



**OREGON  
STATE  
TREASURY**

# Oregon Investment Council

**December 9, 2020**

**John Russell**  
Chair

**Rex Kim**  
Chief Investment Officer

**Tobias Read**  
State Treasurer



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

Main Office  
350 Winter Street, Suite 100  
Salem, OR 97301-3896  
503.378.4000

[oregon.gov/treasury](https://oregon.gov/treasury)  
[oregon.treasurer@state.or.us](mailto:oregon.treasurer@state.or.us)



# OREGON INVESTMENT COUNCIL

## Agenda

**December 9, 2020**  
**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>
9:00-9:05	1. Review & Approval of Minutes October 28, 2020	<b>John Russell</b> <i>OIC Chair</i>	1
9:05-9:10	2. Opening Remarks and Committee Reports	<b>Rex Kim</b> <i>Chief Investment Officer</i>	2
9:10-9:30	3. Oregon Intermediate Term Pool	<b>Geoff Nolan</b> <i>Senior Investment Officer, Fixed Income</i> <b>John Lutkehaus</b> <i>Investment Officer, Fixed Income</i>	3
<u>B. Information Items</u>			
9:30-10:15	4. Discussion on Value Factor	<b>Michael Viteri</b> <i>Senior Investment Officer, Public Equity</i> <b>Ted Aronson</b> <i>Partner, AJO</i> <b>Cliff Asness</b> <i>Chief Investment Officer, AQR Capital Management, LLC</i> <b>Gerard K. O'Reilly</b> <i>Co-CEO/Chief Investment Officer, Dimensional Fund Advisors</i> <b>Hal Reynolds</b> <i>CIO, Los Angeles Capital Management</i>	4
10:15-10:45	5. OPERF Public Equity Program	<b>Michael Viteri</b> <b>Janet Becker-Wold</b> <i>Senior Vice President, Callan</i> <b>James Callahan</b> <i>President, Callan</i>	5

John Russell  
Chair

Patricia Moss  
Vice-Chair

Cara M. Samples  
Member

Monica Enand  
Member

Tobias Read  
State Treasurer

Kevin Olineck  
PERS Director

<b>10:45-11:15</b>	<b>6. OPERF Fixed Income Program</b>	<b>Geoff Nolan Janet Becker-Wold James Callahan</b>	<b>6</b>
<b>11:15-11:45</b>	<b>7. OPERF Risk Parity Program</b>	<b>Karl Cheng</b> <i>Senior Investment Officer, Portfolio Risk &amp; Research</i> <b>Janet Becker-Wold James Callahan</b>	<b>7</b>
<b>11:45-12:15</b>	<b>8. OPERF Q3 Performance</b>	<b>Rex Kim Janet Becker-Wold James Callahan</b>	<b>8</b>
<b>12:15-12:20</b>	<b>9. Asset Allocation &amp; NAV Updates</b>	<b>Rex Kim</b>	<b>9</b>
	a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund d. Southern Oregon University Endowment Fund		
	<b>10. Calendar — Future Agenda Items</b>	<b>Rex Kim</b>	<b>10</b>
<b>12:20</b>	<b>11. Open Discussion</b>	<b>OIC Members Staff Consultants</b>	

**C. Public Comment**

TAB 1 – REVIEW & APPROVAL OF MINUTES

October 28, 2020 Regular Meeting





**OREGON  
STATE  
TREASURY**

# State of Oregon

## Office of the State Treasurer

16290 SW Upper Boones Ferry Road  
Tigard, Oregon 97224

### OREGON INVESTMENT COUNCIL

October 28, 2020

#### Meeting Minutes

Members Present: John Russell, Patricia Moss, Cara Samples, Monica Enand, Tobias Read and Kevin Olineck.

Staff Present: Rex Kim, David Randall, John Hershey, Michael Langdon, Karl Cheng, Ben Mahon, Geoff Nolan, Tony Breault, Michael Viteri, Jen Plett, Faith Sedberry, Wil Hiles, Claire Ilo, May Fanning.

Staff Participating virtually: Mike Mueller, Anna Totdahl, Amanda Kingsbury, Paul Koch, Julie Hall, Ian Huculak, Chris Ebersole, Austin Carmichael, Dana Millican, Amy Bates, Aliese Jacobsen, Monique Sadegh, Mark Selfridge, Tiffany Zahas, Debra Day, Kenny Bao, Jo Recht, Andy Coutu, Will Hampson, Jeremy Knowles, Eric Messer, Mohammed Quraishi, Caitlyn Wang, John Lutkehaus, Kristi Jenkins, Fawn Hubbard, Andrew Robertson, David Elott, Scott Robertson, Krystal Korthals, Michael Kaplan, Deena Bothello, Roy Jackson, Ahman Dirks, Robin Kaukonen and Michael Makale.

Consultants Present: Allan Emkin, David Glickman and Christy Fields (Meketa Investment Group, Inc.); Jim Callahan, Janet Becker-Wold, Uvan Tseng and Anne Heaphy (Callan LLC); Tom Martin and David Fann, (Aksia, TorreyCove Capital Partners LLC)

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 October 28<sup>th</sup>, 2020 OIC meeting was called to order at 9:00 am by John Russell, OIC Chair.

#### **I. 9:00 am Review and Approval of Minutes**

**MOTION:** Chair Russell asked for approval of the September 9<sup>th</sup>, 2020 OIC regular meeting minutes. Treasurer Read moved approval at 9:02 am, and Ms. Enand seconded the motion which then passed by a 5/0 vote.

#### **II. 9:02 am Committee Reports and Opening Remarks**

**Committee Reports:** Mr. Kim, gave an update on the following committee actions taken since the September 9, 2020 OIC meeting:



**OREGON  
STATE  
TREASURY**

**Private Equity Committee:**

September 25, 2020	Centerbridge Capital Partners IV, L.P.	\$250M
	GGV Capital VII L.P., GGV Capital VII Plus L.P., GGV Discovery III, L.P.	\$150M
	GTCR Fund XII, L.P.	\$250M
	Pathway Private Equity Fund C-III, L.P. Follow-On	\$350M

**Opportunity Committee:**

October 15, 2020	Clearlake Flagship Plus Partners, L.P.	\$200M
------------------	--	--------

**Real Estate Committee:**

October 16, 2020	Waterton Residential Property Venture Fund XIV, L.P.	\$150M
------------------	--	--------

**Alternatives Committee:**

None

Mr. Kim also provided opening remarks with an overview of the meeting agenda.

**III. 9:04 am Consultant Recommendations**

John Hershey, Director of Investments, walked the Council through the three staff recommendations, starting with the two new consulting contracts, 1) General Consultant and 2) Diversifying Strategies Consultant, as well as an extension to an existing contract for the Opportunity Portfolio Consultant. Mr. Hershey then provided some context and background about the contracts and search committees. Based on that, Mr. Hershey provided the recommendations as follows:

**General Consultant:** The Committee recommends that the OIC select Meketa to provide primary non-discretionary General Consulting services and Aon to provide secondary General Consulting services. The Committee further recommends pursuing an initial three-year contract term for each consultant with two, pre-negotiated two-year extensions, available at the Council's discretion.

**MOTION #1:** Treasurer Read, moved approval of the recommendation, at 9:07 am, and Ms. Moss seconded the motion which then passed by a 5/0 vote.

**Diversifying Strategies Consultant:** The Committee recommends that the OIC select Albourne to provide DSP Consulting services. The Committee further recommends pursuing an initial three-year contract term with two pre-negotiated two-year extensions, available at the Council's discretion.

**MOTION #2:** Treasurer Read, moved approval of the recommendation, at 9:08 am, and Chair Russell seconded the motion which then passed by a 5/0 vote.

**Opportunity Portfolio Consultant:** The recent business combination of TorreyCove and Aksia has demonstrated additional capabilities and resources relevant to the Opportunity Portfolio, and a continuation of the relationship will provide ongoing reporting synergies with other components of the private market portfolio. As a result, Staff proposes that the OIC extend its current contract subject to the existing terms and conditions, for a final two-year period beginning January 1, 2021 and ending December 31, 2022, on behalf of the Opportunity Portfolio.



**OREGON  
STATE  
TREASURY**

**MOTION #3:** Treasurer Read, moved approval of the recommendation, at 9:09 am, and Ms. Moss seconded the motion which then passed by a 5/0 vote.

After the motions concluded, Chair Russell wished to recognize the role, Julie Hall, Chief Procurement Officer, Administrative Services, played in this process, her hard work and rigor was a main contributor to the overall success of this assignment. Although we will continue seeing Callan LLC work on The Oregon Savings Growth Plan, Chair Russell wished to acknowledge and thank them for all the work done in their role as consultants throughout the years. Member Samples, chimed in to agree with all that was said since she had been part of the Search Committee.

**IV. 9:09 am EQT Infrastructure Fund V Recommendation**

Ben Mahon, Senior Investment Officer, Alternatives, Faith Sedberry, Investment Officer, Alternatives, and Aksia TorreyCove recommend (i) a commitment of up to \$350 million to EQT Infrastructure V (No. 2) USD SCSp and (ii) an initial \$50 million commitment to a co-investment sidecar vehicle that will invest alongside the Fund for the OPERF Alternatives Portfolio, subject to the satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel. This proposed commitment represents the continuation of a relationship on behalf of the OPERF Alternatives Portfolio.

EQT AB is a global alternative asset manager formed in 1994. The Firm was established to combine the industrial heritage of Sweden's Wallenberg family with financial expertise to drive investment value through operational improvements. Since inception, EQT has raised approximately €62 billion of capital commitments for 33 funds across three platforms: private capital, real assets, and credit.

The infrastructure platform was launched in 2007 and is the primary component of EQT's real assets investment strategy. EQT Infra has raised four funds to-date and is now raising EQT Infra V, which will be a continuation of the investment strategy.

OPERF's history with EQT dates back to 2016 and includes commitments to two mandates:

- EQT Infrastructure III ("Fund III" or "EQT Infra III") – €150 million committed in 2016
- EQT Infrastructure IV ("Fund IV" or "EQT Infra IV") – \$290 million committed in 2018

EQT is seeking €12.5 billion of capital commitments for the Fund, with a €15 billion hard cap. The Firm is planning to hold the initial close in the fourth quarter of 2020. EQT will target a mid-teens gross internal rate of return for the Fund.

**MOTION:** Treasurer Read, moved approval of the commitment of up to \$350 million to EQT Infrastructure V (No. 2) USD SCSp and an initial \$50 million commitment to a co-investment sidecar vehicle that will invest alongside the Fund for the OPERF Alternatives Portfolio at 9:26 am, and Ms. Moss seconded the motion which then passed by a 5/0 vote.

**V. 9:26 am Proxy Voting Policy Recommendations**

Michael Viteri, Senior Investment Officer, Public Equity and Staff recommend approval of the updated Oregon Investment Council policy: INV 605- Exercise of Voting Rights Accompanying Equity Securities.

**MOTION:** Treasurer Read, moved approval with a request to adjust some of the language without changing the content of the updates, at 9:33 am, and Ms. Enand seconded the motion which then passed by a 5/0 vote.



**OREGON  
STATE  
TREASURY**

**VI. 9:33 am OPERF Currency Hedging Program Policy Update**

Karl Cheng, Senior Investment Officer, Portfolio Risk & Research, and Jen Plett, Investment Officer, Portfolio Risk & Research, seeks the Oregon Investment Council's approval for revisions and updates to Policy INV 217: OPERF Foreign Currency Risk Policy. The amendment would expand the policy to include Emerging Market (EM) currency hedging activities.

Ms. Plett then provided an introductory presentation of the Emerging Market Currency Management.

**MOTION:** Ms. Enand, moved approval of the revision and amendments to Policy INV 217: OPERF Foreign Currency Risk Policy at 9:38 am, and Treasurer Read seconded the motion which then passed by a 5/0 vote.

**VII. 9:38 am SAIF Annual Review**

Geoff Nolan, Senior Investment Officer, Fixed Income, introduced the SAIF Annual Update and presenters Kerry Barnett, President & CEO, SAIF and Gina Manley, Vice President of Finance & Chief Financial Officer, SAIF. This presentation covered an annual investment performance as well as an update on SAIF's business activity and operating trends.

**VIII. 10:19 am OSGP Annual Review**

Mr. Viteri introduced, Wil Hiles, Investment Officer, Public Equity and Claire Illo, Investment Analyst, Public Equity, and along with Uvan Tseng, Senior Vice President, Callan, LLC, and Anne Heaphy, Senior Vice President, Callan, LLC, provided the Council an annual review of the Oregon Savings Growth Plan.

Staff then proposed the following recommendations:

1. The use of the 3-Year Constant Maturity Treasury as the primary benchmark and the 3-Month Treasury Bill (T-Bill) as the secondary benchmark. Additionally, since the Stable Value Option is now serving as the Plan's sole capital preservation investment option, the 3-Month Treasury Bill also serves as an appropriate benchmark. The 3-Month Treasury Bill is a common industry benchmark for government security money market funds and provides an appropriate comparison for purposes of capital preservation and safety of principal. Therefore, Staff and Callan also recommend utilizing the 3-Month Treasury Bill as a secondary benchmark for the Stable Value Option.

**MOTION #1:** Treasurer Read moved approval of the recommendation to use the 3-Year Constant Maturity Treasury as the primary benchmark and the 3-Month Treasury Bill as the secondary benchmark, and utilizing the 3-Month Treasury Bill as a secondary benchmark for the Stable Value Option, at 10:50 am, and Ms. Moss seconded the motion which then passed by a 5/0 vote.

2. Revision of INV 801: Deferred Compensation Investment Program: Statement of Objectives and INV 802: Deferred Compensation Investment Program: Selecting, Managing, Reporting, and Terminating Program Firms.

Member, Olineck interjected prior to the motion being moved, to suggest making minor edits to INV 801 by adding "and OSGP Advisory Committee" after "OSGP Staff", to reflect the important role both have interchangeably in this process. These edits would be added under bullet points, 2 (twice), and 3 (once). Chair Russell asked for comments, Staff agreed with the suggested addition.

**MOTION #2:** Treasurer Read moved approval of the revision and amendments to INV 801: Deferred Compensation Investment Program: Statement of Objectives and to incorporate references to the OSGP Advisory Committee as part of the reviewing process prior to being presented to the OIC, and INV 802: Deferred Compensation Investment Program:



**OREGON  
STATE  
TREASURY**

Selecting, Managing, Reporting, and Terminating Program Firms at 10:54 am, and Chair Russell seconded the motion which then passed by a 5/0 vote.

**IX. 10:54 am CEM Benchmarking Annual Review**

Chief Investment Operating Officer, David Randall, introduced Mike Heale, Principal, CEM Benchmarking, Inc. who then provided the Council with a presentation focusing on the Pension Fund Assets, for a 5-year review period ending December 31, 2019.

**X. 11:15 am Asset Allocation & NAV Updates**

Mr. Kim reviewed asset allocations and NAVs across OST-managed accounts for periods ended August 31, 2020.

**XI. 11:16 am Calendar – Future Agenda Items**

A calendar listing of future OIC meetings and scheduled agenda topics was included in the Council's meeting material.

**XII. 11:19 am Open Discussion**

During the open discussion, Chair Russell brought up a technology related struggle that he feels is creating somewhat of a challenge. He said, that while being able to hear the speakers he does not have the capability of viewing them on screen. Other Council members agreed and expressed the same concern, which lead to an open conversation of shared thoughts and ideas. Chair Russell then asked IT staff to look into other possibilities that may allow the implementation of multiple screen sharing during the live OIC meeting.

**XIII. 11:25 am Public Comments**

None.

Mr. Russell adjourned the meeting at 11:25 am.

Respectfully submitted,

*May Fanning*

May Fanning  
Executive Support Specialist

## TAB 2 – Opening Remarks and Committee Reports

December 9, 2020

Oregon Investment Council

# Opening Remarks

Rex T. Kim, Chief Investment Officer



OREGON  
STATE  
TREASURY



TAB 3 – Oregon Intermediate Term Pool



December 9, 2020

Oregon Investment Council

# Oregon Intermediate Term Pool INV 404 Policy Update

Geoff Nolan, Senior Investment Officer  
John Lutkehaus, Investment Officer



OREGON  
STATE  
TREASURY



# Agenda

1. Background

---

2. Overview of Fixed Income

---

3. Overview of Internally Managed and non-OPERF Accounts

---

4. Policy Update Process

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

---

6. Appendix

---

# Background

- Oregon Investment Council (OIC) Investment and Management Beliefs
  - The OIC sets policy and is ultimately responsible for the Investment Program
    - Investment management is dichotomous -- part art and part science.
    - The OIC is a policy-setting council that largely delegates investment management activities to the Oregon State Treasury (OST) and qualified external fiduciaries.
    - The OIC is vested with the authority to set and monitor portfolio risk. Both short-term and long-term risks are critical.
    - To exploit market inefficiencies, the OIC should be long term, contrarian, innovative, and opportunistic in its investment approach.
- Role of OIC In Internally Managed and non-OPERF Accounts
  - In addition to oversight of OPERF, the OIC also has oversight of, and is ultimately responsible for, internally managed fixed income accounts plus externally managed non-OPERF accounts.
  - These fixed income accounts include the OSTF, Oregon Intermediate Term Pool (OITP), Public University Fund (PUF), various state agency portfolios, SAIF and the Common School Fund (CSF).
    - A summary of these accounts are highlighted in section 3 with more details provided in the Appendix.

OIC Oversight Includes OPERF, Internally Managed and non-OPERF Accounts

# Agenda

1. Background

---

2. Overview of Fixed Income

---

3. Overview of Internally Managed and non-OPERF Accounts

---

4. Policy Update Process

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

---

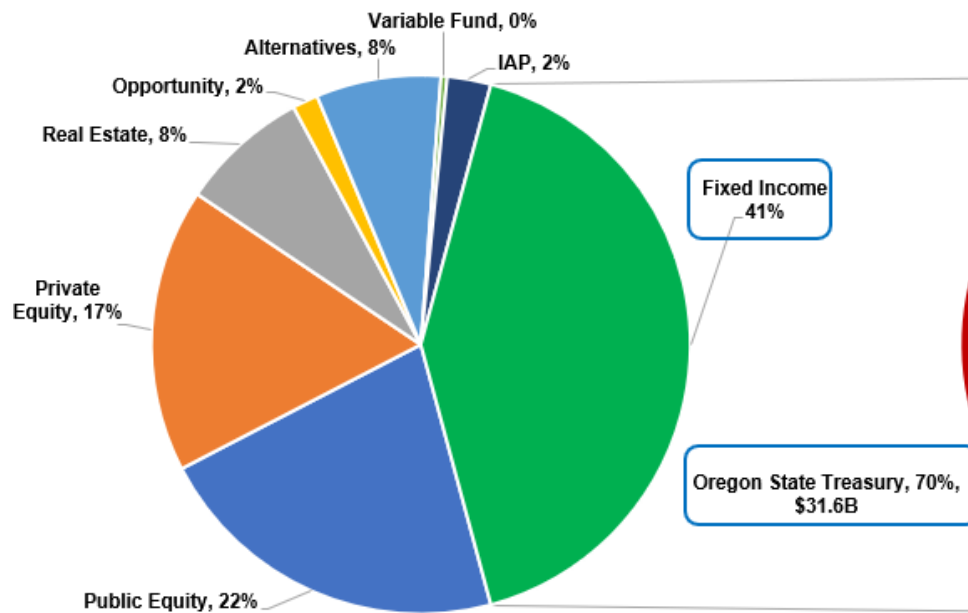
6. Appendix

---

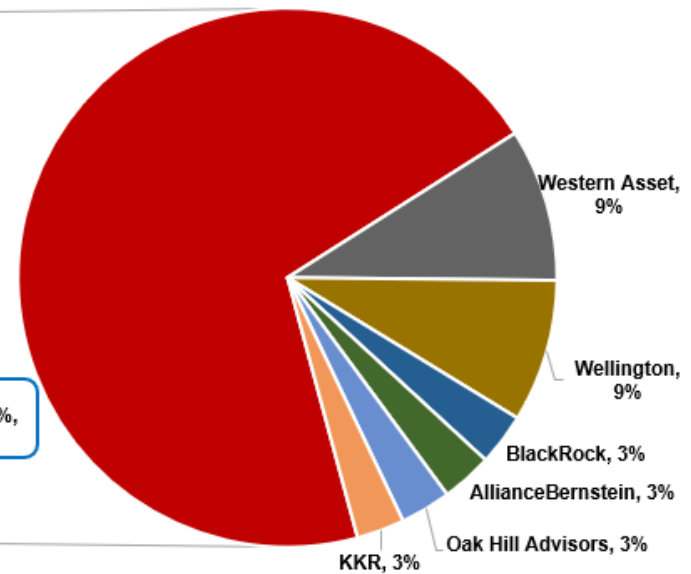
# OST Fixed Income Program Overview

Putting Fixed Income in Context

**Oregon State Treasury Asset Mix**  
\$109 Billion



**Fixed Income Manager Concentration**  
\$45 Billion



As of September 30, 2020

Fixed Income & OST-Managed Funds Represent a Significant Portion of OST Assets



# Agenda

1. Background

---

2. Overview of Fixed Income

---

**3. Overview of Internally Managed and non-OPERF Accounts**

---

4. Policy Update Process

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

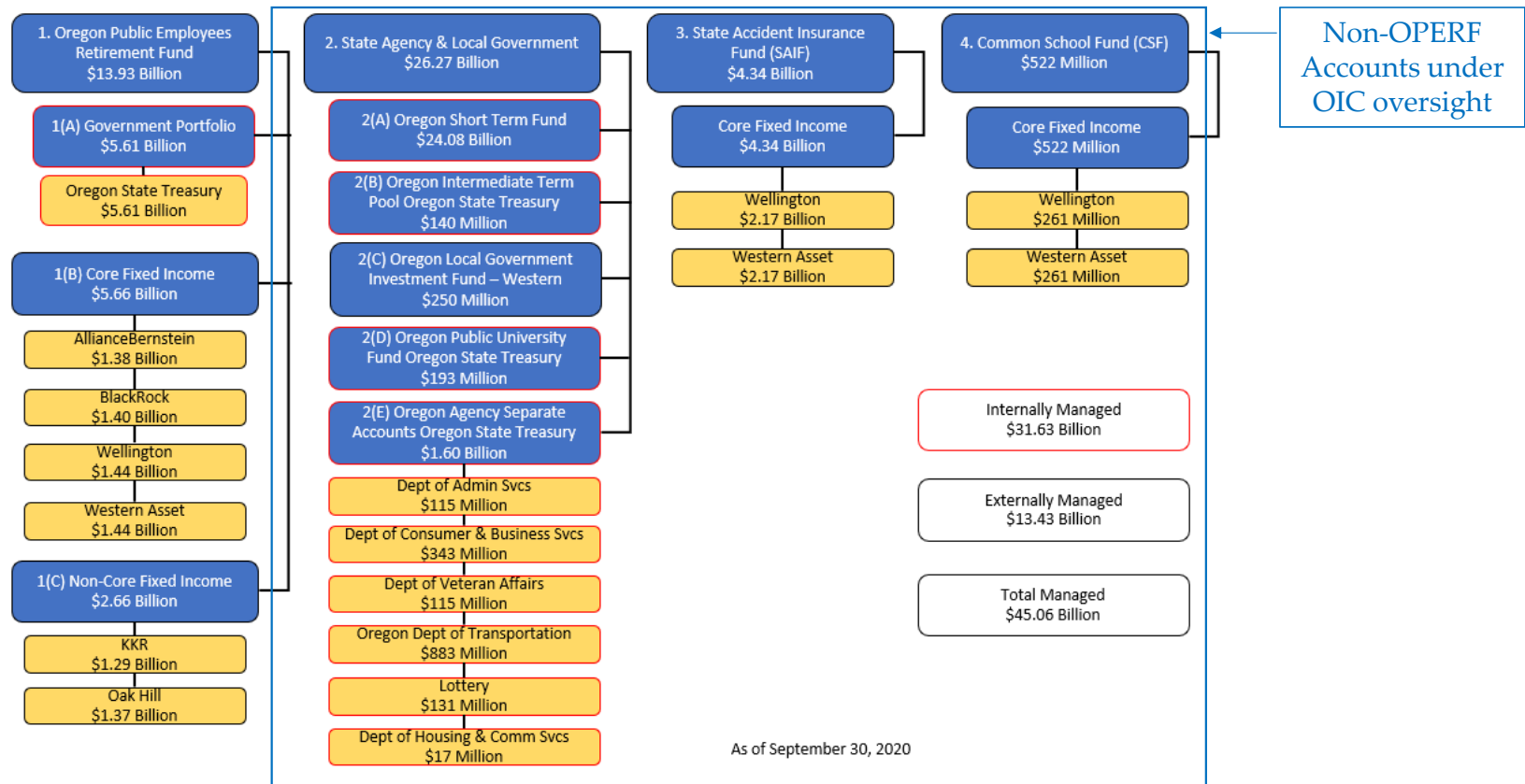
---

6. Appendix

---

# OST Fixed Income Program Overview

## Putting Fixed Income in Context



OST Oversees A Variety of Strategies That Serve A Diverse Oregonian Client Base



# Agenda

1. Background

---

2. Overview of Fixed Income

---

3. Overview of Internally Managed and non-OPERF Accounts

---

**4. Policy Update Process**

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

---

6. Appendix

---



# Policy Update Process

- Background
  - Implementing an enhanced investment policy update process to increase oversight prior to OIC review.
- Enhanced Policy Update Process
  - Investment team proposes policy changes to CIO.
    - Memo required providing analysis and rationale for updates.
    - Included in OIC packet.
  - Risk Management team to review and provide feedback.
  - Investment team, Risk Management team & CIO convene to discuss material differences, if any, regarding proposed updates.
  - Legal and Compliance team to review and provide feedback.
  - General Consultant to review on behalf of OIC.
  - Present policy update recommendation to OIC for review and approval.
  - If approved, update PolicyStat.

## Enhancing Policy Update Process

# Agenda

1. Background

---

2. Overview of Fixed Income

---

3. Overview of Internally Managed and non-OPERF Accounts

---

4. Policy Update Process

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

---

6. Appendix

---

# OITP Policy Discussion: Background & Costs

- Background
  - Outside of OSTF and OPERF, the fixed income team currently manages 7 accounts on behalf of state agencies and universities, totaling ~\$890MM as of 11/2/2020. (Summary on p. 12)
  - Despite similar objectives, there is unnecessary complexity given that the account benchmarks (where they have them), investment policies and guidelines are highly customized.
- Costs of Unnecessary Complexity
  - Inefficiency from Benchmarks (or lack thereof):
    - 6 accounts with similar goals, but 6 different or non-existent benchmarks.
    - Inefficient expressions of account objectives / guidelines. Benchmarks aren't investable, have high levels of mortgage-backed securities (negative convexity) and high turnover (requires more trading).
  - Inability to Share Investment Ideas:
    - 1 idea can't be shared across 6 accounts, nor is it practical to generate 6 different ideas to achieve the same intermediate duration fixed income exposure given similar objectives.
  - Elevated Trading Costs: <sup>(1)</sup>
    - the team estimates that we can collectively save the various state agencies up to \$1.2MM/year by:
      - moving to a benchmark with lower turnover, and
      - trading in larger, more liquid sizes which saves on trading costs
- Cash Management Tools
  - For OITP, there are no approved vehicles to maintain exposure / liquidity in the face of large withdrawals. This results in large tracking error deviations which the team can't control.
    - ETFs, mutual funds and total return swaps are not allowed.

Unnecessary Complexity is Inefficient and Costly



# OITP Policy Discussion: Account Summary

- Client Account Summary
  - Despite similar objectives, there is unnecessary complexity given that the account benchmarks (where they have them), investment policies and guidelines are highly customized.

Use of securities, duration, benchmarks varies despite similar objectives.

AUM (\$MM)	Fund	Account Name	OSTF (%)	OITP (%)	Other Secs (%)	Dur.	Current Benchmark	Proposed Benchmark	Investment Objectives
91**	59C4*	Oregon Intermediate Term Pool	0%	100%	0%	3.3	BBG Barclays 3-5yr	BBG Barclays Int Gov/Credit	1. Return (Total Return)
120	593D*	Oregon Department of Veterans Affairs	90%	10%	0%	0.8	None	Benchmark of Subfund***	1. Return (Total Return) 2. Principal Protection
155	594G*	DAS Insurance	73%	3%	23%	1.1	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Book Yield)
163	595M*	DCBS Workers Benefit	77%	11%	13%	0.9	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
167	593Z*	DCBS Operating	83%	8%	9%	0.9	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
194	59CF*	Oregon Public University Fund	0%	0%	100%	3.8	75% BBG Barclays 3-5yr /25% BBG Barclays 5-7yr	BBG Barclays Int Gov/Credit	1. Liquidity 2. Return (Total Return)
788	59AV	Oregon Department of Transportation	90%	0%	10%		None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
5,557	59CE	PERS Government Portfolio	0%	0%	100%	7.0	BBG Barclays Treasury	BBG Barclays Treasury	None Documented

\* Ability and willingness to seek intermediate credit risk beyond OSTF

\*\* Stripped out double counting of \$48.87mm in sub-investments in OITP

\*\*\* All assets are invested in either OSTF or OITP, both of which have a benchmark and there will be no unbenchmarked individual assets

Source: Aladdin data as of 11/2/2020, PolicyStat as of 11/2/2020

Highly Customized Benchmarks, Objectives & Guidelines are Inefficient & Costly



# OITP Policy Discussion: Recommendations

## Recommended Solutions

- Given the costs & inefficiencies noted above, for OIC approval, we recommend the following:
  - Update OITP INV 404 to add key components including:
    - Bloomberg / Barclays Intermediate Government / Credit Index as the benchmark (rationale below),
    - CIO approval required for guideline updates, and
    - Key Risk Parameters: diversification, liquidity, interest rate risk, credit risk and prohibited investments.
  - Synchronize the OITP and PUF Benchmark
    - Update to the Bloomberg / Barclays Intermediate Government / Credit Index.
      - Rationale: investable, diversified, positive convexity, low turnover and ‘risk stable’ benchmark to gain intermediate duration fixed income exposure.
    - PUF representatives are supportive of the update.
      - Benchmark and guideline updates require PUF Board approval, currently scheduled for 01/2021.
  - Harmonize State Agency Account Portfolio Allocations
    - Use a portfolio allocation mix of OSTF and OITP (e.g., 60% OSTF, 40% OITP).
      - State agency accounts to determine cash needs (e.g., 3-6 months) which will be invested in the OSTF with remainder invested in OITP.
        - ODVA currently uses this allocation methodology. DCBS is supportive with DAS, ODOT pending.
      - Rationale: better meet investment objective & mitigates costs of customization noted above.
  - Cash Management Tools for OITP & PUF
    - Work with OST legal & compliance to find approvable investment vehicles for OITP & PUF (currently ETFs are allowed for PUF)

## Harmonize Accounts to Minimize Inefficiencies

# OITP Policy Discussion: Benefits Summary

## Benefits of Recommendations:

- Benchmark Efficiency:
  - Better expressions of account objectives / guidelines given all accounts will have a benchmark with clear risk and return objectives.
- Ability to Share Investment Ideas:
  - Instead of having to find 6 different ideas, can now have 1 shareable idea.
  - Allows for better risk adjusted returns
- Lower Trading Costs:
  - Estimated saving of up to \$1.2M/year from being able to trade in larger size.
- FTE Hours Saved
  - Across investments, operations, accounting and compliance, harmonization allows for generating, tracking & accounting for fewer trades, cash movements, etc.
- Platform Scalability
  - With the efficiencies noted above, this improves the scalability of the platform allowing the team to internally manage more assets.

Harmonize Accounts to Minimize Inefficiencies



# Oregon Intermediate Term Pool (OITP)

**Objective** – The Oregon Intermediate Term Pool (“OITP”) is a high-quality, intermediate-duration investment pool that is offered to Oregon State Agencies. The OITP investment objective is to maximize total return (i.e., principal and income) within stipulated risk parameters. OITP is not appropriate for funds needed to cover short-term (i.e., less than 1 year) needs. The OITP performance goal portfolio is to meet or outperform the total return of the Bloomberg Barclays 3-5 Year U.S. Aggregate Index.

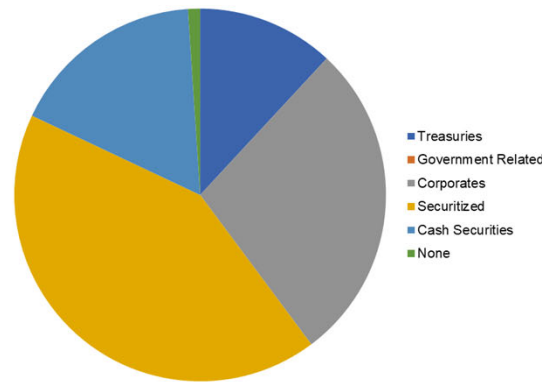
**Strategy** – OITP is actively managed and comprises a diversified portfolio of investment grade fixed income investments as prescribed in the portfolio guidelines. OITP may have exposures, subject to diversification requirements, to several types of investment grade public debt market instruments denominated in U.S. dollars.

**Manager** – Oregon State Treasury

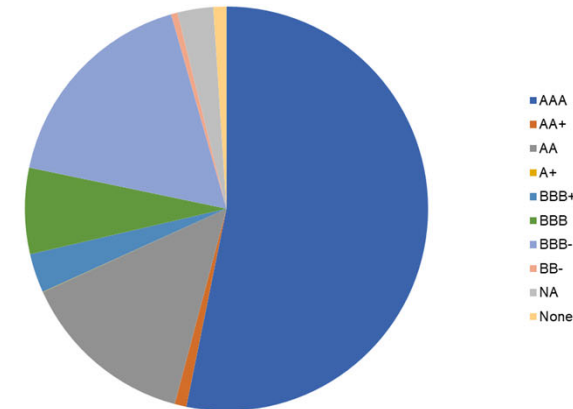
**Benchmark** – Bloomberg Barclays 3-5 Year Aggregate Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
OITP	140,398	1.43	0.97	2.97	3.15	AA-	AA+

Sector Exposures



Rating Exposures



	Market Value	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
<b>Oregon Intermediate Term Pool*</b>	<b>\$140,397,824</b>	<b>0.22</b>	<b>1.15</b>	<b>5.24</b>	<b>5.81</b>	<b>6.43</b>	<b>4.03</b>	<b>3.30</b>	<b>3.22</b>	<b>2.86</b>	<b>2.91</b>
Oregon Intermediate Pool Custom Benchmark		-0.08	0.36	5.02	5.58	6.64	4.01	3.10	3.10	2.74	2.37
Excess Return		0.30	0.79	0.22	0.23	-0.21	0.02	0.20	0.12	0.12	0.54

As of September 30, 2020

\*Includes investments in the Oregon Short Term Fund



# Agenda

1. Background

---

2. Overview of Fixed Income

---

3. Overview of Internally Managed and non-OPERF Accounts

---

4. Policy Update Process

---

5. Oregon Intermediate Term Pool: INV 404 Policy Discussion

---

6. Appendix

---



# Oregon Short Term Fund (OSTF)

**Objective** – The investment objectives of the Oregon Short Term Fund (“OSTF”) are, in priority order, preservation of principal, maintenance of a sufficient level of liquidity to meet all state agency and local government operating requirements and attainment of a yield greater than money market and other short-term alternatives through investments in high-quality, U.S. dollar-denominated fixed income securities. The fund serves as a short-term cash investment vehicle for agencies and local government entities in the State of Oregon, including OPERF.

**Strategy** – OSTF is invested consistent with the fund’s objectives by creating a diversified portfolio comprised of a broad range of fixed income investments. Securities may include the following: U.S. government securities, including U.S. Treasury obligations and securities issued by U.S. Agencies and instrumentalities; securities issued by foreign governments and instrumentalities; certificates of deposit and time deposits in certain qualified depositories; commercial paper; corporate bonds; asset-backed securities; municipal securities; bankers’ acceptances; repurchase agreements; and investments in the Oregon Local Government Intermediate Fund. Investments may be made in securities that are issued at a discount or pay interest based on a fixed or floating rate coupon. All securities are denominated in U.S. dollars.

**Manager** – Oregon State Treasury

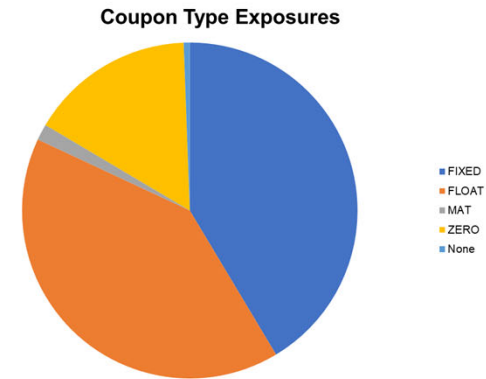
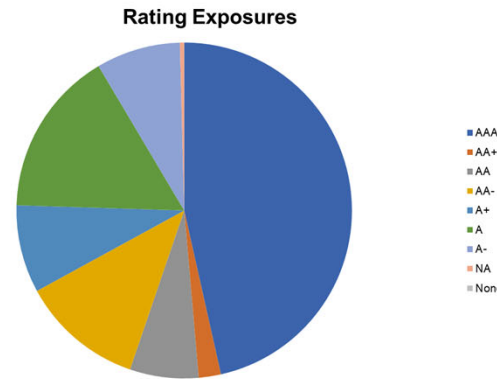
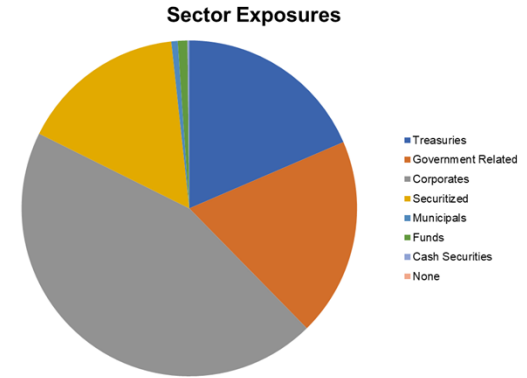
**Benchmark** – 3-Month U.S. T-Bill Index

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
<b>Oregon Short Term Fund*</b>	<b>\$24,078,058</b>	<b>0.03</b>	<b>0.22</b>	<b>1.43</b>	<b>2.04</b>	<b>2.66</b>	<b>2.34</b>	<b>2.07</b>	<b>1.86</b>	<b>1.50</b>	<b>1.28</b>
91-Day Treasury Bill		0.01	0.04	0.64	1.10	1.74	1.69	1.43	1.20	0.86	0.64
Excess Return		0.02	0.18	0.79	0.94	0.92	0.65	0.64	0.66	0.63	0.65

As of September 30, 2020



Fund Characteristics	
Net Assets	\$24,078,058,170
Fund NAV/OSTF Balances (9/30/2020)	\$1.0089
Wtd. Avg. Credit Quality	AA/Aa2/AA-
Book Yield	0.95%
Wtd. Avg. Maturity (days)	210
Duration (years)	0.54
Spread Duration (years)	0.8
Rate Paid	1.00%



# Oregon Public University Fund (PUF)

**Objective** – The objective for the Public University Fund (“PUF”) is a high-quality fixed income portfolio that maximizes total return over a long-term horizon within stipulated risk parameters while providing adequate liquidity to meet participant cash flow needs. Based on historical market performance, total returns generated over extended periods are anticipated to be greater than returns realized in shorter-maturity strategies.

**Strategy** – PUF is actively managed to create a diversified portfolio of investment grade bonds invested over longer horizons than permitted in OSTF.

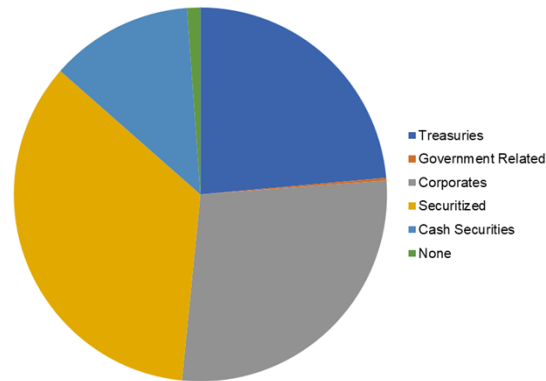
**Manager** – Oregon State Treasury

**Benchmark** – Custom benchmark comprised of:

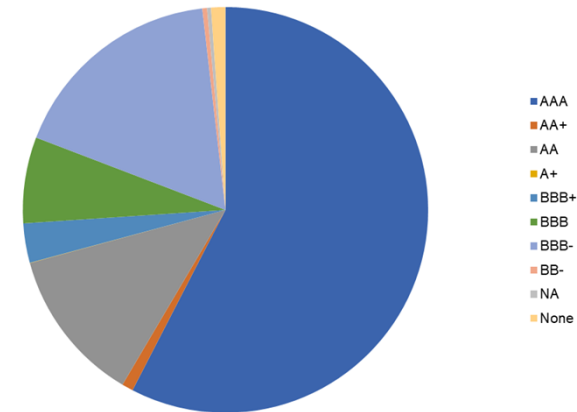
- 75% Bloomberg Barclays Aggregate 3 - 5 Years
- 25% Bloomberg Barclays Aggregate 5 - 7 Years

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
PUF	193,235	1.35	0.97	3.51	3.69	AA-	AA+

**Sector Exposures**



**Rating Exposures**



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year
<b>Public University Core Bond Fund*</b>	<b>\$193,235</b>	<b>0.21</b>	<b>1.02</b>	<b>5.88</b>	<b>6.35</b>	<b>6.90</b>	<b>4.28</b>
Public University Fund Custom Benchmark		-0.06	0.47	5.59	6.14	7.07	4.28
Excess Return		0.27	0.55	0.29	0.20	-0.17	-0.01

As of September 30, 2020

\*Includes investments in the Oregon Short Term Fund



# State Agency Separate Accounts

**Objective** – The investment objectives, constraints and requirements for individual agency accounts are bespoke. The over-arching Fixed Income Investment Policy that covers these separate agency accounts contains the following objectives: (1) determine what funds are eligible for discreet investment management; (2) define the role of fixed income within the OIC’s general investment policies for internally-managed funds; 3) establish specific short- and long-term policy objectives for these funds; and 4) outline strategies for implementing the OIC’s fixed income investment policies.

**Strategy** – Specific risk tolerances of state agency separate accounts vary, but all have the primary goal of achieving a maximum yield while preserving principal. The management strategy for state agency separate accounts eschews trading and adheres to a buy and hold discipline. Separate accounts are constructed to provide sufficient liquidity and be well-diversified amongst sectors and issuers with a weighted-average, minimum credit rating of single A. Staff conducts periodic meetings with agencies to review each agency’s specific portfolio objectives and liquidity needs to ensure individual strategies are still relevant.

**Constraints** – All state agency accounts overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments. INV 402 limits investment exposures by product, concentration and rating. Additionally, each agency portfolio has bespoke guidelines which further restrict exposures and define investment goals.

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
DAS Insurance*	\$114,600	0.04	0.40	2.34	2.95	3.51	2.75	2.34	2.20	2.00	1.66
DCBS Operating Fund**	\$173,114	0.07	0.39	2.13	2.71	3.31	2.58	2.19	2.15	2.12	1.49
DCBS Workers Benefit**	\$169,747	0.05	0.40	2.28	2.90	3.52	2.76	2.42	2.36	2.27	2.06
DHCS Elderly Housing	\$1,943	0.21	-0.06	15.49	12.40	15.95	10.05	6.60	7.03	7.21	6.17
DHCS Housing	\$16,887	0.43	0.55	10.03	9.05	11.59	7.25	5.08	4.20	3.47	2.59
Lottery	\$131,531	0.20	0.10	10.98	9.44	11.26	6.57	4.23	4.67	4.89	4.27
Veterans Affairs**	\$114,898	0.10	0.36	1.62	2.22	2.67	2.33	2.06	1.84	1.41	1.19
Oregon Department of Transportation*	\$883,029	0.07	0.30	1.46	2.07	2.48	2.29	2.02	1.78	1.69	1.70

As of September 30, 2020

\*Includes investments in the Oregon Short Term Fund

\*\*Includes investments in the Oregon Short Term Fund and the Oregon Intermediate Term Pool

# State Accident Insurance Fund (SAIF)

**Objective** – The SAIF portfolio is largely designed to be comprised of fixed income holdings that provide positive cash flow, dampen overall portfolio volatility, provide a real rate of return, and are positively linked to the entity’s insurance liabilities. Maintaining the flexibility to seek out total return and a focus on realized loss minimization are additional, important criteria.

**Strategy** – SAIF funds are invested to maintain an overall portfolio quality of single A or higher with an average duration of +/-20% of the custom fixed income benchmark. In addition, maturities are structured to provide reinvestment opportunities that consider SAIF's operating cash flow projections. SAIF hires independent consultants to develop an appropriate strategy and benchmark. OST staff assists in this process and helps select firms that can best achieve the desired objective given all relevant constraints.

