



## ND STATE INVESTMENT BOARD MEETING

Friday, November 16, 2018, 8:30 a.m.  
Peace Garden Room, State Capitol  
600 E Blvd, Bismarck, ND

### Revised Agenda

#### I. CALL TO ORDER AND ACCEPTANCE OF AGENDA

#### II. ACCEPTANCE OF MINUTES (October 26, 2018)

#### III. GOVERNANCE

- A. SIB Audit Committee Update (15 minutes)
  - 1. SIB Audit Committee Report – Ms. Sara Sauter (enclosed) **Board Acceptance**
  - 2. RIO Financial Audit Report June 30, 2018 – Mr. Hunter (enclosed) **Board Acceptance**
- B. SIB Securities Litigation Update – Mr. Hunter (enclosed) (10 min) **Board Acceptance**

#### IV. INVESTMENTS

- A. Asset and Performance Overview - Mr. Hunter (enclosed) (15 min) **Board Acceptance**
- B. Real Estate Overview (Pension Trust) - Mr. Schulz
  - 1. Invesco Presentation - Mr. Max Swango and Mr. Paul Michaels (enclosed) (40 min)
  - 2. Staff Recommendation - Mr. Schulz (enclosed) (10 min) **Board Action**

===== Break from 10:00 to 10:15 am =====

- C. Callan Review – Ms. Inga Sweet, Mr. Paul Erlendson, Mr. Alex Browning (1 hour) **Board Acceptance**
  - 1. Pension Trust (enclosed)
  - 2. Insurance Trust (enclosed)
  - 3. Legacy Fund (enclosed)
- D. Callan Fee Study – Mr. Paul Erlendson and Mr. Alex Browning (enclosed) (30 min) **Board Acceptance**
- E. Legacy Fund Earnings Update – Mr. Hunter (enclosed) (10 min) *Informational*
- F. Accepting New Clients – Mr. Hunter (enclosed) (5 min) Board Acceptance

#### V. OTHER

Next Meetings: SIB meeting - December 21, 2018, 8:30 am - RIO Conference Room (Tentative)  
January 25, 2019, 8:30 a.m. - Workforce Safety & Insurance  
SIB Securities Litigation - February 14, 2019, 3:00 pm - RIO Conference Room  
SIB Audit Committee meeting - February 21, 2019, 3:00 p.m. - RIO Conference Room

#### VI. ADJOURNMENT

**NORTH DAKOTA STATE INVESTMENT BOARD  
MINUTES OF THE  
OCTOBER 26, 2018, BOARD MEETING**

**MEMBERS PRESENT:** Brent Sanford, Lt. Governor, Chair  
Rob Lech, TFFR Board, Vice Chair  
Troy Seibel, PERS Board, Parliamentarian  
Toni Gumeringer, TFFR Board  
Adam Miller, PERS Board  
Mel Olson, TFFR Board  
Kelly Schmidt, State Treasurer  
Jodi Smith, Commissioner of Trust Lands  
Cindy Ternes, WSI Designee

**MEMBERS ABSENT:** Jon Godfread, Insurance Commissioner  
Yvonne Smith, PERS Board

**STAFF PRESENT:** Eric Chin, Senior Investment Officer  
Connie Flanagan, Chief Financial Officer  
Bonnie Heit, Asst to the Board  
David Hunter, ED/CIO  
Sara Sauter, Audit Svs Suprv  
Cody Schmidt, Compliance Officer  
Darren Schulz, Dep CIO  
Susan Walcker, Investment Accountant

**OTHERS PRESENT:** Brian Barnett, APT, Inc.  
Andrew Chapman, Macquarie  
Anna Dayn, XTP  
Jeff Engleson, Dept. of Trust Lands  
Michael Glascott, Macquarie  
Greg Gordon, Cerberus  
Wolfram Klinger, XTP  
Karl Kuchel, Macquarie  
Anders Odegaard, Attorney General's Office  
Ronald Rawald, Cerberus  
Bryan Reinhardt, PERS

**CALL TO ORDER:**

Lt. Governor Sanford, Chair, called the State Investment Board (SIB) regular meeting to order at 8:32 a.m. on Friday, October 26, 2018, in the Peace Garden Room, at the State Capitol, Bismarck, ND.

**AGENDA:**

**IT WAS MOVED BY MS. TERNES AND SECONDED BY DR. LECH AND CARRIED BY A VOICE VOTE TO ACCEPT THE REVISED AGENDA FOR THE OCTOBER 26, 2018, MEETING.**

**AYES: MS. TERNES, COMMISSIONER SMITH, MS. GUMERINGER, MR. SEIBEL, MR. MILLER, DR. LECH, MR. OLSON, TREASURER SCHMIDT, AND LT. GOVERNOR SANFORD**

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: COMMISSIONER GODFREAD, MS. SMITH**

MINUTES:

IT WAS MOVED BY DR. LECH AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO ACCEPT THE MINUTES OF THE SEPTEMBER 28, 2018, MEETING AS DISTRIBUTED.

AYES: MS. GUMERINGER, COMMISSIONER SMITH, TREASURER SCHMIDT, DR. LECH, MR. OLSON, MR. SEIBEL, MR. MILLER, MS. TERNES, AND LT. GOVERNOR SANFORD

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. SMITH

INVESTMENTS:

Infrastructure Background/Overview - Mr. Schulz reviewed the current infrastructure portfolios of the SIB, the importance of diversification, and the due diligence conducted by staff to support their proposed recommendation.

Macquarie Infrastructure Partners (MIP) - Representatives Mr. Kuchel, Mr. Chapman, and Mr. Glascott provided an overview and structure of the firm. After the review,

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY DR. LECH AND CARRIED BY A VOICE VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO NDCC §44-04-18.4(1), §44-04-19.1(9), & §44-04-19.2 TO DISCUSS CONFIDENTIAL COMMERCIAL AND FINANCIAL INFORMATION AND PROVIDE CONTRACT NEGOTIATING INSTRUCTIONS TO ITS ATTORNEY OR NEGOTIATOR.

AYES: MR. OLSON, MS. GUMERINGER, MR. MILLER, MR. SEIBEL, MS. TERNES, COMMISSIONER SMITH, DR. LECH, TREASURER SCHMIDT, AND LT. GOVERNOR SANFORD

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. SMITH

The Board exited Open Session at 9:01 a.m. and entered into Executive Session at 9:02 a.m. The following individuals were present during Executive Session: Mr. Olson, Ms. Gumeringer, Mr. Miller, Mr. Seibel, Ms. Ternes, Commissioner Smith, Dr. Lech, Treasurer Schmidt, Lt. Governor Sanford, Mr. Odegaard, Mr. Chin, Ms. Flanagan, Ms. Heit, Mr. Hunter, Ms. Sauter, Mr. Schmidt, Mr. Schulz, Ms. Walcker, Mr. Kuchel, Mr. Chapman, and Mr. Glascott.

The Board exited Executive Session at 9:50 a.m. and entered into Open Session at 9:51 a.m.

Mr. Schulz reviewed staff's proposal and felt an investment in MIP IV would be a prudent investment for the Legacy Fund and Pension Trust. An investment in MIP IV offers manager and asset diversification which would be complementary to the Pension Trust and Legacy Fund's existing infrastructure portfolio. MIP IV's core/core plus focus is well-suited as an anchor infrastructure allocation parallel to JP Morgan's Infrastructure Investment Fund (IIF.) A commitment to MIP IV further diversifies the SIB's current infrastructure investments with a focus on large core transactions supplemented by core-plus opportunities. Staff recommended a commitment up to \$140 million in MIP IV (\$65 million in the Pension Trust and \$75 million in the Legacy Fund).

After discussion,

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MS. TERNES AND CARRIED BY A ROLL CALL VOTE TO ACCEPT STAFF RECOMMENDATION.

AYES: MS. TERNES, MR. OLSON, TREASURER SCHMIDT, COMMISSIONER SMITH, MR. SEIBEL, DR. LECH, MR. MILLER, MS. GUMERINGER, AND LT. GOVERNOR SANFORD.

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. SMITH

The Board recessed at 10:02 a.m. and reconvened at 10:15 a.m.

European Non-Performing Loan Investment - At the September 28, 2018, SIB meeting, Mr. Chin reviewed an investment opportunity for the board's consideration in European Non-Performing Loans (NPL). Mr. Chin provided a recap of the investment opportunity.

Cerberus - Representatives Mr. Rawald and Mr. Gordon provided an overview of the firm and the NPL investment opportunity.

Mr. Chin reviewed staff recommendation. RIO investment personnel recommended that the SIB invest up to \$120 million (\$60 million Pension Trust and \$60 million Legacy Fund) in the Cerberus Global NPL investment opportunity subject to continued negotiations and finalization of the contract. The investment would represent a 1% position in both the Pension Trust and the Legacy Fund. The allocation would be funded by reducing equity exposure in both portfolios.

After discussion,

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY COMMISSIONER SMITH AND CARRIED BY A ROLL CALL VOTE TO DENY STAFF RECOMMENDATION REGARDING THE NPL INVESTMENT OPPORTUNITY.

AYES: COMMISSIONER SMITH, TREASURER SCHMIDT, MR. MILLER, MR. OLSON, MS. TERNES, MS. GUMERINGER, MR. SEIBEL, AND LT. GOVERNOR SANFORD

NAYS: DR. LECH

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. SMITH

Lt. Governor Sanford left the meeting and Dr. Lech presided over the meeting. Ms. Ternes also exited the meeting.

Park District of the City of Grand Forks (GFPD) Investment Policy Statement IPS - Mr. Hunter reviewed a revised IPS for the GFPD which was approved by the trustees of the GFPD on October 2, 2018. The GFPD recently completed an asset liability study conducted by Arthur J. Gallagher.

IT WAS MOVED BY COMMISSIONER SMITH AND SECONDED BY MR. OLSON AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE REVISED IPS FOR THE PARK DISTRICT OF THE CITY OF GRAND FORKS.

AYES: MS. GUMERINGER, COMMISSIONER SMITH, TREASURER SCHMIDT, DR. LECH, MR. OLSON, MR. SEIBEL, AND MR. MILLER

NAYS: NONE

MOTION CARRIED

ABSENT: MS. SMITH, MS. TERNES, COMMISSIONER GODFREAD, AND LT. GOVERNOR SANFORD

**GOVERNANCE AND EDUCATION:**

Annual Evaluation of RIO vs Ends - Mr. Hunter, per Governance Policy/Annual Board Planning Cycle highlighted RIO's adherence to the "Ends" policies for the period ending June 30, 2018. Mr. Hunter stated the vast majority of the SIB clients outperformed their respective investment benchmarks for the 5-years ended June 30, 2018 (two exceptions - Public Employees Retirement System (PERS) Retiree Health Insurance Credit and PERS Group Insurance) while adhering to approved guidelines. Mr. Hunter also stated investment fees declined from 0.65% in fiscal 2013 to approximately 0.43% in fiscal 2018. RIO has increased their transparency by enhancing public access to their website. RIO's Internal Audit Division has conducted reviews which provide reasonable assurance that Teachers' Fund for Retirement (TFFR) benefit recipients receive their retirement benefits in a cost effective and timely manner. TFFR member surveys support RIO management's belief that members have access to information which allows them to become knowledgeable about retirement issues and processes. SIB and TFFR client surveys confirm that the boards and staff provide satisfactory services with SIB receiving a 3.7 score and TFFR earning a 3.8 score (on a 4.0 scale) in recent years.

**IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO ACCEPT THE ANNUAL REVIEW OF RIO VERSUS THE SIB GOVERNANCE "ENDS" POLICIES.**

**AYES: MR. OLSON, MR. MILLER, TREASURER SCHMIDT, MS. GUMERINGER, COMMISSIONER SMITH, DR. LECH, AND MR. SEIBEL**

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MS. SMITH, MS. TERNES, COMMISSIONER GODFREAD, AND LT. GOVERNOR SANFORD**

Investment Fee Update - Mr. Hunter updated the Board on investment fees of the SIB portfolios. SIB client investment fees have declined from approximately 0.65% in fiscal year 2013 to approximately 0.43% in fiscal year 2018. Novarca was contracted by the SIB in 2014 to perform a comprehensive review of the investment fees and expenses. Novarca identified over \$1 million in aggregate fee savings in addition to assisting RIO to obtain favorable terms in ongoing fee negotiations with investment firms. Callan has also been conducting biennial fee studies of the SIB's major investment trusts and in-depth fee reviews within selected private markets. Mr. Hunter also noted the Dept. of Trust Lands investment personnel have been assisting RIO to obtain favorable market terms including a re-negotiation which is expected to generate an incremental \$150,000 in annual fee savings for the SIB's clients. Investment fee savings have also been realized between the Dept. of Trust Lands and the SIB who currently share 10 investment managers.

Dr. Lech exited the meeting and Mr. Seibel presided over the remainder of the meeting.

XTP Implementation Services - Representatives Ms. Dayn and Mr. Klingler provided an overview of their firm and strategy.

RIO investment personnel recommended the SIB engage XTP to perform a comprehensive review of their investment fee structures and underlying expenses to further enhance transparency and potentially reduce investment costs. The recommendation would be subject to satisfactory negotiation of legal documentation including a contingent fee structure and strict terms of confidentiality. XTP would replace Novarca as Novarca has completed the terms of their contract.

After discussion,

IT WAS MOVED BY MR. OLSON AND SECONDED BY MR. MILLER AND CARRIED BY A ROLL CALL VOTE TO ACCEPT STAFF RECOMMENDATION AND ENGAGE XTP FOR A PERIOD OF TWO YEARS SUBJECT TO SATISFACTORY NEGOTIATION OF THE CONTRACT.

AYES: TREASURER SCHMIDT, MR. OLSON, COMMISSIONER SMITH, MR. SEIBEL, MR. MILLER, AND MS. GUMERINGER

NAYS: NONE

MOTION CARRIED

ABSENT: DR. LECH, COMMISSIONER GODFREAD, MS. SMITH, MS. TERNES, AND LT. GOVERNOR SANFORD

Included in the board packet were the following reports; Client Satisfaction Survey 2018, Audit Committee Annual Report July 1, 2017 - June 30, 2018, Securities Litigation Committee Update, and Governance Manual (second reading) for the SIB's consideration.

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MS. GUMERINGER AND CARRIED BY A ROLL CALL VOTE TO ACCEPT AGENDA ITEMS IV. C. CLIENT SATISFACTION SURVEY 2018, D. AUDIT COMMITTEE ANNUAL REPORT JULY 1, 2017 - JUNE 30, 2018, E. SECURITIES LITIGATION COMMITTEE UPDATE, AND F. GOVERNANCE MANUAL (SECOND READING).

AYES: MR. OLSON, MR. SEIBEL, COMMISSIONER SMITH, MS. GUMERINGER, MR. MILLER, AND TREASURER SCHMIDT

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. SMITH, MS. TERNES, DR. LECH, AND LT. GOVERNOR SANFORD

**QUARTERLY MONITORING:**

Per Governance Policy, Board/Staff Relationship/Monitoring Executive Performance C-4, the following monitoring reports for the quarter ending September 30, 2018, were provided to the SIB for their consideration: Executive Limitations/Staff Relations, Budget/Financial Conditions, Investment Program, and Retirement Program.

There was not a Watch List report provided as no SIB managers are currently on watch.

Mr. Hunter stated he received one application for the Voluntary Separation Incentive Program which he has approved with a termination date of April 30, 2019. RIO intends to fill the position assuming budget availability.

IT WAS MOVED BY MR. MILLER AND SECONDED BY MR. OLSON AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE QUARTERLY MONITORING REPORTS FOR THE QUARTER ENDING SEPTEMBER 30, 2018.

AYES: TREASURER SCHMIDT, MS. GUMERINGER, COMMISSIONER SMITH, MR. MILLER, MR. OLSON, AND MR. SEIBEL

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MS. TERNES, MS. SMITH, DR. LECH, LT. GOVERNOR SANFORD

Mr. Hunter informed the board RIO will be participating in the State Employee Survey in the next month.

Mr. Hunter also informed the board he provided a market update to the Employee Benefits Programs Committee at their October 25, 2018, meeting.

He also informed the board preliminary discussions have been taking place with the ND State Historical Society regarding possibly coming on board as a client of the SIB. He will keep the board informed.

**OTHER:**

The next meeting of the SIB is scheduled for November 16, 2018, at 8:30 a.m. at the State Capitol, Peace Garden Room.

The next meeting of the Securities Litigation Committee meeting is scheduled for November 5, 2018, at 3:00 p.m. at the Retirement and Investment Office.

The next meeting of the SIB Audit Committee is scheduled for November 15, 2018, at 3:00 p.m. at the Retirement and Investment Office.

**ADJOURNMENT:**

With no further business to come before the SIB, Mr. Seibel adjourned the meeting at 11:55 a.m.

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Lt. Governor Sanford, Chair  
State Investment Board

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Bonnie Heit  
Assistant to the Board

**RETIREMENT AND INVESTMENT OFFICE  
AUDIT SERVICES  
2018-2019 1<sup>st</sup> Quarter Audit Activities Report  
July 1, 2018 – September 30, 2019**

The audit objective of Audit Services is twofold: first, to provide comprehensive, practical audit coverage of the Retirement and Investment Office (RIO) programs; second, to assist RIO management and the State Investment Board (SIB) by conducting special reviews or audits.

Audit coverage is based on the July 1, 2018 through June 30, 2019 work plan approved by the SIB Audit Committee. The audit activities undertaken are consistent with the Audit Services charter and goals, and the goals of RIO. To the extent possible, our audits are being carried out in accordance with the International Standards for the Professional Practice of Internal Auditing. Audit effort is being directed to the needs of RIO and the concerns of management and the SIB Audit Committee.

**Retirement Program Audit Activities**

• **TFFR Employer Audit Program**

We examine employer reporting to the Teachers' Fund for Retirement (TFFR) to determine whether retirement salaries and contributions reported for members of TFFR are in compliance with the definition of salary as it appears in NDCC 15-39.1-04(10). Other reporting procedures reviewed during the audit process are calculation of service hours and eligibility for TFFR membership. A written report is issued after each audit examination is completed. The TFFR Employer Audit Program includes Compliance Audits, and Not in Compliance (NIC) Reviews.

Status of TFFR Employer Audits as of September 30, 2018:

- One (1) employer audits had been completed.
- Two (2) employer audits were in progress.
- Three (3) employer audits were pending but not yet started.

• **Cost Benefit Effective Benefit Payment Audit**

A review of TFFR benefit recipients is completed to determine that they received their retirement benefits in a cost effective and timely manner. Audit Services also verifies the accuracy of benefit payments via the recalculation of benefit payments for the sampling of member accounts. This audit is currently in process.

**Administrative and Investment Audit Activities**

• **Executive Limitation Audit**

Each year the SIB conducts a customer satisfaction survey. The purpose of this annual survey is to determine how well the SIB, through the staff of the RIO, is meeting the expectations of its clients. This survey is part of the SIB's ongoing effort to be more responsive to the needs of their clients and to continually improve the services that are provided. Audit Services facilitated the survey in July and August 2018 and results were provided to the SIB at their October 26, 2018 meeting.

• **External Audit Support**

Audit Services provided support to our external audit partners, CliftonLarsonAllen (CLA), during the GASB 68 Census Data Audits. Audit Services notified eleven employers of an upcoming GASB 68 Census Data Audit in July 2018. CLA anticipated that GASB 68 Census Data Audit work would conclude in mid-October.

• **Risk Assessment**

A formal agency risk assessment of RIO was completed. A risk assessment is a process to identify potential risks and analyze what could happen if it would occur. The purpose of a risk assessment is to identify risk involved in the activities or systems and provide assurance that risk is being managed by management.



**Professional Development/CE/General Education**

Audit Services continued its participation with the Institute of Internal Auditors (IIA) Central NoDak Chapter by attending the September monthly meeting about data analytics.

**NORTH DAKOTA RETIREMENT AND INVESTMENT OFFICE  
 AUDIT SERVICES DIVISION  
 BUDGETED HOURS FOR THE FISCAL YEAR JULY 1, 2018 TO JUNE 30, 2019**

	<b>2018 -2019 BUDGET HOURS (2 FTE'S)</b>
<b>Primary Audit Responsibilities - Total Hours Allocated: 2,680</b>	
Teachers' Fund for Retirement (TFFR) Employer Audits	1,080
TFFR Audit Notifications	
TFFR Compliance Audits	
TFFR Not in Compliance (NIC) Reviews	
REA Audit	
Annual Salary Verification Project	
Teachers' Fund for Retirement (TFFR) File Maintenance Audits	30
Teachers' Fund for Retirement (TFFR) Refund and Purchases Audit	90
TFFR Cost Effective Benefit Payment Audit	140
Investment Audits	690
Investment Manager Due Diligence Audit	
Investment Performance Audit	
Cash Management and Rebalancing Audit	
Executive Limitation Audit	160
SIB Customer Satisfaction Survey	
ED/CIO Effectiveness Survey	
Executive Limitations Audit CY 2018	
SIB Executive Review Committee Survey (If Requested)	
Internal Control Assessment	120
Agency Risk Assessment	150
Quarterly Portfolio Monitoring Testing	120
Special Projects (ex. Board Self-Assessment)	40
External Auditor Assistance	60
GASB 68 Census Data Audit Notifications	
	<b>2,680</b>
<b>% of Available Hours Allocated to Primary Audit Responsibilities</b>	<b>64%</b>
<b>Primary Administrative Responsibilities - Total Hours Allocated: 1,480</b>	
Annual Leave, Sick Leave, and Holidays	632
Staff Meetings, Reporting, Email, and Records Retention	450
SIB Audit Committee, SIB, and TFFR Board Meetings	300
Preparation and Attendance	
Annual Audit Planning	80
Professional Development	18
	<b>1,480</b>
<b>% of Available Hours Allocated to Primary Administrative Responsibilities</b>	<b>36%</b>
<b>Total 2018-2019 Budget Hours</b>	<b>4,160</b>
Total Budget Hours for 2018 - 2019	4,160
Budget Hours for D. Thorsen	2,080
Budget Hours for S. Sauter	2,080

State Investment Board  
Teachers' Fund for Retirement  
North Dakota Retirement and Investment Office  
Bismarck, North Dakota

We have audited the financial statements of the North Dakota Retirement and Investment Office (RIO) as of and for the year ended June 30, 2018, and have issued our report thereon dated October 31, 2018. We have previously communicated to you information about our responsibilities under auditing standards generally accepted in the United States of America, as well as certain information related to the planned scope and timing of our audit. Professional standards also require that we communicate to you the following information related to our audit.

### **Significant audit findings**

#### ***Qualitative aspects of accounting practices***

##### *Accounting policies*

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by RIO are described in Note 1 to the financial statements.

As described in Note 1, RIO adopted Governmental Accounting Standards Board (GASB) Statement 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, in 2018. This statement replaces the requirements of Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, as amended, and improves accounting and financial reporting for postemployment benefits other than pensions.

The financial statements also include the impact of adoption of GASB Statement 82, *Pension Issues-An Amendment of GASB Statements No. 67, No. 68, and No. 73*, which addresses certain issues with the presentation of payroll-related measures in required supplementary information, and the classification of payments made by employers to satisfy employee contribution requirements.

We noted no transactions entered into by RIO during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

##### *Accounting estimates*

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected. There were significant estimates in the valuation of alternative investments and the calculation of the actuarial information included in the footnotes and required supplementary information.

The valuation of alternative investments, including private equity and real asset investments, are a management estimate which is primarily based upon net asset values reported by the investment managers and comprise 16% of the total investment portfolio. The values for these investments are reported based upon the most recent financial data available and are adjusted for cash flows through June 30, 2018. Our audit procedures validated this approach through the use of confirmations sent directly to a sample of investment managers and the review of the most recent audited financial statements for these sampled funds. Furthermore, we reviewed management's estimate and found it to be reasonable.

The actuarially calculated information was based on the assumptions and methods adopted by the Board, including an expected investment rate of return of 7.75% per annum compounded annually. The valuation takes into account all of the promised benefits required by the Retirement Code to which members are entitled as of July 1, 2018. Our audit procedures included reviewing the actuarial valuation and related assumptions used therein and we believe the estimate to be reasonable.

#### Financial statement disclosures

Certain financial statement disclosures are particularly sensitive because of their significance to financial statement users. There were no particularly sensitive financial statement disclosures.

The financial statement disclosures are neutral, consistent, and clear.

#### **Difficulties encountered in performing the audit**

We encountered no significant difficulties in dealing with management in performing and completing our audit.

#### **Uncorrected misstatements**

Professional standards require us to accumulate all misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. Management did not identify and we did not notify them of any uncorrected financial statement misstatements.

#### **Corrected misstatements**

Management did not identify and we did not notify them of any financial statement misstatements detected as a result of audit procedures.

#### **Disagreements with management**

For purposes of this letter, a disagreement with management is a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditors' report. No such disagreements arose during our audit.

#### **Management representations**

We have requested certain representations from management that are included in the attached management representation letter dated October 31, 2018.

#### **Management consultations with other independent accountants**

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a "second opinion" on certain situations. If a consultation involves application of an accounting principle to RIO's financial statements or a determination of the type of auditors' opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

***Significant issues discussed with management prior to engagement***

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to engagement as RIO's auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our engagement.

**Other information in documents containing audited financial statements**

With respect to the required supplementary information (RSI) accompanying the financial statements, we made certain inquiries of management about the methods of preparing the RSI, including whether the RSI has been measured and presented in accordance with prescribed guidelines, whether the methods of measurement and preparation have been changed from the prior period and the reasons for any such changes, and whether there were any significant assumptions or interpretations underlying the measurement or presentation of the RSI. We compared the RSI for consistency with management's responses to the foregoing inquiries, the basic financial statements, and other knowledge obtained during the audit of the basic financial statements. Because these limited procedures do not provide sufficient evidence, we did not express an opinion or provide any assurance on the RSI.

With respect to the schedules of administrative expenses, consultant expenses, investment expenses, and appropriations – budget basis – fiduciary funds (collectively, the supplementary information) accompanying the financial statements, on which we were engaged to report in relation to the financial statements as a whole, we made certain inquiries of management and evaluated the form, content, and methods of preparing the information to determine that the information complies with accounting principles generally accepted in the United States of America, the method of preparing it has not changed from the prior period or the reasons for such changes, and the information is appropriate and complete in relation to our audit of the financial statements. We compared and reconciled the supplementary information to the underlying accounting records used to prepare the financial statements or to the financial statements themselves. We have issued our report thereon dated October 31, 2018.

Other information is being included in documents containing the audited financial statements and the auditors' report thereon. Our responsibility for such other information does not extend beyond the financial information identified in our auditors' report. We have no responsibility for determining whether such other information is properly stated and do not have an obligation to perform any procedures to corroborate other information contained in such documents. As required by professional standards, we read the introductory, investment, actuarial and statistical sections of the comprehensive annual financial report (the other information) in order to identify material inconsistencies between the audited financial statements and the other information. We did not identify any material inconsistencies between the other information and the audited financial statements.

Our auditors' opinion, the audited financial statements, and the notes to financial statements should only be used in their entirety. Inclusion of the audited financial statements in a document you prepare, such as an annual report, should be done only with our prior approval and review of the document.

\* \* \*

This communication is intended solely for the information and use of the State Investment Board, the Board of the Teachers' Fund for Retirement and management of RIO and is not intended to be, and should not be, used by anyone other than these specified parties.

*CliftonLarsonAllen LLP*

**CliftonLarsonAllen LLP**

Baltimore, Maryland  
October 31, 2018

October 31, 2018

CliftonLarsonAllen LLP  
1966 Greenspring Drive, Suite 300  
Timonium, MD 21093

This representation letter is provided in connection with your audit of the financial statements of North Dakota Retirement and Investment Office (RIO), which comprise the fiduciary net position of the entity as of June 30, 2018, and the related changes in fiduciary net position for the year then ended, and the related notes to the financial statements, for the purpose of expressing opinions on whether the financial statements are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP).

Certain representations in this letter are described as being limited to matters that are material. Items are considered material, regardless of size, if they involve an omission or misstatement of accounting information that, in light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would be changed or influenced by the omission or misstatement.

We confirm, to the best of our knowledge and belief, as of October 31, 2018, the following representations made to you during your audit.

#### **Financial Statements**

- We have fulfilled our responsibilities, as set out in the terms of the Contract between the State of North Dakota and CliftonLarsonAllen LLP dated March 7, 2018, for the preparation and fair presentation of the financial statements in accordance with U.S. GAAP. The financial statements include all properly classified funds and other financial information of the primary government and all component units required by generally accepted accounting principles to be included in the financial reporting entity.
- We acknowledge and have fulfilled our responsibility for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.
- We acknowledge our responsibility for the design, implementation, and maintenance of internal control to prevent and detect fraud.
- All significant plan amendments, adopted during the period or subsequent to the date of the financial statements, and their effects on benefits and financial status have been disclosed in the financial statements.
- The values of non-readily marketable investments represent good faith estimates of fair value. The methods and significant assumptions used result in a measure of fair value appropriate for financial measurement and disclosure purposes.
- Significant estimates have been appropriately accounted for and disclosed in accordance with the requirements of U.S. GAAP. Significant estimates are estimates at the financial statement date that could change materially within the next year.
- No events, including instances of noncompliance, have occurred subsequent to the financial statement date and through the date of this letter that would require adjustment to, or disclosure in, the financial statements.

- We have not identified or been notified of any uncorrected financial statement misstatements.
- The effects of all known actual or possible litigation, claims, and assessments have been accounted for and disclosed in accordance with U.S. GAAP.
- Guarantees, whether written or oral, under which the entity is contingently liable, if any, have been properly recorded or disclosed in accordance with U.S. GAAP.
- We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities.
- With respect to actuarial assumptions and valuations:
  - Management agrees with the actuarial methods and assumptions used by the actuary for funding purposes and for determining the total pension liability and has no knowledge or belief that would make such methods or assumptions inappropriate in the circumstances. We did not give any, nor cause any, instructions to be given to RIO's actuary with respect to values or amounts derived, and we are not aware of any matters that have impacted the independence or objectivity of RIO's actuary.
  - There were no omissions from the participant data provided to the actuary for the purpose of determining the total pension liability and other actuarially determined amounts in the financial statements.
  - There have been no changes in the actuarial methods or assumptions used in calculating the amounts recorded or disclosed in the financial statements. There have been no changes in plan provisions between the actuarial valuation date and the date of this letter.
- We believe the plan and trust established under the plan is qualified under the appropriate section of The North Dakota Century Code, and we intend to continue them as a qualified plan and trust.
- We are not aware of any present legislative intentions to terminate the plan.

#### **Information Provided**

- We have provided you with:
  - Access to all information, of which we are aware, that is relevant to the preparation and fair presentation of the financial statements such as records, documentation, and other matters.
  - Additional information that you have requested from us for the purpose of the audit.
  - Unrestricted access to persons within the entity from whom you determined it necessary to obtain audit evidence.
  - Complete minutes of the meetings of the governing board and related committees, or summaries of actions of recent meetings for which minutes have not yet been prepared.
  - All actuarial reports prepared for the plan during the year.
- All material transactions have been recorded in the accounting records and are reflected in the financial statements.
- We have disclosed to you the results of our assessment of the risk that the financial statements may be materially misstated as a result of fraud.
- We have no knowledge of any fraud or suspected fraud that affects the entity and involves:
  - Management;



- Employees who have significant roles in internal control; or
- Others when the fraud could have a material effect on the financial statements.
- We have no knowledge of any allegations of fraud, or suspected fraud, affecting the entity's financial statements communicated by employees, former employees, regulators, or others.
- We have no knowledge of any instances of noncompliance or suspected noncompliance with laws and regulations and provisions of contracts, or abuse whose effects should be considered when preparing financial statements.
- We have disclosed to you all known actual or possible litigation, claims, and assessments whose effects should be considered when preparing the financial statements.
- There are no other material liabilities or gain or loss contingencies that are required to be accrued or disclosed in accordance with U.S. GAAP.
- We have disclosed to you the identity of the entity's related parties and all the related party relationships and transactions of which we are aware.
- We are responsible for compliance with the laws, regulations, and provisions of contracts applicable to RIO, and we have identified and disclosed to you all laws, regulations, and provisions of contracts that we believe have a direct and material effect on the determination of financial statement amounts or other financial data significant to the audit objectives, including legal and contractual provisions for reporting specific activities in separate funds.
- There are no violations or possible violations of budget ordinances, laws and regulations (including those pertaining to adopting, approving, and amending budgets), provisions of contracts, or any debt covenants whose effects should be considered for disclosure in the financial statements, or as a basis for recording a loss contingency, or for reporting on noncompliance.
- The entity has complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.
- We have followed all applicable laws and regulations in adopting, approving, and amending budgets.
- Investments, derivative instruments, and land and other real estate held by RIO are properly valued.
- Expenses have been appropriately classified the statement of changes in net position, and allocations have been made on a reasonable basis.
- Revenues are appropriately classified in the statement of changes in net position.
- Interfund, internal, and intra-entity activity and balances have been appropriately classified and reported.
- Deposits and investment securities and derivative instruments are properly classified as to risk and are properly valued and disclosed.
- Capital assets, including infrastructure and intangible assets, are properly capitalized, reported, and, if applicable, depreciated.
- We acknowledge our responsibility for the required supplementary information (RSI). The RSI is measured and presented within prescribed guidelines and the methods of measurement and presentation have not changed from those used in the prior period. We have disclosed to you any significant assumptions and interpretations underlying the measurement and presentation of the RSI.

- We acknowledge our responsibility for presenting the schedules (the supplementary information) in accordance with U.S. GAAP, and we believe the supplementary information, including its form and content, is fairly presented in accordance with U.S. GAAP. The methods of measurement and presentation of the supplementary information have not changed from those used in the prior period, and we have disclosed to you any significant assumptions or interpretations underlying the measurement and presentation of the supplementary information. If the supplementary information is not presented with the audited financial statements, we will make the audited financial statements readily available to the intended users of the supplementary information no later than the date we issue the supplementary information and the auditors' report thereon.

Signature:  Title: Executive Director/CIO

Signature:  Title: Chief Financial Officer

**NORTH DAKOTA RETIREMENT  
AND INVESTMENT OFFICE  
Bismarck, ND**

**FINANCIAL STATEMENTS  
June 30, 2018 and 2017**

North Dakota Retirement and Investment Office

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June 30, 2018 and 2017

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## INDEPENDENT AUDITORS' REPORT

Governor Doug Burgum  
The Legislative Assembly  
David Hunter, Executive Director/CIO  
State Investment Board  
Teachers' Fund for Retirement Board  
North Dakota Retirement and Investment Office

### **Report on the Financial Statements**

We have audited the accompanying financial statements of the North Dakota Retirement and Investment Office (RIO), a department of the State of North Dakota, which comprise the statement of net position – fiduciary funds as of June 30, 2018 and 2017, and the related statement of changes in net position – fiduciary funds for the years then ended, and the related notes to the financial statements, which collectively comprise RIO's basic financial statements, and the combining and individual fund financial statements as of and for the years ended June 30, 2018 and 2017, as listed in the table of contents.

### ***Management's Responsibility for the Financial Statements***

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

### ***Auditors' Responsibility***

Our responsibility is to express opinions on these financial statements based on our audits. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

## ***Opinions***

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of RIO as of June 30, 2018 and 2017, and the respective changes in financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America. Also, in our opinion, the combining and individual fund financial statements referred to above present fairly, in all material respects, the financial position of each of the individual funds of RIO as of June 30, 2018 and 2017, and the results of the changes in financial position of such funds for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

## ***Emphasis of Matter***

As discussed in Note 1, the financial statements of RIO are intended to present the financial position and the changes in financial position of only that portion of the State of North Dakota that is attributable to the transactions of RIO. They do not purport to, and do not, present fairly the financial position of the State of North Dakota as of June 30, 2018 and 2017, and the changes in its financial position for the years then ended in conformity with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

## ***Other Matters***

### *Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and the schedules of changes in NPL and related ratios - ND Teachers' Fund for Retirement and employer contributions - ND Teachers' Fund for Retirement, investment returns - ND Teachers' Fund for Retirement, employer's share of Net Pension and OPEB Liability – ND Public Employees Retirement System and employer pension and OPEB contributions – ND Public Employees Retirement System and related notes, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

### *Other Information*

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise RIO's basic financial statements and the combining and individual fund financial statements. The schedules of administrative expenses, consultant expenses, investment expenses, and appropriations – budget basis – fiduciary funds, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

These schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

**Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Audit Standards*, we have also issued our report dated October 31, 2018, on our consideration of RIO's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of RIO's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering RIO's internal control over financial reporting.

A handwritten signature in cursive script that reads "CliftonLarsonAllen LLP".

**CliftonLarsonAllen LLP**

Baltimore, Maryland  
October 31, 2018

**INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS**

Governor Doug Burgum  
The Legislative Assembly  
David Hunter, Executive Director/CIO  
State Investment Board  
Teacher's Fund for Retirement Board  
North Dakota Retirement and Investment Office

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the basic financial statements of the North Dakota Retirement and Investment Office (RIO), a department of the State of North Dakota, which collectively comprise RIO's basic financial statements, and the combining and individual fund financial statements, as of and for the year ended June 30, 2018, and the related notes to the financial statements, and have issued our report thereon dated October 31, 2018.

**Internal Control over Financial Reporting**

Management of RIO is responsible for establishing and maintaining effective internal control over financial reporting. In planning and performing our audit, we considered RIO's internal control over financial reporting as a basis for designing our auditing procedures for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of RIO's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of RIO's internal control over financial reporting.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.



### **Compliance and Other Matters**

As part of obtaining reasonable assurance about whether RIO's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

### **Purpose of this Report**

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of RIO's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering RIO's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

A handwritten signature in cursive script that reads "CliftonLarsonAllen LLP".

**CliftonLarsonAllen LLP**

Baltimore, Maryland  
October 31, 2018

# North Dakota Retirement and Investment Office

## Management's Discussion and Analysis

June 30, 2018 and 2017

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Our discussion and analysis of the ND Retirement and Investment Office's (RIO) financial performance provides an overview of RIO's financial activities for the fiscal years ended June 30, 2018 and 2017. Please read it in conjunction with the basic financial statements, which follow this discussion.

RIO administers two fiduciary funds, a pension trust fund for the ND Teachers' Fund for Retirement (TFFR) and an investment trust fund for the ND State Investment Board (SIB) consisting of 23 investment clients in two investment pools and four individual investment accounts.

### **Financial Highlights**

Total net position increased from the previous fiscal year in the fiduciary funds by \$1.5 billion (11.8%) and \$972 million (8.6%) in FY2018 and FY2017, respectively. Approximately 61% of the FY2018 increase and 90% of the FY2017 increase is due to the growth of the Legacy Fund. The Legacy Fund was created by a constitutional amendment in 2010. The amendment provides that 30% of oil and gas gross production and oil extraction taxes on oil produced after June 30, 2011, be transferred to the Legacy Fund. Transfers into the Legacy Fund totaled \$529.9 million and \$399.5 million and net investment income exceeded \$361 million and \$480 million in FY2018 and FY2017, respectively.

Total additions in the fiduciary funds for FY2018 decreased by \$78.1 (3.7%) and increased over \$1 billion (93.3%) in FY2017. Net investment income decreased by \$302 million in FY2018 after rising by \$1.1 billion in FY2017, due to stronger financial markets in FY2017 over FY2018. There was an increase in new purchases of units in the investment program in FY2018 due to stronger oil and gas tax collections affecting the Legacy Fund and the Budget Stabilization Fund after a decrease in FY2017. Total fiduciary fund purchases of units increased \$223.2 million (34.4%) in FY2018 after decreasing by \$115.1 million (15.1%) in FY2017.

Deductions in the fiduciary funds decreased by \$562.8 million (50.7%) in FY2018 after increasing the prior year by \$656.4 million (144.5%). The vast majority of the large swing between fiscal years was due to the drawdown of \$572.5 million from the Budget Stabilization Fund in FY2017 to cover the State's income shortfall during the 2015-17 biennium. Payments to TFFR members in the form of benefits and refunds increased by \$11.5 million (5.8%) and \$10.5 million (5.7%) in FY2018 and FY2017, respectively. These increases represented a rise in the total number of retirees drawing retirement benefits from the pension fund as well as an increase in the retirement salaries on which the benefits of new retirees are based.

As of June 30, 2018 and 2017, the TFFR pension plan had a Net Pension Liability (NPL) of \$1.33 billion and \$1.37 billion, and Plan Fiduciary Net Position as a percent of Total Pension Liability (TPL) of 65.5% and 63.2%, respectively.

### **Overview of the Financial Statements**

This report consists of four parts – management's discussion and analysis (this section), the basic financial statements, required supplementary information, and additional supplementary information that presents combining statements for the investment trust funds. The basic financial statements include fund financial statements that focus on individual parts of RIO's activities (fiduciary funds).

The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of required supplementary information that further explains and supports the information in the financial statements. In addition to these required elements, we have included additional supplementary information, including combining statements that provide details about our investment trust funds, each of which are added together and presented in single columns in the basic financial statements.

**Fund Financial Statements**

The fund financial statements provide detailed information about RIO's activities. Funds are accounting devices that RIO uses to keep track of specific sources of funding and spending for particular purposes.

RIO uses fiduciary funds as RIO is the trustee, or fiduciary, for TFFR (a pension plan) and SIB (investment trust funds). RIO is responsible for ensuring that the assets reported in these funds are used for their intended purposes. All of RIO's fiduciary activities are reported in a statement of net position and a statement of changes in net position.

**Financial Analysis**

RIO's fiduciary fund total assets as of June 30, 2018 and 2017, were \$13.8 billion and \$12.4 billion, respectively, and were comprised mainly of investments. Total assets increased by \$1.4 billion (11.5%) and \$932.2 million (8.1%) from each prior year primarily due to strong financial markets.

Total liabilities as of June 30, 2018 and 2017, were \$54.7 million and \$87.2 million. The majority of the liabilities were comprised of the securities lending collateral payable. Total liabilities decreased by \$32.5 million (37.3%) and \$39.6 million (31.2%) from each prior year due almost entirely to the decrease in securities lending collateral as a result of having fewer securities on loan at year-end.

RIO's fiduciary fund total net position was \$13.8 billion and \$12.3 billion at the close of fiscal years 2018 and 2017, respectively.

**North Dakota Retirement and Investment Office  
Net Position – Fiduciary Funds  
(In Millions)**

	<u>2018</u>	<u>2017</u>	<u>Total % Change</u>
<b>Assets</b>			
Investments	\$ 13,696.7	\$ 12,251.5	11.8%
Securities Lending Collateral	48.1	77.7	-38.0%
Receivables	75.2	69.0	9.1%
Cash & Other	20.9	19.3	8.1%
<b>Total Assets</b>	<u>13,840.9</u>	<u>12,417.5</u>	11.5%
<b>Deferred Outflows of Resources</b>			
Deferred outflows related to pensions	<u>1.4</u>	<u>0.6</u>	113.3%
<b>Liabilities</b>			
Obligations under Securities Lending	48.1	77.7	-38.0%
Accounts Payable & Accrued Expenses	<u>6.6</u>	<u>9.5</u>	-30.9%
<b>Total Liabilities</b>	<u>54.7</u>	<u>87.2</u>	-37.3%
<b>Deferred Inflows of Resources</b>			
Deferred inflows related to pensions	<u>0.1</u>	<u>0.1</u>	-13.0%
<b>Total Net Position</b>	<u>\$ 13,787.5</u>	<u>\$ 12,330.8</u>	11.8%

North Dakota Retirement and Investment Office  
Management's Discussion and Analysis  
June 30, 2018 and 2017

	<u>2017</u>	<u>2016</u>	<u>Total % Change</u>
<b>Assets</b>			
Investments	\$ 12,251.5	\$ 11,278.3	8.6%
Sec Lending Collateral	77.7	116.6	-33.4%
Receivables	69.0	70.5	-2.2%
Cash & Other	19.3	19.9	-2.9%
<b>Total Assets</b>	<u>12,417.5</u>	<u>11,485.3</u>	8.1%
<b>Deferred Outflows of Resources</b>			
Deferred outflows related to pensions	<u>0.6</u>	<u>0.3</u>	126.0%
<b>Liabilities</b>			
Obligations under Securities Lending	77.7	116.6	-33.4%
Accounts Payable & Accrued Expenses	<u>9.5</u>	<u>10.1</u>	-5.5%
<b>Total Liabilities</b>	<u>87.2</u>	<u>126.7</u>	-31.2%
<b>Deferred Inflows of Resources</b>			
Deferred inflows related to pensions	<u>0.1</u>	<u>0.1</u>	-21.9%
<b>Total Net Position</b>	<u>\$ 12,330.8</u>	<u>\$ 11,358.8</u>	8.6%

**North Dakota Retirement and Investment Office  
Changes in Net Position – Fiduciary Funds  
(In Millions)**

	<u>2018</u>	<u>2017</u>	<u>Total % Change</u>
<b>Additions:</b>			
Contributions	\$ 168.9	\$ 168.1	0.5%
Net Investment Income	963.2	1,265.3	-23.9%
Net Securities Lending Income	1.3	1.2	5.5%
Purchase of Units	<u>871.3</u>	<u>648.1</u>	34.4%
<b>Total Additions</b>	<u>2,004.7</u>	<u>2,082.7</u>	-3.7%
<b>Deductions:</b>			
Payments to TFFR members	208.0	196.5	5.8%
Administrative Expenses	3.8	3.5	9.3%
Redemption of Units	<u>336.2</u>	<u>910.7</u>	-63.1%
<b>Total Deductions</b>	<u>548.0</u>	<u>1,110.7</u>	-50.7%
<b>Total Change in Net Position</b>	<u>\$ 1,456.7</u>	<u>\$ 972.0</u>	49.9%

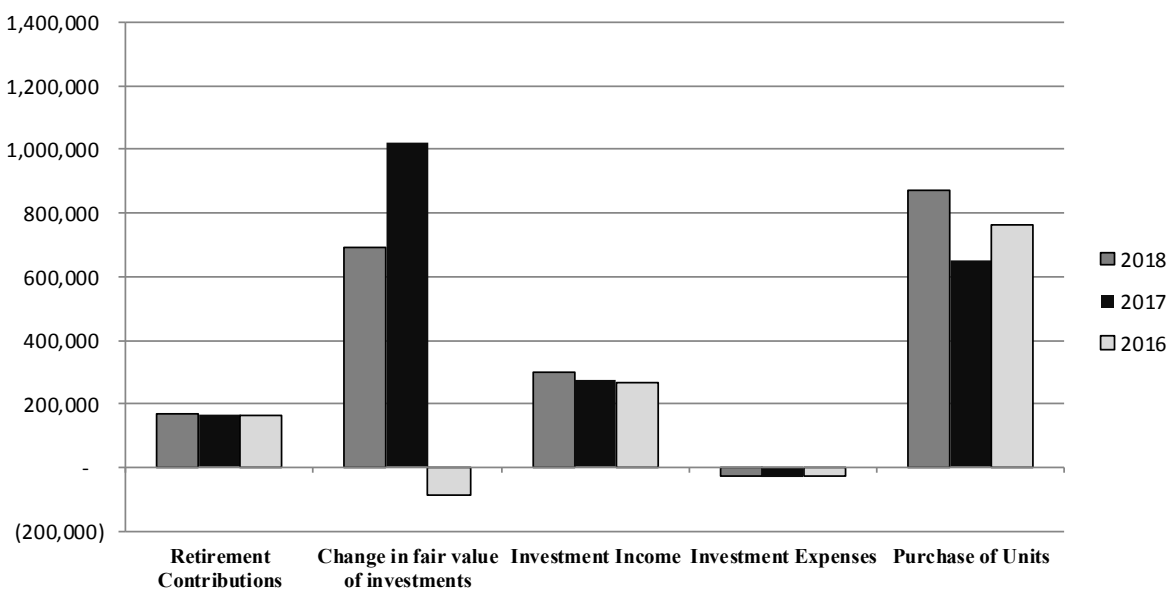
North Dakota Retirement and Investment Office  
Management's Discussion and Analysis  
June 30, 2018 and 2017

	<u>2017</u>	<u>2016</u>	<u>Total % Change</u>
<b>Additions:</b>			
Contributions	\$ 168.1	\$ 162.0	3.8%
Net Investment Income	1,265.3	151.0	738.1%
Net Securities Lending Income	1.2	1.4	-16.1%
Purchase of Units	648.1	763.2	-15.1%
<b>Total Additions</b>	<u>2,082.7</u>	<u>1,077.6</u>	93.3%
<b>Deductions:</b>			
Payments to TFFR members	196.5	186.0	5.7%
Administrative Expenses	3.5	2.9	19.1%
Redemption of Units	910.7	265.4	243.1%
<b>Total Deductions</b>	<u>1,110.7</u>	<u>454.3</u>	144.5%
<b>Total Change in Net Position</b>	<u>\$ 972.0</u>	<u>\$ 623.3</u>	56.0%

**Statement of Changes in Net Position – Additions**

Contributions collected by the pension trust fund increased by \$0.8 million (0.5%) and \$6.1 million (3.8%) over the previous fiscal years due to both an increase in the number of active members contributing to the fund and an increase in the average salary of active members. Net investment income (including net securities lending income and net of investment expenses) decreased by \$302 million (23.8%) in FY2018 and increased by \$1.1 billion or 731% in FY2017. This was the result of stronger financial markets in FY2017 versus FY2018. Deposits of funds into the investment trust fund (purchase of units) decreased by \$115.1 million (15.1%) in FY2017 partially due to lower oil and gas tax collections affecting the Legacy Fund; but rebounded slightly in FY2018, resulting in an increase of \$223.2 million (34.45%) over FY2017 deposits.

**Additions to Net Position  
(in thousands)**



**Statement of Changes in Net Position – Deductions**

Benefits paid to TFFR plan participants, including partial lump-sum distributions, increased by \$11.3 million (5.9%) and \$10.5 million (5.7%) in FY2018 and FY2017, respectively. The increases are due to an increase in the total number of retirees in the plan as well as an increased retirement salary on which the benefits are based upon. Refunds increased by nearly \$150,000 (2.8%) in fiscal year 2018 and by approximately \$61,000 (1.1%) in fiscal year 2017.

Administrative expenses increased by nearly \$322,000 in fiscal year 2018 and nearly \$559,000 in fiscal year 2017. This increase was mainly due to an increase in IT contractual services, including the addition of investment risk analysis/monitoring software in the second half of the fiscal year 2017 (a full year in fiscal year 2018), the payment of the biennial retirement administration software maintenance fee in FY2017; and an increase in pension expense each year due to RIO's participation in the NDPERS pension plan.

The redemption of units in the investment trust funds decreased in FY2018 by \$574.5 million and increased in FY2017 by \$645.3 million due almost entirely to the FY2017 drawdown of \$572.5 million in the Budget Stabilization Fund to cover the State's income shortfall during the 2015-17 biennium.

**Deductions from Net Position  
(in thousands)**



**Conclusion**

For the fiscal year ended June 30, 2018, the pension investment pool and the Legacy Fund generated net time weighted investment returns of 9.1% and 7.5%, respectively, surpassing their respective policy benchmarks. The TFFR pension plan generated a net time weighted return of 9.1%, also exceeding its policy benchmark. The insurance investment pool also performed well and achieved a net time weighted return of 5.2% last year. Investment returns exceeded long-term expectations in fiscal 2018 due to the continued strength of the equity markets particularly in the United States. Investment performance benefited from favorable U.S. income tax policy developments which bolstered revenues, margins and capital spending. Global equities earned over 12.3% within the pension trust with the U.S. equity portfolio (up 16.4%) significantly outpacing international equity returns (up 10.1%). Fixed income results were also strong in the U.S. where investment grade debt earned 1.6% and non-investment grade debt earned over 5.1% in FY18 within the pension trust, noting that international debt strategies were largely eliminated during the past year. Real asset performance was mixed with generally strong, above

## North Dakota Retirement and Investment Office

Management's Discussion and Analysis

June 30, 2018 and 2017

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benchmark returns posted in real estate and infrastructure (both up over 7%), while our timber portfolio lost 2.5% within the pension trust last year. Private equity returns were also disappointing within the pension trust earning slightly over 5.25% the 1-year ended June 30, 2018.

For the fiscal year ended June 30, 2017, the pension investment pool and the Legacy Fund generated net time weighted investment returns of 12.9% and 12.0%, respectively, surpassing their respective policy benchmarks. The TFFR pension plan generated a net time weighted return of 12.9%, also exceeding its policy benchmark. The insurance investment pool also performed well and achieved a net time weighted return of 7.8% last year. Investment returns exceeded long-term expectations in fiscal 2017 due to the surprising strength and resilience of the global financial markets. Investment performance benefitted from relatively low volatility throughout most of last year despite increasing concerns over geopolitical risk in the U.S. and abroad. Global equities earned 19% overall with the pension international equity portfolio (up 21%) outperforming U.S. equity (up 17%). The story was reversed within fixed income, where U.S. centric debt strategies returned over 6% while international debt earned less than 1%. Real asset performance was mixed with strong, above benchmark returns posted in real estate and infrastructure (both up 9%), while our timber portfolio lost 9% in the last year. Private equity returned 11% for the 1-year ended June 30, 2017.

While cumulative returns in the post-credit crisis era have been strong, investors today face numerous challenges in the future that may limit the potential for high market returns and amplify investment risk. First, one could argue that many asset classes and strategies no longer offer compelling valuations for investors. Second, the ever-growing debt burden from unprecedented monetary policy and muted economic growth in a range of economies makes it less and less likely that authorities will be in a position to provide a cushion in a downturn when it occurs. Finally, the specter of the Federal Reserve continuing to raise short-term interest rates in the near future poses a challenge to certain asset classes and strategies to varying degrees. To meet this challenge, the State Investment Board will continue to research strategies and investment options that mitigate and diversify the sources of risk accepted to address funding issues in the challenging years ahead.

TFFR's funding objective is to meet long-term pension benefit obligations through contributions and investment income. To address TFFR's funding shortfall, the ND State Legislature took action in 2011 and approved legislation to increase contributions (4% member and 4% employer) and modify certain benefits for non-grandfathered members. Increased contribution rates will be in effect until TFFR reaches 100% funding on an actuarial basis. This comprehensive funding recovery plan, along with solid investment performance in the future, is expected to improve TFFR's funding level over the long term.

TFFR's funding level increased from 63.7% to 65.4% on an actuarial basis (and from 63.2% to 65.5% on a market basis) from July 1, 2017 to July 1, 2018. Investment performance for FY2017 and FY2018, and for the previous five years, has been greater than expected, resulting in improvement in TFFR's funding status in 2017 and 2018. Over the long term, the plan's funding level is projected to gradually improve with full funding expected in approximately 30 years, if all actuarial assumptions are met in the future, including the 7.75% investment return assumption. Protecting the long term solvency of the pension plan is the TFFR Board's fiduciary responsibility. The Board will continue to proactively address TFFR funding issues so the plan will be financially strong and sustainable for past, present, and future ND educators.

### **Contacting RIO Financial Management**

This financial report is designed to provide our Boards, our membership, our clients and the general public with a general overview of RIO's finances and to demonstrate RIO's accountability for the money we receive. If you have any questions about this report or need additional information, contact the North Dakota Retirement and Investment Office, PO Box 7100, Bismarck, ND 58507-7100.

North Dakota Retirement and Investment Office  
Statement of Net Position – Fiduciary Funds  
June 30, 2018 and 2017

	Pension Trust		Investment Trust		Total	
	2018	2017	2018	2017	2018	2017
Assets:						
Investments, at fair value						
Global equities	\$ 1,441,132,463	1,352,547,367	\$ 5,205,817,256	\$ 4,684,388,027	\$ 6,646,949,719	\$ 6,036,935,394
Global fixed income	589,368,951	521,927,872	4,099,552,552	3,538,734,254	4,688,921,503	4,060,662,126
Global real assets	416,937,112	407,547,460	1,788,156,119	1,661,716,577	2,205,093,231	2,069,264,037
Cash equivalents	28,631,157	27,243,767	127,104,537	57,364,379	155,735,694	84,608,146
Total investments	<u>2,476,069,683</u>	<u>2,309,266,466</u>	<u>11,220,630,464</u>	<u>9,942,203,237</u>	<u>13,696,700,147</u>	<u>12,251,469,703</u>
Invested securities lending collateral	7,413,200	12,839,759	40,721,545	64,829,660	48,134,745	77,669,419
Receivables:						
Investment income	9,765,629	8,947,870	38,863,279	33,653,192	48,628,908	42,601,062
Contributions	26,548,463	26,326,188	-	-	26,548,463	26,326,188
Miscellaneous	8,127	7,398	28,001	21,368	36,128	28,766
Total receivables	<u>36,322,219</u>	<u>35,281,456</u>	<u>38,891,280</u>	<u>33,674,560</u>	<u>75,213,499</u>	<u>68,956,016</u>
Due from other state agency	174	36	-	14	174	50
Cash and cash equivalents	20,486,449	19,073,513	410,261	263,961	20,896,710	19,337,474
Equipment & Software (net of depr)	6,749	8,549	-	-	6,749	8,549
Total assets	<u>2,540,298,474</u>	<u>2,376,469,779</u>	<u>11,300,653,550</u>	<u>10,040,971,432</u>	<u>13,840,952,024</u>	<u>12,417,441,211</u>
Deferred outflows of resources						
Related to pensions	813,903	384,391	544,101	252,274	1,358,004	636,665
Liabilities:						
Accounts payable	126,480	191,738	136,431	201,551	262,911	393,289
Investment expenses payable	459,438	1,583,834	2,279,952	5,165,064	2,739,390	6,748,898
Securities lending collateral	7,413,200	12,839,759	40,721,545	64,829,660	48,134,745	77,669,419
Accrued expenses	2,395,362	1,685,809	1,111,661	644,911	3,507,023	2,330,720
Miscellaneous payable	-	-	34,655	16,983	34,655	16,983
Due to other state agencies	11,967	6,613	2,572	1,649	14,539	8,262
Total liabilities	<u>10,406,447</u>	<u>16,307,753</u>	<u>44,286,816</u>	<u>70,859,818</u>	<u>54,693,263</u>	<u>87,167,571</u>
Deferred inflows of resources						
Related to pensions	48,519	55,342	27,917	32,528	76,436	87,870
Net position:						
Restricted for pensions	2,530,657,411	2,360,491,075	-	-	2,530,657,411	2,360,491,075
Held in trust for external investment pool participants:						
Pension pool	-	-	3,233,154,948	2,978,824,123	3,233,154,948	2,978,824,123
Insurance pool	-	-	2,171,169,377	2,035,100,078	2,171,169,377	2,035,100,078
Held in trust for individual investment accounts	-	-	5,852,558,593	4,956,407,159	5,852,558,593	4,956,407,159
Total net position	<u>\$ 2,530,657,411</u>	<u>\$ 2,360,491,075</u>	<u>\$ 11,256,882,918</u>	<u>\$ 9,970,331,360</u>	<u>\$ 13,787,540,329</u>	<u>\$ 12,330,822,435</u>
Each participant unit is valued at \$1.00						
Participant units outstanding			<u>11,256,882,918</u>	<u>9,970,331,360</u>		

The accompanying notes are an integral part of these financial statements.



North Dakota Retirement and Investment Office  
Statement of Changes in Net Position – Fiduciary Funds  
June 30, 2018 and 2017

	Pension Trust		Investment Trust		Total	
	2018	2017	2018	2017	2018	2017
Additions:						
Contributions:						
Employer contributions	\$ 86,675,715	\$ 86,058,868	\$ -	\$ -	\$ 86,675,715	\$ 86,058,868
Member contributions	79,877,611	79,309,153	-	-	79,877,611	79,309,153
Purchased service credit	2,181,106	2,553,200	-	-	2,181,106	2,553,200
Interest, penalties and other	194,028	235,890	-	-	194,028	235,890
Total contributions	<u>168,928,460</u>	<u>168,157,111</u>	<u>-</u>	<u>-</u>	<u>168,928,460</u>	<u>168,157,111</u>
Investment income:						
Net change in fair value of investments						
value of investments	162,026,369	221,797,589	527,542,620	797,372,051	689,568,989	1,019,169,640
Interest, dividends and other income	54,486,768	50,718,890	246,166,774	224,483,911	300,653,542	275,202,801
	<u>216,513,137</u>	<u>272,516,479</u>	<u>773,709,394</u>	<u>1,021,855,962</u>	<u>990,222,531</u>	<u>1,294,372,441</u>
Less investment expenses	5,352,945	6,011,791	21,653,138	23,033,769	27,006,083	29,045,560
Net investment income	<u>211,160,192</u>	<u>266,504,688</u>	<u>752,056,256</u>	<u>998,822,193</u>	<u>963,216,448</u>	<u>1,265,326,881</u>
Securities lending activity:						
Securities lending income	231,448	229,936	1,334,400	1,254,228	1,565,848	1,484,164
Less securities lending expenses	(46,271)	(45,973)	(266,663)	(250,628)	(312,934)	(296,601)
Net securities lending income	<u>185,177</u>	<u>183,963</u>	<u>1,067,737</u>	<u>1,003,600</u>	<u>1,252,914</u>	<u>1,187,563</u>
Purchase of units (\$1 per unit)	-	-	871,266,337	648,096,361	871,266,337	648,096,361
Total additions	<u>380,273,829</u>	<u>434,845,762</u>	<u>1,624,390,330</u>	<u>1,647,922,154</u>	<u>2,004,664,159</u>	<u>2,082,767,916</u>
Deductions:						
Benefits paid to participants	201,648,202	190,029,141	-	-	201,648,202	190,029,141
Partial lump-sum distributions	768,829	1,075,553	-	-	768,829	1,075,553
Refunds	5,561,668	5,411,850	-	-	5,561,668	5,411,850
Administrative expenses	2,128,794	2,173,431	1,669,600	1,303,019	3,798,394	3,476,450
Redemption of units (\$1 per unit)	-	-	336,169,172	910,737,683	336,169,172	910,737,683
Total deductions	<u>210,107,493</u>	<u>198,689,975</u>	<u>337,838,772</u>	<u>912,040,702</u>	<u>547,946,265</u>	<u>1,110,730,677</u>
Change in net position	<u>170,166,336</u>	<u>236,155,787</u>	<u>1,286,551,558</u>	<u>735,881,452</u>	<u>1,456,717,894</u>	<u>972,037,239</u>
Net position:						
Beginning of year	<u>2,360,491,075</u>	<u>\$ 2,124,335,288</u>	<u>\$ 9,970,331,360</u>	<u>\$ 9,234,449,908</u>	<u>\$ 12,330,822,435</u>	<u>\$ 11,358,785,196</u>
End of Year	<u>\$ 2,530,657,411</u>	<u>\$ 2,360,491,075</u>	<u>\$ 11,256,882,918</u>	<u>\$ 9,970,331,360</u>	<u>\$ 13,787,540,329</u>	<u>\$ 12,330,822,435</u>

The accompanying notes are an integral part of these financial statements.

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**Note 1 - Summary of Significant Accounting Policies**

RIO is an agency of the State of North Dakota operating through the legislative authority of North Dakota Century Code (NDCC) Chapter 54-52.5 and is considered part of the State of North Dakota financial reporting entity and included in the State of North Dakota's Comprehensive Annual Financial Report.

For financial reporting purposes, RIO has included all funds, and has considered all potential component units for which RIO is financially accountable, and other organizations for which the nature and significance of their relationship with RIO are such that exclusion would cause RIO's financial statements to be misleading or incomplete. The Governmental Accounting Standards Board has set forth criteria to be considered in determining financial accountability. These criteria include appointing a voting majority of an organization's governing body and (1) the ability of RIO to impose its will on that organization or (2) the potential for the organization to provide specific financial benefits to, or impose specific financial burdens on RIO.

Based upon these criteria, there are no component units to be included within RIO as a reporting entity and RIO is part of the State of North Dakota as a reporting entity.

**Fund Financial Statement**

All activities of RIO are accounted for within the pension and investment trust funds and are shown, by fund, in the fiduciary fund financial statements.

**Measurement Focus, Basis of Accounting and Financial Statement Presentation**

The financial statements of RIO are reported using the economic resources measurement focus and the accrual basis of accounting.

This measurement focus includes all assets and liabilities associated with the operations of the fiduciary funds on the statements of net position. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows.

**New Accounting Standards**

In fiscal year 2018, RIO implemented GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions, ("GASB 75"). The primary objective of this statement is to improve accounting and financial reporting by state and local governments for postemployment benefits other than pensions (other postemployment benefits or OPEB). Due to the immateriality of the amounts in relation to the previous year's financial statements, no prior period adjustments were made to fiscal year 2017 balances; rather, all financial transactions necessary to establish the liability and deferral balances were recorded in fiscal year 2018 only.

**Fiduciary Fund**

A pension trust fund and investment trust funds have been established to account for the assets held by RIO in a trustee capacity for TFFR and as an agent for other governmental units or funds which have placed certain investment assets under the management of SIB. The SIB manages two external investment pools and four individual investment accounts. The two external investment pools consist of a pension pool and insurance pool. SIB manages the investments of the North Dakota Public Employees Retirement System, Bismarck City Employees and Police, City of Grand Forks Employees and City of Grand Forks Park District Employees pension plans in the pension pool. The investments of Workforce Safety & Insurance, State Fire and Tornado, State

# North Dakota Retirement and Investment Office

Notes to Combined Financial Statements

June 30, 2018 and 2017

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Bonding, Petroleum Tank Release Compensation Fund, Insurance Regulatory Trust, North Dakota Association of Counties Fund, Risk Management, Risk Management Workers Comp, PERS Group Insurance, City of Bismarck Deferred Sick Leave, City of Fargo FargoDome Permanent Fund, Cultural Endowment Fund, ND State Board of Medicine, Lewis and Clark Interpretive Center Endowment Fund and Budget Stabilization Fund are managed in the insurance pool. The Legacy Fund, Job Service of North Dakota, Tobacco Prevention and Control Fund, and PERS Retiree Health investments are managed by SIB in individual investment accounts; except for a small portion of the Legacy Fund fixed income assets that will remain pooled until they are liquidated at a future date and their cash allocation that will remain pooled for operational efficiency.

RIO has no statutory authority over, nor responsibility for, these investment trust funds other than the investment responsibility provided for by statute or through contracts with the individual agencies. The funds that are required to participate according to statute are: Public Employees Retirement System, Workforce Safety & Insurance, State Fire and Tornado, State Bonding, Petroleum Tank Release Compensation Fund, Insurance Regulatory Trust, Risk Management, Risk Management Workers Comp, Cultural Endowment Fund, Legacy Fund and Budget Stabilization Fund.

RIO follows the pronouncements of the Governmental Accounting Standards Board (GASB), which is the nationally accepted standard setting body for establishing accounting principles generally accepted in the United States of America for governmental entities.

Pension and Investment Trust Funds are accounted for using the accrual basis of accounting. Member contributions are recognized in the period in which they are due. Employer contributions are recognized when due and the employer has made a formal commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the NDCC.

## **Use of Estimates**

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

RIO utilizes various investment instruments. Investment securities, in general, are exposed to various risks, such as interest rate, credit, and overall market volatility. Due to the level of risk associated with certain investment securities, it is reasonably possible that changes in the values of investment securities will occur in the near term and that such change could materially affect the amounts reported in the statements of net position.

## **Budgetary Process**

RIO operates through a biennial appropriation, which represents appropriations recommended by the Governor and presented to the General Assembly (the Assembly) at the beginning of each legislative session. The Assembly enacts RIO's budget through passage of a specific appropriation bill. The State of North Dakota's budget is prepared principally on a modified accrual basis. The Governor has line item veto power over all legislation, subject to legislative override.

Once passed and signed, the appropriation bill becomes RIO's financial plan for the next two years. Changes to the appropriation are limited to Emergency Commission authorization, initiative, or referendum action. The Emergency Commission can authorize receipt of federal or other moneys not appropriated by the Assembly if the Assembly did not indicate intent to reject the money. The Emergency Commission may authorize pass-through federal funds from one state agency to another. The Emergency Commission may authorize the transfer of

# North Dakota Retirement and Investment Office

Notes to Combined Financial Statements

June 30, 2018 and 2017

expenditure authority between appropriated line items, however RIO has specific authority as a special fund to transfer between the contingency line item and other line items. Unexpended appropriations lapse at the end of each biennium, except certain capital expenditures covered under the NDCC section 54-44.1-11.

RIO does not use encumbrance accounting. The legal level of budgetary control is at the agency, appropriation and expenditure line item level. RIO does not formally budget revenues and it does not budget by fund. The statement of revenues, expenditures and changes in fund balances - budget and actual is not prepared because revenues are not budgeted.

## Capital Assets and Depreciation

Capital asset expenditures greater than \$5,000 are capitalized at cost in accordance with Section 54-27-21 of the NDCC. Depreciation is computed using the straight-line method over the estimated useful lives of the assets. The estimated useful lives are as follows:

	<u>Years</u>
Office equipment	5
Furniture and fixtures	5

## Investments

NDCC Section 21-10-07 states that the SIB shall apply the prudent investor rule when investing funds under its supervision. The prudent investor rule means that in making investments, the fiduciaries shall exercise the judgment and care, under the circumstances then prevailing, that an institutional investor of ordinary prudence, discretion and intelligence exercises in the management of large investments entrusted to it, not in regard to speculation, but in regard to the permanent disposition of funds, considering probable safety of capital as well as probable income.

The pension fund belonging to TFFR and investment trust funds attributable to the City of Bismarck Employee Pension Plan, the City of Bismarck Police Pension Plan, Job Service of North Dakota, City of Grand Forks Employee Pension Plan, City of Grand Forks Park District Pension Plan and the Public Employees Retirement System (PERS) must be invested exclusively for the benefit of their members. All investments are made in accordance with the respective fund's long-term investment objectives and performance goals.

## Pooled Investments

Most funds whose investments are under the supervision of the SIB participate in pooled investments. The agencies transfer money into the investment pools and receive an appropriate percentage ownership of the pooled portfolio based upon fair value. All activities of the investment pools are allocated to the agencies based upon their respective ownership percentages. Each participant unit is valued at \$1.00 per unit.

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**Investment Valuation and Income Recognition**

Investments are reported at fair value. Quoted market prices, when available, have been used to value investments. The fair values for securities that have no quoted market price represent estimated fair value. International securities are valued based upon quoted foreign market prices and translated into U.S. dollars at the exchange rate in effect at June 30. In general, corporate debt securities have been valued at quoted market prices or, if not available, values are based on yields currently available on comparable securities of issuers with similar credit ratings. Mortgages have been valued on the basis of their future principal and interest payments discounted at prevailing interest rates for similar instruments. The fair value of real estate investments, including timberland, is based on appraisals plus fiscal year-to-date capital transactions. Publicly traded alternative investments are valued based on quoted market prices. When not readily available, alternative investment securities are valued using current estimates of fair value from the investment manager. Such valuations consider variables such as financial performance of the issuer, comparison of comparable companies' earnings multiples, cash flow analysis, recent sales prices of investments, withdrawal restrictions, and other pertinent information. Because of the inherent uncertainty of the valuation for these other alternative investments, the estimated fair value may differ from the values that would have been used had a ready market existed.

The net change in fair value of investments consists of the realized gains or losses and the unrealized increase or decrease in fair value of investments during the year. Realized gains and losses on sales of investments are computed based on the difference between the sales price and the original cost of the investment sold. Realized gains and losses on investments that had been held in more than one fiscal year and sold in the current fiscal year were included as a change in the fair value of investments reported in the prior year(s) and the current year.

Unrealized gains and losses are computed based on changes in the fair value of investments between years. Security transactions are accounted for on a trade date basis. Interest income is recognized when earned. Dividend income is recorded on the ex-dividend date.

**Pensions and Other Postemployment Benefits (OPEB)**

For purposes of measuring the net pension and OPEB liabilities, deferred outflows of resources and deferred inflows of resources related to pensions and OPEB, and pension and OPEB expenses, information about the fiduciary net position of the ND Public Employees Retirement System (NDPERS) defined benefit pension and OPEB plans, and additions to/deductions from NDPERS' fiduciary net position have been determined on the same basis as they are reported by NDPERS. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

**Note 2 - Cash and Cash Equivalents****Custodial Credit Risk**

State law generally requires that all state funds be deposited in the Bank of North Dakota. NDCC 21-04-01 provides that public funds belonging to or in the custody of the state shall be deposited in the Bank of North Dakota. Also, NDCC 6-09-07 states, "[a]ll state funds ... must be deposited in the Bank of North Dakota" or must be deposited in accordance with constitutional and statutory provisions.

**Pension Trust Fund**

Deposits held by the Pension Trust Fund at June 30, 2018 were deposited in the Bank of North Dakota. At June 30, 2018 and 2017, the carrying amount of TFFR's deposits was \$20,486,449 and \$19,073,513, respectively, and the bank balance was \$20,528,537 and \$19,081,337, respectively. The difference results from checks outstanding or deposits not yet processed by the bank. These deposits are exposed to custodial credit risk as uninsured and uncollateralized. However, these deposits at the Bank of North Dakota are guaranteed by the State of North Dakota through NDCC Section 6-09-10.

**Investment Trust Funds**

Certificates of deposit, an insurance pool cash account and a pension pool cash account are recorded as investments and have a cost and carrying value of \$88,601,097 and \$92,016,033 at June 30, 2018 and 2017, respectively. In addition, these funds carry cash and cash equivalents totaling \$410,261 and \$263,961 at June 30, 2018 and 2017, respectively. These deposits are exposed to custodial credit risk as uninsured and uncollateralized. However, these deposits held at the Bank of North Dakota are guaranteed by the State of North Dakota through NDCC Section 6-09-10.

**Note 3 - Investments**

The investment policy of the SIB is governed by NDCC 21-10. The SIB shall apply the prudent investor rule in investing for funds under its supervision. The "prudent investor rule" means that in making investments, the fiduciaries shall exercise the judgment and care, under the circumstances then prevailing, that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the management of large investments entrusted to it, not in regard to speculation but in regard to the permanent disposition of funds, considering probable safety of capital as well as probable income. The retirement funds belonging to the teachers' fund for retirement and the public employees' retirement system must be invested exclusively for the benefit of their members and in accordance with the respective funds' investment goals and objectives.

**Interest Rate Risk**

Interest rate risk is the risk that changes in interest rates of debt securities will adversely affect the fair value of an investment. The price of a debt security typically moves in the opposite direction of the change in interest rates. The SIB does not have a formal investment policy that limits investment maturities as a means of managing its exposure to potential fair value losses arising from future changes in interest rates.

At June 30, 2018 and 2017, the following tables show the investments by investment type and maturity (expressed in thousands).

# North Dakota Retirement and Investment Office

## Notes to Combined Financial Statements

June 30, 2018 and 2017

2018	Total Fair Value	Less than 1 Year	1-6 Years	6-10 Years	More than 10 Years
Asset Backed Securities	\$ 205,023	\$ 470	\$ 44,775	\$ 41,176	\$ 118,602
Bank Deposits	2,736	2,736	-	-	-
Bank Loans	2,636	387	1,085	1,164	-
Collateralized Bonds	2,752	-	-	250	2,502
Commercial Mortgage-Backed	142,460	-	1,777	968	139,715
Commercial Paper	11,886	11,886	-	-	-
Corporate Bonds	1,479,560	31,658	579,400	451,040	417,462
Corporate Convertible Bonds	24,247	-	14,064	5,156	5,027
Government Agencies	105,819	7,183	62,478	18,693	17,465
Government Bonds	585,476	19,918	230,575	122,793	212,190
Gov't Mortgage Backed	580,245	30	5,555	14,467	560,193
Gov't-issued CMB	106,687	9	605	24,048	82,025
Index Linked Government Bonds	4,618	-	696	-	3,922
Municipal/Provincial Bonds	33,218	600	14,331	2,897	15,390
Non-Government Backed CMOs	60,910	43	2,603	1,724	56,540
Other Fixed Income	2,176	1,739	437	-	-
Repurchase Agreements	(18,967)	(18,967)	-	-	-
Short Term Bills and Notes	44,156	44,156	-	-	-
Sukuk	200	200	-	-	-
Funds/Pooled Investments	1,819,095	-	161,997	1,061,786	595,312
<b>Total Debt Securities</b>	<b>\$ 5,194,933</b>	<b>\$ 102,048</b>	<b>\$ 1,120,378</b>	<b>\$ 1,746,162</b>	<b>\$ 2,226,345</b>

2017	Total Fair Value	Less than 1 Year	1-6 Years	6-10 Years	More than 10 Years
Asset Backed Securities	\$ 101,522	\$ -	\$ 16,105	\$ 24,636	\$ 60,781
Bank Loans	3,687	100	2,301	1,286	-
Commercial Mortgage-Backed	119,452	-	3,999	777	114,676
Corporate Bonds	1,199,355	44,108	391,131	376,693	387,423
Corporate Convertible Bonds	14,457	-	5,026	4,582	4,849
Government Agencies	105,235	8,803	62,171	20,754	13,507
Government Bonds	464,441	2,402	155,204	105,268	201,567
Gov't Mortgage Backed	651,844	1,055	18,024	27,933	604,832
Gov't-issued CMB	57,767	343	4,089	7,011	46,324
Index Linked Government Bonds	31,880	-	13,599	12,357	5,924
Municipal/Provincial Bonds	46,016	4,172	11,454	7,198	23,192
Non-Government Backed CMOs	73,991	2,567	10,902	571	59,951
Other Fixed Income	3,575	1,681	1,894	-	-
Repurchase Agreements	(3,208)	(3,208)	-	-	-
Short Term Bills and Notes	7,827	7,827	-	-	-
Funds/Pooled Investments	1,962,531	-	361,109	1,043,860	557,562
<b>Total Debt Securities</b>	<b>\$ 4,840,372</b>	<b>\$ 69,850</b>	<b>\$ 1,057,008</b>	<b>\$ 1,632,926</b>	<b>\$ 2,080,588</b>

# North Dakota Retirement and Investment Office

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In the tables above, the fair values of inflation indexed bonds are reflected in the columns based on their stated maturity dates. The principal balances of these bonds are adjusted every six months based on the inflation index for that period.

Some investments are more sensitive to interest rate changes than others. Variable and floating rate collateralized mortgage obligations (CMOs), asset-backed securities (ABS), interest-only and principal-only securities are examples of investments whose fair values may be highly sensitive to interest rate changes.

Interest-only (IO) and principal-only (PO) strips are transactions which involve the separation of the interest and principal components of a security. They are highly sensitive to prepayments by mortgagors, which may result from a decline in interest rates. The SIB held IOs valued at \$6.7 million and \$8.7 million and POs valued at \$0.0 million and \$4.8 million at June 30, 2018 and 2017, respectively. The SIB has no policy regarding IO or PO strips.

### Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The State Investment Board maintains a highly diversified portfolio of debt securities encompassing a wide range of credit ratings. Although the SIB has no overall policy regarding credit risk, each debt securities manager is given a specific set of guidelines to invest within based on the mandate for which it was hired. The guidelines specify in which range of credit the manager may invest. These ranges include investment grade and below investment grade categories. The following tables present the SIB's ratings as of June 30, 2018 and 2017, (expressed in thousands).

2018	Total Fair Value	Credit Rating*										
		AAA	AA	A	BBB	BB	B	CCC	CC	C	D	NR
Asset Backed Securities	\$ 204,368	\$ 144,343	\$ 18,759	\$ 11,250	\$ 9,889	\$ 3,163	\$ 1,873	\$ 5,965	\$ 2,976	\$ -	\$ 1,495	\$ 4,655
Bank Deposits	2,736	-	-	2,736	-	-	-	-	-	-	-	-
Bank Loans	2,636	-	-	-	387	887	858	272	-	-	-	232
Collateralized Bond	2,752	2,752	-	-	-	-	-	-	-	-	-	-
Commercial Mortgage Backed	141,995	107,878	6,804	5,158	5,673	6,284	1,140	4,431	520	883	1,232	1,992
Commercial Paper	11,886	-	-	10,810	-	-	-	-	-	-	-	1,076
Corporate Bonds	1,479,560	10,261	52,467	311,750	870,000	170,852	56,483	7,745	-	-	2	-
Corporate Convertible Bonds	24,247	-	-	-	1,742	6,265	7,365	8,875	-	-	-	-
Gov't Agencies	92,701	3,096	61,504	1,594	24,799	1,708	-	-	-	-	-	-
Gov't Bonds	75,958	-	3,763	6,033	43,886	9,699	12,577	-	-	-	-	-
Gov't Mortgage Backed	487,236	-	487,236	-	-	-	-	-	-	-	-	-
Gov't Issued CMB	27,991	-	27,991	-	-	-	-	-	-	-	-	-
Index Linked Government Bonds	696	-	-	-	-	-	696	-	-	-	-	-
Municipal/Provincial Bonds	33,218	235	8,326	13,277	7,863	574	2,943	-	-	-	-	-
Non-Gov't Backed CMOs	60,910	23,309	2,398	11,858	2,745	728	2,136	3,344	3,806	-	809	9,777
Other Fixed Income	2,176	-	-	1,499	480	-	-	-	-	-	-	197
Repurchase Agreements	(18,967)	-	(18,967)	-	-	-	-	-	-	-	-	-
Short Term Bills & Notes	42,636	-	7,422	35,214	-	-	-	-	-	-	-	-
Sukuk	200	-	-	-	-	200	-	-	-	-	-	-
Funds/Pooled Investments	1,819,095	-	1,279,292	110,643	355,231	19,052	54,877	-	-	-	-	-
<b>Total Credit Risk of Debt Securities</b>	<b>4,494,030</b>	<b>\$ 291,874</b>	<b>\$ 1,936,995</b>	<b>\$ 521,822</b>	<b>\$ 1,322,695</b>	<b>\$ 219,412</b>	<b>\$ 140,948</b>	<b>\$ 30,632</b>	<b>\$ 7,302</b>	<b>\$ 883</b>	<b>\$ 3,538</b>	<b>\$ 17,929</b>
US Gov't & Agencies **	700,903											
<b>Total Debt Securities</b>	<b>\$ 5,194,933</b>											



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2017	Total Fair Value	Credit Rating*										
		AAA	AA	A	BBB	BB	B	CCC	CC	C	D	NR
Asset Backed Securities	\$ 101,522	\$ 55,001	\$ 4,386	\$ 9,003	\$ 10,555	\$ 4,143	\$ 2,805	\$ 11,811	\$ 1,766	\$ 67	\$ 1,985	\$ -
Bank Loans	3,687	-	-	-	396	1,993	426	-	-	-	-	872
Commercial Mortgage Backed	85,465	44,485	8,826	6,350	6,958	7,045	4,366	5,349	455	-	1,532	99
Corporate Bonds	1,199,355	8,280	38,298	195,825	744,656	142,769	60,766	8,201	-	105	455	-
Corporate Convertible Bonds	14,457	-	-	-	1,627	3,499	3,911	5,420	-	-	-	-
Gov't Agencies	89,139	11,380	53,086	3,228	19,666	1,779	-	-	-	-	-	-
Gov't Bonds	123,863	-	9,813	46,574	45,427	17,267	4,782	-	-	-	-	-
Gov't Mortgage Backed	492,868	-	492,868	-	-	-	-	-	-	-	-	-
Gov't Issued CMB	11,824	-	11,597	-	227	-	-	-	-	-	-	-
Municipal/Provincial Bonds	46,016	3,909	14,473	9,834	15,514	-	2,286	-	-	-	-	-
Non-Gov't Backed CMOs	72,957	17,748	10,630	20,144	3,981	3,000	3,246	7,752	3,588	-	2,868	-
Other Fixed Income	3,575	3,575	-	-	-	-	-	-	-	-	-	-
Repurchase Agreements	(3,208)	-	(3,208)	-	-	-	-	-	-	-	-	-
Short Term Bills & Notes	3,892	-	3,597	295	-	-	-	-	-	-	-	-
Funds/Pooled Investments	1,962,531	161,292	1,005,167	198,871	329,090	247,377	20,734	-	-	-	-	-
<b>Total Credit Risk of Debt Securities</b>	<b>4,207,943</b>	<b>\$ 305,670</b>	<b>\$1,649,533</b>	<b>\$ 490,124</b>	<b>\$ 1,178,097</b>	<b>\$ 428,872</b>	<b>\$ 103,322</b>	<b>\$ 38,533</b>	<b>\$ 5,809</b>	<b>\$ 172</b>	<b>\$ 6,840</b>	<b>\$ 971</b>
US Gov't & Agencies **	632,429											
<b>Total Debt Securities</b>	<b>\$ 4,840,372</b>											

- \* Ratings are determined in the following order:
1. S&P rating
  2. Moody's rating
  3. Fitch rating
  4. Manager-determined rating (internal rating)
  5. If no ratings available using steps 1-4, then shown as not rated.

\*\* US government agency securities explicitly guaranteed by the US government are categorized here. Credit ratings of US government agency securities that are only implicitly guaranteed by the US government are categorized accordingly in the main body of these tables. Implicitly guaranteed agency securities included in the *Asset Backed*, *Commercial Mortgage-Backed*, *Gov't Issued Commercial & Gov't Mortgage Backed*, *Gov't Agencies*, *Gov't Bonds*, *Index Linked Gov't Bonds* and *Short Term Bills and Notes* categories are issued by FNMA, FHLB, FHLMC, FAMC and TVA.

### Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of an investment in a single issuer. As of June 30, 2018 and 2017, the SIB's portfolio has no single issuer exposure that comprises 5% or more of the overall portfolio, excluding investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments. Therefore, there is no concentration of credit risk.

### Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. Although the SIB does not have a formal investment policy governing foreign currency risk, the SIB manages its exposure to fair value loss by requiring their international securities investment managers to maintain diversified portfolios to limit foreign currency and security risk. The SIB's exposure to foreign currency risk is presented in the following tables as of June 30, 2018 and 2017 (expressed in thousands).

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2018

Currency	Short-Term	Debt	Equity	Real Estate	Total
Argentine peso	\$ 63	\$ 3,064	\$ -	\$ -	\$ 3,127
Australian dollar	9,035	(7,424)	86,331	-	87,942
Brazilian real	875	-	3,703	-	4,578
British pound sterling	5,554	(4,870)	224,748	-	225,432
Canadian dollar	3,862	(3,637)	73,146	-	73,371
Chilean peso	55	-	-	-	55
Colombian peso	213	275	-	-	488
Czech koruna	335	-	-	-	335
Danish krone	20	-	22,089	-	22,109
Egyptian pound	308	-	-	-	308
Euro	13,098	(12,059)	444,208	5,312	450,559
Hong Kong dollar	825	-	113,541	-	114,366
Hungarian forint	154	-	3,432	-	3,586
Indonesian rupiah	55	-	-	-	55
Japanese yen	(3,273)	-	235,053	-	231,780
Malaysian ringgit	154	-	1,683	-	1,837
Mexican peso	609	5,671	1,167	-	7,447
New Israeli shekel	246	-	3,755	-	4,001
New Taiwan dollar	142	-	5,441	-	5,583
New Zealand dollar	946	-	468	-	1,414
Norwegian krone	78	-	14,658	-	14,736
Polish zloty	29	-	1,311	-	1,340
Russian ruble	38	-	-	-	38
Singapore dollar	53	-	7,450	-	7,503
South African rand	(1,276)	1,843	6,443	-	7,010
South Korean won	583	-	12,581	-	13,164
Swedish krona	4,746	-	44,887	-	49,633
Swiss franc	1,554	-	82,868	-	84,422
Thai baht	426	-	5,163	-	5,589
Turkish lira	39	-	737	-	776
International commingled funds (various currencies)	-	-	952,235	25,105	977,340
Total international investment securities	\$ 39,546	\$ (17,137)	\$ 2,347,098	\$ 30,417	\$ 2,399,924

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2017

Currency	Short-Term	Debt	Equity	Real Estate	Total
Argentine peso	\$ -	\$ 509	\$ -	\$ -	\$ 509
Australian dollar	3,344	8,461	64,338	-	76,143
Brazilian real	641	6,742	14,678	-	22,061
British pound sterling	14,956	9,761	195,199	-	219,916
Canadian dollar	6,084	-	55,194	-	61,278
Chilean peso	54	-	-	-	54
Colombian peso	204	-	-	-	204
Czech koruna	-	-	760	-	760
Danish krone	-	-	13,941	-	13,941
Euro	(13,111)	13,951	401,660	9,954	412,454
Hong Kong dollar	1,601	-	77,234	-	78,835
Hungarian forint	89	-	4,413	-	4,502
Indian rupee	7,193	1,398	-	-	8,591
Indonesian Rupiah	59	6,939	1,003	-	8,001
Japanese yen	712	381	221,644	-	222,737
Malaysian Ringgit	74	8,006	1,530	-	9,610
Mexican peso	(45)	26,092	-	-	26,047
New Israeli shekel	543	-	4,103	-	4,646
New Taiwan dollar	(378)	-	3,896	-	3,518
New Zealand dollar	88	-	2,177	-	2,265
Norwegian krone	8,121	-	12,450	-	20,571
Peruvian nuevo sol	2	-	-	-	2
Polish zloty	(5)	9,101	1,684	-	10,780
Russian ruble	325	-	-	-	325
Singapore dollar	300	-	6,177	-	6,477
South African rand	47	7,137	7,663	-	14,847
South Korean won	134	-	12,364	-	12,498
Swedish krona	6,408	-	39,213	-	45,621
Swiss franc	128	-	79,937	-	80,065
Thai baht	197	-	5,013	-	5,210
Turkish lira	25	2,461	806	-	3,292
International commingled funds (various currencies)	-	105,946	916,411	61,315	1,083,672
Total international investment securities	\$ 37,790	\$ 206,885	\$ 2,143,488	\$ 71,269	\$ 2,459,432

Negative amounts represent short positions.

## Derivative Securities

Derivatives are financial arrangements between two parties whose payments are based on, or “derived” from, the performance of some agreed upon benchmark. The investment policies of the SIB’s clients allow the use of derivative securities to hedge or replicate underlying exposures but not for speculation. All derivatives are considered investment derivative instruments. The fair value of all derivative securities is reported in the statement of net position. At June 30, 2018 and 2017, the SIB had four types of derivative securities: futures, options, swaps and currency forwards.

### Futures

Futures represent commitments to purchase (asset) or sell (liability) securities at a future date and at a specific price. Futures contracts are traded on organized exchanges (exchange traded) thereby minimizing the SIB’s counterparty risk. The net change in the futures contracts’ value is settled daily in cash with the exchanges. Net gains or losses resulting from the daily settlements are included in net change in fair value of investments in the statement of changes in net position and totaled \$100.0 million and \$133.8 million for fiscal years 2018 and 2017, respectively. At June 30, 2018 and 2017, the SIB investment portfolio had the notional futures balances shown below (expressed in thousands).

<u>Futures</u>	Notional Value	
	<u>June 30, 2018</u>	<u>June 30, 2017</u>
Cash & Cash Equivalent Derivative Futures		
Long	\$ 226,320	\$ 68,249
Short	(962,500)	(725,425)
Equity Derivative Futures		
Long	647,386	623,945
Short	-	-
Fixed Income Derivative Futures		
Long	378,144	287,137
Short	(132,120)	(194,390)
	<u>                    </u>	<u>                    </u>
Total Futures	<u>\$ 157,230</u>	<u>\$ 59,516</u>

### Options

Options represent or give buyers the right, but not the obligation, to buy (call) or sell (put) an asset at a preset price over a specified period. Options are traded on organized exchanges (exchange traded) thereby minimizing the SIB’s counterparty credit risk. The option’s price is usually a small percentage of the underlying asset’s value. As a seller of a financial option, the SIB, through its investment manager, receives a premium at the beginning of the agreement and bears the risk of an unfavorable change in the price of the financial instrument underlying the option. As a buyer of a financial option, the SIB, through its investment manager, pays a premium at the beginning of the agreement and the counterparty bears the risk of an unfavorable change in the price of the financial instrument underlying the option. Gains and losses on options are determined based on fair values and recorded with the net change in fair value of investments in the statement of changes in net position and totaled \$(9.1) million and \$(0.2) million for fiscal years 2018 and 2017, respectively. At June 30, 2018 and 2017, the SIB investment portfolio had the following option balances (expressed in thousands).

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<u>Options</u>	Fair Value	
	June 30, 2018	June 30, 2017
Cash & Other Options		
Call	\$ (149)	\$ (2)
Put	(363)	23
Fixed Income Options		
Call	-	88
Put	(5)	203
Total Options	\$ (517)	\$ 312

### Swaps

A swap is a derivative in which counterparties exchange certain benefits of one party's financial instrument for those of the other party's financial instrument. Specifically, the two counterparties agree to exchange one stream of cash flows for another stream. The SIB, through its investment managers, has entered into various swap agreements in an attempt to manage its exposure to interest rate, inflation, credit, currency and total return risk.

Gains and losses on swaps are determined based on fair values and are recorded with the net change in fair value of investments in the statement of changes in net position and totaled \$3.6 million and \$9.2 million for fiscal years 2018 and 2017, respectively. The maximum loss that would be recognized at June 30, 2018 and 2017, if all counterparties failed to perform as contracted is \$2.75 million and \$2.0 million, respectively. Swap fair values are determined by a third party pricing source. At June 30, 2018 and 2017, the SIB's investment portfolio had the swap fair value balances as shown below (expressed in thousands).

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## Credit Default Swaps

Credit risk represents the exposure to fair value losses arising from a credit event such as default, failure to pay, restructuring or bankruptcy. In a credit default swap (CDS) contract, the protection buyer of the CDS makes a series of payments to the protection seller and, in exchange, receives a payoff if the credit instrument experiences a credit event. CDS contracts are also used to establish exposure to a desired credit instrument.

Counterparty/Moody's Rating	Notional Amount		Expiration Date Range	Fair Value	
	June 30, 2018	June 30, 2017		June 30, 2018	June 30, 2017
Bank of America/A1 (2 contracts)	\$ (2,700)		2021	\$ 13	
Bank of America/A1 (2 contracts)		(2,700)	2018 - 2021		35
BNP Paribas/A1 (2 contracts)		(600)	2019 - 2022		(5)
BNP Paribas/A1 (1 contract)	(400)		2019	(2)	
Citibank/A1 (4 contracts)		(7,750)	2018 - 2019		119
Citibank/A1 (23 contracts)	(9,005)		2018 - 2024	(55)	
Credit Suisse First Boston/A1 (8 contracts)		11,705	2017 - 2022		(759)
Credit Suisse First Boston/A1 (2 contracts)	(89,400)		2022 - 2023	1,369	
Deutsche Bank/Baa2 (2 contracts)	2,000		2059	9	
Goldman Sachs/A3 (2 contracts)		(1,800)	2019 - 2020		22
Goldman Sachs/A3 (10 contracts)	(4,890)		2019 - 2063	37	
HSBC Bank/A1 (1 contract)		(100)	2022		(1)
HSBC Bank/A1 (1 contract)	(100)		2023	(1)	
JP Morgan Chase/Aa3 (3 contracts)		(930)	2019 - 2020		2
JP Morgan Chase/Aa3 (1 contract)	(300)		2019	4	
<b>Total Credit Default Swaps</b>	<b>\$ (104,795)</b>	<b>\$ (2,175)</b>		<b>\$ 1,374</b>	<b>\$ (587)</b>

The notional amount may be positive or negative, depending on whether the position is long or short, respectively.

## Currency Swaps

Currency risk represents the exposure to fair value losses arising from the change in price of one currency against another. A currency swap is a foreign-exchange agreement between two parties to exchange principal and interest in one currency for the same in another currency.

Counterparty/Moody's Rating	Notional Amount		Expiration Date Range	Fair Value	
	June 30, 2018	June 30, 2017		June 30, 2018	June 30, 2017
JP Morgan Chase/Aa3 (1 contract)	\$ -	\$ 106	2020	\$ -	\$ (6)
JP Morgan Chase/Aa3 (1 contract)	106		2020	(7)	
<b>Total Currency Swaps</b>	<b>\$ 106</b>	<b>\$ 106</b>		<b>\$ (7)</b>	<b>\$ (6)</b>

The notional amount may be positive or negative, depending on whether the position is long or short, respectively.

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## Interest Rate Swaps

Interest rate risk represents the exposure to fair value losses arising from future changes in prevailing market interest rates. In the most common type of interest rate swap arrangement, one party agrees to pay fixed interest payments on designated dates to a counterparty, who in turn agrees to make return interest payments that float with some reference rate.

Counterparty/Moody's Rating	Notional Amount		Expiration Date Range	Fair Value	
	June 30, 2018	June 30, 2017		June 30, 2018	June 30, 2017
Citigroup Global Markets/A1 (5 contracts)	\$ (28,885)		2019 - 2025	\$ 1,018	
Credit Suisse First Boston/A1 (34 contracts)		(62,477)	2017 - 2048		1,168
Credit Suisse First Boston/A1 (32 contracts)	94,495		2019 - 2048	2,275	
Goldman Sachs/A3 (1 contract)		5	2017	-	-
JP Morgan Chase/Aa3 (130 contracts)		(642)	2017 - 2046		1,322
JP Morgan Chase/Aa3 (176 contracts)	(134,106)		2018 - 2048	3,122	
Morgan Stanley/A3 (1 contract)		215	2022		(3)
<b>Total Interest Rate Swaps</b>	<b>\$ (68,496)</b>	<b>\$ (62,899)</b>		<b>\$ 6,415</b>	<b>\$ 2,487</b>

The notional amount may be positive or negative, depending on whether the position is long (fixed rate payer) or short (floating rate payer), respectively.

## Inflation Swaps

Inflation risk represents the exposure to fair value losses arising from future changes in prevailing market inflation. In an inflation swap, one party pays a fixed rate on a notional principal amount, while the other party pays a floating rate linked to an inflation index, such as the Consumer Price Index (CPI).

Counterparty/Moody's Rating	Notional Amount		Expiration Date Range	Fair Value	
	June 30, 2018	June 30, 2017		June 30, 2018	June 30, 2017
Credit Suisse First Boston/A1 (3 contracts)	\$ -	\$ 522	2020 - 2030	\$ -	\$ (3)
Goldman Sachs/A3 (5 contracts)		1,797	2020 - 2030		(14)
JP Morgan Chase/Aa3 (22 contracts)	5,730		2022 - 2057	(25)	
<b>Total Inflation Swaps</b>	<b>\$ 5,730</b>	<b>\$ 2,319</b>		<b>\$ (25)</b>	<b>\$ (17)</b>

The notional amount may be positive or negative, depending on whether the position is long (fixed rate payer) or short (floating rate payer), respectively.

## Total Return Swaps

A total return swap is an agreement in which one party makes payments based on a set rate, either fixed or variable, while the other party makes payments based on the return of an underlying asset (income and capital gains). The underlying asset, or reference asset, is owned by the party receiving the set rate payment.

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Counterparty/Moody's Rating	Notional Amount		Expiration Date Range	Fair Value	
	June 30, 2018	June 30, 2017		June 30, 2018	June 30, 2017
Credit Suisse International/A1 (2 contracts)	\$ -	\$ 4,800	2041	\$ -	\$ 21
Credit Suisse International/A1 (2 contracts)	4,800		2041	(20)	
<b>Total Total Return Swaps</b>	<b>\$ 4,800</b>	<b>\$ 4,800</b>		<b>\$ (20)</b>	<b>\$ 21</b>

The notional amount may be positive or negative, depending on whether the position is long (fixed rate payer) or short (floating rate payer), respectively.

### Currency Forwards

Currency forwards represent forward exchange contracts that are entered into in order to manage the exposure to changes in currency exchange rates on the currency denominated portfolio holdings. A forward exchange contract is a commitment to purchase (positive) or sell (negative) a currency at a future date at a negotiated forward rate. The gain or loss arising from the difference between the original contracts and the closing of such contracts is included in the net change in fair value of investments in the statements of changes in net position and totaled \$2.2 million and \$0.5 million for fiscal years 2018 and 2017, respectively. At June 30, 2018 and 2017, the SIB's investment portfolio included the currency forwards balances shown below (expressed in thousands).

Currency	Cost	Purchases	Sales	Fair Value	
				6/30/2018	6/30/2017
Argentine peso	\$ 2	\$ 3	\$ (1)	\$ 2	\$ -
Australian dollar	(1,868)	1,772	(3,640)	(1,832)	3,297
Brazilian real	1,263	2,050	(787)	1,207	480
British pound sterling	(3,732)	1,585	(5,317)	(3,549)	13,007
Canadian dollar	(2,784)	-	(2,784)	(2,737)	6,110
Colombian peso	218	218	-	213	204
Egyptian pound	302	302	-	308	-
Euro	(18,684)	13,170	(31,854)	(17,897)	(16,369)
Hungarian forint	-	-	-	-	(20)
Indian rupee	-	-	-	-	7,193
Israeli shekel	-	-	-	-	(27)
Japanese yen	(44,787)	15,759	(60,546)	(44,049)	(329)
South Korean won	-	-	-	-	(166)
Mexican peso	14	7,031	(7,017)	83	(1,125)
Norwegian krone	-	-	-	-	7,333
Peruvian nuevo sol	-	-	-	-	2
Polish zloty	-	-	-	-	46
Russian ruble	79	4,994	(4,915)	38	325
Singapore dollar	-	-	-	-	(514)
South African rand	(1,886)	-	(1,886)	(1,727)	(515)
Swedish krona	4,746	6,393	(1,647)	4,629	6,415
Turkish lira	-	-	-	-	446
New Taiwan dollar	-	-	-	-	(498)
United States dollar	67,118	120,395	(53,277)	67,119	(25,329)
<b>Total forwards subject to currency risk</b>				<b>\$ 1,808</b>	<b>\$ (34)</b>



# North Dakota Retirement and Investment Office

Notes to Combined Financial Statements

June 30, 2018 and 2017

## Derivative Interest Rate Risk

Derivative interest rate risk is the risk that changes in interest rates will adversely affect the value of an interest rate-based derivative investment. The SIB does not have a formal investment policy regarding such derivative investments. At June 30, 2018 and 2017, the tables below show the SIB's derivative investments subject to interest rate risk (expressed in thousands).

### 2018

	Total Notional					Greater than 5 years
	Value	3 months or less	3 to 6 months	6 to 12 months	1-5 years	
Futures-interest rate contracts	\$ (490,157)	\$ (442,696)	\$ (160,157)	\$ (50,322)	\$ 163,018	\$ -
Options-margined interest rate contracts	(17)	(17)	-	-	-	-
<b>Total</b>	<b>\$ (490,174)</b>	<b>\$ (442,713)</b>	<b>\$ (160,157)</b>	<b>\$ (50,322)</b>	<b>\$ 163,018</b>	<b>\$ -</b>

	Total Fair Value					Greater than 5 years
	Value	3 months or less	3 to 6 months	6 to 12 months	1-5 years	
Options - interest rate contracts	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Options on futures	(5)	(5)	-	-	-	-
Swaps - interest rate contracts	6,390	-	251	179	1,229	4,731
Swaps - credit contracts	1,374	-	37	2	1,392	(57)
<b>Total</b>	<b>\$ 7,759</b>	<b>\$ (5)</b>	<b>\$ 288</b>	<b>\$ 181</b>	<b>\$ 2,621</b>	<b>\$ 4,674</b>

### 2017

	Total Notional					Greater than 5 years
	Value	3 months or less	3 to 6 months	6 to 12 months	1-5 years	
Futures-interest rate contracts	\$ (564,429)	\$ (615,292)	\$ 128,182	\$ (63,483)	\$ (13,836)	\$ -
<b>Total</b>	<b>\$ (564,429)</b>	<b>\$ (615,292)</b>	<b>\$ 128,182</b>	<b>\$ (63,483)</b>	<b>\$ (13,836)</b>	<b>\$ -</b>

	Total Fair Value					Greater than 5 years
	Value	3 months or less	3 to 6 months	6 to 12 months	1-5 years	
Options - caps and floors	\$ 46	\$ -	\$ -	\$ -	\$ 46	\$ -
Options - interest rate contracts	(1)	(1)	-	-	-	-
Options on futures	253	253	-	-	-	-
Swaps - interest rate contracts	2,470	136	131	97	532	1,574
Swaps - credit contracts	(587)	-	1	-	(588)	-
<b>Total</b>	<b>\$ 2,181</b>	<b>\$ 388</b>	<b>\$ 132</b>	<b>\$ 97</b>	<b>\$ (10)</b>	<b>\$ 1,574</b>

### **Fair Value Measurement**

The SIB categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements).

Level 1 Unadjusted quoted prices for identical instruments in active markets.

Level 2 Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

Level 3 Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

The following tables show the fair value leveling of the SIB's investment portfolio at June 30, 2018 and 2017 (expressed in thousands).

North Dakota Retirement and Investment Office  
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2018	Dollars in \$(000)			
	Fair Value Measures Using			
	Fair Value 6/30/18	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
Short Term Securities				
Commercial Paper	\$ 11,886	\$ -	\$ 11,886	\$ -
Short Term Bills and Notes	44,156	-	44,156	-
<b>Short Term Securities</b>	<b>56,042</b>	<b>-</b>	<b>56,042</b>	<b>-</b>
Fixed income investments				
Asset Backed Securities	192,586	-	192,586	-
Bank Loans	2,636	-	2,636	-
Collateralized Bonds	2,752	-	2,752	-
Commercial Mortgage-Backed	140,642	-	137,012	3,630
Corporate Bonds	1,479,560	-	1,479,296	264
Corporate Convertible Bonds	24,247	-	24,247	-
Funds - Fixed Income ETF	28,654	28,654	-	-
Government Agencies	105,819	-	104,115	1,704
Government Bonds	585,476	-	585,476	-
Government Mortgage Backed Securities	580,245	-	580,245	-
Gov't-issued Commercial Mortgage-Backed	106,687	-	106,687	-
Index Linked Government Bonds	4,618	-	4,618	-
Municipal/Provincial Bonds	33,218	-	33,218	-
Non-Government Backed C.M.O.s	55,798	-	53,407	2,391
Other Fixed Income	2,376	-	2,376	-
<b>Total fixed income investments</b>	<b>3,345,314</b>	<b>28,654</b>	<b>3,308,671</b>	<b>7,989</b>
Equity investments				
Common Stock	4,193,715	4,193,668	-	47
Convertible Equity	2,547	-	2,547	-
Funds - Equities ETF	276,921	276,921	-	-
Preferred Stock	2,060	2,049	11	-
Rights/Warrants	167	167	-	-
Stapled Securities	4,865	4,865	-	-
<b>Total equity investments</b>	<b>4,480,275</b>	<b>4,477,670</b>	<b>2,558</b>	<b>47</b>
Derivative investments				
Exchange Cleared Swaps	7,739	-	7,739	-
Options	(517)	(5)	(512)	-
Swaps	(2)	-	(2)	-
<b>Total derivative investments</b>	<b>7,220</b>	<b>(5)</b>	<b>7,225</b>	<b>-</b>
<b>Total investments by fair value level</b>	<b>\$ 7,888,851</b>	<b>\$ 4,506,319</b>	<b>\$ 3,374,496</b>	<b>\$ 8,036</b>

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Investments measured at the net asset value (NAV)	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Commingled Funds-Debt	\$ 1,790,441	\$ -	Daily, monthly
Commingled Funds-Equities	1,082,603	-	Daily, monthly
Distressed Debt	310,992	45,971	Quarterly, Not eligible
Long/Short	208,253	-	Monthly
Mezzanine Debt	540	8,505	Not eligible
Private Credit	238,107	177,200	Not eligible
Private Equity	191,437	300,526	Not eligible
Real Assets	1,729,935	265,460	Quarterly, Not eligible
<b>Total investments measured at the NAV</b>	<b>\$ 5,552,308</b>	<b>\$ 797,662</b>	
Investments at other than fair value			
Cash and adjustments to cash	\$ 196,912		
Bank Certificates of Deposit	58,222		
Other miscellaneous securities	19,374		
Repurchase Agreements	(18,967)		
<b>Total investments at other than fair value</b>	<b>\$ 255,541</b>		
<b>Total investments</b>	<b><u>\$ 13,696,700</u></b>		

# North Dakota Retirement and Investment Office

## Notes to Combined Financial Statements

June 30, 2018 and 2017

2017	Fair Value Measures Using			
	Fair Value 6/30/17	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
Short Term Securities				
Short Term Bills and Notes	\$ 7,826	\$ -	\$ 7,532	\$ 294
<b>Short Term Securities</b>	<b>7,826</b>	<b>-</b>	<b>7,532</b>	<b>294</b>
Fixed income investments				
Asset Backed Securities	100,985	-	100,823	162
Bank Loans	3,687	-	3,687	-
Commercial Mortgage-Backed	119,451	-	119,451	-
Corporate Bonds	1,199,355	-	1,198,360	995
Corporate Convertible Bonds	14,456	-	14,456	-
Funds - Fixed Income ETF	29,259	29,259	-	-
Government Agencies	104,775	-	98,097	6,678
Government Bonds	464,441	-	464,441	-
Government Mortgage Backed Securities	652,306	-	651,753	553
Gov't-issued Commercial Mortgage-Backed	57,767	-	57,767	-
IndexLinked Government Bonds	31,880	-	31,880	-
Municipal/Provincial Bonds	46,016	-	46,016	-
Non-Government Backed C.M.O.s	65,402	-	62,487	2,915
Other Fixed Income	3,578	-	3,575	3
<b>Total fixed income investments</b>	<b>2,893,358</b>	<b>29,259</b>	<b>2,852,793</b>	<b>11,306</b>
Equity investments				
Common Stock	3,752,805	3,752,771	-	34
Convertible Equity	1,746	-	1,746	-
Funds - Common Stock	4,149	4,149	-	-
Funds - Equities ETF	221,791	221,791	-	-
Preferred Stock	2,898	2,898	-	-
Rights/Warrants	12	-	-	12
Stapled Securities	4,547	4,547	-	-
<b>Total equity investments</b>	<b>3,987,948</b>	<b>3,986,156</b>	<b>1,746</b>	<b>46</b>
Derivative investments				
Exchange Cleared Swaps	1,842	-	1,851	(9)
Options	312	253	59	-
Swaps	58	-	58	-
<b>Total derivative investments</b>	<b>2,212</b>	<b>253</b>	<b>1,968</b>	<b>(9)</b>
<b>Total investments by fair value level</b>	<b>\$ 6,891,344</b>	<b>\$ 4,015,668</b>	<b>\$ 2,864,039</b>	<b>\$ 11,637</b>

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Investments measured at the net asset value (NAV)	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Commingled Funds-Debt	\$ 1,729,361	\$ -	Daily, monthly
Commingled Funds-Equities	1,039,323	-	Daily, monthly
Distressed Debt	318,519	12,500	Quarterly, Not eligible
Long/Short	193,356	-	Monthly
Mezzanine Debt	1,781	8,526	Not eligible
Private Equity	167,162	286,819	Not eligible
Real Assets	1,603,883	163,475	Quarterly, Not eligible
<b>Total investments measured at the NAV</b>	<b>\$ 5,053,385</b>	<b>\$ 471,320</b>	
Investments at other than fair value			
Cash and adjustments to cash	\$ 244,004		
Bank Certificates of Deposit	56,819		
Other miscellaneous securities	9,126		
Repurchase Agreements	(3,208)		
<b>Total investments at other than fair value</b>	<b>\$ 306,741</b>		
<b>Total investments</b>	<b>\$ 12,251,470</b>		

Securities classified in Level 1 are valued using quoted prices in active markets for those securities. Securities classified in Level 2 and Level 3 are valued using methodologies such as various bid evaluations, market averages and other matrix pricing techniques as well as values derived from associated traded securities or last trade data. In instances where inputs used to measure fair value fall into different levels, the fair value is categorized based on the lowest level input that is significant to the valuation.

Investments valued at the net asset value (NAV) per share (or its equivalent) have been classified separately in the tables above and include investments considered to be *alternative investments* as defined by the AICPA. The definition includes investments for which a readily determinable fair value does not exist (that is, investments not listed on national exchanges or over-the-counter markets, or for which quoted market prices are not available from sources such as financial publications, the exchanges, or NASDAQ). These types of investments can be held within any of the asset classes used by the SIB based on underlying portfolio holdings and analysis of risk and return relationships. These investments can be structured in different ways, including limited partnerships, limited liability companies, common trusts and mutual funds. Some are closed-ended with a specific life and capital commitment while others are open-ended with opportunity for ad hoc contributions or withdrawals and termination upon proper notice.

**Commingled/Mutual Funds** — These types of funds are open-ended funds and may be utilized in equity or fixed income asset classes. They are funds made up of underlying securities that have readily available fair values (publicly traded stocks or bonds). The SIB owns units of these funds rather than the individual securities. Contributions or withdrawals from these funds can be made as needed, generally with daily or monthly liquidity, with a notice period of one to fifteen days. Because they are liquid funds, there are no unfunded commitments for these types of investments.

**Distressed Debt** — these include investments in the debt instruments of companies which may be publicly traded or privately held that are financially distressed and are either in bankruptcy or likely candidates for bankruptcy. Typical holdings are senior and subordinated debt instruments, mortgages and bank loans. The SIB is including these types of investments in its global fixed income allocations. As of June 30, 2018 and 2017, unfunded commitments in one of its two distressed debt funds totaled \$46.0 million and \$12.5 million, respectively. This fund is not eligible for redemptions. The other fund is eligible for redemptions with quarterly liquidity and 60 days notice, and has no unfunded commitment.

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**Equity Long/Short** — This strategy is a combination of long and short positions, primarily in publicly traded equities. The SIB utilizes this strategy, through a limited partnership structure, within its global equity allocations. This is an open-ended fund with monthly liquidity with a notice period of 15 days. There was no unfunded commitment as of June 30, 2018 and 2017.

**Mezzanine Debt** — This strategy is a hybrid of debt and equity financing. It is essentially debt capital that gives the lender the rights to convert to an ownership or equity interest in the company if the loan is not paid back in time and in full. It is generally subordinated to senior debt. The SIB utilizes this strategy, through a limited partnership structure, in its global fixed income allocation. The two funds in this category are not eligible for redemptions, have remaining lives of 2-5 years, and unfunded commitments of \$8.5 million and \$8.5 million as of June 30, 2018 and 2017, respectively.

**Private Credit** — These investments include loans to private companies, privately placed debt of public companies, or loans backed by real assets. Loan repayment can be derived from either cash flows from an operating company or cash flows generated by a physical or esoteric asset. Private debt is typically secured and has various protections/covenants in place. The debt is customized to the borrower's requirement, thus rendering it illiquid. The SIB includes these strategies within its global fixed income allocation through limited partnership-type structures. Private credit issuers may be investment grade but are typically below-investment grade and similar in some respect to the syndicated bank loan and high yield markets. The SIB employs two senior private debt funds, commonly referred to as direct lenders, which are structured as custom managed accounts that are not eligible for redemptions during remaining investment lives of 3 to 4 years. The SIB first committed to the two funds in this category in FY2018 and the unfunded commitments totaled \$177.2 million as of June 30, 2018.

**Private Equity** — Private Equity investments are typically private interests in corporations across different areas of the capital structure and in different stages of the corporations' development via limited partnership vehicles. Private Equity investments are illiquid and long term in nature (10-12 years), typically held until maturity. Private Equity portfolios generally have a "J-Curve Effect" whereby there are low to negative returns in the initial years due to the payment of investment management fees and initial funding of investments made by the General Partner during a period when investments are typically carried at cost and returns have not been realized. To diversify the program, Private Equity investments are made across business cycles, vintage years, and different strategies. The SIB has a dedicated sub-asset class for private equity investments within its global equity allocation in the pension pool. The SIB does not have the option to request redemptions from its private equity funds. The General Partner distributes earnings and proceeds from the sale of the underlying investments as transactions occur. The SIB has \$300.5 million and \$286.8 million in unfunded private equity commitments as of June 30, 2018 and 2017, respectively.

**Venture Capital** — these include investments in companies in a range of stages of development from start-up/seed stage, early stage, and later/expansion stage. Investments are typically made in years one through six and returns typically occur in years four through ten.

**Buyouts** — these include investments in funds that seek out and purchase underperforming or undervalued companies in order to improve them and sell them or take them public many years later. These funds are also often involved in management buyouts, which are buyouts conducted by the management of the company being purchased, and they often play key roles in leveraged buyouts, which are buyouts that are funded with borrowed money.

**Real Assets** — These investments are intended to provide allocations to tangible assets that are expected to be inflation protected and provide performance above the inflation rate as indicated by the CPI. Investments are generally structured as limited partnerships or limited liability companies. Investments in Real Assets

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include:

**Real Estate** — includes investments in private vehicles through limited partnerships or commingled vehicles that have an ownership interest in direct real estate properties. The investment strategies may include “value added” strategies, which derive their return from both income and appreciation, “opportunistic”, which derive their return primarily through appreciation, and “alternative” which invest in less traditional types of property. Both domestic and international real estate funds are utilized. The SIB has a dedicated sub-asset class for these types of investments within global real assets. There are currently 11 different real estate funds in the portfolio. Three of those funds are open-ended vehicles that accept redemption requests quarterly with a 30-90 day notification period. One fund is in wind-down and will be distributing the final proceeds within the next 6-12 months. The remaining seven funds are closed-ended limited partnerships that are not eligible for redemptions. Those eight funds have a combined unfunded commitment of \$79.2 million and \$78.4 million as of June 30, 2018 and 2017, respectively.

**Timberland** — includes investments in limited liability companies that have an ownership interest in properties where the value of the property is derived mainly from income-producing timber but also from the “higher and better use” value of the underlying land. The SIB includes these assets within its global real assets allocations. There are three funds in the portfolio and they have no unfunded commitments. The funds are not eligible for redemption other than distributions of income and/or proceeds as determined by the investment manager. The funds have remaining lives of 2-8 years.

**Infrastructure** — includes investments in limited partnerships that have an ownership interest in transportation assets such as toll roads, tunnels and bridges; and regulated assets such as electricity transmission, gas and oil distribution and wastewater collection. Other possible investments would include communication assets and social infrastructure. The SIB includes these assets within its global real assets allocations. The infrastructure investments in the portfolio as of June 30, 2018 and 2017, include both open and closed-ended funds. The open-ended funds have no unfunded commitments and are eligible for redemptions quarterly with 90 days notice. There may be a 3-12 month queue for receiving redemptions. The closed-ended funds have unfunded commitments of \$186.3 million and \$85.0 million at June 30, 2018 and 2017, respectively, and are not eligible for redemptions.

### Securities Lending

State statutes permit and the SIB has authorized the use of securities lending – loans of securities to broker-dealers and other entities for collateral with a simultaneous agreement to return the collateral for the same securities in the future. Northern Trust is the securities lending agent for the SIB. Securities are loaned versus collateral that may include cash, U.S. government securities and irrevocable letters of credit. U.S. securities are loaned versus collateral valued at 102% of the fair value of the securities plus any accrued interest. Non-U.S. securities are loaned versus collateral valued at 105% of the fair value of the securities plus any accrued interest.

