



**OREGON
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Oregon Investment Council

June 1, 2022

Cara Samples
Chair

Tobias Read
State Treasurer

Rex Kim
Chief Investment Officer



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OREGON INVESTMENT COUNCIL

Agenda

June 1, 2022
9:00 AM

Oregon State Treasury
Investment Division
16290 SW Upper Boones Ferry Road
Tigard, OR 97224

<u>Time</u>	<u>A. Action Items</u>	<u>Presenter</u>	<u>Tab</u>
9:00-9:10	1. Review & Approval of Minutes April 20, 2022	Cara Samples <i>OIC Chair</i>	1
	2. Committee Reports	Rex Kim <i>Chief Investment Officer</i>	2
9:10-9:30	3. OPERF Real Assets Manager Recommendation	Ben Mahon <i>Senior Investment Officer, Alternatives</i> Paul Koch <i>Investment Officer, Alternatives</i> Tom Martin <i>Global Head of Private Equity & Real Assets, Aksia</i> Nic DiLoretta <i>Managing Director, Head of Real Assets, Aksia</i>	3
9:30-10:30	4. 2022 Capital Markets Assumptions	Karl Cheng <i>Senior Investment Officer, Portfolio Risk & Research</i> Mika Malone <i>Managing Principal, Meketa</i> Colin Bebee <i>Managing Principal, Meketa</i> Katie Comstock <i>Associate Partner, Aon</i> Ashley Woeste <i>Senior Consultant, Aon</i>	4

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Cara Samples
Chair

John Russell
Vice-Chair

Monica Enand
Member

Tobias Read
State Treasurer

Kevin Olineck
PERS Director

B. Information Items

10:40-11:15	5. Investment Policy Statement: Governance	Allan Emkin <i>Managing Principal, Meketa</i> Mika Malone <i>Managing Principal, Meketa</i>	5
11:15-11:45	6. OPERF Q1 Performance Review	Allan Emkin <i>Managing Principal, Meketa</i> Mika Malone <i>Managing Principal, Meketa</i> Paola Nealon <i>Principal, Meketa</i> Katie Comstock <i>Associate Partner, Aon</i> Ashley Woeste <i>Senior Consultant, Aon</i>	6
11:45	7. Asset Allocation & NAV Updates	Rex Kim	7
	a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund		
	8. Calendar — Future Agenda Items	Rex Kim	8
11:50	9. Open Discussion	OIC Member Staff Consultants	
12:00	10. Public Comments		

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TAB 1

REVIEW & APPROVAL OF MINUTES



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State of Oregon

Office of the State Treasurer

16290 SW Upper Boones Ferry Road
Tigard, Oregon 97224

OREGON INVESTMENT COUNCIL

April 20, 2022

Meeting Minutes

Members Present: John Russell, Cara Samples, Monica Enand, Tobias Read, Kevin Olineck

Staff Present: Rex Kim, John Hershey, Michael Langdon, David Randall, Karl Cheng, Ben Mahon, Tony Breault, Geoff Nolan

Staff Participating virtually: Ahman Dirks, Aliese Jacobsen, Alli Gordon, Amanda Kingsbury, Amy Bates, Andrew Coutu, Andrew Hillis, Andrew Robertson, Andrey Voloshinov, Angela Schaffers, Anna Totdahl, Austin Carmichael, Bradley Curran, Chris Ebersole, Claire Illo, Dana Millican, David Elott, Debra Day, Deena Bothello, Eric Messer, Faith Sedberry, Ian Huculak, Jen Plett, Jeremy Knowles, Jo Recht, John Lutkehaus, Kenny Bao, Kristi Jenkins, Krystal Korthals, Louise Howard, Mark Selfridge, Mike Mueller, Missy Simpson, Mohammed Quraishi, Paul Koch, Rachel Wray, Robin Kaukonen, Ryan Mann, Sam Spencer, Scott Robertson, Sommer May, Stacey Spencer, Steve Kruth, Tan Cao, Taylor Bowman, Tiffany Zahas, Tim Miller, Tyler Bernstein, Will Hampson, William Hiles, Aadrial Phillips, Perrin Lim, Tim Powers

Consultants Present: Allan Emkin, Mika Malone, Colin Bebee, Paola Nealon, David Glickman (Meketa Investment Group, Inc.); Katie Comstock, Stephen Cummings, Ashely Woeste (Aon Investments); Tracey Goff (Aksia/TorreyCove Capital Partners LLC); Isabelle Amoroso, Ronaldo Lagnado, Chitpuneet Mann, Eric Spencer, Daisy Weiss (Universa)

PERS Present: Heather Case

Legal Counsel Present: Steven Marlowe (Department of Justice)

Before proceeding with the OIC meeting, Chief Investment Officer Rex Kim provided a disclosure pertaining to the virtual set-up of this OIC meeting, informing those in attendance (virtual and in person) of the guidelines in which this meeting will proceed.

The April 20, 2022 OIC meeting was called to order at 9:01 am by Cara Samples, Chair.

I. 9:01 am Review and Approval of Minutes

MOTION: Chair Samples asked for approval of the March 9, 2022 OIC regular meeting minutes. Vice-Chair Russell moved approval at 9:01 am, and Treasurer Read seconded the motion which then passed by a 4/0 vote.



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II. 9:01 am Committee Reports

Private Equity Committee:

March 11	Aquiline Financial Services Fund V	\$200M
April 1	Union Square Venture 2022 Funds (USV 2022 & USV Opportunity)	\$40M
April 18	TPG Partners IX and Healthcare Partners II	\$350M

Real Estate Committee:

March 29	Abacus Multifamily Associates L.P. Separately Managed Account	\$250M
March 29	Abacus Multifamily Partners Value-Add Fund VI, LP	\$150M

Opportunity Committee:

None

Alternatives Portfolio Committee:

April 11	NGP Royalty Partners II, L.P. with a side car	\$150M \$50M
April 11	Quantum Energy Partners VIII, L.P. with a side car	\$200M \$50M

Staff Discretion

February 3	Co-Invest side car for Brookfield Super Core	\$50M
February 16	Co-Invest side car for Brookfield Super Core	\$50M
March 14	Stonepeak Trail Blazer Investment Partners (Stonepeak Co-Invest Vehicle)	\$50M
April 14	Co-invest sidecar for EQT Infrastructure V	\$50M

III. 9:03 am Comment from Chair Samples

Chair Samples took a moment to voice support for Treasurer Read's instructions to Treasury Staff to divest from assets invested in Russia that have been sanctioned by the federal government, and to express a preference that Treasury dispose of all Russian assets, regardless of sanction status. Vice-Chair Russell and Member Enand voiced their support for the comment.

IV. 9:04 am Tail Risk Hedging Educations

Karl Cheng, Senior Investment Officer, Portfolio Risk and Research, reviewed what was discussed during the first tail risk education session in December, and introduced the presenters from Universa and the topic for today's education session.

Brandon Yarckin, Chief Operating Officer, Universa, gave an introduction to Universa.

Mark Spitznagel, President and Chief Investment Officer, Universa, provided the fundamental concept underlying this strategy, that insurance may improve compounded returns. In addition, he spoke about topics such as the different kinds of risk mitigating strategies, cost effectiveness of various strategies, asset allocations, and governance.



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V. 10:20 am OPERF Risk Survey

Colin Bebee, Managing Principal, Meketa presented the results of the Risk and Implementation Survey as part of the Asset Liability Study.

VI. 10:55 am OPERF Liquidity

Karl Cheng, Senior Investment Officer, Portfolio Risk and Research, introduced the topic and the consultants.

Katie Comstock, Associate Partner, Aon, started the presentation. Topics included an overview of the analysis process, the current target asset allocations, and theoretical economic scenarios and their potential effect on OPERF liquidity.

Karl Cheng then presented information from OST staff on OPERF liquidity. Topics included the objective for OPERF's asset allocation, an overview of current allocations and their potential liquidity, liquidity coverage ratio (LCR), LCR assumptions and estimates, and LCR takeaways.

VII. 11:27 am OPERF Diversifying Strategies Portfolio Annual Review

Be Mahon, Senior Investment Officer, Diversifying Strategies Portfolio, presented the annual review. He discussed the portfolio's strategic role, positioning, performance over the last year, and the plan moving into the next year. Building out the portfolio is over halfway complete.

Stephen Kennedy, Partner/Portfolio Analyst, Albourne, discussed market themes from 2021, including a review of the major events and themes from the year, performance, dispersion, hedge fund AUM trends.

Ben Mahon closed the presentation by discussing 2022 priorities and objectives .

VIII. 12:09 pm Common School Fund Investment Policy Statement

John Hershey, Director of Investments, gave an update on the investment policies review.

Katie Comstock, Associate Partner, Aon, discussed the process and best practices for the review, and some of the updates that have been made so far.

John Hershey finished the discussion by outlining key issues for the OIC to review and discuss, and the next steps.

IX. 12:31 pm Asset Allocation & NAV Updates

Rex Kim, Chief Investment Officer presented the asset allocation and NAV updates.

X. 12:34 pm Calendar – Future Agenda Items

Rex Kim presented the forward calendar.

XI. 12:34 pm Open Discussion

Chair Samples opened the floor for discussion. Vice-Chair Russell, Chair Samples, and Treasurer Read talked about the roles about boundaries between the OIC and OST.

Chair Samples discussed ESG and the OIC's relationship to it, and requested the topic be included in a future meeting.

XII. 12:XX pm Public Comments

Public comments have been submitted electronically and included with the public meeting book.



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Ms. Samples adjourned the meeting at 12:48 pm.

Respectfully submitted,
Aadrial Phillips
Executive Support Specialist

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TAB 2
COMMITTEE REPORTS

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TAB 3
OPERF REAL ASSETS
MANAGER RECOMMENDATION

Brookfield Infrastructure Fund V, L.P.

Purpose

Staff and Aksia recommend: (i) a \$400 million commitment to Brookfield Infrastructure Fund V, L.P. ("BIF V" or the "Fund"); and (ii) an initial \$100 million commitment to a co-investment side car that will invest alongside the Fund, subject to the satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel. This proposed commitment represents the continuation of a relationship on behalf of the OPERF Real Assets Portfolio.

Background

Brookfield Asset Management, Inc. ("Brookfield" or the "Firm") is a publicly-listed global alternative asset manager (NYSE: BAM) with over \$690 billion in assets under management across a range of strategies including real estate, infrastructure, renewable power, private equity, and credit. The Firm has a long history of investing in and operating infrastructure assets, dating back to its founding in 1899. Brookfield is currently one of the largest specialized investors in infrastructure, with \$175 billion in infrastructure assets under management.

Oregon's relationship with Brookfield dates to 2013 and consists of five mandates across four equity strategies:

- Timberland – \$50 million to Brookfield Timberlands Fund V, L.P. in 2013;
- Agriculture – \$100 million to Brookfield Agriculture Fund II, L.P. in 2015;
- Infrastructure – \$400 million to Brookfield Infrastructure Fund III, L.P. in 2016;
- Infrastructure – \$400 million to Brookfield Infrastructure Fund IV, L.P. in 2019 (added a co-investment commitment in 2020, currently at \$50 million); and
- Infrastructure – \$250 million to Brookfield Super-Core Infrastructure Partners (added a co-investment commitment in 2022, currently at \$150 million).

The Firm is seeking \$25 billion in capital commitments for BIF V, inclusive of Brookfield's own 25%-of-total-fund commitment. The Firm plans to hold a first close in mid-2022 and is targeting a 10% net internal rate of return for the Fund.

Discussion/Investment Considerations

Consistent with its history, Brookfield will focus Fund capital on high-quality infrastructure investments, primarily in the transportation, renewable power, utilities, energy, and data sectors. With BIF V, the Firm will emphasize geographies where Brookfield has an operating presence, namely North America, Europe, South America, and Australasia. Brookfield is differentiated by its owner-operator legacy, and a key feature of the BIF V strategy is the Firm's operations-oriented investment approach. This approach benefits the Fund by incorporating technical insight into investment valuation and execution as well as through "hands-on" asset management that enhances operational performance. Brookfield will leverage the scale and expertise of its existing operating platforms to add value post-acquisition. The Firm pursues sufficient influence over its investments through control or co-control positions in order to execute its investment strategy. Target investments are expected to range from \$500 million to \$1.5 billion in size.

Attributes:

- *Deep and experienced team.* As a firm, Brookfield has over 100 years of infrastructure investing experience. Over the past two decades, Brookfield has deployed over \$65 billion of equity capital in more than 170 infrastructure investments. BIF V investment activity will be led by infrastructure CEO, Sam Pollock, and infrastructure COO, Ben Vaughan, supported by a senior leadership team that averages 25 years of infrastructure investing experience and 20 years of Brookfield tenure. As experienced investors

in, and operators of, a wide variety of infrastructure assets, the team possesses a breadth of experience that enables Brookfield to evaluate and optimize the widest possible opportunity set on behalf of the Fund.

- *Operational expertise.* The Fund will be managed by Brookfield’s infrastructure group, which is one of the world’s largest owners and operators of infrastructure assets. Brookfield’s infrastructure platform includes over 350 investment professionals and 47,000 operating employees across five continents. Staff believes this vertical integration sets Brookfield apart from other infrastructure investors, as it allows the Firm insight and management capability in all phases of the investment cycle.
- *Global and mature asset focus.* The Firm’s focus with BIF V will be established infrastructure companies and assets, a strategy that complements OPERF’s existing infrastructure portfolio. Brookfield remains consistent in applying core principles of acquiring high quality assets, investing with discipline, and enhancing value during ownership.
- *Market opportunity.* Infrastructure represents a compelling investment opportunity given the substantial gap between investment demand and capital supply. The infrastructure investment sector is experiencing substantial growth due to the scale of investments required to modernize existing, and develop new, infrastructure. At the same time, traditional suppliers of infrastructure capital, such as governments and utilities, continue to face capital constraints. Given current market dynamics and Brookfield’s impressive track record, Staff believes the investment opportunity set remains compelling.
- *Alignment of interests.* Brookfield is typically a large limited partner in every investment vehicle it sponsors and will contribute at least 25% of the Fund’s aggregate commitments. Additionally, senior executives and other employees of Brookfield are substantial owners of BAM (employees own approximately 20% of BAM).

Concerns:

- *Political/regulatory risks.* The political and regulatory environment for infrastructure is evolving, and changes may have an adverse effect on the Firm’s ability to pursue its BIF V investment strategy. [Mitigant: All investments in the infrastructure sector are subject to the aforementioned risks. Staff finds the risk/reward tradeoff to be reasonable and supported by: a) the team’s experience and technical expertise; b) the Firm’s diversification strategy for BIF V; and c) Brookfield’s demonstrated ability to navigate such risks.]
- *Competitive market for investment opportunities.* Interest from institutional investors in real assets, including infrastructure strategies, remains high. As more capital enters the market for private infrastructure, expected returns may be driven down. [Mitigant: Staff has confidence in Brookfield’s financial discipline and expertise in originating, structuring, and executing infrastructure transactions. Moreover, Brookfield focuses on transactions generated by established relationships, thereby reducing competition.]
- *Currency risk.* As a global fund, the majority of BIF V portfolio investments are expected to be outside the U.S. While drawdowns and distributions are in U.S. dollars, investments will be made in local currencies. [Mitigant: Due to the long investment horizon, currency risk is not expected to be a material component of total return. In addition, Brookfield adopts a hedging strategy for each investment, further managing currency risk.]
- *Significant unrealized value.* As of December 31, 2021, BIF I-IV have an unrealized carrying value of \$38.2 billion across 47 investments. Managing the unrealized portfolio will require significant time and attention from the investment and operating teams. [Mitigant: Brookfield feels that it is adequately staffed to manage prior funds and simultaneously deploy BIF V. The Firm has also re-structured since the BIF IV fundraise, with a team dedicated to the last years of asset ownership through disposition. Brookfield has demonstrated, through the deployment and management of prior funds, its ability to navigate portfolio management and realization challenges successfully.]

Terms

Legal negotiations are not final, but Staff views the proposed terms as in-line with market. Please refer to the Aksia materials for complete details. During fundraising efforts, no placement agent had contact with Treasury staff.

Conclusion

The Real Assets Portfolio target allocation is 7.5%, or approximately \$7.3 billion at current OPERF NAV. The current NAV is \$7.0 billion, with Staff considering Brookfield an anchor relationship within the portfolio. Brookfield is differentiated by their vertical integration and focus on mature, high-quality infrastructure assets. A commitment to BIF V would provide an attractive complement to other existing portfolio positions.

Staff also believes the BIF V strategy represents a natural extension and leveraging of Brookfield's industry-leading real assets investment platform as well as an opportunity to increase OPERF's exposure to a high conviction manager in an attractive sector. The depth and experience of the Brookfield team is notable, with the operations-oriented approach resulting in excellent market intelligence which should benefit BIF V returns. At a macro level, requirements for infrastructure investment are massive, underpinning positive demand dynamics for capital, and Staff believes Brookfield is well positioned to capitalize on the Fund's target opportunity set.

May 18, 2022

Oregon Investment Council (“OIC”)
 Oregon Public Employees Retirement Fund (“OPERF”)
 867 Hawthorne Ave. SE
 Salem, OR 97301

Re: Brookfield Infrastructure Fund V

Aksia LLC (“Aksia”), having been duly authorized by the OIC, has evaluated and hereby recommends, a commitment of up to \$400 million to Brookfield Infrastructure Fund V (the “Fund” or “Fund V”) and \$100 million to a co-investment side car.

Brookfield (the “Firm”) is a publicly traded global alternative asset manager formed in 1899. Currently, the Firm employs over 1,000 investment professionals in eight offices and has roughly \$600 billion in assets under management across real estate, infrastructure, renewable power, private equity, and credit.

Brookfield has invested in infrastructure for multiple decades, initially via the Firm’s balance sheet. In 2007, the Firm created Brookfield Infrastructure Partners (“BIP”) and transferred their infrastructure assets from the corporate balance sheet to BIP. Brookfield raised its first dedicated global infrastructure fund in 2009, followed by subsequent vintages in 2013, 2016 and 2019. The Firm is currently raising Brookfield Infrastructure Fund V targeting \$25 billion in capital commitments with no official hard cap. Brookfield expects to hold a first close in June 2022.

Fund V will follow the same investment strategy as prior vintages, targeting core and core-plus infrastructure assets across North America, Latin America, Europe, and Asia. The Firm seeks to rely on its global scale and operating experience to effectively manage investments and drive value creation. Overall, the Firm brings an extensive track record that has persisted through various market environments.

A commitment to the Fund would be allocated to the Infrastructure sub-sector and will further be categorized as a Global investment.

Aksia recommendation to commit as described above is based upon the following analytical factors and is made within the context of OPEF’s investment guidelines:

- Due diligence of the Fund’s investment process, including a review of the management company, investment team, strategy and risk, and track record;
 - Most recent investment due diligence review conducted March 2022
- Due diligence of the Fund’s operations, including a review of its organizational structure, service providers, regulatory and compliance, and financial statement analysis;
 - Most recent operational due diligence review conducted March 2022
- Consideration of the Fund’s strategy within the context of the current investment environment; and
- Consideration of the Fund’s strategy as a component of OPERF’s portfolio

This recommendation is given solely for the benefit of OPERF and cannot be relied upon by other investors considering an investment in the Fund, since their needs, objectives, and circumstances may not be identical to those of OPERF. In addition, please consult your tax, legal and/or regulatory advisors before allocating to any private investment fund.

Please feel free to contact us should you have any questions about this recommendation.

Respectfully,



Thomas Martin
 Partner, Global Head of Private Equity & Real Assets



Simon Fludgate
 Partner, Head of Operational Due Diligence

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TAB 4

2022 CAPITAL MARKETS ASSUMPTIONS

MEKETA

INVESTMENT GROUP

Oregon Investment Council

June 1, 2022

2022

Capital Market Assumptions



Table of Contents

1. Introduction
2. Overview of Process
3. 2022 Market Environment
4. Conclusion
5. Appendix

Introduction

Setting Capital Market Assumptions (“CMAs”)

- CMAs are the inputs needed to calculate a portfolio’s expected return, volatility, and relationships (i.e., correlations) to the broader markets.
 - CMAs are also used in mean-variance optimization, simulation-based optimization, asset-liability modeling, and every other technique for finding “optimal” portfolios.
- Consultants (including Meketa) generally set them once per year.
 - Our results are published in January based on December 31 data.
- This involves setting long-term expectations for a variety of asset class/strategy attributes:
 - Returns
 - Standard Deviations
 - Correlations
- Our process relies on both quantitative and qualitative methodologies.



Asset Class/Strategy Definitions

- We identify asset classes and strategies that are potentially appropriate for long-term allocations by our clients.
- Several considerations influence this process:
 - Unique return behavior,
 - Observable historical track record,
 - A robust market,
 - And client requests.
- We then make forecasts for each asset class/strategy.
 - We created assumptions for 97 “asset classes” in 2022.

2022 vs. 2021 Summary

- Many investors achieved returns in 2021 that were above their target return.
 - Much of the strong performance was driven by an increase in prices for most risk assets.
- Bond yields increased in 2021, which has an upward impact on most CMAs.
 - However, this was offset by tightening credit spreads for many fixed income assets.
- Moreover, higher rates are being priced into future bond yields.
 - This has a meaningful positive impact on our long-term CMAs.
 - As a result, our 20-year expected returns increased, on average.
- That said, some of these same factors (e.g., higher valuations and future rate increases) will serve as headwinds over the next decade.
 - Absent significant growth and only modest increases in rates, this will be a damper on future returns, especially in relationship to those realized during the post-GFC period.
 - Hence our 10-year CMAs are lower than our 20-year CMAs.



Mid-2022 vs. Early-2022 Summary

- 2022 has proven to be a volatile year.
 - Global equity markets have steadily declined throughout the year, but valuations remain elevated.
 - Sovereign bond yields have continued to rise.
 - Credit spreads have widened but remain below long-term historical averages.
 - Private market valuations have yet to reflect the current capital market environment.
- It is likely that consultants/vendors will produce intra-year updates to CMAs. The primary change pertains to sovereign bond expected returns.
 - Meketa has not formally updated our CMAs, but those that will be used for the OPERF Asset-Liability Study will reflect the prevailing environment.

Overview of Process

Developing Expected Returns

- Market practitioners generally make use of three methods for developing long-term expected returns:
 - Historical average returns
 - Financial/economic theory (e.g., higher risk = higher returns, capital structures, etc.)
 - Current measures (e.g., starting valuations relative to history)
- In addition to the above, practitioners also incorporate general projections for macroeconomic metrics such as GDP and inflation, among others.
- Meketa's methods are in-line with industry standards and represent a mixture of the three mechanisms.
 - Historical average returns play the smallest role in our assumptions.



2021 Peer Survey

- Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.¹
- The Horizon survey is a useful tool to determine whether a consultant's expectations for returns (and risk) are reasonable.

Asset Class	10-Year Average (%)	Meketa 10-Year (%)	20-Year Average (%)	Meketa 20-Year (%)
Cash Equivalents	1.2	0.7	1.9	1.1
TIPS	1.6	1.2	2.4	1.8
US Core Bonds	2.1	1.2	3.2	1.8
US High Yield Bonds	3.8	3.3	5.0	4.2
Emerging Market Debt	4.2	3.9	5.3	3.8
Private Debt	6.5	6.6	6.9	6.8
US Equity (large cap)	5.8	5.2	6.7	6.8
Developed Non-US Equity	6.4	6.7	7.1	7.1
Emerging Non-US Equity	7.2	7.5	7.8	8.1
Private Equity	8.8	8.0	9.6	9.1
Real Estate	5.5	6.5	6.2	6.9
Infrastructure	6.2	7.1	6.8	7.0
Commodities	3.1	3.4	4.0	3.7
Hedge Funds	4.5	3.4	5.3	4.3
Inflation	2.1	2.3	2.2	2.1

¹ The 10-year horizon included all 39 respondents, and the 20-year horizon included 24 respondents. Figures are based on Meketa's 2021 CMEs.



Building 10-year Forecasts

- Our first step is to develop 10-year forecasts based on fundamental models.
 - Each model is based on the most important factors that drive returns for that asset class:

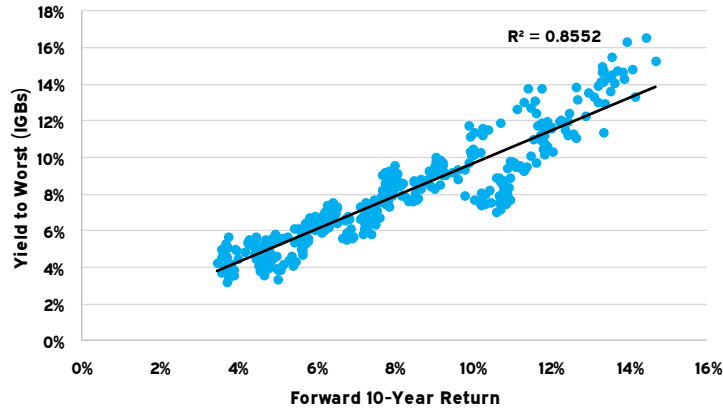
Asset Class Category	Major Factors
Equities	Dividend Yield, GDP Growth, Valuation
Bonds	Yield to Worst, Default Rate, Recovery Rate
Commodities	Collateral Yield, Roll Yield, Inflation
Infrastructure	Public IS Valuation, Income, Growth
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth
Private Equity	EBITDA Multiple, Debt Multiple, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

- The common components are income, growth, and valuation.

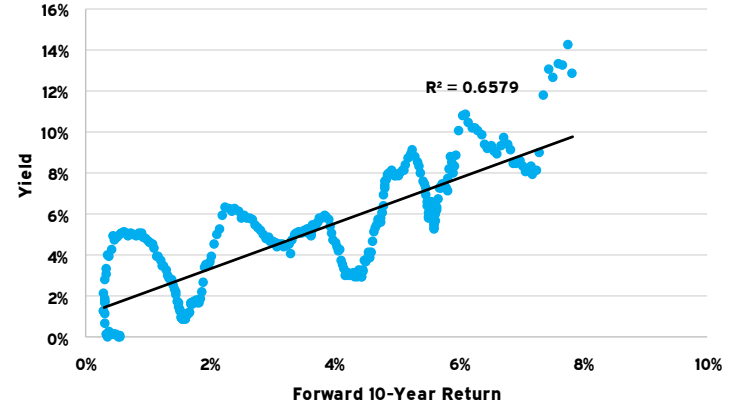


Some factors are naturally more predictive than others

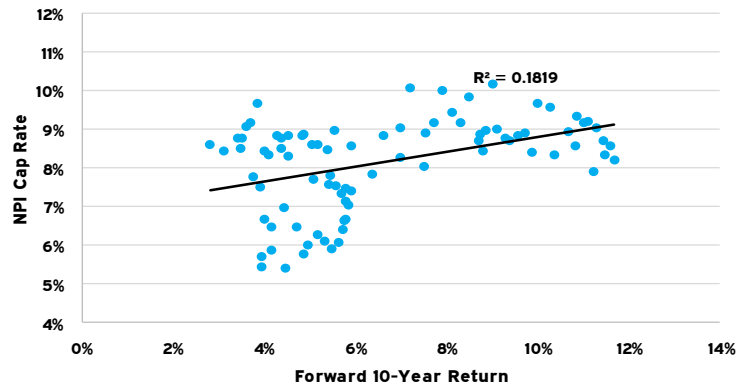
Investment Grade Bonds Yield to Worst vs. Forward 10-Year Returns



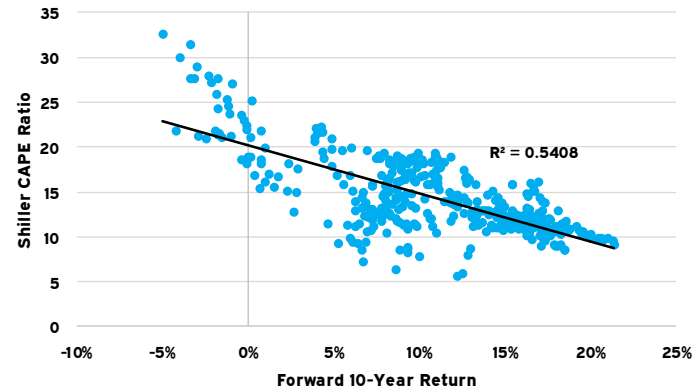
Cash (90-day T-Bill) Yield vs. Forward 10-Year Returns



Core Real Estate Cap Rates vs. Forward 10-Year Returns



US Equities Shiller CAPE vs. Forward 10-Year Returns



CMA Development Example: Public Equities

- We use a fundamental model for equities that combines income and capital appreciation:

$$E(R) = \text{Dividend Yield} + \text{Price Return} + \text{Currency Effect}$$

$$\text{Price Return} = \text{Earnings Growth} + \text{Multiple Effect}$$

- We use the current dividend yield on the respective index.¹
- Earnings growth is a function of real GDP growth, inflation, and exposure to foreign revenue sources.
- We use three approaches to calculate the multiple effect.
 - The models assume reversion to the mean or fair value.

- We arrive at our preliminary 10-year assumption (in local currency)

$$\text{US Equity } E(R) = 1.4\% + [(1 + 5.5\%) \times (1 - 1.4\%) - 1] = 5.4\%$$

- For non-US equities, we add the expected currency effect vs. the US Dollar to the local expected return.

¹ The source for dividend yields is S&P 500 for the US and MSCI for non-US equities.

CMA Development Example: Bonds

- The short version for most investment grade bond models is: $E(R) = \text{current YTW}$.
- The longer version accounts for the expected term structure in the future.
 - If the average duration is roughly five years, we calculate the expected yield in five years.
 - The net effect tends to be minimal, since higher income in years 5 to 10 is offset by price declines in years 1 to 5.
- For corporate bonds, we assume the spread vs. Treasuries will revert most of the way back to their mean since 1990.
- For cash, we use an average of the current rate and the rate suggested by the Taylor Rule (inputs are current & potential GDP, current & desired inflation).
- For TIPS, we add the real yield for the TIPS index to the expected inflation rate used in the equities models.
- As with equities, we also make currency adjustments when necessary.
 - This currently provides a tailwind to foreign and EM local currency debt.

CMA Development Example: Bonds (con't)

- For anything with credit risk, we also take into account the expected default & recovery rates.

	Inv. Grade Corporate (%)	LT Corporate (%)	Foreign Debt (%)	EM Debt (major) (%)	EM Debt (local) (%)	High Yield (%)	Bank Loans (%)
Default Rate	0.08	0.08	0.09	1.16	0.26	3.00	3.00
Loss Rate	50	60	50	50	50	50	40

- As a guide, we use Moody's historical global default & recovery data for each bucket as it is currently rated.
 - Example: EM Debt (local currency)

Rating	Weighting (%)	Default Rate (%)	Weighted Default (%)
Aaa	14.8	0.06	0.01
Aa	45.9	0.09	0.04
Baa	31.6	0.27	0.09
Ba	5.7	1.06	0.06
B	2.0	3.40	0.07
Total Weighted Average Default Rate:			0.26



CMA Development Example: Private Equity

- For Buyouts, we start with public equity expected returns.
- We add a premium or discount based on the pricing of buyouts relative to stocks.
 - EBITDA multiples provide an indication of pricing.
- We add a premia for control (e.g., for greater operational efficiencies) and leverage.
 - We assume leverage of 1.4x - 1.6x.
- We subtract borrowing costs and fees.
 - We assume borrowing costs are consistent with the yield on syndicated loans.

¹ Source: Venture Economics, S&P. We use the middle-market as a proxy given our long-standing bias toward this area.



CMA Development Example: Private Equity (cont.)

- For Venture Capital, we create a public market proxy that we can compare through time.
 - The composite is composed of: traditional technology, biotech, pharmaceuticals, life sciences, IT services, internet, and clean tech & environmental stocks.
 - The weighting to each sector varies through time.
 - The data is an imperfect proxy and the correlation with future returns is not high.
 - Still, this proxy provides some indication of pricing relative to small cap stocks.
- The proxy was trading roughly in line with the small cap market as of year end.



CMA Development Example: Real Estate

- For Core Real Estate, we used two models.
 - The first model adds a premium to the Cap Rate¹.
 - Core RE has historically returned approximately 1.0% more than its cap rate at the start of the period over the subsequent ten years.
 - The second model combines income with capital appreciation potential.
 - The income for core RE has historically been the cap rate minus 2-3% (for Cap Ex).
 - We assume income (NOI) grows at the rate of inflation.
 - We assume there is some measure of fair value for cap rates relative to bond yields.
 - We make a price adjustment based on the forward yield curve.
 - We adjust for leverage, borrowing costs, and fees.

¹ Source: NCREIF.

CMA Development Example: Real Estate (cont.)

- For Non-Core Real Estate, we start with a historical premiums versus core RE.
 - This includes the effect of greater control, development, buying at distress, etc.
- We add a non-US component (e.g., premium for lower cap rates) and a currency effect.
 - We assume 20% to 40% of non-core commitments will be ex-US (majority in Europe).
- We lever the portfolio and then subtract the cost of borrowing.
 - Value-added leverage ranges 40-70% while opportunistic ranges 50-80%.
 - Value-added cost of debt ranges at LIBOR plus 200-350 and opportunistic at LIBOR plus 300-500.
- Finally, we subtracted management fees and carried interest.

The Other Inputs: Standard Deviation and Correlation

- Standard deviation:
 - We review the trailing fifteen-year standard deviation, as well as skewness.
 - Historical standard deviation serves as the base for our assumptions.
 - If there is a negative skew, we increased the volatility assumption based on the size of the historical skewness.

Asset Class	Historical Standard Deviation (%)	Skewness	Assumption (%)
Bank Loans	7.7	-2.7	10.0
FI/L-S Credit	6.8	-2.5	9.0

- We also adjust for private market asset classes with “smoothed” return streams.
- Correlation:
 - We use trailing fifteen-year correlations as our guide.
 - Again, we make adjustments for “smoothed” return streams.
- Most of our adjustments are conservative in nature (i.e., they increase the standard deviation and correlation).

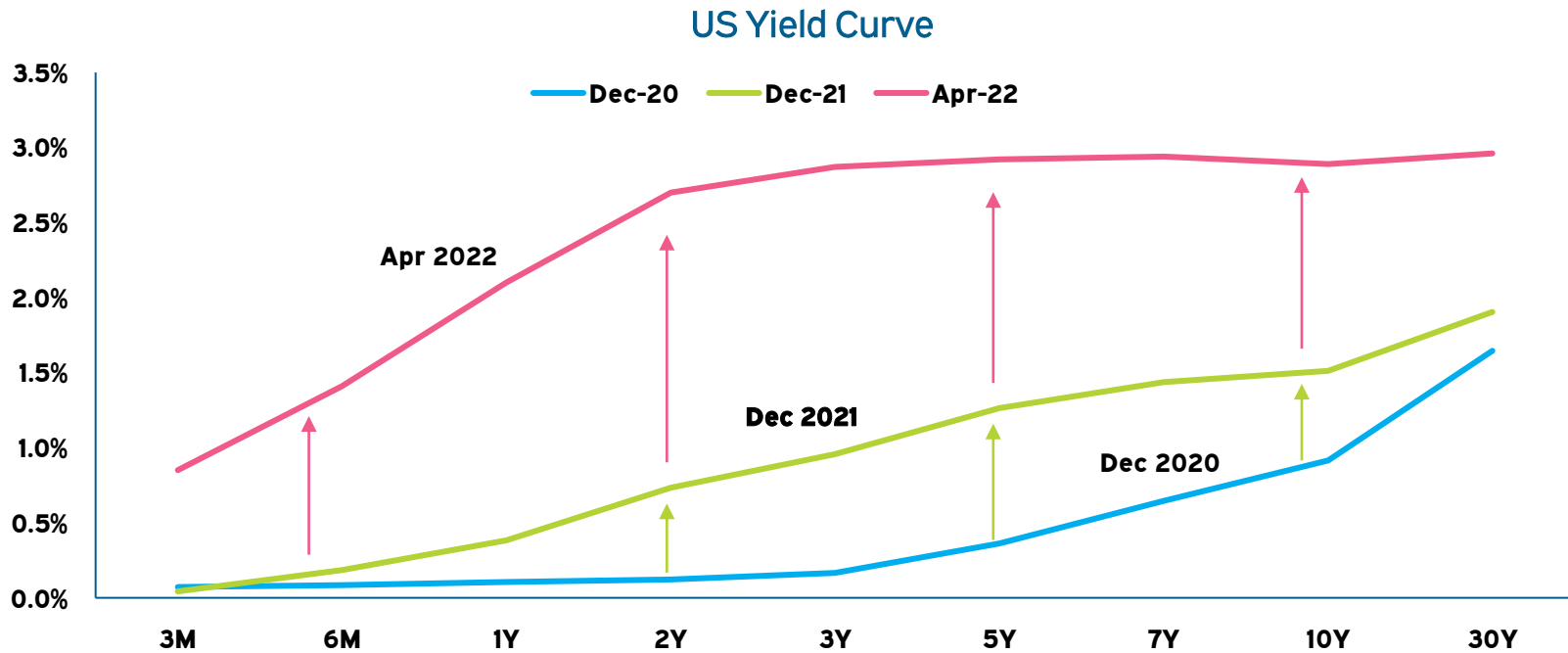
Moving from 10-Year to 20-Year Forecasts

- Our next step is to combine our 10-year forecasts with projections for years 11-20 for each asset class.
- We use a risk premia approach to forecast 10-year returns in ten years (i.e., years 11-20).
 - We start with an assumption (market informed, such as the 10-year forward rate) for what the risk free rate will be in ten years,
 - We then add a risk premia for each asset class.
 - We use historical risk premia as a guide, but many asset classes will differ from this, especially if they have a shorter history.
 - We seek consistency with finance theory (i.e., riskier assets will have a higher risk premia assumption).
- Essentially, we assume mean-reversion over the first ten years (where appropriate), and consistency with CAPM thereafter.
- The final step is to make any qualitative adjustments.
 - The Investment Policy Committee reviews the output and may make adjustments.