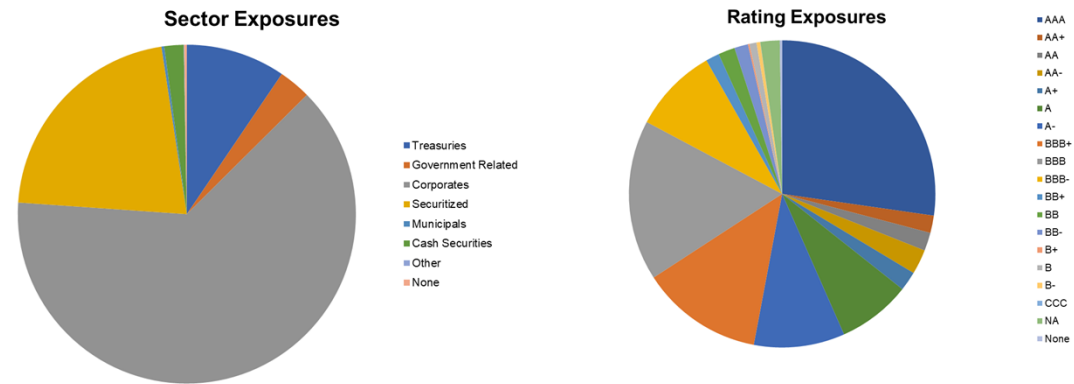
**Managers** – The SAIF portfolio is allocated to two external firms:

- Western Asset
- Wellington Management

**Benchmark** – SAIF’s investment objective and liability structure give rise to a uniquely created custom benchmark that is comprised of the following components:

- 50% Bloomberg Barclays U.S. Corporate Index
- 20% Bloomberg Barclays Mortgage Backed Fixed Rate Security Index
- 15% Bloomberg Barclays U.S. Government Index
- 10% Bloomberg Barclays Corporate Intermediate Index
- 5% Bloomberg Barclays Ba to B U.S. High Yield 2% Issuer Cap

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
SAIF FI	4,381,669	2.13	1.75	6.39	6.36	A	A+
Wellington	2,164,271	2.16	1.75	6.47	6.36	A	A+
Western Asset	2,172,986	2.13	1.75	6.41	6.36	A	A+
Pledged Securities	44,412	0.14	-	1.55	-	AAA	-



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
State Accident Insurance Fund	\$4,337,257	-0.20	1.65	6.54	7.50	9.51	6.05	5.16	5.76	5.30	4.94
Wellington	\$2,164,271	-0.15	1.84	6.60	7.45	9.42	6.01	5.15	5.64	5.29	4.96
Western Asset	\$2,172,986	-0.25	1.45	6.48	7.56	9.61	6.08	5.18	5.88	5.31	4.93
State Accident Insurance Fund Custom Benchmark		-0.22	1.17	6.16	7.07	9.01	5.58	4.54	4.98	4.62	4.31
Excess Return		0.02	0.48	0.38	0.44	0.50	0.47	0.62	0.78	0.68	0.64

As of September 30, 2020



# Oregon Local Government Fund (OLGIF)

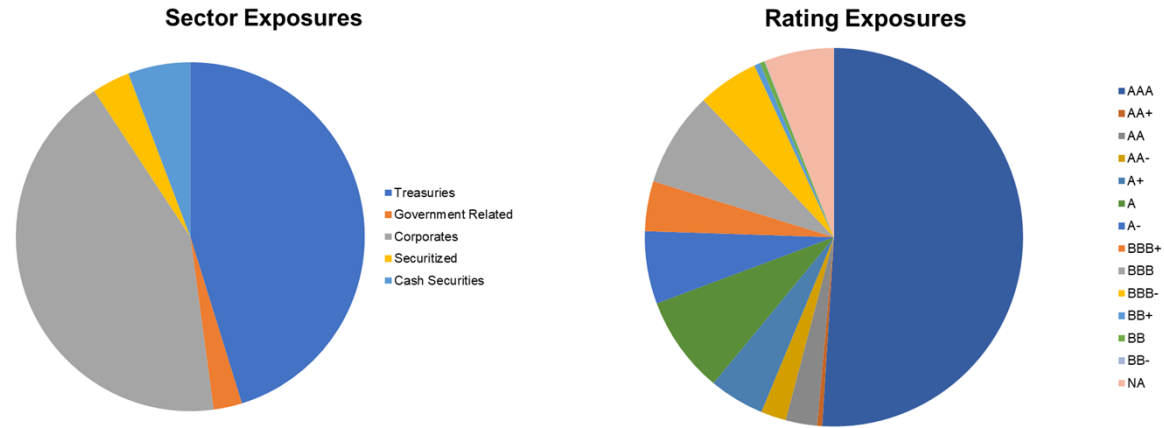
**Objective** – The Oregon Local Government Intermediate Fund ("OLGIF") is a commingled investment pool for local governments offered by Oregon State Treasury. The OLGIF investment objective is to achieve a total return (i.e., principal and income) greater than its benchmark over a full market cycle. OLGIF is expected to provide a risk and return profile consistent with a diversified investment-grade and intermediate-duration fixed income portfolio.

**Strategy** – OLGIF is actively managed to achieve a total return greater than the benchmark by investing in U.S. dollar-denominated investment grade fixed income securities as prescribed in the portfolio guidelines and consistent with the fund's benchmark.

**Manager** – Western Asset

**Benchmark** – Bloomberg Barclays 1-5 Year U.S. Government/Credit Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
Western Asset	250,330	0.62	0.97	2.72	3.15	AA-	AA+



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year
Oregon Local Government Investment Fund	\$250,330	-0.04	0.47	4.66	5.07	5.71	3.72	2.88
Bloomberg Barclays 1-5 Year Government/Credit Index		-0.02	0.37	4.36	4.88	5.44	3.47	2.72
Excess Return		-0.03	0.10	0.30	0.19	0.27	0.25	0.16

As of September 30, 2020



# Common School Fund (CSF)

**Objective** – The objective for the Common School Fund (CSF) fixed income allocation is to provide portfolio diversification while achieving a total return representative of the broad, investment grade U.S. bond universe.

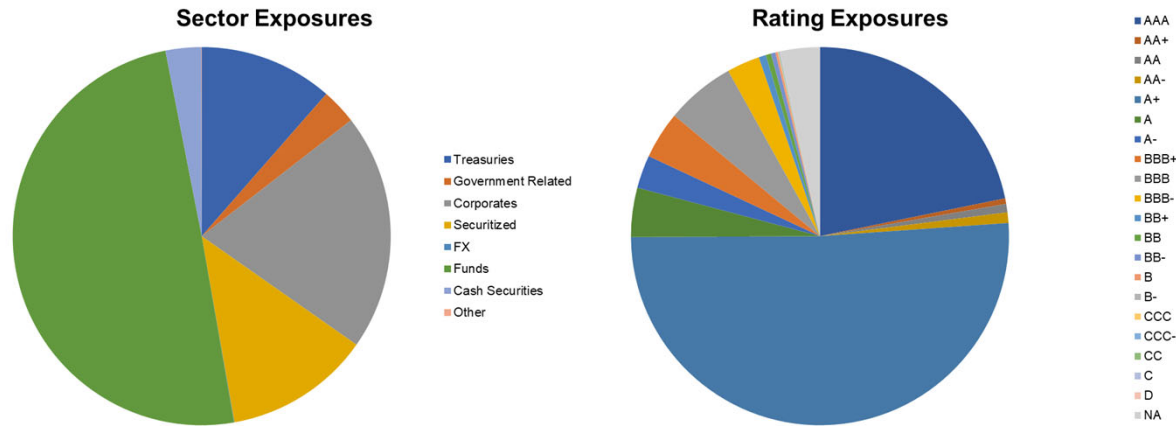
**Strategy** – To meet this objective, the CSF fixed income allocation is actively managed and invested in core U.S. fixed income holdings.

**Managers** – The CSF fixed income allocation is split between two external firms:

- Western Asset
- Wellington Management

**Benchmark** – Bloomberg Barclays U.S. Aggregate Bond Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
CSF FI	521,666	1.47	1.17	6.09	6.09	A+	AA
Wellington	261,194	1.02	1.17	5.77	6.09	A+	AA
Western Asset	260,472	1.93	1.17	6.41	6.09	A+	AA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
Common School Fund	\$521,666	-0.14	1.29	6.92	7.57	9.09	5.66	4.66	5.00	4.61	4.61
Wellington	\$261,194	0.01	1.12	8.10	8.37	9.23	5.79	4.60	4.82	4.46	4.44
Western Asset	\$260,472	-0.29	1.46	5.76	6.78	8.94	5.54	4.72	5.18	4.75	4.87
Bloomberg Barclays U.S. Aggregate Index		-0.05	0.62	6.79	6.98	8.63	5.24	3.93	4.26	4.00	3.81
Excess Return		-0.08	0.67	0.13	0.59	0.46	0.42	0.74	0.75	0.61	0.80

As of September 30, 2020



# Legal Disclaimer Information

## Legal Disclaimer Information

Vendors supply much of the information used in the Oregon State Treasury's analytic platform. In some cases, those vendors requested legal disclaimers to accompany any reporting. Those disclaimers, where applicable, include:

## FTSE International Limited

Source: FTSE International Limited ("FTSE") © FTSE 2016. FTSE® is a trade mark of the London Stock Exchange Group companies and is used by FTSE under license. All rights in the FTSE indices and/or FTSE ratings vest in FTSE and/or its licensors, Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE indices and/or FTSE ratings or underlying data. No further distribution of FTSE Data is permitted without FTSE's express written consent.

## MSCI Inc.

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard & Poor's, a division of the McGraw-Hill Companies, Inc. ("S&P") and is licensed for use by the Oregon Investment Council.

Neither MSCI, S&P nor any third party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard of classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

## Standard & Poor's

This may contain information obtained from third parties, including ratings from credit ratings agencies such as Standard & Poor's.

Reproduction and distribution of third party content in any form is prohibited except with the prior written permission of the related third party. Third party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. THIRD PARTY CONTENT PROVIDERS GIVE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. THIRD PARTY CONTENT PROVIDERS SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, EXEMPLARY, COMPENSATORY, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES, COSTS, EXPENSES, LEGAL FEES, OR LOSSES (INCLUDING LOST INCOME OR PROFITS AND OPPORTUNITY COSTS OR LOSSES CAUSED BY NEGLIGENCE) IN CONNECTION WITH ANY USE OF THEIR CONTENT, INCLUDING RATINGS.

Credit ratings are statements of opinions and are not statements of fact or recommendations to purchase, hold or sell securities. They do not address the suitability of securities or the suitability of securities for investment purposes, and should not be relied on as investment advice.

Updated Jan 2016









# OREGON STATE TREASURY

Tobias Read  
Oregon State Treasurer

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

[oregon.gov/treasury](http://oregon.gov/treasury)

**Executive Summary**  
**Improving Intermediate Fixed Income Efficiency**  
**Staff Recommendation**

**Executive Summary**

Outside of the Oregon Short Term Fund (“OSTF”), OST Fixed Income (“OSTFI”) currently manages 8 accounts on behalf of State Agencies and PERS, totaling \$7.2BN. Six of these accounts seek to achieve exposure to intermediate duration credit beyond the guidelines allowed in the OSTF, totaling \$890MM.

The current structure of Benchmarks, Investment Policies and Investment Guidelines is highly customized despite overwhelmingly similar objectives. This unnecessary complexity has explicit costs in terms of the price paid for liquidity (we estimate up to \$1.2mm/year), and implicit costs in terms of duplicated investment, operations, accounting and compliance team FTE hours expended to achieve the same objective. Further, in its current format, there are opportunity costs in the form of capacity constraints on the number of these types of customized mandates that can be managed internally, thus limiting the scalability of the platform.

We recommend synchronizing State Agency benchmarks, Investment Policies and Investment Guidelines to achieve these savings. For accounts that have an ability to take risk beyond the OSTF, funds in excess of short-term cash needs should be invested in the Oregon Intermediate Term Pool (“OITP”) rather than a bespoke blend of individual securities that do not have a benchmark, risk guidelines or consistent liquidity. For the Oregon Public University Fund (“OPUF”), we recommend changing the benchmark and guidelines to match those in OITP to the extent possible so that for investment idea generation and trading purposes, they can be treated in a pro-rata manner. These changes will allow the OSTFI team to focus on OSTF and OITP as the two primary active investment strategies rather than a complex web of 8 strategies with slightly varying requirements.

**Client Account Summary**

Key account characteristics:

AUM (\$MM)	Fund	Account Name	OSTF (%)	OITP (%)	Other Secs (%)	Dur.	Current Benchmark	Proposed Benchmark	Investment Objectives
91**	59C4*	Oregon Intermediate Term Pool	0%	100%	0%	3.3	BBG Barclays 3-5yr	BBG Barclays Int Gov/Credit	1. Return (Total Return)
120	593D*	Oregon Department of Veterans Affairs	90%	10%	0%	0.8	None	Benchmark of Subfund***	1. Return (Total Return) 2. Principal Protection
155	594G*	DAS Insurance	73%	3%	23%	1.1	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Book Yield)
163	595M*	DCBS Workers Benefit	77%	11%	13%	0.9	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
167	593Z*	DCBS Operating	83%	8%	9%	0.9	None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
194	59CF*	Oregon Public University Fund	0%	0%	100%	3.8	75% BBG Barclays 3-5yr /25% BBG Barclays 5-7yr	BBG Barclays Int Gov/Credit	1. Liquidity 2. Return (Total Return)
788	59AV	Oregon Department of Transportation	90%	0%	10%		None	Benchmark of Subfund***	1. Principal Protection 2. Liquidity 3. Return (Total Return)
5,557	59CE	PERS Government Portfolio	0%	0%	100%	7.0	BBG Barclays Treasury	BBG Barclays Treasury	None Documented

\* Ability and willingness to seek intermediate credit risk beyond OSTF

\*\* Stripped out double counting of \$48.87mm in sub-investments in OITP

\*\*\* All assets are invested in either OSTF or OITP, both of which have a benchmark and there will be no unbenchmarked individual assets

Source: Aladdin data as of 11/2/2020, PolicyStat as of 11/2/2020

**Concerns**

- 6 accounts with similar goals, but 6 different or non-existent benchmarks is inefficient
- Allocation of investment ideas among 6 accounts with complex interacting guidelines is problematic
  - 1 investment idea cannot be shared across all 6 accounts
  - 6 investment ideas to achieve the same intermediate duration credit exposure is impractical
  - The inevitable unequal allocation of investment ideas leads to increased dispersion in risk and return profiles of otherwise similar accounts, especially in an environment with no benchmark
- Trading costs are elevated as much as \$1.2MM/year based on OSTFI estimates driven by two components:
  - Selecting a lower turnover benchmark

- Trading larger lots sizes. Moving from \$0.1MM to \$5MM trades drops slippage from 38bp to 4bp on average<sup>1</sup>
- Appropriate duration positioning, risk sizing and appropriate timing is ambiguous with no benchmark, risk target or return goal
- The existing benchmarks are inefficient expressions of the goals and guidelines permitted for the funds. The benchmarks:
  - Are not investable;
    - There are asset classes and types within the benchmark specifically banned within the guidelines
  - Have extremely high levels of MBS (~60%) and are thus negatively convex
    - Negative convexity means the price of the bonds will drop more than expected when interest rates increase and not increase as much as expected when interest rates drop compared to a bond with a similar amount of duration risk, but that has a normal amount of positive convexity.
    - This also means the duration of the benchmark will be highly unstable which is undesirable for a primary risk measurement
  - Have high turnover 30-50% per year
    - This directly leads to higher trading costs in order to track the composition of the benchmark
    - Unaccounted for is the amount of convexity hedging driven trading required to stabilize primary risk characteristics in the face of concentrations of MBS with high turnover and negative convexity
- No currently approved liquid vehicles for maintaining benchmark exposure in anticipation of month end capital flows can substantially increase tracking error
  - For example, on March 23<sup>rd</sup>, OPUF requested a withdrawal of \$129mm or 41% of the fund
  - Such a large withdrawal cannot be prudently raised immediately prior to month end, and results in a large buildup of cash throughout the month relative to the benchmark which creates large tracking error that is beyond the control of the portfolio management team

## **Recommended Solutions**

### OITP and OPUF Account Benchmarks

- Synchronize the OITP and OPUF benchmarks as the Bloomberg Barclays Intermediate Government/Credit Index (Bloomberg ticker: LF97TRUU)
  - Discussions with the representative of OPUF indicate they are in full support of the proposed changes
    - Guideline changes to OPUF require OPUF Board approval, currently scheduled for January 2021
- The Bloomberg Barclays Intermediate Government/Credit Index was selected because it provides an investable, diversified, positively convex, low turnover and 'risk stable' benchmark for gaining intermediate duration (1-10 years) fixed income exposure

### State Agency Accounts Portfolio Allocation

- State Agencies can better meet their investment objectives through a portfolio mix of OSTF and OITP (e.g., 60% OSTF, 40% OITP) without the need for individual bond holdings
  - Once 3-6 month cash needs are met, as determined by the State Agency, remaining funds can be prudently invested in OITP
  - This is the approach currently employed by Oregon Department of Veteran Affairs

---

<sup>1</sup> Edwards, Amy K. and Harris, Lawrence and Piwowar, Michael S., Corporate Bond Market Transparency and Transaction Costs (September 21, 2004). Fifteenth Annual Utah Winter Finance Conference, Available at SSRN: <https://ssrn.com/abstract=593823> or <http://dx.doi.org/10.2139/ssrn.593823>

- Discussions with Department of Consumer and Business Services indicate their full support for this approach for both accounts
- Discussions with Department of Administrative Services and potentially Oregon Department of Transportation (“ODOT”) are pending

#### Investment Tools for Cash Management

- Gain Legal and Compliance approval for investment vehicles in order to maintain benchmark exposure and liquidity on a short-term basis in the face of fund flows  
Note: Legal and Compliance have determined that for OITP, vehicles such as ETFs, Mutual Funds and Total Return Swaps are not allowed at this time. OPUF may use ETFs.

#### **End Result of Implementing the Recommendations**

Implementing these recommendations is expected to have the following results:

- Trading cost savings of up to \$1.2mm/year based on OSTFI estimates using academic research
- Time savings across Fixed Income Investment, Operations, Accounting and Compliance teams
- Better utilization of investment ideas allowing for higher absolute and relative risk adjusted returns
- All funds invested in a portfolio that has a stated benchmark and clear risk and return objectives
- More precise and consistent customization of risk and return directly through asset allocation between OSTF and OITP rather than complex investment policies and guidelines and the associated policy and guideline management costs
- Increased capacity to manage more assets by the creation of a scalable management platform that leverages a single investment idea more broadly

# INTRODUCTION & OVERVIEW

## Summary Policy Statement

The Oregon Intermediate Term Pool ("OITP") is a pooled investment vehicle for state agency funds and public universities. Eligibility of state agency and public university funds for discreet (i.e., separate account) investment management in pooled vehicles is subject to the discretion of Oregon State Treasury ("OST"). Public universities who invest in OITP are also subject to compliance with INV 407: Public Universities Common Policy. Internally-managed fixed income investments are subject to the policies approved by the Oregon Investment Council ("OIC") and the applicable portfolio investment guidelines ("Guidelines") established and approved by OST.

## Purpose and Goals

The purpose of this policy is to define the investment objectives, general risk parameters and compliance procedures for OITP.

## Applicability

Classified represented, management service, unclassified executive service.

## Authority

ORS Chapters 293 and 294.

# POLICY PROVISIONS

## Policy Statements

- A. **POLICY.** OITP is expected to provide a total return consistent with an investment grade quality, intermediate duration, diversified fixed income portfolio.
  1. While not guaranteed, based upon historical market performance, expected returns in the OITP are anticipated to be greater over time than the returns provided by shorter maturity alternatives such as the Oregon Short Term Fund (OSTF).
  2. OITP is not structured to provide 100% net asset value (NAV) on each participant's initial investments therein. Accordingly, OITP participants may experience gains or losses on their OITP investments due to changes in market conditions. For consistency with the OITP's total return objective, the value of each participant's individual investment will be determined proportional to the NAV of the entire OITP portfolio.
- B. **OBJECTIVE.** The objective of OITP is to maximize long-term total return (i.e., principal and income) within the stipulated risk parameters and approved securities holdings prescribed in the OITP guidelines (the "Guidelines"). Guidelines are prepared by OST staff and approved by OST's Chief Investment Officer, following consultation with OST's Risk, Legal & Compliance Division, as needed.
- C. **COMPLIANCE.** OST's Compliance program will facilitate the following: 1) monitor and evaluate portfolios, asset classes, and other investment funds to determine compliance with OST policies, Guidelines, and contractual obligations; 2) identify instances of non-compliance and develop appropriate resolution strategies; 3) provide relevant compliance information and reports to OST management and the OIC, as appropriate; and, 4) verify resolution by the appropriate individual or manager within the appropriate time frame.
- D. **CORRECTION OF NON-COMPLIANCE.** If OITP is found to be out of compliance with any of the approved Guidelines or is being managed inconsistently with this policy, OST investment staff shall bring the OITP portfolio into compliance as soon as is prudently feasible. Actions to bring the portfolio back into compliance and justification for such actions, including

documentation of proposed and actual resolution strategies, will be coordinated under the OST Compliance program with OST Compliance staff.

## Benchmark

The benchmark for OITP is the Bloomberg Barclays Intermediate U.S. Government/Credit Total Return Index. However, OITP is a total return strategy and this index may not be representative of the portfolio or strategy.

## General Risk Parameters

OITP's risk parameters shall include:

1. Credit Risk: the minimum average portfolio credit rating shall be no less than A3 or equivalent;
2. Diversification: be sufficiently diversified across fixed income assets, security types and positions;
3. Liquidity: maintain adequate liquidity, to meet any expected redemption requests received prior to the 10-day month end minimum notification period;
4. Interest-Rate Risk: the portfolio duration shall not exceed + 20% of the benchmark index; and
5. Prohibited Investments:
  - a. Non-agency residential mortgage pools or non-agency collateralized mortgage obligation; and
  - b. Collateralized debt obligations.

## Exceptions

None.

## Failure to Comply

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

# ADMINISTRATION

## Review

Annually.

## Feedback

Your comments are extremely important to improving the effectiveness of this policy. If you would like to comment on the provisions of this policy, you may do so by e-mailing the Policy Owner. To ensure your comments are received without delay, *please list the policy number and name in your e-mail's subject*. Your comments will be reviewed during the policy revisions process and may result in changes to the policy.

# INTRODUCTION & OVERVIEW

## Summary Policy Statement

The Oregon Intermediate Term Pool ("OITP") is a pooled investment vehicle for state agency funds and public universities. Eligibility of state agency and public university funds for discreet (i.e., separate account) investment management in pooled vehicles is subject to the discretion of Oregon State Treasury ("OST"). Public universities who invest in OITP are also subject to compliance with INV 407: Public Universities Common Policy. Internally-managed fixed income investments are subject to the policies approved by the Oregon Investment Council ("OIC") and the applicable [portfolio investment](#) guidelines ("[Guidelines](#)") established [and approved](#) by OST.

## Purpose and Goals

The purpose of this policy is to define the investment objectives, [general risk parameters](#) and compliance procedures for OITP.

## Applicability

Classified represented, management service, unclassified executive service.

## Authority

ORS Chapters 293 and 294.

# POLICY PROVISIONS

## Policy Statements

- A. **POLICY.** OITP is expected to provide a total return consistent with an investment grade quality, intermediate duration, diversified fixed income portfolio.
1. While not guaranteed, based upon historical market performance, expected returns in the OITP are anticipated to be greater over time than the returns provided by shorter maturity alternatives such as the [Oregon Short Term Fund \(OSTF portfolio\)](#).
  2. OITP is not structured to provide 100% net asset value (NAV) on each ~~participants'~~ [participant's](#) initial investments therein. Accordingly, OITP participants may experience gains or losses on their OITP investments due to changes in market conditions. For consistency with the OITP's total return objective, the value of each participant's individual investment will be determined proportional to the NAV of the entire OITP portfolio.
- B. **OBJECTIVE.** The objective of OITP is to maximize [long-term](#) total return (i.e., principal and income) within the stipulated risk parameters and ~~subject to the~~ approved securities holdings prescribed in the OITP [investment](#) guidelines ([the "Guidelines"](#)). [Guidelines are prepared by OST staff and approved by OST's Chief Investment Officer, following consultation with OST's Risk, Legal & Compliance Division, as needed.](#)
- C. **COMPLIANCE.** OST's Compliance program will facilitate the following: 1) monitor and evaluate portfolios, asset classes, and other investment funds to determine compliance with OST policies, ~~guidelines~~ [Guidelines](#), and contractual obligations; 2) identify instances of non-compliance and develop appropriate resolution strategies; 3) provide relevant compliance information and reports to OST management and the OIC, as appropriate; and, 4) verify resolution by the appropriate individual or manager within the appropriate time frame.
- D. **CORRECTION OF NON-COMPLIANCE.** If OITP is found to be out of compliance with any of the ~~adopted investment guidelines~~ [approved Guidelines](#) or is being managed inconsistently with ~~itsthis~~ [this](#) policy ~~and objectives,~~ [OST](#) investment staff shall bring the OITP portfolio into compliance

as soon as is prudently feasible. Actions to bring the portfolio back into compliance and justification for such actions, including documentation of proposed and actual resolution strategies, will be coordinated under the OST ~~investment~~ Compliance program with OST Compliance staff.

## **Benchmark**

The benchmark for OITP is the Bloomberg Barclays Intermediate U.S. Government/Credit Total Return Index. However, OITP is a total return strategy and this index may not be representative of the portfolio or strategy.

## **General Risk Parameters**

OITP's risk parameters shall include:

1. Credit Risk: the minimum average portfolio credit rating shall be no less than A3 or equivalent;
2. Diversification: be sufficiently diversified across fixed income assets, security types and positions;
3. Liquidity: maintain adequate liquidity, to meet any expected redemption requests received prior to the 10-day month end minimum notification period;
4. Interest-Rate Risk: the portfolio duration shall not exceed + 20% of the benchmark index; and
5. Prohibited Investments:
  - a. Non-agency residential mortgage pools or non-agency collateralized mortgage obligation;
  - and
  - b. Collateralized debt obligations.

D.

## **Exceptions**

None.

## **Failure to Comply**

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

# **~~PROCEDURES and FORMS~~**

~~A. Portfolio Guidelines for the Oregon Intermediate Term Pool~~

# **ADMINISTRATION**

## **Review**

Annually.

## **Feedback**

Your comments are extremely important to improving the effectiveness of this policy. If you would like to comment on the provisions of this policy, you may do so by e-mailing the Policy [Analyst Owner](#). To ensure your comments are received without delay, *please list the policy number and name in your e-mail's subject*. Your comments will be reviewed during the policy revisions process and may result in changes to the policy.



## TAB 4 – Discussion on Value Factor

Oregon Investment Council

# Discussion on Value Factor

Michael Viteri, Senior Investment Officer, Public Equity



OREGON  
STATE  
TREASURY



## TAB 5 – OPERF Public Equity Program

**Oregon Investment Council**  
**OPERF Public Equity Portfolio – Annual Review**  
**December 9, 2020**

**Purpose**

Provide an annual review of the Oregon Public Employees Retirement Fund (OPERF) Public Equity portfolio.

**Background**

The strategic role of OPERF public equity investments is outlined in OIC Policy INV 1201 – *Statement of OIC Investment and Management Beliefs* and OIC Policy INV 601 – *Strategic Role of Public Equity Securities within OPERF*. As outlined in those policy documents, the strategic role of public equity is to generate a return premium relative to risk-free investments, while providing diversification benefits and liquidity in support of OPERF’s cash flow requirements. Return and risk objectives for the Public Equity portfolio (outlined in OIC Policy INV 601 – *Strategic Role of Public Equity Securities within OPERF*) are as follows:

- 1) To achieve an excess portfolio return of 0.50 percent above the MSCI All Country World Investable Market Index (ACWI IMI) (net) over a market cycle of three to five years on a net-of-fee basis; and
- 2) To manage the active risk to a targeted annualized tracking error of 0.75 to 2.0 percent, relative to the MSCI ACWI IMI (net).

As of September 30, 2020, the capitalization-based MSCI All-Country World Investable Market Index was comprised 57.4 percent U.S. equities, 30.4 percent international developed-market equities and 12.2 percent emerging market equities. To achieve a similar allocation to the benchmark within the OPERF Public Equity portfolio, Staff uses a mix of 36 differentiated investment strategies, managed by 18 distinct managers (including Staff), organized across style (core/growth/value), capitalization range (large/mid/small/micro), and geography (country/region/global). The 36 investment strategies are broadly categorized as follows:

- **11 U.S. equity strategies**, comprised of 3 indexed strategies (all of which are internally-managed), and 8 active or systematic strategies (two of which are internally-managed); and
- **25 global/international equity strategies**, comprised of 12 international developed-market strategies (one of which is internally-managed), 7 dedicated emerging-market strategies (one of which is internally-managed), and 6 global strategies.

**Public Equity Management Highlights**

Staff wishes to highlight the following key points, which have been updated for the period ending September 30, 2020:

- **Policy Objective** – The OIC’s public equity policy objective of 50 basis points (bps) of excess return has not been achieved over the three-year and five-year periods (Exhibit 1) but has been achieved over longer time periods. Additionally, the OPERF Public Equity portfolio has utilized just over half of the policy’s 200 bps tracking error (active risk) allowance over the same time periods.

## Exhibit 1

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>OPERF Public Equity Portfolio</b>	<b>\$23,357,993,028</b>	<b>7.13%</b>	<b>-3.03%</b>	<b>5.24%</b>	<b>4.88%</b>	<b>9.20%</b>	<b>8.50%</b>	<b>6.72%</b>
MSCI ACWI IMI (net)		8.11%	0.48%	9.57%	6.47%	9.97%	8.47%	6.01%
<b>Excess</b>		<b>-0.98%</b>	<b>-3.51%</b>	<b>-4.33%</b>	<b>-1.59%</b>	<b>-0.77%</b>	<b>0.03%</b>	<b>0.71%</b>
<b>Tracking Error</b>		N/A	N/A	1.17	1.09	1.05	1.00	
<b>Information Ratio</b>		N/A	N/A	-3.68	-1.46	-0.74	0.03	

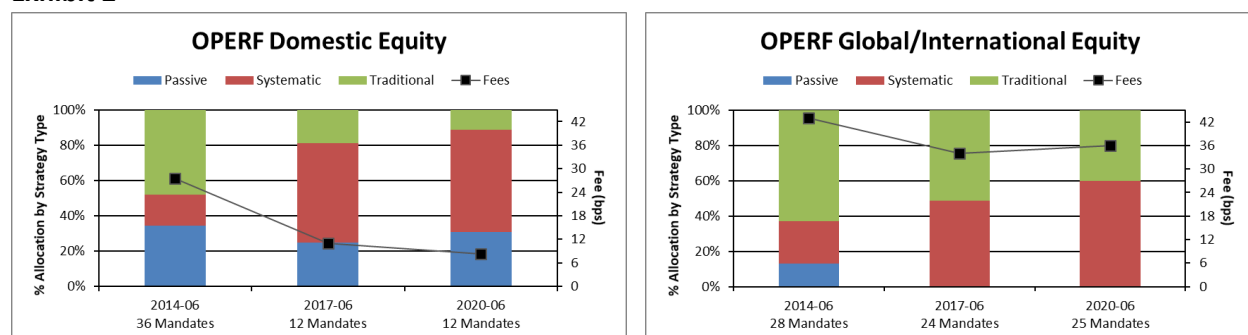
- Internally-Managed Equity Portfolios – Since inception, all internally-managed public equity portfolios (current and terminated mandates) have outperformed their corresponding capitalization-weighted benchmarks, net-of-fees (Appendix A).
- Private Equity Distribution Portfolio - Staff started managing the Private Equity stock distribution portfolio beginning November 1, 2018. Previously, fees paid to an external asset manager overseeing the portfolio included a 30 bps asset management fee and a 10% carry on any appreciation relative to the date stock was distributed from the Private Equity general partner. Since November 1, 2018, the Staff-managed portfolio has received approximately \$261 million in public stock distributions.
- Foreign Exchange (FX) facilitation Program- Staff started managing the FX facilitation program effective May 1, 2019. Previously, fees associated with the program were 3 bps of notional value of the FX trade, and all trades were executed through one external counterparty. Since May 1, 2019, Staff has executed over \$870 million in FX trades through an electronic platform that allows eight counterparties to actively compete through a real-time auction process, ensuring best execution.
- Manager Meetings – Staff continually scans the marketplace for promising investment managers. Meeting prospective managers in OST offices is the most efficient venue for Staff’s initial consideration. For the one-year period ending September 30 2020, Staff conducted 53 in-person meetings in the Tigard office, 89 conference calls with prospective investment managers, 82 quarterly conference calls, and 3 annual on-site diligence meetings with existing OPERF equity managers. Staff maintains documentation on all manager meetings, and uses a broad range of third-party databases and analytical tools to assist in the tracking and evaluation of current and prospective managers.
- Portfolio Rebalances – OIC Policy INV 601 and INV 602 give Staff authority, with CIO approval, to terminate and rebalance amongst existing public equity mandates. For the 12 months ending September 30, 2020, Staff raised \$3.9 billion for PERS pension payments, private market capital calls, and a new internally-managed Emerging Market Risk Premia mandate. (Appendix B).

## **OPERF Public Equity Restructuring**

Staff continues to opportunistically restructure the OPERF Public Equity portfolio away from traditional active mandates and reallocate proceeds in favor of low-cost, systematic or “engineered” factor strategies (both internally- and externally-managed). Staff believes this approach has a higher probability of long-term success for the OPERF Public Equity portfolio than traditional, higher-cost active management implementations.

This restructuring has reduced the number of traditional active managers employed by the OPERF domestic equity portfolio (Exhibit 2) and lowered the portfolio’s investment management costs from 32 bps to 8 bps per annum. Similar actions in the OPERF global/international portfolio have reduced the number of traditional active managers employed and lowered the portfolio’s management costs from 43 to 36 bps per annum.

**Exhibit 2**



This restructuring has also complemented the portfolio’s long-standing overweight to small cap stocks (the “Size” factor) with systematic tilts toward other factors (Value, Momentum, Profitability/Quality, and, most recently, low volatility or “Low Vol”). Supported by robust empirical evidence, these various factors generate excess return premiums that are both persistent over time and pervasive across markets and geographies.

To date, Staff has funded five externally-managed global low volatility (vol) managers (Los Angeles Capital, Acadian, AQR, Arrowstreet, and Dimensional) and an internally-managed Developed ex-U.S. multifactor strategy that tilts towards low volatility. As of September 30, 2020, total exposure to Global Low Vol within the OPERF Public Equity portfolio stands at approximately 23.5 percent (target is 25 percent), and this exposure has modestly underperformed the MSCI ACWI IMI (net) over all trailing time periods since its inception on January 1, 2017 (Exhibit 3).

**Exhibit 3**

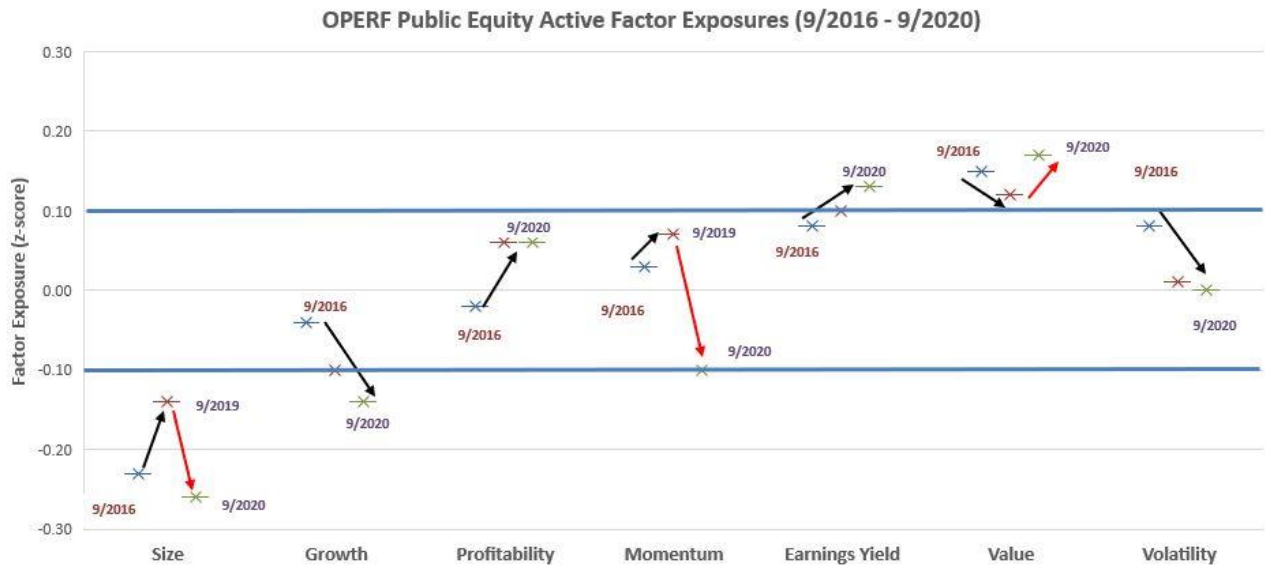
Period Ending 9/30/2020	Market Value	3 Months	YTD	1 Year	3 Years	Since Inception	3-Year Beta
OPERF Global Low Vol	\$5,475,723,581	5.35%	-2.33%	3.20%	5.99%	8.96%	0.75
MSCI ACWI IMI (net)		8.11%	0.48%	9.57%	6.47%	9.71%	1.00
Excess		-2.76%	-2.81%	-6.37%	-0.48%	-0.75%	

Source: State Street, as of September 30, 2020.

Over the long-term, Staff expects the global low volatility portfolio to provide returns commensurate with the portfolio’s MSCI ACWI IMI (net) benchmark (i.e. no excess returns) but with lower volatility. The defensive nature of the portfolio typically outperforms in declining or volatile stock markets such as those exhibited in May 2019 and March 2020.

Staff has intentionally built factor exposures within the OPERF Public Equity portfolio that exhibit better diversification over time (Exhibit 4). From 2016 – 2019 the portfolio’s exposure to the Size and Value was reduced allowing for expanded tilts towards Profitability/Quality, Momentum, and Low Volatility. However, as a result of increased concentration to large cap stocks in global indexes, especially this last year, Size, Momentum, and Value reverted on a relative basis (reversion indicated by red arrows).

**Exhibit 4**



## Appendix A

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 500 Portfolio</b>	<b>\$2,278,660,560</b>	<b>8.92%</b>	<b>5.52%</b>	<b>15.18%</b>	<b>12.34%</b>	<b>14.20%</b>	<b>13.79%</b>	<b>13.47%</b>
S&P 500 Index		8.93%	5.57%	15.15%	12.28%	14.15%	13.74%	13.41%
Excess		-0.01%	-0.05%	0.03%	0.06%	0.05%	0.05%	0.06%
<b>Inception Date: Oct 1, 2009    Tracking Error: 10 bps    Target Excess Return: 5 bps</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 400 Portfolio</b>	<b>\$560,360,181</b>	<b>4.63%</b>	<b>-8.78%</b>	<b>-2.19%</b>	<b>3.05%</b>	<b>8.35%</b>	<b>10.72%</b>	<b>11.41%</b>
S&P 400 Index		4.77%	-8.62%	-2.16%	2.90%	8.11%	10.49%	11.14%
Excess		-0.14%	-0.16%	-0.03%	0.15%	0.24%	0.23%	0.27%
<b>Inception Date: Oct 1, 2009    Tracking Error: 30 bps    Target Excess Return: 10 bps</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 600 Portfolio</b>	<b>\$274,340,538</b>	<b>3.24%</b>	<b>-14.82%</b>	<b>-7.78%</b>	<b>-1.30%</b>	<b>6.42%</b>	<b>9.48%</b>	<b>9.08%</b>
S&P 600 Index		3.17%	-15.25%	-8.29%	-1.46%	5.93%	8.80%	8.38%
Excess		0.07%	0.43%	0.51%	0.16%	0.49%	0.68%	0.70%
<b>Inception Date: April 1, 2010    Tracking Error: 50 bps    Target Excess Return: 30 bps</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>MSCI US Risk Premia Portfolio</b>	<b>\$3,566,695,116</b>	<b>7.86%</b>	<b>2.39%</b>	<b>11.88%</b>	<b>11.25%</b>	<b>13.91%</b>	<b>N/A</b>	<b>11.74%</b>
MSCI Risk Premia Index		7.85%	2.40%	11.92%	11.20%	13.95%	N/A	11.76%
MSCI USA		9.64%	7.27%	17.06%	12.84%	14.40%	N/A	11.01%
Excess		-1.78%	-4.88%	-5.18%	-1.59%	-0.49%	N/A	0.73%
<b>Inception Date: Jan 1, 2014    Tracking Error: 300 bps    Target Excess Return: 150 bps</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>MSCI Int'l Risk Premia Portfolio</b>	<b>\$1,230,276,018</b>	<b>5.75%</b>	<b>-2.85%</b>	<b>3.47%</b>	<b>2.70%</b>	<b>N/A</b>	<b>N/A</b>	<b>3.62%</b>
MSCI Int'l Risk Premia Index		5.69%	-3.21%	3.02%	2.36%	N/A	N/A	3.33%
MSCI World X-US Index		4.92%	-7.13%	0.16%	0.62%	N/A	N/A	2.24%
Excess		0.83%	4.28%	3.31%	2.08%	N/A	N/A	1.38%
<b>Inception Date: Jun 1, 2017    Tracking Error: 300 bps    Target Excess Return: 150 bps</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>TEMS</b>	<b>\$180,449,700</b>	<b>-16.49%</b>	<b>-16.55%</b>	<b>-22.43%</b>	<b>-6.42%</b>	<b>-4.08%</b>	<b>N/A</b>	<b>9.01%</b>
MSCI EM Index		-17.90%	-15.48%	-19.28%	-5.27%	-3.58%	N/A	8.87%
Excess		1.41%	-1.07%	-3.15%	-1.15%	-0.51%	N/A	0.14%
<b>Inception Date: Feb 1, 2009    Tracking Error: 400 bps    Target Excess Return: 200 bps    TERMINATED SEPTEMBER 30, 2015</b>								

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>RUSSELL RAFI LC</b>	<b>\$1,371,571,346</b>	<b>4.04%</b>	<b>10.27%</b>	<b>13.81%</b>	<b>11.23%</b>	<b>N/A</b>	<b>N/A</b>	<b>14.65%</b>
RAFI LC Index		3.97%	10.06%	13.54%	11.21%	N/A	N/A	14.62%
RUSSELL 1000 Index		4.18%	7.83%	11.69%	12.02%	N/A	N/A	14.46%
Excess		-0.14%	2.43%	2.11%	-0.79%	N/A	N/A	0.19%
<b>Inception Date: Nov 1, 2011    Tracking Error: 300 bps    Target Excess Return: 150 bps    TERMINATED AUGUST 31, 2016</b>								

Source: State Street, as of September 30, 2020, unless otherwise noted.



## Appendix B

Date	Manager	Sub-Asset Class	Market Value	Purpose
Oct-19	Acadian	Int'l Developed & Emerging Value	\$ (40,000,000)	Cash Raise/Rebalance
Oct-19	AJO	U.S. Large Value	\$ (43,000,000)	Cash Raise/Rebalance
Oct-19	Alliance Bernstein	Global Value	\$ (35,000,000)	Cash Raise/Rebalance
Oct-19	AQR	Int'l Developed	\$ (40,000,000)	Cash Raise/Rebalance
Oct-19	Arrowstreet	Emerging	\$ (25,000,000)	Cash Raise/Rebalance
Oct-19	Brandes	Int'l Developed & Emerging Value	\$ (40,000,000)	Cash Raise/Rebalance
Oct-19	DFA	U.S. Large	\$ (190,000,000)	Cash Raise/Rebalance
Oct-19	DFA	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Oct-19	Genesis	Emerging	\$ (25,000,000)	Cash Raise/Rebalance
Oct-19	Lazard International	Int'l Developed & Emerging	\$ (45,000,000)	Cash Raise/Rebalance
Oct-19	Lazard CEF	Int'l Developed & Emerging	\$ (60,000,000)	Cash Raise/Rebalance
Oct-19	Walter Scott	Int'l Developed	\$ (45,000,000)	Cash Raise/Rebalance
Oct-19	Westwood	Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Oct-19	William Blair	Emerging	\$ (15,000,000)	Cash Raise/Rebalance
Oct-19	William Blair	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Oct-19	LACM	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Oct-19	Acadian	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Oct-19	AQR	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Oct-19	Arrowstreet	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Oct-19	DFA	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Nov-19	Arrowstreet	Int'l Developed & Emerging	\$ (80,000,000)	Cash Raise/Rebalance
Jan-20	Acadian	Int'l Developed & Emerging Value	\$ (40,000,000)	Cash Raise/Rebalance
Jan-20	AJO	U.S. Large Value	\$ (40,000,000)	Cash Raise/Rebalance
Jan-20	Alliance Bernstein	Global Value	\$ (35,000,000)	Cash Raise/Rebalance
Jan-20	AQR	Int'l Developed	\$ (40,000,000)	Cash Raise/Rebalance
Jan-20	Arrowstreet	Emerging	\$ (25,000,000)	Cash Raise/Rebalance
Jan-20	Brandes	Int'l Developed & Emerging Value	\$ (40,000,000)	Cash Raise/Rebalance
Jan-20	DFA	U.S. Large	\$ (190,000,000)	Cash Raise/Rebalance
Jan-20	DFA	Int'l Developed Small Value	\$ (15,000,000)	Cash Raise/Rebalance
Jan-20	DFA	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Jan-20	Genesis	Emerging	\$ (25,000,000)	Cash Raise/Rebalance
Jan-20	Harris Associates	Int'l Developed Small Value	\$ (15,000,000)	Cash Raise/Rebalance
Jan-20	Lazard International	Int'l Developed & Emerging	\$ (40,000,000)	Cash Raise/Rebalance
Jan-20	Lazard CEF	Int'l Developed & Emerging	\$ (50,000,000)	Cash Raise/Rebalance
Jan-20	OST	U.S. Mid	\$ (15,000,000)	Cash Raise/Rebalance
Jan-20	OST	U.S. Large	\$ (50,000,000)	Cash Raise/Rebalance
Jan-20	Walter Scott	Int'l Developed	\$ (45,000,000)	Cash Raise/Rebalance
Jan-20	Westwood	Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Jan-20	William Blair	Emerging	\$ (15,000,000)	Cash Raise/Rebalance
Jan-20	William Blair	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Jan-20	LACM	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Jan-20	Acadian	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Jan-20	AQR	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Jan-20	Arrowstreet	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Jan-20	DFA	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Feb-20	Arrowstreet	Int'l Developed & Emerging	\$ (80,000,000)	Cash Raise/Rebalance
May-20	Acadian	Int'l Developed & Emerging Value	\$ (15,000,000)	Cash Raise/Rebalance
May-20	AJO	U.S. Large Value	\$ (15,000,000)	Cash Raise/Rebalance
May-20	Alliance Bernstein	Global Value	\$ (15,000,000)	Cash Raise/Rebalance
May-20	AQR	Int'l Developed	\$ (15,000,000)	Cash Raise/Rebalance
May-20	Arrowstreet	Emerging	\$ (5,000,000)	Cash Raise/Rebalance
May-20	Brandes	Int'l Developed & Emerging Value	\$ (15,000,000)	Cash Raise/Rebalance

### Appendix B (Continued)

Date	Manager	Sub-Asset Class	Market Value	Purpose
May-20	DFA	U.S. Large	\$ (70,000,000)	Cash Raise/Rebalance
May-20	DFA	Int'l Developed Small Value	\$ (5,000,000)	Cash Raise/Rebalance
May-20	DFA	Emerging Small	\$ (5,000,000)	Cash Raise/Rebalance
May-20	Genesis	Emerging	\$ (10,000,000)	Cash Raise/Rebalance
May-20	Harris Associates	Int'l Developed Small Value	\$ (5,000,000)	Cash Raise/Rebalance
May-20	Lazard International	Int'l Developed & Emerging	\$ (20,000,000)	Cash Raise/Rebalance
May-20	Lazard CEF	Int'l Developed & Emerging	\$ (10,000,000)	Cash Raise/Rebalance
May-20	OST	U.S. Large	\$ (50,000,000)	Cash Raise/Rebalance
May-20	OST	U.S. Large	\$ (40,000,000)	Cash Raise/Rebalance
May-20	Walter Scott	Int'l Developed	\$ (20,000,000)	Cash Raise/Rebalance
May-20	Westwood	Emerging	\$ (5,000,000)	Cash Raise/Rebalance
May-20	William Blair	Emerging	\$ (5,000,000)	Cash Raise/Rebalance
May-20	William Blair	Emerging Small	\$ (5,000,000)	Cash Raise/Rebalance
May-20	LACM	Global Low Vol	\$ (25,000,000)	Cash Raise/Rebalance
May-20	Acadian	Global Low Vol	\$ (25,000,000)	Cash Raise/Rebalance
May-20	AQR	Global Low Vol	\$ (25,000,000)	Cash Raise/Rebalance
May-20	Arrowstreet	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
May-20	DFA	Global Low Vol	\$ (20,000,000)	Cash Raise/Rebalance
Jun-20	OST	U.S. Mid	\$ (11,000,000)	Cash Raise/Rebalance
Jun-20	Lazard CEF	Int'l Developed & Emerging	\$ (10,000,000)	Cash Raise/Rebalance
Jun-20	OST	Emerging	\$ 50,000,000	Rebalance - Initial Funding
Jul-20	Acadian	Int'l Developed & Emerging Value	\$ (15,000,000)	Cash Raise/Rebalance
Jul-20	AJO	U.S. Large Value	\$ (20,000,000)	Cash Raise/Rebalance
Jul-20	Alliance Bernstein	Global Value	\$ (15,000,000)	Cash Raise/Rebalance
Jul-20	AQR	Int'l Developed	\$ (15,000,000)	Cash Raise/Rebalance
Jul-20	Arrowstreet	Emerging	\$ (10,000,000)	Cash Raise/Rebalance
Jul-20	Brandes	Int'l Developed & Emerging Value	\$ (15,000,000)	Cash Raise/Rebalance
Jul-20	DFA	U.S. Large	\$ (80,000,000)	Cash Raise/Rebalance
Jul-20	DFA	Int'l Developed Small Value	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	DFA	Emerging Small	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	Genesis	Emerging	\$ (10,000,000)	Cash Raise/Rebalance
Jul-20	Harris Associates	Int'l Developed Small Value	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	Lazard International	Int'l Developed & Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Jul-20	Lazard CEF	Int'l Developed & Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Jul-20	OST	U.S. Mid	\$ (14,000,000)	Cash Raise/Rebalance
Jul-20	OST	U.S. Large	\$ (39,000,000)	Cash Raise/Rebalance
Jul-20	OST	U.S. Large	\$ (60,000,000)	Cash Raise/Rebalance
Jul-20	Walter Scott	Int'l Developed	\$ (20,000,000)	Cash Raise/Rebalance
Jul-20	Westwood	Emerging	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	William Blair	Emerging	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	William Blair	Emerging Small	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	DFA	U.S. Micro Value	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	Mellon	U.S. Small Value	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	EAM	U.S. Micro Growth	\$ (5,000,000)	Cash Raise/Rebalance
Jul-20	Callan	U.S. Micro Value	\$ (5,000,000)	Cash Raise/Rebalance
Aug-20	AQR	U.S. Small Value	\$ (5,000,000)	Cash Raise/Rebalance
Aug-20	Arrowstreet	Int'l Developed & Emerging	\$ (25,000,000)	Cash Raise/Rebalance
Aug-20	OST	U.S. Mid	\$ (6,000,000)	Cash Raise/Rebalance
Aug-20	OST	U.S. Large	\$ (31,000,000)	Cash Raise/Rebalance
Aug-20	OST	Int'l Developed	\$ (15,000,000)	Cash Raise/Rebalance
Sep-20	Acadian	Int'l Developed & Emerging Value	\$ (30,000,000)	Cash Raise/Rebalance
Sep-20	AJO	U.S. Large Value	\$ (40,000,000)	Cash Raise/Rebalance

### **Appendix B (Continued)**

<b>Date</b>	<b>Manager</b>	<b>Sub-Asset Class</b>	<b>Market Value</b>	<b>Purpose</b>
Sep-20	Alliance Bernstein	Global Value	\$ (30,000,000)	Cash Raise/Rebalance
Sep-20	AQR	Int'l Developed	\$ (30,000,000)	Cash Raise/Rebalance
Sep-20	Arrowstreet	Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Sep-20	Brandes	Int'l Developed & Emerging Value	\$ (30,000,000)	Cash Raise/Rebalance
Sep-20	DFA	U.S. Large	\$ (160,000,000)	Cash Raise/Rebalance
Sep-20	DFA	Int'l Developed Small Value	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	DFA	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	Genesis	Emerging	\$ (20,000,000)	Cash Raise/Rebalance
Sep-20	Harris Associates	Int'l Developed Small Value	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	Lazard International	Int'l Developed & Emerging	\$ (40,000,000)	Cash Raise/Rebalance
Sep-20	Lazard CEF	Int'l Developed & Emerging	\$ (40,000,000)	Cash Raise/Rebalance
Sep-20	OST	U.S. Mid	\$ (40,000,000)	Cash Raise/Rebalance
Sep-20	OST	U.S. Large	\$ (153,000,000)	Cash Raise/Rebalance
Sep-20	OST	U.S. Large	\$ (140,000,000)	Cash Raise/Rebalance
Sep-20	Walter Scott	Int'l Developed	\$ (40,000,000)	Cash Raise/Rebalance
Sep-20	Westwood	Emerging	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	William Blair	Emerging	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	William Blair	Emerging Small	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	OST	Int'l Developed	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	DFA	U.S. Micro Value	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	Mellon	U.S. Small Value	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	EAM	U.S. Micro Growth	\$ (10,000,000)	Cash Raise/Rebalance
Sep-20	Callan	U.S. Micro Value	\$ (10,000,000)	Cash Raise/Rebalance
Oct-20	OST	U.S. Large	\$ (17,000,000)	Cash Raise/Rebalance
Oct-20	AQR	U.S. Small Value	\$ (10,000,000)	Cash Raise/Rebalance
Oct-20	Arrowstreet	Int'l Developed & Emerging	\$ (50,000,000)	Cash Raise/Rebalance

December 9, 2020

# OPERF Public Equity Portfolio 2020 Annual Review

Michael Viteri

*Senior Investment Officer, Public Equity*



OREGON  
STATE  
TREASURY



# Agenda

		OIC Investment and Management Beliefs Mapping																		
Section	Pages	1A	1B	1C	1D	2A	2B	3A	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B	9A	9B
Agenda	2																			
Public Equity Performance	3 - 4					■		■			■	■	■							
Public Equity Positioning	5						■	■			■	■	■	■						
Public Equity Benchmark	6						■	■			■	■	■	■						
Public Equity Programs	7						■	■			■	■	■	■						
Public Equity Fees	8						■	■			■	■	■	■						
Public Equity Factor Premiums	9 - 12						■	■			■	■	■	■					■	

**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.
- 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**

- A. Asset allocation is the OIC's primary policy tool for managing the investment program's long-term risk/return profile.
- 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**

- 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**

- A. All fees, expenses, commissions, and transaction costs should be diligently monitored and managed in order to maximize net investment returns.
- 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**

- 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.
- 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**

- 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.