Non-cash collateral cannot be pledged or sold unless the borrower defaults. All securities loans can be terminated on demand by either the lender or the borrower, although the average term of SIB loans was approximately 61 and 59 days as of June 30, 2018 and 2017, respectively. Cash open collateral is invested in a short term investment pool, which had an interest sensitivity of 3 days and 3 days as of June 30, 2018 and 2017. This pool is valued based on amortized cost. There were no violations of legal or contractual provisions, no borrower or lending agent default losses known to the securities lending agent. There are no dividends or coupon payments owing on the securities lent. Securities lending earnings are credited to participating clients on approximately the fifteenth day of the following month.

Indemnification deals with the situation in which a client's securities are not returned due to the insolvency of a



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borrower and Northern Trust has failed to live up to its contractual responsibilities relating to the lending of those securities. Northern Trust's responsibilities include performing appropriate borrower and collateral investment credit analyses, demanding adequate types and levels of collateral, and complying with applicable Department of Labor and Federal Financial Institutions Examination Council regulations concerning securities lending.

For securities loaned at fiscal year end, the SIB has no credit risk exposure to borrowers because the amounts the SIB owes the borrowers exceeds the amounts the borrowers owe the SIB.

The following represents the balances relating to the securities lending transactions at June 30, 2018 and 2017 (expressed in thousands).

<b>2018</b>	<b>Securities Lent</b>	<b>Non-Cash Collateral Value</b>	<b>Cash Collateral Investment Value</b>
Lent for cash collateral:			
US agency securities	\$ 27	\$ -	\$ 28
US government securities	885	-	909
US corporate fixed income securities	19,599	-	20,129
Global corporate fixed income securities	942	-	990
US equities	22,812	-	23,365
Global equities	2,583	-	2,714
Lent for non-cash collateral:			
US agency securities	751	772	-
US government securities	3,894	4,005	-
US corporate fixed income securities	149,102	153,336	-
US equities	208,835	214,360	-
Global equities	41,776	44,399	-
<b>Total</b>	<b>\$ 451,206</b>	<b>\$ 416,872</b>	<b>\$ 48,135</b>

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2017	<u>Securities Lent</u>	<u>Non-Cash Collateral Value</u>	<u>Cash Collateral Investment Value</u>
Lent for cash collateral:			
US agency securities	\$ 546	\$ -	\$ 558
US government securities	2,268	-	2,326
US corporate fixed income securities	23,063	-	23,596
Global government fixed income securities	3,285	-	3,443
US equities	43,984	-	45,032
Global equities	2,531	-	2,714
Lent for non-cash collateral:			
US agency securities	4,978	5,071	-
US government securities	2,089	2,128	-
US corporate fixed income securities	112,041	114,160	-
US equities	187,733	191,606	-
Global equities	40,229	42,734	-
Total	<u>\$ 422,747</u>	<u>\$ 355,699</u>	<u>\$ 77,669</u>

**Note 4 - Capital Assets**

	<u>June 30, 2016</u>	<u>Additions</u>	<u>Retirements</u>	<u>June 30, 2017</u>	<u>Additions</u>	<u>Retirements</u>	<u>June 30, 2018</u>
Office equipment	\$19,321	\$ 8,999	\$ (11,441)	\$16,879	\$ -	\$ -	\$16,879
Less accumulated depreciation on office equipment	(19,321)	(450)	11,441	(8,330)	(1,800)	-	(10,130)
Software	1,213,500	-	-	1,213,500	-	-	1,213,500
Less accumulated depreciation on software	(1,213,500)	-	-	(1,213,500)	-	-	(1,213,500)
	<u>\$ -</u>	<u>\$ 8,549</u>	<u>\$ -</u>	<u>\$ 8,549</u>	<u>\$ (1,800)</u>	<u>\$ -</u>	<u>\$ 6,749</u>

**Note 5 - State Agency Transactions**

**Due To/From Other State Agencies**

Amounts due from/to other state agencies are as follows as of June 30, 2018 and 2017:

	2018	2017
Due To		
Information Technology Department	\$ 7,280	\$ 6,617
Office of Administrative Hearings	33	-
Office of Attorney General	7,157	1,356
Office of Management and Budget	69	289
Total due to other state agencies	\$ 14,539	\$ 8,262
Due From		
Public Employees Retirement System	\$ 174	\$ -
Surplus Property	-	50
Total due from other state agencies	\$ 174	\$ 50

These balances are a result of a time lag between the dates that services are provided, the payments are made, and the transactions are entered into the accounting system.

**Note 6 - Operating Leases**

RIO leased office space under an operating lease effective July 1, 2017 through June 30, 2023. RIO also incurs rent expense at other locations on a temporary basis to sponsor retirement education for TFFR members. Rent expense totaled \$87,766 and \$82,861 for fiscal years 2018 and 2017, respectively. Minimum payments under the lease for fiscal 2019 are \$86,171 annually.

**Note 7 - Changes in Noncurrent Liabilities**

Changes in noncurrent liabilities are included in accrued expenses in the statements of changes in net position. The changes for the years ended June 30, 2018 and 2017 are summarized as follows:

	Beginning Balance 7/1/2017	Additions	Reductions	Ending Balance 6/30/2018	Amounts Due Within One Year
Accrued Leave	\$176,864	\$144,638	(\$125,423)	\$196,079	\$117,453
	Beginning Balance 7/1/2016	Additions	Reductions	Ending Balance 6/30/2017	Amounts Due Within One Year
Accrued Leave	\$171,503	\$144,423	(\$139,062)	\$176,864	\$109,212

Pension and Investment Trust Funds liquidate the accrued annual leave.

**Note 8 - North Dakota Teachers' Fund for Retirement**

**Administration**

The following brief description of TFFR is provided for general information purposes only. Participants should refer to NDCC Chapter 15-39.1 for more complete information.

TFFR is a cost-sharing multiple-employer defined benefit pension plan covering all North Dakota public teachers and certain other teachers who meet various membership requirements. TFFR provides for pension, death and disability benefits. The cost to administer the TFFR plan is financed by investment income and contributions.

Responsibility for administration of the TFFR benefits program is assigned to a seven-member Board of Trustees (Board). The Board consists of the State Treasurer, the Superintendent of Public Instruction, and five members appointed by the Governor. The appointed members serve five-year terms which end on June 30 of alternate years. The appointed Board members must include two active teachers, one active school administrator, and two retired members. The TFFR Board submits any necessary or desirable changes in statutes relating to the administration of the fund, including benefit terms, to the Legislative Assembly for consideration. The Legislative Assembly has final authority for changes to benefit terms and contribution rates.

**Membership**

As of June 30, 2018 and 2017, the number of participating employer units was 214 and 215, respectively, consisting of the following:

	June 30, 2018	June 30, 2017
Public School Districts	176	176
County Superintendents	6	6
Special Education Units	19	19
Vocational Education Units	4	5
Other	9	9
Total	214	215

TFFR's membership consisted of the following:

	2018	2017
Retirees and beneficiaries currently receiving benefits	8,743	8,501
Terminated employees - vested	1,623	1,600
Terminated employees - nonvested	971	878
Total	11,337	10,979
Current employees		
Vested	7,696	7,543
Nonvested	3,185	3,331
Total	10,881	10,874

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**Member and Employer Contributions**

Member and employer contributions paid to TFFR are set by NDCC Section 15-39.1-09. Every eligible teacher in the State of North Dakota is required to be a member of TFFR and is assessed at a rate of 11.75% of salary as defined by NDCC Section 15-39.1-04. Every governmental body employing a teacher must also pay into TFFR a sum equal to 12.75% of the teacher's salary. Member and employer contributions will be reduced to 7.75% each when the fund reaches 100% funded ratio on an actuarial basis.

A vested member who terminates covered employment may elect a refund of contributions paid plus 6% interest or defer payment until eligible for pension benefits. A nonvested member who terminates covered employment must claim a refund of contributions paid before age 70½. Refunded members forfeit all service credits under TFFR. These service credits may be repurchased upon return to covered employment under certain circumstances, as defined by the NDCC.

**Pension Benefits**

For purposes of determining pension benefits, members are classified within one of three categories. Tier 1 grandfathered and Tier 1 non-grandfathered members are those with service credit on file as of July 1, 2008. Tier 2 members are those newly employed and returning refunded members on or after July 1, 2008.

***Tier 1 Grandfathered***

A Tier 1 grandfathered member is entitled to receive unreduced benefits when three or more years of credited service as a teacher in North Dakota have accumulated, the member is no longer employed as a teacher and the member has reached age 65, or the sum of age and years of service credit equals or exceeds 85. TFFR permits early retirement from ages 55 to 64, with benefits actuarially reduced by 6% per year for every year the member's retirement age is less than 65 years or the date as of which age plus service equal 85. In either case, benefits may not exceed the maximum benefits specified in Section 415 of the Internal Revenue Code.

Pension benefits paid by TFFR are determined by NDCC Section 15-39.1-10. Monthly benefits under TFFR are equal to the three highest annual salaries earned divided by 36 months and multiplied by 2.00% times the number of service credits earned. Retirees may elect payment of benefits in the form of a single life annuity, 100% or 50% joint and survivor annuity, ten or twenty-year term certain annuity, partial lump-sum option or level income with Social Security benefits. Members may also qualify for benefits calculated under other formulas.

***Tier 1 Non-grandfathered***

A Tier 1 non-grandfathered member is entitled to receive unreduced benefits when three or more years of credited service as a teacher in North Dakota have accumulated, the member is no longer employed as a teacher and the member has reached age 65, or has reached age 60 and the sum of age and years of service credit equals or exceeds 90. TFFR permits early retirement from ages 55 to 64, with benefits actuarially reduced by 8% per year from the earlier of age 60/Rule of 90 or age 65. In either case, benefits may not exceed the maximum benefits specified in Section 415 of the Internal Revenue Code.

Pension benefits paid by TFFR are determined by NDCC Section 15-39.1-10. Monthly benefits under TFFR are equal to the three highest annual salaries earned divided by 36 months and multiplied by 2.00% times the number of service credits earned. Retirees may elect payment of benefits in the form of a single life annuity, 100% or 50% joint and survivor annuity, ten or twenty-year term certain annuity, partial lump-sum option or level income with Social Security benefits. Members may also qualify for benefits calculated under other formulas.

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**Tier 2**

A Tier 2 member is entitled to receive unreduced benefits when five or more years of credited service as a teacher in North Dakota have accumulated, the member is no longer employed as a teacher and the member has reached age 65, or has reached age 60 and the sum of age and years of service credit equals or exceeds 90. TFFR permits early retirement from ages 55 to 64, with benefits actuarially reduced by 8% per year from the earlier of age 60/Rule of 90 or age 65. In either case, benefits may not exceed the maximum benefits specified in Section 415 of the Internal Revenue Code.

Pension benefits paid by TFFR are determined by NDCC Section 15-39.1-10. Monthly benefits under TFFR are equal to the five highest annual salaries earned divided by 60 months and multiplied by 2.00% times the number of service credits earned. Retirees may elect payment of benefits in the form of a single life annuity, 100% or 50% joint and survivor annuity, ten or twenty-year term certain annuity, partial lump-sum option or level income with Social Security benefits. Members may also qualify for benefits calculated under other formulas.

**Death and Disability Benefits**

Death benefits may be paid to a member's designated beneficiary. If a member's death occurs before retirement, the benefit options available are determined by the member's vesting status prior to death. If a member's death occurs after retirement, the death benefit received by the beneficiary (if any) is based on the retirement plan the member selected at retirement.

An active member is eligible to receive disability benefits when: (a) a total disability lasting 12 months or more does not allow the continuation of teaching, (b) the member has accumulated five years of credited service in North Dakota, and (c) the Board of Trustees of TFFR has determined eligibility based upon medical evidence. The amount of the disability benefit is computed by the retirement formula in NDCC Section 15-39.1-10 without consideration of age and uses the member's actual years of credited service. There is no actuarial reduction for reason of disability retirement.

**Investment Rate of Return**

The annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 9.15% and 12.81% for the years ended June 30, 2018 and 2017, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

**Realized Gains and Losses**

Realized gains and losses on sales of investments are components of net change in fair value of investments and are computed as described in Note 1. For the years ended June 30, 2018 and 2017, TFFR had net realized gains of \$108,984,395 and \$72,282,438, respectively.

**Net Pension Liability**

The components of the net pension liability of TFFR at June 30, 2018 and 2017 (expressed in thousands), were as follows:

	June 30, 2018	June 30, 2017
Total pension liability	\$ 3,863,515	\$ 3,734,017
Plan fiduciary net position	<u>(2,530,657)</u>	<u>(2,360,491)</u>
Net pension liability (NPL)	<u>\$ 1,332,858</u>	<u>\$ 1,373,526</u>
Plan fiduciary net position as a percentage of the total pension liability	65.5%	63.2%

**Actuarial Assumptions**

The total pension liability was determined by an actuarial valuation as of July 1, 2018 and 2017, using the following actuarial assumptions:

Valuation date	July 1, 2018	July 1, 2017
Inflation	2.75%	2.75%
Salary increases	4.25% to 14.50%; varying by service, including inflation and productivity	4.25% to 14.50%; varying by service, including inflation and productivity
Cost of living adjustments	None	None
Investment rate of return	7.75% net of investment expenses, including inflation	7.75% net of investment expenses, including inflation

For active and inactive members, mortality rates were based on the RP-2014 Employee Mortality Table projected generationally using Scale MP-2014. For healthy retirees, mortality rates were based on the RP-2014 Healthy Annuitant Mortality Table set back one year, multiplied by 50% for ages under 75 and grading up to 100% by age 80, projected generationally using Scale MP-2014. For disabled retirees, mortality rates were based on the RP-2014 Disabled Mortality Table set forward four years.

The actuarial assumptions used in the July 1, 2018 and 2017 valuations were based on the results of an actuarial experience study dated April 30, 2015, for the period July 1, 2009 – June 30, 2014. An actuarial experience study is generally conducted every five years.

The TFFR Board is responsible for establishing investment policy for the fund assets under NDCC 15-39.1-05.2. Benefit payments are projected to occur over a long period of time. This allows TFFR to adopt a long-term investment horizon and asset allocation policy for the management of fund assets. Asset allocation policy is critical because it defines the basic risk and return characteristics of the investment portfolio. Asset allocation targets are established using an asset-liability analysis designed to assist the Board in determining an acceptable volatility target for the fund and an optimal asset allocation policy mix. This asset-liability analysis considers both sides of the plan balance sheet, utilizing both quantitative and qualitative inputs, in order to estimate the potential impact of various asset class mixes on key measures of total plan risk, including the resulting estimated impact of funded status and contribution rates.

The long-term expected rate of return on TFFR investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected

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rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the TFFR target asset allocation as of June 30, 2018 and 2017 are summarized in the following tables:

2018	Target	Long-Term Expected
<u>Asset Class</u>	<u>Allocation</u>	<u>Real Rate of Return</u>
Global Equity	58.0%	6.7%
Global Fixed Income	23.0%	1.5%
Global Real Assets	18.0%	5.1%
Cash Equivalents	1.0%	0.0%

2017	Target	Long-Term Expected
<u>Asset Class</u>	<u>Allocation</u>	<u>Real Rate of Return</u>
Global Equity	58.0%	6.7%
Global Fixed Income	23.0%	0.8%
Global Real Assets	18.0%	5.2%
Cash Equivalents	1.0%	0.0%

Private equity is included in the Global Equity asset class.

As part of the most recent asset/liability study, the total fund real rate of return was upwardly adjusted by 0.50% to reflect a longer investment time horizon than is assumed in the investment consultant's expected returns and to account for above benchmark returns achieved through active management. In order to estimate the nominal rate of return, the real rate of return was adjusted upward by 2.75% for expected inflation.

## **Discount Rate**

The discount rate used to measure the total pension liability was 7.75% as of June 30, 2018 and 2017. The projection of cash flows used to determine the discount rate assumed that member and employer contributions will be made at rates equal to those based on the July 1, 2018 and 2017 Actuarial Valuation Report. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, TFFR's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members as of July 1, 2018 and 2017. Therefore, the long-term expected rate of return on TFFR investments was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2018 and 2017.



**Sensitivity of Net Pension Liability**

The following presents the net pension liability of the TFFR employers calculated using the discount rate of 7.75% as of June 30, 2018 and 2017, as well as what the employers' net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

2018	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Employers' net pension liability	\$ 1,799,744,383	\$ 1,332,858,315	\$ 944,554,161

2017	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Employers' net pension liability	\$ 1,826,126,843	\$ 1,373,525,753	\$ 996,748,988

**Note 9 - ND Public Employees Retirement System (NDPERS)**

Permanent employees of RIO participate in the pension and other post-employment benefit (OPEB) plans of NDPERS, which is also an agency of the State of North Dakota financial reporting entity and is included in the State of North Dakota's Comprehensive Annual Financial Report. The following brief description of NDPERS is provided for general information purposes only. Participants should refer to NDCC Chapter 54-52 for more complete information.

NDPERS pension (Main System) and OPEB plans are cost-sharing multiple-employer defined benefit plans that cover employees/retirees of the State of North Dakota, its agencies and various participating political subdivisions. NDPERS pension plan provides for pension, death and disability benefits. NDPERS OPEB plan provides a credit toward the monthly health insurance premium of members receiving retirement benefits from the PERS, HPRS and Judges retirement under Chapter 27-17 of the North Dakota Century Code. Effective July 1, 2015, the credit is also available to apply towards monthly premiums under the state dental, vision and long-term care plan and any other health insurance plan. The cost to administer the pension plan is financed through the contributions and investment earnings of the plan. The Retiree Health Insurance Credit Fund is advance-funded on an actuarially determined basis.

Responsibility for administration of the NDPERS defined benefit pension and OPEB plans is assigned to a Board comprised of nine members. The Board consists of a Chairman, who is appointed by the Governor, one member appointed by the Attorney General, one member appointed by the State Health Officer, three members elected by the active membership of the NDPERS system, one member elected by the retired public employees and two members of the legislative assembly appointed by the chairman of the legislative management.

**Pension Benefits**

Benefits are set by statute. NDPERS has no provisions or policies with respect to automatic and ad hoc post-retirement benefit increases. Members of the Main System are entitled to unreduced monthly pension benefits beginning when the sum of age and years of credited service equal or exceed 85 (Rule of 85), or at normal retirement age (65). For members hired on or after January 1, 2016 the Rule of 85 is replaced with the Rule of 90 with a minimum age of 60. The monthly pension benefit is equal to 2.00% of their average monthly salary, using the highest 36 months out of the last 180 months of service, for each year of service. The plan permits early

retirement at ages 55-64 with three or more years of service.

Members may elect to receive the pension benefits in the form of a single life, joint and survivor, term-certain annuity, or partial lump sum with ongoing annuity. Members may elect to receive the value of their accumulated contributions, plus interest, as a lump sum distribution upon retirement or termination, or they may elect to receive their benefits in the form of an annuity. For each member electing an annuity, total payment will not be less than the members' accumulated contributions plus interest.

### **Death and Disability Benefits**

Death and disability benefits are set by statute. If an active member dies with less than three years of service, a death benefit equal to the value of the member's accumulated contributions, plus interest, is paid to the member's beneficiary. If the member has earned more than three years of credited service, the surviving spouse will be entitled to a single payment refund, life-time monthly payment in an amount equal to 50% of the member's accrued normal retirement benefit, or monthly payments in an amount equal to the member's accrued 100% Joint and Survivor retirement benefit if the member had reached normal retirement age prior to date of death. If the surviving spouse dies before the member's accumulated pension benefits are paid, the balance will be payable to the surviving spouse's beneficiary.

Eligible members, who become totally disabled after a minimum of 180 days of service, receive monthly disability benefits equal to 25% of their final average salary with a minimum benefit of \$100. To qualify under this section, the member has to become disabled during the period of eligible employment and apply for benefits within one year of termination. The definition for disabled is set by the System in the North Dakota Administrative Code.

### **Refunds of Member Contributions**

Upon termination, if a member is not vested (is not 65 or does not have three years of service credited for the NDPERS) they will receive the accumulated member contributions plus interest, or may elect to receive this amount at a later date. If a member has vested, they have the option of applying for a refund or can remain as a terminated vested participant. If a member terminated and withdrew their accumulated member contributions and is subsequently reemployed, they have the option of repurchasing their previous service.

### **Member and Employer Contributions**

Member and employer contributions paid to NDPERS are set by statute and are established as a percent of salaries and wages. Member contribution rates are 7% and employer contribution rates are 7.12% of covered compensation.

The member's account balance includes the vested employer contributions equal to the member's contributions to an eligible deferred compensation plan. The minimum member contribution is \$25 and the maximum may not exceed the following:

- 1 to 12 months of service – Greater of one percent of monthly salary or \$25
- 13 to 24 months of service – Greater of two percent of monthly salary or \$25
- 25 to 36 months of service – Greater of three percent of monthly salary or \$25
- Longer than 36 months of service – Greater of four percent of monthly salary or \$25

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**OPEB Benefits**

The employer contribution for the PERS, the HPRS and the Defined Contribution Plan is set by statute at 1.14% of covered compensation. The employer contribution for employees of the state board of career and technical education is 2.99% of covered compensation for a period of eight years ending October 1, 2015. Employees participating in the retirement plan as part-time/temporary members are required to contribute 1.14% of their covered compensation to the Retiree Health Insurance Credit Fund. Employees purchasing previous service credit are also required to make an employee contribution to the Fund. The benefit amount applied each year is shown as "prefunded credit applied" on the Statement of Changes in Plan Net Position for the OPEB trust funds.

Retiree health insurance credit benefits and death and disability benefits are set by statute. There are no provisions or policies with respect to automatic and ad hoc post-retirement benefit increases. Employees who are receiving monthly retirement benefits from the PERS, the HPRS, the Defined Contribution Plan, the Chapter 27-17 judges or an employee receiving disability benefits, or the spouse of a deceased annuitant receiving a surviving spouse benefit or if the member selected a joint and survivor option are eligible to receive a credit toward their monthly health insurance premium under the state health plan.

Effective July 1, 2015, the credit is also available to apply towards monthly premiums under the state dental, vision and long-term care plan and any other health insurance plan. The benefits are equal to \$5.00 for each of the employee's, or deceased employee's years of credited service not to exceed the premium in effect for selected coverage. The retiree health insurance credit is also available for early retirement with reduced benefits.

**Pension & OPEB Liabilities, Pension & OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions & OPEB**

At June 30, 2018 and 2017, RIO reported a liability of \$2,629,203 and \$1,490,832, respectively, for its proportionate share of the net pension and OPEB liability. Due to the net OPEB liability at June 30, 2017, being immaterial to the overall financial statements of RIO and the individual funds, no prior period adjustment was made. The net pension and OPEB liability was measured as of June 30, 2017 and 2016, and the total pension and OPEB liability used to calculate the net pension and OPEB liability was determined by an actuarial valuation as of that date. RIO's proportion of the net pension liability was based on RIO's share of covered payroll in the pension and OPEB plans relative to the covered payroll of all participating NDPERS Main System and OPEB employers. At June 30, 2017, RIO's pension plan proportion was 0.156317 percent and as of June 30, 2016, RIO's proportion was 0.152969 percent. RIO's OPEB plan proportion was 0.147503% as of June 30, 2017 and 2016.

RIO recognized pension and OPEB expense of \$405,602 and \$121,469 for the years ended June 30, 2018 and 2017, respectively. At June 30, 2018 and 2017, RIO reported deferred outflows of resources and deferred inflows of resources related to pensions and OPEB from the following sources:

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	Deferred Outflows of Resources		Deferred Inflows of Resources	
	2018	2017	2018	2017
Differences between expected and actual experience	\$ 14,934	\$ 22,395	\$ 15,088	\$ 13,805
Changes in assumptions	1,041,506	137,436	56,669	74,065
Net differences between projected and actual earnings on plan investments	33,791	207,993	4,411	-
Changes in proportion and differences between employer contributions and proportionate share of contributions	138,324	155,225	268	-
Employer contributions subsequent to the measurement date	<u>129,449</u>	<u>113,616</u>	<u>-</u>	<u>-</u>
Total	<u>\$ 1,358,004</u>	<u>\$ 636,665</u>	<u>\$ 76,436</u>	<u>\$ 87,870</u>

Deferred outflows of resources related to pensions and OPEB resulting from employer contributions subsequent to the measurement date in the amount of \$129,449 will be recognized as a reduction of the net pension liability in the year ended June 30, 2019.

Other amounts reported as deferred outflows of resources and (deferred inflows of resources) related to pensions and OPEB will be recognized in pension expense as follows:

Year Ended June 30	
2019	\$ 261,128
2020	307,595
2021	271,889
2022	202,198
2023	107,533
Thereafter	<u>1,776</u>
	<u>\$ 1,152,119</u>

**Actuarial assumptions**

The total pension and OPEB liabilities in the July 1, 2017 and 2016 actuarial valuation were determined using the following actuarial assumptions, applied to all periods included in the measurement:

**2018 – Pension Plan**

Inflation		3.50%
Salary increases	Service at Beginning of Year:	Increase Rate:
	0	15.00%
	1	10.00%
	2	8.00%
	Age*	
	Under 36	8.00%
	36 - 40	7.50%
	41 - 49	6.00%
	50+	5.00%

\*Age-based salary increase rates apply for employees with three or more years of service

Investment rate of return	7.75%, net of investment expenses
Cost-of-living adjustments	None

**2017 - Pension Plan**

Inflation	3.50%
Salary increase (Payroll Growth)	4.50% per annum
Investment Rate of Return	8.00%, net of investment expenses
Cost of Living Adjustment	None

For active members, inactive members and healthy retirees, mortality rates were based on the RP-2000 Combined Healthy Mortality Table set back two years for males and three years for females, projected generationally using the SSA 2014 Intermediate Cost scale from 2014. For disabled retirees, mortality rates were based on the RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%.

The actuarial assumptions used were based on the results of an actuarial experience study completed in 2015. They are the same as the assumptions used in the July 1, 2017 and 2016, funding actuarial valuation for NDPERS.

As a result of the 2015 actuarial experience study, the NDPERS Board adopted several changes to the actuarial assumptions effective July 1, 2015. This includes changes to the mortality tables, disability incidence rates, retirement rates, administrative expenses, salary scale, and percent married assumption.

**OPEB Plan**

Inflation	2.50%
Salary increase	Not applicable
Investment Rate of Return	7.50%, net of investment expenses
Cost of Living Adjustment	None

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For active members, inactive members and healthy retirees, mortality rates were based on the RP-2000 Combined Healthy Mortality Table set back two years for males and three years for females, projected generationally using the SSA 2014 Intermediate Cost scale from 2014. For disabled retirees, mortality rates were based on the RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%.

The long-term expected rate of return on pension and OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the plans' target asset allocations are summarized in the following table:

### 2018 - Pension Plan

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	57%	6.7%
Global Fixed Income	22%	1.0%
Global Real Assets	20%	5.2%
Cash Equivalents	1%	0.0%

### 2017 - Pension Plan

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	58%	7.2%
Global Fixed Income	23%	1.1%
Global Real Assets	18%	5.2%
Cash Equivalents	1%	0.0%

**2018 - OPEB Plan**

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap Domestic Equity	37%	5.8%
Small Cap Domestic Equity	9%	7.1%
International Equity	14%	6.2%
Core-Plus Fixed Income	40%	1.6%

**2017 - OPEB Plan**

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap Domestic Equity	37%	6.4%
Small Cap Domestic Equity	9%	7.6%
International Equity	14%	6.8%
Core-Plus Fixed Income	40%	1.8%

**Discount rate**

For pension plans, GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the System to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The current employer and employee fixed rate contributions are assumed to be made in each future year. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. In years where assets are not projected to be sufficient to meet benefit payments, which is the case for the PERS pension plan as of June 30, 2017, the use of a municipal bond rate is required.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

The pension plan's fiduciary net position was projected to be sufficient to make all projected future benefit payments through the year of 2061. Therefore, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2061, and the municipal bond rate was applied to all benefit payments after that date. For the purpose of this valuation, the expected rate of return on pension plan investments is 7.75%, the municipal bond rate is 3.56%, and the resulting Single Discount Rate is 6.44%.

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The discount rate used to measure the total pension liability was 8 percent as of June 30, 2016. The projection of cash flows used to determine the discount rate assumes that member and employer contributions will be made at rates equal to those based on the July 1, 2016, Actuarial Valuation Report. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments for current plan members as of June 30, 2016. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2016.

The discount rate used to measure the total OPEB liability was 7.5%. The projection of cash flows used to determine the discount rate assumed plan member and statutory/Board approved employer contributions will be made at rates equal to those based on the July 1, 2017, and July 1, 2016, OPEB actuarial valuation reports. For this purpose, only employer contributions that are intended to fund benefits of current OPEB members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries are not included. Based on those assumptions, the OPEB fiduciary net position was projected to be sufficient to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

### **Sensitivity of the Employer's proportionate share of the net pension and OPEB liability to changes in the discount rate**

The following presents the RIO's proportionate share of the net pension and OPEB liability calculated using the current discount rate, as well as what the RIO's proportionate share of the net pension and OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

2018	1% Decrease (5.44%)	Current Discount Rate (6.44%)	1% Increase (7.44%)
RIO's net pension liability	\$ 3,410,833	\$ 2,512,527	\$ 1,765,175
2017	1% Decrease (6.5%)	Current Discount Rate (7.5%)	1% Increase (8.5%)
RIO's net OPEB liability	146,065	116,676	91,486
2017	1% Decrease (7%)	Current Discount Rate (8%)	1% Increase (9%)
RIO's net pension liability	\$ 2,114,716	\$ 1,490,832	\$ 965,177



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**Pension and OPEB plan fiduciary net position**

Detailed information about the pension and OPEB plans' fiduciary net position is available in the separately issued NDPERS Comprehensive Annual Financial Report. This report can be accessed on the NDPERS website at <https://ndpers.nd.gov/about/financial/annual-report-archive/>.

**Note 10 - Related Parties**

As stated in Note 1, RIO is an agency of the State of North Dakota; as such, other agencies of the state are related parties.

**Note 11 - Contingencies/Litigation**

The State Investment Board has been named as a defendant in two cases, arising out of the Tribune and General Motors bankruptcy proceedings, relating to securities that were purchased by external investment managers in one or more portfolios held by the SIB on behalf of its investment client funds. Outside counsel has been retained for both cases, in addition to assistance received from the ND Office of Attorney General. As of June 30, 2018, no liability has been recorded for the General Motors bankruptcy proceedings as it is too early in the litigation process to reasonably determine whether any payments will be required, but mediation efforts remain on-going. The claim against the SIB in the Tribune bankruptcy litigation has been dismissed, but a final order has not been entered because the Court has yet to decide the remaining claims in the case against unrelated defendants; however, the U.S. District Court has stayed the Trustee's request to amend the complaint to add a constructive fraudulent transfer claim pending the Second Circuit's disposition of the unrelated defendant's claims in light of the U.S. Supreme Court's decision in Merit Management. Any final judgment (including with respect to the claim against the SIB) is subject to appeal. Accordingly, no liability has been recorded at this time.

**REQUIRED SUPPLEMENTARY INFORMATION**

**Schedule of Changes in Net Pension Liability and Related Ratios**  
**North Dakota Teachers' Fund for Retirement**  
**Last 10 Fiscal Years\***  
**(Dollars in thousands)**

	2018	2017	2016	2015	2014
<b>Total pension liability</b>					
Service cost	\$ 78,041	\$ 75,476	\$ 68,239	\$ 60,618	\$ 56,752
Interest	287,375	276,412	265,440	249,064	237,821
Changes of benefit terms	-	-	-	-	-
Differences between expected and actual experience	(27,939)	(10,749)	(8,093)	2,209	9,347
Changes of assumptions	-	-	-	171,325	-
Benefit payments, including refunds of member contributions	(207,979)	(196,516)	(185,969)	(172,239)	(162,259)
<b>Net change in total pension liability</b>	<u>129,498</u>	<u>144,623</u>	<u>139,617</u>	<u>310,977</u>	<u>141,661</u>
<b>Total pension liability - beginning</b>	<u>3,734,017</u>	<u>3,589,394</u>	<u>3,449,777</u>	<u>3,138,800</u>	<u>2,997,139</u>
<b>Total pension liability - ending (a)</b>	<u><u>\$3,863,515</u></u>	<u><u>\$3,734,017</u></u>	<u><u>\$3,589,394</u></u>	<u><u>\$3,449,777</u></u>	<u><u>\$ 3,138,800</u></u>
<b>Plan fiduciary net position</b>					
Contributions - employer	\$ 86,676	\$ 86,059	\$ 82,840	\$ 78,422	\$ 62,355
Contributions - member	79,878	79,309	76,343	72,268	56,555
Contributions - purchased service credit	2,181	2,553	2,768	1,601	2,034
Contributions - other	194	236	45	172	48
Net investment income	211,345	266,688	8,239	73,205	294,246
Benefit payments, including refunds of member contributions	(207,979)	(196,516)	(185,969)	(172,239)	(162,259)
Administrative expenses	(2,129)	(2,173)	(1,852)	(1,923)	(1,586)
<b>Net change in plan fiduciary net position</b>	<u>170,166</u>	<u>236,156</u>	<u>(17,586)</u>	<u>51,506</u>	<u>251,393</u>
<b>Plan fiduciary net position - beginning **</b>	<u>2,360,491</u>	<u>2,124,335</u>	<u>2,141,921</u>	<u>2,090,415</u>	<u>1,839,584</u>
<b>Plan fiduciary net position - ending (b)</b>	<u><u>\$2,530,657</u></u>	<u><u>\$2,360,491</u></u>	<u><u>\$2,124,335</u></u>	<u><u>\$2,141,921</u></u>	<u><u>\$ 2,090,977</u></u>
<b>Plan's net pension liability - ending (a) - (b)</b>	<u><u>\$1,332,858</u></u>	<u><u>\$1,373,526</u></u>	<u><u>\$1,465,059</u></u>	<u><u>\$1,307,856</u></u>	<u><u>\$ 1,047,823</u></u>
<b>Plan fiduciary net position as a percentage of the total pension liability</b>	65.5%	63.2%	59.2%	62.1%	66.6%
<b>Covered payroll</b>	\$ 679,809	\$ 674,971	\$ 649,725	\$ 615,105	\$ 580,053
<b>Plan's net pension liability as a percentage of covered payroll</b>	196.1%	203.5%	225.5%	212.6%	180.6%

**Notes to Schedule:**

\* Complete data for this schedule is not available prior to 2014.

\*\* Restated in 2015 due to GASB 68 implementation.

*Changes of assumptions:* In 2015, amounts reported as changes of assumptions resulted primarily from a decrease in the investment return assumption from 8% to 7.75% and an updated mortality improvement scale.

**Schedule of Employer Contributions  
North Dakota Teachers' Fund for Retirement  
Last 10 Fiscal Years  
(Dollars in thousands)**

Fiscal Year	Actuarially determined contribution	Contributions in relation to the actuarially determined contribution	Contribution deficiency (excess)	Covered payroll	Contributions as a percentage of covered payroll
2009	\$ 41,986	\$ 37,488	\$ 4,498	\$ 454,396	8.25%
2010	52,053	39,837	12,216	482,868	8.25%
2011	65,113	44,545	20,568	509,091	8.75%
2012	69,374	46,126	23,248	527,156	8.75%
2013	52,396	59,301	(6,905)	551,656	10.75%
2014	59,513	62,355	(2,842)	580,053	10.75%
2015	71,168	78,422	(7,254)	615,105	12.75%
2016	84,724	82,840	1,884	649,725	12.75%
2017	89,231	86,059	3,172	674,971	12.75%
2018	88,307	86,676	1,631	679,809	12.75%

**Notes to Schedule**

*Valuation Date:* Actuarially determined contributions for each fiscal year are based on the actuarial valuation as of the beginning of the year in which contributions are reported.

*Methods and assumptions used to determine contribution rates:*

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period	26 years
Asset valuation method	5-year smoothed market
Inflation	2.75%; decreased from 3% prior to July 1, 2015.
Salary increases	4.25% - 14.5%, including inflation and productivity; 4.5% - 14.75% prior to July 1, 2015.
Investment rate of return	7.75%, net of investment expenses, including inflation. Rate was decreased from 8% beginning July 1, 2015.
Retirement age	In the 2015 valuation, rates of retirement were changed to better reflect anticipated future experience. In the 2010 valuation, expected retirement ages of plan members were adjusted to more closely reflect actual experience.
Mortality	In the 2015 valuation, assumed life expectancies were adjusted as a result of adopting the RP-2014 mortality tables with generational improvement. In prior years, those assumptions were based on percentages of GRS post termination non-disabled tables and RP-2000 disabled-life tables.

**Schedule of Investment Returns  
North Dakota Teachers' Fund for Retirement  
Last 10 Fiscal Years\***

**ANNUAL MONEY-WEIGHTED RATE OF RETURN, NET OF INVESTMENT EXPENSES**

<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
9.15%	12.81%	0.39%	3.56%	16.35%	13.60%

\*Note: Annual money-weighted rates of return not available prior to 2013.

**Schedule of Employer's Share of Net Pension and OPEB Liability**  
**ND Public Employees Retirement System**  
**Last 10 Fiscal Years\***  
**(Dollars in thousands)**

	2018	2017	2016	2015
RIO's proportion of NDPERS net pension liability (asset)	0.156317%	0.152969%	0.145546%	0.121849%
RIO's proportion of NDPERS net OPEB liability (asset)	<u>0.147503%</u>	_____	_____	_____
RIO's proportionate share of NDPERS net pension liability (asset)	\$ 2,513	\$ 1,491	\$ 990	\$ 773
RIO's proportionate share of NDPERS net OPEB liability (asset)	<u>117</u>	_____	_____	_____
RIO's covered payroll	<u>\$ 1,596</u>	<u>\$ 1,507</u>	<u>\$ 1,377</u>	<u>\$ 1,026</u>
RIO's proportionate share of NDPERS net pension liability (asset) as a percentage of its covered payroll	157.46%	98.94%	71.90%	75.34%
RIO's proportionate share of NDPERS net OPEB liability (asset) as a percentage of its covered payroll	<u>7.31%</u>	_____	_____	_____
NDPERS Plan fiduciary net position as a percentage of the total pension liability	61.98%	70.46%	77.15%	77.70%
NDPERS Plan fiduciary net position as a percentage of the total OPEB liability	<u>59.78%</u>	_____	_____	_____

\*Complete data for this schedule is not available prior to 2015 for pension liability and prior to 2018 for OPEB liability. Amounts presented for each fiscal year have a measurement date of the previous fiscal year end.

**Schedule of Employer Pension and OPEB Contributions**  
**ND Public Employees Retirement System**  
**Last 10 Years\***  
**(Dollars in thousands)**

	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>
RIO's Statutorily required pension contributions	\$ 112	\$ 114	\$ 107	\$ 98	\$ 73
RIO's Statutorily required OPEB contributions	18	18			
RIO's pension contributions in relation to the statutory required contribution	112	114	107	98	73
RIO's OPEB contributions in relation to the statutory required contribution	<u>18</u>	<u>18</u>			
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
RIO's Covered payroll	\$1,567	\$1,596	\$1,507	\$1,377	\$1,026
RIO's pension contributions as a percentage of covered payroll	7.12%	7.12%	7.12%	7.12%	7.12%
RIO's OPEB contributions as a percentage of covered payroll	1.14%	1.14%			

\*Complete data for this schedule is not available prior to 2014 for pension contributions and 2017 for OPEB contributions.

	Pension Pool Participants					Insurance Pool Participants						
	Public	Bismarck	Bismarck	City of					Petroleum	Insurance		
	Employees	City	City	Grand Forks	City of	Workforce	State		Tank	Regulatory	Cultural	
	Retirement	Employee	Police	Employee	Grand Forks	Safety &	Fire &	State	Release	Trust	Endowment	Risk
System	Pension Plan	Pension Plan	Pension Plan	Park District	Insurance	Tornado	Bonding	Comp. Fund	Fund	Fund	Mgmt	
<b>Assets:</b>												
<b>Investments</b>												
Global equities	\$ 1,758,136,479	\$ 45,411,219	\$ 20,347,059	\$ 38,131,021	\$ 4,385,816	\$ 423,076,842	\$ 8,037,780	\$ -	\$ -	\$ 1,695,244	\$ 246,307	\$ 1,483,201
Global fixed income	711,111,712	33,668,838	11,617,747	15,323,940	1,690,211	1,053,618,793	12,590,595	1,851,487	3,031,127	1,963,236	166,390	3,177,996
Global real assets	523,555,401	19,382,533	7,856,074	9,511,050	657,776	417,515,875	-	-	-	-	22,531	-
Cash equivalents	24,962,756	505,569	201,498	578,342	29,331	19,307,985	2,301,209	1,532,584	3,077,600	1,970,317	13,408	247,570
Total investments	3,017,766,348	98,968,159	40,022,378	63,544,353	6,763,134	1,913,519,495	22,929,584	3,384,071	6,108,727	5,628,797	448,636	4,908,767
Invested sec lending collateral	8,901,748	299,313	122,399	205,941	12,246	5,229,084	82,158	5,503	8,910	15,367	1,999	19,500
Investment income receivable	6,456,644	209,347	83,870	88,855	9,523	9,598,168	137,200	27,143	58,544	8,995	191	47,449
Operating Cash	107,101	-	-	-	-	83,579	1,175	955	972	1,166	357	1,122
Miscellaneous receivable	8,089	-	-	-	-	5,192	62	9	17	5	1	14
Due from other state agency	-	-	-	-	-	-	-	-	-	-	-	-
Total assets	3,033,239,930	99,476,819	40,228,647	63,839,149	6,784,903	1,928,435,518	23,150,179	3,417,681	6,177,170	5,654,330	451,184	4,976,852
<b>Deferred outflows of resources</b>												
Related to pensions	158,043	-	-	-	-	105,691	1,273	188	369	101	24	313
<b>Liabilities:</b>												
Investment expenses payable	572,476	35,434	13,914	5,794	(976)	286,331	2,406	628	1,030	391	(41)	43
Securities lending collateral	8,901,748	299,313	122,399	205,941	12,246	5,229,084	82,158	5,503	8,910	15,367	1,999	19,500
Accounts payable	39,630	-	-	-	-	25,322	303	45	86	26	6	70
Accrued expenses	342,613	-	-	-	-	235,049	3,233	432	894	212	53	755
Miscellaneous payable	-	5,978	2,450	3,766	384	-	-	-	-	-	-	-
Due to other state agencies	743	-	-	-	-	477	6	1	2	-	-	1
Total liabilities	9,857,210	340,725	138,763	215,501	11,654	5,776,263	88,106	6,609	10,922	15,996	2,017	20,369
<b>Deferred inflows of resources</b>												
Related to pensions	8,690	-	-	-	-	6,624	107	13	29	-	1	30
<b>Net position held in trust for external investment pool participants</b>												
	\$ 3,023,532,073	\$ 99,136,094	\$ 40,089,884	\$ 63,623,648	\$ 6,773,249	\$ 1,922,758,322	\$ 23,063,239	\$ 3,411,247	\$ 6,166,588	\$ 5,638,435	\$ 449,190	\$ 4,956,766
<b>Each participant unit is valued at \$ 100</b>												
Participant units outstanding	3,023,532,073	99,136,094	40,089,884	63,623,648	6,773,249	1,922,758,322	23,063,239	3,411,247	6,166,588	5,638,435	449,190	4,956,766



**North Dakota Retirement and Investment Office**  
**Combining Statement of Net Position – Investment Trust Funds – Fiduciary Funds**  
**Year Ended June 30, 2018 (with Comparative Totals for 2017)**

Insurance Pool Participants												Individual Investment Accounts			
Risk Mgmt Workers' Comp	ND Ass'n. of Counties Fund	PERS Group Insurance	Budget Stabilization Fund	City of Bismarck Deferred Sick Leave	City of Fargo Fargo Dome Fund	State Board of Medicine	Lewis & Clark Interpretive Center Endowment	Legacy Fund	Job Service of North Dakota	Tobacco Prevention and Control Fund	PERS Retiree Health Credit Fund	Totals			
												2018	2017		
\$ 1976,995	\$ 2,065,140	\$ -	\$ -	\$ 217,921	\$ 22,268,970	\$ 472,765	\$ 245,963	\$ 2,766,036,036	\$ 30,038,541	\$ 5,462,162	\$ 76,081,795	\$ 5,205,817,256	\$ 4,684,388,027		
3,213,958	3,667,588	29,883,918	106,919,606	474,404	17,422,087	1,730,618	450,409	1,929,981,907	65,100,605	40,386,152	50,509,228	4,099,552,552	3,538,734,254		
-	-	-	-	-	4,459,835	45,279	-	805,149,765	-	-	-	1,788,156,119	1,661,716,577		
160,695	176,663	1,722,976	5,956,531	36,251	443,172	6,162	7,046	54,793,877	550,890	8,507,958	14,147	127,104,537	57,364,379		
5,351,648	5,909,391	31,606,894	112,876,137	728,576	44,594,064	2,254,824	703,418	5,555,961,585	95,690,036	54,356,272	126,605,170	11,220,630,464	9,942,203,237		
23,091	21,660	276,031	994,559	2,547	196,018	16,640	2,654	24,284,177	-	-	-	40,721,545	64,829,660		
4,901	1,271	3,813	727,641	1,452	35,225	(3,707)	(133)	21,357,528	434	8,890	35	38,863,279	33,653,192		
114	-	-	4,371	-	-	-	-	208,349	-	-	-	410,261	263,961		
14	-	-	103	-	-	-	-	14,495	-	-	-	28,001	21,368		
-	-	-	-	-	-	-	-	-	-	-	-	-	14		
5,380,768	5,932,322	31,886,738	114,602,811	732,575	44,825,307	2,267,757	705,939	5,601,826,134	95,690,470	54,365,162	126,605,205	11,300,653,550	10,040,971,432		
310	-	-	6,155	-	-	-	-	271,634	-	-	-	544,101	252,274		
(278)	777	8,719	29,437	122	2,438	418	138	1,150,895	73,229	4,388	92,239	2,279,952	5,165,064		
23,091	21,660	276,031	994,559	2,547	196,018	16,640	2,654	24,284,177	-	-	-	40,721,545	64,829,660		
70	-	-	502	-	-	-	-	70,371	-	-	-	136,431	201,551		
712	-	-	29,916	-	-	-	-	497,792	-	-	-	1,111,661	644,911		
-	349	1,919	-	250	2,653	250	250	-	6,133	3,099	7,174	34,655	16,983		
1	-	-	9	-	-	-	-	1,332	-	-	-	2,572	1,649		
23,596	22,786	286,669	1,054,423	2,919	201,109	17,308	3,042	26,004,567	79,362	7,487	99,413	44,286,816	70,859,818		
26	-	-	3,214	-	-	-	-	9,183	-	-	-	27,917	32,528		
\$ 5,357,456	\$ 5,909,536	\$ 31,600,069	\$ 113,551,329	\$ 729,656	\$ 44,624,198	\$ 2,250,449	\$ 702,897	\$ 5,576,084,018	\$ 95,611,108	\$ 54,357,675	\$ 126,505,792	\$ 11,256,882,918	\$ 9,970,331,360		
5,357,456	5,909,536	31,600,069	113,551,329	729,656	44,624,198	2,250,449	702,897	5,576,084,018	95,611,108	54,357,675	126,505,792	11,256,882,918	9,970,331,360		

	Pension Pool Participants					Insurance Pool Participants						
	Public Employees Retirement System	Bismarck City Employee Pension Plan	Bismarck City Police Pension Plan	City of Grand Forks Employee Pension Plan	City of Grand Forks Park District Pension Plan	Workforce Safety & Insurance	State Fire & Tornado	State Bonding	Petroleum Tank Release Comp. Fund	Insurance Regulatory Trust Fund	Cultural Endowment Fund	Risk Mgmt
<b>Additions:</b>												
Investment income:												
Net change in fair value of investments	\$ 86,115,456	\$ 5,176,598	\$ 2,356,809	\$ 4,557,454	\$ 461,549	\$ 56,336,181	\$ 706,982	\$ (25,066)	\$ (39,367)	\$ 114,512	\$ 26,754	\$ 169,318
Interest, dividends and other income	66,566,132	2,310,859	921,416	1,398,714	123,586	47,422,961	488,940	65,328	115,418	619,100	9,983	114,213
	262,681,588	7,487,457	3,278,225	5,956,168	585,135	103,759,142	1,195,922	40,262	76,051	176,422	36,737	283,531
Less investment expenses	6,474,152	245,148	99,784	137,236	10,205	3,697,172	28,024	2,493	4,198	2,059	649	5,207
Net investment income	256,207,436	7,242,309	3,178,441	5,818,932	574,930	100,061,970	1,167,898	37,769	71,853	174,363	36,088	278,324
Securities lending activity:												
Securities lending income	284,370	9,040	3,739	6,237	460	200,862	2,926	136	229	348	72	595
Less Securities lending expenses	(56,854)	(1,808)	(746)	(12,466)	(92)	(40,117)	(584)	(28)	(45)	(69)	(13)	(118)
Net securities lending income	227,516	7,232	2,993	4,991	368	160,745	2,342	108	184	279	59	477
Purchase of units (\$ 1 per unit)	2,500,000	-	-	408,086	332,342	3,500,000	1,000,000	-	-	4,376,500	-	-
Total Additions	258,934,952	7,249,541	3,181,434	6,232,009	907,640	103,722,715	2,170,240	37,877	72,037	4,551,142	36,147	278,801
<b>Deductions:</b>												
Administrative Expenses	507,190	-	-	-	-	311,969	3,786	1,084	1,265	1,048	682	1,150
Redemption of units (\$ 1 per unit)	14,220,000	-	1,200,000	5,956,175	291,386	74,500,000	1,100,000	-	300,000	4,200,000	17,500	1,100,000
Total Deductions	14,727,190	-	1,200,000	5,956,175	291,386	74,811,969	1,103,786	1,084	301,265	4,201,048	18,182	1,101,150
Change in net position	244,207,762	7,249,541	1,981,434	275,834	616,254	28,910,746	1,066,454	36,793	(229,228)	350,094	17,965	(822,349)
<b>Net position:</b>												
Beginning of year	2,779,324,311	918,865,553	38,108,450	63,347,814	6,156,995	1,893,847,576	2,199,6785	3,374,454	6,395,816	5,288,341	43,1225	5,779,115
End of year	\$ 3,023,532,073	\$ 99,116,094	\$ 40,089,884	\$ 63,623,648	\$ 6,773,249	\$ 1,922,758,322	\$ 23,063,239	\$ 3,411,247	\$ 6,166,588	\$ 5,638,435	\$ 449,190	\$ 4,956,766

North Dakota Retirement and Investment Office  
 Combining Statement of Changes in Net Position – Investment Trust Funds – Fiduciary Funds  
 Year Ended June 30, 2018 (with Comparative Totals for 2017)

Insurance Pool Participants			Individual Investment Accounts										Totals	
Risk Mgmt Workers' Comp	ND Ass'n of Counties Fund	PERS Group Insurance	Budget Stabilization Fund	City of Bismarck Deferred Sick Leave	City of Fargo Fargo Dome Fund	State Board of Medicine	Lewis & Clark Interpretive Center Endowment	Legacy Fund	Job Service of North Dakota	Tobacco Prevention and Control Fund	PERS Retiree Health Credit Fund	2018	2017	
\$ 215,550	\$ 109,928	\$ (534,557)	\$ (694,082)	\$ 17,889	\$ 2,364,132	\$ 23,597	\$ (1,265)	\$ 253,324,655	\$ 483,223	\$ 828,375	\$ 5,447,995	\$ 527,542,620	\$ 797,372,051	
115,469	126,224	856,706	1,024,321	16,401	937,419	50,861	4,667	117,456,240	2,739,029	102,409	3,138,168	246,166,774	224,483,911	
330,719	236,152	322,149	330,239	33,990	3,301,551	74,458	3,402	370,780,895	3,222,252	930,784	8,586,163	773,709,394	1,021,855,962	
5,330	8,864	40,622	84,143	1,960	72,390	4,025	666	10,018,870	303,667	26,688	379,586	21,653,138	23,033,769	
325,389	227,288	281,527	246,096	32,030	3,229,161	70,433	2,736	360,762,025	2,918,585	904,096	8,206,577	752,056,256	998,822,193	
662	691	1,564	2,504	91	7,735	1,848	29	810,262	-	-	-	1,334,400	1,254,228	
(131)	(138)	(312)	(499)	(17)	(1,544)	(368)	(7)	(161,927)	-	-	-	(266,663)	(250,628)	
531	553	1,252	2,005	74	6,191	1,480	22	648,335	-	-	-	1,067,737	1,003,600	
-	1,300,000	217,085,760	107,202,755	-	750,000	-	700,139	529,870,755	-	-	2,240,000	871,266,337	648,096,361	
325,920	1,527,841	217,368,539	107,450,856	32,104	3,985,352	719,133	702,897	891,281,115	2,918,585	904,096	10,446,577	1,624,390,330	1,647,922,154	
1,158	-	-	5,440	-	-	-	-	834,828	-	-	-	1,669,600	1,303,019	
500,000	-	223,250,000	-	-	970,000	-	-	-	4,564,111	4,000,000	-	336,169,172	910,737,683	
501,158	-	223,250,000	5,440	-	970,000	-	-	834,828	4,564,111	4,000,000	-	337,838,772	912,040,702	
(175,238)	1,527,841	(5,881,461)	107,445,416	32,104	3,015,352	719,133	702,897	890,446,287	(1,645,526)	(3,095,904)	10,446,577	1,286,551,558	735,881,452	
5,532,694	4,381,695	37,481,530	6,105,913	697,552	41,608,846	2,178,536	-	4,685,637,731	97,256,634	57,453,579	116,059,215	9,970,331,360	9,234,449,908	
\$ 5,357,456	\$ 5,909,536	\$ 31,600,069	\$ 113,551,329	\$ 729,656	\$ 44,624,198	\$ 2,250,449	\$ 702,897	\$ 5,576,084,018	\$ 95,611,108	\$ 54,357,675	\$ 126,505,792	\$ 11,256,882,918	\$ 9,970,331,360	

North Dakota Retirement and Investment Office  
Pension and Investment Trust Funds – Schedule of Administrative Expenses  
Years Ended June 30, 2018 and 2017

	Pension Trust		Investment Trust	
	2018	2017	2018	2017
Salaries and wages:				
Salaries and wages	\$ 792,299	\$ 819,284	\$ 792,288	\$ 795,303
Fringe benefits	568,887	392,012	419,698	294,409
Total salaries and wages	<u>1,361,186</u>	<u>1,211,296</u>	<u>1,211,986</u>	<u>1,089,712</u>
Operating expenses:				
Travel	15,062	23,870	35,114	25,098
Supplies	2,266	13,216	932	6,454
Postage and Mailing Services	36,993	55,577	13,593	31,428
Printing	15,606	17,106	4,500	6,375
Small Office Equipment and Furniture	2,908	30,542	1,339	12,589
Insurance	387	405	223	233
Rent/Lease of Building Space	55,396	51,561	32,370	31,300
Repairs	155	596	75	314
Information Technology and Communications	71,000	68,469	17,863	14,928
IT Contractual Services	109,750	173,580	443,184	212,767
Professional Development	8,184	13,563	2,878	4,189
Operating Fees and Services	15,106	16,445	21,014	22,148
Professional Fees and Services	15,629	10,446	22,771	9,619
Consultant Services	<u>198,099</u>	<u>264,493</u>	<u>81,025</u>	<u>57,681</u>
Total operating expenses	<u>546,541</u>	<u>739,869</u>	<u>676,881</u>	<u>435,123</u>
Pension trust portion of investment program expenses	219,267	221,816	(219,267)	(221,816)
Depreciation	<u>1,800</u>	<u>450</u>	<u>-</u>	<u>-</u>
Total administrative expenses	<u>2,128,794</u>	<u>2,173,431</u>	<u>1,669,600</u>	<u>1,303,019</u>
Capital assets purchased	<u>-</u>	<u>8,999</u>	<u>-</u>	<u>-</u>
Less - nonappropriated items:				
Consultant Services	198,099	264,493	81,025	57,681
Other operating fees paid under continuing appropriation	125,270	75,026	509,663	275,461
Depreciation	1,800	450	-	-
Accrual adjustments to employee benefits	<u>255,922</u>	<u>75,607</u>	<u>168,895</u>	<u>51,223</u>
Total nonappropriated items	581,091	415,576	759,583	384,365
Total appropriated expenditures	<u>\$ 1,547,703</u>	<u>\$ 1,766,854</u>	<u>\$ 910,017</u>	<u>\$ 918,654</u>

North Dakota Retirement and Investment Office  
Pension and Investment Trust Funds – Schedule of Consultant Expenses  
Years Ended June 30, 2018 and 2017

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	Pension Trust		Investment Trust	
	2018	2017	2018	2017
Actuary fees:				
Cavanaugh MacDonald Consulting	\$ -	\$ 38,632	\$ -	\$ -
Segal Company	71,499	91,742	-	-
Total Actuary Fees	<u>71,499</u>	<u>130,374</u>	-	-
Auditing/Accounting fees:				
CliftonLarsonAllen LLP	82,527	108,987	29,073	28,213
Disability consulting fees:				
Sanford Health	425	300	-	-
Legal fees:				
K&L Gates LLP	16,541	3,152	21,646	4,171
Kasowitz, Benson, Torres & Friedman	197	1,357	309	1,777
Jackson Walker LLP	3,105	-	9,316	-
ND Attorney General	23,805	20,323	20,681	23,520
Total legal fees:	<u>43,648</u>	<u>24,832</u>	<u>51,952</u>	<u>29,468</u>
Total consultant expenses	<u>\$ 198,099</u>	<u>\$ 264,493</u>	<u>\$ 81,025</u>	<u>\$ 57,681</u>

North Dakota Retirement and Investment Office  
Pension and Investment Trust Funds – Schedule of Investment Expenses  
Years Ended June 30, 2018 and 2017

	Pension Trust		Investment Trust	
	2018	2017	2018	2017
Investment managers' fees:				
Global equity managers	\$ 1,380,401	\$ 1,426,842	\$ 1,794,894	\$ 1,835,909
Domestic large cap equity managers	(368,098)	551,198	557,670	3,136,644
Domestic small cap equity managers	586,340	455,668	1,544,538	1,424,504
International equity managers	954,958	852,764	6,229,944	5,315,874
Emerging markets equity managers	697,607	633,942	1,124,677	955,585
Domestic fixed income managers	1,593,550	2,017,975	11,337,399	12,073,101
Below investment grade fixed income managers	1,953,550	1,383,336	2,675,936	1,997,463
Diversified Real Assets	-	-	4,036,212	2,634,755
International fixed income managers	270,428	423,318	311,924	481,699
Real estate managers	2,660,866	2,541,836	5,965,804	5,885,718
Infrastructure managers	1,316,541	803,006	1,681,789	990,596
Timber managers	395,760	437,057	480,991	524,309
Private equity managers	1,513,944	1,225,954	1,773,739	1,436,330
Short term fixed income managers	-	-	122,965	347,423
Cash & equivalents managers	36,561	20,203	165,053	60,352
Balanced account managers	-	-	965,154	896,911
Total investment managers' fees	<u>\$ 12,992,408</u>	<u>\$ 12,773,099</u>	<u>\$ 40,768,689</u>	<u>\$ 39,997,173</u>
Custodian fees	233,938	213,843	927,794	839,740
Investment consultant fees	150,251	124,539	566,574	446,215
SIB Service Fees	-	-	82,764	70,812
Total investment expenses	<u><u>\$ 13,376,597</u></u>	<u><u>\$ 13,111,481</u></u>	<u><u>\$ 42,345,821</u></u>	<u><u>\$ 41,353,940</u></u>

**Reconciliation of investment expenses to financial statements**

	2018	2017	2018	2017
Investment expenses as reflected in the financial statements	\$ 5,352,945	\$ 6,011,791	\$ 21,653,138	\$ 23,033,769
Plus investment management fees included in investment income				
Domestic large cap equity managers	94,592	137,262	364,567	449,770
Domestic small cap equity managers	-	-	-	-
International equity managers	273,564	245,130	1,603,690	1,324,344
Emerging markets equity managers	697,608	633,942	1,124,677	955,585
Domestic fixed income managers	1,236,026	1,636,949	7,619,590	8,458,272
Below investment grade fixed income managers	1,541,521	984,510	2,133,969	1,427,213
Diversified real assets managers	-	-	2,037,750	937,298
Real estate managers	1,514,375	1,458,158	2,110,333	2,025,430
Infrastructure managers	758,699	340,728	974,220	419,451
Timber managers	395,760	437,057	480,991	524,309
Private equity managers	1,511,507	1,225,954	1,770,886	1,436,329
Cash equivalents managers	-	-	140,122	40,973
Balanced account managers	-	-	331,888	321,197
Investment expenses per schedule	<u><u>\$ 13,376,597</u></u>	<u><u>\$ 13,111,481</u></u>	<u><u>\$ 42,345,821</u></u>	<u><u>\$ 41,353,940</u></u>

North Dakota Retirement and Investment Office  
Schedule of Appropriations – Budget Basis – Fiduciary Funds  
July 1, 2017 to June 30, 2019 Biennium

	Approved 2017-2019 Appropriation	2017-2019 Appropriation Adjustment	Adjusted 2017-2019 Appropriation	Fiscal 2018 Expenses	Unexpended Appropriations
All Fund Types:					
Salaries and wages	\$ 4,425,570	\$ -	\$ 4,425,570	\$ 2,148,355	\$ 2,277,215
Operating expenses	862,484	-	862,484	309,365	553,119
Contingency	52,000	-	52,000	-	52,000
Total	<u>\$ 5,340,054</u>	<u>\$ -</u>	<u>\$ 5,340,054</u>	<u>\$ 2,457,720</u>	<u>\$ 2,882,334</u>

***NOTE:** Only those expenses for which there are appropriations are included in this statement.*

Reconciliation of Administrative Expenses  
to Appropriated Expenditures

	<u>2018</u>
Administrative expenses as reflected in the financial statements	\$ 3,798,394
Less:	
Consulting Services*	(279,124)
Other operating fees paid under continuing appropriations*	(634,933)
Depreciation expense	(1,800)
Changes in benefit accrual amounts	<u>(424,817)</u>
Total appropriated expenses	<u>\$ 2,457,720</u>

\* North Dakota Century Code 21-10-06.2 and 15-39.1-05.2 provide authorization for the continuing appropriation.

**Special Comments Requested by the Legislative Audit  
and Fiscal Review Committee  
Year Ended June 30, 2018**

The Legislative Audit and Fiscal Review Committee requires that certain items be addressed by auditors performing audits of state agencies. These items and our responses are as follows:

**Audit Report Communications**

1. What type of opinion was issued on the financial statements?

Unmodified

2. Was there compliance with statutes, laws, rules, regulations under which the agency was created and is functioning?

Yes

3. Was internal control adequate and functioning effectively?

Yes

4. Were there any indications of lack of efficiency in financial operations and management of the agency?

No

5. Has action been taken on findings and recommendations included in prior year reports?

There were no prior year findings or recommendations.

6. Was a management letter issued? If so, provide a summary below, including any recommendations and the management response.

No



## Audit Committee Communications

1. Identify any significant changes in accounting policies, any management conflicts of interest, any contingent liabilities, or any significant unusual transactions.

For the year ended June 30, 2018, the financial statements include the impact of adoption of Governmental Accounting Standards Board (GASB) Statement number 75 and Statement number 82.

*GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, replaces the requirements for Statement number 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, as amended, and improves accounting and financial reporting for postemployment benefits other than pensions. Due to the immateriality of the amounts in relation to the previous year's financial statements, no prior period adjustments were made to fiscal year 2017 balances; rather, all financial transactions necessary to establish the liability and deferral balances were recorded in fiscal year 2018 only.

*GASB 82, Pension Issues-An Amendment of GASB Statements No. 67, No. 68, and No. 73*, addresses certain issues with the presentation of payroll-related measures in required supplementary information, and the classification of payments made by employers to satisfy employee contribution requirements. Upon examination, it was determined that RIO is currently presenting information in accordance with the requirements.

2. Identify any significant accounting estimates, the process used by management to formulate the accounting estimates, and the basis for the auditor's conclusions regarding the reasonableness of those estimates.

The valuation of alternative investments, including private equity and real asset investments, are a management estimate which is primarily based upon net asset values reported by the investment managers and comprise 16% of the total investment portfolio. The values for these investments are reported based upon the most recent financial data available and are adjusted for cash flows through June 30, 2018. Our audit procedures validated this approach through the use of confirmations sent directly to a sample of investment managers and the review of the most recent audited financial statements for these funds. Furthermore, we reviewed management's estimate and found it to be reasonable.

The actuarial valuation was based on the actuarial assumptions and methods adopted by the Board, including an actuarial expected investment rate of return of 7.75% per annum compounded annually. The valuation takes into account all of the promised benefits to which members are entitled as of July 1, 2018 as required by the North Dakota Century Code. The valuation provides certain information required by GASB to be disclosed in the financial statements. Additionally, the valuation is used to determine the adequacy of the current employer contribution rate. Our audit procedures included reviewing the actuarial valuation and related assumptions used therein and we believe the estimate to be reasonable.

3. Identify any significant audit adjustments.

None

4. Identify any disagreements with management, whether or not resolved to the auditor's satisfaction, relating to financial accounting, reporting, or auditing matters that could be significant to the financial statements.

None

5. Identify any significant difficulties encountered in performing the audit.

None

6. Identify any major issues discussed with management prior to retention.

None

7. Identify any management consultations with other accounts about auditing and accounting matters.

None

8. Identify any high-risk information technology systems critical to operations based on the auditor's overall assessment of the importance of the system to the agency and its mission or whether any exceptions identified in the six audit report questions addressed above are directly related to the operations of an information technology system.

Based on the audit procedures performed, the Retirement and Investment Office's critical information technology system is the CPAS system. There were no exceptions identified that were directly related to this application.

This report is intended solely for the information and use of the audit committee, management, the Legislative Audit and Fiscal Review Committee, and other state officials, and is not intended to be and should not be used by anyone other than these specified parties.



**CliftonLarsonAllen LLP**

Baltimore, Maryland  
October 31, 2018



## ND STATE INVESTMENT BOARD SECURITIES LITIGATION COMMITTEE MEETING

Monday November 5, 2018 - 3:00 PM  
North Dakota Retirement and Investment Office (RIO)  
3442 East Century Avenue, Bismarck, ND 58503

### AGENDA

1. Call to Order and Approval of Agenda
2. Minutes (August 23, 2018)
3. SIB Securities Litigation: Contingent Disclosures – Mr. Hunter (10 minutes) *Informational*
  - a. General Motors (Kasowitz Benson Torres)
  - b. Tribune (K&L Gates)
4. Securities Litigation Education by Grant & Eisenhofer – Mr. Marc Weinberg (45 minutes) *Informational*
  - a. Introduction & Overview
  - b. International Securities Litigation
  - c. Sample Portfolio Monitoring Report
  - d. Sample Litigation and Monitoring Agreement
5. Summary of Securities Litigation Representation Firms (15 minutes)
  - a. Existing Defendant Firms – Kasowitz Benson Torres and K&L Gates *Informational*
  - b. Existing Plaintiff Firm – Grant & Eisenhofer *Informational*
  - c. Summary of Reviewed Securities Litigation Firms **Committee Action**
6. SIB Securities Litigation Committee Meeting Schedule (10 minutes) **Committee Action**
7. Other - Next Proposed SIB Securities Litigation Committee Meeting

North Dakota Retirement and Investment Office  
3442 E Century Ave, Bismarck, ND 58503  
Thursday, February 14, 2019 at 3:00 PM

8. Adjournment

Any individual requiring an auxiliary aid or service should contact the Retirement and Investment Office at (701) 328-9885 at least (3) days prior to the scheduled meeting.

**NORTH DAKOTA STATE INVESTMENT BOARD  
SECURITIES LITIGATION SUBCOMMITTEE  
MINUTES OF THE AUGUST 23, 2018, MEETING**

**BOARD MEMBERS PRESENT:** Troy Seibel, Chair  
Treasurer Kelly Schmidt, Vice Chair  
Connie Flanagan, Fiscal/Investment Opr Mgr  
David Hunter, ED/CIO  
Anders Odegaard, Attorney General's Office

**STAFF PRESENT:** Missy Kopp, Retirement Assistant  
Sara Sauter, Audit Svs Suprv  
Darren Schulz, Dep. CIO

**GUESTS:** Eric Belfi, Labaton Sucharow  
Donald Hall, Kaplan Fox  
Serena Hallowell, Labaton Sucharow  
Olav Haazen, Grant & Eisenhofer (TLCF)  
Francis McConville, Labaton Sucharow  
Mark McNair, Kaplan Fox  
Marc Weinberg, Grant & Eisenhofer (TLCF)

**CALL TO ORDER:**

Mr. Seibel, Chair, called the State Investment Board (SIB) Securities Litigation Committee meeting to order at 3:02 p.m. on Thursday, August 23, 2018, at the Retirement and Investment Office, 3442 E Century Ave, Bismarck, ND.

**AGENDA:**

**IT WAS MOVED BY MR. HUNTER AND SECONDED BY TREASURER SCHMIDT AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE AUGUST 23, 2018, MEETING.**

**AYES: TREASURER SCHMIDT, MR. SEIBEL, MR. HUNTER, MS. FLANAGAN, MR. ODEGAARD**

**NAYS: NONE**

**MOTION CARRIED**

**MINUTES:**

**IT WAS MOVED BY MS. FLANAGAN AND SECONDED BY MR. HUNTER AND CARRIED BY A VOICE VOTE TO ACCEPT THE MINUTES OF THE MAY 10, 2018, MEETING AS DISTRIBUTED.**

**AYES: MS. FLANAGAN, MR. ODEGAARD, TREASURER SCHMIDT, MR. SEIBEL, AND MR. HUNTER**

**NAYS: NONE**

**MOTION CARRIED**

**NORTHERN TRUST|FINANCIAL RECOVERY TECHNOLOGIES:**

Ms. Flanagan reviewed the securities litigation claims filing reports for the fiscal year ended June 30, 2018. The service was transitioned from the Northern Trust to Financial Recovery Technologies (FRT) on March 1, 2018. Northern Trust will continue to report on claims filing activity which took place prior to March 1, 2018.

Ms. Flanagan reported that \$189,000 was collected for previously filed class action claims in the fiscal year ended June 30, 2018. Since 2011, annual cash recoveries have varied significantly ranging from a low of \$153,480 in fiscal year 2014 to a high of \$692,958 in fiscal year 2012. The annual recoveries are often materially impacted by the occurrence (or absence) of one or two major cases in any given fiscal year.

**IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MR. ODEGAARD AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE NORTHERN TRUST AND FRT CLAIMS FILING REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 2018.**

**AYES: MR. ODEGAARD, MR. HUNTER, MS. FLANAGAN, MR. SEIBEL, AND TREASURER SCHMIDT  
NAYS: NONE  
MOTION CARRIED**

**SECURITIES LITIGATION EDUCATION:**

Mr. Hunter reviewed the formation of the SIB Securities Litigation Committee which was established on January 26, 2018. He also reviewed the SIB's revised Securities Litigation policy which was adopted by the SIB on April 27, 2018.

Labaton Sucharow - Representatives, Mr. Belfi, Ms. Hallowell, and Mr. McConville, provided an overview of the firm's portfolio monitoring and securities litigation services.

Kaplan Fox - Representatives, Mr. Hall and Mr. McNair, provided an overview of the firm, US securities class action processes, guidelines for evaluating cases, topics of interest to institutional investors, and the firm's approach to securities litigation.

**LITIGATION:**

The Securities Litigation Committee discussed entering into Executive Session to receive updates regarding ongoing litigation cases pertaining to General Motors, Tribune, and Volkswagen.

**IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MR. HUNTER AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION FOR ATTORNEY CONSULTATION PURSUANT TO NDCC 44-04-19.1(9) .**

**AYES: MR. HUNTER, MS. FLANAGAN, MR. SEIBEL, TREASURER SCHMIDT, AND MR. ODEGAARD  
NAYS: NONE  
MOTION CARRIED**

The Securities Litigation Committee exited the open portion of the meeting at 4:40 p.m. and entered into Executive Session at 4:41 p.m.

Mr. Hunter, Ms. Flanagan, Mr. Seibel, Treasurer Schmidt, Mr. Odegaard, Mr. Schulz, Ms. Sauter, Ms. Kopp, and Mr. Weinberg (TLCF) were in attendance.

The Securities Litigation Committee exited Executive Session at 5:01 p.m. and entered into the open portion of the meeting at 5:02 p.m.

The Securities Litigation Committee took no further action on Litigation.

**OTHER:**

The next Securities Litigation meeting is scheduled for November 5, 2018, at the Retirement and Investment Office, 3442 East Century Avenue, Bismarck, ND.

**ADJOURNMENT:**

With no further business to come before the Committee, Mr. Seibel adjourned the meeting at 5:05 p.m.

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Mr. Seibel, Chair

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Bonnie Heit  
Assistant to the Committee

*Informational*

**TO:** SIB Securities Litigation Committee

**FROM:** Dave Hunter, ED/CIO, and Connie Flanagan, Chief Financial Officer

**DATE:** October 30, 2018

**SUBJECT: Securities Litigation – Footnote Disclosure of Contingencies**

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**Note 11 - Contingencies/Litigation**

The State Investment Board has been named as a defendant in two cases, arising out of the Tribune and General Motors bankruptcy proceedings, relating to securities that were purchased by external investment managers in one or more portfolios held by the SIB on behalf of its investment client funds. Outside counsel has been retained for both cases, in addition to assistance received from the ND Office of Attorney General. As of June 30, 2018, no liability has been recorded for the General Motors bankruptcy proceedings as it is too early in the litigation process to reasonably determine whether any payments will be required, but mediation efforts remain on-going. The claim against the SIB in the Tribune bankruptcy litigation has been dismissed, but a final order has not been entered because the Court has yet to decide the remaining claims in the case against unrelated defendants; however, the U.S. District Court has stayed the Trustee's request to amend the complaint to add a constructive fraudulent transfer claim pending the Second Circuit's disposition of the unrelated defendant's claims in light of the U.S. Supreme Court's decision in Merit Management. Any final judgment (including with respect to the claim against the SIB) is subject to appeal. Accordingly, no liability has been recorded at this time.

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**Note:** K&L Gates has been retained for legal representation in the Tribune case and Kasowitz Benson Torres has been retained for legal representation in the General Motors case, as overseen and approved by North Dakota's Office of the Attorney General.

***Informational***

**TO:** SIB Securities Litigation Committee  
**FROM:** Dave Hunter, ED/CIO  
**DATE:** October 30, 2018  
**SUBJECT: Summary of Securities Litigation Representation Firms**

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The Board has currently engaged two law firms to defend the SIB in two securities litigation cases:

- 1.) **Kasowitz Benson Torres** on General Motors; and
- 2.) **K&L Gates** on Tribune.

In 2016, the Board engaged **Grant & Eisenhofer** (as a plaintiff's attorney) to recover investment losses resulting from international securities litigation involving VW and other related parties.

In 2018, the Board engaged **Financial Recovery Technologies** (FRT) to enhance our ability to recover investment losses in U.S. and international securities litigation cases including those involving anti-trust actions in addition to our continuing U.S. class action claims filing activity since March 1, 2018. Northern Trust, as our custodian, continues to seek U.S. class action claim filing recoveries prior to March 1, 2018 (when we transitioned from Northern Trust to FRT).

Since 2011, annual cash recoveries have varied significantly ranging from a low of \$153,480 in fiscal 2014 to a high of \$692,958 in fiscal 2012, noting the annual recoveries are often materially impacted by the occurrence (or absence) of one or two major cases in any year. Securities litigation recoveries approximated \$189,000 for the SIB in the fiscal year ended June 30, 2018.

In 2018, the Securities Litigation Committee met with several prominent law firms widely considered to be leading experts in the securities litigation field including:

- 1.) Bernstein Litowitz Berger & Grossman;
- 2.) Robbins Geller Rodman & Dowd;
- 3.) Labaton Sucharow;
- 4.) Kaplan Fox; and
- 5.) Grant & Eisenhofer.

**Committee Action**

**If the Committee so desires, they could identify a short list of law firms to be utilized on a case by case basis to provide expert advice when new securities litigation related cases are raised for further consideration by our global securities litigation monitoring firm, FRT.**



***Committee Action Requested***

**TO:** SIB Securities Litigation Committee  
**FROM:** Dave Hunter  
**DATE:** October 30, 2018  
**SUBJECT:** **Proposed Meeting Schedule for 2019**

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RIO staff suggests the Securities Litigation Committee schedule four meetings in 2019 on the following dates:

February 14, 2019 (Thursday)  
May 16, 2019 (Thursday)  
August 22, 2019 (Thursday)  
November 7, 2019 (Thursday)

RIO invites input on the proposed meeting dates and desired meeting location (e.g. RIO or Capitol) and time (e.g. 3:00 or 3:30 pm).

If the Committee concurs, RIO's Supervisor of Administrative Services and Office Manager, Bonnie Heit, will seek to confirm Committee member availability on each of the above dates in advance of our next proposed meeting on Thursday, February 14, 2019.

**Board Acceptance Requested**

# **Asset and Performance Overview**

## **Review of Investment Fees and Expenses**

November 9, 2018

Dave Hunter, Executive Director / CIO

Darren Schulz, Deputy Chief Investment Officer

Connie Flanagan, Chief Financial Officer

Eric Chin, Senior Investment Analyst

ND Retirement & Investment Office (RIO)

State Investment Board (SIB)

# State Investment Board – Client Assets Under Management

<b>Fund Name</b>	<b>Market Values as of 9/30/18 <sup>(1)</sup></b>	<b>Market Values as of 6/30/18 <sup>(2)</sup></b>	<b>Market Values as of 9/30/17 <sup>(1)</sup></b>
<b>Pension Trust Fund</b>			
Public Employees Retirement System (PERS)	3,087,115,472	3,024,222,995	2,882,780,029
Teachers' Fund for Retirement (TFFR)	2,526,452,653	2,485,835,306	2,387,906,588
City of Bismarck Employees Pension	100,990,920	99,177,507	95,026,968
City of Grand Forks Employees Pension	67,199,301	63,633,206	64,381,330
City of Bismarck Police Pension	40,888,393	40,106,249	39,465,200
Grand Forks Park District	7,013,895	6,772,657	6,374,760
<b>Subtotal Pension Trust Fund</b>	<b>5,829,660,634</b>	<b>5,719,747,919</b>	<b>5,475,934,876</b>
<b>Insurance Trust Fund</b>			
Workforce Safety & Insurance (WSI)	1,933,569,800	1,923,117,660	1,923,540,134
Budget Stabilization Fund	114,023,036	113,603,777	38,450,912
City of Fargo FargoDome Permanent Fund	45,665,193	44,629,288	43,138,744
PERS Group Insurance Account	29,257,455	31,610,707	35,409,719
State Fire and Tornado Fund	23,646,363	23,066,784	22,024,834
Petroleum Tank Release Compensation Fund	6,200,882	6,167,272	6,453,583
ND Association of Counties (NDACo) Fund	6,031,900	5,910,661	5,108,131
State Risk Management Fund	4,663,817	4,956,217	5,418,039
State Risk Management Workers Comp Fund	3,699,994	5,356,549	5,187,082
State Bonding Fund	3,429,976	3,411,215	3,406,523
ND Board of Medicine	2,279,087	2,251,119	2,215,578
Insurance Regulatory Trust Fund	1,101,023	5,637,791	1,209,577
Bismarck Deferred Sick Leave Account	742,505	730,026	717,066
Lewis & Clark Interpretive Center Endowment Fund	716,108		
Cultural Endowment Fund	462,684	448,825	443,012
<b>Subtotal Insurance Trust Fund</b>	<b>2,175,489,823</b>	<b>2,170,897,891</b>	<b>2,092,722,934</b>
<b>Legacy Trust Fund</b>			
Legacy Fund	5,886,115,867	5,577,319,109	4,960,721,538
PERS Retiree Insurance Credit Fund	130,443,712	126,605,207	120,668,531
Job Service of North Dakota Pension	96,681,300	95,690,469	97,583,404
ND Tobacco Prevention and Control Trust Fund	48,864,750	54,365,162	57,850,830
<b>Total Assets Under SIB Management</b>	<b>14,167,256,086</b>	<b>13,744,625,757</b>	<b>12,805,482,113</b>

- ▶ **SIB client investments approached \$14.2 billion as of September 30, 2018**, with the Pension Trust exceeding \$5.8 billion, Insurance Trust approaching \$2.2 billion and Legacy approaching \$5.9 billion.
- ▶ **The Pension Trust posted a net return of 7.7% in the last year.** During the last 5-years, the Pension Trust generated a net annualized return of 7.8%, exceeding the performance benchmark of 7.0%.
- ▶ **The Insurance Trust generated a net return of 4.1% in the last year.** During the last 5-years, the Insurance Trust posted a net annualized return of 5.2%, exceeding the performance benchmark of 3.9%.
- ▶ **Legacy Fund generated a net return of 6.0% last year, exceeding its policy benchmark.** During the last 5-years, Legacy Fund earned a net annualized return of 6.3%, exceeding the performance benchmark of 5.4%.
- ▶ **RIO conservatively estimates the SIB use of active management enhanced client returns by \$300 million for the 5-years ended September 30, 2018** (e.g. \$10 billion x 0.60% = \$60 million x 5 years = \$300 million).
- ▶ **If SIB managers outperform their benchmark by 0.01% (or 1 basis point), after all fees & expenses, client returns improve by \$1.4 million per year** (e.g. \$14 billion x 0.01% = \$1.4 million).
- ▶ **RIO's internal costs for administering our external investments is less than 1 basis point or 0.01% per year.**

<sup>(1)</sup> Market values are unaudited and subject to change.

<sup>(2)</sup> 6/30/18 market values as stated in the Comprehensive Annual Financial Report.

# Investment Performance Evaluation – Sep. 30, 2018

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## Investment Performance Criteria :

SIB clients should receive investment returns consistent with their investment policies and market variables (pursuant to Section D.3 of the SIB Governance Manual). The “Ends” for investment performance is evaluated based on comparison of each client’s actual rate of return (net of fees), risk levels and risk adjusted returns, versus the client’s policy benchmark over 5 years.

## Pension Trust:

Every Pension Trust client posted positive Excess Returns of at least 0.50% per annum over the last 5-years, while adhering to approved risk levels and generating positive Risk Adjusted Excess Return for 6 of our 7 pension clients (over the last 5 years).

TFFR and PERS each earned 7.8% for the 5-years ended September 30, 2018. Global equities were the primary performance driver and earned 9.3% over the last 5-years with U.S. Equities up 13% and International Equity up 6%. Private equity returns were weak at only 1.6% per annum the last 5-years (but are trending upward in recent years). Fixed Income earned 4% annualized over the last 5-years with Investment Grade up 3.7% and Non-Investment Grade up 6.5%. Global Real Assets also performed fairly well and gained earned 7.8% per annum for the 5-years ended September 30, 2018, with Real Estate up 11.4% and Infrastructure up 5.7%, while Timber returns were weak at -0.36% per annum the last 5-years (versus +6% for the NCREIF Timberland Index).

## Non-Pension Trust:

Every Non-Pension Trust client generated positive Excess Return of at least 0.60% per annum and positive Risk Adjusted Excess Returns for the 5-years ended June 30, 2018, with two exceptions for PERS Retiree Health Insurance Credit Fund (-0.09%) and PERS Group Insurance (-0.06%).

The Legacy Fund earned 6.0% for the 1-year ended September 30, 2018, which translates into \$310 million of net investment income. Legacy’s U.S. Equity portfolio earned 16% last year, while International Equities only earned 3.2%. Fixed Income returns were disappointing last year at only 0.34%, but surpassed the Bloomberg Aggregate Index which declined 1.2% due to rising interest rates. Real Asset returns were mixed with Infrastructure up 11%, Real Estate up 6.6% and Global Inflation Linked Debt Securities up 2.2% last year. Our second largest non-Pension Trust client, WSI, also generated strong returns by earning approximately 4.1% and 6.1% for the 1- and 5-years ended September 30, 2018, respectively.

Risk, as measured by standard deviation, was within approved levels for all SIB clients for the 5-years ended Sep. 30, 2018.

*Actual asset allocations are within Target ranges and guidelines as confirmed by Callan as of September 30, 2018.*

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# Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>PERS - \$3.1 billion</b>					
Total Fund Return - Net	7.68%	10.12%	7.82%	4.64%	0.15%
Policy Benchmark Return	7.49%	9.32%	7.01%	4.22%	
Excess Return	0.18%	0.80%	0.82%	110%	
<b>TFFR - \$2.5 billion</b>					
Total Fund Return - Net	7.70%	10.03%	7.80%	4.62%	0.17%
Policy Benchmark Return	7.58%	9.28%	7.00%	4.22%	
Excess Return	0.12%	0.76%	0.80%	109%	
<b>Bismarck Employee \$101 million</b>					
Total Fund Return - Net	6.29%	8.87%	7.09%	3.98%	0.19%
Policy Benchmark Return	6.11%	8.10%	6.29%	3.61%	
Excess Return	0.18%	0.77%	0.81%	110%	

**Key Points:**  
Every Pension Trust portfolio generated positive “Excess Return” for the 3- and 5-year periods ended September 30, 2018, while adhering to prescribed risk levels (e.g. within 115% of the Policy Benchmark for the 5-years ended 9/30/18).

# Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>Bismarck Police \$41 million</b>					
Total Fund Return - Net	6.77%	9.32%	7.29%	4.28%	0.15%
Policy Benchmark Return	6.64%	8.64%	6.55%	3.91%	
Excess Return	0.12%	0.68%	0.74%	109%	
<b>Job Service - \$97 million</b>					
Total Fund Return - Net	3.95%	6.63%	5.84%	3.46%	-0.06%
Policy Benchmark Return	4.57%	6.45%	5.34%	3.09%	
Excess Return	-0.63%	0.18%	0.50%	112%	
<b>GF Pension - \$67 million</b>					
Total Fund Return - Net	8.53%	10.33%	7.90%	4.68%	0.19%
Policy Benchmark Return	8.25%	9.81%	7.31%	4.42%	
Excess Return	0.27%	0.51%	0.60%	106%	
<b>GFPD - \$7 million</b>					
Total Fund Return - Net	8.82%	10.33%	8.16%	4.68%	0.39%
Policy Benchmark Return	8.25%	9.64%	7.45%	4.49%	
Excess Return	0.57%	0.70%	0.71%	104%	

Risk Adjusted Excess Returns for the 5-years ended Sep. 30, 2018, were positive for all Pension Trust clients with one exception of -0.06% for Job Service.

Job Service is 135% funded & significantly de-risked its portfolio (to 20% equity / 80% debt) in recent years.

**Risk Adjusted Excess Return** measures actual portfolio results versus a benchmark adjusted by its risk relative to a benchmark portfolio. This metric is positive if excess returns are due to “smart” investment decisions or negative if driven by excess risk.

# Non-Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>WSI - \$1.9 billion</b>					
Total Fund Return - Net	4.17%	6.87%	6.10%	2.96%	0.76%
Policy Benchmark Return	2.86%	5.05%	4.59%	2.56%	
Excess Return	1.31%	1.82%	1.51%	OK	
<b>Legacy Fund - \$5.9 billion</b>					
Total Fund Return - Net	6.04%	9.19%	6.31%	4.11%	0.52%
Policy Benchmark Return	5.51%	8.00%	5.28%	3.75%	
Excess Return	0.53%	1.19%	1.03%	OK	
<b>Budget Stabilization \$114 million</b>					
Total Fund Return - Net	0.32%	1.01%	1.33%	0.71%	0.42%
Policy Benchmark Return	0.25%	0.69%	0.72%	0.55%	
Excess Return	0.07%	0.32%	0.61%	OK	
<b>Fire &amp; Tornado \$24 million</b>					
Total Fund Return - Net	4.47%	7.49%	6.29%	3.44%	0.49%
Policy Benchmark Return	3.89%	5.94%	4.99%	2.96%	
Excess Return	0.58%	1.55%	1.30%	OK	

**Returns and Risk:**  
**Thirteen out of Fifteen Non-Pension Trust clients generated positive Excess Return and Risk Adjusted Excess Return for the 5-year period ended Sep. 30, 2018. PERS Retiree Health and Group Insurance underperformed by less than 0.10%. These returns were achieved while adhering to reasonable risk levels within 1% of policy.**

**Risk Adjusted Excess Return** measures a portfolio's excess return adjusted by its risk relative to a benchmark portfolio. This metric is positive if returns are due to "smart" investment decisions or negative if driven by excess risk.

# Non-Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>State Bonding \$3.4 million</b>					
Total Fund Return - Net	0.68%	2.43%	2.47%	1.67%	0.94%
Policy Benchmark Return	0.05%	1.11%	1.43%	1.59%	
Excess Return	0.63%	1.32%	1.04%	OK	
<b>Insur.Reg.Trust Fund \$1.1 million</b>					
Total Fund Return - Net	3.88%	5.94%	4.77%	2.80%	0.16%
Policy Benchmark Return	3.72%	5.04%	4.02%	2.42%	
Excess Return	0.16%	0.90%	0.75%	OK	
<b>Petrol.Tank Release \$6.2 million</b>					
Total Fund Return - Net	0.78%	2.30%	2.30%	1.51%	0.86%
Policy Benchmark Return	0.20%	1.09%	1.35%	1.44%	
Excess Return	0.58%	1.21%	0.95%	OK	
<b>State Risk Mgmt. \$4.7 million</b>					
Total Fund Return - Net	4.91%	7.49%	6.74%	3.19%	0.58%
Policy Benchmark Return	4.22%	5.93%	5.37%	2.79%	
Excess Return	0.70%	1.56%	1.37%	OK	

## SIB Client Commentary:

The State Bonding Fund, Insurance Regulatory Trust Fund, Petroleum Tank Release Compensation Fund, and State Risk Management Fund have all posted positive Risk Adjusted Excess Returns for the 5-years ended Sep. 30, 2018, including **Excess Returns of 0.75% or more.**



# Non-Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>State Risk Mgmt. WC \$3.7 million</b>					
Total Fund Return - Net	5.93%	8.42%	7.44%	3.54%	0.47%
Policy Benchmark Return	5.42%	7.05%	6.17%	3.13%	
Excess Return	0.51%	1.38%	1.27%	OK	
<b>NDACo \$6 million</b>					
Total Fund Return - Net	3.39%	6.77%	5.72%	3.22%	0.47%
Policy Benchmark Return	3.47%	5.28%	4.48%	2.74%	
Excess Return	-0.08%	1.49%	1.25%	OK	
<b>Bismarck Def.Sick \$742,500</b>					
Total Fund Return - Net	3.65%	7.07%	6.07%	3.34%	0.68%
Policy Benchmark Return	2.86%	5.19%	4.54%	2.83%	
Excess Return	0.78%	1.88%	1.53%	OK	
<b>Fargodome \$46 million</b>					
Total Fund Return - Net	6.32%	9.43%	7.48%	4.46%	0.53%
Policy Benchmark Return	5.72%	8.02%	6.26%	4.02%	
Excess Return	0.60%	1.41%	1.22%	OK	

## SIB Client Commentary:

The State Risk Management Workers Compensation Fund, Association of Counties, City of Bismarck Deferred Sick Leave Account and Fargo Dome Permanent Fund have all posted positive Risk Adjusted Excess Returns for the 5-years ended Sep. 30, 2018, including Excess Returns of 1.22% or more.

# Non-Pension Trust Return & Risk Summary – Sep. 30, 2018

	1 Yr Ended 9/30/2018	3 Yrs Ended 9/30/2018	5 Yrs Ended 9/30/2018	Risk 5 Yrs Ended 9/30/2018	Risk Adj Excess Return 5 Yrs Ended 9/30/2018
<b>Cultural Endow. \$462,600</b>					
Total Fund Return - Net	7.83%	10.39%	8.63%	4.56%	0.22%
Policy Benchmark Return	7.75%	9.46%	7.66%	4.15%	
Excess Return	0.07%	0.93%	0.96%	OK	
<b>Board Medicine \$2.3 million</b>					
Total Fund Return - Net	2.73%	4.35%	N/A		
Policy Benchmark Return	2.65%	3.65%	N/A		
Excess Return	0.08%	0.70%	N/A		
<b>PERS Retiree Health \$130 million</b>					
Total Fund Return - Net	6.57%	9.59%	7.36%	4.91%	-0.67%
Policy Benchmark Return	6.84%	9.36%	7.45%	4.49%	
Excess Return	-0.27%	0.23%	-0.09%	OK	
<b>PERS Group Ins. \$29 million</b>					
Total Fund Return - Net	0.39%	0.78%	0.47%	0.63%	-0.05%
Policy Benchmark Return	0.32%	0.86%	0.53%	0.58%	
Excess Return	0.07%	-0.08%	-0.06%	OK	
<b>TPCT Fund \$49 million</b>					
Total Fund Return - Net	1.94%	1.96%	N/A		
Policy Benchmark Return	1.97%	2.01%	N/A		
Excess Return	-0.03%	-0.05%	N/A		

## SIB Client Specific Commentary:

The Cultural Endowment Fund has generated the highest absolute level of net investment returns (of 8.9%) over the last 5-years.

The Board of Medicine became an SIB client three years ago noting they were previously investing in Certificates of Deposit.

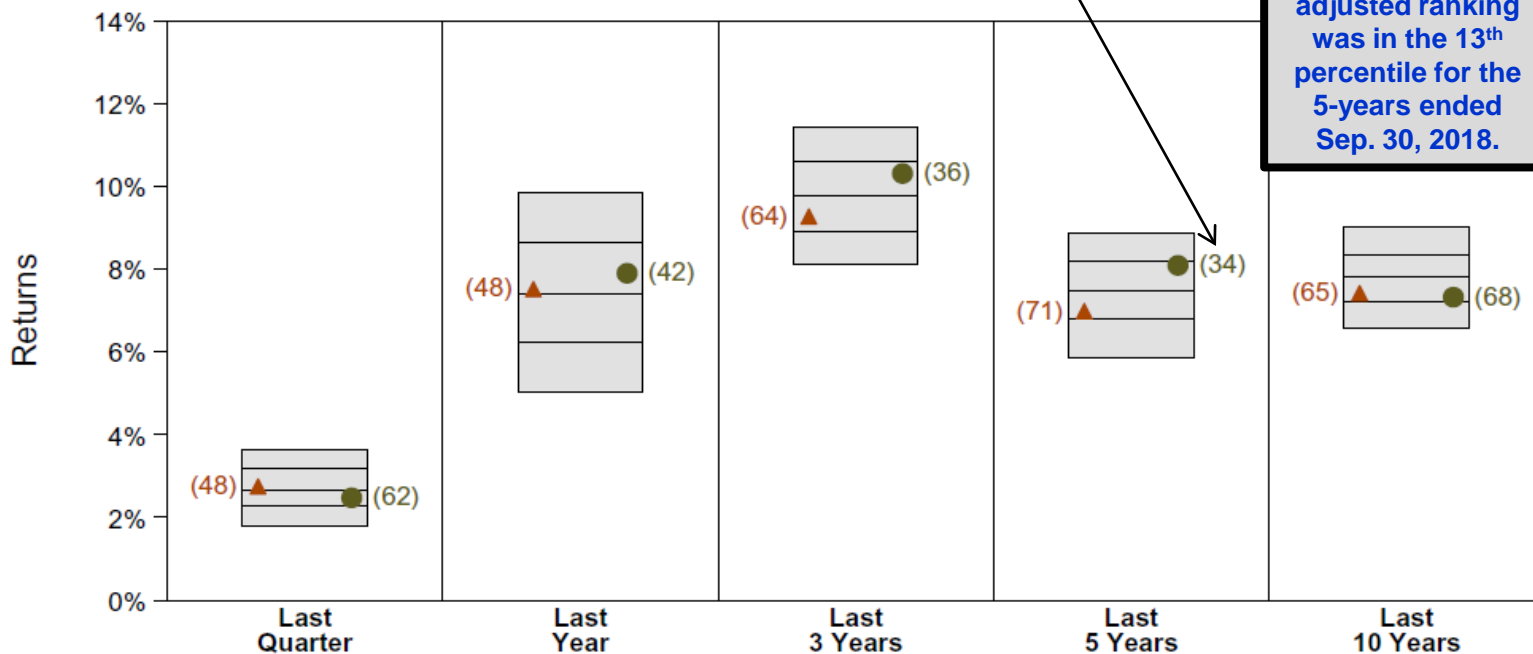
**PERS Retiree Health absolute returns have been reasonable the last 5-years (7.36%) but disappointing on a risk adjusted excess return basis of -0.67%.**

**PERS Group Insurance returns for the 5-years ended Sep. 30, 2018 is disappointing but within -0.05% of the Policy Benchmark and on a Risk Adjusted Excess Return basis the last 5-years.**

The Tobacco Prevention and Control Trust Fund was transferred to OMB regulatory oversight on July 1, 2017.

# Pension Trust “gross” returns were ranked in the 34<sup>th</sup> percentile for the 5-years ended Sep. 30, 2018, based on Callan’s “Public Fund Sponsor Database”.

## Callan Public Fund Sponsor Database



The Pension Trust asset allocation adjusted ranking was in the 13<sup>th</sup> percentile for the 5-years ended Sep. 30, 2018.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	3.64	9.86	11.44	8.89	9.02
25th Percentile	3.20	8.67	10.60	8.20	8.36
Median	2.66	7.40	9.79	7.50	7.81
75th Percentile	2.26	6.23	8.93	6.80	7.23
90th Percentile	1.77	5.03	8.12	5.85	6.59
<b>Total Fund</b> ●	2.48	7.91	10.32	8.10	7.33
<b>Policy Target</b> ▲	2.75	7.53	9.28	6.99	7.43

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

# Return on Investment Fees and Expenses

## Investment Goals for SIB Client Fees and Expenses:

1. The SIB and RIO attempt to keep total fees and expenses at or below 50 bps (0.50%) per annum.
2. We also attempt to generate  $\geq 0.50\%$  of excess return over our stated performance benchmarks (after deducting all investment fees and expenses).
3. If we are successful in attaining both of the above goals, we are effectively earning a minimum 2-for-1 return on our investment fee and expense dollars (which is consistent with our fundamental investment belief that the prudent use of active management is beneficial to our clients).

**Key Point:** For the 5-years ended Sep. 30, 2018, the vast majority of SIB clients earned  $\geq 0.50\%$  of excess return (slides 4-to-9), while fees & expenses averaged  $\leq 0.50\%$  since 2014 (see below).

<u>All State Investment Board Clients</u>	<u>Investment Fees and Expenses</u>	<u>Average "Assets Under Management"</u>	<u>% of AUM</u>
Fiscal Year Ended June 30, 2013	\$45 million	\$6.9 billion	0.65%
Fiscal Year Ended June 30, 2014	\$44 million	\$8.6 billion	0.51%
Fiscal Year Ended June 30, 2015	\$48 million	\$10.1 billion	0.48%
Fiscal Year Ended June 30, 2016	\$46 million	\$10.9 billion	0.42%
Fiscal Year Ended June 30, 2017	\$54.5 million	\$11.8 billion	0.46%
Fiscal Year Ended June 30, 2018	\$56 million	\$13.4 billion	0.42%

**Key Take-Away:** Based on \$10 billion of AUM, a 0.23% decline in fees between fiscal 2013 and 2018 translates into \$23 million of annual fee savings.

*A basis point (or "bp") is equal to one one-hundredth of one percent (or 0.01%) such that 100 basis points ("bps") is equivalent to 1%.*

## Legacy Fund Schedule of Investment Expenses

	FY 2018			FY 2017		
	Average Market Value	Fees in \$	Fees in %	Average Market Value	Fees in \$	Fees in %
Investment managers' fees:						
Domestic large cap equity managers	1,157,153,749	817,082	0.07%	965,570,487	1,922,415	0.20%
Domestic small cap equity managers	424,498,126	709,704	0.17%	364,557,307	630,814	0.17%
International equity managers	1,051,633,065	4,308,926	0.41%	859,092,053	3,553,654	0.41%
Domestic fixed income managers	1,829,238,525	5,809,170	0.32%	1,481,415,976	4,987,591	0.34%
Diversified real assets managers	513,215,642	2,704,986	0.53%	406,004,165	1,368,397	0.34%
Real estate managers	273,421,343	1,490,324	0.55%	255,143,146	1,514,247	0.59%
Cash & equivalents managers	42,188,081	69,690	0.17%	12,637,988	9,758	0.08%
<b>Total investment managers' fees</b> <sup>2</sup>	<b>5,291,348,530</b>	<b>15,909,882</b>	<b>0.30%</b>	<b>4,344,421,122</b>	<b>13,986,877</b>	<b>0.32%</b>
Custodian fees		430,805	0.01%		355,376	0.01%
Investment consultant fees		294,600	0.01%		222,477	0.01%
<b>Total investment expenses</b> <sup>1</sup>		<b>16,635,287</b>	<b>0.31%</b>		<b>14,564,731</b>	<b>0.34%</b>
<b>Total Performance Fees Paid (included in total above)</b>		<b>190,922</b>	<b>0.00%</b>		<b>2,167,158</b>	<b>0.05%</b>
<b>Actual Investment Performance (Net of Fees)</b>			<b>7.57%</b>			<b>12.03%</b>
<b>Policy Benchmark</b>			<b>6.51%</b>			<b>9.91%</b>
		<b>Outperformance</b> <sup>3</sup>	<b>1.06%</b>		<b>Outperformance</b>	<b>2.12%</b>

➤ Investment fees and expenses declined to **0.31%** in fiscal 2018 from **0.34%** in fiscal 2017 largely due to a sharp decline in performance fees (as **Outperformance** declined to **1.06%** in FY 2018 versus **2.12%** in FY 2018).

➤ The use of active management paid significant returns for the Legacy Fund in Fiscal 2018 as we paid <sup>1</sup> \$16.6 million in fees to outperform our stated benchmarks by <sup>3</sup> **1%** or \$50 million (<sup>2</sup> \$5 billion x <sup>3</sup> **1%** = \$50 million).

## ND Public Employees Retirement System Schedule of Investment Expenses

	FY 2018			FY 2017		
	Average Market Value	Fees in \$	Fees in %	Average Market Value	Fees in \$	Fees in %
Investment managers' fees:						
Global equity managers	497,790,578	1,681,241	0.34%	443,295,467	1,716,931	0.39%
Domestic large cap equity managers	515,164,976	(440,474)	-0.09%	458,670,881	654,319	0.14%
Domestic small cap equity managers	159,742,325	726,715	0.45%	144,408,396	561,231	0.39%
Developed international equity managers	356,749,281	1,112,638	0.31%	306,782,154	969,488	0.32%
Emerging markets equity managers	129,137,589	1,060,299	0.82%	109,834,610	898,494	0.82%
<b>Investment grade domestic fixed income managers</b>	<b>435,743,619</b>	<b>1,905,957</b>	<b>0.44%</b>	<b>335,502,197</b>	<b>2,399,466</b>	<b>0.72%</b>
Below investment grade fixed income managers	188,814,114	2,500,721	1.32%	136,630,885	1,854,744	1.36%
Developed international fixed income managers	63,279,110	291,762	0.46%	126,532,685	452,558	0.36%
Real estate managers	311,837,804	3,481,736	1.12%	299,601,975	3,348,730	1.12%
<b>Timber managers</b>	<b>67,040,540</b>	<b>443,112</b>	<b>0.66%</b>	<b>72,185,096</b>	<b>485,605</b>	<b>0.67%</b>
Infrastructure managers	134,465,192	1,557,534	1.16%	114,660,304	917,728	0.80%
Private equity managers	90,169,972	1,649,381	1.83%	79,104,475	1,335,628	1.69%
Cash & equivalents managers	25,394,516	23,636	0.09%	14,736,175	17,861	0.12%
<b>Total investment managers' fees</b>	<b>2,975,329,617</b>	<b>15,994,259</b>	<b>0.54%</b>	<b>2,641,945,299</b>	<b>15,612,783</b>	<b>0.59%</b>
Custodian fees		278,632	0.01%		250,055	0.01%
Investment consultant fees		139,021	0.00%		111,406	0.00%
<b>Total investment expenses</b>		<b>16,411,912</b>	<b>0.55%</b>		<b>15,974,244</b>	<b>0.60%</b>
<b>Actual Investment Performance (Net of Fees)</b>			<b>9.19%</b>			<b>13.05%</b>
<b>Policy Benchmark</b>			<b>7.85%</b>			<b>11.87%</b>
<b>Outperformance</b>			<b>1.34%</b>			<b>1.18%</b>

- PERS investment fees & expenses declined to **0.55%** in fiscal 2018 from **0.60%** in fiscal 2017 largely due to a decline in performance fees (noting that one U.S. equity manager generated a negative fee due to poor returns).
- The use of active management paid significant returns for PERS in Fiscal 2018 as we paid \$16.4 million in fees to outperform our stated benchmarks by **1%** or \$29 million (\$2.9 billion x 1% = \$29 million).

## ND Teachers' Fund for Retirement Schedule of Investment Expenses

	FY 2018			FY 2017		
	Average Market Value	Fees in \$	Fees as % of Average MV	Average Market Value	Fees in \$	Fees as % of Average MV
Investment managers' fees:						
Global equity managers	408,901,458	1,380,401	0.34%	368,541,670	1,426,842	0.39%
<b>Domestic large cap equity managers</b>	<b>427,574,723</b>	<b>(368,098)</b>	<b>-0.09%</b>	<b>388,663,320</b>	<b>551,198</b>	<b>0.14%</b>
Domestic small cap equity managers	129,193,929	586,340	0.45%	117,362,483	455,668	0.39%
Developed international equity managers	306,343,352	954,958	0.31%	269,890,875	852,764	0.32%
Emerging markets equity managers	84,989,807	697,607	0.82%	77,503,580	633,942	0.82%
Investment grade domestic fixed income managers	364,622,117	1,593,550	0.44%	282,438,107	2,017,975	0.71%
Below investment grade fixed income managers *	148,364,649	1,953,550	1.32%	101,467,769	1,383,336	1.36%
Developed international fixed income managers	58,553,192	270,428	0.46%	118,359,898	423,318	0.36%
Real estate managers	238,450,646	2,660,865	1.12%	229,402,622	2,541,836	1.11%
Timber managers	59,876,758	395,760	0.66%	65,007,185	437,057	0.67%
Infrastructure managers *	114,181,019	1,316,541	1.15%	100,536,799	803,006	0.80%
Private equity managers *	82,765,742	1,513,944	1.83%	72,608,878	1,225,954	1.69%
Cash & equivalents managers	29,499,369	36,561	0.12%	19,216,771	20,203	0.11%
<b>Total investment management fees</b>	<b>2,453,316,763</b>	<b>12,992,407</b>	<b>0.53%</b>	<b>2,210,999,957</b>	<b>12,773,099</b>	<b>0.58%</b>
Custodian fees		233,938	0.01%		213,844	0.01%
Investment consultant fees		150,251	0.01%		124,539	0.01%
<b>Total investment expenses</b>		<b>13,376,596</b>	<b>0.55%</b>		<b>13,111,481</b>	<b>0.59%</b>
<b>Actual Investment Performance (Net of Fees)</b>			<b>9.11%</b>			<b>12.92%</b>
<b>Policy Benchmark</b>			<b>7.89%</b>			<b>11.63%</b>
<b>Outperformance/(Underperformance)</b>			<b>1.22%</b>			<b>1.29%</b>

- TFFR investment fees & expenses declined to **0.55%** in fiscal 2018 from **0.59%** in fiscal 2017 largely due to a decline in performance fees (noting that one U.S. equity manager generated a negative fee due to poor returns).
- The use of active management paid significant returns for TFFR in Fiscal 2018 as we paid \$13.4 million in fees to outperform our stated benchmarks by **1%** or \$24 million (\$2.4 billion x 1% = \$24 million).

## WSI Fund Schedule of Investment Expenses

	FY 2018			FY 2017		
	Average Market Value	Fees in \$	Fees in %	Average Market Value	Fees in \$	Fees in %
Investment managers' fees:						
Domestic large cap equity managers	227,079,176	190,170	0.08%	224,096,230	483,425	0.22%
Domestic small cap equity managers	72,903,372	40,693	0.06%	74,251,773	167,479	0.23%
International equity managers	168,974,116	714,087	0.42%	168,301,487	708,790	0.42%
Domestic fixed income managers	1,027,289,753	3,272,794	0.32%	977,744,877	4,218,542	0.43%
Diversified real assets managers	273,049,518	1,315,597	0.48%	264,404,848	1,251,950	0.47%
Real estate managers	139,777,042	765,668	0.55%	135,393,588	810,059	0.60%
Cash & equivalents managers	19,396,368	32,686	0.17%	16,463,575	12,302	0.07%
<b>Total investment managers' fees</b>	<b>1,928,469,346</b>	<b>6,331,695</b>	<b>0.33%</b>	<b>1,860,656,379</b>	<b>7,652,546</b>	<b>0.41%</b>
Custodian fees		160,338	0.01%		159,789	0.01%
Investment consultant fees		111,348	0.01%		91,125	0.00%
<b>Total investment expenses</b>		<b>6,603,381</b>	<b>0.34%</b>		<b>7,903,460</b>	<b>0.42%</b>
<b>Actual Investment Performance (Net of Fees)</b>			<b>5.34%</b>			<b>8.29%</b>
<b>Policy Benchmark</b>			<b>3.77%</b>			<b>5.20%</b>
<b>Outperformance</b>			<b>1.57%</b>			<b>3.09%</b>

- Investment fees and expenses declined to **0.34%** in fiscal 2018 from **0.42%** in fiscal 2017 largely due to a sharp decline in performance fees (as **Outperformance** declined to **1.57%** in FY 2018 versus **3.09%** in FY 2017).
- The use of active management paid significant returns for WSI in Fiscal 2018 as we paid \$6.6 million in fees to outperform our stated benchmarks by over **1%** or \$19 million (\$1.9 billion x 1% = \$19 million).



# RIO Due Diligence Travel Expense Update

<b>Fiscal Year Ended 6/30</b>	<b>Total Expenses</b>	<b>Average AUM during year</b>	<b>Cost as % of AUM</b>
<b>2012</b>	<b>19,161</b>	<b>6,071,721,996</b>	<b>0.00032%</b>
2013	8,148	6,905,312,561	0.00012%
2014	20,034	8,632,237,726	0.00023%
2015	19,134	7,011,550,394	0.00027%
2016	24,997	10,896,823,143	0.00023%
2017	20,589	11,782,432,860	0.00017%
<b>2018</b>	<b>26,661</b>	<b>13,388,707,450</b>	<b>0.00020%</b>

RIO attempts to be fiscally prudent when traveling to conduct onsite due diligence noting that our Supervisor of Administrative Services consistently obtains reasonable fares for air travel and lodging. Our Investment Accountant, who previously worked in the State's Auditor Office, also reviews all submitted expenses for strict adherence to published State guidelines. RIO's investment staff frequently attempt to combine due diligence trips whenever possible in a prudent and cost effective manner. As example, RIO conducted onsite due diligence for the current Invesco Real Estate opportunity under consideration when completing onsite due diligence with another existing investment manager earlier this year.

RIO's due diligence travel expenses have generally ranged from \$19,000 to \$27,000 per year since 2012 (with one exception in fiscal 2013 due to the former CIO resigning in May of 2012). Costs as a % of average assets under management (AUM) have not exceeded 0.00032% per year noting the SIB and RIO must conduct a prudent and reasonable level of due diligence when exercising their fiduciary oversight responsibility (noting average SIB client AUM increased from \$6.1 billion in 2012 to \$13.4 billion in 2018).

**AGENDA ITEM IV.B.**

**TO:** State Investment Board  
**FROM:** Dave Hunter, Darren Schulz and Eric Chin  
**DATE:** November 9, 2018  
**SUBJECT:** Real Estate Overview – Pension Trust

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The Pension Trust has been investing in private real estate for over two decades. During the last ten years, the SIB established strategic partnerships with Invesco and JPMorgan to develop a comprehensive real estate investment strategy anchored in core real estate properties and complemented with value-added and opportunistic investments. This integrated approach has generally performed well as real estate returns for the Pension Trust have often exceeded stated NCREIF performance benchmarks as summarized in the table below:

**Returns for Periods Ended September 30, 2018**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>
<b>Global Real Assets</b>				
Gross	0.72%	6.44%	6.77%	8.24%
Net	0.68%	6.03%	6.34%	7.81%
Weighted Benchmark	1.12%	5.27%	5.34%	6.65%
<b>Real Estate</b>				
Gross	0.81%	7.51%	9.30%	12.00%
Net	0.74%	7.05%	8.79%	11.46%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%



Given recent and forecasted cash distributions in our non-core real estate portfolio, RIO intends to recommend the SIB approve a new \$70 million commitment to Invesco's Value Added Fund V, noting that we are currently under-allocated to the non-core real estate sector within the Pension Trust by approximately \$140 million. It is also important to note the Pension Trust has invested in four prior value-added real estate investment funds with Invesco over the past decade.

The following page is an excerpt from Callan's Performance Report as of September 30, 2018, which provides a high-level overview of the Pension Trust's overall real estate investment performance.

## Real Estate Period Ended September 30, 2018

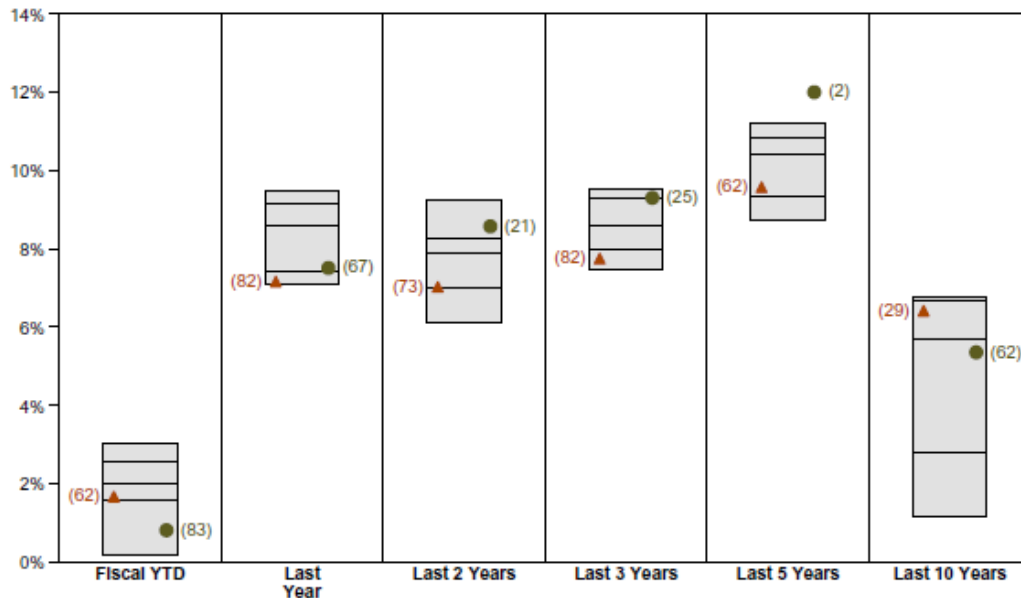
### Quarterly Summary and Highlights

- Real Estate's portfolio posted a 0.81% return for the quarter placing it in the 83 percentile of the Public Fund - Real Estate group for the quarter and in the 67 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 0.86% for the quarter and outperformed the NCREIF Total Index for the year by 0.35%.

