



INVESTMENT COMMITTEE **PORTFOLIO RISK REPORT**



September 2023

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Investment portfolio as of July 31, 2023

Chart 1. Portfolio value

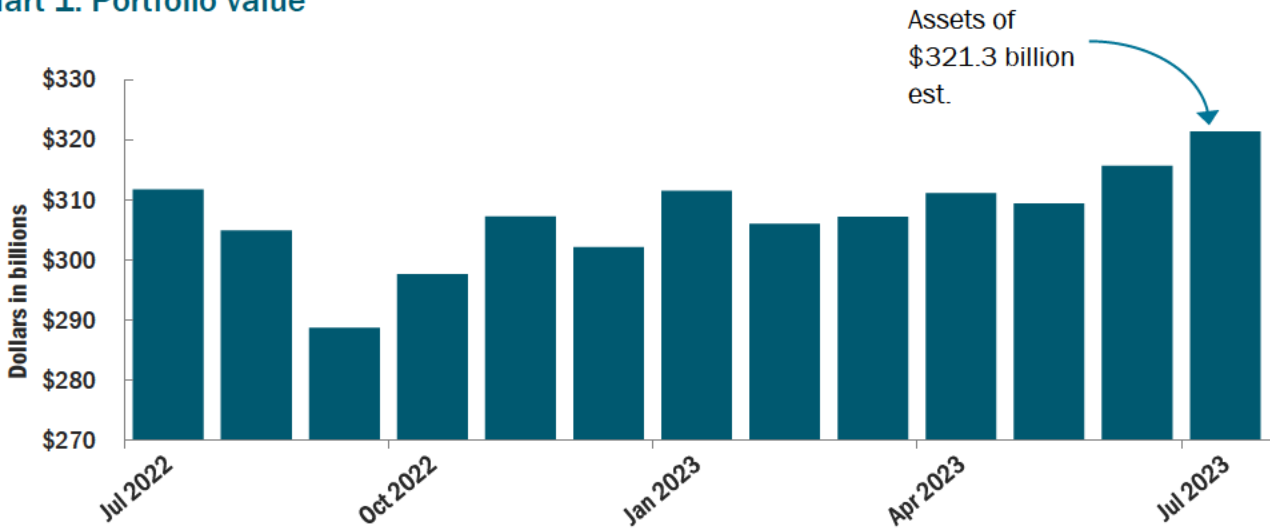


Chart 2. Asset allocation¹

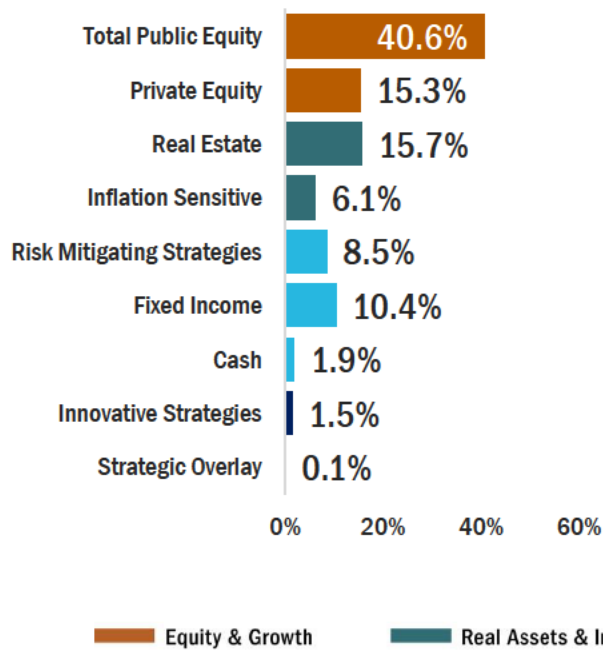
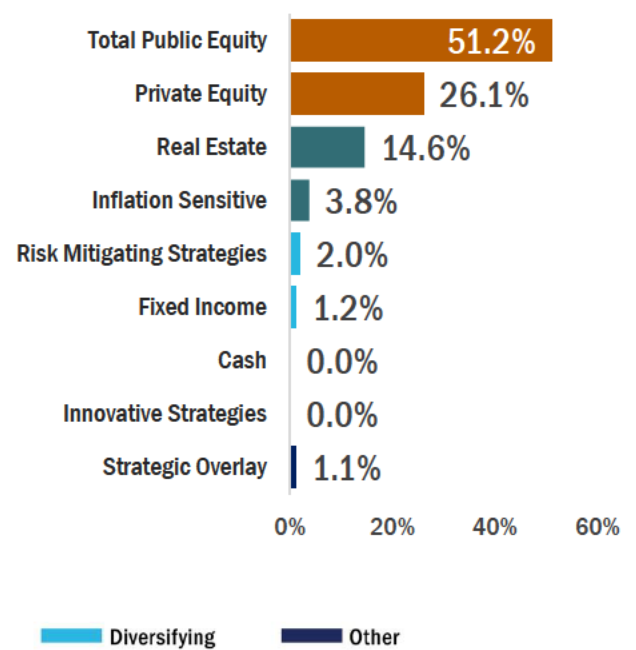


Chart 3. Portfolio risk¹



¹ Total Public Equity includes the following sub-units: Global Equity, SISS and Innovation GE. Strategic Overlay includes Currency and Derivatives Overlay.

Total Fund risk and asset allocation as of July 31, 2023

The Risk team utilizes the BlackRock Aladdin risk management system for the total plan portfolio. According to the BlackRock risk model, approximately 51% of the total risk in the CalSTRS Investment Portfolio comes from Public Equity, versus an approximately 41% asset weight. Public Equity risk and Private Equity risk combined now comprise about 77% of portfolio risk. Portfolio risk increased significantly due to spiked market volatility in early 2020 and it has decreased significantly from its peak.

Chart 4. Asset allocation over the past three years (monthly)