# Public Equity Performance

The strategic role of OPERF public equity investments is outlined in OIC INV 1201 – Statement of OIC Investment and Management Beliefs and OIC Policy INV 601 – Strategic Role of Public Equity Securities within OPERF. As outlined in those policy documents, the strategic role of public equity is to generate a return premium relative to risk-free investments, while providing diversification benefits and liquidity in support of OPERF’s cash flow requirements. Return and risk objectives for the Public Equity Portfolio (outlined in OIC Policy INV 601 – Strategic Role of Public Equity Securities within OPERF) are as follows:

- 1) To achieve an excess portfolio return of 0.50 percent or more above the MSCI All Country World Investable Market Index (net) over a market cycle of three to five years on a net-of-fee basis; and
- 2) To manage active risk to a target annualized tracking error of 0.75 to 2.0 percent, relative to the MSCI ACWI IMI (net).

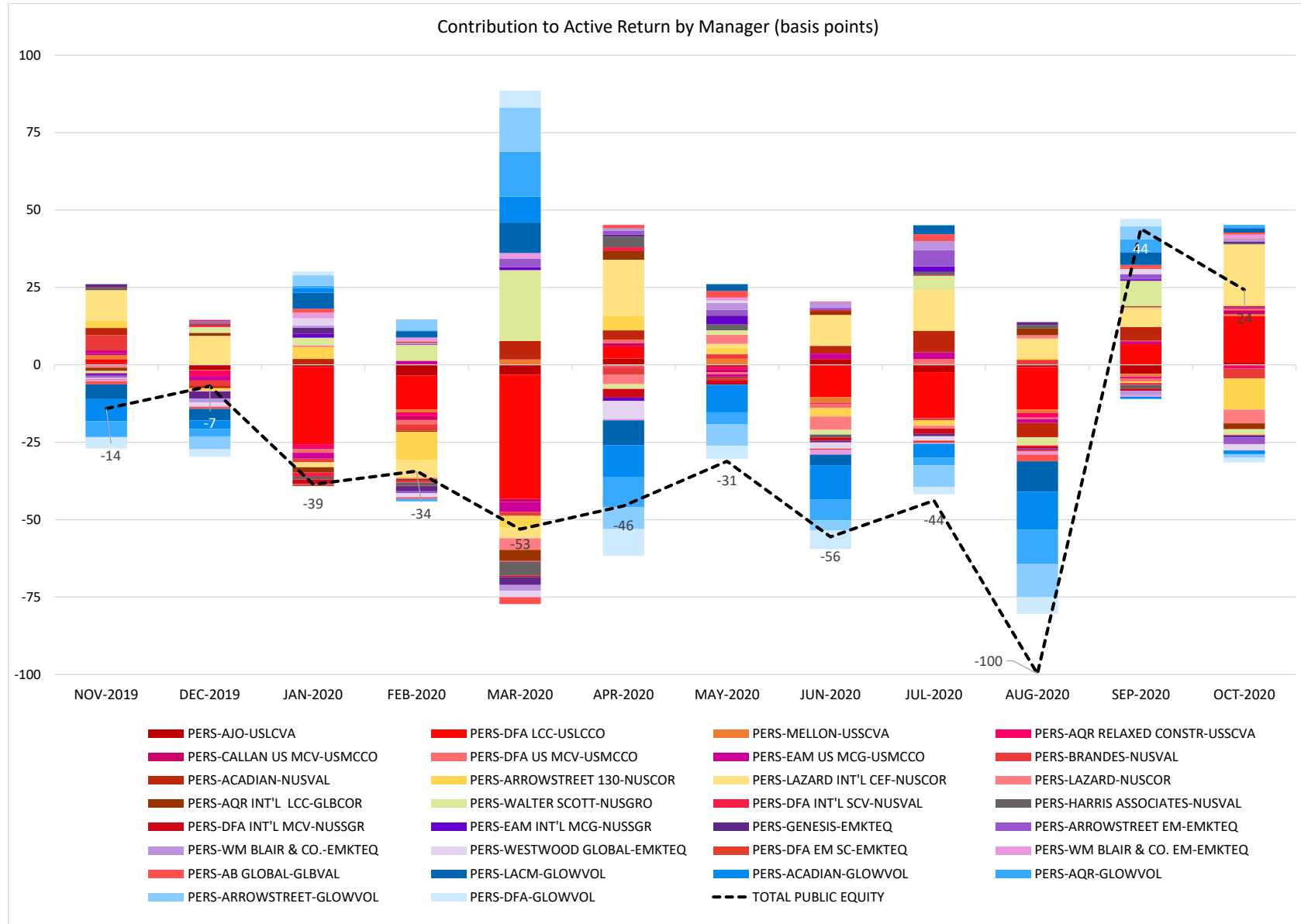
**Public Equity Policy Objective** – The OIC’s public equity policy objective of 50 basis points [bps] of excess return has not been achieved over the three year and five-year period ending September 30, 2020. The OIC’s public equity active risk objective was achieved over all trailing time periods.

Period Ending 9/30/20	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years
<b>OPERF Public Equity Portfolio</b>	<b>\$23,357,993,028</b>	<b>7.13%</b>	<b>-3.03%</b>	<b>5.24%</b>	<b>4.88%</b>	<b>9.20%</b>	<b>8.50%</b>
MSCI ACWI IMI (net)		8.11%	0.48%	9.57%	6.47%	9.97%	8.47%
<b>Excess</b>		<b>-0.98%</b>	<b>-3.51%</b>	<b>-4.33%</b>	<b>-1.59%</b>	<b>-0.77%</b>	<b>0.03%</b>
<b>Tracking Error</b>		N/A	N/A	1.17	1.09	1.05	1.00
<b>Information Ratio</b>		N/A	N/A	-3.68	-1.46	-0.74	0.03



# Public Equity Performance by Manager

- This chart illustrates the total OPERF Public Equity portfolio's active return deconstructed to show each manager's contribution to that return. In essence, it shows the weighted average of each fund's excess return versus its respective benchmark.
- OPERF Public Equity active management which include tilts to Value and Size Premia did not pay off for the 1 year trailing time period.
- In March, public equity experienced a "risk-off" event which penalized Value strategies (shaded in various hues of red) and favored Low Volatility Investing (shaded in various hues of blue).



Source: Public Equity as of September 30, 2020.

# Public Equity Positioning

## Strategic Allocation Targets

Allocation	Market Value (\$mm)	Market Value (%)	OIC Target	OIC Ranges
U.S. Equity	\$ 13,154.00	56.2%	57.4%	+/- 10%
Int'l Developed Equity	\$ 6,808.00	29.1%	30.5%	+/- 10%
Emerging Markets	\$ 3,209.00	13.7%	12.2%	+/- 4%
Other (FX, Cash, etc.)	\$ 224.00	1.0%	0%	N/A

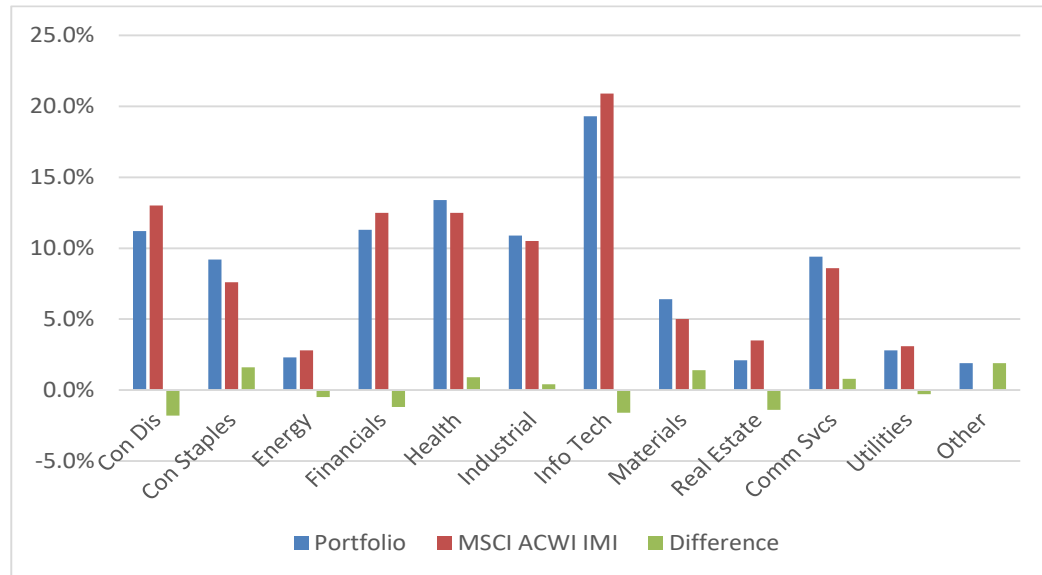
## Top 10 Manager Strategies

Manager	Market value (\$)	Market Value (%)	Benchmark
PERS-OST RISK PREMIA-USLCCO	\$ 3,566,695,116.28	15.3%	MSCI USA
PERS-DFA LCC-USLCCO	\$ 2,576,276,015.90	11.0%	Russell 1000 Value Index
PERS-OST S&P 500 INDEX-USLCCO	\$ 2,278,660,560.32	9.8%	S&P 500 Index
PERS-OST INTRISKPREMIA-NUSCOR	\$ 1,230,276,017.63	5.3%	MSCI ACWI Standard
PERS-ARROWSTREET 130-NUSCOR	\$ 1,127,575,000.69	4.8%	MSCI ACWI IMI
PERS-LAZARD INTL CEF-NUSCOR	\$ 1,022,263,722.80	4.4%	MSCI ACWI IMI
PERS-LACM-GLOWVOL	\$ 981,542,668.58	4.2%	MSCI ACWI / MSCI Min Vol
PERS-ARROWSTREET-GLOWVOL	\$ 914,357,083.14	3.9%	MSCI ACWI IMI/ MSCI IMI Min Vol
PERS-AQR-GLOWVOL	\$ 831,317,903.91	3.6%	MSCI ACWI / MSCI Min Vol
PERS-ACADIAN-GLOWVOL	\$ 778,211,825.08	3.3%	MSCI ACWI IMI/ MSCI IMI Min Vol

## Market Capitalization Weights

Market Capitalization	Market Value (\$ mm)	Market Value (%)	ACWI IMI Net (%)	Diff %
Mega Cap > \$200B	\$ 7,528	32.2%	38.7%	-6.5%
Large Cap \$10B-\$200B	\$ 10,744	45.9%	49.0%	-3.1%
Mid Cap \$6B-\$10B	\$ 1,376	5.9%	4.1%	1.8%
Small/Mid \$2B-\$6B	\$ 1,794	7.7%	5.3%	2.4%
Small Cap \$300M-\$2B	\$ 1,250	5.3%	2.4%	2.9%
Micro Cap <\$300M	\$ 330	1.4%	0.4%	1.0%
Other	\$ 373	1.6%	0.0%	1.6%
Total	\$ 23,395.00	100%	100%	0%

## Sector Weights





# Public Equity Benchmark

## MSCI All Country World Investable Market Index (MSCI ACWI IMI)

### Market Coverage

Holdings: 8,748

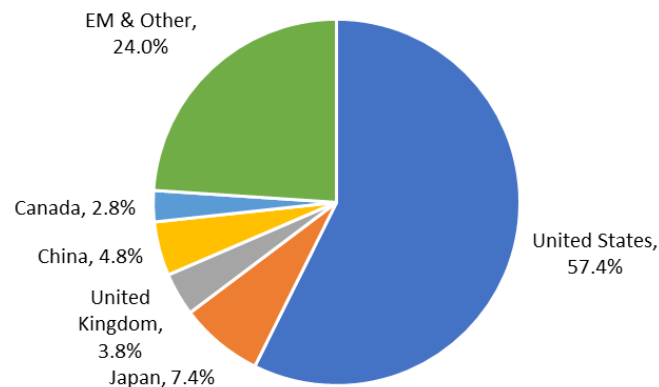
Countries: 49

- U.S Equities: 57.4%
- International Developed Equities: 30.4% across 22 countries
- Emerging Markets Equities: 12.2% across 26 countries

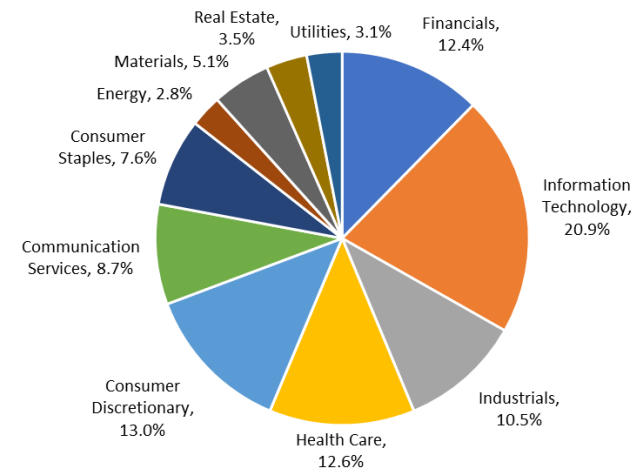
### Top 10 Constituents

Issuer	Country	Mkt Cap (USD BB)	Index Wt. (%)	Sector
APPLE	US	2007.84	3.47	Info Tech
MICROSOFT CORP	US	1515.27	2.62	Info Tech
AMAZON.COM	US	1334.93	2.31	Cons Disc
FACEBOOK A	US	629.75	1.09	Comm Srvs
ALIBABA GROUP HLDG ADR	CN	552.28	0.95	Cons Disc
ALPHABET C	US	444.62	0.77	Comm Srvs
ALPHABET A	US	439.75	0.76	Comm Srvs
JOHNSON & JOHNSON	US	392.24	0.68	Health Care
TENCENT HOLDINGS LI (CN)	CN	378.31	0.65	Comm Srvs
TAIWAN SEMICONDUCTOR MFG	TW	368.29	0.64	Info Tech

### Country Weights



### Sector Weights



# Public Equity Programs

- ❖ **Internal Management** – All internally-managed strategies have outperformed since inception.
- ❖ **Manager Meetings** – For the 12-month period ending September 30, 2020, Staff held 142 “open door” meetings/calls with prospective managers, conducted 82 existing manager quarterly conference calls, and made 3 on-site diligence visits.
- ❖ **Portfolio Cash Raise** – For the 12-month period ending September 30, 2020, staff raised \$3.9 billion for the following: PERS benefit payments; Private Market capital calls; Risk Parity funding; and a new \$50M internally-managed EM Risk Premia ESG mandate.
- ❖ **Private Equity Stock Distribution** – Since its November 1, 2020 inception, this program has received \$261mm in distributions and sold approximately \$213mm in GP-distributed stock. Year to date Return = 38.2%. (**Portfolio Manager: Wil Hiles**)
- ❖ **Foreign Exchange (FX) Facilitation** – Since its May 1, 2019 inception, this program has executed \$870mm in FX trades through an electronic platform that allows for multiple counterparties to compete through a real-time auction process. (**Portfolio Managers: Robin Kaukonen & Wil Hiles**)

## Internally-Managed Portfolios

Primary PM Backup PM

	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 500 Portfolio</b>	<b>\$2,278,660,560</b>	<b>8.92%</b>	<b>5.52%</b>	<b>15.18%</b>	<b>12.34%</b>	<b>14.20%</b>	<b>13.79%</b>	<b>13.47%</b>
S&P 500 Index		8.93%	5.57%	15.15%	12.28%	14.15%	13.74%	13.41%
<b>Excess</b>		<b>-0.01%</b>	<b>-0.05%</b>	<b>0.03%</b>	<b>0.06%</b>	<b>0.05%</b>	<b>0.05%</b>	<b>0.06%</b>
<b>Inception Date: Oct 1, 2009</b>		<b>Tracking Error: 10 bps</b>		<b>Target Excess Return: 5 bps</b>				



	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 400 Portfolio</b>	<b>\$560,360,181</b>	<b>4.63%</b>	<b>-8.78%</b>	<b>-2.19%</b>	<b>3.05%</b>	<b>8.35%</b>	<b>10.72%</b>	<b>11.41%</b>
S&P 400 Index		4.77%	-8.62%	-2.16%	2.90%	8.11%	10.49%	11.14%
<b>Excess</b>		<b>-0.14%</b>	<b>-0.16%</b>	<b>-0.03%</b>	<b>0.15%</b>	<b>0.24%</b>	<b>0.23%</b>	<b>0.27%</b>
<b>Inception Date: Oct 1, 2009</b>		<b>Tracking Error: 30 bps</b>		<b>Target Excess Return: 10 bps</b>				



	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>S&amp;P 600 Portfolio</b>	<b>\$274,340,538</b>	<b>3.24%</b>	<b>-14.82%</b>	<b>-7.78%</b>	<b>-1.30%</b>	<b>6.42%</b>	<b>9.48%</b>	<b>9.08%</b>
S&P 600 Index		3.17%	-15.25%	-8.29%	-1.46%	5.93%	8.80%	8.38%
<b>Excess</b>		<b>0.07%</b>	<b>0.43%</b>	<b>0.51%</b>	<b>0.16%</b>	<b>0.49%</b>	<b>0.68%</b>	<b>0.70%</b>
<b>Inception Date: April 1, 2010</b>		<b>Tracking Error: 50 bps</b>		<b>Target Excess Return: 30 bps</b>				



	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>MSCI US Risk Premia Portfolio</b>	<b>\$3,566,695,116</b>	<b>7.86%</b>	<b>2.39%</b>	<b>11.88%</b>	<b>11.25%</b>	<b>13.91%</b>	<b>N/A</b>	<b>11.74%</b>
MSCI Risk Premia Index		7.85%	2.40%	11.92%	11.20%	13.95%	N/A	11.76%
MSCI USA		9.64%	7.27%	17.06%	12.84%	14.40%	N/A	11.01%
<b>Excess</b>		<b>-1.78%</b>	<b>-4.88%</b>	<b>-5.18%</b>	<b>-1.59%</b>	<b>-0.49%</b>	<b>N/A</b>	<b>0.73%</b>
<b>Inception Date: Jan 1, 2014</b>		<b>Tracking Error: 300 bps</b>		<b>Target Excess Return: 150 bps</b>				



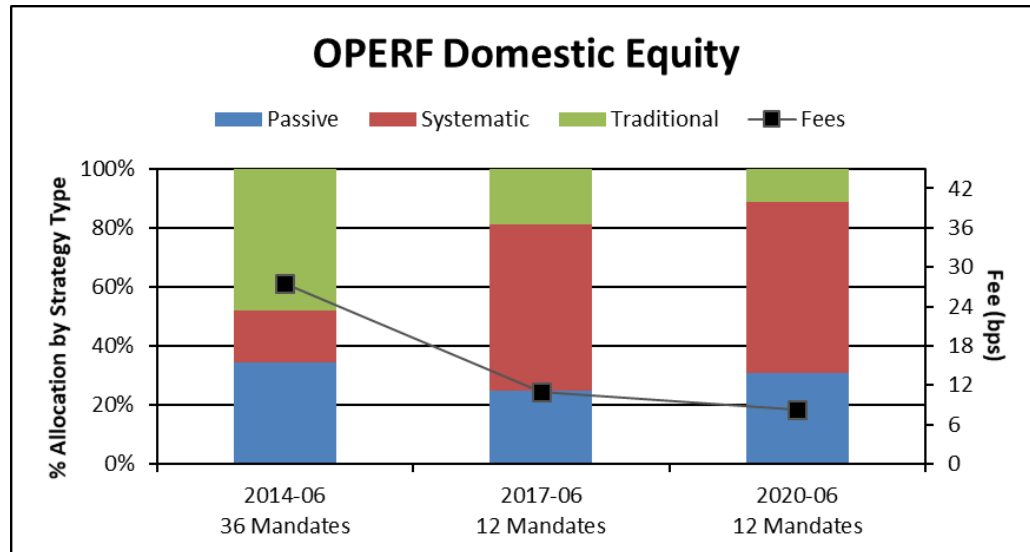
	Market Value	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception
<b>MSCI Int'l Risk Premia Portfolio</b>	<b>\$1,230,276,018</b>	<b>5.75%</b>	<b>-2.85%</b>	<b>3.47%</b>	<b>2.70%</b>	<b>N/A</b>	<b>N/A</b>	<b>3.62%</b>
MSCI Int'l Risk Premia Index		5.69%	-3.21%	3.02%	2.36%	N/A	N/A	3.33%
MSCI World X-US Index		4.92%	-7.13%	0.16%	0.62%	N/A	N/A	2.24%
<b>Excess</b>		<b>0.83%</b>	<b>4.28%</b>	<b>3.31%</b>	<b>2.08%</b>	<b>N/A</b>	<b>N/A</b>	<b>1.38%</b>
<b>Inception Date: Jun 1, 2017</b>		<b>Tracking Error: 300 bps</b>		<b>Target Excess Return: 150 bps</b>				



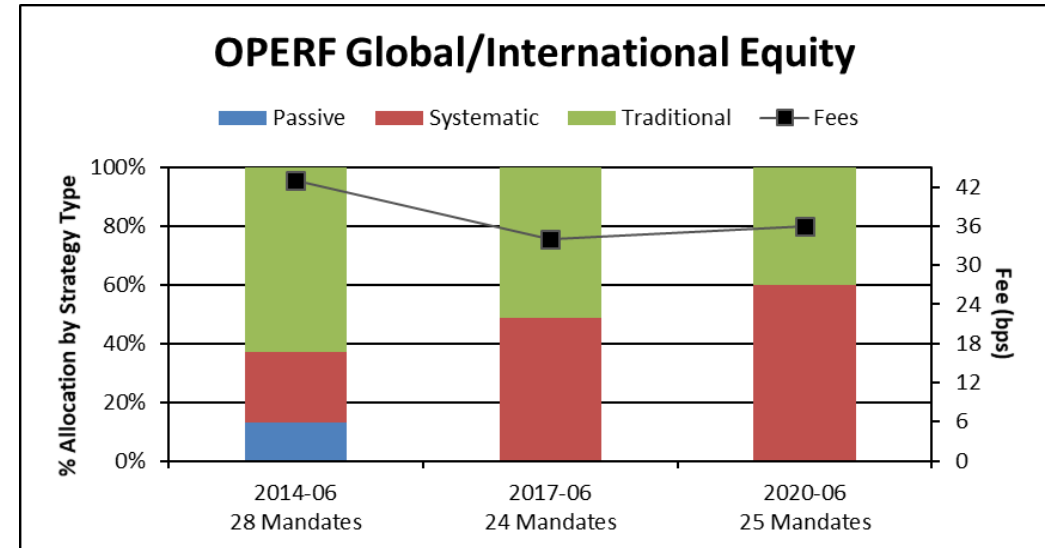
# Public Equity Portfolio

## Fees

- Pursuant to a 2014 OIC approval, staff continues to opportunistically move away from traditional active mandates and reallocate proceeds in favor of low-cost systematic or “engineered” strategies (either internally- or externally-managed).
- Diversify exposures in the U.S. Equity portfolio away from Size (small cap) to other well known return premia which are supported by abundant and robust empirical evidence as persistent and pervasive sources of excess relative return (e.g., Value, Momentum, Low Vol, etc.).
- Reduce exposure to passive management within International Equity and increase exposure to internal low cost systematic strategies.



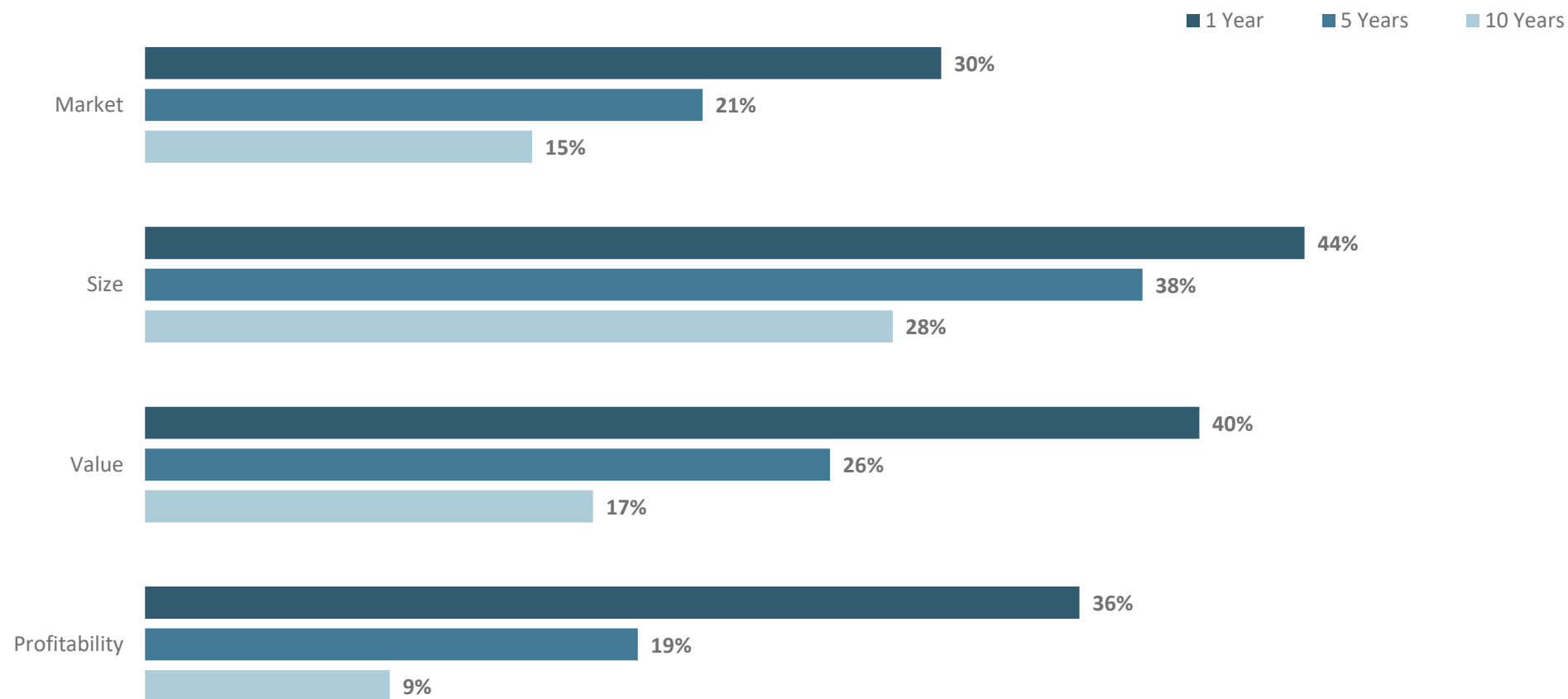
Portfolio Management costs in the Domestic Equity portfolio decreased by more than 60 percent (from 32 bps to 8 bps/annum), number of individual mandates decreased from 36 to 12.



Portfolio Management costs in the International/Global Equity portfolio reduced from 43bps to 36 bps. The number of individual mandates reduced from 32 to 25.

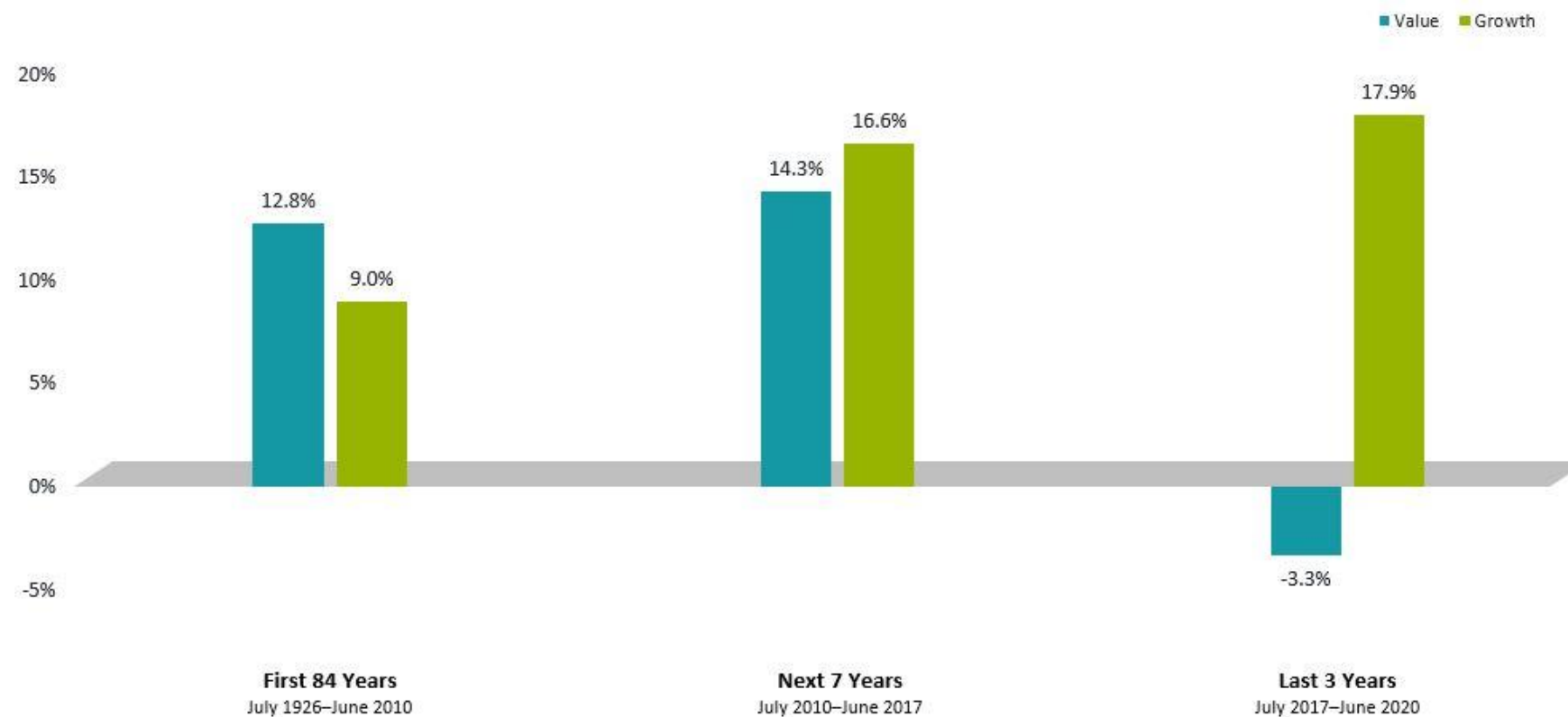
# Public Equity Factor Premiums

Percentage of 1-, 5-, and 10-Year Periods with Negative Premiums  
US equity market (June 1927 - December 2019)



# Public Equity Factor Premiums

An Unprecedented Three-Year Period for Value  
Annualized Compound Returns, July 1926–June 2020



# Public Equity Factor Premiums

## An Unprecedented Spread in Returns

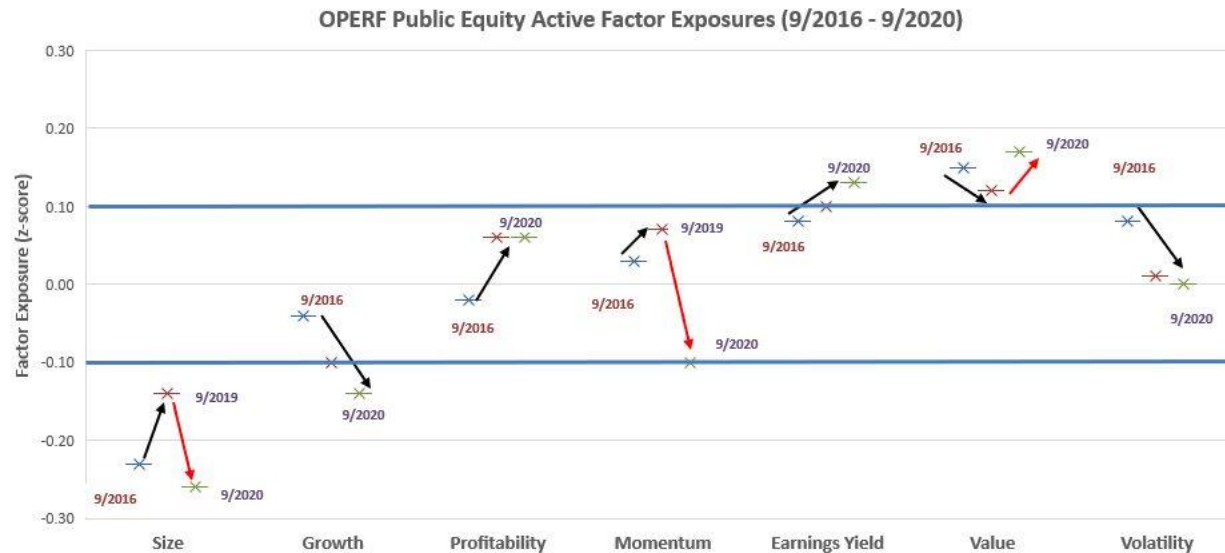
Annualized Compound Return Difference for Small Cap Value Minus Large Cap Growth,  
Rolling 3-Year Periods, June 1929–June 2020



# Public Equity Factor Premiums

## Factor Exposures

- Diversify exposures in the U.S. Equity portfolio away from Size (small cap) to other well known return premia such as Value, Momentum, Profitability (a.k.a. Quality), and Low Volatility which are supported by abundant and robust empirical evidence as persistent and pervasive sources of excess relative return.



Staff has intentionally built factor exposures within the OPERF public equity portfolio that provide improved diversification over time. From 2016 – 2019 the portfolio's exposure to the Size and Value was reduced allowing for expanded tilts towards Profitability/Quality, Momentum, and Low Volatility. However, as a result of increased concentration to large cap stocks, especially this last year in global indexes, Size, Momentum, and Value reverted on a relative basis (reversion indicated by red arrows)

Period Ending 9/30/2020	Market Value	3 Months	YTD	1 Year	3 Years
OPERF Global Low Vol	\$5,475,723,581	5.35%	-2.33%	3.20%	5.99%
MSCI ACWI IMI (net)		8.11%	0.48%	9.57%	6.47%
Excess		-2.76%	-2.81%	-6.37%	-0.48%

Over the long-term, staff expects the global low volatility portfolio to provide returns commensurate with the portfolio's MSCI ACWI IMI Net benchmark (i.e., no excess returns) but with lower volatility.

The 3-year beta for the OPERF Global Low Vol portfolio is 0.75.

The defensive nature of the portfolio typically allows for outperformance in declining or volatile stock markets such as those exhibited in October 2018 and May 2019.



# Public Equity Team



OREGON  
STATE  
TREASURY



## Michael Viteri

Senior Investment Officer

Tenure: 2008

As the Senior Investment Officer, Michael leads a staff of investment professionals on the oversight of the \$24 billion OPERF public equity portfolio, the \$1.7 billion Common School Endowment, the State's \$2.7 billion Deferred Compensation Fund, and the PERS \$2.8 billion IAP.

- ❖ Leads the oversight of the OPERF public equity program comprised of a mix of 36 differentiated internal and external strategies.
- ❖ Created the internally managed public equity program which currently represents 35% of the OPERF public equity portfolio;
- ❖ Directs the management of eight internally managed portfolios/accounts valued at \$8.5 billion;
- ❖ Serves as Internal Equity Portfolio Manager & Trader on US, Developed Market, and Emerging Market portfolios which include foreign exchange execution.
- ❖ Responsible for managing and coordinating the liquidity needs of OPERF by liquidating public equity assets for pension payments and private market capital calls.;
- ❖ Participates in private market Committee Meetings (Real Estate, Private Equity, Alternative, and Opportunistic)

**Education:** BA(s) in Anthropology & Spanish from Arizona State University.  
Masters in International Management from Thunderbird School of Global Management.



## Robin Kaukonen

Investment Officer

Tenure: 2018

As Investment Officer, Robin is part of the public equity team responsible for overseeing the investment pools for the state. Duties assigned include:

- ❖ Manages the S&P 500 and S&P 400 enhanced index strategies. Backs up Mike Viteri and Wil Hiles on the other internal portfolios. Trades single stocks, programs, foreign currencies and futures. Stays current on the trading algorithm strategies.
- ❖ Assists in executing cash raises and transitions with OPERF's outside investment managers. Creates cash ladders, manages the timing of the cash sweeps, and analyzes the transition from pre-trade to post-trade.
- ❖ Attends and evaluates meetings with managers and prospective managers.
- ❖ Identifies new investment opportunities and leads new manager searches.
- ❖ Stays current on macroeconomic and geopolitical trends, ESG advancements, market drivers and factor research through attending manager and industry conferences, webinars, and conference calls with industry experts and thought leaders.

**Education & Certifications:** B.S. in Industrial Management from Carnegie Mellon University.



## Wil Hiles

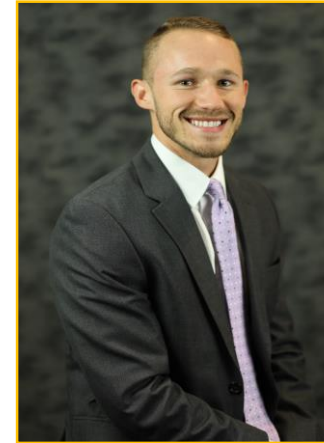
Investment Officer

Tenure: 2016

As Investment Officer, Wil supports the Public Equity team's day-to-day activities by serving as a key contact for internal groups, external investment managers, the custodian bank, and other third-party providers. Duties assigned include:

- ❖ Monitors and evaluates current and prospective investment managers;
- ❖ Evaluates public equity portfolio structure and makes recommendations to improve risk-adjusted returns;
- ❖ Coordinates new account fundings, terminations, portfolio transitions, and cash raise activity;
- ❖ Assist in overseeing proxy voting and commission recapture programs;
- ❖ Conducts public equity and market research/analysis;
- ❖ Serves as internal equity portfolio manager and trader; and
- ❖ Assists in overseeing the Oregon Savings Growth Plan (OSGP) and Individual Account Program (IAP).

**Education and Certifications:** BA in Finance from Linfield College and Master of Science in Finance from Pacific University.



## Claire Ilio

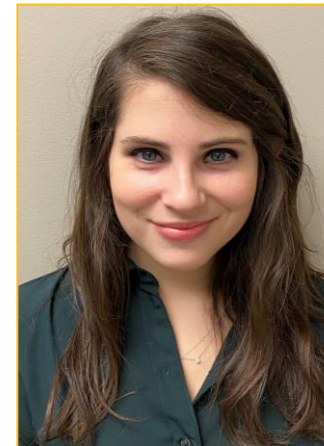
Investment Analyst

Tenure: 2020

As Investment Analyst, Claire assists the public equity team with external manager monitoring and research, and collaborates with the Investment Officers on various research initiatives, such as ESG and climate-focused projects. Duties assigned include:

- ❖ Organizes quarterly call schedules, manages the receipt of all investment manager monthly and quarterly reports and all prospective manager marketing materials, and maintains electronic documentation of all manager and prospective manager visits and calls;
- ❖ Participates in quarterly conference calls, and documents quarterly analyses of all equity managers, aids in formulating memos to the Oregon Investment Council with respect to OPERF Public Equity portfolio;
- ❖ Performs ad hoc analysis as requested by the Investment Officers; and
- ❖ Facilitates multi-million dollar cash transfers, creates necessary documents, secures approved signatures, transmits relevant information to all concerned parties, and retains file copies pertaining to intra-bank and inter-bank cash transfers;
- ❖ Works with Investment Officers and the custody bank in the opening process of "new countries" equity markets which Oregon seeks to invest, works with Investment officers and the dedicated CRP vendor to maintain and track the Commission Recapture Program;
- ❖ Assists the Investment Officers with proxy voting;
- ❖ Helps oversee Oregon's deferred compensation plans – the Oregon Savings Growth Plan (OSGP) and the Individual Account Program (IAP).

**Education & Certifications:** BS in Economics and Business Administration from University of Oregon.





**OREGON  
STATE  
TREASURY**

Tobias Read  
Oregon State Treasurer

16290 SW Upper Boones Ferry Road  
Tigard, OR 97224

[oregon.gov/treasury](https://oregon.gov/treasury)

December 2020



**Oregon Investment Council**

**OPERF Public Equity Review**

---

**Jim Callahan, CFA**  
President

**Janet Becker-Wold, CFA**  
Senior Vice President

# Public Equity Portfolio

---

## Summary Observations

- As of September 2020, the Total Public Equity Portfolio underperformed the MSCI ACWI IMI (Net) Index over the 1-year and other short-term periods, but continued to outperformed over the long-term 10 year period.
  - The majority of the underperformance over the near term was attributed to the U.S. Equity portfolio, which returned 6.3% versus the 15.0% return of the Russell 3000. The Non-U.S. Equity portfolio outperformed its benchmark, returning 5.2% versus 3.5% for the MSCI ACWI ex-US IMI (net) Index.
- The Total Public Equity Portfolio employed 35 strategies and accounted for ~30% of OPERF.
  - The U.S. Equity Portfolio had 6 traditional active strategies (~5.5% of the total public equity portfolio), 3 traditional passive strategies (~13.3%), and 2 factor-oriented strategies (~26.3%).
  - The Non-U.S. Equity Portfolio had 17 traditional active strategies (~28.6% of the total public equity portfolio) and one factor-oriented strategy (~5.3%).
  - The Total Public Equity Portfolio also had 1 traditional active global equity strategy (~1.8% of the Total Public Equity portfolio) and 5 global low-volatility strategies (~18.2%).
- The portfolio is diversified across regions, countries, styles, capitalizations and sectors.
- Tracking error for the Total Public Equity Portfolio is 1.13% for the 10 years ended September 30, 2020, on the lower end of the 0.75% - 2.00% policy range.
- While the majority of the Total Public Equity Portfolio is invested in actively-managed strategies, many of which have higher tracking error targets, active share is around 37% (meaning only about 37% differs from the benchmark); essentially unchanged from last year but a small increase from 33% in 2016.