2022 Environment

Rising Interest Rates

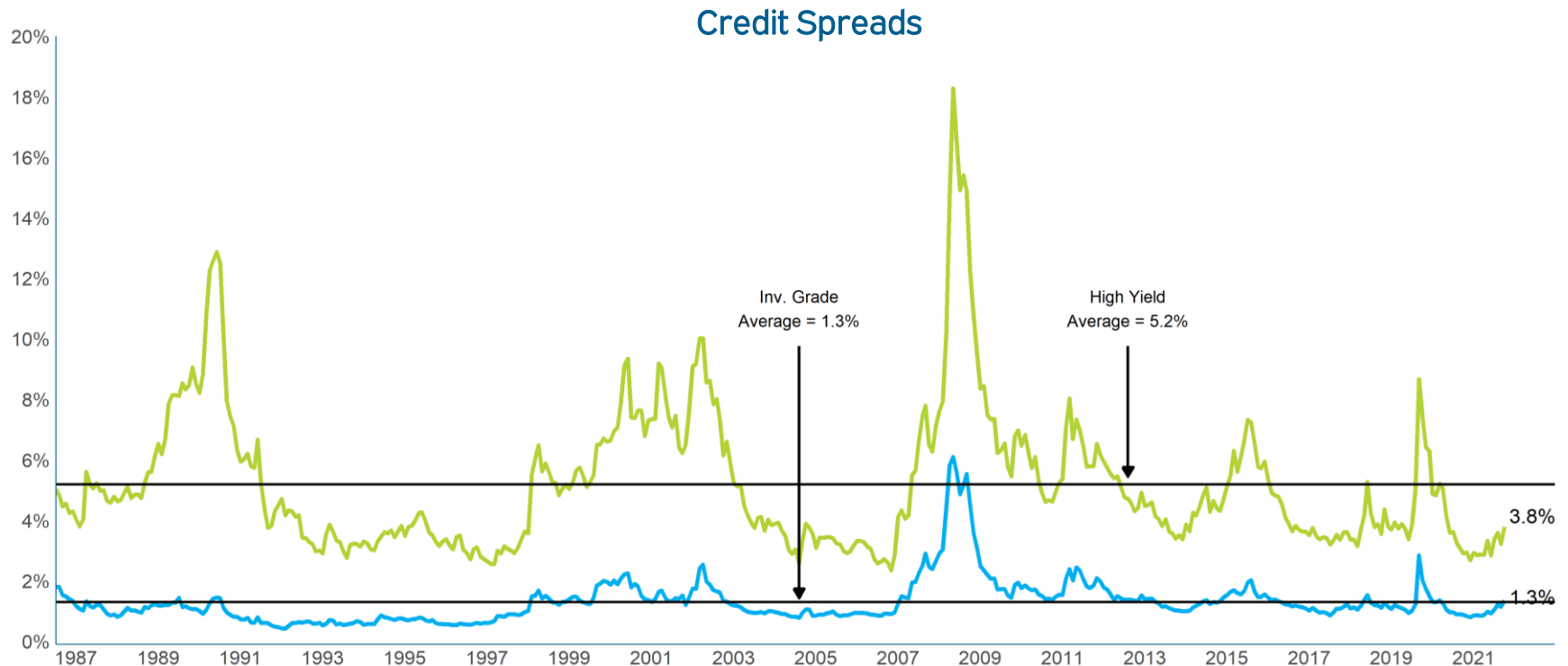
- The US Treasury yield curve steepened during 2021, as concerns about inflation battled with the demand for safe-haven assets (e.g., Treasuries) and Federal Reserve policies designed to maintain low rates (e.g., the quantitative easing program).
- Rates have continued to increase even higher in 2022 YTD.



Source: Bloomberg. Data is as of April 30, 2022.

Tighter Credit Spreads (2021) | Wider Spreads (2022 YTD)

- A combination of policy support (by the Fed) and the risk-on environment pushed spreads even further below their long-term averages in 2021.
 - Spreads in 2022 have widened but remain below their long-term averages.



Source: Bloomberg. High Yield is proxied by the Bloomberg High Yield Index and Investment Grade Corporates are proxied by the Bloomberg US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year US Treasury yield. Data is as of April 30, 2022.



Rising Rates = Higher Yields

- Rising interest rates (and wider credit spreads in 2022 YTD) have resulted in higher yields across every major sector of the global bond market.

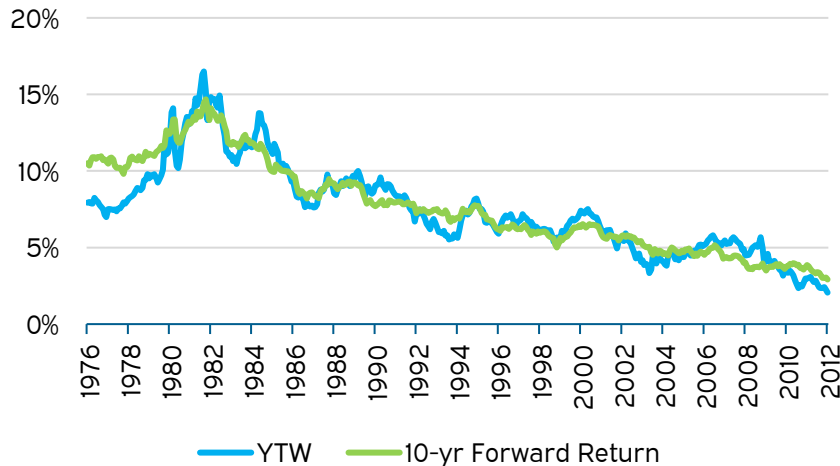
Index	Yield to Worst 4/30/22 (%)	Yield to Worst 12/31/21 (%)	Yield to Worst 12/31/20 (%)
Fed Funds Rate	0.3	0.1	0.1
10-year Treasury	2.89	1.52	0.93
Bloomberg Aggregate	3.48	1.75	1.12
Bloomberg Corporate	4.31	2.33	1.74
Bloomberg Securitized	3.61	1.98	1.25
Bloomberg Global Aggregate	2.57	1.31	0.83
Bloomberg EM Local Currency Government	4.24	3.83	3.20
Bloomberg EM Hard Currency Aggregate	5.97	3.96	3.20
Bloomberg US Corporate High Yield	6.98	4.21	4.18

Source: Bloomberg.

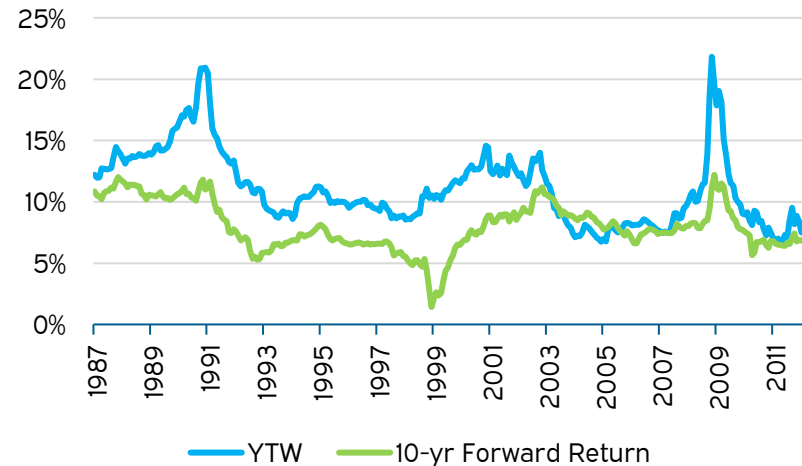
Higher Yields Imply Higher Future Returns

- This increase in interest rates matters because yields have historically been a good predictor of future returns for bonds¹, at least over a 10-year horizon.

YTW and Returns for Investment Grade Bonds



YTW and Returns for High Yield Bonds



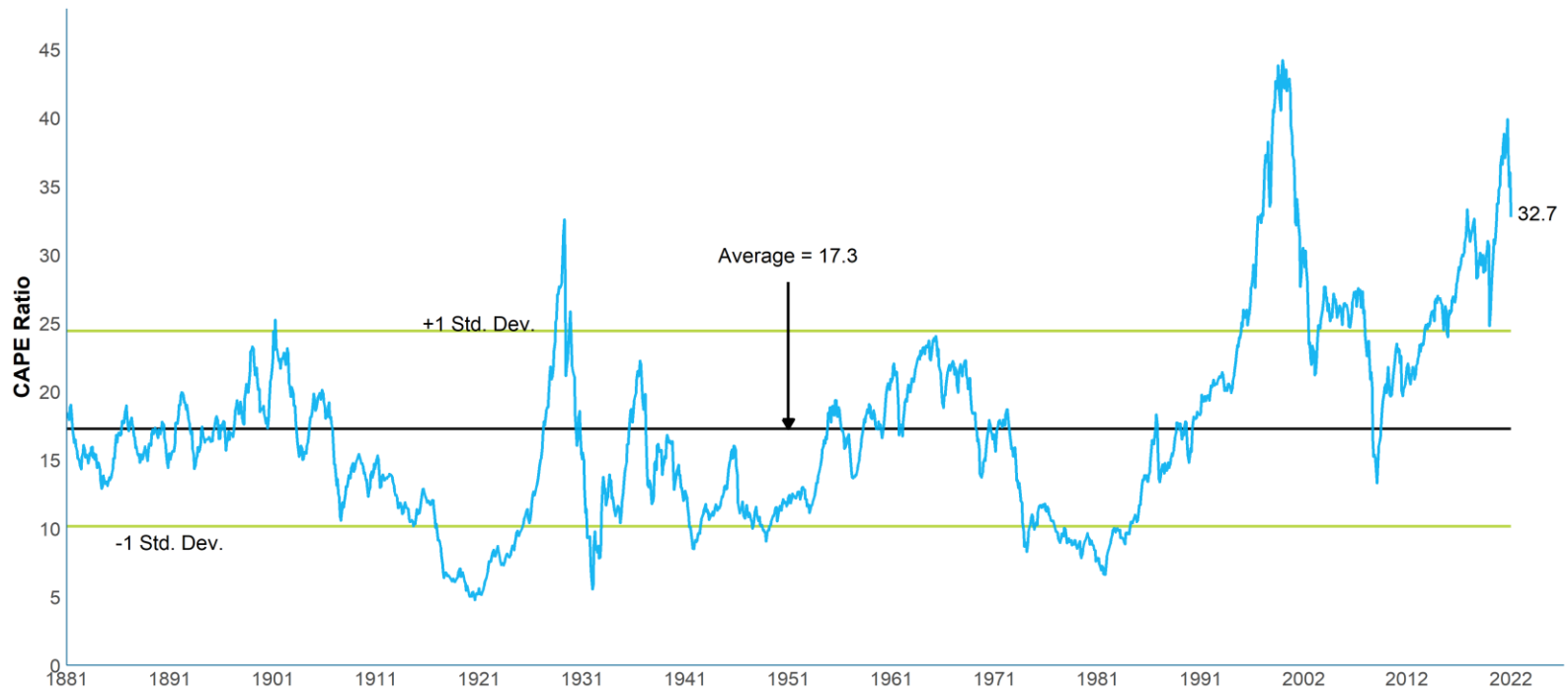
¹ When predicting returns for bonds, default risk should also be taken into account. For example, defaults are why the return for high yield bonds have generally been below the starting yield.

Source: Bloomberg Aggregate and Bloomberg High Yield indices.

Higher Valuations for Equities

- US stocks had a very good 2021, with the S&P 500 index producing a 28.7% gain.
- Despite a drawdown in 2022, valuations remain elevated.

US Equity Cyclically Adjusted P/E



¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is as of April 30, 2022.

Reasonable Valuations in Non-US Equities

- EAFE equities had a solid 2021, gaining 11.3%. This performance has since eroded in 2022 YTD.
- Valuations are close to historical averages.

Developed International Equity Cyclically Adjusted P/E

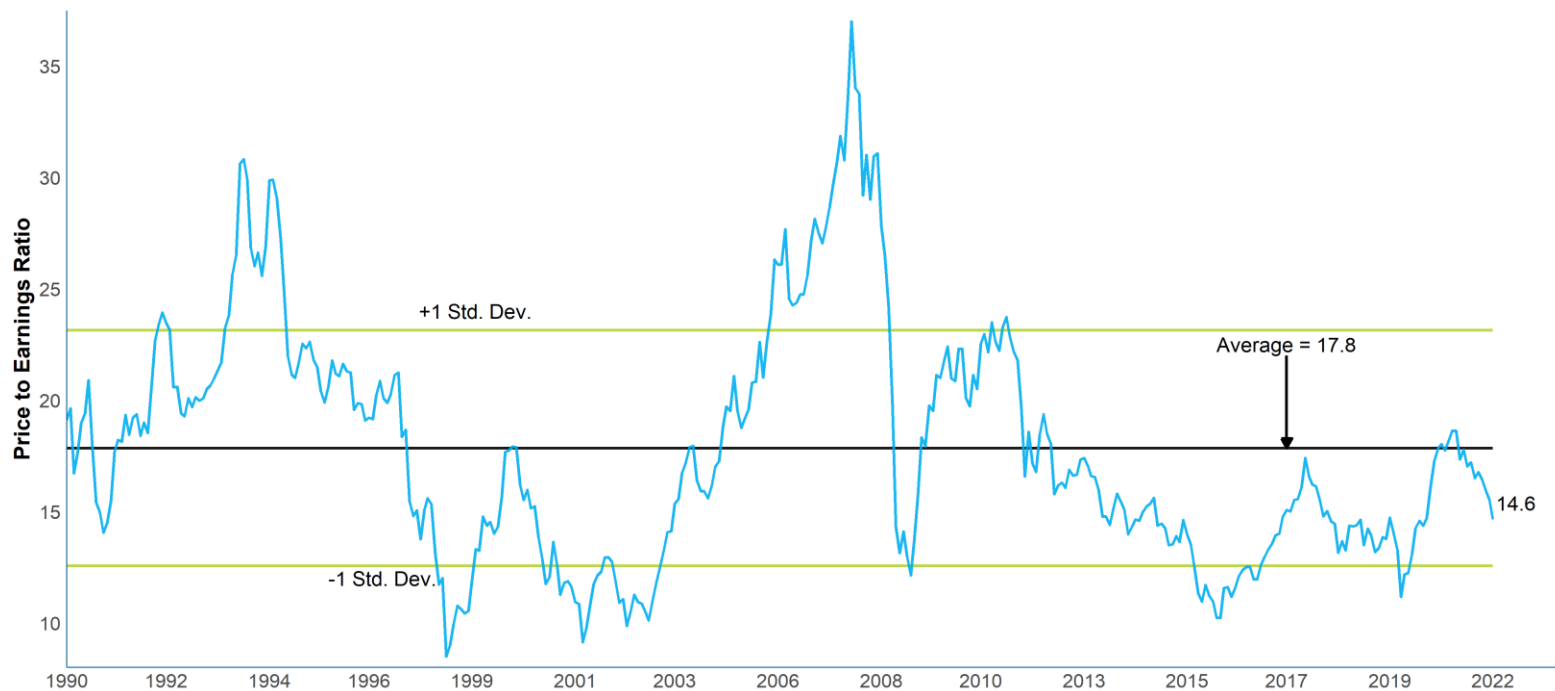


¹ Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of April 30, 2022.

Lower Prices in Emerging Market Equities

- Driven by a substantial downturn in Chinese equities (-21.7%), emerging market equities finished 2021 slightly negative. Similar to other equity markets, 2022 has been a drawdown period.
- P/E ratios are below their long-term averages.

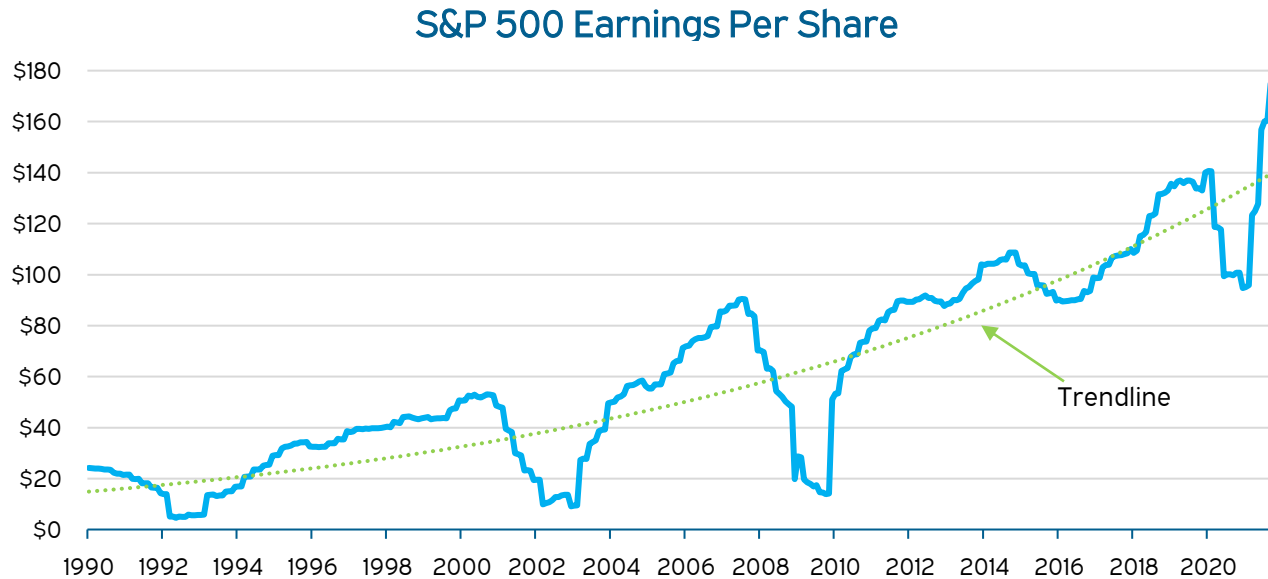
Emerging Market Equity Cyclically Adjusted P/E



¹ Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of April 30, 2022.

Earnings Growth

- It was an amazing 2021 for the S&P 500, which set a new earnings record.
 - EPS rebounded from \$95 to \$177 (representing an 87% increase), well above the previous earnings trend.



Source: S&P 500 Index data from Bloomberg. Represents trailing 12-month "as reported" earnings per share. Data is as of December 31, 2021.

The Link between Economic Growth and Expected Returns

- We have long assumed that earnings growth is linked to economic growth.
 - However, one can exceed the other (and vice versa).

1948 - 2019 ¹	
Nominal GDP Growth P.A.	Corporate Earnings Growth P.A.
6.4%	6.5%

- Net issuance vs buybacks affects EPS.
 - In the US, net shareholder buybacks have resulted in EPS growing faster than earnings.
- Corporate profits can comprise a higher or lower share of the GDP pie.
 - In the US, corporate profits have grown faster than the rest of the economy.
- Intervention by the state & structural inefficiencies also affect earnings growth.
 - The degree to which maximizing shareholder wealth is a primary motivation varies by market.
 - This can take many different forms, such as state-controlled enterprises and/or direct intervention by the state (see China, 2021).
 - Corruption, graft, nepotism, lack of property rights or clear rule of law, can all affect the link between economic growth and earnings growth.

¹ Source: Federal Reserve Economic Data. Corporate earnings defined as Corporate Profits After Tax (without IVA and CCAAdj).

Earnings Growth

- EPS has grown faster than earnings in the US in recent years, acting as a tailwind.
- This is due to companies using excess cash to buy back their shares.¹

EPS with no change in shares

\$1,578 bil / 10.5 mil shares
= \$150.3 per share

EPS with 2% reduction in shares

\$1,578 bil / 10.3 mil shares
= \$153.2 per share

- Over ten years, this can have a significant compounding effect.

EPS with 2% reduction in shares for ten years

\$1,578 bil / 8.6 mil shares
= \$183.9 per share

- Data shows that this trend is almost two decades long.²
- This bucks the longer-term trend (still common in non-US markets) of companies being net issuers of shares.

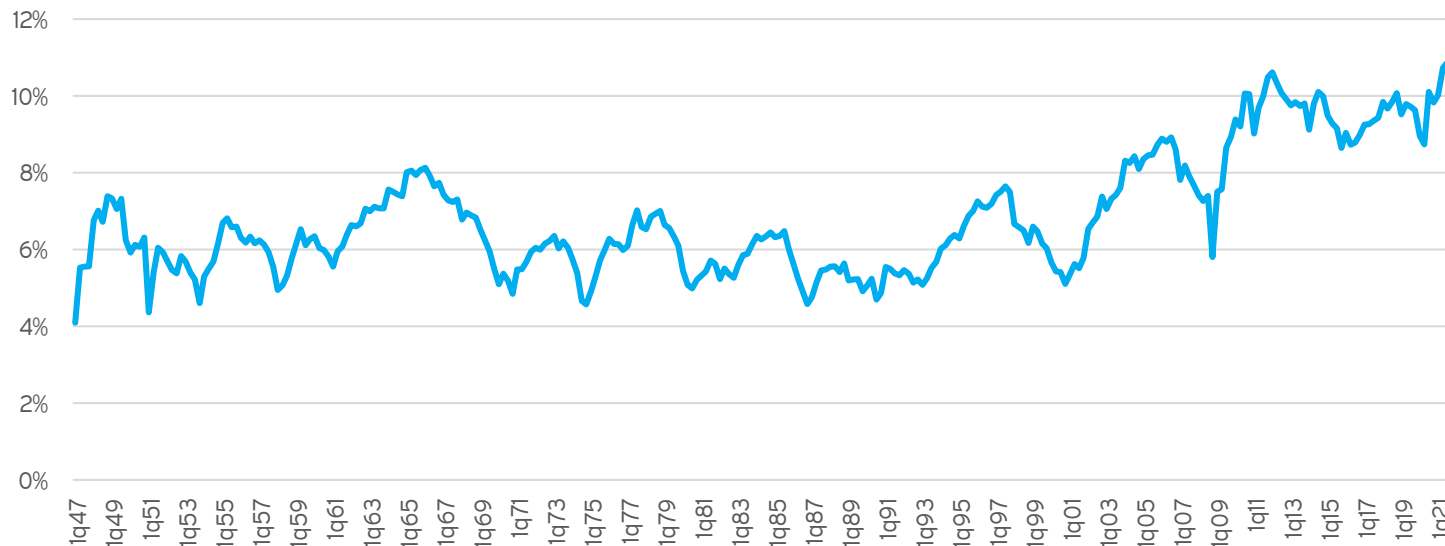
¹ Buying back shares reduces the denominator in the Earnings per Share equation, thus increasing the result of the calculation.

² Source: Yardeni research

Profitability

- The strength in earnings is linked to profits consuming a greater proportion of the economic pie.
 - Prior to 2000, corporate profits averaged 6.1% of GDP.
 - Since 2000, they have averaged 8.6% of GDP.
- Justifying higher future earnings growth implies that profits will continue to comprise a higher percentage of GDP.

Corporate Profits as a % of GDP

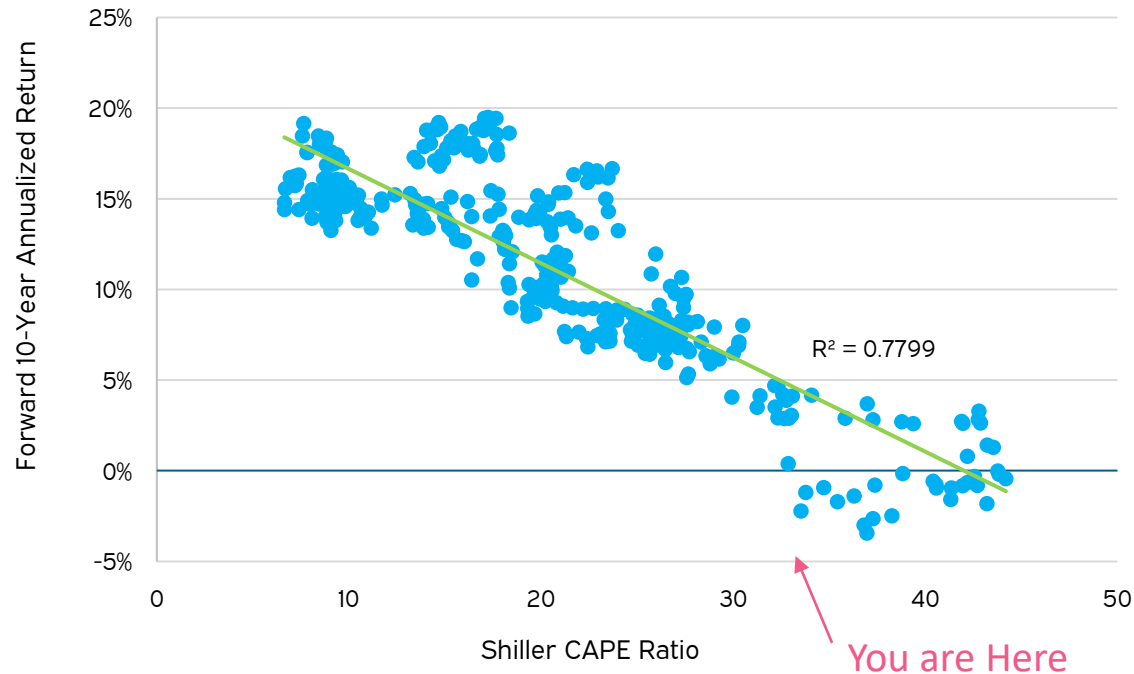


Source: Meketa analysis of FRED data. Series uses Seasonally Adjusted Annual Rate for Nominal GDP and Corporate Profits After Tax with Inventory Valuation Adjustment (IVA) and Capital Consumption Adjustment (CCAdj). Data is from 1q1947 through 3q2021.

Higher Prices Imply Lower Returns for Equities

- Relative prices have been indicative of future equity returns.
- Higher prices have led to lower future returns, and vice versa.

US Equities: Shiller CAPE vs. Forward 10-Year Returns

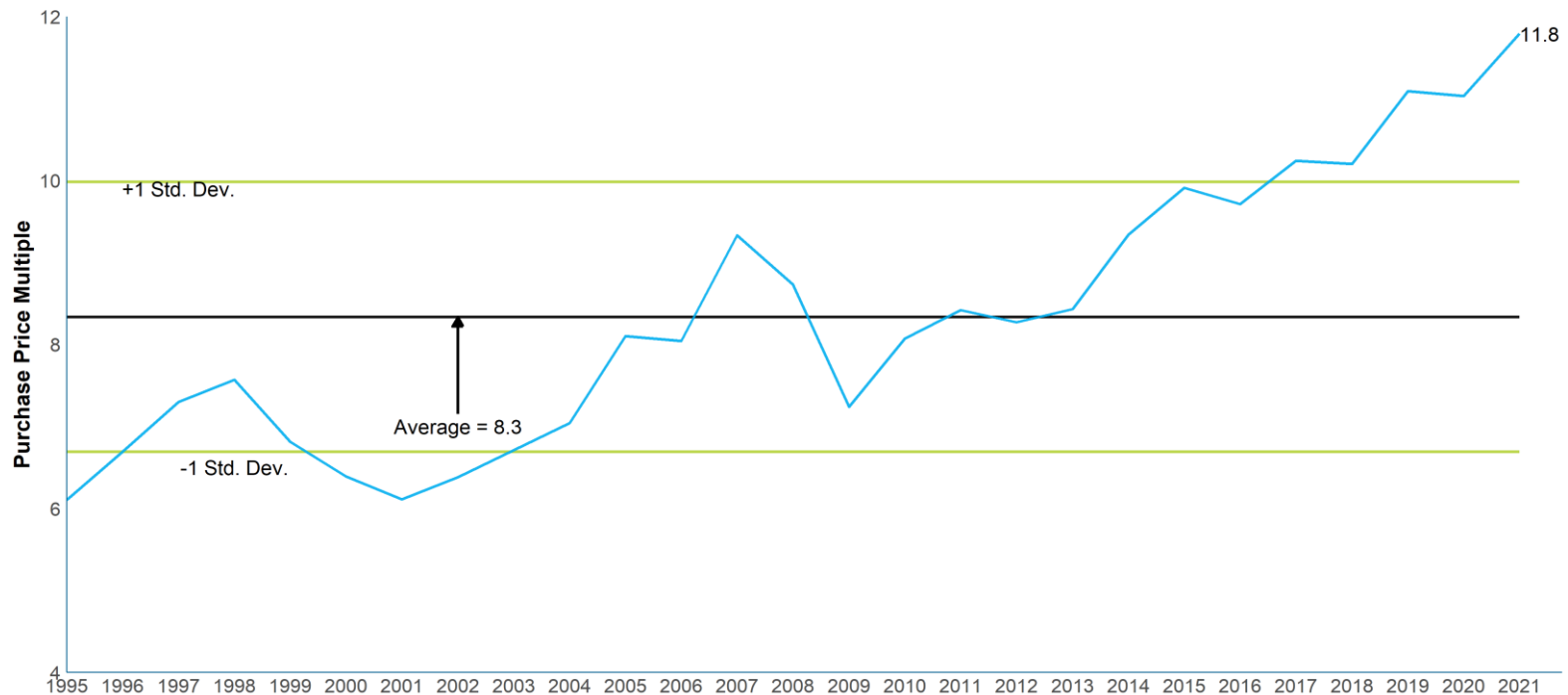


Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is based on monthly returns and Cyclically Adjusted P/E ratio on S&P 500 Index for the period from January 1980 through April 2022.

Higher Prices in Private Equity, too

- EBITDA multiples are the closest proxy to a P/E ratio for private equity.
 - Like public markets, private markets have seen prices continue to climb to new highs.

Private Equity Multiples¹

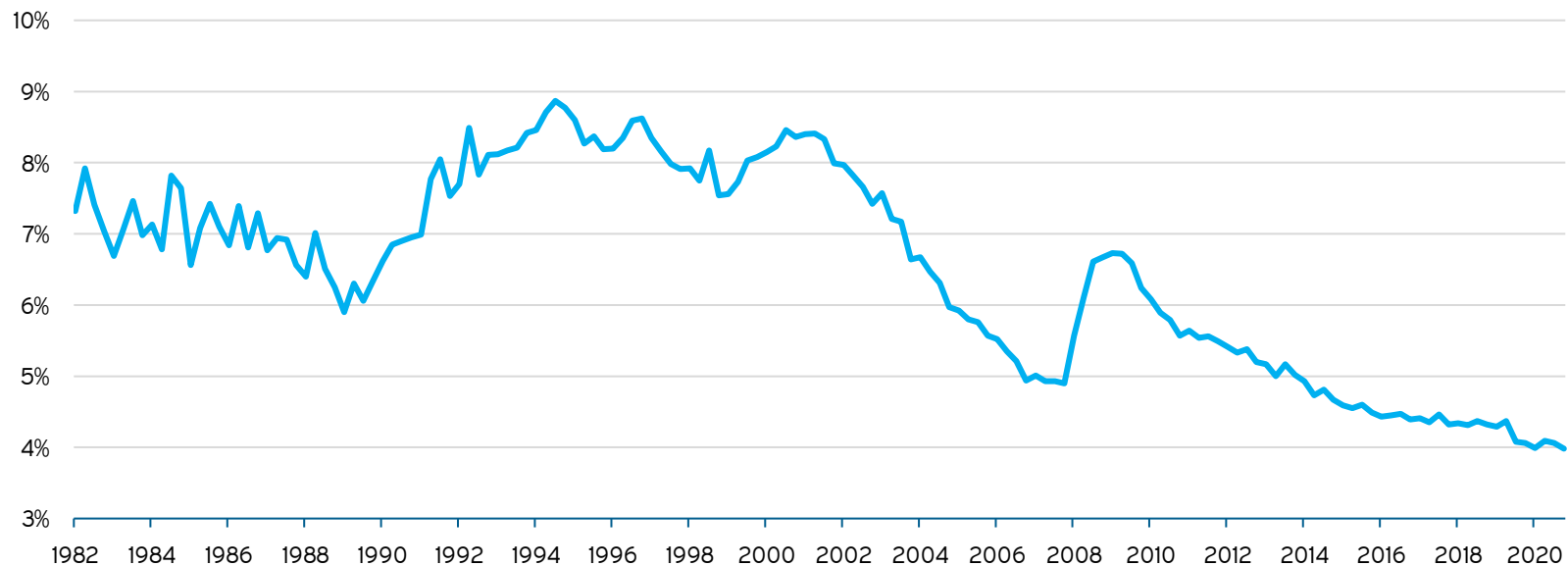


¹ Source: S&P LCD Average EBITDA Multiples Paid in All LBOs. Annual figures, except for 2021 (YTD), as of December 31, 2021.

Little Change for Real Estate

- Real estate cap rates are similar to an earnings yield (the inverse of the P/E ratio) for equities.
 - Cap rates are indicative of future returns.
- While cap rates have been gradually declining for decades, they were relatively flat over 2021.

Core Real Estate Cap Rates¹

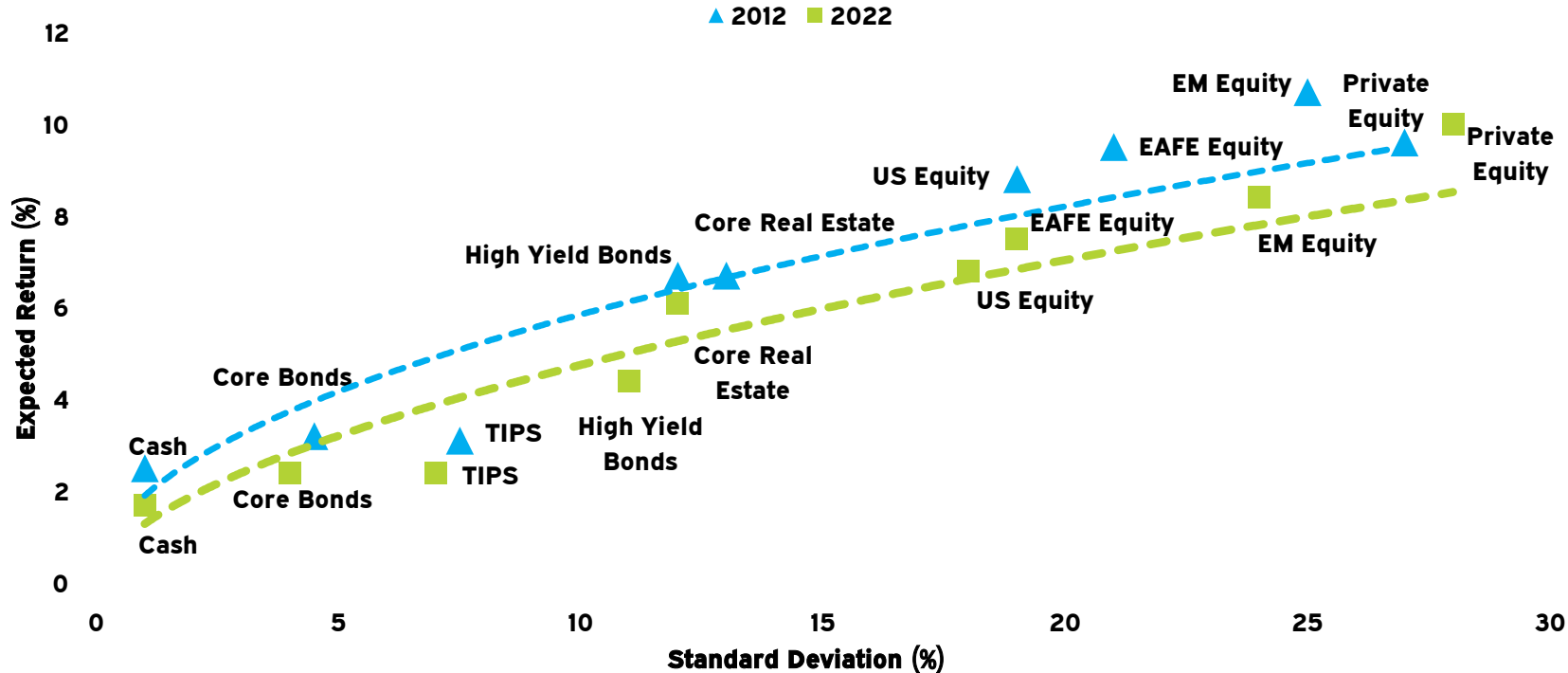


¹ Source: NCREIF NPI value-weighted cap rates. As of September 30, 2021.



The Big Picture: Less Return for the Same Risk¹

- The relationship between long-term return expectations and the level of risk accepted is not static.
- We anticipate investors will have to take on greater levels of risk than they have historically if they want to achieve the returns they have in the past.



¹ Expected return and standard deviation are based upon Meketa Investment Group's 2012 and 2022 20-year capital market expectations.

Conclusion

OPERF CMAs

- Meketa, Aon, and OST Staff have shared data, methodologies, and discussed the CMAs to be used in the OPERF Asset-Liability Study.
- Return, volatility, and correlations assumptions have been developed for the following high-level OPERF strategic classes:
 - Public Equity (i.e., ACWI)
 - Fixed Income (i.e., Bloomberg Aggregate)
 - Risk Parity
 - Leveraged combination of equity, fixed income, and commodities.
 - Private Equity
 - Real Estate
 - Constructed to be in-line with the current portfolio (~80% core and 20% non-core)
 - Real Assets
 - Focused on cash-flow generating infrastructure and natural resources.
 - Diversifying Strategies
 - Broad, diversified basket of strategies in-line with the projected long-term class construct and goals.

OPERF – Starting CMAs (20- to 30-year horizon)

- The CMAs below represent the initial starting point for OPERF’s Asset-Liability Study.
- Based on discussion with the OIC, and further market movements, these will be further tailored during the modeling process and presented to the OIC in September as a final set of CMAs.

Expected Returns (%)

Strategic Class	Meketa	Aon	Staff	2021 OPERF
Public Equity	7.2	7.3	7.0	6.5
Fixed Income	2.4	2.8	3.0	1.7
Risk Parity	5.2	4.5	5.2	5.2
Private Equity	10.0	9.4	9.5	8.5
Real Estate	6.8	5.6	7.0	6.2
Real Assets	9.0	9.2	7.5	7.5
Diversifying Strategies	5.0	7.4	5.5	4.4

Annual Volatility (%)

Strategic Class	Meketa	Aon	Staff	2021 OPERF
Public Equity	18.0	18.5	20.0	18.0
Fixed Income	4.0	4.5	4.3	4.0
Risk Parity	10.0	10.0	10.0	12.0
Private Equity	28.0	25.5	26.0	28.0
Real Estate	13.8	17.4	13.8	13.8
Real Assets	19.1	15.6	17.0	18.8
Diversifying Strategies	8.4	8.1	8.0	9.9



Conclusion

- Asset allocation is the most important decision the OIC will make.
 - It is the area we believe the most time should be spent on.
- The asset allocation process is not one-size-fits-all.
 - We customize everything about the modeling process .
 - Constructing/modeling asset classes should be congruent with the asset allocation process.
 - Certain classes (e.g., private markets) should be reflected as they are, and as they are planned to be, in the asset allocation stage.
- The current capital market environment is presenting investors with considerable variability in setting long-term expected returns for certain asset classes.
- Meketa, Aon, and OST Staff will continue collaborating on CMAs.



Appendix



Preliminary Correlation Matrix

	Public Equity	Fixed Income	Risk Parity	Private Equity	Real Estate	Real Assets	Diversifying Strategies
Public Equity	1.00						
Fixed Income	0.07	1.00					
Risk Parity	0.74	0.48	1.00				
Private Equity	0.80	0.00	0.20	1.00			
Real Estate	0.41	0.23	0.29	0.44	1.00		
Real Assets	0.72	0.23	0.37	0.64	0.62	1.00	
Diversifying Strategies	0.16	0.26	0.29	0.06	0.02	0.16	1.00



FAQs for 2022

How do these CMAs compare to last year's assumptions?

- To help evaluate this, we created a weighted average of expected returns for the asset classes that comprise a typical Meketa client portfolio.¹
- The value of the expected return for the portfolio is not a precise expected return (i.e., it has not been run via MVO), but the magnitude of the change is what is relevant.
- In short, the average of 20-year expected returns is ~40 basis points higher than last January.
- Looking at past years' CMEs, this is the smallest change since 2018.