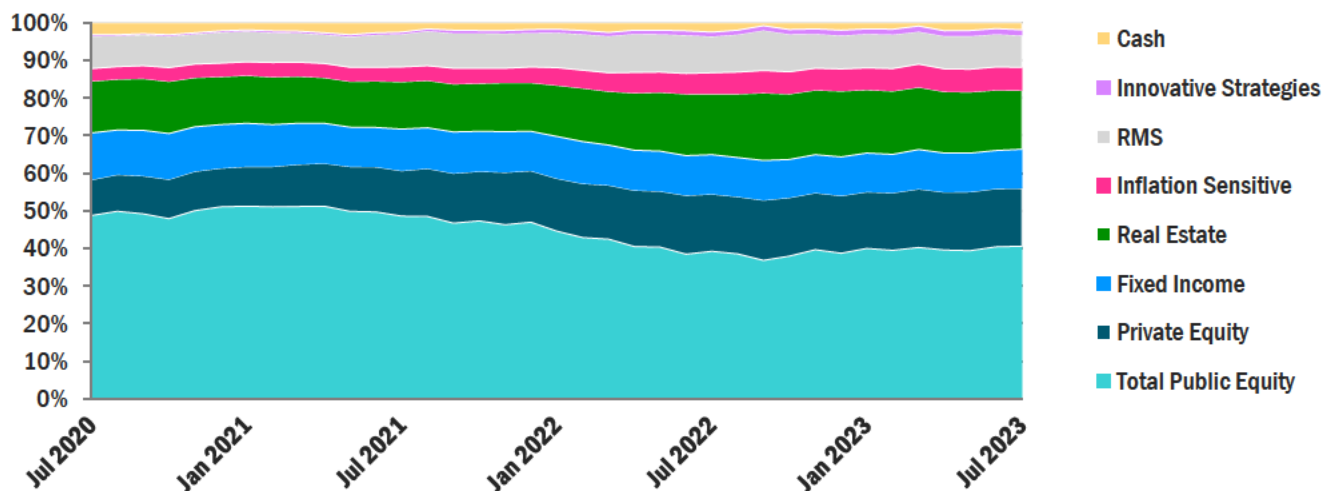
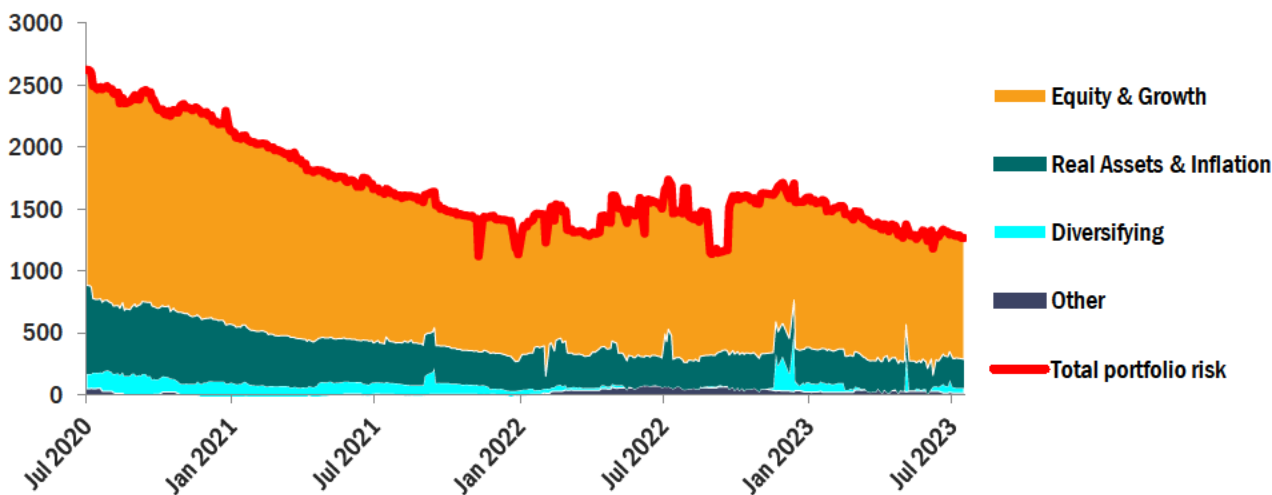


Chart 5. Sources of portfolio risk¹



¹ Equity & Growth includes Total Public Equity and Private Equity. Real Assets & Inflation includes Real Estate and Inflation Sensitive. Diversifying includes Risk Mitigating Strategies, Fixed Income & Cash. Other includes Innovative Strategies and Strategic Overlay.

CaISTRs market exposures

Across all asset classes, the fund has significant exposure to the U.S. with over 78% of the portfolio invested in the U.S. The next largest exposure is 2.3% in Japan. Mexico rounded out the top 10, followed closely by South Korea and Ireland, respectively. China is the 17th largest country exposure. Chart 7 shows the top 10 Total Fund portfolio exposures by parent company, as a percentage of the Total Fund portfolio.

Chart 6. Top 10 market value exposures by country as of July 31, 2023

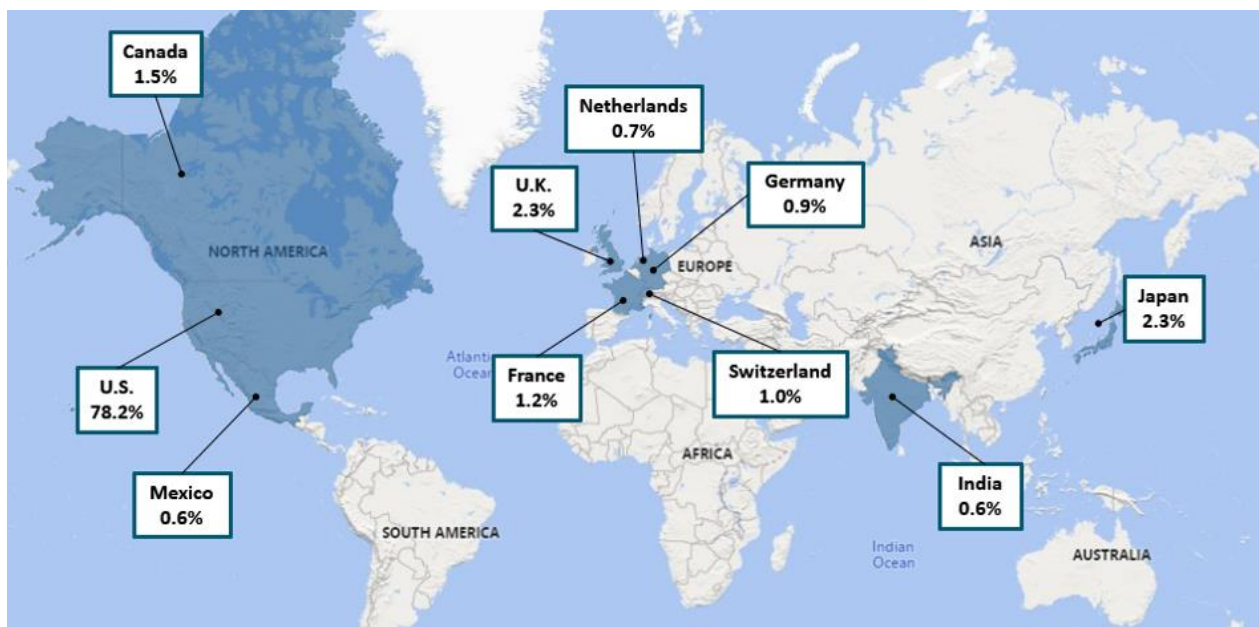
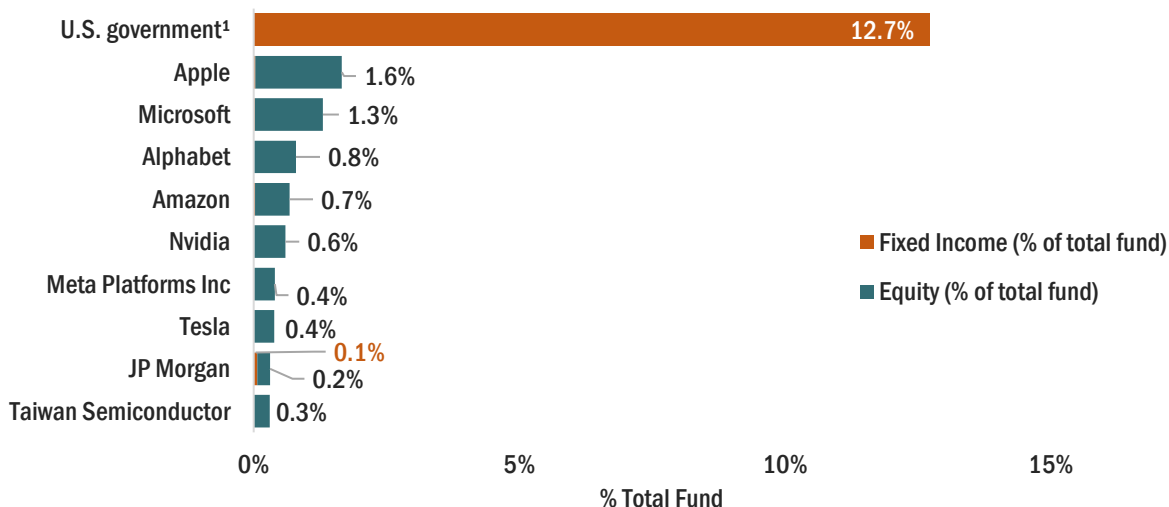


Chart 7. Total Fund top 10 exposures¹



¹ U.S. government includes U.S. Treasuries, Agency MBS and other government agency debt.

