# Oregon Investment Council

December 9, 2015 - 9:00 AM

**PERS Headquarters**
**11410 S.W. 68th Parkway**
**Tigard, OR  97223**

**Katy Durant**
Chair

**John Skjervem**
Chief Investment Officer

**Ted Wheeler**
State Treasurer

# OREGON INVESTMENT COUNCIL

**Agenda**

**December 9, 2015**
**9:00 AM**

PERS Headquarters
11410 S.W. 68th Parkway
Tigard, OR 97223

| Time | A. Action Items | Presenter | Tab |
|---|---|---|---|
| **9:00-9:05** | **1. Review & Approval of Minutes**<br>October 28, 2015 | **Katy Durant**<br>*OIC Chair* | **1** |
| | **Committee Reports** | **John Skjervem**<br>*Chief Investment Officer* | |
| **9:05-9:45** | **2. KKR Americas XII Fund L.P.**<br>*OPERF Private Equity Portfolio* | **Michael Langdon**<br>*Senior Investment Officer*<br>**George Roberts**<br>*Co-Chairman & Co-CEO*<br>**Michael Michelson**<br>*Member, Private Equity*<br>**Alex Navab**<br>*Member & Head of Americas Private Equity*<br>**Tom Martin**<br>*TorreyCove Partners* | **2** |
| **9:45-10:30** | **3. Global Infrastructure Partners III L.P.**<br>*OPERF Alternative Portfolio* | **Ben Mahon**<br>*Investment Officer*<br>**Adebayo Ogunlesi**<br>*Chairman & Managing Partner*<br>**James Jenkins**<br>*Managing Director*<br>**Tom Martin** | **3** |
| **10:30-10:45** | **-------------------- BREAK --------------------** | | |
| **10:45-11:15** | **4. OPERF Opportunity Portfolio Review**<br>*Annual Update* | **John Hershey**<br>*Director of Alternative Investments* | **4** |

| | | | | |
|---|---|---|---|---|
| **11:15-12:00** | **5.** | **OPERF Real Estate Review**<br>*Annual Update* | **Tony Breault**<br>*Senior Investment Officer*<br>**Christy Fields**<br>**David Glickman**<br>*Pension Consulting Alliance* | **5** |
| **12:00-12:45** | **6.** | **OPERF Fixed Income Strategy Update** | **Perrin Lim**<br>*Director of Capital Markets*<br>**Tom Lofton**<br>*Investment Officer*<br>**Alan McKenzie**<br>*Managing Director, Blackrock Solutions*<br>**Jim Callahan**<br>*Callan Associates* | **6** |
| **12:45-12:50** | **7.** | **OIC Elections** | **Katy Durant** | **7** |

**B. Information Items**

| | | | | |
|---|---|---|---|---|
| **12:50-1:00** | **8.** | **OPERF Q3 2015 Performance Report** | **Jim Callahan**<br>**Janet Becker-Wold**<br>*Callan Associates* | **8** |
| | **9.** | **Asset Allocations & NAV Updates**<br>a. Oregon Public Employees Retirement Fund<br>b. SAIF Corporation<br>c. Common School Fund<br>d. Southern Oregon University Endowment Fund | **John Skjervem** | **9** |
| | **10.** | **Calendar — Future Agenda Items** | | **10** |
| | **11.** | **Other Items** | **Council**<br>**Staff**<br>**Consultants** | |

**C. Public Comment Invited**

15 Minutes

TAB 1 – REVIEW & APPROVAL OF MINUTES

October 28, 2015 Regular Meeting

OST Committee Reports – Verbal

JOHN D. SKJERVEM
CHIEF INVESTMENT OFFICER
INVESTMENT DIVISION

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OREGON INVESTMENT COUNCIL
OCTOBER 28, 2015
MEETING MINUTES

| | |
|---|---|
| Members Present: | Rukaiyah Adams, Katy Durant, Keith Larson, Steve Rodeman, John Russell, Ted Wheeler |
| Staff Present: | Darren Bond, Deena Bothello, Karl Cheng, Garrett Cudahey, John Hershey, Julie Jackson, Michael Langdon, Perrin Lim, Tom Lofton, Ben Mahon, Mike Mueller, Paola Nealon, Jen Plett, Tom Rinehart, Angela Schaffers, Priyanka Shukla, John Skjervem, Michael Viteri |
| Consultants Present: | Tom Martin (TorreyCove); Allan Emkin, David Glickman, John Linder (PCA); Janet Becker Wold, Jim Callahan, Uvan Tseng (Callan) |
| Legal Counsel Present: | Dee Carlson, Oregon Department of Justice |

The October 28, 2015 OIC meeting was called to order at 9:00 am by Katy Durant, Chair.

**I. <u>9:00 am Review and Approval of Minutes</u>**

**MOTION:** Mr. Larson moved approval of the September 9, 2015 meeting minutes. Ms. Adams seconded the motion, which then passed by a 4/0 vote (Treasurer Wheeler had not yet arrived).

COMMITTEE REPORTS: John Skjervem, OST Chief Investment Officer gave an update on the following committee actions taken since the September 9, 2015 OIC meeting:

**<u>Private Equity Committee</u>:**
None

**<u>Alternatives Committee</u>:**
None

**<u>Opportunity Portfolio Committee</u>:**
None

**<u>Real Estate Committee</u>:**
None

**II. <u>9:02 am Stonepeak Infrastructure Fund II, L.P.</u>**

Ben Mahon, Alternatives Investment Officer introduced Michael Dorrell and Trent Vichie, Senior Managing Directors and Co-Founders of Stonepeak Infrastructure Partners ("Stonepeak" or the "Firm"). Stonepeak is an independently owned investment firm formed in 2011 by Messrs. Dorrell and Vichie, both formerly of The Blackstone Group and Macquarie. Oregon's relationship with

Stonepeak dates back to 2012, when the OIC committed $100 million of OPERF capital to Stonepeak Infrastructure Fund I, L.P. Accordingly, this proposed commitment should be considered a “re-up” to an existing relationship.

Consistent with its history, Stonepeak will focus Fund II capital on U.S. and Canadian middle-market infrastructure investments, primarily in the power, water, energy, communications, renewables, and transportation sectors. Target returns will include a balance of income and capital appreciation, and the Firm expects to make individual equity investments of between $75 million and $300 million and generally aims to secure a controlling stake.

Staff and TorreyCove recommended a $400 million commitment to the Stonepeak Infrastructure Fund II for the OPERF Alternatives Portfolio, subject to satisfactory negotiation of terms and conditions with Staff working in concert with Department of Justice personnel.

**MOTION:** Ms. Adams moved approval of the staff recommendation. Treasurer Wheeler seconded the motion which passed by a vote of 5/0.

## III. 10:00 am CEM Benchmarking

Bruce Hopkins, Vice President of CEM provided a comprehensive, annual review of OPERF investment costs in both absolute and peer-relative terms.

## IV. 10:30 am OSTF Annual Review

Garrett Cudahey, Fixed Income Investment Officer presented the Oregon Short Term Fund (OSTF) annual review and related policy revisions. These revisions were recommended in order to update outdated language, separate policy from procedure (as part of an OST-wide effort), align fixed income policy with BlackRock’s Aladdin methodology and improve the policies’ overall readability.

Substantive OSTF policy revisions include the following:

1. Policy & Procedure Separation – OST is undergoing an agency-wide effort to separate policy from procedure. In conjunction with this effort, Staff consolidated and separately partitioned all OSTF-related procedural elements.
2. Update to Government Guaranteed Securities – Staff removed outdated TLGP language and inserted language pertaining to securities guaranteed by a government entity.
3. Updated Maturity Language – Staff updated and clarified language for securities with more than one maturity date proxy.
4. Municipal Security Exposure – Staff introduced an OSTF policy limitation for municipal securities and issuers of municipal securities.
5. Ratings Grid Modification – Staff modified the OSTF policy ratings grid to conform to the compliance features of the BlackRock Aladdin operating platform.

**MOTION:** Mr. Larson moved approval of the recommended OSTF policy updates. Ms. Adams seconded the motion, which passed by a vote of 5/0.

## V. 10:47 am OIC Policy Updates

Mike Mueller, Deputy CIO presented various OIC policy updates in connection with OST’s on-going migration to its PolicyStat application.

**MOTION:** Ms. Adams moved approval of the recommended updates. Treasurer Wheeler seconded the motion, which passed by a vote of 5/0.

**VI.** **<u>10:53 am OPERF Actuarial Valuation Update</u>**

Steve Rodeman, PERS Director gave an update on the recently-completed PERS actuarial study, and noted that OPERF's funding ratio has declined from 96% to 84% due to a variety of factors, most notably the State Supreme Court's recent *Moro* decision which invalidated the Legislature's 2013 PERS reforms.

**VII.** **<u>11:35 am Asset Allocation & NAV Updates</u>**

Mr. Skjervem reviewed asset allocations and NAVs across OST-managed accounts for the period ended September 30, 2015.

**VIII.** **<u>11:36 am Calendar – Future Agenda Items</u>**

Mr. Skjervem presented an updated calendar of future OIC meetings and planned agenda topics.

**IX.** **<u>11:36 am Other Items</u>**

None

**<u>11:38 am Public Comments</u>**

Bill Parish, Registered Investment Advisor with Parish & Company, addressed the OIC regarding private equity fee disclosure, private equity fund audit reports and investments in drug and medical procedure cash flows. Specifically, Mr. Parish advocated for OIC disclosure of both private equity firms' carried interest and the audit reports for each private equity investment partnership. Mr. Parish also shared his concerns regarding drug and medical procedure costs, and noted larger policy implications for related royalty investment strategies.

Ms. Durant adjourned the meeting at 11:40 am.

Respectfully submitted,

Julie Jackson

Julie Jackson
Executive Support Specialist

# TAB 2 – KKR AMERICAS XII FUND L.P.

## KKR Americas Fund XII, L.P.

**Purpose**

Subject to satisfactory negotiation of terms and conditions with Staff working in concert with Department of Justice personnel, Staff recommends a commitment of up to $500 million to KKR Americas Fund XII, L.P. ("Fund XII" or "Americas XII") for the OPERF Private Equity Portfolio. This commitment would represent a continuation of the OIC's long-standing, thirty-five year relationship with KKR.

**Background**

KKR was founded in 1976 by Jerome Kohlberg, Henry Kravis and George Roberts who had previously been buyout pioneers at Bear, Stearns & Co. Today KKR is a publicly listed alternative investment management firm with approximately $102 billion of assets under management across all platforms including $63 billion in private markets strategies. Jerome Kohlberg left KKR in the late 1980s, but Henry Kravis and George Roberts continue to act as Co-Chairman & Co-CEO leading more than 1,100 professionals operating in 15 countries. That headcount includes 215 private markets focused investment professionals with a team of 60 focused on the Americas private equity investment platform ("AMPE"). Alex Navab leads the AMPE team which is based primarily in New York and Menlo Park with satellite offices in Sao Paulo (Latin America), Houston (energy) and Calgary (energy). The AMPE team is complemented by KKR's Capstone (portfolio company operations), Capital Markets (debt and equity financings) and GMAA (macro research/portfolio construction) teams as well as the firm's Senior Advisor network (senior industry executives in target sectors). KKR is currently targeting at least $10 billion of capital commitments for KKR Americas Fund XII, and the General Partner ("GP") expects to commit at least $700 million to Fund XII.

**Strategy**

Across all of KKR's global private equity platforms the GP looks for opportunities to acquire a controlling ownership stake in leading companies with strong business franchises, attractive growth prospects, defensible market positions and the ability to generate attractive returns. For KKR Americas Fund XII the GP will target roughly 25 investments of $350 million to $600 million in companies with enterprise values of $500 million to $2 billion. From an industry standpoint, KKR has longstanding coverage of six sectors in the AMPE practice including retail & consumer, energy, financial services, healthcare, industrials and technology, media & telecom. With respect to strategy, Fund XII is being formed to engage in management buyouts/build-ups and growth equity investments primarily in companies based in North America. On an opportunistic basis KKR will pursue deals in Latin America in Fund XII, and the AMPE practice has recently formed a specialized function to explore active, toe-hold investments in public equities.

**Issues to Consider**

Attributes:

- *Large & Experienced Team* – As noted above, KKR was a pioneer of the buyout business and remains an innovator in the industry today. The firm's AMPE practice was an early adopter of both sector specialization and in-house operational capabilities, and, as a result, KKR's industry coverage model and Capstone resources are best in class today. Further, the GP's long experience in the buyout industry is reflected in the tenure of the senior decision makers at KKR. As an example, the AMPE investment committee has an average tenure at KKR and industry experience of 24 years and 29 years, respectively.

- *Enhanced Execution, Portfolio Construction & Portfolio Management Capabilities* – Since the inception of the predecessor fund (KKR North America Fund XI) in 2011, the AMPE team has made material upgrades to the investment process. Today KKR Capital Markets represents a differentiated resource delivering best execution on new deal financings, recapitalizations, liquidity enhancements and exit opportunities. Further, the firm's Capstone team is more deeply imbedded in the investment process and more closely integrated with the sector teams. The addition of the GMAA team allows for a more fulsome exploration of deal and portfolio level risk factors resulting in thoughtful portfolio construction. Finally, KKR has implemented a robust Portfolio Management Committee framework to enforce accountability for value creation initiatives and drive ongoing exit discussions. The AMPE Portfolio Management Committee consists of the firm's most senior partners with an average tenure at KKR and average industry experience of 30 years and 37 years, respectively.
- *Long-Term Relationship with Strong Strategic Fit* – Since 1980, the OIC has committed more than $7 billion of OPERF capital to KKR private equity funds, and at June 30, 2015 those investments had generated a net IRR and multiple of 18% and 1.8x, respectively. This track record is biased toward KKR's original AMPE platform, but also includes exposure to the firm's other regional private equity practice areas. The depth of this history along with the breadth of KKR's offerings make the firm a logical candidate to continue as a core relationship in a period where Staff will more closely manage the number of GPs in the OPERF private equity program.

<u>Concerns</u>:

- *Recent Relative Performance* – Since 2002 the AMPE funds have invested $29 billion in 93 transactions generating a gross total value at June 30, 2015 of $53 billion (1.8x gross multiple). This period includes gross realized proceeds of $28 billion, a net IRR of 12% and a net multiple of 1.6x invested capital. Performance since 2002 encompasses three funds with the most recent fund (NAXI) generating returns just below the first quartile and the two mature funds (Millennium & 2006 Fund) ranking as median performers relative to the full North America buyout peer group. [Mitigant: Recent performance relative to a more narrow and appropriate peer group is more encouraging. This analysis reveals that KKR's recent performance is broadly in line with its true comparable set of large buyout funds.]
- *Hold Size/Portfolio Construction* – The AMPE track record has historically been adversely impacted by a series of large hold positions in transactions that have either lost money or failed to generate compelling gains. Those large hold positions have been a material drag on fund level performance. [Mitigant: Since the inception of the prior AMPE fund in 2011, the GP has implemented material process improvements to mitigate this risk going forward. Today KKR applies a much more robust portfolio construction screen when underwriting each new investment. Further, AMPE leadership appears committed to capping hold positions at appropriate levels going forward.]
- *Turnover* – Recent years have seen material turnover on the AMPE sector teams with KKR having navigated a wholesale generational change in leadership. [Mitigant: Recent, senior level turnover on the sector teams appears to have resulted mostly from an orderly and KKR-driven succession process. At some level it is healthy to have managed turnover to provide growth opportunities and incentives for the next generation of deal makers. The current leaders of the sector teams are younger than in years past, but the group remains very experienced with most having more than 10 years of tenure at KKR. Finally, senior leadership on the AMPE team and at KKR in general remains very stable.]

- *OPERF Private Equity Portfolio Construction* – As of June 30, 2015 KKR managed roughly 17% of the current OPERF PE portfolio with the AMPE series of funds alone accounting for nearly 13% of net asset value. Exposure at this level to a single GP counterparty is more than would generally be expected in a private equity program that is as large and mature as OPERF's. [Mitigant: KKR's weight in the portfolio is the result of a long and very productive relationship, and that exposure has normalized significantly across recent fundraising cycles as the program continues to mature. The recommended commitment for Americas XII is sized in a manner that agrees with Staff's prospective view of what significant, core PE relationships should look like going forward.]

**Terms**

The headline terms are mostly standard aside from a 7% preferred return versus the more commonly used 8%. On management fees, KKR is offering incentives for large commitments as well as a six-month waiver for first close investors. Finally, no placement agent had contact with Staff in connection with this offering.

**Conclusion**

KKR Americas Fund XII represents an attractive, core opportunity for the North America, large buyout portion of OPERF's Private Equity Program. As noted in the introduction, Staff is recommending a capital commitment of up to $500 million for KKR Americas Fund XII, L.P.

TorreyCove
CAPITAL PARTNERS

# MEMORANDUM

**TO:** Oregon Public Employees Retirement Fund ("OPERF")

**FROM:** TorreyCove Capital Partners ("TorreyCove")

**DATE:** November 30, 2015

**RE:** KKR Americas Fund XII, L.P. (the "Fund")

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**Strategy:**

KKR will continue to pursue the same strategy that the Firm has employed for a number of years across several prior funds, albeit with some small changes. This means primarily targeting control buyouts in large businesses across North America. Generally speaking, the Fund will target equity checks between $350 million and $600 million in companies with enterprise values between $500 million and $2 billion, but will have the ability to invest outside these ranges.

In general, KKR adheres to a set of target investment criteria. KKR targets (i) high-quality, leading companies with strong market positions; (ii) companies with opportunities for significant operational improvements; (iii) companies that have competitive advantage and operate in sectors with consolidation opportunities; (iv) strong management teams operating in growing markets with attractive product returns; and (v) investment opportunities made actionable through non-traditional investment structures and capitalizing on market dislocations.

Please see attached investment memorandum for further detail on the investment opportunity.

**Allocation:**

A new commitment to the Fund would be allocated 100% to the Corporate Finance investment sub-sector and will further be categorized as a Domestic investment. As of the June 30, 2015 report, OPERF's allocation to Corporate Finance is listed in the table below. It is important to note that since allocation is based on fair market value, a commitment to the Fund would not have an immediate impact on OPERF's current portfolio allocation. Commitments to the Fund are complementary to OPERF's existing fund commitments and provide the overall portfolio with a further degree of diversification.

| As of June 30, 2015 | Target | FMV | FMV + Unfunded |
|---|---|---|---|
| Corporate Finance | 65-85% | 67% | 68% |

**Conclusion:**

The Fund offers OPERF an opportunity to participate in a differentiated portfolio of private equity investments with relatively attractive overall terms. TorreyCove's review of the General Partner and the proposed Fund indicates that the potential returns available justify the risks associated with an investment in the Fund. TorreyCove recommends that OPERF consider a commitment of $500 million to the Fund. TorreyCove's recommendation is contingent upon the following:

TORREYCOVE
CAPITAL PARTNERS

(1) Satisfactory negotiation or clarification of certain terms of the investment;
(2) Satisfactory completion of legal documents;
(3) Satisfactory continuation and finalization of due diligence;
(4) No material changes to the investment opportunity as presented; and
(5) Confidentiality maintained regarding the commitment of OPERF to the Partnership until such time as all the preceding conditions are met.

TAB 3 – GLOBAL INFRASTRUCTURE PARTNERS III L.P.

## Global Infrastructure Partners Fund III, L.P.

**Purpose**
Staff and TorreyCove recommend a $400 million commitment to Global Infrastructure Partners Fund III, L.P. ("GIP III" or the "Fund") for the OPERF Alternatives Portfolio, subject to satisfactory negotiation of terms and conditions with Staff working in concert with Department of Justice personnel.

**Background**
Global Infrastructure Partners ("GIP" or the "Firm") was founded in 2006 by former senior executives from Credit Suisse and General Electric as an independent, specialist infrastructure fund manager. Since its inception, GIP has raised $17.8 billion in commitments for their flagship equity funds, as well as several GIP-led co-investments. Oregon's relationship with GIP dates back to 2011 when the OIC committed $150 million of OPERF capital to Global Infrastructure Partners Fund II, L.P. ("GIP II"), a global, diversified equity mandate. A subsequent $200 million commitment was made to the Global Infrastructure Partners Capital Solutions Fund, L.P. ("GIP CAPS"), a global, diversified debt mandate, in 2014. Thus, this proposed commitment represents the OIC's third GIP fund commitment.

GIP is seeking $12.5 billion in aggregate L.P. capital commitments for the Fund with a $15 billion hard cap. The Firm plans to hold a first close on or about December 15, 2015. Well in excess of the Alternatives Portfolio's target return, the Fund is targeting a gross internal rate of return of 15% to 20%.

**Discussion/Investment Considerations**
With this Fund, GIP will continue its traditional focus on investing in infrastructure assets on a global basis, primarily in the energy, transportation, and water/waste sectors. Fundamental to its investment strategy, the Firm intends to focus on driving operational improvements, deploying its operating team to utilize industrial best practices, with the goal of generating incremental returns for the Fund. An important feature of GIP III strategy is the Firm's focus on large-scale, complex transactions, which it believes provide less competition and more opportunities for operational value creation. Of note, this scale and expertise has allowed for strategic partnerships with industrial partners, positioning GIP to enter into joint venture relationships with industry leaders (to date, 80% of GIP II's equity investments have been through industrial JVs). The Firm expects to make between 10 to 14 equity investments and generally aims to secure a controlling stake.

<u>Attributes</u>:

- *Experienced team*. GIP has a deep and experienced team, with a balance of financial and operational backgrounds. The GIP team has been very stable, with many of its senior members joining from the original sponsoring partners Credit Suisse (including the former head of global investment banking) and GE (including the former CEO of GE Infrastructure). This breadth of experience provides GIP with the capabilities to evaluate the widest possible set of opportunities on behalf of the Fund.
- *Strong operational orientation*. GIP has built out a 27-member operations team, including a number of former GE executives who apply GE concepts to GIP assets. This operational focus seeks measurable gains in areas such as customer service, pricing, operating efficiency, process improvements, capital spending, working capital management and cost control. These operational improvements drive incremental EBITDA growth post-investment, which in turn drives returns without requiring multiple expansion to achievable acceptable returns.
- *Global and large cap focus*. The Firm's focus with GIP III will be on large, global infrastructure investments, a strategy that complements OPERF's existing infrastructure portfolio. Moreover, GIP is

differentiated by their focus on JV transactions with large industrial partners (which have encompassed a broad spectrum of partners, including Kinder Morgan, MSC, ACS, and DONG Energy).

- *Supply/demand gap*. Globally, infrastructure represents a compelling investment opportunity given the current and substantial gap between capital demand and supply. The infrastructure investment sector is projected to experience substantial growth due to the scale of investments required to modernize existing and develop new infrastructure. According to recent estimates, the global infrastructure expenditure requirement through 2030 is $3 trillion per year.
- *Independent platform*. GIP is employee owned and controlled. As such, conflicts typically associated with sponsored entities do not exist. Including GIP III, GIP management will have committed a minimum of $230 million to its equity funds, thereby providing significant "skin in the game."
- *Strong interim results*. While GIP II is still early in its lifespan, interim investment returns have been strong, with the portfolio achieving a net IRR of 27% and multiple of 1.3x.

Concerns:

- *Political/regulatory risks.* The political and regulatory environment for infrastructure is evolving and changes may have an adverse effect on the Fund's ability to pursue its investment strategy. [Mitigant: All investments in the infrastructure sector are subject to the aforementioned risks. Staff finds the risk/reward tradeoff to be reasonable and supported by a) the team's experience and technical expertise, b) the Fund's asset diversification and c) the Fund's geographic focus on OECD countries.]
- *Competitive market for investment opportunities*. Interest from institutional investors in real assets, including infrastructure strategies, remains high. As more capital enters the market for private infrastructure, expected returns may be driven down. [Mitigant: Staff has confidence in GIP's financial discipline and expertise in originating, structuring, and executing infrastructure transactions. Moreover, GIP focuses on large-scale transactions which tend to be more complex and less competitive than other market segments.]
- *Fund III increase.* Fund III represents a substantial increase in capital commitments relative to Fund II. Such increases in assets under management may result in a deviation from stated objectives, i.e., "style drift," as well as create strains on organizational infrastructure. [Mitigant: GIP's approach is to focus on large-scale, complex transactions and the capital base allows for deployment of a significant amount of capital. Furthermore, the Fund is subject to restrictions on the size and type of investments, limiting the potential impacts on investment approach.]
- *Significant unrealized value*. As of June 30, 2015, Funds I and II have an unrealized carrying value of $7.0 billion across 14 investments. Managing the unrealized portfolio will require significant time and attention from the investment and operating teams. [Mitigant: GIP feels that it is adequately staffed to manage Funds I and II and deploy Fund III, with the only staffing additions being opportunistic hires. GIP has demonstrated through the deployment and management of Fund II its ability to navigate these challenges successfully.]

**Terms**

Fund terms include a management fee on committed capital with a standard carry and preferred return. The Fund will have a five-year investment period, and a 10-year duration with up to two, one-year extensions at the General Partner's discretion plus two additional one-year extensions with the Limited Partners consent. During fundraising efforts, no placement agent had contact with Treasury staff.

**Conclusion**

The Alternatives Portfolio target allocation to infrastructure is 20% to 30% (or approximately $1.7 billion to $2.5 billion at current OPERF NAV). To date, OIC has approved $1.55 billion in aggregate commitments to the sector, and Staff considers GIP III an anchor commitment within the OPERF infrastructure portfolio.

Staff also believes GIP III represents an opportunity to invest with an experienced manager in an attractive sector. Since its formation in 2006, GIP has established a leading reputation in the global infrastructure space, with an investment team whose breadth and depth of resources are almost unrivaled. Moreover, GIP is differentiated by their operational value-add strategy and industrial JV focus. At a macro level, requirements for infrastructure investment are massive, underpinning positive demand dynamics for capital, and Staff believes GIP is well positioned to capitalize on the Fund's target opportunity set.

TorreyCove
CAPITAL PARTNERS

**MEMORANDUM**

**TO:** Oregon Public Employees Retirement Fund ("OPERF")

**FROM:** TorreyCove Capital Partners ("TorreyCove")

**DATE:** November 30, 2015

**RE:** Global Infrastructure Partners III, L.P. (the "Fund")

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**Strategy:**

The Fund will pursue 10 to 14 investments in core and core plus infrastructure assets in the energy, transport, and water/waste sectors in OECD markets. As the Fund is targeting $12.5 billion in capital commitments, GIP expects to invest $500 million to $1.75 billion of equity in each transaction. GIP will continue to pursue long-lived assets that provide essential services to an industry or economy that have strong and secure market positions with high barriers to entry, stable and predictable cash flows from regulated or contracted revenues, inflation protection, and downside protection with room for operational growth. The Firm is targeting a hold period of five to seven years and will look to build up an annual cash yield over two to three years and generate the remainder of the return through capital appreciation.

Please see attached investment memorandum for further detail on the investment opportunity.

**Conclusion:**

The Fund offers OPERF an opportunity to participate in a differentiated portfolio of private investments with relatively attractive overall terms. TorreyCove's review of the General Partner and the proposed Fund indicates that the potential returns available justify the risks associated with an investment in the Fund. TorreyCove recommends that OPERF consider a commitment of $400 million to the Fund. TorreyCove's recommendation is contingent upon the following:

(1) Satisfactory negotiation or clarification of certain terms of the investment;

(2) Satisfactory completion of legal documents;

(3) Satisfactory continuation and finalization of due diligence;

(4) No material changes to the investment opportunity as presented; and

(5) Confidentiality maintained regarding the commitment of OPERF to the Partnership until such time as all the preceding conditions are met.

# TAB 4 – OPERF OPPORTUNITY PORTFOLIO REVIEW

# OPERF Opportunity Portfolio 2014/2015 Review

John Hershey, Director of Alternative Investments

December 9, 2015

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# Opportunity Portfolio strategy

<u>Opportunity Portfolio objectives</u>:

- Opportunistic/dislocation oriented
- Less correlated returns
- Innovation oriented
- Not a "strategic" allocation

<u>Strategies of interest</u>:

- Dislocation oriented
  - Regulatory Capital Arbitrage
  - Mortgages
- Less correlated oriented
  - Drug royalty streams
  - Insurance and reinsurance related
  - Intellectual property
- Innovation oriented
  - Trade finance
  - Legal settlements
- Strategic partnerships
  - "Club Deals"
  - Tactical/opportunistic partnerships

# New investments/pipeline/dispositions 2014/2015

- 2014 (commitment sizes and dates):

  TPG TAO ($250mm – Jan)
  Galton Mortgage ($50mm – Jul)
  Blackstone Tactical Opportunities ($250mm – Aug)
  Orbimed Royalties II ($35mm – Dec)
  Lone Star Residential Fund I ($86.4mm – Dec)

- 2015 (commitment sizes and dates):

  TPG European Specialty Lending ($100mm – Feb)
  TPG TAO ($250mm – Sep)

- Current Pipeline:

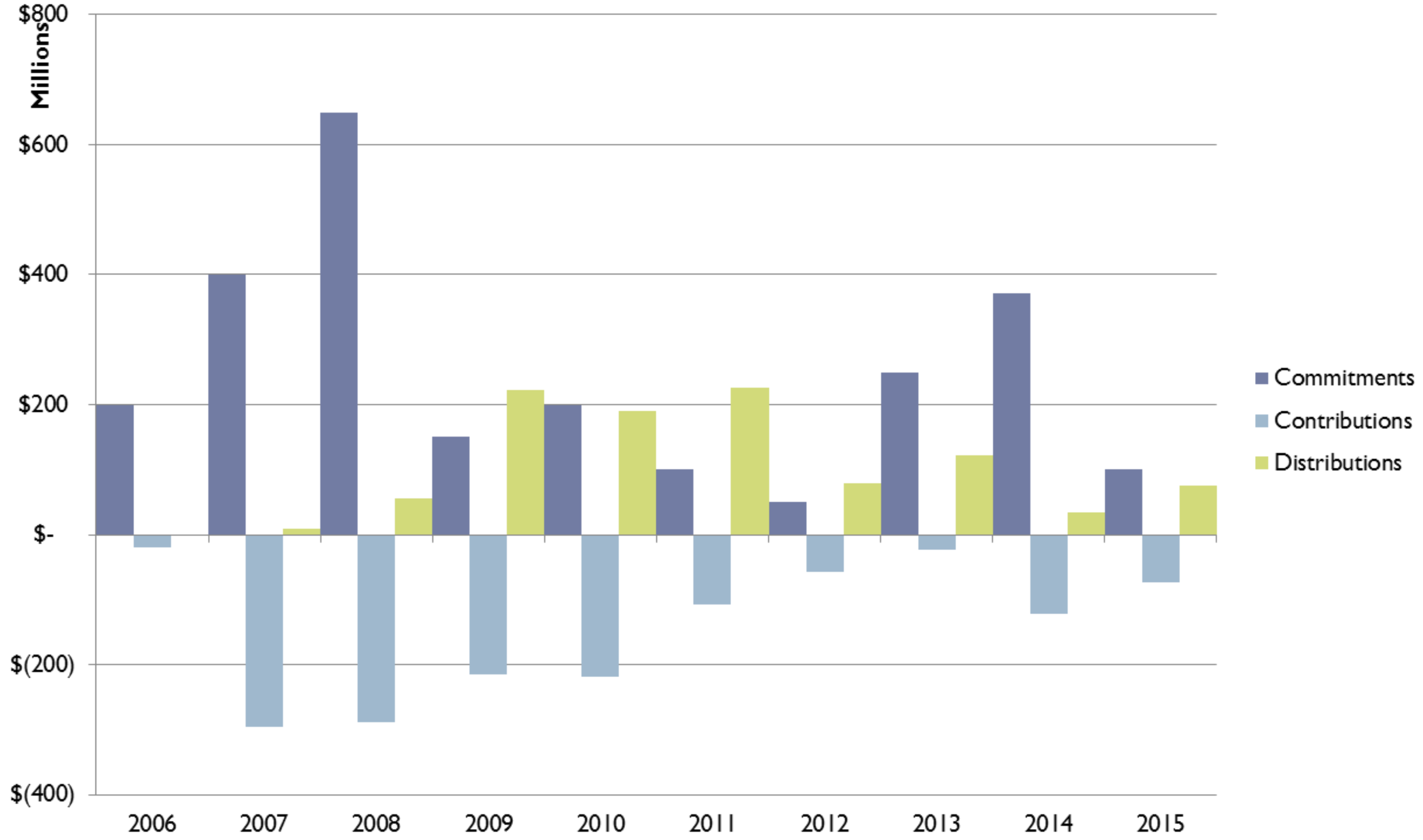
  Blackstone Tactical Opportunities ($250mm – Q1'16)

- Dispositions:

  Endeavour SEAM ($20mm – Q1'15)

# Commitments and cash flows

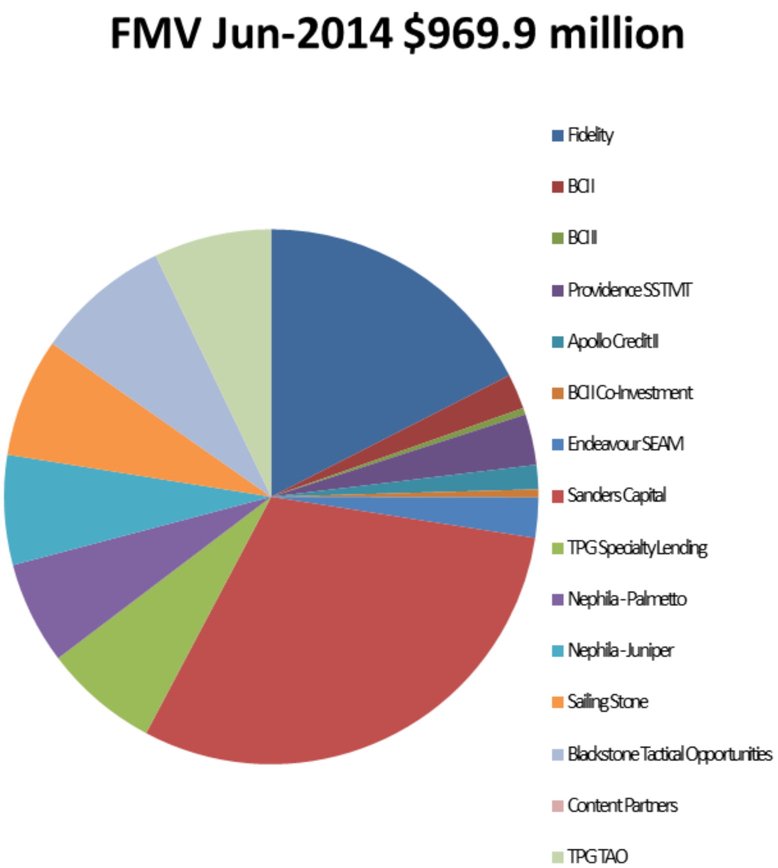
Inception to June 2015

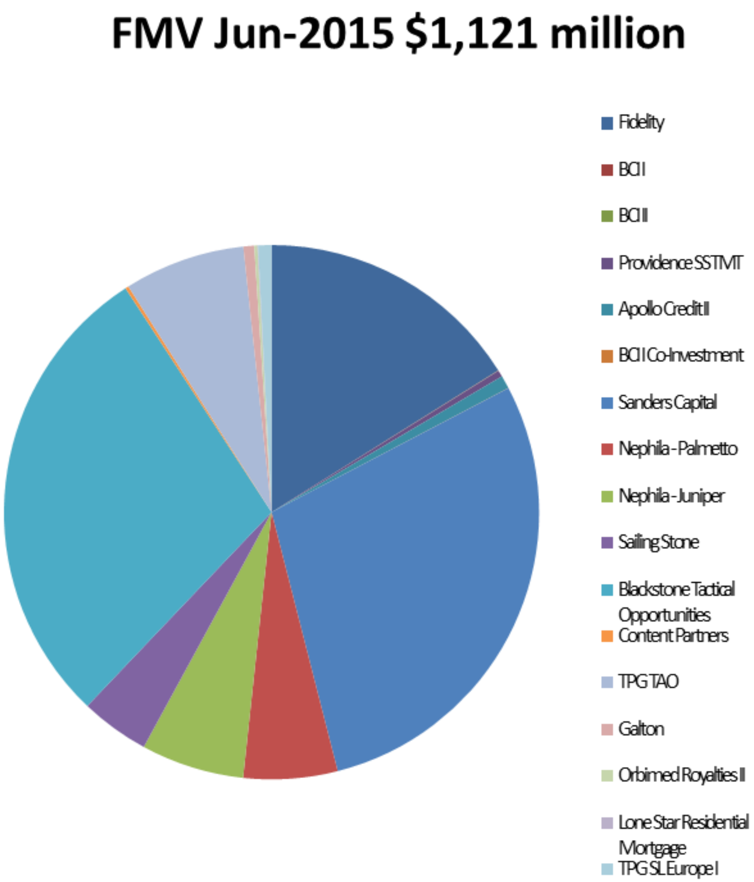


# Portfolio (FMV 6/30/15)

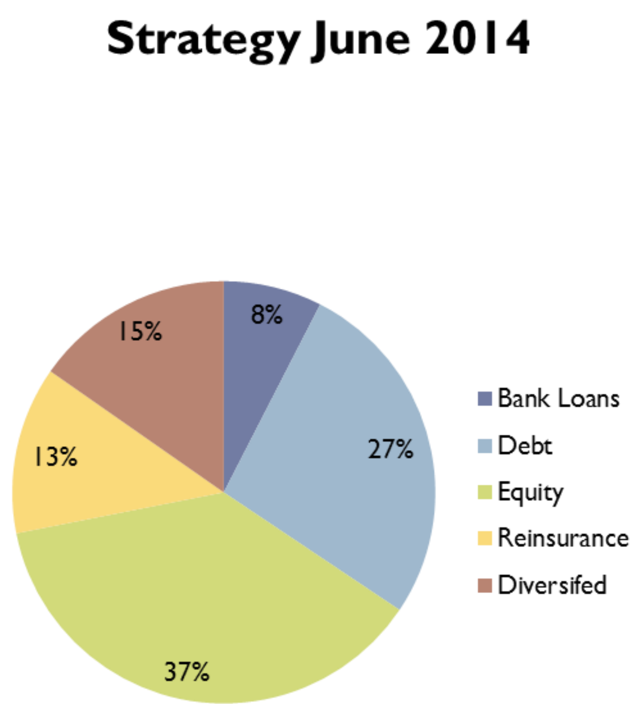
| Fund | FMV ($ mm) | % | Strategy |
|---|---:|---:|:---:|
| Fidelity Real Estate Opportunities | $180.5 | 16.1% | Debt |
| Blackrock Credit Investors I | 0.2 | 0.0 | Debt |
| Blackrock Credit Investors II | 0.2 | 0.0 | Debt |
| Providence Special Situations TMT | 4.4 | 0.4 | Debt |
| Apollo Credit Opportunities Fund II | 8.9 | 0.8 | Debt |
| Blackrock Credit Co-invest | 0.1 | 0.0 | Debt |
| Sanders Capital | 322.0 | 28.7 | All Asset |
| Nephila Juniper | 69.8 | 6.2 | Reinsurance |
| Nephila Palmetto | 63.7 | 5.7 | Reinsurance |
| Sailing Stone Natural Gas | 46.7 | 4.2 | Equity |
| Blackstone Tac Opps | 322.1 | 28.7 | All Asset |
| Content Partners | 2.3 | 0.2 | Royalties |
| TPG Special Situations TAO | 81.9 | 7.3 | Debt |
| Galton | 7.3 | 0.7 | Debt |
| Orbimed | 2.1 | 0.2 | Royalties |
| Lone Star | (0.5) | 0.0 | Debt |
| TPG Specialty Lending Europe I | 9.1 | 0.8 | Debt |
| Total | $1,120.7 | | |

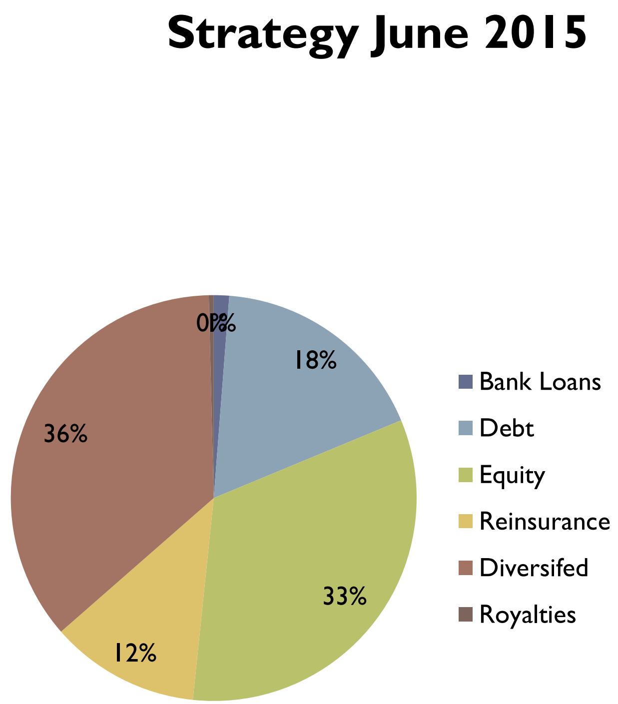
# Portfolio Snapshot (Fair Market Value)



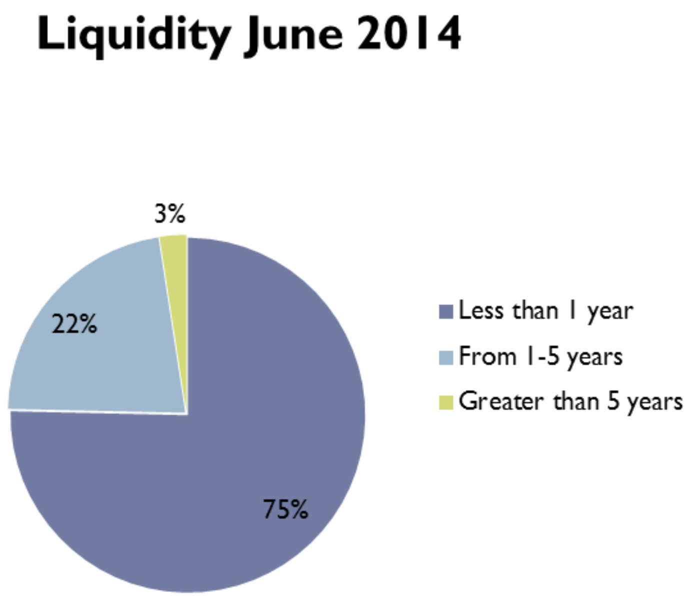



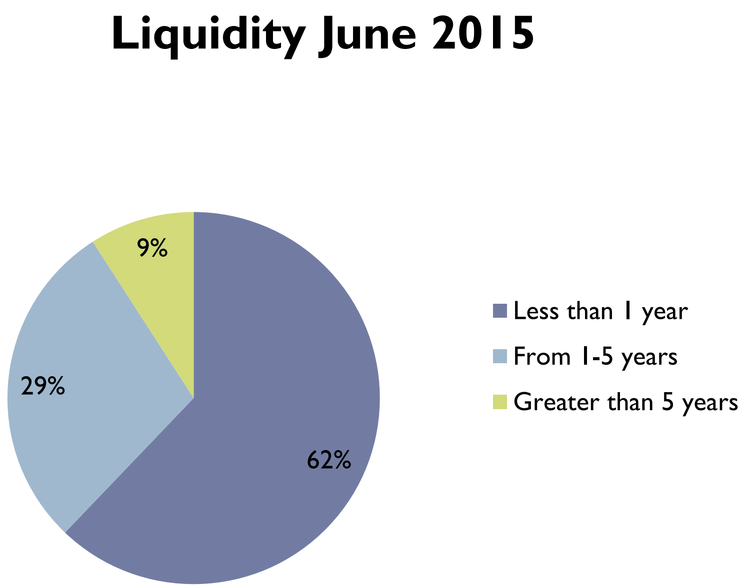
# Portfolio Snapshot (Strategy)



# Portfolio Snapshot (Liquidity)



# Performance (LTM June 30th)

| | |
|---|---|
| NAV (June 30, 2014) | $969,876,850 |
| Plus contributions | $273,905,421 |
| Minus distributions | ($179,179,562) |
| Plus unrealized appreciation | $56,056,411 |
| NAV (June 30, 2015) | $1,120,659,120 |

# Performance (LTM June 30th)

| | 6/2015 | 6/2014 |
|---|---|---|
| FMV + Distributions | $3,055mm | $2,744mm |
| FMV | $1,121mm | $970mm |
| FMV % of OPERF | ~1.6% | ~1.4% |
| FMV + unfunded commitments % of OPERF | ~2.3% | ~2.0% |
| | | |
| Multiple ((FMV + Distributions)/Drawn) | 1.26x | 1.26x |
| IRR since inception (Q2/2006) (source: Staff/Torrey Cove) | 8.2% | 8.8% |
| | | |
| Time weighted returns (source: State Street) | | |
| YTD (June) | 2.9% | 8.6% |
| 1 year | 3.3% | 15.1% |
| 2 years | 9.0% | 16.6% |
| 3 years | 11.9% | 10.8% |
| 4 years | 8.9% | 13.8% |
| 5 years | 11.6% | 16.7% |
| 7 years | 9.2% | 8.0% |

# Active funds review

| Fidelity Real Estate Opportunities Fund | |
|---|---|
| **Strategy** | OTC real estate debt |
| **Performance** | 7.8% net IRR since inception (4/07); 4.4% YTD through 9/30 |
| **Outlook** | 5.7% current yield;  7.2% Yield-to-worst |

| Sanders Capital | |
|---|---|
| **Strategy** | All asset value fund |
| **Performance** | 8.5% net time weighted return since inception (3/10 - 10/15); 4.3% YTD (10/30) |
| **Outlook** | Target return 12 -14% |

# Active funds review

| Nephila Juniper | |
|---|---|
| **Strategy** | Catastrophe Risk Reinsurance |
| **Performance** | 10.4% net TW return since inception (1/12-6/30); 6.3% YTD (9/30) |
| **Outlook** | Target return 12 -14% |

| Nephila Palmetto | |
|---|---|
| **Strategy** | Catastrophe Risk Reinsurance |
| **Performance** | 7.5% net TW return since inception (1/12-6/30); 4.3% YTD (9/30) |
| **Outlook** | Target return 8-10% |

# Active funds review

| Sailing Stone Natural Gas Strategy | |
|---|---|
| **Strategy** | Natural Gas E&P |
| **Performance** | (2.7%) net time weighted return since inception (11/12-6/30); (7.2% )YTD (6/30) |
| **Outlook** | Target total return 15-20% |

| Blackstone Tactical Opportunities | |
|---|---|
| **Strategy** | All assets |
| **Performance** | 1.06x net MOIC; 7.3% net IRR inception to 6/30 (NM less than three years) |
| **Outlook** | Target total return 15-20% |

# Active funds review

| Content Partners | |
|---|---|
| **Strategy** | Entertainment royalties |
| **Performance** | NM (less than three years) |
| **Outlook** | Target total return 10-15% |

| TSSP Adjacent Opportunities Partners | |
|---|---|
| **Strategy** | Debt |
| **Performance** | 1.07x net MOIC; 11.1% net IRR since inception through 6/30) (NM less than three years) |
| **Outlook** | Target total return 15-20% |

# Active funds review

| Galton Onshore Mortgage Recovery Fund III | |
|---|---|
| **Strategy** | Residential mortgages |
| **Performance** | NM (less than three years) |
| **Outlook** | Target total return 15-20% |

| OrbiMed Royalty Opportunities Fund III | |
|---|---|
| **Strategy** | Pharmaceutical royalties |
| **Performance** | NM (less than three years) |
| **Outlook** | Target total return 10-15% |

# Active funds review

| Lone Star Residential Mortgage Fund I | |
|---|---|
| **Strategy** | Residential mortgages |
| **Performance** | NM (less than three years) |
| **Outlook** | Target total return 15-20% |

| TPG Specialty Lending Europe I | |
|---|---|
| **Strategy** | Direct lending |
| **Performance** | NM (less than three years) |
| **Outlook** | Target total return 15-20% |

# TAB 5 – OPERF REAL ESTATE REVIEW

**Oregon Investment Council**
**December 9, 2015**
**OPERF Real Estate Strategy**

**Background**

Presently, OPERF's real estate allocation is comprised primarily of higher return seeking investments and a correspondingly higher use of leverage. This approach has resulted in a pro-cyclical strategy bias with returns largely dependent upon capital appreciation, not current income. This approach also exhibits considerable overlap (i.e., correlation) with OPERF's other risk-based asset allocations, namely public equity, private equity, and, to a lesser extent, the corporate credit exposures within OPERF's fixed income allocation. Given OPERF's large, overall allocation to these risk-based investments, prudent and effective portfolio construction should ensure that each individual asset class exhibits a return/volatility profile consistent with its specific role (e.g., return-seeking, inflation-hedging, liquidity-providing, etc.).

After months of internal discussions and extended, corroborating dialog with consultant PCA, staff has revised its vision for the OPERF real estate portfolio. Specifically, staff now recommends a strategy shift in which current income becomes a larger and more dependable share of the real estate portfolio's total return. This shift is driven largely by a renewed emphasis on real estate's fundamental risk and return attributes, and its unique role within the OPERF portfolio. Specifically, staff is proposing a refinement of OPERF real estate strategy to better and more reliably pursue the following objectives:

1. Improve diversification by gradually re-positioning OPERF's real estate portfolio relative to broader equity market betas (i.e., lower the real estate portfolio's correlation to OPERF's public and private equity allocations); and
2. Through this same re-positioning, improve the real estate portfolio's inflation-hedging potential with a greater emphasis on current income generation.

To best achieve the re-positioning objectives described above, staff recommends the following real estate policy changes:

- Increase current income generation (with a commensurate reduction in capital appreciation) as a proportion of *ex ante* total return expectations;
- Dampen the real estate portfolio's pro-cyclical strategy bias and corresponding volatility by reducing leverage; and
- Focus future real estate investments on income stream durability/resiliency.

**Next Steps**

1. Staff and PCA proceed with revising OPERF's real estate allocation targets as outlined below:

| Real Estate Mandate | Current | | | Recommended | | | Change in Target Allocation | |
|---|---|---|---|---|---|---|---|---|
| | Target Allocation | Policy Range | LTV Limit | Target Allocation | Policy Range | LTV Limit | OPERF % | Target % |
| Private Core | 30.0% | 25-35% | 50.0% | 60.0% | 50-70% | 45.0% | 20.0 | 66.6 |
| Public REITs | 20.0% | 15-25% | | 10.0% | 0-15% | | (10.0) | (50.0) |
| Value Add | 20.0% | 15-25% | 70.0% | 20.0% | 10-30% | 65.0% | 0.0 | 0.0 |
| Opportunistic | 30.0% | 20-40% | N/A | 20.0% | 10-30% | N/A | (10.0) | (33.3) |
| OPERF Real Estate | 100.0% | | | 100.0% | | | 0.0% | |

2. Staff and PCA formalize the above-described strategy shift by presenting real estate policy revisions for approval at the February 3, 2016 OIC meeting.

# OPERF Real Estate Portfolio 2015 Review

Anthony Breault, Senior Real Estate Investment Officer

December 09, 2015

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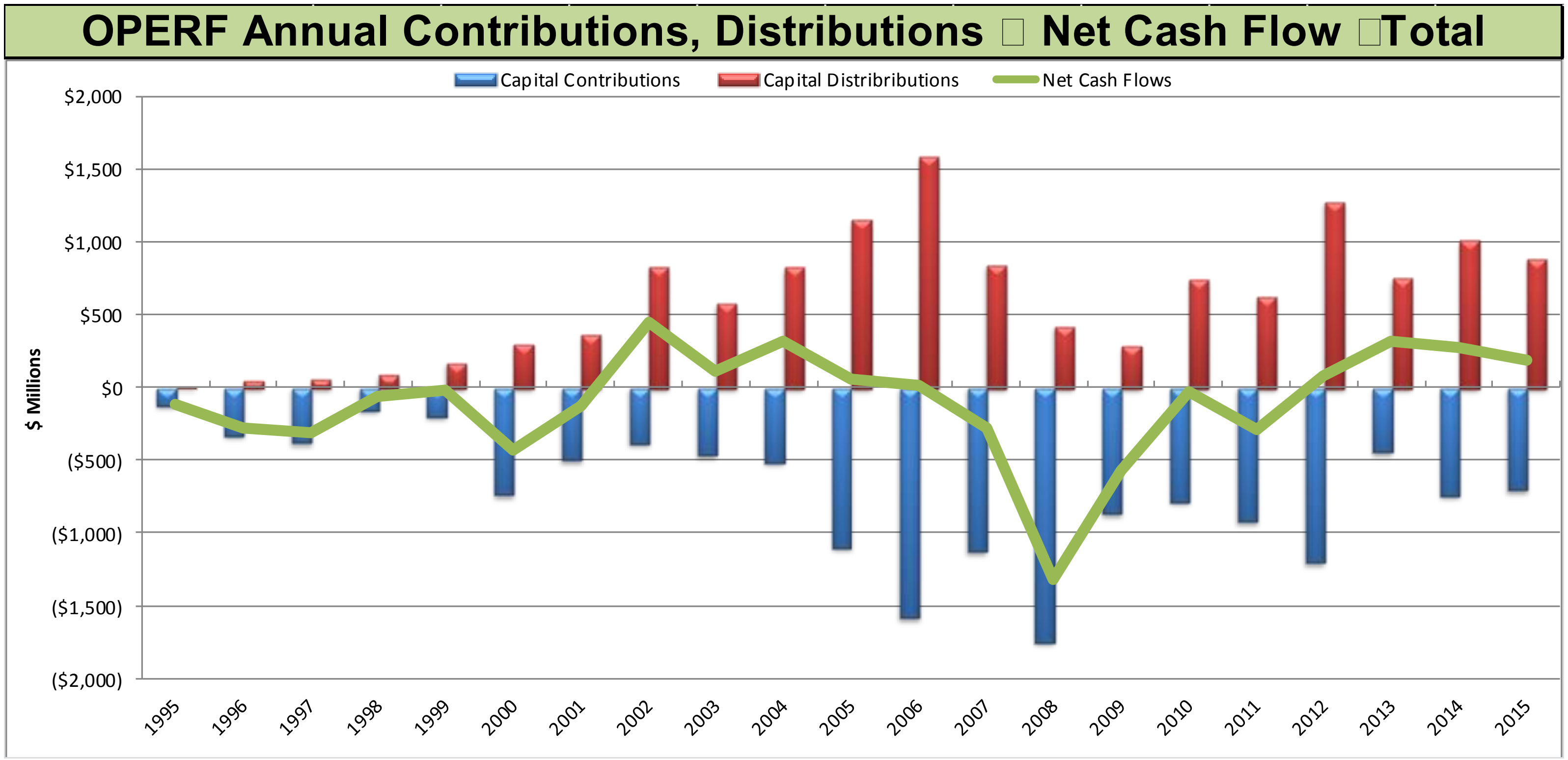
# New Investments – 2015 YTD

Commitments to date

- Madison Realty Capital Fund III ($150mm – March)
- Lone Star Real Estate Fund IV ($300mm – April)
- Waterton Fund IX PT Chicago ($205mm – June)

# Commitments & Cash Flows



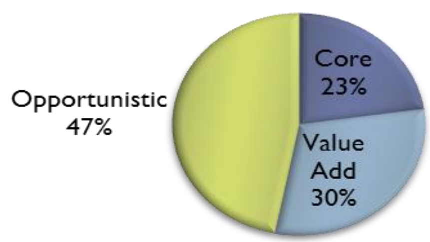

* 2015 totals through June 30, 2015

# Portfolio Snapshot (as of 6/30/15)

| | |
|---|---|
| Current Portfolio Net Asset Value | $7.93 billion<br>11.2% of Total Fund |
| Target Allocation to Real Estate | $8.85 billion<br>12.5% of Total Fund |
| Total Number of Investments | 89 (35 active relationships) |

**** Concentration: Top 10 relationships comprise 60% of portfolio NAV ****

Allocation of □nfunded Commitments



# Portfolio Performance (as of 6/30/2015)

| | | 1 YEAR[1] | 3 YEAR[1] | 5 YEAR[1] | 10 YEAR[2] |
|---|---|---|---|---|---|
| Total Private Real Estate Portfolio | | 13.41 | 14.08 | 13.98 | 8.35 |
| NCREIF Property Index (Quarter lag) | | 12.98 | 11.63 | 12.72 | 8.39 |
| Delta | | 2.05 | 2.64 | 0.88 | (0.04) |

| | YTD | 1 YEAR | 3 YEAR | 5 YEAR | 10 YEAR |
|---|---|---|---|---|---|
| Total Public Real Estate Portfolio (REITs) | -2.99 | 4.22 | 9.56 | 14.16 | 7.45 |

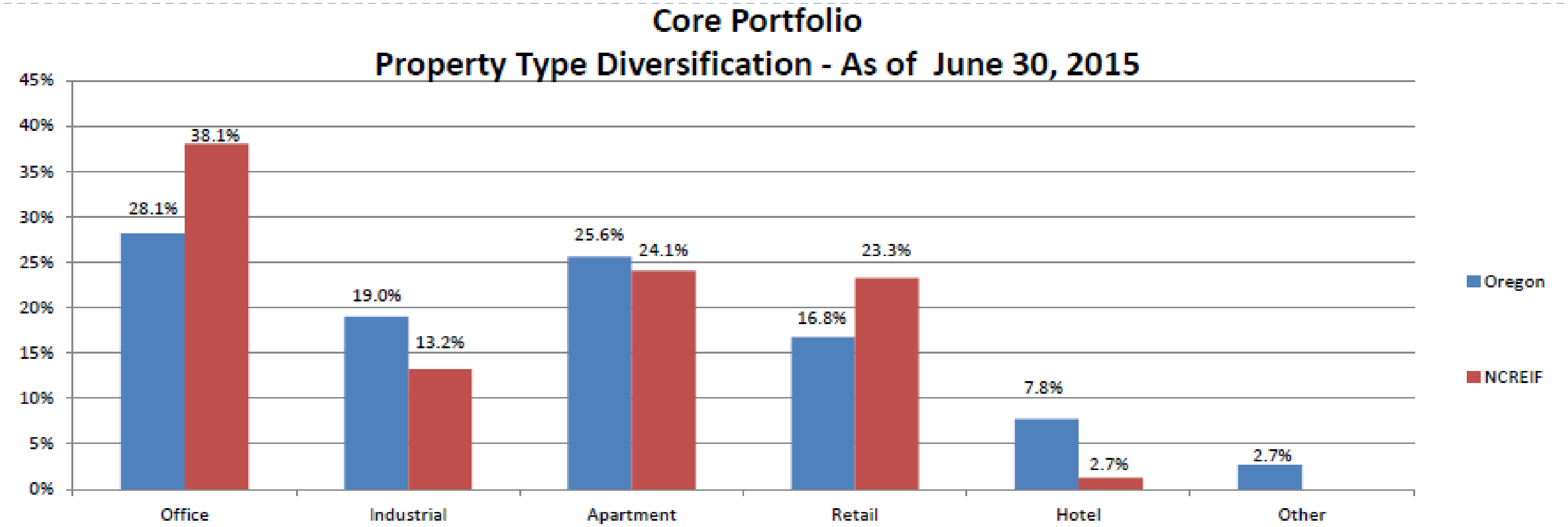
| | | 1 YEAR | 3 YEAR | 5 YEAR | 10 YEAR |
|---|---|---|---|---|---|
| Total Real Estate Portfolio | | 11.19 | 13.07 | 13.96 | 8.03 |

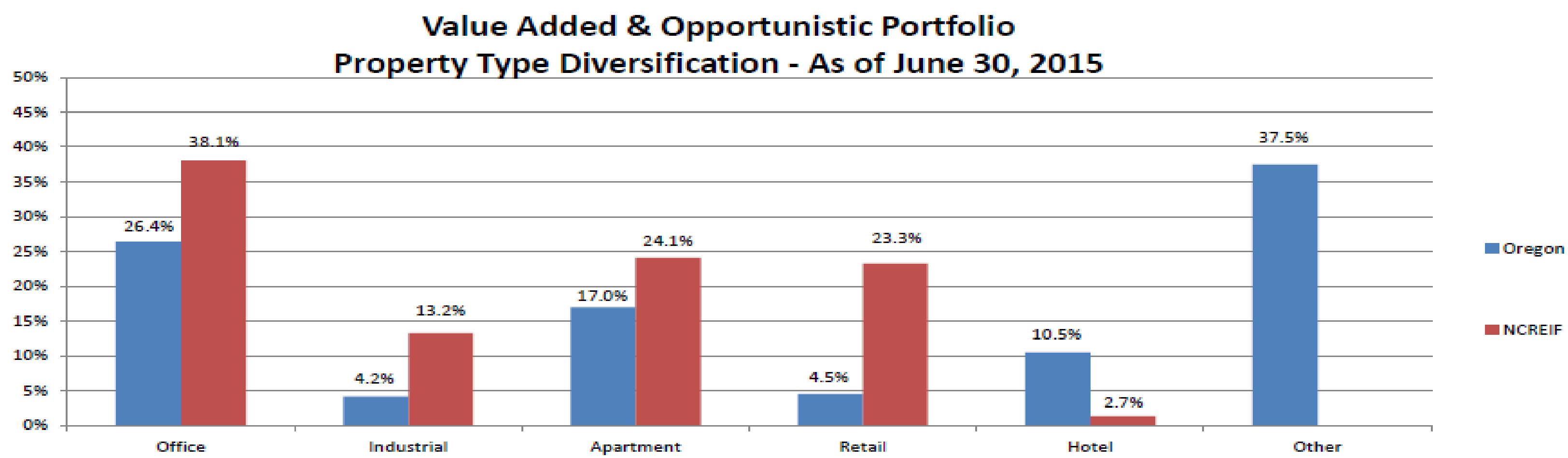
(1) All returns shown on this page are Time Weighted.
(2) 10-Year returns for private portfolio lag one quarter through March 31, 2015

# Sub-Portfolio Weightings

| Portfolio | Allocation Range | Target | Actual | Delta |
|---|---|---|---|---|
| Core (Private) | 25-35% | 30% | 29.9% | (0.1%) |
| REITs | 15-25% | 20% | 23.2% | 3.2% |
| Value Added | 15-25% | 20% | 18.6% | (1.4%) |
| Opportunistic | 20-40% | 30% | 28.3% | (1.7%) |

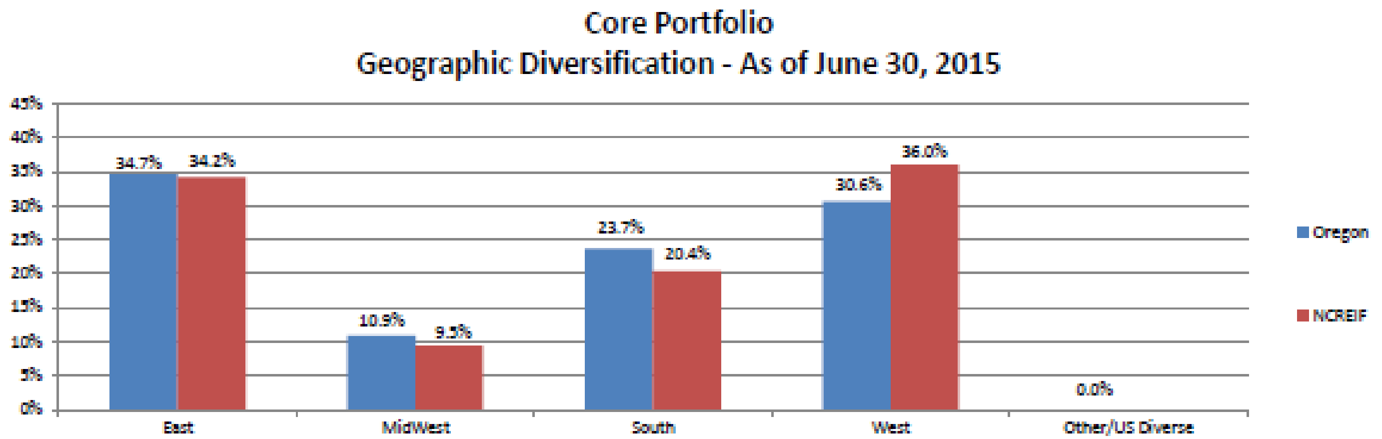
# Portfolio Composition

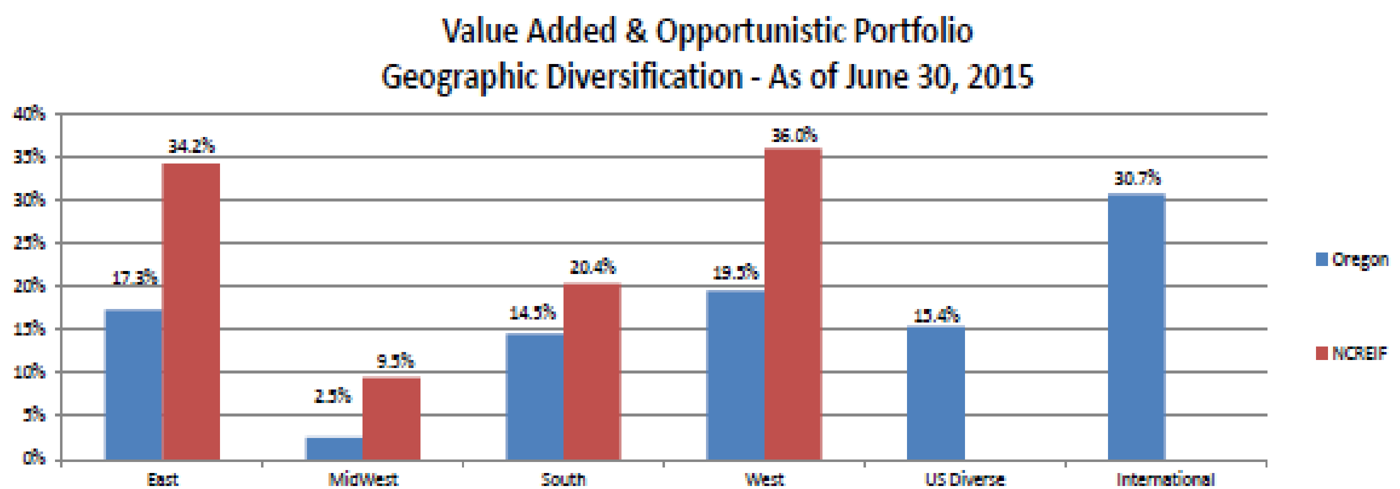



*Other includes private-equity real estate, mixed-use, debt, land, self storage, healthcare, REIT equity, timber, entertainment, infrastructure, and other property types.

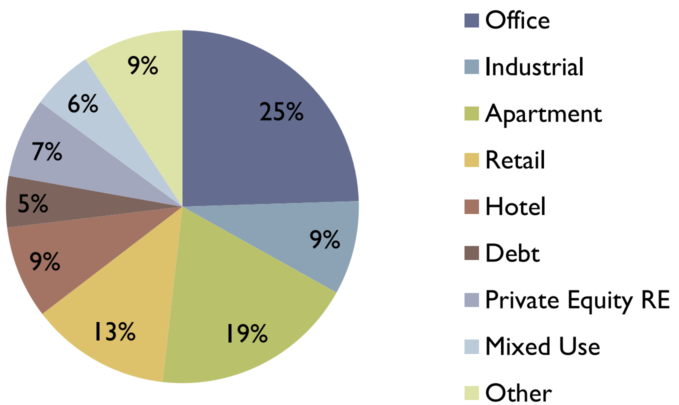
# Geographic Composition



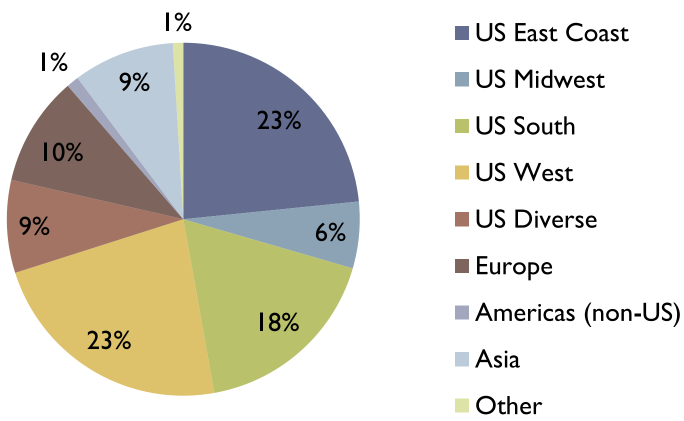
# Aggregate Portfolio Diversification

## Property Type Diversification




Portfolio is broadly diversified across property types and geographies

## Geographic Diversification




Domestic exposure = 79%

# Active Relationships

## Total OPERF Real Estate - $7.93Bn

| | |
|---|---|
| One Year Return | 11.19% |
| NCREIF Index | 12.98% |

### Core

$2.37 Bn
1 Year Return: 16.7%

### Publicly Traded

$1.85 Bn
Domestic 1 Year Return: 7.0%
Ex-US 1 Year Return: - 2.2%

### Value Add

$1.47 Bn
1 Year Return: 19.2%

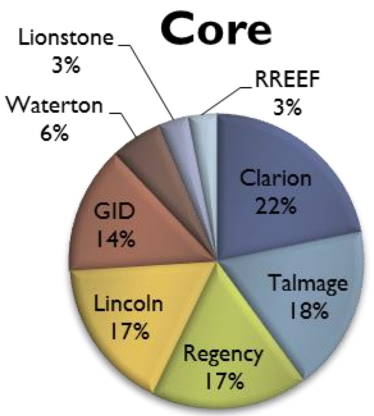
### Opportunistic

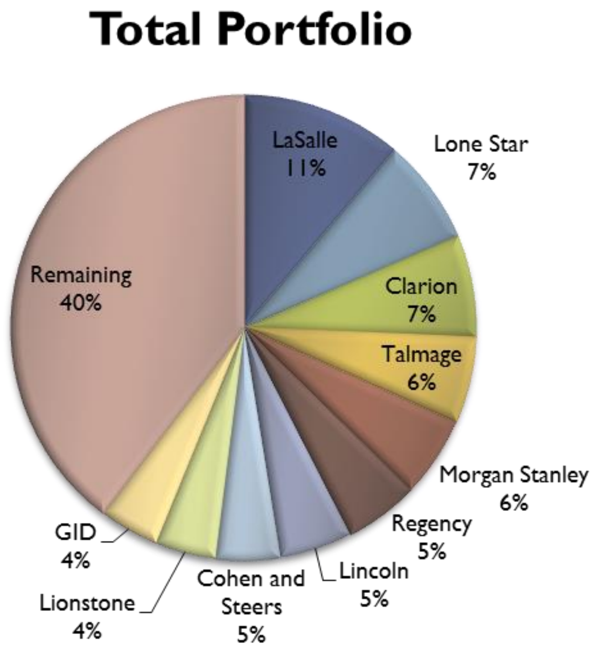
$2.24 Bn
1 Year Return: 6.7%

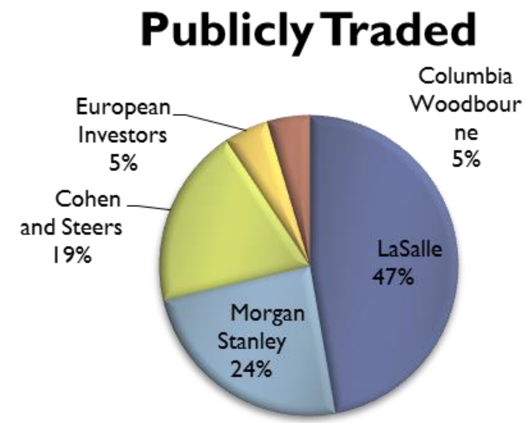
## Active Relationships / Managers

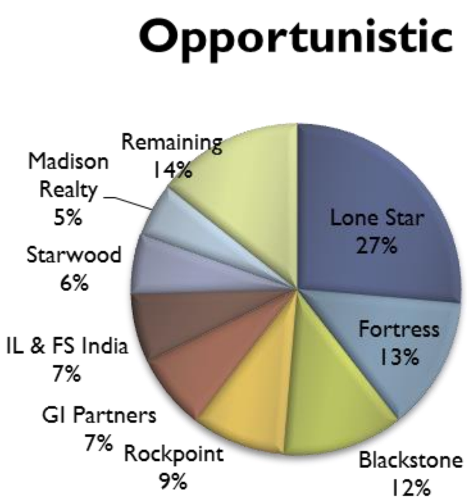
| Core | Publicly Traded | Value Add | Opportunistic |
|---|---|---|---|
| Clarion | LaSalle | Alpha Asia | Angelo Gordon |
| Lincoln | Cohen & Steers | Amstar | Blackstone |
| Regency | Woodbourne | Beacon | Fortress |
| GID | Morgan Stanley | CBRE | Harrison Street |
| RREEF | EII | DivcoWest | IL&FS |
| Talmage | | Lionstone | Landmark |
| Waterton | | Pac Trust | Lone Star |
| | | Prologis | Madison Capital |
| | | Rockwood | Och-Ziff |
| | | Vornado | Rockpoint |
| | | Waterton | Starwood |
| | | Western National | VBI |

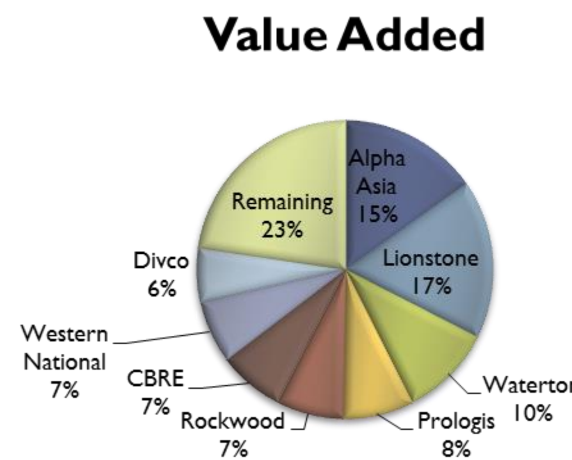
# Relationship Concentration by Strategy



# Real Estate Portfolio - Compliance

- No portions of portfolio out of compliance, including:
  - Debt /LTV;
  - Appraisals; or
  - Portfolio allocations/bandwidths.

- Terminations:
  - None to date.

# Real Estate Portfolio – Initiatives

Staffing
- Filled Real Estate Coordinator (Carmen Leiva)
- Reality Check: portfolio is understaffed given it's size, geographic coverage, complexity, and partnership demands.

REITs
- Numerous reviews with peer plans conducted in 2015 to determine:
  - long-term role of REIT exposure within real estate portfolio; and
  - trade-off between public market volatility & private market smoothing.

Portfolio Composition
- Initiated "relationship budget" to mitigate further exceeding of staffing bandwidth for monitoring and oversight
- Strategic Plan: staff & PCA developing options/strategies for 2016 & beyond

# Real Estate Portfolio – Initiatives (continued)

Pipeline considerations

- Tilting portfolio towards Core/Core Plus (reduced volatility)
- Redefine Value Add (**"adding value"** vs. previous IRR/LTV definition)
- Continued focus on sourcing/structuring Strategic Partnerships for scalable, long-term capital deployment with better alignment and reduced fee-leakage
- Maintain high bar for commingled fund re-ups (value add & opportunistic)

Separate Account (JV) Initiatives

- Multifamily (Core/Core Plus) to complement the Core multifamily mandate
- Retail focus: high street & mid-size centers; and grocery-anchored necessity
- Re-ups and/or restructuring of industrial core, office core, and value-add (build/restore to core)

Fund Initiatives

- Re-ups of proven/valued managers for continued long term partnerships
- New relationship criteria: best-in-class firms; complementary strategies

# Real Estate Portfolio – 2015 In Review

- 2015 Recap
  - ✓ Underlying fundamentals (supply & demand) for CRE are favorable…..yet:
    - 7 years with a near zero lending rate;
    - More capital in the system seeking yield; and
    - Sovereign wealth funds active with low capital costs.
  - ✓ Key to successful investing:
    - Structuring long-term partnerships with proper alignment/governance;
    - Finding investment opportunities that can withstand macro-economic changes; and
    - Maintaining focus on durable cash flows.

# OPERF Real Estate Portfolio Strategic Plan

Anthony Breault, Senior Real Estate Investment Officer

December 09, 2015

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# Role of Real Estate

- **Present**
  - Maximize total return
    - Driven largely by pursuing capital appreciation
  - Diversifier?
    - Diversification power limited by pro-cyclical, capital appreciation bias
- **Future**
  - Manage total return
    - Rebalance back in favor of current income generation
  - Diversifier!
    - Current income bias less pro-cyclical (i.e., less correlated to equity market volatility)
- **Revised Strategy Objectives**
  - Lower RE return volatility
  - Lower equity market correlation
  - Improved inflation hedge

# Revised RE Portfolio Strategy

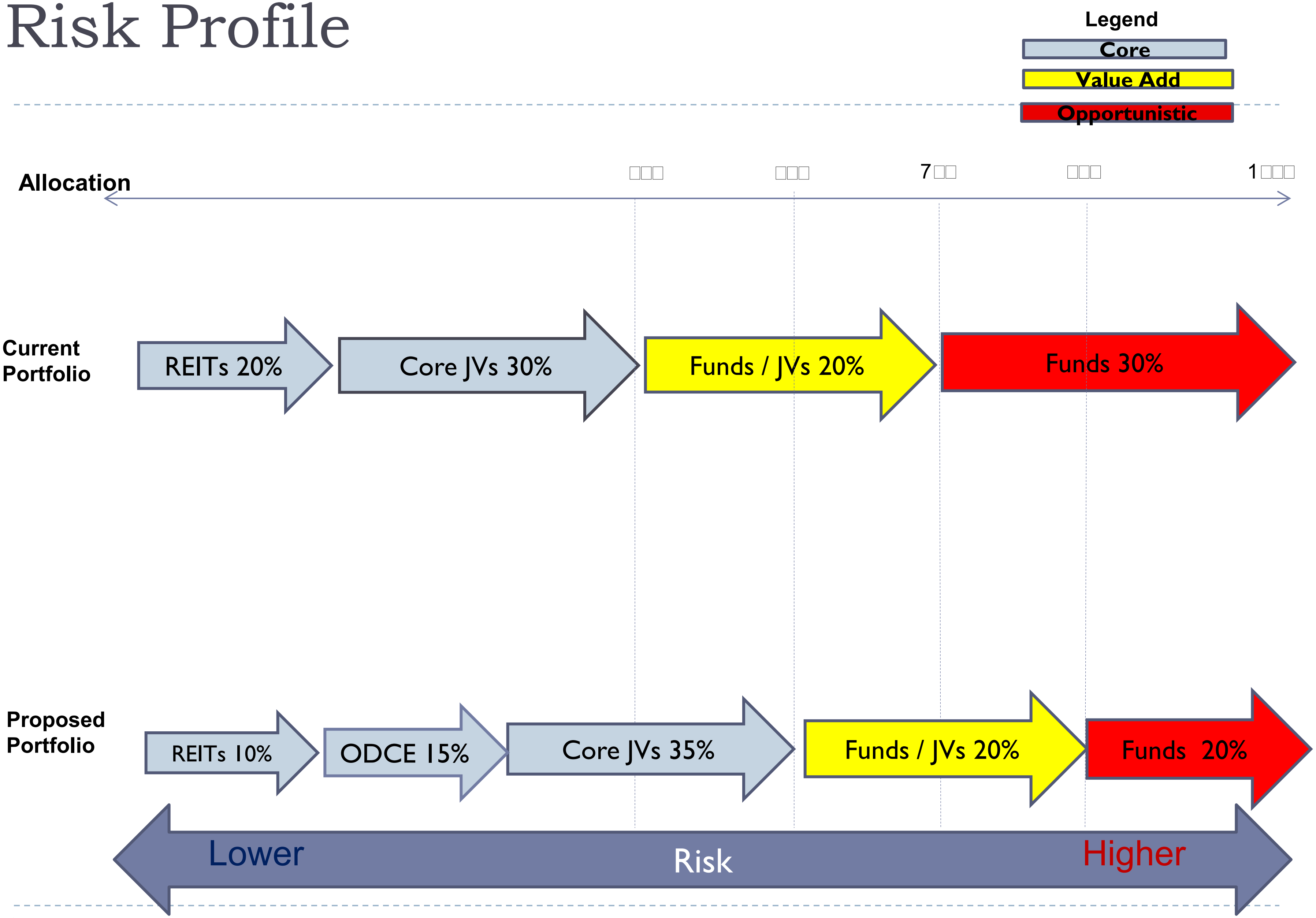
## Current

| Subportfolio | Policy Target | Policy Range | LTV Limit |
|---|---|---|---|
| **Core (Private)** | 30% | 25-35% | 50% |
| **Public REITs** | 20% | 15-25% | |
| **Value-Add** | 20% | 15-25% | 70% |
| **Opportunistic** | 30% | 20-40% | N/A |
| **Total Portfolio** | 100% | | 60% |

## Proposed

| Subportfolio | Policy Target | Policy Range | LTV Limit |
|---|---|---|---|
| **Core** | 60% | 50 – 70% | 45% |
| **1) Core (ODCE)** | | 10 – 20% | 40% |
| **2) Core JVs** | | 30 – 40% | 50% |
| **3) Public REITs** | | 0-15% | |
| **Value-Add** | 20% | 10-30% | 65% |
| **Opportunistic** | 20% | 10-30% | N/A |
| **Total Portfolio** | 100% | | 50% |

# Risk Profile



# The Path Forward

- **Shift to 60% Core Real Estate**
  - Reduces portfolio volatility (private core real estate less correlated to equity market betas)
  - **Transition REITs to ODCE funds**
    - Open-ended fund structures with high quality, diversified core real estate holdings
    - Maximum 40% LTV for inclusion in ODCE (reduces current aggregate leverage)
  - **Increase separate account target allocation to 35%**
    - Tactical control of exposures, fully customizable, capable of adjusting to capital market cycles
- **Value Add**
    - Redefine to stricter parameters (restore/build to core)
    - Reducing portfolio's frictional trading costs / fees via a "xfer to core" mechanism (i.e., Lionstone, value add-to-core single relationship structure)
    - Tactical access to core assets requiring repositioning
- **Opportunistic**
    - Reduce target exposure to 20%

# Considerations for Policy Revision

- **Organization**
  - Staffing must be added regardless of portfolio strategy/construction
  - Revised model places greater emphasis on direct investment & operating skill sets
- **REIT Portfolio**
  - Transition to diversification role (access to real estate not easily achieved in private strategies)
  - Reduce exposure & transition to private Core / Core Plus strategies
- **Core Portfolio**
  - Establish lower levered core structures initially with ODCE / Core Plus funds
  - Seek scalable Core/Core Plus partnerships to complement ODCE funds
- **Value Add**
  - Invest with discipline; strict adherence to ADDING VALUE via NOI growth
  - Focus on creating/restoring core product (i.e., NOT market timing or secondary locations/asset quality)
    - Value Add mandates can seed Core portfolio, reducing frictional/transactional costs
- **Opportunistic**
  - Majority of existing funds will be sold in next 5-7 years
  - Maintain smaller exposure than current as a tactical shift for market dislocations and diversification strategies

# Next / Interim Steps (1H 2016)

- **Revise policies**
  - Revise current policies to reflect updated plan
  - Submit new policies for OIC approval in 1H 2016
  - Report back to OIC with recommended benchmark(s)
- **ODCE funds due diligence**
  - Conduct due diligence on ODCE fund universe
  - Review and determine transition plan for funding ODCE investments from REIT portfolio
- **Seek scalable JV/separate account relationships**
  - Continue sourcing complementary strategies and investment styles for both Core and Value Add exposures
  - Continue focus on fee and transaction cost minimization
  - Maintain capital flow & portfolio construction control rights
- **Maintain focus on strict "relationship budget"**
  - Selective re-ups and new fund relationships for complementary investment styles only
  - Allow much of existing commingled fund portfolio to continue liquidating over time

# TAB 6 – OPERF FIXED INCOME STRATEGY UPDATE

**Oregon Investment Council**
**December 9, 2015**
**OPERF Fixed Income Strategy Update**

## Background

In 2013, and based on staff and consultant recommendations, OIC approved the current set of fixed income strategy exposures. Given OPERF's otherwise large allocation to risk-based assets (e.g., public equity, private equity, real estate and alternatives), these fixed income targets were implemented in 2014 to improve liquidity and moderate volatility at the total OPERF portfolio level. Subsequently, these targets were modeled in the strategic asset allocation study prepared by Callan Associates and first presented for OIC consideration at its March 2015 meeting.

| | 9/30/2015 | | | | Current | |
|---|---|---|---|---|---|---|
| | | Percent of | | | Target Allocation | |
| Fixed Income Mandate | Market Value | Fixed Income | OPERF | OPERF Capital Mkts | Fixed Income | OPERF |
| **Short Duration High Quality** | | | | | | |
| | **4,983,305** | **33.2%** | **7.4%** | **11.8%** | **40.0%** | **8.0%** |
| **Core** | | | | | | |
| | **5,513,782** | **36.7%** | **8.2%** | **13.0%** | **40.0%** | **8.0%** |
| **Below Investment Grade** | | | | | | |
| | **4,510,116** | **30.1%** | **6.7%** | **10.7%** | **20.0%** | **4.0%** |
| **OPERF Fixed Income** | **15,007,223** | **100.0%** | **22.3%** | **35.5%** | **100.0%** | **20.0%** |

OST recently implemented and activated Blackrock's Aladdin operating platform which, among other important features, provides staff with enhanced insight into the risk and return contours of various OPERF asset allocations and investment strategies. Specifically, staff can now evaluate OPERF investment exposures with improved rigor, a capability which includes better assessments of risk and return contributions by, between and among asset allocations and investment strategies.

Using capital market projections from Callan and leveraging both Aladdin and extensive support from the Blackrock Solutions group, an array of alternative fixed income strategies were analyzed to assess efficacy and effectiveness relative to the following set of revised fixed income investment objectives:

1. In the asset-liability study that accompanied its March 2015 strategic asset allocation recommendations, Callan identified a reduced need for near-term plan liquidity;
2. Per policy INV 401 "*Strategic Role of Fixed Income for OPERF*", diversifying OPERF's otherwise high equity market risk is a primary role of fixed income; and
3. Callan's strategic asset allocation recommendations, ultimately approved by the OIC at its May 2015 meeting, were developed using the Barclay's U.S. Aggregate index as the proxy for OPERF's fixed income strategy exposures.

The full strategy analysis, included herewith as Attachment A, evaluated ten alternative fixed income strategies relative to OPERF's current fixed income exposures and the revised investment objectives listed above. Based on this analysis, staff believes changes to OPERF's fixed income strategy are warranted. The key components of Staff's recommendation include the following:

- Reduce below investment grade exposures which exhibit credit risk positively correlated with equity market volatility;
- Add U.S. Treasury and Agency exposure to mitigate equity market volatility at the total OPERF portfolio level;
- Given reduced need for near-term plan liquidity, use current Short Duration High Quality mandate to fund both the U.S. Treasury/Agency exposure and an increased allocation to OPERF's existing Core mandates.

## Recommendation

1. Revise OPERF's fixed income allocation targets as outlined below:

| | Current Target Allocation | | Recommended Target Allocation | | Difference Target Allocation | | Percent Change Target Allocation | |
|---|---|---|---|---|---|---|---|---|
| **Fixed Income Mandate** | **Fixed Income** | **OPERF** | **Fixed Income** | **OPERF** | **Fixed Income** | **OPERF** | **Fixed Income** | **OPERF** |
| **Short Duration High Quality** | 40.0% | 8.0% | 0.0% | 0.0% | (40.0)% | (8.0)% | (100.0)% | (100.0)% |
| **Core** | 40.0% | 8.0% | 46.0% | 9.2% | 6.0% | 1.2% | 15.0% | 15.0% |
| **Below Investment Grade** | 20.0% | 4.0% | 17.0% | 3.4% | (3.0)% | (0.6)% | (15.0)% | (15.0)% |
| **U.S. Government** | 0.0% | 0.0% | 37.0% | 7.4% | 37.0% | 7.4% | 100.0% | 100.0% |
| **OPERF Fixed Income** | 100.0% | 20.0% | 100.0% | 20.0% | 0.0% | 0.0% | 0.0% | 0.0% |

2. Revise OPERF's custom fixed income benchmark to reflect the above-outlined strategy changes:

| Benchmark Name | Current | Recommended | Difference | Percent Change |
|---|---|---|---|---|
| BC 1-3 Year Government/Credit Index | 40% | 0% | 40% | (100)% |
| BC U.S. Treasury index | 0% | 37% | (37)% | 100% |
| BC U.S. Aggregate Bond Index | 40% | 46% | (6)% | 15% |
| S&P/LSTA Loan Index | 15% | 13% | 2% | (13)% |
| BofA ML High Yield Master Index | 5% | 4% | 1% | (20)% |

3. Approve revisions to OIC Policy INV 401 as highlighted in Attachment B to reflect changes in OPERF's fixed income benchmarks.

**Current Status:** *Active* **PolicyStat ID:** *1490083*

| | |
|---|---|
| **Origination:** | *03/2014* |
| **Last Approved:** | *03/2014* |
| **Last Revised:** | *03/2014* |
| **Next Review:** | *08/2015* |
| **Owner:** | *Perrin Lim* |
| **Policy Area:** | *Investments* |
| **References:** | *OST Policy 4.03.01* |

# INV 401: Strategic Role of Fixed Income for OPERF

## POLICY

The strategic role of fixed income investments is to provide diversification to the Oregon Public Employees Retirement Fund (OPERF) portfolio in general and its allocation to equity securities in particular. Fixed income investments also provide liquidity to help meet OPERF's cash flow requirements. Fixed income investments are subject to specific, strategic asset allocation targets established by the Oregon Investment Council and described in Policy 4.01.18.

## PROCEDURES

A. **PURPOSE**

The purpose of these Fixed Income Investment Policies & Strategies is to a) define the objectives of fixed income as an asset class within the general investment policies established by the Oregon Investment Council (OIC) as part of its governance of the OPERF portfolio and b) outline appropriate strategies for implementing the OIC's fixed income investment policies.

Assigned benchmarks may not be changed without OIC approval; however, the following guidelines may be modified as considered necessary by the Chief Investment Officer (CIO):

1. The investment mandate to which a manager is assigned;
2. A manager's investment objectives;
3. A manager's performance objective(s), expressed on a relative basis in comparison to a defined benchmark, as that manager's required excess return; and
4. Permissible fixed income investments in which a manager may invest, subject to permitted holdings as listed in Section D.

B. **POLICY OBJECTIVES**

1. Over a market cycle of three to five years and on a net-of-fee basis, achieve a fixed income portfolio return of at least 35 basis points above the custom policy benchmark which is currently comprised as follows: 37% Barclays U.S. Treasury Intermediate Index; 46~~0~~% Barclays Capital U.S. Aggregate Bond Index; ~~40% Barclays Capital U.S. 1-3 Year Government/Credit Bond Index;~~ 13~~5~~% S&P/LSTA Leveraged Loan Index; and 4~~5~~% Bank of America Merrill Lynch High Yield Master II Index. The fixed income portfolio is also expected to achieve top

quartile performance in a peer group comprised of other public and corporate pension funds with total assets greater than $1 billion.

2. Limit fixed income portfolio risk, as measured by the standard deviation of returns, to a level not to exceed that of the custom benchmark.

C. **STRATEGIES**

1. Build and maintain a well-diversified fixed income portfolio that reflects the general characteristics of the custom benchmark and is managed to maximize total return subject to the risk limitations described directly above.
2. Maintain portfolio duration within parameters as defined by staff, with OIC approval, for each specific fixed income mandate.
3. Staff will have discretion, with CIO approval and quarterly OIC reporting, to rebalance between and among managers should specific mandates exceed the OIC's approved allocation percentage of total OPERF fixed income. The total fixed income portfolio's structural characteristics will be considered at the time of any rebalancing.
4. Invest opportunistically using innovative investment approaches within a controlled and defined portfolio allocation.
5. Over a market cycle of three to five years, active managers are expected to outperform stated benchmarks on an after-fee, risk-adjusted basis.
6. The OIC's selection of active managers will be based upon demonstrated expertise as reflected by an ability to add value over a passive management alternative and within reasonable risk parameters.

D. **PERMITTED HOLDINGS**

The following fixed income securities, individually or in commingled vehicles, may be held outright and under resale agreement:

1. Obligations issued or guaranteed by the U.S. Federal Government, U.S. Federal agencies or U.S. government-sponsored corporations and agencies;
2. Obligations of U.S. and non-U.S. corporations such as convertible and non-convertible notes and debentures, preferred stocks, commercial paper, certificates of deposit and bankers acceptances issued by industrial, utility, finance, commercial banking or bank holding company organizations, bank loans, common stock received in connection with the restructuring of corporate debt;
3. Mortgage-backed, asset-backed and structured securities;
4. Obligations, including the securities of emerging market issuers, denominated in U.S. dollars or foreign currencies of international agencies, supranational entities and foreign governments (or their subdivisions or agencies), as well as foreign currency exchange-related securities, warrants and forward contracts;
5. Obligations issued or guaranteed by U.S. local, city and state governments and agencies;
6. Securities defined under Rule 144A and Commercial Paper defined under Section 4(2) of the Securities Act of 1933;
7. Yankee Bonds (dollar denominated sovereign and corporate debt);
8. Derivatives including futures, swaps and options contracts; and
9. Securities eligible for the Short-Term Investment Fund (OSTF).

E. **DIVERSIFICATION**

The portfolio should be adequately diversified to minimize various risks. The following specific limitations reflect, in part, the OIC's current investment philosophy regarding diversification.

1. Obligations issued or guaranteed by the U.S. government, U.S. agencies or government sponsored enterprises are eligible, without limit.
2. Obligations of other national governments are limited to 10% per issuer.
3. Private mortgage-backed and asset-backed securities are limited to 10% per issuer, unless the collateral is credit-independent of the issuer and the security's credit enhancement is generated internally, in which case the limit is 25% per issuer.
4. Obligations of other issuers are subject to a 3% per issuer limit excluding investments in commingled vehicles.
5. Not more than 25% of the portfolio may be invested in non-dollar denominated securities.
6. Not more than 30% of the portfolio will be below investment grade (below Baa3/BBB-).
7. No more than 5% of the portfolio will be invested in original futures or swaps margin and option premiums, exclusive of any in-the-money portion of the premiums. Short (sold) options positions will generally be hedged with cash, cash equivalents, current portfolio security holdings or other options or futures positions.

F. **ABSOLUTE RESTRICTIONS**

Investments in the following are prohibited:

1. Short sales of securities;
2. Margin purchases or other use of lending or borrowing money or leverage to create positions greater than 100% of the market value of assets under management;
3. Commodities or common stocks, unless common stock shares are received due to a restructuring, then shares will be liquidated at the manager's discretion; and
4. Securities of the existing investment manager, its parents, custodians or subsidiaries.

BLACKROCK SOLUTIONS®

# OPERF Fixed Income Analysis

*Generated using Aladdin*

**BlackRock Client Solutions**

December 9, 2015

# Table of Contents

# I. Overview and Assumptions

# Risk Factors: Drivers of Portfolio Return

**Each asset class offers different total risk and risk factor profiles. BlackRock believes in viewing portfolios and proposed changes by their contribution to risk factors**

- Asset diversification is not sufficient, we seek to manage and diversify risk factor exposures
- In our managed portfolios, dynamically adjust exposures based on risk factor performance in different regimes

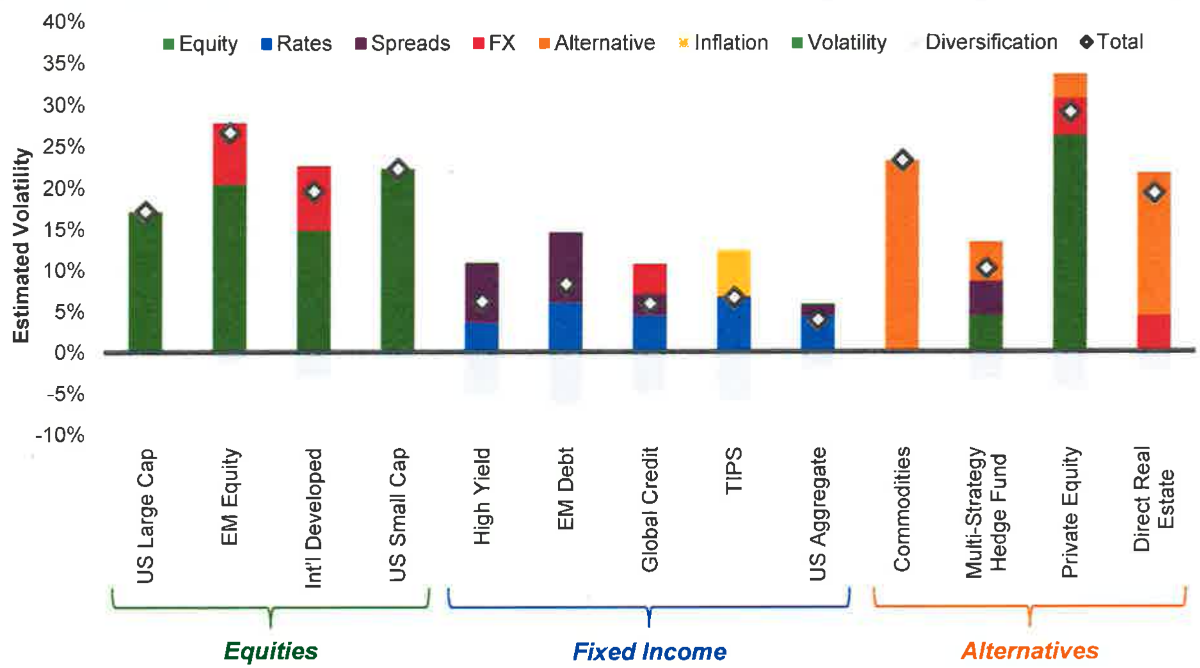
**Risk factors enable direct comparison across public and private asset classes**

- Understand the true drivers of risk/return of each asset class as well as at the total portfolio level

### Risk Factor Groups

| Factor Group | Description |
|---|---|
| Interest Rates | Risk of bearing exposure to changes in nominal interest rates |
| Inflation | Risk of divergence between breakeven and realized inflation |
| Credit | Risk of default or spread widening |
| Equity | Risk associated with economic growth uncertainty |
| FX | Risk associated with foreign currency exposure |
| Alternatives | Risks associated with illiquidity, leverage, commodities, and others |

### Factor Exposures



# Outline of Process and Assumptions

## BlackRock used Aladdin Portfolio Risk Tools to perform the analysis herein

- Capital markets sleeve of OPERF (portfolio group CAP_MKT)

## Risk & Correlation Assumptions

- All risk and correlation assumptions modeled using actual positions in Aladdin Portfolio Risk Tools
- Analysis Date: September 30 2015
- Run using OST environment default risk settings
  - WKL weighting (26 week half life / 0.9737 decay) using 104 weekly observations
  - One year risk horizon
  - 84% (1σ) VaR

## Proxies

- Cash Treasuries – sector modeled as Barclays Treasury Index (ticker LEH_TSY)
- Treasury Futures – sector modeled as US 10YR NOTE DEC 15 contract (cusip TYZ520152)
  - Initial margin requirement assumed 15% of notional

## Optimization (Scenario 1)

- Objective: minimize absolute VaR
- Constraints: Equity allocation remains constant, unconstrained fixed income allocation
- Leverage: 6.66x leverage allowed on treasury future position

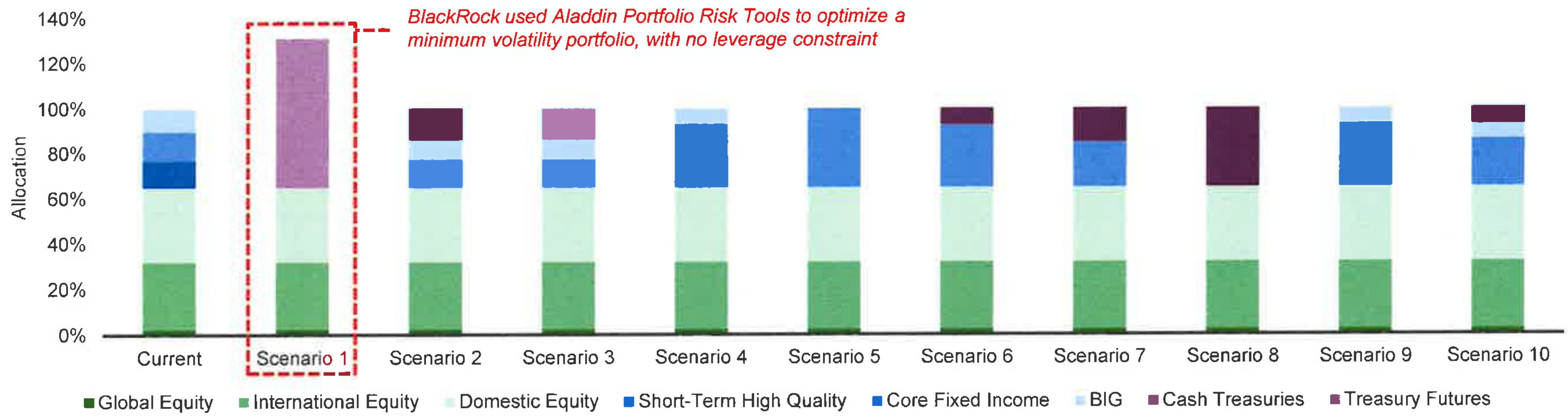
## Return Assumptions

- Provided by Callan

# Overview of Scenarios Modeled

**BlackRock modeled the Capital Markets (CAP_MKT) sleeve of OPERF, using the following asset allocations for each strategy**

## Asset Allocation: All Scenarios Modeled




| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BIG | 10.4% | 0.0% | 8.7% | 8.7% | 7.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.0% | 7.0% |
| Core | 12.9% | 0.0% | 12.2% | 12.2% | 14.0% | 35.0% | 27.6% | 19.9% | 0.0% | 28.0% | 21.0% |
| 1-3 Yr | 11.7% | 0.0% | 0.0% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cash Treasuries** | 0.0% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 7.3% | 15.0% | 35.0% | 0.0% | 7.0% |
| Treasury Futures*** | 0.0% | 66.3% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Domestic Equity | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% |
| Global Equity | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% |
| International Equity | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% |
| **Total** | **100.0%** | **131.4%** | **100.0%** | **100.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** |

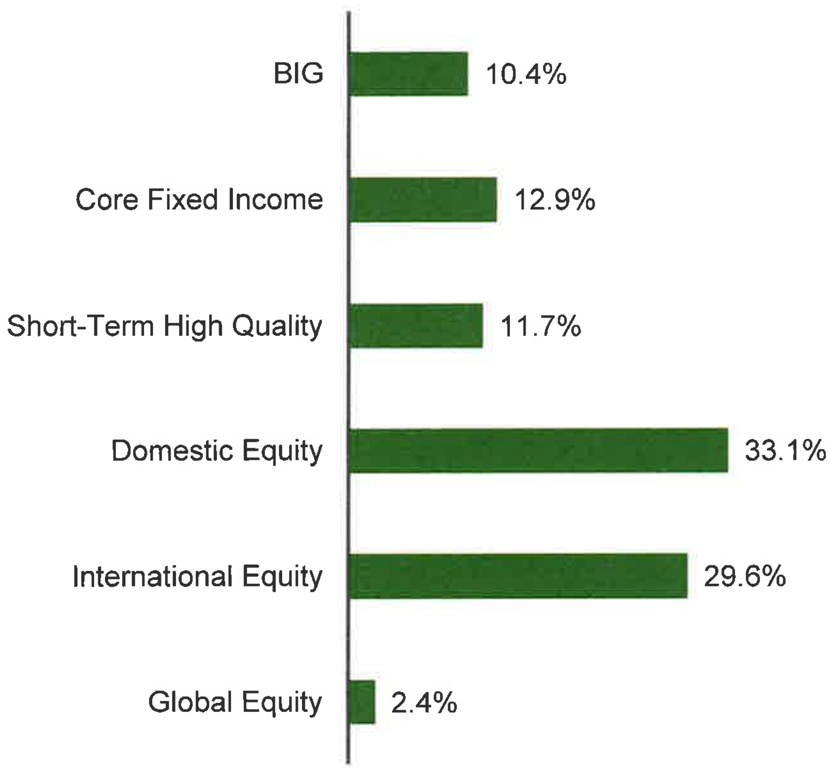
** Initial margin requirement assumed 15% of notional for treasury futures*
*** Barclays Treasury Index duration = 5.64 years, as of 9/30/2015*
**** US 10YR NOTE DEC 15 duration = 6.39 years, as of 9/30/2015*

# II. Current Asset Allocation and Risk Decomposition

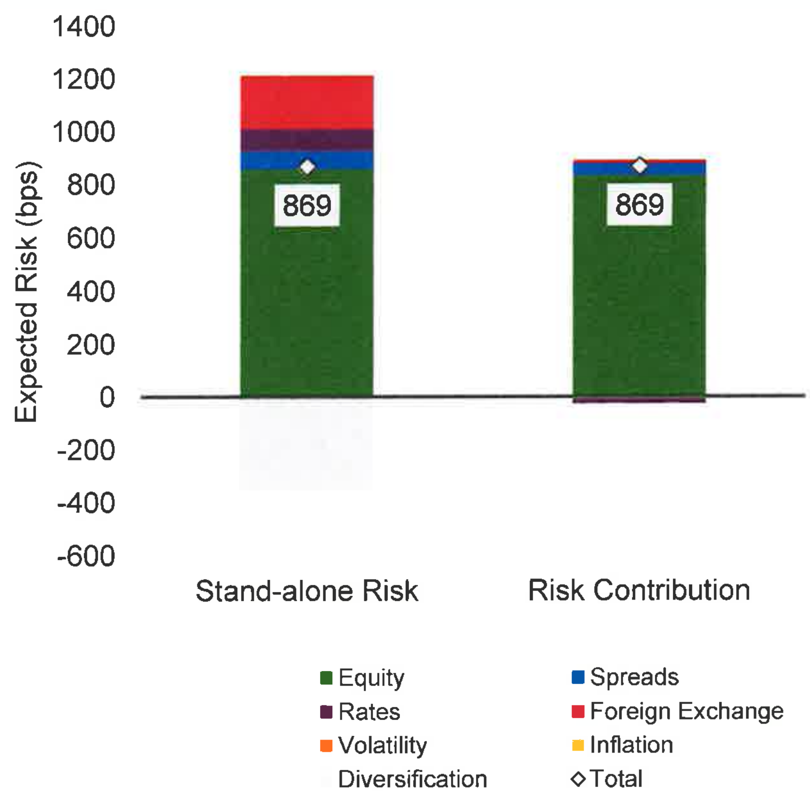
# Current Asset Allocation and Risk Decomposition

**BlackRock used Aladdin Green Package to pull asset allocation information, and ran the risk decomposition using Aladdin Portfolio Risk Tools**

### Current Asset Allocation




### Portfolio Risk Decomposition



# III. Efficient Frontier Analysis

# Asset Class Risk, Returns, and Correlations

**BlackRock used return assumptions provided by Callan, and risk/correlations generated from Aladdin Portfolio Risk Tools**

## Asset Class Risk & Return Profiles

| | Return Benchmark | Expected Return | Risk Benchmark | Expected Risk |
|---|---|---|---|---|
| **BIG** | 75% S&P-LSTA/25% Merrill HY Master II | 4.25% | Portfolio Modeled | 4.14% |
| **Core** | Barclays U.S. Aggregate | 3.00% | Portfolio Modeled | 4.56% |
| **1-3 Yr** | Barclays US Govt/Credit 1 - 3 Year | 2.40% | Portfolio Modeled | 0.65% |
| **Domestic Equity** | MSCI US IMI / Russell 3000 | 7.60% | Portfolio Modeled | 12.93% |
| **Global Equity** | MSCI ACWI IMI | 7.71% | Portfolio Modeled | 13.88% |
| **International Equity** | MSCI ACWI ex-US IMI | 7.80% | Portfolio Modeled | 13.87% |
| **Cash Treasuries** | Barclays U.S. Treasury Intermediate | 2.80% | Barclays U.S. Treasury Index | 3.83% |
| **Treasury Futures** | Barclays U.S. Treasury Intermediate | 2.80% | US 10YR NOTE DEC 15 | 4.74% |

## Asset Class Correlation Matrix

| | BIG | Core | 1-3 Yr | Domestic Equity | Global Equity | International Equity | Cash Treasuries | Treasury Futures |
|---|---|---|---|---|---|---|---|---|
| BIG | 1.00 | | | | | | | |
| Core | -0.21 | 1.00 | | | | | | |
| 1-3 Yr | -0.14 | 0.74 | 1.00 | | | | | |
| Domestic Equity | 0.59 | -0.15 | -0.22 | 1.00 | | | | |
| Global Equity | 0.67 | -0.17 | -0.19 | 0.92 | 1.00 | | | |
| International Equity | 0.66 | -0.16 | -0.14 | 0.78 | 0.92 | 1.00 | | |
| Cash Treasuries | -0.48 | 0.95 | 0.74 | -0.33 | -0.36 | -0.34 | 1.00 | |
| Treasury Futures | -0.49 | 0.92 | 0.78 | -0.36 | -0.39 | -0.36 | 0.99 | 1.00 |

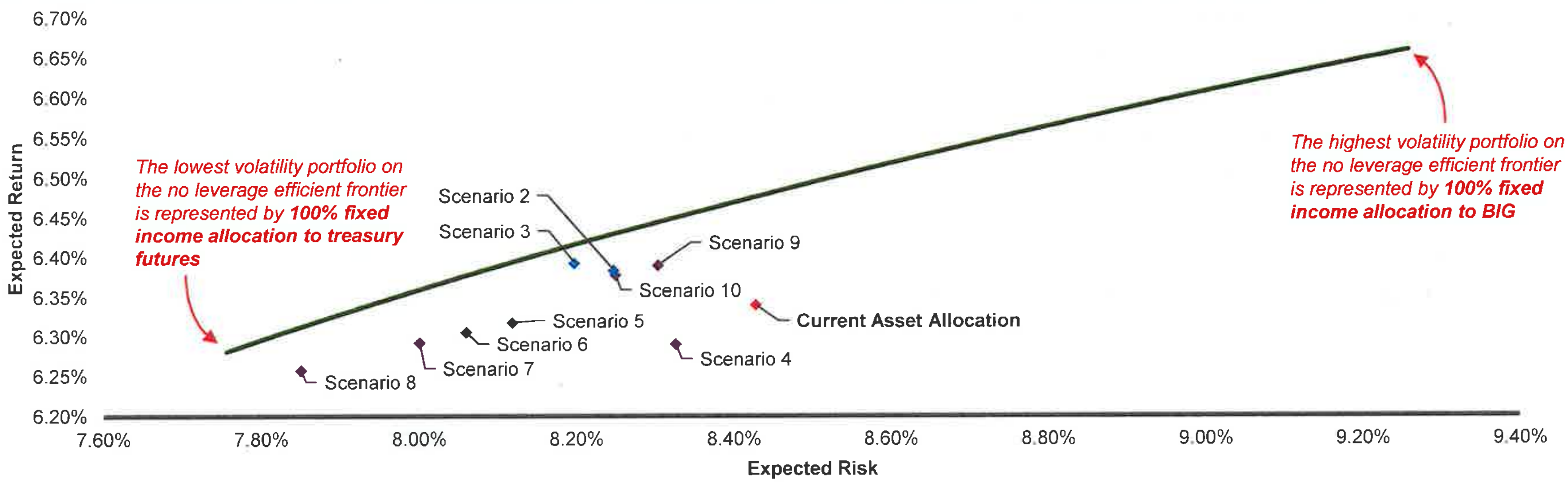
*Expected returns provided by OST/Callan*
*Expected risk/correlations generated from Aladdin Portfolio Risk Tools*

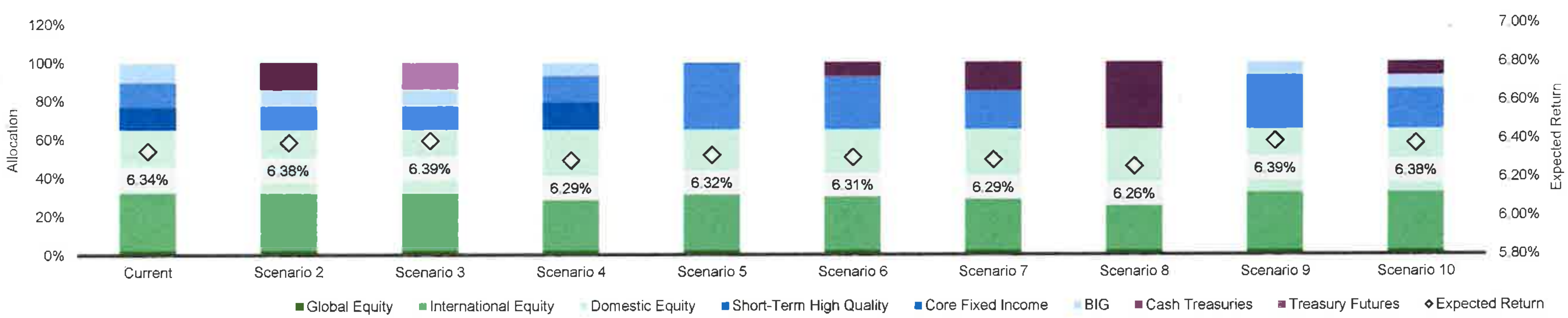
# Efficient Frontier Analysis

*Assuming no ability to apply leverage beyond 100%*

**BlackRock ran an efficient frontier analysis assuming no leverage (excluding Scenario 1) holding equity allocation constant and allowing dynamic changes within fixed income**

## Efficient Frontier: No Leverage



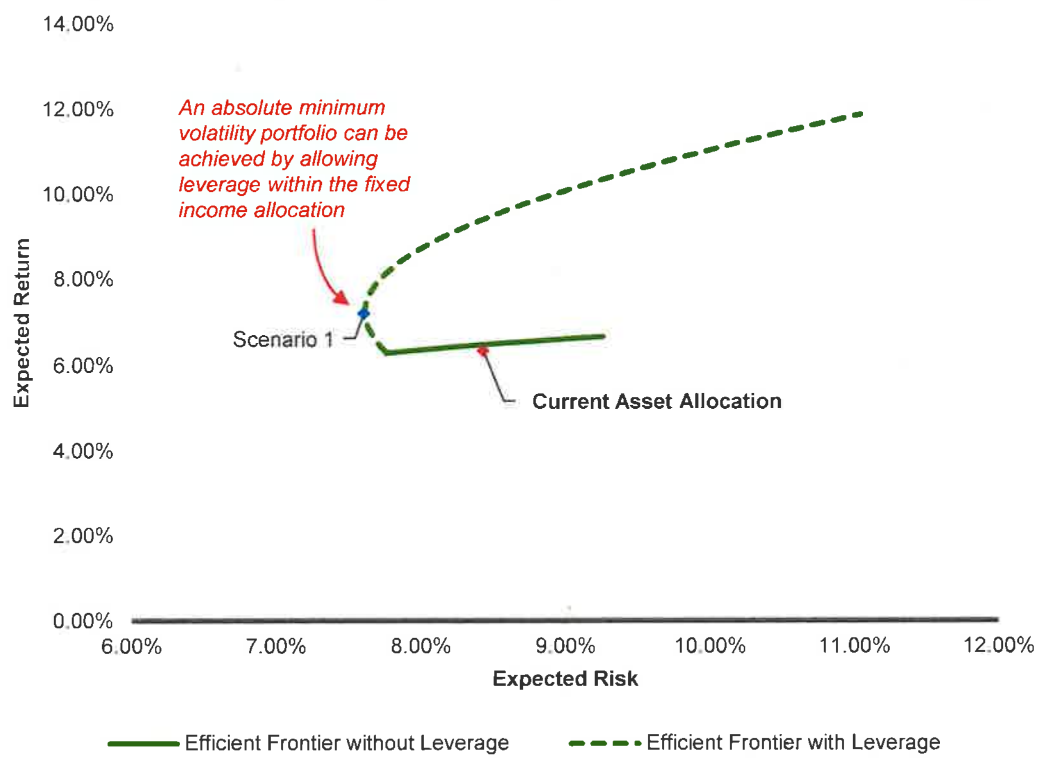
# Efficient Frontier Analysis

*Assuming no leverage constraint*

**BlackRock ran an efficient frontier analysis allowing leverage holding equity allocation constant and allowing dynamic changes in fixed income sectors**

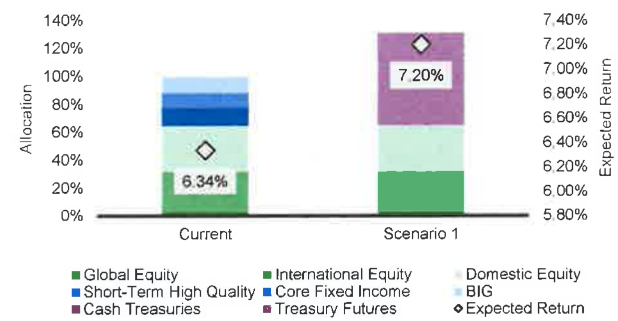
- Scenario 1 represents the minimum volatility achievable, allowing the portfolio to apply leverage to improve diversification

## Efficient Frontier: with and without leverage

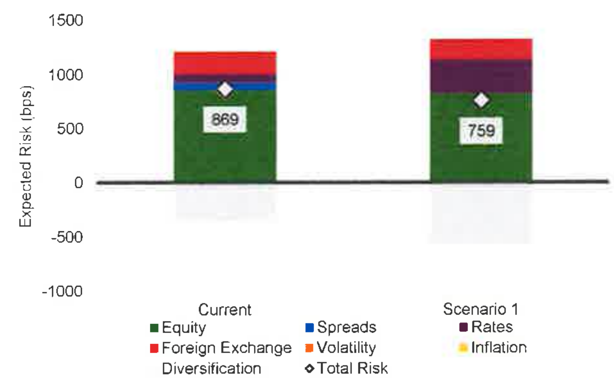



*Expected returns provided by OST/Callan*
*Expected risk/correlations generated from Aladdin Portfolio Risk Tools*

## Asset Allocation

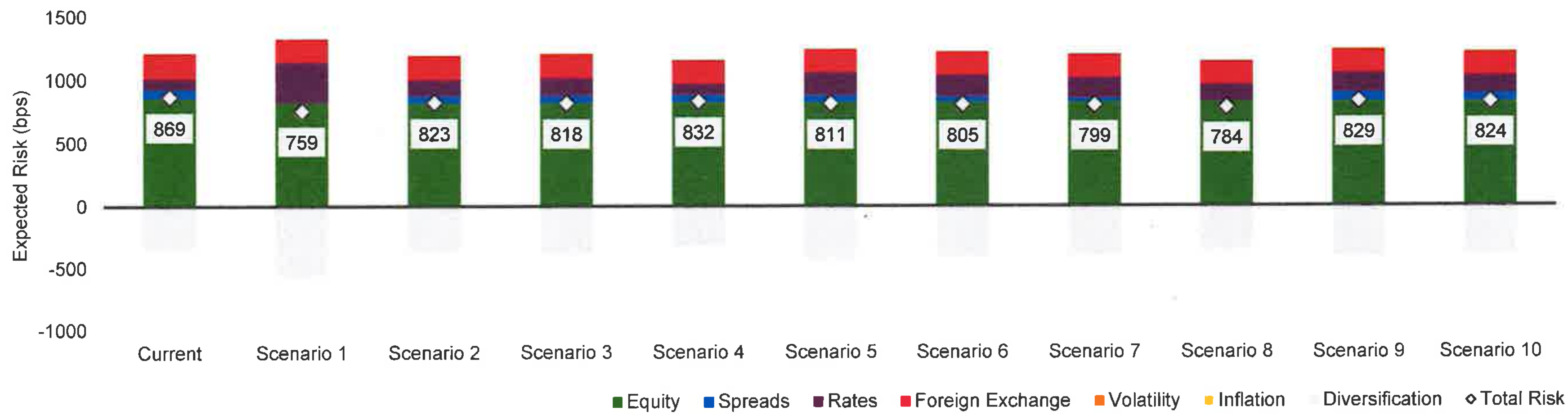



## Risk Decomposition



# Summary of Risk & Return Results

## Risk Decomposition: All Scenarios Modeled




| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BIG | 10.4% | 0.0% | 8.7% | 8.7% | 7.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.0% | 7.0% |
| Core | 12.9% | 0.0% | 12.2% | 12.2% | 14.0% | 35.0% | 27.6% | 19.9% | 0.0% | 28.0% | 21.0% |
| 1-3 Yr | 11.7% | 0.0% | 0.0% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cash Treasuries** | 0.0% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 7.3% | 15.0% | 35.0% | 0.0% | 7.0% |
| Treasury Futures*** | 0.0% | 66.3% | 0.0% | 14.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Domestic Equity | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% |
| Global Equity | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% | 2.4% |
| International Equity | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% | 29.6% |
| **Total** | **100.0%** | **131.4%** | **100.0%** | **100.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** | **35.0%** |
| **Total Risk (bps)** | **869** | **759** | **823** | **818** | **832** | **811** | **805** | **799** | **784** | **829** | **824** |
| **FI Duration** | **3.01** | **6.39** | **4.53** | **4.83** | **3.12** | **5.35** | **5.41** | **5.47** | **5.64** | **4.60** | **4.66** |
| **Expected Return** | **6.34%** | **7.20%** | **6.38%** | **6.39%** | **6.29%** | **6.32%** | **6.31%** | **6.29%** | **6.26%** | **6.39%** | **6.38%** |
| **FI Expected Return** | **3.21%** | **5.13%** | **3.28%** | **3.28%** | **3.05%** | **3.00%** | **2.96%** | **2.92%** | **2.80%** | **3.29%** | **3.25%** |

** Initial margin requirement assumed 15% of notional for treasury futures*
*** Barclays Treasury Index duration = 5.64 years, as of 9/30/2015*
**** US 10YR NOTE DEC 15 duration = 6.39 years, as of 9/30/2015*

# IV. Stress Testing and Scenario Analysis

# US Interest Rates Back-Up

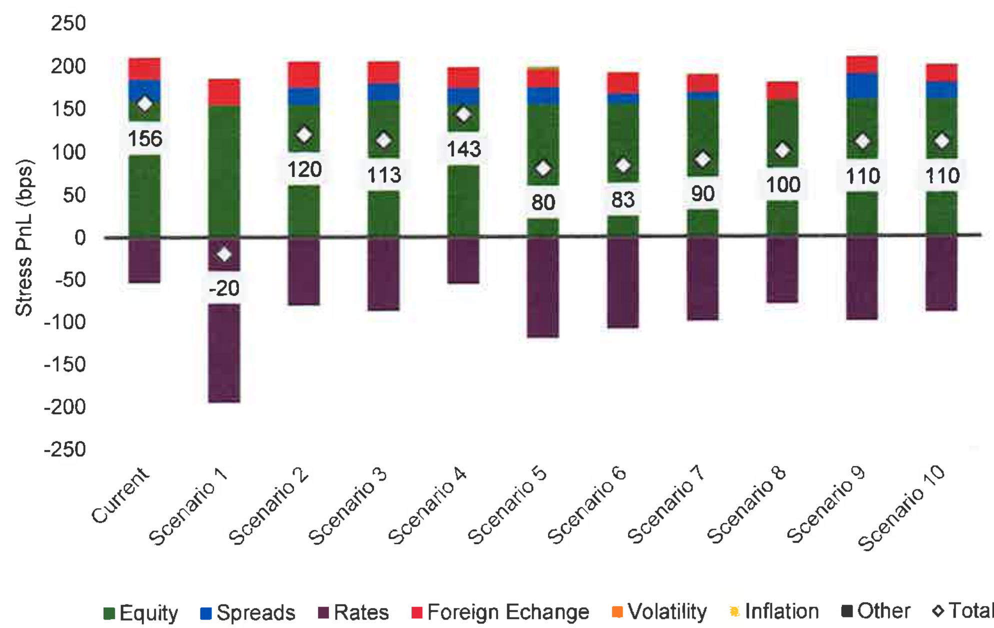
## BRS macroeconomic scenarios are constructed with implied shock framework

- The BRS *Interest Rates Back-Up US* scenario corresponds to a **50.5 bps** to the USD 10 year risk factor
- BRS calibrated to a 1% probability event for a 21-day factor movement using 7 years of rolling data
- Shocks to other factors in the Risk Model will be computed daily using the implied scenario framework (with updated covariance matrices)

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | 50.50 bps |
| **Investment Grade** | -6.70 bps |
| **High Yield** | -80.95 bps |
| **S&P 500** | 2.60% |
| **MSCI EAFE** | 2.21% |

### Stress Test PnL



# Market Crash 2008

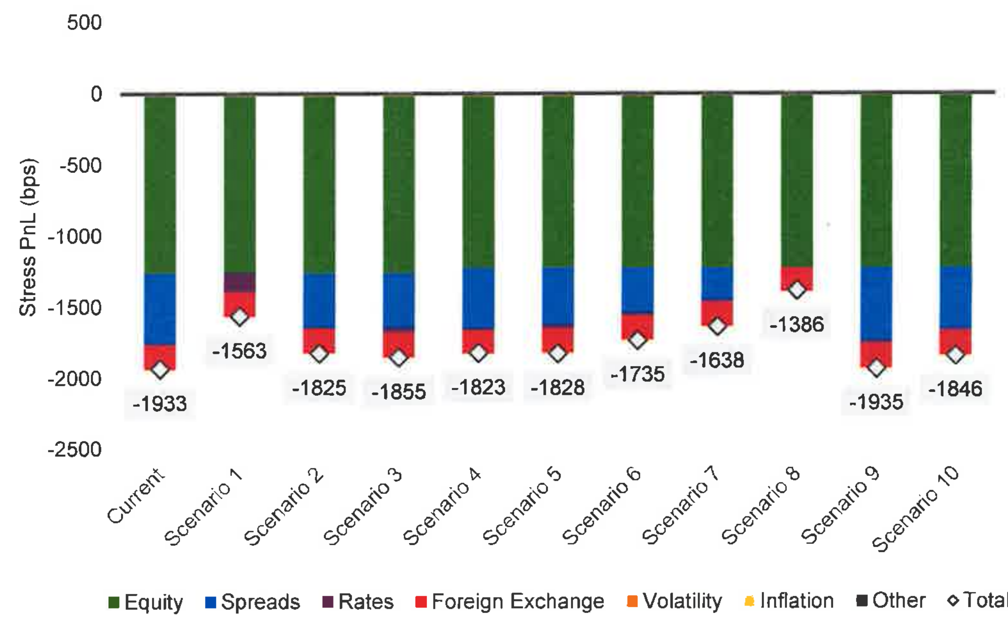
## BRS historical scenarios are constructed based on time period data

- Date range September 12 through November 03, 2008
- Credit & liquidity crisis and equity market crash set off by Lehman Brothers bankruptcy
- Significant credit spreads widening caused by massive deleveraging

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | 87.49 bps |
| **Investment Grade** | 269.98 bps |
| **High Yield** | 709.49 bps |
| **S&P 500** | -22.80% |
| **MSCI EAFE** | -26.48% |

### Stress Test PnL



# Stock Market Drop Global

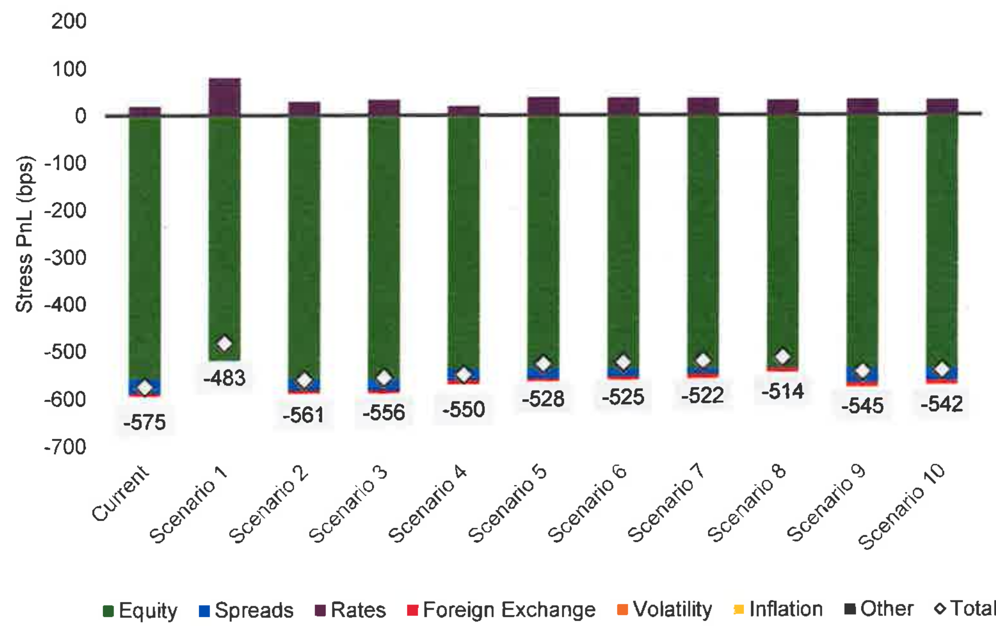
## BRS macroeconomic scenarios are constructed with implied shock framework

- The BRS *Stock Market Drop Global* scenario corresponds to a **8.97% decrease** in the MSCI World Index
- BRS calibrated to a 1% probability event for a 21-day factor movement using 7 years of rolling data
- Shocks to other factors in the Risk Model will be computed daily using the implied scenario framework (with updated covariance matrices)

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | -17.25 bps |
| **Investment Grade** | 9.04 bps |
| **High Yield** | 78.56 bps |
| **S&P 500** | -8.45% |
| **MSCI EAFE** | -9.47% |

### Stress Test PnL



# Equity Volatility Increase

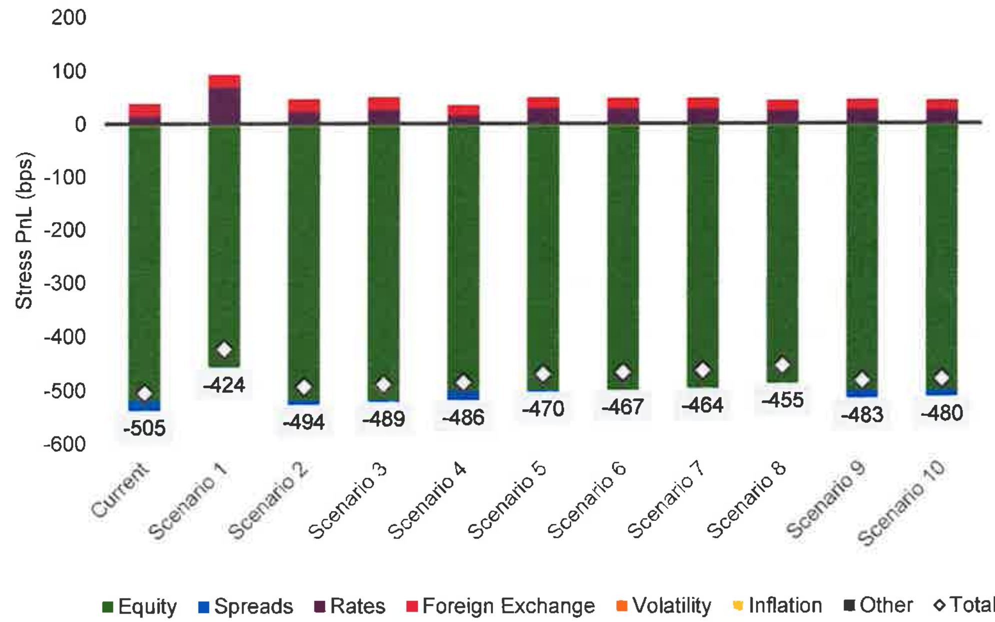
## BRS macroeconomic scenarios are constructed with implied shock framework

- The BRS *Equity Volatility Increase* scenario corresponds to a **+17.20%** shock to the VIX
- BRS calibrated to a 1% probability event for a 21-day factor movement using 7 years of rolling data
- Shocks to other factors in the Risk Model will be computed daily using the implied scenario framework (with updated covariance matrices)

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | -13.57 bps |
| **Investment Grade** | 9.68 bps |
| **High Yield** | 68.40 bps |
| **S&P 500** | -8.34% |
| **MSCI EAFE** | -7.50% |

### Stress Test PnL



# Equity Market Rally of 2014

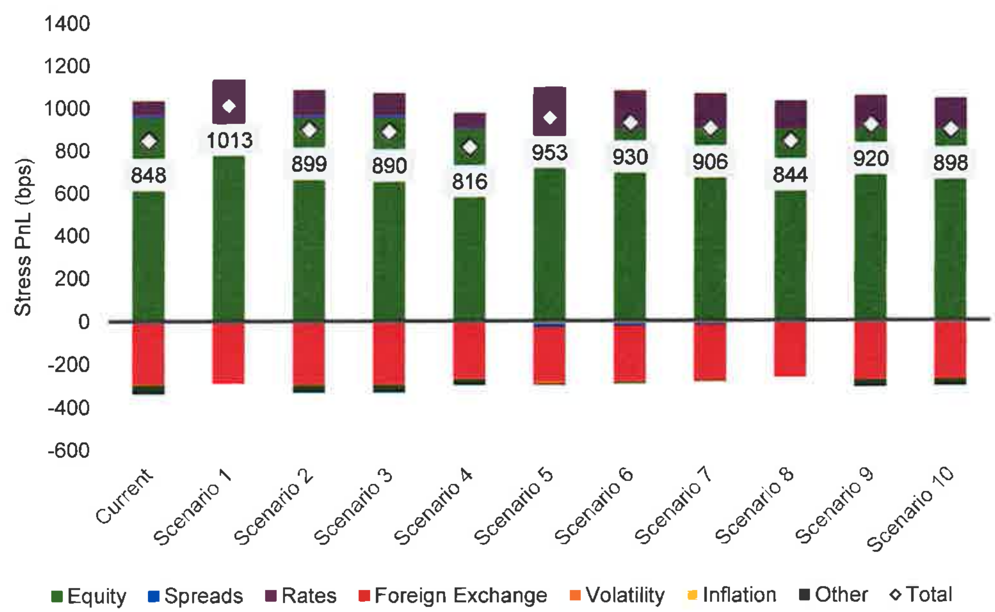
## BRS historical scenarios are constructed based on time period data

- Date range January 1 through December 31, 2014
- Equity bull market, S&P 500 returns **11.39%**
- Rates rally, 10 year treasury down **91.18 bps**

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | -91.18 bps |
| **Investment Grade** | 19.44 bps |
| **High Yield** | 22.32 bps |
| **S&P 500** | 11.39% |
| **MSCI EAFE** | -7.35% |

### Stress Test PnL



# Hypothetical Rapid Deflation

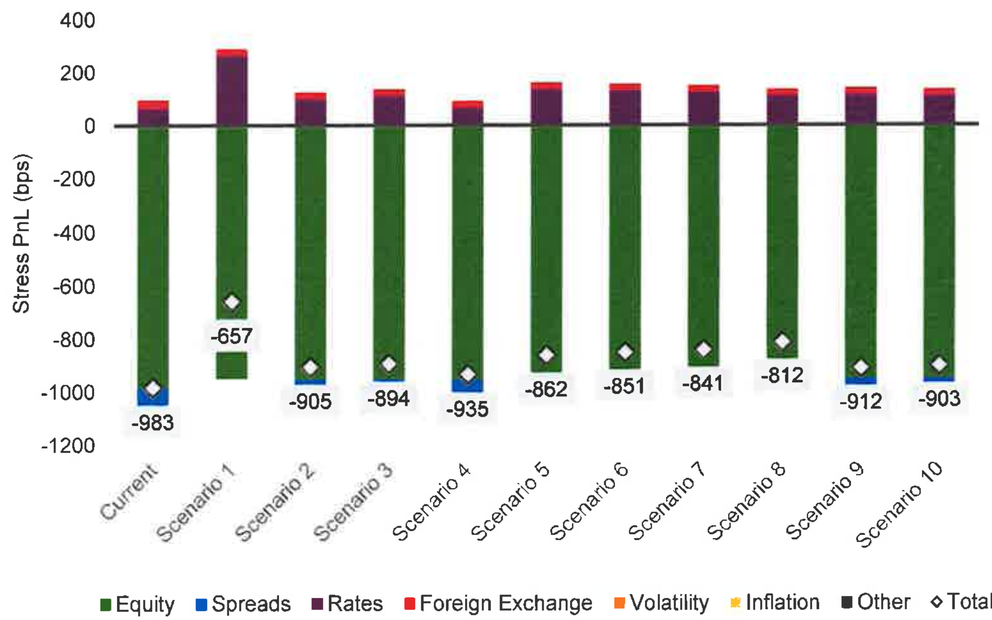
## BRS macroeconomic scenarios are constructed with implied shock framework

- The *Hypothetical Rapid Deflation* scenario shocks 3m CPI by **450 bps** and 1y CPI by **350 bps**
- The short end of the inflation curve drops due to falling oil prices while the short end of the nominal curve is unchanged as nominal rates are already very low

### Changes in Selected Market Factors

| | Shock Size |
|---|---|
| **Tsy 10 Yr** | -62.61 bps |
| **Investment Grade** | 46.70 bps |
| **High Yield** | 217.07 bps |
| **S&P 500** | -15.16% |
| **MSCI EAFE** | -14.54 |

### Stress Test PnL



# V. Appendix I

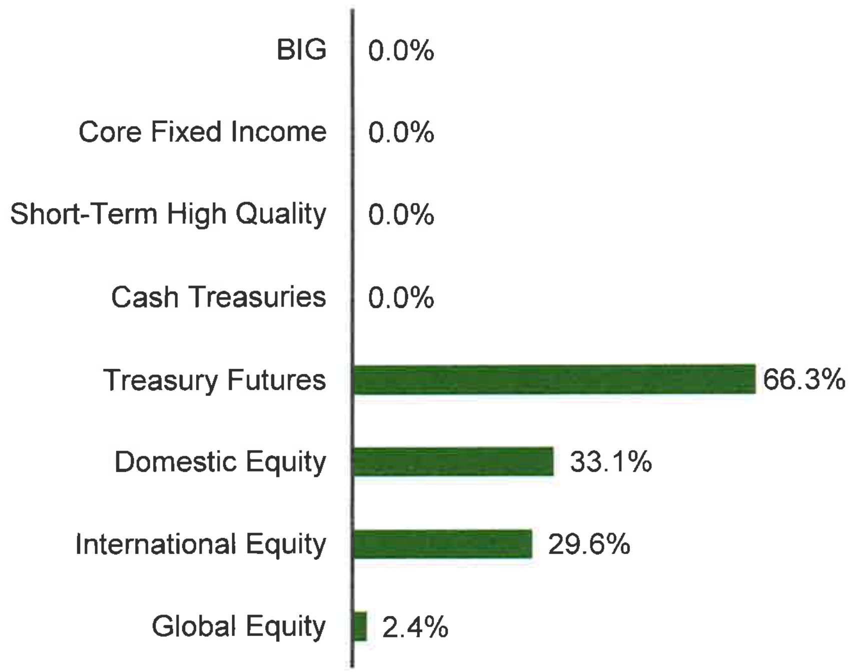
## Alternate Asset Allocation and Risk Decomposition

# Asset Allocation and Risk Decomposition

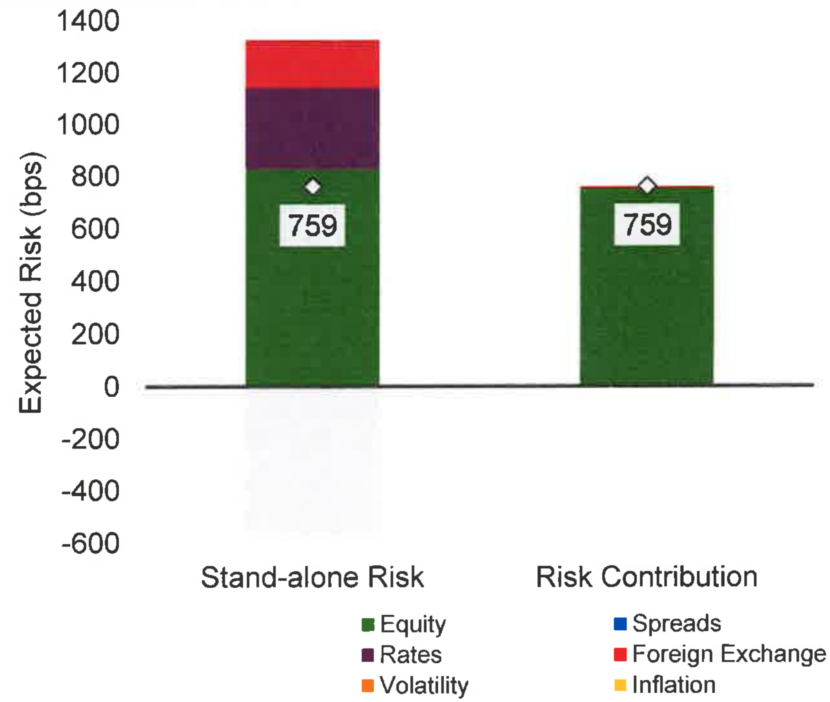
*Scenario 1*

**BlackRock used Portfolio Risk Tools optimization functionality to find the optimal portfolio to minimize absolute risk, with no leverage constraint**

## Scenario Asset Allocation




## Portfolio Risk Decomposition



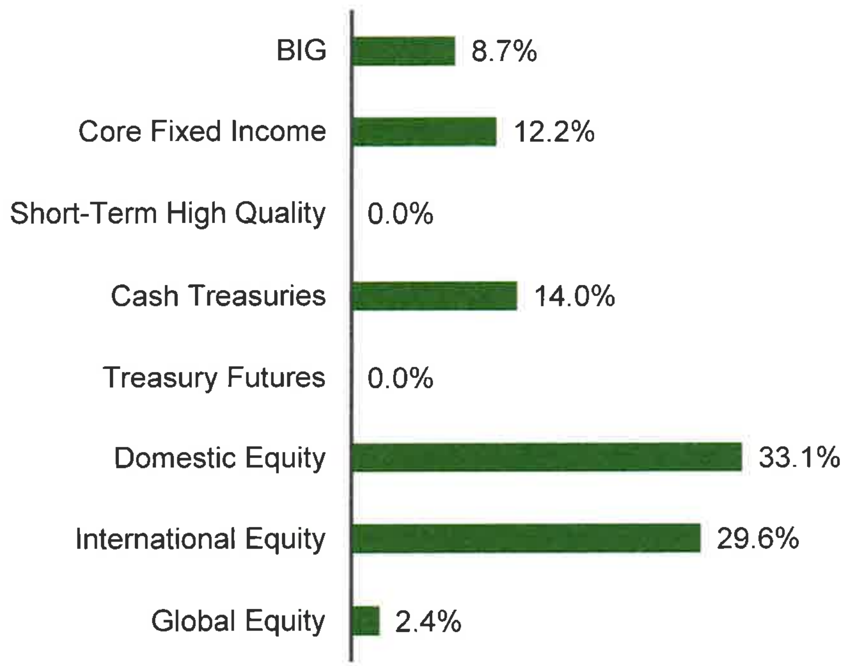

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

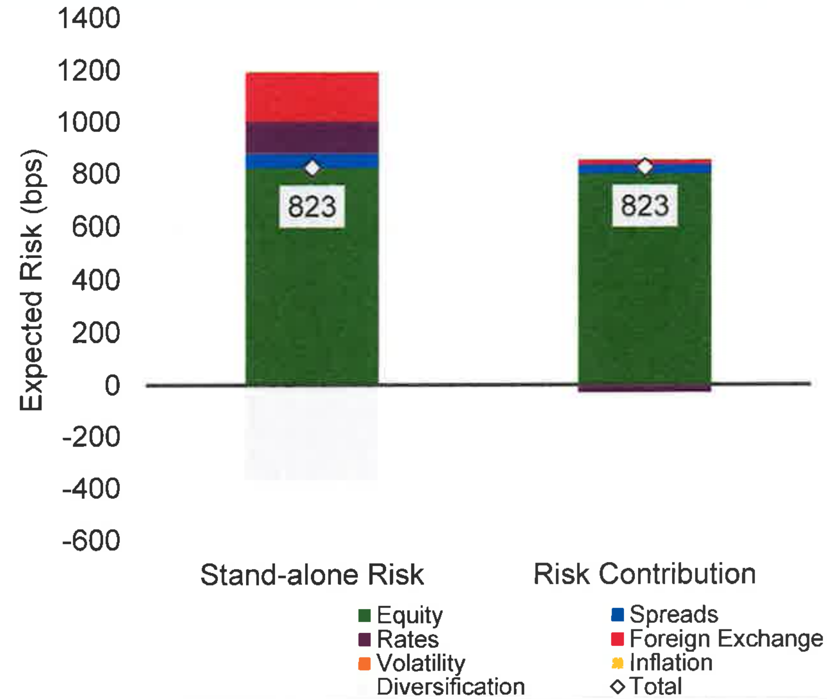
*Scenario 2*

## Re-allocate 40% of fixed income portfolio to cash treasuries

### Scenario Asset Allocation




### Portfolio Risk Decomposition

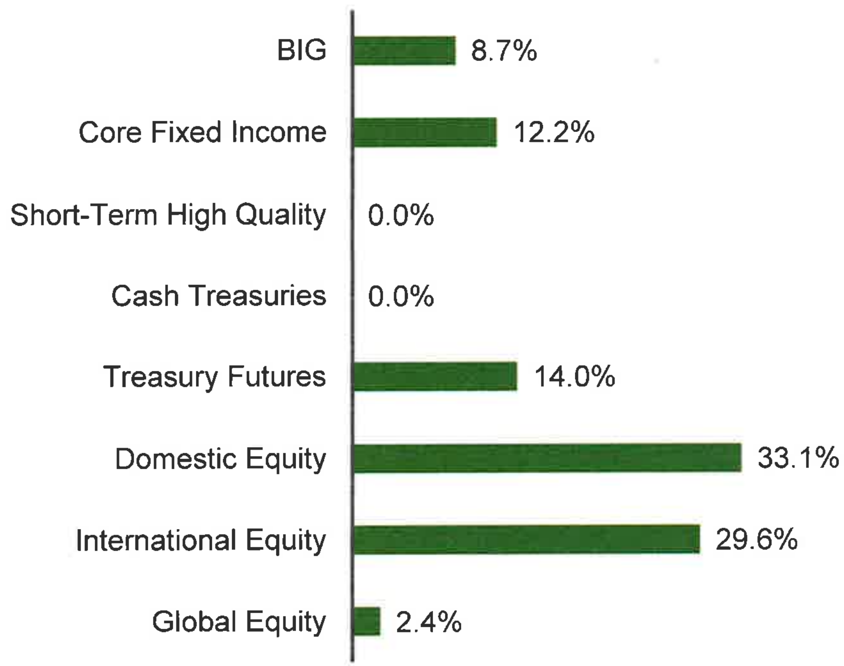



| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

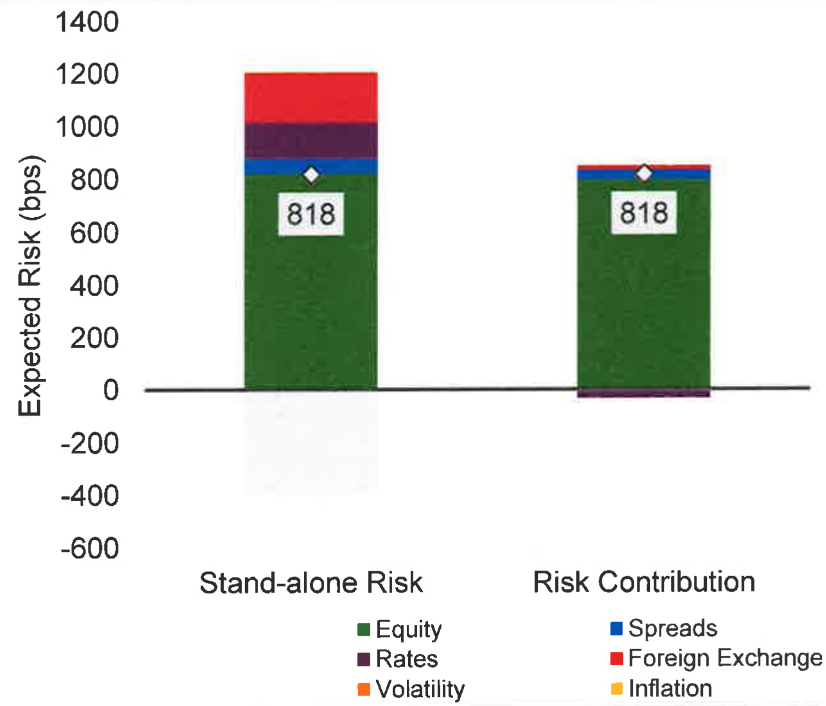
# Asset Allocation and Risk Decomposition
*Scenario 3*

## Re-allocate 40% of fixed income portfolio to treasury futures

### Scenario Asset Allocation




### Portfolio Risk Decomposition



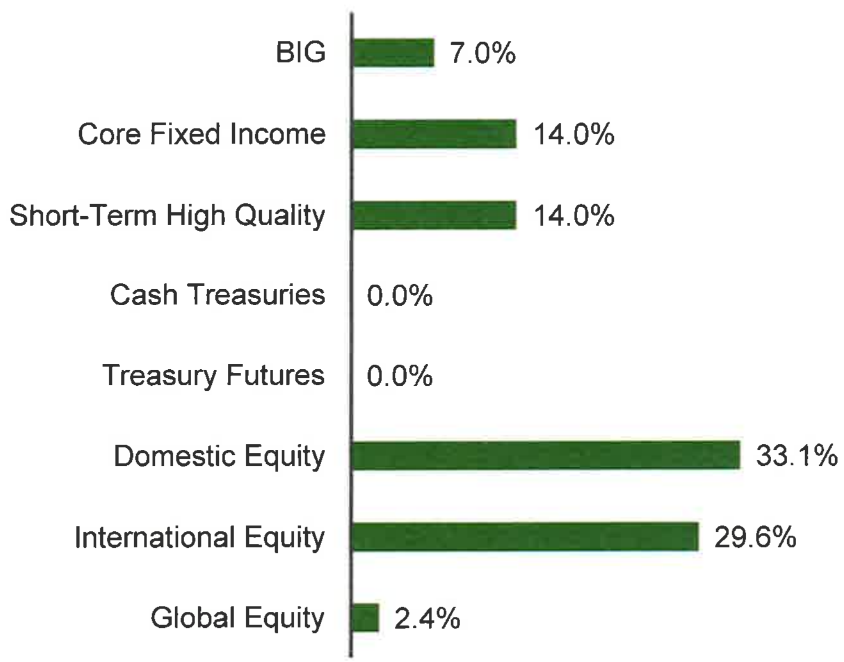

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

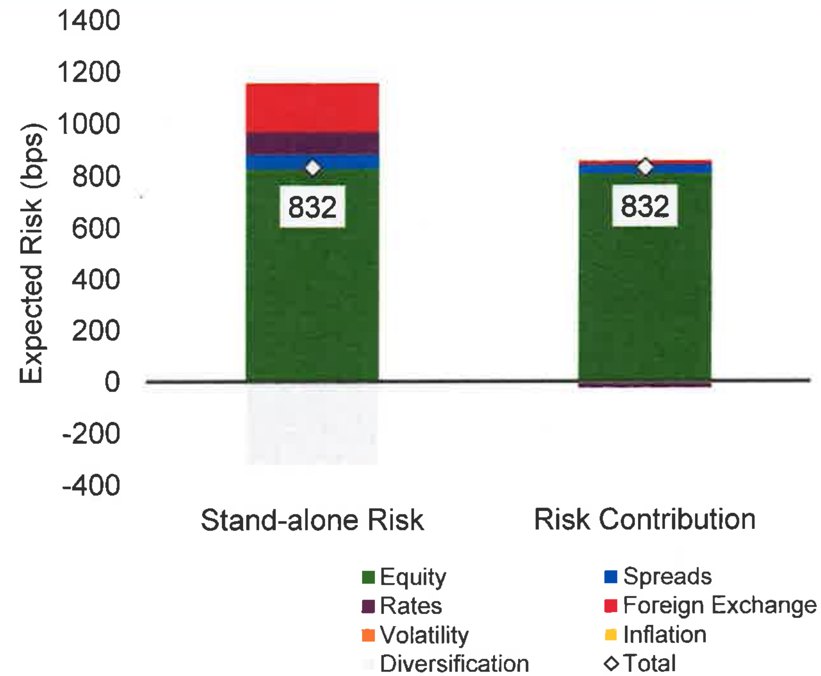
*Scenario 4*

## Target allocation within fixed income portfolios – 40% Core Fixed Income, 20% BIG, 40% Short-Term High Quality

### Scenario Asset Allocation




### Portfolio Risk Decomposition



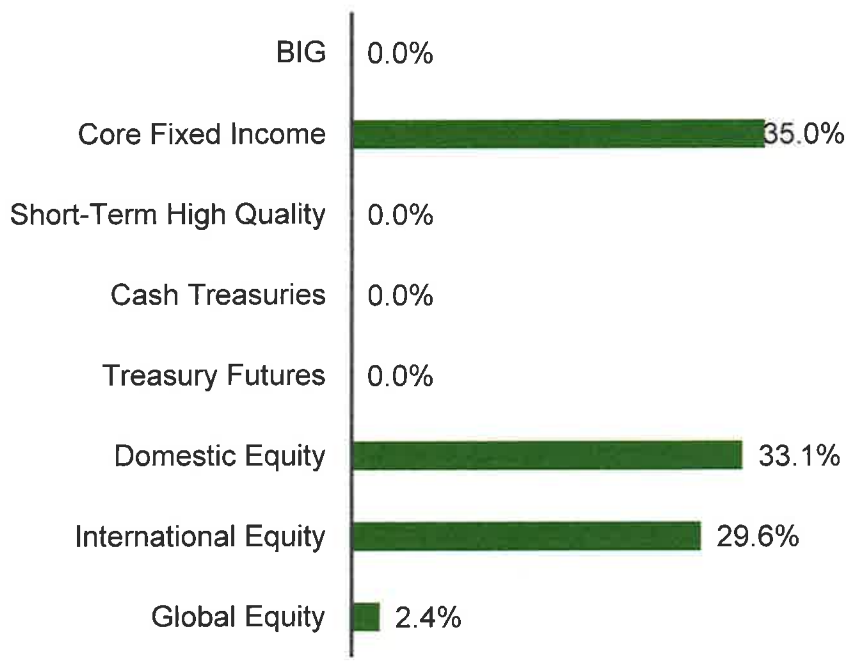

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

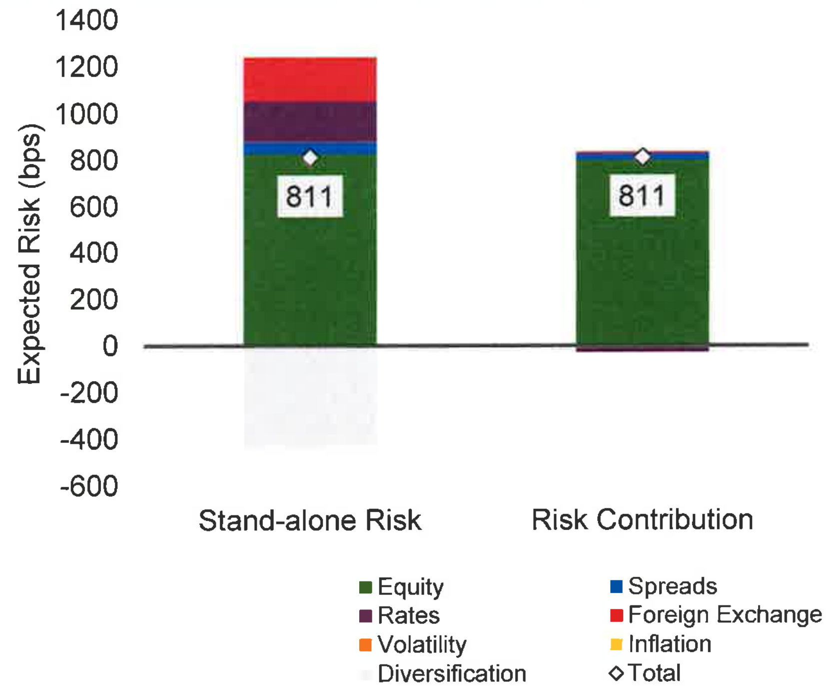
*Scenario 5*

## Re-allocate 100% of fixed income portfolio to Core Fixed Income

### Scenario Asset Allocation




### Portfolio Risk Decomposition

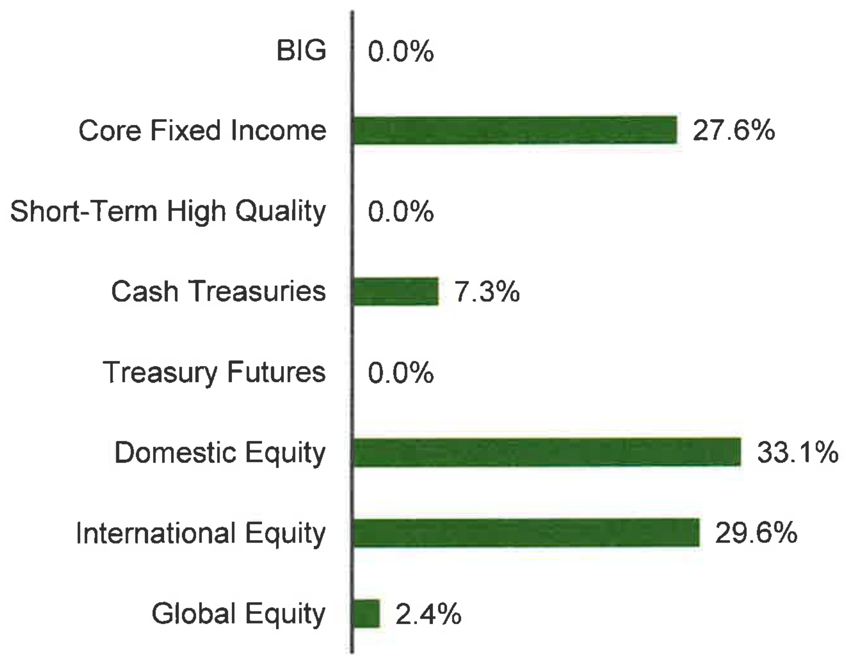



| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Expected Risk (bps) | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| Fixed Income Duration (years) | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| Equity Diversification (bps) | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| Expected Return | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| FI Expected Return | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

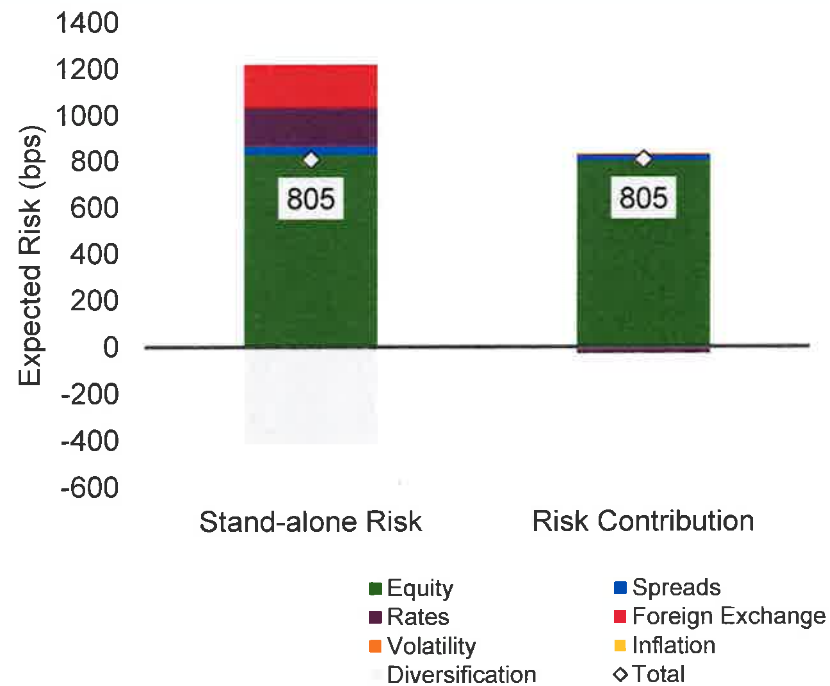
# Asset Allocation and Risk Decomposition
*Scenario 6*

**Re-allocate 79% of fixed income portfolio to Core Fixed Income and 21% of fixed income portfolio to Long Government**

## Scenario Asset Allocation




## Portfolio Risk Decomposition



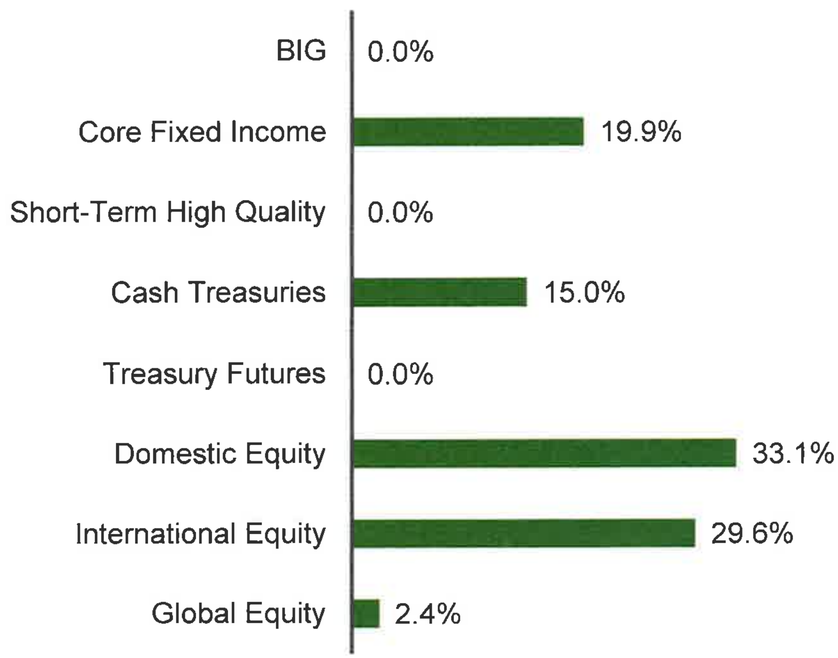

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

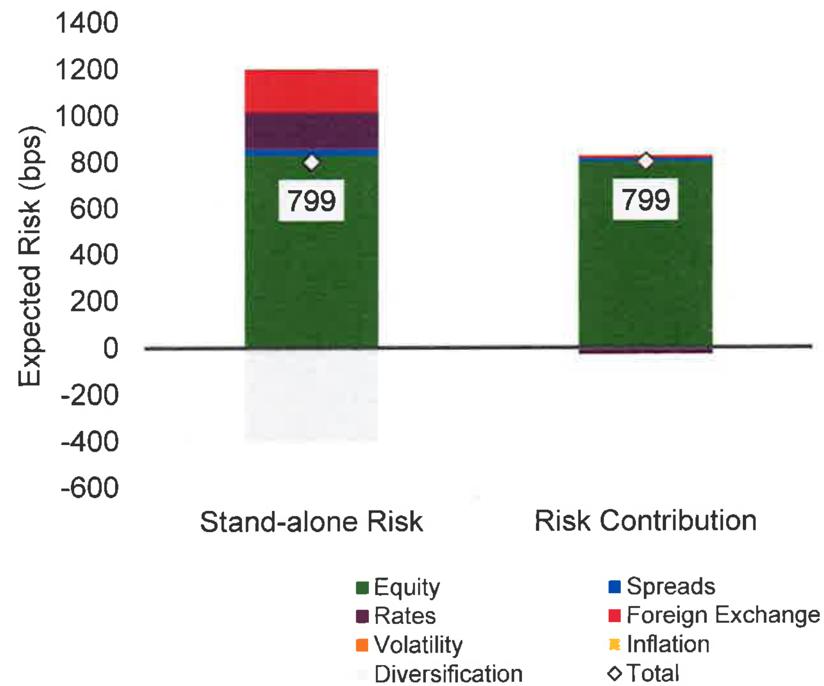
*Scenario 7*

**Re-allocate 57% of fixed income portfolio to Core Fixed Income and 43% of fixed income portfolio to Long Government**

## Scenario Asset Allocation




## Portfolio Risk Decomposition



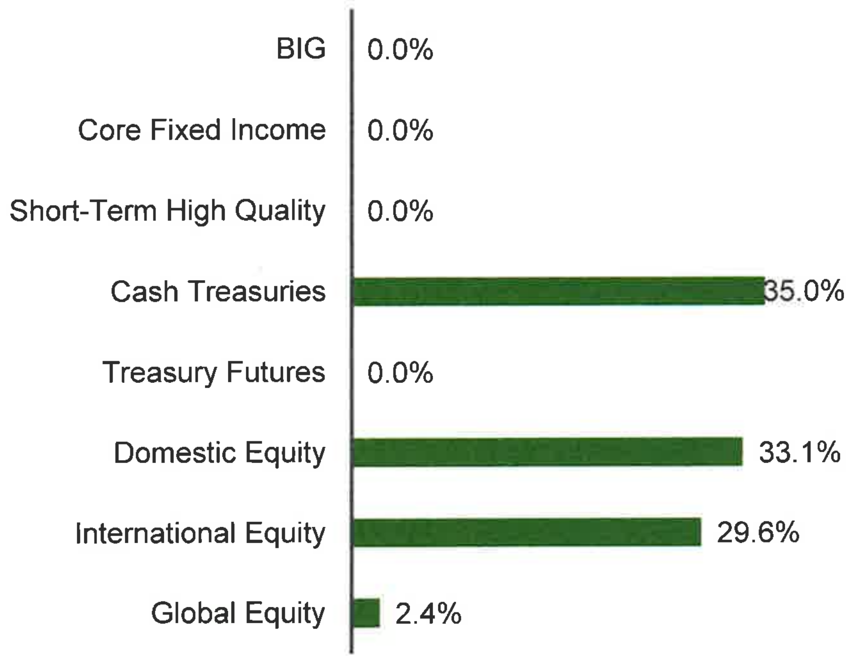

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Expected Risk (bps) | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| Fixed Income Duration (years) | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| Equity Diversification (bps) | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| Expected Return | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| FI Expected Return | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

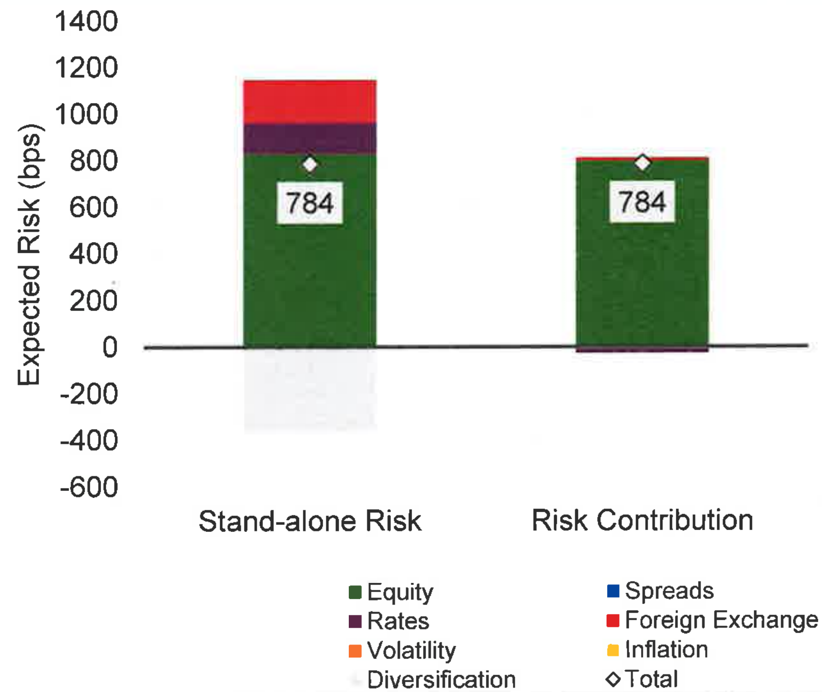
*Scenario 8*

## Re-allocate 100% of fixed income portfolio to Long Government

### Scenario Asset Allocation




### Portfolio Risk Decomposition



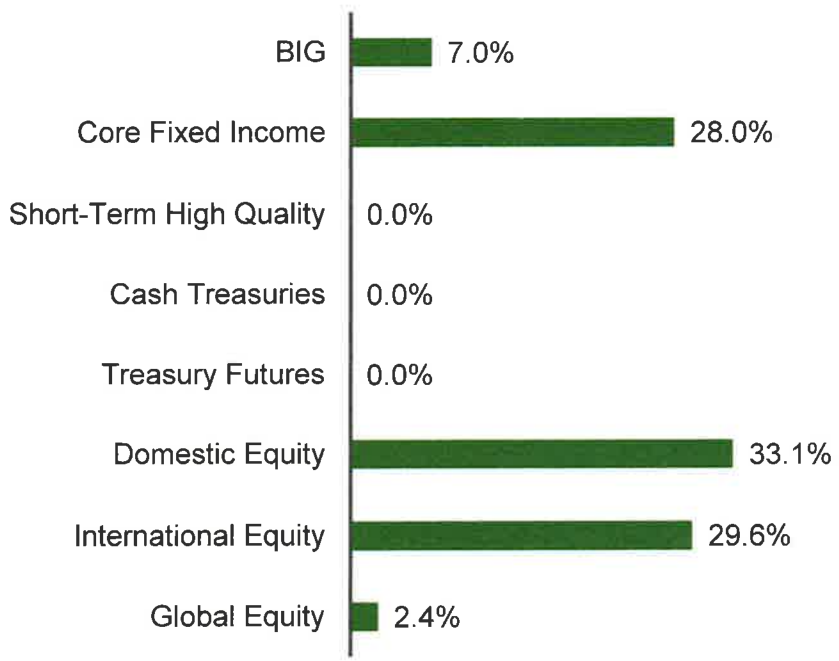

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

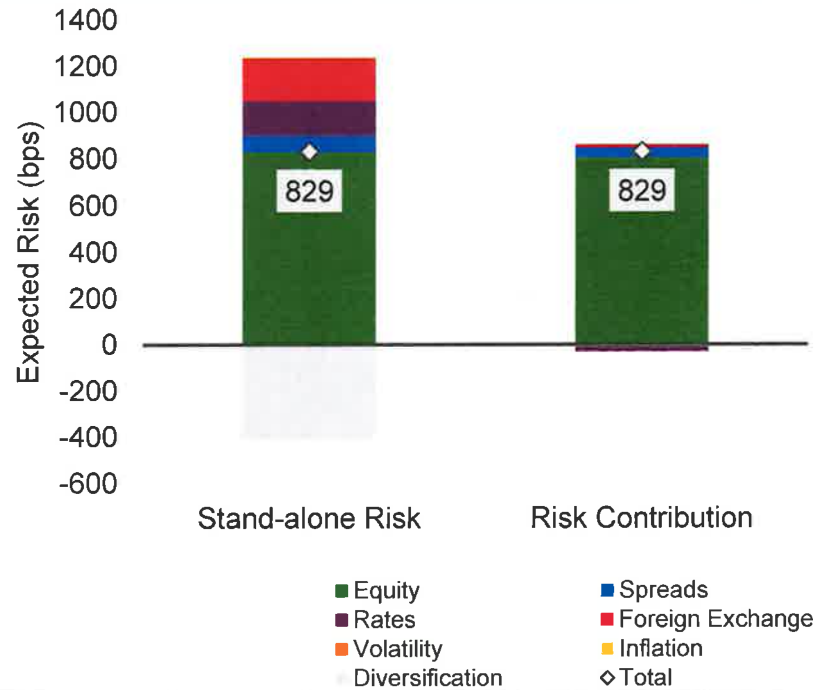
*Scenario 9*

**Re-allocate 80% of fixed income portfolio to Core Fixed Income and 20% of fixed income portfolio to BIG**

## Scenario Asset Allocation




## Portfolio Risk Decomposition



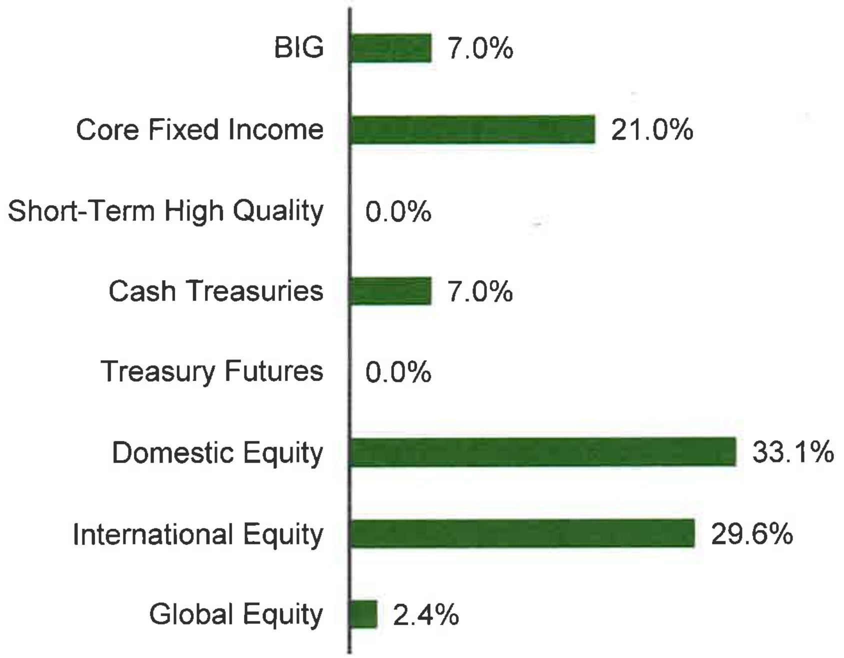

| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# Asset Allocation and Risk Decomposition

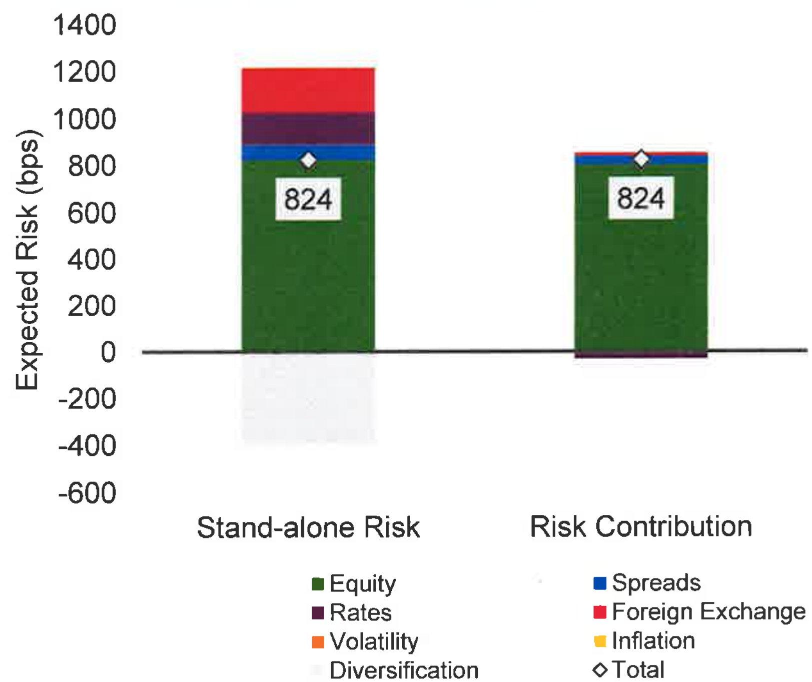
*Scenario 10*

**Re-allocate 60% of fixed income portfolio to Core Fixed Income, 20% of fixed income portfolio to BIG, and 20% of fixed income portfolio to Long Government**

## Scenario Asset Allocation




## Portfolio Risk Decomposition




| | Current | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 | Scenario 7 | Scenario 8 | Scenario 9 | Scenario 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Expected Risk (bps)** | 869 | 759 | 823 | 818 | 832 | 811 | 805 | 799 | 784 | 829 | 824 |
| **Fixed Income Duration (years)** | 3.01 | 6.39 | 4.53 | 4.83 | 3.12 | 5.35 | 5.41 | 5.47 | 5.64 | 4.60 | 4.66 |
| **Equity Diversification (bps)** | -347 | -568 | -372 | -390 | -325 | -431 | -416 | -402 | -362 | -410 | -395 |
| **Expected Return** | 6.34% | 7.20% | 6.38% | 6.39% | 6.29% | 6.32% | 6.31% | 6.29% | 6.26% | 6.39% | 6.38% |
| **FI Expected Return** | 3.21% | 5.13% | 3.28% | 3.28% | 3.05% | 3.00% | 2.96% | 2.92% | 2.80% | 3.29% | 3.25% |

# VI. Appendix II

## Capital Market Assumptions

# Callan Return Assumptions

| Return Benchmark | Expected Return |
|---|---|
| 75% S&P-LSTA/25% Merrill HY Master II | 4.25% |
| Barclays U.S. Aggregate | 3.00% |
| Barclays US Govt/Credit 1 - 3 Year | 2.40% |
| Barclays U.S. Treasury Intermediate | 2.80% |
| MSCI US IMI / Russell 3000 | 7.60% |
| MSCI ACWI ex-US IMI | 7.80% |
| MSCI ACWI Emerging Markets | 7.90% |
| MSCI ACWI IMI (50% MSCI US IMI/Russell 3000, 40% MSCI ACWI ex-US IMI, 10% MSCI Emerging Markets) | 7.71% |

# BlackRock Capital market assumptions

| Asset Class | Benchmark | Expected Return | Expected Volatility |
|---|---|---|---|
| US Equity | MSCI US IMI / Russell 3000 | 6.50% | 17.5% |
| Int'l Developed Equity | MSCI World ex US IMI | 7.00% | 19.5% |
| EM Equity | MSCI Emerging Markets IMI | 7.25% | 25.8% |
| Risk Parity | N/A | 5.90% | 10.5% |
| Hedge Funds | BlackRock Global Diversified Proxy | 4.50% | 6.5% |
| Real Estate | FTSE/EPRA NAREIT US | 6.00% | 16.0% |
| Private Equity | N/A | 9.50% | 28.5% |
| Commodities | S&P GSCI | 2.75% | 18.0% |
| TIPS | BarCap TIPS | 3.00% | 6.3% |
| High Yield | BarCap High Yield | 5.00% | 10.0% |
| Int'l Fixed Income | BarCap Global ex-US Aggregate | 2.50% | 3.0% |
| EM Fixed Income | JP Morgan EMBI | 5.25% | 9.0% |
| U.S. Aggregate | BarCap US Aggregate | 3.00% | 3.8% |
| Int Government | Barclays Int Government | 2.50% | 3.0% |
| Int Credit | Barclays Int Credit | 3.50% | 4.3% |
| Int Gov / Credit | Barclays Int Gov/Credit | 2.90% | 3.5% |
| Long Credit | Barclays Long Corporate | 4.00% | 10.5% |
| Long Government | Barclays Long Government | 2.50% | 14.5% |
| Long Gov / Credit | Barclays Long Gov/Credit | 3.10% | 12.0% |
| Strips 20+ Years | Barclays Strips 20+ Years | 2.50% | 23.5% |
| SURF / TURF | Custom ML Index | 2.50% | 45.8% |
| Cash | Citigroup 3 Mo. Treasury Bills | 2.00% | 0.8% |

The projections in the chart above are based on BlackRock's proprietary long-term capital markets assumptions (10-15 years) for risk and geometric return (above) and correlations (see Appendix B) between major asset classes These asset class assumptions are passive only and do not consider the impact of active management. The assumptions are presented for illustrative purposes only and should not be used, or relied upon, to make investment decisions. The assumptions are not meant to be a representation of, nor should they be interpreted as BlackRock's investment recommendations. Allocations, assumptions, and expected returns are not meant to represent BlackRock performance. Long-term capital markets assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect actual future performance. Ultimately, the value of these assumptions is not in their accuracy as estimates of future returns, but in their ability to capture relevant relationships and changes in those relationships as a function of economic and market influences. The above estimates for volatility are based on a proprietary BlackRock risk model, using 108 months of equally weighted historical data rounded to the closest 25bps. Please note all information shown is based on assumptions, therefore, exclusive reliance on these assumptions is incomplete and not advised. The individual asset class assumptions are not a promise of future performance.

For Private Equity, BlackRock's modeling approach employs a comprehensive set of Public Equity exposures where the factors are constructed to capture the attributes of Private Equity. Private Equity risk factors include geography (e.g., region or country), currency, capitalization (e.g., large, mid, small), sector (e.g., consumer discretionary, energy, materials), and idiosyncratic.

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This material is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or to adopt any investment strategy. The opinions expressed are as of December 2015 and may change as subsequent conditions vary. The information and opinions contained in this material are derived from proprietary and nonproprietary sources deemed by BlackRock to be reliable, are not necessarily all-inclusive and are not guaranteed as to accuracy. There is no guarantee that any forecasts made will come to pass. Any investments named within this material may not necessarily be held in any accounts managed by BlackRock. Reliance upon information in this material is at the sole discretion of the reader. Past performance is no guarantee of future results.

Past performance is not a guide to future performance. The value of investments and the income from them can fall as well as rise and is not guaranteed. You may not get back the amount originally invested. Changes in the rates of exchange between currencies may cause the value of investments to fluctuate.

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# TAB 7 – OIC ELECTIONS

| | |
|---|---|
| **Current Status:** *Active* | **PolicySat ID:** *1490060* |

| | |
|---|---|
| **Origination:** | *10/2013* |
| **Last Approved:** | *10/2013* |
| **Last Revised:** | *10/2013* |
| **Next Review:** | *06/2015* |
| **Owner:** | *Mike Mueller: Deputy Chief Investment Officer* |
| **Policy Area:** | *Investments* |
| **References:** | *OST Policy 4.00.02* |

# INV 103: Oregon Investment Council (OIC) and Staff Duties



## POLICY

The Oregon Investment Council formulates broad policies for the investment and reinvestment of moneys in the investment funds and the acquisition, retention, management and disposition of investments of the investment Funds (Fund or Funds). The Council includes the State Treasurer and four appointees of the Governor. Additionally, the PERS Director sits with the Council, but may not vote. The members of the Council biennially elect a chair and a vice chair from among the four Governor appointed, voting members. The vice chair functions as the chair in the event the chair is unable to fulfill the duties. OIC meetings are conducted according to the rules set forth in sample Form A.

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.

## PROCEDURES

1. **Staff and Research Support.** Should the OIC wish to investigate or research a matter related to current or potential investment activities, OST Investment Division staff shall provide support and assistance as required.
2. **Record, Transcribe, and Distribute Minutes of OIC Meetings.** A member of the Investment Division staff records and distributes minutes for OIC meetings. Approved minutes, except those taken during executive session, are posted to OST's website. In addition, meetings shall be recorded by audio file.
3. **Draft OIC Resolutions.** The Chief Investment Officer or staff may draft policies or resolutions for OIC action upon request. All advisors of the Council, including but not limited to private investment advisors, staff members of the OST and legal counsel, when practicable, shall submit to the Council for its consideration written recommendations, whenever the advisor provides information to the Council which the advisor believes may require action by the Council. From the written recommendations, OST staff shall have prepared for the Council's consideration appropriate forms of motion. Whenever practicable, OST staff shall review and advise the Council in writing whether proposed Council action concerning investments falls within or outside of existing investment policies and, if within, shall state the policy that is applicable.

4. **Council Elections.** The Council shall select one of its members as chair, for a term and with powers and duties necessary for the performance of the functions of the office as the council determines (ORS 293.711(3)). The Council shall biennially elect a chair, and vice chair, at the last regular meeting of the Council in each odd-numbered calendar year. A person may not serve as chair of the Council for more than four years in any 12-year period (ORS 293.711(4)). Between biennial elections, with at least one week's notice, a majority of the Council may request a special election, to be held at the next meeting of the Council, to select officers for the unexpired term. In the event that a chair or vice chair resigns or is removed, or whose service on the Council ends, the Council, at its next regular meeting, shall elect a replacement.

## SAMPLE FORMS, DOCUMENTS, OR REPORTS (Attached)

Sample Form A — Rules of Conduct for OIC Meetings

## Attachments:

A: Rules for Conduct for Oregon Investment Council Meetings

**Sample Form A**

**Rules for Conduct for Oregon Investment Council Meetings**

**Applicability of Rules**

1. These rules are applicable to convened business meetings, regular and special, of the Oregon Investment Council.

2. Meetings will be called from time-to-time by the Chairman:

   a. Regular meetings will generally be held eight times per year;

   b. Special meetings and informal meetings will be held as needed;

   c. Meetings may also be held by telephone; and

   d. Meetings in Executive Session shall be held according to Oregon Revised Statutes.

3. **Chair**: The Chair is responsible for coordinating with the CIO to set the agenda of the OIC, in accordance with Policy 4.00.01. Additionally, the Chair shall preside over all regular and special meetings of the OIC. The primary role of the Chair is to help ensure OIC meetings are as efficient and productive as possible, and to facilitate communication among OIC members and between the OIC and the Office of the State Treasurer.

4. Notice of meetings will be given in compliance with Oregon Revised Statutes 192.610-690 and cases applicable thereto.

5. **Agenda**: Notice of the meeting shall also contain a copy of the agenda for the meeting setting forth, with reasonable clarity, the matters to be discussed.

6. **Quorum:** Three members are a quorum to take action.

7. **Majority Vote**: An affirmative vote of three members of the Council is required for the Council to approve resolutions.

8. **Conflict of Interest**: Notice of conflict of interest, as defined in Oregon Revised Statutes 244.120 and rules promulgated by the Oregon Government Ethics Commission and this Council, shall be announced prior to taking an action on an issue. Announced conflicts should be recorded as provided in Oregon Revised Statutes 244.130 (See also: 4.00.03). "Take action" means to vote, debate, recommend or discuss.

9. **Voting**: Members, when present, shall vote either aye or nay on an issue, except in the case of a potential conflict of interest. If such a potential conflict of interest exists, the member shall make a declaration of that conflict and may be excused from voting by the body.

10. **Record of Votes:** Roll call votes shall be tallied by the Chief Investment Officer through an oral roll call.

11. **Recess or Adjournment:** A quorum being present, any meeting of the Council may be recessed or adjourned by a majority vote of the Council or by the Chair of the meeting.

# TAB 8 – OPERF Q3 2015 PERFORMANCE REPORT

Callan
FORTY YEARS

December 9, 2015

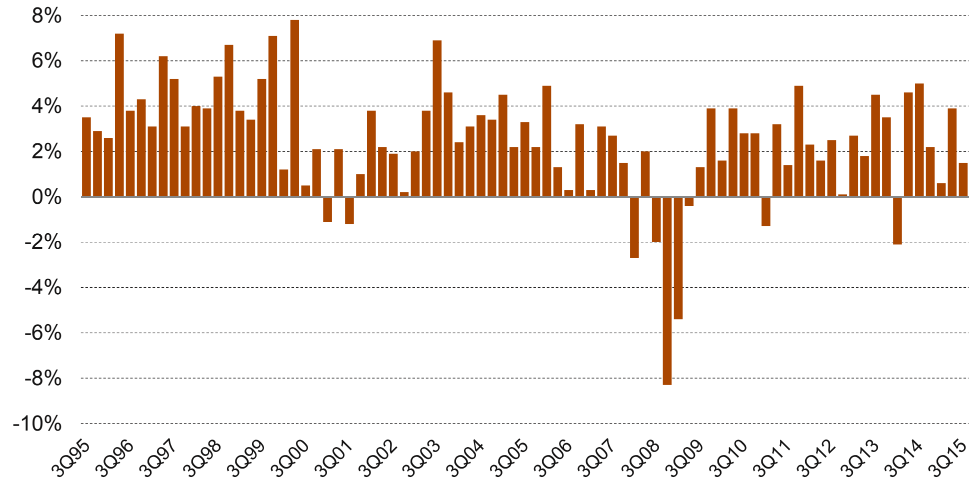
# Oregon Investment Council

Third Quarter 2015
Performance Review

# Economic Commentary

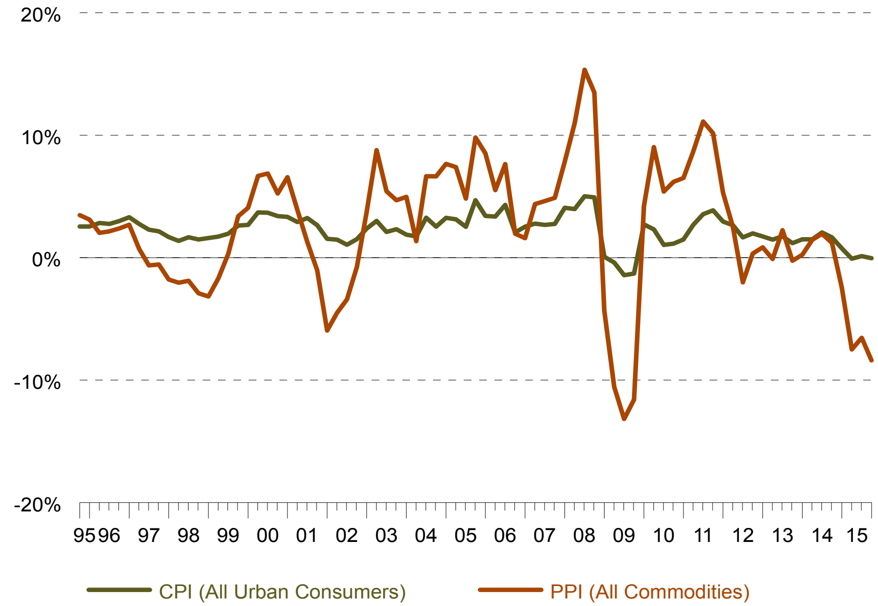
## Third Quarter 2015

**Quarterly Real GDP Growth (20 Years)**




Source: Bureau of Economic Analysis

**Inflation Year-Over-Year**




Source: Bureau of Labor Statistics

- The 3rd quarter was marked by heightened volatility spurred by growing concerns over slowing global economic growth. Uncertainty over the magnitude and pace of China's slowdown and the resultant effect on other markets were central points of worry. Investors remained keenly focused on statements from the Fed in attempts to gauge the timing of the widely anticipated first hike in interest rates since 2006, but the quarter ended with no action.
- The U.S. GDP increased 1.5% in the 3rd quarter, helped by consumer and government spending. 2nd quarter GDP was revised up to 3.9%, up sharply from the initial estimate of 2.3%.
- Over the quarter, unemployment fell from 5.3% to 5.1%, its lowest level since 2008. The labor force participation rate registered 62.6%, the lowest level since 1977. Payroll gains have moderated.
- Inflation continued to remain below the Fed’s 2% target. For the trailing 12 months ended September, headline CPI was flat, while Core CPI (excluding food and energy) climbed 1.9%.

# Market Summary – Third Quarter 2015

| Index | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years | Last 15 Years |
|---|---|---|---|---|---|---|
| **U.S. Equity:** | | | | | | |
| Russell:3000 Index | (7.25) | (0.49) | 12.53 | 13.28 | 6.92 | 4.31 |
| S&P:500 | (6.44) | (0.61) | 12.40 | 13.34 | 6.80 | 3.96 |
| Russell:1000 Index | (6.83) | (0.61) | 12.66 | 13.42 | 6.95 | 4.14 |
| Russell:1000 Growth | (5.29) | 3.17 | 13.61 | 14.47 | 8.09 | 2.19 |
| Russell:1000 Value | (8.39) | (4.42) | 11.59 | 12.29 | 5.71 | 5.73 |
| Russell:Midcap Index | (8.01) | (0.25) | 13.91 | 13.40 | 7.87 | 7.63 |
| Russell:Midcap Growth | (7.99) | 1.45 | 13.98 | 13.58 | 8.09 | 3.72 |
| Russell:Midcap Value | (8.04) | (2.07) | 13.69 | 13.15 | 7.42 | 9.55 |
| Russell:2000 Index | (11.92) | 1.25 | 11.02 | 11.73 | 6.55 | 6.51 |
| Russell:2000 Growth | (13.06) | 4.04 | 12.85 | 13.26 | 7.67 | 4.15 |
| Russell:2000 Value | (10.73) | (1.60) | 9.18 | 10.17 | 5.35 | 8.53 |
| **U.S. Fixed Income:** | | | | | | |
| Barclays:Aggregate Index | 1.23 | 2.94 | 1.71 | 3.10 | 4.64 | 5.29 |
| Barclays:Gov/Credit Bond | 1.20 | 2.73 | 1.59 | 3.09 | 4.61 | 5.36 |
| Barclays:Gov/Credit Long | 2.18 | 3.09 | 2.17 | 5.96 | 6.65 | 7.55 |
| Barclays:Gov/Credit 1-3 | 0.29 | 1.19 | 0.86 | 1.04 | 2.85 | 3.41 |
| Barclays:Credit | 0.53 | 1.50 | 2.02 | 4.09 | 5.28 | 6.09 |
| Barclays:Mortgage Idx | 1.30 | 3.43 | 1.98 | 3.03 | 4.71 | 5.18 |
| Barclays:High Yld Corp | (4.86) | (3.43) | 3.51 | 6.15 | 7.25 | 7.35 |
| Barclays:US Universal Idx | 0.68 | 2.33 | 1.88 | 3.36 | 4.80 | 5.49 |
| **Real Estate:** | | | | | | |
| NCREIF:Total Index | 3.09 | 13.48 | 11.90 | 12.55 | 8.02 | 8.99 |
| NAREIT Composite Idx | 0.73 | 6.94 | 8.17 | 11.40 | 6.05 | 10.34 |
| **Global Equity:** | | | | | | |
| MSCI:ACWI | (9.34) | (6.16) | 7.52 | 7.39 | 5.14 | 3.86 |
| MSCI:AC WORLD IMI | (9.59) | (6.21) | 7.20 | 6.99 | 4.84 | 3.75 |
| **Non-U.S. Equity:** | | | | | | |
| MSCI:EAFE US$ | (10.23) | (8.66) | 5.63 | 3.98 | 2.97 | 3.03 |
| MSCI:EAFE LC(Net) | (8.98) | 0.80 | 12.71 | 7.71 | 3.30 | 1.93 |
| MSCI:ACWI ex US | (12.10) | (11.78) | 2.78 | 2.27 | 3.49 | 3.93 |
| MSCI:AC Wld Net x US LC | (9.62) | (1.71) | 9.64 | 6.00 | 3.80 | 2.74 |
| MSCI:ACWI SC ex US | (10.02) | (6.42) | 5.51 | 3.85 | 5.11 | 7.13 |
| MSCI:Emer Markets | (17.78) | (18.98) | (4.93) | (3.25) | 4.60 | 7.79 |
| **Other:** | | | | | | |
| 3 Month T-Bill | 0.01 | 0.02 | 0.06 | 0.08 | 1.33 | 1.72 |
| US DOL:CPI All Urban Cons | (0.29) | (0.04) | 0.93 | 1.73 | 1.81 | 2.12 |

- Uncertainty and fear worked their way into global financial markets in the third quarter as volatility spiked and equities declined in value. Concerns centered on China, where anemic global growth appears to be sapping the world's second largest economy.
- The People's Bank of China (PBOC) surprised market participants when they unexpectedly devalued the yuan in August. The PBOC claimed the devaluation was consistent with its effort to move towards a more market-oriented economy and currency but many suspected it was an effort to prop up faltering growth Additionally, the PBOC provided further monetary stimulus by cutting interest rates for the fifth time since November and lowering bank reserve requirements.
- Commodities also felt the weight of the decelerating global economy with oil sinking to below $39 per barrel before ending September at $45, down 24% for the quarter.
- The Fed decided to keep its 0% to 0.25% target range for the federal funds rate unchanged during the highly anticipated September meeting. The Federal Open Market Committee cited deteriorating global macroeconomic conditions as well as below-target inflation in the U.S. as their main concerns (see previous slide). Chair Janet Yellen also noted, in a late September speech, that the first increase will still likely be this year.
- In Europe, the economy continues its weak growth trend in the face of quantitative easing by the European Central Bank. Inflation is non-existent as year-over-year euro currency bloc prices declined 0.1% in September. Excluding food and energy, prices rose 0.9% over that time frame. Unemployment remains stubbornly high at 11%, down from 11.9% to start the year. Early in the quarter, Greece narrowly averted a "Grexit" and was granted its third bailout in five years to allow the country to remain a member of the European Monetary Union.

# Market Summary

## Third Quarter 2015

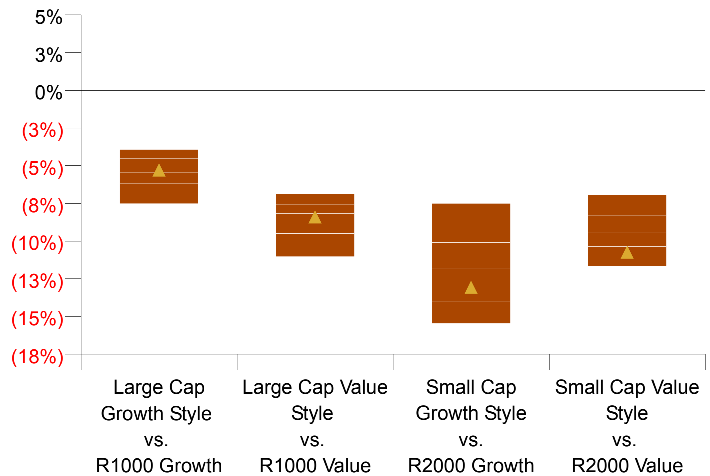
| Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| NFI-ODCE Val Gross 3.7% | NFI-ODCE Val Gross 14.9% | NFI-ODCE Val Gross 13.4% | NFI-ODCE Val Gross 14.0% | ML:High Yield CP Idx 7.0% |
| Barclays:Aggregate Index 1.2% | Barclays:Aggregate Index 2.9% | Russell:3000 Index 12.5% | S&P:500 13.3% | Russell:3000 Index 6.9% |
| 3 Month T-Bill 0.0% | Russell:2000 Index 1.2% | S&P:500 12.4% | Russell:3000 Index 13.3% | S&P:500 6.8% |
| ML:High Yield CP Idx (4.9%) | 3 Month T-Bill 0.0% | Russell:2000 Index 11.0% | Russell:2000 Index 11.7% | NFI-ODCE Val Gross 6.7% |
| S&P:500 (6.4%) | Russell:3000 Index (0.5%) | ML:High Yield CP Idx 3.4% | ML:High Yield CP Idx 5.9% | Russell:2000 Index 6.5% |
| Russell:3000 Index (7.2%) | S&P:500 (0.6%) | MSCI:ACWI x US (Net) 2.3% | Barclays:Aggregate Index 3.1% | Barclays:Aggregate Index 4.6% |
| Russell:2000 Index (11.9%) | ML:High Yield CP Idx (3.5%) | Barclays:Aggregate Index 1.7% | MSCI:ACWI x US (Net) 1.8% | MSCI:Emer Markets 4.6% |
| MSCI:ACWI x US (Net) (12.2%) | MSCI:ACWI x US (Net) (12.2%) | 3 Month T-Bill 0.1% | 3 Month T-Bill 0.1% | MSCI:ACWI x US (Net) 3.0% |
| MSCI:Emer Markets (17.8%) | MSCI:Emer Markets (19.0%) | MSCI:Emer Markets (4.9%) | MSCI:Emer Markets (3.2%) | 3 Month T-Bill 1.3% |

# US Equity

## Third Quarter 2015

- The Russell 3000 Index suffered its worst quarterly performance in four years as a result of August's market selloff, slumping 7.2% for the quarter.
- While all capitalizations suffered, large caps lost the least (Russell 1000: -6.8%), followed by midcaps (Russell Midcap: -8.0%) and small caps trailed considerably (Russell 2000: -11.9%).
- Style performance was mixed with growth holding up better than value among large caps but underperforming value among smaller stocks.

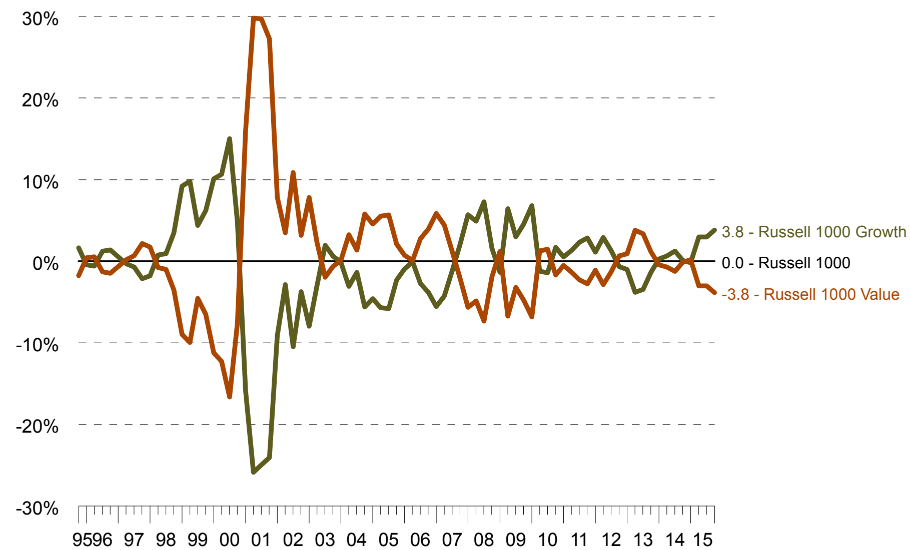
### Callan Style Group Quarterly Returns




| | Large Cap Growth Style vs. R1000 Growth | Large Cap Value Style vs. R1000 Value | Small Cap Growth Style vs. R2000 Growth | Small Cap Value Style vs. R2000 Value |
|---|---|---|---|---|
| 10th Percentile | -3.94 | -6.89 | -7.54 | -6.98 |
| 25th Percentile | -4.54 | -7.54 | -10.10 | -8.32 |
| Median | -5.46 | -8.18 | -11.84 | -9.46 |
| 75th Percentile | -6.16 | -9.49 | -14.03 | -10.36 |
| 90th Percentile | -7.48 | -11.00 | -15.44 | -11.65 |
| Benchmark ▲ | -5.29 | -8.39 | -13.06 | -10.73 |

Source: Russell Investment Group

### Rolling One-Year Relative Returns (versus Russell 1000 Index)

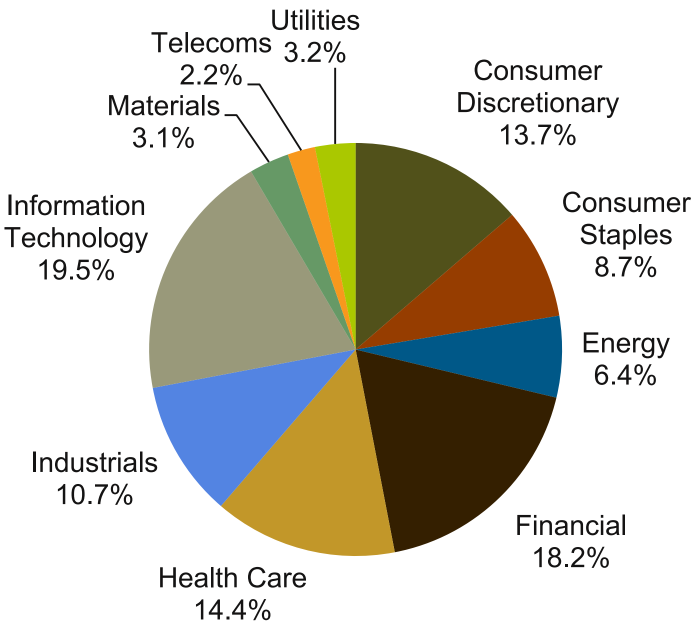



Source: Russell Investment Group

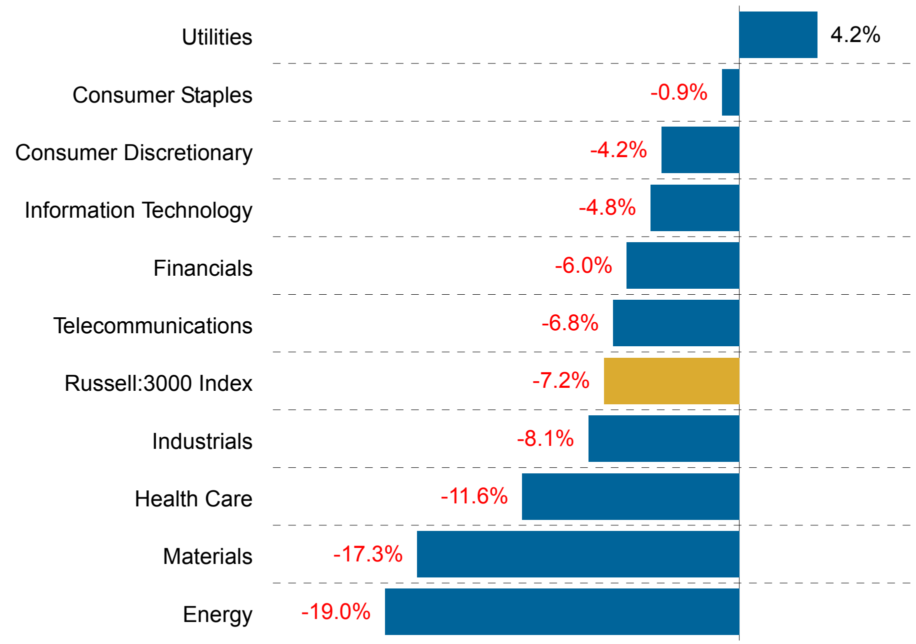
# US Equity Overview

## Third Quarter 2015

### Economic Sector Exposure (Russell 3000)




### Economic Sector Returns (Russell 3000




Source: Russell Investment Group

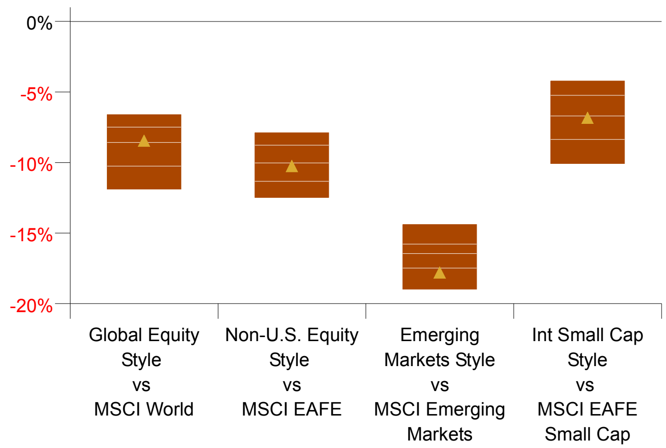
- Consistent with the "risk off" sentiment evident in the 3rd quarter, defensive sectors within the Russell 3000 Index fared best. Utilities (+4.2%) and Consumer Staples (-0.9%) were the top performers. Commodity price sensitive sectors such as Basic Materials (-17.3%) and Energy (-19.0%) were the hardest hit in an environment of slowing global growth converging with falling commodity prices.
- The typically defensive Health Care (-11.6%) sector was the exception as Democratic presidential front runner Hillary Clinton sent the sector reeling by unveiling plans to make prescription drugs more affordable.

# Non-US Equity

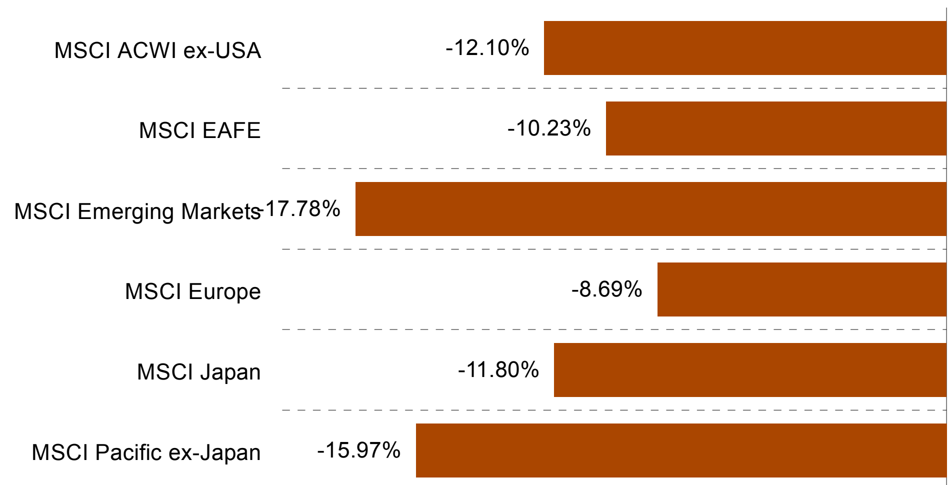
## Third Quarter 2015

- Developed foreign equities trailed their domestic indices counterparts, in US dollar terms. Broadly representing both developed and emerging stocks, the MSCI ACWI ex-US was down 12.1%. Returns measured in local currencies ended the quarter slightly ahead of dollar denominated returns (MSCI ACWI ex-US LC Index: -9.6%).
- Regionally, Europe declined the least, down 8.7%, while Japan performed about in line with broad international equity. Emerging equity markets were the most severely impacted by slowing growth, falling commodity prices and capital outflows as the MSCI Emerging Markets Index declined 17.8%.

**Callan Style Group Quarterly Returns**




| | Global Equity Style vs MSCI World | Non-U.S. Equity Style vs MSCI EAFE | Emerging Markets Style vs MSCI Emerging Markets | Int Small Cap Style vs MSCI EAFE Small Cap |
|---|---|---|---|---|
| 10th Percentile | -6.60 | -7.88 | -14.38 | -4.22 |
| 25th Percentile | -7.49 | -8.76 | -15.78 | -5.23 |
| Median | -8.57 | -10.02 | -16.44 | -6.69 |
| 75th Percentile | -10.25 | -11.33 | -17.47 | -8.36 |
| 90th Percentile | -11.88 | -12.47 | -18.97 | -10.08 |
| Benchmark ▲ | -8.45 | -10.23 | -17.78 | -6.83 |

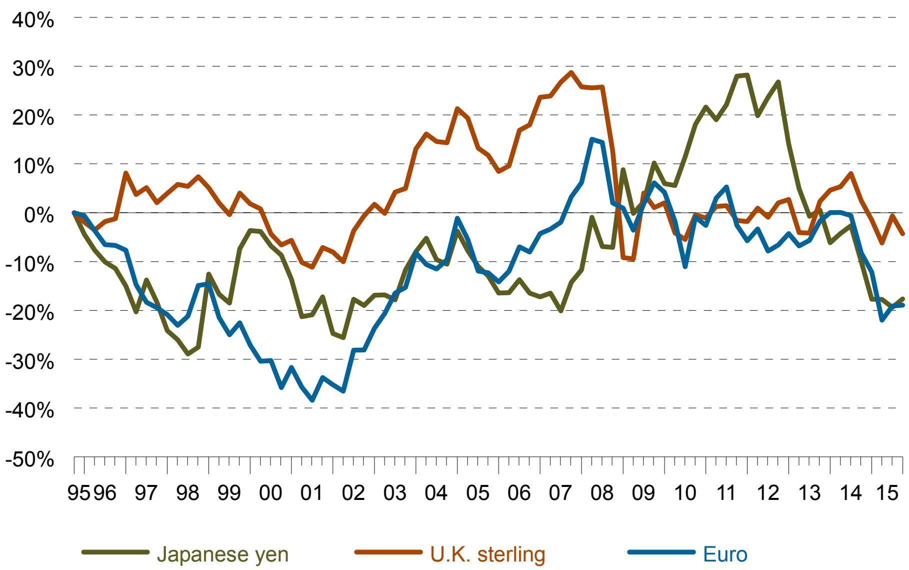



Source: MSCI

# Currency and Yield Curve

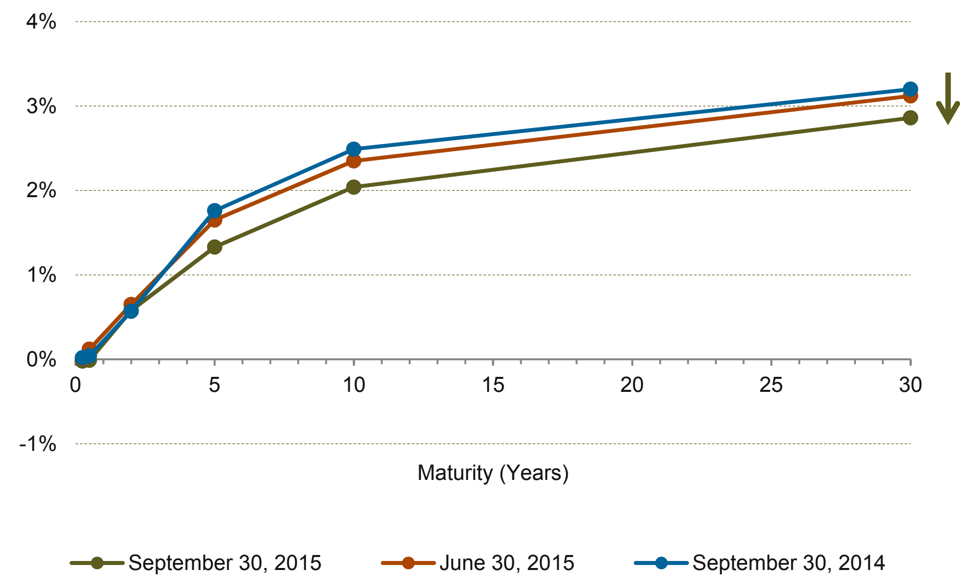
## Third Quarter 2015

**Major Currencies' Cumulative Returns (vs. U.S. Dollar)**




*Euro returns from 1Q99. German mark prior to 1Q99.
Source: MSCI

**U.S. Treasury Yield Curves**




Source: Bloomberg

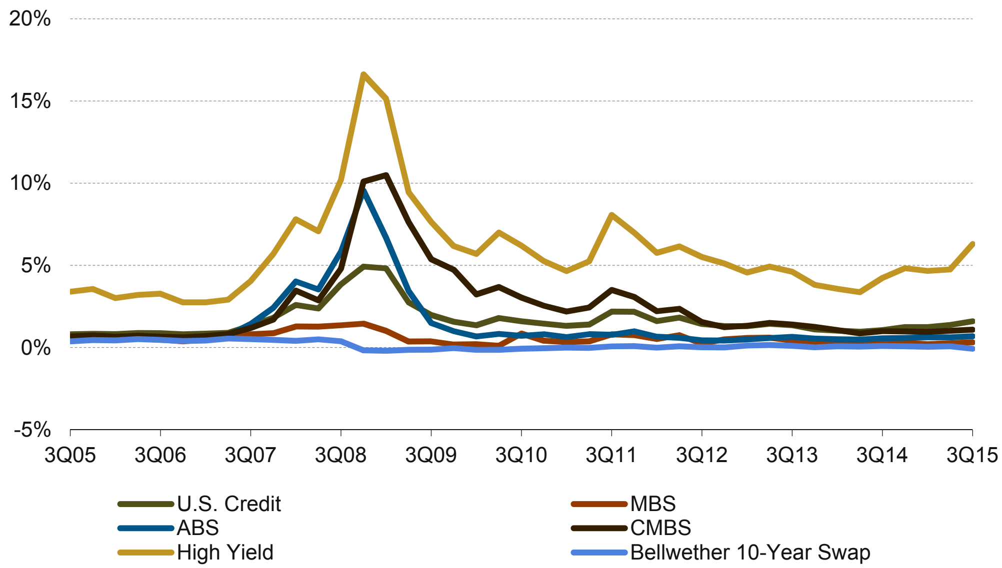
- Virtually all emerging currencies depreciated against the dollar, though some developed currencies appreciated in expectation of a U.S. interest rate increase, which ultimately did not materialize.
- The U.S. bond market reversed course with interest rates falling and Treasuries rising. The yield curve flattened out once again in the third quarter. The 10-year U.S. Treasury yield decreased 32 bps. Yields on longer-term bonds decreased by a similar amount.

# Fixed Income

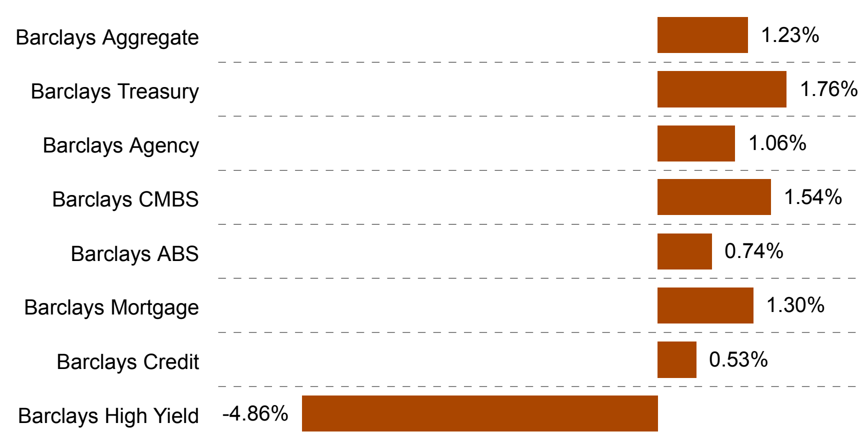
## Third Quarter 2015

- The Barclays Aggregate Index was up a more modest 1.2% for the quarter as corporate bonds underperformed in the risk-off environment. For the quarter, corporates underperformed like-duration Treasuries by nearly 150 bps.
- High yield corporates suffered even more; the Barclays High Yield Index sank 4.9%. Ex-Energy, the High Yield Index was down 3.0%. The yield on the High Yield Index rose to 8% as bonds weakened and the sector was hit with more than $10 billion in outflows from open end mutual funds and more than $3 billion from ETFs during the quarter.

**Effective Yield Over Treasuries**




**Absolute Returns for Quarter ended September 30, 2015**



# OPERF Total Regular Account

## Performance Summary for the Third Quarter 2015

**Total Fund:**

For the third quarter of 2015, the Total Regular Account retreated 3.06% (-3.12% net of fees),protecting against the 3.36% loss for the Policy Target, and ranked in the 13th percentile of the $10B+ public fund peer group. For the 12 months ended September 30, 2015, the Account gained 1.49% (+1.23% net of fees), just trailing the Policy Target return of 1.37% on a net of fees basis, and ranked in the 7th percentile of Callan's $10B+ public fund peer group.

**Asset Classes:**

— **U.S. Equity:** The U.S. Equity Portfolio lost 8.01% (-8.05% net of fees) for the quarter, trailing the 7.25% decline in the Russell 3000 Index. This return ranked the Portfolio in the 74th percentile of Callan's Public Fund: $10B+ Domestic Equity (gross) peer group. On a trailing one year basis, the Portfolio retreated 0.62% (-0.77% net of fees) versus a decline of 0.49% for the benchmark, and ranked in the 41st percentile of the peer group. 10 year results are positive on an absolutely basis but are now slightly behind the benchmark and rank near the median of the peer group.

— **International Equity:** The International Equity Portfolio sank 11.24% (-11.32% net of fees) for the quarter versus the 11.88% drop in the MSCI ACWI ex-U.S. IMI Index. This return ranked the Portfolio in the top 26th percentile of Callan's Public Fund: $10B+ International Equity (gross) peer group. For the trailing year, the Portfolio lost 8.66% (-9.00% net of fees), protecting against the 11.42% decline in the benchmark, and ranked in the 22nd percentile of the peer group. 10 year results remain well ahead of the benchmark and rank in the top quartile of the peer group.

— **Fixed Income:** The Fixed Income Portfolio added 0.02% (-0.03% net of fees) in the quarter, lagging the 0.16% gain in the Custom Benchmark. This return ranked the Portfolio in the 72nd percentile of Callan's Public Funds $10+B US Fixed income (Gross) peer group. For the trailing year, the Portfolio gained 1.76% (+1.54% net of fees) versus 1.62% for the benchmark. This return ranked the Portfolio in the 59th percentile of the peer group. 10 year results continue to be favorable versus both the benchmark and peer group.

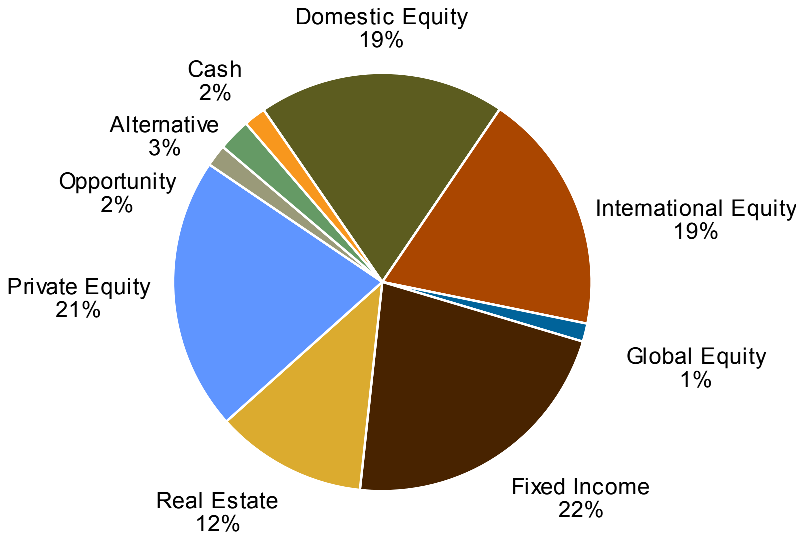
— **Private Equity:** The Private Equity Portfolio's returns remain strong on an absolute basis, though the 10 year net return of 11.63% is just slightly behind the 11.77% gain in the benchmark.

— **Real Estate:** The Real Estate Portfolio continues to show solid absolute results over the last decade with three and five year returns ahead of the benchmark. On a trailing 10 year basis, the portfolio's gain of 7.68% is just slightly behind the 8.16% return for the benchmark over the same time period.

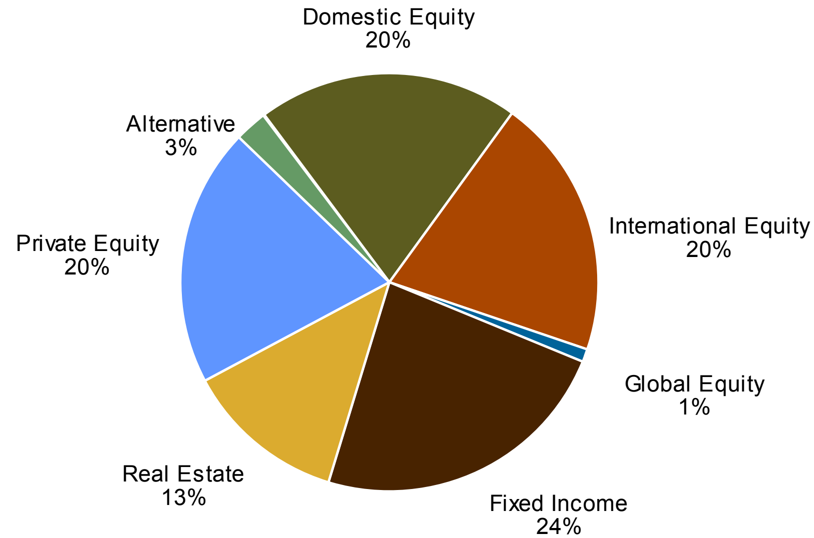
# OPERF Total Regular Account

## Asset Allocation as of September 30, 2015

### Actual Asset Allocation




### Target Asset Allocation




| Asset Class | $000s Actual | Weight Actual | Target | Percent Difference | $000s Difference |
|---|---|---|---|---|---|
| Domestic Equity | 12,862,535 | 19.1% | 20.2% | (1.2%) | (801,518) |
| International Equity | 12,598,370 | 18.7% | 20.2% | (1.6%) | (1,065,684) |
| Global Equity | 915,416 | 1.4% | 1.0% | 0.4% | 240,648 |
| Fixed Income | 14,945,906 | 22.1% | 23.5% | (1.4%) | (911,144) |
| Real Estate | 7,878,623 | 11.7% | 12.5% | (0.8%) | (555,978) |
| Private Equity | 14,235,716 | 21.1% | 20.0% | 1.1% | 740,354 |
| Opportunity | 1,169,580 | 1.7% | 0.0% | 1.7% | 1,169,580 |
| Alternative | 1,690,121 | 2.5% | 2.5% | 0.0% | 3,201 |
| Cash | 1,180,540 | 1.7% | 0.0% | 1.7% | 1,180,540 |
| Total | 67,476,806 | 100.0% | 100.0% | | |

# OPERF Total Regular Account

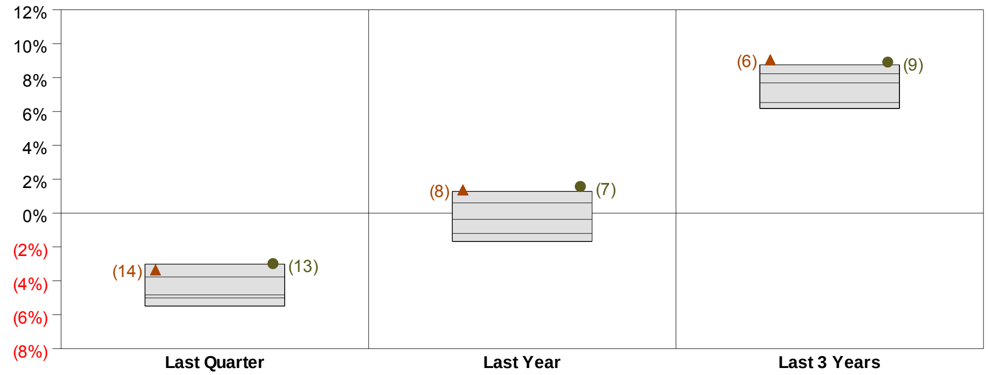
## Net Performance by Asset Class as of September 30, 2015

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Total Public Equity** | **(9.72%)** | **(4.91%)** | **8.42%** | **7.81%** | **4.92%** |
| MSCI ACWI IMI Net | (9.59%) | (6.21%) | 7.20% | 6.99% | 4.84% |
| **Domestic Equity** | **(8.05%)** | **(0.77%)** | **12.07%** | **12.70%** | **6.59%** |
| Russell 3000 Index | (7.25%) | (0.49%) | 12.53% | 13.28% | 6.92% |
| CAI Pub Fund:10+ Dom Eq | (7.57%) | (1.06%) | 12.39% | 13.07% | 6.91% |
| **International Equity** | **(11.32%)** | **(9.00%)** | **4.68%** | **3.70%** | **4.61%** |
| MSCI ACWI ex-US IMI Index | (11.88%) | (11.42%) | 2.75% | 2.08% | 3.47% |
| CAI Pub Fund:10+ Intl Eq | (12.33%) | (10.99%) | 3.21% | 2.74% | 3.69% |
| **Total Fixed Income** | **(0.03%)** | **1.54%** | **2.36%** | **4.50%** | **5.68%** |
| Custom FI Benchmark | 0.16% | 1.62% | 1.86% | 3.34% | 4.71% |
| CAI Pub Fund: 10+ US FI | 0.20% | 1.77% | 1.87% | 3.73% | 5.03% |
| **Total Real Estate** | **1.83%** | **11.44%** | **12.68%** | **13.22%** | **7.68%** |
| Total Real Estate ex REITs | 2.48% | 13.38% | 14.06% | 14.01% | 7.99% |
| NCREIF Property Index Qtr Lag | 3.14% | 12.98% | 11.63% | 12.72% | 8.16% |
| Public Plan - Real Estate | 2.23% | 11.67% | 11.63% | 12.30% | 6.04% |
| **Total Private Equity** | **3.72%** | **8.61%** | **14.82%** | **14.26%** | **11.63%** |
| Russell 3000 + 300 BPS Qtr Lag | 0.88% | 10.50% | 21.22% | 21.02% | 11.77% |
| **Total Alternative** | **0.09%** | **(5.90%)** | **2.32%** | **-** | **-** |
| CPI + 4% | 0.69% | 3.96% | 4.97% | - | - |
| **Opportunity Portfolio** | **(1.03%)** | **3.18%** | **9.73%** | **10.31%** | **-** |
| Russell 3000 Index | (7.25%) | (0.49%) | 12.53% | 13.28% | 6.92% |
| CPI + 5% | 0.76% | 4.36% | 5.65% | 6.66% | 6.79% |
| **Total Regular Account** | **(3.12%)** | **1.23%** | **8.58%** | **8.92%** | **6.44%** |
| Total Regular Account ex-Overlay | (3.16%) | 1.15% | 8.53% | 8.84% | 6.47% |
| OPERF Policy Benchmark* | (3.36%) | 1.37% | 9.05% | 9.42% | 6.67% |

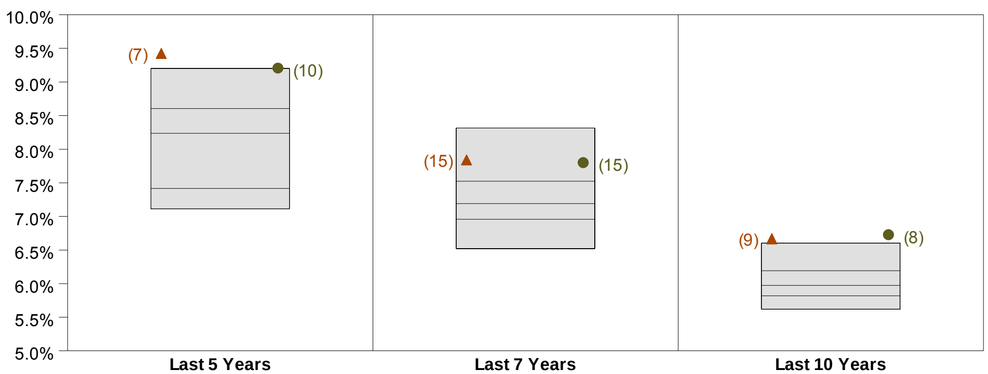
*Policy Benchmark = 41.5% MSCI ACWI-net, 23.5% Custom FI Benchmark, 20.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% NCREIF Property Index Qtr Lag, 2.5% CPI + 400 bps

# OPERF Total Regular Account

## Gross Performance and Peer Group Rankings as of September 30, 2015*




| | Last Quarter | Last Year | Last 3 Years |
|---|---|---|---|
| 10th Percentile | (3.02) | 1.28 | 8.76 |
| 25th Percentile | (3.77) | 0.60 | 8.22 |
| Median | (4.83) | (0.37) | 7.68 |
| 75th Percentile | (5.00) | (1.21) | 6.52 |
| 90th Percentile | (5.49) | (1.67) | 6.17 |
| **Total Regular Account** ● | (3.06) | 1.49 | 8.83 |
| Policy Target ▲ | (3.36) | 1.37 | 9.05 |




| | Last 5 Years | Last 7 Years | Last 10 Years |
|---|---|---|---|
| 10th Percentile | 9.20 | 8.32 | 6.60 |
| 25th Percentile | 8.60 | 7.52 | 6.19 |
| Median | 8.23 | 7.19 | 5.97 |
| 75th Percentile | 7.42 | 6.96 | 5.82 |
| 90th Percentile | 7.11 | 6.52 | 5.62 |
| **Total Regular Account** ● | 9.19 | 7.78 | 6.71 |
| Policy Target ▲ | 9.42 | 7.84 | 6.67 |

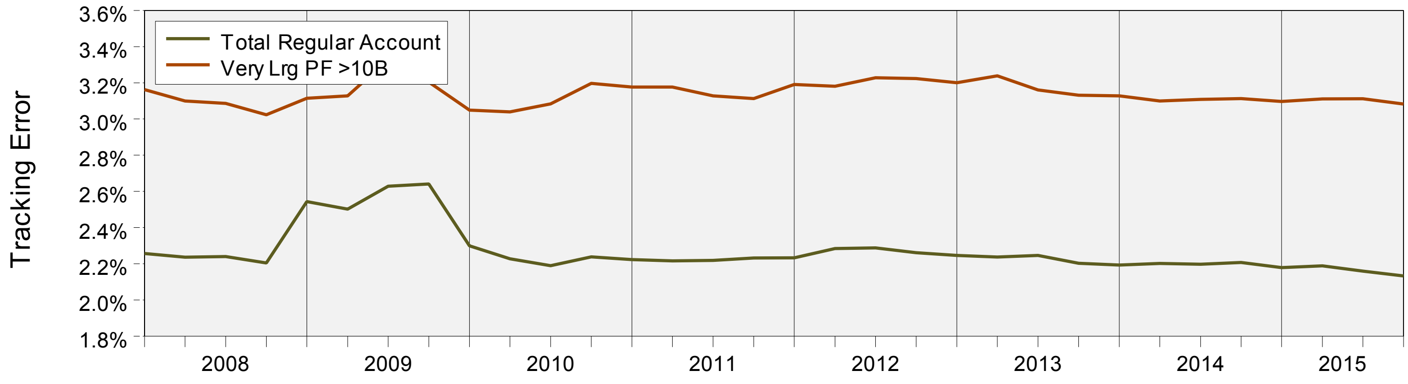
*Versus Callan's Very Large Public Funds (> $10 billion) Peer Group

Policy target= 41.5% MSCI ACWI-net, 23.5% Custom FI Benchmark, 20.0% Russell 3000 + 300 BPS Qtr Lag, 12.5% NCREIF Property Index Qtr Lag, 2.5% CPI + 400 bps

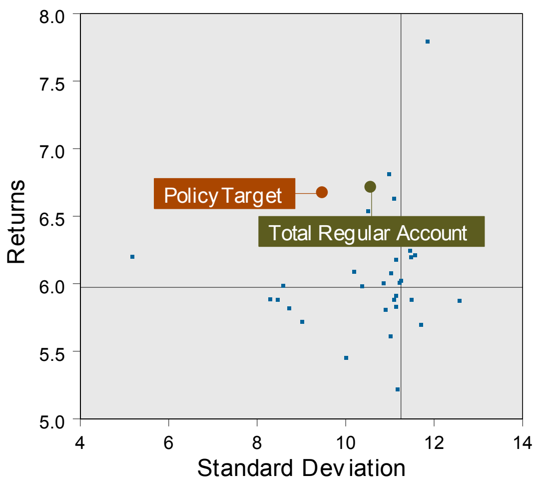
# OPERF Total Regular Account

## Risk Analysis vs. Very Large Public Funds (>10 billion)
## Ten Years ended September 30, 2015

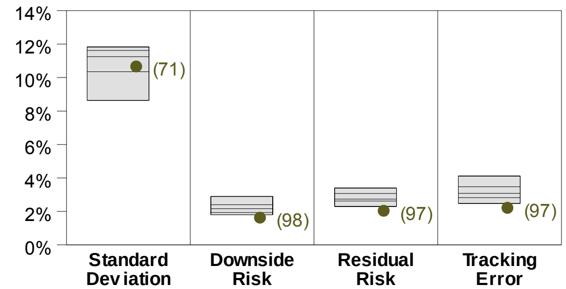
**Rolling 40 Quarter Tracking Error vs Policy Target**




**Risk Analysis vs Very Lrg Public Funds (>10B) (Gross)**
**Ten Years Ended September 30, 2015**




**Risk Statistics Rankings vs Policy Target**
**Rankings Against Very Lrg Public Funds (>10B) (Gross)**
**Ten Years Ended September 30, 2015**

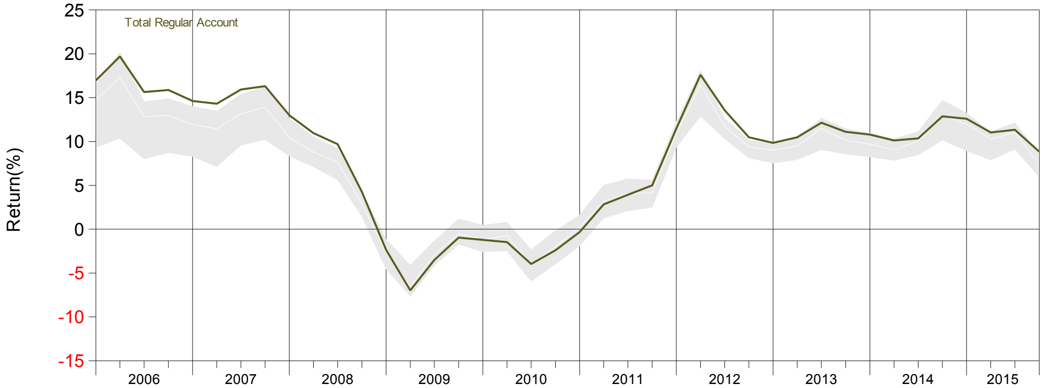



| | Standard Deviation | Downside Risk | Residual Risk | Tracking Error |
|---|---|---|---|---|
| 10th Percentile | 11.84 | 2.90 | 3.40 | 4.11 |
| 25th Percentile | 11.62 | 2.41 | 3.08 | 3.47 |
| Median | 11.25 | 2.16 | 2.74 | 3.08 |
| 75th Percentile | 10.35 | 1.93 | 2.62 | 2.83 |
| 90th Percentile | 8.64 | 1.81 | 2.30 | 2.48 |
| **Total Regular Account** ● | 10.59 | 1.55 | 1.95 | 2.13 |

# OPERF Total Regular Account

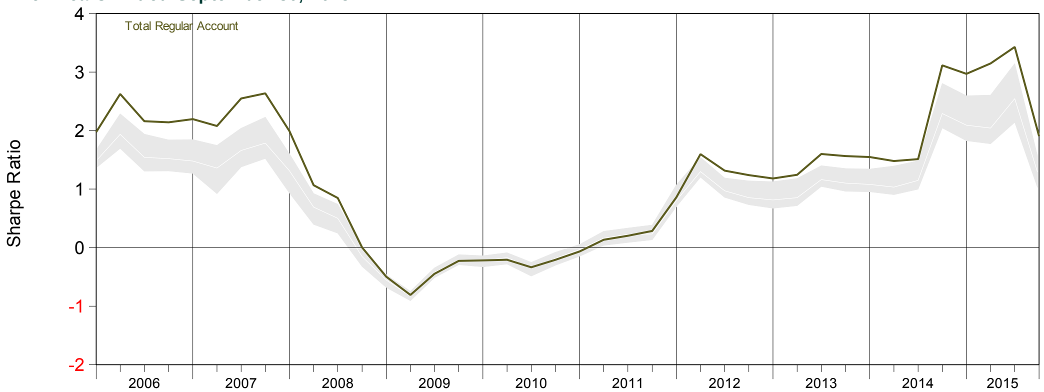
## Historical Consistency Analysis vs. Very Large Public Funds (>10 billion)

Rolling Three Year Return(%) Relative to Policy Target
Ten Years Ended September 30, 2015




| Rolling Three Year Period Analysis | Median | Portfolio |
|---|---|---|
| Average Annual Return(%) | 7.52% | 8.51% |
| % Positive Periods | 80% | 78% |
| Average Ranking | 50 | 28 |

Rolling Three Year Sharpe Ratio Relative to Policy Target
Ten Years Ended September 30, 2015




| Rolling Three Year Period Analysis | Median | Portfolio |
|---|---|---|
| Average Annual Sharpe Ratio | 0.85% | 1.24% |
| % Positive Periods | 75% | 78% |
| Average Ranking | 50 | 19 |

# OPERF Public Equity

## Asset Distribution as of September 30, 2015

| | Market Values | % of Total Fund |
|---|---|---|
| **Total Public Equity** | $ 26,415,620,494 | 38.72% |
| **Domestic Equity** | $ 12,862,535,129 | 18.88% |
| Large Cap Growth | $ 1,333,618,538 | 1.96% |
| Large Cap Value | $ 1,936,309,047 | 2.84% |
| Small Cap Growth | $ 223,943,317 | 0.33% |
| Small Cap Value | $ 700,579,466 | 1.03% |
| Market Oriented | $ 8,628,784,837 | 12.67% |
| Other | $ 39,299,924 | 0.05% |
| **International Equity** | $ 12,598,369,543 | 18.49% |
| International Market Oriented (Core) | $ 6,615,545,888 | 9.71% |
| International Value | $ 1,585,351,910 | 2.33% |
| International Growth | $ 1,315,052,500 | 1.93% |
| International Small Cap | $ 1,306,988,305 | 1.92% |
| Emerging Markets | $ 1,775,430,940 | 2.61% |
| **Global Equity** | $ 915,415,898 | 1.34% |

# OPERF Public Equity

## Style Exposure as of September 30, 2015

### Style Exposure Matrix
### Holdings as of September 30, 2015

| | Value | Core | Growth | Total |
|---|---|---|---|---|
| Large | 22.1% (225)<br>23.6% (261) | 18.0% (246)<br>22.1% (270) | 20.7% (274)<br>24.8% (318) | 60.8% (745)<br>70.4% (849) |
| Mid | 6.5% (318)<br>5.2% (467) | 8.4% (438)<br>6.7% (569) | 8.7% (455)<br>7.4% (662) | 23.6% (1211)<br>19.3% (1698) |
| Small | 3.1% (602)<br>2.7% (1030) | 4.7% (839)<br>3.3% (1250) | 3.6% (454)<br>2.7% (1117) | 11.5% (1895)<br>8.7% (3397) |
| Micro | 1.3% (1242)<br>0.6% (1018) | 1.9% (1101)<br>0.6% (851) | 1.0% (323)<br>0.4% (679) | 4.2% (2666)<br>1.6% (2548) |
| **Total** | 33.1% (2387)<br>32.1% (2776) | 33.0% (2624)<br>32.6% (2940) | 33.9% (1506)<br>35.3% (2776) | 100.0% (6517)<br>100.0% (8492) |

### Style Exposure Matrix
### Holdings as of September 30, 2015

| | Value | Core | Growth | Total |
|---|---|---|---|---|
| Europe/ Mid East | 4.8% (398)<br>6.5% (461) | 6.1% (424)<br>7.3% (444) | 7.4% (297)<br>8.8% (483) | 18.3% (1119)<br>22.6% (1388) |
| N. America | 23.4% (864)<br>19.2% (827) | 20.2% (1116)<br>17.8% (1088) | 19.6% (667)<br>18.7% (892) | 63.2% (2647)<br>55.6% (2807) |
| Pacific | 2.8% (709)<br>3.5% (569) | 3.4% (493)<br>4.3% (555) | 3.8% (276)<br>4.2% (531) | 9.9% (1478)<br>12.0% (1655) |
| Emerging/ FM | 2.1% (416)<br>3.0% (919) | 3.3% (591)<br>3.3% (853) | 3.2% (266)<br>3.6% (870) | 8.6% (1273)<br>9.8% (2642) |
| **Total** | 33.1% (2387)<br>32.1% (2776) | 33.0% (2624)<br>32.6% (2940) | 33.9% (1506)<br>35.3% (2776) | 100.0% (6517)<br>100.0% (8492) |

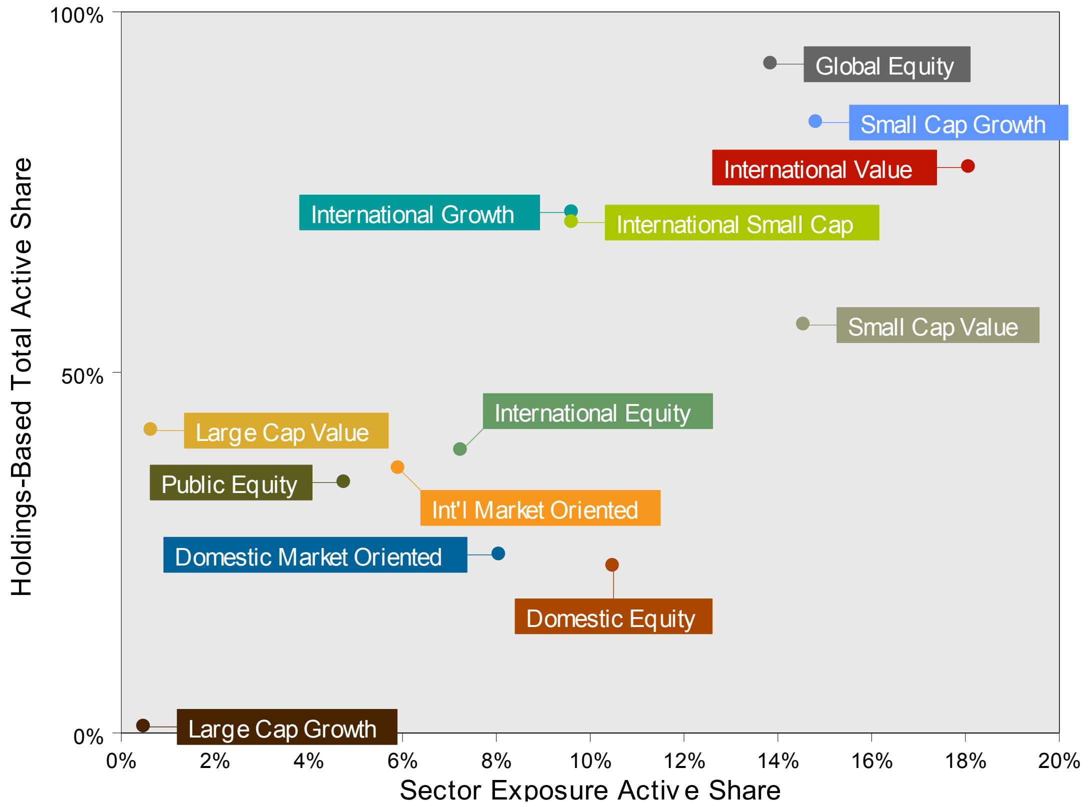
- **Public Equity**
- **MSCI ACWI IMI**

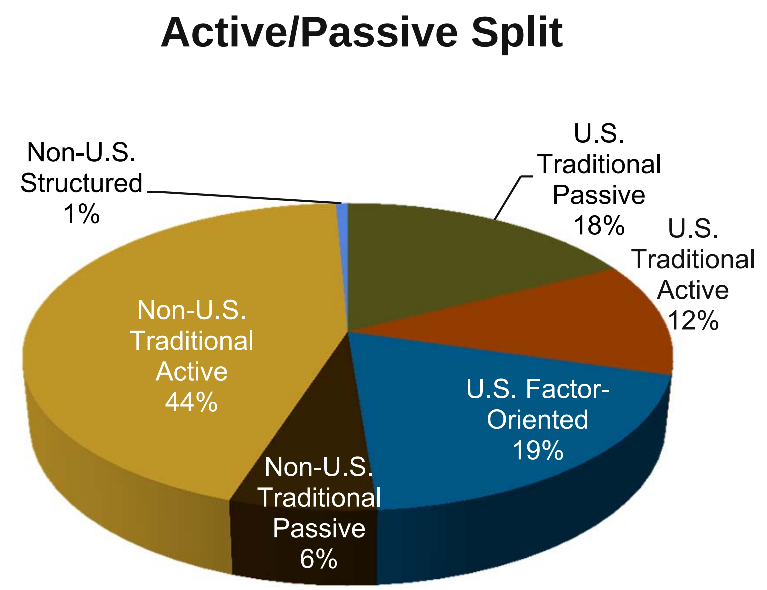
Percentages may not sum to 100% due to rounding

# OPERF Public Equity

## Public Market Allocation as of September 30, 2015

**Active Share Analysis**



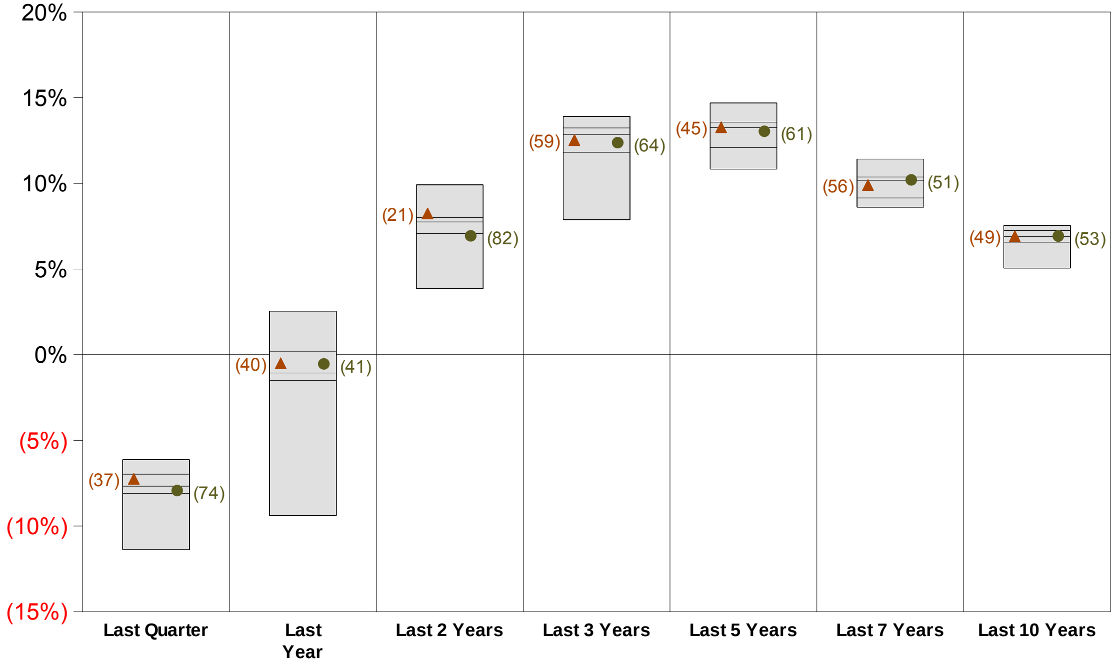




| | Weight % | Index | Total Act Share | Non-Idx Act Share | Sector Act Share | Number Securities |
|---|---|---|---|---|---|---|
| *Public Equity | 100.00% | AC WORLD IMI | 34.73% | 2.33% | 4.77% | 6662 |

# OPERF U.S. Equity

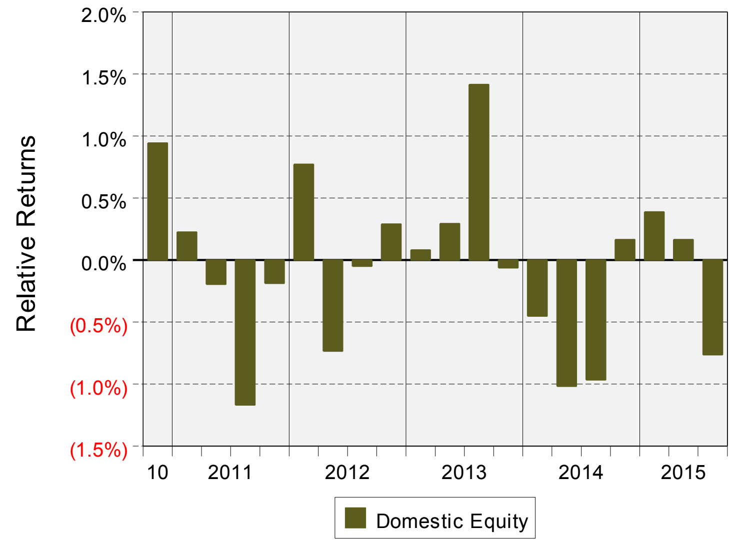
## Performance Analysis as of September 30, 2015

**Performance vs CAI Pub Fund:10+ Dom Eq (Gross)**




| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 7 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | (6.13) | 2.55 | 9.91 | 13.91 | 14.69 | 11.42 | 7.55 |
| 25th Percentile | (6.98) | 0.20 | 8.00 | 13.24 | 13.57 | 10.37 | 7.25 |
| Median | (7.68) | (1.07) | 7.75 | 12.86 | 13.26 | 10.18 | 6.90 |
| 75th Percentile | (8.10) | (1.51) | 7.07 | 11.81 | 12.10 | 9.14 | 6.56 |
| 90th Percentile | (11.38) | (9.39) | 3.86 | 7.88 | 10.83 | 8.60 | 5.06 |
| **Domestic Equity** ● | (8.01) | (0.62) | 6.86 | 12.30 | 12.96 | 10.13 | 6.85 |
| Russell 3000 Index ▲ | (7.25) | (0.49) | 8.25 | 12.53 | 13.28 | 9.91 | 6.92 |

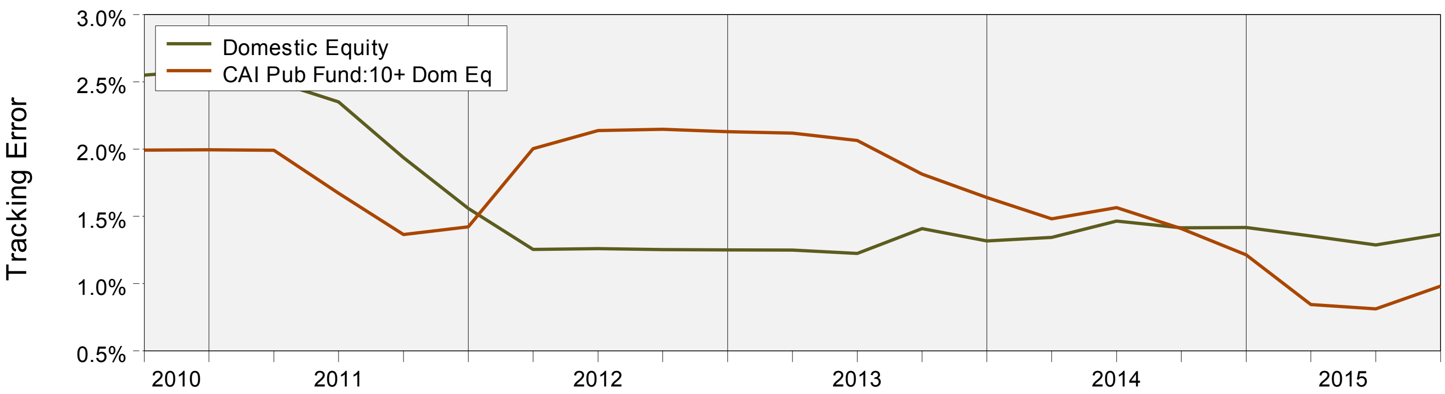
**Relative Return vs Russell 3000 Index**



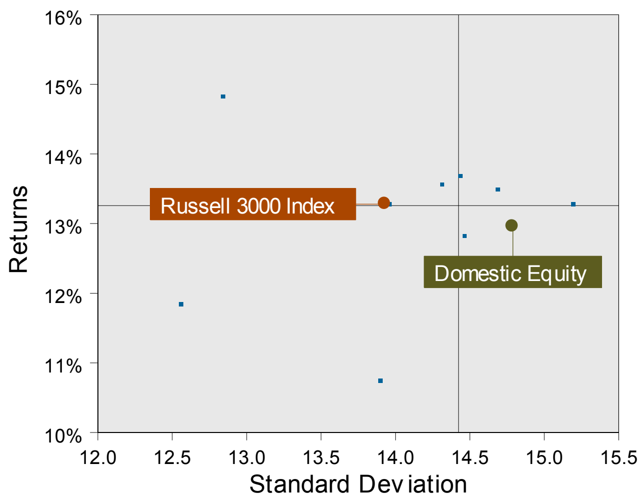
# OPERF U.S. Equity

## Risk Analysis as of September 30, 2015

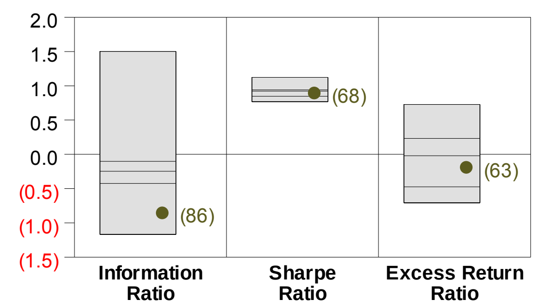
### Rolling 12 Quarter Tracking Error vs Russell 3000 Index




### CAI Pub Fund:10+ Dom Eq (Gross)
### Annualized Five Year Risk vs Return




### Risk Adjusted Return Measures vs Russell 3000 Index
### Rankings Against CAI Pub Fund:10+ Dom Eq (Gross)
### Five Years Ended September 30, 2015

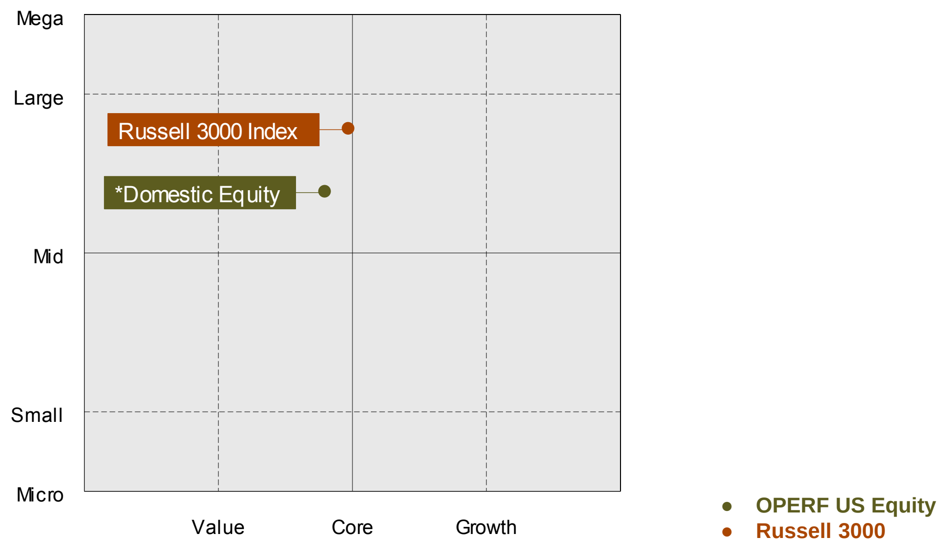



| | Information Ratio | Sharpe Ratio | Excess Return Ratio |
|---|---|---|---|
| 10th Percentile | 1.50 | 1.12 | 0.73 |
| 25th Percentile | (0.10) | 0.94 | 0.23 |
| Median | (0.25) | 0.92 | (0.02) |
| 75th Percentile | (0.42) | 0.85 | (0.47) |
| 90th Percentile | (1.17) | 0.77 | (0.71) |
| **Domestic Equity** ● | (0.88) | 0.87 | (0.21) |

# OPERF U.S. Equity

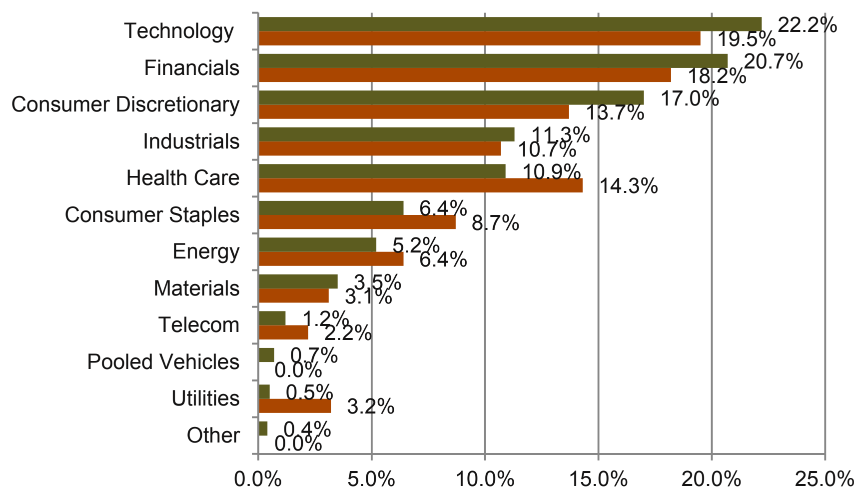
## Characteristics as of September 30, 2015

**Style Map vs CAI Pub Fund:10+ Dom Eq**
**Holdings as of September 30, 2015**




**Style Exposure Matrix**
**Holdings as of September 30, 2015**

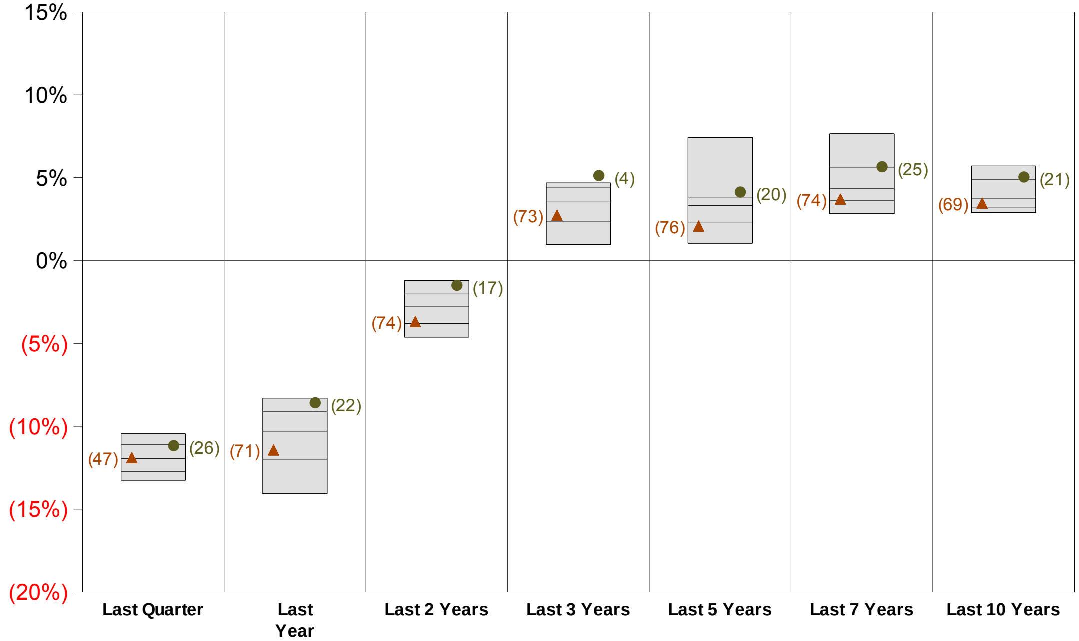
| | Value | Core | Growth | Total |
|---|---|---|---|---|
| Large | 24.9% (91)<br>26.6% (91) | 16.6% (106)<br>21.2% (105) | 19.1% (100)<br>25.0% (99) | 60.6% (297)<br>72.8% (295) |
| Mid | 8.1% (184)<br>6.0% (180) | 8.3% (218)<br>6.5% (217) | 7.6% (197)<br>5.8% (193) | 23.9% (599)<br>18.3% (590) |
| Small | 3.3% (270)<br>2.3% (327) | 4.8% (379)<br>3.3% (488) | 3.2% (216)<br>2.3% (365) | 11.4% (865)<br>7.9% (1180) |
| Micro | 1.3% (290)<br>0.4% (273) | 1.9% (314)<br>0.5% (403) | 0.9% (118)<br>0.3% (209) | 4.1% (722)<br>1.1% (885) |
| **Total** | 37.6% (835)<br>35.2% (871) | 31.7% (1017)<br>31.4% (1213) | 30.8% (631)<br>33.3% (866) | 100.0% (2483)<br>100.0% (2950) |



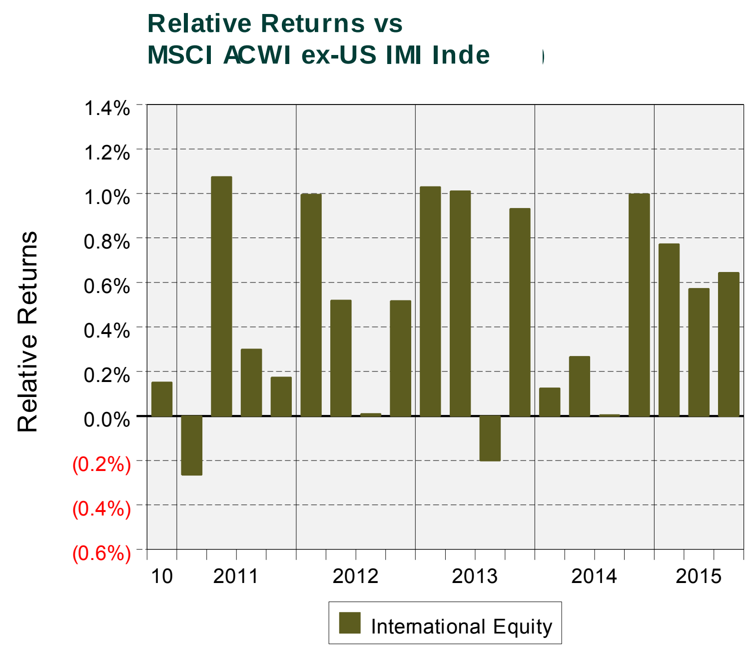

| | Wtd. Median Mkt Cap | Price/Earn. | Price/Book | Forecasted Earn. Growth | Div yield | MSCI Combined Z-Score |
|---|---|---|---|---|---|---|
| Domestic Equity | 27.28 | 14.99 | 2.21 | 10.56 | 2.09 | -0.14 |
| Russell 3000 Index | 46.22 | 15.95 | 2.43 | 11.28 | 2.16 | -0.02 |

# OPERF Non-US Equity

## Performance Analysis as of September 30, 2015




| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 7 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | (10.45) | (8.30) | (1.21) | 4.69 | 7.44 | 7.65 | 5.70 |
| 25th Percentile | (11.11) | (9.12) | (2.01) | 4.43 | 3.82 | 5.63 | 4.88 |
| Median | (11.95) | (10.29) | (2.75) | 3.54 | 3.33 | 4.34 | 3.76 |
| 75th Percentile | (12.71) | (11.99) | (3.80) | 2.34 | 2.32 | 3.64 | 3.18 |
| 90th Percentile | (13.25) | (14.07) | (4.62) | 0.97 | 1.05 | 2.83 | 2.89 |
| **International Equity** ● | (11.24) | (8.66) | (1.57) | 5.06 | 4.06 | 5.59 | 4.97 |
| MSCI ACWI ex-US IMI Index (5) ▲ | (11.88) | (11.42) | (3.68) | 2.75 | 2.08 | 3.71 | 3.47 |

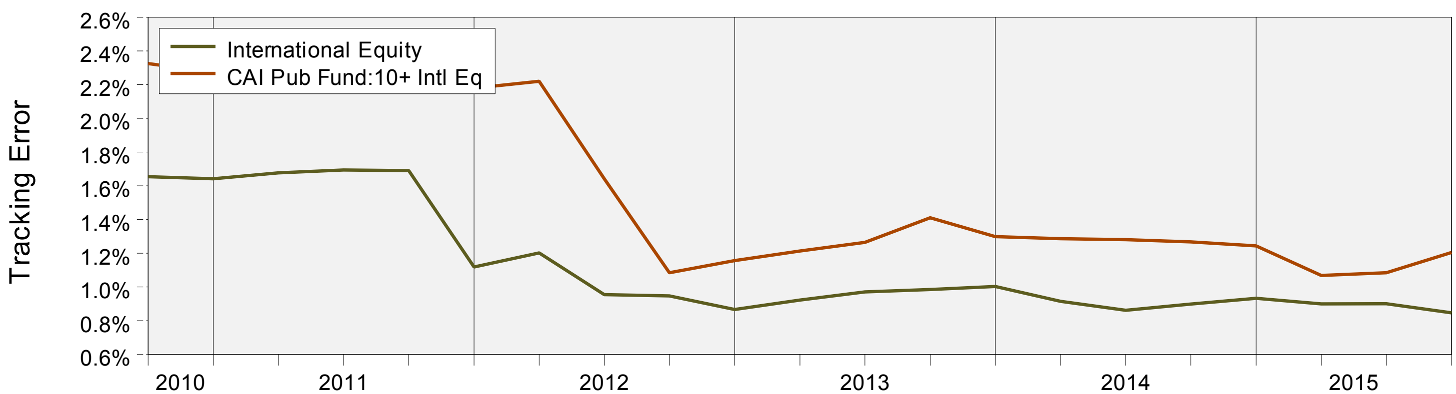



The benchmark for the International Equity portfolio was the MSCI ACWI ex US Gross Index through May 31, 2008, and the MSCI ACWI ex US IMI Net Index thereafter. Index returns above are linked.

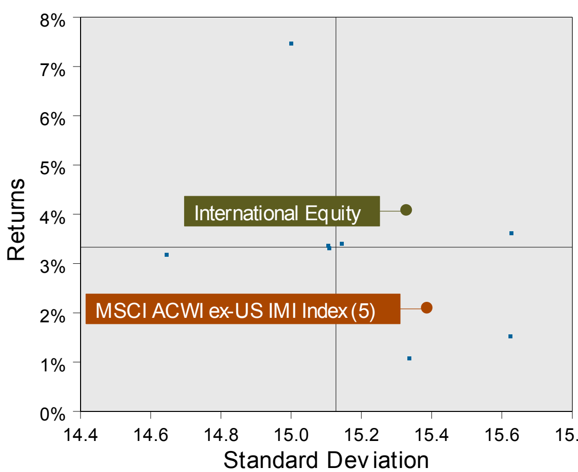
# OPERF Non-US Equity

## Risk Analysis as of September 30, 2015

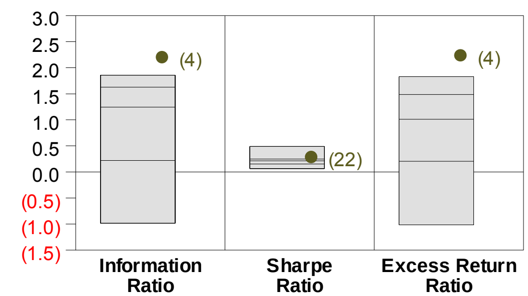
### Rolling 12 Quarter Tracking Error vs MSCI ACWI ex-US IMI Index




### CAI Pub Fund:10+ Intl Eq (Gross) Annualized Five Year Risk vs Return




### Risk Adjusted Return Measures vs MSCI ACWI ex-US IMI Index
Rankings Against CAI Pub Fund:10+ Intl Eq (Gross)
Five Years Ended September 30, 2015




| | Information Ratio | Sharpe Ratio | Excess Return Ratio |
|---|---|---|---|
| 10th Percentile | 1.86 | 0.49 | 1.83 |
| 25th Percentile | 1.63 | 0.25 | 1.49 |
| Median | 1.24 | 0.22 | 1.01 |
| 75th Percentile | 0.22 | 0.15 | 0.20 |
| 90th Percentile | (0.99) | 0.06 | (1.02) |
| **International Equity** ● | 2.18 | 0.26 | 2.21 |

The benchmark for the International Equity portfolio was the MSCI ACWI ex US Gross Index through May 31, 2008, and the MSCI ACWI ex US IMI Net Index thereafter. Index returns above are linked.

# OPERF Non-US Equity

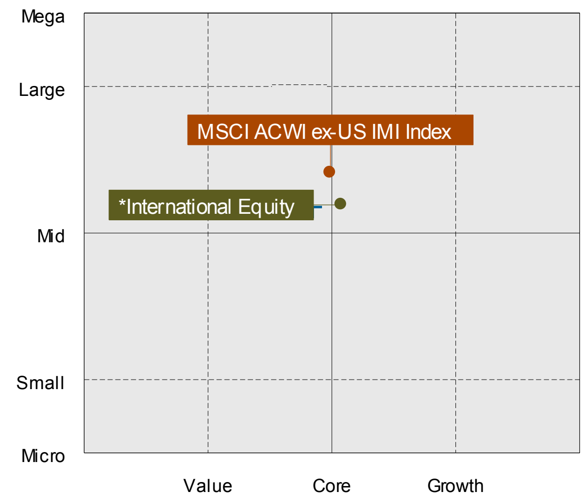
## Characteristics as of September 30, 2015

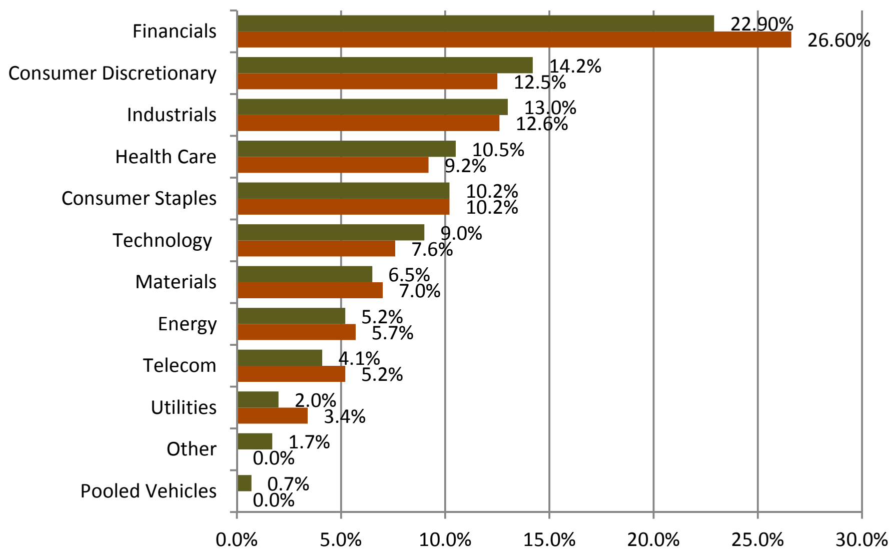
**Style Exposure Matrix**
**Holdings as of September 30, 2015**

| | Value | Core | Growth | Total |
|---|---|---|---|---|
| Europe/ Mid East | 11.3% (437)<br>12.2% (449) | 16.6% (494)<br>16.8% (463) | 21.0% (373)<br>18.4% (476) | 48.9% (1304)<br>47.5% (1388) |
| N. America | 1.4% (93)<br>1.9% (108) | 1.4% (91)<br>2.9% (129) | 1.7% (48)<br>2.0% (88) | 4.6% (232)<br>6.7% (325) |
| Pacific | 6.9% (756)<br>7.2% (556) | 9.5% (602)<br>9.2% (573) | 9.8% (350)<br>8.7% (526) | 26.3% (1708)<br>25.1% (1655) |
| Emerging/ FM | 5.3% (742)<br>6.2% (894) | 8.0% (2158)<br>7.0% (894) | 6.9% (599)<br>7.4% (854) | 20.2% (3499)<br>20.7% (2642) |
| **Total** | 25.0% (2028)<br>27.5% (2007) | 35.6% (3345)<br>35.9% (2059) | 39.5% (1370)<br>36.5% (1944) | 100.0% (6743)<br>100.0% (6010) |

● International Equity
● MSCI ACWI ex-U.S. IMI

**Style Map vs CAI Pub Fund:10+ Intl Eq**
**Holdings as of September 30, 2015**



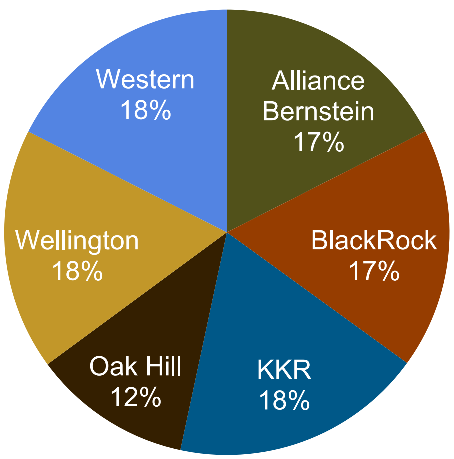

| | Wtd. Median Mkt Cap | Price/Earn. | Price/Book | Forecasted Earn. Growth | Div yield | MSCI Combined Z-Score |
|---|---|---|---|---|---|---|
| International Equity | 15.16 | 13.04 | 1.49 | 10.77 | 2.83 | 0.07 |
| MSCI ACWI ex-US IMI | 19.72 | 13.07 | 1.49 | 10.02 | 3.09 | 0.00 |

# OPERF Total Fixed Income

## Allocations as of September 30, 2015

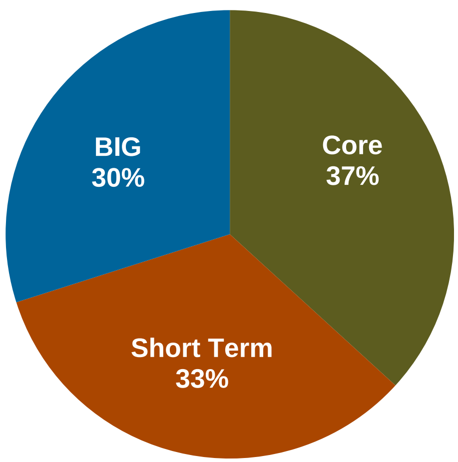
### Allocation by Manager

| Managers | Assets ($M) | % Allocation |
|---|---|---|
| AllianceBernstein | 2,614,583 | 17.5% |
| BlackRock | 2,615,134 | 17.5% |
| KKR Asset Mgmt | 2,744,824 | 18.4% |
| Oak Hill | 1,725,189 | 11.5% |
| Wellington | 2,626,568 | 17.6% |
| Western Asset Mgmt | 2,619,648 | 17.5% |
| **Total** | **$ 14,945,947** | **100.0%** |




### Allocation by Strategy

| Managers | Assets ($M) | % Allocation |
|---|---|---|
| Core | 5,496,693,655 | 36.8% |
| Short Term | 4,979,240,395 | 33.3% |
| BIG | 4,470,013,183 | 29.9% |
| **Total** | **$ 14,945,947,233** | **100.0%** |




Percentages may not sum to 100% due to rounding

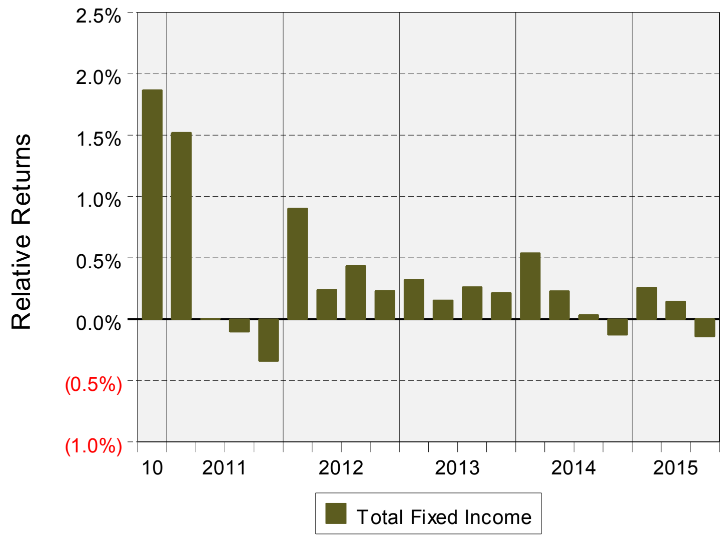
# OPERF Total Fixed Income

## Performance Analysis as of September 30, 2015

### Performance vs Public Fund 10+ B US FI (Gross)


| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 7 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 1.45 | 3.40 | 5.15 | 3.42 | 5.74 | 7.37 | 6.03 |
| 25th Percentile | 0.63 | 2.28 | 4.15 | 2.51 | 4.63 | 6.93 | 5.40 |
| Median | 0.30 | 1.84 | 3.53 | 1.88 | 3.89 | 5.94 | 5.02 |
| 75th Percentile | (0.42) | 1.21 | 2.83 | 1.24 | 3.43 | 5.25 | 4.66 |
| 90th Percentile | (0.97) | 0.72 | 2.50 | 1.08 | 2.88 | 3.76 | 3.35 |
| **Total Fixed Income** ● | 0.02 | 1.76 | 3.05 | 2.57 | 4.71 | 7.43 | 5.85 |
| Oregon Custom FI Benchmark ▲ | 0.16 | 1.62 | 2.46 | 1.86 | 3.34 | 5.07 | 4.71 |

### Relative Returns vs Oregon Custom FI Benchmark

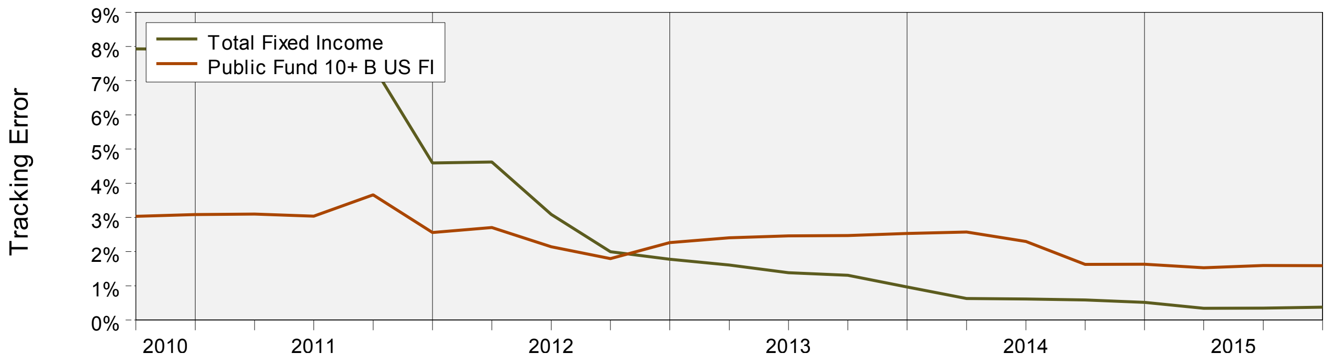



Current Benchmark = 40% Barclays Capital U.S. Aggregate Bond, 40% Barclays Capital U.S. 1-3 Govt/Credit Bond Index, 15% S&P/LSTA Leveraged Loan Index, and 5% BofA ML High Yield Master II Index

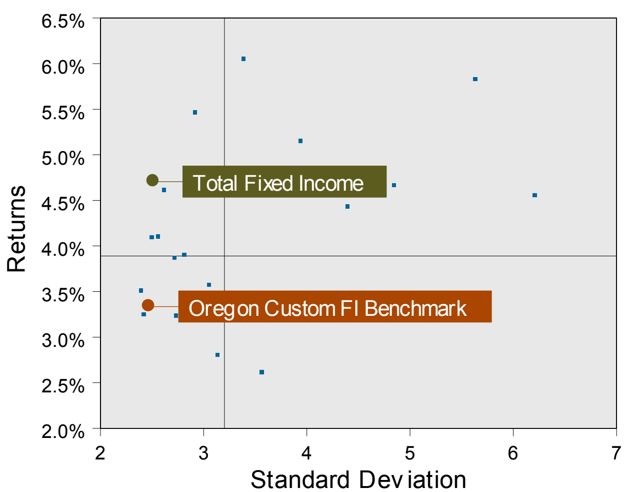
# OPERF Total Fixed Income

## Risk Analysis as of September 30, 2015

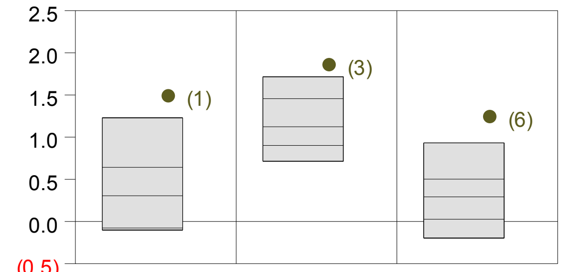
### Rolling 12 Quarter Tracking Error vs Oregon Custom FI Benchmark




### Public Fund 10+ B US FI (Gross) Annualized Five Year Risk vs Return




### Risk Adjusted Return Measures vs Oregon Custom FI Benchmark Rankings Against Public Fund 10+ B US FI (Gross) Five Years Ended September 30, 2015



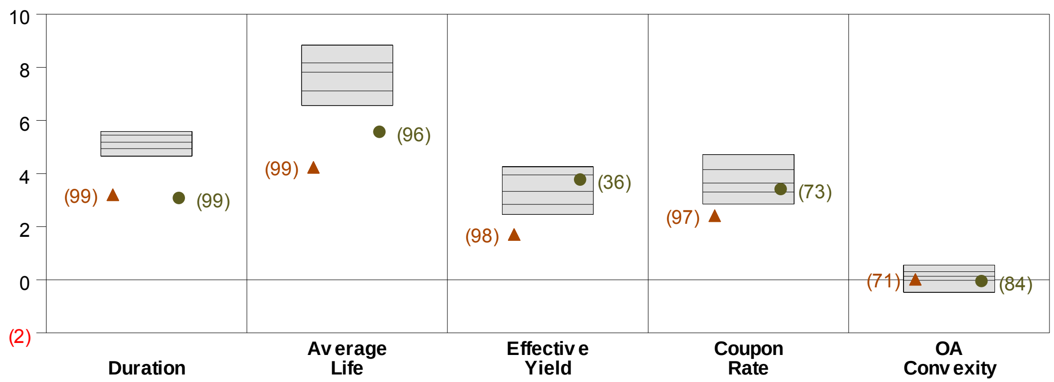

| | Information Ratio | Sharpe Ratio | Excess Return Ratio |
|---|---|---|---|
| 10th Percentile | 1.23 | 1.72 | 0.93 |
| 25th Percentile | 0.64 | 1.46 | 0.50 |
| Median | 0.31 | 1.12 | 0.29 |
| 75th Percentile | (0.08) | 0.90 | 0.03 |
| 90th Percentile | (0.10) | 0.71 | (0.20) |
| Total Fixed Income ● | 1.47 | 1.84 | 1.23 |

Current Benchmark = 40% Barclays Capital U.S. Aggregate Bond, 40% Barclays Capital U.S. 1-3 Govt/Credit Bond Index, 15% S&P/LSTA Leveraged Loan Index, and 5% BofA ML High Yield Master II Index

# OPERF Total Fixed Income

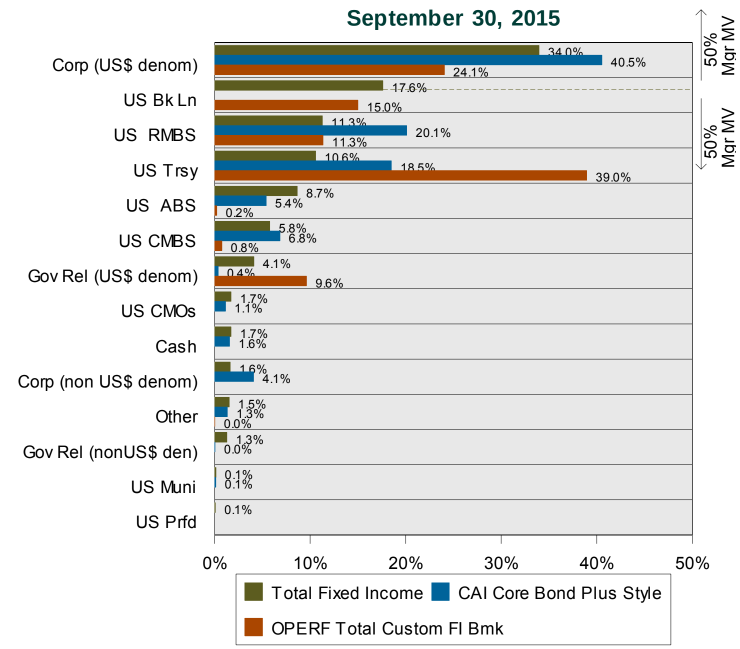
## Characteristics as of September 30, 2015

**Fixed Income Portfolio Characteristics**
**Rankings Against CAI Core Bond Plus Style**
**as of September 30, 2015**




| | Duration | Average Life | Effective Yield | Coupon Rate | OA Convexity |
|---|---|---|---|---|---|
| 10th Percentile | 5.59 | 8.84 | 4.26 | 4.72 | 0.55 |
| 25th Percentile | 5.45 | 8.17 | 3.95 | 4.15 | 0.31 |
| Median | 5.18 | 7.82 | 3.33 | 3.64 | 0.13 |
| 75th Percentile | 4.94 | 7.11 | 2.84 | 3.31 | (0.02) |
| 90th Percentile | 4.65 | 6.57 | 2.46 | 2.86 | (0.47) |
| **Total Fixed Income** ● | 3.03 | 5.52 | 3.72 | 3.36 | (0.10) |
| OPERF Total Custom FI Bmk ▲ | 3.21 | 4.24 | 1.71 | 2.41 | 0.02 |

**Sector Allocation**
**September 30, 2015**




| | Quality Ratings |
|---|---|
| Total Fixed Income | A- |
| OPERF Total FI Bench | A |

Current Benchmark = 40% Barclays Capital U.S. Aggregate Bond, 40% Barclays Capital U.S. 1-3 Govt/Credit Bond Index, 15% S&P/LSTA Leveraged Loan Index, and 5% BofA ML High Yield Master II Index

# TAB 9 – ASSET ALLOCATIONS & NAV UPDATES

## Asset Allocations at October 31, 2015

| OPERF | Policy | Target[1] | Regular Account: $ Thousands | Regular Account: Pre-Overlay | Regular Account: Overlay | Regular Account: Net Position | Regular Account: Actual | Variable Fund: $ Thousands | Total Fund: $ Thousands |
|---|---|---|---|---|---|---|---|---|---|
| Public Equity | 32.5-42.5% | 37.5% | 27,049,880 | 39.2% | 579,233 | 27,629,113 | 40.1% | 678,347 | 28,307,460 |
| Private Equity | 13.5-21.5% | 17.5% | 14,208,288 | 20.6% | | 14,208,288 | 20.6% | | 14,208,288 |
| **Total Equity** | **50.0-60.0%** | **55.0%** | **41,258,168** | **59.8%** | **579,233** | **41,837,401** | **60.7%** | | **42,515,748** |
| Opportunity Portfolio | 0-3% | 0.0% | 1,196,693 | 1.7% | | 1,196,693 | 1.7% | | 1,196,693 |
| **Fixed Income** | **15-25%** | **20.0%** | **15,007,223** | **21.8%** | **1,106,330** | **16,113,553** | 23.4% | | **16,113,553** |
| **Real Estate** | **9.5-15.5%** | **12.5%** | **8,071,473** | **11.7%** | **(17,800)** | **8,053,673** | 11.7% | | **8,053,673** |
| **Alternative Investments** | **0-12.5%** | **12.5%** | **1,763,554** | **2.6%** | | **1,763,554** | 2.6% | | **1,763,554** |
| **Cash[2]** | **0-3%** | **0.0%** | **1,671,142** | **2.4%** | **(1,667,763)** | **3,379** | 0.0% | 9,392 | **12,771** |
| TOTAL OPERF | | **100%** | **$ 68,968,253** | **100.0%** | **$ -** | **$ 68,968,253** | **100.0%** | **$ 687,739** | **$ 69,655,992** |

[1]Targets established in June 2015. Interim policy benchmark consists of: 41.5% MSCI ACWI Net, 23.5% Custom FI Benchmark, 20% Russell 3000+300bps (1 quarter lagged), 12.5% NCREIF (1 quarter lagged), & 2.5% CPI+400bps.

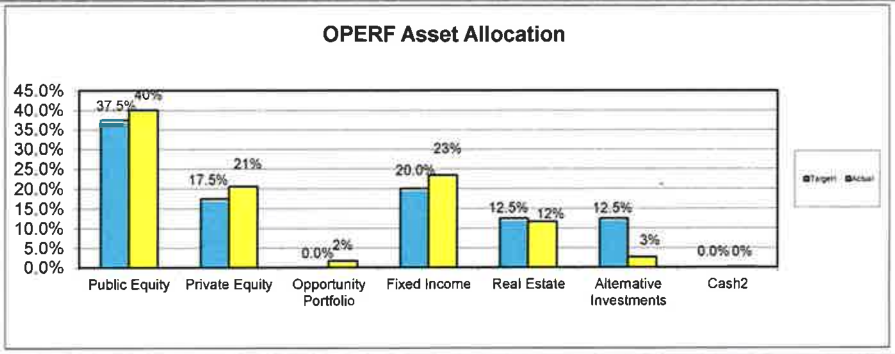
[2]Includes cash held in the policy implementation overlay program.

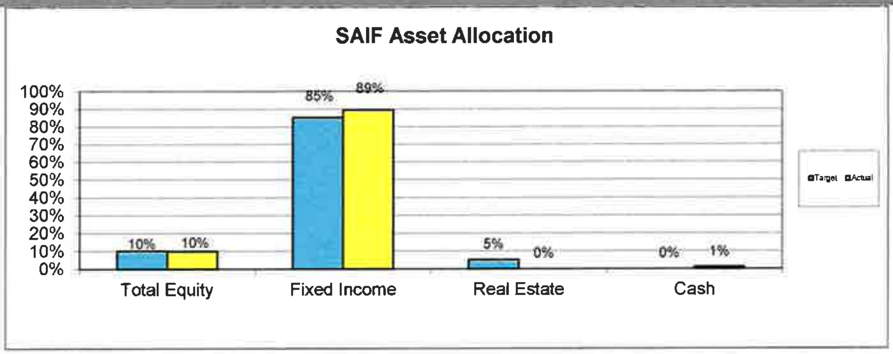
| SAIF | Policy | Target | $ Thousands | Actual |
|---|---|---|---|---|
| **Total Equity** | **7-13%** | **10.0%** | **446,724** | **9.8%** |
| **Fixed Income** | **80-90%** | **85.0%** | **4,060,112** | **89.3%** |
| **Real Estate** | **0-7%** | **5.0%** | **0** | **0.0%** |
| **Cash** | **0-3%** | **0%** | **38,752** | **0.9%** |
| TOTAL SAIF | | | **$4,545,588** | **100.0%** |

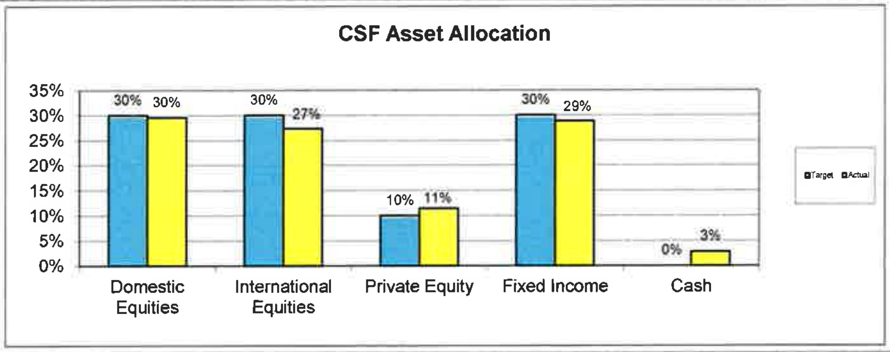
| CSF | Policy | Target | $ Thousands | Actual |
|---|---|---|---|---|
| Domestic Equities | 25-35% | 30% | $432,013 | 29.6% |
| International Equities | 25-35% | 30% | 400,069 | 27.4% |
| Private Equity | 0-12% | 10% | 166,822 | 11.4% |
| **Total Equity** | **65-75%** | **70%** | **998,904** | **68.3%** |
| **Fixed Income** | **25-35%** | **30%** | **421,576** | **28.8%** |
| **Cash** | **0-3%** | **0%** | **41,181** | **2.8%** |
| TOTAL CSF | | | **$1,461,661** | **100.0%** |

| SOUE | Policy | Target[3] | $ Thousands | Actual |
|---|---|---|---|---|
| Global Equities | 65-75% | 70% | 1,523 | 72.8% |
| **Growth Assets** | **65-75%** | **70%** | **1,523** | **72.8%** |
| Fixed Income | 25-35% | 30% | 567 | 27.1% |
| Cash | 0-3% | 0% | 3 | 0.1% |
| **Diversifying Assets** | **25-35%** | **30%** | **570** | **27.2%** |
| TOTAL HIED | | | **$2,093** | **100.0%** |

[3]Revised asset allocation adopted by OIC, March 2015.

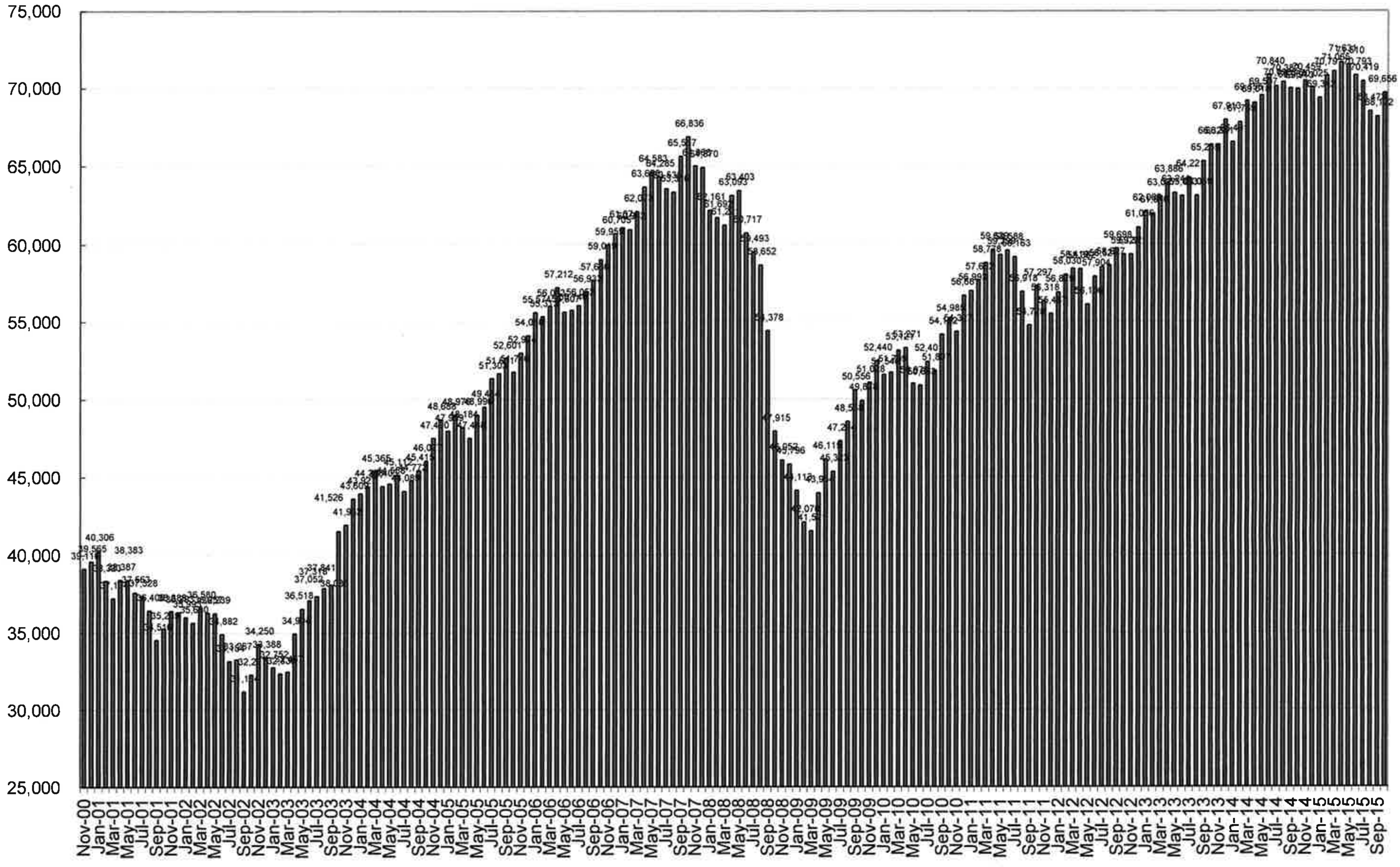


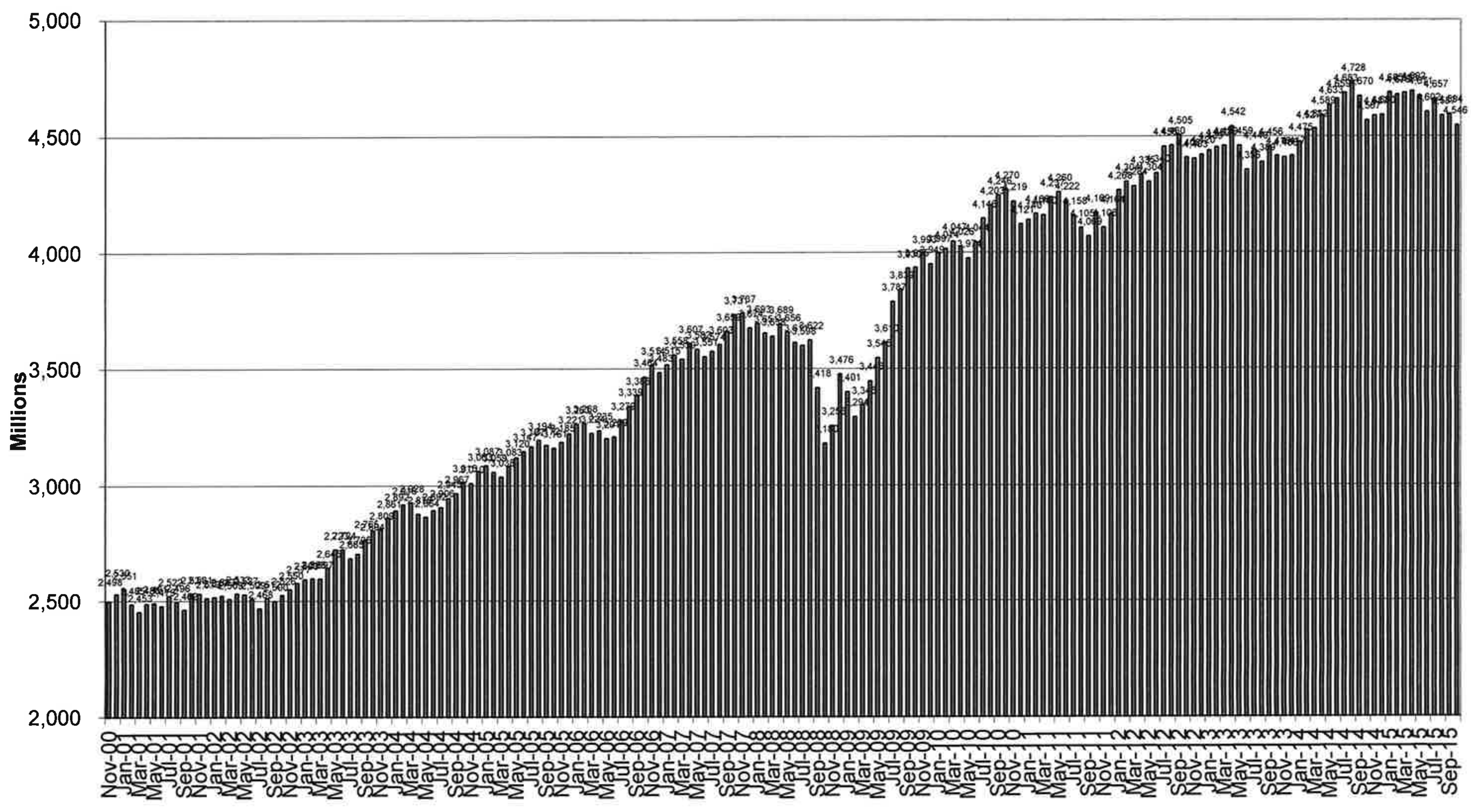




103115_assetallocation.xls

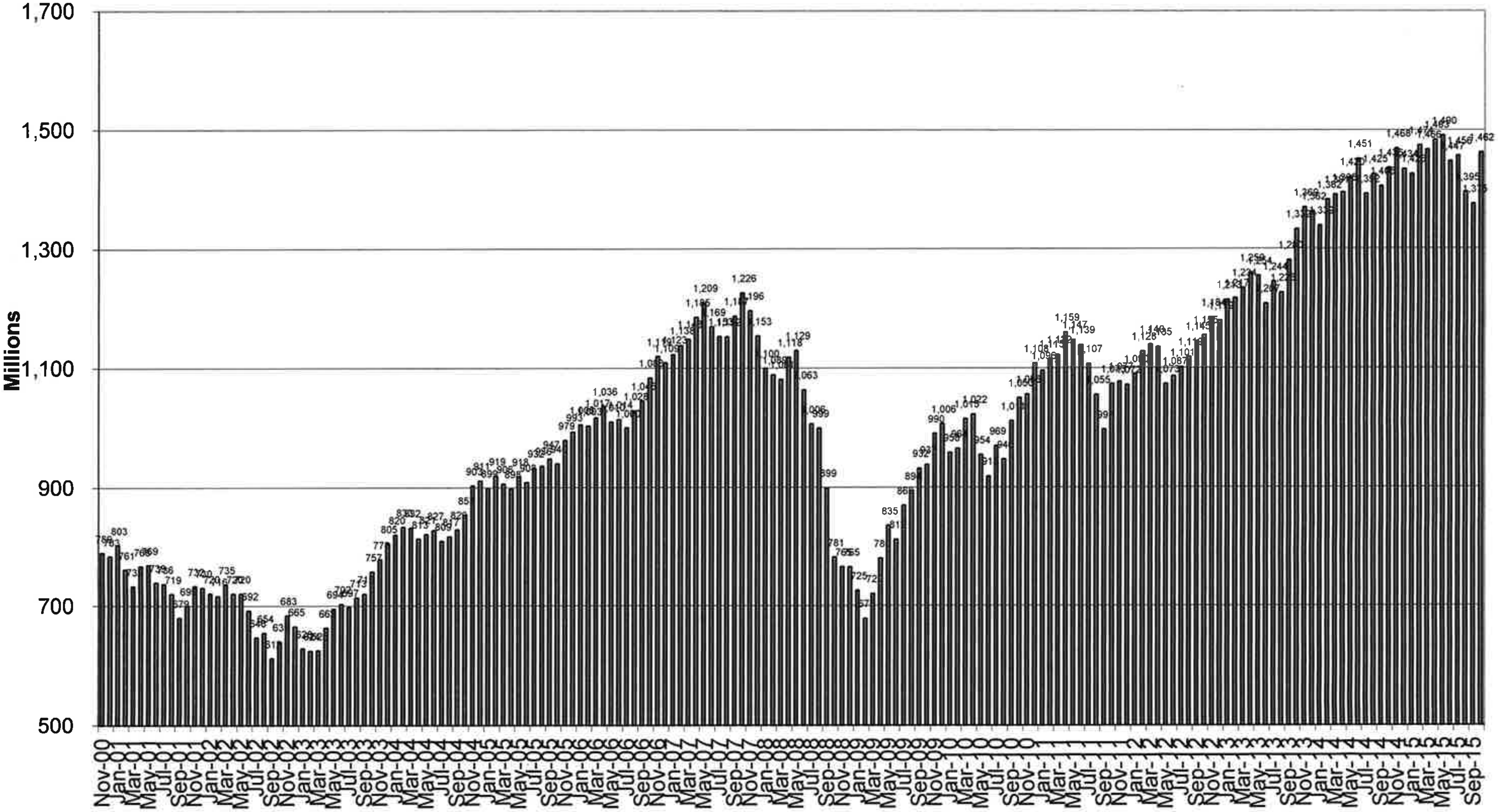
**OPERF NAV**
**15 years ending October 2015**
**($ in Millions)**



**SAIF NAV**
**15 years ending October 2015**
**($ in Millions)**



**CSF NAV**
**15 years ending October 2015**
**($ in Millions)**



# TAB 10 – CALENDAR/FUTURE AGENDA ITEMS

# 2016 OIC Meeting Calendar and Planned Agenda Topics

| | |
|---|---|
| **February 3:** | OPERF Alternatives Portfolio Review<br>OPERF Private Equity Review<br>OSGP Annual Update<br>Annual Placement Agent Report<br>2017 OIC Calendar Approval |
| **March 9:** | CSF Annual Review<br>SAIF Annual Review<br>OIC Policy Update Placeholder<br>OPERF Q4 2015 Performance & Risk Report |
| **April 20:** | OPERF Policy Implementation Overlay Review<br>OIC Real Estate Consultant Recommendation |
| **June 1:** | OITP Annual Review<br>Securities Lending Update<br>OPERF Q1 2015 Performance & Risk Report<br>OPERF Litigation Update |
| **August 3:** | |
| **September 14:** | OPERF Public Equity Review<br>OIC Private Equity Consultant Recommendation<br>OPERF Q2 2015 Performance & Risk Report |
| **October 26:** | OSTF Annual Review<br>OPERF Fixed Income Review<br>OPERF CEM Benchmarking Report<br>OIC General Consultants Recommendation |
| **December 7:** | OPERF Q3 2016 Performance Report<br>OPERF Real Estate Review<br>OPERF Opportunity Portfolio Review |