
Oregon Investment Council

December 13, 2017
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

December 13, 2017
9:00 AM

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

<u>Time</u>	<u>A. Action Items</u>	<u>Presenter</u>	<u>Tab</u>
9:00-9:02	1. Review & Approval of Minutes November 1, 2017	Rukaiyah Adams <i>OIC Chair</i>	1
9:02-9:10	2. Committee Reports and CIO Remarks	John Skjervem <i>Chief Investment Officer</i>	2
9:10-9:15	3. Officer Election	Council Members	3
9:15-9:55	4. Aspect Capital Core Diversified Programme <i>OPERF Alternatives Portfolio</i>	Ben Mahon <i>Senior Investment Officer, Alternatives</i> Karl Cheng <i>Senior Investment Officer, Portfolio Risk & Research</i> Anthony Todd <i>Chief Executive Officer</i> Jim Callahan <i>Executive Vice President, Callan</i>	4
<u>B. Information Items</u>			
9:55-10:35	5. Fixed Income Program Review <i>OPERF, OSTF, OITP and other OST-managed accounts</i>	Perrin Lim <i>Director of Capital Markets</i> Garret Cudahey <i>Investment Officer, Fixed Income</i> Tom Lofton <i>Investment Officer, Fixed Income</i> Angela Schaffers <i>Investment Analyst, Fixed Income</i>	5
10:35-10:45	----- BREAK -----		

10:45-11:00	6. Q3 2017 Performance & Risk Report <i>OPERF</i>	Karl Cheng Janet Becker-Wold <i>Senior Vice President, Callan</i>	6
11:00-11:05	7. Asset Allocation & NAV Updates a. Oregon Public Employees Retirement Fund b. SAIF Corporation c. Common School Fund d. Southern Oregon University Endowment Fund	John Skjervem	7
	8. Calendar — Future Agenda Items	John Skjervem	8
11:05	9. Open Discussion	OIC Members Staff Consultants	

C. Public Comment Invited
10 Minutes

TAB 1 – REVIEW & APPROVAL OF MINUTES

November 1, 2017 Regular Meeting



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

OREGON INVESTMENT COUNCIL
NOVEMBER 1, 2017
MEETING MINUTES

Members Present: Rukaiyah Adams, Tobias Read, John Russell (by phone), Rex Kim, Rick Miller and Steve Rodeman

Staff Present: John Skjervem, Darren Bond, Perrin Lim, David Randall, John Hershey, Deena Bothello, Karl Cheng, May Fanning, Michael Langdon, Jen Plett, Jen Peet, James Sinks, Michael Viteri, Amanda Kingsbury, Austin Carmichael, Dana Millican, Ben Mahon, Angela Schaffers, Priyanka Shukla, Roy Jackson, Mike Mueller, Steven Chang, Andy Coutu, Dmitri Palamateer, Kim Olson, William Hiles, Lisa Massena, Eric Messer, Ryan Mann and Mark Selfridge

Consultants Present: Tom Martin and David Fann, (TorreyCove); Allan Emkin and Christy Fields (PCA); Jim Callahan, Janet Becker-Wold and Andy Iseri (Callan)

Legal Counsel Present: Steven Marlowe, Oregon Department of Justice

The November 1st, 2017 OIC meeting was called to order at 9:00 am by Rukaiyah Adams, OIC Chair.

I. 9: 01am Review and Approval of Minutes

MOTION: Mr. Russell moved approval of the September 20th, 2017 OIC meeting minutes, and Mr. Kim seconded the motion which then passed by a 5/0 vote.

II. 9:06 am Committee Reports and CIO Update

Committee Reports: John Skjervem, OST Chief Investment Officer gave an update on the following committee actions taken since the September 20, 2017 OIC meeting:

Private Equity Committee

September 25, 2017	TPG Growth IV	\$200 million
October 12, 2017	Roark Capital Partners V	\$250 million

Alternatives Portfolio Committee

None

Opportunity Portfolio Committee

None

Real Estate Committee

October 25, 2017	ASB Allegiance Real Estate Fund	\$150 million
October 25, 2017	Heitman America Real Estate Trust	\$150 million

Mr. Skjervem then gave opening remarks which included comments on the Private Equity Manager Recommendation, Alternatives Manager Presentation and the Currency Manager Recommendation. He also talked about the Public Equity Review and briefly commented on the planned Strategic Issues Discussion.

III. 09:53 am Novalpina Capital Partners I SCSp – OPERF Private Equity Portfolio

Michael Langdon, Senior Investment Officer, Private Equity, recommended approval of an up to €200 million capital commitment to Novalpina Capital Partners I, as part of the OPERF private equity portfolio. Approval of the proposed commitment would create a new relationship with Novalpina Capital LLP.

The new partnership among Novalpina founders will extend these founders' shared experience and heritage of nearly two decades working together, a period during which they built and led Europe- and Asia-based private equity platforms for some of the world's leading private equity franchises. Most notably, the founders shared long tenures at TPG where they helped establish, develop, and manage that firm's non-U.S. private equity investment practice at the most senior level. Based on that shared experience, Novalpina founders will create a firm culture of focus, alignment, collaboration, and innovation. The founders are currently building an investment team of 20 professionals, initially all based in London. That team is being formed in an extremely deliberate manner based on a highly developed view of culture and strategy. Novalpina is targeting €1 billion for its debut fund, and the GP anticipates making a material commitment of €75 million to the partnership.

Mr. Langdon then introduced Novalpina founding partners, Messrs. Stephen Peel and Stefan Kowski, who provided the Council with a more detailed presentation on the firm and its initial fund strategy.

MOTION: Mr. Miller moved approval of staff's recommendation, and Mr. Kim seconded the motion which then passed by a 5/0 vote.

IV. 10:30 am BlackRock Style Advantage – OPERF Alternatives Portfolio

Mike Mueller, Investment Officer, Alternatives recommend a \$500 million commitment (an initial investment of \$250 million with additional funding at Staff discretion) to the BlackRock Style Advantage Fund for the Diversifying Strategies sleeve of the OPERF Alternatives Portfolio, subject to the satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel. This proposed commitment represents a new investment manager relationship on behalf of the OPERF Alternatives Portfolio.

In January 2011, the OIC approved the creation of the Alternatives Portfolio, with a target allocation of 5% of total OPERF assets and a portfolio mix of approximately 75% Real Assets and 25% Diversifying Strategies. Consistent with the expansion potential outlined in the original proposal, the target allocation for the Alternatives Portfolio has increased twice since its inception: first, in June 2013, when the overall target allocation was doubled to 10% of total OPERF assets; and second, in June 2015, when the Diversifying Strategies sleeve was increased to 5% of total OPERF assets (resulting in an overall 12.5% target allocation for the Alternatives Portfolio and a 60% Real Assets / 40% Diversifying Strategies mix).

As referenced during the Alternatives Portfolio "2017 Plan and Review," Staff is in the second year of a three-year plan to build out the Diversifying Strategies allocation. That plan included funding two additional alternative risk premia mandates and one additional managed futures mandate, prior to year-end 2017. In the alternative risk premia category, Blackrock is the second manager staff is recommending following the OIC's recent approval of JP Morgan for a similar mandate.

Mr. Mueller then introduced Mr. Ked Hogan, PhD, Managing Director, Chief Investment Officer, BlackRock, Inc. who provided the Council with a presentation on the firm and its Style Advantage Fund strategy.

MOTION: Mr. Russell moved approval of staff's recommendation, and Mr. Kim seconded the motion which then passed by a 5/0 vote.

V. 11:41 am Adrian Lee & Partners – OPERF Currency Overlay Program

Karl Cheng, Senior Investment Officer, Portfolio Risk & Research and Jiangning (Jen) Plett, Senior Investment Analyst recommend the approval of Adrian Lee & Partners for a \$2 billion notional currency management mandate in connection with OPERF's Currency Overlay Program, subject to satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel.

Adrian Lee & Partners was established in 1999 by Mr. Adrian Lee and several other members of J.P. Morgan Investment Management to focus exclusively on currency management. Prior to founding ALP, Mr. Lee was Managing Director of J.P. Morgan Investment Management's Currency Overlay group and developed J.P. Morgan's tactical currency models. ALP manages \$12.6 billion across active currency hedging (\$8.2 billion, 65%), currency absolute return (\$3.4 billion, 27%), and passive currency hedging (\$1 billion, 8%) strategies. Based in London and Dublin, the Firm has a team of 27 individuals with an average of 15 years of experience in institutional currency management for clients located in the U.S., Europe and Australia.

Ms. Plett introduced Mr. Adrian Lee, President & CIO and Philip Lawson, Head of Portfolio Management, who together provided the Council with a presentation on the firm and its currency management strategy.

MOTION: Treasurer Read moved approval of staff's recommendation, and Mr. Kim seconded the motion which then passed by a 5/0 vote.

VI. 12:27 pm Public Equity Review – OPERF

Mike Viteri, Senior Investment Officer, Public Equity, and Wil Hiles, Investment Analyst II, Public Equity provided an annual review of the Oregon Public Employees Retirement Fund (OPERF) Public Equity Portfolio.

Staff also recommend the approval of benchmark changes for four public equity mandates and a decrease in the public equity excess return objective contained in INV 601:

- 1) Approve the following manager/benchmark changes:
 - a) Wellington Small Cap – from Russell 2000 Index to Russell Micro Cap Index;
 - b) Westwood EM – from MSCI EM Net to MSCI EM IMI Net;
 - c) William Blair EM – from MSCI EM Net to MSCI EM Growth Net; and
 - d) William Blair SC EM – from MSCI EM Small Cap Net to MSCI EM Small Cap Growth Net.
- 2) Modify the excess return objective contained in INV 601 from 0.75 percent to 0.50 percent 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.

MOTION: Mr. Russell moved approval of staff's recommendation, and Treasurer Read seconded the motion which then passed by a 5/0 vote.

VII. 12:28 pm Strategic Issues Discussion: Complexity – OPERF

In consideration of time restrictions, Ms. Adams opted to postpone this agenda item to a separate meeting (date, time and location TBD).

VIII. 12:29 pm Asset Allocation & NAV Updates

Mr. Skjervem reviewed asset allocations and NAVs across OST-managed accounts for the period ended September 30, 2017.

IX. 12:29 pm Calendar — Future Agenda Items

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

X. 12:29 pm Open Discussion

N/A

12:30 pm Public Comments

Michael Pineschi, Researcher with Unite Here, addressed the Council and reiterated his organization's concerns regarding Brookfield and the unionization process for workers at its Hard Rock Hotel and Casino property in Las Vegas.

Ms. Adams adjourned the meeting at 12:31 pm.

Respectfully submitted,

May Fanning

May Fanning
Executive Support Specialist

DRAFT

TAB 2 – Committee Reports and CIO Remarks

Opening Remarks

John D. Skjervem, Chief Investment Officer

December 13, 2017



Oregon State Treasury

December 13, 2017 OIC Meeting

Officer Election

- Back on track after last year's Special Election

Alternatives Manager Recommendation

- Trend-following (e.g., managed futures) important element of Diversifying Strategies allocation
- Designed to capture/exploit Momentum factor
- Perhaps more than any other alternative risk premia approaches, Momentum-based strategies well-timed with equity market highs

Fixed Income Program Review

- Much progress in 2017 (performance, operations and compliance)
- Structural evolution largely complete
- Setting the stage for potential benchmark change next year

Q3 2017 Performance & Risk Report

- Uniformly good performance YTD
- Trying to make the red bar bigger!

TAB 3 – Officer Election



Origination: 04/2007
Last Approved: 10/2016
Last Revised: 10/2016
Next Review: *1 year after approval*
Owner: *John Skjervem: Chief Investment Officer*
Policy Area: *Investments*
References: *OST Policy 4.00.00*

INV 101: Oregon State Treasury Support for the Oregon Investment Council

OREGON INVESTMENT COUNCIL POLICY

INTRODUCTION & OVERVIEW

Summary Policy Statement

The Oregon Investment Council ("OIC" or "Council") formulates broad policies for the investment and reinvestment of moneys in the investment funds and the acquisition, retention, management, and disposition of investments in the investment funds (the "Fund" or "Funds"). The voting members of the Council include the State Treasurer and four appointees of the Governor. The Public Employees Retirement System (PERS) Director is an ex officio, non-voting member of the Council. The OIC is responsible for approving and revising policies. The Chief Investment Officer, working with Investment Division staff, is responsible for approving and revising procedures, developing OIC meeting agendas, and drafting OIC resolutions. OST Investment Division staff provide administrative and research support to the Council, and are responsible for recording, transcribing, and distributing OIC meeting minutes.

Authority

ORS 182.010-020, ORS 293.721-726, ORS 293.731

POLICY PROVISIONS

Policy Statements

1. Develop OIC Meeting Agendas
 - a. The Chief Investment Officer (CIO), in coordination with the OIC Chair and State Treasurer, is responsible for constructing an agenda for each OIC meeting.
 - b. The CIO shall produce the agenda established in (a) and distribute it and any pertinent documents or

Approval Signatures

Step Description	Approver	Date
	Carmen Leiva	pending
	John Skjervem: Chief Investment Officer	11/2017

COPY

OREGON INVESTMENT COUNCIL POLICY

Meeting Conduct Rules

Applicability of Rules

1. These rules are applicable to convened meetings, regular and special, of the Oregon Investment Council (“OIC” or “Council”).
2. In consultation and coordination with the Chief Investment Officer (the “CIO”) of the Oregon State Treasury (OST), the OIC Chair will schedule approximately eight Council meetings during each calendar year. The OIC Chair may call additional, special or informal meetings as deemed necessary or advisable, and may hold these or regularly-scheduled meetings by telephone. OIC meetings held in Executive Session shall be conducted in accordance with ORS 192.660.
3. **Chair**: In accordance with INV 101, the Chair is responsible for consulting and coordinating with the CIO to develop and set all OIC meeting agendas. Additionally, the Chair shall preside over all OIC meetings, regular and special. The primary roles of the Chair are to a) ensure OIC meetings are as efficient and productive as possible and b) facilitate communication among OIC members, OST staff and other constituents and stakeholders.
4. **Meeting Notice and Agenda**: The CIO shall provide notice of meetings in compliance with ORS 192.610-690, and such notice shall contain a copy of the meeting agenda setting forth, with reasonable clarity, the matters scheduled for OIC members’ review and discussion.
5. **Quorum**: Three of the Council’s five voting members shall constitute a quorum.
6. **Majority Vote**: An affirmative vote of three of the Council’s five voting members is required for Council approval of recommendations and resolutions.
7. **Conflict of Interest**: As defined in ORS 244.120, rules promulgated by the Oregon Government Ethics Commission and other related Council policies, Council members shall announce any and all potential or actual conflicts of interest prior to taking action on an issue, recommendation or resolution that is presented to the Council for its consideration or approval. Announced conflicts should be recorded as provided in Oregon Revised Statutes 244.130 (see also: INV 104 OIC Standards of Ethics). For purposes of this policy, “take action” means to vote, debate, recommend or discuss.
8. **Voting**: Except in the case of an actual conflict of interest, OIC members, when present, shall vote either aye or nay on any issue, recommendation or resolution presented to the Council for its consideration or approval. If such an actual conflict of interest exists, the affected member shall make a declaration of the conflict and excuse him or herself from the corresponding Council vote or discussion.
9. **Record of Votes**: The OIC’s legal representative shall tally member votes through an oral roll call process.
10. **Recess or Adjournment**: Given a quorum, either the Chair or a majority vote among the Council’s voting members may recess or adjourn any Council meeting.

11. **Council Elections:** The Council shall elect a Chair and Vice Chair at the last regularly-scheduled Council meeting in each odd-numbered calendar year. The Chair and Vice Chair shall both serve two-year terms and may be reelected to consecutive terms provided that, per ORS 293.711, no member may serve as Chair for more than four years in any consecutive 12-year period.

Between biennial elections, and with at least one week's notice, a majority of the Council's voting members may request a special election, held at the next regularly-scheduled Council meeting, to select officers for vacancies in an otherwise unexpired term.

In the event that a Chair or Vice Chair resigns, is removed, or whose service on the Council ends, the Council, at its next regularly-scheduled meeting, shall elect a successor.

TAB 4 – Aspect Capital Core Diversified Programme
OPERF Alternatives Portfolio

Aspect Capital Core Diversified Programme

Purpose

Staff and Callan recommend a \$500 million commitment (an initial investment of \$250 million with additional funding at Staff discretion) to the Aspect Capital Core Diversified Programme for the Diversifying Strategies sleeve of the OPERF Alternatives Portfolio, subject to satisfactory negotiation of terms and conditions with Staff working in concert with legal counsel. This proposed commitment represents a new investment manager relationship on behalf of the OPERF Alternatives Portfolio.

Background

In January 2011, the OIC approved the creation of the Alternatives Portfolio, with a target allocation of 5% of total OPERF assets and a portfolio mix of approximately 75% Real Assets¹ and 25% Diversifying Assets². Consistent with the expansion potential outlined in the original proposal, the target allocation for the Alternatives Portfolio has increased twice since its inception: first, in June 2013, when the overall target allocation was doubled to 10% of total OPERF assets, and second, in June 2015, when the Diversifying Assets sleeve was increased to 5% of total OPERF assets (resulting in an overall 12.5% target allocation for the Alternatives Portfolio and a 60% Real Assets/40% Diversifying Assets mix).

As referenced during the Alternatives Portfolio “2017 Plan and Review”, Staff is in the second year of a three-year plan to build out the Diversifying Strategies allocation. That plan included funding two additional alternative risk premia mandates and one additional managed futures mandate, prior to year-end 2017. Aspect Capital is the managed futures manager Staff is recommending for OIC approval to complement OPERF’s existing investment in the AQR Managed Futures strategy (approved at the October 2016 OIC meeting).

Discussion/Investment Considerations

Aspect Capital (“Aspect” or the “Firm”) was established in 1997 by several individuals, including Anthony Todd and Martin Lueck who left Adam, Harding, & Lueck, an early pioneer in quantitative investing. As part of that legacy, the firm has focused exclusively on trend following strategies until a recent acquisition of a currency management team. Aspect remains independently owned with Messrs. Todd and Lueck, including related family trusts, owning over 70% of the Firm’s equity, with the balance held by other employees. Aspect has a team of over 130 individuals and total assets under management (AUM) of over \$6 billion, with approximately \$4.7 billion in trend following strategies and \$1.7 billion in currency management.

Momentum vs. Trend Following

Although Aspect’s strategy is “trend following”, a subset of managed futures, it may be helpful to compare “trend following” with “momentum” strategies.

A *cross-sectional* momentum or “momentum” strategy is one that models a well-defined group of securities collectively and sorts them based on their *relative* performance over a prior period. The strategy is implemented by going long the top fraction of the sorted group while shorting the bottom fraction. For example, the constituents of the S&P 500 can be sorted based on their 12-month performance and a simple

¹ Using current OIC/OST nomenclature, *Real Assets* is synonymous with the illiquid elements of the Alternatives Portfolio (e.g., infrastructure, natural resources, etc.).

² Using current OIC/OST nomenclature, *Diversifying Assets* is synonymous with the liquid elements of the Alternatives Portfolio.

long-short strategy could be implemented by purchasing the top 20% and shorting the bottom 20% of this group, ranked on the basis of relative performance in the previous period. Since a momentum strategy is based on relative performance, it can be implemented in a “market neutral” fashion with zero net exposure. Therefore, even in an environment where markets have performed strongly positive (or negative), a momentum strategy with zero net exposure can be implemented because some securities have outperformed others. Momentum has proven to be an effective investment strategy, across markets and asset classes, over time. OPERF currently has exposures to this strategy, or risk premium, through other quantitatively-based strategies in the Public Equity and Alternatives portfolios.

A generic *time-series* momentum or “trend following” strategy is one that generates an investment signal based on an individual security’s *absolute* performance over a prior period. This signal could be a trend, e.g., today’s price relative to price from X days ago, or an inflection based on the comparison of moving averages of two different periods. While a momentum strategy is often market neutral, a trend following strategy can have net long or short exposure based on the state of the market. For example, in an environment where global equity markets have positive performance, a trend following strategy would be long various country indices with almost no shorting. To improve breadth and diversification, trend following strategies are typically applied across a variety of asset classes, such as currencies, public equities, fixed income, and commodities. Trend following is profitable when prices continue their trends but may suffer in directionless markets. Thematically, both momentum and trend following strategies are based on the expectation that past results are a good indicator of future performance. A number of explanations have been proposed for why trend following and momentum investing have generated positive performances over time and across asset classes, including under-reaction to news, herding, and pro-cyclical fund flows.

Trend following strategies are typically implemented through *futures*. A future is an exchange-listed derivative instrument (it *derives* its value by the price of a referenced asset) that is traded between two parties to buy or sell the referenced asset at a specified future time. The asset can be almost any physical or financial instrument, such as the price of soybean meal, a 10-Year U.S. Treasury note, or the Japanese yen/U.S. dollar exchange rate. Futures are liquid securities that provide cost-effective exposures to the referenced assets. Besides liquidity, futures are cost-effective because little cash is transferred when they are traded. An initial margin is posted to the exchange (the ultimate counterparty) when the contract is traded and a daily “variation margin” or cash transfer occurs between the exchange and the investor’s account to adjust for market movements.

As noted, the Alternatives Portfolio has \$250 million invested in the managed futures category via AQR. Although similar, the two managers have different approaches in model design. Aspect’s investment model begins with the evaluation of a market’s trend over seven different periods, from one to two weeks on the shorter end to three to six months on the longer end. AQR’s model evaluates a market’s performance over three specific periods: one; three; and twelve months. Both managers allocate risk equally among four asset classes and lever their exposures to target high-teen volatility. To manage the impact of transaction costs on performance, both firms devote significant resources, including computational power and human research effort.

While Staff expects Aspect Core Diversified Programme and AQR Managed Futures to perform well over a full-market cycle, given OPERF’s large equity risk exposure, the potential to deliver positive performance in declining markets is what makes these strategies attractive diversifiers. Both Aspect and AQR evaluate individual price trends for approximately 100 futures and other derivative markets across asset classes. Trend following is uncorrelated with global equities over a full-market cycle, but it would be long (short) beta in trending up (down) markets. In periods of sustained declining prices (e.g., the 2008-09 Global Financial Crisis), these strategies would short a number of financial instruments, partially offsetting OPERF’s equity exposure.

Attributes:

- *Long history with trend following.* Aspect has focused on trend following for the past two decades and some of its senior leaders have experience that extends beyond that. Although the respective performance of Aspect and AQR strategies is highly correlated at +0.8, as is typical with trend following strategies in general, the two firms have different investment and trading approaches that should provide OPERF *manager* and *process* diversification.
- *Uncorrelated returns.* Difficult to find, investments with returns *truly* uncorrelated to those of conventional asset classes provide valuable diversification benefits. Accordingly, a commitment to these trend following strategies is intended to improve OPERF's risk-adjusted return while adding diversification and incremental improvements to downside risk. Using both live and back-tested data, the two strategies have slightly negative correlations to OPERF's returns.
- *Enhanced transparency and cost effectiveness.* Unlike many hedge fund managers, trend following managers typically provide their investors complete position-level transparency, detailed insights into their investment models, and in-depth performance attribution. In addition, Staff was able to negotiate a competitive, flat management fee.
- *Liquidity.* Trend following strategies have not, historically, gated investors (i.e., limited investors' withdrawal requests), even during the worst part of the Global Financial Crisis when assets in trend following strategies declined by about 20% in aggregate. Staff expects Aspect would maintain its liquidity window through market downturns.

Concerns:

- *Trend following strategies have periods of underperformance.* Trend following strategies tend to perform poorly in markets without clear trends, which may last several years, or when there are sharp inflection points. [Mitigant: a trend following strategy may detract from performance at times, but as an uncorrelated investment, these strategies underperform while other OPERF investments are expected to contribute positive performance.]
- *Significant use of leverage and shorting.* By design, trend following requires leverage and shorting. [Mitigant: Aspect only invests in highly-liquid instruments and will maintain high levels of cash. The Firm has extensive capabilities and experience managing complex portfolios and operational risks.]

Conclusion

The Alternatives Portfolio target allocation to Diversifying Strategies is 40%, or approximately \$3.7 billion at current OPERF NAV. To date, OPERF has a total of \$1.4 billion invested in this category with AQR, and an additional \$1 billion committed to JP Morgan's Systematic Alpha and BlackRock's Style Advantage strategies. Trend following strategies, or managed futures more broadly, can provide an excellent source of diversification to OPERF's otherwise significant equity exposure. Paired with the existing AQR Managed Futures investment, a commitment to Aspect Core Diversified Programme will complete, for now, the build-out of the managed futures component of the Diversifying Strategies sleeve within the Alternatives Portfolio.



Memorandum

To: Oregon Investment Council (“OIC”)
From: Callan LLC (“Callan”)
Date: November 28, 2017
Subject: OPERF Diversifying Strategies - Aspect Core Diversified Programme (“Aspect Core Diversified”)

Callan conducted an evaluation of Aspect Capital’s Core Diversified Programme for Oregon State Treasury. Callan is supportive of the firm and its trend-following strategy within OPERF’s Diversifying Strategies allocation.

Aspect was established in 1997 by Anthony Todd, Martin Lueck, Michael Adam and Eugene Lambert. Two of Aspect’s founders, Michael Adam and Martin Lueck, were previously co-founders of AHL, which has been recognized as one of the original pioneers to apply quantitative techniques to managed futures strategies. Today, under the continuing leadership of Martin Lueck and Anthony Todd, Aspect manages \$6.6 billion, of which \$4 billion is invested in Aspect’s Diversified Programme, the firm’s flagship fund of systematic macro strategies.

The primary substrategy of the Diversified Programme is trend-following. Given the more scalable nature of its trend-following models, Aspect offers this core trend-following strategy as a separate offering called Aspect Core Diversified Programme. As of July 31, 2017, Aspect Core Diversified Programme, which was separately launched in November 2014, has \$459 million of dedicated assets, in addition to assets allocated to the trend-following strategies within the Diversified Programme. Since Aspect’s Core Diversified Programme incorporates the Diversified Programme’s full suite of trend-following models, any research-driven changes made to Aspect’s trend-following models within its Diversified Programme are automatically incorporated in its Core Diversified Programme. Facing less capacity constraints, Aspect offers its Core Diversified Programme at a low flat fee versus Aspect’s flagship fund offered with traditional hedge fund fees.

Not included in the Core Diversified Programme are the complementary risk-mitigating or modulating strategies designed to smooth the trend-following component’s performance patterns. These complementary investment styles, which are less scalable, include such risk premia as carry or yield, value or defensive, or mean reversion, which are found elsewhere at a lower cost in traditional portfolios of stocks and bonds, such as those of OPERF and therefore are not necessary to OPERF within the Aspect mandate. Also not included in the Core Diversified Programme are trend-following trades in less liquid markets. In contrast to the Diversified Programme’s underlying 170 markets, the Core Diversified

Programme's portfolio consists of roughly 90 markets, but those markets represent about 75% of the risk exposures in the Diversified Programme's trend-following component.

The Programme's trend-following process uses seven different model speeds, ranging in responsiveness from roughly 1-2 weeks to 3-6 months. Trend signals are unbiased and continuous in nature, building and reducing positions gradually over time with an average holding period of about 5 months. The portfolio construction process combines the model's individual views on each market's trend strength and direction. The key factors used are: (1) market-level volatility, for adjusting overall exposures to equities, rates, currencies and commodities; (2) market risk weighting, to target equal risk allocations across and within markets, all else equal; and (3) portfolio-level risk management, to avoid over-concentration in any one market sector or too much leverage to those markets in a low-volatility environment.

Please see attached research note for further detail on the investment opportunity.

Conclusion:

Callan believes that Aspect's Core Diversified Programme targeting 15% volatility is an attractive investment opportunity, notwithstanding potential investment risks inherent to a pure trend-following strategy that warrants ongoing monitoring. Based upon our evaluation of the firm, investment process, and proposed strategy, along with how the Programme fits OPERF, Callan believes that:

- Aspect is a well-established investment firm with substantial resources committed to research, portfolio construction and risk management.
- Under the stable leadership of the firm's key professionals (Anthony Todd and Martin Lueck), the organization is committed to delivering liquid, transparent investment solutions that are competitive with those of any peer.
- The Programme is a compelling fit for OST's proposed trend-following mandate for OPERF as it is focused exclusively on price-based trend-following that is relatively uncorrelated to the existing Diversifying Strategies (e.g., AQR) and the rest of OPERF.

Callan recommends that OPERF approve the proposed investment of \$250 million, up to a total of \$500 million. Callan's recommendation is contingent upon the following:

- (1) A satisfactory review and approval of the fund's offering materials by OPERF's legal counsel
- (2) No significant changes to the team or process as presented
- (3) Satisfactory fee negotiations

TAB 5 – Fixed Income Program Review
OPERF OSTF, OITP and other
OST-managed accounts

Fixed Income Program

Annual Review

December 13, 2017



Oregon State Treasury

Agenda

- Look Back and Look Ahead
- Internal Derivatives Usage Update
- Fixed Income Program Overview
- Discussion on Select Accounts
- Q&A

Looking Back & Looking Ahead

2017: Accomplishments & Highlights

- Integration of Aladdin tools, Operations Team and Compliance Partners
- Transitioned OPERF U.S. Government portfolio to internal management
- Strong Investment Performance Across the Fixed Income Program

2018: Goals and Strategy

- Team Buildout & Talent Development
- OPERF Fixed Income Benchmark Review
- Program Enhancements – using new tools and staff to achieve better results
- Continued Aladdin and internal resource integration

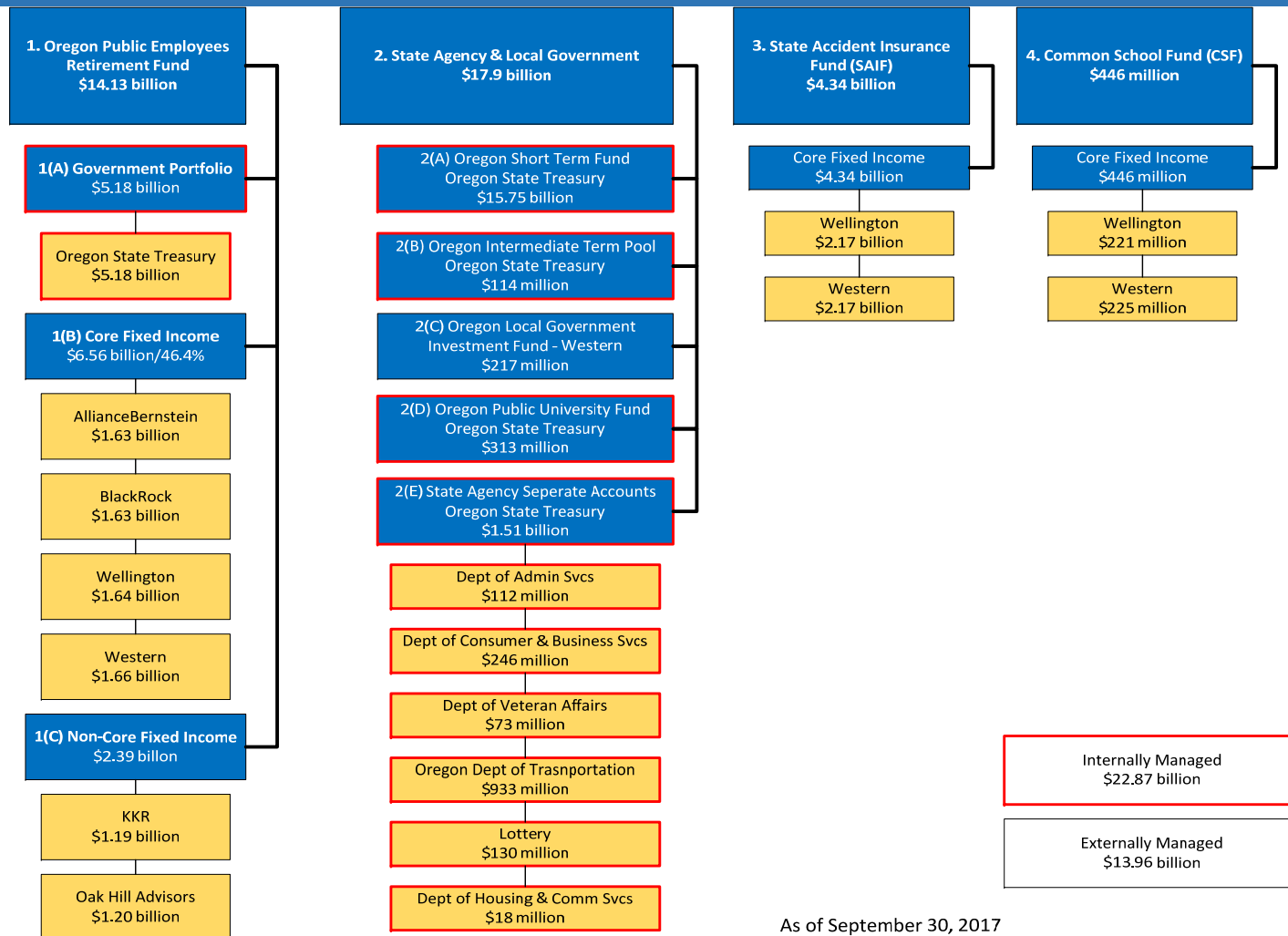
Derivatives Usage in Fixed Income

- Gradual usage transition
- Alignment of operational procedures and tools prior to engaging

Security Description	Notional Market Value (\$Ms)	Notional Market Value %	Duration	Duration Contribution
OPERF GOVT Portfolio	5,182,212	100.0%	6.05	6.05
BND	5,177,164	99.9%	6.05	6.05
CASH	-11,263	-0.2%	0.00	0.00
FUND	13,798	0.3%	0.51	0.00
FUTURE	2,513	0.0%	6.44	0.00
US 5YR NOTE DEC 17	1,170	0.0%	4.11	0.00
US ULTRA 10YR NOTE DEC 17	1,343	0.0%	8.48	0.00

Data as of November 15, 2017

OST Fixed Income Program Overview



As of September 30, 2017

1. Oregon Public Employees Retirement Fund (OPERF) Fixed Income

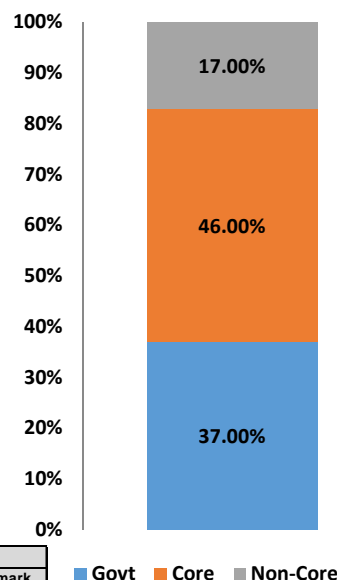
Objective – To provide diversification to the OPERF portfolio in general and to equity exposures in particular. Additionally, the fixed income portfolio is designed to provide liquidity and income to help meet cash flow needs. Over a market cycle of three to five years, and on a net-of-fee basis, the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

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

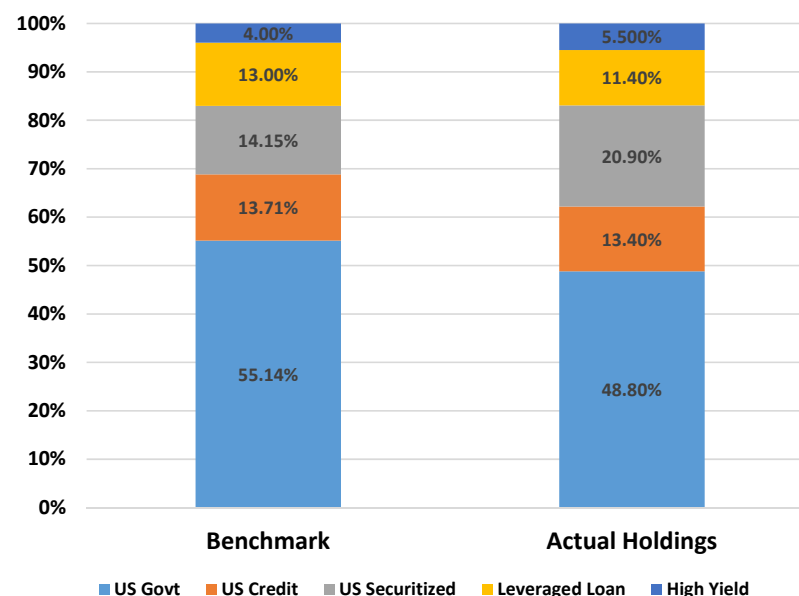
Benchmark – The benchmark is a custom blend comprised of:

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

Strategy Weighting



Benchmark and Actual Sector Exposures



Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
OPERF FI	14,155,536	3.05	2.82	5.09	5.01	AA-	AA-
CORE FI	6,556,650	2.85	2.54	5.95	5.81	AA	AA
NON-CORE	2,415,262	5.97	5.45	0.69	0.61	B	B+
GOVT	5,183,615	1.95	1.95	6.04	6.05	AAA	AAA

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
OPERF Total Fixed Income	14,135,392	-0.53	0.70	3.31	1.00	2.93	2.46	2.88	2.59	4.05	5.27
OPERF Custom Fixed Income Benchmark		-0.45	0.75	2.95	0.44	2.33	2.09	2.39	2.04	3.07	4.28
Excess Return		-0.08	-0.05	0.36	0.56	0.60	0.37	0.49	0.55	0.98	0.99

As of September 30, 2017

1(A). OPERF Government Portfolio

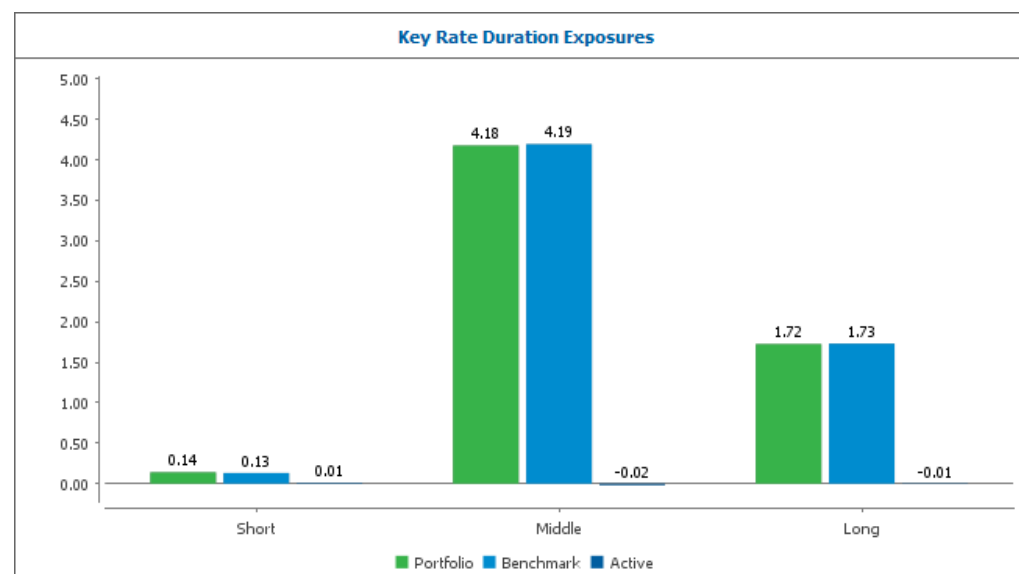
Objective – The Government Portfolio’s objective is to enhance the diversification benefit of the OPERF fixed income portfolio versus OPERF’s otherwise large allocation to risk assets (e.g., Public Equity, Private Equity, Real Estate and Alternatives) and to provide a reliable source of liquidity. Over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

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

Manager – Oregon State Treasury

Benchmark – Bloomberg Barclays U.S. Treasury Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
GOVT Portfolio	5,183,615	1.95	1.95	6.04	6.05	AAA	AAA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year
OPERF Government Fixed Income	5,183,883	-0.87	0.38	2.27	-1.65	0.23	0.53
OPERF Government Fixed Income Benchmark		-0.86	0.38	2.26	-1.67	0.26	0.57
Excess Return		-0.01	0.00	0.01	0.02	-0.03	-0.04

As of September 30, 2017

1(B). OPERF Core Fixed Income Portfolio

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

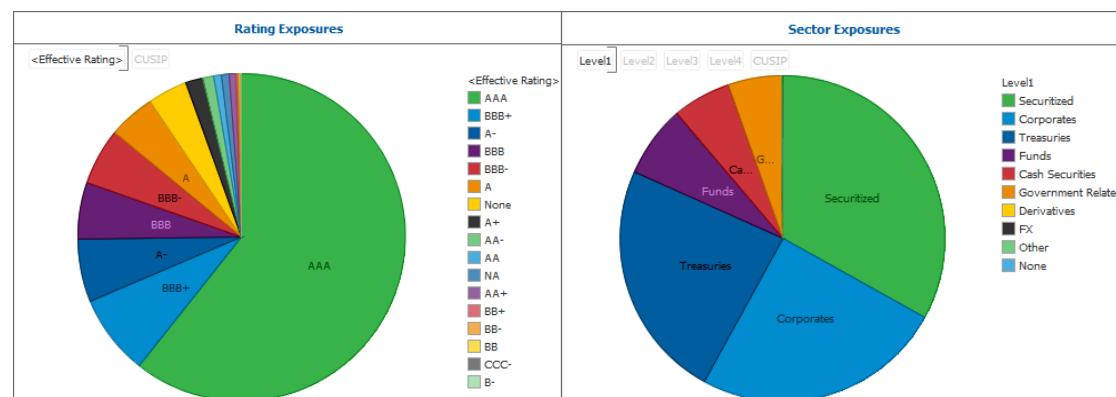
Strategy – To achieve its objective, the core allocation is actively invested against the Bloomberg Barclays U.S. Aggregate index which encompasses the liquid, investment grade government, corporate and securitized bond markets in the United States. Staff seeks to allocate the core mandate amongst high-conviction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

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

- AllianceBernstein
- BlackRock
- Wellington Management
- Western Asset

Benchmark – Bloomberg Barclays U.S. Aggregate Bond Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
CORE FI	6,556,650	2.85	2.54	5.95	5.81	AA	AA
Western Asset	1,657,605	3.16	2.54	6.87	5.81	AA-	AA
Wellington	1,642,426	2.98	2.54	6.16	5.81	AA-	AA
BlackRock	1,626,178	2.56	2.54	5.81	5.81	AA	AA
AllianceBernstein	1,630,441	2.68	2.54	4.96	5.81	AA	AA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
Core Fixed Income	6,557,735	-0.39	1.02	3.88	0.93	3.49	3.26	3.79	2.88	4.07	5.23
AllianceBernstein	1,630,426	-0.47	0.86	3.32	0.47	3.03	3.08	3.65	2.68	3.65	5.17
BlackRock	1,626,192	-0.45	0.90	3.37	0.26	2.85	2.91	3.37	2.56	3.74	4.87
Wellington	1,643,264	-0.33	1.07	4.06	1.42	3.80	3.63	4.03	3.06	4.40	5.48
Western Asset	1,657,852	-0.29	1.24	4.77	1.57	4.30	3.44	4.10	3.22	4.52	5.27
OPERF Custom Core Fixed Income Benchmark		-0.48	0.85	3.14	0.07	2.60	2.71	3.13	2.23	3.31	4.45
Excess Return		0.09	0.17	0.74	0.86	0.89	0.55	0.66	0.65	0.76	0.78

As of September 30, 2017

1(C). OPERF Non-Core Fixed Income Portfolio

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

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

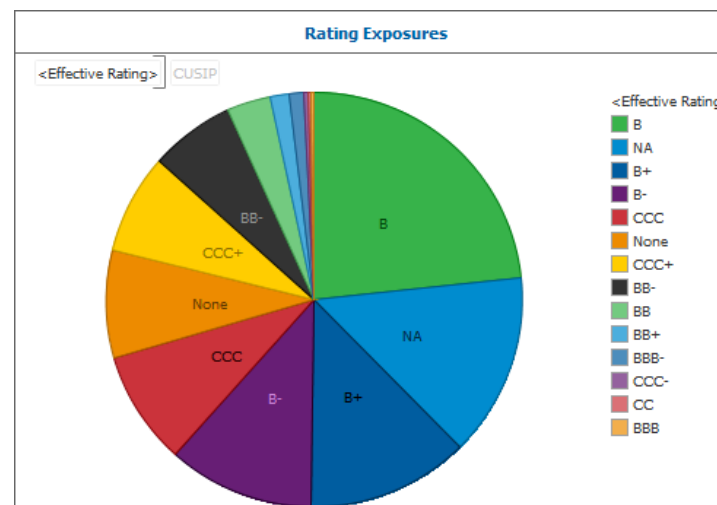
Managers – The portfolio is allocated to two external firms:

- KKR
- Oak Hill Advisors

Benchmark – Each manager has a unique benchmark:

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

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating		Option Adjusted Spread	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
NON-CORE	2,415,262	5.97	5.45	0.69	0.61	B	B+	426	369
Oak Hill Advisors	1,207,716	5.49	5.38	0.65	0.36	B	B+	379	372
KKR	1,207,546	6.44	5.53	0.73	0.85	B	B+	474	367



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year
Non-Core Fixed Income	2,393,766	-0.21	0.51	4.02	5.95	6.42	4.45	4.78	5.33	6.52
KKR	1,185,774	-1.04	-0.54	2.91	4.36	5.50	3.63	4.30	5.07	6.53
KKR Custom Leveraged Loans/Bond Index		0.57	1.39	4.38	6.61	7.31	4.58	4.70	4.90	5.67
Excess Return		-1.61	-1.93	-1.47	-2.25	-1.81	-0.95	-0.40	0.17	0.86
Oak Hill Advisors	1,207,992	0.61	1.57	5.14	7.55	7.42	5.45	5.29	5.53	6.30
Oak Hill Custom Leveraged Loans/Bond Index		0.47	1.19	3.57	5.86	6.21	4.18	4.22	4.44	5.15
Excess Return		0.14	0.38	1.57	1.69	1.21	1.27	1.07	1.09	1.15

As of September 30, 2017

2(A). Oregon Short Term Fund (OSTF)

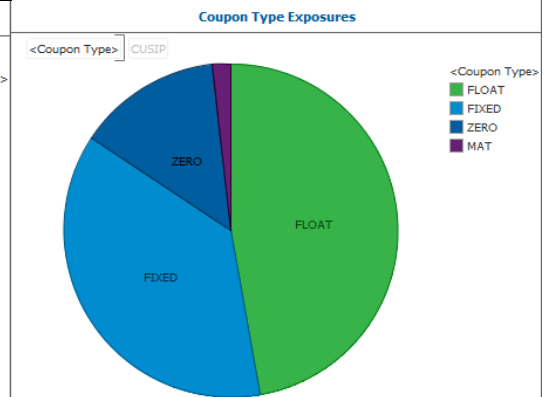
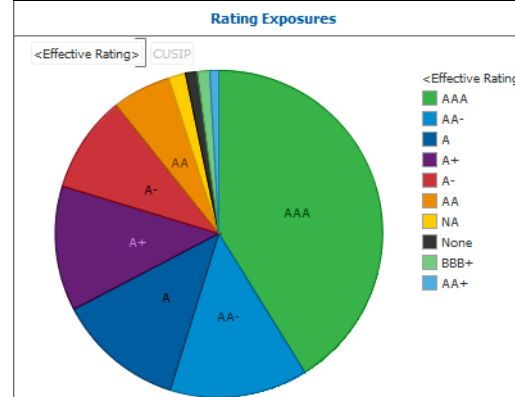
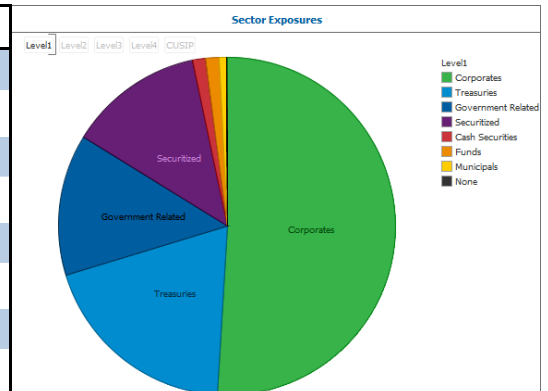
Objective – The investment objectives of the Oregon Short Term Fund (“OSTF”) are, in priority order, preservation of principal, maintenance of a sufficient level of liquidity to meet all state agency and local government operating requirements and attainment of a yield greater than money market and short-term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

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

Manager – Oregon State Treasury

Benchmark – 3-Month U.S. T-Bill Index

Fund Characteristics	
Net Assets	\$15,748,687,951
Fund NAV/OSTF Bal (8/31/17)	\$1.0187
Wtd. Avg. Credit Quality	AA-/Aa2/AA
Book Yield	1.55%
Wtd. Avg. Maturity (days)	198
Duration (years)	0.50
Spread Duration (years)	0.86
Rate Paid (effective 9/30/17)	1.45%



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
Oregon Short Term Fund*	15,748,688	0.08	0.38	1.08	1.26	1.15	0.95	0.87	0.83	0.84	1.15
91 Day Treasury Bill		0.09	0.26	0.57	0.66	0.46	0.32	0.25	0.22	0.19	0.47
Excess Return		-0.01	0.12	0.51	0.60	0.69	0.63	0.62	0.61	0.65	0.68

As of September 30, 2017

* Includes investments in Oregon Local Government Intermediate Fund

2(B). Oregon Intermediate Term Pool (OITP)

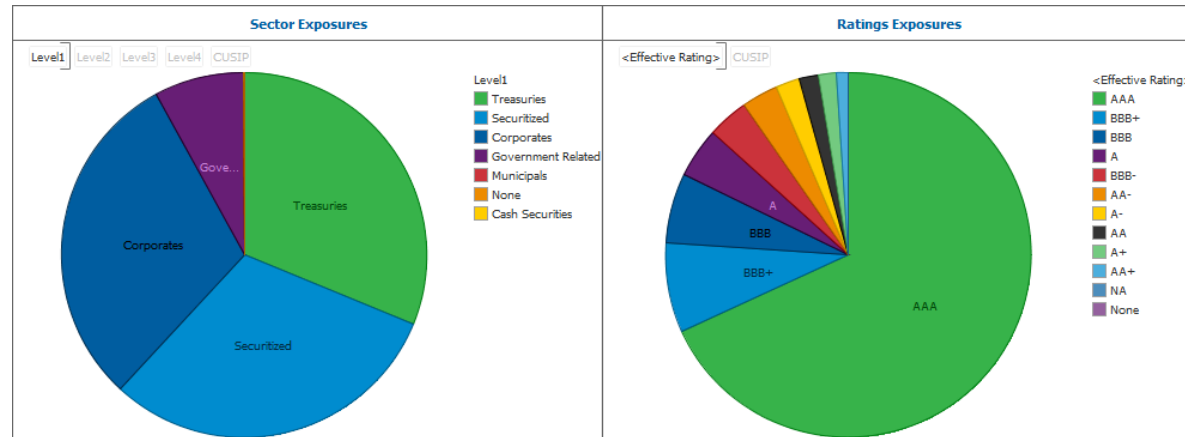
Objective – The Oregon Intermediate Term Pool (“OITP”) is a high-quality, intermediate-duration investment pool that is offered to Oregon State Agencies. The OITP investment objective is to maximize total return (i.e., principal and income) within stipulated risk parameters. OITP is not appropriate for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

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

Manager – Oregon State Treasury

Benchmark – Bloomberg Barclays 3-5 Year Aggregate Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
OITP	114,458	2.10	2.11	3.06	3.69	AA	AA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year
Oregon Intermediate Term Pool*	114,468	-0.27	0.59	1.98	1.13	1.93	1.92	1.95	1.79	2.40
Oregon Intermediate Pool Custom Benchmark		-0.41	0.58	2.12	0.41	1.73	1.89	1.80	1.49	1.67
Excess Return		0.14	0.01	-0.14	0.72	0.20	0.03	0.15	0.30	0.73

As of September 30, 2017

* Includes Investments in the Oregon Short Term Fund

2(C). Oregon Local Government Investment Fund (OLGIF)

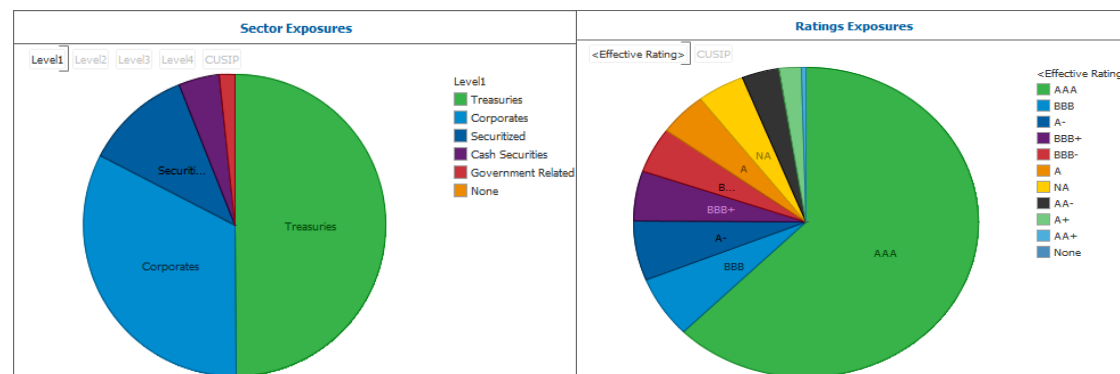
Objective – The Oregon Local Government Intermediate Fund ("OLGIF") is a commingled investment pool for local governments offered by Oregon State Treasury. The OLGIF investment objective is to achieve a total return (i.e., principal and income) greater than its benchmark over a full market cycle. OLGIF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

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

Manager – Western Asset

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

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
Western Asset	216,525	1.97	1.82	2.77	2.75	AA	AA



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year
Oregon Local Government Investment Fund	216,523	-0.22	0.49	1.67	0.40
Bloomberg Barclays 1-5 Year Government/Credit Index		-0.27	0.43	1.58	0.51
Excess Return		0.05	0.06	0.09	-0.11

As of September 30, 2017

2(D). Oregon Public University Fund (PUF)

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

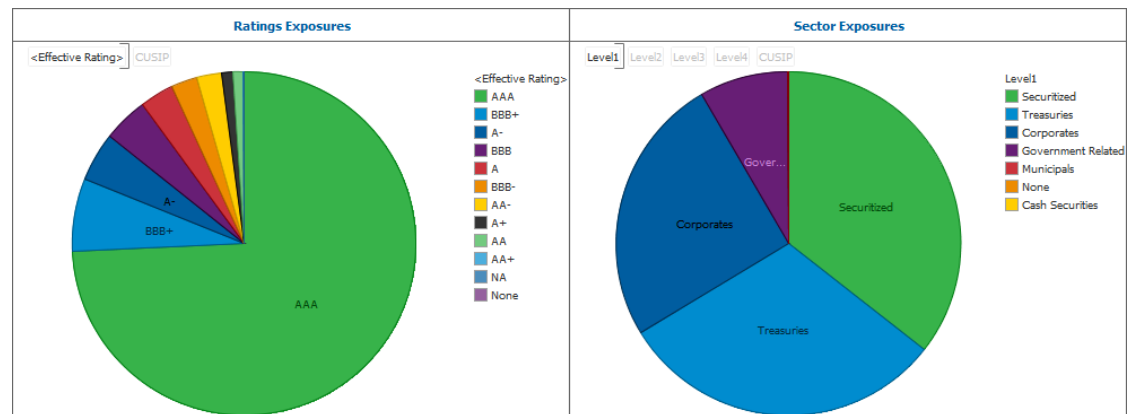
Strategy – PUF is actively managed to create a diversified portfolio of investment grade bonds invested over longer horizons than permitted in OSTF.

Manager – Oregon State Treasury

Benchmark – Custom benchmark comprised of:

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

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
PUF	313,000	2.19	2.24	3.53	3.91	AA	AA



	Market Value (\$Ms)	1 Mth	3 Mth
Public University Fund*	313,019	-0.39	0.61
Public University Fund Custom Benchmark		-0.40	0.65
Excess Return		0.01	-0.04

As of September 30, 2017

* Includes Investments in the Oregon Short Term Fund

2(E). State Agency Separate Accounts

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

Strategy – Depending on the specific goals of each respective state agency, separate account investment objectives range from achieving a maximum yield while preserving principal to maximizing total return within a set of constraints. Separate accounts are constructed to provide sufficient liquidity and be well-diversified amongst sectors and issuers with a weighted-average, minimum credit rating of single A. Staff conducts periodic meetings with agencies to review each agency’s specific portfolio objectives and liquidity needs to ensure individual strategies are still relevant.

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

	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
DAS Insurance*	112,016	-0.06	0.45	1.39	1.13	1.37	1.53	1.43	1.04	1.19	1.60
DCBS Insurance**	107,585	-0.02	0.46	1.48	1.04	1.51	1.70	1.78	1.43	1.03	1.67
DCBS Workers Benefit**	138,566	-0.03	0.63	1.77	1.40	1.76	1.84	1.91	1.55	1.77	2.37
DHCS Elderley Housing	2,714	-1.39	0.54	4.11	-3.09	2.65	4.26	5.13	2.66	4.56	5.89
DHCS Housing	15,267	-1.55	-1.53	-1.20	-1.17	-0.21	0.57	0.73	0.58	0.65	2.72
Lottery	129,980	-1.15	0.57	3.58	-2.48	1.88	3.23	3.65	2.02	3.29	5.00
Veterans Affairs**	72,873	0.06	0.41	1.12	1.25	1.11	0.90	0.72	0.59	0.71	0.60
Oregon Department of Transportation*	933,193	0.10	0.38	1.05	1.21	1.03	1.14	1.24	1.14	1.45	2.38

As of September 30, 2017

* Includes Investments in the Oregon Short Term Fund

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

Additional information for each account can be found in the appendix.

3. State Accident Insurance Fund (SAIF)

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

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

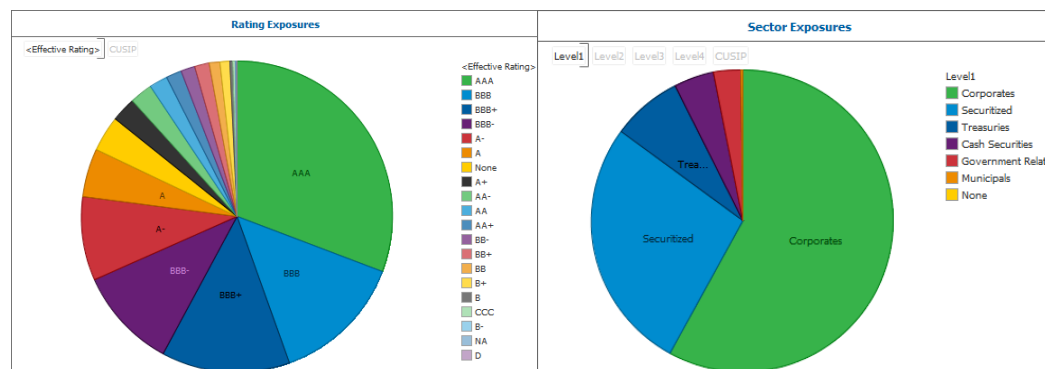
Managers – The SAIF portfolio is allocated to two external firms:

- Western Asset
- Wellington Management

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

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

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
SAIF FI	4,351,980	3.16	2.96	6.34	5.99	A	A+
Wellington	2,169,682	3.21	2.96	6.01	5.99	A+	A+
Western Asset	2,174,344	3.13	2.96	6.68	5.99	A	A+
Pledged Securities	7,954	1.62	N/A	2.85	N/A	AAA	N/A



	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
State Accident Insurance Fund	4,344,005	-0.25	1.32	5.01	2.57	5.33	4.16	4.75	3.74	4.47	5.79
Wellington	2,169,661	-0.27	1.29	4.96	2.59	5.09	4.24	4.74	3.71	4.51	5.81
Western Asset	2,174,343	-0.24	1.36	5.05	2.54	5.57	4.07	4.74	3.76	4.44	5.75
State Accident Insurance Fund Custom Benchmark		-0.24	1.12	4.09	1.49	4.08	3.46	3.91	2.91	3.77	5.27
Excess Return		-0.01	0.20	0.92	1.08	1.25	0.70	0.84	0.83	0.70	0.52

As of September 30, 2017

4. Common School Fund (CSF)

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

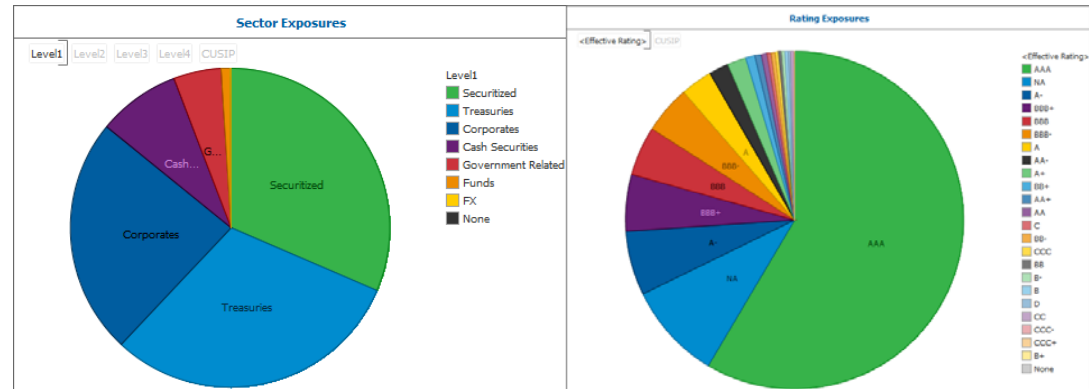
Strategy – To meet this objective, the CSF fixed income allocation is actively managed and invested in core U.S. fixed income holdings.

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

- Western Asset
- Wellington Management

Benchmark – Bloomberg Barclays U.S. Aggregate Bond Index

Portfolio	NAV (\$Ms)	Yield to Maturity		Duration		Effective Rating	
		Portfolio	Benchmark	Portfolio	Benchmark	Portfolio	Benchmark
CSF FI	446,678	1.60	2.54	3.10	5.81	A+	AA
Western Asset	225,353	3.17	2.54	6.14	5.81	A+	AA
Wellington	221,325	2.54	2.54	5.81	5.81	AA	AA

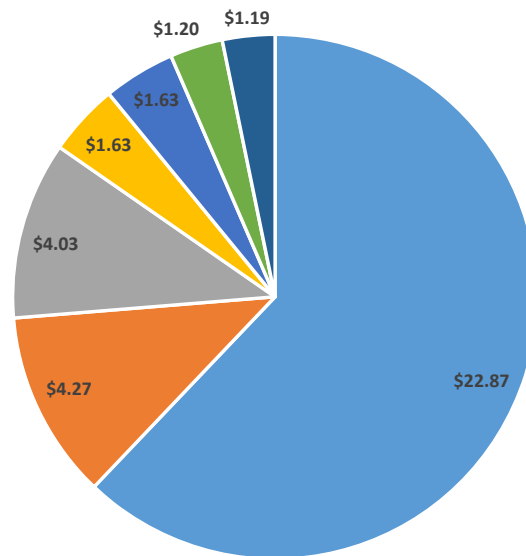


	Market Value (\$Ms)	1 Mth	3 Mth	YTD	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year
Common School Fund	445,981	-0.35	1.11	4.42	1.71	4.02	3.25	3.83	2.93	4.16	5.13
Wellington	220,627	-0.32	0.99	3.88	1.10	3.37	2.92	3.48	2.48	3.87	5.11
Western Asset	225,354	-0.39	1.22	4.96	2.33	4.65	3.58	4.17	3.38	4.58	5.25
Bloomberg Barclays U.S. Aggregate Index		-0.48	0.85	3.14	0.07	2.79	2.64	3.08	2.25	3.20	4.42
Excess Return		0.13	0.26	1.28	1.64	1.23	0.61	0.75	0.68	0.96	0.71

As of September 30, 2017

OST Fixed Income Manager Concentration

Fixed Income Assets by Manager (\$ Billions)
as of September 30, 2017



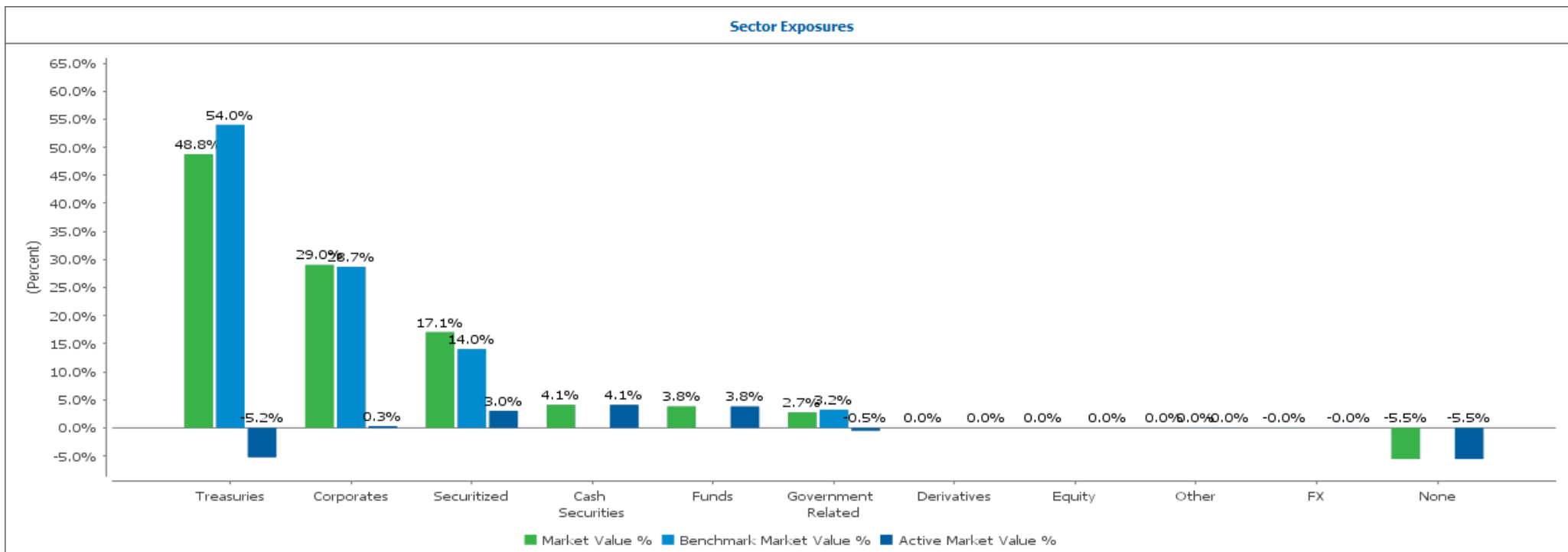
■ Oregon State Treasury ■ Western Asset ■ Wellington ■ BlackRock ■ AllianceBernstein ■ Oak Hill Advisors ■ KKR

Appendix 1

OPERF Fixed Income

Appendix 1.i

OPERF Fixed Income Sector Exposure



Data as of September 30, 2017

Appendix 1.ii

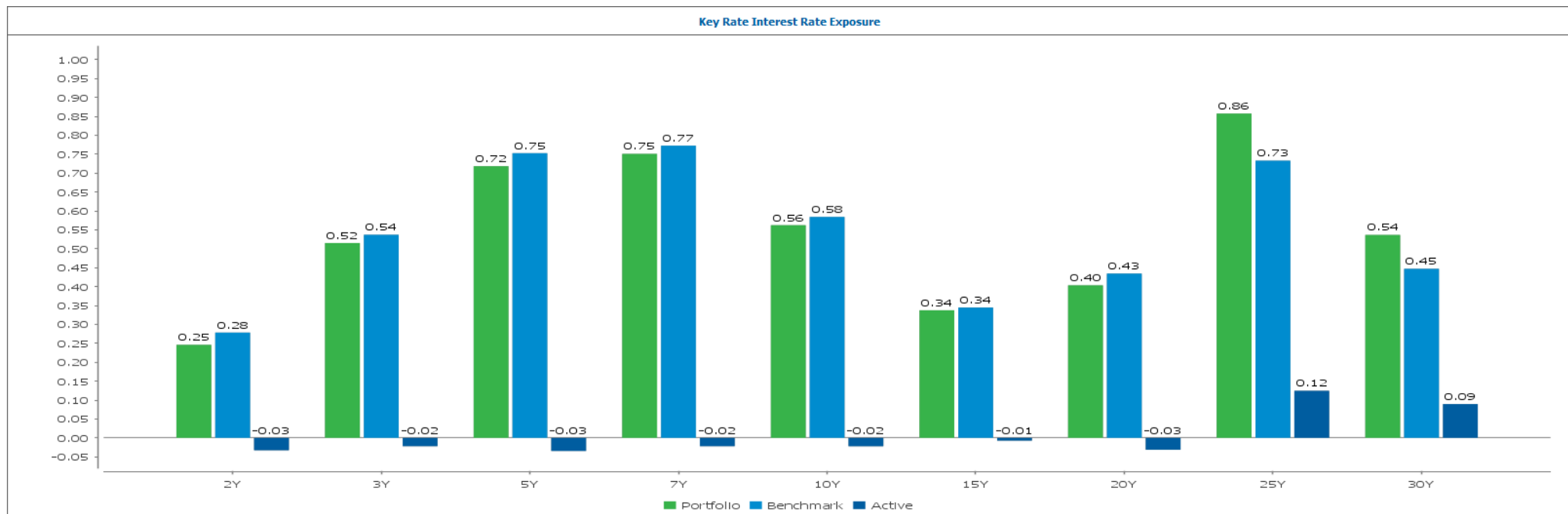
OPERF Fixed Income Issuer Exposure

Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
FI	14,155,536	100.0%	5.09	5.09	2.51	2.51	2.71	104	AA-
+ UNITED STATES TREASURY	6,775,610	47.9%	6.63	3.17	0.00	0.00	1.97	1	AAA
+ FEDERAL NATIONAL MORTGAGE ASSOCIATION	715,109	5.1%	4.64	0.23	5.67	0.29	2.84	31	AAA
+ None	665,965	4.7%	7.52	0.35	7.73	0.36	5.76	180	AA+
+ STATE STREET	583,965	4.1%	0.00	0.00	0.00	0.00	1.23	0	
+ FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	203,119	1.4%	4.76	0.07	5.81	0.08	2.93	31	AAA
+ FEDERAL HOME LOAN BANKS	146,876	1.0%	0.30	0.00	0.30	0.00	0.49	2	AAA
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	143,416	1.0%	4.14	0.04	5.27	0.05	2.61	17	AAA
+ TEST ISSUER	136,749	1.0%	7.45	0.07	7.53	0.07	0.37	1	
+ JAPAN (GOVERNMENT OF)	103,103	0.7%	1.58	0.01	0.00	0.00	0.00	1	A
+ BANK OF AMERICA CORP	78,962	0.6%	5.38	0.03	5.61	0.03	2.90	94	BBB+
+ GOLDMAN SACHS GROUP INC/THE	71,137	0.5%	5.84	0.03	5.94	0.03	2.92	94	A-
+ JPMORGAN CHASE & CO	67,454	0.5%	5.27	0.03	5.86	0.03	2.86	90	A-
+ CITIGROUP INC	50,393	0.4%	6.81	0.02	7.11	0.03	3.34	121	BBB+
+ AT&T INC	49,347	0.3%	7.97	0.03	8.07	0.03	3.77	151	BBB+
+ VERIZON COMMUNICATIONS INC	48,366	0.3%	9.17	0.03	9.36	0.03	3.74	137	BBB+
+ ALMONDE INC	46,637	0.3%	0.30	0.00	5.56	0.02	2.03	439	B-
+ WELLS FARGO & COMPANY	44,595	0.3%	8.62	0.03	8.79	0.03	3.32	105	A
+ PREFERRED PROPPANTS LLC	44,298	0.3%	0.26	0.00	2.51	0.01	12.57	1,108	CCC+
+ MORGAN STANLEY	43,806	0.3%	5.00	0.02	5.21	0.02	2.82	93	A-
+ SHELL	40,662	0.3%	0.22	0.00	0.87	0.00	2.70	159	
+ NEW ENTERPRISE STONE & LIME CO INC	40,260	0.3%	0.40	0.00	3.22	0.01	0.00	594	
+ MEXICO (UNITED MEXICAN STATES) (GOVERNMENT)	38,835	0.3%	12.06	0.03	7.30	0.02	5.63	95	BBB+
+ BRAND ENERGY AND INFRASTRUCTURE SERVICES INC	37,058	0.3%	0.83	0.00	5.23	0.01	1.87	427	B-
+ RESIDUAL FUNDING CORP PRINCIPAL STRIP	33,990	0.2%	2.77	0.01	2.79	0.01	1.77	17	AAA
+ UFC HOLDINGS LLC	33,752	0.2%	0.30	0.00	5.03	0.01	1.70	472	B

Data as of September 30, 2017

Appendix 1.iii

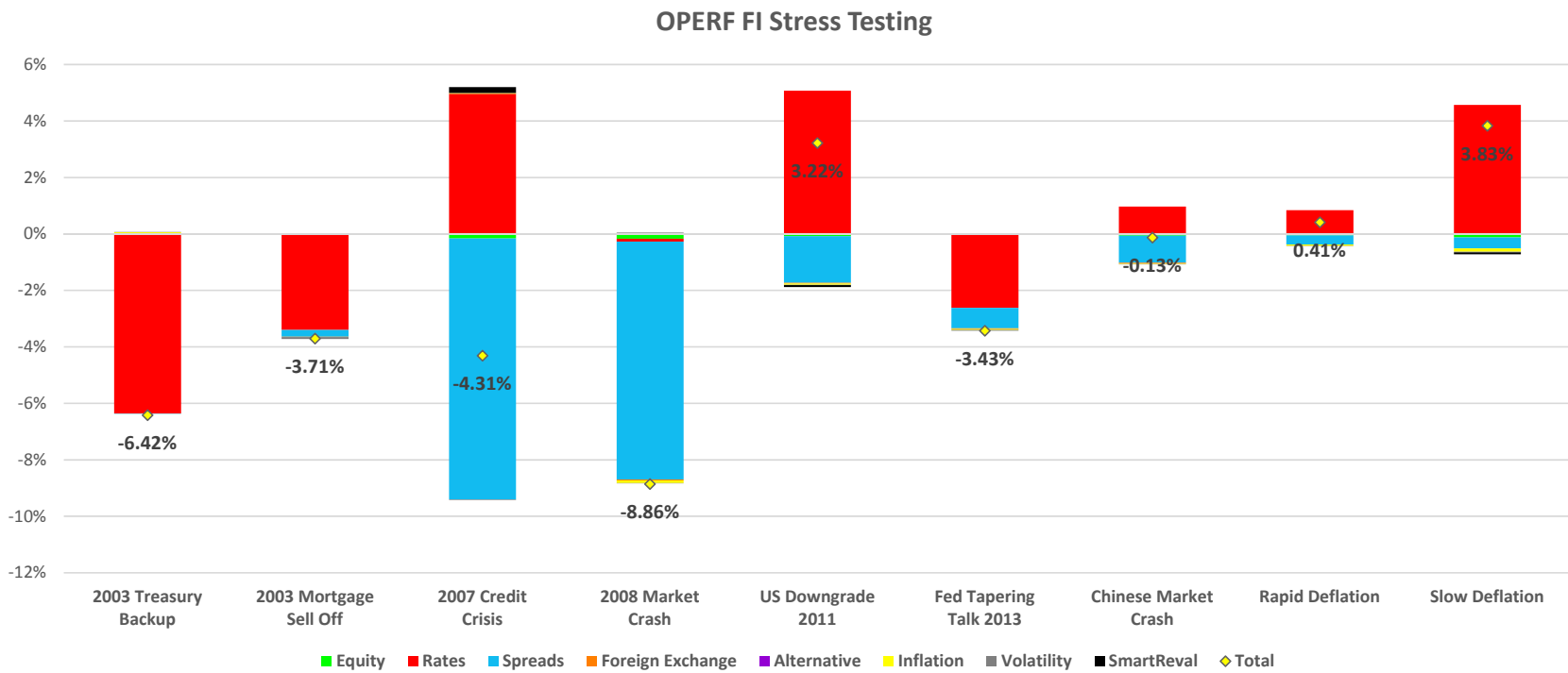
OPERF Fixed Income Interest Rate Exposure



Data as of September 30, 2017

Appendix 1.iv

OPERF Fixed Income Stress Testing

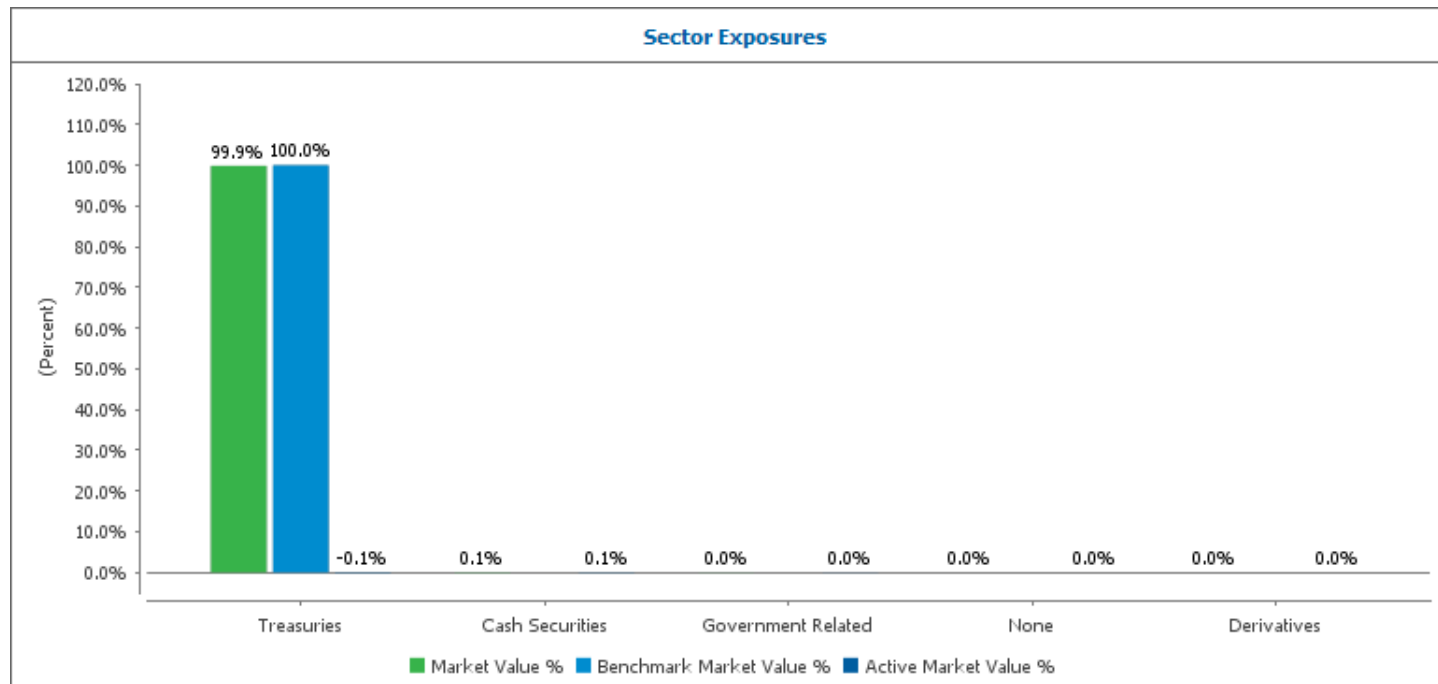


Data as of September 30, 2017

Appendix 1(A) OPERF Government Portfolio

Appendix 1(A)i

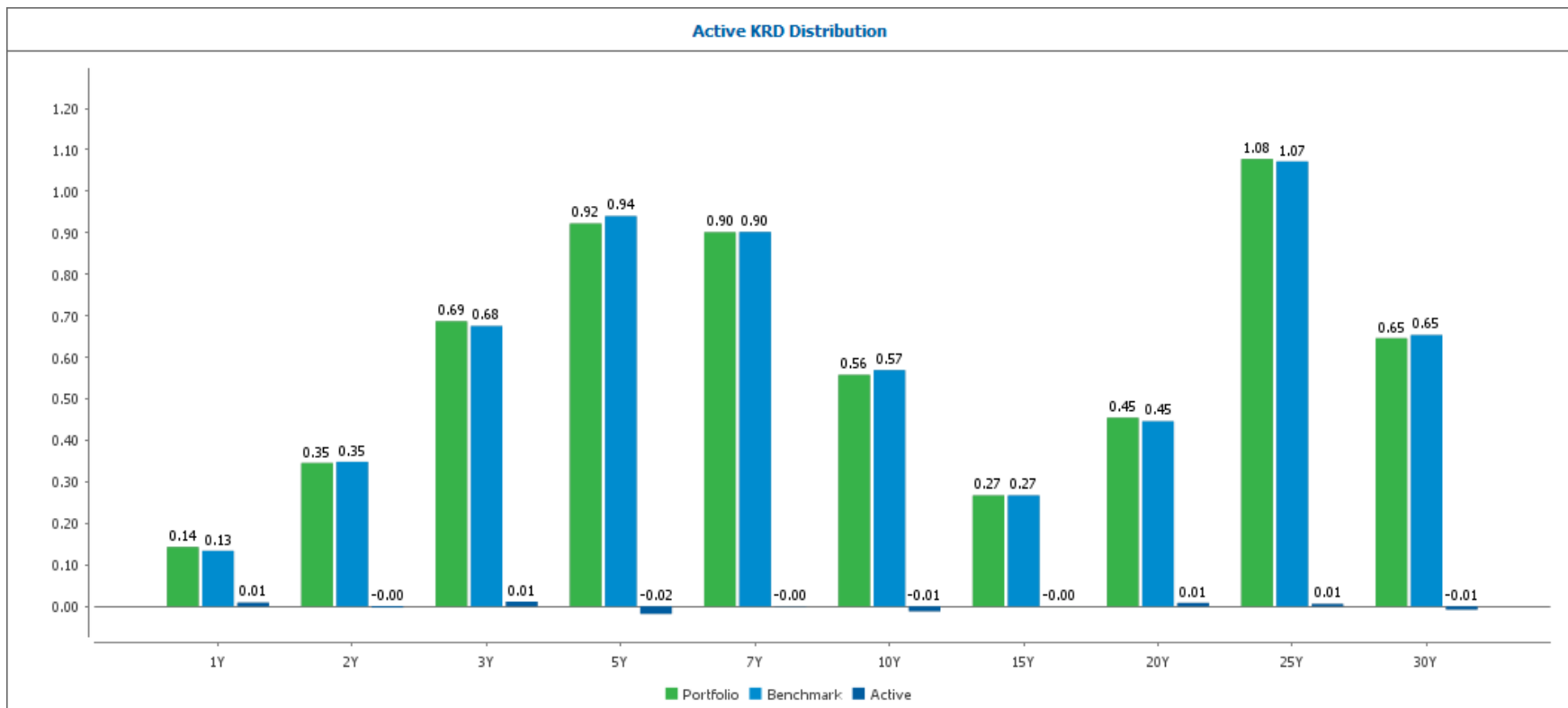
OPERF Government Portfolio Sector Exposure



Data as of September 30, 2017

Appendix 1(A)ii

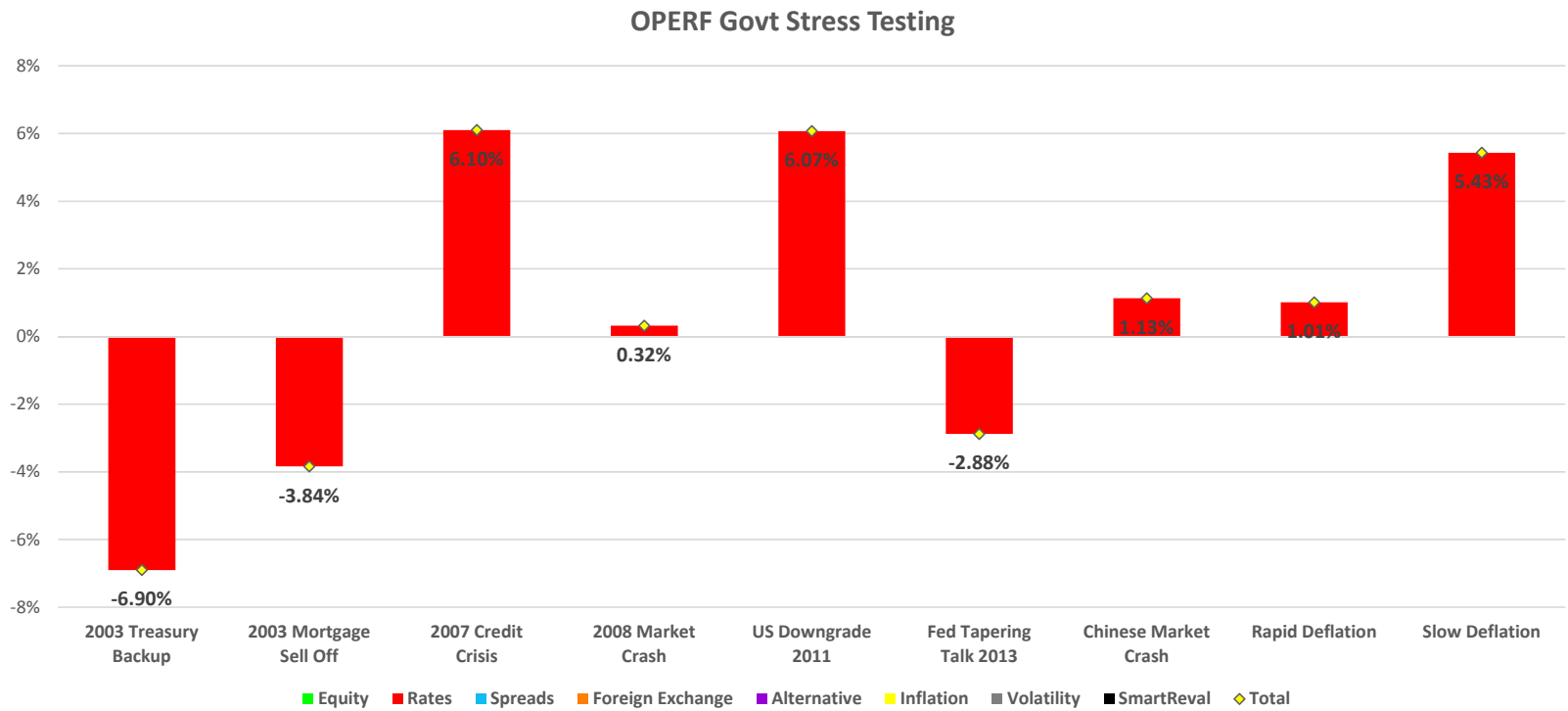
OPERF Government Portfolio Interest Rate Exposure



Data as of September 30, 2017

Appendix 1(A)iii

OPERF Government Portfolio Stress Testing

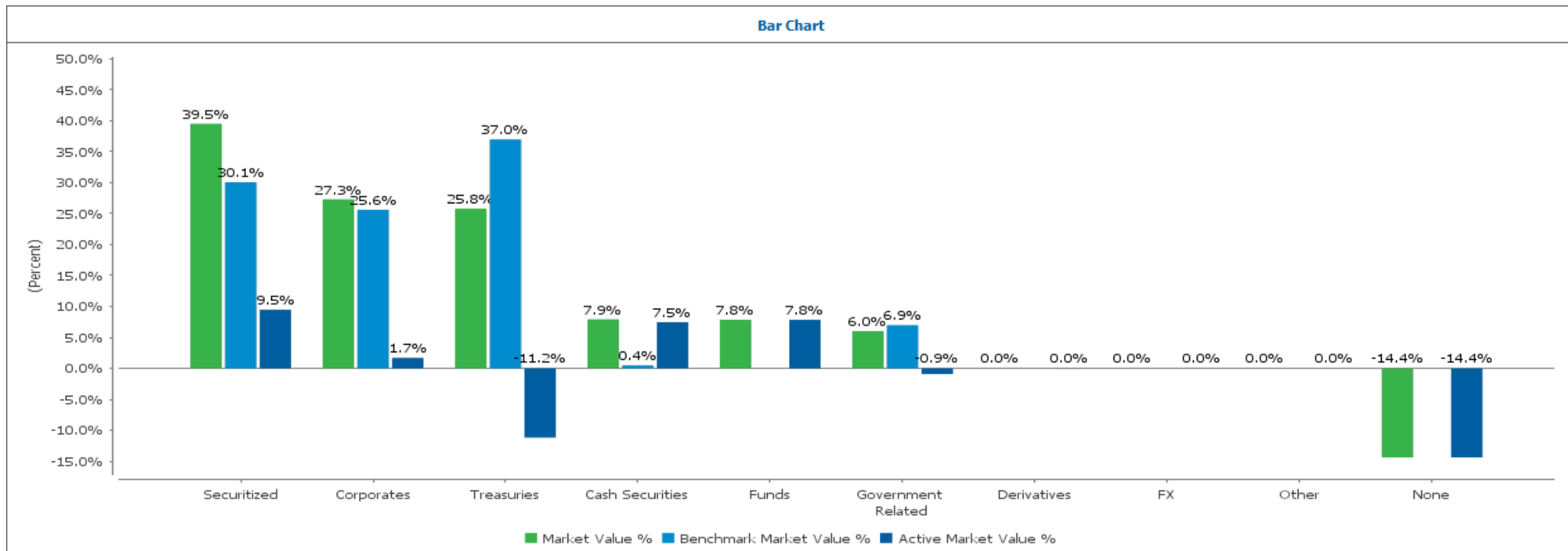


Data as of September 30, 2017

Appendix 1(B) OPERF Core Fixed Income

Appendix 1(B)i

OPERF CORE Sector Exposure



Data as of September 30, 2017

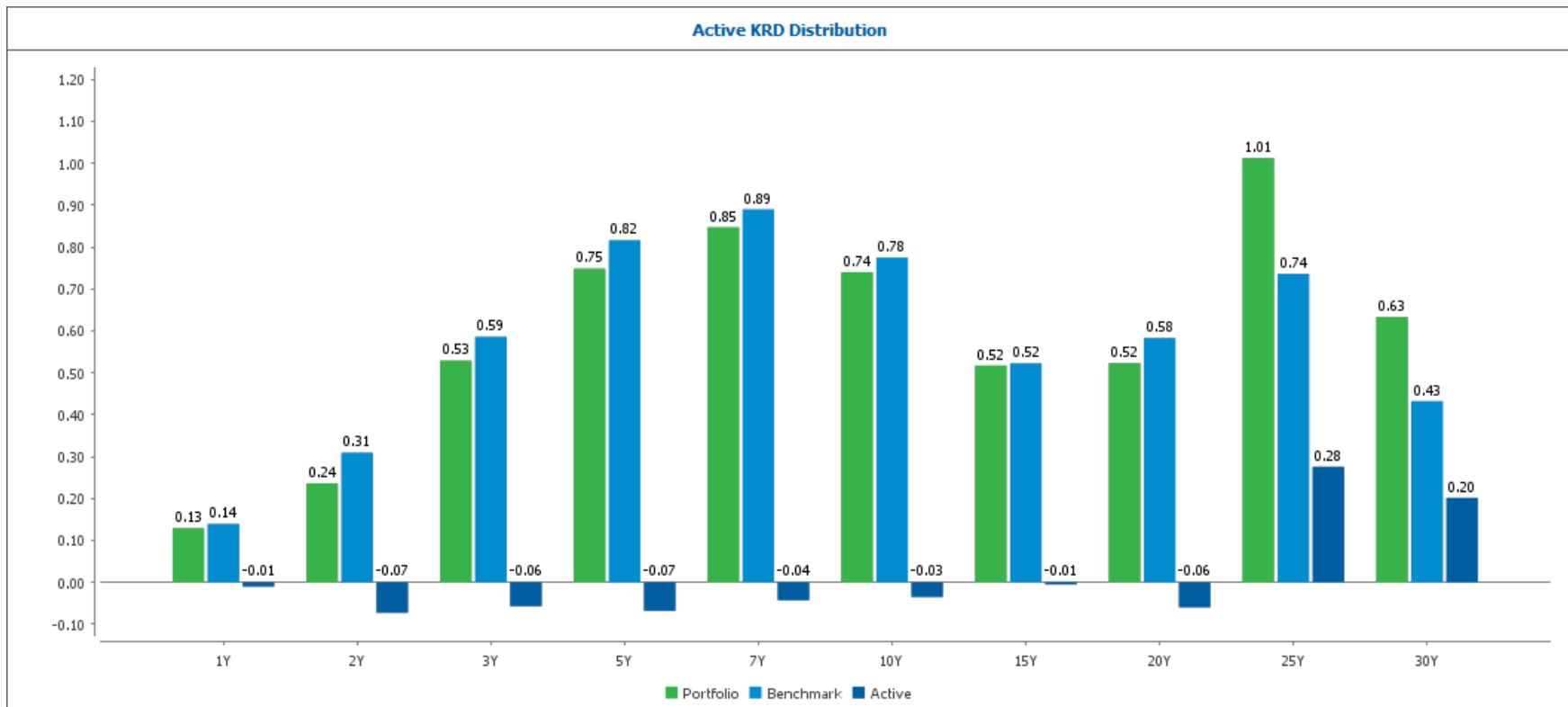
Appendix 1(B)ii

OPERF CORE Issuer Exposure

Risk and Exposure									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
[-] CORE_FI	6,581,091	100.0%	6.14	6.14	4.29	4.29	2.89	72	AA
+ [-] UNITED STATES TREASURY	1,568,293	23.8%	8.60	2.05	0.00	0.00	2.02	1	AAA
+ [-] None	836,054	12.7%	8.87	1.13	9.03	1.15	5.61	170	AA+
+ [-] FEDERAL NATIONAL MORTGAGE ASSOCIATION	574,133	8.7%	4.64	0.40	5.65	0.49	2.78	34	AAA
+ [-] STATE STREET	443,689	6.7%	0.00	0.00	0.00	0.00	1.24	0	
+ [-] FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	164,477	2.5%	5.00	0.12	5.93	0.15	2.83	33	AAA
+ [-] TEST ISSUER	154,855	2.4%	8.05	0.19	8.14	0.19	0.51	1	
+ [-] FEDERAL HOME LOAN BANKS	146,971	2.2%	0.28	0.01	0.29	0.01	0.45	1	AAA
+ [-] GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	143,065	2.2%	3.93	0.09	5.16	0.11	2.57	19	AAA
+ [-] JAPAN (GOVERNMENT OF)	103,757	1.6%	1.55	0.02	0.00	0.00	0.00	1	A
+ [-] BANK OF AMERICA CORP	79,385	1.2%	5.36	0.06	5.55	0.07	2.83	89	BBB+
+ [-] CASH & EQUIVALENTS	76,042	1.2%	0.00	0.00	0.00	0.00	1.33	0	
+ [-] GOLDMAN SACHS GROUP INC/THE	71,501	1.1%	5.84	0.06	5.93	0.06	2.86	89	A-
+ [-] JPMORGAN CHASE & CO	67,563	1.0%	5.26	0.05	5.84	0.06	2.80	86	A-
+ [-] AT&T INC	50,153	0.8%	8.04	0.06	8.13	0.06	3.75	151	BBB+
+ [-] CITIGROUP INC	48,385	0.7%	6.72	0.05	7.02	0.05	3.22	113	BBB+
+ [-] VERIZON COMMUNICATIONS INC	44,525	0.7%	8.77	0.06	8.96	0.06	3.62	133	BBB+
+ [-] MORGAN STANLEY	44,025	0.7%	4.99	0.03	5.18	0.03	2.74	87	A-
+ [-] WELLS FARGO & COMPANY	42,254	0.6%	8.37	0.05	8.52	0.05	3.23	102	A
+ [-] MEXICO (UNITED MEXICAN STATES) (GOVERNMENT)	37,175	0.6%	11.86	0.07	7.38	0.04	5.82	105	BBB+
+ [-] RESIDUAL FUNDING CORP PRINCIPAL STRIP	34,021	0.5%	2.73	0.01	2.75	0.01	1.77	15	AAA
+ [-] HSBC HOLDINGS PLC	27,543	0.4%	5.82	0.02	6.06	0.03	3.04	100	A
+ [-] MIZUHO BANK LTD (NEW YORK BRANCH)	24,013	0.4%	0.27	0.00	0.27	0.00	1.33	26	A
+ [-] MICROSOFT CORPORATION	23,106	0.4%	9.64	0.03	9.76	0.03	2.85	53	AAA

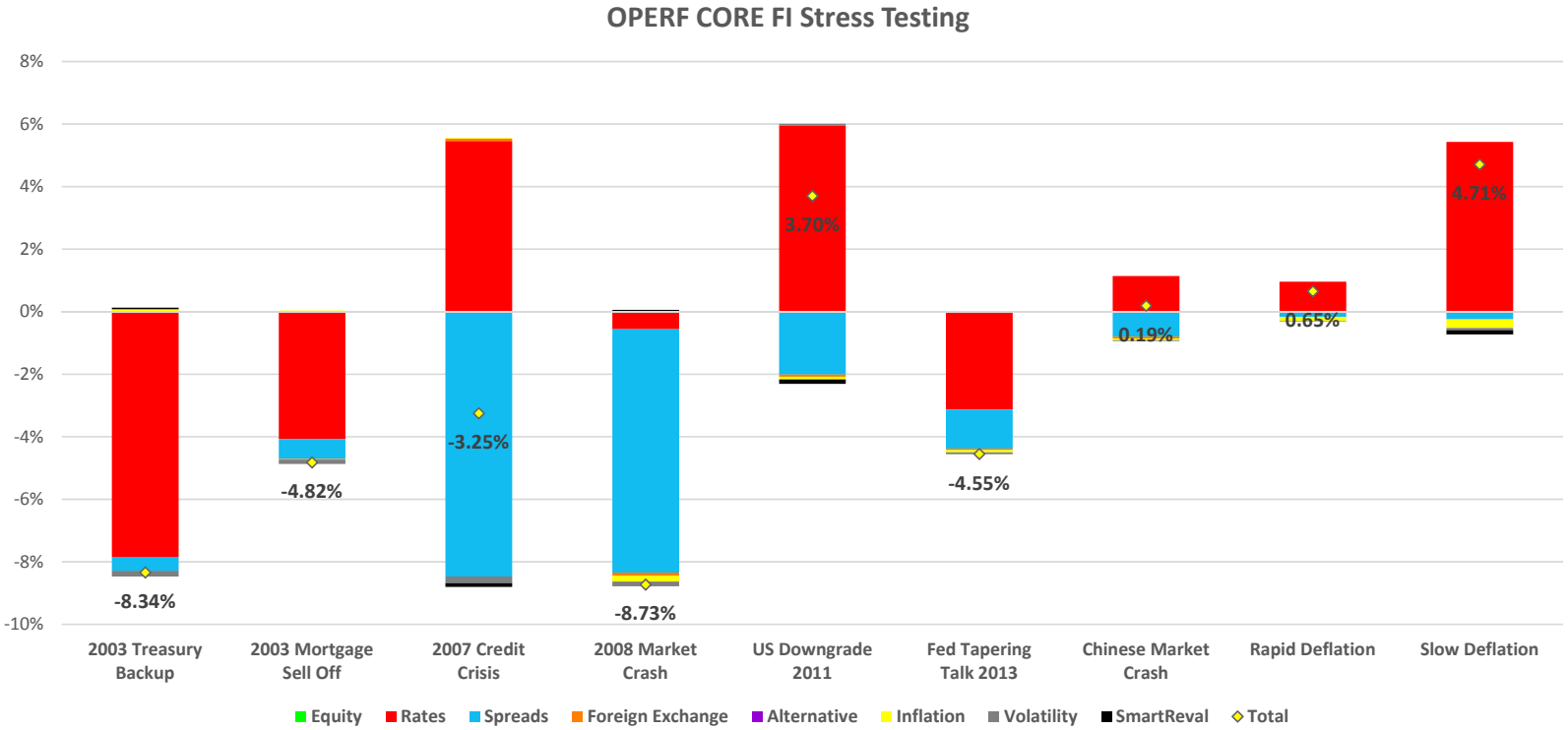
Data as of September 30, 2017

Appendix 1(B)iii OPERF CORE Interest Rate Exposure



Data as of September 30, 2017

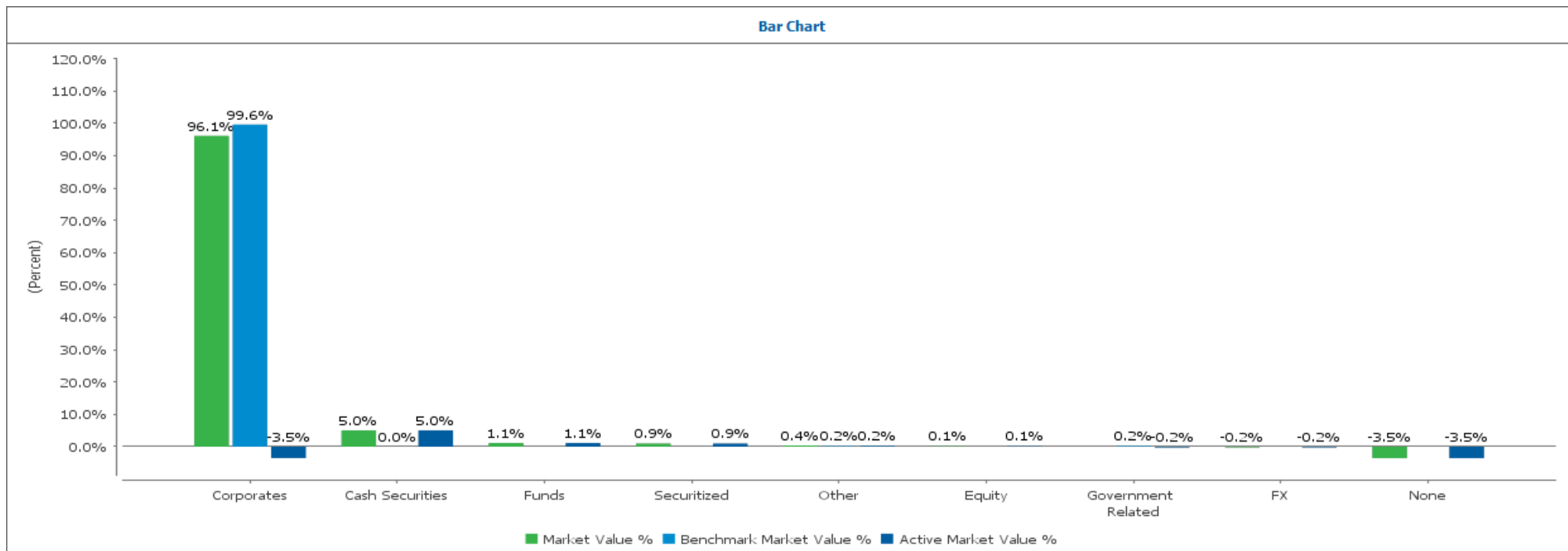
Appendix 1(B)iv OPERF CORE Stress Testing



Data as of September 30, 2017

Appendix 1(C) OPERF Non-Core Fixed Income

Appendix 1(C)i OPERF NON-CORE Sector Exposure



Data as of September 30, 2017

Appendix 1(C)ii

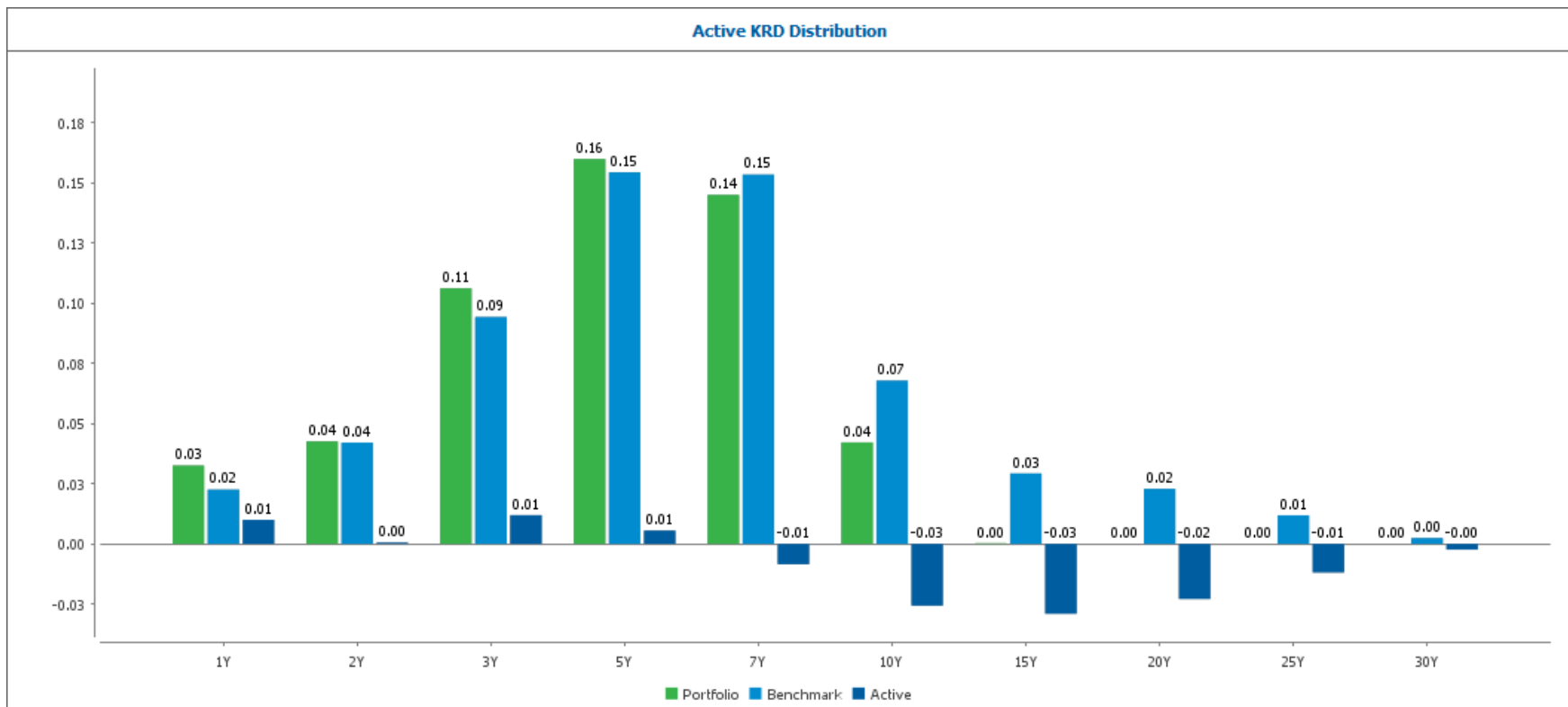
OPERF NON-CORE Issuer Exposure

Risk and Exposure								
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS
NON-CORE	2,401,781	100.0%	0.71	0.71	3.70	3.70	4.01	
+ STATE STREET	108,059	4.5%	0.00	0.00	0.00	0.00	1.24	
+ ALMONDE INC	46,692	1.9%	0.27	0.01	5.52	0.11	2.65	
+ PREFERRED PROPPANTS LLC	46,274	1.9%	0.26	0.00	2.48	0.05	11.07	
+ NEW ENTERPRISE STONE & LIME CO INC	40,287	1.7%	0.36	0.01	3.18	0.05	0.00	
+ BRAND ENERGY AND INFRASTRUCTURE SERVICES INC	36,920	1.5%	0.81	0.01	5.22	0.08	2.11	
+ UFC HOLDINGS LLC	33,905	1.4%	0.27	0.00	5.00	0.07	0.77	
+ DELTA 2 (LUX) SARL	29,676	1.2%	0.25	0.00	3.44	0.04	0.00	
+ WILLIAM MORRIS ENDEAVOR ENTERTAINMENT LLC	28,318	1.2%	0.25	0.00	3.30	0.04	0.00	
+ TEST	26,954	1.1%	0.26	0.00	0.26	0.00	0.00	
+ EXCELITAS TECHNOLOGIES CORP	26,213	1.1%	0.17	0.00	2.76	0.03	4.66	
+ TRANSDIGM INC	25,970	1.1%	1.02	0.01	3.92	0.04	4.36	
+ EXPRO FINSERVICES SARL	25,664	1.1%	0.00	0.00	3.32	0.04	19.62	1.
+ BMC FOREIGN HOLDING COMPANY	25,221	1.1%	0.23	0.00	4.29	0.05	5.55	
+ USI INC	24,259	1.0%	0.22	0.00	5.57	0.06	4.50	
+ REYNOLDS GROUP ISSUER INC / REYNOLDS GROUP ISSUER LLC / REYNOLDS GROUP ISSUER LUXEMBOURG	23,819	1.0%	0.05	0.00	0.08	0.00	3.34	
+ SEDGWICK CLAIMS MANAGEMENT SERVICES INC	22,790	0.9%	0.20	0.00	3.74	0.04	0.00	
+ TIBCO SOFTWARE INC	22,304	0.9%	0.15	0.00	2.86	0.03	3.79	
+ SFR GROUP SA	21,493	0.9%	1.06	0.01	2.54	0.02	4.08	
+ CHANGE HEALTHCARE HOLDINGS LLC	21,453	0.9%	0.39	0.00	5.45	0.05	0.31	
+ SOLERA LLC / SOLERA FINANCE INC	20,905	0.9%	0.25	0.00	4.10	0.04	0.00	
+ PAE HOLDING CORP	20,775	0.9%	0.28	0.00	4.13	0.04	3.79	
+ MAXEDA DIY BV	20,468	0.9%						
+ BALBOA MERGER SUB INC	20,460	0.9%	0.07	0.00	0.13	0.00	5.27	

Data as of September 30, 2017

Appendix 1(C)iii

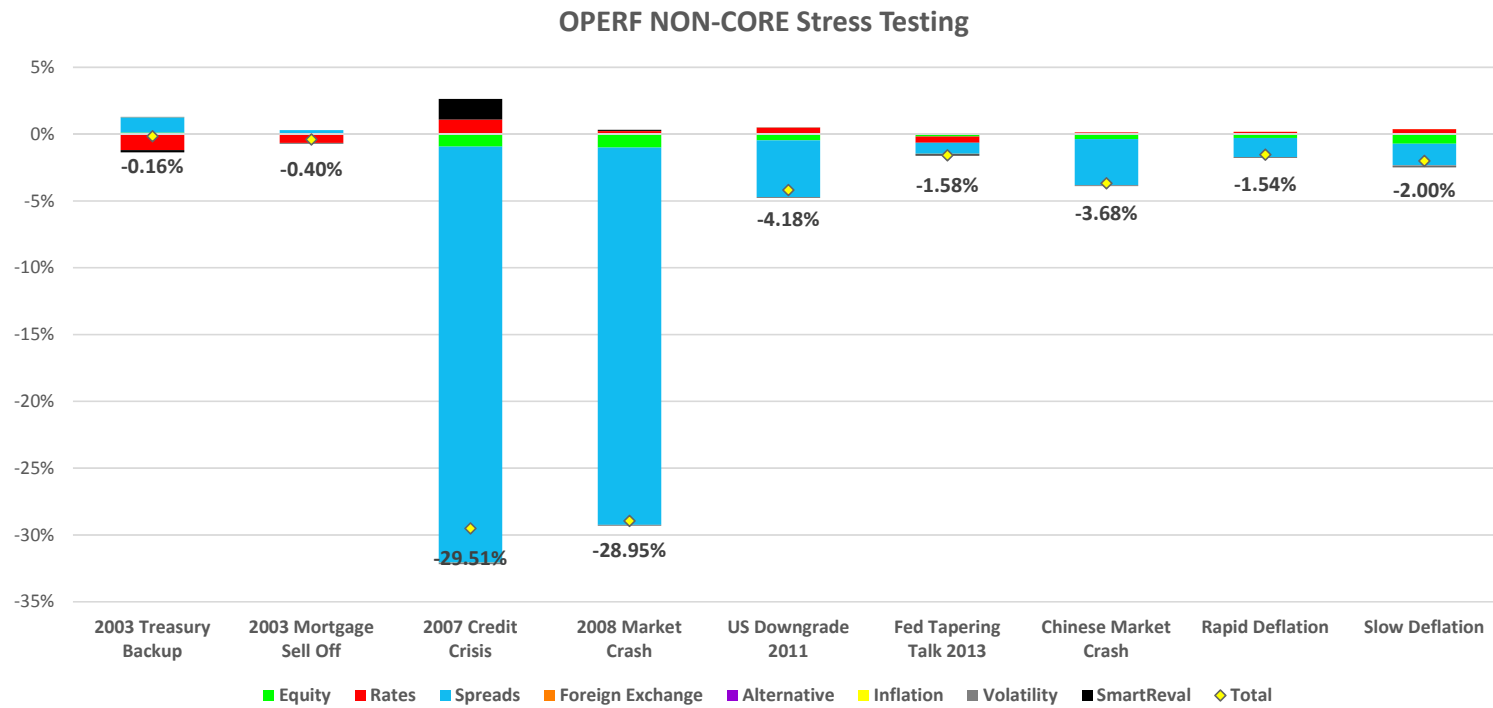
OPERF NON-CORE Interest Rate Exposure



Data as of September 30, 2017

Appendix 1(C)iv

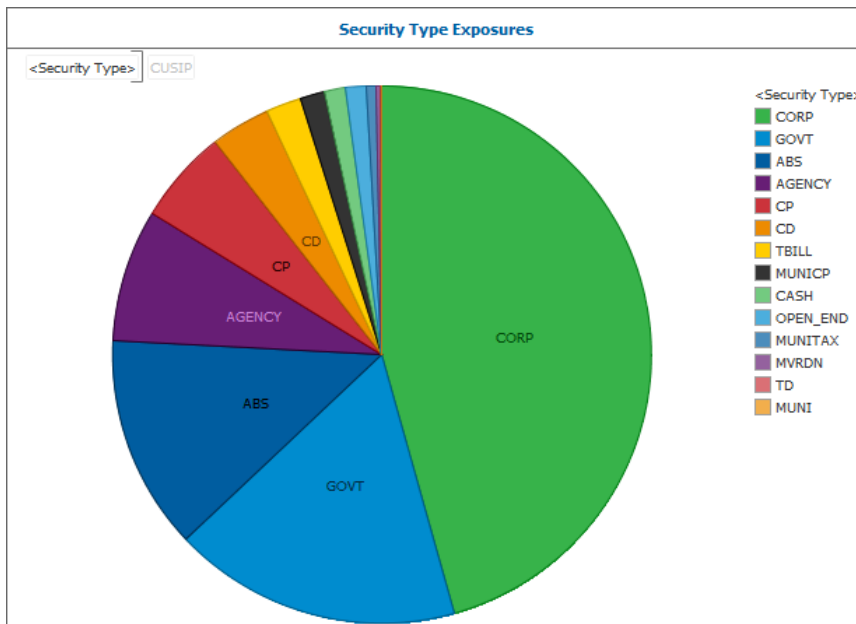
OPERF NON-CORE Stress Testing



Data as of September 30, 2017

Appendix 2(A) Oregon Short Term Fund

Appendix 2(A) Oregon Short Term Fund Security Type Exposure



Security Type Exposures

Security Description	Market Value %		Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Maturity	Book Yield (GAAP)
	Portfolio	Portfolio 09/30/2016						
592W	100.0%	100.0%	0.51	0.51	0.87	0.87	1.44	1.55
+ CORP	46.8%	47.2%	0.56	0.26	1.33	0.62	1.65	1.86
+ GOVT	17.7%	18.5%	0.35	0.06	0.00	0.00	1.16	1.16
+ ABS	13.2%	12.7%	0.82	0.11	1.16	0.15	1.55	1.56
+ AGENCY	8.2%	6.3%	0.14	0.01	0.44	0.04	0.90	0.99
+ CP	5.8%	4.2%	0.19	0.01	0.26	0.01	1.24	1.26
+ CD	3.7%	3.7%	0.11	0.00	0.43	0.02	1.35	1.50
+ TBILL	2.1%	0.1%	0.36	0.01	0.00	0.00	1.08	1.13
+ MUNICIP	1.6%	1.8%	0.19	0.00	0.19	0.00	1.25	1.24
+ OPEN_END	1.3%	0.7%	2.77	0.04	1.73	0.02	1.97	
+ MUNITAX	0.6%	0.3%	0.93	0.01	0.94	0.01	1.61	1.50
+ MVRDN	0.2%	4.3%	0.00	0.00	0.00	0.00	1.24	1.04
+ TD	0.0%	0.3%	0.20	0.00	0.21	0.00	1.30	1.30
+ MUNI	0.0%	0.0%	0.01	0.00	0.26	0.00	1.37	
+ CASH	-1.3%	-0.3%	0.00	0.00	0.00	0.00	1.23	1.23

Data as of September 30, 2017

Appendix 2(A)ii

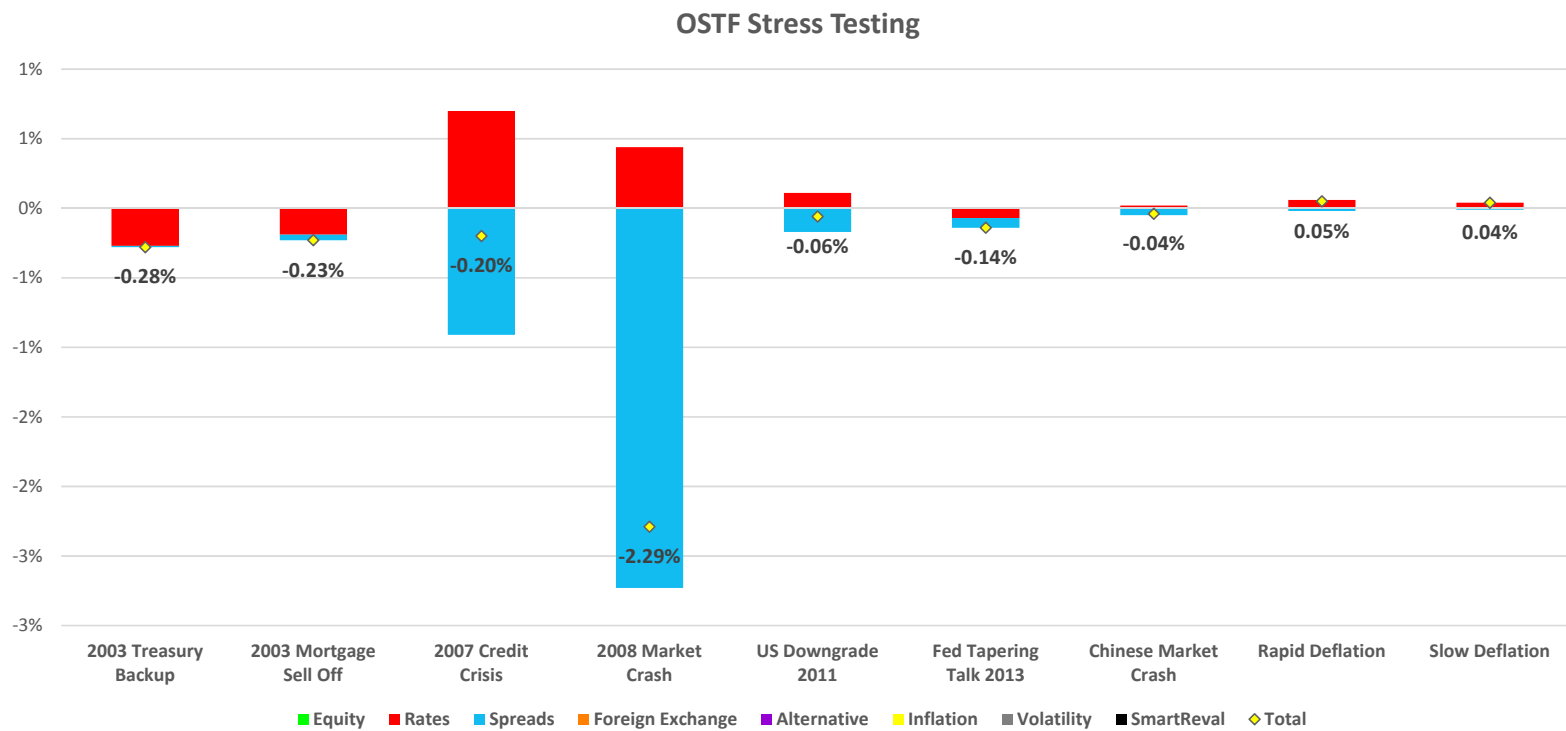
Oregon Short Term Fund Issuer Exposure

Issuer Exposures						
Security Description	Market Value %	Duration	Duration Contribution	Yield to Maturity	Book Yield (GAAP)	Effective Rating
- 592W	100.0%	0.51	0.51	1.44	1.55	AA
+ UNITED STATES TREASURY	19.9%	0.35	0.07	1.15	1.16	AAA
+ FEDERAL HOME LOAN BANKS	4.4%	0.17	0.01	0.76	0.81	AAA
+ WELLS FARGO BANK NA	2.8%	0.24	0.01	1.57	1.71	AA
+ GOLDMAN SACHS GROUP INC/THE	2.7%	0.35	0.01	1.73	2.09	A-
+ TOYOTA MOTOR CREDIT CORP	2.7%	0.38	0.01	1.51	1.74	AA-
+ JPMORGAN CHASE & CO	2.6%	0.60	0.02	1.68	1.94	A-
+ MORGAN STANLEY	2.5%	0.56	0.01	1.80	2.10	A-
+ FEDERAL FARM CREDIT BANKS FUNDING CORP	2.4%	0.12	0.00	1.16	1.35	AAA
+ BANK OF AMERICA NA	2.0%	0.26	0.01	1.21	1.67	A
+ CATERPILLAR FINANCIAL SERVICES CORPORATION	1.9%	0.40	0.01	1.53	1.63	A
+ AMERICAN HONDA FINANCE CORPORATION	1.8%	0.63	0.01	1.55	1.69	A+
+ CITI BANK NA	1.5%	0.52	0.01	1.56	1.64	A+
+ CHASE ISSUANCE TRUST	1.5%	0.64	0.01	1.49	1.59	AAA
+ CITIBANK CREDIT CARD ISSUANCE TRUST	1.4%	1.30	0.02	1.67	1.69	AAA
+ AMERICAN EXPRESS CREDIT CORPORATION	1.4%	0.48	0.01	1.71	1.94	A
+ CREDIT SUISSE AG (NEW YORK BRANCH)	1.3%	0.48	0.01	1.49	1.71	A
+ OREGON LOCAL GOVERNMENT INTERMEDIATE FUND	1.3%	2.77	0.04	1.97		
+ LLOYDS BANK PLC	1.3%	0.39	0.00	1.49	1.55	A
+ WESTPAC BANKING CORP	1.2%	0.24	0.00	1.51	1.85	AA-
+ TORONTO-DOMINION BANK/THE	1.2%	0.27	0.00	1.52	2.02	AA-
+ BANK OF NOVA SCOTIA	1.2%	0.96	0.01	1.71	2.07	A+
+ ONTARIO (PROVINCE OF)	1.2%	1.12	0.01	1.90	1.62	AA-
+ PACCAR FINANCIAL CORP	1.2%	0.73	0.01	1.85	1.67	A+
+ JOHN DEERE CAPITAL CORP	1.1%	0.31	0.00	1.55	1.75	A

Data as of September 30, 2017

Appendix 2(A)iii

Oregon Short Term Fund Stress Testing

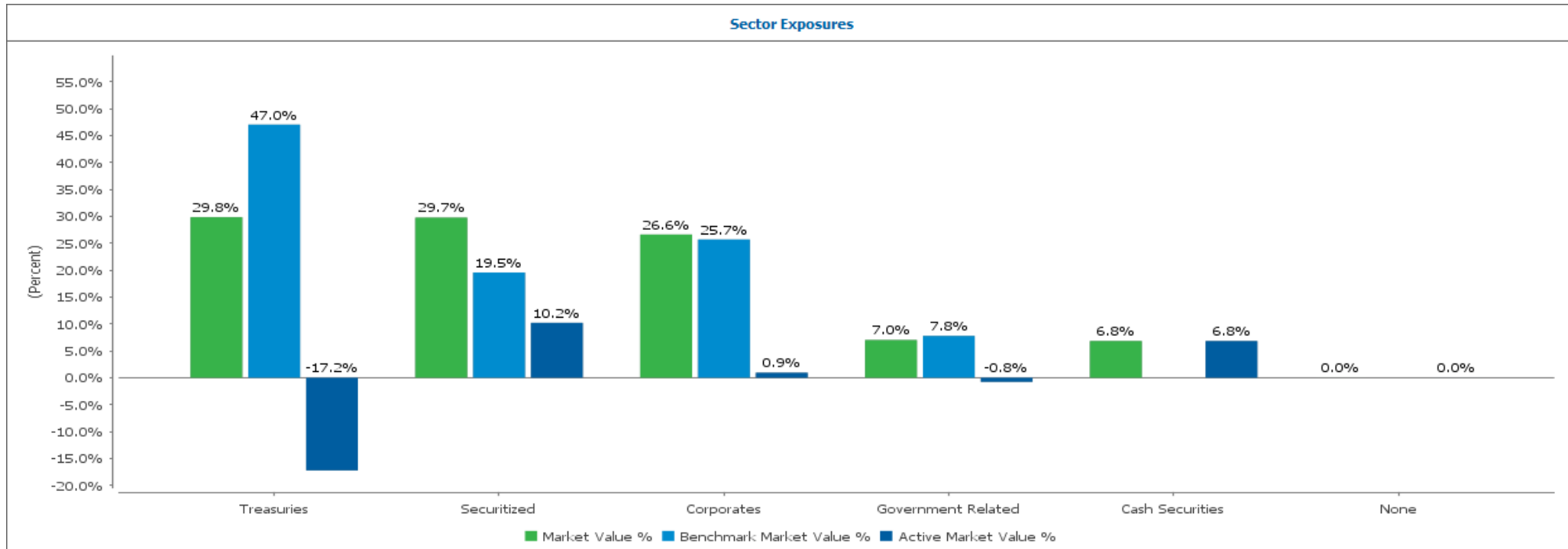


Data as of September 30, 2017

Appendix 2(B) Oregon Intermediate Term Fund

Appendix 2(B)i

Oregon Intermediate Term Fund Sector Exposure



Data as of September 30, 2017

Appendix 2(B)ii

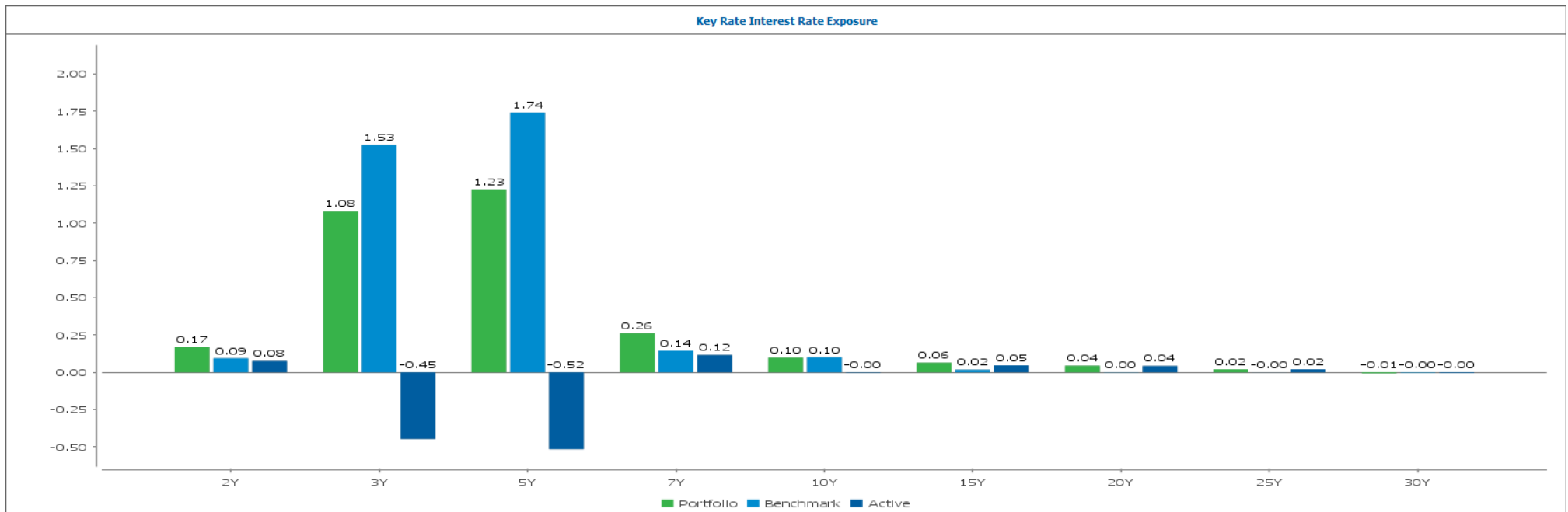
Oregon Intermediate Term Fund Issuer Exposure

Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
- 59C4	114,458	100.0%	3.06	3.06	2.57	2.57	2.01	33	AA
+ UNITED STATES TREASURY	34,132	29.8%	3.66	1.09	0.00	0.00	1.53	2	AAA
+ OREGON STATE TREASURY	7,804	6.8%	0.51	0.03	0.87	0.06	1.44	30	AA
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	7,142	6.2%	3.22	0.20	3.95	0.25	2.35	17	AAA
+ FEDERAL NATIONAL MORTGAGE ASSOCIATION	5,234	4.6%	3.61	0.17	4.40	0.20	2.54	22	AAA
+ FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	5,111	4.5%	4.25	0.19	5.37	0.24	2.87	35	AAA
+ CITIGROUP INC	3,169	2.8%	2.70	0.07	3.93	0.11	2.43	80	BBB+
+ SHERWIN-WILLIAMS COMPANY (THE)	3,051	2.7%	4.33	0.12	4.37	0.12	2.60	70	BBB
+ BANK OF AMERICA CORP	2,811	2.5%	3.63	0.09	3.66	0.09	2.56	76	BBB+
+ CITIBANK CREDIT CARD ISSUANCE TRUST	2,745	2.4%	2.77	0.07	2.79	0.07	1.94	32	AAA
+ EUROPEAN INVESTMENT BANK	2,436	2.1%	4.41	0.09	4.45	0.09	2.06	17	AAA
+ FORD MOTOR CREDIT COMPANY LLC	2,055	1.8%	2.94	0.05	2.96	0.05	2.61	95	BBB
+ FEDERAL HOME LOAN BANKS	2,044	1.8%	2.34	0.04	2.36	0.04	1.60	3	AAA
+ DEUTSCHE BANK AG (NEW YORK BRANCH)	2,020	1.8%	2.67	0.05	2.69	0.05	2.56	96	BBB
+ CATERPILLAR FINANCIAL SERVICES CORPORATION	2,018	1.8%	4.38	0.08	4.43	0.08	2.41	51	A
+ JOHN DEERE CAPITAL CORP	2,006	1.8%	0.19	0.00	4.68	0.08	1.84	55	A
+ ARROW ELECTRONICS INC	1,981	1.7%	6.14	0.11	6.20	0.11	3.48	131	BBB-
+ CNH EQUIPMENT TRUST CNH_17-A	1,719	1.5%	3.52	0.05	3.55	0.05	2.22	46	AAA
+ VMWARE INC	1,508	1.3%	2.79	0.04	2.81	0.04	2.19	57	BBB-
+ HYUNDAI AUTO RECEIVABLES TRUST HART_17-B	1,495	1.3%	3.31	0.04	3.33	0.04	2.27	53	AAA
+ PORT MORROW ORE	1,471	1.3%	4.68	0.06	4.72	0.06	2.26	32	AA
+ DR PEPPER SNAPPLE GROUP INC	1,390	1.2%	4.70	0.06	4.74	0.06	2.62	67	BBB+
+ CAPITAL ONE MULTI-ASSET EXECUTION TRUST	1,376	1.2%	0.06	0.00	3.95	0.05	1.57	35	AAA
+ FREDDIE MAC FHLMC_2995	1,080	0.9%	0.33	0.00	4.80	0.05	1.56	22	AAA
+ WELLS FARGO COMMERCIAL MORTGAGE TRUST WFCM_16-C37	1,052	0.9%	3.57	0.03	3.47	0.03	2.44	66	AAA
+ SYNCHRONY CREDIT CARD MASTER NOTE TRUST	1,033	0.9%	2.37	0.02	2.39	0.02	2.00	45	AAA

Data as of September 30, 2017

Appendix 2(B)iii

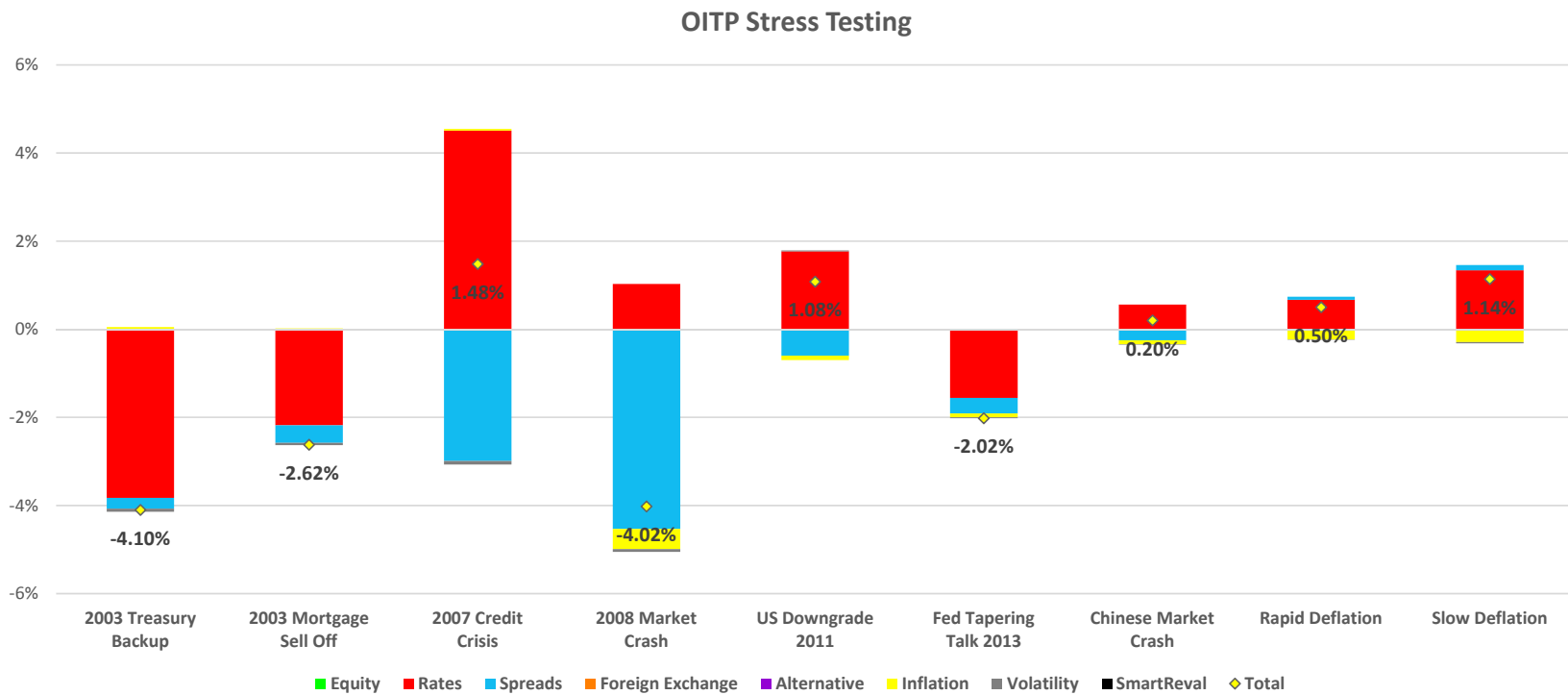
Oregon Intermediate Term Fund Interest Rate Exposure



Data as of September 30, 2017

Appendix 2(B)iv

Oregon Intermediate Term Fund Stress Testing

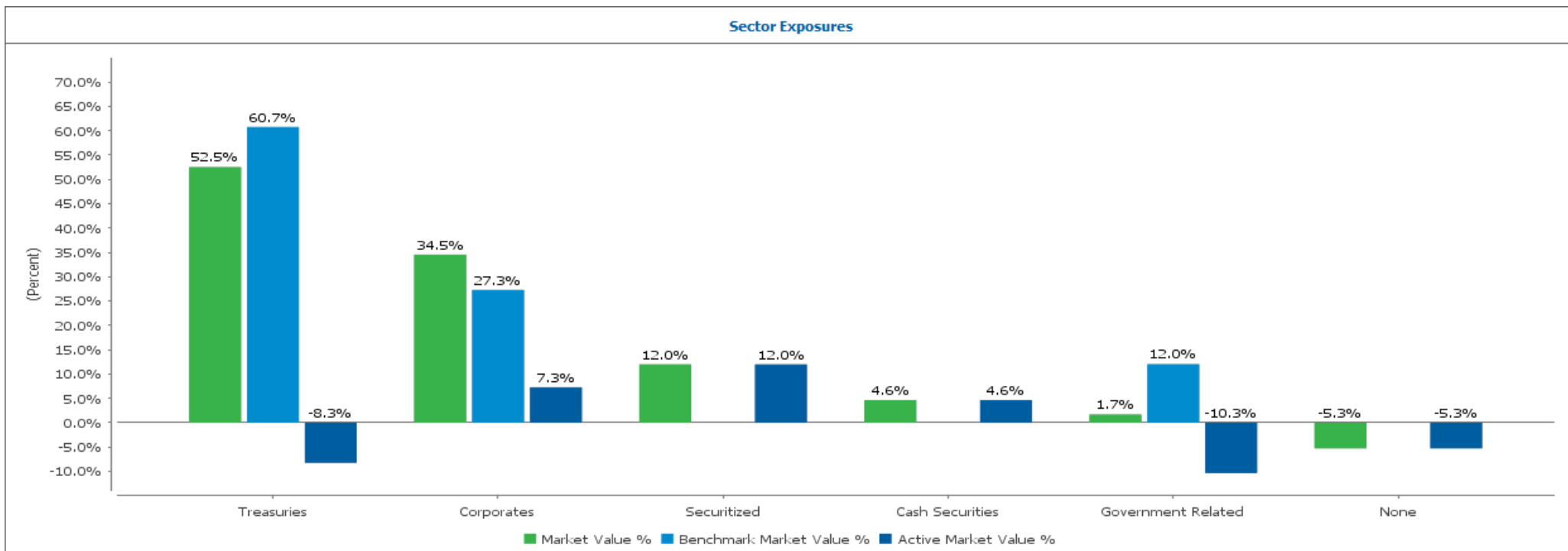


Data as of September 30, 2017

Appendix 2(C) Oregon Local Government Investment Fund

Appendix 2(C)i

Oregon Local Government Investment Fund Sector Exposure



Data as of September 30, 2017

Appendix 2(C)ii

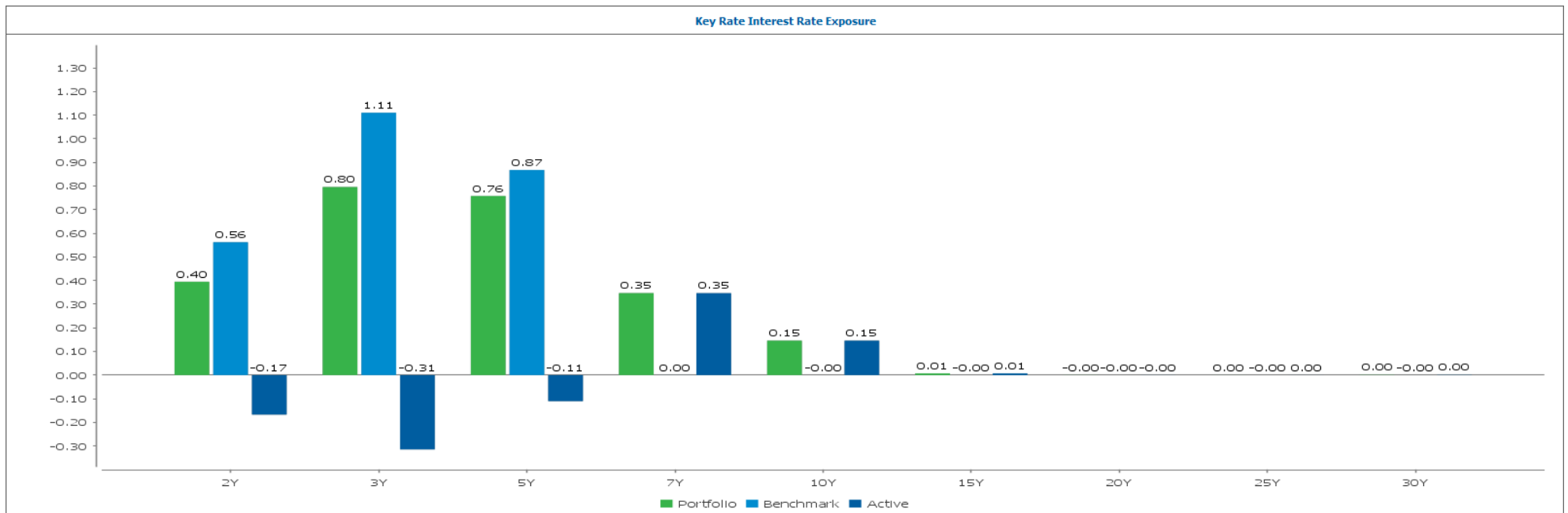
Oregon Local Government Investment Fund Issuer Exposure

Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
- 59CB	216,525	100.0%	2.77	2.77	1.73	1.73	1.97	31	AA
+ UNITED STATES TREASURY	113,657	52.5%	2.14	1.12	0.00	0.00	1.54	1	AAA
+ STATE STREET	10,062	4.6%	0.00	0.00	0.00	0.00	1.23	0	
+ BANK OF AMERICA CORP	4,008	1.9%	4.97	0.09	5.02	0.09	2.86	90	BBB+
+ GOLDMAN SACHS GROUP INC/THE	3,043	1.4%	2.81	0.04	2.83	0.04	2.28	64	A-
+ WELLS FARGO & COMPANY	2,963	1.4%	3.92	0.05	3.95	0.05	2.55	73	A
+ CITIGROUP INC	2,765	1.3%	4.54	0.06	4.59	0.06	2.90	98	BBB+
+ CHEVRON CORP	2,149	1.0%	2.74	0.03	2.76	0.03	1.96	37	AA-
+ SHELL INTERNATIONAL FINANCE BV	2,067	1.0%	4.50	0.04	4.54	0.04	2.29	42	AA-
+ GENERAL ELECTRIC CO	2,028	0.9%	3.34	0.03	3.37	0.03	2.26	52	A+
+ JPMORGAN CHASE & CO	1,781	0.8%	4.74	0.04	4.79	0.04	2.75	81	A-
+ ANHEUSER-BUSCH INBEV FINANCE INC	1,719	0.8%	3.34	0.03	3.37	0.03	2.18	44	A-
+ ECOPETROL SA	1,668	0.8%	5.11	0.04	5.16	0.04	3.79	173	BBB
+ FORD CREDIT FLOORPLAN MASTER OWNER TRUST	1,663	0.8%	1.75	0.01	1.77	0.01	1.84	39	AAA
+ TIME WARNER CABLE INC	1,601	0.7%	2.62	0.02	2.64	0.02	2.69	108	BBB-
+ AMERICAN EXPRESS CREDIT CORPORATION	1,597	0.7%	2.42	0.02	2.44	0.02	2.10	54	A
+ SOUTHERN COPPER CORP	1,562	0.7%	4.62	0.03	4.67	0.03	2.92	96	BBB
+ TORONTO-DOMINION BANK/THE	1,534	0.7%	1.47	0.01	1.48	0.01	1.75	33	AA-
+ CAPITAL ONE MULTI-ASSET EXECUTION TRUST	1,500	0.7%	2.07	0.01	2.09	0.01	1.86	36	AAA
+ ROYAL BANK OF CANADA	1,449	0.7%	2.35	0.02	2.37	0.02	1.94	40	AA-
+ AT&T INC	1,444	0.7%	1.38	0.01	1.39	0.01	1.91	49	BBB+
+ MANUFACTURERS AND TRADERS TRUST CO	1,389	0.6%	2.77	0.02	2.79	0.02	2.16	54	A
+ ANADARKO PETROLEUM CORPORATION	1,255	0.6%	2.61	0.02	2.63	0.02	2.77	115	BBB
+ HSBC HOLDINGS PLC	1,247	0.6%	4.46	0.03	4.51	0.03	2.89	99	A
+ VERIZON COMMUNICATIONS INC	1,195	0.6%	3.42	0.02	3.45	0.02	2.19	45	BBB+
+ BECTON DICKINSON AND COMPANY	1,182	0.5%	2.58	0.01	2.60	0.01	2.31	73	BBB-

Data as of September 30, 2017

Appendix 2(C)iii

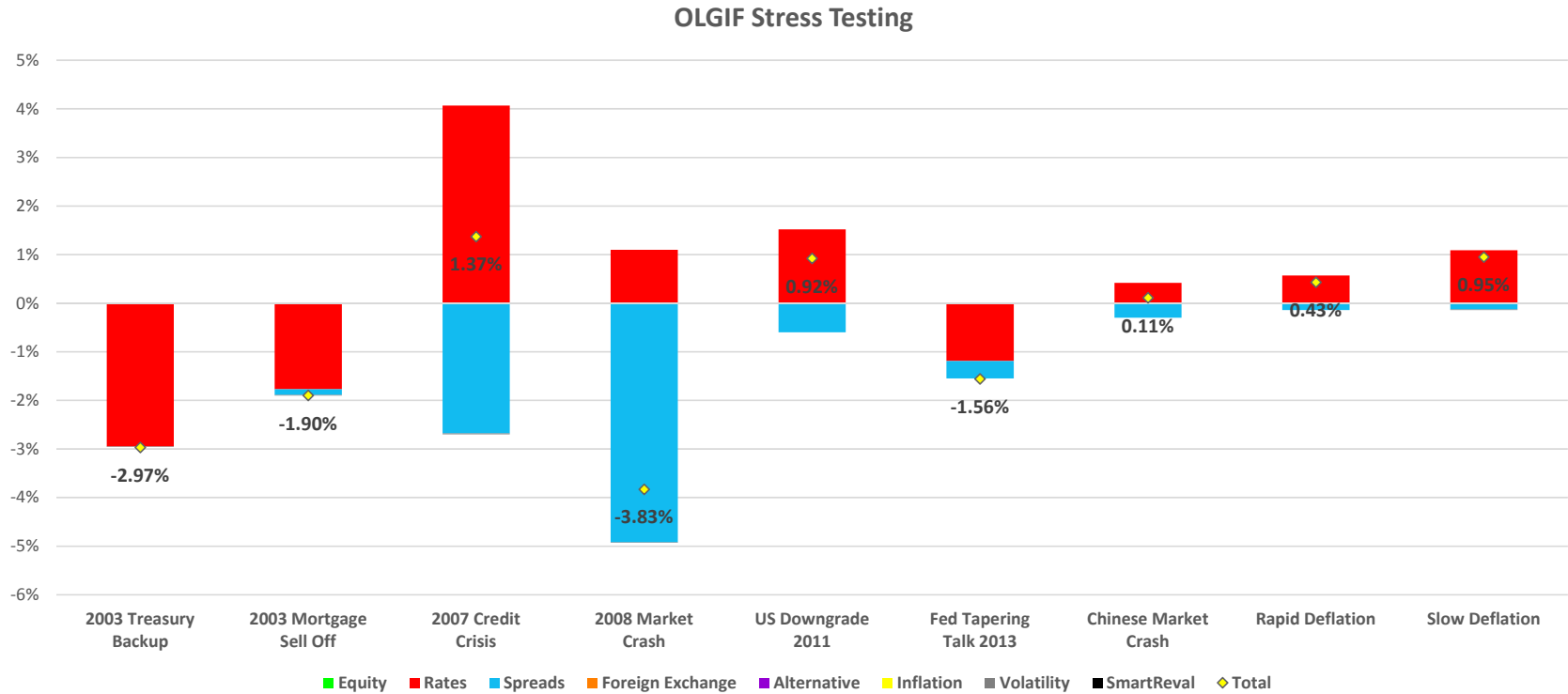
Oregon Local Government Investment Fund Interest Rate Exposure



Data as of September 30, 2017

Appendix 2(C)iv

Oregon Local Government Investment Fund Stress Testing

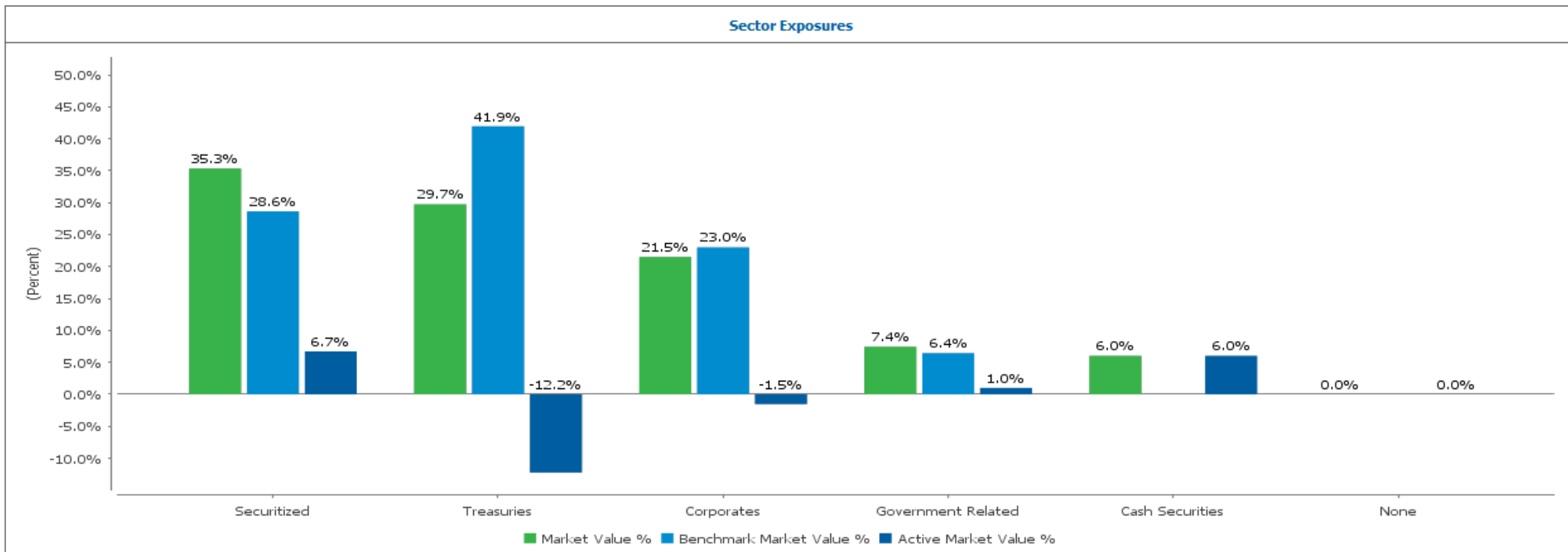


Data as of September 30, 2017

Appendix 2(D) Oregon Public University Fund

Appendix 2(D)i

Oregon Public University Fund Sector Exposure



Data as of September 30, 2017

Appendix 2(D)ii

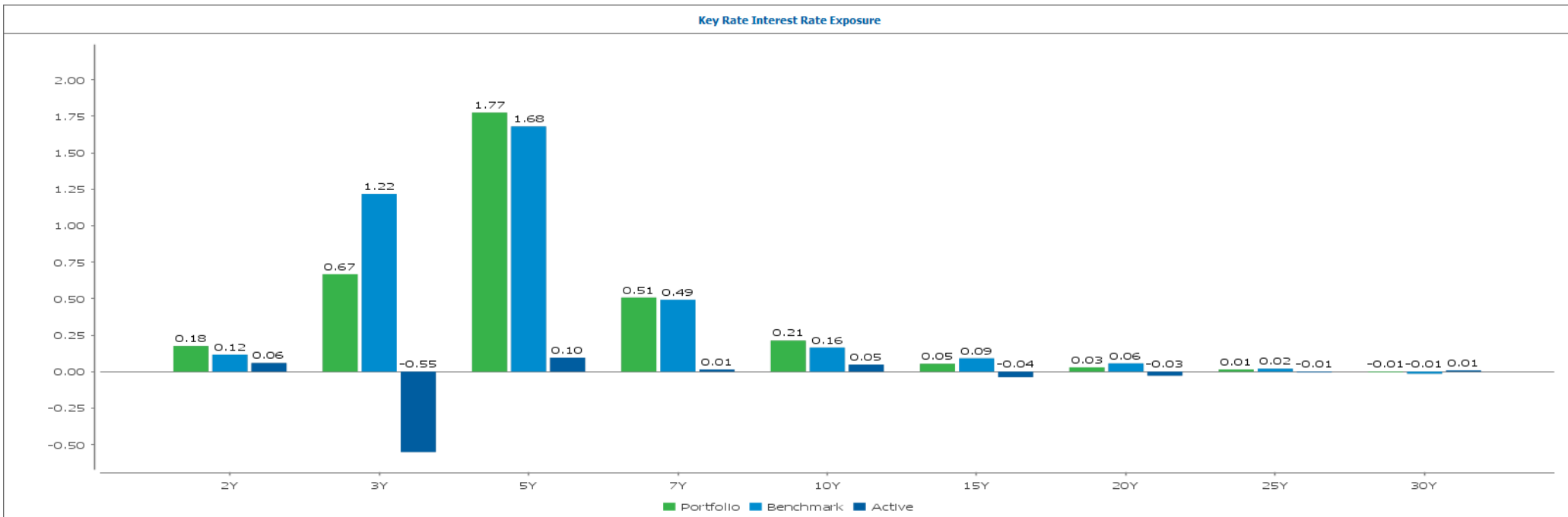
Oregon Public University Fund Issuer Exposure

Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
- 59CF	313,000	100.0%	3.53	3.53	2.77	2.77	2.19	35	AA
+ UNITED STATES TREASURY	93,051	29.7%	4.77	1.42	0.00	0.00	1.96	2	AAA
+ OREGON STATE TREASURY	26,567	8.5%	0.51	0.04	0.87	0.07	1.44	30	AA
+ FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	17,435	5.6%	3.65	0.20	4.40	0.24	2.47	20	AAA
+ FEDERAL NATIONAL MORTGAGE ASSOCIATION	17,346	5.5%	3.65	0.20	4.54	0.25	2.52	17	AAA
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	9,889	3.2%	3.25	0.10	4.11	0.13	2.42	20	AAA
+ CITIBANK CREDIT CARD ISSUANCE TRUST	8,336	2.7%	3.19	0.08	3.21	0.09	2.01	32	AAA
+ EUROPEAN INVESTMENT BANK	7,772	2.5%	4.41	0.11	4.45	0.11	2.06	17	AAA
+ FORD MOTOR CREDIT COMPANY LLC	7,156	2.3%	4.25	0.10	4.29	0.10	3.07	118	BBB
+ CITIGROUP INC	6,123	2.0%	2.05	0.04	4.25	0.08	2.45	89	BBB+
+ CAPITAL ONE MULTI-ASSET EXECUTION TRUST	5,684	1.8%	0.06	0.00	3.95	0.07	1.57	35	AAA
+ TENNESSEE VALLEY AUTHORITY	5,418	1.7%	7.09	0.12	7.17	0.12	2.44	25	AAA
+ GOLDMAN SACHS GROUP INC/THE	5,189	1.7%	0.24	0.00	6.38	0.11	2.49	114	A-
+ WELLS FARGO COMMERCIAL MORTGAGE TRUST WFCM_16-C37	5,118	1.6%	3.57	0.06	3.47	0.06	2.44	66	AAA
+ DR PEPPER SNAPPLE GROUP INC	4,739	1.5%	5.06	0.08	5.11	0.08	2.69	67	BBB+
+ MORGAN STANLEY CAPITAL I TRUST MSC_15-UBS8	4,634	1.5%	2.66	0.04	2.69	0.04	2.26	65	AAA
+ SHERWIN-WILLIAMS COMPANY (THE)	4,575	1.5%	5.23	0.08	5.28	0.08	2.84	81	BBB
+ FREDDIE MAC FHLMC_4664	3,570	1.1%	3.43	0.04	3.93	0.04	2.49	28	AAA
+ CNH EQUIPMENT TRUST CNH_17-A	3,326	1.1%	3.52	0.04	3.55	0.04	2.22	46	AAA
+ FREDDIE MAC FHLMC_4268	3,145	1.0%	3.45	0.03	3.95	0.04	2.52	32	AAA
+ ASTRAZENECA PLC	3,083	1.0%	7.01	0.07	7.09	0.07	3.16	93	BBB+
+ SYNCHRONY CREDIT CARD MASTER NOTE TRUST	3,005	1.0%	2.37	0.02	2.39	0.02	2.00	45	AAA
+ TEVA PHARMACEUTICAL FINANCE NETHERLANDS III BV	2,901	0.9%	3.62	0.03	3.66	0.03	3.24	146	BBB-
+ FREDDIE MAC FHLMC_4625	2,893	0.9%	3.76	0.03	4.68	0.04	2.58	11	AAA
+ JPMORGAN CHASE & CO	2,706	0.9%	0.13	0.00	5.39	0.05	2.21	85	A-
+ GENERAL ELECTRIC CAPITAL CORP	2,563	0.8%	0.17	0.00	5.10	0.04	1.96	62	AA-

Data as of September 30, 2017

Appendix 2(D)iii

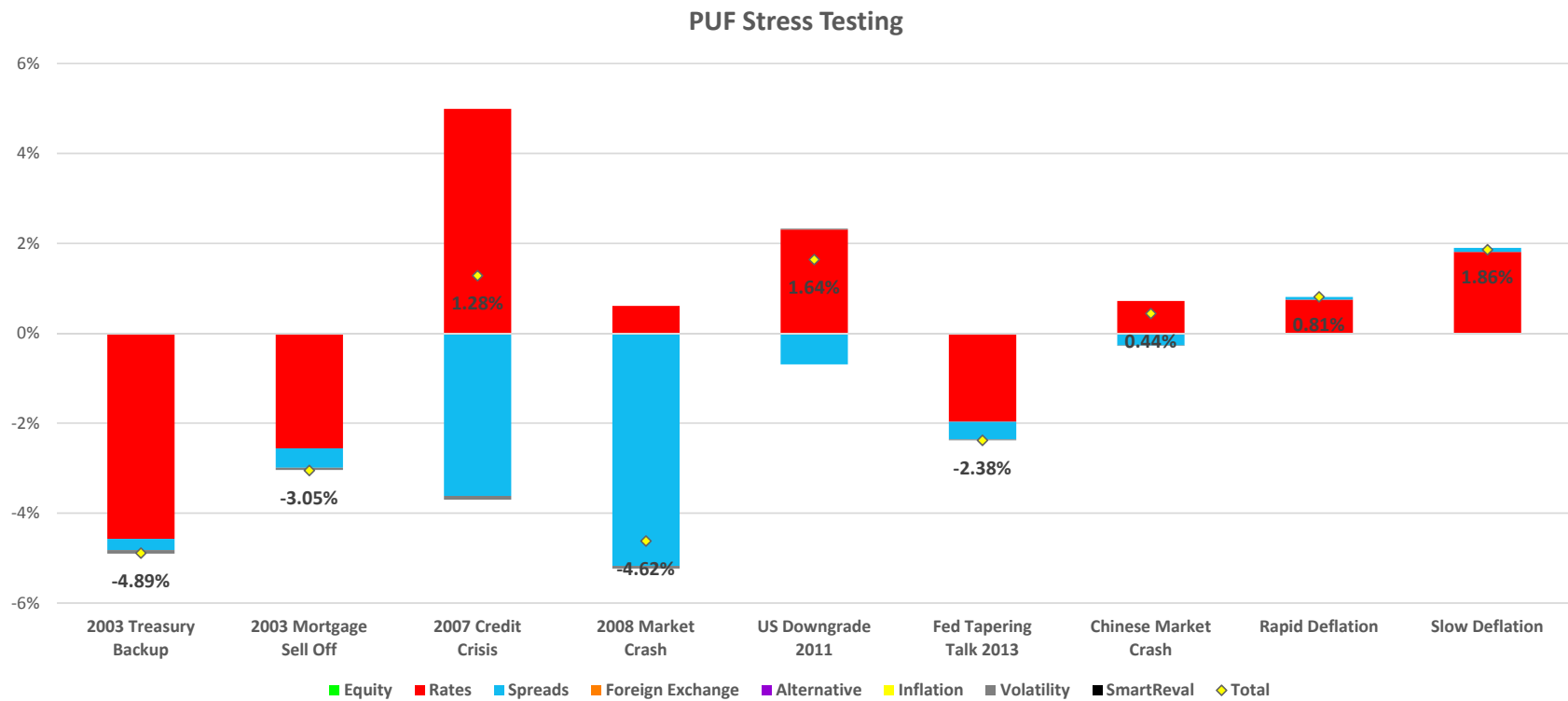
Oregon Public University Fund Interest Rate Exposure



Data as of September 30, 2017

Appendix 2(D)iv

Oregon Public University Fund Stress Testing



Data as of September 30, 2017

Appendix 2(E) State Agency Separate Accounts

Appendix 2 (E)i: State Agency Separate Accounts

Department of Administrative Services – Insurance Fund (DAS)

Objective – Objectives for the Department of Administrative Services (“DAS”) Insurance Fund, in priority order, are: preservation of capital; liquidity; and return. The over-arching goal is to mitigate credit and interest rate risk while maintaining sufficient liquidity to meet anticipated cash needs all while maximizing return. The portfolio is designed to maximize yield based on amortized cost (“book yield”) and not total return. Investments are generally held to maturity.

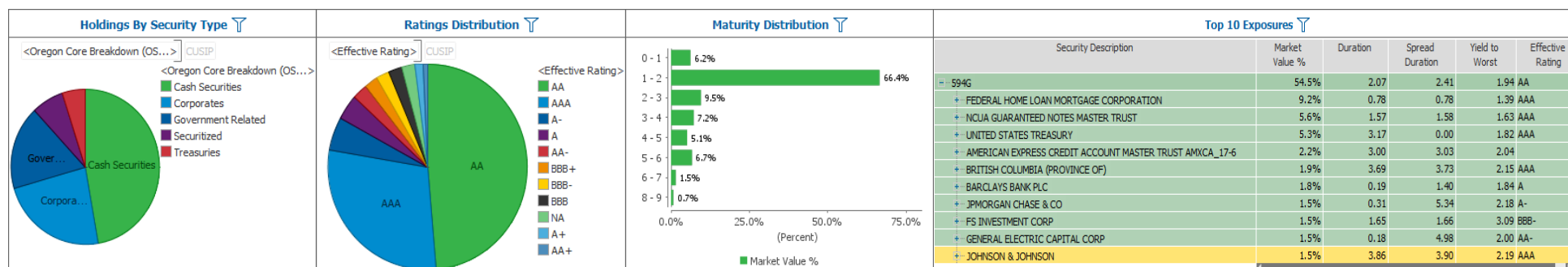
Strategy – The portfolio is constructed to provide for liquidity needs and preserve principal in a variety of economic and market environments while maximizing available yield. The key to executing this strategy is the balanced management of liquidity, issuer credit stability, portfolio diversification, and maturity laddering. Staff conducts periodic meetings with DAS representatives to review the account’s investment performance, objectives and liquidity needs.

Constraints – Key bespoke constraints for the DAS portfolio includes a maximum average maturity of 5 years and a minimum weighted-average credit quality of AA/Aa2. All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product type, concentration and rating. Additional constraints are in place through the DAS Investment Policy Statement.

Manager – Oregon State Treasury

Benchmark – None

DAS Insurance Fund Metrics



Data as of September 30, 2017

Appendix 2 (E)ii: State Agency Separate Accounts

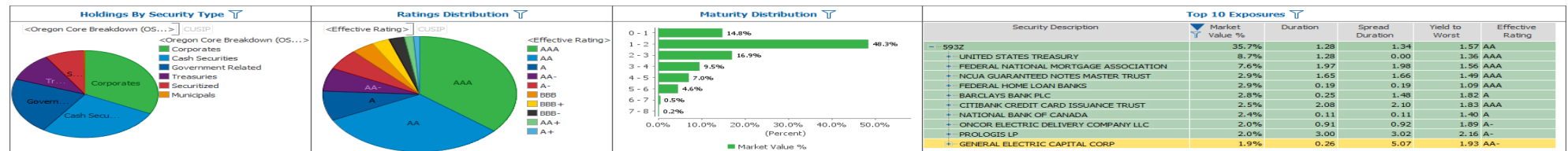
Department of Consumer & Business Services (DCBS)

Objective – Objectives for the Department of Consumer & Business Services (“DCBS”) Insurance Fund and Workers Benefit Fund, in priority order, are: preservation of capital; liquidity; and return. The over-arching goal is to mitigate credit and interest rate risk while maintaining sufficient liquidity to meet anticipated cash needs all while maximizing return. The portfolio is designed to maximize yield based on amortized cost (“book yield”) and not total return. Investments are generally held to maturity.

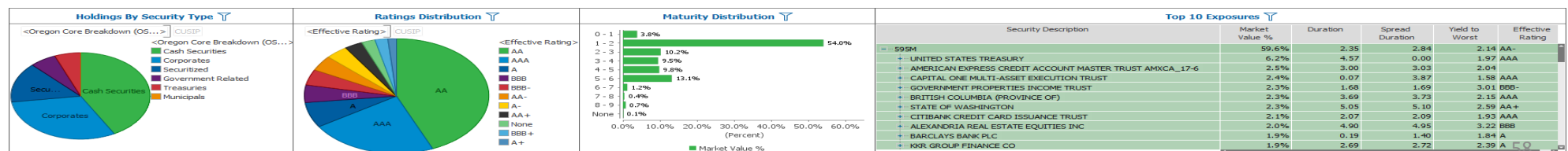
Strategy – The portfolio is constructed to provide liquidity and preserve principal in a variety of economic and market environments while maximizing available yield. The key to executing this strategy is the balanced management of liquidity, issuer credit stability, portfolio diversification, and maturity laddering. Staff conducts periodic meetings with DCBS representatives to review the investment performance, objectives and liquidity needs.

Constraints – Key bespoke constraints for both the Insurance and Workers Benefit Funds include a maximum weighted average maturity of 5 years, a minimum weighted-average credit quality of AA/Aa2 for the Insurance Fund and a minimum weighted-average credit quality of A/A2 for the Workers Benefit Fund. All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product, concentration and rating. Additional constraints are in place through the DCBS Investment Policy Statements for the Insurance Fund and the Workers Benefit Fund.

DCBS Insurance Fund Metrics



DCBS Insurance Fund Metrics



Data as of September 30, 2017

Appendix 2 (E)iii: State Agency Separate Accounts

Oregon Department of Veterans Affairs (ODVA)

Objective – Objectives for the Oregon Department of Veterans Affairs (“ODVA”) Fund, in priority order, are: preservation of capital; liquidity; and return. The over-arching goal is to mitigate credit and interest rate risk while maintaining sufficient liquidity to meet anticipated cash needs all while maximizing return. The portfolio is designed to maximize yield based on amortized cost (“book yield”) and not total return. Investments are generally held to maturity.

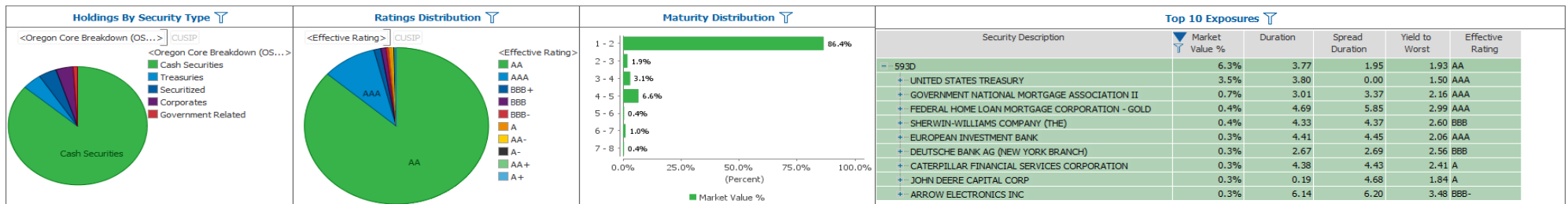
Strategy – The portfolio is constructed to provide liquidity and preserve principal in a variety of economic and market environments while maximizing available yield. The key to executing this strategy is the balanced management of liquidity, issuer credit stability, portfolio diversification, and maturity laddering. Staff conducts periodic meetings with agencies to review each agency’s specific investment performance, objectives and liquidity needs. Under unique market circumstances (e.g., very low interest rate environments), frequent communication with ODVA is necessary to monitor ODVA’s asset/liability match (or mismatch) and fixed/floating interest rate risk.

Constraints – Key bespoke constraints for the portfolio include maximum weighted-average maturity of 5 years and minimum weighted-average credit quality of AA/Aa2. All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product, concentration and rating. Additional constraints are in place through the ODVA Investment Policy Statement.

Manager – Oregon State Treasury

Benchmark – None

ODVA Fund Metrics



Data as of September 30, 2017

Appendix 2 (E)iv: State Agency Separate Accounts

Oregon Department of Transportation (ODOT)

Objective – Objectives for the Oregon Department of Transportation (“ODOT”) Fund, in priority order, are: preservation of capital, liquidity, and return. The over-arching goal is to mitigate credit and interest rate risk while maintaining sufficient liquidity to meet anticipated cash needs all while maximizing return. The portfolio is designed to maximize yield based on amortized cost (“book yield”) and not total return. Investments are generally held to maturity.

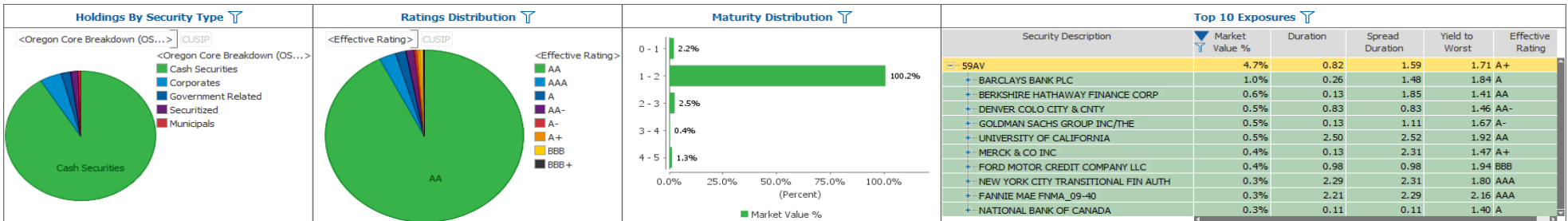
Strategy – The portfolio is constructed to provide for liquidity needs and preserve principal in a variety of economic and market environments while maximizing available yield. The key to executing this strategy is the balanced management of liquidity, issuer credit stability, portfolio diversification, and maturity laddering. Staff conducts periodic meetings with ODOT to review Fund investment performance, objectives and liquidity needs.

Constraints – Key bespoke constraints for ODOT’s portfolio include maximum weighted-average maturity of 2 years and minimum weighted-average credit quality of A/A2. All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product, concentration and rating. Additional constraints are in place through ODOT’s Investment Policy Statement.

Manager – Oregon State Treasury

Benchmark – None

ODOT Fund Metrics



Data as of September 30, 2017

Appendix 2 (E)v: State Agency Separate Accounts Lottery

Objective – Lottery investments are made to offset liabilities owed to prize winners who elect to take a payment stream in lieu of a lump-sum payment.

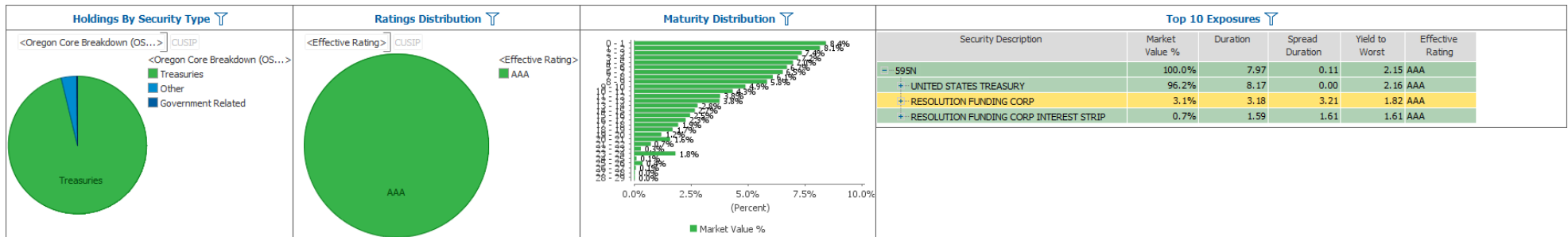
Strategy – The portfolio is constructed to preserve invested principal and match investment maturities with individual prize liability needs by investing in zero-coupon government-guaranteed securities.

Constraints – The key, bespoke Lottery portfolio constraint limits exposures to U.S. Government guaranteed investments. All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product, concentration and rating. Additional constraints are in place through the Lottery’s Investment Policy Statement.

Manager – Oregon State Treasury

Benchmark – None

Lottery Fund Metrics



Data as of September 30, 2017

Appendix 2 (E)vi: State Agency Separate Accounts

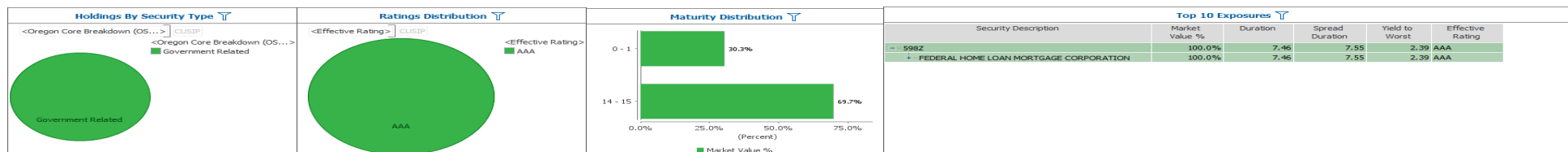
Department of Housing & Community Services – Housing Fund and Elderly Housing Fund

Objective – Objectives for the Oregon Department of Housing and Community Services (“DHCS”) Funds, in priority order, are: preservation of capital; liquidity; and return. The over-arching goal is to mitigate credit and interest rate risk while maintaining sufficient liquidity to meet anticipated cash needs all while maximizing return. The portfolio is designed to maximize yield based on amortized cost (“book yield”) and not total return. Investments are generally held to maturity.

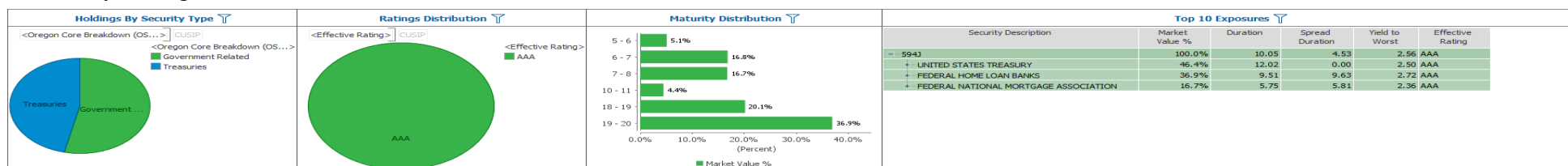
Strategy – The portfolio is constructed to preserve invested principal and match investment maturities with agency anticipated liability needs. The agency communicates investment needs as agency liabilities arise and Treasury staff acts accordingly by investing to offset the known liabilities.

Constraints – All state agency investments overseen by OST are governed by OIC Policy INV 402: Internal Fixed Income Portfolio Investments which limits investment exposures by product, concentration and rating. Additional constraints are in place through the DHCS Investment Policy Statement.

DHS Housing Fund Metrics



DHS Elderly Housing Fund Metrics



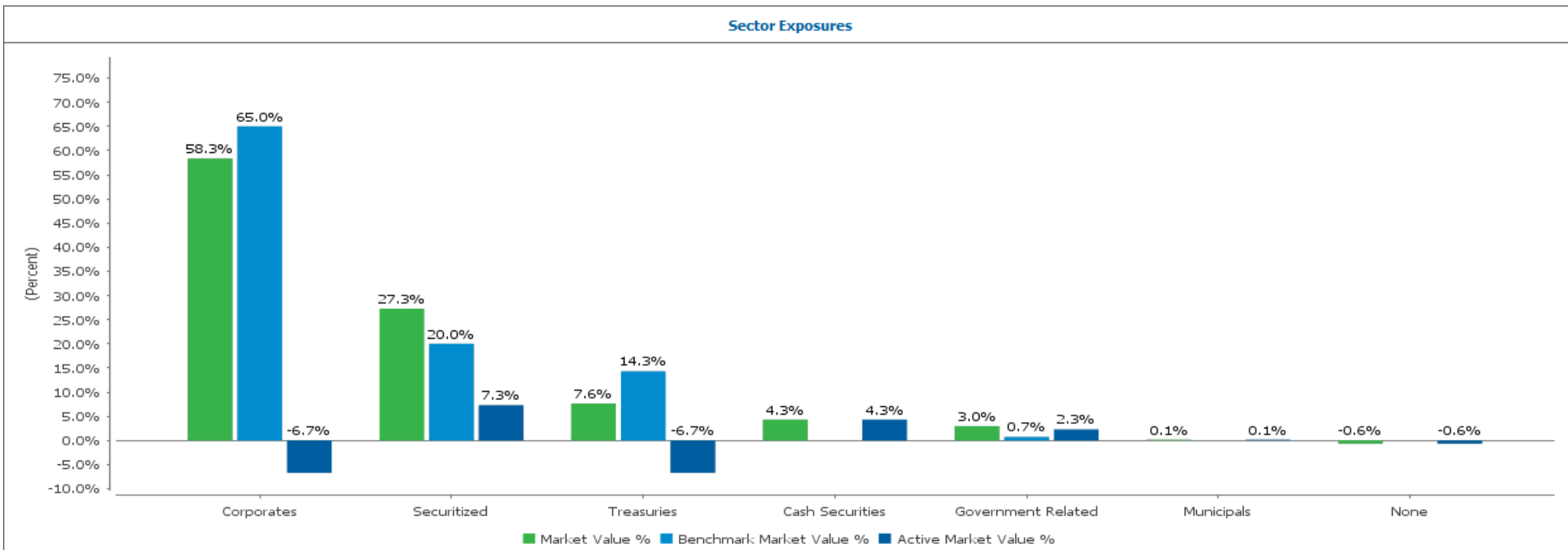
Data as of September 30, 2017

Appendix 3

State Accident Insurance Fund

Appendix 3.i

State Accident Insurance Fund Sector Exposure



Data as of September 30, 2017

Appendix 3.ii

State Accident Insurance Fund Issuer Exposure

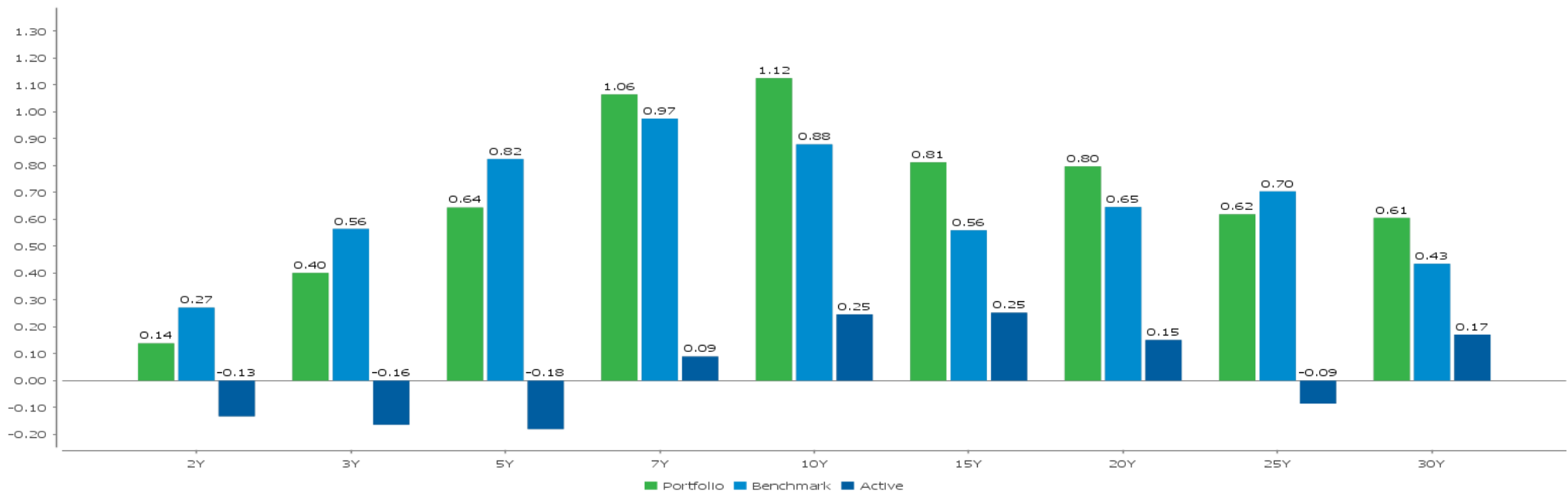
Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
- SAIFFI	4,351,980	100.0%	6.34	6.34	5.90	5.90	3.11	107	A
+ None	653,988	15.0%	1.76	0.26	2.83	0.43	2.16	77	AA
+ UNITED STATES TREASURY	324,335	7.5%	11.27	0.84	0.00	0.00	2.14	0	AAA
+ FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	236,470	5.4%	5.54	0.30	6.27	0.34	2.91	32	AAA
+ FEDERAL NATIONAL MORTGAGE ASSOCIATION	176,944	4.1%	5.28	0.21	5.99	0.24	2.76	48	AAA
+ GOLDMAN SACHS GROUP INC/THE	50,677	1.2%	11.33	0.13	11.47	0.13	4.31	171	BBB
+ AT&T INC	45,523	1.0%	7.95	0.08	8.04	0.08	3.82	150	BBB+
+ WELLS FARGO & COMPANY	42,753	1.0%	12.04	0.12	12.19	0.12	3.97	139	A-
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	40,235	0.9%	1.12	0.01	7.46	0.07	1.11	13	AAA
+ MORGAN STANLEY	36,166	0.8%	6.55	0.05	6.62	0.06	3.63	142	BBB
+ CITIGROUP INC	36,042	0.8%	11.34	0.09	11.48	0.10	4.09	153	BBB
+ BANK OF AMERICA CORP	35,785	0.8%	7.01	0.06	7.11	0.06	3.25	114	BBB+
+ VERIZON COMMUNICATIONS INC	31,040	0.7%	10.77	0.08	10.90	0.08	4.01	151	BBB+
+ MICROSOFT CORPORATION	30,936	0.7%	9.41	0.07	9.51	0.07	3.00	61	AAA
+ GE CAPITAL INTERNATIONAL FUNDING CO	28,594	0.7%	11.40	0.07	11.55	0.08	3.56	105	AA-
+ APPLE INC	25,703	0.6%	4.35	0.03	4.63	0.03	2.25	49	AA+
+ COMCAST CORPORATION	24,624	0.6%	5.11	0.03	5.17	0.03	2.58	75	A-
+ JPMORGAN CHASE & CO	22,823	0.5%	7.16	0.04	7.24	0.04	3.30	110	BBB+
+ CONOCOPHILLIPS HOLDING CO	22,155	0.5%	8.25	0.04	8.34	0.04	3.75	138	A-
+ BP CAPITAL MARKETS PLC	21,118	0.5%	6.40	0.03	6.47	0.03	2.99	81	A
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION I	20,076	0.5%	1.91	0.01	2.24	0.01	1.68	62	AAA
+ TIME WARNER CABLE INC	18,939	0.4%	5.90	0.03	5.97	0.03	3.65	168	BBB-
+ INDONESIA (REPUBLIC OF)	18,900	0.4%	14.10	0.06	14.28	0.06	4.32	159	BBB-
+ SCHLUMBERGER HOLDINGS CORP	17,965	0.4%	6.87	0.03	6.94	0.03	3.31	107	BBB+
+ BANK ONE CORPORATION	17,649	0.4%	6.92	0.03	6.99	0.03	3.86	159	BBB+
+ VISA INC	17,509	0.4%	10.40	0.04	10.57	0.04	3.15	69	A+

Data as of September 30, 2017

Appendix 3.iii

State Accident Insurance Fund Interest Rate Exposure

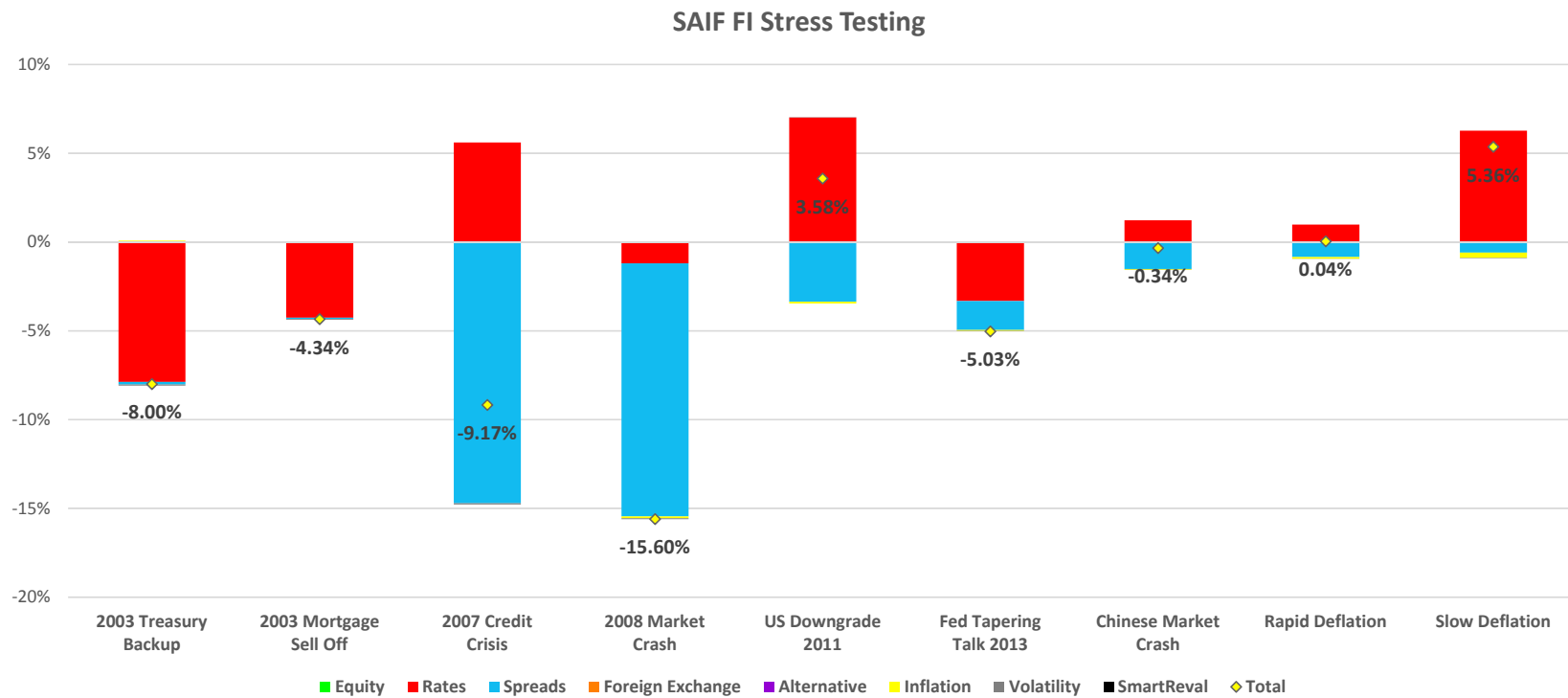
Key Rate Interest Rate Exposure



Data as of September 30, 2017

Appendix 3.iv

State Accident Insurance Fund Stress Testing



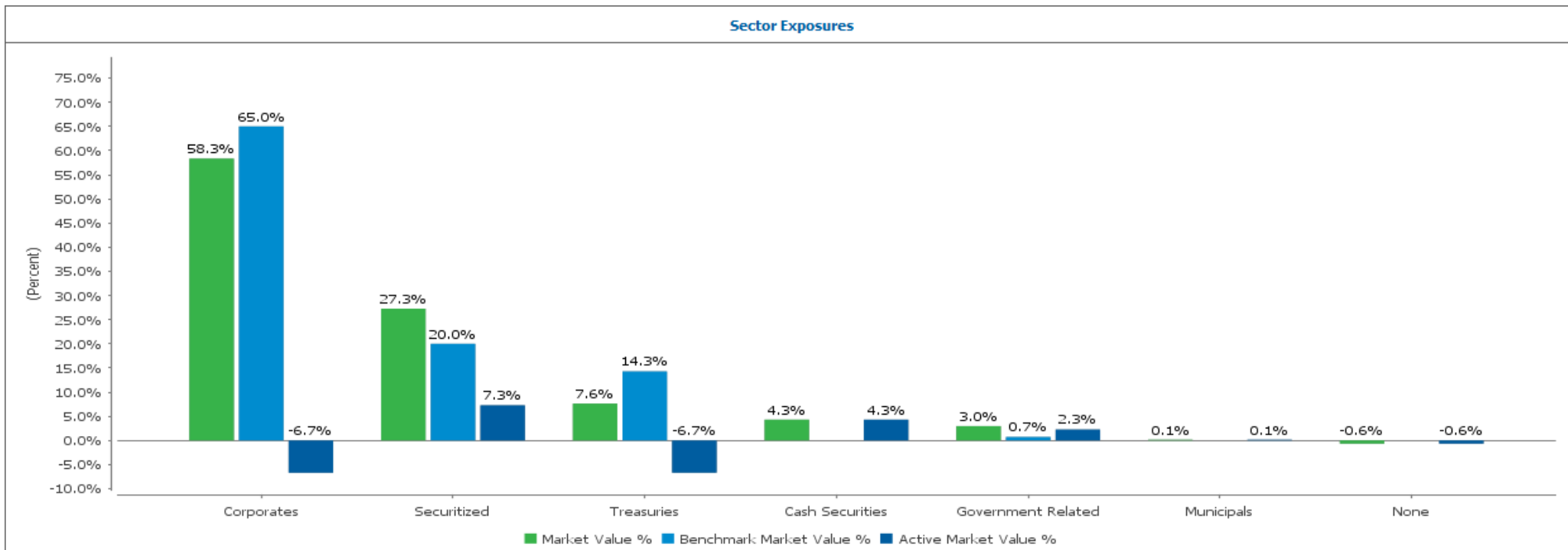
Data as of September 30, 2017

Appendix 4

Common School Fund

Appendix 4.i

Common School Fund Sector Exposure



Data as of September 30, 2017

Appendix 4.ii

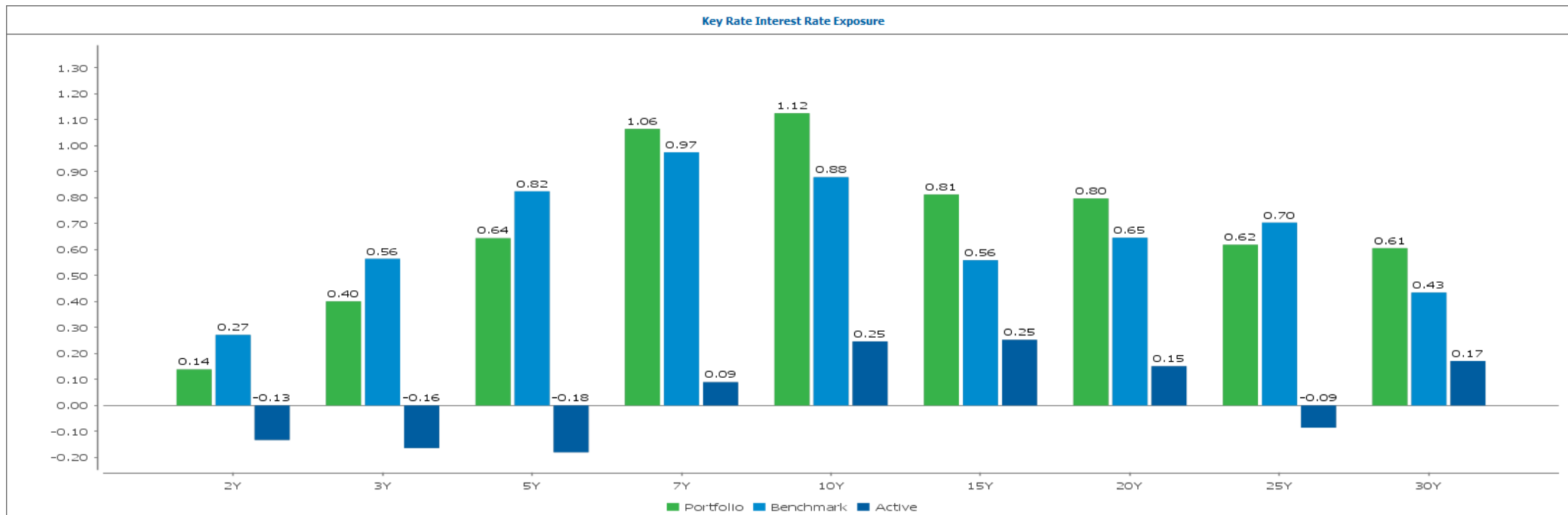
Common School Fund Issuer Exposure

Issuer Exposures									
Security Description	Market Value (m)	Market Value %	Duration	Duration Contribution	Spread Duration	Spread Duration Contribution	Yield to Worst	OAS	Effective Rating
- SAIFFI	4,351,980	100.0%	6.34	6.34	5.90	5.90	3.11	107	A
+ None	653,988	15.0%	1.76	0.26	2.83	0.43	2.16	77	AA
+ UNITED STATES TREASURY	324,335	7.5%	11.27	0.84	0.00	0.00	2.14	0	AAA
+ FEDERAL HOME LOAN MORTGAGE CORPORATION - GOLD	236,470	5.4%	5.54	0.30	6.27	0.34	2.91	32	AAA
+ FEDERAL NATIONAL MORTGAGE ASSOCIATION	176,944	4.1%	5.28	0.21	5.99	0.24	2.76	48	AAA
+ GOLDMAN SACHS GROUP INC/THE	50,677	1.2%	11.33	0.13	11.47	0.13	4.31	171	BBB
+ AT&T INC	45,523	1.0%	7.95	0.08	8.04	0.08	3.82	150	BBB+
+ WELLS FARGO & COMPANY	42,753	1.0%	12.04	0.12	12.19	0.12	3.97	139	A-
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION II	40,235	0.9%	1.12	0.01	7.46	0.07	1.11	13	AAA
+ MORGAN STANLEY	36,166	0.8%	6.55	0.05	6.62	0.06	3.63	142	BBB
+ CITIGROUP INC	36,042	0.8%	11.34	0.09	11.48	0.10	4.09	153	BBB
+ BANK OF AMERICA CORP	35,785	0.8%	7.01	0.06	7.11	0.06	3.25	114	BBB+
+ VERIZON COMMUNICATIONS INC	31,040	0.7%	10.77	0.08	10.90	0.08	4.01	151	BBB+
+ MICROSOFT CORPORATION	30,936	0.7%	9.41	0.07	9.51	0.07	3.00	61	AAA
+ GE CAPITAL INTERNATIONAL FUNDING CO	28,594	0.7%	11.40	0.07	11.55	0.08	3.56	105	AA-
+ APPLE INC	25,703	0.6%	4.35	0.03	4.63	0.03	2.25	49	AA+
+ COMCAST CORPORATION	24,624	0.6%	5.11	0.03	5.17	0.03	2.58	75	A-
+ JPMORGAN CHASE & CO	22,823	0.5%	7.16	0.04	7.24	0.04	3.30	110	BBB+
+ CONOCOPHILLIPS HOLDING CO	22,155	0.5%	8.25	0.04	8.34	0.04	3.75	138	A-
+ BP CAPITAL MARKETS PLC	21,118	0.5%	6.40	0.03	6.47	0.03	2.99	81	A
+ GOVERNMENT NATIONAL MORTGAGE ASSOCIATION I	20,076	0.5%	1.91	0.01	2.24	0.01	1.68	62	AAA
+ TIME WARNER CABLE INC	18,939	0.4%	5.90	0.03	5.97	0.03	3.65	168	BBB-
+ INDONESIA (REPUBLIC OF)	18,900	0.4%	14.10	0.06	14.28	0.06	4.32	159	BBB-
+ SCHLUMBERGER HOLDINGS CORP	17,965	0.4%	6.87	0.03	6.94	0.03	3.31	107	BBB+
+ BANK ONE CORPORATION	17,649	0.4%	6.92	0.03	6.99	0.03	3.86	159	BBB+
+ VISA INC	17,509	0.4%	10.40	0.04	10.57	0.04	3.15	69	A+

Data as of September 30, 2017

Appendix 4.iii

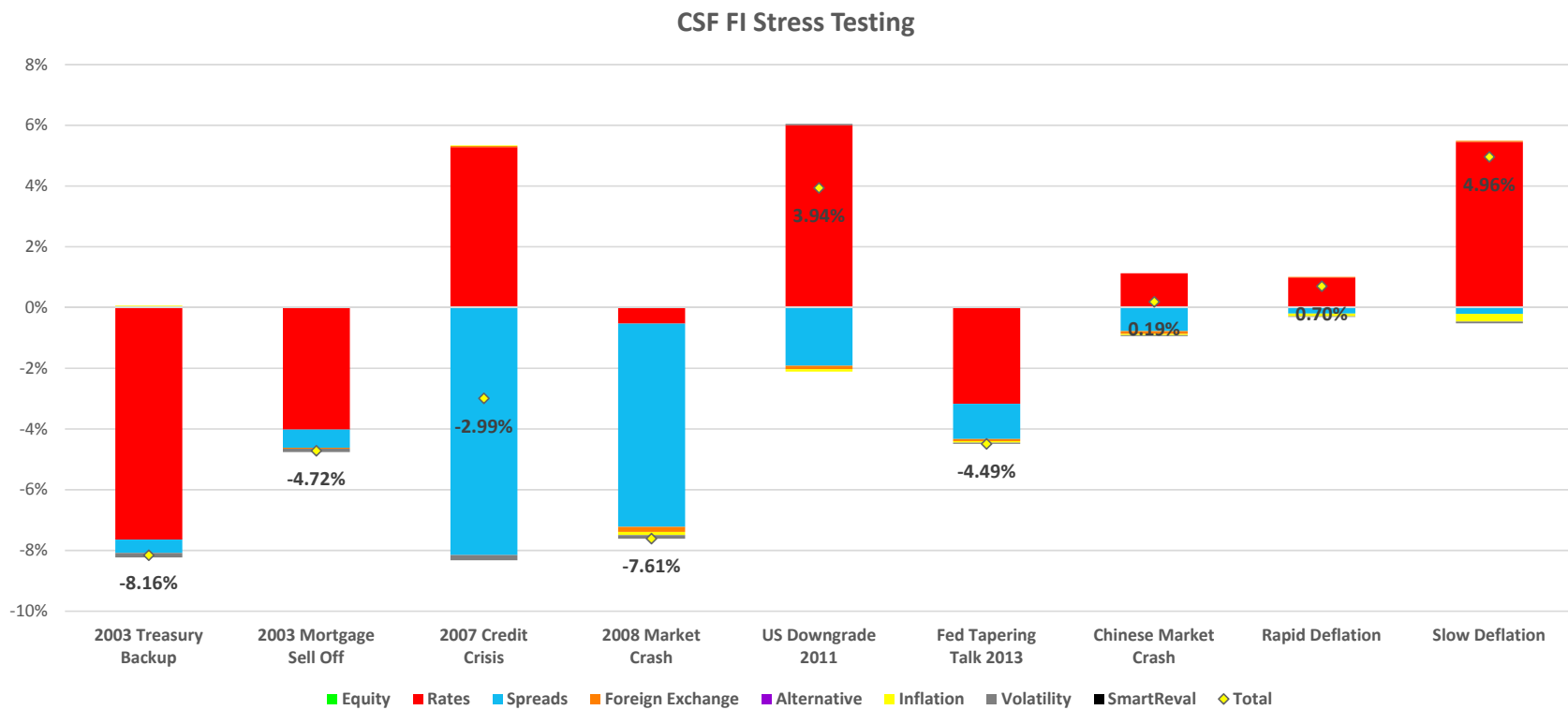
Common School Fund Interest Rate Exposure



Data as of September 30, 2017

Appendix 4.iv

Common School Fund Stress Testing



Data as of September 30, 2017

Stress Testing Details

Scenario Definitions

1. 2003 Treasury Backup

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

2. 2003 Mortgage Sell Off

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

3. 2007 Credit Crisis

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

4. 2008 Market Crash

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

5. 2011 US Downgrade

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

6. 2013 Fed Tapering Scare

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

7. Chinese Market Crash

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

8. Rapid Deflation

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

9. Slow Deflation

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

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TAB 6 – Q3 2017 Performance & Risk Report

OPERF

OPERF Risk Dashboard

2017 Q3

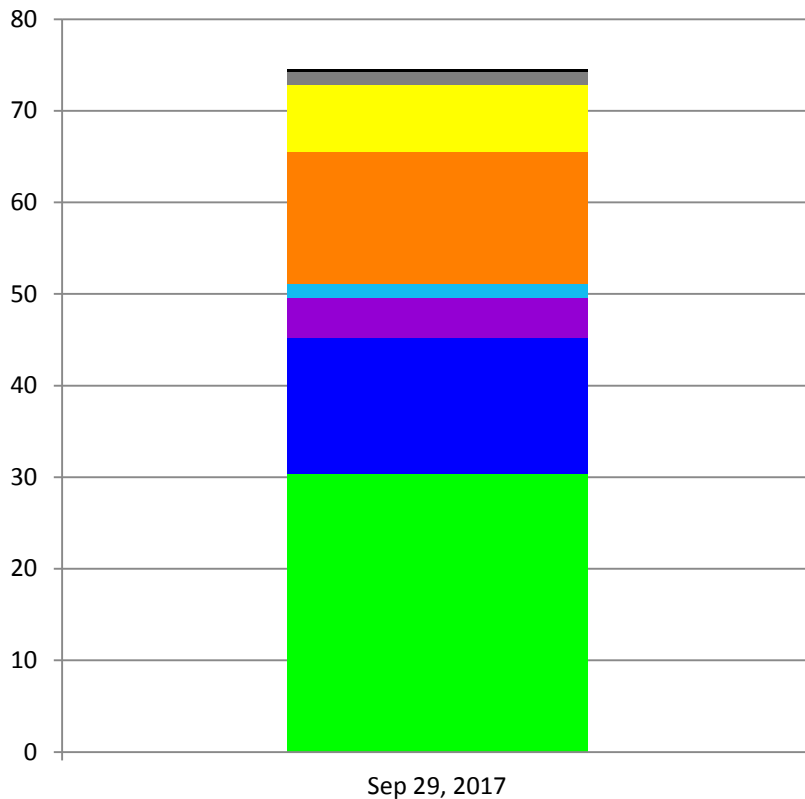
December 13, 2017



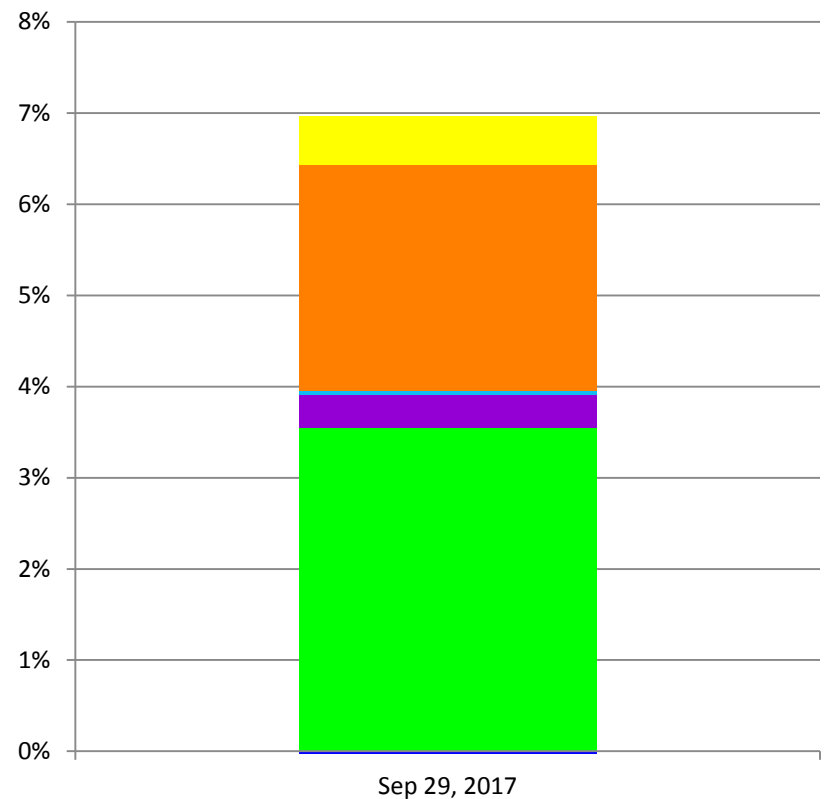
Oregon State Treasury

Allocation & Risk Contribution by Asset Class

Allocation in \$B

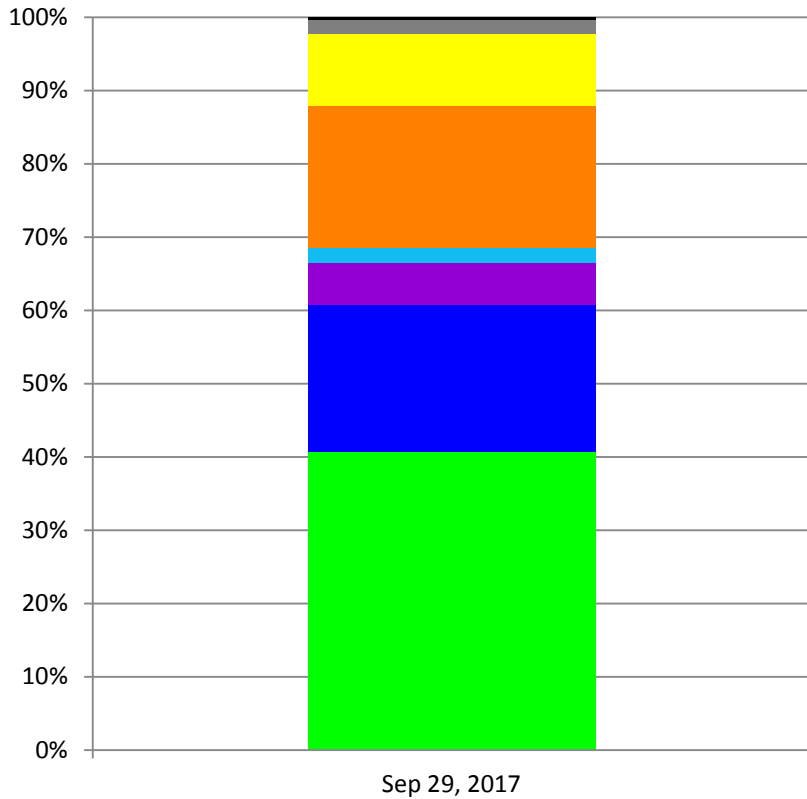


Risk Contribution

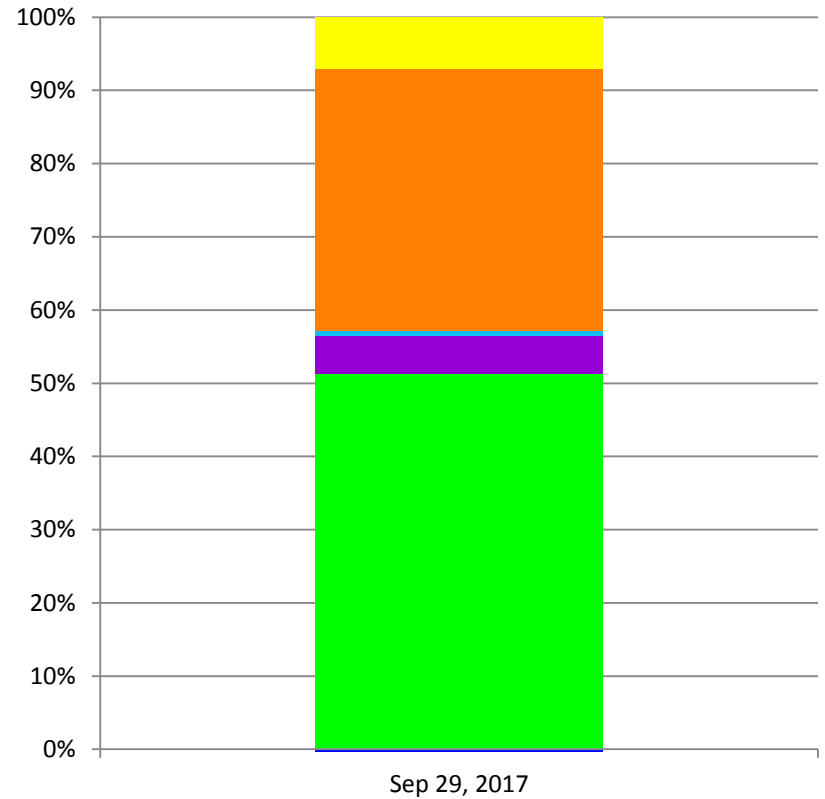


Allocation & Risk Contribution by Asset Class

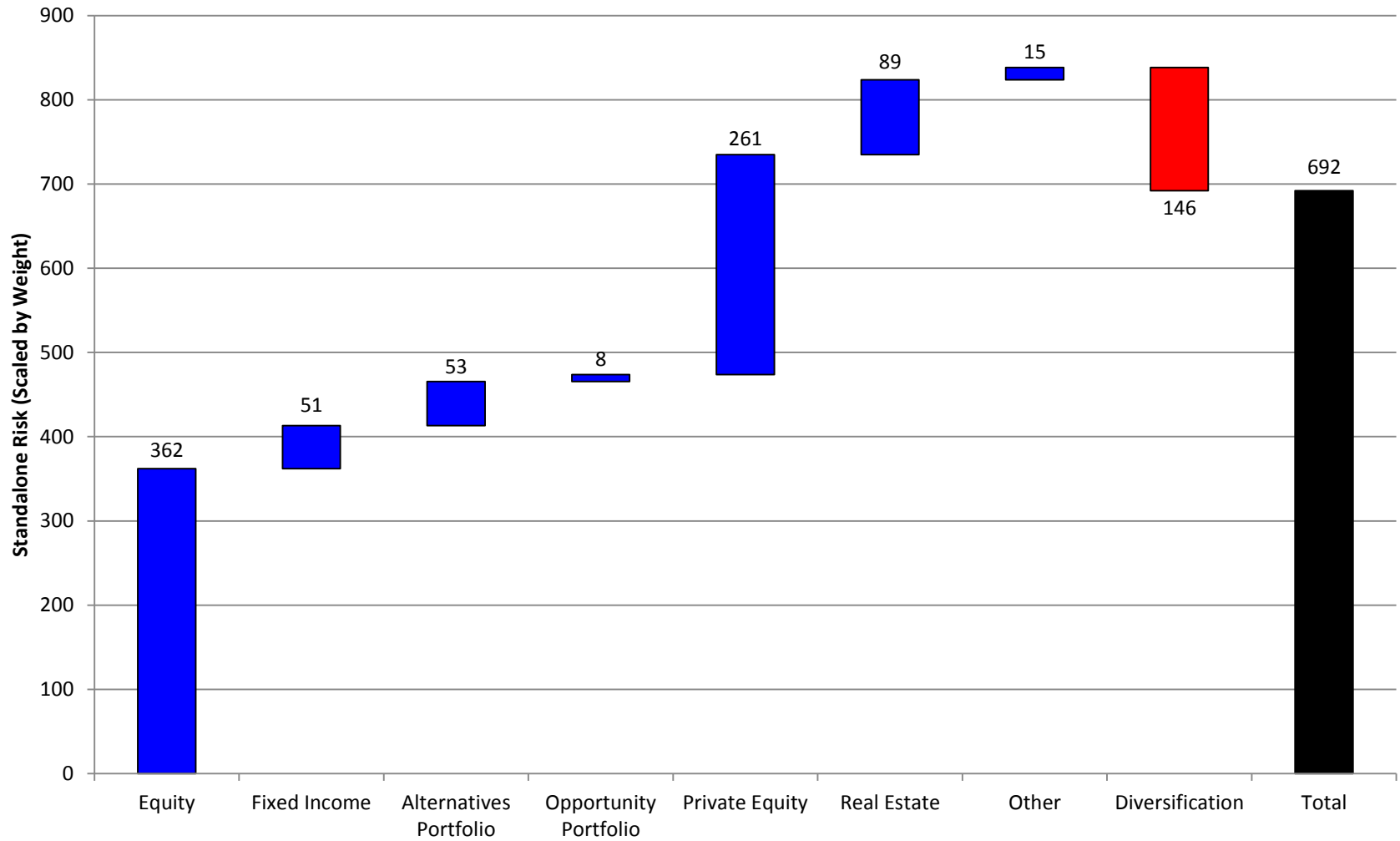
Allocation % of Total



Risk Contribution % of Total

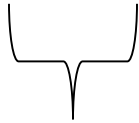


Stand-alone Risk by Asset Class

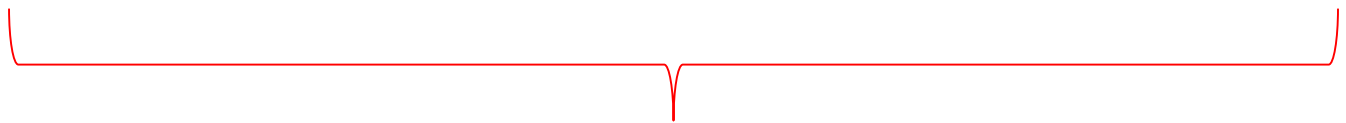


Correlation Matrix by Asset Class

Expected Return	Expected Risk	Predicted Risk ¹	Sep 29, 2017	Equity	Fixed Income	Alternatives Portfolio	Opportunity Portfolio	Private Equity	Real Estate	OPERF
7.1%	19.5%	8.9%	Equity	1.00	-0.15	0.61	0.58	0.89	0.48	0.97
3.0%	3.8%	2.6%	Fixed Income		1.00	-0.04	-0.13	-0.28	0.24	-0.07
6.3%	10.6%	9.1%	Alternatives Portfolio			1.00	0.50	0.62	0.38	0.69
		4.0%	Opportunity Portfolio				1.00	0.61	0.31	0.62
9.5%	26.3%	13.5%	Private Equity					1.00	0.43	0.94
6.7%	15.0%	9.1%	Real Estate						1.00	0.60
7.1%	14.1%	8.3%	OPERF							1.00

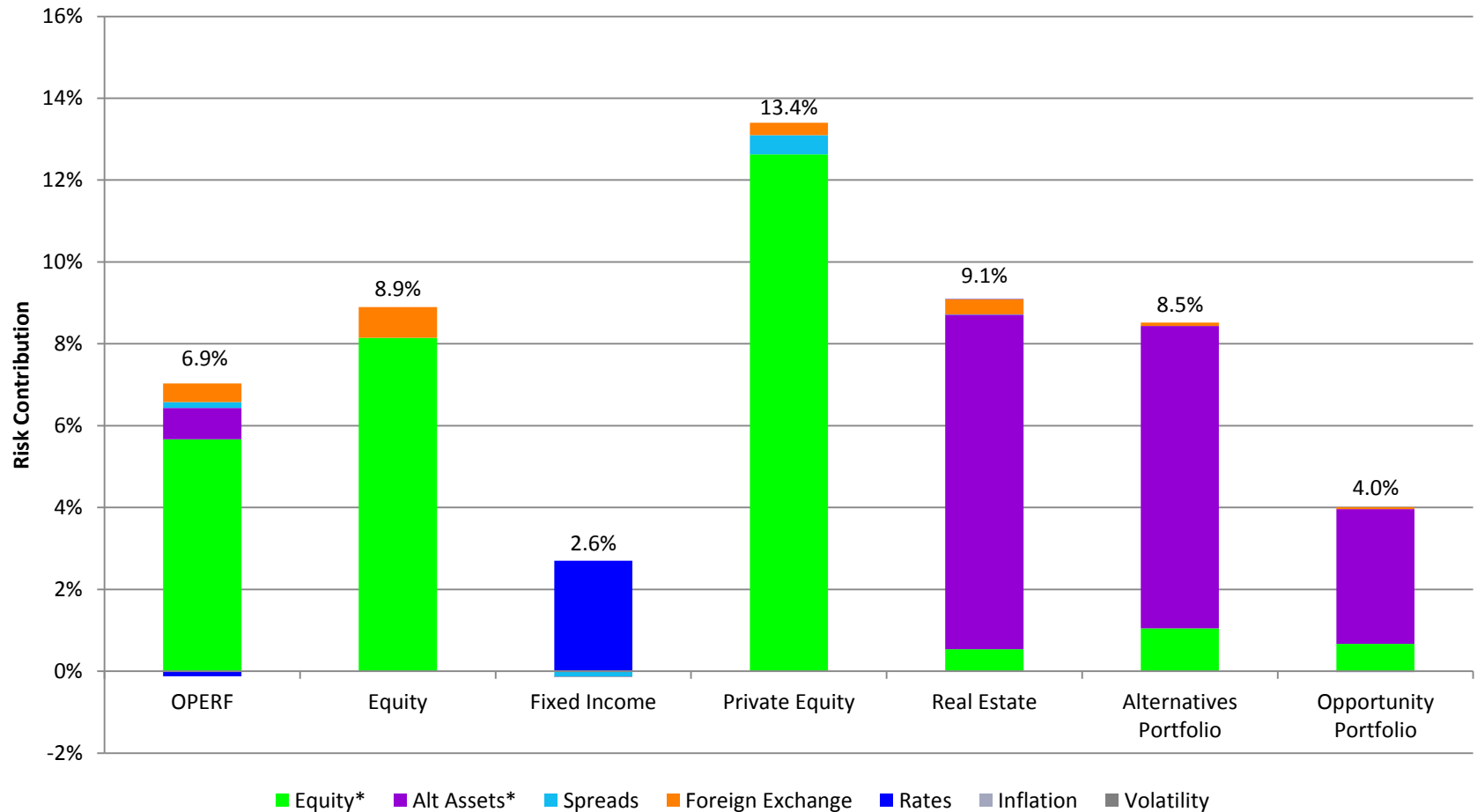


Capital Market Assumptions from Callan



¹Ex-Ante, holdings-based correlations between asset classes as estimated by Aladdin

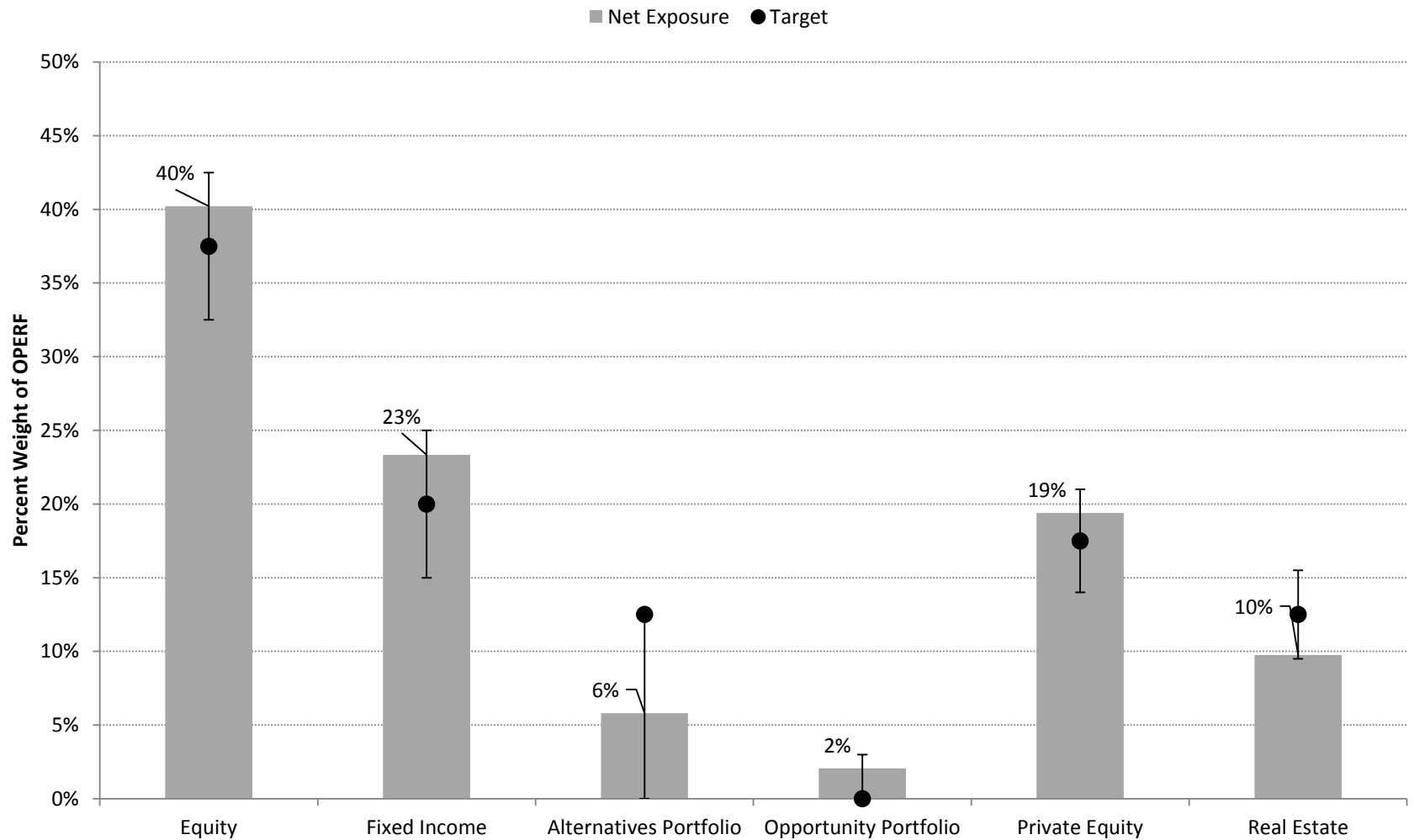
Risk Contribution by Factor Group



*Aladdin's Alternative risk factor group includes Private Equity, Real Estate, and Hedge Fund risk factors; however, Private Equity risk factors are highly correlated to Public Equity risk factors. In the above chart, Equity includes both Public & Private Equity while Alt Assets includes all other Alternative risk factors.



OPERF Allocations



Liquidity Report

Asset Class	Liquidity (\$M)				∞	Uncalled Commitment	Next 12 Months
	1 Week	1 Month	1 Quarter				
Cash & Overlay	1,364						
Public Equity	27,309	2,009	1,337				
Fixed Income	11,742	2,394					
Private Equity				14,565		-10,483	
Real Estate	550			7,160		-2,087	
Alternatives	215	230		3,889		-2,488	
Opportunity				1,539		-831	
Proj PERS Cash Flow							-3,200
Total	41,179	4,633	1,337	27,153		-15,888	-3,200

Public Equity - 1 Month = AQR 130/30, Arrowstreet 130/30, & Callan US Micro Cap Value portfolios

Public Equity - 1 Quarter = Lazard Closed-End Fund portfolio

Fixed Income - 1 Month = Below Investment Grade

Real Estate - 1 Week = REIT composite

Alternatives - 1 Week = SailingStone

Alternatives - 1 Month = AQR

- ▶ Table periods approximate the time required to liquidate different OPERF allocations.

Top 10 Exposures by Investment Firm

Rank	Asset Manager	Mkt Val (\$mm)	Mkt Val Weight	Asset Class
1	Internally-Managed	12,899	17.4%	Cash, Fixed Inc, Public Equity
2	Dimensional Fund Advisors	5,643	7.6%	Public Equity
3	AQR Capital Management	3,685	5.0%	Alternatives, Public Equity
4	KKR	3,156	4.3%	Fixed Income, Private Equity
5	Arrowstreet Capital	2,958	4.0%	Public Equity
6	AB (f/k/a AllianceBernstein)	2,644	3.6%	Fixed Income, Public Equity
7	Lazard	2,319	3.1%	Public Equity
8	Wellington	2,177	2.9%	Fixed Income, Public Equity
9	Acadian	2,038	2.7%	Public Equity
10	Western Asset Management	1,658	2.2%	Fixed Income



December 13, 2017



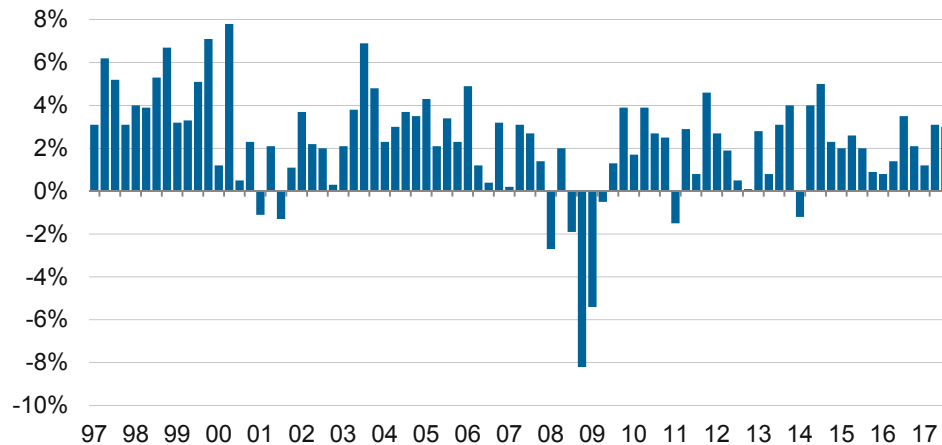
Oregon Investment Council

Third Quarter 2017
Performance Review

Economic Commentary

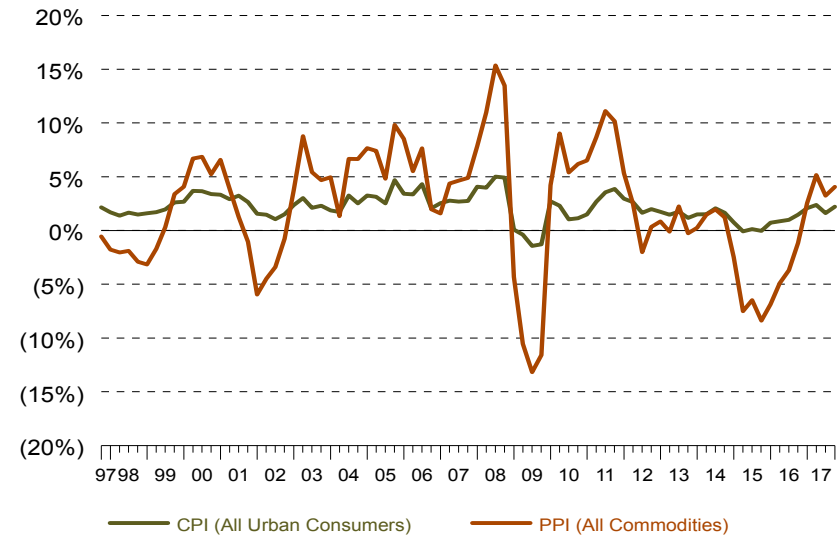
Third Quarter 2017

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

- The first estimate of the third quarter GDP came in at an unexpectedly solid 3.0%. Growth was supported by a rise in inventory investment and a decrease in imports, offsetting the setback in consumer spending and construction related to hurricanes Harvey & Irma. The rebuilding efforts are likely to boost GDP in the 4th quarter and into 2018. Second quarter GDP was revised up to 3.1%, the fastest pace since the first quarter of 2015.
- In the first two months of the quarter, job growth was weaker than expected, though still within consensus range (July: +138,000; August: +169,000). In September, 33,000 jobs were shed from the payroll, reflecting effects of hurricanes that blew through the Southeastern U.S. Nonetheless, unemployment rate fell 0.2% to 4.2%, the lowest reading since January 2001. Labor market participation broke through its resistance level and climbed 0.3% to 63.1%. Average hourly earnings grew 2.9% year-over-year.
- Hurricane Harvey gave a boost to energy prices, inflating the headline figure above core. For the trailing 12 months ended September, Headline CPI was +2.2%, and Core CPI (excluding food and energy) was +1.7%.

Performance By Asset Class

Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
MSCI Emerging Markets 8.0%	MSCI Emerging Markets 22.9%	Russell 2000 12.2%	Russell 3000 14.2%	Russell 2000 7.8%
MSCI ACWI ex-US 6.2%	Russell 2000 20.7%	NCREIF ODCE 10.8%	S&P 500 14.2%	Merrill Lynch High Yield 7.7%
Russell 2000 5.7%	MSCI ACWI ex-US 19.6%	S&P 500 10.8%	Russell 2000 13.8%	Russell 3000 7.6%
Russell 3000 4.6%	Russell 3000 18.7%	Russell 3000 10.7%	NCREIF ODCE 11.6%	S&P 500 7.4%
S&P 500 4.5%	S&P 500 18.6%	Merrill Lynch High Yield 5.9%	MSCI ACWI ex-US 7.0%	NCREIF ODCE 5.0%
Merrill Lynch High Yield 2.0%	Merrill Lynch High Yield 9.1%	MSCI Emerging Markets 5.3%	Merrill Lynch High Yield 6.4%	Bloomberg Aggregate 4.3%
NCREIF ODCE 1.9%	NCREIF ODCE 7.7%	MSCI ACWI ex-US 4.7%	MSCI Emerging Markets 4.4%	MSCI Emerging Markets 1.7%
Bloomberg Aggregate 0.8%	90 Day T-Bill 0.7%	Bloomberg Aggregate 2.7%	Bloomberg Aggregate 2.1%	MSCI ACWI ex-US 1.3%
90 Day T-Bill 0.3%	Bloomberg Aggregate 0.1%	90 Day T-Bill 0.3%	90 Day T-Bill 0.2%	90 Day T-Bill 0.5%

OPERF Total Regular Account

Performance Summary for the Third Quarter 2017

Total Fund:

In the third quarter of 2017, the Total Regular Account gained 3.66% (+3.54% net of fees), beating the 3.35% return of the Policy Benchmark, and ranked at the median of Callan's \$10B+ public fund peer group. For the 12 months ended September 30, 2017, the Total Regular Account surged 12.70% (+12.25% net of fees) versus 13.00% for the Policy Target, and ranked in the 70th percentile of Callan's \$10B+ public fund peer group. Longer term results trail the Policy Target but rank in the top third of the peer group.

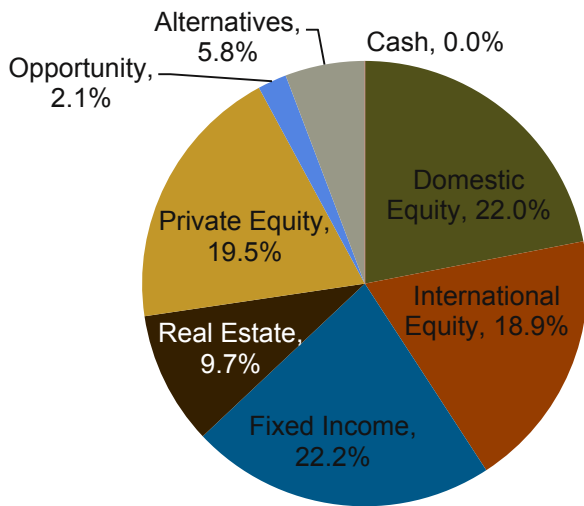
Asset Classes:

- **Total Fixed Income:** The Fixed Income Portfolio added 0.73% (+0.70% net of fees) for the quarter versus an increase of 0.75% for the Custom Fixed Income Benchmark, and ranked in the 94th percentile of Callan's Public Funds \$10+B US Fixed income (Gross) peer group. For the trailing year, the Portfolio 1.12% (+0.97% net of fees), easily beating the benchmark return of 0.44%, and ranked in the 60th percentile of the peer group. 10 year results remain ahead of the benchmark and rank in the top quartile of the peer group.
- **Total Public Equity:** Total Public Equity gained 5.71% (+5.65% net of fees) for the quarter versus an advance of 5.32% for the MSCI ACWI IMI Net benchmark, and ranked in the 39th percentile of its peer group. For the trailing year, the portfolio leapt 20.40% (+20.10% net of fees), handily beating the 18.73% return of the benchmark and ranked in the top half of the peer group.
 - **U.S. Equity:** The U.S. Equity Portfolio advanced 5.10% (+5.08% net of fees) for the quarter, beating the 4.57% gain in the Russell 3000 Index, and ranked in the 11th percentile of Callan's Public Fund: \$10B+ Domestic Equity (gross) peer group. On a trailing 12 month basis, the Portfolio surged 20.04% (+19.92% net of fees) versus a gain of 18.71% for the benchmark and ranked in the top decile of the peer group. 10 year results are slightly behind those of the benchmark (+7.33% net of fees versus +7.57%) but rank in the top half of the peer group.
 - **International Equity:** The International Equity Portfolio rose 7.03% (+6.92% net of fees) for the quarter, beating the 6.27% gain in the MSCI ACWI ex-U.S. IMI Index, and ranked in the top decile of Callan's Public Fund: \$10B+ International Equity (gross) peer group. For the trailing year, the Portfolio soared 21.61% (+21.10% net of fees) versus 19.55% for the benchmark, and ranked in the top quartile of the peer group. 10 year results remain well ahead of the benchmark (+3.45% net of fees versus 1.67%) and continue to rank in the top quartile of the peer group.
- **Total Real Estate:** The Real Estate Portfolio continues to show solid absolute results over the last decade with an annualized return of 4.82% net of fees.
- **Opportunity Portfolio:** The Opportunity Portfolio's results over the last ten years continue to be favorable with an annualized return of 6.50% net of fees.
- **Alternative Portfolio:** The Alternative Portfolio has gained an annualized return of 3.88% net of fees over the last five years.
- **Total Private Equity:** The Private Equity Portfolio's returns remain strong with an annualized return of 8.56% net of fees over the last ten years.

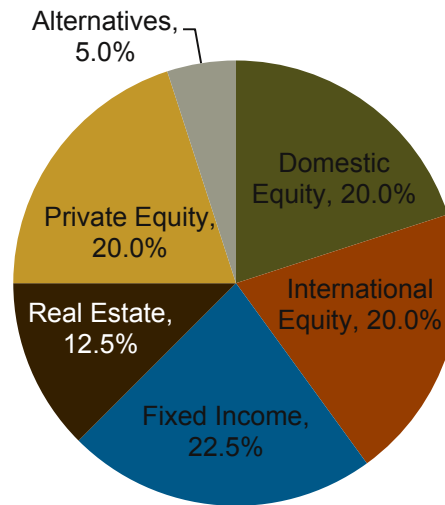
OPERF Total Regular Account

Asset Allocation as of September 30, 2017

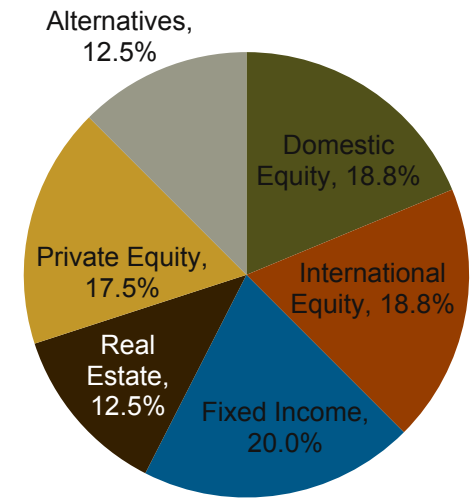
Actual Allocation



Interim Policy Target



Strategic Policy Target*



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Total Fixed Income	16,584,741	22.2%	22.5%	(0.3%)	(256,613)
U.S. Equity Portfolio	16,442,343	22.0%	20.0%	2.0%	1,472,250
Non-U.S. Equity Portfolio	14,140,426	18.9%	20.0%	(1.1%)	(829,667)
Total Real Estate	7,229,580	9.7%	12.5%	(2.8%)	(2,126,728)
Opportunity Portfolio	1,538,835	2.1%	0.0%	2.1%	1,538,835
Alternative Portfolio	4,334,575	5.8%	5.0%	0.8%	592,052
Total Private Equity	14,564,610	19.5%	20.0%	(0.5%)	(405,483)
Cash	15,354	0.0%	0.0%	0.0%	15,354
Total	74,850,464	100.0%	100.0%		

*Target established in June 2015

OPERF Total Regular Account

Net Cumulative Performance by Asset Class as September 30, 2017

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
Total Regular Account	3.54	12.25	7.00	9.15	9.23	5.52
Total Regular Account ex-Overlay	3.59	12.27	6.93	9.10	9.15	5.51
OPERF Policy Benchmark*	3.31	12.96	7.56	9.74	9.81	6.03
Total Fixed Income	0.70	0.97	2.45	2.58	4.04	5.27
OPERF Total Custom FI Benchmark	0.75	0.44	2.09	2.04	3.07	4.28
Callan Public Fund \$10bn+ U.S. Fixed	1.14	1.66	3.44	2.83	3.89	4.90
Total Public Equity	5.65	20.10	8.59	11.41	10.10	4.73
MSCI ACWI IMI Net	5.32	18.73	7.72	10.42	9.34	4.18
U.S. Equity	5.08	19.92	10.64	13.95	13.86	7.33
Russell 3000 Index	4.57	18.71	10.74	14.23	14.28	7.57
Callan Large Public > \$10bn U.S. Equity	4.60	19.35	10.76	14.23	14.07	7.59
Non-U.S. Equity	6.92	21.10	6.86	9.00	7.02	3.07
MSCI ACWI ex USA IMI**	6.27	19.55	5.16	7.32	5.50	1.67
Callan Large Public >\$10bn Non-U.S. Equity	6.05	20.46	6.24	8.26	6.32	2.50
Total Real Estate	1.19	6.98	9.50	11.01	11.87	4.82
Total Real Estate ex REITs	1.37	12.16	11.51	12.66	13.02	5.12
NCREIF Property Index Qtr Lag	1.75	7.19	10.11	10.45	11.55	6.40
Callan Public Plan - Real Estate	1.51	6.85	9.72	10.44	11.25	4.25
Opportunity Portfolio	1.38	5.80	4.05	7.60	8.61	6.50
Russell 3000 Index	4.57	18.71	10.74	14.23	14.28	7.57
CPI + 5%	2.09	7.31	5.96	6.10	6.69	6.69
Total Alternative	2.62	9.51	2.05	3.88	--	--
CPI + 4%	1.75	6.31	5.26	5.35	--	--
Total Private Equity	4.43	15.51	8.78	12.40	12.69	8.56
OIC - Russell 3000 + 300 BPS Qtr Lag	3.77	22.01	12.35	17.98	18.76	10.90

*Policy Benchmark = 22.5% OPERF Total Custom FI Benchmark, 20.0% Russell 3000 Index, 20.0% MSCI ACWI ex US IMI, 20.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% Oregon Custom Real Estate Benchmark and 5.0% CPI + 400 bps.

**Non-US Equity Benchmark performance through May 31, 2008, is MSCI ACWI ex US Gross and is linked thereafter with the MSCI ACWI ex-US IMI Net Index.

OPERF Total Regular Account

Net Calendar Year Performance by Asset Class as September 30, 2017

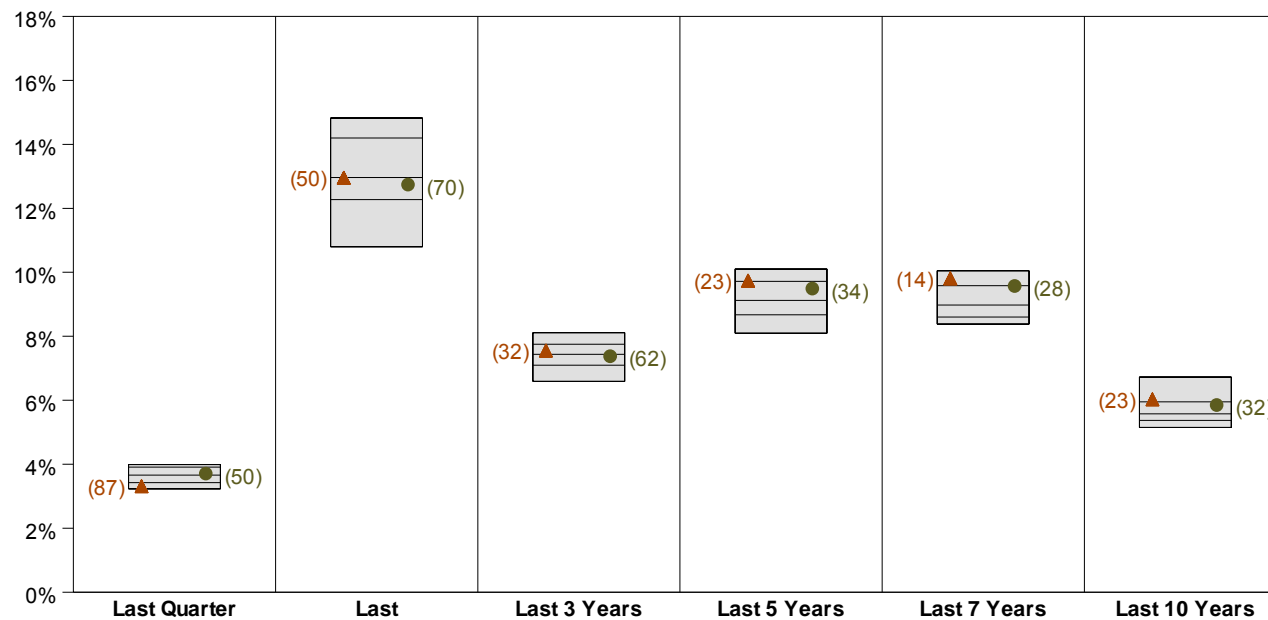
	3 Qtrs. 2017	2016	2015	2014	2013
Total Regular Account	11.05	6.84	2.11	7.29	15.59
Total Regular Account ex-Overlay	11.06	6.73	2.02	7.28	15.57
OPERF Policy Benchmark*	11.55	8.95	1.57	8.24	15.61
Total Fixed Income	3.28	3.06	0.54	3.52	1.04
OPERF Total Custom FI Benchmark	2.95	2.52	0.16	3.04	0.29
Callan Public Fund \$10bn+ U.S. Fixed	4.13	5.25	-0.50	6.31	-1.79
Total Public Equity	17.29	9.89	-1.75	3.31	26.68
MSCI ACWI IMI Net	17.24	8.36	-2.19	3.84	23.55
U.S. Equity	12.86	14.90	-0.87	9.85	35.41
Russell 3000 Index	13.91	12.74	0.48	12.56	33.55
Callan Large Public > \$10bn U.S. Equity	13.80	13.66	0.06	11.78	33.51
Non-U.S. Equity	23.36	4.67	-2.59	-2.88	18.62
MSCI ACWI ex USA IMI**	21.47	4.41	-4.60	-3.89	15.82
Callan Large Public >\$10bn Non-U.S. Equity	22.46	4.84	-3.58	-2.81	16.91
Total Real Estate	7.61	6.58	9.89	14.16	12.83
Total Real Estate ex REITs	9.05	10.01	12.67	12.01	15.79
NCREIF Property Index Qtr Lag	5.26	8.88	13.48	11.26	11.00
Callan Public Plan - Real Estate	5.34	8.24	11.05	13.46	11.35
Opportunity Portfolio	5.68	2.65	2.14	8.81	15.00
Russell 3000 Index	13.91	12.74	0.48	12.56	33.55
CPI + 5%	6.06	6.99	5.39	5.33	6.46
Total Alternative	6.10	6.61	-4.32	4.44	6.02
CPI + 4%	5.28	6.16	4.76	4.78	5.56
Total Private Equity	11.80	6.26	7.79	15.90	16.19
OIC - Russell 3000 + 300 BPS Qtr Lag	16.03	18.37	2.49	21.24	25.19

*Policy Benchmark = 22.5% OPERF Total Custom FI Benchmark, 20.0% Russell 3000 Index, 20.0% MSCI ACWI ex US IMI, 20.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% Oregon Custom Real Estate Benchmark and 5.0% CPI + 400 bps.

OPERF Total Regular Account

Gross Performance and Peer Group Rankings* as of September 30, 2017

Performance vs Large Public Funds (>10B) (Gross)



10th Percentile	3.99	14.82	8.11	10.10	10.05	6.73
25th Percentile	3.91	14.20	7.75	9.72	9.59	5.95
Median	3.66	12.96	7.43	9.12	8.98	5.58
75th Percentile	3.42	12.27	7.10	8.67	8.61	5.37
90th Percentile	3.23	10.80	6.59	8.09	8.38	5.16
Total Regular Account	● 3.66	12.70	7.33	9.45	9.53	5.80
Total Policy Target	▲ 3.31	12.96	7.56	9.74	9.81	6.03

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



Appendix

Capital Market Review

Broad Market Rally

- During the quarter, economic data, strong consumer sentiment, and corporate earnings propelled markets higher.
- Stocks and bonds alike rewarded investors in what's been coined the "everything rally," marked by its surprisingly low volatility. Non-U.S. equities outperformed the U.S. for the third consecutive quarter, boosted by a weaker dollar. Bonds provided solid returns as overall risk appetite remained strong.
- Five-year US equity returns are robust. Bond performance is steady. Cash remains below inflation on a fifteen year basis.

	2013	2014	2015	2016	YTD 2017	Last Qtr.	Last 5 Years	Last 10 Years	Last 15 Years
Broad U.S. Stock Market									
Russell 3000	33.55	12.56	0.48	12.74	13.91	4.57	14.23	7.57	10.37
Large Cap U.S. Stocks									
S&P 500	32.39	13.69	1.38	11.96	14.24	4.48	14.22	7.44	10.04
Small Cap U.S. Stocks									
Russell 2000	38.82	4.89	-4.41	21.31	10.94	5.67	13.79	7.85	11.37
Non-U.S. Stock Markets									
MSCI EAFE	22.78	-4.90	-0.81	1.00	19.96	5.40	8.38	1.34	8.26
MSCI Emerging Markets	-2.27	-1.82	-14.60	11.60	28.14	8.04	4.36	1.65	12.86
Fixed Income									
Barclays Aggregate	-2.02	5.97	0.55	2.65	3.14	0.85	2.06	4.27	4.23
Citi Non-U.S. World Govt	-4.56	-2.68	-5.54	1.81	8.63	2.57	-1.07	2.67	4.41
Cash Market									
3-Month T-Bill	0.07	0.03	0.05	0.33	0.57	0.26	0.22	0.47	1.29
Inflation - CPI-U	1.50	0.76	0.73	2.07	2.23	0.76	1.30	1.70	2.09

Global Economic Update

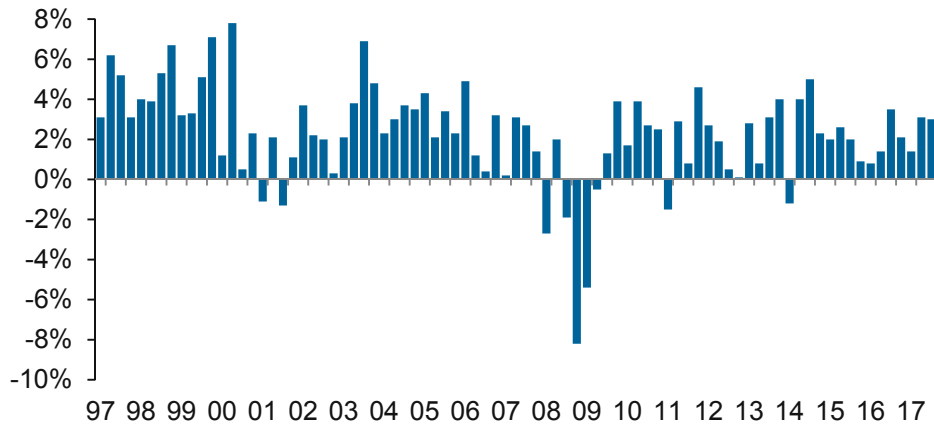
The Big Picture

- Growth in the U.S. continues to gain momentum.
 - Real U.S. GDP revised up to 3.1% in the second quarter, came in at a surprising 3.0% for the third quarter, after accounting for the impact of Hurricanes Harvey and Irma.
 - Outside the U.S., euro zone GDP revised upwards to 2.3% from 1.7%.
 - In China, annual growth increased by 6.9% in the second quarter, an identical pace to that reported in the first quarter, and slightly ahead of expectations.
- The disconnect sharpened in the third quarter of 2017 between the good economic data and gloomy sentiment
 - Uncertainty regarding geopolitics, the future of monetary and fiscal policy, taxes, trade and conflict
 - Richly priced capital markets spur concerns about an “inevitable” market correction.
 - Natural disasters
- Globally, will rate policies start to converge?
 - The Fed left rates unchanged at its September meeting, but there is a strong expectation it will raise them in December.
 - Outside the U.S., the ECB kept rates unchanged though rates rose in anticipation of an ECB rate hike over the next 12 months and amid speculation that the tapering of ECB asset purchases may be on the horizon.
- Unemployment picture continues to improve
 - In the U.S., unemployment held steady at 4.4%, close to the 15-year low of 4.3% set in August. Labor conditions remain tight.
 - Euro zone unemployment dropped to 9.1%, the lowest since 2009.
- Inflation continues to fall short of expectations. Headline CPI rose 2.2% during the quarter, but that rise was simply a recovery from an earlier downdraft in energy. Core CPI (ex-food and energy) rose just 1.7% in the quarter and remains below the Fed’s 2% target.
- The U.S. dollar continued the sell-off that began after the “Trump-induced” peak in January, losing nearly 3% in the quarter versus a broad basket of developed market currencies. The trade-weighted value of the dollar is down 10% from a year ago.
- Crude oil prices rebounded after bottoming out in Q2 below \$45, climbing above \$50.

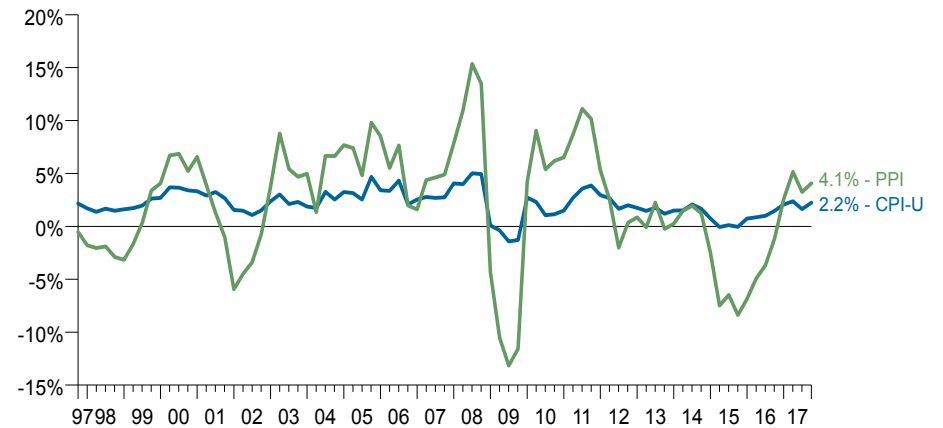
U.S. Economy

For the Periods Ended September 30, 2017

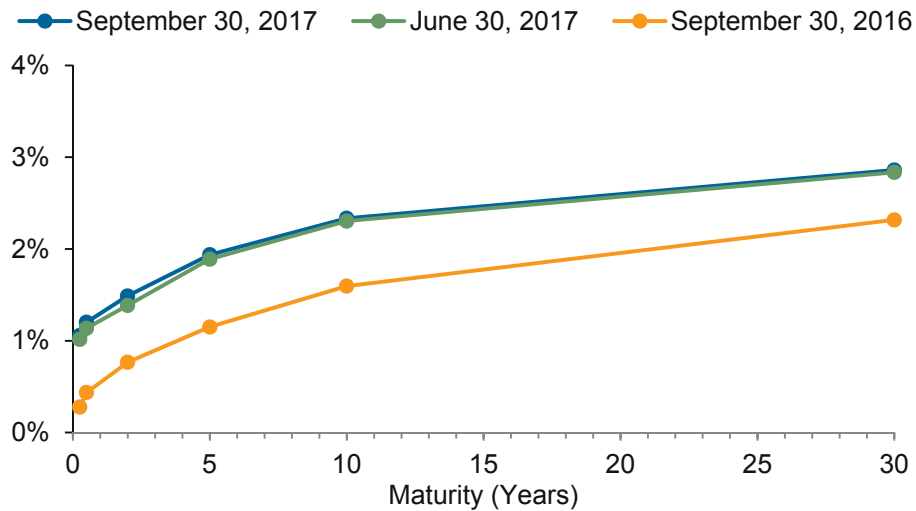
Quarterly Real GDP Growth (20 Years)



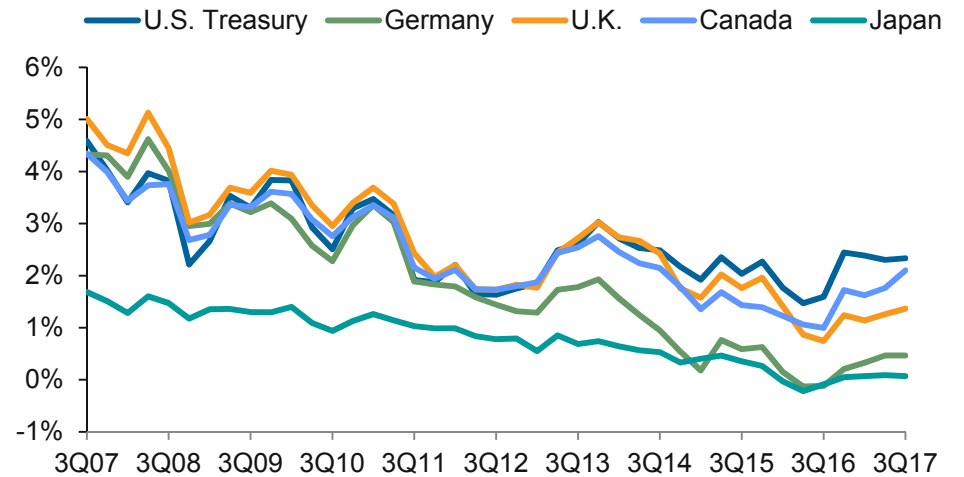
Inflation Year-Over Year



U.S. Treasury Yield Curves



10-Year Global Government Bond Yields

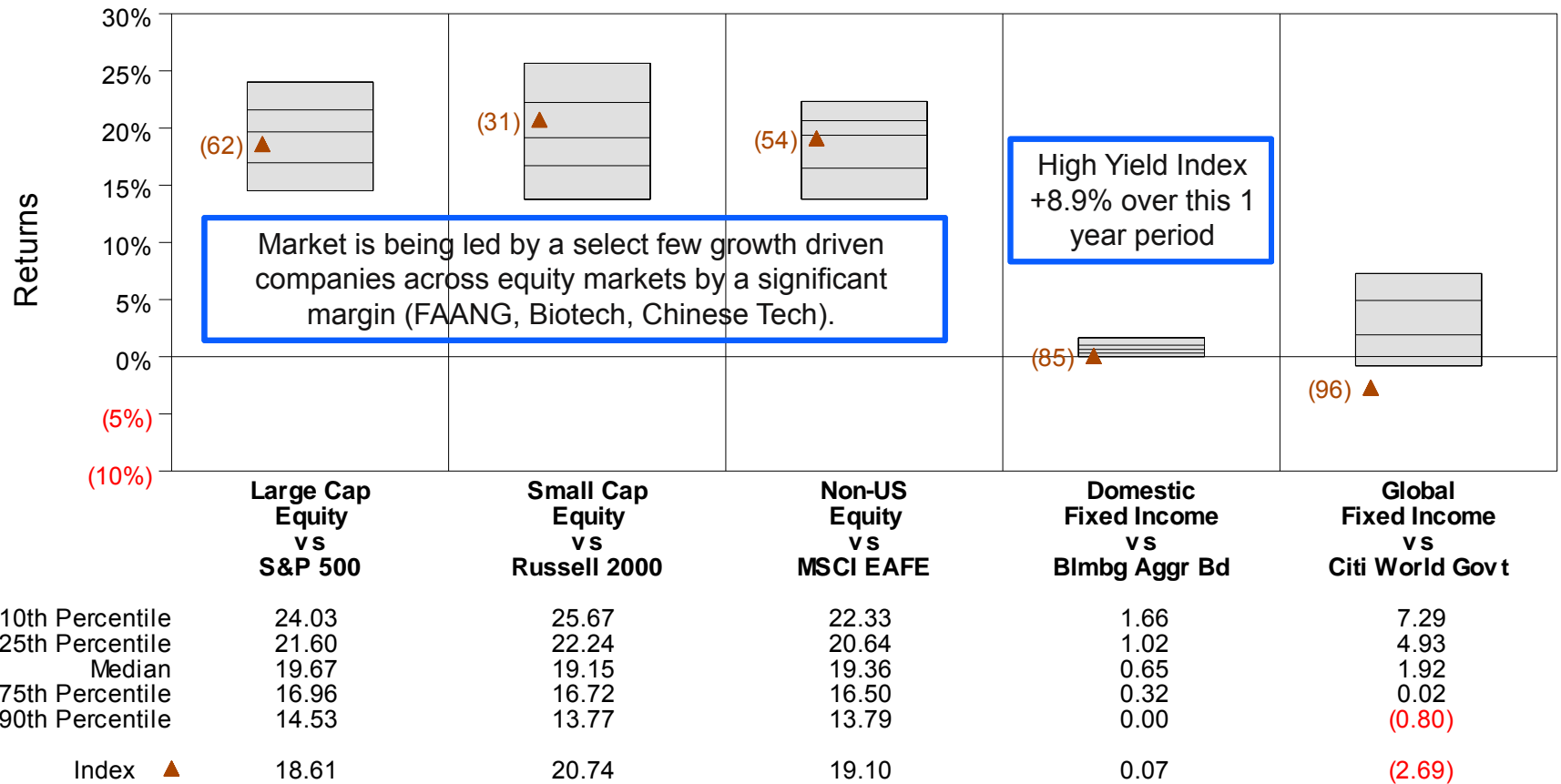


Sources: Bureau of Labor Statistics, Bloomberg

Active vs. Passive by Asset Class

Trailing One Year Results are Impressive for “Risk” Assets

Range of Mutual Fund Returns by Asset Class
One Year Ended September 30, 2017



U.S. Stock Market Has Enjoyed an Incredible Run

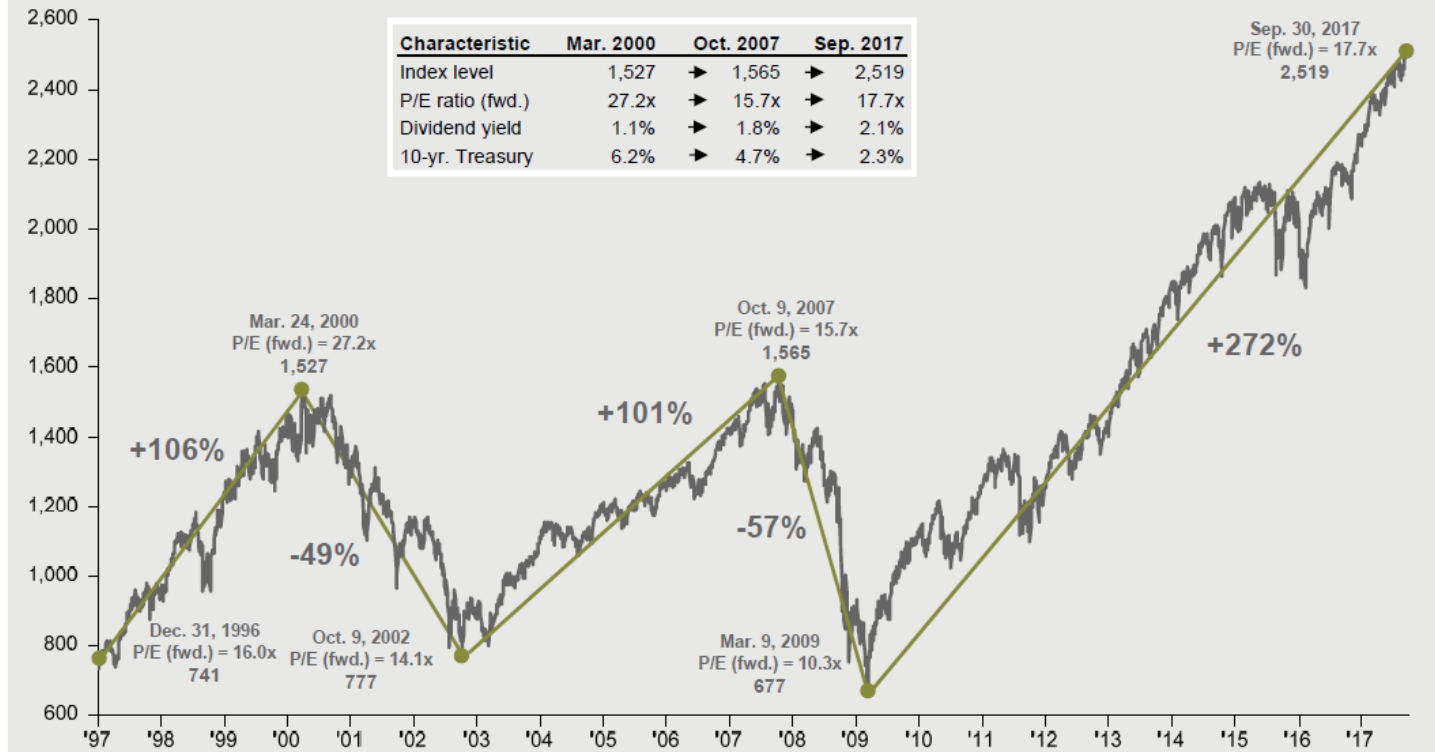
S&P 500 Index at inflection points

GTM - U.S. | 4

Equities

- Forward valuation is high but nowhere near the peak set in 2000.
- Dividend yield is currently comparable to that of a 10-year Treasury; vastly different relationship between stock and bond yields in 2000 and 2007.

S&P 500 Price Index



Source: Compustat, FactSet, Thomson Reuters, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management. Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price to earnings ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns. *Guide to the Markets - U.S.* Data are as of September 30, 2017.

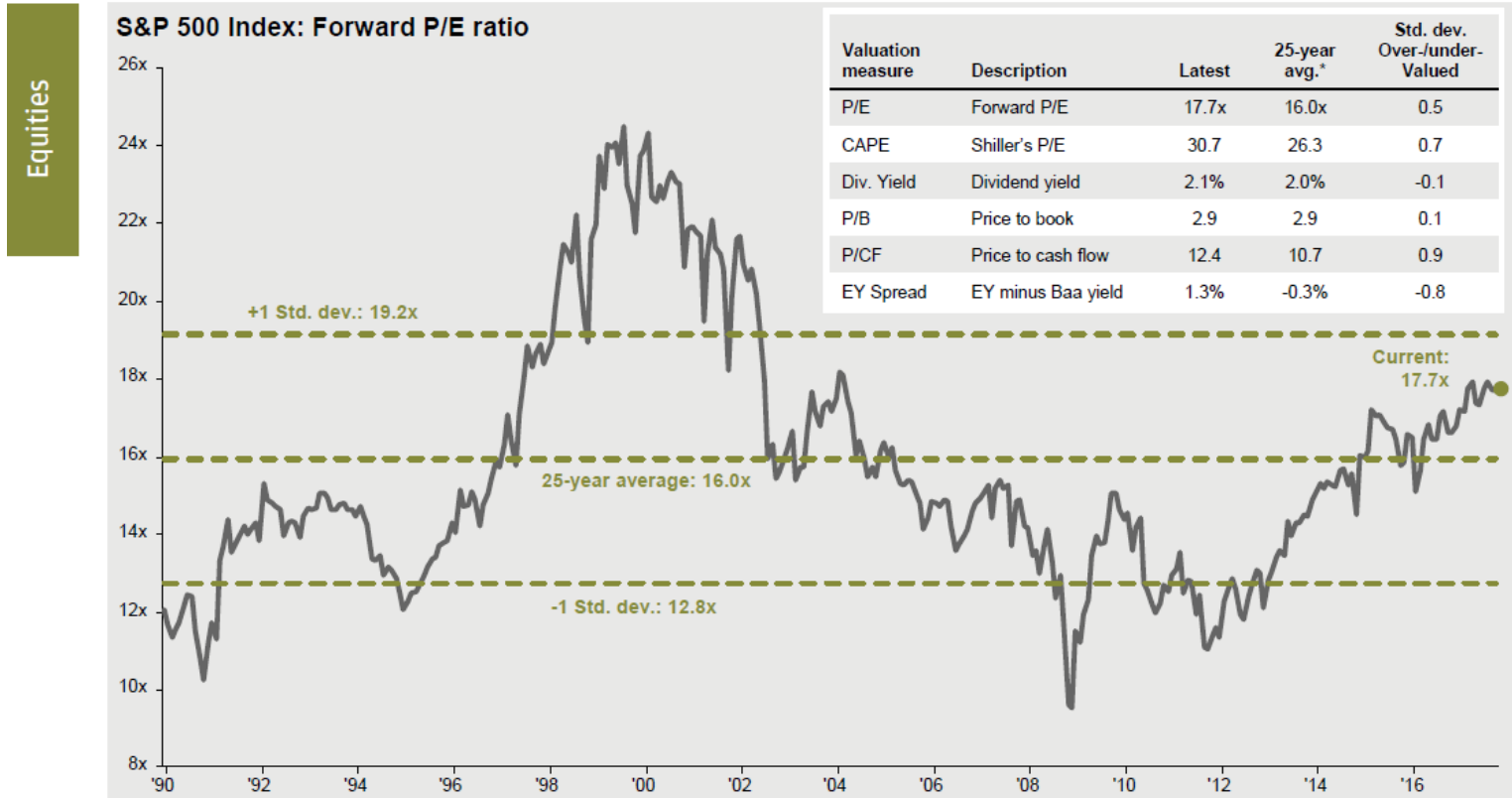
J.P.Morgan
Asset Management

U.S. Stocks Look Rich...

Forward-Looking P/E Based on Consensus Analysts' Estimates

S&P 500 valuation measures

GTM - U.S. | 5

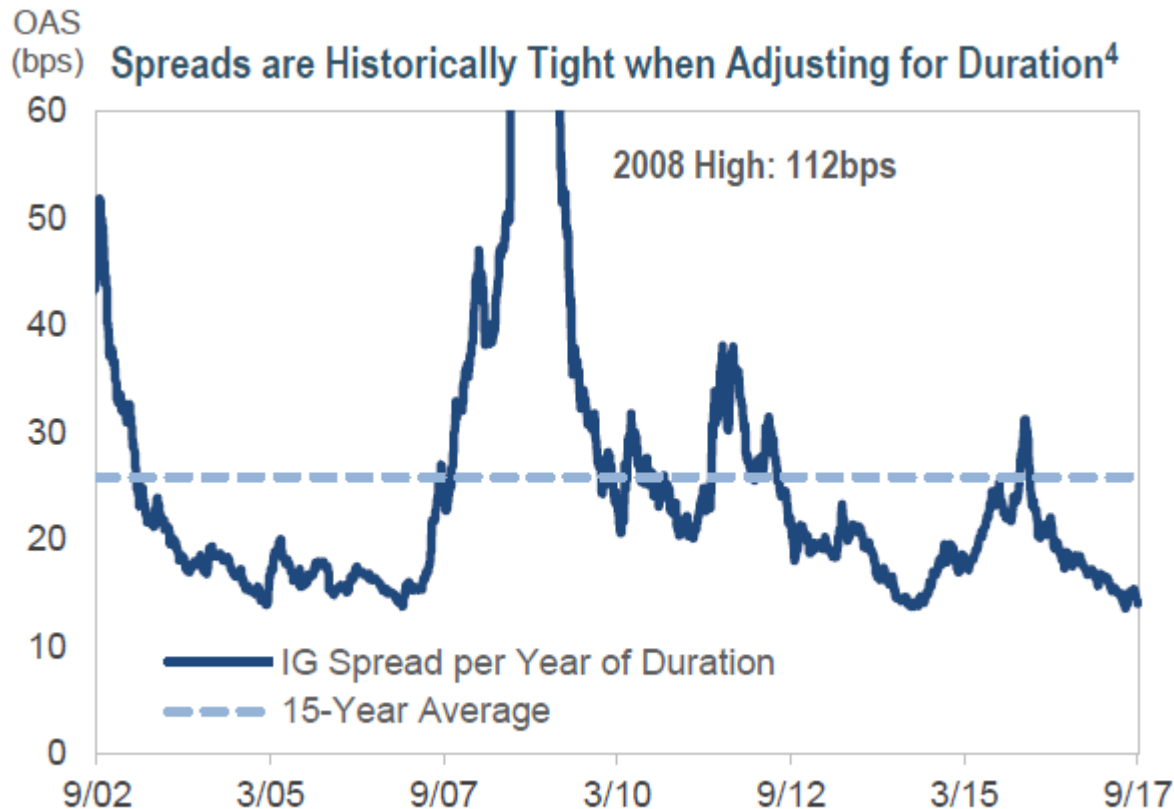


Source: FactSet, FRB, Thomson Reuters, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management.
 Price to earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since December 1989, and FactSet for September 30, 2017. Average P/E and standard deviations are calculated using 25 years of FactSet history. Shiller's P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. Price to book ratio is the price divided by book value per share. Price to cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure. *P/CF is a 20-year average due to cash flow data availability.
 Guide to the Markets – U.S. Data are as of September 30, 2017.

J.P.Morgan
 Asset Management

... Corporate Bonds May Look Even Richer Than Stocks

Investment Grade Spreads Near Historic Lows



- Credit spreads are the yield required over Treasuries.
- The chart on left adjusts the Investment Grade (“IG”) Spread for duration.
- The chart shows that IG Spread is at similar levels as before the Global Financial Crisis.
- This indicates investors do not require as much yield for taking on additional risk.

• Source: IR&M, Morgan Stanley, Citigroup Index LLC

U.S. Equity Market Environment

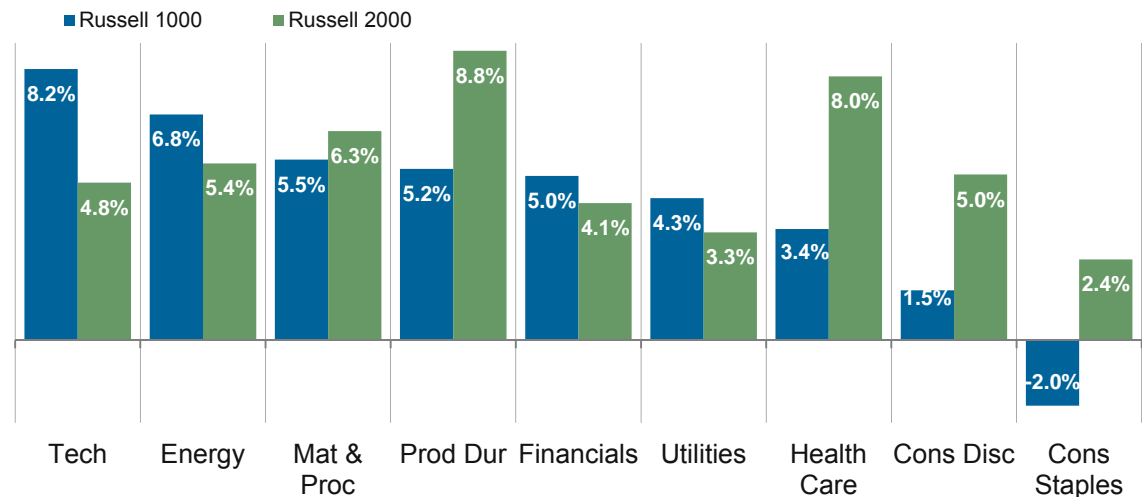
For the Periods Ended September 30, 2017

- Investors seemingly chasing momentum during this period of strength, while contrarians question where longer-term alpha can be found amid stretched valuations.
- The S&P 500 notched 13 new all-time highs in the quarter and had the highest percentage of companies reporting better than expected earnings since 2010.
- Growth outperformed Value across the market cap spectrum due largely to strong results from Tech (+8%).
- Bolstered by biotech (+15%) and small banks, small cap outperformed large cap.
- Top sectors in large cap included Energy (+7%), Materials (+6%), and Tech (+8%) due to strong earnings from the “FAAMG” stocks.*
- Momentum (+28% YTD) remained the top performer while Defensive (+9% YTD) lagged for the 6th consecutive year. Since the GFC low, the S&P 500 has surged 372% through 3Q17; the corresponding bull market is now the second longest on record.

For Periods ended September 30, 2017

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Large Cap Equity						
Russell 1000 Growth	5.90	21.94	12.69	15.26	9.08	10.65
Russell 1000 Value	3.11	15.12	8.53	13.20	5.92	9.82
Mid Cap Equity						
Russell Midcap Growth	5.28	17.82	9.96	14.18	8.20	12.12
Russell Midcap Value	2.14	13.37	9.19	14.33	7.85	12.07
Small Cap Equity						
Russell 2000 Growth	6.22	20.98	12.17	14.28	8.47	11.78
Russell 2000 Value	5.11	20.55	12.12	13.27	7.14	10.86

Economic Sector Quarter Performance (as of September 30, 2017)



Source: Callan, Russell Investment Group
 *Facebook, Apple, Amazon, Microsoft, Google

Non-U.S. Equity Market Environment

For the Periods Ended September 30, 2017

- Non-U.S. developed equity (+5.4%) outperformed the U.S. (+4.5%) for the third consecutive quarter on positive economic data out of Europe and some signs of political stability.
- U.S. dollar lost ground to the euro given that European growth surprised on the upside and the market-friendly outcomes in European elections.
- Emerging Markets (+7.9%) continued to outpace Developed Markets (+5.4%), fueled by a soft dollar, synchronized global growth, and strong oil and commodity prices.
- China continued to fare well by posting GDP of 6.9%, exceeding expectations; Chinese Tech and Real Estate were top performers.
- Developed non-U.S. small cap outperformed large cap given the risk-on market environment spurred by improving economic activity in Europe.
- Energy (+13%), Materials (+11%), and Tech (+9%) were among the top performers within both developed non-U.S. and emerging markets, although Real Estate (+18%) was the standout sector in EM due to the China-based property surge (+37%).

For Periods ended September 30, 2017

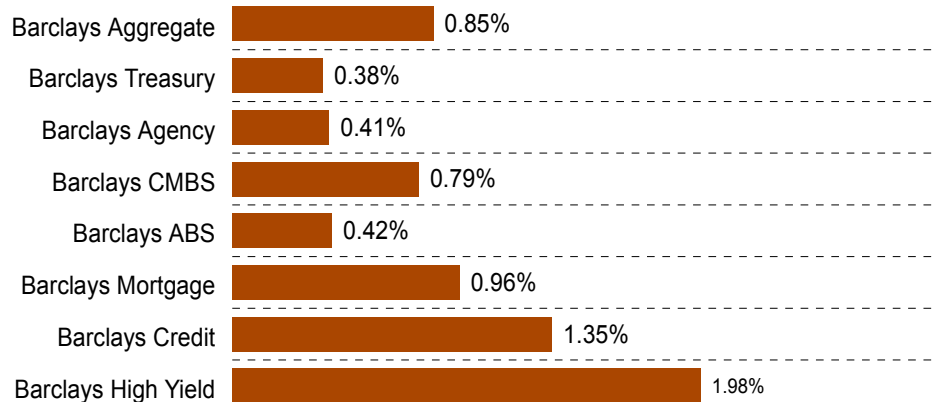
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Non-U.S. Equity						
MSCI ACWI ex USA	6.16	19.61	4.70	6.97	1.28	8.88
MSCI ACWI ex USA Growth	6.33	17.68	6.43	7.87	1.89	8.72
MSCI ACWI ex USA Value	5.99	21.55	2.92	6.02	0.61	8.97
MSCI EAFE	5.40	19.10	5.04	8.38	1.34	8.26
MSCI EAFE (local)	3.36	19.02	7.87	12.26	2.61	7.29
Regional Equity						
MSCI Europe	6.45	22.30	4.36	8.36	1.08	8.63
MSCI Europe (local)	3.45	17.71	7.89	10.93	3.24	7.91
MSCI Japan	3.97	14.09	7.75	10.60	1.69	5.97
MSCI Japan (local)	4.16	26.83	8.68	19.08	1.47	5.42
MSCI Pacific ex Japan	3.66	14.44	4.57	5.28	2.68	11.48
MSCI Pacific ex Japan (loc)	2.16	12.89	7.22	9.33	3.28	9.31

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Emerging/Frontier Markets						
MSCI Emerging Markets	7.89	22.46	4.90	3.99	1.32	12.49
MSCI Emerging Markets (loc)	7.58	21.76	8.50	7.91	3.86	12.53
MSCI Frontier Markets	8.03	25.47	-1.36	8.73	-1.07	8.89
Non-U.S. Small Cap Equity						
MSCI EAFE Small Cap	7.46	21.84	11.13	12.85	4.63	11.77
MSCI Em Mkts Small Cap	5.64	14.89	3.14	4.60	1.74	13.32

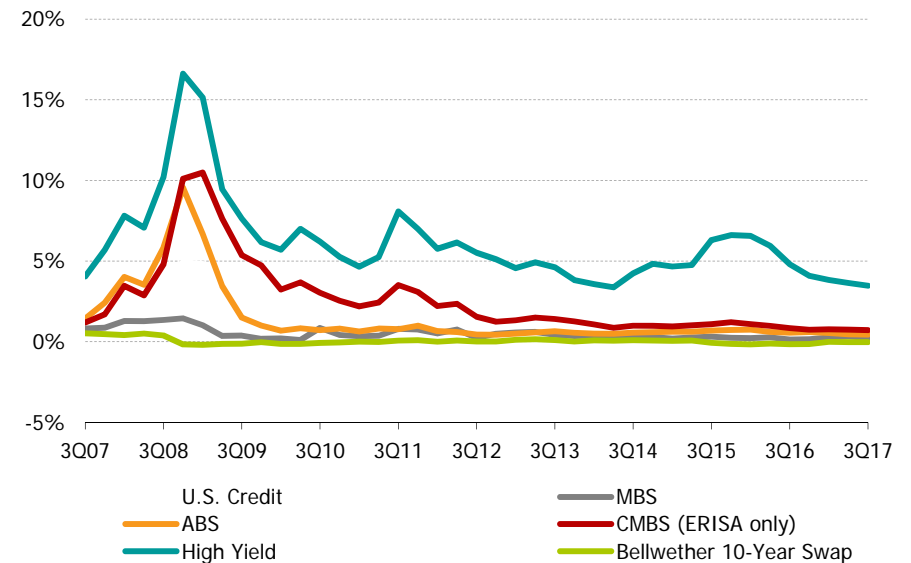
Sources: Callan, MSCI

Fixed Income Overview

Absolute Returns for Quarter ended September 30, 2017



Effective Yield Over Treasuries

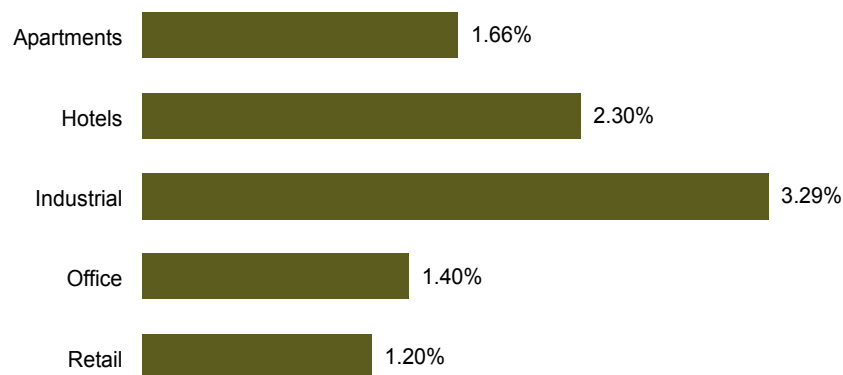


Source: Callan, Barclays

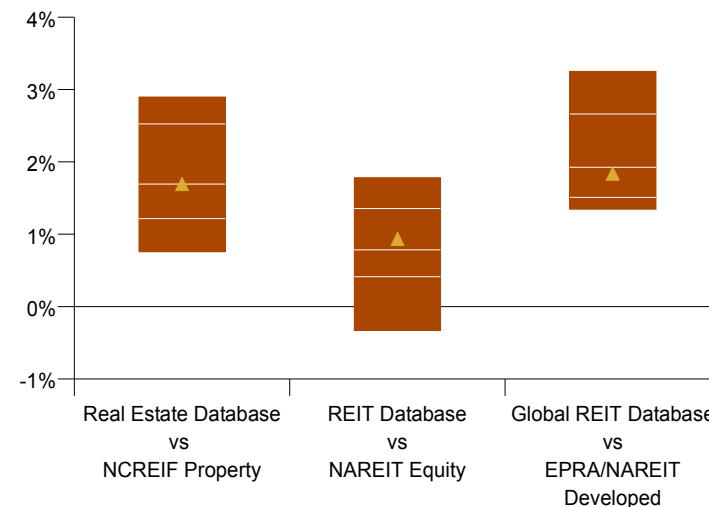
- The broad bond market, as measured by the Bloomberg Barclays U.S. Aggregate Bond Index, returned +0.9%.
- The yield curve continued its flattening trend, as short-term treasuries rose to 1.5%, the highest level since August 2008, while moderate growth and inflation kept long-term rates low and range bound.
- The 10-year Treasury yield touched 2.00% during the quarter on geopolitical risks related to North Korea, but ended the quarter at 2.33%. And the 10-year breakeven spread (the difference between nominal and real yields) rose to 1.84% as of quarter-end from 1.73% at the end of the second quarter.
- Corporate credit spreads tightened on strong demand and robust corporate earnings. Financials and Utilities were the leading sectors during the quarter. The Bloomberg Barclays U.S. Corporate Bond Index rose 1.4%.
- Lower-rated credits outperformed investment grade, aided by the hunt for yield, with the Bloomberg Barclays U.S. Corporate High Yield Bond Index up 2.0%

Real Estate Overview

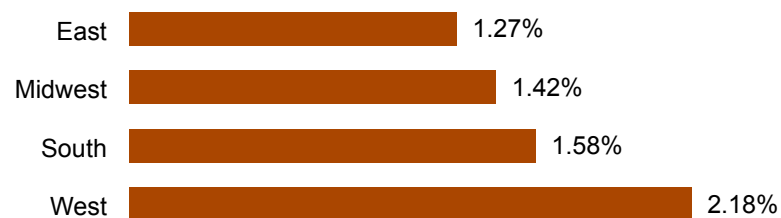
NCREIF All Equity Sector Quarterly Returns by Property Type



Callan Style Group Quarterly Returns



Sector Quarterly Returns by Region



10th Percentile	2.90	1.78	3.25
25th Percentile	2.53	1.36	2.66
Median	1.69	0.78	1.93
75th Percentile	1.21	0.41	1.51
90th Percentile	0.76	-0.33	1.35
Benchmark ▲	1.70	0.94	1.84

- The NCREIF Property Index advanced 1.7% during the third quarter (Income: +1.1%; Appreciation: +0.6%). This marked the 35th consecutive quarter of positive returns for the Index. Appreciation return resumed its decreasing trend after an increase during the second quarter.
- All sectors posted gains. The industrial sector remains the strongest performer, benefitting as structural shifts in the economy, property markets and consumer habits continue to dampen demand for traditional retail space. Regionally, all areas added value. The West region was the strongest performer for the fourth successive quarter.
- Global REITs bested their U.S. counterparts, rising 1.8%. U.S. REITs started with a strong July but then surrendered most of the gains with poor showings in August and September.

Hedge Fund & Multi-Asset Class (MAC)

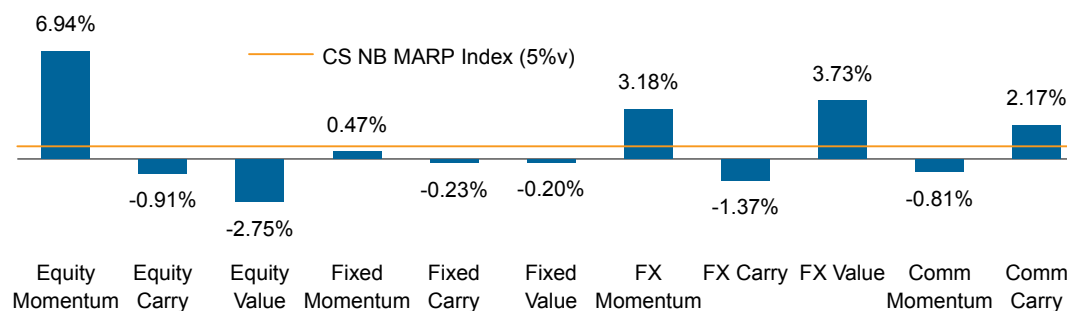
- Opportunity set for hedge funds continues to improve with declining central bank-driven liquidity, rising short-term rates and lower intra-market correlations, enabling fundamentals to matter more.
- As represented by median Callan Fund-of-Fund managers, hedge fund portfolios performed as expected, net of fees, even after adjusting for any embedded market beta, particularly in long-short equity.
- Top-down oriented macro hedge funds failed to get traction since markets outside of equities continued to be choppy or trendless.
- Smaller hedge funds marginally beat larger ones, on average, as illustrated by HFRI Fund Wtd Composite (+2.27) vs Asset Wtd Composite (+1.66%).
- Median managers of Callan Multi-Asset Class (MAC) style groups generated positive returns consistent with their return expectations. Risk Parity and Long-Biased MACs benefitted from higher exposures to equity-related factors.
- As highlighted by the Credit Suisse Neuberger Multi-Asset Risk Premia Index (see bar chart), most alternative risk premia were flat or down. Strong momentum in equities and currencies particularly helped Risk Premia strategies.

Returns for Periods ended September 30, 2017

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Hedge Fund Universe						
Callan Absolute Return FoF	1.76	6.76	3.01	4.88	3.32	5.03
Callan Core Diversified FoF	1.91	6.18	2.16	4.90	3.05	5.32
Callan Long/Short Equity FoF	3.08	10.50	4.13	5.96	3.31	5.66
HFRI Asset Weighted Compo	1.66	6.57	2.67	4.51	--	--
HFRI Fund Weighted Index	2.27	7.16	3.41	4.72	3.08	6.09
.HFRI Equity Hedge	3.65	11.13	4.64	6.32	2.92	6.00
.HFRI Event-Driven	2.11	9.96	3.73	5.91	3.96	7.43
.HFRI Macro	0.39	-1.01	0.56	0.70	2.03	4.56
.HFRI Relative Value	1.28	5.94	3.43	4.95	4.93	6.11
90 Day T-Bill + 5%	1.48	5.66	5.32	5.22	5.47	6.29
Liquid Alternatives Universe						
Callan Absolute Return MAC*	1.39	3.84	3.47	4.06	5.07	--
Callan Risk Premia MAC*	2.96	2.84	2.69	2.73	--	--
Callan Long Biased MAC*	3.25	9.66	5.18	5.74	5.60	8.65
Callan Risk Parity MAC*	3.49	6.06	4.86	4.86	6.59	--
S&P 500	4.48	18.61	10.81	14.22	7.44	10.04
Bloomberg Barclays Aggregate	0.85	0.07	2.71	2.06	4.27	4.23
60% S&P / 40% BB BC Agg	3.03	10.93	7.60	9.32	6.57	8.01
CS NB MARP Index (5%v)	0.82	-1.27	4.61	4.03	7.49	--
SG Trend Index	0.75	-9.34	-0.14	1.10	3.03	3.44

* Gross of fees

Returns for Quarter ended September 30, 2017 Alternative Risk Factor Breakdown



Source: Credit Suisse Neuberger Berman Multi-Asset Risk Premia Index (Bloomberg: CSEANB1E Index)

Private Equity Market

- Observations: Low volatility and gently rising markets fostered continued “Golden Era” conditions in the private equity market during the third quarter.
- Fundraising: The fundraising market is booming. We expect that 2017 will exceed 2016’s \$312 billion, with potential for setting new record.
- Returns: With recent public equity gains, private equity returns are simply “competitive” with public equity over horizons of five years and less.
- Investments: The number of new company investments dipped (buyout -12% and VC -21%) but dollar volumes remained healthy (buyout +6% and VC -6%). High prices present a headwind, but there were some large transactions in the quarter (Panera Bread \$7.5b and Staples \$6.5b).
- Exits: Buyout exits declined 12% in number, but were up 6% in dollar volume; buyout-backed IPOs fell to only one. VC exits rose 2% by count and 9% by dollar volume (both M&A and IPO).

Funds Closed 1/1/17 to 9/30/17

Strategy	# Partnerships	Amount (\$mm)	%
Venture Capital	382	29,109	12%
Buyouts	272	167,111	67%
Subordinated Debt	52	22,627	9%
Distressed Debt	17	9,601	4%
Secondary and Other	31	9,869	4%
Fund-of-Funds	85	11,122	4%
Totals	839	249,439	100%

Source: Private Equity Analyst

Private Equity Performance Database

(Pooled Horizon IRRs Through 6/30/17)

Strategy	3 Months	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	2.0	8.8	11.9	14.7	9.4	8.3	19.6
Growth Equity	3.7	14.5	9.5	12.7	9.9	11.8	13.2
All Buyouts	6.5	18.7	10.4	14.4	8.7	13.9	12.5
Mezzanine	4.0	11.7	8.6	9.9	8.7	9.5	8.8
Distressed	4.3	17.8	8.2	12.0	9.1	11.3	11.4
All Private Equity	5.0	15.8	10.4	13.9	9.0	12.2	13.2
S&P 500	3.1	17.9	9.6	14.6	7.2	8.4	7.2

Source: Thomson Reuters/Cambridge

TAB 7 – Asset Allocation & NAV Updates

Asset Allocations at October 31, 2017

Regular Account							Variable Fund	Total Fund	
OPERF	Policy	Target ¹	\$ Thousands	Pre-Overlay	Overlay	Net Position	Actual	\$ Thousands	\$ Thousands
Public Equity	32.5-42.5%	37.5%	31,339,103	41.3%	(682,946)	30,656,157	40.4%	605,288	31,261,444
Private Equity	13.5-21.5%	17.5%	14,811,846	19.5%		14,811,846	19.5%		14,811,846
Total Equity	50.0-60.0%	55.0%	46,150,949	60.9%	(682,946)	45,468,003	60.0%		46,073,290
Opportunity Portfolio	0-3%	0.0%	1,559,783	2.1%		1,559,783	2.1%		1,559,783
Fixed Income	15-25%	20.0%	14,149,888	18.7%	2,659,583	16,809,471	22.2%		16,809,471
Real Estate	9.5-15.5%	12.5%	7,576,587	10.0%	(8,700)	7,567,887	10.0%		7,567,887
Alternative Investments	0-12.5%	12.5%	4,393,393	5.8%		4,393,393	5.8%		4,393,393
Cash ²	0-3%	0.0%	1,986,031	2.6%	(1,967,937)	18,094	0.0%		20,517
TOTAL OPERF		100%	\$ 75,816,630	100.0%	\$ -	\$ 75,816,630	100.0%	\$ 607,711	\$ 76,424,340

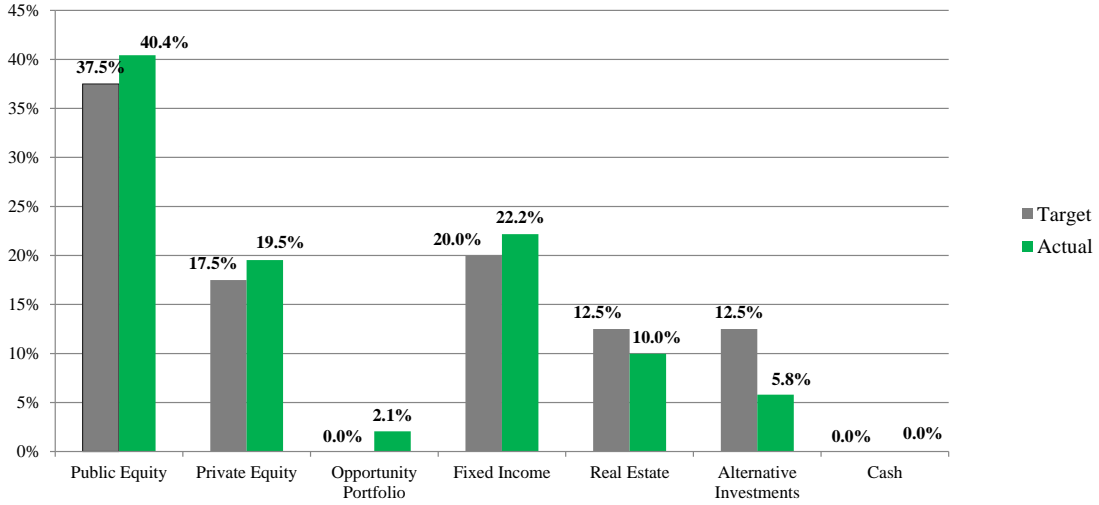
¹Targets established in June 2015. Interim policy benchmark consists of: 40% MSCI ACWI IMI Net, 22.5% Custom FI Benchmark, 20% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF ODCE net (1 quarter lagged), & 5% CPI+400bps.

²Includes cash held in the policy implementation overlay program.

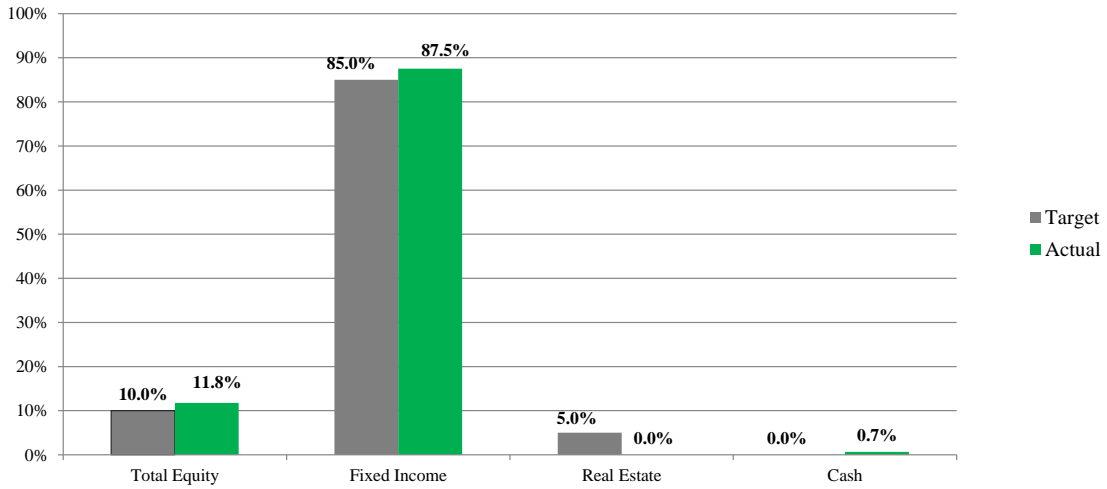
SAIF	Policy	Target	\$ Thousands	Actual
Total Equity	7-13%	10.0%	568,353	11.8%
Fixed Income	80-90%	85.0%	4,226,149	87.5%
Real Estate	0-7%	5.0%	0	0.0%
Cash	0-3%	0%	32,728	0.7%
TOTAL SAIF			\$ 4,827,230	100.0%

CSF	Policy	Target	\$ Thousands	Actual
Domestic Equities	25-35%	30%	484,683	29.4%
International Equities	25-35%	30%	481,471	29.2%
Private Equity	0-12%	10%	203,015	12.3%
Total Equity	65-75%	70%	1,169,169	71.0%
Fixed Income	25-35%	30%	446,315	27.1%
Cash	0-3%	0%	31,145	1.9%
TOTAL CSF			\$ 1,646,629	100.0%

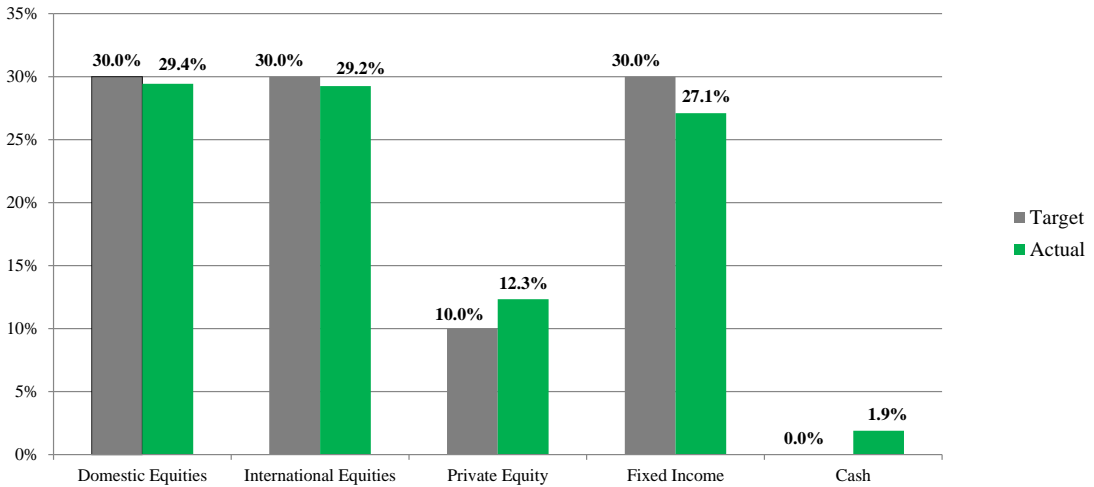
OPERF Asset Allocation



SAIF Asset Allocation



CSF Asset Allocation

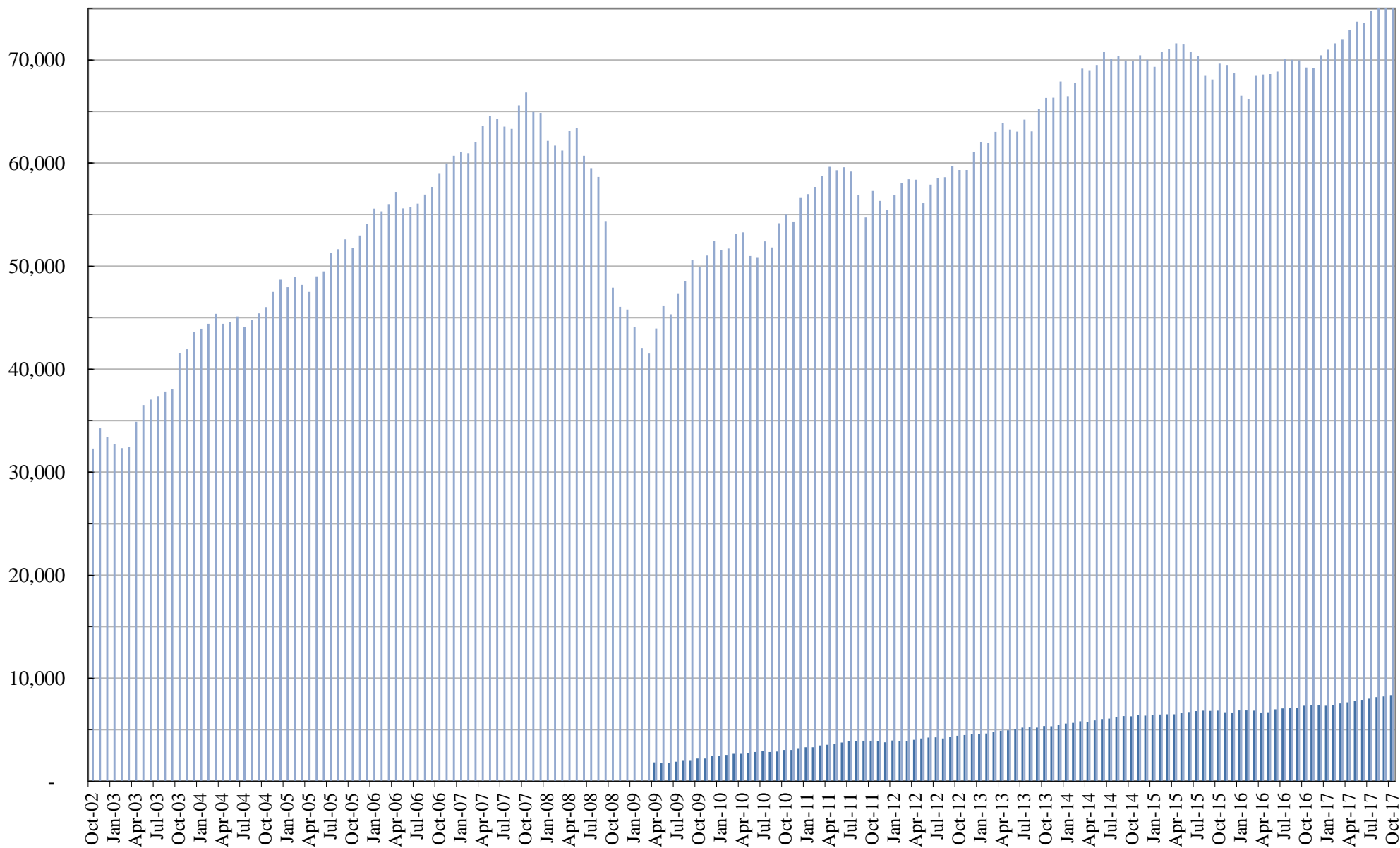


OPERF NAV

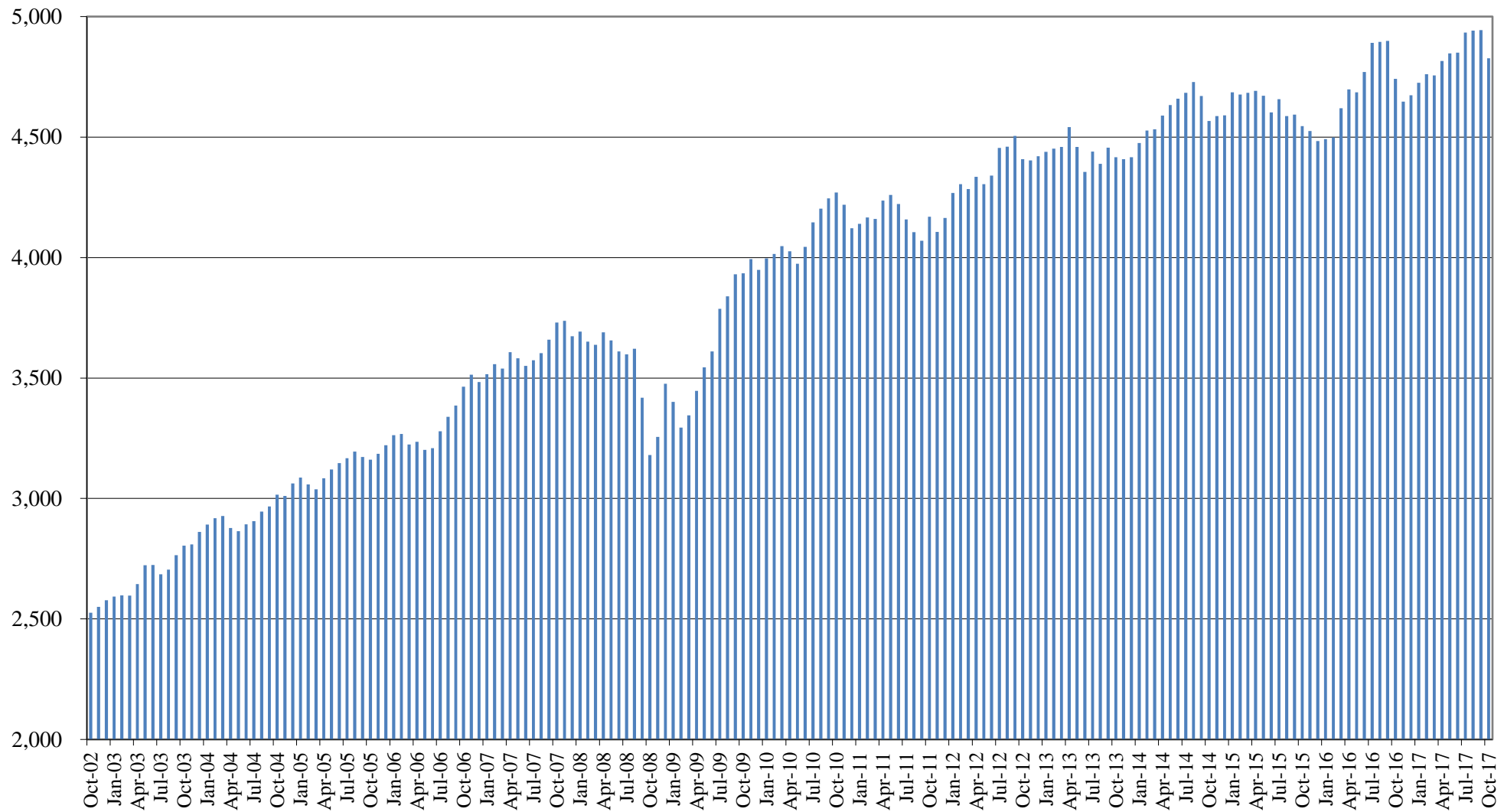
15 years ending October 2017

(\$ in Millions)

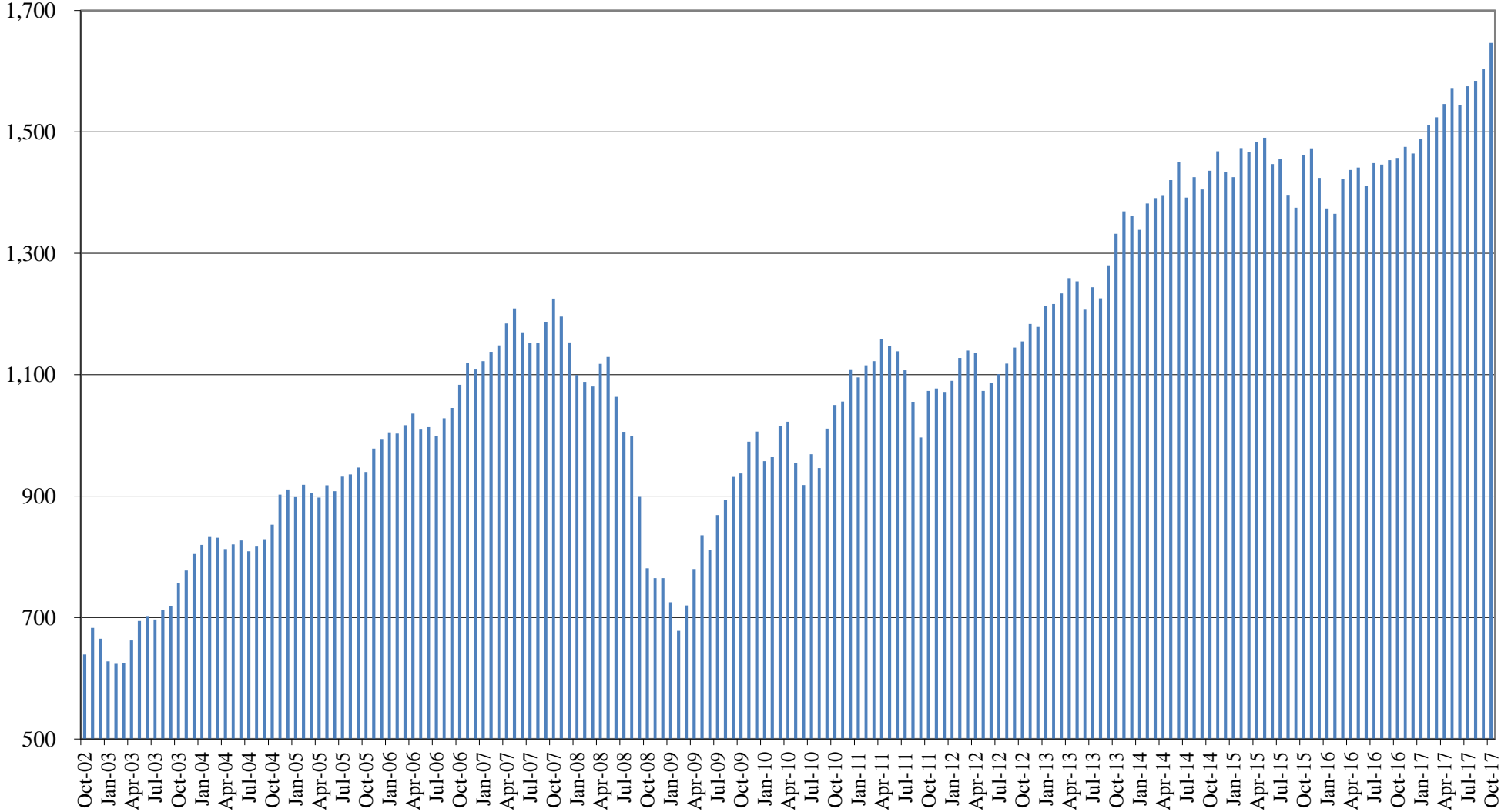
IAP OPERF



SAIF NAV
15 years ending October 2017
(\$ in Millions)



CSF NAV
15 years ending October 2017
(\$ in Millions)



TAB 8 – Calendar — Future Agenda Items

2017/18 OIC Forward Calendar and Planned Agenda Topics

February 1, 2018:	Private Equity Manager Recommendation Private Equity Program Review Placement Agent Report 2019 OIC Calendar Approval Guest Speaker Presentation
March 14, 2018:	OPERF Overlay Review Securities Lending Update Real Estate Program Review Q4 2017 OPERF Performance & Risk Report
April 25, 2018:	OPERF Asset Allocation & Capital Market Assumptions Update Alternatives Portfolio Review OIC Policy Updates SAIF Annual Review Strategic Issues Discussion ¹
June 6, 2018	Opportunity Portfolio Review Q1 OPERF Performance & Risk Report Operations Update CSF Annual Review
August 8, 2018:	Corporate Governance Update OIC Policy Updates
September 19, 2018:	Q2 OPERF Performance & Risk Report CEM Benchmarking Report
October 31, 2018:	Currency Program Review Public Equity Program Review
December 12, 2018:	Q3 OPERF Performance & Risk Report Fixed Income Program Review (OPERF, OSTF & OITP)

¹ Alternative date may be selected.