# Strategic Role and Policy Objectives of Public Equities

## Strategic Role

- Provide enhanced returns, diversification, and liquidity to meet cash flow needs.
- Target allocation is 33.5% of the Total Fund.
- The investable universe can be categorized as U.S., Non-U.S. developed and emerging markets.

## Policy Objectives

- Provide one of the highest expected returns of the OPERF major asset classes.
- Achieve a return of 0.50% or more above the MSCI All Country World Index Investable Market Index (ACWI IMI) (net) over a market cycle of 3 to 5 years on a net-of-fee basis.

As of September 30, 2020	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Public Equity*</b>	5.24%	4.88%	9.21%	8.51%
MSCI ACWI IMI Net	9.57%	6.47%	9.97%	8.47%
<b>Excess Return</b>	<b>(4.33%)</b>	<b>(1.59%)</b>	<b>(0.76%)</b>	<b>0.04%</b>

- Total active risk is managed to a targeted annualized tracking error of 0.75% to 2.00% relative to the MSCI ACWI IMI (net).
  - Tracking error for the trailing 5 years ended September 30, 2020 was 1.14%, near the low end of the range.

\*Public equity benchmark transitioned to the MSCI ACWI IMI in 2008

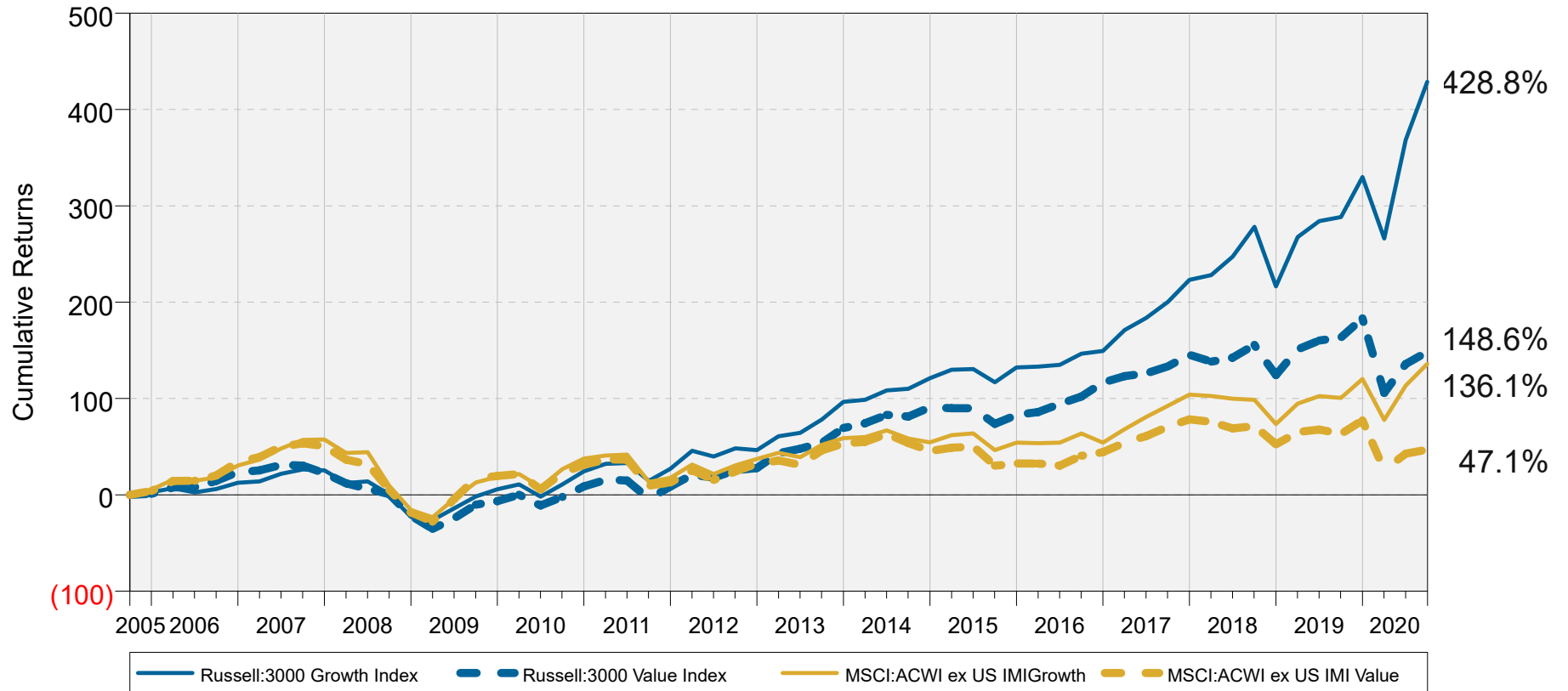
# Public Equity Managers

	September 30, 2020			September 30, 2020	
	Market Value	% of Total Fund		Market Value	% of Total Fund
<b>Total Public Equity</b>	<b>\$23,382,743,672</b>	<b>29.14%</b>	<b>Non-U.S. Equity</b>	<b>\$7,975,095,290</b>	<b>9.94%</b>
<b>U.S. Equity</b>	<b>\$10,742,036,934</b>	<b>13.39%</b>	<b>International Market Oriented (Core)</b>	<b>\$4,425,978,025</b>	<b>5.52%</b>
<b>Large Cap Value</b>	<b>\$484,155,789</b>	<b>0.60%</b>	Arrowstreet Capital	1,127,575,001	1.41%
Aronson, Johnson & Ortiz	484,155,789	0.60%	Lazard Asset Management	587,429,482	0.73%
<b>Small Cap Growth</b>	<b>\$194,623,961</b>	<b>0.24%</b>	Lazard International CEF	1,022,263,723	1.27%
EAM MicroCap Growth	194,623,961	0.24%	AQR Capital Management	458,433,802	0.57%
<b>Small Cap Value</b>	<b>\$598,282,568</b>	<b>0.75%</b>	OST Int'l Risk Premia	1,230,276,017	1.53%
AQR Capital Management	156,987,699	0.20%	<b>International Value</b>	<b>\$963,592,182</b>	<b>1.20%</b>
Boston Company Asset Management	178,644,614	0.22%	Acadian Asset Management	492,059,567	0.61%
Callan US Microcap Value	135,155,195	0.17%	Brandes Investment Partners	471,532,614	0.59%
DFA MicroCap Value	127,495,059	0.16%	<b>International Growth</b>	<b>\$655,952,326</b>	<b>0.82%</b>
<b>Market Oriented</b>	<b>\$9,256,332,444</b>	<b>11.53%</b>	Walter Scott Mgmt	655,952,326	0.82%
DFA Large Cap Core	2,576,276,016	3.21%	<b>International Small Cap</b>	<b>\$614,766,489</b>	<b>0.77%</b>
Russell 2000 Synthetic - OST managed	274,340,537	0.34%	DFA International Small Cap	170,271,816	0.21%
S&P 500 - OST managed	2,278,660,561	2.84%	Harris Associates	173,250,291	0.22%
S&P 400 - OST managed	560,360,181	0.70%	EAM International Micro Cap	141,867,522	0.18%
OST Risk Premia Strategy	3,566,695,116	4.44%	DFA International Micro Cap	129,376,861	0.16%
<b>Other Equity</b>			<b>Emerging Markets</b>	<b>\$1,314,806,267</b>	<b>1.64%</b>
Shott Capital Management	183,891,528	0.23%	Genesis Emerging Markets	309,533,425	0.39%
Transitional & Closed Accounts	24,750,677	0.03%	Arrowstreet Emerging Markets	370,097,255	0.46%
			Westwood Global Investment	189,896,992	0.24%
			William Blair and Company	194,883,431	0.24%
			DFA Emerging Market Small Cap	96,202,120	0.12%
			William Blair Emerging Mkt Small Cap	103,929,351	0.13%
			<b>Global Equity</b>	<b>\$4,665,611,448</b>	<b>5.81%</b>
			Alliance Bernstein Global Value	420,163,885	0.52%
			<b>Global Equity Low Volatility</b>	<b>\$4,245,447,563</b>	<b>5.29%</b>
			LACM	981,542,668	1.22%
			Arrowstreet	914,357,083	1.14%
			AQR	831,317,904	1.04%
			Acadian	778,211,825	0.97%
			DFA Global Low Volatility	740,018,082	0.92%

# Growth and Value Returns

## Russell 3000 and MSCI ACW IMI

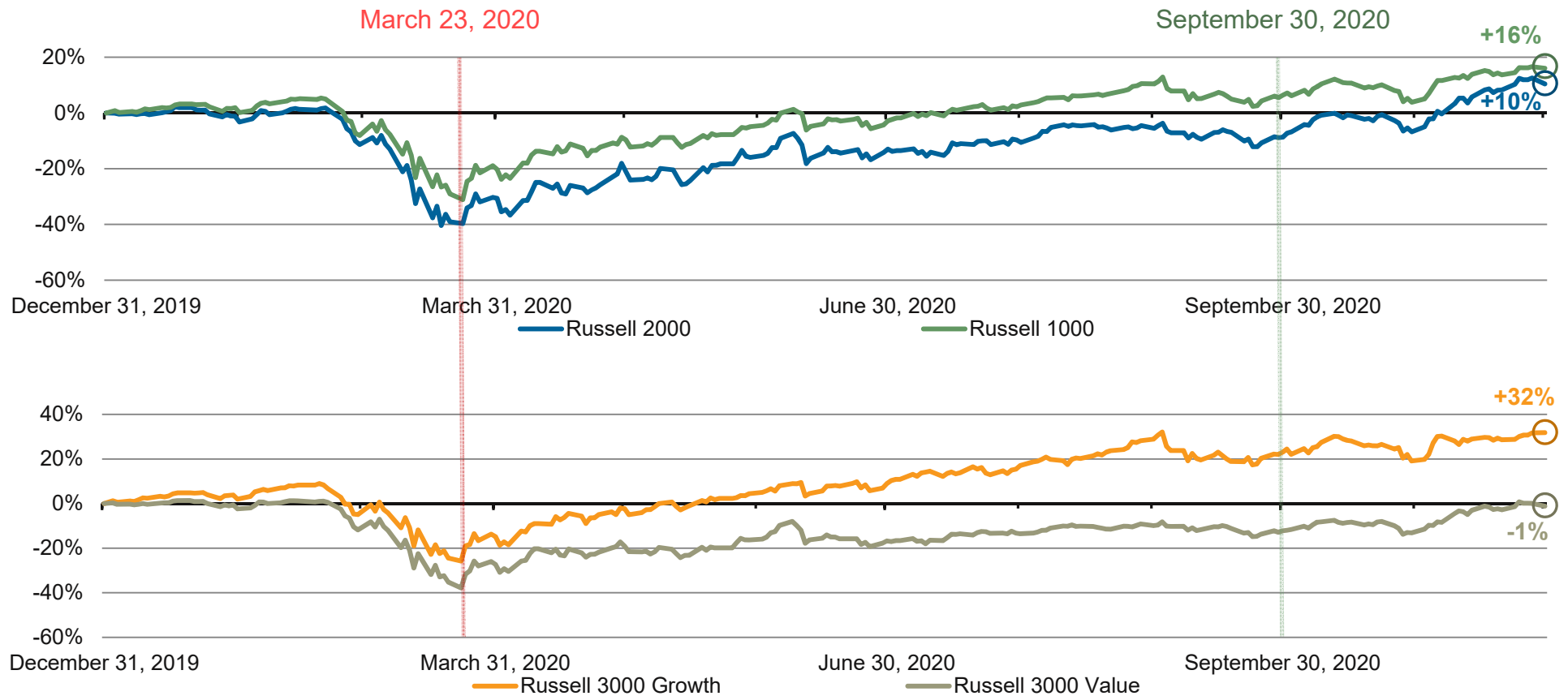
Cumulative Returns  
for 15 Years Ended September 30, 2020





# Dispersion Among Size and Style

Cumulative Return For Size and Style Indices Through November 30, 2020



- The Russell 2000 Index was down 8.7% compared to the Russell 1000 Index which gained 6.4% year-to-date through September.
- The Russell 3000 Value Index was down 12.2% while the Russell 3000 Growth Index was up 23.0% through the end of the third quarter.

# Total Public Equity Exposures

Holdings-Based Analysis as of September 30, 2020

## By Size\*

Style Exposure Matrix  
Holdings as of September 30, 2020

	Value	Core	Growth	Total	
Large	19.7% (257)	17.2% (238)	26.4% (306)	63.3% (801)	-8.7%
	18.1% (276)	18.6% (257)	35.3% (335)	72.0% (868)	
Mid	7.7% (445)	6.5% (404)	6.5% (441)	20.7% (1290)	+8.7%
	5.5% (540)	5.0% (552)	6.4% (646)	16.8% (1738)	
Small	4.2% (994)	4.3% (1072)	3.1% (821)	11.6% (2887)	
	2.6% (1058)	3.1% (1251)	2.9% (1168)	8.6% (3477)	
Micro	2.1% (2852)	1.4% (1712)	1.0% (956)	4.4% (5520)	
	0.6% (973)	0.6% (933)	1.4% (698)	2.6% (2604)	
Total	33.7% (4548)	29.4% (3426)	36.9% (2524)	100.0% (10498)	
	26.7% (2847)	27.3% (2993)	46.0% (2847)	100.0% (8687)	

+7.0% (Value)      -9.1% (Growth)

■ OPERF Public Equity      ■ MSCI ACWI IMI

## By Region

Style Exposure Matrix  
Holdings as of September 30, 2020

	Value	Core	Growth	Total
Europe/ Mid East	4.1% (461)	5.3% (414)	6.5% (322)	15.9% (1197)
	4.1% (429)	5.1% (481)	8.4% (536)	17.6% (1446)
N. America	21.7% (1106)	17.4% (904)	21.4% (641)	60.5% (2651)
	16.5% (848)	15.9% (947)	26.9% (788)	59.3% (2583)
Pacific	4.2% (954)	3.2% (483)	4.4% (313)	11.8% (1750)
	3.1% (582)	3.1% (575)	4.6% (595)	10.7% (1752)
Emerging/ FM	3.6% (2027)	3.5% (1625)	4.6% (1248)	11.8% (4900)
	3.0% (988)	3.2% (990)	6.1% (928)	12.3% (2906)
Total	33.7% (4548)	29.4% (3426)	36.9% (2524)	100.0% (10498)
	26.7% (2847)	27.3% (2993)	46.0% (2847)	100.0% (8687)

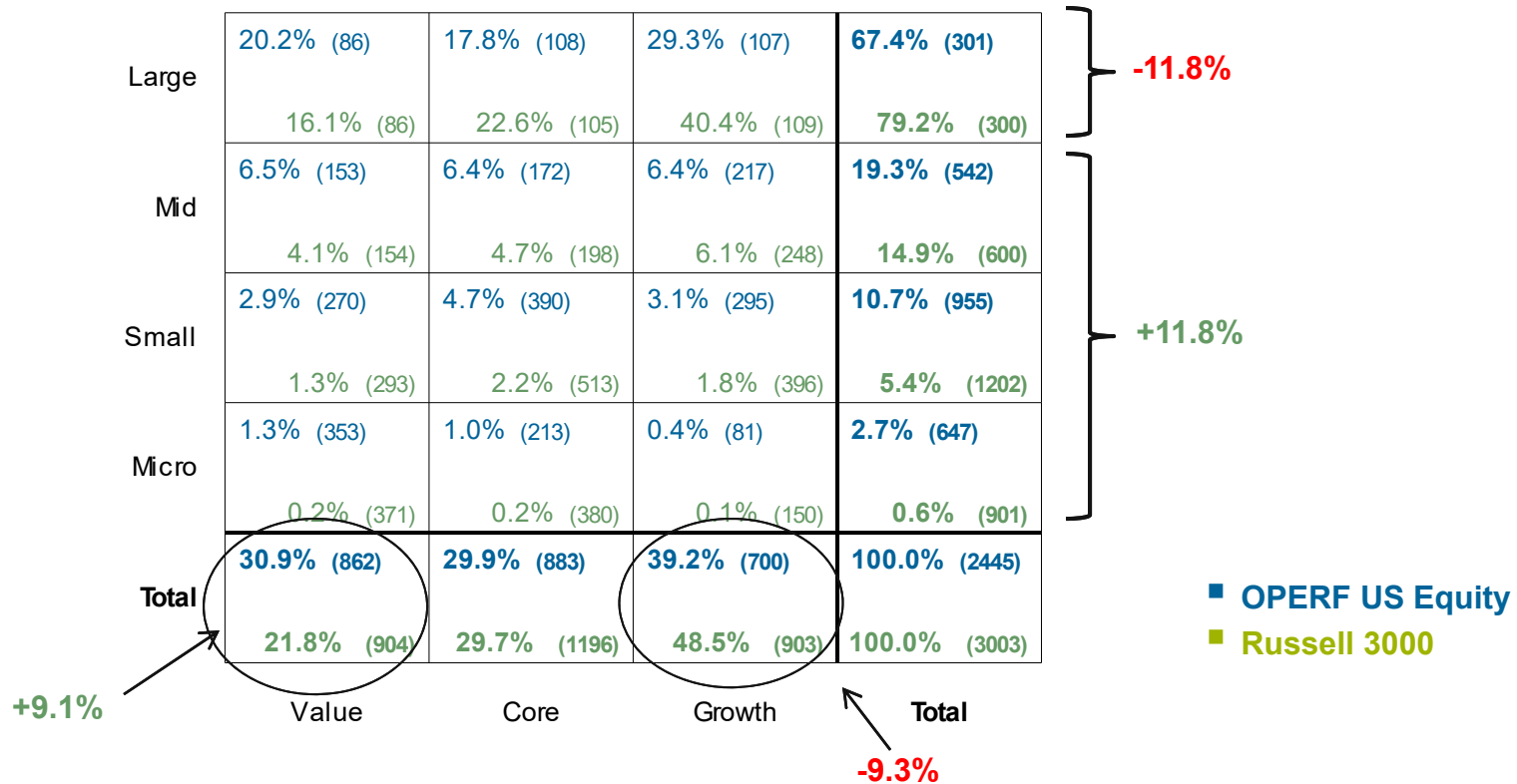
- The Total Public Equity Portfolio is underweight large cap (63.3% vs. 72.0%) and overweight mid, small, and micro cap (36.7% vs. 28.0%) and exhibits a value bias relative to the MSCI ACWI IMI.
- Regional allocations have shifted over the last year to overweight the Pacific region and underweight Europe / Mid East. North America continued to be overweight; Emerging/Frontier markets shifted to a slight underweight.

\*The capitalization segments in the matrices above are dictated by capitalization decile breakpoints. The style segments are determined using the Combined Z Score, based on the eight fundamental factors used in the MSCI stock scoring system.

# U.S. Equity Style Exposures

Exposures as of September 30, 2020

**Style Exposure Matrix**  
Holdings as of September 30, 2020



- The U.S. Equity Portfolio is underweight large cap (67.4% vs.79.2%), overweight mid, small, and micro cap equity (32.7% vs. 20.9%) and exhibits a value tilt relative to the Russell 3000.

# Non-U.S. Equity Style and Geographic Exposure

Exposures as of September 30, 2020

**Style Exposure Matrix**  
Holdings as of September 30, 2020

Large	13.1% (111)	18.3% (98)	26.7% (164)	<b>58.1% (373)</b>	-4.6%
	14.8% (197)	17.0% (183)	30.9% (256)	<b>62.7% (636)</b>	
Mid	7.6% (165)	6.6% (143)	7.6% (168)	<b>21.8% (476)</b>	+4.6%
	6.2% (377)	6.1% (422)	8.2% (474)	<b>20.5% (1273)</b>	
Small	5.7% (688)	4.5% (702)	3.9% (552)	<b>14.2% (1942)</b>	
	3.8% (789)	4.2% (898)	4.2% (862)	<b>12.1% (2549)</b>	
Micro	2.4% (2243)	1.6% (1346)	1.9% (762)	<b>5.9% (4351)</b>	
	0.9% (731)	0.9% (682)	2.9% (494)	<b>4.7% (1907)</b>	
Total	<b>28.8% (3207)</b>	<b>31.1% (2289)</b>	<b>40.1% (1646)</b>	<b>100.0% (7142)</b>	
	25.6% (2094)	28.2% (2185)	46.2% (2086)	100.0% (6365)	
	Value	Core	Growth	Total	

+3.2%

-6.1%

■ OPERF Non-US Equity

■ MSCI ACWI ex-US IMI

**Style Exposure Matrix**  
Holdings as of September 30, 2020

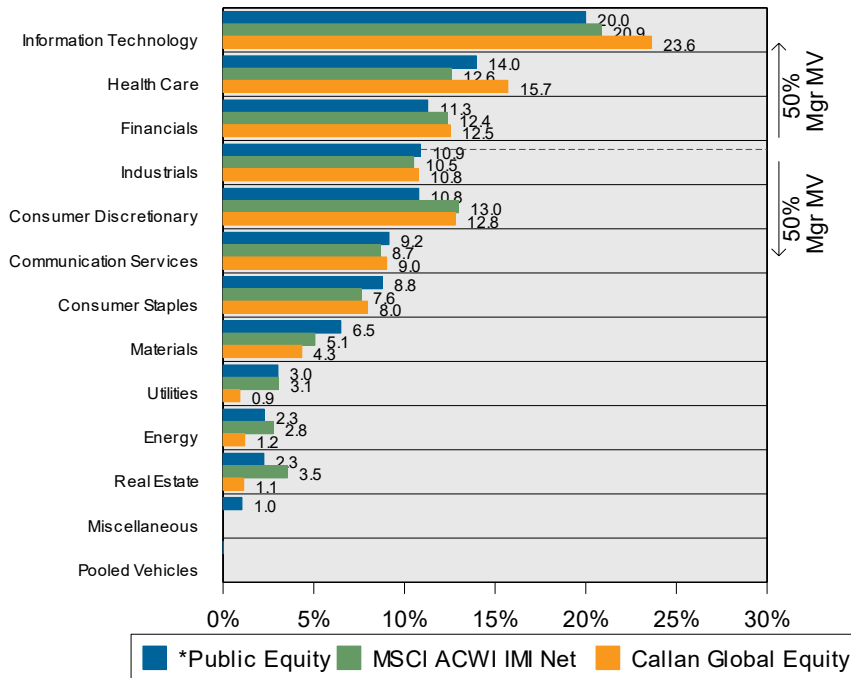
Europe/ Mid East	10.4% (399)	13.2% (342)	14.9% (240)	<b>38.5% (981)</b>
	9.2% (425)	11.3% (491)	18.8% (518)	<b>39.3% (1434)</b>
N. America	0.6% (56)	1.4% (44)	2.5% (41)	<b>4.5% (141)</b>
	1.9% (87)	1.9% (100)	2.9% (89)	<b>6.6% (276)</b>
Pacific	9.2% (863)	7.9% (391)	9.8% (221)	<b>26.9% (1475)</b>
	7.4% (590)	7.4% (585)	10.6% (577)	<b>25.3% (1752)</b>
Emerging/ FM	8.6% (1889)	8.6% (1512)	12.9% (1144)	<b>30.0% (4545)</b>
	7.2% (992)	7.7% (1009)	13.9% (902)	<b>28.8% (2903)</b>
Total	<b>28.8% (3207)</b>	<b>31.1% (2289)</b>	<b>40.1% (1646)</b>	<b>100.0% (7142)</b>
	25.6% (2094)	28.2% (2185)	46.2% (2086)	100.0% (6365)
	Value	Core	Growth	Total

- The Non-U.S. Equity Portfolio is underweight large cap (58.1% vs. 62.7%), overweight mid, small, and micro cap (41.9% vs. 37.3%) and exhibits an underweight to growth relative to the MSCI ACWI ex-U.S. IMI Index.
- Regional allocations were overweight Emerging and Frontier Markets and the Pacific region. The portfolio had a underweight to Europe/Mid East and to North America.

# Public Equity

## Portfolio Characteristics

**Sector Allocation  
September 30, 2020**



**Portfolio Characteristics  
As of September 30, 2020**

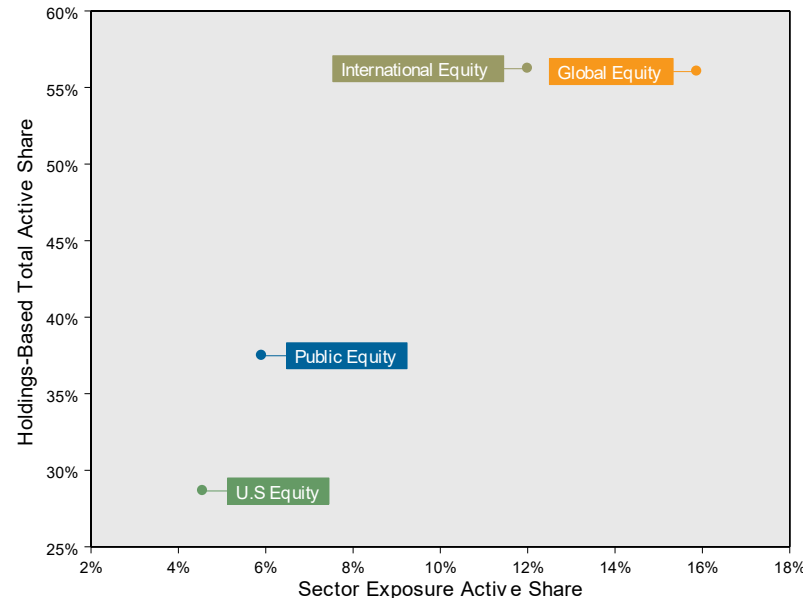
	Weighted Median Market Cap	Price/ Forecasted Earnings	Price/ Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
Public Equity	30.40	16.58	1.89	9.84	2.22	(0.24)
MSCI ACWI IMI Net	51.69	19.45	2.20	11.26	2.03	0.02

- Sector exposures are in line with the benchmark. The most significant differences are in Utilities and Real Estate, where the Public Equity Portfolio is overweight and underweight, respectively.
- Weighted median market cap shows a smaller cap bias compared to the benchmark; P/E and P/B characteristics indicate a value bias.

# Active Share Analysis

As of September 30, 2020

Active Share Analysis  
Ended September 30, 2020



	Weight %	Index	Total Act Share	Non-Idx Act Share	Sector Act Share	Number Securities	Security Diverse
*Public Equity	100.00%	MSCI ACWI IMI	37.48%	2.99%	5.92%	11258	259.42
U.S Equity	45.10%	Russell 3000	28.64%	0.51%	4.57%	2587	89.90
International Equity	34.14%	MSCI ACWI ex US IMI	56.23%	6.47%	12.01%	7707	163.73
Global Equity	19.97%	MSCI ACWI	56.04%	7.21%	15.89%	2602	165.38

- Total active share for the Public Equity Portfolio, which measures how different a portfolio is from its index on a holdings basis, remained around 37% as of September 30, 2020.
  - Active share has increased from three years ago when it was 33%. This is due to the move away from traditional passive strategies and increased allocations to factor-based strategies and the funding of the low-volatility mandates.

# Total Public Equity Portfolio Risk Analysis

## Rolling 12 Quarter Tracking Error vs MSCI ACWI IMI Net



## 5 Years Ended September 30, 2020

	Sharpe Ratio	Excess Return Ratio	Standard Deviation	Tracking Error
Total Public Equity	0.26	-0.27	17.93	1.14
MSCI ACWI World IMI	0.27	0.00	17.99	0.00
U.S. Equity	0.35	-1.04	19.11	2.15
Russell 3000	0.49	0.00	18.19	0.00
Non-U.S. Equity	0.13	1.2	18.61	1.03
MSCI ACWI ex-U.S. IMI	0.06	0.00	18.18	0.00

# Asset Class Performance – U.S. Equity

Net of Fee Returns as of September 30, 2020

	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>U.S. Equity</b>	6.28%	7.32%	11.03%	11.86%
Russell 3000 Index	15.00%	11.65%	13.69%	13.48%
<b>Excess Return</b>	<b>(8.72%)</b>	<b>(4.33%)</b>	<b>(2.66%)</b>	<b>(1.62%)</b>
Lg Public >10 B DE	11.55%	10.04%	12.74%	12.85%
<b>Market Oriented</b>	9.12%	8.99%	12.26%	12.38%
Russell 3000 Index	15.00%	11.65%	13.69%	13.48%
<b>Excess Return</b>	<b>(5.88%)</b>	<b>(2.66%)</b>	<b>(1.43%)</b>	<b>(1.10%)</b>
CAI All Cap: Broad DB	13.67%	10.79%	12.62%	12.20%
<b>Large Cap Value</b>	-10.27%	-0.86%	4.50%	8.40%
Russell 1000 Value Index	-5.03%	2.63%	7.66%	9.95%
<b>Excess Return</b>	<b>(5.24%)</b>	<b>(3.49%)</b>	<b>(3.16%)</b>	<b>(1.55%)</b>
CAI Large Cap Value Style	-4.80%	2.66%	7.75%	10.05%
<b>Small Cap Growth</b>	25.31%	10.58%	12.28%	12.70%
Russell 2000 Growth Index	15.71%	8.18%	11.42%	12.34%
<b>Excess Return</b>	<b>9.60%</b>	<b>2.40%</b>	<b>0.86%</b>	<b>0.36%</b>
CAI Sm Cap Growth Style	25.53%	15.62%	15.49%	14.58%
<b>Small Cap Value</b>	-17.98%	-6.73%	2.94%	6.43%
Russell 2000 Value Index	-14.88%	-5.13%	4.11%	7.09%
<b>Excess Return</b>	<b>(3.10%)</b>	<b>(1.60%)</b>	<b>(1.17%)</b>	<b>(0.66%)</b>
CAI Small Cap Value Style	-14.74%	-4.77%	3.83%	8.24%

- The U.S. Equity portfolio lagged the Russell 3000 Index over all time periods above.
- The Market Oriented portfolio was the largest detractor over the one year period ended September 30, 2020.
  - Underperforming portfolios include OST Risk Premia and DFA Large Cap Core.



# Asset Class Performance – Non-U.S. & Global Equity

Net of Fee Returns as of September 30, 2020

	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Non-U.S. Equity</b>	5.22%	1.94%	7.27%	5.47%
MSCI ACWI ex-US IMI Index (Net)	3.51%	1.13%	6.31%	4.17%
<b>Excess Return</b>	<b>1.71%</b>	<b>0.81%</b>	<b>0.96%</b>	<b>1.30%</b>
Lg Public >10 B IE	4.51%	1.90%	7.26%	5.03%
<b>International Market Oriented (Core)</b>	4.89%	2.54%	7.35%	6.02%
MSCI World ex-US IMI Net	1.10%	0.73%	5.60%	4.65%
<b>Excess Return</b>	<b>3.79%</b>	<b>1.81%</b>	<b>1.75%</b>	<b>1.37%</b>
CAI Core Int'l Equity	2.39%	0.86%	5.77%	5.54%
<b>International Value</b>	-6.57%	-2.68%	4.69%	4.37%
MSCI ACWI ex-US IMI Value	-9.98%	-4.87%	2.44%	1.81%
<b>Excess Return</b>	<b>3.41%</b>	<b>2.19%</b>	<b>2.25%</b>	<b>2.56%</b>
CAI Core Value Int'l Equity Style	-5.17%	-3.29%	3.15%	3.91%
<b>International Growth</b>	17.87%	10.87%	11.90%	7.54%
MSCI World ex US Growth	13.64%	7.06%	9.09%	6.61%
<b>Excess Return</b>	<b>4.23%</b>	<b>3.81%</b>	<b>2.81%</b>	<b>0.93%</b>
CAI Core Growth Int'l Equity Style	14.45%	6.47%	9.37%	7.49%
<b>International Small Cap</b>	0.81%	-3.91%	4.00%	5.07%
ACWI Sm Cap ex US	6.97%	0.93%	6.80%	5.31%
<b>Excess Return</b>	<b>(6.16%)</b>	<b>(4.84%)</b>	<b>(2.80%)</b>	<b>(0.24%)</b>
CAI Int'l Small Cap Style	8.36%	0.96%	7.14%	8.19%
<b>Emerging Markets</b>	13.07%	3.12%	9.03%	3.89%
EM IMI Index	10.14%	2.04%	8.43%	2.34%
<b>Excess Return</b>	<b>2.93%</b>	<b>1.08%</b>	<b>0.60%</b>	<b>1.55%</b>
CAI Emerging Markets Equity DB	2.00%	10.78%	3.58%	7.43%
<b>Global Equity</b>	2.14%	4.49%	8.23%	7.89%
MSCI ACWI Value Net Index	-8.03%	-1.22%	4.96%	5.24%
<b>Excess Return</b>	<b>10.17%</b>	<b>5.71%</b>	<b>3.27%</b>	<b>2.65%</b>
CAI Global Eq Broad Style	12.03%	7.81%	10.85%	9.84%

- The Non-U.S. Equity portfolio continues to outperform the ACWI ex-U.S. IMI net over all periods measured

# Low Volatility Strategies\*

7 Year Period Ended September 2020

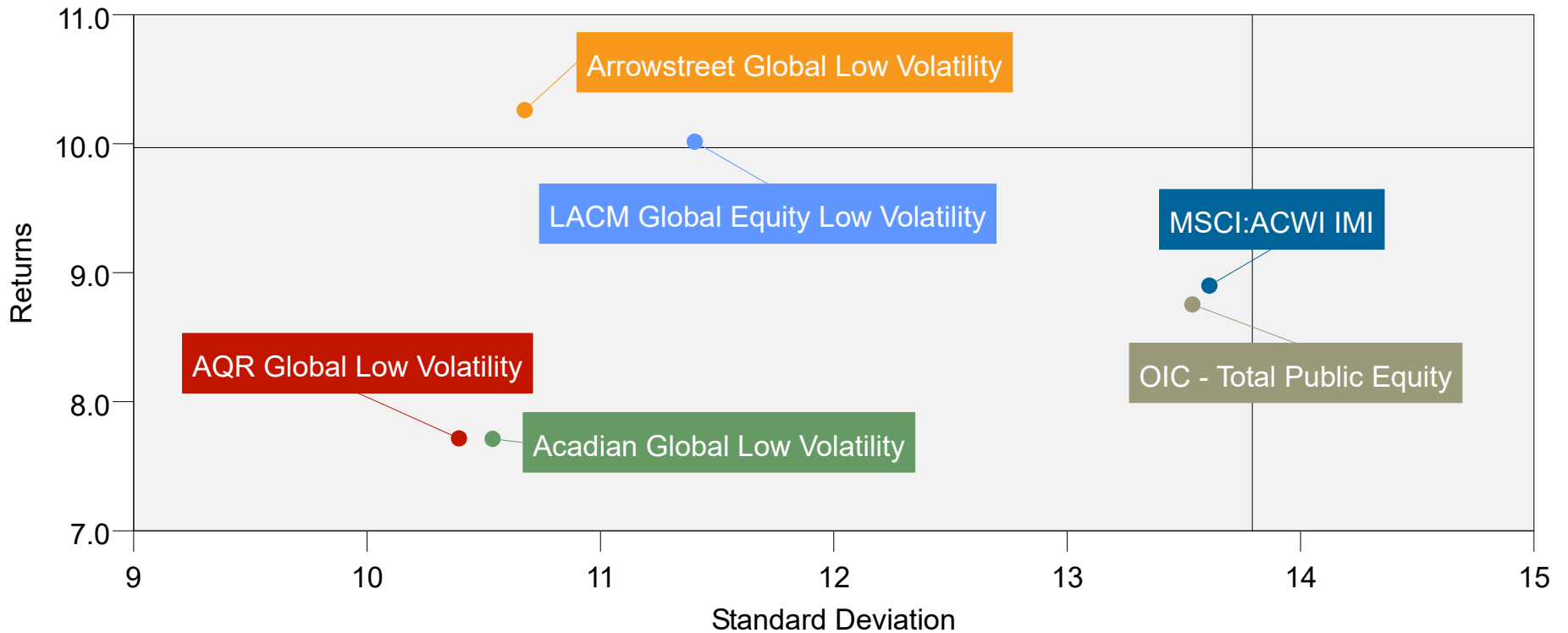
Strategy	7-Year Return (%)	Standard Deviation (%)	Beta
Acadian Global Low Volatility	6.79	10.62	0.73
AQR Global Low Volatility	6.80	10.39	0.72
Arrowstreet Global Low Volatility	9.24	10.72	0.74
LACM Global Equity Low Volatility	8.93	11.44	0.82
OIC - Domestic Equity	9.89	14.58	1.04
OIC - International Equity	4.99	14.06	1.00
OIC - Total Public Equity	7.48	13.48	1.00
MSCI ACWI IMI (net)	7.60	13.50	1.00

- Arrowstreet and LACM beat the ACWI IMI over the seven year period while AQR and Acadian lagged.
- All exhibit lower volatility and betas relative to the ACWI IMI.

\*All strategies linked to composites with longer history beginning July 2012. Actual Oregon returns begin on February 2017 for Acadian, March 2017 for AQR, May 2017 for Arrowstreet and December 2016 for LACM. DFA Global Low Volatility not included due to one quarter of track record.

# Low Volatility Strategies\*

7 Year Period Ended September 2020



Note – Crosshairs represent median risk and return of Callan's Global Equity Broad Style Group.

\*All strategies linked to composites with longer history beginning July 2012. Actual Oregon returns begin on February 2017 for Acadian, March 2017 for AQR, May 2017 for Arrowstreet and December 2016 for LACM. DFA Global Low Volatility not included due to one quarter of track record.

# OST Managed Strategies

As of September 30, 2020

Portfolio Benchmark	S&P 500 S&P 500 Index	S&P 400 S&P 400 Index	R2000 Synthetic Russell 2000 Index	Risk Premia MSCI USA Index	Int'l Risk Premia MSCI World X-US Index
Portfolio Return (1 yr)	15.18%	-2.19%	-7.78%	11.88%	3.47%
Benchmark Return (1 yr)	15.15%	-2.16%	-8.29%	11.92%	3.02%
Excess Return	<b>0.03%</b>	<b>-0.03%</b>	<b>0.51%</b>	<b>-0.03%</b>	<b>0.44%</b>
Portfolio Return (Inception)	13.47%	11.41%	9.08%	11.76%	3.62%
Benchmark Return (Inception)	13.41%	11.14%	8.38%	11.76%	3.33%
Excess Return	<b>0.06%</b>	<b>0.27%</b>	<b>0.70%</b>	<b>-0.01%</b>	<b>0.29%</b>
Tracking Error*	0.69	0.15	0.44	2.16	1.15
Excess Return Ratio*	0.08	1.61	1.30	-0.23	1.24
AUM	\$ 2,278,660,561	\$ 560,360,181	\$ 274,340,537	\$ 3,566,695,116	\$ 1,230,276,017
Inception Date	10/1/2009	10/1/2009	4/1/2010	1/1/2014	6/1/2017

- Since inception, the internally managed strategies have performed well versus their respective benchmarks.

\*Risk statistics are calculated using 5 years worth of quarterly data unless the track record is less than 5 years, in which case it is calculated on a since inception basis (provided that there is at least 3 years worth of data).

TAB 6 – OPERF Fixed Income Program

December 9, 2020

Oregon Investment Council

# OPERF Fixed Income Portfolio 2020 Review and 2021 Plan

Geoff Nolan, Senior Investment Officer



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	9B
Agenda	2																			
Fixed Income Performance	3 - 4																			
Fixed Income Benchmark	5																			
Looking Back & Looking Ahead	6 - 7																			
Fixed Income Overview	8 - 9																			
OPERF Discussion	10 -13																			
Appendix	15 - 19																			

## 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.
- 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

- A. Asset allocation is the OIC's primary policy tool for managing the investment program's long-term risk/return profile.
- 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

- 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

- A. All fees, expenses, commissions, and transaction costs should be diligently monitored and managed in order to maximize net investment returns.
- 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

- 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.
- 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

- 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.

# Fixed Income Performance

- Role of Fixed Income in Oregon Public Employees Retirement Fund (OPERF) = Diversification & Liquidity
  - The role of fixed income investments, pursuant to policy INV 401, is to:
    - provide diversification to the OPERF portfolio in general and to equity securities in particular, and
    - provide liquidity to help meet OPERF's cash flow needs.
  - Realized Fixed Income Benefits:
    - ✓ Adding Diversification:
      - ✓ 9/30/19: Correlation to OPERF portfolio of -0.15 and Public Equities of -0.25.
      - 9/30/20: Correlation to OPERF portfolio of +0.63 and Public Equities of +0.59.
        - Primary YoY Delta: March 2020 pandemic drawdown + realignment not completed.
    - ✓ Adding Liquidity: ~\$5.6BN available within 7 – 14 days (Government Portfolio)

## Trailing Performance

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
<b>OPERF Total Fixed Income</b>	<b>\$13,930,113</b>	<b>0.27</b>	<b>1.51</b>	<b>6.71</b>	<b>7.04</b>	<b>5.34</b>	<b>4.37</b>	<b>3.93</b>	<b>4.43</b>
OPERF Custom Fixed Income Benchmark		0.07	1.07	6.46	6.59	5.08	3.97	3.54	3.67
Excess Return		0.20	0.43	0.24	0.45	0.26	0.40	0.39	0.77

As of September 30, 2020

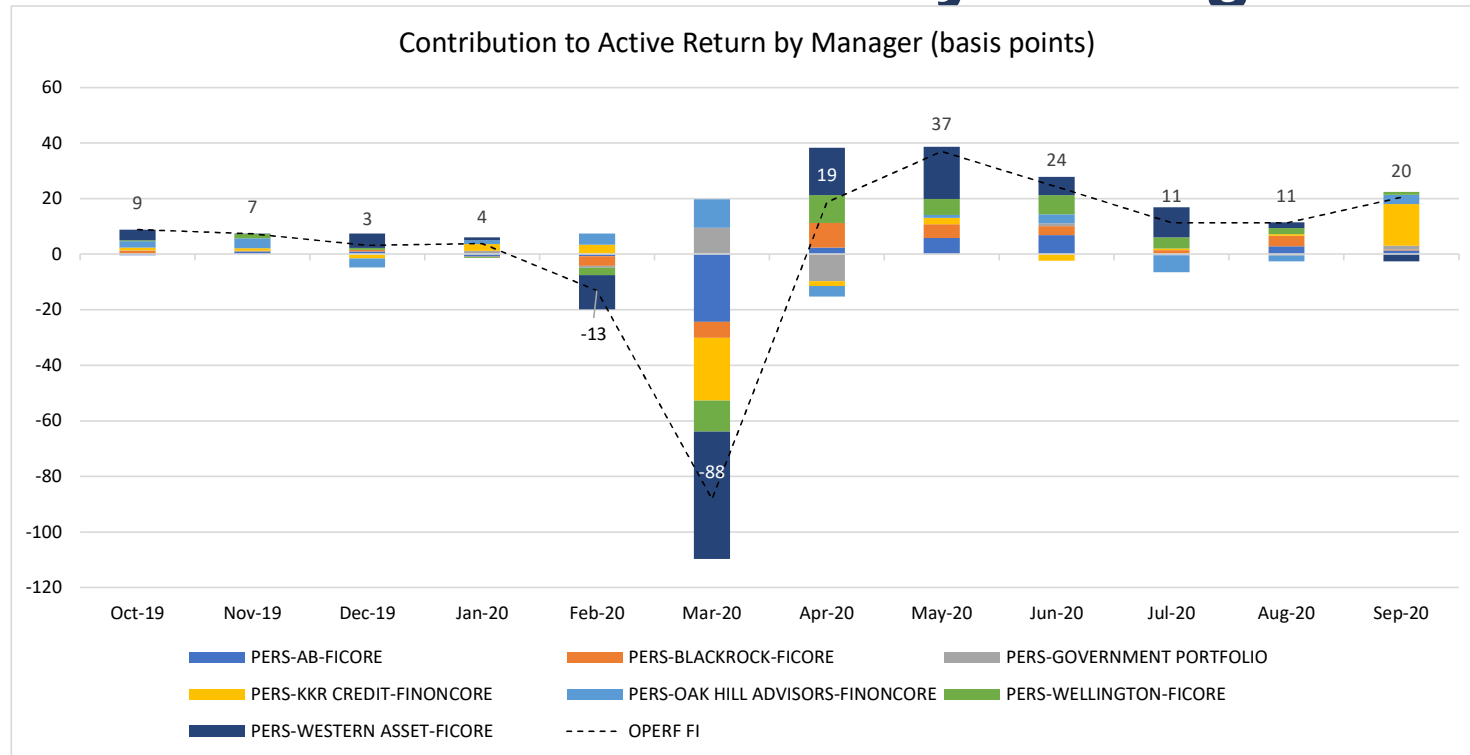
## Risk Statistics

	1 Year	3 Year	5 Year	7 Year	10 Year
OPERF Fixed Income Tracking Error	1.09%	0.64%	0.59%	0.55%	0.67%
OPERF Fixed Income Information Ratio	0.41	0.41	0.67	0.71	1.14





# Fixed Income Performance by Manager



- This chart illustrates the total OPERF Fixed Income portfolio's active return deconstructed to show each manager's contribution to that return. That is, it shows the weighted average of each fund's excess return versus its respective benchmark.
- On balance, active management has paid off over the past year.
- March was a notable exception as we experienced a "risk-off" event and an increase in correlations that favored passive management.
  - Managers with higher betas & tracking errors ("TE") tended to underperform in this "risk off" environment relative to those with lower betas & TE.



Active Management Paid off Over Last Year

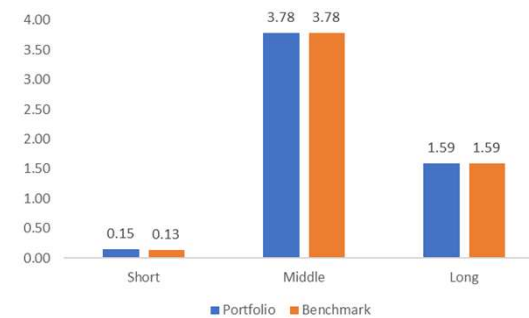
# Fixed Income Benchmark

**Benchmark** – The benchmark is a custom blend comprised of: 37% Bloomberg Barclays U.S. Treasury Index; 46% Bloomberg Barclays U.S. Aggregate Index; 13% S&P/LSTA Leveraged Loan Index; and 4% Bank of America Merrill Lynch High Yield Master II Index.