Year	Weighted Average Expected Return (%)	Change from Prior Year (%)
2022	6.5	+0.4
2021	6.1	-0.7
2020	6.8	-0.6
2019	7.4	+0.7
2018	6.7	-0.2
2017	6.9	-0.3

¹ The weights are as follows: 10% investment grade bonds, 3% LT government bonds, 4% TIPS, 3% high yield, 2% bank loans, 3% EM debt, 3% private debt, 25% US equity, 12% EAFE equity, 8% EM equity, 10% private equity, 10% real estate, 2% natural resources, 3% infrastructure, 2% hedge funds.

FAQs for 2022 (cont.)

What is driving the changes from last year?

- The changes relative to last year are being driven by what happened in the market, not by methodology changes.
- The increase in interest rates affected many asset classes, as did higher inflation expectations. Tighter credit spreads & higher valuations also have an impact.
- Higher expected rates provide a tailwind in our 20-year projections, as the bridge from 10 to 20 years is made via a risk premia being added to a (higher) future risk-free rate.

How do Meketa's CMAs compare to peers?

- We believe our CMAs are in the same ballpark as our peers. We note that in recent years there has been a trend of money managers tending to have lower return expectations than consultants.
- We generally cite the survey conducted each year by Horizon Actuarial Services for making peer comparisons, as it is the most comprehensive survey of CMAs that we are aware of. However, this survey is usually not published until July or August.
- It is important to distinguish between intermediate term assumptions (e.g., 7-10 years) and long-term assumptions (e.g., 20-30 years) when making these comparisons.

FAQs for 2022 (cont.)

Did volatility expectations change?

- Not systematically. There were changes in a few individual asset classes, but these tended to be small and netted out to no upward or downward trend.
- Our methodology includes a 15-year look back, which includes the volatile years of 2020 and 2008.

Did Meketa make any qualitative adjustments?

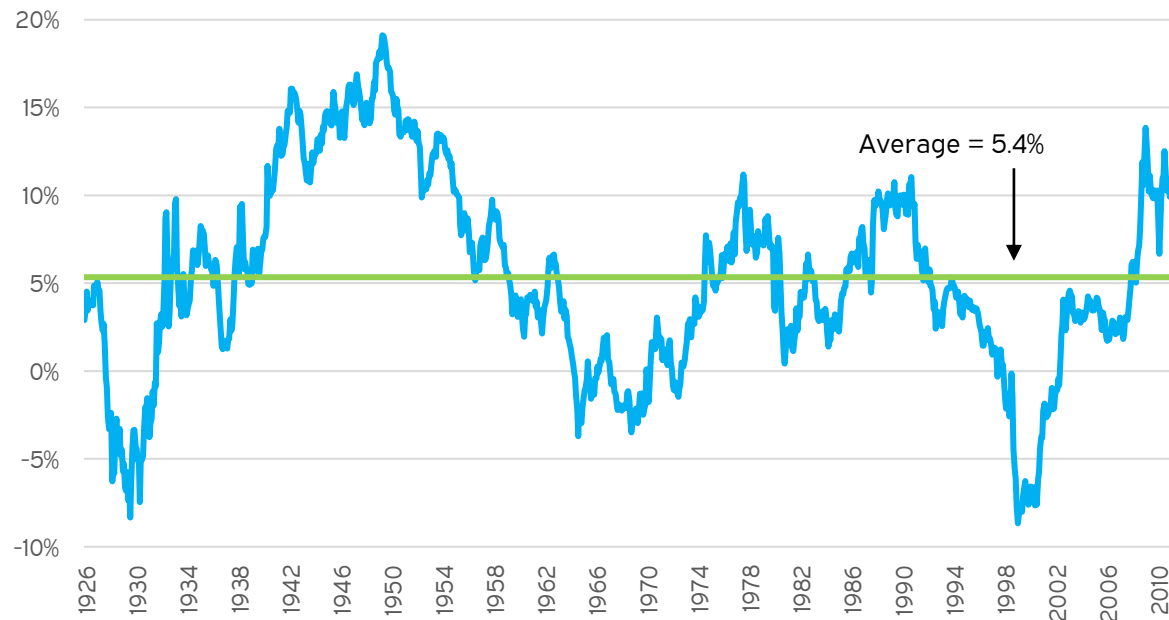
- As usual, we made some qualitative adjustments to the CMAs.
- We made changes for EM small cap (as usual), as earnings data is unreliable at best, resulting in non-intuitive outcomes from our models.
- We made modest decreases to private equity and core private real estate, based on anticipated mark-ups at December 31 valuations.
- The biggest decrease was for public natural resources, as we believe prices reflect a re-pricing of risk and lower anticipated secular earnings for the sector.

FAQs for 2022 (cont.)

Is Meketa comfortable with the equity risk premium implied by the CMEs?

- Yes. We assume a 5.5% risk premium for US equities over 10-year Treasuries.
- Historically, the risk premium for the S&P 500 over the yield for the 10-year has averaged 5.4%.

Equity Risk Premia over 10-year Treasury¹



¹ Represents the ten-year risk premium for the S&P 500 index over the 10-year Treasury yield at the start of the period.

FAQs for 2022 (cont.)

Is Meketa assuming that interest rates will go up?

- Yes, though indirectly. We use the market's projections for future rates, as they were priced in at the time of our analysis.
- For example, we observe that the market is projecting that the ten-year Treasury will be yielding approximately 2.8% in ten years.
- This was a meaningful increase from 2.0% one year ago, and a full 130 bp higher than what the 10-year Treasury was yielding as of 12/31/21.

Is the yield curve you imply steeper than recent history?

- Our model implies a spread between cash and the 10-year Treasury of ~50 bp. This is a flatter yield curve than has historically been the case.
- The yield on the 10-year Treasury has averaged 150 bp over that for the 90-day T-bill since 1934.

Why is the 10-year expected return for long-term corporate bonds lower than the yield?

- Defaults (modest) and rising rates. When rates have gone up historically, the return has been lower than the starting yield. This is particularly true with longer duration assets.

FAQs for 2022 (cont.)

How does Meketa arrive at its inflation assumption? Is it based on a combination of breakeven rates and other data?

- Most of our economic projections come from the IMF's World Economic Outlook. Their inflation projections are in the table below.
- They are projecting higher inflation numbers for the US than had been seen until 2021, with 2022 expected to be the highest level.
- We combine the five-year average for the US with the 5-year-5 inflation swap (i.e., what the market is projecting 5-year inflation will be five years from now), which is 2.6%, to arrive at our 10-year number of 2.6%.

Inflation Estimates

	2022	2023	2024	2025	2026	5-Year Average
US	3.5	2.7	2.6	2.5	2.3	2.7
Euro Area	1.7	1.4	1.5	1.6	1.7	1.6
UK	2.6	2.0	2.0	2.0	2.0	2.1
Japan	0.5	0.7	0.8	1.0	1.0	0.8

Source: IMF World Economic Outlook, October 2021.

FAQs for 2022 (cont.)

If 20-year US inflation is expected to be 2.2%, and the real yield on 20-year TIPS is -0.6%, shouldn't the expected return for long TIPS be closer to 1.6% than 3.2%?

- Arguably, it is only our 10-year inflation number that matters, as it flows through the models for several asset classes, while the 20-year inflation forecast does not. This includes our TIPS models. Hence it is possible for there to be a disconnect for the 20-year horizon.
- It is not uncommon to see modest disconnects between economists' projections, the swap market, and the breakeven inflation rate (BEI).

Why do EM Equities have a more negative correction when adjusting for rates?

- EM equities have a higher historical discount rate – both in real and nominal terms – than do developed markets. We assume this will continue to be the case for the horizon of this analysis.

FAQs for 2022 (cont.)

Why did the spread for private equity over public equity widen?

- For the second year in a row, multiples moved up more quickly for public equities than they did for private equity (e.g., EBITDA multiples for buyouts).
- Of note, the private equity data (as always) is through 9/30; it is possible that buyout multiples will “catch up” with public equity in early 2022.

How does Meketa look at valuations for venture capital?

- Venture capital tends to be focused on a smaller part of the broad economy, concentrating mostly on a few sectors such as technology and healthcare.
- To get a feel for how VC is currently priced, we create a proxy composed of public market indices that focus on these sectors.
- The proxy is currently composed of: NASDAQ; Pharma, Biotech & Life Sciences; IT Services; and Clean Tech/Environment. The composition and weightings have changed over time.
- That said, we take our VC model with a large grain of salt, as there is very little data available.

FAQs for 2022 (cont.)

What effect do we expect net buybacks to have, if any?

- We believe US companies will continue to be net buyers of their shares over the next decade, but to a lesser extent than they have for the past decade. This will be a net tailwind.
- We expect other markets to be net issuers of shares (i.e., this will be dilutive to shareholder wealth). This is most pronounced in emerging markets, due to their anticipated growth.

Do we still expect US earnings to grow faster than the broad economy?

- Yes, until/unless there is a structural shift, perhaps due to political events, US companies are likely to earn a greater share of economic growth than they have over the post-WWII era.

What about the political climate in China and the actions taken by the CCP?

- While the possibility of greater state intervention was always possible, the CCP made abundant use of their power to influence/harm certain sectors or companies in 2021.
- As a result, we are placing a greater discount on Chinese (and hence, emerging market) growth translating to EPS growth and thus shareholder wealth.

FAQs for 2022 (cont.)

Why do we believe US companies will be net buyers of their stock for an extended period, and why does that matter?

- There are several reasons why we can/should believe US companies will be net buyers of their stock for an extended period (e.g., the next ten years), and why that may change.
- First, it would be a continuation of a nearly two-decade trend that CFOs have decided it is in their interest to prioritize buybacks over dividends or other uses of cash.
 - This could obviously change, but the catalyst for this is not obvious nor apparently on the horizon.
- The second factor is that if labor finally starts clawing back a larger portion of GDP.
 - This clearly could happen, but despite an incredibly tight labor market, it is not happening (at least not yet). Rather, companies have had success passing on their higher labor costs to their customers and hence maintaining their profitability.
- All of this matters in our models because it impacts what portion of GDP growth translates to EPS growth.
 - If companies are more profitable and they are buying back shares, this will be much more beneficial to EPS than if companies are less profitable and are diluting their shares (e.g., via new issuance).

FAQs for 2022 (cont.)

Although higher bond yields justify an increase in expected return for bonds, would it not also create losses to existing fixed income portfolios?

- Yes, rising rates will cause losses in bond portfolios. While YTW has been a great predictor of future bond returns, it tends to slightly overestimate those returns in a rising rate environment.
 - This is particularly true for longer duration bonds.
- And this is reflected in our models, and hence their output. The 10-year expected return for core bonds is about 10 bp below the yield, and for long-term Treasuries it is 50 bp lower.

If yields increased, why did the 10-year expected return for long-term Treasuries decrease?

- The market is projecting higher future rates; the losses from rising rates are magnified for longer duration bonds, and in this case overwhelms the increase in yields.

Is the drop in REIT return expectations due to higher rate/mortgage rate expectations?

- REIT yields dropped from 4.0% to 3.0%, likely reflecting stronger expectations by the market for the prospects for REITs following the sharp downturn in real estate in 2020.

FAQs for 2022 (cont.)

For Natural Resources, many economists believe we are at the beginning of a bull market that could last a decade or longer, and valuations appear low. Why is our expected return so low?

- Public NR is probably the asset/sector where there is the greatest dispersion in thinking/forecasting about the future, due to the energy transition.
- The market (via pricing) appears to be forecasting lower growth rates for the sector than it is for the broader economy.

What is driving the cut in 10-year bank loan expected return?

- The market bid up the price for bank loans in 2021, probably in anticipation of rising rates.
- The average price went from 95.73 to 98.64, hence all of the price appreciation we were expecting occurred in a single year (as opposed to being spread over ten years).
- Likewise, the average spread dropped from 325 to 279 bp.

Do we consider inflation when building expected returns for real assets like real estate, infrastructure, and natural resources?

- Yes, inflation is a component for the vast majority of these assets, and their growth is generally linked to inflation in our models.

20-year Geometric Expected Returns Rate Sensitive

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
Cash Equivalents	1.7	1.1	0.6	higher future yields expected
Short-term Investment Grade Bonds	1.9	1.3	0.6	higher future yields
Investment Grade Bonds	2.4	1.8	0.6	higher yields
Intermediate Government Bonds	1.9	1.4	0.5	higher yields
Long-term Government Bonds	2.8	2.5	0.3	higher yields offset by losses from future rate increases
Mortgage Backed Securities	2.5	1.8	0.7	higher yields
Investment Grade Corporate Bonds	3.0	2.3	0.7	higher yields
Long-term Corporate Bonds	3.7	3.2	0.5	higher yields
Short-term TIPS	1.9	1.4	0.5	higher inflation expectations
TIPS	2.4	1.8	0.6	higher inflation expectations & higher real yields
Long-term TIPS	3.2	2.9	0.3	higher inflation expectations
Global ILBs	2.3	1.9	0.4	higher future yields
Foreign Bonds	2.3	1.7	0.6	higher yields
<i>US Inflation</i>	<i>2.2</i>	<i>2.1</i>	<i>0.1</i>	<i>Higher economist and market projections</i>



20-year Geometric Expected Returns Credit

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
High Yield Bonds	4.4	4.2	0.2	higher yields partly offset by tighter spreads
Higher Quality High Yield	4.2	3.8	0.4	higher yields partly offset by tighter spreads
Bank Loans	4.0	4.0	0.0	higher prices and tighter spreads
Collateralized Loan Obligations(CLOs)	4.2	4.2	0.0	higher prices/lower yields
Emerging Market Bonds (major)	4.2	3.7	0.5	higher yields
Emerging Market Bonds (local)	4.6	3.9	0.7	higher yields
Private Debt	7.3	6.8	0.5	higher yields
Direct Lending	7.1	6.7	0.4	higher yields
Specialty Finance	7.3	NA	NA	<i>New asset class</i>
Mezzanine Debt	7.2	6.9	0.3	higher yields
Distressed Debt	7.7	7.0	0.7	higher yields



20-year Geometric Expected Returns Equities

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
US Equity	6.8	6.8	0.0	higher earnings offset by higher prices
US Small Cap	7.4	7.1	0.3	
Developed Non-US Equity	7.5	7.1	0.4	lower earnings growth offset by lower prices
Dev. Non-US Small Cap	7.4	7.0	0.4	
Emerging Market Equity	8.4	8.1	0.3	lower earnings growth offset by lower prices & higher dividends
Emerging Market Small Cap	8.2	8.2	0.0	
Frontier Market Equity	8.7	8.9	-0.2	lower earnings growth and higher prices
Global Equity	7.2	7.1	0.1	lower earnings mostly offset by lower prices
Low Volatility Equity	6.5	6.4	0.1	
Private Equity	10.0	9.1	0.9	
Buyouts	9.8	9.0	0.8	Higher earnings and multiples have not expanded as much as public markets
Growth Equity	10.1	NA	NA	<i>New asset class</i>
Venture Capital	10.3	9.6	0.7	Higher earnings and pricing has not expanded as much as public markets

20-year Geometric Expected Returns Real Estate & Infrastructure

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
Real Estate	7.4	6.9	0.5	lower REIT yields, slightly less attractive pricing in private markets
REITs	7.1	7.2	-0.1	lower REIT yields
Core Private Real Estate	6.1	5.5	0.6	Flat cap rates offset by higher future rates
Value-Added Real Estate	8.1	7.7	0.4	slightly less attractive pricing offset by higher future rates
Opportunistic Real Estate	9.6	9.2	0.4	slightly less attractive pricing offset by higher future rates
Infrastructure	7.7	NA	NA	<i>New aggregate</i>
Infrastructure (Public)	7.4	7.4	0.0	worse pricing (depending on the index)
Infrastructure (Core Private)	7.3	7.0	0.3	slightly more expensive offset by higher future rates
Infrastructure (Non-Core Private)	9.3	9.0	0.3	slightly more expensive offset by higher future rates

20-year Geometric Expected Returns Natural Resources & Commodities

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
Natural Resources (Public)	7.7	7.3	0.4	strong earnings rebound but questions about the future
Natural Resources (Private)	8.5	8.3	0.2	higher prices offset by higher real income
Energy	8.9	9.0	-0.1	more expensive
Mining	8.5	8.2	0.3	more expensive offset by and higher future rates
Timberland	6.8	6.3	0.5	slightly higher real income and higher future rates
Farmland	7.2	6.6	0.6	slightly higher real income and higher future rates
Sustainability	9.3	8.8	0.5	higher future rates
Gold Mining	8.2	7.9	0.3	mining slightly more expensive
Gold (Metal)	2.8	2.3	0.5	higher inflation expectations
Commodities	4.6	3.7	0.9	higher cash yield and inflation expectations

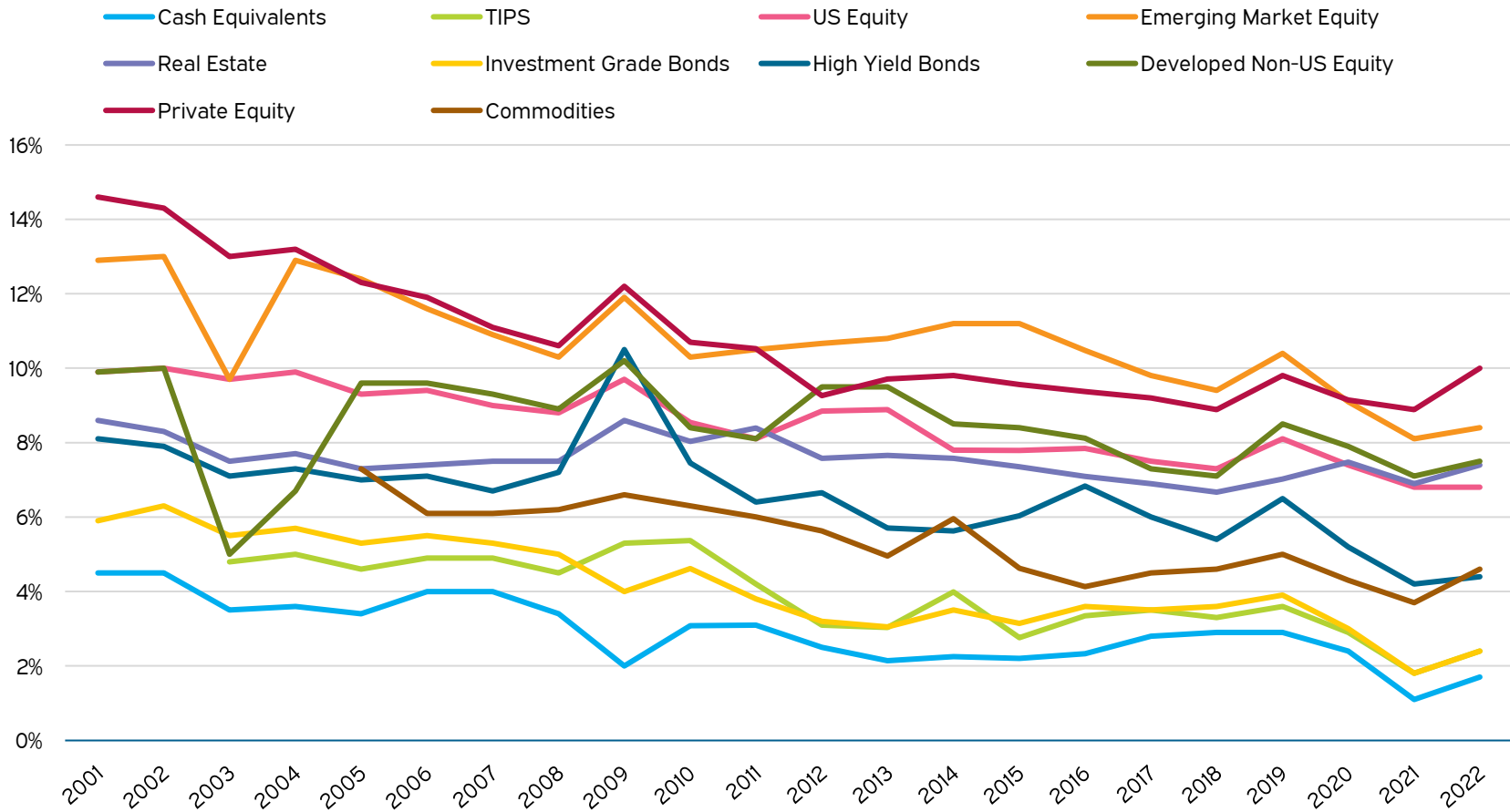


20-year Geometric Expected Returns Alternative Strategies (Other)

	2022 E(R) (%)	2021 E(R) (%)	Δ From 2021 (%)	Notes
Hedge Funds	4.4	4.3	0.1	revised to include CTAs & adjusted current asset weights
Long-Short	4.1	3.8	0.3	higher cash yield
Event Driven	5.2	4.9	0.3	higher cash and distressed debt yields
Global Macro	5.0	4.3	0.7	higher yields
CTA – Trend Following	4.8	4.7	0.1	assuming lower signal benefits (due to arbitrage)
Fixed Income/L-S Credit	3.8	3.4	0.4	higher yields offset by tighter spreads
Relative Value/Arbitrage	5.1	4.6	0.5	steeper curve for carry trade offset by lower convert arb yields
Insurance Linked Strategies	5.0	4.6	0.4	higher coupon offset by higher expected loss
Risk Parity (10% vol)	5.2	4.0	1.2	higher yields and leverage
TAA	4.5	4.1	0.4	higher yields
Alternative Risk Premia	4.6	4.1	0.5	higher cash yield



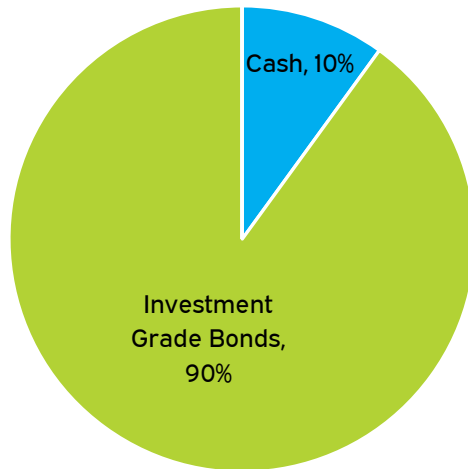
Our 20-year CMEs since 2000





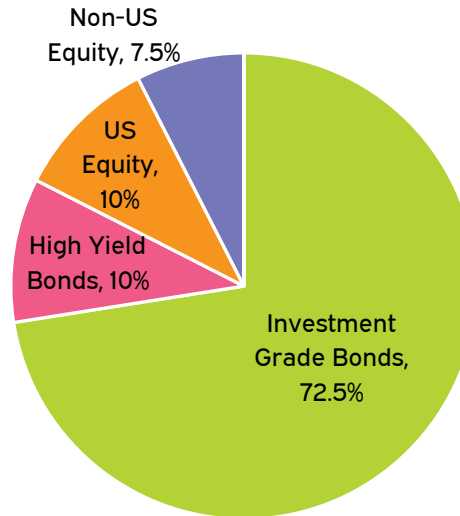
Achieving Actuarial Return Targets

1994



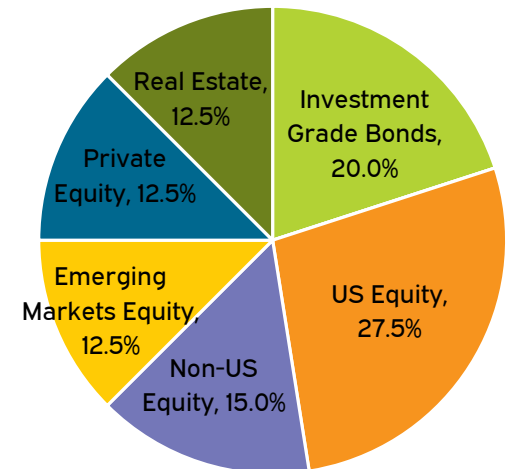
Expected Return = 7.25%
Expected Volatility = 3.1%

2001



Expected Return = 7.25%
Expected Volatility = 4.9%

2022



Expected Return = 7.25%
Expected Volatility = 14.6%

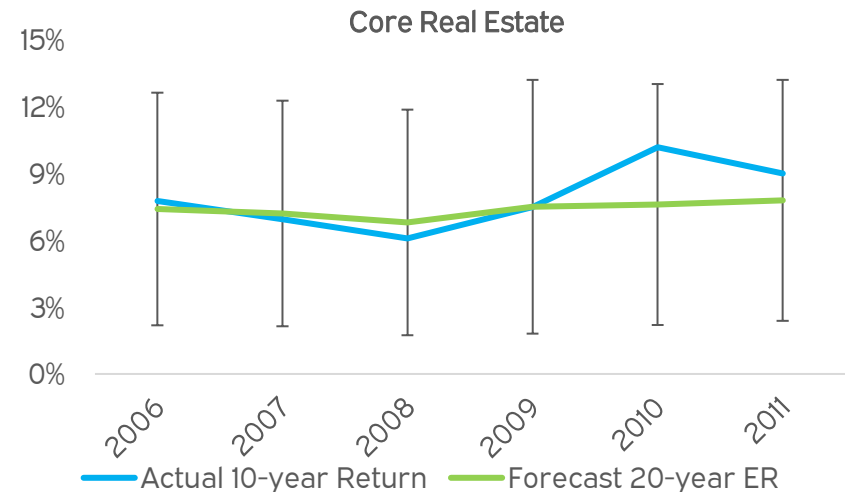
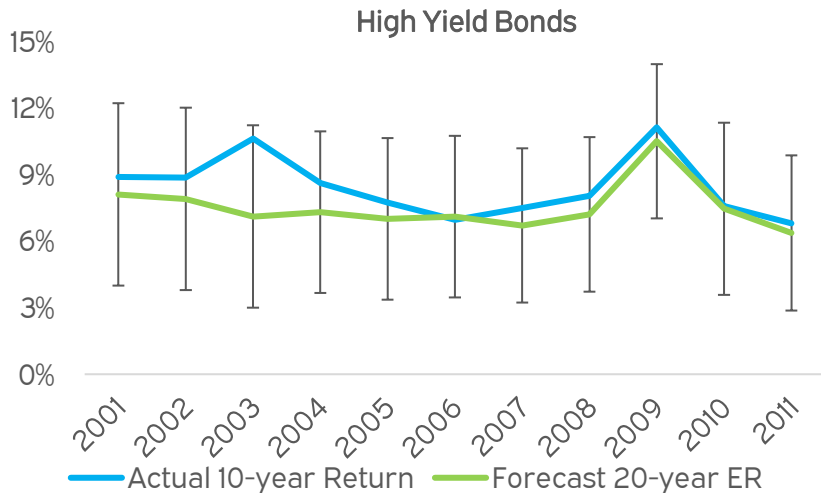
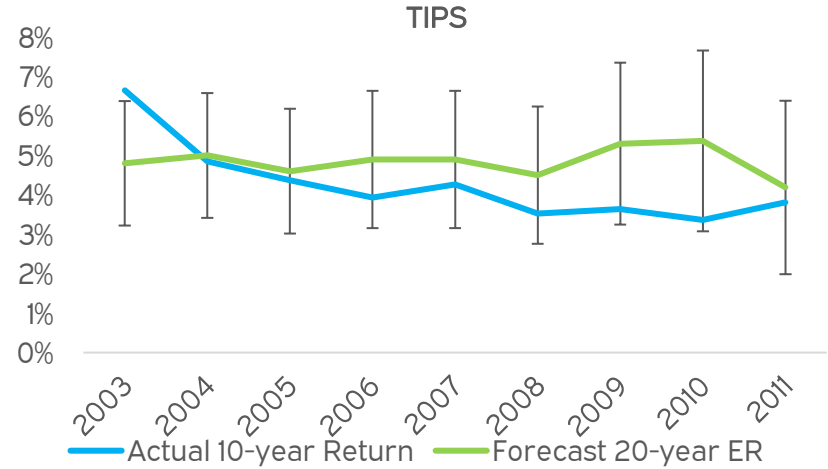
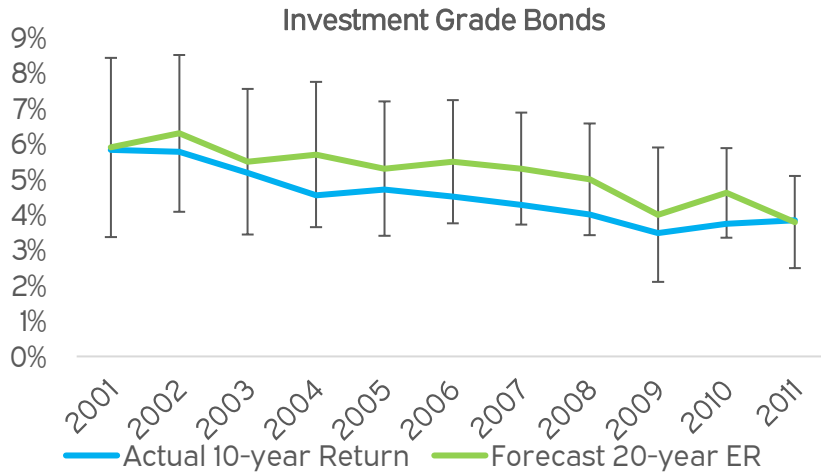
Increasing Risk

- As returns have trended down, institutional investors have had to increase the risk and complexity of portfolios in order to achieve a return target near recent median assumptions.
- Compared to 1994, a portfolio constructed with 2021 CMAs requires nearly 5x the risk level.

Note: Utilizes at-the-time CMAs from PCA (1994, 2001) and Meketa (2022). Portfolios represent partial mean-variance optimizations.

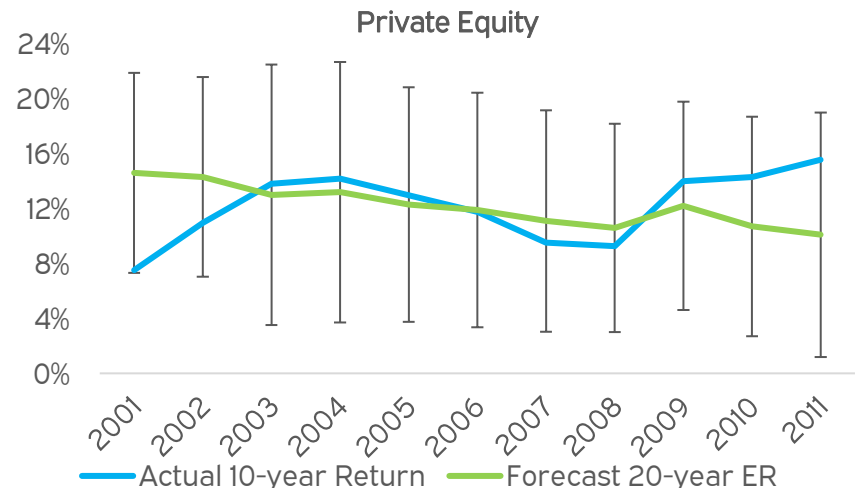
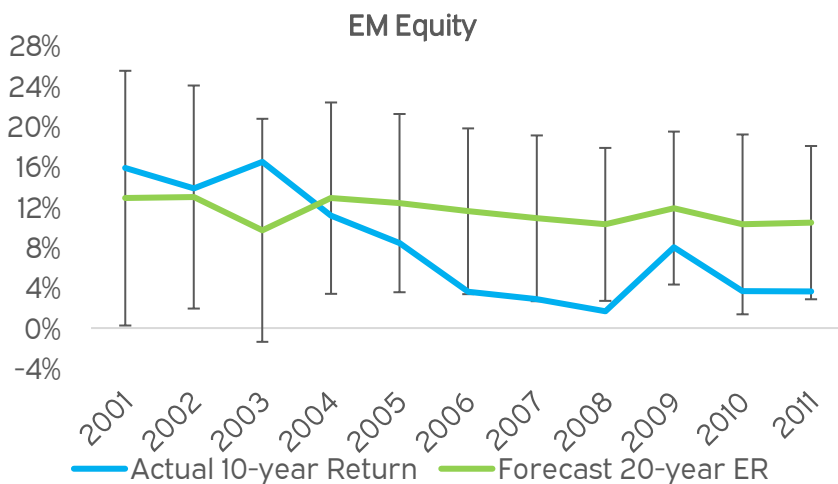
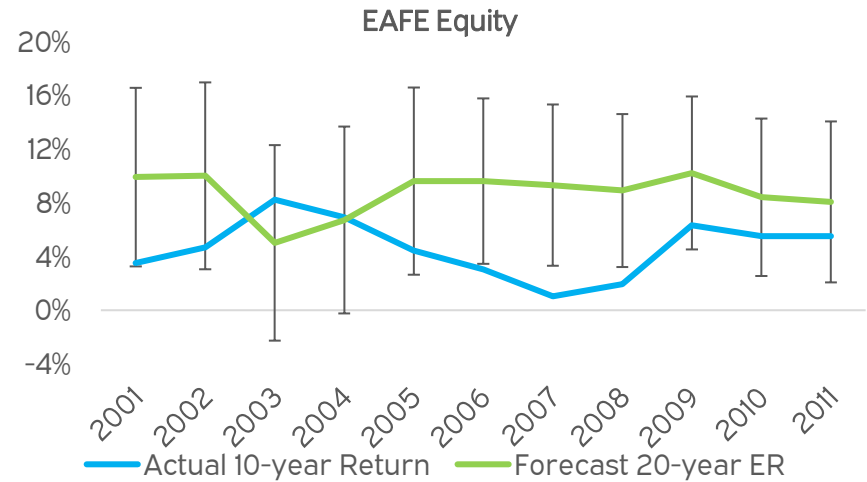
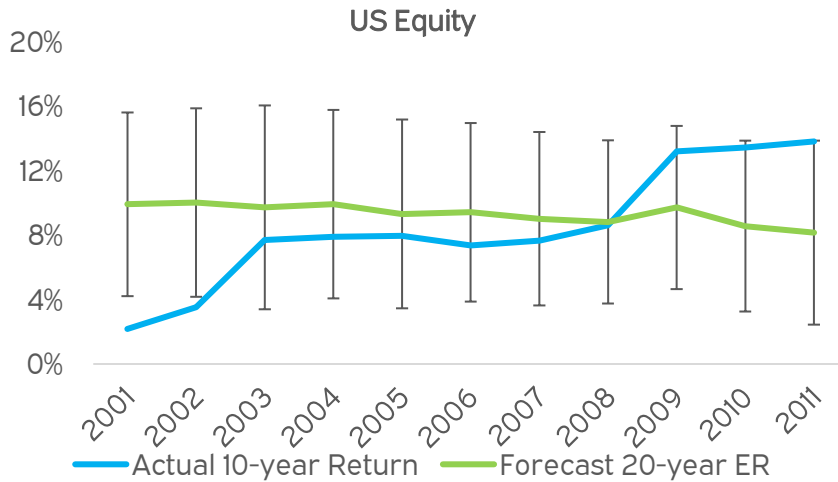


Our Track Record





Our Track Record (cont.)



Equities: Model ¹

- To calculate the price return, we estimate the fair value of the index in ten years.
 - We first calculate future EPS by compounding current EPS¹ at the projected earnings growth rate.
 - We average the next ten years of projected EPS to arrive at an EPS 10.

	US	EAFE	EM	EAFE Sm	EM Small	Frontier
2022	181.8	133.7	88.1	12.8	60.6	45.6
2023	191.8	139.4	93.4	13.3	64.7	48.2
2024	202.3	145.4	99.0	13.8	69.2	51.0
2025	213.4	151.6	105.0	14.3	73.9	53.9
2026	225.2	158.1	111.3	14.8	79.0	57.0
2027	237.5	164.9	118.1	15.4	84.4	60.3
2028	250.6	172.0	125.2	15.9	90.2	63.8
2029	264.3	179.4	132.8	16.5	96.4	67.5
2030	278.8	187.1	140.8	17.1	103.0	71.4
2031	294.2	195.1	149.3	17.8	110.0	75.5
2032	310.3	203.5	158.3	18.4	117.6	79.8
Average EPS10 in 10 years	246.8	169.7	123.3	15.7	88.8	62.8

¹ We use *As Reported* trailing 12-month earnings for the S&P 500, and trailing 12 month earnings from MSCI for the non-US indices.

Equities: Model 1 (cont.)

- For projected earnings growth, we add expected real GDP and expected inflation to arrive at nominal GDP!¹
 - We assume that GDP growth is a close long-term proxy for earnings growth.
 - We assume that the amount of economic growth that translates to EPS growth varies.²

	US	EAFE	EM	Frontier
% of Growth Translating to EPS	105%	93%	78%	65%

- The model is based on the theory that a region's companies will grow at roughly the same rate as its economy, as defined by GDP, over the long term.
 - We also adjust for the percentage of earnings that is derived from foreign countries.³

	Earnings from US	Earnings from EAFE	Earnings from EM	Earnings from Frontier
S&P 500	65%	17%	18%	1%
MSCI EAFE	23%	48%	21%	2%
MSCI Emerging Markets	18%	9%	76%	1%
MSCI Frontier Markets	4%	5%	9%	79%

¹ We constructed 5-year GDP based on the IMF World Economic Outlook as of October 2021 and Oxford Economics projections, and then use Oxford Economics projections for the remaining five years to arrive at a ten-year forecast for each. Note that the inflation history for emerging and frontier markets is subjective. We constructed inflation projections based on the IMF World Economic Outlook as of October 2021, historical averages and 5-year Inflation swaps maturing 5 years from now where available (e.g., US, Euro Area, UK, and Japan).

² We believe the percentage of GDP growth translating to earnings growth varies due to net issuance, state intervention, etc.

³ Source: MSCI Economic Exposure indices for North America, EAFE, and Emerging Markets; estimates for small cap and frontier markets.

Equities: Model 1 (cont.)

- We multiply EPS10 by our projected PE10 ratio to arrive at a ten-year price target.
 - We assume investors will pay slightly different ratios for earnings in different regions¹

$$\text{US Price Target} = 246.8 \times 28.5 = 7,025$$

- We divide this future price by the current price and then annualize the price change.

$$\text{US Price Return} = (7025 \div 4766)^{1/10} - 1 = 4.0\%$$

- We subtract the projected earnings growth² from the price change to arrive at the Multiplier Effect.

$$\text{Multiplier Effect}_{\text{Model 1}} = 4.0\% - 5.5\% = -1.5\%$$

¹ We assume that PE reverts 75% of the way back to its historical median. For the US, we use 25.0x, which is consistent with its median PE10 since 1990. We assume a lower PE10 for other regions that is consistent with their valuation relative to the US over the past two decades.

² Projected Earnings growth for Model 1 equals the US nominal GDP growth projection.

Equities: Model 2

- To calculate the price return, we estimate the fair value of the index in ten years.
 - We first calculate future EPS by multiplying current EPS by projected earnings growth.

$$US\ EPS = 181.8 \times (1 + 5.5\%)^{10} = 310.6$$

- For projected earnings growth, we used a subjective growth rate.
 - For the US, we used a rate lower than the historical average due to our current assessment that we are nearer a peak than a trough in the earnings cycle.
- We multiply EPS by our projected PE ratio¹ to arrive at a ten-year price target.

$$US\ Price\ Target = 310.6 \times 19.9 = 6181.5$$

- We divide this future price by the current price and then annualize the price change.

$$US\ Price\ Return = (6181.5 \div 4766.2)^{1/10} - 1 = 2.6\%$$

- We subtract the projected earnings growth² from the US Price return to arrive at the Multiplier Effect.

$$Multiplier\ Effect_{Model\ 2} = 2.6\% - 5.5\% = -2.9\%$$

¹ For the US, we use a PE (trailing twelve months) of 17.0x which is consistent with its median since 1954. We assume a lower PE for other regions that is consistent with their valuation relative to the US over the past two decades.