### Quarterly Asset Growth

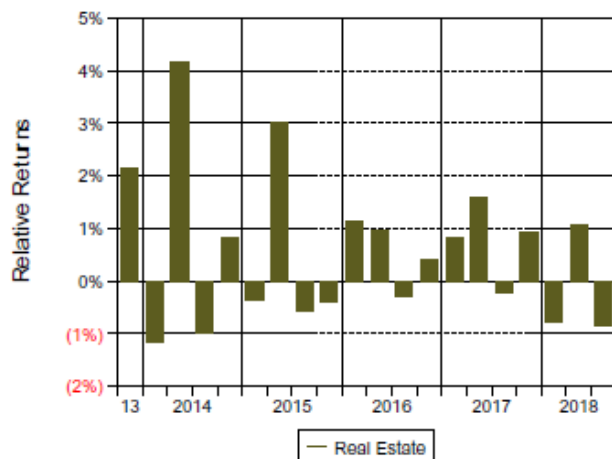
Beginning Market Value	\$585,428,115
Net New Investment	\$35,136,156
Investment Gains/(Losses)	\$5,032,109
Ending Market Value	\$625,596,381

### Performance vs Public Fund - Real Estate (Gross)

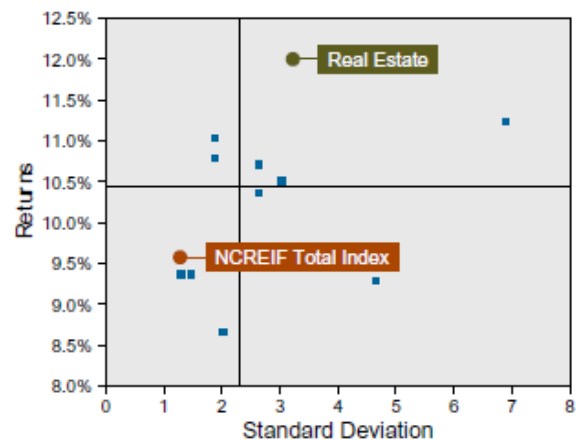


10th Percentile	3.05	9.48	9.26	9.53	11.21	6.77
25th Percentile	2.55	9.15	8.24	9.31	10.85	6.67
Median	1.98	8.60	7.87	8.59	10.43	5.67
75th Percentile	1.58	7.42	7.02	8.00	9.34	2.79
90th Percentile	0.16	7.11	6.11	7.46	8.72	1.16
<b>Real Estate</b>	<b>0.81</b>	<b>7.51</b>	<b>8.57</b>	<b>9.30</b>	<b>12.00</b>	<b>5.36</b>
<b>NCREIF Total Index</b>	<b>1.67</b>	<b>7.16</b>	<b>7.03</b>	<b>7.75</b>	<b>9.57</b>	<b>6.42</b>

### Relative Return vs NCREIF Total Index



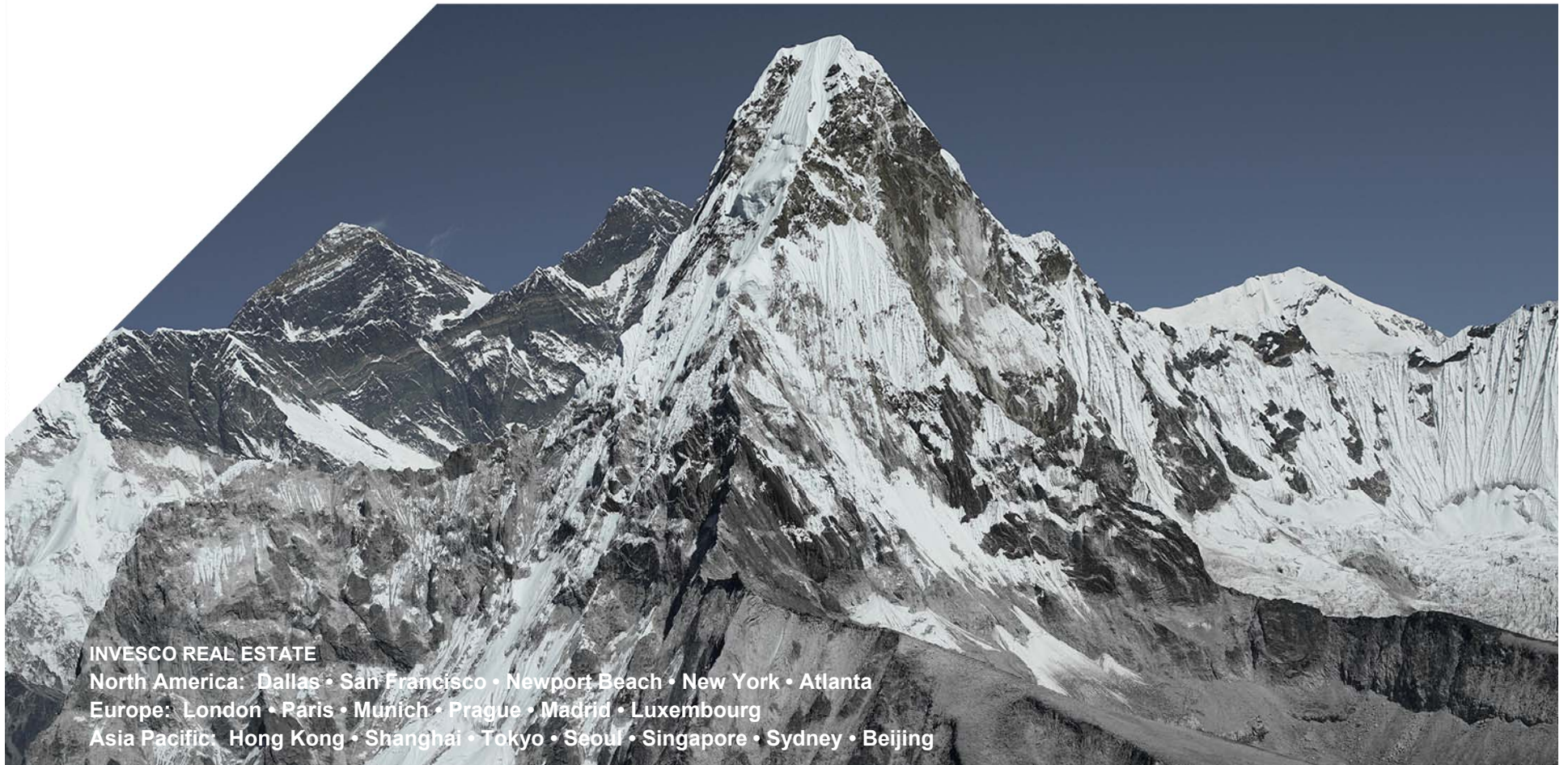
### Public Fund - Real Estate (Gross) Annualized Five Year Risk vs Return





## North Dakota State Investment Board Real Estate Review

November 2018



### INVESCO REAL ESTATE

North America: Dallas • San Francisco • Newport Beach • New York • Atlanta

Europe: London • Paris • Munich • Prague • Madrid • Luxembourg

Asia Pacific: Hong Kong • Shanghai • Tokyo • Seoul • Singapore • Sydney • Beijing

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<b>1</b>	<b>Invesco Real Estate Overview</b>
<b>2</b>	<b>Portfolio Overview</b>
<b>3</b>	<b>Invesco U.S. Value-Add Fund V, L.P.</b>

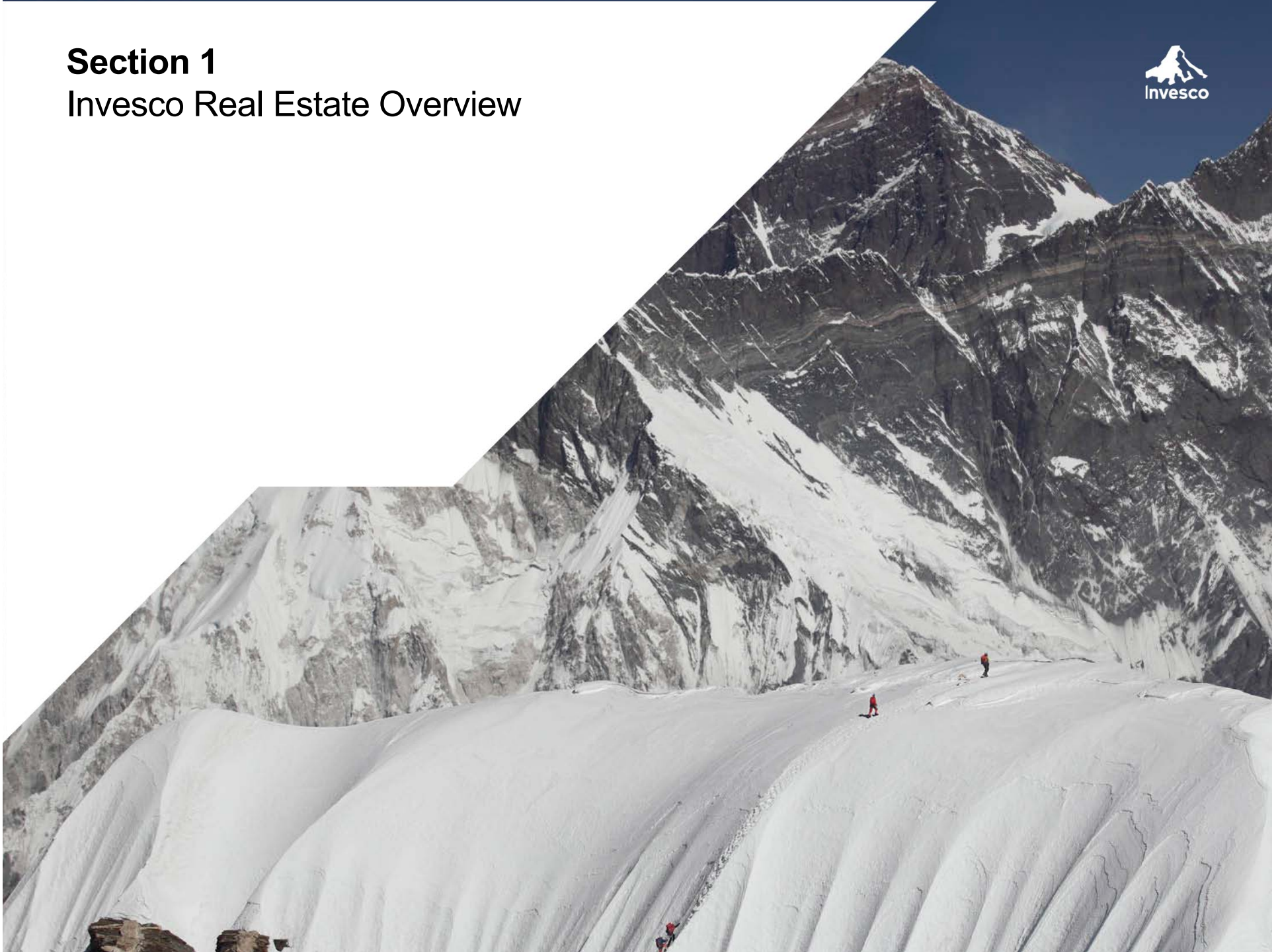
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For one-on-one Institutional Investor use with North Dakota State Investment Board.

All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is not to be construed as an offer to buy or sell any financial instruments. It is not our intention to state, indicate or imply in any manner that current or past results are indicative of future profitability or expectations. As with all investments there are associated inherent risks. Please obtain and review all financial material carefully before investing. This publication may contain confidential and proprietary information of Invesco Companies. Circulation, disclosure, or dissemination of all or any part of this material to any unauthorized persons is prohibited. Unauthorized reproduction or distribution of all or any part of this material is prohibited. For one-on-one presentations only.

# Section 1

## Invesco Real Estate Overview



## \$64.1 Billion Under Management

491 Employees Worldwide; 21 Offices; 16 Countries



### North American Direct

— \$31.0 Billion  
— Since 1983

### Global Securities

— \$15.6 Billion  
— Since 1988

### European Direct

— \$11.5 Billion  
— Since 1996

### Asian Direct

— \$6.0 Billion  
— Since 2006

# Invesco Real Estate Value Proposition



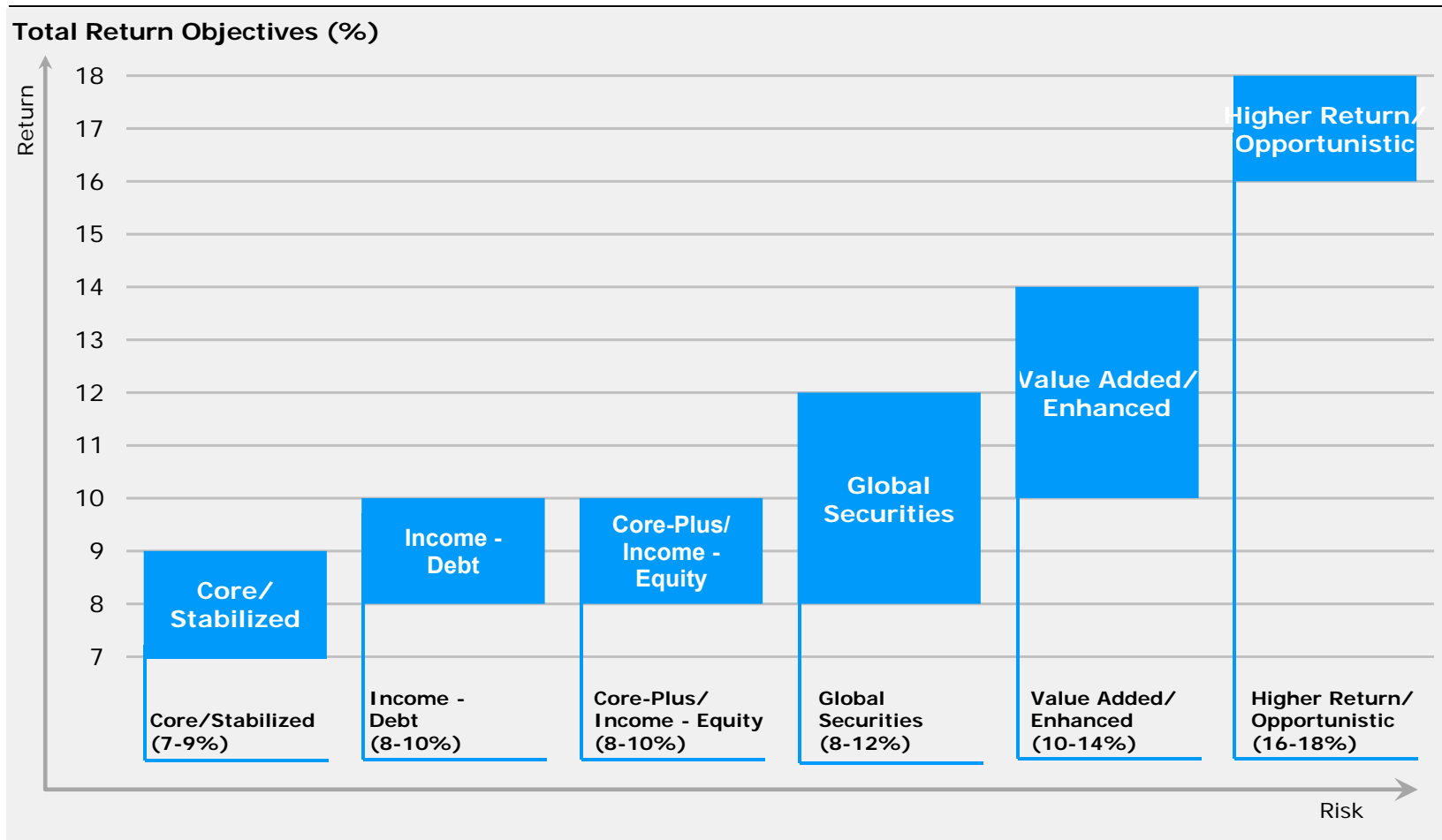
- 
- A decorative graphic on the left side of the slide, consisting of several overlapping, semi-transparent blue arrow shapes pointing to the right, creating a sense of motion and direction.
- Client focused
  - Truly global business with local expertise/execution
  - One corporate culture
  - Sole focus on investment management
  - Best practices focused
  - Performance driven
  - Investment breadth: core to opportunistic strategies in public and private markets



# Risk/Return Spectrum for Investment Strategies



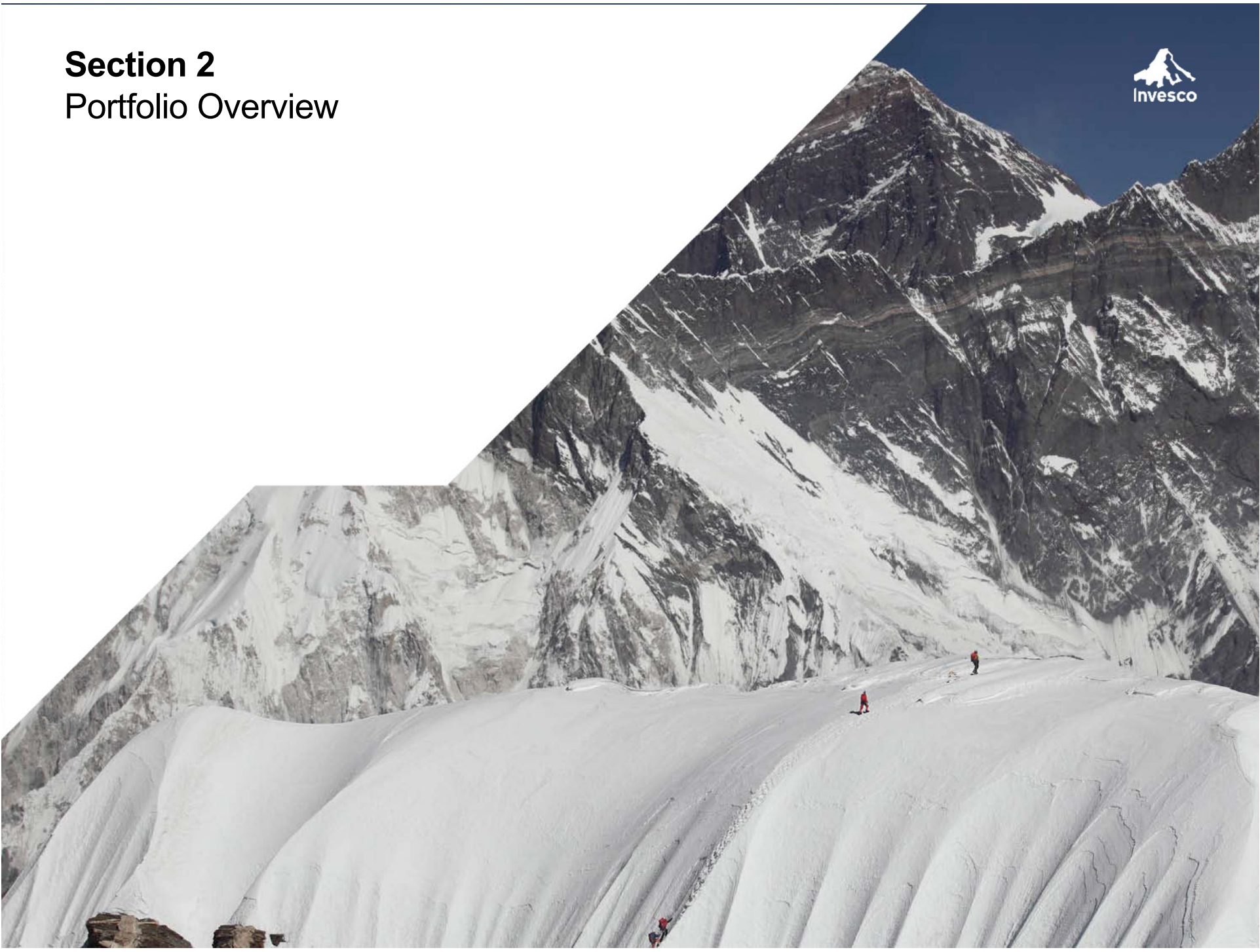
■ Invesco offers a range of investment strategies for clients



Source: Invesco Real Estate (September 30, 2018) for illustrative purposes only, ranges shown are approximate and based on current market conditions which are subject to change. It is not known whether these return objectives will be realized.

# Section 2

## Portfolio Overview



# North Dakota/Invesco Real Estate Partnership



**Maintain exposure to real estate in a portfolio diversified by property type, location and investment strategy.**

## **Portfolio Targets:**

- Primary exposure to core, high quality portfolio of stabilized assets.
- Modest exposure to value added investments to increment returns.
- Minimal exposure to Asia to capture higher growth opportunities.

**Relationship began in 1996**

Swanston Square ♦ Apartment  
Melbourne, Australia



116 New Montgomery ♦ Office  
San Francisco, CA



The Shops at Legacy  
Retail ♦ Plano, TX

Photographs shown above represent recently acquired Core, Value Add and Asia Fund assets.



# Investment Objectives and Portfolio Construction



<b>Current</b>			
	<b>Allocation (%)</b>	<b>Current Allocation (\$ Millions)</b>	<b>Long-Term Return Profile (Net)</b>
1. US Core	84%	\$517*	7.0%
2. US Value Add	11%	\$70	10.0%
3. Asia Value-Add	5%	\$30	14.0%
<b>Total</b>	<b>100%</b>	<b>\$617</b>	<b>7.7%</b>

\*NAV as of September 30, 2018  
Source: Invesco Real Estate

# US Core Fund



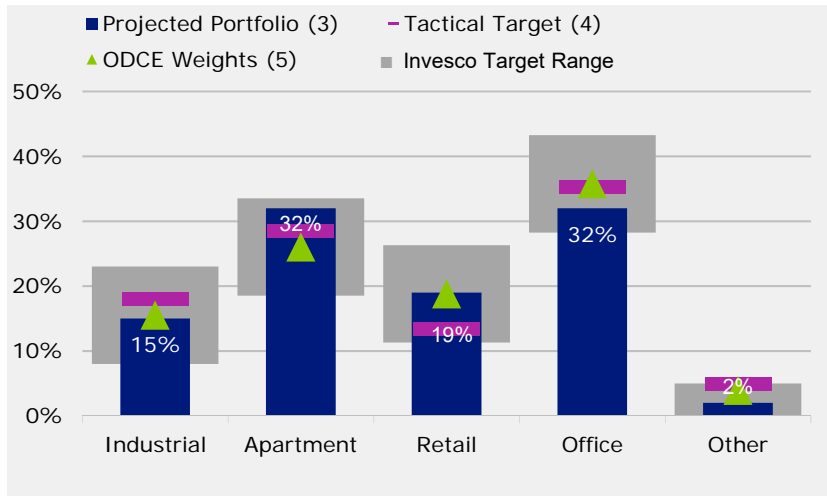
## Overview

<b>Investment Strategy:</b>	Core Real Estate
<b>Target Sectors:</b>	Apartment, Retail, Industrial, Office
<b>Geographic Focus:</b>	Major metropolitan areas within the United States
<b>Leverage:</b>	Maximum of 35% loan-to-value
<b>Liquidity:</b>	Quarterly with 45 days notice and reasonable best efforts basis <sup>(1)</sup>

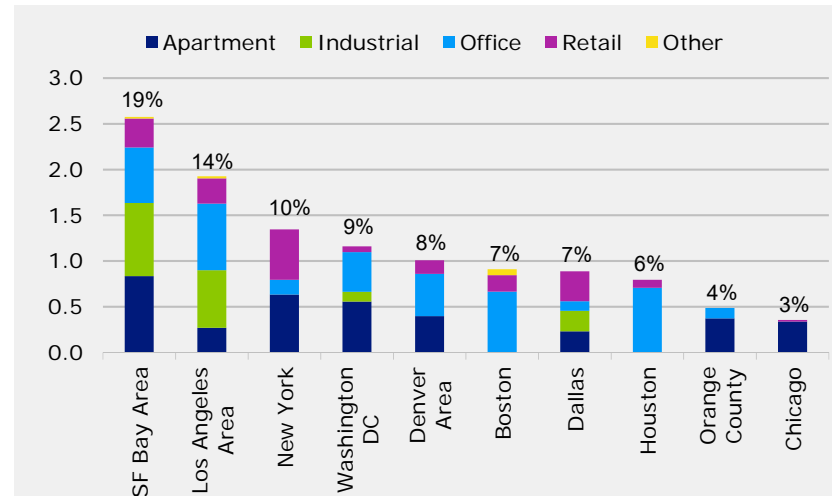
## Portfolio Summary

<b>Gross Asset Value:</b>	\$13.4Bn
<b>Net Asset Value:</b>	\$9.8Bn
<b>Loan-to-value (incl./excl. short-term borrowing):</b>	23.8%/23.4% <sup>(1)</sup>
<b>Number of investments:</b>	101
<b>Portfolio % leased:</b>	93.3% <sup>(2)</sup>
<b>Trailing 4 quarter gross distribution yield:</b>	3.3%
<b>Number of clients:</b>	131

## Property Type Allocations - Proforma



## Top 10 Market Exposure - Proforma (billions) <sup>(6)</sup>



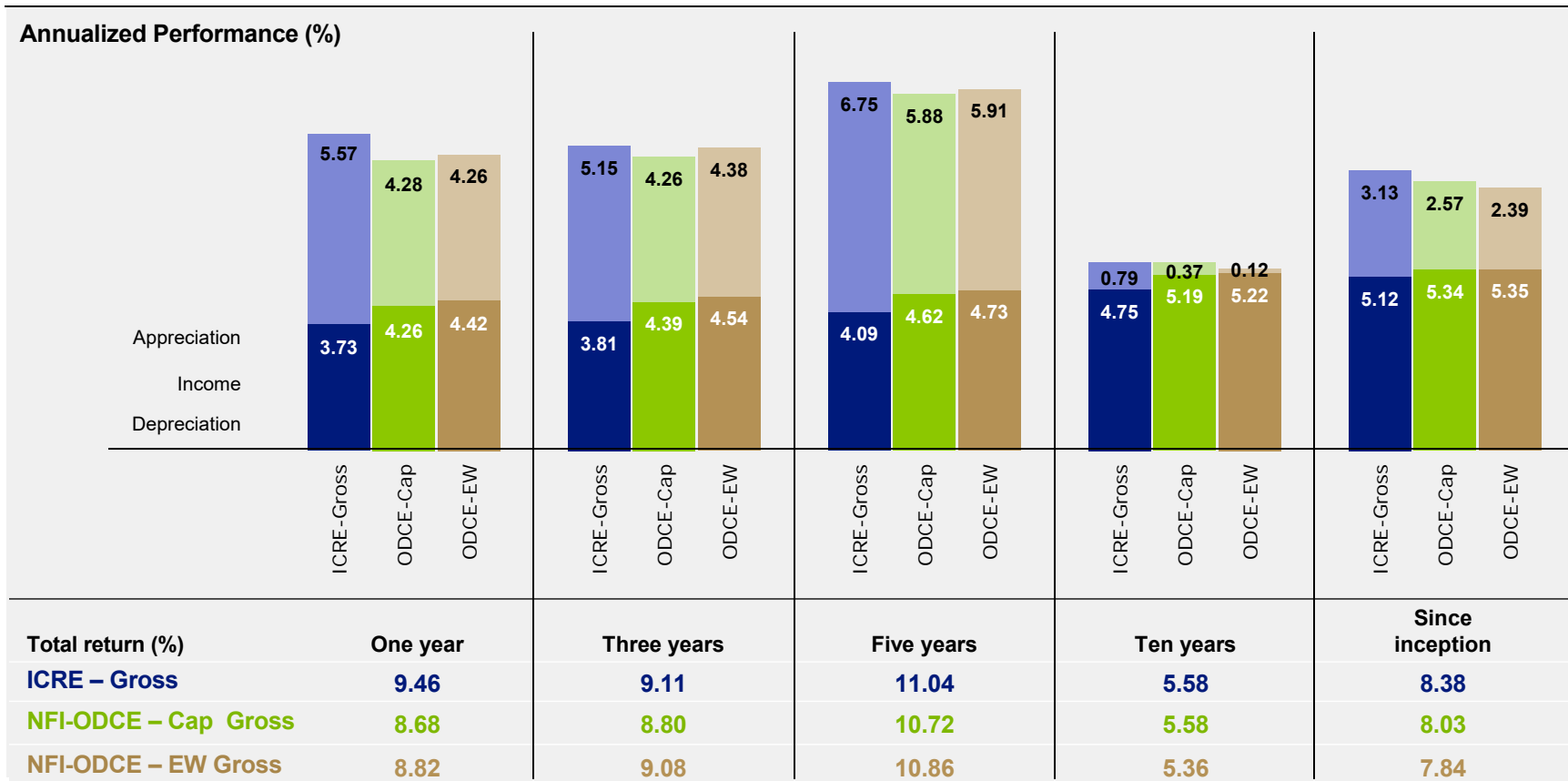
Source: Invesco Real Estate as of September 30, 2018. <sup>1</sup> Short-term line of credit balance was \$50m. <sup>2</sup>Core Portfolio = 95.4% <sup>3</sup> Projected property type weightings include the Manage-to-Core Portfolio on a fully funded basis. <sup>4</sup>Target diversification may change based on changing market conditions. <sup>5</sup>Based on Gross NCREIF-ODCE - Capital Weighted. <sup>6</sup>Based on gross real estate value of the Core Portfolio. Proforma MSA weightings include remaining capital to be spent on the Value Add Portfolio. Represents San Francisco, SF East Bay, and San Jose \*Represents Los Angeles, Burbank and the Inland Empire Region. Photographs shown above represent recently acquired core real estate assets. Performance was not a criterion for selection, and the photographs are provided for illustrative purposes only and do not constitute investment advice or a recommendation.

# Performance

As of September 30, 2018



- Strong absolute performance across multiple market cycles.
- Relative outperformance over most time horizons.



This chart reflects the fund performance of the Invesco Core Real Estate-U.S.A., LP. The fund inception date is September 30, 2004. Returns for less than one year are not annualized.

This performance information is supplemental to the Global Investment Performance (GIPS®) compliant presentation of the Invesco North American Direct Real Estate Composite which includes more complete information about the Composite's construction and performance. A complete list of composites and performance results is available upon request.

# Invesco Real Estate Fund II

## Fund Overview (\$ in millions)



**Milehouse** | Denver, CO



**Broadstone Arboretum** | Austin, TX



### Key Fund Stats

Vintage Year	2007
Fund Size	\$457
No. of Investments	16
% Realized	100%
Fund Maturity	December 2015

### Fund Performance (Gross)

IRR	8.2%
EM	1.36x

# Invesco US Value Add Fund III

## Fund Overview (\$ in millions)



**Kenmore Row | Boston, MA**



**Pearl at Dadeland | Miami, FL**



Source: Invesco Real Estate as of June 30, 2018 <sup>(1)</sup> Asset level debt only.

### Key Fund Stats

Vintage Year	2012
Fund Size	\$344
Equity Committed	95%
No. of Investments	13
% Realized	60%
Weighted Average Leverage (LTV) <sup>(1)</sup>	48%
Net Capital Invested (\$ / %)	\$0 / 0%
Fund Maturity	December 2020

### Fund Performance (Gross)

Since Inception – IRR	20.3%
Since Inception – EM	1.6x
Projected – IRR	17.3%
Projected – EM	1.6x
Full Liquidation (projected)	2019



# Invesco US Value Add Fund IV

## Fund Overview (\$ in millions)



Third and Shoal | Austin, TX



Rendering

Broadstone Harbor Beach | Ft. Lauderdale, FL



### Key Fund Stats

Vintage Year	2014
Fund Size	\$759
No. of Investments	22
% Realized <sup>(1)</sup>	16%
Weighted Avg. Leverage (LTV) <sup>(2)</sup>	50%
Net Capital Invested <sup>(3)</sup> (\$ / %)	\$450 / 59%
Fund Maturity	December 2022

### Fund Performance (Gross)

Since Inception – IRR	18.3%
Since Inception – EM	1.3x
Projected – IRR	17.0%
Projected – EM	1.6x
Full Return of Capital (est.)	2020
Full Liquidation (est.)	2022

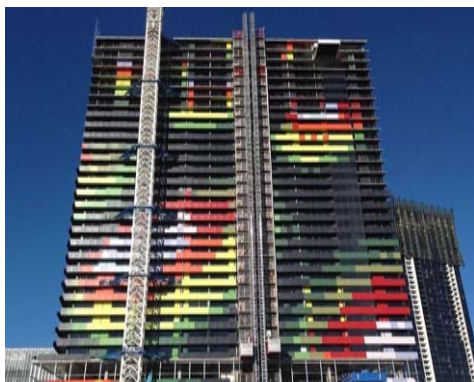
<sup>(1)</sup> Includes Venue Brookwood which was sold subsequent to QE. <sup>(2)</sup> Asset level debt only. <sup>(3)</sup> Following the 3Q / 4Q capital calls, peak equity and net invested capital is 63%. Source: Invesco Real Estate as June 30, 2018.

# Invesco Asia Real Estate Fund I

## Fund Overview (\$ in millions)



*Swanton Square,  
Melbourne, Australia*



*Dignity Mansion,  
Changzhou, China*



*M Plaza  
Seoul, South Korea*



*Urban Square  
Greater Tokyo, Japan*



Vintage Year	<b>2010 (final close)</b>
Fund Size (millions)	<b>\$113</b>
Since Inception IRR (gross)	<b>14.7%</b>
Since Inception Equity Multiple (gross)	<b>1.5x</b>
Leverage	<b>0%</b>
Net Invested Capital	<b>95%</b>
Investments (Total/Unrealized)	<b>6/0</b>
Fund Maturity <sup>(1)</sup>	<b>December 2018</b>

Note:

(1) Initial Fund term expired on December 2017; 1 year extension approved till December 2018. The purpose of the extension is to ensure that the Fund is able to cover the warranty period relating to the sale of the final Asset and can proceed with an orderly liquidation process.

# Invesco Asia Real Estate Fund III

## Fund Overview (\$ in millions)



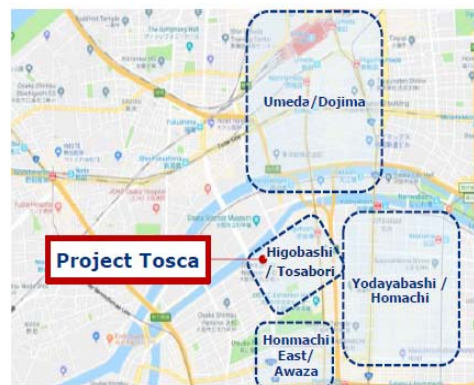
**Project Samsung,  
Seoul, South Korea**



**Project Skyler,  
Brisbane, Australia**



**Project Tosca,  
Osaka, Japan**



Vintage Year  
**2015 (Initial close)**

Fund Size (millions)  
**\$100**

Projected/Since Inception IRR (gross)  
**33%/N.A.**

Projected/Since Inception Equity Multiple (gross)  
**1.6x/N.A.**

Leverage  
**62%**

Net Invested Capital  
**17%**

Investments (Total/Unrealized)  
**3/1**

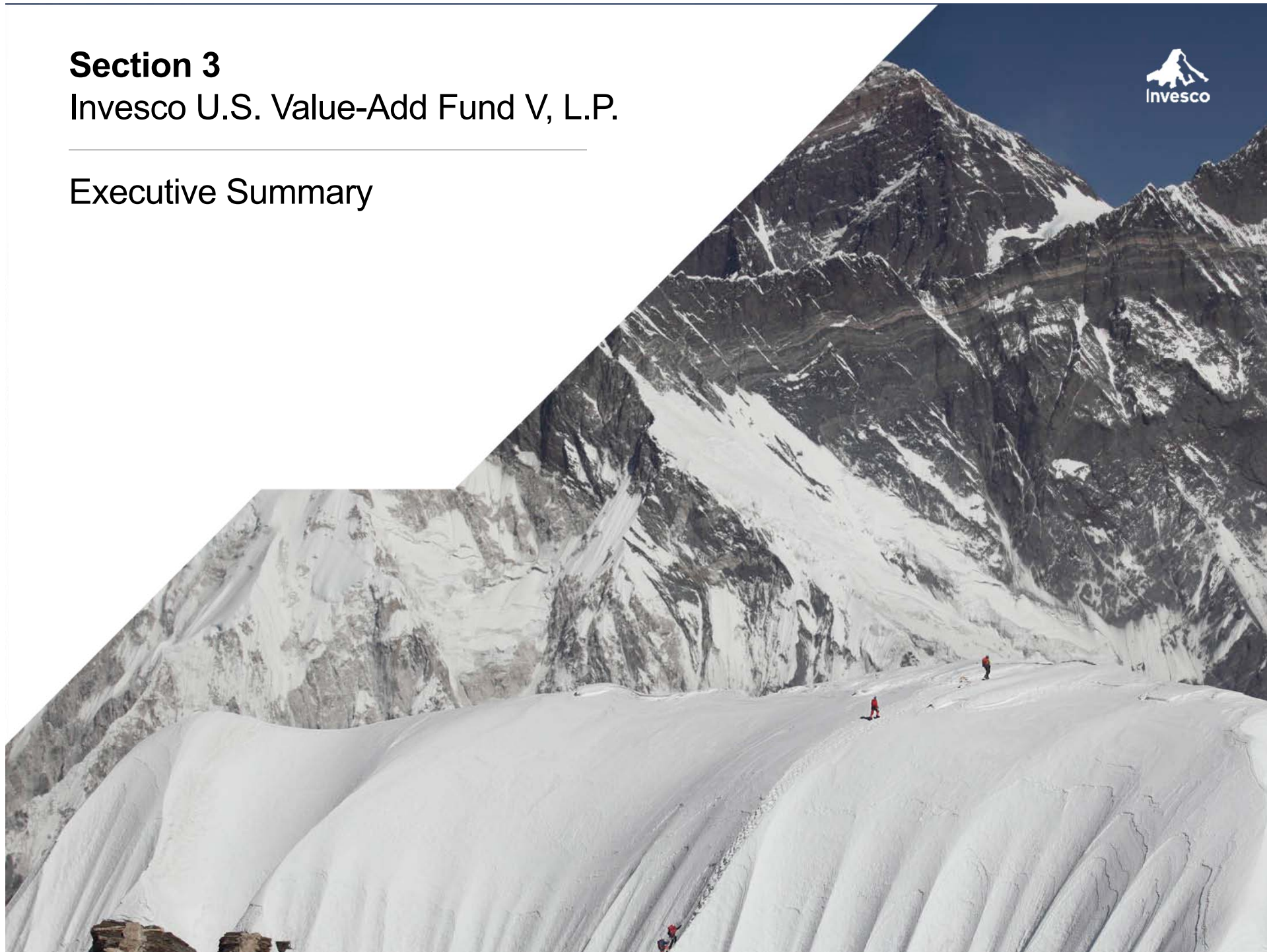
Fund Maturity  
**8 years from Final Closing**

## Section 3

Invesco U.S. Value-Add Fund V, L.P.

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Executive Summary



# Investment Strategies

## Creating Value through Bottom-Up Execution



Investment Strategies	“Fix Broken Core”	“Manufacture Core”	“Exploit Pricing Inefficiencies”
Execution Characteristics	<ul style="list-style-type: none"> <li>Re-Tenanting (Vacancy)</li> <li>Re-Tenanting (MTM)</li> <li>Renovation</li> <li>Re-Positioning</li> <li>Adaptive Re-Use</li> </ul>	<ul style="list-style-type: none"> <li>Avoidance of regulatory risk</li> <li>Transit-oriented</li> <li>Amenity-dense</li> <li>Employment-dense</li> <li>Residential preferred</li> <li>Select commercial opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Higher and better use analysis</li> <li>Monetization – motivated sellers</li> <li>Opportunities on JV recaps</li> <li>Out of favor (or emerging) submarkets</li> </ul>
Tactical Observations	<ul style="list-style-type: none"> <li>Cyclical acquisition pricing challenging</li> <li>Tenant demand is concentrating in key submarkets</li> </ul>	<ul style="list-style-type: none"> <li>Substantial excess tenant demand occurring in new product over existing commodity</li> <li>Core capital preference on exit</li> </ul>	<ul style="list-style-type: none"> <li>Sellers valuing execution “certainty” over “peak value”</li> <li>Capital partner forced liquidations</li> <li>Increasing recap activity</li> </ul>



Hanover Diridon | San Jose, CA



888 Broadway | New York, NY



Harbor Chase Fairfax | Washington, DC

# Performance Summary

## Invesco's 26-Year Value-Add Summary



<b>Experience</b>	<p><b>Invesco Real Estate has invested in US value-added real estate since 1992</b></p> <ul style="list-style-type: none"> <li>▪ Over \$14 billion and 217 value-added investments</li> <li>▪ Deep experience across the risk spectrum                             <ul style="list-style-type: none"> <li>➢ Multiple Cycles</li> <li>➢ Recap to development</li> <li>➢ Primary, secondary, tertiary markets</li> </ul> </li> <li>▪ Organizational Stability                             <ul style="list-style-type: none"> <li>➢ Consistent team leadership through the Fund Series</li> <li>➢ Consistency of investment philosophy</li> <li>➢ Institutionally rigorous process</li> </ul> </li> </ul>
<b>Summary</b>	<p><b>Favorable value-added returns over multiple cycles</b></p> <ul style="list-style-type: none"> <li>▪ 14.8% IRR on realized and unrealized (estimated) returns (gross, levered)</li> <li>▪ 14.5% IRR on realized investments (gross, levered) <sup>(1)</sup></li> <li>▪ No realized capital loss on any value-add investment vehicle</li> </ul>

Investment	Vintage Year	Gross Capitalization	Equity Raised	% Equity Committed	Equity Invested	Current LTV <sup>(2)</sup>	# of Investments	IRR <sup>(4)</sup>		Equity Multiple <sup>(3)</sup>		% Realized
								Gross	Net	Gross	Net	
Invesco Value-Add Separate Accounts	1992-2018	\$9,150	\$5,229	N/A	\$5,229	31%	142	15.5%	12.6%	1.5x	1.4x	66%
Invesco Real Estate Fund	2005	\$891	\$320	103%	\$330	N/A	15	3.2%	1.6%	1.2x	1.1x	100%
Invesco Real Estate Fund II, LP	2007	\$1,074	\$457	92%	\$416	N/A	16	8.1%	6.7%	1.4x	1.3x	100%
Invesco Real Estate Fund III, LP	2012	\$845	\$344	95%	\$315	53% <sup>(3)</sup>	13	17.6%	14.0%	1.6x	1.4x	60%
Invesco US Value-Add Fund IV, LP	2014	\$1,823	\$759	93%	\$593	46% <sup>(3)</sup>	24	17.0%	13.5%	1.6x	1.5x	13%
Invesco US Value-Add Fund V, LP	2017	\$1,059	\$485	40%	\$120 <sup>(5)</sup>	57% <sup>(3)</sup>	7	16.2%	13.8%	1.8x	1.7x	0%
<b>Value-Add Totals</b>		<b>\$14,842</b>	<b>\$7,593</b>	<b>-</b>	<b>\$7,004</b>	<b>N/A</b>	<b>217</b>	<b>14.8%</b>	<b>12.0%</b>	<b>1.5x</b>	<b>1.4x</b>	

All figures in millions

<sup>(1)</sup> This reflects Investment Level "Gross Returns", net returns are not shown because fees are assigned at the Fund Level not the Investment Level for realized Fund investments. Please note that net returns will be lower after the application of fund fees.

<sup>(2)</sup> Aggregation of individual asset-level LTVs. Calculated on unrealized investments as of June 30, 2018.

<sup>(3)</sup> Fund level LTV for Invesco Value-Add Fund III, Invesco Value-Add Fund IV and Invesco Value-Add Fund V as of June 30, 2018 is 48%, 47% and 30%, respectively.

<sup>(4)</sup> IRR and Equity Multiple performance shown is combination of realized and unrealized (estimated) returns as of June 30, 2018.

<sup>(5)</sup> Capital investment from Funds' line of credit.

Source: Invesco Real Estate unaudited results. The above presentation reflects our historical Value-Add performance results, earned in both separate accounts and fund vehicles spanning many market cycles. Past performance is not indicative of future results and historical market conditions may not be comparable to current market conditions.



# Domestic Value Add Exposure

## Invesco Real Estate Funds II, III, IV and V



Year End	Pre-2016	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>VF II (\$50MM)<sup>(1)</sup></b>											
Contribution	(\$46.0)	\$0.0	\$0.0								
Distribution	\$51.0	\$9.0	\$0.0								
<b>VF II Annual Net Invested</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>								
<b>VF III (\$50MM) <sup>(2)</sup></b>											
Contribution	(\$43.5)	(\$0.3)	(\$2.5)	\$0.0	\$0.0						
Distribution	\$30.0	\$2.1	\$15.0	\$5.1	\$14.0						
<b>VF III Annual Net Invested</b>	<b>(\$13.5)</b>	<b>(\$11.7)</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>						
<b>VF IV (\$70MM)<sup>(2)</sup></b>											
Contribution	(\$8.3)	(\$23.9)	(\$16.9)	(\$10.6)	(\$6.3)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Distribution	\$0.0	\$5.6	\$9.7	\$12.7	\$19.5	\$23.2	\$16.6	\$8.5	\$0.0	\$0.0	\$0.0
<b>VF IV Annual Net Invested</b>	<b>(\$8.3)</b>	<b>(\$26.5)</b>	<b>(\$33.7)</b>	<b>(\$31.6)</b>	<b>(\$18.4)</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>
<b>VF V (\$70MM)<sup>(3)</sup></b>											
Contribution	\$0.0	\$0.0	\$0.0	\$0.0	(\$21.0)	(\$14.0)	(\$14.0)	(\$17.5)	\$0.0	\$0.0	\$0.0
Distribution	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$3.5	\$19.6	\$21.0	\$21.0	\$21.0	\$20.3
<b>VF V Annual Net Invested</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>(\$21.0)</b>	<b>(\$31.5)</b>	<b>(\$25.9)</b>	<b>(\$22.4)</b>	<b>(\$1.4)</b>	<b>\$0.0</b>	<b>\$0.0</b>
<b>Cumulative Annual Net Invested</b>	<b>(21.8)</b>	<b>(38.2)</b>	<b>(33.7)</b>	<b>(31.6)</b>	<b>(39.4)</b>	<b>(31.5)</b>	<b>(25.9)</b>	<b>(22.4)</b>	<b>(1.4)</b>	<b>0.0</b>	<b>0.0</b>

(\$ in millions).

<sup>(1)</sup> The Fund has liquidated all of its investments and the final sale proceeds were distributed in 4Q 2016. The Fund is in the process of winding down and Investor may receive a residual, immaterial distribution following wind down. Liquidation and dissolution estimated to be completed in 2019.

<sup>(2)</sup> This is a high level estimate based on anticipated acquisition and/or disposition activity.

<sup>(3)</sup> Hypothetical timing of contributions and distributions for new fund.

# Invesco US Value Add Fund V

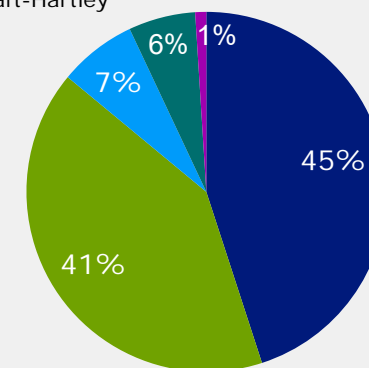
## Commitments Summary



Investor Type	Commitments (USD)
US Foundation	\$40 million
US Insurance Company	\$15 million
US Public Pension	\$50 million
US Insurance Company	\$30 million
US Public Pension	\$30 million
US Public Pension	\$10 million
US Foundation	\$15 million
US Corporate Plan	\$25 million
US Public Pension	\$30 million
US Taft Hartley	\$15 million
US Public Pension	\$150 million
US Public Pension	\$75 million
Non-US Sovereign Wealth Fund	\$100 million
<b>Closed Commitments</b>	<b>\$585 million</b>
Non-US Sovereign Wealth Fund	\$150 million
US Public Pension	\$70 million
<b>November Investment Committee</b>	<b>\$805 million</b>
Non-US Sovereign Wealth Fund	\$150 million
US Public Pension	\$25 million
<b>In Progress "Re-Ups"</b>	<b>\$980 million</b>
<b>Ongoing Discussions</b>	<b>\$50+ million</b>

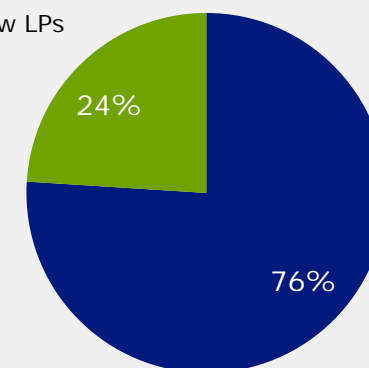
### LP Composition

- US Public Pension
- Non-US SWF
- US Insurance/Corporate
- US Foundation
- US Taft-Hartley



### Prior Fund Series LPs vs. New LPs

- Prior Fund Series LPs
- New LPs



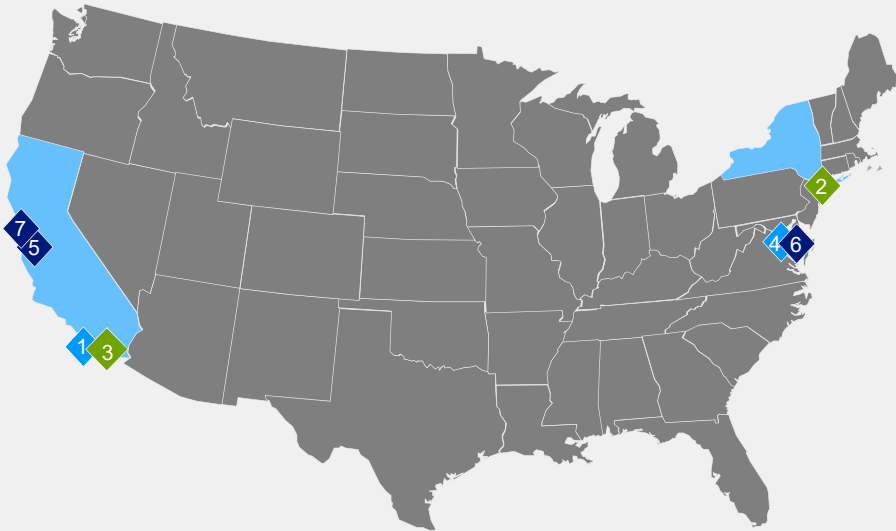


# Pre-Specified Portfolio

Initial Portfolio Construction of +/-40% of Target Equity Raise



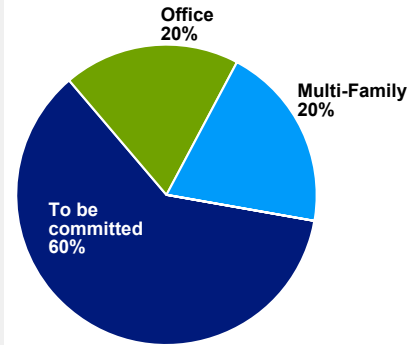
## Market Exposures



- |   |   |
|---|---|
| <b>1</b> ALEXAN FASHION VALLEY<br>San Diego, CA | <b>5</b> HANOVER DIRIDON<br>San Jose, CA        |
| <b>2</b> 888 BROADWAY<br>New York, NY           | <b>6</b> HARBOR CHASE POTOMAC<br>Washington, DC |
| <b>3</b> THE PRESS<br>Orange Co., CA            | <b>7</b> CAMPUS DRIVE<br>San Francisco, CA      |
| <b>4</b> HARBOR CHASE FAIRFAX<br>Washington, DC |   |

## Sector Allocation (%)

Current



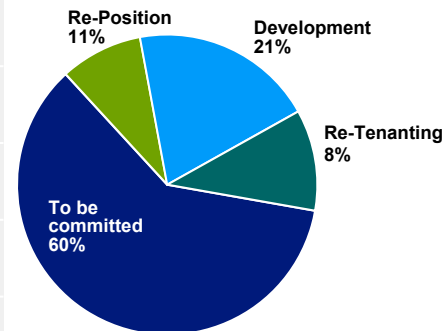
Strategic Range

Tactical Target

Sector	Strategic Range	Tactical Target
Multi-Family (incl. Sr. Housing)	33-50%	+/-50%
Office	25-40%	+/-35%
Industrial	0-15%	+/-15%
Retail	0-15%	+/-0%

## Investment Strategy (%) <sup>(1)</sup>

Current



Strategic Range

Strategy	Strategic Range
Renovation	25%
Re-Tenancing	25%
Re-Position	25%
Development	25%

(\$ in millions) <sup>(1)</sup>Fund is "neutral" on investment strategy weightings and employs a best relative value approach. It is not known whether investments in due diligence will be acquired by the Fund. Information is presented for illustrative purposes only. Figures are estimates and are as of July 2018 and are SUBJECT TO CHANGE.

# Pre-Specified Portfolio

Initial Portfolio Construction on +/-40% of Target Equity Raise



Investment (MSA)	Property Type (Strategy)	Status	Fund Equity Commitment		Acquisition Pricing Discipline (Untrended)			Target Returns		Investment Duration
			\$	% of Fund	Stab'd Yield	Exit Cap	Risk Premium	IRR	EM	Months
<b>HELD (UNREALIZED)</b>										
ALEXAN FASHION VALLEY San Diego, CA	MULTI-FAMILY (Development)	Closed	\$45	6%	5.11%	4.25%	20%	14%	1.6x	48
THE PRESS Orange County, CA	OFFICE (Re-Positioning)	Closed	\$93	11%	6.45%	5.25%	23%	14%	1.8x	60
888 BROADWAY New York, NY	OFFICE (Re-Tenancing)	Closed	\$33	4%	6.88%	5.00%	33%	18%	1.5x	36
CAMPUS DRIVE <sup>(1)</sup> San Francisco, CA	OFFICE (Re-Tenancing)	Closed	\$36	4%	N/A	N/A	N/A	22%	1.5x	24
<b>SUBTOTAL/WTD AVG.</b>			<b>\$207</b>	<b>26%</b>	<b>6.18%</b>	<b>4.94%</b>	<b>24%</b>	<b>16%</b>	<b>1.7x</b>	<b>-</b>
<b>ALLOCATED (IN DUE DILIGENCE) / ESTIMATED CLOSING</b>										
HARBOR CHASE FAIRFAX Washington, DC	MF/SR. HOUSING (Development)	4Q 2018	\$29	4%	9.25%	6.00%	54%	20%	2.2x	60
HANOVER DIRIDON San Jose, CA	MULTI-FAMILY (Development)	4Q 2018	\$49	6%	5.21%	4.25%	23%	14%	1.6x	48
HARBOR CHASE POTOMAC Washington, DC	MF/SR. HOUSING (Development)	1Q 2019	\$43	5%	9.13%	5.75%	59%	19%	2.2x	60
<b>SUBTOTAL/WTD AVG.</b>			<b>\$121</b>	<b>15%</b>	<b>7.57%</b>	<b>5.17%</b>	<b>40%</b>	<b>17%</b>	<b>2.0x</b>	<b>-</b>
<b>TOTALS</b>			<b>\$328</b>	<b>40%</b>	<b>6.76%</b>	<b>5.05%</b>	<b>32%</b>	<b>16%</b>	<b>1.8x</b>	<b>-</b>

(\$ in millions). <sup>(1)</sup> Co-invest with Fund LP.

It is not known whether investments in due diligence will be acquired by the Fund. Information is presented for illustrative purposes only.

Figures are estimates and are as of July 2018 and are SUBJECT TO CHANGE.

# Invesco US Value Add Fund V (“VF V”)

Continuation of Invesco Real Estate’s (“IRE”) Flagship Series



Fund Summary	
<ul style="list-style-type: none"> <li>~\$800 million closed / in active LP process</li> </ul>	<b>Targeted Fund Size:</b> \$800 million - \$1 billion
<ul style="list-style-type: none"> <li>\$1 billion hard cap</li> </ul>	<b>Target Return Range (levered/gross)*:</b> 11-14% IRR
<ul style="list-style-type: none"> <li>Final Close in December 2018</li> </ul>	<b>GP Commitment:</b> \$25 Million
<ul style="list-style-type: none"> <li>~40% Pre-specified Portfolio</li> </ul>	<b>Minimum LP Commitment:</b> \$10 Million
<ul style="list-style-type: none"> <li>Pre-specified Portfolio targeted returns of 16% IRR and 1.8 EM (gross)</li> </ul>	<b>Initial Close:</b> July 2017
	<b>Final Close:</b> December 2018
	<b>Initial Fund Life:</b> 7 years from Final Closing
	<b>Extensions:</b> Two; 1-year extensions (LPAC discretion)
	<b>Investment Period:</b> July 2021
	<b>Leverage (LTV):</b> Maximum 60% at Fund-Level / 75% on Individual Investments
	<b>Management Fee:</b> 1.5% on Invested Equity
	<b>Preferred Return:</b> 9%
	<b>Incentive Fee (Portfolio Test):</b> 20%; 50% catch-up

\* This is a target return based on current economic condition and other factors. There is no guarantee that the return objective can be achieved. Investors should not rely solely on the information above to make any investment decision. Please see PPM for more complete information. Performance was not a criteria for selection, and the photographs are provided for illustrative purposes only and do not constitute investment advice or a recommendation.

## Board Action

### Pension Trust – Invesco Real Estate Recommendation

#### Executive Summary

##### Recommendation:

With the anticipated return of previously invested capital in our value added, closed end real estate portfolio within the pension trust, the SIB will need to make new commitments to maintain its target exposure to non-core real estate. Based on the pension trust's current availability to commit, the market opportunities, the relative attractiveness of different strategies, and the pace of capital deployment from our existing managers, Staff recommends making a \$70 million commitment to Invesco's Value Added Fund V at this time subject to satisfactory legal review and negotiation. The SIB previously committed \$100 million (in aggregate) to Invesco's Value Added Funds II and III in addition to a \$70 million commitment to Invesco Value Added Fund IV.

##### Rationale:

The Pension Trust has a 10.5% target asset allocation to real estate including an approximate 3.8% target allocation to the non-core sector. Based on the pension trust's \$5.8 market value as of 9/30/18, the non-core real estate allocation in the pension trust should approximate \$220 million. Compared to this target, the actual investment in non-core real estate approached \$80 million on 9/30/18. The SIB last made non-core real estate commitments to private funds in late-2013. This prior round of commitments was established to better diversify our core real estate exposure based on a targeted allocation of 65% core and 35% non-core real estate. At this time, our availability to commit to private real estate has grown due to the increase in total market value and meaningful distributions from existing private real estate managers. With the anticipated wind down of non-core U.S. real estate funds as well as the rapid deployment of committed capital, the SIB will need to make new commitments to maintain its target exposure to private real estate.

<b>Pension Trust Global Real Estate</b>		<b>% of Total</b>
<b>Managers</b>	<b>Market Value</b>	<b>Assets</b>
Invesco Core Real Estate	\$ 303,223,933	5.2%
Invesco Fund II	\$ 185,886	0.0%
Invesco Fund III	\$ 19,073,619	0.3%
Invesco Asia III	\$ 4,352,553	0.1%
Invesco Fund IV	\$ 49,163,630	0.8%
<b>Invesco Real Estate</b>	<b>\$ 375,999,621</b>	<b>6.4%</b>
JPMorgan Core Real Estate	\$ 243,270,340	4.2%
JPMorgan Alternative / China	\$ 1,041,851	0.0%
JPMorgan Greater European	\$ 5,284,569	0.1%
<b>JPMorgan Real Estate</b>	<b>\$ 249,596,760</b>	<b>4.3%</b>
<b>Total Real Estate</b>	<b>\$ 625,596,381</b>	<b>10.7%</b>

Given the nature of investing in closed-end real estate, at the beginning of a fund’s life there is a lag period from when a commitment is made until when the actual dollars are invested. Later, when the fund approaches its termination and portfolio holdings mature, properties are sold, the portfolio eventually winds down, and capital is returned to investors. To recognize that investment in funds is often below the commitment level, the SIB needs to make commitments relative to the desired target allocation to non-core real estate in order to achieve the real estate target allocation of 3.8%.

### Current Combined Real Estate Portfolio

Closed-end real estate funds available to institutional real estate investors range from core (lower targeted return/lower risk) strategies to opportunistic (higher targeted return/higher risk) strategies. Core funds typically target returns in the mid-to-high single digit range, predominantly from stable income streams such as apartments. Value-added funds target IRRs from high single digit to mid-teens, while opportunity funds target returns in the high teens and above. Value-added and opportunistic funds will use higher leverage as well depending on the type of investments and the availability of debt in the market. The risk displayed includes both financial and operating risk. For example, re-tenant or development projects involve more operating risk than collecting rents and maintenance of core buildings.

### Strategic Position of Pension Trust Private Real Estate Managers

Strategy	SIB Manager	Investment Theme Example	Operating Risk	Financial Leverage	Target Return
Core	Invesco, JP Morgan	Office, Retail, Apartment with low vacancy in prime markets, stable cash flow	Low	Low	Low
Value-Added	Invesco, JP Morgan	Tenant/property improvement, stabilize rent roll, transform to core	Medium	Medium	Medium
Opportunistic	Invesco, JP Morgan	Development, recapitalization, value-added enhancement	High	High	High

The target allocation for the pension trust is approximately 66% core and 35% non-core private real estate. Currently, the strategy allocation is 87% core and 13% non-core private real estate as illustrated below:

Pension Trust Global Real Estate Managers	Market Value	% of Real Assets
Core Real Estate	\$ 546,494,273	87.4%
Non-Core Real Estate	\$ 79,102,108	12.6%
	<b>\$ 625,596,381</b>	<b>10.7%</b>

## Current Real Estate Market Trends

Since its peak in 2008, private real estate fund-raising has plummeted to pre-crisis levels in 2013 and 2015. Much of the capital raised post-2008 went into core assets (well financed, nearly fully leased Class A properties in major markets), as investors become risk-averse and foreign capital floods primary core markets. On the public side, the capital formation of REITs has increased since 2008; REITs are essentially core vehicles. As most of the equity raised, public and private, chase after the core assets, it leaves more opportunities than capital in non-core assets. Several non-core locations outside major metropolitan areas are now experiencing equal or stronger growth rates than core locations in New York and London—and are more attractively valued. While non-core properties do carry their share of risks, Staff and Callan believe their current valuations and potential returns can more than compensate investors—especially compared to many prime properties.

Among our non-core managers, Invesco is the nearing the final close for its current value-added fund. Without new commitments, the pension trust will have a sub-optimal exposure to non-core private real estate within the next several years. Invesco managed through the severe real estate downturn reasonably well with the anticipation of no loss of capital and the possibility of meaningful upside. Despite a disadvantageous 2007 vintage year, Invesco Real Estate Fund II is projected to return a net IRR of 6.7% and an investment multiple of 1.3x. Funds III and IV are projected to return net IRR's in excess of 13% and an investment multiple of over 1.4x which is consistent with the expected values for Fund V.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Global Real Assets</b>				
Gross	0.72%	6.44%	6.77%	8.24%
Net	0.68%	6.03%	6.34%	7.81%
Weighted Benchmark	1.12%	5.27%	5.34%	6.65%
<b>Real Estate</b>				
Gross	0.81%	7.51%	9.30%	12.00%
Net	0.74%	7.05%	8.79%	11.46%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%



**Real Estate**  
**Period Ended September 30, 2018**

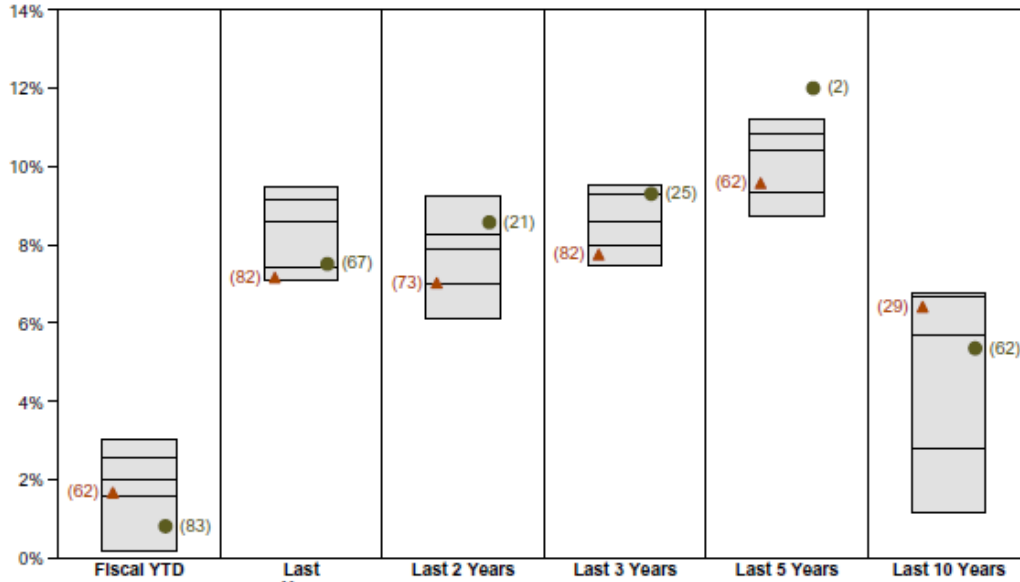
**Quarterly Summary and Highlights**

- Real Estate's portfolio posted a 0.81% return for the quarter placing it in the 83 percentile of the Public Fund - Real Estate group for the quarter and in the 67 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 0.86% for the quarter and outperformed the NCREIF Total Index for the year by 0.35%.

**Quarterly Asset Growth**

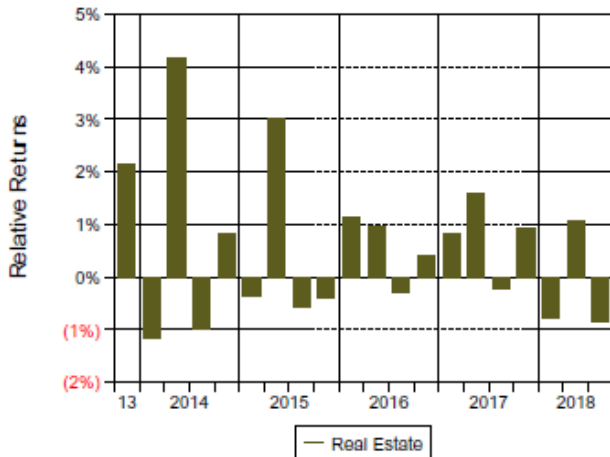
Beginning Market Value	\$585,428,115
Net New Investment	\$35,136,156
Investment Gains/(Losses)	\$5,032,109
Ending Market Value	\$625,596,381

**Performance vs Public Fund - Real Estate (Gross)**

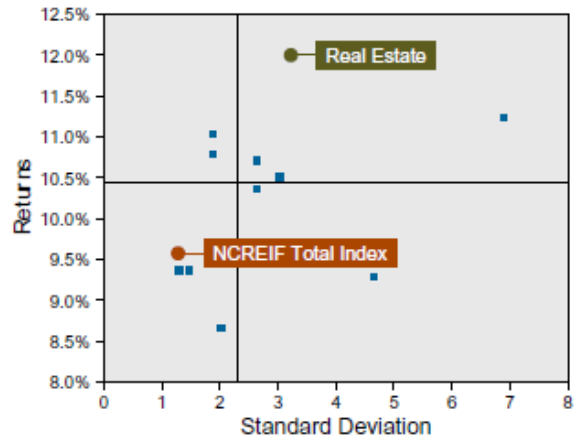


10th Percentile	3.05	9.48	9.26	9.53	11.21	6.77
25th Percentile	2.55	9.15	8.24	9.31	10.85	6.67
Median	1.98	8.60	7.87	8.59	10.43	5.67
75th Percentile	1.58	7.42	7.02	8.00	9.34	2.79
90th Percentile	0.16	7.11	6.11	7.46	8.72	1.16
<b>Real Estate</b> ●	0.81	7.51	8.57	9.30	12.00	5.36
<b>NCREIF Total Index</b> ▲	1.67	7.16	7.03	7.75	9.57	6.42

**Relative Return vs NCREIF Total Index**



**Public Fund - Real Estate (Gross)**  
**Annualized Five Year Risk vs Return**



**Inga Sweet**  
**Callan Overview to the North Dakota State Investment Board**  
**November 16, 2018**



**Inga B. Sweet** is Executive Vice President and Chief Operating Officer. She is responsible for overseeing the firm's business operations. Inga is a member of Callan's Board of Directors and the firm's Management Committee. She serves on Callan's Institute Advisory Committee and is a shareholder of the firm.

Inga joined Callan in 1991. From 1991 until 1998 was responsible for international equity manager research, analysis, and manager structure work as a member of Global Manager Research. From 1998 through 2007 she was a member of the Institutional Consulting Group where she provided consulting and research services to investment manager clients. In 2007 Inga helped form Callan's Published Research Group which she has overseen since its inception. In 2009 Inga returned to Global Manager Research to co-manage the group until 2016. Inga graduated from George Washington University with a BA in International Relations.



# Callan



November 16, 2018

## **North Dakota State Investment Board**

Performance Evaluation as of  
September 30, 2018

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**Paul Erlendson**  
Senior Vice President

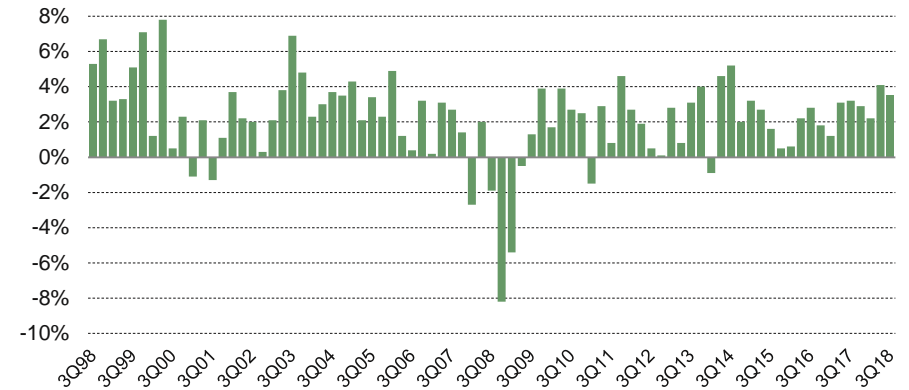
**Alex Browning**  
Senior Vice President

# U.S. Economy

September 30, 2018

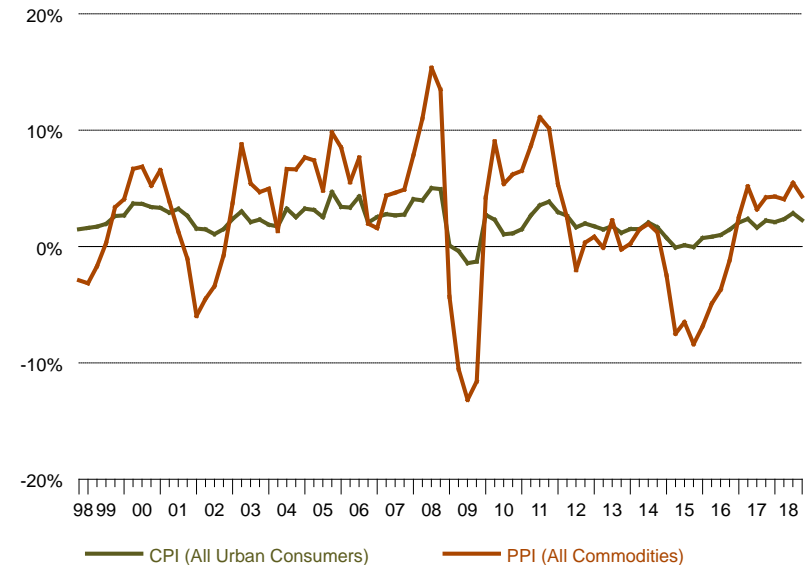
- The initial estimate of third quarter GDP growth came in at 3.5% (annualized)
  - Down from 4.2% in the second quarter
  - Consumer spending up 4.0% (annualized); up from a strong 3.8% in Q2
- Labor market strong
  - Unemployment reached 3.7% in September; lowest since 1969
  - About 185,000 nonfarm payrolls were added per month during the third quarter
- Inflation remained well-behaved
  - Headline CPI was 2.3% in September (y/y); Core CPI was 2.2% (y/y)
  - Core PCE in line with Fed’s 2% target
- The Fed raised rates as expected
  - A 25 bp hike in September brought the target range to 2.00% –2.25%; “accommodative” dropped from language
  - At its November 8<sup>th</sup> meeting, the Federal Open Market Committee (FOMC) voted unanimously to hold short-term interest rates steady noting that business investment “moderated from its rapid pace earlier this year.”
  - The Fed meets again in December. Consensus expects one more rate hike this year and three in 2019

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year

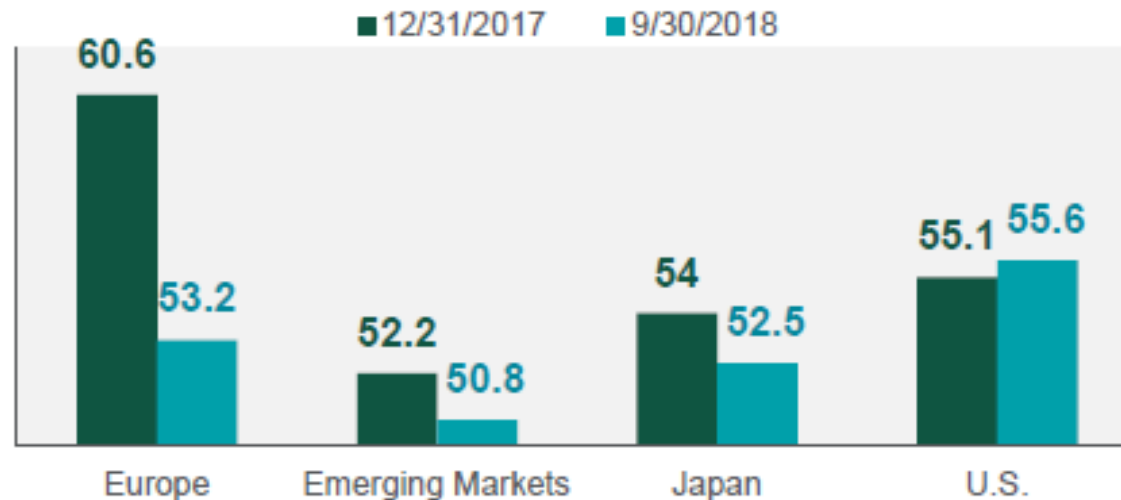


Source: Bureau of Labor Statistics

# Global Purchasing Manager Indexes

Readings > 50 Indicate Growth

PURCHASING MANAGER INDEXES – THEN AND NOW



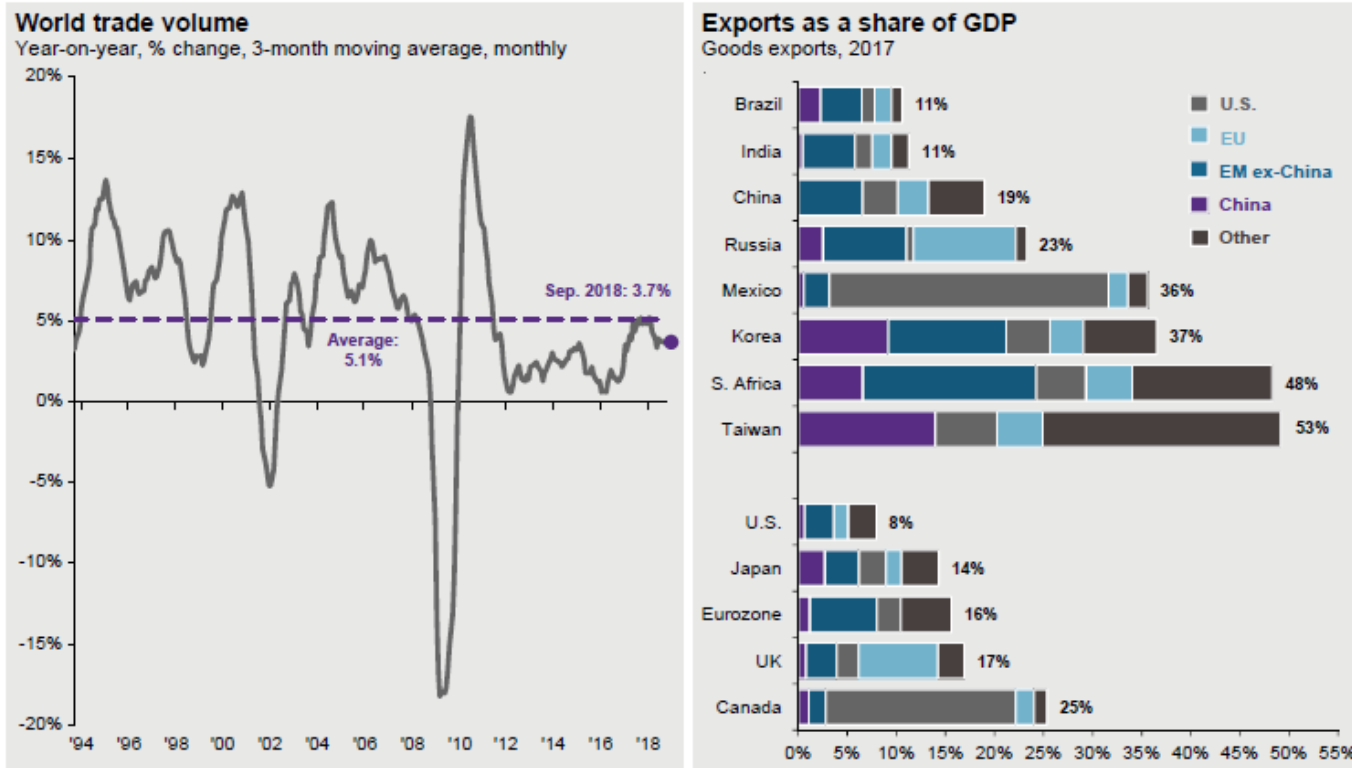
- U.S. economic growth has accelerated while the rest of the world has slowed down.
- BREXIT negotiations.
- Rise of Populist coalition in Italy.
- Continued U.S. Fed hikes and rising dollar.
- Turkish Lira down 37%, Argentinian Peso down 55% YTD as of 09/30/2018.
- Turkey and Argentina: poor governance and finances amplified by trade concerns and global growth divergence.

# The importance of World Trade



- World trade represents more than 50% of World GDP.
- Considering the influence of World Trade on World GDP, it would appear that trade related disruptions should be expected to have a significant impact on non-U.S. equity returns.

# World Trade and GDP Impact

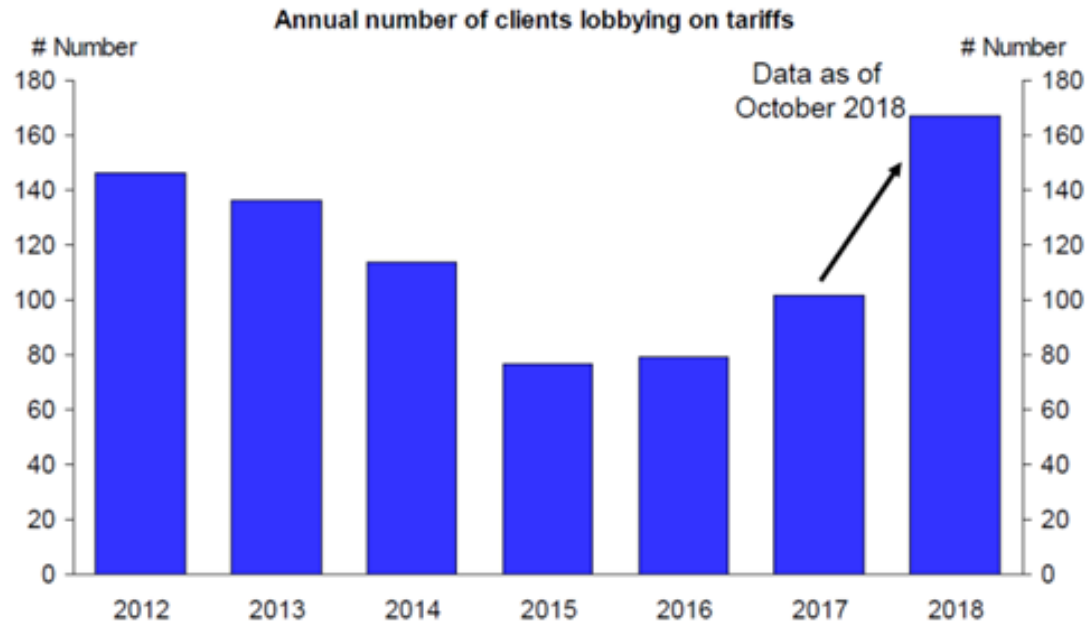


Source: FactSet, J.P. Morgan Asset Management; (Left) Netherlands Policy Analysis; (Right) IMF. Guide to the Markets – U.S. Data are as of September 30, 2018.

- World trade volume has been below average since 2012.
- Mexico, Taiwan, Korea, S. Africa and Canada have high exports as a share of GDP so could be more adversely impacted by trade sanctions.

# Global Trade and Corporate Lobbying Efforts

60% increase in number of companies lobbying on tariffs



Source: Center for Responsive Politics, DB Global Research

Deutsche Bank Research

Torsten Slok, torsten.slok@db.com +1 212 250-2155

October 2018


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- As the long-standing global trade regime has been disrupted, the number of companies directing lobbying efforts at protecting their markets has increased dramatically.

# Asset Class Performance

## Periodic Table of Investment Returns for Periods Ended September 30, 2018

Best



Worst

Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
S&P:500 7.7%	Russell:2000 Index 11.5%	S&P:500 17.9%	S&P:500 17.3%	S&P:500 13.9%	S&P:500 12.0%
Russell:2000 Index 3.6%	S&P:500 10.6%	Russell:2000 Index 15.2%	Russell:2000 Index 17.1%	Russell:2000 Index 11.1%	Russell:2000 Index 11.1%
MSCI:EAFE 1.4%	3 Month T-Bill 1.3%	MSCI:EAFE 2.7%	MSCI:EM Gross 12.8%	MSCI:EAFE 4.4%	MSCI:EM Gross 5.8%
3 Month T-Bill 0.5%	MSCI:EAFE (1.4%)	3 Month T-Bill 1.6%	MSCI:EAFE 9.2%	MSCI:EM Gross 4.0%	MSCI:EAFE 5.4%
Blmbg:Aggregate 0.0%	Blmbg:Aggregate (1.6%)	Blmbg:Commodity Price Idx 0.9%	Blmbg:Aggregate 1.3%	Blmbg:Aggregate 2.2%	Blmbg:Aggregate 3.8%
MSCI:EM Gross (0.9%)	Blmbg:Commodity Price Idx (3.4%)	MSCI:EM Gross (0.4%)	3 Month T-Bill 0.8%	3 Month T-Bill 0.5%	3 Month T-Bill 0.3%
Blmbg:Commodity Price Idx (2.5%)	MSCI:EM Gross (7.4%)	Blmbg:Aggregate (1.2%)	Blmbg:Commodity Price Idx (1.0%)	Blmbg:Commodity Price Idx (7.7%)	Blmbg:Commodity Price Idx (6.6%)

# U.S. Equity Market

September 30, 2018

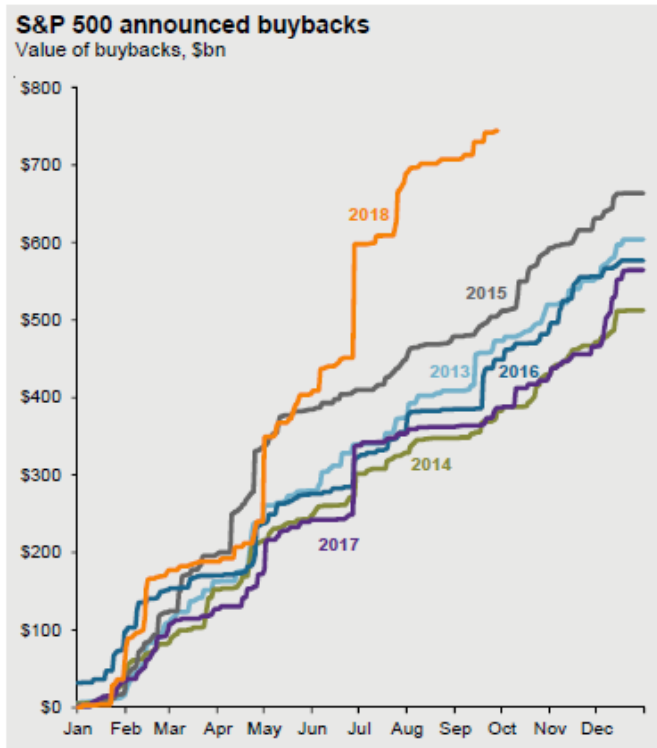
- The S&P 500 Index rose 7.7%
  - Best quarterly result since 4Q 2013
  - Health Care (+14.5%) and Industrials (+10.0%) led the way in the third quarter
- Growth continued to outperform Value, widening year-to-date divergence
  - R1000 Growth (+9.2%) vs. R1000 Value (+5.7%)
- Large caps outperformed small caps and pulled ahead year-to-date
  - Last Quarter: R1000 (+7.4%) vs. R2000 (+3.6%)

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Large Cap Equity</b>						
Russell 1000 Index	7.42	10.49	17.76	17.07	13.67	12.09
Russell 1000 Growth	9.17	17.09	26.30	20.55	16.58	14.31
Russell 1000 Value	5.70	3.92	9.45	13.55	10.72	9.79
<b>Mid Cap Equity</b>						
Russell Midcap Index	5.00	7.46	13.98	14.52	11.65	12.31
Russell Midcap Growth	7.57	13.38	21.10	16.65	13.00	13.46
Russell Midcap Value	3.30	3.13	8.81	13.09	10.72	11.29
<b>Small Cap Equity</b>						
Russell 2000 Index	3.58	11.51	15.24	17.12	11.07	11.11
Russell 2000 Growth	5.52	15.76	21.06	17.98	12.14	12.65
Russell 2000 Value	1.60	7.14	9.33	16.12	9.91	9.52

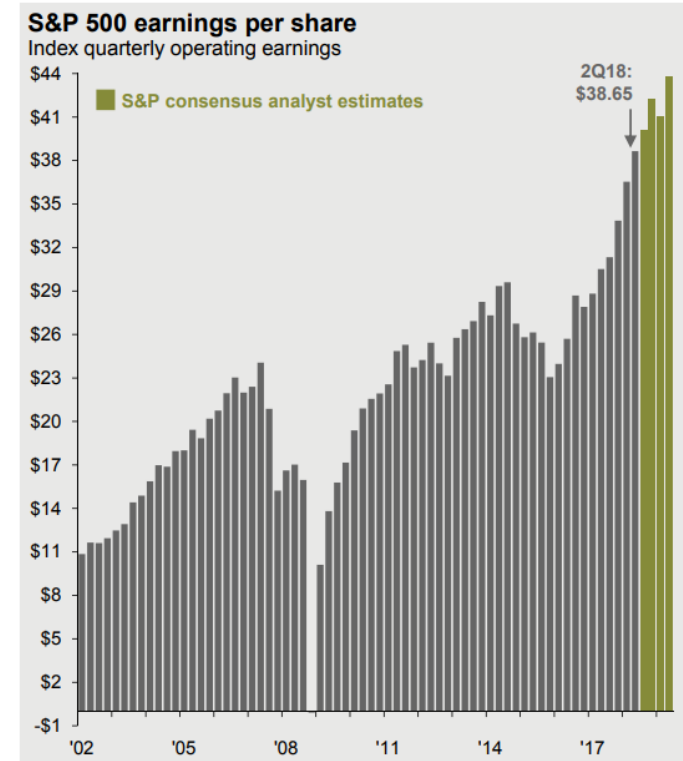


# S&P 500 Earnings

September 30, 2018



Source: JP Morgan Guide to the Markets. As of September 30, 2018

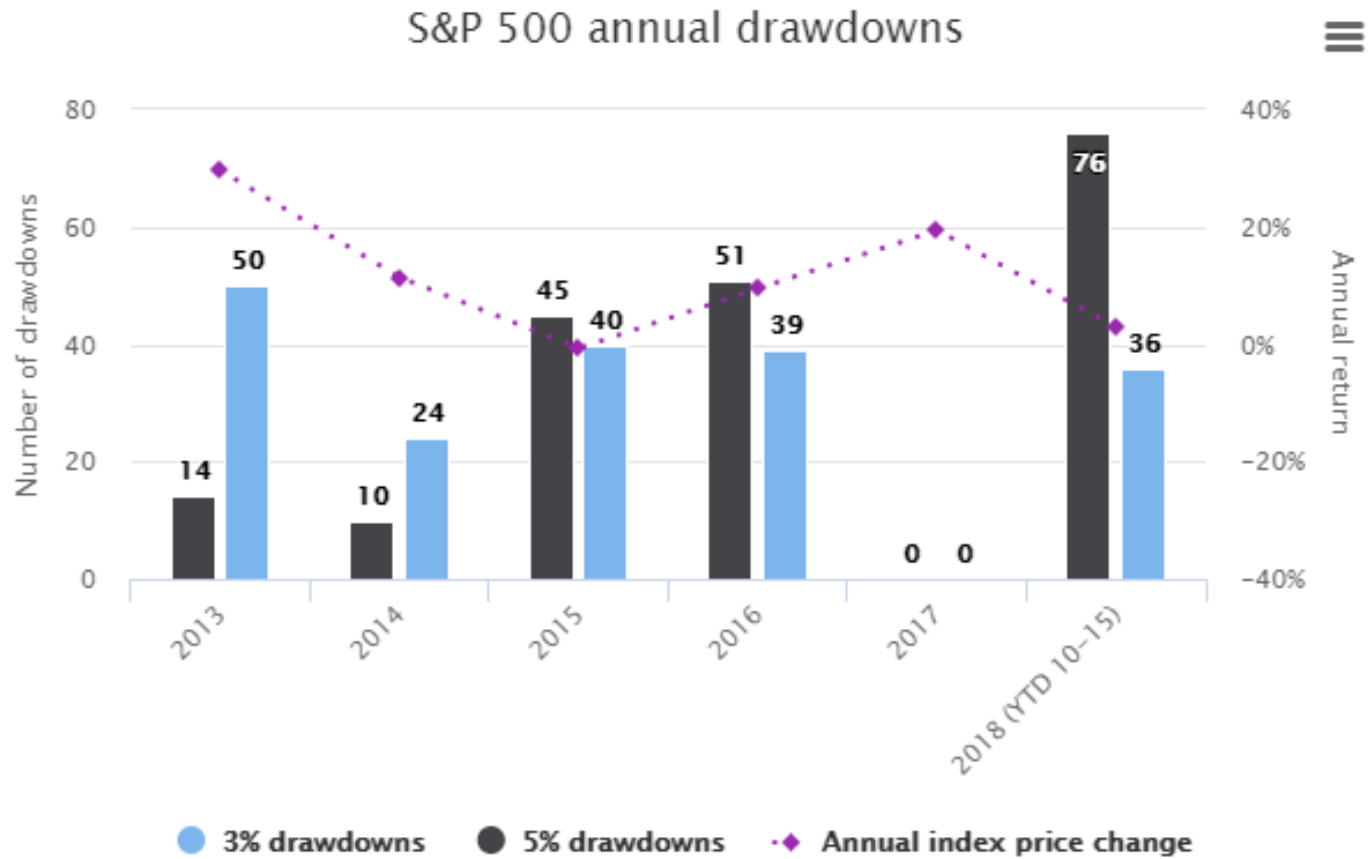


Source: JP Morgan Guide to the Markets. As of September 30, 2018

- For Q3 2018 (with 74% of the companies in the S&P 500 reporting actual results for the quarter), 78% of S&P 500 companies have reported a positive EPS surprise and 61% have reported a positive sales surprise.
- For Q3 2018, the blended earnings growth rate for the S&P 500 is 24.9%. If 24.9% is the actual growth rate for the quarter, it will mark the second highest earnings growth since Q3 2010.
  - Nine sectors are reporting double-digit earnings growth, led by the Energy, Financials, Communication Services, and Materials sectors.
- Buybacks and tax cuts fueling EPS growth in 2018.

Source: FACTSET; Earnings Insight as of November 2, 2018

# S&P 500 Intra-Day Drawdowns

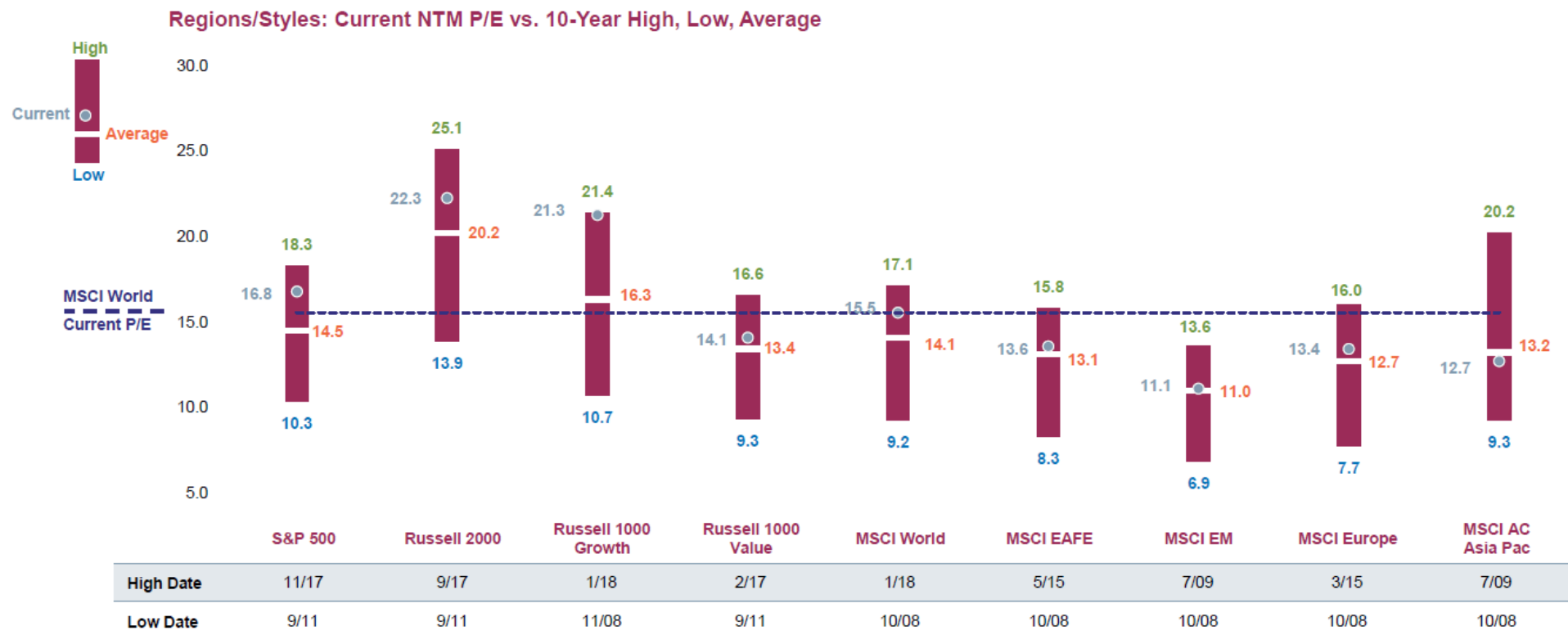


Bloomberg LP

- Volatility and drawdowns were exceptionally low in 2017.
- Equity market volatility has risen in 2018.

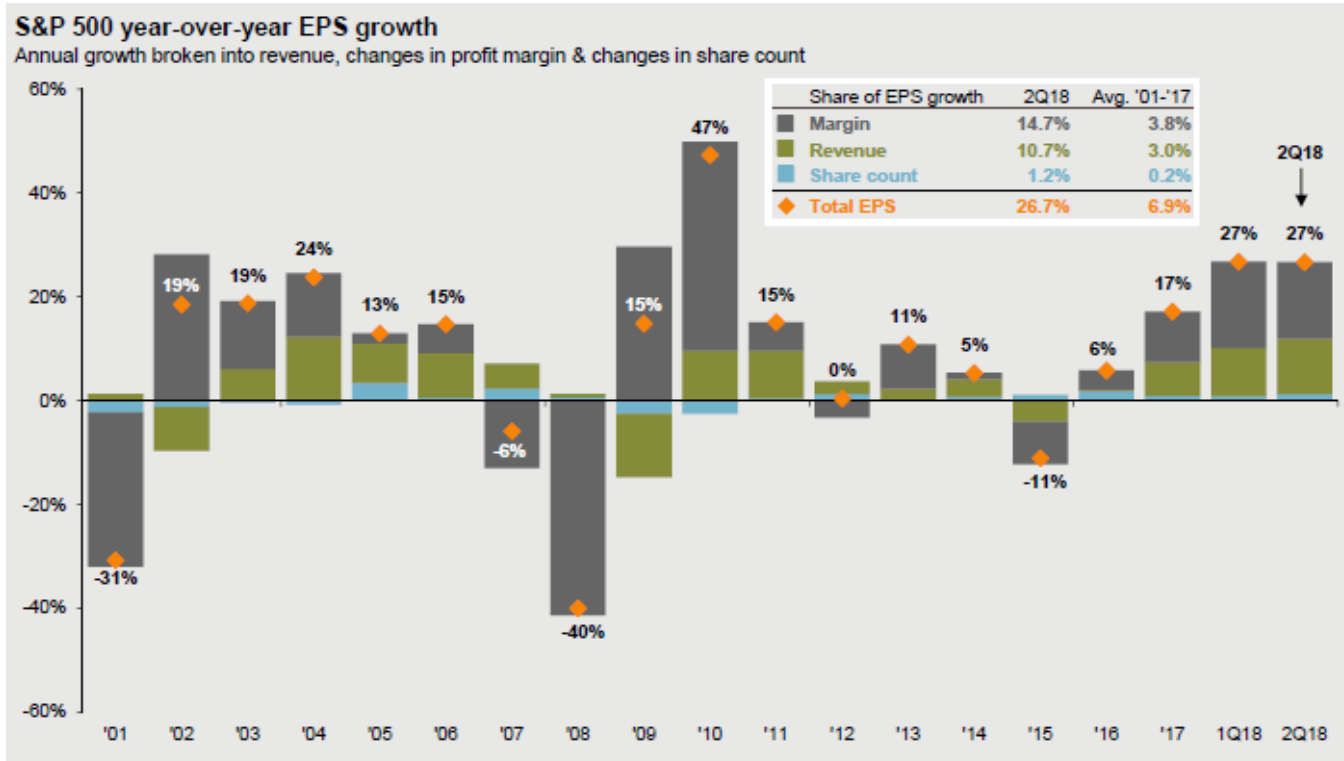
# Global Equity Valuation Measures

September 30, 2018



Source: Eaton Vance. FactSet. NTM P/E is market price per share divided by expected earnings per share over the next twelve months.

# S&P 500 Earnings/Share Growth: High Relative to Long-Term Average



Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.  
EPS levels are based on annual operating earnings per share except for 2018, which is quarterly. Percentages may not sum due to rounding. Past performance is not indicative of future returns.  
Guide to the Markets – U.S. Data are as of September 30, 2018.

## S&P 500 performance vs. earnings growth.

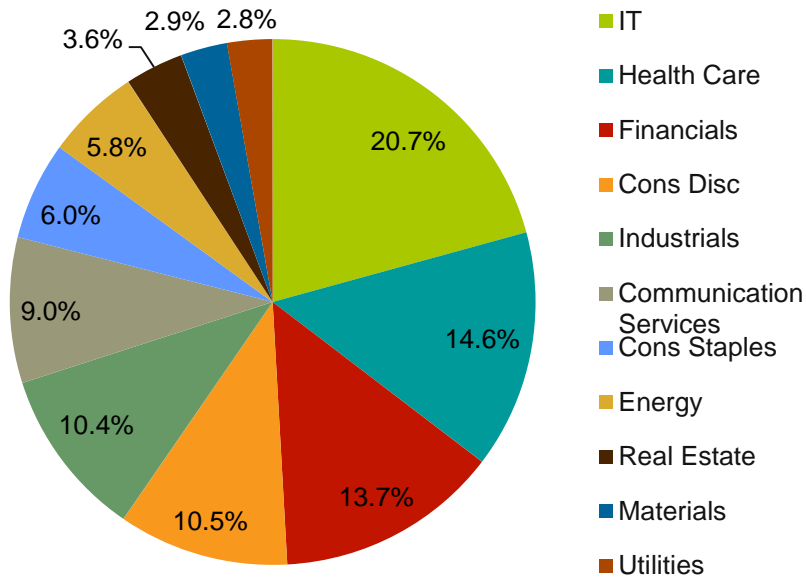
EPS growth (year over year)	S&P 500 gain per annum
Over 20%	2.6%
5% to 20%	7.1%
-20% to 5%	12.1%
-20% and below	-13.6%

Source: Ned David Research, as of 9/30/2018.

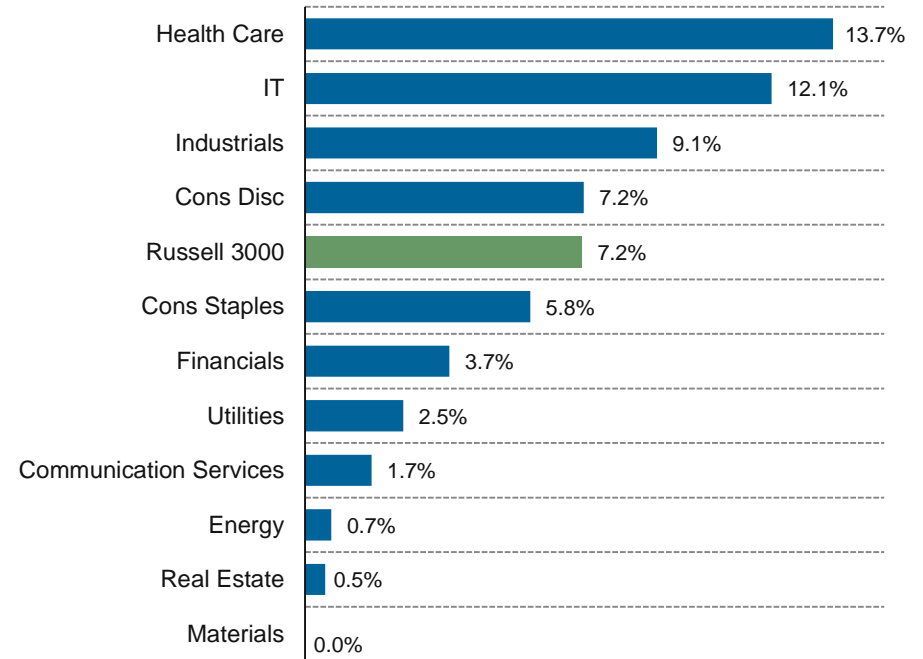
# U.S. Equity Returns

September 30, 2018

Economic Sector Exposure (Russell 3000)



Quarterly Returns (Russell 3000)

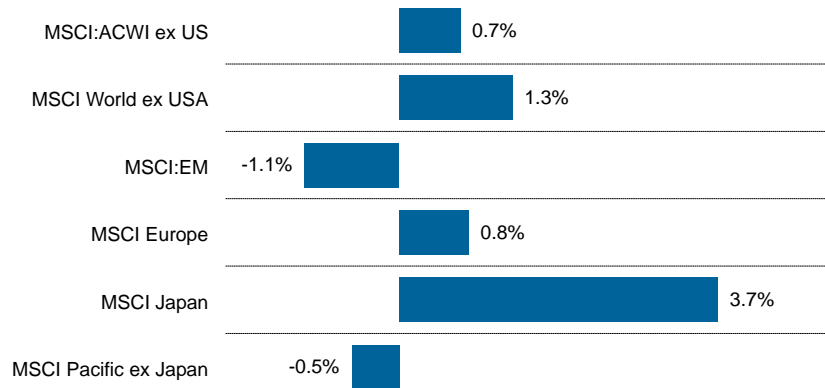


- The Russell 1000 Index was up 7.4% in the third quarter. Health Care (+14.3%) and Information Technology (+12.5%) drove gains, while Materials (-0.1%) and Real Estate (+1.0%) weighed on returns.
- The Russell 2000 Index was up 3.6% in the third quarter. Communication Services (+12.9%) and Health Care (+7.7%) drove gains, while Energy (-2.9%) and Consumer Staples (-1.4%) weighed on returns.

# International Equity Returns

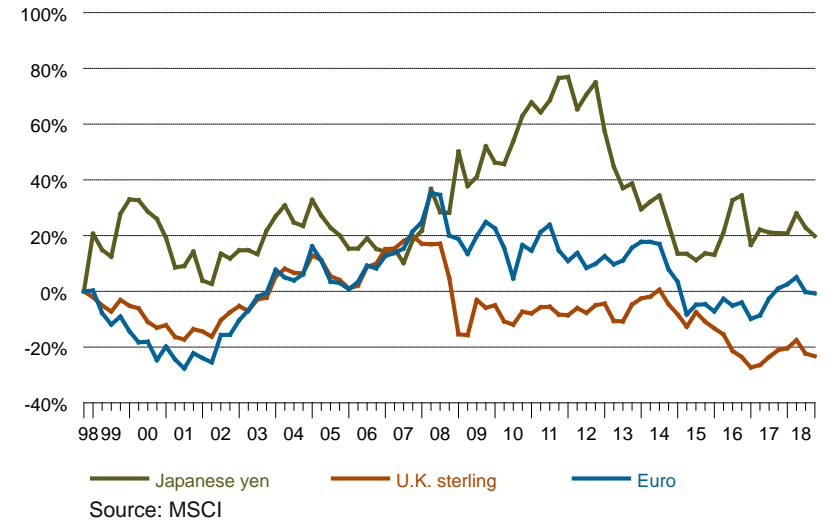
September 30, 2018

## Regional Quarterly Performance (U.S. Dollar)

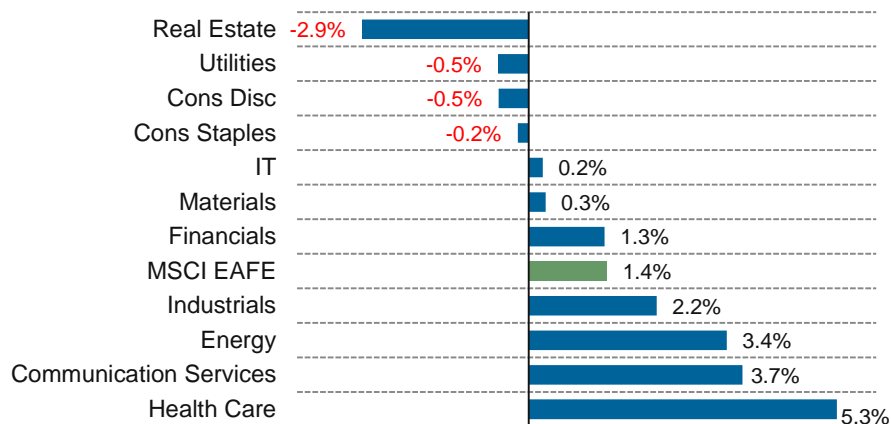


Source: MSCI

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



## MSCI EAFE Sector Returns

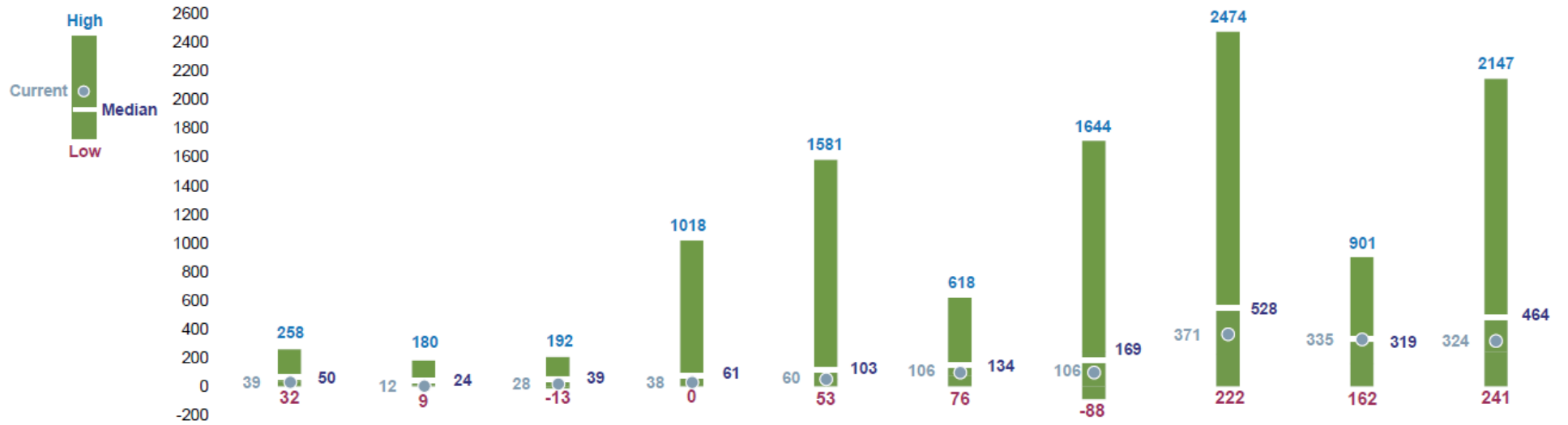


Source: MSCI

- Japan was the strongest performing region (+3.7%).
- The dollar appreciated against most major currencies in the third quarter. The pound fell by 1.2%, the euro dropped by 0.5% and the yen lost 2.5% against the dollar.
- Health Care outshined other sectors in the third quarter, while Real Estate and Utilities lagged.

# Fixed Income Spread Analysis

September 30, 2018



	Aggregate	Agency	MBS	ABS	CMBS	Corporate	Preferred	Floating-Rate Loans	Emerging Markets (USD)	High Yield
<b>Max Spread Date</b>	12/3/2008	11/20/2008	12/3/2008	1/6/2009	11/21/2008	12/3/2008	3/9/2009	12/19/2008	10/24/2008	12/15/2008
<b>Min Spread Date</b>	2/23/2005	3/12/2013	7/27/2010	10/1/2009	12/8/2004	3/11/2005	12/6/2017	3/31/2006	6/1/2007	6/1/2007
<b>Spread on 12/31/17</b>	36	14	25	36	62	93	-30	405	285	358
<b>Spread on 12/31/16</b>	43	21	15	59	75	123	213	465	342	422
<b>Spread on 12/31/15</b>	56	21	24	72	121	165	158	714	415	695

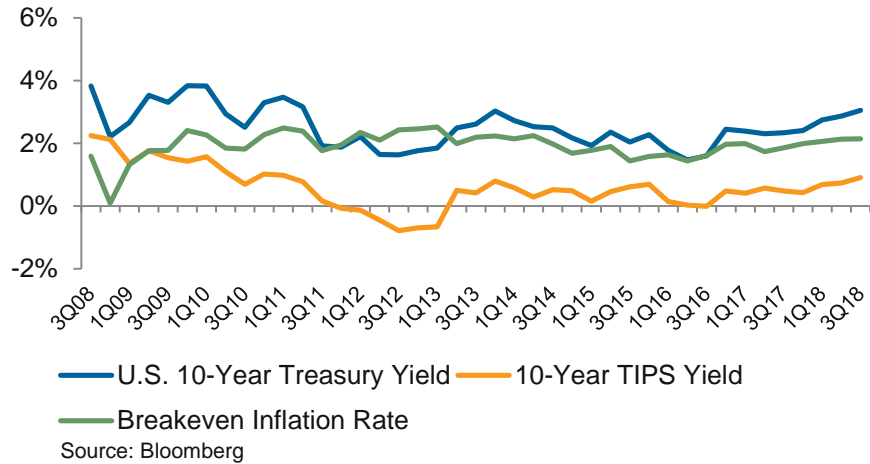
Source: Eaton Vance; FactSet

Source: Factset as of 9/30/18. Spread history measures past 15 years. Data provided is for informational use only. Past performance is no guarantee of future results. See end of report for important additional information. All fixed-income spreads are in basis points and measure option-adjusted yield spread relative to comparable maturity U.S. Treasuries using daily data. Loan Index spread represents the three-year discounted spread over LIBOR. Aggregate represented by Bloomberg Barclays US Aggregate Index. Agency represented by Bloomberg Barclays U.S. Agency Index. MBS represented by Bloomberg Barclays U.S. Mortgage Backed Securities (MBS) Index. ABS represented by Bloomberg Barclays U.S. Asset Backed Securities (ABS) Index. CMBS represented by Bloomberg Barclays U.S. CMBS Investment Grade Index. Corporate represented by Bloomberg Barclays U.S. Corporate Investment Grade Index. Preferred represented by ICE BofA ML Fixed Rate Preferred Securities Index. Floating-Rate Loans represented by S&P/LSTA Leveraged Loan Index. Emerging Markets(USD) represented by JPMorgan Emerging Markets Bond Index (EMBI) Global Diversified. High Yield represented by ICE BofA ML US High Yield Index.

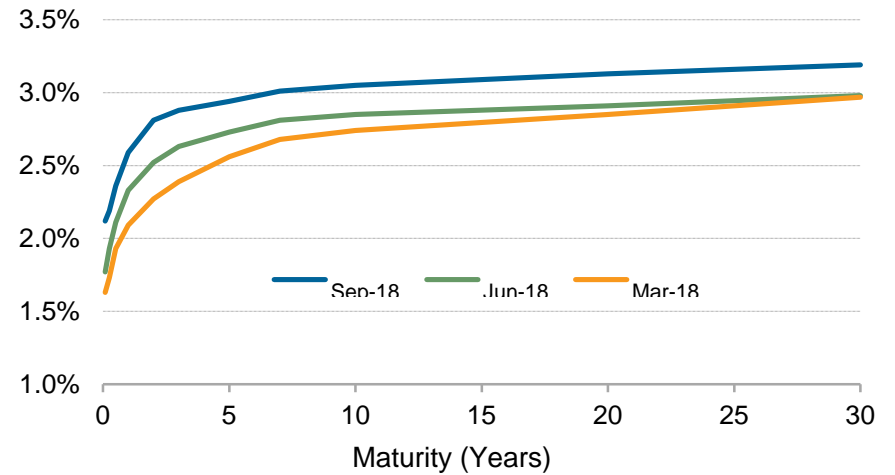
# Yield Curve Changes

September 30, 2018

## Historical 10-Year Yield

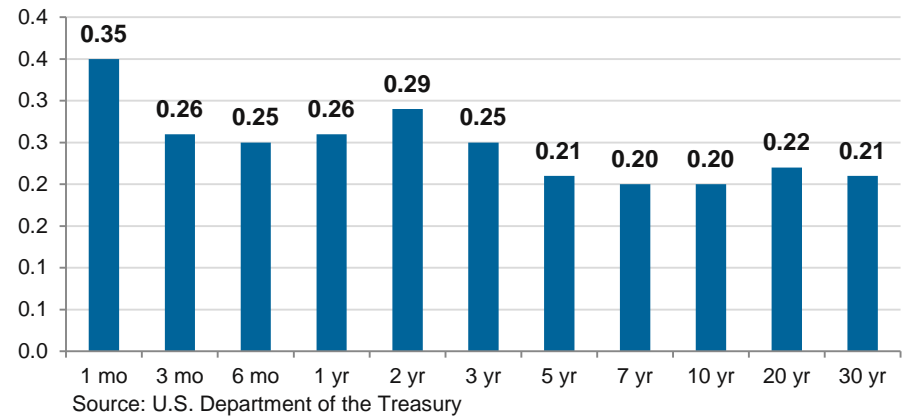


## Treasury Yield Curve



- The Treasury yield curve continued to flatten during the third quarter. The 2-year yield increased 29 basis points while the 10-year only increased 20 basis points and the 30-year by 21 basis points.
- The spread between the 2- and 10-year is down from 33 bps last quarter to 24 bps.

## Changes June-September 2018

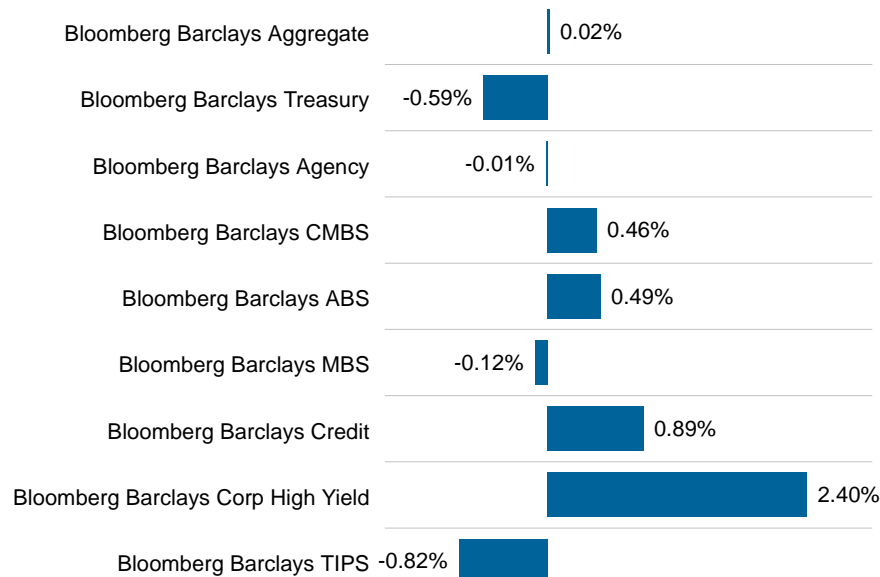




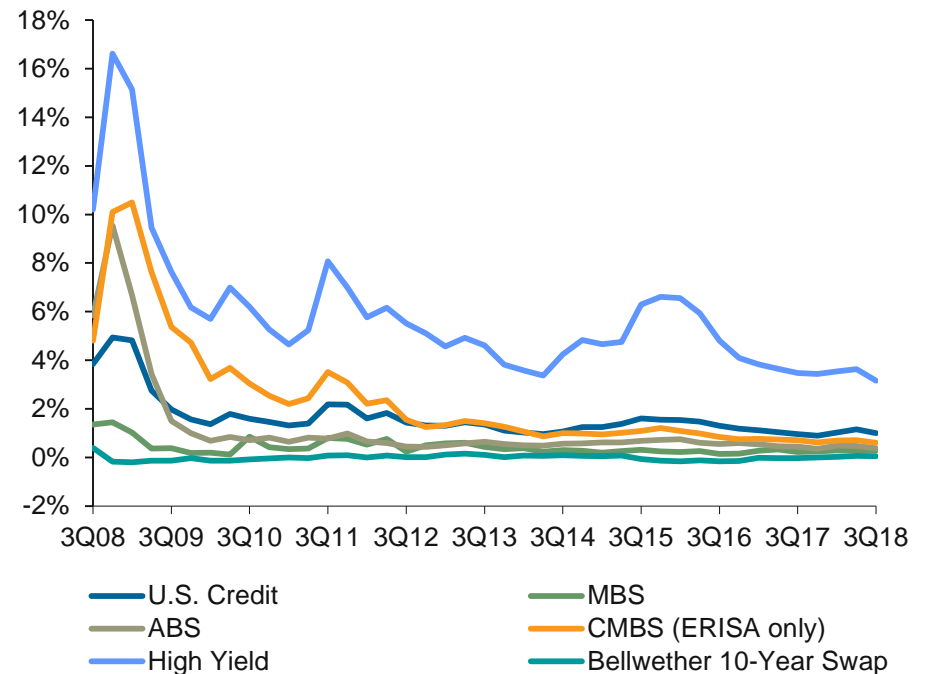
# Total Rates of Return by Bond Sector

September 30, 2018

## Total Returns



## Effective Yield Over Treasuries



- The Bloomberg Aggregate Index was flat for the quarter while underlying sectors were mixed.
- Strong corporate earnings and limited issuance boosted performance of investment grade and high yield credit.
- The more interest rate sensitive sectors, such as Treasuries and MBS, declined as rates rose across the curve.
- TIPS was the worst performing sector in the quarter amid rising real yields.

