



Market & Portfolio Update

Amy C. McGarrity

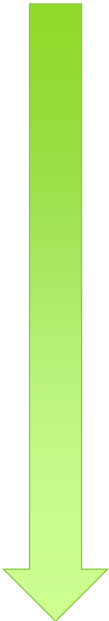
Chief Investment Officer/Chief Operating Officer

June 17, 2022

Market Performance: 2022 YTD* vs. 2021 Calendar Year

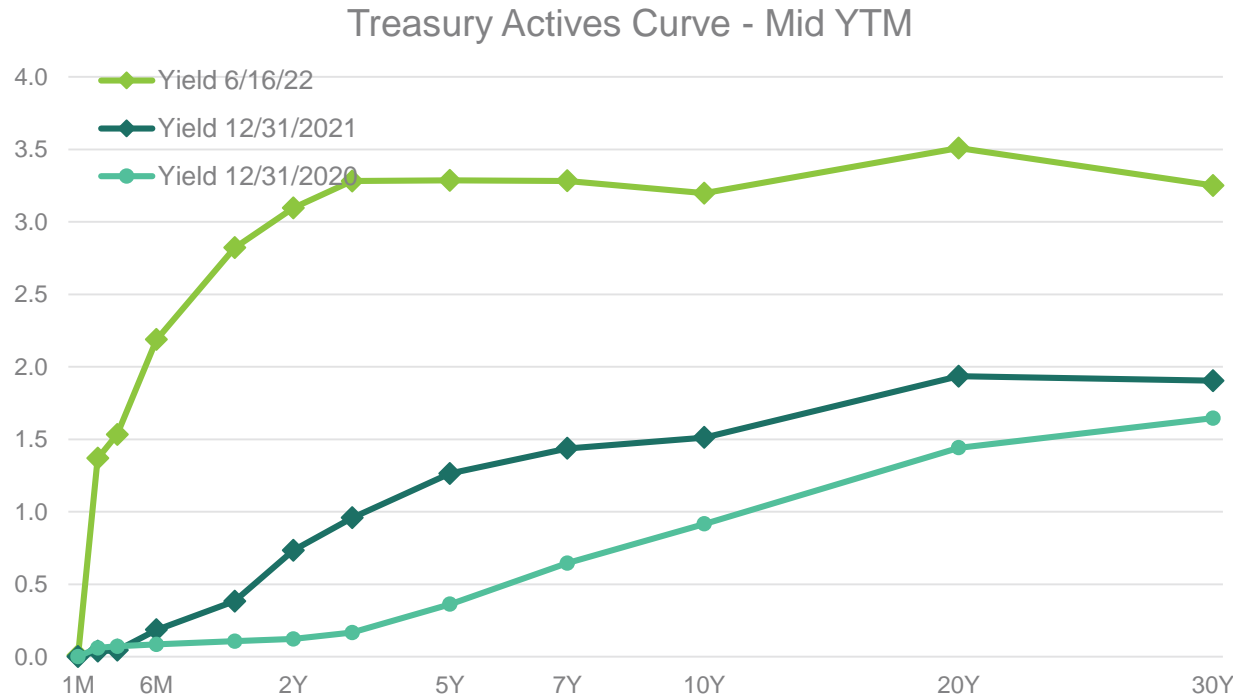
Oil and commodities are moving higher, while stock and bond markets are broadly selling off YTD

2022 Highest Performers



All returns are presented in unhedged USD terms
 CPI-U YTD is as of previous month end (5/31/2022)
 *YTD as of 6/16/2022

