

# CalPERS Trust Level Review & Annual Program Reviews

Investment Committee  
September 19, 2022

# Contents

**Market Conditions, Performance, and Key Economic Indicators**

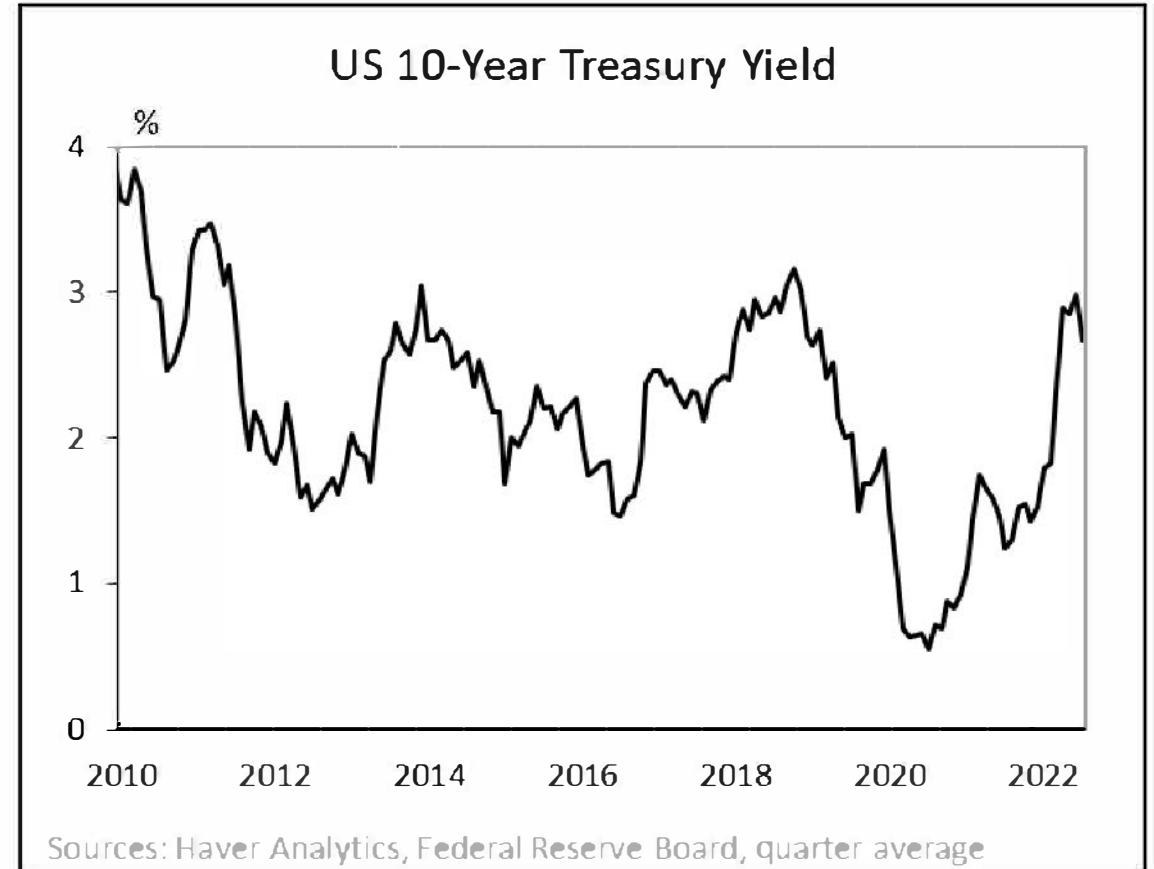
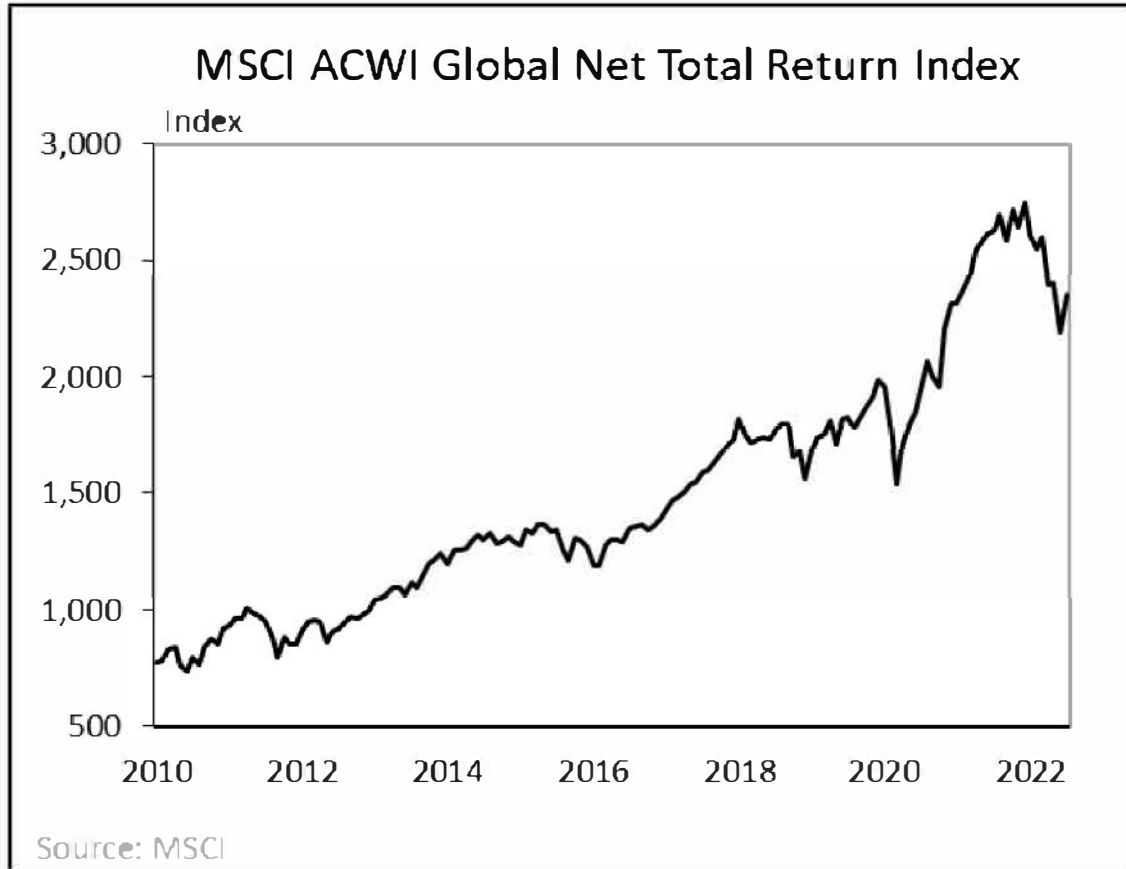
**Trust Level Highlights**

**Portfolio Structure & Annual Program Reviews**

**Appendix**

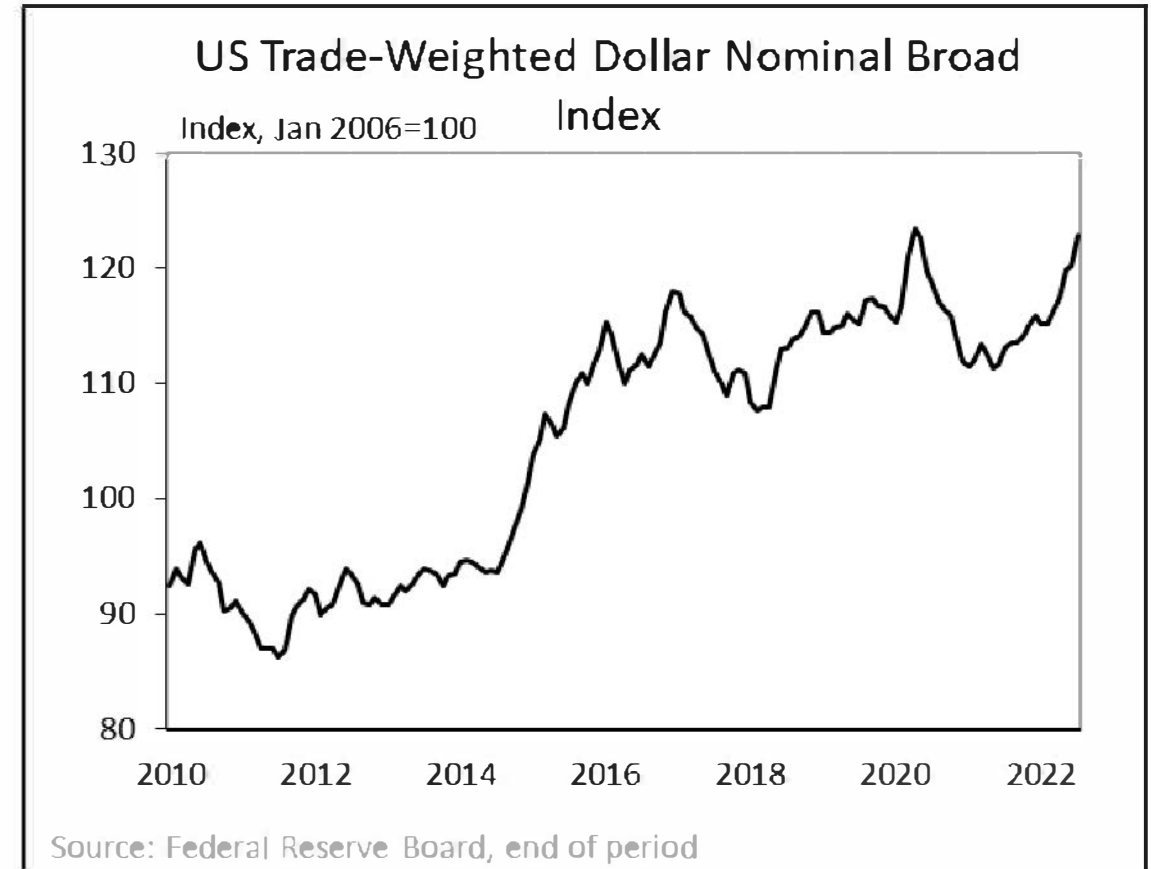
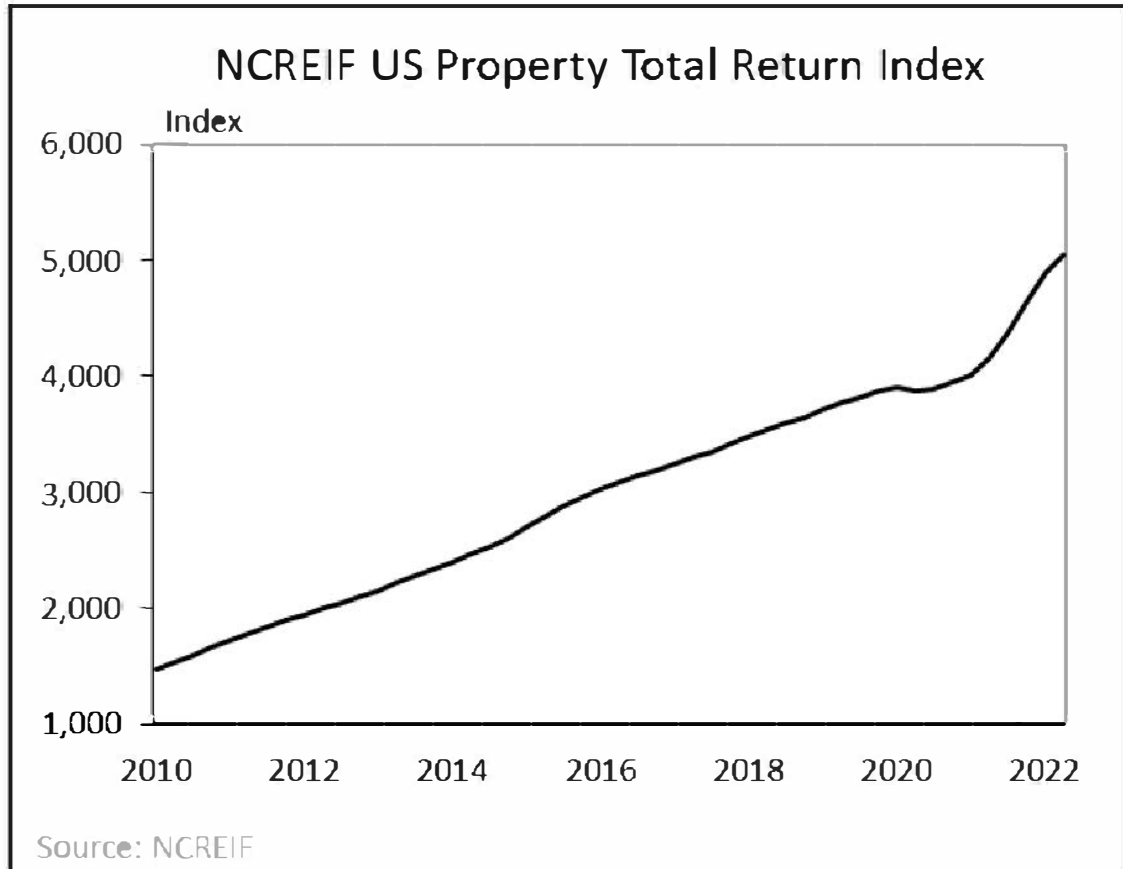
# Market Performance

## Reversal of recent gains



# Market Performance

## US macroeconomy relative outperformance



# Economic Update and Outlook

## Recent developments

- Economic activity slowing rapidly, both in the US and globally
- Inflation remains persistently high
- Policy tightening starting to have a global impact

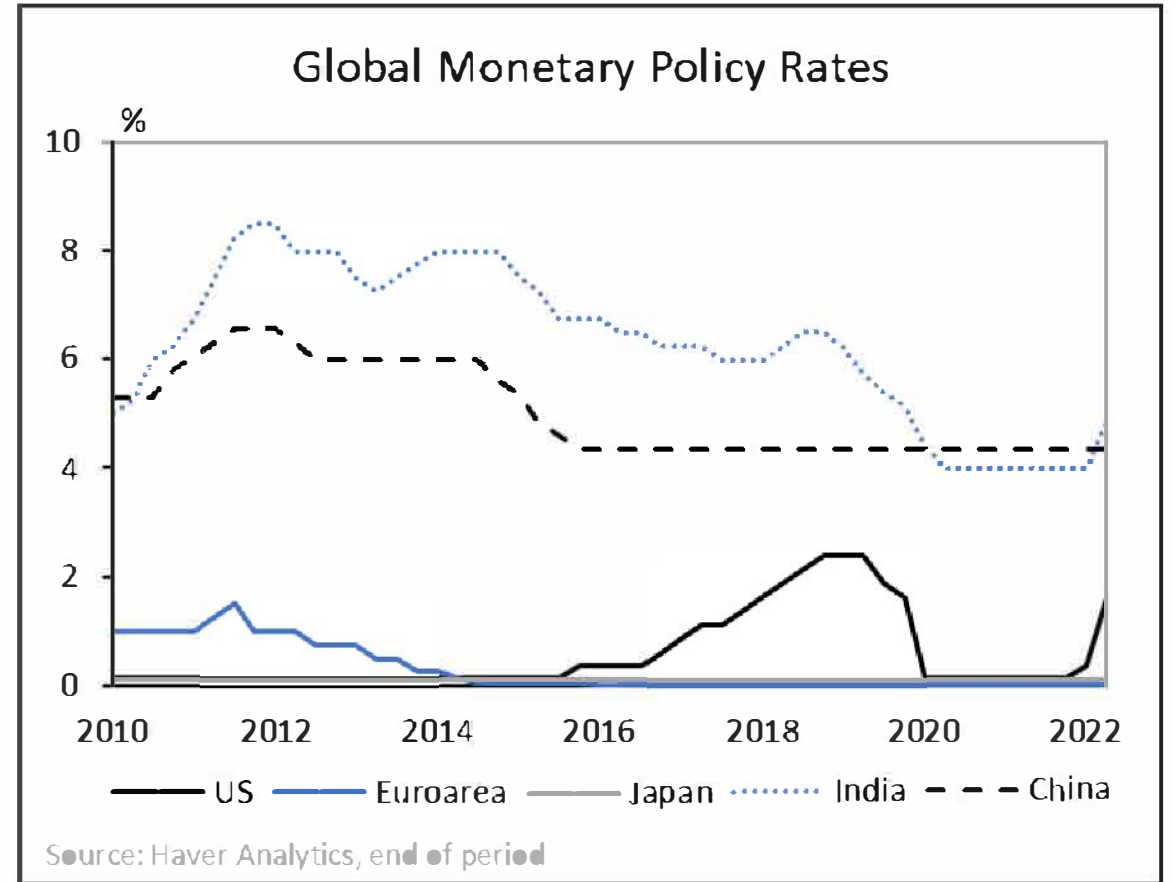
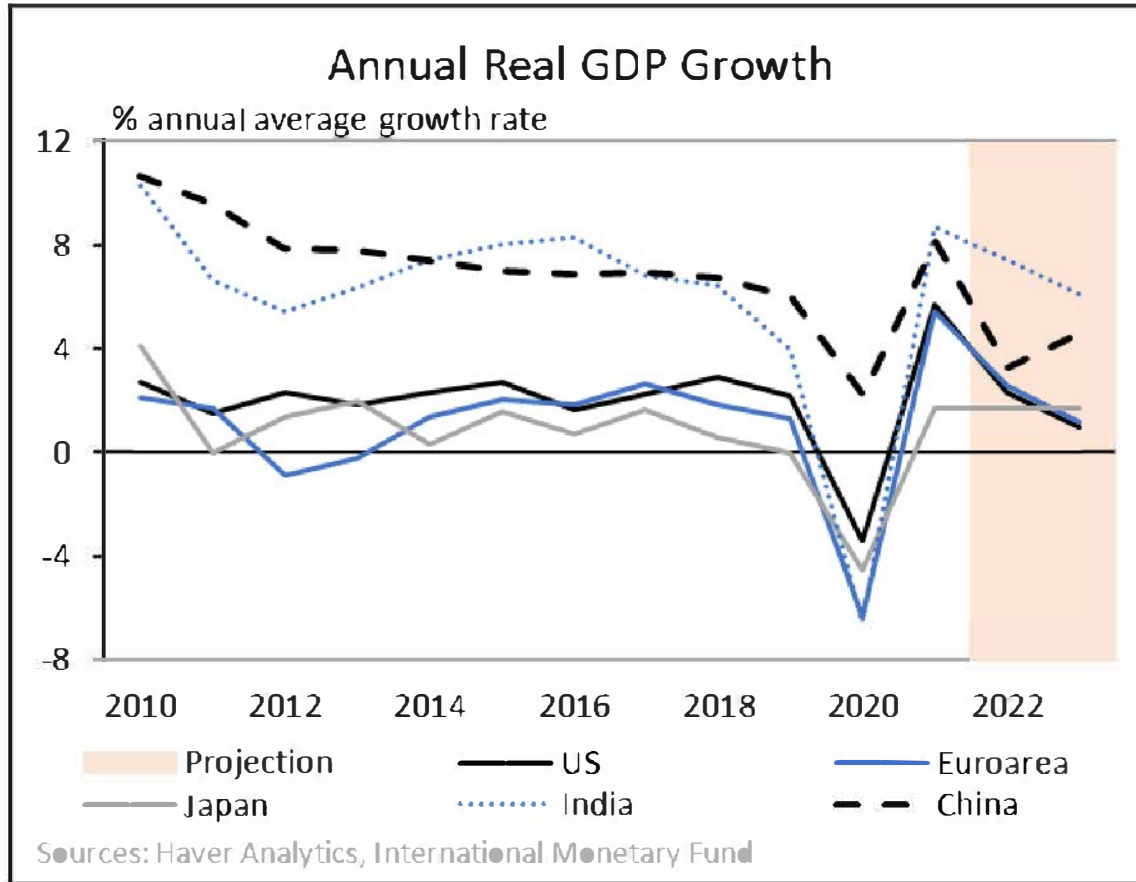
## Looking ahead

- Further policy tightening required to lean against inflation pressure
- Globally, some economies are moving towards recession
- Geopolitical tensions continue to add significant uncertainty to the outlook



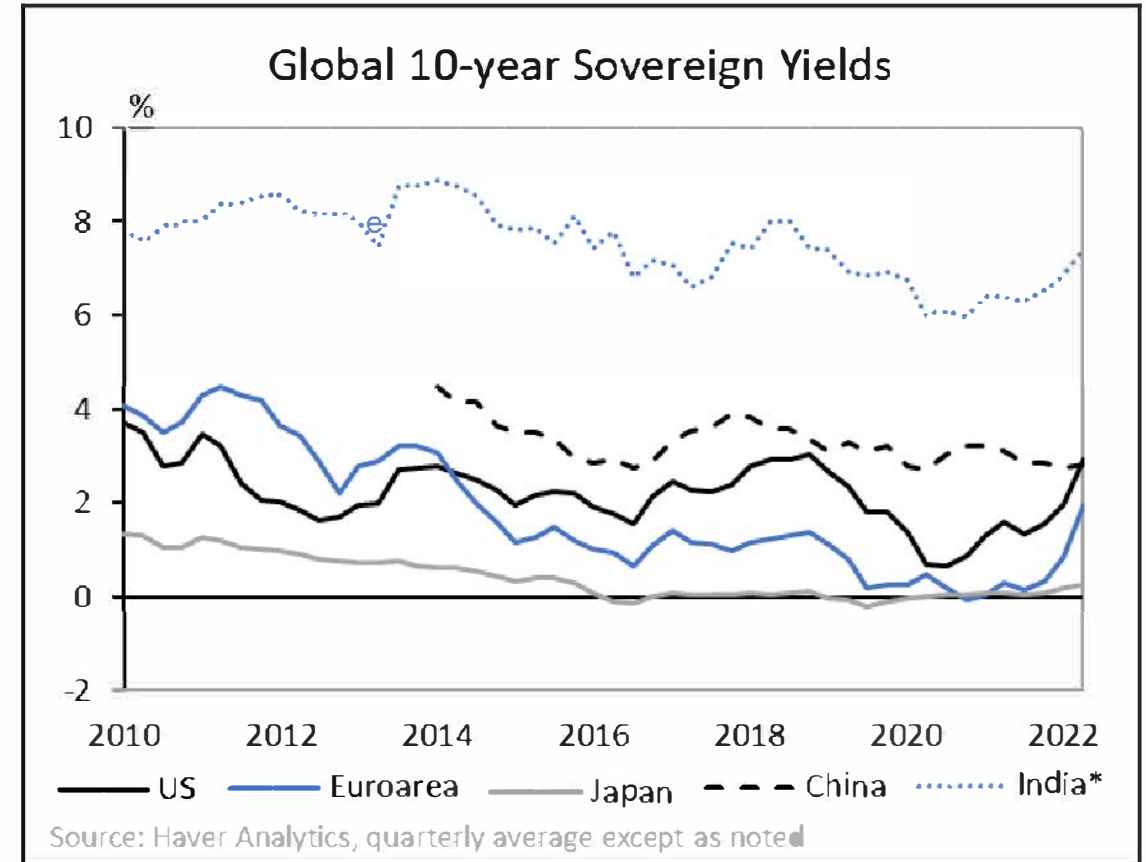
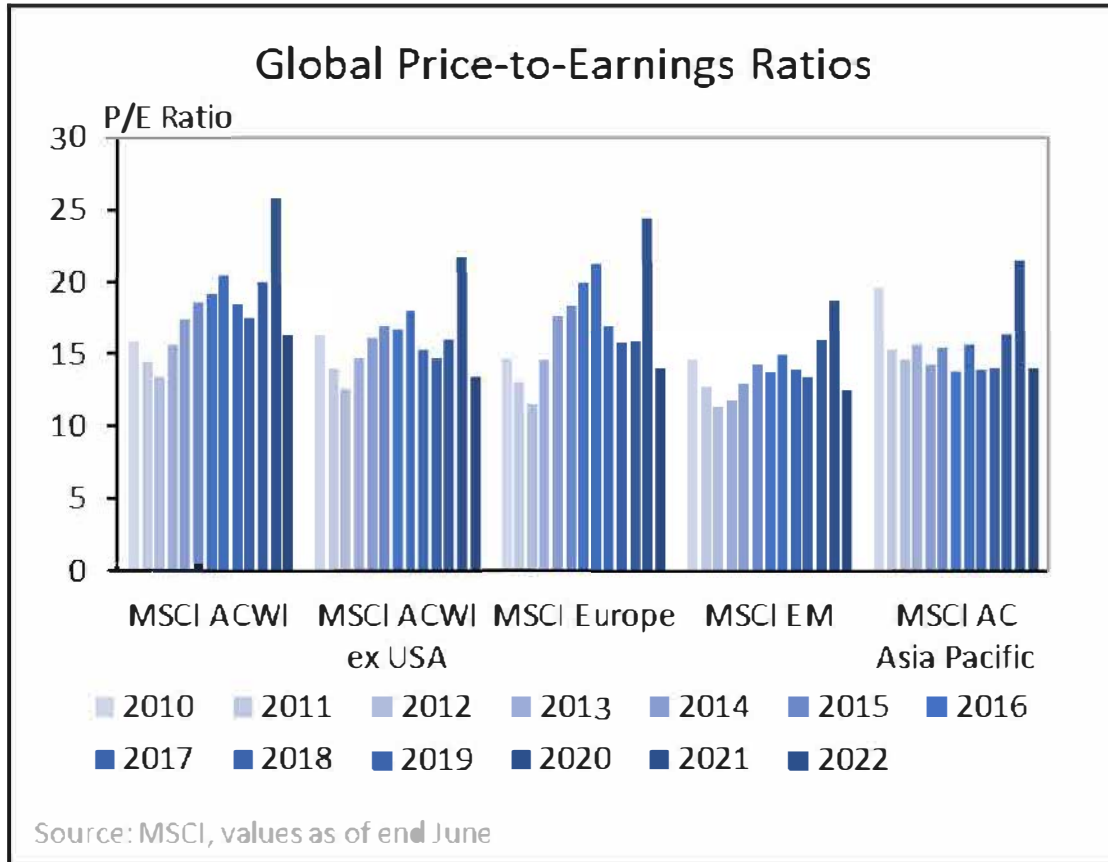
# Macroeconomic Indicators

Financial market prices point to a soft economic landing



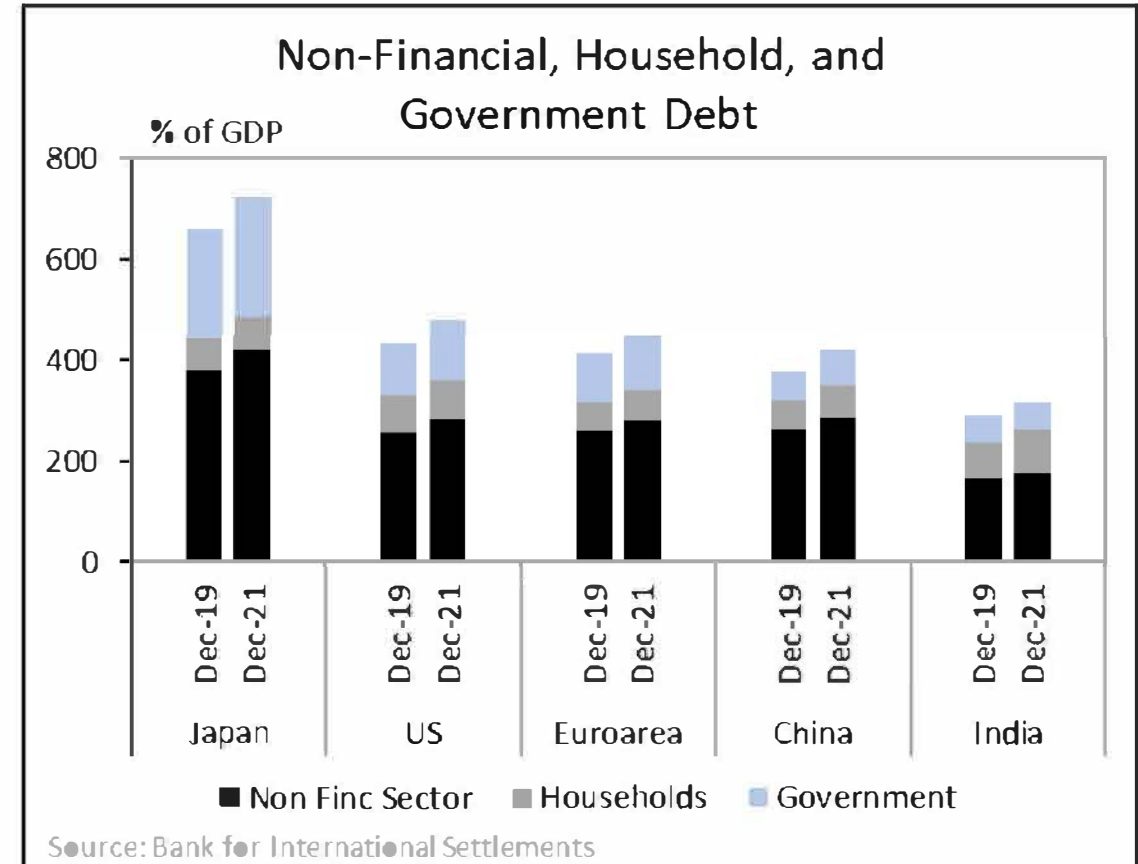
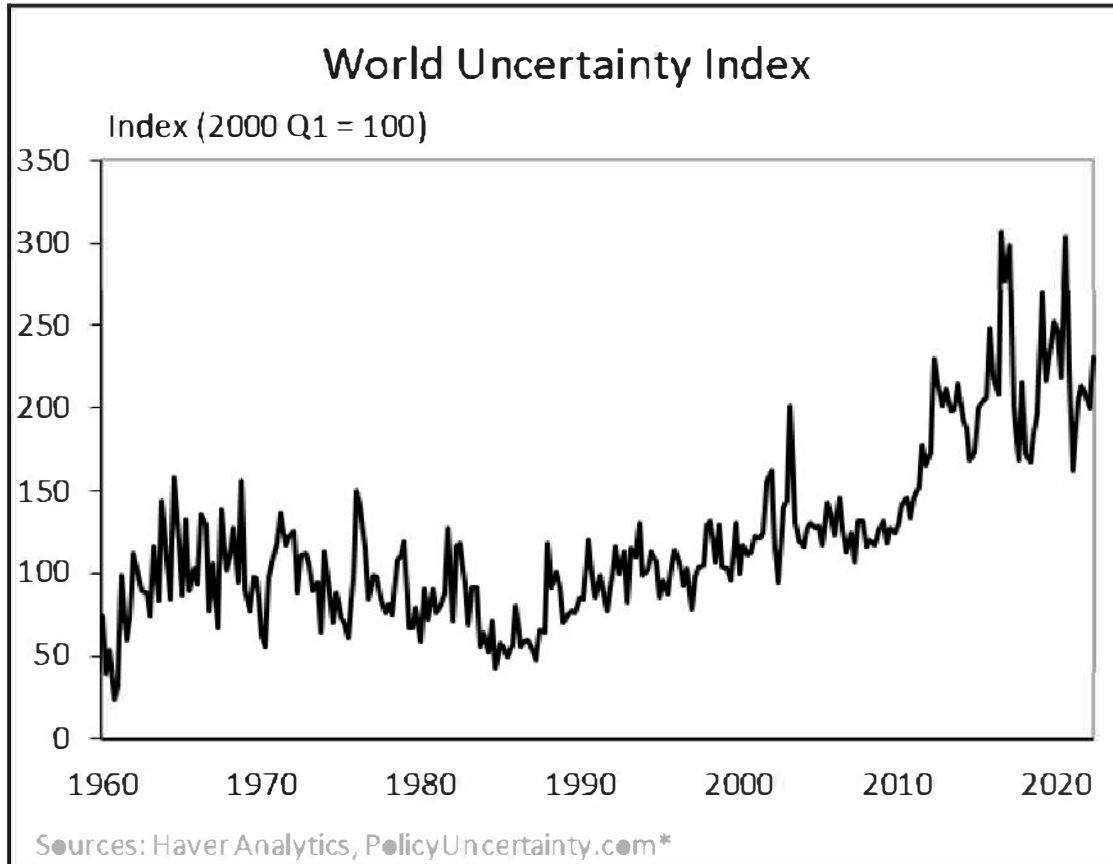
# Macroeconomic Indicators

Easing economic growth expected to revalue assets further



# Macroeconomic Indicators

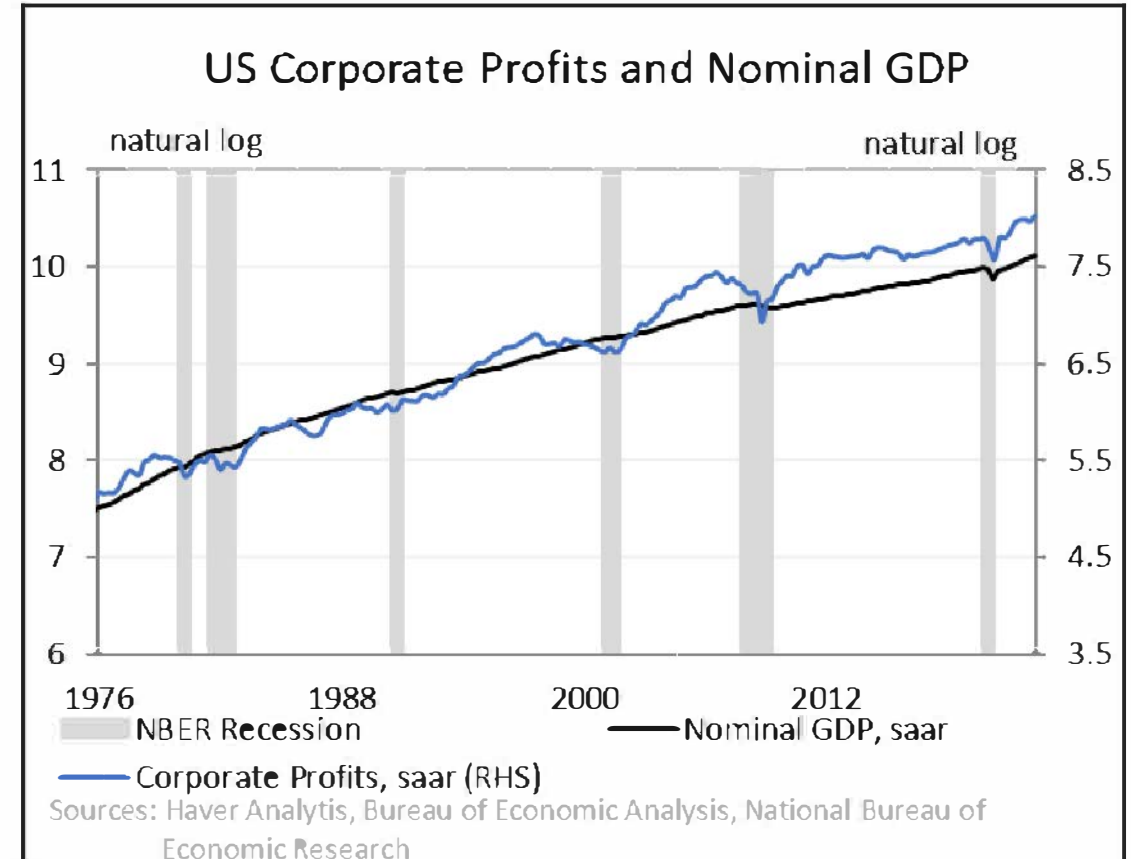
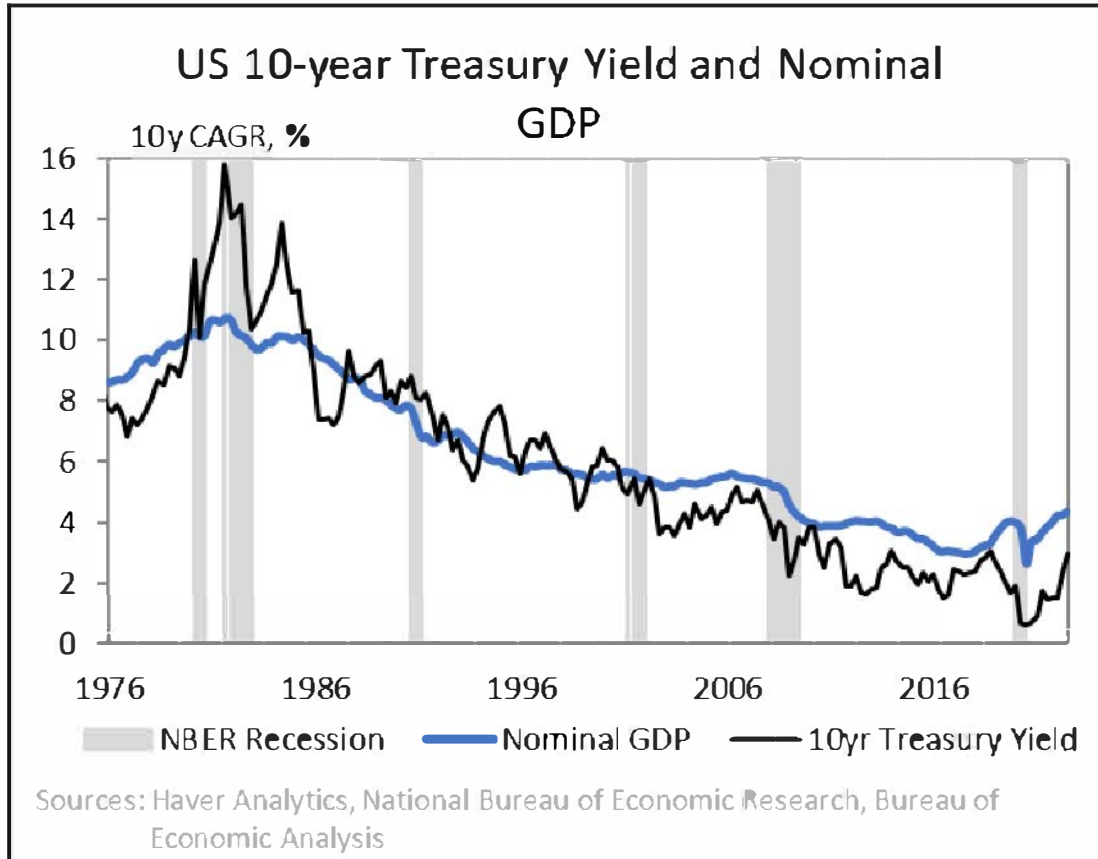
## Uncertainty remains historically high





