Oregon Investment Council

October 31, 2018
9:00 AM

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

Rukaiyah Adams
Chair

John Skjervem
Chief Investment Officer

Tobias Read
State Treasurer

OREGON INVESTMENT COUNCIL

Agenda

October 31, 2018
9:00 AM

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

Time	**A. Action Items**	**Presenter**	**Tab**
9:00-9:05	**1. Review & Approval of Minutes** September 19, 2018	**Rukaiyah Adams** *OIC Chair*	**1**
9:05-9:10	**2. Committee Reports and CIO Remarks**	**John Skjervem** *Chief Investment Officer*	**2**
9:10-9:20	**3. General Consultant Recommendation** *OPERF*	**Karl Cheng** *Senior Investment Officer, Portfolio Risk & Research*	**3**
9:20-9:30	**4. Portfolio Consultant Recommendation** *OPERF Alternatives and Opportunity Portfolios*	**Ben Mahon** *Senior Investment Officer, Alternatives*	**4**
9:30-9:45	**5. Public Equity Policy Updates** *OPERF and other OST-managed Funds*	**Jennifer Peet** *Corporate Governance Director*	**5**
9:45-10:00	**6. OSTF Portfolio Rules Recommendation** *Oregon Short Term Fund*	**Garrett Cudahey** *Investment Officer, Fixed Income*	**6**
	B. Information Items		
10:00-10:30	**7. Currency Overlay Program** *OPERF*	**Jiangning (Jen) Plett** *Senior Investment Analyst* **Karl Cheng**	**7**
10:30-10:45	**-------------------- BREAK --------------------**		

10:45-11:30	**8.**	**Public Equity Review** *OPERF*	**Michael Viteri** *Senior Investment Officer, Public Equity* **Robin Kaukonen** *Investment Officer, Public Equity* **Tim Baumert** *Investment Officer, Public Equity* **Janet Becker-Wold** *Senior Vice President, Callan LLC*	**8**
11:30-11:35	**9.**	**Asset Allocations & NAV Updates** a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund d. Southern Oregon University Endowment Fund	**John Skjervem**	**9**
	10.	**Calendar — Future Agenda Items**	**John Skjervem**	**10**
11:35	**11.**	**Open Discussion**	**Council Members** **Staff** **Consultants**	

C. Public Comment Invited

10 Minutes

TAB 1 – REVIEW & APPROVAL OF MINUTES

September 19, 2018 Regular Meeting

JOHN D. SKJERVEM
CHIEF INVESTMENT OFFICER
INVESTMENT DIVISION

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STATE OF OREGON
OFFICE OF THE STATE TREASURER
16290 SW UPPER BOONES FERRY ROAD
TIGARD, OREGON 97224

OREGON INVESTMENT COUNCIL
SEPTEMBER 19, 2018
MEETING MINUTES

Members Present:	Rukaiyah Adams, John Russell, Tobias Read, Rex Kim and Kevin Olineck
Staff Present:	John Skjervem, Perrin Lim, David Randall, Deena Bothello, Karl Cheng, Tony Breault, Anna Totdahl, Austin Carmichael, Kim Olson, David Elott, May Fanning, Steve Kruth, Jen Plett, Debra Day, Dana Millican, Ben Mahon, Paul Koch, Jo Recht, Tom Lofton, Geoff Nolan, Ricardo Lopez, Angela Schaffers, Aliese Jacobsen, Eric Messer, Mark Selfridge, Michael Langdon, Michael Viteri, Jennifer Peet, William Hiles, Michael Mueller, Emily Nash, Kristel Flores, Andy Coutu, Tim Baumert, James Sinks, Susan Wilson, Lisa Pettinati, Jenny Dalto, Dmitri Palmateer, Amy Wojcicki, Michael Kaplan, Robin Kaukonen, Ryan Mann, and Chris Ebersole
Consultants Present:	Tom Martin and David Fann (TorreyCove); Allan Emkin, and Brandon Ross (PCA); Janet Becker-Wold, Uvan Tseng, and Jim Callahan (Callan)
Legal Counsel Present:	Steven Marlowe, Department of Justice

The September 19th, 2018 OIC meeting was called to order at 9:00 am by Rukaiyah Adams, OIC Chair.

I. 9: 00am Review and Approval of Minutes

MOTION: Chair Adams moved approval of the August 8th, 2018 OIC regular meeting minutes. Member Russell moved the motion, and Member Kim seconded the motion which then passed by a 3/0 vote.

II. 9:05 am Committee Reports and CIO Update

Committee Reports: Mr. Skjervem gave an update on the following committee actions taken since the August 8th, 2018 OIC meeting:

Private Equity Committee

August 30, 2018	General Atlantic Managed Account Program	$250M

Alternatives Portfolio Committee

August 17, 2018	Digital Colony Partners	$150M

Opportunity Portfolio Committee

None

Real Estate Committee

None

Mr. Skjervem then provided opening remarks which included a brief introduction of the revised OIC Member Orientation Manual, background on the McKinsey survey results, and context for the Equity Market update. He also mentioned the Q2 2018 OPERF results and annual OSGP review, and emphasized the importance of the annual CEM Benchmarking report. Finally, Mr. Skjervem introduced newly hired OST employees, David Elott, Assistant General Counsel and Kasey Krifka, Oregon Savings Network Engagement Director.

III. 9:08 am Policy Updates

Jennifer Peet, Corporate Governance Director presented the Council with a recently revised version of the OIC Orientation Manual and gave a brief description of the document's purpose.

MOTION: Mr. Kim moved approval of the OIC Orientation Manual, and Mr. Russell seconded the motion which then passed by a 3/0 vote.

9:15 am Treasurer Read arrived.

IV. 9:39 am McKinsey Survey Results – *OST Investment Division*

Bryce Klempner, Principal, and Elizabeth Skovira, Associate Partner of McKinsey & Company, Inc. summarized for the Council the results of the organizational health survey McKinsey conducted on and for the benefit of the Oregon State Treasury Investment Division. Results were presented relative to McKinsey's other survey composites which included both a public agency composite, an institutional investor composite and a much broader composite comprising all organizations participating in the McKinsey survey. Ms. Skovira shared that the investment division's overall scores were high relative to each of the comparative composites, while she and Mr. Klempner both noted select areas that represented opportunities for improvement.

V. 10:33 am Equity Market Update and Discussion – *OPERF*

Ronald Temple, CFA, Managing Director, Co-Head of Multi-Asset and Head of U.S. Equity, Lazard Asset Management delivered a comprehensive overview of and update on global equity markets.

VI. 11:09 am Q2 2018 Performance & Risk Report – *OPERF*

Karl Cheng, Senior Investment Officer, Portfolio Risk & Research and Janet Becker-Wold, Senior Vice President, Callan Associates, presented the quarterly OPERF investment performance and risk report for the calendar year and cumulative period ended June 30, 2018.

VII. 11:36 am CEM Benchmarking Report – *OPERF*

Karl Cheng introduced Mr. Mike Heale, Principal, CEM, who presented the OPERF investment cost analysis performed by CEM Benchmarking Inc. for both the calendar and five-year period ended December 31, 2017. Among other highlights, Mr. Heale noted that OPERF's overall annual costs decreased by 4 basis points in 2017.

VIII. 12:06 pm Oregon Savings Growth Plan – *Annual Review and Update*

With support and assistance from the OST Investment Division, the Oregon Investment Council is responsible for investment choices within the Oregon Savings Growth Plan (OSGP), a 457(b) deferred compensation plan that provides Oregon public employees a convenient way to save for retirement on either a pre- or after-tax (Roth) basis.

Michael Viteri, Senior Investment Officer, Public Equity, Wil Hiles, Investment Analyst II, Public Equity and Uvan Tseng, Senior Vice President, Callan Associates, recommend approval of three OSGO investment option changes:

1) Add Arrowstreet ACWI ex-US to and remove BlackRock ACWI ex-US from the Plan's International Equity Option;
2) Consolidate Capital Preservation Options and remove the existing Short-Term Fixed Income Option; and
3) Simplify the Real Return Option by removing GMO Benchmark Free Allocation and Wellington Real Total Return.

MOTION: Mr. Russell moved approval of staff's three recommendations, and Treasurer Read seconded the motion which then passed by a 4/0 vote.

IX. <u>12:07 pm Asset Allocation & NAV Updates</u>

Mr. Skjervem reviewed asset allocations and NAVs across OST-managed accounts for the period ended July 31, 2018.

X. <u>12:07 pm Calendar — Future Agenda Items</u>

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

XI. <u>12:08 pm Open Discussion</u>

Chair Adams thanked investment division staff and the Treasurer for the success of the September 6 Sustainability Summit in Portland. Additionally, Treasurer Read wanted to acknowledge all the efforts the investment team made, particularly with bringing together so many quality presenters. He also thanked the Capitol staff for working hard to make sure the summit ran smoothly.

<u>12: 09 pm Public Comments</u>

1. Aaron Brenner of UFCW and Peter Strazynski of NAP, addressed the Council concerning Endeavor Capital, and asked the Council to conduct a thorough review of the OIC's relationship with the firm prior to making any additional capital commitments.

2. David Rogers, Executive Directors or ACLU of Oregon, Maria Elena Morales of ACLU and Jim Baker, Private Equity Stakeholder Project, addressed the Council to bring attention to Endeavour Capital's current investment in Aladdin Bail bonds and associated insurance company Seaview.

Ms. Adams adjourned the meeting at 12:28 pm.

Respectfully submitted,

May Fanning
Executive Support Specialist

TAB 2 – Committee Reports and CIO Remarks

Opening Remarks

John D. Skjervem, Chief Investment Officer

October 31, 2018

Oregon State Treasury

October 31, 2018 OIC Meeting

Consultant Recommendations

- General and Portfolio-specific

Policy Updates

- Public Equity
- OSTF

Currency Overlay Program

- Early innings, but so far, so good

Public Equity Review

- Couple of specific recommendations
- Couple of new team members!

Speaking of New Team Members

- Faith Sedberry, Investment Officer, Alternatives Portfolio

TAB 3 – General Consultant Recommendation

OPERF

Renewal of OIC General Consulting Contracts

Purpose
To address the OIC's two general consulting contracts, both of which expire on December 31, 2018.

Background
Callan LLC (Callan) and Pension Consulting Alliance LLC (PCA) were both initially retained with three-year contracts that began on January 1, 2014. Under ***OST Policy INV 210: Consulting Contracts***, new contracts are awarded for three-year periods and a) can be renewed no more than twice and b) are limited to a final expiration date not more than four years beyond the contracts' original expiration date. At the end of seven years, contracts must be re-bid and a new seven-year cycle can begin. Additionally, the OIC retains the contractual right to terminate such contracts, at any time, upon written notice.

At the October 2016 meeting near the conclusion of the original three-year period, the OIC approved the first of two possible two-year contract renewals with both firms.

Staff Recommendation
In recognition of the contributions made by Callan and PCA, respectively, Staff proposes that the OIC extend its current contracts with both firms, subject to existing terms and conditions, for a final two-year period beginning January 1, 2019 and ending December 31, 2020.

TAB 4 – Portfolio Consultant Recommendation

OPERF Alternatives and Opportunity Portfolio

OIC Consultant Recommendation
OPERF Alternatives & Opportunity Portfolios

Purpose

Subject to the satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel, the Alternatives Portfolio consultant search committee (the "Committee") recommends that the Oregon Investment Council ("OIC" or "Council") pursue a non-discretionary, full retainer consulting contract with TorreyCove Capital Partners, LLC ("TorreyCove") beginning January 1, 2019 for the OPERF Alternatives Portfolio. Additionally, Staff recommends that an existing agreement with TorreyCove be renewed, to provide for the continuation of similar consulting services for the OPERF Opportunity Portfolio.

Background

The Alternatives Portfolio consultant ("Consultant") assists the Council and Oregon State Treasury Investment Division staff ("Staff") with respect to program construction, investment selection, and portfolio monitoring for the private markets components of the OPERF Alternatives Portfolio (i.e., infrastructure and natural resources). An effective Consultant will provide creative, non-conflicted advice supported by the following: (i) demonstrable "hands-on" alternatives expertise; (ii) experience working with and assisting large public pension fund boards; and, (iii) senior investment professionals focused on working collaboratively with the OIC and Staff. The Council's existing contract for Alternatives Portfolio consultant services ends December 31, 2018.

The initial OIC Alternatives and Opportunity Portfolio relationship with TorreyCove was established via an amendment to the OIC's contract with TorreyCove for the Private Equity Portfolio in January 2013. Prior to the amendment, there was no portfolio-wide consultant contract for the Alternatives or Opportunity Portfolios. In late 2016, a separate contractual relationship (the "2017 Agreement") was created for the Alternatives and Opportunity Portfolios, for a two-year period ending December 31, 2018.

With the initial term of the 2017 Agreement expiring, a Committee was formed to undertake a formal Request for Proposals ("RFP") process to identify candidate firms to provide Alternatives Portfolio consulting services. The Committee was comprised of the following individuals:

1. Rex Kim – Alternatives Portfolio OIC Committee Member
2. John Skjervem – Chief Investment Officer
3. John Hershey – Director of Alternative Investments
4. OST Alternatives Portfolio Staff:
    a. Ben Mahon – Senior Investment Officer
    b. Paul Koch – Investment Officer
    c. Mike Mueller – Investment Officer

With the support and advice of OST Chief Procurement Officer Julie Hall, the Committee commenced a formal search process by issuing a RFP for Alternatives Portfolio consulting services on June 8, 2018. The RFP was posted to the Treasury website for six weeks, and eight qualified firms submitted proposals by the stipulated July 20, 2018 deadline. A sub-group of the Committee (Ben Mahon, Paul Koch, and Mike Mueller) independently reviewed and scored all qualifying proposals. Scoring was based on many factors including key person backgrounds, firm history and experience, proposed service plan, monitoring and reporting, and the proposed retainer-based fee schedule. After this evaluation process, the sub-group recommended that the Committee interview three semi-finalists.

On August 29, 2018 the three semi-finalists presented to the Committee at OST's Tigard office after which the Committee identified TorreyCove as the most attractive candidate relative to Council objectives and Staff needs.

TorreyCove Capital Partners
In November 2011, TorreyCove was formed by the senior management team of PCG Asset Management and a strategic partner, Mitsubishi Corporation ("MC"). The new firm's founding business philosophy was to create a conflict-free platform serving sophisticated institutional investors with first-class private markets investment research, monitoring capabilities, and a high degree of client service. In March 2017, TorreyCove's four original founding partners (David Fann, Michelle Davidson, Kara King, and Tom Martin) purchased the equity held by MC in TorreyCove. TorreyCove is now an independent entity wholly owned by 13 members of the Firm's management team. TorreyCove and its predecessor organization have provided private markets consulting services to public pension fund clients since 1991.

TorreyCove currently employs 52 professionals located in offices in San Diego, CA (headquarters), Danvers, MA, and New York, NY. The firm advises on over $60 billion of capital, across 22 clients. TorreyCove has proposed assigning Tom Martin, Nic DiLoretta and Kara King as the key OPERF client advisory team, all of whom have extensive knowledge of OPERF and the Alternatives Portfolio.

The Investment Research Group ("IRG"), led by Tom Martin, an investment research professional with over 16 years of experience, has well-established proprietary due diligence procedures that guide the evaluation of investment opportunities for clients. In addition to performing comprehensive due diligence, the IRG is highly experienced in considering not only the attributes and issues associated with a specific opportunity, but also each opportunity's merits relative to its peer group, and relative to OPERF's portfolio. The IRG is organized functionally by strategy and geography based on focus teams. These teams are responsible for proactively maintaining a high level of real-time market knowledge, managing a relevant network of relationships, sourcing and diligencing opportunities, and establishing an active dialogue with clients related to their focus area. These teams drive the development of tactical and strategic investment ideas.

Kara King, Managing Director, manages TorreyCove's Risk Management Department. She is also a member of the firm's Board of Managers and Executive and Investment Committees. Ms. King has been focused on risk management since 1998. The risk management team focuses on cash flow verification, monitoring and analysis of private markets portfolios (including recommendations for all general partner LPAC consent requests), valuation guidelines, general partner compliance verification, and client-focused reporting and auditing functions. Prior to co-founding TorreyCove, Ms. King was a Managing Director and Chief Compliance Officer at PCG Asset Management, LLC.

Throughout the current mandate, TorreyCove has demonstrated a commitment to quality due diligence and to regular bi-monthly pipeline/strategy calls with Alternatives Portfolio Staff.

Recommendation

1. The Committee recommends that the OIC select TorreyCove to provide non-discretionary Alternatives Portfolio consulting services. The Committee further recommends pursuing an initial three-year contract term with two, pre-negotiated 24-month extensions available at the Council's discretion.

2. Additionally, Staff recommends extending the 2017 Agreement with TorreyCove, for a two-year period ending December 31, 2020, to continue providing due diligence and monitoring services for the OPERF Opportunity Portfolio.

TAB 5 – Public Equity Policy Updates

OPERF and other OST-managed Funds

OIC Policy Updates
October 31, 2018

Purpose

Staff is currently reviewing all investment-related polices with the objective of rationalizing (i.e., reducing and consolidating) the number of existing policies, and improving the clarity of all remaining policies. Within the context of this policy review project, this presentation will identify proposed changes to policies governing Public Equity, as manifest in updates to INV 601 and INV 603.

Discussion

Staff recommends the following three technical policy modifications:

1. Synchronize the expected return of the U.S. Risk Premia and International Risk Premia strategies relative to their cap-weighted benchmarks (specifically, 150 bps excess return annualized over a market cycle);
2. Clarify the return and tracking error objectives for these same two strategies (specifically, 10 bps excess return with tracking error of 50 bps or less relative to the risk premia benchmark); and
3. Establish a deadline of 6 months for liquidating securities from all internally-managed equity portfolios, when those securities are no longer included in the portfolios' corresponding benchmark.

Second, staff recommends reducing the number of policies from seven to three, one external, one internal, and one for proxy voting (the OIC reviewed and approved the proxy voting policy at the March meeting). Specifically, staff recommends the following:

INV 601	Public Equity Investments - Strategic Role of Public Equity Securities within OPERF	Retain
INV 602	Equity Investments - Selecting and Terminating Investment Management Firms	Retire and fold into INV 601
INV 603	Internal Equity Portfolio Objectives and Strategies	Retain
INV 604	Internal Equity Approved Broker List	Retire and fold into INV 603
INV 605	Proxy voting	Retain (approved in March of 2018)
INV 606	Equity Investments - Commission Recapture	Retire and fold into INV 601
INV 607	Equity Investments - Manager Monitoring	Retire and fold into INV 601

Recommendation: Approve policy updates as presented in attached documents.

INV 601 Public Equity/External

INTRODUCTION & OVERVIEW

Summary Policy Statement

The strategic role of publicly-traded equity securities is ~~to provide enhanced return and diversification opportunities~~delineated in the Oregon Investment Council Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund ~~("~~(“OPERF~~"~~” or the ~~"~~“Fund~~").~~”). The OPERF ~~public equity portfolio also provides~~Public Equity Portfolio (the “Portfolio”) is expected to provide enhanced return and diversification opportunities, as well as liquidity ~~relative~~ to meet the Fund's cash flow requirements. Staff, with approval from the Chief Investment Officer (CIO) and ~~quarterly~~ notification to the Oregon Investment Council ("OIC~~, will have the~~" or the "Council") as noted below, has discretion to rebalance between and among managers ~~with~~within the ~~public equity portfolio.~~Portfolio. Public equity securities are subject to the specific, strategic allocation targets ~~established by OIC Policy~~ ***~~INV 215: OPERF Asset Allocation and Rebalancing Policy~~***described herein.

Purpose and Goals

The purpose of these Public Equity Investment Policies & Strategies is to define the objectives of public equity as an asset class within the general investment policies of the ~~Oregon Investment Council ("~~OIC~~" or the "Council"),~~, and to outline strategies used to implement the Council's public equity investment policies.

Applicability

Classified represented, management service, unclassified executive service.

Authority

ORS Chapter 293.

POLICY PROVISIONS

~~GENERAL POLICY~~

~~To~~ Policy Statements

The Portfolio is expected to provide one of the highest expected returns among approved OPERF asset classes. Over the long-term, public equity returns are expected to exceed inflation~~ by approximately 5 percent on an average, annual basis.~~.

A. OBJECTIVES

1. ~~To achieve a public equities portfolio~~Achieve a Portfolio return of 0.50 percent or more above the MSCI All Country World Index Investable Market Index (ACWI IMI) (net) over a market cycle of three to five years and on a net-of-fees basis.
2. ~~To manage~~Manage active risk to a targeted annualized tracking error of 0.75 to 2.0 percent, relative to the MSCI ACWI IMI (net).

~~A.~~ **~~DIVERSIFICATION~~**

~~Subject to periodic review and revision, the Council adopts the following strategic allocation targets:~~

~~The OPERF public equity portfolio shall be structured on a global basis, seeking to loosely replicate the country and market capitalization characteristics of the investable universe of public equity~~

~~securities which can be further categorized as U.S., non-U.S. developed countries and emerging market countries.~~

~~**Allocation**~~	~~**Targets**~~	~~**Ranges**~~
~~U.S.~~	~~ACWI IMI weight~~	~~+/- 10%~~
~~Non-U.S.~~	~~ACWI IMI weight~~	~~+/- 10%~~
~~Emerging Markets~~	~~ACWI IMI weight~~	~~+/- 4%~~

~~1. A strategic allocation to ***Size*** (small cap) and ***Value*** (style exposure), domestically:~~

~~**Allocation**~~	~~**Targets**~~	~~**Ranges**~~
~~U.S. Small Cap Overweight~~	~~70%~~	~~0% - 100%~~
~~U.S. Value~~	~~60%~~	~~+/- 10%~~

~~*Note: The U.S. small cap overweight is based on the Russell 2000 index weight relative to the Russell 3000 index weight, the latter of which approximates 8%. A 70% U.S. Small Cap overweight target equates to a 13.6% [8% x (1+0.7)] allocation within the Domestic Equity portfolio. The U.S. value target is determined and calculated using a Russell 3000 baseline which weighs growth and value equally. A 60% U.S. Value weight implies that the U.S. Growth weight is 40%.*~~

~~2. A 25% strategic allocation of the OPERF Public Equity portfolio to ***Low Volatility*** strategies, globally:~~

~~**Allocation**~~	~~**Targets**~~	~~**Ranges**~~
~~Global Low Volatility~~	~~25%~~	~~+/- 10%~~

~~3. Unless tax, regulatory or liquidity constraints suggest otherwise, diversify public equity allocations across the stock markets of all investable countries to ensure exposure to a wide range of investment opportunities, and participate broadly in those markets in an attempt to capture the full market rate of equity return generated therein. The size of any commitment to an individual investment strategy will be based on that strategy's expected portfolio impact, the Staff's confidence in the strategy's manager, the manager's investment style, and the capacity available in/with a particular strategy/manager.~~

3. Maintain an overall equity portfolio capitalization that broadly reflects the MSCI ACWI IMI, but with deliberate, systematic overweights to small capitalization and value stocks. These strategic overweights or "tilts" are based on and supported by robust empirical research that historically links persistent and pervasive evidence of excess returns to systematic small cap and value "factor" exposures. Implementation of other such ~~"factor"~~ tilts may be considered at the manager, strategy or mandate level upon approval of both the CIO and OIC.

4. Unless tax, regulatory or liquidity constraints suggest otherwise, diversify public equity allocations across the stock markets of all investable countries to ensure exposure to a wide range of investment opportunities, and participate broadly in those markets in an attempt to capture the full market rate of equity return generated therein. The size of any commitment to an individual investment strategy will be based on that strategy's expected portfolio impact, the Staff's confidence in the strategy's manager, the manager's investment style, and the capacity available

in/with a particular strategy/manager.

~~4.~~5. Invest opportunistically, using unique investment approaches, within a controlled and defined portfolio allocation.

~~5.~~6. Enhance returns through selective active management provided such actively-managed strategies demonstrate empirical efficacy relative to embedded factor exposures and net of all fees and transactions costs.

B. STRATEGIES

1. Actively-managed strategies are expected to outperform stated benchmarks on an after-fee and risk-adjusted basis. Comparisons against a representative peer group universe will also be considered in evaluating the performance and risk characteristics of these strategies.
2. Benchmarks assigned to all non-U.S. strategies should be unhedged. Managers may be permitted to hedge currency exposures, and in cases where currency represents an explicit element of a manager's stated investment approach, may take active currency positions; however, all managers will be measured against an unhedged benchmark.

C. ALLOCATION TARGETS

Subject to periodic review and revision, the Oregon Investment Council (the "Council") adopts the following strategic allocation targets for the public equity portfolio (the "Portfolio"). The Portfolio will be structured on a global basis, seeking to loosely replicate the country and market capitalization characteristics of the investable universe of public equity securities.

Allocation	Targets	Ranges
U.S.	ACWI IMI weight	+/- 10%
Non-U.S.	ACWI IMI weight	+/- 10%
Emerging Markets	ACWI IMI weight	+/- 4%

~~4. The Council's selection of active managers will be based on those managers' demonstrated ability to add value on a "triple net" basis (i.e., net of all fees, transactions costs and factor exposures) relative to a passive management alternative. Additional considerations include managers' stated style and volatility parameters relative to the strategic allocation targets outlined above~~

~~B.~~D. OST STAFF AUTHORITY ~~& REPORTING~~

1. With CIO approval ~~and subsequent quarterly reporting to the OIC, staff will also have~~, OST Staff has discretion to rebalance between and among managers within the ~~public equity portfolio.~~ Portfolio. The aggregate structural characteristics of the ~~public equity portfolio~~ Portfolio will be considered during such rebalancing, while re-allocations between asset classes shall remain governed by ~~Policy~~ ~~***INV 215: OPERF Asset Allocation and Rebalancing Policy.***~~ OIC Policy.
2. 130/30 strategies may be implemented with any existing OPERF public equity mandate, conditional upon ~~consultant and~~ CIO ~~concurrence~~approval, and provided such implementation does not change the mandate's role within the ~~public equity portfolio. Staff~~ Portfolio. The CIO will report any such 130/30 implementations to the Council ~~in~~at the ~~quarter immediately~~next regular OIC meeting following the implementation.

0. ~~On a quarterly basis, staff will prepare and deliver to the Council a report that includes public equity portfolio performance relative to return and risk objectives as outlined in this policy including the portfolio's style (growth/value) and construction (active/passive) weightings, as well as its geographic allocation relative to the MSCI ACWI IMI benchmark.~~

D. ~~**INVESTMENT MANAGEMENT AGREEMENT (IMA) EXECUTION**~~

~~Management guidelines shall be attached to and incorporated into every separate account contract entered into between the Council and an investment manager. These guidelines may be modified from time to time as considered necessary by the CIO; however, the assigned benchmark may not be changed without OIC approval, and each contract must specify the following:~~

0. ~~The specific category to which a manager's strategy is assigned;~~
0. ~~A description of the manager's investment style;~~
0. ~~The manager's specific performance objective relative to an index or passively managed alternative;~~
0. ~~The strategy's expected risk (tracking error) relative to its assigned benchmark;~~
0. ~~Portfolio characteristics which the OIC expects the manager's strategy to exhibit on average throughout a market cycle; and~~

3. ~~A list of permissible equity securities in which the manager may invest.~~ OST Staff, with approval from the CIO and notification to the OIC at a regular meeting, is authorized to fund any internally-managed equity strategy considered necessary to allocate assets from terminated or defunded managers.

4. OST Staff, with approval from the CIO and notification to the OIC at its next regular meeting, may terminate “at will” any manager according to the terms of its contract with and on behalf of the OIC.

5. OST Staff, with approval of the Director of Capital Markets, is authorized to maintain a set of internal procedures to execute the directives contained in this policy.

E. COMMISSION RECAPTURE

Commission Recapture (CR) is a negotiated rebate of commissions paid to brokers, which allows asset owners (e.g., OPERF) to earn back a percentage of total commissions. Staff shall retain a CR agent for the Portfolio and monitor its performance and efficacy.

F. SOFT DOLLARS

"Soft Dollars" refers to an arrangement in which an investment manager obtains products or services, *other than the execution of securities transactions*, from or through a broker. In exchange, the broker receives a share of that investment manager's transaction business or "flow." Managers are expected to comply with all applicable laws and regulations related to receipt of such products or services. Staff shall review external managers' soft dollar usage on a quarterly basis.

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. OST Procedure: Investment Manager Benchmarks (Appendix A)

ADMINISTRATION

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. 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.

INV 601 Public Equity/External

INTRODUCTION & OVERVIEW

Summary Policy Statement

The strategic role of publicly-traded equity securities is delineated in the Oregon Investment Council Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund ("OPERF" or the "Fund"). The OPERF Public Equity Portfolio (the "Portfolio") is expected to provide enhanced return and diversification opportunities, as well as liquidity to meet the Fund's cash flow requirements. Staff, with approval from the Chief Investment Officer (CIO) and notification to the Oregon Investment Council ("OIC" or the "Council") as noted below, has discretion to rebalance between and among managers within the Portfolio. Public equity securities are subject to the specific, strategic allocation targets described herein.

Purpose and Goals

The purpose of these Public Equity Investment Policies & Strategies is to define the objectives of public equity as an asset class within the general investment policies of the OIC, and to outline strategies used to implement the Council's public equity investment policies.

Applicability

Classified represented, management service, unclassified executive service.

Authority

ORS Chapter 293.

POLICY PROVISIONS

Policy Statements

The Portfolio is expected to provide one of the highest expected returns among approved OPERF asset classes. Over the long-term, public equity returns are expected to exceed inflation.

A. OBJECTIVES

1. Achieve a Portfolio return of 0.50 percent or more above the MSCI All Country World Index Investable Market Index (ACWI IMI) (net) over a market cycle of three to five years and on a net-of-fees basis.
2. Manage active risk to a targeted annualized tracking error of 0.75 to 2.0 percent, relative to the MSCI ACWI IMI (net).
3. Maintain an overall equity portfolio capitalization that broadly reflects the MSCI ACWI IMI, but with deliberate, systematic overweights to small capitalization and value stocks. These strategic overweights or "tilts" are based on and supported by robust empirical research that historically links persistent and pervasive evidence of excess returns to systematic small cap and value "factor" exposures. Implementation of other such tilts may be considered at the manager, strategy or mandate level upon approval of both the CIO and OIC.
4. Unless tax, regulatory or liquidity constraints suggest otherwise, diversify public equity allocations across the stock markets of all investable countries to ensure exposure to a wide range of investment opportunities, and participate broadly in those markets in an attempt to capture the full market rate of equity return generated therein. The size of any commitment to an individual investment strategy will be based on that strategy's expected portfolio impact, the Staff's confidence in the strategy's manager, the manager's investment style, and the capacity available in/with a particular strategy/manager.

5. Invest opportunistically, using unique investment approaches, within a controlled and defined portfolio allocation.
6. Enhance returns through selective active management provided such actively-managed strategies demonstrate empirical efficacy relative to embedded factor exposures and net of all fees and transactions costs.

B. STRATEGIES

1. Actively-managed strategies are expected to outperform stated benchmarks on an after-fee and risk-adjusted basis. Comparisons against a representative peer group universe will also be considered in evaluating the performance and risk characteristics of these strategies.
2. Benchmarks assigned to all non-U.S. strategies should be unhedged. Managers may be permitted to hedge currency exposures, and in cases where currency represents an explicit element of a manager's stated investment approach, may take active currency positions; however, all managers will be measured against an unhedged benchmark.

C. ALLOCATION TARGETS

Subject to periodic review and revision, the Council adopts the following strategic allocation targets for the Portfolio. The Portfolio will be structured on a global basis, seeking to loosely replicate the country and market capitalization characteristics of the investable universe of public equity securities.

Allocation	**Targets**	**Ranges**
U.S.	ACWI IMI weight	+/- 10%
Non-U.S.	ACWI IMI weight	+/- 10%
Emerging Markets	ACWI IMI weight	+/- 4%

D. OST STAFF AUTHORITY

1. With CIO approval, OST Staff has discretion to rebalance between and among managers within the Portfolio. The aggregate structural characteristics of the Portfolio will be considered during such rebalancing, while re-allocations between asset classes shall remain governed by OIC Policy.
2. 130/30 strategies may be implemented with any existing OPERF public equity mandate, conditional upon CIO approval, and provided such implementation does not change the mandate's role within the Portfolio. The CIO will report any such 130/30 implementations to the Council at the next regular OIC meeting following the implementation.
3. OST Staff, with approval from the CIO and notification to the OIC at a regular meeting, is authorized to fund any internally-managed equity strategy considered necessary to allocate assets from terminated or defunded managers.
4. OST Staff, with approval from the CIO and notification to the OIC at its next regular meeting, may terminate “at will” any manager according to the terms of its contract with and on behalf of the OIC.
5. OST Staff, with approval of the Director of Capital Markets, is authorized to maintain a set of internal procedures to execute the directives contained in this policy.