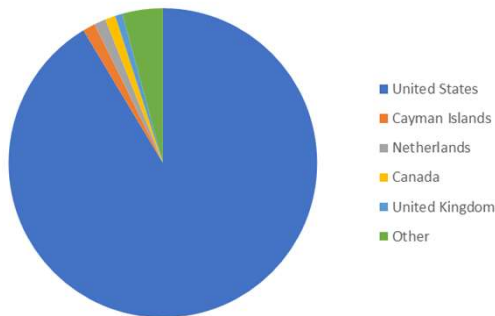
## OPERF Fixed Income Portfolios

Fund	Market Value (\$M)	Market Value %	Role in Portfolio
Government Portfolio	\$5,610,013	40.1%	Gov't
Western Asset	\$1,443,803	10.3%	Core
Wellington	\$1,435,168	10.3%	Core
BlackRock	\$1,402,751	10.0%	Core
AllianceBernstein	\$1,378,338	9.9%	Core
Oak Hill Advisors	\$1,370,997	9.8%	Non-Core
KKR	\$1,289,043	9.2%	Non-Core

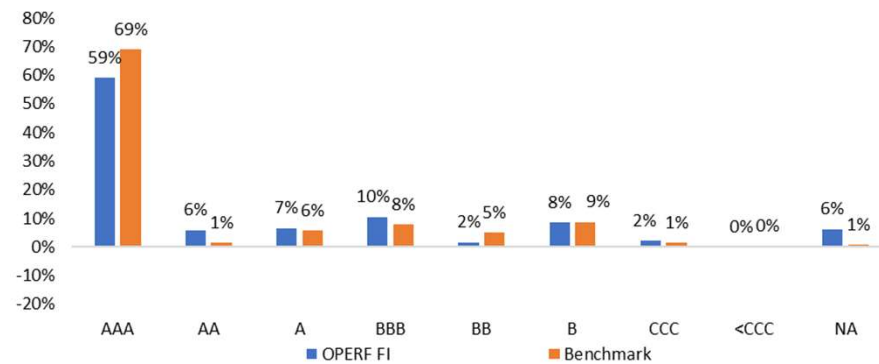
## Key Rate Duration



## Country Weights



## Credit Rating Weights



Source: BlackRock Aladdin, as of September 30, 2020.

# Looking Back

- 2020 Market Update
  - Even compared to 2019, in which fixed income markets staged a strong comeback, 2020 was a rollercoaster ride with the pandemic hitting in March, driving down global markets and economies. Strong Fed intervention across a number of fronts underpinned and helped fuel a strong market recovery.
    - U.S. Fixed Income: TIPS: +8.7%, Treasuries: +7.8%, Mortgages: +3.6%, High Yield: +3.8%, <sup>(1)</sup>
    - EM (Hard Dollar): +3.6%, <sup>(1)</sup> S&P 500: +12.8%<sup>(2)</sup>
- 2020 Highlights
  - Virtual Local Government Investor Day Conference
  - Fixed Income Strategic Review Implementation Update:
    - Implementation temporarily interrupted by COVID-19 pandemic.
      - Restarted Fall 2020. Expected time to complete 3-6 quarters.
    - Manager searches continued despite interruption:
      - Completed & Approved by OIC: Global Sovereign, EMD, Structured Products.
      - Pending: Investment Grade and High Yield managers short-listed.
      - Relevant manager fees have been / will be negotiated to be in line with market expectations.

COVID-19 Pandemic Paused Realignment Implementation. Restarted Fall 2020



# Looking Ahead

- 2021 Goals
  - Continue to Implement Strategic Fixed Income Realignment
  - Multi-Year Automation Initiative:
    - Driver: Continue to support recent personnel buildout & fixed income's role within OPERF.
    - Goal: Overcome the lack of full transparency / manual nature of fixed income markets, improve team efficiencies, enhance investment decision making and, ultimately, given fixed income is a scalable asset class, allow for more assets to be managed internally, thus saving on external manager fees.
  - Upcoming OPERF Strategic Asset Allocation Review
    - Given the low interest rate environment, which is expected to continue for the foreseeable future, the fixed income team will be reviewing the appropriateness of, and making possible recommendation changes to:
      - the strategic benchmark,
      - the tracking error budget,
      - the alpha target, and
      - the alpha target constituents.

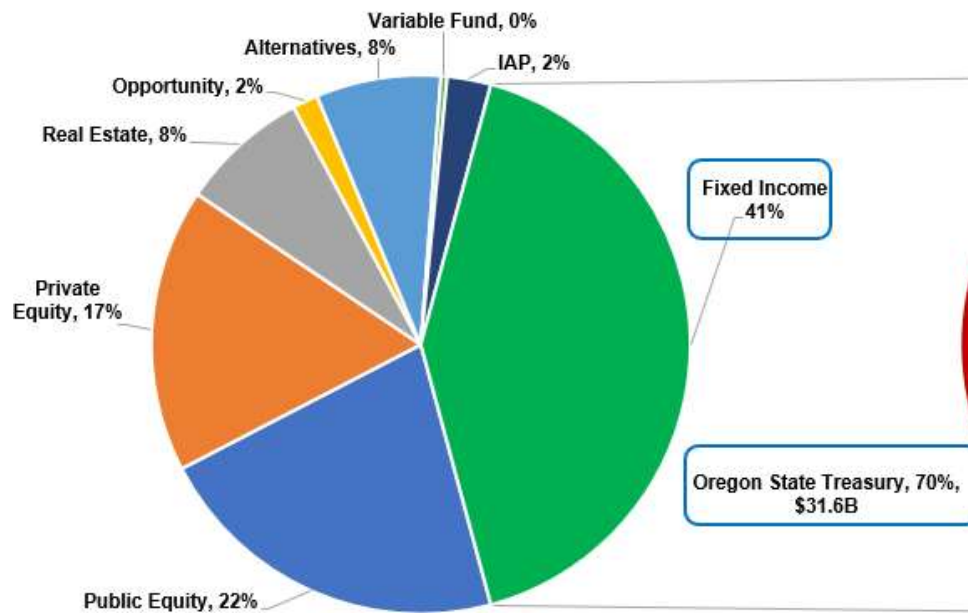
## 2021 Goals: Continue Platform Initiatives



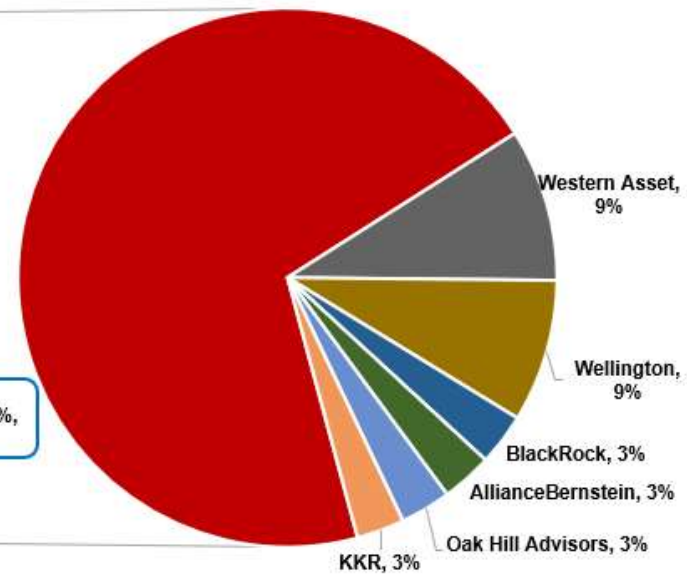
# OST Fixed Income Program Overview

Putting Fixed Income in Context

**Oregon State Treasury Asset Mix**  
\$109 Billion



**Fixed Income Manager Concentration**  
\$45 Billion



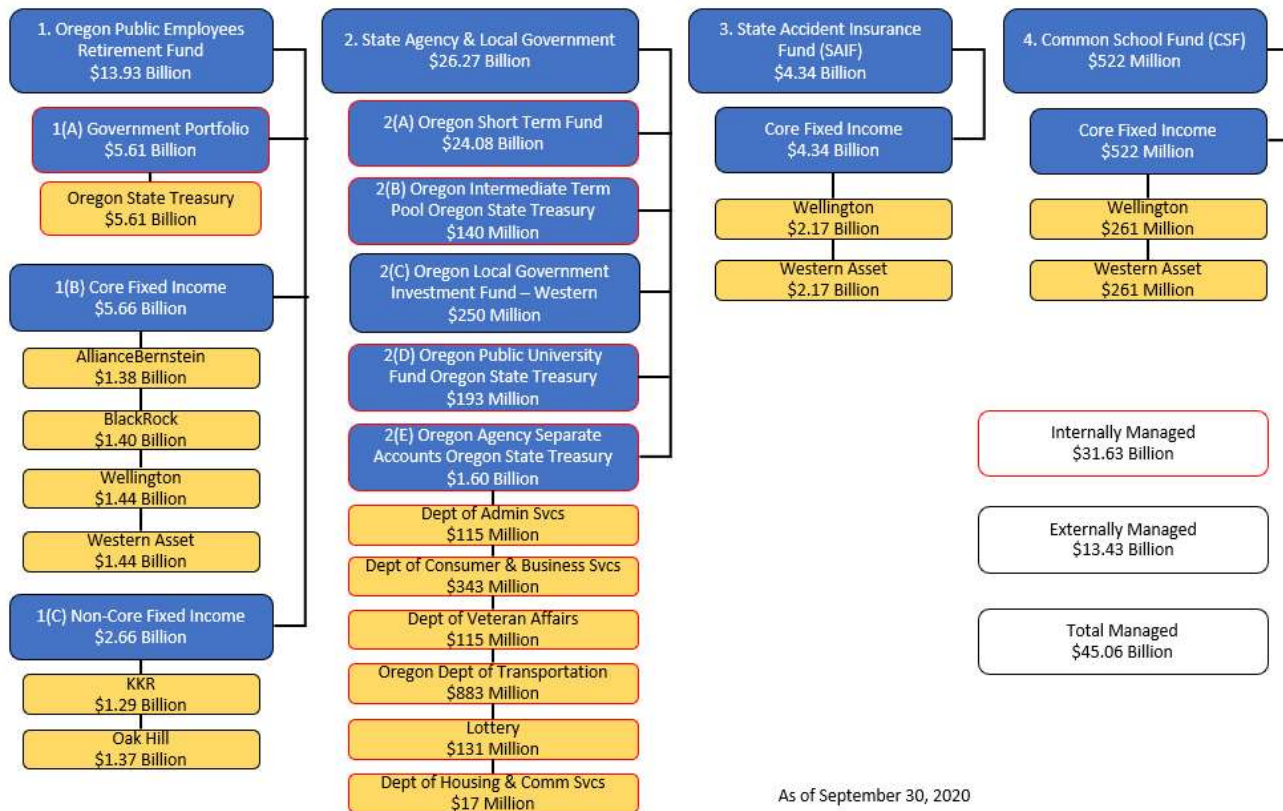
As of September 30, 2020

Fixed Income & OST-Managed Funds Represent a Significant Portion of OST Assets



# OST Fixed Income Program Overview

## Putting Fixed Income in Context



OST Oversees A Variety of Strategies That Serve A Diverse Oregonian Client Base



# Oregon Public Employees Retirement Fund (OPERF): Fixed Income

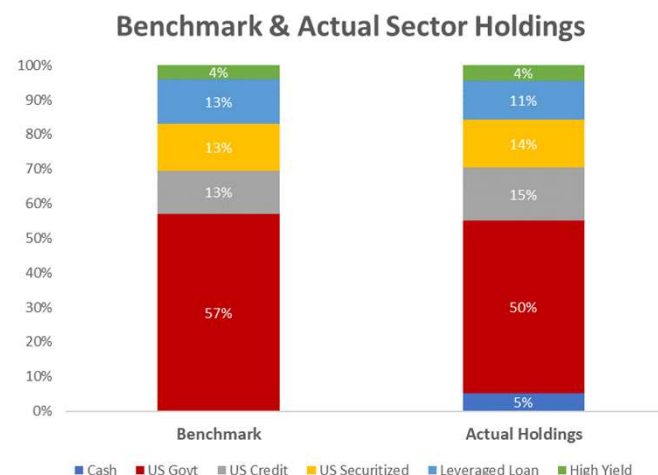
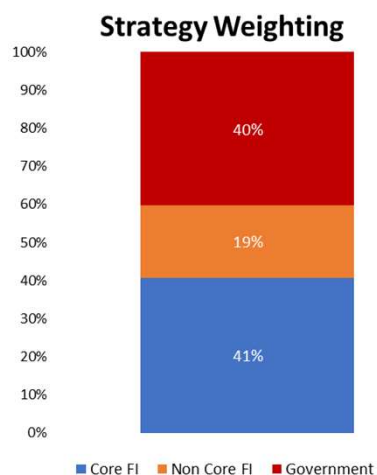
**Objective** – To provide diversification to the OPERF portfolio in general and to equity exposures in particular. Additionally, the fixed income portfolio is designed to provide liquidity and income to help meet cash flow needs. Over a market cycle of three to five years, and on a net-of-fee basis, the performance objective is to achieve a total return of at least 25 basis points above the custom policy benchmark while maintaining an annualized targeted tracking error between 0.5 to 1.0 percent.

**Strategy** – OPERF’s fixed income portfolio is deployed into three actively managed strategies: a U.S. government allocation; a core bond allocation; and an allocation to bank loan and high yield securities.

**Benchmark** – The benchmark is a custom blend comprised of:

- 37% Bloomberg Barclays U.S. Treasury Index;
- 46% Bloomberg Barclays U.S. Aggregate Index;
- 13% S&P/LSTA Leveraged Loan Index; and
- 4% Bank of America Merrill Lynch High Yield Master II Index.

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
OPERF FI	13,930,115	2.19	1.69	5.59	5.51	AA-	AA-
Core FI	5,660,061	2.47	1.17	6.05	6.09	AA-	AA
Non Core FI	2,660,040	5.05	5.71	1.49	0.64	B	B+
Government	5,610,013	0.54	0.48	7.08	7.02	AAA	AAA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
<b>OPERF Total Fixed Income</b>	<b>13,930,113</b>	<b>0.27</b>	<b>1.51</b>	<b>6.71</b>	<b>7.04</b>	<b>8.22</b>	<b>5.34</b>	<b>4.24</b>	<b>4.37</b>	<b>3.93</b>	<b>4.43</b>
OPERF Custom Fixed Income Benchmark		0.07	1.07	6.46	6.59	7.93	5.08	3.90	3.97	3.54	3.67
Excess Return		0.20	0.44	0.25	0.45	0.29	0.26	0.34	0.40	0.39	0.76

As of September 30, 2020





# OPERF Core Fixed Income Portfolio

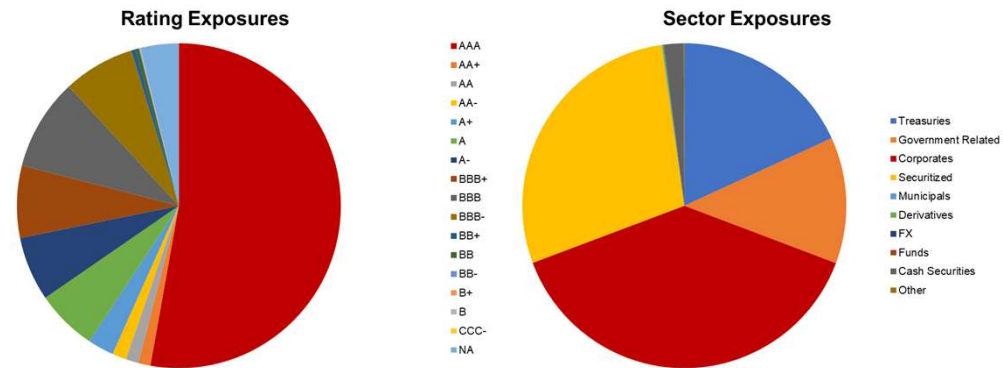
**Objective** – The OPERF Core Fixed Income Portfolio is designed to provide exposure to the broad, liquid U.S. investment grade bond universe in order to provide a diversifying return stream to OPERF that seeks to complement OPERF’s risk-asset exposures while providing liquidity and income to help fund both the plan’s beneficiary payment obligations and other investment opportunities. The performance goal is a higher, after-fee and risk-adjusted return relative to the broad U.S. investment grade bond market.

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
CORE FI	5,660,061	2.47	1.17	6.05	6.09	AA-	AA
Western Asset	1,443,803	2.35	1.17	6.51	6.09	A+	AA
Wellington	1,435,168	3.85	1.17	5.73	6.09	AA-	AA
BlackRock	1,402,751	1.54	1.17	5.68	6.09	AA-	AA
AllianceBernstein	1,378,338	2.11	1.17	6.26	6.09	AA-	AA

**Strategy** – To achieve its objective, the core allocation is actively invested against the Bloomberg Barclays U.S. Aggregate index which encompasses the liquid, investment grade government, corporate and securitized bond markets in the United States. Staff seeks to allocate the core mandate amongst high-conviction firms that are complementary to each other in the way they view markets and structure portfolios.

**Managers** – The portfolio is currently allocated to the following four external firms:

- AllianceBernstein
- BlackRock
- Wellington Management
- Western Asset



**Benchmark** – Bloomberg Barclays U.S. Aggregate Bond Index

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
<b>Core Fixed Income</b>	<b>5,660,058</b>	<b>-0.05</b>	<b>1.27</b>	<b>7.31</b>	<b>7.85</b>	<b>9.16</b>	<b>5.73</b>	<b>4.51</b>	<b>4.83</b>	<b>4.62</b>	<b>4.57</b>
AllianceBernstein	1,378,338	0.08	1.03	6.27	6.61	8.28	5.16	3.97	4.30	4.30	4.10
BlackRock	1,402,749	-0.02	1.17	8.11	8.48	9.30	5.75	4.35	4.58	4.38	4.34
Wellington	1,435,168	0.05	1.31	8.39	8.83	9.53	6.05	4.87	5.14	4.89	4.89
Western Asset	1,443,803	-0.31	1.57	6.50	7.51	9.52	5.98	4.86	5.30	4.90	4.95
<b>OPERF Custom Core Fixed Income Benchmark</b>		<b>-0.05</b>	<b>0.62</b>	<b>6.79</b>	<b>6.98</b>	<b>8.63</b>	<b>5.24</b>	<b>3.93</b>	<b>4.18</b>	<b>4.03</b>	<b>3.89</b>
Excess Return		0.00	0.65	0.52	0.87	0.53	0.49	0.58	0.65	0.59	0.68

As of September 30, 2020





# OPERF Non-Core Fixed Income Portfolio

**Objective** – The non-core allocation is designed to provide enhanced expected return opportunities and diversification from the government and core fixed income allocations by accessing risk and return sources different from those traditionally available in the core and government portions of the OPERF fixed income portfolio.

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating		Option Adjusted Spread	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
NON CORE FI	2,660,040	5.05	5.71	1.49	0.64	B	B+	465.82	512.07
Oak Hill Advisors	1,370,997	5.61	5.66	1.59	0.39	B	B+	526.60	510.39
KKR	1,289,043	4.47	5.76	1.39	0.91	B	B+	401.18	513.87

**Strategy** – To achieve the objective, the non-core allocation is actively invested in a mix of bank loans and high yield bonds that offer exposure to corporate credit spreads with limited interest rate risk given the floating rate nature of bank loans. A significant portion of the bank loan allocation is in secured positions that are higher in the capital structure than traditional high-yield bonds and thus offer better protection through higher recovery rates in the event of a default or credit event.

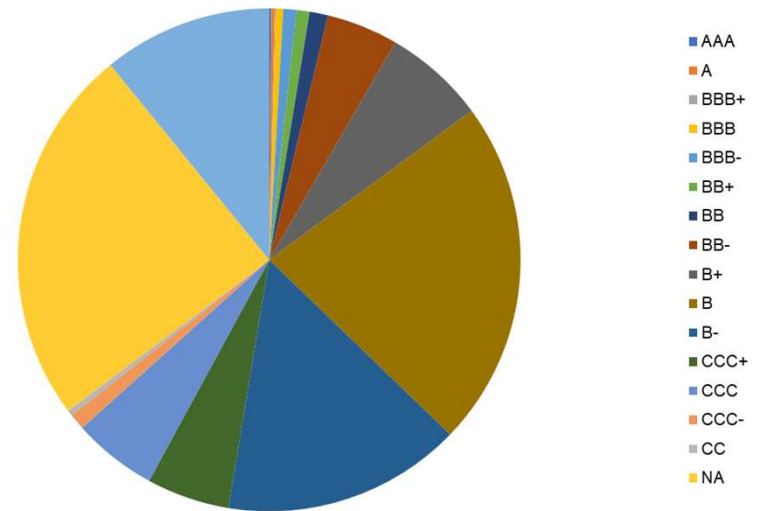
**Managers** – The portfolio is allocated to two external firms:

- KKR
- Oak Hill Advisors

**Benchmark** – Each manager has a unique benchmark:

- KKR - 65% S&P LSTA Leveraged Loan Index; 35% BAML High Yield Master II
- Oak Hill - 85% S&P LSTA Leveraged Loan Index; 15% BAML High Yield Master II

Rating Exposures



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
<b>Non-Core Fixed Income</b>	<b>2,660,040</b>	<b>1.18</b>	<b>4.90</b>	<b>-0.30</b>	<b>1.84</b>	<b>3.09</b>	<b>3.58</b>	<b>4.17</b>	<b>4.71</b>	<b>4.27</b>	<b>5.63</b>
KKR	1,289,043	1.67	6.18	-1.61	0.45	2.10	2.84	3.21	3.89	3.67	5.41
KKR Custom Leveraged Loans/Bond Index		0.05	4.35	-0.52	1.51	2.86	3.37	4.17	4.93	4.13	4.98
Excess Return		1.62	1.83	-1.09	-1.06	-0.76	-0.53	-0.96	-1.04	-0.46	0.43
<b>Oak Hill Advisors</b>	<b>1,370,997</b>	<b>0.73</b>	<b>3.72</b>	<b>0.97</b>	<b>3.18</b>	<b>4.05</b>	<b>4.31</b>	<b>5.11</b>	<b>5.54</b>	<b>4.87</b>	<b>5.70</b>
Oak Hill Custom Leveraged Loans/Bond Index		0.38	4.23	-0.60	1.25	2.41	3.22	3.87	4.40	3.79	4.57
Excess Return		0.35	-0.51	1.57	1.93	1.64	1.09	1.24	1.14	1.08	1.13

As of September 30, 2020



# OPERF Government Portfolio

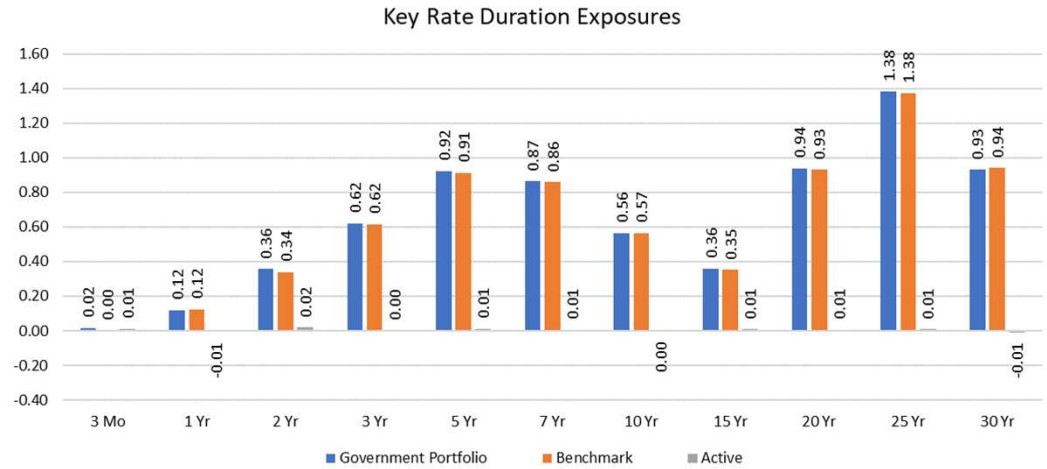
**Objective** – The Government Portfolio’s objective is to enhance the diversification benefit of the OPERF fixed income portfolio versus OPERF’s otherwise large allocation to risk assets (e.g., Public Equity, Private Equity, Real Estate and Alternatives) and to provide a reliable source of liquidity. Over a market cycle of three to five years, and on a net-of-fee basis, the objective is to achieve a return of 0.00 basis points above the policy benchmark while maintaining an annualized targeted tracking error between 0.5 to 1.0 percent.

**Strategy** – The Government Portfolio is managed to closely match the benchmark with minimal active risk. To achieve this goal, staff seeks to maintain a key rate duration profile similar to the benchmark while holding fewer positions than the benchmark in order to reduce trading costs.

**Manager** – Oregon State Treasury

**Benchmark** – Bloomberg Barclays U.S. Treasury Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
Government	5,610,013	0.54	0.48	7.08	7.02	AAA	AAA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year
OPERF Government Fixed Income	5,610,013	0.17	0.19	8.95	8.10	9.30	5.54	3.70	3.38
OPERF Government Fixed Income Benchmark		0.14	0.17	8.90	8.04	9.25	5.50	3.66	3.37
Excess Return		0.03	0.02	0.05	0.06	0.05	0.04	0.04	0.01

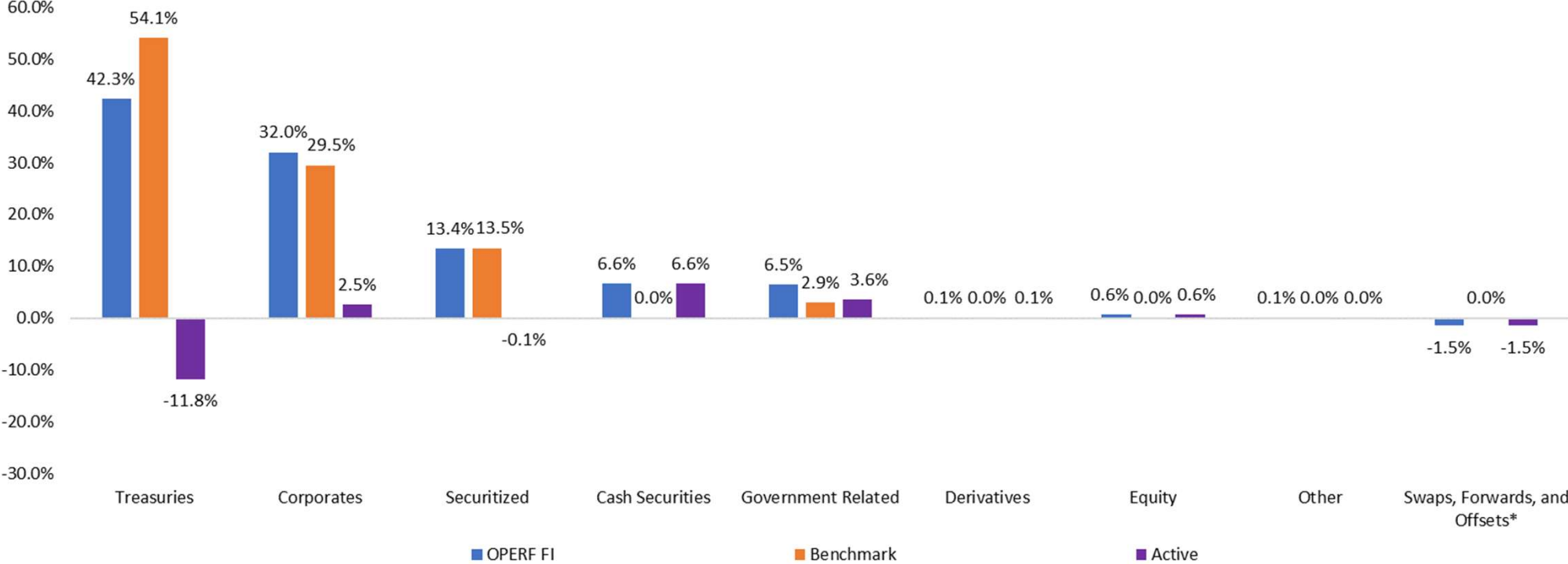
As of September 30, 2020



# Appendix

# OPERF Fixed Income Sector Exposure

Sector Exposures



\*Includes interest rate swaps, currency forwards and other fixed income derivatives as well as related cash offsets associated with forwards, derivatives and certain positions in the "Cash Securities" category above.

Data as of September 30, 2020



# OPERF Fixed Income Issuer Exposure

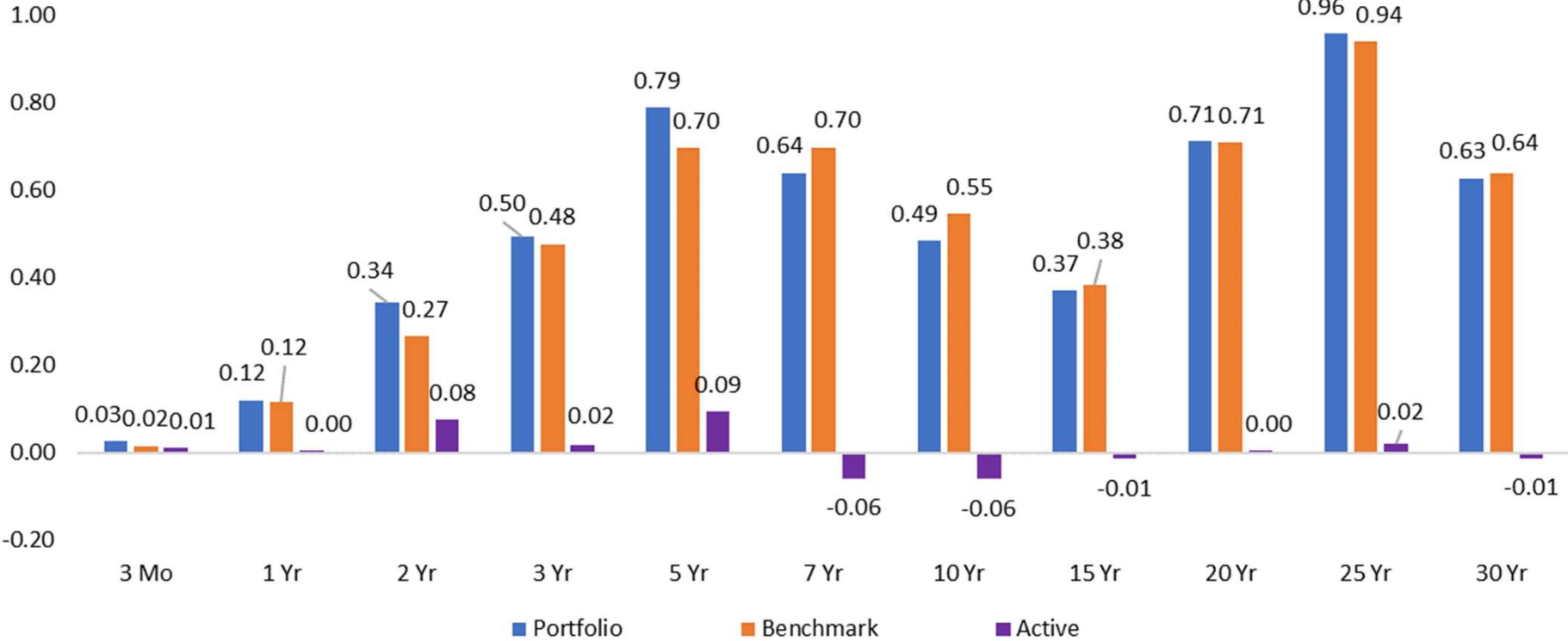
Security Description	Market Value (\$M)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Dur Contrib	Yield to Worst	OAS (bps)	Effective Rating
OPERF FI	\$13,930,115	100.00%	5.59	5.59	2.61	2.61	2.14	143	AA-
UNITED STATES OF AMERICA	\$6,037,285	43.34%	8.33	3.61	0.17	0.07	0.60	2	AAA
FEDERAL NATIONAL MORTGAGE ASSOCIATION	\$948,425	6.81%	2.66	0.18	3.99	0.27	1.29	63	AAA
OREGON STATE TREASURY	\$582,035	4.18%	0.54	0.02	0.81	0.03	0.35	23	AA
STATE STREET	\$310,484	2.23%	0.00	0.00	0.00	0.00	0.15	0	N/A
UNIFORM MBS	\$205,803	1.48%	2.90	0.04	4.40	0.07	0.91	-4	AAA
FEDERAL HOME LOAN MORTGAGE CORPORATION	\$200,395	1.44%	3.68	0.05	4.74	0.07	1.15	54	AAA
BANK OF AMERICA CORP	\$91,052	0.65%	6.02	0.04	6.23	0.04	1.46	102	A
CANADA (GOVERNMENT OF)	\$85,979	0.62%	3.05	0.02	3.05	0.02	0.31	12	AAA
JPMORGAN CHASE & CO	\$69,042	0.50%	4.96	0.02	5.44	0.03	1.36	102	A
WELLS FARGO & COMPANY	\$55,439	0.40%	8.04	0.03	8.25	0.03	2.12	139	A
GOLDMAN SACHS GROUP INC/THE	\$54,415	0.39%	4.64	0.02	4.73	0.02	1.27	93	A-
CITIGROUP INC	\$52,289	0.38%	6.61	0.02	6.76	0.03	1.75	128	BBB+
FANNIEMAE-ACES FNMA_17-M2	\$49,687	0.36%	5.66	0.02	5.67	0.02	0.97	59	AAA
MEXICO (UNITED MEXICAN STATES) (GOVERNMENT)	\$47,542	0.34%	9.39	0.03	5.66	0.02	5.19	196	BBB
MORGAN STANLEY	\$42,105	0.30%	5.43	0.02	5.62	0.02	1.61	122	A-
BROADCOM INC	\$36,105	0.26%	5.77	0.01	5.77	0.01	2.06	164	BBB-
SOTERA HEALTH HOLDINGS LLC	\$33,852	0.24%	4.60	0.01	5.45	0.01	5.32	486	B
AT&T INC	\$33,717	0.24%	10.00	0.02	10.01	0.02	2.30	157	BBB
ANHEUSER BUSCH INBEV NV	\$33,115	0.24%	13.22	0.03	13.25	0.03	3.03	194	BBB+
COMCAST CORPORATION	\$33,048	0.24%	9.49	0.02	9.50	0.02	2.19	138	A-
ABBVIE INC	\$31,624	0.23%	7.21	0.02	7.22	0.02	1.69	114	BBB
VERIZON COMMUNICATIONS INC	\$31,301	0.22%	10.00	0.02	10.03	0.02	1.89	116	BBB+
CHARTER COMMUNICATIONS INC	\$30,329	0.22%	8.96	0.02	8.98	0.02	2.86	209	BBB-
NEXT LUXEMBOURG SCSP	\$29,404	0.21%	2.10	0.00	3.60	0.01	4.62	422	B+

Data as of September 30, 2020



# OPERF Fixed Income Interest Rate Exposure

## Key Rate Interest Rate Exposure

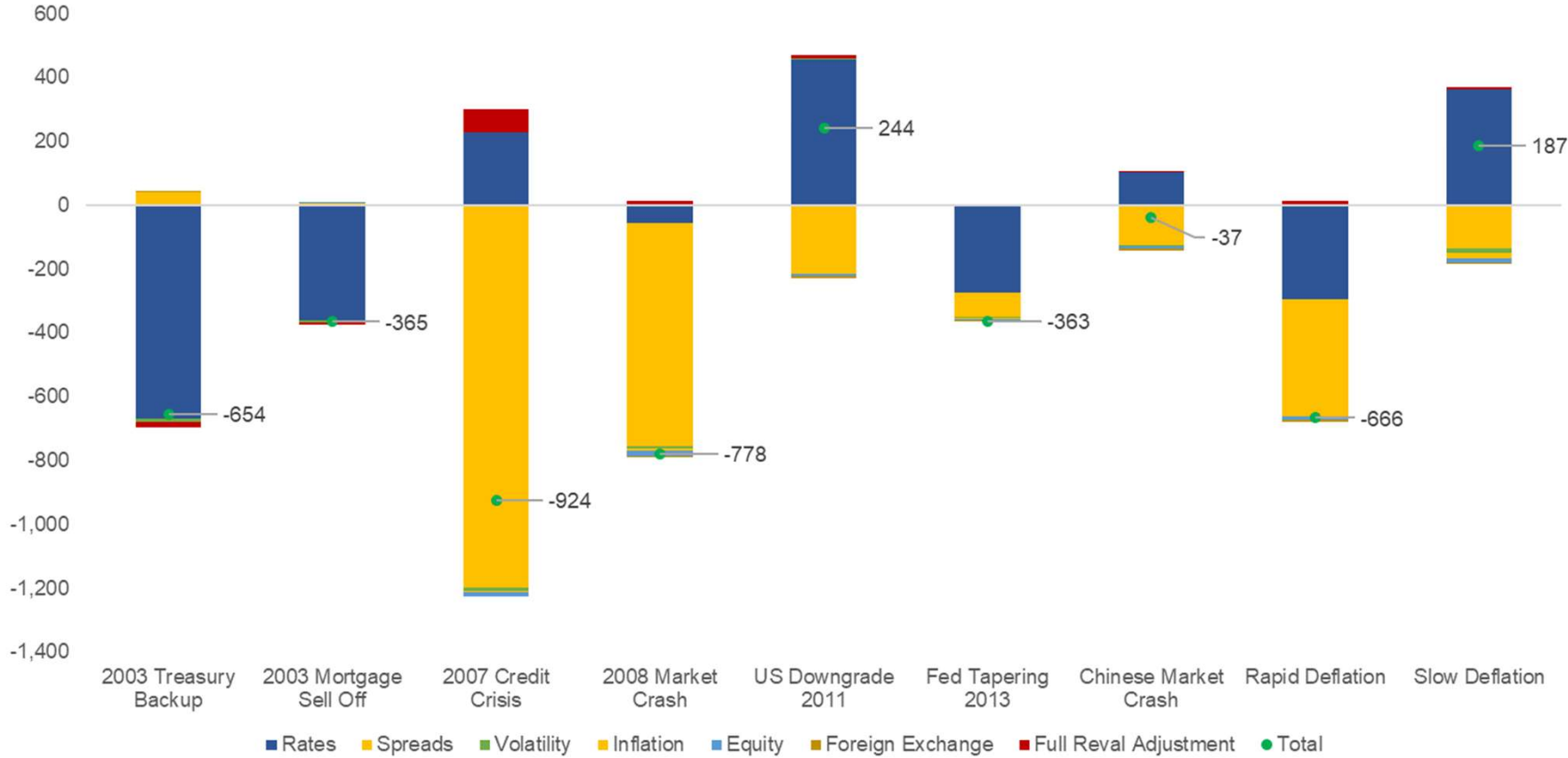


Data as of September 30, 2020



# OPERF Fixed Income Stress Testing

OPERF FI Stress Testing



Data as of September 30, 2020

Fixed Income Portfolio 2020 Annual Review and 2021 Plan



# OPERF Non-Core Stress Testing

## Scenario Definitions

### 1. 2003 Treasury Backup

Treasuries sell-off resulting in a loss on interest rate returns. Equities and alternatives benefit as investors seek returns in other investments.

### 2. 2003 Mortgage Sell Off

An unexpected rise in Treasury yields engendered a massive sell-off of mortgage backed securities (MBS), resulting in increased MBS spreads and decreased credit spreads. Convexity selling as mortgage durations lengthen.

### 3. 2007 Credit Crisis

The Credit Crisis of 2007 resulted from the bursting of the housing bubble, a consequence of an unprecedented expansion of credit that helped feed a boom in the housing market. The bursting of the bubble forced banks to write down bad loans caused by mortgage delinquencies. The crisis saw a massive decrease in Treasury yields and a widening of both MBS and credit spreads.

### 4. 2008 Market Crash

Credit & liquidity crisis and equity market crash set off by Lehman Brothers bankruptcy. Significant credit spreads widening caused by massive deleveraging.

### 5. 2011 US Downgrade

The period begins with an indication of a 50% chance of a US downgrade from S&P and ends with the Fed's Operation Twist announcement. The stock market incurred losses while bond markets saw gains due to flight to quality.

### 6. 2013 Fed Tapering Scare

The timing and magnitude of Bernanke's testimony in front of Congress surprised the market, causing market volatility and both equity and bonds to sell off. Emerging Markets suffered badly due to a flight of money to the US.

### 7. Chinese Market Crash

Chinese stock market crash beginning with the popping of the stock market bubble on June 12, 2015.

### 8. Rapid Deflation

Oil price drops which causes short-end of the inflation curve to drop. The short end of the nominal curve is held unchanged since nominal rates in the short end are already very low. Due to the new round of quantitative easing agency mortgage rate spreads widen.

### 9. Slow Deflation

Oil price is kept unchanged. The 10yr inflation rate drops 200 bps. The 10yr nominal rate drops to historical lows while short-term nominal rates are held constant. Agency mortgage rate spreads tighten.



# Legal Disclaimer Information

## Legal Disclaimer Information

Vendors supply much of the information used in the Oregon State Treasury's analytic platform. In some cases, those vendors requested legal disclaimers to accompany any reporting. Those disclaimers, where applicable, include:

## FTSE International Limited

Source: FTSE International Limited ("FTSE") © FTSE 2016. FTSE® is a trade mark of the London Stock Exchange Group companies and is used by FTSE under license. All rights in the FTSE indices and/or FTSE ratings vest in FTSE and/or its licensors. Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE indices and/or FTSE ratings or underlying data. No further distribution of FTSE Data is permitted without FTSE's express written consent.

## MSCI Inc.

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard & Poor's, a division of the McGraw-Hill Companies, Inc. ("S&P") and is licensed for use by the Oregon Investment Council.

Neither MSCI, S&P nor any third party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard of classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

## Standard & Poor's

This may contain information obtained from third parties, including ratings from credit ratings agencies such as Standard & Poor's.

Reproduction and distribution of third party content in any form is prohibited except with the prior written permission of the related third party. Third party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. THIRD PARTY CONTENT PROVIDERS GIVE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. THIRD PARTY CONTENT PROVIDERS SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, EXEMPLARY, COMPENSATORY, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES, COSTS, EXPENSES, LEGAL FEES, OR LOSSES (INCLUDING LOST INCOME OR PROFITS AND OPPORTUNITY COSTS OR LOSSES CAUSED BY NEGLIGENCE) IN CONNECTION WITH ANY USE OF THEIR CONTENT, INCLUDING RATINGS.

Credit ratings are statements of opinions and are not statements of fact or recommendations to purchase, hold or sell securities. They do not address the suitability of securities or the suitability of securities for investment purposes, and should not be relied on as investment advice.

Updated Jan 2016







# OREGON STATE TREASURY

Tobias Read  
Oregon State Treasurer

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

[oregon.gov/treasury](https://oregon.gov/treasury)

December 2020



**Oregon Investment Council**

OPERF Fixed Income Annual  
Review

---

**Janet Becker-Wold, CFA**  
Senior Vice President

**Jim Callahan, CFA**  
President

# Fixed Income Portfolio

---

## Summary Observations

- The Total Fixed Income portfolio continues to perform well and has exceeded the Custom Target Index over both near and longer term periods.
- As of September 30, 2020, the Fixed Income portfolio employed 7 strategies and accounted for 18% of OPERF.
  - The Portfolio is roughly 41% Core, 40% Treasuries and 19% Non-Core.
  - The Core portion is managed by four managers – AllianceBernstein, BlackRock, Wellington and Western.
  - The Treasury portfolio is managed by OST Staff.
  - Non-Core is managed by Oak Hill and KKR (under liquidation).
  - The Portfolio is diversified across all sectors of the fixed income market.
- With dedicated Treasury and core Aggregate exposures, the portfolio is positioned to perform well in a down equity market consistent with its stated role in the OPERF portfolio.

# Strategic Role and Policy Objectives of Fixed Income

---

## Strategic Role

- Provide income, diversification and liquidity.
- Target allocation is 20% of the Total Fund.
- The investable universe can be described as investment grade securities as defined by the Bloomberg Barclays U.S. Aggregate index and below investment grade debt (leveraged loans and high yield).

## Policy Objectives

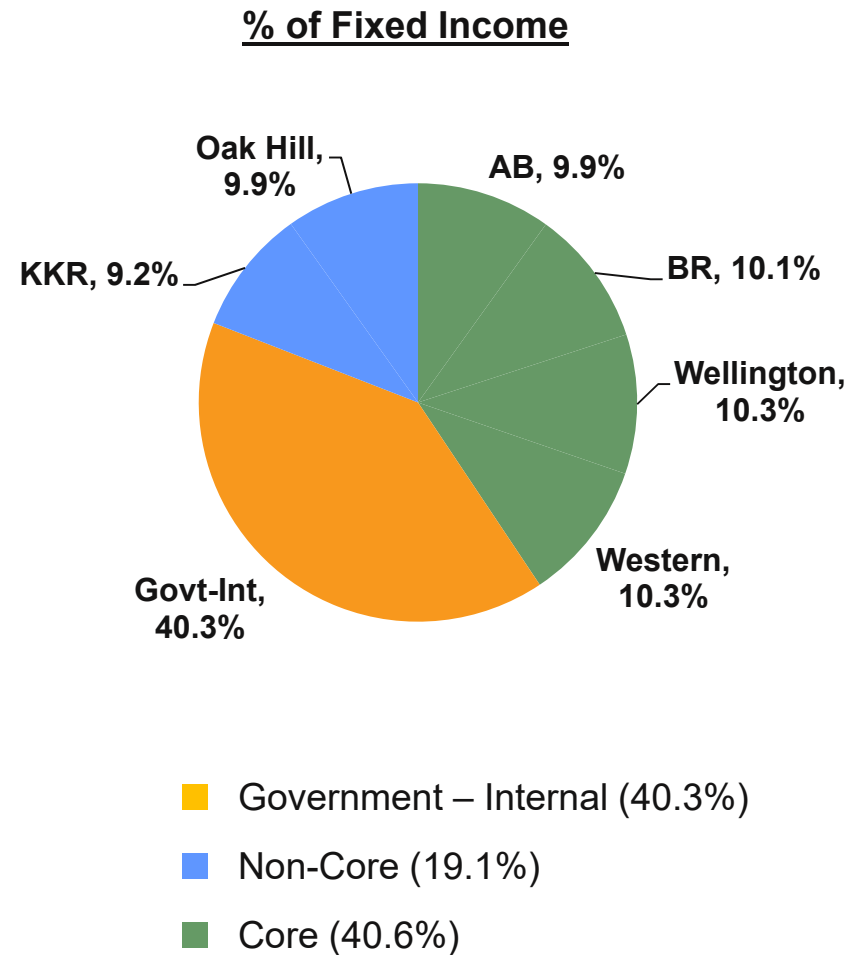
- Over a market cycle, achieve a rate of return at least 25 bps over the custom policy benchmark net of fees at a tracking error between 0.5-1.0%.
  - Portfolio return of 4.4% over trailing 10 years ended September 30, 2020 exceeds the Custom Benchmark by 0.76% net of fees.
  - Custom Benchmark = 46% Bloomberg U.S. Aggregate; 37% Bloomberg U.S. Treasury; 13% S&P/LSTA Leveraged Loan Index; 4% ICE BofA ML High Yield Master II.