# Macroeconomic Indicators

Economic growth, yields, and equity returns are related over time



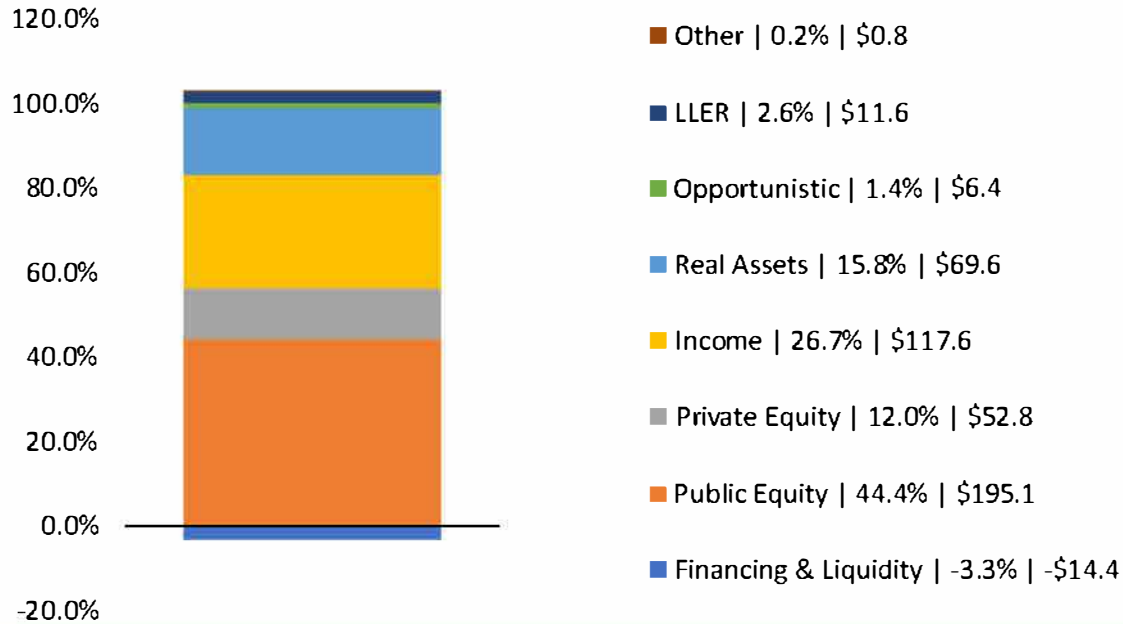
# Contents

## Trust Level Highlights

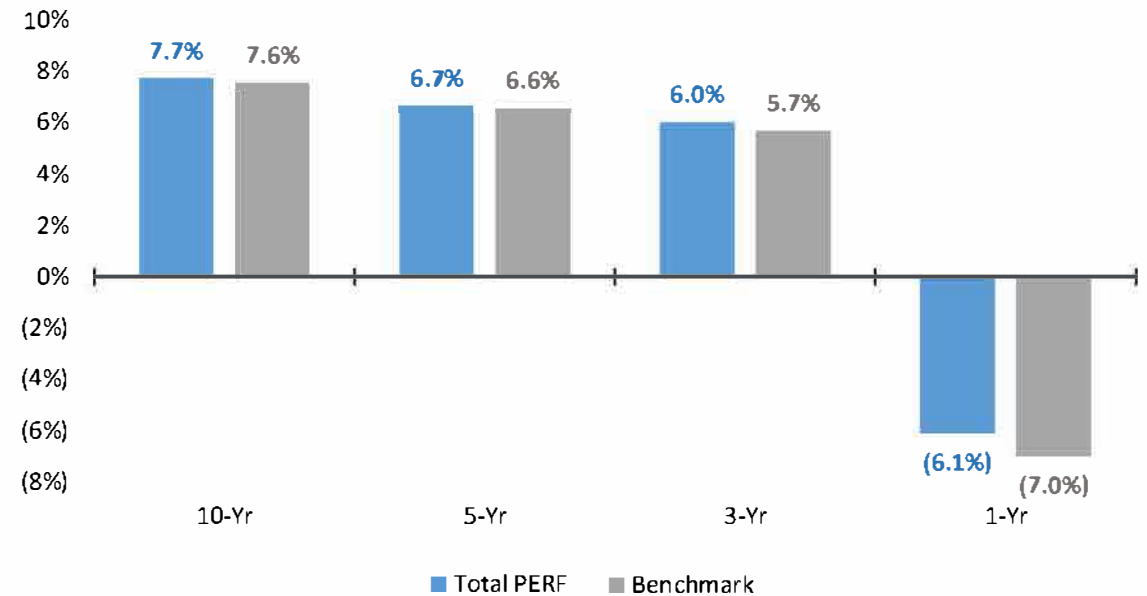
- I. Summary
- II. Strategic Asset Allocation
- III. Implementation & Value Add

# Total Fund Snapshot (as of June 30, 2022)

## Asset Allocation (\$Bil)



## Performance



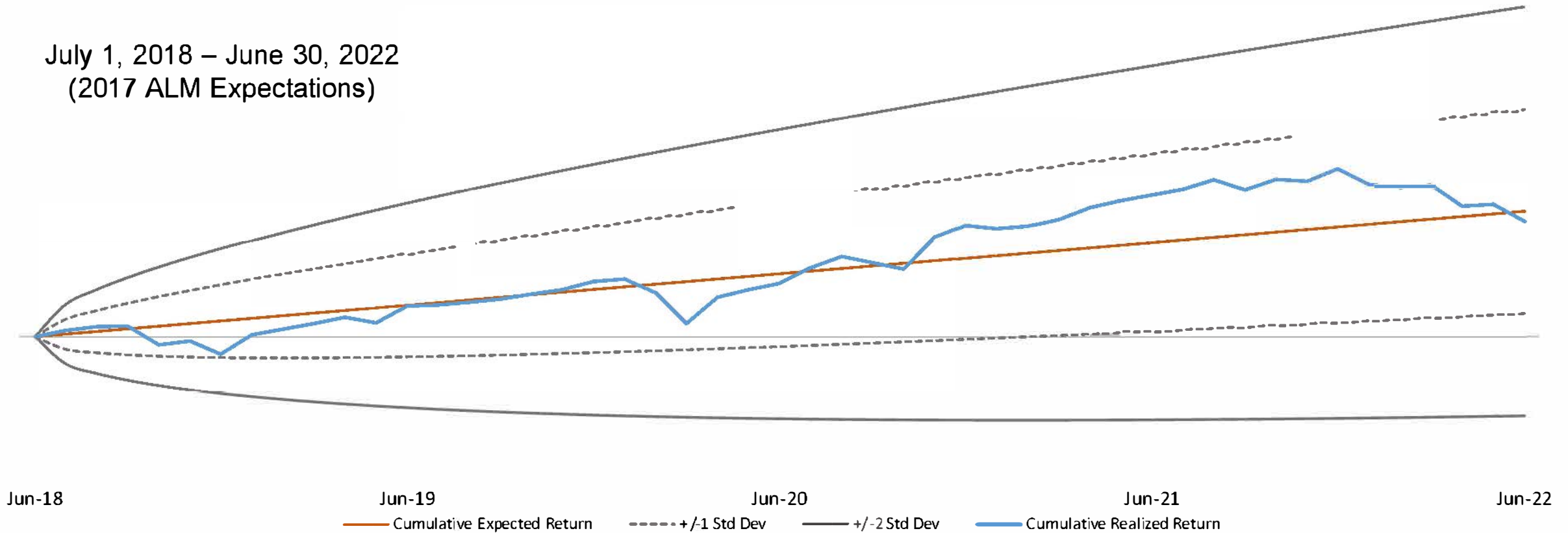
Ending Market Value <b>\$439.6 Billion</b>	Realized 10 Year Sharpe Ratio <b>1.0</b>	Realized 5 Year Information Ratio <b>0.1</b>	Leverage <b>8.9%</b>	30 Day Liquidity Coverage <b>2.2x</b>	Forecasted Volatility <b>12.9%</b>	Forecasted Actionable Tracking Error <b>10 bps</b>
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Note: All performance reported net of investment expenses and annualized. Realized risk measures are calculated using monthly returns.

# Total Fund Return vs. 2017 SAA Expectations (as of June 30, 2022)

July 1, 2018 – June 30, 2022  
(2017 ALM Expectations)

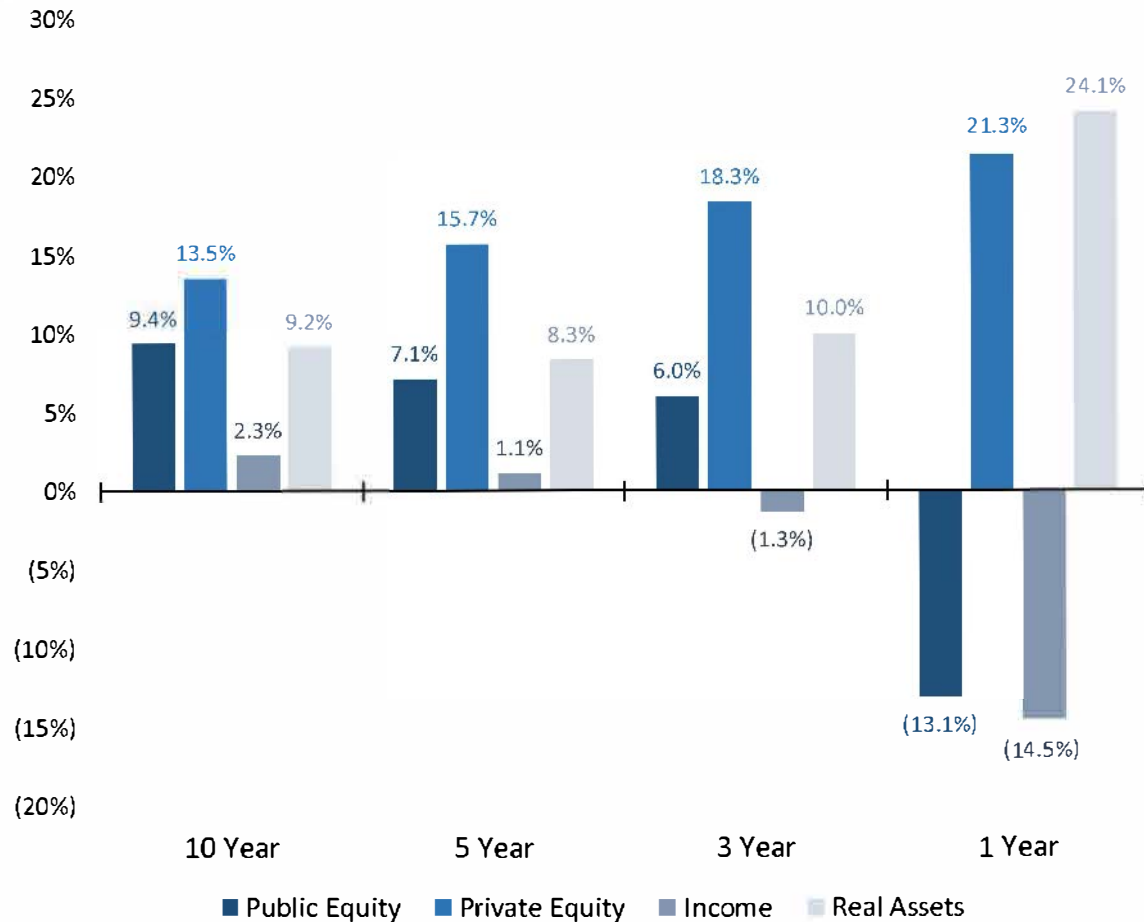


	Expected	Realized	Difference
Annualized Return	7.0%	6.2%	(0.8%)
Volatility	11.4%	9.0%	(2.4%)

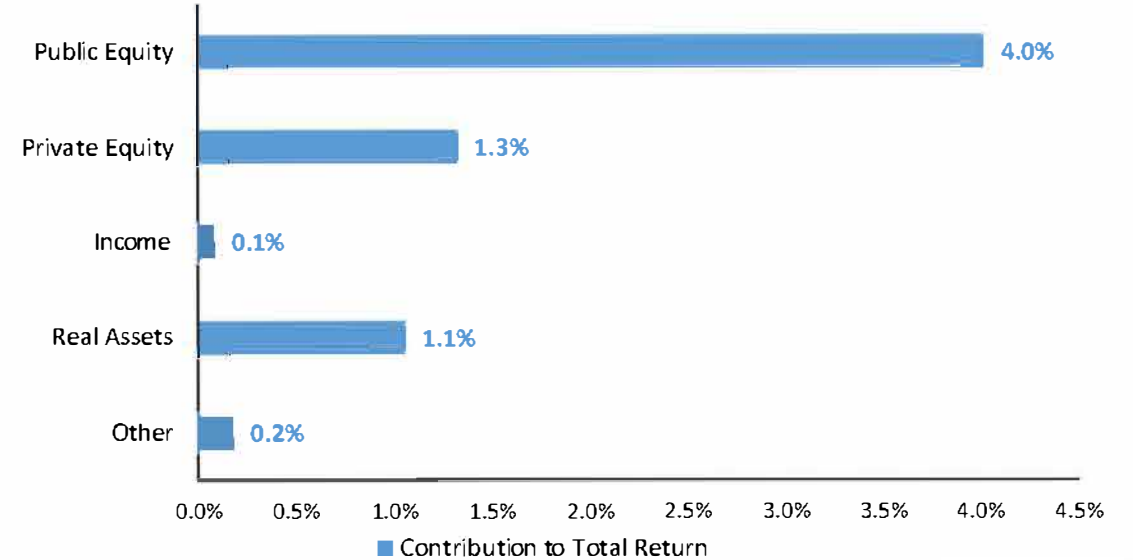
Note: All performance reported net of investment expenses.

# Total Fund Return by Asset Class (as of June 30, 2022)

**Total Return by Asset Class**



**Contribution to 5 Year Total Return by Asset Class**



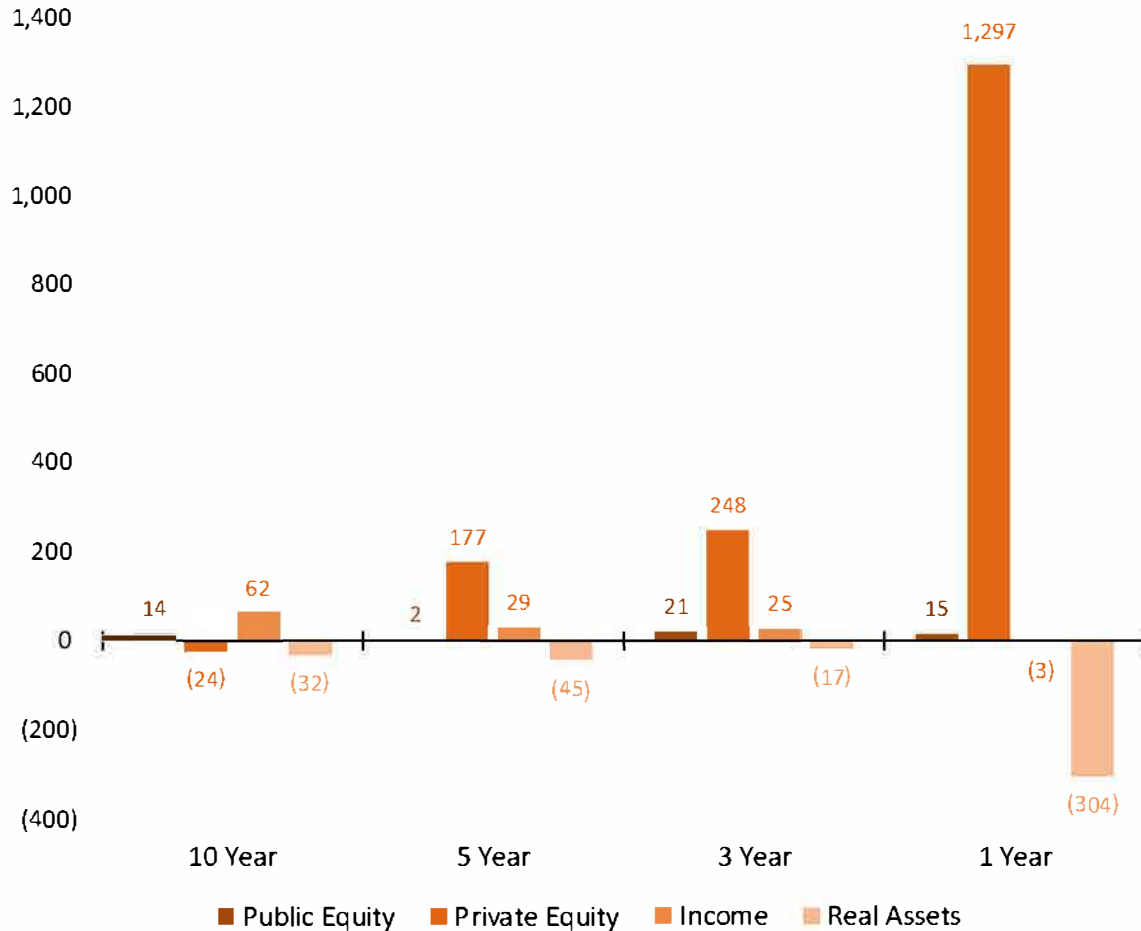
	Average Allocation	Return	Contribution to Total Return
<b>Total PERF</b>	<b>100.0%</b>	<b>6.7%</b>	<b>6.7%</b>
Public Equity	50.1%	7.1%	4.0%
Private Equity	7.9%	15.7%	1.3%
Income	26.6%	1.1%	0.1%
Real Assets	11.1%	8.3%	1.1%
Other	4.3%	-	0.2%



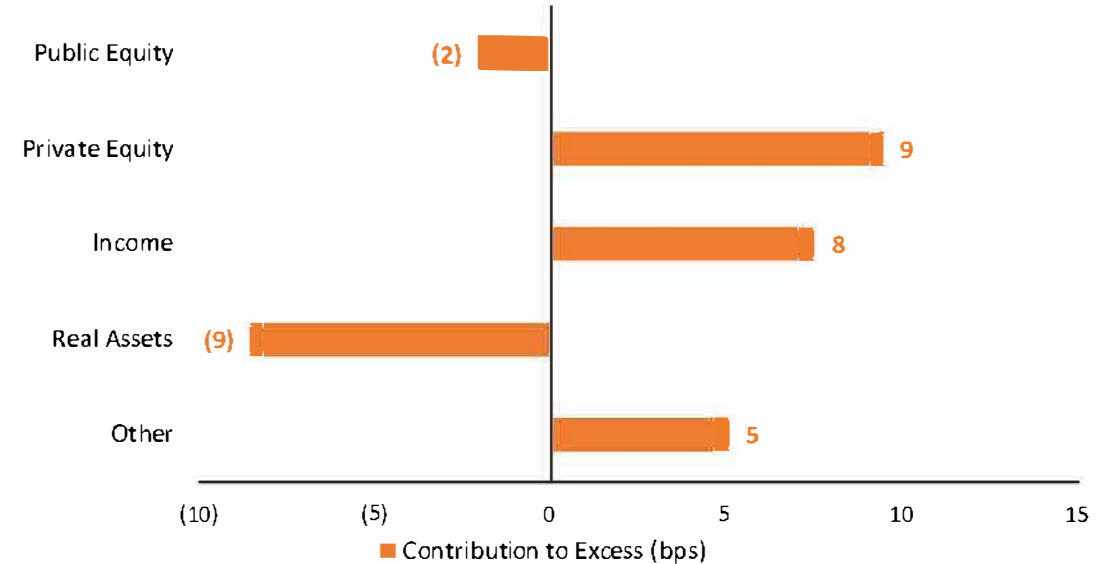
Note: All performance reported net of investment expenses and annualized unless noted otherwise.

# Total Fund Excess Return by Asset Class (as of June 30, 2022)

Excess Return by Asset Class (bps)



Contribution to 5 Year Excess Return by Asset Class



	Average Allocation	Average BM Allocation	Return	BM Return	Excess (bps)	Contribution to Excess (bps)
<b>Total PERF</b>	<b>100.0%</b>	<b>100.0%</b>	<b>6.7%</b>	<b>6.6%</b>	<b>12</b>	<b>12</b>
Public Equity	50.1%	49.9%	7.1%	7.1%	2	(2)
Private Equity	7.9%	8.0%	15.7%	13.9%	177	9
Income	26.6%	26.6%	1.1%	0.8%	29	8
Real Assets	11.1%	11.8%	8.3%	8.8%	(45)	(9)
Other <sup>1</sup>	4.3%	3.8%	-	-	-	5



Note: All performance reported net of investment expenses and annualized. Public Equity benchmarks are net of taxes.  
<sup>1</sup> Other includes impact from allocations to other strategies and allocation management.

# Total Fund Risk Summary (as of June 30, 2022)

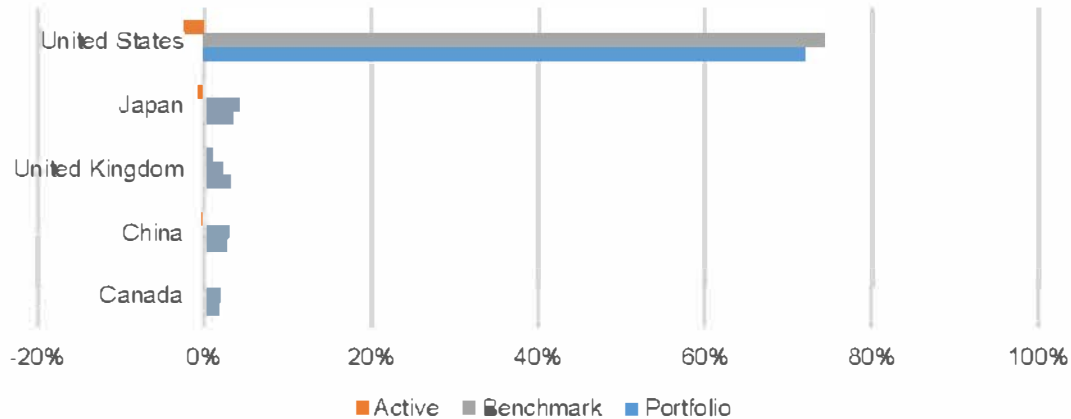
## Total Fund Risk Statistics (Forecasted)

Portfolio Volatility	12.9%
Benchmark Volatility	11.7%
Tracking Error (Total Fund)	1.63%
Tracking Error (Actionable)	0.10%
Portfolio Beta (to Bmk)	1.1

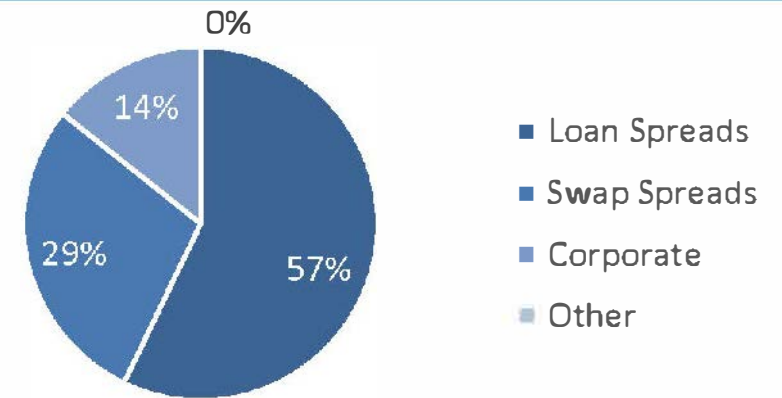
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Actionable TE Contribution	% Risk
<b>Total Portfolio Risk</b>	<b>12.9%</b>	<b>100.0%</b>	<b>0.10%</b>	<b>100.0%</b>
Equity	6.9%	53.5%	0.01%	10.0%
Alternative	4.9%	38.3%	0.00%	0.0%
Spreads	0.6%	4.8%	0.07%	70.0%
Foreign Exchange	0.6%	4.3%	0.00%	0.0%
Rates	(0.2%)	(1.2%)	0.01%	10.0%
Other	0.0%	0.1%	0.01%	10.0%

## Total Fund Allocation by Country (top 5)

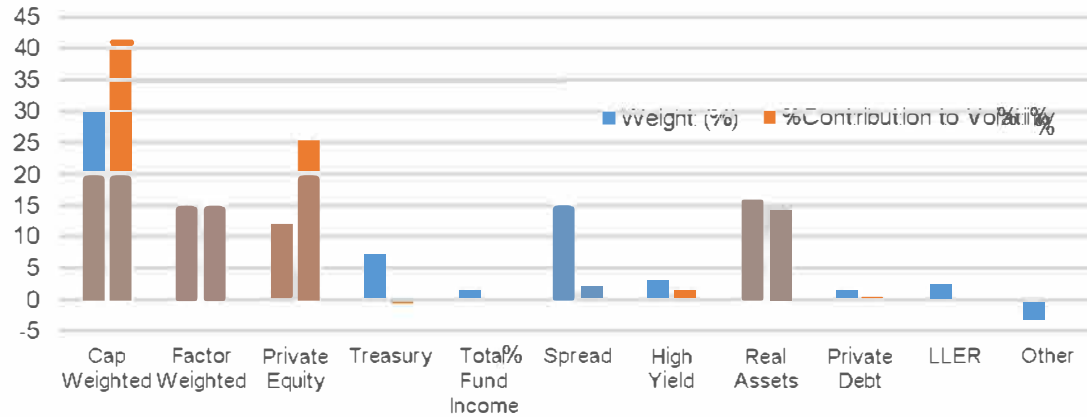


## Active Risk from Spread Factor



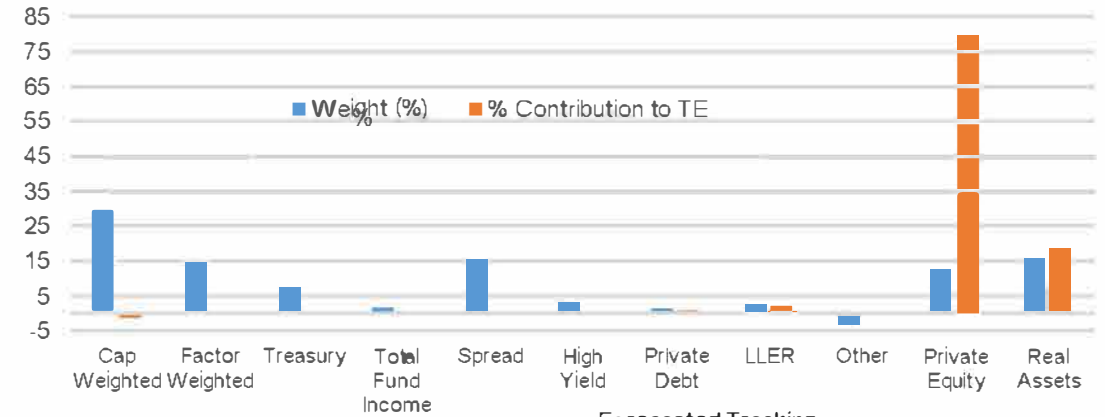
# Total Fund Risk Summary (as of June 30, 2022)

### Contribution to Total Fund Volatility



	Market Value (\$M)	Weight(%)	Forecasted Volatility(%)	% Contribution to Total Volatility
Cap Weighted	130,486	29.7	18.5	41.5
Factor Weighted	64,665	14.7	13.7	15.0
Private Equity	52,848	12.0	27.9	25.3
Treasury	31,402	7.1	11.8	-0.4
Total Fund Income	6,773	1.5	11.6	0.0
Spread	66,412	15.1	6.8	2.1
High Yield	12,977	3.0	7.7	1.5
Real Assets	69,645	15.8	13.3	14.4
Private Debt	6,361	1.4	7.4	0.4
LLER	11,618	2.6	2.9	0.3
Other <sup>1</sup>	(13,567)	-3.1	3.7	0.1
<b>Total PERF</b>	<b>439,620</b>	<b>100</b>	<b>12.9</b>	<b>100</b>

### Contribution to Total Fund Tracking Error



	Weight(%)	Forecasted Tracking Error(%)	% Contribution to TE
Cap Weighted	29.7	0.2	-1.1
Factor Weighted	14.7	0.1	0.1
Treasury	7.1	0.1	0.0
Total Fund Income	1.5	1.0	0.3
Spread	15.1	0.3	0.0
High Yield	3.0	0.4	-0.2
Private Debt	1.4	7.4	0.9
LLER	2.6	2.9	2.0
Other <sup>1</sup>	-3.1	3.7	0.2
<b>Total PERF Actionable</b>		<b>0.10</b>	<b>2.2</b>
Private Equity	12.0	11.4	79.3
Real Assets	15.8	3.8	18.5
<b>Total PERF</b>	<b>100.0</b>	<b>1.63</b>	<b>100.0</b>

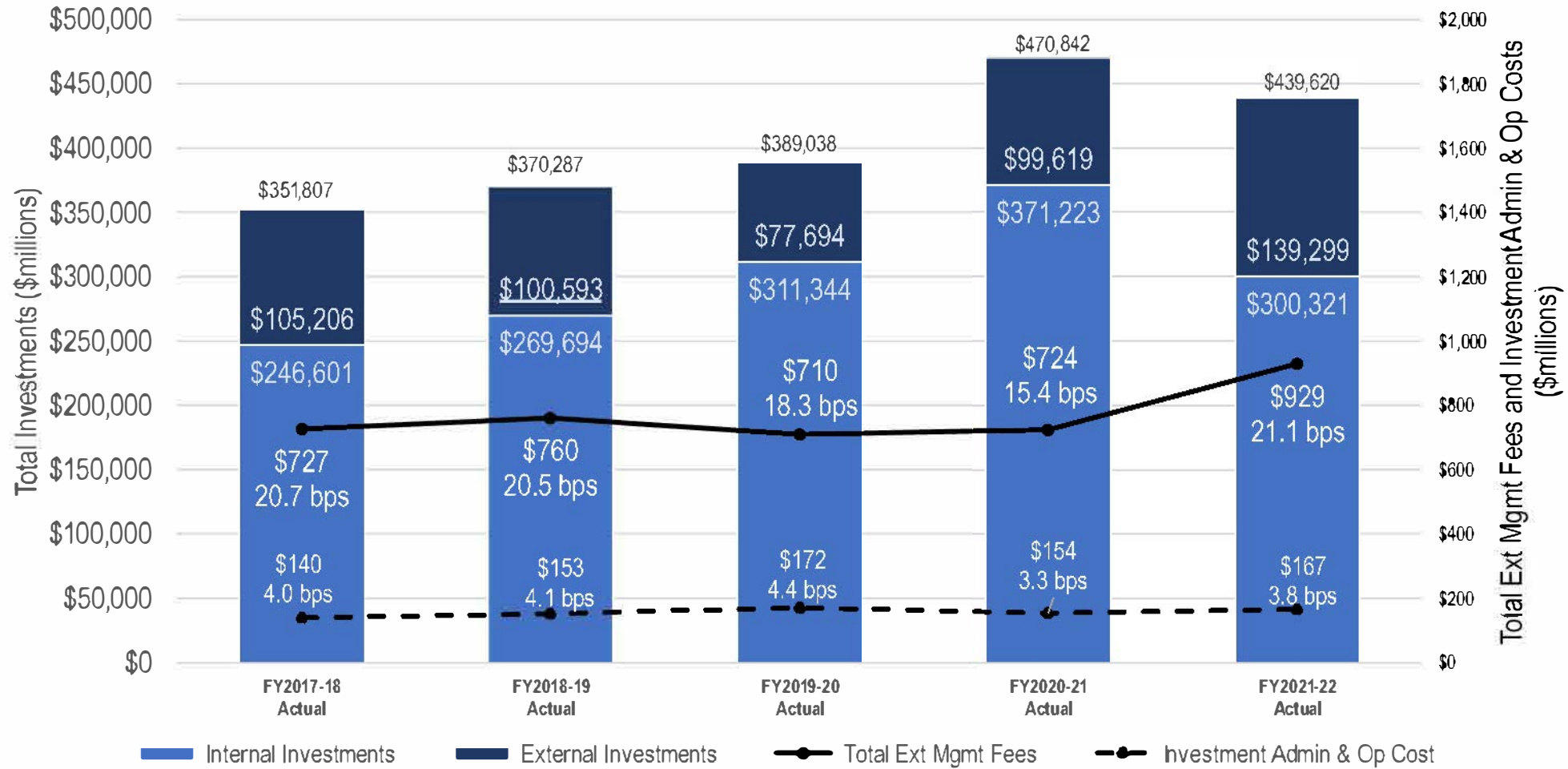


<sup>1</sup>Includes Trust Level Financing, Liquidity and other total fund strategies



# Investment Expenses FY 2017-18 thru FY 2021-22

Total Investments vs. Total Ext Management Fees and Investment Administrative & Operating Costs



Fees are based on Total Ext Mgmt Base and Performance Fees



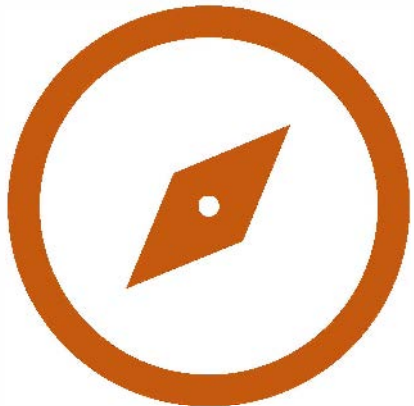
## Evaluation | Total Fund

### What has worked



- New strategic asset allocation
- Enhanced liquidity management
- CIO hired after 18-month vacancy

### Areas for refinement



- Deploy private assets
- People Strategy
- Data and technology
- Enhanced governance model

# Contents

## Portfolio Structure & Annual Program Reviews

- I. Public Markets
  - a. Public Equity
  - b. Fixed Income
- II. Opportunistic
- III. Private Markets
  - a. Private Equity
  - b. Real Assets

# Role of Public Equity

## Public Equity

- Efficiently capture the equity risk premium
- Total return oriented
- Major driver of returns is price appreciation and cash yields
- Reliable source of liquidity