E. COMMISSION RECAPTURE

Commission Recapture (CR) is a negotiated rebate of commissions paid to brokers, which allows asset owners (e.g., OPERF) to earn back a percentage of total commissions. Staff shall retain a CR agent for the Portfolio and monitor its performance and efficacy.

F. SOFT DOLLARS

"Soft Dollars" refers to an arrangement in which an investment manager obtains products or services, *other than the execution of securities transactions*, from or through a broker. In exchange, the broker receives a share of that investment manager's transaction business or "flow." Managers are expected to comply with all applicable laws and regulations related to receipt of such products or services. Staff shall review external managers' soft dollar usage on a quarterly basis.

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. OST Procedure: Investment Manager Benchmarks (Appendix A)

ADMINISTRATION

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. 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.

INV 603 Public Equity Internal

INTRODUCTION & OVERVIEW

Summary Policy Statement

~~All internal equity~~ Internally-managed, publicly-traded investments ~~shall be authorized by a public equity investment officer, and such authorization shall be documented~~ in ~~accordance with portfolio guidelines established by~~equity securities are permitted in the Oregon Investment Council ~~(~~("OIC~~). Subject to prior notification~~") Statement of Fund Governance, and the strategic role of such investments is delineated in the OIC~~, the Chief~~ Statement of Investment ~~Officer (CIO) has~~Objectives and Policy Framework for the ~~authority to approve changes to~~Oregon Public Employees Retirement Fund ("OPERF" or the ~~"Permitted Holdings" section of this policy.~~"Fund").

Purpose and Goals

The purpose of this policy is to specify portfolio strategies staff is authorized to manage internally, and to define governing risk, performance, and permitted investment parameters.

Applicability

Classified represented, management service, unclassified executive service.

Authority

ORS Chapter 293.

POLICY PROVISIONS

Internal~~Policy Statements and~~ Strategies

A. S&P 500 Index Strategy

1. The objective of the S&P 500 Index Strategy is to closely match the performance of the S&P 500 Total Return Index ~~performance~~ using full index replication.
2. The S&P 500 Index Strategy is expected to outperform the S&P 500 Total Return Index by 5 basis points annualized over a market cycle with an expected tracking error of 10 basis points or less.
3. Permitted Holdings:
   a. Securities contained in the S&P 500 Index;
   b. Securities reasonably expected to be part of the S&P 500 Index at some future date;
   c. Securities that have recently been a member of the S&P 500 Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which replicate the S&P 500 Index such as iShares S&P 500 Index Fund (Ticker: IVV) or SPDR S&P 500 (Ticker: SPY);
   e. S&P 500 Index Futures (Large Contracts and Minis); and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

B. S&P 400 Index Strategy

1. The objective of the S&P 400 Index Strategy is to closely match the performance of the S&P 400

Total Return Index ~~performance~~ using full index replication.

2. The S&P 400 Index Strategy is expected to outperform the S&P 400 Total Return Index by 10 basis points annualized over a market cycle with an expected tracking error of 30 basis points or less.
3. Permitted Holdings:
   a. Securities contained in the S&P 400 Index;
   b. Securities reasonably expected to be part of the S&P 400 Index at some future date;
   c. Securities that have recently been a member of the S&P 400 Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which replicate the S&P 400 Index such as iShares S&P 400 Index Fund (Ticker: IJH);
   e. S&P 400 Index Futures (Large Contracts and Minis); and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

C. Russell 2000 Synthetic Index Strategy

1. The objective of the Russell 2000 Index Strategy is to closely match the performance of the Russell 2000 Total Return Index ~~performance~~ using synthetic replication.
2. The Russell 2000 Index Strategy is expected to outperform the Russell 2000 Index Total Return Index by 30 basis points annualized over a market cycle with an expected tracking of 50 basis points or less.
3. Permitted Holdings:
   a. Russell 2000 Index and S&P 600 futures contracts;
   b. iShares Russell 2000 Index (Ticker: IWM);
   c. U.S. Treasury Bills or other acceptable cash equivalents used for equity futures collateral;
   d. Oregon Short Term Fund or a comparable short maturity fixed income fund approved by the CIO;
   e. PIMCO Enhanced Short Maturity ETF (Ticker: MINT);
   f. DFA – One-year Fixed Income Portfolio I (Ticker: DFIHX); and
   g. DFA – Two-year Global Fixed Income Portfolio I (Ticker: DFGFX).

D. U.S. Risk Premia Strategy

1. The objective of the U.S. Risk Premia Strategy is to closely match the MSCI USA Multi-factor Total Return Index (Bloomberg Ticker: M2CXEQM Index) using full index replication.

~~1.~~ The MSCI USA Multi-factor Total Return strategy has two return objectives: a) to outperform the MSCI USA Capitalization Index by 150 basis points annualized over a market cycle ~~-~~; b (to outperform the MSCI USA Multi-factor Total Return Index by 10 basis points with an expected tracking error of ~~400~~50 basis points or less. This strategy invests in a blend of risk premia or "factors" including momentum, value and quality. ~~A key tenet supporting the risk premia strategy is that systematic tilts toward these and other discreet factors are rewarded in the form of excess returns over long-term investment horizons.~~

~~International Developed Risk Premia Strategy~~

~~1.~~2. ~~The objective of the International Developed Risk Premia Strategy is to outperform the MSCI World X-US Index (net) by 200 basis points annualized over a market cycle with an expected tracking of 700 basis points or less. This strategy invests in a blend of risk premia or "factors" including, momentum, value, quality and low volatility.~~ A key tenet supporting the risk premia strategy is that systematic tilts toward these and other discreet factors are rewarded in the form of excess returns over long-term investment horizons.

~~2.~~3. Permitted Holdings:

~~S&P 500 Index Strategy~~

~~1. Securities contained in the S&P 500 Index.~~
~~2. Securities reasonably expected to be part of the S&P 500 Index at some future date.~~
~~3. Securities that have recently been included in the S&P 500 Index.~~
~~4. Exchange Traded Funds (ETFs) which replicate the S&P 500 Index such as iShares S&P 500~~

~~Index Fund (Ticker: IVV) or SPDR S&P 500 (Ticker: SPY).~~

~~1. S&P 500 Index Futures (Large Contracts and Minis).~~

~~2. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.~~

~~**S&P 400 Index Strategy**~~

~~4. Securities contained in the S&P 400 Index.~~

~~5. Securities reasonably expected to be part of the S&P 400 Index at some future date.~~

~~6. Securities that have recently been included in the S&P 400 Index.~~

~~7. Exchange Traded Funds (ETFs) which replicate the S&P 400 Index such as iShares S&P 400 Index Fund (Ticker: IJH).~~

~~8. S&P 400 Index Futures (Large Contracts and Minis).~~

~~9. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.~~

~~**Russell 2000 Synthetic Index Strategy**~~

~~11. Russell 2000 Index and S&P 600 futures contracts.~~

~~12. iShares Russell 2000 Index (Ticker: IWM).~~

~~13. U.S. Treasury Bills or other acceptable cash equivalents used for equity futures collateral.~~

~~14. Oregon Short Term Fund.~~

~~15. PIMCO Enhanced Short Maturity ETF (Ticker: MINT).~~

~~16. DFA One-Year Fixed Income Portfolio I (Ticker: DFIHX).~~

~~17. DFA Two-Year Global Fixed Income Portfolio I (Ticker: DFGFX).~~

~~**U.S. Risk Premia Strategy**~~

~~s.~~a. Securities contained in the MSCI USA Index~~.~~;

~~t.~~b. Securities reasonably expected to be part of the MSCI USA Index at some future date~~.~~;

~~u.~~c. Securities that have recently been a member of the MSCI USA Index~~.~~ (to be liquidated within 6 months unless approved by the Director of Capital Markets);

~~v.~~d. Exchange Traded Funds (ETFs) which closely track either the MSCI USA or other U.S. Large Cap style/risk premia index~~.~~;

~~w.~~e. Russell 1000, Russell 2000, S&P 500, S&P 400 and S&P 600 futures contracts~~.~~; and

f. ~~U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.~~ U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

E. International Developed Risk Premia Strategy

1. The objective of the International Developed Risk Premia Strategy is to closely match the MSCI World ex-US Diversified Multi-factor USD Net Total Return Index (Bloomberg Ticker: M1WOUDM) using full index replication.

2. The MSCI World ex-U.S. International Developed Risk Premia strategy has two return objectives: a) to outperform the MSCI World ex-U.S. International Capitalization Index (net) by 150 basis points annualized over a market cycle; b) to outperform the MSCI World ex-U.S. Diversified Multi-factor USD Net Total Return Index (net) by 10 basis points with an expected tracking error of 50 basis points or less. This strategy invests in a blend of risk premia or "factors" including, momentum, value, quality and low volatility. A key tenet supporting the risk premia strategy is that systematic tilts toward these and other discreet factors are rewarded in the form of excess returns over long-term investment horizons.

3. Permitted Holdings:

   a. Securities contained in the MSCI World ~~X~~ex-US Index~~.~~;

   b. Securities reasonably expected to be part of the MSCI World ~~X~~ex-US Index at some future date~~.~~;

   c. Securities that have recently been a member of the MSCI World ~~X-US Index.~~ ex-U.S. Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);

   d. Exchange Traded Funds (ETFs) which closely track either the MSCI World ~~X-US~~ex-U.S.

or other International Developed ~~X - US~~ex-U.S. style/risk premia index~~.~~;

e. MSCI EAFE, MSCI Canada futures contracts~~.~~; and

f. ~~U.S. Treasury Bills or other acceptable cash equivalents utilized~~U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

~~1.~~ Policy Statements ~~for equity futures collateral.~~

A. Best Execution

In managing funds, investment officers shall pursue "Best Execution" during the trading process, and seek to maximize a portfolio's value consistent with its stated investment objectives and any applicable constraints. As part of the Best Execution pursuit, OST investment officers will perform the following duties: (1) accurately determine portfolio trading requirements; (2) select appropriate trading techniques, venues and agents; (3) monitor and control liquidity, endeavoring to avoid excessive market impact; (4) protect beneficiaries' interests and investment managers' proprietary information; and (5) evaluate trading results and effectiveness on a continual basis.

B. Broker Selection, Monitoring, and Termination

OST staff shall maintain a list of acceptable brokers (the Authorized Broker List) with whom equity securities trades may be executed for internally-managed portfolios. All trades for internally-managed equity portfolios shall be executed through brokers on the Authorized Broker List, and additions to the Authorized Broker List shall be approved by the Chief Investment Officer. All approved brokers will adhere to the following requirements:

1. Brokers on the Approved Broker List must be registered with the Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA);
2. Brokers on the Authorized Broker List must not be under review for serious wrongdoing (penalties for which the broker faces severe impairment of its abilities to conduct future business) nor under suspension by the Securities and Exchange Commission (SEC), Financial Industry Regulatory Authority (FINRA), U.S. Commodity Futures Trading Commission (CFTC), or any other U.S. securities regulatory body;
3. Brokers on the Authorized Broker List shall not have conflicts of interests due to direct familial relationships between a supervisory or contact/executing broker and any direct relative of any OST staff member;
4. The assigned representative at a broker on the Authorized Broker List must have experience servicing an institutional client with over $1 billion of equity assets and supply at least one reference for that relationship;
5. OST Investment Division staff must be satisfied that a broker on the Authorized Broker List has adequate financial resources to perform the necessary services, as well as the capability to execute trades in a competent manner; and
6. The CIO shall provide advance approval for any soft dollar services (as defined in INV 601) received by OST in connection with the internal portfolio management activities.

~~B.~~C. Absolute Restrictions

The ~~Internal Public Equity Portfolios~~internally-managed public equity portfolios may not ~~purchase~~make the following ~~investments or~~ types of investments without the specific advanced written approval of both the CIO **and** OIC:

1. Short sales of securities;

2. Notional equity exposure in excess of a portfolio's Net Asset Value;

3. Commodities; and

4. Non-U.S. dollar denominated fixed income securities issued by entities incorporated or chartered outside of the United States.

D. Correction of Non-Compliance

If an internally-managed public equity ~~fund~~portfolio is found to be out of compliance with one or more adopted investment guidelines or is being managed inconsistently with its policy and objectives, Staff shall bring the ~~internally managed equity fund~~portfolio into compliance as soon as is prudently feasible. Actions to bring internally-managed public equity ~~funds~~portfolios back into compliance and justification for such actions, including documentation of proposed and actual resolution strategies shall be coordinated with the ~~OST~~Oregon State Treasury investment compliance program.

~~Investment Transaction Authorization~~

~~All trades shall be entered into~~

E. OST Staff Authority and Reporting

1. OST Staff, with approval from the ~~Order Management System (OMS)~~Chief Investment Officer, has the authority to approve changes to the "Permitted Holdings" sections of ~~record (e.g., Aladdin), and are authorized electronically by a~~this Policy.

2. ~~1.~~ As denoted in INV 601: Public Equity Investments: Strategic Role of Public Equity Securities within OPERF, "Staff, with approval from the Chief Investment Officer ~~who shall act in accordance with established procedures~~(CIO) and ~~internal controls for the operation of the investment program consistent with this policy.~~notification to the Oregon Investment Council ("OIC" or the "Council") as noted below, has discretion to rebalance between and among managers within the [Public Equity] Portfolio."

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

~~None~~

A. OST Procedure: Authorized Broker List (Appendix A)

ADMINISTRATION

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. 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.

INV 603 Public Equity Internal

INTRODUCTION & OVERVIEW

Summary Policy Statement

Internally-managed, publicly-traded investments in equity securities are permitted in the Oregon Investment Council ("OIC") Statement of Fund Governance, and the strategic role of such investments is delineated in the OIC Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund ("OPERF" or the "Fund").

Purpose and Goals

The purpose of this policy is to specify portfolio strategies staff is authorized to manage internally, and to define governing risk, performance, and permitted investment parameters.

Applicability

Classified represented, management service, unclassified executive service.

Authority

ORS Chapter 293.

POLICY PROVISIONS

Internal Strategies

A. S&P 500 Index Strategy

1. The objective of the S&P 500 Index Strategy is to closely match the performance of the S&P 500 Total Return Index using full index replication.
2. The S&P 500 Index Strategy is expected to outperform the S&P 500 Total Return Index by 5 basis points annualized over a market cycle with an expected tracking error of 10 basis points or less.
3. Permitted Holdings:
   a. Securities contained in the S&P 500 Index;
   b. Securities reasonably expected to be part of the S&P 500 Index at some future date;
   c. Securities that have recently been a member of the S&P 500 Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which replicate the S&P 500 Index such as iShares S&P 500 Index Fund (Ticker: IVV) or SPDR S&P 500 (Ticker: SPY);
   e. S&P 500 Index Futures (Large Contracts and Minis); and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

B. S&P 400 Index Strategy

1. The objective of the S&P 400 Index Strategy is to closely match the performance of the S&P 400 Total Return Index using full index replication.
2. The S&P 400 Index Strategy is expected to outperform the S&P 400 Total Return Index by 10 basis points annualized over a market cycle with an expected tracking error of 30 basis points or

less.
3. Permitted Holdings:
   a. Securities contained in the S&P 400 Index;
   b. Securities reasonably expected to be part of the S&P 400 Index at some future date;
   c. Securities that have recently been a member of the S&P 400 Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which replicate the S&P 400 Index such as iShares S&P 400 Index Fund (Ticker: IJH);
   e. S&P 400 Index Futures (Large Contracts and Minis); and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

C. Russell 2000 Synthetic Index Strategy

1. The objective of the Russell 2000 Index Strategy is to closely match the performance of the Russell 2000 Total Return Index using synthetic replication.
2. The Russell 2000 Index Strategy is expected to outperform the Russell 2000 Index Total Return Index by 30 basis points annualized over a market cycle with an expected tracking of 50 basis points or less.
3. Permitted Holdings:
   a. Russell 2000 Index and S&P 600 futures contracts;
   b. iShares Russell 2000 Index (Ticker: IWM);
   c. U.S. Treasury Bills or other acceptable cash equivalents used for equity futures collateral;
   d. Oregon Short Term Fund or a comparable short maturity fixed income fund approved by the CIO;
   e. PIMCO Enhanced Short Maturity ETF (Ticker: MINT);
   f. DFA – One-year Fixed Income Portfolio I (Ticker: DFIHX); and
   g. DFA – Two-year Global Fixed Income Portfolio I (Ticker: DFGFX).

D. U.S. Risk Premia Strategy

1. The objective of the U.S. Risk Premia Strategy is to closely match the MSCI USA Multi-factor Total Return Index (Bloomberg Ticker: M2CXEQM Index) using full index replication.
2. The MSCI USA Multi-factor Total Return strategy has two return objectives: a) to outperform the MSCI USA Capitalization Index by 150 basis points annualized over a market cycle; b (to outperform the MSCI USA Multi-factor Total Return Index by 10 basis points with an expected tracking error of 50 basis points or less. This strategy invests in a blend of risk premia or "factors" including momentum, value and quality. A key tenet supporting the risk premia strategy is that systematic tilts toward these and other discreet factors are rewarded in the form of excess returns over long-term investment horizons.
3. Permitted Holdings:
   a. Securities contained in the MSCI USA Index;
   b. Securities reasonably expected to be part of the MSCI USA Index at some future date;
   c. Securities that have recently been a member of the MSCI USA Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which closely track either the MSCI USA or other U.S. Large Cap style/risk premia index;
   e. Russell 1000, Russell 2000, S&P 500, S&P 400 and S&P 600 futures contracts; and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

E. International Developed Risk Premia Strategy

1. The objective of the International Developed Risk Premia Strategy is to closely match the MSCI World ex-US Diversified Multi-factor USD Net Total Return Index (Bloomberg Ticker: M1WOUDM) using full index replication.

2. The MSCI World ex-U.S. International Developed Risk Premia strategy has two return objectives: a) to outperform the MSCI World ex-U.S. International Capitalization Index (net) by 150 basis points annualized over a market cycle; b) to outperform the MSCI World ex-U.S. Diversified

Multi-factor USD Net Total Return Index (net) by 10 basis points with an expected tracking error of 50 basis points or less. This strategy invests in a blend of risk premia or "factors" including, momentum, value, quality and low volatility. A key tenet supporting the risk premia strategy is that systematic tilts toward these and other discreet factors are rewarded in the form of excess returns over long-term investment horizons.

3. Permitted Holdings:
   a. Securities contained in the MSCI World ex-US Index;
   b. Securities reasonably expected to be part of the MSCI World ex-US Index at some future date;
   c. Securities that have recently been a member of the MSCI World ex-U.S. Index (to be liquidated within 6 months unless approved by the Director of Capital Markets);
   d. Exchange Traded Funds (ETFs) which closely track either the MSCI World ex-U.S. or other International Developed ex-U.S. style/risk premia index;
   e. MSCI EAFE, MSCI Canada futures contracts; and
   f. U.S. Treasury Bills or other acceptable cash equivalents utilized for equity futures collateral.

Policy Statements

A. Best Execution

In managing funds, investment officers shall pursue "Best Execution" during the trading process, and seek to maximize a portfolio's value consistent with its stated investment objectives and any applicable constraints. As part of the Best Execution pursuit, OST investment officers will perform the following duties: (1) accurately determine portfolio trading requirements; (2) select appropriate trading techniques, venues and agents; (3) monitor and control liquidity, endeavoring to avoid excessive market impact; (4) protect beneficiaries' interests and investment managers' proprietary information; and (5) evaluate trading results and effectiveness on a continual basis.

B. Broker Selection, Monitoring, and Termination

OST staff shall maintain a list of acceptable brokers (the Authorized Broker List) with whom equity securities trades may be executed for internally-managed portfolios. All trades for internally-managed equity portfolios shall be executed through brokers on the Authorized Broker List, and additions to the Authorized Broker List shall be approved by the Chief Investment Officer. All approved brokers will adhere to the following requirements:

1. Brokers on the Approved Broker List must be registered with the Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA);
2. Brokers on the Authorized Broker List must not be under review for serious wrongdoing (penalties for which the broker faces severe impairment of its abilities to conduct future business) nor under suspension by the Securities and Exchange Commission (SEC), Financial Industry Regulatory Authority (FINRA), U.S. Commodity Futures Trading Commission (CFTC), or any other U.S. securities regulatory body;
3. Brokers on the Authorized Broker List shall not have conflicts of interests due to direct familial relationships between a supervisory or contact/executing broker and any direct relative of any OST staff member;
4. The assigned representative at a broker on the Authorized Broker List must have experience servicing an institutional client with over $1 billion of equity assets and supply at least one reference for that relationship;
5. OST Investment Division staff must be satisfied that a broker on the Authorized Broker List has adequate financial resources to perform the necessary services, as well as the capability to execute trades in a competent manner; and
6. The CIO shall provide advance approval for any soft dollar services (as defined in INV 601) received by OST in connection with the internal portfolio management activities.

C. Absolute Restrictions

The internally-managed public equity portfolios may not make the following types of investments without the specific advanced written approval of both the CIO **and** OIC:

1. Short sales of securities;
2. Notional equity exposure in excess of a portfolio's Net Asset Value;
3. Commodities; and
4. Non-U.S. dollar denominated fixed income securities issued by entities incorporated or chartered outside of the United States.

D. Correction of Non-Compliance

If an internally-managed public equity portfolio is found to be out of compliance with one or more adopted investment guidelines or is being managed inconsistently with its policy and objectives, Staff shall bring the portfolio into compliance as soon as is prudently feasible. Actions to bring internally-managed public equity portfolios back into compliance and justification for such actions, including documentation of proposed and actual resolution strategies shall be coordinated with the Oregon State Treasury investment compliance program.

E. OST Staff Authority and Reporting

1. OST Staff, with approval from the CIO, has the authority to approve changes to the "Permitted Holdings" sections of this Policy.
2. As denoted in INV 601: Public Equity Investments: Strategic Role of Public Equity Securities within OPERF, "Staff, with approval from the Chief Investment Officer (CIO) and notification to the Oregon Investment Council ("OIC" or the "Council") as noted below, has discretion to rebalance between and among managers within the [Public Equity] Portfolio."

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. OST Procedure: Authorized Broker List (Appendix A)

ADMINISTRATION

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. 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 6 – OSTF Portfolio Rules Recommendation

Oregon Short Term Fund

Oregon Short Term Fund Proposed Policy Revision

Purpose

Staff is recommending a revision to the Oregon Short Term Fund policy to increase the allowable percentage of asset-backed securities (ABS) from 15% of the portfolio's assets to 25%.

Background

In 2014, based on staff recommendation, the OIC approved the addition of ABS securities into the Oregon Short Term Fund (OSTF) policy. The approved recommendation allowed for up to 15% of OSTF assets to be invested in ABS securities provided the securities had a weighted average life of 3 years or less at the time of purchase, and were rated AAA/Aaa/AAA or the highest short-term ratings category (A1+/P1/F1+). Additionally, the recommendation limited staff to investing no more than 5% of the fund's assets in any single issuing trust.

Since the policy modification in 2014, staff has prudently expanded the fund's ABS allocation in select high-quality securities which improved staff's ability to meet the fund's policy objectives: 1) principal preservation; 2) abundant liquidity; and 3) a market yield consistent with a high-quality, liquid portfolio.

Staff is recommending another policy modification to allow for up to 25% of fund assets in ABS securities for the following reasons:

- <u>Alignment with Policy Objectives</u> – Highly-rated ABS securities have a strong history of providing principal protection. ABS securities are also highly-liquid with deep new issuance and secondary trading markets.
- <u>Attractive Relative Yields in Collateralized Form</u> – ABS securities offer attractive relative yields when compared to other asset classes in the U.S. short-duration fixed income markets.
- <u>Improved Diversification</u> – ABS securities offer diversification from corporate credit exposures, thus allowing staff to build a more resilient portfolio.

Recommendation

Staff recommends increasing the allowable percentage of ABS securities in the Oregon Short Term Fund from 15% to 25% of fund assets. Limitations on security ratings, weighted average life and maximum exposure to any single issuing trust are left unchanged by this recommendation.

OSTF Proposed Policy Revision

Garrett Cudahey
Investment Officer
October 31, 2018

Oregon State Treasury

Agenda

- Background
- OSTF ABS Experience Since Policy Update
- Recommendation / Rationale
- Benefits of ABS
- Deployment Strategy
- Additional Monitoring Capacity
- Potential Risks
- Request for Vote on Staff's Proposal
- Appendix

Background

- OSTF policy modified October 2014 to allow up to 15% of Asset Backed Securities (ABS).

- ABS allocation deployed across the following high quality assets:
  - prime U.S. auto loan;
  - prime U.S. credit cards; and
  - select U.S. agriculture and construction equipment trusts.

- All securities must be rated AAA or highest money-market ratings.

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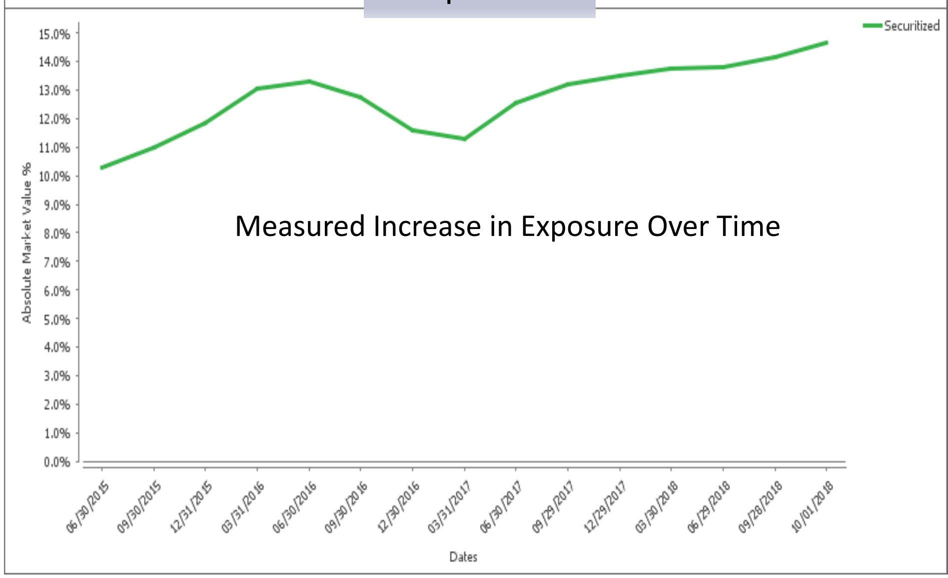
OSTF ABS Experience

OSTF's Recent ABS History

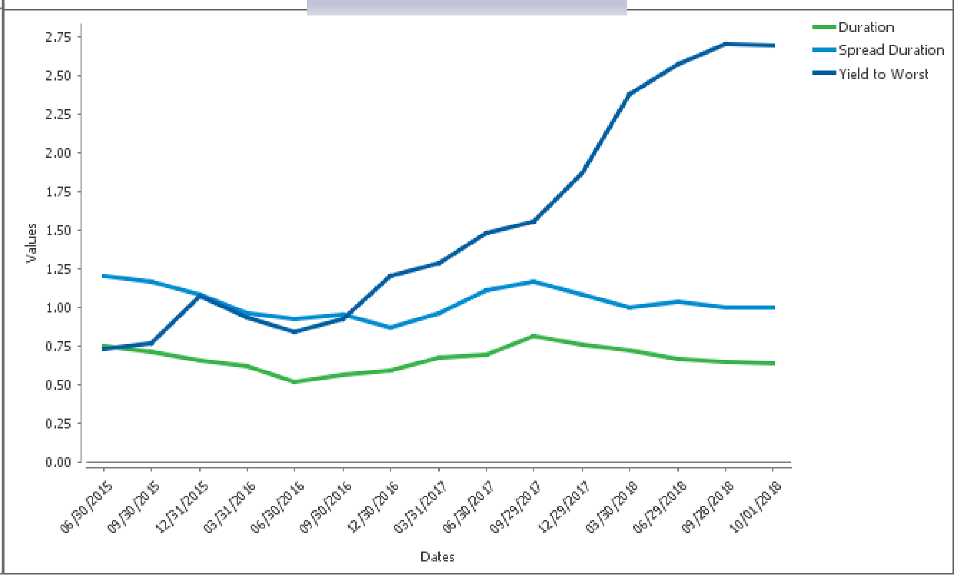
Performance by Sector	
Aug 2015 - Aug 2018	
OSTF	**1.28%**
Corporates	**1.56%**
Securitized	**1.14%**
Government Related	**0.96%**
Municipals	**0.89%**
Treasuries	**0.89%**
Funds	**0.07%**

(Figures are annualized)

Exposure



Historical Metrics



OSTF ABS Experience: What We Invest in Now

We DO invest in: ***Hi Quality Assets & Issuers***

- U.S. Collateral
- Prime Borrowers
- *High-quality* Originators and Servicers
- Large and Liquid Issues
- Prime U.S. Auto Loan Trusts
- Prime U.S. Credit Card Trusts
- Selected U.S. Equipment Trusts
- Only AAA-rated or equivalent money-market ratings

We DON'T invest in: ***Low Quality Assets & Issuers***

- Subprime Issuers
- Subordinated Positions (even if AAA-rated)
- Non-U.S. Collateral
- Trusts that Lack Diversification
- Smaller and Infrequent Issuers
- Lower-rated Originators and Services
- Issuers Without a Track Record

Portfolio Exposure Snapshot

OSTF's Investible ABS Universe

U.S. Prime Auto Loan Issuers	U.S. Prime Auto Lease Issuers	U.S. Prime Credit Card Issuers
Ally	Ally	American Express
BMW	BMW	Bank of America
Carmax	Ford	Barclays
Fifth Third	GM Financial	Capital One
Ford	Hyundai	Chase Bank
GM Financial	Mercedes-Benz	Citibank
Honda	Nissan	Discover
Huntington	Porsche	Synchrony
Hyundai	Volkswagen	World Financial Network
Mercedes-Benz	World Omni	
M&T Bank		**U.S. Other**
Nissan		Case New Holland
Porsche		John Deere
Toyota		Verizon Wireless
USAA		
Volkswagen		
World Omni		**Current Investments*

Current OSTF ABS Allocations (9/28/2018)

Name	Market Value (m)	Market Value %
ABS	2,515,717	14.1%
CREDIT CARD ABS	1,503,352	8.4%
American Express	286,684	1.6%
Citibank	221,092	1.2%
Chase Bank	215,572	1.2%
Discover	196,216	1.1%
Synchrony	185,674	1.0%
Barclays Dryrock	160,615	0.9%
Capital One	125,811	0.7%
Bank of America	91,685	0.5%
Synchrony	20,004	0.1%
AUTO ABS	847,944	4.8%
Toyota	232,702	1.3%
Honda	175,183	1.0%
Carmax	125,798	0.7%
Ford	122,648	0.7%
Nissan	109,823	0.6%
Ally	44,300	0.2%
Hyundai	31,905	0.2%
World Omni	5,584	0.0%
EQUIPMENT ABS	164,421	0.9%
Case New Holland	99,040	0.6%
John Deere	65,381	0.4%

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Recommendation / Rationale

Recommendation:

- Increase maximum allowable exposure to ABS from 15% to 25%

Rationale:

- Benefits of ABS
  - ✓ Asset Class Aligned with OSTF Objectives
  - ✓ Increased Safety of Principal
  - ✓ Liquid / Deep Markets
  - ✓ Attractive Relative Yields in Collateralized Form
  - ✓ Improve Diversification
- Prudent Deployment Strategy
- New Staff Resources to Assist in Tracking and Monitoring

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Benefit: Alignment with OSTF Objectives

OSTF Objectives (Priority Order)	**ABS Characteristics**
(1) Preservation of Principal	✓ Strong History of Principal Preservation
(2) Liquidity	✓ Liquid / Deep Trading Markets
(3) Yield	✓ Attractive Relative Yield in Collateralized Form

Benefit: Increased Safety of Principal

Strong History of Principal Preservation

Asset class	Original balance (USDbn)	Repaid (%)	No loss expected (%)	Loss expected (%)	Loss realised (%)	Total loss (%)
Credit cards	862.8	82.1	17.9	0.0	0.0	0.0
Auto	666.4	85.9	14.1	0.0	0.0	0.0
Student loans	529.3	61.2	38.3	0.5	0.0	0.5
Commercial	101.4	81.2	16.0	2.0	0.9	2.8
Other	82.1	79.2	19.6	0.3	0.9	1.3
Total	**2,242.1**	**78.1**	**21.6**	**0.2**	**0.1**	**0.3**