² Projected Earnings growth for Model 2 equals an assumed rate of 5% for the US, 4.5% for EAFE, and 6.5% for EM.



Equities: Model 3

- Our third equity model uses a form of the dividend discount model (DDM).
- This is based on the premise that low rates drive up valuations when discounting future cash flows (or earnings).
- First, we figure out what the implied cost of equity (i.e., discount rate) has been historically.
 - This is based on historical interest rates, growth rates, and prices.
- We then turn that into a “premium” over government bond rates that can be applied to the current level of (real) interest rates to arrive at a new (lower) discount rate.
- This can be used to calculate a present value for the market using the DDM.

¹ The historical discount rate is calculated based on historical valuations, earnings, and growth rates.

Equities: Model 3 (cont.)

- To calculate fair value, we use the Dividend Discount Model.

$$\text{Fair Value} = E \times (1 + G) \div (D - G)$$

- For earnings (E), we use EPS10
- For the growth rate (G), we use a subjective earnings growth rate
- For the discount rate (D), we use a rate implied by the projected real rate, the historical discount rate, and the historical real rate¹

$$\text{Implied Discount Rate} = -0.5\% + 11.3\% - 2.3\% = 8.5\%$$

- The fair value can be calculated as:

$$\text{Fair Value} = 122.3 \times (1 + 5.5\%) \div (8.5\% - 5.5\%) = 4,302.1$$

- We find the difference between fair value and current value, and we assume reversion to fair value is achieved over a ten-year period.

$$\text{Multiplier Effect}_{\text{Model 3}} = [1 + (4302.1 - 4766.2) \div 4766.2] ^ (1/10) - 1 = -1.0\%$$

¹ The historical discount rate is calculated based on historical valuations, earnings, and growth rates.

Currency Effect

- For non-US equities, we calculate an adjustment for the expected impact of currency movements.
 - We use a three-factor model that weights 40% on PPP theory, 30% on IRP theory, and 30% on current account differential theory.
 - PPP posits that money will flow to the currency with lower cost of goods and services¹
 - IRP posits that money will flow to the currency with the lower interest rate²
 - Current account differential posits that money will flow to the currency with the lower current account deficit³

Market	Expected Inflation (%)	PPP Impact (%)	Interest Rates (%)	IRP Impact (%)	Current Account Impact (%)	Net Effect (%)	Adjusted Net Effect ⁴ (%)
EAFE	1.7	2.5	-0.4	-0.4	2.3	1.6	1.0
EM	4.4	5.7	4.5	4.4	2.5	4.3	1.0
US	2.6	NA	0.1	NA	NA	NA	NA

¹ Sources for PPP data: World Bank (PPP Conversion Factor) and *The Economist* (Big Mac Index).

² We use the central bank discount rate or equivalent for the major countries of each region (source: FRED). Due to lack of data for frontier markets, we used yield-to-worst on longer-term bonds and then adjusted the yield down subjectively (to adjust for term structure).

³ We use the differential between each region's current account as a % of global trade (source: FRED & The World Fact Book)

⁴ We cap the currency adjustment at +/- 1% per annum, given the unpredictable nature of currency markets.



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TAB 5

INVESTMENT POLICY STATEMENT: GOVERNANCE

Governance and Delegation: Oregon Investment Council History

June 1, 2022

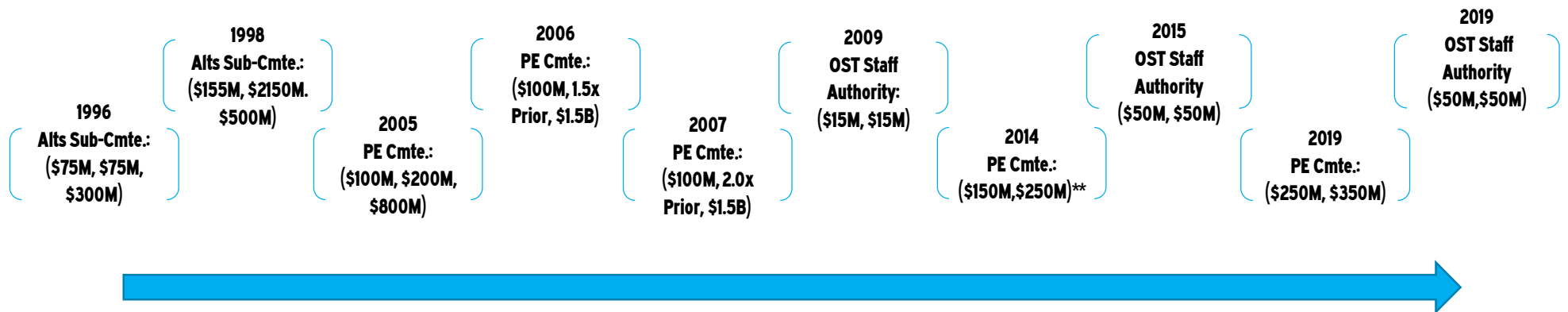
Background

- Over the last 30 years, pension governance and management has undergone enormous change. The markets, the size and complexity of portfolios and resources (staff and consultants) have all evolved.
 - All large public pension plans, including OPERF share in that experience.
- The OPERF portfolio, Treasury staff, resources (tools like Aladdin), and use of consultants have grown.
- To address the growth and complexity of this dynamic, the governance model for almost all large plans have evolved to various extents.
 - OIC is no different.
- Today, we highlight the shifts that the OPERF portfolio has undergone over the last three decades, as a framework to discuss the role of the OIC, the Staff, and its consultants.

* ((New Limit, Limit Re-Up, Limit Total)

** Aggregate annual and manager specific limits were removed

Evolution of Delegated Authority Over Time

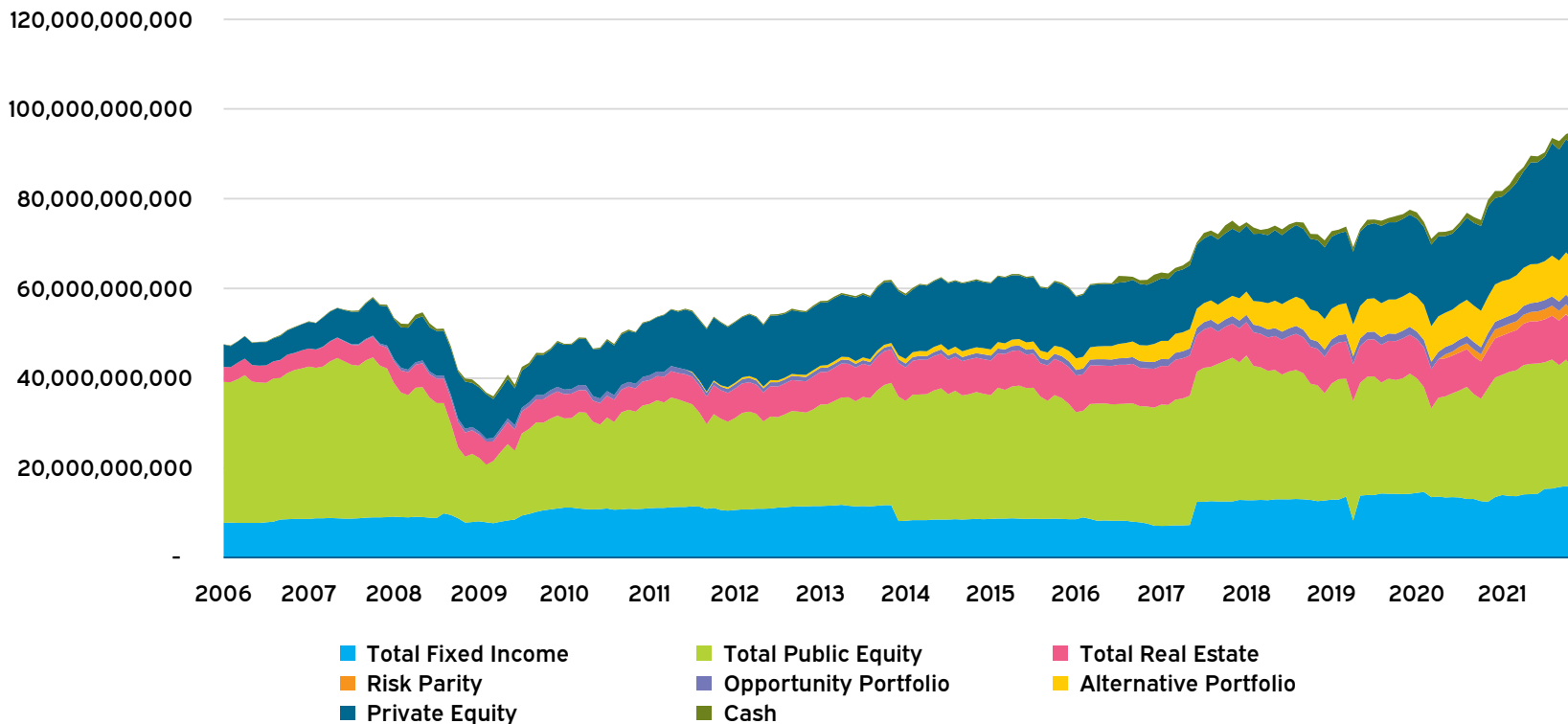


→ IC delegation has gone from none to some - reflecting complexity, resources and time.

Footnote: (Limit New, Limit Reup, Limit Total)

Growth of OPERF Over the Last 30 Years

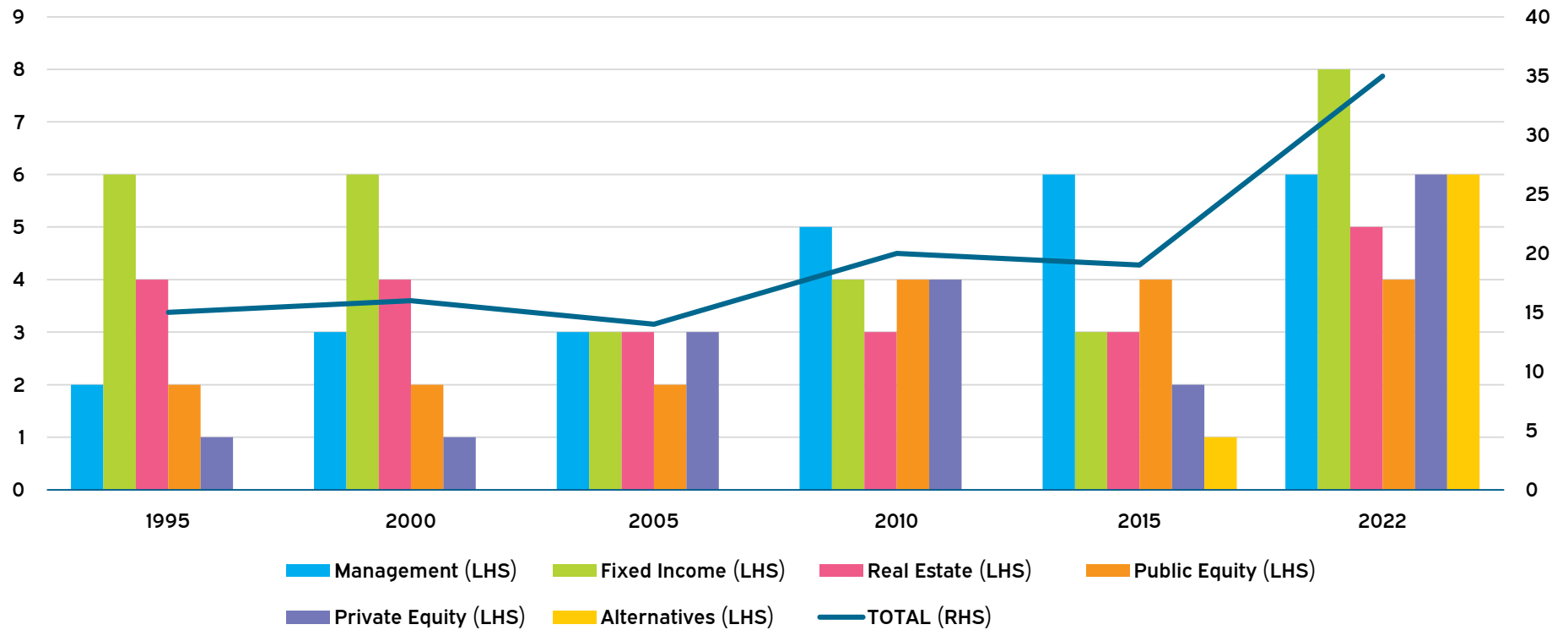
Asset Allocation has Become More Complex



→ OPERF has grown to nearly \$100 billion in assets, and the asset allocation has evolved and become more complex over the last 20 years, with the addition of asset classes such as risk parity and alternatives.

Growth of Staff Over the Years

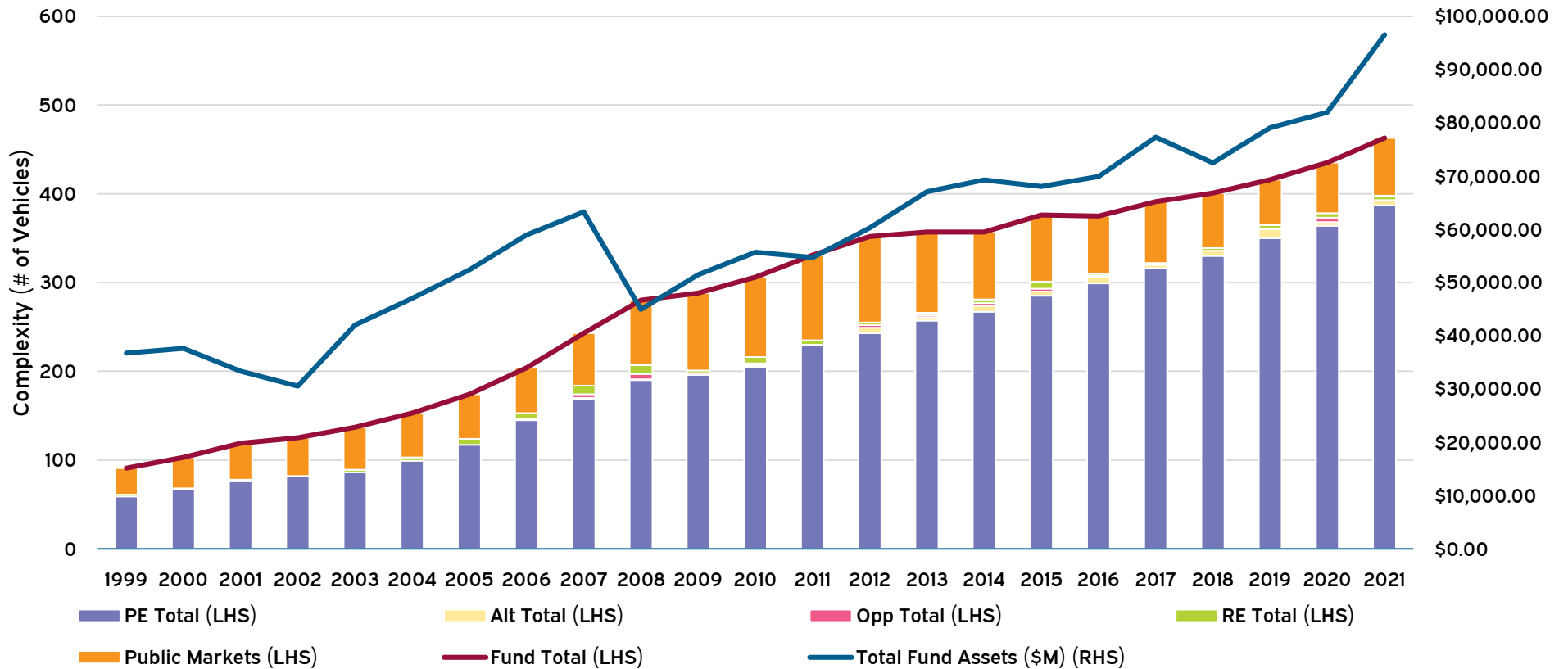
**Front Office Staffing
1995 - 2022**



→ Growth of Staff has seen a material expansion over time, in addition to an extensive buildout to back-office support.

Front Office Staffing data provided by Oregon Investment Council

Number of Investment Vehicles



→ The growth of assets added to the complexity of the portfolio and the number of total investment vehicles across public and private assets.

Takeaways

- Over time, OIC governance has evolved to reflect the changes in the capital markets, complexity, resources and time constraints.
- We believe that that process should continue, aligned with the OIC's stated mandate as a policy-setting Board. How and when are issues that require thoughtful discussion and debate
 - Areas that are most commonly delegated include manager and GP hiring/termination decisions, rebalancing, tactical positioning. Today, some of these functions fall within OST Staff purview.
 - A reasonable "next step" in the evolution of the OIC portfolio would be to consider increasing the size of managers staff can take action on.
- The continued evolution of delegated authority will be articulated within both the Common School Fund IPS and the OPERF IPS.

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

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TAB 6

OPERF Q1 PERFORMANCE REVIEW

Oregon Investment Council

June 1, 2022

Executive Summary

Table of Contents

1. Economic and Market Update as of March 31, 2022
2. Executive Summary Q1 2022
3. Performance Update as of March 31, 2022
4. Disclaimer, Glossary, and Notes

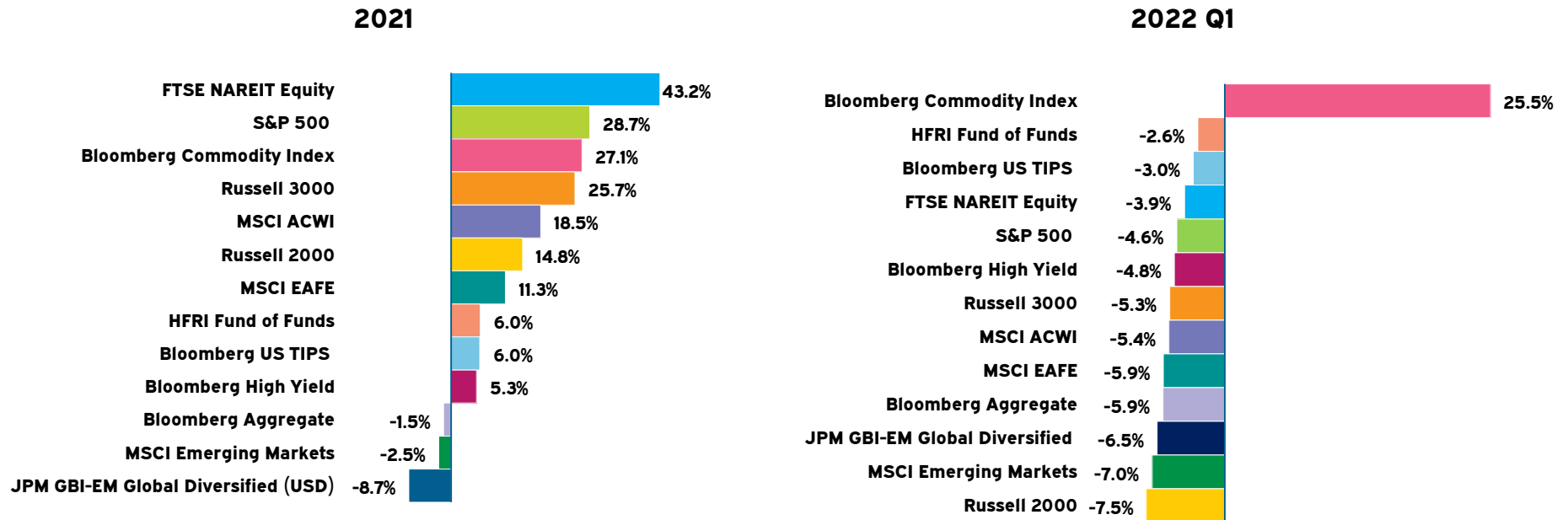
Economic and Market Update

Data as of March 31, 2022

Q1 Commentary

- The first quarter saw market volatility, driven by persistently high inflation, expectations for policy to tighten faster than previously expected, and Russia's invasion of Ukraine.
- Except for commodities, all asset classes declined during the quarter.
 - Equities declined across the board with double-digit losses in China particularly weighing on emerging markets.
 - Value oriented equities outpaced growth in the US influenced by higher interest rates.
 - Bonds in the US had one of their worst quarters on record, declining more than equities.
 - Rates rose across the US yield curve, with the curve inverting by some measures by month-end.
 - Inflation remains high globally given lingering supply issues from the pandemic and the conflict in Ukraine.
 - The pace of policy tightening will likely increase due to persistent inflation.
- The conflict in eastern Europe will have considerable economic and financial consequences for the global economy including the pacing of policy rate tightening, the risk of policy mistakes, and supply shocks pushing inflation even higher around the world.

Index Returns¹



→ Outside of emerging markets and the broad US investment grade bond market (Bloomberg Aggregate), most asset classes appreciated in 2021.

→ Most major asset classes suffered negative returns in the first quarter of 2022 with the notable exception of commodities. TIPS declined less than most other asset classes in the inflationary environment.

¹ Data Source: Bloomberg and FactSet. Data is as of March 31, 2022.

Executive Summary

Q1 2022

OPERF Performance Summary – Commentary

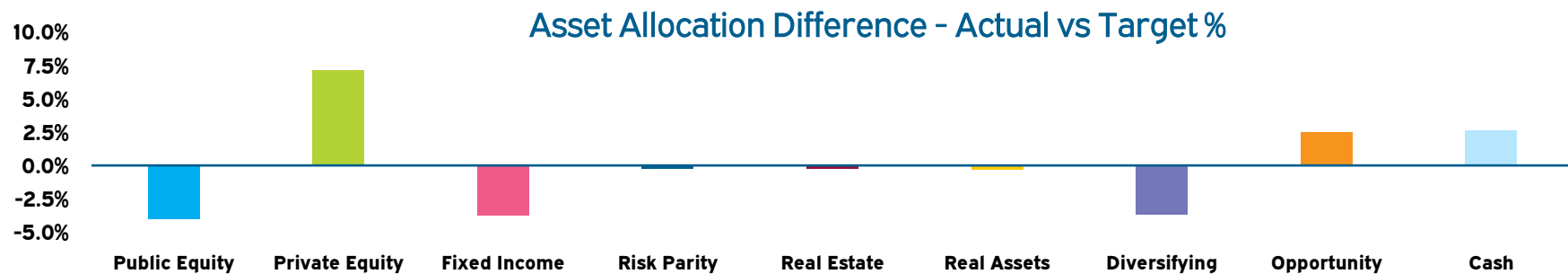
- OPERF posted a return of 1.2% for the first quarter, relative to a benchmark return of 0.3% and peer median return of -2.6%. This impressive, and notably, positive performance, ranks in the top quartile of the InvestMetrics public plan peer universe of all DB plans over \$10 billion for the quarter, as does the Fund's 1-year return of 15.2%.
- The largest driver of the positive absolute performance at the total fund level, was the significant contribution of private equity performance (+7.4%), which is lagged by one quarter.
- Public Equities (-4.6%) outperformed the broad MSCI ACWI IMI Net (Daily) index (-5.5%). Outperformance was driven by value managers, both domestically and abroad, and the Global Low Vol portfolio. Value exhibited strong relative performance during the quarter as rising interest rates and high inflation created headwinds for growth stocks which had dominated the pandemic markets on more accommodative policy.
 - The Global Equity Low Volatility sleeve comprises nearly 90% of the total allocation to Global Equity. Due to the emphasis on downside protection, these strategies have been a source of outperformance during a volatile first quarter.
- OPERF's Fixed Income portfolio (-5.2%) outperformed the Oregon Custom Core FI Benchmark (-5.9%). US Investment Grade Bonds experienced a historically challenging quarter as rapidly rising rates drove down prices. As a result, Non-Core Fixed Income, Global Sovereign, and Structured Credit portfolios contributed to outperformance.

OPERF Performance Summary – Commentary (continued)

- OPERF has strong benchmark-relative performance across all time periods within the Real Estate portfolio. Real Estate (+8.7%), which has a 12.3% portfolio allocation helped drive outperformance on the Total Fund level for both the first quarter and 1-year periods.
- The Opportunity Portfolio underperformed the CPI +5% benchmark over the most recent quarter but provided positive absolute returns.
 - Diversifying Strategies, at 3.8% of the Total Fund, returned 6.8% for the quarter and was another driver of relative outperformance for the fund.
 - Real Assets, driven by rapidly rising inflation pressures and supply chain issues, experienced a strong first quarter. The Fund's Real Assets portfolio returned 5.1% for the quarter versus the CPI +4% benchmark of 4.1%.
 - The overweight to and absolute performance within the Private Equity portfolio were strong contributors to OPERF's positive return over the most recent quarter, even though it underperformed its benchmark for the period. The OPERF Portfolio maintains a significant overweight relative to the target - actual allocation of 27.1% versus a target allocation of 20%. OPERF is actively looking to reduce private equity exposure, though it will take some time given the illiquid nature of the asset class

OPERF Asset Allocation as of March 31, 2022

Asset Class	Actual (\$ 000)	Actual Weight (%)	Target Weight (%)	Difference (%)	Difference (\$ 000)
Public Equity	25,136,583	26.0	30.0	-4.0	-3,891,833
Private Equity	26,249,112	27.1	20.0	7.1	6,896,835
Fixed Income	15,720,964	16.2	20.0	-3.8	-3,631,313
Risk Parity	2,175,667	2.2	2.5	-0.3	-243,368
Real Estate	11,869,874	12.3	12.5	-0.2	-225,300
Real Assets	6,963,730	7.2	7.5	-0.3	-293,374
Diversifying	3,718,530	3.8	7.5	-3.7	-3,538,574
Opportunity	2,383,173	2.5	0.0	2.5	2,383,173
Cash	2,543,753	2.6	0.0	2.6	2,543,753
Total	96,536,798	100.0	100.0		
YTD Net Cash Flow	-894,400				
Gain/Loss	-291,158				



- A significant majority of OPERF’s assets are allocated to risk-oriented assets in the public and private equity markets.
- Efforts are underway/ liquidity programs in place to reduce the overweight to Private Equity. It is important to note that reducing exposure to PE is challenging given the nature of the asset class, and a work in progress.

OPERF Q1 2022 Performance Attribution¹

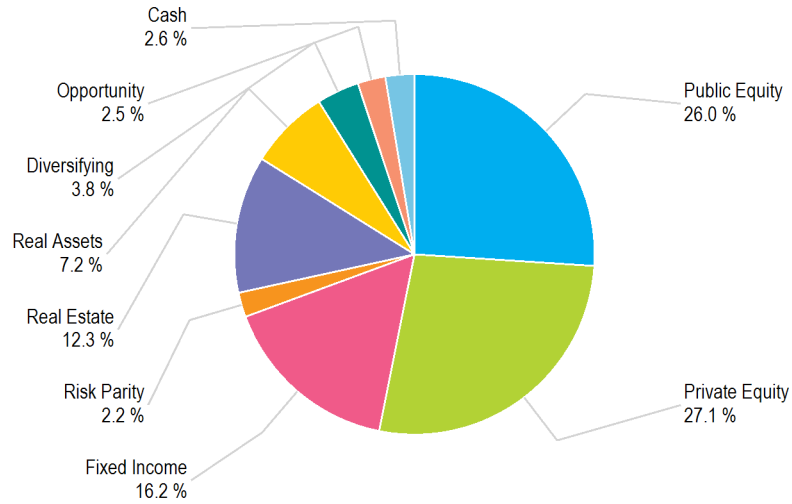
	QTD	1 Yr	3 Yr	5 Yr	10 Yr
Total Fund	1.2	15.2	12.4	10.6	9.6
Total Fund ex Overlay	1.2	15.6	12.7	10.8	9.6
OPERF Policy Benchmark	0.3	11.0	13.1	10.8	10.0
Over/Under	0.9	4.2	-0.7	-0.2	-0.4
InvMetrics All DB > \$10B Net Median	-2.6	9.5	11.8	10.0	8.8
InvMetrics All DB > \$10B Net Rank	1.0	1.0	7.0	10.0	6.0
Total Fixed Income	-5.2	-3.3	2.2	2.5	2.9
Oregon Custom FI Benchmark	-5.9	-4.0	1.7	2.2	2.4
Over/Under	0.7	0.7	0.5	0.3	0.5
Total Public Equity	-4.6	6.2	13.1	11.1	10.2
MSCI ACWI IMI Net (Daily)	-5.5	6.3	13.5	11.4	10.0
Over/Under	0.9	-0.1	-0.4	-0.3	0.2
Total Real Estate	8.7	27.5	11.8	10.1	11.0
NCREIF ODCE (Custom) (Adj.)	7.7	21.0	8.2	7.7	9.3
Over/Under	1.0	6.5	3.6	2.4	1.7
Risk Parity	-4.4	9.3	--	--	--
S&P Risk Parity - 12% Target Volatility	-0.8	15.6	14.6	11.7	9.5
Over/Under	-3.6	-6.3			
Opportunity Portfolio	1.8	16.5	13.1	10.3	9.9
CPI + 5%	4.4	13.9	9.4	8.5	7.4
Over/Under	-2.6	2.6	3.7	1.8	2.5
Diversifying Strategies	6.8	9.7	-0.2	-1.5	2.0
HFRI FOF Conservative Index	0.4	4.3	5.8	4.5	3.8
Over/Under	6.4	5.4	-6.0	-6.0	-1.8
Real Assets	5.1	18.6	7.7	7.0	--
CPI + 4%	4.1	12.9	8.3	7.5	6.4
Over/Under	1.0	5.7	-0.6	-0.5	
Private Equity	7.4	37.2	24.4	21.1	16.2
Russell 3000 + 300 BPS QTR LAG (Adj.)	10.1	29.4	29.5	21.5	19.8
Over/Under	-2.7	7.8	-5.1	-0.4	-3.6
Cash	-0.6	-0.6	1.1	1.5	1.1
ICE BofA US 3-Month Treasury Bill	0.0	0.1	0.8	1.1	0.6
Over/Under	-0.6	-0.7	0.3	0.4	0.5

Target	Overweight / Underweight	Contributors / Detractors
Policy	As of 3/31/22	QTD
20.0%	-3.80%	Contributor
30.0%	-4.00%	Contributor
12.5%	-0.20%	Contributor
2.5%	-0.30%	Neutral
0.0%	2.50%	Neutral
7.5%	-3.70%	Neutral
7.5%	-0.30%	Neutral
20.0%	7.10%	Detractor
0.0%	2.60%	Neutral

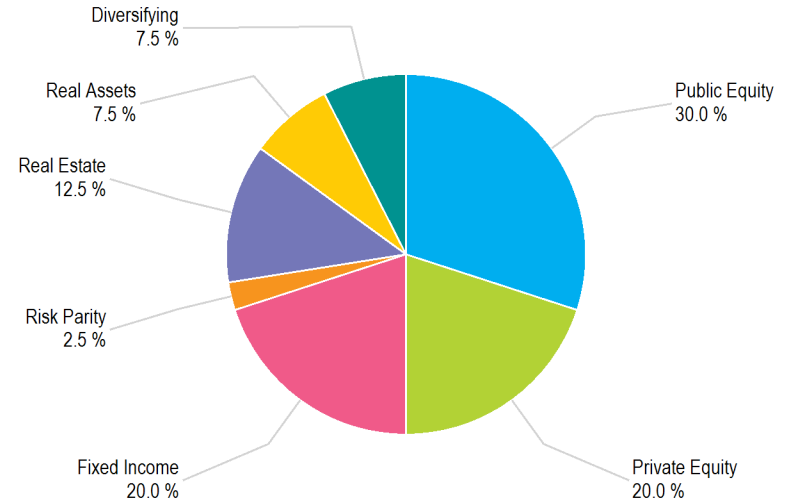
¹ Performance figures may differ versus State Street reporting due to calculation methodology differences.

Performance **Summary**
As of March 31, 2022

Actual Asset Allocation



Target Asset Allocation

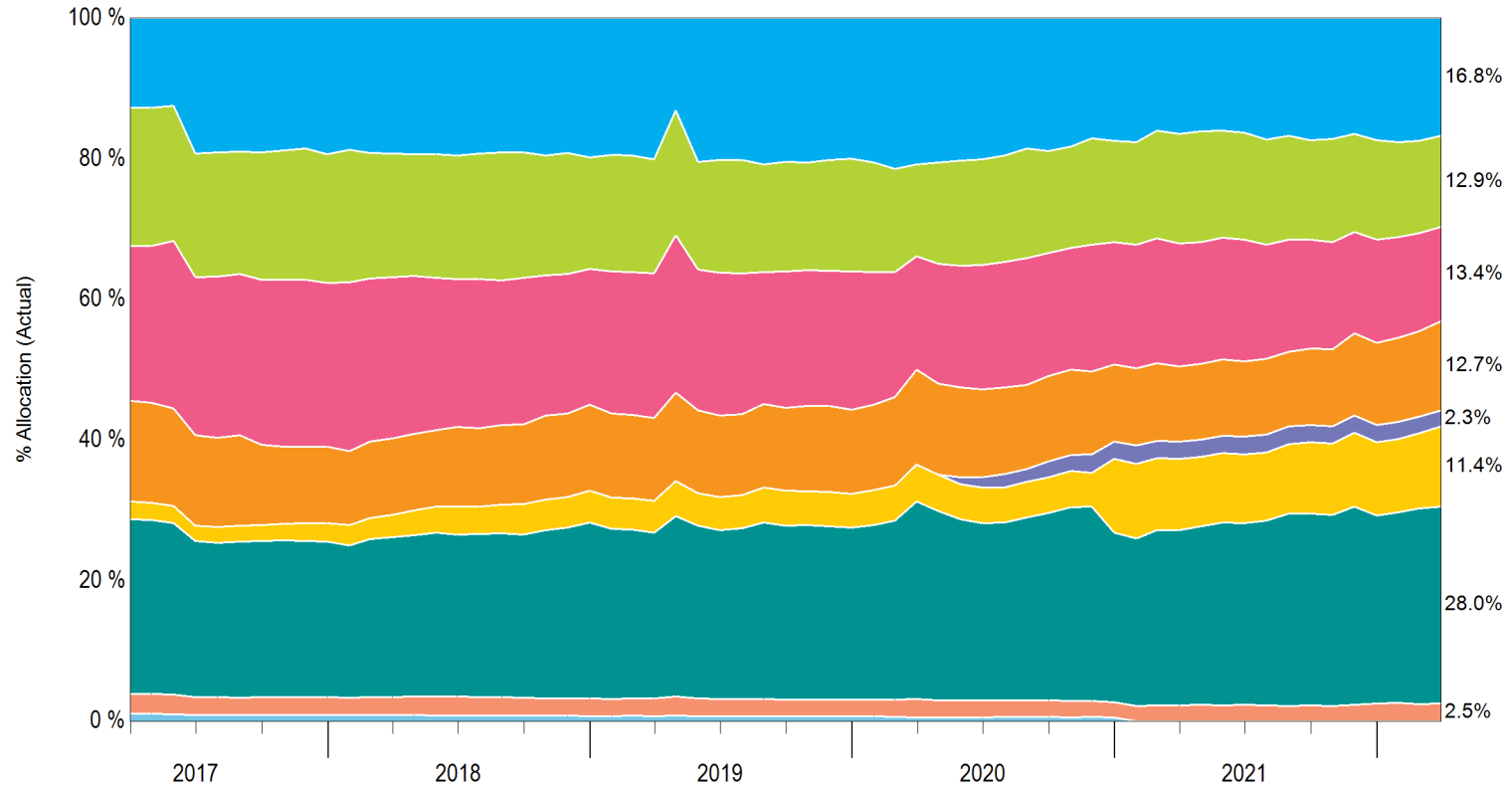


Asset Allocation vs. Target

As Of March 31, 2022

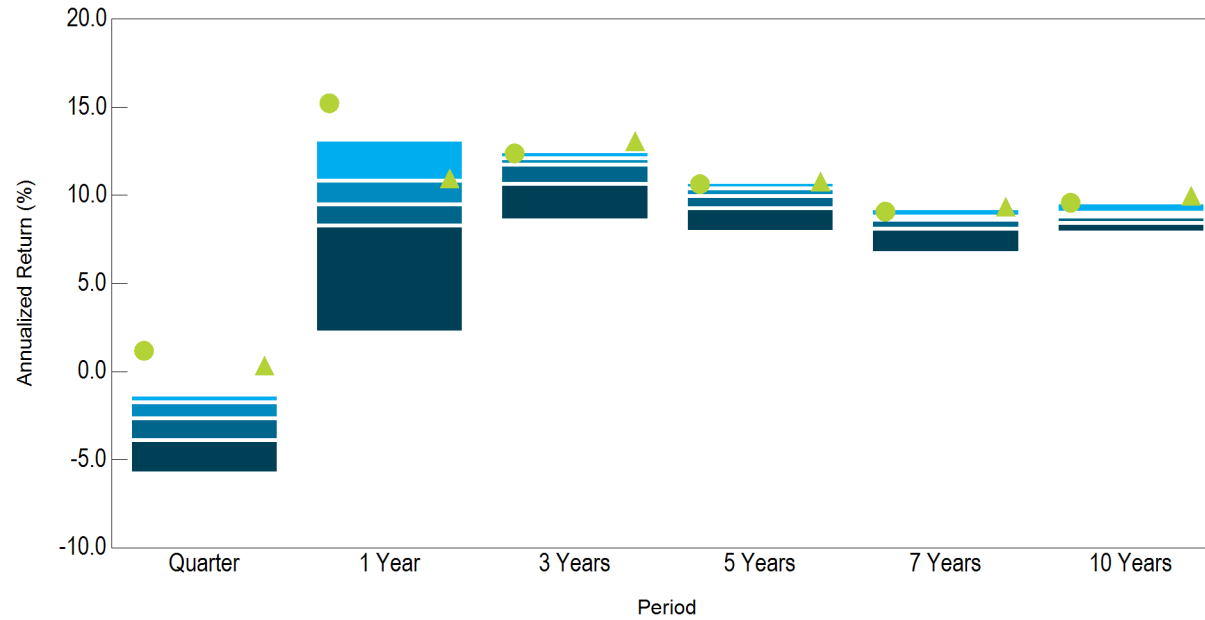
	Current	Current	Policy	Difference	Difference
Public Equity	\$25,136,582,878	26.0%	30.0%	-4.0%	-\$3,891,833,104
Private Equity	\$26,249,112,213	27.1%	20.0%	7.1%	\$6,896,834,891
Fixed Income	\$15,720,964,304	16.2%	20.0%	-3.8%	-\$3,631,313,017
Risk Parity	\$2,175,667,027	2.2%	2.5%	-0.3%	-\$243,367,638
Real Estate	\$11,869,873,525	12.3%	12.5%	-0.2%	-\$225,299,801
Real Assets	\$6,963,730,333	7.2%	7.5%	-0.3%	-\$293,373,663
Diversifying	\$3,718,530,378	3.8%	7.5%	-3.7%	-\$3,538,573,618
Opportunity	\$2,383,173,224	2.5%	0.0%	2.5%	\$2,383,173,224
Cash	\$2,543,752,726	2.6%	0.0%	2.6%	\$2,543,752,726
Total	\$96,761,386,610	100.0%	100.0%		

Asset Allocation History 5 Years Ending March 31, 2022



- Total Fixed Income
- Total Real Estate
- Alternative Portfolio
- Opportunity Portfolio
- U.S. Equity Portfolio
- Risk Parity
- Total Private Equity
- Cash
- Non-U.S. Equity Portfolio

InvMetrics All DB > \$10B Net Return Comparison Ending March 31, 2022



	Return (Rank)					
	Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
5th Percentile	-1.3	13.2	12.5	10.7	9.2	9.6
25th Percentile	-1.7	10.8	12.1	10.4	8.8	9.0
Median	-2.6	9.5	11.8	10.0	8.6	8.8
75th Percentile	-3.9	8.3	10.7	9.3	8.1	8.5
95th Percentile	-5.8	2.2	8.6	8.0	6.8	7.9
# of Portfolios	20	20	20	20	19	19
● Total Fund	1.2 (1)	15.2 (1)	12.4 (7)	10.6 (10)	9.1 (8)	9.6 (6)
▲ OPERF Policy Benchmark	0.3 (1)	11.0 (25)	13.1 (3)	10.8 (5)	9.3 (5)	10.0 (3)

Disclaimer, Glossary, and Notes

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: [Investment Terminology](#), International Foundation of Employee Benefit Plans, 1999.