## Market Capitalization Weighted

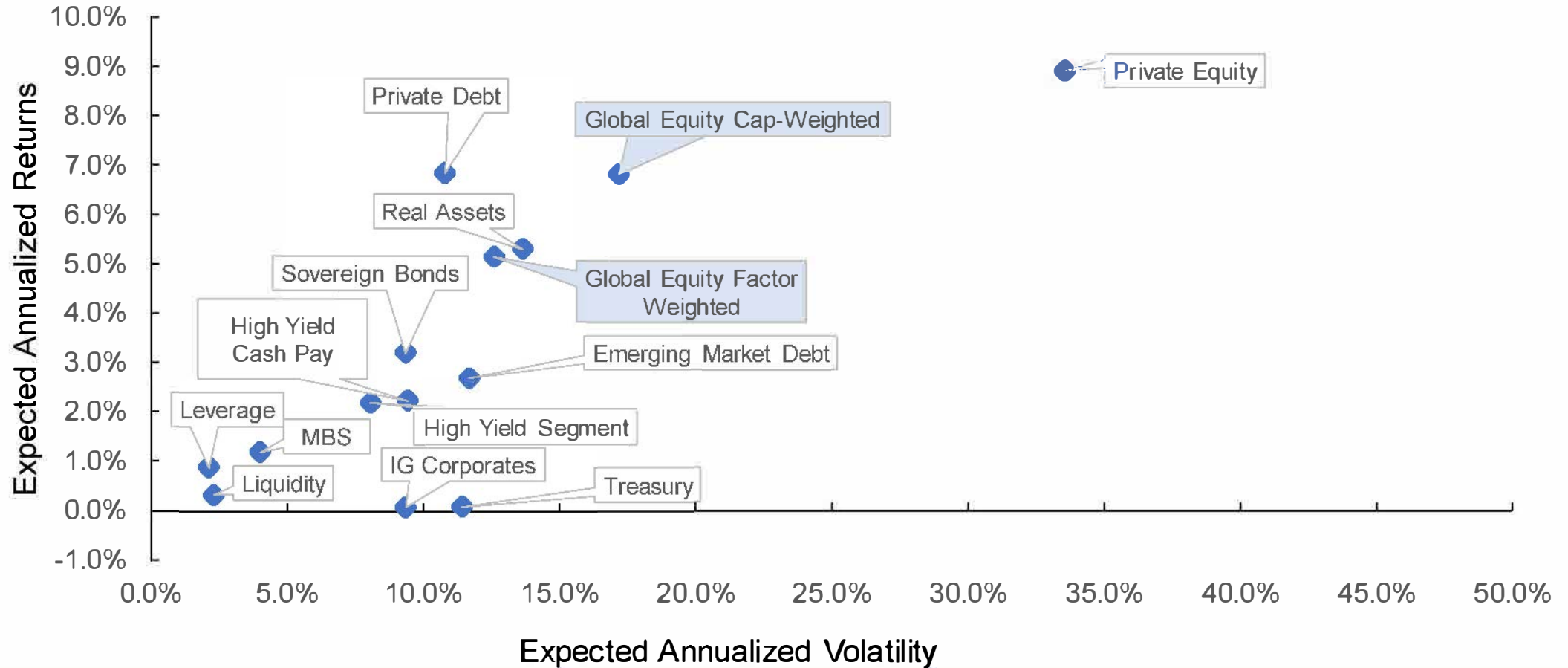
- Provide exposure to economic growth and be a reliable source of liquidity

## Factor Weighted

- Provide exposure to economic growth with reduced overall volatility and some diversification of equity risk

# Role of Public Equity

Board Adopted Capital Market Assumptions (5-year)



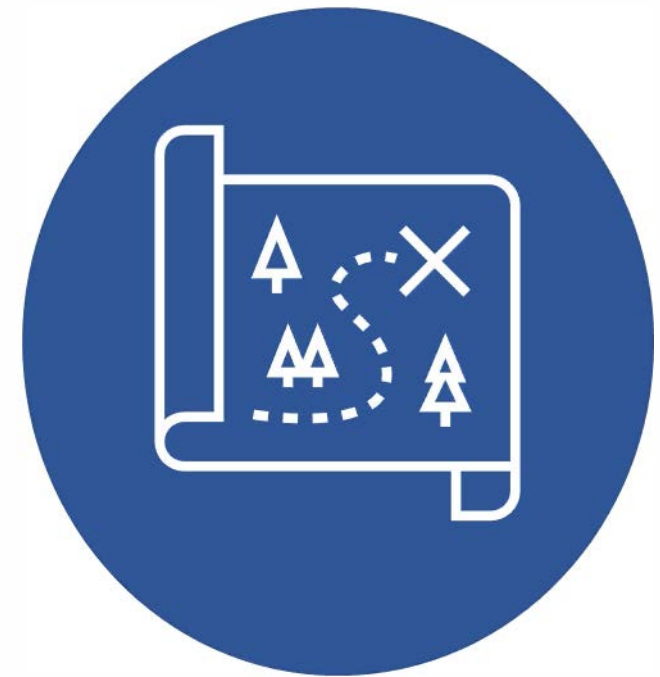
# Market Environment/Themes | Public Equity

## Current Concerns

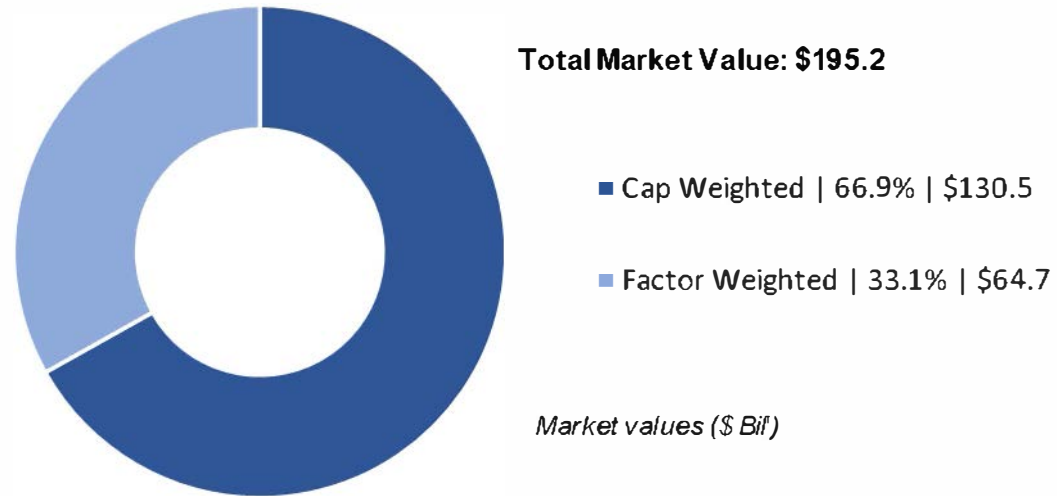
- High inflation, tightening financial conditions, recession fears, and geopolitical risks have led to a contraction of valuation multiples and a downward revision in earnings expectations

## Investment Themes

- Increase allocation to active investment strategies which tend to add the most alpha during periods of market volatility and market dislocation



# Public Equity | Role and Structure



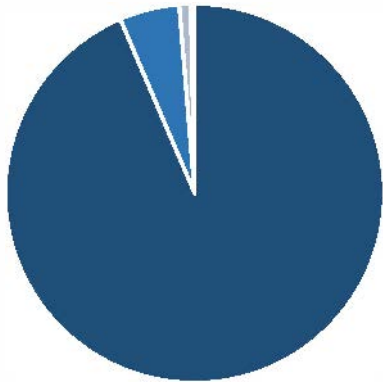
	% of Total Fund Actual	% of Total Fund Target <sup>1</sup>
Public Equity	44.4	50 (+/- 7)
Cap Weighted	29.7	35
Factor Weighted	14.7	15

- Public Equity is the principal asset class providing growth exposure in the strategic asset allocation. Its goal is to provide equity beta exposure plus risk-managed systematic and opportunistic alpha
- Program thoughtfully delivers multiple equity betas with low active risk and an efficient cost structure
- 96% of the total portfolio is invested in cost-efficient, internally-managed strategies
- Defensive positioning and high conviction strategies positively contributed to relative performance amid volatile global financial markets

<sup>1</sup> Note: Target as of June 30, 2022. A new strategic asset allocation target, to be effective 7/1/22, was adopted by the CalPERS Board of Administration on 11/15/21

# Cap Weighted Snapshot (as of June 30, 2022)

## Strategy Allocation (\$ Bil)



**Total Market Value: \$130.5**

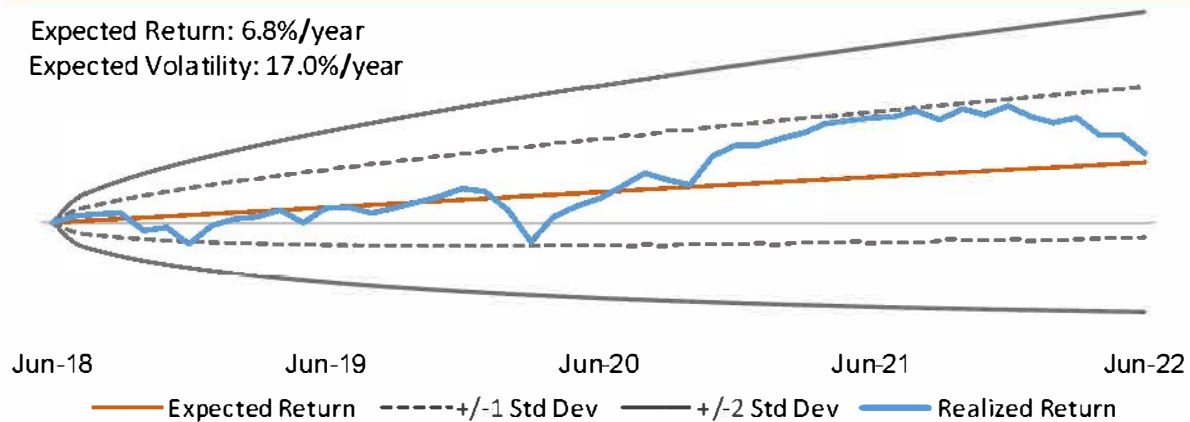
- Index Oriented | 93.6% | \$122.1
- Traditional Active | 5.1% | \$6.7
- Alt Beta | 1.0% | \$1.3
- Emerging Manager | 0.3% | \$0.4

## Total Return



## Cumulative Return vs 2017 SAA Expectations<sup>1</sup>

Expected Return: 6.8%/year  
Expected Volatility: 17.0%/year



## Key Metrics



Note: All performance reported net of investment expenses and annualized unless noted otherwise. Public Equity benchmarks are net of taxes.

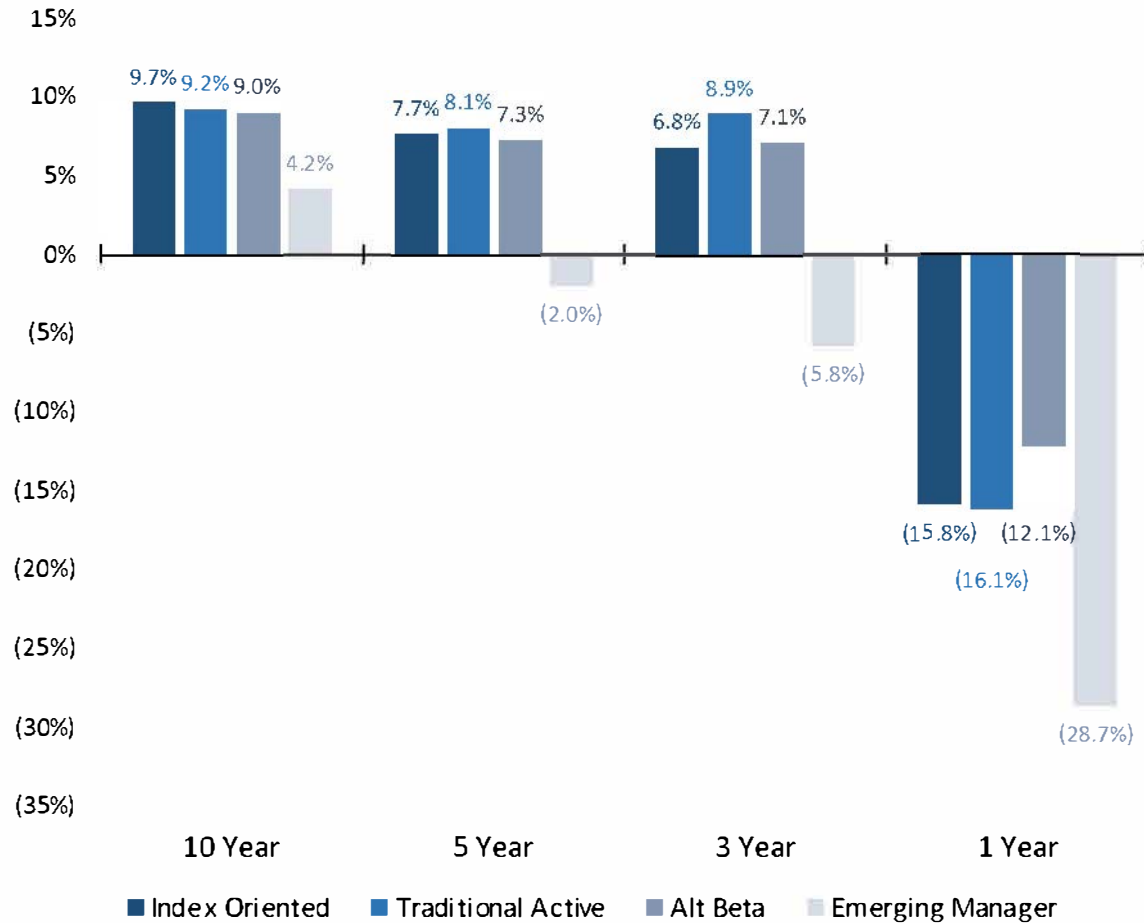
Risk measures are calculated using monthly returns.

<sup>1</sup> Chart shown from the Cap Weighted segment's inception of 7/1/2018

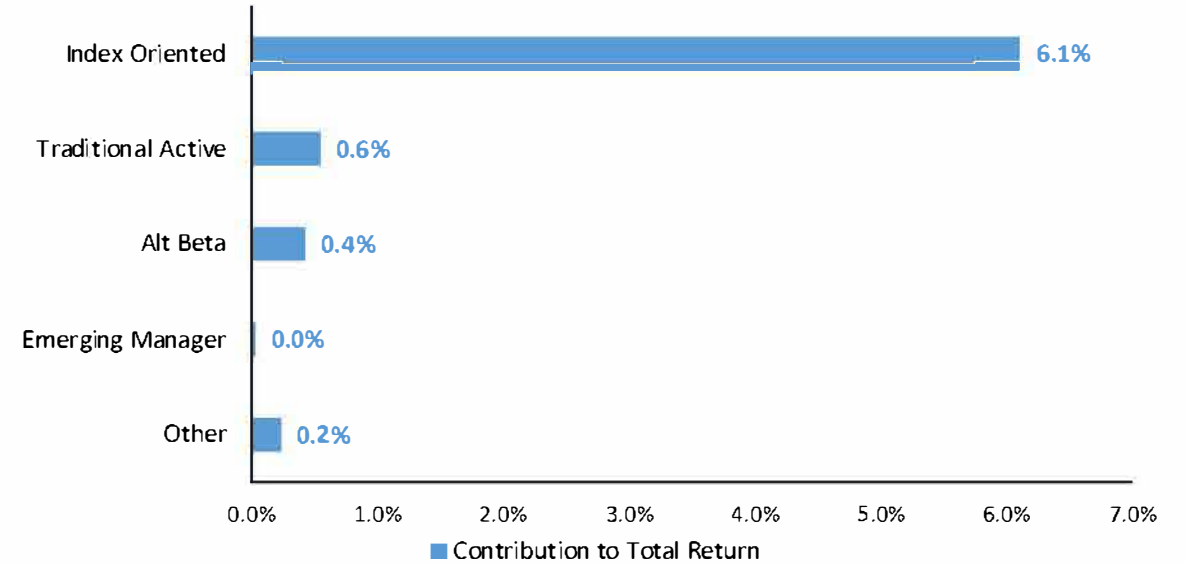


# Cap Weighted Total Return by Strategy (as of June 30, 2022)

**Total Return by Strategy**



**Contribution to Cap Weighted 5 Year Total Return**



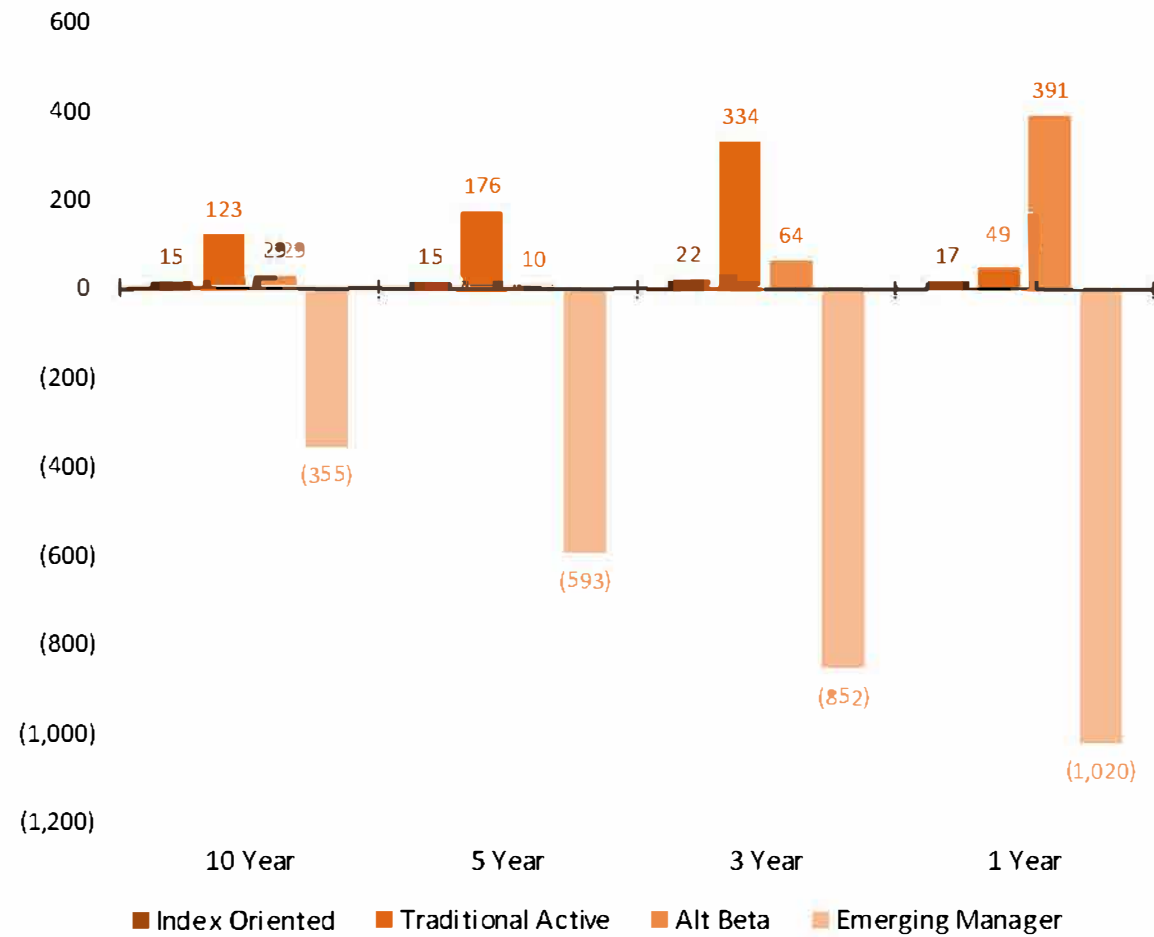
	Average Allocation	Return	Contribution to Total Return
<b>Cap Weighted</b>	<b>100.0%</b>	<b>7.4%</b>	<b>7.4%</b>
Index Oriented	59.7%	7.7%	6.1%
Traditional Active	10.6%	8.1%	0.6%
Alt Beta	7.3%	7.3%	0.4%
Emerging Manager	1.3%	(2.0%)	0.0%
Other <sup>1</sup>	21.0%	-	0.2%



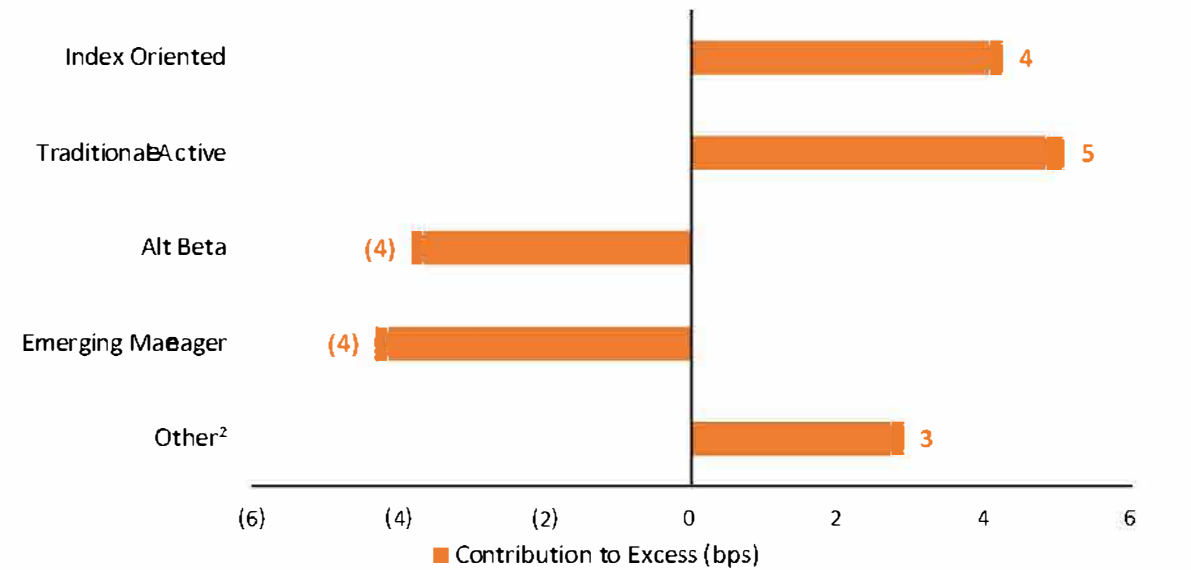
Note: All performance reported net of investment expenses and annualized.  
<sup>1</sup> Other includes impact from allocations to other strategies.

# Cap Weighted Excess Return by Strategy (as of June 30, 2022)

**Excess Return by Strategy (bps)**



**Contribution to Cap Weighted 5Y Excess Return<sup>1</sup> (bps)**

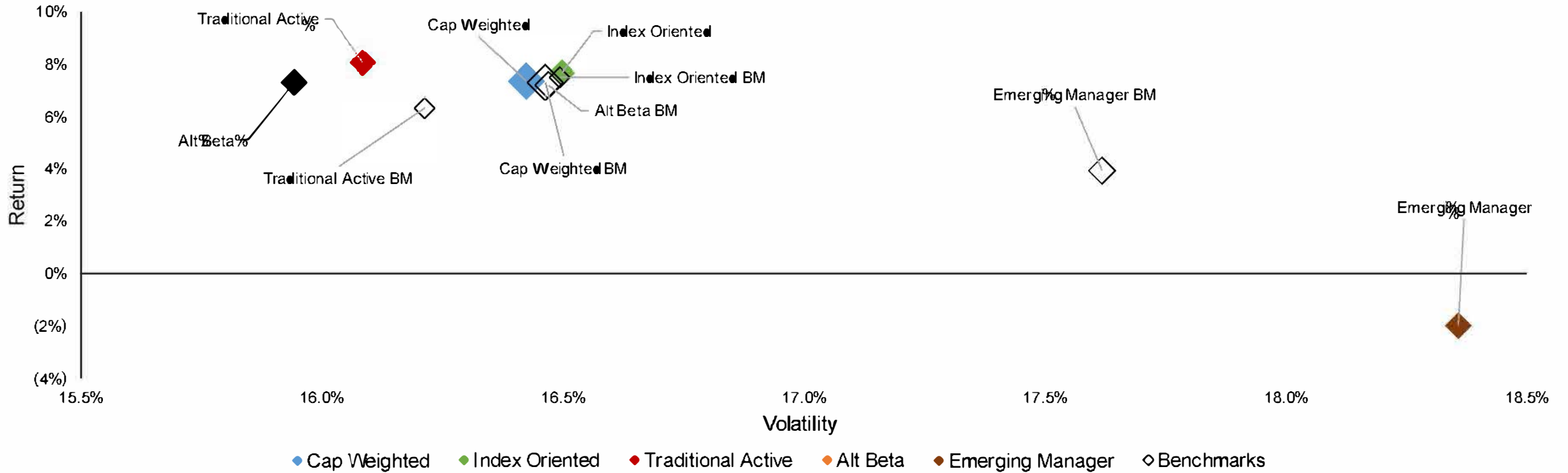


	Average Allocation	Average BM Allocation	Return	BM Return	Excess (bps)	Contribution to Excess <sup>1</sup> (bps)
<b>Cap Weighted</b>	<b>100.0%</b>	<b>100.0%</b>	<b>7.4%</b>	<b>7.3%</b>	<b>4</b>	<b>4</b>
Index Oriented	59.7%	-	7.7%	7.5%	15	4
Traditional Active	10.6%	-	8.1%	6.3%	176	5
Alt Beta	7.3%	-	7.3%	7.2%	10	(4)
Emerging Manager	1.3%	-	(2.0%)	3.9%	(593)	(4)
Other <sup>2</sup>	21.0%	-	-	-	-	3



Note: All performance reported net of investment expenses and annualized. Public Equity benchmarks are net of taxes.  
<sup>1</sup> Strategy contribution to excess excludes the impact of income from securities lending, which is reflected in "Other."  
<sup>2</sup> Other includes impact from allocations to other strategies, income from securities lending, and allocation management.

# 5 Year Cap Weighted Risk-Return (as of June 30, 2022)



	Return	Volatility	Sharpe Ratio	Tracking Error (bps)	Information Ratio
<b>Cap Weighted</b>	<b>7.4%</b>	<b>16.4%</b>	<b>0.39</b>	<b>25</b>	<b>0.19</b>
Index Oriented	7.7%	16.5%	0.41	10	1.50
Traditional Active	8.4%	16.1%	0.44	204	0.86
Alt Beta	7.3%	15.9%	0.40	153	0.07
Emerging Manager	(2.0%)	18.4%	(0.16)	368	(1.61)



Note: All performance reported net of investment expenses and annualized.  
 Public Equity benchmarks are net of taxes.  
 Risk measures are calculated using monthly returns.

# Cap Weighted Risk Summary (as of June 30, 2022)

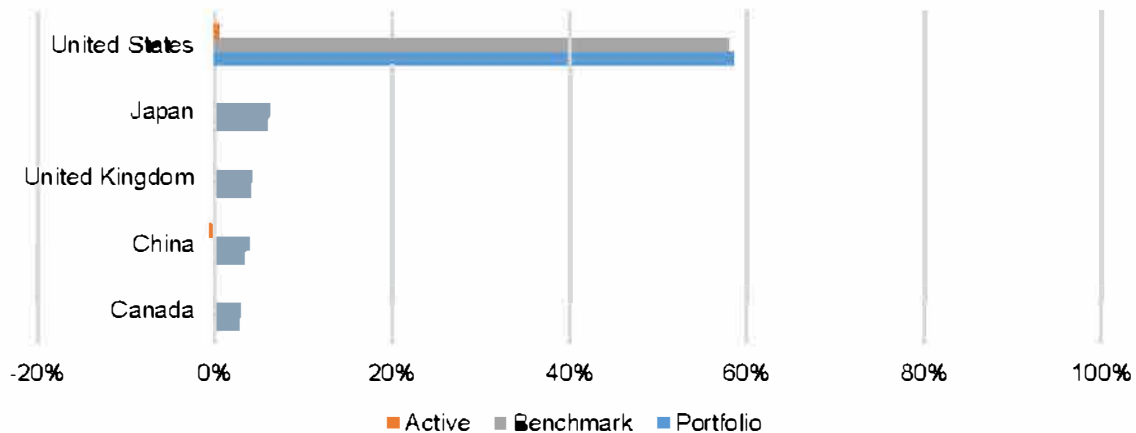
## Segment Risk Statistics (Forecasted)

Segment Volatility	18.5%
Benchmark Volatility	18.6%
Tracking Error	0.16%
Portfolio Beta (to Bmk)	1.0

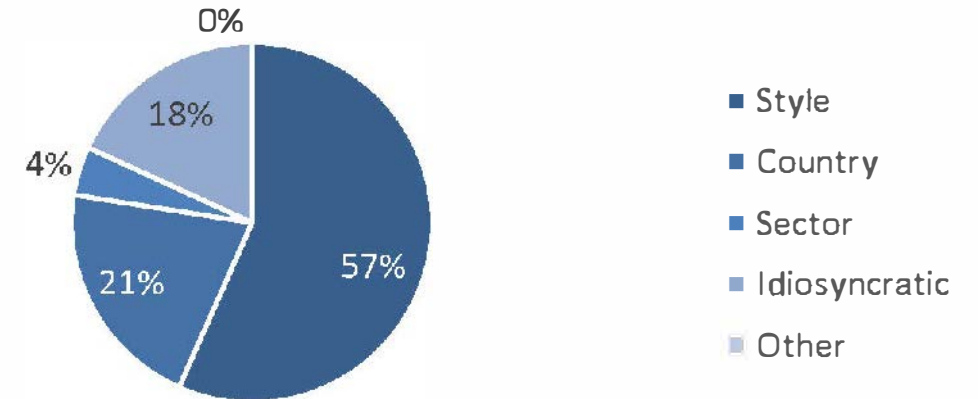
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Active Risk Contribution	% Active Risk
<b>Total Segment Risk</b>	<b>18.5%</b>	<b>100.0%</b>	<b>0.16%</b>	<b>100.0%</b>
Equity	17.5%	94.1%	0.16%	102.5%
Foreign Exchange	1.1%	5.9%	(0.01%)	(3.2%)
Rates	0.0%	0.0%	0.00%	0.3%
Spreads	0.0%	0.0%	0.00%	0.0%

## Segment Allocation by Country (Top 5)

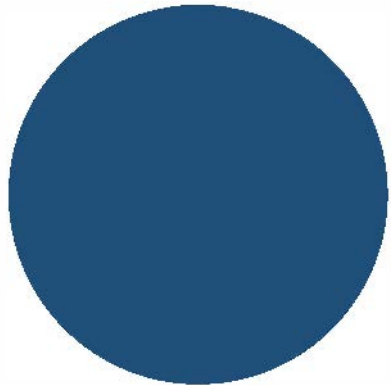


## Active Risk from Equity Factor



# Factor Weighted Snapshot (as of June 30, 2022)

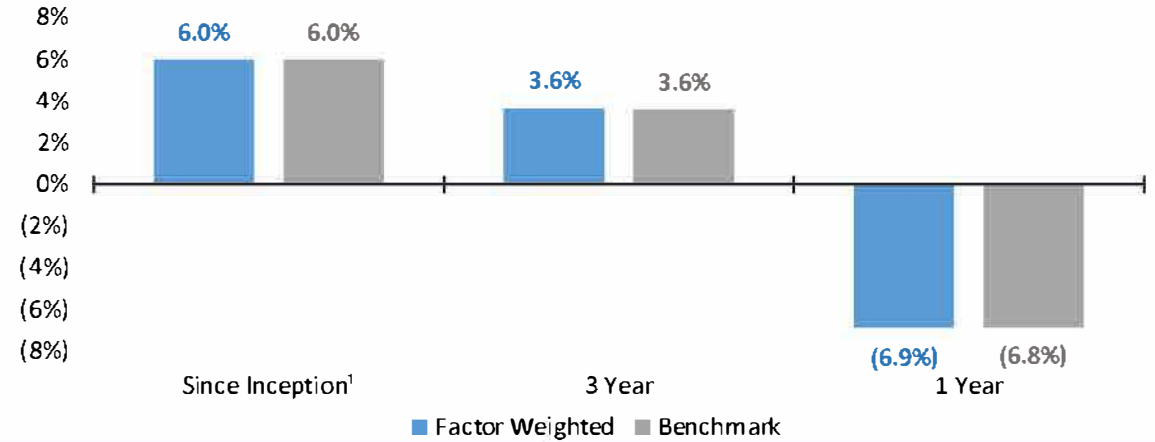
## Strategy Allocation (\$ Bil)



**Total Market Value: \$64.7**

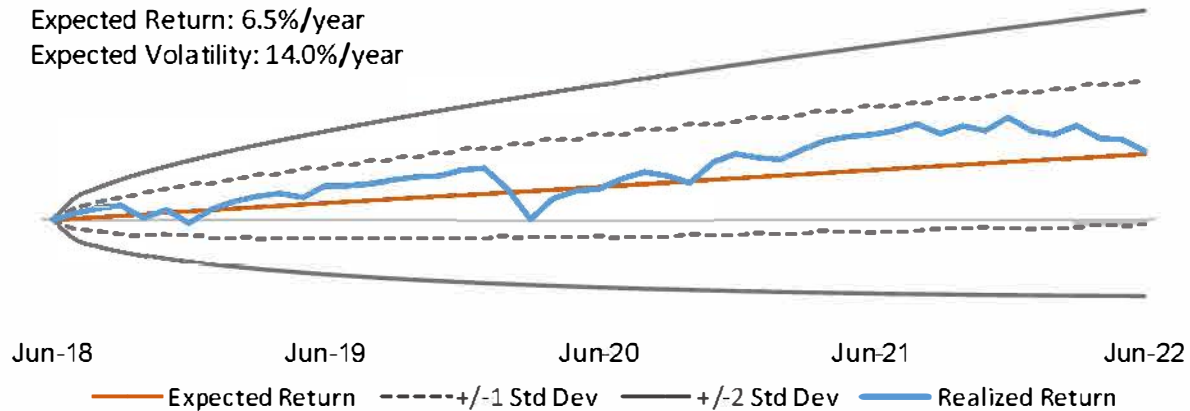
■ Factor Weighted | 100.0% | \$64.7

## Total Return



## Cumulative Return vs 2018 SAA Expectations<sup>1</sup>

Expected Return: 6.5%/year  
Expected Volatility: 14.0%/year



## Key Metrics

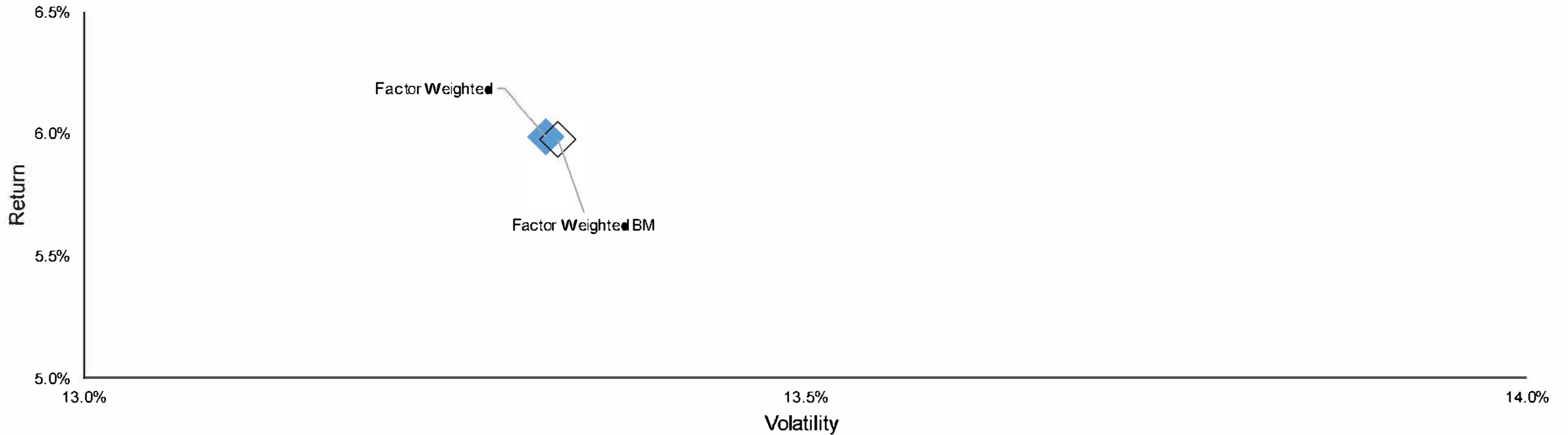


Note: All performance reported net of investment expenses and annualized unless noted otherwise. Public Equity benchmarks are net of taxes.

Risk measures are calculated using monthly returns.