Fitch Ratings - Global Structured Finance Losses (2000-2016 Issuance), September 2017

Includes all rating categories (AAA, Investment Grade, Speculative Grade)

No Losses on Rated U.S. Credit Card / Auto ABS tranches from 2000-2016 (Fitch Ratings)

OSTF Objectives: (1) Preservation of Principal (2) Liquidity (3) Yield

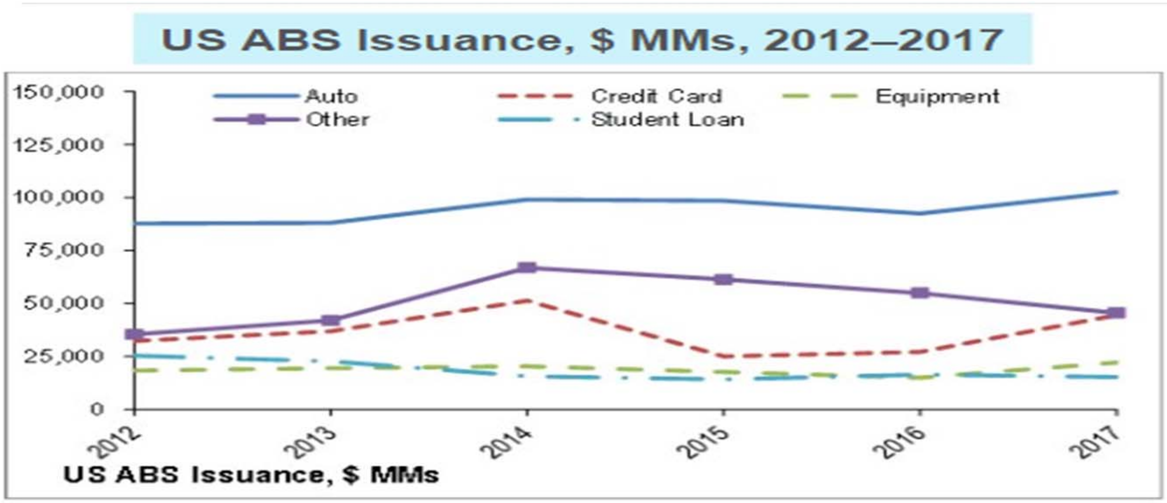
Benefit: Liquid / Deep Trading Markets

Liquid / Deep Trading Market with Significant Secondary & New Issue Markets

Depth of Market: # Trades and $ Volume

TRACE Reported Trade Data		
	Reported Trades	**Reported Volume**
Auto ABS	10,955	$16,148,865,000
Credit Card ABS	7,382	$15,411,853,000
Data is for 90 days ended 10/1/2018		

ABS New Issuance Trends

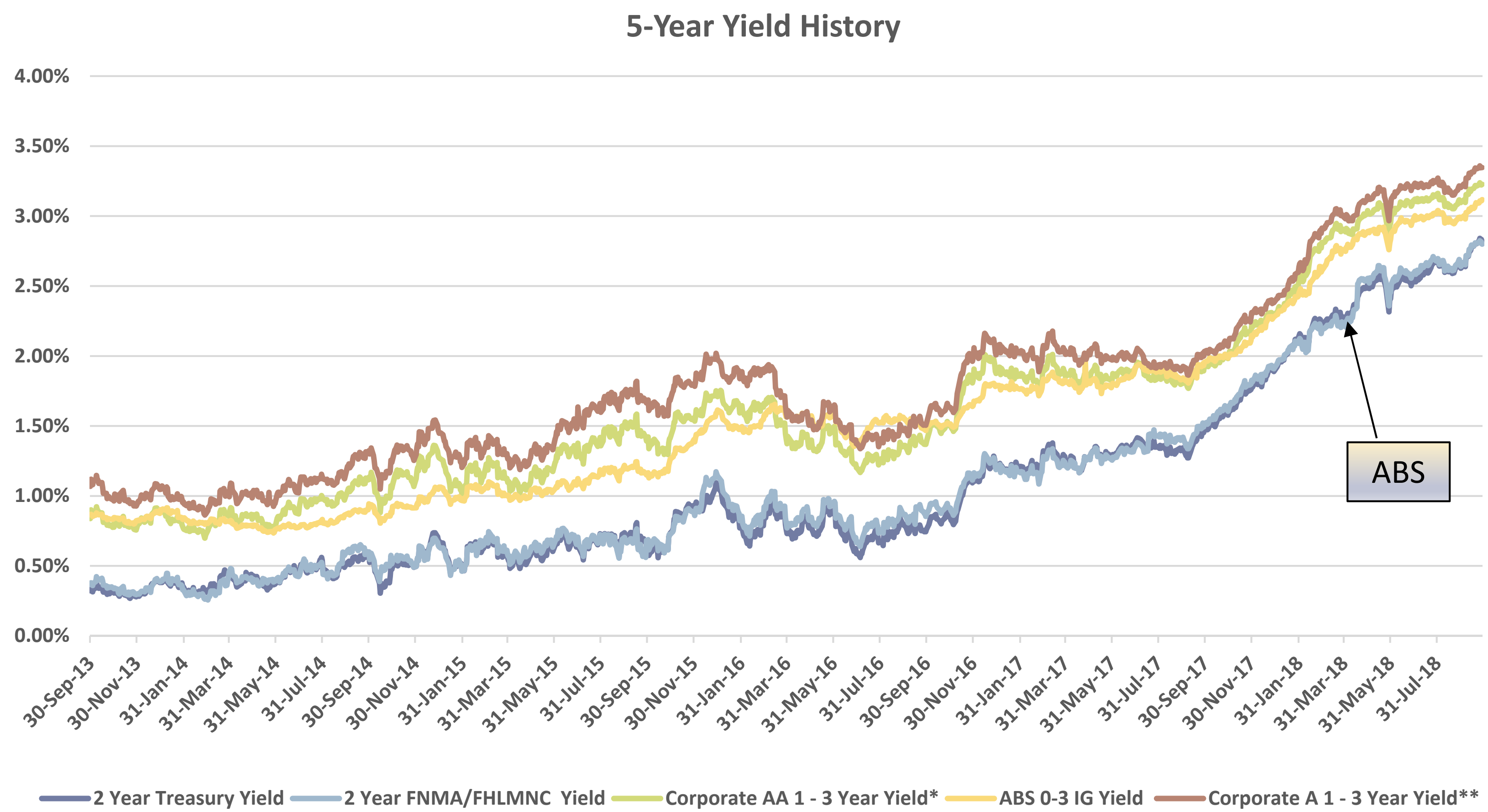


Source: SIFMA

OSTF Objectives: (1) Preservation of Principal (2) Liquidity (3) Yield

Benefit: Attractive Relative Yields in *Collateralized* Form

OSTF's Investible Universe



Source: Citigroup. Note: "ABS 0-3 IG Index" used above contains all investment-grade rated asset-backed securities in the United States market. The Oregon Short Term Fund only invests in AAA-rated or securities with the highest money-market ratings (A1+/P1/F1+). *Represents the 1-3 year U.S. AA-rated corporate bond universe. **Represents the 1-3 year U.S. A-rated corporate bond universe.

OSTF Objectives: (1) Preservation of Principal (2) Liquidity (3) Yield

Benefit: Enhanced Ability to Diversify Risk

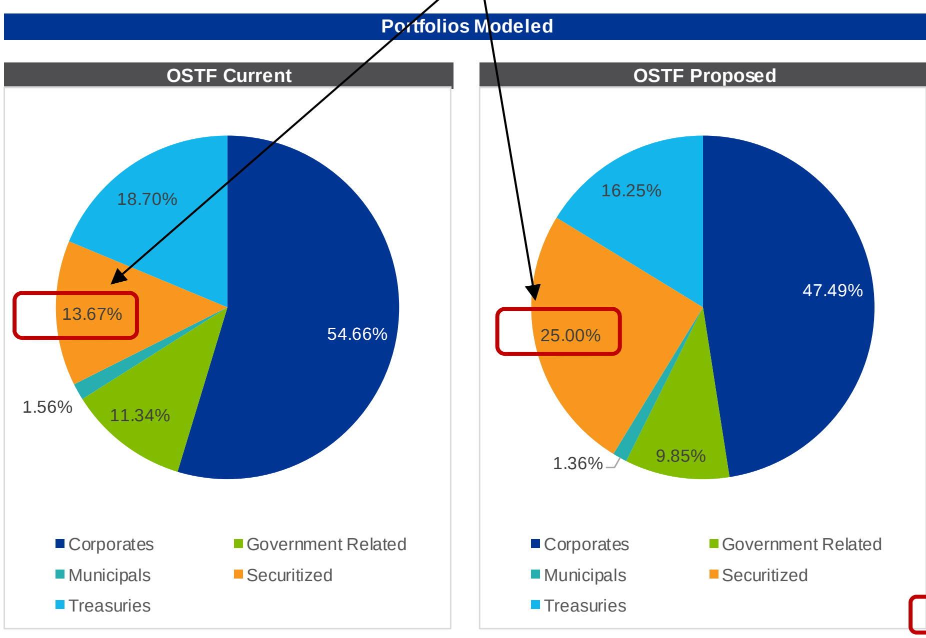
Strong Diversification from Corporate Credit.

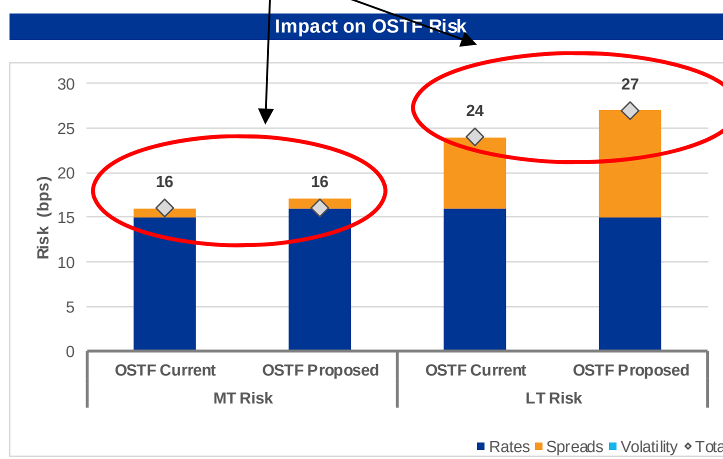
Correlations

	Auto ABS AAA 2Y Spread	CreditCard ABS AAA 2Y Spread	Equipment ABS AAA 2Y Spread	Spread USBIG Credit (AAA/AA/A)
Auto ABS AAA 2Y Spread	1	0.9	0.77	-0.03
CreditCard ABS AAA 2Y Spread	0.9	1	0.9	0.36
Equipment ABS AAA 2Y Spread	0.77	0.9	1	0.49

(source: Citi Velocity, data utilizes daily spreads for a one year period ending 9/27/18)

Additional ABS Allocation Leads to Nominal Risk Impact.





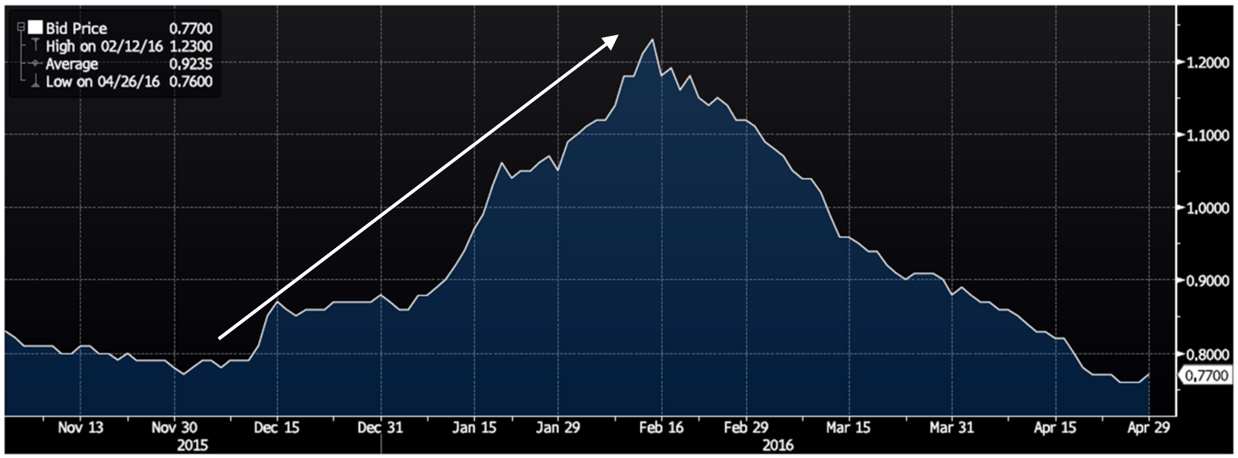
	MT Risk		LT Risk	
	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed
Rates	15	16	16	15
Spreads	1	1	8	12
Volatility	0	0	0	0
Total	**16**	**16**	**24**	**27**

"MT Risk" = medium term risk modelling with a 2-year historical lookback. "LT Risk" = long term risk modelling with a 10-year lookback which includes the financial crisis. All risk modelling assumes OSTF is at full 25% ABS allocation.

Benefit: Q1 2016 Case Study – Diversification in Action

China/oil market disruptions late 2015/early 2016 led to spread widening in corporate credit markets….

Bloomberg Barclays 1-3 Year Corporate Credit Index Spread



… OSTF corporate positions impacted, but ABS positions held up well.

	Return - Quarter Ended 2/29/2016			
Description	**Total Return (bp)**	**Duration (bp)**	**Income (bp)**	**OAS Change (bp)**
OSTF	18.79	23.81	14.18	-6.41
Securitized	36.15	34.74	17.36	5.12
Treasuries	24.43	29.88	8.72	0.00
Corporates	14.46	22.16	18.94	-14.47
Government Related	11.16	13.90	5.92	-0.78

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Prudent Deployment Strategy

Same Disciplined Approach

Use Allocation Defensively and Primarily for Diversification

Expected Uses of Allocation

	US Prime Auto Loans	US Prime Credit Cards	US Equipment Trusts	US Prime Auto Lease (New)
Increase Existing Issuer Exposure	✓	✓	✓	
Add New Issuers that Meet OSTF Criteria	✓			✓
Increased Focus on Money Market Tranches	✓			
Staff will remain open to new ABS asset classes that meet OSTF policies & desired investment criteria.				

Existing and Expected Issuers

U.S. Prime Auto Loan Issuers	U.S. Prime Auto Lease Issuers	U.S. Prime Credit Card Issuers
Ally	Ally	American Express
BMW	BMW	Bank of America
Carmax	Ford	Barclays
Fifth Third	GM Financial	Capital One
Ford	Hyundai	Chase Bank
GM Financial	Mercedes-Benz	Citibank
Honda	Nissan	Discover
Huntington	Porsche	Synchrony
Hyundai	Volkswagen	World Financial Network
Mercedes-Benz	World Omni	
M&T Bank		**U.S. Other**
Nissan		Case New Holland
Porsche		John Deere
Toyota		Verizon Wireless
USAA		
Volkswagen		**Targeted Future Investments*
World Omni		**Current Investments*

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Additional Monitoring Capability

- Fixed income team slated to more than double over the next year, adding one Investment Officer and three Investment Analysts.
- Analyst positions will support portfolio managers in exposure and oversight monitoring thus allowing the OSTF to execute the deployment strategy.

Current Fixed Income Team

Geoff Nolan
Senior Investment Officer

Garrett Cudahey
Investment Officer

Tom Lofton
Investment Officer

Angela Schaffers
Investment Analyst

Expected Future Fixed Income Team

Geoff Nolan
Senior Investment Officer

Garrett Cudahey
Investment Officer

Tom Lofton
Investment Officer

Investment Officer
(vacant)

Angela Schaffers
Investment Analyst

Investment Analyst
(vacant)

Investment Analyst
(vacant)

Investment Analyst
(vacant)

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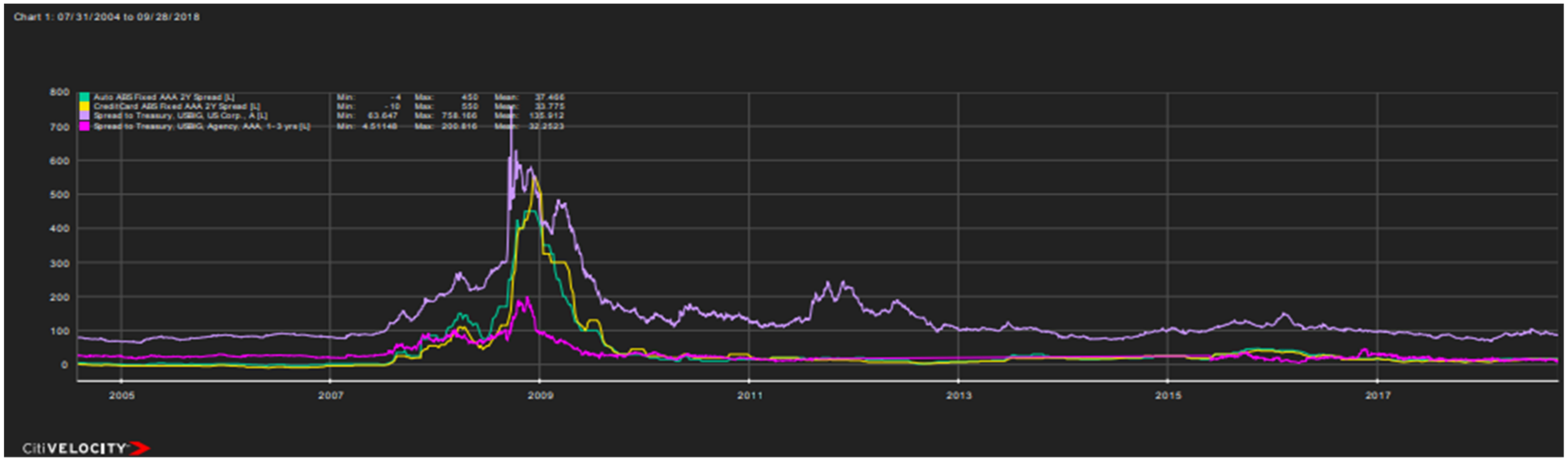
Potential Risks

Investing in ABS securities is not without risk. Below are a few risks present in the marketplace:

- **ABS is a Spread* Product** – Like all spread product, periods of underperformance can occur in spread-widening events. ABS spreads widened significantly during the 2008-2009 economic downturn.



- **ABS has Varying Ties to Seller/Servicer**** – While the collateral and performance of the collateral are bankruptcy remote from the seller/servicer, risk-events have occurred where seller/servicer risk has flowed into issued ABS (e.g. Volkswagen diesel scandal).
- **ABS Securities Not Guaranteed or Back-Stopped by Seller/Servicer** – Risk and return in ABS securities is tied to collateral performance and *not* the seller or servicer of the assets. If the collateral is insufficient to cover payments to holders, additional funds will *not* be supplied by the seller/servicer.
- **U.S. ABS securities Largely Tied to U.S. Consumer** – Significant impairments in the U.S. consumers ability or willingness to support assets can have a material adverse impact on ABS performance.

* "Spread product" refers to debt instruments that trade with a spread over a prevailing interest rate curve, such as the U.S. Treasury curve or the swaps curve.
** "Seller" refers to the entity who originates or aggregates loans or assets and sells them into the trust that issues ABS securities. The "servicer" refers to the entity who manages the loans or assets after being sold into the issuing trust.

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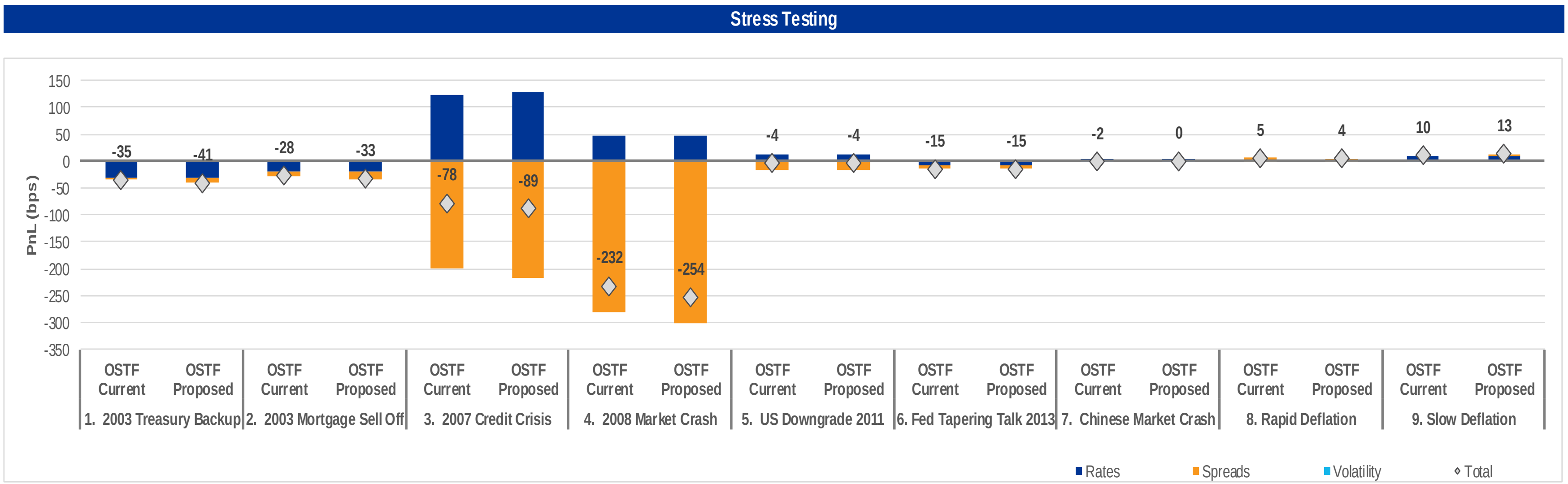
Stress Scenarios

Proposed Allocation Shift Holds Up Well in Stressed Scenarios.



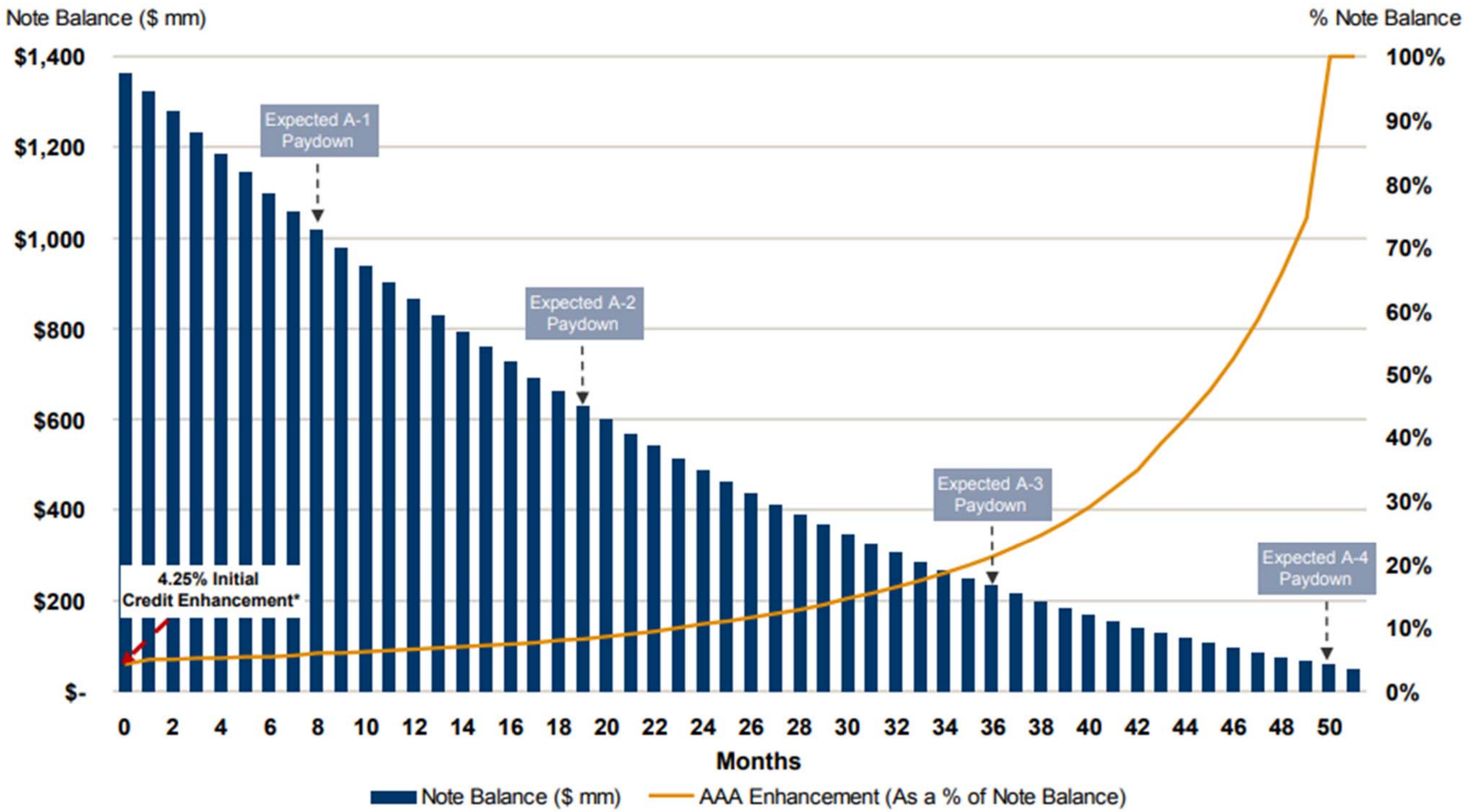
	1. 2003 Treasury		2. 2003 Mortgage		3. 2007 Credit Crisis		4. 2008 Market		5. US Downgrade		6. Fed Tapering Talk		7. Chinese Market		8. Rapid Deflation		9. Slow Deflation	
	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed	OSTF Current	OSTF Proposed
Rates	-30	-30	-21	-21	124	128	46	47	12	12	-7	-7	2	2	-1	-1	10	10
Spreads	-5	-11	-8	-12	-201	-216	-280	-303	-16	-16	-8	-8	-3	-2	6	5	-1	2
Volatility	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**-35**	**-41**	**-28**	**-33**	**-78**	**-89**	**-232**	**-254**	**-4**	**-4**	**-15**	**-15**	**-2**	**0**	**5**	**4**	**10**	**13**

Stress scenario modelling assumes OSTF is at full 25% allocation to ABS.

Prime Auto Loan ABS Structure

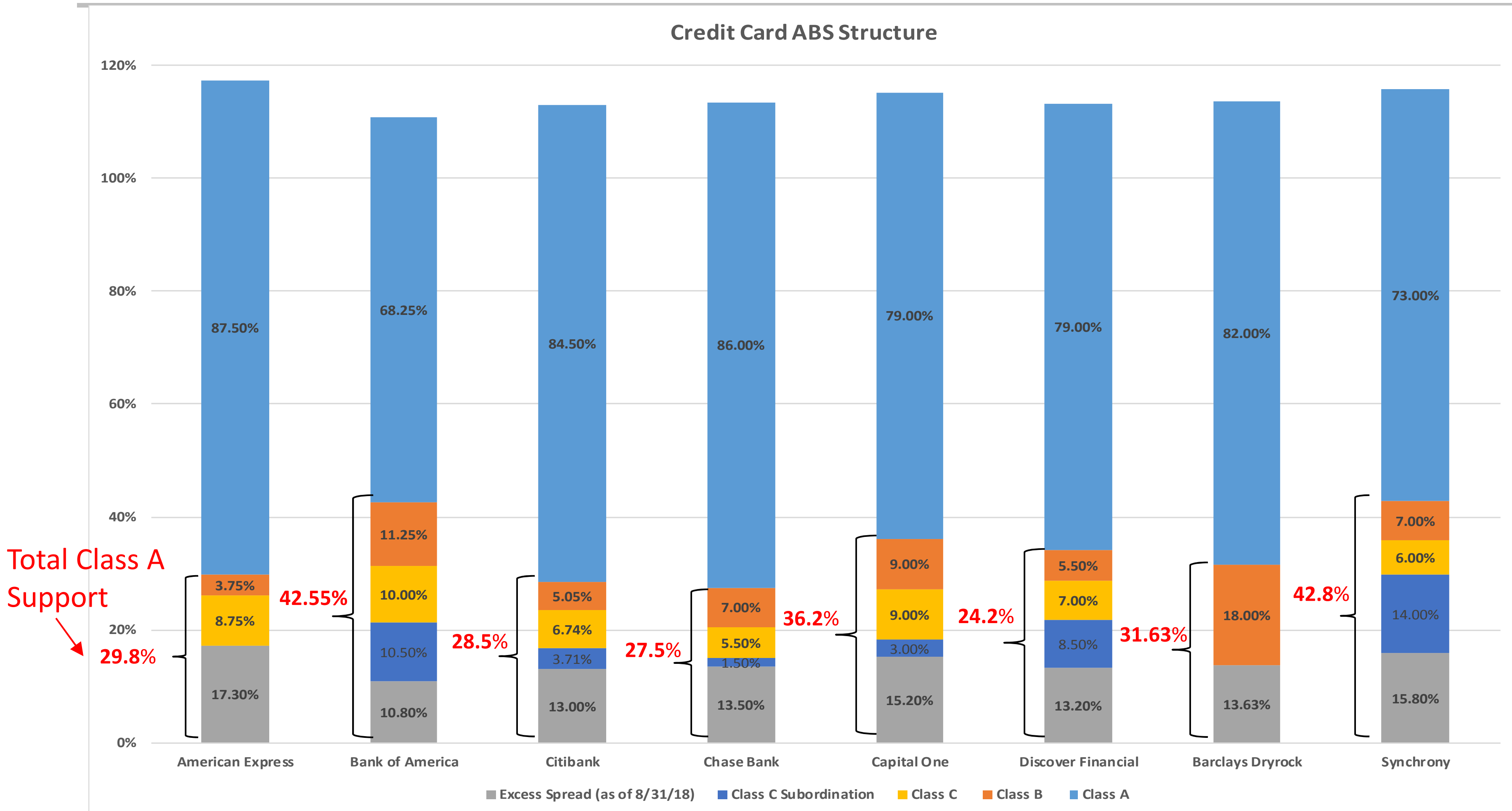
	Ally Bank	CarMax	Ford	Honda	Hyundai	Nissan	Toyota
	ALLYA	CARMAX	FORDO	HAROT	HART	NAROT	TAOT
Trust Detail	2018-3	2018-3	2018-B	2018-3	2018-A	2018-B	2018-C
Pool Balance	$ 1,119,013,479.86	$ 1,206,048,230.04	$ 1,161,498,793.26	$ 1,079,623,038.64	980,222,708.55	1,128,824,647.21	1,382,567,812.67
Number of Loans	71,862	73,397	40,936	60,044	55,346	48,649	72,009
Average Loan	$ 15,571.70	$ 16,431.85	$ 28,373.53	$ 17,980.53	$ 17,710.81	$ 23,203.45	$ 19,199.93
Weighted Average APR	6.10%	8.26%	3.46%	2.16%	3.59%	2.61%	2.13%
Original Term to Maturity*	66.53	66.11	65.4	60.95	66.23	67	66.1
Remaining Term to Maturity**	52.32	61.77	58.4	48.29	54.76	56	51.69
Seasoning	14.21	4.34	7.00	12.66	11.47	11.00	14.41
Geographic Diversification							
State 1	TX (12.99%)	CA (17.39%)	TX (17.16%)	CA (18.90%)	CA (12.88%)	CA (8.29%)	CA (24.98%)
State 2	CA (9.56%)	TX (10.57%)	CA (9.85%)	TX (9.88%)	FL (9.34%)	TX (7.89%)	TX (13.85%)
State 3	FL (8.89%)	FL (8.54%)	FL (7.52%)	FL (6.00%)	TX (9.16%)	PA (6.34%)	IL (4.64%)
State 4	PA (4.7%)	GA (6.06%)	IL (3.91%)	MD (5.93%)	IL (5.88%)	FL (5.98%)	PA (4.58%)
State 5	IL (4.58%)	VA (5.47%)	GA (3.89%)		PA (4.15%)	NC (4.87%)	NJ (4.06%)
Weighted Average FICO Score	736	706	739	769	750	774	762
New Vehicle	69.00%	0.50%	86.84%	89.82%	93.99%	94.80%	80.98%
Used Vehicle	31.00%	99.50%	13.16%	10.18%	6.01%	5.20%	19.02%
Initial AAA-rated Enhancement							
Subordination	5.15%	7.30%	5.00%	2.50%	4.80%	0.00%	2.50%
Reserve	0.25%	0.25%	0.50%	0.25%	0.25%	0.25%	0.25%
Overcollateralization	0.45%	0.70%	0.00%	0.00%	2.50%	4.00%	0.00%
Total	5.85%	8.25%	5.50%	2.75%	7.55%	4.25%	2.75%
Rating Agency Expected Cumulative Net Losses							
Moody's	0.85%	-	-	0.50%	2.00%	0.85%	0.60%
S&P	0.95-1.05%	2.20-2.30%	0.55-1.20%	-	1.65-1.85%	-	0.55-.65%
Fitch	-	2.40%	1.55%	0.90%	-	1.15%	-

Auto ABS Structure Enhancement Example



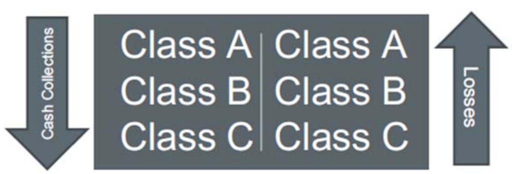
AAA-rated auto-loan ABS benefit from amortization that builds subordination as the deal ages.