Returns  
for Periods Ended September 30, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
OIC - PERS Fixed Income	1.51	7.04	5.34	4.36	4.43
OPERF Total Custom FI Benchmark	1.07	6.59	5.08	3.97	3.67
Public Fund 10+ B US FI	1.32	6.46	5.35	4.96	4.32

# Fixed Income Managers

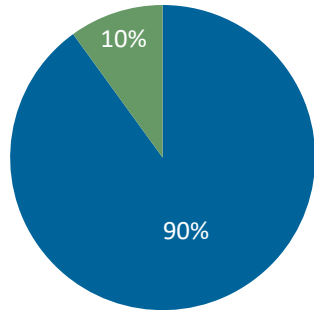
	September 30, 2020	
	Market Value	% of Total Fund
<b>Total Fixed Income</b>	<b>\$13,930,112,557</b>	<b>18.09%</b>
<b>Core Fixed Income</b>	<b>\$5,660,058,389</b>	<b>7.35%</b>
AllianceBernstein	1,378,337,900	1.79%
BlackRock	1,402,751,496	1.82%
Wellington	1,435,168,257	1.86%
Western Asset	1,443,803,490	1.87%
<b>US Government</b>	<b>\$5,610,012,637</b>	<b>7.28%</b>
Government Portfolio	5,610,012,637	7.28%
<b>Non-Core Fixed Income</b>	<b>\$2,660,040,093</b>	<b>3.45%</b>
KKR Credit Advisors	1,289,042,732	1.67%
Oak Hill	1,370,997,362	1.78%



# Fixed Income Portfolio Evolution

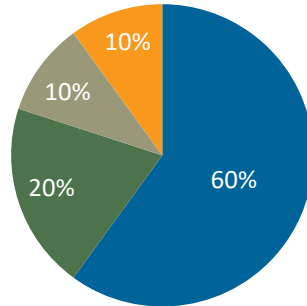
## Changes in the Custom Fixed Income Index

Prior to Feb 2011



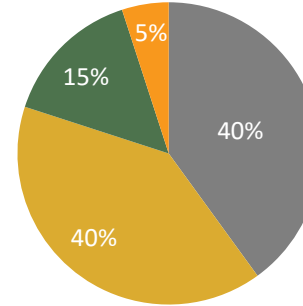
- BC U.S. Universal Index
- SSBI Non-U.S. World Government Bond Hedged Index

Starting Mar 2011



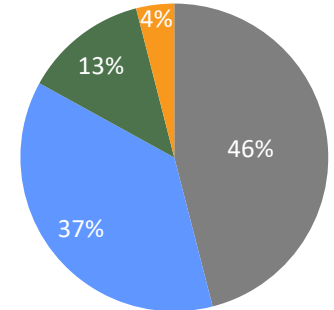
- BC U.S. Universal Index
- S&P/LTSA Leveraged Loan Index
- JPM EMBI Global Index
- BofA ML High Yield Master II Index

Starting Jan 2014



- BB U.S. Aggregate
- U.S. 1-3 year Govt/Credit Index
- S&P/LTSA Leveraged Loan Index
- BofA ML High Yield Master II Index

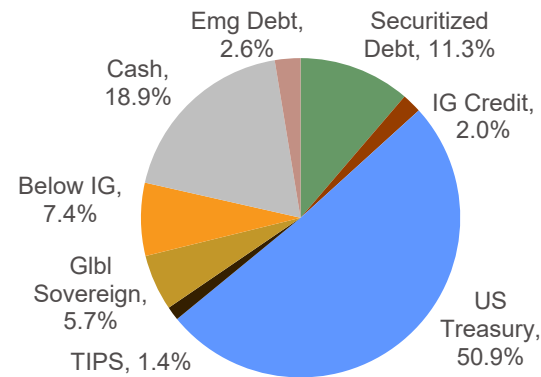
Starting Mar 2016



- BB U.S. Aggregate
- Barclays Treasury
- S&P/LTSA Leveraged Loan Index
- BofA ML High Yield Master II Index

- Unlevered new target.
- Target will be leveraged 12.5%.
- Leverage will be primarily be employed on IG Credit, Global Sovereign, and Securitized Debt.

### Implementation In Process



Source: OST Fixed Income Strategic Review, June, 2020



# Performance

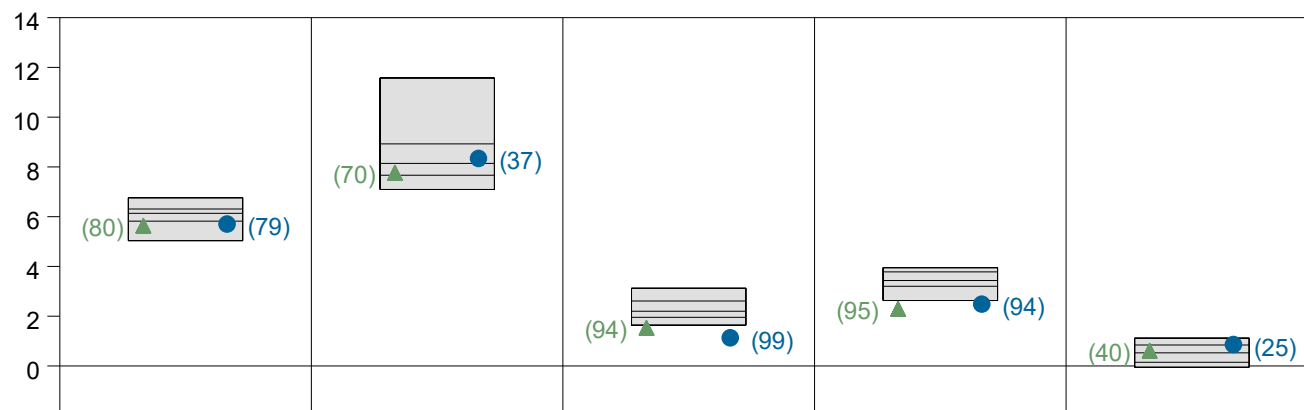
## Net of Fees, Period Ending September 30, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fixed Income</b>	<b>1.51%</b>	<b>7.04%</b>	<b>5.34%</b>	<b>4.36%</b>	<b>4.43%</b>
Oregon Custom FI Benchmark (15)	1.07%	6.59%	5.08%	3.97%	3.67%
Lg Public >10 B DF	1.32%	6.46%	5.03%	4.76%	4.23%
<b>Core Fixed Income</b>	<b>1.27%</b>	<b>7.85%</b>	<b>5.73%</b>	<b>4.83%</b>	<b>4.57%</b>
AllianceBernstein	1.03%	6.61%	5.16%	4.30%	4.10%
BlackRock	1.16%	8.38%	5.71%	4.56%	4.33%
Wellington	1.31%	8.59%	5.97%	5.08%	4.92%
Western Asset	1.56%	7.15%	5.86%	5.23%	4.92%
Oregon Custom FI Benchmark (16)	0.62%	6.98%	5.24%	4.18%	3.87%
CAI Core Bond Style	1.09%	7.98%	5.77%	4.75%	4.25%
<b>US Government*</b>	<b>0.19%</b>	<b>8.10%</b>	<b>5.54%</b>	-	-
Blmbg Treasury	0.17%	8.04%	5.50%	3.75%	3.15%
Callan Core Bond FI	1.09%	7.98%	5.77%	4.75%	4.25%
<b>Non-Core Fixed Income</b>	<b>4.90%</b>	<b>1.84%</b>	<b>3.58%</b>	<b>4.71%</b>	<b>5.63%</b>
Leveraged Loans & Bond Idx (23)	4.28%	1.37%	3.29%	4.66%	4.76%
KKR Credit Advisors	6.14%	0.42%	2.82%	3.88%	5.40%
Leveraged Loans & Bond Idx (17)	4.34%	1.49%	3.37%	4.92%	4.96%
Oak Hill	3.72%	3.19%	4.31%	5.54%	5.70%
Leveraged Loans & Bond Idx (18)	4.22%	1.24%	3.22%	4.40%	4.55%
Leveraged Bank Loans	3.59%	0.41%	2.94%	3.93%	4.56%

\* Benchmark definitions in the Appendix

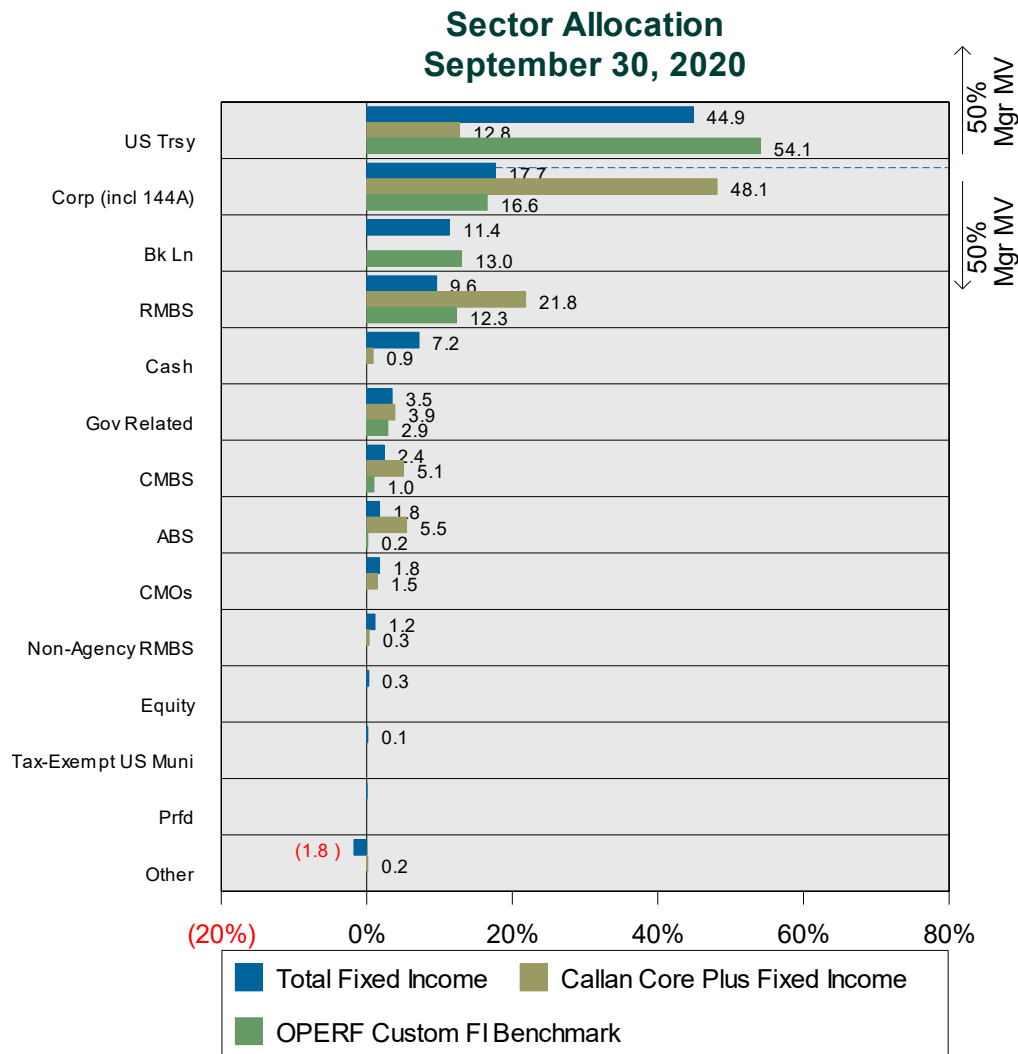
# Fixed Income Portfolio Characteristics

## Fixed Income Portfolio Characteristics Rankings Against Callan Core Plus Fixed Income as of September 30, 2020



	Duration	Average Life	Effective Yield	Coupon Rate	OA Convexity
10th Percentile	6.76	11.58	3.12	3.94	1.12
25th Percentile	6.31	8.92	2.61	3.78	0.84
Median	6.13	8.14	2.20	3.43	0.53
75th Percentile	5.82	7.67	1.95	3.20	0.15
90th Percentile	5.04	7.09	1.64	2.64	(0.05)
<b>Total Fixed Income</b> ●	5.68	8.32	1.11	2.46	0.83
OPERF Custom FI Benchmark ▲	5.64	7.77	1.54	2.30	0.62

# Fixed Income Sector Allocation

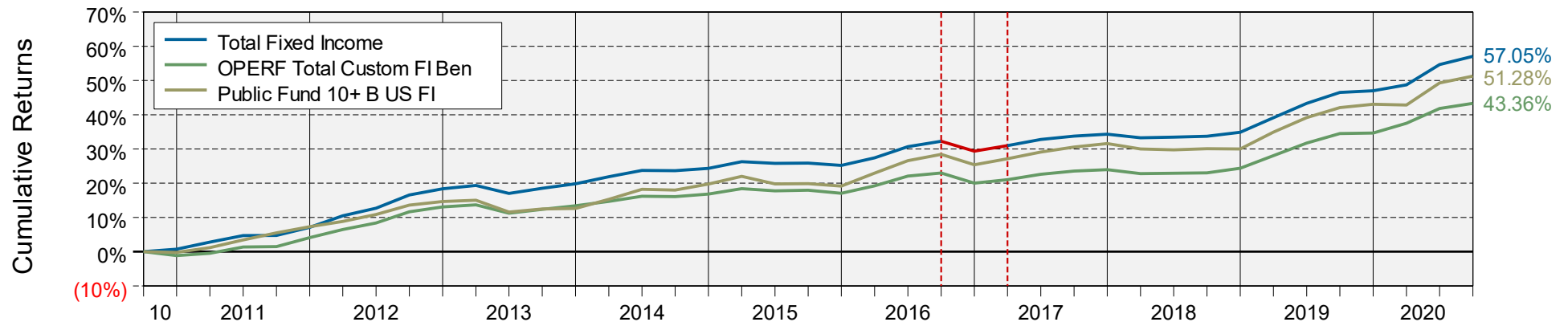


- Given dedicated Treasury portfolio, OPERF's sector allocations differ from the Callan Core Plus Fixed Income peer group
  - Weight is higher than peers but in line with the custom benchmark
- Investment grade corporate bonds are also lower than peers
- New fixed income structure will have dedicated allocations to treasuries, securitized debt, investment grade credit, sovereign debt and emerging market debt.

# Absolute Cumulative Drawdown Analysis

10 Years Ended September 30, 2020

## Absolute Cumulative Drawdown Analysis



### Worst Absolute Drawdown

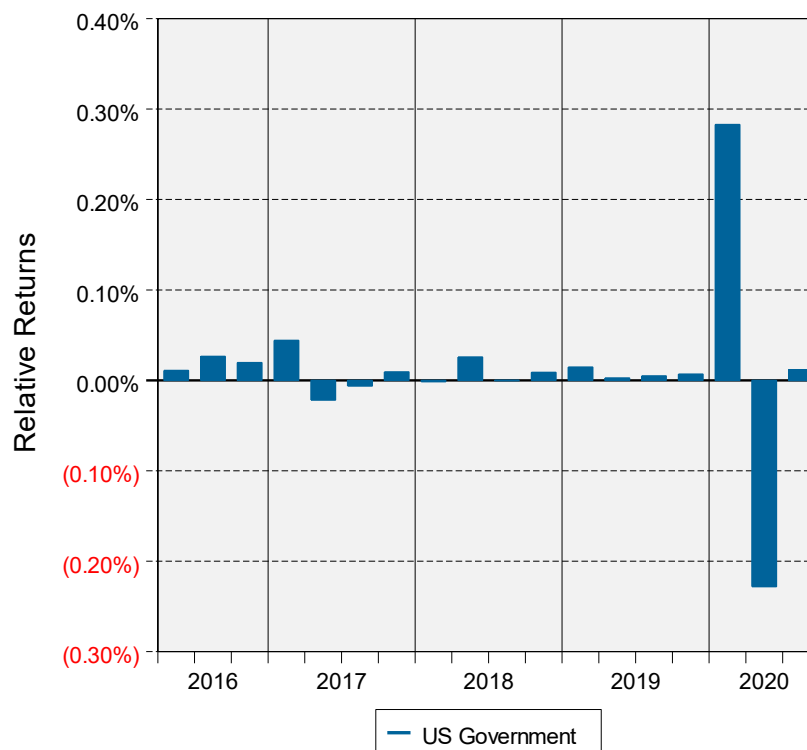
	Return	Years	Period	Index	Peers
Total Fixed Income	(0.98)%	0.50	2016/09-2017/03	(1.57)%	(1.02)%
Recovery from Trough	1.38%	0.25	2017/03-2017/06	1.29%	1.55%
OPERF Total Custom FI Ben	(1.57)%	0.50	2016/09-2017/03		
Public Fund 10+ B US FI	(2.37)%	0.75	2015/03-2015/12		

- The OPERF portfolio outperformed the benchmark in the most recent drawdown, 9/2016-3/2017.

# Internally Managed Treasury Portfolio

18 Quarters ended September 30, 2020

Relative Return vs Blmbg Treasury



	Returns	Standard Deviation	Sharpe Ratio	Excess Return	Tracking Error	Information Ratio
OST - Government Blended	3.69%	4.07%	0.59%	0.03	0.18%	0.03%
<i>Blmbg:Treasury</i>	3.66%	4.02%	0.58%	0.00	0.00%	0.00%

# Fixed Income as Equity Hedge

---

## Correlation to MSCI ACWI IMI (OPERF Total Equity Benchmark)

Correlation  
for Period Ended September 30, 2020

	Last 5 Years
OPERF Total Custom FI Benchmark	0.08
Blmbg:Aggregate	(0.08)
Blmbg:Treasury	(0.58)
BofA ML:US High Yield Master II	0.89
S&P:LSTA Lev Loan	0.90

- OPERF Total Custom. FI Benchmark = 46% Bloomberg U.S. Aggregate; 37% Bloomberg U.S. Treasury; 13% S&P/LSTA Leveraged Loan Index; 4% ICE BofA ML High Yield Master II since March 2016.
- Treasuries provide the strongest diversification of equity risk with a negative correlation of .58.
- Below investment grade components, U.S. High Yield and Levered Loans, have the highest correlation to equity (.90).

# Benchmark References

---

- (15) Prior to February 28, 2011, index is Oregon Custom FI 90/10 Benchmark (90% BC US Universal Index and 10% SSBI Non-US World Gov't Bond Hedged Index). From March 1, 2011 to December 31, 2013, index is Oregon Custom FI Benchmark 60% BC US Universal Index, 20% S&P/LSTA Leveraged Loan Index, 10% JMP EMBI Global Index, and 10% BofA ML High Yield Master II Index). From January 1, 2014 to February 29, 2016, index is Oregon Custom FI Benchmark (40% Barclays Capital U.S. Aggregate Bond, 40% Barclays Capital U.S. 1-3 Govt/Credit Bond Index, 15% S&P/LSTA Leveraged Loan Index, and 5% BofA ML High Yield Master II Index). From March 1, 2016 to Present, index is 46% Barclays Aggregate Bond, 37% Barclays Treasury, 4% BofA ML High Yield Master II and 13% S&P/LSTA.
- (16) Prior to February 28, 2011, index is Oregon Custom External FI 90/10 Benchmark (90% BC US Universal and 10% SSBI Non-US World Gov't Bond Hedged Index). From March 1, 2011 to December 31, 2013, index is Oregon Custom External FI Benchmark (90% BC US Universal Index and 10% JMP EMBI Global Index). From January 1, 2014 to Current, index is Oregon Custom External FI Benchmark (100% Barclays Capital U.S. Aggregate Bond).
- (17) 65% S&P-LSTA/35% Merrill HY Master II.
- (18) 85% S&P-LSTA/15% Merrill HY Master II.
- (23) 75% S&P-LSTA/25% Merrill HY Master II.

# Index Descriptions

---

- **Bloomberg Barclays Aggregate:** The Bloomberg Barclays US Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS and CMBS (agency and non-agency).
- **Bloomberg Barclays Treasury Index:** The Bloomberg Barclays US Treasury Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury with at least one year to maturity.
- **ICE BofA ML US High Yield Master II Index:** tracks the performance of US dollar denominated below investment grade rated corporate debt publically issued in the US domestic market. To qualify for inclusion in the index, securities must have a below investment grade rating (based on an average of Moody's, S&P, and Fitch) and an investment grade rated country of risk (based on an average of Moody's, S&P, and Fitch foreign currency long term sovereign debt ratings). Each security must have greater than 1 year of remaining maturity, a fixed coupon schedule, and a minimum amount outstanding of \$100 m.
- **S&P/LSTA (Loan Syndications and Trading Association) U.S. Leveraged Loan Index (LLI):** The index is a fixed-weighted index that tracks the performance of the U.S. senior loan market. Term loans from syndicated credits must meet the following criteria at issuance in order to be eligible for inclusion in the LLI: Senior secured; U.S. dollar denominated; minimum initial term of one year; minimum initial spread of *LIBOR* + 125 basis points; US\$ 50 million initially funded loans. The loan must have been bought by an institutional investor, and must currently be in their portfolio.



# Definition of Terms

---

- Alpha represents the historical return from an asset, based on factors unrelated to the underlying factors affecting the market. As such, Alpha is a measure of the return for asset specific (or residual) risk. Alpha is used as a measure of a manager's contribution to performance due to security or sector selection. A positive (negative) Alpha indicates that a portfolio was positively (negatively) rewarded for the residual risk taken for a given level of market exposure. If the market excess return is 2% and the portfolio Beta is 1.1, then the manager would have to have an excess return greater than 2.2% for the manager to have contributed to performance above and beyond the performance of the market.
- Beta is a measure of the systematic risk of a security or portfolio. Beta measures the historical sensitivity of portfolio or security excess returns to movements in the excess return of the market index. The value for Beta is expressed as a percentage of the market where the market Beta is 1.00. A security or portfolio with a Beta above the market has volatility greater than the market. If the Beta of a security was 1.3, a 1 percent increase in the market return resulted, on average, in a 1.3 percent increase in the security's return. A security or portfolio with Beta below the market has lower volatility than the market and the return on the security will move less than the market return. If the Beta of the security was .9, a 1 percent decrease in the market resulted in only a .9 percent decrease in the security's return.
- Down Market Capture is determined by the index which has a Down-Capture ratio of 100% when the index is performing negatively. If a manager captures less than 100% of the declining market it is said to be "defensive".
- Excess Return is a portfolio return minus the benchmark.
- Information Ratio is a risk statistic that measures the excess return per unit of residual "non-market" risk in a portfolio. The ratio is equal to the Alpha divided by the Residual Risk. Because the Information Ratio represents a residual-risk adjusted measure of the excess returns of a portfolio, the resulting value can be looked at as the excess return per unit of risk that is due solely to the specific risks associated with the securities in the portfolio and by definition could be diversified away.
- Maximum Drawdown is the maximum loss from a peak to a trough of a portfolio, before a new peak is attained.

# Definition of Terms

---

- R-Squared indicates the extent to which the variability of the portfolio returns are explained by market action. It can also be thought of as measuring the diversification relative to the appropriate benchmark. An r-squared value of .75 indicates that 75% of the fluctuation in a portfolio return is explained by market action. An r-squared of 1.0 indicates that a portfolio's returns are entirely related to the market and it is not influenced by other factors. An r-squared of zero indicates that no relationship exists between the portfolio's return and the market.
- Sharpe Ratio is a commonly used measure of risk-adjusted return. It is calculated by subtracting the "risk-free" return (usually 3 Month Treasury Bill) from the portfolio return and dividing the resulting "excess return" by the portfolio's risk level (standard deviation). The result is a measure of return gained per unit of risk taken.
- Sortino Ratio measures excess return over a benchmark divided by downside risk. The natural appeal is that it identifies value-added per unit of truly bad risk. The danger of interpretation, however, lies in the two areas: (1) the statistical significance of the denominator, and (2) its reliance on the persistence of skewness in return distributions.
- Standard Deviation is a statistical measure of portfolio risk. It reflects the average deviation of the observations from their
- Sample mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns typically is. The wider the typical range of returns, the higher the standard deviation of returns, and the higher the portfolio risk. If returns are normally distributed (e.g., has a bell shaped curve distribution) then approximately 2/3 of the returns would occur within plus or minus one standard deviation from the sample mean.
- Tracking Error is a statistical measure of a portfolio's risk relative to an index. It reflects the standard deviation of a portfolio's individual quarterly or monthly returns from the index's returns. Typically, the lower the Tracking Error, the more "index-like" the portfolio.
- Up Market Capture is determined by the index which has an Up-Capture ratio of 100% when the index is performing positively. If a manager captures more than 100% of the rising market it is said to be "offensive".

TAB 7 – OPERF Risk Parity Program

December 9, 2020

# OPERF Risk Parity 2020 Annual Review

**Karl Cheng**

*Senior Investment Officer, Portfolio Risk & Research*



**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	9B
Agenda	2																			
Risk Parity Performance	3																			
Risk Parity Benchmark	4																			
Looking Back & Looking Ahead	5 - 6																			
What is Risk Parity?	7 - 9																			
Functional Roles of RP Exposures	10																			
Other Considerations of RP	11																			
Appendix	12																			

## 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.
  - 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**
  - A. Asset allocation is the OIC's primary policy tool for managing the investment program's long-term risk/return profile.
  - 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**
  - 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**
  - A. All fees, expenses, commissions, and transaction costs should be diligently monitored and managed in order to maximize net investment returns.
  - 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**
  - 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.
  - 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**
  - 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.



# Risk Parity Performance

## Strategic Role

The strategic role of OPERF risk parity investments is outlined in OIC Policy INV 610 – Strategic Role of Risk Parity for OPERF. Risk parity strategies provide long-only leveraged exposures to a combination of public equity, fixed income, and commodity betas targeting returns approximating that of public equity but with a lower volatility of returns. It is expected that this portfolio of exposures, particularly levered exposures to sovereign bonds or interest rates, will improve OPERF’s diversification and have better downside characteristics than an equity index investment.

## Trailing Performance

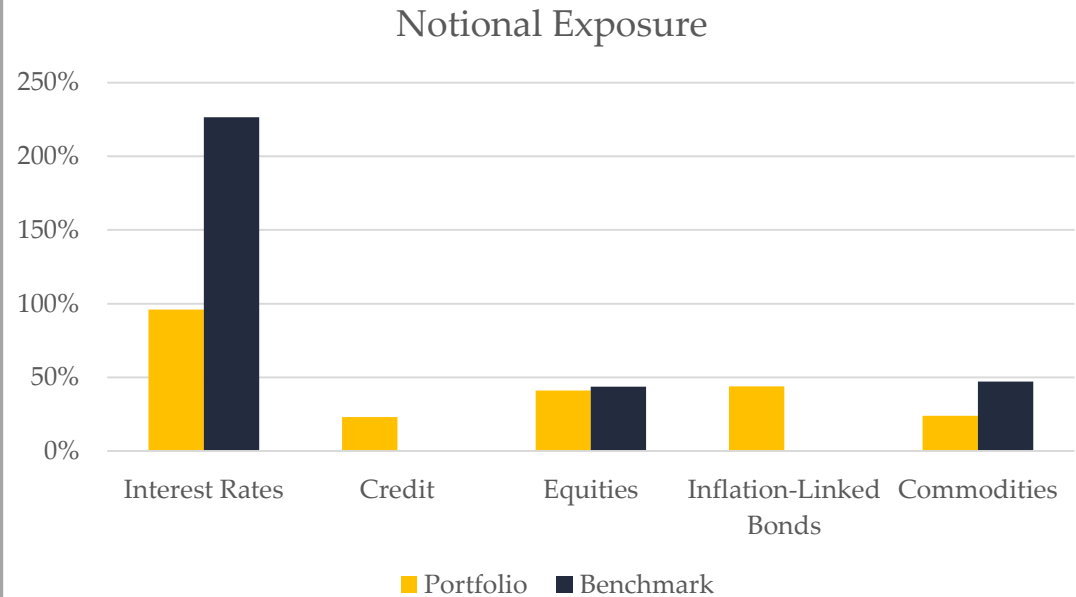
	Market Value	3 Months	Since Inception (April 2020)
<b>OPERF Risk Parity</b>	<b>\$1,585 million</b>	<b>5.19%</b>	<b>10.11%</b>
S&P Risk Parity (12% Target Volatility)		5.87%	17.57%
<b>Excess Return</b>		<b>-0.68%</b>	<b>-7.47%</b>

Source: State Street, as of September 30, 2019.

- There is no representative “market” index for risk parity. S&P licensed the proprietary methodology from a third-party firm.
- Differences in performances mainly occurred in the first two months as investments were initiated with the three firms.
- Nuances with the index construction methodology – greater leverage and more commodity exposures – also led to underperformance.

# Risk Parity Benchmark

Manager	Market Value (\$M)	Market Value (%)
Bridgewater All Weather	537	33.9
Man AHL TargetRisk	516	32.6
PanAgora Risk Parity Multi Asset	532	33.6
<b>Total</b>	<b>1,585</b>	<b>100.0</b>



# Looking Back

April 2019	OIC approved a 2.5% target allocation to Risk Parity.
December 2019	OIC approved \$650-million allocations to Man AHL TargetRisk and PanAgora Risk Parity Multi Asset.
January 2020	OIC Approved a \$650-million allocation to Bridgewater All Weather.
April 2020	OIC approved <i>INV 610 Strategic Role of Risk Parity for OPERF</i> which sets the <i>S&amp;P Risk Parity Index – 12% Target Volatility</i> as the benchmark for the portfolio.
Since April 2020	Staff funding risk parity mandates at a measured pace.



# Looking Forward

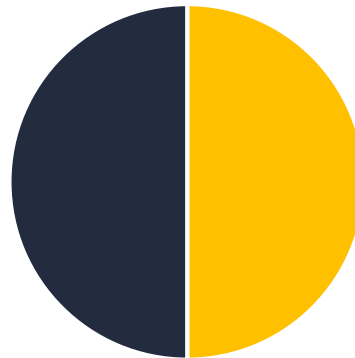
- Complete funding of the three mandates up to the OIC-approved target allocation of 2.5% of OPERF.
- Continue monitoring the performances and the exposures of the Risk Parity Portfolio.
- Prepare for the upcoming OPERF Strategic Asset Allocation Review.

# What is Risk Parity? (1)

Risk Parity is a framework of allocating by *risk* rather than by *capital*.

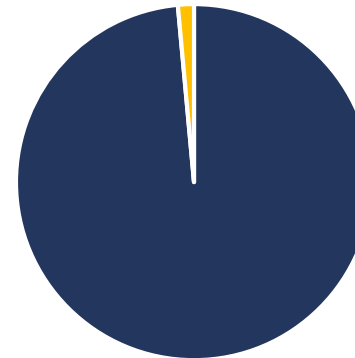
- Consider a two-asset portfolio that equally allocates capital to public equity and fixed income. Since the volatility of return for public equity is typically multiples that for fixed income, equity contributes the majority of the portfolio risk.

50/50 Capital Allocation



■ Public Equity ■ Fixed Income

50/50 Risk Contribution

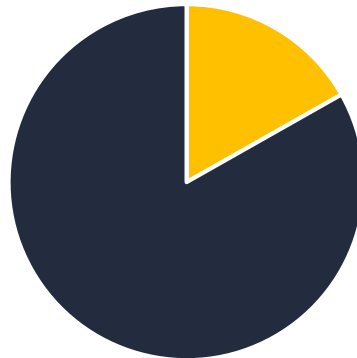


■ Public Equity ■ Fixed Income

# What is Risk Parity? (2)

- Risk parity attempts to balance the risk among the asset classes with the *a priori* premise that the Sharpe Ratios<sup>1</sup> of the asset classes are approximately equal. Using the same two asset classes, a risk parity portfolio would allocate the majority of the *capital* to fixed income so that the *risk contributions* of public equity and fixed income are roughly equal. The result should be a better diversified portfolio [*OIC Investment Belief #2B*].

Risk Parity Capital Allocation



■ Public Equity ■ Fixed Income

RP Risk Contribution



■ Public Equity ■ Fixed Income

<sup>1</sup>Sharpe Ratio is the return excess of the risk-free rate divided by standard deviation. It can be interpreted as how efficiently an investor deploys risk.

# What is Risk Parity? (3)

- Given that equity has a higher return premium than fixed income [*OIC Investment Belief #3*], an *unlevered* risk parity portfolio with a lower equity allocation would have a lower expected return than a 50/50 portfolio. To deliver a return approximate that of the 50/50 portfolio, the risk parity portfolio is levered using liquid exchange-traded futures.
- Despite leverage, the risk parity portfolio is expected to have a lower volatility of return than a 50/50 portfolio since it is a better diversified portfolio and the leverage is mainly in lower risk fixed income exposure.

	50/50	Unlevered RP	Levered RP
Public Equity	50%	17%	28%
Fixed Income	50%	83%	139%
Total	100%	100%	167%
Expected Return	5.4%	3.7%	5.4%
Std Deviation	9.2%	4.1%	6.9%

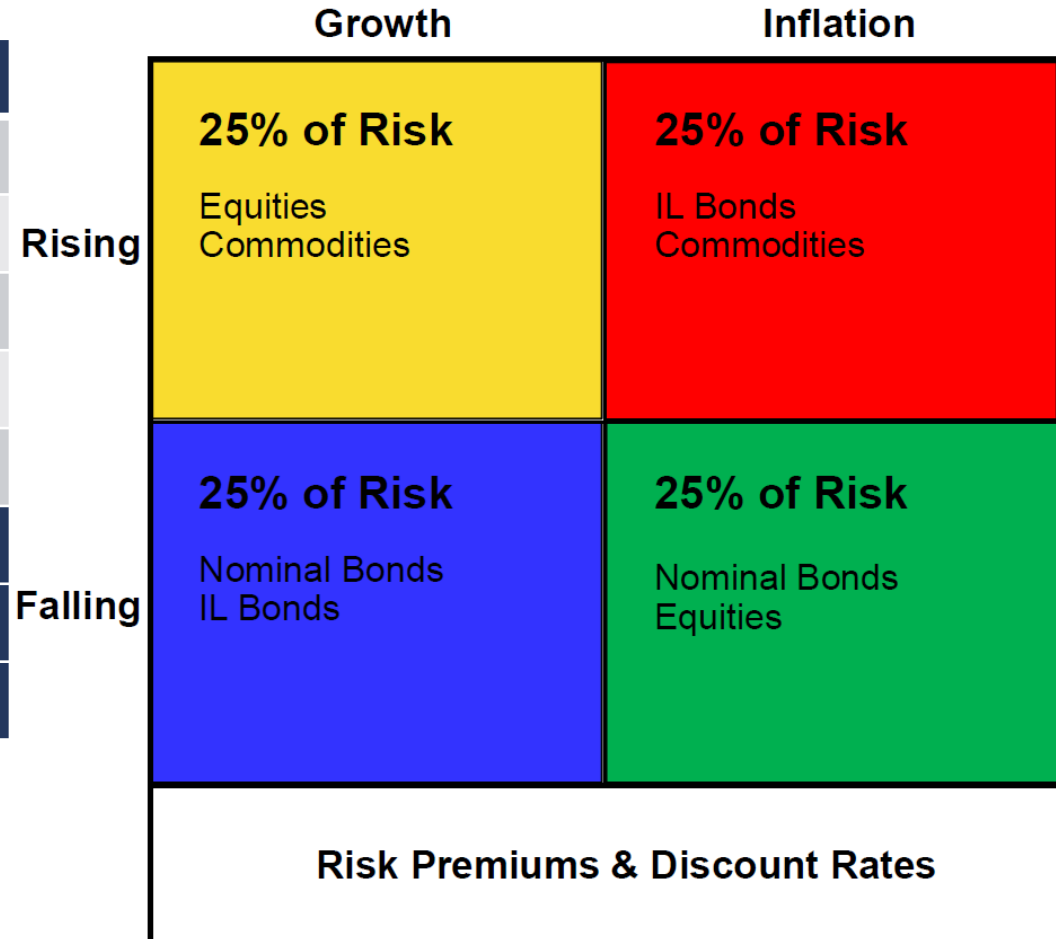
For illustrative purpose using Callan's 2020 Capital Market Assumptions and assuming financing cost of 1%. Required leverage would increase as financing cost increases.

# Functional Roles of Risk Parity Exposures

As of September 30, 2020

Asset Class	Notional Exposure
Interest Rates	96%
Credit	23%
Equities	41%
Inflation-Linked Bonds	44%
Commodities	24%
<b>Total</b>	<b>228%</b>
<b>NAV (\$M)</b>	<b>1,585</b>
<b>Gross Exposure (\$M)</b>	<b>3,612</b>

Bridgewater's Four-Quadrant Construct



# Other Considerations of Risk Parity

- Risk parity is a *multi-asset* portfolio with allocations to equity, fixed income, inflation-linked bonds, commodities, and credit.
  - For every \$1 of NAV, OPERF Risk Parity provides approximately \$1.40 of interest rate exposure, plus other beta exposures (*see previous slide*).
- The strategy is a trade-off between equity and a diversified, leveraged exposures to interest rates and other asset class exposures.
  - Risk parity typically lags equity in a bull market, e.g., 2019, but it typically outperforms equity in a bear market, e.g., 2008.
- Asset class weights are roughly static, i.e., while the managers may individually make small adjustments to their portfolios, they do not make macroeconomic calls nor relative valuation tilts between asset classes.

# Appendix: Matrix of Correlations of Returns among OIC-Approved Risk Parity Managers

	Bridgewater	Man AHL	PanAgora
Bridgewater	1.00	0.75	0.90
Man AHL	0.75	1.00	0.85
PanAgora	0.90	0.85	1.00

Using monthly returns from January 2015 to September 2020, scaled to 12% volatility.



# OREGON STATE TREASURY

Tobias Read  
Oregon State Treasurer

16290 SW Upper Boones Ferry Road  
Tigard, OR 97224

[oregon.gov/treasury](https://oregon.gov/treasury)



TAB 8 – OPERF Q3 Performance



To: The Oregon Investment Council

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

Re: Third Quarter 2020 Risk Report for the Oregon Public Employees Retirement Fund

This memo summarizes OPERF’s predicted volatility, as estimated by Aladdin, Treasury’s end-to-end investment analytics platform built by BlackRock. As of September 30, 2020, Aladdin estimated a volatility of return of 25.0% for OPERF, substantially higher than Callan LLC’s forward assumptions presented at the June 2020 meeting. Aladdin’s estimate is elevated due to: a) the model’s short-term emphasis and b) related to the first point, market volatilities spiked in the first half of 2020 which raised Aladdin’s estimate. Staff recommends no additional action at this point.

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

For the quarter, OPERF generated a net cash inflow of approximately \$170 million. \$1,475 million of cash was raised from liquidations in the Public Equity and Fixed Income Portfolios. That was offset by \$690 million of net pension payments, \$600 million in Risk Parity funding, and \$258 million of Alternatives Portfolio net cash outflow.

OPERF Asset Allocation

Investment Belief #2 in INV 1201: Statement of OIC Investment and Management Beliefs states: “Asset Allocation Drives Risk and Return”. Shown in the table below are OPERF’s target allocations approved by the Council at the April 2019 meeting.

Table 1. OPERF Target Asset Allocation

Table with 4 columns: Asset Class, Target Allocation (%), Rebalancing Range (%), and Expected Annual Policy Return (%)^1. Rows include Public Equity, Private Equity, Fixed Income, Real Estate, Alternatives, Risk Parity, and Total Fund.

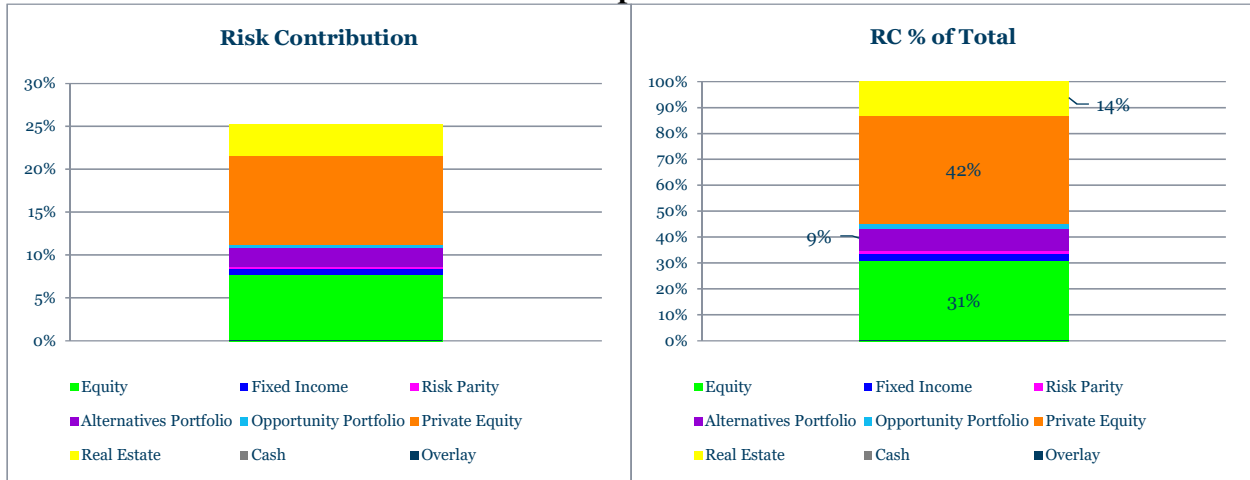
^1Per the OIC-approved Capital Market Assumptions presented by Callan LLC at the June 2020 meeting.



## OPERF Predicted Risk

The risk estimates are shown in the charts below.

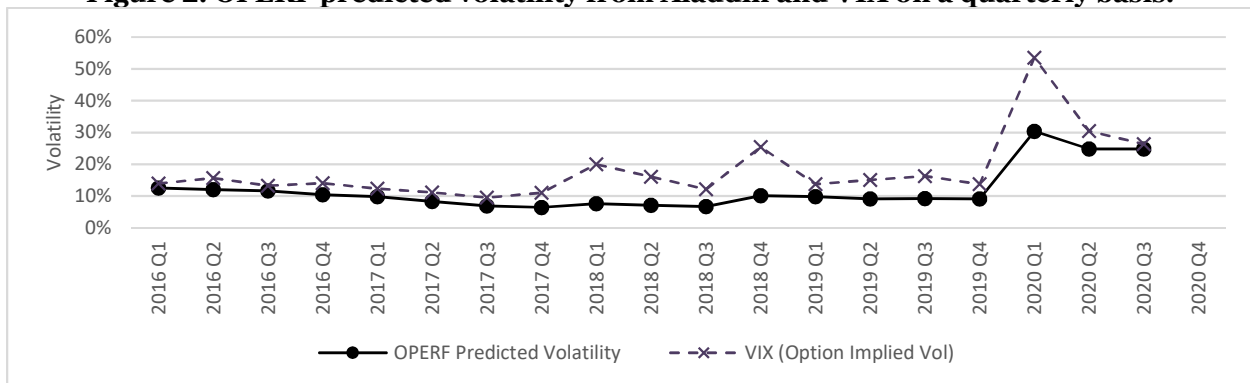
**Figure 1. OPERF Risk Contribution by Asset Class and Risk Contribution as a percent of total OPERF predicted risk.**



The total predicted **standard deviation**, or **volatility**, for OPERF is 25.0% as of September 30, 2020. To put that in context, Callan LLC (“Callan”), the OIC’s investment consultant, estimates OPERF’s long-term volatility to be 12.4% using their 2020 Capital Market Assumptions. There are two main explanations for the variation between Callan’s and Aladdin’s estimates:

1. Callan’s estimate is based on their ten-year forward assumptions while Aladdin’s estimate uses a short-term, two-year lookback period so there will almost always be some difference between their two estimates; and
2. Aladdin’s two-year lookback period for September 2020 captures the highly volatile market environment of March 2020 which impacted the model. The chart below compares Aladdin’s estimates over the past five years versus the [Chicago Board Options Exchange’s Volatility Index \(“VIX”\)](#), which measures the implied volatility of 30-day S&P 500 options. Implied volatility is highly correlated to realized volatility, which is why the chart shows a spike in VIX in March 2020.

**Figure 2. OPERF predicted volatility from Aladdin and VIX on a quarterly basis.**



Another item of note from Figure 1 is that “equity” risk, that is the predicted risk contributions from the Public Equity and Private Equity Portfolios, is estimated to be 73% of OPERF’s total predicted risk. Since equity volatility spiked, as shown in Figure 2, OPERF’s predicted volatility also spiked.

Equity risk has always been the largest risk contributor to OPERF. OIC Investment Belief #3 summarizes the Council’s objective for investing in equity: “*Over the long-term, equity-oriented investments provide reliable return premiums relative to risk-free investments.*” However, the “cost” of this incremental return is that equity investments are much more volatile than investment grade fixed income and U.S. Treasuries. Over the past several years, the OIC has approved changes to asset allocations and portfolio construction to diversify the Fund from equity risk:

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

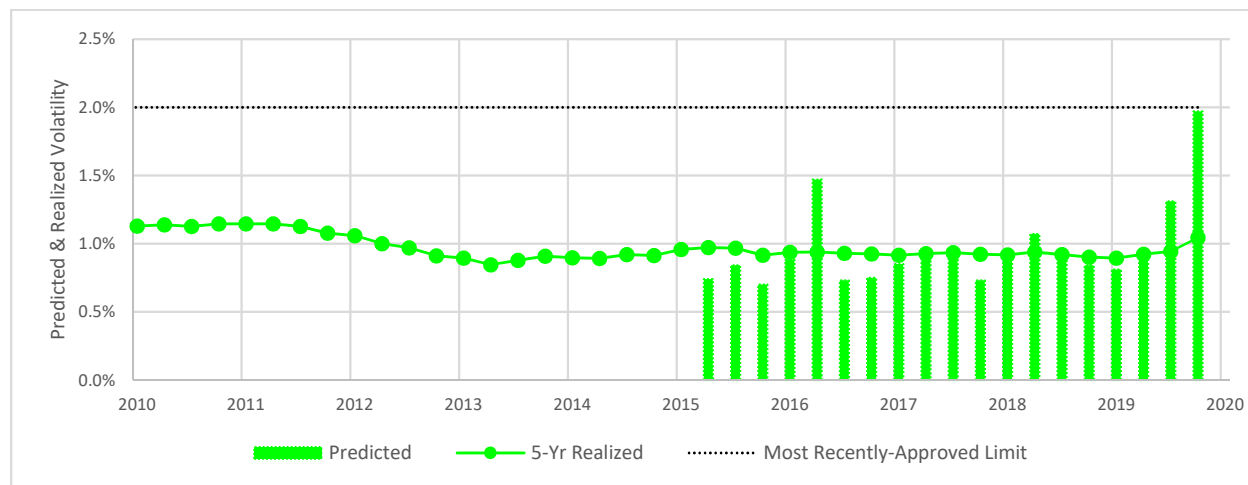
As stated under OIC Investment Belief #1C: “*The OIC must weigh the short-term risk of principal loss against the long-term risk of failing to meet return expectations.*” Volatilities are elevated due to exogenous macroeconomic events. Despite Aladdin’s estimate being double that of Callan’s assumption, **staff recommends no action at this time.** As mentioned during previous OIC meetings, OPERF is effectively a “market taker”, i.e., while the OIC manages the Fund for the long term, the realized returns and volatilities are dictated by the market. It is staff’s belief that any possible gain due to a sudden tactical shift at this time may be offset by transaction cost and/or opportunity cost, e.g., reducing equity allocation due to elevated volatility may risk missing a market rally.

## Capital Markets

### Public Equity

The Public Equity Portfolio has an OIC-approved **tracking error** range of 0.75% to 2.00%. Using monthly performance data from State Street, the five-year tracking error through September 30, 2020 for the Portfolio is 1.05%, well within the approved range. Predicted active risk increased beginning with Q1 2020 as Covid concerns impacted all aspects of capital markets.