Treasury Yield Curve

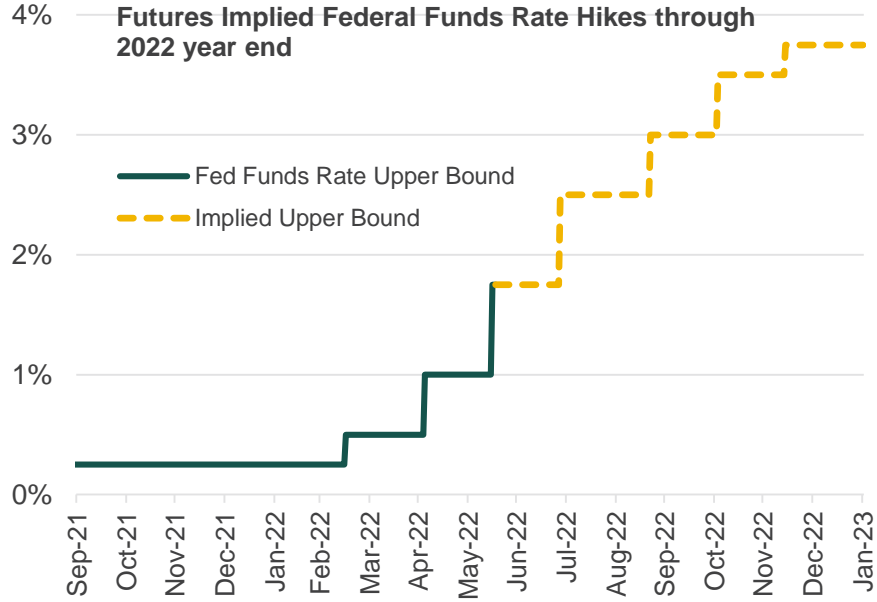
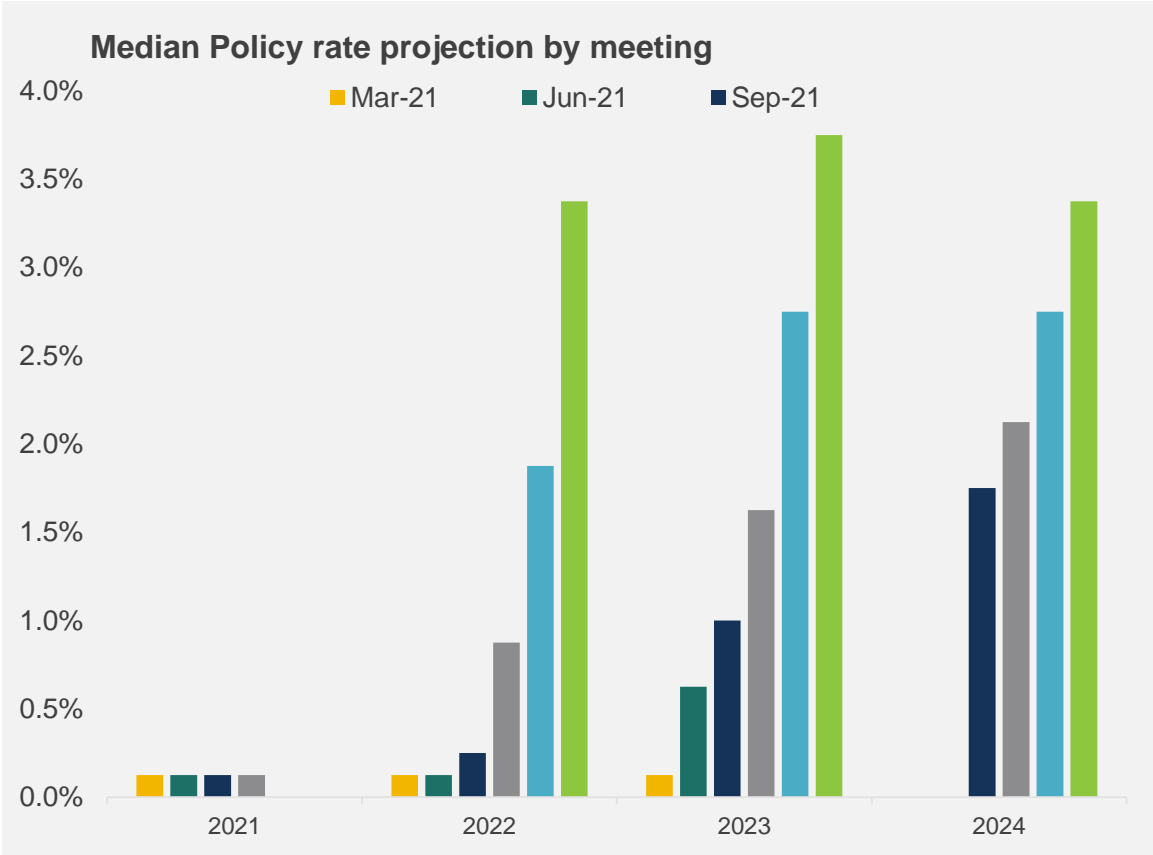