<sup>1</sup> Information shown from the Factor Weighted segment's inception of 7/1/2018

# Since Inception<sup>1</sup> Factor Weighted Risk-Return (as of June 30, 2022)



	Return	Volatility	Sharpe Ratio	Tracking Error (bps)	Information Ratio
<b>Factor Weighted</b>	<b>6.0%</b>	<b>13.3%</b>	<b>0.38</b>	<b>11</b>	<b>0.10</b>



Note: All performance reported net of investment expenses and annualized unless noted otherwise. Public Equity benchmarks are net of taxes.  
Risk measures are calculated using monthly returns.

<sup>1</sup> Information shown from the Factor Weighted segment's inception of July 1, 2018

# Factor Weighted Risk Summary (as of June 30, 2022)

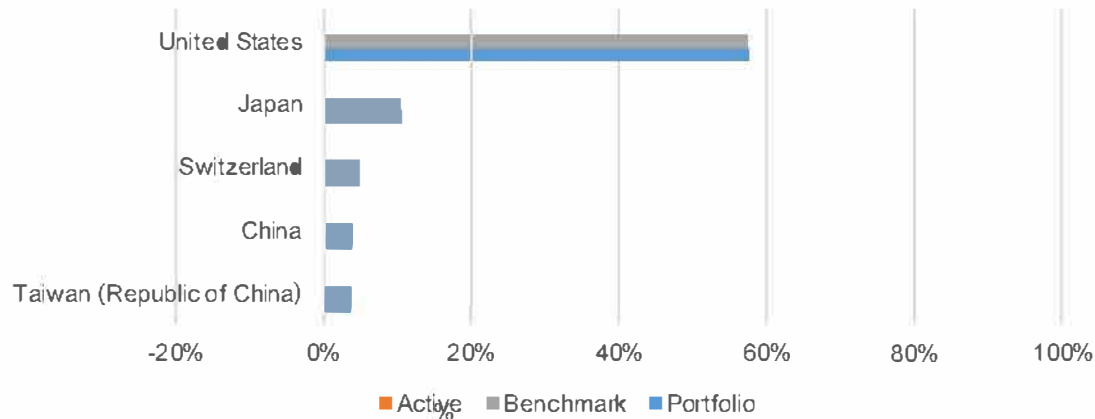
## Segment Risk Statistics (Forecasted)

Segment Volatility	13.7%
Benchmark Volatility	13.7%
Tracking Error	0.06%
Portfolio Beta (to Bmk)	1.0

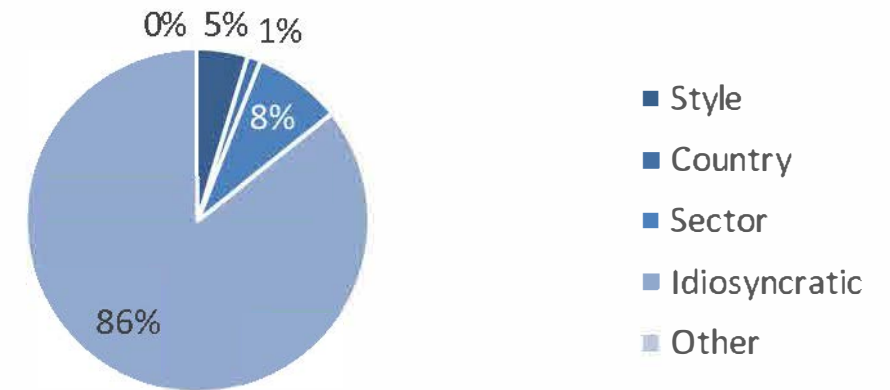
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Active Risk Contribution	% Risk
<b>Total Segment Risk</b>	<b>13.7%</b>	<b>100.0%</b>	<b>0.06%</b>	<b>100.0%</b>
Equity	13.3%	96.9%	0.06%	99.2%
Foreign Exchange	0.4%	3.1%	0.00%	0.8%
Rates	0.0%	0.0%	0.00%	0.0%
Spreads	0.0%	0.0%	0.00%	0.0%

## Segment Allocation by Country (top 5)



## Active Risk from Equity Factor



# Public Equity | Integration of Governance & Sustainability Strategy

Proxy Voting	Votes all public company proxies in a manner consistent with CalPERS' Governance & Sustainability Principles and CalPERS' Investment Beliefs
Engagement	Actively engages portfolio companies on executive and employee compensation, corporate board diversity, climate change, human capital management, and other Governance & Sustainability considerations to promote long-term value creation
Partnerships	Leverages external and internal partnerships to actively engage global asset owners and managers, companies, data providers, regulators, and standards-setting bodies on material Governance & Sustainability factors
Research	Continuous research, development and integration of best practices, proxy voting enhancements, and evolution of Governance & Sustainability Principles

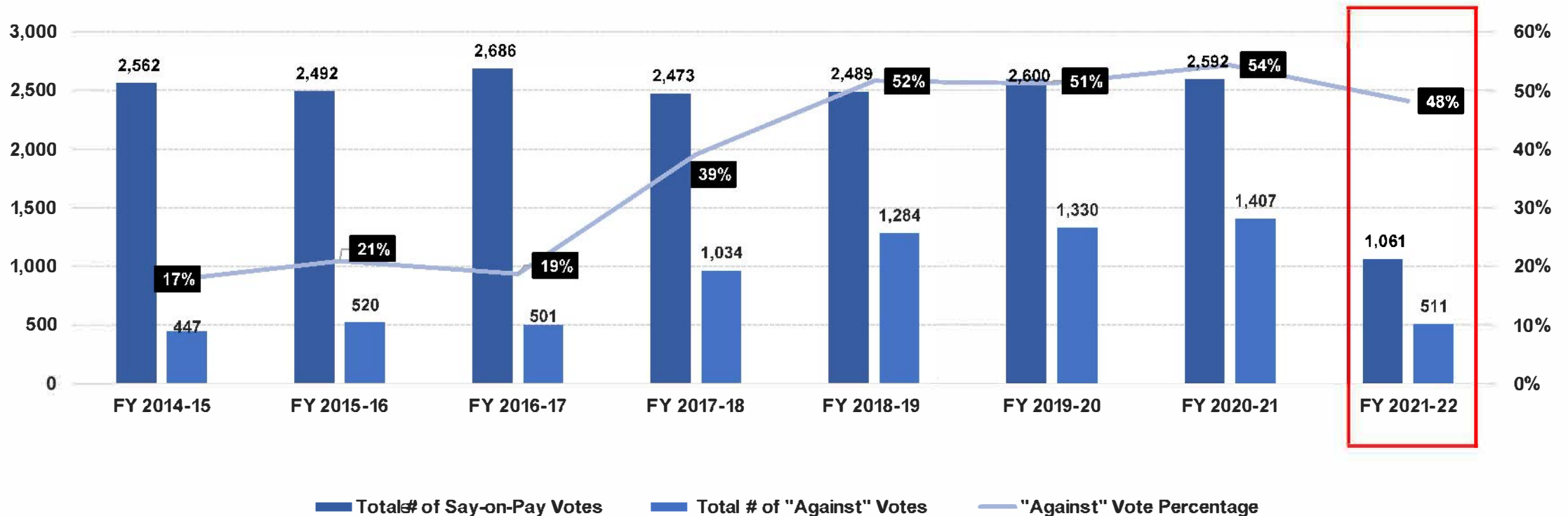


# Governance & Sustainability | Proxy Voting and Engagement Update

- **Enhanced executive compensation analysis and accountability**
  - Voted “against” 48% of executive compensation proposals for poor pay-for-performance alignment (by comparison voted “against” 54% in FY20-21)
  - Voted “against” 1,342 Compensation Committee members, holding them accountable for poor pay-for-performance alignment and poor compensation practices (by comparison voted “against” 3,896 directors in FY20-21)
- **Improved corporate board diversity and accountability**
  - 78% of companies engaged since July 2017 have since added at least one diverse director to their boards (620 of 800 companies). Excluding delisted, acquired, and bankrupt companies, 88% of companies engaged have added at least one diverse director to their boards (561 of 634 companies)
  - Voted “against” 133 directors (Nominating/Governance Committee Members) at companies where staff identified board composition concerns related to diversity (by comparison voted “against” 197 directors in FY20-21). Staff is in the process of identifying the 2022 target list of diversity companies
  - Partnered with CalSTRS, LACERA and SFERS on the California Board Diversity Initiative to improve board diversity at S&P 500 companies surrounding underrepresented groups
- **Engaged Climate Action 100+ companies**
  - CalPERS is leading engagements at 22 companies including 6 Japanese companies
    - Staff is currently evaluating engagement “next steps” for 2023 proxy season, including filing shareowner proposals
  - CalPERS voted against 95 directors at 26 (CA100+) companies for not adequately responding to the CA100+ Initiative
  - CalPERS filed/co-filed 2 shareowner proposals (1 withdrawn and 1 achieved 27% support)
    - Ran proxy solicitation in support of CalPERS filed shareowner proposal and publicized key proxy votes on CalPERS website, which were flagged by the CA100+ initiative
  - Results and progress of collaborative engagements are detailed in the Climate Action 100+ January 2022 Progress Update (<http://www.climateaction100.org/>)

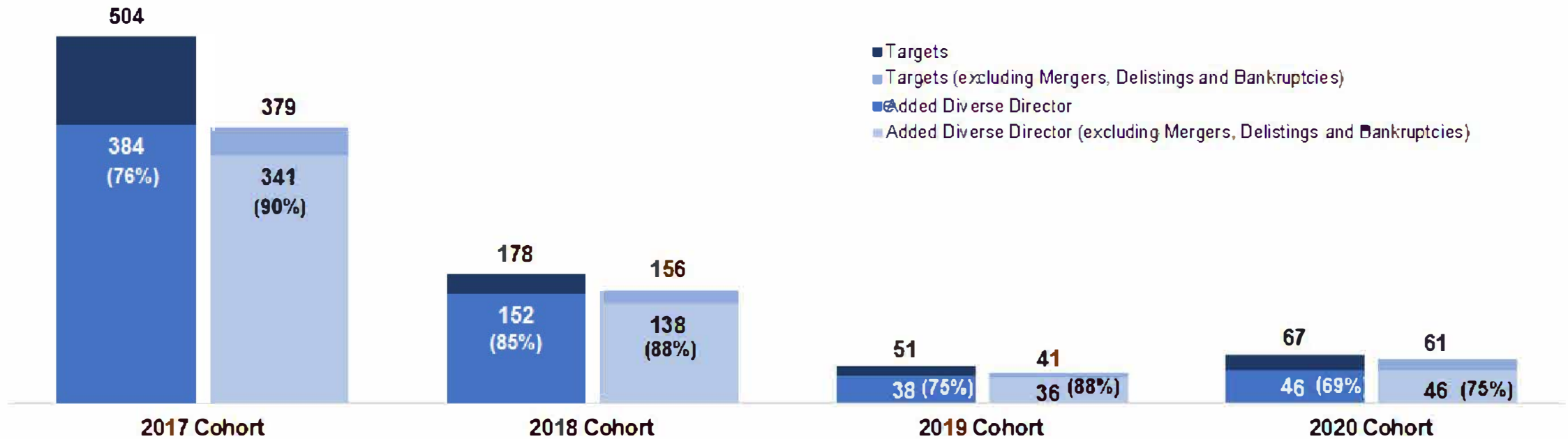
# Governance & Sustainability | U.S. Executive Compensation Votes

CalPERS' U.S. Executive Compensation Votes: FY 2014-15 to FY 2021-22



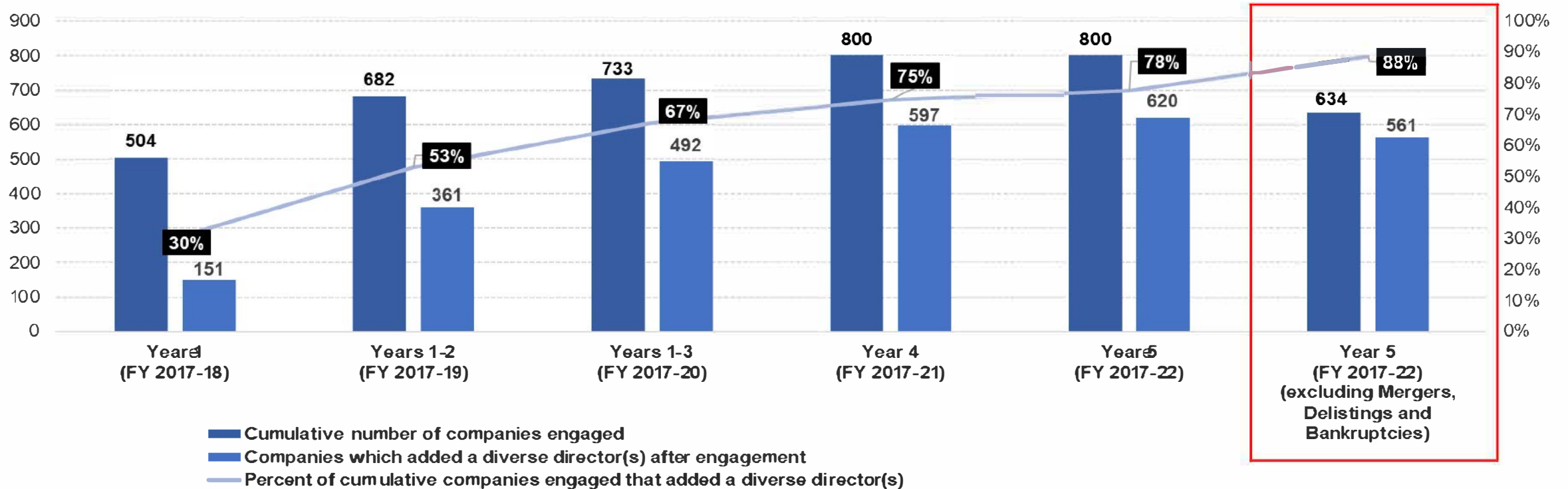
# Governance & Sustainability | Corporate Board Diversity Cohorts

## CalPERS Board Diversity Engagements (as of 6/30/22)



# Governance & Sustainability | Corporate Board Diversity Cohorts

**CalPERS Corporate Board Diversity**  
(Cumulative Engagements from July 2017 to June 2022)



# Governance & Sustainability | Climate Action 100+



## CalPERS is playing a leading role in both strategy and implementation

- CalPERS convened the initiative following the carbon footprint of our global equity portfolio in 2015
  - Inaugural Chair (and current member) of the CA100+ Steering Committee
  - Initiative now has over 700 signatories with over \$68 trillion in assets under management
  - Signatories are engaging a total of 166 companies with some of the largest GHG emissions across the globe

## Engagement Update

- For the first time in 2022, CalPERS considered specific climate-related criteria to help inform director votes at all CA100+ companies. This is a new policy to hold directors accountable on climate change just as we do with diversity and executive compensation. As a result, CalPERS voted against 95 directors at 26 CA100+ companies
- Over 70% of CA100+ companies have now set a net zero by 2050 target or ambition
- CA100+ Net Zero Benchmark was launched in March 2021 and updated in March 2022

## Climate Action 100+ Engagement Goals

- Investors signed on to Climate Action 100+ are requesting the boards and senior management of companies to:
  - Improve the governance of climate-related risks and opportunities
  - Curb greenhouse gas (GHG) emissions across the value chain to be consistent with net-zero by 2050, and
  - Strengthen climate-related financial disclosures in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

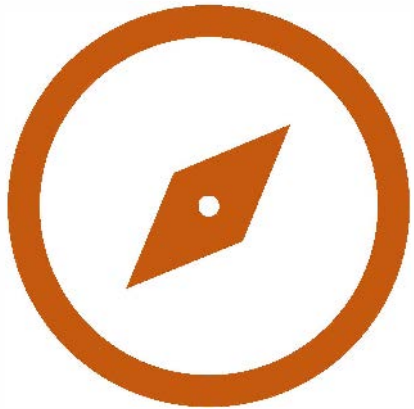
# Evaluation | Public Equity

## What has worked



- Despite volatile and challenging market conditions, Global Equity delivered positive relative performance for the fiscal year. Intended exposure to Low Volatility and Value tilts were rewarded and positively contributed to relative performance
- Reduced technology and operating costs, resulting in savings of approximately \$1.6 million

## Areas for refinement



- Active and Alternative Beta strategies added value, but their contribution to the overall portfolio was limited due to a smaller allocation to active strategies as a result of legacy strategic reduction in CalPERS Total Fund active risk implemented 3 years ago
- Refine the strategy search process to improve the opportunistic deployment of capital

## Priority Initiatives for 2022-23 | Public Equity

- Progress the implementation of the Total Fund Governance & Sustainability Strategic Plan, with a continued focus on climate change, corporate board diversity and executive compensation
- Implement business process improvements to improve platform robustness and efficiency
- Further diversify active equity strategies to efficiently capture the equity risk premium

# Contents

## Portfolio Structure & Annual Program Reviews

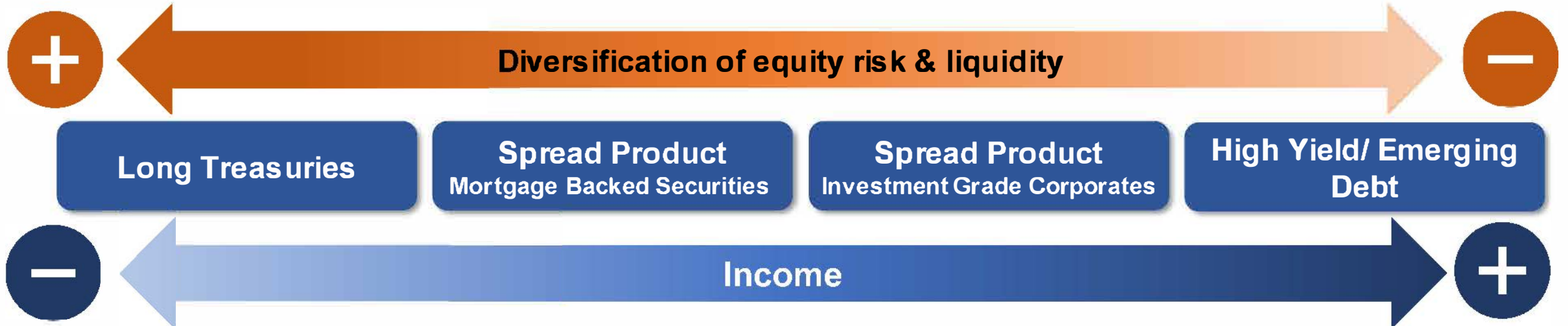
- I. Public Markets
  - a. Public Equity
  - b. Fixed Income
- II. Opportunistic
- III. Private Markets
  - a. Private Equity
  - b. Real Assets



# Role of Fixed Income

## Fixed Income

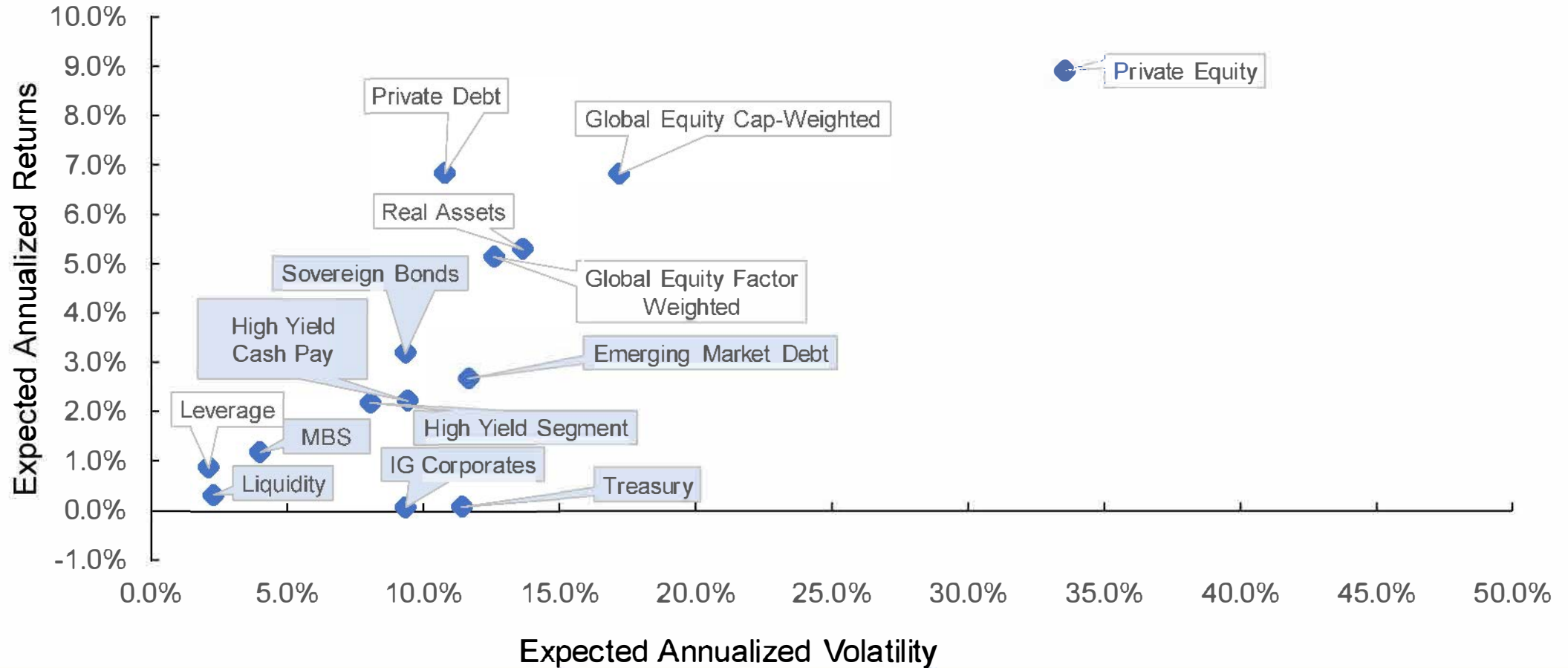
Serve as a long-term economic diversifier to equity risk and be a reliable source of income and liquidity



The asset segments that comprise the Fixed Income portfolio have different risk and return characteristics. Some are less liquid, provide less diversification of equity risk, but provide more income. Others provide more diversification and are liquid but provide less income

# Role of Fixed Income

Board Adopted Capital Market Assumptions (5-year)



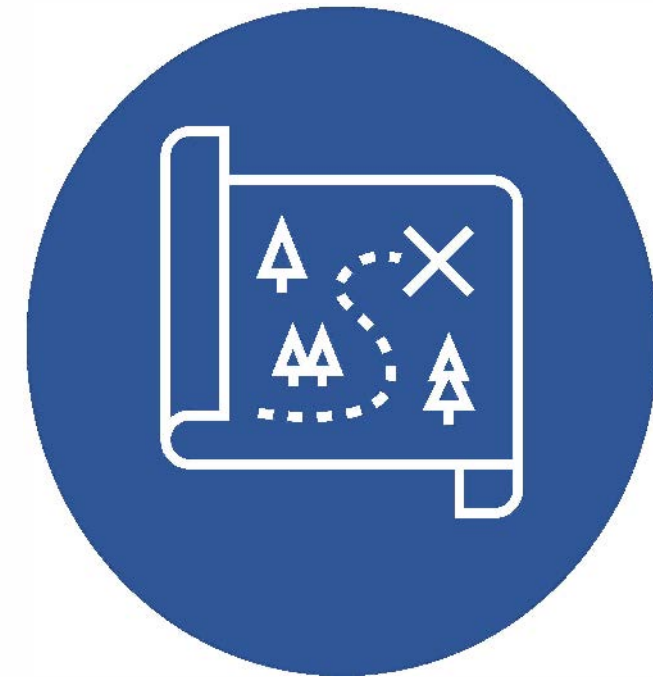
# Fixed Income Environment/Themes

## Current Concerns

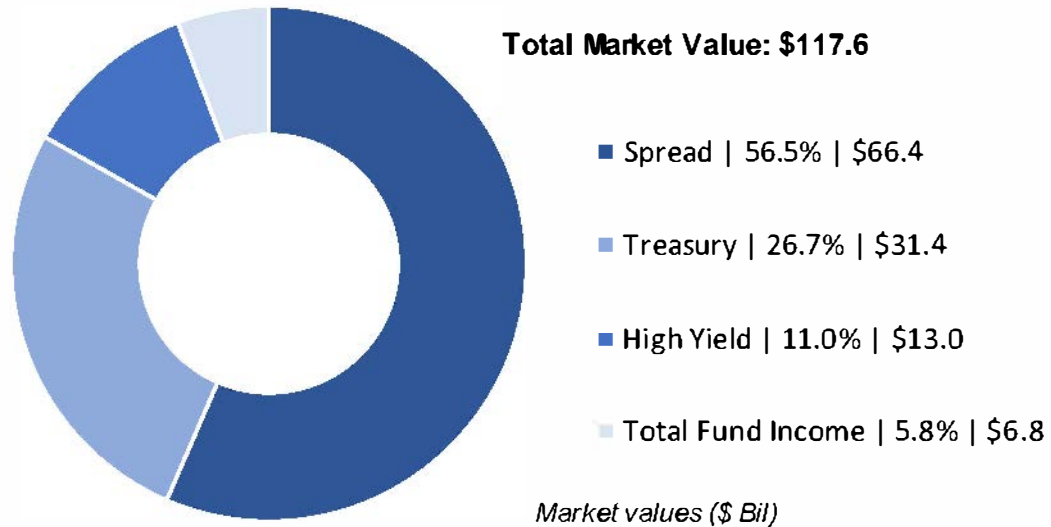
- Volatile markets, heightened geopolitical risk and the Russia/Ukraine conflict have led to highly uncertain returns
  - Deglobalization momentum and higher inflation
  - Aggressive central banks and higher interest rates
- A global economy that continues to slow is our concern

## Investment Themes

- Market uncertainty provides the opportunity to take advantage of the improved risk/return probabilities and cheaper valuations



# Fixed Income | Role and Structure



	% of Total Fund Actual	% of Total Fund Target <sup>2</sup>
Fixed Income	26.7	28 (+/- 6)
Long Spread	15.1	15
Long Treasury <sup>1</sup>	7.1	10
High Yield	3.0	3
Total Fund Income	1.5	N/A

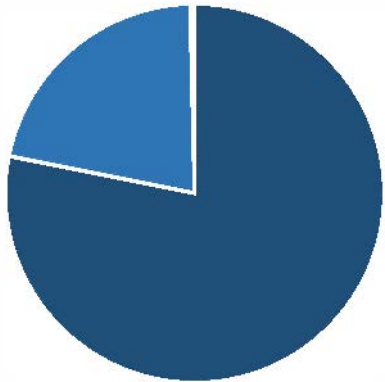
- Fixed Income provides liquidity and income in the strategic asset allocation. There were three distinct segments in the last fiscal year.
  1. Treasury Segment is designed to be a long-term economic diversifier to equity risk and a reliable source of liquidity
  2. Spread Segment provides a reliable source of income and an additional source of liquidity
  3. High Yield Segment provides exposure to economic growth and is a reliable source of income
- Over 95% of Fixed Income is invested in cost-efficient, internally-managed strategies

<sup>1</sup> Underweight vs. policy target exists in part to proxy overweights in illiquid private asset classes (Private Equity and Real Assets)

<sup>2</sup> Note: Target as of June 30, 2022. A new strategic asset allocation target, to be effective 7/1/22, was adopted by the CalPERS Board of Administration on 11/15/21

# Treasury Snapshot (as of June 30, 2022)

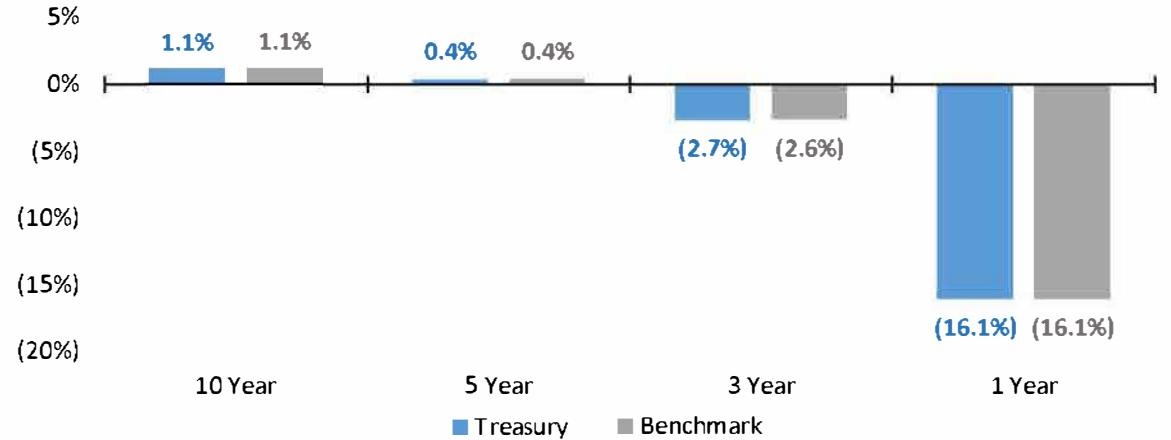
## Asset Type Allocation (\$ Bil)



**Total Market Exposure: \$31.4**

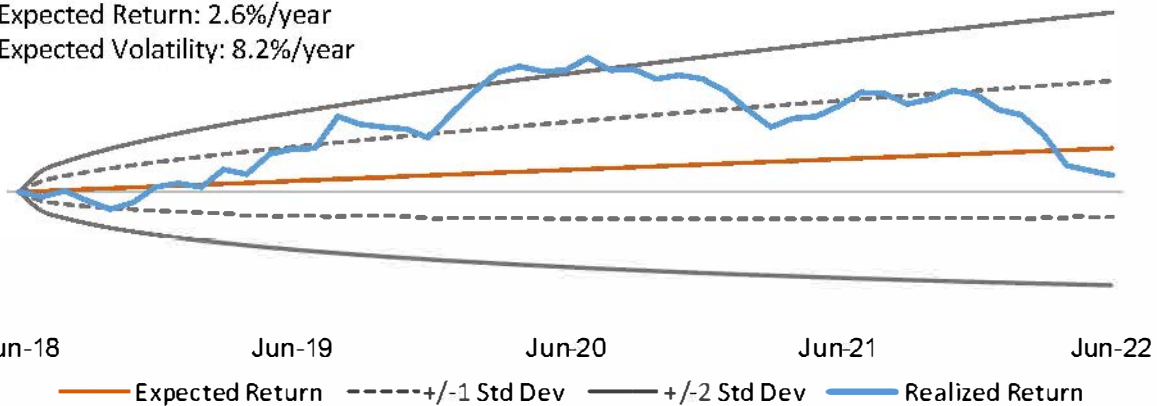
- US Treasury Cash Bonds | 78.1% | \$24.5
- US Treasury Futures | 21.5% | \$6.7
- Cash Securities | 0.4% | \$0.1

## Total Return



## Cumulative Return vs 2018 SAA Expectations<sup>1</sup>

Expected Return: 2.6%/year  
Expected Volatility: 8.2%/year



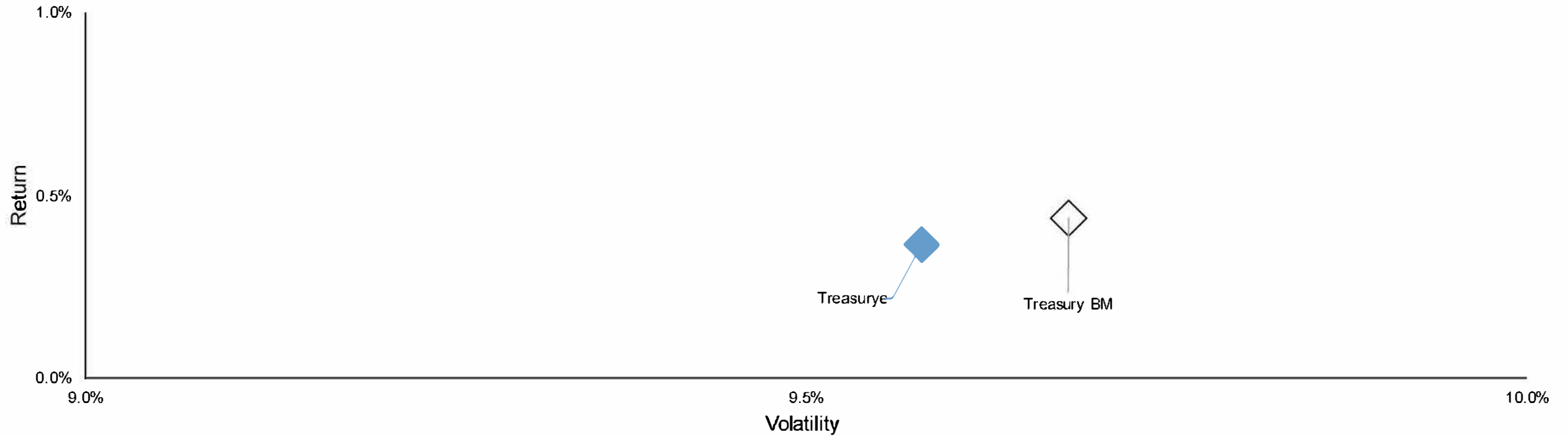
## Key Metrics



Note: All performance reported net of investment expenses and annualized unless noted otherwise. Risk measures are calculated using monthly returns.