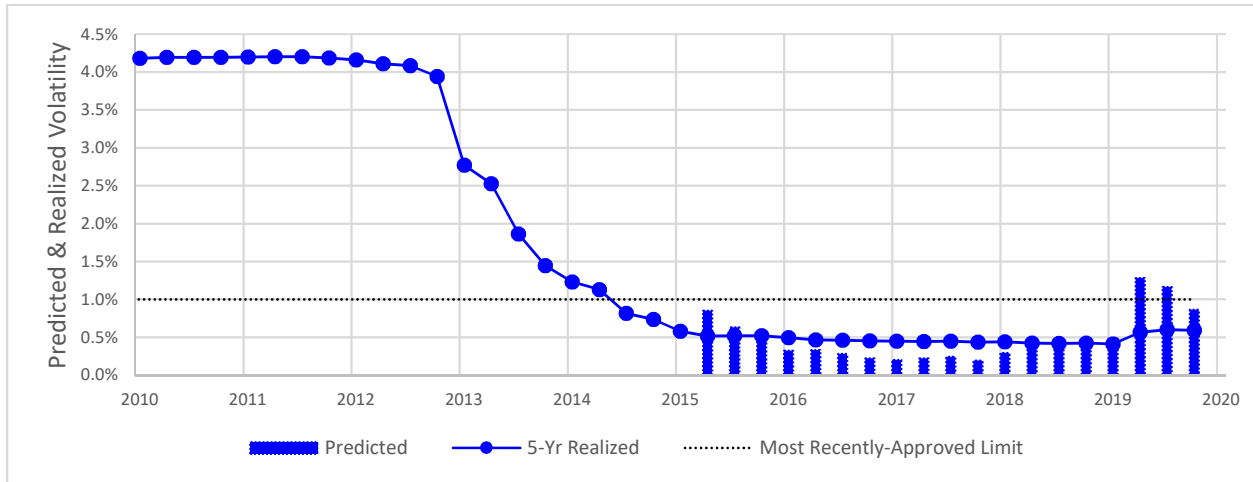
**Figure 3. Public Equity’s predicted risk and realized five-year tracking error on a quarterly basis.**



### Fixed Income

The Fixed Income Portfolio has an OIC-approved **tracking error** of up to 1.0%. Using monthly performance data from State Street, the five-year tracking error through September 30, 2020 for the Portfolio is 0.59%, well within the approved range. Similar to what occurred for Public Equity, Covid concerns impacted all sectors of the fixed income market.

**Figure 4. Fixed Income’s predicted risk and realized five-year tracking error on a quarterly basis.**



**OPERF Cash Flow**

Table 2 below summarizes approximate net investment cash flow for the quarter. That was offset by cash outflow of \$690 million for net pension payments and cash inflow of \$20 million from the Individual Account Program (IAP).

**Table 2. OPERF Net Cash Flow by Portfolio**

<b>Asset Class</b>	<b>Net Cash Flow (\$M)</b>
Public Equity	+1,185
Private Equity	+103
Fixed Income	+290
Real Estate	+34
Alternatives	-258
Opportunity	+33
Risk Parity	-600
Other	+51
<b>Total Fund</b>	<b>+839</b>

# Callan



December 9, 2020

## Oregon Investment Council

Third Quarter 2020  
Performance Review

---

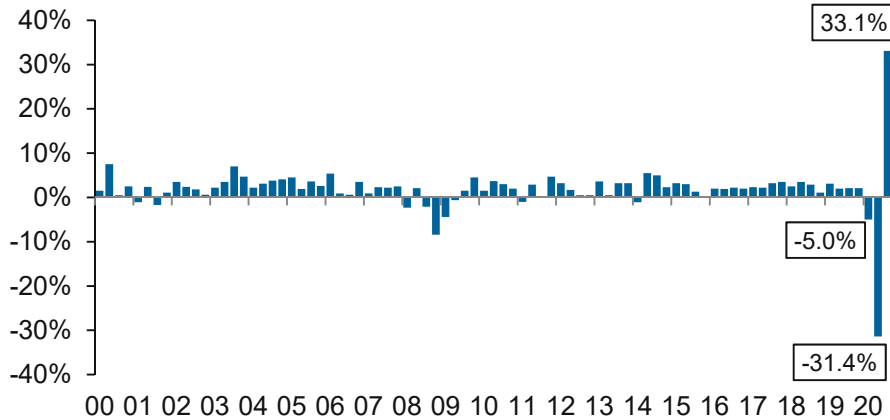
**Janet Becker-Wold, CFA**  
Senior Vice President

**Jim Callahan, CFA**  
President

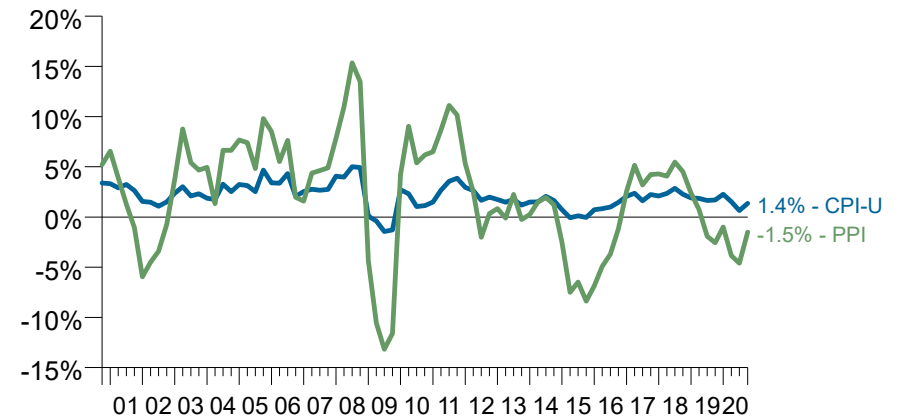
# U.S. Economy—Summary

For periods ended September 30, 2020

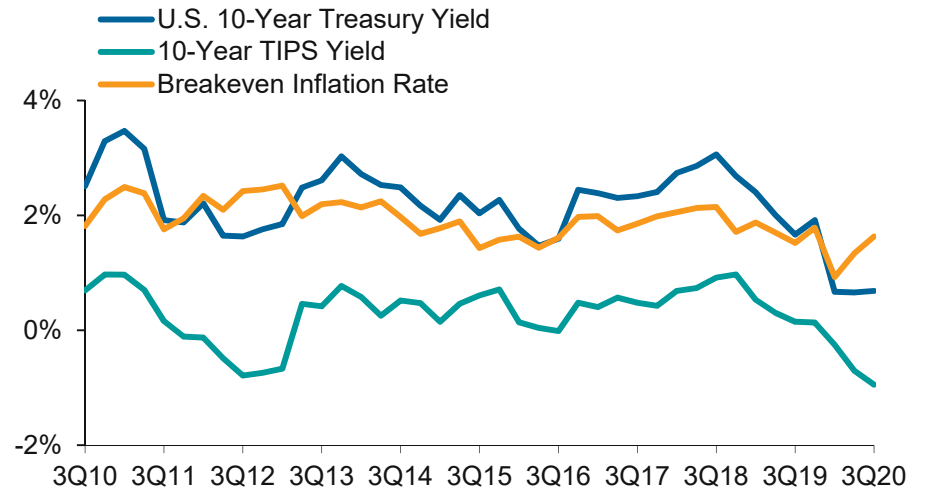
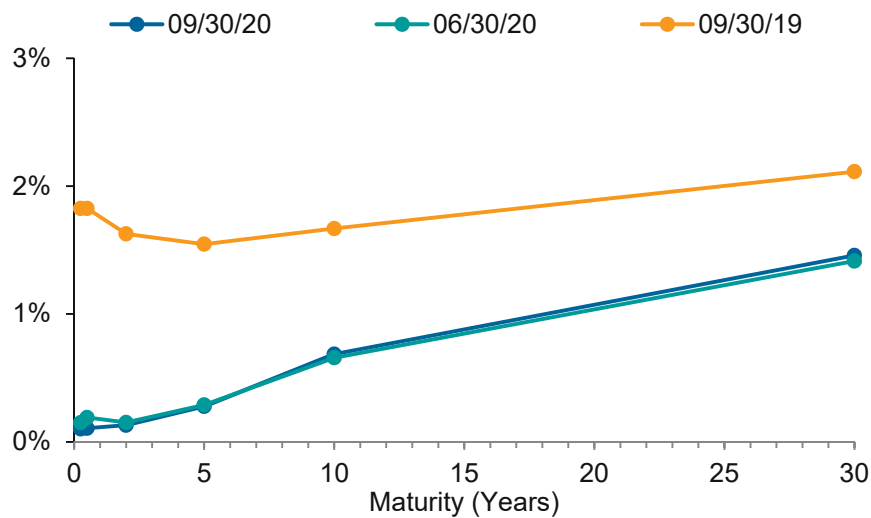
## Quarterly Real GDP Growth



## Inflation Year-Over-Year



## U.S. Treasury Yield Curves



# Callan Periodic Table of Investment Returns – Public Markets

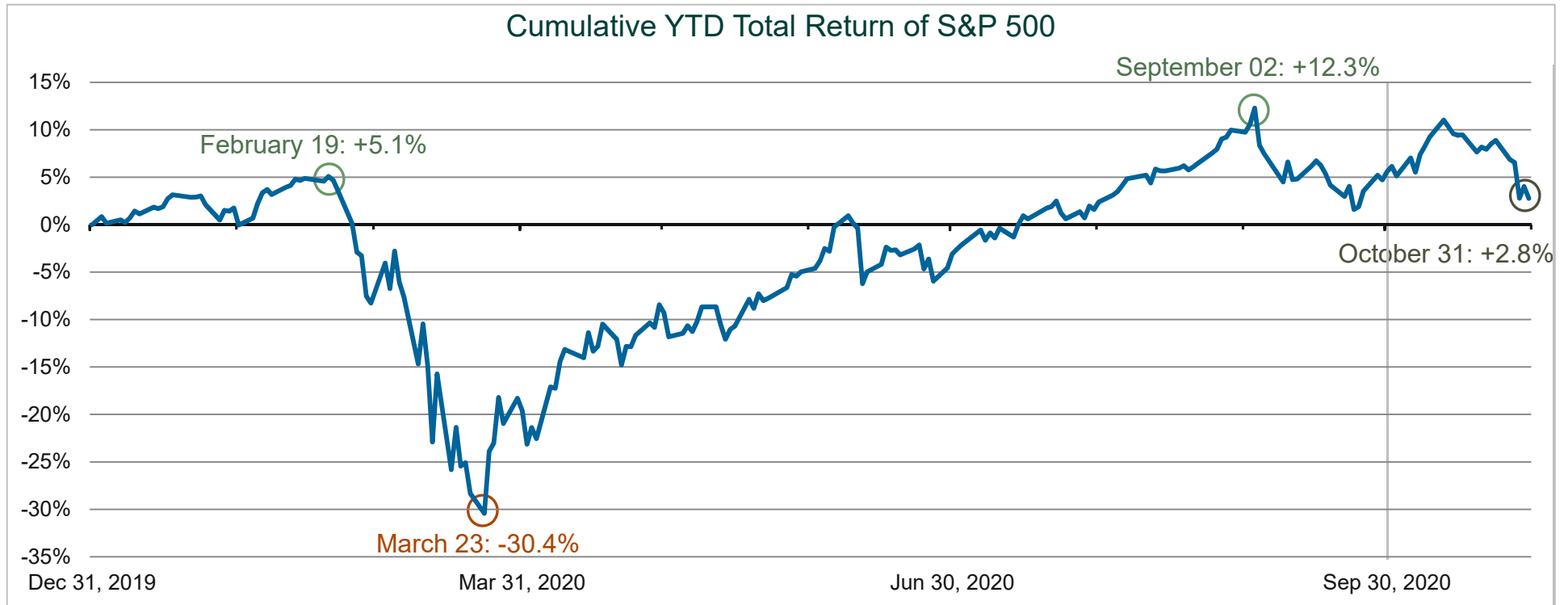
Annual Returns				Quarter and Cumulative (as of 9/30/20)				
2016	2017	2018	2019	3Q2020	Year to Date	Last 5 Years	Last 7 Years	Last 10 Years
Small Cap Equity 21.3%	Emerging Market Equity 37.3%	U.S. Fixed Income 0.0%	Large Cap Equity 31.5%	Emerging Market Equity 9.6%	U.S. Fixed Income 6.8%	Large Cap Equity 14.1%	Large Cap Equity 12.7%	Large Cap Equity 13.7%
High Yield 17.1%	Dev ex-U.S. Equity 24.2%	High Yield -2.1%	Small Cap Equity 25.5%	Large Cap Equity 8.9%	Large Cap Equity 5.6%	Emerging Market Equity 9.0%	Small Cap Equity 6.4%	Small Cap Equity 9.9%
Large Cap Equity 12.0%	Large Cap Equity 21.8%	Global ex-U.S. Fixed Income -2.1%	Dev ex-U.S. Equity 22.5%	Small Cap Equity 4.9%	Global ex-U.S. Fixed Income 4.8%	Small Cap Equity 8.0%	High Yield 5.3%	High Yield 6.5%
Emerging Market Equity 11.2%	Small Cap Equity 14.6%	Large Cap Equity -4.4%	Real Estate 21.9%	Dev ex-U.S. Equity 4.9%	High Yield 0.6%	High Yield 6.8%	U.S. Fixed Income 4.0%	Real Estate 4.7%
Real Estate 4.1%	Global ex-U.S. Fixed Income 10.5%	Real Estate -5.6%	Emerging Market Equity 18.4%	High Yield 4.6%	Emerging Market Equity -1.2%	Dev ex-U.S. Equity 5.3%	Emerging Market Equity 3.7%	Dev ex-U.S. Equity 4.4%
Dev ex-U.S. Equity 2.7%	Real Estate 10.4%	Small Cap Equity -11.0%	High Yield 14.3%	Global ex-U.S. Fixed Income 4.1%	Dev ex-U.S. Equity -7.1%	U.S. Fixed Income 4.2%	Dev ex-U.S. Equity 2.9%	U.S. Fixed Income 3.6%
U.S. Fixed Income 2.6%	High Yield 7.5%	Dev ex-U.S. Equity -14.1%	U.S. Fixed Income 8.7%	Real Estate 2.1%	Small Cap Equity -8.7%	Global ex-U.S. Fixed Income 3.6%	Real Estate 2.7%	Emerging Market Equity 2.5%
Global ex-U.S. Fixed Income 1.5%	U.S. Fixed Income 3.5%	Emerging Market Equity -14.6%	Global ex-U.S. Fixed Income 5.1%	U.S. Fixed Income 0.6%	Real Estate -19.7%	Real Estate 2.0%	Global ex-U.S. Fixed Income 1.3%	Global ex-U.S. Fixed Income 1.3%

Sources: ● Bloomberg Barclays Aggregate ● Bloomberg Barclays Corp High Yield ● Bloomberg Barclays Global Aggregate ex US  
● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500



# U.S. Equity Markets Rebound Over 60%

Data as of October 31, 2020

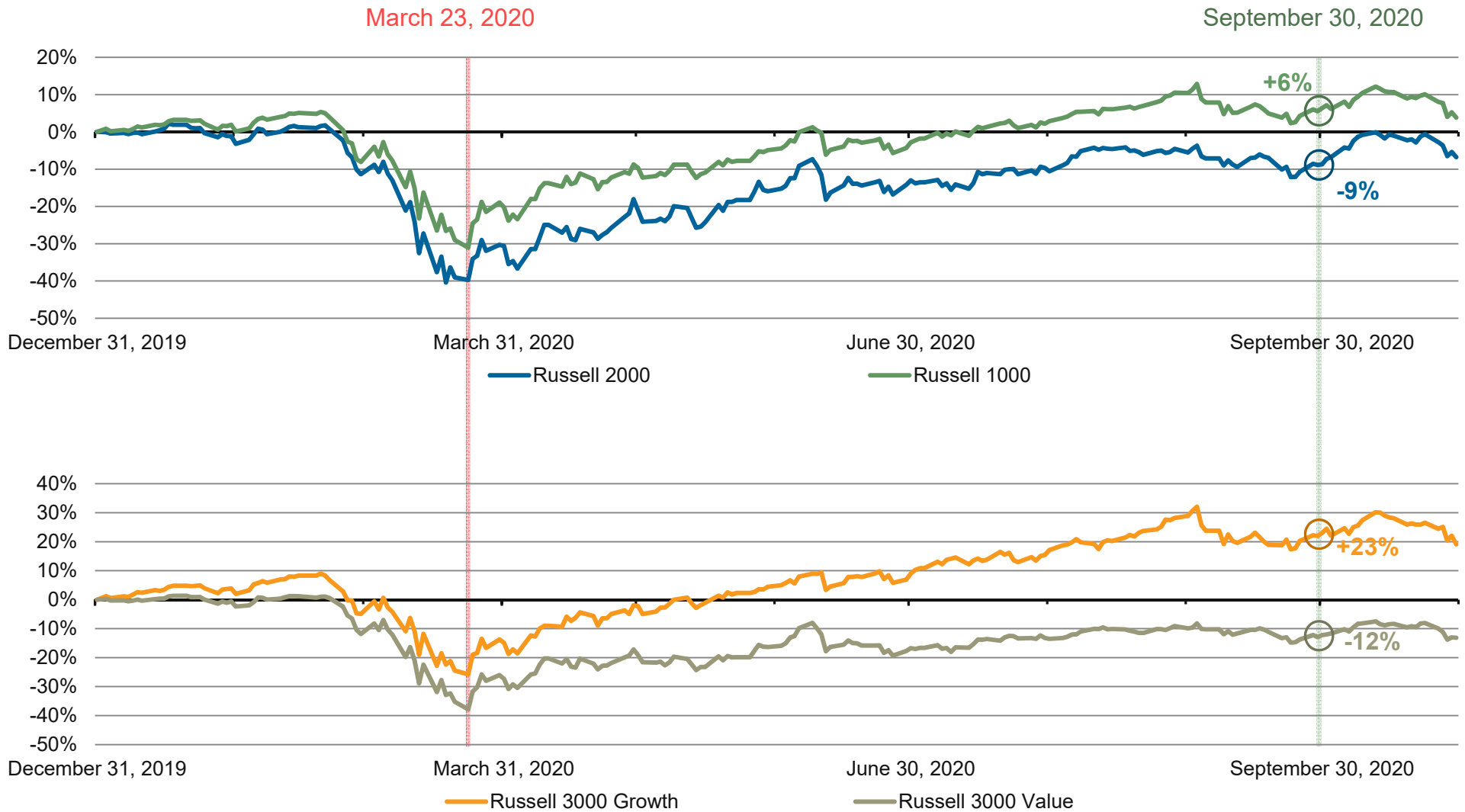


The S&P 500 Total Return Index climbed over 61% from its nadir on March 23rd to its peak on September 2nd. At the end of the third quarter, the index was up 5.6% YTD.

# Dispersion Among Size and Style

Data as of October 31, 2020

### Cumulative YTD Return For Size and Style Indices

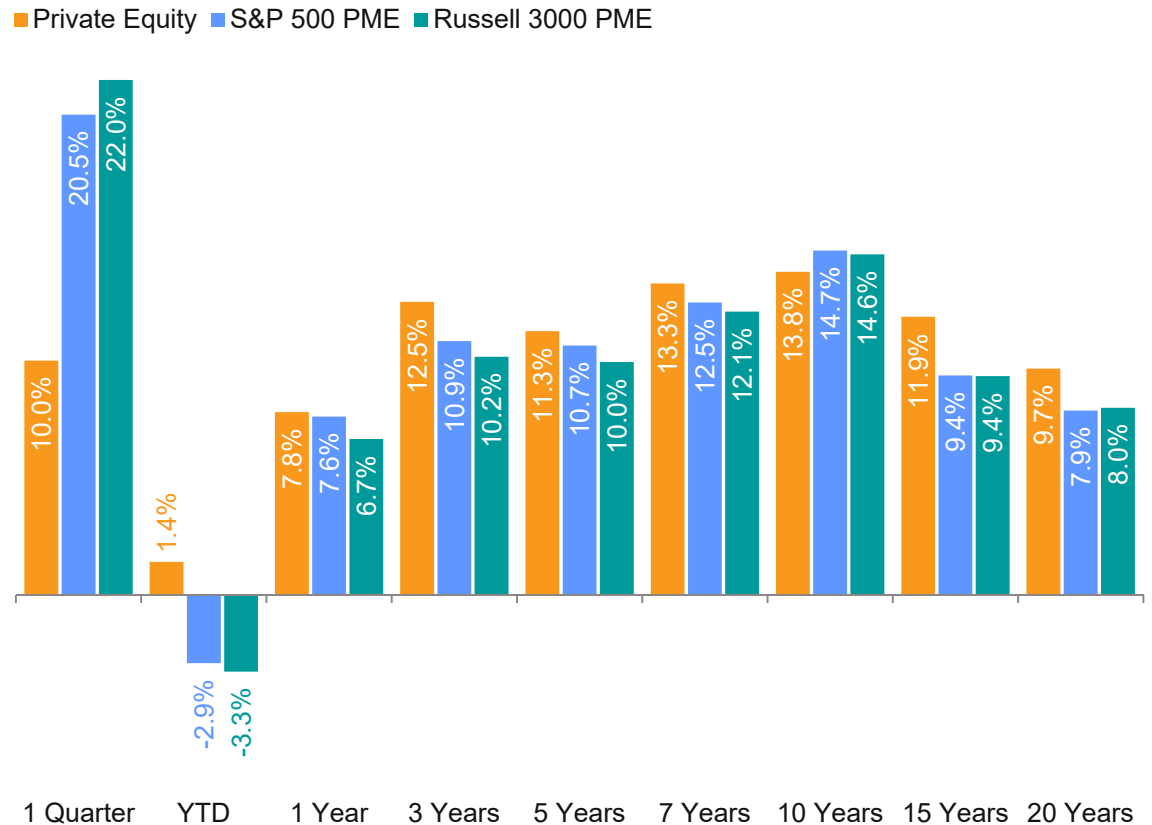


# Private Equity Performance

As of 6/30/20

- 2Q20 rebound in private equity performance similar to public market rebound (private equity did not decline as severely in 1Q).
- Private equity performance positive YTD, significantly outperforming public equity.
- Private equity outperforms public equity across all time horizons, except over the last 10 years.

Net IRRs as of 6/30/20



Source: Refinitiv/Cambridge

# U.S. Private Real Estate Market Trends

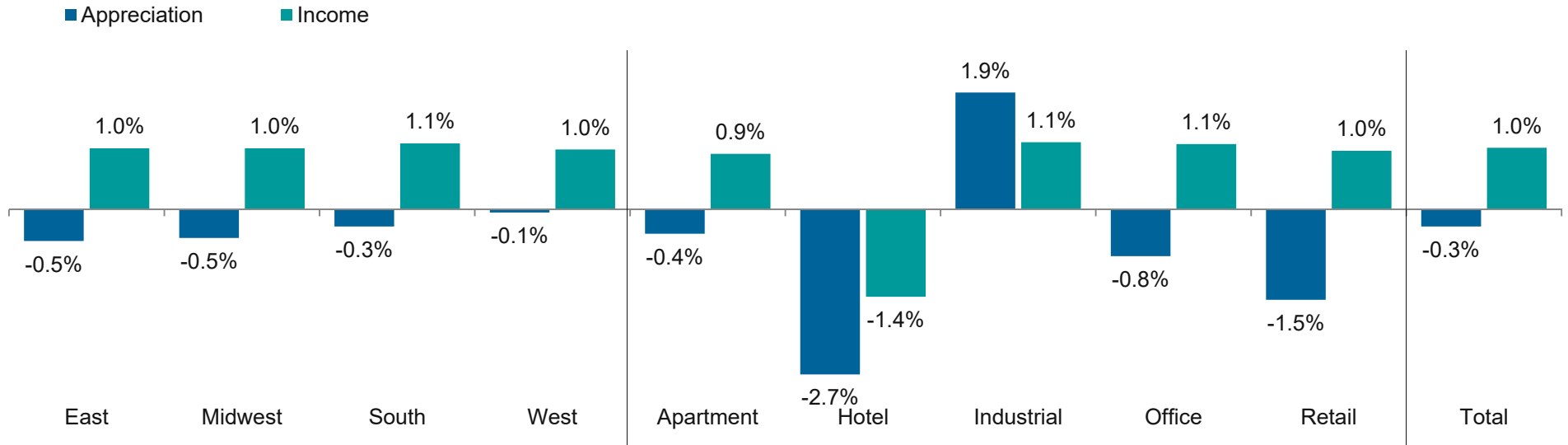
As of September 30, 2020

## Results

- Pandemic’s impact reflected in 3Q20 results.
- Income remains positive except in Hotel sector.
- All sectors experienced negative appreciation; Industrial remains the best performer.
- Negative appreciation returns expected for 4Q and beyond.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	0.5%	1.4%	5.2%	6.6%	10.3%
Appreciation	-0.5%	-2.5%	1.0%	2.3%	5.3%
Income	1.0%	4.0%	4.1%	4.3%	4.8%
NCREIF Property Index	0.7%	2.0%	5.1%	6.3%	9.4%
Appreciation	-0.3%	-2.2%	0.6%	1.6%	4.1%
Income	1.0%	4.3%	4.5%	4.6%	5.2%

## NCREIF Property Index Returns by Region and Property Type



Source: NCREIF

# OPERF Total Regular Account

## Performance Summary for the Third Quarter 2020

### Total Fund:

For the quarter ended September 30, 2020, the Total Regular Account rose 4.99% (+4.86% net of fees), lagging behind the 7.30% return of the Policy Benchmark, and ranked in the third quartile of Callan's \$10B+ public fund peer group. For the twelve months ended September, the Total Regular Account gained 4.12% (+3.62% net of fees), short of the return for the Policy Target, and ranked in the fourth quartile in Callan's \$10B+ public fund peer group. Longer term results against the Policy Target were mixed, however, peer group ranks were above median.

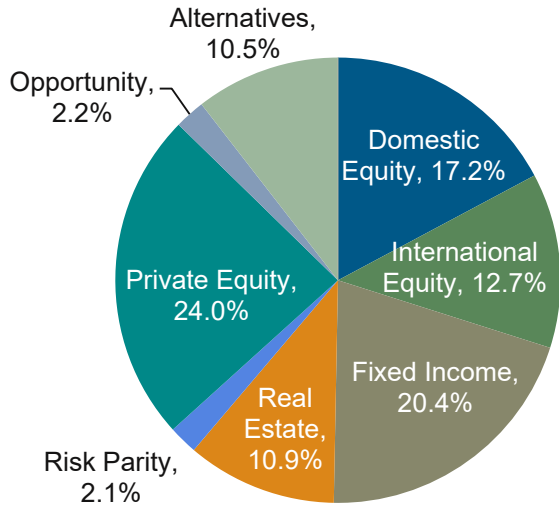
### Asset Classes:

- **Total Fixed Income:** The Fixed Income Portfolio added 1.54% (+1.51% net of fees) for the quarter versus a gain of 1.07% for the Custom Fixed Income Benchmark, and ranked in the 32rd percentile of Callan's Public Funds \$10B+ US Fixed Income (Gross) peer group. For the trailing year, the Portfolio rose 7.18% (+7.04% net of fees), ahead of the 6.59% return of the benchmark, and ranked in the 56th percentile of the peer group. 10 year results were ahead of the benchmark and ranked in the top quartile of the peer group.
- **Total Public Equity:** Total Public Equity portfolio returned 7.18% (+7.13% net of fees) for the quarter versus the 8.11% increase in the MSCI ACWI IMI Net benchmark, and ranked in the 63th percentile of its peer group. For the trailing year, the portfolio rose 5.46% (+5.24% net of fees), behind the 9.57% return of the benchmark and ranked in the 69th percentile of peer group.
  - **U.S. Equity:** The U.S. Equity Portfolio increased 7.06% (+7.04% net of fees) for the quarter, lagging the Russell 3000 Index return of 9.21%, and ranked in the 99th percentile of Callan's Public Fund: \$10B+ Domestic Equity (gross) peer group. On a trailing 12 month basis, the Portfolio rose 6.34% (+6.28% net of fees) versus a return of 15.00% for the benchmark and ranked in the 94th percentile of the peer group. 10 year results of 12.04% (+11.86% net of fees) lagged the benchmark return of 13.48% and ranked in the 92th percentile of the peer group.
  - **International Equity:** The International Equity Portfolio rose 8.28% (+8.17% net of fees) for the quarter, outperforming the 6.80% return of the MSCI ACWI ex-U.S. IMI Index, and ranked in the 10th percentile of Callan's Public Fund: \$10B+ International Equity (gross) peer group. For the trailing year, the Portfolio returned 5.63% (+5.22% net of fees) outperforming the benchmark return of 3.51%, and ranked in the 44th percentile in the peer group. 10 year results remained comfortably ahead of the benchmark (+5.47% net of fees versus +4.17%) and continued to rank in the top quartile of the peer group.
- **Total Real Estate:** The Real Estate Portfolio continued to show competitive absolute results over the last decade with an annualized return of 10.15%, net.
- **Opportunity Portfolio:** The Opportunity Portfolio's results over the last ten years continued to be favorable with an annualized return of 8.25%, net.
- **Alternative Portfolio:** The Alternative Portfolio returned 0.40% per annum net of fees over the last five years.
- **Total Private Equity:** The Private Equity Portfolio's returns remained strong with an annualized return of 12.74% net of fees over the last ten years.

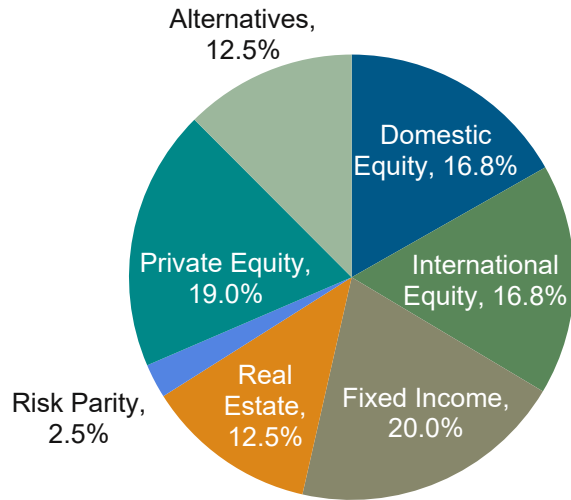
# OPERF Total Regular Account

## Asset Allocation

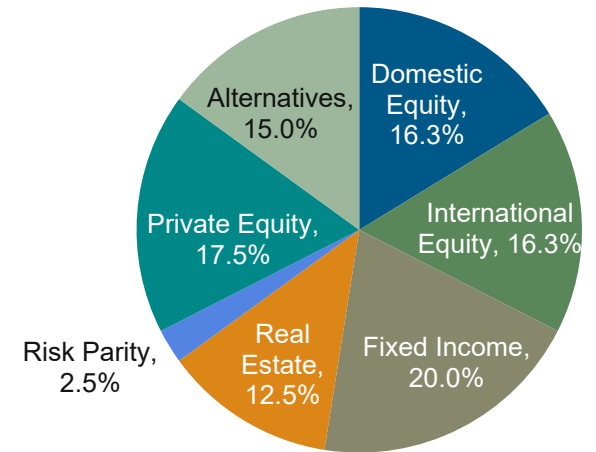
Actual Allocation as of 9/30/2020



Interim Policy Target\*



Strategic Policy Target\*\*



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Total Fixed Income	15,738,795	20.4%	20.0%	0.4%	336,389
U.S. Equity Portfolio	13,243,556	17.2%	16.8%	0.4%	344,041
Non-U.S. Equity Portfolio	9,818,754	12.7%	16.8%	(4.0%)	(3,080,761)
Total Real Estate	8,376,327	10.9%	12.5%	(1.6%)	(1,250,177)
Risk Parity	1,585,022	2.1%	2.5%	(0.4%)	(340,279)
Opportunity Portfolio	1,664,988	2.2%	0.0%	2.2%	1,664,988
Alternative Portfolio	8,113,096	10.5%	12.5%	(2.0%)	(1,513,408)
Total Private Equity	18,455,143	24.0%	19.0%	5.0%	3,822,857
Cash	16,349	0.0%	0.0%	0.0%	16,349
<b>Total</b>	<b>77,012,030</b>	<b>100.0%</b>	<b>100.0%</b>		

\*Interim policy target adopted July 1, 2020

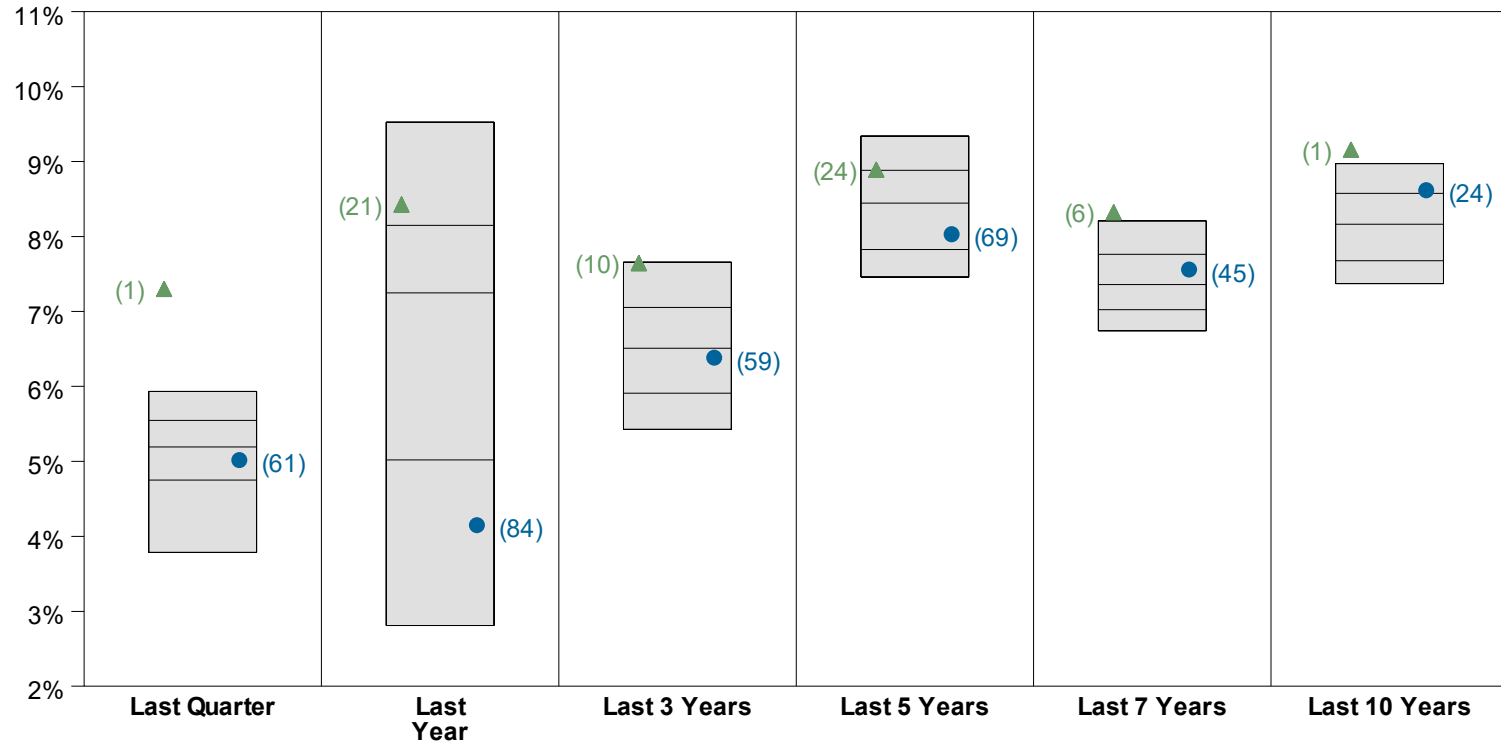
\*\*Strategic policy target adopted April 24, 2019

\*\*\*Totals provided by OST Staff

# OPERF Total Regular Account

Gross Performance and Peer Group Rankings\* as of September 30, 2020

## Performance vs Callan Public Fund Spons- V Lg DB (>10B) (Gross)

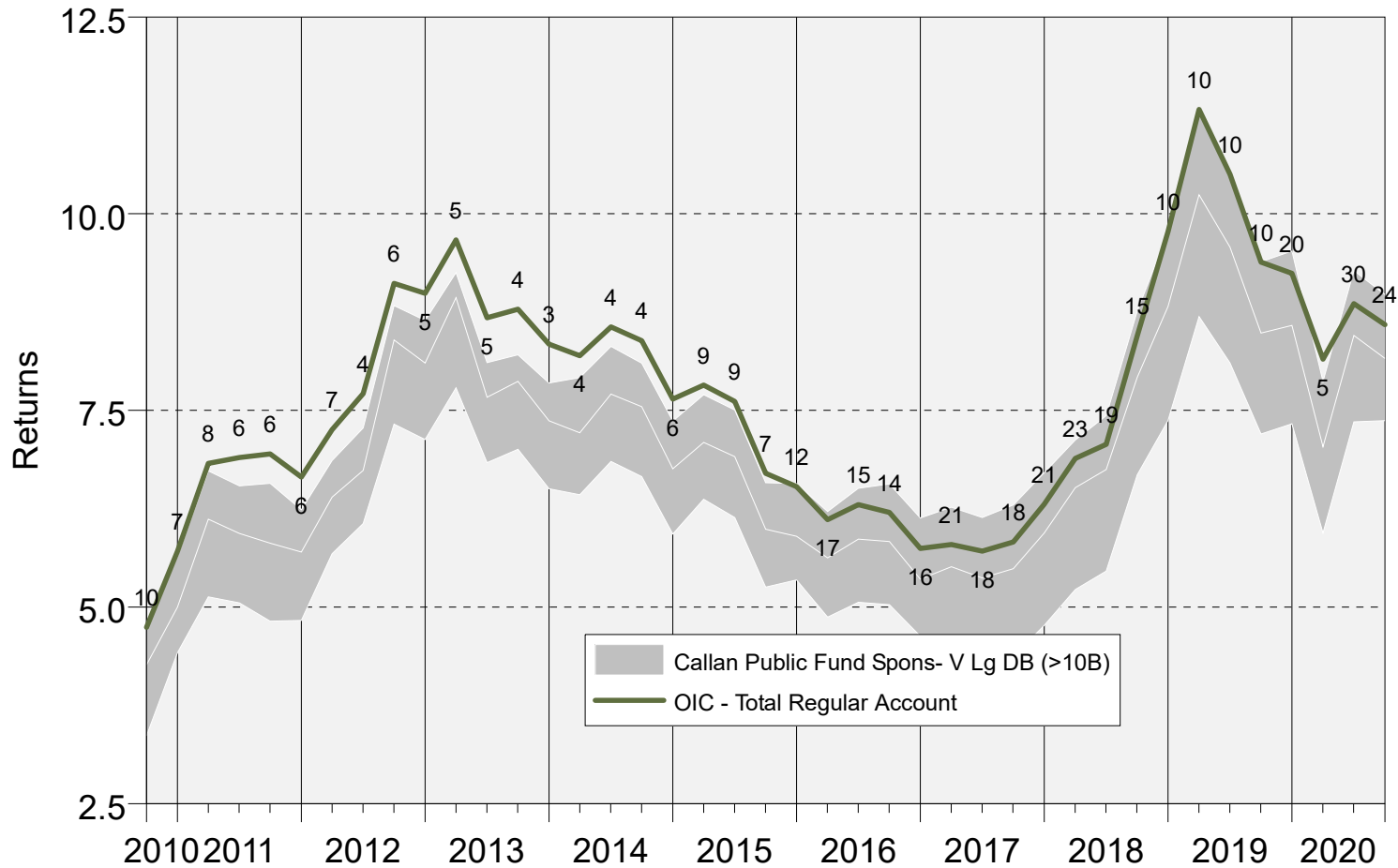


10th Percentile	5.94	9.52	7.66	9.34	8.21	8.97
25th Percentile	5.55	8.15	7.05	8.88	7.76	8.58
Median	5.19	7.25	6.51	8.45	7.36	8.16
75th Percentile	4.75	5.02	5.91	7.83	7.02	7.68
90th Percentile	3.79	2.81	5.43	7.46	6.74	7.37
<b>Total Regular Account</b> ●	4.99	4.12	6.36	8.01	7.53	8.59
<b>Policy Target</b> ▲	7.30	8.43	7.65	8.89	8.32	9.16

\*Versus Callan's Very Large Public Funds (> \$10 billion) Peer Group (36 funds)

# OPERF Rolling 10 Year Returns and Rankings

Rolling 40 Quarter Gross of Fee Returns  
for 10 Years Ended September 30, 2020



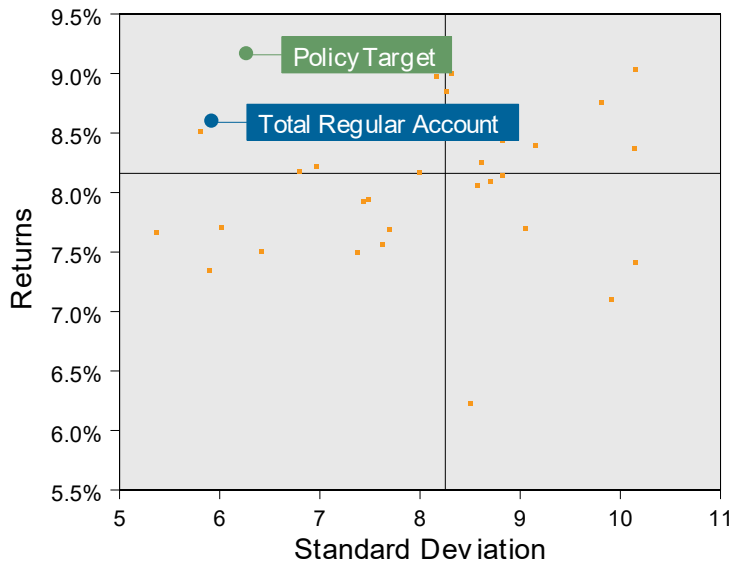
Data labels indicate OIC ranking among Callan Public Fund Sponsor – Very Large DB Database (>10B) for the trailing 10 years.



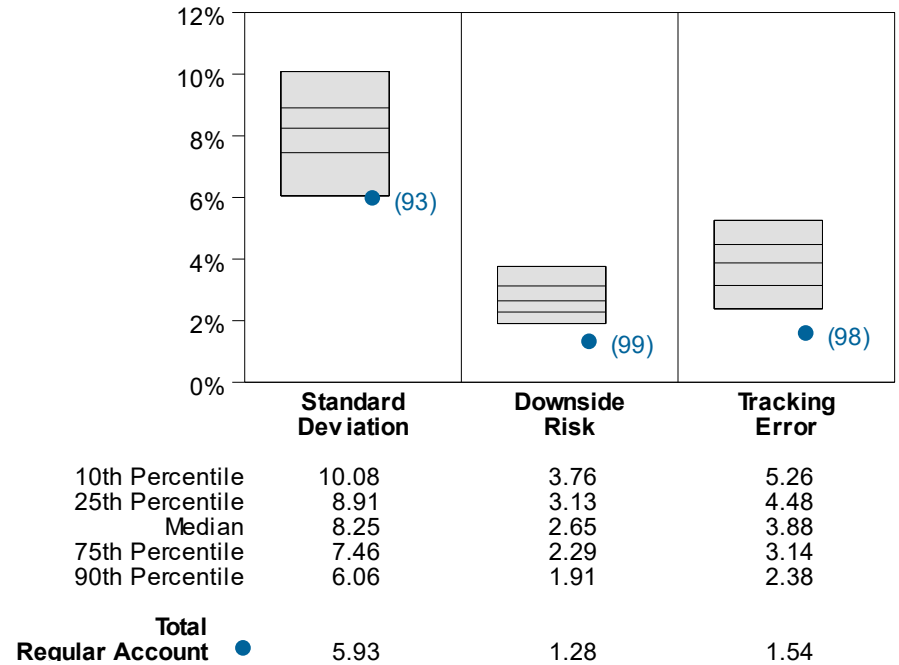
# OPERF Total Regular Account

## Risk vs Return

Callan Public Fund Spons- V Lg DB (>10B) (Gross)  
Annualized Ten Year Risk vs Return



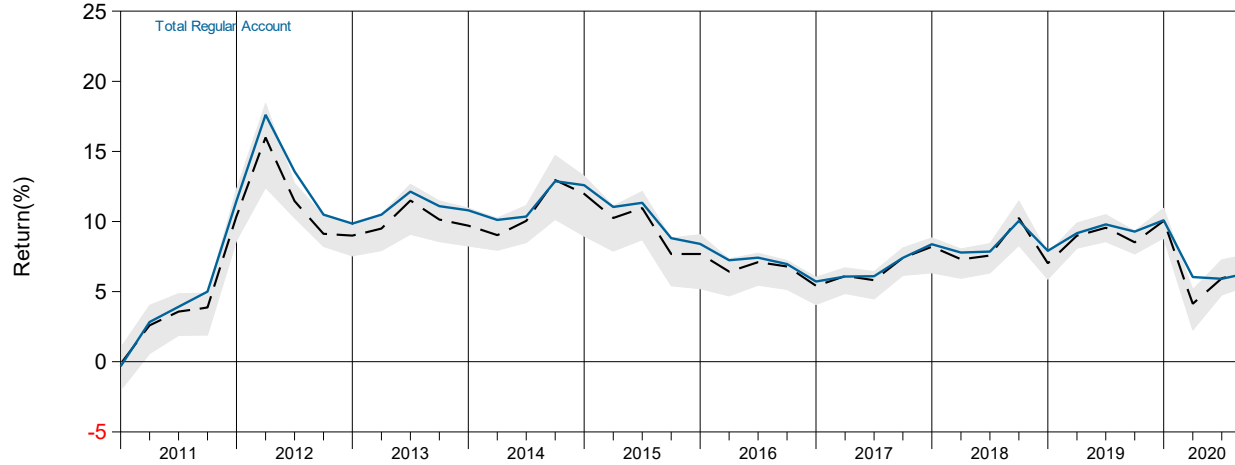
Risk Statistics Rankings vs Policy Target  
Rankings Against Callan Public Fund Sponsor- V Lg DB (>10B) (Gross)  
Ten Years Ended September 30, 2020



# Total Fund Consistency

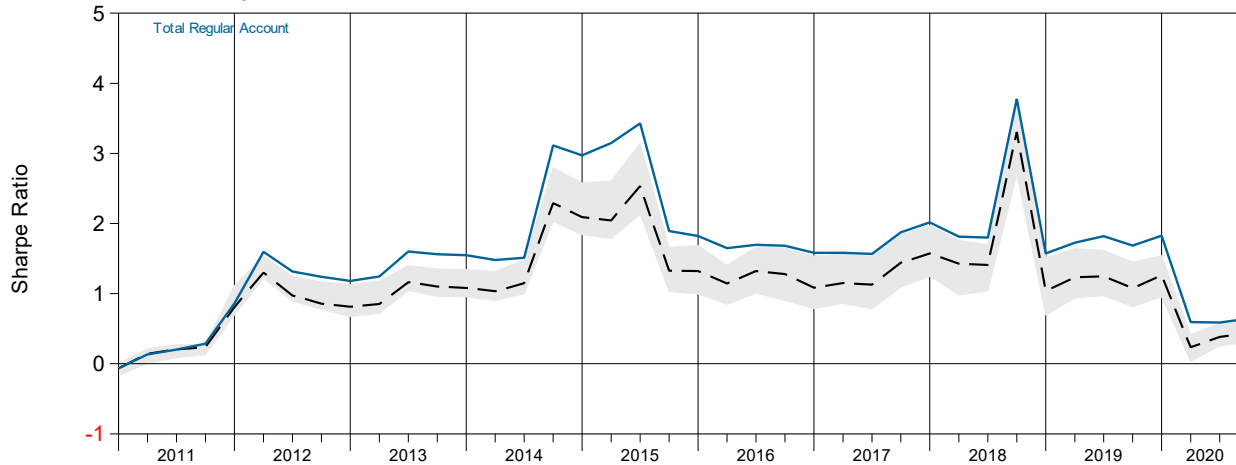
## Total Fund Exhibit Strong Consistency of Rolling Three Year Returns and Sharpe Ratio

**Rolling Three Year Return(%) Relative to Policy Target  
Ten Years Ended September 30, 2020**



Rolling Three Year Period Analysis	Median	Portfolio
Average Annual Return(%)	8.16%	8.75%
% Positive Periods	100%	98%
Average Ranking	50	30

**Rolling Three Year Sharpe Ratio Relative to Policy Target  
Ten Years Ended September 30, 2020**



Rolling Three Year Period Analysis	Median	Portfolio
Average Annual Sharpe Ratio	1.16%	1.59%
% Positive Periods	98%	98%
Average Ranking	50	10

# OPERF Total Regular Account

## Net Performance by Asset Class, Periods Ending September 30, 2020

	Last Quarter	YTD	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Regular Account</b>	<b>4.86%</b>	<b>0.14%</b>	<b>5.86%</b>	<b>7.56%</b>	<b>8.23%</b>
Total Regular Account ex-Overlay	5.02%	0.44%	5.86%	7.48%	8.15%
OPERF Policy Benchmark*	7.30%	4.28%	7.65%	8.89%	9.16%
<b>Total Fixed Income</b>	<b>1.51%</b>	<b>6.71%</b>	<b>5.34%</b>	<b>4.36%</b>	<b>4.43%</b>
Custom FI Benchmark	1.07%	6.46%	5.08%	3.97%	3.65%
Callan Public Fund > \$10bn U.S. Fixed	1.19%	6.85%	5.66%	4.85%	4.12%
<b>Total Public Equity</b>	<b>7.13%</b>	<b>-3.03%</b>	<b>4.88%</b>	<b>9.21%</b>	<b>8.51%</b>
MSCI ACWI IMI Net	8.11%	0.48%	6.47%	9.97%	8.47%
<b>Total Real Estate</b>	<b>-0.35%</b>	<b>0.00%</b>	<b>5.80%</b>	<b>7.16%</b>	<b>10.15%</b>
Total Real Estate ex REITs	-0.66%	0.43%	6.14%	7.89%	10.91%
Oregon Custom Real Estate Benchmark	-1.75%	0.25%	4.72%	6.24%	9.43%
Callan Public Plan - Real Estate	0.06%	-0.90%	5.30%	6.48%	9.40%
<b>Opportunity Portfolio</b>	<b>7.03%</b>	<b>2.03%</b>	<b>5.19%</b>	<b>6.22%</b>	<b>8.25%</b>
CPI + 5%	2.36%	5.13%	6.78%	6.77%	6.72%
<b>Alternative Portfolio</b>	<b>1.13%</b>	<b>-8.06%</b>	<b>-3.33%</b>	<b>0.40%</b>	<b>-</b>
CPI + 4%	1.95%	4.31%	5.85%	5.88%	-
<b>Total Private Equity</b>	<b>9.64%</b>	<b>4.35%</b>	<b>12.85%</b>	<b>11.24%</b>	<b>12.74%</b>
OIC - Russell 3000 + 300 BPS Qtr Lag	22.88%	7.66%	13.32%	13.31%	17.10%

- For quarter: public equity lagged benchmark while fixed income led.
- Year-to-date:
  - Total Regular account lags Policy Benchmark by 4.1%.
  - All asset classes, except fixed income, trail their respective benchmarks.
  - Fixed income has the highest return at 6.7%.
- Over the 10 year period – private equity has the strongest absolute return (+12.7%) but trails the benchmark.