Tenor	Yield 6/16/2022	Yield 12/31/21	Yield 12/31/20	Change Dec 20 - Jun 22
1M	0.99%	0.03%	0.04%	0.95%
2M	1.37	0.04	0.06	1.31
3M	1.53	0.04	0.07	1.46
6M	2.19	0.19	0.09	2.10
1Y	2.82	0.38	0.11	2.71
2Y	3.10	0.73	0.12	2.97
3Y	3.28	0.96	0.17	3.12
5Y	3.29	1.26	0.36	2.92
7Y	3.28	1.44	0.65	2.64
10Y	3.20	1.51	0.92	2.28
20Y	3.51	1.94	1.44	2.07
30Y	3.25	1.90	1.65	1.61

- Concerns about inflation and the war in Ukraine are adding confusion to the economic picture
- Federal Funds Rate raised by 150 bps through June 15, 2022; four more rate hikes are expected in 2022

Interest Rate Expectations

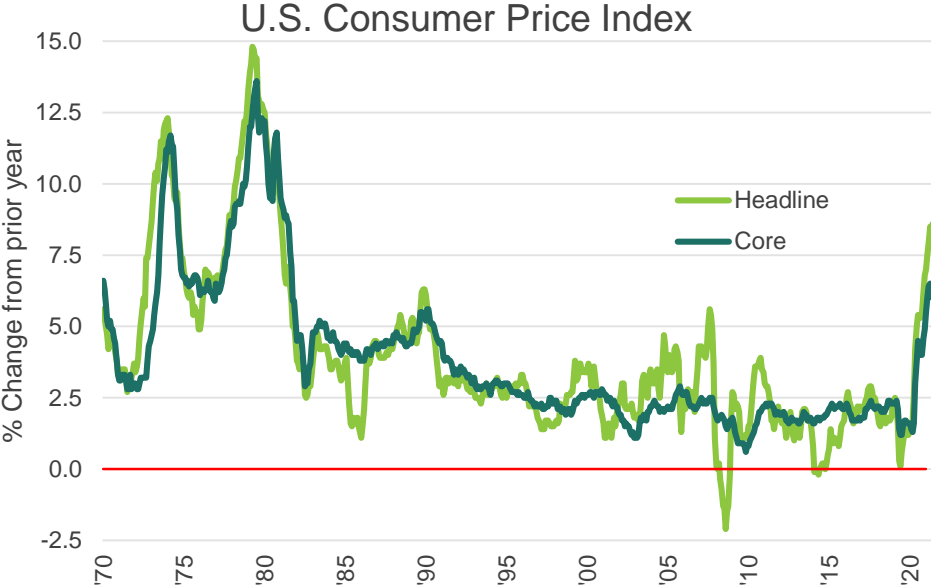
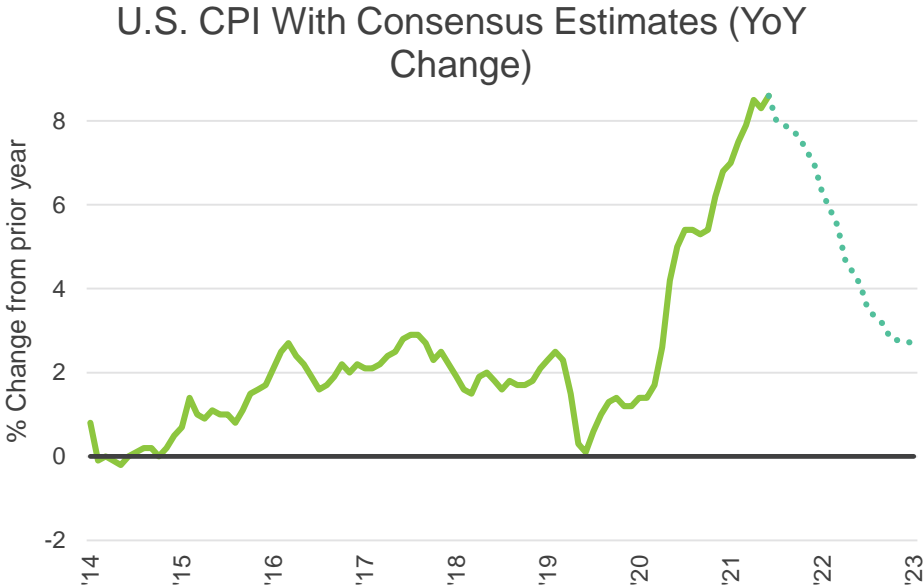
Since March 2021, the Fed has become increasingly hawkish