<sup>1</sup> Chart shown from the Treasury segment's inception of 7/1/2018

# 5 Year Treasury Risk-Return (as of June 30, 2022)



	Return	Volatility	Sharpe Ratio	Tracking Error (bps)	Information Ratio
Treasury	0.4%	9.6%	(0.06)	36	(0.19)

# Treasury Segment Risk Summary (as of June 30, 2022)

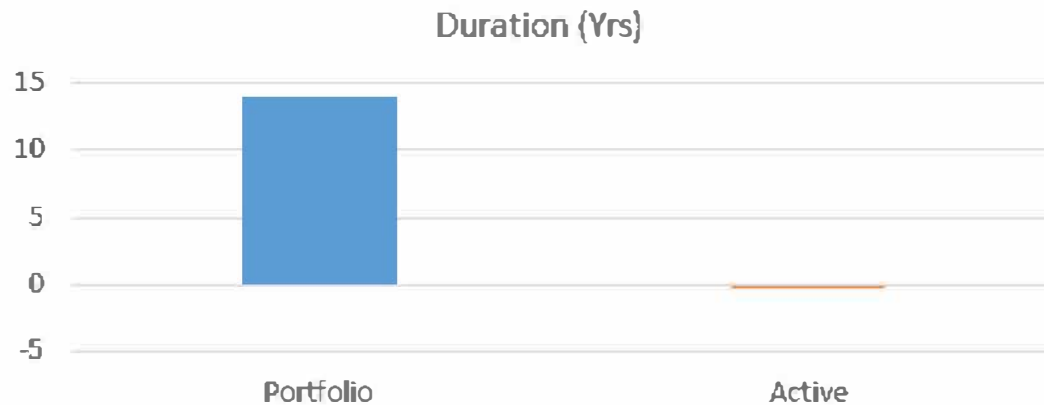
## Segment Risk Statistics (Forecasted)

Segment Volatility	11.8%
Benchmark Volatility	11.8%
Tracking Error	0.11%

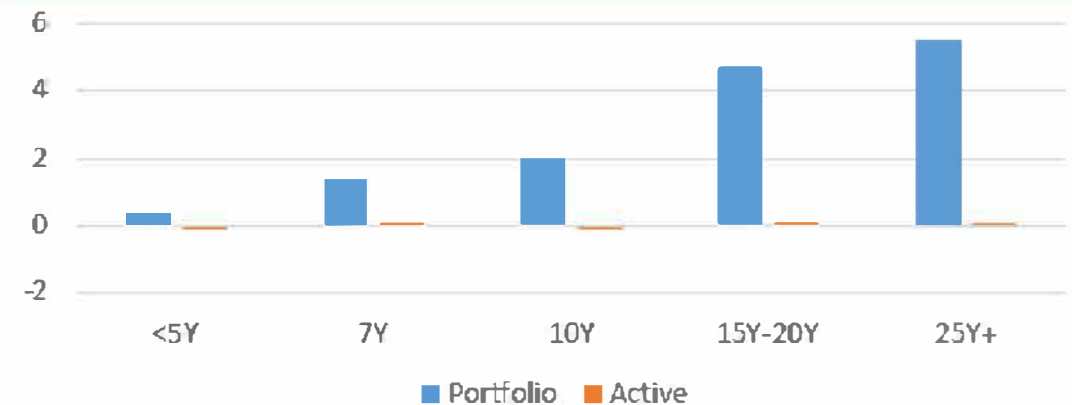
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Active Risk Contribution	% Risk
<b>Total Segment Risk</b>	<b>11.8%</b>	<b>100.0%</b>	<b>0.11%</b>	<b>100.0%</b>
US Interest Rates	11.8%	100.0%	0.01%	5.3%
Money Market Factors	0.0%	0.0%	0.00%	4.1%
Convexity	0.0%	0.0%	0.00%	0.0%
Idiosyncratic	0.0%	0.0%	0.10%	90.6%

## Key Portfolio Characteristics

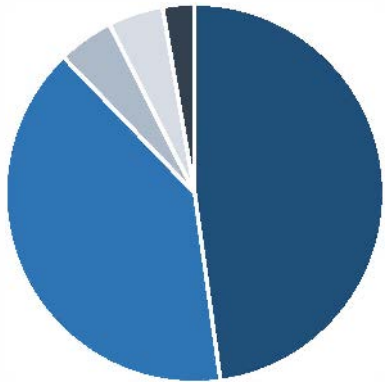


## Key Interest Rate Durations



# Spread Snapshot (as of June 30, 2022)

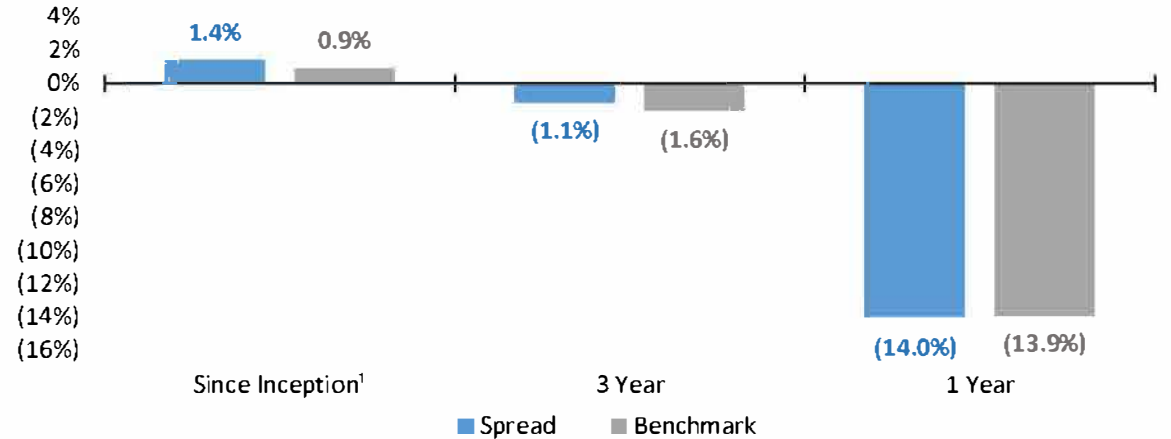
## Strategy Allocation (\$ Bil)



**Total Market Value: \$66.4**

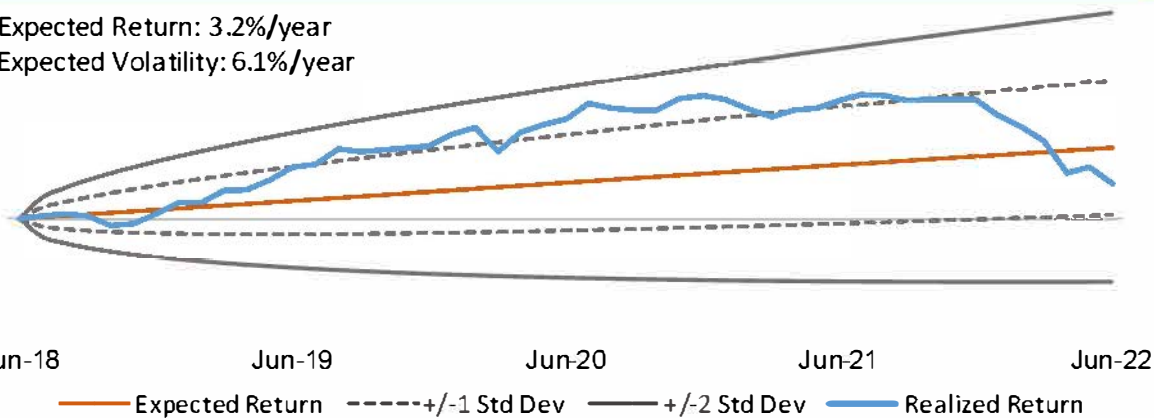
- Mortgage | 47.8% | \$31.8
- Credit ex Sovereign | 40.0% | \$26.5
- Spread High Yield | 4.8% | \$3.2
- Sovereign | 4.7% | \$3.1
- Other | 2.7% | \$1.8

## Total Return



## Cumulative Return vs 2017 SAA Expectations<sup>1</sup>

Expected Return: 3.2%/year  
Expected Volatility: 6.1%/year



## Key Metrics



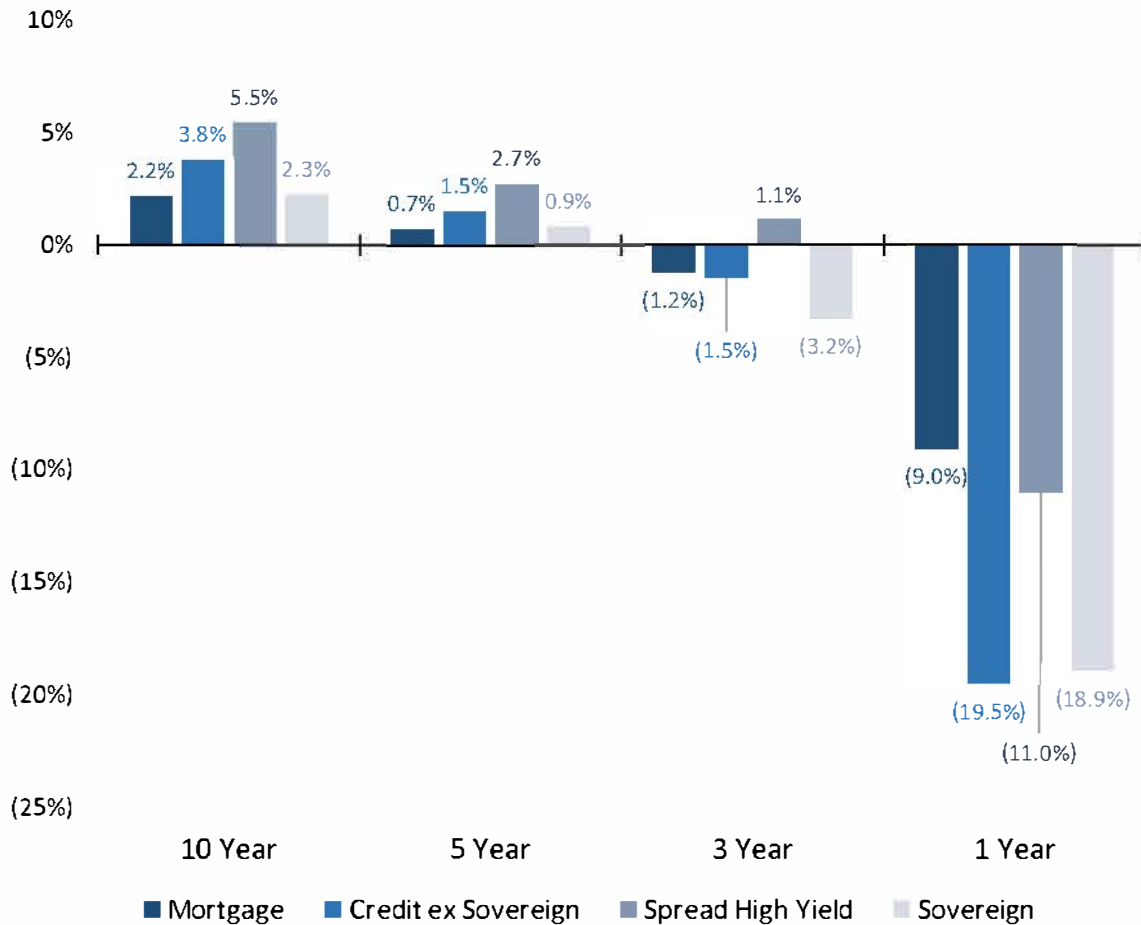
Note: All performance reported net of investment expenses and annualized unless noted otherwise.  
Risk measures are calculated using monthly returns.

<sup>1</sup> Information shown from the Spread segment's inception of 7/1/2018

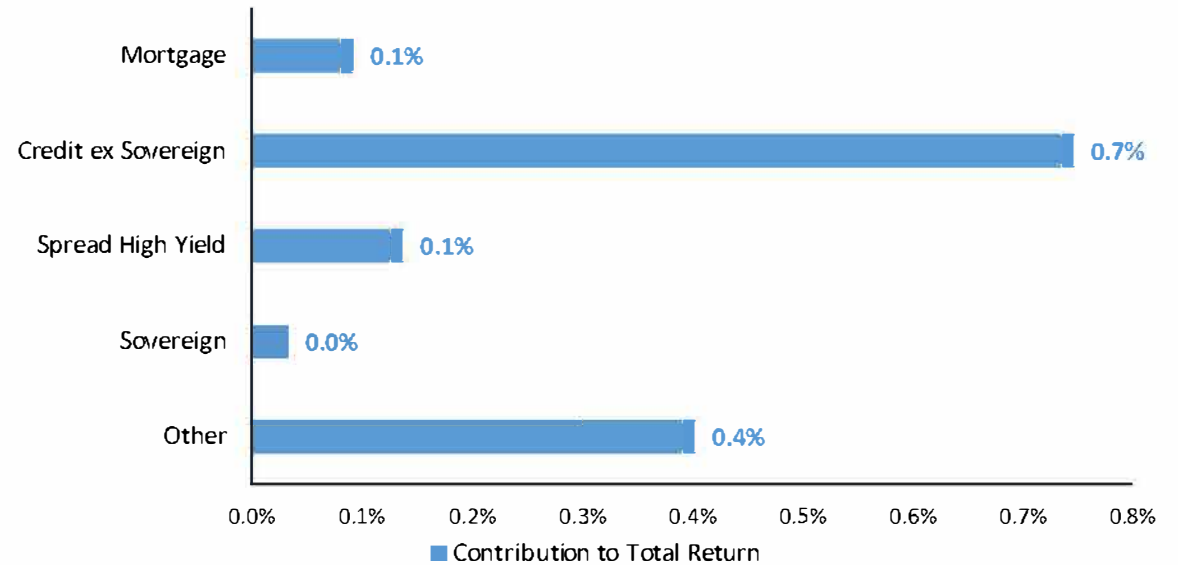


# Spread Total Return by Strategy (as of June 30, 2022)

**Total Return by Strategy<sup>1,2</sup>**



**Contribution to Spread Segment Total Return Since 7/1/2018<sup>2</sup>**



	Average Allocation	Return	Contribution to Total Return
<b>Spread</b>	<b>100.0%</b>	<b>1.4%</b>	<b>1.4%</b>
Mortgage	45.0%	0.7%	0.1%
Credit ex Sovereign	38.8%	2.2%	0.7%
Spread High Yield	4.7%	2.3%	0.1%
Sovereign	4.7%	1.3%	0.0%
Other <sup>3</sup>	6.7%	-	0.4%



Note: All performance reported net of investment expenses and annualized.

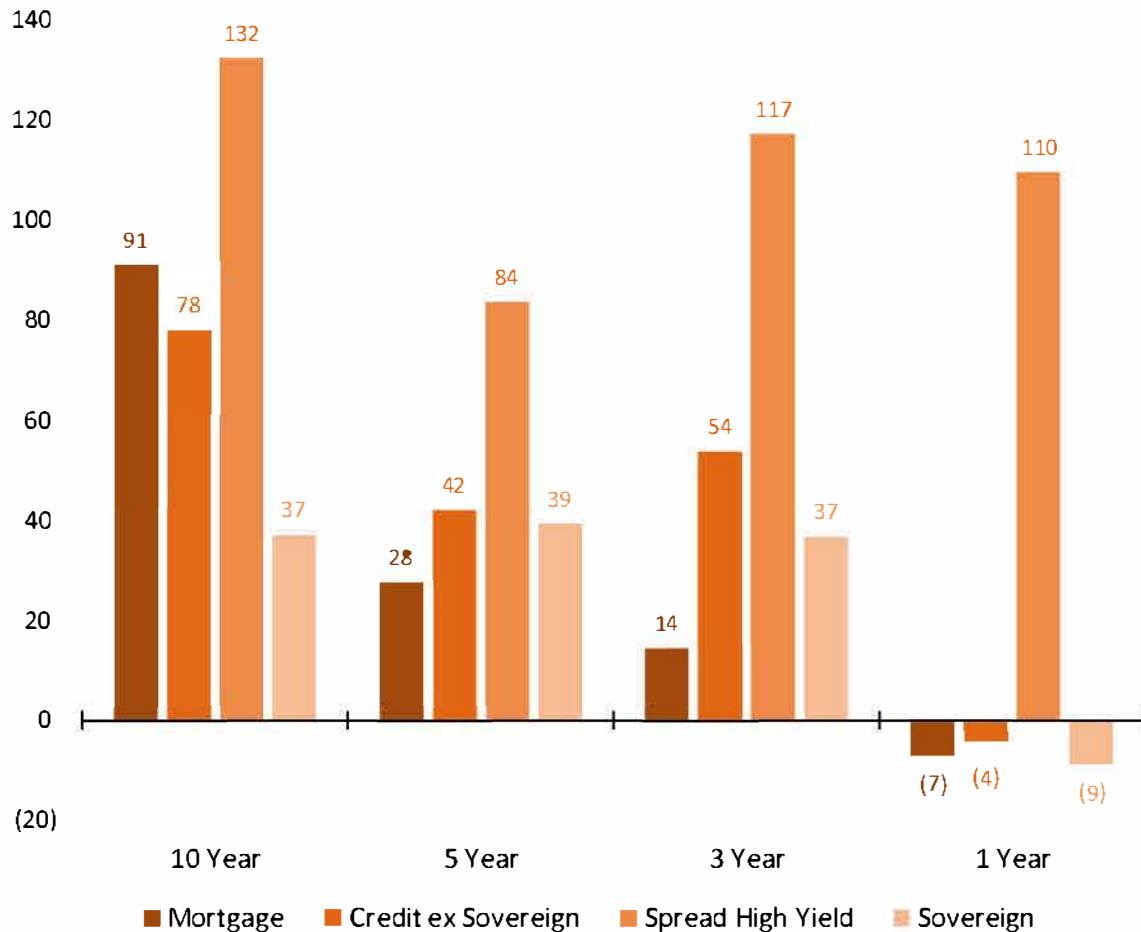
<sup>1</sup> Strategies existed and were managed by GFI prior to the Spread segment incepting.

<sup>2</sup> Spread segment incepted 7/1/2018.

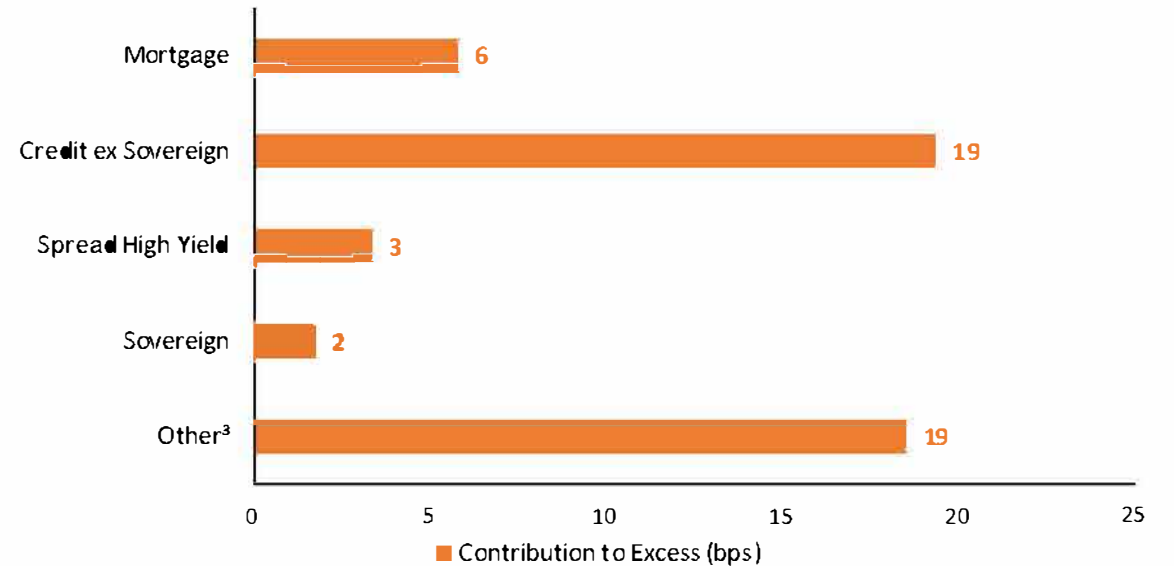
<sup>3</sup> Other includes impact from allocations to other strategies.

# Spread Excess Return by Strategy (as of June 30, 2022)

Excess Return by Strategy<sup>1</sup> (bps)



Contribution to Spread Segment Excess Return Since 7/1/2018<sup>1,2</sup> (bps)



	Average Allocation	Average BM Allocation	Return	BM Return	Excess (bps)	Contribution to Excess <sup>2</sup> (bps)
<b>Spread</b>	<b>100.0%</b>	<b>100.0%</b>	<b>1.4%</b>	<b>0.9%</b>	<b>49</b>	<b>49</b>
Mortgage	45.0%	47.8%	0.7%	0.5%	15	6
Credit ex Sovereign	38.8%	38.5%	2.2%	1.7%	47	19
Spread High Yield	4.7%	4.6%	2.3%	1.6%	70	3
Sovereign	4.7%	4.6%	1.3%	0.8%	42	2
Other <sup>3</sup>	6.7%	4.4%	-	-	-	19



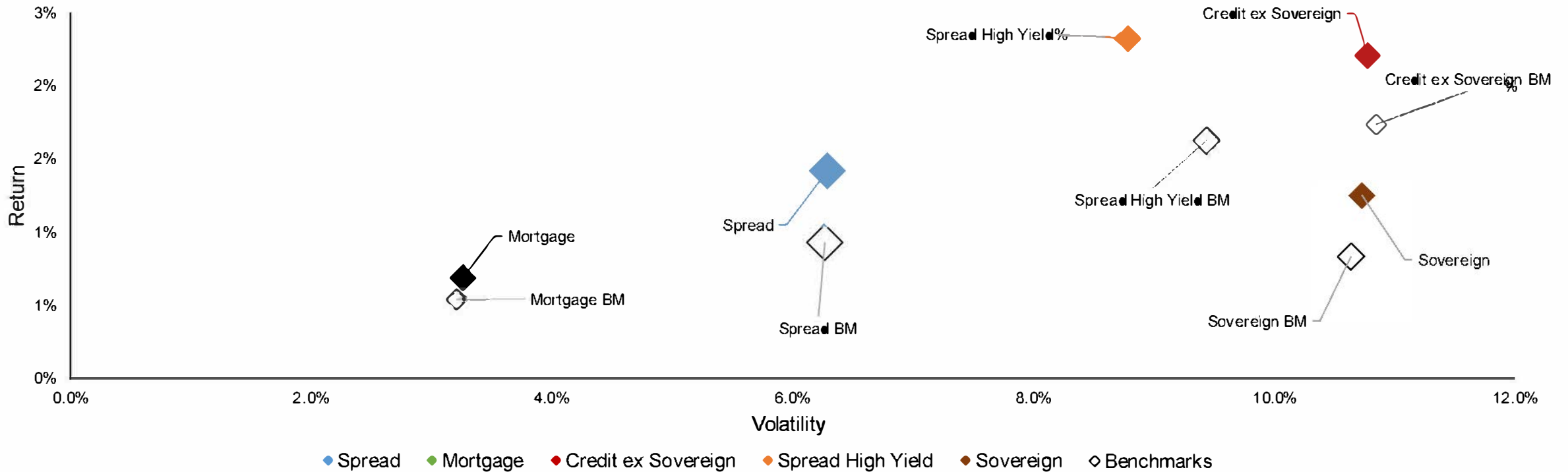
Note: All performance reported net of investment expenses and annualized.

<sup>1</sup> Strategies existed and were managed by GFI prior to the Spread segment incepting. The Spread segment incepted 7/1/2018.

<sup>2</sup> Strategy contribution to excess excludes the impact of income from securities lending, which is reflected in "Other."

<sup>3</sup> Other includes impact from allocations to other strategies, securities lending, and allocation management.

# Since Inception<sup>1</sup> Spread Risk-Return (as of June 30, 2022)



	Return	Volatility	Sharpe Ratio	Tracking Error (bps)	Information Ratio
<b>Spread</b>	<b>1.4%</b>	<b>6.3%</b>	<b>0.08</b>	<b>24</b>	<b>2.00</b>
Mortgage	0.7%	3.3%	(0.06)	30	0.51
Credit ex Sovereign	2.2%	10.8%	0.12	42	1.12
Spread High Yield	2.3%	8.8%	0.16	108	0.65
Sovereign	1.3%	10.7%	0.03	50	0.83



Note: All performance reported net of investment expenses and annualized.  
Risk measures are calculated using monthly returns.

<sup>1</sup> Information shown from the Spread segment's inception of July 1, 2018

# Spread Segment Risk Summary (as of June 30, 2022)

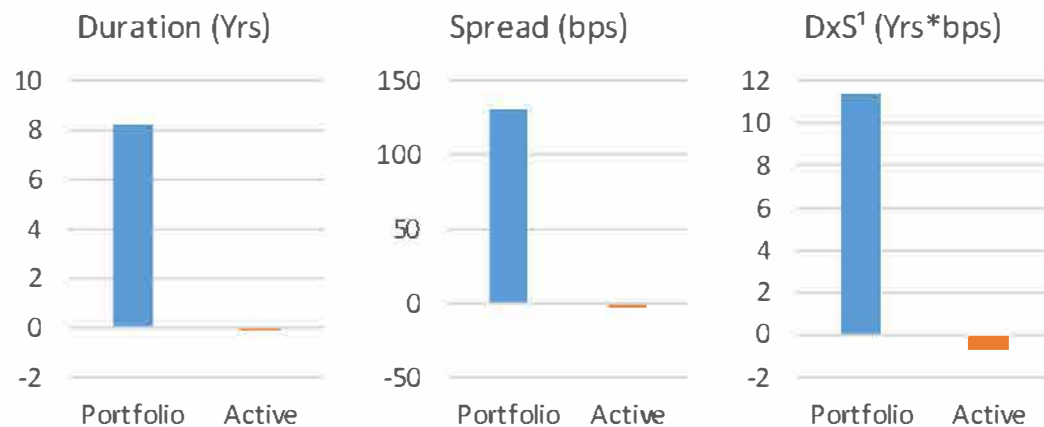
## Segment Risk Statistics (Forecasted)

Segment Volatility	6.8%
Benchmark Volatility	6.8%
Tracking Error	0.30%

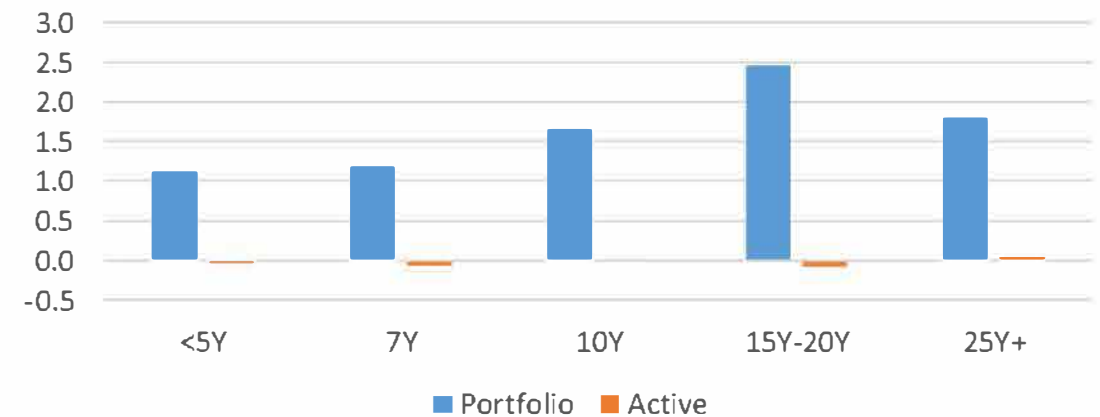
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Active Risk Contribution	% Risk
<b>Total Segment Risk</b>	<b>6.8%</b>	<b>100.0%</b>	<b>0.30%</b>	<b>100.0%</b>
US Interest Rates	5.7%	84.0%	0.00%	1.1%
US Credit	0.5%	7.5%	0.15%	49.7%
Idiosyncratic	0.0%	0.1%	0.04%	14.6%
Other	0.6%	8.4%	0.1%	34.6%

## Key Portfolio Characteristics

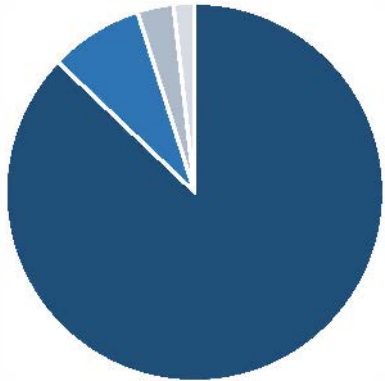


## Key Interest Rate Durations



# High Yield Snapshot (as of June 30, 2022)

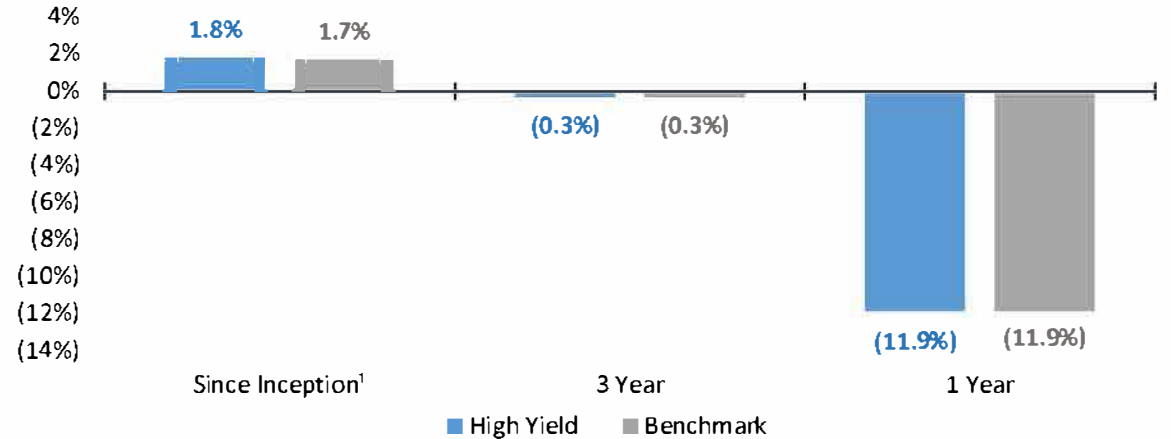
## Sector Allocation (\$ Bil)



**Total Market Value: \$13.0**

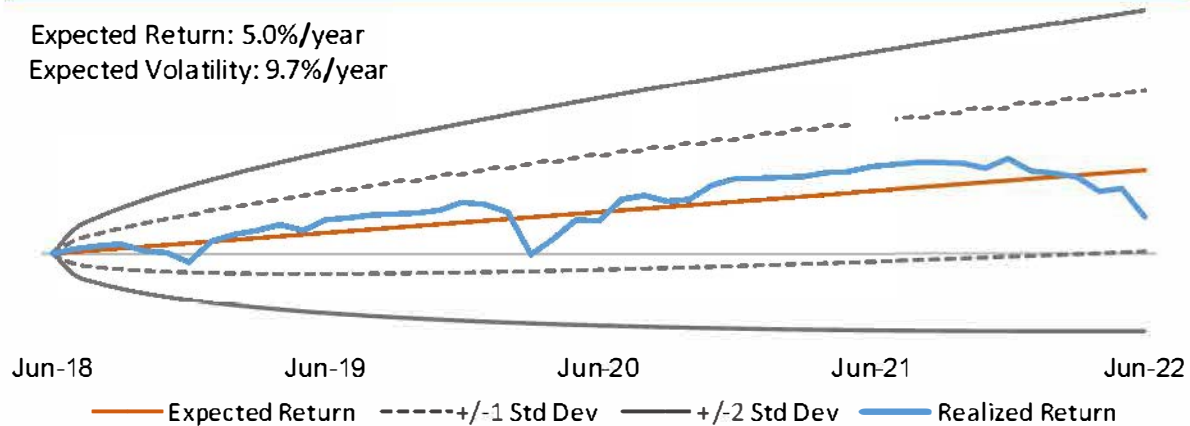
- Industrial | 87.1% | \$11.3
- Financial | 8.0% | \$1.0
- Utilities | 3.1% | \$0.4
- Cash Securities | 1.8% | \$0.2

## Total Return



## Cumulative Return vs 2017 SAA Expectations<sup>1</sup>

Expected Return: 5.0%/year  
Expected Volatility: 9.7%/year



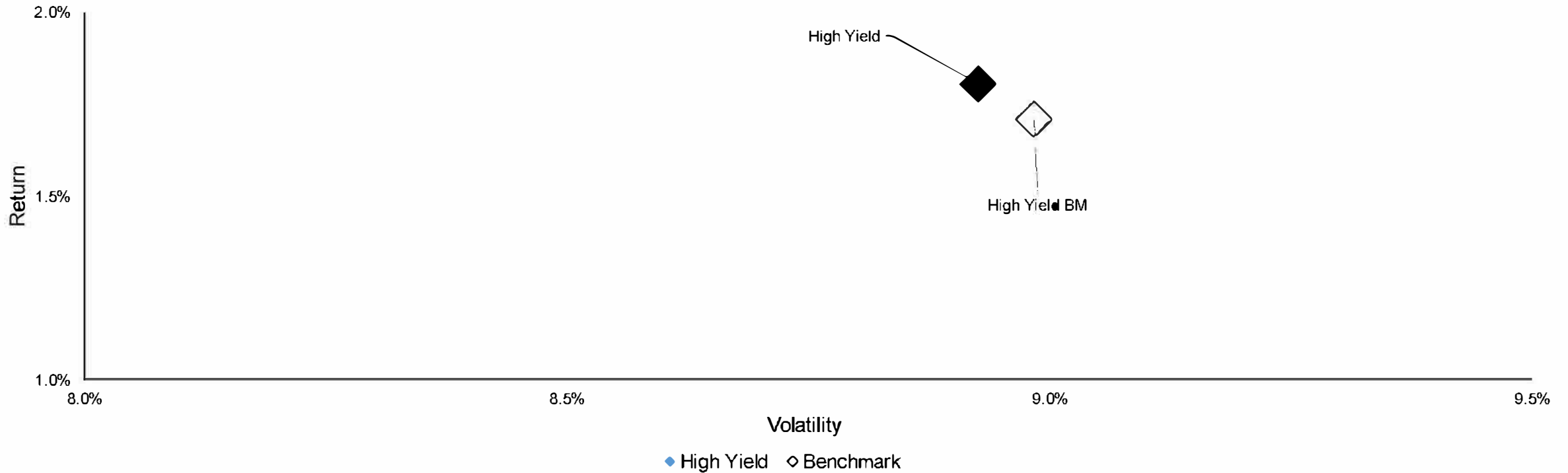
## Key Metrics



Note: All performance reported net of investment expenses and annualized unless noted otherwise. Risk measures are calculated using monthly returns.