CaSTRS market and sector exposures

Charts 8 and 9 show the top 10 Total Public Equity Portfolio exposures and the top 10 Total Fixed Income exposures, by parent company as a percentage of the respective portfolios.

Chart 8.
Total Public Equity top 10 exposures

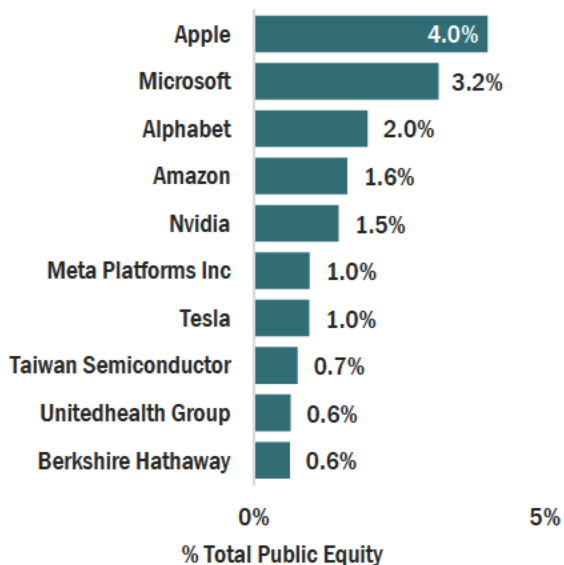


Chart 9.
Total Fixed Income top 10 exposures¹

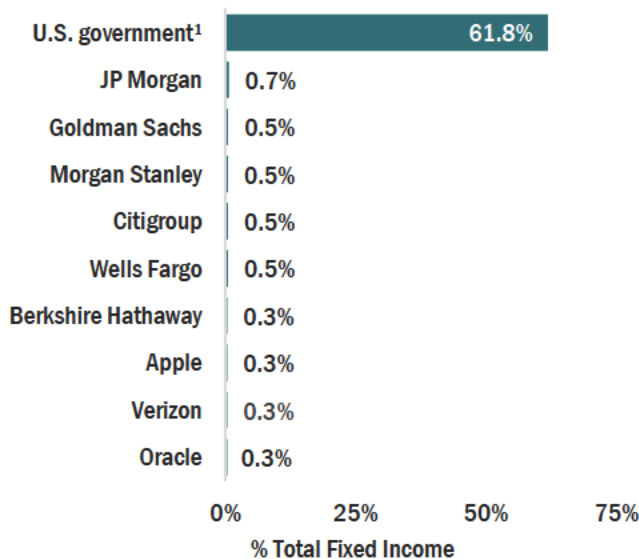
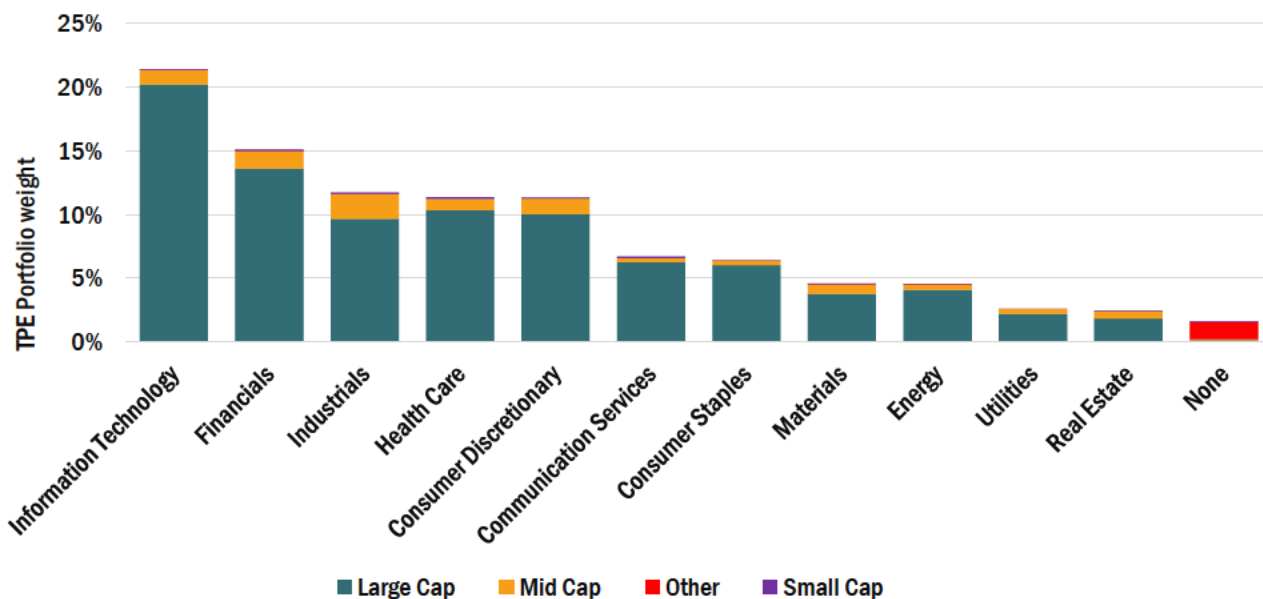


Chart 10. Total Public Equity – Sector portfolio exposures as of July 31, 2023



¹ U.S. Treasuries, Agency MBS and other government agency deb

CaSTRS largest manager exposures

Table 1 and Chart 11 summarizes the top 10 manager exposures by relationship, aggregated across all asset classes, as a percentage of the CaSTRS Total Fund.

Table 1. CaSTRS Total Fund¹

Manager	Relationship length (years) ²	Asset Class	Exposure (million)
Principal	39	Real Estate, Global Equity	\$ 10,784
BlackStone	23	Private Equity, Real Estate	\$ 7,989
BlackRock	23	Real Estate, Fixed Income, Inflation Sensitive, Innovative Strategies, SISS	\$ 5,062
Fairfield	21	Real Estate	\$ 3,458
Trend TT	5	Risk Mitigating Strategies	\$ 3,390
CBRE	39	Real Estate	\$ 3,295
Trend LX	7	Risk Mitigating Strategies	\$ 3,188
Invesco	18	Real Estate, Inflation Sensitive, Private Equity	\$ 3,165
JP Morgan	12	Real Estate, Global Equity	\$ 3,032
Ares	11	Private Equity, Innovative Strategies, Real Estate, SISS, Fixed Income	\$ 3,007