Source: FOMC Summary of Economic Projections

Inflation Estimates

Economist surveys point to a renormalization of inflation trends over the next 18 months

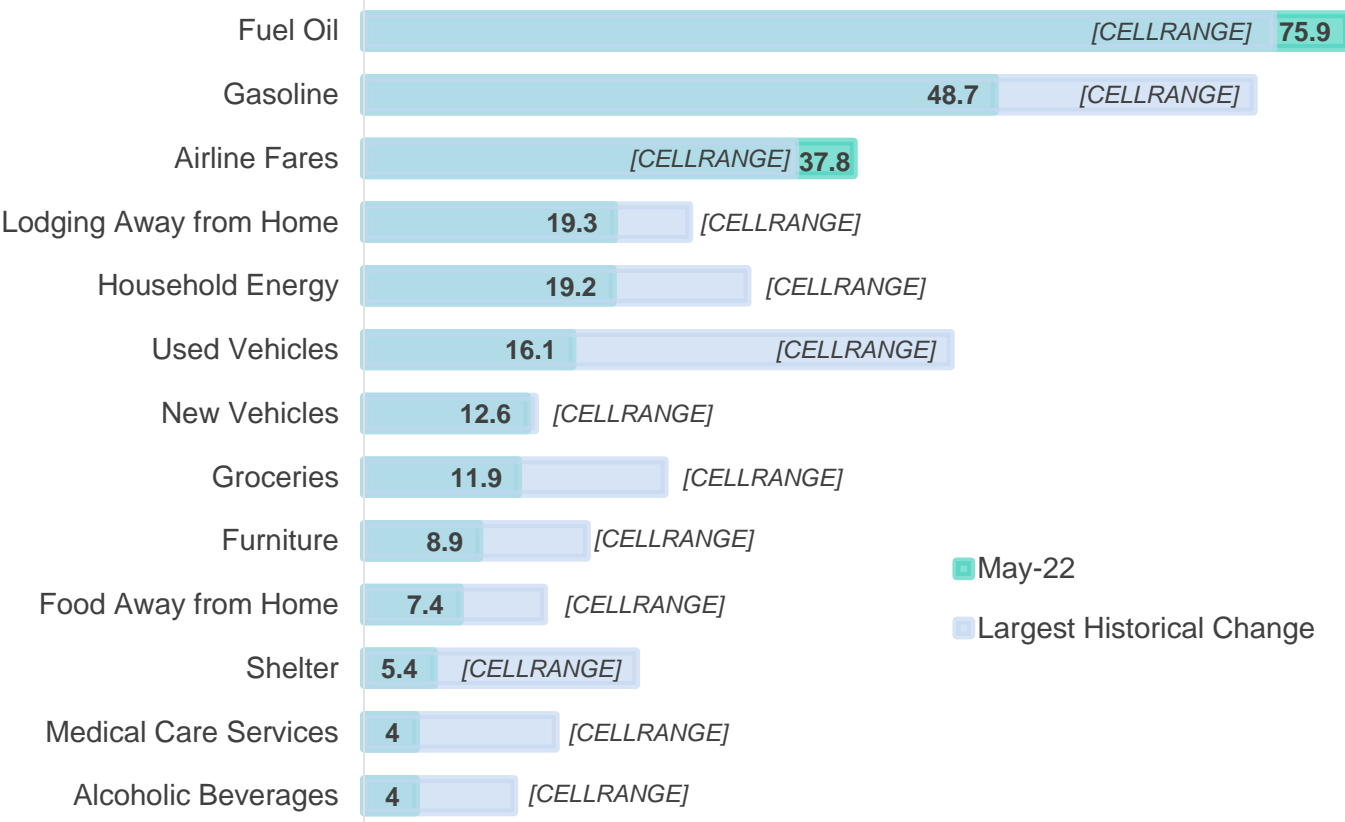


Source: Bureau of Labor Statistics