<sup>1</sup> Information shown from the High Yield segment's inception of 7/1/2018

# Since Inception<sup>1</sup> High Yield Risk-Return (as of June 30, 2022)



	Return	Volatility	Sharpe Ratio	Tracking Error (bps)	Information Ratio
High Yield	1.8%	8.9%	0.10	31	0.31

# High Yield Segment Risk Summary (as of June 30, 2022)

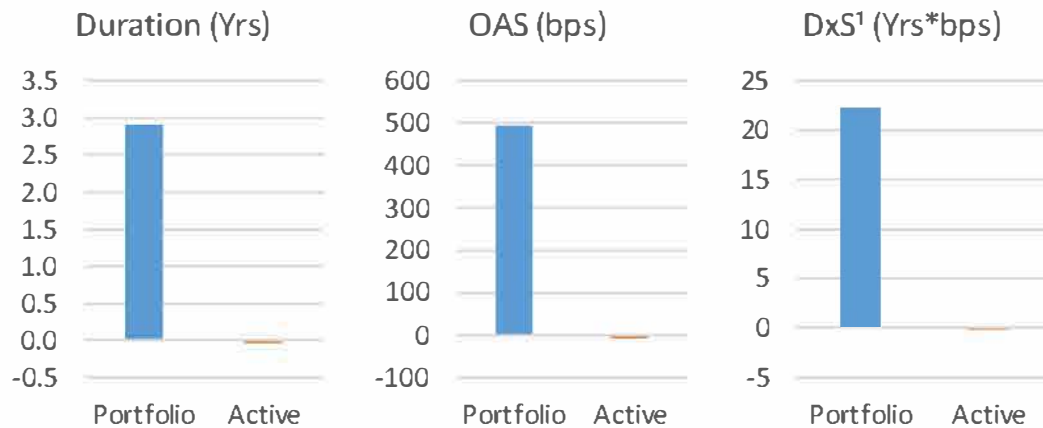
## Segment Risk Statistics (Forecasted)

Segment Volatility	7.7%
Benchmark Volatility	8.0%
Tracking Error	0.40%

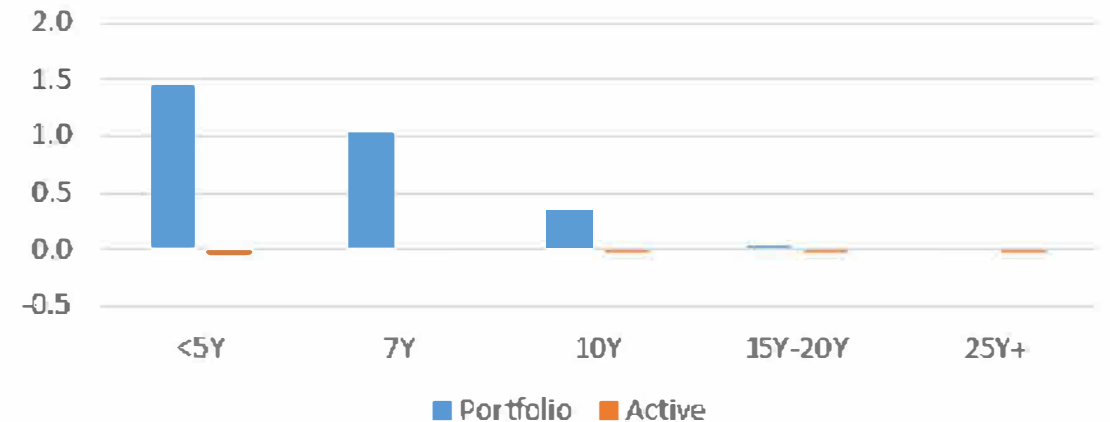
## Risk Decomposition (Forecasted)

	Portfolio Risk Contribution	% Risk	Active Risk Contribution	% Risk
<b>Total Segment Risk</b>	<b>7.7%</b>	<b>100.0%</b>	<b>0.40%</b>	<b>100.0%</b>
US High Yield	7.8%	100.9%	0.37%	91.9%
US Interest Rates	-0.3%	-3.6%	0.00%	-0.6%
Idiosyncratic	0.1%	0.8%	0.05%	12.9%
Other	0.2%	2.0%	-0.02%	-4.1%

## Key Portfolio Characteristics



## Key Interest Rate Durations



## Integration of Governance & Sustainability | Fixed Income

- Implemented ESG risk screening tool using rating agency scores
- Invested in new issues of green, social, sustainability, and sustainability-linked bonds and grew holdings to approximately \$950mn
- Collaborated with Corporate Governance on engagements
- Developed ESG questionnaire for external managers
- Collaborated with other asset classes on presentation to INVO staff on ESG integration approaches
- Participated on Credit Roundtable ESG committee



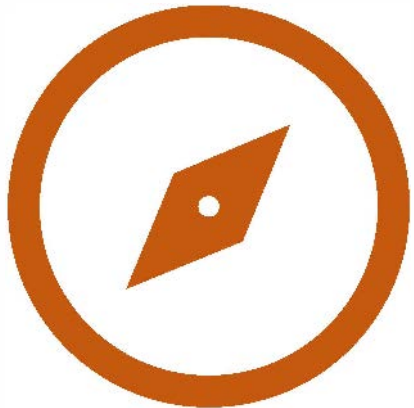
## Evaluation | Fixed Income

### What has worked



- Continued strong long-term relative performance
- Focused on our role, collaboration, and impact to Fixed Income and the Total Fund
- Facilitated Total Fund implementation of leverage and liquidity via the Treasury and Mortgage portfolios

### Areas for Refinement



- Reducing the operational complexity and inefficiencies in the Treasury Segment
- Improve Investment Office information barriers so the Fixed Income portfolios are not restricted when other asset classes have material non-public information

---

# Priority Initiatives for 2022-23 | Global Fixed Income

- Continue to assess opportunistically allocating to the Total Fund Income portfolio to generate incremental long-term alpha
- Successfully invest in a cost-effective manner the increased Strategic Asset Allocations to High Yield and Emerging Market Debt
- Leverage the fundamental analysis skills in Global Fixed Income to support Private Equity, Opportunistic Strategies, Real Assets and the Research and Strategy Group in analyzing potential new investment opportunities
- Continue to research innovative ways to add long-term returns in fixed income assets

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# Role of Opportunistic Strategies & Private Debt

## Opportunistic Strategies & Private Debt

Harvest illiquidity premium, produce current income,  
invest opportunistically

### Low Liquidity Enhanced Return

- Produce higher yields than cash-like securities through the illiquidity premium
- Very low probability of principal loss

### Opportunistic Strategies

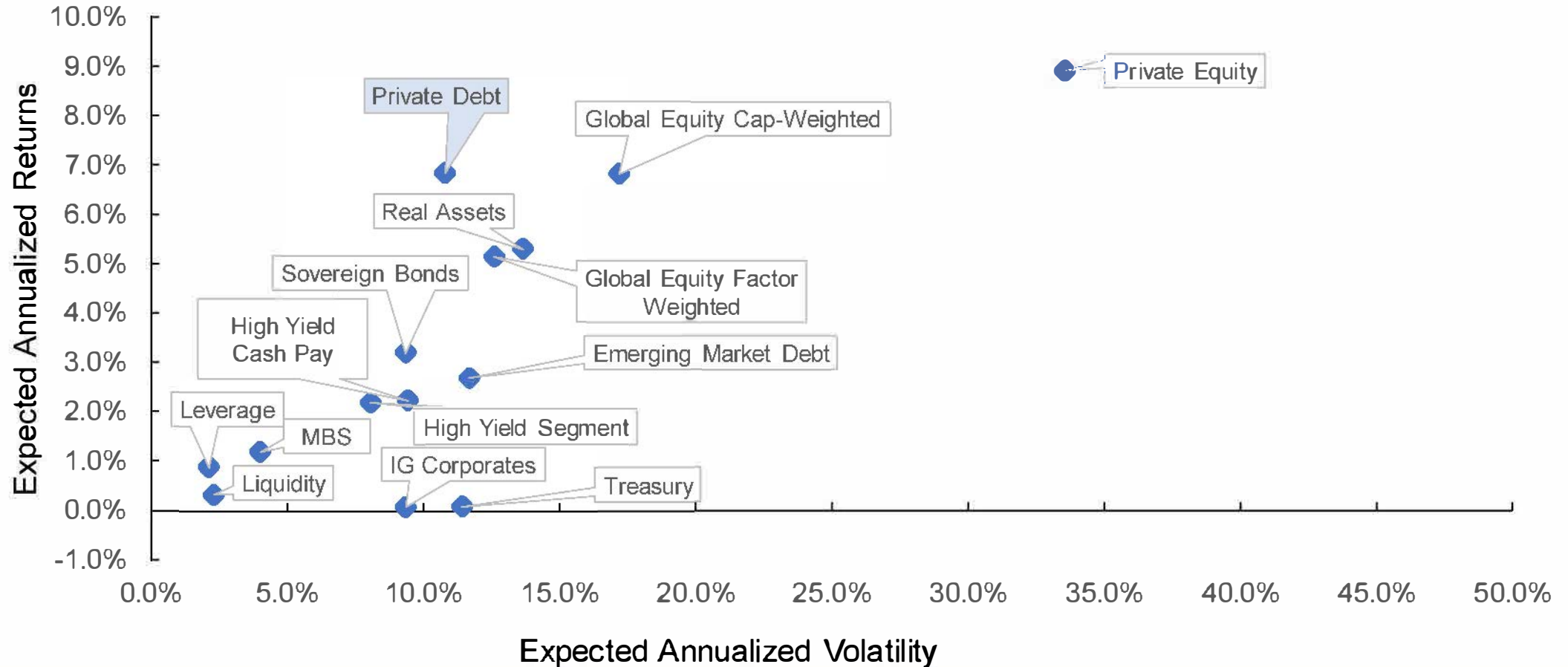
- Permits investments outside Strategic Asset Allocation
- Opportunistically seeks to invest in perceived undervalued opportunities

### Private Debt

- Attractive risk-adjusted return driven by premium extracted from illiquidity and complexity of private loans
- Complements Private Equity

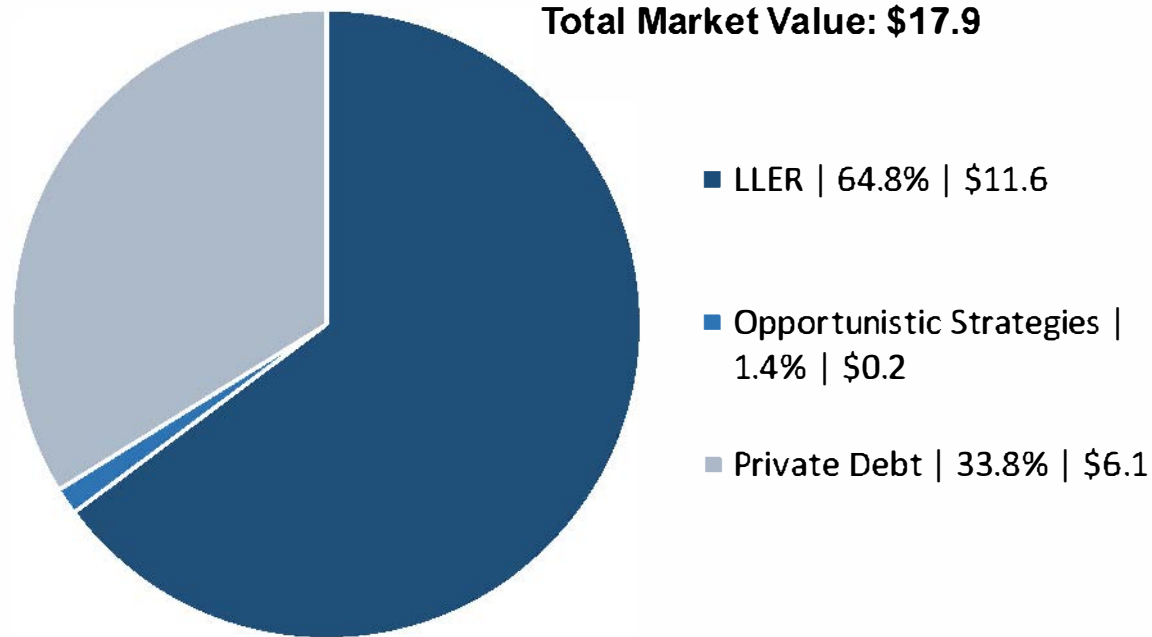
# Role of Opportunistic Strategies & Private Debt

Board Adopted Capital Market Assumptions (5-year)



# Opportunistic Strategies & Private Debt | Overview (as of June 30, 2022)

## Strategy Allocation (\$ Bil)



## Strategies Described

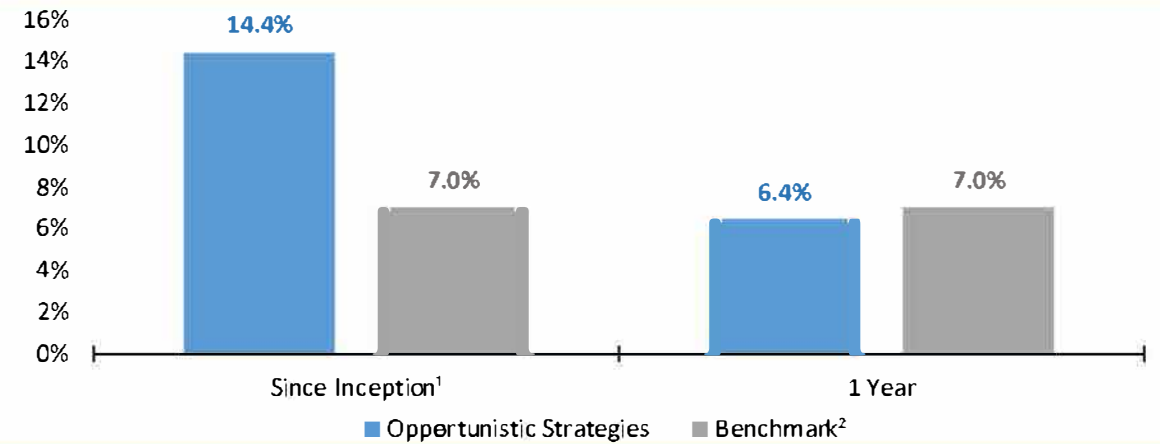
- **Low Liquidity Enhanced Return (LLER)** seeks to earn an illiquidity premium in the market through investing in securities that have a remote possibility of principal loss
- **Opportunistic Strategies** permits the investment in opportunities and the establishment of innovative portfolios outside the strategic asset allocation to invest in assets perceived to be substantially undervalued
- **Private Debt** seeks to provide an attractive risk-adjusted return through the premium driven by the certainty of execution and the complexity in originating, underwriting and structuring of private loans

# Opportunistic Strategies & Private Debt Snapshot (as of June 30, 2022)

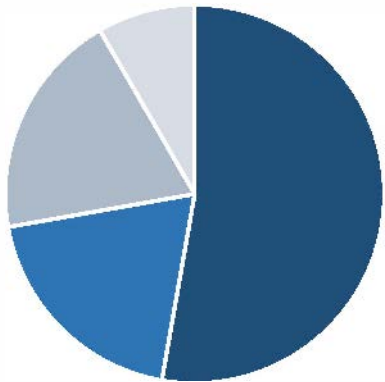
LLER Total Return



Opportunistic Strategies Total Return



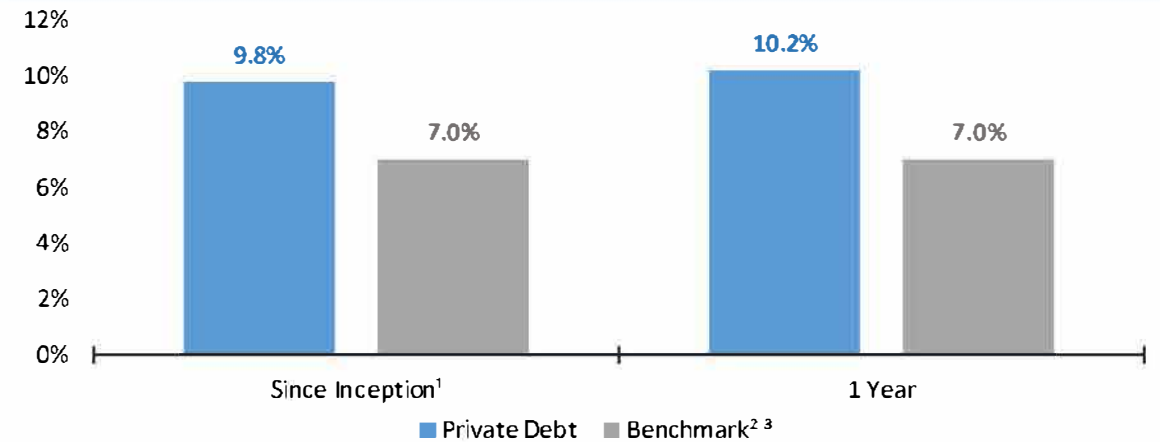
Private Debt Strategy Allocation (\$ Bil)



Total Market Value: \$6.1

- Direct Lending | 52.8% | \$3.2
- Specialty Lending | 19.4% | \$1.2
- Liquidity Financing | 19.4% | \$1.2
- Real Estate Financing | 8.4% | \$0.5

Private Debt Total Return



Note: All performance reported net of investment expenses and annualized.

<sup>1</sup> Information shown from each strategy's inception. Private Debt – 7/1/2020; LLER – 11/1/2014; Opportunistic Strategies – 6/1/2020

<sup>2</sup> Strategy benchmarks: LLER – 1M USD LIBOR; Private Debt – 7% Return; Opportunistic Strategies – 7% Return.

<sup>3</sup> The Private Debt benchmark changed to the S&P LSTA US Leveraged Loan 100 + 125 bps effective 7/1/2022, the Private Debt segment's inception date.

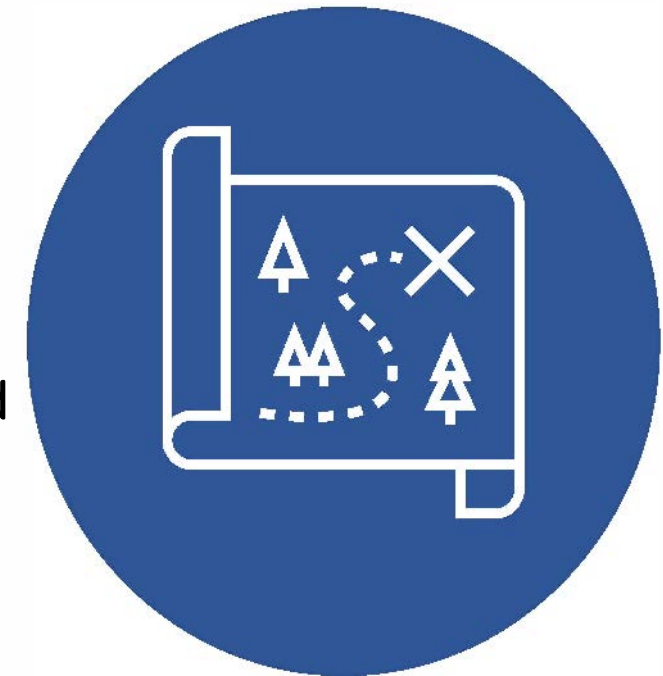
# Market Environment/Themes | Opportunistic Strategies & Private Debt

## Current concerns

- Impact of geopolitical tensions, inflation challenges, supply chain issues and rising interest rates on borrowers' earnings and their ability to service their loans

## Investment Themes

- The market revaluation of Growth companies has created investment opportunities for Private Debt
- “Hung deals” of banks from failed public market syndication have created attractive co-investment opportunities for Private Debt





# Integration of Governance & Sustainability | Opportunistic Strategies & Private Debt

- The Opportunistic program is integrating ESG factors into the manager assessment process by:
  - Reviewing how external managers incorporate ESG into their investment-decision making through the Due Diligence Questionnaire and annual review processes
- Although still in the early stages, private debt managers continue to improve on ESG-related engagements
  - A manager embedded a ratcheting mechanism to lower interest rates as the borrower meets certain criteria, to ensure ongoing ESG engagements
  - A manager has taken the initiative to have one of their funds to be Article 8<sup>1</sup> compliant

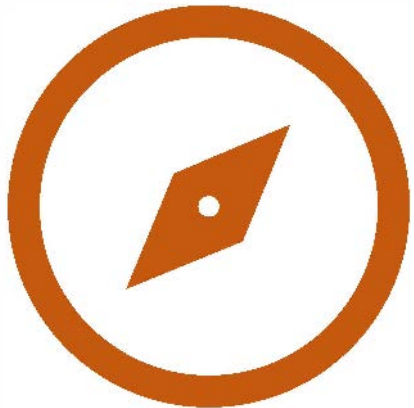
# Evaluation | Opportunistic Strategies & Private Debt

## What has worked



- Since inception, the CalPERS private debt area has committed almost \$20Bn, with \$6Bn deployed
- Having been in run-off mode until late-2021 (~\$7Bn), the team has since rebuilt the Low Liquidity Enhanced Return portfolio to almost \$12Bn (as of 06/30/22)

## Areas for Refinement



- A different set of talents is needed in addition to what is needed to sustain current deployment pace
- The need to further adapt eFront / PEARS will help to better understand exposure, performance and risks of the portfolio

---

## Priority Initiatives for 2022-23 | Opportunistic Strategies & Private Debt

- Develop and implement a budget and resourcing plan to meet the Private Debt allocation target within the Strategic Asset Allocation
- Establish a portfolio review process for existing managers, investments, and strategies to better understand risks and opportunities of private debt strategies
- Deploy eFront (PEARS) system enhancements related to SAA implementation and improved compliance monitoring
- Continue to deploy capital to meet the private debt allocation target and to ensure a robust and well diversified portfolio

# Contents

## Portfolio Structure & Annual Program Reviews

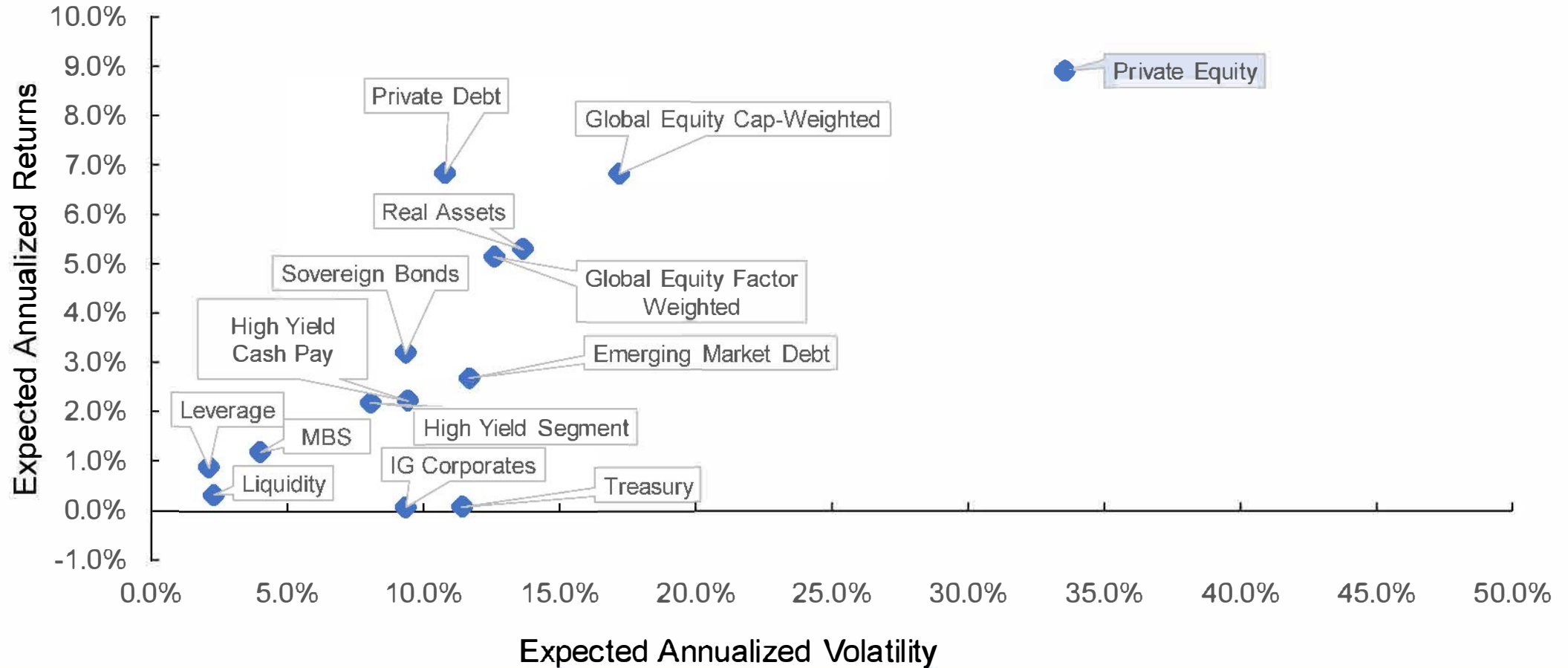
- I. Public Markets
  - a. Public Equity
  - b. Fixed Income
- II. Opportunistic
- III. Private Markets
  - a. Private Equity
  - b. Real Assets

# Role of Private Equity

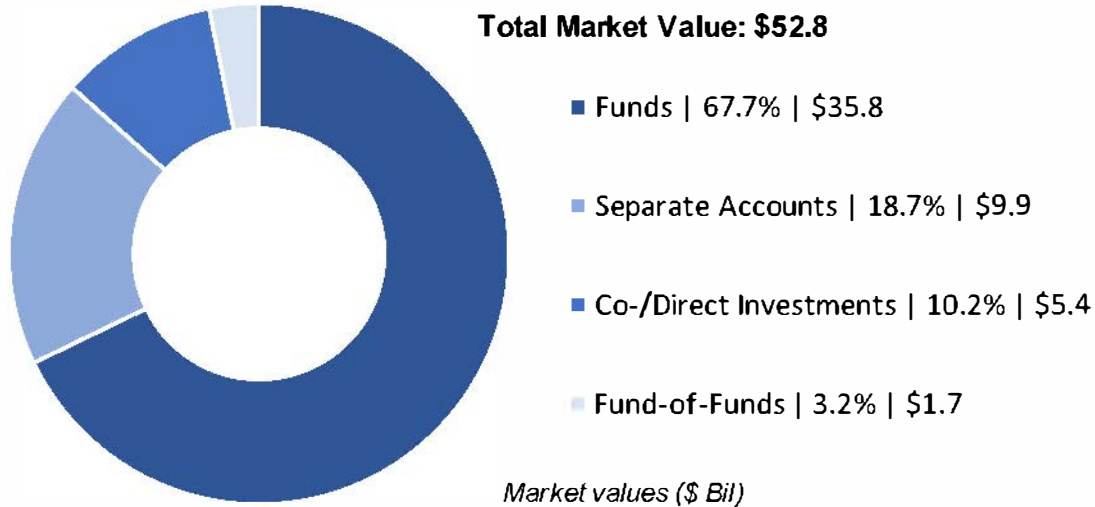
- Enhance equity returns through an active, value-added approach
- Major driver of returns is appreciation, aided by leverage, with negligible cash yield
- Forward focus on co-investment

# Role of Private Equity

Board Adopted Capital Market Assumptions (5-year)



# Private Equity | Role and Structure



	% of Total Fund Actual	% of Total Fund Target <sup>1</sup>
Private Equity	12.0	8 (+/- 4)

- Private Equity provides growth exposure in the strategic asset allocation. Its goal is to provide active equity exposure to private companies to generate returns greater than public equity
- The portfolio is highly diversified across investment type, industry segment, investment strategy, geography, vintage year, and underlying portfolio companies
- Long-term priorities for the asset class include forming deep partnerships with high-quality managers, ramping a co-investment program, and integrating data more deeply into all aspects of the program

<sup>1</sup> Note: Target as of June 30, 2022. A new strategic asset allocation target, to be effective 7/1/22, was adopted by the CalPERS Board of Administration on 11/15/21

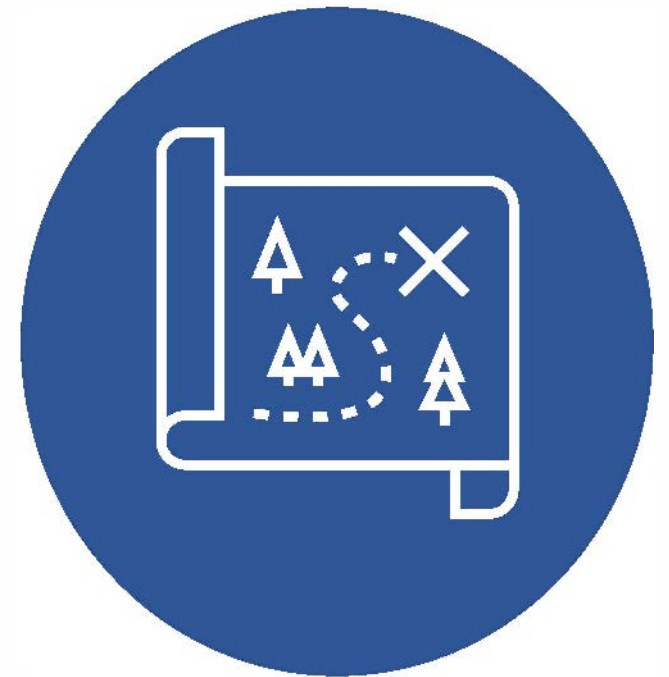
# Market Environment/Themes | Private Equity

## Current Concerns

- Broader market pullback driven denominator effect coupled with lower return expectations from the existing portfolio will pressure our commitment to private equity. Consistency is key

## Investment Themes

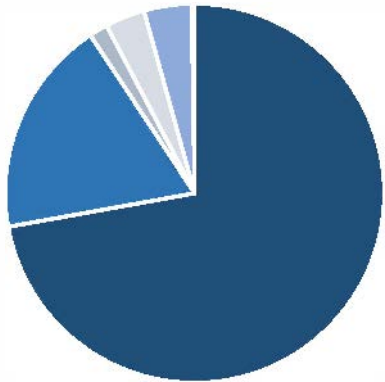
- Maintain our investment pace to deploy capital in a lower valuation environment
- Use dislocation in market and fundraising environment to opportunistically expand our exposure to high quality managers and assets
- Continue to ramp of our co-investment program and deepen our sector expertise





# Private Equity Snapshot (as of June 30, 2022)

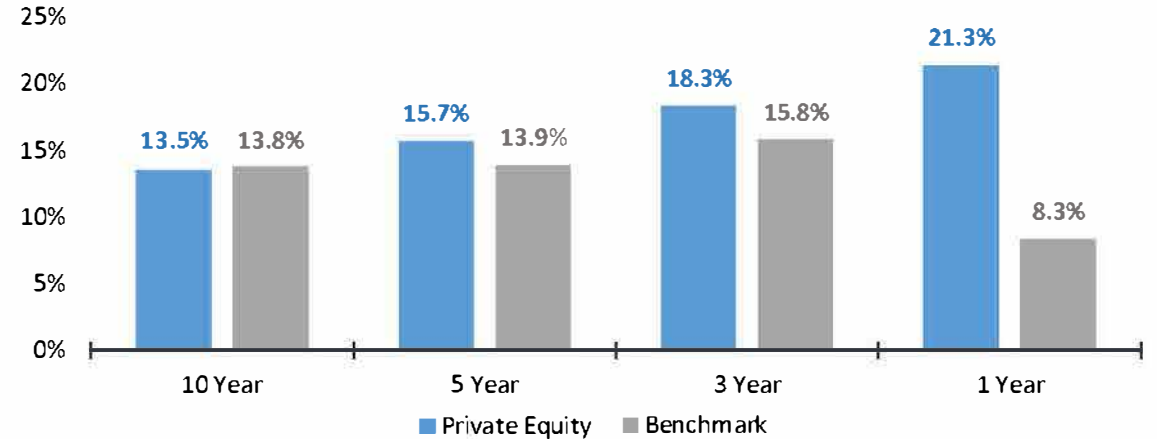
## Strategy Allocation (\$ Bil)



**Total Market Value: \$52.8**

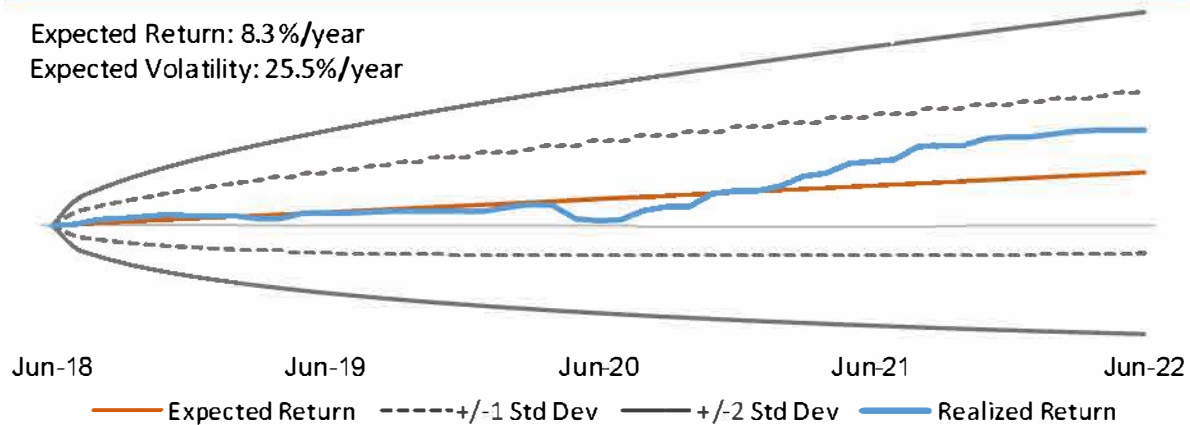
- Buyouts | 72.2% | \$38.1
- Growth/Expansion | 18.6% | \$9.8
- Venture | 1.6% | \$0.8
- Credit | 3.4% | \$1.8
- Opportunistic | 4.1% | \$2.2
- Other | 0.2% | \$0.1

## Total Return



## Cumulative Return vs 2017 SAA Expectations<sup>1</sup>

Expected Return: 8.3%/year  
Expected Volatility: 25.5%/year

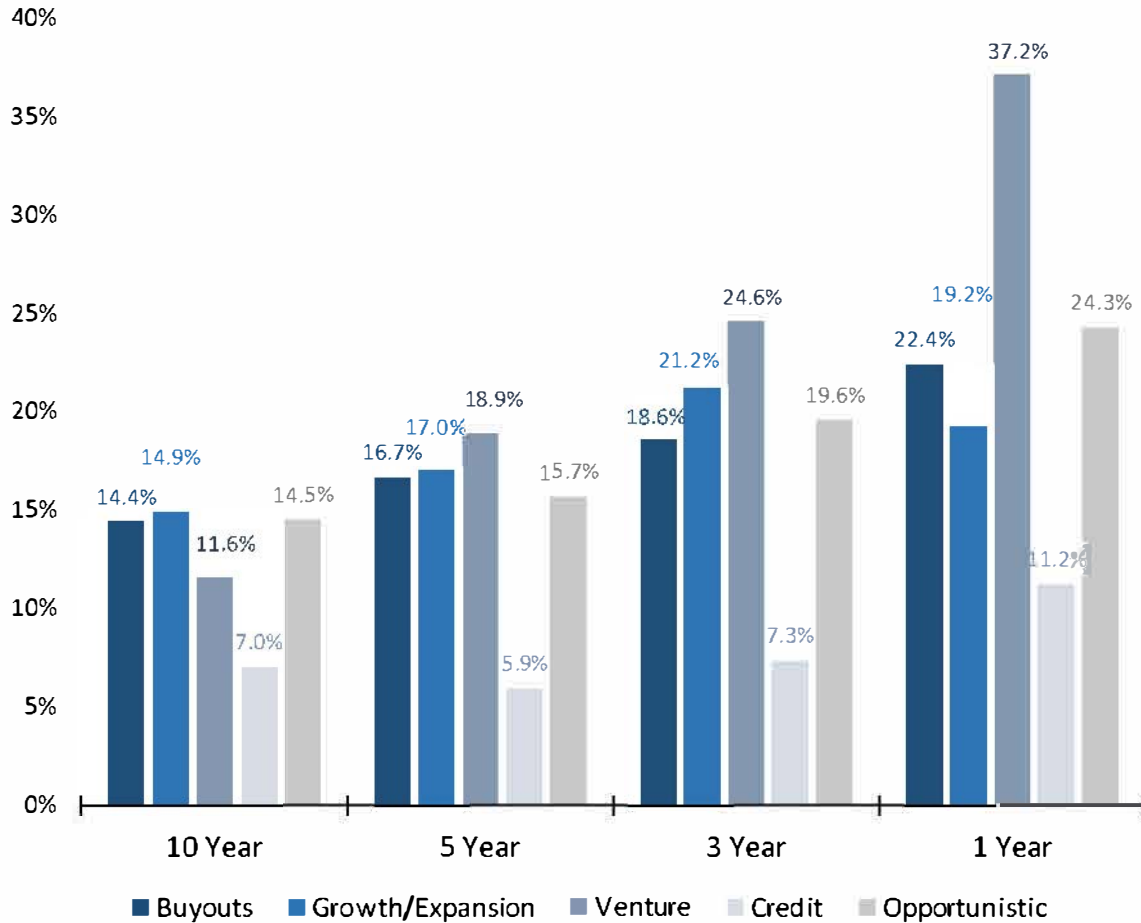


## Key Metrics

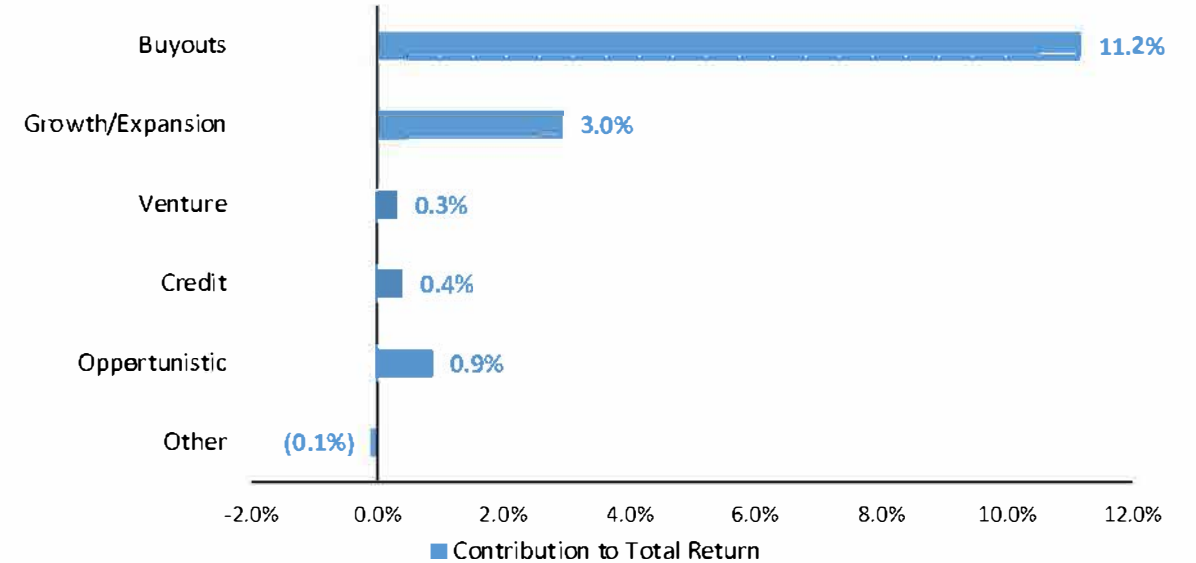


# Private Equity Total Return by Strategy (as of June 30, 2022)

Total Return by Strategy



Contribution to Private Equity 5 Year Total Return by Strategy



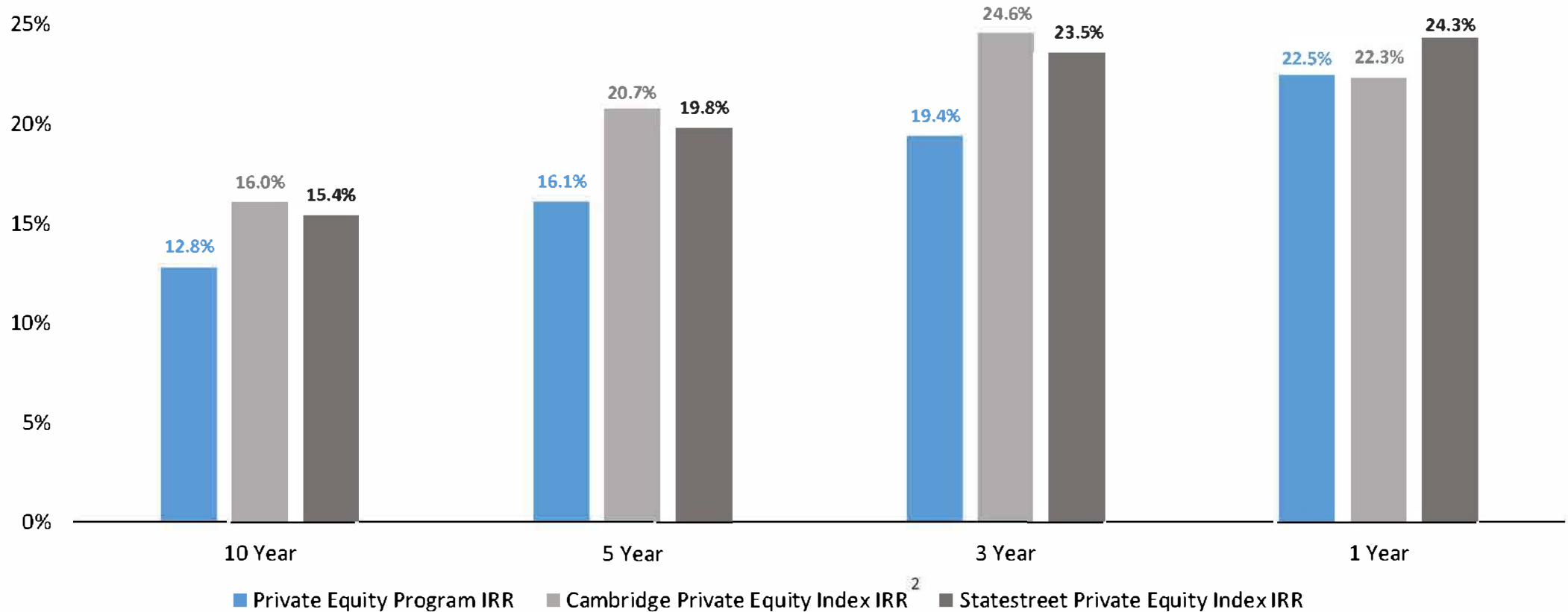
	Average Allocation	Return	Contribution to Total Return
<b>Private Equity</b>	<b>100.0%</b>	<b>15.7%</b>	<b>15.7%</b>
Buyouts	66.5%	16.7%	11.2%
Growth/Expansion	16.8%	17.0%	3.0%
Venture	2.1%	18.9%	0.3%
Credit	7.3%	5.9%	0.4%
Opportunistic	6.3%	15.7%	0.9%
Other	1.0%	-	(0.1%)



Note: All performance reported net of investment expenses and annualized.