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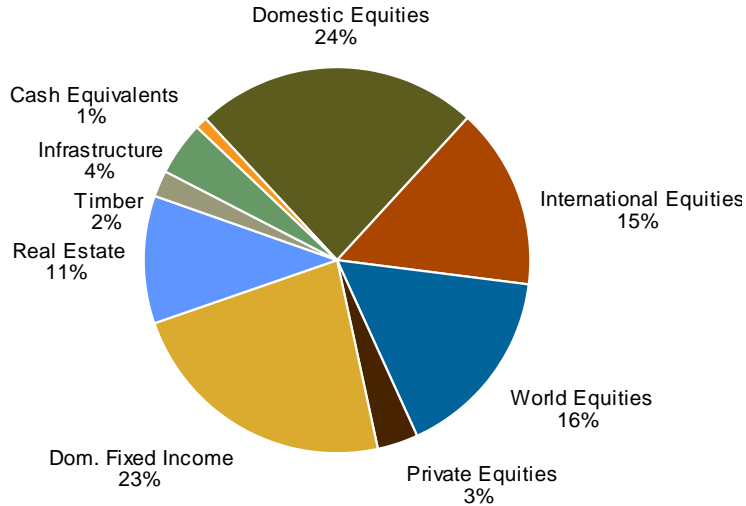
## **Consolidated Pension Trusts Quarterly Review**

- Public Employees Retirement System
- Teachers' Fund for Retirement

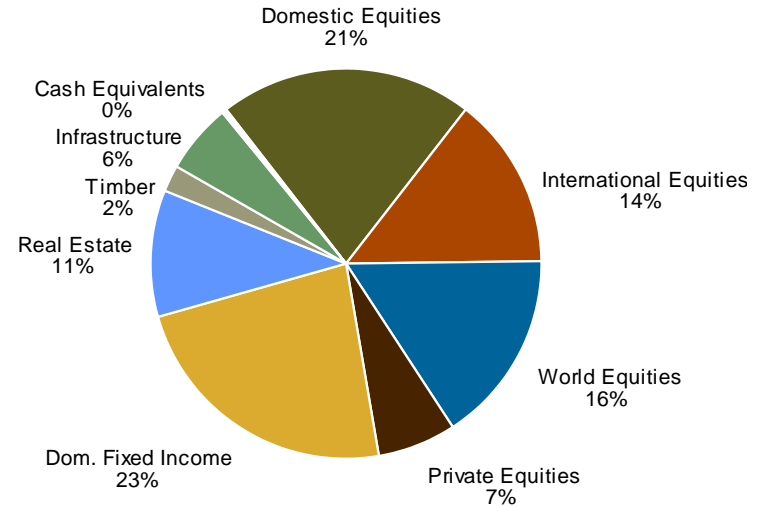
# Consolidated Pension Trust Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



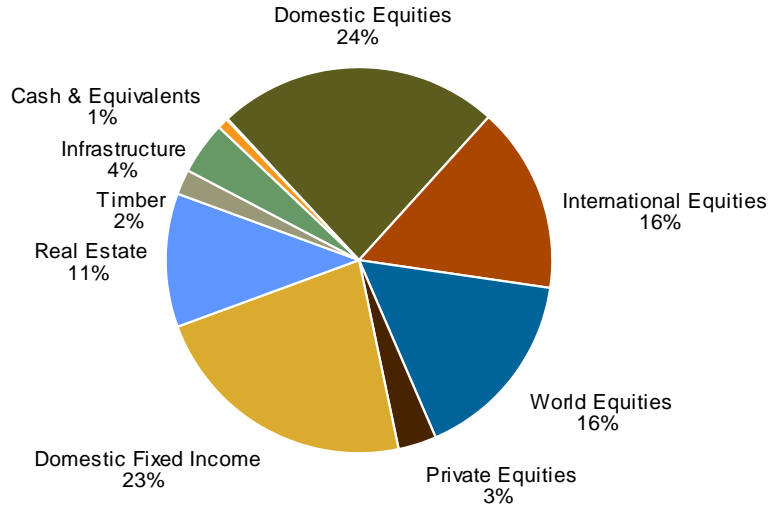
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	1,381,137	23.7%	21.0%	2.7%	156,909
International Equities	887,617	15.2%	14.3%	0.9%	53,975
World Equities	944,830	16.2%	16.0%	0.2%	12,084
Private Equities	197,591	3.4%	6.5%	(3.1%)	(181,337)
Dom. Fixed Income	1,344,815	23.1%	23.3%	(0.2%)	(13,496)
Real Estate	625,596	10.7%	10.5%	0.2%	13,482
Timber	127,484	2.2%	2.2%	(0.0%)	(768)
Infrastructure	259,915	4.5%	5.8%	(1.3%)	(78,205)
Cash Equivalents	60,675	1.0%	0.4%	0.6%	37,356
<b>Total</b>	<b>5,829,661</b>	<b>100.0%</b>	<b>100.0%</b>		

- Combined public equity allocations are above target. These “temporary” over-weights are reasonable from a risk-management perspective given that SIB awaits capital calls to fund private equity and infrastructure.

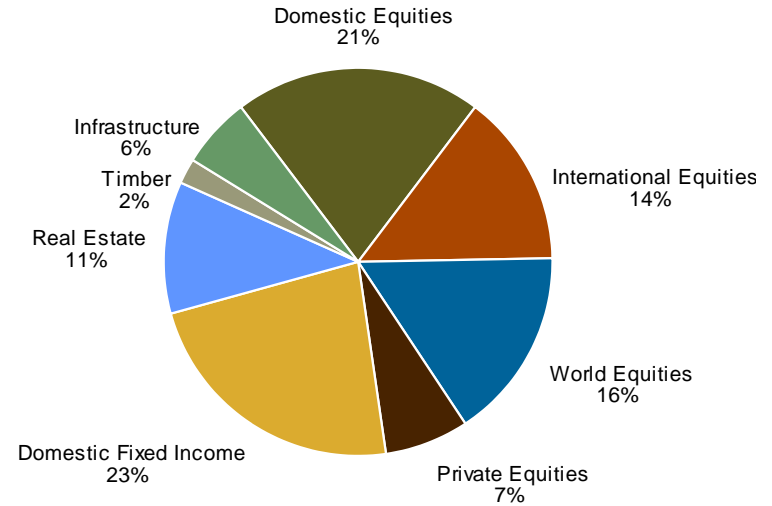
# PERS Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



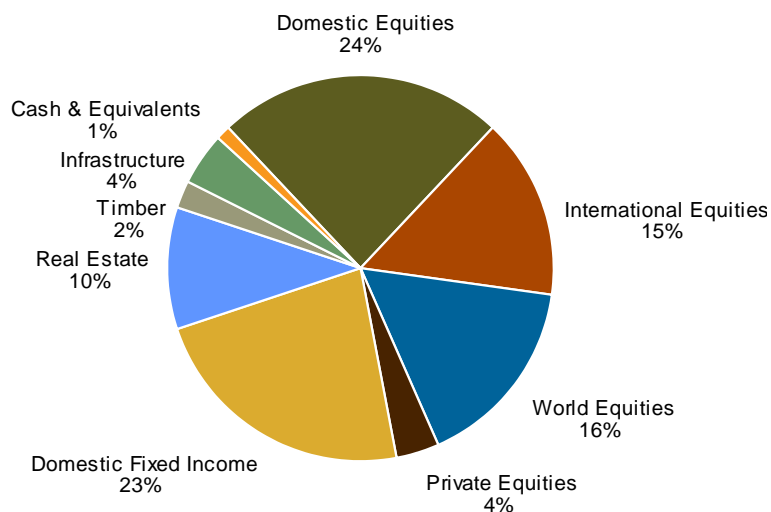
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	729,040	23.6%	20.6%	3.0%	93,094
International Equities	480,440	15.6%	14.4%	1.2%	35,895
World Equities	501,277	16.2%	16.0%	0.2%	7,339
Private Equities	99,128	3.2%	7.0%	(3.8%)	(116,970)
Domestic Fixed Income	702,285	22.7%	23.0%	(0.3%)	(7,751)
Real Estate	345,161	11.2%	11.0%	0.2%	5,578
Timber	64,468	2.1%	2.1%	(0.0%)	(362)
Infrastructure	136,248	4.4%	5.9%	(1.5%)	(45,892)
Cash & Equivalents	29,068	0.9%	0.0%	0.9%	29,068
<b>Total</b>	<b>3,087,115</b>	<b>100.0%</b>	<b>100.0%</b>		

- Combined public equity allocations are above target. These “temporary” over-weights are reasonable from a risk-management perspective given that SIB awaits capital calls to fund private equity and infrastructure.

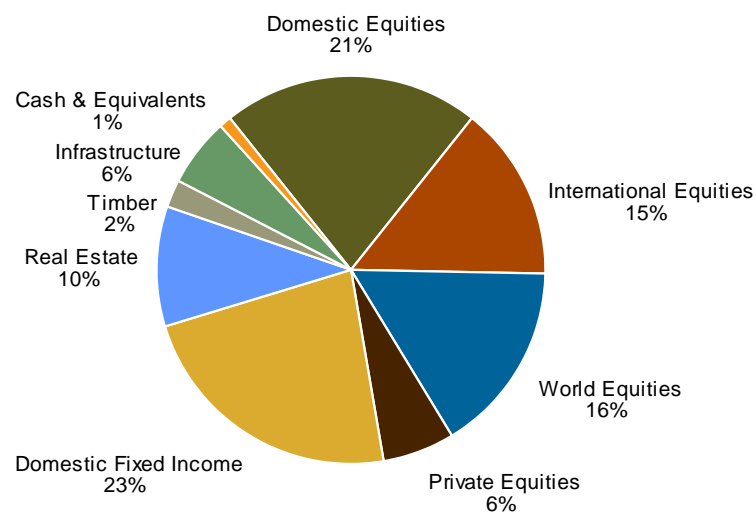
# TFFR Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



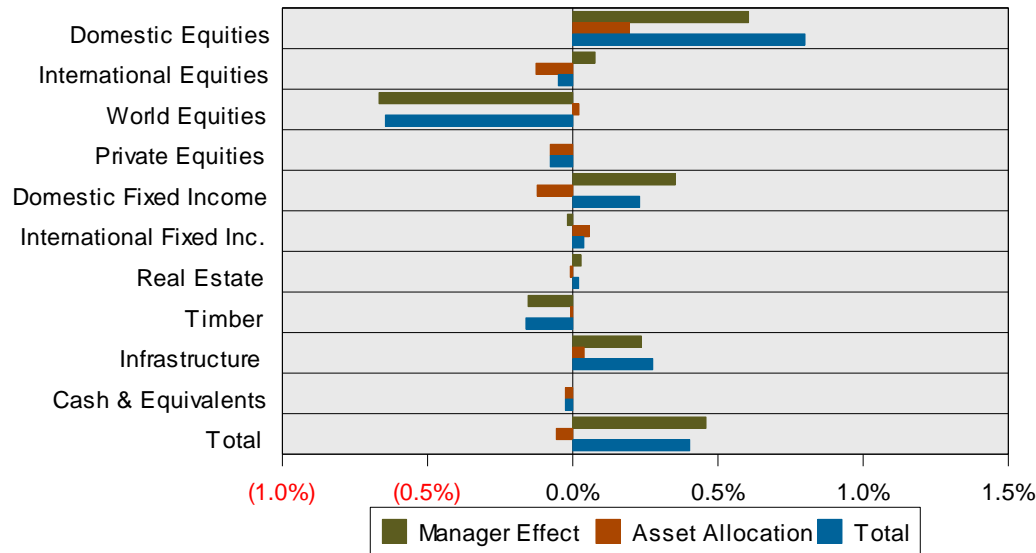
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	605,837	24.0%	21.4%	2.6%	65,176
International Equities	383,128	15.2%	14.6%	0.6%	14,266
World Equities	408,955	16.2%	16.0%	0.2%	4,722
Private Equities	90,989	3.6%	6.0%	(2.4%)	(60,599)
Domestic Fixed Income	578,714	22.9%	23.0%	(0.1%)	(2,370)
Real Estate	258,706	10.2%	10.0%	0.2%	6,061
Timber	57,546	2.3%	2.3%	(0.0%)	(563)
Infrastructure	112,227	4.4%	5.7%	(1.3%)	(31,781)
Cash & Equivalents	30,352	1.2%	1.0%	0.2%	5,087
<b>Total</b>	<b>2,526,453</b>	<b>100.0%</b>	<b>100.0%</b>		

- Combined public equity allocations are above target. These “temporary” over-weights are reasonable from a risk-management perspective given that SIB awaits capital calls to fund private equity and infrastructure.

# PERS Performance and Attribution

As of September 30, 2018

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 09/30/2018

Return Type	Return (%)
Gross	7.92%
Net of fees	7.68%
Target	7.51%
Net added	0.17%

## One Year Relative Attribution Effects

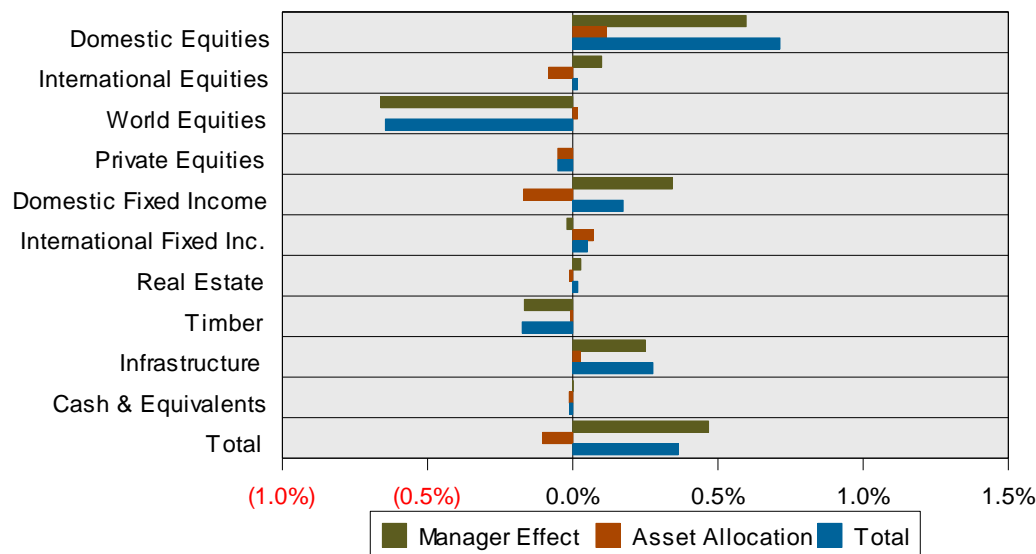
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	20.03%	17.22%	0.61%	0.19%	0.80%
International Equities	16%	14%	2.30%	1.88%	0.08%	(0.13)%	(0.05)%
World Equities	17%	16%	7.05%	11.24%	(0.67)%	0.02%	(0.65)%
Private Equities	3%	7%	8.37%	8.37%	0.00%	(0.08)%	(0.08)%
Domestic Fixed Income	21%	21%	1.67%	0.03%	0.35%	(0.12)%	0.23%
International Fixed Inc.	2%	2%	-	-	(0.02)%	0.06%	0.04%
Real Estate	11%	11%	7.51%	7.16%	0.03%	(0.01)%	0.02%
Timber	2%	2%	(2.52)%	4.00%	(0.15)%	(0.01)%	(0.16)%
Infrastructure	5%	6%	8.91%	3.64%	0.24%	0.04%	0.28%
Cash & Equivalents	1%	0%	1.69%	1.69%	0.00%	(0.03)%	(0.03)%

<b>Total</b>	<b>7.92% = 7.51% + 0.46% + (0.06%)</b>	<b>0.40%</b>
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# TFFR Performance and Attribution

As of September 30, 2018

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 09/30/2018

Return Type	Return (%)
Gross	7.94%
Net of fees	7.70%
Target	7.57%
Net added	0.13%

## One Year Relative Attribution Effects

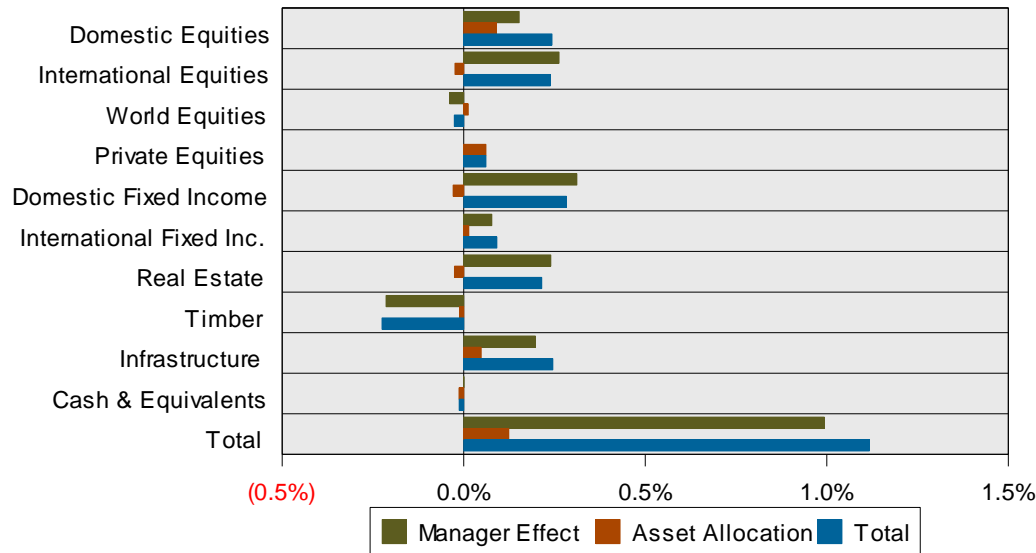
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	20.02%	17.24%	0.60%	0.12%	0.71%
International Equities	16%	15%	2.58%	2.03%	0.10%	(0.08)%	0.02%
World Equities	17%	16%	7.05%	11.24%	(0.66)%	0.02%	(0.64)%
Private Equities	3%	6%	8.38%	8.38%	0.00%	(0.05)%	(0.05)%
Domestic Fixed Income	21%	21%	1.58%	(0.05)%	0.34%	(0.17)%	0.17%
International Fixed Inc.	2%	2%	-	-	(0.02)%	0.07%	0.05%
Real Estate	10%	10%	7.51%	7.16%	0.03%	(0.01)%	0.02%
Timber	2%	2%	(2.52)%	4.00%	(0.17)%	(0.01)%	(0.17)%
Infrastructure	5%	6%	8.91%	3.64%	0.25%	0.03%	0.28%
Cash & Equivalents	1%	1%	1.70%	1.59%	0.00%	(0.01)%	(0.01)%

**Total** **7.94% = 7.57% + 0.47% + (0.10%)** **0.36%**

# PERS Performance and Attribution

As of September 30, 2018

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 09/30/2018

Return Type	Return (%)
Gross	8.12%
Net of fees	7.82%
Target	7.01%
Net added	0.81%

## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	13.85%	13.15%	0.15%	0.09%	0.24%
International Equities	15%	15%	5.90%	4.23%	0.26%	(0.02%)	0.24%
World Equities	16%	16%	9.01%	9.28%	(0.04%)	0.01%	(0.03%)
Private Equities	4%	6%	1.62%	1.62%	0.00%	0.06%	0.06%
Domestic Fixed Income	19%	18%	4.79%	3.14%	0.31%	(0.03%)	0.28%
International Fixed Inc.	4%	4%	-	-	0.08%	0.01%	0.09%
Real Estate	10%	10%	12.04%	9.57%	0.24%	(0.03%)	0.21%
Timber	3%	4%	(0.36%)	5.99%	(0.21%)	(0.01%)	(0.22%)
Infrastructure	4%	5%	6.32%	1.61%	0.20%	0.05%	0.25%
Cash & Equivalents	1%	1%	0.62%	0.59%	0.00%	(0.01%)	(0.01%)

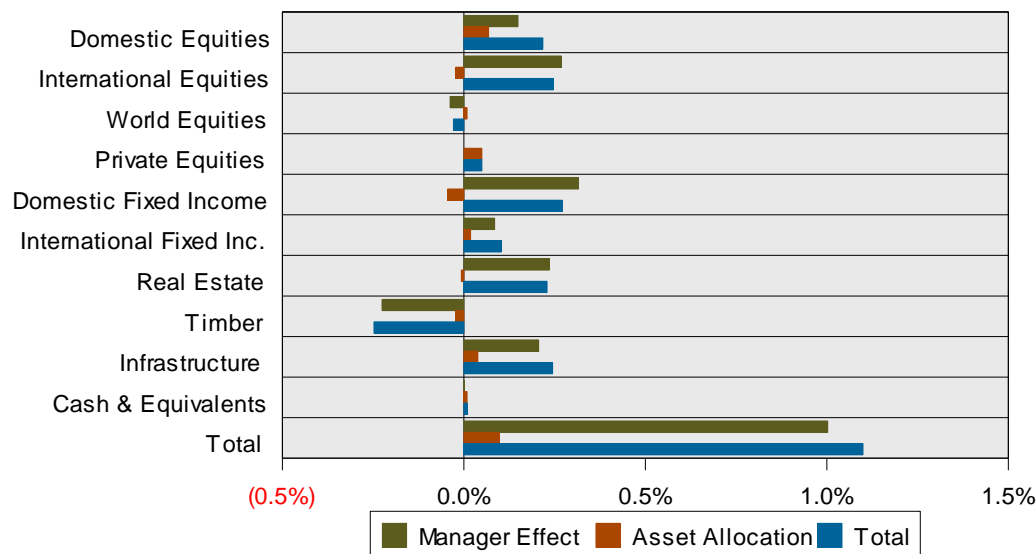
<b>Total</b>	<b>8.12% = 7.01% + 0.99% + 0.12%</b>	<b>1.12%</b>
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# TFFR Performance and Attribution

As of September 30, 2018

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 09/30/2018

Return Type	Return (%)
Gross	8.10%
Net of fees	7.80%
Target	7.00%
Net added	0.80%

## Five Year Annualized Relative Attribution Effects

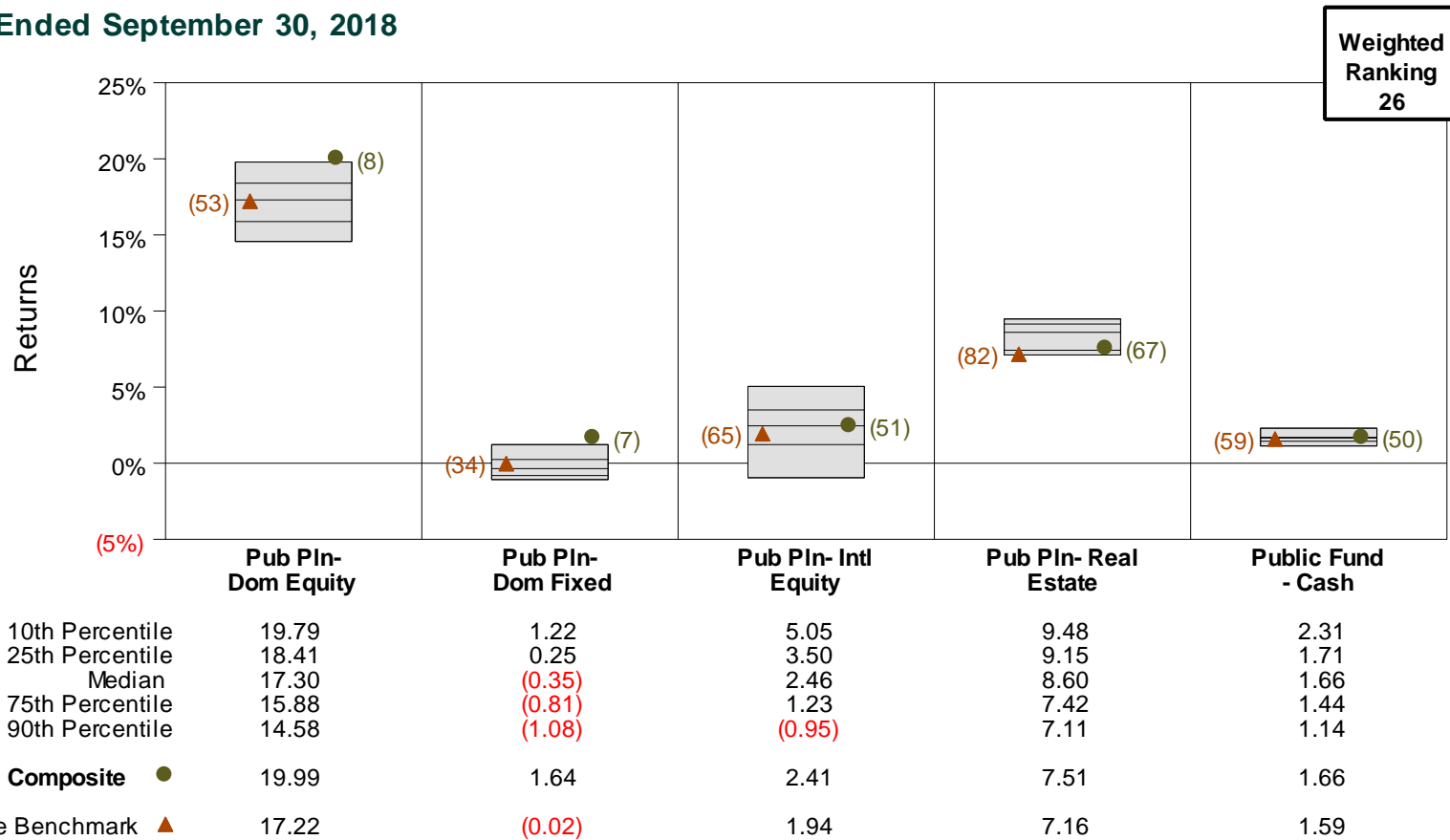
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	13.85%	13.15%	0.15%	0.07%	0.22%
International Equities	15%	15%	5.95%	4.25%	0.27%	(0.02%)	0.25%
World Equities	16%	16%	9.01%	9.28%	(0.04%)	0.01%	(0.03%)
Private Equities	4%	5%	1.62%	1.62%	0.00%	0.05%	0.05%
Domestic Fixed Income	18%	18%	4.71%	3.00%	0.32%	(0.04%)	0.27%
International Fixed Inc.	4%	5%	-	-	0.09%	0.02%	0.10%
Real Estate	10%	10%	12.04%	9.57%	0.24%	(0.01%)	0.23%
Timber	3%	4%	(0.35%)	5.99%	(0.23%)	(0.02%)	(0.25%)
Infrastructure	4%	5%	6.32%	1.61%	0.21%	0.04%	0.24%
Cash & Equivalents	1%	1%	0.62%	0.52%	0.00%	0.01%	0.01%

<b>Total</b>	<b>8.10% = 7.00% + 1.00% + 0.10%</b>	<b>1.10%</b>
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# Asset Class Composite Results

## Consolidated Pension Trust Asset Class Results vs. Other Public Pension Funds

### Total Asset Class Performance One Year Ended September 30, 2018

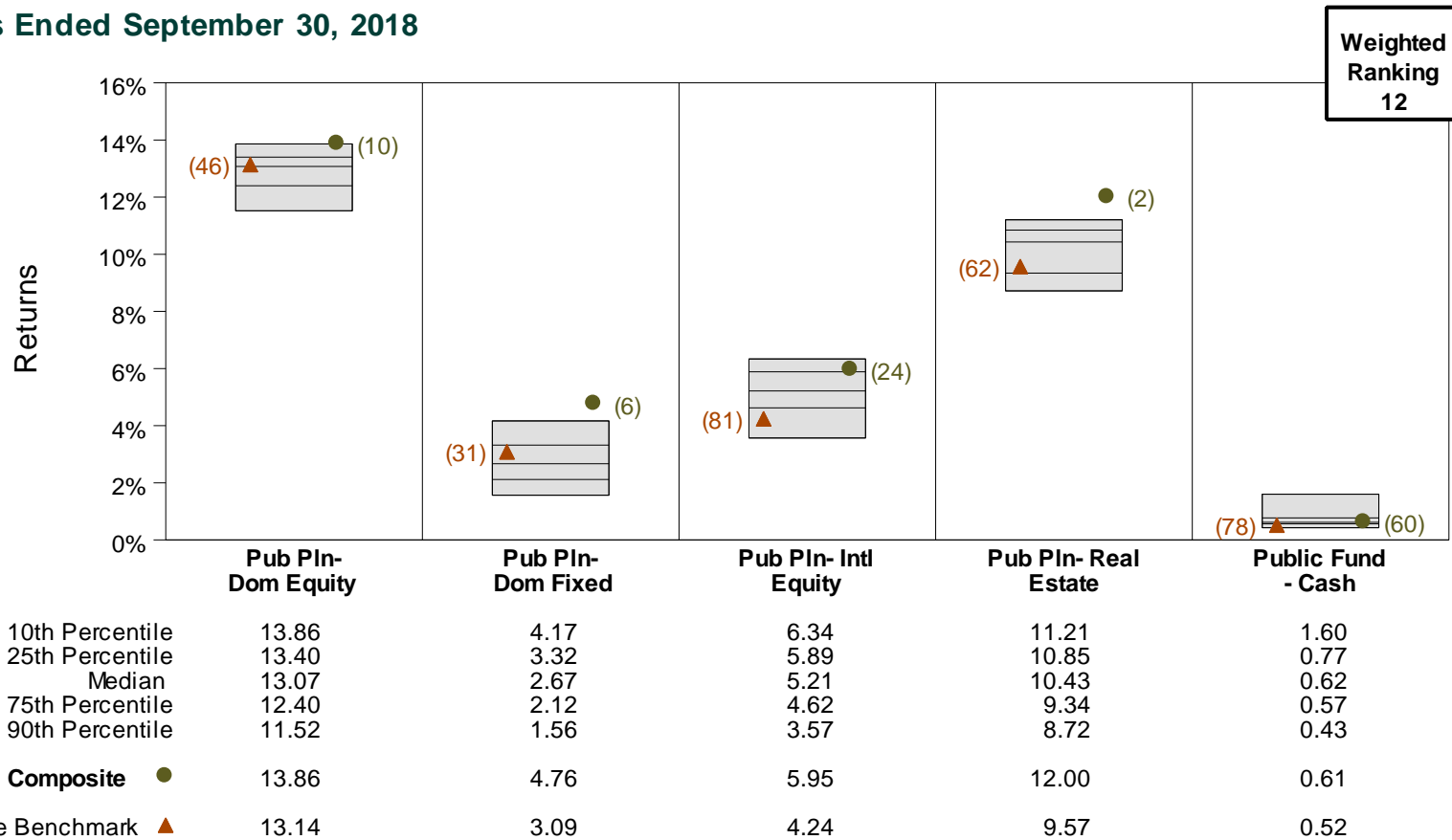


- All asset classes outperformed their respective benchmarks over the last year.
- Domestic equity and domestic fixed income placed in the top decile over the past year.

# Asset Class Composite Results

## Consolidated Pension Trust Asset Class Results vs. Other Public Pension Funds

### Total Asset Class Performance Five Years Ended September 30, 2018



- All asset classes led their respective benchmarks over the past five (5) years.
- Domestic equity, domestic fixed income, international equity and real estate all placed in the top quartile over the past year.

Callan

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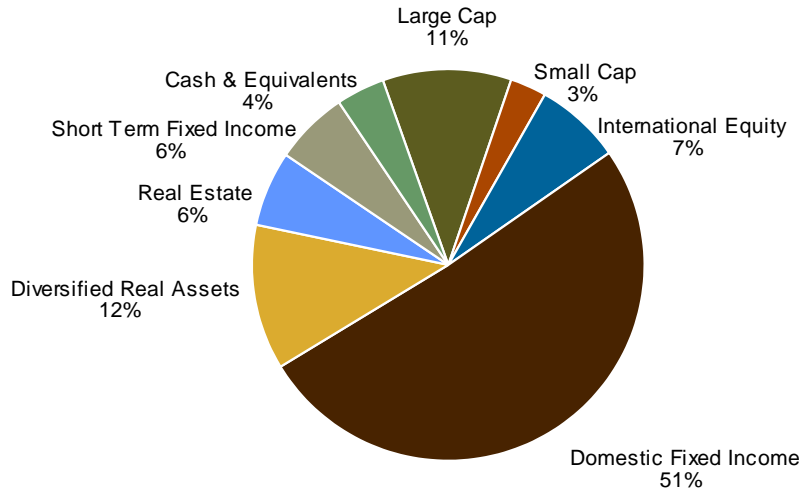
## **Consolidated Insurance Trust Quarterly Review**

- Workforce Safety and Insurance Legacy Fund
- Budget Stabilization Fund

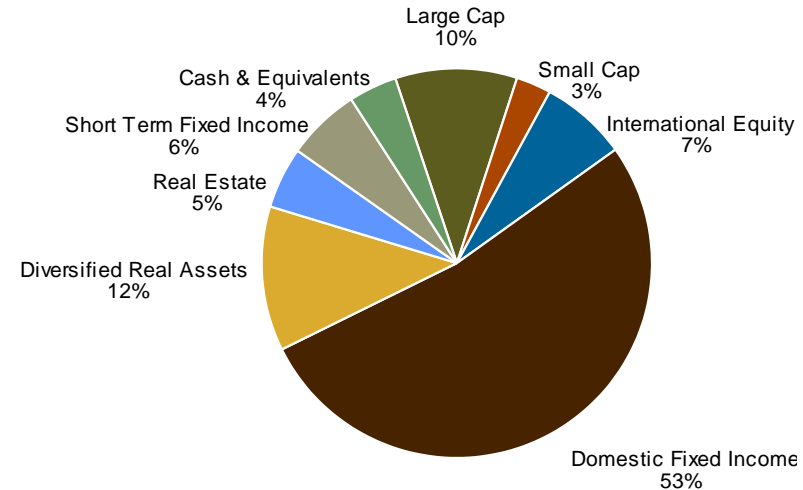
# Consolidated Insurance Trust Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



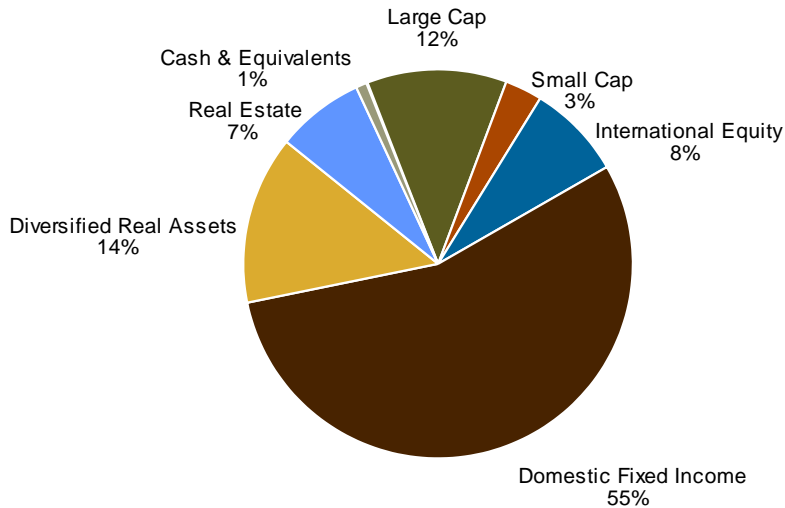
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	243,743	10.6%	10.1%	0.5%	12,058
Small Cap	69,025	3.0%	2.9%	0.1%	2,502
International Equity	163,081	7.1%	7.2%	(0.1%)	(2,080)
Domestic Fixed Income	1,170,606	51.0%	52.6%	(1.6%)	(35,988)
Diversified Real Assets	274,975	12.0%	12.0%	(0.0%)	(293)
Real Estate	141,558	6.2%	5.1%	1.1%	24,569
Short Term Fixed Income	139,499	6.1%	6.1%	(0.0%)	(429)
Cash & Equivalents	91,418	4.0%	4.0%	(0.0%)	(338)
<b>Total</b>	<b>2,293,905</b>	<b>100.0%</b>	<b>100.0%</b>		

- Allocations are within target ranges. The over-weight to real estate will take time to correct and can be addressed by directing net-contributions into Domestic Fixed-Income.

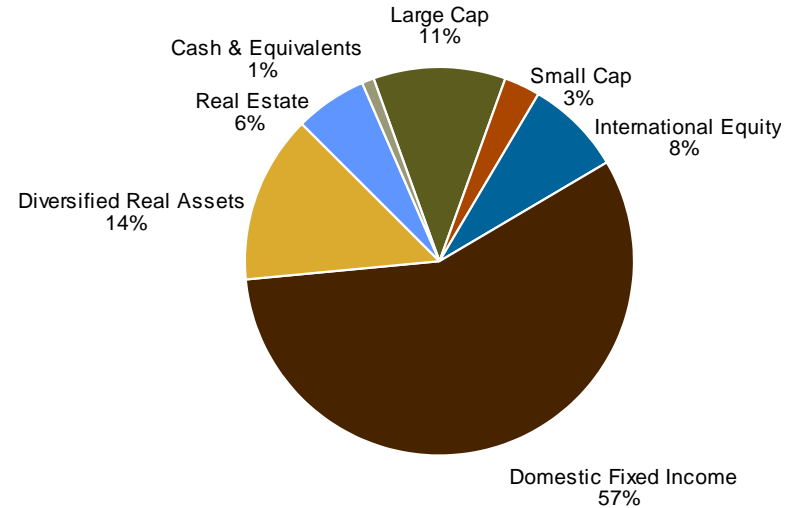
# WSI Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



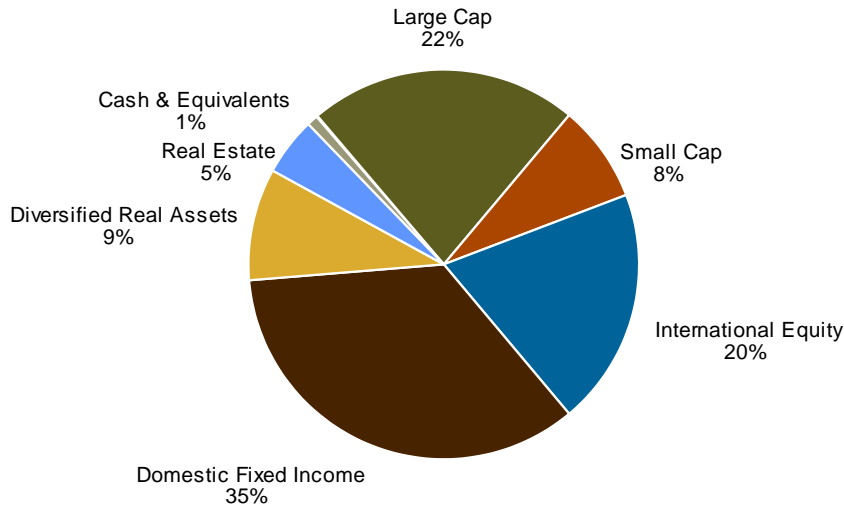
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	224,757	11.6%	11.0%	0.6%	12,064
Small Cap	60,811	3.1%	3.0%	0.1%	2,804
International Equity	152,777	7.9%	8.0%	(0.1%)	(1,909)
Domestic Fixed Income	1,065,481	55.1%	57.0%	(1.9%)	(36,654)
Diversified Real Assets	270,362	14.0%	14.0%	(0.0%)	(338)
Real Estate	141,489	7.3%	6.0%	1.3%	25,474
Cash & Equivalents	17,895	0.9%	1.0%	(0.1%)	(1,441)
<b>Total</b>	<b>1,933,570</b>	<b>100.0%</b>	<b>100.0%</b>		

- Allocations are within target ranges. The over-weight to real estate will take time to correct and can be addressed by directing net-contributions into Domestic Fixed-Income.

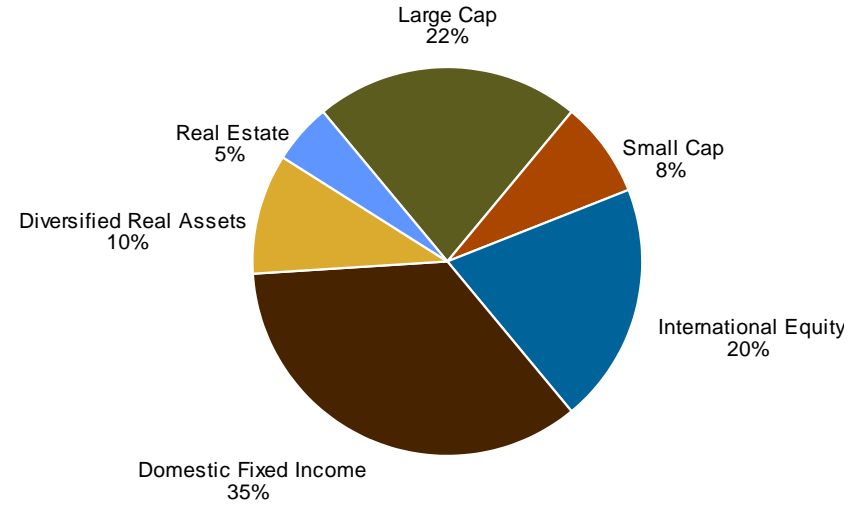
# Legacy Fund Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



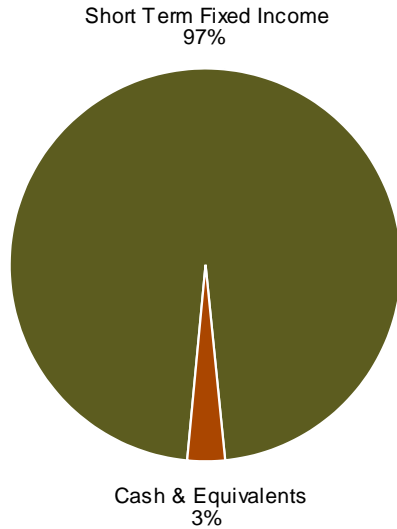
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	1,315,453	22.3%	22.0%	0.3%	20,507
Small Cap	474,473	8.1%	8.0%	0.1%	3,584
International Equity	1,160,993	19.7%	20.0%	(0.3%)	(16,230)
Domestic Fixed Income	2,050,114	34.8%	35.0%	(0.2%)	(10,026)
Diversified Real Assets	549,288	9.3%	10.0%	(0.7%)	(39,324)
Real Estate	283,299	4.8%	5.0%	(0.2%)	(11,007)
Cash & Equivalents	52,496	0.9%	0.0%	0.9%	52,496
<b>Total</b>	<b>5,886,116</b>	<b>100.0%</b>	<b>100.0%</b>		

- Allocations are well within target ranges. The Legacy Fund's rebalancing benefits from the significant inflows which allow RIO to tightly control exposures to liquid asset classes.

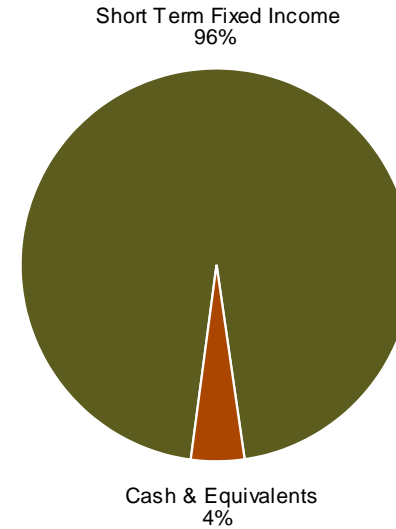
# Budget Stabilization Fund Allocation

As of September 30, 2018

**Actual Asset Allocation**



**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Short Term Fixed Income	110,539	96.9%	95.6%	1.3%	1,499
Cash & Equivalents	3,484	3.1%	4.4%	(1.3%)	(1,499)
Total	114,023	100.0%	100.0%		

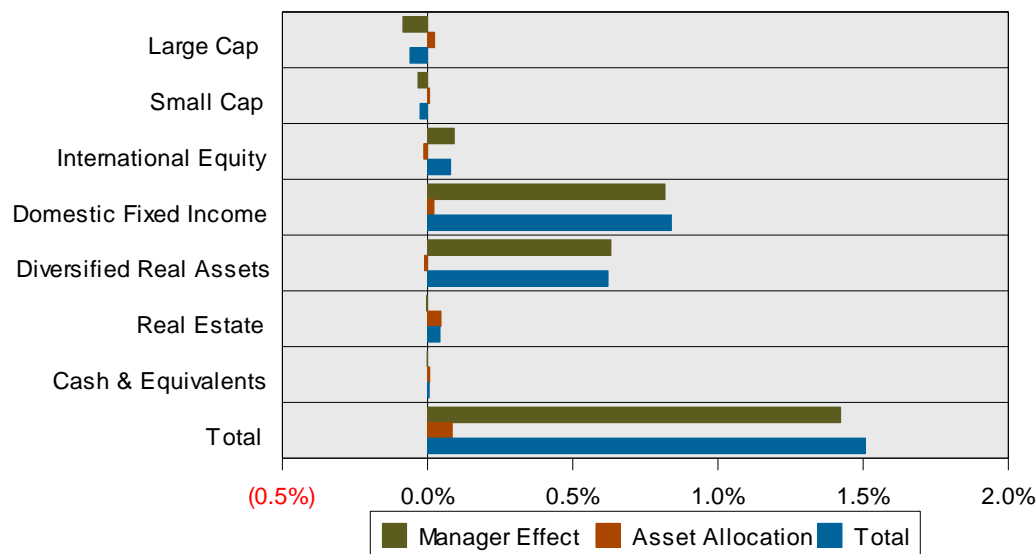
- The Budget Stabilization Fund's asset allocation reflects a very risk-averse, highly liquid investment objective.



# WSI Performance and Attribution

As of September 30, 2018

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 09/30/2018

Return Type	Return (%)
Gross	4.37%
Net of fees	4.17%
Target	2.86%
Net added	1.31%

## One Year Relative Attribution Effects

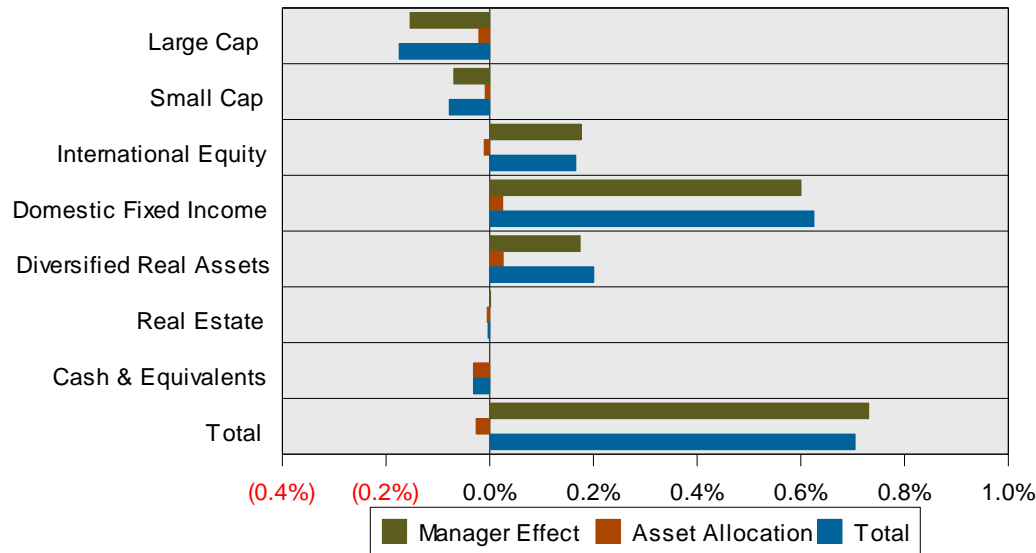
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	16.91%	17.76%	(0.08%)	0.02%	(0.06%)
Small Cap	4%	4%	14.22%	15.24%	(0.03%)	0.01%	(0.03%)
International Equity	9%	9%	3.49%	2.67%	0.09%	(0.01%)	0.08%
Domestic Fixed Income	53%	54%	0.26%	(1.22%)	0.82%	0.02%	0.84%
Diversified Real Assets	14%	15%	6.57%	2.04%	0.63%	(0.01%)	0.62%
Real Estate	7%	6%	7.13%	7.16%	(0.00%)	0.05%	0.04%
Cash & Equivalents	1%	1%	1.42%	1.59%	(0.00%)	0.01%	0.01%

**Total** 4.37% = 2.86% + 1.42% + 0.09% 1.51%

# Legacy Performance and Attribution

As of September 30, 2018

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 09/30/2018

Return Type	Return (%)
Gross	6.24%
Net of fees	6.04%
Target	5.53%
Net added	0.51%

## One Year Relative Attribution Effects

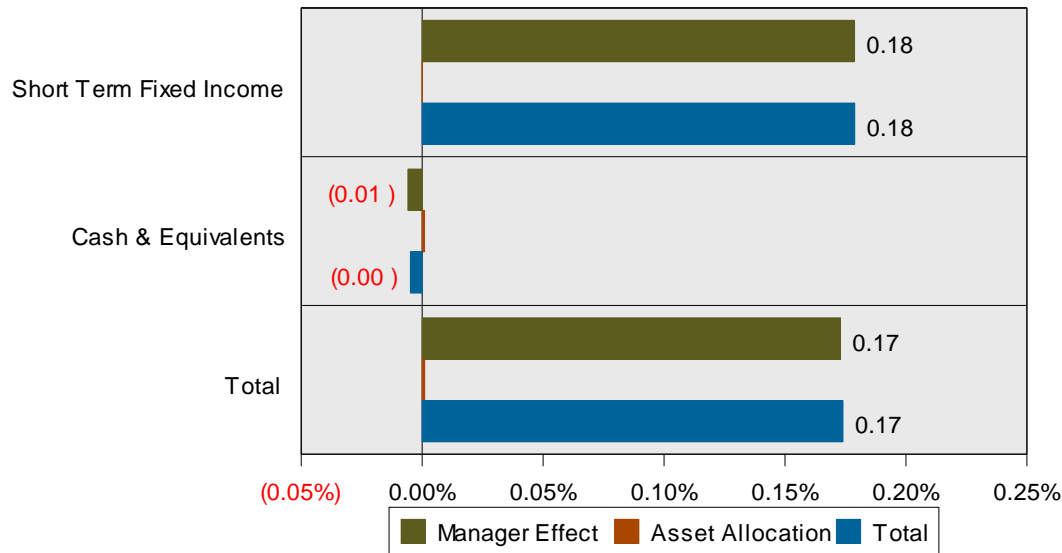
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	16.98%	17.76%	(0.15%)	(0.02%)	(0.17%)
Small Cap	8%	8%	14.29%	15.24%	(0.07%)	(0.01%)	(0.08%)
International Equity	20%	20%	3.50%	2.67%	0.18%	(0.01%)	0.17%
Domestic Fixed Income	34%	35%	0.45%	(1.22%)	0.60%	0.02%	0.63%
Diversified Real Assets	10%	10%	2.42%	0.66%	0.17%	0.03%	0.20%
Real Estate	5%	5%	7.12%	7.16%	0.00%	(0.00%)	(0.00%)
Cash & Equivalents	1%	0%	1.42%	1.42%	0.00%	(0.03%)	(0.03%)

**Total** **6.24% = 5.53% + 0.73% + (0.03%)** **0.70%**

# Budget Performance and Attribution

As of September 30, 2018

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 09/30/2018

Return Type	Return (%)
Gross	0.42%
Net of fees	0.32%
Target	0.25%
Net added	0.07%

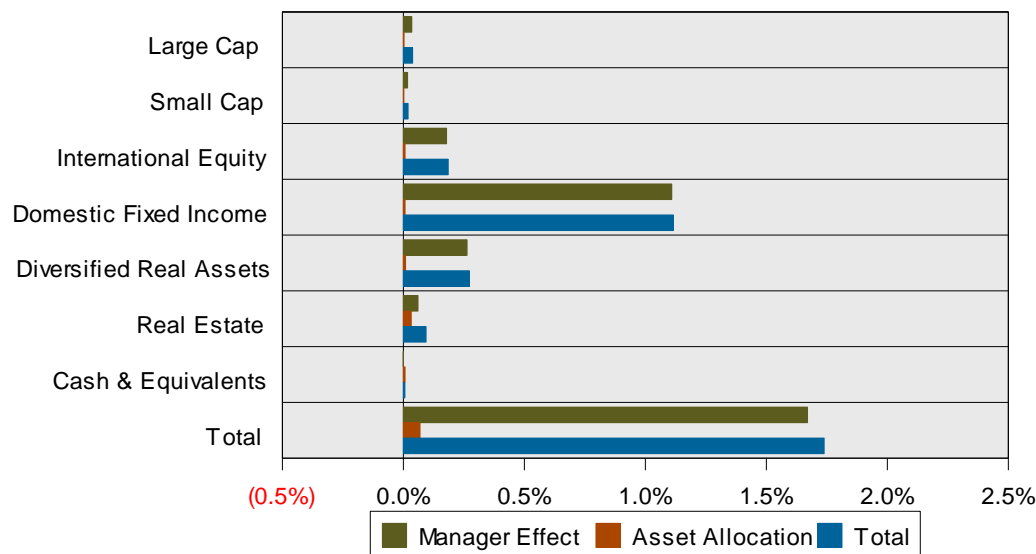
## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	97%	97%	0.39%	0.20%	0.18%	0.00%	0.18%
Cash & Equivalents	3%	3%	1.42%	1.59%	(0.01%)	0.00%	(0.00%)
<b>Total</b>			<b>0.42%</b>	<b>0.25%</b>	<b>+ 0.17%</b>	<b>+ 0.00%</b>	<b>0.17%</b>

# WSI Performance and Attribution

As of September 30, 2018

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 09/30/2018

Return Type	Return (%)
Gross	6.32%
Net of fees	6.10%
Target	4.58%
Net added	1.52%

## Five Year Annualized Relative Attribution Effects

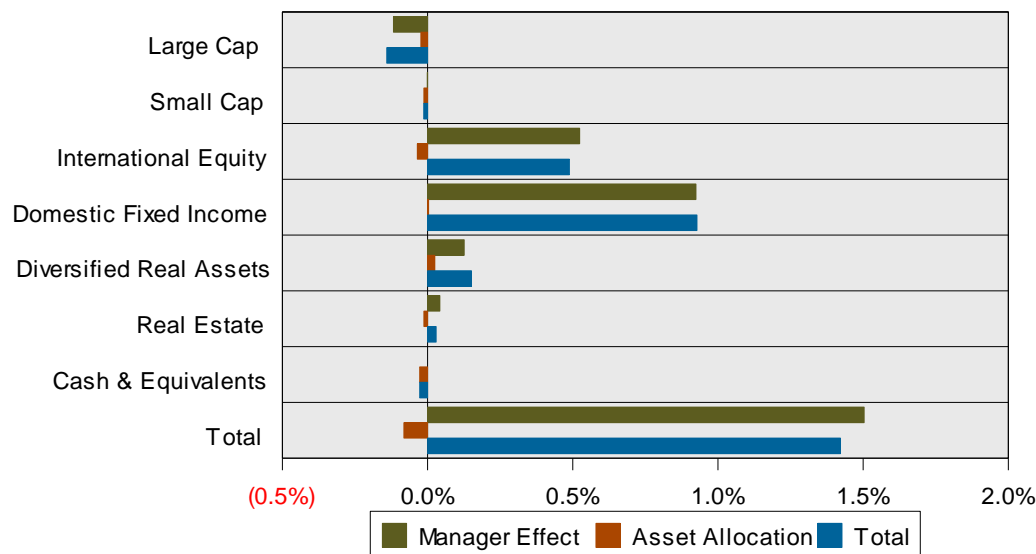
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	14.02%	13.67%	0.04%	0.00%	0.04%
Small Cap	4%	4%	11.56%	11.07%	0.02%	0.00%	0.02%
International Equity	9%	9%	6.25%	4.31%	0.18%	0.01%	0.19%
Domestic Fixed Income	53%	53%	4.27%	2.16%	1.11%	0.01%	1.12%
Diversified Real Assets	16%	16%	4.52%	2.84%	0.26%	0.01%	0.27%
Real Estate	7%	6%	10.50%	9.57%	0.06%	0.03%	0.09%
Cash & Equivalents	1%	1%	0.45%	0.52%	(0.00%)	0.01%	0.01%

**Total** **6.32% = 4.58% + 1.67% + 0.07%** **1.74%**

# Legacy Performance and Attribution

As of September 30, 2018

## Three Year Annualized Relative Attribution Effects



## Returns for 3 Year Ended 09/30/2018

Return Type	Return (%)
Gross	9.42%
Net of fees	9.19%
Target	8.00%
Net added	1.19%

## One Year Relative Attribution Effects

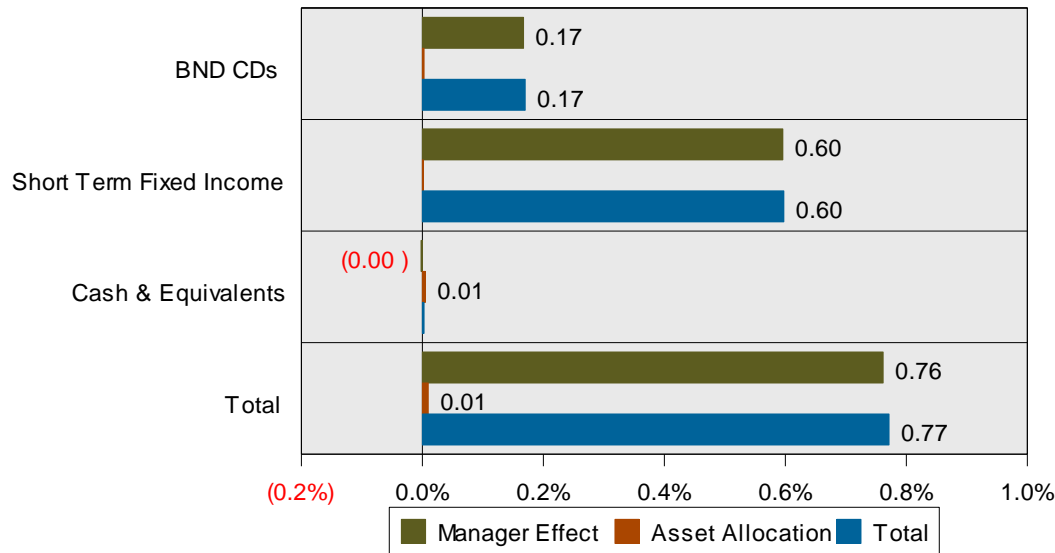
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	20.03%	17.22%	0.61%	0.19%	0.80%
International Equities	16%	14%	2.30%	1.88%	0.08%	(0.13%)	(0.05%)
World Equities	17%	16%	7.05%	11.24%	(0.67%)	0.02%	(0.65%)
Private Equities	3%	7%	8.37%	8.37%	0.00%	(0.08%)	(0.08%)
Domestic Fixed Income	21%	21%	1.67%	0.03%	0.35%	(0.12%)	0.23%
International Fixed Inc.	2%	2%	-	-	(0.02%)	0.06%	0.04%
Real Estate	11%	11%	7.51%	7.16%	0.03%	(0.01%)	0.02%
Timber	2%	2%	(2.52%)	4.00%	(0.15%)	(0.01%)	(0.16%)
Infrastructure	5%	6%	8.91%	3.64%	0.24%	0.04%	0.28%
Cash & Equivalents	1%	0%	1.69%	1.69%	0.00%	(0.03%)	(0.03%)

**Total** **7.92% = 7.51% + 0.46% + (0.06%)** **0.40%**

# Budget Performance and Attribution

As of September 30, 2018

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 09/30/2018

Return Type	Return (%)
Gross	1.49%
Net of fees	1.33%
Target	0.71%
Net added	0.62%

## Five Year Annualized Relative Attribution Effects

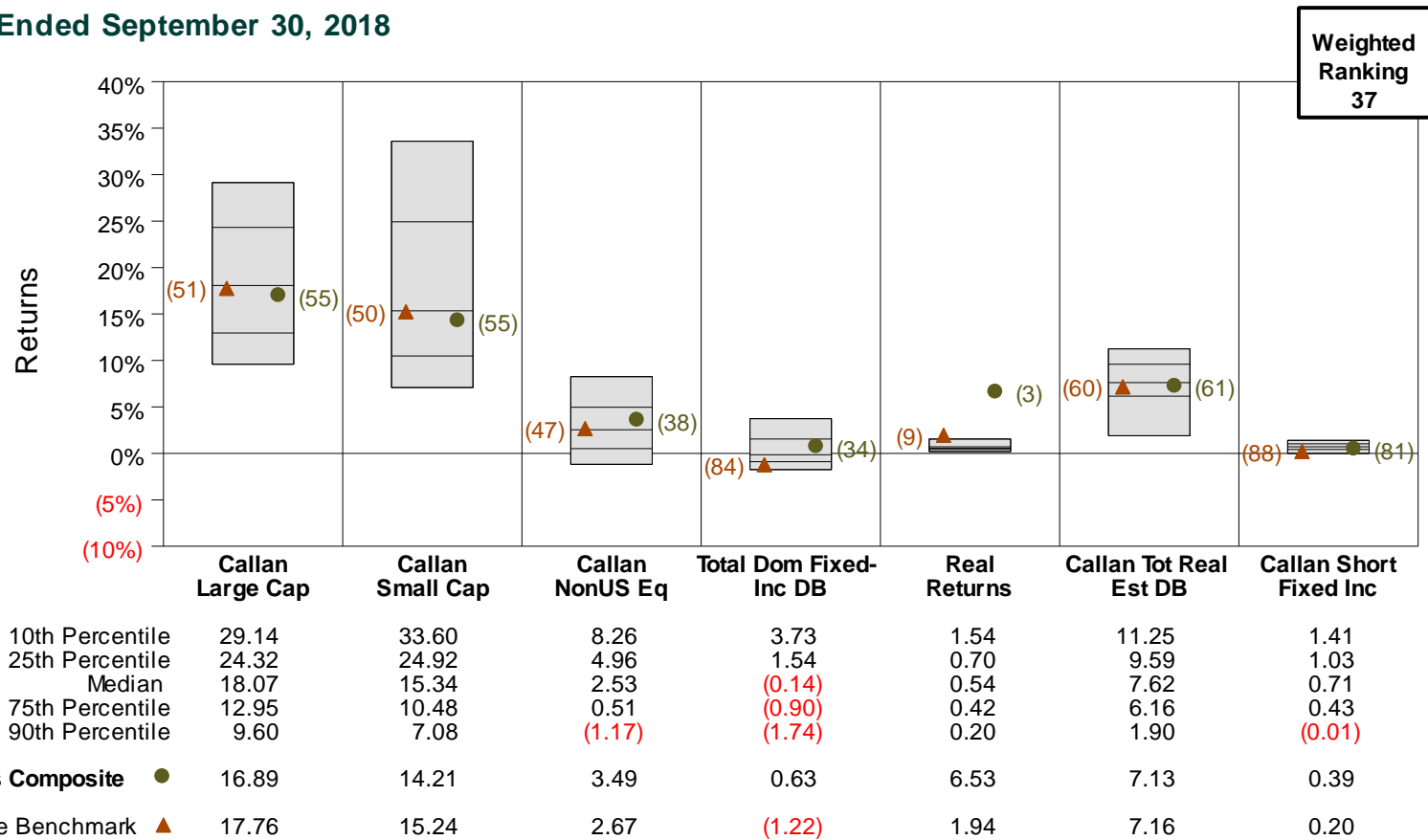
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	12%	12%	-	-	0.17%	0.00%	0.17%
Short Term Fixed Income	85%	85%	1.38%	0.66%	0.60%	0.00%	0.60%
Cash & Equivalents	3%	3%	0.45%	0.52%	(0.00%)	0.01%	0.00%

**Total** **1.49% = 0.71% + 0.76% + 0.01%** **0.77%**

# Asset Class Composite Results

## Consolidated Insurance Trust Asset Class Results vs. Callan Style Groups

Total Asset Class Performance  
One Year Ended September 30, 2018

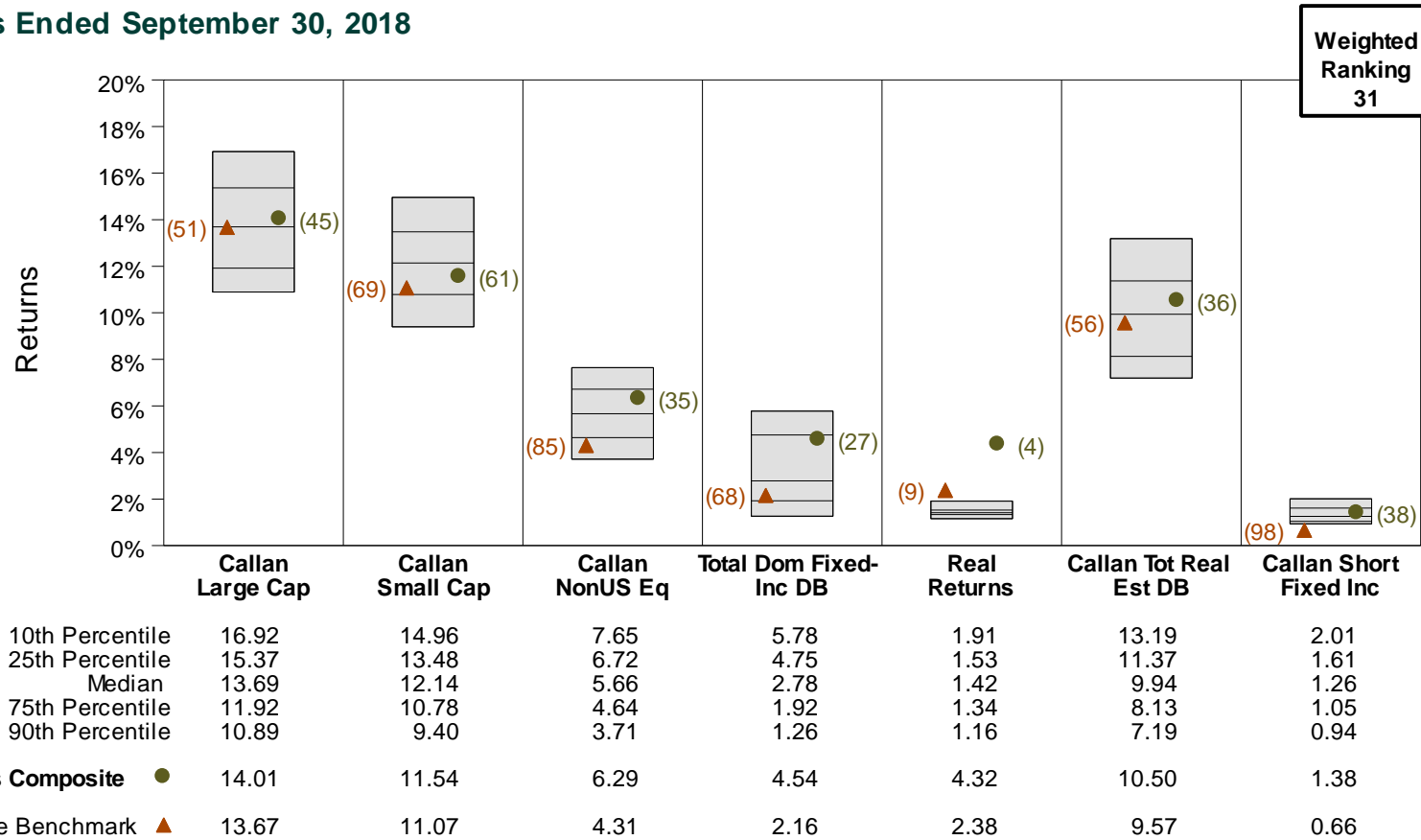


- Non-U.S. equity, domestic fixed income, real returns, and short term fixed income all outperformed their respective benchmarks during the past twelve months.
- Real returns ranked in the top decile, while non-U.S. equity and domestic fixed income performed above the median of peers.

# Asset Class Composite Results

## Consolidated Insurance Trust Asset Class Results vs. Callan Style Groups

Total Asset Class Performance  
Five Years Ended September 30, 2018



- All asset classes led their respective benchmarks over the past 5 years.
- All asset classes except for small cap equities performed above the median of peers.



Callan

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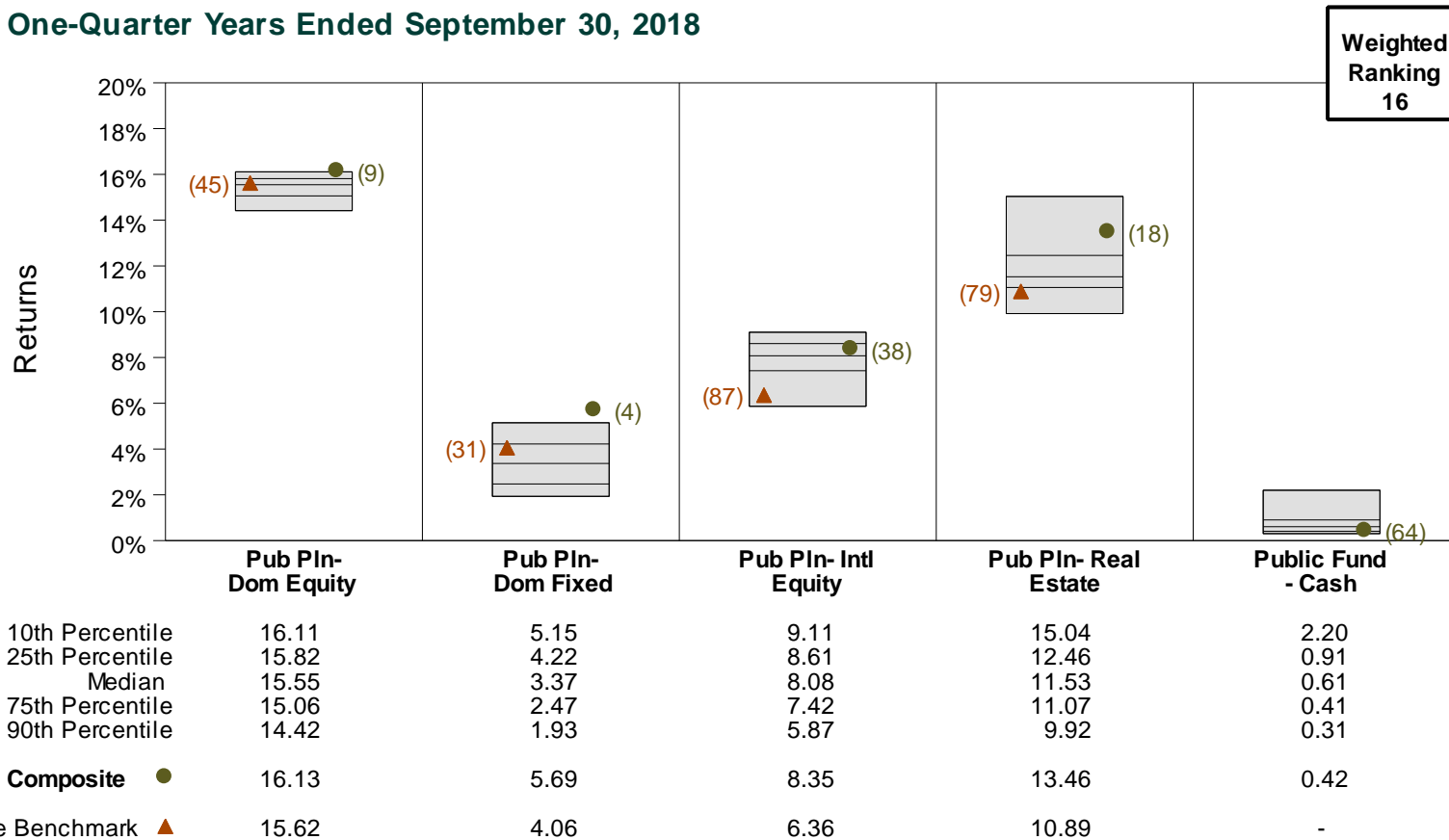
## **Appendix**

Consolidated Asset Class Rankings

# Asset Class Composite Results

## PERS' Asset Class Results vs. Other Public Pension Funds

### Total Asset Class Performance Eight and One-Quarter Years Ended September 30, 2018

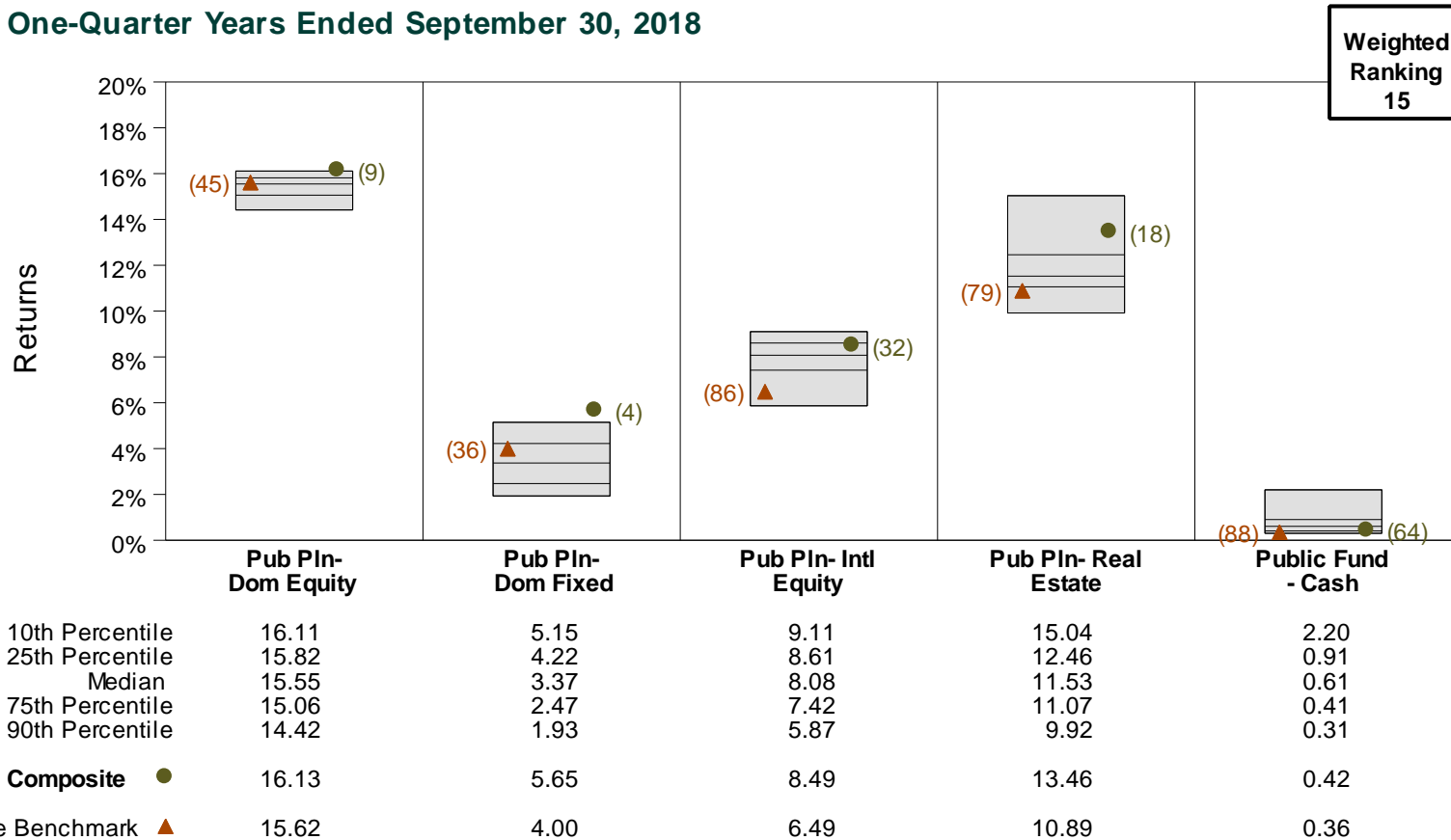


- All asset classes have outperformed their benchmarks over the last 8.25 years.
- Domestic equity and fixed income are in the top decile.

# Asset Class Composite Results

## TFFR's Asset Class Results vs. Other Public Pension Funds

### Total Asset Class Performance Eight and One-Quarter Years Ended September 30, 2018

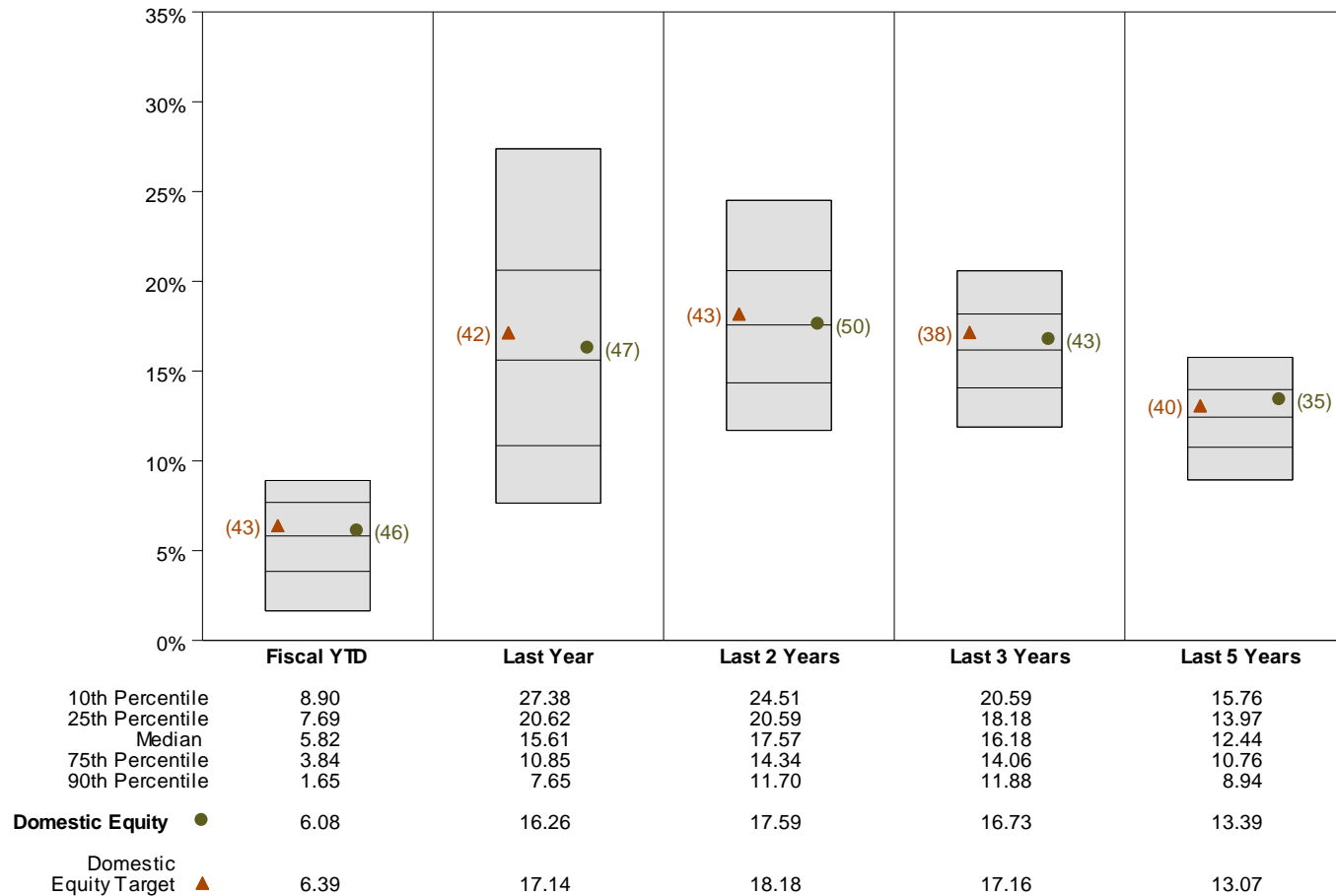


- All asset classes have outperformed their benchmarks over the last 8.25 years.
- Domestic equity and fixed income are in the top decile.

# Consolidated Pension Trust: Domestic Equity

As of September 30, 2016

## Performance vs Total Domestic Equity Database (Gross)

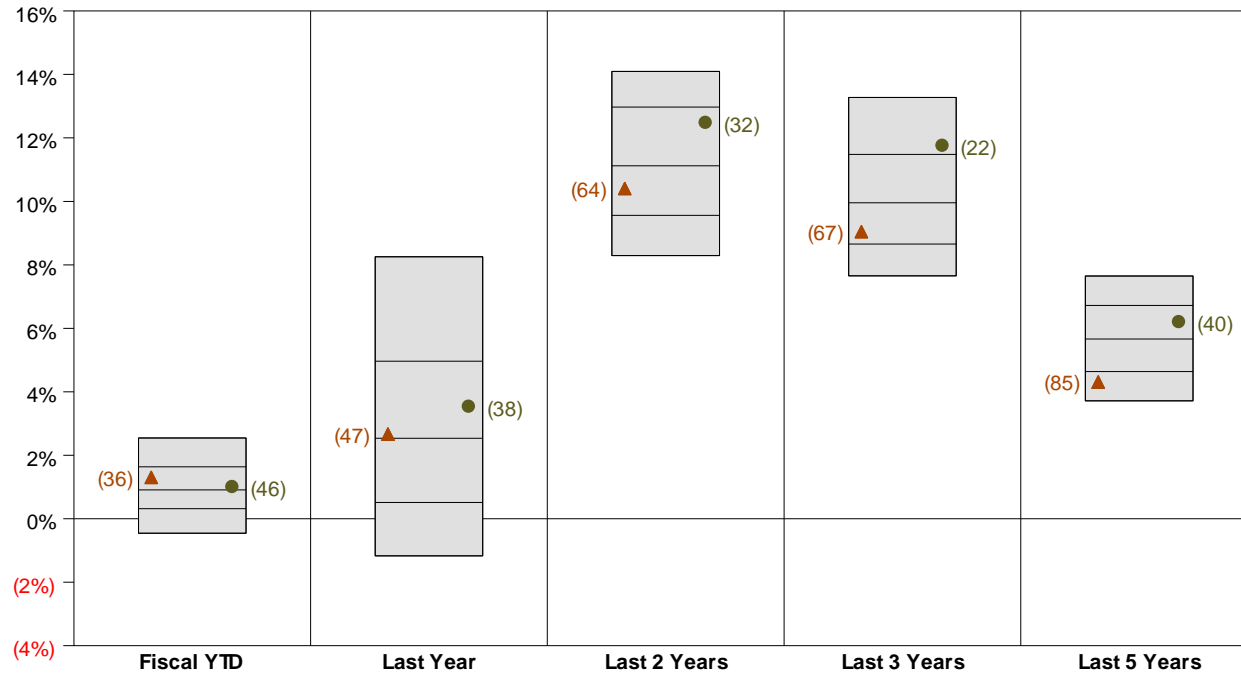


- Domestic equity produced a positive return during the quarter, but underperformed its benchmark.
- The asset class performed at, or above median during all measured time periods.

# Consolidated Pension Trust: International Equity

As of September 30, 2016

## Performance vs Callan Non-US Equity (Gross)



10th Percentile  
25th Percentile  
Median  
75th Percentile  
90th Percentile

**International Equity** ●

International  
Equity Target ▲

Fiscal YTD

Last Year

Last 2 Years

Last 3 Years

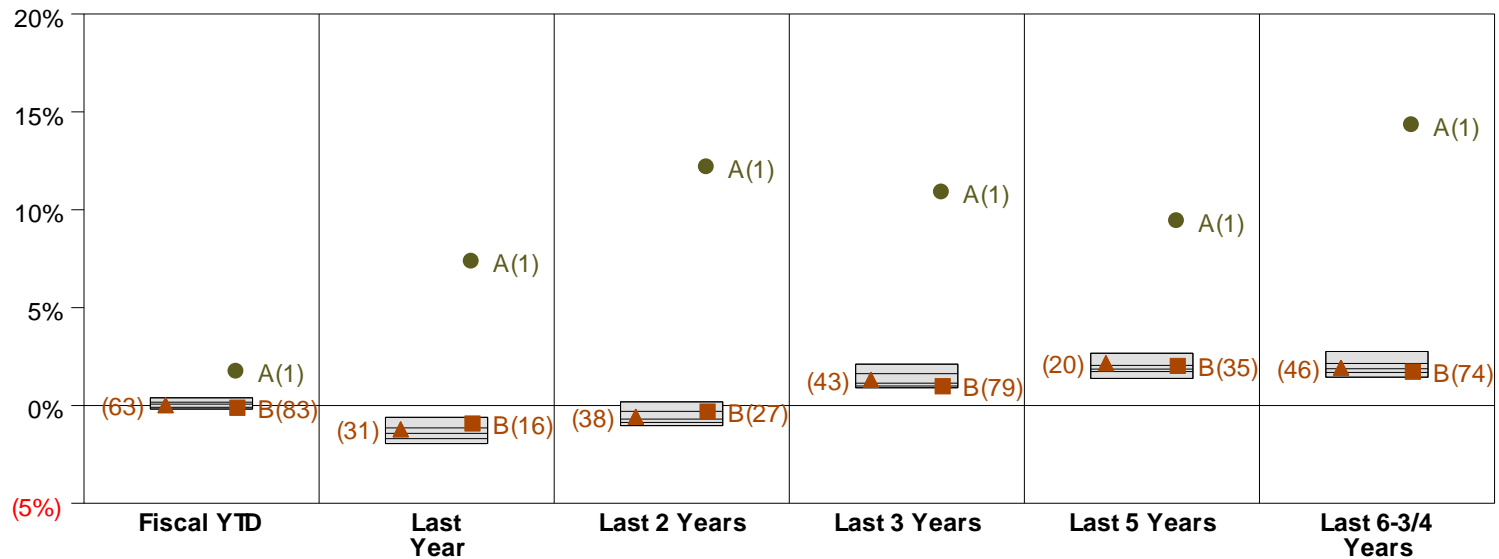
Last 5 Years

- International equity produced a positive return during the quarter, but underperformed its benchmark.
- The asset class performed above the median of peers during all measured periods.

# Consolidated Pension Trust: PIMCO DISCO II

As of September 30, 2016

## Performance vs Callan Core Bond Mutual Funds (Net)

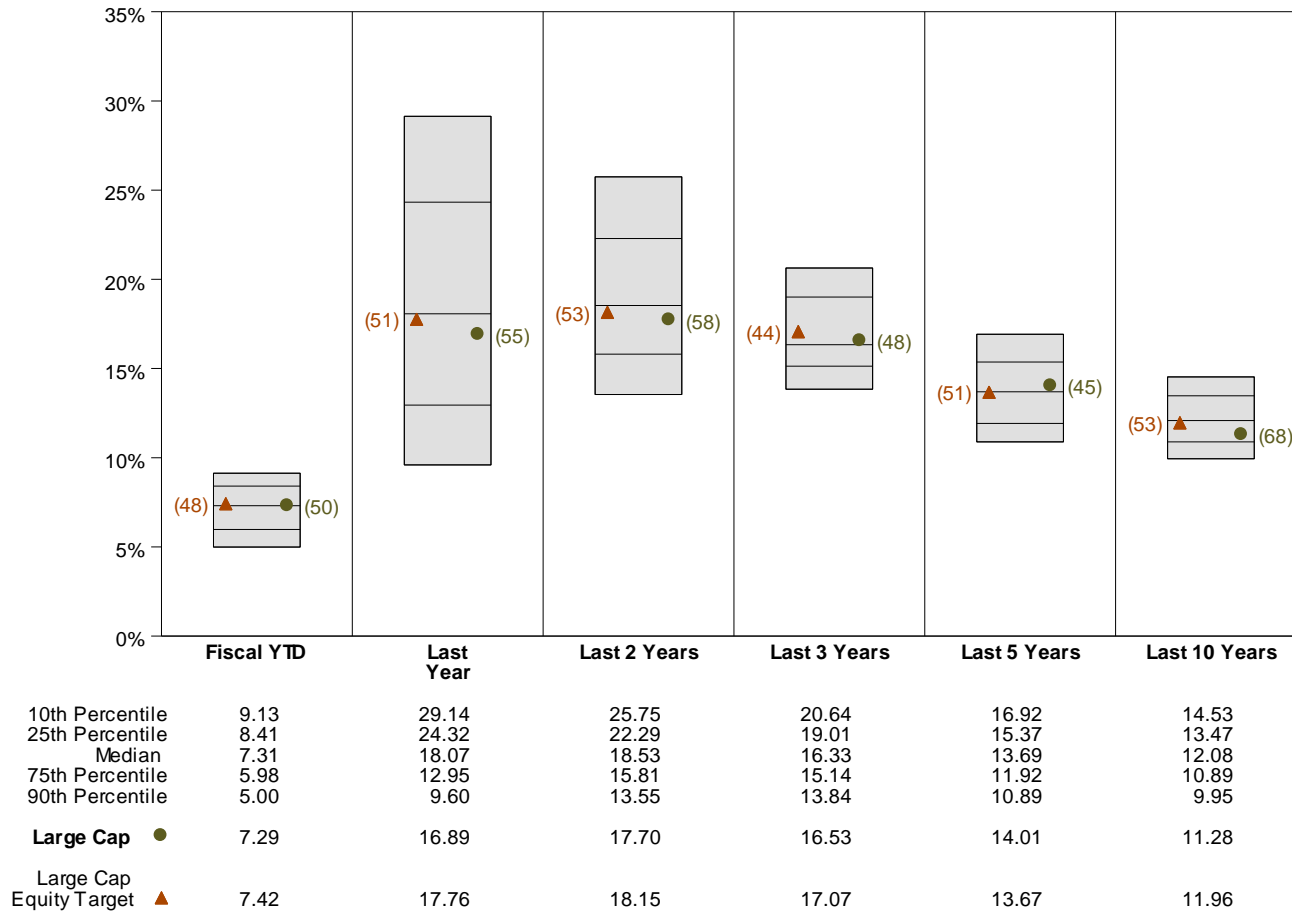


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-3/4 Years
10th Percentile	0.39	(0.61)	0.19	2.11	2.67	2.76
25th Percentile	0.16	(1.15)	(0.30)	1.62	2.05	2.14
Median	0.07	(1.43)	(0.69)	1.14	1.86	1.87
75th Percentile	(0.10)	(1.69)	(0.87)	0.99	1.73	1.68
90th Percentile	(0.18)	(1.95)	(1.03)	0.91	1.38	1.45
PIMCO DiSCO II ● A	1.69	7.32	12.14	10.85	9.39	14.29
Blmbg Mortgage ■ B	(0.12)	(0.92)	(0.31)	0.98	2.02	1.73
Blmbg Aggregate ▲	0.02	(1.22)	(0.57)	1.31	2.16	1.93

# Consolidated Insurance Trust: Large Cap Equity

As of September 30, 2016

## Performance vs Callan Large Capitalization (Gross)

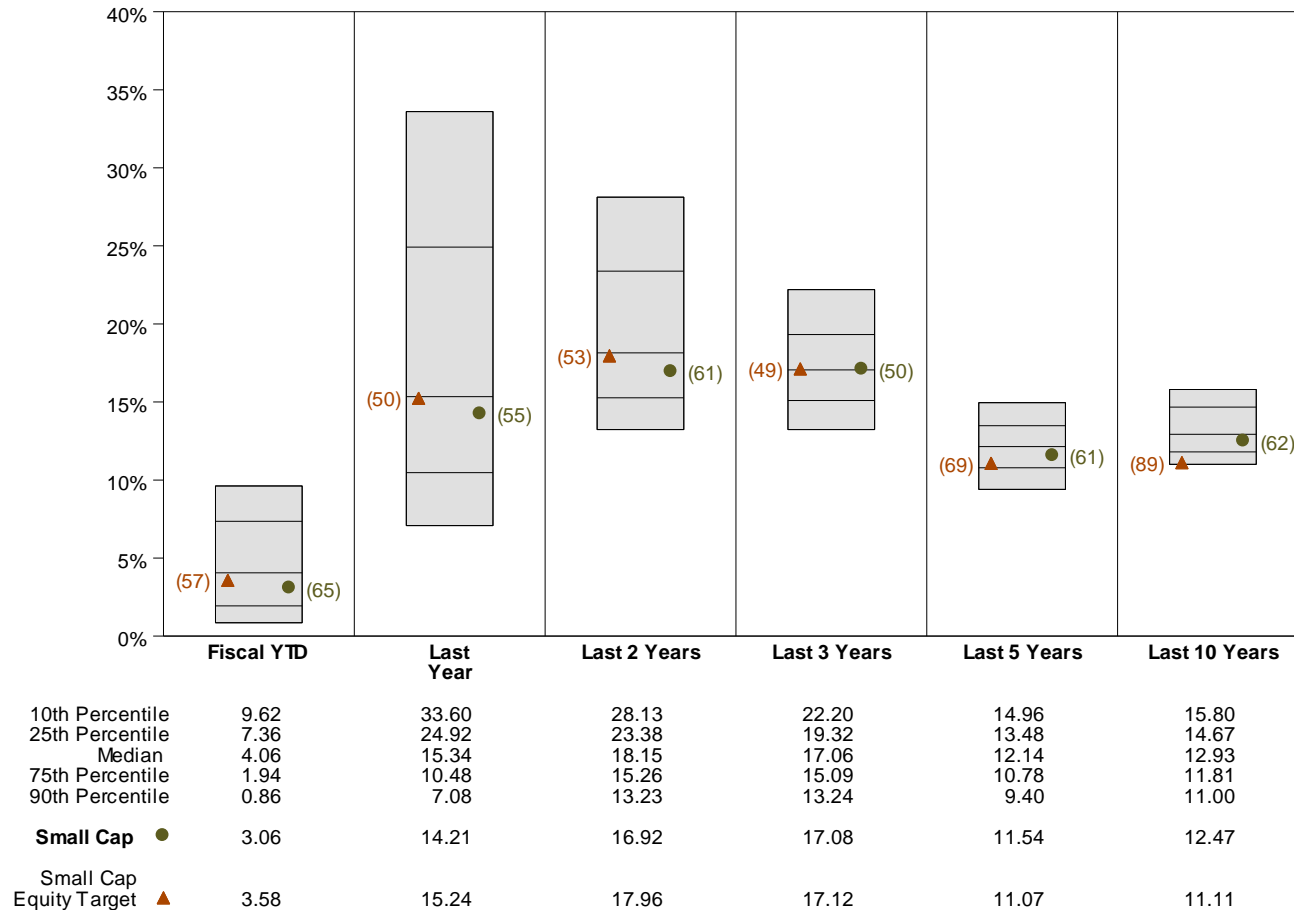


- The large cap equity asset class produced a positive return, but underperformed its benchmark.
- Over the three and five-year periods the asset class performed above the peer median.

# Consolidated Insurance Trust: Small Cap Equity

As of September 30, 2016

## Performance vs Callan Small Capitalization (Gross)



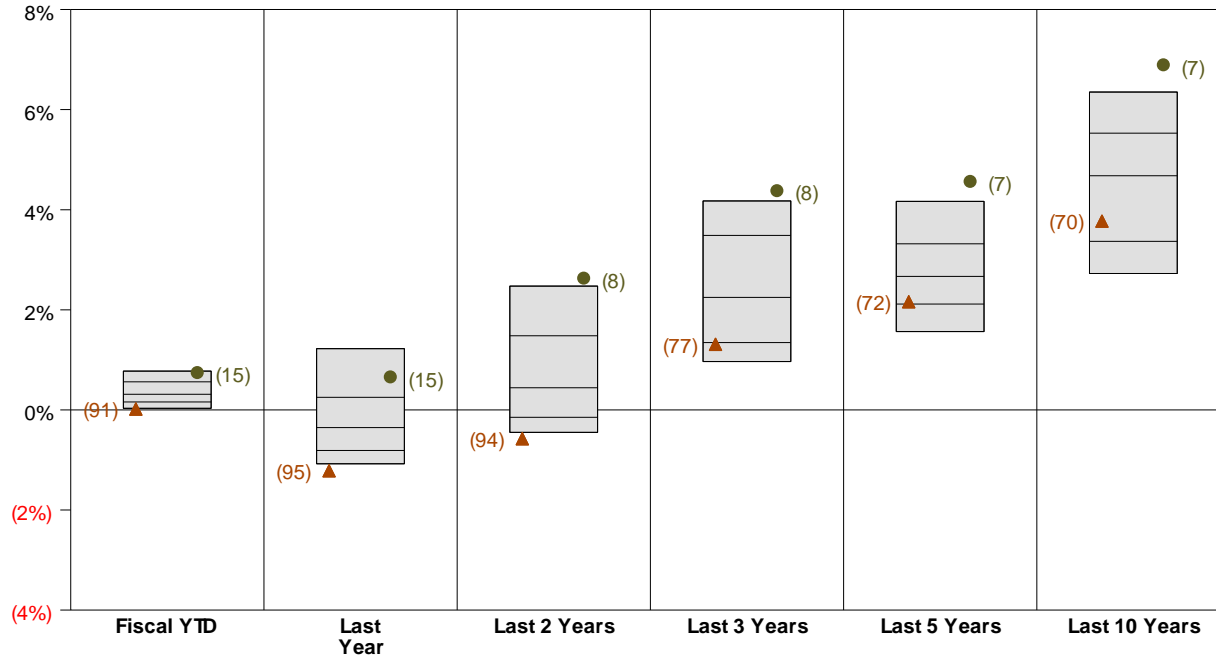
- The small cap equity asset class underperformed the benchmark over the past quarter, one-year, two-year and three-year periods.
- The asset class performed at, or below the peer median over all measured periods.



# Consolidated Insurance Trust: Domestic Fixed Income

As of September 30, 2016

## Performance vs Public Fund - Domestic Fixed (Gross)



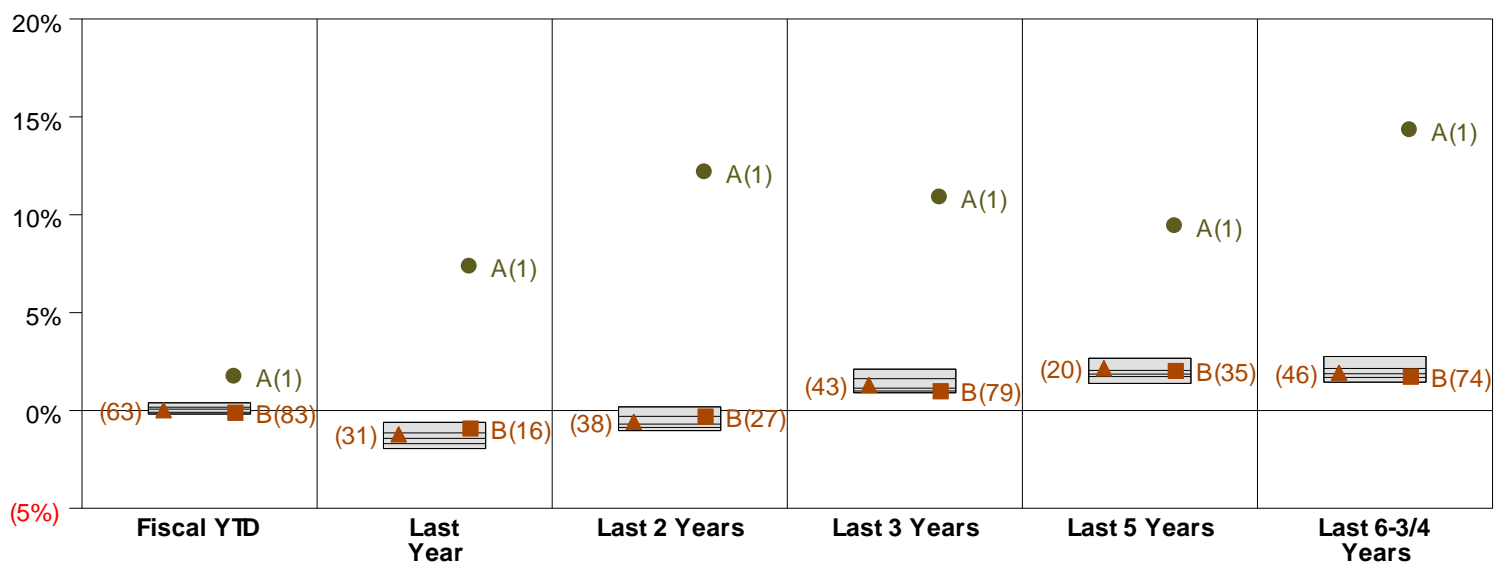
10th Percentile	0.78	1.22	2.47	4.18	4.17	6.35
25th Percentile	0.56	0.25	1.48	3.49	3.32	5.53
Median	0.31	(0.35)	0.44	2.25	2.67	4.68
75th Percentile	0.16	(0.81)	(0.15)	1.35	2.12	3.37
90th Percentile	0.03	(1.08)	(0.45)	0.97	1.56	2.73
<b>Domestic Fixed Income</b> ●	0.72	0.63	2.61	4.35	4.54	6.86
Domestic Fixed Inc. Target ▲	0.02	(1.22)	(0.57)	1.31	2.16	3.77

- The domestic fixed income asset class outperformed its benchmark during all measured periods.
- The asset class performed in the top quartile this quarter and over the past year, while performing in the top decile during all other periods.

# Consolidated Insurance Trust: PIMCO DISCO II

As of September 30, 2016

## Performance vs Callan Core Bond Mutual Funds (Net)



	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-3/4 Years
10th Percentile	0.39	(0.61)	0.19	2.11	2.67	2.76
25th Percentile	0.16	(1.15)	(0.30)	1.62	2.05	2.14
Median	0.07	(1.43)	(0.69)	1.14	1.86	1.87
75th Percentile	(0.10)	(1.69)	(0.87)	0.99	1.73	1.68
90th Percentile	(0.18)	(1.95)	(1.03)	0.91	1.38	1.45
PIMCO DiSCO II ● A	1.69	7.32	12.14	10.85	9.39	14.29
Blmbg Mortgage ■ B	(0.12)	(0.92)	(0.31)	0.98	2.02	1.73
Blmbg Aggregate ▲	0.02	(1.22)	(0.57)	1.31	2.16	1.93

# Total Private Equity Summary

Periods ending September 30, 2016

	September 30, 2018	Quarter Change	June 30, 2018
<b>Summary</b>			
Vintage Years	21 in 1998-2018		21 in 1998-2018
<b>Changes in Value</b>			
Capital Commitments	\$897,918,157	-	\$897,918,157
Paid-In Capital	\$776,488,977	\$21,303,941	\$755,185,036
Uncalled Capital	\$278,905,265	\$(21,303,941)	\$300,209,206
% Paid-In	86.48%	2.37%	84.10%
Distributed Capital	\$699,410,831	\$15,911,804	\$683,499,027
Net Asset Value	\$197,586,394	\$4,905,033	\$192,681,361
<b>Total Realized and Unrealized Value</b>	<b>\$896,997,226</b>	<b>\$20,816,838</b>	<b>\$876,180,388</b>
<b>Ratios and Performance</b>			
Distributions to Paid-In Capital (DPI)	0.90x	(0.00)x	0.91x
Residual Value to Paid-In Capital (RVPI)	0.25x	(0.00)x	0.26x
Total Value to Paid-In Capital (TVPI)	1.16x	(0.01)x	1.16x
Quartile Ranking	3 <sup>rd</sup>		3 <sup>rd</sup>
Net IRR	4.26%	(0.06%)	4.33%
<b>Additional Performance Metrics</b>			
Distribution Rate, as % of Beginning NAV		8.26%	
Unrealized Gain/(Loss), Dollars		\$(487,103)	
Unrealized Gain/(Loss), %		(0.25%)	

# Total Private Equity Summary

Periods ending September 30, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Private Equities*</b>					
Net	0.40%	8.37%	2.84%	1.60%	1.12%
Adams Street Direct Co-Invest Fd	(20.13%)	(31.75%)	(10.43%)	0.97%	1.62%
Adams Street Direct Fund 2010	8.14%	28.22%	13.99%	17.08%	-
Adams Street 1998 Partnership	4.30%	5.20%	2.63%	2.20%	(1.52%)
Adams Street 1999 Partnership	(0.08%)	3.81%	3.79%	1.43%	1.03%
Adams Street 2000 Partnership	5.19%	14.95%	4.70%	2.53%	3.37%
Adams Street 2001 Partnership	2.48%	11.73%	3.00%	4.90%	4.69%
Adams Street 2002 Partnership	3.26%	0.24%	10.44%	5.25%	5.49%
Adams Street 2003 Partnership	5.73%	20.87%	9.62%	12.79%	7.77%
Adams Street 2010 Partnership	2.50%	19.69%	13.83%	15.38%	-
Adams Street 2008 Fund	0.00%	13.94%	14.81%	14.19%	6.09%
Adams Street 1999 Non-US	0.15%	2.68%	5.78%	1.59%	5.95%
Adams Street 2000 Non-US	1.54%	12.51%	5.51%	3.25%	0.70%
Adams Street 2001 Non-US	(1.87%)	4.80%	(5.84%)	13.94%	3.32%
Adams Street 2002 Non-US	0.91%	9.40%	9.55%	5.69%	1.72%
Adams Street 2003 Non-US	(3.06%)	(2.42%)	15.15%	11.18%	8.67%
Adams Street 2004 Non-US	1.59%	12.51%	3.93%	8.10%	2.89%
Adams Street 2010 Non-US	7.08%	22.28%	19.31%	13.64%	-
Adams Street 2010 Non-US Emg	3.02%	21.97%	15.11%	14.32%	-
Adams Street 2015 Global Fd	2.74%	20.96%	-	-	-
Adams Street 2016 Global Fd	0.00%	14.30%	-	-	-
Adams Street 2017 Global Fd	0.00%	11.71%	-	-	-
Adams Street BVCF IV Fund	(1.34%)	0.22%	0.92%	11.53%	29.89%
BlackRock	0.41%	1.95%	-	-	-
Capital International V	(1.98%)	(48.63%)	(42.36%)	(28.75%)	(15.01%)
Capital International VI	(0.29%)	6.06%	5.76%	(2.53%)	-
CorsAir III	(0.46%)	(33.99%)	(2.00%)	(2.76%)	(4.35%)
CorsAir IV	(0.43%)	26.63%	15.06%	18.27%	-
EIG Energy Fund XIV	(0.01%)	18.50%	(24.61%)	(20.10%)	(6.77%)
Hearthstone Advisors MS III	0.00%	8.27%	(18.32%)	283.21%	-
Lewis & Clark, LP	11.32%	68.60%	0.14%	(11.25%)	(2.14%)
Lewis & Clark II	0.00%	0.90%	4.44%	(1.95%)	-
Matlin Patterson II	0.00%	5.68%	(6.94%)	(3.76%)	(26.97%)
Matlin Patterson III	(0.34%)	12.58%	3.05%	2.13%	8.38%
Quantum Energy Partners	0.00%	(17.54%)	(13.61%)	(7.37%)	0.01%

# 39<sup>th</sup> Annual Callan Institute: January 28 – 30, 2019

Palace Hotel, San Francisco, CA

## Workshop Sessions

- The New Face of DC Plans
- The Evolution of Strategic Allocations: What's Next?
- Private Equity: Primary Investment Opportunities and Considerations (Tuesday Only)
- Market Intelligence Panel — Live! (Wednesday Only)



**Raghuram Rajan**

Former Governor of the Reserve Bank of India



**David Autor**

Associate Head of the MIT Department of Economics



**Condoleezza Rice**

Former U.S. Secretary of State



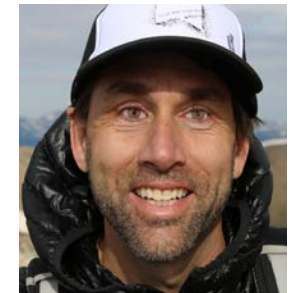
**Jennifer Golbeck**

Director of the Social Intelligence Lab at the University of Maryland



**Kevin Murphy**

Professor at the University of Chicago Booth School of Business



**Eric Weihenmayer**

World-Class Adventurer

## Conference Registration:

<https://www2.callan.com/2019natcallan>

## Hotel Registration:

<https://www.starwoodmeeting.com/events/start.action?id=1810023702&key=342DEED7>

September 30, 2018



## North Dakota State Investment Board Pension Funds

Investment Measurement Service  
Quarterly Review

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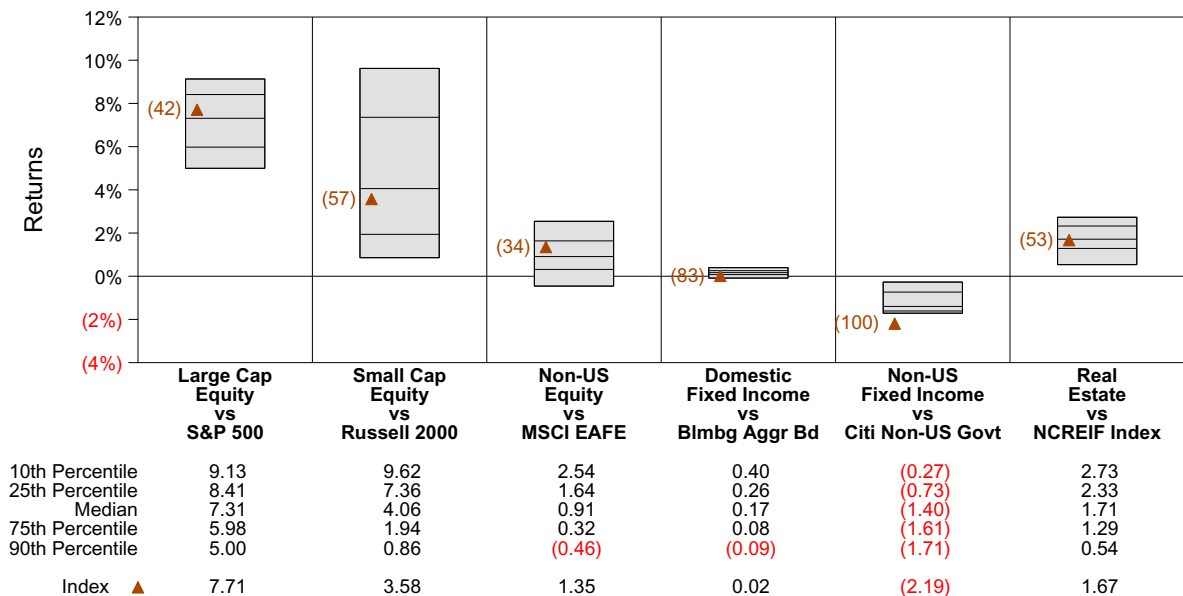
## Market Overview

### Active Management vs Index Returns

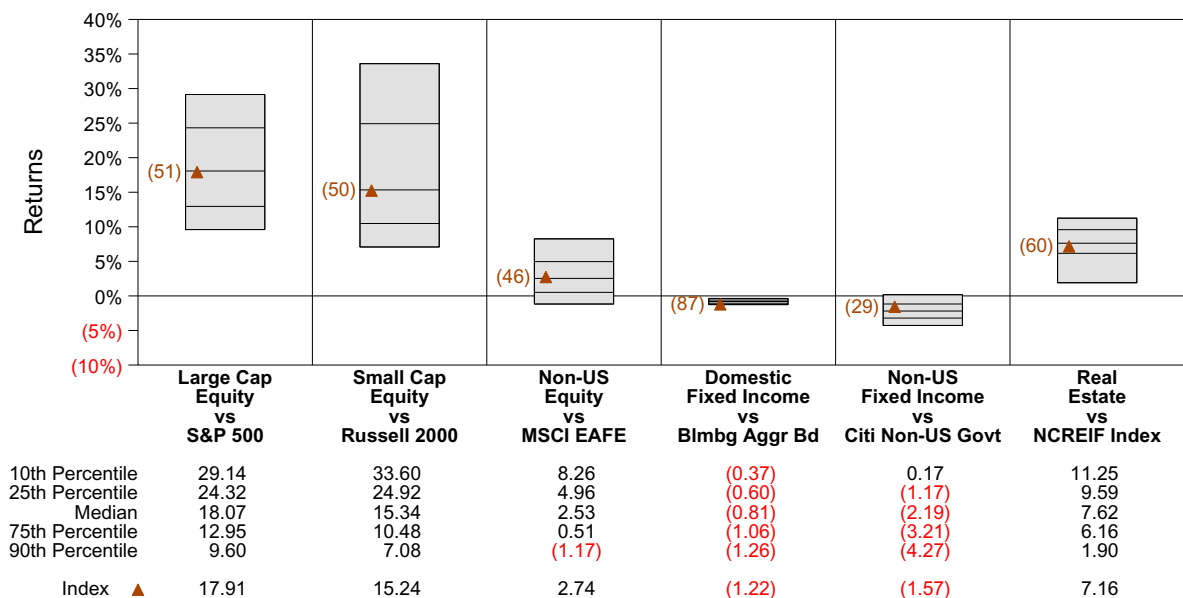
#### Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended September 30, 2018



#### Range of Separate Account Manager Returns by Asset Class One Year Ended September 30, 2018



### Everything Is Going Great! Right?

ECONOMY

**2** The U.S. economy has been firing on all cylinders, and the accompanying run-up in the equity market in the first three quarters buoyed confidence that all was not just well, but great! If only we knew in September what Halloween fright awaited us in October.

### Equity Risk Looms Large for Plans

FUND SPONSOR

**4** The median plan sponsor in Callan's database gained 2.7% in the quarter, lagging the 4.6% gain of a 60% S&P 500/40% Bloomberg Barclays Aggregate benchmark. Sponsors are focused on equity exposure, market volatility, and mitigating risk in the event of an equity correction.

### Markets Diverge, With U.S. Staying Strong

EQUITY

**6** U.S. stocks posted broad-based gains, fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several indices hit records. Non-U.S. developed and emerging markets faltered due to geopolitical and economic uncertainties.

### U.S. Returns Mostly Flat; EM Debt Volatile

FIXED INCOME

**8** The U.S. Treasury yield curve rose across the maturity spectrum on better-than-expected corporate earnings and solid U.S. economic data. The JPM EMBI Global Diversified Index (USD denominated) gained 2.3%, but the JPM GBI-EM Global Diversified Index fell 1.8%.

### Strong Market Both Here and Abroad

REAL ESTATE

**10** Supply and demand fundamentals were balanced but peaking. The Industrial sector performed the strongest. U.S. and non-U.S. REITs were trading at discounts to net asset value. European markets (ex-U.K.) and Asian products saw momentum.

### Boo! More Tricks Than Treats

PRIVATE EQUITY

**12** Private equity investment and exit activity showed a general slowdown during the third quarter. Company investments and exits trended slightly down, fewer new partnerships were closed, but dollar commitments increased. Investors are pursuing broad diversification.

### Active Traders Grind Forward; MACs Falter

HEDGE FUNDS/MACs

**13** Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds. Callan's Multi-Asset Class Peer Groups continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks.

### DC Plans Rebound, TDFs Struggle

DEFINED CONTRIBUTION

**15** The Callan DC Index™ rose 1.8% in the second quarter and outpaced the 1.1% gain of the Age 45 Target Date Fund (TDF). DC plan balances grew by 1.9%, driven primarily by market performance. The second quarter marked another all-time high for TDFs' share of DC assets.

### Broad Market Quarterly Returns

U.S. Equity  
Russell 3000



+7.1%

Non-U.S. Equity  
MSCI ACWI ex USA



+0.7%

U.S. Fixed Income  
Bloomberg Barclays Agg



0.0%

Non-U.S. Fixed Income  
Bloomberg Barclays GBI ex US



-1.7%

Sources: Bloomberg Barclays, MSCI, FTSE Russell

# Everything Is Great! Right?

ECONOMY | Jay Kloepfer

September 20 marked the capstone of a summer run-up in the U.S. equity market. We saw a true market correction in February (S&P 500 Index down 10.1%) and a drawdown of more than 7% in March, but the memory of those experiences was obliterated by a smooth, steady climb, with the S&P 500 gaining 12% in the first three quarters. Economic reports came in mixed for most economies outside the U.S. during 2018, but the U.S. economy has been firing on all cylinders, with the job market, investment, and output all showing robust gains. GDP grew 3.5% in the third quarter and 4.2% in the second. The accompanying run-up in the equity market buoyed confidence that all was not just well, but great, and this economic expansion and bull market still had fresh legs to keep going.

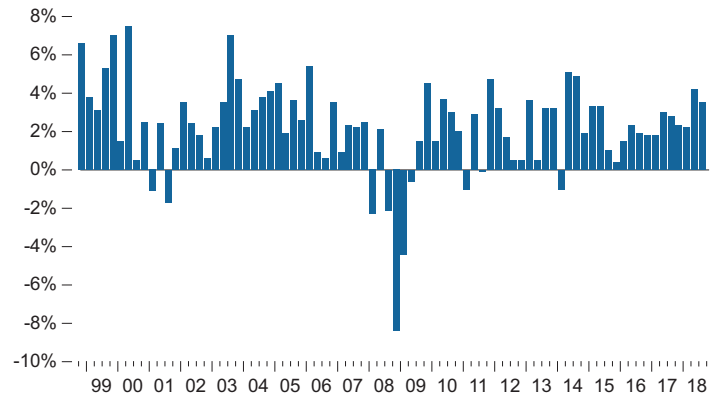
If only we knew in September what Halloween fright awaited us in October.

Since the start of the year, investors had been growing increasingly concerned that the expansion was getting long in the tooth, and that both the economy and the stock market must be nearing peaks. While elapsed time is not an economic variable, the fact that the current expansion set a record for length heightened fears of a downturn. Richly priced capital markets across all asset classes and a new peak in the level of corporate earnings reported during the summer earnings season suggested that a market correction was inevitable. Through the end of September, such fears contrasted with the continuing stream of good economic news, and the market roared. The unemployment rate dropped to 3.7% in September, the lowest since 2000. Wages continue to inch up, with average hourly earnings growth rising from 2% toward 3%. While potentially inflationary and certainly a cost to business, stronger wage growth kept consumer spending robust, and boosted consumer (and business) confidence.

Against this backdrop, the Fed raised rates three times in 2018, bringing the Fed Funds rate to 2.0-2.25%. The Fed expects one

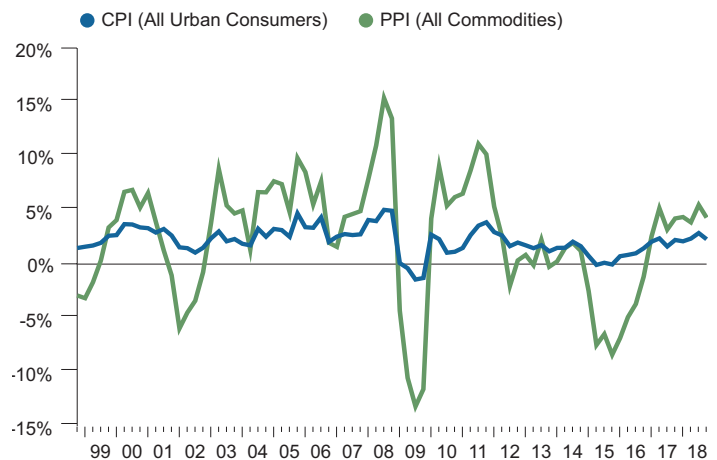
## Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

## Inflation Year-Over-Year



Source: Bureau of Labor Statistics

more rate hike this year and three in 2019. The Fed has now raised rates 200 basis points over the past two years. Since inflation has not changed over this period, real rates have essentially risen by 2 percentage points. Much of the growth in the first half of 2018 was attributed to the tax cut and spending, and trade activity in advance of tariffs imposed in July by the U.S. and China. Monetary policy has incrementally become

a more significant headwind, and it began showing up in the third quarter. While it is true that real rates are low relative to history, the change in rates is important. Since the mid-1980s real rates have risen by 2 percentage points four times; three of those occurrences resulted in recessions. In a study by Capital Economics, monetary policy tightening was a major contributing factor in 29 out of 45 recessions in G7 countries since 1960.

Higher interest rates are beginning to squeeze some of the most rate-sensitive segments of the economy. Housing has been an ongoing mystery; starts surged to an 11-year high in May, only to stall during the summer. Home sales are also clearly feeling the pressure of higher rates, and from the supply side, a shortage of houses. Residential investment contracted by 4% in the third quarter, following declines in each of the first two quarters. Home prices rose substantially in certain markets through the summer, but early indications are that rates began to crimp prices and sales in September. Housing can often be the canary in the coal mine: an early indicator of slowing economic activity and lower confidence.

Inflation had been gradually trending up, reaching 2.9% in June, finally fulfilling the expectations of many market observers, but the year-over-year gain in the CPI slowed to 2.3% in the third quarter. Much of the rise in the first half was attributable to a rebound in oil prices. Once oil prices stabilize as expected, the increase in inflation will likely abate. One reason for the stability of inflation is the growing dominance of services in the inflation calculation. The services inflation rate has been much steadier than the goods rate and consistently positive near 2%. Goods prices are more volatile and much more influenced than services by factors such as trade, currency, supply and demand of raw materials, and geopolitics.

### Recent Quarterly Economic Indicators

	3Q18	2Q18	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16
Employment Cost–Total Compensation Growth	2.8%	2.8%	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%
Nonfarm Business–Productivity Growth	2.2%	3.0%	0.3%	-0.3%	2.3%	1.6%	0.4%	1.3%
GDP Growth	3.5%	4.2%	2.2%	2.3%	2.8%	3.0%	1.8%	1.8%
Manufacturing Capacity Utilization	75.8%	75.5%	75.3%	75.2%	74.4%	74.9%	74.6%	74.4%
Consumer Sentiment Index (1966=100)	98.1	98.3	98.9	98.4	95.1	96.4	97.2	93.2

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

### The Long-Term View

Index	2018 3rd Qtr	Periods ended Dec. 31, 2017			
		Year	5 Yrs	10 Yrs	25 Yrs
<b>U.S. Equity</b>					
Russell 3000	7.12	21.13	15.58	8.60	9.72
S&P 500	7.71	21.83	15.79	8.50	9.69
Russell 2000	3.58	14.65	14.12	8.71	9.54
<b>Non-U.S. Equity</b>					
MSCI ACWI ex USA	0.71	27.19	6.80	1.84	--
MSCI Emerging Markets	-1.09	37.28	4.35	1.68	--
MSCI ACWI ex USA Small Cap	-1.51	31.65	10.03	4.69	--
<b>Fixed Income</b>					
Bloomberg Barclays Agg	0.02	3.54	2.10	4.01	5.48
90-Day T-Bill	0.49	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-0.47	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	-1.74	10.51	-0.20	2.40	5.02
<b>Real Estate</b>					
NCREIF Property	1.67	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	0.79	5.23	9.46	7.44	10.76
<b>Alternatives</b>					
CS Hedge Fund	0.59	7.12	4.23	3.24	–
Cambridge PE*	4.51	19.48	13.97	9.14	15.65
Bloomberg Commodity	-2.02	1.70	-8.45	-6.83	2.47
Gold Spot Price	-4.65	13.68	-4.82	4.56	5.63
<b>Inflation – CPI-U</b>	0.18	2.11	1.43	1.61	2.23

\*Data for most recent period lags by a quarter

Sources: Bloomberg Barclays, Bloomberg, Credit Suisse, FTSE, MSCI, NCREIF, FTSE Russell, Standard & Poor's, Thomson Reuters/Cambridge, Bureau of Economic Analysis

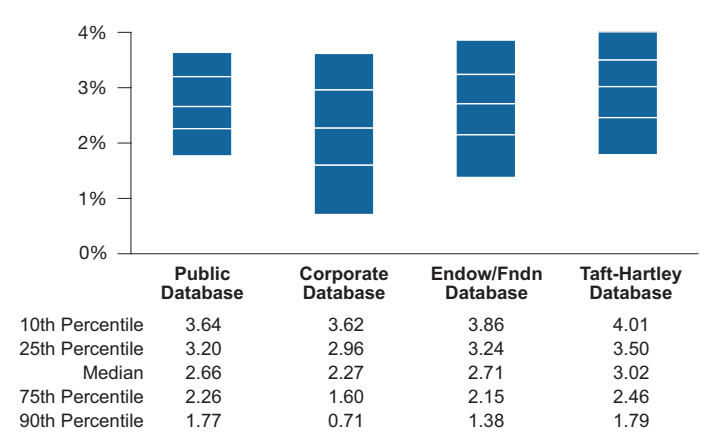
Related to goods prices, the ISM manufacturing index had reached a 14-year high earlier this year, but fell back in September, as manufacturers and exporters face the triple threat of a stronger dollar (up 8% since mid-April), the imposition of tariffs in July and anticipation of more in October, and weakening of global growth.

# Equity Risk Looms Large for Plans

## FUND SPONSOR

- The median fund sponsor in Callan’s database gained 2.7% in the third quarter.
- Taft-Hartley plans (+3.0%) were the best-performing sponsor by type, as they were the previous quarter; corporate plans (+2.3%) showed the lowest increase.
- By size, the strongest returns came from small plans (under \$100 million), which rose 2.9%, compared to a 2.6% gain for medium plans (\$100 million-\$1 billion) and 2.3% for large plans (more than \$1 billion).
- All types and sizes lagged a 60% S&P 500/40% Bloomberg Barclays US Aggregate benchmark, which rose 4.6%.
- Over the last year, three years, and five years, Taft-Hartley plans had the strongest returns of all fund types, while public plans have done best over the last 10 years.
- Investors are focused on concerns about equity exposure, market volatility, and how to mitigate risk in the event of an equity market correction in a rising interest rate environment.
- But they face competing fears: an equity market downturn vs. the fear of missing out (FOMO!).

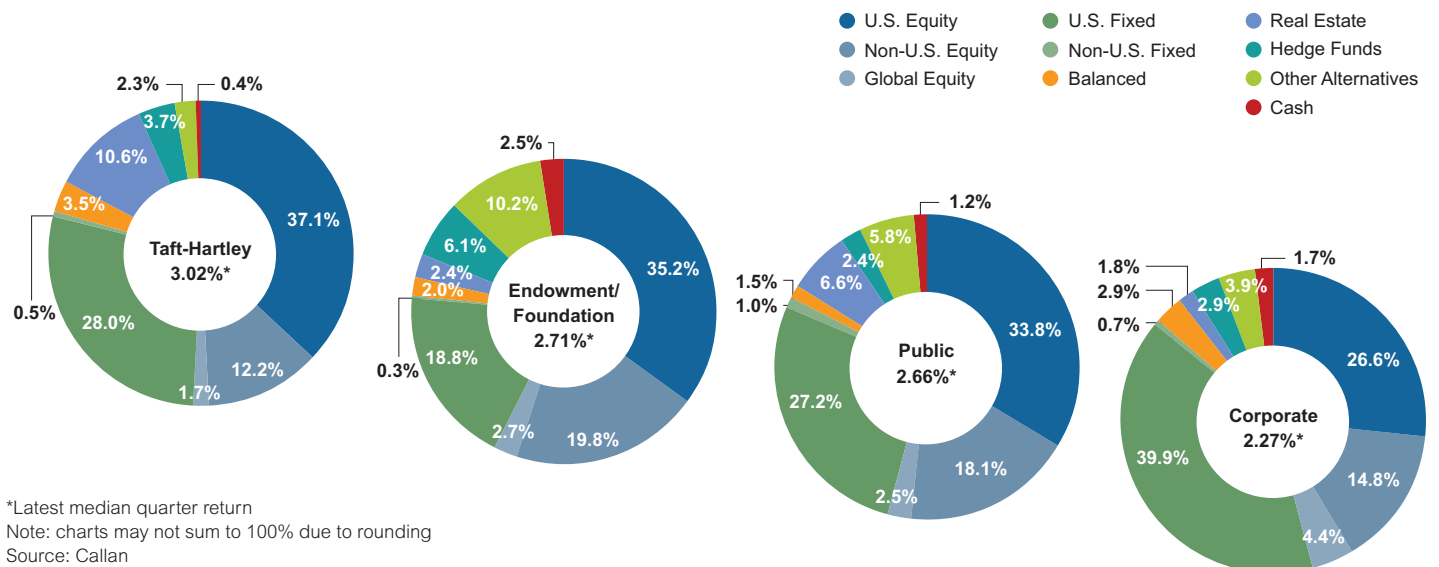
## Callan Fund Sponsor Returns for the Quarter



Source: Callan

- They are refining the definition of growth to include investments such as high yield, convertibles, low-volatility equity, hedge funds, multi-asset class strategies, and options-based strategies.
- Many sponsors are seeking higher returns outside of traditional asset classes such as equity and fixed income, and

## Callan Fund Sponsor Average Asset Allocation



\*Latest median quarter return  
 Note: charts may not sum to 100% due to rounding  
 Source: Callan

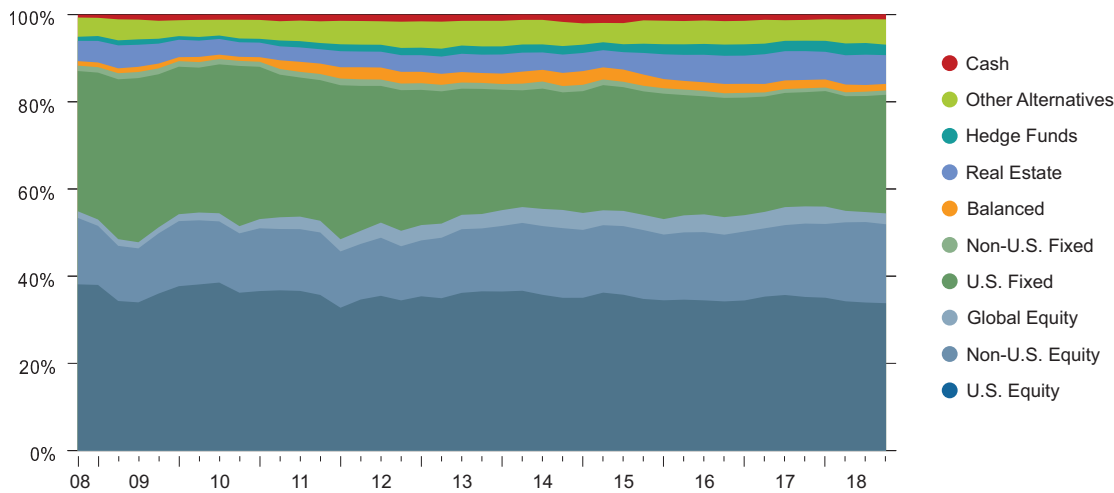
worry about risk mitigation. The late stage of the economic cycle combined with elevated equity valuations and low bond yields is causing sponsors to explore allocations to U.S. Treasuries, managed futures, and tail risk hedging.

- Concerns about fees and controlling costs continue among plan sponsors, and that issue has been an incentive to increase passive exposure.
- For defined contribution plans, fee reduction and disclosure, compliance, and evaluating the structure of fund line-ups are key areas of focus. Target date funds continue to dominate asset flows; they now account for almost 32.5% of DC assets, according to the Callan DC Index™.
- Negotiating fee reductions and fee transparency is ongoing for DC plan sponsors, in some cases to a significant extent. Interest in institutional investment structures is increasing as another path to fee reduction.

- Non-qualified deferred compensation (NQDC) plans are being evaluated on a standalone basis due to their design flexibility.
- Some corporate plan sponsors have made large voluntary contributions in 2018. As a result, plans are reaching full funding. A glidepath strategy for gradual de-risking is no longer needed for some; these plans can fully de-risk immediately.
- Endowments, foundations, and sovereign wealth funds saw a continuing focus on evaluating a sustainable distribution rate to balance intergenerational equity.
- Interest in multi-asset class strategies continues, in particular from public and corporate defined benefit plans. Callan divides the multi-asset class universe into four categories: long biased, absolute return, risk parity, and risk premia.

Callan Public Fund Database Average Asset Allocation

(10 Years)



Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, endowments/foundations, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

# Global Equity

## U.S. Equities

U.S. stocks posted broad-based gains in the third quarter fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several major indices hit record levels during the quarter, and the 7.7% gain for the **S&P 500 Index** was its biggest since the fourth quarter of 2013. Volatility was muted in spite of persistent headlines around threats of trade wars and the ever-changing negotiations to avert them.

### Large Cap Outpaces Small Cap

- Tax reform and U.S. prosperity contributed to an acceleration in corporate earnings growth, and valuations remained elevated as strong sentiment persisted given positive economic data.
- Amazon (+17.8%), Apple (+22.4%), and Microsoft (+16.4%) were strong contributors to large cap outperformance.
- FAANG stocks plus Microsoft had a more muted impact than in previous quarters but still contributed nearly 25% of the S&P 500's quarterly return.
- All sectors landed in positive territory. The strongest performers were Health Care (+14.5%), Industrials (+10%), and Communication Services (+9.9%).
- The new Communication Services sector represents 10% of the S&P 500 and includes several FAANG stocks such as Alphabet, Facebook, and Netflix; Tech and Consumer Discretionary now represent lower weightings in the Index.

## Growth Continues to Outperform Value

- The divergence between growth and value is approaching a historical high; growth is outpacing value this year by the widest margin in 15 years within large cap (**Russell 1000 Growth YTD: +17.1%** vs. **Russell 1000 Value YTD: +3.9%**) due largely to ongoing euphoria over the FAANG stocks.
- Momentum continued as the leading factor for the quarter and year-to-date; value has been the worst-performing style for the last 18 months.

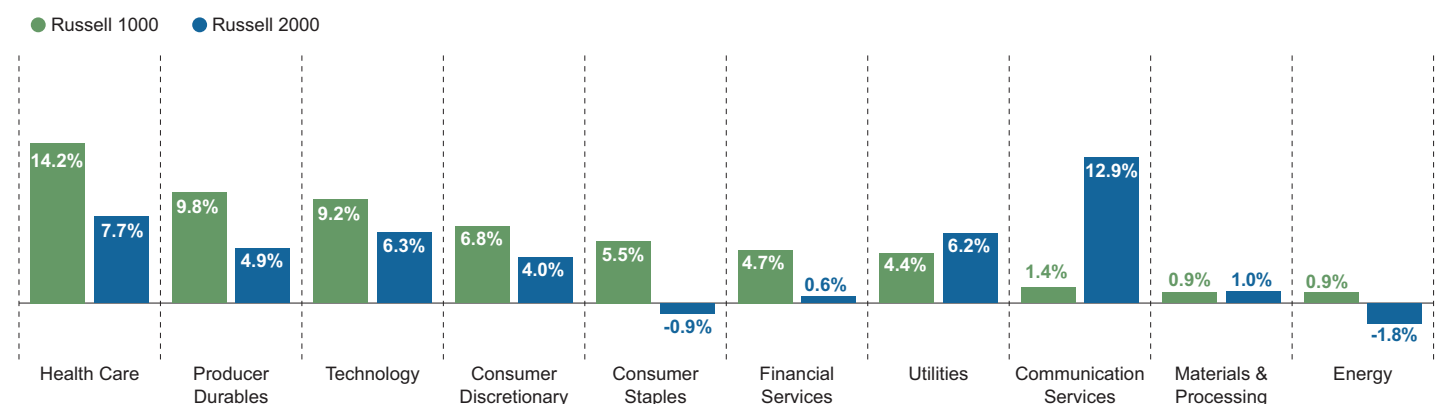
## Non-U.S. / Global Equity

Market divergence has emerged after synchronized growth in 2017. The U.S. continues to post positive returns while non-U.S. developed and emerging markets have lagged year-to-date, dragged down by geopolitical and economic uncertainties.

### Global/Non-U.S. Developed Markets See Slowing Growth

- The dollar rallied against the euro and yen given the fundamentals of the U.S. economy and the Fed's contractionary monetary policy; other central banks maintained the status quo.
- Global trade tensions coupled with Brexit negotiations and Italy's populism concerns tempered the European market despite solid earnings growth. In Japan, GDP growth and the re-election of Prime Minister Shinzo Abe as head of his party and sparked the market.

## Quarterly Performance of Select Sectors



Source: FTSE Russell

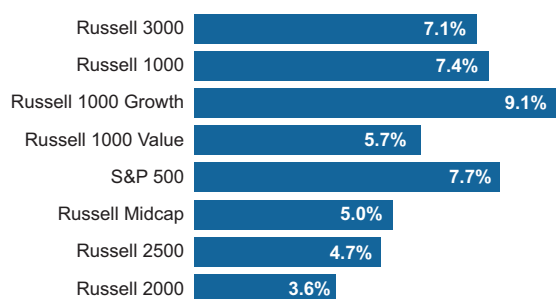


- Top sector performers were Health Care, Telecommunication Services, and Energy.
- Real Estate, Financials, and Consumer Staples were hurt by rising interest rates and a flattening yield curve.
- Style had a de minimis impact; however, growth moderately outperformed value. Volatility and small cap factors were out of favor given market uncertainties.

### Emerging Markets Under Pressure

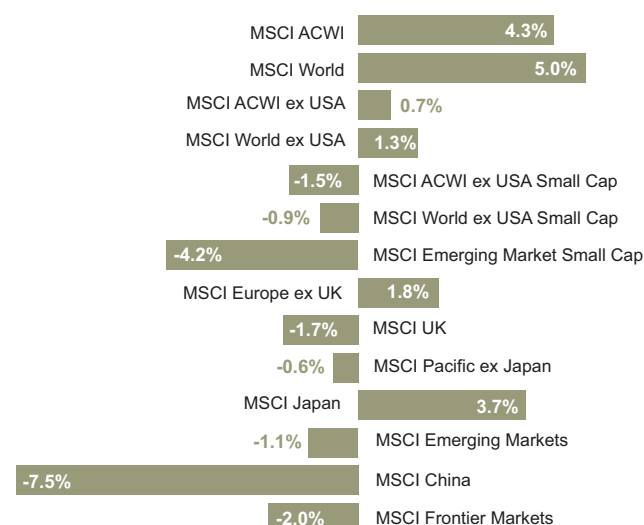
- Emerging markets were under pressure from a rising dollar, U.S. interest rates, and U.S.-China trade frictions.
- Turkey was the worst-performing country within emerging markets as the lira and local currency bonds crashed due to the twin deficit, high level of dollar debt, and inflation.
- The economic slowdown in China and trade tensions with the U.S. weakened the market.

### U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



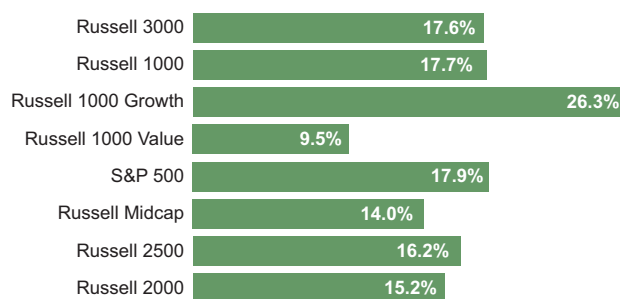
Source: MSCI

- Brazil and Russia were among the best performers due to climbing oil prices.
- Supported by the oil price hike, Energy was the best performer; Consumer Discretionary was the worst sector performer, weighed down by China and India.
- Value and large cap factors were in favor as Energy gained traction, and momentum struggled as market leadership rotated away from Asian tech companies.

### Non-U.S. Small Cap Underperforms

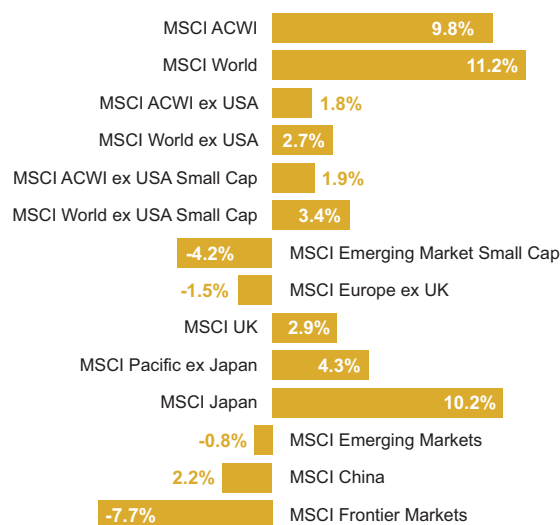
- Both non-U.S. developed and emerging market small cap underperformed large cap as the appetite for risk waned due to rising interest rates and the U.S. dollar, global trade tensions, and geopolitical conflicts.
- Value was favored in both non-U.S. developed and emerging market small cap as the Energy sector thrived.

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



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

# Global Fixed Income

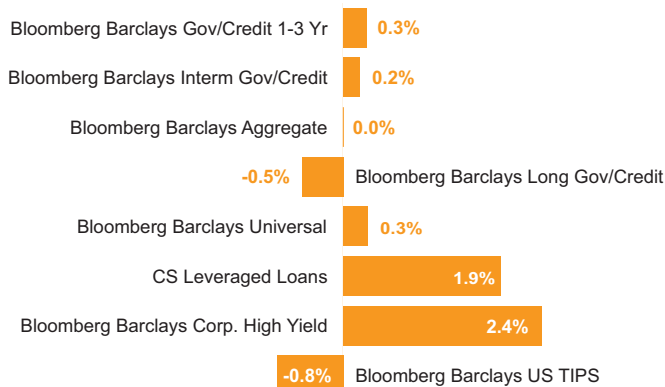
## U.S. Fixed Income

Fixed income markets grappled with multiple issues, resulting in continued volatility. Trade conflicts due to the imposition of tariffs, emerging market elections, and the rising U.S. dollar contributed to the unstable environment. U.S. rates rose in the third quarter and the yield curve continued flattening.

### High Yield Tops the Quarter

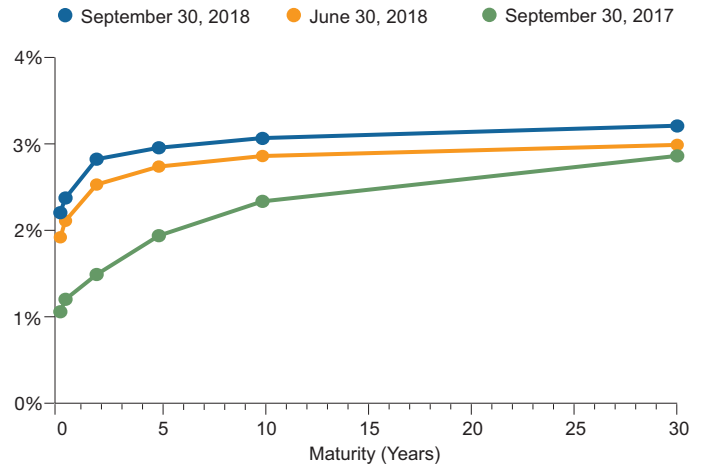
- The **Bloomberg Barclays US Aggregate Bond Index** was essentially flat, rising only 0.02% but gaining 1.6% year-to-date.
- The 10-year U.S. Treasury yield rose steadily, reaching a high of 3.10% before settling at 3.06% as strong economic data repriced investors' inflation expectations and increased the probability of a December rate hike by the Federal Reserve.
- The yield curve flattened, with short-term interest rates rising more quickly than longer-term rates. The spread between the 2-year and 10-year narrowed 9 basis points to 24 bps from last quarter, the tightest in 10 years.
- Investment-grade (IG) corporates gained 1.0% in the third quarter but dropped 2.3% YTD.
- New issuance remained strong with demand for new loans oversubscribed by an average of two to three times throughout the quarter.

### U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

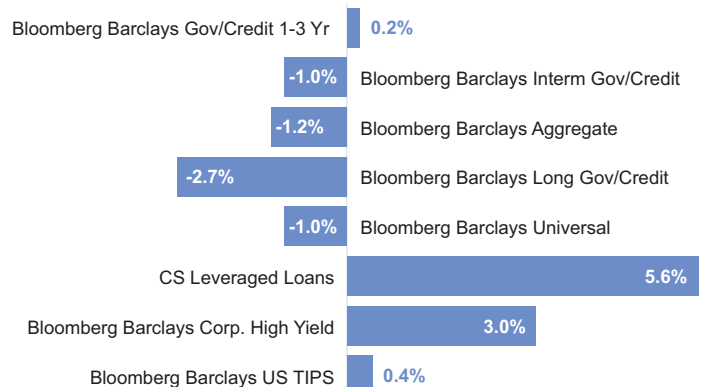
## U.S. Treasury Yield Curves



Source: Bloomberg

- Spreads continued to narrow this quarter.
- Higher rates and weaker overall fundamentals caused the IG sector to post negative results YTD.
- The **Bloomberg Barclays US Corporate High Yield Index** gained 2.4% in the quarter and +2.6% YTD.
- Low new issuance volume and stable fundamentals compressed spreads.

### U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

## GLOBAL FIXED INCOME (Continued)

- Bond issuance was \$41 billion, 33% lower than in the third quarter of 2017.
- Bank loans gained 1.8% in the quarter and 4.0% YTD.
- Demand continues for floating-rate securities despite covenant-light structures and higher spread duration.
- Heavy issuance continued through the quarter; YTD leveraged loan issuance is above \$900 billion, driven by leveraged buyout and mergers-and-acquisitions activities.
- CLO formation also increased demand in the third quarter.

### Non-U.S. Fixed Income

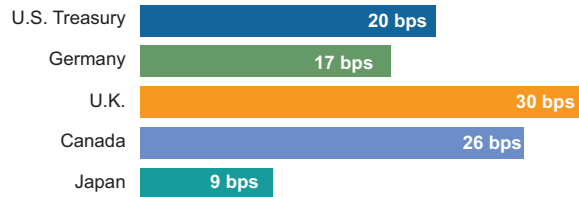
The **JPM EMBI Global Diversified Index** (USD denominated) gained 2.3%, with all sub-regions delivering positive results. Local currency emerging markets (EM), however, fared more poorly. The **JPM GBI-EM Global Diversified Index** fell 1.8% for the quarter but also endured significant intra-quarter volatility, including a 6.1% drop in August.

### Volatility Hinders Local EM Debt

- Return dispersion among countries was significant. Argentina (-35%) has seen its peso fall more than 50% this year to a record low as investors were spooked by previous currency debacles and worries over the economic picture. In addition to securing support from the International Monetary Fund, the country's central bank hiked short-term interest rates 15 percentage points to a global high of 60%.
- Turkey (-27%) endured a similar currency rout, though for different reasons. U.S.-imposed sanctions and concerns over central bank policy were the twin drivers of the lira's weakness. Turkey hiked short rates by 6.25 percentage points to 24% to stem its currency slide.
- Elsewhere, returns were far more modest (positive or negative); only Russia (-6%) and Mexico (+6%) were noteworthy.
- Issuers in Europe faced a different challenge as political uncertainties surrounding Italy caused that market to weaken.

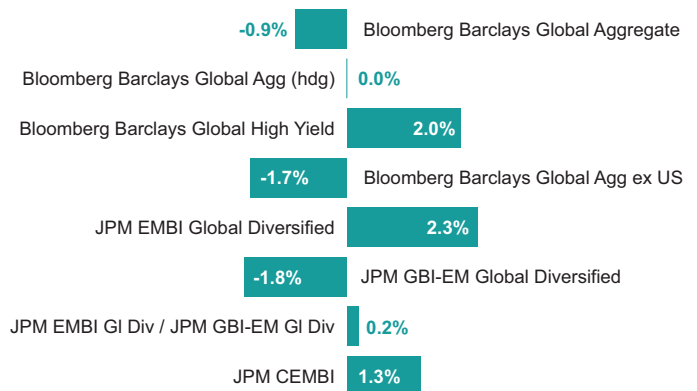
### Change in 10-Year Global Government Bond Yields

2Q18 to 3Q18



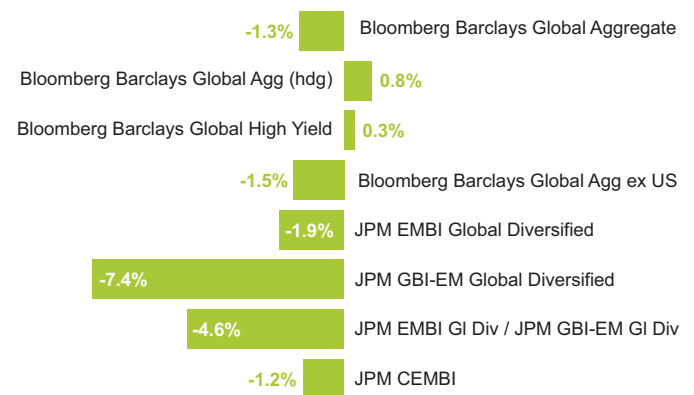
Source: Bloomberg Barclays

### Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

### Non-U.S. Fixed Income: One-Year Returns



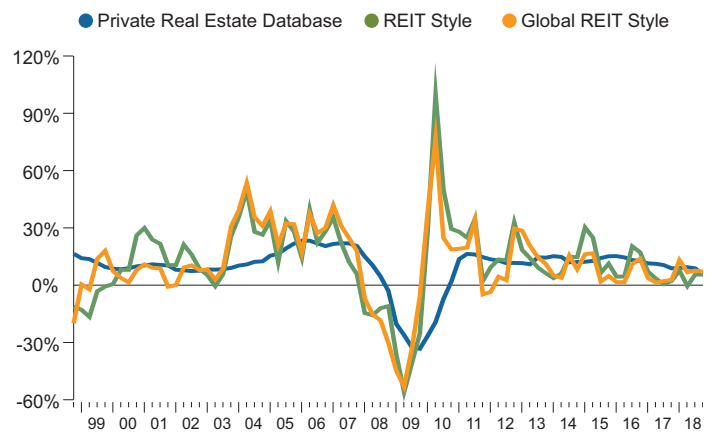
Sources: Bloomberg Barclays and JPMorgan Chase

# Market Robust With Private Valuations at Historic Highs

REAL ESTATE | Kevin Nagy, CAIA

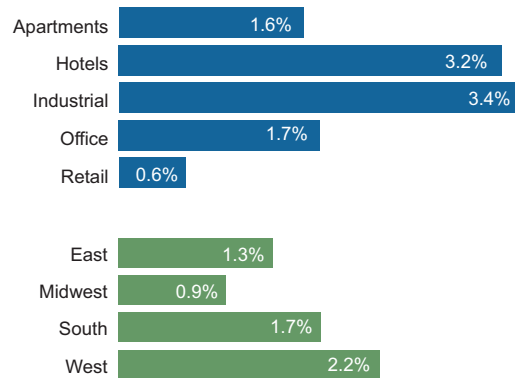
- Supply and demand fundamentals are balanced but peaking. Supply is in check and aided by strict commercial real estate lending standards. Demand continues on the back of strong U.S. growth.
- Transaction volumes took a step back from current cycle peak levels but remain robust, supporting pricing, which remains expensive.
- The Industrial sector is performing the strongest, benefiting from structural shifts in the economy, property markets, and consumer habits, which continue to dampen demand for traditional retail space. Office is performing as expected late in the cycle, and tenant improvements and other capital expenditures are increasingly eroding cash flow. Multi-family remains strong except for very high-end properties in some markets.
- U.S. core real estate returns continue to moderate and shift toward income with limited appreciation. Appreciation that occurs is coming from net operating income growth rather than further cap rate compression.
- Spreads remain relatively tight between core and value-add due to large amounts of capital in both strategies chasing fewer available deals, combined with more core investors chasing yield.
- Both U.S. and non-U.S. real estate investment trusts (REITs) are trading at discounts to net asset value, indicating relative value for public market securities compared to private real estate valuations.
- European real estate markets (ex-U.K.) are gaining momentum due to strong fundamentals in the major cities of Europe despite continued political noise across the region.
- Asian real estate products are seeing strong fundraising momentum, with existing managers reaching target fund sizes and Asia-focused open-end funds increasing.
- Farmland managers in the United States are concerned more about the reworking of the North American Free Trade Agreement than the trade war with China. Chinese tariffs on soybeans are seen as a temporary dislocation as opposed to a long-term headwind.
- As private real estate valuations continue to test historical highs, investors are looking at other sectors, such as real estate debt and REITs, to access the best risk-adjusted returns from real estate. This is resulting in the formation of some products with very wide mandates that allow the investment manager to place capital across real estate debt and equity markets and up and down the capital stack based on relative value.

## Rolling One-Year Returns



Source: Callan

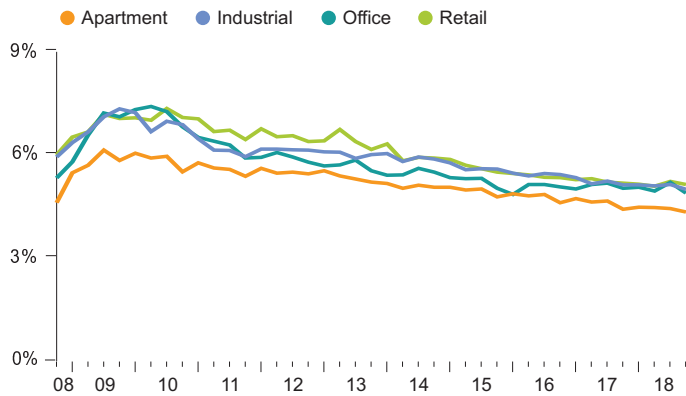
## Sector Quarterly Returns by Property Type and Region



Source: NCREIF

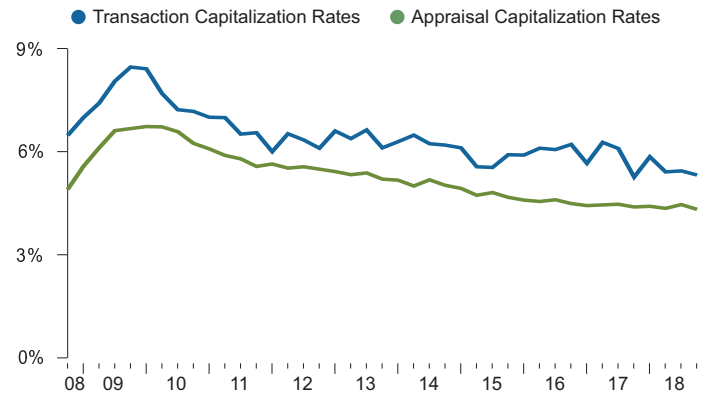
## REAL ESTATE (Continued)

### NCREIF Capitalization Rates by Property Type



Source: NCREIF  
Note: Capitalization rates are appraisal-based.

### NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF  
Note: Transaction capitalization rate is equal weighted.

### Callan Database Median and Index Returns\* for Periods ended September 30, 2018

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
<b>Private Real Assets</b>							
Real Estate ODCE Style	1.51	5.57	7.68	8.32	9.94	4.64	7.09
NFI-ODCE (value wt net)	1.87	5.75	7.71	7.83	9.71	4.62	7.28
NCREIF Property	1.67	5.27	7.16	7.75	9.57	6.42	8.96
NCREIF Farmland	1.13	3.62	6.66	7.12	9.86	11.62	14.62
NCREIF Timberland	1.02	2.44	4.00	3.52	5.99	4.01	7.42
<b>Public Real Estate</b>							
Global Real Estate Style	0.25	1.00	5.57	7.18	7.10	7.64	9.62
EPRA/NAREIT Developed	-0.30	0.06	3.66	6.19	5.43	6.04	--
Global ex-U.S. Real Estate Style	-0.14	1.49	7.08	6.96	5.27	6.83	9.61
EPRA/NAREIT Developed ex US	-0.99	-0.96	5.36	7.25	3.97	6.48	8.58
U.S. REIT Style	0.88	2.14	4.61	7.94	9.72	8.37	10.31
NAREIT Equity REITs	0.79	1.81	3.35	7.64	9.16	7.44	9.41

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NAREIT, NCREIF

# More Tricks Than Treats

PRIVATE EQUITY | Gary Robertson

Third quarter private equity partnerships holding final closes totaled \$140 billion, with 197 new partnerships formed, according to Pitchbook. The dollar volume rose by 30% from \$108 billion, but the number of funds closing declined by 6% from 210 in the prior quarter. Year-to-date, 2018 is running \$64 billion (or 15%) behind a year ago. Investors are pursuing broad diversification with buyouts tracking to less than 50% of capital raised, and all other major strategies receiving significant new allocations.

- New buyout transactions declined although activity remained strong overall, according to PitchBook. Funds closed 1,477 investments with \$126 billion in disclosed deal value, representing a 17% decline in count and a 4% dip in dollar value from the second quarter's 1,775 investments and \$131 billion of announced value. The \$13.8 billion purchase of Unilever's vegetable spread business (e.g., Country Crock) by KKR was the quarter's largest buyout.
- According to PitchBook, new investments in venture capital companies totaled 4,010 rounds of financing with \$53 billion of announced value. The number of investments was down 23% from the prior quarter, and announced value fell 26%. The median pre-money valuations continued to increase across the board, with Series D showing the largest increases.
- There were 454 private M&A exits of private equity-backed companies (excluding venture capital), PitchBook reports, with disclosed values totaling \$131 billion. Both private

## Funds Closed January 1 to September 30, 2018

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	270	45,756	12%
Growth Equity	38	24,553	7%
Buyouts	148	175,110	47%
Mezzanine Debt	44	42,482	11%
Distressed	11	23,103	6%
Energy	22	20,222	5%
Secondary and Other	55	27,368	7%
Fund-of-funds	29	11,496	3%
<b>Totals</b>	<b>617</b>	<b>370,090</b>	<b>100%</b>

Source: PitchBook

Figures may not total due to rounding.

sale count and announced dollar volume were down from the prior quarter's 620 sales and \$135 billion. There were 26 private-equity backed IPOs in the third quarter raising an aggregate \$7 billion, down from 53 totaling \$16 billion previously.

- Venture-backed M&A exits totaled 276 transactions with disclosed value of \$34 billion. The number of sales declined from 344 in the second quarter, but announced values increased slightly from \$31 billion in the second quarter. There were 53 VC-backed IPOs in the third quarter with a combined float of \$14 billion. For comparison, the second quarter had 69 IPOs and total issuance of \$19 billion.

Please see our upcoming issue of *Private Equity Trends* for more in-depth coverage.

## Private Equity Performance Database (%) (Pooled Horizon IRRs through June 30, 2018\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.68	12.97	9.23	16.18	9.51	9.70	17.90
Growth Equity	5.83	20.09	12.21	13.63	9.95	13.04	13.47
All Buyouts	5.38	22.64	13.65	14.41	8.83	14.59	12.43
Mezzanine	3.18	14.72	9.70	10.18	8.80	9.67	8.67
Distressed	2.45	10.99	6.72	9.52	9.49	10.77	10.34
<b>All Private Equity</b>	<b>3.63</b>	<b>15.26</b>	<b>10.10</b>	<b>10.82</b>	<b>9.25</b>	<b>11.47</b>	<b>11.24</b>
S&P 500	4.82	19.11	11.94	13.97	9.12	12.97	12.81

Private equity returns are net of fees.

Sources: Standard & Poor's and Thomson Reuters/Cambridge

\*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Active Trading Grinds Forward Under Market Stress

HEDGE FUNDS/MACs | Jim McKee

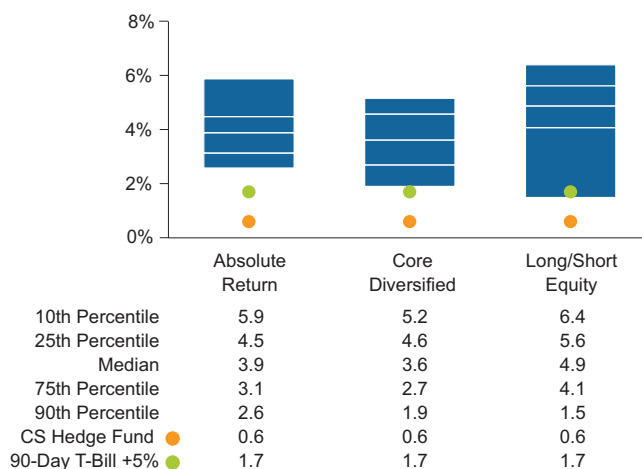
## Hedge Funds

A resilient U.S. economy stimulated by tax cuts and falling unemployment pushed up U.S. stocks and the U.S. dollar in the third quarter. The stronger dollar tied to rising short-term rates undermined a slowing Chinese economy as well as markets linked to it. Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds.

The **Credit Suisse Hedge Fund Index** gained 0.6%.

- Aided by climbing U.S. stock prices, *Long/Short Equity* (+1.5%) topped CS hedge fund strategies.
- Supported by the strong U.S. corporate environment, event-driven strategies (*Event-Driven Multi*, *Distressed*, *Risk Arb*) made modest but steady gains.
- *Emerging Markets* (-4.1%) suffered the most, surrendering its excess returns over passive benchmarks from prior quarters.
- Reflecting live hedge fund portfolios, the **HFRI FOF Composite Index**, net of all fees, inched forward 0.3%.

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, Federal Reserve

## Callan Database Median and Index Returns\* for Periods ended September 30, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	0.37	4.53	3.96	4.04	4.54	4.89
Callan Absolute Return FOF Style	0.42	4.60	3.73	3.88	4.33	4.45
Callan Core Diversified FOF Style	0.68	3.37	3.76	3.61	4.36	5.07
Callan Long/Short Equity FOF Style	-0.30	4.86	5.17	4.87	5.33	5.89
Credit Suisse Hedge Fund	0.59	3.49	3.09	3.39	4.43	5.39
CS Convertible Arbitrage	0.92	1.86	3.97	2.56	6.05	3.97
CS Distressed	0.79	3.36	4.46	3.44	5.00	6.36
CS Emerging Markets	-4.08	-3.98	5.23	3.70	4.69	6.73
CS Equity Market Neutral	-0.24	1.20	1.08	1.77	-3.18	0.20
CS Event-Driven Multi	1.14	4.27	2.37	1.70	3.98	5.72
CS Fixed Income Arb	0.93	4.71	4.41	3.88	5.22	4.06
CS Global Macro	-0.19	3.56	2.66	2.68	4.75	6.36
CS Long/Short Equity	1.54	5.55	4.37	5.40	5.72	6.49
CS Managed Futures	0.63	3.29	-2.66	2.84	1.42	3.15
CS Multi-Strategy	0.98	3.05	4.84	5.67	6.59	6.36
CS Risk Arbitrage	0.82	1.13	4.50	2.54	3.33	3.95
HFRI Asset Wtd Composite	0.37	3.88	3.88	3.87	4.74	--
90-Day T-Bill + 5%	1.70	6.59	5.84	5.52	5.34	6.30

\*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

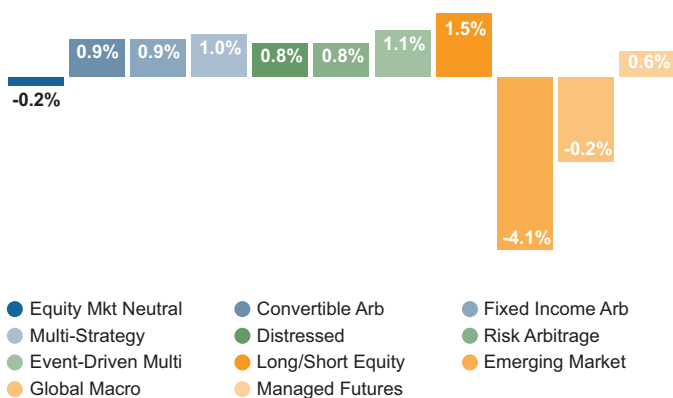
- Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** forged ahead 0.4%, net of all fees and expenses.
- Despite the U.S. equity rally, the median *Callan Long/Short Equity FOF* (-0.3%) slipped behind the *Callan Absolute Return FOF* (+0.4%), which tends to benefit from event-driven deals and credit trades.
- With diversifying exposures to both non-directional and directional styles, the *Core Diversified FOF* gained 0.7%.

### Multi-Asset Class (MAC) Strategies

Callan's **Multi-Asset Class (MAC) Style Groups** continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks, as a stronger dollar and rising rates created a difficult top-down environment.

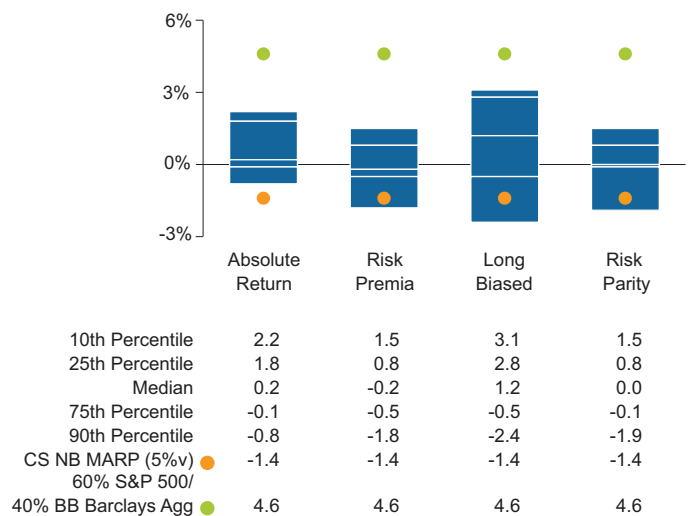
- The **HFR Risk Parity Index** targeting 12% volatility slipped 0.3%, given its typical fixed income bias.
- The **CS NB Multi Asset Risk Premia Index** (-1.4%) is an equal risk-weighted index of alternative risk factors (value, carry, momentum, and liquidity) across four capital markets (equity, fixed income, currency, and commodities) targeting 5% volatility.
- Within CS NB MARP, *Equity Value* (-3.4%) sank again, adding to losses from the prior two quarters for a 11.9% year-to-date loss. Supported by rising energy prices, *Commodity Momentum* (+5.9%) was strong again, leading to a 16% YTD gain.

### Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

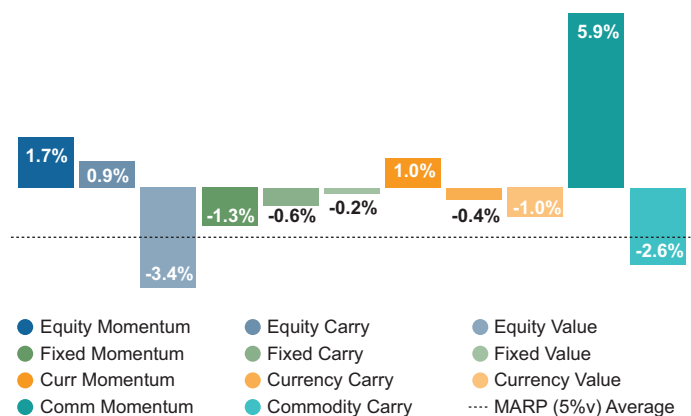
### MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Credit Suisse, Neuberger Berman, Standard & Poor's

- Buoyed by its usually long equity bias within a dynamic asset allocation framework, the *Callan Long Biased MAC* advanced 1.2%.
- Likely impacted by underlying tilts to an equity value risk factor, the median *Callan Risk Premia MAC* slipped 0.2%.
- Typically targeting equal risk-weighted allocations to major asset classes with leverage, the *Callan Risk Parity MAC* (0.0%) was flat.
- As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, the *Callan Absolute Return MAC* edged ahead 0.2%.

### Alternative Risk Factor Breakdown



Sources: Credit Suisse Neuberger Berman



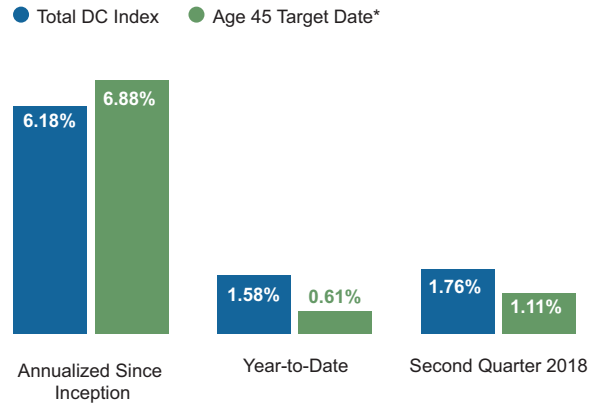
# DC Plans Rebound, TDFs Struggle

DEFINED CONTRIBUTION | James Veneruso, CFA, CAIA

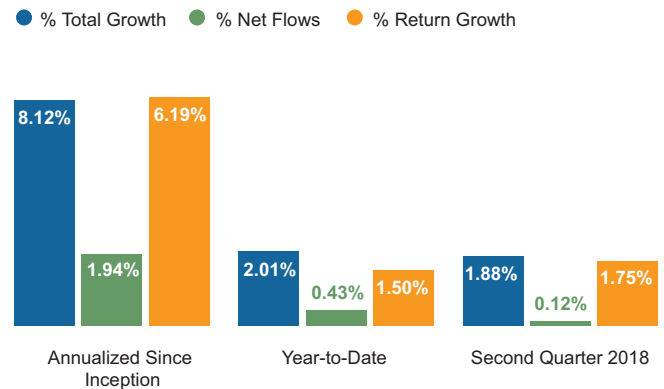
- The Callan DC Index™ rebounded from first quarter losses, returning 1.8% in the second quarter and outpacing the 1.1% gain of the Age 45 Target Date Fund (TDF).
- TDFs suffered from their higher allocation to non-U.S. equity and emerging markets. The average DC plan has a 5.6% allocation to non-U.S. equity and emerging markets, compared to 26.5% for the Age 45 TDF.
- Since inception, the DC Index's annual return of 6.2% trails the Age 45 TDF by 70 basis points.
- DC plan balances grew by 1.9%, driven primarily by market performance. For the quarter, inflows (participant and plan sponsor contributions) accounted for only 12 bps of growth.
- TDFs absorbed approximately 92 cents of every dollar that flowed into DC funds.
- Several DC investments saw material net outflows, including U.S. equities (large and small/mid cap), U.S./global balanced, and U.S. fixed income.
- Second quarter turnover (i.e., net transfer activity levels within DC plans) increased slightly from the first quarter to 0.35%, well below the historical average of 0.62%.
- The Callan DC Index's equity allocation ended the quarter at 70%, modestly above its historical average (68%).
- The second quarter marked another all-time high for TDFs' share of DC assets, expanding to 32.5%. U.S. large cap continues to be the second-highest allocation, at 24.1%.
- While TDFs have a larger overall weight within the Index, they remain less prevalent than the next largest plan holding, U.S. large cap equity. In plans that offer TDFs, they account for 35% of plan assets. U.S. large cap equity funds account for 24% of plan assets, even though they are offered by 100% of DC plans.

*The Callan DC Index is an equally weighted index tracking the cash flows and performance of nearly 90 plans, representing more than one million DC participants and over \$135 billion in assets. The Index is updated quarterly and is available on Callan's website, as is the quarterly DC Observer newsletter.*

## Investment Performance



## Growth Sources



## Net Cash Flow Analysis (Second Quarter 2018) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	91.57%
Brokerage Window	2.33%
Company Stock	-18.29%
U.S. Large Cap	-44.41%
<b>Total Turnover**</b>	<b>0.35%</b>

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

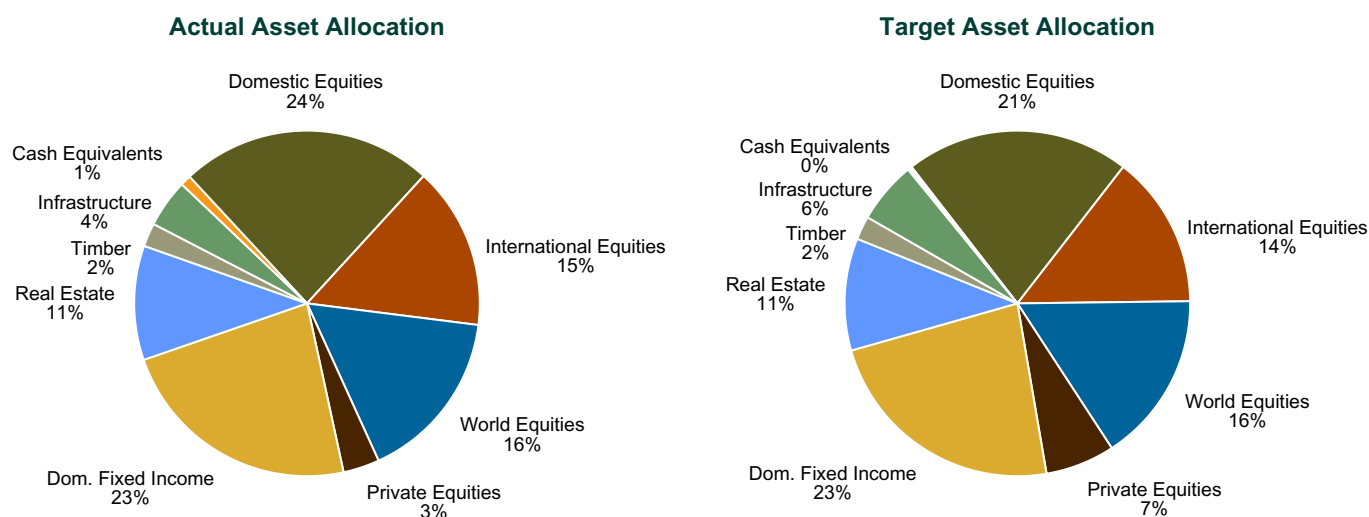
Note: DC Index inception date is January 2006.

\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

\*\* Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

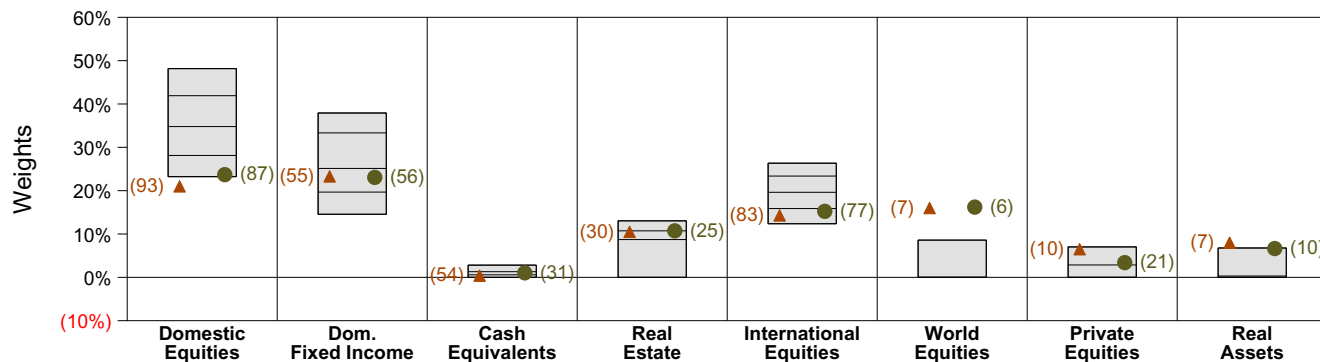
## Actual vs Target Asset Allocation As of September 30, 2018

The top left chart shows the Fund's asset allocation as of September 30, 2018. The top right chart shows the Fund's target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund's asset allocation and the target allocation versus the Callan Public Fund Sponsor Database.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	1,381,137	23.7%	21.0%	2.7%	156,909
International Equities	887,617	15.2%	14.3%	0.9%	53,975
World Equities	944,830	16.2%	16.0%	0.2%	12,084
Private Equities	197,591	3.4%	6.5%	(3.1%)	(181,337)
Dom. Fixed Income	1,344,815	23.1%	23.3%	(0.2%)	(13,496)
Real Estate	625,596	10.7%	10.5%	0.2%	13,482
Timber	127,484	2.2%	2.2%	(0.0%)	(768)
Infrastructure	259,915	4.5%	5.8%	(1.3%)	(78,205)
Cash Equivalents	60,675	1.0%	0.4%	0.6%	37,356
<b>Total</b>	<b>5,829,661</b>	<b>100.0%</b>	<b>100.0%</b>		

### Asset Class Weights vs Callan Public Fund Sponsor Database



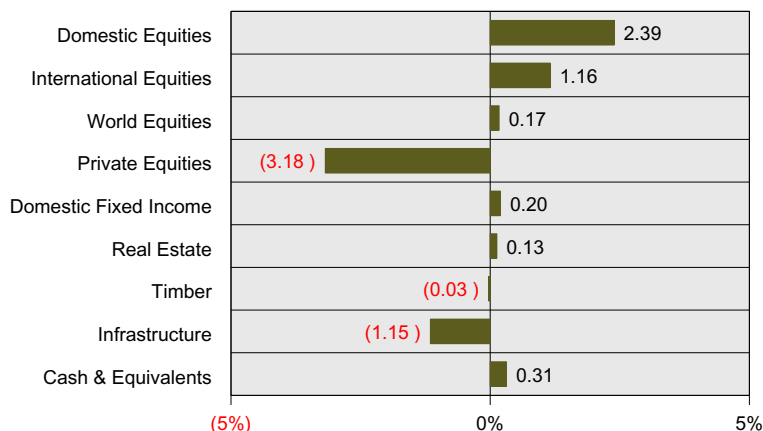
	Domestic Equities	Dom. Fixed Income	Cash Equivalents	Real Estate	International Equities	World Equities	Private Equities	Real Assets
10th Percentile	48.16	37.92	2.82	13.04	26.34	8.59	7.02	6.78
25th Percentile	41.92	33.33	1.30	10.73	23.37	0.00	2.86	0.31
Median	34.79	25.13	0.59	8.72	19.62	0.00	0.00	0.00
75th Percentile	28.13	19.67	0.00	0.00	15.87	0.00	0.00	0.00
90th Percentile	23.23	14.55	0.00	0.00	12.36	0.00	0.00	0.00
<b>Fund</b>	23.69	23.07	1.04	10.73	15.23	16.21	3.39	6.65
<b>Target</b>	21.00	23.30	0.40	10.50	14.30	16.00	6.50	8.00
% Group Invested	95.56%	97.04%	72.59%	72.59%	91.85%	12.59%	30.37%	25.19%

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

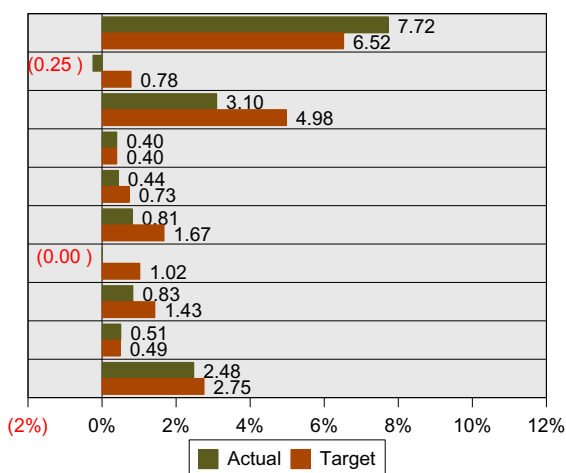
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

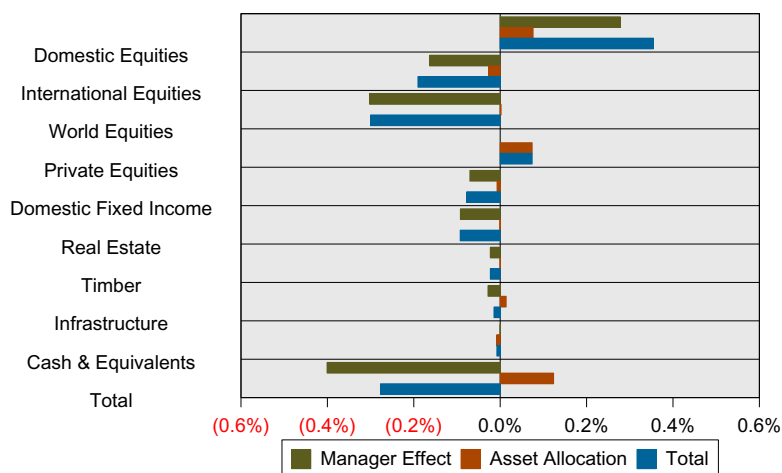
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

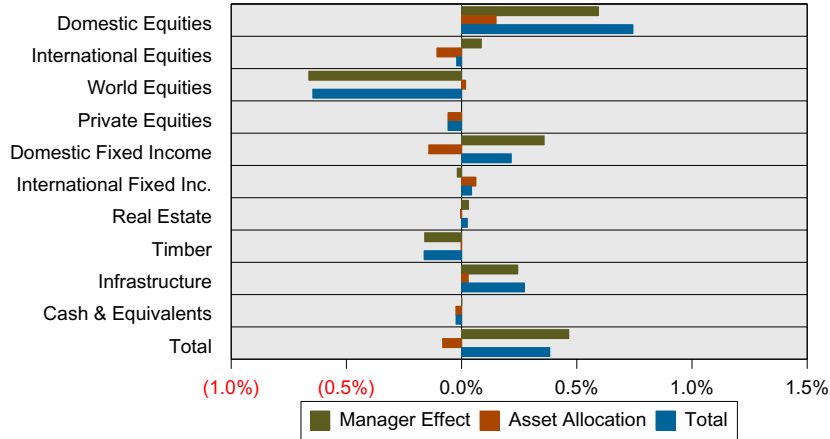
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	7.72%	6.52%	0.28%	0.08%	0.35%
International Equities	15%	14%	(0.25)%	0.78%	(0.16)%	(0.03)%	(0.19)%
World Equities	16%	16%	3.10%	4.98%	(0.30)%	0.00%	(0.30)%
Private Equities	3%	6%	0.40%	0.40%	0.00%	0.07%	0.07%
Domestic Fixed Income	23%	23%	0.44%	0.73%	(0.07)%	(0.01)%	(0.08)%
Real Estate	11%	10%	0.81%	1.67%	(0.09)%	(0.00)%	(0.09)%
Timber	2%	2%	(0.00)%	1.02%	(0.02)%	0.00%	(0.02)%
Infrastructure	5%	6%	0.83%	1.43%	(0.03)%	0.01%	(0.01)%
Cash & Equivalents	1%	0%	0.51%	0.49%	0.00%	(0.01)%	(0.01)%
<b>Total</b>			<b>2.48%</b>	<b>2.75%</b>	<b>(0.40)%</b>	<b>0.12%</b>	<b>(0.28)%</b>

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

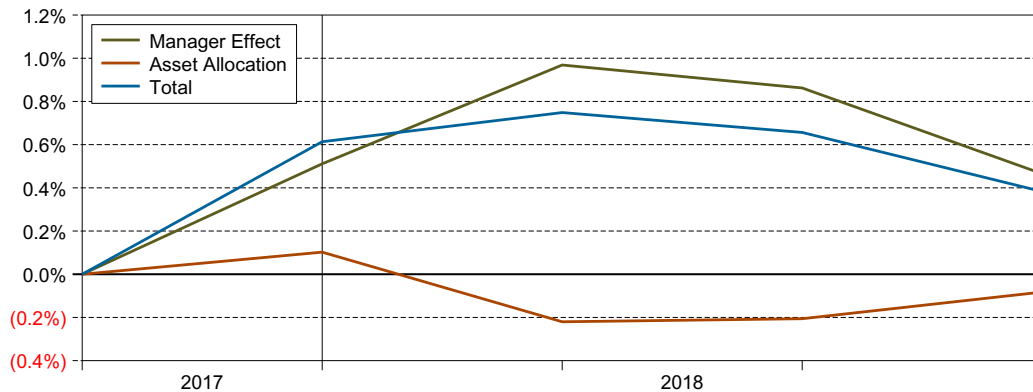
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

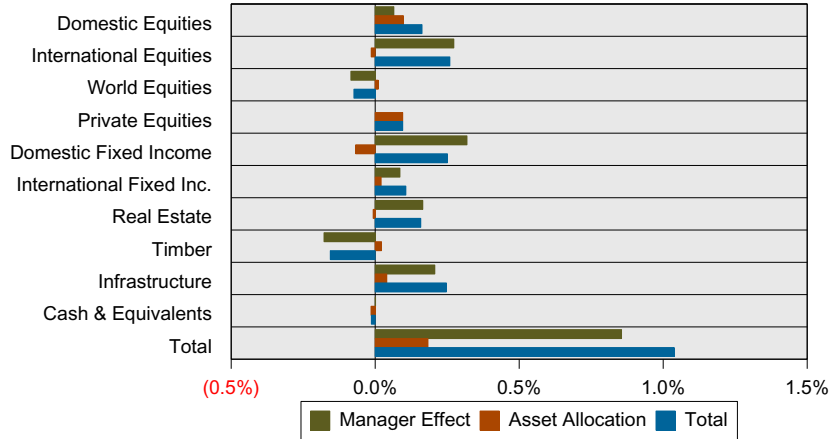
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	19.99%	17.22%	0.59%	0.15%	0.74%
International Equities	16%	14%	2.41%	1.94%	0.09%	(0.11%)	(0.02%)
World Equities	17%	16%	7.05%	11.24%	(0.66%)	0.02%	(0.65%)
Private Equities	3%	6%	8.37%	8.37%	0.00%	(0.06%)	(0.06%)
Domestic Fixed Income	22%	21%	1.64%	(0.02%)	0.36%	(0.14%)	0.22%
International Fixed Inc.	2%	2%	-	-	(0.02%)	0.06%	0.04%
Real Estate	10%	10%	7.51%	7.16%	0.03%	(0.00%)	0.03%
Timber	2%	2%	(2.52%)	4.00%	(0.16%)	(0.00%)	(0.16%)
Infrastructure	5%	6%	8.91%	3.64%	0.24%	0.03%	0.27%
Cash & Equivalents	1%	0%	1.66%	1.59%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>7.91%</b>	<b>7.53%</b>	<b>+ 0.47%</b>	<b>+ (0.08%)</b>	<b>0.38%</b>

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

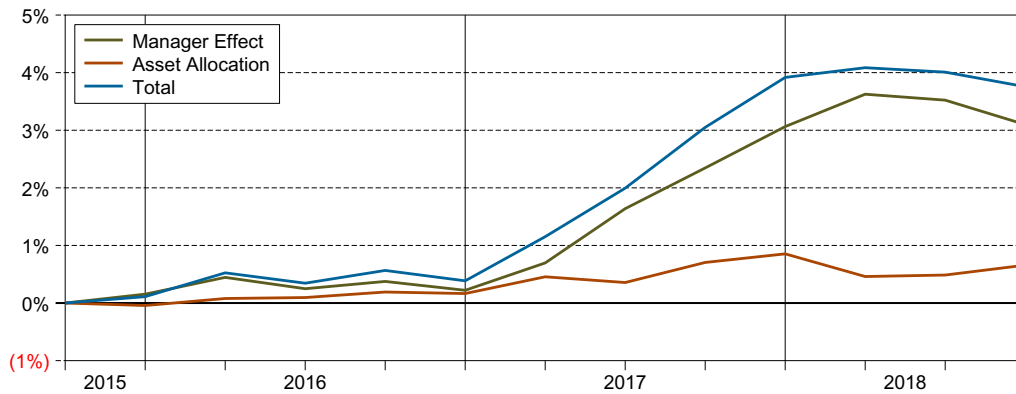
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

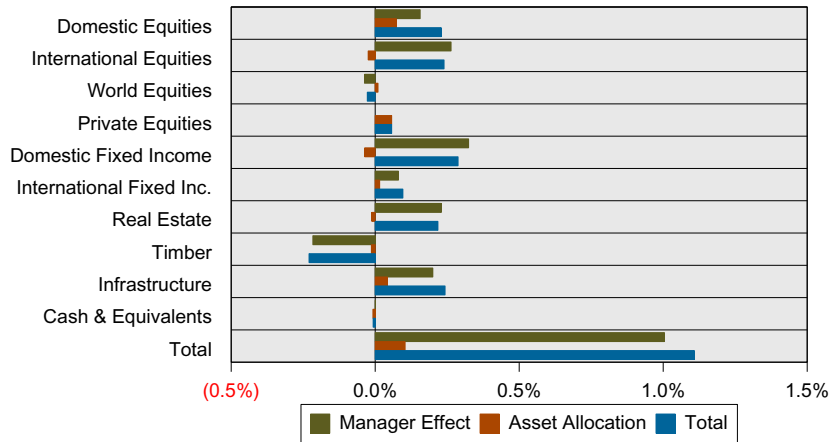
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	17.44%	17.15%	0.06%	0.10%	0.16%
International Equities	16%	14%	11.59%	9.85%	0.27%	(0.01%)	0.26%
World Equities	17%	16%	12.92%	13.54%	(0.08%)	0.01%	(0.07%)
Private Equities	3%	6%	2.84%	2.84%	0.00%	0.10%	0.10%
Domestic Fixed Income	19%	19%	4.76%	3.13%	0.32%	(0.07%)	0.25%
International Fixed Inc.	4%	4%	-	-	0.09%	0.02%	0.11%
Real Estate	11%	10%	9.30%	7.75%	0.17%	(0.01%)	0.16%
Timber	3%	3%	(2.71%)	3.52%	(0.18%)	0.02%	(0.16%)
Infrastructure	5%	5%	6.88%	2.38%	0.21%	0.04%	0.25%
Cash & Equivalents	1%	1%	0.98%	0.84%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>10.32%</b>	<b>9.28%</b>	<b>+ 0.86%</b>	<b>+ 0.18%</b>	<b>1.04%</b>

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

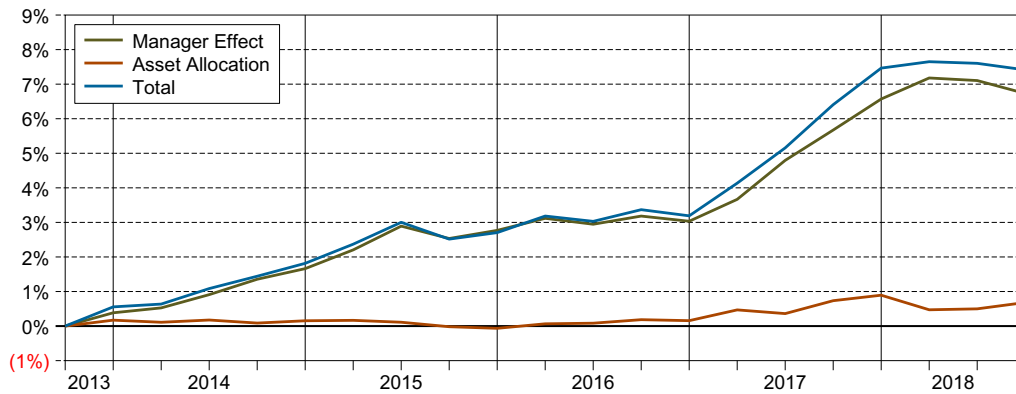
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

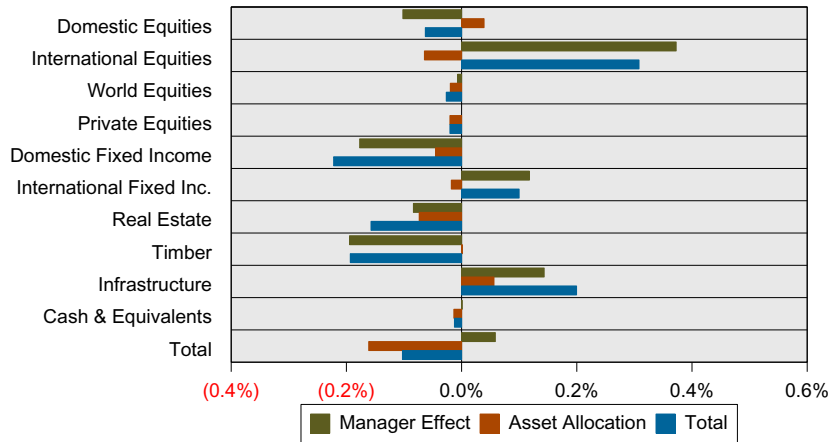
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	13.86%	13.14%	0.16%	0.07%	0.23%
International Equities	15%	14%	5.95%	4.24%	0.26%	(0.02%)	0.24%
World Equities	16%	16%	9.02%	9.28%	(0.04%)	0.01%	(0.03%)
Private Equities	4%	6%	1.62%	1.62%	0.00%	0.06%	0.06%
Domestic Fixed Income	19%	19%	4.76%	3.09%	0.32%	(0.04%)	0.29%
International Fixed Inc.	4%	4%	-	-	0.08%	0.02%	0.10%
Real Estate	10%	10%	12.00%	9.57%	0.23%	(0.01%)	0.22%
Timber	3%	4%	(0.36%)	5.99%	(0.22%)	(0.01%)	(0.23%)
Infrastructure	4%	5%	6.32%	1.61%	0.20%	0.04%	0.24%
Cash & Equivalents	1%	1%	0.61%	0.52%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>8.10%</b>	<b>6.99%</b>	<b>+ 1.00%</b>	<b>+ 0.10%</b>	<b>1.11%</b>

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

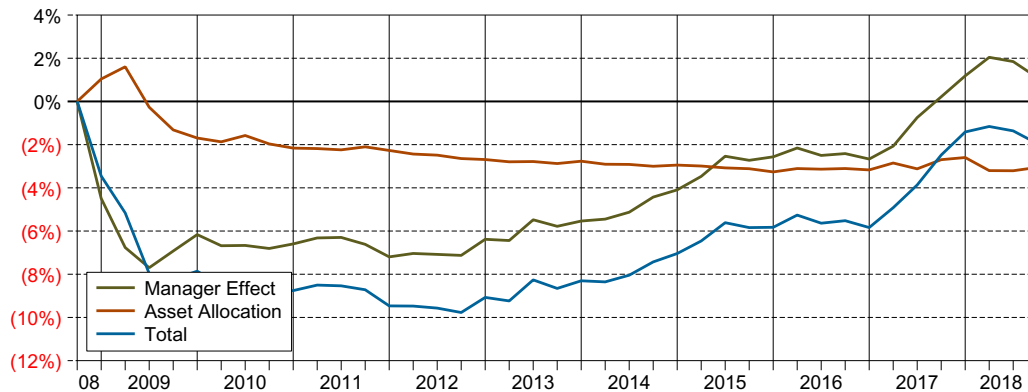
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Ten Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Ten Year Annualized Relative Attribution Effects

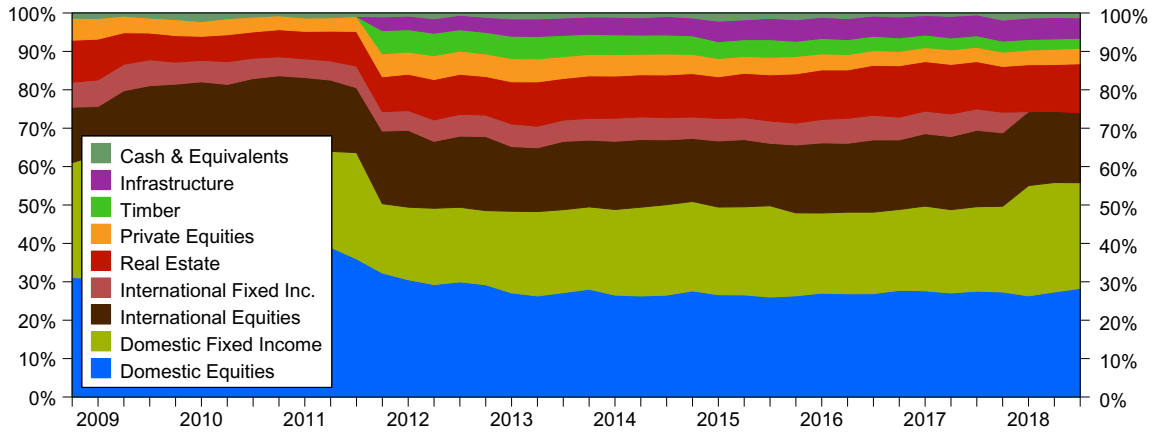
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	28%	27%	11.56%	11.82%	(0.10%)	0.04%	(0.06%)
International Equities	16%	16%	7.66%	5.46%	0.37%	(0.06%)	0.31%
World Equities	10%	10%	-	-	(0.01%)	(0.02%)	(0.03%)
Private Equities	4%	5%	1.16%	1.16%	0.00%	(0.02%)	(0.02%)
Domestic Fixed Income	22%	20%	5.39%	5.37%	(0.18%)	(0.05%)	(0.22%)
International Fixed Inc.	5%	5%	-	-	0.12%	(0.02%)	0.10%
Real Estate	9%	9%	5.36%	6.42%	(0.08%)	(0.07%)	(0.16%)
Timber	3%	3%	-	-	(0.19%)	0.00%	(0.19%)
Infrastructure	3%	4%	-	-	0.14%	0.06%	0.20%
Cash & Equivalents	1%	1%	0.43%	0.34%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>7.33%</b>	<b>7.43%</b>	<b>+ 0.06%</b>	<b>+ (0.16%)</b>	<b>(0.10%)</b>

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

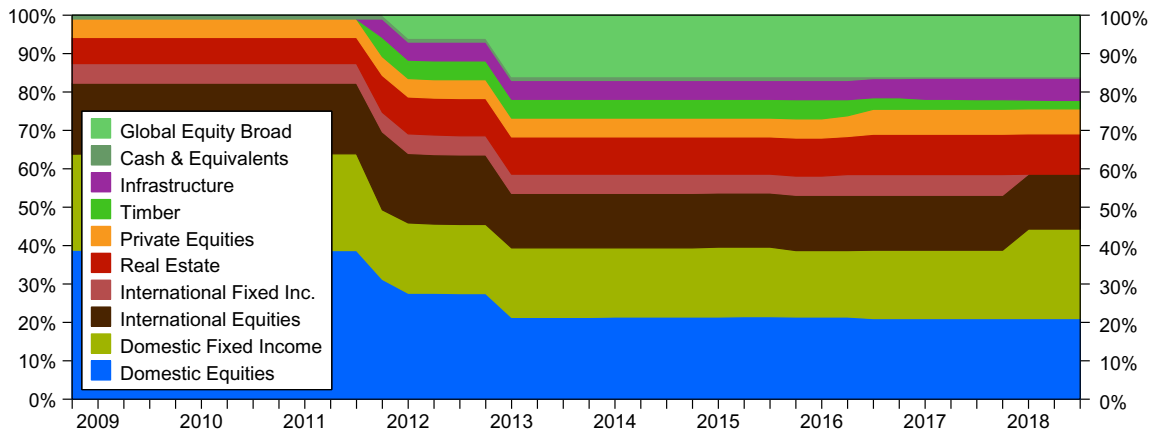
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Sponsor Database.

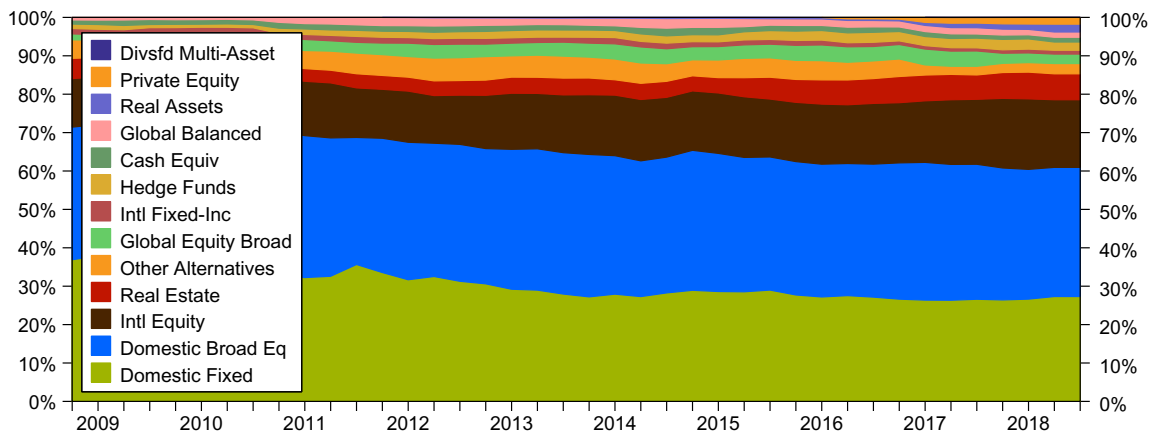
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation



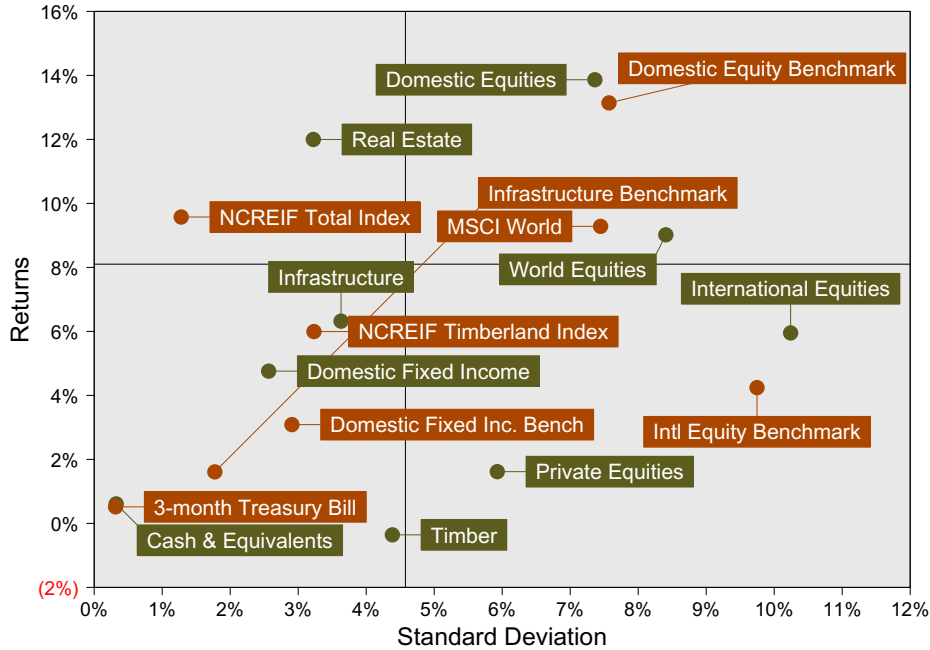
\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.



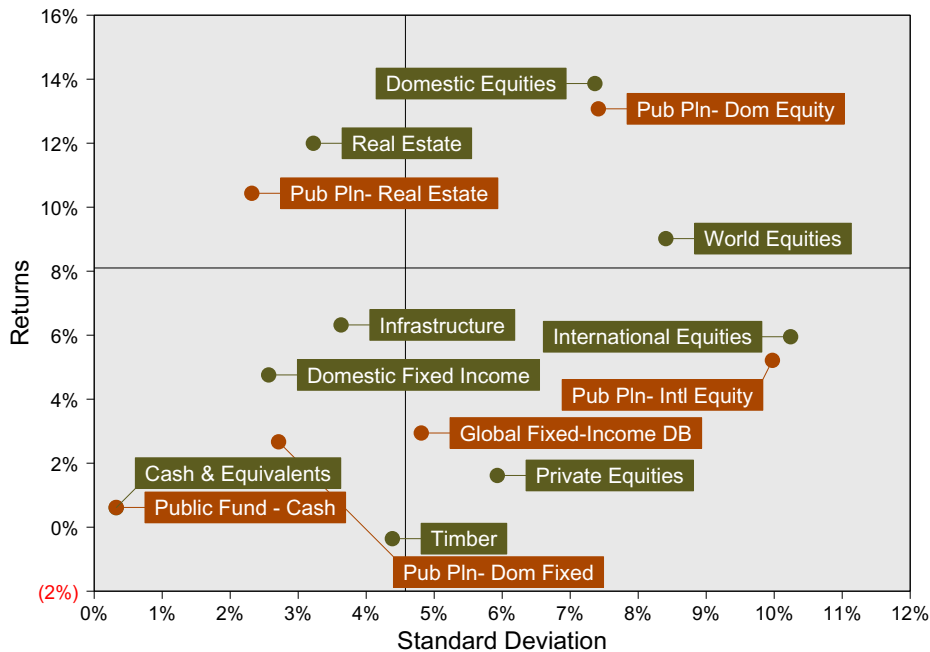
## Asset Class Risk and Return

The charts below show the five year annualized risk and return for each asset class component of the Total Fund. The first graph contrasts these values with those of the appropriate index for each asset class. The second chart contrasts them with the risk and return of the median portfolio in each of the appropriate CAI comparative databases. In each case, the crosshairs on the chart represent the return and risk of the Total Fund.

### Five Year Annualized Risk vs Return Asset Classes vs Benchmark Indices



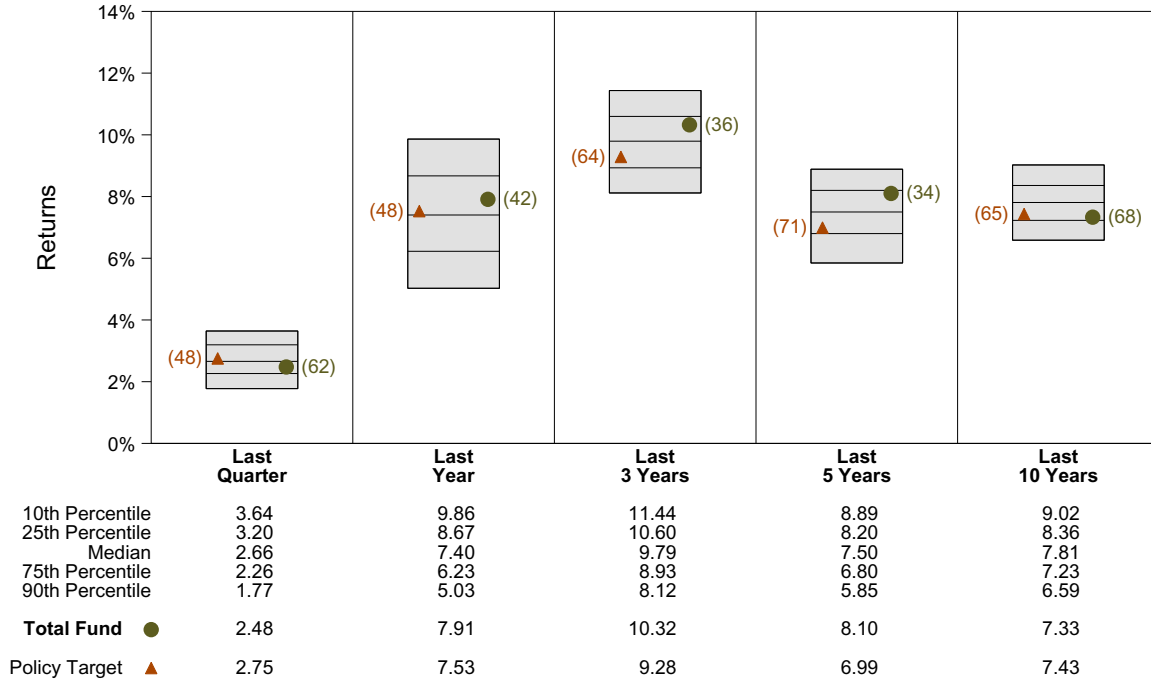
### Five Year Annualized Risk vs Return Asset Classes vs Asset Class Median



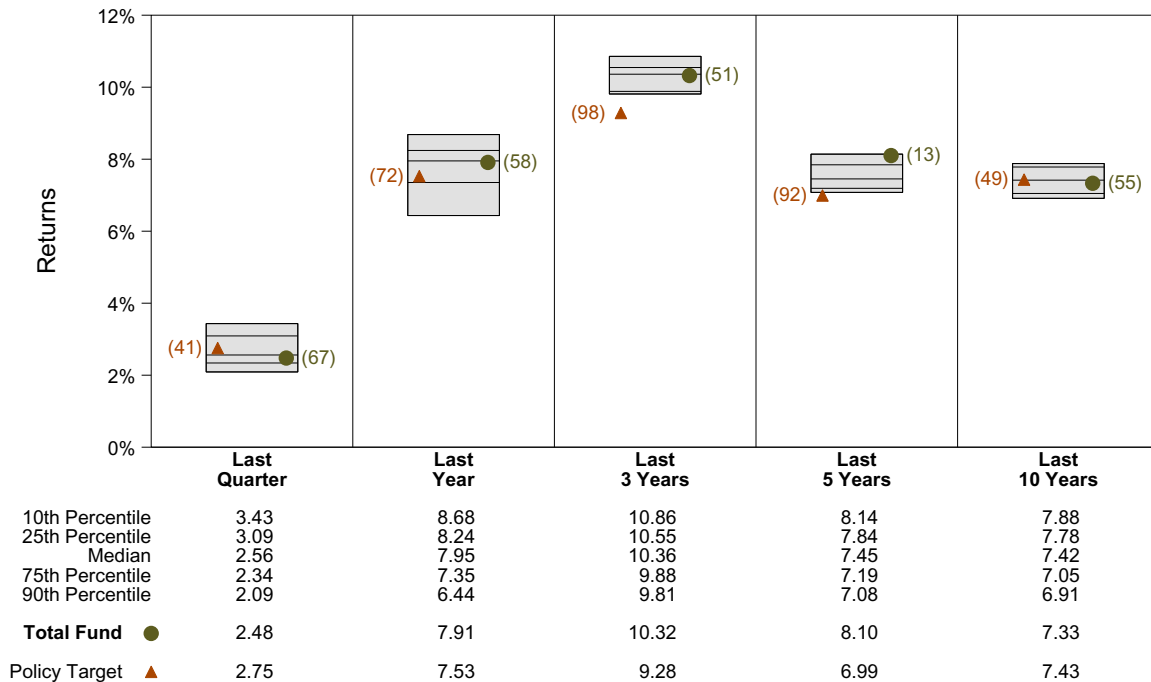
## Total Fund Ranking

The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended September 30, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

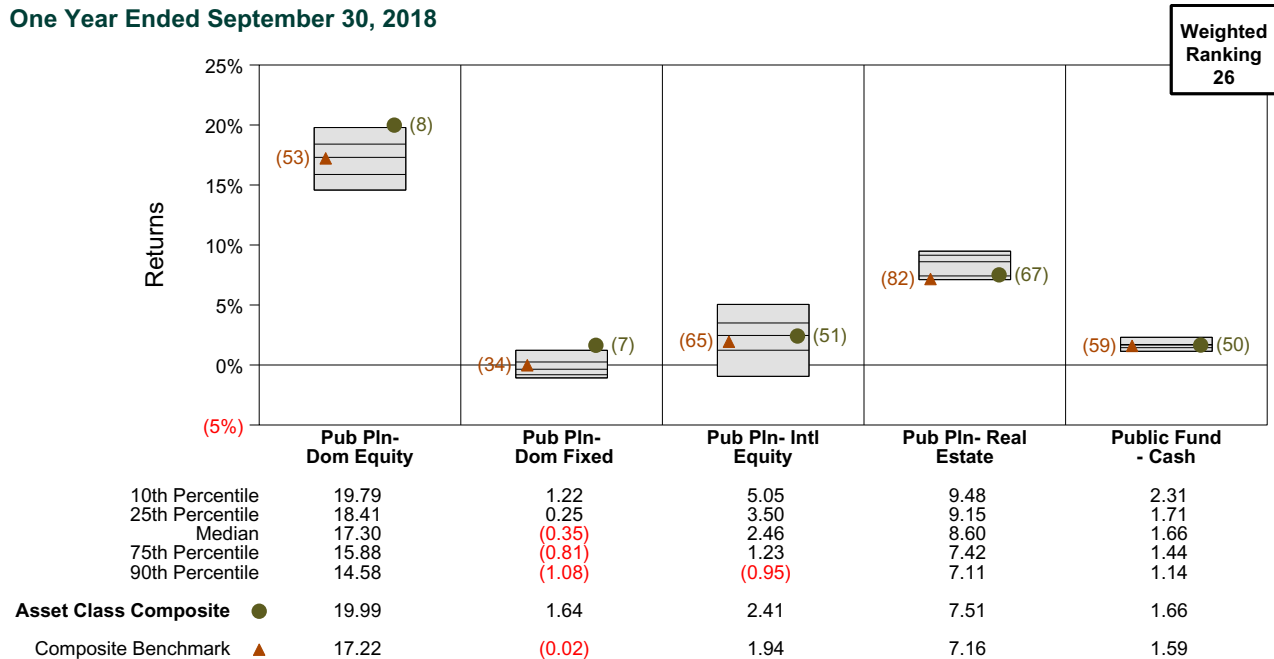


\* Current Quarter Target = 16.3% BImbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% BImbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

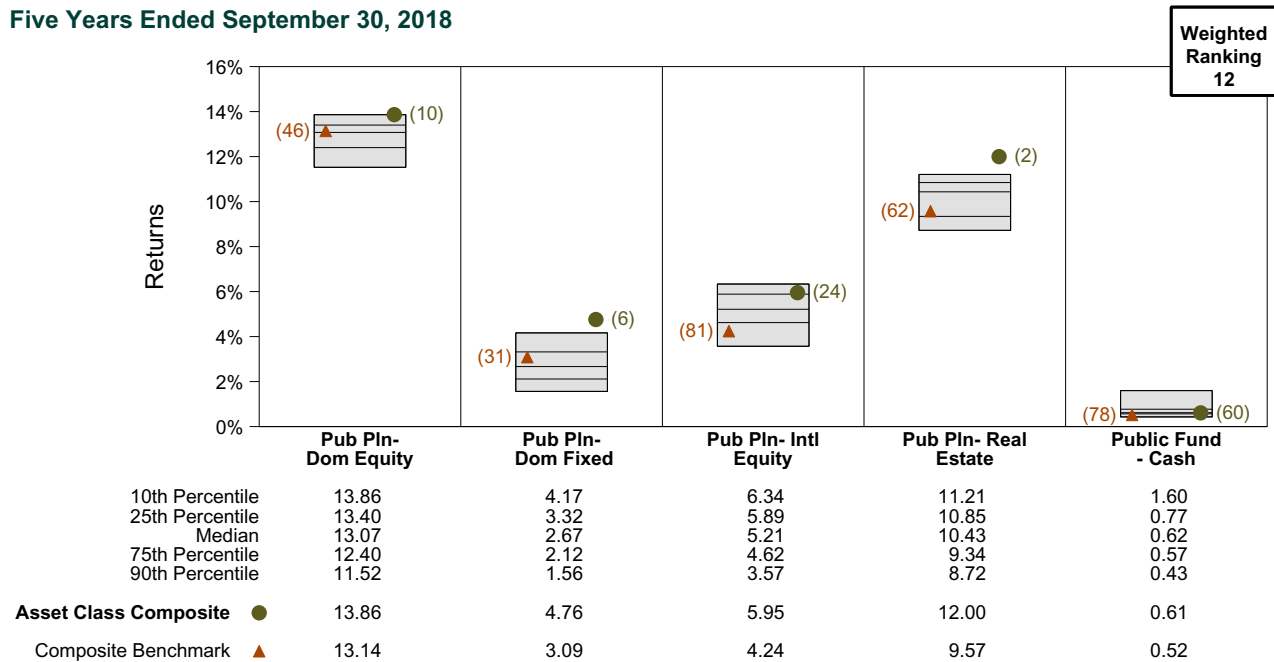
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Five Years Ended September 30, 2018



\* Current Quarter Target = 16.3% BImbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% BImbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Distribution Across Investment Managers

	September 30, 2018			Inv. Return	June 30, 2018	
	Market Value	Weight	Net New Inv.		Market Value	Weight
<b>Global Equities</b>	<b>\$3,411,175,059</b>	<b>58.51%</b>	<b>\$(29,303,833)</b>	<b>\$128,183,587</b>	<b>\$3,312,295,305</b>	<b>57.91%</b>
<b>Public Equities</b>	<b>\$3,213,584,102</b>	<b>55.12%</b>	<b>\$(34,695,970)</b>	<b>\$127,421,501</b>	<b>\$3,120,858,571</b>	<b>54.56%</b>
<b>World Equities</b>	<b>\$944,830,145</b>	<b>16.21%</b>	<b>\$(783,180)</b>	<b>\$28,391,143</b>	<b>\$917,222,182</b>	<b>16.04%</b>
EPOCH Investment Partners	427,857,753	7.34%	(658,247)	14,079,598	414,436,403	7.25%
LSV Asset Management	516,972,392	8.87%	(124,933)	14,311,546	502,785,780	8.79%
<b>Domestic Equities</b>	<b>\$1,381,137,435</b>	<b>23.69%</b>	<b>\$(33,536,152)</b>	<b>\$101,210,988</b>	<b>\$1,313,462,599</b>	<b>22.96%</b>
<b>Large Cap</b>	<b>\$1,042,021,889</b>	<b>17.87%</b>	<b>\$(33,255,130)</b>	<b>\$82,705,847</b>	<b>\$992,571,172</b>	<b>17.35%</b>
L.A. Capital	416,995,610	7.15%	(15,199,217)	37,302,178	394,892,650	6.90%
LACM Enhanced Index	223,007,701	3.83%	(55,913)	16,520,450	206,543,164	3.61%
Northern Trust AM Enh S&P 500	201,230,859	3.45%	(9,000,000)	14,252,657	195,978,202	3.43%
Parametric Clifton Enh S&P 500	200,787,718	3.44%	(9,000,000)	14,630,562	195,157,156	3.41%
<b>Small Cap</b>	<b>\$339,115,546</b>	<b>5.82%</b>	<b>\$(281,022)</b>	<b>\$18,505,141</b>	<b>\$320,891,427</b>	<b>5.61%</b>
Atlanta Capital	175,161,809	3.00%	(281,022)	13,094,569	162,348,262	2.84%
Parametric Clifton Enh Small Cap	163,953,737	2.81%	0	5,410,572	158,543,165	2.77%
<b>International Equities</b>	<b>\$887,616,522</b>	<b>15.23%</b>	<b>\$(376,638)</b>	<b>\$(2,180,630)</b>	<b>\$890,173,789</b>	<b>15.56%</b>
<b>Developed</b>	<b>\$683,912,596</b>	<b>11.73%</b>	<b>\$(376,638)</b>	<b>\$4,743,467</b>	<b>\$679,545,767</b>	<b>11.88%</b>
DFA Int'l Small Cap	86,581,609	1.49%	0	(850,407)	87,432,016	1.53%
Northern Trust AM World Ex US	327,490,711	5.62%	(26,965)	4,043,247	323,474,429	5.66%
Wellington Management Co.	85,745,748	1.47%	(185,836)	(1,188,272)	87,119,856	1.52%
William Blair	184,094,528	3.16%	(163,836)	2,738,899	181,519,465	3.17%
<b>Emerging Markets</b>	<b>\$203,703,926</b>	<b>3.49%</b>	<b>\$0</b>	<b>\$(6,924,096)</b>	<b>\$210,628,022</b>	<b>3.68%</b>
Axiom	149,398,916	2.56%	0	(4,339,242)	153,738,158	2.69%
DFA	54,305,010	0.93%	0	(2,584,854)	56,889,864	0.99%

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Distribution Across Investment Managers

	September 30, 2018			June 30, 2018		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Private Equities</b>	<b>\$197,590,956</b>	<b>3.39%</b>	<b>\$5,392,137</b>	<b>\$762,086</b>	<b>\$191,436,734</b>	<b>3.35%</b>
Adams Street Direct Co-Invest Fd	881,982	0.02%	0	(222,257)	1,104,239	0.02%
Adams Street Direct Fund 2010	897,504	0.02%	(127,359)	67,548	957,315	0.02%
Adams Street 1998 Partnership	13,042	0.00%	(113,664)	537	126,169	0.00%
Adams Street 1999 Partnership	126,662	0.00%	0	(97)	126,759	0.00%
Adams Street 2000 Partnership	628,181	0.01%	0	30,998	597,183	0.01%
Adams Street 2001 Partnership	868,679	0.01%	0	20,987	847,692	0.01%
Adams Street 2002 Partnership	155,441	0.00%	0	4,914	150,527	0.00%
Adams Street 2003 Partnership	202,330	0.00%	0	10,960	191,370	0.00%
Adams Street 2010 Partnership	6,530,673	0.11%	(260,014)	159,486	6,631,201	0.12%
Adams Street 2008 Fund	6,805,484	0.12%	(799,266)	85	7,604,665	0.13%
Adams Street 1999 Non-US	71,499	0.00%	0	106	71,393	0.00%
Adams Street 2000 Non-US	451,353	0.01%	0	6,864	444,489	0.01%
Adams Street 2001 Non-US	170,296	0.00%	0	(3,242)	173,538	0.00%
Adams Street 2002 Non-US	93,163	0.00%	0	842	92,321	0.00%
Adams Street 2003 Non-US	202,950	0.00%	0	(6,408)	209,358	0.00%
Adams Street 2004 Non-US	258,386	0.00%	0	4,037	254,349	0.00%
Adams Street 2010 Non-US	3,209,945	0.06%	(226,122)	212,100	3,223,967	0.06%
Adams Street 2010 Non-US Emg	1,699,565	0.03%	(29,987)	49,808	1,679,744	0.03%
Adams Street 2015 Global Fd	17,189,721	0.29%	2,254,651	458,255	14,476,815	0.25%
Adams Street 2016 Global Fd	10,789,650	0.19%	2,100,000	0	8,689,650	0.15%
Adams Street 2017 Global Fd	12,584,244	0.22%	4,920,000	0	7,664,244	0.13%
Adams Street BVCF IV Fund	3,351,156	0.06%	0	(45,359)	3,396,515	0.06%
BlackRock	35,997,161	0.62%	5,926,800	131,747	29,938,614	0.52%
Capital International V	1,107,351	0.02%	22,309	(22,309)	1,107,351	0.02%
Capital International VI	27,763,484	0.48%	112,777	(81,499)	27,732,206	0.48%
CorsAir III	7,573,508	0.13%	(664,360)	(37,304)	8,275,172	0.14%
CorsAir IV	27,067,525	0.46%	(1,125,570)	(122,044)	28,315,139	0.50%
EIG Energy Fund XIV	6,360,817	0.11%	(271,493)	(619)	6,632,929	0.12%
Hearthstone Advisors MS II	1	0.00%	0	0	1	0.00%
Hearthstone Advisors MS III	2,482,362	0.04%	0	0	2,482,362	0.04%
Lewis & Clark, LP	1,721,600	0.03%	(1,016,232)	192,472	2,545,360	0.04%
Lewis & Clark II	4,848,911	0.08%	(1,160,912)	0	6,009,823	0.11%
Matlin Patterson II	1,221,685	0.02%	0	0	1,221,685	0.02%
Matlin Patterson III	11,244,080	0.19%	(4,149,421)	(48,523)	15,442,024	0.27%
Quantum Energy Partners	3,020,565	0.05%	0	0	3,020,565	0.05%

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Distribution Across Investment Managers

	September 30, 2018			June 30, 2018		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Fixed Income</b>	<b>\$1,344,814,732</b>	<b>23.07%</b>	<b>\$(30,293,824)</b>	<b>\$6,012,745</b>	<b>\$1,369,095,811</b>	<b>23.94%</b>
<b>Domestic Fixed Income</b>	<b>\$1,344,814,732</b>	<b>23.07%</b>	<b>\$(30,293,824)</b>	<b>\$6,012,745</b>	<b>\$1,369,095,811</b>	<b>23.94%</b>
<b>Investment Grade</b>	<b>\$949,508,676</b>	<b>16.29%</b>	<b>\$(29,025,621)</b>	<b>\$925,965</b>	<b>\$977,608,332</b>	<b>17.09%</b>
Declaration Total Return	117,021,946	2.01%	(64,159)	467,213	116,618,892	2.04%
PIMCO DiSCO II	90,216,496	1.55%	(29,729,951)	1,811,172	118,135,275	2.07%
PIMCO Core Plus Constrained	322,806,363	5.54%	12,903,730	1,007,976	308,894,658	5.40%
Prudential Core	316,457,147	5.43%	(135,240)	631,427	315,960,960	5.52%
SSgA Long US Treas Index	103,006,724	1.77%	(12,000,000)	(2,991,824)	117,998,548	2.06%
<b>Below Investment Grade</b>	<b>\$395,306,056</b>	<b>6.78%</b>	<b>\$(1,268,204)</b>	<b>\$5,086,780</b>	<b>\$391,487,480</b>	<b>6.84%</b>
Ares ND Credit Strategies Fd	76,557,381	1.31%	3,600,000	0	72,957,381	1.28%
Cerberus ND Private Credit Fd	71,104,708	1.22%	0	1,198,062	69,906,646	1.22%
Goldman Sachs 2006 Offshore	84,704	0.00%	(39,490)	(2,282)	126,476	0.00%
Goldman Sachs Offshore V	413,310	0.01%	0	0	413,310	0.01%
Loomis Sayles	208,392,232	3.57%	(255,946)	3,891,001	204,757,178	3.58%
PIMCO Bravo II Fund	38,753,721	0.66%	(4,572,767)	(1)	43,326,489	0.76%
<b>Global Real Assets</b>	<b>\$1,012,996,003</b>	<b>17.38%</b>	<b>\$22,384,184</b>	<b>\$7,259,455</b>	<b>\$983,352,364</b>	<b>17.19%</b>
<b>Real Estate</b>	<b>\$625,596,381</b>	<b>10.73%</b>	<b>\$35,136,156</b>	<b>\$5,032,109</b>	<b>\$585,428,115</b>	<b>10.24%</b>
Invesco Core Real Estate	303,223,933	5.20%	0	(682)	303,224,615	5.30%
Invesco Fund II	185,886	0.00%	0	0	185,886	0.00%
Invesco Fund III	19,073,619	0.33%	0	0	19,073,619	0.33%
Invesco Asia RE Feeder	242,164	0.00%	0	0	242,164	0.00%
Invesco Asia RE Fund III	4,110,389	0.07%	1,181,014	(28,195)	2,957,570	0.05%
Invesco Value Added Fd IV	49,163,630	0.84%	3,974,155	0	45,189,475	0.79%
JP Morgan	243,270,340	4.17%	29,992,540	5,082,862	208,194,937	3.64%
JP Morgan Alternative Fd	316,577	0.01%	0	0	316,577	0.01%
JP Morgan China Property Fd	725,274	0.01%	0	0	725,274	0.01%
JP Morgan Greater European Opp Fd	5,284,569	0.09%	(11,553)	(21,875)	5,317,997	0.09%
<b>Other Real Assets</b>	<b>\$387,399,623</b>	<b>6.65%</b>	<b>\$(12,751,972)</b>	<b>\$2,227,346</b>	<b>\$397,924,249</b>	<b>6.96%</b>
<b>Infrastructure</b>	<b>\$259,915,351</b>	<b>4.46%</b>	<b>\$(11,231,972)</b>	<b>\$2,227,346</b>	<b>\$268,919,977</b>	<b>4.70%</b>
ISQ Global Infrastructure II	3,708,255	0.06%	0	208,255	3,500,000	0.06%
The Rohatyn Group	19,927,530	0.34%	(19,135)	(1,233,130)	21,179,795	0.37%
JP Morgan IIF	190,337,159	3.26%	(6,220,249)	3,268,714	193,288,694	3.38%
Grosvenor Cust. Infrastructure	29,995,873	0.51%	(4,992,588)	(16,493)	35,004,954	0.61%
Grosvenor Cust. Infrastructure II	15,946,534	0.27%	0	0	15,946,534	0.28%
<b>Timber</b>	<b>\$127,484,272</b>	<b>2.19%</b>	<b>\$(1,520,000)</b>	<b>\$0</b>	<b>\$129,004,272</b>	<b>2.26%</b>
TIR Teredo	30,194,823	0.52%	0	0	30,194,823	0.53%
TIR Springbank	97,289,449	1.67%	(1,520,000)	0	98,809,449	1.73%
<b>Cash</b>	<b>\$60,674,836</b>	<b>1.04%</b>	<b>\$5,414,255</b>	<b>\$256,147</b>	<b>\$55,004,434</b>	<b>0.96%</b>
Northern Trust Cash Account	50,426,653	0.87%	5,414,255	204,855	44,807,543	0.78%
Bank of ND	10,248,183	0.18%	0	51,292	10,196,891	0.18%
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(96,358)</b>	<b>\$96,358</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$5,829,660,630</b>	<b>100.0%</b>	<b>\$(31,895,577)</b>	<b>\$141,808,292</b>	<b>\$5,719,747,915</b>	<b>100.0%</b>

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Equities</b>					
Gross	3.88%	10.73%	13.70%	9.61%	-
Net	3.83%	10.51%	13.45%	9.30%	-
Weighted Benchmark	3.99%	10.77%	12.94%	8.76%	-
<b>Public Equities</b>					
Gross	4.09%	-	-	-	-
Net	4.04%	-	-	-	-
Weighted Benchmark	4.41%	-	-	-	-
<b>World Equities</b>					
Gross	3.10%	7.05%	12.92%	9.02%	-
Net	3.01%	6.70%	12.51%	8.43%	-
MSCI World	4.98%	11.24%	13.54%	9.28%	8.56%
EPOCH Investment - Gross(1)	3.40%	10.80%	13.11%	9.25%	-
EPOCH Investment - Net	3.24%	10.11%	12.40%	8.55%	-
MSCI World	4.98%	11.24%	13.54%	9.28%	8.56%
LSV Asset Management - Gross(2)	2.85%	4.12%	12.69%	8.84%	-
LSV Asset Management - Net	2.82%	4.01%	12.52%	8.36%	-
MSCI ACWI Gross	4.40%	10.35%	14.02%	9.25%	8.77%
<b>Domestic Equities</b>					
Gross	7.72%	19.99%	17.44%	13.86%	11.56%
Net	7.68%	19.80%	17.24%	13.65%	11.29%
Weighted Benchmark	6.52%	17.22%	17.15%	13.14%	11.82%
<b>Large Cap</b>					
Gross	8.37%	20.29%	17.52%	14.73%	11.21%
Net	8.34%	20.17%	17.38%	14.56%	11.01%
Large Cap Benchmark(3)	7.42%	17.76%	17.07%	13.67%	11.96%
L.A. Capital - Gross	9.51%	25.50%	19.04%	16.35%	14.05%
L.A. Capital - Net	9.46%	25.25%	18.80%	16.12%	13.81%
Russell 1000 Growth Index	9.17%	26.30%	20.55%	16.58%	14.31%
LACM Enhanced Index - Gross	8.00%	16.88%	16.30%	13.75%	12.35%
LACM Enhanced Index - Net	7.97%	16.76%	16.17%	13.62%	12.18%
Russell 1000 Index	7.42%	17.76%	17.07%	13.67%	12.09%
Northern Tr AM Enh S&P500 - Gross	7.31%	17.28%	15.98%	13.37%	12.06%
Northern Tr AM Enh S&P500 - Net	7.31%	17.28%	15.98%	13.16%	11.86%
S&P 500 Index	7.71%	17.91%	17.31%	13.95%	11.97%
Parametric Clifton Enh S&P500 - Gross	7.51%	16.55%	17.09%	13.90%	-
Parametric Clifton Enh S&P500 - Net	7.51%	16.55%	17.00%	13.84%	-
S&P 500 Index	7.71%	17.91%	17.31%	13.95%	11.97%
<b>Small Cap</b>					
Gross	5.77%	19.08%	17.07%	10.91%	12.23%
Net	5.68%	18.69%	16.67%	10.54%	11.72%
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	11.11%
Atlanta Capital - Gross	8.07%	24.05%	-	-	-
Atlanta Capital - Net	7.89%	23.21%	-	-	-
S&P 600 Small Cap Index	4.71%	19.08%	19.41%	13.32%	12.86%
Parametric Clifton Enh SmCap - Gross	3.41%	14.20%	17.46%	11.75%	-
Parametric Clifton Enh SmCap - Net	3.41%	14.20%	17.25%	11.46%	-
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	11.11%

(1) EPOCH Investment was removed from the Domestic Equities Composite to the World Equities Composite as of 1/1/2012.

(2) LSV Asset Management was removed from the Domestic Equities and Intl Equities Composites to the World Equities Composite as of February 1, 2013.

(3) S&P 500 Index through 12/31/2011 and Russell 1000 Index thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>International Equities</b>					
Gross	(0.25%)	2.41%	11.59%	5.95%	7.66%
Net	(0.29%)	2.25%	11.40%	5.73%	7.32%
Weighted Benchmark	0.78%	1.94%	9.85%	4.24%	5.46%
<b>Developed</b>					
Gross	0.70%	4.11%	11.39%	6.16%	7.72%
Net	0.64%	3.88%	11.14%	5.90%	7.40%
Benchmark(1)	1.31%	2.67%	9.05%	4.31%	5.17%
DFA Int'l Small Cap Value - Net	(0.97%)	(3.00%)	10.34%	6.59%	8.51%
World ex US SC Value	(0.30%)	0.79%	11.12%	5.87%	8.66%
Northern Tr AM World ex US - Gross	1.25%	2.98%	9.71%	-	-
Northern Tr AM World ex US - Net	1.24%	2.95%	9.67%	-	-
MSCI World ex US	1.31%	2.67%	9.32%	4.24%	5.18%
Wellington Management - Gross	(1.37%)	5.43%	13.89%	9.70%	12.59%
Wellington Management - Net	(1.58%)	4.54%	12.95%	8.79%	11.62%
BMI, EPAC, <\$2 B	(0.45%)	4.26%	11.91%	7.49%	8.62%
William Blair - Gross	1.51%	9.18%	-	-	-
William Blair - Net	1.42%	8.80%	-	-	-
MSCI ACWI ex US IMI	0.39%	1.79%	10.14%	4.39%	5.60%
<b>Emerging Markets</b>					
Gross	(3.29%)	(2.93%)	11.97%	4.77%	6.44%
Net	(3.29%)	(2.93%)	11.97%	4.67%	6.08%
Emerging Mkts - Net	(1.09%)	(0.81%)	12.36%	3.61%	5.40%
Axiom - Net	(2.82%)	(2.11%)	12.58%	-	-
Emerging Mkts - Net	(1.09%)	(0.81%)	12.36%	3.61%	5.40%
DFA - Net	(4.54%)	(5.08%)	10.33%	4.60%	8.55%
Emerging Mkts - Net	(1.09%)	(0.81%)	12.36%	3.61%	5.40%

(1) MSCI EAFE through 12/31/1996; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again through 6/30/2016; MSCI World ex-US thereafter.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Private Equities*</b>					
Net	0.40%	8.37%	2.84%	1.60%	1.12%
Adams Street Direct Co-Invest Fd	(20.13%)	(31.75%)	(10.43%)	0.97%	1.62%
Adams Street Direct Fund 2010	8.14%	28.22%	13.99%	17.08%	-
Adams Street 1998 Partnership	4.30%	5.20%	2.63%	2.20%	(1.52%)
Adams Street 1999 Partnership	(0.08%)	3.81%	3.79%	1.43%	1.03%
Adams Street 2000 Partnership	5.19%	14.95%	4.70%	2.53%	3.37%
Adams Street 2001 Partnership	2.48%	11.73%	3.00%	4.90%	4.69%
Adams Street 2002 Partnership	3.26%	0.24%	10.44%	5.25%	5.49%
Adams Street 2003 Partnership	5.73%	20.87%	9.62%	12.79%	7.77%
Adams Street 2010 Partnership	2.50%	19.69%	13.83%	15.38%	-
Adams Street 2008 Fund	0.00%	13.94%	14.81%	14.19%	6.09%
Adams Street 1999 Non-US	0.15%	2.68%	5.78%	1.59%	5.95%
Adams Street 2000 Non-US	1.54%	12.51%	5.51%	3.25%	0.70%
Adams Street 2001 Non-US	(1.87%)	4.80%	(5.84%)	13.94%	3.32%
Adams Street 2002 Non-US	0.91%	9.40%	9.55%	5.69%	1.72%
Adams Street 2003 Non-US	(3.06%)	(2.42%)	15.15%	11.18%	8.67%
Adams Street 2004 Non-US	1.59%	12.51%	3.93%	8.10%	2.89%
Adams Street 2010 Non-US	7.08%	22.28%	19.31%	13.64%	-
Adams Street 2010 Non-US Emg	3.02%	21.97%	15.11%	14.32%	-
Adams Street 2015 Global Fd	2.74%	20.96%	-	-	-
Adams Street 2016 Global Fd	0.00%	14.30%	-	-	-
Adams Street 2017 Global Fd	0.00%	11.71%	-	-	-
Adams Street BVCF IV Fund	(1.34%)	0.22%	0.92%	11.53%	29.89%
BlackRock	0.41%	1.95%	-	-	-
Capital International V	(1.98%)	(48.63%)	(42.36%)	(28.75%)	(15.01%)
Capital International VI	(0.29%)	6.06%	5.76%	(2.53%)	-
CorsAir III	(0.46%)	(33.99%)	(2.00%)	(2.76%)	(4.35%)
CorsAir IV	(0.43%)	26.63%	15.06%	18.27%	-
EIG Energy Fund XIV	(0.01%)	18.50%	(24.61%)	(20.10%)	(6.77%)
Hearthstone Advisors MS III	0.00%	8.27%	(18.32%)	283.21%	-
Lewis & Clark, LP	11.32%	68.60%	0.14%	(11.25%)	(2.14%)
Lewis & Clark II	0.00%	0.90%	4.44%	(1.95%)	-
Matlin Patterson II	0.00%	5.68%	(6.94%)	(3.76%)	(26.97%)
Matlin Patterson III	(0.34%)	12.58%	3.05%	2.13%	8.38%
Quantum Energy Partners	0.00%	(17.54%)	(13.61%)	(7.37%)	0.01%

\* Corsair III was taken out from the Private Equity Composite on July 1, 2009. It was then added back into the Private Equity Composite on October 1, 2011. At this time Corsair IV, Capital Intl and EIG were also added to this composite.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Fixed Income</b>					
Gross	0.44%	2.27%	5.05%	4.31%	-
Net	0.40%	2.09%	4.82%	4.08%	-
Weighted Benchmark	0.73%	1.17%	3.56%	2.69%	-
<b>Domestic Fixed Income</b>					
Gross	0.44%	1.64%	4.76%	4.76%	5.39%
Net	0.40%	1.49%	4.56%	4.55%	5.15%
Weighted Benchmark	0.73%	(0.02%)	3.13%	3.09%	5.37%
<b>Investment Grade</b>					
Gross	0.09%	0.15%	3.21%	3.86%	4.18%
Net	0.06%	0.06%	3.09%	3.74%	3.98%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
Declaration Total Return - Net	0.40%	2.24%	3.46%	4.12%	-
Libor-3 Month	0.60%	2.02%	1.25%	0.85%	0.72%
PIMCO Core Plus Cons. - Gross(1)	0.30%	(0.91%)	4.69%	2.77%	-
PIMCO Core Plus Cons. - Net	0.27%	(1.02%)	4.37%	2.47%	-
Blended Benchmark(2)	0.60%	2.02%	1.25%	0.89%	-
PIMCO DiSCO II - Net	1.69%	7.32%	10.85%	9.39%	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
Prudential Core - Gross	0.20%	-	-	-	-
Prudential Core - Net	0.16%	-	-	-	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
SSgA Long US Treas Idx - Gross	(2.88%)	(3.56%)	0.71%	4.39%	-
SSgA Long US Treas Idx - Net	(2.88%)	(3.59%)	0.68%	4.36%	-
Blmbg Long Treas	(2.88%)	(3.56%)	0.72%	4.41%	5.45%
<b>Below Investment Grade</b>					
Gross	1.30%	5.05%	8.57%	6.89%	8.52%
Net	1.23%	4.78%	8.18%	6.48%	8.20%
Blmbg HY Corp 2% Issue	2.40%	3.05%	8.15%	5.55%	9.46%
Ares ND Credit Strategies Fd - Net	0.00%	5.03%	-	-	-
Cerberus ND Private Credit Fd - Net	1.71%	12.68%	-	-	-
S&P/LSTA Leveraged Loan B	1.96%	5.43%	5.52%	4.32%	6.56%
Goldman Sachs 2006 Offshore - Net	(2.25%)	5.67%	22.36%	23.58%	12.90%
Goldman Sachs Offshore V - Net	0.00%	11.30%	(0.66%)	4.03%	8.26%
PIMCO Bravo II Fund - Net	0.00%	6.00%	8.75%	-	-
Blmbg HY Corp 2% Issue	2.40%	3.05%	8.15%	5.55%	9.46%
Loomis Sayles - Gross	1.90%	2.83%	7.98%	6.04%	9.81%
Loomis Sayles - Net	1.78%	2.31%	7.45%	5.51%	9.44%
Blmbg HY Corp 2% Issue	2.40%	3.05%	8.15%	5.55%	9.46%

(1) The product changed from Commingled Fund to Separate Account in March 2014.

(2) Libor-3 month through Feb. 28, 2014; Fund's performance through March 31, 2014; Libor-3 month thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

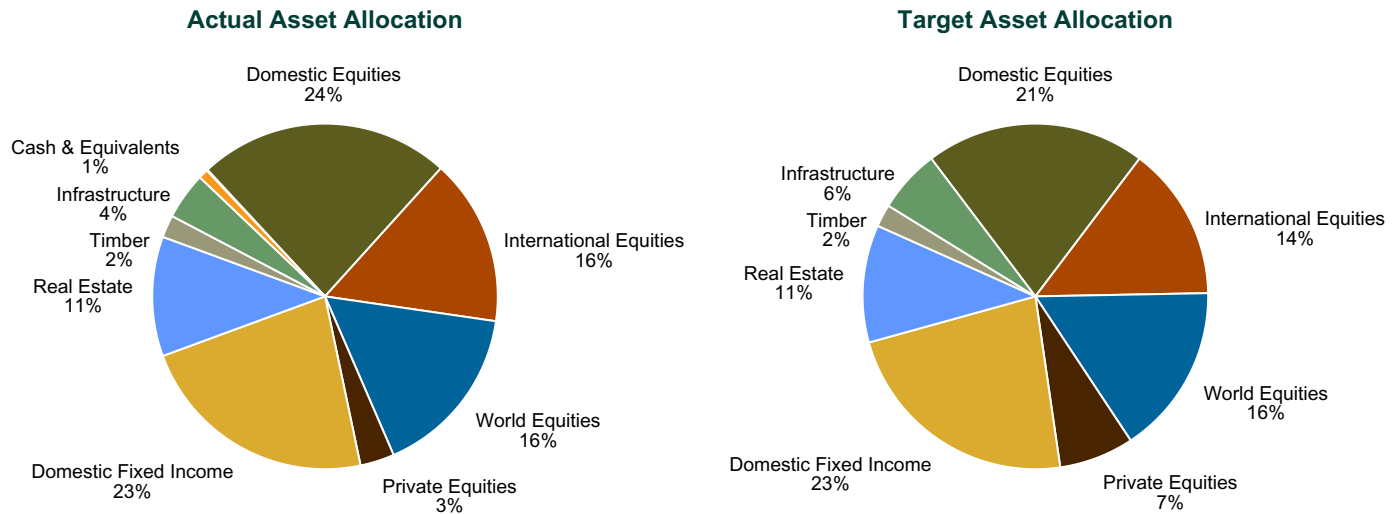
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Real Assets</b>					
Gross	0.72%	6.44%	6.77%	8.24%	-
Net	0.68%	6.03%	6.34%	7.81%	4.46%
Weighted Benchmark	1.12%	5.27%	5.34%	6.65%	-
<b>Real Estate</b>					
Gross	0.81%	7.51%	9.30%	12.00%	5.36%
Net	0.74%	7.05%	8.79%	11.46%	4.87%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	6.42%
Invesco Core Real Estate - Gross	(0.00%)	6.72%	8.19%	10.48%	5.29%
Invesco Core Real Estate - Net	(0.00%)	6.45%	7.85%	10.11%	4.87%
Invesco Fund II - Net	0.00%	(1.24%)	8.93%	9.47%	(4.34%)
Invesco Fund III - Net	0.00%	0.30%	8.54%	12.42%	-
Invesco Asia RE Feeder - Net	0.00%	(13.25%)	175.39%	94.93%	-
Invesco Asia RE Fund III - Net	(0.83%)	81.72%	-	-	-
Invesco Value Added Fd IV - Net	0.00%	11.65%	8.06%	-	-
JP Morgan - Gross	2.14%	8.84%	9.08%	11.23%	6.22%
JP Morgan - Net	1.95%	7.92%	8.11%	10.17%	5.16%
JP Morgan Alternative Fd - Net	0.00%	8.18%	5.88%	(5.83%)	(5.49%)
JP Morgan China Property Fd - Net	0.00%	134.93%	55.51%	48.91%	21.28%
JPM Greater European Opp Fd - Net	(0.41%)	(48.43%)	(12.92%)	4.80%	-
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	6.42%
<b>Other Real Assets</b>					
Gross	0.56%	-	-	-	-
Net	0.58%	-	-	-	-
Weighted Benchmark	1.31%	-	-	-	-
<b>Infrastructure</b>					
Gross	0.83%	8.91%	6.88%	6.32%	-
Net	0.86%	8.42%	6.33%	5.77%	-
ISQ Global Infrastructure II - Net	5.95%	-	-	-	-
The Rohatyn Group - Net	(5.83%)	(14.04%)	1.85%	1.17%	1.05%
JP Morgan IIF - Gross	1.70%	12.48%	7.37%	6.64%	3.02%
JP Morgan IIF - Net	1.73%	11.77%	6.57%	5.80%	1.91%
Grosvenor Cust. Infrastructure - Net	(0.05%)	7.85%	8.12%	8.75%	-
Grosvenor Cust. Infrastructure II - Net	0.00%	8.25%	6.83%	-	-
Benchmark(1)	1.43%	3.64%	2.38%	1.61%	1.51%
<b>Timber</b>					
Net	(0.00%)	(2.52%)	(2.71%)	(0.36%)	-
TIR Teredo - Net	0.00%	(3.98%)	(0.82%)	3.75%	4.49%
TIR Springbank - Net	0.00%	(2.07%)	(3.24%)	(2.30%)	(3.61%)
NCREIF Timberland Index	1.02%	4.00%	3.52%	5.99%	4.01%
<b>Cash &amp; Cash Equivalents - Net</b>					
Cash Account - Net	0.51%	1.66%	0.98%	0.61%	0.43%
Bank of ND - Net	0.49%	1.65%	0.99%	0.61%	0.42%
Bank of ND - Net	0.50%	1.64%	-	-	-
3-month Treasury Bill	0.49%	1.59%	0.84%	0.52%	0.34%
<b>Total Fund</b>					
Gross	2.48%	7.91%	10.32%	8.10%	7.33%
Net	2.43%	7.67%	10.05%	7.79%	6.94%
Target*	2.75%	7.53%	9.28%	6.99%	7.43%

\* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.2% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

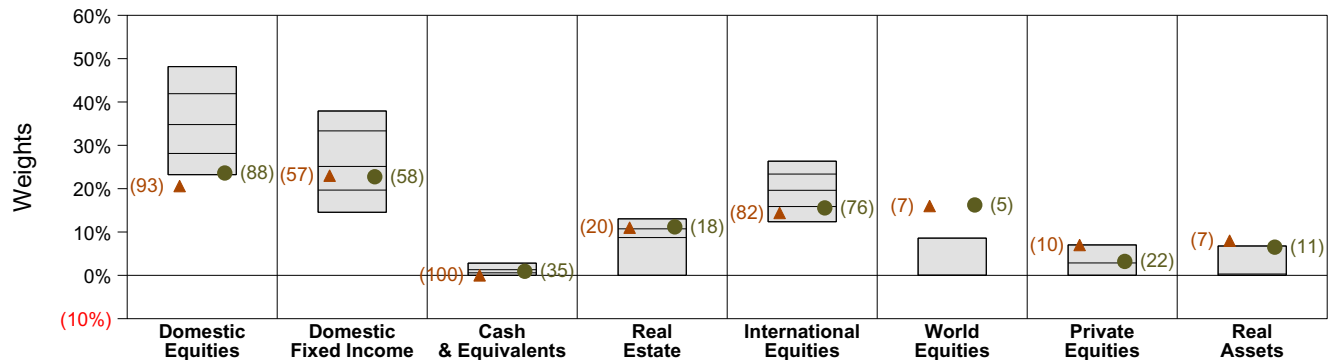
## Actual vs Target Asset Allocation As of September 30, 2018

The top left chart shows the Fund's asset allocation as of September 30, 2018. The top right chart shows the Fund's target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund's asset allocation and the target allocation versus the Callan Public Fund Sponsor Database.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	729,040	23.6%	20.6%	3.0%	93,094
International Equities	480,440	15.6%	14.4%	1.2%	35,895
World Equities	501,277	16.2%	16.0%	0.2%	7,339
Private Equities	99,128	3.2%	7.0%	(3.8%)	(116,970)
Domestic Fixed Income	702,285	22.7%	23.0%	(0.3%)	(7,751)
Real Estate	345,161	11.2%	11.0%	0.2%	5,578
Timber	64,468	2.1%	2.1%	(0.0%)	(362)
Infrastructure	136,248	4.4%	5.9%	(1.5%)	(45,892)
Cash & Equivalents	29,068	0.9%	0.0%	0.9%	29,068
<b>Total</b>	<b>3,087,115</b>	<b>100.0%</b>	<b>100.0%</b>		

### Asset Class Weights vs Callan Public Fund Sponsor Database



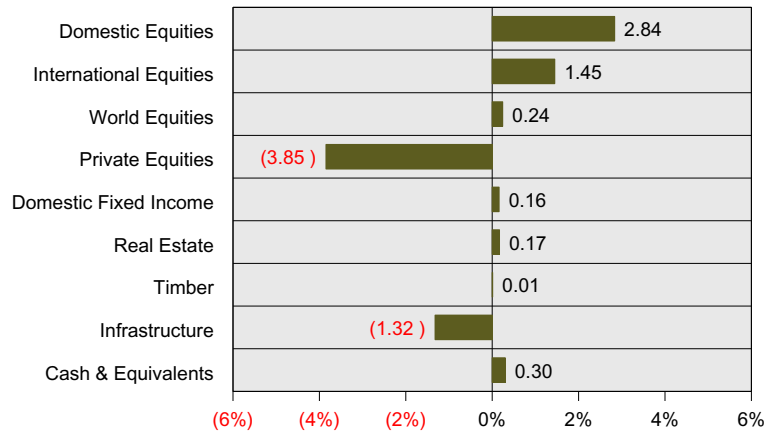
	Domestic Equities	Domestic Fixed Income	Cash & Equivalents	Real Estate	International Equities	World Equities	Private Equities	Real Assets
10th Percentile	48.16	37.92	2.82	13.04	26.34	8.59	7.02	6.78
25th Percentile	41.92	33.33	1.30	10.73	23.37	0.00	2.86	0.31
Median	34.79	25.13	0.59	8.72	19.62	0.00	0.00	0.00
75th Percentile	28.13	19.67	0.00	0.00	15.87	0.00	0.00	0.00
90th Percentile	23.23	14.55	0.00	0.00	12.36	0.00	0.00	0.00
<b>Fund</b>	23.62	22.75	0.94	11.18	15.56	16.24	3.21	6.50
<b>Target</b>	20.60	23.00	0.00	11.00	14.40	16.00	7.00	8.00
% Group Invested	95.56%	97.04%	72.59%	72.59%	91.85%	12.59%	30.37%	25.19%

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

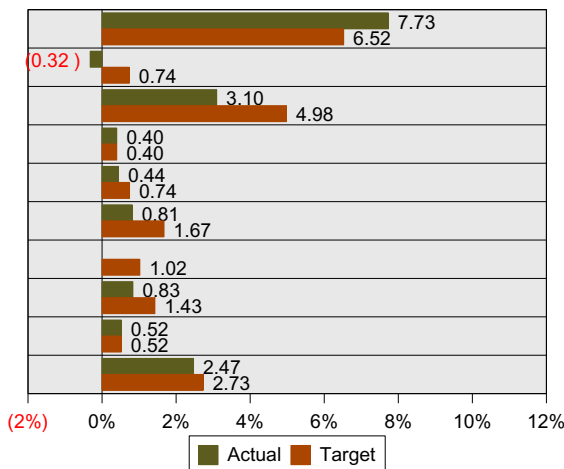
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

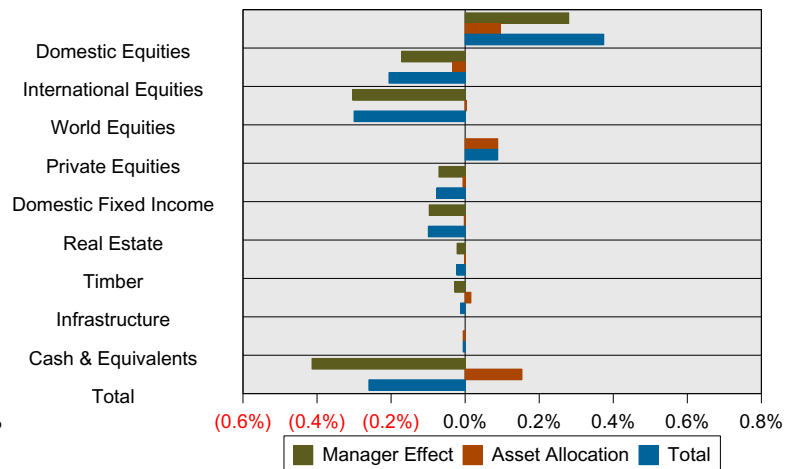
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

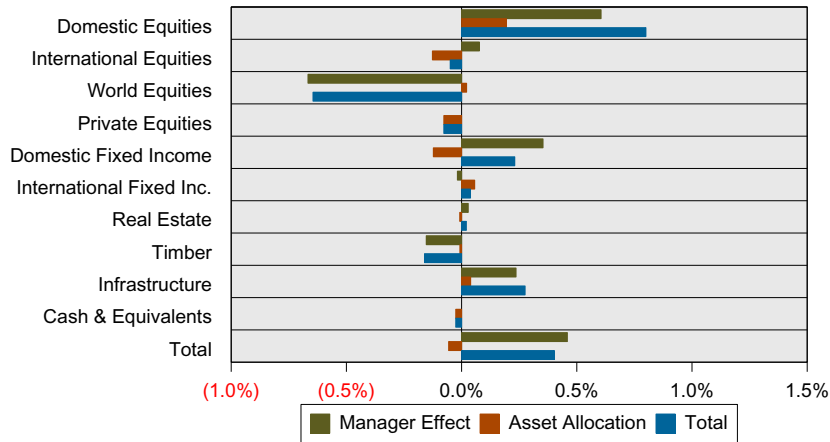
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	7.73%	6.52%	0.28%	0.09%	0.37%
International Equities	16%	14%	(0.32%)	0.74%	(0.17%)	(0.03%)	(0.21%)
World Equities	16%	16%	3.10%	4.98%	(0.30%)	0.00%	(0.30%)
Private Equities	3%	7%	0.40%	0.40%	0.00%	0.09%	0.09%
Domestic Fixed Income	23%	23%	0.44%	0.74%	(0.07%)	(0.01%)	(0.08%)
Real Estate	11%	11%	0.81%	1.67%	(0.10%)	(0.00%)	(0.10%)
Timber	2%	2%	0.00%	1.02%	(0.02%)	(0.00%)	(0.02%)
Infrastructure	5%	6%	0.83%	1.43%	(0.03%)	0.02%	(0.01%)
Cash & Equivalents	0%	0%	0.52%	0.52%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>2.47%</b>	<b>2.73%</b>	<b>(0.41%)</b>	<b>0.15%</b>	<b>(0.26%)</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

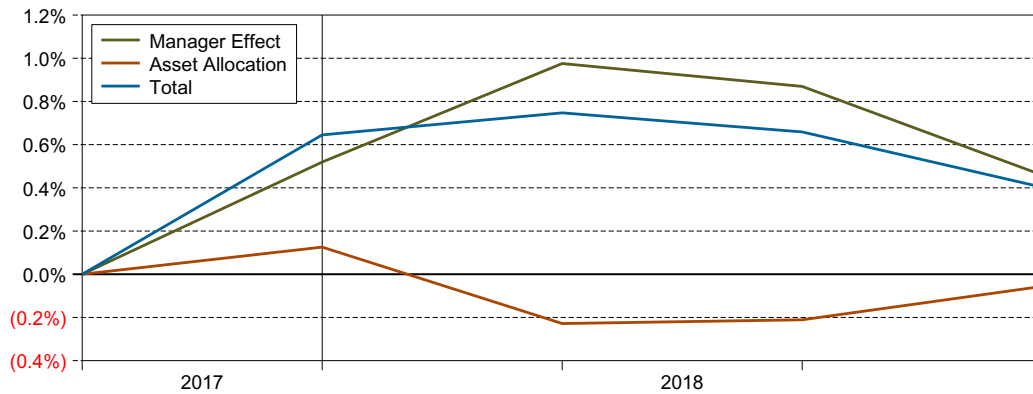
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

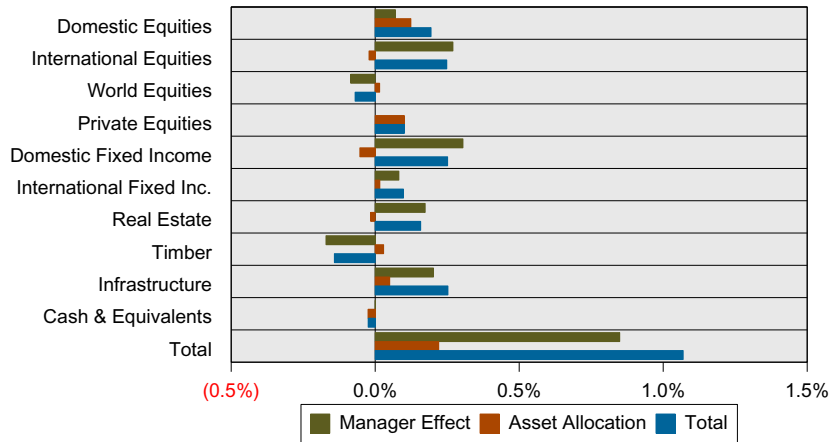
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	20.03%	17.22%	0.61%	0.19%	0.80%
International Equities	16%	14%	2.30%	1.88%	0.08%	(0.13%)	(0.05%)
World Equities	17%	16%	7.05%	11.24%	(0.67%)	0.02%	(0.65%)
Private Equities	3%	7%	8.37%	8.37%	0.00%	(0.08%)	(0.08%)
Domestic Fixed Income	21%	21%	1.67%	0.03%	0.35%	(0.12%)	0.23%
International Fixed Inc.	2%	2%	-	-	(0.02%)	0.06%	0.04%
Real Estate	11%	11%	7.51%	7.16%	0.03%	(0.01%)	0.02%
Timber	2%	2%	(2.52%)	4.00%	(0.15%)	(0.01%)	(0.16%)
Infrastructure	5%	6%	8.91%	3.64%	0.24%	0.04%	0.28%
Cash & Equivalents	1%	0%	1.69%	1.69%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>7.92%</b>	<b>7.51%</b>	<b>0.46%</b>	<b>(0.06%)</b>	<b>0.40%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

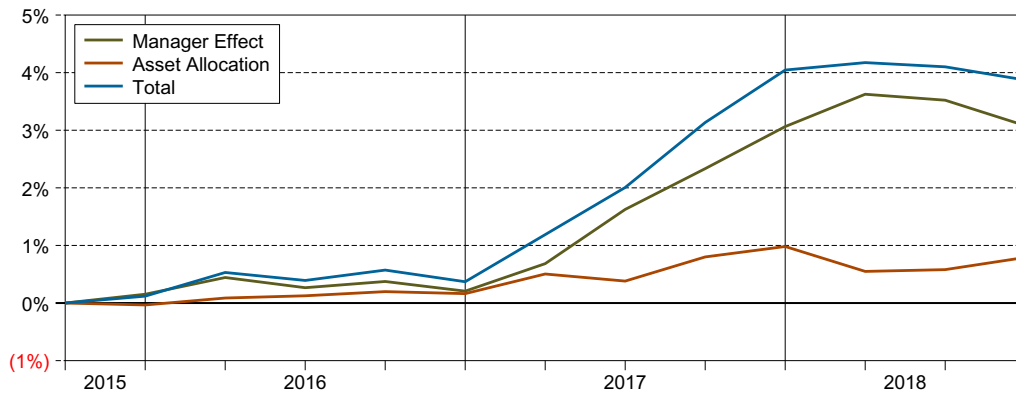
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

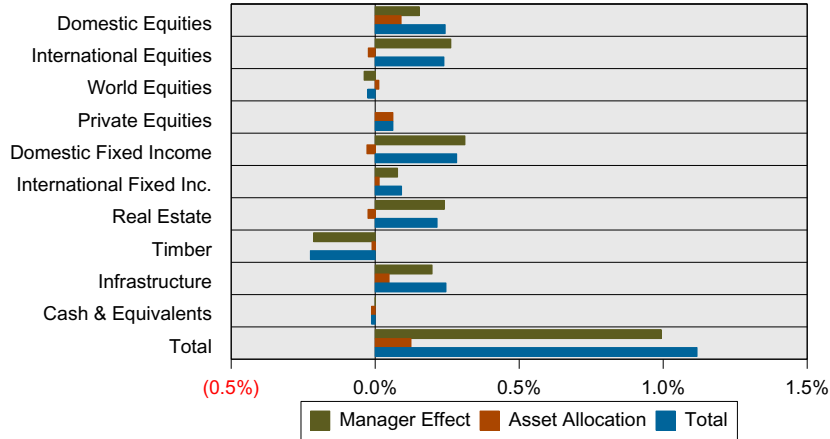
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	17.46%	17.15%	0.07%	0.12%	0.19%
International Equities	16%	14%	11.61%	9.91%	0.27%	(0.02%)	0.25%
World Equities	17%	16%	12.92%	13.54%	(0.09%)	0.02%	(0.07%)
Private Equities	3%	6%	2.85%	2.85%	0.00%	0.10%	0.10%
Domestic Fixed Income	19%	19%	4.82%	3.25%	0.30%	(0.05%)	0.25%
International Fixed Inc.	4%	4%	-	-	0.08%	0.02%	0.10%
Real Estate	11%	11%	9.31%	7.75%	0.17%	(0.02%)	0.16%
Timber	3%	3%	(2.71%)	3.52%	(0.17%)	0.03%	(0.14%)
Infrastructure	4%	5%	6.88%	2.38%	0.20%	0.05%	0.25%
Cash & Equivalents	1%	0%	1.00%	0.96%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>10.39%</b>	<b>9.32%</b>	<b>+ 0.85%</b>	<b>+ 0.22%</b>	<b>1.07%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

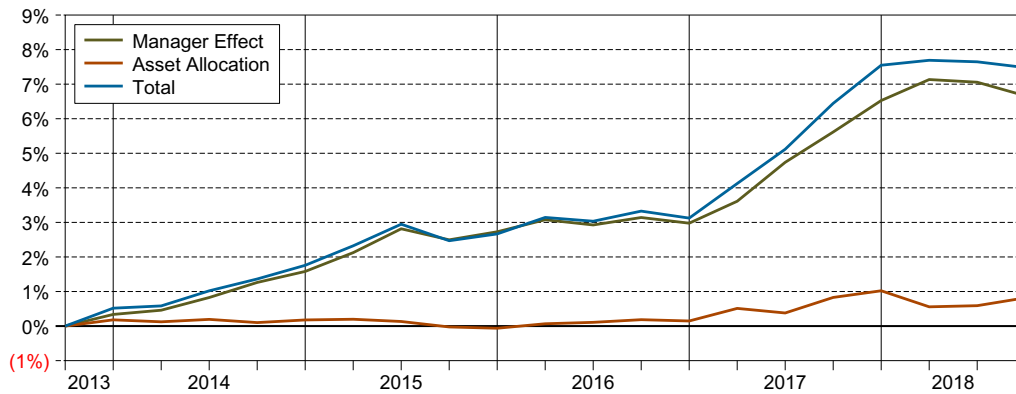
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	13.85%	13.15%	0.15%	0.09%	0.24%
International Equities	15%	15%	5.90%	4.23%	0.26%	(0.02%)	0.24%
World Equities	16%	16%	9.01%	9.28%	(0.04%)	0.01%	(0.03%)
Private Equities	4%	6%	1.62%	1.62%	0.00%	0.06%	0.06%
Domestic Fixed Income	19%	18%	4.79%	3.14%	0.31%	(0.03%)	0.28%
International Fixed Inc.	4%	4%	-	-	0.08%	0.01%	0.09%
Real Estate	10%	10%	12.04%	9.57%	0.24%	(0.03%)	0.21%
Timber	3%	4%	(0.36%)	5.99%	(0.21%)	(0.01%)	(0.22%)
Infrastructure	4%	5%	6.32%	1.61%	0.20%	0.05%	0.25%
Cash & Equivalents	1%	1%	0.62%	0.59%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>8.12%</b>	<b>7.01%</b>	<b>+ 0.99%</b>	<b>+ 0.12%</b>	<b>1.12%</b>

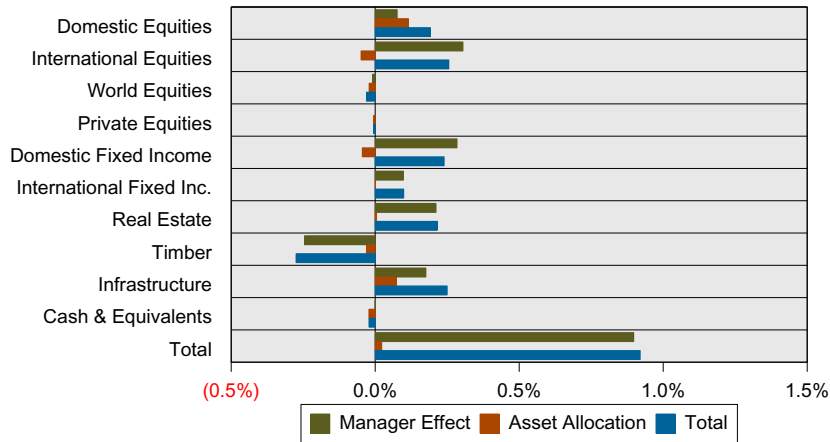
\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.



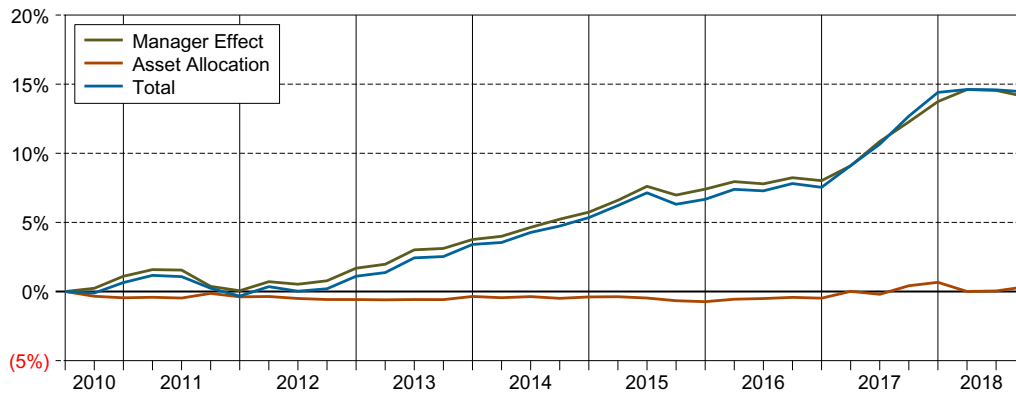
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Eight and One-Quarter Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Eight and One-Quarter Year Annualized Relative Attribution Effects

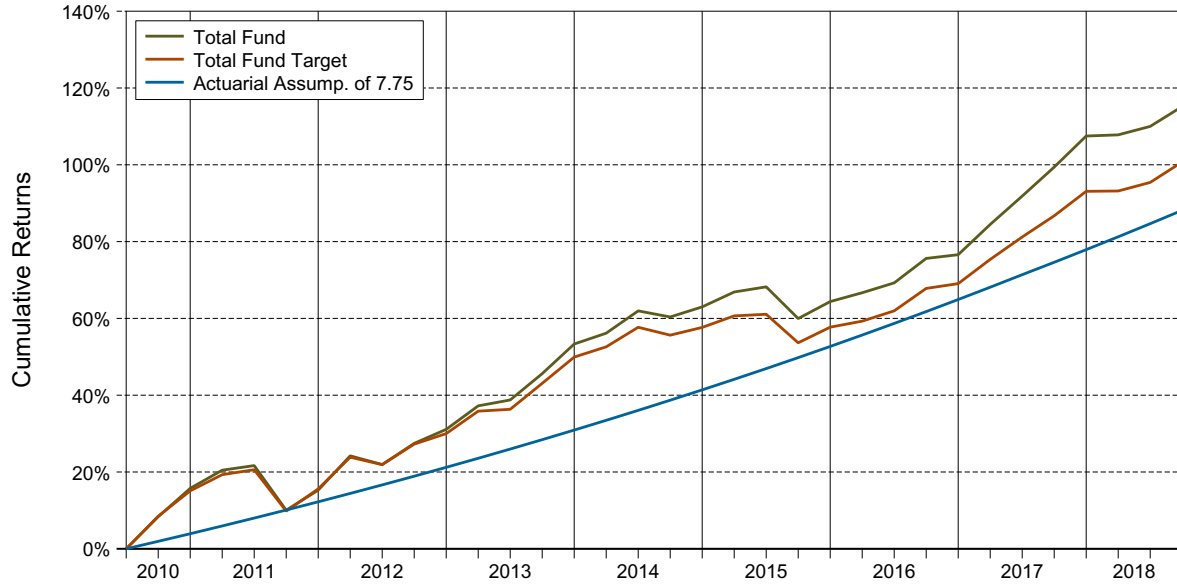
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	26%	25%	16.13%	15.62%	0.08%	0.12%	0.19%
International Equities	16%	15%	8.35%	6.36%	0.30%	(0.05%)	0.26%
World Equities	12%	12%	-	-	(0.01%)	(0.02%)	(0.03%)
Private Equities	4%	6%	4.00%	4.00%	0.00%	(0.01%)	(0.01%)
Domestic Fixed Income	20%	19%	5.69%	4.06%	0.28%	(0.04%)	0.24%
International Fixed Inc.	5%	5%	-	-	0.10%	0.00%	0.10%
Real Estate	9%	9%	13.46%	10.89%	0.21%	0.00%	0.22%
Timber	3%	4%	-	-	(0.25%)	(0.03%)	(0.27%)
Infrastructure	3%	4%	-	-	0.18%	0.07%	0.25%
Cash & Equivalents	1%	1%	0.42%	0.40%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>9.73%</b>	<b>8.81%</b>	<b>+ 0.90%</b>	<b>+ 0.02%</b>	<b>0.92%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

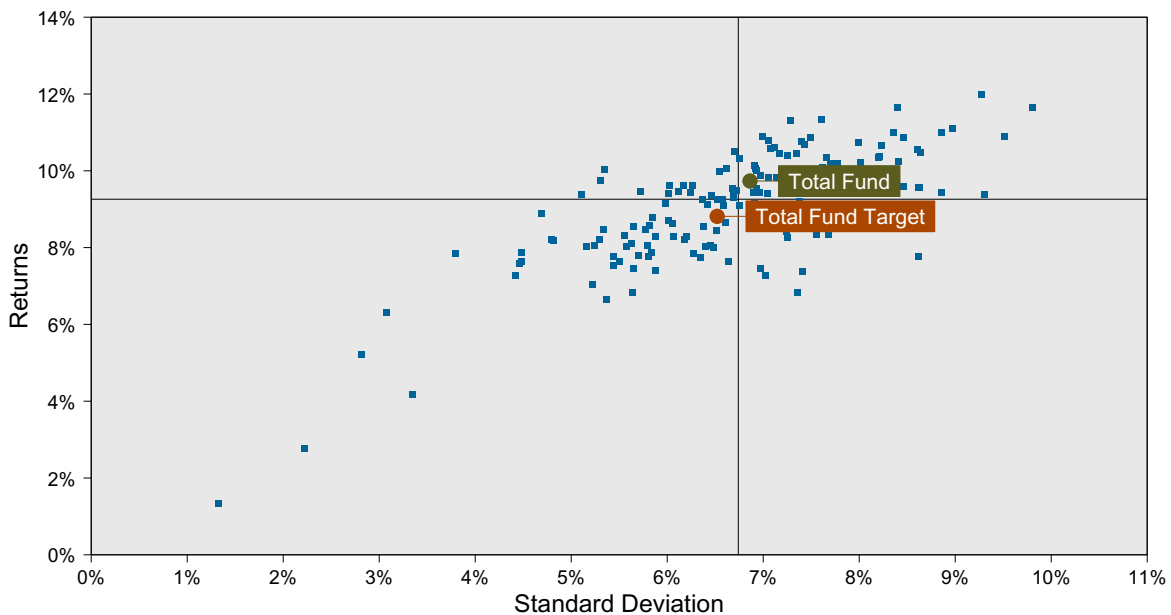
## Cumulative Performance Relative to Target

The first chart below illustrates the cumulative performance of the Total Fund relative to the cumulative performance of the Fund's Target Asset Mix. The Target Mix is assumed to be rebalanced each quarter with no transaction costs. The second chart below shows the return and the risk of the Total Fund and the Target Mix, contrasted with the returns and risks of the funds in the Callan Public Fund Sponsor Database.

### Cumulative Returns Actual vs Target



### Eight and One-Quarter Year Annualized Risk vs Return



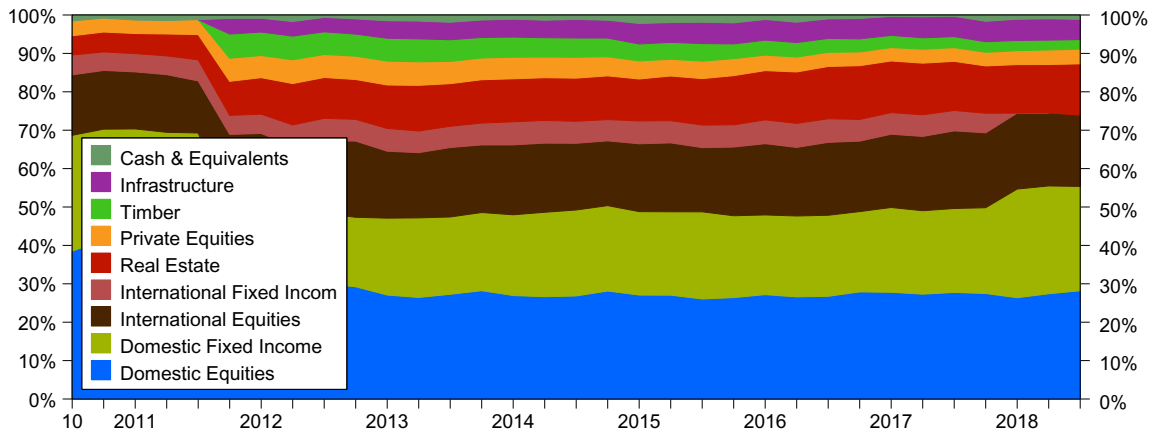
Squares represent membership of the Callan Public Fund Sponsor Database

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

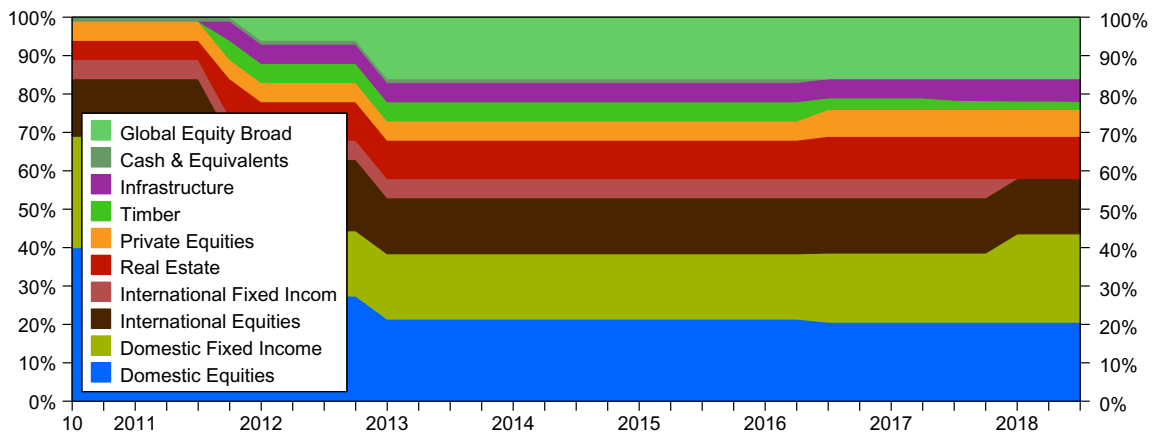
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Sponsor Database.

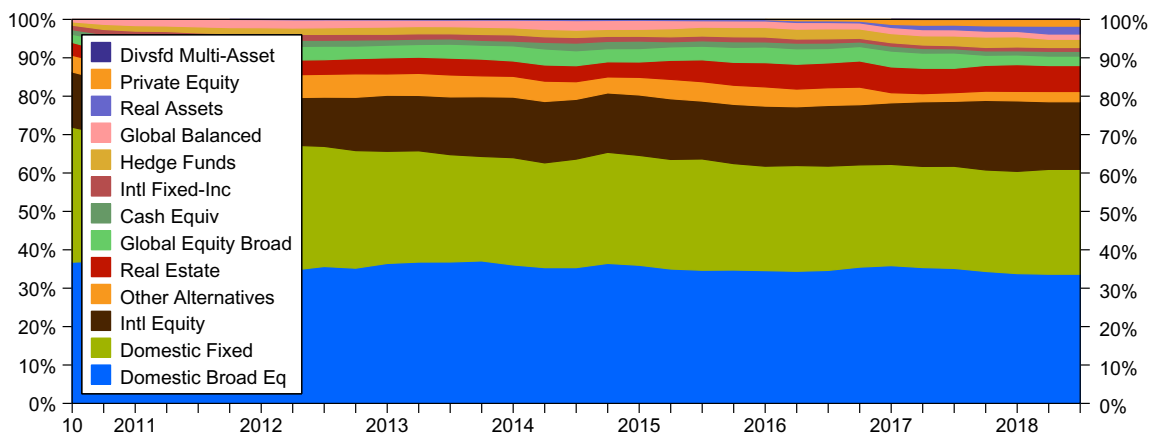
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation

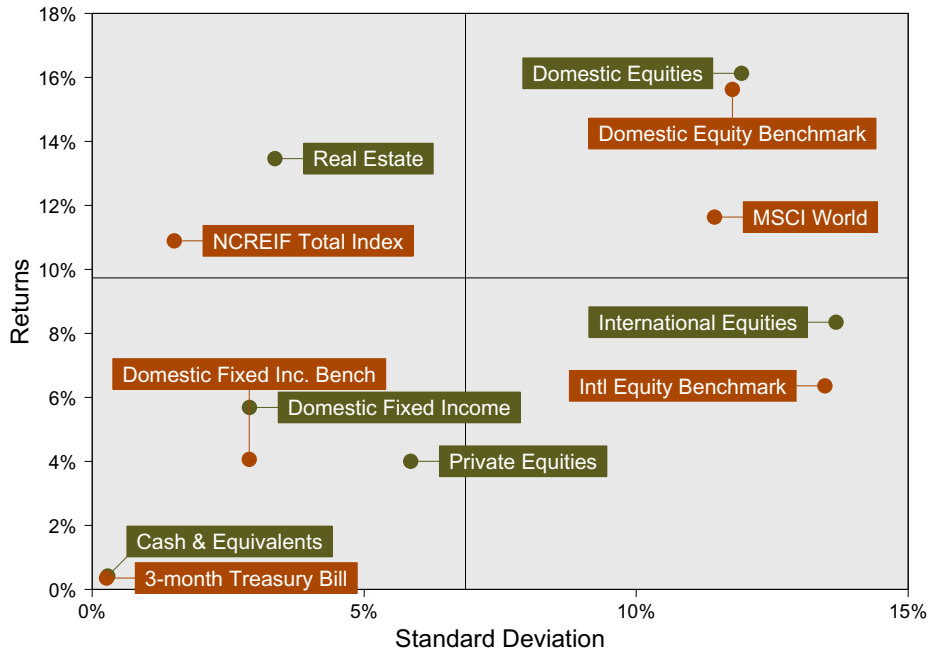


\* Current Quarter Target = 16.0% Blmgb Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmgb HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

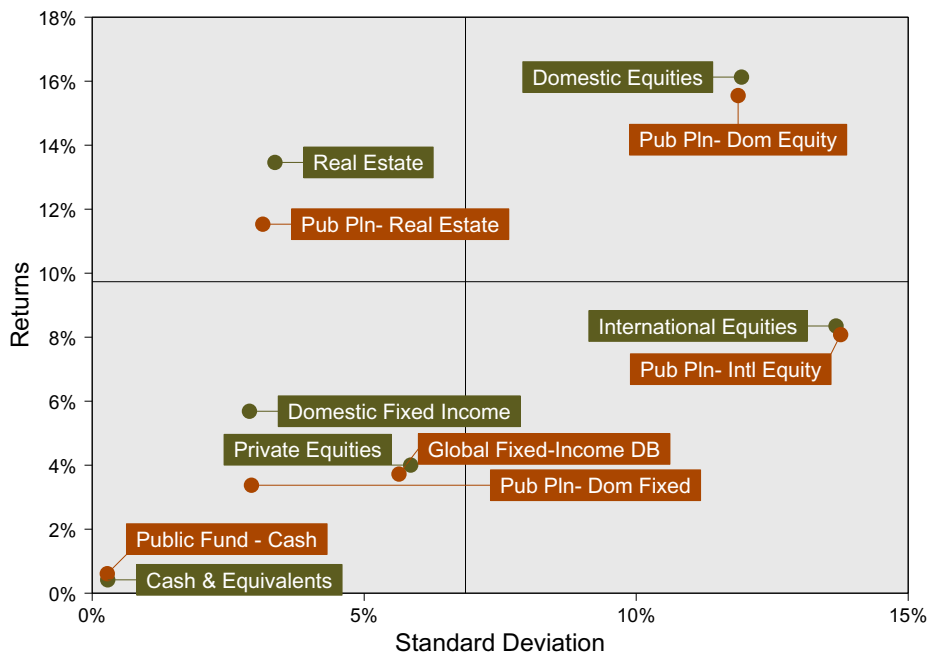
## Asset Class Risk and Return

The charts below show the eight and one-quarter year annualized risk and return for each asset class component of the Total Fund. The first graph contrasts these values with those of the appropriate index for each asset class. The second chart contrasts them with the risk and return of the median portfolio in each of the appropriate CAI comparative databases. In each case, the crosshairs on the chart represent the return and risk of the Total Fund.

### Eight and One-Quarter Year Annualized Risk vs Return Asset Classes vs Benchmark Indices



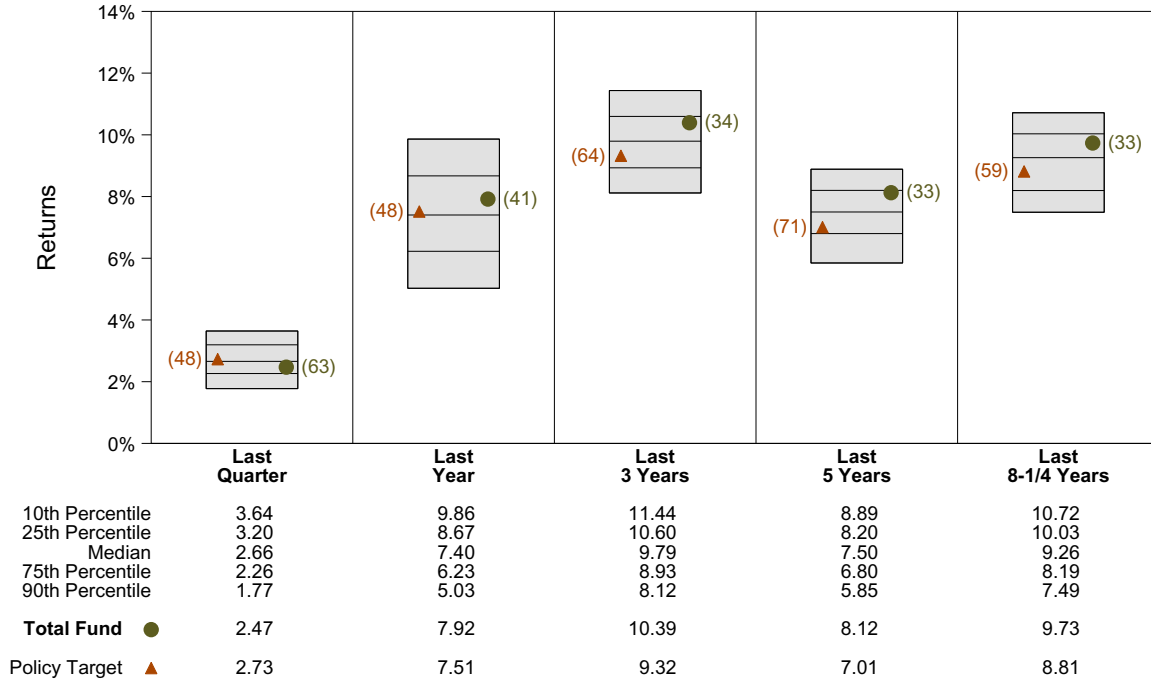
### Eight and One-Quarter Year Annualized Risk vs Return Asset Classes vs Asset Class Median



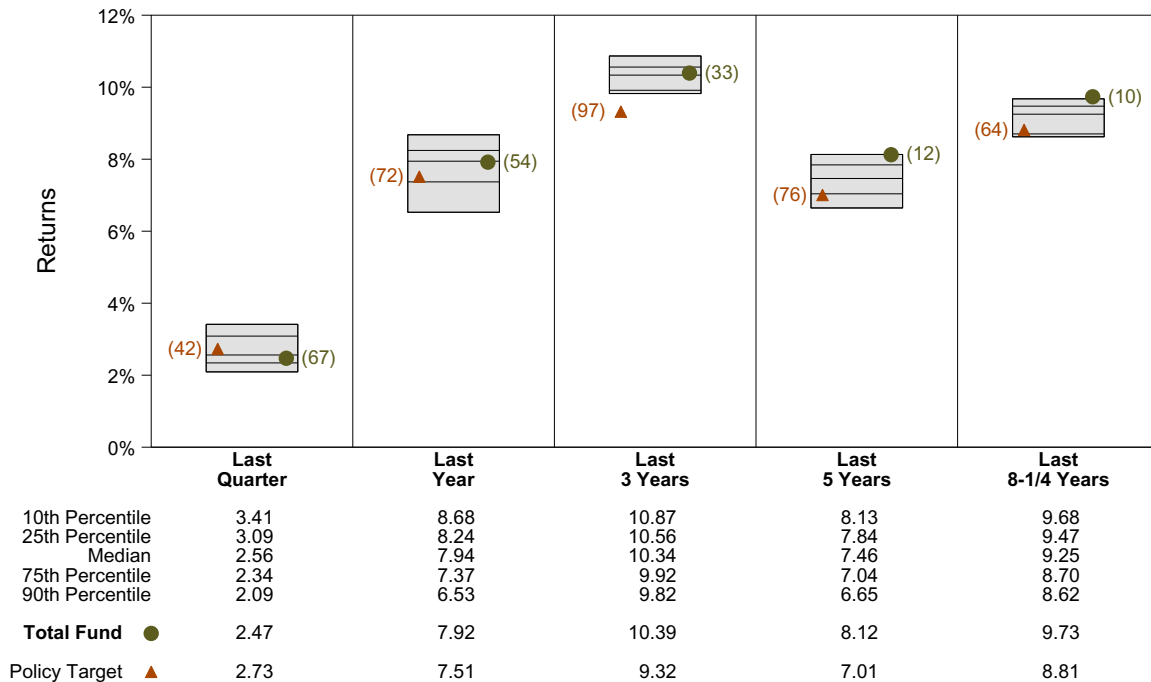
## Total Fund Ranking

The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended September 30, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

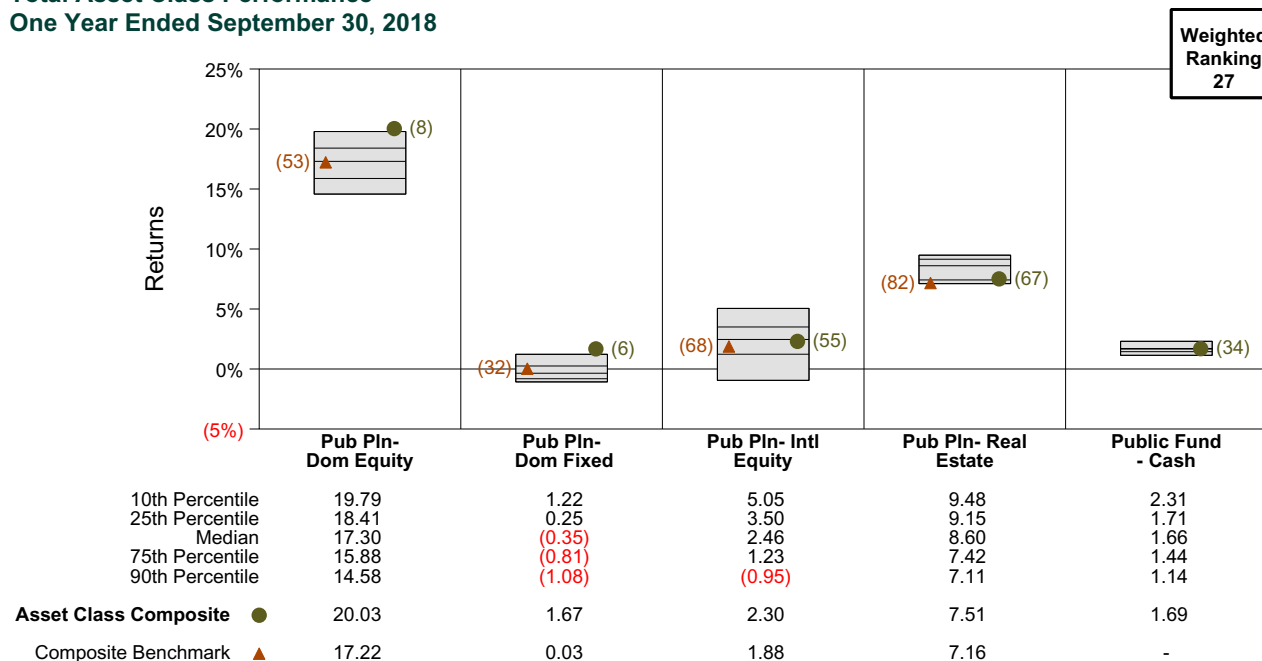


\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

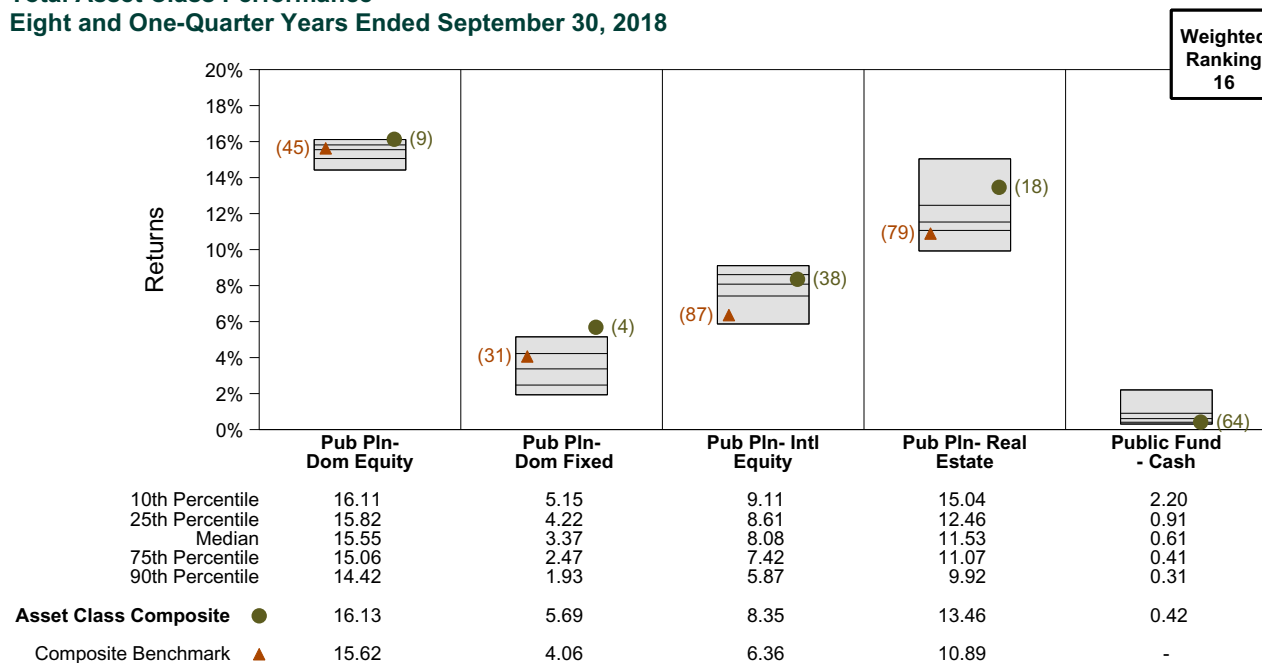
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Eight and One-Quarter Years Ended September 30, 2018



\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Class Allocation

	September 30, 2018		Net New Inv.	Inv. Return	June 30, 2018	
	Market Value	Weight			Market Value	Weight
<b>Global Equities</b>	<b>\$1,809,885,918</b>	<b>58.63%</b>	<b>\$(17,908,194)</b>	<b>\$67,487,141</b>	<b>\$1,760,306,970</b>	<b>58.21%</b>
<b>Public Equities</b>	<b>\$1,710,757,503</b>	<b>55.42%</b>	<b>\$(20,613,348)</b>	<b>\$67,104,814</b>	<b>\$1,664,266,037</b>	<b>55.03%</b>
<b>World Equities</b>	<b>\$501,277,381</b>	<b>16.24%</b>	<b>\$(415,514)</b>	<b>\$15,062,853</b>	<b>\$486,630,042</b>	<b>16.09%</b>
<b>Domestic Equities</b>	<b>\$729,040,237</b>	<b>23.62%</b>	<b>\$(19,998,892)</b>	<b>\$53,587,942</b>	<b>\$695,451,188</b>	<b>23.00%</b>
Large Cap	549,319,075	17.79%	(19,980,061)	43,789,375	525,509,761	17.38%
Small Cap	179,721,163	5.82%	(18,831)	9,798,567	169,941,426	5.62%
<b>International Equities</b>	<b>\$480,439,885</b>	<b>15.56%</b>	<b>\$(198,942)</b>	<b>\$(1,545,980)</b>	<b>\$482,184,807</b>	<b>15.94%</b>
Developed	361,246,349	11.70%	(198,942)	2,505,525	358,939,766	11.87%
Emerging Markets	119,193,536	3.86%	0	(4,051,505)	123,245,041	4.08%
<b>Private Equities</b>	<b>\$99,128,414</b>	<b>3.21%</b>	<b>\$2,705,154</b>	<b>\$382,327</b>	<b>\$96,040,933</b>	<b>3.18%</b>
<b>Global Fixed Income</b>	<b>\$702,285,479</b>	<b>22.75%</b>	<b>\$(13,512,294)</b>	<b>\$3,155,378</b>	<b>\$712,642,395</b>	<b>23.56%</b>
<b>Domestic Fixed Income</b>	<b>\$702,285,479</b>	<b>22.75%</b>	<b>\$(13,512,294)</b>	<b>\$3,155,378</b>	<b>\$712,642,395</b>	<b>23.56%</b>
Investment Grade	492,356,171	15.95%	(13,024,844)	476,175	504,904,839	16.70%
Below Investment Grade	209,929,309	6.80%	(487,450)	2,679,202	207,737,557	6.87%
<b>Global Real Assets</b>	<b>\$545,876,322</b>	<b>17.68%</b>	<b>\$15,668,994</b>	<b>\$3,939,014</b>	<b>\$526,268,313</b>	<b>17.40%</b>
<b>Real Estate</b>	<b>\$345,160,890</b>	<b>11.18%</b>	<b>\$22,325,453</b>	<b>\$2,771,438</b>	<b>\$320,063,999</b>	<b>10.58%</b>
<b>Other Real Assets</b>	<b>\$200,715,432</b>	<b>6.50%</b>	<b>\$(6,656,459)</b>	<b>\$1,167,577</b>	<b>\$206,204,314</b>	<b>6.82%</b>
Infrastructure	136,247,842	4.41%	(5,887,810)	1,167,577	140,968,074	4.66%
Timber	64,467,590	2.09%	(768,650)	(0)	65,236,240	2.16%
<b>Cash</b>	<b>\$29,067,752</b>	<b>0.94%</b>	<b>\$3,998,783</b>	<b>\$63,655</b>	<b>\$25,005,314</b>	<b>0.83%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(50,739)</b>	<b>\$50,739</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$3,087,115,470</b>	<b>100.0%</b>	<b>\$(11,803,449)</b>	<b>\$74,695,927</b>	<b>\$3,024,222,992</b>	<b>100.0%</b>

PLEASE REFER TO PAGES 29-31 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Equities</b>					
Gross	3.85%	10.66%	13.71%	9.58%	-
Net	3.80%	10.44%	13.47%	9.29%	-
Weighted Benchmark	3.95%	10.81%	12.95%	8.68%	-
<b>Public Equities</b>					
Gross	4.05%	-	-	-	-
Net	3.99%	-	-	-	-
Weighted Benchmark	4.41%	-	-	-	-
<b>World Equities</b>					
Gross	3.10%	7.05%	12.92%	9.01%	-
Net	3.01%	6.70%	12.52%	8.43%	-
MSCI World	4.98%	11.24%	13.54%	9.28%	11.64%
<b>Domestic Equities</b>					
Gross	7.73%	20.03%	17.46%	13.85%	16.13%
Net	7.69%	19.85%	17.26%	13.65%	15.88%
Weighted Benchmark	6.52%	17.22%	17.15%	13.15%	15.62%
<b>Large Cap</b>					
Gross	8.38%	20.31%	17.52%	14.70%	16.41%
Net	8.35%	20.19%	17.38%	14.54%	16.18%
Benchmark(1)	7.42%	17.76%	17.07%	13.67%	15.82%
<b>Small Cap Equity</b>					
Gross	5.77%	19.08%	17.06%	10.85%	15.09%
Net	5.68%	18.69%	16.66%	10.54%	14.78%
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	14.76%
<b>International Equities</b>					
Gross	(0.32%)	2.30%	11.61%	5.90%	8.35%
Net	(0.36%)	2.14%	11.43%	5.70%	8.06%
Weighted Benchmark	0.74%	1.88%	9.91%	4.23%	6.36%
<b>Developed</b>					
Gross	0.70%	4.10%	11.40%	6.14%	9.05%
Net	0.64%	3.87%	11.15%	5.89%	8.74%
Benchmark(2)	1.31%	2.67%	9.05%	4.31%	6.94%
<b>Emerging Markets</b>					
Gross	(3.29%)	(2.93%)	11.97%	4.70%	5.74%
Net	(3.29%)	(2.93%)	11.97%	4.65%	5.50%
Benchmark(3)	(1.09%)	(0.81%)	12.36%	3.61%	4.16%
<b>Private Equities</b>					
Net	0.40%	8.37%	2.85%	1.61%	3.94%

(1) S&P 500 Index through 12/31/2011 and the Russell 1000 Index thereafter.

(2) 50% Hedged EAFE through 3/31/2011, MSCI EAFE through 6/30/2016; MSCI World ex-US thereafter.

(3) MSCI Emerging Mkts Idx (Gross) through 6/30/2011 and MSCI Emerging Mkts Idx Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Fixed Income</b>					
Gross	0.44%	2.30%	5.12%	4.33%	-
Net	0.41%	2.13%	4.89%	4.09%	-
Weighted Benchmark	0.74%	1.11%	3.58%	2.66%	-
<b>Domestic Fixed Income</b>					
Gross	0.44%	1.67%	4.82%	4.79%	5.69%
Net	0.41%	1.53%	4.63%	4.59%	5.45%
Weighted Benchmark	0.74%	0.03%	3.25%	3.14%	4.06%
<b>Inv. Grade Fixed Income</b>					
Gross	0.09%	0.14%	3.22%	3.87%	4.54%
Net	0.06%	0.05%	3.09%	3.74%	4.38%
Blmbg Aggregate Index	0.02%	(1.22%)	1.31%	2.16%	2.65%
<b>Below Inv. Grade Fixed Income</b>					
Gross	1.29%	5.10%	8.57%	6.89%	8.64%
Net	1.22%	4.83%	8.20%	6.49%	8.22%
Blmbg HY Corp 2% Issue	2.40%	3.05%	8.15%	5.55%	7.51%
<b>Global Real Assets</b>					
Gross	0.72%	6.49%	6.90%	8.34%	-
Net	0.68%	6.09%	6.47%	7.91%	-
Weighted Benchmark	1.52%	5.72%	5.51%	6.76%	-
<b>Real Estate</b>					
Gross	0.81%	7.51%	9.31%	12.04%	13.46%
Net	0.74%	7.04%	8.81%	11.51%	12.91%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	10.89%
<b>Other Real Assets</b>					
Gross	0.57%	-	-	-	-
Net	0.59%	-	-	-	-
Weighted Benchmark	1.32%	-	-	-	-
<b>Infrastructure</b>					
Gross	0.83%	8.91%	6.88%	6.32%	-
Net	0.86%	8.42%	6.33%	5.77%	-
Benchmark(1)	1.43%	3.64%	2.38%	1.61%	-
<b>Timber</b>					
Net	0.00%	(2.52%)	(2.71%)	(0.36%)	-
NCREIF Timberland Index	1.02%	4.00%	3.52%	5.99%	5.06%
<b>Cash &amp; Equivalents - Net</b>	<b>0.52%</b>	<b>1.69%</b>	<b>1.00%</b>	<b>0.62%</b>	<b>0.42%</b>
3-month Treasury Bill	0.49%	1.59%	0.84%	0.52%	0.36%
<b>Total Fund</b>					
Gross	2.47%	7.92%	10.39%	8.12%	9.73%
Net	2.42%	7.68%	10.12%	7.82%	9.41%
Target*	2.73%	7.51%	9.32%	7.01%	8.81%

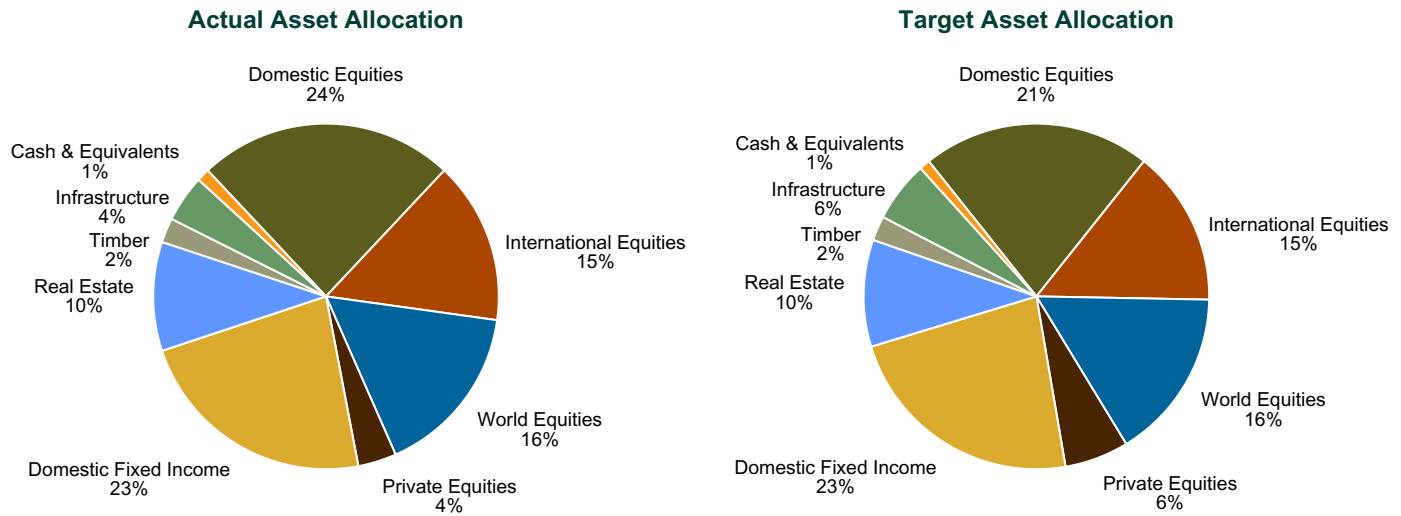
\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.1% NCREIF Timberland Index.

(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

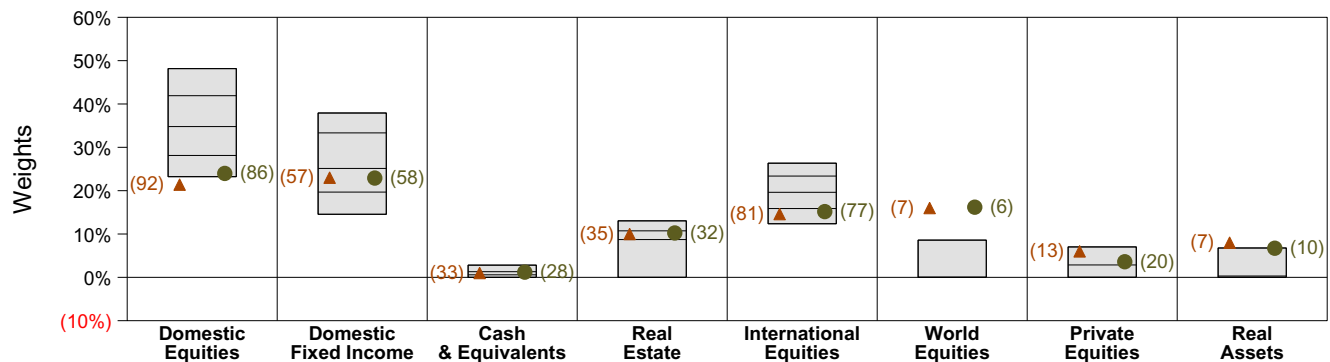
## Actual vs Target Asset Allocation As of September 30, 2018

The top left chart shows the Fund's asset allocation as of September 30, 2018. The top right chart shows the Fund's target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund's asset allocation and the target allocation versus the Callan Public Fund Sponsor Database.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	605,837	24.0%	21.4%	2.6%	65,176
International Equities	383,128	15.2%	14.6%	0.6%	14,266
World Equities	408,955	16.2%	16.0%	0.2%	4,722
Private Equities	90,989	3.6%	6.0%	(2.4%)	(60,599)
Domestic Fixed Income	578,714	22.9%	23.0%	(0.1%)	(2,370)
Real Estate	258,706	10.2%	10.0%	0.2%	6,061
Timber	57,546	2.3%	2.3%	(0.0%)	(563)
Infrastructure	112,227	4.4%	5.7%	(1.3%)	(31,781)
Cash & Equivalents	30,352	1.2%	1.0%	0.2%	5,087
<b>Total</b>	<b>2,526,453</b>	<b>100.0%</b>	<b>100.0%</b>		

### Asset Class Weights vs Callan Public Fund Sponsor Database



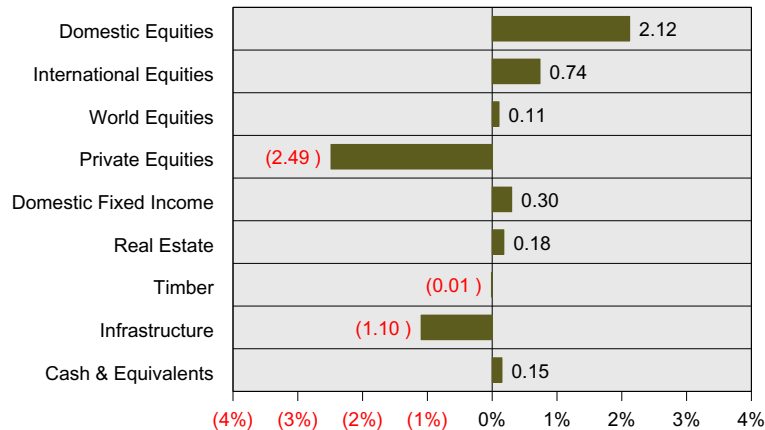
	Domestic Equities	Domestic Fixed Income	Cash & Equivalents	Real Estate	International Equities	World Equities	Private Equities	Real Assets
10th Percentile	48.16	37.92	2.82	13.04	26.34	8.59	7.02	6.78
25th Percentile	41.92	33.33	1.30	10.73	23.37	0.00	2.86	0.31
Median	34.79	25.13	0.59	8.72	19.62	0.00	0.00	0.00
75th Percentile	28.13	19.67	0.00	0.00	15.87	0.00	0.00	0.00
90th Percentile	23.23	14.55	0.00	0.00	12.36	0.00	0.00	0.00
<b>Fund</b> ●	23.98	22.91	1.20	10.24	15.16	16.19	3.60	6.72
<b>Target</b> ▲	21.40	23.00	1.00	10.00	14.60	16.00	6.00	8.00
% Group Invested	95.56%	97.04%	72.59%	72.59%	91.85%	12.59%	30.37%	25.19%

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

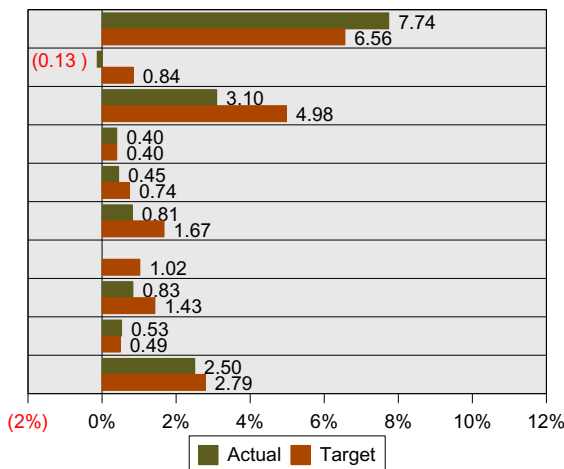
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

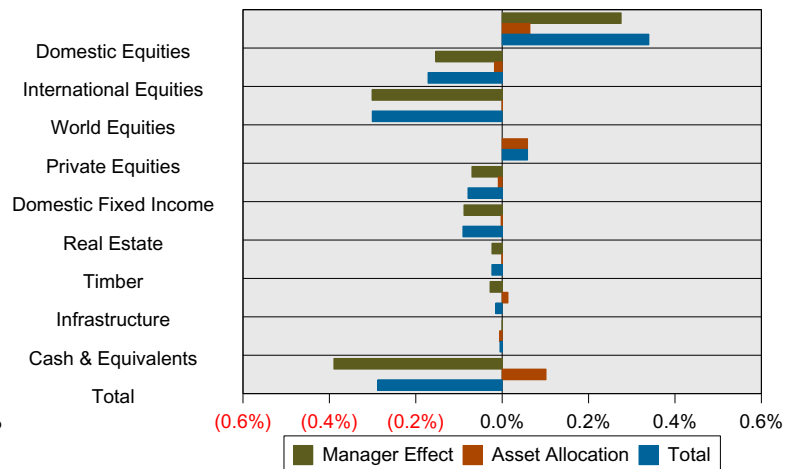
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

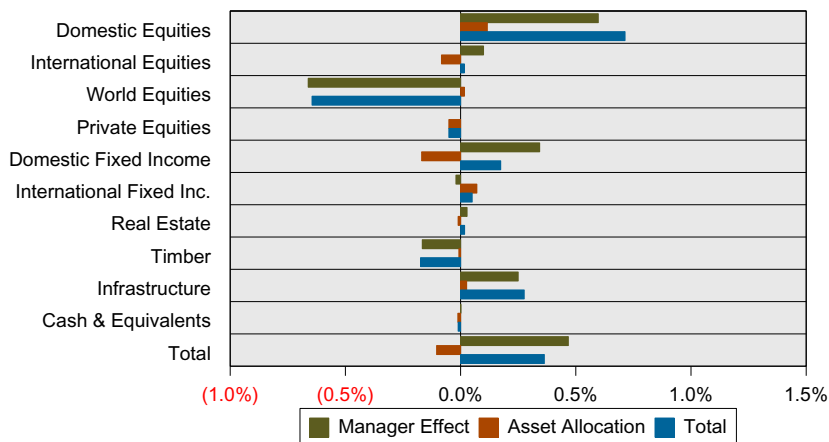
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	24%	21%	7.74%	6.56%	0.28%	0.06%	0.34%
International Equities	15%	15%	(0.13)%	0.84%	(0.15)%	(0.02)%	(0.17)%
World Equities	16%	16%	3.10%	4.98%	(0.30)%	0.00%	(0.30)%
Private Equities	4%	6%	0.40%	0.40%	0.00%	0.06%	0.06%
Domestic Fixed Income	23%	23%	0.45%	0.74%	(0.07)%	(0.01)%	(0.08)%
Real Estate	10%	10%	0.81%	1.67%	(0.09)%	(0.00)%	(0.09)%
Timber	2%	2%	0.00%	1.02%	(0.02)%	(0.00)%	(0.02)%
Infrastructure	5%	6%	0.83%	1.43%	(0.03)%	0.01%	(0.01)%
Cash & Equivalents	1%	1%	0.53%	0.49%	0.00%	(0.01)%	(0.01)%
<b>Total</b>			<b>2.50%</b>	<b>2.79%</b>	<b>(0.39)%</b>	<b>0.10%</b>	<b>(0.29)%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

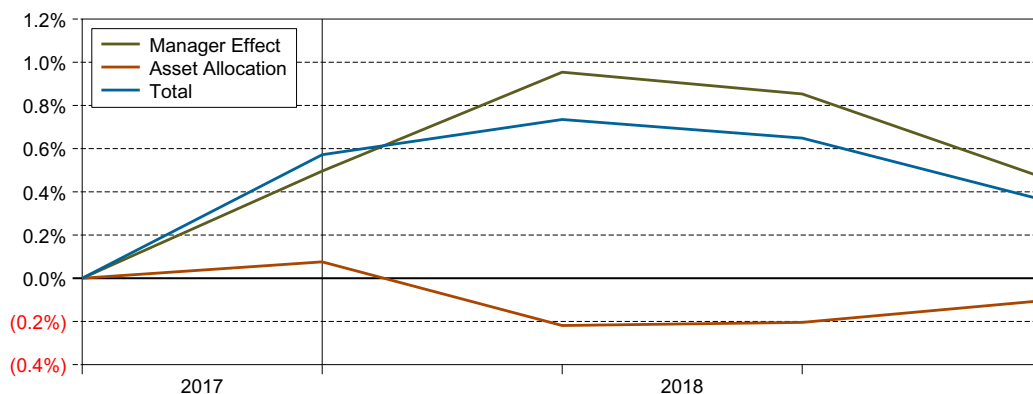
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

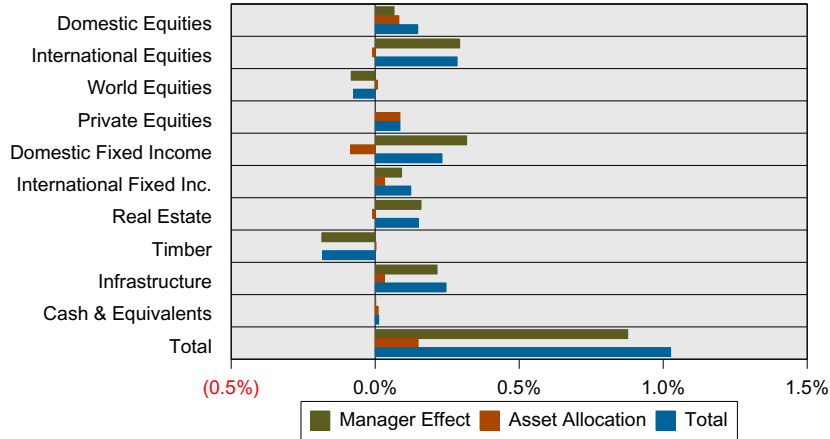
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	20.02%	17.24%	0.60%	0.12%	0.71%
International Equities	16%	15%	2.58%	2.03%	0.10%	(0.08%)	0.02%
World Equities	17%	16%	7.05%	11.24%	(0.66%)	0.02%	(0.64%)
Private Equities	3%	6%	8.38%	8.38%	0.00%	(0.05%)	(0.05%)
Domestic Fixed Income	21%	21%	1.58%	(0.05%)	0.34%	(0.17%)	0.17%
International Fixed Inc.	2%	2%	-	-	(0.02%)	0.07%	0.05%
Real Estate	10%	10%	7.51%	7.16%	0.03%	(0.01%)	0.02%
Timber	2%	2%	(2.52%)	4.00%	(0.17%)	(0.01%)	(0.17%)
Infrastructure	5%	6%	8.91%	3.64%	0.25%	0.03%	0.28%
Cash & Equivalents	1%	1%	1.70%	1.59%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>7.94%</b>	<b>7.57%</b>	<b>+ 0.47%</b>	<b>+ (0.10%)</b>	<b>0.36%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

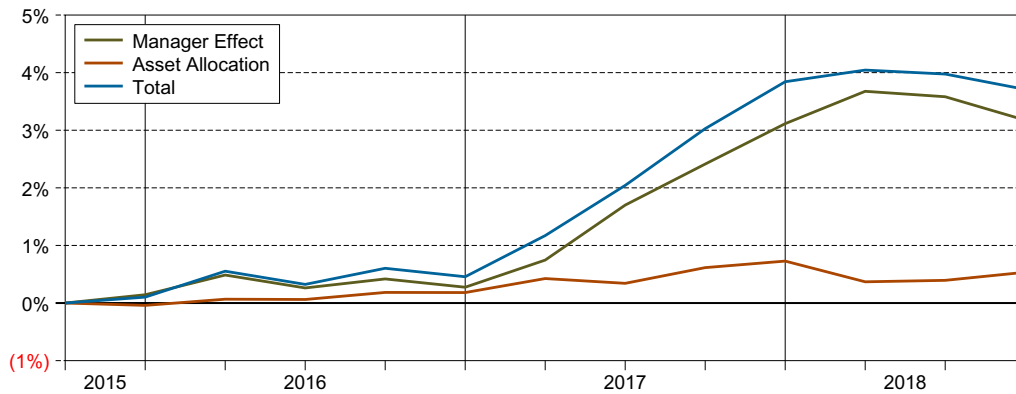
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

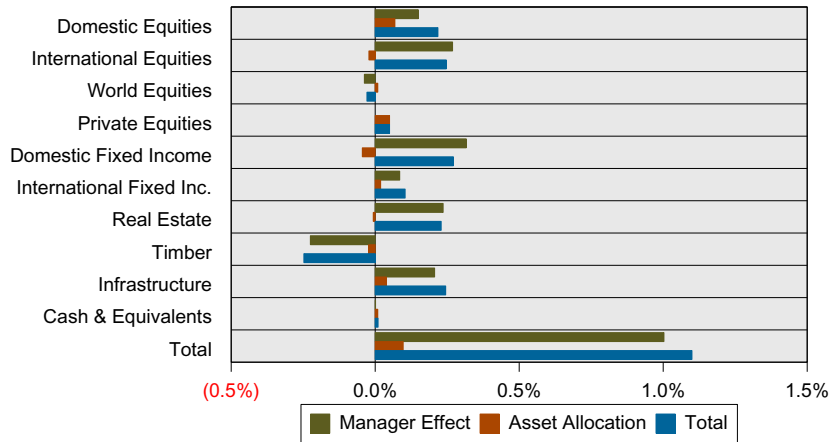
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	17.45%	17.15%	0.07%	0.08%	0.15%
International Equities	16%	15%	11.60%	9.74%	0.29%	(0.01%)	0.28%
World Equities	16%	16%	12.92%	13.54%	(0.08%)	0.01%	(0.08%)
Private Equities	3%	6%	2.85%	2.85%	0.00%	0.09%	0.09%
Domestic Fixed Income	19%	18%	4.70%	3.02%	0.32%	(0.09%)	0.23%
International Fixed Inc.	4%	4%	-	-	0.09%	0.03%	0.12%
Real Estate	10%	10%	9.31%	7.75%	0.16%	(0.01%)	0.15%
Timber	3%	3%	(2.71%)	3.52%	(0.19%)	0.00%	(0.18%)
Infrastructure	5%	5%	6.88%	2.38%	0.21%	0.03%	0.25%
Cash & Equivalents	1%	1%	1.00%	0.84%	0.00%	0.01%	0.01%
<b>Total</b>			<b>10.30%</b>	<b>9.28%</b>	<b>+ 0.88%</b>	<b>+ 0.15%</b>	<b>1.03%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

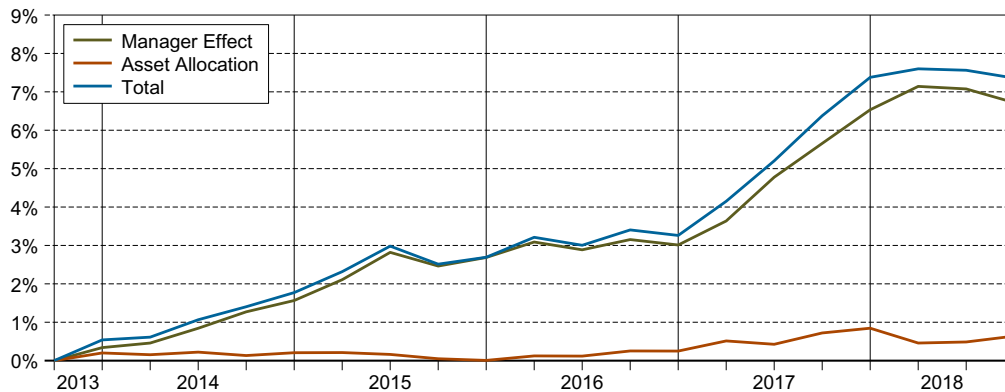
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

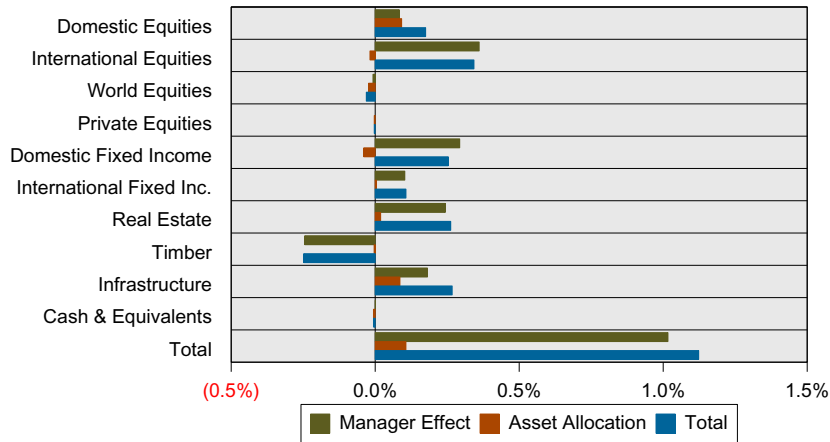
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	13.85%	13.15%	0.15%	0.07%	0.22%
International Equities	15%	15%	5.95%	4.25%	0.27%	(0.02%)	0.25%
World Equities	16%	16%	9.01%	9.28%	(0.04%)	0.01%	(0.03%)
Private Equities	4%	5%	1.62%	1.62%	0.00%	0.05%	0.05%
Domestic Fixed Income	18%	18%	4.71%	3.00%	0.32%	(0.04%)	0.27%
International Fixed Inc.	4%	5%	-	-	0.09%	0.02%	0.10%
Real Estate	10%	10%	12.04%	9.57%	0.24%	(0.01%)	0.23%
Timber	3%	4%	(0.35%)	5.99%	(0.23%)	(0.02%)	(0.25%)
Infrastructure	4%	5%	6.32%	1.61%	0.21%	0.04%	0.24%
Cash & Equivalents	1%	1%	0.62%	0.52%	0.00%	0.01%	0.01%
<b>Total</b>			<b>8.10%</b>	<b>7.00%</b>	<b>+ 1.00%</b>	<b>+ 0.10%</b>	<b>1.10%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

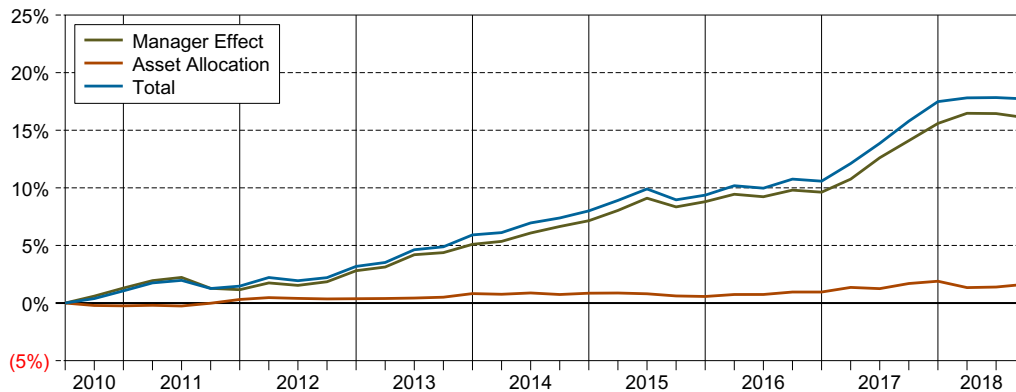
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Eight and One-Quarter Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Eight and One-Quarter Year Annualized Relative Attribution Effects

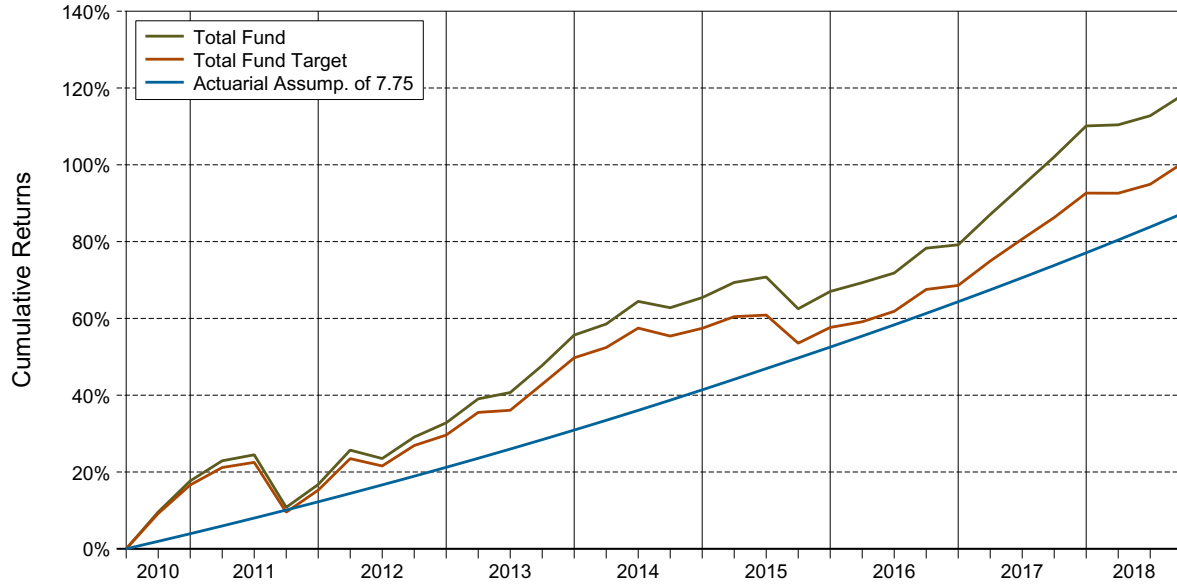
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	26%	25%	16.13%	15.62%	0.08%	0.09%	0.18%
International Equities	17%	17%	8.49%	6.49%	0.36%	(0.02%)	0.34%
World Equities	12%	12%	-	-	(0.01%)	(0.02%)	(0.03%)
Private Equities	4%	5%	4.02%	4.02%	0.00%	(0.00%)	(0.00%)
Domestic Fixed Income	18%	18%	5.65%	4.00%	0.29%	(0.04%)	0.25%
International Fixed Inc.	5%	5%	-	-	0.10%	0.00%	0.11%
Real Estate	10%	10%	13.46%	10.89%	0.24%	0.02%	0.26%
Timber	3%	4%	-	-	(0.24%)	(0.00%)	(0.25%)
Infrastructure	4%	4%	-	-	0.18%	0.09%	0.27%
Cash & Equivalents	1%	1%	0.42%	0.36%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>9.91%</b>	<b>8.79%</b>	<b>+ 1.02%</b>	<b>+ 0.11%</b>	<b>1.12%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

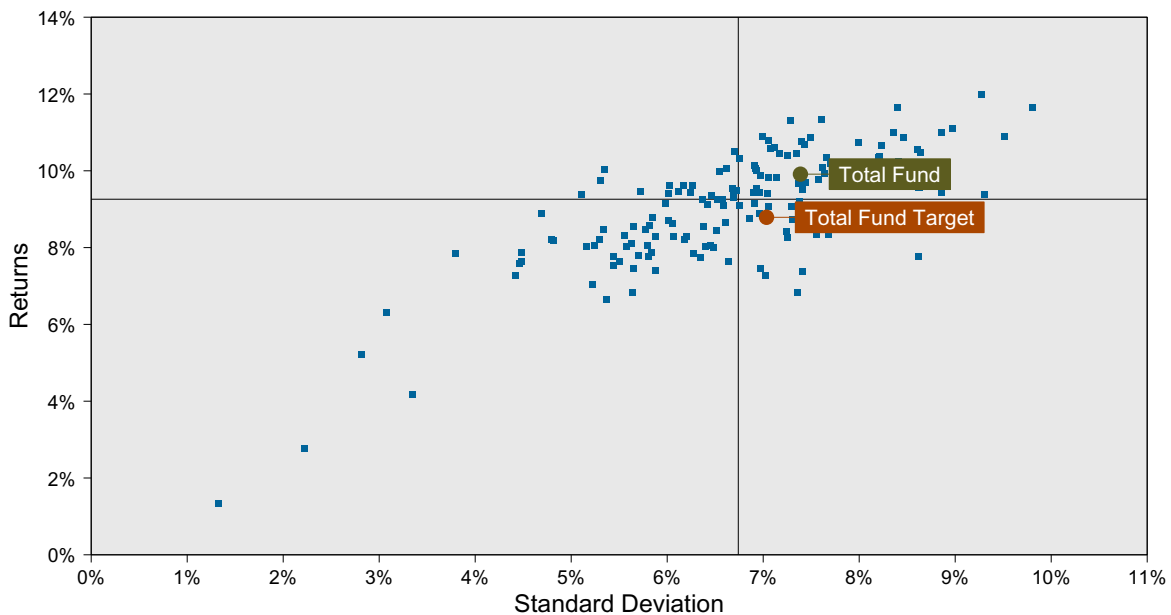
## Cumulative Performance Relative to Target

The first chart below illustrates the cumulative performance of the Total Fund relative to the cumulative performance of the Fund's Target Asset Mix. The Target Mix is assumed to be rebalanced each quarter with no transaction costs. The second chart below shows the return and the risk of the Total Fund and the Target Mix, contrasted with the returns and risks of the funds in the Callan Public Fund Sponsor Database.

### Cumulative Returns Actual vs Target



### Eight and One-Quarter Year Annualized Risk vs Return



Squares represent membership of the Callan Public Fund Sponsor Database

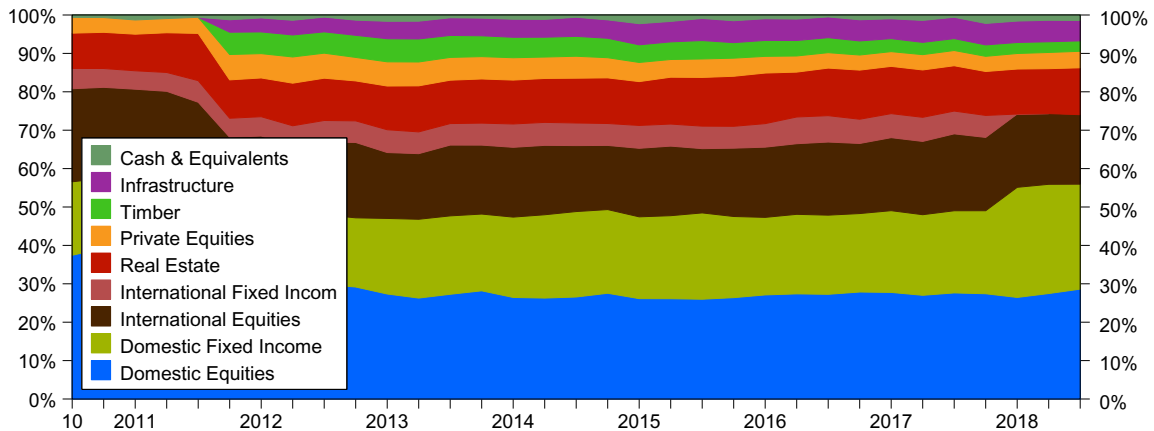
\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.



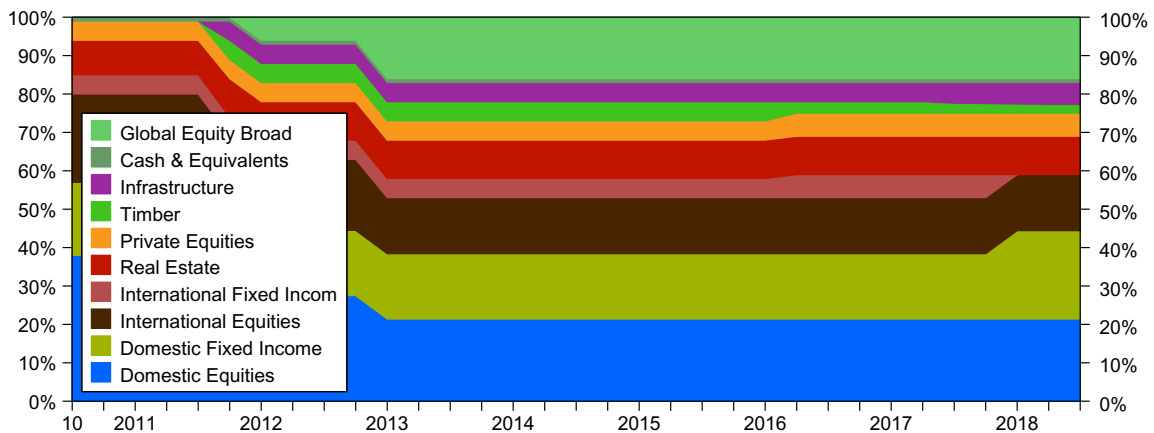
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Sponsor Database.

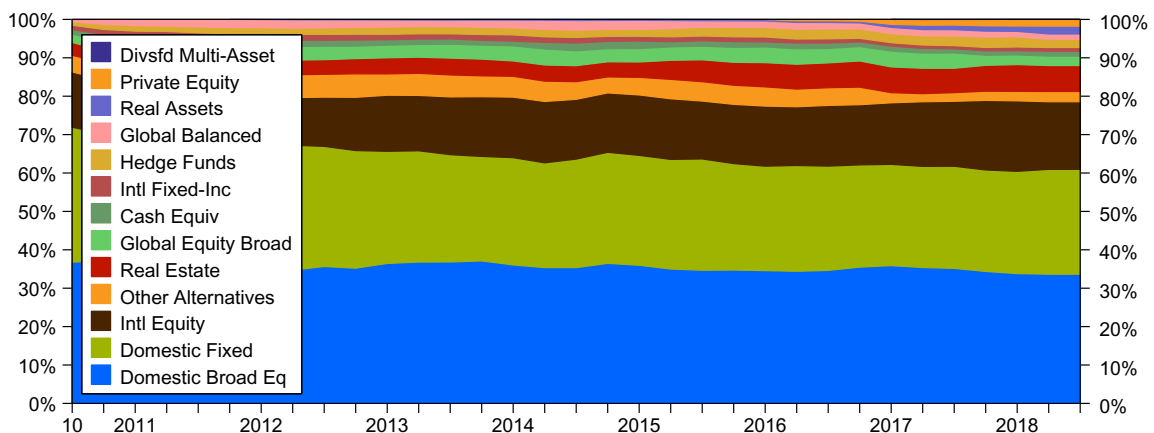
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation

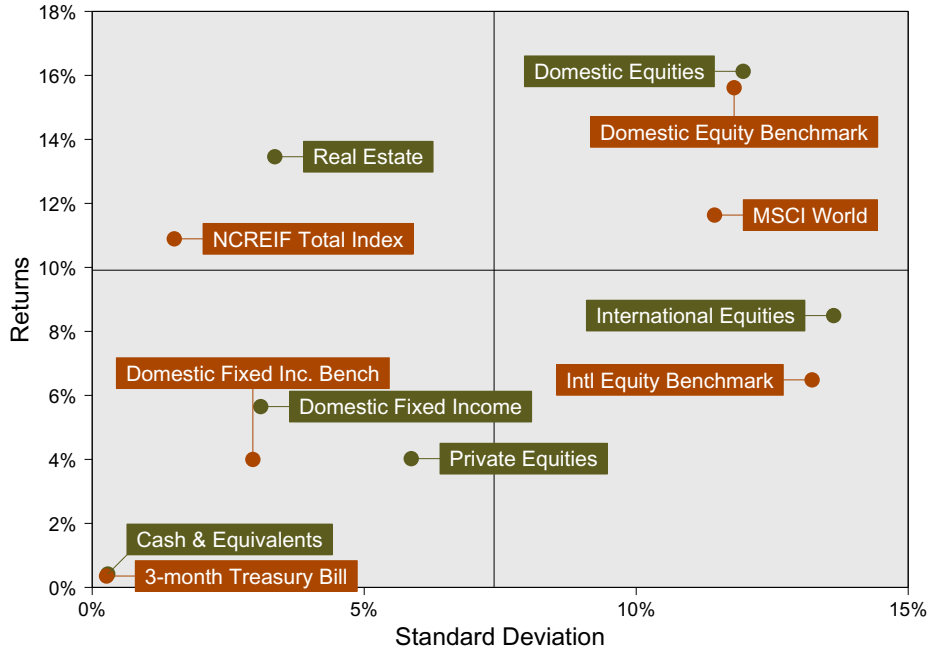


\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

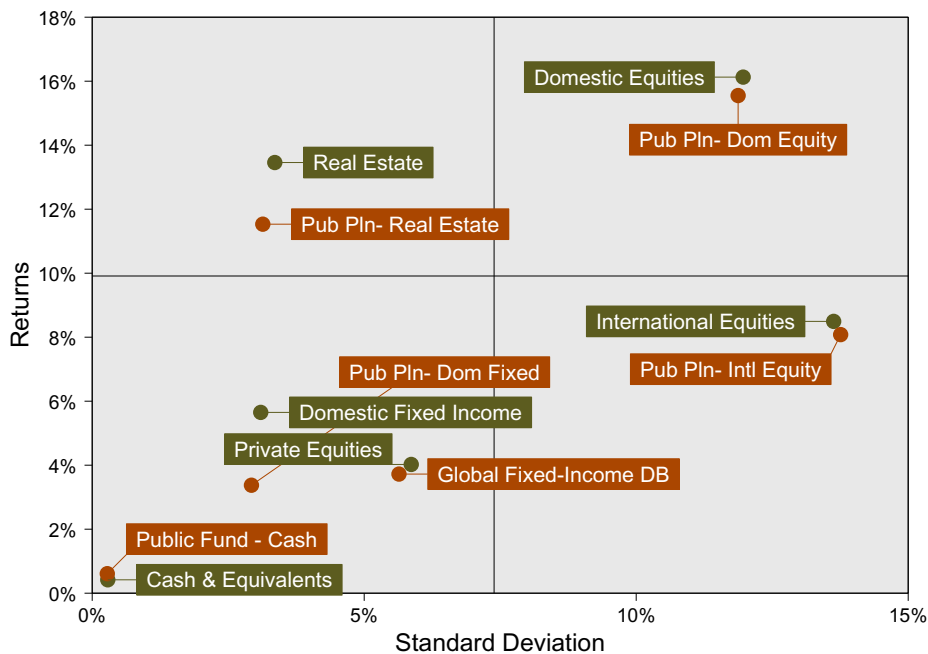
## Asset Class Risk and Return

The charts below show the eight and one-quarter year annualized risk and return for each asset class component of the Total Fund. The first graph contrasts these values with those of the appropriate index for each asset class. The second chart contrasts them with the risk and return of the median portfolio in each of the appropriate CAI comparative databases. In each case, the crosshairs on the chart represent the return and risk of the Total Fund.

**Eight and One-Quarter Year Annualized Risk vs Return  
Asset Classes vs Benchmark Indices**



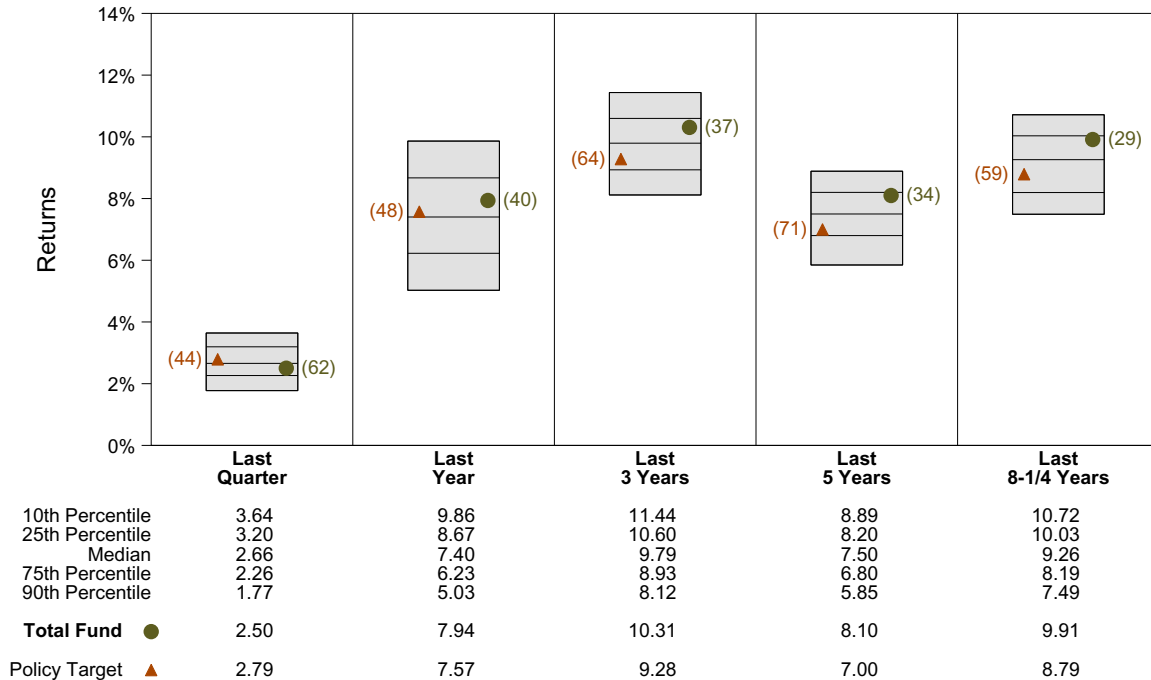
**Eight and One-Quarter Year Annualized Risk vs Return  
Asset Classes vs Asset Class Median**



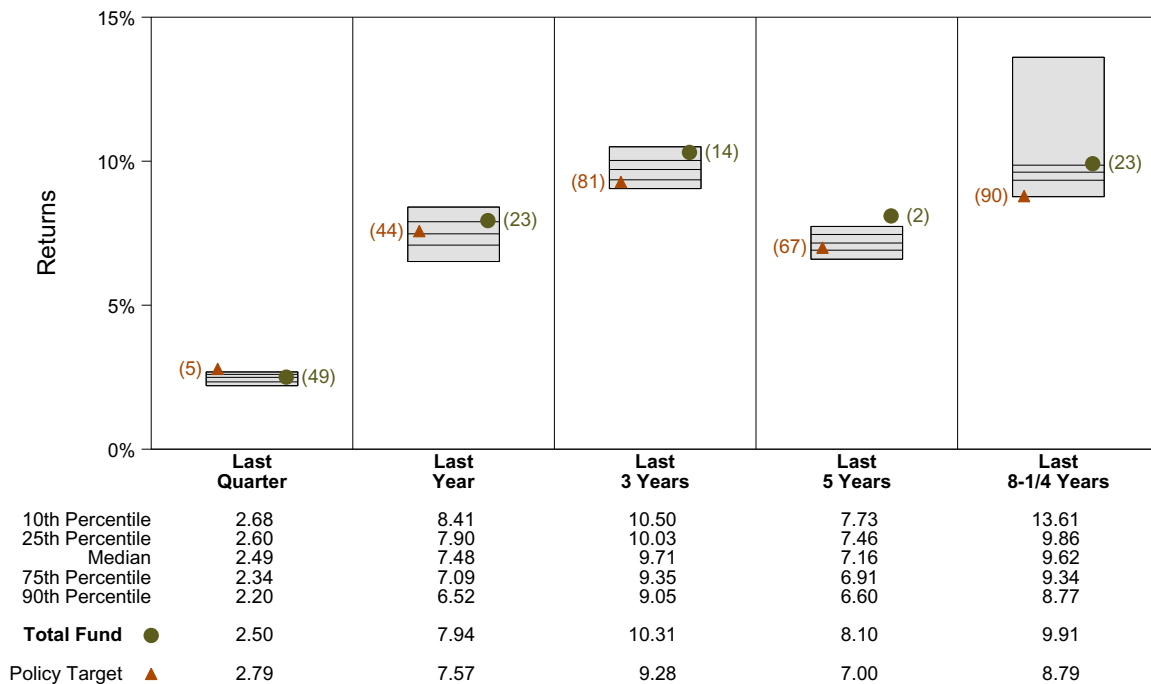
## Total Fund Ranking

The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended September 30, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

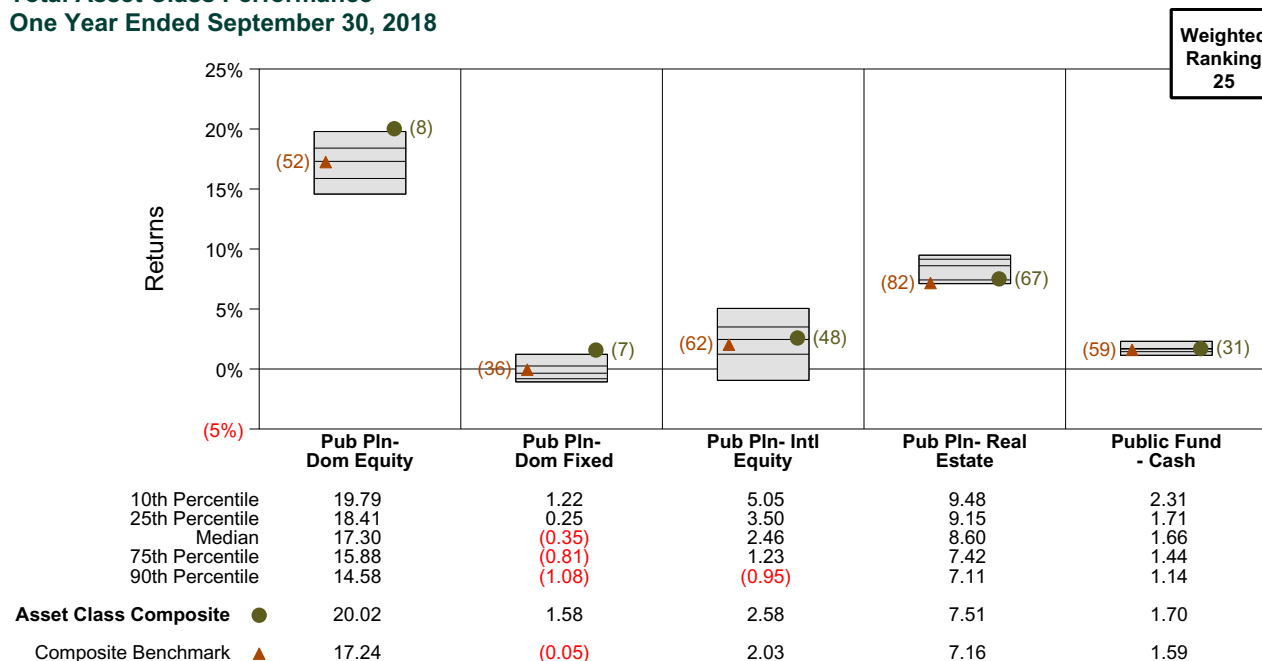


\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

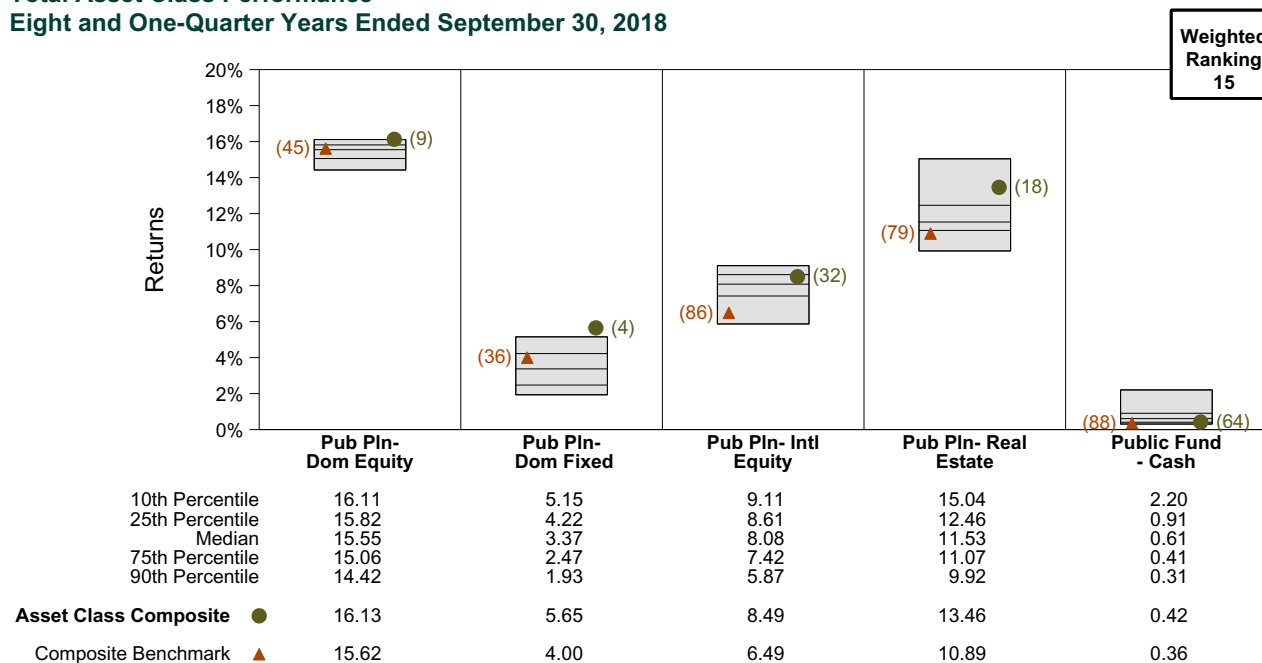
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Eight and One-Quarter Years Ended September 30, 2018



\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Class Allocation

	September 30, 2018		Net New Inv.	Inv. Return	June 30, 2018	
	Market Value	Weight			Market Value	Weight
<b>Global Equities</b>	<b>\$1,488,908,415</b>	<b>58.93%</b>	<b>\$(11,221,277)</b>	<b>\$56,509,020</b>	<b>\$1,443,620,672</b>	<b>58.07%</b>
<b>Public Equities</b>	<b>\$1,397,919,846</b>	<b>55.33%</b>	<b>\$(13,704,300)</b>	<b>\$56,158,088</b>	<b>\$1,355,466,058</b>	<b>54.53%</b>
<b>World Equities</b>	<b>\$408,954,826</b>	<b>16.19%</b>	<b>\$(839,389)</b>	<b>\$12,305,249</b>	<b>\$397,488,966</b>	<b>15.99%</b>
<b>Domestic Equities</b>	<b>\$605,836,953</b>	<b>23.98%</b>	<b>\$(12,096,188)</b>	<b>\$44,353,331</b>	<b>\$573,579,810</b>	<b>23.07%</b>
Large Cap	461,502,737	18.27%	(12,376,580)	36,485,474	437,393,843	17.60%
Small Cap	144,334,216	5.71%	280,392	7,867,857	136,185,967	5.48%
<b>International Equities</b>	<b>\$383,128,067</b>	<b>15.16%</b>	<b>\$(768,723)</b>	<b>\$(500,492)</b>	<b>\$384,397,282</b>	<b>15.46%</b>
Developed	305,985,338	12.11%	(568,723)	2,123,973	304,430,088	12.25%
Emerging Markets	77,142,729	3.05%	(200,000)	(2,624,465)	79,967,194	3.22%
<b>Private Equities</b>	<b>\$90,988,569</b>	<b>3.60%</b>	<b>\$2,483,023</b>	<b>\$350,932</b>	<b>\$88,154,614</b>	<b>3.55%</b>
<b>Global Fixed Income</b>	<b>\$578,713,913</b>	<b>22.91%</b>	<b>\$(17,991,633)</b>	<b>\$2,636,387</b>	<b>\$594,069,158</b>	<b>23.90%</b>
<b>Domestic Fixed Income</b>	<b>\$578,713,913</b>	<b>22.91%</b>	<b>\$(17,991,633)</b>	<b>\$2,636,387</b>	<b>\$594,069,158</b>	<b>23.90%</b>
Investment Grade	407,979,463	16.15%	(16,984,058)	409,539	424,553,981	17.08%
Below Investment Grade	170,734,450	6.76%	(1,007,575)	2,226,848	169,515,177	6.82%
<b>Global Real Assets</b>	<b>\$428,478,502</b>	<b>16.96%</b>	<b>\$5,964,311</b>	<b>\$3,047,836</b>	<b>\$419,466,355</b>	<b>16.87%</b>
<b>Real Estate</b>	<b>\$258,706,009</b>	<b>10.24%</b>	<b>\$12,281,529</b>	<b>\$2,079,874</b>	<b>\$244,344,606</b>	<b>9.83%</b>
<b>Other Real Assets</b>	<b>\$169,772,493</b>	<b>6.72%</b>	<b>\$(6,317,218)</b>	<b>\$967,962</b>	<b>\$175,121,748</b>	<b>7.04%</b>
Infrastructure	112,226,875	4.44%	(5,631,100)	967,962	116,890,013	4.70%
Timber	57,545,617	2.28%	(686,119)	(0)	58,231,736	2.34%
<b>Cash</b>	<b>\$30,351,821</b>	<b>1.20%</b>	<b>\$1,490,560</b>	<b>\$182,143</b>	<b>\$28,679,119</b>	<b>1.15%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(42,173)</b>	<b>\$42,173</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$2,526,452,651</b>	<b>100.0%</b>	<b>\$(21,800,212)</b>	<b>\$62,417,559</b>	<b>\$2,485,835,304</b>	<b>100.0%</b>

PLEASE REFER TO PAGES 29-31 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Equities</b>					
Gross	3.93%	10.83%	13.69%	9.57%	-
Net	3.88%	10.60%	13.45%	9.28%	-
Weighted Benchmark	4.05%	10.81%	12.89%	8.68%	-
<b>Public Equities</b>					
Gross	4.15%	-	-	-	-
Net	4.10%	-	-	-	-
Weighted Benchmark	4.44%	-	-	-	-
<b>World Equities</b>					
Gross	3.10%	7.05%	12.92%	9.01%	-
Net	3.01%	6.70%	12.52%	8.43%	-
MSCI World	4.98%	11.24%	13.54%	9.28%	11.64%
<b>Domestic Equities</b>					
Gross	7.74%	20.02%	17.45%	13.85%	16.13%
Net	7.70%	19.84%	17.25%	13.65%	15.88%
Weighted Benchmark	6.56%	17.24%	17.15%	13.15%	15.62%
<b>Large Cap</b>					
Gross	8.37%	20.30%	17.51%	14.70%	16.40%
Net	8.34%	20.18%	17.38%	14.54%	16.17%
Benchmark(1)	7.42%	17.76%	17.07%	13.67%	15.82%
<b>Small Cap</b>					
Gross	5.77%	19.08%	17.06%	10.85%	15.11%
Net	5.68%	18.69%	16.66%	10.54%	14.80%
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	14.76%
<b>International Equities</b>					
Gross	(0.13%)	2.58%	11.60%	5.95%	8.49%
Net	(0.17%)	2.41%	11.40%	5.75%	8.20%
Weighted Benchmark	0.84%	2.03%	9.74%	4.25%	6.49%
<b>Developed</b>					
Gross	0.70%	4.10%	11.40%	6.14%	9.09%
Net	0.64%	3.87%	11.15%	5.89%	8.79%
Benchmark(2)	1.31%	2.67%	9.05%	4.31%	6.94%
<b>Emerging Markets</b>					
Gross	(3.29%)	(2.92%)	11.97%	4.70%	5.72%
Net	(3.29%)	(2.92%)	11.97%	4.65%	5.47%
Benchmark(3)	(1.09%)	(0.81%)	12.36%	3.61%	4.16%
<b>Private Equities</b>					
Net	0.40%	8.37%	2.85%	1.61%	3.96%

(1) S&P 500 Index through 12/31/2011 and the Russell 1000 Index thereafter.