Chart 11. CaSTRS Total Fund¹

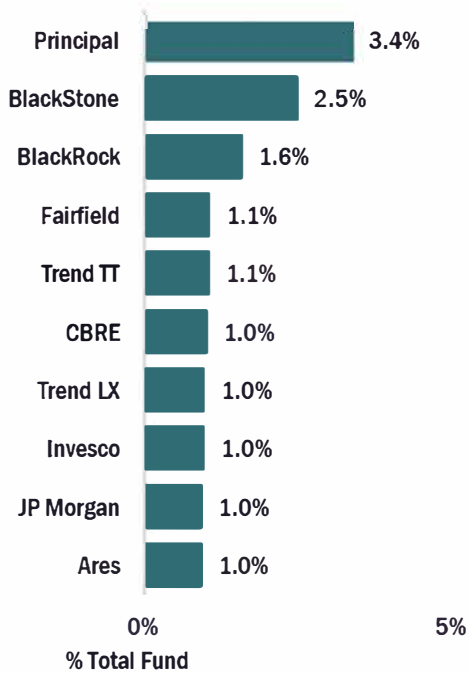
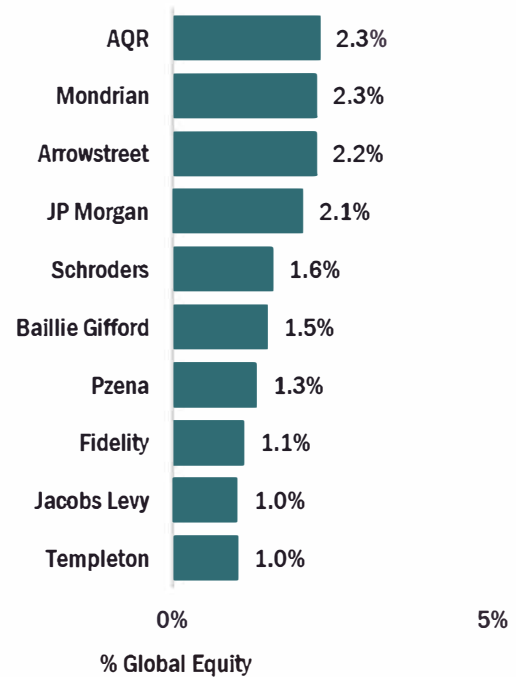


Chart 12. Global Equity



¹ Public asset manager exposures reported are as of 6/30/23. Private asset manager exposures reported are as of 3/31/23.

CaSTRS largest manager exposures

Charts 13 – 16 show the top 10 manager exposures by relationship, as a percentage of each respective asset class portfolio

Chart 13. Fixed Income¹

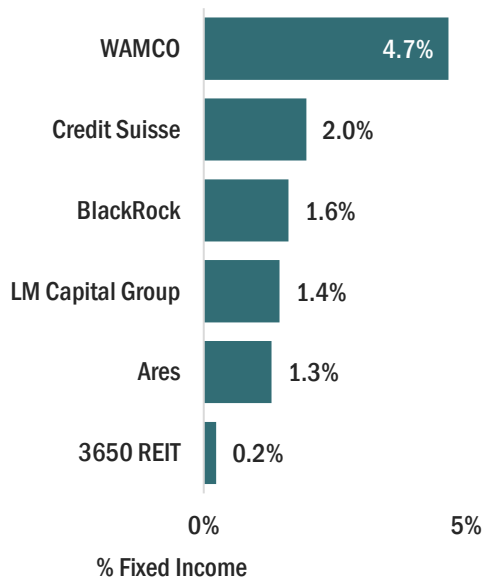


Chart 14. Currency

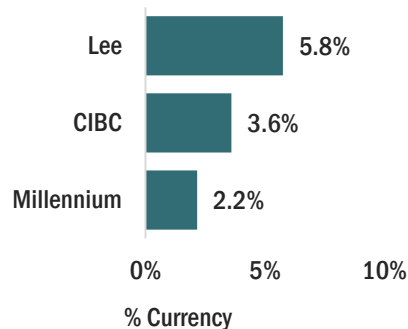


Chart 15. SISS¹

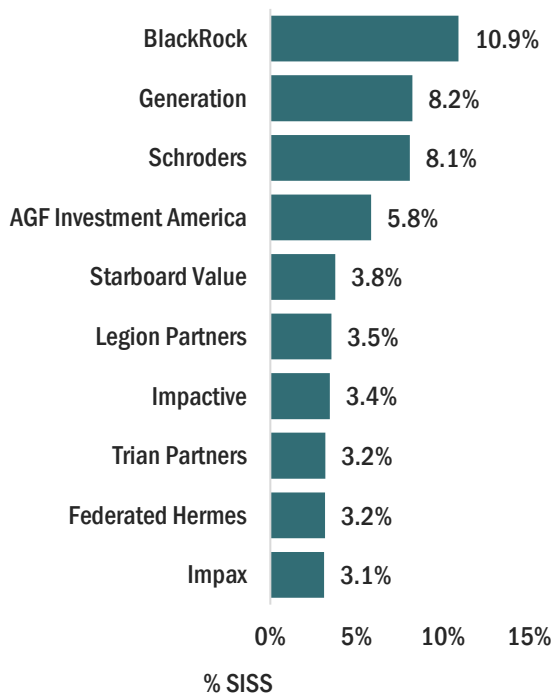
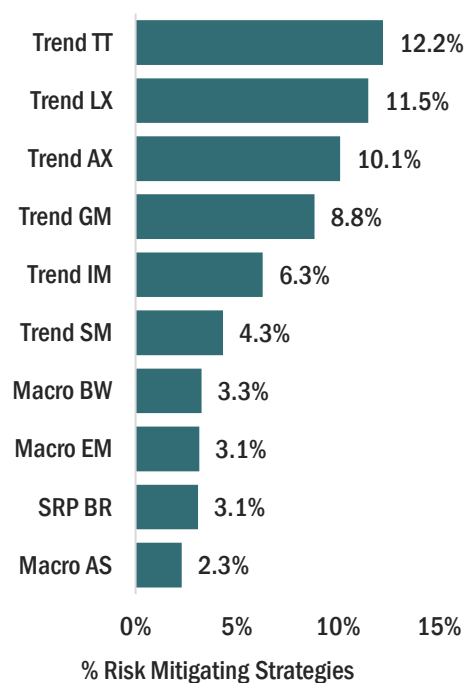


Chart 16. Risk Mitigating Strategies



¹ Public asset manager exposures reported are as of 6/30/23.
Private asset manager exposures reported are as of 3/31/23.

CaSTRS largest manager exposures

Charts 17 – 20 show the top 10 manager exposures by relationship, as a percentage of each respective asset class portfolio

