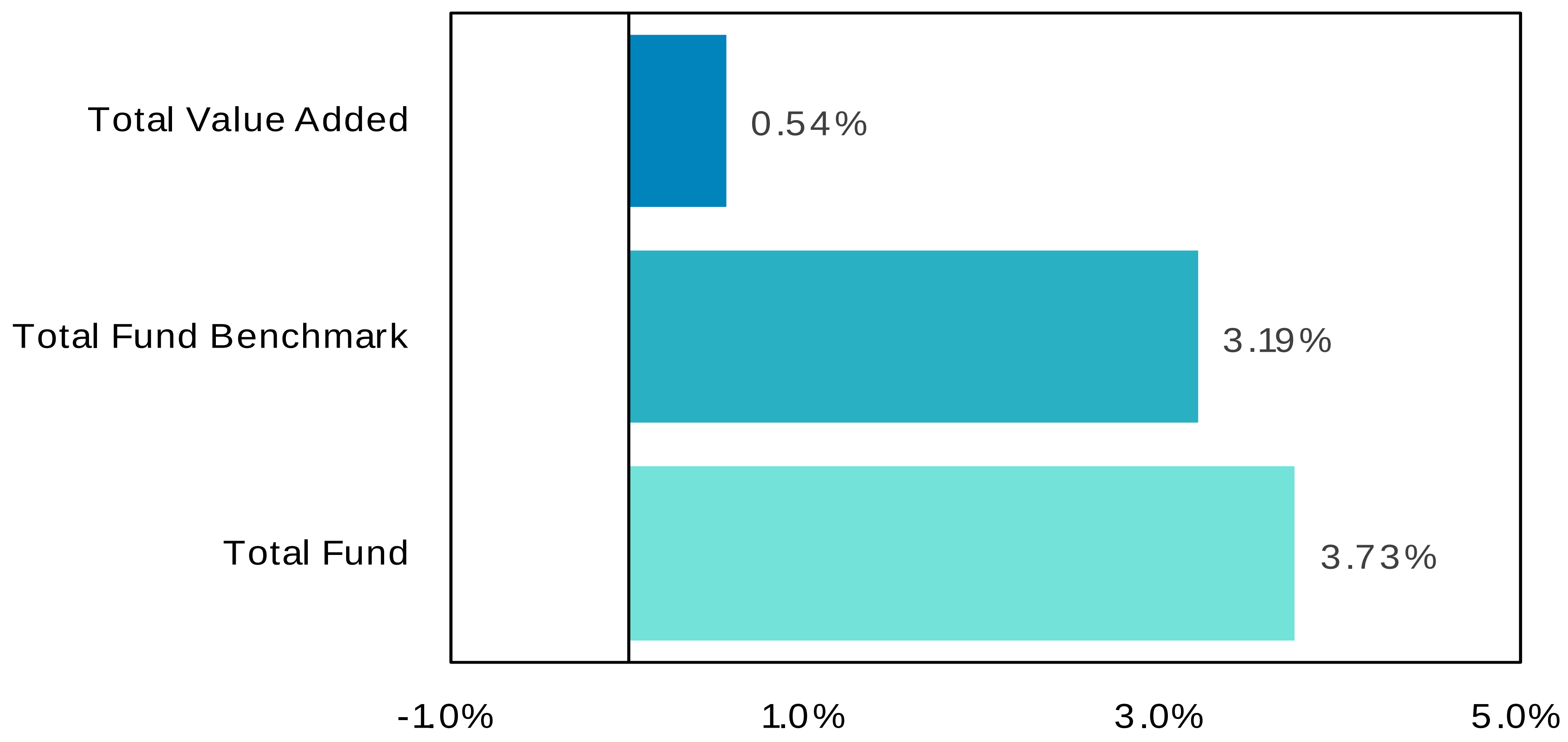
4. Total TRS Performance Ending 3/31/2023



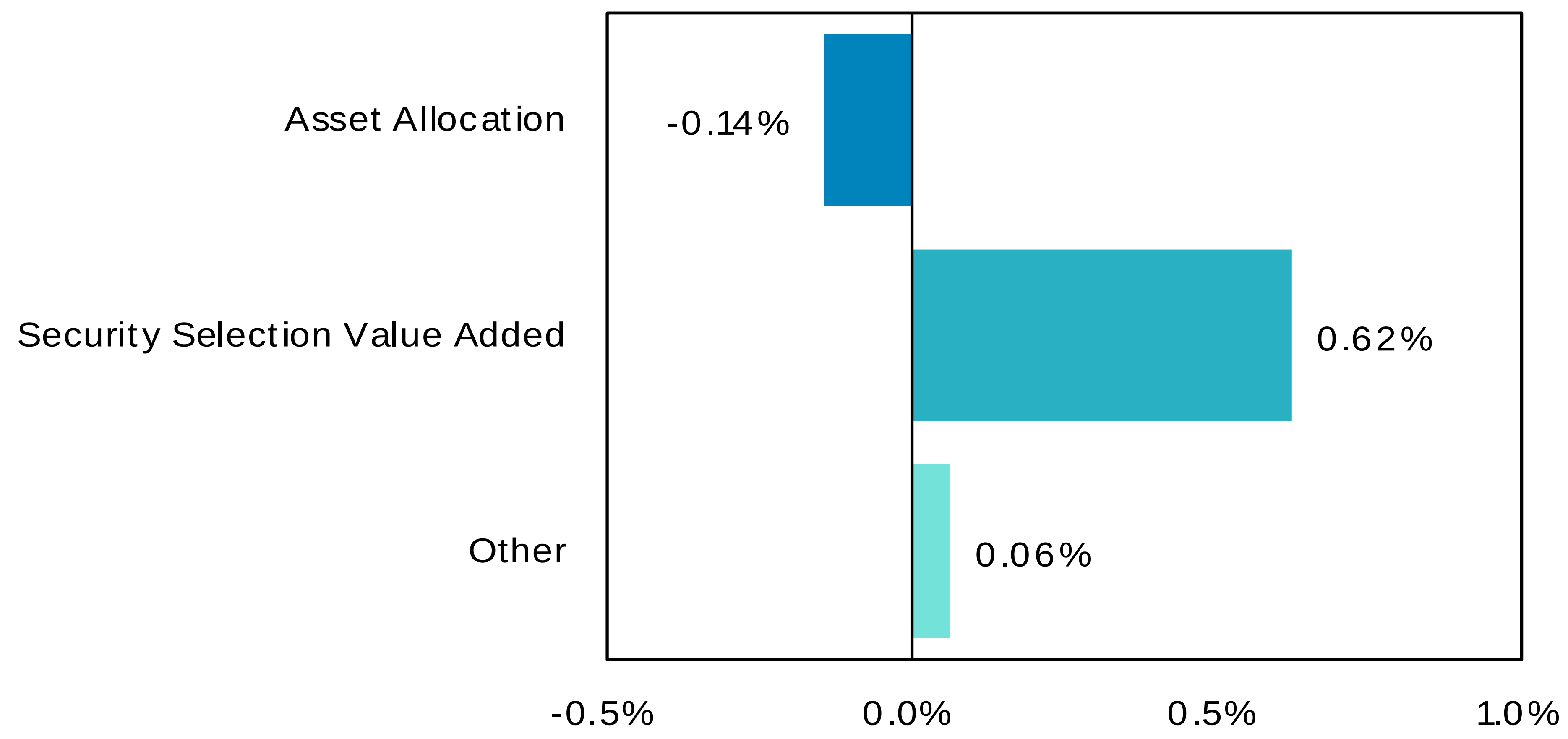
5. Total Fund Attribution – One Quarter Ending 3/31/2023

Total Fund vs. Total Fund Benchmark

Total Fund Performance

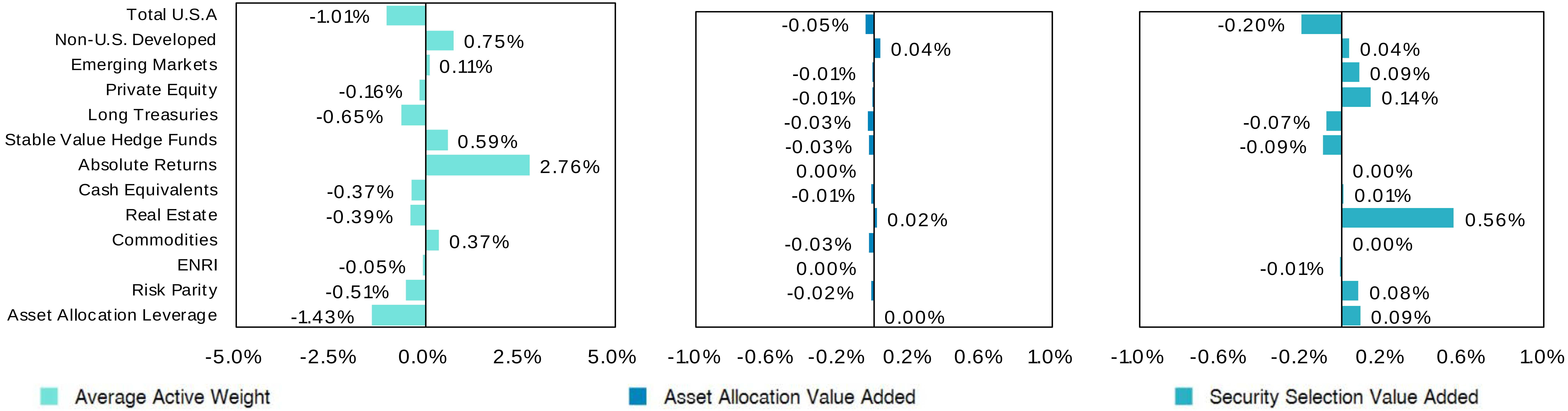


Total Value Added: 0.54%



Total Asset Allocation: -0.14%

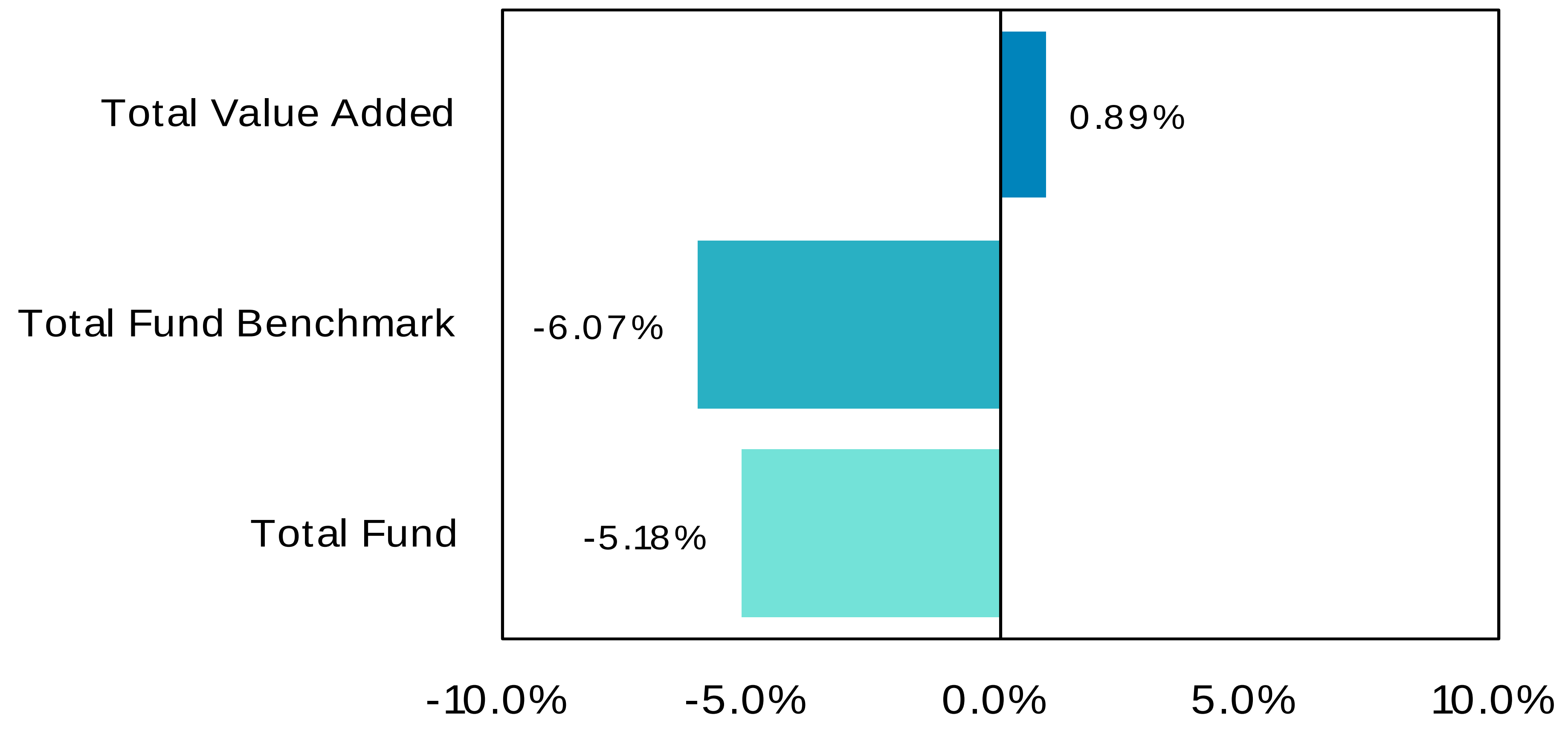
Total Security Selection Value Added: 0.62%



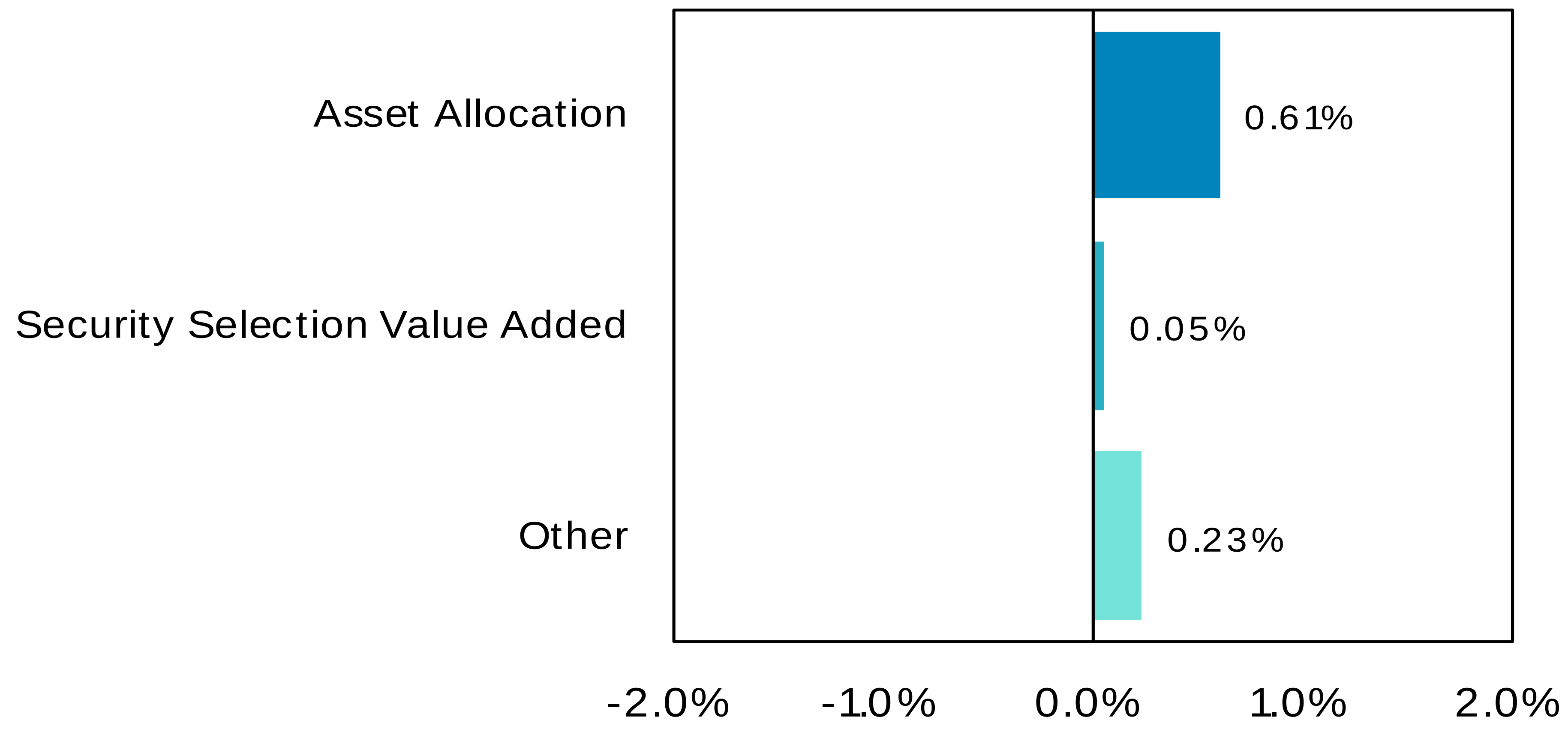
5. Total Fund Attribution – One Year Ending 3/31/2023

Total Fund vs. Total Fund Benchmark

Total Fund Performance

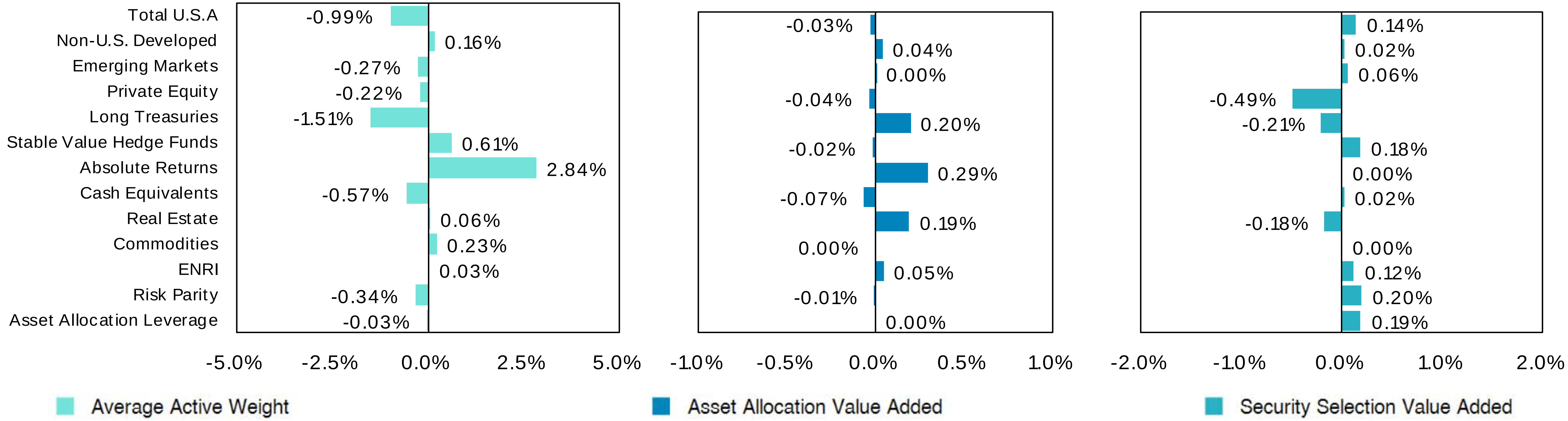


Total Value Added: 0.89%



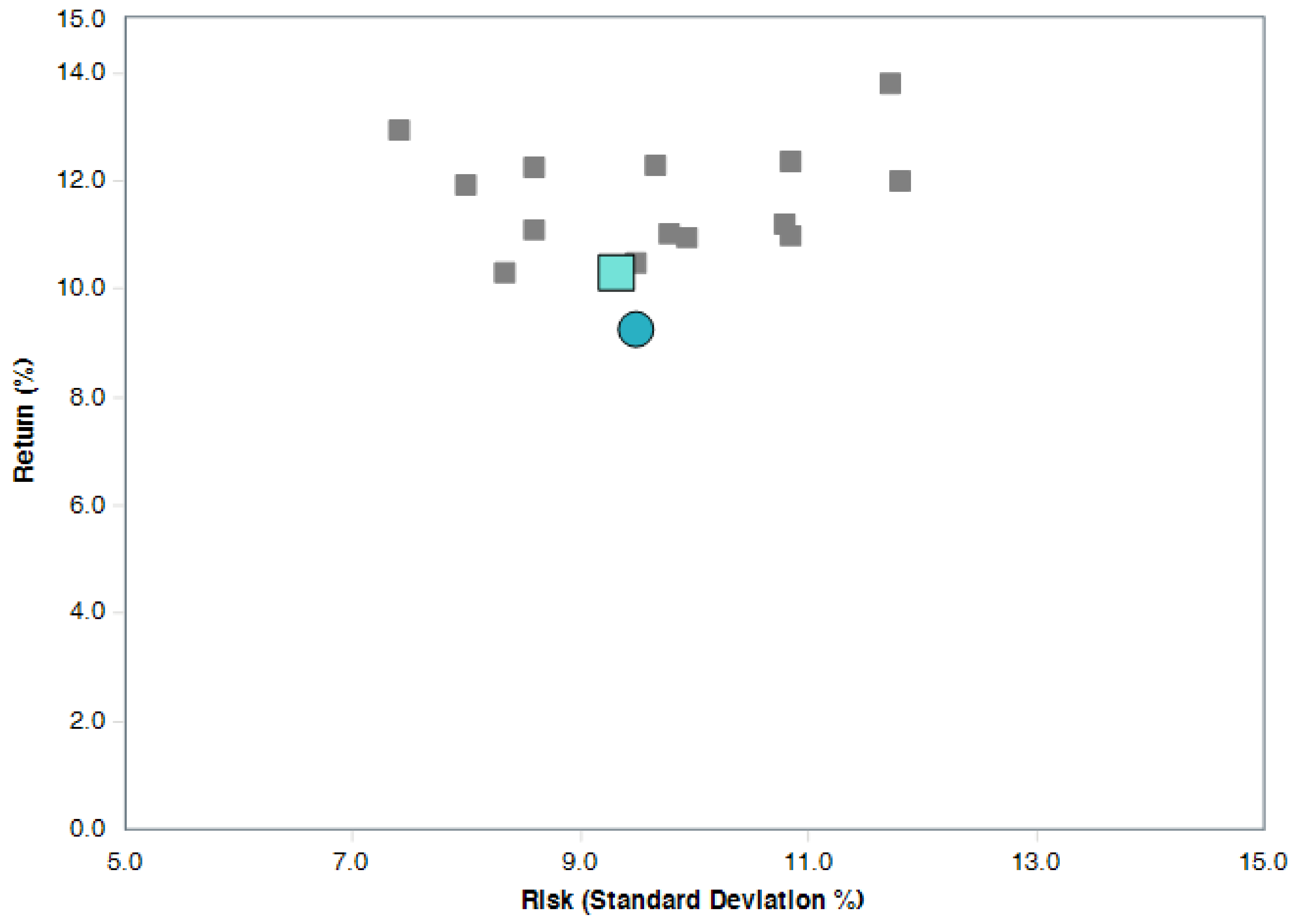
Total Asset Allocation: 0.61%

Total Security Selection Value Added: 0.05%



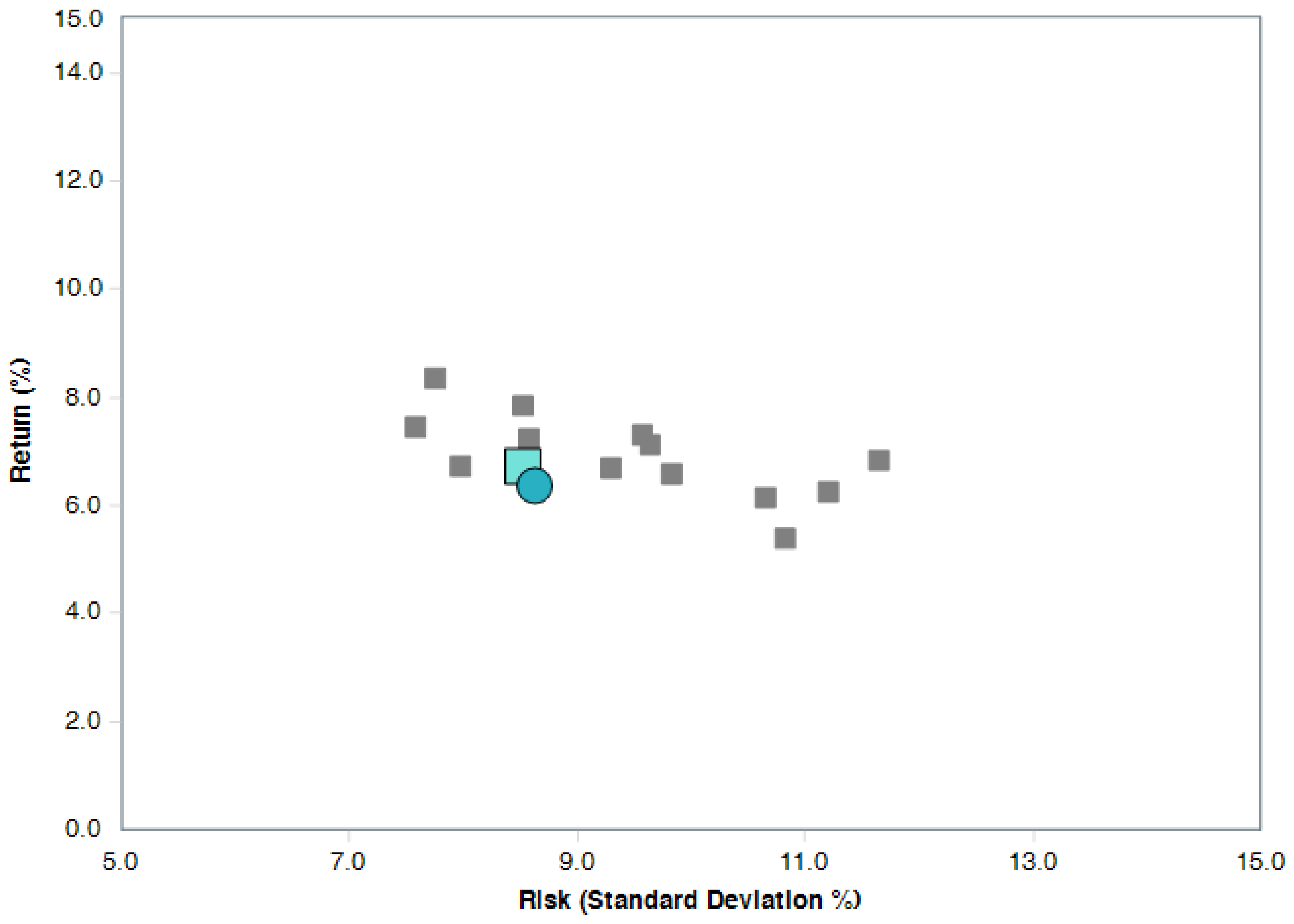
6. Risk Profile: Total Fund Risk-Return vs. Peers