Inflation Components

Various components of CPI are seeing inflation greater than / near historical highs

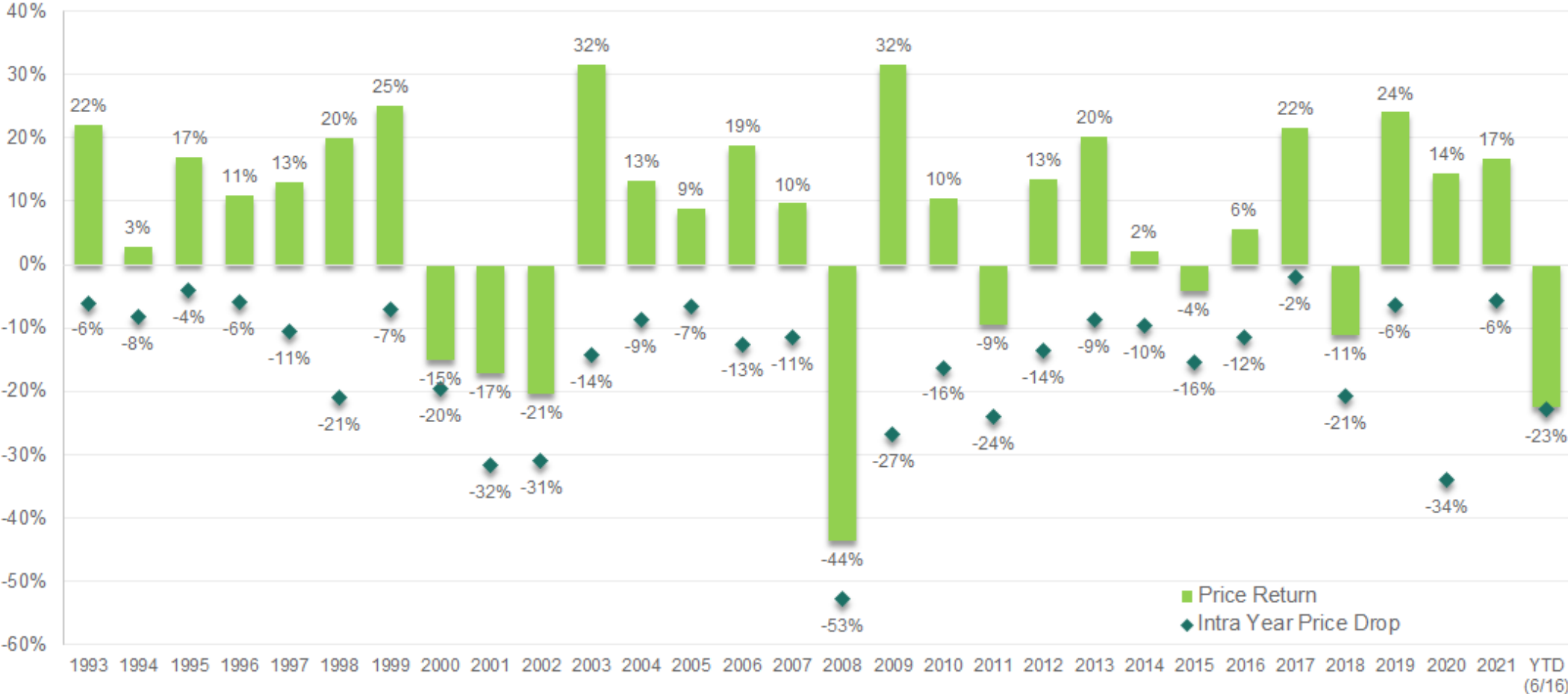
Selected Components of Consumer Price Index % change from prior year & largest historical change