# Private Equity Performance vs Peer Universe Benchmarks (as of March 31, 2022<sup>1</sup>)

## Internal Rates of Return



Note: All performance reported net of investment expenses and annualized.

<sup>1</sup> Program and benchmark returns reflect valuations as of 3/31/2022

<sup>2</sup> Cambridge universe includes Buyout, Venture Capital, Growth Equity, Subordinated Capital, Credit Opportunities, Senior Debt & Control-Oriented Distressed asset classes

## Governance & Sustainability | Private Equity

The Private Equity program has embedded sustainability in our program in the following ways:

- Catalyzing and leading the ESG Data Convergence Initiative to standardize ESG metrics. Learn more at:

[https://ilpa.org/ilpa\\_esg\\_roadmap/esg\\_data\\_convergence\\_project/](https://ilpa.org/ilpa_esg_roadmap/esg_data_convergence_project/)

- Promoting broad shared employee ownership models in Private Equity through our work with Ownership Works. Learn more at: <https://ownershipworks.org/>
- Integration of ESG factors into our investment and monitoring processes

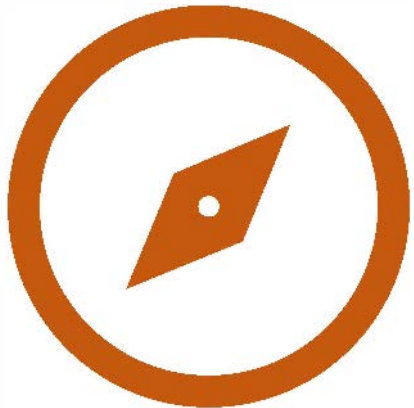
# Evaluation | Private Equity

## What has worked



- Deepened and expanded team capabilities
- Methodical capital commitment pacing coupled with high-conviction underwriting standards
- Material scaling of co-investment program driven by deeper integration with managers
- Expanded traction in Middle Market Buyout, Growth, and Venture segments
- Completed secondary sale
- Step-function increase in ESG engagement

## Areas for Refinement



- Encountered team capacity constraints given the strong flow of investment opportunities
- Performance headwinds from legacy portfolio. Secondary sale as partial mitigant
- Low exposure to Venture strategy which has outperformed total PE benchmarks for a decade

## Priority Initiatives for 2022-23 | Private Equity

- Empower our segment teams to lead from the front
- Deepen our manager and company underwriting skills
- Create opportunities for our team to develop differentiated knowledge and circles of competence
- Expand our co-investment program
- Integrate data more deeply into our program and investment process
- Expand sustainability approach
- Reassess our approach to Asia and formulate long-term strategy

# Contents

## Portfolio Structure & Annual Program Reviews

- I. Public Markets
  - a. Public Equity
  - b. Fixed Income
- II. Opportunistic
- III. Private Markets
  - a. Private Equity
  - b. Real Assets

# Role of Real Assets

## Real Assets

Stable and predictable cash yield, diversification of equity risk, and inflation protection

### Real Estate

- Returns predominately derived from income
- Stable cash yield under long term leases with good credit tenants

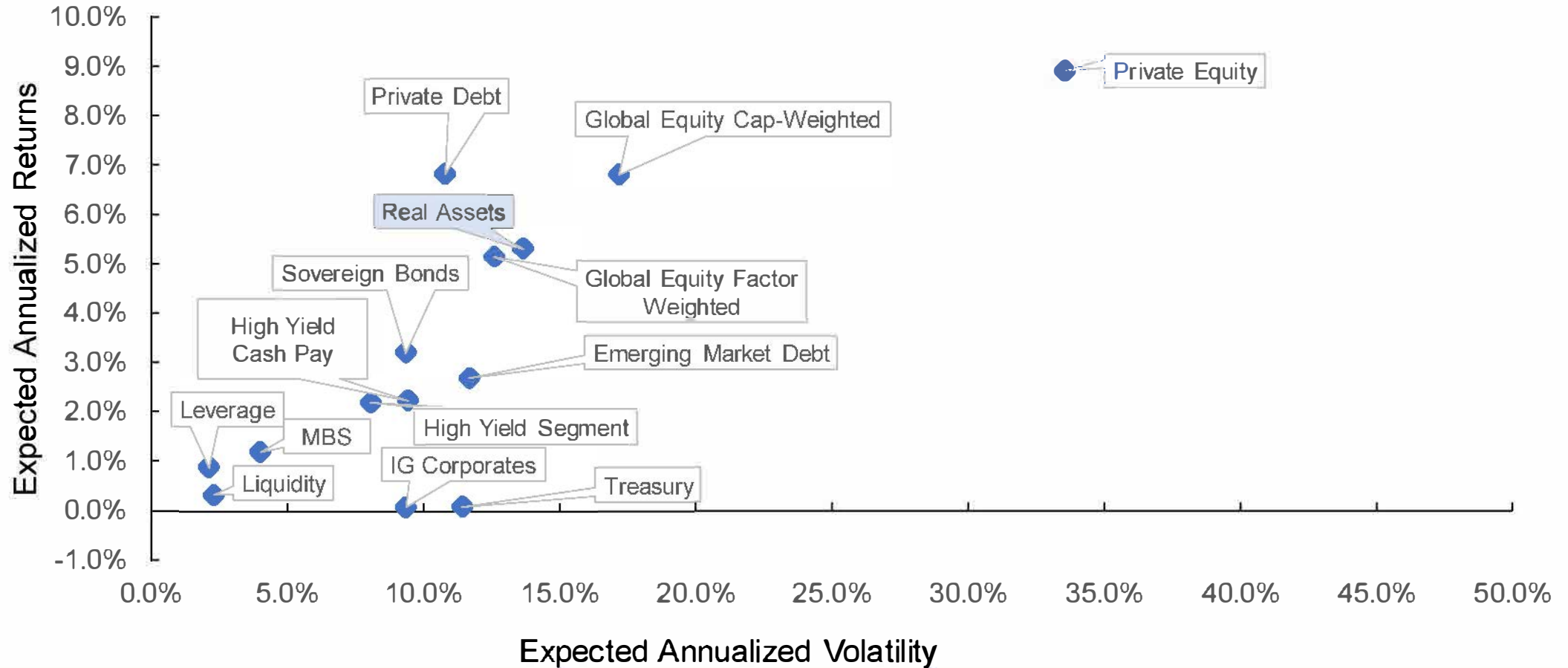
### Infrastructure

- Returns predominately derived from income
- Focus on large scale, essential and defensive assets with proven revenue models

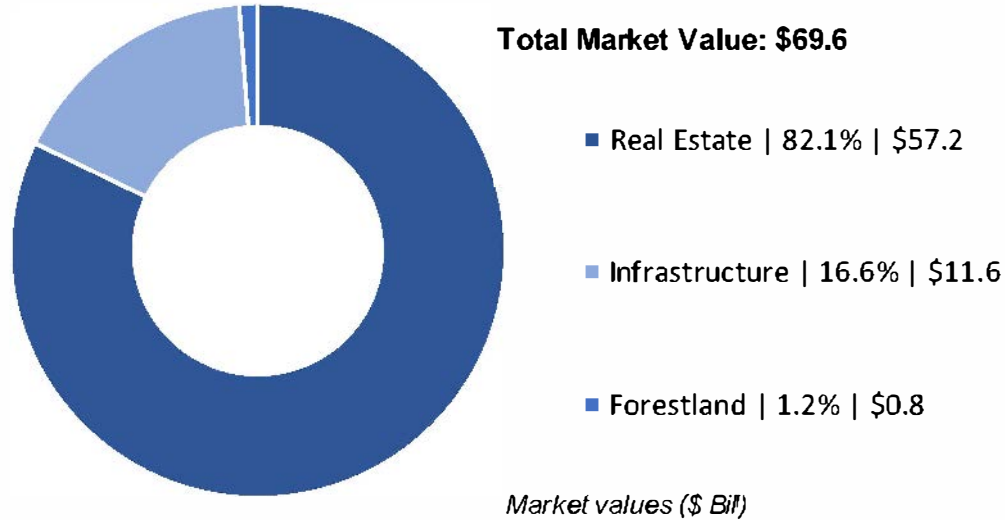


# Role of Real Assets

Board Adopted Capital Market Assumptions (5-year)



# Real Assets | Role and Structure



	% of Total Fund Actual	% of Total Fund Target <sup>1</sup>
Real Assets	15.8	13 (+/- 5)

- Emphasis on Core is consistent with the Role to deliver stable, predictable cash yield and inflation protection
  - Real Estate targets Core, well-located assets with strong competitive positions and defensive characteristics
  - Infrastructure targets essential, durable/long-lived assets and interests in portfolio companies
- Grow Infrastructure portfolio and increase diversification
- Focus on separate accounts and evaluation of commingled funds, co-investments and directs

<sup>1</sup> Note: Target as of June 30, 2022. A new strategic asset allocation target, to be effective 7/1/22, was adopted by the CalPERS Board of Administration on 11/15/21

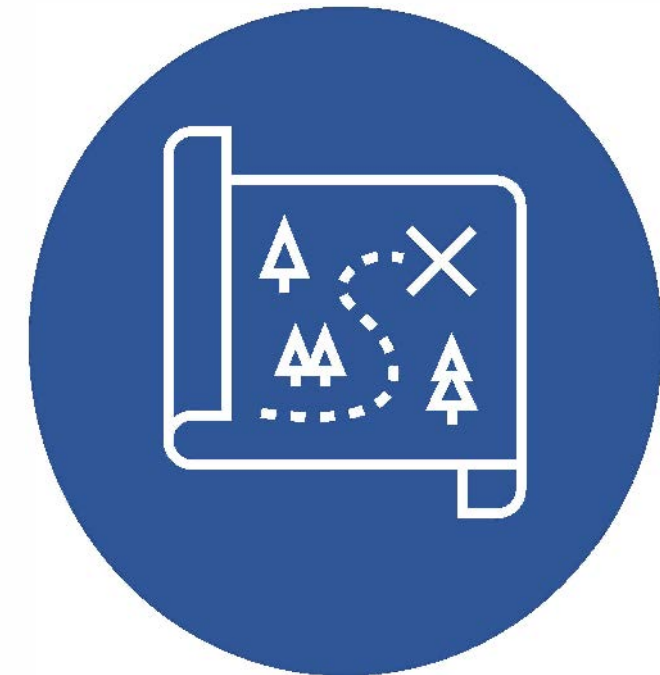
# Market Environment/Themes | Real Assets

## Current concerns

- Increasing interest rates, inflation, geopolitical tension, and recessionary fears are causing uncertainty and will likely impact valuations
- COVID-19 impact to select Real Estate and Infrastructure sectors remain

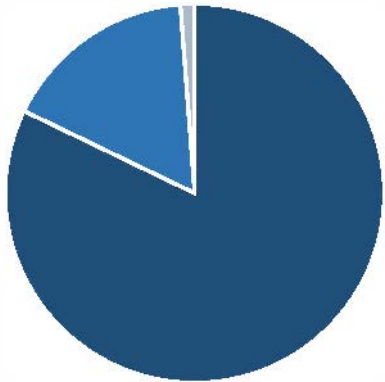
## Investment Themes

- Increasing allocations to private assets
- Market participants continue to favor Industrial, Multifamily, Power/Energy and Digital Infrastructure opportunities
- Higher interest rates offer investors capable of purchasing with all equity a competitive advantage



# Real Assets Snapshot (as of June 30, 2022)

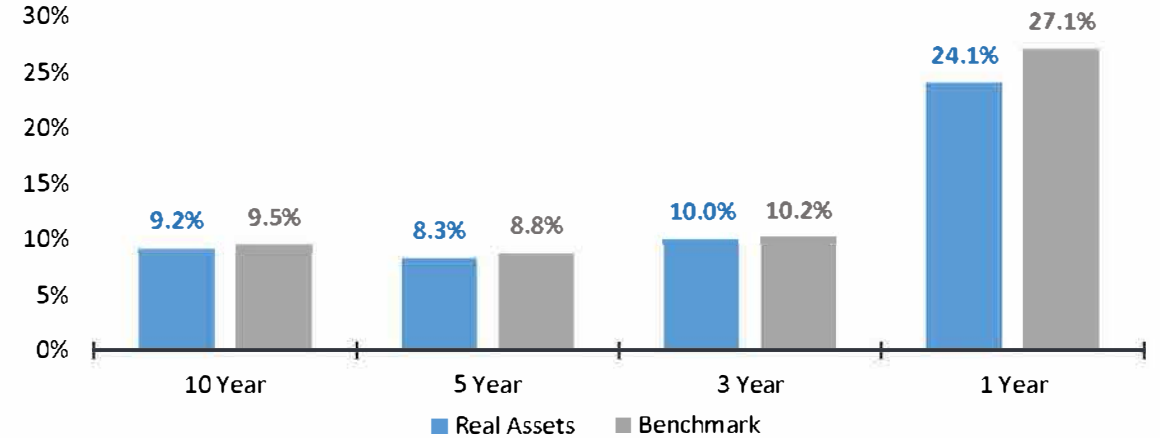
## Asset Class Allocation (\$ Bil)



**Total Market Value: \$69.6**

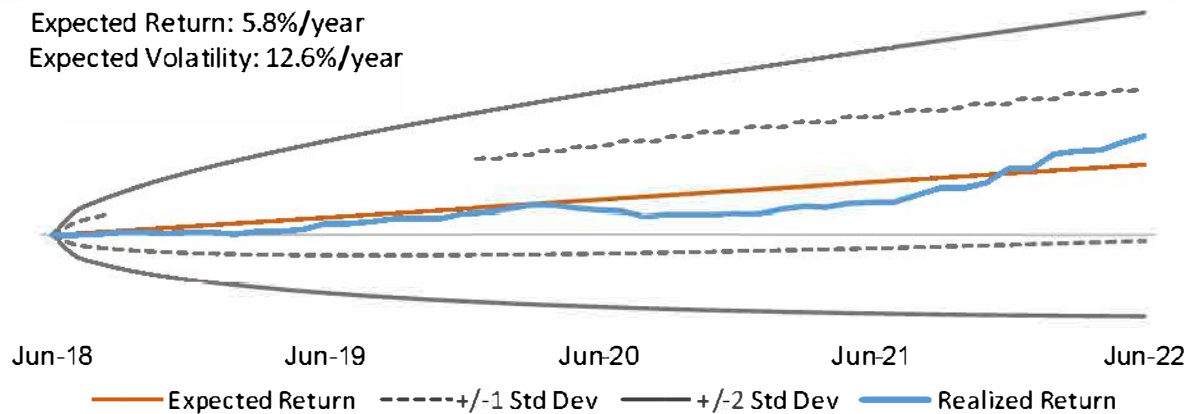
- Real Estate | 82.1% | \$57.2
- Infrastructure | 16.6% | \$11.6
- Forestland | 1.2% | \$0.8

## Total Return



## Cumulative Return vs 2017 SAA Expectations<sup>1</sup>

Expected Return: 5.8%/year  
Expected Volatility: 12.6%/year



## Key Metrics

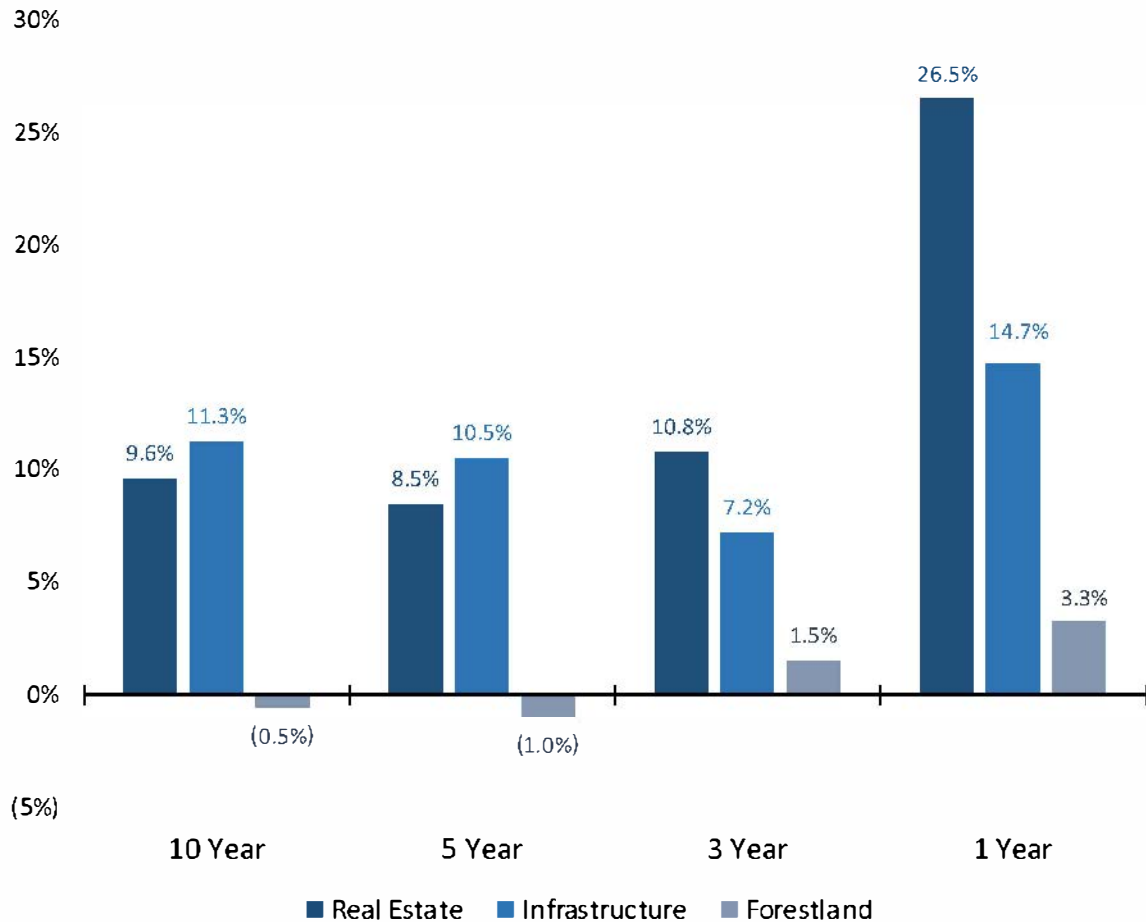


Note: All performance reported net of investment expenses and annualized unless noted otherwise.

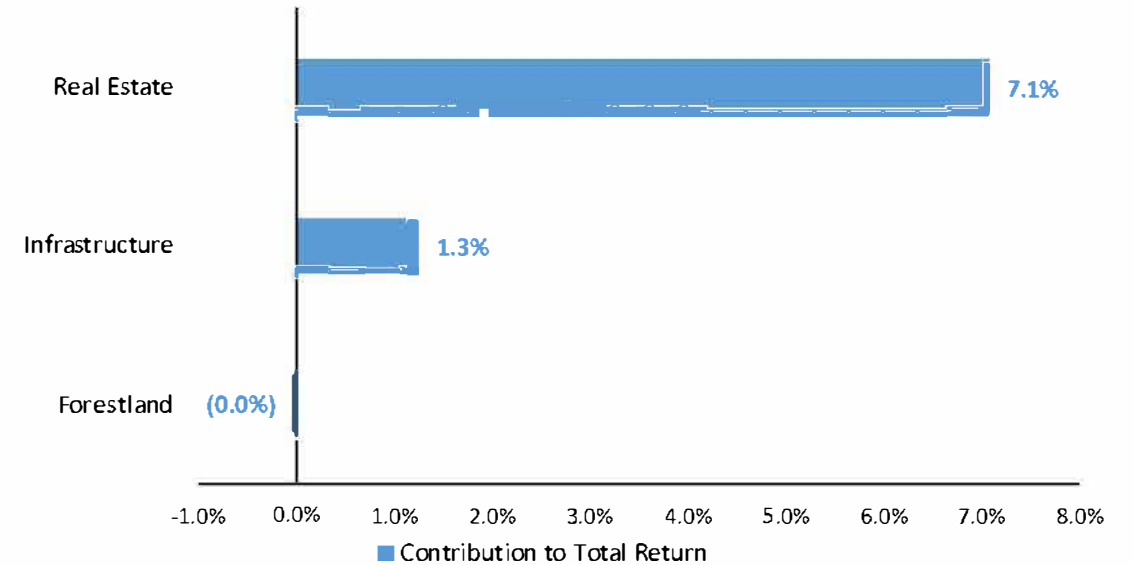
<sup>1</sup> Chart shown from 7/1/2018, the effective date of the asset allocation approved during FY 17/18.

# Real Assets Total Return by Asset Class (as of June 30, 2022)

Total Return by Asset Class



Contribution to Real Assets 5 Year Total Return by Asset Class



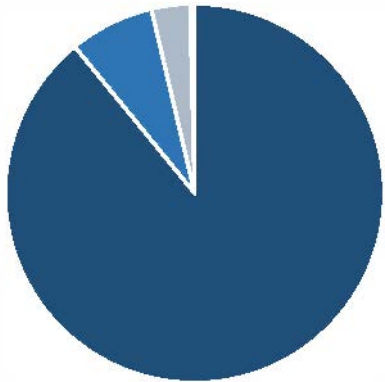
	Average Allocation	Return	Contribution to Total Return
<b>Real Assets</b>	<b>100.0%</b>	<b>8.3%</b>	<b>8.3%</b>
Real Estate	84.0%	8.5%	7.1%
Infrastructure	12.9%	10.5%	1.3%
Forestland	3.1%	(1.0%)	(0.0%)



Note: All performance reported net of investment expenses and annualized.

# Real Estate Risk Allocation and Performance

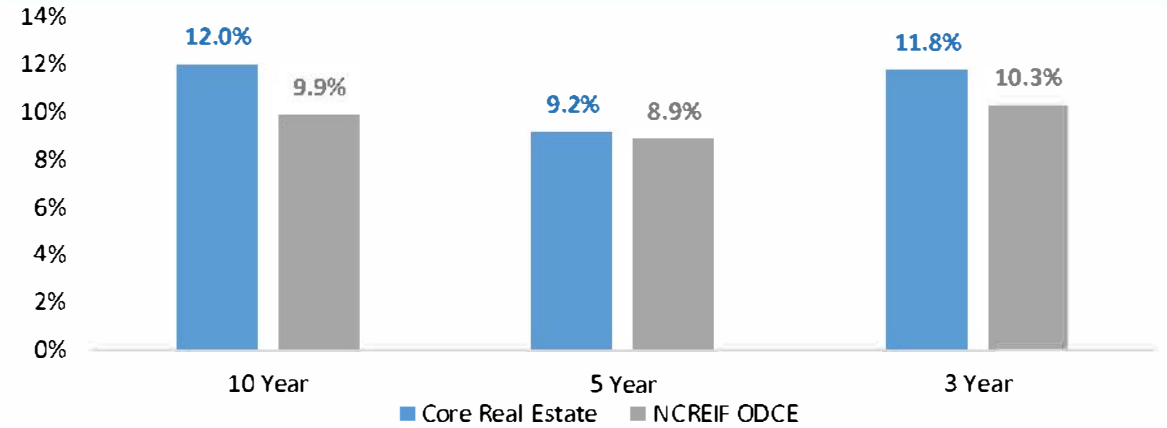
Risk Allocation (\$ Bil) as of June 30, 2022



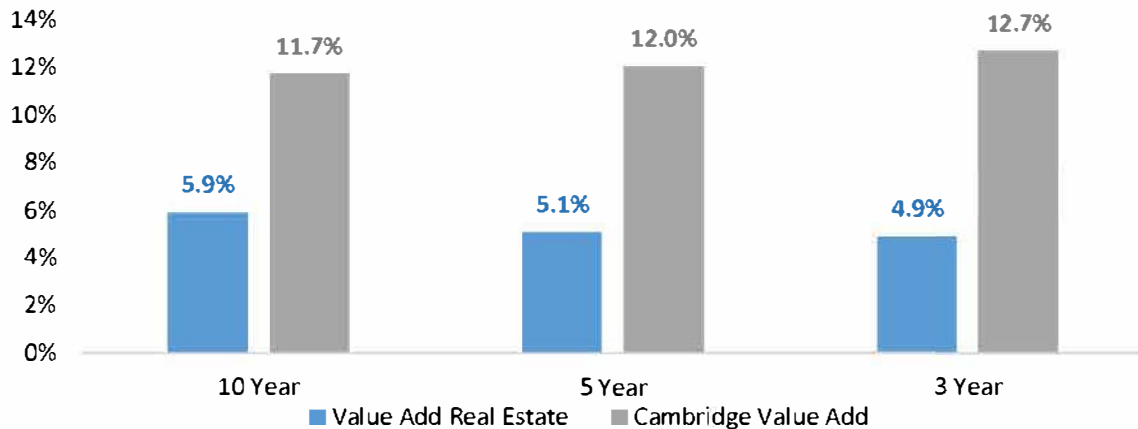
Total Market Value: \$57.2

- Core Real Estate | 89.1% | \$51.0
- Value Add Real Estate | 7.2% | \$4.1
- Opportunistic Real Estate | 3.3% | \$1.9
- Other | 0.4% | \$0.2

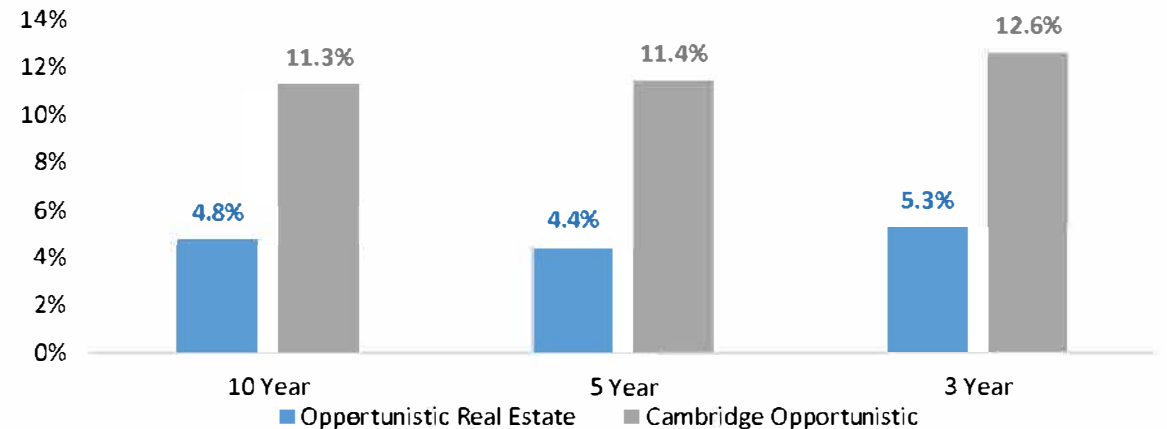
Core Real Estate Total Return as of March 31, 2022



Value Add Real Estate Total Return as of March 31, 2022



Opportunistic Real Estate Total Return as of March 31, 2022



# Real Assets | Integration of Governance & Sustainability

Sustainable Investment Activities	Description / Status
<b>Real Assets Sustainable Investment Practice Guidelines (SIPG)</b>	<ul style="list-style-type: none"> <li>Real Assets' approach to integrating ESG considerations throughout the investment decision making process</li> </ul>
<b>Global Real Estate Sustainability Benchmark (GRESB)</b>	<ul style="list-style-type: none"> <li>88% of the portfolio submitted into GRESB Assessment in 2021 (up from 85% in the prior year)</li> </ul>
<b>ESG Consideration Matrix (ESG Matrix)</b>	<ul style="list-style-type: none"> <li>Framework utilized for assessing ESG risks and opportunities for new acquisitions through separate accounts</li> </ul>
<b>Energy Optimization (EO) Initiative for Real Estate</b>	<ul style="list-style-type: none"> <li>Ongoing identification of accretive EO opportunities, reducing carbon intensity and generating cost savings over time</li> </ul>
<b>Climate Risk &amp; Energy Transition Research</b>	<ul style="list-style-type: none"> <li>Climate risk assessment completed for the domestic Real Estate portfolio in collaboration with Total Fund research</li> <li>Energy Transition Review for Infrastructure included an evaluation of potential risks and opportunities</li> </ul>
<b><u>Responsible Contractor Program (RCP)</u></b>	<ul style="list-style-type: none"> <li>Real Estate Separate Account operating agreements include provisions requiring compliance with the RCP Policy</li> </ul>
<b>National Council of Real Estate Investment Fiduciaries (NCREIF) Pension Real Estate Association (PREA) Reporting Standards</b>	<ul style="list-style-type: none"> <li>CalPERS represented on NCREIF PREA's ESG Think Tank and Reporting Standards Council</li> <li>Contributed to the development of "ESG Principles of Reporting for Private Real Estate" published in October 2021</li> </ul>



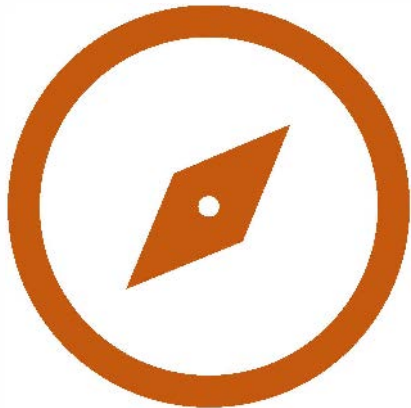
## Evaluation | Real Assets

### What has worked



- Program comprised of high-quality, essential assets in defined target markets with stable cash flows has held up through business cycle. Portfolio delivered 26.71% 1-Yr return
- Expansion of relationships with best-in-class infrastructure managers and integration of staff functional disciplines of monitoring and underwriting
- Unified team collaborating to implement the Strategic Plan and optimize portfolio construction

### Areas for refinement



- Disposition of non-strategic assets, consider portfolio leverage options, streamline investment process
- Define benchmark for infrastructure



## Priority Initiatives for 2022-23 | Real Assets

- Continue to implement the 2021 Five Year Strategic Plan
  - Deploy capital at scale in a disciplined manner maintaining high underwriting standards
  - Further expand and diversify Infrastructure manager relationships
  - Initiate resource planning to effectively manage a growing portfolio
  - Reduce exposure to assets that do not meet the Role of Real Assets
- Evaluate appropriate benchmark considerations for Infrastructure program
- Remain focused on Sustainable Investment initiatives consistent with Total Fund priorities

# Conclusion

- Q&A

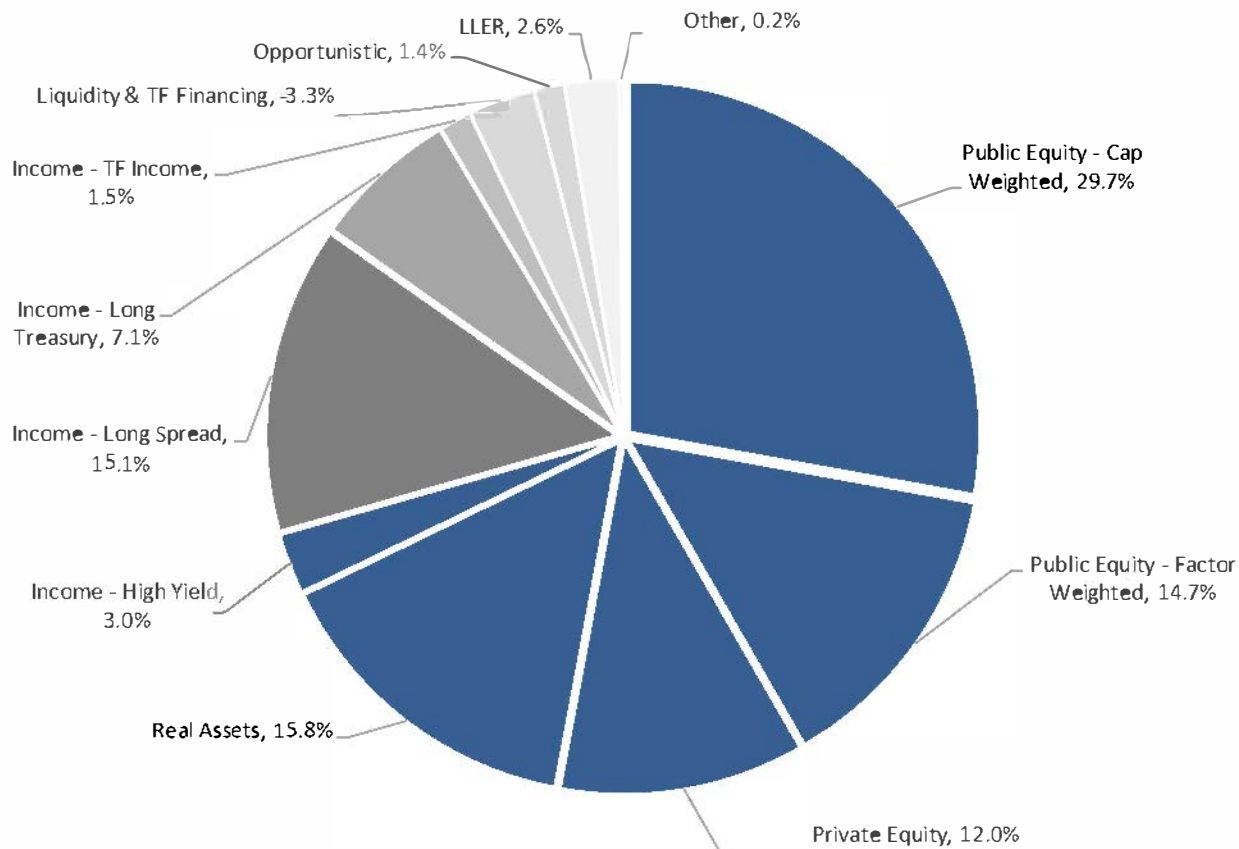
# Contents

## Appendix

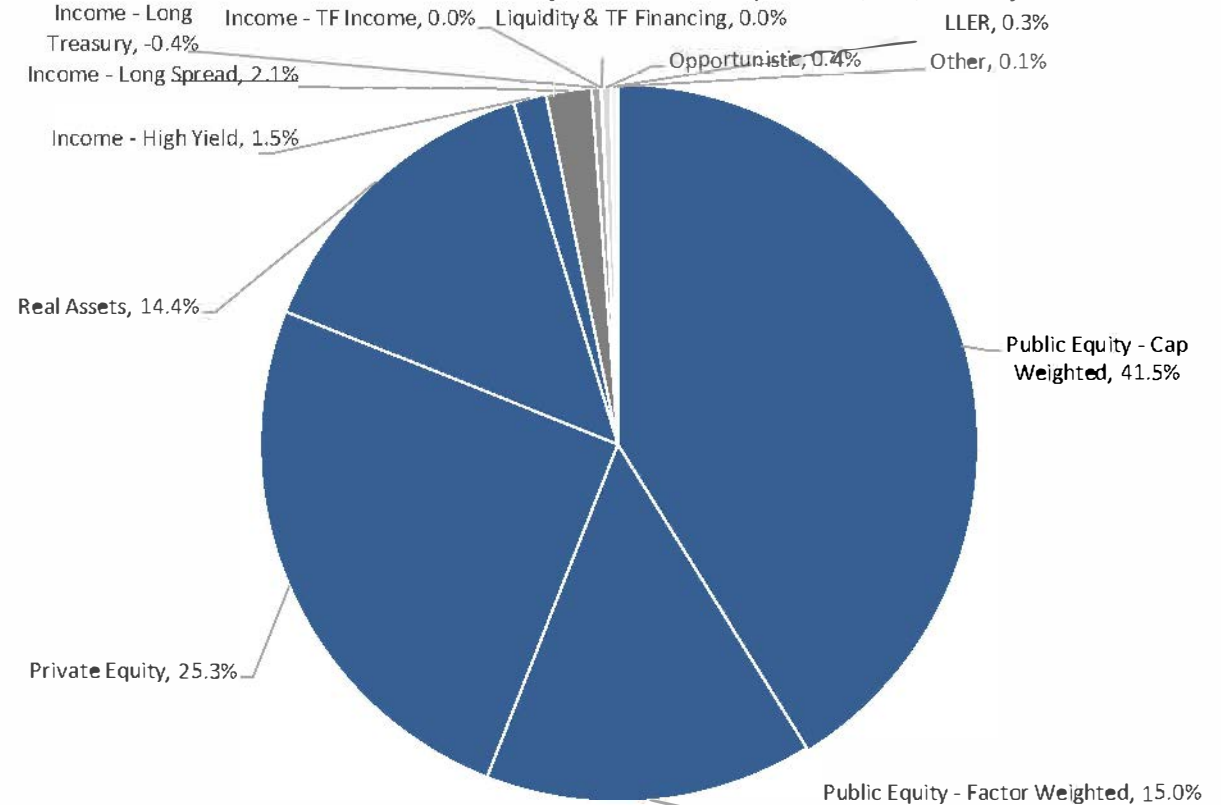
- I. Additional Total Fund Information
- II. Additional Program Area Information
  - a. Functional Org Charts
  - b. Program Expenses
  - c. Private Equity: ARS Update and Outsourcers Policy Report
- III. Investment Beliefs Summary