[The Handbook of Fixed Income Securities](#), Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

Oregon Investment Council

June 1, 2022

Performance Update
As of March 31, 2022

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1. Economic and Market Update as of March 31, 2022
2. Q1 Detailed Performance
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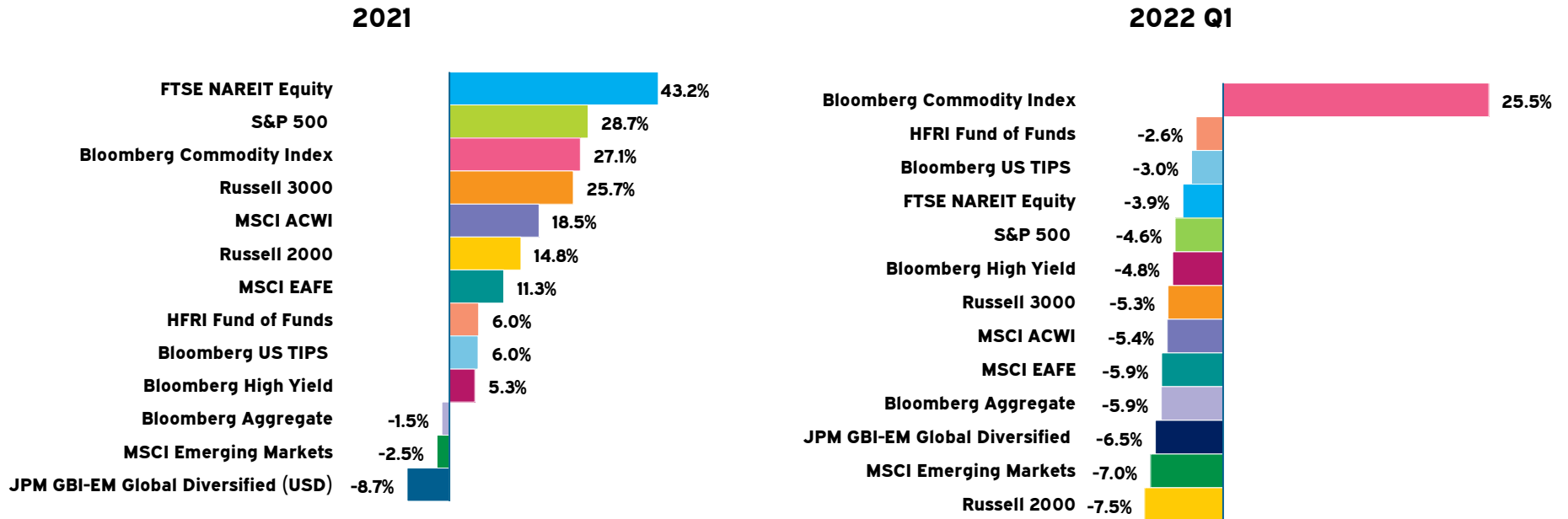
Economic and Market Update

Data as of March 31, 2022

Q1 Commentary

- The first quarter saw market volatility, driven by persistently high inflation, expectations for policy to tighten faster than previously expected, and Russia's invasion of Ukraine.
- Except for commodities, all asset classes declined during the quarter.
 - Equities declined across the board with double-digit losses in China particularly weighing on emerging markets.
 - Value oriented equities outpaced growth in the US influenced by higher interest rates.
 - Bonds in the US had one of their worst quarters on record, declining more than equities.
 - Rates rose across the US yield curve, with the curve inverting by some measures by month-end.
 - Inflation remains high globally given lingering supply issues from the pandemic and the conflict in Ukraine.
 - The pace of policy tightening will likely increase due to persistent inflation.
- The conflict in eastern Europe will have considerable economic and financial consequences for the global economy including the pacing of policy rate tightening, the risk of policy mistakes, and supply shocks pushing inflation even higher around the world.

Index Returns¹



→ Outside of emerging markets and the broad US investment grade bond market (Bloomberg Aggregate), most asset classes appreciated in 2021.

→ Most major asset classes suffered negative returns in the first quarter of 2022 with the notable exception of commodities. TIPS declined less than most other asset classes in the inflationary environment.

¹ Data Source: Bloomberg and FactSet. Data is as of March 31, 2022.

Domestic Equity Returns¹

Domestic Equity	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	3.7	-4.6	15.6	18.9	16.0	14.6
Russell 3000	3.2	-5.3	11.9	18.2	15.4	14.3
Russell 1000	3.4	-5.1	13.3	18.7	15.8	14.5
Russell 1000 Growth	3.9	-9.0	15.0	23.5	20.9	17.0
Russell 1000 Value	2.8	-0.7	11.7	13.0	10.3	11.7
Russell MidCap	2.6	-5.7	6.9	14.9	12.6	12.8
Russell MidCap Growth	1.6	-12.6	-0.9	14.8	15.1	13.5
Russell MidCap Value	3.0	-1.8	11.5	13.6	10.0	12.0
Russell 2000	1.2	-7.5	-5.8	11.7	9.7	11.0
Russell 2000 Growth	0.5	-12.6	-14.3	9.9	10.3	11.2
Russell 2000 Value	2.0	-2.4	3.3	12.7	8.6	10.5

US Equities: Russell 3000 Index returned -5.3%, and value indices outperformed growth in Q1.

- Despite positive returns in March, US equities posted negative returns for the first quarter of 2022 across all market capitalizations and styles given persistently high inflation and geopolitical uncertainty.
- Value stocks declined far less than growth stocks in the rising rate environment. Strong returns in the energy sector and weakness in the technology sector contributed to the results.
- Large company stocks (Russell 1000) outperformed small company stocks (Russell 2000).

¹ Source: Bloomberg. Data is as of March 31, 2022.

Foreign Equity Returns¹

Foreign Equity	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	0.2	-5.4	-1.5	7.5	6.8	5.5
MSCI EAFE	0.6	-5.9	1.2	7.8	6.7	6.3
MSCI EAFE (Local Currency)	2.1	-3.7	6.2	8.2	6.5	8.6
MSCI EAFE Small Cap	0.0	-8.5	-3.6	8.5	7.4	8.3
MSCI Emerging Markets	-2.3	-7.0	-11.4	4.9	6.0	3.4
MSCI Emerging Markets (Local Currency)	-2.1	-6.1	-9.9	6.2	7.5	6.3
MSCI China	-8.0	-14.2	-32.5	-3.0	3.5	4.5

International Developed Market Equities: MSCI EAFE -5.9% in Q1.

- Returns in international developed markets were also negative for the first quarter of 2022.
- Declines were driven by a sharp fall in stocks in Europe hurt by a high reliance on Russian oil and gas.
- Continued strength in the US dollar also weighed on results.

Emerging Markets: MSCI EM -7.0% in Q1.

- Emerging market stocks declined more than developed market stocks for the quarter.
- China was a key driver of results as its zero COVID-19 policy led to renewed lockdowns in Shanghai. Concerns related to regulations on US-listed China stocks and overall slower growth also weighed on returns.
- Russian stocks and the ruble plunged with sanctions and trading halts.

¹ Source: Bloomberg. Data is as of March 31, 2022.

Fixed Income Returns¹

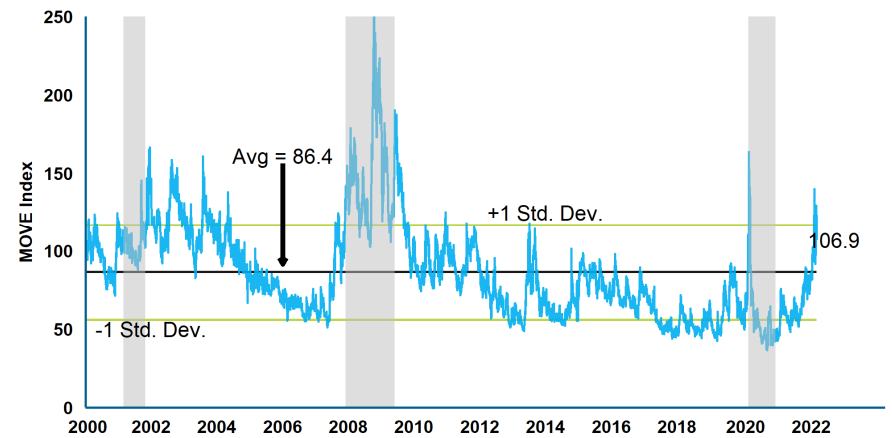
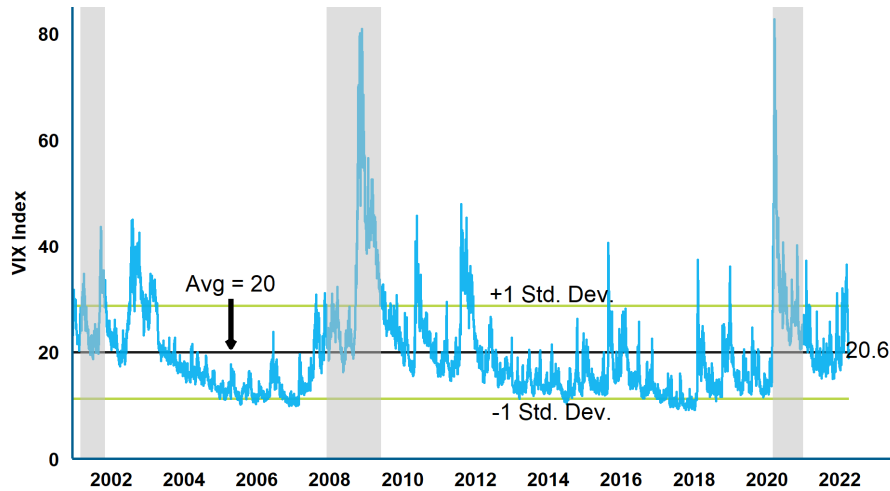
Fixed Income	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-2.7	-6.1	-4.2	1.8	2.3	2.6	3.3	6.6
Bloomberg Aggregate	-2.8	-5.9	-4.2	1.7	2.1	2.2	2.9	6.8
Bloomberg US TIPS	-1.9	-3.0	4.3	6.2	4.4	2.7	2.6	7.6
Bloomberg High Yield	-1.1	-4.8	-0.7	4.6	4.7	5.7	6.0	4.6
JPM GBI-EM Global Diversified (USD)	-1.5	-6.5	-8.5	-1.1	0.2	-0.7	6.4	5.1

Fixed Income: Bloomberg Universal -6.1% in Q1.

- The broad US investment grade bond market (Bloomberg Aggregate) experienced one of its worst quarters on record given continued concerns about policy tightening and inflation. The nominal 10-year Treasury yield finished the quarter at 2.3%, a level 0.8% above the end of 2021.
- TIPS also declined in the rising rate environment, but less than other bond sectors, helped by their inflation component.
- US credit spreads widened in the first quarter, particularly in high yield, as risk assets fell. Spreads remain at relatively low levels, though, given strong corporate health and high investor demand in the low-rate environment.
- Emerging market debt prices also declined in the quarter driven by the Russian invasion of Ukraine.

¹ Source: Bloomberg. JPM GBI-EM is from InvestorForce. Data is as of March 31, 2022.

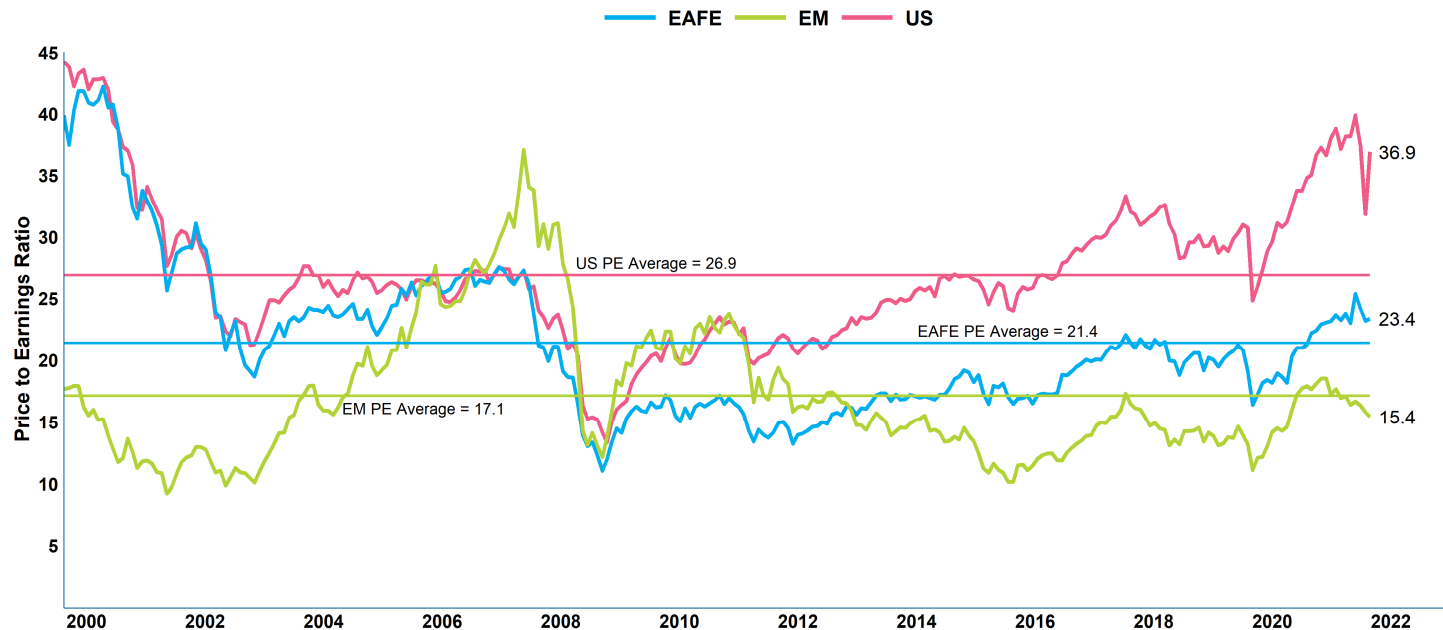
Equity and Fixed Income Volatility¹



- Volatility in equities (VIX) increased for the first quarter but finished well below the March peak of 36.5.
- Fixed income volatility (MOVE) also increased and remains elevated driven largely by expectations that the Federal Reserve would tighten monetary policy faster than previously expected.

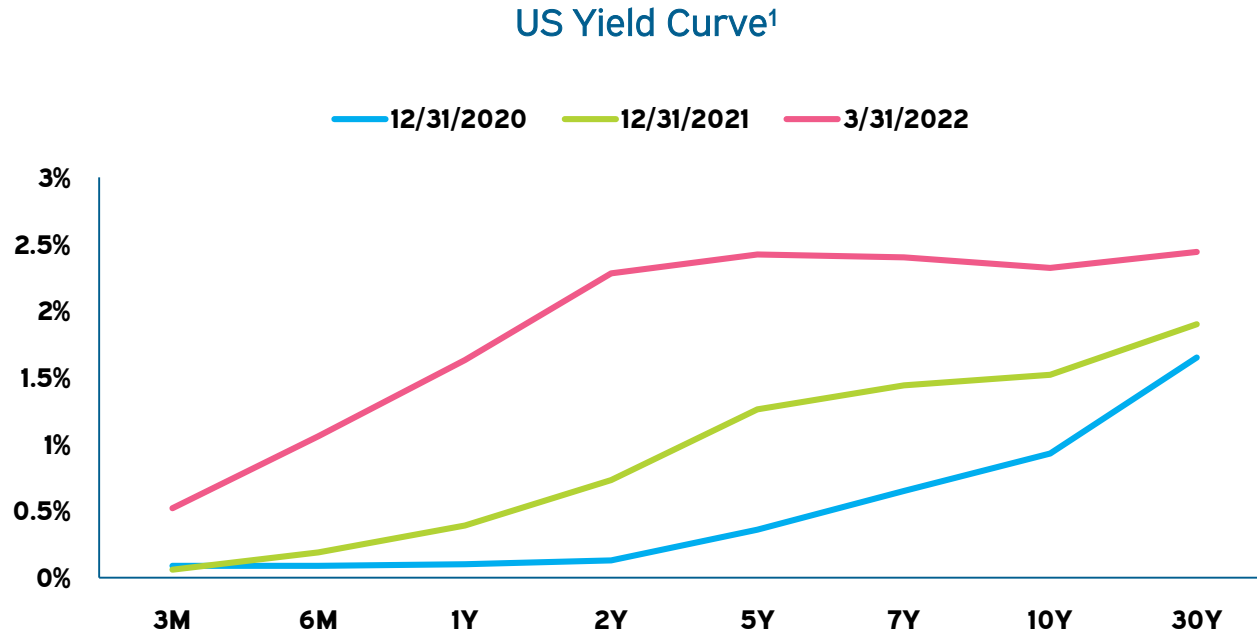
¹ Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of March 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the present month-end respectively.

Equity Cyclically Adjusted P/E Ratios¹



- US equity valuations retreated in the first two months of 2022, and rebounded in March with the market recovery. They remain well above long-term averages (near +2 standard deviations).
- International developed market valuations remain below the US, with those for emerging markets under its long-term average.

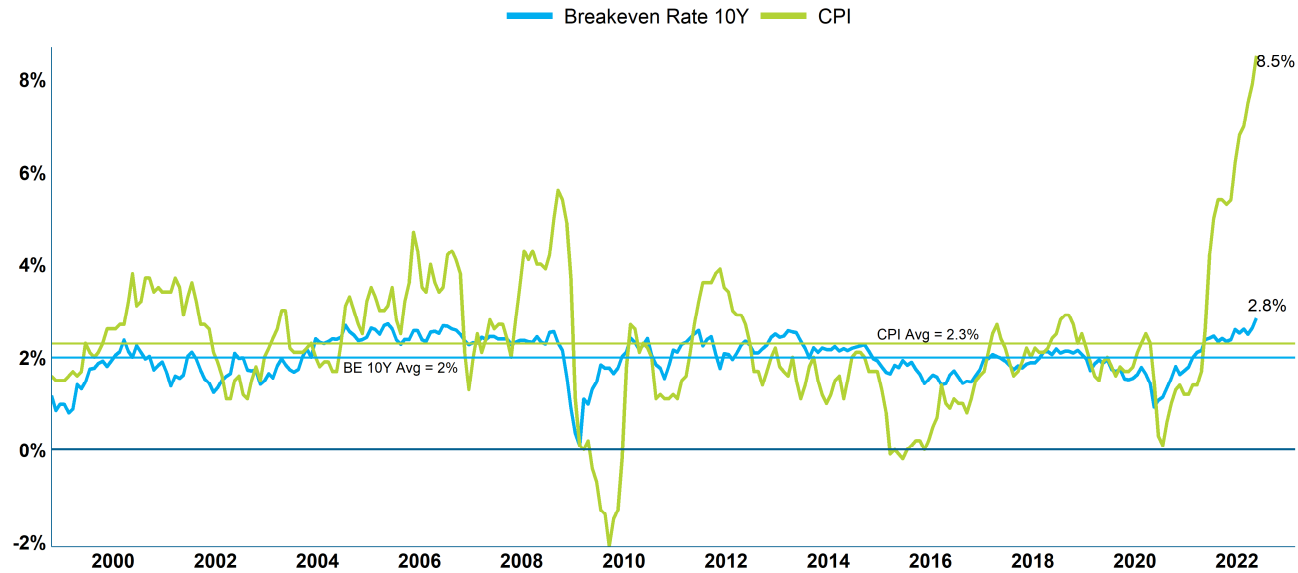
¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of March 31, 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to month-end respectively.



- The trends of higher rates across maturities and curve flattening continued during the first quarter of 2022 as markets repriced inflation, rate expectations, and an accelerated pace of the Federal Reserve reducing its balance sheet.
- The spread between two-year and ten-year Treasuries declined significantly over the quarter and became negative after quarter-end which historically has often signaled a recession.

¹ Source: Bloomberg. Data is as of March 31, 2022.

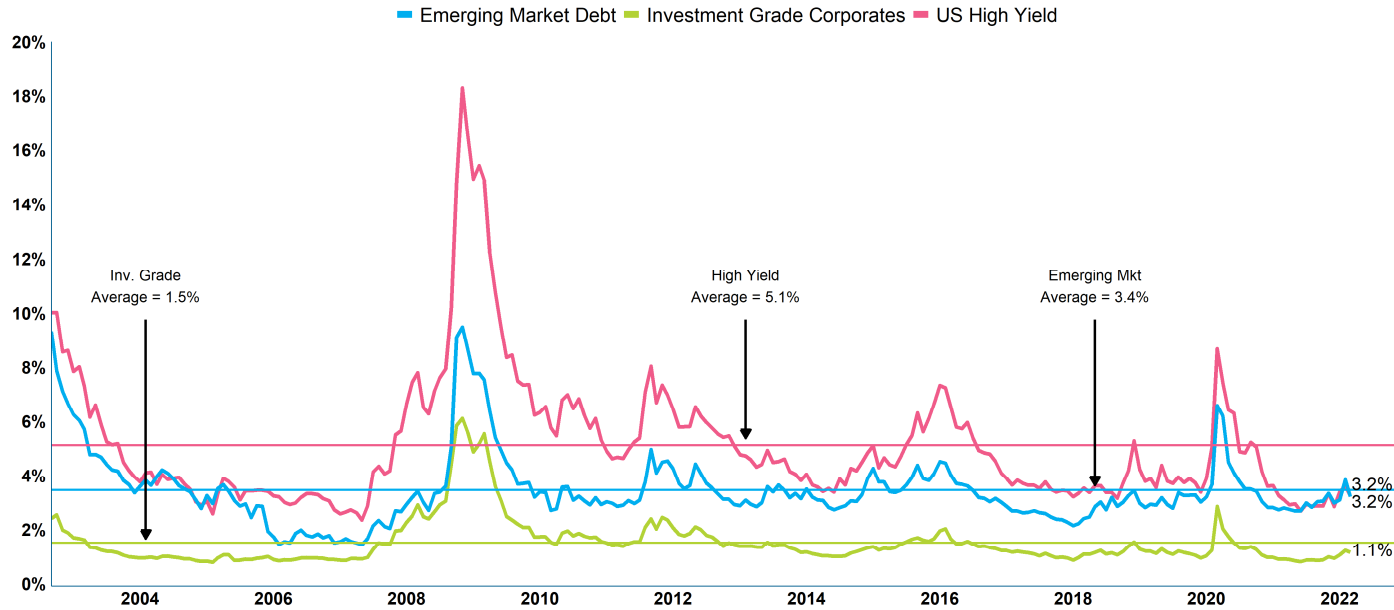
Ten-Year Breakeven Inflation and CPI¹



- Inflation expectations (breakevens) increased during the quarter but are off their peak of close to 3.0%. They remain well above the long-term average.
- Trailing twelve-month CPI continued to rise in March, reaching 8.5%, a level not seen since the early 1980s and far above the long-term average of 2.3%.
- Rising prices for energy and food, and for new and used cars, remained key drivers of higher inflation.

¹ Source: Bloomberg. Data is as of March 31, 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

Credit Spreads vs. US Treasury Bonds¹



- Credit spreads (the spread above a comparable maturity Treasury) increased over the quarter leading to negative returns.
- In the US, high yield spreads increased more than investment grade spreads, but declined less due to the higher relative income. Emerging market spreads finished the quarter at the same level as US high yield.
- The search for yield in a low-rate environment and continued strong corporate fundamentals with low default risk have been key drivers in the decline in credit spreads to below long-term averages in the US. High yield spreads remain well below the long-term average.

¹ Sources: Bloomberg. Data is as of March 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the present month-end respectively.

Global Economic Outlook

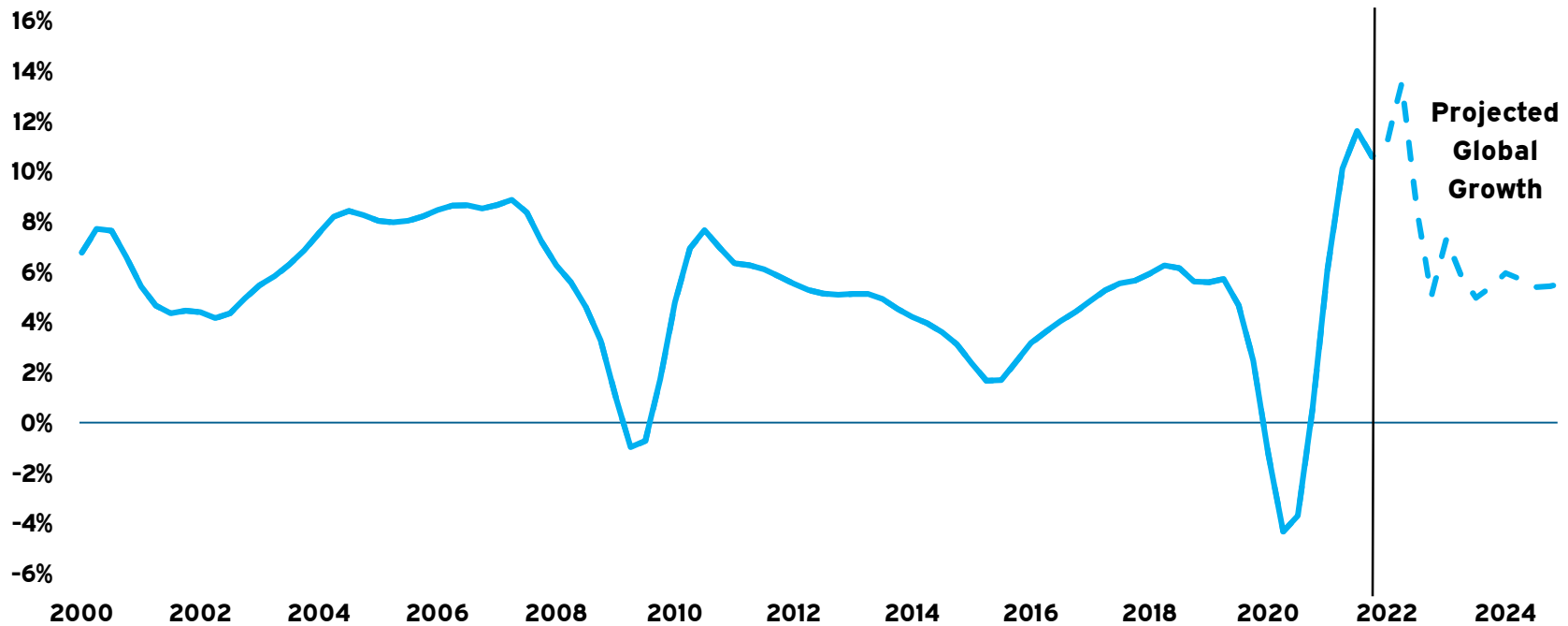
The IMF significantly lowered global growth forecasts in their latest projections, driven by the economic impacts of the war in Ukraine.

- The IMF forecasts final global GDP to come in at 6.1% in 2021 and 3.6% in 2022 (0.8% below the prior 2022 estimate), both still above the past ten-year average of 3.0%.
- In advanced economies, GDP is projected to increase 3.3% in 2022 and 2.4% in 2023. The US has limited economic ties with Russia but saw another downgrade in the 2022 growth forecast (3.7% versus 4.0%) largely due to policy reduction happening faster than previously expected. The euro area economy saw a significant downgrade in expected growth (2.8% versus 3.9%) in 2022 as rising energy prices particularly weigh on the region that is a net importer of energy. The Japanese economy is expected to grow 2.4% this year.
- Growth projections for emerging markets are higher than developed markets, at 3.8% in 2022 and 4.4% in 2023. China’s growth was downgraded (4.4% versus 4.8%) for 2022 given tight COVID-19 restrictions and continued property sector problems.
- The global inflation forecast was significantly increased for 2022 (7.4% versus 3.8%) due to the war in Ukraine.

	Real GDP (%) ¹			Inflation (%) ¹		
	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average
World	3.6	3.6	3.0	7.4	4.8	3.5
Advanced Economies	3.3	2.4	1.6	5.7	2.5	1.5
US	3.7	2.3	2.1	7.7	2.9	1.9
Euro Area	2.8	2.3	0.9	5.3	2.3	1.2
Japan	2.4	2.3	0.5	1.0	0.8	0.5
Emerging Economies	3.8	4.4	4.2	8.7	6.5	5.1
China	4.4	5.1	6.7	2.1	1.8	2.1

¹ Source: IMF World Economic Outlook. Real GDP forecasts from April WEO Update. Inflation forecasts are as of the April 2022 Update. "Actual 10 Year Average" represents data from 2012 to 2021.

Global Nominal Gross Domestic Product (GDP) Growth¹

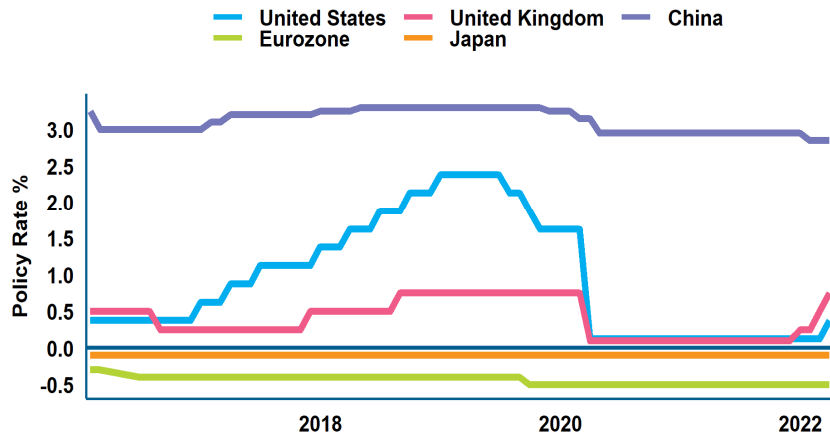


- Global economies are expected to slow in 2022 compared to 2021 but are forecasted to have another year of largely above-trend growth as economies continue to emerge from the pandemic.
- Looking forward, the track of the conflict between Russia and Ukraine, continued supply chain issues, ongoing inflationary pressures, tighter monetary policy, and lingering pandemic problems all remain key.

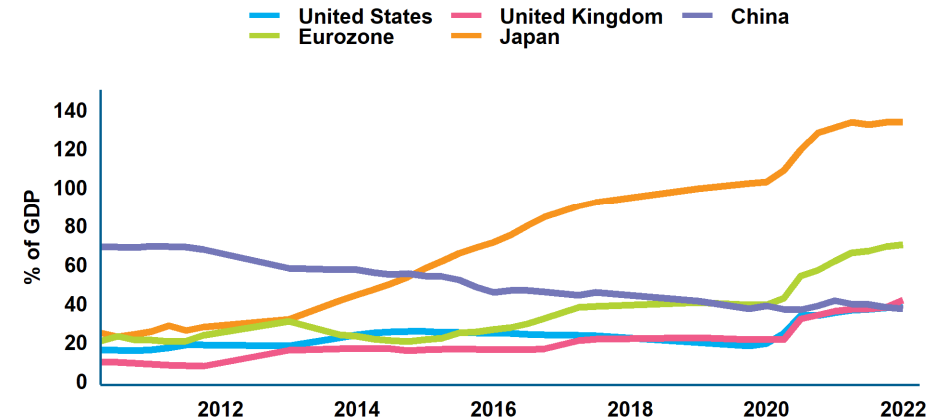
¹ Source: Oxford Economics (World GDP, US\$ prices & PPP exchange rate, nominal, % change YoY). Updated March 2022.

Central Bank Response¹

Policy Rates



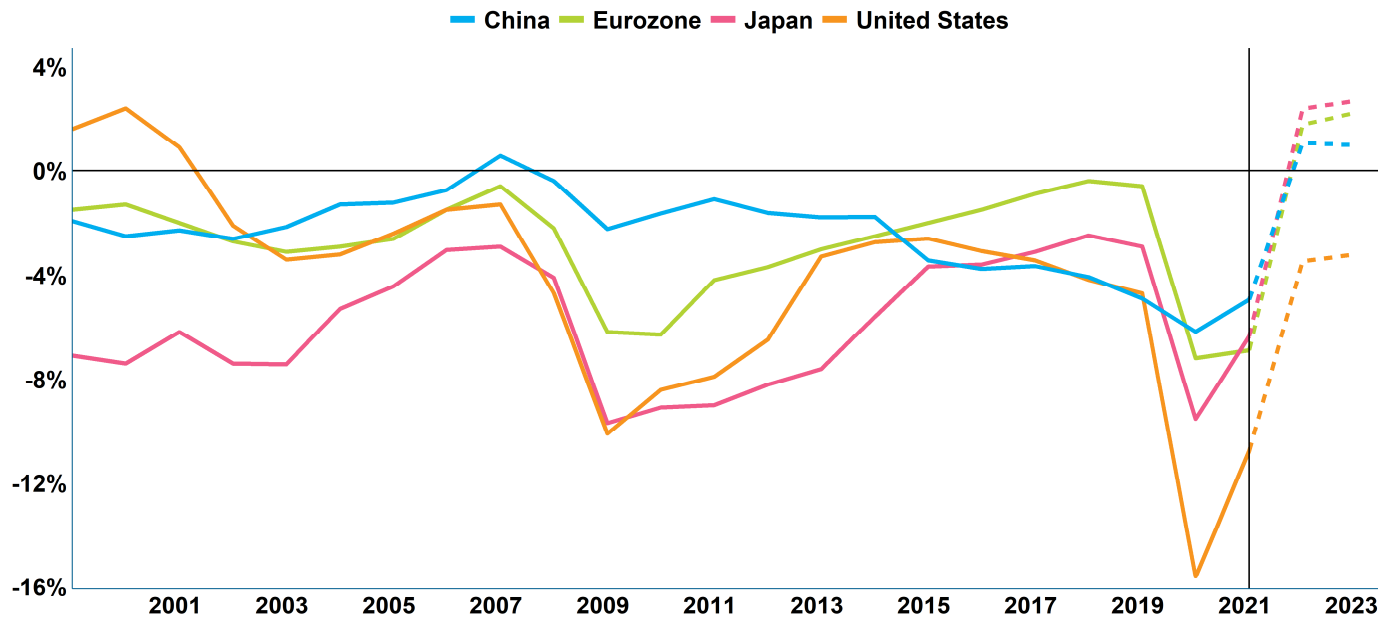
Balance Sheet as % of GDP



- After global central banks took extraordinary action to support the economy during the pandemic including policy rate cuts and emergency stimulus through quantitative easing (QE), many are considering reducing support in the face of high inflation.
- The pace of withdrawing support will likely vary across central banks with the US expected to take a more aggressive approach. The risk remains for a policy error, particularly overtightening, as the war in Ukraine could suppress global growth.
- The one notable outlier is China, where the central bank recently lowered rates and reserve requirements in response to slowing growth.

¹ Source: Bloomberg. Policy rate data is as of March 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of December 31, 2021.

Budget Surplus / Deficit as a Percentage of GDP¹

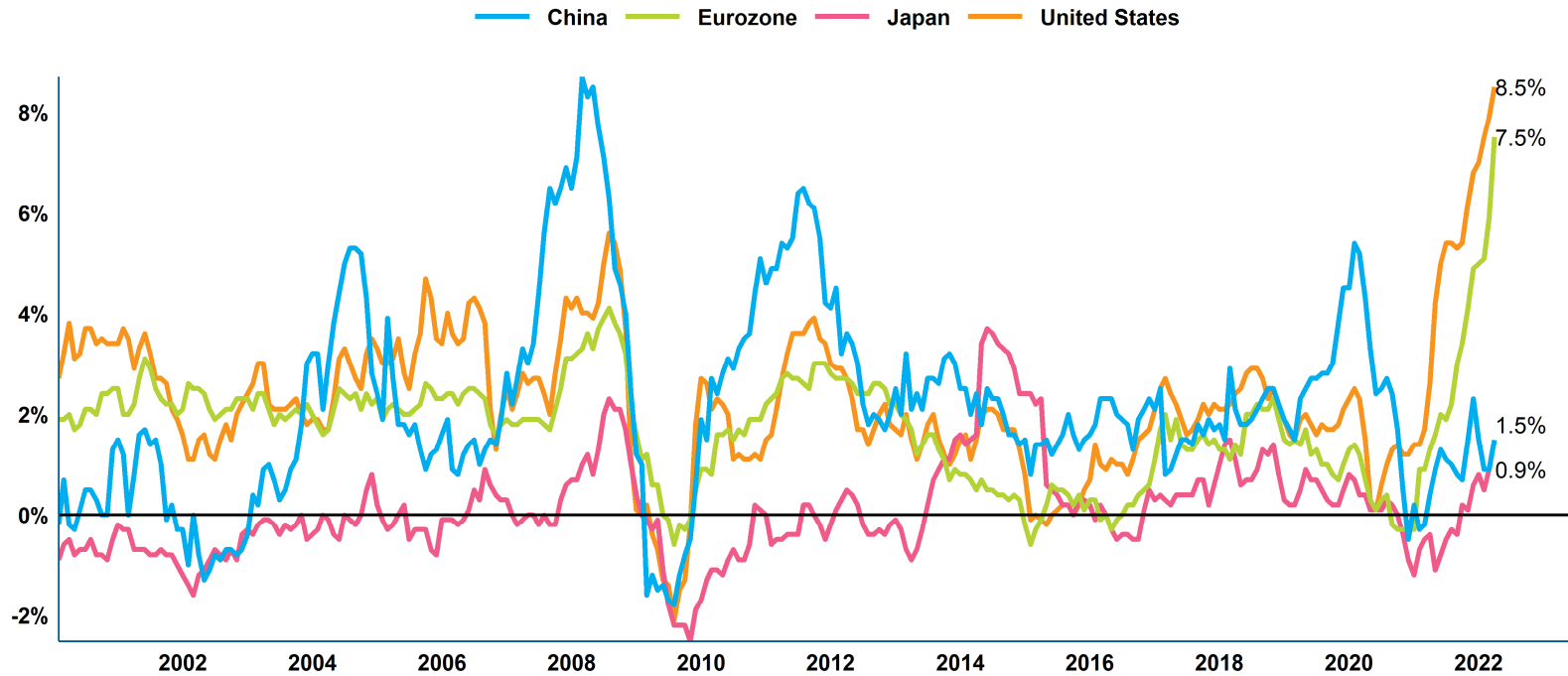


→ Budget deficits as a percentage of GDP drastically increased for major world economies, particularly the US, due to massive fiscal support and the severe economic contraction's effect on tax revenue in 2020 and 2021.

→ As fiscal stimulus programs end, and economic recoveries continue, deficits should improve in the coming years.

¹ Source: Bloomberg. Data is as of March 31, 2022. Projections via IMF Forecasts from April 2022 Report. Dotted lines represent 2022 and 2023 forecasts.

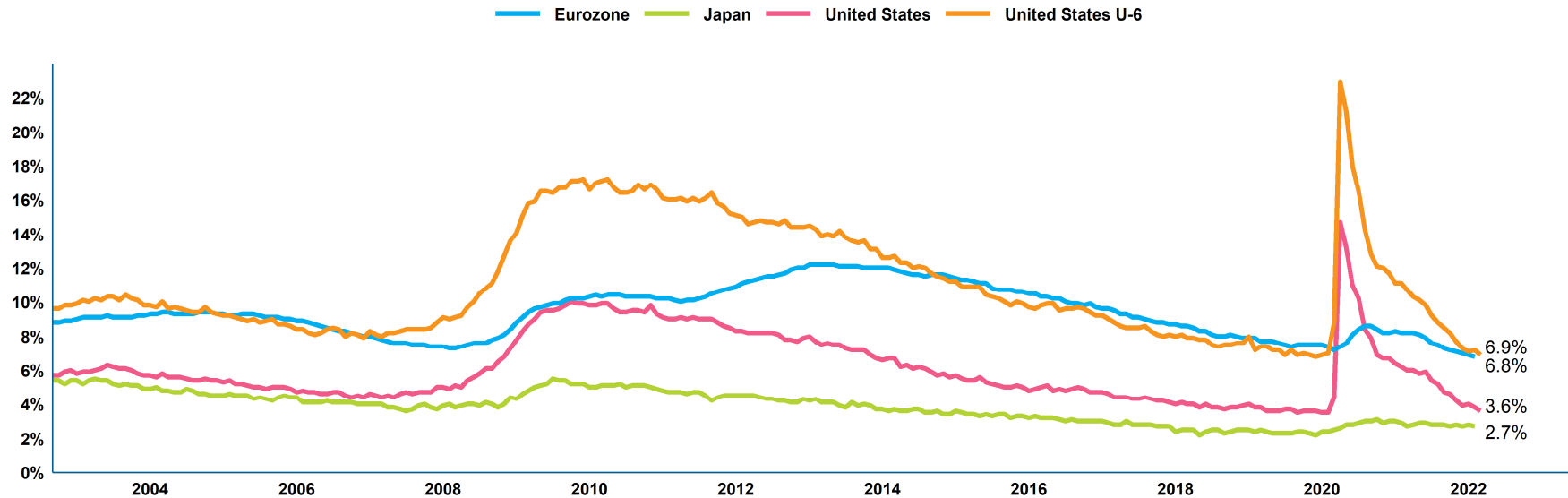
Inflation (CPI Trailing Twelve Months)¹



- Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it continues to reach levels not seen in decades.
- Supply issues related to the pandemic and higher prices in many key commodities driven by the Russia and Ukraine conflict have been key drivers of inflation globally.

¹ Source: Bloomberg. Data is as of March 2022, except for Japan, where the most recent data available is as of February 28, 2022.

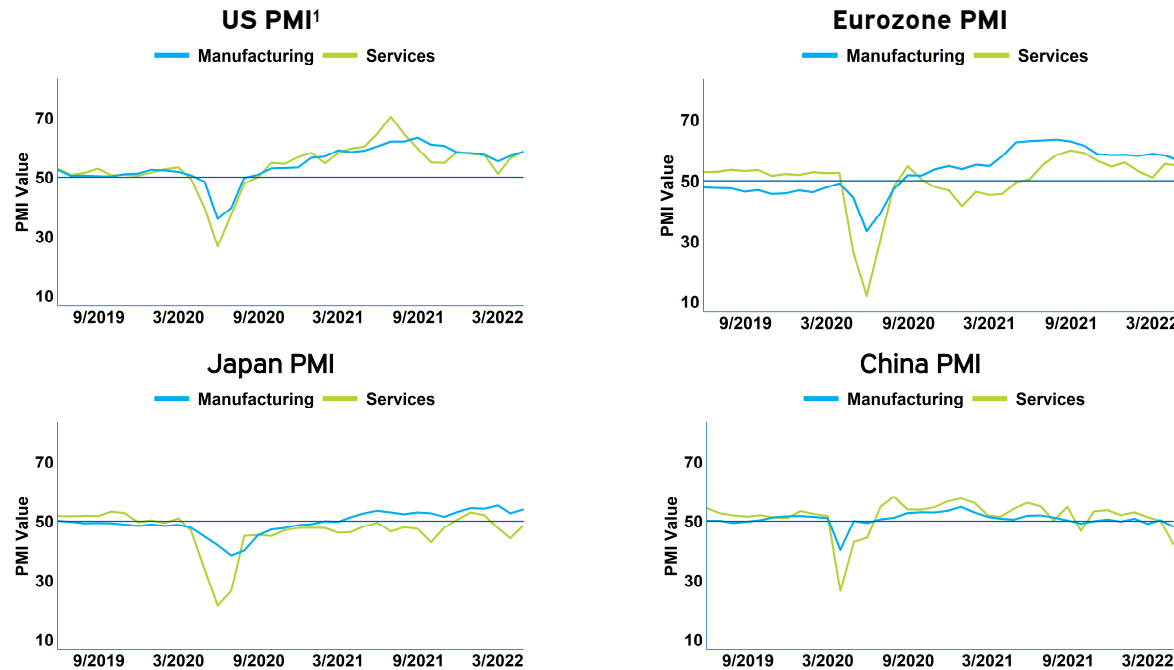
Unemployment¹



- As economies have largely reopened due to vaccines for the virus, improvements have been seen in the labor market.
- US unemployment, which experienced the steepest rise from the pandemic, has declined back to pre-pandemic levels. The broader measure (U-6) that includes discouraged and underemployed workers has declined but is much higher at 6.9%.

¹ Source: Bloomberg. Data is as of March 31, 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of February 28, 2022.

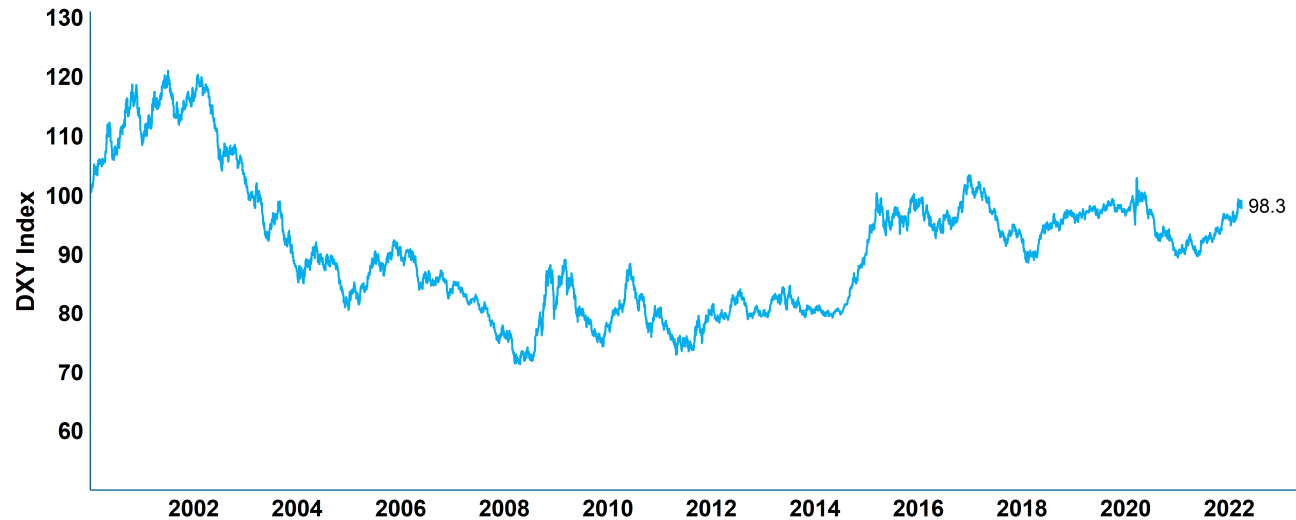
Global PMIs



- After improvements from the lows of the pandemic, Purchasing Managers Indices (PMI), based on surveys of private sector companies, have experienced pressures recently.
- Service sector PMIs have seen some improvements in the US and Europe lately as the effects of the Omicron variant wane, while Japan and China remain in contraction due to a rise in COVID-19 cases.
- In most countries, manufacturing PMIs are in expansion territory as pandemic-related production issues ease and orders increase. China is the one exception, though, with the manufacturing PMI falling below 50 in March due to increased COVID-19 restrictions.

¹ Source: Bloomberg. US Market Services and Manufacturing PMI, Caixin Services and Manufacturing PMI, Eurozone Market Services and Manufacturing PMI, Jibun Bank Services and Manufacturing PMI. Data is as of March 2022. Readings below 50 represent economic contractions.

US Dollar versus Broad Currencies¹



- The US dollar continued its 2021 trend of strengthening against a broad basket of peers in the first quarter of 2022 with further increases after month-end.
- Safe-haven flows and higher rates have been key drivers of the dollar’s continued strength.
- A few commodity-sensitive currencies like the Brazilian real, South African rand, and Mexican peso have recently outpaced the dollar, given persistently high commodity prices.

¹ Source: Bloomberg. Data as of March 28, 2022.

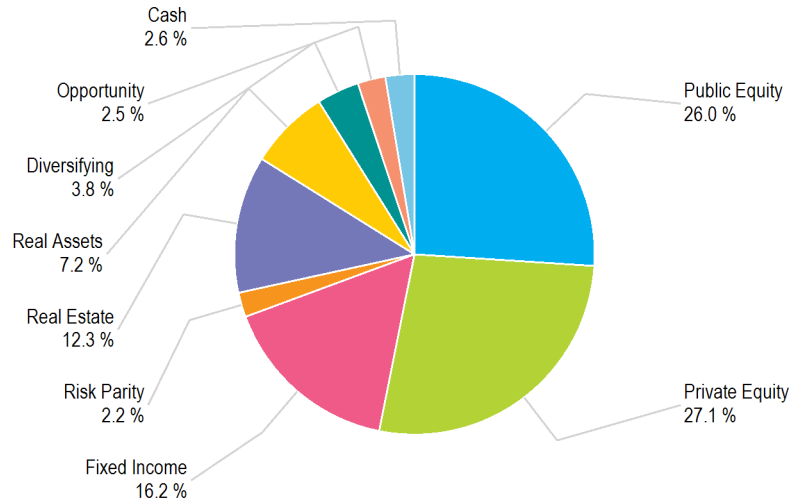
Summary

Key Trends in 2022:

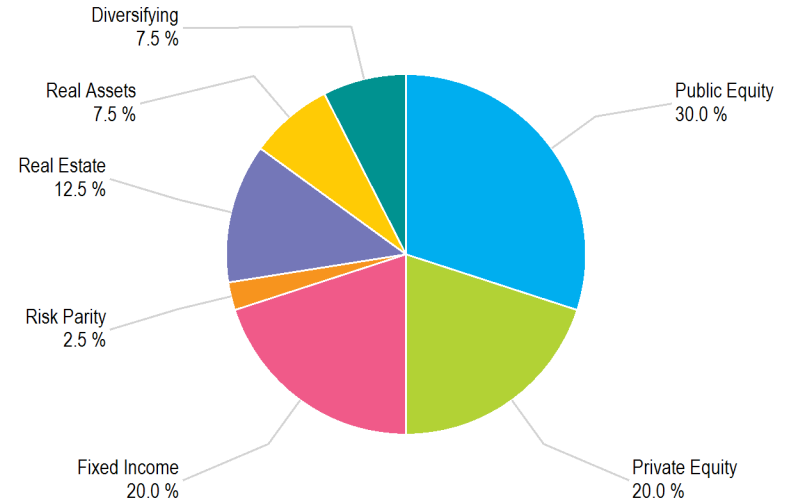
- The war in eastern Europe has created significant uncertainty going forward with a wide range of potential outcomes. Volatility will likely remain high.
- Expect growth to slow globally in 2022 but remain above trend. The track of the pandemic and war will be key.
- Inflationary pressures could linger, particularly if the Russian invasion of Ukraine intensifies or expands.
- The end of many fiscal programs will put the burden of continued growth on consumers. Higher energy and food prices will depress their ability to spend in other areas.
- Monetary policy will likely tighten globally but will remain relatively low. The risk of policy error remains.
- Valuations remain high in the US, but low rates and strong margins should be supportive.
- Outside the US, valuations remain lower in both emerging and developed markets, but risks remain.

Q1 Detailed Performance **Summary**

Actual Asset Allocation



Target Asset Allocation

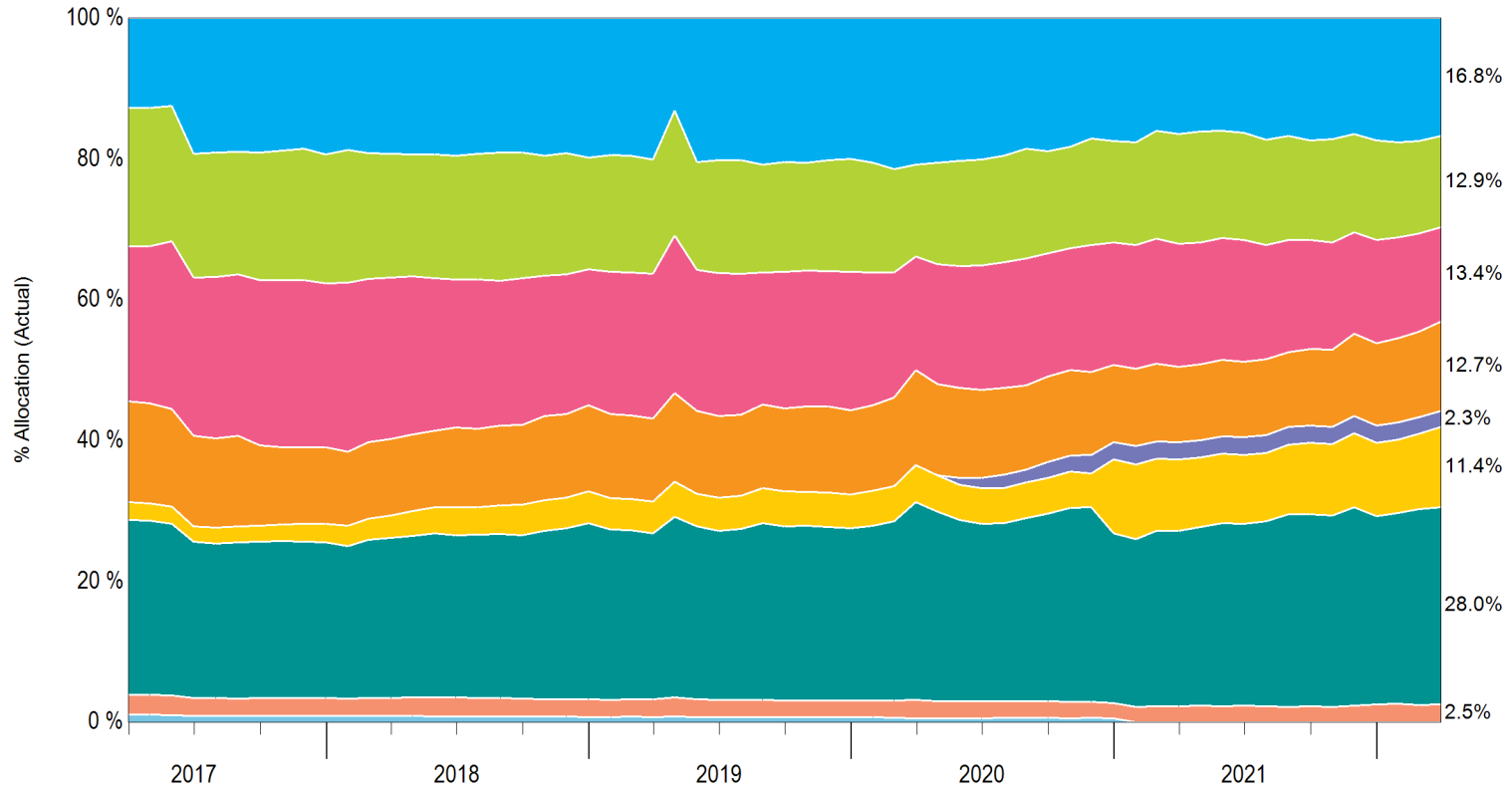


Asset Allocation vs. Target

As Of March 31, 2022

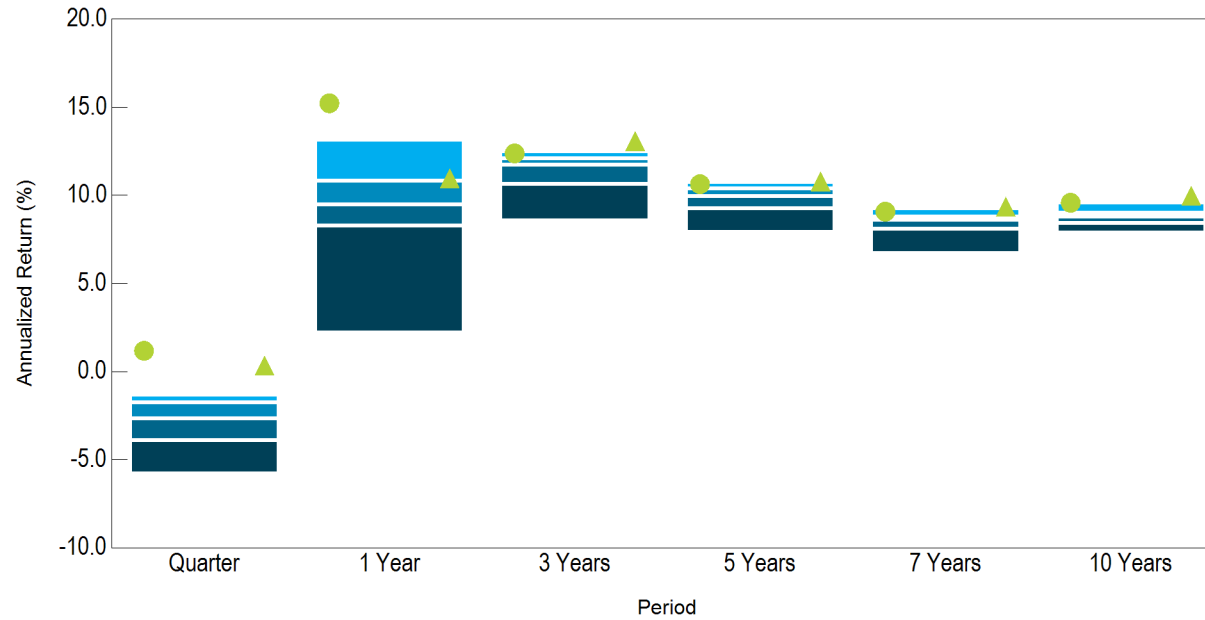
	Current	Current	Policy	Difference	Difference
Public Equity	\$25,136,582,878	26.0%	30.0%	-4.0%	-\$3,891,833,104
Private Equity	\$26,249,112,213	27.1%	20.0%	7.1%	\$6,896,834,891
Fixed Income	\$15,720,964,304	16.2%	20.0%	-3.8%	-\$3,631,313,017
Risk Parity	\$2,175,667,027	2.2%	2.5%	-0.3%	-\$243,367,638
Real Estate	\$11,869,873,525	12.3%	12.5%	-0.2%	-\$225,299,801
Real Assets	\$6,963,730,333	7.2%	7.5%	-0.3%	-\$293,373,663
Diversifying	\$3,718,530,378	3.8%	7.5%	-3.7%	-\$3,538,573,618
Opportunity	\$2,383,173,224	2.5%	0.0%	2.5%	\$2,383,173,224
Cash	\$2,543,752,726	2.6%	0.0%	2.6%	\$2,543,752,726
Total	\$96,761,386,610	100.0%	100.0%		

Asset Allocation History 5 Years Ending March 31, 2022



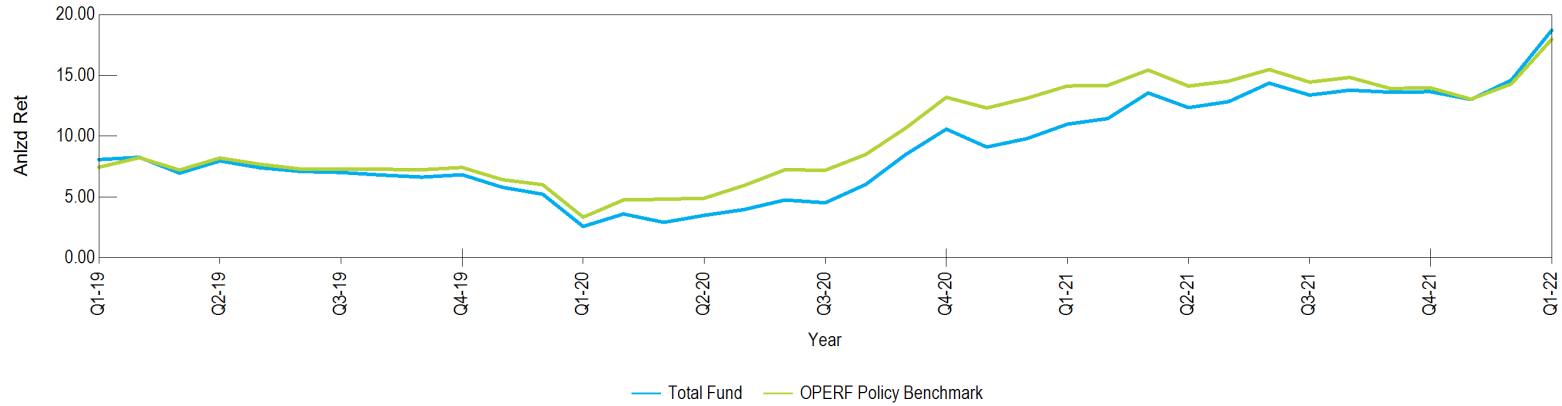
- Total Fixed Income
- Total Real Estate
- Alternative Portfolio
- Opportunity Portfolio
- U.S. Equity Portfolio
- Risk Parity
- Total Private Equity
- Cash
- Non-U.S. Equity Portfolio

InvMetrics All DB > \$10B Net Return Comparison Ending March 31, 2022

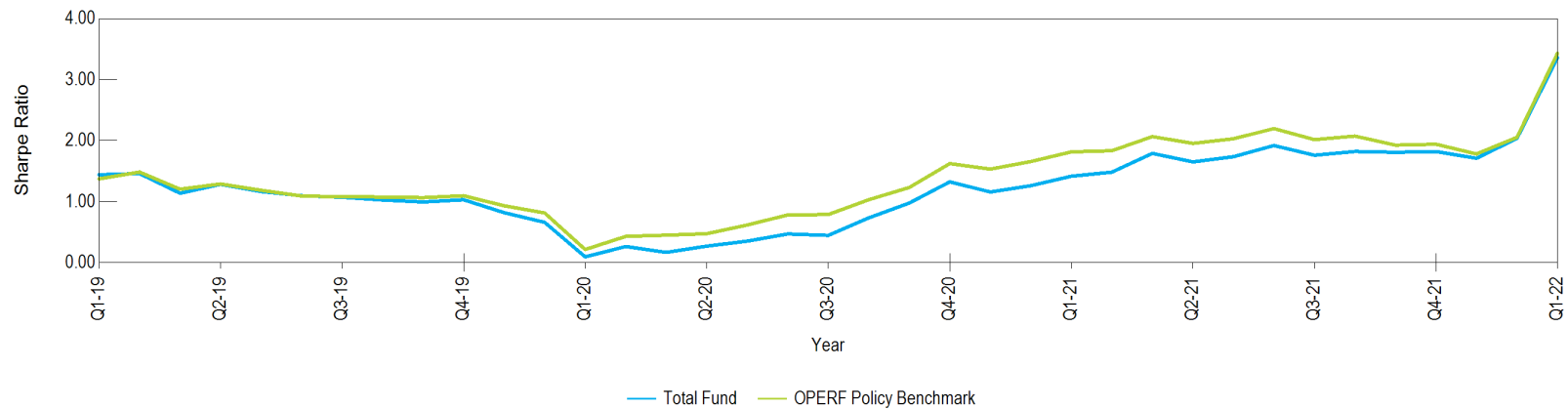


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-1.3		13.2		12.5		10.7		9.2		9.6	
25th Percentile	-1.7		10.8		12.1		10.4		8.8		9.0	
Median	-2.6		9.5		11.8		10.0		8.6		8.8	
75th Percentile	-3.9		8.3		10.7		9.3		8.1		8.5	
95th Percentile	-5.8		2.2		8.6		8.0		6.8		7.9	
# of Portfolios	20		20		20		20		19		19	
Total Fund	1.2	(1)	15.2	(1)	12.4	(7)	10.6	(10)	9.1	(8)	9.6	(6)
OPERF Policy Benchmark	0.3	(1)	11.0	(25)	13.1	(3)	10.8	(5)	9.3	(5)	10.0	(3)

Rolling 3 Year Annualized Return (%)
Total Fund vs. OPERF Policy Benchmark



Rolling 3 Year Sharpe Ratio
Total Fund vs. OPERF Policy Benchmark



Trailing Net Performance							
	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Total Fund	96,761,386,610	100.0	1.2	15.2	12.4	10.6	9.6
<i>OPERF Policy Benchmark</i>			0.3	11.0	13.1	10.8	10.0
<i>60% MSCI ACWI / 40% Bloomberg Aggregate</i>			-5.6	2.7	9.2	8.0	7.1
<i>70% MSCI ACWI/30% Barclays Agg</i>			-5.5	3.8	10.3	9.0	7.8
<i>InvMetrics All DB > \$10B Net Median</i>			-2.6	9.5	11.8	10.0	8.8
<i>InvMetrics All DB > \$10B Net Rank</i>			1	1	7	10	6
Total Fixed Income	15,720,964,304	16.2	-5.2	-3.3	2.2	2.5	2.9
<i>Oregon Custom FI Benchmark</i>			-5.9	-4.0	1.7	2.2	2.4
<i>Bloomberg US Aggregate TR</i>			-5.9	-4.2	1.7	2.1	2.2
<i>Fixed Income Weighted BM</i>			-5.3	-3.3	1.8	2.2	2.4
Core Fixed Income	4,011,581,128	4.1	-6.7	-4.5	2.1	2.6	3.0
<i>Oregon Custom External FI BM</i>			-5.9	-4.2	1.7	2.1	2.4
Alliance Bernstein	19,238	0.0	2.0	11.4	6.9	5.3	4.3
<i>Oregon Custom External FI BM</i>			-5.9	-4.2	1.7	2.1	2.4
Blackrock	1,312,066,469	1.4	-5.9	-4.1	2.2	2.5	2.8
<i>Oregon Custom External FI BM</i>			-5.9	-4.2	1.7	2.1	2.4
Wellington	1,340,485,516	1.4	-6.8	-4.6	2.4	2.8	3.2
<i>Oregon Custom External FI BM</i>			-5.9	-4.2	1.7	2.1	2.4
Western Asset	1,359,009,904	1.4	-7.3	-4.4	2.5	2.9	3.3
<i>Oregon Custom External FI BM</i>			-5.9	-4.2	1.7	2.1	2.4
U.S. Government	7,017,100,822	7.3	-5.4	-3.6	1.5	1.8	--
<i>Government Blended Index</i>			-5.6	-3.6	1.4	1.8	1.1
Government Portfolio	7,017,100,822	7.3	-5.4	-3.6	1.5	--	--
<i>Government Blended Index</i>			-5.6	-3.6	1.4	1.8	1.1

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Non-Core Fixed Income	1,540,383,764	1.6	-1.0	2.5	5.0	4.3	5.2
<i>Custom Non-Core Fixed Income Index</i>			-1.2	2.4	4.3	4.2	4.7
KKR Asset Management	40,453,287	0.0	-18.8	-14.5	0.2	0.9	3.6
<i>KKR Custom Leveraged Loans & Bond Index</i>			-1.7	2.0	4.3	4.2	4.8
Oak Hill	1,499,930,477	1.6	-0.4	2.9	5.4	5.0	5.5
<i>Oakhill Custom Lev Loan & Bond Index</i>			-0.8	2.7	4.3	4.1	4.5
Global Sovereign	1,126,228,501	1.2	-3.4	-3.4	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>			-3.9	-3.6	0.8	2.2	3.1
MSIM Global Sovereign	562,459,340	0.6	-3.3	-3.2	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>			-3.9	-3.6	0.8	2.2	3.1
PIMCO Global Sovereign	563,769,160	0.6	-3.5	-3.5	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>			-3.9	-3.6	0.8	2.2	3.1
Emerging Markets Debt	350,336,126	0.4	-9.4	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>			-10.0	-7.4	0.0	1.7	3.7
Ashmore EMD	113,747,525	0.1	-9.8	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>			-10.0	-7.4	0.0	1.7	3.7
Global Evolution EMD	119,423,916	0.1	-8.3	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>			-10.0	-7.4	0.0	1.7	3.7
PGIM EMD	117,164,685	0.1	-10.2	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>			-10.0	-7.4	0.0	1.7	3.7

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Structured Credit Products	1,675,336,899	1.7	-4.2	--	--	--	--
<i>Oregon Structured Credit Products FI BM</i>			-4.3	--	--	--	--
Schroders SCP	561,672,777	0.6	-3.3	--	--	--	--
<i>ICE BofA AA-BBB US Asset Backed Sec Idx</i>			-4.0	-3.2	1.7	2.5	3.1
Putnam SCP	540,883,831	0.6	-7.0	--	--	--	--
<i>Bloomberg US MBS TR USD</i>			-5.0	-4.9	0.6	1.4	1.7
Guggenheim SCP	572,780,291	0.6	-1.8	--	--	--	--
<i>ICE BofA AA-BBB US Asset Backed Sec Idx</i>			-4.0	-3.2	1.7	2.5	3.1
Total Public Equity	25,099,802,672	25.9	-4.6	6.2	13.1	11.1	10.2
<i>MSCI ACWI IMI Net (Daily)</i>			-5.5	6.3	13.5	11.4	10.0
U.S. Equity	12,112,345,806	12.5	-4.8	9.6	16.2	13.4	13.1
<i>Russell 3000 TR</i>			-5.3	11.9	18.2	15.4	14.3
Small Cap Growth	266,796,304	0.3	-10.8	-5.8	19.6	18.1	13.4
<i>Russell 2000 Growth TR</i>			-12.6	-14.3	9.9	10.3	11.2
EAM MicroCap Growth	266,796,304	0.3	-10.8	-5.8	19.6	18.1	14.5
<i>Russell Microcap Growth Index (Daily)</i>			-13.7	-25.5	9.1	8.0	9.3
Small Cap Value	741,879,434	0.8	-0.3	8.6	14.0	8.9	10.6
<i>Russell 2000 Value TR</i>			-2.4	3.3	12.7	8.6	10.5
AQR Capital Management	194,625,447	0.2	1.6	16.3	13.2	6.3	9.0
<i>Russell 2000 Value TR</i>			-2.4	3.3	12.7	8.6	10.5
Mellon Asset Management	247,639,501	0.3	-0.3	5.6	13.6	10.3	11.5
<i>Russell 2000 Value TR</i>			-2.4	3.3	12.7	8.6	10.5

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
DFA MicroCap Value	152,290,799	0.2	0.2	9.4	15.4	9.4	--
<i>Russell Microcap Value (Daily)</i>			-3.5	0.6	15.0	10.7	12.1
Callan US Microcap Value	147,323,687	0.2	-3.0	2.9	14.0	10.0	--
<i>Russell Microcap Value (Daily)</i>			-3.5	0.6	15.0	10.7	12.1
Market Oriented (CORE)	11,103,633,719	11.5	-5.0	10.2	16.7	14.1	13.4
<i>Russell 1000 TR</i>			-5.1	13.3	18.7	15.8	14.5
DFA Large Cap Core	2,774,929,605	2.9	-3.4	11.7	16.7	13.5	--
<i>Russell 1000 TR</i>			-5.1	13.3	18.7	15.8	14.5
Russell 2000 Synthetic - OST managed	387,282,317	0.4	-5.7	1.1	14.0	10.4	11.9
<i>S&P 600 Custom</i>			-5.6	1.2	13.6	10.2	11.3
S&P 500 - OST managed	3,095,345,008	3.2	-4.6	15.7	19.0	16.0	14.7
<i>S&P 500 Index (Daily)</i>			-4.6	15.7	18.9	16.0	14.6
S&P 400 - OST managed	750,876,099	0.8	-4.9	4.5	14.1	11.2	12.4
<i>S&P 400 Midcap Index (Daily)</i>			-4.9	4.6	14.1	11.1	12.2
OST Risk Premia Strategy	4,095,200,689	4.2	-6.2	7.5	16.0	14.8	--
<i>Risk Premia Custom Index</i>			-6.2	7.4	16.0	14.8	--
Non-U.S. Equity	8,221,508,097	8.5	-5.5	1.1	10.2	8.7	7.4
<i>Oregon MSCI ACWI Ex US IMI (Net)</i>			-5.6	-1.3	7.9	6.9	5.8
Total International Overlay Accounts	36,474,420	0.0					
PERS-Adrian Lee Active Currency	13,868,678	0.0					
PERS-P/E Global Active Currency	-2,090,365	0.0					
PERS-Aspect Cap Active Currency	24,667,736	0.0					

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
International Market Oriented (Core)	4,796,464,354	5.0	-5.4	1.7	9.8	9.0	7.8
<i>MSCI World ex USA IMI Net Return</i>			-5.2	2.3	8.7	7.2	6.5
Arrowstreet Capital	1,416,525,637	1.5	-1.8	13.0	13.6	13.0	11.1
<i>Oregon MSCI ACWI Ex US IMI (Net)</i>			-5.6	-1.3	7.9	6.9	5.8
Lazard Asset Management	523,697,300	0.5	-5.5	-1.7	6.1	5.8	5.8
<i>Oregon MSCI ACWI Ex US (Net)</i>			-5.4	-1.5	7.5	6.8	5.6
Lazard International CEF	1,002,680,058	1.0	-15.6	-14.5	9.4	9.3	--
<i>Oregon MSCI ACWI Ex US (Net)</i>			-5.4	-1.5	7.5	6.8	5.6
AQR Capital Management	371,827,887	0.4	-4.9	-5.2	4.3	3.7	5.7
<i>Oregon MSCI WORLD Ex US (Net)</i>			-4.8	3.1	8.6	7.1	6.3
OST Int'l Risk Premia	1,481,733,472	1.5	-0.8	9.2	10.6	--	--
<i>MSCI World x US Custom Div Multiple-Factor</i>			-0.9	8.8	10.1	8.4	--
<i>MSCI World ex USA Net Index</i>			-4.8	3.0	8.5	7.1	6.3
International Value	1,070,055,368	1.1	-2.2	5.8	9.7	8.0	7.4
<i>Oregon MSCI ACWI Ex US Value IMI (Net)</i>			-0.3	3.3	5.9	4.9	4.6
Acadian Asset Management	571,648,733	0.6	-2.0	9.3	13.1	10.8	8.9
<i>Oregon MSCI ACWI Ex US Value IMI (Net)</i>			-0.3	3.3	5.9	4.9	4.6
Brandes Investment Partners	498,406,634	0.5	-2.3	2.2	6.2	5.1	5.8
<i>Oregon MSCI ACWI Ex US Value (Net)</i>			0.1	3.3	5.5	4.7	4.2
International Growth	637,411,341	0.7	-11.4	0.0	11.2	11.1	8.5
<i>Oregon MSCI WORLD Ex US (Net)</i>			-4.8	3.1	8.6	7.1	6.3
Walter Scott Management	637,411,341	0.7	-11.4	0.0	11.2	11.1	8.8
<i>Oregon MSCI WORLD Ex US (Net)</i>			-4.8	3.1	8.6	7.1	6.3

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
International Small Cap	666,281,960	0.7	-5.6	2.4	11.2	6.5	7.4
<i>MSCI World Ex US Small Cap Value (Net)</i>			-2.9	2.1	8.3	6.3	7.0
DFA International Small Cap	175,198,578	0.2	-1.4	5.9	9.1	5.1	7.1
<i>MSCI World Ex US Small Cap Value (Net)</i>			-2.9	2.1	8.3	6.3	7.0
Harris Associates	201,296,657	0.2	-10.3	-3.9	9.9	5.9	6.6
<i>MSCI ACWI ex USA Small Cap Value (Net)</i>			-2.6	3.3	8.7	6.5	6.7
EAM International Micro Cap	164,001,328	0.2	-6.9	5.3	18.9	9.5	--
<i>Oregon FTSE Global Ex US Micro Cap</i>			-3.5	5.7	16.0	10.3	--
DFA International Micro Cap	125,785,398	0.1	-1.8	5.4	10.0	5.8	--
<i>Oregon FTSE Global Ex US Micro Cap</i>			-3.5	5.7	16.0	10.3	--
Emerging Markets	1,051,295,074	1.1	-5.5	-5.4	10.5	8.3	5.4
<i>ORE MSCI Emerging Markets IMI (Net)</i>			-6.6	-9.5	5.7	6.2	3.6
Genesis Emerging Markets	210,239,188	0.2	-10.9	-17.4	2.9	5.3	3.7
<i>ORE MSCI Emerging Markets IMI (Net)</i>			-6.6	-9.5	5.7	6.2	3.6
Arrowstreet Emerging Markets	438,690,855	0.5	-3.3	-2.6	16.1	10.6	6.7
<i>ORE MSCI Emerging Markets IMI (Net)</i>			-6.6	-9.5	5.7	6.2	3.6
Westwood Global Investment	160,362,161	0.2	6.0	5.9	8.9	6.7	5.2
<i>MSCI Emerging Markets IMI Net</i>			-6.6	-9.5	5.7	6.3	3.5
William Blair and Company	145,704,176	0.2	-12.3	-9.2	14.2	11.7	6.6
<i>MSCI Emerging Markets Growth Net</i>			-10.3	-18.3	6.4	6.3	3.5
William Blair Emerging Mkt Small Cap	96,189,072	0.1	-10.0	2.9	16.7	10.2	--
<i>MSCI Emerging Markets Small Cap Gr Net</i>			-6.9	4.2	13.7	8.4	5.6
OST EM Risk Premia ESG	109,622	0.0					

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Global Equity	4,750,447,991	4.9	-2.6	7.0	10.1	9.2	9.8
<i>MSCI ACWI IMI Net (Daily)</i>			-5.5	6.3	13.5	11.4	10.0
Alliance Bernstein Global Value	438,130,402	0.5	-5.2	1.3	8.5	5.4	7.8
<i>Oregon MSCI ACWI Value (Net)</i>			-1.0	8.8	9.0	7.5	7.6
Global Equity Low Volatility	4,312,317,588	4.5	-2.3	7.6	10.3	9.9	--
<i>MSCI AC World (Daily Const)</i>			-5.4	7.3	13.8	11.6	10.0
<i>MSCI ACWI Minimum Volatility Index (Net)</i>			-3.0	8.6	7.7	8.6	9.1
LACM Global Equity Low Volatility	1,039,407,855	1.1	-3.2	8.3	12.4	11.2	--
<i>MSCI AC World (Daily Const)</i>			-5.4	7.3	13.8	11.6	10.0
<i>MSCI ACWI Minimum Volatility Index (Net)</i>			-3.0	8.6	7.7	8.6	9.1
Arrowstreet Global Low Volatility	1,013,482,126	1.0	-0.1	5.0	12.7	--	--
<i>MSCI ACWI IMI Net (Daily)</i>			-5.5	6.3	13.5	11.4	10.0
AQR Global Low Volatility	763,717,747	0.8	-4.5	5.0	7.5	7.9	--
<i>MSCI AC World (Daily Const)</i>			-5.4	7.3	13.8	11.6	10.0
<i>MSCI ACWI Minimum Volatility Index (Net)</i>			-3.0	8.6	7.7	8.6	9.1
Acadian Global Low Volatility	789,844,271	0.8	-1.6	10.8	8.0	7.5	--
<i>MSCI ACWI IMI Net (Daily)</i>			-5.5	6.3	13.5	11.4	10.0
DFA Global Low Volatility	705,865,589	0.7	-2.4	9.8	10.6	--	--
<i>MSCI AC World (Daily Const)</i>			-5.4	7.3	13.8	11.6	10.0
Other Equity	15,806,566	0.0					
Transitional & Closed Accounts	334,159	0.0					
PERS- Equity Distribution	15,472,407	0.0					

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Total Real Estate	11,869,873,525	12.3	8.7	27.5	11.8	10.1	11.0
<i>NCREIF ODCE (Custom) (Adj.)</i>			7.7	21.0	8.2	7.7	9.3
Real Estate excluding REITS	11,440,803,205	11.8	9.2	27.9	12.3	10.4	11.7
<i>NCREIF ODCE (Custom) (Adj.)</i>			7.7	21.0	8.2	7.7	9.3
Total REITS	429,070,320	0.4	-4.4	17.9	5.2	6.8	7.3
ABKB - LaSalle Advisors	316,504,002	0.3	-4.0	24.2	14.4	13.7	11.7
<i>Nareit Equity Share Price Index</i>			-5.3	23.6	11.7	10.7	10.5
Woodbourne Investment Management	112,566,318	0.1	-5.4	2.9	4.7	4.6	6.5
<i>Nareit Equity Share Price Index</i>			-5.3	23.6	11.7	10.7	10.5
Risk Parity	2,175,667,027	2.2	-4.4	9.3	--	--	--
<i>S&P Risk Parity - 12% Target Volatility</i>			-0.8	15.6	14.6	11.7	9.5
Man AHL Target Risk	720,623,027	0.7	-5.8	10.2	--	--	--
<i>S&P Risk Parity - 12% Target Volatility</i>			-0.8	15.6	14.6	11.7	9.5
PanAgora Risk Parity	702,467,000	0.7	-7.1	3.5	--	--	--
<i>S&P Risk Parity - 12% Target Volatility</i>			-0.8	15.6	14.6	11.7	9.5
Bridgewater All Weather	752,577,000	0.8	-0.4	14.4	--	--	--
<i>S&P Risk Parity - 12% Target Volatility</i>			-0.8	15.6	14.6	11.7	9.5
Opportunity Portfolio	2,383,173,224	2.5	1.8	16.5	13.1	10.3	9.9
<i>CPI + 5%</i>			4.4	13.9	9.4	8.5	7.4
Alternative Portfolio	10,682,260,711	11.0	5.6	15.0	3.9	2.8	2.8
<i>CPI +4%</i>			4.1	12.9	8.3	7.5	6.4
Diversifying Strategies	3,718,530,378	3.8	6.8	9.7	0.0	-1.0	2.5

Total Fund | As of March 31, 2022

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Real Assets	6,963,730,333	7.2	5.1	18.6	7.7	7.0	--
<i>CPI +4%</i>			4.1	12.9	8.3	7.5	6.4
Infrastructure	4,810,720,966	5.0	5.5	16.7	12.8	--	--
<i>CPI +4%</i>			4.1	12.9	8.3	7.5	6.4
Natural Resources	2,153,009,367	2.2	3.8	22.2	1.4	--	--
<i>CPI +4%</i>			4.1	12.9	8.3	7.5	6.4
Private Equity	26,249,112,213	27.1	7.4	37.2	24.4	21.1	16.2
<i>Russell 3000 + 300 BPS QTR LAG (Adj.)</i>			10.1	29.4	29.5	21.5	19.8
<i>MSCI ACWI+3% (1 quarter lagged)</i>			7.5	22.0	23.9	17.8	15.2
Cash	2,001,598,482	2.1	-0.6	-0.6	1.1	1.5	1.1
<i>ICE BofA US 3-Month Treasury Bill</i>			0.0	0.1	0.8	1.1	0.6
PERS-Russell Overlay Cash Balance	542,154,244	0.6					

Calendar Year Performance										
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Total Fund	20.0	7.7	13.6	0.5	15.4	7.1	2.0	7.3	15.6	14.3
<i>OPERF Policy Benchmark</i>	15.6	12.4	14.0	1.2	15.6	9.0	1.6	8.2	15.6	16.6
<i>InvMetrics All DB > \$10B Net Median</i>	16.7	10.7	17.9	-2.6	15.4	8.2	0.3	6.6	14.0	12.8
<i>InvMetrics All DB > \$10B Net Rank</i>	14	94	92	8	51	82	3	34	29	2
Total Fixed Income	-0.9	7.7	8.8	0.3	3.7	2.8	0.6	3.5	1.0	10.4
<i>Oregon Custom FI Benchmark</i>	-0.9	7.3	8.3	0.3	3.3	2.5	0.1	3.0	0.3	8.6
Core Fixed Income	-1.1	8.7	9.8	-0.2	4.6	3.4	0.6	6.9	-1.4	9.1
<i>Oregon Custom External FI BM</i>	-1.5	7.5	8.7	0.0	3.5	2.7	0.6	6.0	-1.9	6.8
Alliance Bernstein	6.3	6.8	8.8	0.2	3.7	3.3	0.4	7.3	-1.8	7.6
<i>Oregon Custom External FI BM</i>	-1.5	7.5	8.7	0.0	3.5	2.7	0.6	6.0	-1.9	6.8
Blackrock	-1.4	9.1	8.9	0.1	3.8	2.8	0.9	6.7	-1.7	7.9
<i>Oregon Custom External FI BM</i>	-1.5	7.5	8.7	0.0	3.5	2.7	0.6	6.0	-1.9	6.8
Wellington	-0.9	9.6	9.8	-0.4	4.6	4.0	0.8	6.5	-1.2	10.0
<i>Oregon Custom External FI BM</i>	-1.5	7.5	8.7	0.0	3.5	2.7	0.6	6.0	-1.9	6.8
Western Asset	-1.2	9.4	11.6	-0.7	5.6	3.7	0.4	7.0	-1.0	11.0
<i>Oregon Custom External FI BM</i>	-1.5	7.5	8.7	0.0	3.5	2.7	0.6	6.0	-1.9	6.8
U.S. Government	-2.3	8.1	6.9	0.9	2.3	-1.6	0.9	1.0	--	--
<i>Government Blended Index</i>	-2.3	8.0	6.9	0.9	2.3	-1.3	0.8	0.8	--	--
Government Portfolio	-2.3	8.1	6.9	0.9	--	--	--	--	--	--
<i>Government Blended Index</i>	-2.3	8.0	6.9	0.9	--	--	--	--	--	--

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Non-Core Fixed Income	6.4	3.7	10.5	0.1	4.9	10.1	0.2	2.4	8.1	13.2
<i>Custom Non-Core Fixed Income Index</i>	5.3	3.9	10.1	-0.2	5.0	12.0	-1.7	1.8	5.8	11.1
KKR Asset Management	13.8	2.6	10.5	-0.4	3.4	9.3	-0.2	2.5	9.0	13.8
<i>KKR Custom Leveraged Loans & Bond Index</i>	5.2	4.3	10.6	-0.5	5.3	12.7	-2.1	1.9	6.0	11.7
Oak Hill	5.7	4.9	10.5	0.5	6.3	11.2	0.9	2.2	6.5	12.0
<i>Oakhill Custom Lev Loan & Bond Index</i>	5.2	3.6	9.5	0.0	4.6	11.2	-1.3	1.7	5.6	10.5
Global Sovereign	--	--	--	--	--	--	--	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>	--	--	--	--	--	--	--	--	--	--
MSIM Global Sovereign	--	--	--	--	--	--	--	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>	--	--	--	--	--	--	--	--	--	--
PIMCO Global Sovereign	--	--	--	--	--	--	--	--	--	--
<i>BbgBarc Global Treasury Ex-U.S.</i>	--	--	--	--	--	--	--	--	--	--
Emerging Markets Debt	--	--	--	--	--	--	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>	--	--	--	--	--	--	--	--	--	--
Ashmore EMD	--	--	--	--	--	--	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>	--	--	--	--	--	--	--	--	--	--
Global Evolution EMD	--	--	--	--	--	--	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>	--	--	--	--	--	--	--	--	--	--
PGIM EMD	--	--	--	--	--	--	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>	--	--	--	--	--	--	--	--	--	--

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Structured Credit Products	--	--	--	--	--	--	--	--	--	--
<i>Oregon Structured Credit Products FI BM</i>	--	--	--	--	--	--	--	--	--	--
Schroders SCP	--	--	--	--	--	--	--	--	--	--
<i>ICE BofA AA-BBB US Asset Backed Sec Idx</i>	--	--	--	--	--	--	--	--	--	--
Putnam SCP	--	--	--	--	--	--	--	--	--	--
<i>Bloomberg US MBS TR USD</i>	--	--	--	--	--	--	--	--	--	--
Guggenheim SCP	--	--	--	--	--	--	--	--	--	--
<i>ICE BofA AA-BBB US Asset Backed Sec Idx</i>	--	--	--	--	--	--	--	--	--	--
Total Public Equity	20.0	12.7	25.3	-10.5	24.5	9.8	-1.7	3.3	26.7	17.5
<i>MSCI ACWI IMI Net (Daily)</i>	18.2	16.3	26.4	-10.1	24.0	8.3	-2.1	3.8	23.5	16.4
U.S. Equity	27.2	13.6	29.0	-7.9	20.3	14.9	-0.8	9.8	35.4	16.3
<i>Russell 3000 TR</i>	25.7	20.9	31.0	-5.3	21.1	12.8	0.5	12.6	33.6	16.4
Small Cap Growth	19.6	38.9	33.9	-4.7	26.8	6.3	-5.0	-3.6	57.9	11.3
<i>Russell 2000 Growth TR</i>	2.8	34.6	28.5	-9.3	22.2	11.3	-1.4	5.6	43.3	14.6
EAM MicroCap Growth	19.6	38.9	33.9	-4.7	26.8	6.3	-5.7	1.8	57.5	17.6
<i>Russell Microcap Growth Index (Daily)</i>	0.9	40.1	23.3	-14.2	16.7	6.9	-3.9	4.3	52.8	15.2
Small Cap Value	35.6	0.3	21.3	-14.1	7.5	31.4	-5.2	3.0	36.8	15.5
<i>Russell 2000 Value TR</i>	28.3	4.7	22.4	-12.9	7.8	31.7	-7.5	4.3	34.5	18.1
AQR Capital Management	46.3	-7.1	15.2	-18.1	-1.2	31.7	-2.5	4.7	36.9	11.8
<i>Russell 2000 Value TR</i>	28.3	4.7	22.4	-12.9	7.8	31.7	-7.5	4.3	34.5	18.1

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Mellon Asset Management	25.8	5.2	24.2	-8.0	10.8	26.8	-5.8	2.6	36.7	19.0
<i>Russell 2000 Value TR</i>	28.3	4.7	22.4	-12.9	7.8	31.7	-7.5	4.3	34.5	18.1
DFA MicroCap Value	41.6	1.1	18.5	-15.7	7.3	33.3	-6.3	0.2	--	--
<i>Russell Microcap Value (Daily)</i>	34.9	6.3	21.3	-12.0	11.1	30.6	-6.5	3.1	--	--
Callan US Microcap Value	31.7	2.0	28.3	-15.8	16.4	37.2	-7.0	5.2	--	--
<i>Russell Microcap Value (Daily)</i>	34.9	6.3	21.3	-12.0	11.1	30.6	-6.5	3.1	--	--
Market Oriented (CORE)	26.6	15.2	30.1	-7.1	22.0	14.8	-1.7	11.1	33.1	16.6
<i>Russell 1000 TR</i>	26.5	21.0	31.4	-4.8	21.7	12.1	0.9	13.2	33.1	16.4
DFA Large Cap Core	27.8	12.7	29.1	-9.0	21.1	15.6	-4.6	--	--	--
<i>Russell 1000 TR</i>	26.5	21.0	31.4	-4.8	21.7	12.1	0.9	--	--	--
Russell 2000 Synthetic - OST managed	27.1	11.8	23.4	-11.3	14.5	23.4	-3.6	5.8	39.9	17.3
<i>S&P 600 Custom</i>	26.8	11.3	22.8	-11.0	14.7	21.3	-4.4	4.9	38.8	16.3
S&P 500 - OST managed	28.7	18.4	31.7	-4.4	21.8	12.0	1.5	13.7	32.5	16.0
<i>S&P 500 Index (Daily)</i>	28.7	18.4	31.5	-4.4	21.8	12.0	1.4	13.7	32.4	16.0
S&P 400 - OST managed	24.6	13.5	26.6	-10.9	16.7	21.1	-2.0	10.0	33.9	18.0
<i>S&P 400 Midcap Index (Daily)</i>	24.8	13.7	26.2	-11.1	16.3	20.7	-2.2	9.8	33.5	17.9
OST Risk Premia Strategy	24.3	15.8	31.3	-5.5	27.1	10.8	4.5	13.0	--	--
Non-U.S. Equity	12.7	13.5	22.6	-14.9	30.4	4.6	-2.6	-2.9	18.6	18.9
<i>Oregon MSCI ACWI Ex US IMI (Net)</i>	8.5	11.1	21.6	-14.8	27.8	4.4	-4.6	-3.9	15.8	17.0

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Total International Overlay Accounts										
PERS-Adrian Lee Active Currency										
PERS-P/E Global Active Currency										
PERS-Aspect Cap Active Currency										
International Market Oriented (Core)	13.1	12.5	23.2	-14.3	31.0	2.5	-1.2	-2.6	21.3	19.3
<i>MSCI World ex USA IMI Net Return</i>	<i>12.4</i>	<i>8.3</i>	<i>22.9</i>	<i>-14.7</i>	<i>25.2</i>	<i>2.9</i>	<i>-1.9</i>	<i>-4.5</i>	<i>21.6</i>	<i>16.6</i>
Arrowstreet Capital	24.5	9.1	23.2	-10.3	35.4	4.7	0.4	0.8	26.2	20.1
<i>Oregon MSCI ACWI Ex US IMI (Net)</i>	<i>8.5</i>	<i>11.1</i>	<i>21.6</i>	<i>-14.8</i>	<i>27.8</i>	<i>4.4</i>	<i>-4.6</i>	<i>-3.9</i>	<i>15.8</i>	<i>17.0</i>
Lazard Asset Management	7.1	6.9	21.0	-13.4	24.8	0.9	-1.1	-2.8	19.1	21.4
<i>Oregon MSCI ACWI Ex US (Net)</i>	<i>7.8</i>	<i>10.7</i>	<i>21.5</i>	<i>-14.2</i>	<i>27.2</i>	<i>4.5</i>	<i>-5.5</i>	<i>-3.9</i>	<i>15.3</i>	<i>16.8</i>
Lazard International CEF	4.5	30.2	29.0	-17.2	39.8	0.1	-0.2	0.6	--	--
<i>Oregon MSCI ACWI Ex US (Net)</i>	<i>7.8</i>	<i>10.7</i>	<i>21.5</i>	<i>-14.2</i>	<i>27.2</i>	<i>4.5</i>	<i>-5.5</i>	<i>-3.9</i>	<i>--</i>	<i>--</i>
AQR Capital Management	6.1	5.9	19.6	-20.3	26.8	2.1	2.4	-4.9	23.1	22.6
<i>Oregon MSCI WORLD Ex US (Net)</i>	<i>12.6</i>	<i>7.6</i>	<i>22.5</i>	<i>-14.1</i>	<i>24.2</i>	<i>2.8</i>	<i>-3.0</i>	<i>-4.3</i>	<i>21.0</i>	<i>16.4</i>
OST Int'l Risk Premia	15.6	7.7	22.8	-12.0	--	--	--	--	--	--
<i>MSCI World x US Custom Div Multiple-Factor</i>	<i>15.0</i>	<i>7.3</i>	<i>22.4</i>	<i>-12.3</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>
International Value	18.0	4.9	17.8	-12.4	25.7	9.8	-4.5	-4.3	25.0	15.1
<i>Oregon MSCI ACWI Ex US Value IMI (Net)</i>	<i>11.0</i>	<i>-0.1</i>	<i>16.3</i>	<i>-14.6</i>	<i>23.6</i>	<i>8.8</i>	<i>-8.9</i>	<i>-5.0</i>	<i>15.7</i>	<i>17.4</i>
Acadian Asset Management	21.7	11.5	19.4	-15.4	35.1	11.8	-7.2	-3.7	21.9	19.7
<i>Oregon MSCI ACWI Ex US Value IMI (Net)</i>	<i>11.0</i>	<i>-0.1</i>	<i>16.3</i>	<i>-14.6</i>	<i>23.6</i>	<i>8.8</i>	<i>-8.9</i>	<i>-5.0</i>	<i>15.7</i>	<i>17.4</i>
Brandes Investment Partners	14.1	-1.3	16.4	-9.4	16.3	7.9	-1.6	-5.0	28.3	10.5
<i>Oregon MSCI ACWI Ex US Value (Net)</i>	<i>10.5</i>	<i>-0.8</i>	<i>15.7</i>	<i>-14.0</i>	<i>22.7</i>	<i>8.9</i>	<i>-10.1</i>	<i>-5.1</i>	<i>15.0</i>	<i>17.0</i>

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
International Growth	12.4	19.9	28.1	-6.4	27.5	1.3	1.9	-4.3	18.8	18.3
<i>Oregon MSCI WORLD Ex US (Net)</i>	12.6	7.6	22.5	-14.1	24.2	2.8	-3.0	-4.3	21.0	16.4
Walter Scott Management	12.4	19.9	28.0	-6.3	27.5	6.4	1.2	-3.1	13.1	20.3
<i>Oregon MSCI WORLD Ex US (Net)</i>	12.6	7.6	22.5	-14.1	24.2	2.8	-3.0	-4.3	21.0	16.4
International Small Cap	18.1	9.3	24.1	-24.3	30.2	4.9	6.1	-6.5	29.1	18.7
<i>MSCI World Ex US Small Cap Value (Net)</i>	13.3	2.6	22.8	-18.4	27.9	7.9	1.1	-5.9	27.7	19.5
DFA International Small Cap	16.9	1.1	20.9	-23.3	27.4	9.6	2.5	-6.6	32.9	20.5
<i>MSCI World Ex US Small Cap Value (Net)</i>	13.3	2.6	22.8	-18.4	27.9	7.9	1.1	-5.9	27.7	19.5
Harris Associates	20.1	5.0	33.4	-24.1	27.2	7.1	1.0	-6.7	30.9	17.9
<i>MSCI ACWI ex USA Small Cap Value (Net)</i>	14.1	4.7	20.3	-18.2	29.9	8.2	-1.2	-4.5	20.9	20.2
EAM International Micro Cap	17.8	38.4	20.3	-33.6	45.3	2.2	23.5	--	--	--
<i>Oregon FTSE Global Ex US Micro Cap</i>	18.0	27.9	16.6	-20.0	31.4	6.0	2.9	--	--	--
DFA International Micro Cap	17.1	5.7	18.5	-22.0	30.9	11.9	-1.8	--	--	--
<i>Oregon FTSE Global Ex US Micro Cap</i>	18.0	27.9	16.6	-20.0	31.4	6.0	2.9	--	--	--
Emerging Markets	4.3	23.5	22.1	-17.4	35.7	10.3	-14.5	1.2	-0.1	21.7
<i>ORE MSCI Emerging Markets IMI (Net)</i>	-0.3	18.4	17.6	-15.0	37.0	9.9	-13.9	-1.8	-2.2	18.7
Genesis Emerging Markets	-6.6	17.5	29.3	-15.9	33.6	12.0	-14.9	-1.0	0.7	21.6
<i>ORE MSCI Emerging Markets IMI (Net)</i>	-0.3	18.4	17.6	-15.0	37.0	9.9	-13.9	-1.8	-2.2	18.7
Arrowstreet Emerging Markets	9.6	32.1	23.7	-19.5	35.4	11.2	-15.8	1.1	-1.0	22.8
<i>ORE MSCI Emerging Markets IMI (Net)</i>	-0.3	18.4	17.6	-15.0	37.0	9.9	-13.9	-1.8	-2.2	18.7
Westwood Global Investment	3.6	10.1	9.8	-9.3	29.5	19.0	-16.1	0.2	0.6	18.4
<i>MSCI Emerging Markets IMI Net</i>	-0.3	18.4	17.6	-15.0	37.3	11.2	-14.9	-2.2	-2.6	18.2

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
William Blair and Company	4.4	41.4	29.1	-21.6	50.2	1.9	-14.1	5.7	0.9	21.5
<i>MSCI Emerging Markets Growth Net</i>	-8.4	31.3	25.1	-18.3	37.3	11.2	-14.9	-2.2	-2.6	18.2
William Blair Emerging Mkt Small Cap	17.9	33.0	21.7	-24.4	38.5	-4.3	-5.9	14.9	--	--
<i>MSCI Emerging Markets Small Cap Gr Net</i>	20.4	25.6	12.0	-20.0	33.8	2.3	-6.8	1.0	--	--
OST EM Risk Premia ESG										
Global Equity	15.5	7.4	21.6	-7.9	22.3	9.4	-3.3	6.9	35.6	12.6
<i>MSCI ACWI IMI Net (Daily)</i>	18.2	16.3	26.4	-10.1	24.0	8.3	-2.1	3.8	23.5	16.4
Alliance Bernstein Global Value	18.1	4.2	20.1	-19.1	21.8	9.3	-3.3	6.9	35.6	12.6
<i>Oregon MSCI ACWI Value (Net)</i>	19.6	-0.3	20.6	-10.8	18.3	12.6	-6.3	2.9	22.4	15.5
Global Equity Low Volatility	15.2	7.9	21.7	-5.5	22.5	--	--	--	--	--
<i>MSCI AC World (Daily Const)</i>	18.5	16.3	26.6	-9.4	24.0	--	--	--	--	--
LACM Global Equity Low Volatility	15.4	15.0	23.1	-6.6	22.7	--	--	--	--	--
<i>MSCI AC World (Daily Const)</i>	18.5	16.3	26.6	-9.4	24.0	--	--	--	--	--
Arrowstreet Global Low Volatility	15.1	12.6	22.3	-2.7	--	--	--	--	--	--
<i>MSCI ACWI IMI Net (Daily)</i>	18.2	16.3	26.4	-10.1	--	--	--	--	--	--
AQR Global Low Volatility	11.4	6.8	19.6	-5.7	--	--	--	--	--	--
<i>MSCI AC World (Daily Const)</i>	18.5	16.3	26.6	-9.4	--	--	--	--	--	--
Acadian Global Low Volatility	17.5	-1.9	20.2	-7.0	--	--	--	--	--	--
<i>MSCI ACWI IMI Net (Daily)</i>	18.2	16.3	26.4	-10.1	--	--	--	--	--	--
DFA Global Low Volatility	17.2	5.5	--	--	--	--	--	--	--	--
<i>MSCI AC World (Daily Const)</i>	18.5	16.3	--	--	--	--	--	--	--	--

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Other Equity										
Transitional & Closed Accounts										
PERS- Equity Distribution										
Total Real Estate	19.0	2.7	7.2	8.0	10.0	7.9	9.9	14.2	12.8	13.6
NCREIF ODCE (Custom) (Adj.)	13.6	0.6	4.7	7.7	6.7	8.9	13.5	11.3	11.0	11.0
Real Estate excluding REITS	18.6	3.0	7.3	8.9	11.2	10.0	12.7	12.0	15.8	10.8
NCREIF ODCE (Custom) (Adj.)	13.6	0.6	4.7	7.7	6.7	8.9	13.5	11.3	11.0	11.0
Total REITS	28.2	-0.9	7.2	-2.0	9.8	1.1	2.0	22.2	2.2	26.1
ABKB - LaSalle Advisors	36.2	3.0	29.9	3.2	7.4	5.4	2.9	32.1	1.6	17.7
Nareit Equity Share Price Index	41.3	-5.2	28.7	-4.0	8.7	8.6	2.8	28.0	2.8	19.7
Woodbourne Investment Management	9.9	0.6	18.5	-4.8	10.6	4.3	8.6	19.5	-1.8	15.8
Nareit Equity Share Price Index	41.3	-5.2	28.7	-4.0	8.7	8.6	2.8	28.0	2.8	19.7
Risk Parity	13.7	--	--	--	--	--	--	--	--	--
S&P Risk Parity - 12% Target Volatility	18.2	--	--	--	--	--	--	--	--	--
Man AHL Target Risk	17.0	--	--	--	--	--	--	--	--	--
S&P Risk Parity - 12% Target Volatility	18.2	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity	9.0	--	--	--	--	--	--	--	--	--
S&P Risk Parity - 12% Target Volatility	18.2	--	--	--	--	--	--	--	--	--
Bridgewater All Weather	15.5	--	--	--	--	--	--	--	--	--
S&P Risk Parity - 12% Target Volatility	18.2	--	--	--	--	--	--	--	--	--

Total Fund | As of March 31, 2022

	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)
Opportunity Portfolio	22.7	10.2	6.2	5.8	10.5	6.1	2.1	8.8	15.0	18.4
<i>CPI + 5%</i>	<i>12.4</i>	<i>6.4</i>	<i>7.4</i>	<i>7.0</i>	<i>7.2</i>	<i>7.2</i>	<i>5.8</i>	<i>5.8</i>	<i>6.6</i>	<i>6.8</i>
Alternative Portfolio	14.8	-6.6	-1.3	-2.4	8.3	6.6	-4.3	4.4	6.0	-0.8
<i>CPI +4%</i>	<i>11.3</i>	<i>5.4</i>	<i>6.4</i>	<i>6.0</i>	<i>6.2</i>	<i>6.2</i>	<i>4.8</i>	<i>4.8</i>	<i>5.6</i>	<i>5.8</i>
Diversifying Strategies	8.7	-11.6	-1.0	-13.1	8.8	0.8	8.1	9.4	7.9	3.7
Real Assets	19.0	-2.0	0.0	6.5	10.5	--	--	--	--	--
<i>CPI +4%</i>	<i>11.3</i>	<i>5.4</i>	<i>6.4</i>	<i>6.0</i>	<i>6.2</i>	--	--	--	--	--
Infrastructure	16.7	7.4	11.1	--	--	--	--	--	--	--
<i>CPI +4%</i>	<i>11.3</i>	<i>5.4</i>	<i>6.4</i>	--	--	--	--	--	--	--
Natural Resources	23.8	-13.0	-12.2	--	--	--	--	--	--	--
<i>CPI +4%</i>	<i>11.3</i>	<i>5.4</i>	<i>6.4</i>	--	--	--	--	--	--	--
Private Equity	41.6	12.7	11.1	18.2	17.3	6.3	7.3	15.9	16.2	14.4
<i>Russell 3000 + 300 BPS QTR LAG (Adj.)</i>	<i>35.7</i>	<i>18.4</i>	<i>6.0</i>	<i>21.1</i>	<i>22.2</i>	<i>18.4</i>	<i>2.5</i>	<i>21.2</i>	<i>25.2</i>	<i>34.0</i>
Cash	0.1	1.6	3.3	2.0	1.3	1.2	0.5	0.5	0.7	1.7
<i>ICE BofA US 3-Month Treasury Bill</i>	<i>0.1</i>	<i>0.7</i>	<i>2.3</i>	<i>1.9</i>	<i>0.9</i>	<i>0.3</i>	<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>0.1</i>
PERS-Russell Overlay Cash Balance										

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.



To: The Oregon Investment Council

From: Karl Cheng, Senior Investment Officer, Portfolio Risk & Research

Re: First Quarter 2022 Risk Report for the Oregon Public Employees Retirement Fund

Executive Summary

This memo summarizes OPERF’s predicted volatility, as estimated by Aladdin, Treasury’s end-to-end investment analytics platform built by BlackRock. As of March 31, 2022, Aladdin estimated a return volatility of 13.9% for OPERF, approximately 1% higher than the estimate presented by Meketa Investment Group (“Meketa”) at the June 2021 meeting. That is mainly due to the significant overweight to Private Equity. **Staff recommends no action at this point.**

The realized and predicted volatilities for the liquid portion of the Fund, mainly the Public Equity and Fixed Income Portfolios, are within OIC guidelines.

OPERF Asset Allocation

Investment Belief #2 in [INV 1201: Statement of OIC Investment and Management Beliefs](#) states: “*Asset Allocation Drives Risk and Return*”. Shown in the table below are OPERF’s target allocations approved by the Council at the June 2021 meeting.

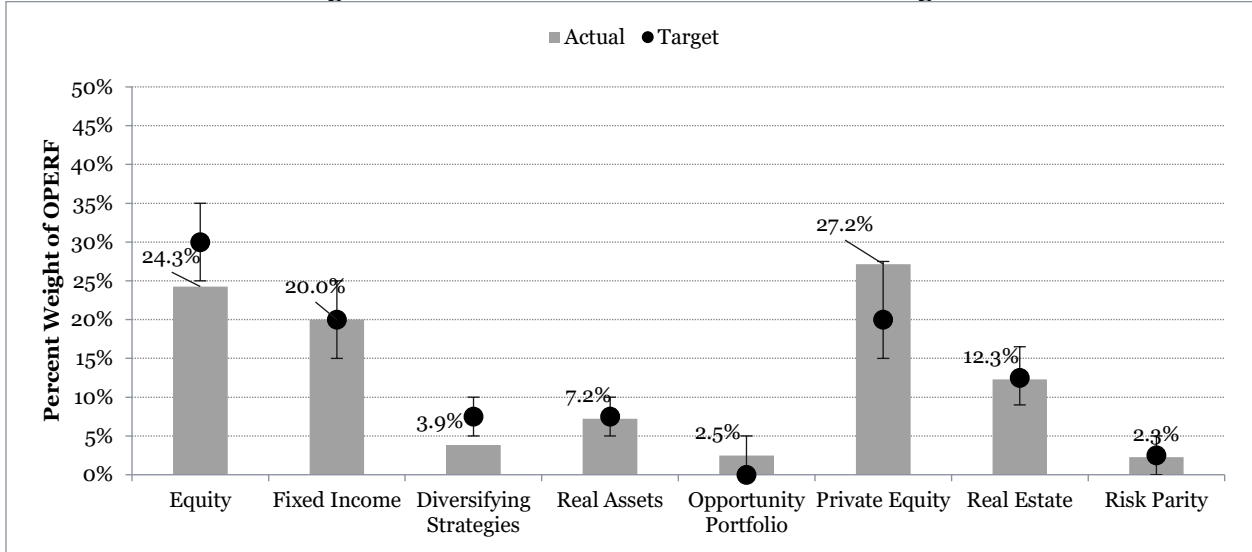
Table 1. OPERF Target Asset Allocation

Asset Class	Target Allocation (%)	Rebalancing Range (%)
Public Equity	30.0	25.0 – 35.0
Private Equity	20.0	15.0 – 27.5
Fixed Income	20.0	15.0 – 25.0
Real Estate	12.5	9.0 – 16.5
Real Assets	7.5	5.0 – 10.0
Diversifying Strategies	7.5	5.0 – 10.0
Risk Parity	2.5	0.0 – 5.0
Total Fund	100.0	

Including the synthetic overlays exposures managed by Russell Investments, Figure 1 below shows OPERF’s allocation.



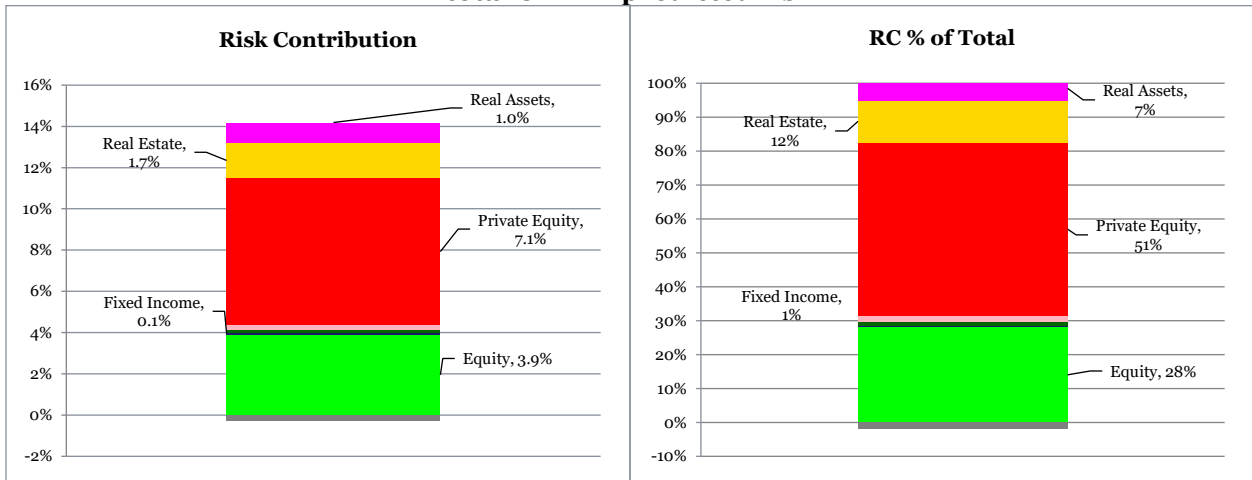
Figure 1. OPERF Actual Allocation versus Target



OPERF Predicted Risk

The risk estimates are shown in the charts below.

Figure 2. OPERF Risk Contribution by Asset Class and Risk Contribution as a percent of total OPERF predicted risk



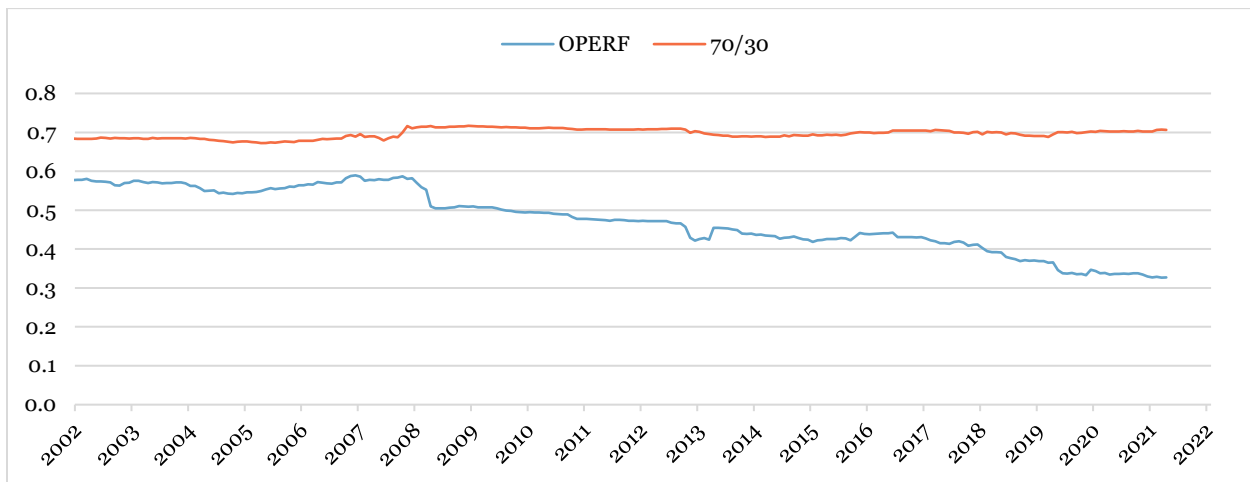
The total predicted **standard deviation**, or **volatility**, for OPERF is 13.9% as of March 31, 2022. To put that in context, Meketa, the OIC’s investment consultant, estimates OPERF’s long-term volatility to be 12.8% using their 2021 Capital Market Assumptions, which were a blend of forward 10- and 20-year assumptions from staff, Meketa, and Aon Investments, the Council’s secondary investment consultant. Aladdin’s model uses a medium-term, five-year lookback period so there will almost always be some difference between the two estimates.

Another item of note from Figure 2 is that “equity” risk, that is the predicted risk contributions from the Public Equity and Private Equity Portfolios, is estimated to be 79% of OPERF’s predicted risk. Equity risk has always been the largest risk contributor to OPERF. OIC Investment Belief #3 summarizes the Council’s objective for investing in equity: “*Over the long-term, equity-oriented investments provide reliable return premiums relative to risk-free investments.*” However, equity investments are much more volatile than investment grade fixed income and U.S. Treasuries. Over the past several years, the OIC has approved changes to asset allocations and portfolio construction to diversify the Fund from equity risk, including:

- Increasing Diversifying Strategies allocation,
- Rebalancing the Fixed Income and Real Estate Portfolios,
- Allocating to defensive equity within the Public Equity Portfolio, and
- Adding Risk Parity.

The OIC-approved changes have reduced OPERF’s volatility over time. Figure 3 below plots OPERF’s rolling 20-quarter realized beta to MSCI ACWI IMI as well as that of the 70% MSCI ACWI IMI & 30% Bloomberg U.S. Aggregate Index blend, or the “Reference Portfolio”. OPERF’s realized beta hovered around +0.60 in the earlier portion of the analysis period before starting a steady decline. Part of that decline is due to an increasing allocation to illiquid investments, which tend to have performance smoothing, but the other cause is the aforementioned diversification.