Source: Bureau of Labor Statistics

Global Equity Market Volatility

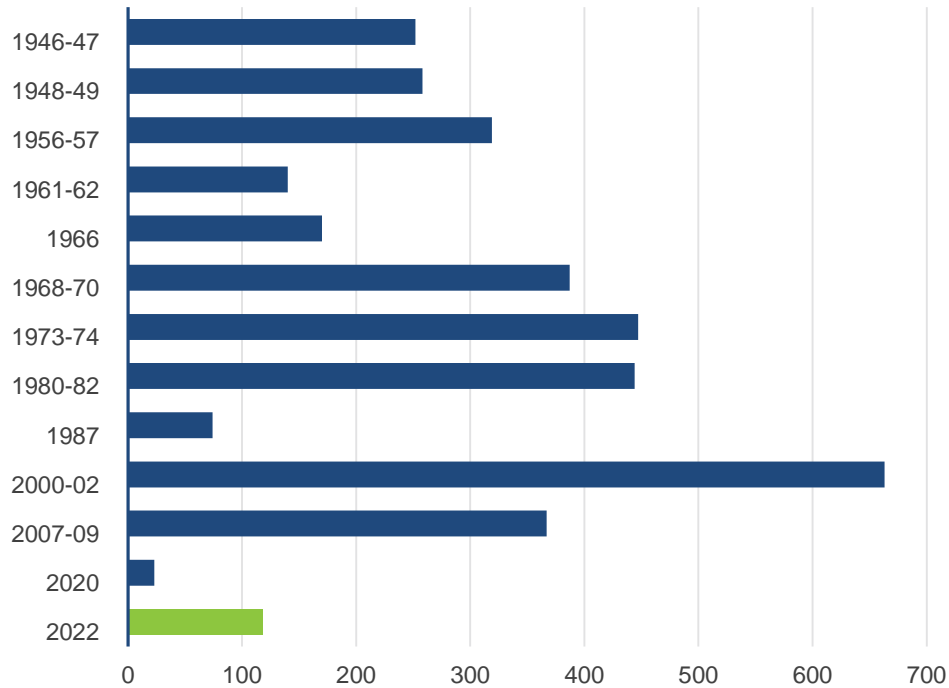
MSCI ACWI Intra-Year Declines vs. Calendar Year Returns
Despite average intra-year decline of 15.6%, annual returns were positive in 22 of 30 years



Market Downturn History

While the most recent bear market was short-lived, historically they have lasted longer

Days from peak to trough for the S&P 500's bear markets



Period	Days	Percent Decline
1946-47	252	-28%
1948-49	258	-20%
1956-57	319	-22%
1961-62	140	-28%
1966	170	-22%
1968-70	387	-36%
1973-74	447	-48%
1980-82	444	-27%
1987	74	-34%
2000-02	663	-49%
2007-09	367	-57%
2020	23	-34%
2022	118**	-24%

Source: S&P Dow Jones Indices

* Bear Market is generally defined by a decline of more than 20% from recent highs

** Through June 16, 2022

2022 Asset Allocation Changes

Policy benchmark weights and target range will update yearly based on actual Alternatives allocation

Based on final 2022 valuations, Alternatives moved from 4.0% to 4.5% and Global Equity from 55.5% to 55.0%. The Global Equity range was also updated to reflect the change.