Chart 17. Inflation Sensitive¹

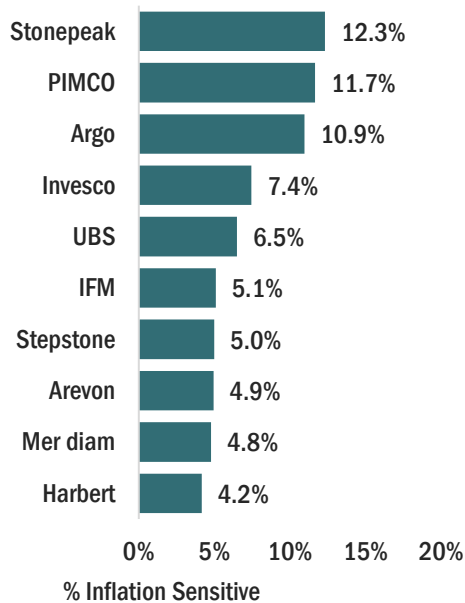


Chart 18. Innovative Strategies¹

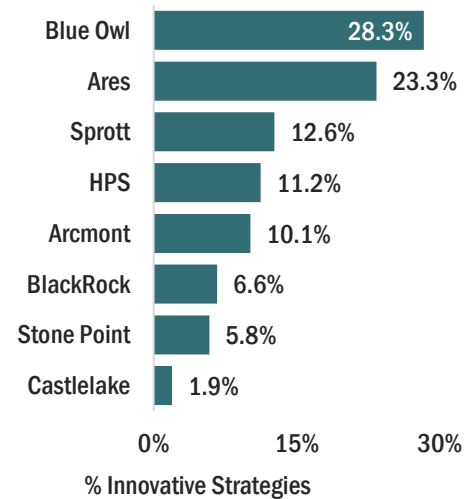


Chart 19. Real Estate¹

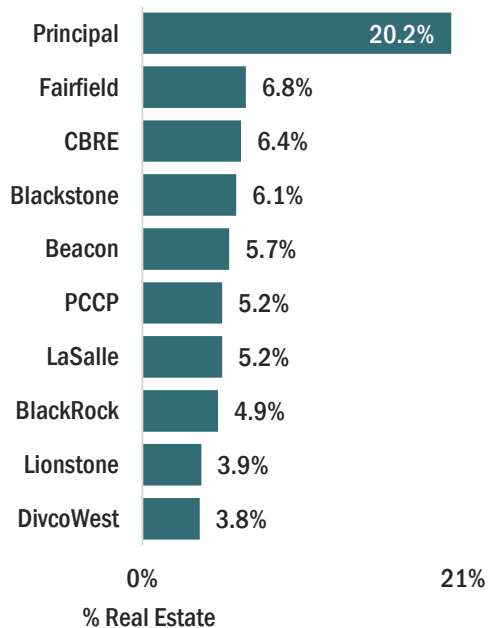
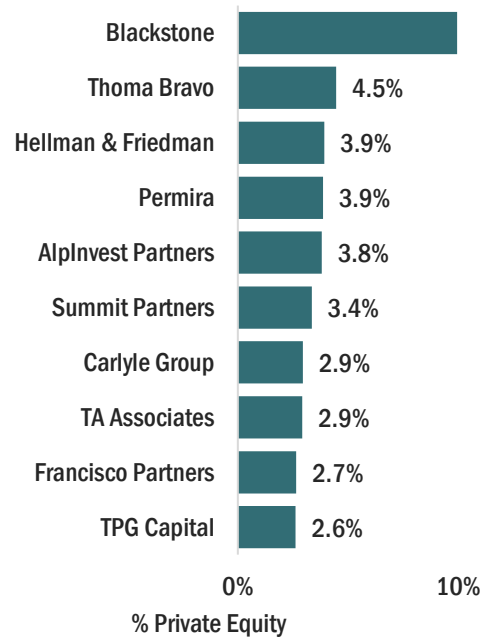


Chart 20. Private Equity¹

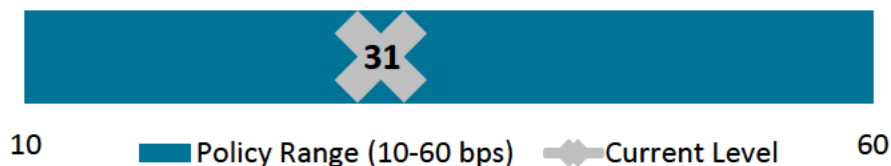


¹ Public asset manager exposures reported are as of 6/30/23. Private asset manager exposures reported are as of 3/31/23

Total Public Equity – Active risk summary

Chart 21. Current active risk (bps)¹

At the May 2023 Investment Committee meeting, the committee approved a new governance policy for Total Public Equity, establishing an active risk budget range of 10 to 60 basis points. As of July 31, 2023, the expected active risk of the Total Public Equity portfolio is 31 basis points.



Historical active risk (bps)

Chart 22. Forecasted²

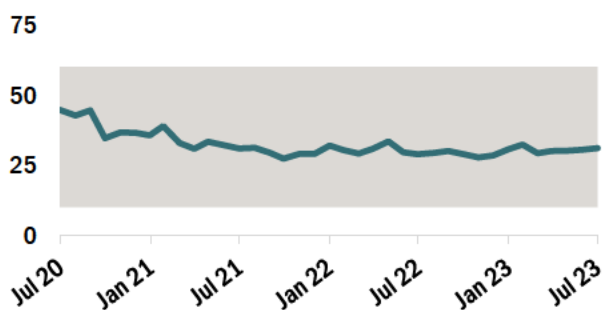
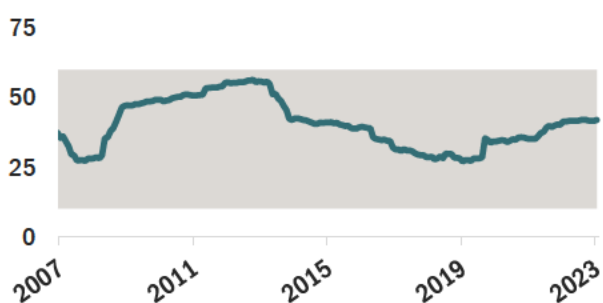


Chart 23. Realized³



Exposures vs. benchmark (market value %)

Chart 24. Geographic active exposures

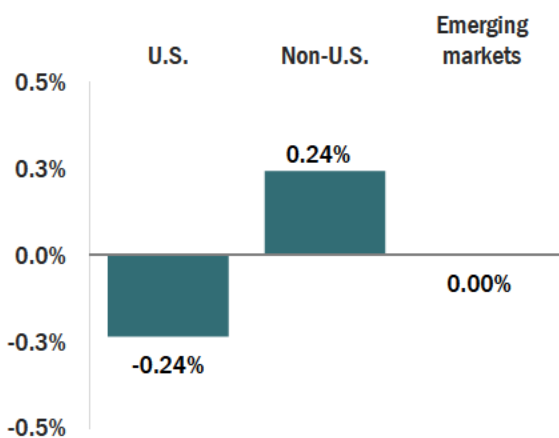
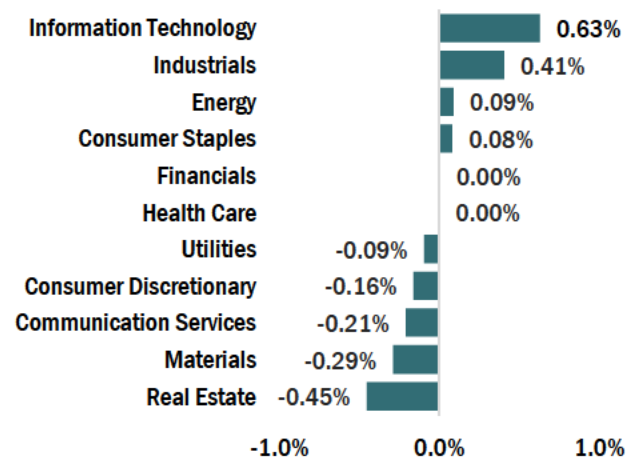


Chart 25. Sector active exposures



¹ Forecasted active risk based on BlackRock Aladdin model calculation.