(2) 50% Hedged EAFE through 3/31/2011; MSCI EAFE through 6/30/16; MSCI World ex-US thereafter.

(3) MSCI Emerging Mkts Idx (Gross) through 6/30/2011 and MSCI Emerging Mkts Idx Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Fixed Income</b>					
Gross	0.45%	2.28%	5.01%	4.24%	-
Net	0.41%	2.10%	4.79%	4.00%	-
Weighted Benchmark	0.74%	1.26%	3.43%	2.57%	-
<b>Domestic Fixed Income</b>					
Gross	0.45%	1.58%	4.70%	4.71%	5.65%
Net	0.41%	1.43%	4.51%	4.51%	5.50%
Weighted Benchmark	0.74%	(0.05%)	3.02%	3.00%	4.00%
<b>Inv. Grade Fixed Income</b>					
Gross	0.09%	0.14%	3.22%	3.86%	4.54%
Net	0.06%	0.05%	3.09%	3.74%	4.38%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.65%
<b>Below Inv. Grade Fixed Income</b>					
Gross	1.29%	5.11%	8.57%	6.89%	8.63%
Net	1.22%	4.83%	8.19%	6.48%	8.21%
Blmbg HY Corp 2% Issue	2.40%	3.05%	8.15%	5.55%	7.51%
<b>Global Real Assets</b>					
Gross	0.71%	6.39%	6.66%	8.20%	-
Net	0.67%	5.98%	6.24%	7.77%	-
Weighted Benchmark	1.51%	5.64%	5.47%	6.73%	-
<b>Real Estate</b>					
Gross	0.81%	7.51%	9.31%	12.04%	13.46%
Net	0.74%	7.04%	8.81%	11.51%	12.91%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	10.89%
<b>Other Real Assets</b>					
Gross	0.56%	-	-	-	-
Net	0.57%	-	-	-	-
Weighted Benchmark	1.31%	-	-	-	-
<b>Infrastructure</b>					
Gross	0.83%	8.91%	6.88%	6.32%	-
Net	0.86%	8.42%	6.33%	5.77%	-
Benchmark(1)	1.43%	3.64%	2.38%	1.61%	-
<b>Timber</b>					
Net	0.00%	(2.52%)	(2.71%)	(0.35%)	-
NCREIF Timberland Index	1.02%	4.00%	3.52%	5.99%	5.06%
<b>Cash &amp; Equivalents - Net</b>					
3-month Treasury Bill	0.53%	1.70%	1.00%	0.62%	0.42%
	0.49%	1.59%	0.84%	0.52%	0.36%
<b>Total Fund</b>					
Gross	2.50%	7.94%	10.31%	8.10%	9.91%
Net	2.46%	7.70%	10.03%	7.80%	9.58%
Target*	2.79%	7.57%	9.28%	7.00%	8.79%

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.8% NCREIF NFI-ODCE Eq Wt Net, 2.8% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.3% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

# Domestic Equities

## Period Ended September 30, 2018

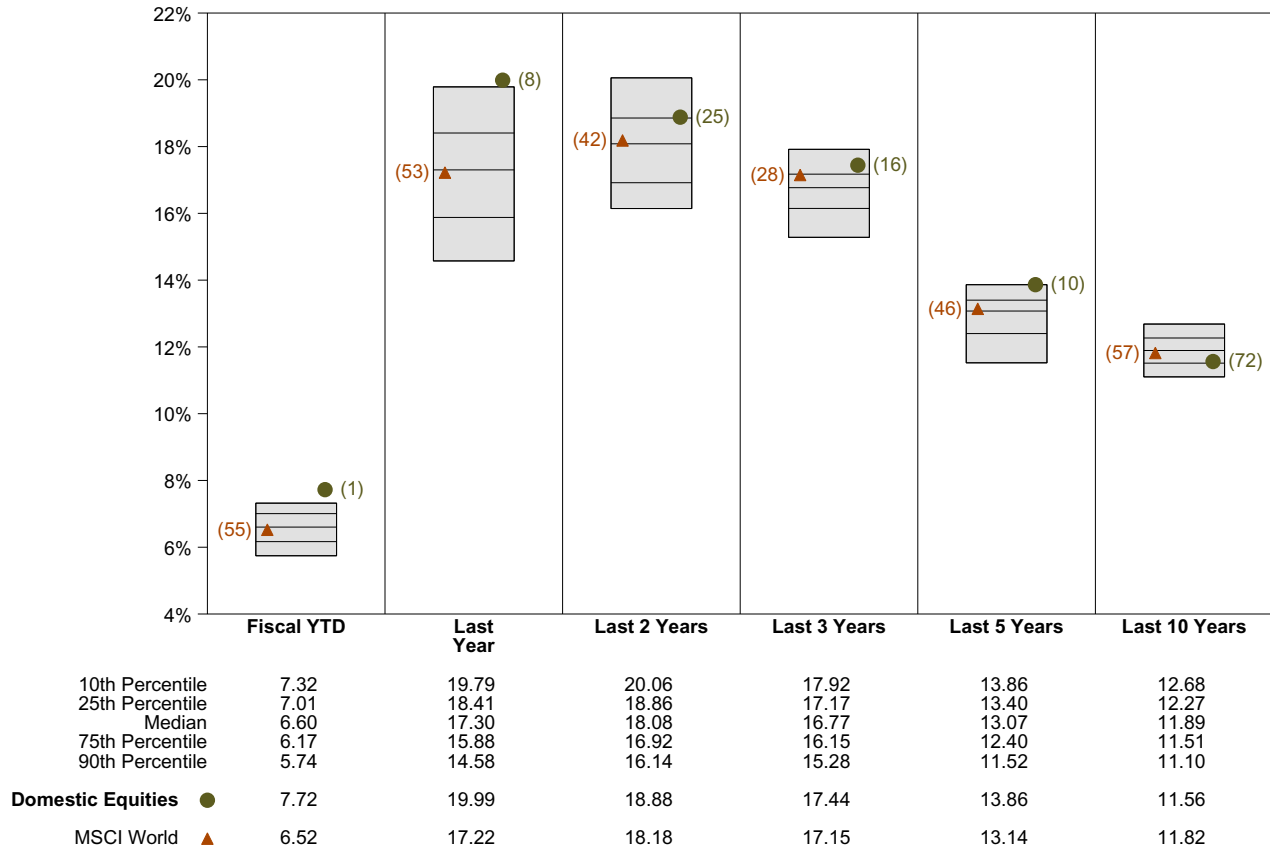
### Quarterly Summary and Highlights

- Domestic Equities's portfolio posted a 7.72% return for the quarter placing it in the 1 percentile of the Public Fund - Domestic Equity group for the quarter and in the 8 percentile for the last year.
- Domestic Equities's portfolio outperformed the MSCI World by 1.20% for the quarter and outperformed the MSCI World for the year by 2.77%.

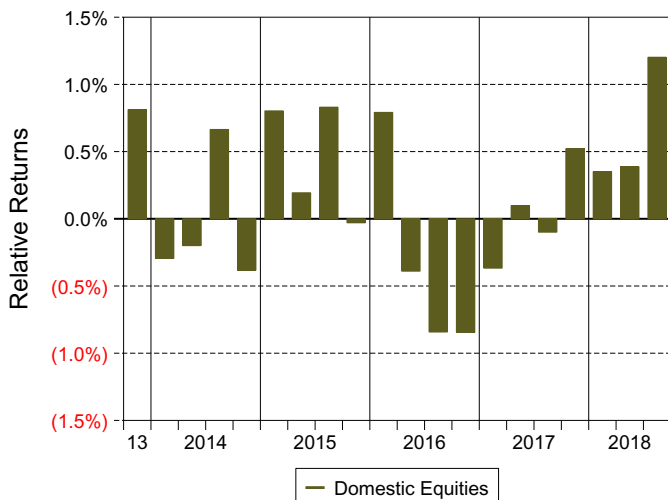
### Quarterly Asset Growth

Beginning Market Value	\$1,313,462,599
Net New Investment	\$-33,536,152
Investment Gains/(Losses)	\$101,210,988
Ending Market Value	\$1,381,137,435

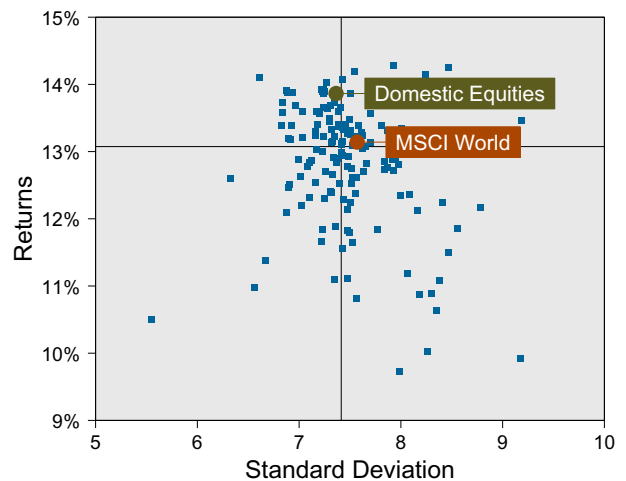
### Performance vs Public Fund - Domestic Equity (Gross)



### Relative Return vs MSCI World



### Public Fund - Domestic Equity (Gross) Annualized Five Year Risk vs Return





# L.A. Capital Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Structured portfolio is a large growth portfolio benchmarked to the Russell 1000 Growth Index. It is an active assignment meaning that it targets a 2% alpha and constrains its risk budget (tracking error) to 4% relative to the benchmark. LA Capital believes that investment results are driven by Investor Preferences and thus recognize that when preferences shift a different posture related to that factor is warranted.

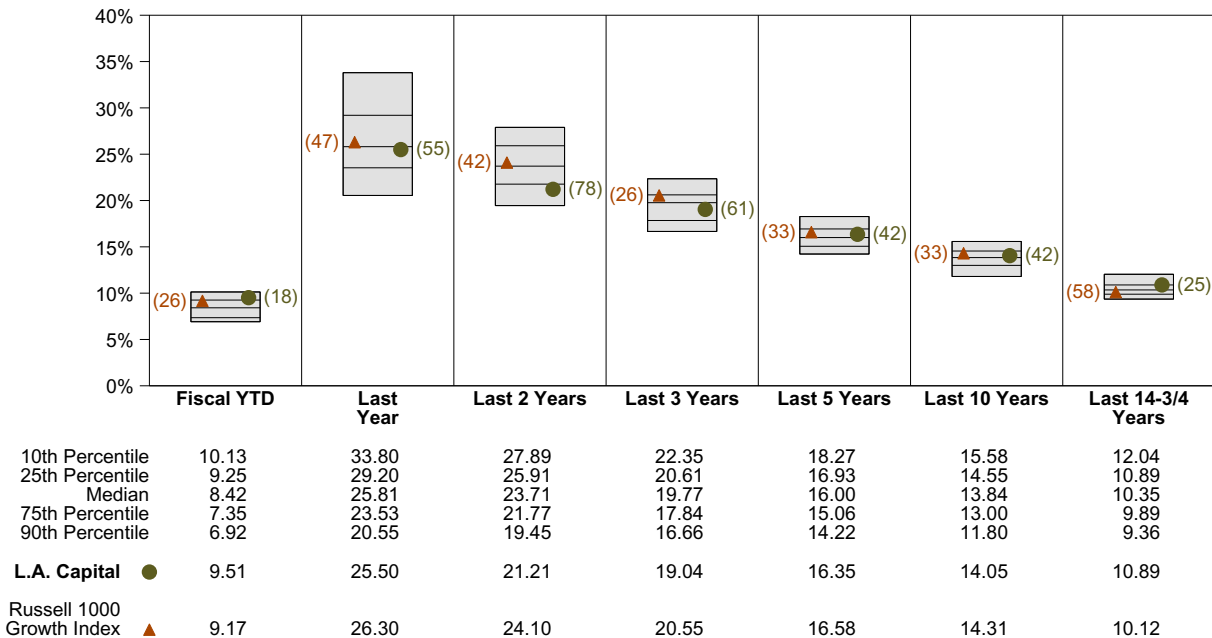
## Quarterly Summary and Highlights

- L.A. Capital's portfolio posted a 9.51% return for the quarter placing it in the 18 percentile of the Callan Large Cap Growth group for the quarter and in the 55 percentile for the last year.
- L.A. Capital's portfolio outperformed the Russell 1000 Growth Index by 0.34% for the quarter and underperformed the Russell 1000 Growth Index for the year by 0.80%.

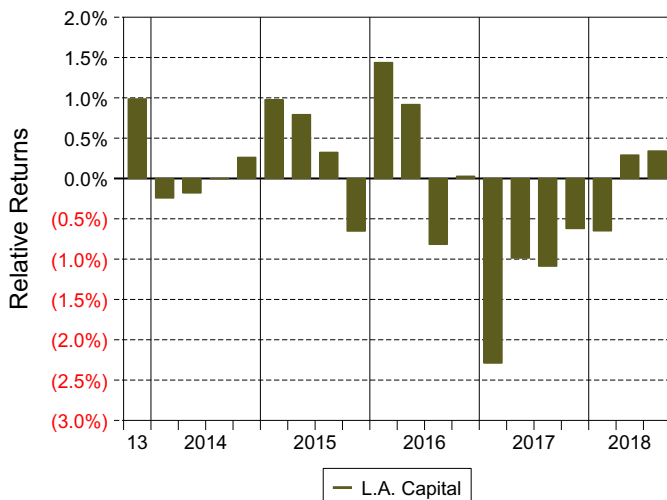
## Quarterly Asset Growth

Beginning Market Value	\$394,892,650
Net New Investment	\$-15,199,217
Investment Gains/(Losses)	\$37,302,178
Ending Market Value	\$416,995,610

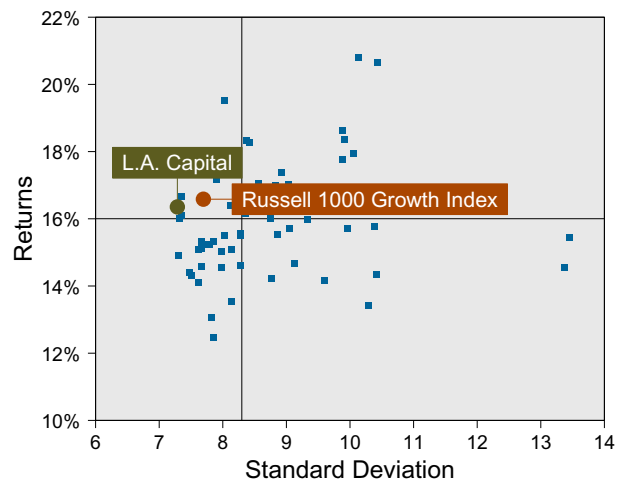
## Performance vs Callan Large Cap Growth (Gross)



## Relative Return vs Russell 1000 Growth Index



## Callan Large Cap Growth (Gross) Annualized Five Year Risk vs Return



# L.A. Capital Management Enhanced Index Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Enhanced portfolio is a large core portfolio benchmarked to the Russell 1000 Index. Characterized as an enhanced index assignment, its objective is to track the benchmark with lower variability. The pension portfolio began in August of 2000 and the insurance portfolio was initiated in April of 2004. Since October of 2006 a small portion of each of the two core accounts was allocated into the Large Cap Alpha Fund with intent to add incremental alpha to the assignment given that the information ratio was expected to be higher.

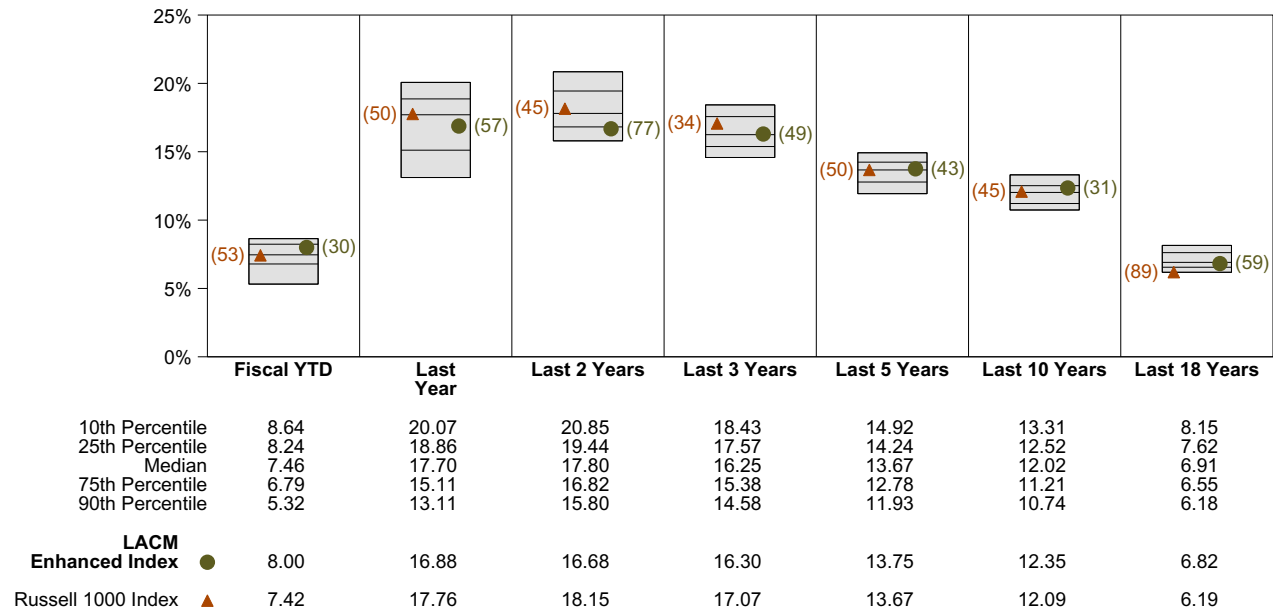
## Quarterly Summary and Highlights

- LACM Enhanced Index's portfolio posted a 8.00% return for the quarter placing it in the 30 percentile of the Callan Large Cap Core group for the quarter and in the 57 percentile for the last year.
- LACM Enhanced Index's portfolio outperformed the Russell 1000 Index by 0.58% for the quarter and underperformed the Russell 1000 Index for the year by 0.88%.

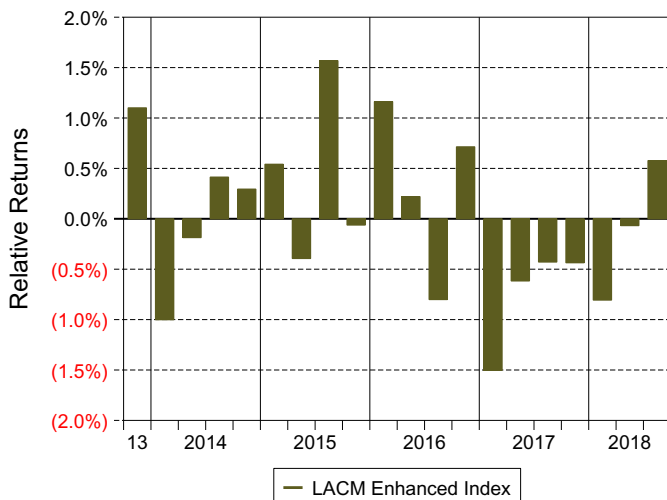
## Quarterly Asset Growth

Beginning Market Value	\$206,543,164
Net New Investment	\$-55,913
Investment Gains/(Losses)	\$16,520,450
Ending Market Value	\$223,007,701

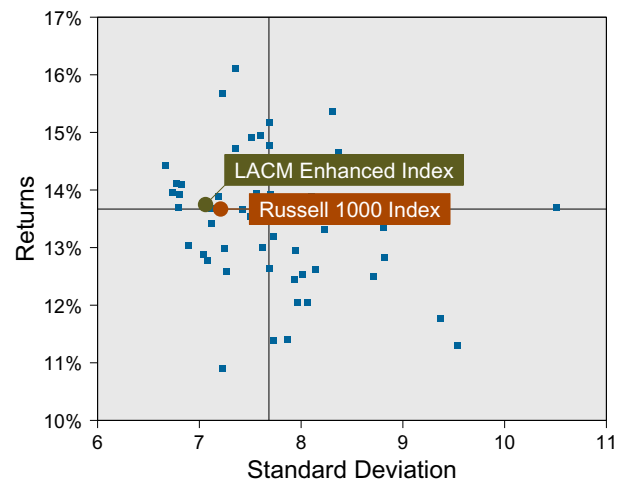
## Performance vs Callan Large Cap Core (Gross)



## Relative Return vs Russell 1000 Index



## Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



# Northern Trust AM Enh S&P500 Period Ended September 30, 2018

## Investment Philosophy

Northern Trust AM Enhanced S&P 500 employs a quantitative investment approach, focusing on the stock selection process as the principal source of value added. The account invests primarily in a broadly diversified portfolio of equity securities that include securities convertible into equity securities (including common stock), warrants, rights and units or shares in trusts, exchange traded funds and investment companies. The Investment Manager intends to use futures and options to manage market risk associated with the account's investments.

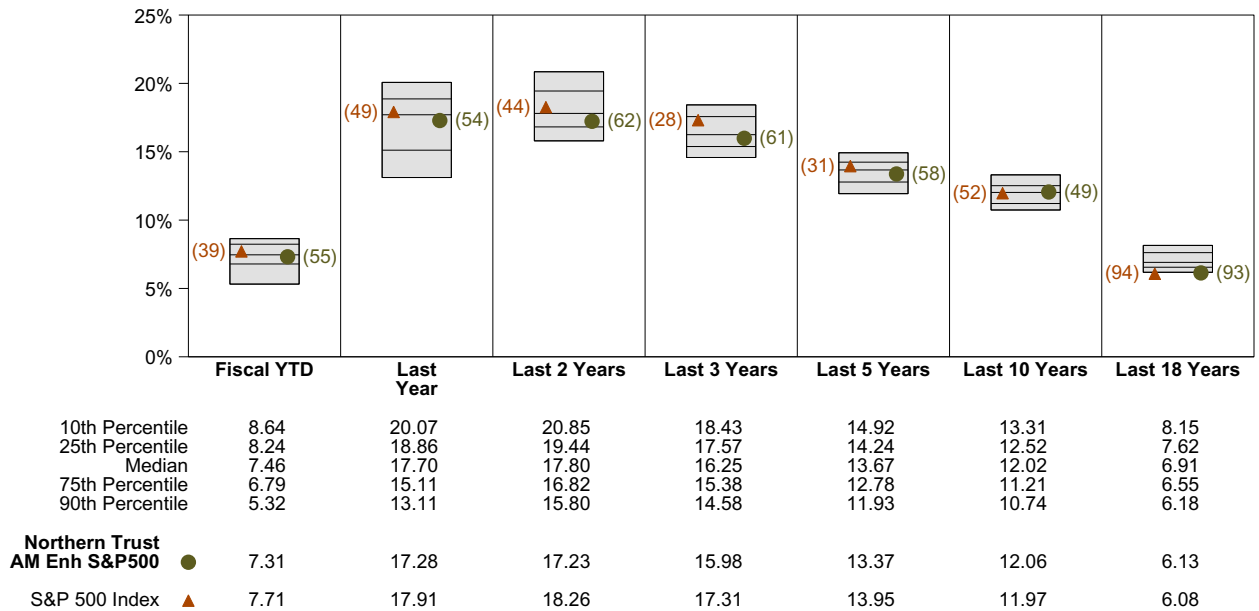
## Quarterly Summary and Highlights

- Northern Trust AM Enh S&P500's portfolio posted a 7.31% return for the quarter placing it in the 55 percentile of the Callan Large Cap Core group for the quarter and in the 54 percentile for the last year.
- Northern Trust AM Enh S&P500's portfolio underperformed the S&P 500 Index by 0.40% for the quarter and underperformed the S&P 500 Index for the year by 0.63%.

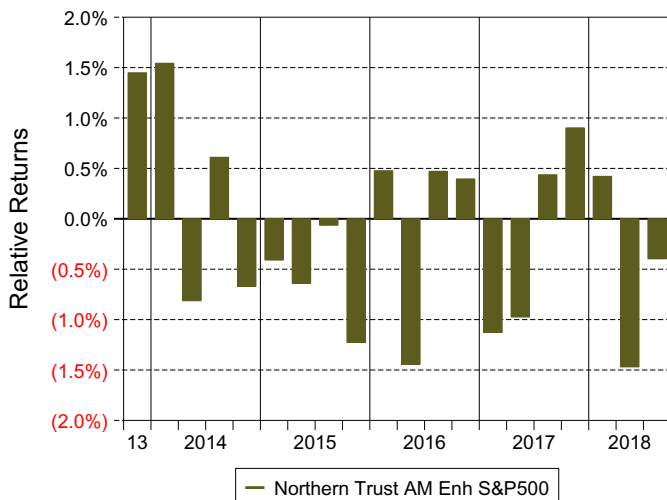
## Quarterly Asset Growth

Beginning Market Value	\$195,978,202
Net New Investment	\$-9,000,000
Investment Gains/(Losses)	\$14,252,657
Ending Market Value	\$201,230,859

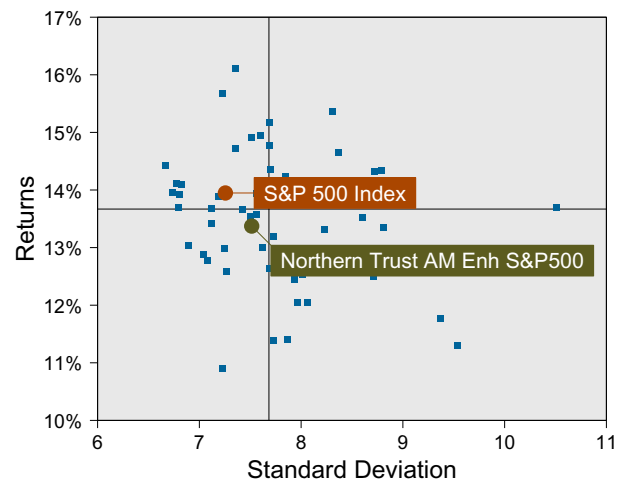
## Performance vs Callan Large Cap Core (Gross)



## Relative Return vs S&P 500 Index



## Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



# Parametric Clifton Enh S&P Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

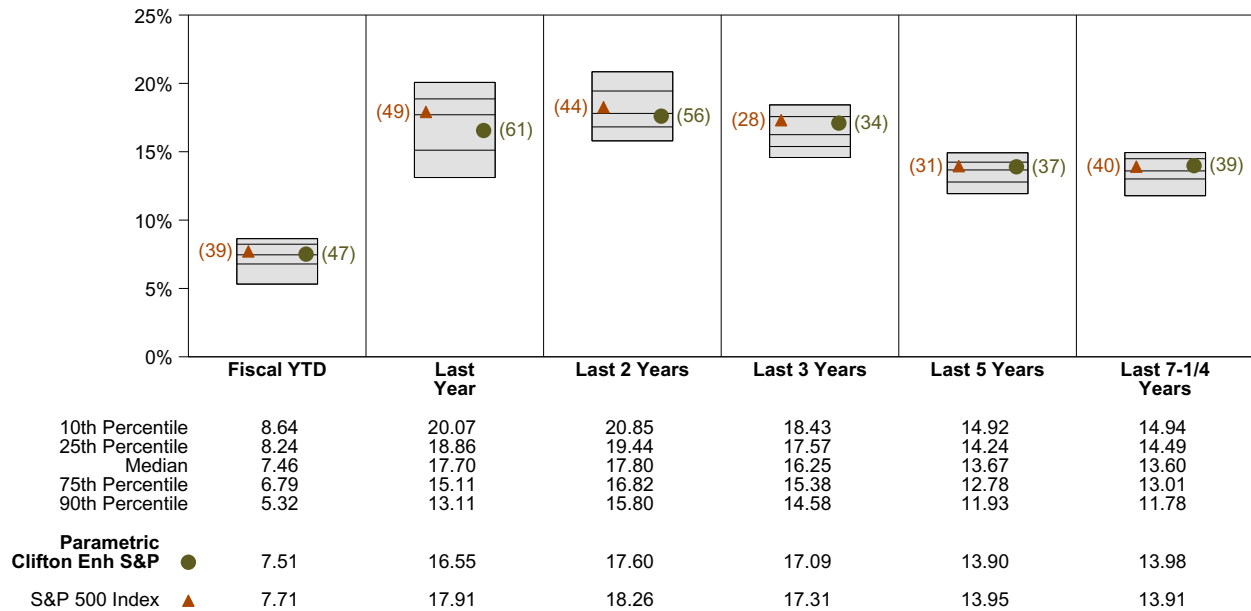
## Quarterly Summary and Highlights

- Parametric Clifton Enh S&P's portfolio posted a 7.51% return for the quarter placing it in the 47 percentile of the Callan Large Cap Core group for the quarter and in the 61 percentile for the last year.
- Parametric Clifton Enh S&P's portfolio underperformed the S&P 500 Index by 0.20% for the quarter and underperformed the S&P 500 Index for the year by 1.36%.

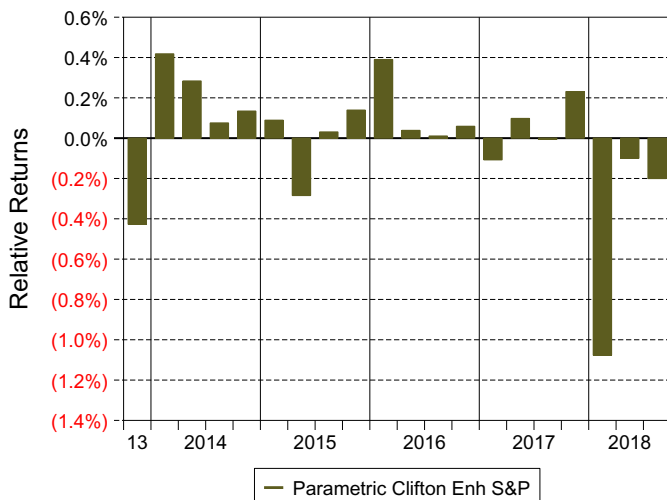
## Quarterly Asset Growth

Beginning Market Value	\$195,157,156
Net New Investment	\$-9,000,000
Investment Gains/(Losses)	\$14,630,562
Ending Market Value	\$200,787,718

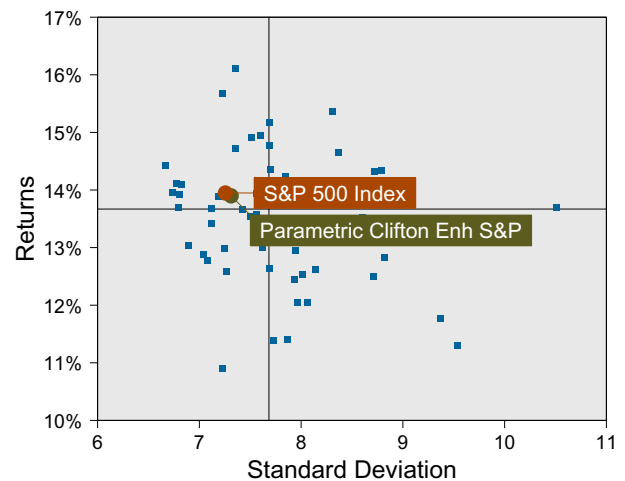
## Performance vs Callan Large Cap Core (Gross)



## Relative Return vs S&P 500 Index



## Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



# Atlanta Capital Period Ended September 30, 2018

## Investment Philosophy

Atlanta believes that high quality companies produce consistently increasing earnings and dividends, thereby providing attractive returns with moderate risk over the long-term.

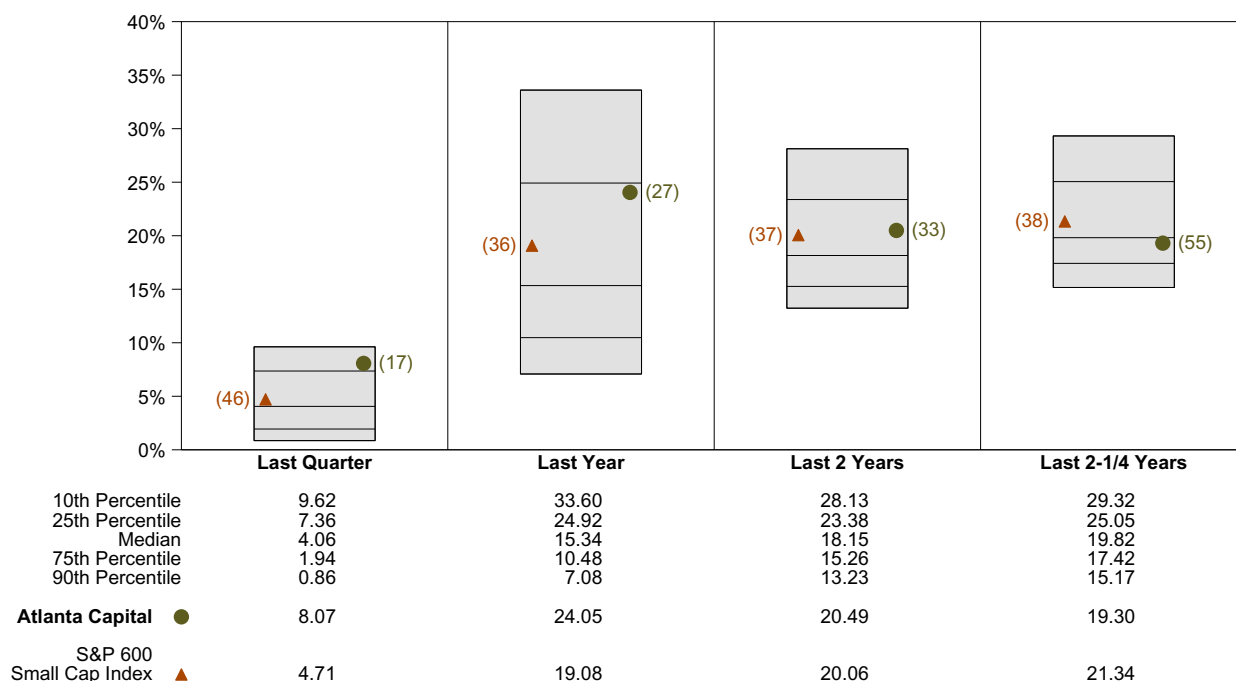
## Quarterly Summary and Highlights

- Atlanta Capital's portfolio posted a 8.07% return for the quarter placing it in the 17 percentile of the Callan Small Capitalization group for the quarter and in the 27 percentile for the last year.
- Atlanta Capital's portfolio outperformed the S&P 600 Small Cap Index by 3.36% for the quarter and outperformed the S&P 600 Small Cap Index for the year by 4.97%.

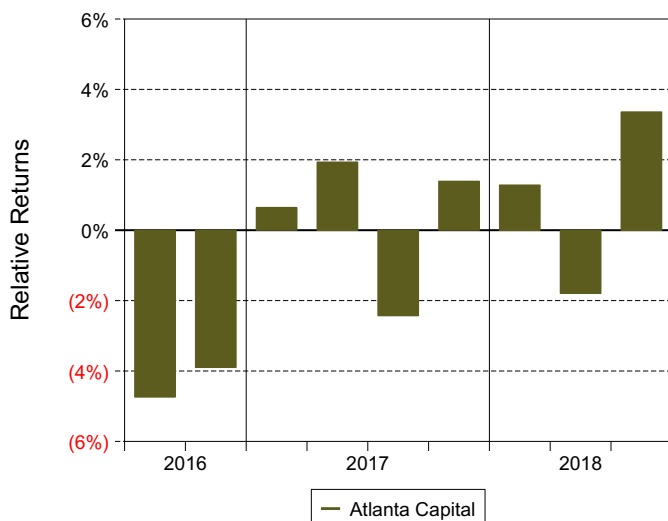
## Quarterly Asset Growth

Beginning Market Value	\$162,348,262
Net New Investment	\$-281,022
Investment Gains/(Losses)	\$13,094,569
Ending Market Value	\$175,161,809

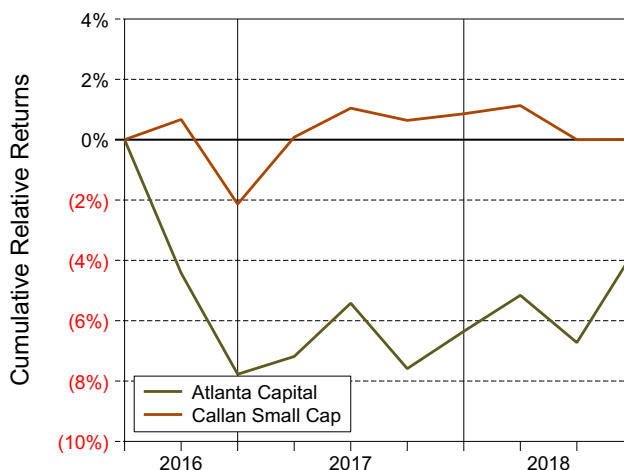
## Performance vs Callan Small Capitalization (Gross)



## Relative Return vs S&P 600 Small Cap Index



## Cumulative Returns vs S&P 600 Small Cap Index



# Parametric Clifton Enh SmCap Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

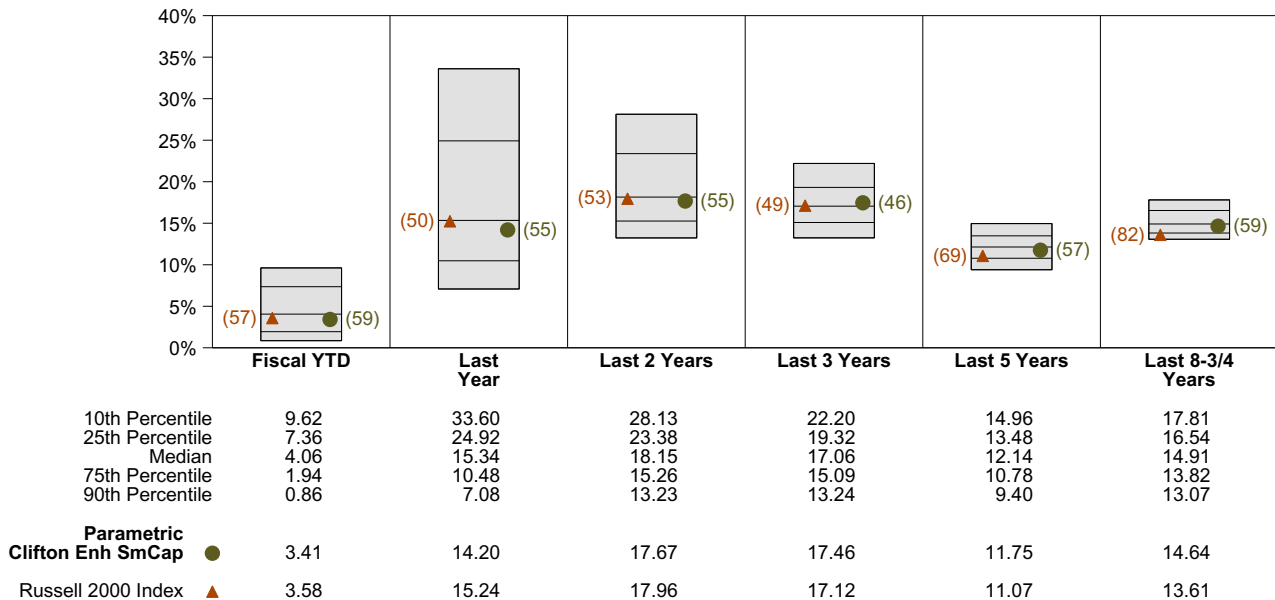
## Quarterly Summary and Highlights

- Parametric Clifton Enh SmCap's portfolio posted a 3.41% return for the quarter placing it in the 59 percentile of the Callan Small Capitalization group for the quarter and in the 55 percentile for the last year.
- Parametric Clifton Enh SmCap's portfolio underperformed the Russell 2000 Index by 0.16% for the quarter and underperformed the Russell 2000 Index for the year by 1.04%.

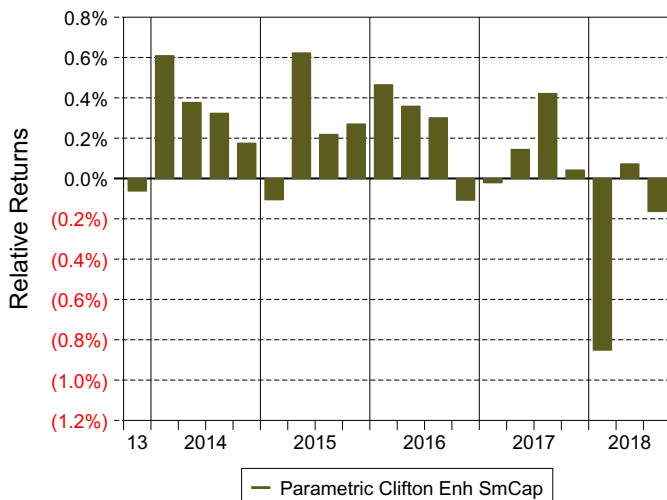
## Quarterly Asset Growth

Beginning Market Value	\$158,543,165
Net New Investment	\$0
Investment Gains/(Losses)	\$5,410,572
Ending Market Value	\$163,953,737

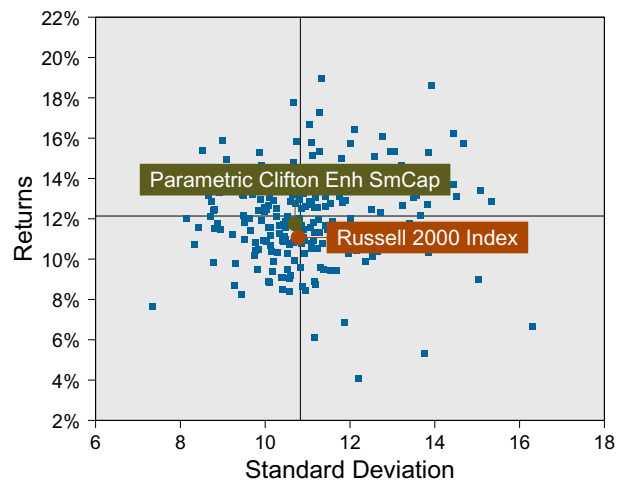
## Performance vs Callan Small Capitalization (Gross)



## Relative Return vs Russell 2000 Index



## Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



# International Equities Period Ended September 30, 2018

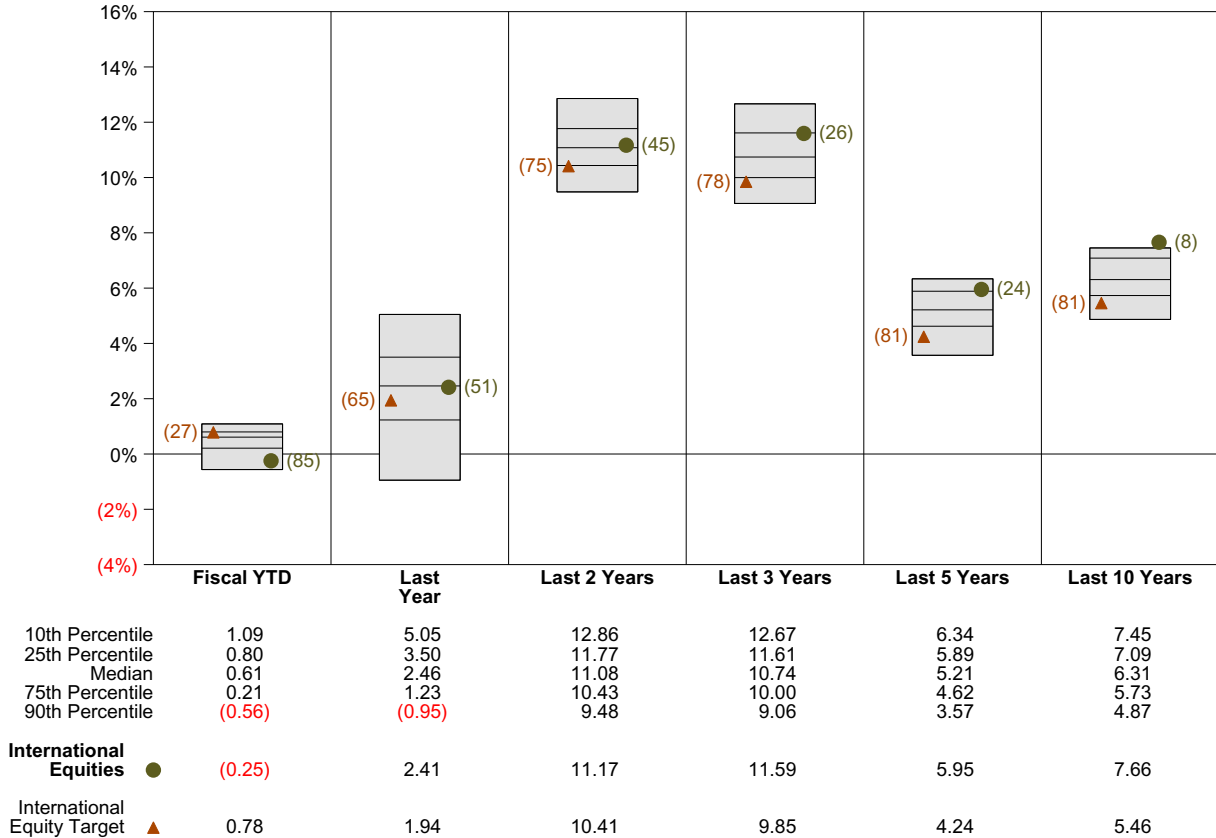
## Quarterly Summary and Highlights

- International Equities's portfolio posted a (0.25)% return for the quarter placing it in the 85 percentile of the Public Fund - International Equity group for the quarter and in the 51 percentile for the last year.
- International Equities's portfolio underperformed the International Equity Target by 1.03% for the quarter and outperformed the International Equity Target for the year by 0.47%.

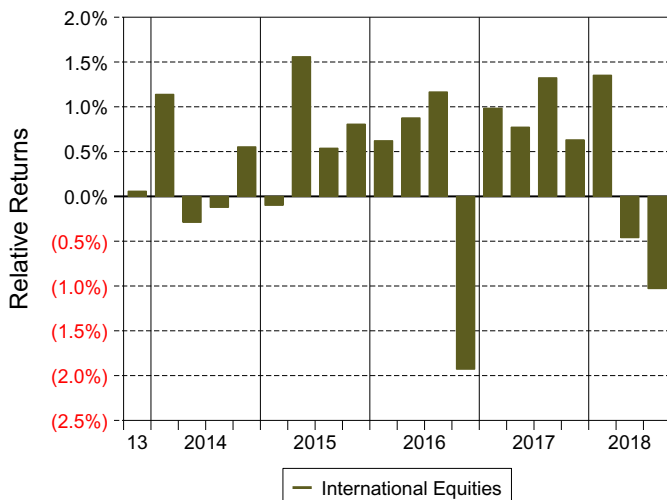
## Quarterly Asset Growth

Beginning Market Value	\$890,173,789
Net New Investment	\$-376,638
Investment Gains/(Losses)	\$-2,180,630
Ending Market Value	\$887,616,522

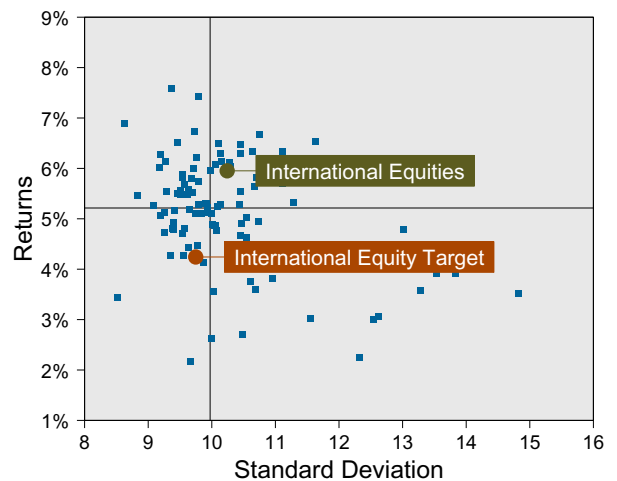
## Performance vs Public Fund - International Equity (Gross)



## Relative Return vs International Equity Target



## Public Fund - International Equity (Gross) Annualized Five Year Risk vs Return



# DFA International Small Cap Value Fund

## Period Ended September 30, 2018

### Investment Philosophy

The International Small Cap Value Portfolio invests in the stocks of small, non-US developed markets companies that Dimensional believes to be value stocks at the time of purchase. Specifically, it looks at companies that fall within the smallest 8-10% of each country's market capitalization, and who's shares have a high book value in relation to their market value (BtM). It does not invest in emerging markets.

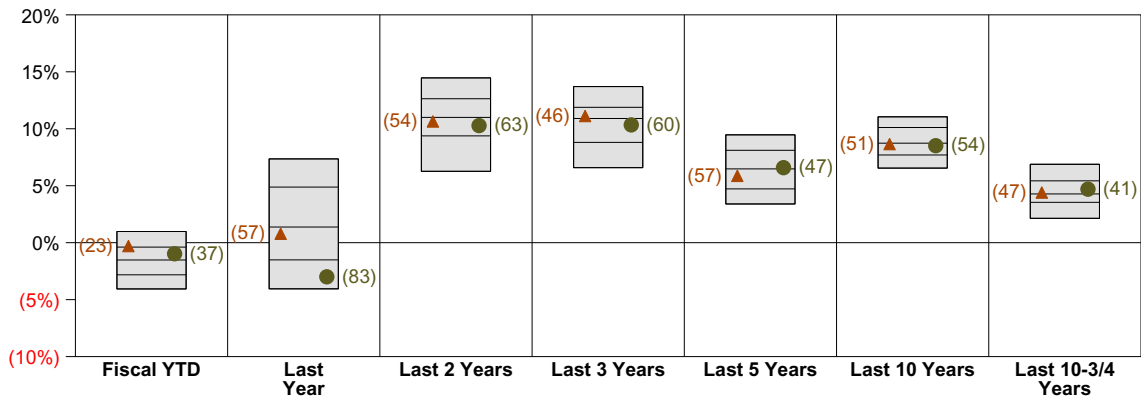
### Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a (0.97)% return for the quarter placing it in the 37 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 83 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.68% for the quarter and underperformed the World ex US SC Value for the year by 3.78%.

### Quarterly Asset Growth

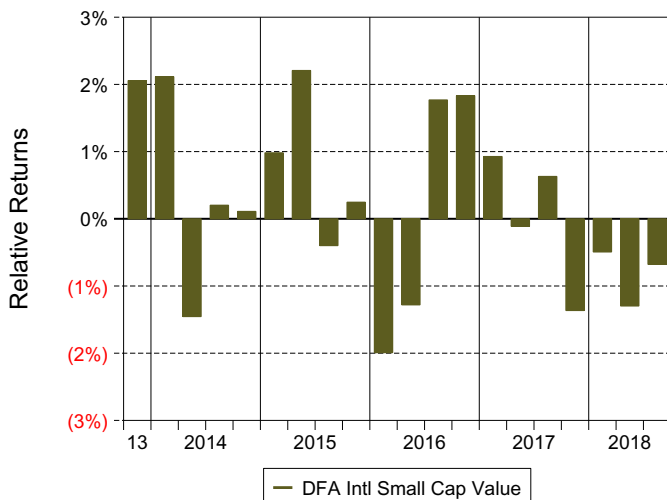
Beginning Market Value	\$87,432,016
Net New Investment	\$0
Investment Gains/(Losses)	\$-850,407
Ending Market Value	\$86,581,609

### Performance vs Callan International Small Cap Mut Funds (Net)

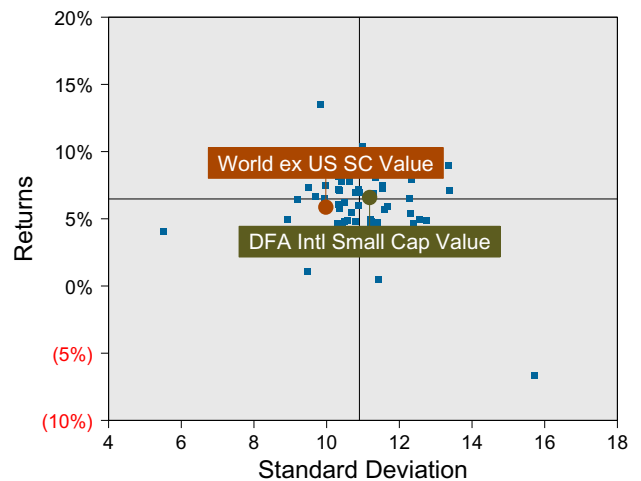


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-3/4 Years
10th Percentile	0.98	7.36	14.47	13.70	9.47	11.05	6.88
25th Percentile	(0.39)	4.88	12.64	11.88	8.11	10.11	5.43
Median	(1.52)	1.37	11.00	10.90	6.48	8.73	4.28
75th Percentile	(2.82)	(1.51)	9.38	8.80	4.72	7.70	3.54
90th Percentile	(4.06)	(4.05)	6.26	6.58	3.40	6.55	2.14
<b>DFA Intl Small Cap Value</b>	<b>(0.97)</b>	<b>(3.00)</b>	10.28	10.34	6.59	8.51	4.70
World ex US SC Value	(0.30)	0.79	10.64	11.12	5.87	8.66	4.40

### Relative Return vs World ex US SC Value



### Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return





# Northern Tr AM Wrld ex US Period Ended September 30, 2018

## Investment Philosophy

The Fund's objective is to provide investment results that approximate the overall performance of the MSCI World ex-US Equity Index.

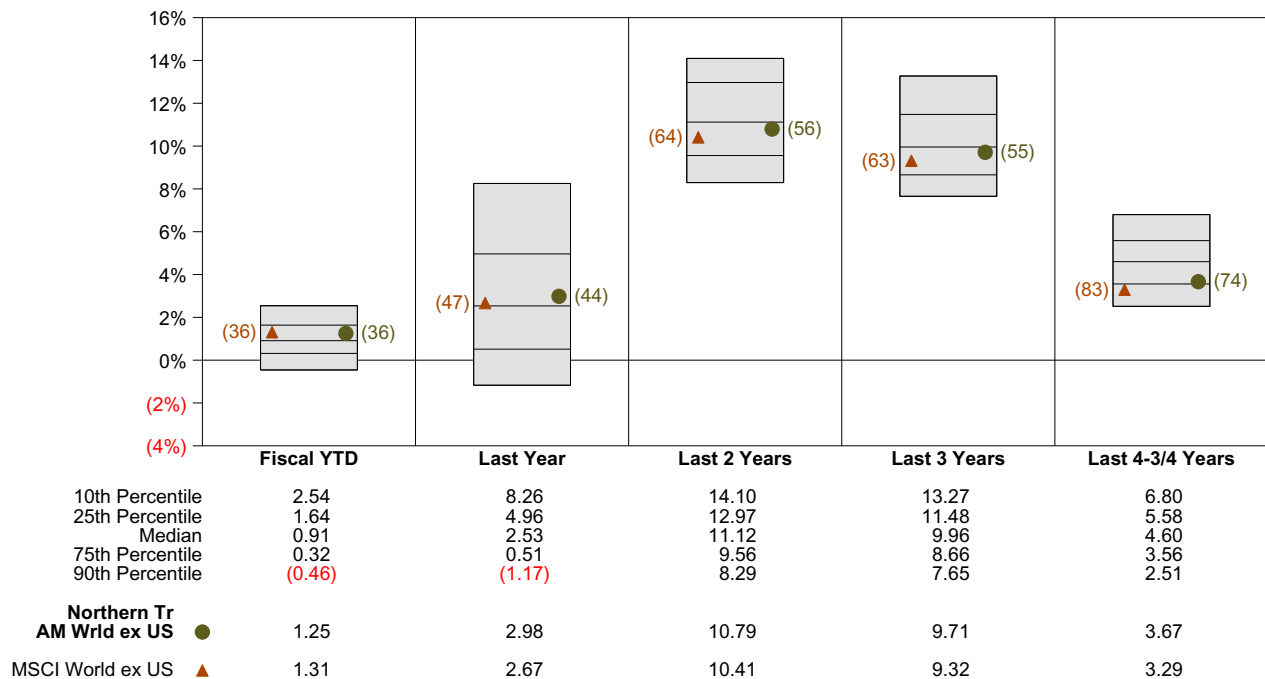
## Quarterly Summary and Highlights

- Northern Tr AM Wrld ex US's portfolio posted a 1.25% return for the quarter placing it in the 36 percentile of the Callan Non-US Equity group for the quarter and in the 44 percentile for the last year.
- Northern Tr AM Wrld ex US's portfolio underperformed the MSCI World ex US by 0.06% for the quarter and outperformed the MSCI World ex US for the year by 0.31%.

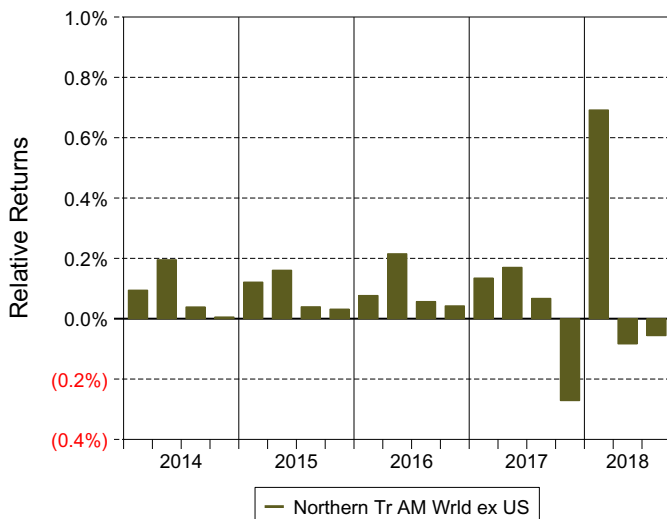
## Quarterly Asset Growth

Beginning Market Value	\$323,474,429
Net New Investment	\$-26,965
Investment Gains/(Losses)	\$4,043,247
Ending Market Value	\$327,490,711

## Performance vs Callan Non-US Equity (Gross)

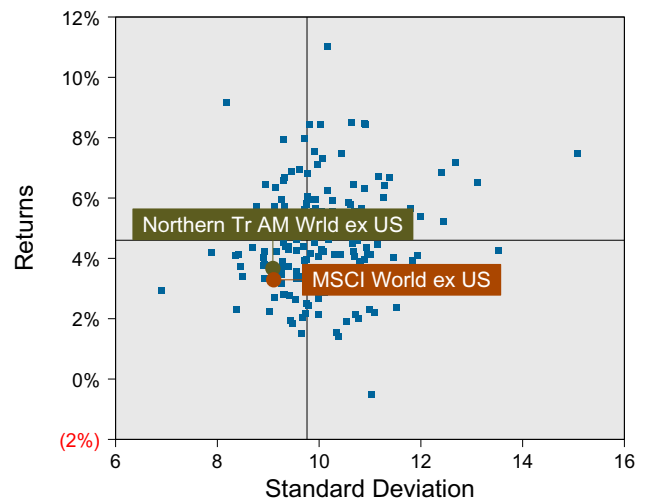


## Relative Return vs MSCI World ex US



## Callan Non-US Equity (Gross)

## Annualized Four and Three-Quarter Year Risk vs Return



# Wellington Management Period Ended September 30, 2018

## Investment Philosophy

The International Small Cap Opportunities investment approach is bottom-up focused, and leverages the global research resources at Wellington Management. In implementing purchase decisions, consideration is given to the size, liquidity, and volatility of these prospects. Sell decisions are based on changing fundamentals or valuations, or on finding better opportunities elsewhere. The assets are not hedged.

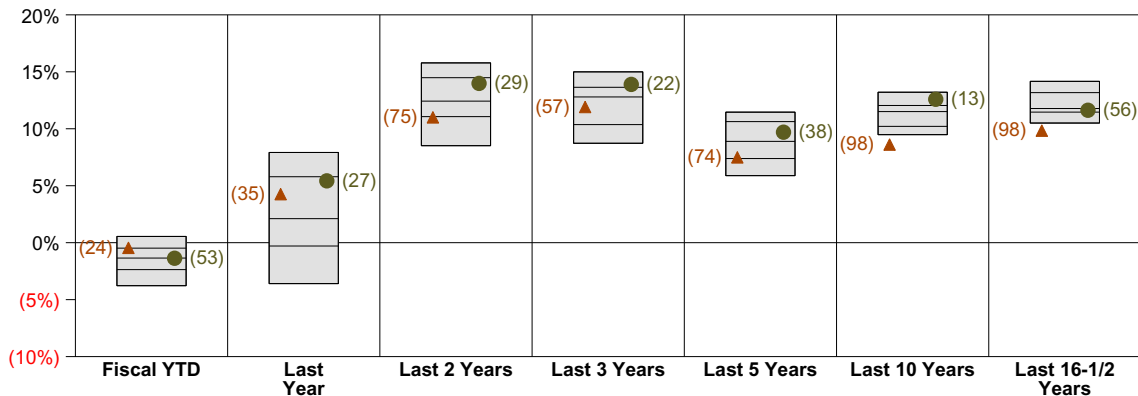
## Quarterly Summary and Highlights

- Wellington Management's portfolio posted a (1.37)% return for the quarter placing it in the 53 percentile of the Callan International Small Cap group for the quarter and in the 27 percentile for the last year.
- Wellington Management's portfolio underperformed the S&P BMI EPAC <\$2 B by 0.91% for the quarter and outperformed the S&P BMI EPAC <\$2 B for the year by 1.17%.

## Quarterly Asset Growth

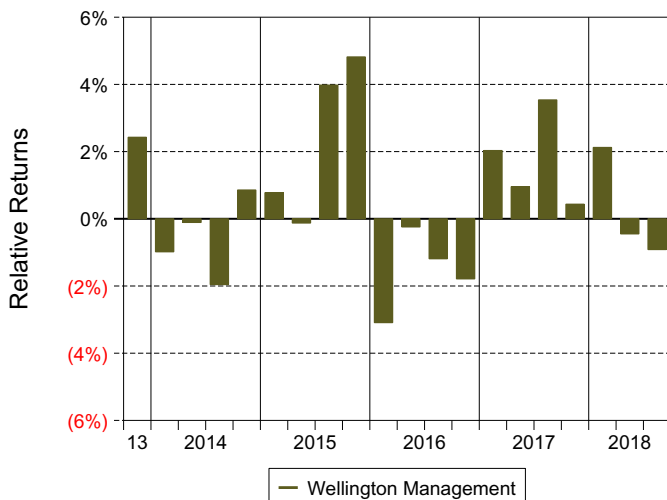
Beginning Market Value	\$87,119,856
Net New Investment	\$-185,836
Investment Gains/(Losses)	\$-1,188,272
Ending Market Value	\$85,745,748

## Performance vs Callan International Small Cap (Gross)

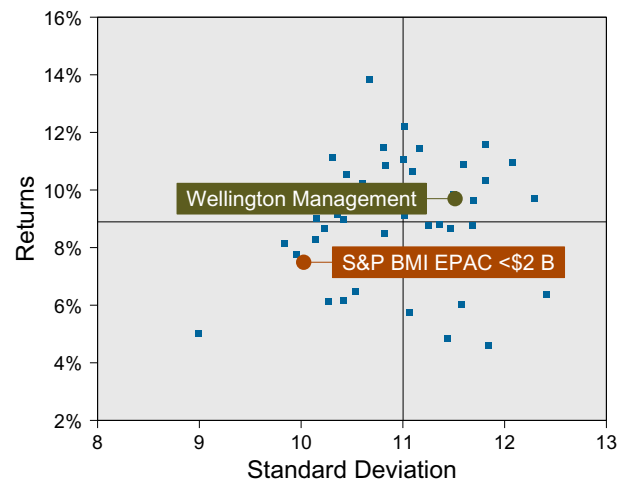


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 16-1/2 Years
10th Percentile	0.55	7.92	15.78	14.99	11.46	13.21	14.16
25th Percentile	(0.48)	5.79	14.48	13.64	10.63	12.04	13.17
Median	(1.35)	2.11	12.43	12.79	8.89	11.51	11.78
75th Percentile	(2.37)	(0.29)	11.07	10.36	7.38	10.21	11.46
90th Percentile	(3.78)	(3.59)	8.51	8.73	5.88	9.48	10.50
<b>Wellington Management</b>	<b>● (1.37)</b>	5.43	13.98	13.89	9.70	12.59	11.62
<b>S&amp;P BMI EPAC &lt;\$2 B</b>	<b>▲ (0.45)</b>	4.26	11.00	11.91	7.49	8.62	9.84

## Relative Return vs S&P BMI EPAC <\$2 B



## Callan International Small Cap (Gross) Annualized Five Year Risk vs Return



# William Blair

## Period Ended September 30, 2018

### Investment Philosophy

One of the basic investment tenets of William Blair & Company has been its focus on quality growth companies. They believe that investing in quality growth companies will generate above average results with generally less risk than the market. This opportunity exists because they believe the market underestimates the durability and rate of growth in companies that have the following characteristics: strong management with a unique vision, competitive advantages that prolong the duration and size of earnings growth, and conservative financing. Internationally, they believe that this philosophy can be combined with strategic flexibility in managing geographic exposure, capitalization, sector emphasis, and relative growth and valuation at the portfolio level in order to provide an appropriate degree of adaptability to cyclical conditions.

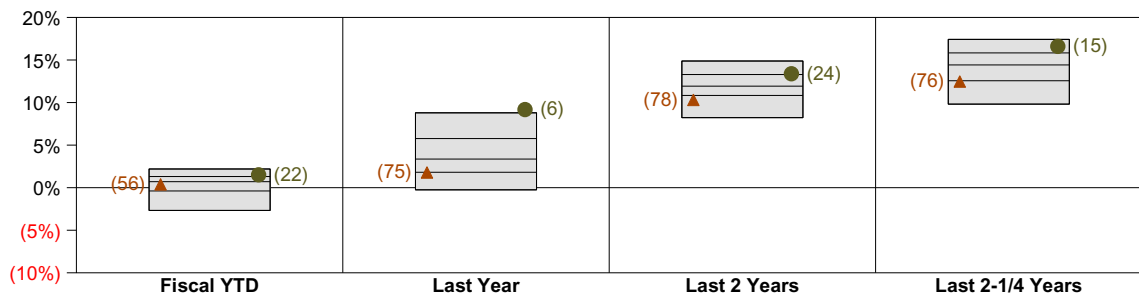
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 1.51% return for the quarter placing it in the 22 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 6 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.12% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 7.39%.

### Quarterly Asset Growth

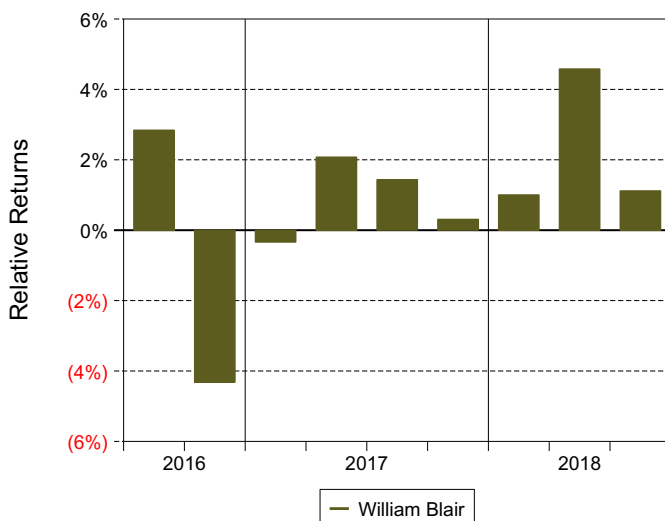
Beginning Market Value	\$181,519,465
Net New Investment	\$-163,836
Investment Gains/(Losses)	\$2,738,899
Ending Market Value	\$184,094,528

### Performance vs Callan Non-US All Country Growth Equity (Gross)

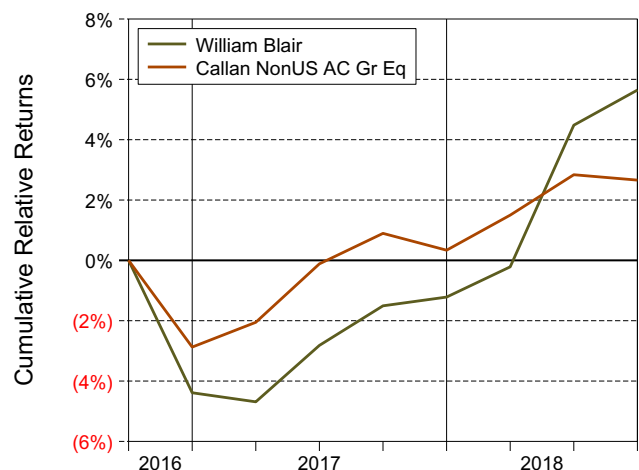


10th Percentile	2.20	8.79	14.88	17.42
25th Percentile	1.31	5.77	13.29	15.83
Median	0.70	3.36	11.93	14.42
75th Percentile	(0.38)	1.81	10.84	12.56
90th Percentile	(2.67)	(0.25)	8.23	9.82
William Blair	1.51	9.18	13.38	16.60
MSCI ACWI ex US IMI	0.39	1.79	10.31	12.47

### Relative Return vs MSCI ACWI ex US IMI



### Cumulative Returns vs MSCI ACWI ex US IMI



# Axiom Emerging Markets

## Period Ended September 30, 2018

### Investment Philosophy

The Emerging Markets Equity strategy seeks to invest in emerging market securities issued by companies whose key business drivers are both improving and exceeding expectations, as determined by Axiom's stock selection techniques focused on fundamental company analysis. The strategy considers companies either (i) located in countries that are not included in the MSCI Developed Markets Index series or (ii) that derive a majority of their revenues or assets from a country or countries not included in the MSCI Developed Markets Index series, in each case at the time of investment. Although the Manager generally expects the strategy's investment portfolio to be geographically diverse, there are no prescribed limits on geographic distribution of the strategy's investments and the strategy has the authority to invest in securities traded in securities markets or any country in the world.

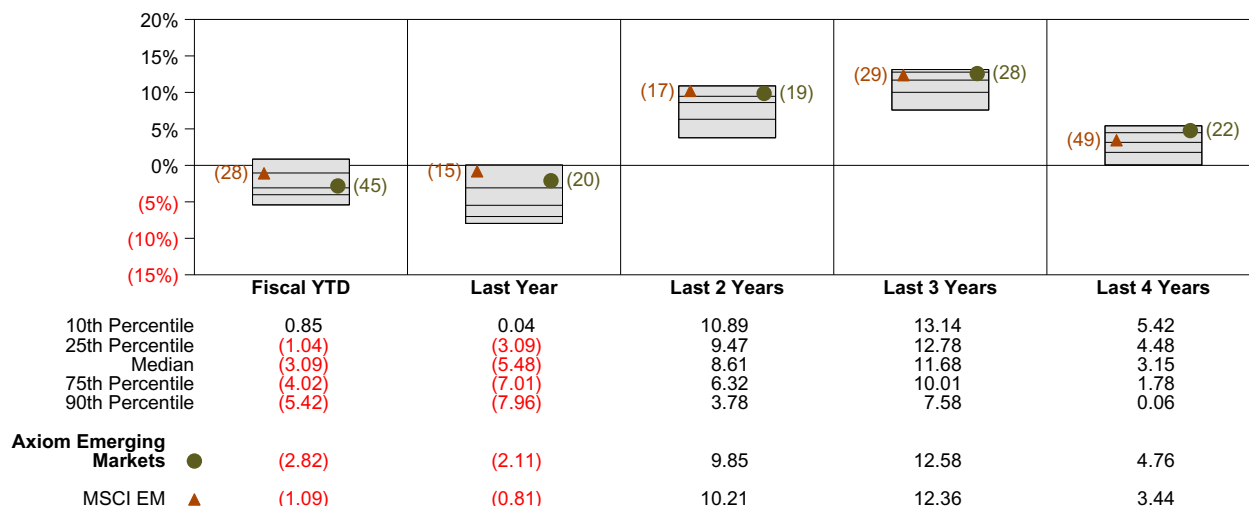
### Quarterly Summary and Highlights

- Axiom Emerging Markets's portfolio posted a (2.82)% return for the quarter placing it in the 45 percentile of the Callan Emerging Markets Equity Mut Funds group for the quarter and in the 20 percentile for the last year.
- Axiom Emerging Markets's portfolio underperformed the MSCI EM by 1.73% for the quarter and underperformed the MSCI EM for the year by 1.29%.

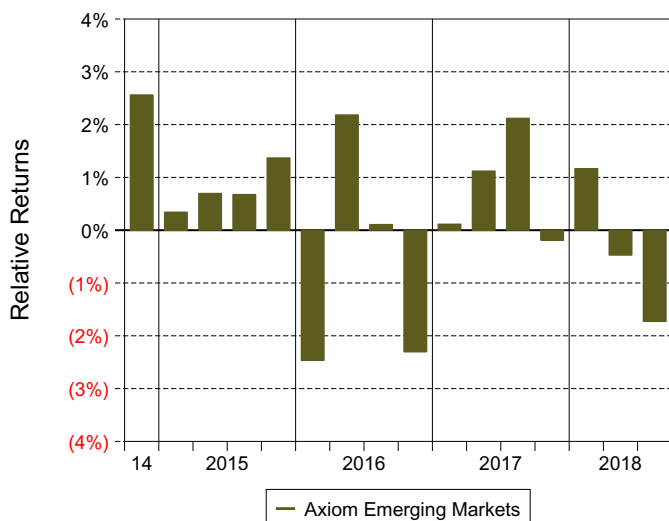
### Quarterly Asset Growth

Beginning Market Value	\$153,738,158
Net New Investment	\$0
Investment Gains/(Losses)	\$-4,339,242
Ending Market Value	\$149,398,916

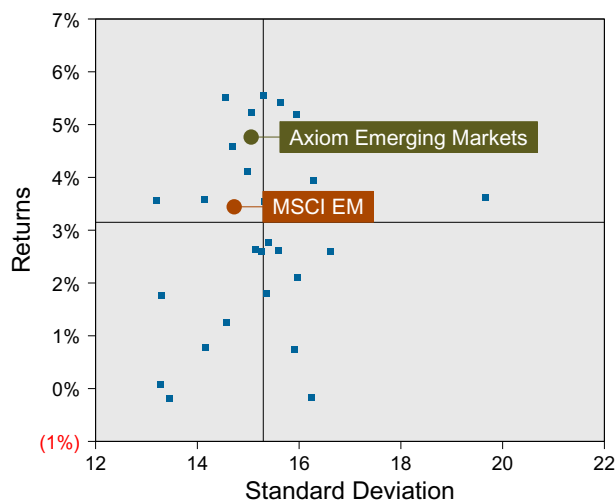
### Performance vs Callan Emerging Markets Equity Mut Funds (Net)



### Relative Return vs MSCI EM



### Callan Emerging Markets Equity Mut Funds (Net) Annualized Four Year Risk vs Return



# DFA Emerging Markets Period Ended September 30, 2018

## Investment Philosophy

The Emerging Markets Small Cap Portfolio invests in small cap emerging markets companies. Presently, this means investment in companies whose market capitalization is less than \$2.3 billion at the time of purchase. Dimensional considers, among other things, information disseminated by the International Finance Corporation in determining and approving emerging market countries.

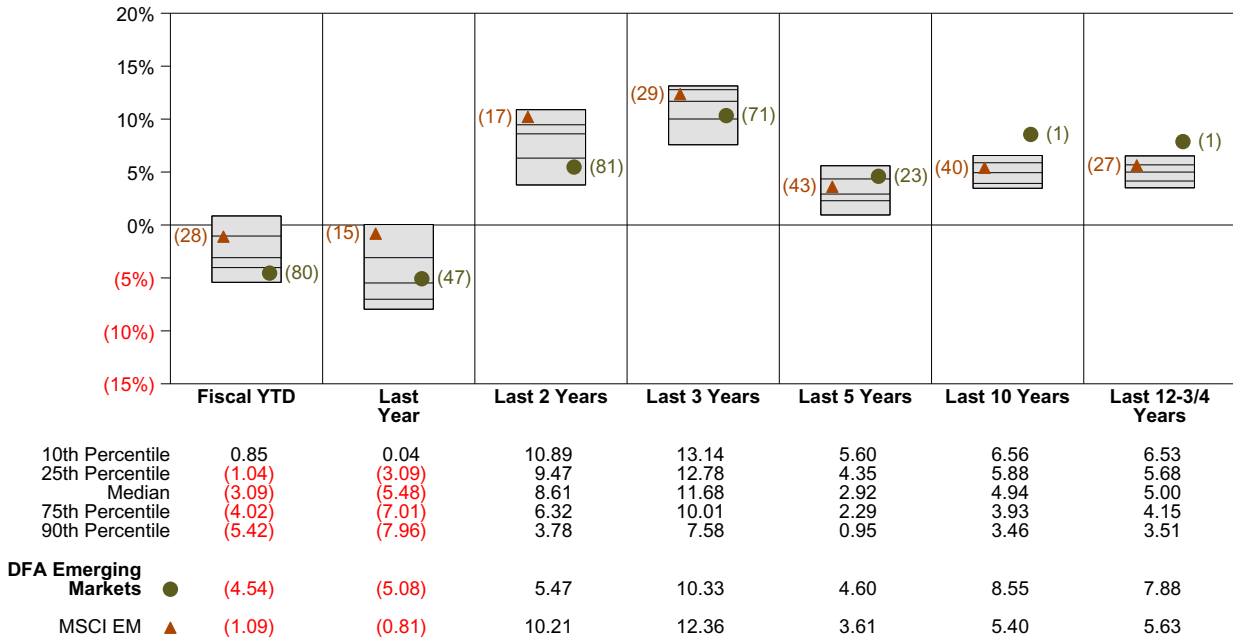
## Quarterly Summary and Highlights

- DFA Emerging Markets's portfolio posted a (4.54)% return for the quarter placing it in the 80 percentile of the Callan Emerging Markets Equity Mut Funds group for the quarter and in the 47 percentile for the last year.
- DFA Emerging Markets's portfolio underperformed the MSCI EM by 3.45% for the quarter and underperformed the MSCI EM for the year by 4.27%.

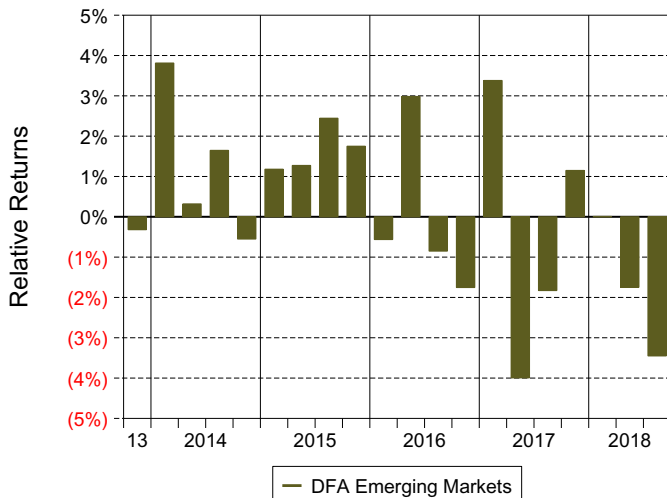
## Quarterly Asset Growth

Beginning Market Value	\$56,889,864
Net New Investment	\$0
Investment Gains/(Losses)	\$-2,584,854
Ending Market Value	\$54,305,010

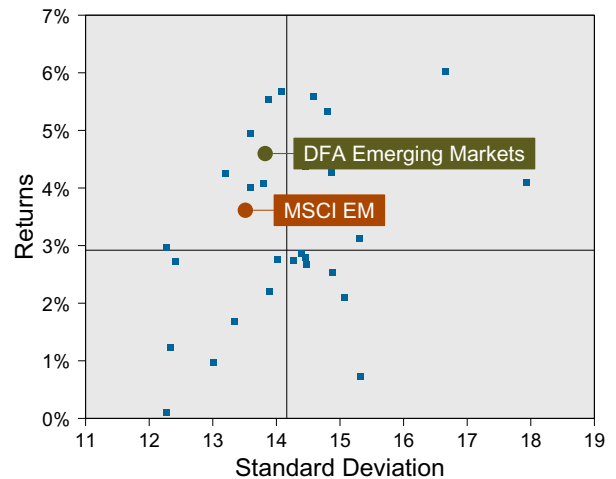
## Performance vs Callan Emerging Markets Equity Mut Funds (Net)



## Relative Return vs MSCI EM



## Callan Emerging Markets Equity Mut Funds (Net) Annualized Five Year Risk vs Return



# EPOCH Investment Period Ended September 30, 2018

## Investment Philosophy

Epoch seeks to produce superior risk adjusted returns by building portfolios of businesses with outstanding risk/reward profiles without running a high degree of capital risk. They analyze businesses in the same manner private investors would in looking to purchase the entire company. The strategy only invests in businesses that are understood and where they have confidence in the financial statements. They seek businesses that generate "free cash flow" and securities that have unrecognized potential yet possess a combination of above average yield, above average free cash flow growth, and/or below average valuation. Global Choice is a "best ideas" portfolio at Epoch with every stock held in other strategies managed by the firm.

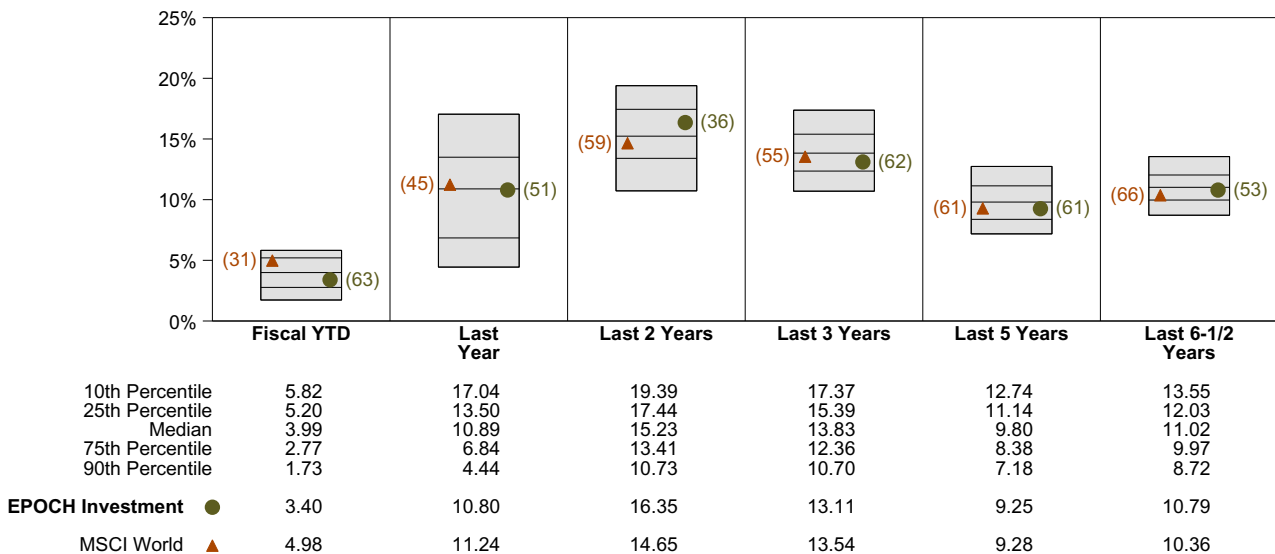
## Quarterly Summary and Highlights

- EPOCH Investment's portfolio posted a 3.40% return for the quarter placing it in the 63 percentile of the Callan Global Equity group for the quarter and in the 51 percentile for the last year.
- EPOCH Investment's portfolio underperformed the MSCI World by 1.58% for the quarter and underperformed the MSCI World for the year by 0.44%.

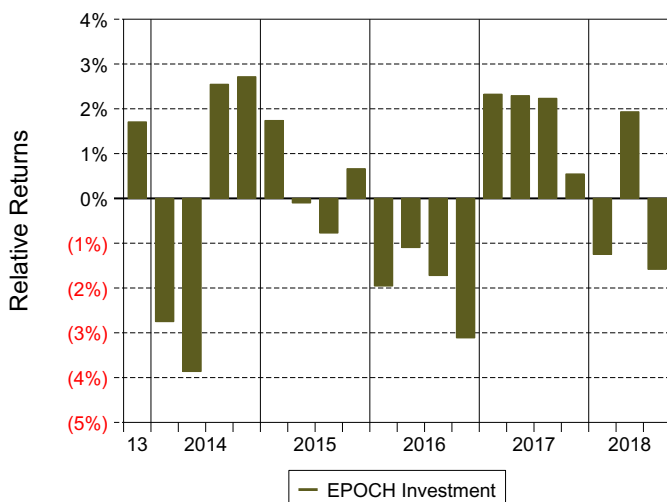
## Quarterly Asset Growth

Beginning Market Value	\$414,436,403
Net New Investment	\$-658,247
Investment Gains/(Losses)	\$14,079,598
Ending Market Value	\$427,857,753

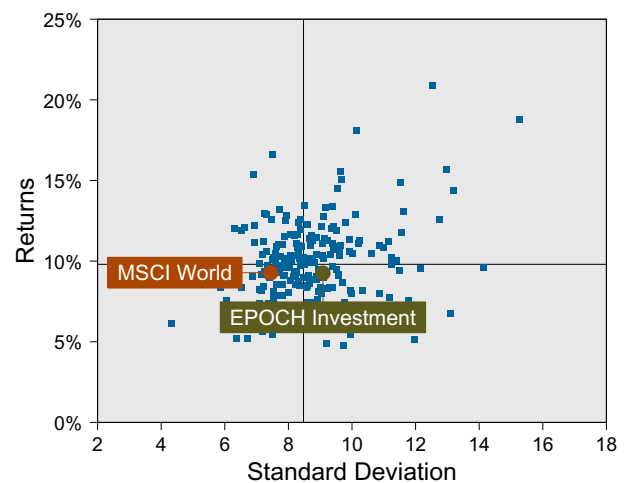
## Performance vs Callan Global Equity (Gross)



## Relative Return vs MSCI World



## Callan Global Equity (Gross) Annualized Five Year Risk vs Return



# LSV Asset Management

## Period Ended September 30, 2018

### Investment Philosophy

The Global Value (ACWI) Equity strategy is managed using quantitative techniques to select individual securities in a risk-controlled, bottom-up approach. Value factors and security selection dominate sector/industry factors as explainers of performance.

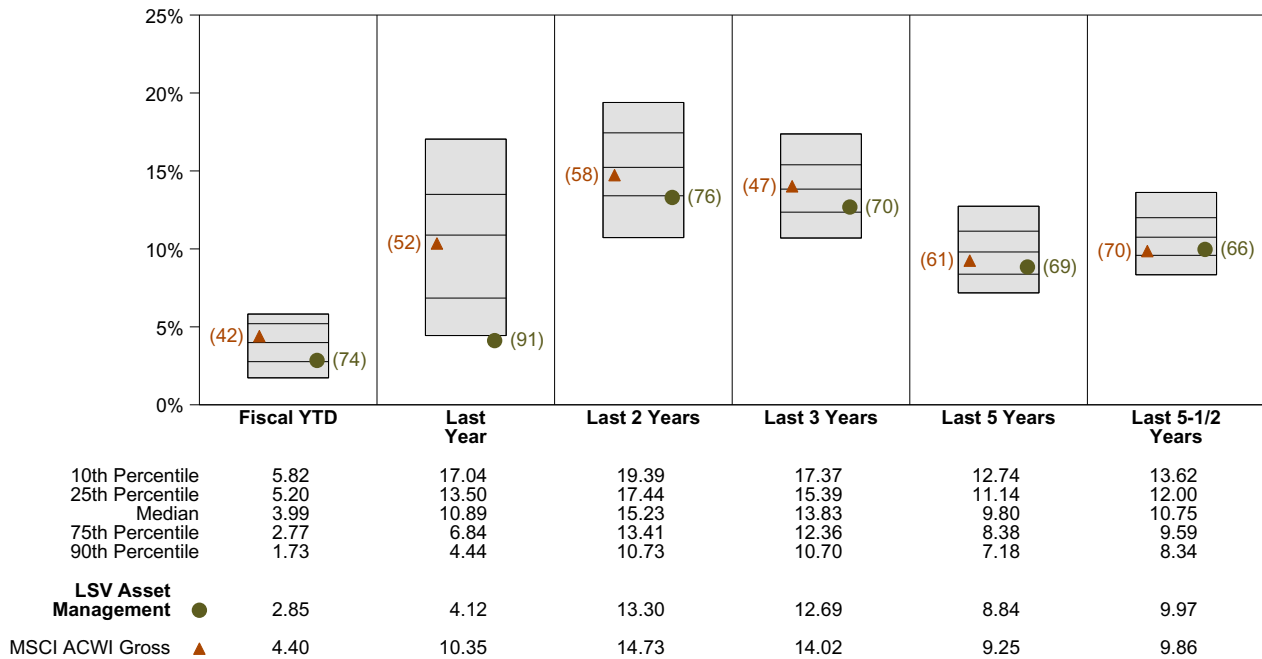
### Quarterly Summary and Highlights

- LSV Asset Management's portfolio posted a 2.85% return for the quarter placing it in the 74 percentile of the Callan Global Equity group for the quarter and in the 91 percentile for the last year.
- LSV Asset Management's portfolio underperformed the MSCI ACWI Gross by 1.55% for the quarter and underperformed the MSCI ACWI Gross for the year by 6.23%.

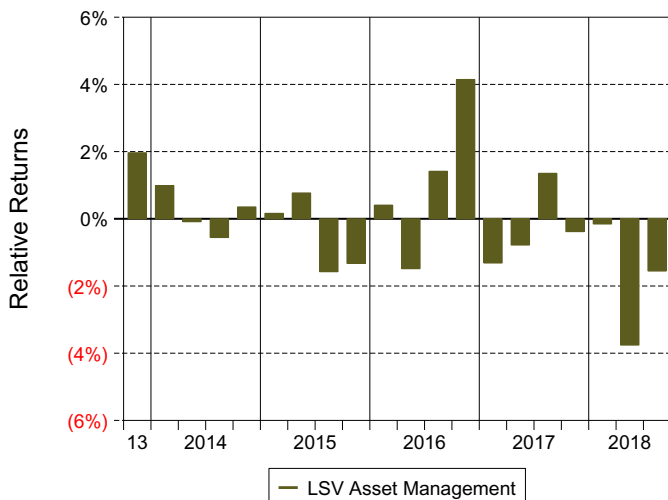
### Quarterly Asset Growth

Beginning Market Value	\$502,785,780
Net New Investment	\$-124,933
Investment Gains/(Losses)	\$14,311,546
Ending Market Value	\$516,972,392

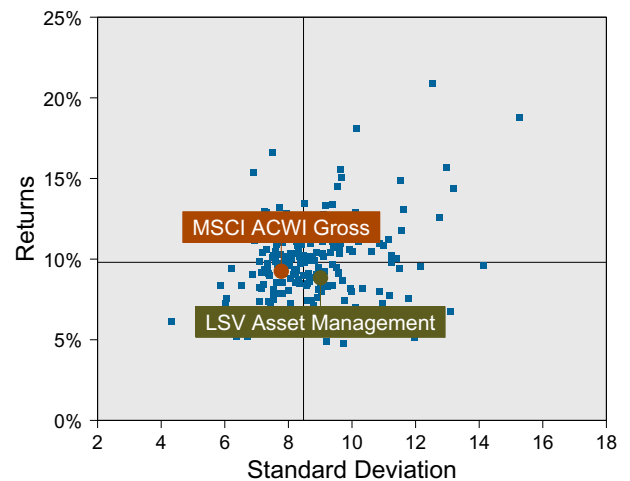
### Performance vs Callan Global Equity (Gross)



### Relative Return vs MSCI ACWI Gross



### Callan Global Equity (Gross) Annualized Five Year Risk vs Return



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 17-3/4 Years
<b>Private Equity</b>	<b>0.40%</b>	<b>8.37%</b>	<b>2.84%</b>	<b>1.60%</b>	<b>2.52%</b>
Adams Street Direct Co-Invest Fd	(20.13%)	(31.75%)	(10.43%)	0.97%	-
Adams Street Direct Fd 2010	8.14%	28.22%	13.99%	17.08%	-
Adams Street 1998 Partnership	4.30%	5.20%	2.63%	2.20%	1.82%
Adams Street 1999 Partnership	(0.08%)	3.81%	3.79%	1.43%	2.55%
Adams Street 2000 Partnership	5.19%	14.95%	4.70%	2.53%	3.72%
Adams Street 2001 Partnership	2.48%	11.73%	3.00%	4.90%	3.92%
Adams Street 2002 Partnership	3.26%	0.24%	10.44%	5.25%	-
Adams Street 2003 Partnership	5.73%	20.87%	9.62%	12.79%	-
Adams Street 2010 Partnership	2.50%	19.69%	13.83%	15.38%	-
Adams Street 2008 Fund	0.00%	13.94%	14.81%	14.19%	-
Adams Street 1999 Non-US	0.15%	2.68%	5.78%	1.59%	5.92%
Adams Street 2000 Non-US	1.54%	12.51%	5.51%	3.25%	3.61%
Adams Street 2001 Non-US	(1.87%)	4.80%	(5.84%)	13.94%	-
Adams Street 2002 Non-US	0.91%	9.40%	9.55%	5.69%	-
Adams Street 2003 Non-US	(3.06%)	(2.42%)	15.15%	11.18%	-
Adams Street 2004 Non-US	1.59%	12.51%	3.93%	8.10%	-
Adams Street 2010 Non-US	7.08%	22.28%	19.31%	13.64%	-
Adams Street 2010 NonUS Emg	3.02%	21.97%	15.11%	14.32%	-
Adams Street 2015 Global Fd	2.74%	20.96%	-	-	-
Adams Street 2016 Global Fd	0.00%	14.30%	-	-	-
Adams Street 2017 Global Fd	0.00%	11.71%	-	-	-
Adams Street BVCF IV Fund	(1.34%)	0.22%	0.92%	11.53%	16.35%
BlackRock	0.41%	1.95%	-	-	-
Capital International V	(1.98%)	(48.63%)	(42.36%)	(28.75%)	-
Capital International VI	(0.29%)	6.06%	5.76%	(2.53%)	-
CorsAir III	(0.46%)	(33.99%)	(2.00%)	(2.76%)	-
CorsAir IV	(0.43%)	26.63%	15.06%	18.27%	-
EIG Energy Fund XIV	(0.01%)	18.50%	(24.61%)	(20.10%)	-
Hearthstone Advisors MS III	0.00%	8.27%	(18.32%)	283.21%	-
Lewis & Clark	11.32%	68.60%	0.14%	(11.25%)	-
Lewis & Clark II	0.00%	0.90%	4.44%	(1.95%)	-
Matlin Patterson II	0.00%	5.68%	(6.94%)	(3.76%)	-
Matlin Patterson III	(0.34%)	12.58%	3.05%	2.13%	-
Quantum Energy Partners	0.00%	(17.54%)	(13.61%)	(7.37%)	-
Russell 1000 Index	7.42%	17.76%	17.07%	13.67%	6.86%
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	8.77%



# Domestic Fixed Income Period Ended September 30, 2018

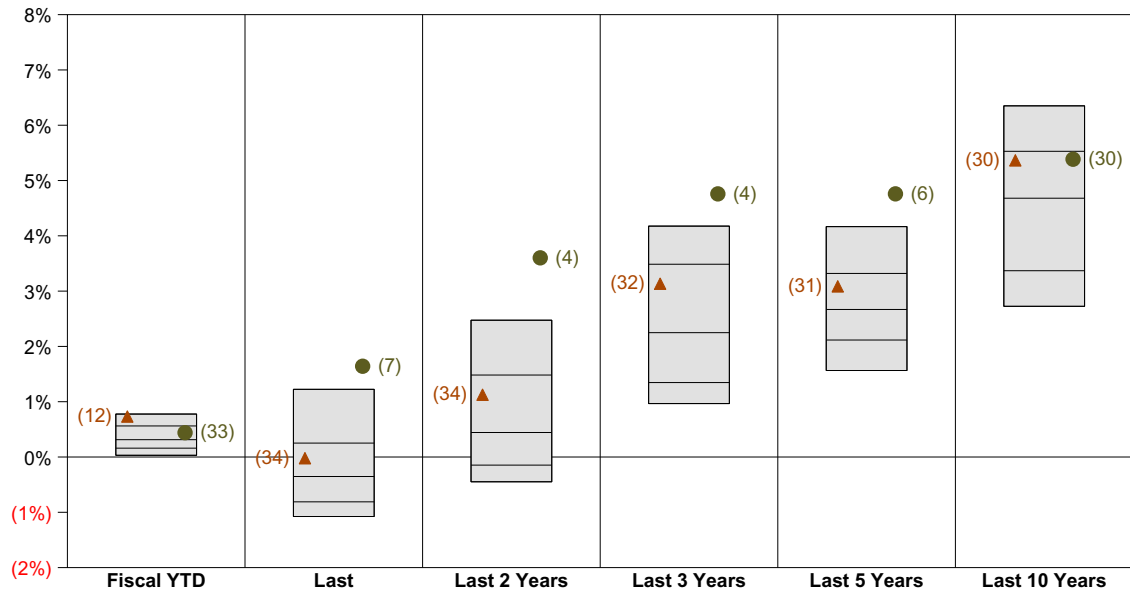
## Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.44% return for the quarter placing it in the 33 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 7 percentile for the last year.
- Domestic Fixed Income's portfolio underperformed the Domestic Fixed Income Target by 0.29% for the quarter and outperformed the Domestic Fixed Income Target for the year by 1.66%.

## Quarterly Asset Growth

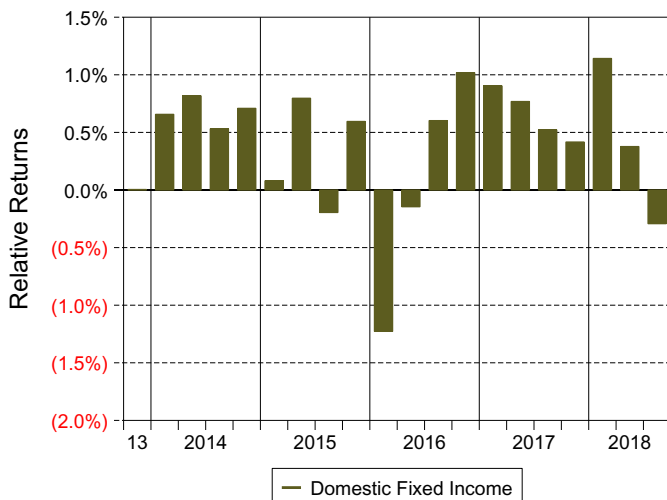
Beginning Market Value	\$1,369,095,811
Net New Investment	\$-30,293,824
Investment Gains/(Losses)	\$6,012,745
Ending Market Value	\$1,344,814,732

## Performance vs Public Fund - Domestic Fixed (Gross)

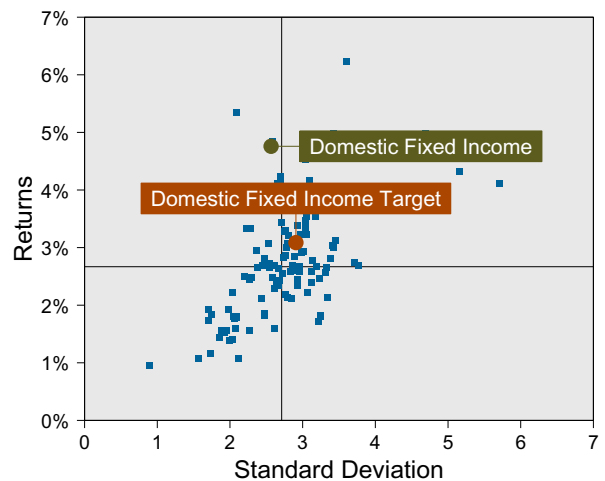


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.78	1.22	2.47	4.18	4.17	6.35
25th Percentile	0.56	0.25	1.48	3.49	3.32	5.53
Median	0.31	(0.35)	0.44	2.25	2.67	4.68
75th Percentile	0.16	(0.81)	(0.15)	1.35	2.12	3.37
90th Percentile	0.03	(1.08)	(0.45)	0.97	1.56	2.73
<b>Domestic Fixed Income</b> ●	0.44	1.64	3.60	4.76	4.76	5.39
Domestic Fixed Income Target ▲	0.73	(0.02)	1.13	3.13	3.09	5.37

## Relative Returns vs Domestic Fixed Income Target



## Public Fund - Domestic Fixed (Gross) Annualized Five Year Risk vs Return



# Declaration Total Return Period Ended September 30, 2018

## Investment Philosophy

The Fund's portfolio holdings consist primarily of RMBS issued by private sector companies (Non-Agency RMBS) and government agencies (Agency MBS) and CMBS issued by private sector companies. Agency MBS includes securities issued by the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Government National Mortgage Association (Ginnie Mae). Portfolio holdings may range from short tenure senior classes to stressed issues or subordinated securities with substantial risk of non-payment and correspondingly higher yields. Smaller portfolio allocations may include consumer asset-backed securities (ABS), or other structured credit securities and corporate bonds. As a diversification strategy and a potential hedge to credit risk, the Fund may invest in securities which tend to benefit from slow mortgage prepayments and economic growth, such as interest only (IO) MBS.

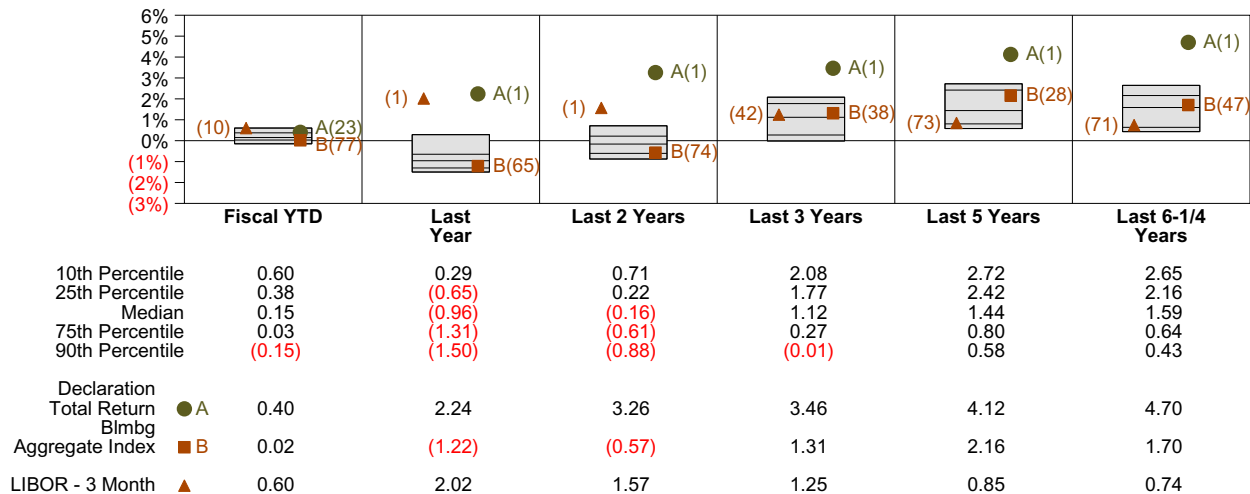
## Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.40% return for the quarter placing it in the 23 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 1 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.20% for the quarter and outperformed the LIBOR - 3 Month for the year by 0.22%.

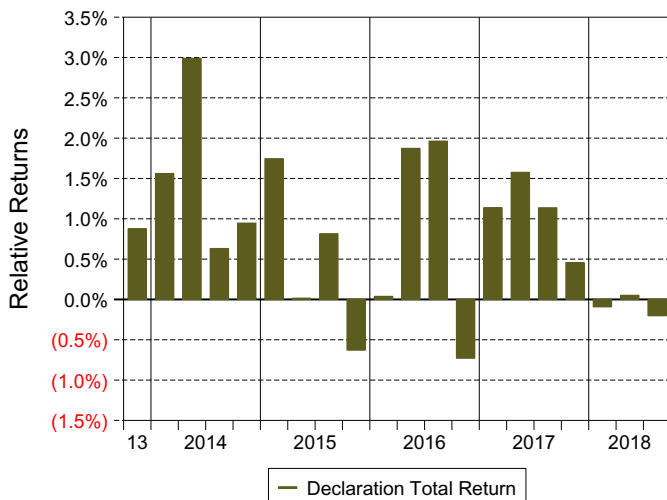
## Quarterly Asset Growth

Beginning Market Value	\$116,618,892
Net New Investment	-\$64,159
Investment Gains/(Losses)	\$467,213
Ending Market Value	\$117,021,946

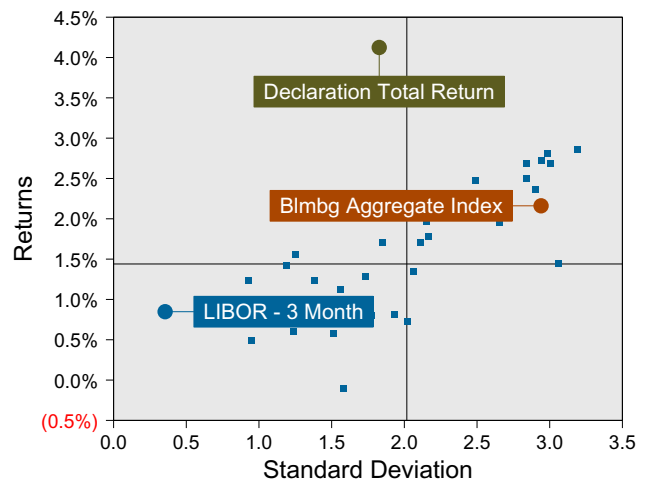
## Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



## Relative Return vs LIBOR - 3 Month



## Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Five Year Risk vs Return



# PIMCO DiSCO II

## Period Ended September 30, 2018

### Investment Philosophy

The PIMCO Distressed Senior Credit Opportunities Fund is an opportunistic private-equity style Fund which seeks to provide investors enhanced returns principally through long-biased investments in undervalued senior and super senior structured credit securities that are expected to produce attractive levels of current income and that may also appreciate in value over the long term. The fund will look to capitalize on forced sales by liquidity constrained investors.

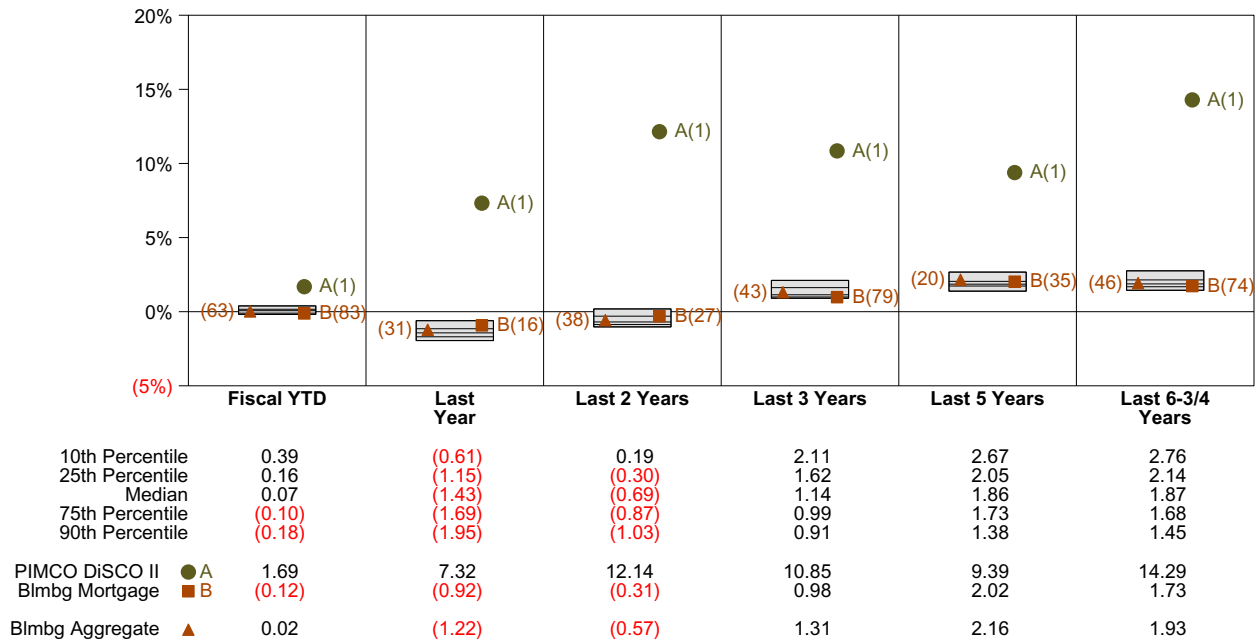
### Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 1.69% return for the quarter placing it in the 1 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 1 percentile for the last year.
- PIMCO DiSCO II's portfolio outperformed the Blmbg Aggregate by 1.67% for the quarter and outperformed the Blmbg Aggregate for the year by 8.54%.

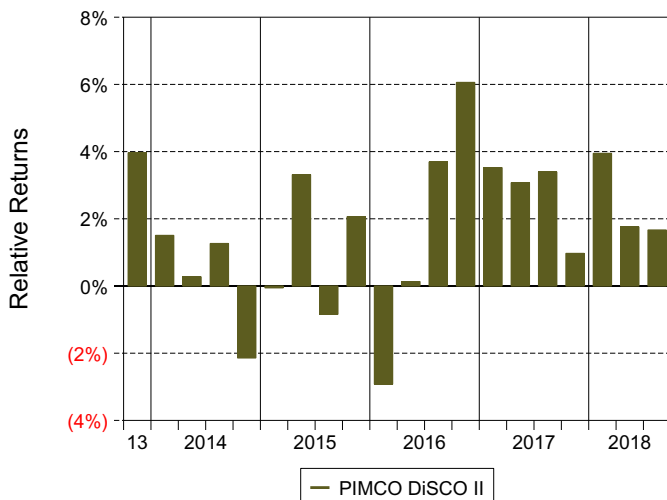
### Quarterly Asset Growth

Beginning Market Value	\$118,135,275
Net New Investment	\$-29,729,951
Investment Gains/(Losses)	\$1,811,172
Ending Market Value	\$90,216,496

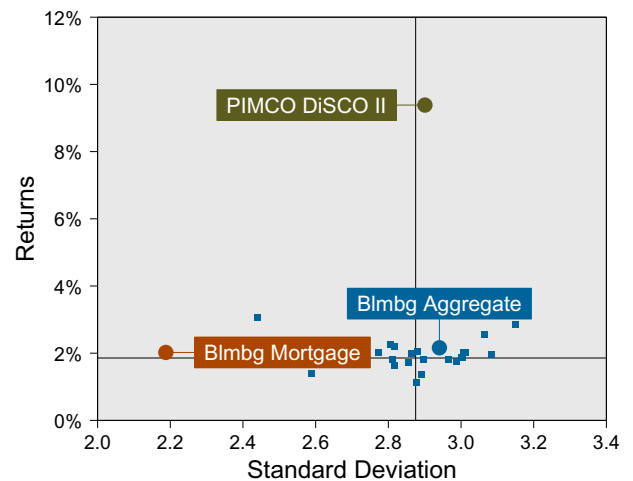
### Performance vs Callan Core Bond Mutual Funds (Net)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Mutual Funds (Net) Annualized Five Year Risk vs Return



# PIMCO Core Plus Constrained Period Ended September 30, 2018

## Investment Philosophy

The PIMCO Unconstrained Bond Strategy is an absolute return-oriented, investment grade quality fixed income strategy that leverages PIMCO's secular thinking, global themes, and integrated investment process without the constraints of a benchmark or significant sector/instrument limitations. The strategy focuses on long-term economic, social and political trends. Over shorter cyclical time frames, the unconstrained nature of the strategy allows PIMCO to take on more risk when tactical opportunities are identified, and it allows for reduction and diversification of risk at times when the outlook may be more challenging for traditional fixed income benchmarks. **The product changed from Commingled Fund to Separate Account in March 2014. \*Libor-3 month through February 28, 2014; Fund's performance through March 31, 2014; Libor-3 month thereafter.**

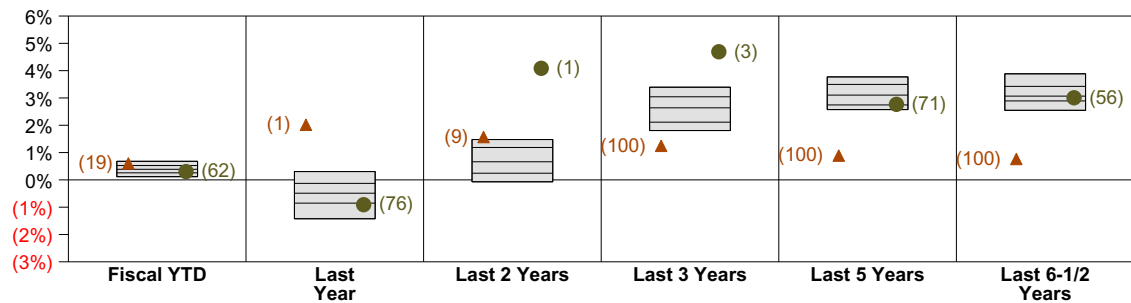
## Quarterly Summary and Highlights

- PIMCO Core Plus Constrained's portfolio posted a 0.30% return for the quarter placing it in the 62 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 76 percentile for the last year.
- PIMCO Core Plus Constrained's portfolio underperformed the Blended Benchmark\* by 0.30% for the quarter and underperformed the Blended Benchmark\* for the year by 2.93%.

## Quarterly Asset Growth

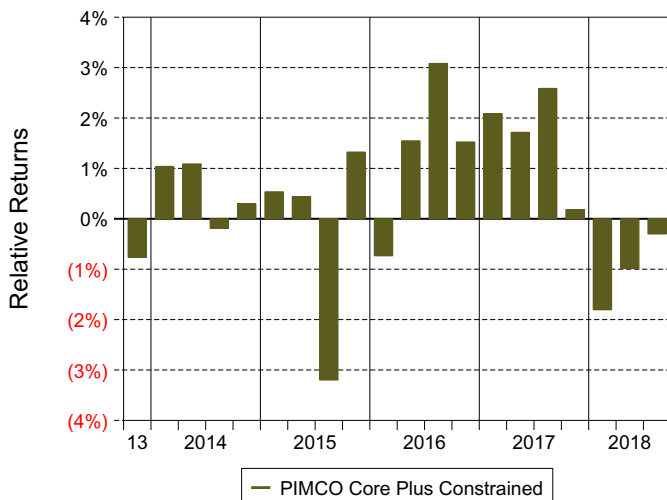
Beginning Market Value	\$308,894,658
Net New Investment	\$12,903,730
Investment Gains/(Losses)	\$1,007,976
Ending Market Value	\$322,806,363

## Performance vs Callan Core Plus Fixed Income (Gross)

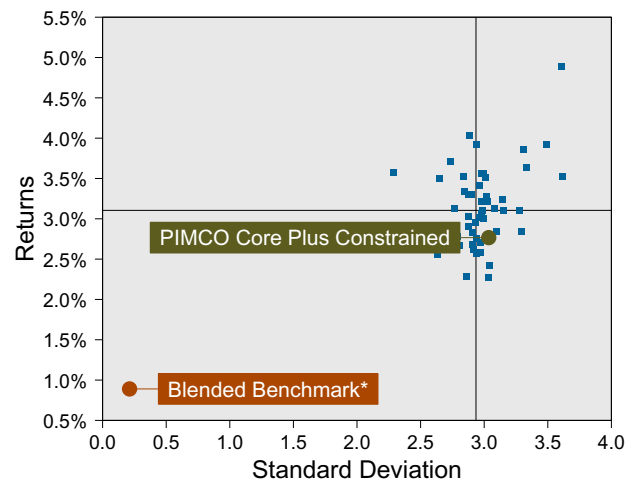


10th Percentile	0.68	0.30	1.48	3.39	3.77	3.88
25th Percentile	0.53	(0.13)	1.19	3.04	3.50	3.42
Median	0.39	(0.49)	0.66	2.64	3.10	3.07
75th Percentile	0.26	(0.85)	0.24	2.11	2.74	2.89
90th Percentile	0.12	(1.42)	(0.07)	1.81	2.57	2.55
<b>PIMCO Core Plus Constrained</b> ●	0.30	(0.91)	4.09	4.69	2.77	3.01
<b>Blended Benchmark*</b> ▲	0.60	2.02	1.57	1.25	0.89	0.77

## Relative Return vs Blended Benchmark\*



## Callan Core Plus Fixed Income (Gross) Annualized Five Year Risk vs Return



# Prudential Core Period Ended September 30, 2018

## Investment Philosophy

The PGIM Fixed Income Core Fixed Income strategy seeks to provide +60 bps over the Bloomberg Barclays Aggregate Index over a market cycle. The strategy tends to generate its excess return from fairly equal increments of both sector allocation and subsector/security allocation. Duration and yield curve positioning is generally de-emphasized, but will be considered when market opportunities dictate. The primary way they add value is through intensive research-based sector, industry, and security selection. The strategy is predominately investment grade, but may also invest nominally in crossover/high yield bonds and emerging markets debt, when guidelines permit.

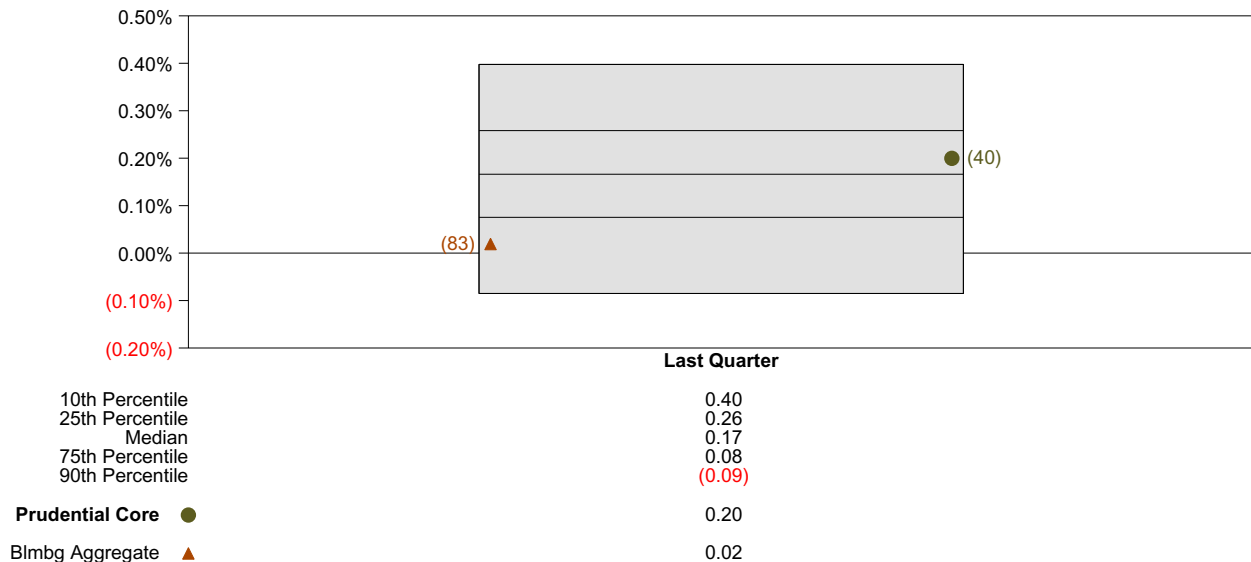
## Quarterly Summary and Highlights

- Prudential Core's portfolio posted a 0.20% return for the quarter placing it in the 40 percentile of the Callan Core Bond Fixed Income group for the quarter.
- Prudential Core's portfolio outperformed the Blmbg Aggregate by 0.18% for the quarter.