# Assets Sensitive to Economic Growth Dominate Risk

**Asset Allocation (as of 6/30/2022)**



**Risk Contribution by Asset Class (as of 6/30/2022)**



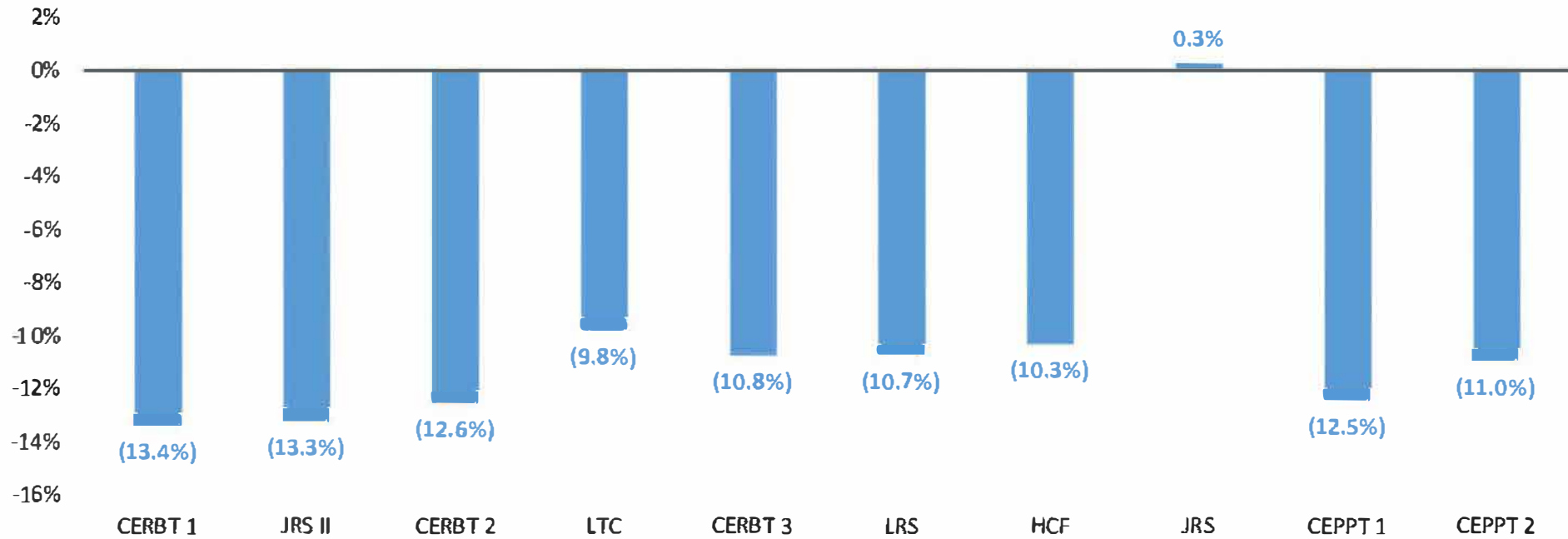
Low

Sensitivity to Economic Growth

High

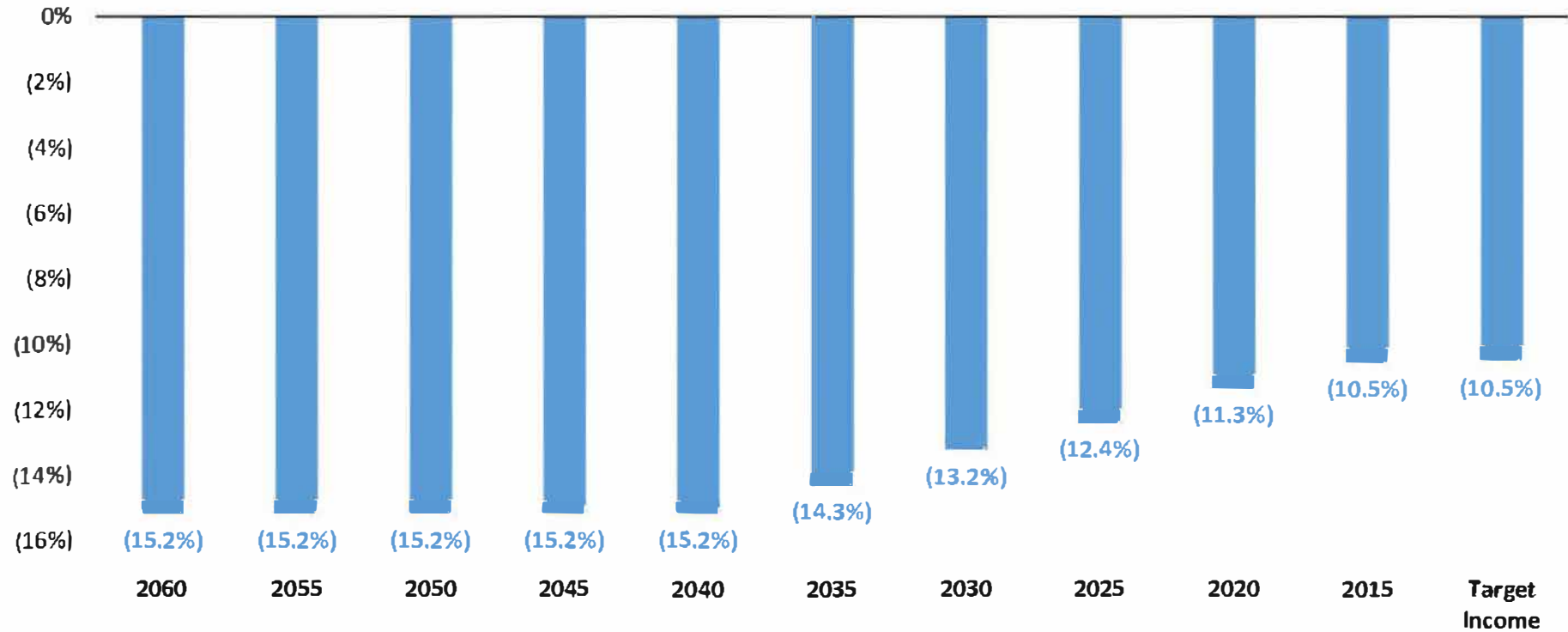
Legend

# Affiliate Funds Snapshot | 1-Year Returns



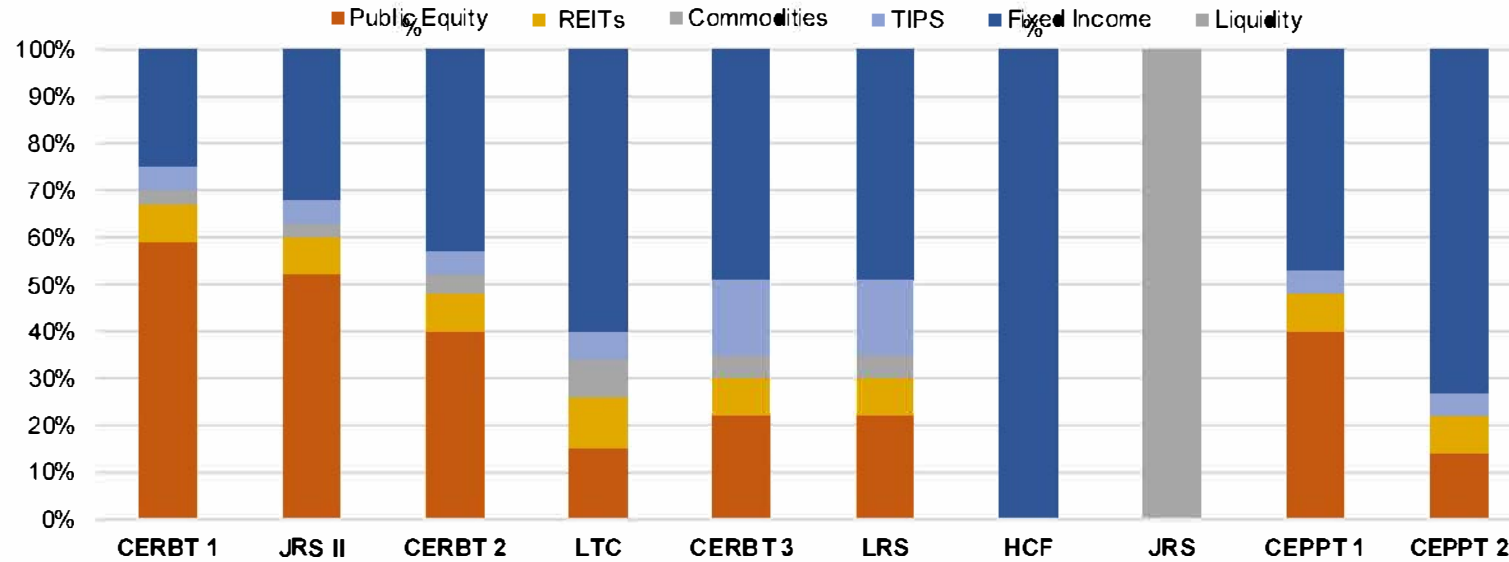
<b>Ending Market Value (\$mm)</b>	12,806	2,127	1,750	4,887	747	103	328	49	58	26
<b>Benchmark</b>	(13.6%)	(13.4%)	(12.7%)	(9.9%)	(10.8%)	(10.8%)	(10.3%)	0.2%	(12.6%)	(11.0%)
<b>Excess Performance (bps)</b>	17	16	9	10	1	3	(3)	10	13	1

# Affiliate Funds Snapshot | 1-Year Returns



<b>Ending Market Value (\$mm)</b>	8	14	39	65	113	123	191	201	157	84	104
<b>Benchmark</b>	(15.4%)	(15.4%)	(15.4%)	(15.4%)	(15.4%)	(15.4%)	(13.4%)	(12.5%)	(11.4%)	(10.6%)	(10.6%)
<b>Excess (bps)</b>	21	21	21	21	21	18	15	12	10	7	7

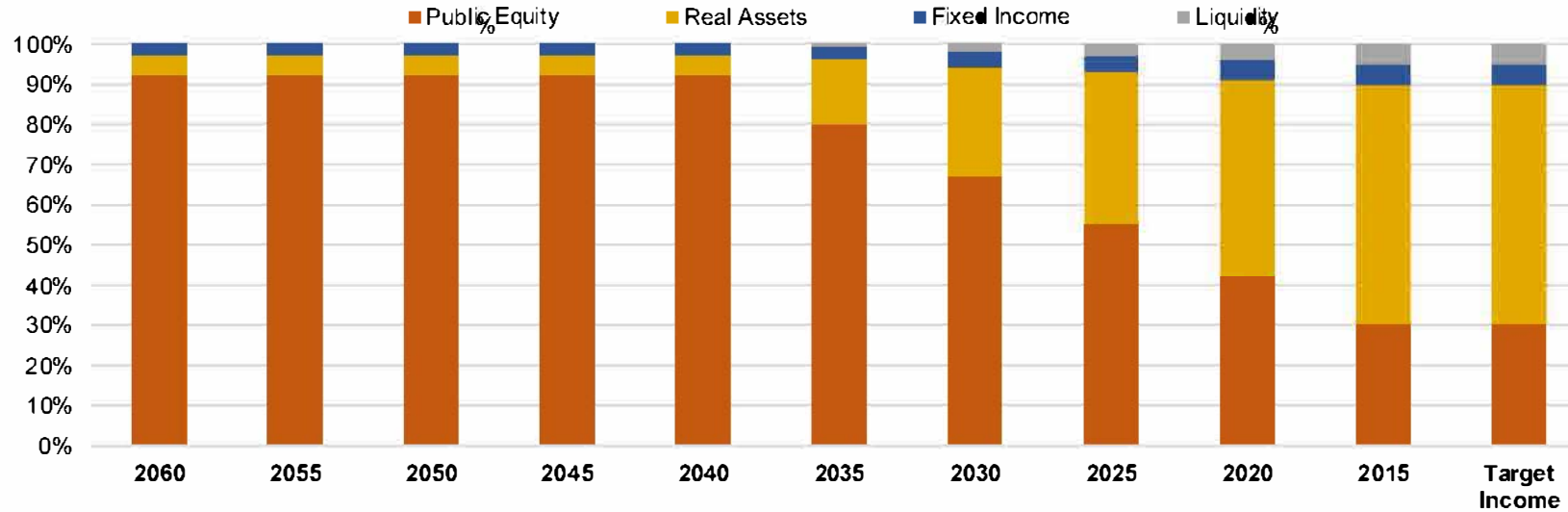
# Defined Benefit, Health, and Pre-Funding Plans (as of June 30, 2022)



<b>Ending Market Value</b>	<b>(\$mm)</b>	12,806	2,127	1,750	4,887	747	103	328	49	58	26
<b>Volatility</b>		11.7%	10.8%	9.3%	7.4%	7.3%	7.3%	4.0%	0.3%		
<b>Tracking Error (bps)</b>	<b>5 Yr</b>	8	10	9	39	9	10	6	10	NA	NA
<b>Sharpe Ratio</b>		0.39	0.40	0.39	0.35	0.40	0.41	(0.02)	0.82		
<b>Information Ratio</b>		2.88	2.55	2.16	0.17	1.53	1.60	0.19	0.70		
<b>Total Return (Net of Fees)</b>	<b>1 Yr</b>	-13.4%	-13.3%	-12.6%	-9.8%	-10.8%	-10.7%	-10.3%	0.3%	-12.5%	-11.0%
	<b>3 Yr</b>	4.6%	4.1%	3.3%	2.2%	2.5%	2.5%	-0.9%	0.7%		
	<b>5 Yr</b>	5.6%	5.3%	4.6%	3.5%	3.9%	3.9%	0.9%	1.2%	NA	NA
	<b>10 Yr</b>	6.8%	6.7%	5.7%	3.7%	4.5%	4.6%	1.8%	0.7%		



# SIP Target Date Funds (as of June 30, 2022)



Ending Market Value (\$mm)		8	14	39	65	113	123	191	201	157	84	104
<b>Volatility</b>			15.4%	15.4%	15.4%	15.3%	13.9%	12.1%	10.2%	8.4%	6.7%	6.2%
<b>Tracking Error (bps)</b>			55	55	55	54	47	40	33	27	21	21
<b>Sharpe Ratio</b>	5 Yr	NA	0.36	0.36	0.36	0.34	0.34	0.34	0.36	0.35	0.35	0.37
<b>Information Ratio</b>			0.24	0.24	0.25	0.25	0.29	0.28	0.52	0.58	0.63	0.63
<b>Total Return (Net of Fees)</b>	1 Yr	-15.2%	-15.2%	-15.2%	-15.2%	-15.2%	-14.3%	-13.2%	-12.4%	-11.3%	-10.5%	-10.5%
	3 Yr	6.1%	6.1%	6.1%	6.2%	6.1%	5.7%	5.1%	4.4%	3.7%	2.7%	2.5%
	5 Yr	NA	6.5%	6.5%	6.5%	6.2%	5.6%	5.1%	4.6%	3.9%	3.3%	3.3%
	10 Yr		NA	8.0%	8.0%	7.7%	7.2%	6.5%	5.8%	4.9%	4.2%	3.7%





# Global Equity | Functional Org Chart



- Portfolio management for internally-managed equity strategies (96% of public equity is internally-managed)
- Evaluate and enhance portfolio construction processes

- Research and build value-add strategies
- Analyze and monitor active strategies
- Develop in-depth understanding of risk and performance characteristics

- Exercise ownership rights
- Actively engage portfolio companies
- Execute on Governance & Sustainability Strategy

# Global Equity | Program Costs

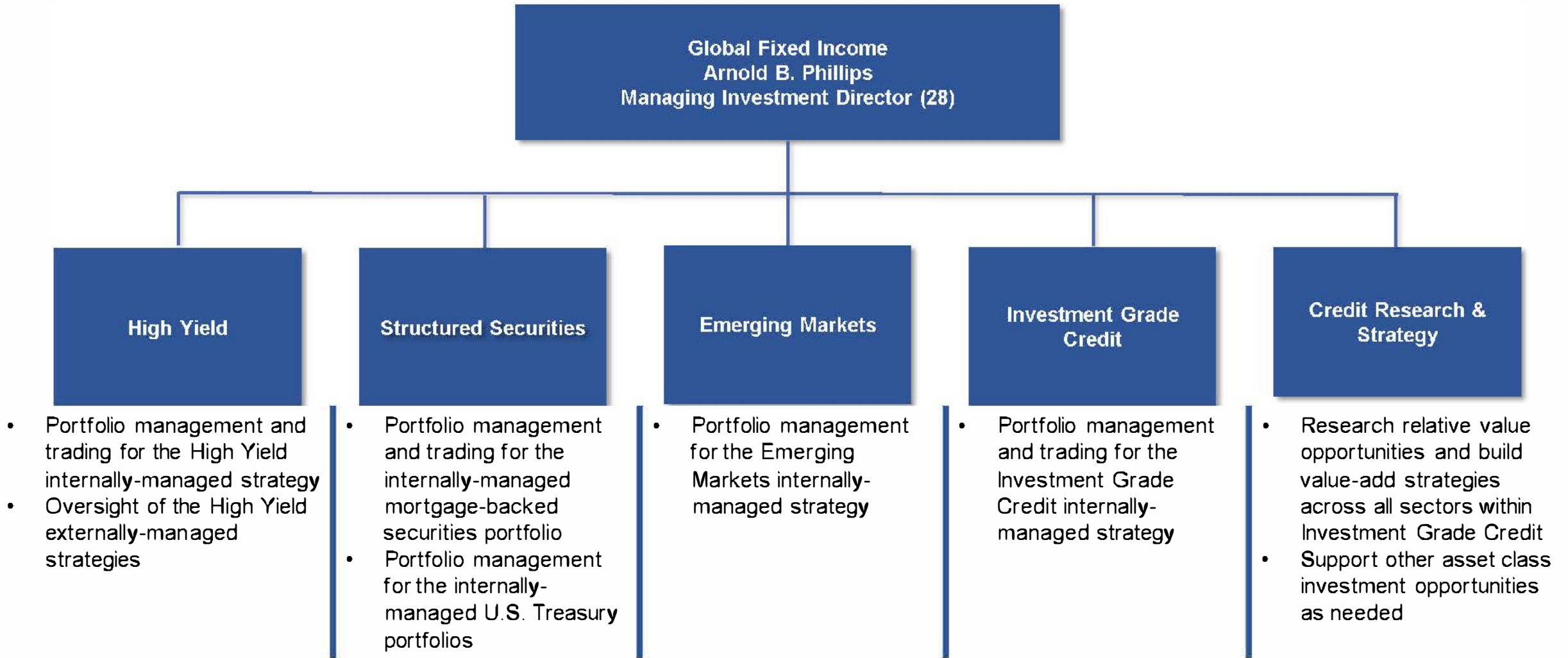
Expense Type	FY 2021-22			FY 2020-21		
	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>3</sup> (BPS)	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>3</sup> (BPS)
Internal Management <sup>1</sup>	\$ 226,935	\$ 5.7	0.3	\$ 219,238	\$ 5.7	0.3
External Management <sup>2</sup>	\$ 8,343	\$ 40.0	48	\$ 7,190	\$ 40.6	57
<u>Consultants Expense</u>	N/A	\$ 0.8	0.0	N/A	\$ 0.8	0.0
Technology & Operating Expense	N/A	\$ 13.3	0.6	N/A	\$ 14.9	0.7
<b>Total Program</b>	<b>\$ 235,278</b>	<b>\$ 59.8</b>	<b>3</b>	<b>\$ 226,429</b>	<b>\$ 62.0</b>	<b>3</b>

- Global Equity operates in a cost-effective manner, with 96% of the portfolio invested in internally-managed strategies. Costs for externally-managed strategies have slightly come down since the prior fiscal year, which is mainly attributed to paying out a lower performance fee
- Since the prior fiscal year, total program costs have come down by approximately \$2.2 million, which is primary driven by reduced technology and operating costs



<sup>1</sup> Internal Management Fees include internal model provider fees  
<sup>2</sup> External Management Fees include base and performance fees  
<sup>3</sup> BPS calculated on fee type Avg AUM. Internal Management, Consultants and Technology & Operating Expense BPS calculated on Total Program Avg AUM

# Global Fixed Income | Functional Org Chart



# Global Fixed Income | Program Costs

Expense Type	FY 2021-22			FY 2020-21		
	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>2</sup> (BPS)	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>2</sup> (BPS)
Internal Management	\$ 132,913	\$ 8.7	1	\$ 127,247	\$ 7.7	1
External Management <sup>1</sup>	\$ 3,371	\$ 15.0	44	\$ 4,100	\$ 16.8	41
Consultants Expense	N/A	\$0.0	0	N/A	\$ 0.0	0
Technology & Operating Expense	N/A	\$ 13.5	1	N/A	\$ 13.4	1
<b>Total Program</b>	<b>\$ 136,284</b>	<b>\$ 37.2</b>	<b>3</b>	<b>\$ 131,347</b>	<b>\$ 37.9</b>	<b>3</b>

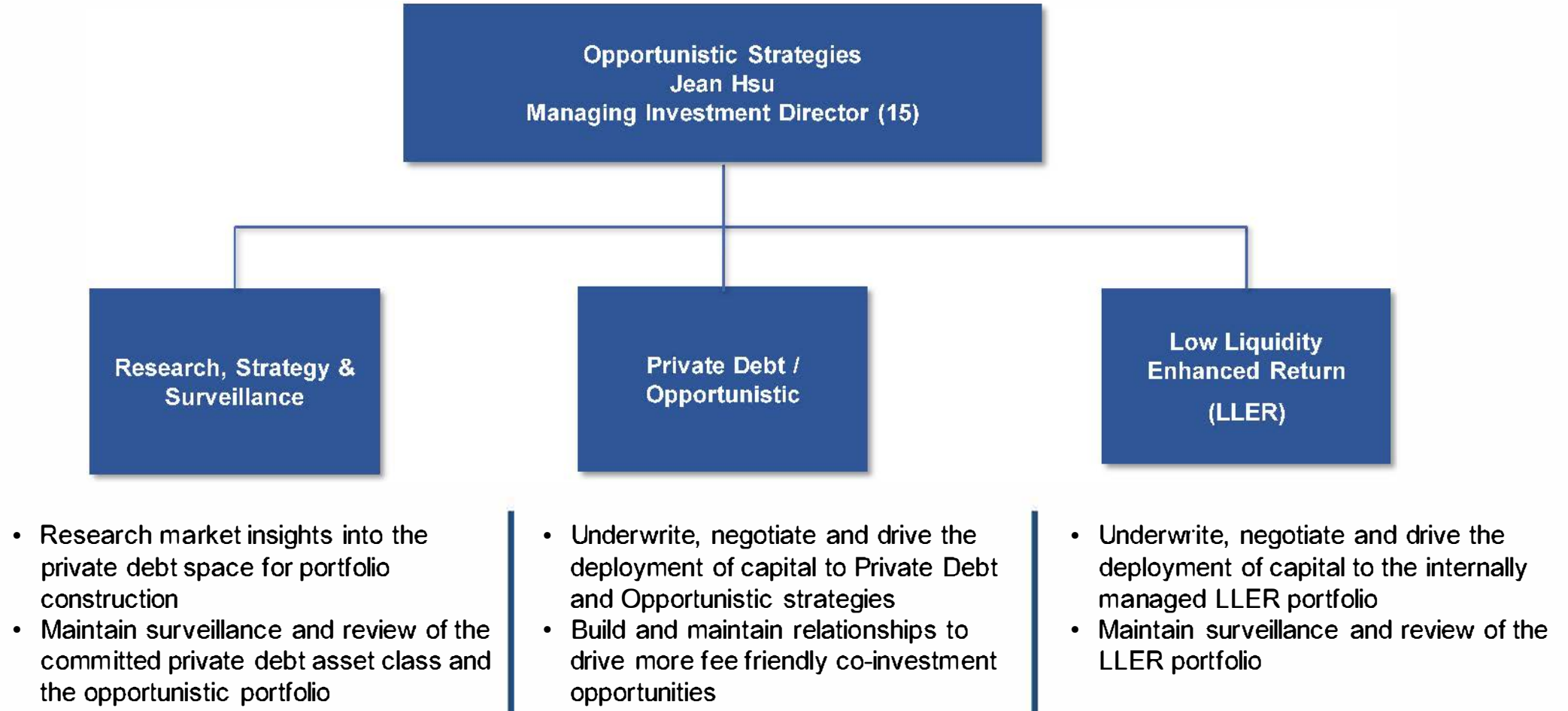
- Costs stayed flat from the previous fiscal year
- GFI continues to be a cost-efficient and cost-minded program for the Total Fund
- Costs are expected to increase in the coming year with the increased allocations to high yield and emerging market debt



<sup>1</sup> Includes base and performance fees

<sup>2</sup> BPS calculated on fee type Avg AUM. Consultants and Technology & Operating Expense BPS calculated on Total Program Avg AUM

# Opportunistic Strategies & Private Debt | Functional Org Chart



# Opportunistic Strategies & Private Debt | Program Costs

Expense Type	FY 2021-22			FY 2020-21		
	Avg AUM (\$millions)	Fees & Profit Sharing Paid (\$millions)	Fees & Profit Sharing Paid <sup>2</sup> (BPS)	Avg AUM (\$millions)	Fees & Profit Sharing Paid (\$millions)	Fees & Profit Sharing Paid <sup>2</sup> (BPS)
Internal Management	\$ 8,518	\$ 3.3	4	\$ 10,721	\$ 2.1	2
External Management <sup>1</sup>	\$ 4,359	\$ 29.8	68	\$ 903	\$ 4.6	51
Consultants Expense	N/A	\$0.1	0	N/A	\$ 0.1	0
Technology & Operating Expense	N/A	\$ 1.0	1	N/A	\$ 1.2	1
<b>Total Program</b>	<b>\$ 12,877</b>	<b>\$ 34.1</b>	<b>27</b>	<b>\$ 11,625</b>	<b>\$ 8.0</b>	<b>7</b>

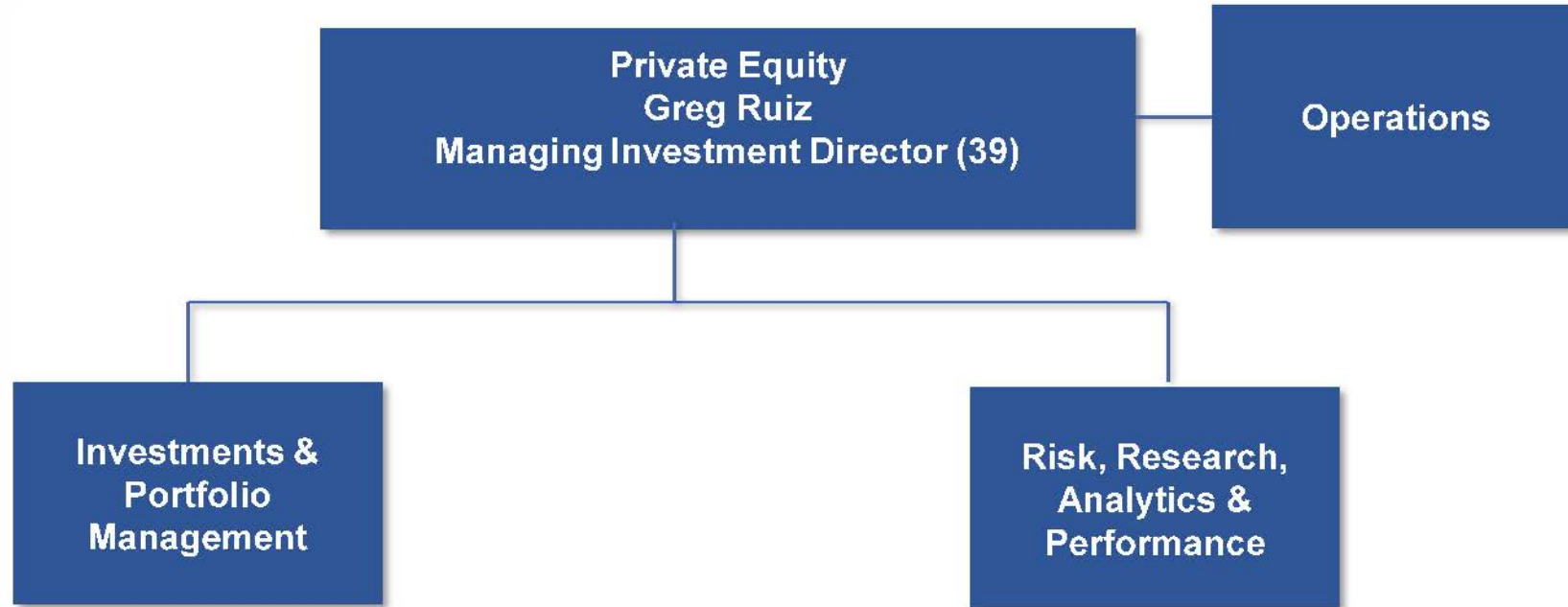
- Total program costs as a percentage of average total AUM increased due to the deployment of the private debt managers, which has become an increasingly large part of the program's total AUM
- Private debt continues to seek co-investment opportunities to further drive cost-efficiency

<sup>1</sup> Includes base and performance fees

<sup>2</sup> BPS calculated on fee type AUM. Internal Management, Consultants and Technology & Operating Expense BPS calculated on Total Program AUM



# Private Equity | Functional Org Chart



- Active portfolio construction
- Underwrite fund and company-specific investments
- Monitor PE portfolio
- Operations (bullets for operations box)
- Coordinate and execute key operational functions across the PE program

- Assess and analyze portfolio
- Lead research function
- Report on portfolio performance

# Private Equity | Program Costs

Expense Type	FY 2021-22			FY 2020-21		
	Avg AUM (\$millions)	Fees & Profit Sharing Paid (\$millions)	Fees & Profit Sharing Paid <sup>2</sup> (BPS)	Avg AUM (\$millions)	Fees & Profit Sharing Paid (\$millions)	Fees & Profit Sharing Paid <sup>2</sup> (BPS)
Internal Management	\$0	\$ 8.3	2	\$0	\$ 7.7	3
External Management <sup>1</sup>	\$ 47,414	\$ 1094.6	231	\$ 30,200	\$ 826.4	274
Consultants Expense	N/A	\$ 1.1	0	N/A	\$ 1.8	1
Technology & Operating Expense	N/A	\$ 8.6	2	N/A	\$ 8.2	3
<b>Total Program</b>	<b>\$ 47,414</b>	<b>\$ 1112.5</b>	<b>235</b>	<b>\$ 30,200</b>	<b>\$ 844.1</b>	<b>280</b>

- Continued traction driving greater cost-efficiency across the Private Equity program, primarily resulting from scaling co-investment exposure
- Total program costs as a percentage of average AUM declined 16% from 280 bps in FY 2020-21 to 235 bps in FY 2021-22

<sup>1</sup> Includes base and performance fees

<sup>2</sup> All BPS fees paid figures are calculated on average Program AUM



# Real Assets | Functional Org Chart



- Manager and investment underwriting
- Manager engagement, monitoring, reporting
- Market surveillance
- Operating agreement compliance

- Operations, data and systems integrity
- Performance and attribution analysis
- Research – capital markets, sector fundamentals, target markets
- Governance oversight

# Real Assets | Program Costs

Expense Type	FY 2021-22			FY 2020-21		
	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>2</sup> (BPS)	Avg AUM (\$millions)	Fees Paid (\$millions)	Fees Paid <sup>2</sup> (BPS)
Internal Management	\$0	\$ 10.6	2	\$0	\$ 10.0	2
External Management <sup>1</sup>	\$ 54,726	\$ 450.2	82	\$ 44,422	\$ 325.2	73
Consultants Expense	N/A	\$ 1.5	0	N/A	\$ 1.0	0
Technology & Operating Expense	N/A	\$ 12.8	2	N/A	\$ 10.8	2
<b>Total Program</b>	<b>\$ 54,726</b>	<b>\$ 475.1</b>	<b>87</b>	<b>\$ 44,422</b>	<b>\$ 347.0</b>	<b>78</b>

- External Management Costs were up marginally by 9bps resulting from improving performance and payment of accrued incentives
- At 87bps, Total Program Costs represents a 21% discount to RAU’s benchmark of 110bps
- Costs are expected to increase as Infrastructure expands into commingled funds which are not as cost efficient as SMAs



<sup>1</sup> Includes base and performance fees

<sup>2</sup> All BPS fees paid figures are calculated on average Program AUM

## Private Equity | Additional Information

- **Restricting Private Equity Investments in Public Sector Outsourcers Policy:**
  - To the best of CalPERS knowledge, the Policy has been effective in limiting our General Partners investments in public sector outsourcers, as CalPERS has not received any waiver requests in the last 12 months and all of our GPs have agreed to make good faith efforts to comply with the Policy
  - This Policy has had no negative impact on PE Program investment opportunities
- **Status of Absolute Return Strategies (ARS) winddown/composition:**
  - ARS legacy portfolio NAV of \$165.7M as of 6/30/2022, with one primary privately-held interest remaining
  - Staff continues to actively seek monetization opportunities with the respective manager

# CalPERS Investment Beliefs Summary

CalPERS' Investment Beliefs are not a checklist to be applied to every decision. They are a guide for making decisions that often require balancing multiple inter-related decision factors. Each Investment Belief also contains several sub-beliefs that are actionable statements that provide insight as to how the Investment Beliefs will be implemented.

1. Liabilities must influence the asset structure
2. A long time investment horizon is a responsibility and an advantage
3. CalPERS investment decisions may reflect wider stakeholder views, provided they are consistent with its fiduciary duty to members and beneficiaries
4. Long-term value creation requires effective management of three forms of capital: financial, physical, and human
5. CalPERS must articulate its investment goals and performance measures and ensure clear accountability for their execution
6. Strategic allocation is the dominant determinant of portfolio risk and return
7. CalPERS will take risk only where we have a strong belief we will be rewarded for it
8. Costs matter and need to be effectively managed
9. Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error
10. Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives