



**OREGON
STATE
TREASURY**

Oregon Investment Council

April 20, 2022

Cara Samples
Chair

Tobias Read
State Treasurer

Rex Kim
Chief Investment Officer



Investment Division
16290 SW Upper Boones Ferry Road
Tigard, OR 97224
503.431.7900

Main Office
867 Hawthorne Ave SE
Salem, OR 97301
503.378.4000

oregon.gov/treasury
oregon.treasurer@state.or.us



OREGON INVESTMENT COUNCIL

Agenda

April 20, 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 March 9, 2022	Cara Samples <i>OIC Chair</i>	1
	2. Committee Reports	Rex Kim <i>Chief Investment Officer</i>	2
	<u>B. Information Items</u>		
9:10-10:10	3. Tail Risk Hedging Education	Karl Cheng <i>Senior Investment Officer, Portfolio Risk & Research</i> Mark Spitznagel <i>President, Chief Investment Officer, Universa</i> Brandon Yarckin <i>Chief Operating Officer, Universa</i> Ronald Lagnado, PhD <i>Director, Universa</i> Eric Spencer, CAIA <i>Chief Financial Officer, Head of Investor Relations, Universa</i>	3
10:10-10:40	4. OPERF Risk Survey	Mika Malone <i>Managing Principal, Meketa</i> Colin Bebee <i>Managing Principal, Meketa</i>	4

-----BREAK-----

Cara Samples
Chair

John Russell
Vice-Chair

Monica Enand
Member

Tobias Read
State Treasurer

Kevin Olineck
PERS Director

10:50-11:25	5. OPERF Liquidity	Karl Cheng <i>Senior Investment Officer, Portfolio Risk & Research</i> Katie Comstock <i>Associate Partner, Aon</i> Ashley Woeste <i>Senior Consultant, Aon</i>	5
11:25-12:00	6. OPERF Diversifying Strategies Portfolio Annual Review	Ben Mahon <i>Senior Investment Officer, Alternatives</i> Stephen Kennedy <i>Partner/Portfolio Analyst, Albourne</i>	6
12:00-12:30	7. Common School Fund Investment Policy Statement	John Hershey <i>Director of Investments</i> Katie Comstock <i>Associate Partner, Aon</i> Ashley Woeste <i>Senior Consultant, Aon</i> Steve Cummings <i>Senior Partner, Aon</i>	7
12:30	8. Asset Allocation & NAV Updates	Rex Kim	8
	a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund		
	9. Calendar — Future Agenda Items	Rex Kim	9
12:35	10. Open Discussion	OIC Member Staff Consultants	

O I C



OREGON
STATE
TREASURY

TAB 1
REVIEW & APPROVAL OF MINUTES



**OREGON
STATE
TREASURY**

State of Oregon

Office of the State Treasurer

16290 SW Upper Boones Ferry Road
Tigard, Oregon 97224

OREGON INVESTMENT COUNCIL

March 9, 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: Caleb Aldridge, Kenny Bao, Amy Bates, Tyler Bernstein, Taylor Bowman, Tan Cao, Austin Carmichael, Andrew Coutu, Debra Day, Ahman Dirks, Chris Ebersole, Alli Gordon, William Hiles, Andrew Hillis, Louise Howard, Ian Huculak, Claire Ilo, Roy Jackson, Aliese Jacobsen, Josh Jones, Robin Kaukonen, Amanda Kingsbury, Jeremy Knowles, Paul Koch, Krystal Korthals, Perrin Lim, Wei Keat Lui, Sommer May, Eric Messer, Dana Millican, Mike Mueller, Dmitri Palmateer, Lisa Pettinati, Aadrial Phillips, Jen Plett, Tim Powers, Mohammed Quraishi, Jo Recht, Scott Robertson, Faith Sedberry, Mark Selfridge, Sam Spencer, Anna Totdahl, Andrey Voloshinov, Rachel Wray, Tiffany Zahas

Consultants Present: Allan Emkin, Christy Fields, Mika Malone, Colin Bebee, Paola Nealon, David Glickman (Meketa Investment Group, Inc.); Kristen Doyle, Stephen Cummings (Aon Investments); Tom Martin, David Fann (Aksia/TorreyCove Capital Partners LLC)

PERS Present: Heather Case, Michiru Farney (PERS Board)

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 March 9, 2022 OIC meeting was called to order at 9:01 am by John Russell, OIC Vice Chair.

I. 9:01 am Review and Approval of Minutes

MOTION: Vice-Chair Russell asked for approval of the January 26, 2022 OIC regular meeting minutes. Treasurer Read moved approval at 9:01 am, and Member Enand seconded the motion which then passed by a 4/0 vote.



**OREGON
STATE
TREASURY**

II. 9:02 am Committee Reports

Private Equity Committee:

February 14	Francisco Partners VII & Francisco Partners Agility III	\$300M
February 14	Veritas Capital Partners VIII	\$250M
February 14	Vista Equity Partners VIII	\$250M

Real Estate Committee:

None

Opportunity Committee:

None

Alternatives Portfolio Committee:

February 23	Caxton Global Investments (USA) LLC	\$250M
February 23	Davidson Kempner Institutional Partners, L.P.	\$250M
February 23	Hudson Bay Fund, L.P.	\$250M

III. 9:03 am OPERF Benchmarking

Mika Malone, Managing Principal/Consultant, Paola Nealon, Managing Principal/Consultant, and Allan Emkin, Managing Principal/Consultant, Meketa Investment Group, and Kristin Doyle, Partner, AON presented phase 2 of the OPERF Benchmarking review. They discussed the total fund policy benchmark, individual asset class benchmarks, and a recommendation to add a passive market benchmark or reference portfolio at the total fund level. They believe that a 70/30 stocks/bonds portfolio would currently be the proper reference portfolio.

Motion: Vice Chair Russell asked if there was a motion to add the reference portfolio. Treasurer Read moved to accept the recommendation. Member Enand seconded the motion, which passed by a 4/0 vote.

IV. 10:09 am OPERF Q4 Performance Review

Allen Emkin, Managing Principal/Consultant and Paola Nealon, Managing Principal/Consultant, Meketa Investment Group presented the OPERF Q4 Performance Review. Topics included general performance, asset allocations, and return drivers for the quarter and the year overall.

V. 10:21 am OPERF Real Estate Portfolio Annual Review

Anthony Breault, Senior Investment Officer, Real Estate, Christy Fields, Managing Principal/Consultant, Meketa Investment Group, Austin Carmichael, Investment Officer and Chris Ebersole, Investment Officer, Real Estate presented the annual review of the OPERF Real Estate Portfolio. Topics included portfolio composition, market commentary, return drivers, debt metrics, new commitments, risk strategies, property diversification, and ESG factors.

VI. 11:03 am OPERF Real Assets Portfolio Annual Review

Ben Mahon, Senior Investment Officer, Alternatives, and Thomas Martin, Head of PE & RA Research, Akasia/TorreyCove discussed the OPERF Real Assets Portfolio annual review. Topics included the strategic role of the portfolio, positioning, risk metrics, performance, pacing plan, and 2022 priorities.



VII. **11:38 am Asset Allocation & NAV Updates**

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

VIII. **11:40 pm Calendar – Future Agenda Items**

Rex Kim presented the forward calendar.

IX. **11:42 am Open Discussion**

Vice Chair Russell remarked on the quality of public comments. OIC Members and Rex Kim discussed return to in-person meetings. Vice Chair Russell also voiced his views about the topic of divestiture.

X. **11:47 am Public Comments**

Vice-Chair Russell adjourned the meeting at 11:48 am.

Respectfully submitted,
Aadrial Phillips
Executive Support Specialist

O I C



OREGON
STATE
TREASURY

TAB 2
COMMITTEE REPORTS

O I C



OREGON
STATE
TREASURY

TAB 3

TAIL RISK HEDGING EDUCATION

O I C



OREGON
STATE
TREASURY

TAB 4
OPERF RISK SURVEY

Oregon Investment Council

April 20, 2022

Asset-Liability Study:
Risk and Implementation
Survey Results

Introduction

- This report presents the responses to the 2022 Risk and Implementation Survey.
- Results are separated for each question: 1) Council and 2) Staff.
 - Total responses: five OIC members and ten Staff.
 - We have highlighted areas of agreement and disagreement between the two groups.
- Additional dialogue during the presentation will enhance the takeaways and utility of the exercise.
- The results of the survey serve as a foundation for the asset-liability modeling process. They begin to frame the inputs (e.g., classes and constraints) and output goals (e.g., key metrics and characteristics) of the process.

Key Takeaways

- For the vast majority of topics, there is a high level of consensus within each of the respective groups (i.e., within the OIC and within Staff).
 - Furthermore, the OIC and Staff share similar viewpoints on most considerations.
- The results support the current trajectory of the OIC/OPERF. There is nothing in the results that suggests a material deviation from the current strategic allocation and risk posture is desired.
- Primary objectives:
 - Maintain consistent progress on funded ratio.
 - Avoid major drawdowns and focus on corresponding implications of negative net cash-flow.

Key Takeaways (continued)

→ As it relates to existing and potential classes, the following apply:

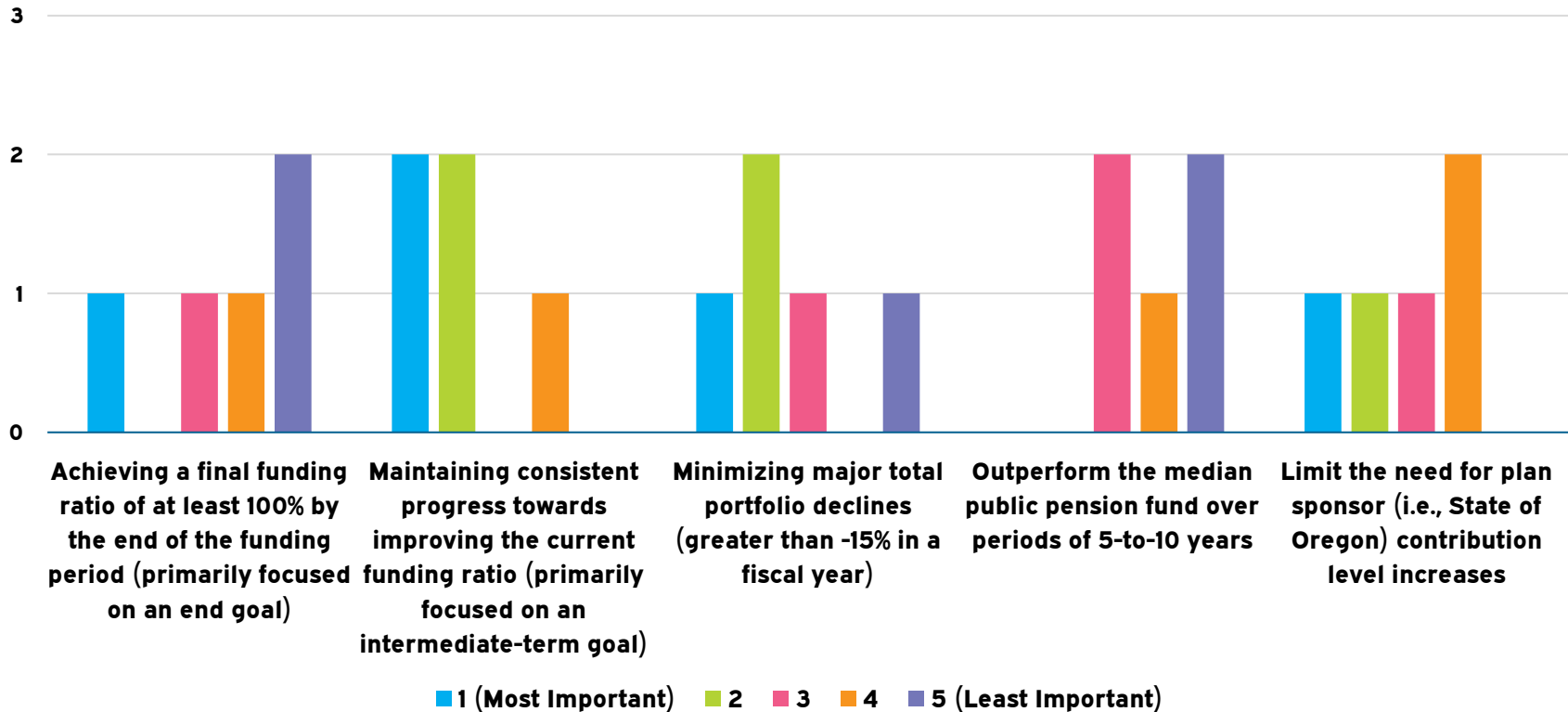
- Continue a focus on illiquid strategies and examine all strategies based on net-of-fee results.
- Subject to asset-liability model output, Risk Parity and Opportunistic investments may still serve a purpose within OPERF.
- Exploring the incorporation of equity hedging strategies (e.g., long volatility or tail risk) is desired.
- While the Diversifying Strategies class is viewed as valuable, there needs to be further refinement as to what can and cannot be included in the class.

→ As a reminder, a similar survey was conducted in 2021.

- Generally speaking, the 2021 and 2022 results were congruent.
- Primary differences (all marginal):
 - A more consistent view on risk tolerance across questions in 2022.
 - Improved understanding of risk factor exposures and portfolio functions.
 - Decrease in the desire to look “different” compared to peers.
 - Additional support for tactical allocation decisions.

1. Please rank the following objectives in order of importance with 1 being most important and 5 being least important.

Council

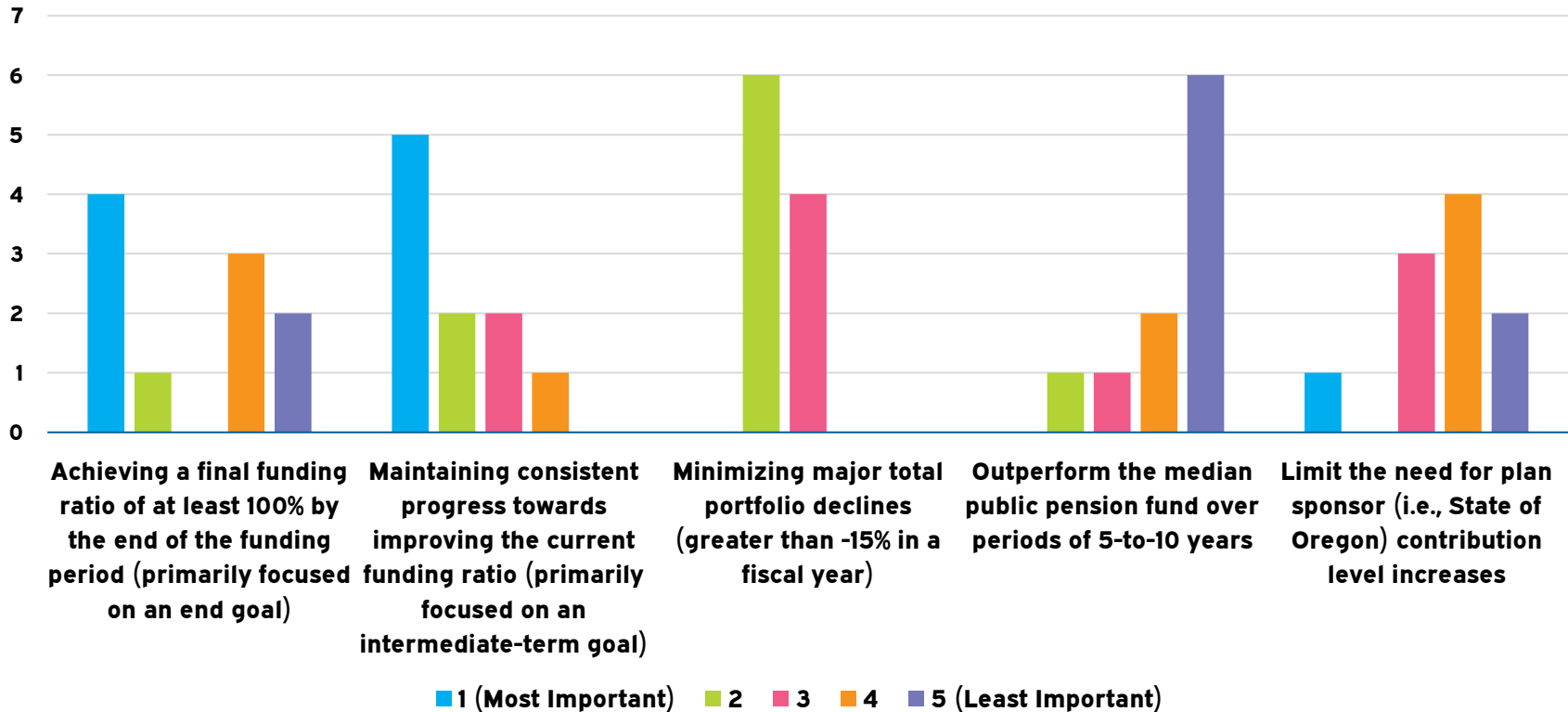


→ There was a low-to-moderate level of consensus as it relates to the objectives. Maintaining consistent funding progress was the primary area of agreement.

→ Moreover, the OIC does not appear to be overly concerned about peer performance.

1. Please rank the following objectives in order of importance with 1 being most important and 5 being least important.

Staff



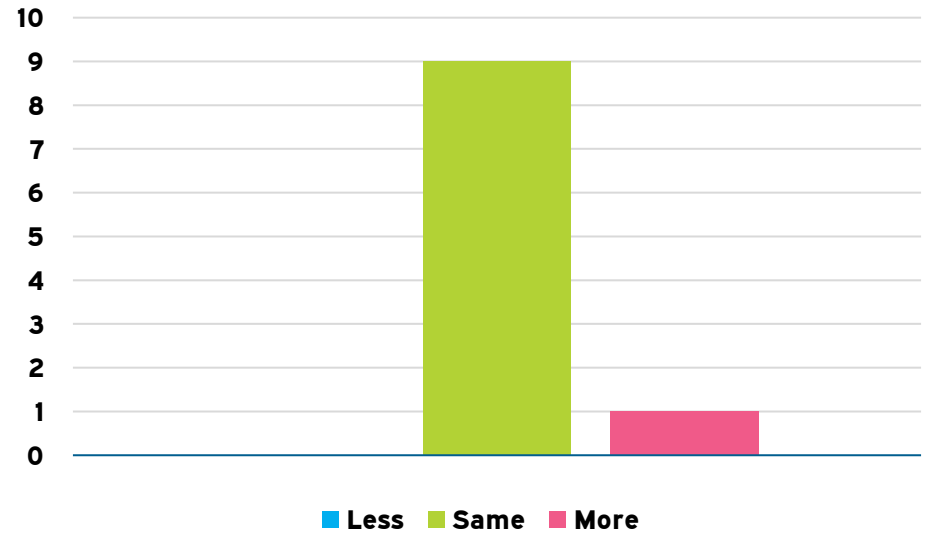
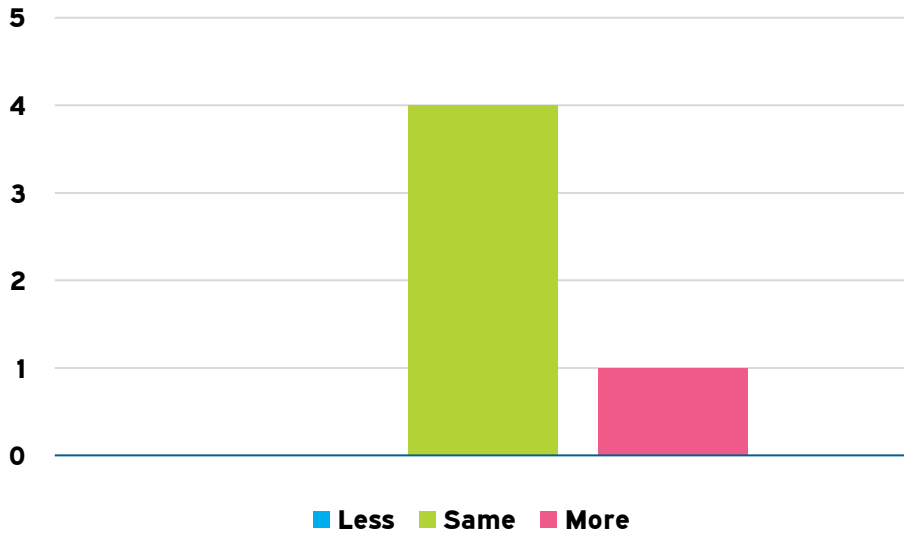
→ Staff and OIC generally shared similar objectives.

→ In part due to a larger sample size, the Staff responses indicate more consensus in the objectives. Staff is focused on funding progress, avoiding major drawdowns, and is not overly concerned about peers.

2. To achieve long-term goals, should OIC be taking more, less, or the same amount of investment risk in the portfolio?

Council

Staff



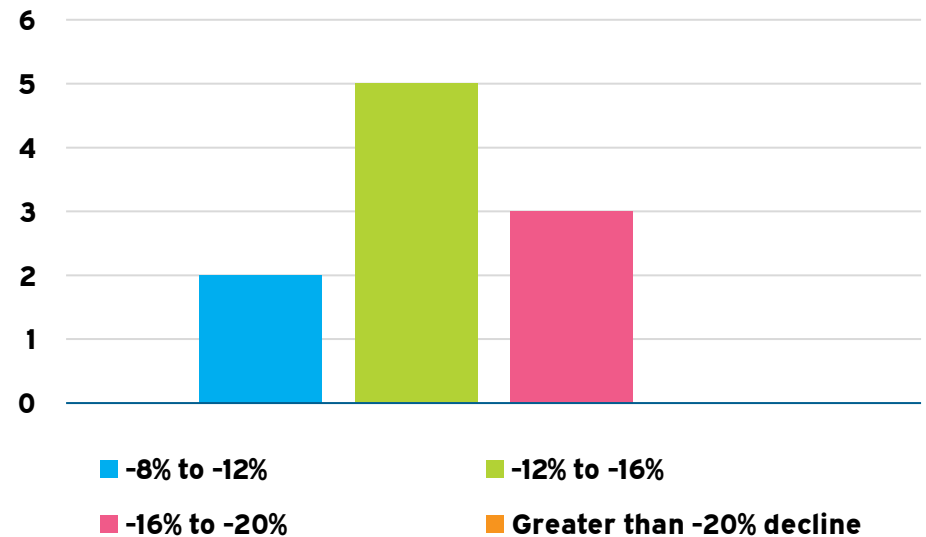
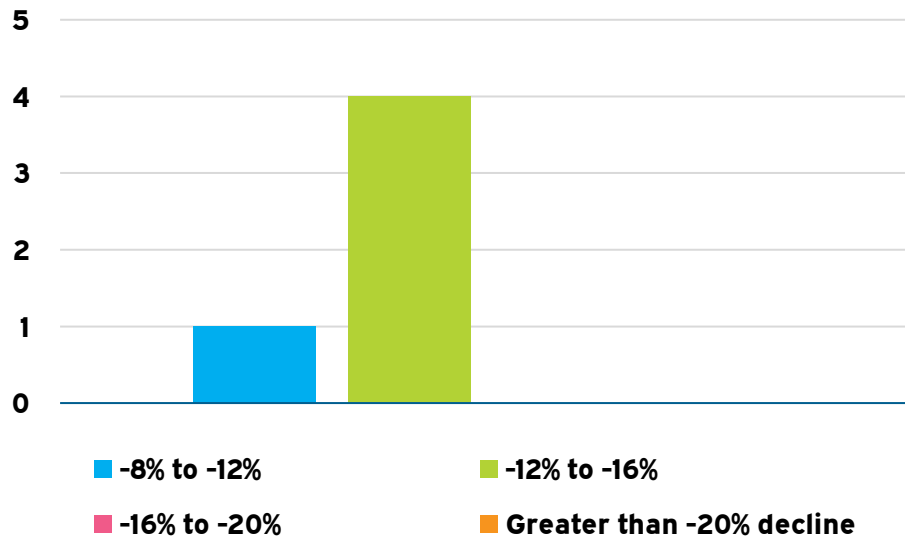
→ The vast majority of respondents believe OPERF is taking enough risk necessary to achieve long-term goals.

→ Staff and OIC are aligned with respect to perspectives on the amount of risk in the portfolio.

3. What is considered to be a bad but not necessarily a catastrophic year to the respondent?

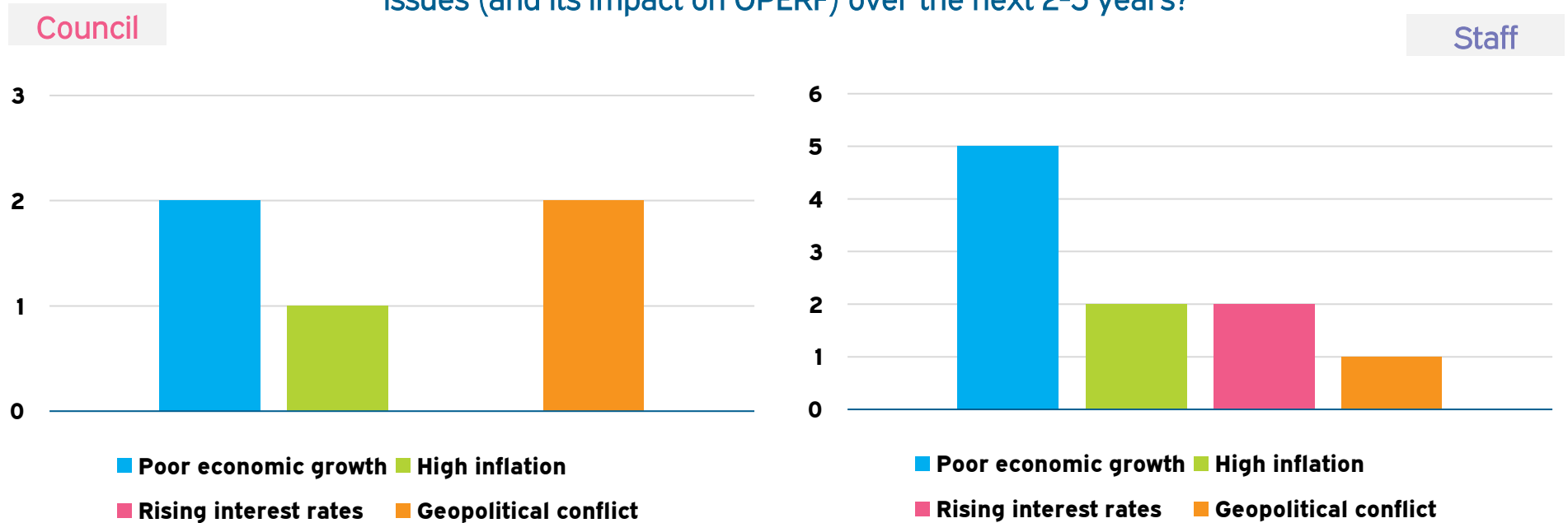
Council

Staff



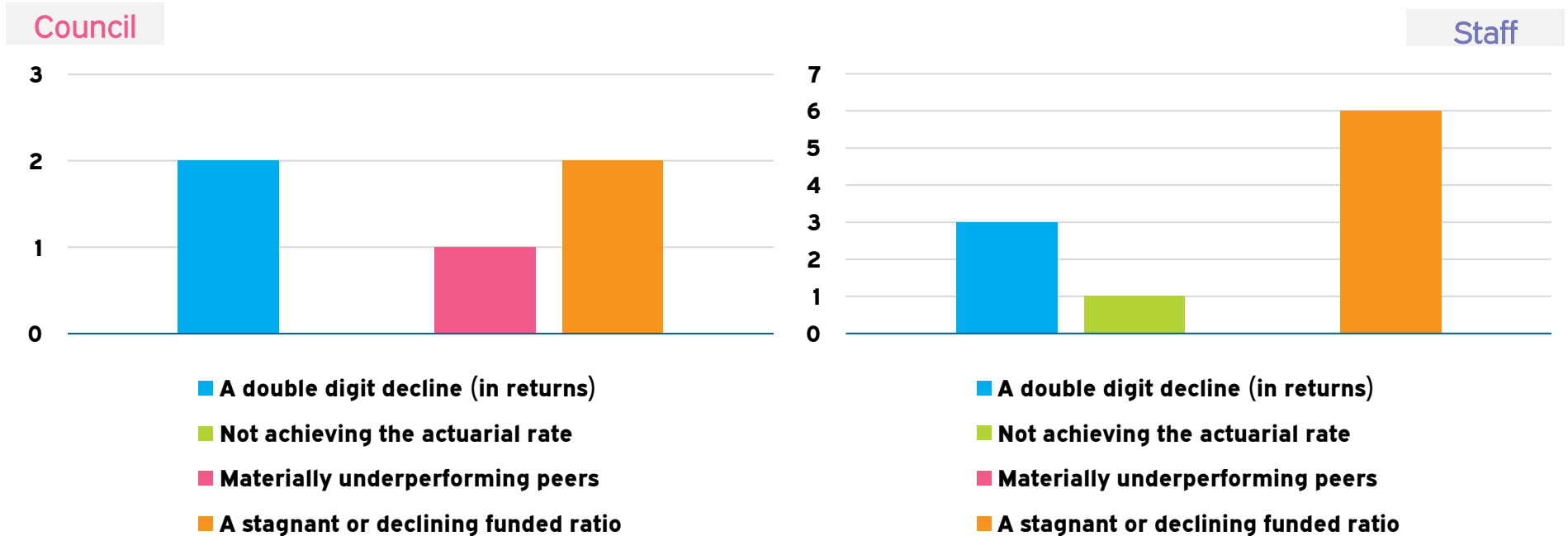
- OIC is aligned with respect to single-year downside risk.
- 80% of OIC respondents believe that a decline of -12% to -16% would be considered bad but not necessarily catastrophic.
- On average, the OIC's selections indicate a preference to not lose two years of actuarially assumed returns in a single year.
- Staff and OIC are generally aligned with respect to downside risk tolerance, although Staff exhibits a modestly higher risk tolerance as 30% of respondents selected the -16% to -20% range.

4. As an OIC member, I am most concerned with which of the following macroeconomic issues (and its impact on OPERF) over the next 2-5 years?



- Poor economic growth and geopolitical conflict were the primary concerns of the OIC.
- 2-5 years is an intermediate period, and these results reflect the primary risk factor in the portfolio (i.e., economic growth risk) as well as current worldwide events.
- Staff is primarily concerned with the impacts of poor economic growth on OPERF. As it relates to geopolitical conflict, only 10% of the Staff respondents selected this option as the primary concern.

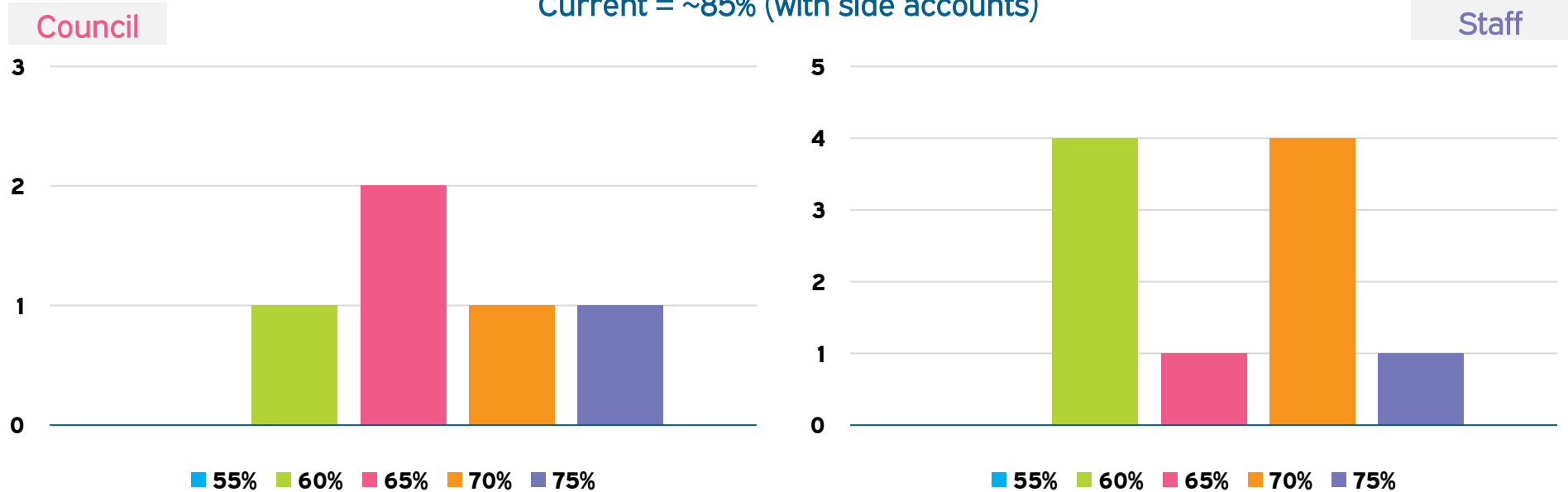
5. Which of the following outcomes is of the greatest concern over the next 10 years?



- Similar to question #1 (ranking objectives), the OIC is largely concerned with funded ratio progress and material downside risks over a relatively long period of 10 years.
- Interestingly, one OIC member is concerned about peer relative performance over this timeframe.
- Staff and OIC are aligned as both groups are largely focused on maintaining funding progress. 60% of Staff respondents are concerned about a stagnant or declining funded ratio.
- Of note, there is a degree of commonality among each of the selections by Staff as they are related and/or directly impact the funded ratio. This was intentional as there are different ways of viewing the issue.

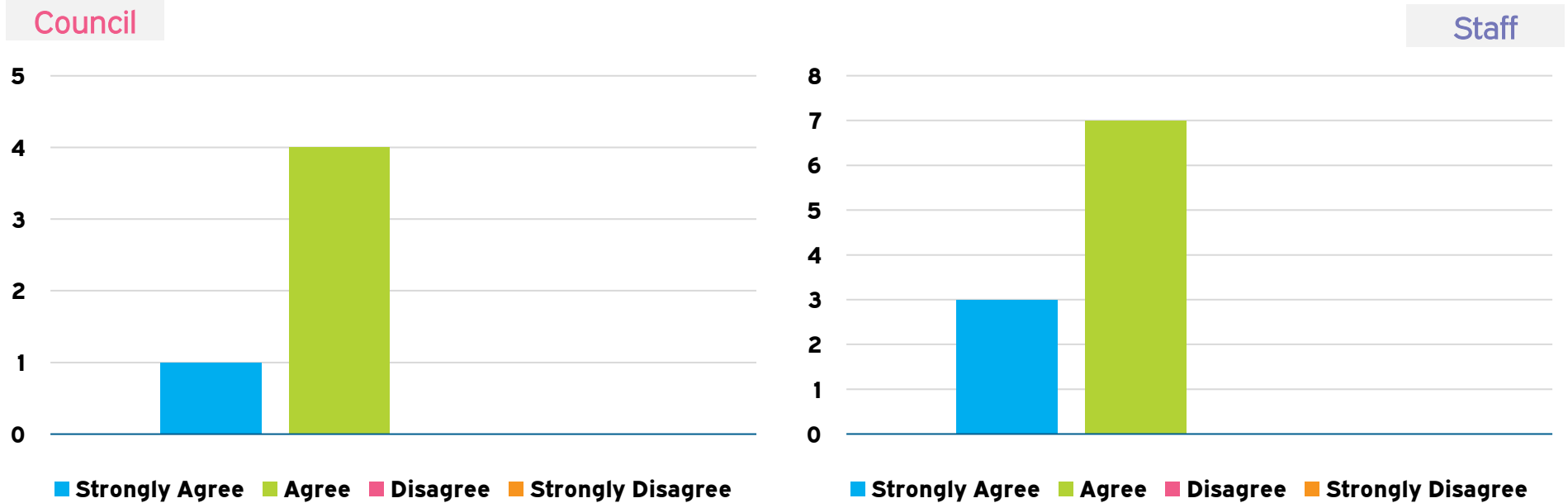
6. What is the minimum funded ratio that the respondent is willing to accept in a market crisis scenario (i.e., very rapid deterioration in economic conditions)?

Current = ~85% (with side accounts)



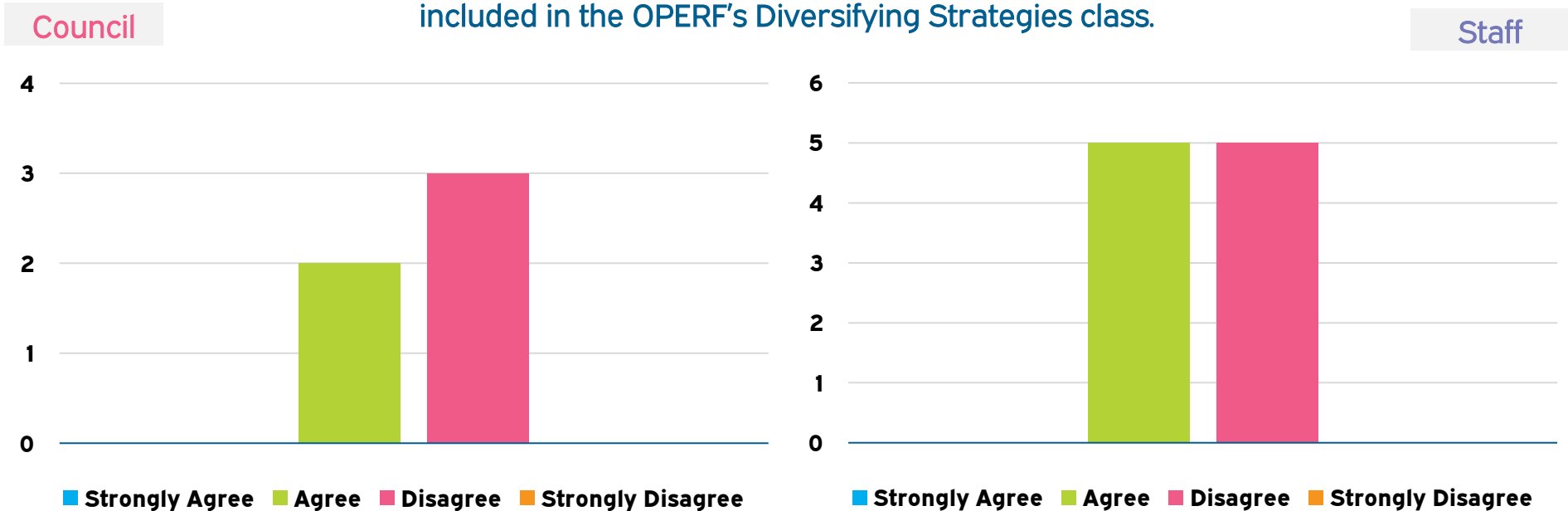
- 80% of OIC respondents do not want to see the funded ratio drop below 65% (or higher) during a market crisis.
- Of note, OPERF experienced a roughly 30% drop in funded ratio during the Global Financial Crisis.
- Staff's responses can be grouped into two camps: 1) 60-65% and 2) 70-75%.
- Staff and OIC are generally aligned as it relates to funded ratio decline (i.e., weighted average funded ratio decline preferences are nearly identical).

7. The Diversifying Strategies class can provide stability in funded ratio level over time.



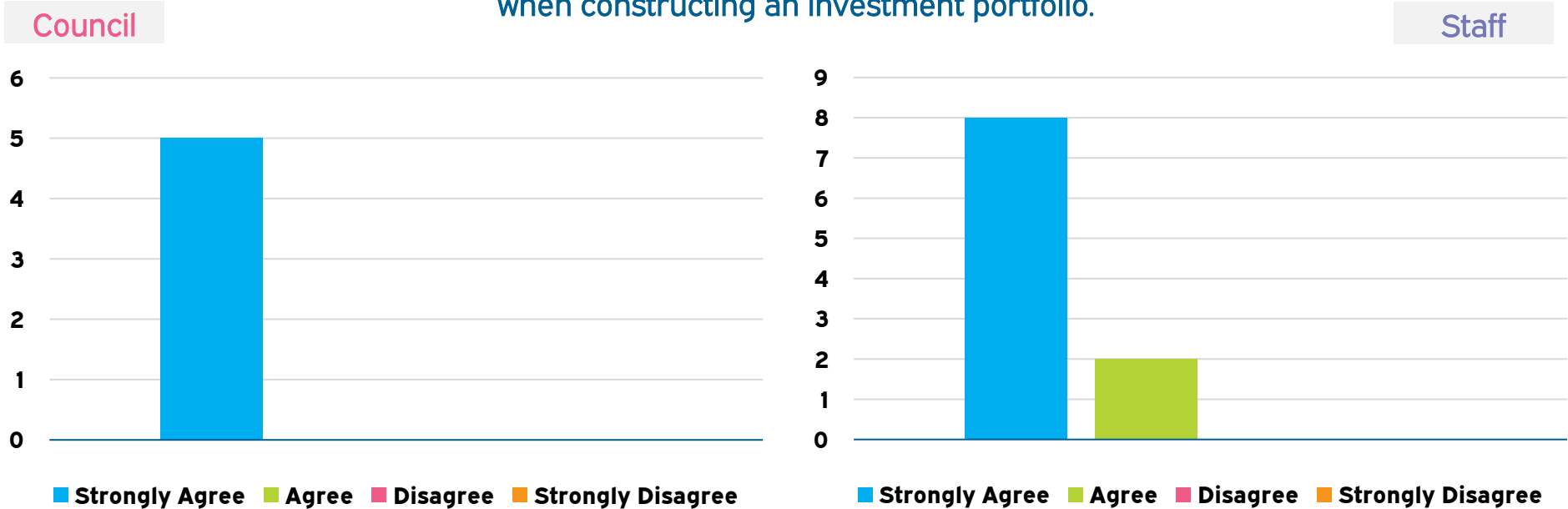
- There is a high level of consensus among the OIC as it relates to the utility of the Diversifying Strategies class.
- Similar to the OIC, Staff indicated a high level of consensus that the Diversifying Strategies class can improve the stability of the funded ratio over time.

8. It is straight-forward to understand what can and cannot be included in the OPERF's Diversifying Strategies class.



- While the OIC agrees that the Diversifying Strategies class is of value, 60% of OIC respondents do not agree that it is straight-forward to understand what can and cannot be included in the class.
- From Meketa's experience, this is a common perspective as it relates to this type of functional class.
- While there is slightly more agreement from Staff compared to the OIC, Staff's understanding is still mixed as it relates to what can and cannot be included in the Diversifying Strategies class.

9. The cash-flow position of the Fund (e.g., net positive contributions or net negative benefit payments) is an important consideration when constructing an investment portfolio.

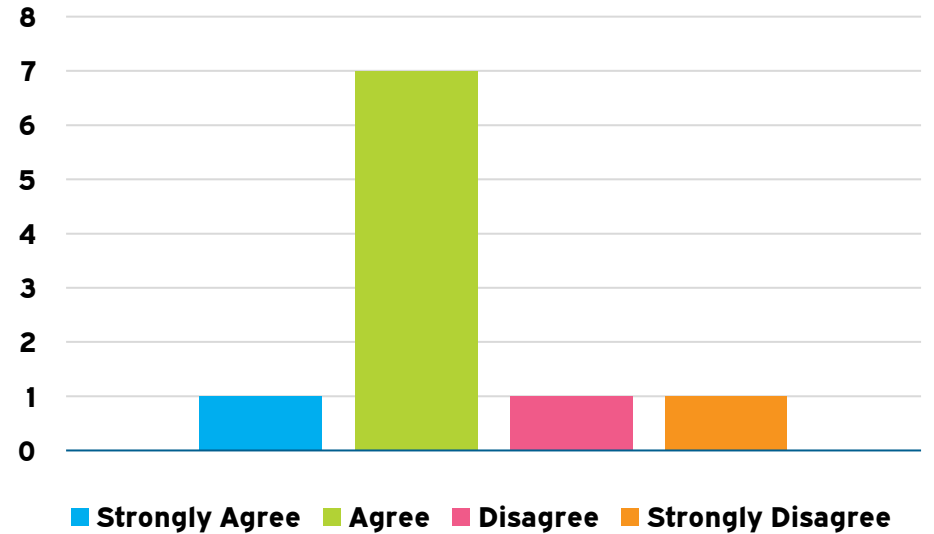
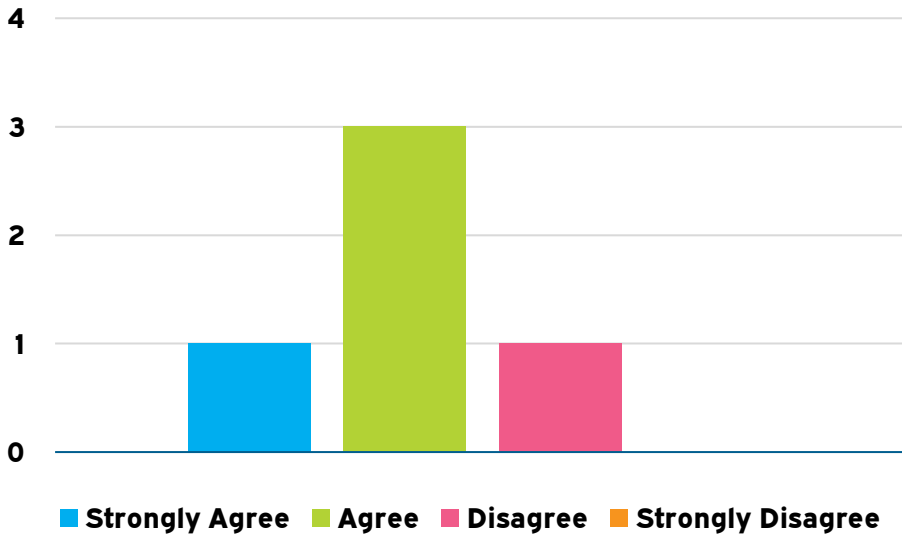


- All OIC respondents strongly agreed that OPERF’s cash-flow position was an important consideration in constructing the investment portfolio.
- Similar to the OIC, the vast majority of Staff respondents strongly agreed that OPERF’s cash-flow position was an important consideration in constructing the investment portfolio.

10. Shifting asset allocation away from policy (i.e., tactical allocations) from time-to-time adds value.

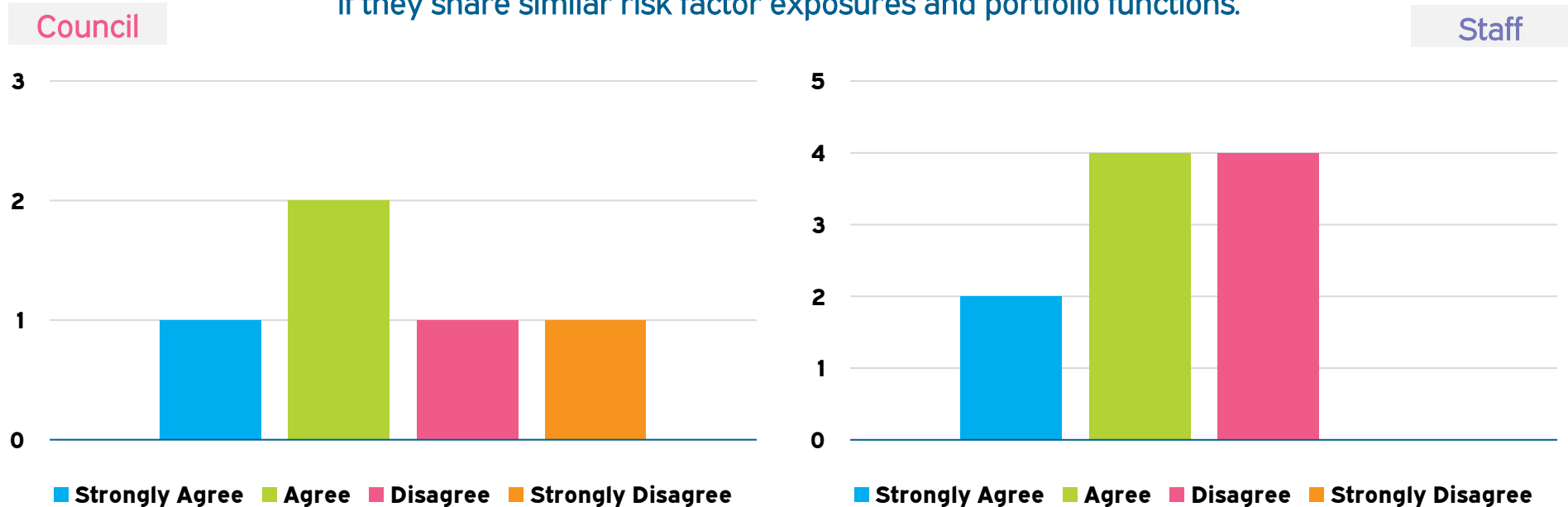
Council

Staff



- 80% of OIC respondents believe tactical positioning can add value, with the remaining 20% of respondents disagreeing.
- Similar to the OIC, 80% of Staff believe that tactical positioning can add value. Of the disagreeing 20%, one respondent strongly disagreed.

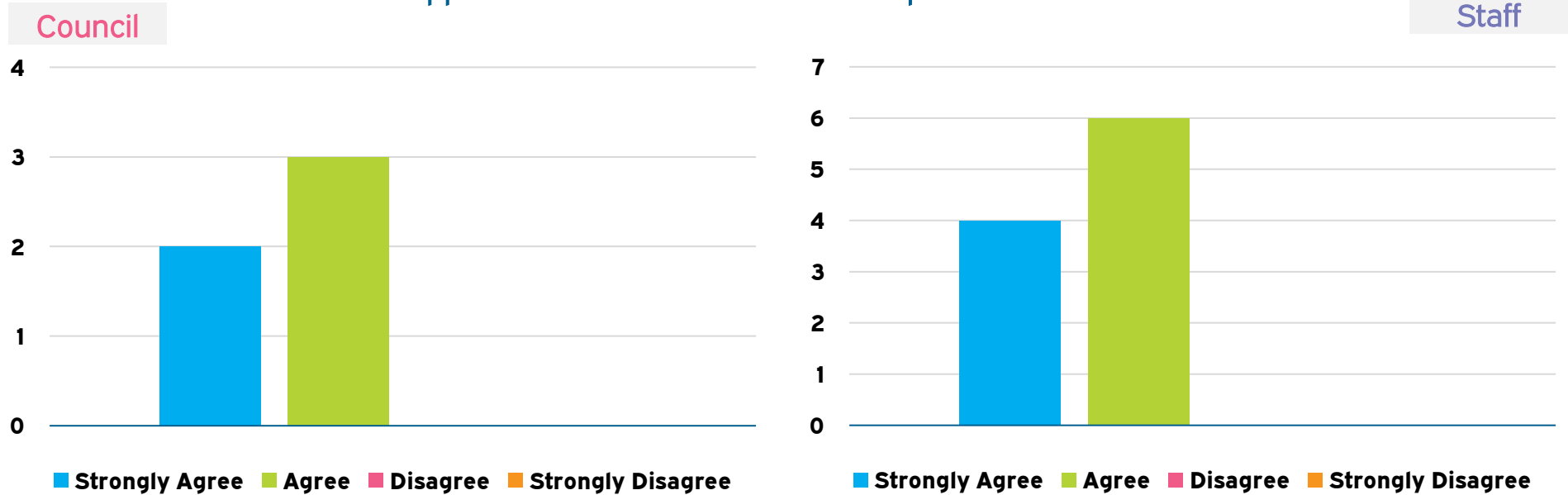
11. Different strategies and/or asset classes may be interchangeable if they share similar risk factor exposures and portfolio functions.



→ OIC respondents were split 60/40 when asked whether different strategies offering similar factor exposures should or could be interchangeable.

→ Similar to the OIC, Staff respondents were split 60/40 when asked whether different strategies offering similar factor exposures should or could be interchangeable.

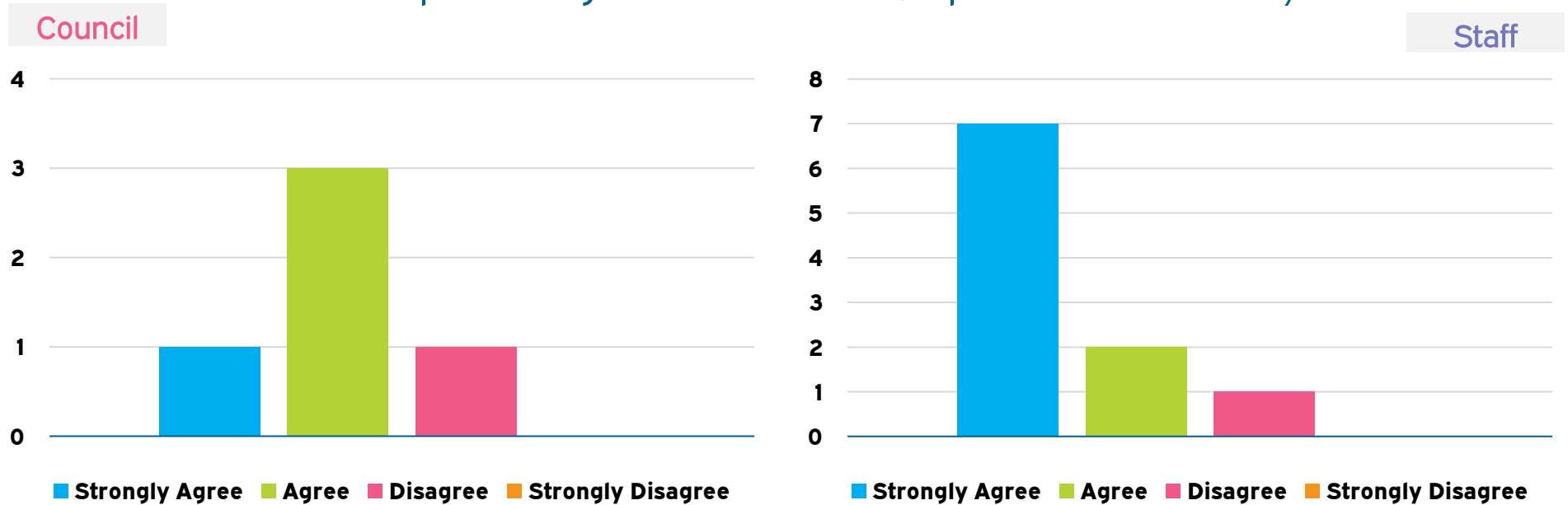
12. Opportunistic investments have the potential to add value.



→ All OIC respondents either agreed or strongly agreed in the value add behind opportunistic investments.

→ Similar to the OIC, all Staff respondents either agreed or strongly agreed in the value add behind opportunistic investments.

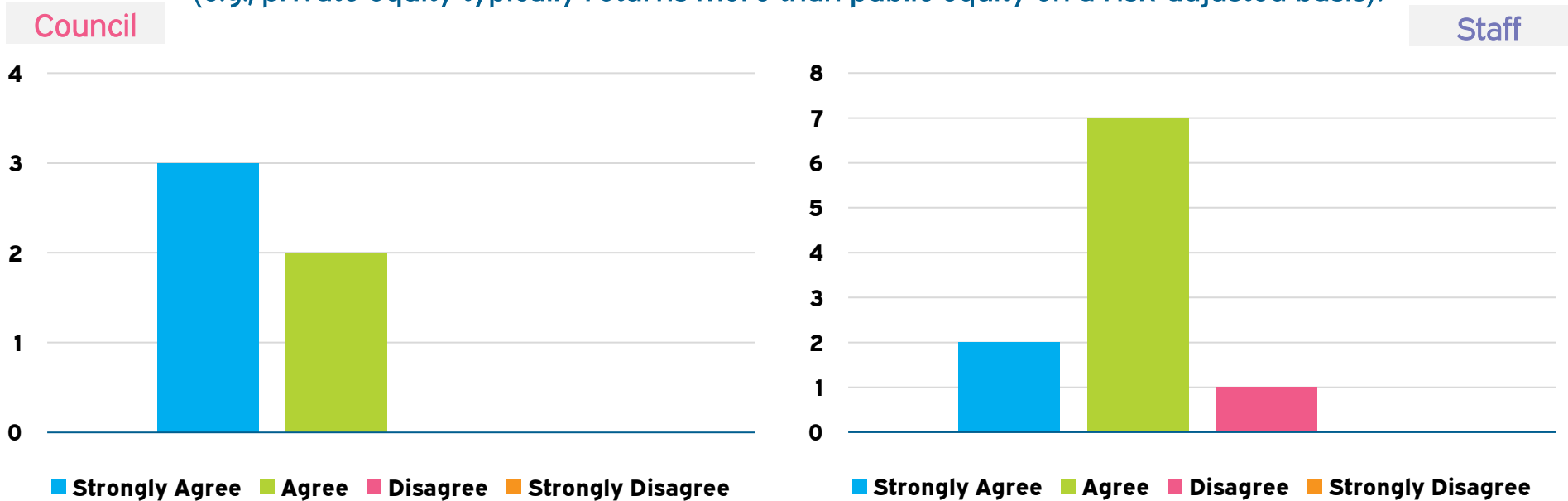
13. High fee strategies are worthwhile if they produce high net-of-fee returns (e.g., a strategy with a 1% management fee and a 9% expected net-of-fee return is preferred to a strategy with a 20 basis point management fee and an 8.0% expected net-of-fee return).



→ 80% of the OIC believe that net-of-fee risk-adjusted results should be the primary determinant of investment success for a given strategy.

→ With an even higher level of conviction than the OIC, 70% of Staff strongly agree and 20% agree that net-of-fee risk-adjusted results should be the primary determinant of investment success.

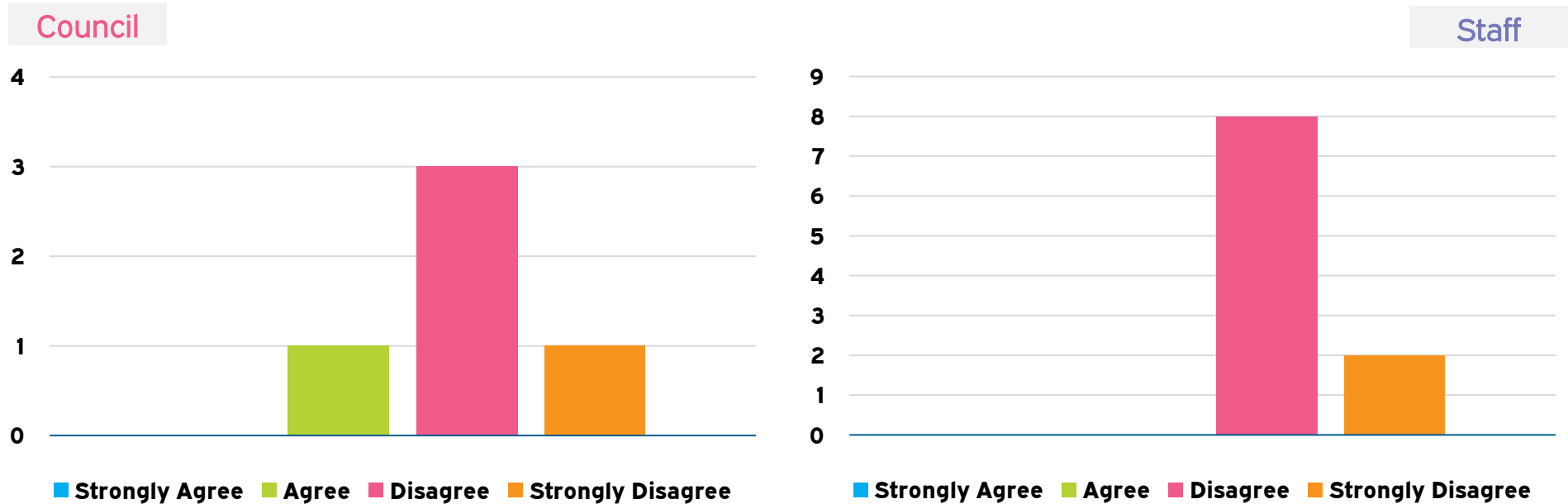
14. Illiquid strategies typically return more than similar-risk, liquid strategies (e.g., private equity typically returns more than public equity on a risk-adjusted basis).



→ All OIC members strongly agree or agree that illiquidity risk is worthwhile.

→ There is slightly less agreement among Staff (compared to the OIC) in the value of illiquidity risk, but the vast majority of Staff agree illiquidity risk is worthwhile.

15. Producing a return pattern that is different than peers is important (given the same long-term return).



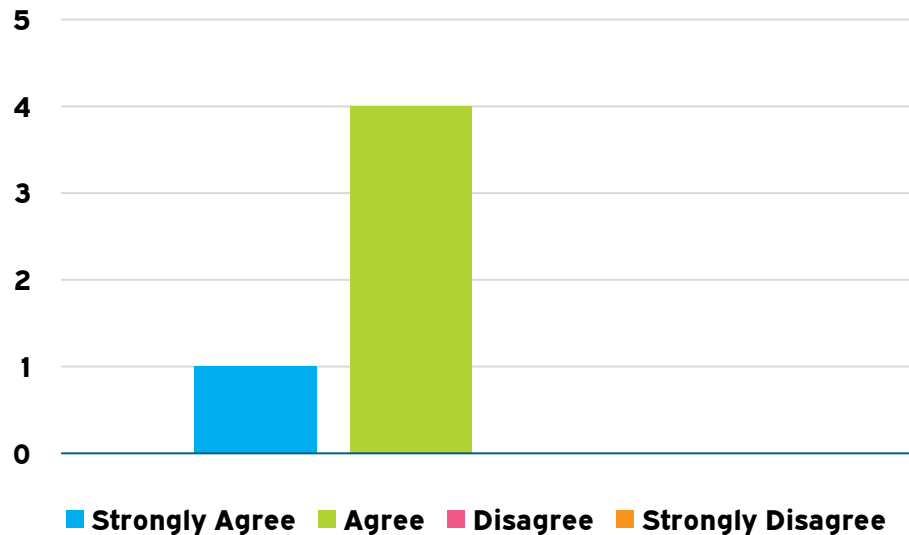
→ 80% of OIC respondents do not believe that producing a return pattern different than peers is particularly important.

→ This implies that the OIC does not place a lot of value on being “different” than peer funds.

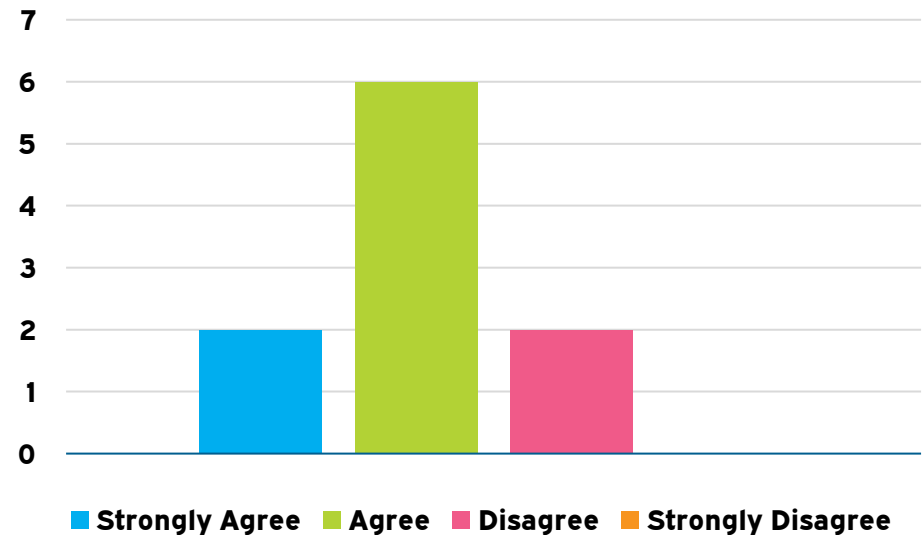
→ Similar to the OIC, Staff does not believe that producing a return pattern different than peers is particularly important.

16. Strategies that are designed to hedge equity risk (e.g., insurance-like long volatility or tail risk strategies, etc.) can enhance the risk/return profile of OPERF.

Council

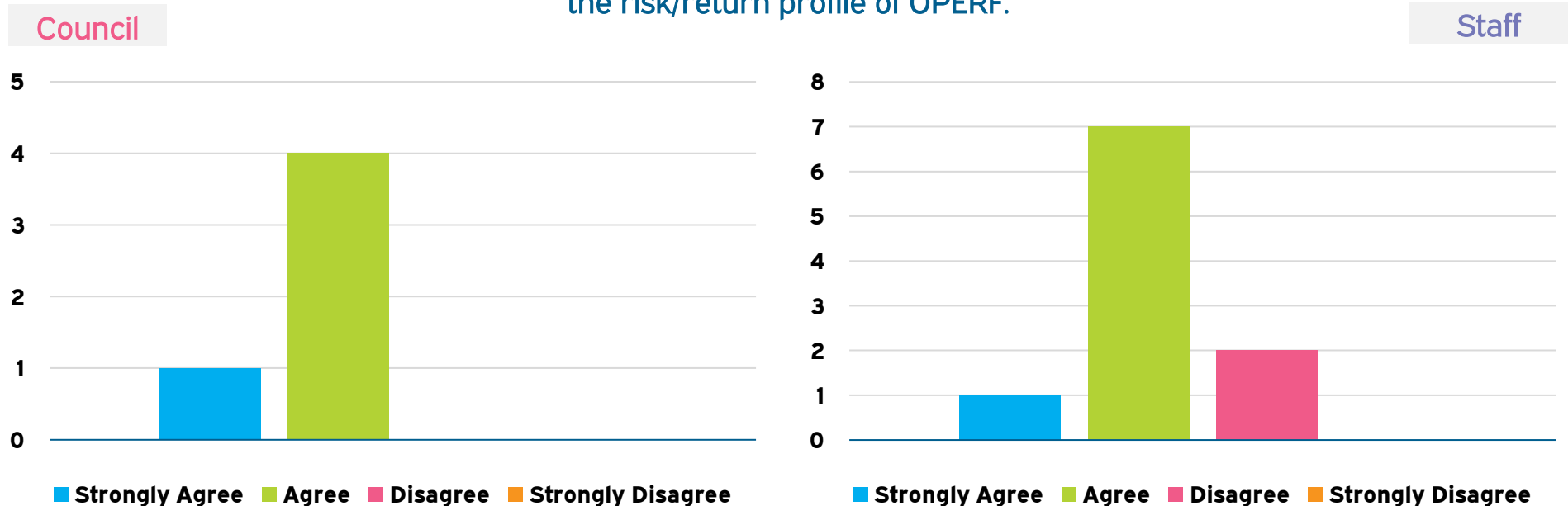


Staff



- The OIC believes that employing equity hedging strategies can enhance the risk/return profile of OPERF.
- While the vast majority of Staff also believe that equity hedging strategies may be worthwhile, 20% of Staff do not agree in its potential utility.

17. Long-only, multi-asset class strategies (e.g., Risk Parity) can enhance the risk/return profile of OPERF.



→ The OIC believes that long-only, multi-asset class strategies, such as Risk Parity, can enhance the risk/return profile of OPERF.

→ While the majority of Staff also agree with the OIC that long-only, multi-asset class strategies may be valuable, 20% of Staff respondents disagree with this statement.

Conclusion

- These survey results serve as a foundational guide for the asset-liability modelling process. The preferences and viewpoints of the OIC will be built into the model and its corresponding output.
- The results support the current trajectory of the OIC/OPERF. There is nothing in the results that suggests a material deviation from the current strategic allocation and risk posture is desired.
- Primary objectives:
 - Maintain consistent progress on funded ratio.
 - Avoid major drawdowns and focus on corresponding implications of negative net cash-flow.
- As it relates to existing and potential classes, the following apply:
 - Continue a focus on illiquid strategies and examine all strategies based on net-of-fee results.
 - Subject to asset-liability model output, Risk Parity and Opportunistic investments may still serve a purpose within OPERF.
 - Exploring the incorporation of equity hedging strategies (e.g., long volatility or tail risk) is desired.
 - While the Diversifying Strategies class is viewed as valuable, there needs to be further refinement as to what can and cannot be included in the class.
- Next Steps
 - Discussion of asset classes for modeling and corresponding capital market assumptions.

Appendix

Objectives - Council

1. Please rank the following objectives in order of importance with 1 being most important and 5 being least important.

Achieving a final funding ratio of at least 100% by the end of the funding period (primarily focused on an end goal)

1: 1

2: 0

3: 1

4: 1

5: 2

Maintaining consistent progress towards improving the current funding ratio (primarily focused on an intermediate-term goal)

1: 2

2: 2

3: 0

4: 1

5: 0

Minimizing major total portfolio declines (greater than -15% in a fiscal year)

1: 1

2: 2

3: 1

4: 0

5: 1

Outperform the median public pension fund over periods of 5-to-10 years.

1: 0

2: 0

3: 2

4: 1

5: 2

Limit the need for plan sponsor (i.e., State of Oregon) contribution level increases.

1: 1

2: 1

3: 1

4: 2

5: 0

Risk Appetite - Council

2. To achieve long-term goals, should the OIC be taking more, less, or the same amount of investment risk in the portfolio?

Less: 0

Same: 4

More: 1

3. What is considered to be a bad but not necessarily a catastrophic year to the respondent?

-8% to -12%: 1

-12% to -16%: 4

-16% to -20%: 0

Greater than -20% decline: 0

4. As an OIC member, I am most concerned with this of the following macroeconomic issues (and its impact on OPERF) over the next 2-5 years?

Poor economic growth: 2

High inflation: 1

Rising interest rates: 0

Geopolitical conflict: 2

5. Which of the following outcomes is of the greatest concern over the next 10 years?

A double digit decline (in returns): 2

Not achieving the actuarial rate: 0

Materially underperforming peers: 1

A stagnant or declining funded ratio: 2

Risk Mitigation - Council

6. What is the minimum funded ratio that the respondent is willing to accept in a market crisis scenario (i.e., very rapid deterioration in economic conditions)?

Current = ~85% (with side accounts)

55%: 0

60%: 1

65%: 2

70%: 1

75%: 1

7. The Diversifying Strategies class can provide stability in funded ratio levels over time.

Strongly Agree: 1

Agree: 4

Disagree: 0

Strongly Disagree: 0

8. It is straight-forward to understand what can and cannot be included in the OPERF's Diversifying Strategies class.

Strongly Agree: 0

Agree: 2

Disagree: 3

Strongly Disagree: 0

9. The cash-flow position of the Fund (e.g., net positive contributions or net negative benefit payments) is an important consideration when constructing an investment portfolio.

Strongly Agree: 5

Agree: 0

Disagree: 0

Strongly Disagree: 0

Risk and Implementation Survey Results

Implementation - Council

10. Shifting asset allocation away from policy (i.e., tactical allocations) from time-to-time adds value.
- Strongly Agree: 1
 - Agree: 3
 - Disagree: 1
 - Strongly Disagree: 0
11. Different strategies and/or asset classes may be interchangeable if they share similar risk factor exposures and portfolio functions.
- Strongly Agree: 1
 - Agree: 2
 - Disagree: 1
 - Strongly Disagree: 1
12. Opportunistic investments have the potential to add value.
- Strongly Agree: 2
 - Agree: 3
 - Disagree: 0
 - Strongly Disagree: 0
13. High fee strategies are worthwhile if they produce high net-of-fee returns. (e.g., a strategy with a 1% management fee and a 9% expected net-of-fee return is preferred to a strategy with a 20 basis point management fee and an 8.0% expected net-of-fee return).
- Strongly Agree: 1
 - Agree: 3
 - Disagree: 1
 - Strongly Disagree: 0
14. Illiquid strategies typically return more than similar-risk, liquid strategies (e.g., private equity typically returns more than public equity on a risk-adjusted basis).
- Strongly Agree: 3
 - Agree: 2
 - Disagree: 0
 - Strongly Disagree: 0
15. Producing a return pattern that is different than peers is important (given the same long-term return).
- Strongly Agree: 0
 - Agree: 1
 - Disagree: 3
 - Strongly Disagree: 1

Implementation (continued) – Council

16. Strategies that are designed to hedge equity risk (e.g., insurance-like long volatility or tail risk strategies, etc.) can enhance the risk/return profile of OPERF.

Strongly Agree: 1

Agree: 4

Disagree: 0

Strongly Disagree: 0

17. Long-only, multi-asset class strategies (e.g., Risk Parity) can enhance the risk/return profile of OPERF.

Strongly Agree: 1

Agree: 4

Disagree: 0

Strongly Disagree: 0

Objectives - Staff

1. Please rank the following objectives in order of importance with 1 being most important and 5 being least important.

Achieving a final funding ratio of at least 100% by the end of the funding period (primarily focused on an end goal)

1: 4
2: 1
3: 0
4: 3
5: 2

Maintaining consistent progress towards improving the current funding ratio (primarily focused on an intermediate-term goal)

1: 5
2: 2
3: 2
4: 1
5: 0

Minimizing major total portfolio declines (greater than -15% in a fiscal year)

1: 0
2: 6
3: 4
4: 0
5: 0

Outperform the median public pension fund over periods of 5-to-10 years.

1: 0
2: 1
3: 1
4: 2
5: 6

Limit the need for plan sponsor (i.e., State of Oregon) contribution level increases.

1: 1
2: 0
3: 3
4: 4
5: 2

Risk Appetite - Staff

2. To achieve long-term goals, should the OIC be taking more, less, or the same amount of investment risk in the portfolio?

Less: 0

Same: 9

More: 1

3. What is considered to be a bad but not necessarily a catastrophic year to the respondent?

-8% to -12%: 2

-12% to -16%: 5

-16% to -20%: 3

Greater than -20% decline: 0

4. As an OIC member, I am most concerned with this of the following macroeconomic issues (and its impact on OPERF) over the next 2-5 years?

Poor economic growth: 5

High inflation: 2

Rising interest rates: 2

Geopolitical conflict: 1

5. Which of the following outcomes is of the greatest concern over the next 10 years?

A double digit decline (in returns): 3

Not achieving the actuarial rate: 1

Materially underperforming peers: 0

A stagnant or declining funded ratio: 6

Risk Mitigation - Staff

6. What is the minimum funded ratio that the respondent is willing to accept in a market crisis scenario (i.e., very rapid deterioration in economic conditions)?

Current = ~85% (with side accounts)

55%: 0

60%: 4

65%: 1

70%: 4

75%: 1

7. The Diversifying Strategies class can provide stability in funded ratio levels over time.

Strongly Agree: 3

Agree: 7

Disagree: 0

Strongly Disagree: 0

8. It is straight-forward to understand what can and cannot be included in the OPERF's Diversifying Strategies class.

Strongly Agree: 0

Agree: 5

Disagree: 5

Strongly Disagree: 0

9. The cash-flow position of the Fund (e.g., net positive contributions or net negative benefit payments) is an important consideration when constructing an investment portfolio.

Strongly Agree: 8

Agree: 2

Disagree: 0

Strongly Disagree: 0

Risk and Implementation Survey Results

Implementation - Staff

10. Shifting asset allocation away from policy (i.e., tactical allocations) from time-to-time adds value.
- Strongly Agree: 1
 - Agree: 7
 - Disagree: 1
 - Strongly Disagree: 1
11. Different strategies and/or asset classes may be interchangeable if they share similar risk factor exposures and portfolio functions.
- Strongly Agree: 2
 - Agree: 4
 - Disagree: 4
 - Strongly Disagree: 1
12. Opportunistic investments have the potential to add value.
- Strongly Agree: 4
 - Agree: 6
 - Disagree: 0
 - Strongly Disagree: 0
13. High fee strategies are worthwhile if they produce high net-of-fee returns. (e.g., a strategy with a 1% management fee and a 9% expected net-of-fee return is preferred to a strategy with a 20 basis point management fee and an 8.0% expected net-of-fee return).
- Strongly Agree: 7
 - Agree: 2
 - Disagree: 1
 - Strongly Disagree: 0
14. Illiquid strategies typically return more than similar-risk, liquid strategies (e.g., private equity typically returns more than public equity on a risk-adjusted basis).
- Strongly Agree: 2
 - Agree: 7
 - Disagree: 1
 - Strongly Disagree: 0
15. Producing a return pattern that is different than peers is important (given the same long-term return).
- Strongly Agree: 0
 - Agree: 0
 - Disagree: 8
 - Strongly Disagree: 2

Implementation (continued) – Staff

16. Strategies that are designed to hedge equity risk (e.g., insurance-like long volatility or tail risk strategies, etc.) can enhance the risk/return profile of OPERF.

Strongly Agree: 2

Agree: 6

Disagree: 2

Strongly Disagree: 0

17. Long-only, multi-asset class strategies (e.g., Risk Parity) can enhance the risk/return profile of OPERF.

Strongly Agree: 1

Agree: 7

Disagree: 2

Strongly Disagree: 0

O I C



OREGON
STATE
TREASURY

TAB 5
OPERF LIQUIDITY



Liquidity Analysis

Oregon Investment Council
April 2022

Table of Contents

- Overview
- Liquidity Analysis
- Conclusions
- Appendix

Overview

Background

- The liquidity analysis for Oregon Public Employees Retirement Fund (OPERF) is performed under the Current Policy
 - Intended as a stress-testing model, incorporating the profile of the liabilities as well as expected future contributions
 - Uses different scenarios for economic environments and other relevant events
 - Shows how the portfolio's liquidity profile could evolve with a given investment strategy
- We categorized investments by liquidity into five buckets
 - **Liquid (Risk-Reducing Assets):** less than 3 months needed for return of capital (e.g., publicly traded securities)
 - **Liquid (Return-Seeking Assets):** less than 3 months needed for return of capital (e.g., publicly traded securities)
 - **Quasi-Liquid:** Typical lock-up of 3–12 months. Conservatively, we assumed a 1-year lock-up in most economic environments, 2 years in a Recession scenario, and 3 years in a Dark Skies scenario (e.g., many hedge funds, open-end real estate)
 - **Illiquid: Potential lock-up of 5–10 years**, depending on economic environment (e.g., closed-end real estate)
 - **Illiquid: Potential lock-up of 10+ years** (e.g., typical private equity)
- This is intended to be a conservative approximation of the actual liquidity properties of the assets
- Not surprisingly, varying economic scenarios would lead OPERF's percentage allocation to alternative assets to differ from its targets due to liquidity differences in asset classes

Overview

Asset Allocation and Liquidity Category

	Current Policy
Liquid (Risk-Reducing Assets)	
Core Fixed Income	20.0%
<i>Subtotal</i>	<i>20.0%</i>
Liquid (Return-Seeking Assets)	
Public Equity	30.0%
Risk Parity	2.5%
Real Estate	0.6%
<i>Subtotal</i>	<i>33.1%</i>
Quasi-Liquid Assets	
Alternatives (Diversifying Strategies)	7.5%
Real Estate	6.9%
<i>Subtotal</i>	<i>14.4%</i>
Illiquid 5-10 Years	
Real Estate	5.0%
Alternatives (Infrastructure)	4.5%
Alternatives (Natural Resources)	3.0%
<i>Subtotal</i>	<i>12.5%</i>
Illiquid 10+ Years	
Private Equity	20.0%
<i>Subtotal</i>	<i>20.0%</i>
Total	100.0%

46.9% in Illiquid + Quasi-Liquid Assets

Overview

Economic Scenarios

- **Base Case Scenario**

- Markets perform consistent with our Capital Market Assumptions (~50th percentile)

- **Recession Scenario**

- Somewhat pessimistic outlook for the markets (~95th percentile)
- Return-seeking assets decline in the first two years with a modest rebound in later years

- **Dark Skies Scenario**

- Very pessimistic outlook for markets (~99th percentile)
- Return-seeking assets decline significantly
- The value of public equities declines approximately 50% over three years, without an immediate rebound

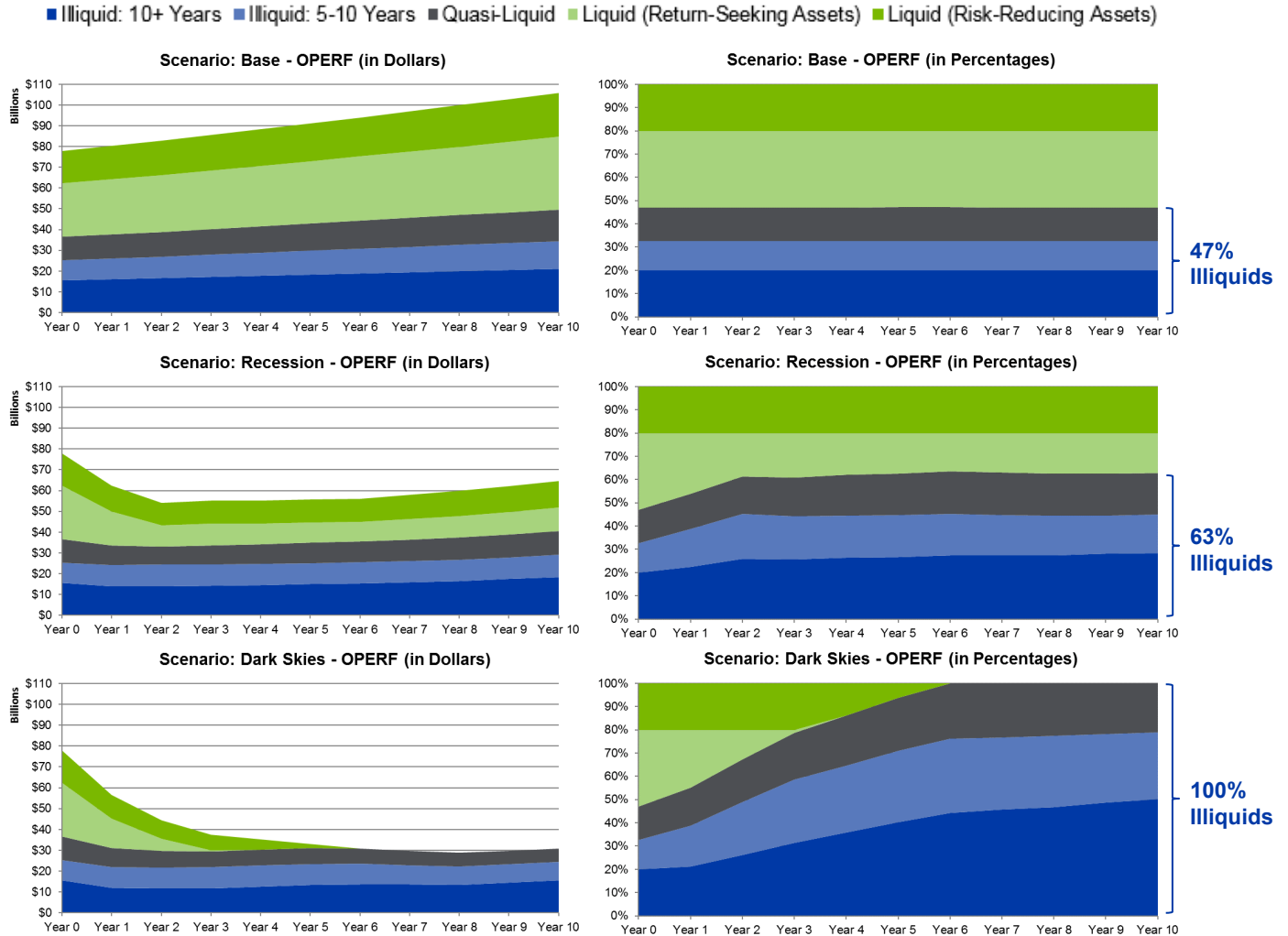
Liquidity Analysis

Summary of Results | Current Policy

Base Case
(50th Percentile)

Recession
(~95th Percentile)

Dark Skies
(~99th Percentile)



Note: Year 0 represents a starting point of December 31, 2021

Conclusions

- OPERF has sufficient liquidity in the modeled Base Case (50% percentile) and Recession (~95th percentile) economic scenarios
- In a Dark Skies (~99th percentile) economic scenario, the Plan's assets are projected to be 100% illiquid by Year 6 which would compromise plan operations and force selling on the secondary market
 - OPERF's liquidity is strained due to the combined impact of asset returns, biennium rate setting, and employer contribution rate collars that slow the replenishing of Plan assets
 - In this scenario, the OIC may want to pare back future commitments to stay closer to the target allocations. However, the allocation would still be significantly different from the target allocation.
- This analysis is highly sensitive to the assumed contributions
 - If OPERF receives less contributions than assumed, especially in a Dark Skies environment, then illiquid and quasi-liquid investments drift even further from target and the potential for liquidity issues increases



Appendix

- Liquidity Analysis Detail

Background

Aon Investments' Approach to Analyzing Liquidity Risk from Alternatives

- Intended as a stress-testing model
- Develops multi-year projections of assets and spending needs
- Uses different scenarios for economic environments and other relevant events
- Shows how the portfolio's liquidity profile could evolve with a given investment strategy
- Incorporates the profile of the liabilities as well as expected future contributions

Background

Process Inputs and Outputs



Background

Modeling Parameters – Degrees of Illiquidity

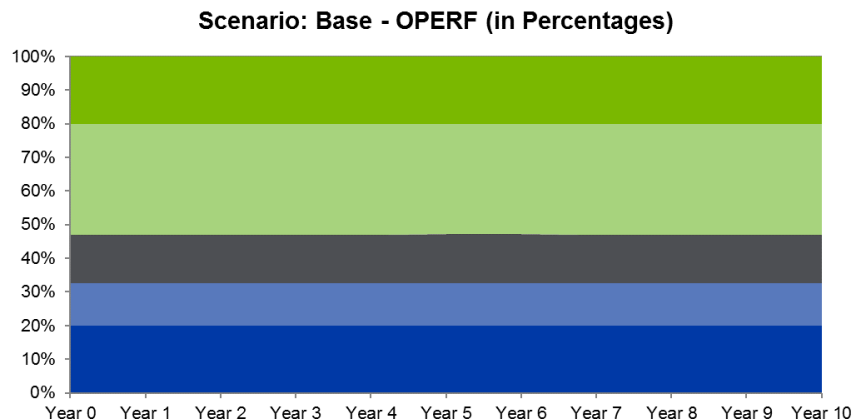
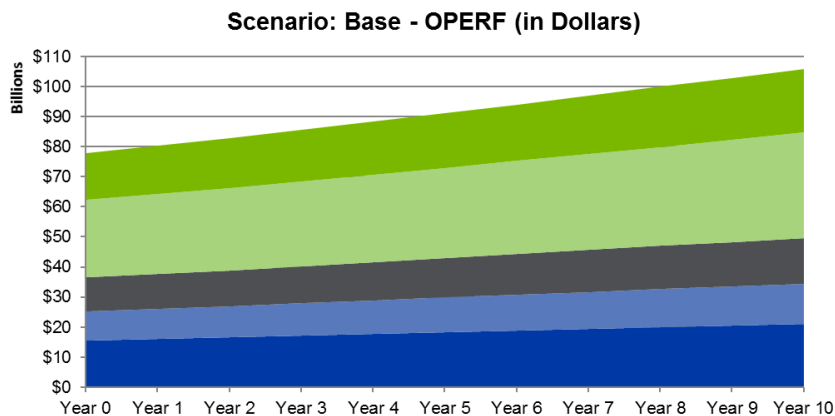
- We categorized investments by liquidity into five buckets
 - **Liquid (Risk-Reducing Assets):** less than 3 months needed for return of capital (e.g., publicly traded securities)
 - **Liquid (Return-Seeking Assets):** less than 3 months needed for return of capital (e.g., publicly traded securities)
 - **Quasi-Liquid:** Typical lock-up of 3–12 months. Conservatively, we assumed a 1-year lock-up in most economic environments, 2 years in a Recession scenario, and 3 years in a Dark Skies scenario (e.g., many hedge funds, open-end real estate)
 - **Illiquid: Potential lock-up of 5–10 years,** depending on economic environment (e.g., closed-end real estate)
 - **Illiquid: Potential lock-up of 10+ years** (e.g., typical private equity)
- This is intended to be a conservative approximation of the actual liquidity properties of the assets
- We started with the target asset allocations, then see how the actual allocations would change in different economic scenarios, continuing new commitments to private assets, as expected.
- Assumptions
 - Asset-liability information based on projections provided by the plan actuary as of December 31, 2019 which were synced to the results of the December 31, 2020 actuarial valuation report
 - Asset experience through December 31, 2021 included in this analysis
 - The plan's contribution policy is estimated based on our understanding of the methodology used by the plan actuary
 - Assumes the portfolio starts at the target asset allocation levels for illiquid assets, maintaining close to the portfolio targets over the next 10 years

Liquidity Analysis: Base Case Economic Scenario

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Base Case economic scenario, assuming commitments are continued as expected

■ Illiquid: 10+ Years ■ Illiquid: 5-10 Years ■ Quasi-Liquid ■ Liquid (Return-Seeking Assets) ■ Liquid (Risk-Reducing Assets)



Key Takeaway:

- Total illiquid and quasi-liquid assets are projected to stay near 47% of the Plan and can be maintained near the target with no cash flow problems

Note: Year 0 represents a starting point of December 31, 2021

Liquidity Analysis: Base Case Economic Scenario (continued)

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Base Case economic scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Liquid Return-Seeking	33	33	33	33	33	33	33	33	33	33	33
Total Liquid	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%
Quasi-Liquid	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Illiquid: 5-10 Year Lock-up	13	13	13	13	13	13	13	13	13	13	12
Illiquid: 10+ Year Lock-up	20	20	20	20	20	20	20	20	20	20	20
Total Quasi + Illiquid	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%

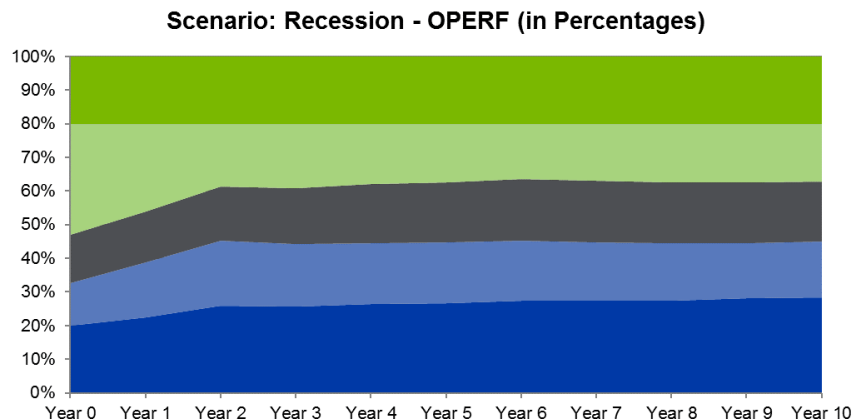
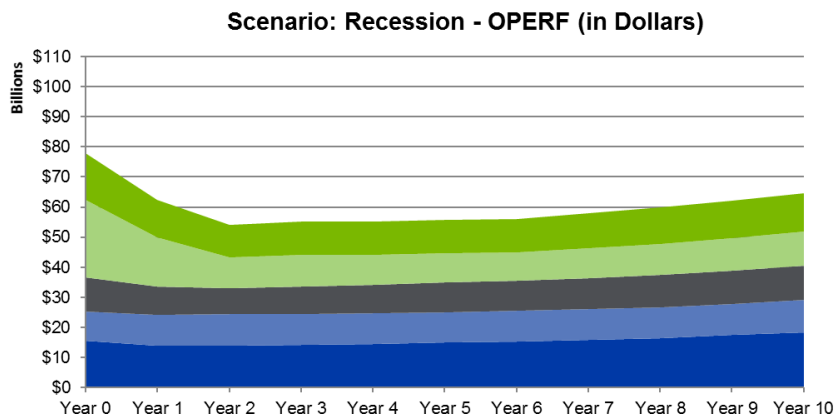
Note: Year 0 represents a starting point of December 31, 2021; Percentages may not sum to 100% due to rounding

Liquidity Analysis: Recession Economic Scenario

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Recession economic scenario, assuming commitments are continued as expected

■ Illiquid: 10+ Years ■ Illiquid: 5-10 Years ■ Quasi-Liquid ■ Liquid (Return-Seeking Assets) ■ Liquid (Risk-Reducing Assets)



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but recessionary markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 63% of the Plan due to the shrinking market value of the total Plan in this scenario
- There would not be a concern with the ability to pay benefits
- The OIC may need to redeem some quasi-liquid assets to stay close to its target allocation (47% illiquid assets)

Note: Year 0 represents a starting point of December 31, 2021

Liquidity Analysis: Recession Economic Scenario (continued)

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Recession economic scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Liquid Return-Seeking	33	26	19	19	18	17	17	17	17	18	17
Total Liquid	53%	46%	39%	39%	38%	37%	37%	37%	37%	38%	37%
Quasi-Liquid	14%	15%	16%	17%	17%	18%	18%	18%	18%	18%	18%
Illiquid: 5-10 Year Lock-up	13	16	19	19	18	18	18	17	17	16	17
Illiquid: 10+ Year Lock-up	20	22	26	26	26	27	27	27	27	28	28
Total Quasi + Illiquid	47%	54%	61%	61%	62%	63%	63%	63%	63%	62%	63%

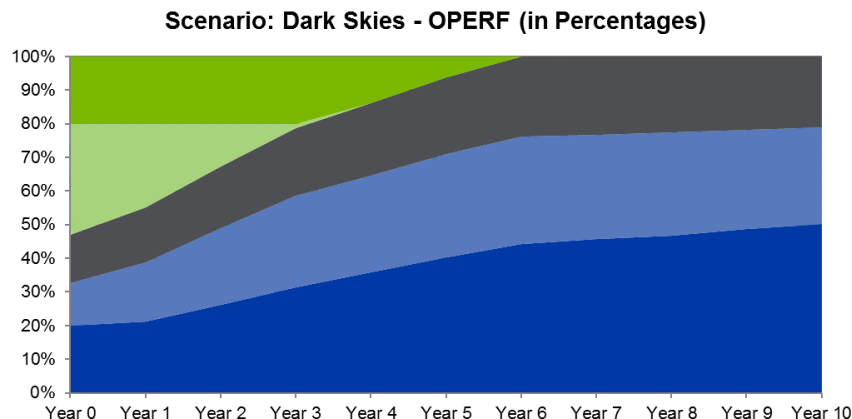
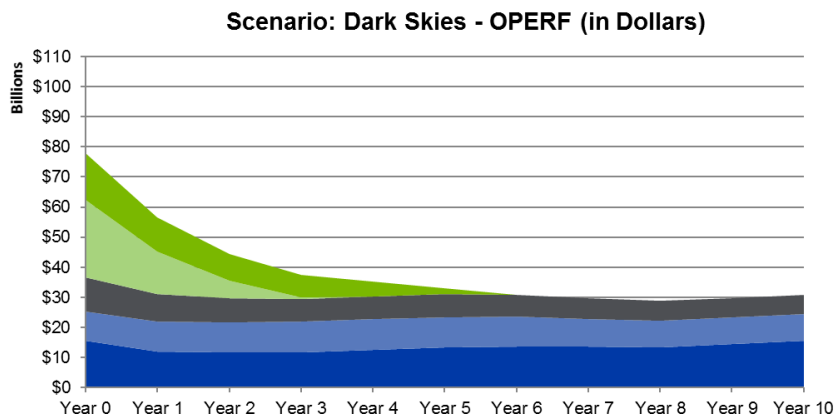
Note: Year 0 represents a starting point of December 31, 2021; Percentages may not sum to 100% due to rounding

Liquidity Analysis: Dark Skies Economic Scenario

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Dark Skies economic scenario, assuming commitments are continued as expected

■ Illiquid: 10+ Years ■ Illiquid: 5-10 Years ■ Quasi-Liquid ■ Liquid (Return-Seeking Assets) ■ Liquid (Risk-Reducing Assets)



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but subpar markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 100% of the Plan due to the shrinking market value of the total Plan in this scenario
- In this scenario, the OIC may want to pare back future commitments to stay closer to the target allocations. However, the allocation would still be significantly different from the target allocation (47% illiquid assets)

Note: Year 0 represents a starting point of December 31, 2021

Liquidity Analysis: Dark Skies Economic Scenario (continued)

Current Policy

- The exhibit below shows the projected liquidity lock-up of the Current Policy allocation in the Dark Skies economic scenario

Asset Allocation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Risk-Reducing Assets	20%	20%	20%	20%	14%	6%	0%	0%	0%	0%	0%
Liquid Return-Seeking	33	25	13	1	0	0	0	0	0	0	0
Total Liquid	53%	45%	33%	21%	14%	6%	0%	0%	0%	0%	0%
Quasi-Liquid	14%	16%	18%	20%	22%	23%	24%	23%	23%	22%	21%
Illiquid: 5-10 Year Lock-up	13	18	23	27	29	31	32	31	31	30	29
Illiquid: 10+ Year Lock-up	20	21	26	31	36	40	44	46	47	49	50
Total Quasi + Illiquid	47%	55%	67%	79%	86%	94%	100%	100%	100%	100%	100%

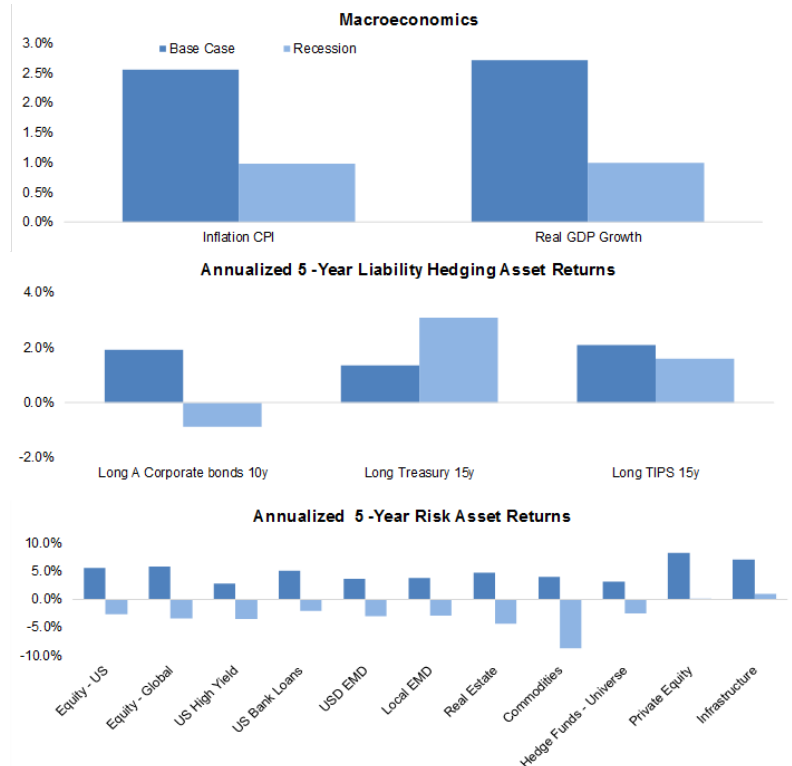
Note: Year 0 represents a starting point of December 31, 2021; Percentages may not sum to 100% due to rounding

Recession Scenario

Description

The US economy slips back into recession in 2022

- A resurgence of covid-19 infections driven by new variants and low vaccine take up necessitates further lockdown measures, as existing vaccines prove less effective and it takes time to develop, test and distribute updated vaccines.
- The global economy experiences a deep recession, as containment measures weigh heavily on economic activity.
- The US experiences a deep recession in 2022 and into 2023.
- Inflation turns negative in 2022. However, the period of deflation is short lived and inflation starts to rise in later years as the economy begins to recover.
- Treasury yields fall while TIPS yields remain at low levels as the US enters recession. Yields rise in later years as a recovery gets underway. Corporate spreads rise significantly due to the poor economic situation and increased risks of downgrades or defaults.
- Most risk assets make losses in the first two years but rebound in later years as the economy recovers.



Returns from 30 September 2021

Source: Aon

The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Recession Scenario

Data Table

RECESSION SCENARIO

	Year										
	0	1	2	3	4	5	6	7	8	9	10
Yields (BOY)											
Treasury yield 5y	1.0%	-0.1%	-0.1%	0.3%	0.6%	0.9%	1.1%	1.2%	1.2%	1.3%	1.4%
Long Treasury yield 15y	1.9%	0.4%	0.3%	0.9%	1.0%	1.2%	1.3%	1.4%	1.5%	1.6%	1.7%
TIPS yield 5y	-1.5%	-2.2%	-2.2%	-2.2%	-2.1%	-1.9%	-1.8%	-1.6%	-1.5%	-1.4%	-1.3%
Long TIPS yield 15y	-0.5%	-1.6%	-1.6%	-1.4%	-1.3%	-1.2%	-1.0%	-0.9%	-0.8%	-0.7%	-0.6%
Breakeven price inflation 15y	2.5%	2.0%	1.9%	2.2%	2.3%	2.4%	2.4%	2.4%	2.3%	2.3%	2.3%
A Corporate bond yield 5y	1.6%	3.8%	4.5%	4.3%	4.0%	4.0%	3.9%	3.7%	3.6%	3.4%	3.3%
Long A Corporate bond yield 10y	2.5%	3.5%	4.1%	4.2%	3.9%	3.8%	3.8%	3.8%	3.7%	3.7%	3.6%
A Corporate spread 5y	0.6%	3.9%	4.6%	4.0%	3.4%	3.0%	2.8%	2.6%	2.3%	2.1%	1.9%
Long A Corporate spread 10y	0.8%	3.3%	3.8%	3.4%	3.0%	2.7%	2.6%	2.4%	2.3%	2.1%	2.0%
Expected nominal return on assets											
Equity - US		-18.8%	-10.8%	9.9%	5.0%	5.0%	5.0%	5.1%	5.1%	5.2%	5.3%
Equity - Global		-21.6%	-12.4%	10.7%	5.2%	5.2%	5.3%	5.3%	5.4%	5.5%	5.5%
A Corporate bonds 5y		-6.0%	-0.3%	4.0%	4.8%	3.6%	4.0%	4.1%	4.0%	4.0%	4.0%
Long A Corporate bonds 10y		-7.7%	-3.6%	0.5%	4.6%	2.3%	2.4%	2.7%	3.0%	3.2%	3.4%
Treasury 5y		6.3%	0.1%	-1.3%	-0.6%	-0.2%	0.9%	1.0%	1.0%	1.1%	1.2%
Long Treasury 15y		26.3%	1.7%	-6.8%	-1.4%	-1.5%	-0.1%	0.1%	0.4%	0.4%	0.5%
Long Treasury 30y		51.5%	2.2%	-6.1%	-3.1%	-3.8%	-1.9%	-1.8%	-1.6%	-1.5%	-1.3%
TIPS 5y		2.1%	-1.0%	-0.9%	-1.0%	-0.7%	-0.3%	-0.2%	0.0%	0.2%	0.3%
Long TIPS 15y		15.9%	-0.7%	-3.4%	-1.3%	-1.3%	-0.9%	-0.7%	-0.6%	-0.4%	-0.2%
US High Yield		-12.7%	-14.9%	6.9%	3.4%	1.9%	2.9%	3.2%	3.3%	3.5%	3.7%
Bank Loans		-13.0%	-7.8%	6.0%	3.2%	3.0%	3.4%	3.8%	4.1%	4.4%	4.7%
USD Emerging Market Debt		-17.3%	-10.1%	7.2%	3.8%	3.5%	3.9%	4.0%	4.1%	4.1%	4.2%
Local Emerging Market Debt		-17.1%	-9.9%	7.4%	3.9%	3.7%	4.0%	4.2%	4.2%	4.3%	4.4%
Real Estate		-13.5%	-8.4%	-3.2%	0.2%	4.1%	4.2%	4.2%	4.3%	4.3%	4.4%
Commodities		-28.3%	-22.4%	6.6%	3.2%	3.2%	3.3%	3.3%	3.4%	3.5%	3.6%
Hedge Funds - FoHF - Universe		-14.8%	-9.6%	5.9%	4.8%	3.0%	3.0%	3.0%	3.1%	3.1%	3.1%
Private Equity		-18.9%	-6.4%	13.1%	8.3%	8.5%	8.5%	8.4%	8.4%	8.4%	8.4%
Infrastructure - US		-5.6%	-1.2%	2.3%	3.1%	6.7%	6.7%	6.8%	6.8%	6.8%	6.9%
Cash		0.0%	-0.8%	-0.5%	-0.3%	0.1%	0.3%	0.5%	0.7%	0.9%	1.0%
CPI		0.8%	0.7%	0.9%	1.1%	1.4%	1.5%	1.5%	1.6%	1.7%	1.8%

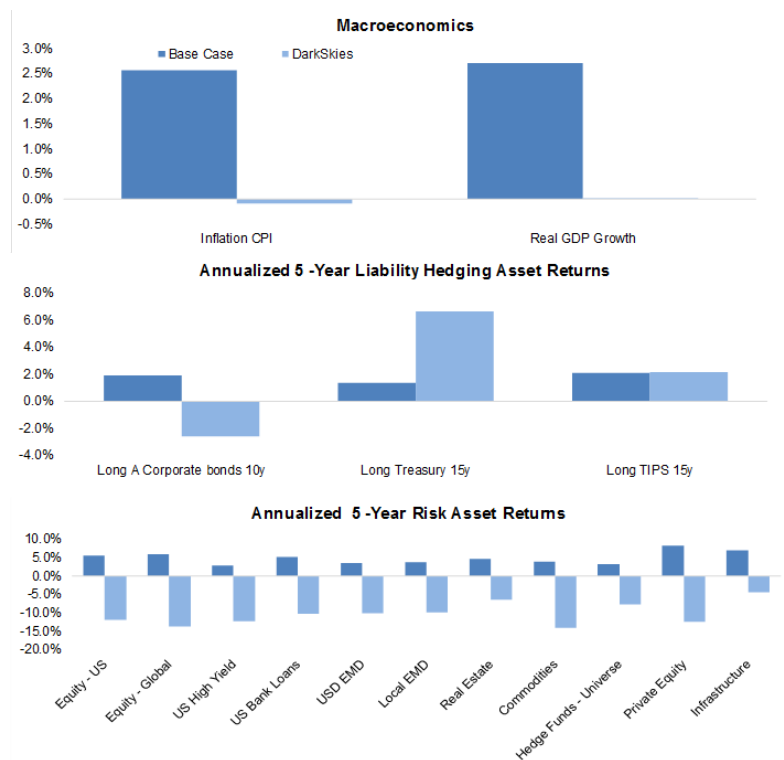
Scenario information as of September 30, 2021

Dark Skies Scenario

Description

A deep recession followed by a longer period of stagnant growth

- The effects of the pandemic worsen as new mutations of the virus create persistent disruption to the global economy. New restrictions and regional lockdowns are required to stem infections, hampering economic activity.
- Economic weakness in developed and emerging market economies and severe levels of financial distress (due to high debt levels and political crisis) lead to a global recession followed by stagnation.
- The US experiences a protracted deep recession.
- Inflation is pushed into negative territory in 2022 and remains there in 2023, while continued sluggish growth over the following years means that inflation stays close to zero.
- Treasury yields fall and remain at low levels as the US enters recession. Corporate spreads rise significantly due to the poor economic situation and increased risks of downgrades or defaults.
- Risk assets make losses in the first few years. There is no pronounced bounce in growth and the economic situation remains poor for a long time, which weighs on returns in later years.



Returns from 30 September 2021

Source: Aon

The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Dark Skies Scenario

Data Table

DARK SKIES SCENARIO

	Year										
	0	1	2	3	4	5	6	7	8	9	10
Yields (BOY)											
Treasury yield 5y	1.0%	-0.5%	-1.0%	-1.0%	-0.9%	-0.8%	-0.5%	-0.3%	-0.1%	0.1%	0.3%
Long Treasury yield 15y	1.9%	0.0%	-0.4%	-0.5%	-0.4%	-0.3%	-0.1%	0.1%	0.3%	0.5%	0.7%
TIPS yield 5y	-1.5%	-2.3%	-2.7%	-2.8%	-2.7%	-2.6%	-2.4%	-2.3%	-2.1%	-2.0%	-1.8%
Long TIPS yield 15y	-0.5%	-1.9%	-2.2%	-2.2%	-2.2%	-2.1%	-1.9%	-1.8%	-1.6%	-1.4%	-1.2%
Breakeven price inflation 15y	2.5%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.9%	1.9%	1.9%	2.0%
A Corporate bond yield 5y	1.6%	4.9%	5.1%	4.7%	4.1%	3.9%	3.8%	3.7%	3.6%	3.5%	3.4%
Long A Corporate bond yield 10y	2.5%	4.2%	4.4%	4.1%	3.7%	3.5%	3.5%	3.5%	3.5%	3.5%	3.4%
A Corporate spread 5y	0.6%	5.4%	6.0%	5.7%	5.1%	4.6%	4.3%	4.0%	3.7%	3.3%	3.0%
Long A Corporate spread 10y	0.8%	4.4%	4.9%	4.7%	4.2%	3.9%	3.7%	3.4%	3.2%	3.0%	2.8%
Expected nominal return on assets											
Equity - US		-27.9%	-20.3%	-11.4%	2.0%	2.0%	2.4%	2.7%	3.1%	3.4%	3.8%
Equity - Global		-31.5%	-23.0%	-13.0%	1.9%	1.9%	2.3%	2.7%	3.1%	3.5%	3.9%
A Corporate bonds 5y		-10.5%	-0.1%	1.5%	2.6%	1.3%	0.7%	1.2%	1.7%	2.0%	2.4%
Long A Corporate bonds 10y		-13.9%	-2.5%	0.9%	2.7%	0.8%	-0.5%	0.1%	0.6%	1.1%	1.6%
Treasury 5y		7.8%	1.5%	-1.0%	-1.4%	-1.7%	-2.0%	-1.7%	-1.4%	-1.2%	-0.9%
Long Treasury 15y		34.3%	5.5%	0.4%	-1.1%	-1.9%	-3.2%	-3.0%	-2.6%	-2.4%	-2.2%
Long Treasury 30y		72.9%	5.0%	0.6%	1.6%	-2.8%	-3.8%	-3.7%	-3.5%	-3.4%	-3.3%
TIPS 5y		0.8%	-1.3%	-1.7%	-2.3%	-2.3%	-2.2%	-1.9%	-1.6%	-1.3%	-1.0%
Long TIPS 15y		18.4%	0.9%	-1.2%	-2.8%	-3.1%	-3.8%	-3.5%	-3.2%	-2.9%	-2.5%
US High Yield		-15.9%	-22.8%	-14.5%	-2.6%	-3.8%	-3.9%	-2.9%	-2.0%	-1.1%	-0.2%
Bank Loans		-20.3%	-15.4%	-12.6%	-0.7%	-0.9%	-0.3%	0.4%	1.1%	1.7%	2.4%
USD Emerging Market Debt		-23.9%	-15.7%	-9.2%	0.8%	0.3%	0.3%	0.8%	1.3%	1.7%	2.2%
Local Emerging Market Debt		-23.8%	-15.5%	-9.0%	0.9%	0.5%	0.5%	1.0%	1.4%	1.9%	2.3%
Real Estate		-15.1%	-10.8%	-5.2%	-0.9%	1.3%	1.6%	1.9%	2.3%	2.6%	3.0%
Commodities		-35.4%	-27.4%	-3.9%	1.8%	1.8%	2.0%	2.2%	2.4%	2.7%	2.9%
Hedge Funds - FoHF - Universe		-17.7%	-12.5%	-6.9%	0.1%	0.1%	0.4%	0.7%	1.0%	1.3%	1.6%
Private Equity		-30.8%	-22.3%	-11.6%	4.3%	4.3%	4.7%	5.1%	5.5%	5.9%	6.3%
Infrastructure - US		-12.4%	-8.2%	-4.4%	0.6%	3.2%	3.6%	4.0%	4.4%	4.8%	5.2%
Cash		0.0%	-1.0%	-1.1%	-1.0%	-0.9%	-0.7%	-0.5%	-0.2%	0.0%	0.2%
CPI		-0.7%	-1.0%	0.3%	0.4%	0.6%	0.8%	0.8%	1.0%	1.2%	1.4%

Scenario information as of September 30, 2021



Appendix

- Actuarial Assumptions and Methods

Actuarial Assumptions and Methods

- Actuarial projections were provided last year by the plan actuary as of December 31, 2019
 - These projections will be synced to the December 31, 2020 actuarial valuation with necessary scaling factors applied throughout the period
- Actuarial assumptions:
 - Valuation Rate of Interest = 6.90%
 - Inflation = 2.40%
 - Payroll Growth = 3.40%
 - Actuarial Value of Assets: market value of assets without any smoothing
 - For purposes of this analysis, assets do not include side accounts and do not assume additional contributions to side account reserves
 - All other assumptions as documented in the Actuarial Valuation Report as of December 31, 2020 unless noted otherwise
- Contribution policy reflects the following:
 - Biennium rate setting process
 - Actuarially Determined Contribution Calculation = Normal Cost plus a level percent amortization of the unfunded liability using a 3.40% salary scale
 - New amortization bases are established each year, creating a layered 20-year amortization base (22 years for the fresh start December 31, 2019 valuation)
 - Employer contributions are offset by side account transfers
 - Final employer contribution is subject to collars, limiting the amount by which rates can change
- Actual asset performance through December 31, 2021 was incorporated into the analysis



Appendix

- Capital Market Assumptions

Capital Market Assumption Methodology

- The Aon Asset Model and Economic Scenario Generator (ESG) creates 5,000 simulations of key economic variables and total returns.
- We believe the model is complete and consistent. All the major markets and asset classes are modeled within a consistent framework allowing for the interactions between them to be properly taken into account.
- It is arbitrage free and captures the fact that extreme market events do occur more frequently than would be predicted by simpler statistical models.
- The ESG models the full yield curve as this allows for accurate treatment of liabilities and realistic modeling of the future distribution of interest rates and inflation. This allows us to assess the sensitivities of assets and liabilities to changes in interest and inflation rates.
- The model is calibrated to Aon's globally-consistent Capital Market assumptions every quarter.
- Nominal and real government interest rates are projected using an extended two factor Black-Karasinki model and a 2 factor Vasicek model respectively. The models are mean reverting starting with current yield curves and reverting towards our long-term fair values over the very long-term.
- Credit spreads are modeled stochastically using a Markov based model to determine the probabilities of transition between various credit rating and default, and a stochastic parameter reflecting the level of risk aversion in the market.
- Return seeking assets (including equities) are modeled using an individual asset class model with its own returns and volatilities but no correlations to other asset classes, and exposure to 6 other economic models to gain the correct correlation structures between returns for each asset class.

Aon Investments' Capital Market Assumptions

As of December 31, 2021 (10 Years)

	Expected Real Return ¹	Expected Nominal Return ¹	Expected Nominal Volatility
Equity			
1 Global Equity IMI	3.9%	6.4%	18.5%
Fixed Income			
2 Core Fixed Income	-0.4%	2.0%	4.0%
Alternatives			
3 Non-Core Real Estate	5.0%	7.5%	25.0%
4 Core Real Estate	3.1%	5.6%	15.0%
5 Private Equity	6.0%	8.5%	25.0%
6 Infrastructure	4.9%	7.4%	14.5%
7 Hedge Funds - CTAs ²	4.4%	6.9%	15.0%
8 Hedge Funds - Global Macro ²	3.6%	6.1%	12.0%
9 Alternative Risk Premia	3.3%	5.8%	9.5%
10 Risk Parity	2.3%	4.8%	10.0%
Inflation			
11 Inflation	0.0%	2.4%	1.0%

Notes

¹ Expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees

² Alpha incorporated in Expected Nominal Return

Aon Investments' Capital Market Assumptions

As of December 31, 2021

Nominal Correlations		1	2	3	4	5	6	7	8	9	10	11
1	Global Equity IMI	1.00	0.02	0.48	0.36	0.63	0.35	0.13	0.05	0.34	0.73	0.09
2	Core Fixed Income	0.02	1.00	0.04	0.05	0.03	0.05	-0.05	0.23	0.09	0.44	0.02
3	Non-Core Real Estate	0.48	0.04	1.00	0.96	0.38	0.22	0.05	0.01	0.17	0.32	0.09
4	Core Real Estate	0.36	0.05	0.96	1.00	0.32	0.19	0.03	0.00	0.13	0.23	0.09
5	Private Equity	0.63	0.03	0.38	0.32	1.00	0.32	0.07	-0.04	0.22	0.37	0.07
6	Infrastructure	0.35	0.05	0.22	0.19	0.32	1.00	0.03	0.00	0.13	0.23	0.08
7	Hedge Funds - CTAs	0.13	-0.05	0.05	0.03	0.07	0.03	1.00	0.20	0.04	0.07	-0.07
8	Hedge Funds - Global Macro	0.05	0.23	0.01	0.00	-0.04	0.00	0.20	1.00	0.07	0.25	0.15
9	Alternative Risk Premia	0.34	0.09	0.17	0.13	0.22	0.13	0.04	0.07	1.00	0.28	0.11
10	Risk Parity	0.73	0.44	0.32	0.23	0.37	0.23	0.07	0.25	0.28	1.00	0.16
11	Inflation	0.09	0.02	0.09	0.09	0.07	0.08	-0.07	0.15	0.11	0.16	1.00

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

The following capital market assumptions were developed by Aon's Global Asset Allocation Team and represent the long-term capital market outlook (i.e., 10 years) based on data at the end of the fourth quarter of 2021. The assumptions were developed using a building block approach, reflecting observable inflation and interest rate information available in the fixed income markets as well as Consensus Economics forecasts. Our long-term assumptions for other asset classes are based on historical results, current market characteristics, and our professional judgment.

Inflation – Expected Level (2.4%)

Based on Consensus Economics long-term estimates and our near-term economic outlook, we expect U.S. consumer price inflation to be approximately 2.4% during the next 10 years.

Real Returns for Asset Classes

Fixed Income

- **Cash (-0.9%)** – Over the long run, we expect the real yield on cash and money market instruments to produce a real return of -0.9% in a moderate to high-inflationary environment.
- **TIPS (-1.2%)** – We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about -1.2%.
- **Core Fixed Income (i.e., Market Duration) (-0.4%)** – We expect intermediate duration Treasuries to produce a real return of about -0.8%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.4%, resulting in a long-term real return of -0.4%.
- **Core Plus Bonds (-0.2%)** – Modeled as 20% 5 duration gov't bonds real return of -0.8% and 80% 5 duration corporate bonds real return of -0.1%.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

- **Long Duration Bonds – Government and Credit (0.2%)** – We expect Treasuries with a duration comparable to the Long Government Credit Index to produce a real return of -0.2%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.2%, resulting in an expected real return of 0.2%.
- **Long Duration Bonds – Credit (0.3%)** – We expect Treasuries with a duration comparable to the Long Credit Index to produce a real return of -0.2%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.5%, resulting in an expected real return of 0.3%.
- **Long Duration Bonds – Government (-0.2%)** – We expect Treasuries with a duration of ~12 years to produce a real return of -0.2% during the next 10 years.
- **High Yield Bonds (0.7%)** – We expect intermediate duration Treasuries to produce a real return of about -0.8%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 1.5%, resulting in an expected real return of 0.7%.
- **Bank Loans (1.8%)** – We expect LIBOR to produce a real return of about -0.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 2.4%, resulting in an expected real return of 1.8%.
- **Non-US Developed Bonds: 50% Hedged (-0.7%)** – We forecast real returns for non-US developed market bonds to be -0.7% over a 10-year period after adjusting for a 50% currency hedge. We assume a blend of one-third investment grade corporate bonds and two-thirds government bonds. We also produce assumptions for 0% hedged and 100% hedged non-US developed bonds.
- **Emerging Market Bonds (Sovereign; USD) (1.5%)** – We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 1.5% over a 10-year period.
- **Emerging Market Bonds (Corporate; USD) (1.0%)** – We forecast real returns for emerging market corporate bonds denominated in US dollars to be 1.0% over a 10-year period.
- **Emerging Market Bonds (Sovereign; Local) (2.5%)** – We forecast real returns for emerging market sovereign bonds denominated in local currency to be 2.5% over a 10-year period.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

- **Multi Asset Credit (MAC) (2.3%)** – We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 1.5% plus 0.8% from alpha (net of fees) over a 10-year period.
- **Private Debt-Direct Lending (4.2%)** – The base building block is bank loans 1.8% + spread 2.4% (net of management fees and performance incentives). There is 100% leverage included in the assumption with the cost of financing at LIBOR +1.8%.

Equities

- **Large Cap U.S. Equity (3.1%)** – This assumption is based on our 10-year outlook for large cap U.S. company dividends and real earnings growth. Adjustments are made for valuations as needed.
- **Small Cap U.S. Equity (3.3%)** – Adding a 0.2% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 3.3%. This return premium is theoretically justified by the higher risk inherent in small cap U.S. equity versus large cap U.S. equity, and is also justified by historical data. In recent years, higher small cap valuations relative to large cap equity has reduced the small cap premium.
- **Global Equity (Developed & Emerging Markets) (3.9%)** – We employ a building block process similar to the U.S. equity model using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 3.9% for global equity.
- **International (Non-U.S.) Equity, Developed Markets (4.1%)** – We employ a building block process similar to the U.S. equity model using the non-U.S. developed equity markets that comprise the MSCI EAFE Index.
- **Emerging Market Stocks (4.7%)** - We employ a building block process similar to the U.S. equity model using the non-U.S. emerging equity markets that comprise the MSCI Emerging Markets Index.
- **Equity Risk Insurance Premium Strategies-High Beta (2.3%)** – We expect real returns from 50% equity + 50% cash of 1.4% plus 0.9% insurance risk premium over the next 10 years.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

Alternative Asset Classes

- **Hedge Fund-of-Funds Universe (0.7%)** – The generic category “hedge funds” encompasses a wide range of strategies accessed through “fund-of-funds” vehicles. We also assume the *median* manager is selected and also allow for the additional costs associated with Fund-of-Funds management. A top-tier portfolio of funds (hedge fund-of-funds buy-list) could add an additional 1.2% in return at similar volatility based on alpha, lower fees and better risk management.
- **Hedge Fund-of-Funds Buy List (2.0%)** – The generic category of top-tier “hedge funds” encompasses a wide range of strategies accessed through “fund-of-funds” vehicles. We assume additional costs associated with Funds-of-Funds management. To use this category the funds must be buy rated or we advise on manager selection.
- **Broad Hedge Funds Universe (2.1%)** – Represents a diversified portfolio of direct hedge fund investments. This investment will tend to be less diversified than a typical “fund-of-funds” strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure.
- **Broad Hedge Funds Buy List (3.3%)** – Represents a diversified portfolio of top-tier direct hedge fund investments. This investment will tend to be less diversified than a typical “fund-of-funds” strategy as there will be fewer underlying managers and will not include the extra layer of fees found in a Fund-of-Funds structure. To use this category the funds must be buy rated or we advise on manager selection.
- **Core Real Estate (3.1%)** -- Our real return assumption for core real estate is based a gross income of about 3.4%, management fees of roughly 1%, 25% leverage and future capital appreciation near the rate of inflation during the next 10 years. We assume a portfolio of equity real estate holdings that is diversified by property and by geographic region.
- **Non-Core Real Estate (5.0%)** – Core real estate is levered approximately 100% as the base building block for this assumption. We subtract financing costs for the leverage and 2% management costs. We also assume nominal alpha of 3%. We assume a 50/50 mix of value-add and opportunistic investments.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

- **U.S. REITs (2.9%)** – Our real return assumption for U.S. REITs is based on income of about 2.6% and future capital appreciation near the rate of inflation during the next 10 years. REITs are a sub-set of U.S. small/mid cap equity universe.
- **Commodities (1.7%)** – Our commodity assumption is for a diversified portfolio of commodity futures contracts. Commodity futures returns are composed of three parts: spot price appreciation, collateral return, and roll return (positive or negative change implied by the shape of the future curve). We believe that spot prices will converge with CPI over the long run (i.e., 2.4%). Collateral is assumed to be LIBOR cash (-0.6%). Also, we believe the roll effect will be near zero, resulting in a real return of about 1.7% for commodities.
- **Private Equity (6.0%)** – Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt.
- **Infrastructure (4.9%)** – Our infrastructure assumption is formulated using a cash flow based approach that projects cash flows (on a diversified portfolio of assets) over a 10 year period. Income and capital growth as well as gearing levels, debt costs and terms, relevant tax and management expenses are all taken into consideration. Our approach produces an expected real return of 4.9% for infrastructure.
- **Equity Risk Insurance Premium Strategies-Low Beta (1.6%)** – We assume real returns from cash -0.9% + 2.5% alpha.
- **Alternative Risk Premia (ARP) (3.3%)** – Real LIBOR -0.6% plus 3.9% alpha (net of fees)
- **eLDI (0.9%)** – Combination of various long credit strategies (1/6 real estate debt, 1/3 securitized debt, 1/6 CMOs, 1/3 private placements)
- **Closed-End Real Assets (5.7%)** – Combination of 50% Non-Core Real Estate and 50% Infrastructure.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—Q1 2022

Volatility / Correlation Assumptions

Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we “de-smooth” historical returns before calculating volatilities. Importantly, we consider expected volatility trends in the future – in recent years we assumed the re-emergence of an economic cycle and a loss of confidence in central bankers would lead to an increase in volatility. Correlation assumptions are generally similar to actual historical results; however, we do make adjustments to reflect our forward-looking views as well as current market fundamentals.



Appendix

- 2021 Horizon Survey Results

2021 Horizon Survey Results

- **What is the Horizon Survey?**

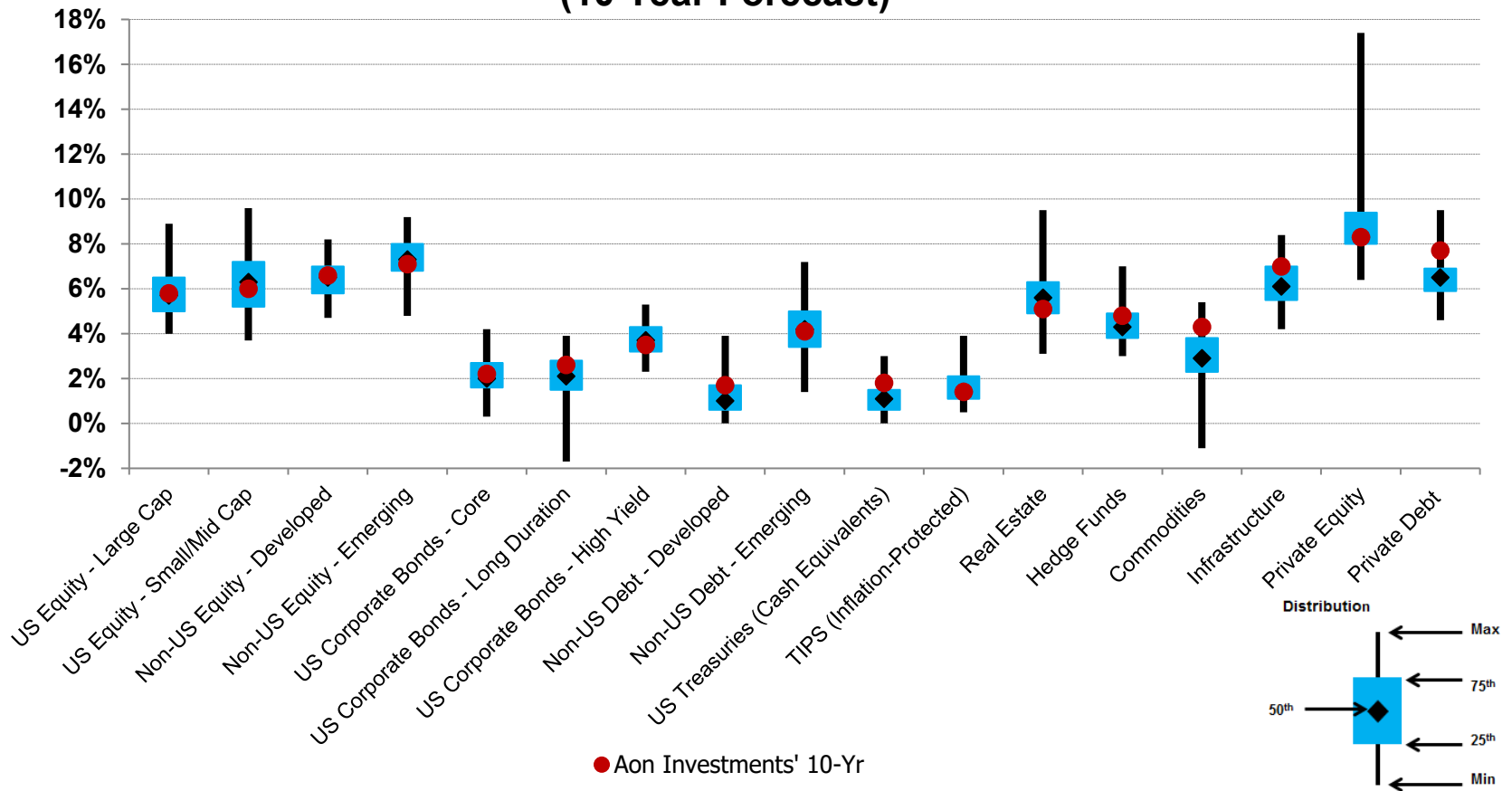
- Since 2010, Horizon Actuarial Services, LLC has conducted a capital market assumption survey of investment firms to aid in determining reasonable assumptions for a pension plan's expected return on assets
 - While Aon does not seek to change our approach based on how we stack up to peers, it is a helpful double-check to make sure we are not too far off from others in the industry

- **How does Aon compare to the 2021 survey results?**

- Aon Investments' 2021 10-year forecast assumptions (as of March 31, 2021)
 - **Equities:** approximately middle of the pack for U.S. and Non-U.S. equities
 - **Fixed Income:** approximately middle of the pack relative to the survey's median level; higher for U.S. Treasuries
 - **Alternatives:** approximately middle of the pack relative to the survey's median level; higher for Commodities and Private Debt

Aon Investments' Capital Market Assumptions vs. Horizon Survey

Expected Geometric Returns of 39 Investment Advisors (10 Year Forecast)



SOURCE: Horizon Actuarial Solutions, LLC survey of 2021 capital market assumptions from 39 independent investment advisors
 Expected returns of the survey are annualized over 10-years (geometric).
 Aon Investments' expected returns are annualized over 10-years as of 2Q 2021 (3/31/2021)

Aon Investments vs. Peers (2021 Horizon Survey)—10-Year Forecast

Asset Class	Horizon Survey		Aon Investments		Difference	
	10 Year Horizon		10 Year Forecasts		Aon Investments - Horizon Survey	
	Expected Return	Expected Risk	Expected Return	Expected Risk	Expected Return	Expected Risk
US Equity - Large Cap	5.7%	16.4%	5.8%	17.0%	0.1%	0.6%
US Equity - Small/Mid Cap	6.3%	20.2%	6.0%	23.0%	-0.3%	2.8%
Non-US Equity - Developed	6.5%	18.3%	6.6%	20.0%	0.1%	1.7%
Non-US Equity - Emerging	7.3%	24.3%	7.1%	27.0%	-0.2%	2.7%
US Fixed Income - Core	2.0%	5.5%	2.2%	4.0%	0.2%	-1.5%
US Fixed Income - Long Duration Corp	2.1%	10.4%	2.6%	9.0%	0.5%	-1.4%
US Fixed Income - High Yield	3.7%	9.9%	3.5%	12.0%	-0.2%	2.1%
Non-US Fixed Income - Developed	1.0%	7.2%	1.7%	5.5%	0.7%	-1.7%
Non-US Fixed Income - Emerging	4.2%	11.3%	4.1%	13.0%	-0.1%	1.7%
Treasuries (Cash Equivalents)	1.1%	1.3%	1.8%	1.5%	0.7%	0.2%
TIPS (Inflation-Protected)	1.4%	5.6%	1.4%	3.5%	0.0%	-2.1%
Real Estate	5.6%	17.6%	5.1%	15.0%	-0.5%	-2.6%
Hedge Funds	4.3%	8.1%	4.8%	9.0%	0.5%	0.9%
Commodities	2.9%	17.3%	4.3%	17.0%	1.4%	-0.3%
Infrastructure	6.1%	17.0%	7.0%	14.5%	0.9%	-2.5%
Private Equity	8.3%	22.3%	8.3%	25.0%	0.0%	2.8%
Private Debt	6.5%	11.4%	7.7%	16.5%	1.2%	5.1%
Inflation	2.0%	2.1%	2.1%	1.0%	0.1%	-1.1%

Notes (Horizon Survey):

Source: Horizon Actuarial survey of 2021 capital market assumptions from 39 independent investment advisors

Expected returns are median annualized (geometric).

Notes (Aon Investments' Forecasts):

Aon Investments' Forecasts are for Q2 2021

- US Equity - Small/Mid Cap forecasts represents Aon Investments' forecasts for US Small Cap
- US Fixed Income - Long Duration forecasts represents Aon Investments' forecasts for Long Duration Credit
- Non-US Fixed Income - Developed forecasts represents Aon Investments' forecasts for Non-US Fixed Income - Developed (50% Hedged)
- Non-US Fixed Income - Emerging forecasts represents Aon Investments' forecasts for Emerging Market Bonds - Sovereign USD
- Real Estate forecasts represents Aon Investments' forecasts for Core Real Estate
- Hedge Fund forecasts represents Aon Investments' forecasts for Direct Hedge Funds (Universe)

Leading Methodologies & Reasons for Differences

Leading Methodologies

- Building Block
- Global Capital Asset Pricing Model (Global CAPM)
- Surveys
- Historical data (as a guide to future)
- Black-Litterman (combination of building block and CAPM)

Reasons for Differences

- Methodology
- Time Horizon
- Arithmetic vs. Geometric forecasts*
- Alpha (active management)*
- Inflation
- Investment Fees*
- Asset class definition

* While some firms in the Horizon survey responded with arithmetic forecasts, the results have been converted to geometric forecasts for comparison purposes. Additionally, the return expectations included in the Horizon survey are generally market returns that do not reflect active management. Returns for asset classes where passive investments are not available (e.g., hedge funds and private equity) are net of fees.



Appendix

- About This Material

About This Material

This material includes a summary of calculations and consulting related to the finances of the Oregon Public Employees Retirement Fund (OPERF). The following variables have been addressed:

- Contributions, Liquidity, Net Outflow

This analysis is intended to assist the Investment Committee with a review of the associated issues and options, and its use may not be appropriate for other purposes. This analysis has been prepared solely for the benefit of the Investment Committee. Any further dissemination of this report is not allowed without the written consent of Aon Investments USA Inc.

Our calculations were generally based on the methodologies identified in the actuary's valuation report for OPERF. We believe the methodology used in these calculations conforms to the applicable standards identified in the report.

Models are used to develop alternative scenarios based on the underlying valuation model and project financial results under those scenarios. The models were developed by experts outside and within Aon. Where outside models were used, the models were reviewed by experts within Aon. The models were selected as appropriate for these projections by the undersigned.

Experience different than anticipated could have a material impact on the ultimate costs of the benefits. In addition, changes in plan provisions or applicable laws could have a significant impact on cost. Actual experience may differ from our modeling assumptions.

Our calculations were based on data provided by the plan actuary. The actuarial assumptions and methods and plan provisions reflected in these projections are the same as those used for the 2020 actuarial valuation for OPERF as noted in the actuarial reports, except where noted in this report. Unless specifically noted, our calculations do not reflect any other changes or events after December 31, 2020. Reflecting events after December 31, 2020 would impact the results of the projection.

In conducting these projections, we have relied on plan design, demographic and financial information provided by other parties, including the plan's actuary and plan sponsor. While we cannot verify the accuracy of all of the information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it has produced appropriate results.

These projections have been conducted in accordance with generally accepted actuarial principles and practices, including applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board. The undersigned actuary is familiar with the near-term and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no colleague of Aon Investments USA Inc. providing services to OPERF has any direct financial interest or indirect material interest in OPERF. Thus, we believe there is no relationship existing that might affect our capacity to prepare and certify this report for OPERF.

Aon Investments USA Inc.

Phil Kivarkis, FSA, CFA

Legal Disclosures and Disclaimers

Investment advice and consulting services provided by Aon Investments USA Inc. (“Aon Investments”). The information contained herein is given as of the date hereof and does not purport to give information as of any other date. The delivery at any time shall not, under any circumstances, create any implication that there has been a change in the information set forth herein since the date hereof or any obligation to update or provide amendments hereto.

This document is not intended to provide, and shall not be relied upon for, accounting, legal or tax advice. Any accounting, legal, or taxation position described in this presentation is a general statement and shall only be used as a guide. It does not constitute accounting, legal, and tax advice and is based on Aon Investments’ understanding of current laws and interpretation.

Aon Investments disclaims any legal liability to any person or organization for loss or damage caused by or resulting from any reliance placed on that content. Aon Investments reserves all rights to the content of this document. No part of this document may be reproduced, stored, or transmitted by any means without the express written consent of Aon Investments.

Aon Investments USA Inc. is a federally registered investment advisor with the U.S. Securities and Exchange Commission. Aon Investments is also registered with the Commodity Futures Trading Commission as a commodity pool operator and a commodity trading advisor and is a member of the National Futures Association. The Aon Investments ADV Form Part 2A disclosure statement is available upon written request to:

Aon Investments USA Inc.
200 E. Randolph Street
Suite 700
Chicago, IL 60601
ATTN: Aon Investments Compliance Officer

© Aon plc 2022. All rights reserved.

OPERF Liquidity

April 20, 2022



OREGON
STATE
TREASURY



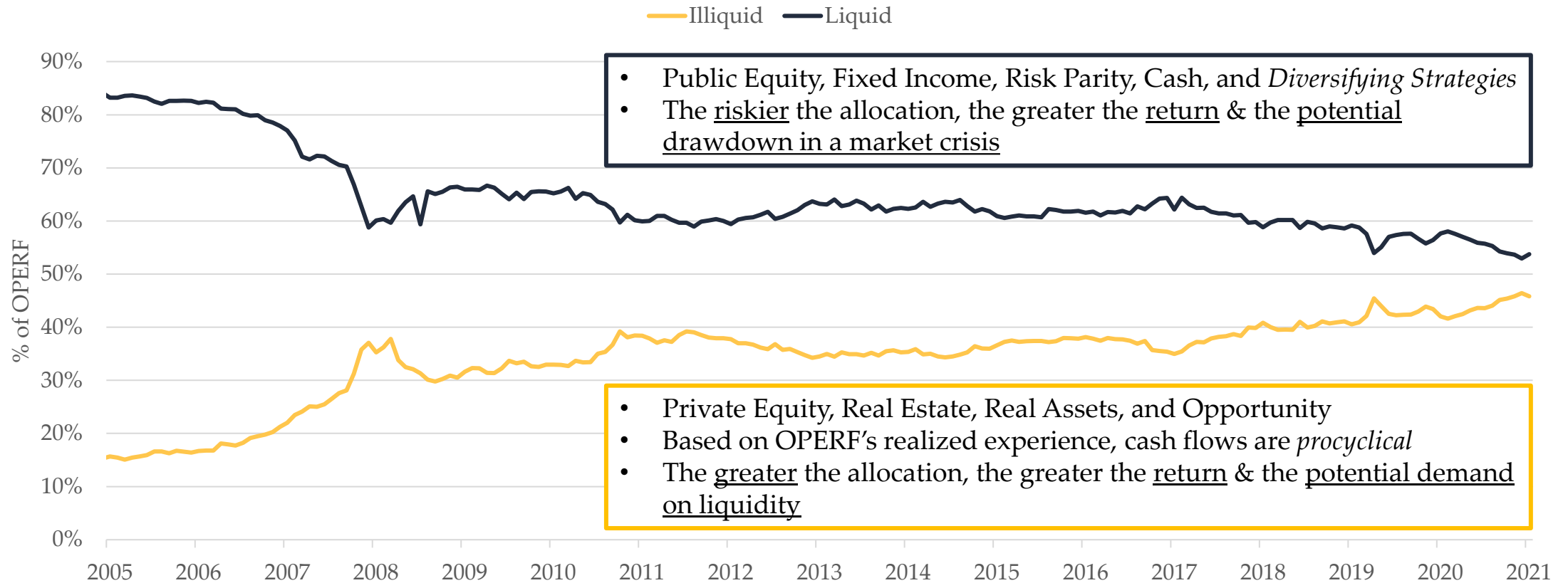
Objectives for OPERF's Asset Allocation

- The OIC strives to balance several objectives for OPERF using the asset allocation:
 - Generate a sufficiently high return to meet the PERS Board's assumed actuarial rate of return;
 - Moderate the riskiness of OPERF such that several market drawdowns are not catastrophic; and
 - Meet the liquidity needs of the Fund, specifically the net beneficiary payments and capital calls.

OPERF's Liquid and Illiquid Assets

- The OIC has allocated OPERF among eight asset class portfolios that can be broadly categorized into “Liquid” and “Illiquid” Assets.
- Liquid Assets are those that can be liquidated quickly – in “normal” market conditions – but also include “semi-liquid” assets such as the Diversifying Strategies Portfolio and certain mandates in the Public Equity and Fixed Income Portfolios.
- Illiquid Assets can not be liquidated quickly. Additionally, without regular “marks” of the investments, the “book market” volatilities likely understate the “economic” volatilities.
 - OPERF's Private Equity Portfolio “held up” better than the Public Equity Portfolio through the Great Financial Crisis but it also drew more from OPERF's liquidity in that period.
 - The cash flow characteristics of Illiquid Assets are “procyclical” with the economic cycle.

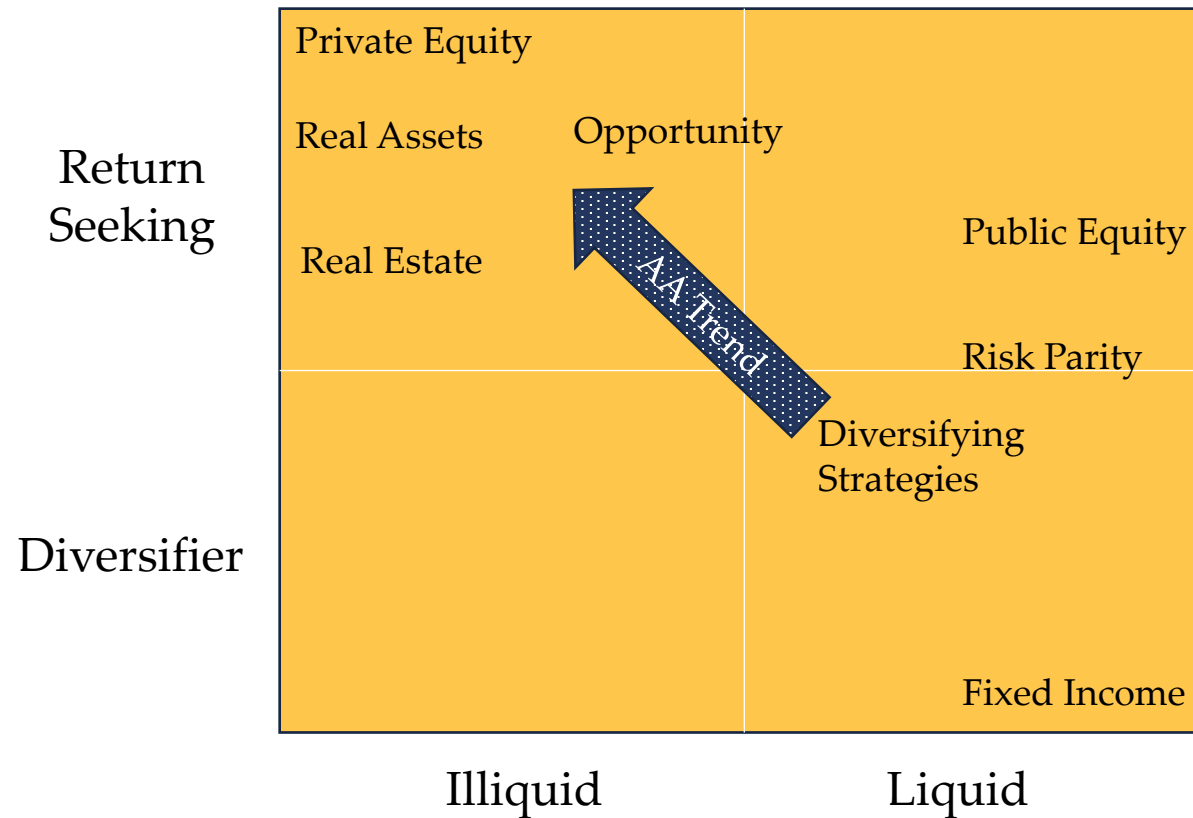
OPERF Physical Allocation Over Time



Source: State Street

OREGON
STATE
TREASURY

OPERF Asset Allocation



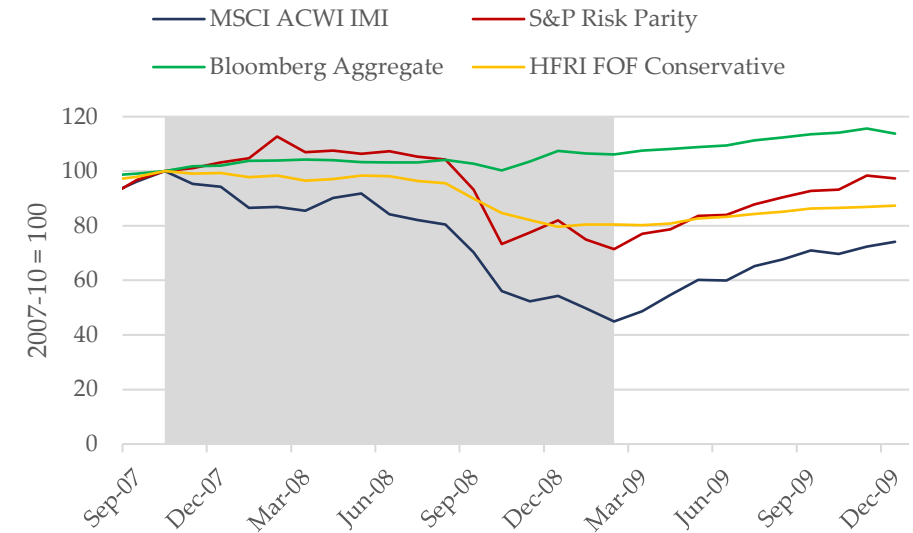
Liquidity Coverage Ratio

- Apply a scenario similar to Aon’s “Dark Skies”: assume a sharp market sell-off of the liquid portion of OPERF with no recovery for eight years, i.e., a “L-shaped” recovery.
- The Liquidity Coverage Ratio (LCR) is the ratio of **post-shock liquid assets plus expected eight-year cash inflows** divided by **expected eight-year cash outflows** or:

$$\frac{\text{Liquid Assets} \times (1 + \text{Shock Return}) + \text{Distributions} + \text{Employer Contributions}}{\text{Gross Benefit Payments} + \text{Capital Calls}}$$

LCR Assumptions

- *Liquid Assets* of \$51.9B as of 2021-12
- *Shock Return*
 - Apply returns from 2007-10 to 2009-02
 - Shock Return = -29%
- *Employer Contributions* estimated[†] to be \$25.0B for the next eight years
- *Gross Benefit Payments* estimated[†] to be \$51.9B for the next eight years
- *Illiquid Distributions and Capital Calls* estimated* to be \$85.1B and \$50.3B respectively for the next eight years



Source: Bloomberg

[†]Milliman

*Staff and OIC Consultants

LCR Estimates

- Using the assumptions from the previous slide, $LCR_0 = 1.44$, i.e., the sum of post-shock liquid assets plus expected cash inflows would be 144% of the expected cash outflows.
- If distributions decline, reflecting the procyclical nature of private market cash flows such that they equal the contributions, $LCR_1 = 1.10$.

LCR Takeaways

LCR encapsulates several asset allocation considerations:

- Increasing private market allocations would decrease liquid assets thereby lowering LCR;
- Increasing the riskiness of liquid assets would magnify the shock return thereby lowering LCR; and
- It could be a useful metric to compare the liquidity implications of different asset allocations.



OREGON STATE TREASURY

Tobias Read
Oregon State Treasurer

16290 SW Upper Boones Ferry Road
Tigard, OR 97224

oregon.gov/treasury

O I C



OREGON
STATE
TREASURY

TAB 6

OPERF DIVERSIFYING STRATEGIES PORTFOLIO

ANNUAL REVIEW

April 20, 2022

OPERF Diversifying Strategies Portfolio

Annual Review and Forward Plan



OREGON
STATE
TREASURY



Agenda

Section	Pages	OIC Investment and Management Beliefs Mapping																	
		1A	1B	1C	1D	2A	2B	3A	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B	9A
Diversifying Strategies Portfolio Overview	2-5				X	X	X				X		X	X					
Markets	7-11				X		X				X						X	X	X
Project Pathfinder Update	12-15				X	X	X				X		X	X				X	
2021 Review	16-17				X	X	X				X						X		X
Results	18-19				X		X				X							X	
2022 Preview	20				X	X	X				X						X	X	X
Appendix	22-24				X		X				X		X	X			X	X	X

LEGEND: OIC INVESTMENT AND MANAGEMENT BELIEFS

1 THE OIC SETS POLICY AND IS ULTIMATELY RESPONSIBLE FOR THE INVESTMENT PROGRAM

- A. Investment management is dichotomous -- part art and part science.
- B. The OIC is a policy-setting council that largely delegates investment management activities to the OST and qualified external fiduciaries.
- C. The OIC is vested with the authority to set and monitor portfolio risk. Both short-term and long-term risks are critical.
- X** D. To exploit market inefficiencies, the OIC should be long term, contrarian, innovative, and opportunistic in its investment approach.

2 ASSET ALLOCATION DRIVES RISK AND RETURN

- X** A. Asset allocation is the OIC's primary policy tool for managing the investment program's long-term risk/return profile.
- X** B. Portfolio construction, including diversification and correlation considerations, is essential to maximizing risk-adjusted returns.

3 THE EQUITY RISK PREMIUM WILL BE REWARDED

- A. Over the long-term, equity-oriented investments provide reliable return premiums relative to risk-free investments.

4 PRIVATE MARKET INVESTMENTS CAN ADD SIGNIFICANT VALUE AND REPRESENT A CORE OIC/OST COMPETENCY

- A. The OIC can capitalize on its status as a true, long-term investor by making meaningful allocations to illiquid, private market investments.
- B. Dispersion in private market investment returns is wide; accordingly, top-quartile manager selection, diversification across vintage year, strategy type, and geography, and careful attention to costs are paramount.

5 CAPITAL MARKETS HAVE INEFFICIENCIES THAT CAN BE EXPLOITED

- X** A. Inefficiencies that can be exploited by active management may exist in certain segments of the capital markets.
- B. Passive investment management in public markets will outperform the median active manager in those markets over time.

6 COSTS DIRECTLY IMPACT INVESTMENT RETURNS AND SHOULD BE MONITORED AND MANAGED CAREFULLY

- X** A. All fees, expenses, commissions, and transaction costs should be diligently monitored and managed in order to maximize net investment returns.
- X** B. External incentive structures should be carefully evaluated to ensure proper alignment with investment program objectives.

7 FAIR AND EFFICIENT CAPITAL MARKETS ARE ESSENTIAL FOR THE LONG-TERM INVESTMENT SUCCESS

- A. The OIC recognizes that the quality of regulation and corporate governance can affect the long-term value of its investments.
- B. The OIC also recognizes that voting rights have economic value.

8 THE INTEGRATION OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) FACTORS, SIMILAR TO OTHER INVESTMENT FACTORS, MAY HAVE A BENEFICIAL IMPACT ON THE ECONOMIC OUTCOME OF AN INVESTMENT AND AID IN THE ASSESSMENT OF RISKS ASSOCIATED WITH THAT INVESTMENT

- X** A. The consideration of ESG factors within the investment decision-making framework is important in understanding the near-term and long-term impacts of investment decisions.
- X** B. Over time, there has been an evolution of multi-factor, or more holistic approaches, to identify opportunities and remediate risks, in a large globally-diversified investment portfolio.

9 DIVERSITY, IN ALL ASPECTS, IS ACCRETIVE TO MEETING OIC OBJECTIVES

- X** A. By embracing and enhancing diversity and inclusion efforts, the OIC ensures that the investment program will be exposed to and informed by a wide range of perspectives, ideas and opinions.



Portfolio Overview

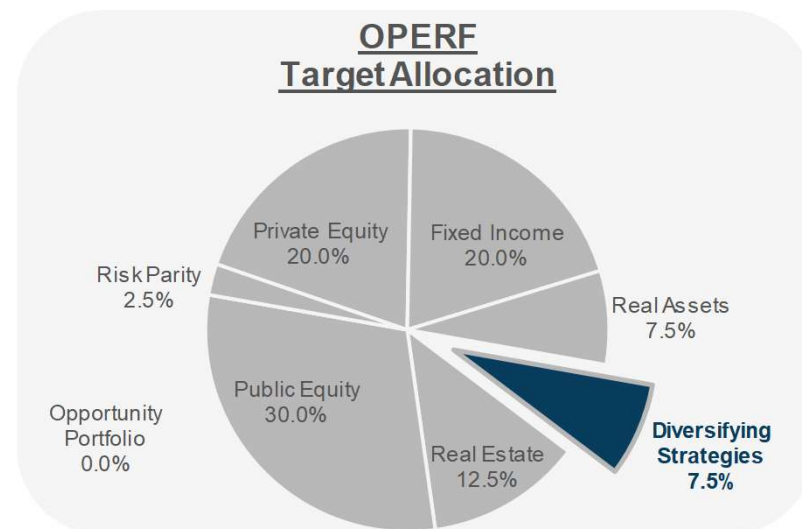
Strategic Role

➤ Portfolio background

- Alternatives Portfolio (inclusive of Real Assets and Diversifying Strategies) approved at the January 2011 OIC meeting; Portfolio bifurcated into its component parts in June 2021.
- Target allocation for Diversifying Strategies has increased three times since its inception (most recently in 2019), growing from an initial 1.0% target to its current 7.5% target.
- Fair market value = \$3.5 billion (3.7% of OPERF) vs. target of \$7.1 billion (7.5% of OPERF).

➤ Portfolio objectives

- Participate in attractive long-term investment opportunities.
- Diversify the overall OPERF investment portfolio through differentiated (i.e., less correlated) returns.
- Seek diversified hedge fund manager and strategy exposures.
- Performance objective: HFRI Fund of Funds Conservative Index.



➤ Performance

	YTD	1 Year	3 Year	5 Year	ITD
Diversifying Strategies Portfolio	6.4%	13.7%	0.5%	-1.4%	2.4%
HFRI FOF Conservative	-0.2%	4.5%	5.8%	4.5%	4.0%
<i>Difference</i>	6.5%	9.2%	-5.3%	-5.9%	-1.5%

Source: Albourne. Data as of February 28, 2022.



OREGON
STATE
TREASURY

Portfolio Overview

Positioning

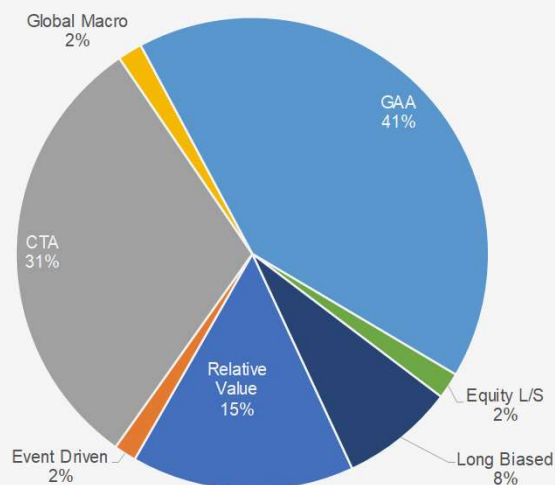
Portfolio Summary

Attribute	2/28/2021	2/28/2022	% Change
GP Relationships	8	9	12.5%
Holdings	10	12	20.0%
Total Approved Amount	\$4,350.0	\$5,600.0	28.7%
Subscriptions	\$4,159.1	\$4,284.1	3.0%
Redemptions	\$399.1	\$841.5	110.9%
Net Asset Value	\$3,358.7	\$3,493.9	4.0%
Unfunded Approvals	\$125.0	\$1,250.0	900.0%
ITD Return	1.3%	2.4%	90.6%

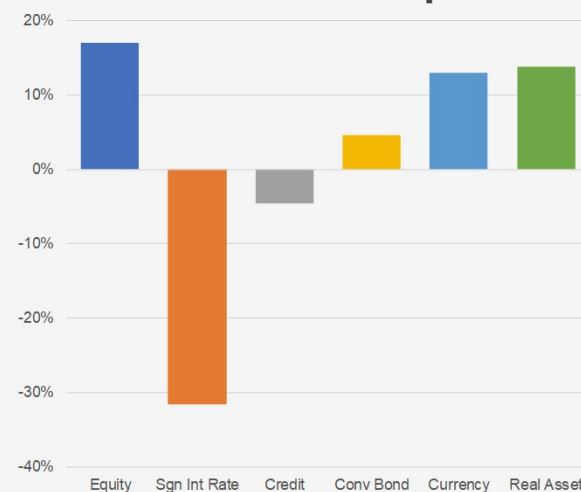
Top 5 Managers

Manager	# of Mandates	\$ of Exposure	% of Exposure
AQR Capital Management	3	\$1,360.4	38.9%
Bridgewater Associates	1	\$580.6	16.6%
GMO	1	\$536.0	15.3%
BlackRock	1	\$396.1	11.3%
Aspect Capital	1	\$320.4	9.2%

Strategy Weights¹



Net Asset Class Exposure



Source: Albourne, State Street. Data as of February 28, 2022. \$ in millions.
¹Data from Albourne Risk Analyst Assessment with multi-strategy look-through.

Portfolio Overview

Executive Summary

- Performance boosted by equity value exposures (over trailing year, at least)
 - Diversifying Strategies Portfolio returned 13.7% over the past year, increasing the Portfolio's since inception return to 2.4%.
 - For the trailing year, contributors were broad based with every strategy group and individual fund realizing positive performance.
 - With a strong rebound from the equity value factor, Alternative Risk Premia funds enjoyed a solid year (1-year return = 27.0%), although longer-term performance remains muted (since inception = 2.3%).

- Project Pathfinder proceeding to plan
 - With key objectives of increasing manager and strategy diversification in focus, continue to advance Phase One through concurrent workstreams, concentrating initially on rebalancing the CTA portfolio as well as adding global macro and multi-strategy funds.
 - Have received approval for five (out of a contemplated nine) new Phase One managers, totaling \$1.25 billion in commitments thus far.
 - Active diligence efforts underway on three additional funds.
 - Pivot to Phase Two beginning in second half of 2022.

- Albourne onboarding and integration largely complete
 - Utilizing full slate of due diligence and monitoring resources.



Source: Albourne. Performance as of February 28, 2022.

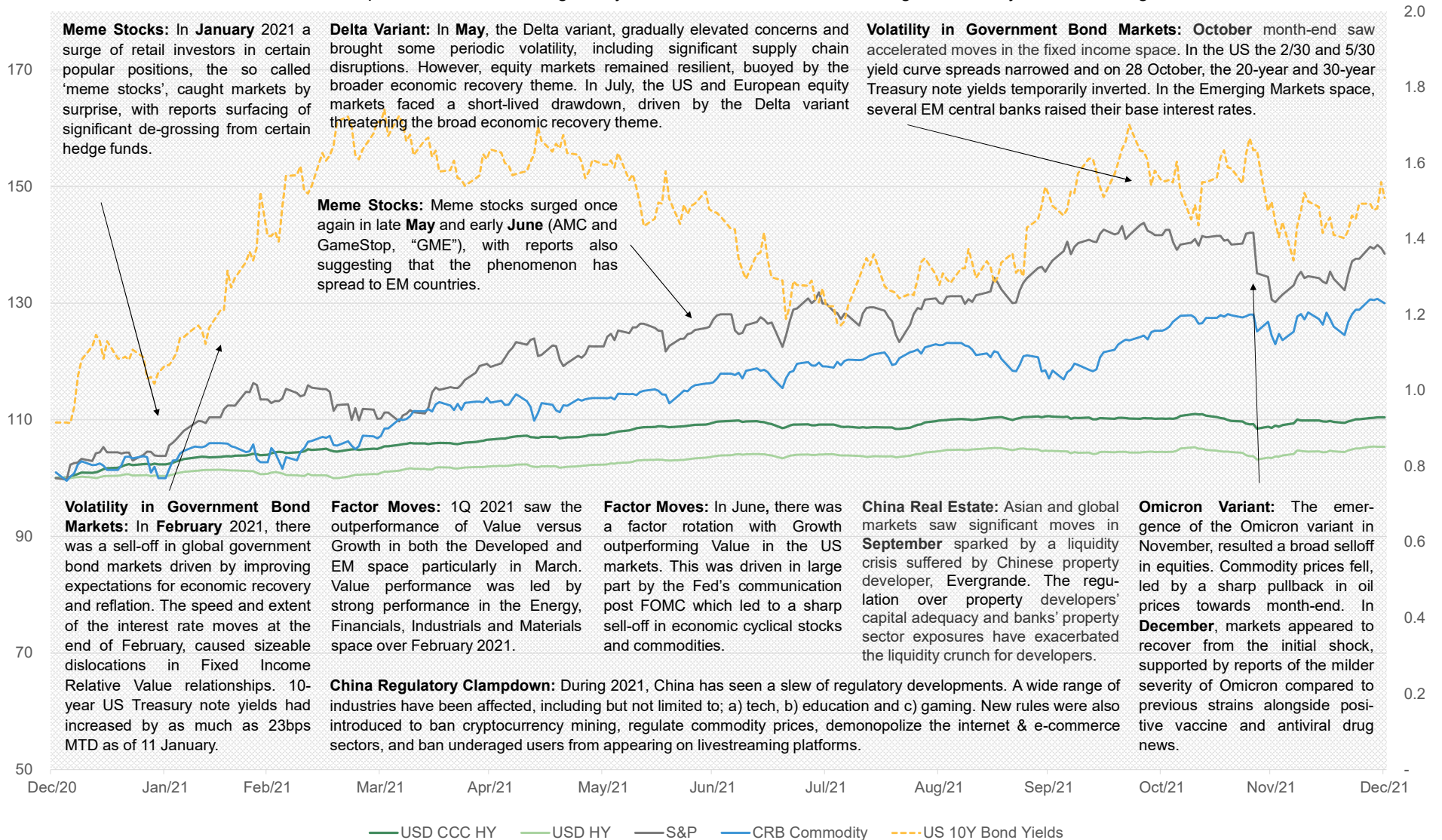
Topics

1. Diversifying Strategies Portfolio Overview
- 2. Diversifying Strategies Portfolio Update**
 - A. Markets
 - B. Project Pathfinder Update
 - C. 2021 Review
 - D. Results
 - E. 2022 Preview
3. Appendix

Markets

2021 Snapshot Review

2021 was a fast-paced year with many developments across many fronts. The economic recovery theme narrative remained generally buoyant, supported by quantitative easing, low interest rates and the broader Monetary Policy 3. As economies reopened, inflation surged, and alongside new COVID variants, supply chain disruptions threatened the growth outlook, and in turn created stagflation worries. Government bond markets were quite volatile driven by inflationary and rate hike speculations. Finally, China's relations with the US and the West remained topical and a series of regulatory reforms in the world's second largest economy affected a range of industries.



Markets

Themes in 2021

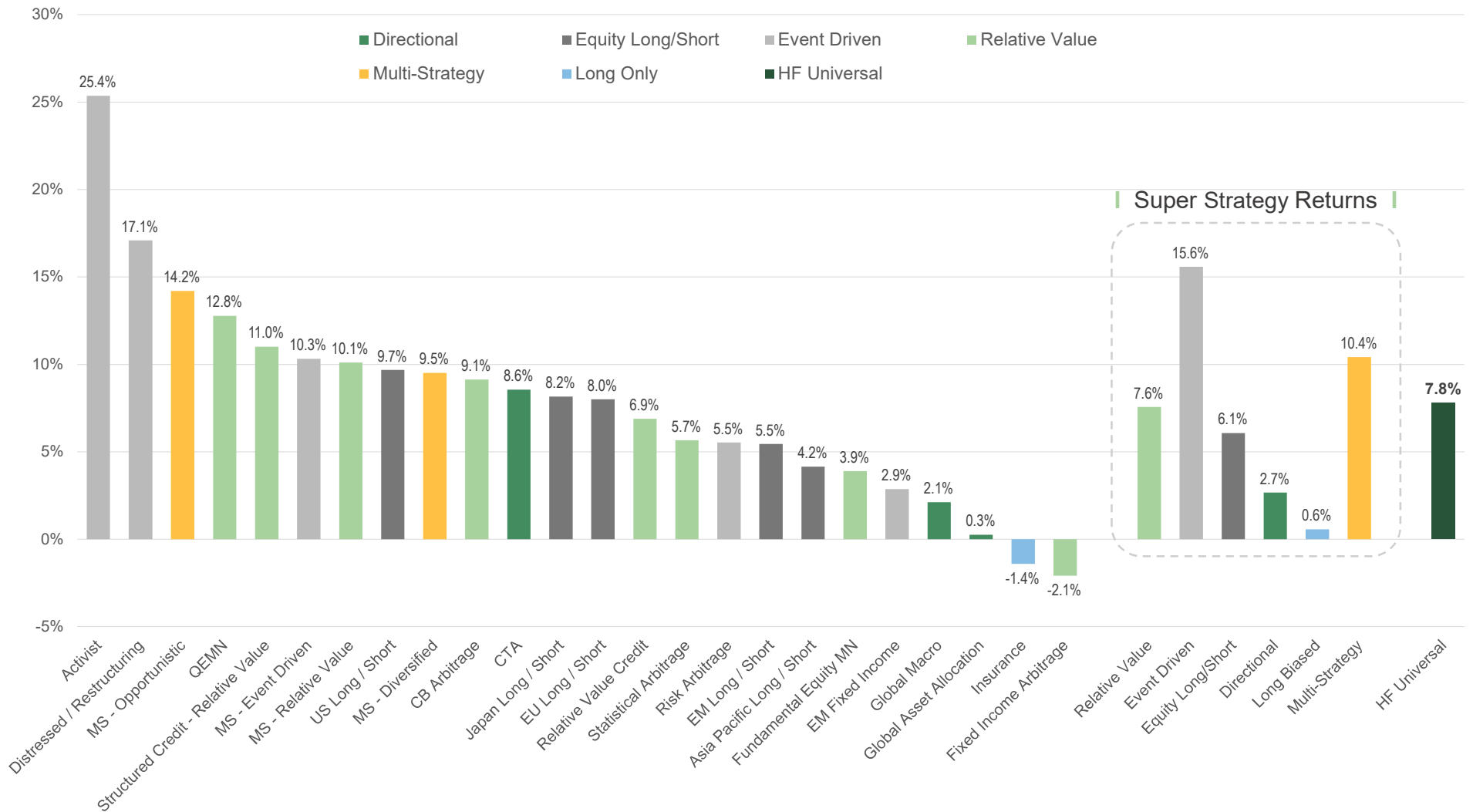
<p>COVID-19</p> <ul style="list-style-type: none"> • Variants continue to cause disruptions of global industries and supply chains • These contribute toward a compelling environment for Activist and Global/US Equity Long/Short strategies 	<p>US-China Relations</p> <ul style="list-style-type: none"> • Sell-off in US-listed Chinese companies and China ADRs after DiDi delisting • Managers cautiously positioned in consumer internet stocks in China • Shift in focus toward advanced manufacturing, cloud computing & renewable energy • Tensions weigh on many mergers requiring Chinese regulatory approval 	<p>China Regulatory Clampdown</p> <ul style="list-style-type: none"> • China has seen a slew of regulatory developments in 2021 • Many industries have been affected including tech, education, and gaming, and digital assets • New rules were introduced to ban cryptocurrency mining, regulate commodity prices, and demonopolize the internet & e-commerce sectors 	<p>Energy Transition Emphasized by COP26</p> <ul style="list-style-type: none"> • Net zero carbon emissions goal by 2050 • Commodities & base metals needed to build infrastructure • Investors seeking long commodity exposure for beta participation • Some managers trading carbon actively or via passive buy & hold approach
<p>Meme Stocks / Retail Investors</p> <ul style="list-style-type: none"> • In January 2021, a surge of retail investors took certain popular positions • Meme stocks caught markets by surprise, with reports surfacing of significant de-grossing from certain hedge funds • An SEC report in October identified areas that merit further investigation 	<p>Inflation & Interest Rate Hike</p> <ul style="list-style-type: none"> • Quantitative easing adopted by key central banks to combat COVID-19 driven economic downturn resulted in rising inflation • In November, Fed Chairman Jerome Powell commented that inflation can no longer be described as “transitory” 	<p>Institutionalization of Digital Assets</p> <ul style="list-style-type: none"> • Institutional investors embraced digital assets in 2021 • Private market allocators continue to direct capital towards the space via venture capital • We observed a surge in traditional hedge fund adoption of digital assets • The rate of adoption is expected to increase rapidly 	<p>The End of LIBOR</p> <ul style="list-style-type: none"> • In March, the UK FCA announced that the publication of most LIBOR fixings will cease in 2022 with few exceptions • An enormous number of securities and contracts still reference LIBOR • Beyond 2021, no new contracts can be issued that reference the US Dollar LIBOR
<p>Commodities Super Cycle</p> <ul style="list-style-type: none"> • The year evolved around the narrative that commodities were in the midst of a broad-based super cycle • Commodities have grabbed the interest of institutional investors as a hedge against inflation 	<p>Government Bond Market Volatility</p> <ul style="list-style-type: none"> • 2021 saw substantial volatility in government bond markets • A sell-off in global government bond markets occurred in February, driven by improving recovery expectations • Accelerated moves in the fixed income space in October appear to have had a material impact on Fixed Income Arbitrage 	<p>Factor Moves</p> <ul style="list-style-type: none"> • Following a strong month in November 2020, the Value factor had another solid month in February 2021 • There were many factors that were positive for Value investors, including the post-pandemic recovery and infrastructure efforts 	<p>China Real Estate</p> <ul style="list-style-type: none"> • Chinese markets moved significantly in September sparked by a liquidity crisis suffered by Chinese property developer, Evergrande • Despite the turmoil, Chinese credit remains an investable asset class as the strategy generally benefits from policy driven dislocation and non-fundamental crises

<https://village-eu.albourne.com/castle/cionotes/4175591>

Markets

Performance – YTD as of December 2021

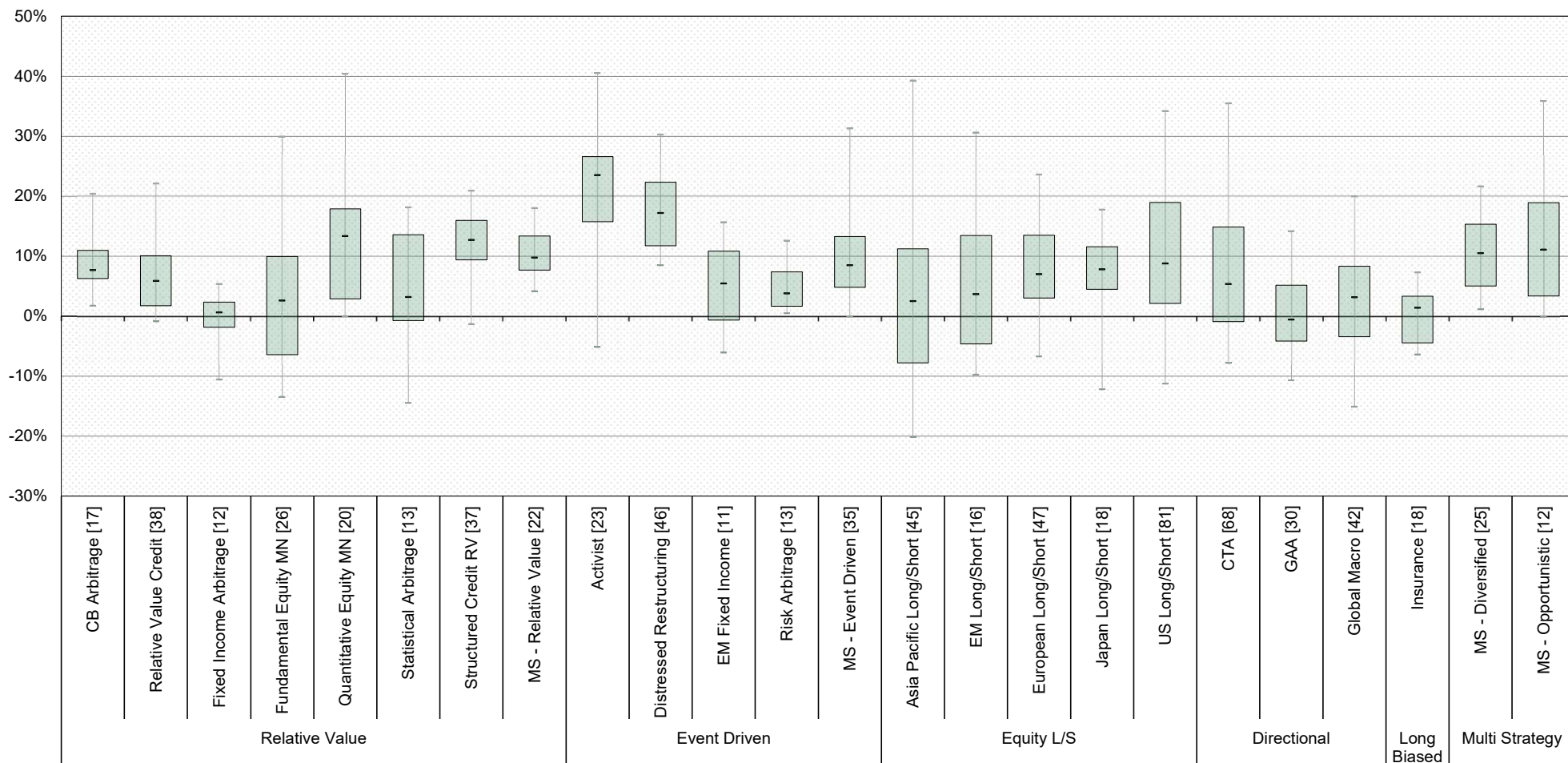
HedgeRS EW Performance - YTD*



Source: Albourne HedgeRS Indices. <https://village-eu.albourne.com/castle/hedgers>
 *Based on fund returns/estimates received as of 17 January 2021. Past performance is not necessarily indicative of future results

Markets

Dispersion – YTD as of December 2021



Albourne Hedge Fund Strategy & Number of Funds

Notes:

Data shows dispersion of returns: Middle bar represents the median; upper & lower bounds of the box represents the top quartile and bottom quartile, respectively; upper & lower whiskers represent the 95th & 5th percentiles, respectively.

Universe shown is the constituents of the relevant HedgeRS Equal Weighted Index for each strategy

Calculations include all funds with returns over each relevant time period.

* Based on all fund returns/estimates received as of 17 January 2021

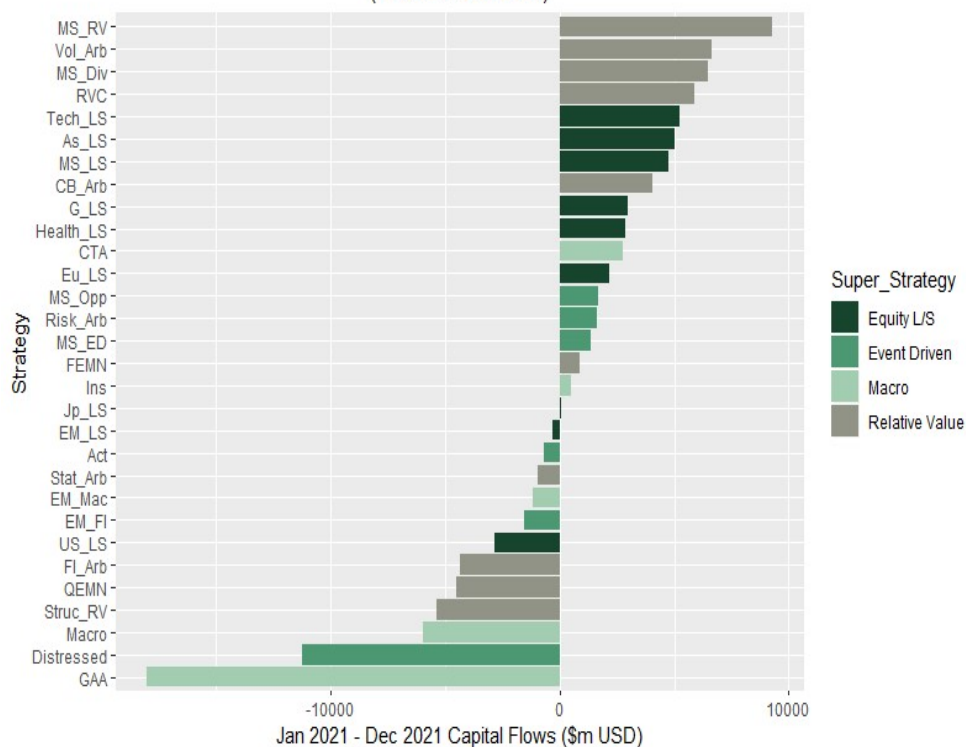
Source: Albourne
Past performance is not indicative of future results

Markets

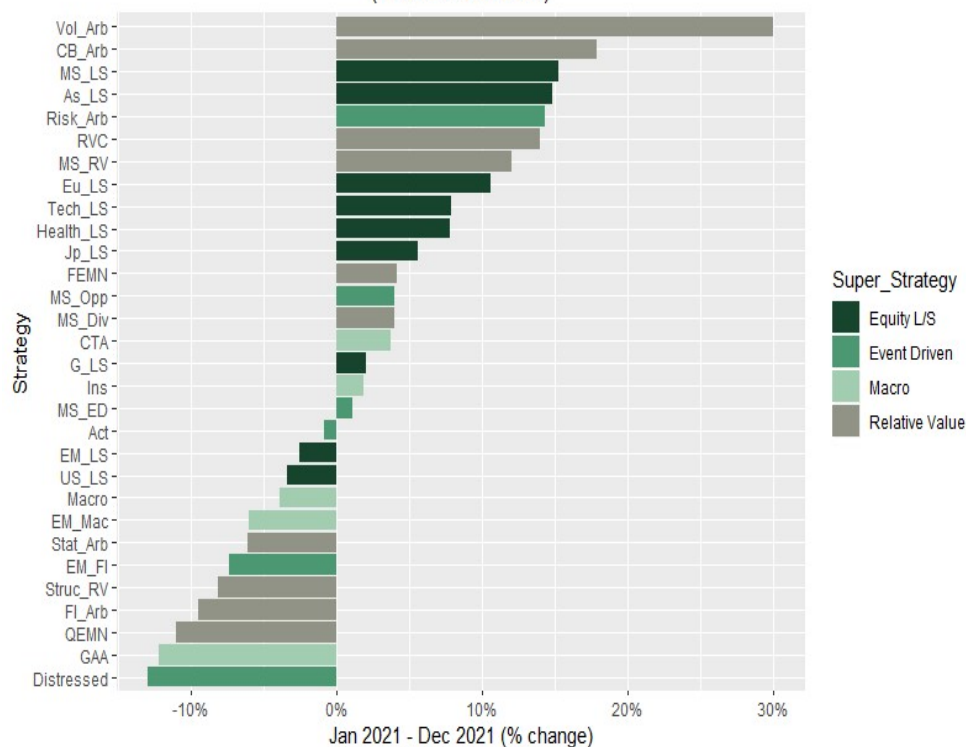
Hedge Fund AUM Trends (Dec 2020- Dec 2021)

Multi-strategy and Relative Value funds have been notable beneficiaries of flows over the past year. Long/Short remains positive but less compared to last year. Distressed and GAA have seen the largest outflows as a dearth of opportunity, and a question mark over the relevance of GAA strategies seem to have discouraged allocations.

Hedge Fund AUM Trends (\$ change)
(Jan 2021 - Dec 2021)



Hedge Fund AUM Trends (% change)
(Jan 2021 - Dec 2021)




“Act” = Activist, “As_LS” = Asia Pacific Long/Short, “CB_Arb” = Convertible Bond Arbitrage, “EM_FI” = Emerging Markets Fixed Income, “EM_LS” = Emerging Markets Long/Short, “EM_Mac” = Emerging Markets Macro, “Eu_LS” = European Long/Short, “FEMN” = Fundamental Equity Market Neutral, “FI_Arb” = Fixed Income Arbitrage, “G_LS” = Global Long/Short, “GAA” = Global Asset Allocation, “Health_LS” = Healthcare Long/Short, “Ins” = Insurance, “Jp_LS” = Japan Long/Short, “Macro” = Global Macro, “MS_Div” = Multi-Strategy Diversified, “MS_ED” = Multi-Strategy Event Driven, “MS_LS” = Multi-Strategy Long/Short, “MS_Opp” = Multi-Strategy Opportunistic, “MS_RV” = Multi-Strategy Relative Value, “QEMN” = Quantitative Equity Market Neutral, “Risk_Arb” = Risk Arbitrage, “RVC” = Relative Value Credit, “Stat_Arb” = Statistical Arbitrage, “Struc_RV” = Structured Credit Relative Value, “Tech_LS” = Tech Long/Short, “US_LS” = US Long/Short, “Vol_Arb” = Volatility Arbitrage

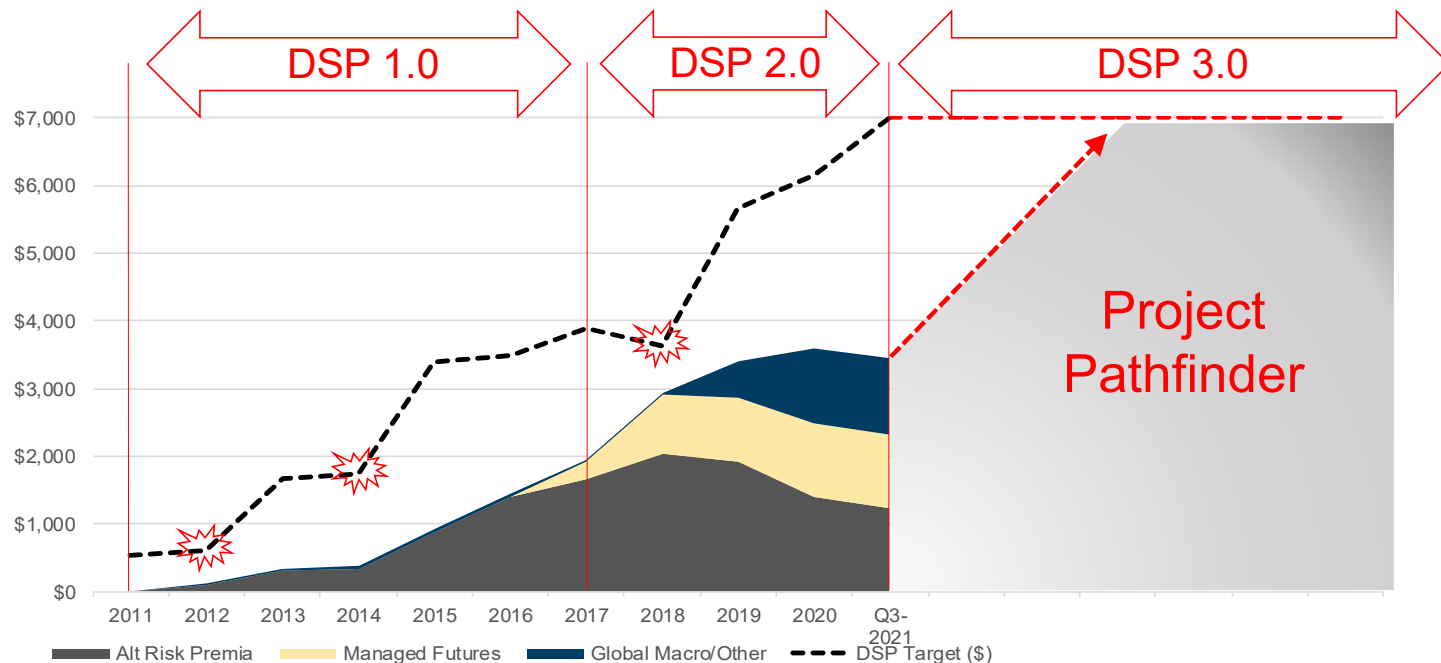
Project Pathfinder Update

Portfolio Evolution

➤ Portfolio composition over time

- The Diversifying Strategies allocation has increased three times since inception, with each increase taking place early in the respective build-out of the allocation.
- Staff considers three distinct periods of Portfolio construction evolution:
 - DSP 1.0: sole focus on Alternatives Risk Premia. “Putting our beach towels down,” establishing strategic partnership with AQR.
 - DSP 2.0: focused on expanding manager roster; established anchor relationships in Managed Futures and Global Macro/Other sectors.
 - DSP 3.0: following allocation increase, initiated Project Pathfinder to evaluate roles and objectives of the Portfolio and to identify the tactical steps required to move the current portfolio in the long-term direction.

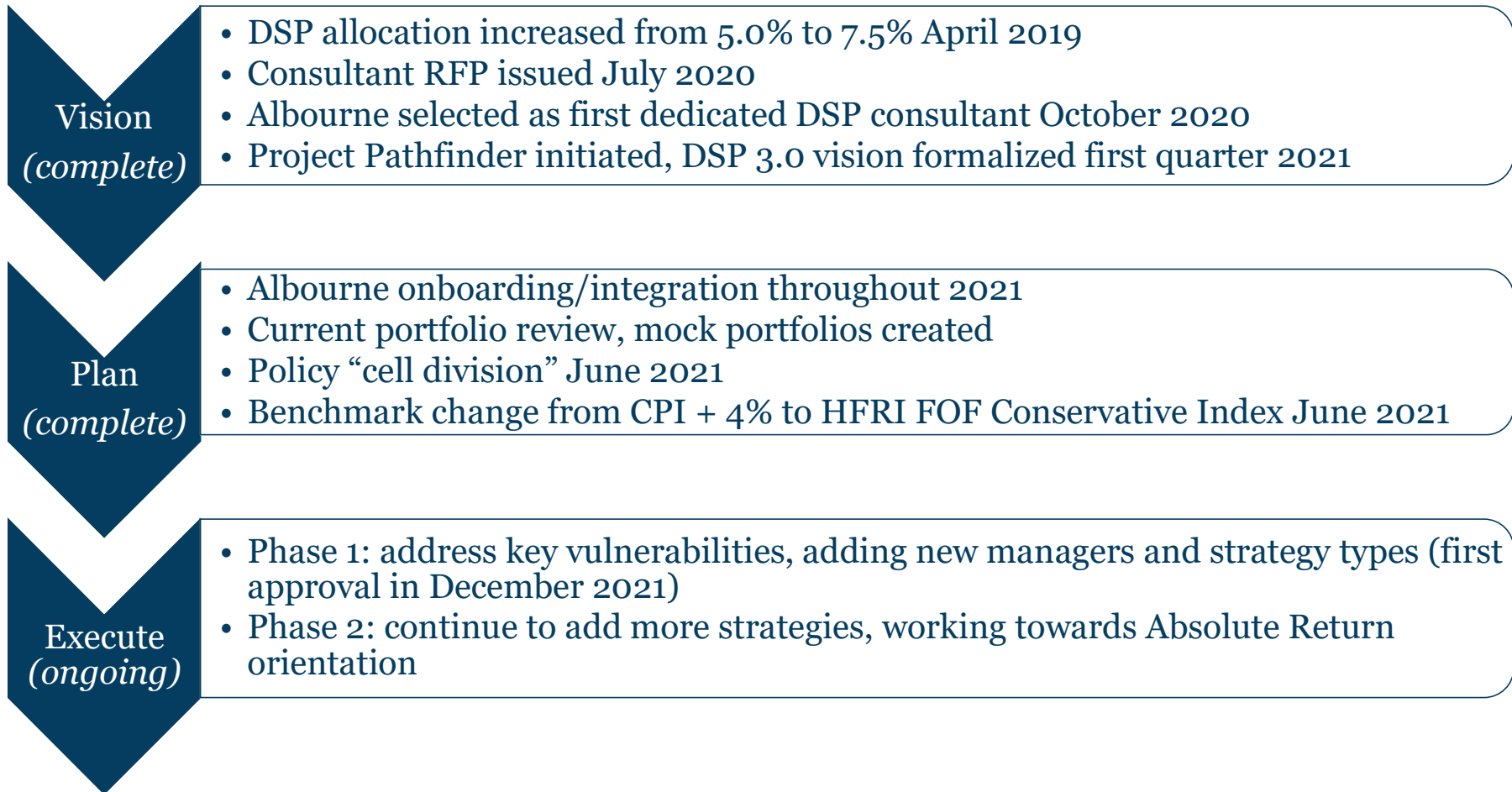
 = allocation increase



OREGON
STATE
TREASURY

Project Pathfinder Update

Timeline



Project Pathfinder Update

Refining DSP Objectives

- Objective: to provide OPERF with additional risk-mitigating characteristics as a complement to the fixed income portfolio
 - DSP designed to be an Absolute Return portfolio, consisting primarily of market neutral and directional strategies that provide a return stream that is expected to have a low correlation to equity markets. Due to some of the strategies historically exhibiting left tail exposure or directional managers being positioned with long exposure to equities, long volatility strategies will be utilized to dampen left tail and short convexity exposures.
- Reflected in asset allocation framework:

Reference Portfolio

- Reference portfolios are portfolios that consist of passively managed, publicly traded asset classes that have similar risk levels as a specific investor's portfolio.
 - They are commonly used for comparison and/or benchmarking purposes.
- A 60% Public Equity / 40% Fixed Income portfolio has historically been a common example.
- Most institutional investors, including OPERF, now more closely mirror a 70/30 portfolio due to the decline in interest rates and expected returns over the last ten years.

	Current (%)	70/30 (%)
Fixed Income	20.0%	30.0%
Diversifying Strategies	7.5%	---
Total Risk Mitigating	27.5%	30.0%
Public Equity	32.5%	70.0%
Private Equity	17.5%	---
Real Estate	12.5%	---
Real Assets	7.5%	---
Risk Parity	2.5%	---
Total Return Seeking	72.5%	70.0%

*From June 2, 2021,
asset allocation
review*



Project Pathfinder Update

DSP 3.0 Vision

➤ Two phase implementation:

- Phase One: address key vulnerabilities by increasing the number of managers and strategies, establishing anchor relationships in relative value, event driven, and global macro strategy groups as well as expanding the CTA portfolio to 4 managers, equally weighted.
- Phase Two: continue to add more strategies (specialist relative value, equity long/short, tail hedge, etc.), working towards Absolute Return orientation.
- *While subject to change*, using the contemplated Phase One and Phase Two portfolios, potential strategy allocations and manager counts look as follows:

Strategy Allocations

Strategy Type	Current	Phase 1	Phase 2
Relative Value	15%	24%	32%
Event Driven	2%	13%	9%
Global Macro	2%	12%	7%
CTA	31%	23%	15%
GAA	41%	22%	12%
Equity L/S	2%	3%	12%
Long Biased	8%	3%	4%
Other Directional	0%	0%	6%

Strategy Count

Strategy Type	Current	Phase 1	Phase 2
Relative Value	0	3	8
Event Driven	0	1	1
Global Macro	0	2	2
CTA	3	4	4
GAA	4	4	3
Equity L/S	0	0	2
Long Biased	0	0	1
Other Directional	0	0	4
Multi-Strategy	1	1	1
Fund of Funds	1	1	1
TOTAL	9	16	27
TOTAL GPs	7	14	24



¹Data from Albourne Risk Analyst Assessment with multi-strategy look-through.

2021 Review

Priorities

- DSP 3.0 evaluation
 - Through “Project Pathfinder,” look to make substantial progress towards finalizing DSP 3.0 vision and plan.
 - *Albourne onboarding/integration occurred throughout 2021, with DSP 3.0 vision and plan formalized in first half of the year.*
 - *Review of current portfolio and creation of Phase One and Two mock portfolios completed.*
- Monitoring and risk management
 - Continue to pursue enhancements to monitoring and risk management efforts, specifically onboarding and leveraging Albourne’s capabilities.
 - Further formalize ESG and D&I integration across the broader Alternatives Program.
 - *Made significant progress across monitoring, risk management, and ESG efforts; continue to refine and integrate.*
 - *Creation of Capital Market Leadership committee, providing a forum for on-going monitoring and sharing of best practices.*
- Conduct research reviews of areas of interest
 - Continue equity value (and general factor) research.
 - *Completed.*

2021 Review

Approvals

➤ Phase One of Project Pathfinder in execution mode

- During 2021/Q1 2022, OIC/OST authorized \$1.25 billion in investments across five investments.
 - All five investments represent new relationships.
- Approvals helped to continue refinement to strategy and development of anchor positions.
 - Identified anchor relationships in relative value, event driven, and global macro strategy groups.
 - Expanded CTA portfolio to 4 managers, rebalanced to be equally weighted.
- No shortage of deal flow! Steady stream of new managers, strategies, and structures.

Investment	Strategy	Authorized Date	Commitment Amount
Man AHL Alpha	CTA	December 2021	\$250.0
Brevan Howard Master Fund	Global Macro	December 2021	\$250.0
Caxton Global Investments	Global Macro	February 2022	\$250.0
Davidson Kempner Multi-Strategy Fund	Multi Strategy - Event Driven	February 2022	\$250.0
Hudson Bay Fund	Multi Strategy - Relative Value	February 2022	\$250.0
2021 + Q1 2022 Total			\$1,250.0

Source: OST Staff. Data as of February 28, 2022. \$ in millions.



Results Performance (through February 2022)

Diversifying Strategies

portfolio.performance

Portfolio Performance Metrics

	Annualized Performance						Annualized Risk				
	February 2022	Quarter to Date	Year to Date	1 Year	3 Years	5 Years	Since Investment	Since Proforma Start	Volatility	DV ¹	Worst DD ²
Portfolio	0.53%	6.35%	6.35%	13.69%	0.51%	-1.42%	2.44%	2.35%	6.17%	4.06%	-27.80%
HFRI FoF: Conservative	0.23%	-0.19%	-0.19%	4.49%	5.79%	4.45%	3.97%	3.90%	3.45%	2.49%	-7.64%
USD 3M Libor + 5%	0.45%	0.89%	0.89%	5.31%	6.10%	6.53%	6.04%	6.03%	0.24%	0.00%	
S&P 500 TR (SPTR)	-2.99%	-8.01%	-8.01%	16.39%	18.24%	15.17%	15.31%	15.29%	13.14%	8.01%	-19.60%
BofAML US HY Bonds	-0.90%	-3.62%	-3.62%	0.81%	5.06%	4.71%	6.22%	6.43%	6.59%	4.56%	-13.13%

Unless otherwise stated, all computations are for the period Dec 2011-Feb 2022 ¹Downside Volatility, with Risk-Free=0.61% ²Worst Drawdown

VAMI

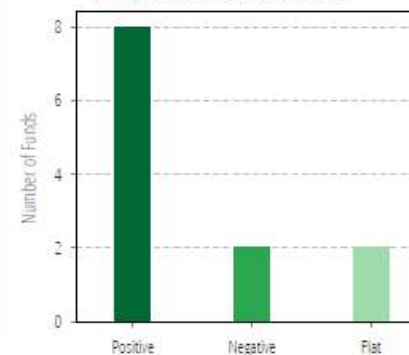


Moments and Measures

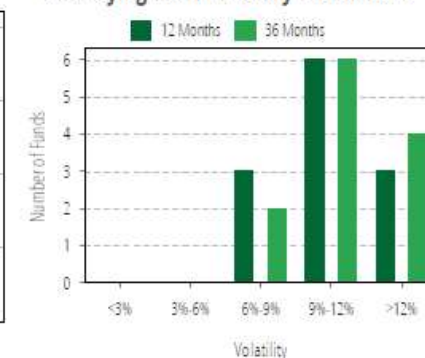
	Portfolio	HFRI FoF: Conservative	USD 3M Libor + 5%	S&P 500 TR (SPTR)	BofAML US HY Bonds
Skew	0.09	-2.81	1.09	-0.48	-2.02
Kurtosis	0.62	20.67	-0.27	1.68	13.58
Sharpe	0.28	0.95	22.59	1.12	0.88
Sortino Ratio ³	0.43	1.32		1.83	1.27
Calmar Ratio	0.08	0.51		0.78	0.49
Omega Ratio ³	0.23	0.83		0.83	0.75
Gain/Loss Ratio ³	1.26	2.29		2.28	2.12
Positive Months	56%	73%	100%	72%	72%
Negative Months	44%	27%	0%	28%	28%

³Using Risk-Free MAR=0.61%

Fund Returns for Feb 2022



Underlying Fund Volatility Distribution



- Value exposures helped boost returns over trailing periods

Source: Albourne
Past performance is not indicative of future results

Results

Performance (through February 2022)

Diversifying Strategies

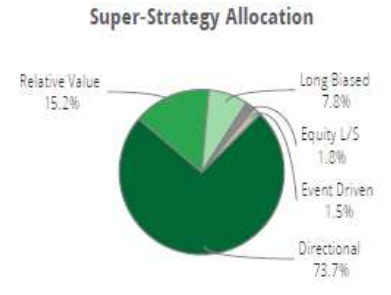
core.risk

Portfolio Statistics	
Portfolio Details	
Month	Feb 2022
Reporting Currency	USD
Portfolio Dates	
Proforma Start	Dec 2011
Historical Systematic Start	Dec 2011
Current Systematic Start	Jan 1999
Based on Portfolio¹	
Feb 2022	0.53%
QTD Return	6.35%
YTD Return	6.35%
Annualized Return	2.35%
Annualized Volatility	6.17%
Downside Volatility ²	4.06%
Sharpe Ratio ²	0.28
Sortino Ratio ²	0.43
Maximum Drawdown	-27.80%
Tactical Benchmark Return	3.90%
Historical Systematic Return	2.50%
Beta vs S&P 500 TR (SPTR) ³	0.07
Beta vs BofAML US HY Bonds ³	0.08
Correlation to Historical Systematic	0.56
Based on Current Systematic	
Annualized Expected Volatility	6.86%
1 Month 95% VaR	3.26%
Beta vs S&P 500 TR (SPTR) ⁴	0.04
Beta vs BofAML US HY Bonds ⁴	0.10
Beta vs Tactical Benchmark ⁵	0.45

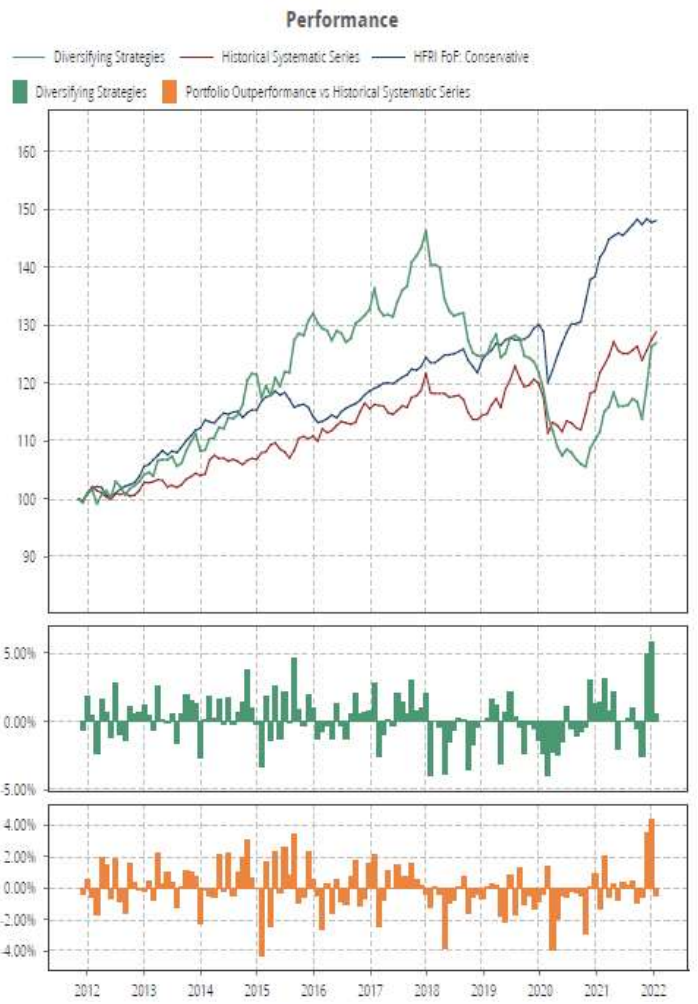
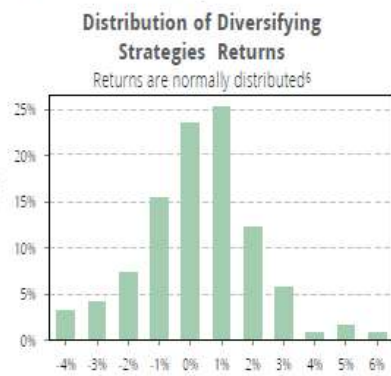
¹Unless otherwise noted, Dec 2011-Feb 2022. ²Risk-Free=0.61% ³Dec 2011-Feb 2022. ⁴Jan 1999-Feb 2022. ⁵HFRI FoF: Conservative, Jan 1999-Feb 2022.

Portfolio Objectives		
	Target	Actual
Return	Libor + 5.00%	2.35%
Volatility	3% - 6%	6.17%
Historical Sharpe Ratio	1	0.28

Portfolio Objectives evaluated over Dec 2011-Feb 2022.



Data from Albourne Risk Analyst Assessment.



- DSP is being reconfigured to provide more balance across a broader set of hedge fund strategies.
- Relative Value strategies are being increased and Directional strategies are being scaled back and being diversified by sub-strategy type.

Source: Albourne
Past performance is not indicative of future results

2022 Preview

Priorities

1. Demonstrate continued progress on Project Pathfinder
 - Expect to focus first half 2022 on substantially completing Phase One, pivoting to Phase Two beginning second half 2022.
2. Monitoring and risk management
 - Continue to pursue enhancements to monitoring and risk management efforts.
 - Further formalize ESG and D&I integration across the broader Alternatives Program.
3. Conduct research reviews of areas of interest
 - Equity long/short.
 - Fixed income long/short.
 - “Long volatility” strategies.

Topics

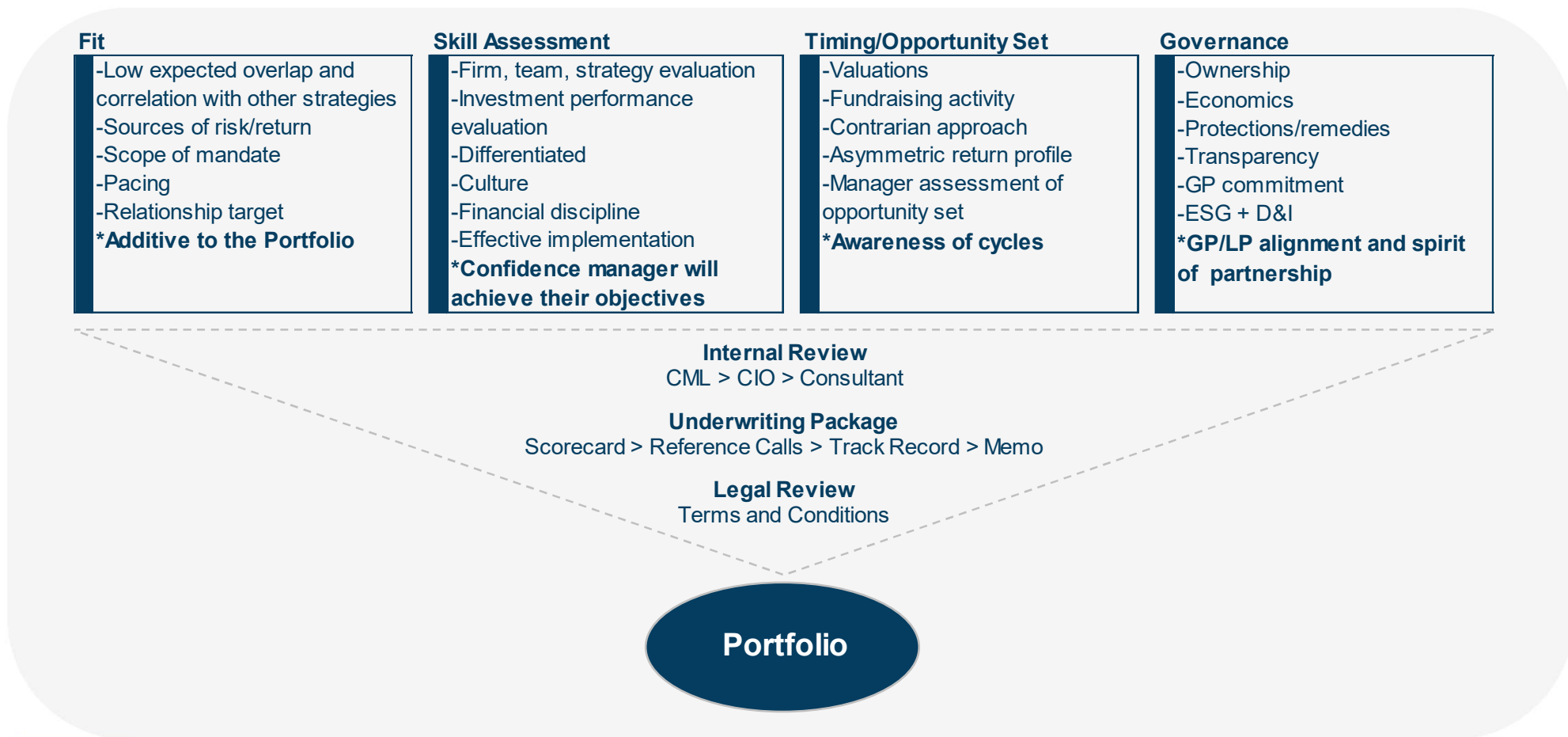
1. Diversifying Strategies Portfolio Overview
2. Diversifying Strategies Portfolio Update
- 3. Appendix**

Appendix

Investment Process

➤ Evaluation framework

- Very high-level summary of Alternatives Portfolio investment evaluation framework below
- In practice, many more variables, non-linear, and with numerous feedback channels

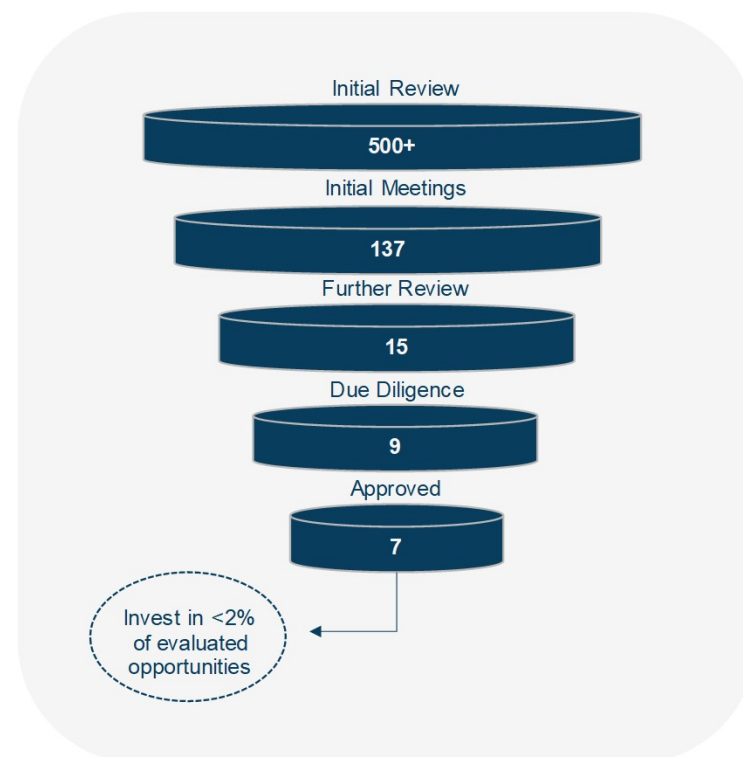


Appendix

Investment Process, cont.

➤ 2021 Alternatives Portfolio meeting activity

- Began formally tracking meeting count in 2016.
- Scale, brand, and open door policy leveraged to foster deal flow.
 - E.g., among U.S. defined benefit plans, OPERF ranks (by assets) in the top 5 in infrastructure, the top 10 in energy and commodities, and the top 20 in hedge funds*.
- Over 4,400 notes and other correspondence deposited in research management system.
- After screening approximately 500 opportunities, held initial meetings (in-person or telephonic) with 137 distinct prospective managers/investments.
- “Deep dives” on 15 opportunities.
- Ultimately sought approval for 7 investments.



Appendix

Albourne Super-Strategy Buckets

➤ Macro/directional

- Generally refers to strategies that are more directional in nature, although they can shift opportunistically between having a directional bias and a non directional bias. Typically investing at the asset class level (e.g., fixed income, currencies, equities and commodities) rather than individual company securities.
- Strategy examples: global macro, CTA.

➤ Relative value

- Seek returns by capitalizing on the mispricing of related securities or financial instruments, generally avoid taking a directional bias with regard to the price movement of securities/markets.
- Strategy examples: fundamental equity market neutral, convertible arbitrage.

➤ Event driven

- Focus on identifying and analyzing securities that can benefit from the occurrence of an extraordinary transaction or event (e.g., restructurings, takeovers, mergers, spin offs, bankruptcy, etc.).
- Strategy examples: merger arbitrage, distressed investing.

➤ Equity long/short

- Maintain some level of market exposure (either net long or net short); however, the level of market exposure may vary through time.
- Strategy examples: emerging markets long/short, U.S. long/short.





OREGON STATE TREASURY

Tobias Read
Oregon State Treasurer

350 Winter St NE, Suite 100
Salem, OR 97301-3896

O I C



OREGON
STATE
TREASURY

TAB 7
COMMON SCHOOL FUND
INVESTMENT POLICY STATEMENT

April 20, 2022

Investment Policies Review

Policy Update Project

John Hershey

Director of Investments



**OREGON
STATE
TREASURY**

Agenda

- Review
- Initial Efforts
- Pivot
- Aon best practices – presented by Aon
- Key Issues
- Draft IPS
- Next Steps

Review

- Provided an update to the OIC in December 2021
- Initial objective was to consolidate 48 investment policies, 26 appendices, over 170 pages into seven standalone documents (an Investment Policy Statement (IPS) and Guidelines Statement for each of the major Funds (OPERF, CSF, and SAIF, and another for all of the internally managed Funds)

Name	Date modified	Type	Size
2020 4-28 SC370 CP - FINAL DRAFT v2	5/17/2021 3:27 PM	Microsoft Word Doc...	696 KB
Appendix B - OIC-CSF Alternative Investmen...	11/23/2021 12:44 PM	Microsoft Word Doc...	59 KB
INV 101, Oregon State Treasury Support for ...	11/23/2020 3:11 PM	Microsoft Word Doc...	16 KB
INV 104, OIC Standard of Ethics	11/23/2020 3:12 PM	Microsoft Word Doc...	19 KB
INV 104, OIC Standard of Ethics, DRAFT 08.2...	12/7/2020 3:05 PM	Microsoft Word Doc...	20 KB
INV 203, Dodd Frank Regulatory Compliance	11/23/2020 3:20 PM	Microsoft Word Doc...	18 KB
INV 205, Consideration of Investments and ...	11/23/2020 3:20 PM	Microsoft Word Doc...	19 KB
INV 207, Proposals, Solicitations, Contracts, ...	11/23/2020 3:21 PM	Microsoft Word Doc...	16 KB
INV 209, Rotating Internal Control and Oper...	11/23/2020 3:22 PM	Microsoft Word Doc...	16 KB
INV 210, Consulting Contracts	11/23/2020 3:23 PM	Microsoft Word Doc...	16 KB
INV 211, Mining Loans	11/23/2020 3:24 PM	Microsoft Word Doc...	17 KB
INV 212, Sulfur and Iron Duesthurs	11/23/2020 3:26 PM	Microsoft Word Doc...	17 KB
INV 216, Securities Lending	11/23/2020 3:26 PM	Microsoft Word Doc...	15 KB
INV 217, OICRF Foreign Currency Risk Policy	11/23/2020 3:27 PM	Microsoft Word Doc...	17 KB
INV 217, OICRF Foreign Currency Risk Policy...	12/7/2020 3:27 AM	Microsoft Word Doc...	17 KB
INV 218, Individual Account Program	11/23/2020 3:28 PM	Microsoft Word Doc...	17 KB
INV 218, Individual Account Program, FRENCH...	12/7/2020 3:27 PM	Microsoft Word Doc...	17 KB
INV 301, Staff to the Oregon Short Term Fun...	11/23/2020 3:29 PM	Microsoft Word Doc...	16 KB
INV 302, Short Term Investments, Treasury ...	11/23/2020 3:30 PM	Microsoft Word Doc...	15 KB
INV 303, Short Term Investments, Portfolio ...	11/23/2020 3:30 PM	Microsoft Word Doc...	22 KB
INV 401, Strategic Role of Fixed Income for ...	11/23/2020 3:41 PM	Microsoft Word Doc...	17 KB
INV 402, Internal Fixed Income Portfolio Inc...	11/23/2020 3:42 PM	Microsoft Word Doc...	16 KB
INV 406, Intermediate Term Real Investments	11/23/2020 3:42 PM	Microsoft Word Doc...	16 KB
INV 406, Oregon Local Government Intern...	11/23/2020 3:44 PM	Microsoft Word Doc...	18 KB
INV 407, Public Universities Common Policy...	11/23/2020 3:44 PM	Microsoft Word Doc...	18 KB
INV 501, Acquiring and Managing Equity Re...	11/23/2020 3:54 PM	Microsoft Word Doc...	24 KB
INV 502, Real Estate Investments, Property ...	11/23/2020 3:55 PM	Microsoft Word Doc...	17 KB
INV 503, Real Estate Investments, Property L...	12/7/2020 3:29 AM	Microsoft Word Doc...	16 KB
INV 504, Real Estate Investments, Responsib...	11/23/2020 3:56 PM	Microsoft Word Doc...	18 KB
INV 505, Real Estate Investments, Non Man...	11/23/2020 3:57 PM	Microsoft Word Doc...	16 KB
INV 505, Real Estate Investments, Non Man...	12/7/2020 3:31 AM	Microsoft Word Doc...	16 KB
INV 601, Public Equity Investments, Strateg...	11/23/2020 3:58 PM	Microsoft Word Doc...	18 KB
INV 603, Internal Equity, Portfolio Objectives...	11/24/2020 9:41 AM	Microsoft Word Doc...	18 KB
INV 605, Exercise of Voting Rights Account...	11/24/2020 9:43 AM	Microsoft Word Doc...	16 KB
INV 610, Strategic Role of Risk Parity for OIC...	11/24/2020 9:44 AM	Microsoft Word Doc...	17 KB
INV 701, Private Equity Portfolio Standards a...	11/24/2020 9:46 AM	Microsoft Word Doc...	22 KB
INV 702, Alternative Investments Portfolio St...	11/24/2020 9:49 AM	Microsoft Word Doc...	19 KB
INV 703, OICRF Opportunity Portfolio Stand...	11/24/2020 9:50 AM	Microsoft Word Doc...	17 KB

Name	Date modified	Type	Size
Appendix A - Procedures for INV 710	11/12/2021 12:49 PM	Microsoft Word Doc...	17 KB
Appendix A - Procedures for INV 711	11/12/2021 12:45 PM	Microsoft Word Doc...	17 KB
INV 901 CSF investment guidelines -- Inform...	1/7/2021 10:59 AM	Microsoft Word Doc...	19 KB
APPENDIX B (7)	1/7/2021 10:59 AM	Microsoft Word Doc...	58 KB
INV 703 APPENDIX A rev. 1-31-2020 FINAL	1/7/2021 10:59 AM	Microsoft Word Doc...	26 KB
Procedures for INV 702 final	1/7/2021 10:58 AM	Microsoft Word Doc...	19 KB
APPENDIX B (8)	1/7/2021 10:58 AM	Microsoft Word Doc...	58 KB
APPENDIX D	1/7/2021 10:58 AM	Microsoft Word Doc...	14 KB
APPENDIX C (1)	1/7/2021 10:58 AM	Microsoft Word Doc...	17 KB
APPENDIX B (5)	1/7/2021 10:58 AM	Microsoft Word Doc...	58 KB
APPENDIX A (1)	1/7/2021 10:58 AM	Microsoft Word Doc...	16 KB
INV 601A 112817	1/7/2021 10:57 AM	Microsoft Word Doc...	19 KB
APPENDIX D Contract Execution and Partner...	1/7/2021 10:55 AM	Microsoft Word Doc...	17 KB
APPENDIX C Real Estate Investment Procedu...	1/7/2021 10:55 AM	Microsoft Word Doc...	19 KB
APPENDIX B (4)	1/7/2021 10:55 AM	Microsoft Word Doc...	53 KB
APPENDIX A Alternatives Investment Autho...	1/7/2021 10:55 AM	Microsoft Word Doc...	17 KB
Western University Fund guidelines March20...	1/7/2021 10:54 AM	Microsoft Word Doc...	24 KB
IPS - Southern Oregon University Endowme...	1/7/2021 10:53 AM	Microsoft Word Doc...	18 KB
Appendix A Oregon Public University Coe B...	1/7/2021 10:53 AM	Microsoft Word 97 - ...	63 KB
Appendix A - OIGF Portfolio Guidelines Final	1/7/2021 10:51 AM	Microsoft Word Doc...	34 KB
INV 404 Appendix A - Portfolio Guidelines fo...	1/7/2021 10:50 AM	Microsoft Word Doc...	28 KB
INV 4021 Department of Veterans Affairs Fu...	1/7/2021 9:59 AM	Microsoft Word 97 - ...	32 KB
INV 402D DODOT Fund IPS for OIC	1/7/2021 9:59 AM	Microsoft Word Doc...	27 KB
INV 402C Insurance Fund IPS for OIC	1/7/2021 9:58 AM	Microsoft Word Doc...	29 KB
INV 402B DCBS Workers Benefit Fund IPS for...	1/7/2021 9:58 AM	Microsoft Word Doc...	28 KB
INV 402A DCBS Fund IPS for OIC	1/7/2021 9:58 AM	Microsoft Word Doc...	26 KB
Appendix A Sudan	1/7/2021 9:57 AM	Microsoft Word Doc...	16 KB
INV 203A Form of Representative Represent...	1/7/2021 9:56 AM	Microsoft Word Doc...	13 KB
Appendix A Rules of Conduct at OIC meetin...	1/7/2021 9:54 AM	Microsoft Word Doc...	17 KB

Initial efforts

- Started with the Common School Fund IPS
 - First draft
 - Approximately 35 pages, up from five pages for the current CSF INV 901
 - Sourced from > 10 existing documents
- Problems encountered
 - Very rugged brute force approach resulted in a disjointed document (policy) that was difficult to follow
 - After the January OIC meeting, the working group met and decided to pivot and change the objective to a more streamlined IPS

Pivot

- Asked Aon in January to provide a best practices “template”
- Have since been working to build off their template for Oregon and CSF specific needs
- Now have a more approachable document to consider
 - 11 pages, up from five and down from the first draft’s 35 pages and sourced from two documents rather than > 10
 - The trade off is fewer existing policies have been consolidated
 - Further work will necessitate consolidating a number of general (those that apply to all funds, including OPERF and SAIF) OIC administrative and compliance policies such as INV 210 (Consulting Contracts) and INV 212 (Sudan and Iran Divestiture) into a single new document

Key issues for OIC Review and Discussion

- Most of the draft changes relate to the new template (new table of contents, sections) all intended to make the policy document flow in a logical and easy to follow fashion
- One area of focus for the OIC should be on Section II (Roles and Responsibilities)
 - Currently the language is sourced from existing OIC policies (in particular INV 1202 (Statement of Funds Governance) and INV 1203 (Statement of Investment Objectives and Policy Framework for the Oregon Public Employee Retirement Fund) and the current CSF INV 901), in addition to Aon’s best practices format and language
 - The OIC should consider a discussion regarding the CSF’s governance model as it relates to best practices

Next steps

- This presentation is meant to be informational and does not call for an immediate action item
- In addition to OIC review, Legal review of the draft will be required
- There is an upcoming CSF asset allocation study that will be reviewed with the OIC at the July OIC meeting
- It is anticipated that any changes in allocation will require a change to policy as asset allocation is one of the more important determinates of risk and return
- It is further anticipated that an action item regarding these changes to existing policy will be on the July OIC Agenda



OREGON STATE TREASURY

Tobias Read
Oregon State Treasurer

16290 SW Upper Boones Ferry Road
Tigard, OR 97224

oregon.gov/treasury



Oregon Investment Council

Common School Fund (CSF) Policy Update

IPS: Effective Governance Tool

“A successful and effective IPS articulates the organization’s long-term investment objectives and outlines policies and procedures to help achieve those goals.”

- **Written documentation is critical** in order to demonstrate that you acted prudently. Hard to prove your conduct or process if it is not documented.
 - A well-written, comprehensive IPS is the best form of documentation as it clearly articulates who is responsible for which roles, including forms of delegation, defines the purpose and objective of the asset pool, and provides clear guidelines for ongoing monitoring and execution
 - IPS is one of the critical elements of the “Documentation of Process”, an important component of demonstrating that you acted prudently
 - An IPS also ensures continuity by providing a framework for decision-making which is particularly important when personnel changes occur
- **Roles/Responsibilities Section of the IPS:**
 - Special attention should be made to the *Roles and Responsibilities* section of the IPS, specifically with regard to the levels of delegation that may exist
 - To be prudent, when delegating the following generally applies:
 - Duty of prudence in selecting qualified professionals
 - Duty to specify the scope of the delegation
 - Duty to monitor the professionals to ensure the delegation is carried consistent with the delegation, and that the delegation continues to be prudent

Key Components of an Effective Investment Policy Statement (IPS) for Common School Fund

Key Components	Description	Covered by Existing CSF IPS?	Updates Made to Current Working Draft
Introduction, Scope and Purpose	Provides an introduction to the organization, the scope of the IPS, appropriate fiduciary standards and the purpose and intent of the IPS	Key elements that are not included in the IPS <ul style="list-style-type: none"> • Description of the role or fundamental purpose of the CSF • Scope and purpose of the IPS • Fiduciary language 	Added – See section I. <i>Introduction and Purpose</i>
Roles and Responsibilities	The Department of State Lands has ultimate fiduciary responsibility, however many ongoing responsibilities delegated to others need to be clearly articulated.	The five roles that are not included in the IPS <ul style="list-style-type: none"> • Department of State Lands • OIC • External Investment Advisors • Custodian • Investment Managers The following role is described in the document <ul style="list-style-type: none"> • OST Staff 	Added – See section II. <i>Roles and Responsibilities</i> *Note: This section is still being reviewed internally and sections on OIC and OST Staff may be revised before seeking final approval.
Investment Objectives	Clearly stated investment objectives will help establish appropriate asset allocation guidelines and other polices. Investment objectives are also important when reviewing the investment results.	Investment Objective is not fully outlined Example: The CSF should preserve and enhance the real (inflation-adjusted) market value of CSF's assets over the long-term, net of annual spending and expenses.	Added – See section III. <i>Investment Objectives</i>

Key Components of an Effective Investment Policy Statement (IPS) for Common School Fund

Key Components	Description	Covered by CSF IPS?	Updates Made to Current Working Draft
Time Horizon	It is important to reference the applicable time horizon in order to set the right perspective when evaluating outcomes.	Time Horizon is not defined in IPS	Added – See section III. <i>Investment Objectives</i>
Risk Tolerance	Appropriate risk language and parameters for the investment program, particularly the willingness to accept downside risk in the near term, can help when assessing portfolio choices.	Risk Tolerance is not explained in IPS	Added – See section III. <i>Investment Objectives</i>
Spending Policy	CSF is relied upon to support both current and future spending needs for Oregon School Districts. Stating the CSF’s target spending policy helps set expectations for the variability in spend.	Spending Policy is not outlined in IPS	Added – See section III. <i>Investment Objectives</i>
Asset Allocation Guidelines	<p>Asset allocation may be the most important determinant of long-term success for the organization’s investment program and should be described in the IPS.</p> <p>Rebalancing guidelines help guide the actions of staff without requiring additional committee approval.</p>	<p>IPS Includes:</p> <ul style="list-style-type: none"> - Long-term allocation targets - Policy ranges - Description of each asset class and their primary portfolio purpose - Rebalancing methodology and frequency 	<p>Maintained & Enhanced – See section IV. <i>Asset Allocation Guidelines</i> & Section V. <i>Strategic Role Guidelines</i></p> <p>*Note: Asset class targets and ranges were moved to Appendix A.</p>

Key Components of an Effective Investment Policy Statement (IPS) for Common School Fund

Key Components	Description	Covered by CSF IPS?	Updates Made to Current Working Draft
Performance Measurement & Evaluation	<p>A regular review of performance helps the organization monitor the portfolio's progress toward the stated investment objectives.</p> <p>Identifying benchmarks to help measure and evaluate the portfolio's performance provides tangible metrics to guide this process.</p>	<p>Asset class benchmarks are included in the IPS</p> <p>Total Fund Benchmark is not directly stated in the current IPS</p>	<p>Added – See section VI. <i>Performance Measurement and Evaluation</i></p> <p>*Note: New language was added to address shortfalls in illiquid asset classes that take time to build out. <i>Interim Policy Benchmark</i> is now defined.</p>
Additional Considerations	<ul style="list-style-type: none"> • Proxy voting policy—Asset owners may want to include language on direct voting of proxies where appropriate to the assets to ensure that their investments are aligned to support the organization's mission & beliefs. • Liquidity policy—Defining a liquidity policy helps ensure that the portfolio maintains adequate liquidity & helps the organization meet its cash needs during market declines. • Responsible investing (RI)—The IPS may include a section articulating CSF's philosophy & approach to RI (if applicable). • Frequency of IPS Review—It is prudent to review the IPS on a periodic basis. 	<p>It is not described in IPS</p> <p>It is not described in IPS</p> <p>It is not described in IPS</p> <p>It is not described in IPS</p>	<p>Added – All proxy voting is delegated to Investment Professionals. See section II. <i>Roles and Responsibilities</i> under Investment Professionals section</p> <p>Added – See section III. <i>Investment Objectives</i> under Risk section</p> <p>This section is housed in the standalone Investment Beliefs Policy Statement INV 1201 rather than the IPS</p> <p>Added – See section I. <i>Introduction and Purpose</i> under Purpose section</p>

Investment Policy Statement
for
the Common School Fund (v1)

Adopted – XX XX, 2022

DRAFT



Table of Contents

I. INTRODUCTION AND PURPOSE

II. ROLES AND RESPONSIBILITIES.....

III. INVESTMENT OBJECTIVES

IV. ASSET ALLOCATION GUIDELINES.....

V. STRATEGIC ROLE GUIDELINES

VI. PERFORMANCE MEASUREMENT AND EVALUATION

APPENDIX:

A: STRATEGY TARGETS & RANGE.....

DRAFT



I. INTRODUCTION AND PURPOSE

Introduction:

The purpose of the Investment Policy Statement (IPS) is to assist the Oregon Investment Council (“OIC” or “Council”) in effectively supervising, monitoring, and evaluating the investments of the Common School Fund (“CSF” or the “Fund”). The OIC formulates policies for the investment and reinvestment of funds under the control and administration of the Department of State Land’s Board (“the “State Land Board” or “SLB”). It is the intention of the SLB and the OIC that the CSF’s investments be managed in accordance with this Investment Policy Statement.

The SLB has determined that the CSF should be viewed as a perpetual fund managed to benefit both present and future beneficiaries of Oregon’s Department of Education.

The investment portfolio should preserve and enhance the real or inflation-adjusted market value of the Fund’s assets over the long-term, net of annual spending and expenses. To achieve this objective, the SLB has adopted a long-term investment horizon such that short-term spending needs and market volatility will be monitored and balanced with the long-term real return objective.

The investment of assets must be made in accordance with the standards put forth in the Uniform Prudent Management of Institutional Funds Act (UPMIFA) as adapted by Oregon. UPMIFA requires fiduciaries to apply the standard of prudence with reasonable care and skill “to any investment as part of the total portfolio and overall investment strategy, rather than to individual investments.” All investment actions and decisions must be based solely on the over-arching long term interests of the CSF.

This IPS applies to all investable assets of the CSF. All assets available for investment will be invested through an investment portfolio approved by the OIC as delegated by the SLB. Separate account, mutual fund and/or commingled investment vehicles that may include, but are not limited to equities, fixed income, private equity, private credit, real assets, and alternative investments.

Authority:

ORS Chapters 273, 293 and 327. Article VIII of the Oregon Constitution.

Purpose:

The purpose of this IPS is to define the investment objectives, policies and procedures established by the OIC to support the Fund’s mission. This IPS will serve as a framework, with sufficient flexibility in order to be practical, for the management and review of the Fund and intended to:

- Identify roles and responsibilities;
- Establish investment objectives;
- Outline the annual spending policy approved by the SLB. Establish long-term asset allocation targets; and
- Establish guidelines to monitor the performance in comparison to stated objectives.

Additionally, this IPS serves as a guide and general framework within which the Fund’s assets are managed in achieving the near-term and long-term objectives of those assets. The OIC also recognizes that from time to time, short-term market fluctuations and dynamics could make it impossible to precisely reflect all aspects of this policy at all times. This IPS is established to accommodate these short-term fluctuations, which should not necessitate IPS adjustments. It is expected that this IPS be reviewed periodically to ensure alignment with forward-looking market expectations and industry best thinking and best practices.

II. ROLES AND RESPONSIBILITIES

State Land Board

The State Land Board has ultimate fiduciary responsibility for the Fund. The SLB must ensure that appropriate policies governing the management of the investable assets are in place and being effectively implemented. Pursuant to ORS 293.701 the OIC has the responsibility to oversee the investment activities of the Fund on behalf of the SLB.

Oregon Investment Council

The Oregon Investment Council has the responsibility to ensure that all investments are managed in a manner that is consistent with the policies and objectives of the Fund.

The Council retains direct approval of the following determinations:

- Establish the IPS for the management of the Fund
- In conjunction with OST staff, work with the SLB and DSL staff to ensure the Fund's asset allocation policy comports with the SLB's goals for the Fund. Moreover, the OIC shall not make asset allocation changes without considering input from the SLB or DSL staff.
- Develop investment goals that are consistent with the financial needs of the CSF and the appropriate asset allocation consistent with meeting those objectives
- Total fund investment objectives and asset class benchmarks;
- Investment policies, including target asset allocation policies;
- Asset allocation re-balancing policies;
- Asset class strategies and any structural tilts;
- Active management exposure within each asset class;
- Manager structure within each asset class; and,
- Before approving or amending policy decisions, the Council seeks advice, guidance and recommendations from OST staff, Council-retained investment consultants, investment managers and other experts or sources as considered prudent by the Council.
- Recommend spending policy guidelines to the Department of State Land's Board.

OIC functions include, but are not limited to:

- Coordination with the Department of State Lands, Department of Education, and other agencies, on matters of joint concern;
- Approval of its due-diligence processes;
- Periodically review and evaluate investment results;
- Receipt and review of periodic reports from OST staff, consultants, investment managers and other experts;
 - General policy and governance on matters resulting from these reviews;
- Response to legislative and or regulatory action that impacts its policies;
- Coordination with the Oregon Department of Justice on its representation with respect to litigation and general protocols concerning the Fund;
- Coordination with the Treasurer with respect to the Fund, including but not limited to OST staffing plans, incentive compensation and the budget for all investment activities under the purview of the OIC;
- Approving all major personal service and consulting contracts related to investment activities under the purview of the OIC; and
- Select, monitor and terminate custodian, consultants, and other service providers involved with servicing all or parts of the Portfolio.

The OIC may, at its discretion, delegate the execution of above responsibilities, in full or in part, to external parties with appropriate expertise to assist the OIC in discharging its obligations. Other

specialists may be employed by the OIC from time to time, on an as-needed basis, to ensure its responsibilities in providing oversight of Fund assets are prudently executed.

Oregon State Treasury Staff

The Council has delegated to the **Oregon State Treasury (“OST” or “Treasury”)** staff the following investment management and implementation decisions with the approval from the Chief Investment Officer ("CIO") and quarterly notification to the OIC:

- Manage day-to-day investment activities of the Fund to ensure sufficient cash flow to meet the CSF's distribution needs;
- OST staff in conjunction with the OIC's general consultant will perform formal asset allocation reviews at least every three years to ensure that the Fund is positioned properly;
- Work with the Council-retained investment consultants to compile information on the investment return and performance for the OIC review;
- Interface with OIC to ensure necessary action items are brought to OIC and that OIC decisions are implemented;
- Re-balancing of total fund, asset class and manager exposures to ensure assets are within the total fund, asset class strategy and manager structure guidelines approved by the Council;
- Recommending retaining investment managers within each asset class. Before recommending a manager change, Treasury staff will satisfy the Council that the manager change is supported by a satisfactory level of analysis and due diligence;
- Retain an external manager in any of the asset classes that has been approved by the OIC on behalf of the Oregon Public Employees Retirement Fund ("OPERF");
- Terminating investment managers;
- Convert any public equity long-only implementation to a 130/30 strategy, provided such implementation does not change the mandate's role within the Fund's Global Equity Portfolio; and
- Preparing, negotiating and executing investment manager mandates, guidelines and fee agreements;
- Overseeing individual investment managers to ensure their portfolios comply with their respective portfolio mandates and guidelines;
- Providing oversight of the master custodian to ensure that the Fund's rights to pursue securities class action litigation are appropriately protected; and
- In making the above decisions, Treasury staff shall seek as needed the advice, guidance and recommendations from Council-retained investment consultants, investment managers and other experts and sources as considered prudent by Treasury staff.

Investment Consultant

The Investment Consultant's responsibilities may include but are not limited to:

- Assist the OIC and OST staff with manager selection, retention and termination;
- Assist the OIC and OST staff with rebalancing and implementation of this IPS, as approved;
- Assist the OIC with the development of investment policies, guidelines and objectives;
- Prepare and present performance measurement analysis and quarterly reports;
- Attend OIC meetings;
- Provide research/education on related issues and investment opportunities; and
- Work with the OST to ensure sufficient cash flow availability to meet the CSF's needs.

Investment Professionals

Investment decisions delegated to investment professionals include:

- The buying and selling of individual securities and/or other investments by qualified investment managers authorized under the portfolio management guidelines approved by the Council; and

- The voting of shareholder proxies by qualified independent third-party proxy agent that accompany the securities and/or investments held by the Fund with oversight by Treasury staff and in accordance with Council voting guidelines.

Custodian

Custodian's responsibilities include:

- Provide security safekeeping, collection of income, settlement of trades, collections of proceeds of maturing securities, and daily investment of cash; and
- Provide monthly reports detailing investment holdings and transactions to OST staff.

III. INVESTMENT OBJECTIVES

The primary objective of the CSF is to generate a real rate of return, above an appropriate inflation rate (i.e. the Consumer Price Index or CPI) and over time, that is sufficient to support, in perpetuity, the mission of the CSF and its spending needs. It is particularly important to preserve the value of the assets in real terms (i.e. inflation adjusted) to maintain its purchasing power without eroding the principal corpus of the Fund over long-term periods. Thus, the long-term return objective will account for inflation, administrative expenses, other planned withdrawals, and annual spend as appropriate.

Spending Policy

The State Land Board is responsible for approving the spending policy for the Common School Fund per the Common School Fund Distribution Rate Policy. Before approving a change to the spending policy, the State Land Board generally seeks advice, guidance and recommendations from the OIC, OST staff, and Council-retained investment consultants. The OIC recognizes the dual funding role of the Fund in supporting both current and future spending needs (i.e. provide a stable and predictable stream of funds versus maintain purchasing power of the Fund over time). It is the responsibility of the SLB and OIC to maintain this intergenerational equity and balance needs between current and future beneficiaries. Unless prohibited by contribution restrictions or law, dividends and interest income, capital gains and principal may be used for spending purposes to the extent such payments do not exceed the annual spending amount determined by the spending rate and formula below.

The target spending rate and formula will be reviewed at least annually in light of evolving trends with respect to the investment return of the Fund, capital market expectations, funding needs of the CSF, and other resources available to the CSF. Based on these considerations, the spending policy will be adjusted as appropriate.

Unless otherwise directed and/or approved by the State Land Board, the annual target spending rate shall be 3.5% of the Portfolio's trailing three-year average market value.

Proposed or actual spending in any given fiscal year that would lead the Fund's market value to dip below its corpus shall be monitored by OST staff and reported to the OIC in a timely manner.

In addition to the CSF's annual spending policy used to fund Oregon's Department of Education, the CSF makes an annual distribution to the Oregon Public Employees Retirement System (PERS) to provide funding for the state school districts' unfunded liability fund per ORS 238.299 and Chapter 105, Oregon Laws 2018 through year 2027. The annual distribution is the lessor of (1) the total Unclaimed Property Net Investment Earnings (Losses), and (2) the Net Inflow of Unclaimed Property less investment expenses and operating expenses. The annual distribution is zero if there are investment losses for that year.

Time Horizon

The OIC acknowledges that fluctuating rates of return characterize the securities markets, particularly during short-term time periods. Accordingly, the OIC views interim fluctuations with an appropriate perspective, given the long-term perpetual objectives. Long-term investment objectives are to be evaluated over a minimum long-term horizon, defined as rolling ten-year periods.

Diversification

The OIC believes that the likelihood of realization of the investment objectives is enhanced through diversification. The OIC will aim to diversify assets among portfolio roles and strategies to maintain acceptable risk levels and enhance long-term investment return opportunities.

Risk

Risk refers to the uncertainty and the prospective loss due to an activity or an exposure. With respect to the CSF, that is expressed principally as investment risk, i.e., a permanent impairment to the Fund's value that could reduce its ability to meet and sustain spending requirements, but it could also be exhibited in operations and liquidity management. At the same time, given the relationship between risk and return, taking too little risk could lead to the Fund underperforming its return objective. Given the need to take an appropriate amount, risk is considered throughout the investment process, from asset allocation to manager selection to performance evaluation.

A. Risk Standards and Metrics

Staff will monitor investment risk of the Fund on ex ante and ex post bases to evaluate whether appropriate amount of risk is being taken efficiently, i.e., to be properly compensated and commensurately to the return objectives of the Fund. Risk evolves over time, dictated by changing macroeconomic environments and shifting mix of investments in the portfolio. Staff will therefore apply various tools and approaches over different time horizons to analyze the Fund's investment risk. Staff will also consider total risk, i.e., the variation of total returns, at various levels of the Fund, and active risk, i.e., the variation of relative returns versus a benchmark, at the manager and asset class levels for the public market investments.

Staff will use realized returns to evaluate ex post tracking error but will typically rely on a risk model to estimate ex ante risk. Most commercial risk models make simplifying assumptions to improve reliability and sensibility, but they are ultimately assumptions that will never fully capture all outcomes, such as extreme losses in a drawdown. Nevertheless, the output of such models can be useful, particularly in the context of other analyses undertaken by staff.

B. Liquidity

Liquidity risk is defined as that element of total risk comes from the unpredictability of the cost and time duration necessary to convert existing investment positions to cash.

The cash flows of the CSF include, but are not limited to:

- A spending rate as a percentage of net asset value set by the State Land Board from the Fund to Oregon's Department of Education;
- Agency expenses;
- Unclaimed property receipts that flow into the Fund; and
- Private market capital calls and distributions.

In combination with the illiquidity of private market investments and rebalancing requirements (see "Rebalancing Guidelines"), staff will consider the liquidity of the assets and cash flow requirements when recommending an asset allocation to the OIC and managing the Fund investments.

C. Foreign-Exchange Risk Management

The CSF makes distributions to Oregon's Department of Education in U.S. dollars, yet, for diversification purpose, a portion of the Fund's assets is invested outside the U.S. and denominated in foreign currencies. The translation of foreign-denominated investments back to the U.S. dollar provides incremental volatility of return to CSF's total, overall risk. Furthermore, there is little economic basis or empirical evidence to support a positive, long-term return expectation in connection with these foreign currency exposures. In other words, unmanaged foreign currency exposure is a source of uncompensated risk.

Staff will manage this risk by taking into consideration the magnitude of exposures, operational requirements, and portfolio construction. Implementation could take the form of: requiring the underlying investment managers to implement currency hedging; retaining a third-party currency manager or managers to hedge the currencies; or leaving the currency exposures unhedged if the incremental risk is small and not material relative to other considerations.

IV. ASSET ALLOCATION GUIDELINES

Given the perpetual nature of the CSF, asset allocation will be the most important determinant of long-term success. The target allocation balances the need to satisfy the long-term return objective and to minimize total investment risk. The target allocation is based on long-term capital market assumptions (expected returns, risk, and correlations) of asset classes and over time should provide an expected return equal to or greater than the primary objective of the Fund, while avoiding undue risk concentrations in any single role or strategy; thus, reducing risk at the total portfolio level. To achieve these goals, the asset allocation will be set with the target percentages and within the ranges provided in Appendix A.

Formal asset allocation reviews will be performed at least every three years to ensure that the Fund is positioned properly. These reviews will be performed by OST staff in conjunction with the OIC's general consultant.

Rebalancing Guidelines

The OIC recognizes that rapid unanticipated market shifts or changes in economic conditions may lead to wide deviations from the target allocation and approved ranges. Generally, these divergences are of a short-term or tactical nature in response to fluctuating market environments. There may be short-term deviations from the target due to illiquidity of private market investments.

Execution of the rebalancing may be implemented through any combination of actions: a) purchase and sale of funds/securities; or b) allocation of normal cash flows (e.g., distributions to cover the CSF's spending needs). Investments will be liquidated (and funded) in a manner that allows for orderly transition of asset allocation in the most efficient means possible.

A breach of any of the established asset allocation ranges triggers a review and possible rebalancing back to established targets with due consideration given to the liquidity of the affected investments, all anticipated transaction costs and the current portfolio structure within each asset class. Given the nature of private assets, the amount and timing of the cash flows cannot be precisely known, and it will take time to build out the portfolio to the long-term policy target levels. Accordingly, at any particular time, the actual allocation to Private Equity, Real Estate, and Alternatives may be above or below the long-term target allocation.

OST staff will review the asset allocation on a monthly basis and rebalance to within the target asset allocation range at least quarterly if necessary.

V. STRATEGIC ROLE GUIDELINES

This section outlines the strategic investment guidelines for each portfolio role, which shall serve as a framework for evaluating asset allocation choices across asset classes and investment strategies to

achieve the Fund's objectives. While certain strategies and investment securities may demonstrate risk and return characteristics at different time periods that could fulfill more than one portfolio role, it is the strategic nature of those investments that shall dictate the primary purpose they serve in the Portfolio.

Global Equity Investments

The strategic role of publicly traded equity securities is to serve as the Fund's primary return-seeking investments to generate long-term asset growth. Return over time is primarily driven by equity risk beta. The Fund's Global Equity portfolio also provides liquidity necessary to meet its cash distribution obligations.

Fixed Income Investments

The strategic role of fixed income securities is to diversify the Fund in general and its allocation to equity securities in particular. The Fixed Income portfolio provides liquidity necessary to meet its cash distribution obligations. The fixed income allocation shall consist primarily of U.S. investment grade fixed income securities represented within the benchmark index. It may also allow for non-benchmark sectors, including, but not limited to, developed and emerging markets international securities, inflation-linked bonds, as well as below investment grade securities.

Private Equity Investments

The strategic role of private equity investments is to enhance return and diversification opportunities for the Fund. While potentially more volatile than public equity, private equity provides a diversification benefit and the opportunity to achieve higher returns. Diversification in the Fund's Private Equity portfolio may be accomplished by investing across different fund types and strategies including venture capital, leverage buyout, mezzanine debt, distressed debt, sector funds, secondaries, and fund-of-funds.

Real Estate Investments

The strategic role of real estate investments is to enhance return and diversification opportunities for the Fund while providing some inflation protection. Diversification in real estate may be accomplished through exposure to a variety of real estate debt and equity investment strategies, property types (i.e., office, industrial, retail, multifamily, hospitality, etc.), geographic location, and various stages of a property life-cycle.

Alternative Investments

The strategic role of alternative investments is to enhance long-term return and diversification opportunities for the Fund. A lower correlation between the returns of alternative investments and other Fund assets is expected, and alternative investments are therefore expected to provide an added measure of diversification to overall Fund returns. Diversification in alternative investments may be achieved through exposure to a variety of possible alternative investment assets and strategies, including, but not limited to, infrastructure, natural resources, and other diversifying strategies.

VI. PERFORMANCE MEASUREMENT AND EVALUATION

Total Portfolio Performance:

The principal goal of the Fund is to maximize the likelihood of achieving and/or exceeding the Investment Objectives stated in this IPS over the long-term.

The primary benchmark for evaluating performance of the Fund will be a weighted benchmark consisting of broad market indices for the underlying strategies combined according to the strategy allocation targets as described in Appendix A. Total Portfolio performance will be evaluated on a net-of-fee basis relative to the representative weighted benchmark over various trailing time periods, as applicable.

A portion of the Fund's assets will be committed to Private Equity, Real Estate, and Alternative assets. Given the nature of these investments, the amount and timing of the cash flows cannot be precisely known, and it will take time to build out the portfolio to the long-term policy target levels. Accordingly, at

any particular time, the actual allocation to Private Equity, Real Estate, and Alternatives may be below the long-term target allocation. In such an event, for policy benchmark measurement purposes, any shortfall in the target allocation to Private Equity will be deployed to the Global Equity asset class; any shortfall to Real Estate and Alternatives will be deployed 50% to the Global Equity asset class and 50% to the Fixed Income asset class. As constituted, this “float adjusted” benchmark will also be referred to as the Interim Policy Benchmark. The composition of the Interim Policy Benchmark will be adjusted over time to reflect the invested balances in Private Equity, Real Estate, and Alternatives and is expected gradually to converge to the Policy Benchmark.

Strategy Performance:

Performance for the underlying asset classes will be compared with the risk and return of an appropriate market index (as described in Appendix A), on a net-of-fee basis over various trailing time periods.

Review and Reporting:

OST/OIC Reviews. OST staff will continuously review asset allocations and investment performance, and present their review and conclusions to the OIC on no less than an annual basis. These reviews will focus on the continued appropriateness of existing policy, compliance with guidelines and performance relative to Fund objectives. A formal process shall be established allowing DSL staff to meet with OIC's general consultant on an annual basis to discuss investment management and asset allocation issues. In addition, DSL staff will have the opportunity to address the OIC annually to discuss the State Land Board's particular views regarding Fund performance and related management issues.

Presentation to State Land Board. OST staff will arrange for and lead a formal review of the Fund at a meeting of the State Land Board on at least an annual basis. OST and DSL staff will coordinate in advance of each meeting to develop an agenda.

The foregoing IPS was adopted by the Council to be effective as of _____,2022

By: _____
(Title)

Appendix A
Asset Allocation Strategy Targets & Range

Fund Role	Benchmark	Min	Target	Max
Global Equity	MSCI ACWI IMI Net	40.0%	45%	50.0%
Private Equity	Russell 3000 + 300 bps	8.0%	10%	12.0%
Fixed Income	Bloomberg Barclays U.S. Aggregate Bond Index	20%	25%	30%
Real Estate	NCREIF-ODCE	0%	10%	12%
Alternatives	CPI+ 4%	0%	10%	12%
Cash	Cash	0%	0%	3%

* Total Portfolio Index will be a weighted benchmark consisting of market indices for each strategy combined according to the strategy allocation targets as described above

** The sum of Strategy "Min" and "Max" within each Portfolio Role (Global Equity, Private Equity, Fixed Income, Real Estate, Alternatives, and Cash) will not equal "Min" and "Max" for each Role.

INTRODUCTION & OVERVIEW

Summary Policy Statement

The Oregon Investment Council ("OIC") formulates policies for the investment and reinvestment of funds under the control and administration of the Department of State Lands ("DSL"), known as the Common School Fund (the "Fund"). This policy provides guidance to Oregon State Treasury ("OST") staff and advisors regarding approved asset classes, asset allocation, and reporting requirements for the Fund.

Purpose and Goals

The investment objective for the Fund is to maximize risk-adjusted return, while remaining consistent with Fund goals as established by DSL's board (the "State Land Board"). The OIC has approved the following asset classes to meet the Fund's investment objective: 1) Global Equity; 2) Private Equity; 3) Fixed Income; 4) Real Estate; 5) Alternatives; and 6) Cash (each as defined below). This policy will outline the strategic role of each asset class and provide further guidance to OST staff on the investment program.

Applicability

Classified represented, management service, and unclassified executive service staff.

POLICY PROVISIONS

Policy Statements

A. Asset Allocation

Recognizing the general objectives and operating philosophy of the Fund, the OIC has approved the following asset classes and target ranges:

- Global Equity.** Domestic and international investments that represent a direct ownership of, or interest in, a corporation, and the shares of which are traded in public securities markets.
- Fixed Income.** Investments in loans and other debt. This asset class may include mortgage-backed, asset-backed and structured securities.
- Private Equity.** Investments in privately-held companies or corporations including buyouts and venture capital. Fund of funds investing and purchases of secondary interests may also be included in this category.
- Alternatives.** Investments will be diversified through exposure to a variety of alternative investment assets and strategies, including infrastructure, natural resources, and other diversifying strategies.
- Real Estate.** Investments will be diversified through exposure to a variety of real estate investment strategies, including core, value add, and opportunistic.
- Cash.** Cash and cash equivalents are defined as cash held in OST's Oregon Short Term Fund.

Asset Class	Benchmark	Target Allocation	Range
Global Equity	MSCI ACWI IMI Net	45%	40% - 50%
Private Equity	Russell 3000 + 300 bps	10%	8% - 12%
Fixed Income	Bloomberg Barclays U.S. Aggregate Bond Index	25%	20% - 30%

Real Estate	NCREIF-ODCE	10%	0% - 12%
Alternatives	CPI+ 4%,	10%	0% - 12%
Cash	Cash	0%	0% - 3%

- OST staff shall monitor the Fund's actual asset allocations relative to OIC-established targets on a monthly basis. A sustained and material deviation outside of the approved ranges shall trigger a rebalancing back towards established targets with due consideration given to any liquidity constraints and/or potential transactions costs. Whenever possible, the Fund's cash flows will be used to rebalance between asset classes. Alternative investments will receive special consideration and staff will receive additional flexibility in building out this asset class given its still-nascent status.
- OST will work with the State Land Board and DSL staff to ensure the Fund's asset allocation policy comports with the State Land Board's goals for the Fund. Moreover, the OIC shall not make asset allocation changes without considering input from the State Land Board or DSL staff.
- Formal asset allocation reviews will be performed at least every 3 years to ensure that the Fund is positioned properly. These reviews will be performed by OST staff in conjunction with the OIC's general consultant.

B. Global Equity Investments

The strategic role of publicly-traded equity securities is to provide one of the highest expected returns among approved asset classes for the Fund. The Fund's Global Equity portfolio also provides liquidity necessary to meet its cash distribution obligations.

- The Fund's Global Equity portfolio is structured on a global basis, seeking to loosely replicate the country and market capitalization characteristics of the MSCI ACWI Investable Market Index (MSCI ACWI IMI Net).
- OST staff will seek to enhance returns through selective active management, provided such actively managed strategies demonstrate empirical efficacy relative to factor exposures and net of all fees and transactions costs.
- Benchmarks assigned to all non-U.S. strategies should be unhedged. Managers may be permitted to hedge currency exposures, and in cases where currency represents an explicit element of a manager's stated investment approach, may take active currency positions.
- Proxies associated with separately managed accounts will be voted by OST's third-party proxy voting agent.

C. Fixed Income Investments

The strategic role of fixed income securities is to diversify the Fund in general and its allocation to equity securities in particular. The Fixed Income portfolio provides liquidity necessary to meet its cash distribution obligations.

- The Fund's Fixed Income portfolio is structured as a well-diversified bond portfolio.
- The benchmark is the Bloomberg Barclays U.S. Aggregate Bond Index (the "Benchmark").
- Actively-managed strategies are expected to outperform stated benchmarks on an after-fee and risk adjusted basis, over a 3-5 year market cycle while remaining within reasonable risk parameters.

D. Private Equity Investments

The strategic role of private equity investments is to enhance return and diversification opportunities for the Fund. While potentially more volatile than public equity, private equity provides a diversification benefit and the opportunity to achieve higher returns.

- The Fund's Private Equity portfolio will include investments with a select group of large, established and historically successful private equity partners and will generally be accessed through limited partnership interests.
- Diversification in the Fund's Private Equity portfolio may be accomplished through any of the following: investment style or strategy; geographic focus; sector allocation; and capitalization.
- Partnership agreements shall conform to current industry standards and shall be subject to legal sufficiency approval by and through OST legal counsel.

4. The Fund's Private Equity portfolio is expected to achieve total returns greater than the Russell 3000 + 300 basis points, net of fees, over a three- to five-year investment cycle.

E. Real Estate Investments

The strategic role of real estate investments is to enhance return and diversification opportunities for the Fund.

1. Diversification in real estate may be accomplished through exposure to a variety of real estate debt and equity investment strategies, property types (i.e., office, industrial, retail, multifamily, hospitality, etc.), geographic location, and various stages of a property life-cycle from development to stabilized.
2. The Fund's Real Estate portfolio is expected to achieve total returns greater than the NCREIF Fund Index - Open-End Diversified Core Equity (NFI-ODCE), net of fees.

F. Alternative Investments

The strategic role of alternative investments is to enhance long-term return and diversification opportunities for the Fund. A lower correlation between the returns of alternative investments and other Fund assets is expected, and alternative investments are therefore expected to provide an added measure of diversification to overall Fund returns.

1. Diversification in alternative investments may be achieved through exposure to a variety of possible alternative investment assets and strategies, including, but not limited to, infrastructure, natural resources, and other diversifying strategies.
2. The Fund's Alternatives portfolio is expected to achieve total returns greater than the Consumer Price Index for All Urban Consumers ("CPI") plus 400 basis points, net of fees.

G. OST Staff Authority

With approval from the Chief Investment Officer ("CIO") and quarterly notification to the OIC, OST staff may:

1. Terminate "at will" any public equity or fixed income manager or mandate according to the terms of its contract with, and on behalf of, the OIC;
2. Rebalance between and among managers within the Fund's Global Equity or Fixed Income portfolios. The aggregate, structural characteristics of the portfolio will be considered during such rebalancings;
3. Rebalance between and among open-end core real estate funds within the Real Estate Portfolio. The aggregate, structural characteristics of the portfolio will be considered during such rebalancings;
4. Convert any public equity long-only implementation to a 130/30 strategy, provided such implementation does not change the mandate's role within the Fund's Global Equity Portfolio; and
5. Retain an external manager in any of the five asset classes that has been approved by the OIC on behalf of the Oregon Public Employees Retirement Fund ("OPERF").

H. Compliance. The OST Compliance program will a) monitor and evaluate portfolios and asset classes and determine compliance with OST policies and contractual obligations; b) identify instances of non-compliance and develop and execute appropriate resolution strategies; c) provide relevant compliance information and reports to OST management and the Fund, as appropriate; and d) when applicable, verify resolution by the appropriate individual or manager within the appropriate time frame.

I. Review and Reporting

1. **OST/OIC Reviews.** OST staff will continuously review asset allocations and investment performance, and present their review and conclusions to the OIC on no less than an annual basis. These reviews will focus on the continued appropriateness of existing policy, compliance with guidelines and performance relative to Fund objectives. A formal process shall be established allowing DSL staff to meet with OIC's general consultant on an annual basis to discuss investment management and asset allocation issues. In addition, DSL staff will have the opportunity to address the OIC annually to discuss the State Land Board's particular views regarding Fund performance and related management issues.
2. **Presentation to State Land Board.** OST staff will arrange for and lead a formal review of the Fund at a meeting of the State Land Board on at least an annual basis. OST and DSL staff will coordinate in advance of each meeting to develop an agenda.

Exceptions

None.

Failure to Comply

Failure to comply with this policy may be cause for disciplinary action up to and including dismissal.

O I C



OREGON
STATE
TREASURY

TAB 8

ASSET ALLOCATION & NAV UPDATES

Asset Allocations at February 28, 2022

OPERF	Policy	Target ¹	Regular Account					Target Date Funds		Variable Fund	Total Fund
			\$ Thousands	Pre-Overlay	Overlay	Net Position	Actual	\$ Thousands	\$ Thousands	\$ Thousands	
Public Equity	25.0-35.0%	30.0%	25,509,408	26.8%	(1,504,830)	24,004,578	25.2%	1,213,887	379,782	25,598,246	
Private Equity	15.0-27.5%	20.0%	25,716,029	27.0%		25,716,029	27.0%			25,716,029	
Total Equity	45.0-55.0%	50.0%	51,225,437	53.8%	(1,504,830)	49,720,607	52.3%			51,314,275	
Opportunity Portfolio	0-5%	0.0%	2,414,813	2.5%		2,414,813	2.5%	2,152,805	6,942	2,414,813	
Fixed Income	15-25%	20.0%	16,102,732	16.9%	3,660,110	19,762,842	20.8%			21,915,647	
Risk Parity	0.0-3.5%	2.5%	2,187,717	2.3%		2,187,717	2.3%	2,187,717			
Real Estate	7.5-17.5%	12.5%	11,223,009	11.8%	(2,100)	11,220,909	11.8%	11,220,909			
Real Assets	2.5-10.0%	7.5%	6,347,314	6.7%		6,347,314	6.7%	6,347,314			
Diversifying Strategies	2.5-10.0%	7.5%	3,527,482	3.7%		3,527,482	3.7%	3,527,482			
Cash ²	0-3%	0.0%	2,128,499	2.2%	(2,153,180)	(24,681)	0.0%	(17,739)			
TOTAL OPERF		100%	\$ 95,157,003	100.0%	\$ -	\$ 95,157,003	100.0%	\$ 3,366,692	\$ 386,723	\$ 98,910,418	

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%	484,362	10.1%
Fixed Income	80-90%	85.0%	4,045,269	84.0%
Real Estate	0-7%	5.0%	267,144	5.5%
Cash	0-3%	0.0%	21,041	0.4%
TOTAL SAIF			\$ 4,817,816	100.0%

CSF	Policy	Target	\$ Thousands	Actual
Global Equities	40-50%	45.0%	1,084,515	50.9%
Private Equity	8-12%	10.0%	213,748	10.0%
Total Equity	58-62%	55.0%	1,298,263	61.0%
Fixed Income	20-30%	25.0%	503,251	23.6%
Real Estate	0-12%	10.0%	190,082	8.9%
Alternative Investments	0-12%	10.0%	116,825	5.5%
Cash	0-3%	0.0%	20,943	1.0%
TOTAL CSF			\$ 2,129,363	100.0%

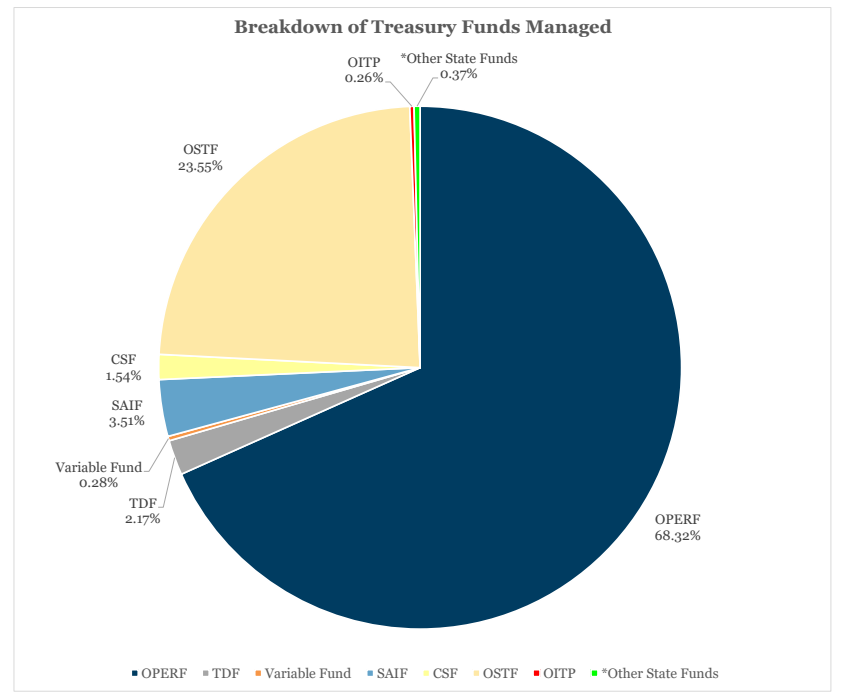
SOUE	Policy	Target	\$ Thousands	Actual
Global Equities	0-65%	N/A	2,239	75.2%
Fixed Income	35-100%	N/A	735	24.7%
Cash	0-3%	N/A	2	0.1%
TOTAL SOUE			\$ 2,976	100.0%

WOUE	Policy	Target	\$ Thousands	Actual
Global Equities	30-65%	55.0%	1,145	55.4%
Fixed Income	35-60%	40.0%	815	39.4%
Cash	0-25%	5.0%	108	5.2%
TOTAL WOUE			\$ 2,068	100.0%

OSTF, OITP & Other State Funds*	\$ Thousands	Actual
OSTF	32,211,371	93.9%
OITP	363,874	1.1%
DAS Insurance Fund	128,774	0.4%
DCBS Operating Fund	181,419	0.5%
DCBS Workers Benefit Fund	159,734	0.5%
DCHS - Elderly Housing Bond Sinking Fund	1,581	0.0%
DCHS - Other Fund	15,285	0.0%
Oregon Lottery Fund	117,766	0.3%
DVA Bond Sinking Fund	103,206	0.3%
ODOT Fund	473,875	1.4%
OLGIF	243,545	0.7%
OPUF	307,412	0.9%
Total OSTF & Other State Funds	\$ 34,307,842	100.0%

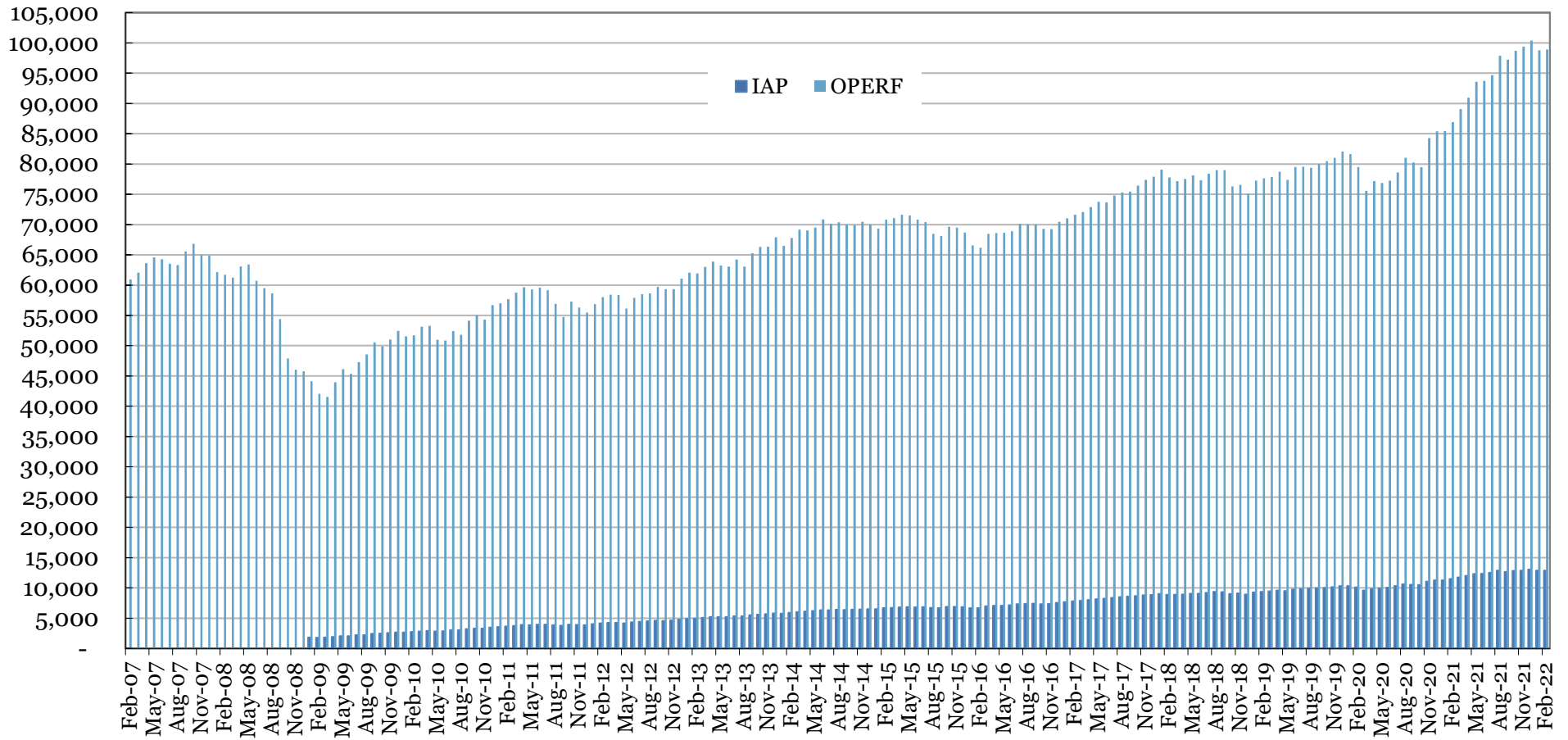
Total of All Treasury Funds** \$ 136,759,512

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

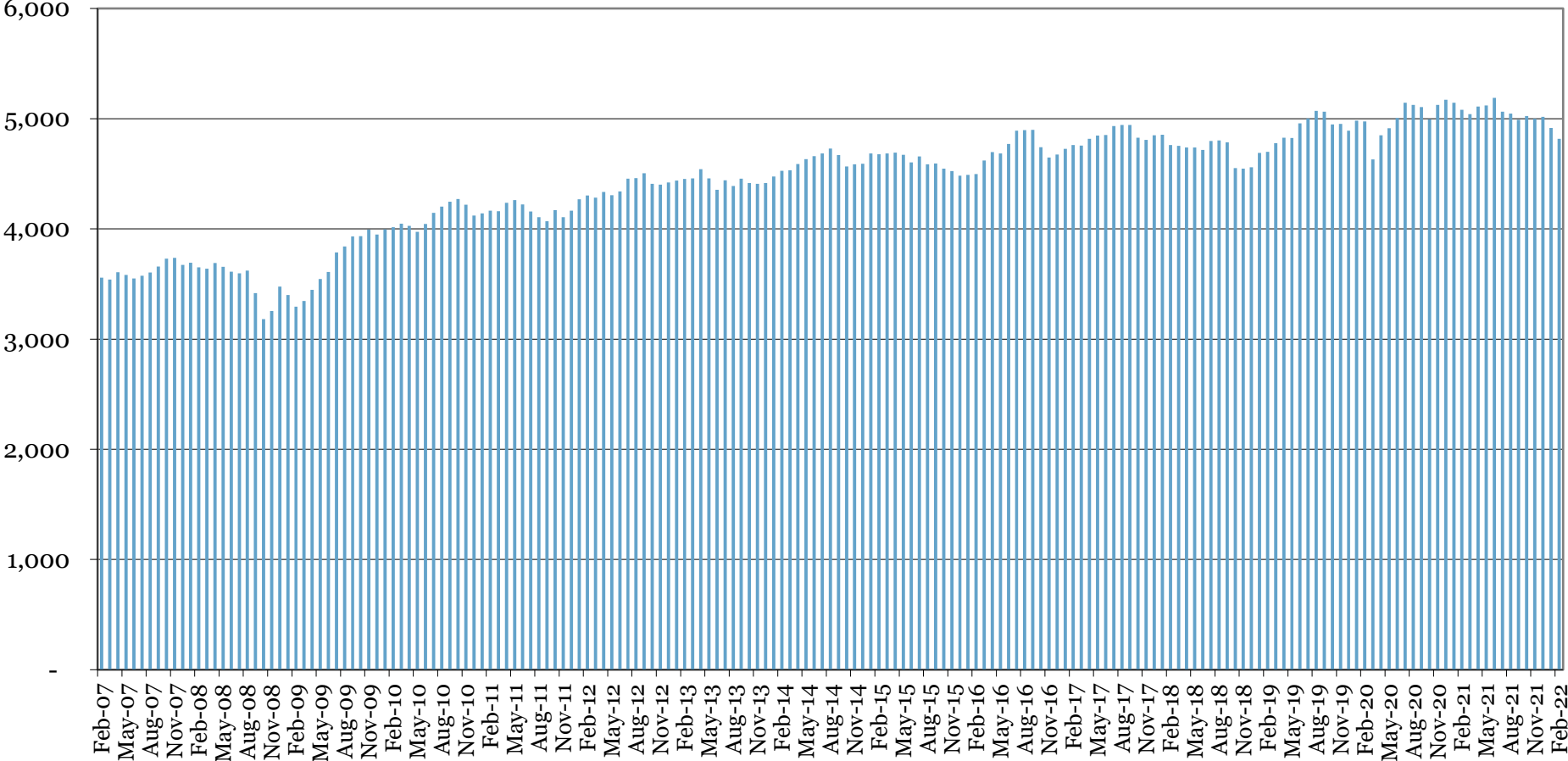


*Other State Funds include DAS Insurance Fund, DCBS Operating Fund, DCBS Workers Benefit Fund, DCHS - Elderly Housing Bond Sinking Fund, DCHS - Other Fund, Oregon Lottery Fund, DVA Bond Sinking Fund, ODOT Fund, OLGIF, & OPUF.

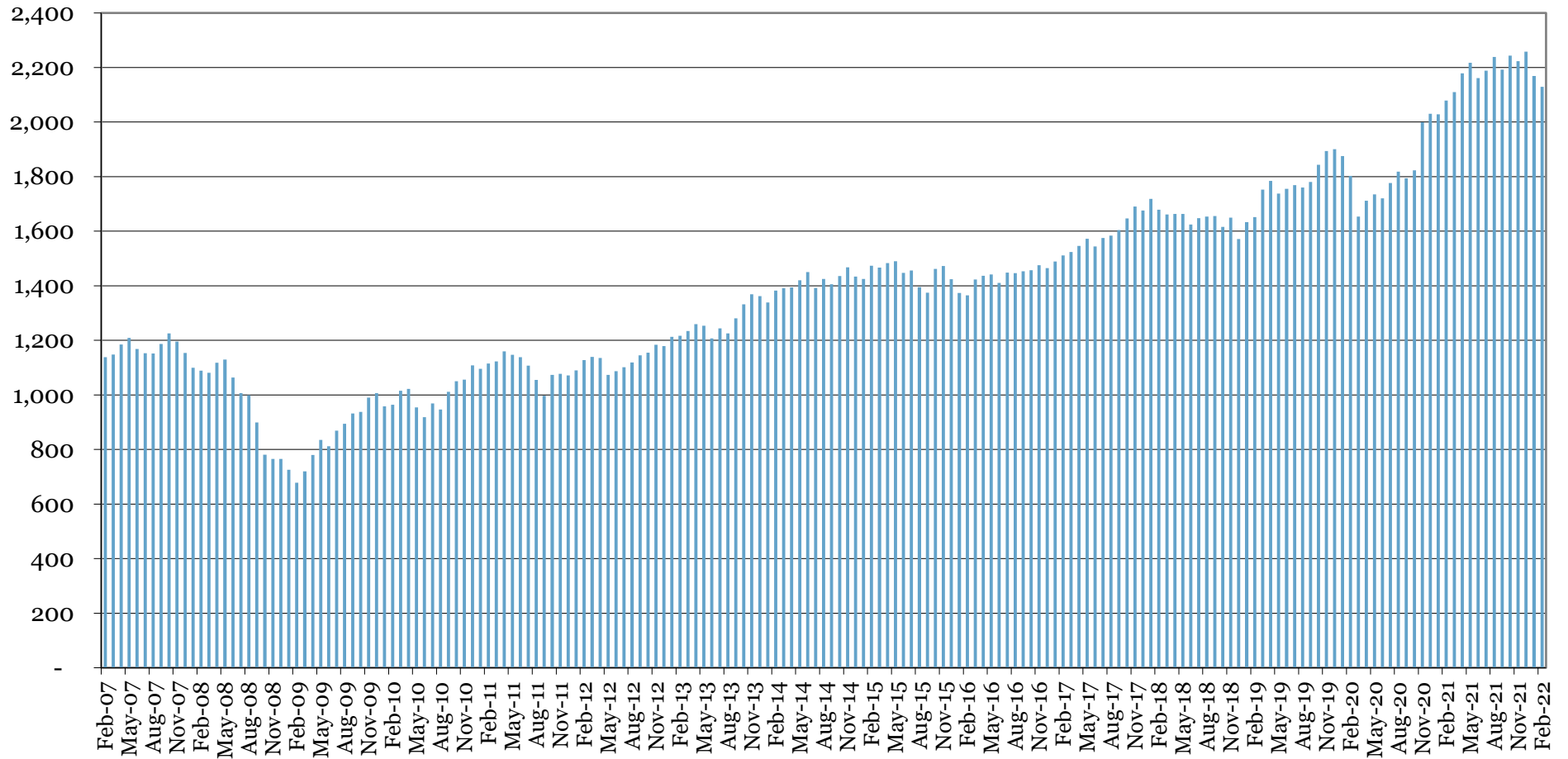
OPERF NAV
15 years ending February 28, 2022
(\$ in Millions)



SAIF NAV
15 years ending February 28, 2022
(\$ in Millions)



CSF NAV
15 years ending February 28, 2022
(\$ in Millions)



O I C



OREGON
STATE
TREASURY

TAB 9

CALENDAR – FUTURE AGENDA ITEMS

2022/23 OIC Forward Calendar and Planned Agenda Topics

June 1, 2022	Q1 OPERF Performance Capital Markets Assumptions OPERF Leverage Real Assets Manager Recommendation
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

O I C



OREGON
STATE
TREASURY

TAB 10
OPEN DISCUSSION

O I C



OREGON
STATE
TREASURY

TAB 11
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>