Asset Class	2022 Policy Benchmark Weight	Long-Term Target Allocation	2022 Permissible Range	Long-Term Permissible Range
Global Equity	55.0%	54.0%	49% - 61%	48% - 60%
Fixed Income	23.5%	23.0%	18.5% - 28.5%	18% - 28%
Private Equity	8.5%	8.5%	4% - 13%	4% - 13%
Real Estate	8.5%	8.5%	4% - 13%	4% - 13%
Alternatives	4.5%	6.0%	0% - 12%	0% - 12%
Cash/Short Term*	0.0%	0.0%	0% - 3%	0% - 3%
Total	100%	100%		

* Includes Cash Overlay

2021 Asset Allocation Final Valuation

Fixed Income was outside the permissible range when the final books were closed

- In range on 12/31/2021
- Booking of final private market valuations caused breach

“Accounting” breach only

- Weighting was never outside the range on an actual day-to-day asset allocation management perspective
- Markets had corrected by time final valuations were booked (April 2022)

Asset Class	12/31/2021 Calendar Year-end Weighting	12/31/2021 Final Close Weighting	2021 Permissible Range
Global Equity	59.3%	58.3%	49.5% - 61.5%
Fixed Income	18.6%	18.4%	18.5% - 28.5%
Private Equity	8.8%	9.2%	4% - 13%
Real Estate	8.0%	8.8%	4% - 13%
Alternatives	4.7%	4.7%	0% - 12%
Cash/Short Term*	0.6%	0.6%	0% - 3%
Total	100%	100%	

* Includes Cash Overlay

Russia Executive Orders

Current Federal Executive Orders impact one PERA holding (Sberbank)

- “Blocked security” – window to sell ended May 25, 2022
- Russian markets remained closed to Americans (prohibited sales transactions)
 - Unable to sell by the required date – still hold position
 - Have reported to OFAC – awaiting further guidance
- New investments “in any sector of the Russian Federation economy” are prohibited

Extremely fluid situation – PERA staff continues to monitor



2022+ Projects: Investments/Collaborative

Project

Status

Unitization – Fixed Income asset class

Project team is pursuing unitization of the Fixed Income asset class with anticipated completion in 3Q2022; once Fixed Income is complete, will explore other unitization opportunities

Refreshed Technology Roadmap

Project team focusing in on private asset classes, though ongoing upgrades, custodian bank services, and software evaluations are in process throughout department. Team is focused on efficient use and optimization of current technology.



Investment Activities

- Work continues on the Kyriba (cash management/forecasting software) implementation project, with expected completion in Summer 2022
- Refreshed Investment FactSheets for Private Equity and Internal Costs Savings
- Produced 2022 Investment Stewardship Report
- New hires in Investment Operations
- Began utilizing additional custodial services related to capital call execution services for partnerships in Alternatives

Investment Baby Boom Continues...



Hudson
August 1, 2021



Emma
August 1, 2021



Will
January 14, 2022



Audrey
March 8, 2022



Isabelle
April 10, 2022



APPENDIX

Asset Allocation Policy

Policy

Asset class weights will be within permissible ranges

Status

All asset class weights within permissible ranges

Asset Class	2022 Policy Benchmark Weight	Actual Weight* (March 31, 2022)	Range
Global Equity	55.0%	56.7%	49% - 61%
Fixed Income	23.5%	19.4%	18.5% - 28.5%
Private Equity	8.5%	9.7%	4% - 13%
Real Estate	8.5%	8.5%	4% - 13%
Alternatives	4.5%	5.2%	0% - 12%
Cash/Short Term**	0.0%	0.5%	0% - 3%
Total	100%	100%	