Credit Card ABS Structure - Current

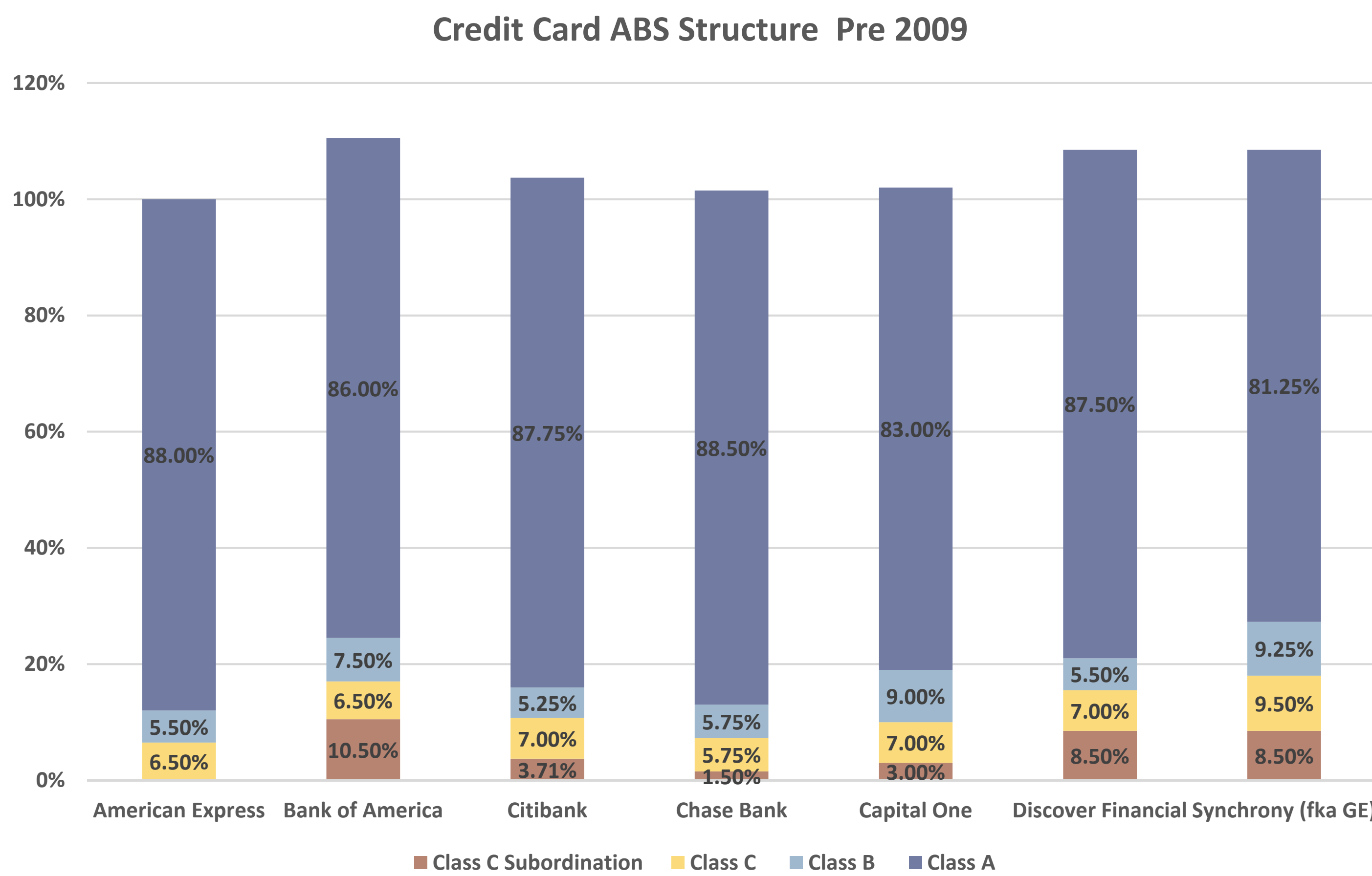


Gross Yield
Less Chargeoffs
Less Servicing Fee
Less Weighted Average Coupon (WAC)
Excess Spread

Excess spread is the first line of defense prior to losses entering the Class C, Class B and Class A tranches in that order.



Credit Card ABS Structure – Pre-2009



	American Express	Bank of America	Citibank	Chase Bank	Capital One	Discover Financial	Synchrony (fka GE)
Class A Subordination Pre-2009	12.00%	24.50%	15.96%	13.00%	19.00%	21.00%	27.25%
Class A Subordination Current	12.50%	31.75%	15.50%	14.00%	21.00%	21.00%	27.00%
Difference	0.50%	7.25%	-0.46%	1.00%	2.00%	0.00%	-0.25%

OREGON INVESTMENT COUNCIL POLICY

INTRODUCTION & OVERVIEW

Summary Policy Statement

The Oregon Investment Council has, with advice from the State Treasurer, from OST investment staff, and from the Oregon Short Term Fund Board, adopted specific rules for investing the Oregon Short Term Fund (OSTF).

Applicability

Classified represented, management service, unclassified executive service

Authority

ORS 293

POLICY PROVISIONS - Portfolio Rules for the Oregon Short Term Fund

I. **Scope**
These rules apply to the investment of cash from all state and eligible local government participants in the Oregon Short Term Fund ("OSTF"). These rules are established under the authority of, and shall not supersede the requirements established under, ORS Chapter 293.

II. **Investment Objectives**
The primary objectives of investment activities, in priority order, shall be preservation of principal, liquidity, and yield.

A. **Preservation of Principal**: Capital preservation is the OSTF's foremost objective, and all OSTF investments shall be made in a manner consistent therewith. Credit and interest rate risks will be carefully managed and mitigated (see specific guidelines below).
B. **Liquidity**: The OSTF shall remain sufficiently liquid to meet all state, agency and local government operating requirements as may be reasonably anticipated. The OSTF should consist largely of securities with active secondary or resale markets.
C. **Yield:** The OSTF shall be designed with the objective of attaining a market rate of return throughout budgetary and economic cycles, taking into account the aforementioned investment risk constraints and liquidity needs.

III. **Maturity Distribution of Portfolio**

A. 50% of the OSTF portfolio must mature within 93 days.

B. A maximum of 25% of the OSTF portfolio may mature over one year.
C. No investment may mature later than 3 years from its settlement date.
D. For purposes of this policy, maturity date will be calculated by using the following proxies, and if a security contains more than one of the following attributes, the shortest attribute will be used as the maturity date proxy:
   1. For securities that have been called by the issuer, the effective call date will be used as the maturity date proxy;
   2. For securities with a put option, the date upon which the put option is fully exercisable for a value of at least 100% of the investment's par or face amount will be used as the maturity date proxy;
   3. For variable rate securities, the period remaining to the next reset date will be used as the maturity date proxy; and
   4. For asset-backed securities, the weighted average life (WAL) will be used as the maturity date proxy.

IV. **Diversification and Portfolio Limitations**

A. Eligible Securities:

Issue Type	**Maximum Holdings % or $**	**Minimum Ratings S&P/Moody's/Fitch**
U.S. Treasury Obligations (1)	100%	None
U.S. Agency Securities (1) Per Issuer	100% 33%	None None
Foreign Government & Instrumentalities (1) Per Issuer	25% 10%	AA-/Aa3/AA-
Corporate Securities (Total) Corporate Bonds Commercial Paper (2) Per Issuer	50% 50% 50% 5%	A-/A3/A- A-1/P-1/F-1
Asset-Backed Securities Per Issuing Trust	~~15~~25% 5%	AAA/Aaa/AAA A-1+/P-1/F-1+

Negotiable Certificates of Deposit Per Issuer	20% 5%	A-1/P-1/F-1
Bankers' Acceptances Per Issuer	20% 5%	A-1/P-1/F-1
Time Certificates of Deposit (3) Per Issuer	20% 5%	None
Municipal Debt (Total) Municipal Commercial Paper Short Term Municipal Obligations Per Issuer	25% 25% 25% 10%	AA-/Aa3/AA- A-1/P-1/F-1 SP-1/(V)MIG1/F-1
Repurchase Agreements (4.) Per Counterparty	100% 5%	None
Reverse Repurchase Agreements (5) Per Counterparty	100% 5%	None
Oregon Local Government Intermediate Fund ("OLGIF")	$250 Million	A-/A3/A-

1. Securities guaranteed by the U.S. Treasury, a U.S. Agency or a Foreign Government or its Instrumentality will be considered a U.S. Treasury, a U.S. Agency or a Foreign Government or its Instrumentality for the purposes of this policy.
2. Commercial Paper (CP) must have top-tier short term ratings by at least two of the nationally recognized statistical rating organizations (NRSROs) at the time of purchase.
3. Permitted Time Certificates of Deposit (TCDs) will be limited to qualified depositories as defined in ORS Chapter 295.005. Maximum TCD exposure per

depository must be no more than 5% of the issuing bank's total deposits, or $250,000, whichever is greater. Maximum credit union exposure per depository shall be $250,000.

4. Repurchase agreements must meet the following criteria:
   a) Maximum maturity will be 90 days;
   b) Net capital of counterparties must be greater than $100 million;
   c) Repurchase Agreements must equal no more than 2% of a counterparty's liabilities;
   d) Counterparties must be a Primary Dealer as recognized by the Federal Reserve Bank. The only exception is OST's custodial agent as a non-primary dealer counterparty;
   e) Counterparties must have a signed repurchase agreement;
   f) Collateral must be delivered to the OST's account at its custodian or to an account established for the OST pursuant to the terms of the specific Repurchase Agreement in the name of the Office of the State Treasurer; and
   g) Collateral for repurchase agreements may be U.S. Treasury or U.S. Agency Discount and Coupon securities only. Collateral must have a final maturity of three years or less. The market value of the delivered collateral must be maintained at not less than 102% of the cash invested.
5. Reverse Repurchase Agreements must meet the following criteria:
   a) Maximum maturity will be 90 days;
   b) Net capital of counterparties must be greater than $100 million;
   c) Reverse Repurchase Agreements must equal no more than 2% of a counterparty's liabilities;
   d) Counterparties must be a Primary Dealer as recognized by the Federal Reserve Bank;
   e) Counterparties must have a signed repurchase agreement;
   f) Acceptable reinvestment vehicles include securities that may otherwise be purchased outright;
   g) Securities will be reversed on a fully collateralized basis; and
   h) Reverse repurchase investments for interest rate arbitrage shall only be done on a matched book basis.

B. All OSTF portfolio investments must be denominated in U.S. $.

C. Total foreign exposure (government and corporate indebtedness) limited to 25% of OSTF portfolio.

D. Any one individual issuer of securities or support commitments limited to 10% of OSTF portfolio with the exception of the U.S. Treasury (100% maximum) and U.S. government agency securities (33% per issuer).

E. Securities that have been downgraded below the minimum ratings will be sold or held at the Senior Investment Officer's (SIO) or SIO designee's discretion.

F. A single rating will be determined for each investment based on the following methodology:

   1. When three nationally recognized statistical rating organizations (NRSROs) rate an issue, a median rating is used to determine eligibility by dropping the highest and/or lowest rating;

2. When a rating from only two NRSROs is available, the lower ("most conservative") of the two ratings will be used; and
3. When a rating from only one NRSRO is available, that rating will be used. To determine average rating for each security, a numeric value will be assigned to each NRSRO rating based on the following scheme:

Value	S&P Rating	Moody's Rating	Fitch Rating
29	U.S. Treasury & Agency AAA/A-1+(*)	U.S. Treasury & Agency Aaa/P-1(*)	U.S. Treasury & Agency AAA/F-1+(*)
28	AA+	Aa1	AA+
27	AA/A-1+/SP-1+	Aa2	AA/F-1+
26	AA-	Aa3/P-1/ MIG1/VMIG1	AA-
25	A+	A1	A+
24	A/A-1/SP-1	A2	A/F-1
23	A-	A3	A-
22	BBB+/A-2/SP-2	Baa1/P-2/ MIG2/VMIG2	BBB+/F-2
21	BBB	Baa2	BBB
20	BBB-/A-3/SP-3	Baa3/P-3/ MIG3/VMIG3	BBB-/F-3

* Limited to Asset-Backed Securities rated A-1+, P-1 and F-1+ by Standard & Poor's, Moody's and Fitch respectively.

G. The target weighted average credit quality of the OSTF portfolio shall be AA (or > 26.50).

H. For newly issued securities, and absent assigned ratings, "expected ratings" may be used as a proxy for actual ratings for not more than 30 business days after the anticipated settlement date.

I. No commitments to buy or sell securities may be made more than 14 business days prior to the anticipated settlement date, or receive a fee other than interest for future deliveries.

J. For purposes of compliance, eligible funds will be treated as a single investment and exempt from maturity or exposure restrictions except for maximum exposure and minimum ratings.

V. Reinvestment of Securities Lending Cash Collateral

A. Acceptable reinvestment vehicles include securities that may otherwise be purchased outright in accordance with the Portfolio Rules for the Oregon Short Term Fund (Sections VI). Within the securities lending program only, cash collateral may also be reinvested in:
   1. Repurchase agreements collateralized by U.S. Treasury or U.S. Government Agency securities with a maximum original maturity of 30 years. No more than 25% of assets shall be placed with the same counterparty. Repurchase agreements may also be placed with the Federal Reserve Bank's Repo facility.

B. Net capital of lending counterparties must be over $100 million.

C. Securities will only be loaned on a fully collateralized basis.

D. Lending counterparties must be a Primary Dealer as recognized by the Federal Reserve Bank, and have a signed master securities lending agreement.

E. The market value of the delivered collateral must be maintained at not less than 102% of the market value of the securities loaned.

F. Notwithstanding Section VI.A.11 hereof, Reverse Repurchase Agreements are prohibited within the securities lending program.

Procedures

I. Standards of Care

A. **Prudence.** Investment officers shall use the "prudent investor" standard to guide their OSTF management efforts. Pursuant to ORS Chapter 293.726:
   1. The investment funds shall be invested and the investments of those funds managed as a prudent investor would do, under the circumstances then prevailing and in light of the purposes, terms, distribution requirements and laws governing each investment fund; and
   2. The standard in subsection (1) of this section requires the exercise of reasonable care, skill and caution, and is to be applied to investments not in isolation but in the context of each investment fund's investment portfolio and as a part of an overall investment strategy, which should incorporate risk and return objectives reasonably suitable to the particular investment fund.

B. **Ethics and Conflicts of Interest.** Investment officers involved in the investment process shall refrain from personal business activity that could conflict with the proper execution and management of the investment program or that could impair their ability to make impartial decisions. Investment officers and employees shall, at all times, comply with the State of Oregon Government Standards and Practices code of ethics set forth in ORS Chapter 244, as well as all policies of the OST.

C. **Delegation of Authority.** The Senior Investment Officer and Investment Officer(s) (or the Investment Analyst acting under the direction of the Investment Officers) shall act in accordance with established written procedures and internal controls for the operation of the investment program consistent with these Portfolio Rules. No person may engage in an investment transaction except as provided under the terms of these Portfolio Rules and the procedures established by OST staff. The Senior Investment Officer and Investment Officer(s) are jointly responsible for all transactions undertaken, and shall establish a reasonable system of controls to regulate the activities of subordinate employees.

II. Compliance

A. **Compliance Monitoring.** OST shall provide an investment compliance program to accomplish the following objectives: a) monitor and evaluate portfolios, asset classes, and other investment funds to determine compliance with OST policies and contractual obligations; b) identify instances of non-compliance and develop appropriate resolution strategies; c) provide relevant compliance information and reports to OST management and the OIC, as appropriate; and d) verify resolution by the appropriate individual or manager within the appropriate time frame.

B. **Correction of Non-compliance.** If the OSTF is found to be out of compliance with one or more adopted investment guidelines or is being managed inconsistently with its policy and objectives, investment staff shall bring the OSTF 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 shall be coordinated with the OST investment compliance program.

III. Safekeeping and Custody

A. **Authorized Financial Dealers and Institutions.** All financial institutions and broker/dealers who desire to become qualified for investment transactions must supply, as appropriate, the following:
   1. Audited financial statements;
   2. Licensing Representation form provided to OST; and
   3. Understanding and acknowledgment of OSTF Portfolio Rules.

B. **Internal Controls.** The Senior Investment Officer and Investment Officer(s) jointly collaborate to establish and maintain an adequate internal control structure designed to reasonably protect the assets of the OSTF from loss, theft or misuse.

C. **Delivery vs. Payment.** All trades where applicable will be executed by delivery vs. payment (DVP) to ensure that securities are deposited in an eligible financial institution prior to the release of funds.

D. **Safekeeping.** Securities will be held by a third-party custodian as evidenced by safekeeping receipts.

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

Upon approval of changes to this policy, the policy owner shall contact the Banking Operations Manager to update the Oregon Short Term Fund Finance and Investment pages on the external OST website.

ADMINISTRATION

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. 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 7 – Currency Overlay Program

OPERF

OPERF Currency Overlay Program Review

Purpose
To provide the Oregon Investment Council (OIC) a review of the Oregon Public Employees Retirement Fund (OPERF or the "Fund") Currency Overlay Program, which was launched on January 2, 2018.

Background
The Public Employees Retirement System pays benefits from OPERF in U.S. dollars, yet a sizable portion of the Fund's assets are invested outside the U.S. and denominated in foreign currencies. Essentially, OPERF's foreign currency (FX) exposure is a by-product of its international investments and represents an explicit source of OPERF asset volatility. For U.S.-based investors, currency risk manifests during strong (i.e., appreciating) dollar periods. Without some form of FX hedging, the value in U.S. dollar terms of OPERF's foreign assets *declines* when the dollar *appreciates*.

To evaluate FX risks and propose potential risk-mitigating FX management solutions, staff has surveyed extensive empirical research and conducted discussions with peer funds, consultants, an index provider, and currency managers since summer 2016. Staff reported the following primary findings during two OIC education sessions held in December 2016 and March 2017:

- Unmanaged currency exposure is a source of uncompensated risk; and
- Currency fluctuations contribute meaningfully to OPERF's total risk.

After deliberation, the OIC adopted Policy INV 217: OPERF Foreign Currency Risk Policy on August 9, 2017 to establish a Currency Overlay Program (the "Program") to manage FX risk. The goal of the Program is to strategically manage foreign currency risk to reduce volatility in U.S. dollar-denominated value while preserving the diversification benefits of OPERF's foreign-denominated investments.

On November 1, 2017, OIC approved hiring Adrian Lee & Partners, a London-based currency management specialist, to manage a $2 billion notional currency management mandate to help launch the Program.

Program Profile

Considerations	Program Parameters
Objective	To hedge currency risk of the target international equity portfolio
Inception date	January 2nd, 2018
Notional amount	$2 billion
Target portfolio	Currency mix in the MSCI World ex-U.S. Index
Base currency	U.S. dollar
Benchmark	The currency component of return on a 50% hedged MSCI World ex-U.S. Index
Range of hedge ratios	0% to 100%
Active volatility target	2%
Permitted investments	1) Foreign developed market currencies that constitute the MSCI World ex-U.S. Index (14 currencies) 2) Currency spot and forward contracts 3) Currency forward contracts with maturities of up to 6 months 4) Cross hedging allowed with limited net short position

Initial Results
Despite its nascent status, the Program has so far met staff's expectation and achieved the Program's goal of reducing currency-related portfolio volatility. Year-to-date as of September 30, 2018, the Program has reduced OPERF's International Equity portfolio risk by 30 bps and increased its portfolio return by 37 bps (relative to the Portfolio's risk/return performance on a non-hedged basis). In addition, the Program has realized $46.6 million of cash inflows as a result of its FX forward contract rollovers and U.S. dollar appreciation so far this year.

Staff Recommendation
None, information only.

OPERF Currency Overlay Program Review

October 31, 2018

Oregon State Treasury

Agenda

- Executive Summary
- Program Background
- Program Goal
- Program Profile
- Initial Results

Appendix:

1) Public Equity’s Currency Exposure
2) International Equity’s Currency Exposure
3) Recent Currency Markets

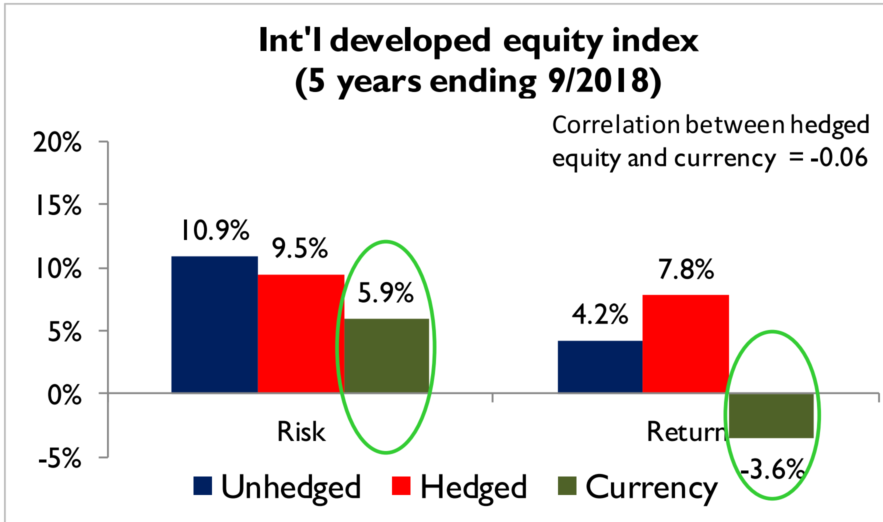
Executive Summary

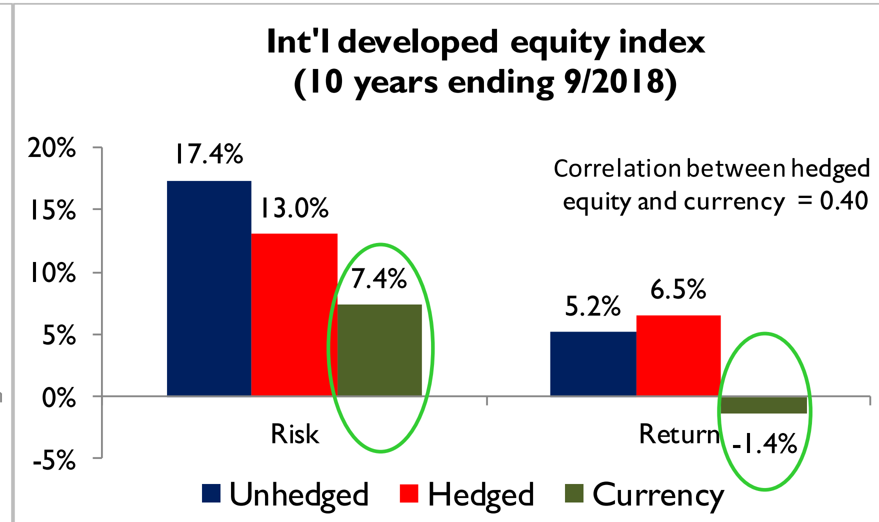
- Empirical research shows unmanaged currency exposure is a source of uncompensated risk.
- After two education sessions on currency risk, the OIC adopted INV 217: OPERF Foreign Currency Risk Policy on August 9th, 2017.
- The OIC approved hiring Adrian Lee & Partners to manage a $2 billion notional currency management mandate in connection with OPERF's Currency Overlay Program (the "Program").
- The Program was initiated on January 2, 2018.
- Despite its still nascent status, the Program has met staff's expectation and reduced currency-related portfolio volatility.

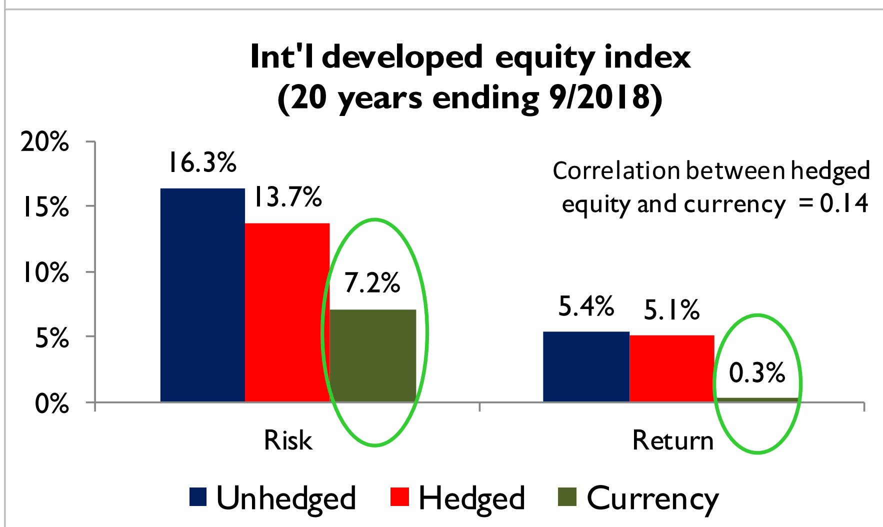
Program Background

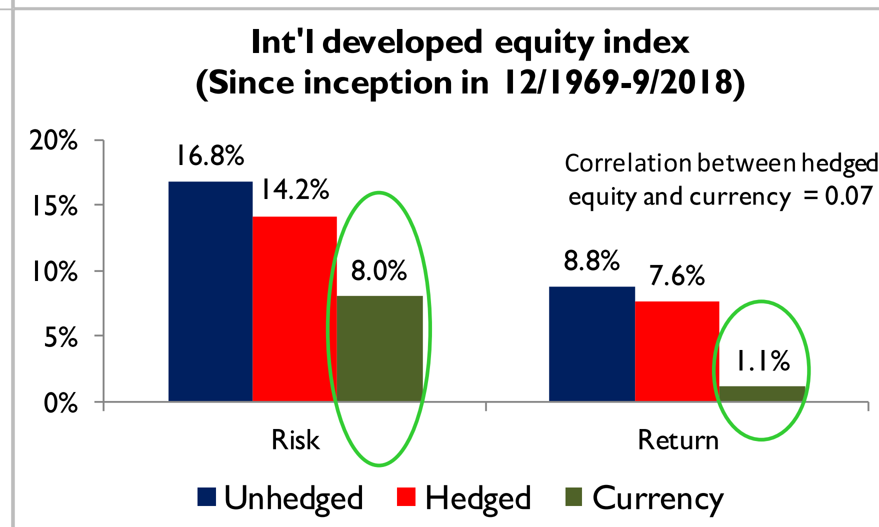
- Rational
  - OPERF has a U.S. Dollar (USD) liability in the form of its benefit payment obligations.
  - OPERF has sizable foreign currency (FX) exposure due to its investments in non-U.S. assets.
  - Currency fluctuations contribute meaningfully to OPERF's total risk.
  - Unmanaged currency exposure is a source of uncompensated risk.
- Surveyed extensive empirical research and conducted dialogues with peer funds, consultants, an index provider, and currency managers.
- Held four OIC currency discussions from 12/2016 to 12/2017.

Program Background - Uncompensated Currency Risk





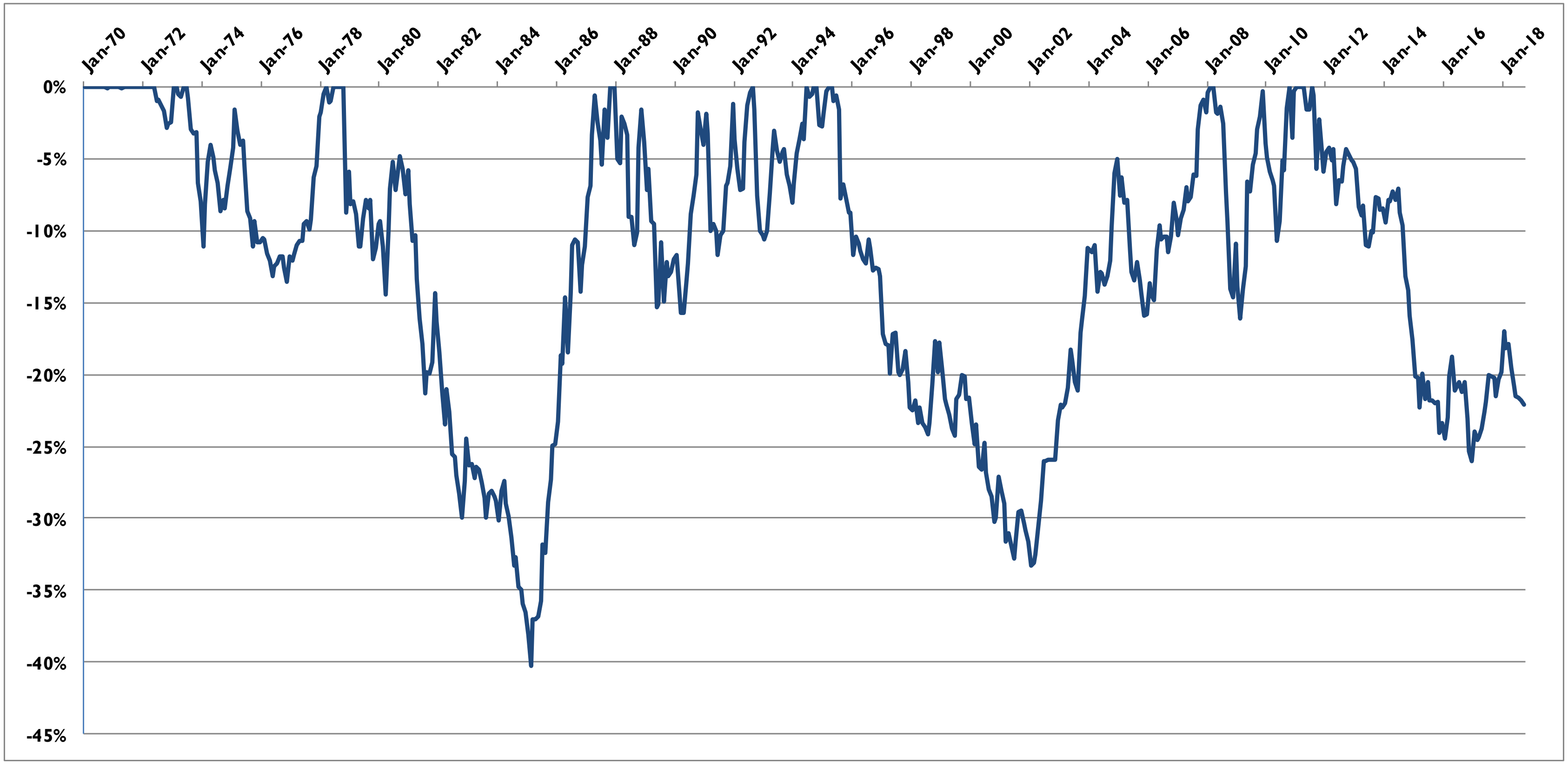




Source: OST Staff Calculation, MSCI

Program Background - Drawdown

- Currency impact on MSCI World ex-U.S. indices is pro-cyclical during stressed environments (e.g., 1998, 2001, 2008, 2014-2015).
- Currency's historical maximum loss from a peak to a trough is -40%, which occurred in February 1985.