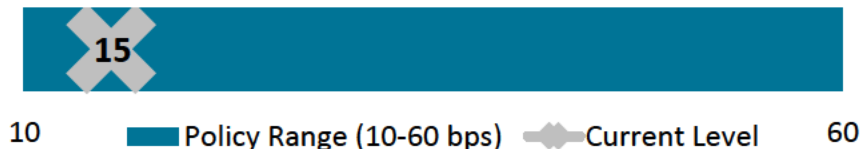
² Forecasted active risk based on the Total Public Equity Portfolio and market conditions over time.

³ Based on a rolling 60-month period of realized returns through July 31, 2023

Fixed Income – Active risk summary

Chart 26. Current active risk (bps)¹

At the September 2021 Investment Committee meeting, the committee approved a new governance policy for Fixed Income, establishing an active risk budget range of 10 to 60 basis points. As of July 31, 2023, the expected active risk of the Fixed Income Portfolio is 15 basis points.



Historical active risk (bps)

Chart 27. Forecasted²

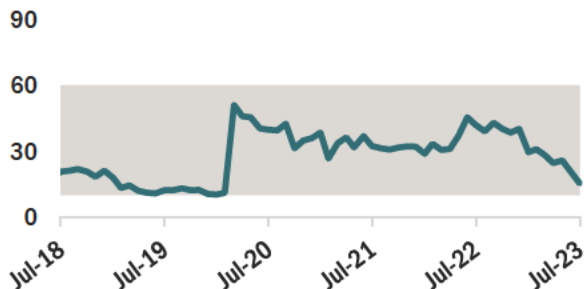
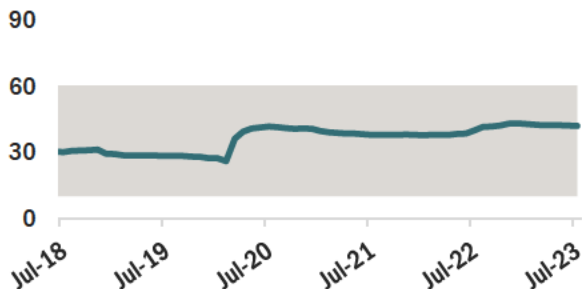


Chart 28. Realized³



Fixed Income exposures vs. benchmark (market value %)

Chart 29. Geographic active exposures

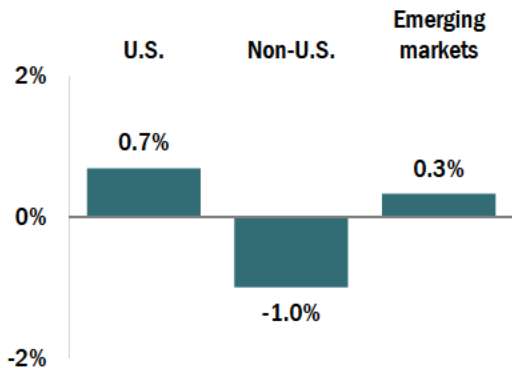
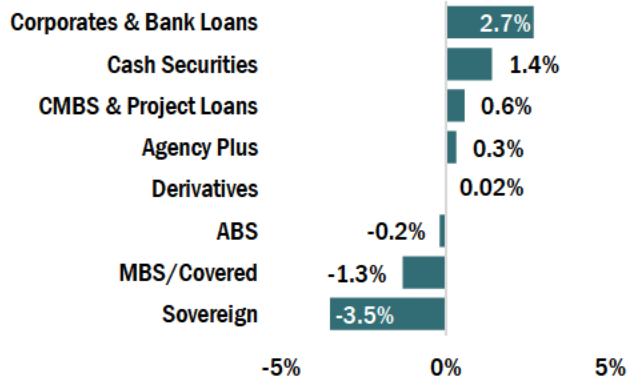


Chart 30. Sector active exposures



¹ Forecasted active risk based on BlackRock Aladdin model calculation.

² Forecasted active risk based on the Fixed Income Portfolio and market conditions over time.

³ Based on a rolling 60-month period of realized returns through July 31, 2023

Real Estate

At the July 2021 Investment Committee meeting, the committee approved a new CalSTRS Real Estate Investment Policy. The policy sets limits on Real Estate leverage depending on CalSTRS' level of control. Controlled structures have a leverage limit of 50% and are typically separate accounts and joint ventures where CalSTRS is the majority investor. Non-controlled structures have a leverage limit of 65% and are typically commingled funds where CalSTRS is a minority partner with typical limited-partner rights.

Real Estate data is based on CalSTRS' share of gross asset value as of December 31, 2022.

Real Estate leverage

Chart 31. Leverage and limits

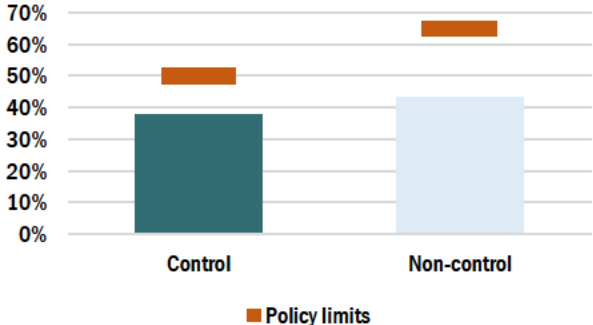
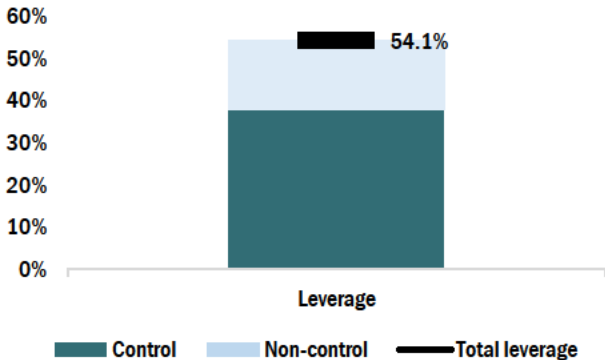


Chart 32. Total leverage



Real Estate Portfolio exposure

Chart 33. Geographic exposure¹

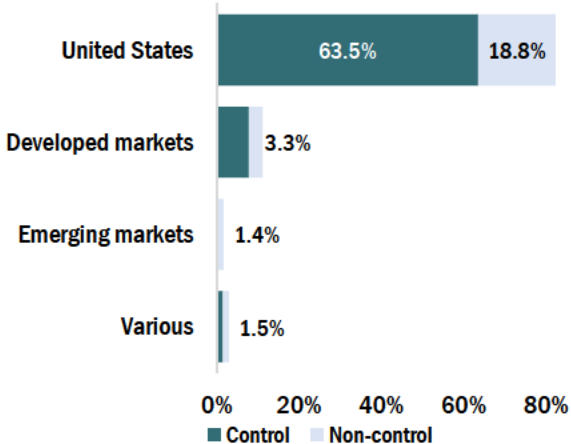
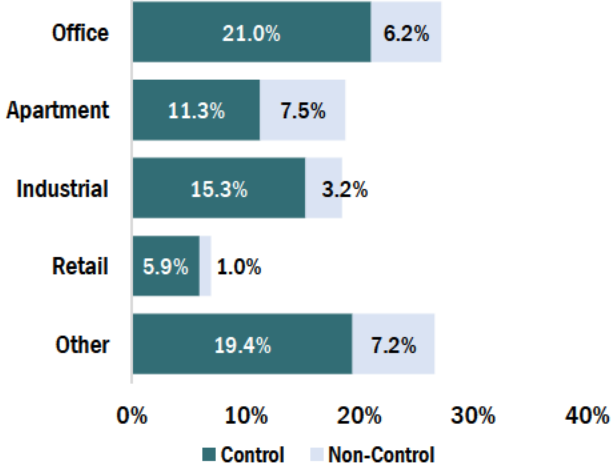


Chart 34. Property type exposure²



¹ Various investments have properties in multiple countries that could be in multiple regions.

² Other property type includes diversified investments that include multiple property types and all other property types (for example, hotels or land).

Private Equity

Private Equity Portfolio company level data as of December 31, 2022.

Chart 35. Sector exposure

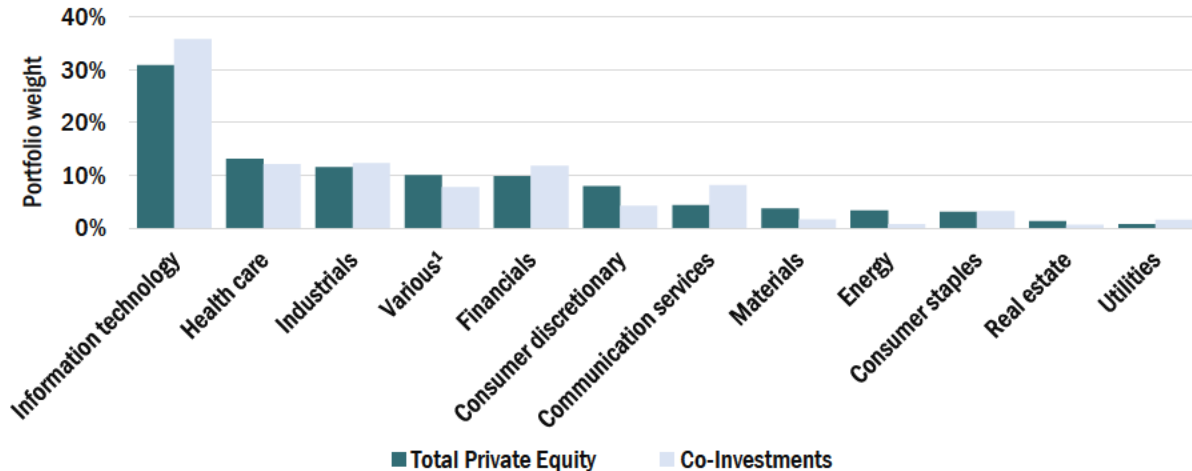
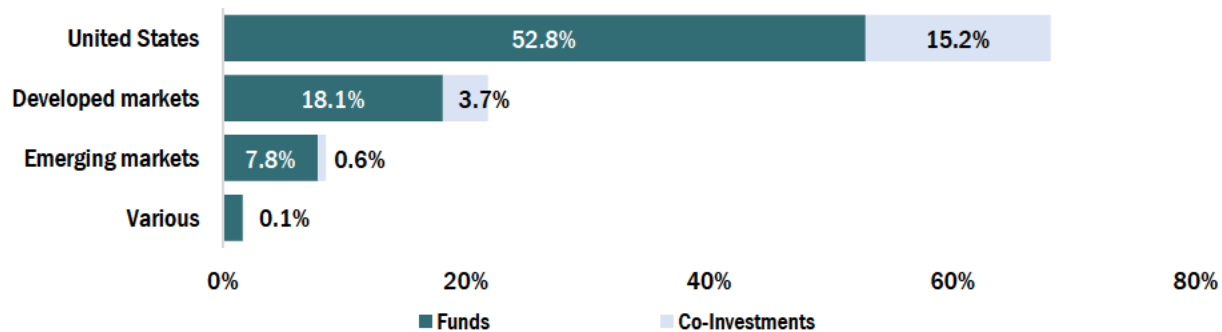


Table 2. Top 10 portfolio company exposure

Company	Investment vehicle	Market value (millions)	% of Private Equity
1	Co-Investments & funds	\$520	1.06%
2	Co-Investments & funds	\$384	0.79%
3	Co-Investments	\$331	0.68%
4	Co-Investments & funds	\$309	0.63%
5	Funds	\$293	0.60%
6	Co-Investments & funds	\$253	0.52%
7	Co-Investments & funds	\$251	0.51%
8	Co-Investments & funds	\$229	0.47%
9	Co-Investments & funds	\$228	0.46%
10	Co-Investments & funds	\$211	0.43%

Chart 36. Geographic exposure¹



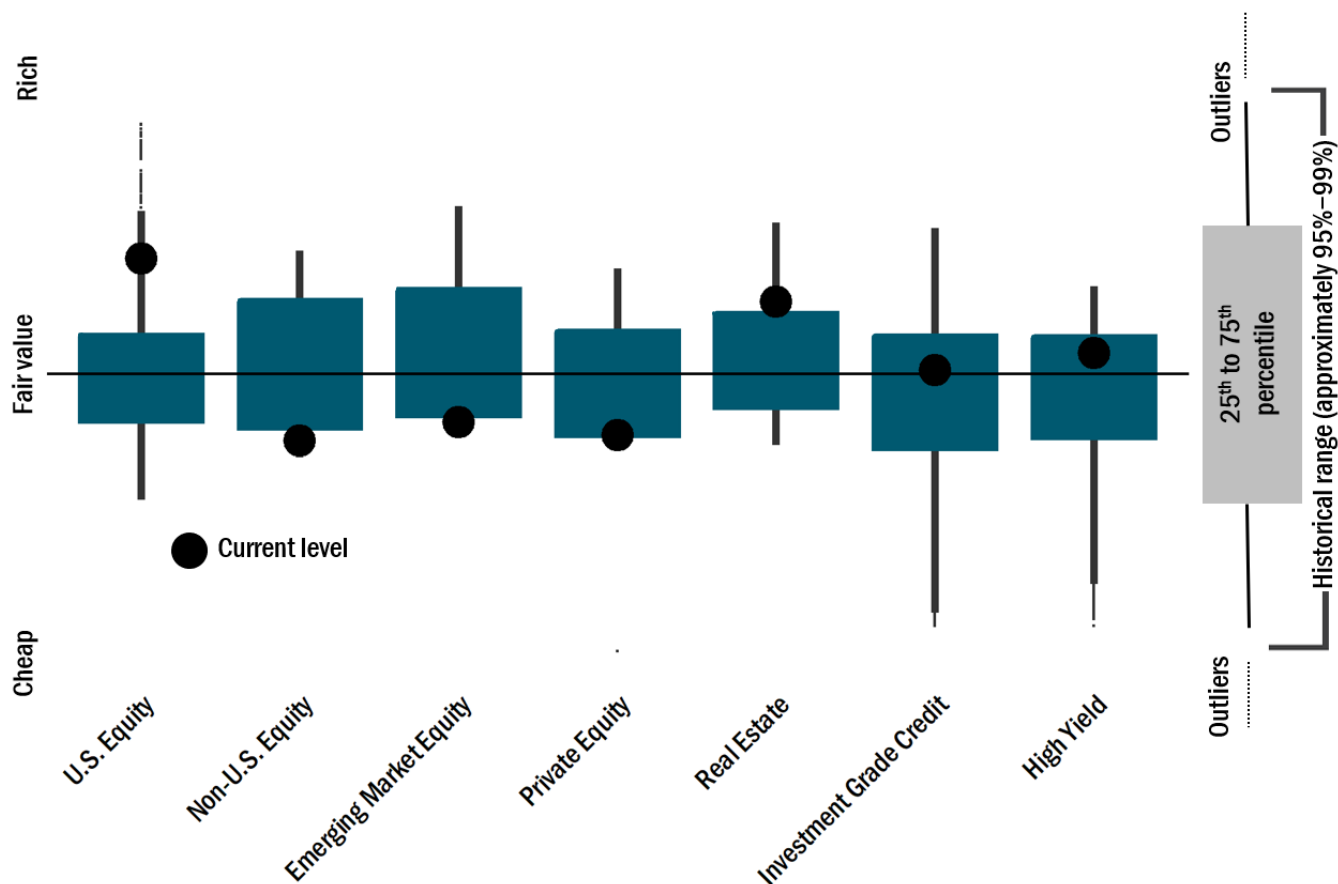
¹ Various includes investments in which the sector or geography data is not available at the level of detail of the data set.