Figure 3. OPERF's Beta to MSCI ACWI IMI

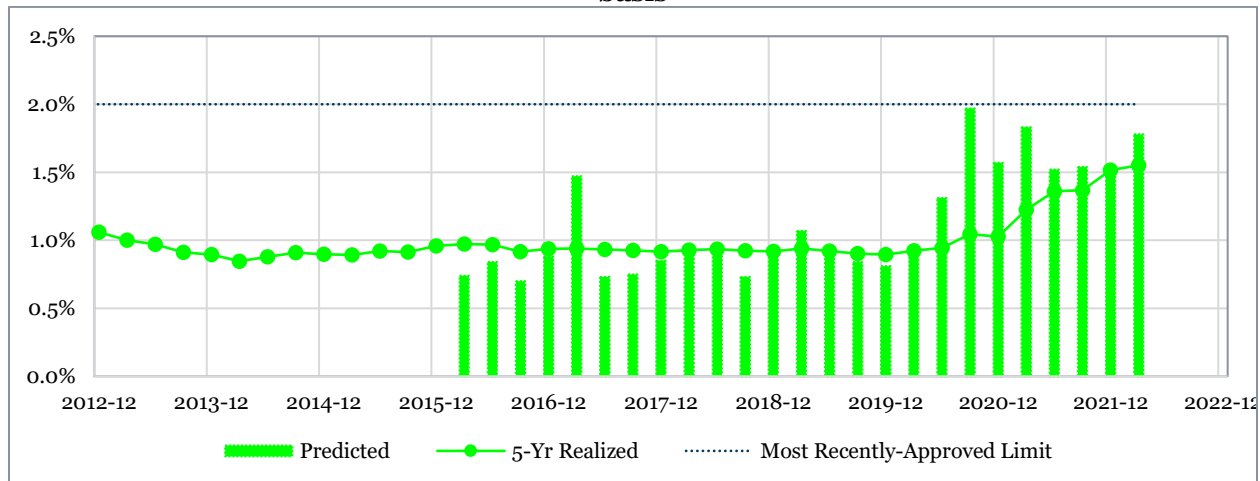


Capital Markets

Public Equity

The Public Equity Portfolio has an OIC-approved **tracking error** range of 0.75% to 2.00%. Using monthly performance data from State Street, the five-year tracking error through March 31, 2022 for the Portfolio is 1.55%, well within the approved range. Predicted active risk increased beginning with Q1 2020 as Covid concerns impacted all aspects of capital markets but still within the OIC-approved range.

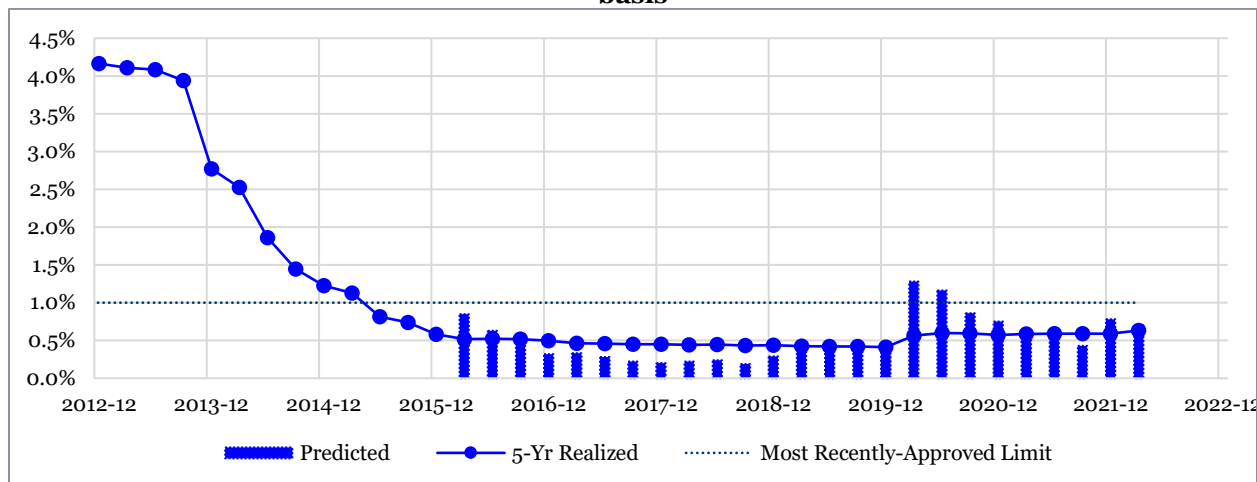
Figure 4. Public Equity's predicted risk and realized five-year tracking error on a quarterly basis



Fixed Income

The Fixed Income Portfolio has an OIC-approved **tracking error** of up to 1.0%. Using monthly performance data from State Street, the five-year tracking error through March 31, 2022 for the Portfolio is 0.63%, well within the approved range. Similar to what occurred for Public Equity, Covid concerns impacted all sectors of the fixed income market. Predicted risk spiked in Q1 and Q2 2020 as both credit and rate risks spiked but have since moderated.

Figure 5. Fixed Income's predicted risk and realized five-year tracking error on a quarterly basis



OPERF Cash Flow

Table 2 below summarizes approximate net investment cash flow and pension cash flow for Year-to-Date 2022 and for the past five years.

Table 2. OPERF Net Cash Flow by Portfolio by Time Period

Asset Class	Net Cash Flow (\$M)					
	YTD 2022	2021	2020	2019	2018	2017
Public Equity	904	4,220	3,062	2,752	3,432	1,451
Private Equity	384	2,730	494	347	1,216	1,434
Fixed Income	-881	-3,053	3,154	327	61	21
Real Estate	-90	-396	15	-48	-28	508
Real Assets	-433	-572	-564	-578	-524	-306
Diversifying Strategies	1	381	-621	-490	-1,349	-395
Opportunity	22	-248	71	26	156	-2
Risk Parity	0	0	-1,800	0	0	0
Other	-210	-227	-449	283	-15	0
Total Fund	-304	2,836	3,362	2,617	2,948	2,711
<i>Net Pension</i>	<i>-1,039</i>	<i>-1,093</i>	<i>-3,041</i>	<i>-2,659</i>	<i>-2,798</i>	<i>-3,195</i>

The estimated uncalled commitments from the private market portfolios are tabulated below.

Asset Class Portfolio	Uncalled Commitment (\$B)
Private Equity	\$10.0
Real Assets	\$3.3
Real Estate	\$3.7
Opportunity	\$1.3
Total	\$18.2



To: The Oregon Investment Council

From: Jen Plett, Investment Officer, Portfolio Risk & Research

Re: First Quarter 2022 Risk Report for the Common School Fund (CSF)

Executive Summary

This memo summarizes CSF’s predicted volatility, as estimated by Aladdin, Treasury’s end-to-end investment analytics platform built by BlackRock. As of March 31, 2022, Aladdin estimated a return volatility of 12% for CSF, in-line with staff’s expectation. Therefore, staff recommends no additional action at this point.

CSF Asset Allocation

Investment Belief #2 in INV 1201: Statement of OIC Investment and Management Beliefs states: “*Asset Allocation Drives Risk and Return*”. Shown in the table below are CSF’S target allocations approved by the Council. When applying 2021’s Capital Market Assumptions, CSF’s policy portfolio with the following approved target allocations is expected to produce an estimated return volatility of 12.1%. To reach the similar level of estimated riskiness as this policy portfolio, a Reference Portfolio can be constructed with 65% in the MSCI ACWI IMI and 35% in the Bloomberg Barclays U.S. Aggregate Bond passive portfolios.

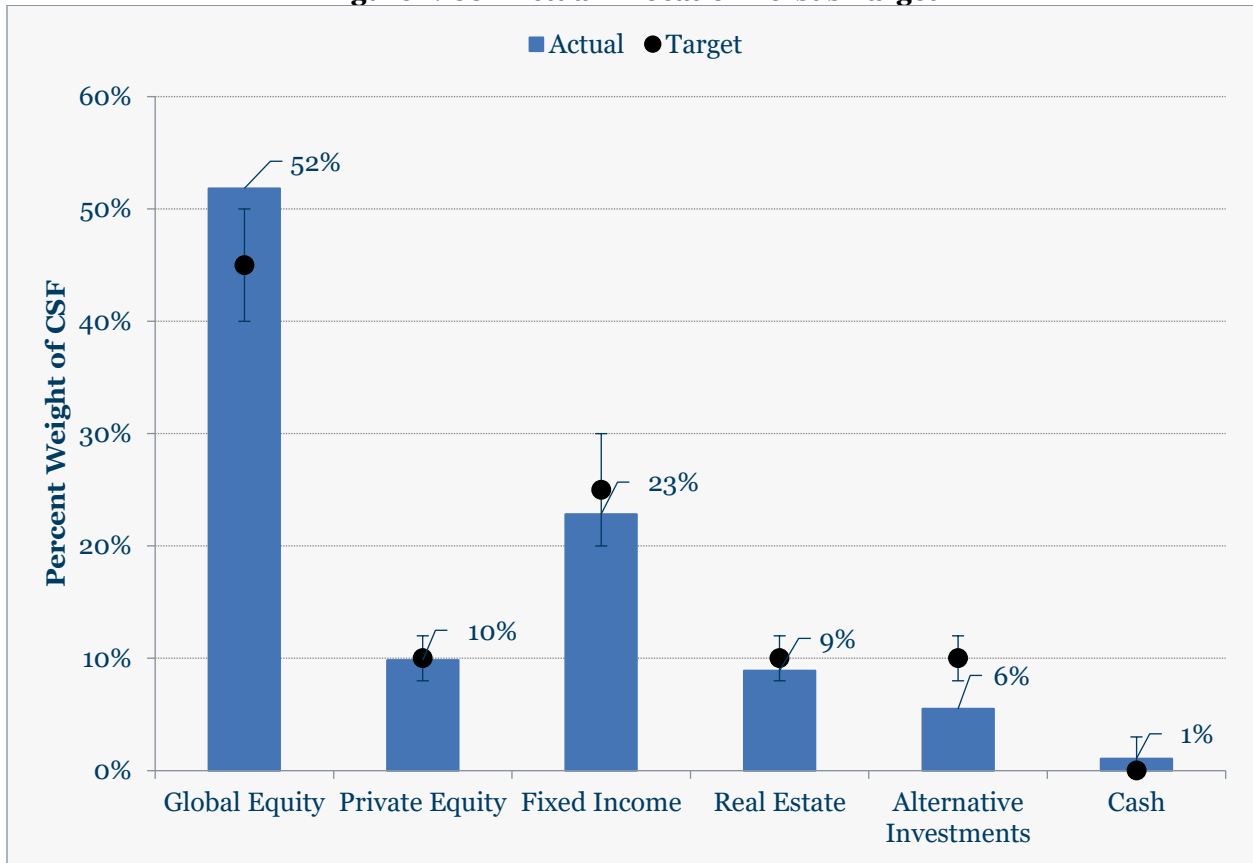
Table 1. CSF Target Asset Allocation

Asset Class	Target Allocation (%)	Rebalancing Range (%)
Global Equity	45	40 - 50
Private Equity	10	8 - 12
Fixed Income	25	20 -30
Real Estate	10	8 - 12
Alternative Investments	10	8 - 12
Cash	0	0 - 3
Total Fund	100	

Figure 1 below shows CSF’s actual allocation.



Figure 1. CSF Actual Allocation versus Target

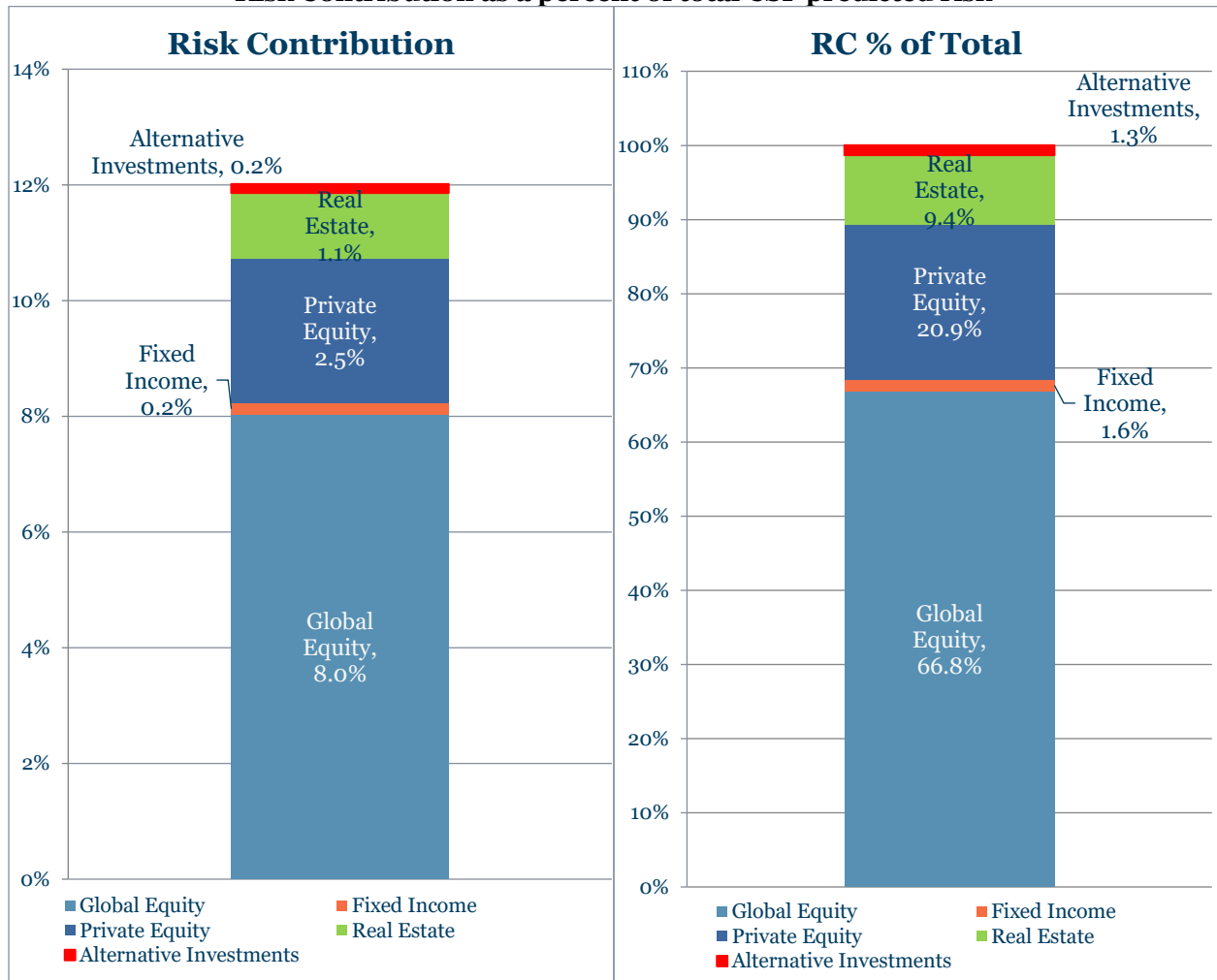


As of March 31, 2022, actual CSF asset allocations were within the policy tolerances relative to the established targets, with the exception of Global Equity which was slightly above its upper range threshold. The slight overallocation in Global Equity mainly results from CSF's underweight to Alternative Investments and will be tapped to fund new Alternative Investments.

CSF Predicted Risk

The risk estimates are shown in the charts below.

Figure 2. CSF Risk Contribution by Asset Class and Risk Contribution as a percent of total CSF predicted risk



The total predicted **standard deviation**, or **volatility**, for CSF is 12% as of March 31, 2022. Aladdin’s risk model uses a medium-term, five-year lookback.

Another item of note from Figure 2 is that “equity” risk, that is the predicted risk contributions from Global Equity and Private Equity, is estimated to be 88% of CSF’s predicted risk. Equity risk has always been the largest risk contributor to CSF. OIC Investment Belief #3 summarizes the Council’s objective for investing in equity: “*Over the long-term, equity-oriented investments provide reliable return premiums relative to risk-free investments.*” However, equity investments are much more volatile than investment grade fixed income and U.S. Treasuries. To improve diversification, in 2017, the OIC approved the reduction in

allocation to Global Equity by 15% and to Fixed Income by 5% while funding new asset classes such as Real Estate and Alternatives Investments.

The OIC-approved changes have reduced CSF's volatility over time. Figure 3 below plots CSF's rolling 20-quarter realized beta to MSCI ACWI IMI as well as that of the 65% MSCI ACWI IMI & 35% Bloomberg Barclays U.S. Aggregate Bond portfolio, or the "Reference Portfolio". CSF's realized beta was elevated during the Great Financial Crisis from 2007 to 2009 before steadily trending down. Part of that decline is due to an increasing allocation to illiquid investments, which tend to have performance smoothing, but the other cause is the improved diversification.

Figure 3. CSF's Beta to MSCI ACWI IMI

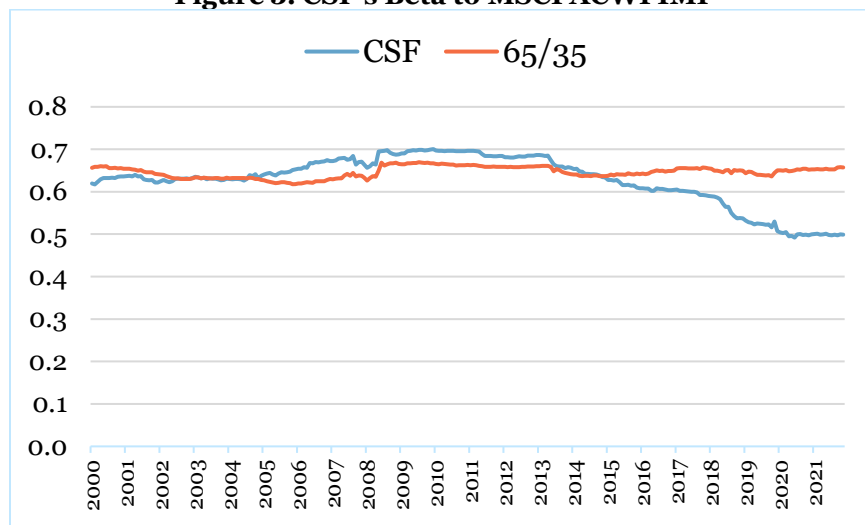
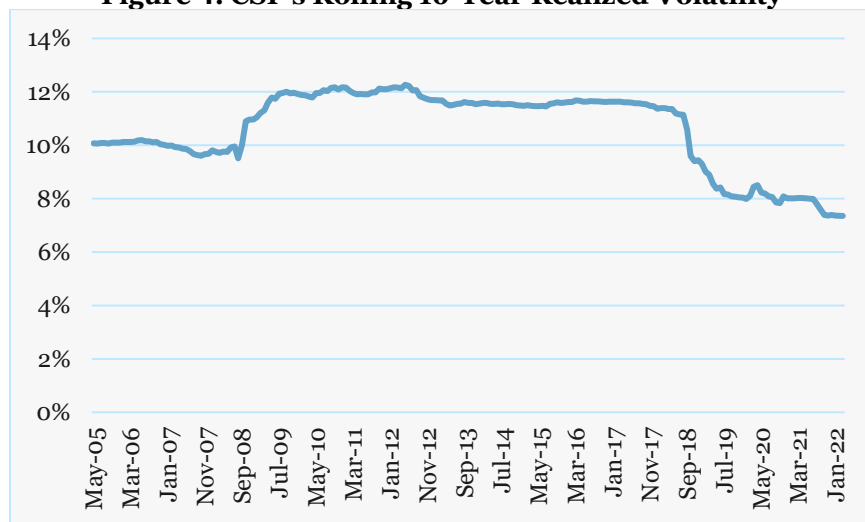


Figure 4. CSF's Rolling 10-Year Realized Volatility



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TAB 7

ASSET ALLOCATION & NAV UPDATES

Asset Allocations at April 30, 2022

OPERF	Regular Account						
	Policy	Target ¹	\$ Thousands	Pre-Overlay	Overlay	Net Position	Actual
Public Equity	25.0-35.0%	30.0%	22,651,560	23.9%	(1,275,842)	21,375,718	22.6%
Private Equity	15.0-27.5%	20.0%	26,315,492	27.8%		26,315,492	27.8%
Total Equity	45.0-55.0%	50.0%	48,967,052	51.8%	(1,275,842)	47,691,210	50.4%
Opportunity Portfolio	0-5%	0.0%	2,425,603	2.6%		2,425,603	2.6%
Fixed Income	15-25%	20.0%	15,266,972	16.1%	3,769,264	19,036,236	20.1%
Risk Parity	0.0-3.5%	2.5%	2,086,760	2.2%		2,086,760	2.2%
Real Estate	7.5-17.5%	12.5%	12,073,227	12.8%	(1,900)	12,071,327	12.8%
Real Assets	2.5-10.0%	7.5%	6,972,466	7.4%		6,972,466	7.4%
Diversifying Strategies	2.5-10.0%	7.5%	4,325,073	4.6%		4,325,073	4.6%
Cash ²	0-3%	0.0%	2,471,999	2.6%	(2,491,522)	(19,523)	0.0%
TOTAL OPERF		100%	\$ 94,589,154	100.0%	\$ -	\$ 94,589,154	100.0%

Target Date Funds		Variable Fund	Total Fund
\$ Thousands		\$ Thousands	\$ Thousands
1,134,675		337,968	22,848,360
			26,315,492
			49,163,853
2,147,203			2,425,603
			21,183,439
			2,086,760
			12,071,327
			6,972,466
			4,325,073
		6,938	(12,585)
\$ 3,281,878		\$ 344,905	\$ 98,215,937

¹Targets established in October 2021. Interim policy benchmark effective October 1, 2021, consists of: 30% MSCI ACWI IMI Net, 20% Bloomberg U.S. Aggregate, 20% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF ODCE net (1 quarter lagged), 7.5% CPI+400bps, 7.5% HFRI FOF Conservative & 2.5% S&P Risk Parity - 12% Target Volatility.
²Includes cash held in the policy implementation overlay program.

SAIF	Policy	Target	\$ Thousands	Actual
Total Equity	7-13%	10.0%	455,411	10.1%
Fixed Income	80-90%	85.0%	3,742,202	82.8%
Real Estate	0-7%	5.0%	287,856	6.4%
Cash	0-3%	0.0%	33,408	0.7%
TOTAL SAIF			\$ 4,518,877	100.0%

CSF	Policy	Target	\$ Thousands	Actual
Global Equities	40-50%	45.0%	1,070,608	49.1%
Private Equity	8-12%	10.0%	218,007	10.0%
Total Equity	58-62%	55.0%	1,288,614	59.1%
Fixed Income	20-30%	25.0%	558,448	25.6%
Real Estate	0-12%	10.0%	200,766	9.2%
Alternative Investments	0-12%	10.0%	121,661	5.6%
Cash	0-3%	0.0%	12,123	0.6%
TOTAL CSF			\$ 2,181,612	100.0%

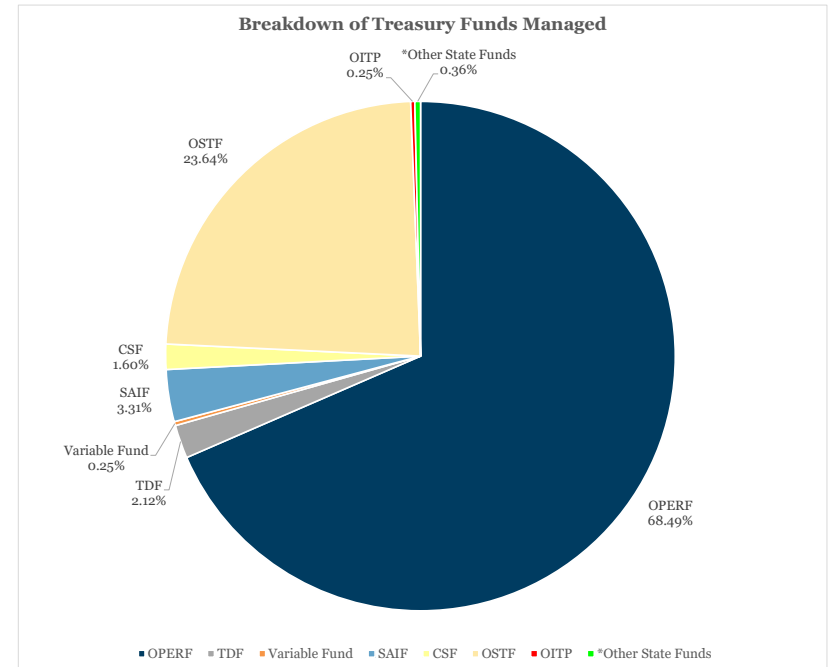
SOUE	Policy	Target	\$ Thousands	Actual
Global Equities	0-65%	N/A	2,105	75.8%
Fixed Income	35-100%	N/A	670	24.1%
Cash	0-3%	N/A	2	0.1%
TOTAL SOUE			\$ 2,776	100.0%

WOUE	Policy	Target	\$ Thousands	Actual
Global Equities	30-65%	55.0%	1,076	55.9%
Fixed Income	35-60%	40.0%	742	38.5%
Cash	0-25%	5.0%	108	5.6%
TOTAL WOUE			\$ 1,927	100.0%

OSTF, OITP & Other State Funds*	\$ Thousands	Actual
OSTF	32,060,118	93.7%
OITP	348,033	1.0%
DAS Insurance Fund	160,472	0.5%
DCBS Operating Fund	171,447	0.5%
DCBS Workers Benefit Fund	148,044	0.4%
DCBS - Elderly Housing Bond Sinking Fund	1,419	0.0%
DCBS - Other Fund	14,418	0.0%
Oregon Lottery Fund	115,564	0.3%
DVA Bond Sinking Fund	77,378	0.2%
ODOT Fund	572,048	1.7%
OLGIF	236,329	0.7%
OPUF	303,954	0.9%
Total OSTF & Other State Funds	\$ 34,209,224	100.0%

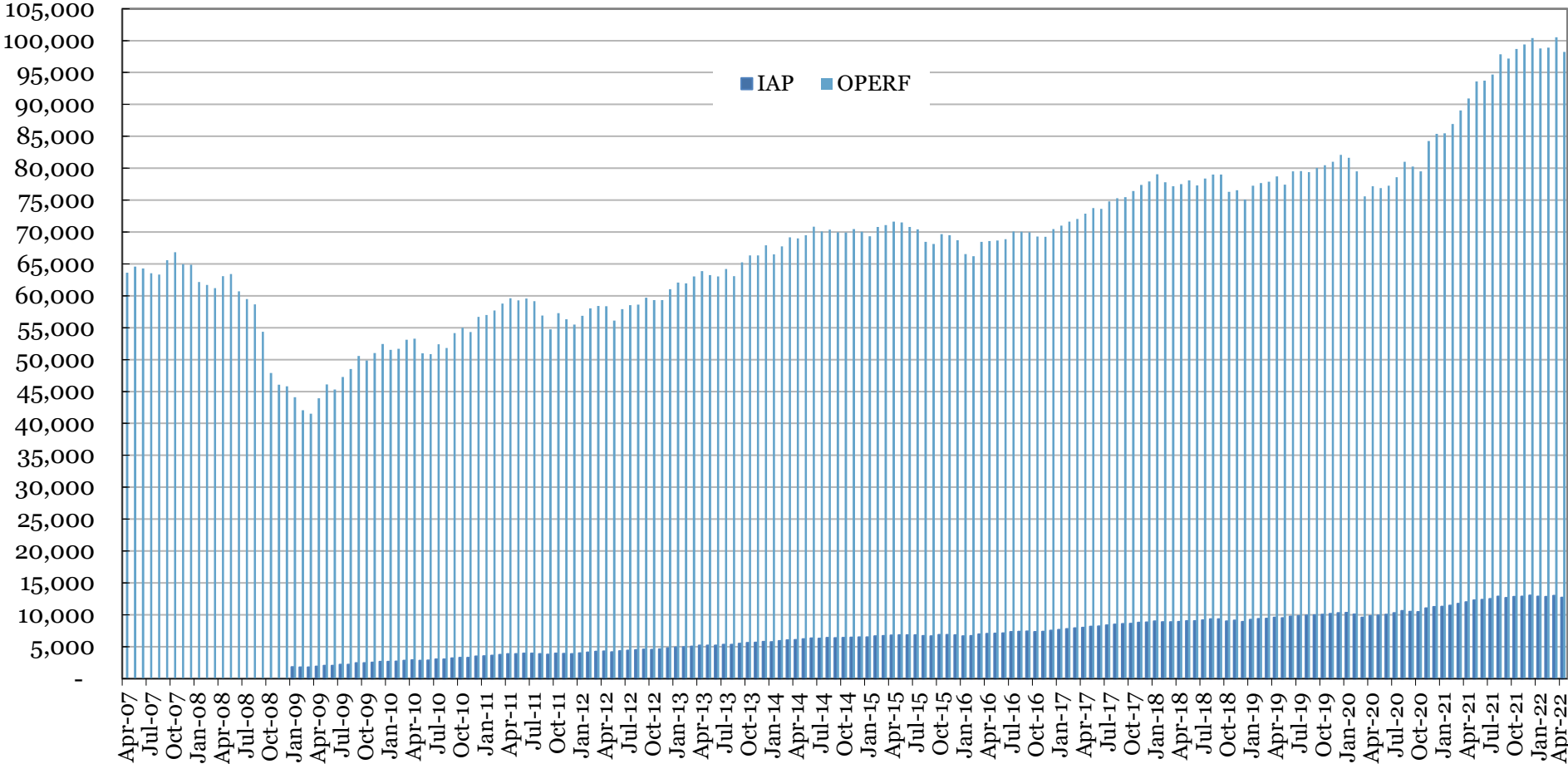
Total of All Treasury Funds** \$ 135,644,421

**Balances of the funds include OSTF or OITP investments, which is why total does not foot.

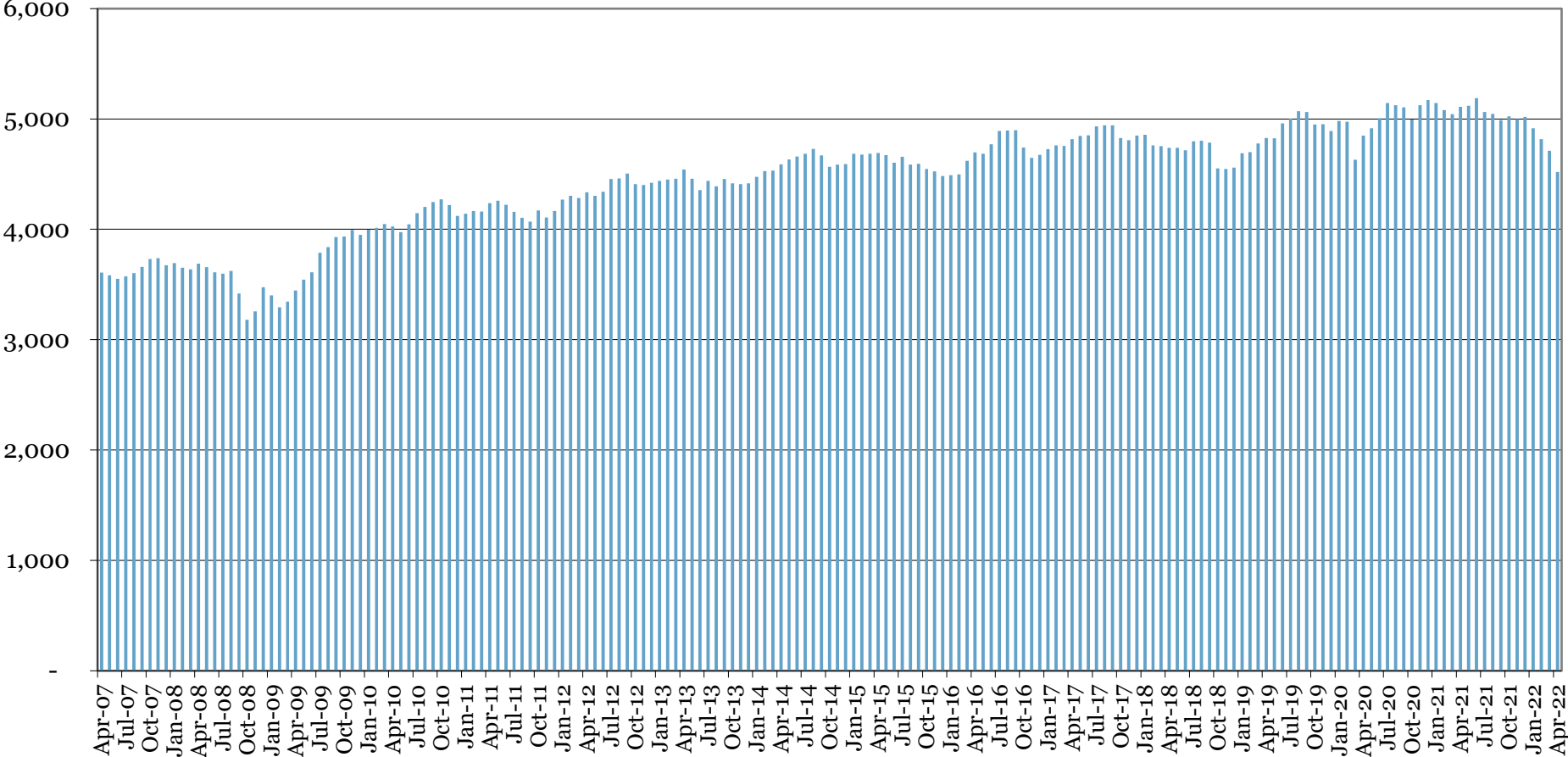


*Other State Funds include DAS Insurance Fund, DCBS Operating Fund, DCBS Workers Benefit Fund, DCBS - Elderly Housing Bond Sinking Fund, DCBS - Other Fund, Oregon Lottery Fund, DVA Bond Sinking Fund, ODOT Fund, OLGIF, & OPUF.

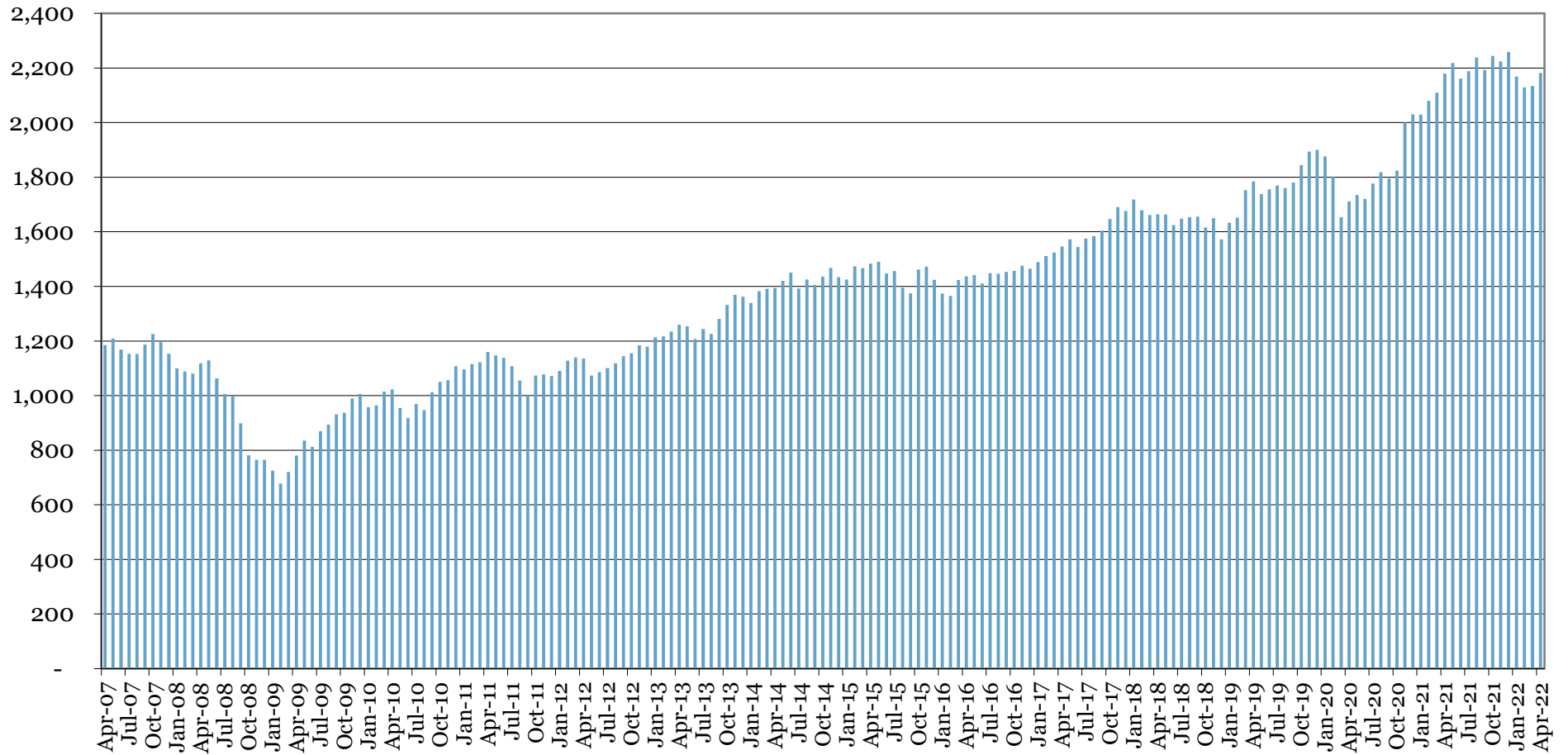
OPERF NAV
15 years ending April 30, 2022
(\$ in Millions)



SAIF NAV
15 years ending April 30, 2022
(\$ in Millions)



CSF NAV
15 years ending April 30, 2022
(\$ in Millions)



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TAB 8

CALENDAR — FUTURE AGENDA ITEMS

2022/23 OIC Forward Calendar and Planned Agenda Topics

July 20, 2022	Common School Fund Strategic Asset Allocation Real Estate Market Overview
September 7, 2022	OPERF Preliminary Asset/Liability Q2 OPERF Performance
October 26, 2022	OPERF Asset/Liability Study Individual Account Program (IAP) Review SAIF Annual Review Common School Fund Annual Review OSGP Annual Review
December 7, 2022	Q3 OPERF Performance Public Equity Portfolio Review Fixed Income Portfolio Review
January 25, 2023	Private Equity Portfolio Review Opportunity Portfolio Review 2024 OIC Calendar Approval
March 8, 2023	Q4 OPERF Performance Real Estate Portfolio Review Real Assets Portfolio Review
April 20, 2023	Diversifying Strategies Portfolio Review
May 31, 2023	Q1 OPERF Performance

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TAB 9
OPEN DISCUSSION

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TAB 10
PUBLIC COMMENTS

Public comments can now be found at the OIC website at:

<https://www.oregon.gov/treasury/invested-for-oregon/pages/oregon-investment-council.aspx>