Source: MSCI, OST staff calculation

Program Goal

INV 217: OPERF Foreign Currency Risk Policy

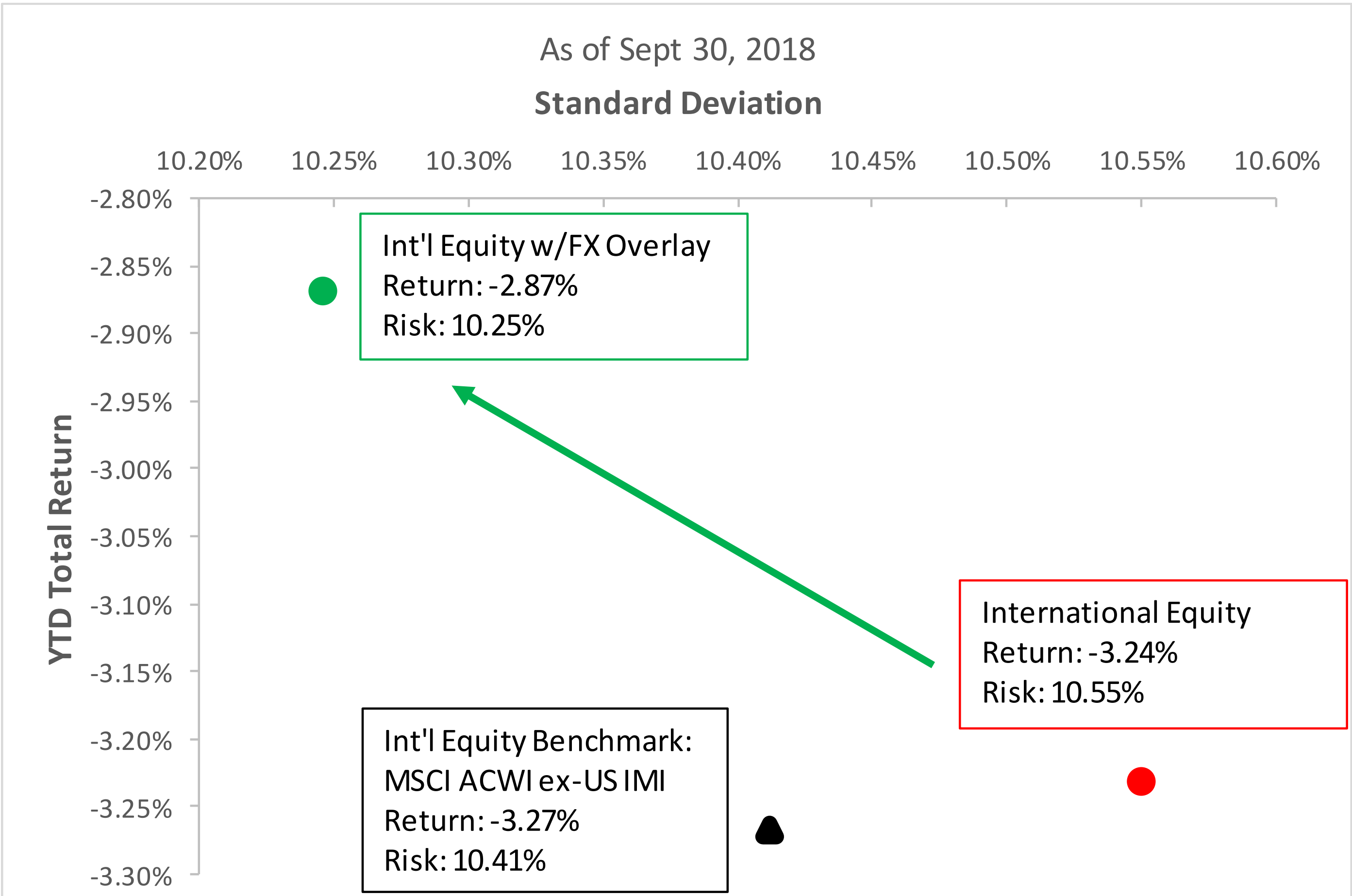
- "The goal of the Currency Overlay Program is to strategically manage foreign currency risk to reduce volatility in U.S. dollar-denominated value as a result of movements in foreign exchange rates while preserving the diversification benefits of OPERF's foreign-denominated investments."

Program Profile

Considerations	Program Parameters
Objective	To hedge currency risk of the target international equity portfolio
Inception date	January 2nd, 2018
Notional amount	$2 billion
Target portfolio	Currency mix in the MSCI World ex-U.S. Index
Base currency	U.S. dollar
Benchmark	The currency component of return on a 50% hedged MSCI World ex-U.S. Index
Range of hedge ratios	0% to 100%
Active volatility target	2%
Permitted investments	1) Foreign developed market currencies that constitute the MSCI World ex-U.S. Index (14 currencies) 2) Currency spot and forward contracts 3) Currency forward contracts with maturities up to 6 months 4) Cross hedging allowed with limited net short position

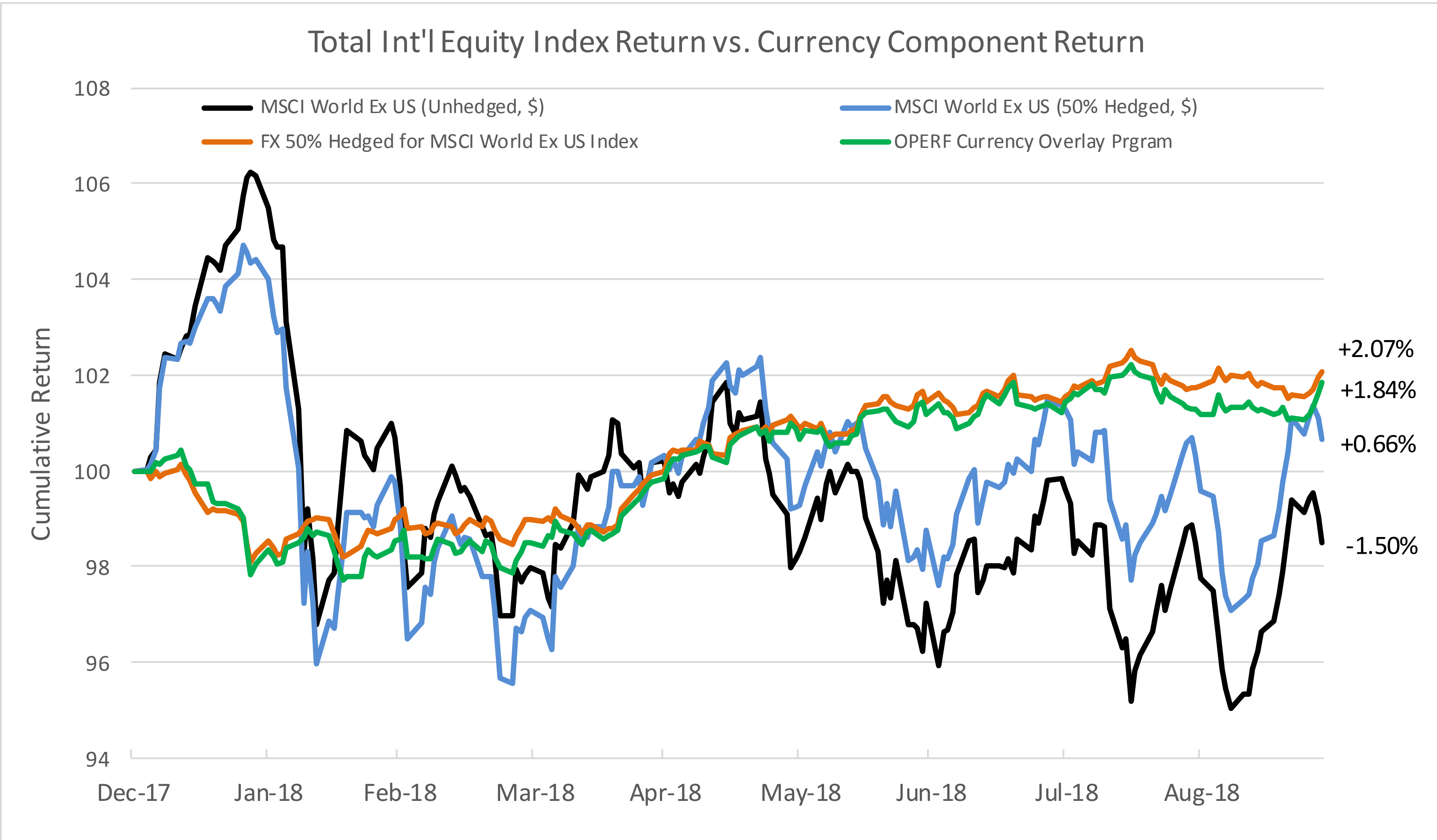
Initial Results - Return vs. Risk

With currency overlay, OPERF's international public equity portfolio risk was reduced by 30 bps YTD, while portfolio return improved by 37 bps (compared to YTD unhedged results).



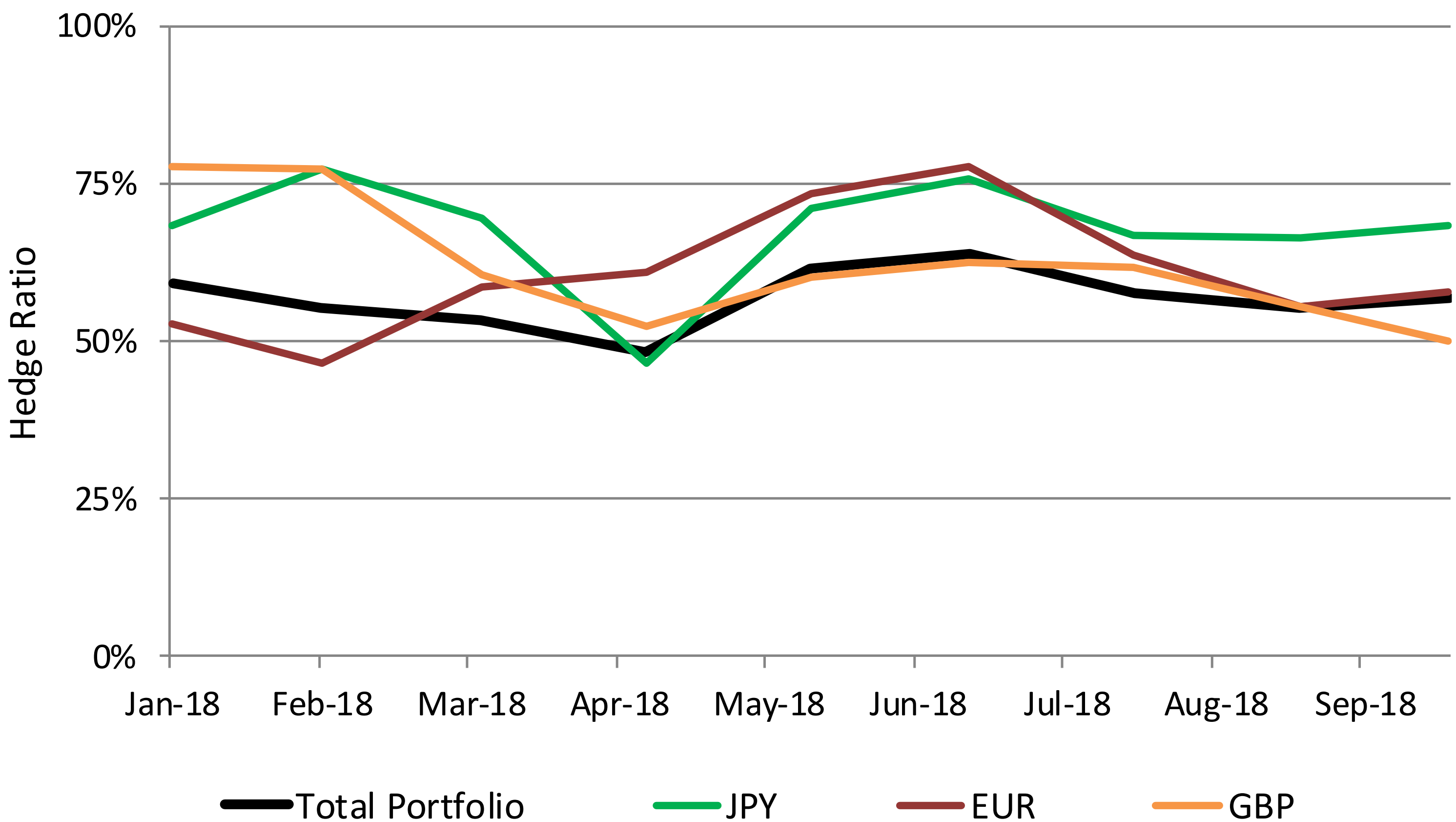
Source: Custodian bank State Street

Initial Results - YTD 50% Hedged Performance



Source: Bloomberg, MSCI, Custodian bank State Street

Initial Results - Program Hedge Ratio Trends



Source: Adrian Lee & Partners

Appendix 1 – Public Equity's Currency Exposure

	As of Sept 30, 2018	MSCI ACWI IMI	EQ without Currency Hedge	EQ with Currency Hedge	FX Overlay Hedge Impact on EQ
1	US Dollar (USD)	55.9%	61.5%	65.5%	4.0%
2	Euro (EUR)	9.7%	7.1%	5.9%	-1.2%
3	Japanese Yen (JPY)	8.0%	6.5%	5.4%	-1.0%
4	British Pound (GBP)	5.5%	6.4%	5.8%	-0.6%
5	Hong Kong Dollar (HKD)	3.3%	2.6%	2.5%	-0.1%
6	Canadian Dollar (CAD)	3.0%	2.3%	2.2%	0.0%
7	Swiss Franc (CHF)	2.4%	1.8%	0.9%	-0.9%
8	Australian Dollar (AUD)	2.1%	1.6%	1.7%	0.1%
9	South Korean Won (KRW)	1.7%	1.9%	1.9%	0.0%
10	Taiwan Dollar (TWD)	1.4%	1.1%	1.1%	0.0%
11	Indian Rupee (INR)	1.0%	0.8%	0.8%	0.0%
	Other Currencies	5.9%	6.5%	6.3%	-0.2%
		100.0%	100.0%	100.0%	100.0%

Source: BlackRock Aladdin

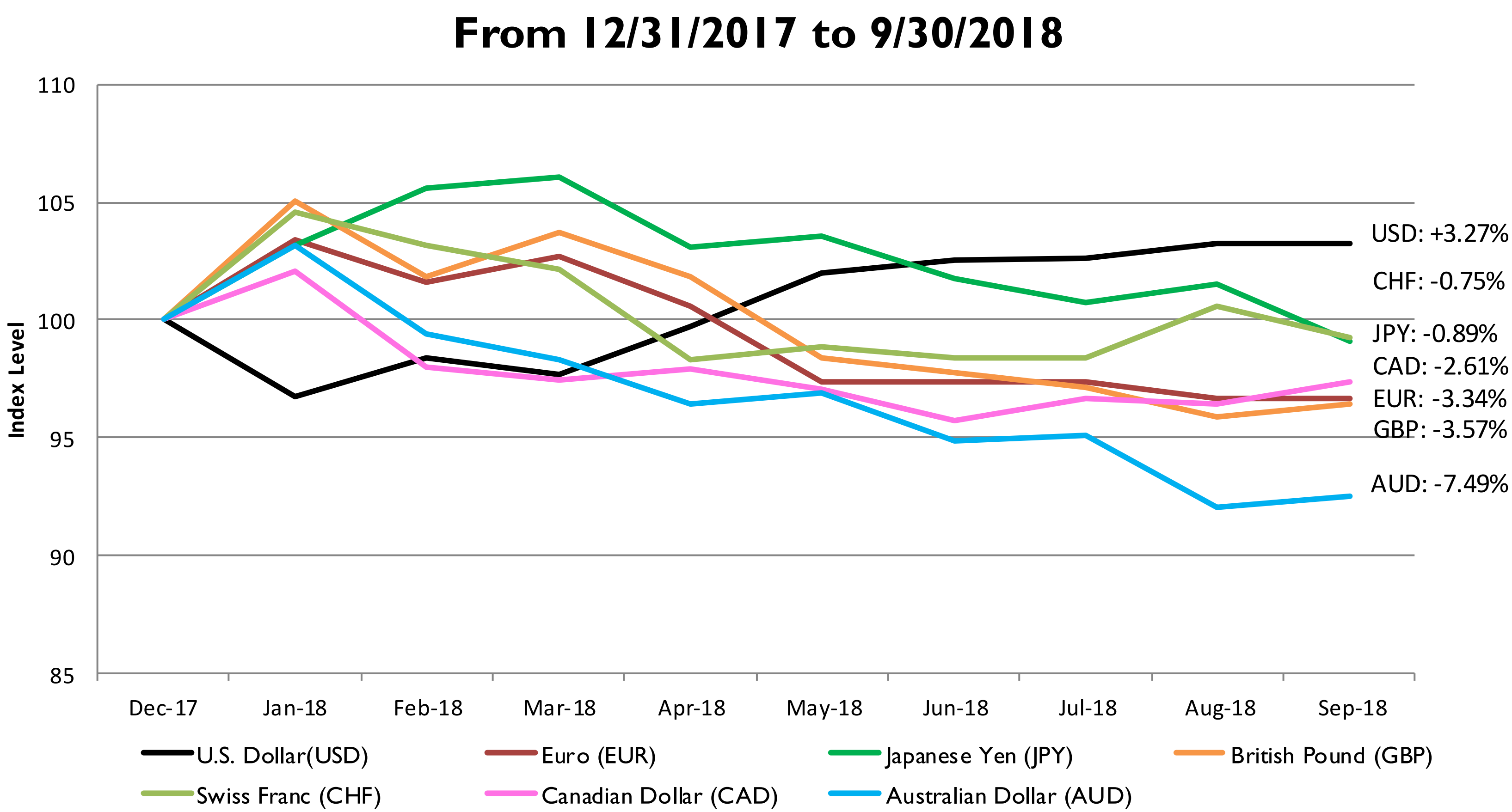
Appendix 2 – International Equity's Currency Exposure

	As of Sept 30, 2018	MSCI World Ex US	MSCI ACWI Ex US IMI	Int'l EQ without Currency Hedge	Int'l EQ with Currency Hedge	FX Overlay Hedge Impact on Int'l EQ
1	Euro (EUR)	29.3%	21.5%	15.8%	12.4%	-3.3%
2	Japanese Yen (JPY)	22.4%	17.7%	13.1%	10.2%	-2.8%
3	British Pound (GBP)	16.0%	12.2%	16.4%	14.9%	-1.6%
4	Canadian Dollar (CAD)	8.8%	6.7%	5.2%	5.1%	-0.1%
5	Swiss Franc (CHF)	7.5%	5.3%	3.2%	0.9%	-2.4%
6	Australian Dollar (AUD)	6.2%	4.7%	4.0%	4.2%	0.2%
7	Hong Kong Dollar (HKD)	3.0%	7.3%	5.7%	5.4%	-0.3%
8	Swedish Krona (SEK)	2.3%	2.0%	1.1%	0.7%	-0.4%
9	Danish Krone (DKK)	1.5%	1.2%	1.5%	1.3%	-0.2%
10	Singapore Dollar (SGD)	1.2%	0.9%	0.4%	-0.2%	-0.6%
11	US Dollar (USD)	0.8%	2.4%	13.0%	24.1%	11.0%
12	Norwegian Krone (NOK)	0.7%	0.7%	0.2%	0.9%	0.7%
13	Israeli Shekel (ILS)	0.3%	0.3%	0.7%	0.4%	-0.3%
14	New Zealand Dollar (NZD)	0.2%	0.2%	0.4%	0.5%	0.1%
	South Korean Won (KRW)	0.0%	3.7%	4.3%	4.3%	0.0%
	Taiwan Dollar (TWD)	0.0%	3.1%	2.4%	2.4%	0.0%
	Indian Rupee (INR)	0.0%	2.2%	2.0%	2.0%	0.0%
	Brazilian Real (BRL)	0.0%	1.4%	2.6%	2.6%	0.0%
	South African Rand (ZAR)	0.0%	1.4%	2.0%	2.0%	0.0%
	Other EM Currencies	0.0%	4.9%	6.0%	6.0%	0.0%
		100.0%	100.0%	100.0%	100.0%	100.0%

Source: BlackRock Aladdin, MSCI

- The MSCI World Ex US index is a Non-U.S. developed market equity index containing 14 currencies.
- The currency component of return on a 50% hedged MSCI World Ex US index is the benchmark for the OPERF Currency Overlay Program.
- The MSCI All Country World Index ex US Investable Market index (MSCI ACWI Ex US IMI) is a global equity index covering both Non-U.S. developed markets and emerging markets countries. It has 37 currencies in the index. It is also the benchmark for the OPERF's International Equity portfolio.

Appendix 3 – Recent Currency Market Performance



Source: Bloomberg

INV 217: OPERF Foreign Currency Risk Policy

INTRODUCTION & OVERVIEW

Purpose and Goals

The purpose of this policy is to a) summarize the philosophy of the *Oregon Investment Council* (the "OIC" or the "Council") relative to the foreign currency exposures of the Oregon Public Employees Retirement Fund (OPERF) and b) establish a Currency Overlay Program to manage the risk of such exposures. The goal of the Currency Overlay Program is to strategically manage foreign currency risk to reduce volatility in U.S. dollar-denominated value as a result of movements in foreign exchange rates while preserving the diversification benefits of OPERF's foreign-denominated investments.

POLICY PROVISIONS

Definitions

Currency Exposure: The direct or indirect exposure to a foreign currency due to an investment. For example, OPERF may hold shares of Toyota Motor Corporation listed on the Tokyo Stock Exchange and denominated in Japanese yen. This particular investment would have a currency exposure to the movement of the Japanese yen versus the U.S. dollar *distinct and separate* from the equity performance of the shares on the Tokyo Stock Exchange. There are several forms of currency exposure:

a. *Direct*. Currency exposure from a foreign currency-denominated investment. These include investments such as publicly-traded stocks listed on foreign exchanges. Measuring this type of direct currency exposure is relatively simple and straight forward.

b. *Indirect*. Currency exposure from a U.S. dollar-denominated investment that holds or comprises other foreign currency-denominated investments. For example, a U.S.-listed Exchange Traded Fund (ETF) that tracks a foreign index is denominated in U.S. dollars but is comprised of foreign stocks. The investor's investment in this ETF would be measured in U.S. dollars, but the investor would have non-U.S. dollar currency exposure associated with the ETF's underlying foreign stock holdings. If this ETF's underlying holdings are transparent, measuring this type of indirect currency exposure is also relatively simple and straightforward.

c. *Implicit*. Currency exposure from an investment that has economic sensitivity to foreign currencies. For example, a publicly-traded stock of a multi-national corporation may be denominated in U.S. dollars, but a shareholder would have currency exposure to the non-U.S. component of that corporation's revenue. This type of implicit foreign currency exposure is often difficult to measure due to opaque or insufficient accounting detail and/or corporate- or partnership-level currency hedging activities.

Policy Statements

As a U.S. sovereign entity, OPERF must pay benefits in U.S dollars, yet a sizable portion of OPERF's assets are invested outside the U.S. and denominated in foreign currencies. Essentially, OPERF's foreign currency exposure is a by-product of its international investments.

INV 1201 Statement of OIC Investment and Management Beliefs reaffirms the Council's authority to set and monitor portfolio risks. The Council acknowledges that such risks include those that arise from currency movements, that is, the incremental volatility of return due to the translation of investments denominated in foreign currencies back to the U.S. dollar. Furthermore, the OIC recognizes that a) there is little economic basis or empirical evidence to support a positive, long-term return expectation in connection with OPERF's foreign currency exposure, and b) OPERF's foreign currency exposure is the source of meaningful, stand-alone volatility that contributes to OPERF's total, overall risk. **In other words, the OIC recognizes that unmanaged foreign currency exposure is a source of uncompensated risk.**

Although foreign currency exposure results in uncompensated risk, the Council maintains unhedged policy benchmarks at both the total fund (i.e., OPERF) and individual asset class levels, but simultaneously directs staff to moderate the impact of foreign currency exposure on both OPERF and individual asset class performance as and when economically feasible.

1) Staff will initiate and manage a Currency Overlay Program (the "Program") to strategically manage foreign currency risk to reduce volatility in U.S. dollar-denominated value as a result of movements in foreign exchange rates. However, the Council recognizes that the implementation of the Program and related strategies or tactics could generate additional risks for OPERF, such as operational risk – significant cash inflows and outflows generated exclusively from currency hedging activities – and counterparty risk. To that end, staff will consider and incorporate these additional risks in Program design, implementation and management efforts.

2) The Program will be managed to meet the following guidelines:

   a. Performance and risk objectives evaluated over a full currency market cycle:

      - The Program is expected to achieve a zero or negligible annualized rate of return, net of fees;

- The Program, in isolation, shall target a moderate level of risk while reducing OPERF-level volatility due to foreign currency exposures; and

- The Program aims to minimize negative cash flows and limit portfolio drawdowns.

b. The Program is permitted to transact in foreign currencies that constitute the MSCI World ex-U.S. Index, a developed countries equity index; and

c. Staff will provide the Council an annual review of the Program.

3) On a regular basis, staff will report to the Council a summary of OPERF's direct and indirect currency exposures. Implicit exposures, particularly those from OPERF's private market investments, are more difficult to measure. Staff will endeavor to include implicit exposures in its summary report, but will balance such efforts against related time, cost and accuracy considerations.

Exceptions

None.

Failure to Comply

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

ADMINISTRATION

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. 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 8 – Public Equity Review

OPERF

Oregon Investment Council
OPERF Public Equity Portfolio -- Annual Review
October 31, 2018

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 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 targeted annualized tracking error of 0.75 to 2.0 percent, relative to the MSCI ACWI IMI (net).

As of September 30, 2018, the capitalization-based MSCI All Country World Index - IMI was comprised of 54.8 percent U.S. equities, 34.4 percent international developed-market equities, and 10.8 percent emerging-market equities. To achieve a similar allocation to the benchmark within the OPERF public equity portfolio, staff uses a mix of 34 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 34 investment strategies are broadly categorized as follows:

- **11 U.S. Equity strategies**, comprised of 3 indexed strategies (which are internally-managed) and 8 active and/or systematic strategies (one of which is internally-managed); and
- **23 Global/International Equity strategies**, comprised of 12 international developed-market strategies (one of which is managed internally), 6 dedicated emerging-market strategies and 5 global-equity strategies (4 of which are low volatility strategies).

Public Equity Management Highlights

Although results for the period ending June 30, 2018 are detailed in a report from OIC general consultant Callan, staff wishes to highlight the following key points which have been updated for the period ending September 30, 2018:

- ***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 periods (Exhibit 1). Although the public equity portfolio did not achieve its return objectives, the portfolio did provide meaningful excess returns. Moreover, this excess performance has been achieved by utilizing less than half the policy's 200 bps tracking error (active risk) allowance.

Exhibit 1

Period Ending 9/30/2018	Market Value	3 Months	1 Year	3 Years	5 Years	10 Years
OPERF Public Equity Returns	$ 28,049,054,516	3.73%	9.68%	13.87%	9.10%	9.12%
MSCI ACWI IMI Net		3.88%	9.63%	13.47%	8.69%	8.49%
Excess Return (0.50% Target)		**-0.15%**	**0.05%**	**0.40%**	**0.41%**	**0.63%**
OPERF Public Equity Tracking Error (2.0% Maximum)		**N/A**	**0.82%**	**0.85%**	**0.92%**	**0.92%**
Information Ratio (Excess Return/Tracking Error)		**N/A**	**0.06**	**0.47**	**0.45**	**0.68**

Source: State Street

- ***Internally-Managed Equity Portfolios*** – Since inception, six out of the seven internally-managed public equity portfolios (current and terminated mandates) have out-performed their corresponding capitalization weighted benchmarks, net of fees (Appendix A).

- ***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 2018, staff conducted 112 in-person meetings in the Tigard office, 61 quarterly conference calls and 19 annual on-site diligence meetings with existing OPERF equity managers. Staff maintains files 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 manager strategies.

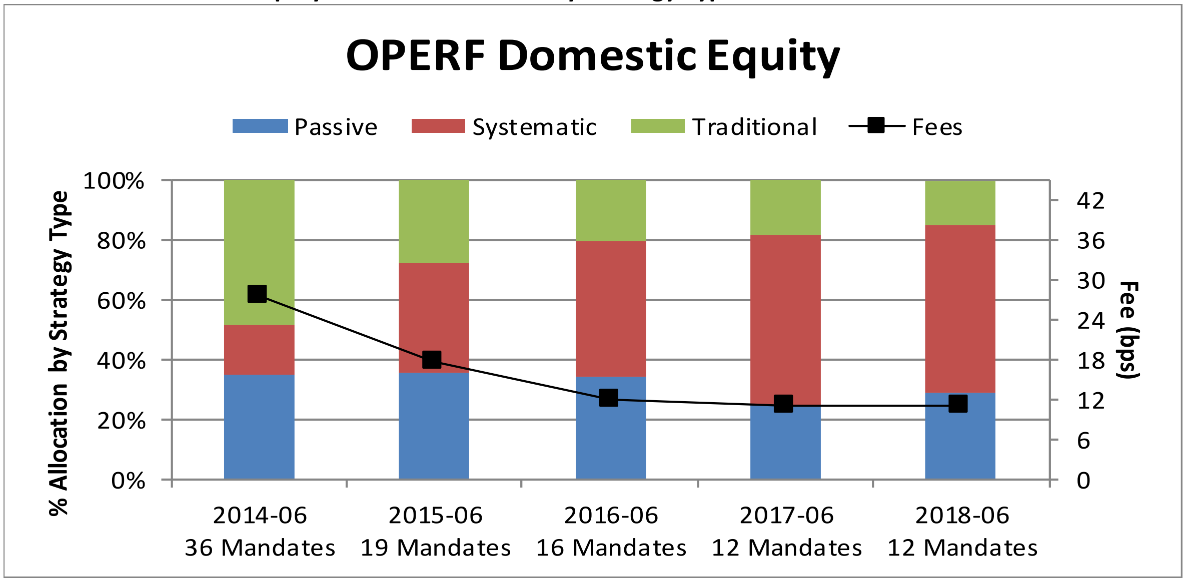
- ***Portfolio Rebalances*** – OIC Policy INV 601 and INV 602 give staff authority, with CIO approval, to terminate and rebalance among existing public equity mandates. For the 12 months ending September 30, 2018, staff raised $5.4 billion for OPERF pension payments, private market capital calls, and the Individual Account Program (IAP) restructuring (Appendix B). These actions include terminating two mandates (one international and one domestic mandate).

<u>OPERF Public Equity Structural Evolution</u>

Staff continues to opportunistically restructure OPERF's 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 in the OPERF domestic equity portfolio (Exhibit 2), and lowered the portfolio's management costs from 31.6 bps to 11 bps per annum.

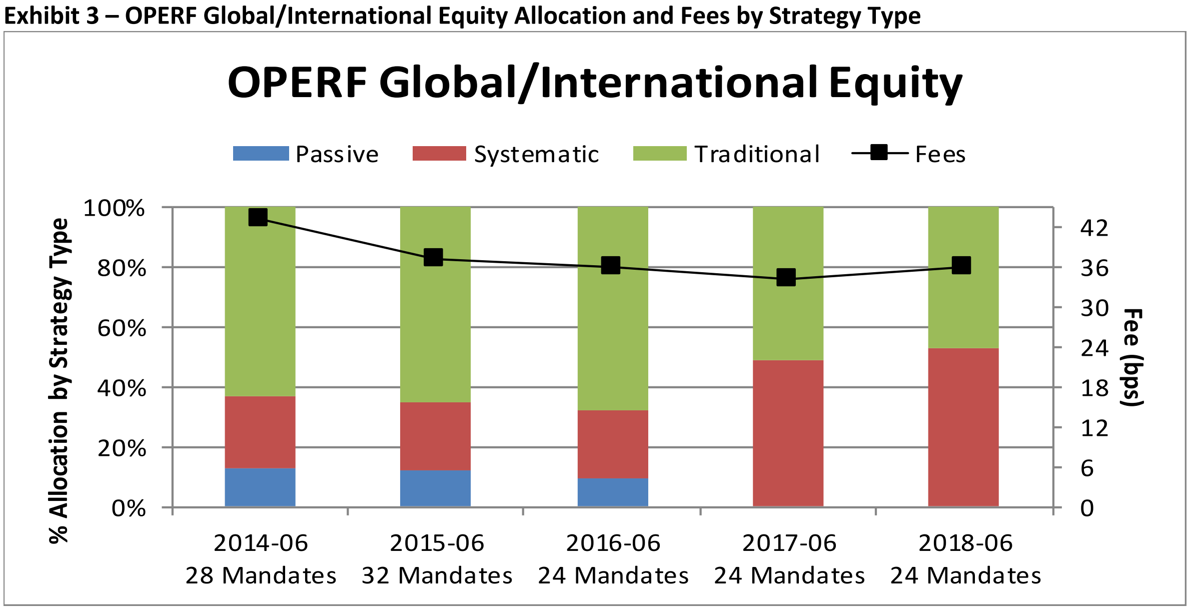
Exhibit 2 – OPERF U.S. Equity Allocation and Fees by Strategy Type



Source: OST Public Equity

Similar actions in the Global/International portfolio (Exhibit 3) have reduced the number of traditional active managers employed and lowered the portfolio's management costs from 43 bps to 36 bps per annum.