\*Current Policy Benchmark = 33.5% MSCI ACWI IMI, 20.0% OPERF Total Custom FI Benchmark, 19.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% Oregon Custom Real Estate Benchmark, 12.5% CPI + 400 bps and 2.5% S&P Risk Parity 12% Vol.

# Public Equity Performance – US Equity

Periods Ending September 30, 2020

	Last Quarter	YTD	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Public Equity</b>	<b>7.13%</b>	<b>-3.03%</b>	<b>4.88%</b>	<b>9.21%</b>	<b>8.51%</b>
MSCI ACWI IMI Net	8.11%	0.48%	6.47%	9.97%	8.47%
<b>U.S. Equity</b>	<b>7.04%</b>	<b>-2.50%</b>	<b>7.32%</b>	<b>11.03%</b>	<b>11.86%</b>
Russell 3000 Index	9.21%	5.41%	11.65%	13.69%	13.48%
Lg Public >10 B DE	8.81%	2.42%	10.04%	12.74%	12.85%
<b>Market Oriented</b>	<b>7.69%</b>	<b>0.08%</b>	<b>8.99%</b>	<b>12.26%</b>	<b>12.38%</b>
Russell 3000 Index	9.21%	5.41%	11.65%	13.69%	13.48%
<b>Large Cap Value</b>	<b>2.73%</b>	<b>-15.74%</b>	<b>-0.86%</b>	<b>4.50%</b>	<b>8.40%</b>
Russell 1000 Value Index	5.59%	-11.58%	2.63%	7.66%	9.95%
CAI Large Cap Value Style	4.70%	-11.86%	2.66%	7.75%	10.05%
<b>Small Cap Growth</b>	<b>8.23%</b>	<b>4.54%</b>	<b>10.58%</b>	<b>12.28%</b>	<b>12.70%</b>
Russell 2000 Growth Index	7.16%	3.88%	8.18%	11.42%	12.34%
CAI Sm Cap Growth Style	9.84%	14.18%	15.62%	15.49%	14.58%
<b>Small Cap Value</b>	<b>0.78%</b>	<b>-24.47%</b>	<b>-6.73%</b>	<b>2.94%</b>	<b>6.43%</b>
Russell 2000 Value Index	2.56%	-21.54%	-5.13%	4.11%	7.09%
CAI Small Cap Value Style	2.62%	-21.11%	-4.77%	3.83%	8.24%

# Public Equity Performance – Non-US and Global Equity

Periods Ending September 30, 2020

	Last Quarter	YTD	Last 3 Years	Last 5 Years	Last 10 Years
<b>Non-U.S. Equity</b>	<b>8.17%</b>	<b>-3.86%</b>	<b>1.94%</b>	<b>7.27%</b>	<b>5.47%</b>
MSCI ACWI ex-US IMI Index (Net)	6.80%	-5.21%	1.13%	6.31%	4.17%
Lg Public >10 B IE	6.88%	-4.63%	1.90%	7.26%	5.03%
<b>International Market Oriented (Core)</b>	<b>7.60%</b>	<b>-3.74%</b>	<b>2.54%</b>	<b>7.35%</b>	<b>6.02%</b>
MSCI World ex-US IMI Net	5.64%	-6.70%	0.73%	5.60%	4.65%
CAI Core Int'l Equity	5.73%	-5.56%	0.86%	5.77%	5.54%
<b>International Value</b>	<b>4.57%</b>	<b>-14.21%</b>	<b>-2.68%</b>	<b>4.69%</b>	<b>4.37%</b>
MSCI ACWI ex-US IMI Value	2.98%	-17.08%	-4.87%	2.44%	1.81%
CAI Core Value Int'l Equity Style	3.44%	-13.67%	-3.29%	3.15%	3.91%
<b>International Growth</b>	<b>8.80%</b>	<b>8.06%</b>	<b>10.87%</b>	<b>11.90%</b>	<b>7.54%</b>
MSCI World ex US Growth	8.51%	5.13%	7.06%	9.09%	6.61%
CAI Core Growth Int'l Equity Style	9.27%	4.41%	6.47%	9.37%	7.49%
<b>International Small Cap</b>	<b>10.13%</b>	<b>-9.82%</b>	<b>-3.91%</b>	<b>4.00%</b>	<b>5.07%</b>
ACWI Sm Cap ex US	10.50%	-3.64%	0.93%	6.80%	5.31%
CAI Int'l Small Cap Style	10.39%	-2.92%	0.96%	7.14%	8.19%
<b>Emerging Markets</b>	<b>11.66%</b>	<b>2.17%</b>	<b>3.12%</b>	<b>9.03%</b>	<b>3.89%</b>
EM IMI Index	9.79%	-1.29%	2.04%	8.43%	2.34%
CAI Emerging Markets Equity DB	9.72%	1.27%	3.56%	9.65%	4.17%
<b>Global Equity</b>	<b>5.27%</b>	<b>-3.57%</b>	<b>4.49%</b>	<b>8.23%</b>	<b>7.89%</b>
MSCI ACWI Value Net Index	3.97%	-14.54%	-1.22%	4.96%	5.24%
CAI Global Eq Broad Style	8.01%	2.70%	7.81%	10.85%	9.84%

# Fixed Income Performance

Periods Ending September 30, 2020

	Last Quarter	YTD	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fixed Income</b>	<b>1.51%</b>	<b>6.71%</b>	<b>5.34%</b>	<b>4.36%</b>	<b>4.43%</b>
Oregon Custom FI Benchmark	1.07%	6.46%	5.08%	3.97%	3.67%
Lg Public >10 B DF	1.32%	5.72%	5.03%	4.76%	4.23%
<b>Core Fixed Income</b>	<b>1.27%</b>	<b>7.31%</b>	<b>5.73%</b>	<b>4.83%</b>	<b>4.57%</b>
AllianceBernstein	1.03%	6.26%	5.16%	4.30%	4.10%
BlackRock	1.16%	8.02%	5.71%	4.56%	4.33%
Wellington		8.15%			
Western Asset	1.56%	6.15%	5.86%	5.23%	4.92%
Oregon Custom FI Benchmark	0.62%	6.79%	5.24%	4.18%	3.87%
CAI Core Bond Style	1.09%	7.71%	5.77%	4.75%	4.25%
<b>US Government*</b>	<b>0.19%</b>	<b>8.95%</b>	<b>5.54%</b>	-	-
Blmbg Treasury	0.17%	8.90%	5.50%	3.75%	3.15%
Callan Core Bond FI	1.09%	7.71%	5.77%	4.75%	4.25%
<b>Non-Core Fixed Income</b>	<b>4.90%</b>	<b>-0.30%</b>	<b>3.58%</b>	<b>4.71%</b>	<b>5.63%</b>
Leveraged Loans & Bond Idx	4.28%	-0.57%	3.29%	4.66%	4.76%
KKR Credit Advisors	6.14%	-1.64%	2.82%	3.88%	5.40%
Leveraged Loans & Bond Idx	4.34%	-0.53%	3.37%	4.92%	4.96%
Oak Hill	3.72%	0.97%	4.31%	5.54%	5.70%
Leveraged Loans & Bond Idx	4.22%	-0.61%	3.22%	4.40%	4.55%
Leveraged Bank Loans	3.59%	-1.28%	2.94%	3.93%	4.56%

# Callan



Appendix

## OPERF Total Regular Account – Calendar Years

	YTD	2019	2018	2017	2016
<b>Total Regular Account</b>	<b>0.14%</b>	<b>13.56%</b>	<b>0.48%</b>	<b>15.39%</b>	<b>7.11%</b>
Total Regular Account ex-Overlay	0.44%	13.19%	0.45%	15.38%	6.73%
OPERF Policy Benchmark*	4.28%	13.99%	1.22%	15.64%	8.95%
<b>Total Fixed Income</b>	<b>6.71%</b>	<b>8.84%</b>	<b>0.25%</b>	<b>3.70%</b>	<b>3.06%</b>
Custom FI Benchmark	6.46%	8.27%	0.31%	3.32%	2.52%
Callan Public Fund > \$10bn U.S. Fixed	6.85%	9.61%	-0.58%	4.61%	4.82%
<b>Total Public Equity</b>	<b>-3.03%</b>	<b>25.25%</b>	<b>-10.47%</b>	<b>24.41%</b>	<b>9.89%</b>
MSCI ACWI IMI Net	0.48%	26.35%	-10.08%	23.95%	8.36%
<b>U.S. Equity Portfolio</b>	<b>-2.50%</b>	<b>28.99%</b>	<b>-7.87%</b>	<b>20.40%</b>	<b>14.90%</b>
Russell 3000 Index	5.41%	31.02%	-5.24%	21.13%	12.74%
Callan Large Public > \$10bn U.S. Equity	3.86%	30.34%	-5.66%	21.28%	12.60%
<b>Non-U.S. Equity Portfolio</b>	<b>-3.86%</b>	<b>22.61%</b>	<b>-14.88%</b>	<b>30.23%</b>	<b>4.67%</b>
MSCI ACWI ex-US IMI Index	-5.21%	21.63%	-14.76%	27.81%	4.41%
Callan Large Public > \$10bn Non-U.S. Equity	-4.50%	22.98%	-14.09%	29.70%	5.16%
<b>Total Real Estate</b>	<b>0.00%</b>	<b>7.25%</b>	<b>8.03%</b>	<b>10.05%</b>	<b>7.88%</b>
Total Real Estate ex REITs	0.43%	7.27%	8.87%	11.19%	10.01%
Oregon Custom Real Estate Benchmark	0.25%	4.64%	7.71%	6.70%	8.88%
Callan Public Plan - Real Estate	-0.90%	6.86%	7.98%	7.70%	8.50%
<b>Opportunity Portfolio</b>	<b>2.03%</b>	<b>6.15%</b>	<b>5.85%</b>	<b>10.47%</b>	<b>6.12%</b>
CPI + 5%	5.13%	7.32%	6.77%	7.18%	6.99%
<b>Alternative Portfolio</b>	<b>-8.06%</b>	<b>-1.32%</b>	<b>-2.44%</b>	<b>8.30%</b>	<b>6.61%</b>
CPI + 4%	4.31%	6.37%	5.98%	6.19%	6.16%
<b>Total Private Equity</b>	<b>4.35%</b>	<b>11.10%</b>	<b>18.15%</b>	<b>17.32%</b>	<b>6.26%</b>
OIC - Russell 3000 + 300 BPS Qtr Lag	7.66%	6.00%	21.06%	22.22%	18.37%

\*Current Policy Benchmark = 33.5% MSCI ACWI IMI, 20.0% OPERF Total Custom FI Benchmark, 19.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% Oregon Custom Real Estate Benchmark, 12.5% CPI + 400 bps and 2.5% S&P Risk Parity 12% Vol.



# U.S. Equity Continues to Shine Amid Pandemic

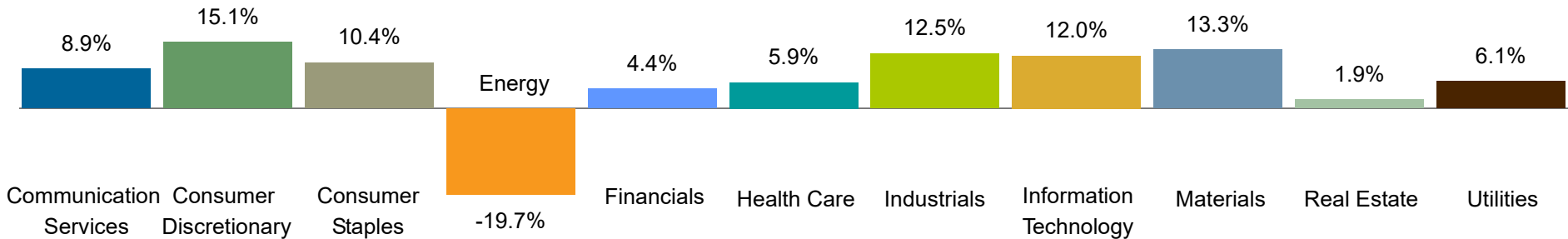
## Gains YTD

- S&P +8.9% for the quarter, bringing YTD to +5.6%
  - *Consumer Discretionary (+15%) and Industrials (+13%) dominated, with Tech (+12%) a close third in risk-on market.*
  - *S&P 500 YTD would be negative if not for Facebook, Microsoft, Amazon, Alphabet, and Apple, representing 33% of the return.*
- YTD, pandemic punishing some sectors while rewarding others
  - *Tech +29% YTD; Cons. Disc. +23% (online retailers +60%).*
  - *Energy -48% amid declining crude and natural gas prices.*
  - *Demand from hotels/cruise lines/airlines down as industries have dropped 40%+.*

## Small cap reverses to trail large cap

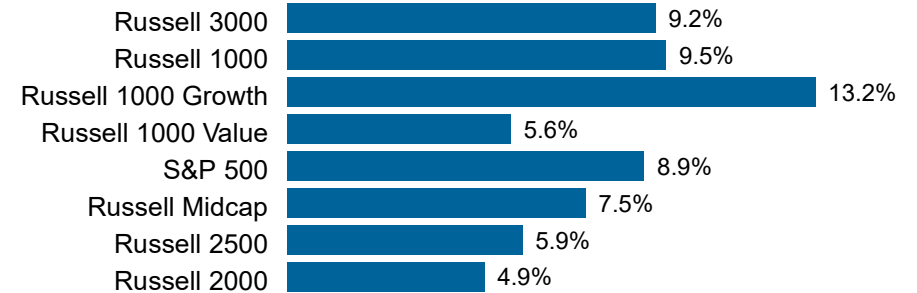
- Following a stellar 2Q20 recovery, small cap trailed large.
  - *Remains behind large cap by a wide margin over last 12 months.*
- Growth continues to outpace value across market caps.
- Growth, value dispersion near all-time high driven by Tech.
  - *YTD RUS1G +25% vs. RUS1V -12%*
- Growth stock P/E near 2x historical average across market caps.

## Industry Sector Quarterly Performance (S&P 500)

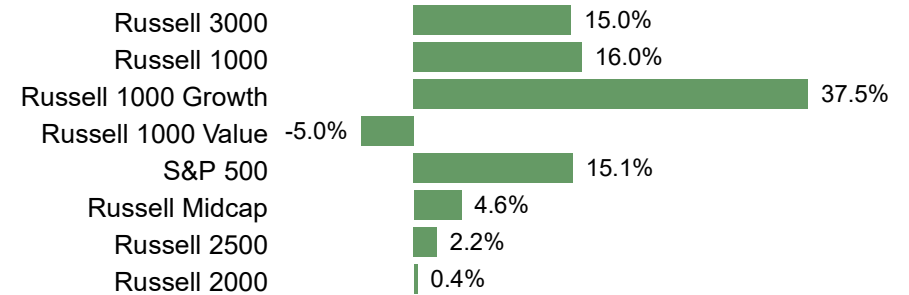


Sources: FTSE Russell, S&P Dow Jones Indices

## U.S. Equity: Quarterly Returns



## U.S. Equity: One-Year Returns



# Global ex-U.S. Equity Performance

## Continued recovery into 3Q20

- Returns broadly positive across developed and emerging markets but muted YTD.
- Recent support from ultra-low interest rates and upward earnings revisions.
- EM recovery driven by global risk-on environment; key countries within EM (China and South Korea) have better managed the pandemic.
- Small cap continued to outperform large as lockdowns eased and business confidence improved.

## Rebound for cyclicals

- Materials, Industrials, and Consumer Discretionary outperformed as consumption and production resumed.
- Factor performance led by momentum (rebound) and volatility (risk-on market mentality.)

## U.S. dollar vs. other currencies

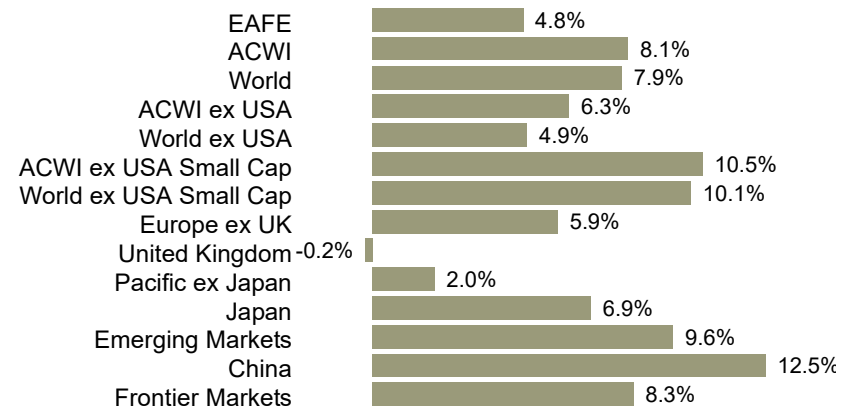
- U.S. dollar lost ground versus every developed market currency on expectation of lower-for-longer U.S. rates due to Fed's shift in approach toward inflation and employment.

## Growth vs. value

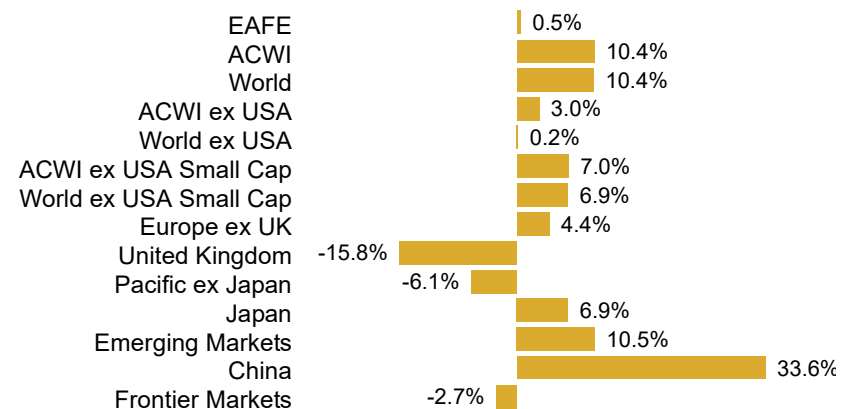
- Growth continued to outperform value.
- Extremely narrow market with performance dominated by Tech.

Source: MSCI

## Global Equity: Quarterly Returns



## Global Equity: Annual Returns



# U.S. Fixed Income Performance: 3Q20

## Treasury yields largely unchanged

- 10-year UST yield at 0.69% in 3Q20, up 3 bps from 2Q20 but off sharply from year-end level of 1.92%.
- TIPS did well as inflation expectations rose from 1.34% to 1.63%.
- No rate hikes expected until at least 2023.

## Bloomberg Barclays Aggregate roughly flat

- Corporate and CMBS the strongest investment grade sectors as investors hunted for yield.
- Corporate supply (\$1 trillion YTD) at a record as companies rushed to take advantage of ultra-low interest rates.

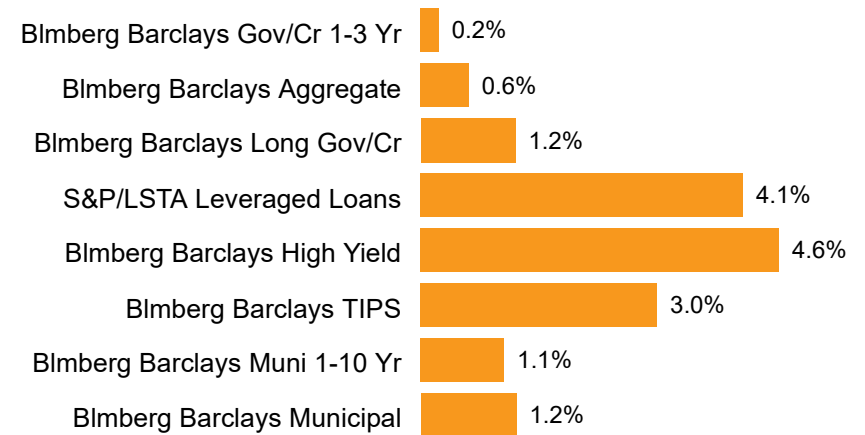
## Risk-on sentiment helped high yield and loans

- Non-investment grade sectors rallied, but remain roughly flat YTD.
- The high yield bond market also experienced high levels of net new issuance (over \$120 billion YTD).

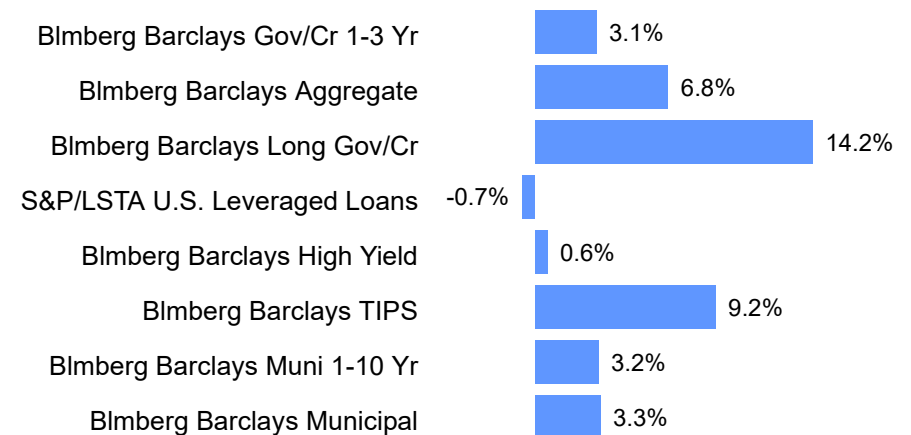
## Munis boosted by favorable supply/demand dynamics

- Robust demand and muted supply of tax-exempt municipals.
- Issuance in taxable municipals sharply higher.
- Tax revenues better than expected, but challenges remain and stimulus uncertain (but needed).

## U.S. Fixed Income: Quarterly Returns



## U.S. Fixed Income: Nine Month Returns



---

## Disclaimers

*Information contained herein is the confidential and proprietary information of Callan and should not be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission.*

*This report was prepared by Callan for use by a specific client and should not be used by anyone other than the intended recipient for its intended purpose. The content of this report is based on the particular needs of such client and may not be applicable to the specific facts and circumstances of any other individual or entity.*

*Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated.*

*This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.*

*This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.*

*Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.*

## TAB 9 – Asset Allocation & NAV Updates

## Asset Allocations at October 31, 2020

OPERF	Regular Account						Target Date Funds	Variable Fund	Total Fund	
	Policy	Target <sup>1</sup>	\$ Thousands	Pre-Overlay	Overlay	Net Position	Actual	\$ Thousands	\$ Thousands	\$ Thousands
Public Equity	27.5-37.5%	32.5%	22,820,779	29.9%	(508,700)	22,312,079	29.3%	1,046,255	378,804	23,737,137
Private Equity	13.5-21.5%	17.5%	18,912,189	24.8%		18,912,189	24.8%			18,912,189
<b>Total Equity</b>	<b>45.0-55.0%</b>	<b>50.0%</b>	<b>41,732,969</b>	<b>54.7%</b>	<b>(508,700)</b>	<b>41,224,268</b>	<b>54.1%</b>			<b>42,649,327</b>
Opportunity Portfolio	0-5%	0.0%	1,594,555	2.1%		1,594,555	2.1%			1,594,555
Fixed Income	15-25%	20.0%	13,366,323	17.5%	2,035,890	15,402,213	20.2%	1,793,894		17,196,107
Risk Parity	0.0-2.5%	2.5%	1,556,994	2.0%		1,556,994	2.0%			1,556,994
Real Estate	9.5-15.5%	12.5%	8,369,551	11.0%	(1,200)	8,368,351	11.0%			8,368,351
Alternative Investments	7.5-17.5%	15.0%	8,100,508	10.6%		8,100,508	10.6%			8,100,508
Cash <sup>2</sup>	0-3%	0.0%	1,539,404	2.0%	(1,525,989)	13,414	0.0%		6,952	20,366
<b>TOTAL OPERF</b>		<b>100%</b>	<b>\$ 76,260,303</b>	<b>100.0%</b>	<b>\$ -</b>	<b>\$ 76,260,303</b>	<b>100.0%</b>	<b>\$ 2,840,149</b>	<b>\$ 385,756</b>	<b>\$ 79,486,208</b>

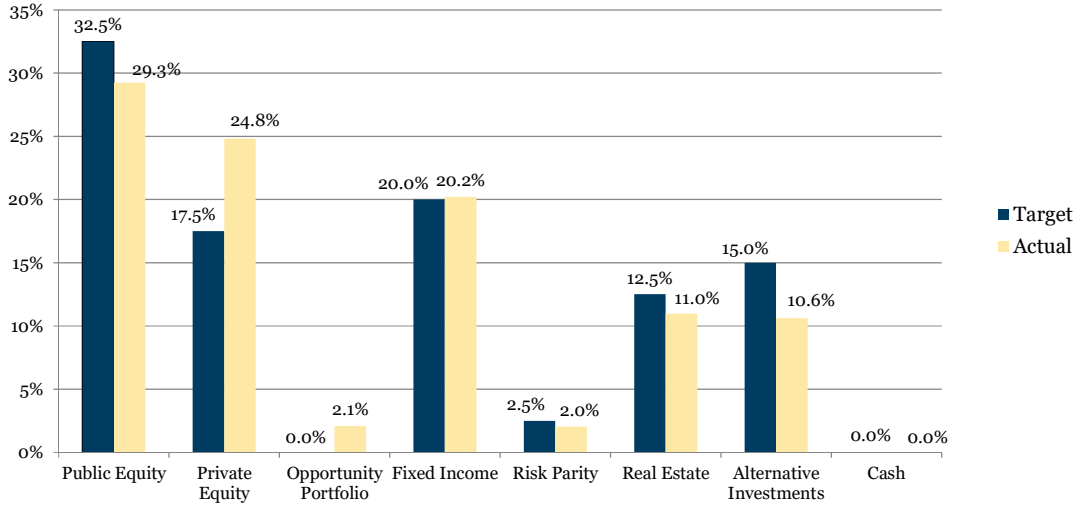
<sup>1</sup>Targets established in April 2019. Interim policy benchmark effective July 1, 2020, consists of: 33.5% MSCI ACWI IMI Net, 20% Custom FI Benchmark, 19% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF ODCE net (1 quarter lagged), 12.5% CPI+400bps, & 2.5% S&P Risk Parity - 12% Target Volatility.

<sup>2</sup>Includes cash held in the policy implementation overlay program.

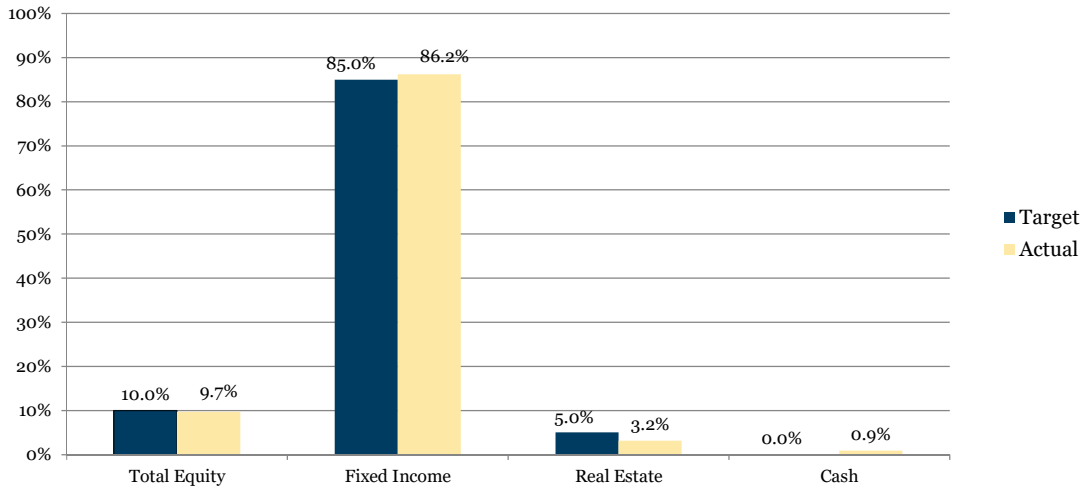
SAIF	Policy	Target	\$ Thousands	Actual
Total Equity	7-13%	10.0%	485,477	9.7%
Fixed Income	80-90%	85.0%	4,302,562	86.2%
Real Estate	0-7%	5.0%	159,455	3.2%
Cash	0-3%	0.0%	45,750	0.9%
<b>TOTAL SAIF</b>			<b>\$ 4,993,243</b>	<b>100.0%</b>

CSF	Policy	Target	\$ Thousands	Actual
Global Equities	40-50%	45.0%	800,411	43.9%
Private Equity	8-12%	10.0%	181,024	9.9%
<b>Total Equity</b>	<b>58-62%</b>	<b>55.0%</b>	<b>981,436</b>	<b>53.8%</b>
Fixed Income	25-35%	25.0%	520,146	28.5%
Real Estate	8-12%	10.0%	130,777	7.2%
Alternative Investments	8-12%	10.0%	120,975	6.6%
Cash	0-3%	0.0%	70,266	3.9%
<b>TOTAL CSF</b>			<b>\$ 1,823,600</b>	<b>100.0%</b>

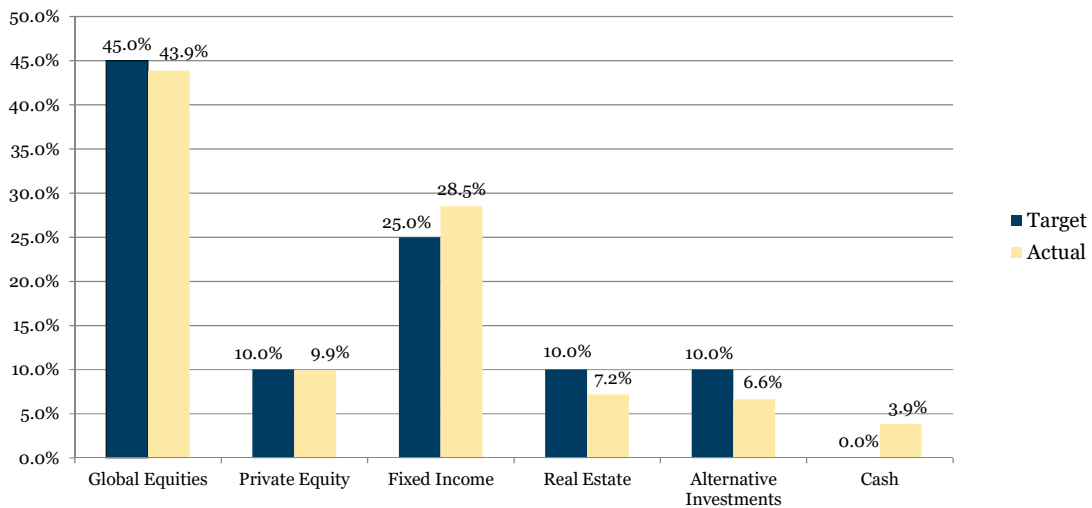
### OPERF Asset Allocation



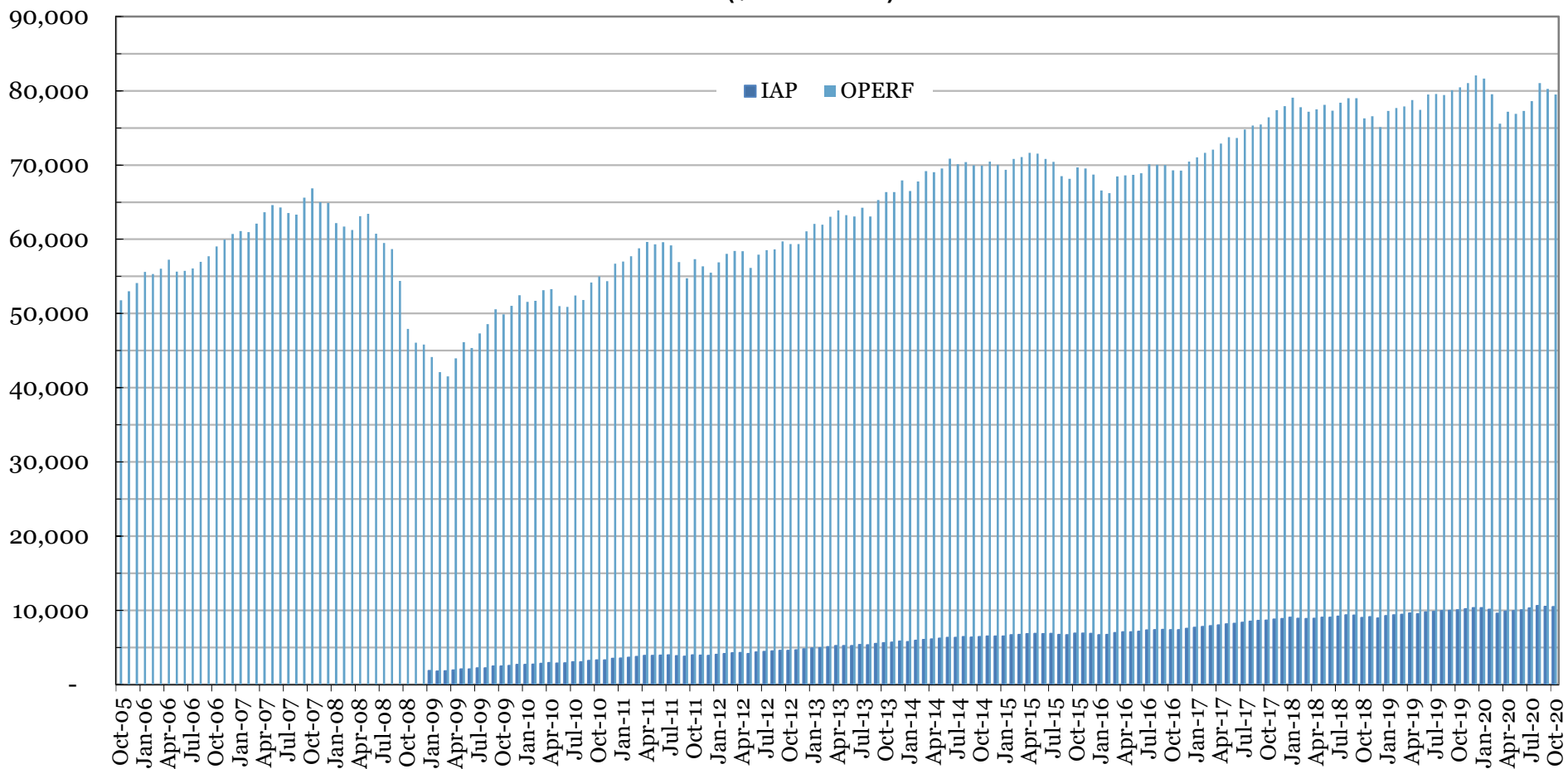
### SAIF Asset Allocation



### CSF Asset Allocation

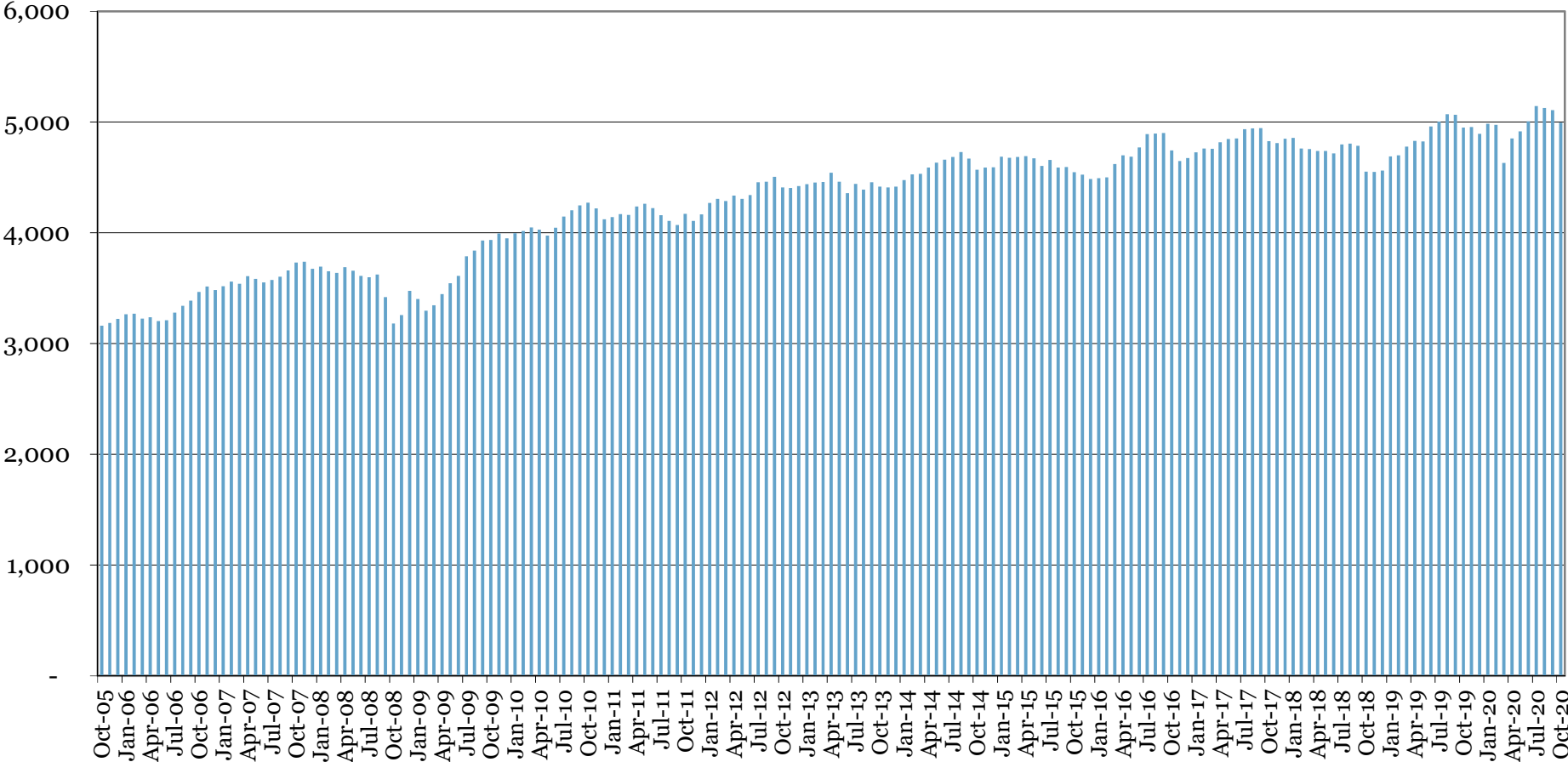


**OPERF NAV**  
**15 years ending October 31, 2020**  
**(\$ in Millions)**

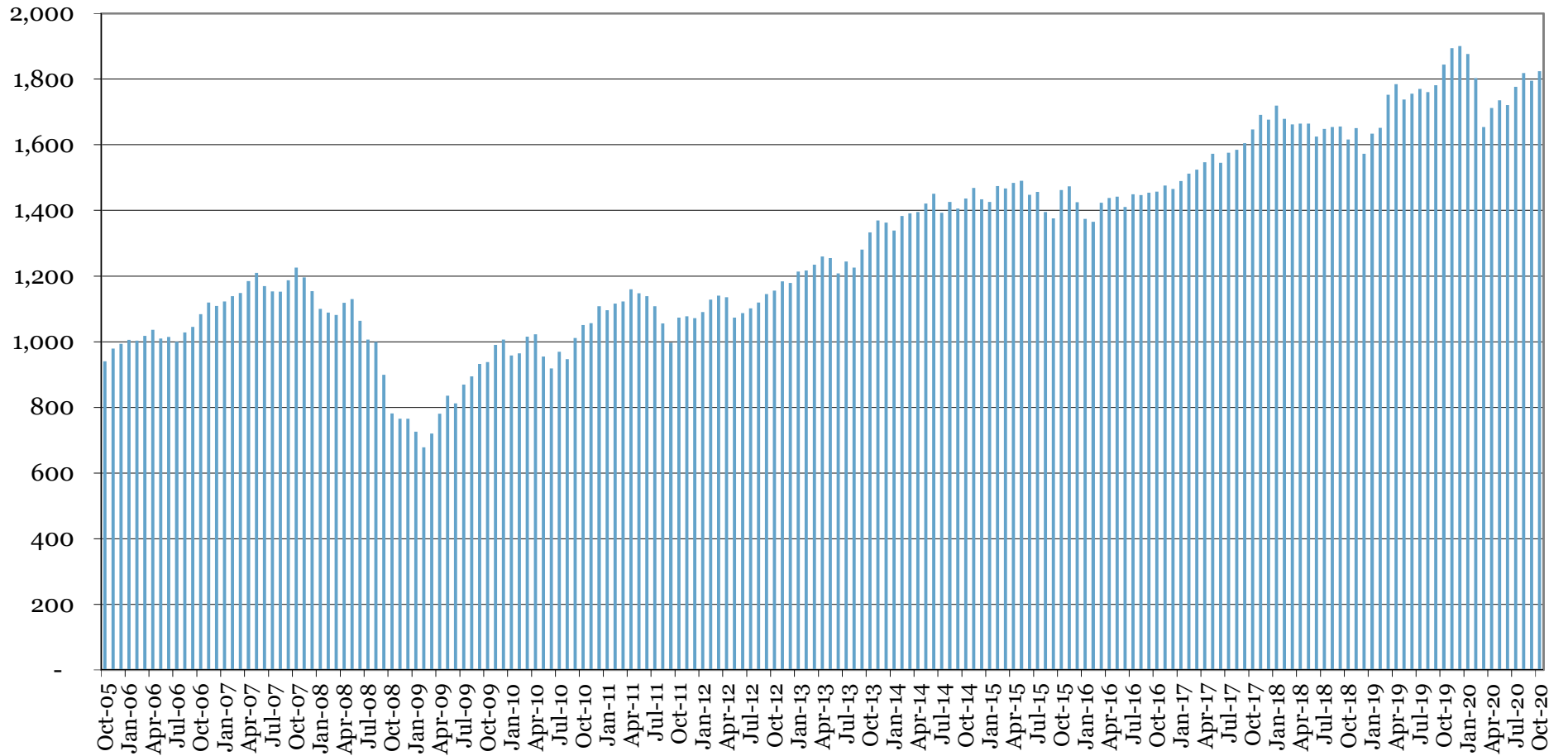




**SAIF NAV**  
**15 years ending October 31, 2020**  
**(\$ in Millions)**



**CSF NAV**  
**15 years ending October 31, 2020**  
**(\$ in Millions)**



TAB 10 – Calendar — Future Agenda Items

## **2020/21 OIC Forward Calendar and Planned Agenda Topics**

<b>January 28, 2021</b>	Private Equity Program Review Opportunity Portfolio Program Review Placement Agent Report 2022 OIC Calendar Approval
<b>March 10, 2021</b>	Real Estate Portfolio Review Alternatives Program Review Q4 OPERF Performance & Risk Review
<b>April 21, 2021</b>	OPERF Asset Allocation & Capital Market Assumptions Update Risk Review (Currency, Overlay) Operational Annual Review
<b>June 2, 2021</b>	OIC, PERS Joint Session IAP Program Review CEM Benchmarking Q1 OPERF Performance & Risk Review
<b>September 8, 2021</b>	ESG Annual Review Corporate Governance, Proxy Voting Securities Lending Q2 OPERF Performance & Risk Review
<b>October 27, 2021</b>	SAIF Annual Review OSGP Annual Review Common School Fund Annual Review
<b>December 8, 2021</b>	Public Equity Program Review Fixed Income Program Review Q3 OPERF Performance & Risk Review