Annualized Return vs. Annualized Standard Deviation 3 Years Ending March 31, 2023



	Return	Standard Deviation
Total Fund	10.3	9.3
Total Fund Benchmark	9.2	9.5
— Median	11.6	9.7

Annualized Return vs. Annualized Standard Deviation 5 Years Ending March 31, 2023

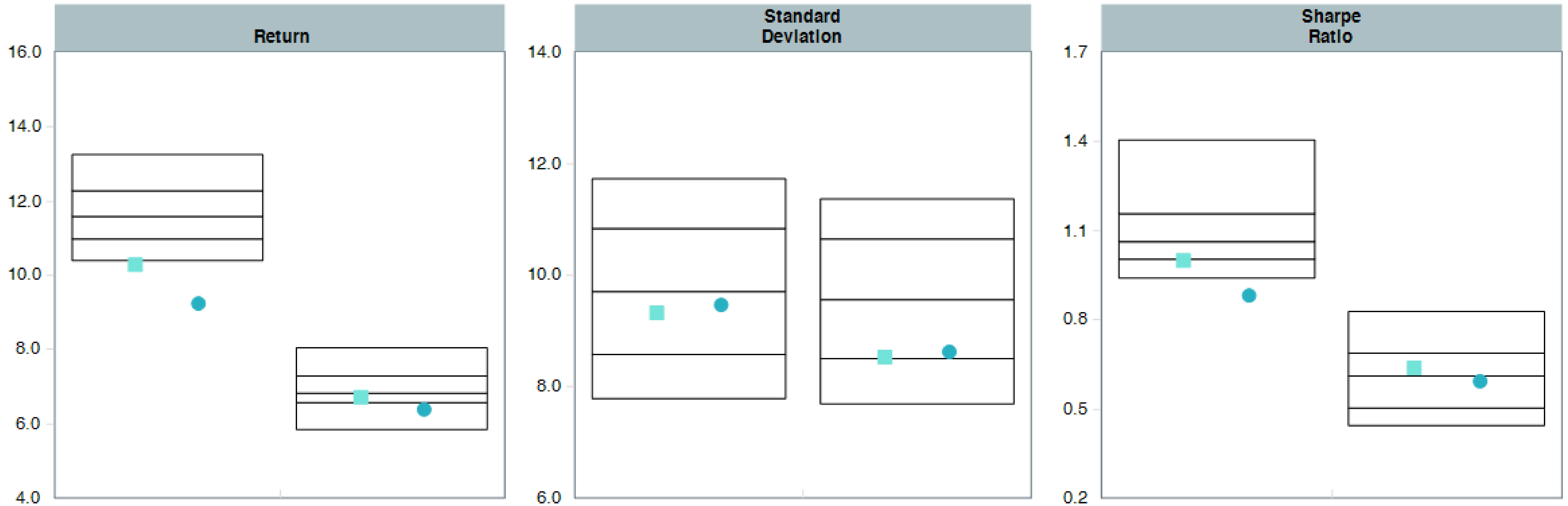


	Return	Standard Deviation
Total Fund	6.7	8.5
Total Fund Benchmark	6.4	8.6
— Median	6.8	9.6

Note: Public Plan peer group composed of 14 and 13 public funds, respectively, with total assets in excess of $10B as of 3/31/2023. An exhibit outlining the asset allocation of the peer portfolios is provided in the appendix of this report.

6. Risk Profile: Trailing 3-Year and 5-Year Risk Metrics Peer Comparison

Total Fund vs. All Public Plans > $10B



	Return 3 Years	Return 5 Years	Standard Deviation 3 Years	Standard Deviation 5 Years	Sharpe Ratio 3 Years	Sharpe Ratio 5 Years
Total Fund	**10.3 (100)**	**6.7 (61)**	**9.3 (63)**	**8.5 (75)**	**1.0 (78)**	**0.6 (41)**
Total Fund Benchmark	9.2 (100)	6.4 (80)	9.5 (62)	8.6 (67)	0.9 (100)	0.6 (57)
5th Percentile	13.3	8.0	11.7	11.4	1.4	0.8
1st Quartile	12.3	7.3	10.8	10.6	1.2	0.7
Median	11.6	6.8	9.7	9.6	1.1	0.6
3rd Quartile	11.0	6.6	8.6	8.5	1.0	0.5
95th Percentile	10.4	5.9	7.8	7.7	0.9	0.4
Population	14	13	14	13	14	13

Parentheses contain percentile rankings.

7. IPS Stated Trust Return Objectives ending 3/31/2023

	Five Year	Seven Year	Ten Year	Twenty Year
Total Fund	**6.7**	**8.2**	**7.6**	**8.1**
Total Fund Benchmark	6.4	7.6	7.1	7.7
Difference	*+0.3*	*+0.6*	*+0.5*	*+0.4*
Total Fund	**6.7**	**8.2**	**7.6**	**8.1**
Assumed Rate of Return	7.3	7.5	7.6	7.8
Difference	*-0.6*	*+0.7*	*0.0*	*+0.3*
Total Fund	**6.7**	**8.2**	**7.6**	**8.1**
CPI + 5%	8.9	8.4	7.7	7.5
Difference	*-2.2*	*-0.2*	*-0.1*	*+0.6*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

8. Global Equity: Performance Summary Ending 3/31/2023

	First Quarter	One Year	Three Year	Five Year	Ten Year
Total Global Equity	**4.8**	**-7.2**	**15.7**	**7.7**	**8.7**
Total Global Equity Benchmark	4.8	-6.6	15.9	8.3	8.8
Difference	*0.0*	*-0.6*	*-0.2*	*-0.6*	*-0.1*
Total U.S. Equity	**6.0**	**-7.6**	**19.7**	**9.4**	**10.5**
Total U.S. Equity Benchmark	7.4	-8.5	18.8	10.6	11.9
Difference	*-1.4*	*+0.9*	*+0.9*	*-1.2*	*-1.4*
Non-U.S. Equity	**7.0**	**-6.7**	**11.6**	**2.1**	**4.3**
Non-U.S. Equity Benchmark	6.4	-7.0	10.9	1.8	3.7
Difference	*+0.6*	*+0.3*	*+0.7*	*+0.3*	*+0.6*
Non-U.S. Developed	**8.4**	**-2.7**	**13.6**	**3.5**	**5.4**
TRS Non-U.S. Developed Benchmark	8.2	-2.9	13.4	3.8	4.9
Difference	*+0.2*	*+0.2*	*+0.2*	*-0.3*	*+0.5*
Emerging Markets	**4.8**	**-12.4**	**8.4**	**-0.1**	**2.8**
TRS Emerging Market Benchmark	3.8	-13.2	6.8	-1.4	1.7
Difference	*+1.0*	*+0.8*	*+1.6*	*+1.3*	*+1.1*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

8. Global Equity: Performance Summary Ending 3/31/2023 (cont'd)

	First Quarter	One Year	Three Year	Five Year	Ten Year
Total Public Equity	**6.6**	**-6.9**	**15.2**	**5.3**	**6.9**
Public Equity Benchmark	6.8	-7.5	14.5	5.7	7.1
Difference	*-0.2*	*+0.6*	*+0.7*	*-0.4*	*-0.2*
Total Private Equity	**1.2**	**-7.8**	**16.3**	**14.0**	**14.3**
Private Equity Benchmark	0.4	-5.2	18.0	15.1	13.6
Difference	*+0.8*	*-2.6*	*-1.7*	*-1.1*	*+0.7*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

9. Stable Value: Performance Summary Ending 3/31/2023

	First Quarter	One Year	Three Year	Five Year	Ten Year
Total Stable Value	**3.8**	**-9.4**	**-4.5**	**1.9**	**3.3**
Total Stable Value Benchmark	5.0	-12.0	-7.0	0.8	2.0
Difference	*-1.2*	*+2.6*	*+2.5*	*+1.1*	*+1.3*
Total Government Bonds	**5.6**	**-17.4**	**-12.1**	**-0.6**	**1.6**
Treasury Benchmark	6.2	-16.0	-11.3	-0.4	1.5
Difference	*-0.6*	*-1.4*	*-0.8*	*-0.2*	*+0.1*
Stable Value Hedge Funds	**-0.8**	**4.3**	**9.7**	**5.8**	**5.5**
Hedge Funds Benchmark	0.8	0.8	7.6	3.9	3.4
Difference	*-1.6*	*+3.5*	*+2.1*	*+1.9*	*+2.1*
Absolute Return	**3.0**	**4.8**	**8.3**	**6.7**	**7.4**
Absolute Return Benchmark	2.1	7.1	4.1	4.2	3.4
Difference	*+0.9*	*-2.3*	*+4.2*	*+2.5*	*+4.0*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

10. Real Return: Performance Summary Ending 3/31/2023

	First Quarter	One Year	Three Year	Five Year	Ten Year
Total Real Return	**-0.6**	**8.8**	**11.8**	**9.6**	**8.9**
Real Return Benchmark	-2.9	8.2	9.3	7.5	7.3
Difference	*+2.3*	*+0.6*	*+2.5*	*+2.1*	*+1.6*
Real Estate	**-1.9**	**6.4**	**12.0**	**10.8**	**11.6**
Real Estate Benchmark	-5.2	6.5	9.0	7.7	9.1
Difference	*+3.3*	*-0.1*	*+3.0*	*+3.1*	*+2.5*
Energy, Natural Resources, and Infrastructure	**2.9**	**15.6**	**11.0**	**7.3**	**--**
Energy and Natural Res. Benchmark	3.0	12.5	10.2	7.1	--
Difference	*-0.1*	*+3.1*	*+0.8*	*+0.2*	
Commodities	**-4.3**	**-2.6**	**22.6**	**5.3**	**-5.8**
Commodities Benchmark	-4.9	-10.0	30.5	4.9	-3.8
Difference	*+0.6*	*+7.4*	*-7.9*	*+0.4*	*-2.0*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

11. Risk Parity: Performance Summary Ending 3/31/2023

	First Quarter	One Year	Three Year	Five Year	Ten Year
Total Risk Parity	**6.7**	**-13.6**	**5.2**	**2.1**	**3.3**
Risk Parity Benchmark	5.4	-16.2	4.0	2.4	3.5
Difference	*+1.3*	*+2.6*	*+1.2*	*-0.3*	*-0.2*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

12. Cash Equivalents: Performance Summary Ending 3/31/2023

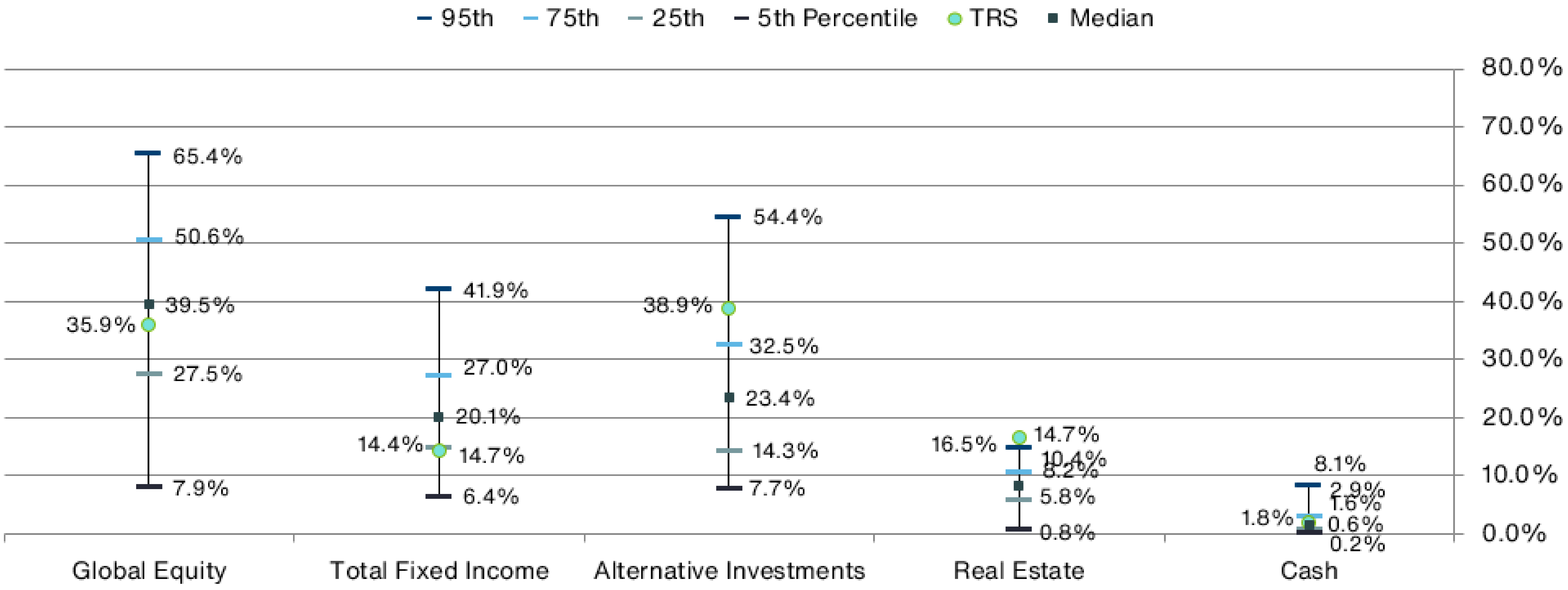
	First Quarter	One Year	Three Year	Five Year	Ten Year
Cash Equivalents	**1.5**	**4.3**	**1.7**	**1.7**	**2.1**
Cash Benchmark	1.1	2.6	1.0	1.4	0.9
Difference	*+0.4*	*+1.7*	*+0.7*	*+0.3*	*+1.2*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

Appendix – Supplemental Reporting

TRS Commitment Levels vs. Peers (>$10 Billion) as of 3/31/2023

- The chart below depicts the asset allocation of peer public funds with assets greater than $10 billion.
  - The ends of each line represent the 95th and 5th percentile of exposures, the middle light blue and grey lines represent the 25th and 75th percentile of exposures, the purple square represents the median, and the green dot represents TRS exposure.



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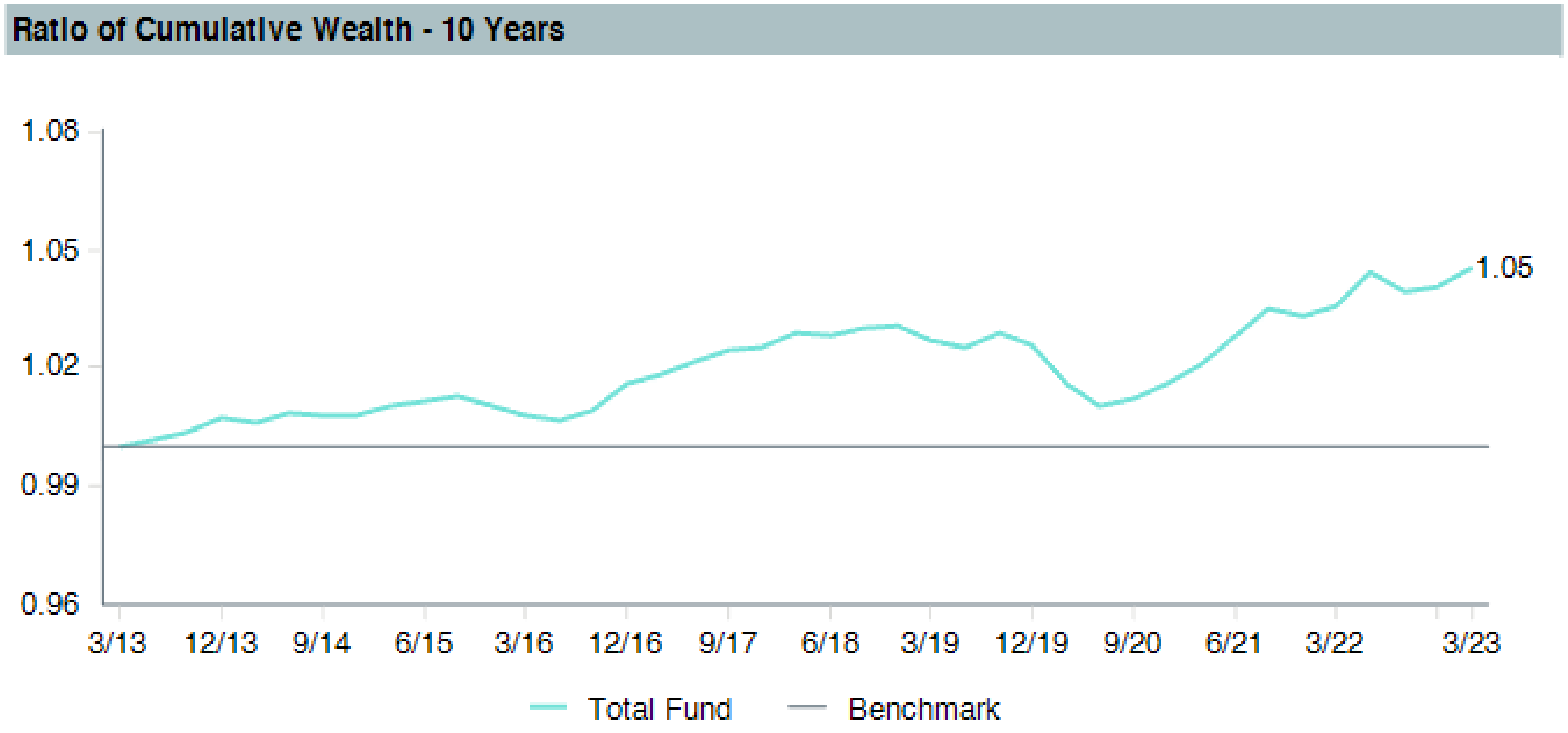
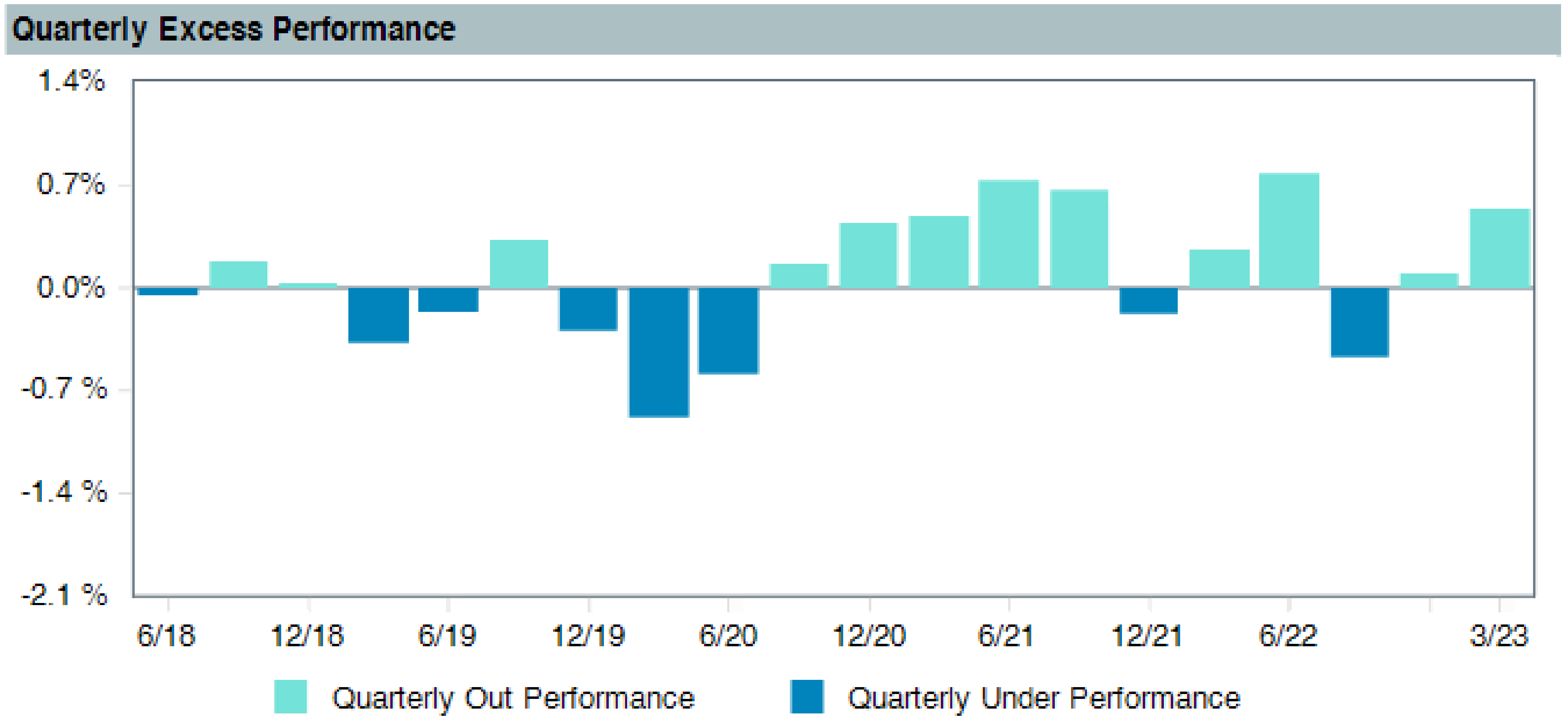
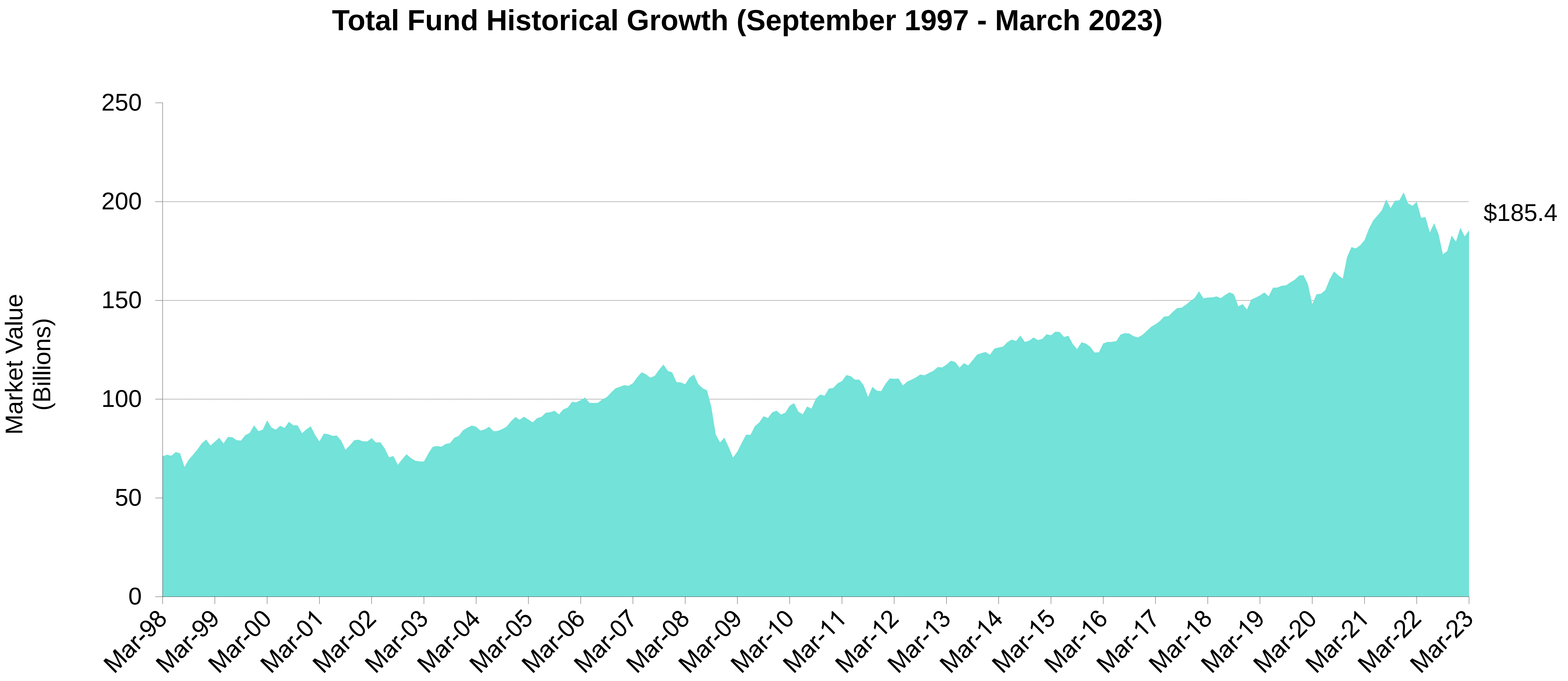
Historical Excess Performance Ending 3/31/2023