Exhibit 3 – OPERF Global/International Equity Allocation and Fees by Strategy Type

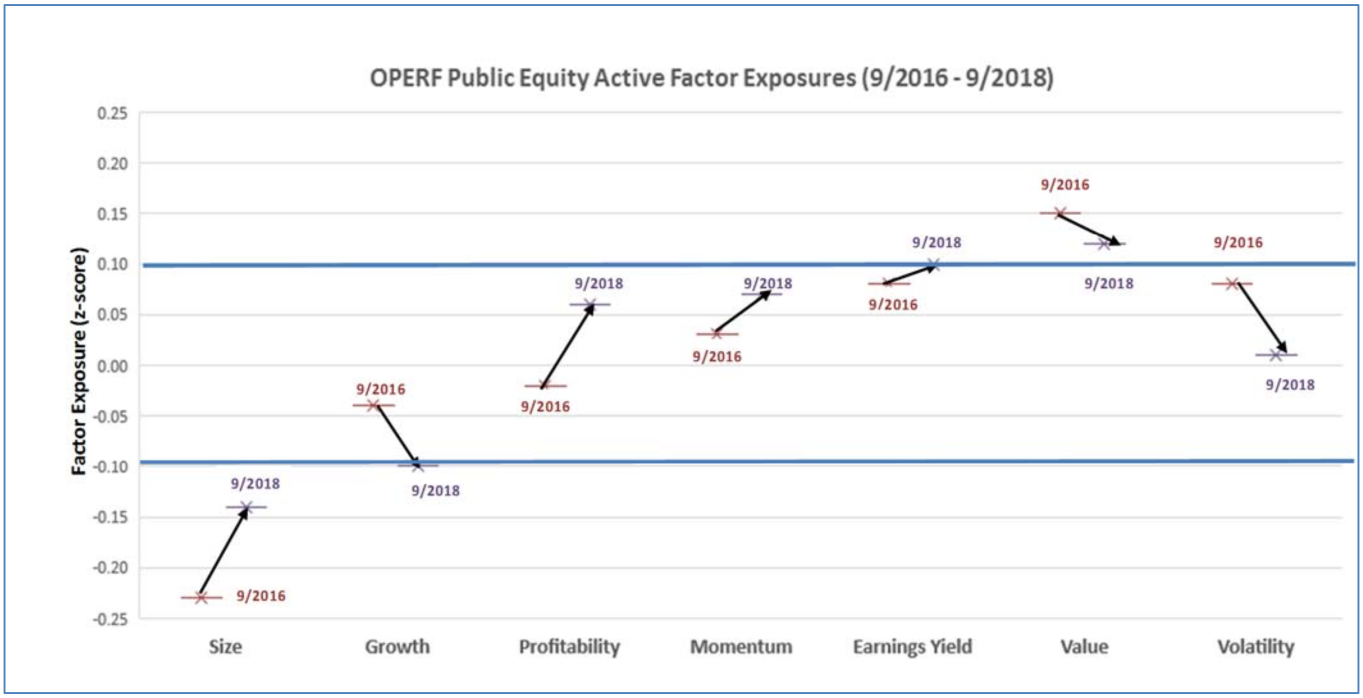


This restructuring has also complemented the portfolio's long-standing overweight to small cap stocks (the "Size" factor) with systematic tilts toward other factors (Value, Momentum, Profitability/Quality, etc.). Supported by robust empirical evidence, these various factors generate excess return premiums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

Exhibit 4 shows the 3-year progression of factor exposures that staff has intentionally built within the portfolio. The substantial Size exposure has been reduced, allowing for expanded tilts towards Value

(Earnings Yield, negative Growth, Value), as well as large biases towards Profitability, Momentum and Low Volatility (Volatility decreasing).

Exhibit 4 – OPERF Public Equity Active Factor Exposures



Source: BlackRock Aladdin

Appendix A

Internally-Managed Equity Performance

(Period ended September 30, 2018, unless otherwise noted)

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
OST 400 Portfolio	**$ 719,151,441**	**-1.08%**	**3.89%**	**7.64%**	**14.50%**	**16.04%**	**12.21%**	**14.69%**
S&P 400 Index		**-1.10%**	**3.86%**	**7.49%**	**14.21%**	**15.68%**	**11.91%**	**14.38%**
Excess		**0.01%**	**0.03%**	**0.15%**	**0.28%**	**0.36%**	**0.31%**	**0.31%**
Inception Date of Oct. 1, 2009	**Tracking Error = 30 bps**	**Target Excess Return: 10 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
OST 500 Portfolio	**$ 2,727,006,492**	**0.58%**	**7.76%**	**10.58%**	**17.92%**	**17.35%**	**13.99%**	**14.34%**
S&P 500 Index		**0.57%**	**7.71%**	**10.55%**	**17.91%**	**17.31%**	**13.95%**	**14.29%**
Excess		**0.01%**	**0.05%**	**0.02%**	**0.01%**	**0.04%**	**0.04%**	**0.05%**
Inception Date of Oct 1, 2009	**Tracking Error = 10 bps**	**Target Excess Return: 5 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
Russell 2000 Synthetic	**$ 325,632,840**	**-2.28%**	**3.63%**	**11.57%**	**15.03%**	**17.76%**	**11.77%**	**13.71%**
Russell 2000 Index		**-2.41%**	**3.58%**	**11.51%**	**15.24%**	**17.12%**	**11.07%**	**12.90%**
Excess		**0.13%**	**0.06%**	**0.06%**	**-0.21%**	**0.64%**	**0.70%**	**0.81%**
Inception Date of April 1, 2010	**Tracking Error = 50 bps**	**Target Excess Return: 30 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
RISK PREMIA	**$ 3,161,345,915**	**0.43%**	**8.06%**	**11.51%**	**21.29%**	**19.11%**	**N/A**	**14.00%**
MSCI Risk Premia Index		*0.43%*	*8.07%*	*11.38%*	*21.14%*	*19.18%*	*N/A*	*14.03%*
MSCI USA		**0.46%**	**7.51%**	**10.58%**	**17.86%**	**17.14%**	**N/A**	**12.21%**
Excess		**-0.03%**	**0.55%**	**0.93%**	**3.42%**	**1.97%**	**N/A**	**1.79%**
Inception Date of Jan 1, 2014	**Tracking Error = 300 bps**	**Target Excess Return: 150 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
INT'L RISK PREMIA	**$ 691,168,396**	**1.29%**	**2.04%**	**0.25%**	**3.48%**	**N/A**	**N/A**	**5.62%**
MSCI INT'L Risk Premia Index		*1.23%*	*2.03%*	*0.07%*	*3.29%*	*N/A*	*N/A*	*5.50%*
MSCI WORLD X-US		**0.78%**	**1.31%**	**-1.50%**	**2.67%**	**N/A**	**N/A**	**6.26%**
Excess		**0.51%**	**0.73%**	**1.75%**	**0.81%**	**N/A**	**N/A**	**-0.64%**
Inception Date of Jun 1, 2017	**Tracking Error = 300 bps**	**Target Excess Return: 150 bps**						

Period Ending 9/30/15	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
TEMS	**$ 180,449,700**	**-3.87%**	**-16.49%**	**-16.55%**	**-22.43%**	**-6.42%**	**-4.08%**	**9.01%**
MSCI EM Index		**-3.01%**	**-17.90%**	**-15.48%**	**-19.28%**	**-5.27%**	**-3.58%**	**8.87%**
Excess		**-0.86%**	**1.41%**	**-1.07%**	**-3.15%**	**-1.15%**	**-0.51%**	**0.14%**
Inception Date of Feb 1, 2009	**Tracking Error = 400 bps**	**Target Excess Return: 200 bps**		**TERMINATED SEPTEMBER 30, 2015**				

Period Ending 8/31/16	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
RUSSELL RAFI LC	**$ 1,371,571,346**	**-0.05%**	**4.04%**	**10.27%**	**13.81%**	**11.23%**	**N/A**	**14.65%**
RAFI LC Index		*-0.04%*	*3.97%*	*10.06%*	*13.54%*	*11.21%*	*N/A*	*14.62%*
RUSSELL 1000		**0.13%**	**4.18%**	**7.83%**	**11.69%**	**12.02%**	**N/A**	**14.46%**
Excess		**-0.18%**	**-0.14%**	**2.43%**	**2.11%**	**-0.79%**	**N/A**	**0.19%**
Inception Date of Nov 1, 2011	**Tracking Error = 300 bps**	**Target Excess Return: 150 bps**		**TERMINATED AUGUST 31, 2016**				

Source: State Street

Appendix B

OPERF Public Equity Portfolio Rebalancing
(October 1, 2017 – September 30, 2018)

Date(s)	Manager	Sub-Asset Class	Market Value	Purpose
Dec-17	AJO	U.S. Large Cap Value	$ (400,000,000)	IAP Restructure
Dec-17	DFA Large Cap Core	U.S. Large Cap Value	$ (475,000,000)	IAP Restructure
Dec-17	AQR International	Int'l Developed	$ (200,000,000)	IAP Restructure
Dec-17	Acadian Developed & Er	Int'l Developed & Emerging	$ (300,000,000)	IAP Restructure
Dec-17	DFA International Small	Developed Small Cap	$ (50,000,000)	IAP Restructure
Dec-17	Harris Associates	Int'l Small Cap Value	$ (50,000,000)	IAP Restructure
Dec-17	Pyramis Int'l Small Cap	Developed Small Cap	$ (75,000,000)	IAP Restructure
Dec-17	Genesis	Emerging Markets	$ (200,000,000)	IAP Restructure
Dec-17	Wellington	U.S. Micro Cap	$ (50,000,000)	IAP Restructure
Feb-18	AQR International	Int'l Developed	$ (100,000,000)	Cash Raise/Rebalance
Feb-18	Brandes	Int'l Developed & Emerging Value	$ (100,000,000)	Cash Raise/Rebalance
Feb-18	AJO	US Large Cap Value	$ (200,000,000)	Cash Raise/Rebalance
Feb-18	DFA Large Cap Core	U.S. Large Cap Value	$ (400,000,000)	Cash Raise/Rebalance
Feb-18	Alliance Bernstein	Global Value	$ (200,000,000)	Cash Raise/Rebalance
Apr-18	DFA Large Cap Core	U.S. Large Cap	$ (245,000,000)	Cash Raise/Rebalance
Apr-18	AJO	US Large Cap Value	$ (50,000,000)	Cash Raise/Rebalance
Apr-18	Wellington	U.S. Micro Cap	$ (29,000,000)	Cash Raise/Rebalance
Apr-18	Boston Company	U.S. Small Cap Value	$ (19,000,000)	Cash Raise/Rebalance
Apr-18	EAM	U.S. Micro Cap Growth	$ (10,000,000)	Cash Raise/Rebalance
Apr-18	DFA US Micro Cap	U.S. Micro Cap Value	$ (15,000,000)	Cash Raise/Rebalance
Apr-18	AQR International	World Developed	$ (54,000,000)	Cash Raise/Rebalance
Apr-18	Arrowstreet 130/30	Int'l Developed & Emerging	$ (100,000,000)	Cash Raise/Rebalance
Apr-18	Lazard CEF	Int'l Developed & Emerging	$ (70,000,000)	Cash Raise/Rebalance
Apr-18	Lazard International	Int'l Developed & Emerging	$ (60,000,000)	Cash Raise/Rebalance
Apr-18	Walter Scott	Int'l Developed	$ (50,000,000)	Cash Raise/Rebalance
Apr-18	Acadian	Int'l Developed & Emerging Value	$ (55,000,000)	Cash Raise/Rebalance
Apr-18	Brandes	Int'l Developed & Emerging Value	$ (57,000,000)	Cash Raise/Rebalance
Apr-18	DFA World Small Cap Va	Int'l Developed Small Cap Value	$ (19,000,000)	Cash Raise/Rebalance
Apr-18	Harris Associates	Int'l Developed Small Cap Value	$ (18,000,000)	Cash Raise/Rebalance
Apr-18	Pyramis Global	Int'l Developed Small Cap	$ (20,000,000)	Cash Raise/Rebalance
Apr-18	EAM	Global X -US Micro Cap Growth	$ (10,000,000)	Cash Raise/Rebalance
Apr-18	DFA Global X-US Micro	Global X -US Micro Cap Value	$ (10,000,000)	Cash Raise/Rebalance
Apr-18	Genesis	Emerging	$ (32,000,000)	Cash Raise/Rebalance
Apr-18	William Blair	Emerging	$ (17,000,000)	Cash Raise/Rebalance
Apr-18	Arrowstreet	Emerging	$ (35,000,000)	Cash Raise/Rebalance
Apr-18	William Blair	Emerging Small	$ (10,000,000)	Cash Raise/Rebalance
Apr-18	Westwood	Emerging	$ (20,000,000)	Cash Raise/Rebalance
Apr-18	Alliance Bernstein	Global Value	$ (50,000,000)	Cash Raise/Rebalance
Jun-18	DFA Large Cap Core	U.S. Large Cap	$ (115,000,000)	Cash Raise/Rebalance
Jun-18	AJO	US Large Cap Value	$ (25,000,000)	Cash Raise/Rebalance
Jun-18	Wellington	U.S. Micro Cap	$ (13,000,000)	Cash Raise/Rebalance
Jun-18	Boston Company	U.S. Small Cap Value	$ (9,000,000)	Cash Raise/Rebalance
Jun-18	AQR 130/30	U.S. Small Cap Value	$ (8,000,000)	Cash Raise/Rebalance
Jun-18	EAM	U.S. Micro Cap Growth	$ (5,000,000)	Cash Raise/Rebalance
Jun-18	DFA US Micro Cap	U.S. Micro Cap Value	$ (7,000,000)	Cash Raise/Rebalance
Jun-18	AQR International	World Developed	$ (26,000,000)	Cash Raise/Rebalance
Jun-18	Arrowstreet 130/30	Int'l Developed & Emerging	$ (53,000,000)	Cash Raise/Rebalance
Jun-18	Lazard CEF	Int'l Developed & Emerging	$ (40,000,000)	Cash Raise/Rebalance
Jun-18	Lazard International	Int'l Developed & Emerging	$ (30,000,000)	Cash Raise/Rebalance
Jun-18	Walter Scott	Int'l Developed	$ (25,000,000)	Cash Raise/Rebalance
Jun-18	Acadian	Int'l Developed & Emerging Value	$ (26,000,000)	Cash Raise/Rebalance
Jun-18	Brandes	Int'l Developed & Emerging Value	$ (27,000,000)	Cash Raise/Rebalance
Jun-18	DFA World Small Cap Va	Int'l Developed Small Cap Value	$ (9,000,000)	Cash Raise/Rebalance
Jun-18	Harris Associates	Int'l Developed Small Cap Value	$ (9,000,000)	Cash Raise/Rebalance
Jun-18	Pyramis Global	Int'l Developed Small Cap	$ (307,806,054)	Termination/Cash Raise
Jun-18	Genesis	Emerging	$ (15,000,000)	Cash Raise/Rebalance
Jun-18	William Blair	Emerging	$ (7,000,000)	Cash Raise/Rebalance
Jun-18	Arrowstreet	Emerging	$ (16,000,000)	Cash Raise/Rebalance
Jun-18	Westwood	Emerging	$ (11,000,000)	Cash Raise/Rebalance
Jun-18	Alliance Bernstein	Global Value	$ (24,000,000)	Cash Raise/Rebalance
Sep-18	Wellington	U.S. Micro Cap	$ (491,000,000)	Termination/Cash Raise
Sep-18	The Boston Company	U.S. Small Cap Value	$ (50,000,000)	Cash Raise/Rebalance
Sep-18	Dimensional Fund Advis	Global Value	$ (50,000,000)	Cash Raise/Rebalance
Sep-18	OST 59DZ	U.S. Small Cap	$ (200,000,000)	Cash Raise/Rebalance
			$ (5,453,806,054.00)	

Callan

October 31, 2018

Oregon Investment Council

OPERF Public Equity Review

Public Equity Portfolio

Summary Observations

- The Total Public Equity portfolio continues to perform well and has exceeded the MSCI ACWI IMI (Net) Index over both near term and longer term periods as of June 30, 2018.
  - The majority of the outperformance over the longer term has come from the non-U.S. equity portfolio, although both the U.S. equity and Non-U.S. equity portfolios had a strong trailing 12 month period on an absolute and relative basis.
- As of June 30, 2018, the public equity portfolio employed 35 strategies and accounted for ~37% of OPERF
  - The U.S. equity portfolio had 7 traditional active strategies (~9.0% of the total public equity portfolio), 3 traditional passive strategies (~13.5%), and 2 factor-oriented strategies (~24.3%).
  - The non-U.S. equity portfolio had 17 traditional active strategies (~34.5% of the total public equity portfolio) and one factor-oriented strategy (~2.4%)
    - During the last 12 months, one traditional active strategy, Fidelity International Small Cap, was terminated.
  - The public equity portfolio also had 1 traditional active global equity strategy (~2.7% of the total public equity portfolio) and 4 global low-volatility strategies (~13.4%).
- The portfolio is diversified across regions, countries, styles, capitalizations and sectors.
- Total tracking error for the public equity portfolio is 0.91% for the 10 years ended June 30, 2018, which remains on the lower end of the 0.75% - 2.00% policy range.
- While the majority of the portfolio is invested in actively-managed strategies, many of which have higher tracking error targets, the active share of the total public equity portfolio remains around 37% (meaning only about 37% of the total portfolio is different from the benchmark); this is essentially unchanged from last year but represents an increase from the 33% it was the previous year.

Strategic Role and Policy Objectives of Public Equities

Strategic Role

- Provide enhanced returns, diversification, and liquidity to meet cash flow needs.
- Target allocation is 37.5% of the Total Fund.
- The investable universe can be categorized as U.S., Non-U.S. developed and emerging market countries.

Policy Objectives

- Provide one of the highest expected returns of the OPERF major asset classes.
- Over the long term, the return should exceed inflation by 6.0%.
  - Portfolio return of 6.7% over trailing 10 years ended June 30, 2018 exceeds inflation by approximately 5.4% annualized.
- Achieve a portfolio 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 June 30, 2018	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Public Equity*	**11.71%**	**8.74%**	**10.19%**	**6.67%**
- MSCI ACWI IMI Net	11.14%	8.34%	9.60%	6.14%
Excess Return	**0.57%**	**0.40%**	**0.59%**	**0.53%**

- Active risk will be managed to a targeted annualized tracking error of 0.75% to 2.00% relative to the MSCI ACWI IMI (net).
  - Portfolio tracking error for trailing 5 years ended June 30, 2018 was 0.93%, near the low end of the range.

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

Public Equity Managers

	June 30, 2018 Market Value	% of Public Equity
Total Public Equity	**$ 27,795,275,780**	**100.0%**
U.S. Equity Portfolio	**$ 13,065,260,763**	**47.0%**
Large Cap Value		
Aronson, Johnson & Ortiz	$ 816,803,056	2.9%
Small Cap Growth		
EAM MicroCap Growth	$ 191,128,026	0.7%
Small Cap Value		
AQR Capital Management	$ 268,255,208	1.0%
Boston Company Asset Management	$ 312,749,246	1.1%
Callan US Microcap Value	$ 196,394,218	0.7%
DFA MicroCap Value	$ 254,520,355	0.9%
Market Oriented (Core)		
DFA Large Cap Core	$ 3,834,392,484	13.8%
Wellington Mgmt - Domestic Equity	$ 463,470,112	1.7%
Russell 2000 Synthetic - OST managed	$ 525,376,895	1.9%
S&P 500 - OST managed	$ 2,530,546,573	9.1%
S&P 400 - OST managed	$ 692,207,982	2.5%
OST Risk Premia Strategy	$ 2,925,432,008	10.5%
Other		
Shott Capital Management	$ 36,086,011	0.1%
Transitional & Closed Accounts	$ 17,898,589	0.1%

	June 30, 2018 Market Value	% of Public Equity
Non-U.S. Equity Portfolio	**$ 14,730,015,017**	**53.0%**
International Market Oriented (Core)		
Arrowstreet Capital	$ 1,536,634,012	5.5%
Lazard Asset Management	$ 906,698,226	3.3%
Lazard International CEF	$ 1,271,424,523	4.6%
AQR Capital Management	$ 780,162,640	2.8%
OST Int'l Risk Premia	$ 667,526,667	2.4%
International Value		
Acadian Asset Management	$ 811,327,145	2.9%
Brandes Investment Partners	$ 860,044,971	3.1%
International Growth		
Walter Scott Mgmt	$ 782,556,925	2.8%
International Small Cap		
DFA International Small Cap	$ 281,941,195	1.0%
Harris Associates	$ 269,412,531	1.0%
EAM International Micro Cap	$ 153,529,226	0.6%
DFA International Micro Cap	$ 166,825,279	0.6%
Emerging Markets		
Genesis Emerging Markets	$ 435,101,496	1.6%
Arrowstreet Emerging Markets	$ 468,403,096	1.7%
Westwood Global Investment	$ 323,148,577	1.2%
William Blair and Company	$ 236,434,526	0.9%
DFA Emerging Market Small Cap	$ 154,693,853	0.6%
William Blair Emerging Mkt Small Cap	$ 148,873,123	0.5%
Global Equity		
Alliance Bernstein Global Value	$ 748,478,053	2.7%
LACM Global Equity Low Vol	$ 985,113,406	3.5%
Arrowstreet Global Low Vol	$ 933,701,213	3.4%
AQR Global Low Vol	$ 900,833,093	3.2%
Acadian Global Low Vol	$ 907,151,241	3.3%

Total Public Equity Exposures

Holdings-Based Analysis as of June 30, 2018

By Size*

Style Exposure Matrix
Holdings as of June 30, 2018

	Value	Core	Growth	Total
Large	21.3% (261) 23.7% (302)	19.2% (269) 21.5% (291)	21.1% (272) 24.0% (295)	**61.6% (802)** **69.2% (888)**
Mid	6.8% (367) 5.4% (497)	7.4% (419) 6.1% (573)	8.1% (476) 7.8% (706)	**22.3% (1262)** **19.3% (1776)**
Small	3.7% (835) 3.0% (1090)	4.6% (912) 3.6% (1319)	2.8% (641) 3.0% (1143)	**11.2% (2388)** **9.7% (3552)**
Micro	1.9% (2723) 0.6% (971)	1.9% (1876) 0.7% (979)	1.2% (1098) 0.5% (713)	**4.9% (5697)** **1.8% (2663)**
Total	**33.7% (4186)** **32.8% (2860)**	**33.1% (3476)** **31.9% (3162)**	**33.2% (2487)** **35.3% (2857)**	**100.0% (10149)** **100.0% (8879)**

By Region

Style Exposure Matrix
Holdings as of June 30, 2018

	Value	Core	Growth	Total
Europe/ Mid East	5.1% (471) 5.6% (462)	6.1% (448) 6.9% (537)	6.5% (328) 6.8% (516)	**17.7% (1247)** **19.3% (1515)**
N. America	21.2% (836) 18.4% (774)	19.8% (1012) 17.7% (1121)	18.2% (609) 19.0% (848)	**59.2% (2457)** **55.1% (2743)**
Pacific	3.4% (1035) 4.5% (630)	3.1% (536) 3.2% (531)	4.7% (373) 4.4% (591)	**11.3% (1944)** **12.1% (1752)**
Emerging/ FM	4.1% (1844) 4.2% (994)	4.0% (1480) 4.1% (973)	3.8% (1177) 5.1% (902)	**11.9% (4501)** **13.4% (2869)**
Total	**33.7% (4186)** **32.8% (2860)**	**33.1% (3476)** **31.9% (3162)**	**33.2% (2487)** **35.3% (2857)**	**100.0% (10149)** **100.0% (8879)**

- **OPERF Public Equity** (upper value in each cell)
- **MSCI ACWI IMI** (lower value in each cell)

- Total public equity portfolio is underweight large cap (61.6% vs. 69.2%) but overweight mid, small, and micro cap (38.4% vs. 30.8%) and exhibits a slight value bias relative to the MSCI ACWI IMI.
- Regional allocations have shifted over the last year to be overweight to North America and underweight Europe/Mid East; allocations to the Pacific region and Emerging/Frontier markets are approximately inline.

*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 June 30, 2018

Style Exposure Matrix
Holdings as of June 30, 2018

	Value	Core	Growth	Total
Large	25.6% (110) 27.3% (110)	15.6% (101) 20.3% (99)	20.6% (89) 26.6% (89)	**61.8% (300)** **74.2% (298)**
Mid	6.8% (169) 4.8% (177)	8.1% (208) 6.5% (215)	5.9% (183) 5.9% (205)	**20.8% (560)** **17.3% (597)**
Small	4.4% (285) 2.3% (340)	5.0% (341) 2.9% (481)	2.8% (192) 2.4% (374)	**12.3% (818)** **7.5% (1195)**
Micro	1.8% (281) 0.3% (273)	2.3% (259) 0.4% (392)	1.0% (111) 0.3% (230)	**5.1% (651)** **1.0% (895)**
Total	**38.7% (845)** **34.7% (900)**	**31.1% (909)** **30.2% (1187)**	**30.2% (575)** **35.1% (898)**	**100.0% (2329)** **100.0% (2985)**

- **OPERF U.S. Equity**
- **Russell 3000**

- The U.S. equity portfolio is underweight large cap (61.8% vs.74.2%) but overweight mid, small, and micro cap equity (38.2% vs. 25.8%) and exhibits a value tilt relative to the Russell 3000.

Non-U.S. & Global Equity

Exposures as of June 30, 2018

Style Exposure Matrix
Holdings as of June 30, 2018

	Value	Core	Growth	**Total**
Large	15.8% (124) 20.3% (206)	21.4% (137) 21.9% (199)	23.3% (167) 21.9% (239)	**60.5% (428)** **64.1% (644)**
Mid	7.1% (151) 5.9% (353)	6.6% (159) 6.8% (417)	8.4% (208) 9.6% (520)	**22.2% (518)** **22.3% (1290)**
Small	4.3% (588) 3.7% (800)	4.4% (615) 4.1% (947)	3.3% (440) 3.6% (831)	**12.1% (1643)** **11.3% (2578)**
Micro	2.3% (2249) 0.9% (738)	1.7% (1489) 0.8% (691)	1.3% (880) 0.6% (505)	**5.3% (4618)** **2.3% (1934)**
Total	**29.5% (3112)** **30.8% (2097)**	**34.2% (2400)** **33.5% (2254)**	**36.3% (1695)** **35.7% (2095)**	**100.0% (7207)** **100.0% (6446)**

Style Exposure Matrix
Holdings as of June 30, 2018

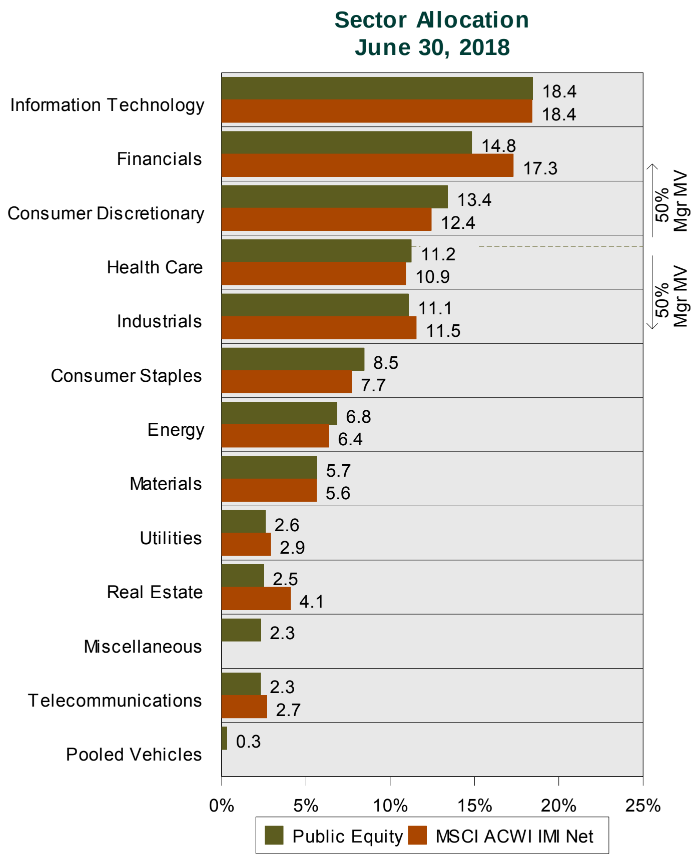
	Value	Core	Growth	**Total**
Europe/ Mid East	12.1% (396) 11.5% (439)	14.7% (408) 14.6% (561)	14.1% (235) 14.2% (515)	**40.9% (1039)** **40.3% (1515)**
N. America	1.6% (67) 2.0% (102)	1.6% (56) 2.8% (110)	1.7% (39) 1.8% (98)	**4.9% (162)** **6.6% (310)**
Pacific	7.0% (937) 9.0% (607)	7.2% (477) 7.1% (559)	10.2% (300) 9.1% (586)	**24.5% (1714)** **25.2% (1752)**
Emerging/ FM	8.9% (1712) 8.3% (949)	10.6% (1459) 9.0% (1024)	10.2% (1121) 10.6% (896)	**29.7% (4292)** **28.0% (2869)**
Total	**29.5% (3112)** **30.8% (2097)**	**34.2% (2400)** **33.5% (2254)**	**36.3% (1695)** **35.7% (2095)**	**100.0% (7207)** **100.0% (6446)**

- **OPERF Non-U.S. Equity**
- **MSCI ACWI ex-U.S. IMI**

- The non-U.S. equity portfolio is underweight large cap (60.5% vs. 64.1%) and overweight mid, small, and micro cap (39.5% vs. 35.9%) relative to the MSCI ACWI ex-U.S. IMI Index.
- Regional allocations are approximately in-line with benchmark, with a modest overweight to Emerging/Frontier Markets (and an underweight to North America).

Public Equity

Portfolio Characteristics



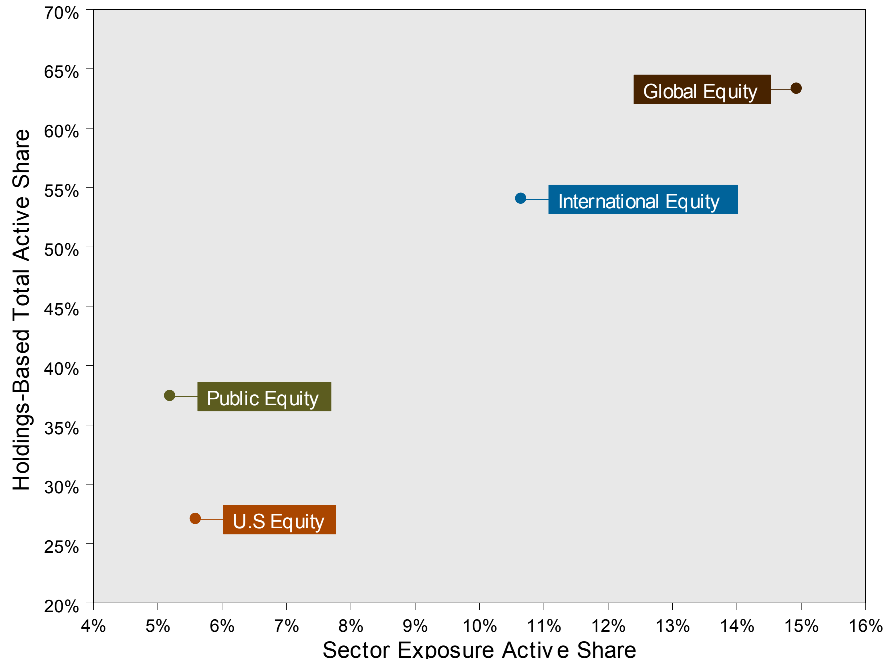
Portfolio Characteristics Relative to MSCI ACWI IMI Net as of June 30, 2018

	Weighted Median Market Cap	Price/Fore-casted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
Public Equity	23.83	14.08	2.06	13.51	2.17	(0.09)
MSCI ACWI IMI Net	40.21	15.03	2.13	13.91	2.35	(0.02)

- Sector exposures are approximately in-line with the benchmark. The most significant differences are in Financials and Real Estate, where the Public Equity Portfolio is underweight both sectors.
- Weighted median market cap shows a smaller cap bias compared to the benchmark but other characteristics are approximately in-line.