* Transitional cash remains within respective asset classes

** Includes Cash Overlay

Active Risk Policy

Policy

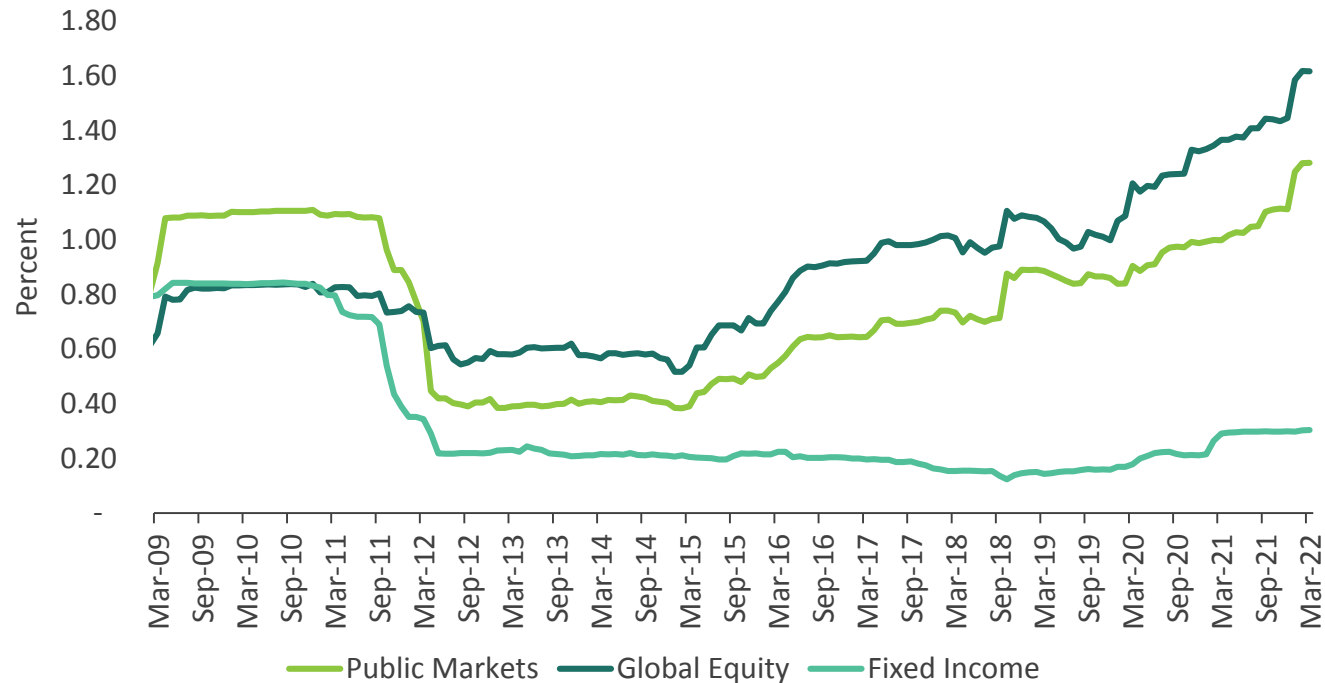
Active risk within marketable securities asset classes (i.e., Global Equity and Fixed Income) and total marketable securities portfolios will not exceed maximums

Status

Active risk levels are within policy limits

Active Risk		
	Five-Year Tracking Error in Basis Points 31-Mar-22	Active Risk Policy Maximum in Basis Points
Global Equity	162	225
Fixed Income	30	100
Total Marketable Securities	128	150

Historical Active Risk - Public Markets



*Active risk measurement was changed from trailing three years to trailing five years as of January 2020



Portfolio Monitor

ASSET CLASS

STRATEGY

Global Equity

Portfolio retains higher quality bias. No material sector or geographic overweights or underweights relative to the benchmark.

Fixed Income

The portfolio is biased to be overweight spread product, take on limited duration risk, and generate the majority of outperformance from security selection and asset allocation. Short term dislocations may cause volatility in performance; however, long term the portfolio is expected to outperform the benchmark

Private Equity

Focus continues to be on building a high quality vintage with experienced teams that have long-term track records. The fundraising cycle continues to move at a rapid pace, providing a number of actionable opportunities. The re-up pipeline continues to be full creating the need to be mindful of timing and selection regarding primary commitments. Liquidity options are being evaluated across the PE portfolio.

Real Estate

Real Estate fundamentals and supply dynamics remain strong in Industrial and Multifamily while traditional Office and Retail continue to tell a mixed story with winners and losers in terms of tenant demand. Cost of Real Estate debt is headed higher leading to rising capitalization rates. General economic concerns coupled with material shortages beginning to impact real estate values. Focus remain on durable well leased properties in high employment markets.

Alternatives

Real assets including infrastructure, agriculture and timber offer solid income in a low return environment and may benefit from rising inflation. Also, special situations in Europe and select Emerging Markets are becoming interesting due to rising volatility and macro uncertainty. Existing¹⁸ distressed managers have substantial dry powder available to pursue value transactions in a risk off environment.