Total Fund vs. Total Fund Benchmark





TRS Asset Growth



External Manager Program: Public Equity Performance as of 3/31/2023

	Allocation ($ in billions)	First Quarter	One Year	Three Year	Five Year
EP Total Global Equity	**$28.1**	**6.4**	**-6.4**	**17.4**	**6.4**
EP Global Equity Benchmark	**--**	6.9	-7.8	14.7	5.7
Difference	--	*-0.5*	*+1.4*	*+2.7*	*+0.7*
EP U.S.A.	**$10.6**	**5.2**	**-9.4**	**21.0**	**10.5**
EP U.S.A. Benchmark	--	7.4	-8.5	18.8	10.6
Difference	--	*-2.2*	*-0.9*	*+2.2*	*-0.1*
EP Non-U.S. Developed	**$6.2**	**10.2**	**0.7**	**15.1**	**4.9**
MSCI EAFE + Canada Policy Index	--	8.2	-2.9	13.4	3.8
Difference	--	*+2.0*	*+3.6*	*+1.7*	*+1.1*
EP Emerging Markets	**$5.6**	**4.2**	**-11.3**	**11.0**	**1.1**
MSCI Emerging Markets Policy Index	--	3.8	-13.2	6.8	-1.4
Difference	--	*+0.4*	*+1.9*	*+4.2*	*+2.5*
EP World Equity	**$5.8**	**6.5**	**-3.9**	**20.2**	**9.0**
EP World Equity Benchmark	--	7.2	-7.5	15.7	7.2
Difference	--	*-0.7*	*+3.6*	*+4.5*	*+1.8*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

External Manager Program: Stable Value/Total Program Performance as of 3/31/2023

	Allocation ($ in billions)	First Quarter	One Year	Three Year
EP Total Stable Value	**$8.8**	**-0.8**	**4.3**	**9.7**
EP Stable Value Benchmark	**--**	0.8	0.8	7.6
Difference	--	*-1.6*	*+3.5*	*+2.1*
Total External Public Program	**$44.0**	**4.8**	**-4.5**	**14.6**
EP External Public Benchmark	--	5.5	-6.2	12.0
Difference	--	*-0.7*	*+1.7*	*+2.6*

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

Public Strategic Partnership Program (SPN): Performance as of 3/31/2023

	Allocation ($ in billions)	First Quarter	One Year	Three Year
Public Strategic Partnership	**$7.1**	**6.2**	**-9.1**	**9.1**
Public SPN Benchmark	**--**	6.6	-9.7	6.6
Difference	--	*-0.4*	*+0.6*	*+2.5*
BlackRock	**$2.5**	**6.6**	**-7.0**	**9.1**
JP Morgan	**$2.5**	**6.1**	**-9.3**	**9.5**
Morgan Stanley	**$2.1**	**5.7**	**-11.2**	**8.6**

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

Benchmarks

Total Fund Performance Benchmark – 16.5% MSCI U.S.A. IMI, 11.9% MSCI EAFE plus Canada Index, 8.2% MSCI Emerging Markets Index, 17.4% State Street Private Equity Index (1 quarter lagged), 14.6% Blmb. Barc. Long Term Treasury Index, 4.5% HFRI FoF Conservative Index, 2.0% Citigroup 3 Mo. T-Bill Index, 17.2% NCREIF ODCE Index (1 quarter lagged), 6.5% Energy and Natural Resources Benchmark, 7.3% Risk Parity Benchmark, and -6.0% Asset Allocation Leverage Benchmark.

Global Equity Benchmark – 30.5% MSCI U.S.A. IMI, 22.1% MSCI EAFE plus Canada Index, 15.1% MSCI Emerging Markets Index, and 32.3% State Street Private Equity Index (1 quarter lagged)

- TF U.S. Equity Benchmark - MSCI U.S.A. Investable Markets Index (IMI)
- Emerging Markets Equity Benchmark – MSCI Emerging Markets Index
- Non-US Developed Equity Benchmark– MSCI EAFE + Canada Index
- Private Equity Benchmark - State Street Private Equity Index (1 quarter lagged)

Benchmarks (cont'd)

Stable Value Benchmark – 76.4% Blmb. Barc. Long Term Treasury Index and 23.6% HFRI FoF Conservative Index

- US Treasuries Benchmark – Bloomberg Barclays Long Term Treasury Index

- Stable Value Hedge Funds – HFRI Fund of Funds (FoF) Conservative Index

- Absolute Return Benchmark - SOFR + 4%

Real Return Benchmark – 72.5% NCREIF ODCE Index and 27.5% Energy & Natural Resources Benchmark

- Real Estate Benchmark – NCREIF ODCE Index (1 quarter lagged)

- Energy and Natural Resources Benchmark – 75% Cambridge Associates Natural Resources Index (reweighted) and 25% quarterly Seasonally-Adjusted Consumer Price Index (1 quarter lagged)

- Commodities Benchmark – Goldman Sachs Commodity Index

▪ Risk Parity Benchmark – 100% HFR Risk Parity Vol 12 Institutional Index

Description of Performance Attribution

- A measure of the source of the deviation of a fund's performance from that of its policy benchmark. Each bar on the attribution graph represents the contribution made by the asset class to the total difference in performance. A positive value for a component indicates a positive contribution to the aggregate relative performance. A negative value indicates a detrimental impact. The magnitude of each component's contribution is a function of (1) the performance of the component relative to its benchmark, and (2) the weight (beginning of period) of the component in the aggregate.
- The individual Asset Class effect, also called **Selection Effect**, is calculated as

  Actual Weight of Asset Class x (Actual Asset Class Return – Asset Class Benchmark Return)
- The bar labeled **Allocation Effect** illustrates the effect that a Total Fund's asset allocation has on its relative performance. Allocation Effect calculation = (Asset Class Benchmark Return –Total Benchmark Return) x (Actual Weight of Asset Class – Target Policy Weight of Asset Class).
- The bar labeled **Other** is a combination of Cash Flow Effect and Benchmark Effect:

  - Cash Flow Effect describes the impact of asset movements on the Total Fund results. Cash Flow Effect calculation = (Total Fund Actual Return – Total Fund Policy Return) – Current Selection Effect – Current Allocation Effect

  - Benchmark Effect results from the weighted average return of the asset classes' benchmarks being different from the Total Funds' policy benchmark return. Benchmark Effect calculation = Total Fund Policy Return – (Asset Class Benchmark Return x Target Policy Weight of Asset Class)
- **Cumulative Effect**

  Cumulative Effect calculation = Current Effect t *(1+Cumulative Total Fund Actual Return t-1) + Cumulative Effect t-1*(1+Total Fund Benchmark Return t)

Disclaimers and Notes

Disclaimers and Notes

Disclaimers:

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- **Refer to Hedge Fund Research, Inc. www.hedgefundresearch.com for more information on HFR indices**

Notes:

- **The rates of return contained in this report are shown on an after-fees basis unless otherwise noted. They are geometric and time weighted. Returns for periods longer than one year are annualized.**

- **Universe percentiles are based upon an ordering system in which 1 is the best ranking and 100 is the worst ranking.**

- **Due to rounding throughout the report, percentage totals displayed may not sum up to 100.0%. Additionally, individual fund totals in dollar terms may not sum up to the plan totals.**

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ATTN: Aon Investments Compliance Officer

Private Markets

Eric Lang, Senior Managing Director
Tim Koek, Director – Data Analytics
July 2023

TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT
MANAGEMENT DIVISION

Overview

- Philosophy
- Private Markets Role in the Trust
- Performance
- TRICOT Update
- Data Analytics Overview
- Accomplishments and Priorities

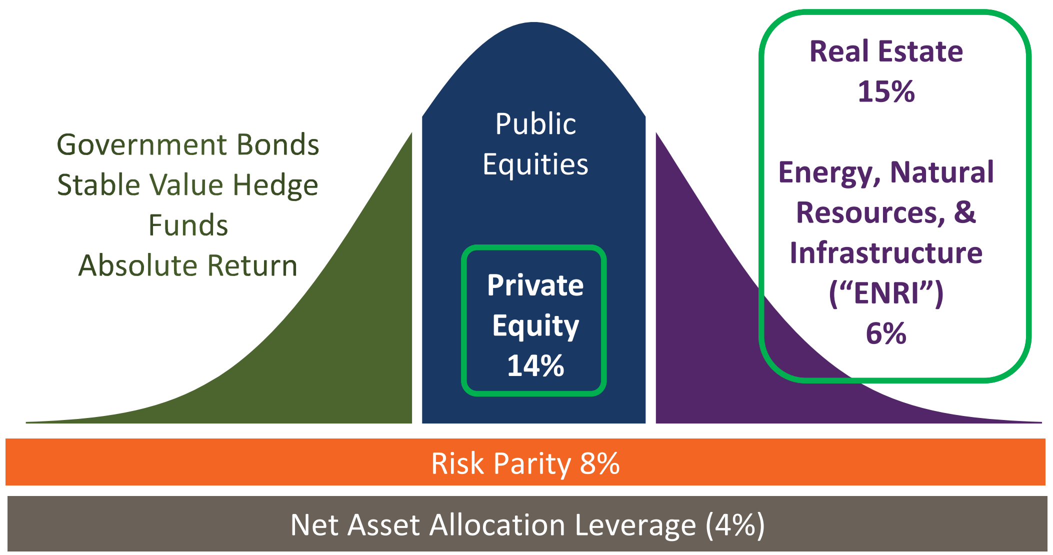
Private Markets Philosophy

Culture and Team	• Demonstrating the TRS IMD culture through collaboration, openness, candor and meritocracy of ideas • Hire and retain great investors for internal capabilities and work across the Trust
World Class Investors through Partnership	• Being the partner of choice for our managers using speed, consistency, predictability, and our people
Transparency	• Improving transparency through reporting and communication both internally and externally
Innovate	• Utilizing unique partnership and investment structures • Focusing on technology and data • Always evolving
Value Driven	• Finding value where others are not looking
Industry Leadership	• Maintaining industry leadership roles across all private assets • Growing TRS Private Markets alumni network

TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT
MANAGEMENT DIVISION

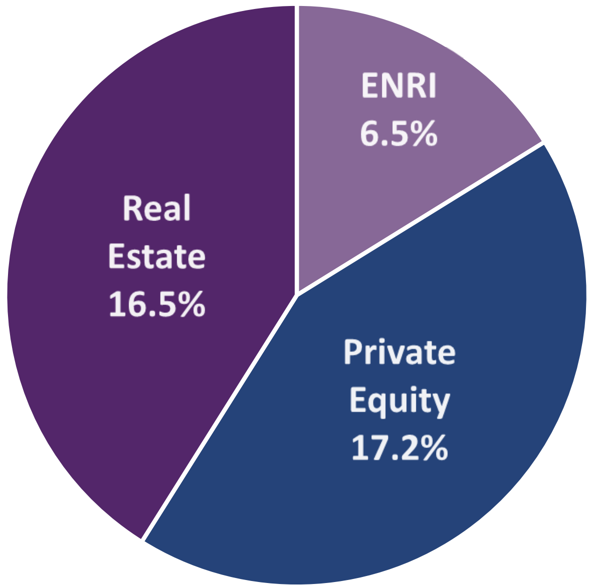
Private Markets Role in the Trust

Role in the Trust



Private Markets

(% of Trust)



Source: State Street as of 3/31/23

Private Markets Role in the Trust

Executive Summary ($M)

PORTFOLIO PERFORMANCE											
Portfolio	Market Value	% of Trust	1-Year TWR	3-Year TWR	5-Year TWR	1-Year IRR	3-Year IRR	5-Year IRR	SI IRR	SAA Median Return	PL Invested Managers
ENRI	$11,934	6.5%	15.6%	11.0%	7.3%	15.8%	10.3%	7.5%	7.3%	7.3%	30
Private Equity	$31,604	17.2%	(7.8%)	16.3%	14.0%	(8.9%)	16.6%	14.2%	13.6%	8.4%	55
Real Estate	$30,213	16.5%	6.4%	12.0%	10.7%	6.2%	11.8%	10.8%	9.7%	8.5%	41
Total	**$73,751**	**40.2%**	**0.9%**	**13.8%**	**11.7%**	**0.3%**	**13.6%**	**11.7%**	**11.3%**	**8.4%**	**107**

PRINCIPAL INVESTMENTS ("PI") PERFORMANCE										
Portfolio	Market Value	% of Portfolio	No. (active)	1-Year TWR	3-Year TWR	5-Year TWR	1-Year IRR	3-Year IRR	5-Year IRR	SI IRR
ENRI	$4,685	39.3%	45	12.9%	10.9%	5.9%	13.7%	9.1%	6.0%	9.1%
Private Equity	$8,618	27.3%	78	(9.0%)	13.9%	12.5%	(10.2%)	13.7%	12.9%	15.6%
Real Estate	$15,716	52.0%	111	6.4%	13.5%	12.3%	6.3%	13.0%	12.2%	14.8%
Total	**$29,019**	**39.3%**	**234**	**2.0%**	**13.0%**	**11.4%**	**1.8%**	**12.6%**	**11.3%**	**14.2%**

2022 APPROVAL ACTIVITY NUMBER OF INVESTMENTS			
Portfolio	Funds	PIs	Total
ENRI	9	40	49
Private Equity	26	39	65
Real Estate	12	116	128
Total	**47**	**195**	**242**

2022 APPROVAL ACTIVITY DOLLAR VALUE OF INVESTMENTS			
Portfolio	Funds	PIs	Total
ENRI	$1,425	$1,077	$2,502
Private Equity	$2,502	$1,043	$3,545
Real Estate	$1,650	$2,693	$4,343
Total	**$5,577**	**$4,813**	**$10,390**

2022 CASH FLOWS					
Portfolio	Net Capital Called	Capital Distributions	Income Distributions	Total Distributions	Net Cash Flows
ENRI	$2,180	$2,200	$362	$2,562	$382
Private Equity	$3,673	$4,492	$453	$4,945	$1,272
Real Estate	$5,040	$4,571	$602	$5,173	$133
Total	**$10,893**	**$11,263**	**$1,417**	**$12,680**	**$1,787**

Source: State Street based on 12/31/22 valuations for IRR calculation and 3/31/23 cash adjusted valuations for TWR calculation; Percentage of Trust is as of 3/31/23; Activity based on TRS IMD data
Note: ENRI TWR reflects ENR performance from 10/01/13 through 9/30/2016 and ENRI (ENR plus Infrastructure) from 10/01/16 through 3/31/23
Note: ENRI IRR reflects performance from fund investments initially transferred to ENRI portfolio (inception date: 10/28/04)
Note: Approval activity does not include Emerging Managers

TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Private Markets Role in the Trust

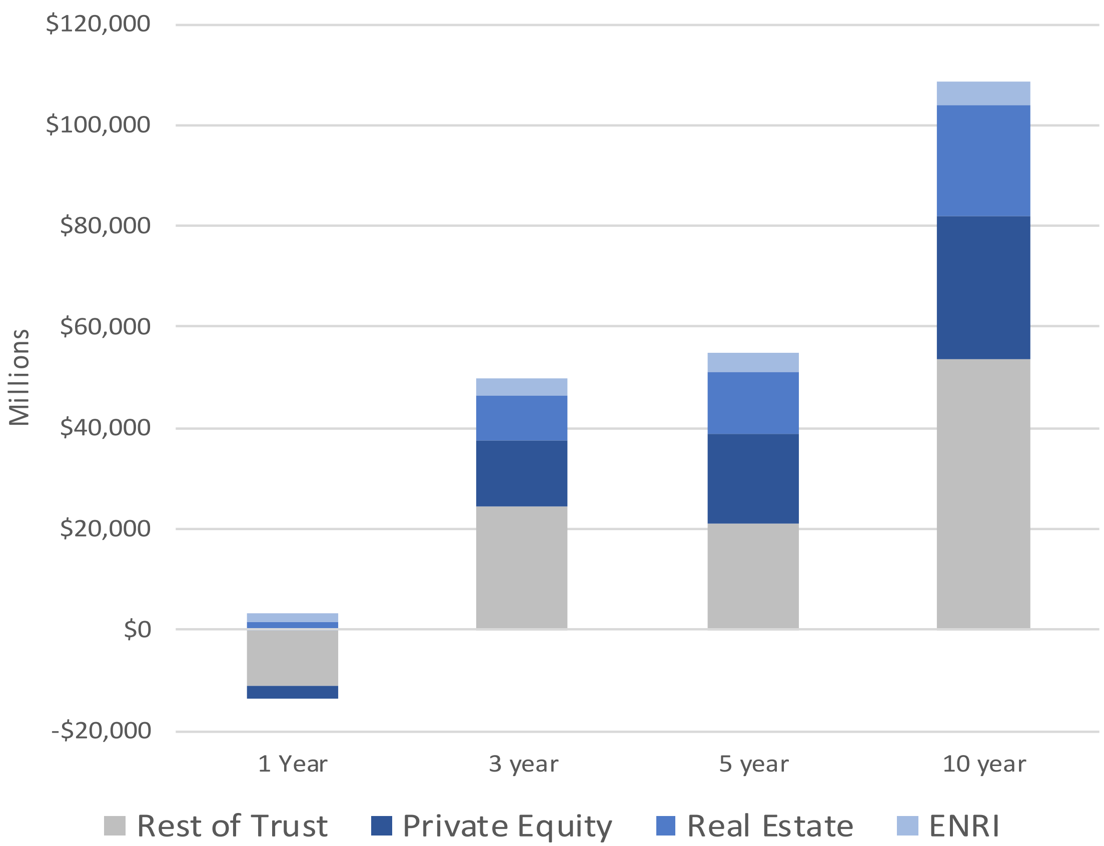
Portfolio Detail Returns

PORTFOLIO	MEASURE	1-YEAR RETURN	3-YEAR RETURN	5-YEAR RETURN	COMMENTS
ENRI	IRR	15.8%	10.3%	7.5%	• Excellent 1-year results
	TWR	**15.6%**	**11.0%**	**7.3%**	• Energy overweight is working
	Benchmark	12.5%	10.2%	7.1%	• Seeing healthy excess returns
	Excess Return	**3.1%**	**0.8%**	**0.2%**	
Private Equity	IRR	(8.9%)	16.6%	14.2%	• Long-term returns are strong
	TWR	**(7.8%)**	**16.3%**	**14.0%**	• Market conditions are impacting 1-year returns
	Benchmark	(5.2%)	18.0%	15.1%	• Lagging benchmark due to mega buyout overweight, PI's
	Excess Return	**(2.6%)**	**(1.7%)**	**(1.1%)**	and legacy partnerships
	TUCS Peer (%)	**93rd**	**27th**	**25th**	• Leading peers on 3-year and 5-year basis
Real Estate	IRR	6.2%	11.8%	10.8%	• Consistent long-term returns
	TWR	**6.4%**	**12.0%**	**10.7%**	• Portfolio is positioned well given limited office holdings
	Benchmark	6.6%	9.0%	7.7%	• Outstanding excess returns over longer periods
	Excess Return	**(0.2%)**	**3.0%**	**3.0%**	• Leading peers on all time periods
	TUCS Peer (%)	**21st**	**9th**	**9th**	

Source: State Street based on 12/31/22 valuations for IRR calculation and 3/31/23 cash adjusted valuations for TWR calculation; TUCS as of 3/31/23

Private Markets Performance

Dollar Value Add to Trust



2023 Performance – Early Preview

- First quarter 2023 returns are flat
- Real Estate is expecting to see value declines in 1H 2023 as appraisals are updated, and higher interest rates impact portfolio
- Energy continues to outperform

Preview of 1Q 2023 Performance

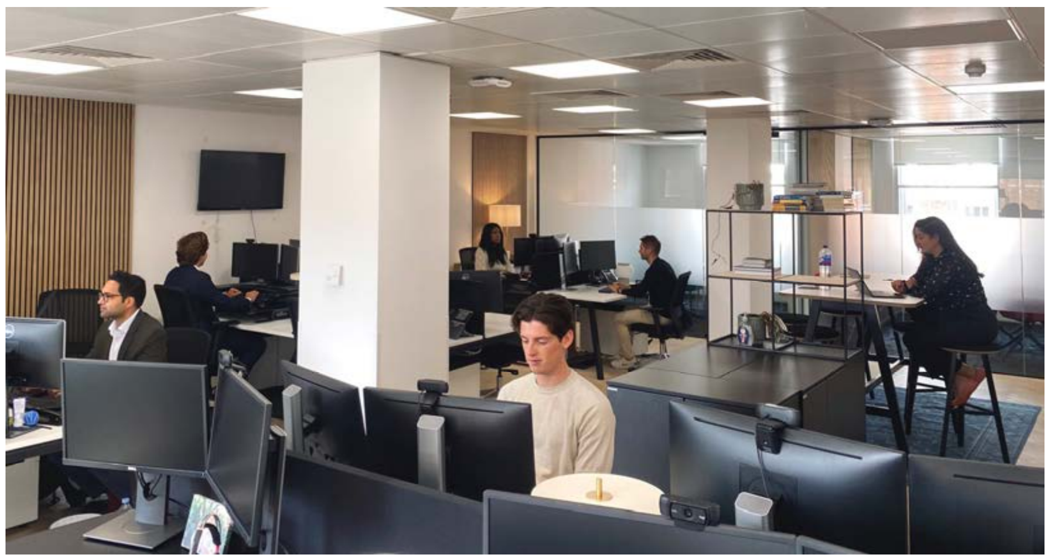
Portfolio	Q1 2023 IRR	1-Year IRR	% of NAV Reported
ENRI	1.7%	9.3%	90.3%
Private Equity	2.0%	(4.9%)	88.9%
Real Estate	(1.4%)	(0.6%)	91.4%
Total	**0.5%**	**(1.1%)**	**90.2%**

Source: State Street cash adjusted as of 3/31/23.
Note: Q1 2023 IRR includes only valuations received as of 6/20/2023. The 1-Year IRR is based on cash adjusted valuations as of 3/31/23.

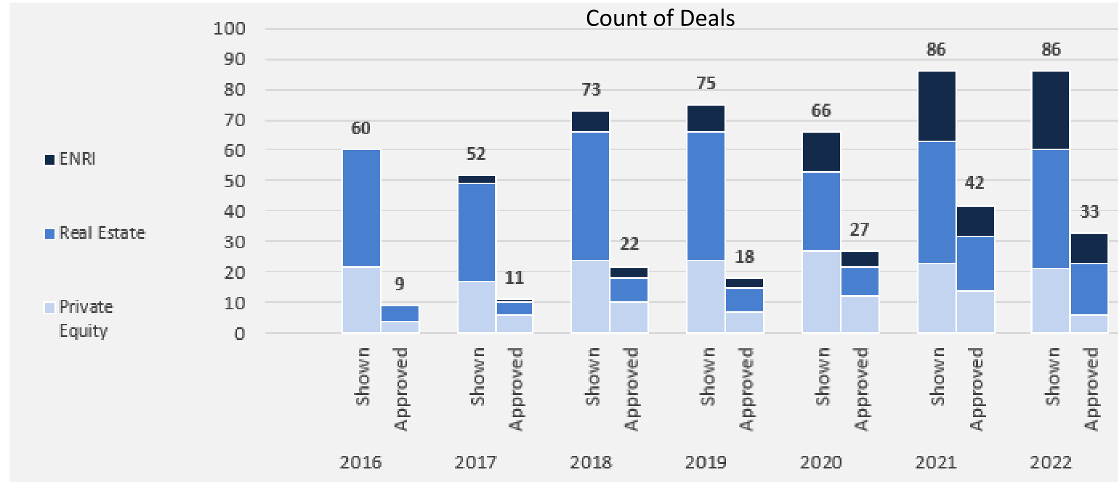
TRICOT Update

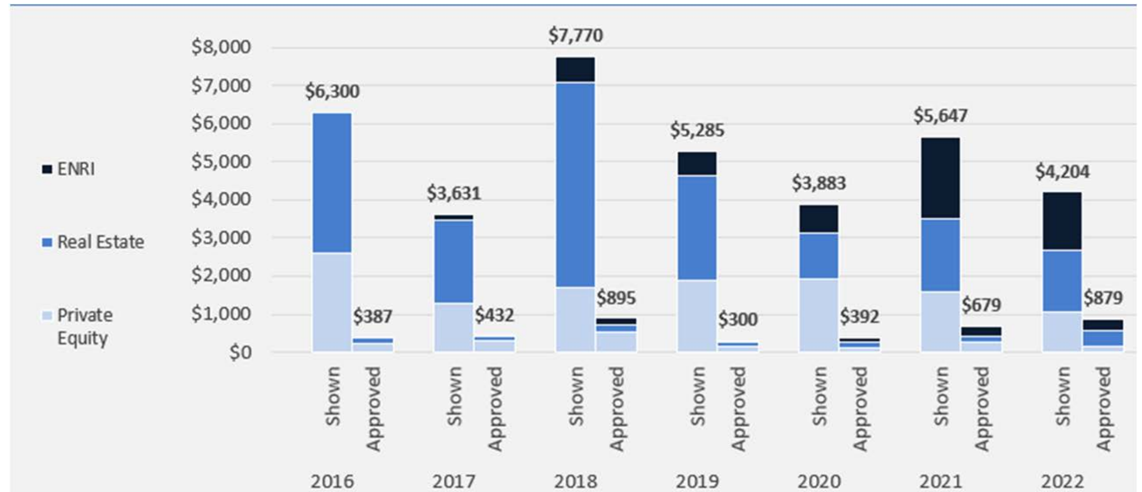
Overview

- TRICOT continues to **strengthen local presence, relationships, and expertise** in Europe – resulting in attractive deal flow and increasingly-sophisticated underwriting
- The deal flow in TRICOT remained consistent with 2021 levels, and we expect that to decline without the ENRI presence, and dislocation in the market
- TRICOT **recommended 33 deals** in 2022, representing **$879 million** of capital across Private Markets



Historical Deal Summary



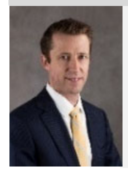


Source: *TRS IMD*

Private Markets Data Analytics Team

- The Data Analytics team is embedded within Private Markets and works directly with the Private Equity, Real Estate, and Energy, Natural Resources and Infrastructure investment teams

PRIVATE MARKETS ANALYTICS

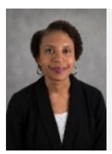


Tim Koek
Director
BCom, Griffith University
LLB, Griffith University

PROCESS AND PROJECTS

Melissa Kleihege
Analyst
BS, Texas A&M

BUSINESS AND DATA

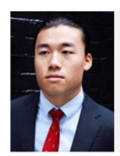


Barbara Woodard, CPA
Senior Associate
BBA, Texas A&M

Sam Zedan, CAIA
Associate
BA, University of Illinois, Chicago

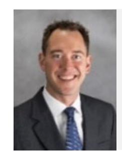
QUANTITATIVE ANALYSIS / DATA SCIENCE

Roxie Chung
Senior Analyst
BS, UCSD
MFE, UCLA Anderson



Alex Huang
Analyst
BS, New York University

DATA ENGINEERING / ARCHITECTURE



Jeff Stafford
Senior Associate
BS, Pepperdine University

Nikhil Mothukuri
Contractor
B-Tech, JNTU, India
MS, University of Hartford

DEAL PIPELINE AND CRM

Tyler Kniskern
Associate
BBA, New Mexico State Univ.

TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Private Markets Data Analytics Team

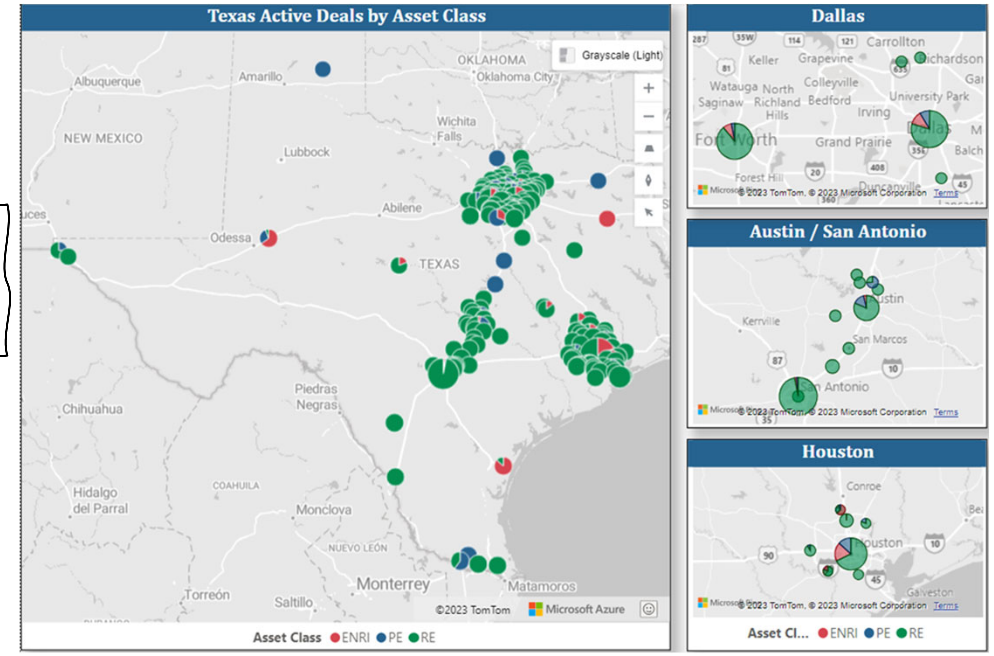
- Objectives for the team:
  - Make information more readily accessible
  - Reduce the investment team's time spent on reporting activities
  - Support investment teams in the investment diligence and monitoring process
  - Act as a multiplier for the investment teams
  - Leverage service providers to better support private markets
    - Custodian
    - Data Sources
    - Software Tools

Activity	Volume
Funds and Investment Vehicles (12/31/22)	829+
Underlying holdings (12/31/22)	36,200+
Capital calls, distributions & valuations loaded - 2022	8,814
New commitments & addi. ons (2022)	100+
Investment monitoring pages (H1 2023)	1,812
Number of diligence and monitoring interactions recorded in CRM system in 2022	1,915+
Dashboard views (2022) (average >154/business day)	40,163
Number of key data sources integrated	8

Private Markets Data Analytics Team

- The team works on a wide range of initiatives, including:
  - Reporting, Data, and Automation
  - Key systems support and maintenance
  - Analytical and statistical analysis
  - New technologies and alternative data
  - Process improvement
  - Validation and reconciliation

Texas Exposure



Portfolio Review

Wildfire Exposure

Summary: Accomplishments & Priorities

2022 ACCOMPLISHMENTS	2023 PRIORITIES

2022 ACCOMPLISHMENTS

- Successfully completed Build the Fleet
  - Cumulative fleet hires of 30
- TRICOT 2.0
  - Two local hires onboarded
- Pivoting to more Energy Investments
- Continued Data Analytics Integration to Enhance Investment Decisions
- Stabilized Team Attrition

2023 PRIORITIES

- Managing Smaller Capital Plans
- Data Automation in Private Markets
- Legal Terms Tool for Private Markets
- Enhance Underlying Holdings Data
- Influence Terms in the Industry

TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

APPENDIX

TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT
MANAGEMENT DIVISION

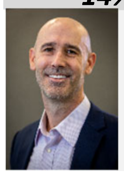
Private Markets Overview

Organizational Structure

Private Markets
35% of Trust Benchmark

Eric Lang
Senior Managing Director
BBA, UT Austin
MBA, University of Houston

Private Equity
14% of Trust Benchmark

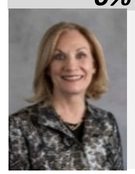


Neil Randall
Managing Director
BBA, Texas A&M
MS, Texas A&M

Real Estate
15% of Trust Benchmark

Grant Walker
Senior Director
BBA, Baylor
MBA, St. Edwards

ENRI
6% of Trust Benchmark



Carolyn Hansard
Senior Director
BS, UT Austin
MBA, UT Austin

Private Markets Analytics

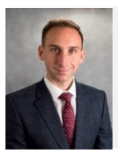
Tim Koek
Director
BCom, Griffith University
LLB, Griffith University

Portfolio Initiatives

LeAnn Gola, CPA
Portfolio Initiatives Manager
BBA, Texas State University
MAcy, Texas State University

TRICOT – TRS LONDON

Kimberly Carey**
TRICOT Director, RE
BBA, Texas A&M



Mikhael Rawls, CFA
Director
BA, Harvard University

Chase Lewis
Sr. Analyst, RE
BBA, UT Austin

Sara Shan**
Admin Coordinator
LLB, Middlesex University

PRIVATE MARKETS ANALYTICS AND SUPPORT

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Contractor
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MS, University of Hartford

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BA, University of Illinois, Chicago

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BBA, New Mexico State Univ.

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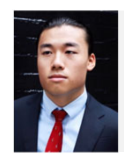
Melissa Kleihege
Analyst
BS, Texas A&M



Alex Huang
Analyst
BS, New York University

Sienna Hilton
Administrative Assistant

***TRICOT direct hires*

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Energy, Natural Resources, and Infrastructure

Ryan Zafereo, Director

July 2023

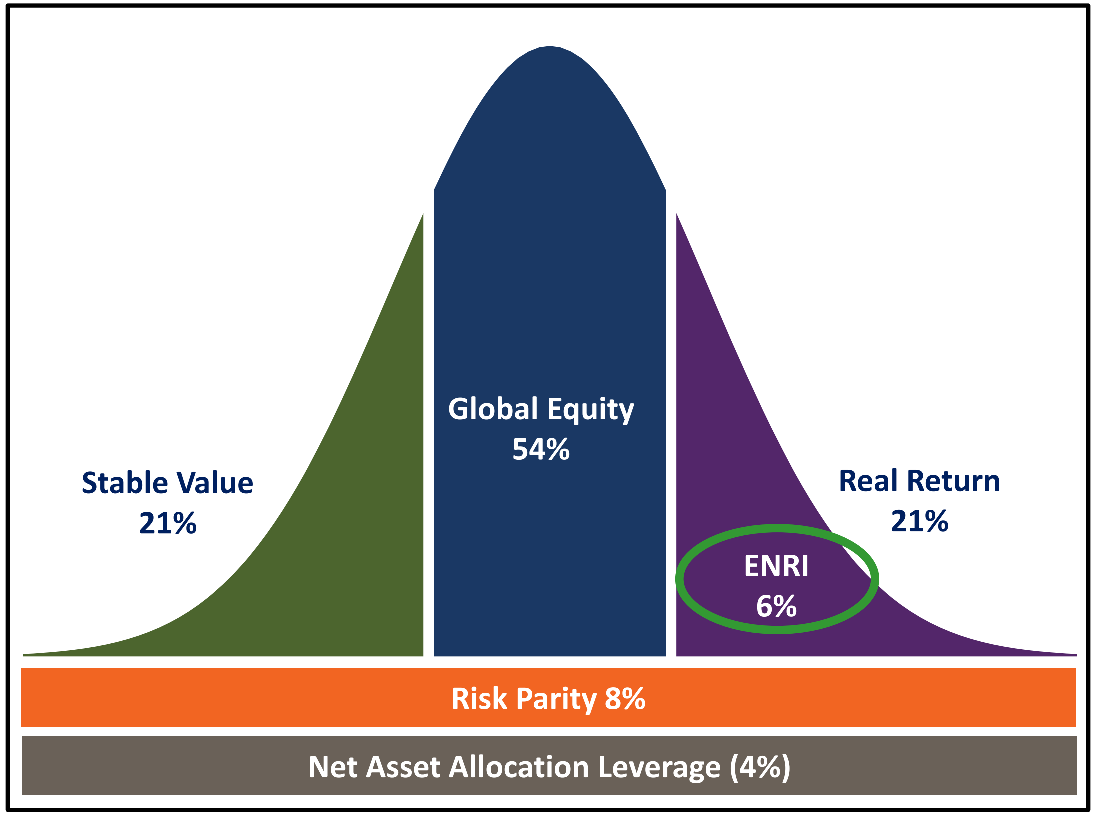
Overview

- ENRI in the Trust
- 2022 Performance
- Capital Plan
- Spotlight - Energy Markets
- Accomplishments and Priorities

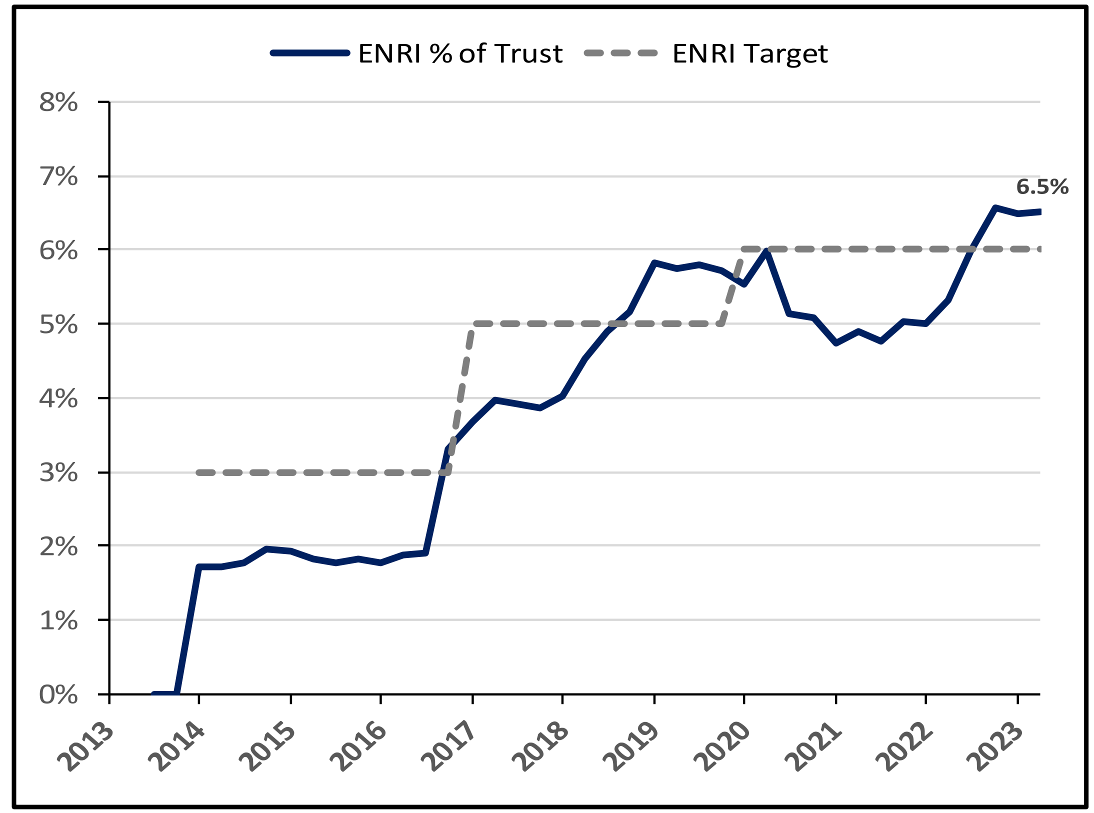
Role in the Trust

Energy, Natural Resources & Infrastructure (ENRI)

ENRI TARGET % OF TRUST



HISTORICAL TRUST ALLOCATION



Source: State Street as of 3/31/23

Note: Per the TRS Investment Policy Statement, target allocation weights represent transitional benchmarks (2006-2014), long-term target allocations (2015-present)

Performance Summary

($M)

PORTFOLIO PERFORMANCE			
Asset Class	**1-Year Return**	**3-Year Return**	**5-Year Return**
ENRI IRR	15.8%	10.3%	7.5%
ENRI TWR	15.6%	11.0%	7.3%
ENRI Benchmark	12.5%	10.2%	7.1%
ENRI Excess Return	**3.1%**	**0.8%**	**0.2%**

PORTFOLIO GROWTH			
ENRI	**1-Year**	**3-Year**	**5-Year**
Ending Value	$11,934	$11,934	$11,934
less Starting Value	10,670	8,815	6,357
less Contributions	2,180	5,650	10,088
plus Distributions	2,562	5,629	8,079
Investment Return	**$1,646**	**$3,098**	**$3,568**

FUND AND PRINCIPAL INVESTMENTS PERFORMANCE										
Portfolio	**Market Value**	**% of Portfolio**	**No. (active)**	**1-Year TWR**	**3-Year TWR**	**5-Year TWR**	**1-Year IRR**	**3-Year IRR**	**5-Year IRR**	**SI IRR**
Funds	$7,249	60.7%	78	17.3%	10.9%	8.3%	17.1%	11.1%	8.4%	6.6%
Principal Investments	4,685	39.3%	45	12.9%	10.9%	5.9%	13.7%	9.1%	6.0%	9.1%
Total	**$11,934**	**100%**	**123**	**15.6%**	**11.0%**	**7.3%**	**15.8%**	**10.3%**	**7.5%**	**7.3%**

PORTFOLIO STRATEGY SUMMARY BY RISK							
Strategy	**Target Portfolio Weight**	**% of Portfolio**			**Investment Returns**		
		12/31/2022	**12/31/2019**	**Change**	**1-Year IRR**	**3-Year IRR**	**SI IRR**
Core	10-20%	5.9%	2.0%	3.9%	15.5%	13.5%	9.2%
Value-Add	50-70%	57.4%	58.6%	(1.2%)	10.5%	9.8%	7.8%
Opportunistic	20-30%	36.7%	39.5%	(2.7%)	25.1%	10.8%	6.3%
ENRI TOTAL	**100%**	**100.0%**	**100.0%**	**0.0%**	**15.8%**	**10.3%**	**7.3%**

PORTFOLIO SECTOR SUMMARY BY SECTOR							
Sector	**Target Portfolio Weight**	**% of Portfolio**			**Investment Returns**		
		12/31/2022	**12/31/2019**	**Change**	**1-Year IRR**	**3-Year IRR**	**SI IRR**
Infrastructure	N/A	50.9%	44.7%	6.2%	11.1%	11.3%	11.4%
Energy Diversified	N/A	42.8%	49.3%	(6.5%)	24.6%	9.7%	3.3%
Natural Resources	N/A	6.3%	6.0%	0.3%	(1.6%)	7.3%	11.7%
ENRI TOTAL	N/A	**100.0%**	**100.0%**	**0.0%**	**15.8%**	**10.3%**	**7.3%**

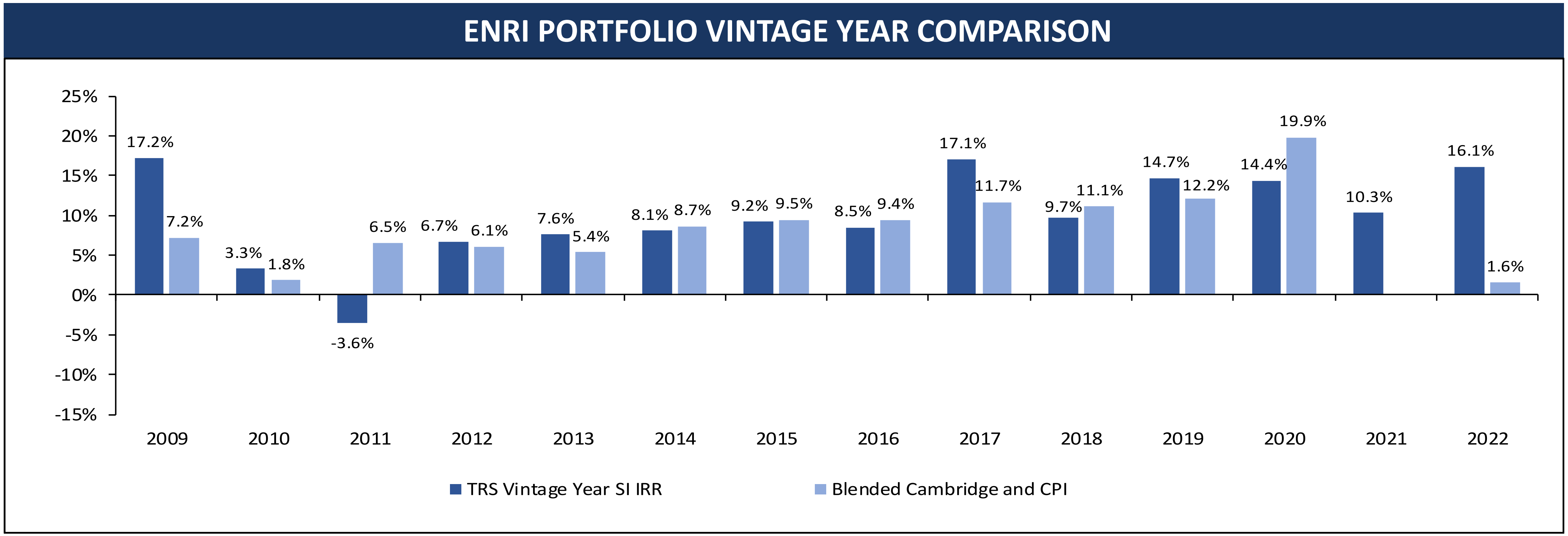
Source: State Street based on 12/31/22 valuations; TWR as of 3/31/23
Note: Inception date as 10/28/04, when fund investments were initially transferred to ENRI portfolio
Note: TWR and Benchmark reflect ENR performance from 10/01/13 through 9/30/2016 and ENRI (ENR plus Infrastructure) from 10/01/16 through 3/31/23

TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT MANAGEMENT DIVISION

Performance Summary

TRS Vintage Year Comparison

- ENRI outperformed the blended Cambridge and CPI returns for 50% of the vintage years



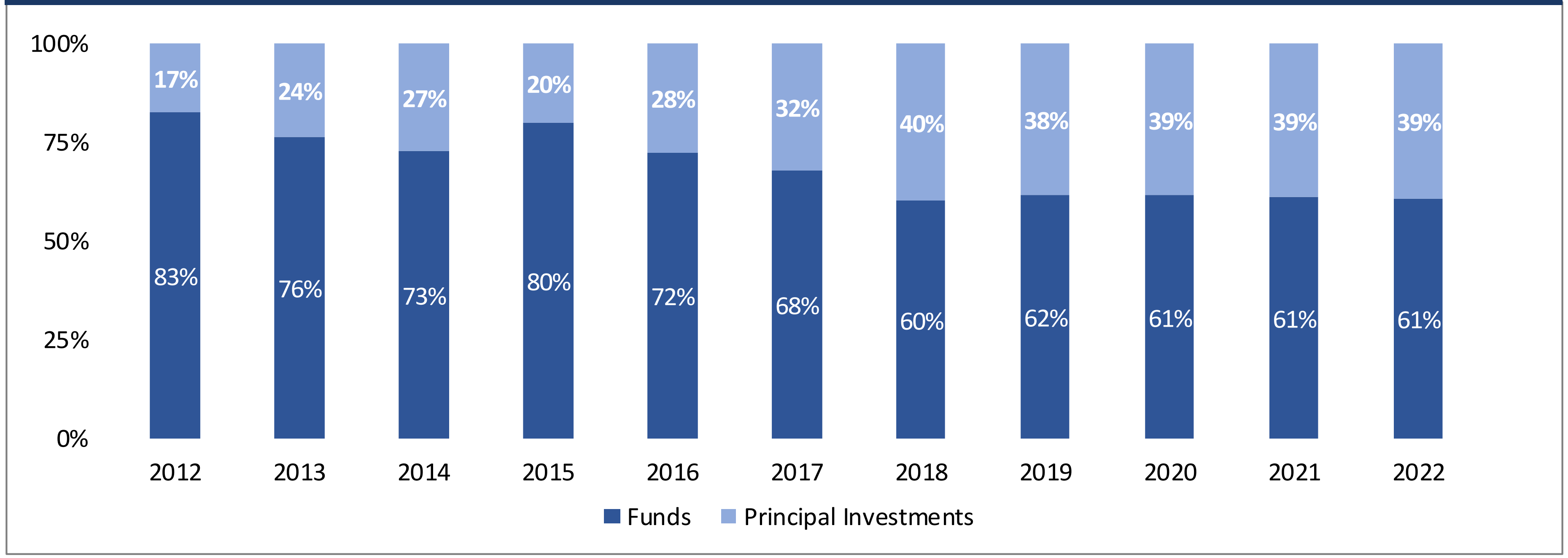
Source: State Street as of 12/31/22
Note: TRS IMD calculation using Cambridge vintage year IRRs (40% Infrastructure and 40% Natural Resources) and 20% annualized CPI
Note: Cambridge does not have sufficient constituents to report a return for Natural Resources for vintage year 2021

Performance Summary

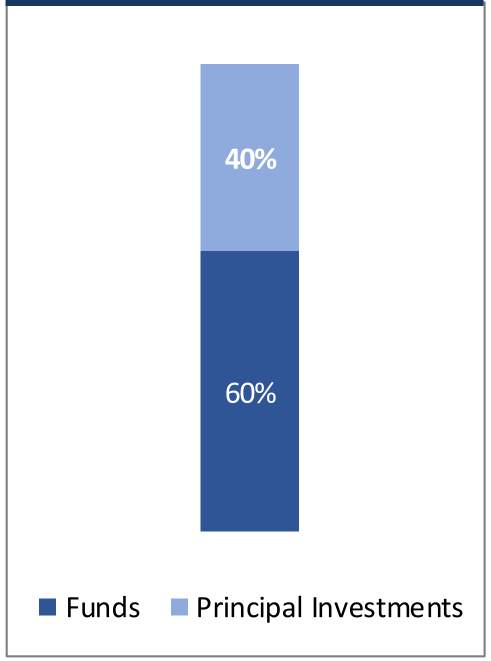
ENRI Principal Investments Program

- ENRI continues to focus on Principal Investments with increased transaction volumes through innovative structures
- ENRI has maintained its target allocation of 60% Funds and 40% Principal Investments

PRINCIPAL INVESTMENT MARKET VALUE OVER TIME



TARGET



Source: State Street as of 12/31/22
Note: Target is the long-term target for Principal Investments

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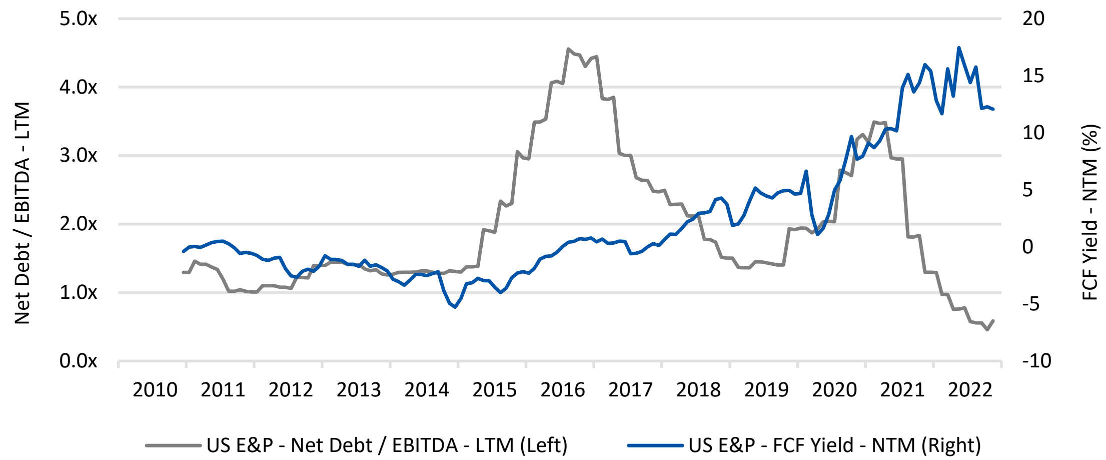
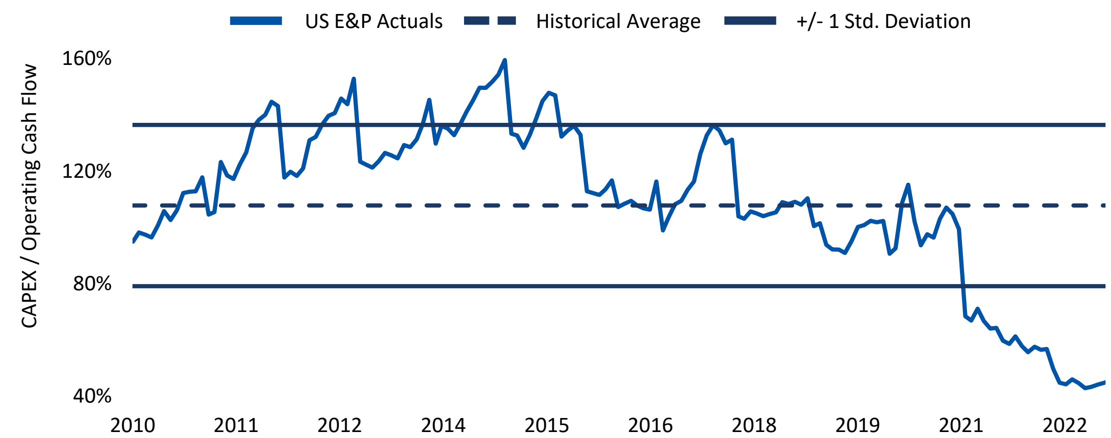
Spotlight – Energy Markets

The Health of the Energy Industry has Improved Significantly in Recent Years…

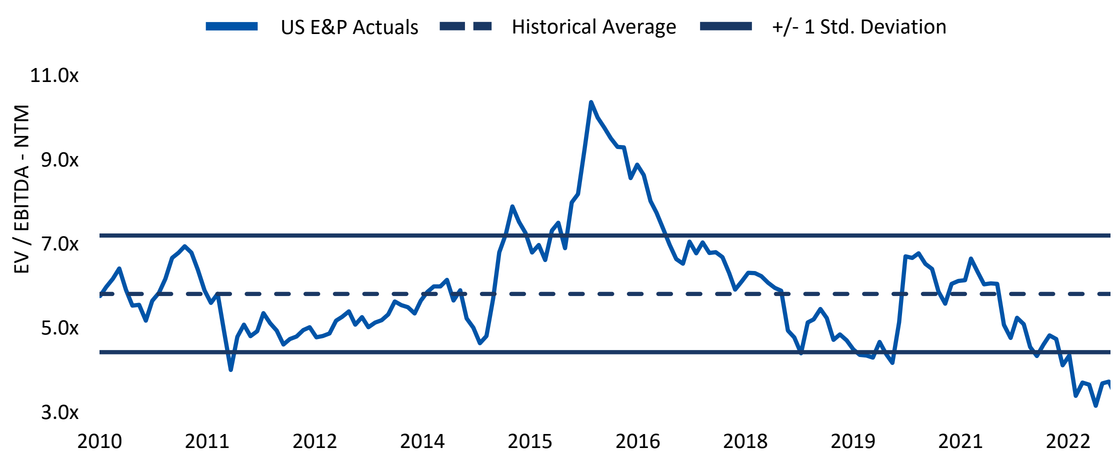
HIGH FREE CASH FLOW HAS BEEN USED TO REDUCE LEVERAGE…



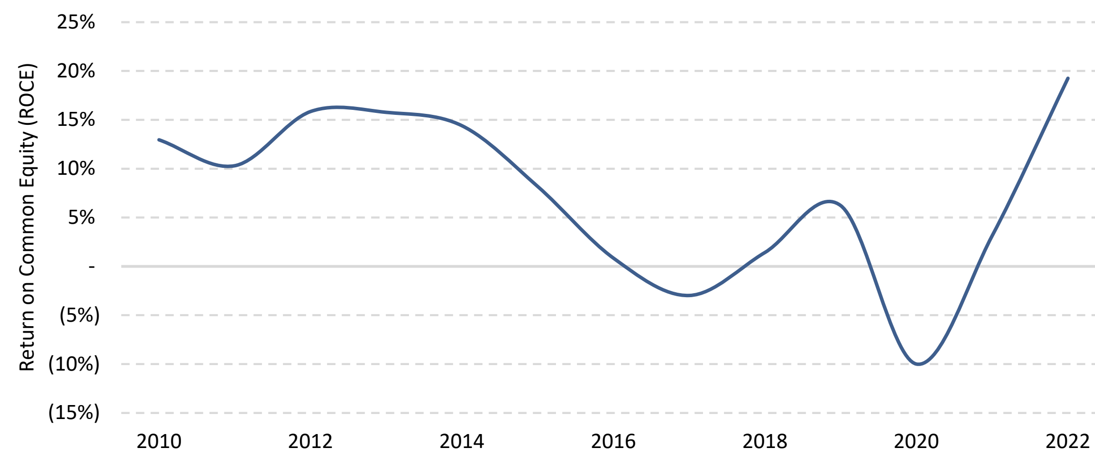
… AND RETURN CASH TO SHAREHOLDERS GIVEN LIMITED CAPEX INVESTMENT



VALUATIONS REMAIN LOW …



… DESPITE HIGH RETURNS ON EQUITY



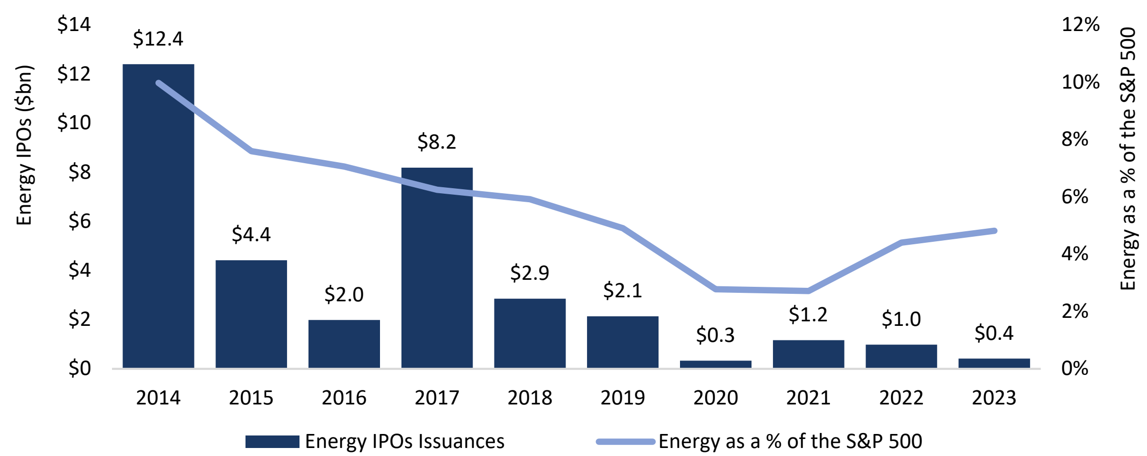
TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Source: FactSet, Pickering Energy Partners, Quantum Energy Partners

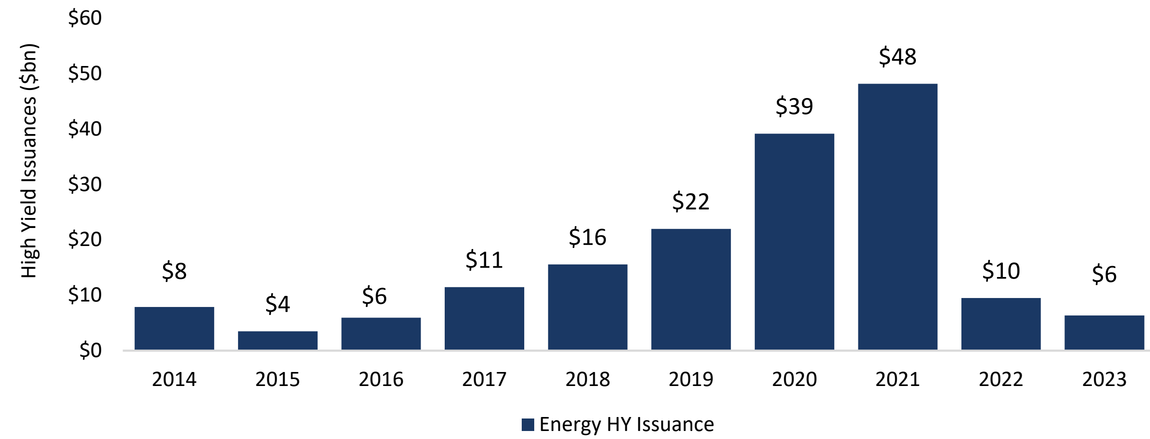
Spotlight – Energy Markets

… And Yet Capital Availability to Energy Companies has Declined Materially

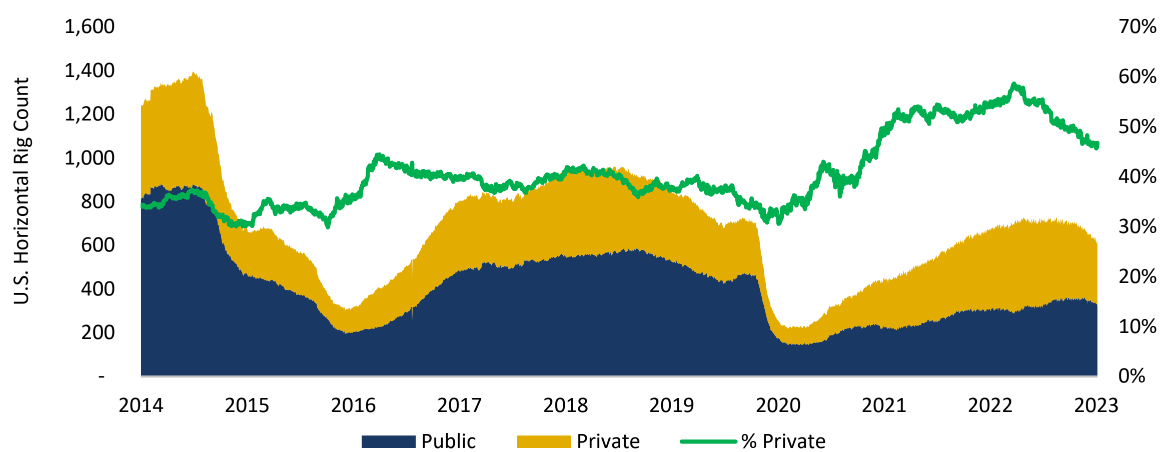
ENERGY REMAINS OUT OF FAVOR IN THE PUBLIC EQUITY MARKETS



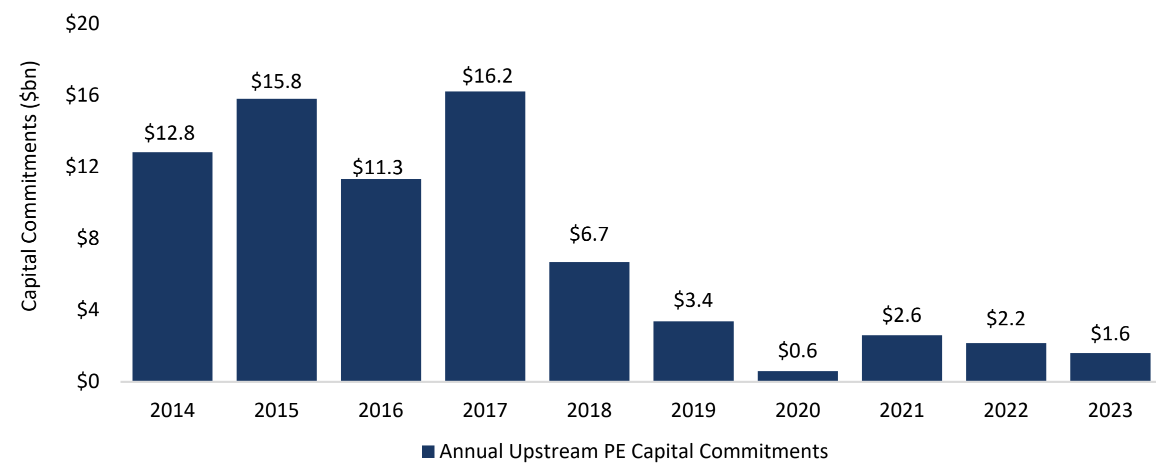
HIGH YIELD DEBT ISSUANCE IN ENERGY IS LOW



PRIVATE OPERATORS ACCOUNT FOR A SIGNIFICANT PORTION OF THE MARKET



UPSTREAM PRIVATE CAPITAL RAISED CONTINUES TO BE CHALLENGED[1]



TRS
TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT MANAGEMENT DIVISION

Source: Pickering Energy Partners

(1) Based on publicly announced PE sponsors' equity commitments to upstream companies. Based on Enverus provided data.

Summary: Accomplishments and Priorities

ENRI

2022 ACCOMPLISHMENTS

- Performance
  - Overall, generated IRR of 15.8%, 10.3% and 7.5% for 1, 3 and 5-year periods, respectively
  - Principal investments generated IRR of 13.7%, 9.1%, and 6.0% for 1, 3 and 5-year periods, respectively
- Team Update
  - Added 4 Associates
- Portfolio Construction
  - Developed new energy opportunities/relationships
  - Kicked off SAA
- Capital Plan Impact
  - Approximately $2.5 billion
    - $1,425 million to Funds
    - $995 million to Principal Investments
    - $69 million to Emerging Managers

2023 PRIORITIES

- Capital Plan
  - Commit approximately $2.0 billion with 40% in Principal Investments
- Team
  - Recruit team additions at the junior level
  - Developing comprehensive training and development program
- Portfolio Construction
  - Continue to review bespoke energy opportunities
  - Cautious on valuations for infrastructure opportunities
  - Assess mining opportunities

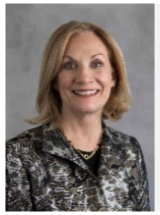
TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Source: Performance data from State Street as of 12/31/22

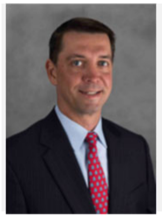
APPENDIX

Organization

ENRI Team



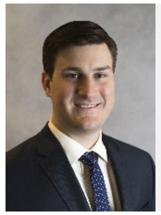
Carolyn Hansard*
Sr. Director
BS, UT Austin
MBA, UT Austin



Mark Cassens*
Director
BS, UT Austin
MBA, UT Austin

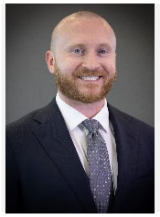
Daniel Judd, CFA*
Director
BBus, Griffith University
MBA, Bond University

Ryan Zafereo*
Director
BBA, UT Austin

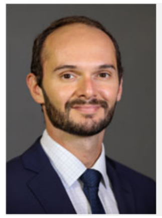


Emerson Halstead, CFA
Investment Manager
BS, UT Austin
MBA, IU Bloomington
MLA, Harvard University

Hunter Coleman, CFA
Associate
BBA, Texas A&M



Patrick Quinn
Associate
BA, Providence College
MBA, UT Austin



Murilo Martins
Associate
BS, Louisiana Tech University
MBA, UT Austin

James Gilbert
Associate
BS, University of Arkansas
MBA, Columbia University

Ashley Arabia
Senior Analyst
BA, Texas A&M
MSF, UT Austin

Nabil Mirzaei
Analyst
BBA, UT Austin

Joining ENRI on August 1, 2023

Susan White
Team Assistant
BS, Penn State University

** ENRI investment committee (ENRI IC) members; ENRI IC also includes Eric Lang*

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Private Equity

Neil Randall, Managing Director

July 2023

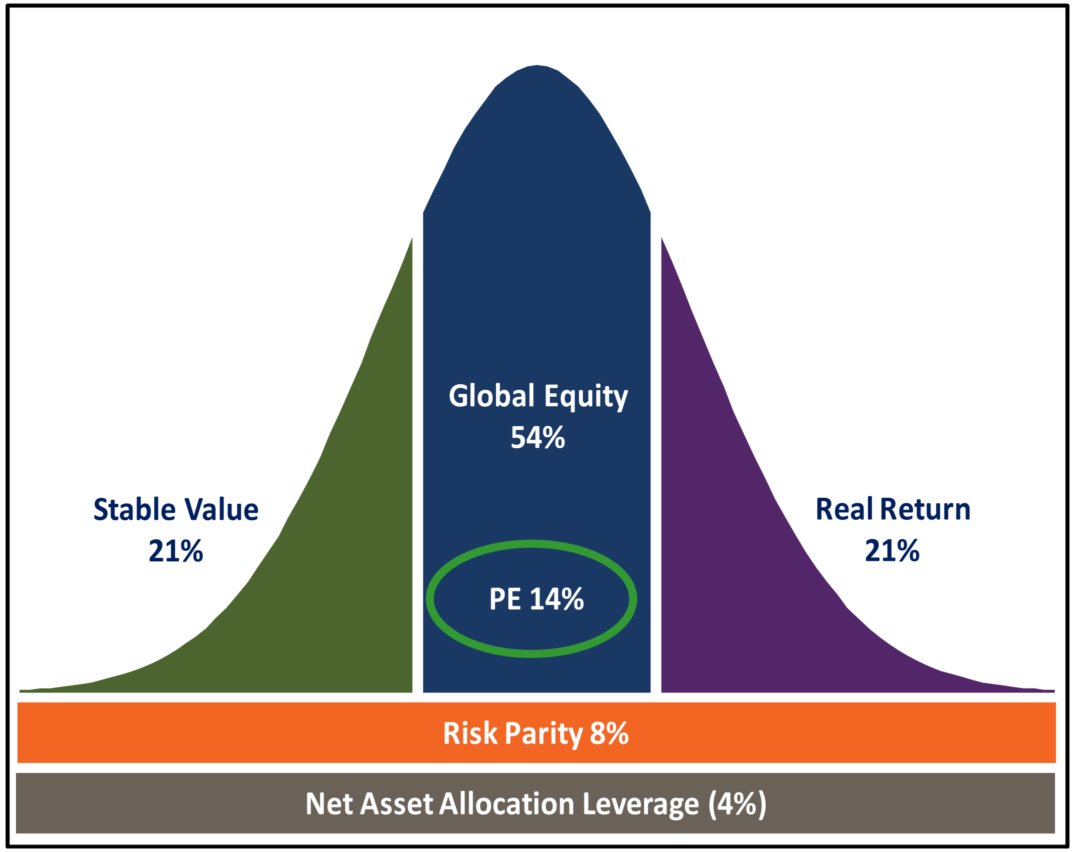
Overview

- Private Equity in the Trust
- 2022 Performance
- Capital Plan
- Spotlight – Increasing Allocation Down Market in the U.S.
- Accomplishments and Priorities

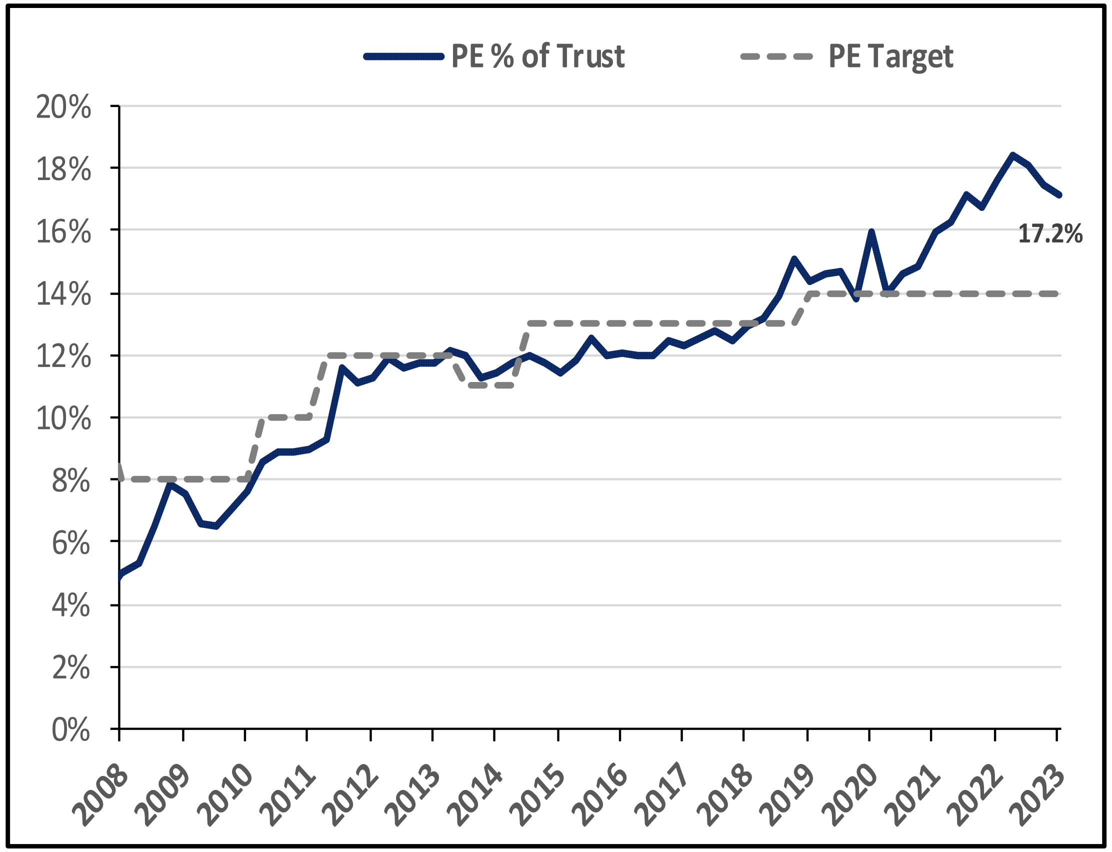
Role in the Trust

Private Equity (PE)

PE TARGET % OF TRUST



HISTORICAL TRUST ALLOCATION



Source: State Street as of 3/31/2023

Note: Per the TRS Investment Policy Statement, target allocation weights represent transitional benchmarks (2006-2014), long-term target allocations (2015-present)

Performance Summary

($M)

PORTFOLIO PERFORMANCE			
Asset Class	**1 Year Return**	**3 Year Return**	**5 Year Return**
Private Equity IRR	(8.9%)	16.6%	14.2%
Private Equity TWR	(7.8%)	16.3%	14.0%
Private Equity Benchmark	(5.2%)	18.0%	15.1%
Private Equity Excess Return	**(2.6%)**	**(1.7%)**	**(1.1%)**
TUCS Peer (Percentile)	93rd	27th	25th

PORTFOLIO GROWTH			
Private Equity ($ millions)	**1 Year**	**3 Year**	**5 Year**
Ending Value	$31,604	$31,604	$31,604
less Starting Value	36,017	23,706	19,727
less Contributions	3,673	13,126	21,380
plus Distributions	4,945	18,213	27,152
Investment Return	**($3,141)**	**$12,985**	**$17,649**

FUNDS AND PRINCIPAL INVESTMENT PERFORMANCE										
Portfolio	**Market Value**	**% of Portfolio**	**No. (active)**	**1-Year TWR**	**3-Year TWR**	**5-Year TWR**	**1-Year IRR**	**3-Year IRR**	**5-Year IRR**	**SI IRR**
Funds	$22,986	72.7%	239	(7.3%)	17.1%	14.7%	(8.4%)	17.7%	14.7%	13.4%
Principal Investments	8,618	27.3%	78	(9.0%)	13.9%	12.5%	(10.2%)	13.7%	12.9%	15.6%
Total	**$31,604**	**100%**	**317**	**(7.8%)**	**16.3%**	**14.0%**	**(8.9%)**	**16.6%**	**14.2%**	**13.6%**

PORTFOLIO STRATEGY SUMMARY							
Style	**Target Portfolio Weight**	**% of Portfolio**			**Investment Returns**		
		12/31/2022	**12/31/2019**	**Change**	**1-Year IRR**	**3-Year IRR**	**SI IRR**
Total Buyout	**82.5%**	**79.4%**	**79.4%**	**(0.0%)**	**(6.8%)**	**17.9%**	**14.4%**
Mega Buyout (>$7bn)	*20-25%*	*36.5%*	*34.3%*	*2.2%*	*(7.3%)*	*16.5%*	*12.4%*
Large Buyout ($3-7bn)	*35-40%*	*26.6%*	*32.2%*	*(5.6%)*	*(12.1%)*	*18.5%*	*16.8%*
Mid/Small Buyout (<$3bn)	*20-25%*	*16.3%*	*12.9%*	*3.4%*	*6.0%*	*20.2%*	*14.3%*
Venture / Growth Equity	**17.5%**	**14.6%**	**11.4%**	**3.2%**	**(20.7%)**	**19.2%**	**12.3%**
Credit / Special Situations	**0.0%**	**6.0%**	**9.2%**	**(3.2%)**	**(1.6%)**	**1.6%**	**9.2%**
PRIVATE EQUITY TOTAL	**100%**	**100.0%**	**100.0%**	**0.0%**	**(8.9%)**	**16.6%**	**13.6%**

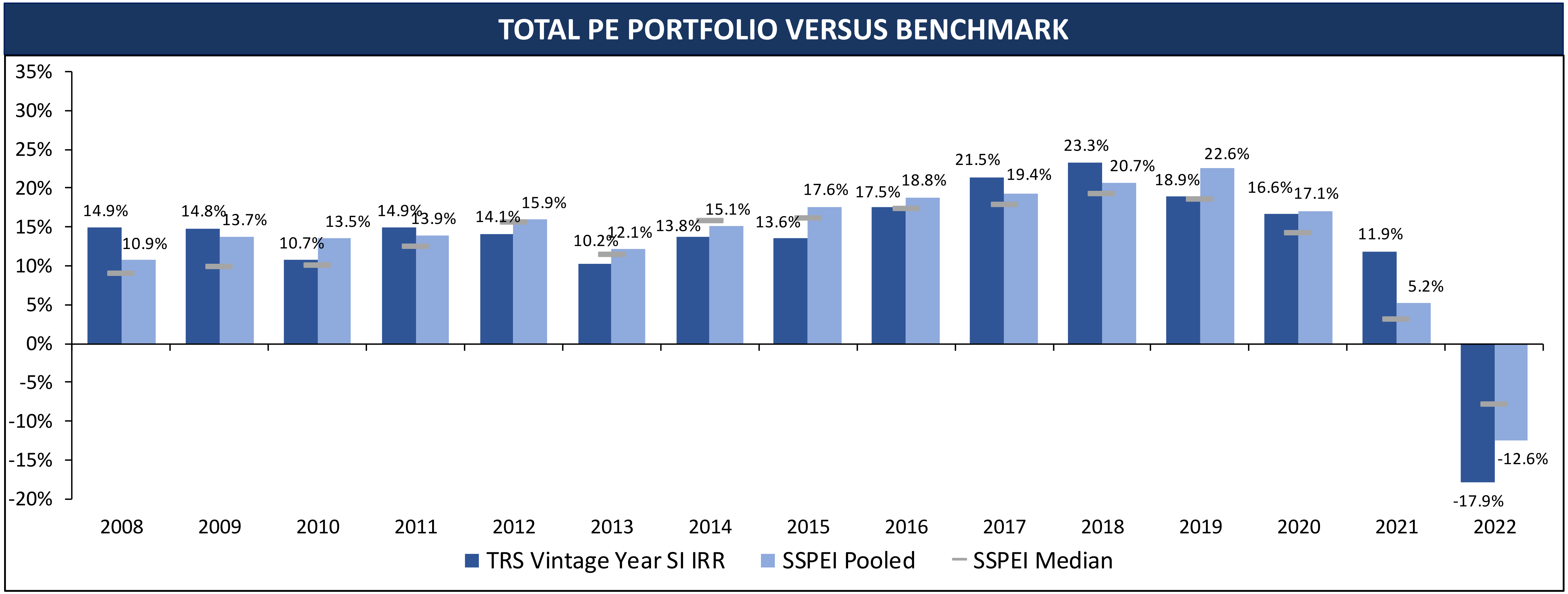
Source: State Street based on 12/31/22 valuations; TWR and TUCS as of 3/31/23. Performance includes Emerging Managers

Note: Since Inception IRR of PE Portfolio reflects performance since June 1992, the strategies within the portfolio have various inception dates

Performance Summary

TRS Vintage Year Comparison

- 2022 was a challenging year for private equity returns



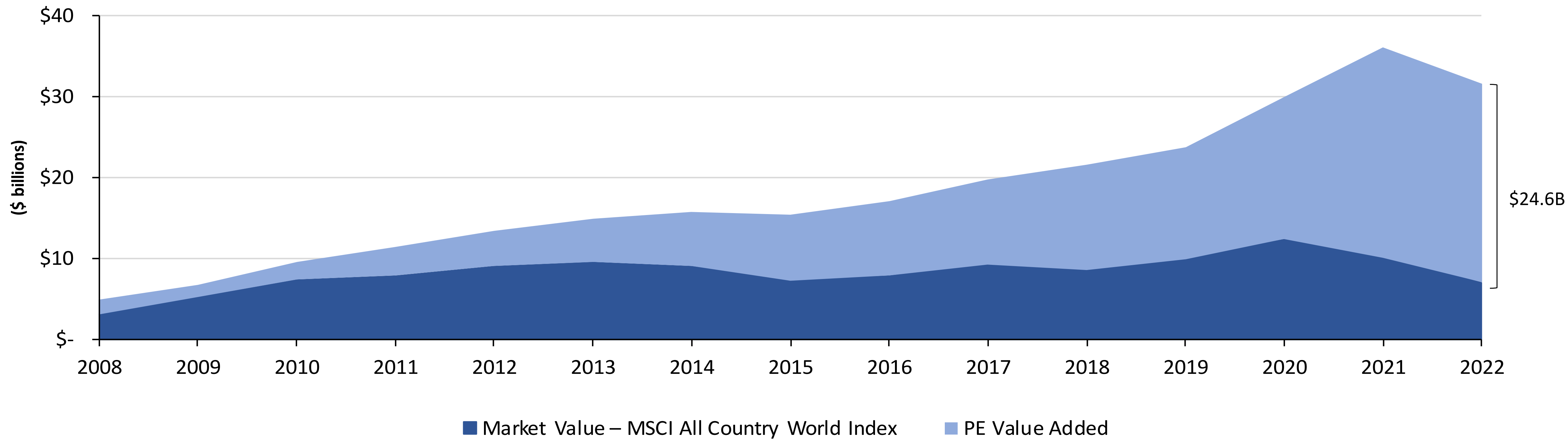
Source: State Street as of 12/31/22

Performance

PE Value Added

- $24.6 billion of value added over the public benchmark (MSCI All Country World Index) through 2022
- Since inception alpha versus MSCI All Country World Index: 622 bps

PRIVATE EQUITY PERFORMANCE RELATIVE TO PUBLIC MARKETS



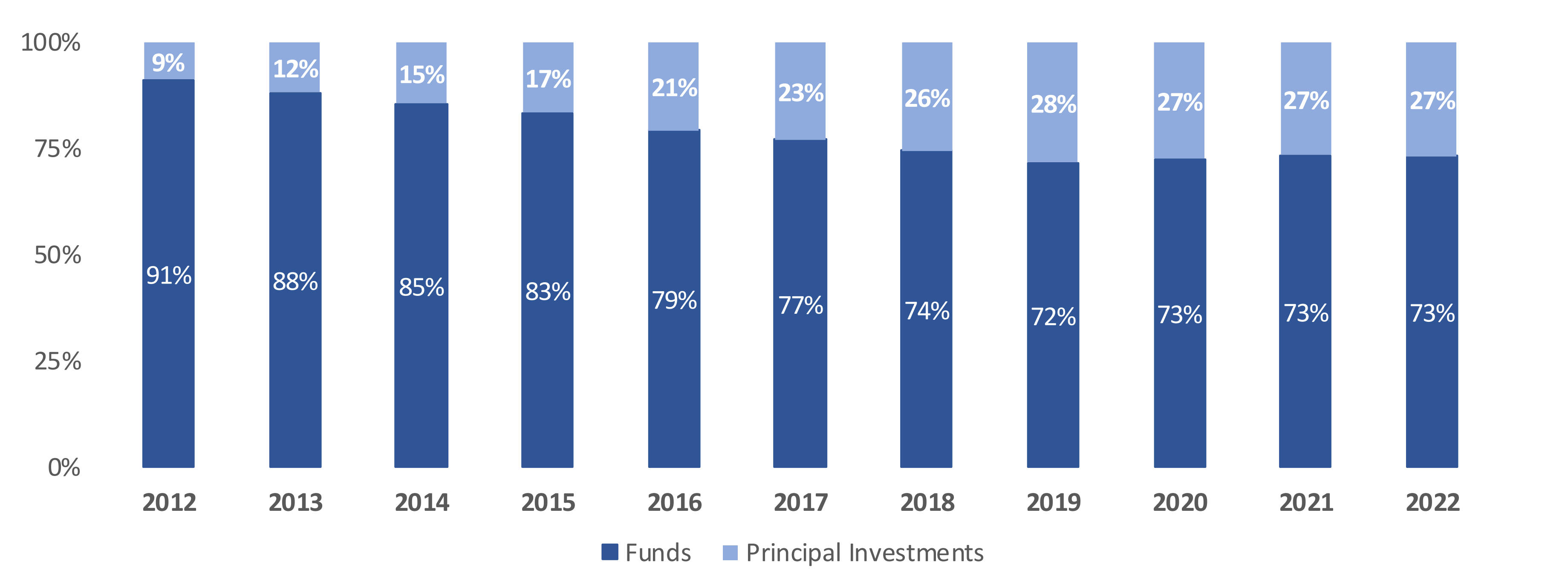
Source: State Street as of 12/31/22
Note: Public Market values calculated by assuming investments were made in the MSCI All Country World Index in the same size and timing as TRS Private Equity cash flows

Performance

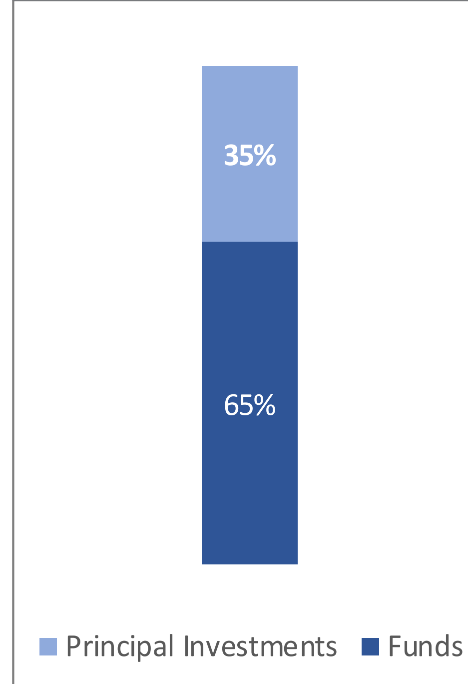
PE Principal Investments Program

- PE continues to focus on Principal Investments with increased transaction volumes through innovative structures

PRINCIPAL INVESTMENT MARKET VALUE OVER TIME



TARGET



Source: State Street as of 12/31/22
Note: Target is long-term target for Principal Investments

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Spotlight – Increasing Allocation Down Market in the U.S.

PE Portfolio	Prior Target %	Δ	Current Target %
U.S. Mega Buyout	30-35%	↓	12.5%
US Large	12.5-17.5%	↑	25.0%
US Small/Mid	12.5-17.5%	↑	20.0%
Europe Buyout	15-20%	=	17.5%
Asia / RoW Buyout	10-12.5%	↓	7.5%
Venture Capital	12.5-17.5%	=	17.5%
Credit	0.0%	=	0.0%
Total	100%		100.0%

Comments on U.S. Buyout Allocation Changes

- Targeting our highest allocation to U.S. Large where returns have been accretive to benchmark and where TRS can be a meaningful LP
- Increasing Small/Mid to try and capture highest historical average returns and alpha in U.S. buyout market

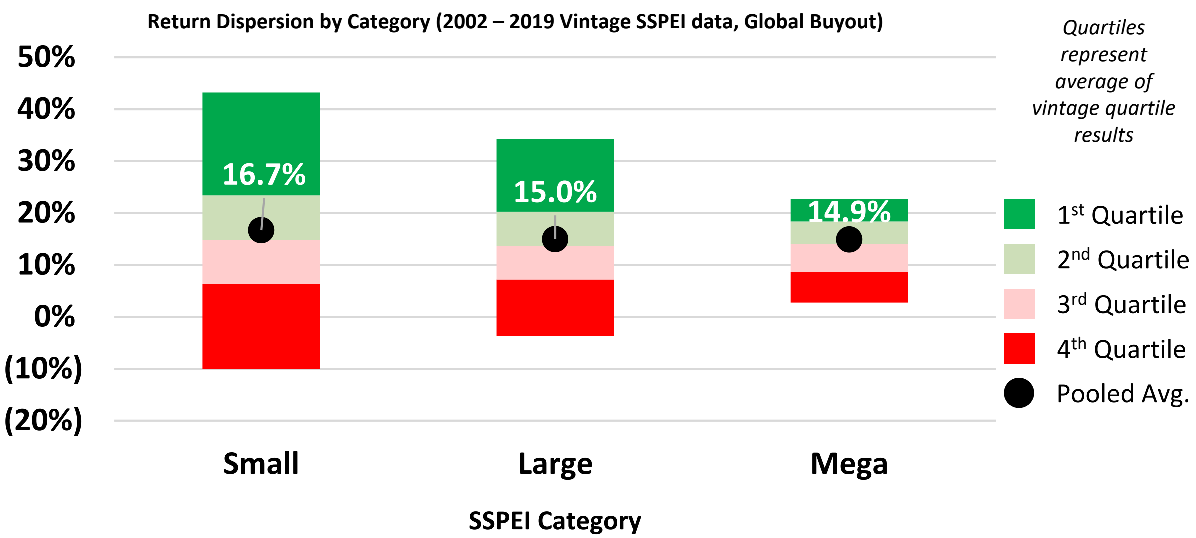
TRS Teacher Retirement System of Texas Investment Management Division

Note: SSPEI Small/Mid, Large, and Mega buyout refer to fund sizes <$3B, $3B-$9.99B, and >=$10B, respectively

Spotlight – Increasing Allocation Down Market in the U.S. (cont.)

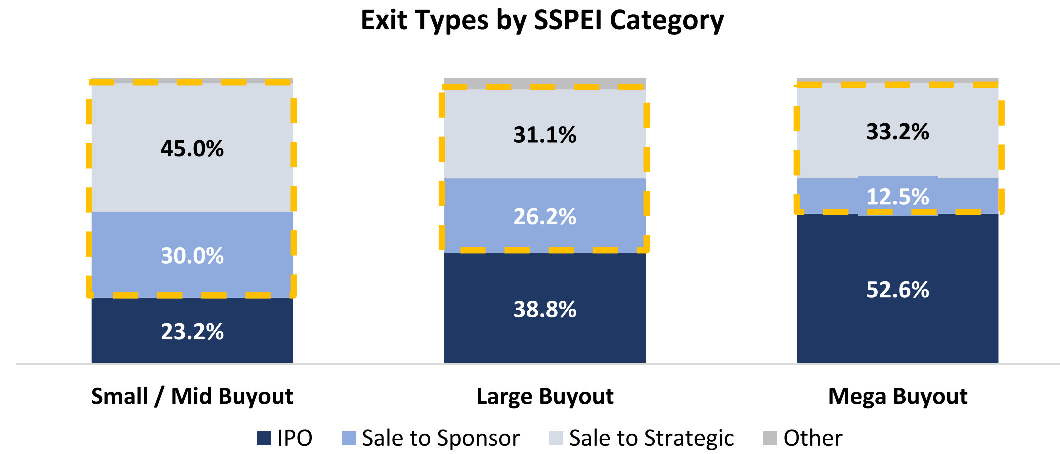
Small and Middle Market buyout strategies offer TRS an attractive alternative to its traditional overweight to Large/Mega end of market

Higher Average Returns and Wider Quartile Dispersion

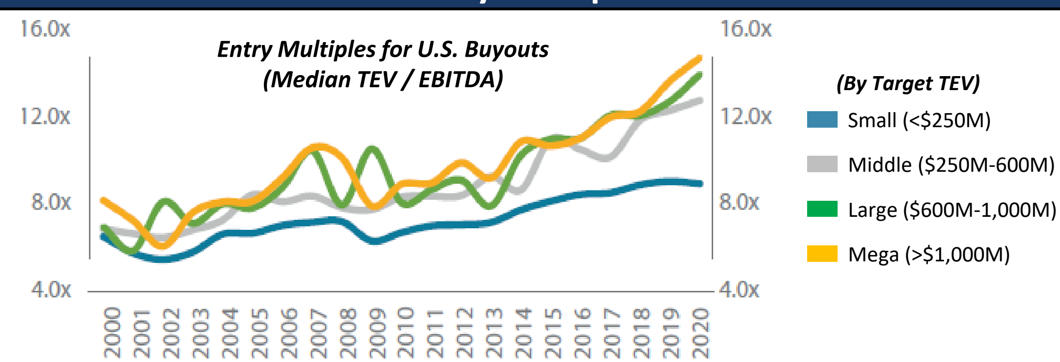


More Optionality for Targets at Exit

Investing in smaller targets allows for a larger base of strategic and financial buyers and reduces reliance on using the IPO markets for exits.



Lower Median Entry Multiples Down Market



Key Considerations

Higher Dispersion	The wider range of outcomes requires a greater reliance on manager selection to avoid 4th quartile funds
Resource Allocation	The higher manager/fund count required at the lower end of the market require greater allocation of team resources to manager sourcing and ongoing portfolio management

Sources: SSPEI as of 9/30/2022, Stepstone, Estimate based on TRS portfolio company information

Note: Top left quadrant, SSPEI Small and Large categories refer to buyout partnerships not offered by Mega firms with typical deal sizes of <$500M and >$1B, respectively. Mega buyout partnerships reflect firms that participate in the largest deals, regardless of fund size. SSPEI "Mid" category (typical deal sizes of $500M - $1B) is included evenly between Small and Large categories

Note: Top right quadrant, SSPEI Small / Mid, Large, and Mega buyout refer to fund sizes <$3B, $3B-$9.99B, and >=$10B, respectively

Summary: Accomplishments and Priorities

PE

2022 Accomplishments

- Performance
  - PE performance was negative in 2022, but substantially outperformed public markets
  - Q4’22 quarterly return was back to positive returns and exceeded the SSPEI by 78bps
  - Exceed the median performance of peer set (TUCS) by >200bps on a three-year basis and by >400bps on five-year returns
- Team
  - Repeat Award winner of the Best LP (Global PE >$10bn) by Private Equity Exchange
  - Scott Ramsower appointed Vice Chair of ILPA
- Capital Plan Impact
  - Approximately $3.4 billion
    - $2.4 billion to Funds
    - $0.9 billion to Principal Investments
    - $0.1 billion to Emerging Managers

2023 Priorities

- Portfolio Construction Refresh
  - Update PE sub-strategy allocation targets, manager counts, Funds average check sizes
- Streamlined Approval for EPM Funds
  - Propose alternatives for IIC to authorize EPM asset class investment committees to approve certain funds
- Active Portfolio Management
  - Complete CFO readiness
  - Further develop strategic view on other value-add active management capabilities

TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Source: Performance data from State Street as of 12/31/22; TUCS as of 3/31/23

APPENDIX

TRS Organizational Chart

Private Equity Team


Neil Randall*
Managing Director
BBA, Texas A&M
MS, Texas A&M

FUNDS


Scott Ramsower*
Head of Funds
Director
BBA, Texas A&M

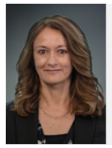

Kaitlin Miles*
Director
BBA, University of Richmond


Caitlyn Macdonald
Principal
BA, Williams College

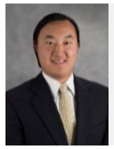

Layne Johnson
Principal
BA, Yale University

PRINCIPAL INVESTMENTS

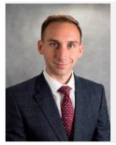

Michael Lazorik*
PI Head / Technology
Director
BBA, UT Austin

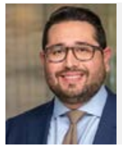

Tamara Polewik*
PI Head / Consumer
Director
BA, Dartmouth College
MBA, University of Chicago

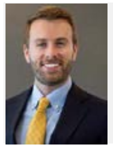

Will Carpenter, CFA*
PI Head / Industrials
Director
BBA, Texas A&M
MS, Texas A&M


Justin Wang*
Director
BBA, UT Austin

TRICOT**

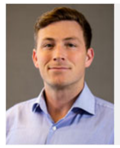

Mikhael Rawls, CFA
Funds Lead TRICOT
Director
BA, Harvard University


Pierre Duran
Associate Principal
BS, University of Central Florida


Kent Zier
Associate Principal
BS, University of Notre Dame


Matt Waldbaum
Associate Principal
BS, Miami University FSB
MBA, Northwestern University


Stephen Y. Kim
Associate Principal
AB, Brown University


Benjamin Bayles
Associate Principal
BA, Washington & Lee University


Ryan Voves
Associate Principal
BBA Finance, University of Iowa


Audrey Li, CFA
Associate Principal
BS, Beijing Jiaotong Univ.
MBA, University of Pennsylvania

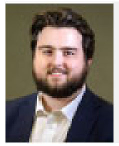

D'Oncee Brockington
Associate
BBA, UT Austin


Alexandra Wildeson
Associate
BBA, Southern Methodist University

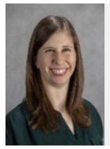

Aaron Duke
Associate
BS, Baylor University
MBA, Jones Graduate School of Business


Jake Melville
Sr. Analyst
BA, Denison University


Ethan Uecker
Sr. Analyst
BS, University of Oregon


Kyle von Kreisler
Sr. Analyst
BBA, UT Austin

Team members work across Funds & Principal Investments


Beth Booker
Assistant
BA, Ursuline College
MLIS, Kent State University

Note: Benjamin Bayles will transition to the TRICOT office in September 2023
** Private Equity Investment Committee (PEIC) members; PEIC also includes Eric Lang*
*** TRICOT is TRS' London office*

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Real Estate

Grant Walker, Senior Director

July 2023

TEACHER RETIREMENT SYSTEM OF TEXAS
INVESTMENT MANAGEMENT DIVISION

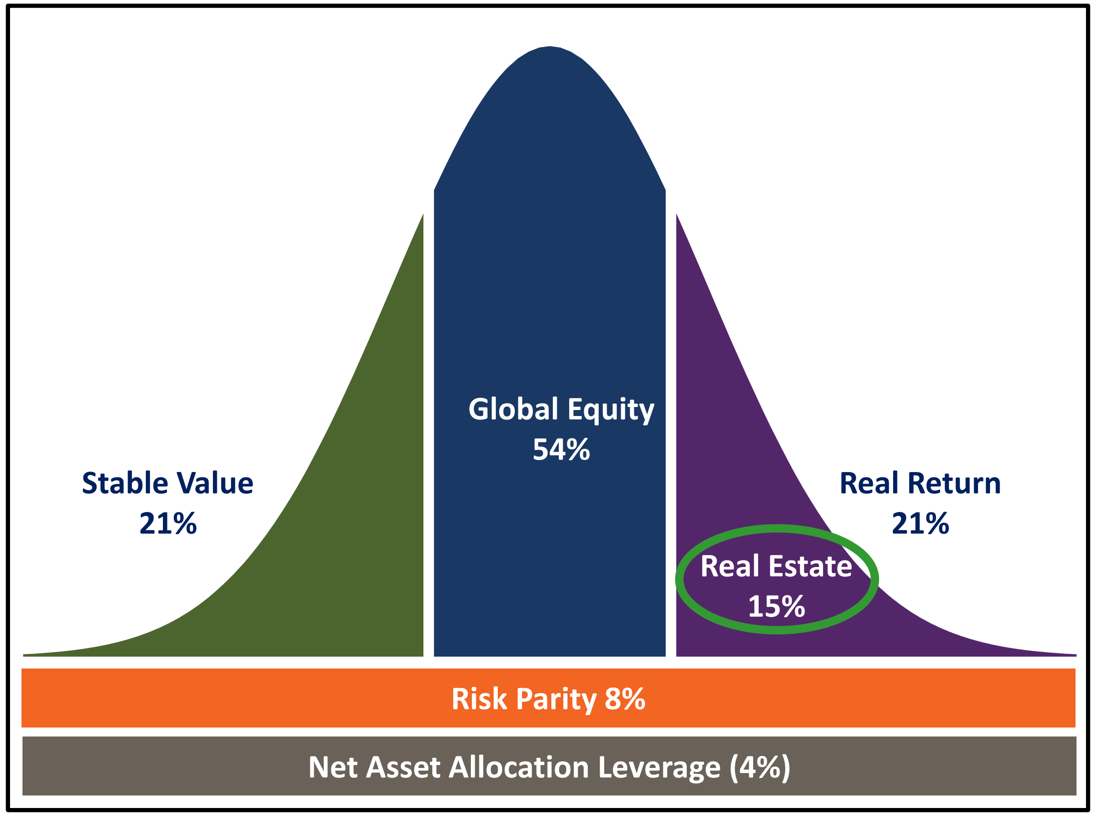
Overview

- Real Estate in the Trust
- 2022 Performance
- Capital Plan
- Spotlight – Office Environment
- Accomplishments and Priorities

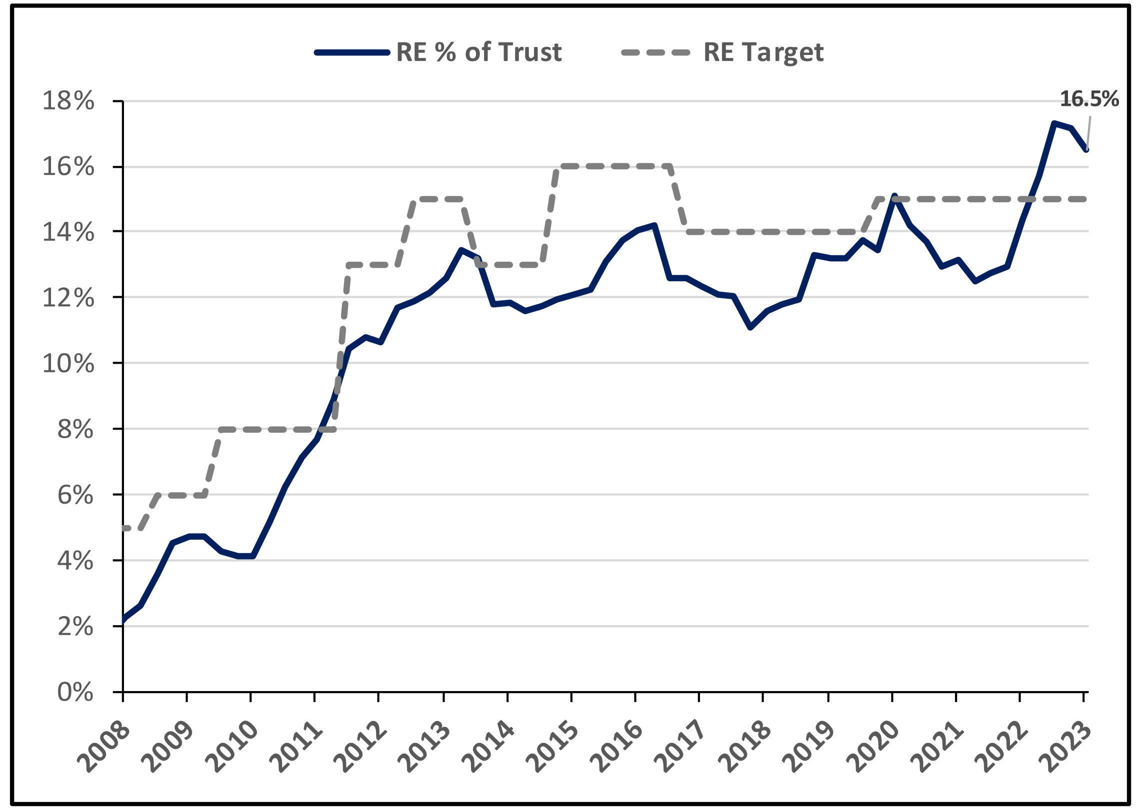
Role in the Trust

Real Estate (RE)

RE TARGET % OF TRUST



HISTORICAL TRUST ALLOCATION



Source: State Street as of 3/31/23

Note: Per the TRS Investment Policy Statement, target allocation weights represent transitional benchmarks (2006-2014), long-term target allocations (2015-present)

Performance Summary
($M)

PORTFOLIO PERFORMANCE			
Asset Class	**1 Year Return**	**3 Year Return**	**5 Year Return**
Real Estate IRR	6.2%	11.8%	10.8%
Real Estate TWR	6.4%	12.0%	10.7%
Real Estate Benchmark	6.6%	9.0%	7.7%
Real Estate Excess Return	(0.2%)	3.0%	3.0%
TUCS Peer (Percentile)	21st	9th	9th

PORTFOLIO GROWTH			
Real Estate ($ millions)	**1 Year**	**3 Year**	**5 Year**
Ending Value	$30,213	$30,213	$30,213
less Starting Value	28,610	22,491	17,351
less Contributions	5,040	13,605	25,244
plus Distributions	5,173	14,667	24,670
Investment Return	**$1,736**	**$8,784**	**$12,288**

FUNDS AND PRINCIPAL INVESTMENT PERFORMANCE										
Portfolio	**Market Value**	**% of Portfolio**	**No. (active)**	**1-Year TWR**	**3-Year TWR**	**5-Year TWR**	**1-Year IRR**	**3-Year IRR**	**5-Year IRR**	**SI IRR**
Funds	$14,497	48.0%	155	5.2%	10.1%	9.1%	6.0%	10.6%	9.5%	7.7%
Principal Investments	15,716	52.0%	111	6.4%	13.5%	12.3%	6.3%	13.0%	12.2%	14.8%
Total	**$30,213**	**100%**	**266**	**6.4%**	**12.0%**	**10.7%**	**6.2%**	**11.8%**	**10.8%**	**9.7%**

PORTFOLIO STRATEGY SUMMARY								
Strategy	**Target Portfolio Weight**	**RE Portfolio Leverage**	**% of Portfolio**			**Investment Returns**		
			12/31/2022	**12/31/2019**	**Change**	**1-Year IRR**	**3-Year IRR**	**SI IRR**
Core	35% - 45%	33.6%	29.2%	33.5%	(4.3%)	13.4%	13.8%	11.1%
Value Add	10% - 15%	53.3%	16.4%	13.3%	3.1%	(0.6%)	4.6%	6.7%
Opportunistic	30% - 40%	47.8%	45.2%	37.4%	7.8%	6.3%	14.9%	9.6%
RASS	10% - 15%	61.4%	9.0%	15.2%	(6.2%)	(3.0%)	6.3%	11.3%
Other Real Assets	0.0%	0.0%	0.2%	0.6%	(0.4%)	(13.5%)	7.8%	1.7%
REAL ESTATE TOTAL	**100%**	**47.1%**	**100.0%**	**100.0%**	**0.0%**	**6.2%**	**11.8%**	**9.7%**

Source: State Street based on 12/31/22 valuations; TWR and TUCS as of 3/31/23
Note: Inception date of RE portfolio is April 2006
Note: Currency hedges and legal fees are included in the total aggregate IRR and TWR performance
Note: RE Portfolio Leverage from General Partner reporting as of 9/30/22
Note: ODCE benchmark had 21.5% leverage as of 9/30/22

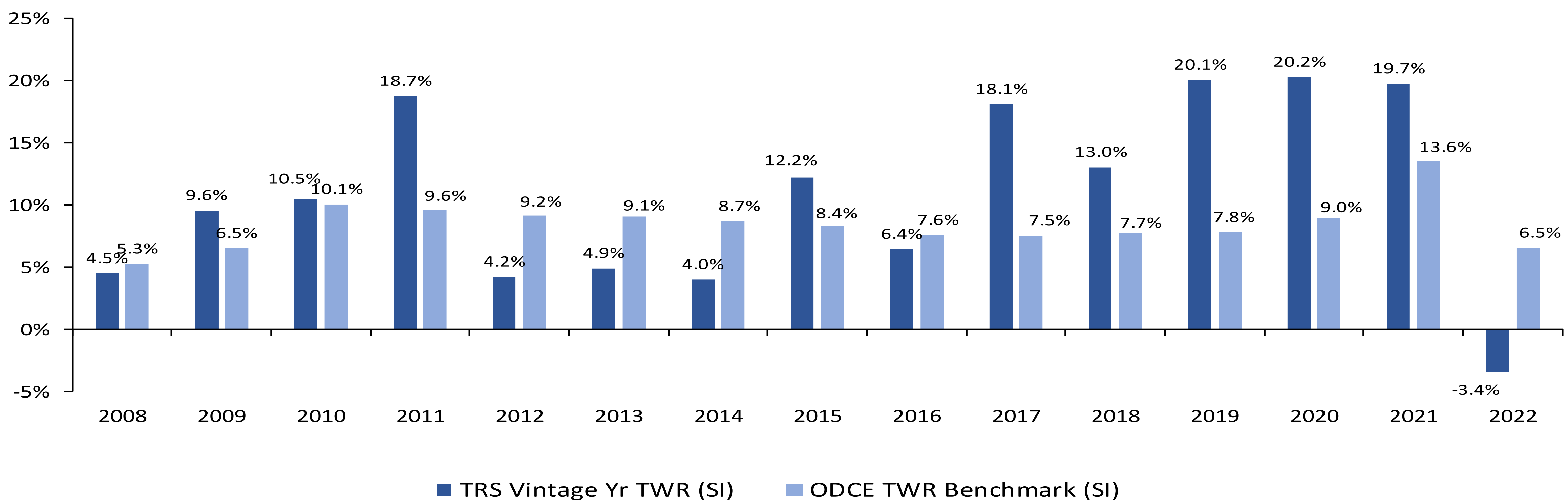
TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Performance Summary

TRS Vintage Year Comparison

- RE's vintage year investments have outperformed the benchmark 9 out of the last 15 years
- Portfolio positioning and security selection the past five years have been successful

TOTAL RE PORTFOLIO VERSUS BENCHMARK



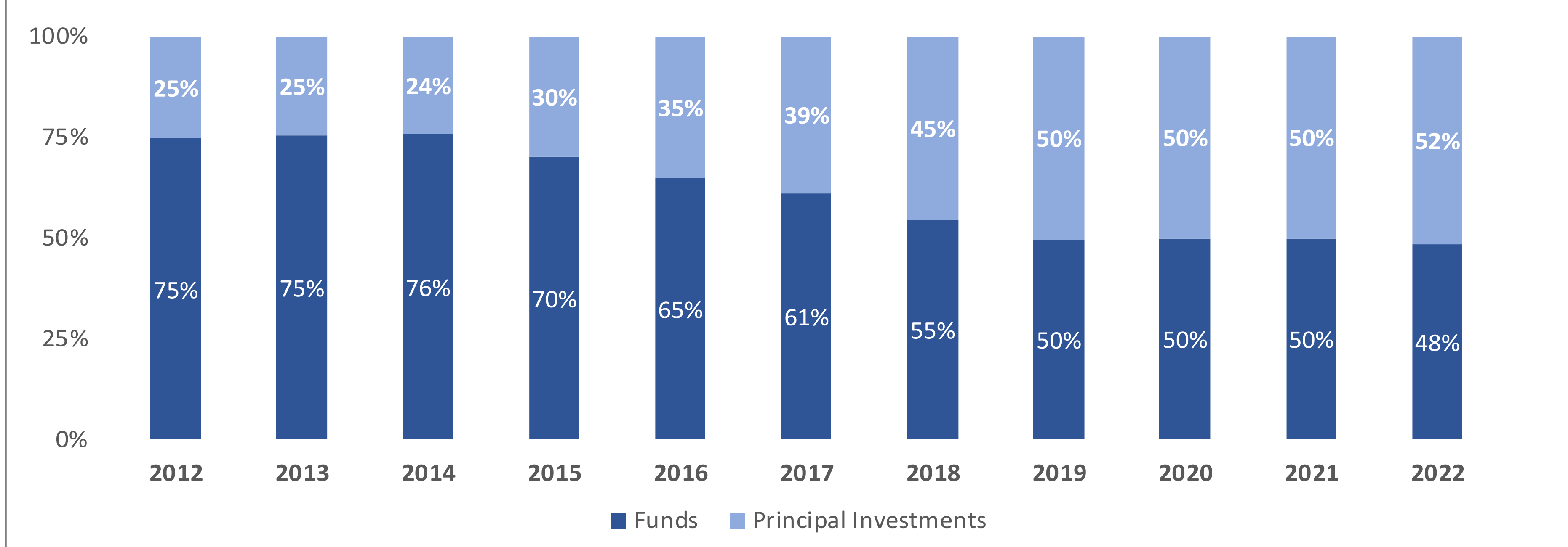
Source: State Street and NCREIF data as of 12/31/22
Note: The TRS Real Estate Benchmark is NFI-ODCE, which is a capitalization weighted, open-end, diversified core equity real estate index

Performance

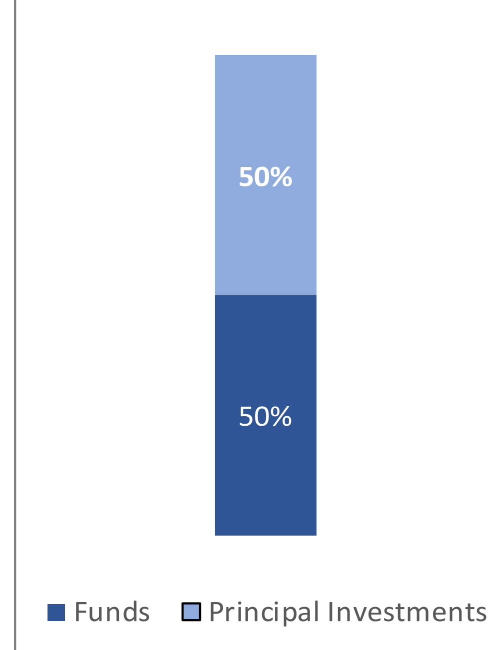
RE Principal Investments Program

- RE has maintained its target allocation of 50% Funds and 50% Principal Investments
- Committed approximately $2.3 billion to Principal Investments in 2022

PRINCIPAL INVESTMENT MARKET VALUE OVER TIME



TARGET



Source: State Street as of 12/31/22

Note: Target is long-term target for Principal Investments

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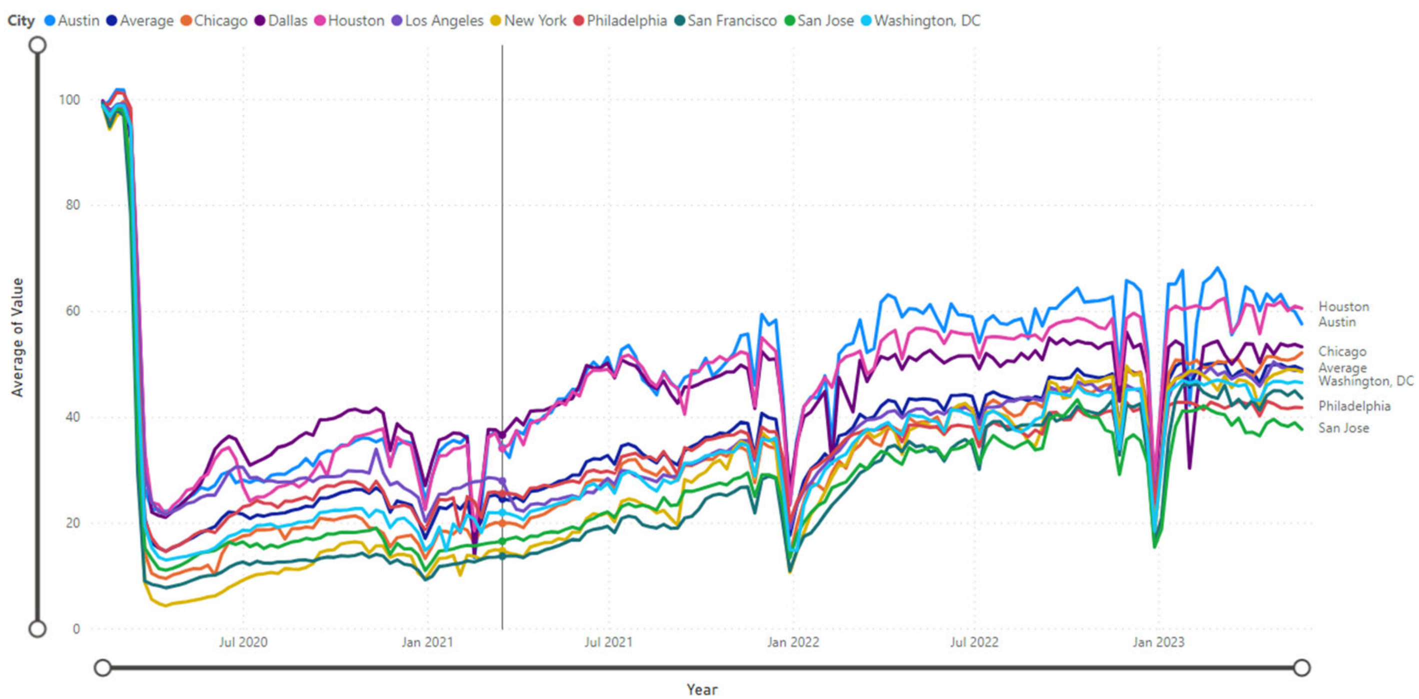
Spotlight – Office Environment

Pandemic Impact Remains A Key Negative Factor

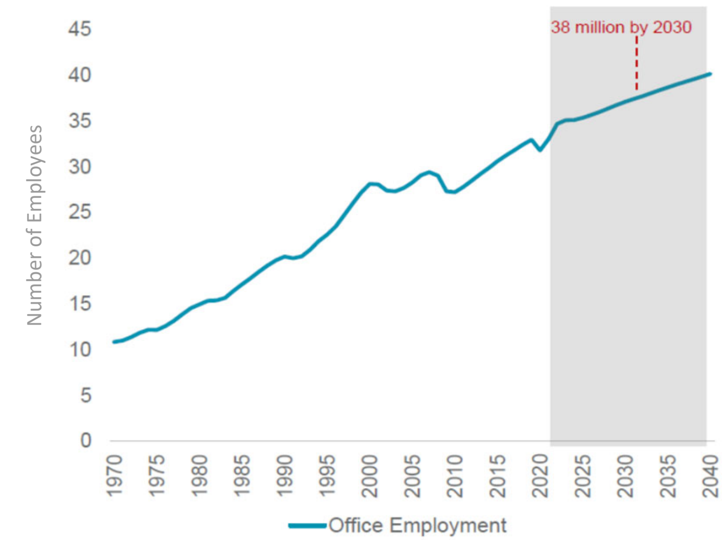
- Although office-using employment is projected to increase to 38 million by 2030, the COVID-19 pandemic caused a decline in demand for office space as many employees now work from home part time or full time
- Square Feet required per office worker has declined by ~10% since the pandemic began (190 SF to 170 SF) and is expected to continue to decline
- On average, U.S. office entries are tracking to 47.6% of pre-COVID levels, with large variations by city

U.S. Office Entries as a % of Pre-COVID



Source: Kastle Systems keycard and fob data across 3,600 buildings. Data as of April 2023.

Projected Office-Using Employment by 2030



	SF per worker	Total Demand by SF
Pre-pandemic	190	7,220,000,000
Today	170	6,460,000,000
By 2030	140	5,320,000,000

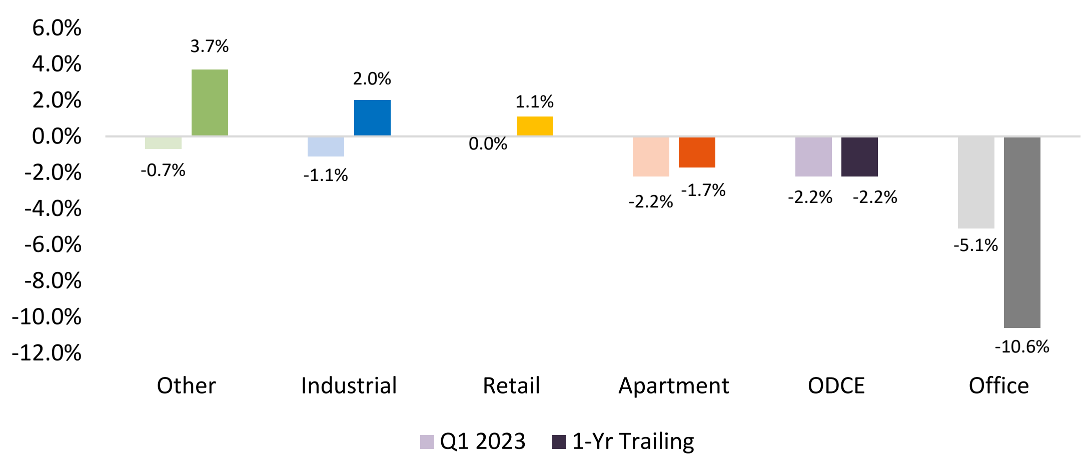
Source: Moody's Analytics, Cushman & Wakefield Research. Assumes 38 million workers.

Spotlight – Office Environment

TRS RE Portfolio Remains Under-Allocated Relative to Benchmark

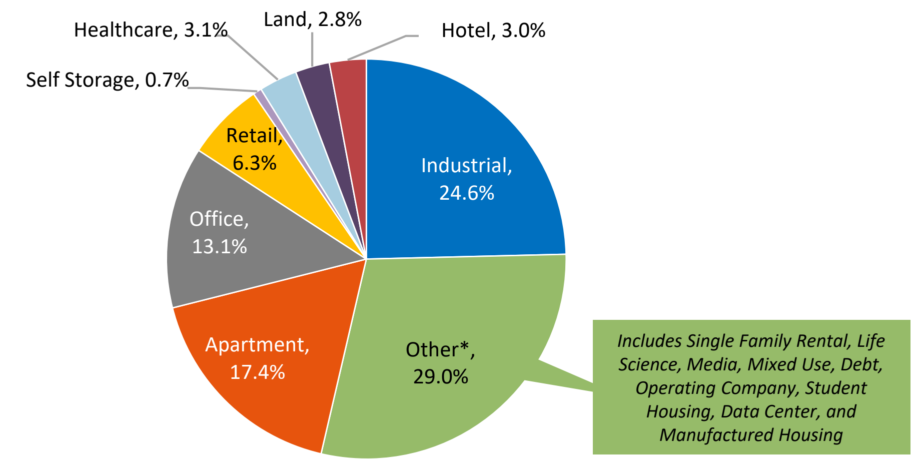
- Traditional office represents 13.1% of TRS RE portfolio, below the 21.6% allocation within the ODCE benchmark
- Increased interest rates and lower office demand have caused office valuations to decline further than other property types
- Given the underperformance of office assets, TRS's portfolio under-allocation should generate alpha

ODCE Property Type Total Return

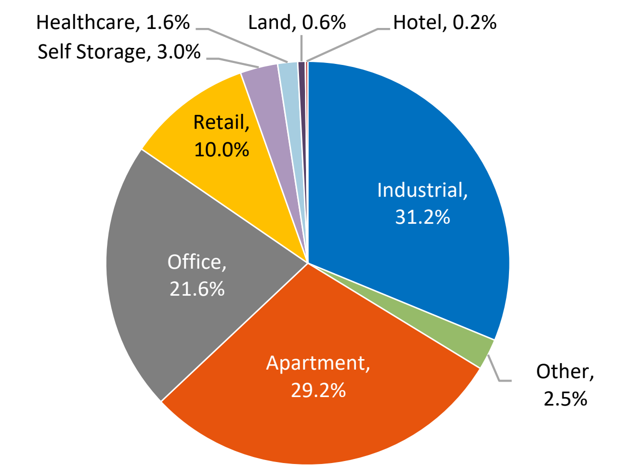


Source: IDR, NFI-ODCE. Quarterly and 1-Year Trailing gross unlevered appreciation return by property type as of Q1 2023.

Total TRS Real Estate NAV by Property Type



ODCE Allocation by Property Type



Source: PowerBI, NCREIF. TRS RE data and ODCE data as of 12/31/2022.

TRS TEACHER RETIREMENT SYSTEM OF TEXAS INVESTMENT MANAGEMENT DIVISION

Summary: Accomplishments and Priorities

RE

2022 Accomplishments

- Performance
  - TRS RE portfolio exceeded benchmark on 3-year and 5-year periods
    - TRS TWR outperformed by 300 bps over both the 3-year and 5-year periods
    - TUCS peer percentile is 9th for both periods
- Team Update
  - Hired 2 full-time team members in 2022; 1 as Associate and 1 Analyst
- Maintained allocation of approximately 50% to Funds and 50% to Principal Investments
- Capital Plan (as of 12/31/2022): Committed $4.5 billion toward a $4.6 billion plan
  - $1.9 billion to Funds
  - $2.3 billion to Principal Investments
  - $0.3 billion to Emerging Managers

2023 Priorities

- Commit approximately $1.9 billion with at least 50% in Principal Investments
- Real Estate Portfolio Framework
  - Implement long-term strategic plan for RE portfolio using current holdings data, performance attribution, and house views for major property types and alternative sectors
- Active Portfolio Management
  - Engage GPs to understand debt maturity schedule and capital needs associated with refinancing
  - Monitor impact of portfolio given broader market conditions
- Strategy Project
  - Continue to develop structured strategy and implement across the TRS RE portfolio
- Legislative Process on Title Holding Companies
  - Support legislative process to have ability to own real estate via title holding companies

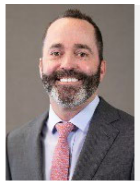
Source: State Street based on 12/31/22 valuations; TWR and TUCS as of 3/31/23

APPENDIX

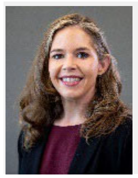
Organization

RE Team

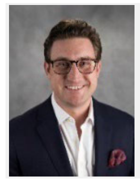
Grant Walker*
Senior Director
BBA, Baylor
MBA, St. Edwards



Craig Rochette, CFA, CAIA*
Director
BS, University of Arizona



Jennifer Wenzel*
Director
BBA, UT Austin



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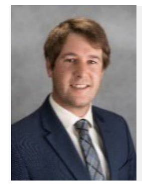

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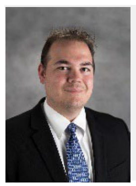

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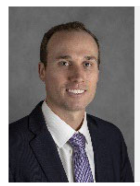

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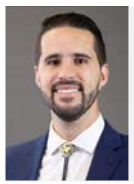

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Senior Associate
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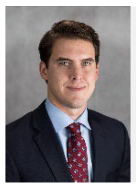

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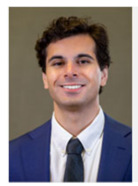

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Associate
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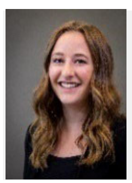

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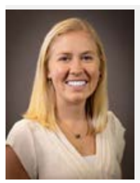

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Gracie Marsh
Program Analyst
BA, UC Davis

TRICOT**

Kimberly Carey
Director, TRICOT Lead
BA, Texas A&M

Chase Lewis
Associate
BBA, UT Austin

** Real Estate Investment Committee (REIC) members; REIC also Includes Eric Lang*
*** TRICOT is TRS' London office*

RE Strategy Definitions

Core
- Institutional quality, best-located and best-leased assets in the market in each of the traditional property types (office, multifamily, retail, industrial)
- Typical leverage is up to 50% loan-to-value (LTV)
- 35% - 45% allocation target

Value-Add
- Return-enhancing strategies executed at the property level designed to enhance value through execution of one or more of the following strategies: lease-up, rehabilitation, repositioning
- Typical leverage is 50% to 65% LTV
- 10% - 15% allocation target

Opportunistic
- Broad range of risk and return via opportunity funds, specialized investments, and mezzanine debt or equity with the majority of strategies involving some level of development or distress
- Typical leverage is 70% LTV and higher
- 30% - 40% allocation target

Real Assets Special Situations (RASS)
- Publicly traded shares of listed REITs (Real Estate Investment Trusts) and REOCs (Real Estate Operating Companies) or other real asset related entities, public or private real asset debt
- 10% - 15% allocation target

Other Real Estate (ORE)
- Land and other opportunistic investments providing inflation protection with relatively low expected volatility

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Investment Policy Statement Proposed Changes

Katy Hoffman, Chief of Staff

Brad Gilbert, Senior Director

July 2023

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INVESTMENT MANAGEMENT DIVISION

Proposed Modifications to Investment Policy Statement (IPS)

Modification #	Proposed Modifications
1	Implement legislative changes
1a	Establish hedge fund limit
1b	Authorize real estate title-holding entities
2	Expand Public Markets additional allocation and termination authority to include Head of Special Opportunities
3	Reduce required Board disclosure items for Investment under Internal Investment Committee (IIC) consideration
4	Authorize derivative transactions between Trust portfolios
5	Change rating requirement for Securities Lending Agent
6	Remove security restriction
7	Expand Investment Integrity Questionnaire to add additional diligence questions
8	Clarify and clean up IPS to improve readability and clarity such as the removal of outdated footnotes or changing Chairman to Chair

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Modification #1a

Implement Legislative changes: Establish hedge fund limit

- **Proposal**
  - TRS Board of Trustees to set the limit on hedge fund investments at 15%
  - Remove reference to statutory limit on hedge fund investments at 10%
- **Rationale**
  - The 88th Legislature delegated to the TRS Board of Trustees the responsibility to determine the maximum percentage of the value of the total investment portfolio that may be invested in hedge funds
  - Setting the limit at 15% allows TRS to grow the Directional Hedge Fund (DHF) + Overlay program and create a buffer to accommodate market volatility
- **Background Information**
  - TRS has invested in hedge funds since 2001. A legislative limit of 5% was introduced in 2007 and subsequently increased to 10% in 2011. Currently, hedge fund exposure is 9%
  - Hedge funds provide diversification and access to best-in-class investment talent which help reduce overall portfolio risk and increase expected returns
  - Further expansion would be considered as part of the Strategic Asset Allocation study

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Modification #1b

Implement Legislative changes: Authorize real estate title-holding entities

- **Proposal**
  - Include title-holding entities as an additional authorized investment for the Trust and Real Estate portfolio
- **Rationale**
  - The 88^{th} Legislature clarified TRS authority by defining securities under the law to include interests in wholly-owned real estate title-holding corporations controlled by TRS
  - Enables TRS to remove third-party engagements and exert direct control for select real estate holdings and/or strategies
- **Background Information**
  - Securities law restricts the type of assets that can be held by title-holding entities. Core real estate mandates likely to be the first use of new authority
  - TRS is required to disclose address of these assets while still retaining confidentiality for details of the investment under state law

Modification #2

Add "Head of Special Opportunities" to Public Markets Portfolio Management Authority

- **Proposal**
  - Add "Head of Special Opportunities" to Article 2.6(c) & 2.6(d) of External Public Markets Portfolio Authorization in order to allow additions, termination and withdrawal authority
- **Rationale**
  - Mirrors the portfolio management authority granted to CIO, CRO, the heads of Public Markets and External Private Markets
- **Background Information**
  - Currently Head of Special Opportunities must get either CIO, CRO, Heads of Public Market, or Head of External Public Markets to authorize these Special Opportunities portfolio decisions
  - In the past, there have been few portfolio actions, but the activity has been increasing
  - Reporting of usage would continue as part of the Transparency report

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Modification #3

Reduce required Board disclosure items for Investments under IIC consideration

- **Proposal**
  - Remove two disclosure items from the list of eleven in 1.7(d)
    1. Projected TRS commitment or funding date
    2. Type of investment representation contemplated
  - Amend one disclosure item by adding "anticipated" for the name of the investment vehicle
- **Rationale**
  - These select items are difficult to predict or are often not known at the time of disclosure to the Board
  - Other key disclosure items remain such as name of investment manager, investment amount, strategy description and placement agent involvement
- **Background Information**
  - Required disclosure items are provided to the Board in the Transparency report typically ten business days before IIC consideration
  - The IMD would continue to provide the Board with an annual report of all investment representations and individuals serving in those roles

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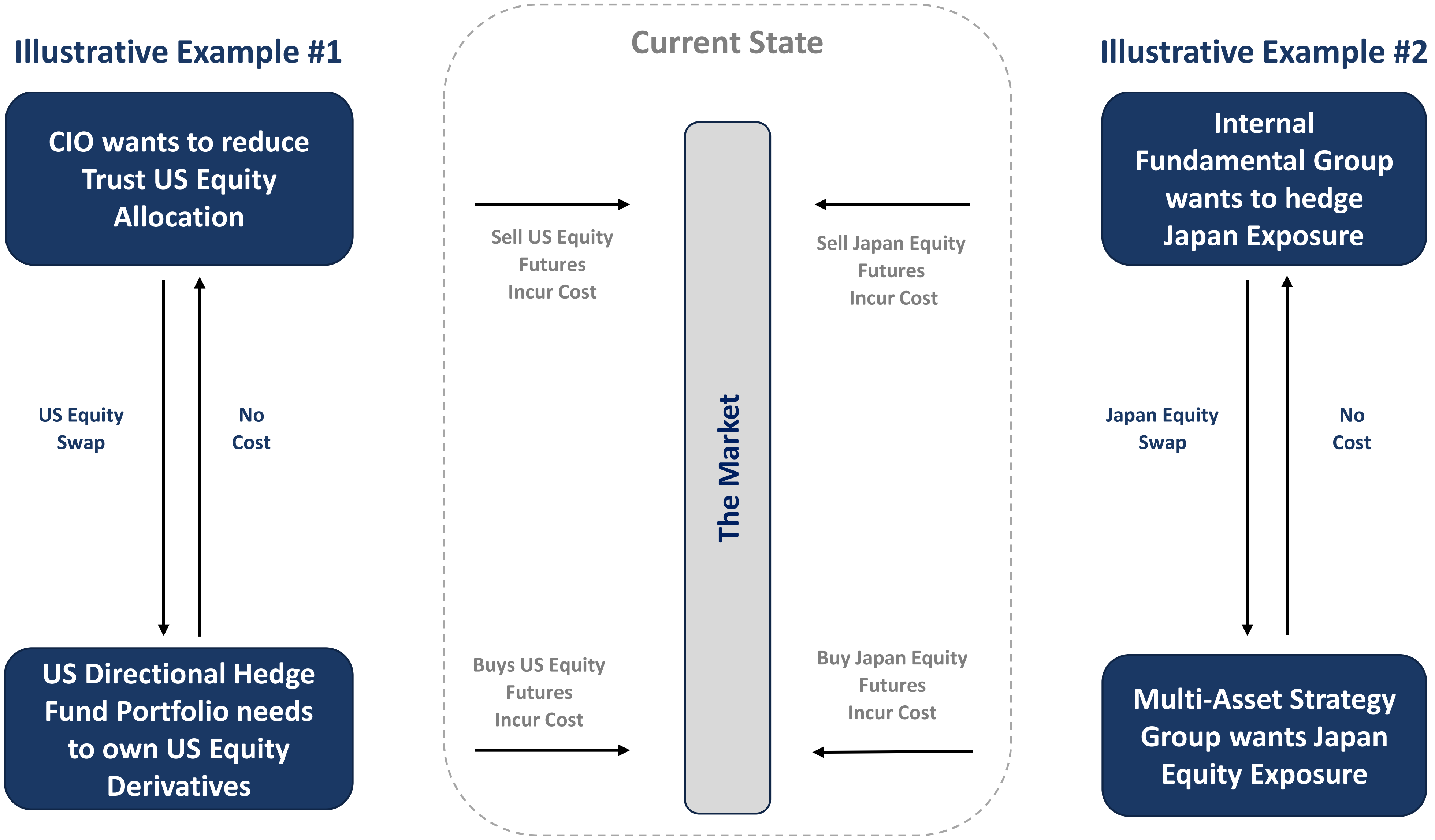
Modification #4

Authorize derivative transactions between Trust portfolios

- **Proposal**
  - Allow the Trust to execute internal Over the Counter (OTC) derivative transactions between Trust portfolios
- **Rationale**
  - Enable internal trade activity between portfolios to improve efficiency and minimize transaction costs by eliminating need for both portfolios executing trades in the market
  - Reduces need for the Trust to post cash margin or collateral with external counterparty
- **Background Information**
  - Internal trades will utilize existing workflows for market facing trades for operational and auditability purposes
  - Transactions would be captured in existing IPS required performance and risk reporting for the Board

Modification #4 continued

Authorize derivative transactions between Trust portfolios



Modification #5

Change rating requirement for Securities Lending Agent

- **Proposal**
  - Change current requirement to add bolded text. "A securities lending agent must be **either** rated A- or better by an NRSRO **or insured by an organization rated A- or better by an NRSRO and execute a securities lending agreement as required by applicable law**."

- **Rationale**
  - This change would expand the number of securities lending agents to include those who utilize other entities, such as insurance companies, to support indemnification
  - The Board selects the securities lending agent(s) and Texas Gov't § 825.303 requires an indemnification agreement be satisfactory in form and content to the Board

- **Background Information**
  - Currently State Street Bank is our only securities lending agent
  - Internal Audit recommended IMD evaluate the benefit of having multiple securities lending agents
  - Study found potential benefit of having an additional securities lending agent and TRS plans to RFP for additional securities lending agent for Board consideration

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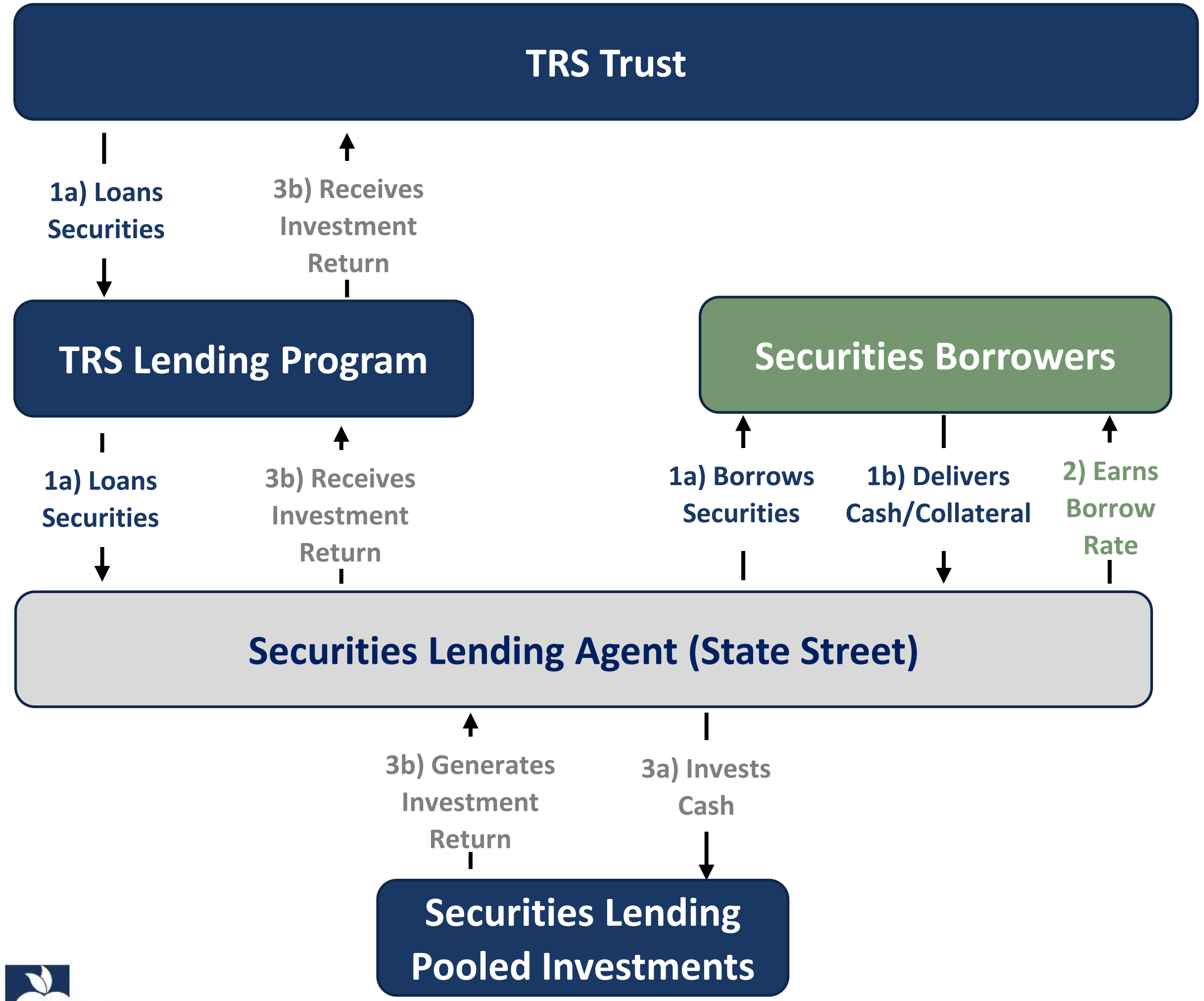
Modification #5 continued

Change rating requirement for Securities Lending Agent



- Securities Lending is the practice of loaning securities in exchange for receiving cash/collateral

  1) (a) Lender loans securities to borrower

     (b) Borrower delivers cash/collateral in return

  2) Borrower earns interest on collateral posted *("borrow rate")*

  3) (a) Cash/collateral is invested in Securities Lending pooled investments per TRS direction

     (b) Securities Lending Pool generates investment return

     - Securities lender (TRS) earns spread between investment return and borrow rate paid
     - Securities Lending agent earns a management fee and may share in investment return

- State Street indemnifies TRS for loss associated with Security Borrow default

Modification #5 continued

Change rating requirement for Securities Lending Agent

TRS Trust

1a) Loans Securities

3b) Receives Investment Return

TRS Lending Program

Securities Borrowers

1a) Loans Securities

3b) Receives Investment Return

1a) Borrows Securities

1b) Delivers Cash/Collateral

2) Earns Borrow Rate

New Unrated Securities Lending Agent

4) Buys Insurance

Insurer Rated A- or Better

3b) Generates Investment Return

3a) Invests Cash

Securities Lending Pooled Investments

- Unrated Securities Lending Agent purchases insurance from highly rated insurer to support indemnification obligation associated with Security Borrow default
- State Street would continue as a security lending agent
- TRS would segregate pools of securities for each agent to prevent overutilization

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Modification #6

Remove security restriction

- **Proposal**
  - Remove Article 1.8(e) that prohibits directly owning securities in prurient oriented companies
- **Rationale**
  - The current restriction potentially conflicts with Article 1.5, specifically the statement that, in making investment decisions, IMD will consider factors that are material to long-term returns and levels of risk
  - The impact is minimal given that a limited number of restricted securities are publicly traded, and none are in the Trust benchmarks
- **Background Information**
  - Restriction added to IPS by the Board in 2006
  - Total market capitalization of nine restricted companies is estimated to be $750mm; immaterial relative to the investible universe
  - Initial list was significantly larger and included public companies with sizeable market cap. Over the years, these companies have been acquired or gone private
    - There remains the possibility that a company of size could IPO or become a benchmark constituent

Modification #7

Expand Investment Integrity Questionnaire (IIQ) to add additional diligence questions

- **Proposal**
  - Add two questions to the IIQ about political contributions and lobbying activity in Texas
  - Clean up IIQ for improved reliability of responses and address common mistakes
- **Rationale**
  - The additional questions will increase diligence around political contributions and lobbying activities of managers that were not currently captured
  - As a result of these clarifications, we expect to receive fewer questions from managers and fewer completed IIQs with errors
- **Background Information**
  - Under pay-to-play principles and as fiduciaries, it is important to be aware of the relationships, or appearance of relationships, between entities that seek to do business with TRS and those who can influence the award of such business