Active Share Analysis

As of June 30, 2018



	Weight %	Index	Total Act Share	Non-Idx Act Share	Sector Act Share	Number Securities	Security Diverse
Public Equity	**100.00%**	**MSCI ACWI IMI**	**37.39%**	**3.79%**	**5.20%**	**10792**	**313.32**
U.S Equity	**46.84%**	**Russell 3000**	**27.02%**	**0.90%**	**5.60%**	**2358**	**122.00**
International Equity	**43.56%**	**MSCI ACWI ex US IMI**	**54.00%**	**5.71%**	**10.66%**	**7731**	**183.18**
Global Equity	**16.11%**	**MSCI ACWI**	**63.26%**	**8.66%**	**14.94%**	**2099**	**179.53**

- 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 June 30, 2018.
  - Active share has increased from two years ago when it was at 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 June 30, 2018

	Sharpe Ratio	Excess Return Ratio	Standard Deviation	Tracking Error
Total Public Equity	1.19	0.97	8.48	0.93
MSCI ACWI IMI	1.11	0.00	8.24	0.00

U.S. Equity	1.62	-0.17	7.79	1.63
Russell 3000	1.78	0.00	7.22	0.00

Non-U.S./Global Equity	0.72	1.62	10.63	1.06
MSCI ACWI ex-U.S. IMI	0.56	0.00	10.61	0.00

Asset Class Performance – U.S. Equity

Net of Fee Returns as of June 30, 2018

	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Equity	**15.01%**	**11.16%**	**12.85%**	**9.86%**
- Russell 3000 Index	14.78%	11.58%	13.29%	10.23%
Excess Return	**0.23%**	**(0.42%)**	**(0.44%)**	**(0.37%)**
- Lg Public >10 B DE	14.89%	11.59%	13.24%	10.32%
Market Oriented	**15.05%**	**11.39%**	**12.82%**	**-**
- Russell 3000 Index	14.78%	11.58%	13.29%	10.23%
Excess Return	**0.27%**	**(0.19%)**	**(0.47%)**	**-**
- CAI All Cap: Broad DB	16.18%	10.53%	12.47%	9.43%
- Russell 1000 Growth Index	22.51%	14.98%	16.36%	11.83%
Excess Return	**(6.33%)**	**(4.44%)**	**(3.88%)**	**(2.40%)**
- CAI Lrg Cap Growth Style	22.86%	14.03%	16.26%	11.23%
Large Cap Value	**11.26%**	**7.81%**	**9.91%**	**-**
- Russell 1000 Value Index	6.77%	8.26%	10.34%	8.49%
Excess Return	**4.49%**	**(0.45%)**	**(0.43%)**	**-**
- CAI Large Cap Value Style	9.64%	8.99%	11.10%	8.98%
Small Cap Growth	**36.95%**	**11.16%**	**13.13%**	**-**
- Russell 2000 Growth Index	21.86%	10.60%	13.65%	11.24%
Excess Return	**15.09%**	**0.55%**	**(0.52%)**	**-**
- CAI Sm Cap Growth Style	27.71%	12.26%	14.24%	11.59%
Small Cap Value	**14.16%**	**11.61%**	**11.72%**	**-**
- Russell 2000 Value Index	13.10%	11.22%	11.18%	9.88%
Excess Return	**1.06%**	**0.39%**	**0.54%**	**-**
- CAI Small Cap Value Style	12.74%	10.68%	12.15%	11.45%

- The U.S. equity portfolio has added value net of fees over the Russell 3000 Index on a trailing year basis but lags slightly over longer periods measured above.

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

Net of Fee Returns as of June 30, 2018

	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
International Equity	**8.88%**	**6.59%**	**7.65%**	**4.29%**
MSCI ACWI ex-US IMI Index (Net)	7.75%	5.46%	6.39%	2.93%
Excess Return	**1.14%**	**1.13%**	**1.26%**	**1.36%**
Lg Public >10 B IE	8.00%	6.32%	7.16%	3.90%
International Market Oriented (Core)	**9.84%**	**6.67%**	**8.02%**	**-**
MSCI World ex-US IMI Net	7.74%	5.49%	6.77%	3.06%
Excess Return	**2.10%**	**1.17%**	**1.25%**	**-**
CAI Core Int'l Equity	7.53%	5.74%	7.43%	3.97%
International Value	**10.39%**	**7.55%**	**8.30%**	**-**
MSCI ACWI ex-US IMI Value	5.04%	4.02%	5.21%	2.53%
Excess Return	**5.35%**	**3.53%**	**3.08%**	**-**
CAI Core Value Int'l Equity Style	5.46%	4.68%	6.71%	3.57%
International Growth	**10.56%**	**6.66%**	**7.47%**	**-**
MSCI World ex US Growth	9.26%	5.95%	7.11%	2.92%
Excess Return	**1.30%**	**0.70%**	**0.36%**	**-**
CAI Core Growth Int'l Equity Style	10.75%	7.00%	8.09%	4.64%
International Small Cap	**6.62%**	**7.64%**	**9.19%**	**-**
ACWI Sm Cap ex US	10.57%	7.94%	8.98%	5.77%
Excess Return	**(3.94%)**	**(0.30%)**	**0.21%**	**-**
CAI Int'l Small Cap Style	12.83%	9.96%	11.44%	7.69%
Emerging Markets	**5.91%**	**5.08%**	**5.19%**	**-**
EM IMI Index	7.90%	5.19%	4.93%	2.52%
Excess Return	**(1.98%)**	**(0.11%)**	**0.26%**	**-**
CAI Emerging Markets Equity DB	8.19%	6.60%	6.35%	3.64%
Global Equity	**8.82%**	**6.39%**	**10.62%**	**4.64%**
MSCI ACWI Value Net Index	5.40%	6.09%	7.22%	4.50%
Excess Return	**3.41%**	**0.30%**	**3.40%**	**0.14%**
CAI Global Eq Broad Style	12.07%	9.04%	10.68%	7.32%

- The non-U.S. equity portfolio continues to outperform the ACWI ex-U.S. IMI net over all periods measured above.

OST Managed Strategies

As of June 30, 2018

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)	14.34%	13.84%	17.66%	19.03%	7.26%
Benchmark Return (1 yr)	14.37%	13.50%	17.57%	14.53%	7.04%
Excess Return	-0.03%	0.34%	0.09%	4.50%	0.22%
Portfolio Return (Inception)	13.80%	14.64%	13.71%	12.87%	7.26%
Benchmark Return (Inception)	13.75%	14.32%	12.83%	11.13%	7.04%
Excess Return	0.05%	0.08%	0.88%	1.74%	0.22%
Tracking Error*	0.05	0.08	0.39	1.66	N/A
Excess Return Ratio*	0.30	3.71	2.13	1.05	N/A
AUM	$ 2,530,546,573	$ 692,207,982	$ 525,376,895	$ 2,925,432,008	$ 667,526,667
Inception Date	10/01/2009	10/01/2009	04/01/2010	01/01/2014	06/01/2017

- On a since inception basis, the internally managed strategies have all 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).

OPERF Public Equity Portfolio
2018 Annual Review

Michael Viteri— Senior Investment Officer, Public Equity

October 31, 2018

Oregon State Treasury

Agenda

Section	Pages	1A	1B	1C	1D	1E	2A	2B	3A	4A	4B	5A	5B	6A	6B	7A	7B
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OPERF Public Equity - Performance	3																
OPERF Public Equity Excess Returns (Vs. Peers)	4																
OPERF Public Equity Benchmark	5																
OPERF Public Equity Restructure	6-7																
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OPERF Internal Small Cap Benchmark Change	9																

		LEGEND: OIC INVESTMENT AND MANAGEMENT BELIEFS
1		**THE OIC SETS POLICY AND IS ULTIMATELY RESPONSIBLE FOR THE INVESTMENT PROGRAM**
	A.	The OIC is a policy-setting council that laregely delegates investment management activities to the OST and qualified external fiduciaries.
	B.	The OIC has authority to set and monitor portfolio risk. Both short-term and long-term risks are critical.
	C.	To exploit market inefficiencies, the OIC must be contrarian, innovative and opportunistic in its investment approach.
	D.	Internal incentive structures should be carefully evaluated to ensure proper alignment with specific investment objectives.
	E.	Adequate resources are required to successfully compete in global capital markets.
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 and vintage year diversification 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		**TRANSPARENT CAPITAL MARKETS ARE ESSENTIAL FOR THE LONG-TERM SUCCESS OF OIC/OST INVESTMENT ACTIVITIES**
	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 and therefore must be treated as a fund or beneficiary asset.

OPERF 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 targeted 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, 2018. Although excess return objectives were not met, the portfolio did achieve meaningful returns. Moreover, this excess performance has been achieved by utilizing less than half the policy's 200 bps tracking error (active risk) allowance.

Period Ending 9/30/2018	Market Value	3 Months	1 Year	3 Years	5 Years	10 Years
OPERF Public Equity Returns	$ 28,057,207,021	3.73%	9.68%	13.87%	9.11%	9.12%
MSCI ACWI IMI Net		3.88%	9.63%	13.47%	8.69%	8.49%
Excess Return (0.50% Target)		**-0.15%**	**0.05%**	**0.40%**	**0.42%**	**0.63%**

OPERF Public Equity Tracking Error (2.0% Maximum)		**N/A**	**0.83%**	**0.85%**	**0.92%**	**0.92%**
Information Ratio (Excess Return/Tracking Error)		**N/A**	**0.06**	**0.47**	**0.46**	**0.68**

Source: State Street

OPERF Public Equity - Excess Returns (as of June 30, 2018)

Period Ending 6/30/2018	Market Value	3 Months	1 Year	3 Years	5 Years	10 Years
OPERF Public Equity Returns	$ 29,776,099,310	0.21%	11.71%	8.72%	10.18%	6.67%
MSCI ACWI IMI Net		0.72%	11.14%	8.34%	9.60%	6.14%
Excess Return (0.50% Target)		**-0.51%**	**0.57%**	**0.38%**	**0.58%**	**0.53%**

Public Equity Pension Plan Peers (ranked by public equity 5-year excess returns)

Plan	Market Value ($ Millions)	5-Year Plan Return (%)	5-Year Excess Return (%)	Rank	Net/Gross of Fees
Colorado Public Employees' Retirement Association (COPERA)	27,203	10.70	1.10	1	Unknown
North Carolina Retirement System (NCRS)	39,512	10.20	0.90	2	Net
Florida State Board of Administration (SBA)	89,983	10.23	0.60	3	Net
Oregon Public Employees Retirement Fund (OPERF)	**27,776**	**10.18**	**0.58**	**4**	**Net**
Indiana Public Retirement System (INPRS)	6,446	9.70	0.56	5	Net
Mass Pension Reserves Investment Trust (PRIT)	30,064	10.04	0.54	6	Gross
Wyoming State Treasurer's Office	3,663	9.95	0.54	6	Net
Virginia Retirement System (VRS)	31,400	9.90	0.30	8	Net
Washington State Investment Board (WSIB)	34,682	10.20	0.27	9	Net
Maryland State Retirement and Pension System	19,484	9.79	0.17	10	Net
Texas Municipal Retirement System (TMRS)	10,820	10.42	0.12	11	Net
California Public Employees' Retirement System (CalPERS)	171,826	10.19	0.04	12	Net
California State Teachers Retirement System (CalSTRS)	120,282	10.80	0.00	13	Net
State of Wisconsin Investment Board (SWIB)	49,747	9.84	-0.07	14	Gross
Alaska Permanent Fund (APFC)	26,905	9.52	-0.08	15	Gross
Texas Teachers Retirement System (TRS)	60,590	8.50	-0.20	16	Net
Arizona State Retirement System (ASRS)	18,413	10.10	-0.35	17	Unknown
TRS of Illinois (TRSIL)	26,749	10.80	-0.50	18	Net

Source: Pension plan web sites, as of June 30, 2018.

OPERF Public Equity Policy Benchmark

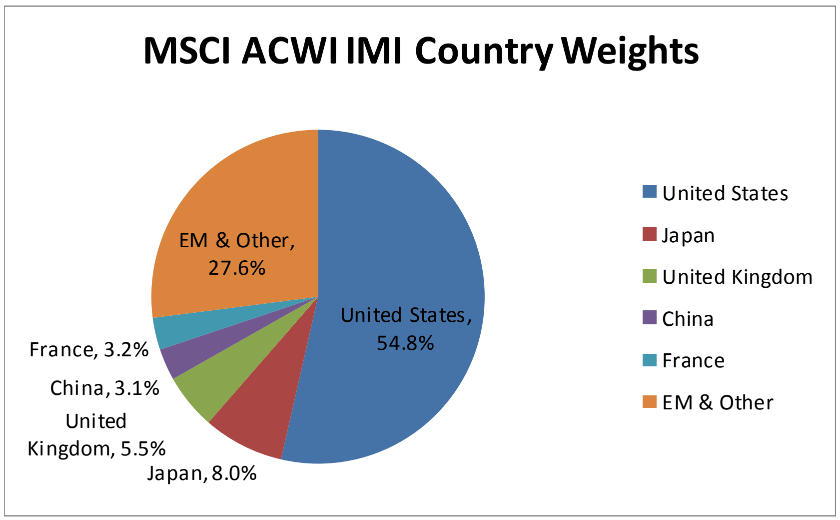
MSCI All Country World Investible Market Index (MSCI ACWI IMI)

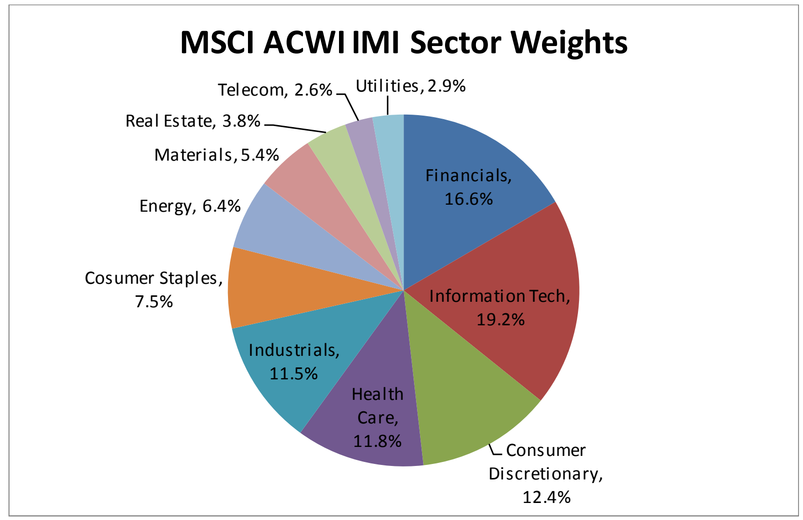
- Coverage of 47 countries:
  - U.S. equity market representing 54.8 percent;
  - International Developed equity representing 34.4 percent (23 countries); and
  - Emerging Markets representing 10.8 percent (24 countries).
- Holds 8,870 stocks, weighted by market capitalization (float adjusted) and represents more than 97% of the global opportunity set.

Source: MSCI

TOP 10 CONSTITUENTS (as of 9/30/18)

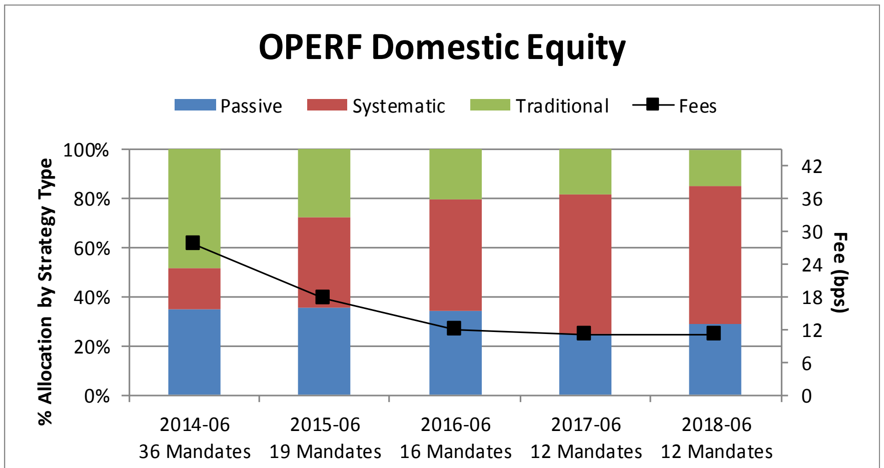
	Country	Mkt Cap (USD BB)	Index Wt. ()%)	Sector
APPLE	US	1,109.54	2.05	Info Tech
MICROSOFT CORP	US	834.79	1.55	Info Tech
AMAZON.COM	US	826.12	1.53	Cons Discr
FACEBOOK A	US	394.47	0.73	Info Tech
JP MORGAN CHASE & CO	US	384.20	0.71	Financials
ALPHABET C	US	374.82	0.69	Info Tech
JOHNSON & JOHNSON	US	370.59	0.69	Health Care
ALPHABET A	US	360.50	0.67	Info Tech
EXXON MOBIL CORP	US	359.96	0.67	Energy
BANK OF AMERICA CORP	US	283.77	0.53	Financials

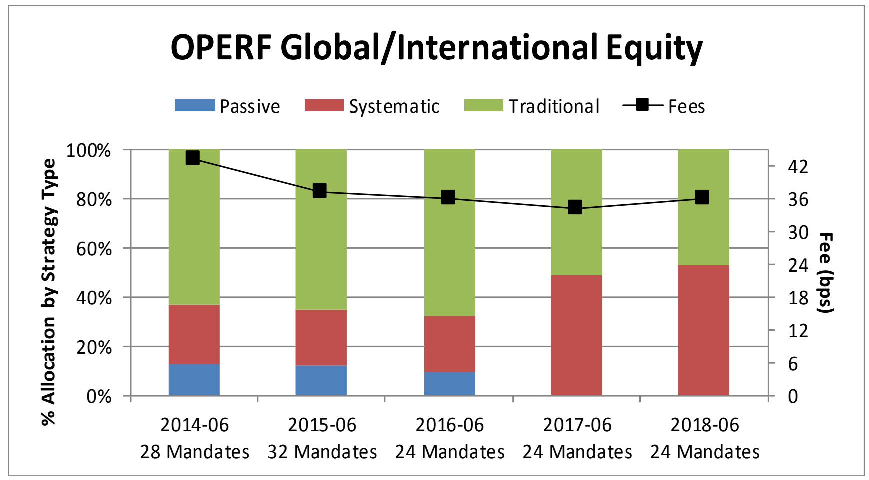




OPERF Public Equity Portfolio Restructure

- Pursuant to the OIC approved 2014 recommendation, staff continues to opportunistically move away from traditional active mandates and reallocate proceeds in favor of low-cost systematic or "engineered" strategies.
- 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.
- Increase exposure to active management within International Equity.





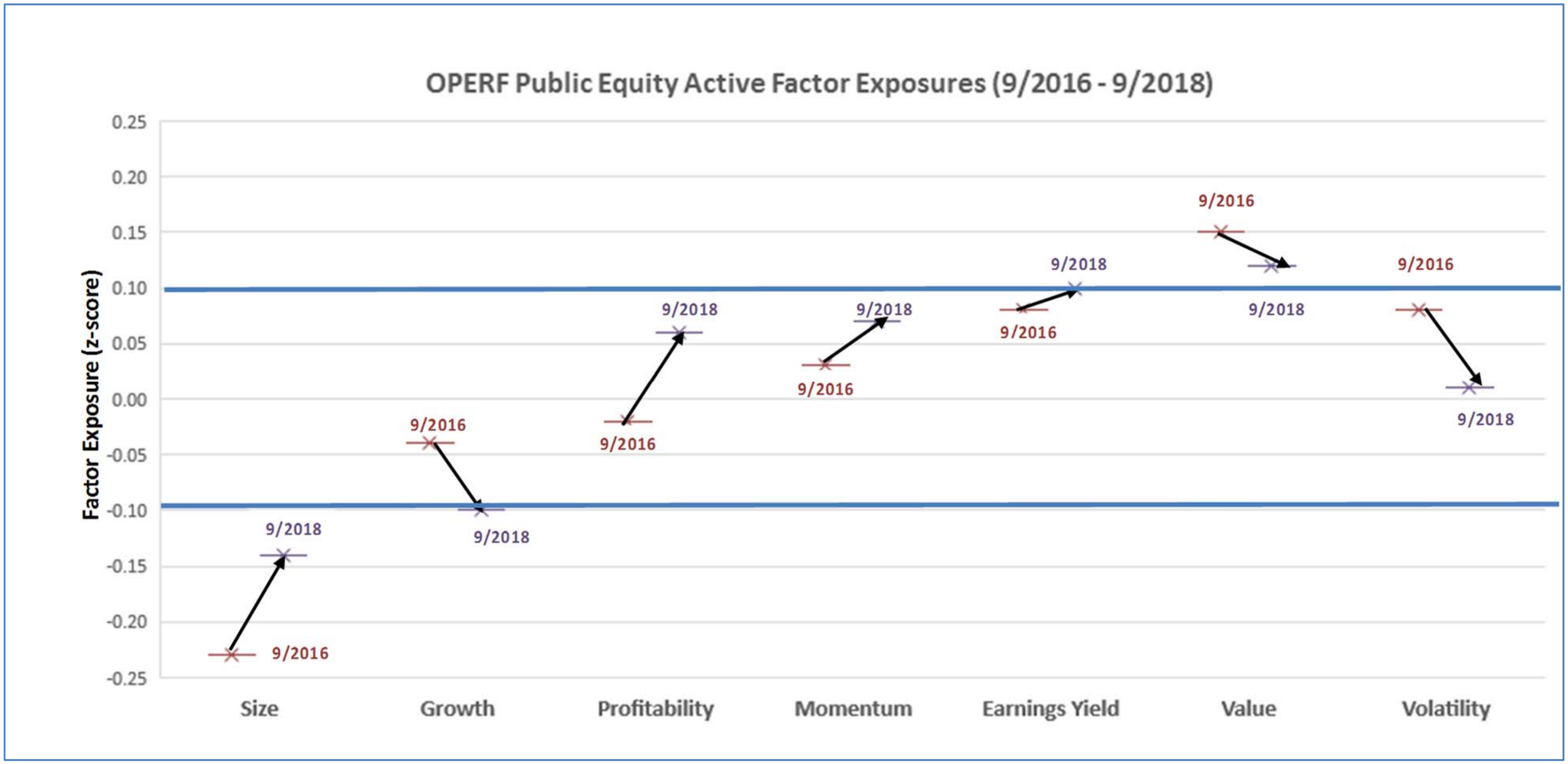
Portfolio Management costs in the Domestic Equity portfolio reduced by more than 60 percent (from 31.6 bps to 11 bps/annum), number of individual mandates decreased from 37 to 12.

Portfolio Management costs in the International/Global Equity portfolio reduced from 43bps to 36 bps. The number of individual mandates reduced from 32 to 24.

OPERF Public Equity Portfolio Restructure

Active Factor Exposures

This restructuring has complemented the portfolio's long-standing overweight to small cap stocks (Size) with systematic tilts toward other factors (Value, Momentum, Profitability/Quality, Low Volatiltiy, etc.), that generate excess return premiums and are supported by robust empirical evidence as both persistent over time and pervasive across markets and geographies.



Private Equity Stock Distributions

Background

- In 1999, OST private equity staff engaged a manager to assist with the receipt, management and sale of stock distributions from the private equity portfolio.

Discussion

- Staff proposes to insource the OPERF private equity stock distribution portfolio for the following reasons:

    1) Capacity to leverage the internal portfolio management and trading team experience (46 years of combined trading experience).

    2) Given the systems (BlackRock Aladdin), personnel (data ops, investment accounting, compliance, investment management) and processes already in place, the addition of an internally-managed stock distribution portfolio would not require any incremental resources.

    3) Over the last six years, asset management fees and carry (performance-based fee) associated with this account have been \$1MM and \$8.6MM, respectively. Staff expects improved performance due to insourced cost savings.

Recommendation

- Staff recommends insourcing the OPERF Private Equity stock distribution portfolio.

Internally-Managed Small Cap Benchmark Change

Background

- OST public equity staff has successfully managed a small cap strategy benchmarked to the Russell 2000 index which has out-performed its benchmark by 81 basis points since inception (April 1, 2010).

Discussion

- Since its inception, the S&P SmallCap 600 (S&P 600) Index has outperformed the Russell 2000 Index ninety-five percent of the time, with an annualized return premium of 1.9%.
- This significant performance differential is attributable to 1) an exploitable weakness in the Russell rebalancing methodology and 2) an earnings requirement that results in a statistically significant quality tilt within the S&P 600 index.
- Staff believes it can add value above S&P 600 index returns by applying successful trading strategies similar to those utilized in two other internally-managed public equity portfolios (S&P 500 Large Cap and the S&P MidCap 400 portfolios).

Recommendation

- Staff recommends changing OPERF's internally-managed small cap benchmark from the Russell 2000 to the S&P 600.

OPERF Public Equity Portfolio – Private Equity Stock Distribution
STAFF RECOMMENDATION
October 31, 2018

Purpose

Staff recommends internally-managing public equity stock distributions received as distributions from OPERF's Private Equity portfolio.

Background

Private equity fund general partners raise capital from institutional investors (limited partners) to provide venture or growth capital as well as finance buy-outs, carve-outs and other types of corporate restructurings. When portfolio holding companies held within private equity funds are acquired by an existing, publicly-traded company (i.e., a strategic exit) or are monetized through an initial public offering (IPO), ownership in these portfolio companies converts to public equity shares (i.e., stock). In many cases, the general partner (GP) decides to distribute stock to a fund's limited partners (LPs), rather than distribute cash. In these cases, the GP calculates fund performance using the stock price on the distribution date. Finally, stock distributed to limited partners is often initially constrained in terms of liquidity so that LPs' immediate and/or wholesale efforts to sell can have significant, adverse effects on share price.

Oregon State Treasury private equity staff engaged an asset manager to assist with the receipt, management and ultimate sale of distributed stock starting back in September 1999. Since that time, OPERF has received slightly more than $1 billion in stock distributions that have been managed and ultimately liquidated.

Discussion

Staff has successfully managed select public equity mandates since 2009. As of September 30, 2018, internally-managed public equity AUM totaled approximately $7.6 billion, representing 27 percent of OPERF's $28 billion global public equity portfolio. Six out of the seven internally-managed public equity portfolios (current and terminated mandates) have out-performed their corresponding capitalization weighted benchmarks, net of fees since inception (Appendix A).

Exhibit 1

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
OST 400 Portfolio	**$ 719,151,441**	**-1.08%**	**3.89%**	**7.11%**	**14.50%**	**16.04%**	**12.21%**	**14.69%**
S&P 400 Index		**-1.10%**	**3.86%**	**6.92%**	**14.21%**	**15.68%**	**11.91%**	**14.38%**
Excess		**0.01%**	**0.03%**	**0.19%**	**0.28%**	**0.36%**	**0.31%**	**0.31%**
Inception Date of Oct. 1, 2009	**Tracking Error = 30 bps**	**Target Excess Return: 10 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
OST 500 Portfolio	**$ 2,727,006,492**	**0.58%**	**7.76%**	**10.58%**	**17.92%**	**17.35%**	**13.99%**	**14.34%**
S&P 500 Index		**0.57%**	**7.71%**	**10.55%**	**17.91%**	**17.31%**	**13.95%**	**14.29%**
Excess		**0.01%**	**0.05%**	**0.02%**	**0.01%**	**0.04%**	**0.04%**	**0.05%**
Inception Date of Oct 1, 2009	**Tracking Error = 10 bps**	**Target Excess Return: 5 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
Russell 2000 Synthetic	**$ 325,632,840**	**-2.27%**	**3.63%**	**9.72%**	**15.04%**	**17.77%**	**11.77%**	**13.71%**
Russell 2000 Index		**-2.41%**	**3.58%**	**9.90%**	**15.23%**	**17.12%**	**11.07%**	**12.90%**
Excess		**0.13%**	**0.06%**	**-0.18%**	**-0.19%**	**0.65%**	**0.70%**	**0.81%**
Inception Date of April 1, 2010	**Tracking Error = 50 bps**	**Target Excess Return: 30 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
RISK PREMIA	**$ 3,161,345,915**	**0.43%**	**8.06%**	**11.51%**	**21.29%**	**19.11%**	**N/A**	**14.00%**
MSCI Risk Premia Index		*0.43%*	*8.07%*	*11.38%*	*21.14%*	*19.18%*	*N/A*	*14.03%*
MSCI USA		**0.46%**	**7.51%**	**10.58%**	**17.86%**	**17.14%**	**N/A**	**12.21%**
Excess		**-0.03%**	**0.55%**	**0.93%**	**3.42%**	**1.97%**	**N/A**	**1.79%**
Inception Date of Jan 1, 2014	**Tracking Error = 300 bps**	**Target Excess Return: 150 bps**						

Period Ending 9/30/18	Market Value	Month	3 Months	YTD	1 year	3 years	5 years	Inception
INT'L RISK PREMIA	**$ 691,168,396**	**1.27%**	**2.008%**	**1.00%**	**3.45%**			**5.60%**
MSCI INT'L Risk Premia Index		*1.23%*	*2.030%*	*0.86%*	*3.29%*			*5.50%*
MSCI WORLD X-US		**0.78%**	**1.308%**	**0.25%**	**2.68%**			**6.35%**
Excess		**0.49%**	**0.701%**	**0.747%**	**0.773%**			**-0.751%**
Inception Date of Jun 1, 2017	**Tracking Error = 300 bps**	**Target Excess Return: 150 bps**						

While past performance does not guarantee future results, staff expects internally-managed strategies to continue to deliver cost-effective, value-accreting performance.

Currently, staff time devoted to internal management portfolios is modest (20 – 25 percent of total public equity staff time). This efficient use of staff time reflects in part the trading and internal management infrastructure developed for and in support of these efforts:

1) Implemented Aladdin for equity portfolio and risk management efforts (2015);
2) Initiated Aladdin-based workflows to support mid- and back-office functionality in connection with equity and futures trading activities (2015); and
3) Activated Aladdin pre- and post-trade compliance protocols (2014).

In staff's opinion, given the systems, personnel and processes already in place and as described above, the addition of an internally-managed stock distribution portfolio would not require much, if any, incremental resources and is expected to result in improved performance due to insourced cost savings.

<u>Issues to Consider</u>

Pros:

- Improved, net-of-fee returns by removing the current asset management fees of 30 basis points annualized and 10 percent performance fee on realized gains above the distribution price;
- Better control and transparency of the OPERF public equity stock distribution portfolio through the ability to leverage the internal portfolio management and trading team experience, resources and tools;
- Ability to easily adopt and implement the associated workflow, not requiring any additional costs for resources or tools.

Cons:

- The now near decade long bull market has served liquidating managers well, in terms of hold versus sell decisions. With market volatility expected to increase over the next 1-2 years, this may affect performance relative to the distribution price. [**Mitigant**: Public Equity staff has 46 years of combined trading experience, covering multiple trading regimes and is well equipped to manage trading through various market environments.]

Recommendation

Staff recommends insourcing the OPERF Private Equity stock distribution portfolio.

Domestic Equity – Internally-Managed Small Cap Portfolio
STAFF RECOMMENDATION

Purpose

To recommend changing the internally-managed small cap portfolio benchmark from the Russell 2000 Index to the S&P SmallCap 600 Index.

Executive Summary

Since its inception, the S&P SmallCap 600 Index has outperformed the Russell 2000 Index ninety-five percent of the time, with an annualized return premium of 1.9% (11.2% vs. 9.3%, respectively). This significant performance differential is attributable to 1) an exploitable weakness in the Russell rebalancing methodology and 2) an earnings requirement that results in a quality tilt within the S&P index. Importantly, staff believes both the negative effects of Russell's annual reconstitution methodology and the positive effects of S&P's systematic quality tilt will persist; therefore, staff expects a sustainable performance differential between the S&P SmallCap 600 and Russell 2000.

Background

The Russell 2000 Index was launched in 1984 shortly after research by Rolf Banz[1] demonstrated that stock issued by smaller capitalization firms exhibited higher, risk-adjusted returns on average than stock returns from large capitalization firms. The S&P SmallCap 600 index was launched a decade later on the back of research from Eugene Fama and Kenneth French which identified market, value and size as powerful, explanatory factors[2].

Since inception through September 30, 2018, the S&P SmallCap 600 has outperformed the Russell 2000 ninety-five percent of the time, with an annualized return of 11.2% vs, the Russell 2000 return of 9.3% (Exhibit 1). Despite this performance dominance, the S&P SmallCap 600 has not captured much market share. "According to eVestment Alliance, as of June 30, 2017, 93% of the small-cap funds and 81% of the assets in the space are benchmarked to the Russell 2000, compared to 3% of the funds and 5% of the assets benchmarked to the S&P SmallCap 600."[3]

Exhibit 1

Period Ending 9/30/18	YTD	1 year	3 years	5 years	10 Years	Inception
S&P 600 Index	**14.52%**	**19.05%**	**19.35%**	**13.28%**	**12.83%**	**11.18%**
Russell 2000 Index	**11.51%**	**15.27%**	**17.12%**	**11.07%**	**11.10%**	**9.27%**
Excess	**3.01%**	**3.78%**	**2.23%**	**2.21%**	**1.73%**	**1.91%**
Inception Date of S&P 600 is Jan 1, 1994						

Source: Bloomberg

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[1] Banz, R. "The Relationship between Market Value and Return of Common Stocks," Journal of Financial Economics, 1981.

[2] Fama, E.F and French, K.R., (1993) Commons Risk Factors in the Returns on Stocks and Bonds, Journal of Financial Economics 33, 3 -56.

[3] Gunzberg, Jodie and Glawe "Big Things Come in Small Packages: Looking into the S&P SmallCap 600", December 2017, page 1.

To better understand S&P SmallCap 600 outperformance relative to the Russell 2000, we below highlight differences in index constituency, inclusion criteria and rebalancing methodologies.

Index Construction, Inclusion Criteria, Rebalancing

Russell U.S. indexes are constructed using a capitalization rank methodology. Once a year, Russell ranks the top 3,000 U.S. stocks by market capitalization. The highest ranked 1,000 stocks comprise the Russell 1000 Index, and the next 2,000 stocks comprise the Russell 2000 Index. For Russell indices, rebalancing occurs once annually at the end of June. Although the Russell 2000 index holds 2,000 stocks immediately following its annual rebalance, corporate actions (e.g., mergers, spin-offs, outstanding share changes, bankruptcy, etc.) increase or decrease the number of stocks held in the index over the course of the subsequent 12-month period. For example, as of the date of this memo, the Russell 2000 Index holds 2,035 stocks.

By contrast, the S&P SmallCap 600 index is continuously rebalanced to hold exactly 600 stocks. S&P applies inclusion criteria via an *Index Committee,* which incorporates preferences for market capitalization, liquidity, sector diversification and an earnings requirement which results in an implicit quality tilt.[4] For inclusion, companies must have reported positive earnings for both the most recent quarter and cumulative 12-month (i.e., four quarter) period. A constant number of index constituents (one addition/deletion at a time) coupled with the Index Committee's quality-biased inclusion criteria produce what in Staff's opinion is a superior composite of small cap U.S. stocks.

Performance Differentials

The performance differential between the S&P SmallCap 600 and Russell 2000 is primarily attributable to two features: 1) the Russell 2000 Index rebalancing methodology; and 2) the implicit quality tilt within the S&P SmallCap 600 Index.

Since Russell reconstitutes its indices once a year based on market capitalization, arbitrageurs have historically been able to successfully capitalize on acute supply and demand pressures that manifest during the concentrated, annual reconstitution period. These pressures reflect the popularity of the Russell 2000 Index for benchmark purposes, the commensurately large amount of assets managed to the Russell 2000 Index, and the generally poor liquidity of many of the Russell 2000 Index's underlying stocks. In essence, "Russell 2000 index managers have to sell their largest (and usually best performing) stocks to Russell 1000 index managers and replace them with the smallest (and usually worst performing) stocks from the Russell 1000 (also referred to as the Russell 1000 Fallen Angels)."[5] In addition, stocks graduating from micro-cap obscurity to the Russell 2000 Index are bid up in price when micro-cap illiquidity collides

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[4] Arends, Brett "A Tale of Two Indexes", Barron's, January 27, 2018.

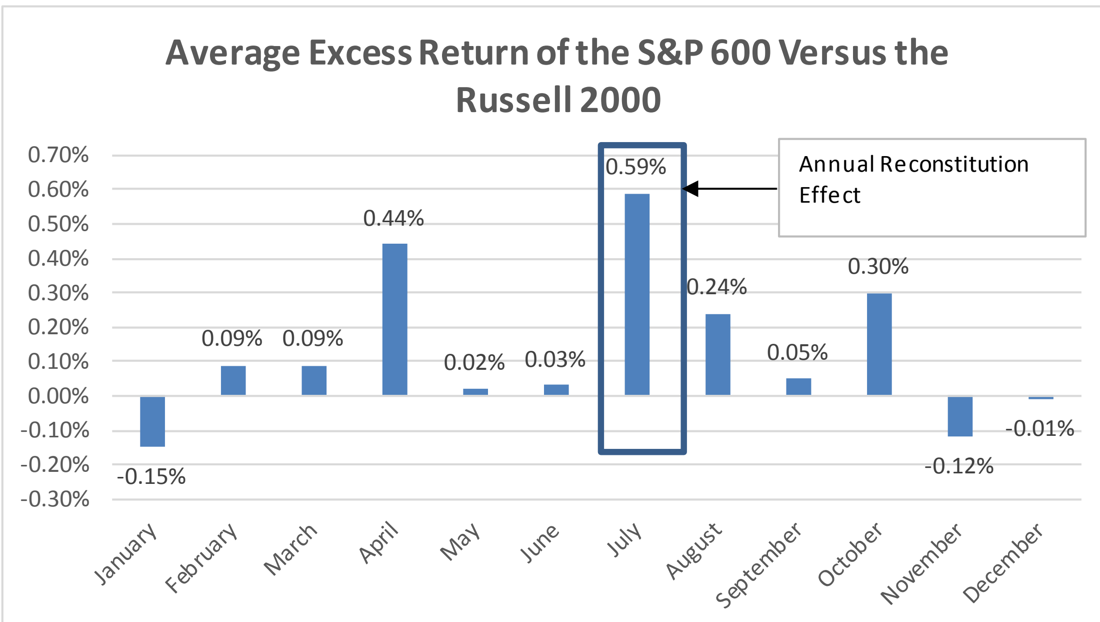
[5] Jankovskis, Peter, "The Not So perfect Index – The Impact Of Russell 2000 Rebalancing On Small-Cap Performance," Journal of Indexes, 2002.

with Russell 2000 Index inclusion demand.

Moreover, after the annual rebalancing date, prices for both entering and exiting stocks exhibit mean reversion, negatively affecting Russell 2000 Index performance relative to the S&P SmallCap 600 Index. "Investment managers who rebalance their portfolios to match benchmark indexes on or near the dates of actual index revision pay an extremely steep liquidity premium."[6]

As seen in Exhibit 2 below, the annual reconstitution effect dilutes Russell 2000 Index returns relative to S&P SmallCap 600 Index returns. Chen, Noronha, and Singal estimated that the relative performance drag associated with this effect has been 1.3% per year.[7]

Exhibit 2



Source: S&P Dow Jones Indices LLC, Russell, Factset. Data from 1994 through December 2016.

The earnings requirement (i.e., quality tilt) embedded in the S&P index may also contribute to the persistent performance differential between the two indices. Cliff Asness et al. made a strong case that upon controlling for quality, a stable and significant small-cap premium emerges.[8]

The S&P SmallCap 600 Index quality effect is observed in a regression (Exhibit 3) that adds a quality factor to the original constituents of the Fama-French three-factor model (market, value

[6] Madhavan, Ananth "The Russell Reconstitution Effect," Financial Analysts Journal, Jul/Aug 2003, page 51.
[7] Chen, Hongui, Greg Noronha, and Vijay Singal, (2006), "Index changes and Losses to Investors in S&P 500 and Russell 2000 Index funds."
[8] Asness, C., Frazzini, A., Israel, R., Moskowitz, T., and Pedersen, L. (2015) "Size Matters, If you Control Your Junk," AQR Capital.

and size).[9] The coefficient of this quality factor (RMW – robust operating profitability minus weak operating profitability) is statistically significant for the S&P SmallCap 600 Index (t-Stat of 4.82), but not for the Russell 2000 (t-Stat of -1.32).

Exhibit 3

S&P 600		
Observations	240	
R Square	0.96	
	Coefficients	*t Stat*
Intercept	-0.06	-0.77
Mkt-RF	1.01	48.14
SMB	0.79	28.35
HML	0.19	5.73
RMW	0.17	4.82
CMA	-0.02	-0.32

Russell 2000		
Observations	240	
R Square	0.98	
	Coefficients	*t Stat*
Intercept	-0.11	-2.00
Mkt-RF	1.01	72.08
SMB	0.79	42.47
HML	0.13	5.54
RMW	-0.03	-1.32
CMA	0.02	0.60

Source: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#Research. Data from July 1998 through June 2018.

Conclusion

Staff recommends changing OPERF's internally-managed small cap benchmark from the Russell 2000 to the S&P SmallCap 600 based upon the latter's superior inclusion and rebalancing methodologies. Furthermore, staff believes it can add value above future S&P SmallCap 600 Index returns by applying trading strategies similar to those utilized in two other internally-managed public equity portfolios (the S&P 500 Large Cap and S&P MidCap 400 portfolios). Since these portfolios' 2009 inception, staff's trading strategies have achieved their net excess return objectives of 5 and 30 basis points, respectively.

[9] Fama, E.F and French, K.R., (1993) Commons Risk Factors in the Returns on Stocks and Bonds, Journal of Financial Economics 33, 3 -56.

TAB 9 – Asset Allocations & NAV Updates

Asset Allocations at September 30, 2018

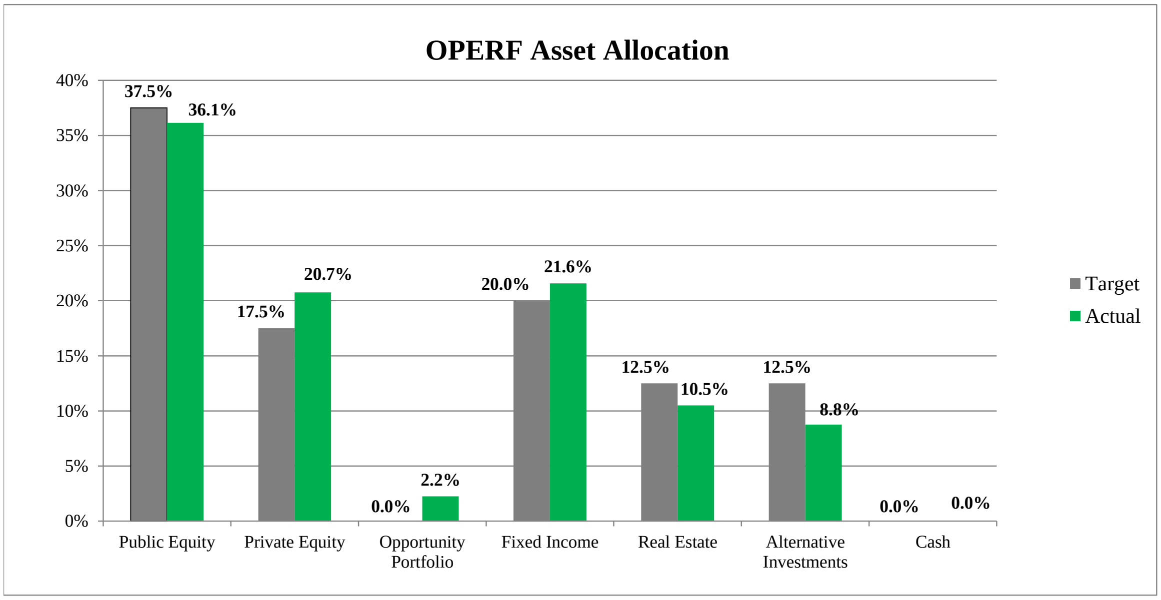
OPERF	Policy	Target[1]	Regular Account $ Thousands	Pre-Overlay	Overlay	Net Position	Actual	Target Date Funds $ Thousands	Variable Fund $ Thousands	Total Fund $ Thousands
Public Equity	32.5-42.5%	37.5%	28,231,426	37.1%	(705,300)	27,526,126	36.1%	1,039,420	543,429	29,108,974
Private Equity	13.5-21.5%	17.5%	15,804,119	20.7%		15,804,119	20.7%			15,804,119
Total Equity	**50.0-60.0%**	**55.0%**	**44,035,545**	**57.8%**	**(705,300)**	**43,330,246**	**56.9%**			**44,913,094**
Opportunity Portfolio	0-3%	0.0%	1,710,839	2.2%		1,710,839	2.2%			1,710,839
Fixed Income	**15-25%**	**20.0%**	**14,110,964**	**18.5%**	**2,324,657**	**16,435,621**	21.6%	1,233,076		**17,668,697**
Real Estate	**9.5-15.5%**	**12.5%**	**8,001,043**	**10.5%**	**(5,600)**	**7,995,443**	10.5%			**7,995,443**
Alternative Investments	**0-12.5%**	**12.5%**	**6,677,430**	**8.8%**		**6,677,430**	8.8%			**6,677,430**
Cash[2]	**0-3%**	**0.0%**	**1,632,316**	**2.1%**	**(1,613,757)**	**18,559**	0.0%		9,458	**28,017**
TOTAL OPERF		**100%**	**$ 76,168,138**	**100.0%**	**$ -**	**$ 76,168,138**	**100.0%**	**$ 2,272,495**	**$ 552,887**	**$ 78,993,520**

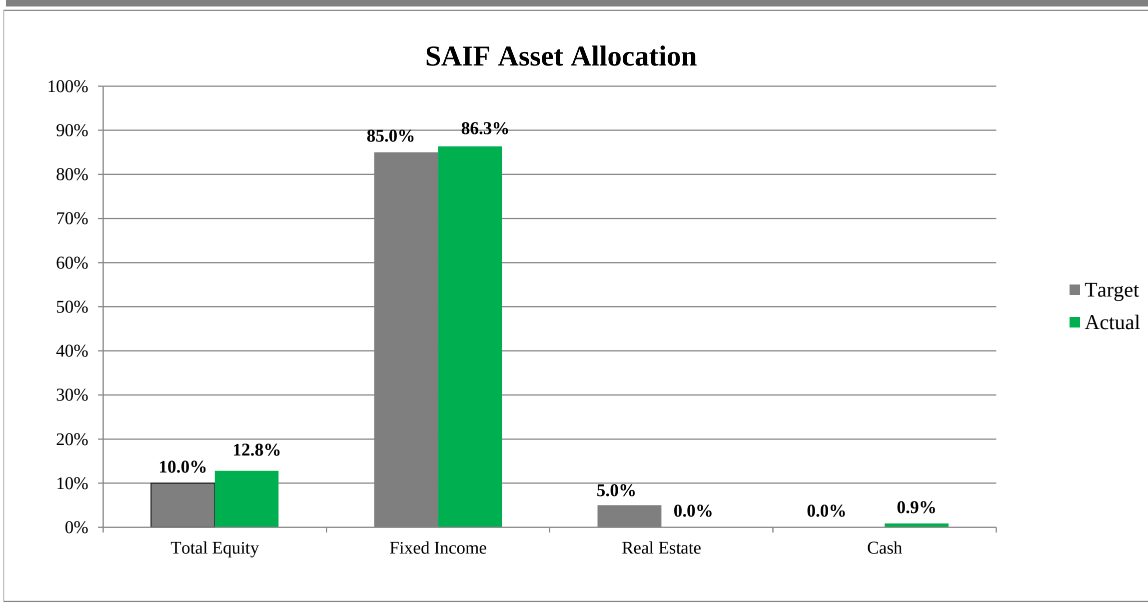
[1]Targets established in June 2015. Interim policy benchmark consists of: 40% MSCI ACWI IMI Net, 22.5% Custom FI Benchmark, 20% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF ODCE net (1 quarter lagged), & 5% CPI+400bps.

[2]Includes cash held in the policy implementation overlay program.

SAIF	Policy	Target	$ Thousands	Actual
Total Equity	**7-13%**	**10.0%**	**612,341**	**12.8%**
Fixed Income	**80-90%**	**85.0%**	**4,130,618**	**86.3%**
Real Estate	**0-7%**	**5.0%**	**0**	**0.0%**
Cash	**0-3%**	**0%**	**41,089**	**0.9%**
TOTAL SAIF			**$ 4,784,048**	**100.0%**

CSF	Policy	Target	$ Thousands	Actual
Global Equities	40-50%	45%	781,447	47.2%
Private Equity	8-12%	10%	215,679	13.0%
Total Equity	**58-62%**	**55%**	**997,126**	**60.2%**
Fixed Income	**25-35%**	**25%**	**437,101**	**26.4%**
Real Estate	**8-12%**	**10%**	**90,173**	**5.4%**
Diversifying Strategies	**8-12%**	**10%**	**89,287**	**5.4%**
Cash	**0-3%**	**0%**	**41,621**	**2.5%**
TOTAL CSF			**$ 1,655,307**	**100.0%**


OPERF Asset Allocation
40%
35%
30%
25%
20%
15%
10%
5%
0%
37.5%
36.1%
17.5%
20.7%
0.0%
2.2%
20.0%
21.6%
12.5%
10.5%
12.5%
8.8%
0.0%
0.0%
Public Equity
Private Equity
Opportunity Portfolio
Fixed Income
Real Estate
Alternative Investments
Cash
Target
Actual


SAIF Asset Allocation
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
10.0%
12.8%
85.0%
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5.0%
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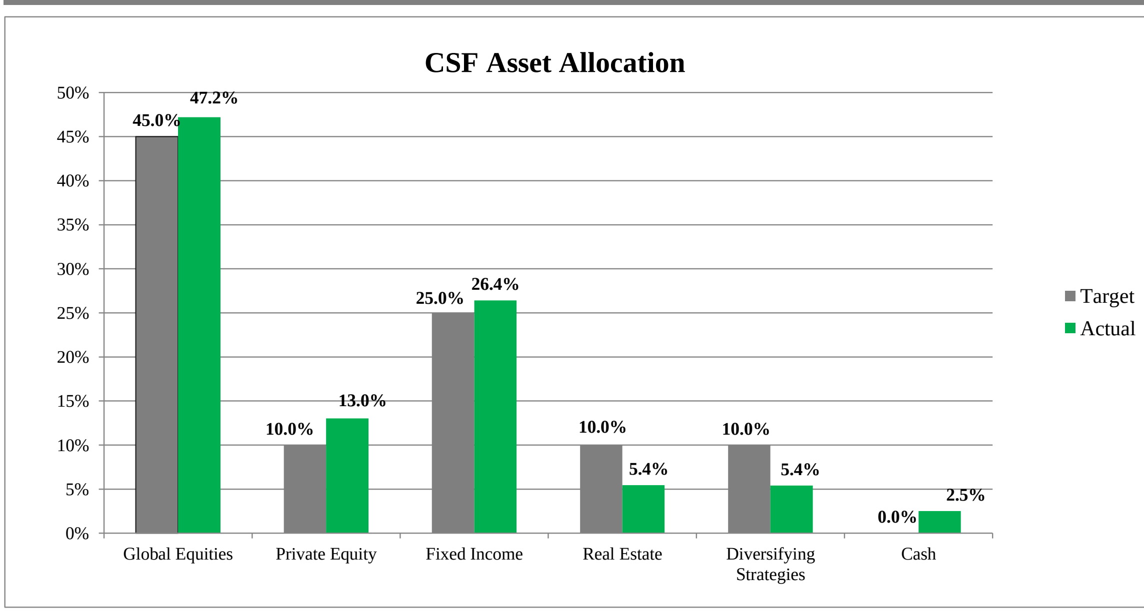
0.9%
Total Equity
Fixed Income
Real Estate
Cash
Target
Actual


CSF Asset Allocation
50%
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35%
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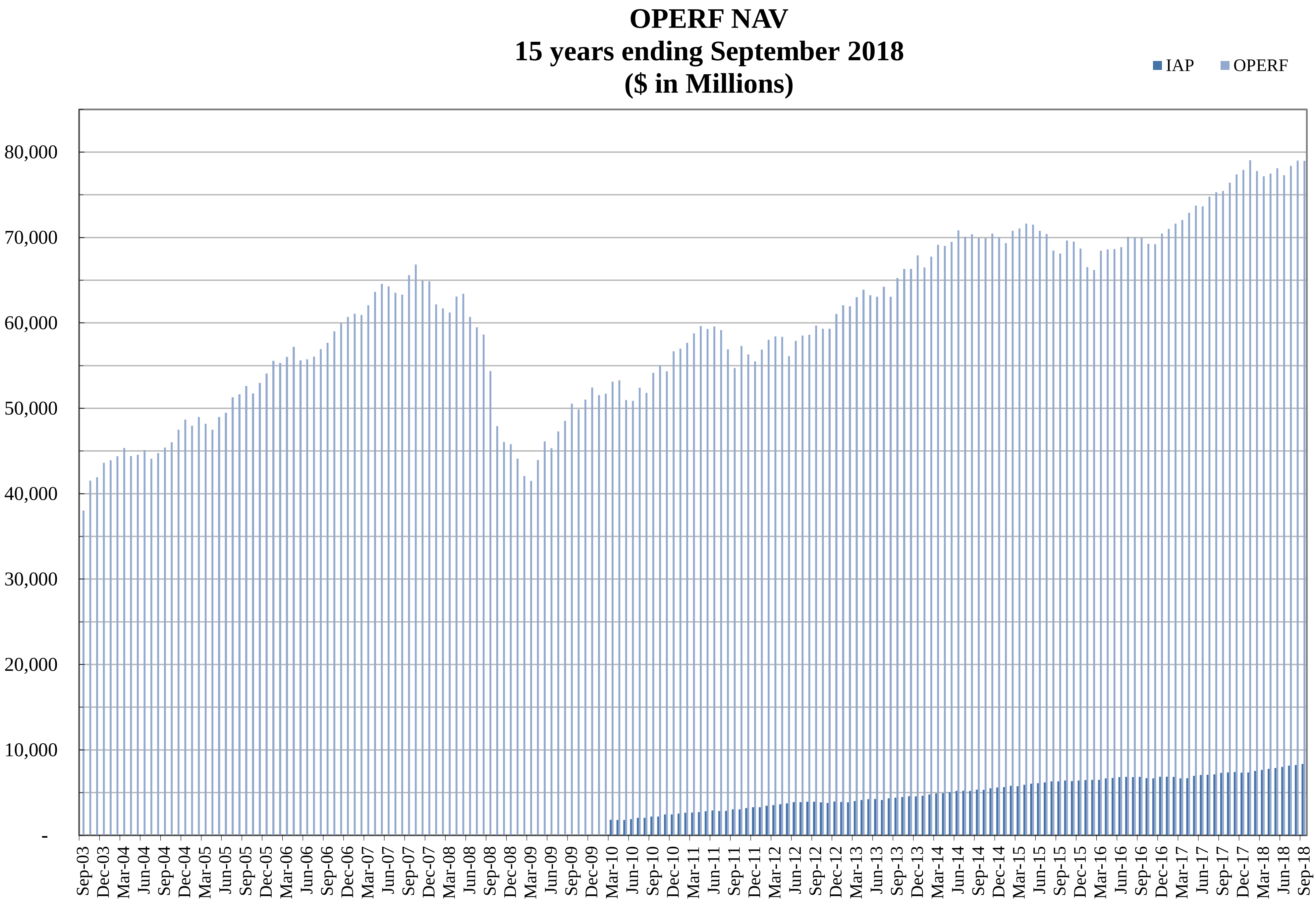
25%
20%
15%
10%
5%
0%
45.0%
47.2%
10.0%
13.0%
25.0%
26.4%
10.0%
5.4%
10.0%
5.4%
0.0%
2.5%
Global Equities
Private Equity
Fixed Income
Real Estate
Diversifying Strategies
Cash
Target
Actual


OPERF NAV
15 years ending September 2018
($ in Millions)
IAP
OPERF
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Mar-06
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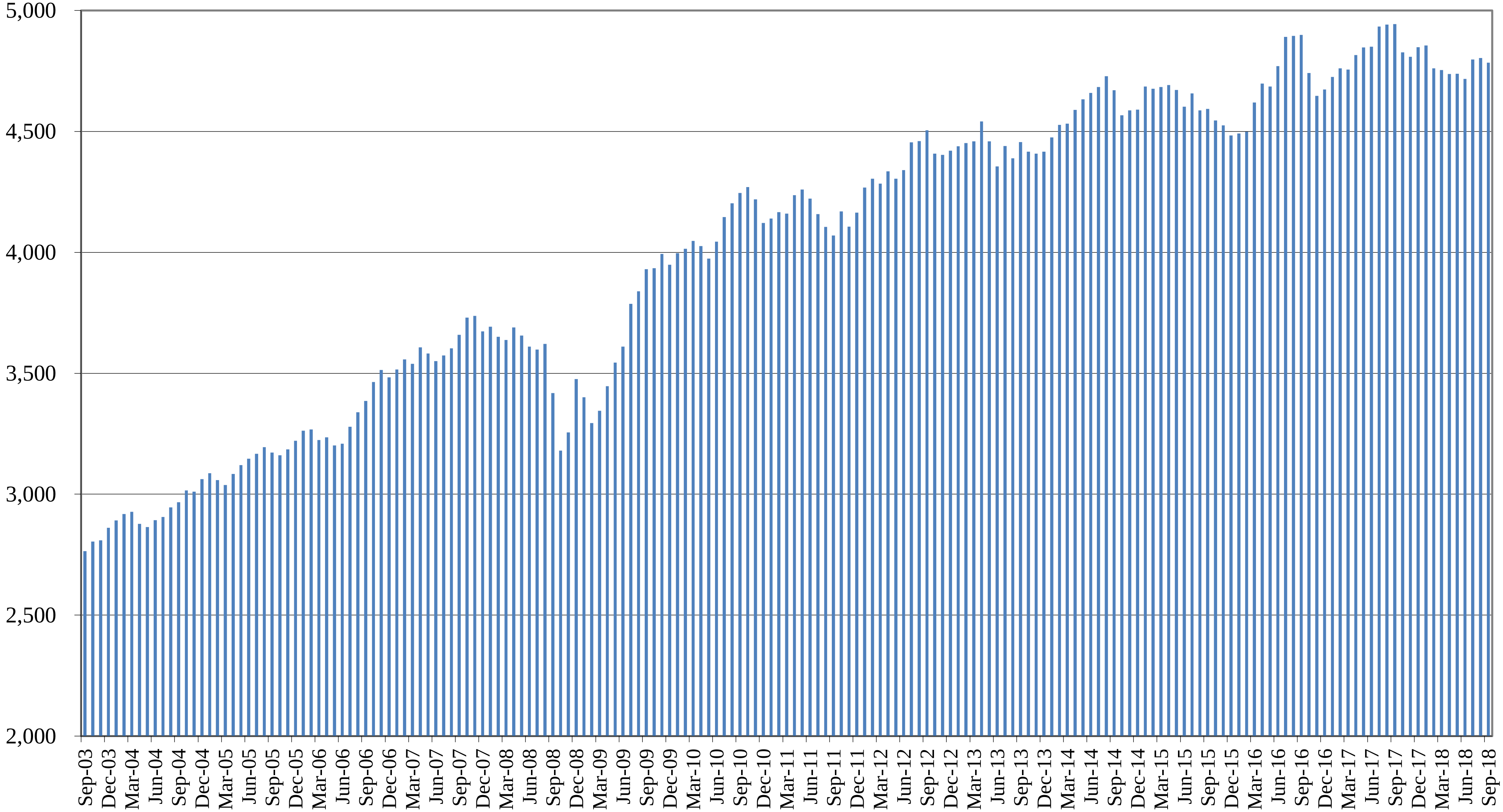
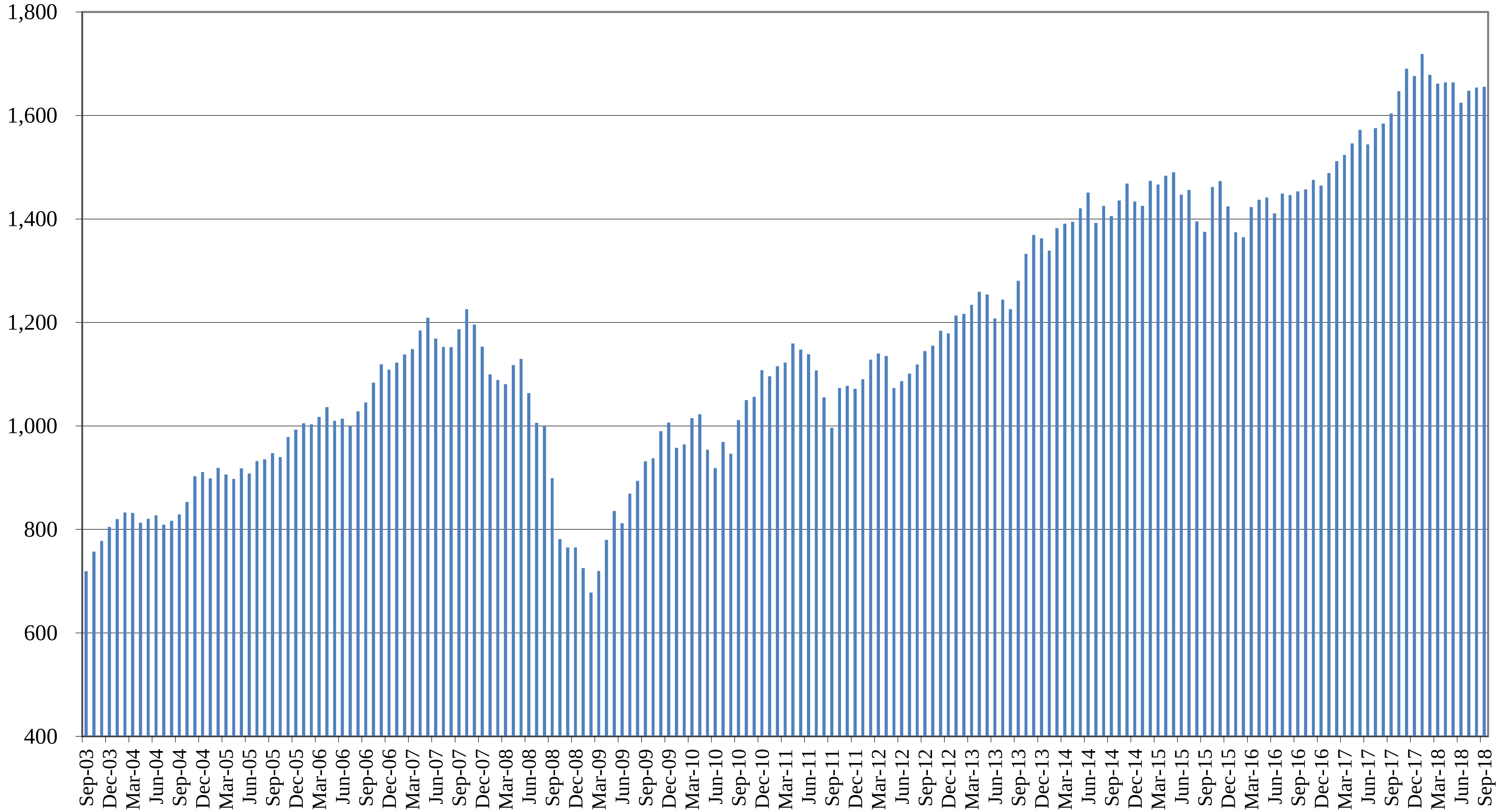
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18

SAIF NAV
15 years ending September 2018
($ in Millions)



CSF NAV
15 years ending September 2018
($ in Millions)



TAB 10 – Calendar — Future Agenda Items

2018/19 OIC Forward Calendar and Planned Agenda Topics

December 12, 2018:	Alternatives Portfolio Investment Recommendation Fixed Income Program Review Q3 OPERF Performance & Risk Report
January 31, 2019:	Private Equity Investment Recommendation Private Equity Portfolio Review Placement Agent Report 2020 OIC Calendar Approval IAP Update
March 13, 2019:	Real Estate Portfolio Review Q4 2018 OPERF Performance & Risk Report SAIF Annual Review CSF Annual Review
April 24, 2019:	OPERF Asset Allocation & Capital Market Assumptions Update Securities Lending Update OPERF SAA Overlay Review OPERF Liquidity Analysis
June 5, 2019	Q1 OPERF Performance & Risk Report Alternatives Portfolio Review Operations Update
August 7, 2019	Opportunity Portfolio Review OSGP Annual Review Corporate Governance Update
September 18, 2019	Q2 OPERF Performance & Risk Report CEM Benchmarking Report OSGP Annual Review
October 30, 2019	General Consultant Recommendation Currency Overlay Review Public Equity Program Review