Valuations

For most of the larger asset classes in the portfolio, the price of the asset at any given time is an important component of expected return, particularly over the medium term (three to five years). Higher prices tend to precede periods of lower returns, an important consideration for the risk-return opportunities across the portfolio.

Chart 37 shows several common measures of valuation converted to a common scale for comparability. In the past few months, the valuations for real estate and high yield credit have increased while the valuation for non-U.S. developed equity has decreased. U.S. equity continues to have higher valuations than non-U.S. developed and emerging market equity.

Chart 37. Asset class valuations¹



¹ Valuation metrics: Long-Term P/E Ratio for Public Equity; Total Value/EBITDA for Private Equity; Transaction Cap Rate for Real Estate; Credit spreads for Investment Grade and High Yield Credit.

Market volatility

The volatility index presented in Chart 38 and Chart 39 is an indicator of general market turbulence. The red lines provide a threshold by which to judge whether a day is an outlier or not. The long-term chart shows that, historically, periods of higher turbulence tend to cluster in time. The clustering of turbulent periods means that if a particular day is an outlier, the following day is much more likely to be an outlier. Several days in a row of outliers are a strong indicator that market turbulence could persist for many weeks or months. Economic concerns over the rate of inflation, potential additional interest rate hikes in the United States, global growth and further banking sector turmoil are the major causes of recent turbulence.

Chart 38. Market turbulence—long term

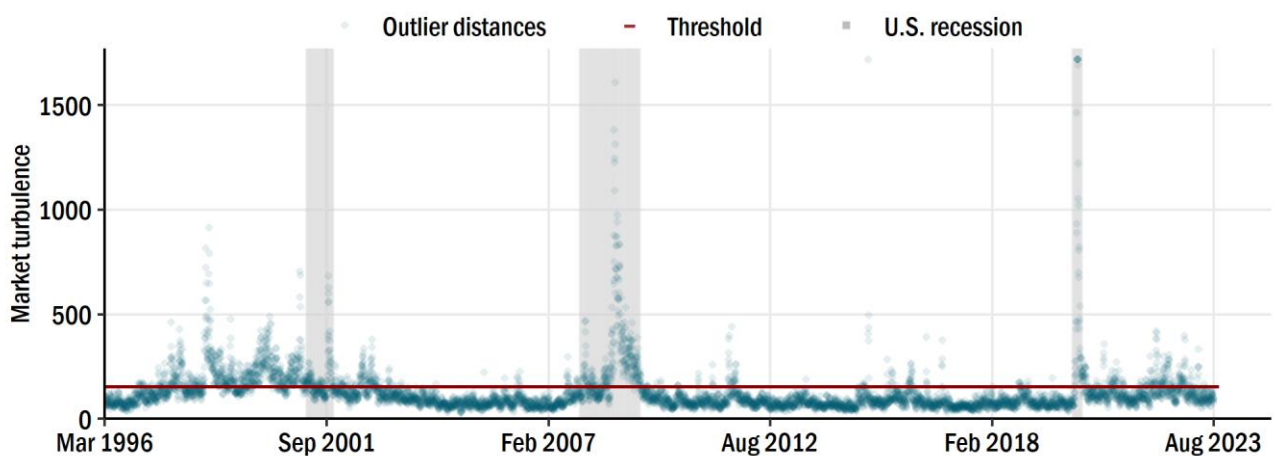
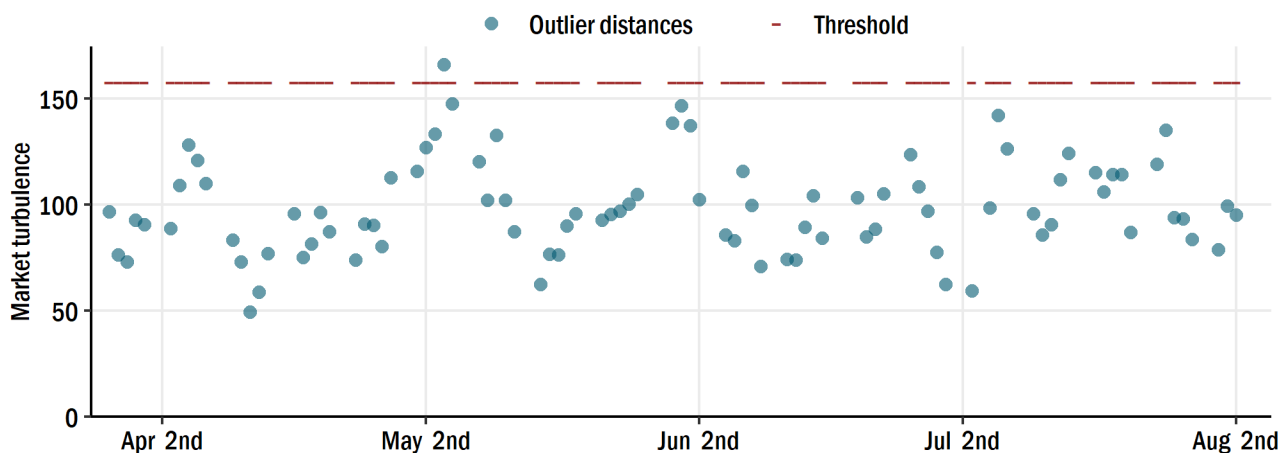


Chart 39. Market turbulence—recent



Fund liquidity

Paying timely benefit payments is a key objective that requires an appropriate level of cash or liquid assets that can be readily converted to cash. To ensure the fund has an appropriate level of liquidity, the Investment Policy specifies minimum levels of cash and other liquid assets. In addition to required policies, the Risk Allocation Committee manages portfolio rebalancing and timing in order to ensure cash is available when needed. A convenient framework for measuring how much liquidity is available is to break down the assets into multiple tiers:

- Cash.
- Tier 1 assets: Securities that trade frequently and can be readily converted to cash.
- Tier 2 assets: Generally liquid securities that can still trade at prevailing price levels even in periods of modest market stress.
- Less liquid assets: Securities that are by their nature illiquid, such as Private Equity Portfolio partnerships and otherwise liquid assets that become illiquid in periods of stress.

Table 3 shows the liquidity profile of the total portfolio. The combination of cash and Tier 1 assets provide a substantial cushion to ensure timely benefit payments, even in periods of extended market stress.

Table 3. Fund liquidity

Asset	Portfolio value (billions)	Months of benefit payments
Cash	\$5.9	3.8
Tier 1 assets	\$183.9	120.5
Tier 2 assets	\$9.2	6.0
Less liquid assets	\$119.1	78.1