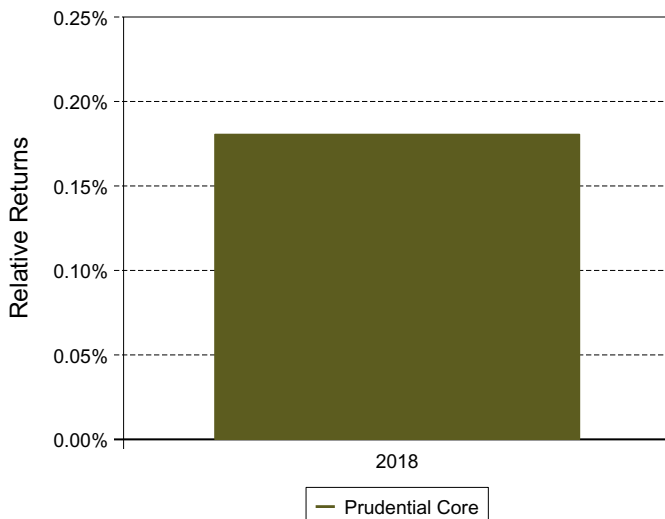
## Quarterly Asset Growth

Beginning Market Value	\$315,960,960
Net New Investment	\$-135,240
Investment Gains/(Losses)	\$631,427
Ending Market Value	\$316,457,147

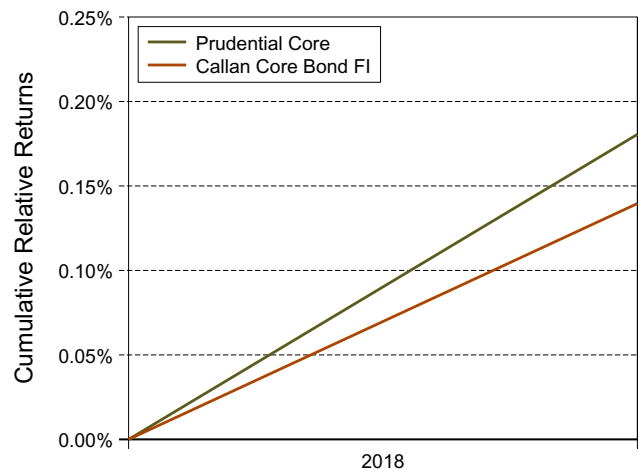
## Performance vs Callan Core Bond Fixed Income (Gross)



## Relative Return vs Blmbg Aggregate



## Cumulative Returns vs Blmbg Aggregate



# SSgA Long US Treas Index Period Ended September 30, 2018

## Investment Philosophy

The Fund seeks an investment return that approximates as closely as practicable, before expenses, the performance of the Barclays Capital U.S. Long Treasury Bond Index over the long term.

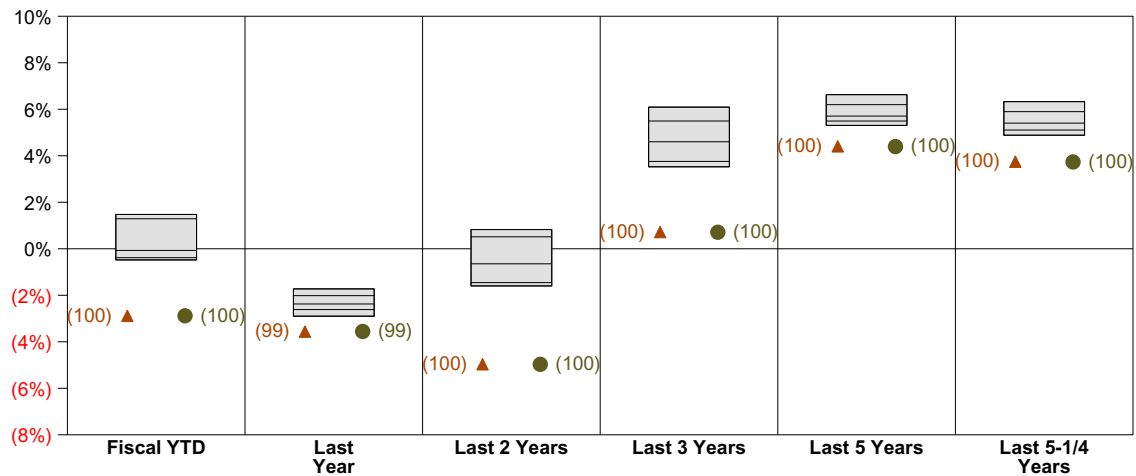
## Quarterly Summary and Highlights

- SSgA Long US Treas Index's portfolio posted a (2.88)% return for the quarter placing it in the 100 percentile of the Callan Extended Maturity Fixed Income group for the quarter and in the 99 percentile for the last year.
- SSgA Long US Treas Index's portfolio underperformed the Blmbg Treasury Long by 0.00% for the quarter and outperformed the Blmbg Treasury Long for the year by 0.00%.

## Quarterly Asset Growth

Beginning Market Value	\$117,998,548
Net New Investment	\$-12,000,000
Investment Gains/(Losses)	\$-2,991,824
Ending Market Value	\$103,006,724

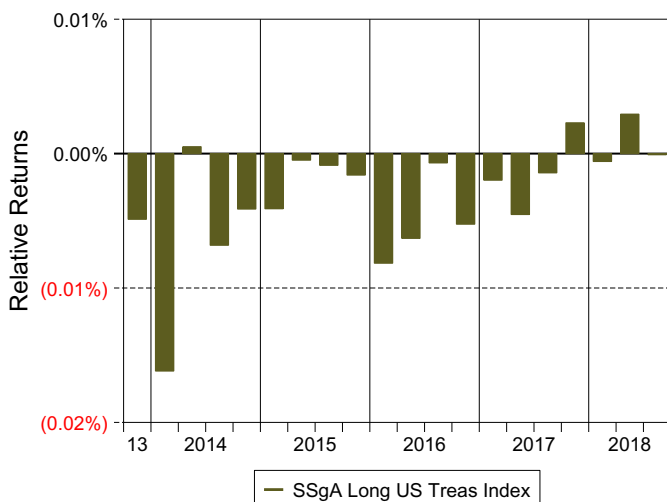
## Performance vs Callan Extended Maturity Fixed Income (Gross)



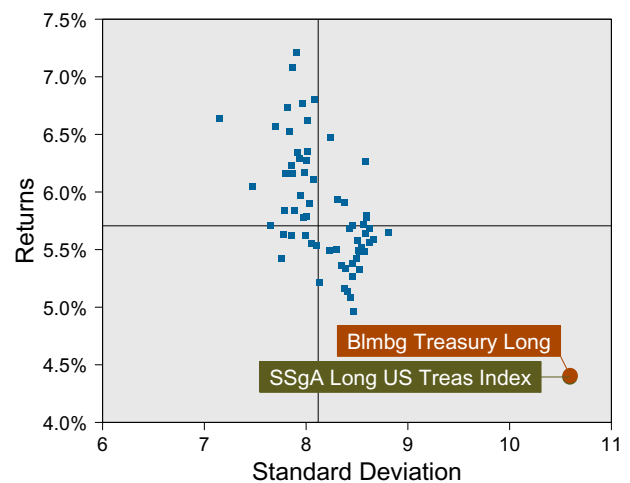
10th Percentile	1.48	(1.72)	0.83	6.09	6.63	6.33
25th Percentile	1.29	(2.02)	0.52	5.49	6.20	5.90
Median	(0.07)	(2.37)	(0.65)	4.60	5.71	5.40
75th Percentile	(0.38)	(2.61)	(1.46)	3.76	5.49	5.11
90th Percentile	(0.48)	(2.90)	(1.60)	3.52	5.30	4.88

SSgA Long US Treas Index ●	(2.88)	(3.56)	(4.97)	0.71	4.39	3.73
Blmbg Treasury Long ▲	(2.88)	(3.56)	(4.97)	0.72	4.41	3.75

## Relative Return vs Blmbg Treasury Long



## Callan Extended Maturity Fixed Income (Gross) Annualized Five Year Risk vs Return



# Ares ND Credit Strategies Fd Period Ended September 30, 2018

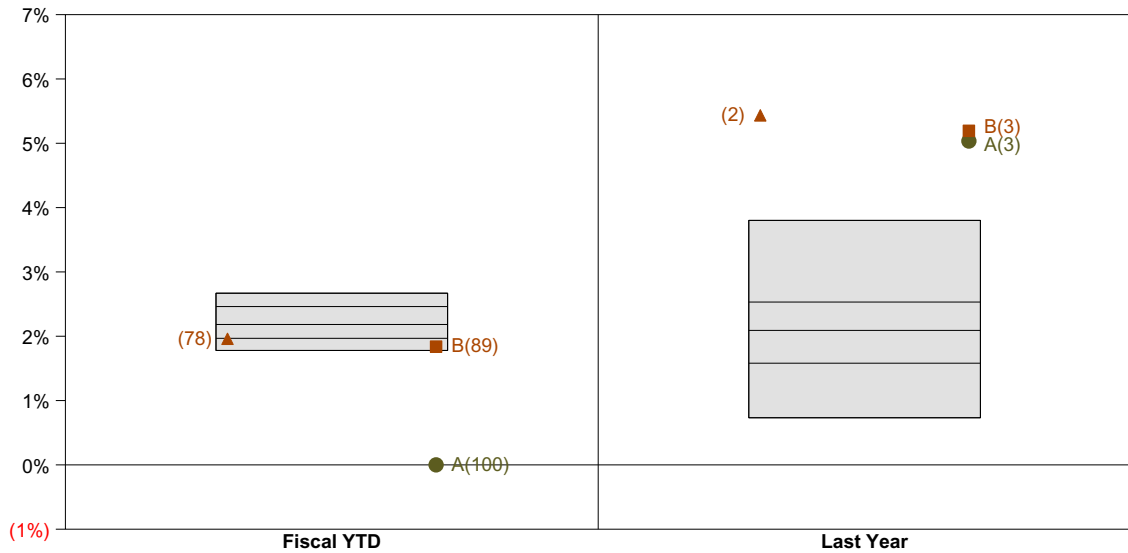
## Quarterly Summary and Highlights

- Ares ND Credit Strategies Fd's portfolio posted a 0.00% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 3 percentile for the last year.
- Ares ND Credit Strategies Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 1.96% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.40%.

## Quarterly Asset Growth

Beginning Market Value	\$72,957,381
Net New Investment	\$3,600,000
Investment Gains/(Losses)	\$0
Ending Market Value	\$76,557,381

## Performance vs Callan High Yield Mutual Funds (Net)



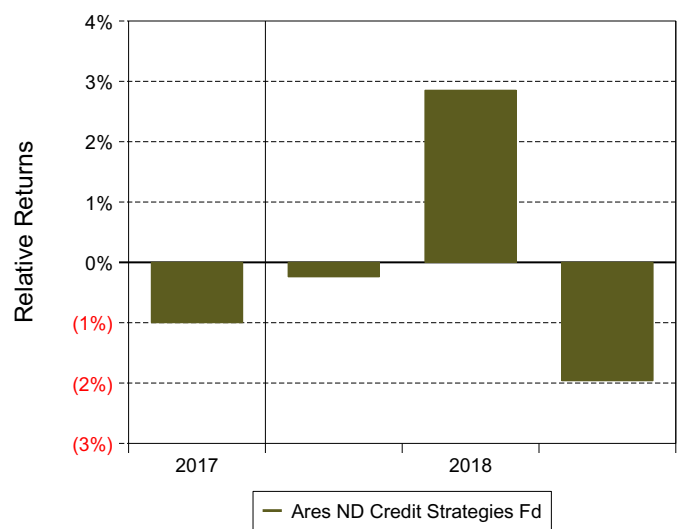
10th Percentile	2.67
25th Percentile	2.46
Median	2.18
75th Percentile	1.97
90th Percentile	1.78

Ares ND Credit Strategies Fd S&P/LSTA Leveraged Loan	A	0.00
S&P/LSTA Leveraged Loan B Index	B	1.84
S&P/LSTA Leveraged Loan B Index	▲	1.96

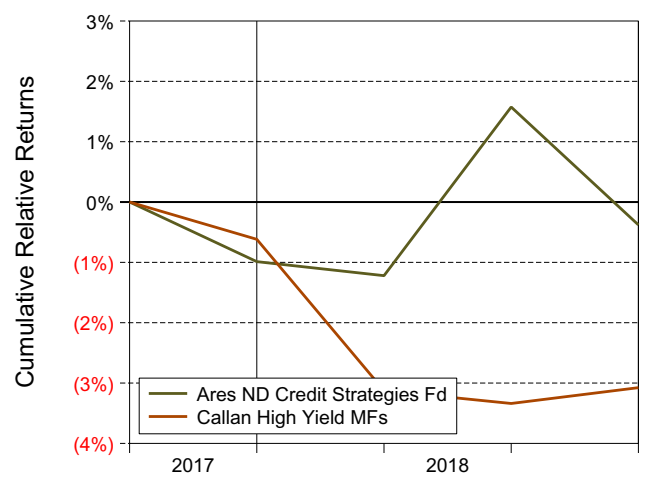
10th Percentile	3.80
25th Percentile	2.53
Median	2.09
75th Percentile	1.58
90th Percentile	0.73

Ares ND Credit Strategies Fd S&P/LSTA Leveraged Loan	A	5.03
S&P/LSTA Leveraged Loan B Index	B	5.19
S&P/LSTA Leveraged Loan B Index	▲	5.43

## Relative Returns vs S&P/LSTA Leveraged Loan B Index



## Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



# Cerberus ND Private Credit Fd Period Ended September 30, 2018

## Investment Philosophy

The investment objective of the LLC is to achieve superior risk-adjusted rates of return primarily through origination of, and investment in, secured debt assets consistent with the Loan Opportunities Strategy of the Cerberus Business Finance lending platform ("CBF", "Cerberus Business Finance" or the "Cerberus Lending Platform"). The Cerberus Lending Platform is a direct origination and lending business focused on providing secured debt primarily to U.S. middle-market companies. The LLC expects to generate both current income and capital appreciation.

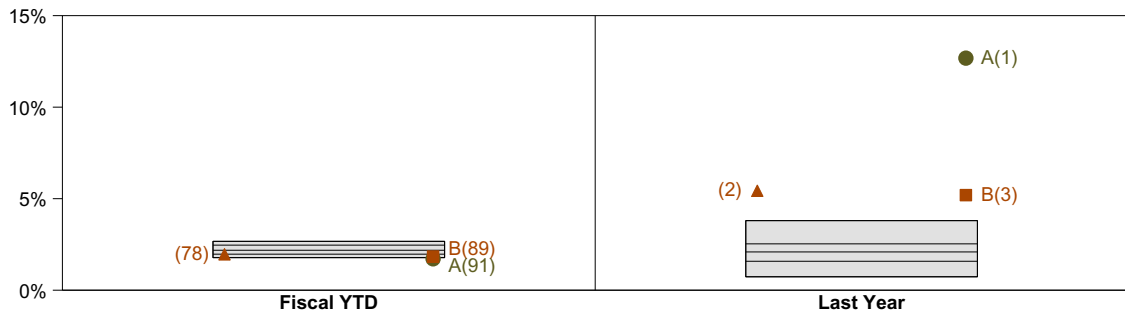
## Quarterly Summary and Highlights

- Cerberus ND Private Credit Fd's portfolio posted a 1.71% return for the quarter placing it in the 91 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 1st percentile for the last year.
- Cerberus ND Private Credit Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 0.25% for the quarter and outperformed the S&P/LSTA Leveraged Loan B Index for the year by 7.24%.

## Quarterly Asset Growth

Beginning Market Value	\$69,906,646
Net New Investment	\$0
Investment Gains/(Losses)	\$1,198,062
Ending Market Value	\$71,104,708

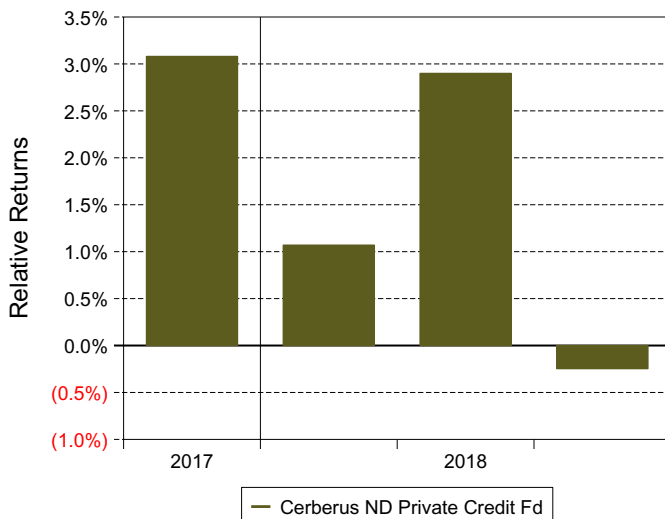
## Performance vs Callan High Yield Mutual Funds (Net)



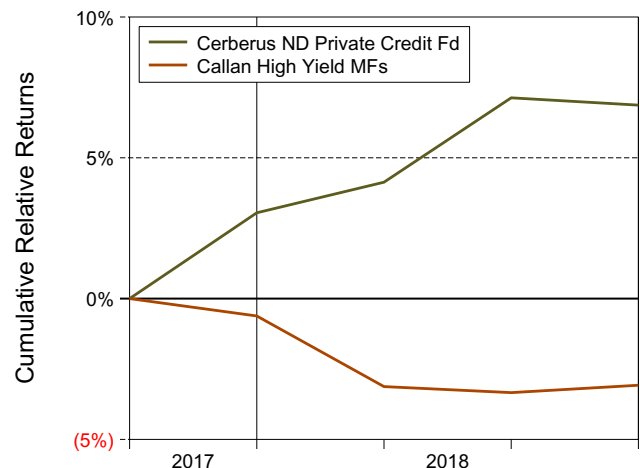
10th Percentile	2.67
25th Percentile	2.46
Median	2.18
75th Percentile	1.97
90th Percentile	1.78

Cerberus ND Private Credit Fd S&P/LSTA Leveraged Loan	● A	1.71	12.68
S&P/LSTA Leveraged Loan B Index	▲	1.96	5.43
S&P/LSTA Leveraged Loan B Index	■ B	1.84	5.19

## Relative Returns vs S&P/LSTA Leveraged Loan B Index



## Cumulative Returns vs S&P/LSTA Leveraged Loan B Index





# Goldman Sachs 2006 Offshore Period Ended September 30, 2018

## Investment Philosophy

GS Mezzanine Partners seeks large-sized mezzanine investments comprised generally of fixed income securities and an associated equity component. They focus on providing "private high yield" capital for mid- to large-sized leveraged and management buyout transactions, recapitalizations, financings, re-financings, acquisitions and restructurings for private equity firms, private family companies and corporate issuers.

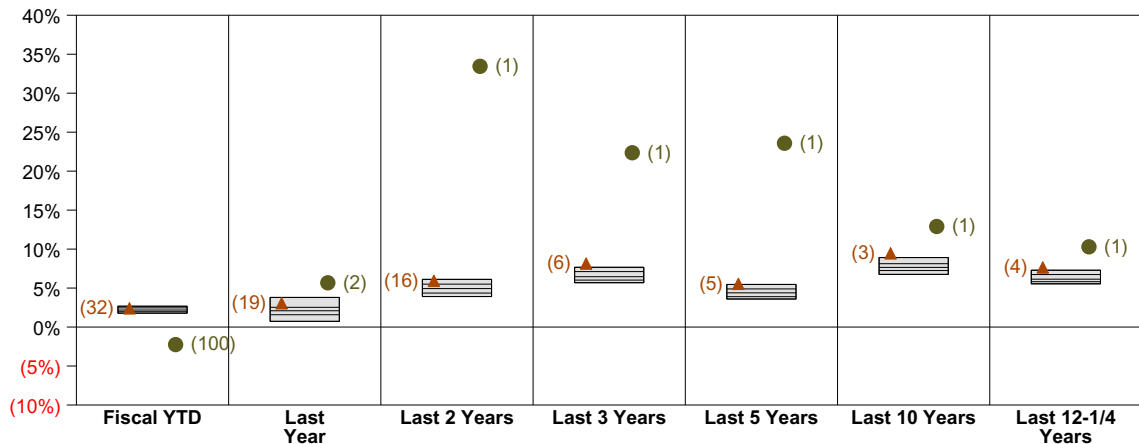
## Quarterly Summary and Highlights

- Goldman Sachs's portfolio posted a (2.25)% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 2 percentile for the last year.
- Goldman Sachs's portfolio underperformed the Blmbg HY 2% Iss Cap by 4.65% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 2.62%.

## Quarterly Asset Growth

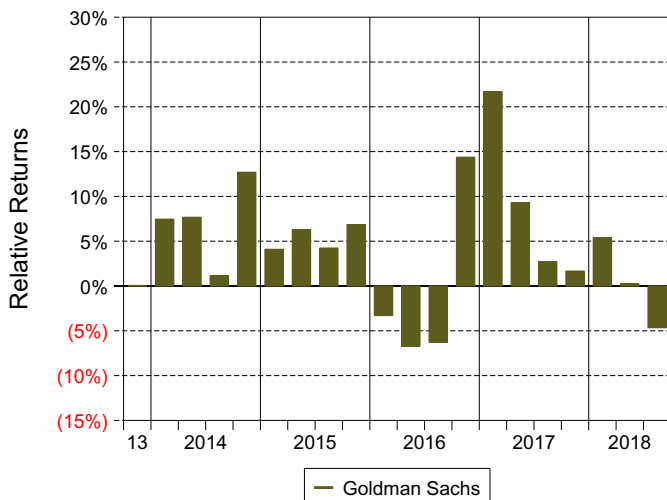
Beginning Market Value	\$126,476
Net New Investment	\$-39,490
Investment Gains/(Losses)	\$-2,282
Ending Market Value	\$84,704

## Performance vs Callan High Yield Mutual Funds (Net)

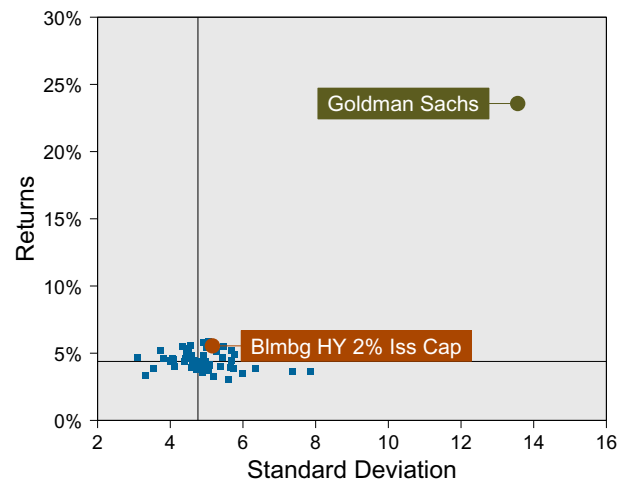


10th Percentile	2.67	3.80	6.12	7.67	5.47	8.92	7.29
25th Percentile	2.46	2.53	5.50	7.11	4.89	8.13	6.73
Median	2.18	2.09	4.94	6.46	4.39	7.65	6.14
75th Percentile	1.97	1.58	4.36	6.02	3.89	7.25	5.82
90th Percentile	1.78	0.73	3.91	5.69	3.60	6.75	5.54
<b>Goldman Sachs</b>	<b>(2.25)</b>	5.67	33.45	22.36	23.58	12.90	10.29
Blmbg HY 2% Iss Cap	2.40	3.05	5.92	8.15	5.55	9.46	7.65

## Relative Return vs Blmbg HY 2% Iss Cap



## Callan High Yield Mutual Funds (Net) Annualized Five Year Risk vs Return



# Goldman Sachs Offshore Fund V Period Ended September 30, 2018

## Investment Philosophy

GS Mezzanine Partners seeks large-sized mezzanine investments comprised generally of fixed income securities and an associated equity component. They focus on providing "private high yield" capital for mid- to large-sized leveraged and management buyout transactions, recapitalizations, financings, re-financings, acquisitions and restructurings for private equity firms, private family companies and corporate issuers.

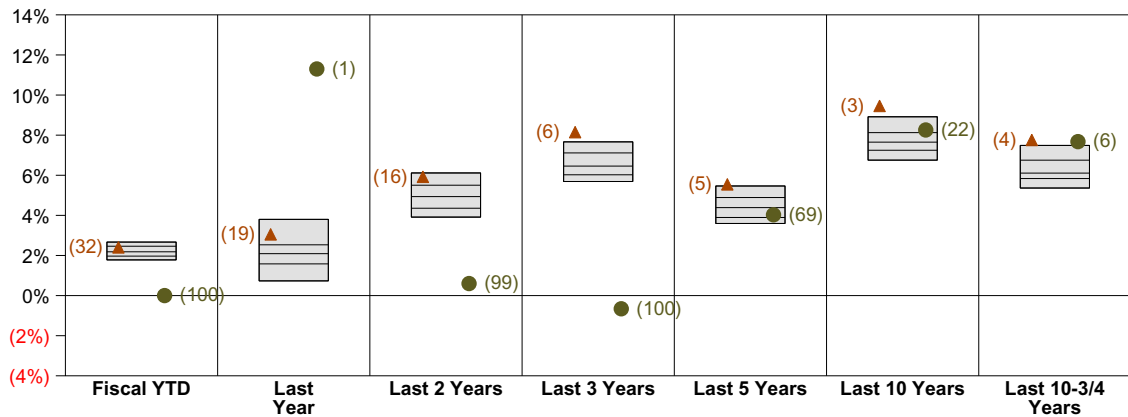
## Quarterly Summary and Highlights

- Goldman Sachs Offshore V's portfolio posted a 0.00% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 1 percentile for the last year.
- Goldman Sachs Offshore V's portfolio underperformed the Blmbg HY 2% Iss Cap by 2.40% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 8.25%.

## Quarterly Asset Growth

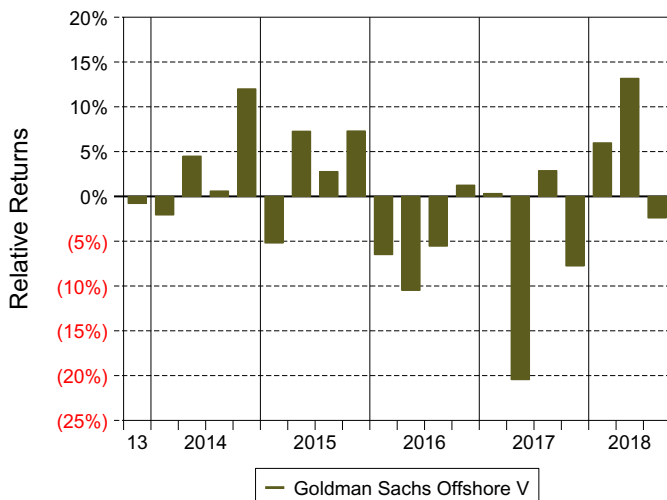
Beginning Market Value	\$413,310
Net New Investment	\$0
Investment Gains/(Losses)	\$0
Ending Market Value	\$413,310

## Performance vs Callan High Yield Mutual Funds (Net)

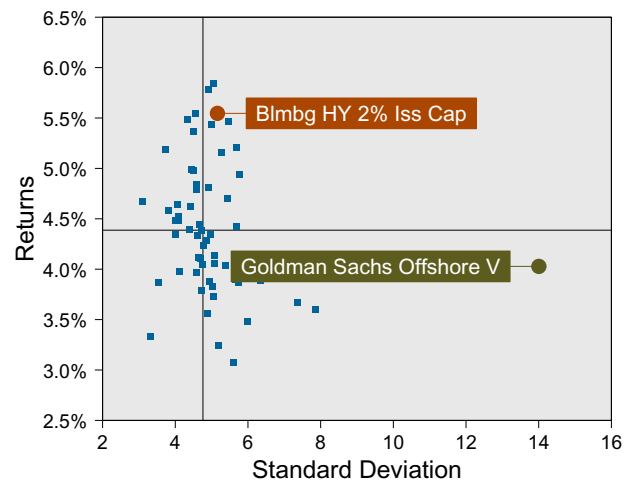


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-3/4 Years
10th Percentile	2.67	3.80	6.12	7.67	5.47	8.92	7.49
25th Percentile	2.46	2.53	5.50	7.11	4.89	8.13	6.75
Median	2.18	2.09	4.94	6.46	4.39	7.65	6.11
75th Percentile	1.97	1.58	4.36	6.02	3.89	7.25	5.84
90th Percentile	1.78	0.73	3.91	5.69	3.60	6.75	5.36
<b>Goldman Sachs Offshore V</b> ●	0.00	11.30	0.60	(0.66)	4.03	8.26	7.68
Blmbg HY 2% Iss Cap ▲	2.40	3.05	5.92	8.15	5.55	9.46	7.76

## Relative Return vs Blmbg HY 2% Iss Cap



## Callan High Yield Mutual Funds (Net) Annualized Five Year Risk vs Return



# Loomis Sayles

## Period Ended September 30, 2018

### Investment Philosophy

The High Yield Full Discretion Strategy seeks to identify attractive sectors and specific investment opportunities primarily within the global fixed income market through a global economic and interest rate framework. Portfolio managers incorporate a long-term macroeconomic view along with a stringent bottom-up investment evaluation process that drives security selection and resulting sector allocations. Opportunistic investments in non-benchmark sectors including investment grade corporate, emerging market, and non-US dollar debt and convertible bonds help to manage overall portfolio risk and enhance total return potential.

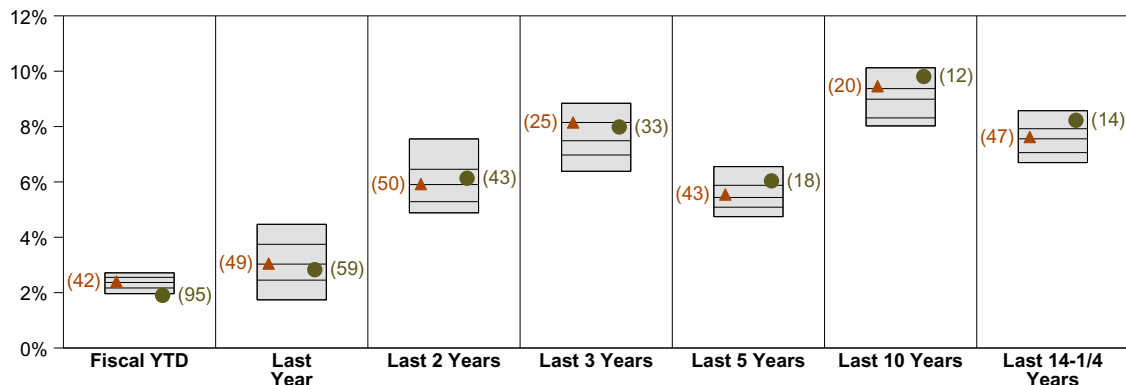
### Quarterly Summary and Highlights

- Loomis Sayles's portfolio posted a 1.90% return for the quarter placing it in the 95 percentile of the Callan High Yield Fixed Income group for the quarter and in the 59 percentile for the last year.
- Loomis Sayles's portfolio underperformed the Blmbg HY 2% Iss Cap by 0.50% for the quarter and underperformed the Blmbg HY 2% Iss Cap for the year by 0.22%.

### Quarterly Asset Growth

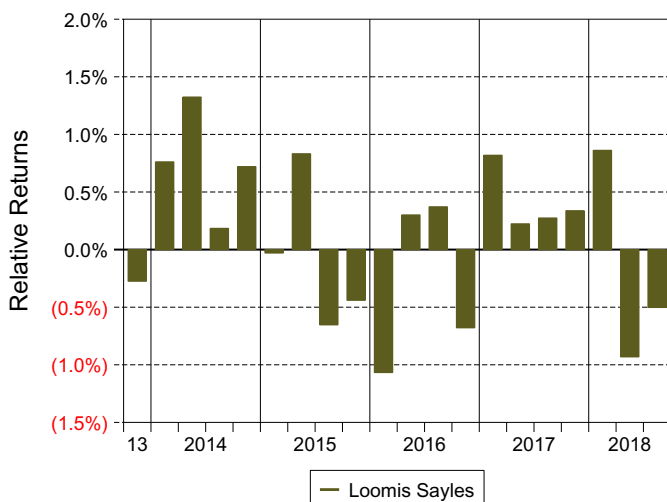
Beginning Market Value	\$204,757,178
Net New Investment	\$-255,946
Investment Gains/(Losses)	\$3,891,001
Ending Market Value	\$208,392,232

### Performance vs Callan High Yield Fixed Income (Gross)

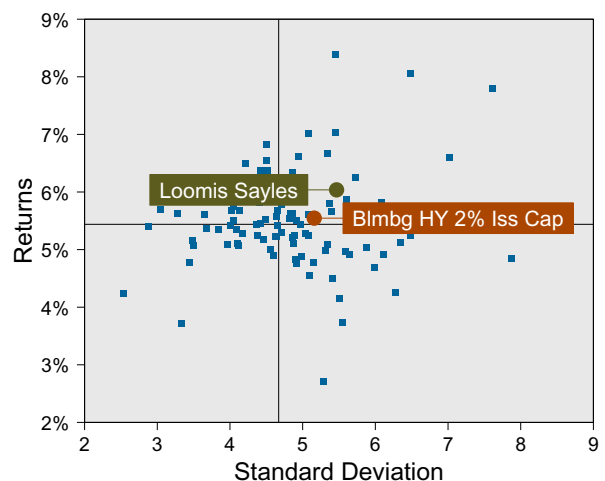


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 14-1/4 Years
10th Percentile	2.72	4.47	7.55	8.84	6.55	10.12	8.57
25th Percentile	2.55	3.75	6.46	8.15	5.88	9.37	7.92
Median	2.37	3.03	5.90	7.49	5.44	8.99	7.56
75th Percentile	2.17	2.45	5.29	6.97	5.09	8.31	7.06
90th Percentile	1.96	1.74	4.88	6.38	4.74	8.02	6.70
<b>Loomis Sayles</b> ●	1.90	2.83	6.13	7.98	6.04	9.81	8.23
Blmbg HY 2% Iss Cap ▲	2.40	3.05	5.92	8.15	5.55	9.46	7.62

### Relative Return vs Blmbg HY 2% Iss Cap



### Callan High Yield Fixed Income (Gross) Annualized Five Year Risk vs Return



# PIMCO Bravo II Fund

## Period Ended September 30, 2018

### Investment Philosophy

The BRAVO II Fund is a private equity style fund targeting an annualized IRR of 15-20% and multiple of 1.8-2x, net of fees and carried interest with an initial 5-year term. The fund will seek to capitalize on non-economic asset sale decisions by global financial institutions. The fund will have the flexibility to acquire attractively discounted, less liquid loans, structured credit and other assets tied to residential or commercial real estate markets in the U.S. and Europe.

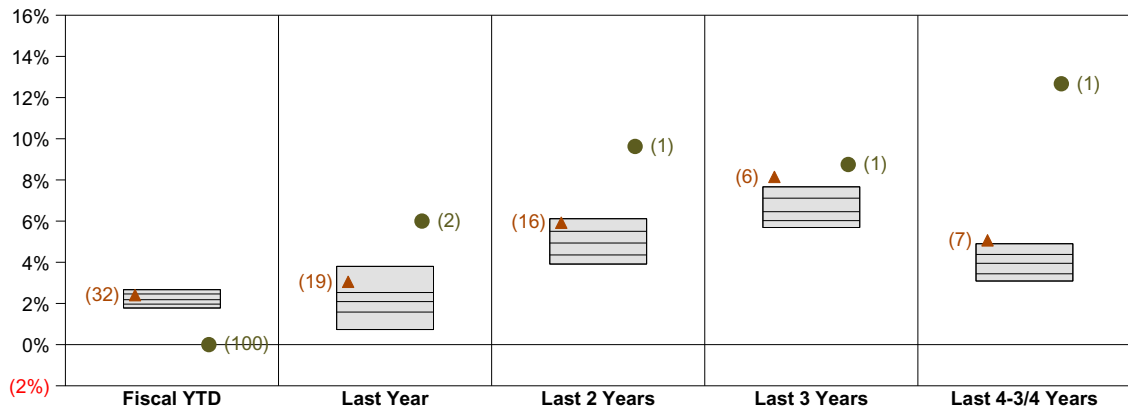
### Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a 0.00% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 2 percentile for the last year.
- PIMCO Bravo II Fund's portfolio underperformed the Blmbg HY 2% Iss Cap by 2.40% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 2.95%.

### Quarterly Asset Growth

Beginning Market Value	\$43,326,489
Net New Investment	\$-4,572,767
Investment Gains/(Losses)	\$-1
Ending Market Value	\$38,753,721

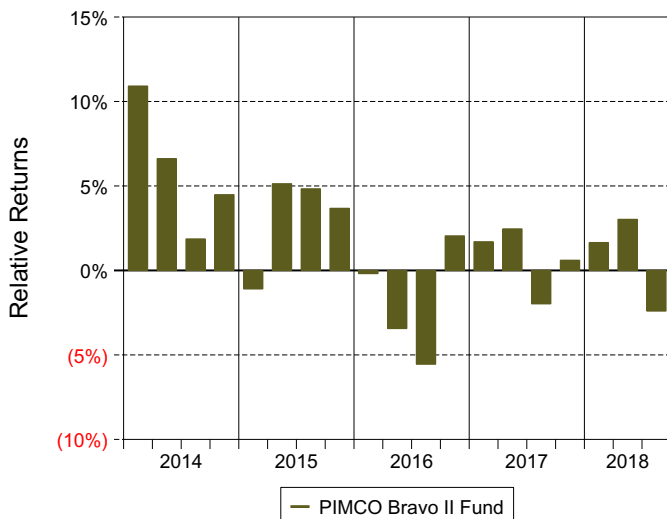
### Performance vs Callan High Yield Mutual Funds (Net)



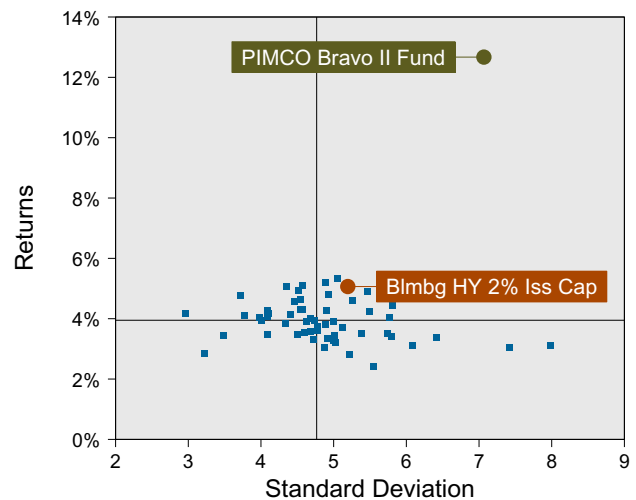
10th Percentile	2.67	3.80	6.12	7.67	4.90
25th Percentile	2.46	2.53	5.50	7.11	4.38
Median	2.18	2.09	4.94	6.46	3.95
75th Percentile	1.97	1.58	4.36	6.02	3.44
90th Percentile	1.78	0.73	3.91	5.69	3.09

<b>PIMCO Bravo II Fund</b>	●	0.00	6.00	9.63	8.75	12.67
Blmbg HY 2% Iss Cap	▲	2.40	3.05	5.92	8.15	5.07

### Relative Return vs Blmbg HY 2% Iss Cap



### Callan High Yield Mutual Funds (Net) Annualized Four and Three-Quarter Year Risk vs Return



# Real Estate Period Ended September 30, 2018

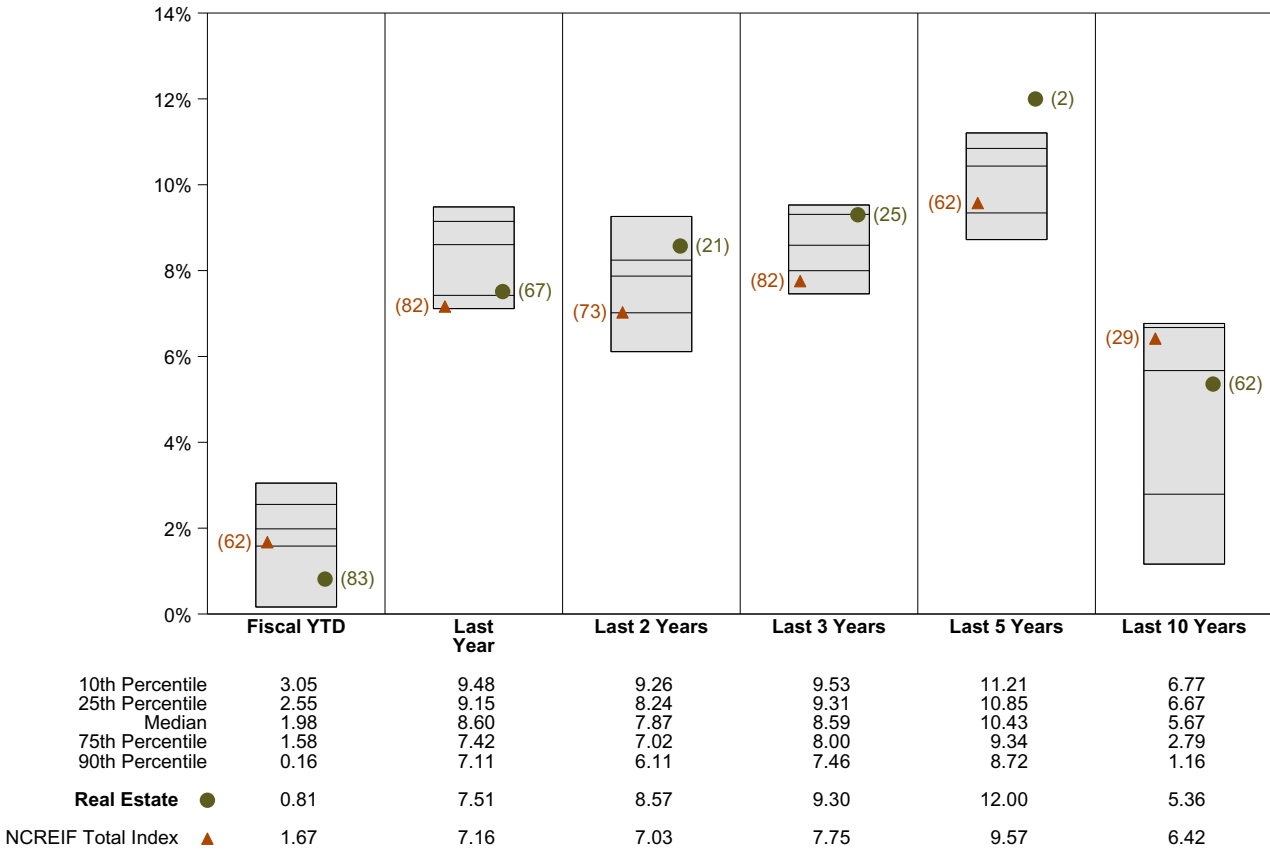
## Quarterly Summary and Highlights

- Real Estate's portfolio posted a 0.81% return for the quarter placing it in the 83 percentile of the Public Fund - Real Estate group for the quarter and in the 67 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 0.86% for the quarter and outperformed the NCREIF Total Index for the year by 0.35%.

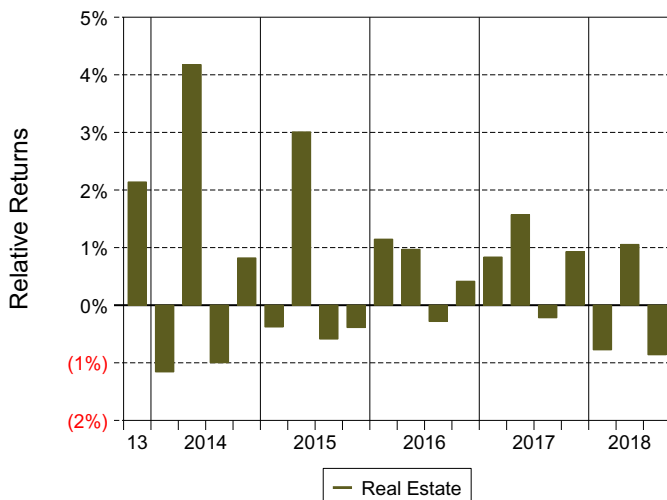
## Quarterly Asset Growth

Beginning Market Value	\$585,428,115
Net New Investment	\$35,136,156
Investment Gains/(Losses)	\$5,032,109
Ending Market Value	\$625,596,381

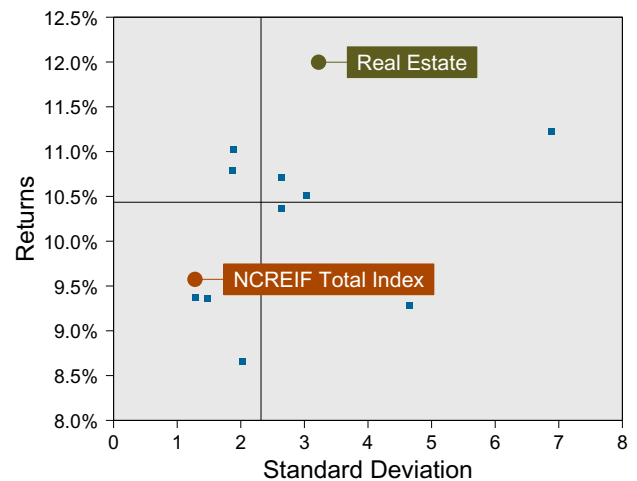
## Performance vs Public Fund - Real Estate (Gross)



## Relative Return vs NCREIF Total Index



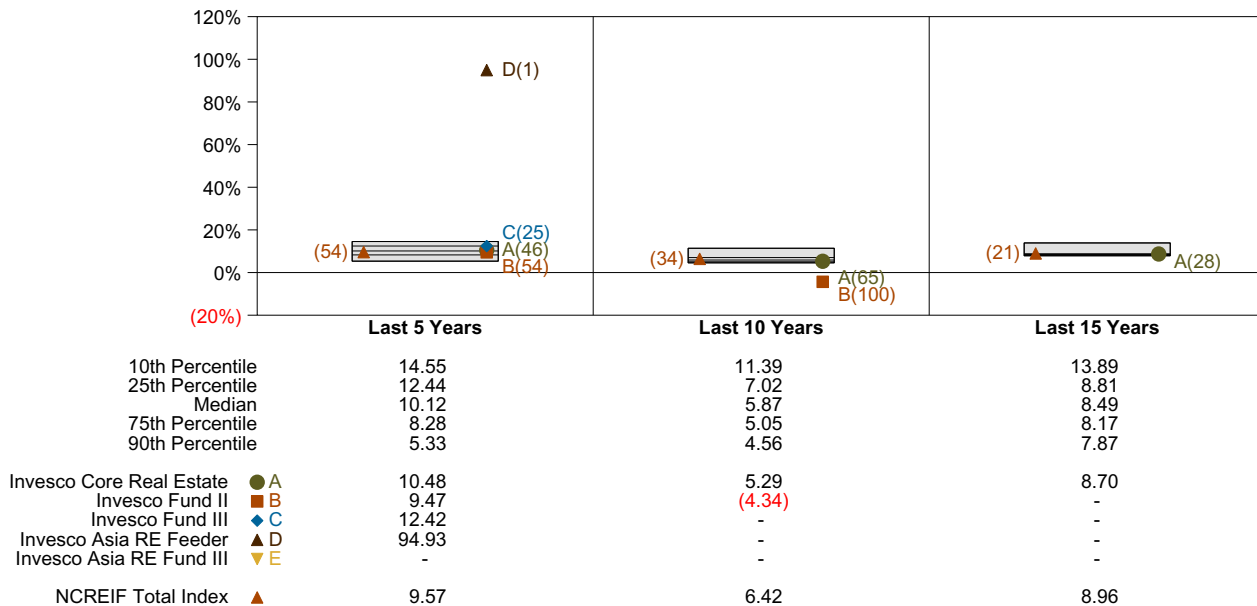
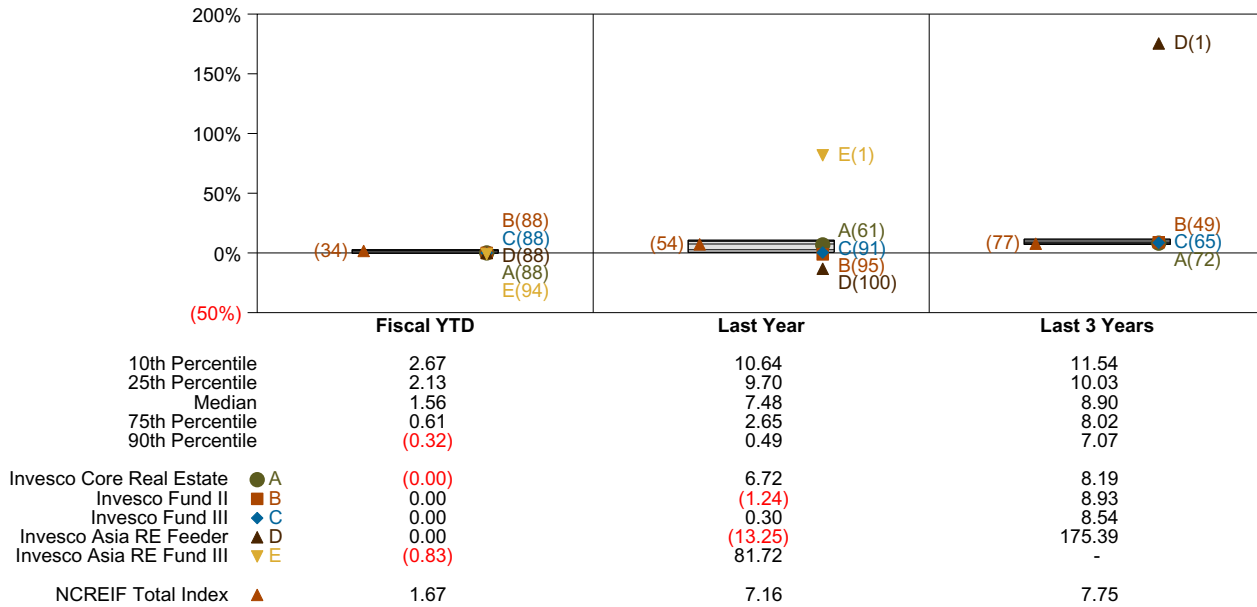
## Public Fund - Real Estate (Gross) Annualized Five Year Risk vs Return



# North Dakota State Investment Board Pension Funds Performance vs Callan Total Domestic Real Estate DB Periods Ended September 30, 2018

## Return Ranking

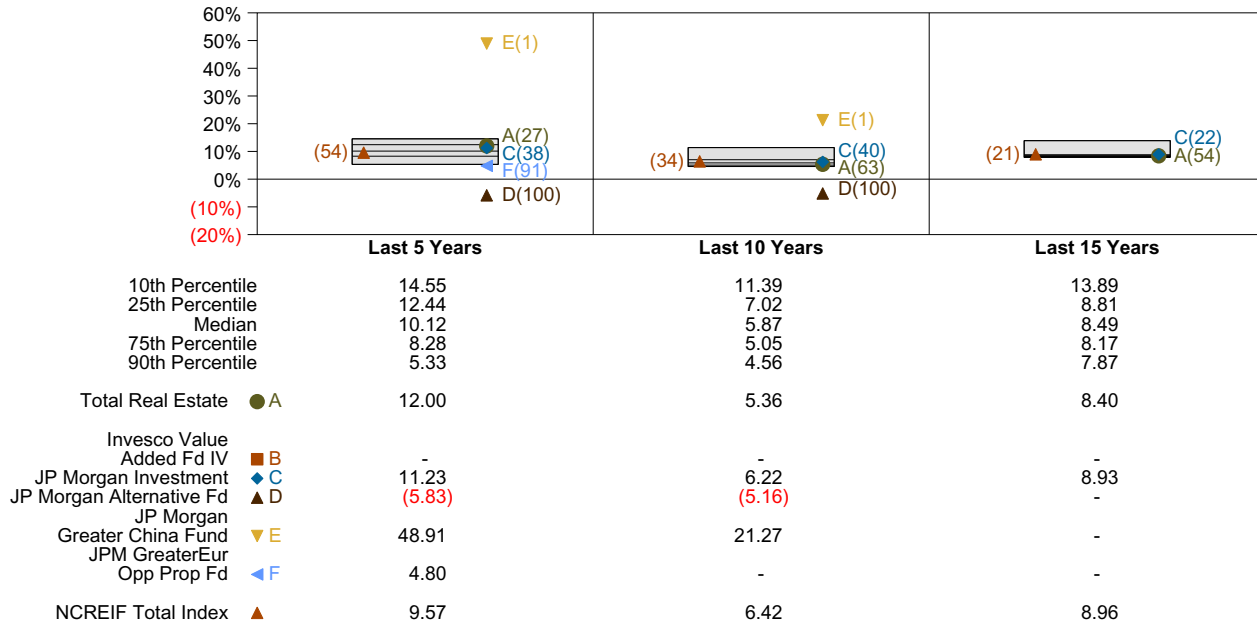
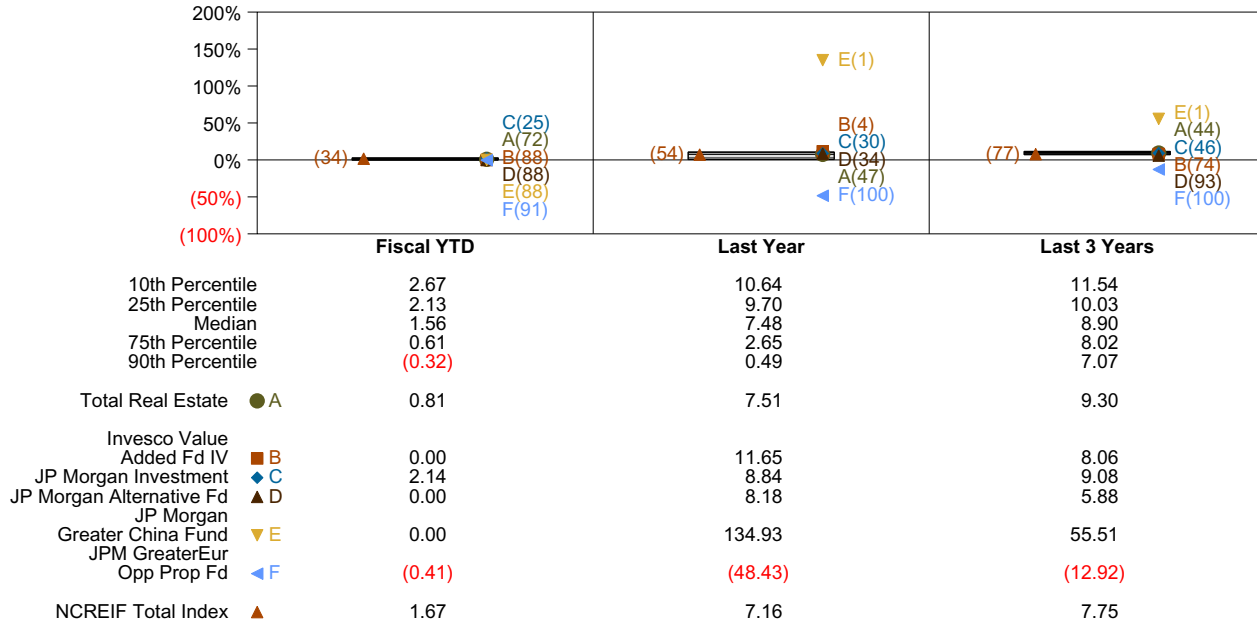
The chart below illustrates fund rankings over various periods versus the Callan Total Domestic Real Estate DB. The bars represent the range of returns from the 10th percentile to the 90th percentile for each period for all funds in the Callan Total Domestic Real Estate DB. The numbers to the right of the bar represent the percentile rankings of the funds being analyzed. The table below the chart details the rates of return plotted in the graph above.



# North Dakota State Investment Board Pension Funds Performance vs Callan Total Domestic Real Estate DB Periods Ended September 30, 2018

## Return Ranking

The chart below illustrates fund rankings over various periods versus the Callan Total Domestic Real Estate DB. The bars represent the range of returns from the 10th percentile to the 90th percentile for each period for all funds in the Callan Total Domestic Real Estate DB. The numbers to the right of the bar represent the percentile rankings of the funds being analyzed. The table below the chart details the rates of return plotted in the graph above.



# TIR Teredo

## Period Ended September 30, 2018

### Investment Philosophy

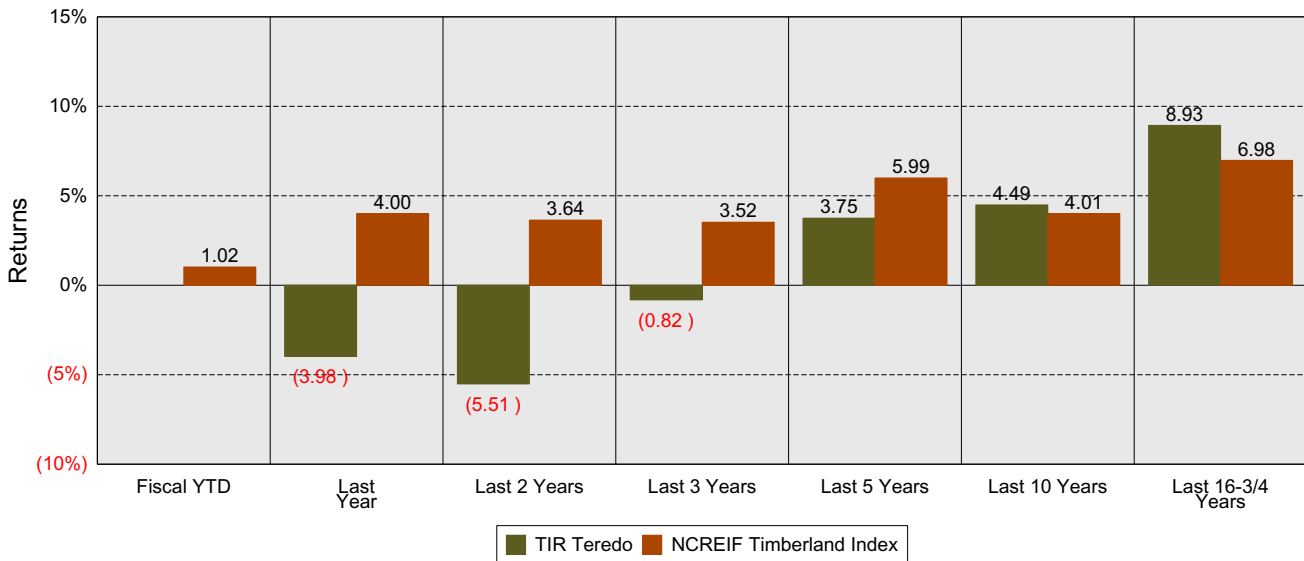
Teredo Timber LLC - The investment objective of Teredo is to provide competitive investment returns from increasing saw timber production through the 20 year term of the partnership. TIR's management strategy is to maximize saw timber volume by applying intensive forest management techniques which accelerate growth through the diameter class distribution. Periodic cash flows are produced from thinning and final harvests of the individual timber stands.

### Quarterly Summary and Highlights

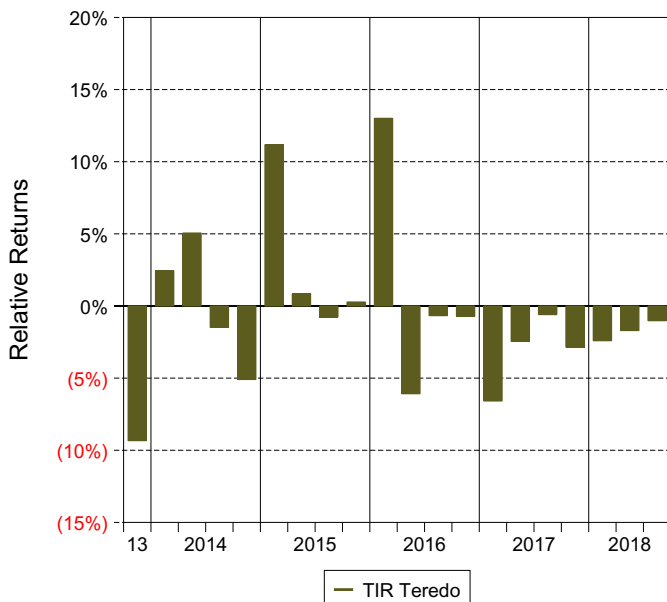
- TIR Teredo's portfolio underperformed the NCREIF Timberland Index by 1.02% for the quarter and underperformed the NCREIF Timberland Index for the year by 7.98%.

### Quarterly Asset Growth

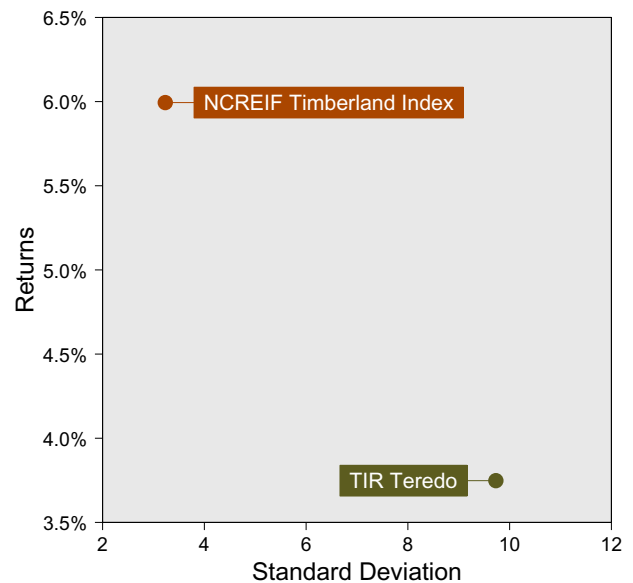
Beginning Market Value	\$30,194,823
Net New Investment	\$0
Investment Gains/(Losses)	\$0
Ending Market Value	\$30,194,823



Relative Return vs NCREIF Timberland Index



Annualized Five Year Risk vs Return





# TIR Springbank

## Period Ended September 30, 2018

### Investment Philosophy

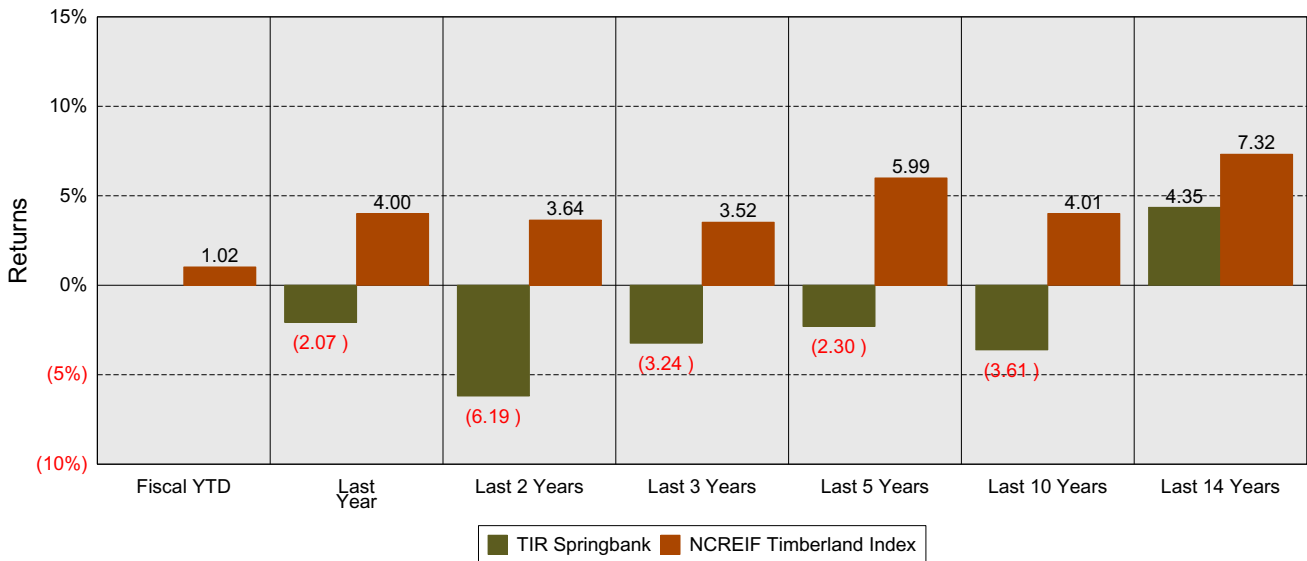
Springbank LLC - The investment objective of Springbank is to maximize long-term investment potential by means of the formation of a dedicated land management group, intensive timber management to increase timber production, the coordination of timber harvesting with land management activities and direct marketing and selective real estate partnerships.

### Quarterly Summary and Highlights

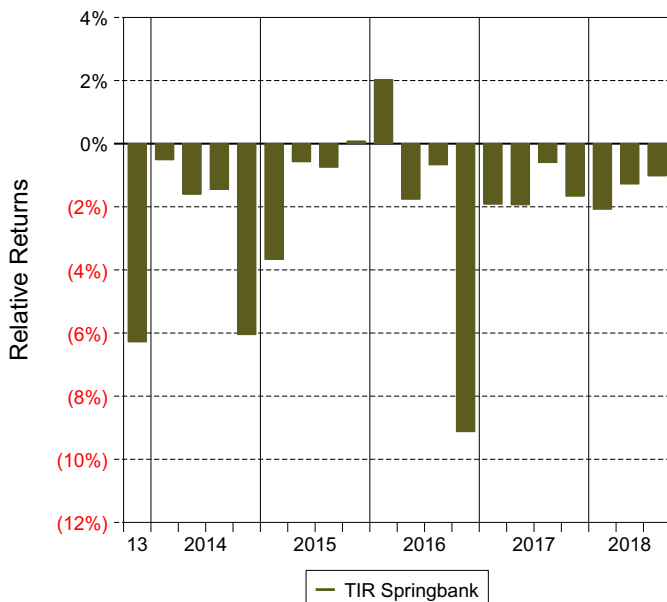
- TIR Springbank's portfolio underperformed the NCREIF Timberland Index by 1.02% for the quarter and underperformed the NCREIF Timberland Index for the year by 6.08%.

### Quarterly Asset Growth

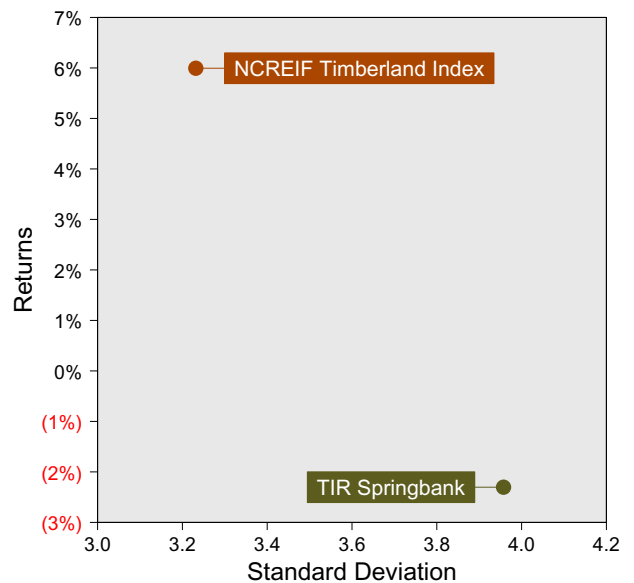
Beginning Market Value	\$98,809,449
Net New Investment	\$-1,520,000
Investment Gains/(Losses)	\$0
Ending Market Value	\$97,289,449



Relative Return vs NCREIF Timberland Index



Annualized Five Year Risk vs Return



# ISQ Global Infrastructure II

## Period Ended September 30, 2018

### Investment Philosophy

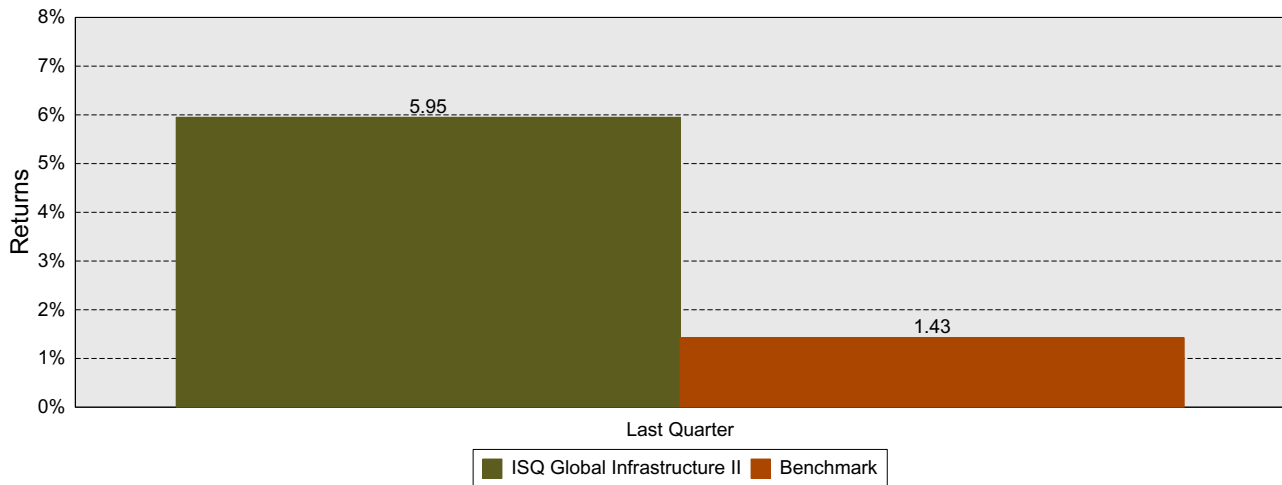
The ISQ Global Infrastructure Fund II seeks to achieve long-term capital appreciation as well as current income through equity and equity related investments in infrastructure and infrastructure related assets located globally, with a focus on North America, Europe, and selected growth economies in Asia and Latin America. The Fund may also invest in debt Securities that have equity-like returns or an equity component, or are related to its equity investments, including without limitation convertible debt, bank loans and participations and other similar instruments. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

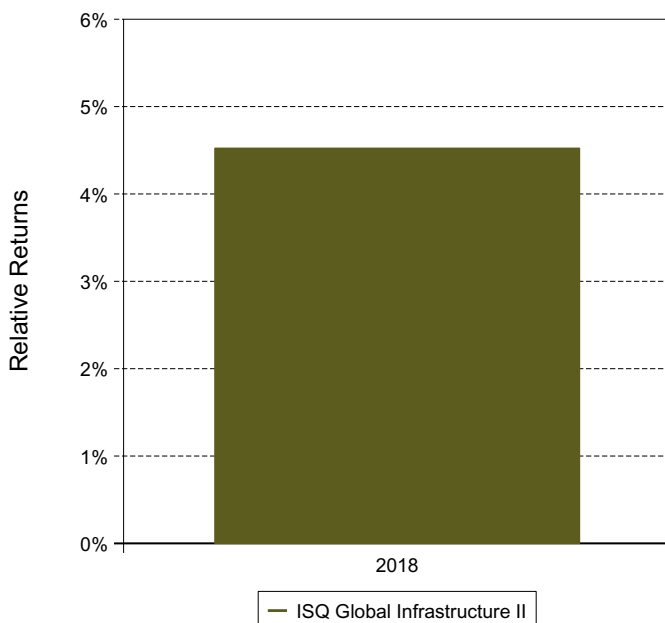
- ISQ Global Infrastructure II's portfolio outperformed the Benchmark by 4.52% for the quarter.

### Quarterly Asset Growth

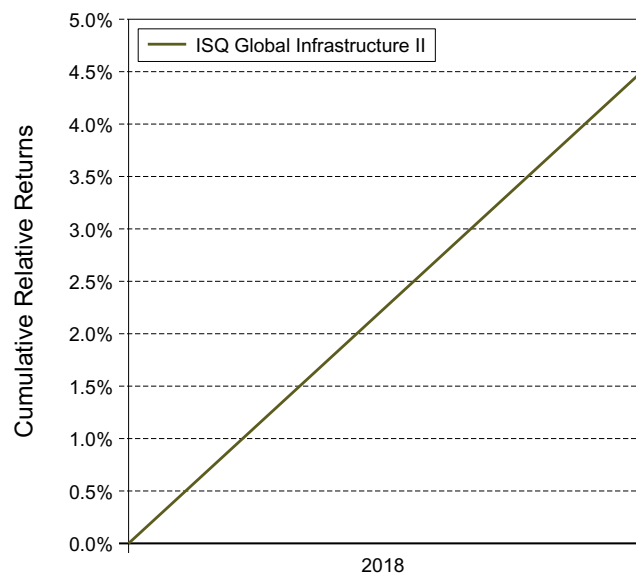
Beginning Market Value	\$3,500,000
Net New Investment	\$0
Investment Gains/(Losses)	\$208,255
Ending Market Value	\$3,708,255



Relative Return vs Benchmark



Cumulative Returns vs Benchmark



# The Rohatyn Group

## Period Ended September 30, 2018

### Investment Philosophy

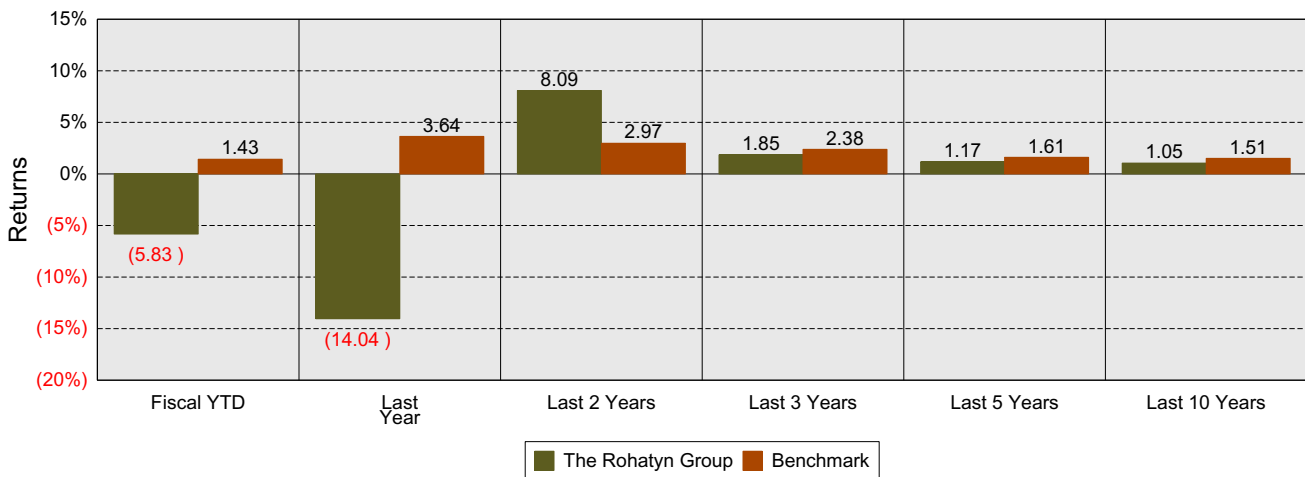
The Rohatyn Group's Asian Infrastructure & Related Resources Opportunity (AIRRO) Fund seeks to invest in infrastructure and related resources opportunities across the greater Asia Pacific region. The Fund seeks to invest in a broad range of assets, including: core infrastructure, power both from conventional and renewable sources, communications, water and waste-water, public works, urban development and other "social" infrastructure assets and related resources. The management of the AIRRO Fund was transferred from JP Morgan to The Rohatyn Group in May, 2018. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

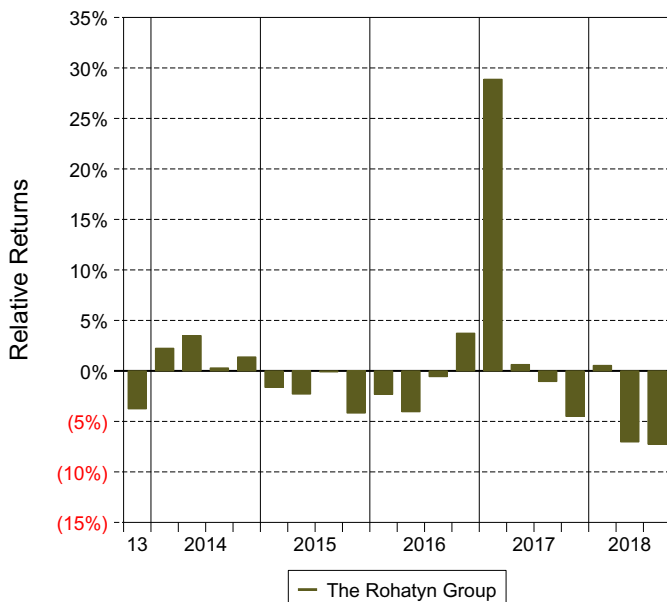
- The Rohatyn Group's portfolio underperformed the Benchmark by 7.25% for the quarter and underperformed the Benchmark for the year by 17.68%.

### Quarterly Asset Growth

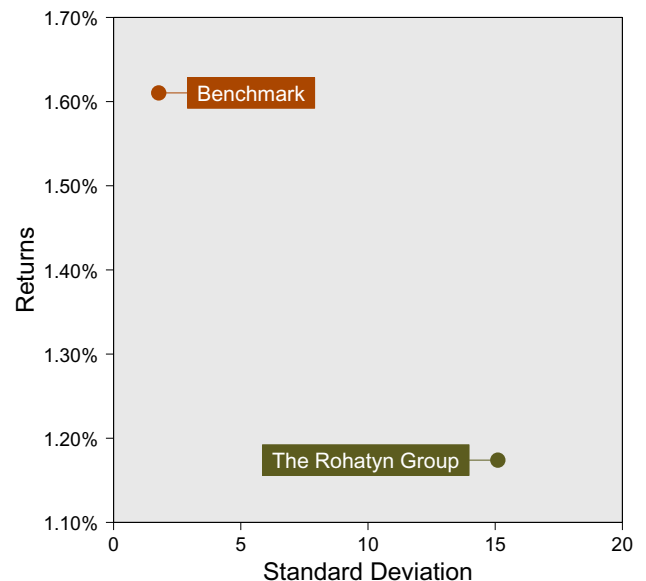
Beginning Market Value	\$21,179,795
Net New Investment	\$-19,135
Investment Gains/(Losses)	\$-1,233,130
Ending Market Value	\$19,927,530



Relative Return vs Benchmark



Annualized Five Year Risk vs Return



# JPM Infrastructure Fund

## Period Ended September 30, 2018

### Investment Philosophy

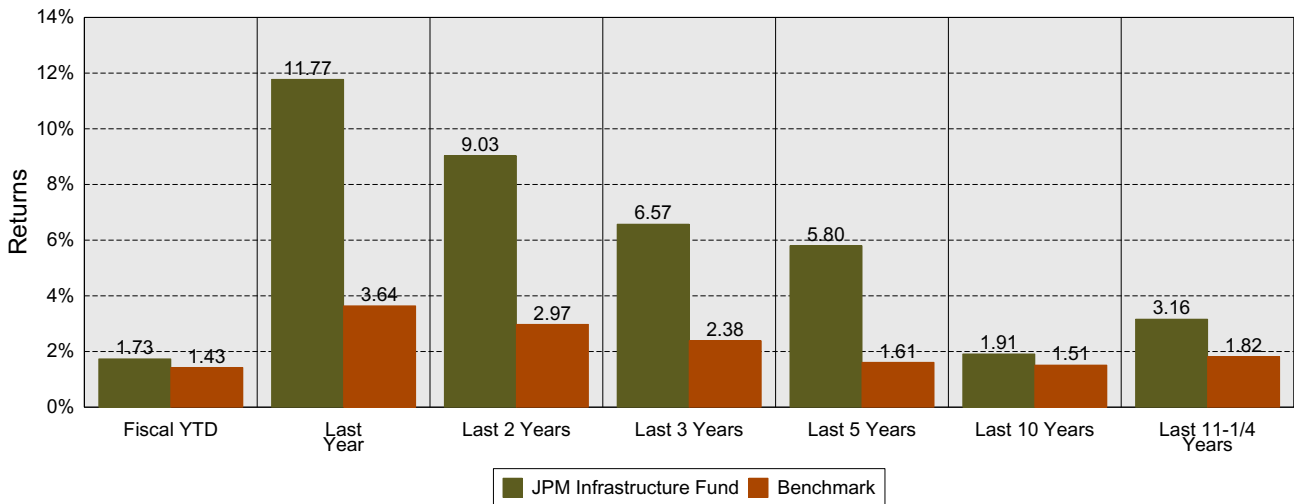
The only open-ended private commingled infrastructure fund in the U.S., the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

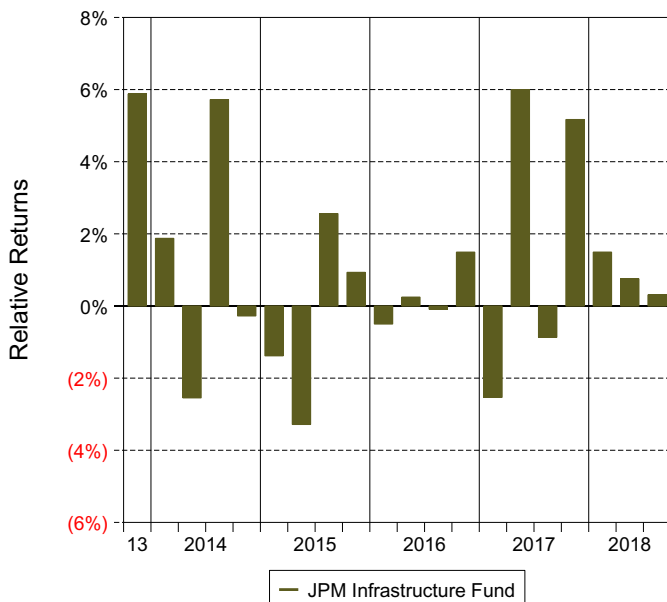
- JPM Infrastructure Fund's portfolio outperformed the Benchmark by 0.31% for the quarter and outperformed the Benchmark for the year by 8.14%.

### Quarterly Asset Growth

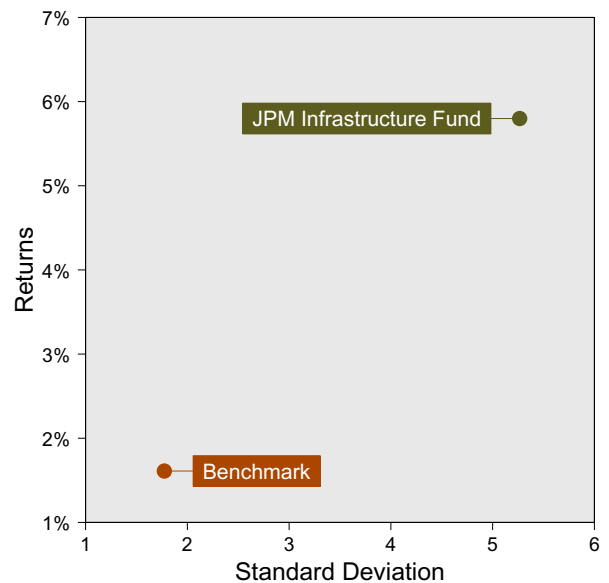
Beginning Market Value	\$193,288,694
Net New Investment	\$-6,287,504
Investment Gains/(Losses)	\$3,335,969
Ending Market Value	\$190,337,159



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



# Grosvenor Cust. Infrastructure Period Ended September 30, 2018

## Investment Philosophy

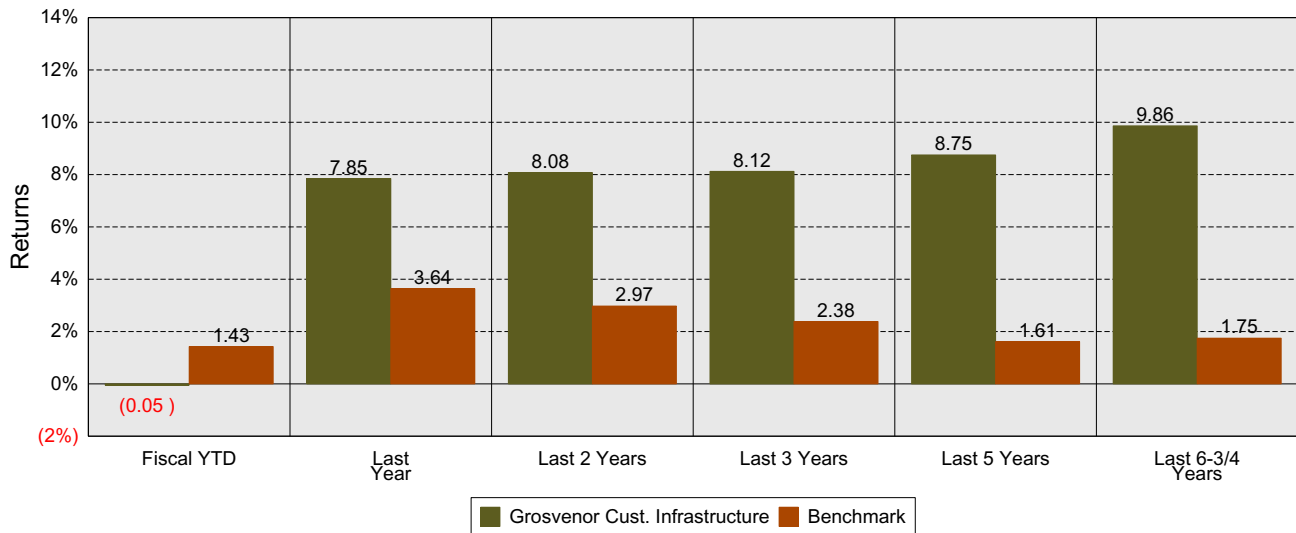
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

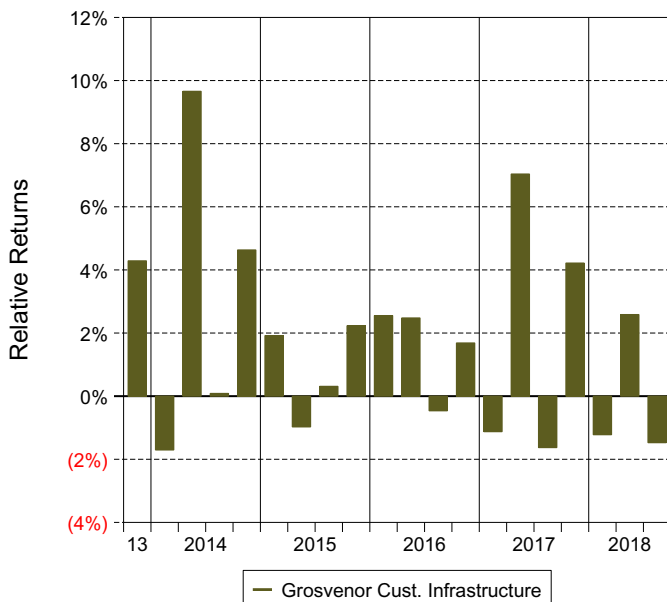
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.47% for the quarter and outperformed the Benchmark for the year by 4.21%.

## Quarterly Asset Growth

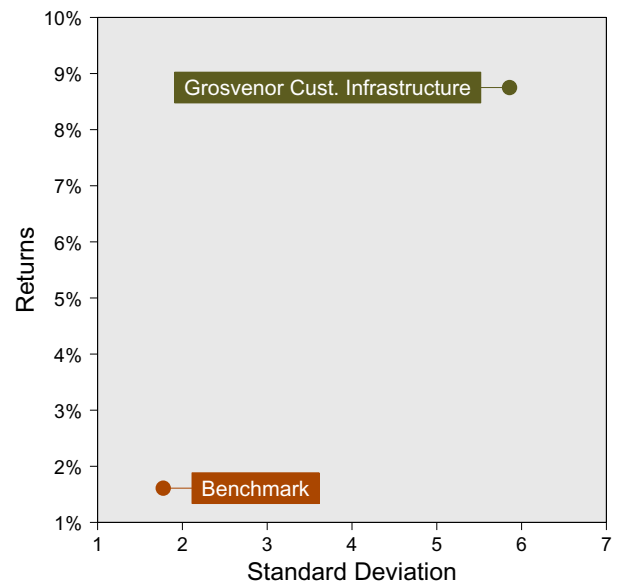
Beginning Market Value	\$35,004,954
Net New Investment	\$-4,992,588
Investment Gains/(Losses)	\$-16,493
Ending Market Value	\$29,995,873



## Relative Return vs Benchmark



## Annualized Five Year Risk vs Return



# Grosvenor Cust. Infrastructure II Period Ended September 30, 2018

## Investment Philosophy

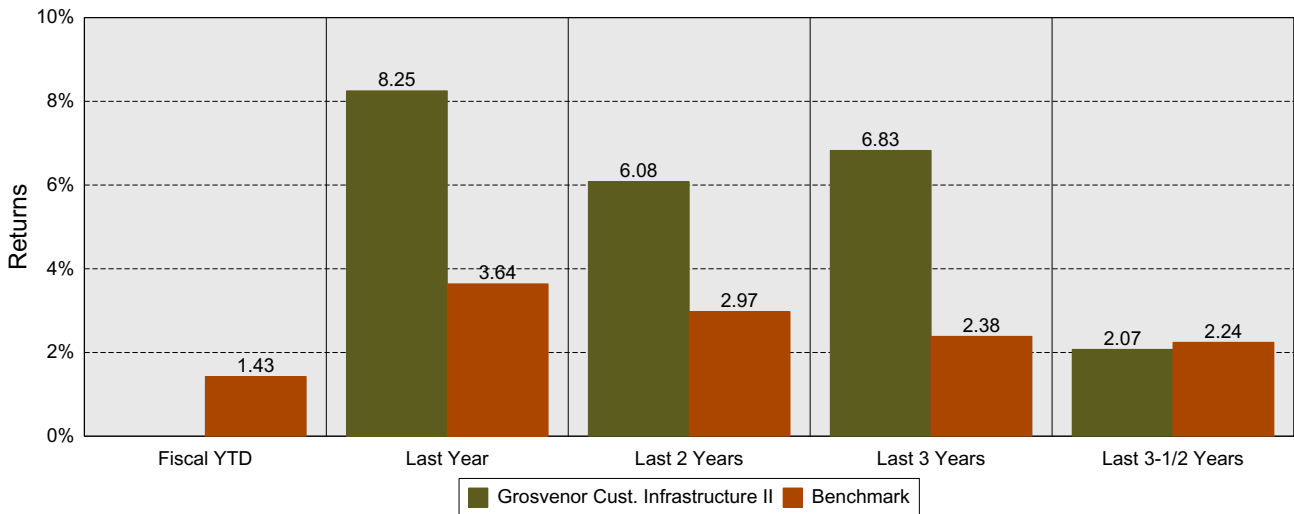
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

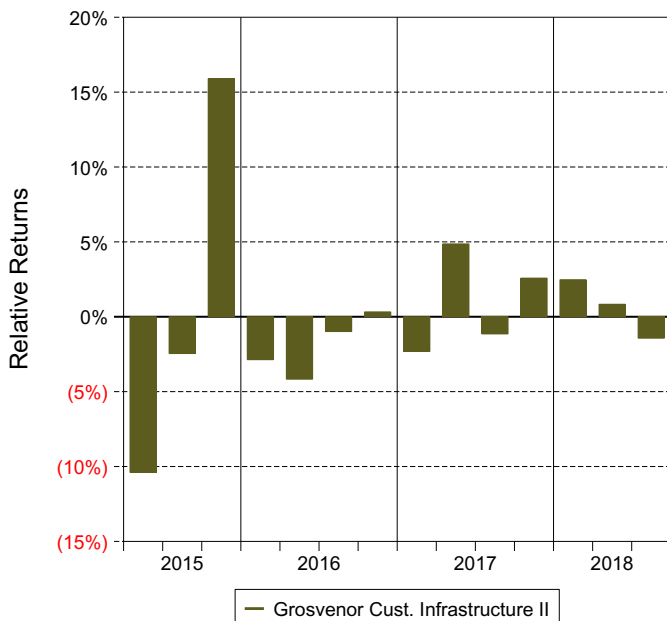
- Grosvenor Cust. Infrastructure II's portfolio underperformed the Benchmark by 1.43% for the quarter and outperformed the Benchmark for the year by 4.61%.

## Quarterly Asset Growth

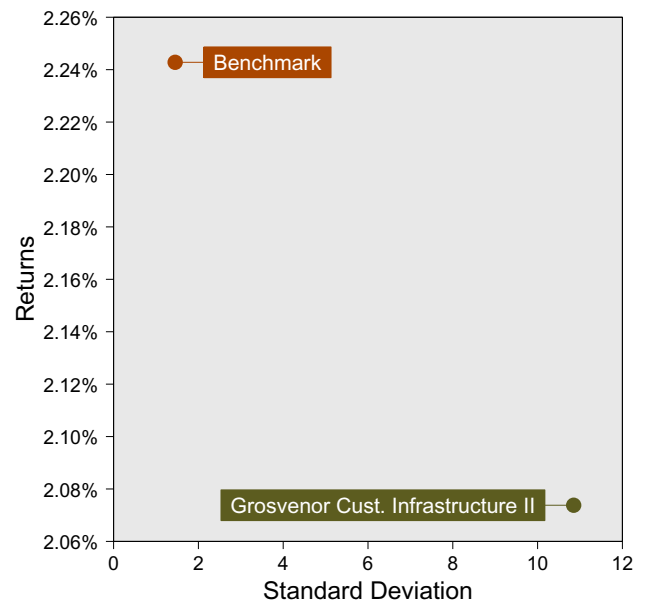
Beginning Market Value	\$15,946,534
Net New Investment	\$0
Investment Gains/(Losses)	\$0
Ending Market Value	\$15,946,534



Relative Return vs Benchmark



Annualized Three and One-Half Year Risk vs Return



## Research and Educational Programs

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog “Perspectives.” For more information contact Corry Walsh at 312.346.3536 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan’s Experts



**An Investor Framework for Addressing Climate Change** | Callan’s Anna West lays out the top issues for investors about this issue. We also identify solutions and areas of progress for those seeking to address climate-related risks as well as benefit from emerging opportunities.

**Promoting Gender Diversity in the Investment Industry** | Callan Executive Chairman Ron Peyton offers his observations on what has worked for gender inclusion at the firm over the last 45 years and what we have learned in the hope that it will inform others on how to progress toward equality in senior roles industry-wide.



**Helping DC Plan Participants in the “Distribution” Phase** | Callan’s Tom Shingler and James Veneruso discuss our research on the “distribution phase” of defined contribution plans, when participants are drawing down assets, and the issues that plan sponsors should address.

**Picking Through the Alpha Graveyard: Correcting for Survivorship Bias in Investment Product Universes** | In this paper from the *Journal of Investment Management*, Callan’s Greg Allen, Ivan Cliff, and Wally Meerschaert propose a technique to correct for survivorship bias in investment product universes. It uses all available data for survivors and non-survivors, corrects for bias across the full distribution (from 1st to 99th percentile), and can be applied to other return-based statistics such as the Sharpe ratio.

**Infrastructure: No Longer a Niche Option** | Callan’s Jan Mende discusses investing in infrastructure. Institutional investors are increasing allocations, managers are creating more investment options, and benchmarks are being refined.

**The Shape of Risk: Making Cents of the Irrational With Options** | In the third quarter’s *Hedge Fund Monitor*, Jim McKee discusses the use of options as insurance for institutional portfolios.

**2018 ESG Survey** | Callan’s sixth annual survey on the status of environmental, social, and governance (ESG) investing in the U.S. institutional investment market reveals more than 40% of investors are incorporating ESG factors into investment decisions.

**Your Plan Will Face a Cyberattack; Here’s How to Prepare** | The third quarter’s edition of the *DC Observer* is designed to assist plan sponsors with formulating and executing their cybersecurity strategy to protect their information and their assets.

## Quarterly Periodicals

**Private Equity Trends** | This newsletter offers the latest data on private equity fundraising, buyouts, venture capital, and returns.

**Market Pulse Flipbook** | A quarterly market reference guide covering investment and fund sponsor trends in the U.S. economy, U.S. and non-U.S. equities and fixed income, alternatives, and defined contribution.

**Capital Market Review** | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity across a wide range of asset classes.

**Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?** | Callan’s Real Assets Consulting group identifies seven indicators—based on spreads in real estate and fixed income markets—that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

## Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: [www.callan.com/library/](http://www.callan.com/library/)

Callan's **2019 National Conference** will be held January 28-30, 2019. Mark your calendars for this upcoming event! And please visit the Events page on our website ([www.callan.com/events/](http://www.callan.com/events/)) for additional information as it becomes available.

**For more information about events, please contact Barb Gerraty: 415.274.3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## The Center for Investment Training Educational Sessions

The Center for Investment Training, better known as the "Callan College," provides a foundation of knowledge for industry professionals who are involved in the investment decision-making process. It was founded in 1994 to provide clients and non-clients alike with basic- to intermediate-level instruction. Our next sessions are:

### Introduction to Investments

*San Francisco, April 16-17, 2019*

*San Francisco, July 16-17, 2019*

*Chicago, October 22-23, 2019*

This program familiarizes fund sponsor trustees, staff, and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals who have less than two years of experience with asset-management oversight and/or support responsibilities. Tuition for the Introductory "Callan College" session is \$2,350 per person. Tuition includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

### Customized Sessions

The "Callan College" is equipped to customize a curriculum to meet the training and educational needs of a specific organization. These tailored sessions range from basic to advanced and can take place anywhere—even at your office.

**Learn more at [www.callan.com/events/callan-college-intro](http://www.callan.com/events/callan-college-intro) or contact Kathleen Cunnie: 415.274.3029 / [cunnie@callan.com](mailto:cunnie@callan.com)**

## Education: By the Numbers

**525** Attendees (on average) of the Institute's annual National Conference

**50+** Unique pieces of research the Institute generates each year

**3,700** Total attendees of the "Callan College" since 1994

**1980** Year the Callan Institute was founded



**"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialog to raise the bar across the industry."**

Greg Allen, Chief Executive Officer and Chief Research Officer



## List of Callan's Investment Manager Clients

Confidential – For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor and disclose potential conflicts on an on-going basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g. attending and educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance Department.

Manager Name
Acadian Asset Management LLC
AEGON USA Investment Management
Aether Investment Partners
AEW Capital Management
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
Black Creek Investment Management, Inc.
BlackRock
BMO Global Asset Management
BNP Paribas Asset Management
BNY Mellon Asset Management
Boston Partners
Brandes Investment Partners, L.P.
Brandywine Global Investment Management, LLC
Breckinridge Capital Advisors, Inc.
BrightSphere Investment Group (FKA Old Mutual Asset)
Brown Brothers Harriman & Company
Cambiar Investors, LLC

Manager Name
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management
CenterSquare Investment Management
Chartwell Investment Partners
Christian Brothers Investment Services
CIM Group
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
CS McKee, L.P.
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS (Formerly Deutsche Asset Management)
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
GAM (USA) Inc.

Manager Name
Gerding Edlen
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs Asset Management
Green Square Capital LLC
Greenwich Investment Management, Inc.
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Harding Loevner L.P.
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln National Corporation
LMCG Investments, LLC
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
Macquarie Investment Management (MIM)
Manulife Asset Management
McKinley Capital Management, LLC
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management
Nuveen Investments, Inc.
OFI Global Asset Management
O'Shaughnessy Asset Management, LLC
P/E Investments

Manager Name
Pacific Investment Management Company
Pathway Capital Management
Peregrine Capital Management, Inc.
Perkins Investment Management
PGIM
PGIM Fixed Income
PineBridge Investments
Pictet Asset Management Ltd.
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Reaves Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management Inc.
Russell Investments
Santander Global Facilities
Schroder Investment Management North America Inc.
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
Standard Life Investments Limited
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The Boston Company Asset Management, LLC
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
WCM Investment Management
WEDGE Capital Management
Wedgewood Partners, Inc.
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC

September 30, 2018



**North Dakota State Investment  
Board Insurance Trust**

**Investment Measurement Service  
Quarterly Review**

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Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see Appendix for Important Information and Disclosures.

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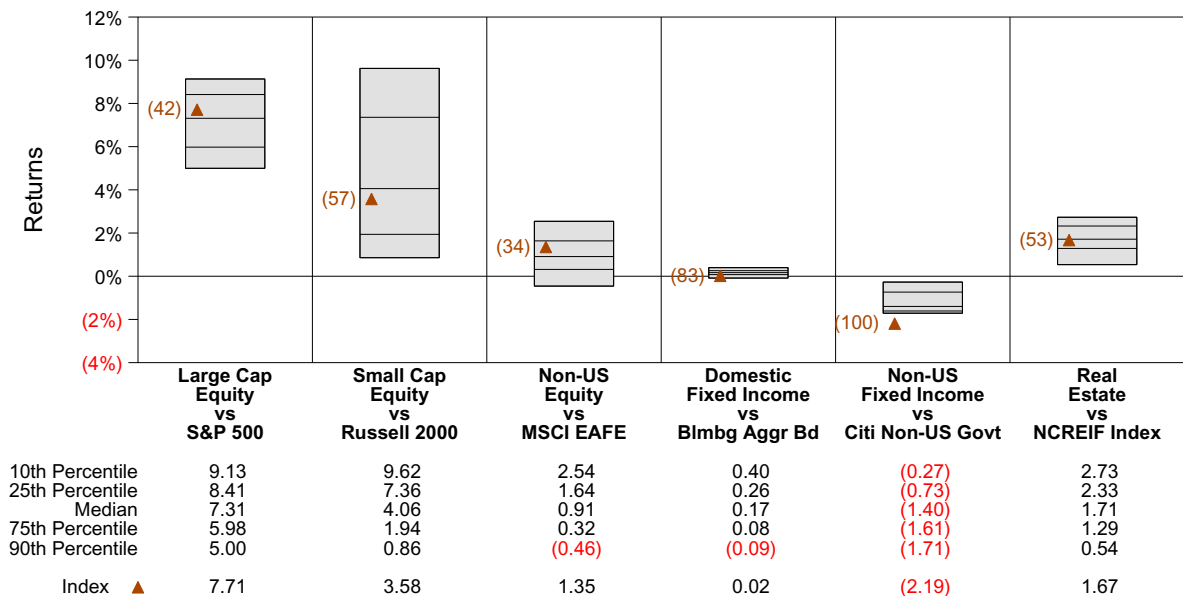
## Market Overview

### Active Management vs Index Returns

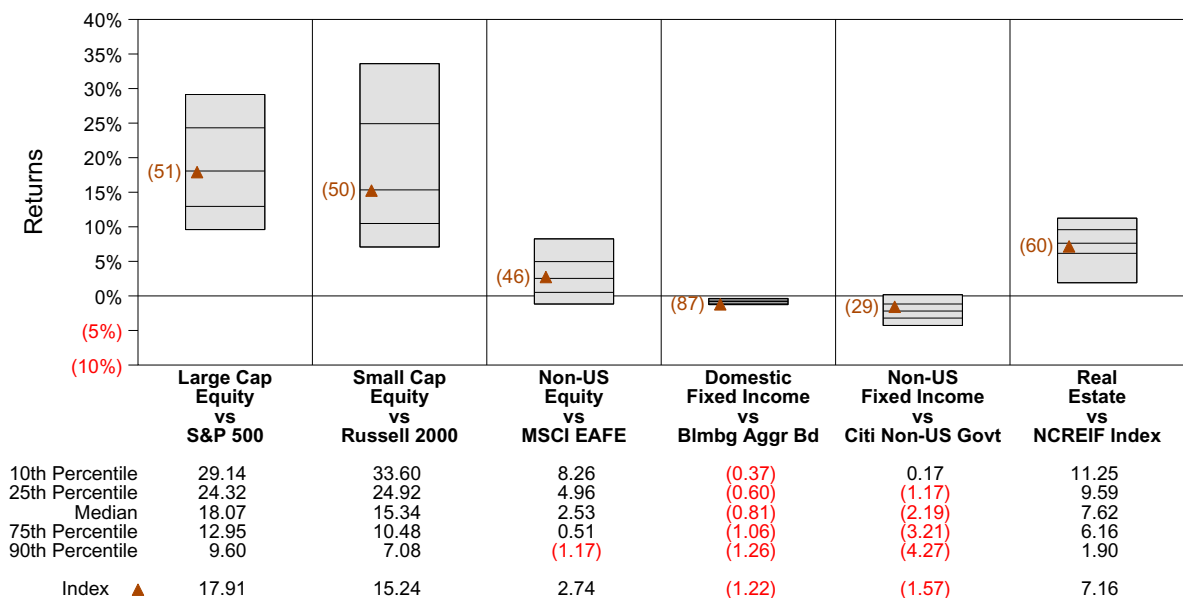
#### Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended September 30, 2018



#### Range of Separate Account Manager Returns by Asset Class One Year Ended September 30, 2018



### Everything Is Going Great! Right?

**ECONOMY**

**2** The U.S. economy has been firing on all cylinders, and the accompanying run-up in the equity market in the first three quarters buoyed confidence that all was not just well, but great! If only we knew in September what Halloween fright awaited us in October.

### Strong Market Both Here and Abroad

**REAL ESTATE**

**10** Supply and demand fundamentals were balanced but peaking. The Industrial sector performed the strongest. U.S. and non-U.S. REITs were trading at discounts to net asset value. European markets (ex-U.K.) and Asian products saw momentum.

### Equity Risk Looms Large for Plans

**FUND SPONSOR**

**4** The median plan sponsor in Callan's database gained 2.7% in the quarter, lagging the 4.6% gain of a 60% S&P 500/40% Bloomberg Barclays Aggregate benchmark. Sponsors are focused on equity exposure, market volatility, and mitigating risk in the event of an equity correction.

### Boo! More Tricks Than Treats

**PRIVATE EQUITY**

**12** Private equity investment and exit activity showed a general slowdown during the third quarter. Company investments and exits trended slightly down, fewer new partnerships were closed, but dollar commitments increased. Investors are pursuing broad diversification.

### Markets Diverge, With U.S. Staying Strong

**EQUITY**

**6** U.S. stocks posted broad-based gains, fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several indices hit records. Non-U.S. developed and emerging markets faltered due to geopolitical and economic uncertainties.

### Active Traders Grind Forward; MACs Falter

**HEDGE FUNDS/MACs**

**13** Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds. Callan's Multi-Asset Class Peer Groups continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks.

### U.S. Returns Mostly Flat; EM Debt Volatile

**FIXED INCOME**

**8** The U.S. Treasury yield curve rose across the maturity spectrum on better-than-expected corporate earnings and solid U.S. economic data. The JPM EMBI Global Diversified Index (USD denominated) gained 2.3%, but the JPM GBI-EM Global Diversified Index fell 1.8%.

### DC Plans Rebound, TDFs Struggle

**DEFINED CONTRIBUTION**

**15** The Callan DC Index™ rose 1.8% in the second quarter and outpaced the 1.1% gain of the Age 45 Target Date Fund (TDF). DC plan balances grew by 1.9%, driven primarily by market performance. The second quarter marked another all-time high for TDFs' share of DC assets.

## Broad Market Quarterly Returns

**U.S. Equity**  
Russell 3000



**+7.1%**

**Non-U.S. Equity**  
MSCI ACWI ex USA



**+0.7%**

**U.S. Fixed Income**  
Bloomberg Barclays Agg



**0.0%**

**Non-U.S. Fixed Income**  
Bloomberg Barclays GBI ex US



**-1.7%**

Sources: Bloomberg Barclays, MSCI, FTSE Russell

# Everything Is Great! Right?

ECONOMY | Jay Kloepfer

September 20 marked the capstone of a summer run-up in the U.S. equity market. We saw a true market correction in February (S&P 500 Index down 10.1%) and a drawdown of more than 7% in March, but the memory of those experiences was obliterated by a smooth, steady climb, with the S&P 500 gaining 12% in the first three quarters. Economic reports came in mixed for most economies outside the U.S. during 2018, but the U.S. economy has been firing on all cylinders, with the job market, investment, and output all showing robust gains. GDP grew 3.5% in the third quarter and 4.2% in the second. The accompanying run-up in the equity market buoyed confidence that all was not just well, but great, and this economic expansion and bull market still had fresh legs to keep going.

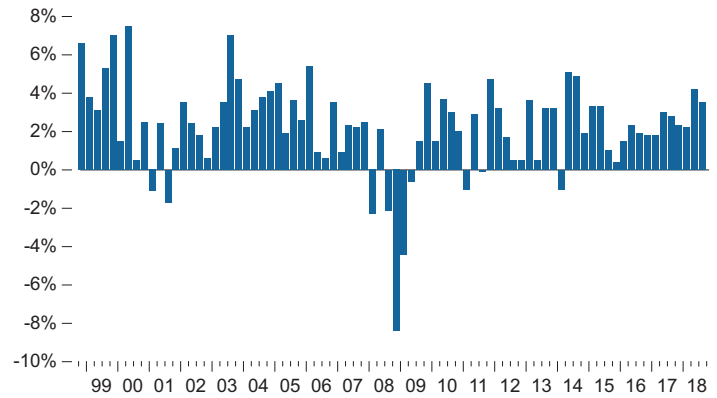
If only we knew in September what Halloween fright awaited us in October.

Since the start of the year, investors had been growing increasingly concerned that the expansion was getting long in the tooth, and that both the economy and the stock market must be nearing peaks. While elapsed time is not an economic variable, the fact that the current expansion set a record for length heightened fears of a downturn. Richly priced capital markets across all asset classes and a new peak in the level of corporate earnings reported during the summer earnings season suggested that a market correction was inevitable. Through the end of September, such fears contrasted with the continuing stream of good economic news, and the market roared. The unemployment rate dropped to 3.7% in September, the lowest since 2000. Wages continue to inch up, with average hourly earnings growth rising from 2% toward 3%. While potentially inflationary and certainly a cost to business, stronger wage growth kept consumer spending robust, and boosted consumer (and business) confidence.

Against this backdrop, the Fed raised rates three times in 2018, bringing the Fed Funds rate to 2.0-2.25%. The Fed expects one

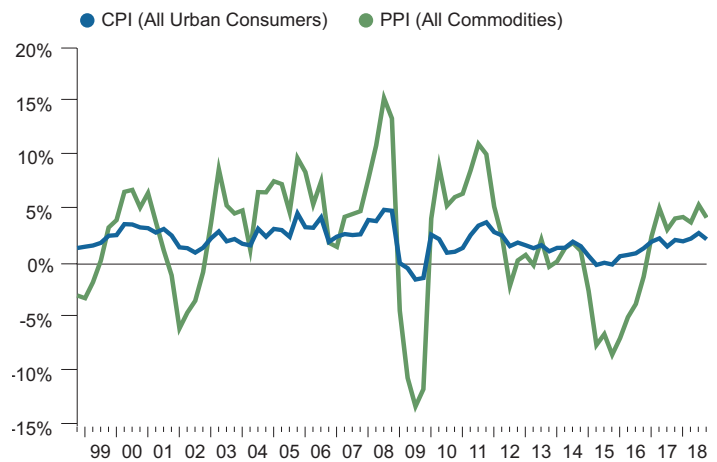
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

more rate hike this year and three in 2019. The Fed has now raised rates 200 basis points over the past two years. Since inflation has not changed over this period, real rates have essentially risen by 2 percentage points. Much of the growth in the first half of 2018 was attributed to the tax cut and spending, and trade activity in advance of tariffs imposed in July by the U.S. and China. Monetary policy has incrementally become



a more significant headwind, and it began showing up in the third quarter. While it is true that real rates are low relative to history, the change in rates is important. Since the mid-1980s real rates have risen by 2 percentage points four times; three of those occurrences resulted in recessions. In a study by Capital Economics, monetary policy tightening was a major contributing factor in 29 out of 45 recessions in G7 countries since 1960.

Higher interest rates are beginning to squeeze some of the most rate-sensitive segments of the economy. Housing has been an ongoing mystery; starts surged to an 11-year high in May, only to stall during the summer. Home sales are also clearly feeling the pressure of higher rates, and from the supply side, a shortage of houses. Residential investment contracted by 4% in the third quarter, following declines in each of the first two quarters. Home prices rose substantially in certain markets through the summer, but early indications are that rates began to crimp prices and sales in September. Housing can often be the canary in the coal mine: an early indicator of slowing economic activity and lower confidence.

Inflation had been gradually trending up, reaching 2.9% in June, finally fulfilling the expectations of many market observers, but the year-over-year gain in the CPI slowed to 2.3% in the third quarter. Much of the rise in the first half was attributable to a rebound in oil prices. Once oil prices stabilize as expected, the increase in inflation will likely abate. One reason for the stability of inflation is the growing dominance of services in the inflation calculation. The services inflation rate has been much steadier than the goods rate and consistently positive near 2%. Goods prices are more volatile and much more influenced than services by factors such as trade, currency, supply and demand of raw materials, and geopolitics.

### Recent Quarterly Economic Indicators

	3Q18	2Q18	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16
Employment Cost–Total Compensation Growth	2.8%	2.8%	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%
Nonfarm Business–Productivity Growth	2.2%	3.0%	0.3%	-0.3%	2.3%	1.6%	0.4%	1.3%
GDP Growth	3.5%	4.2%	2.2%	2.3%	2.8%	3.0%	1.8%	1.8%
Manufacturing Capacity Utilization	75.8%	75.5%	75.3%	75.2%	74.4%	74.9%	74.6%	74.4%
Consumer Sentiment Index (1966=100)	98.1	98.3	98.9	98.4	95.1	96.4	97.2	93.2

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

### The Long-Term View

Index	2018 3rd Qtr	Periods ended Dec. 31, 2017			
		Year	5 Yrs	10 Yrs	25 Yrs
<b>U.S. Equity</b>					
Russell 3000	7.12	21.13	15.58	8.60	9.72
S&P 500	7.71	21.83	15.79	8.50	9.69
Russell 2000	3.58	14.65	14.12	8.71	9.54
<b>Non-U.S. Equity</b>					
MSCI ACWI ex USA	0.71	27.19	6.80	1.84	--
MSCI Emerging Markets	-1.09	37.28	4.35	1.68	--
MSCI ACWI ex USA Small Cap	-1.51	31.65	10.03	4.69	--
<b>Fixed Income</b>					
Bloomberg Barclays Agg	0.02	3.54	2.10	4.01	5.48
90-Day T-Bill	0.49	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-0.47	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	-1.74	10.51	-0.20	2.40	5.02
<b>Real Estate</b>					
NCREIF Property	1.67	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	0.79	5.23	9.46	7.44	10.76
<b>Alternatives</b>					
CS Hedge Fund	0.59	7.12	4.23	3.24	–
Cambridge PE*	4.51	19.48	13.97	9.14	15.65
Bloomberg Commodity	-2.02	1.70	-8.45	-6.83	2.47
Gold Spot Price	-4.65	13.68	-4.82	4.56	5.63
<b>Inflation – CPI-U</b>	0.18	2.11	1.43	1.61	2.23

\*Data for most recent period lags by a quarter

Sources: Bloomberg Barclays, Bloomberg, Credit Suisse, FTSE, MSCI, NCREIF, FTSE Russell, Standard & Poor's, Thomson Reuters/Cambridge, Bureau of Economic Analysis

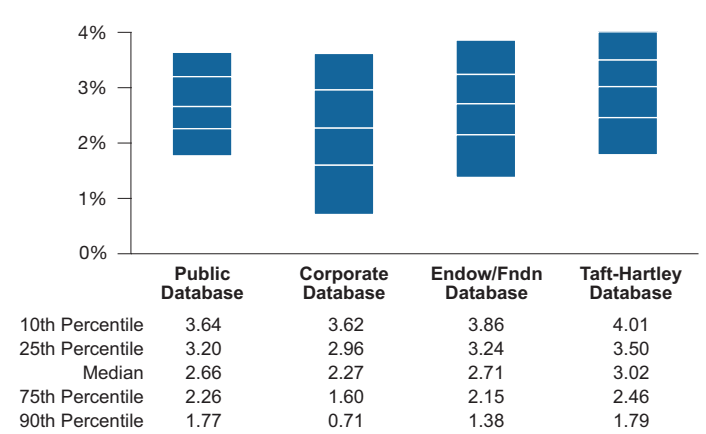
Related to goods prices, the ISM manufacturing index had reached a 14-year high earlier this year, but fell back in September, as manufacturers and exporters face the triple threat of a stronger dollar (up 8% since mid-April), the imposition of tariffs in July and anticipation of more in October, and weakening of global growth.

# Equity Risk Looms Large for Plans

## FUND SPONSOR

- The median fund sponsor in Callan’s database gained 2.7% in the third quarter.
- Taft-Hartley plans (+3.0%) were the best-performing sponsor by type, as they were the previous quarter; corporate plans (+2.3%) showed the lowest increase.
- By size, the strongest returns came from small plans (under \$100 million), which rose 2.9%, compared to a 2.6% gain for medium plans (\$100 million-\$1 billion) and 2.3% for large plans (more than \$1 billion).
- All types and sizes lagged a 60% S&P 500/40% Bloomberg Barclays US Aggregate benchmark, which rose 4.6%.
- Over the last year, three years, and five years, Taft-Hartley plans had the strongest returns of all fund types, while public plans have done best over the last 10 years.
- Investors are focused on concerns about equity exposure, market volatility, and how to mitigate risk in the event of an equity market correction in a rising interest rate environment.
- But they face competing fears: an equity market downturn vs. the fear of missing out (FOMO!).

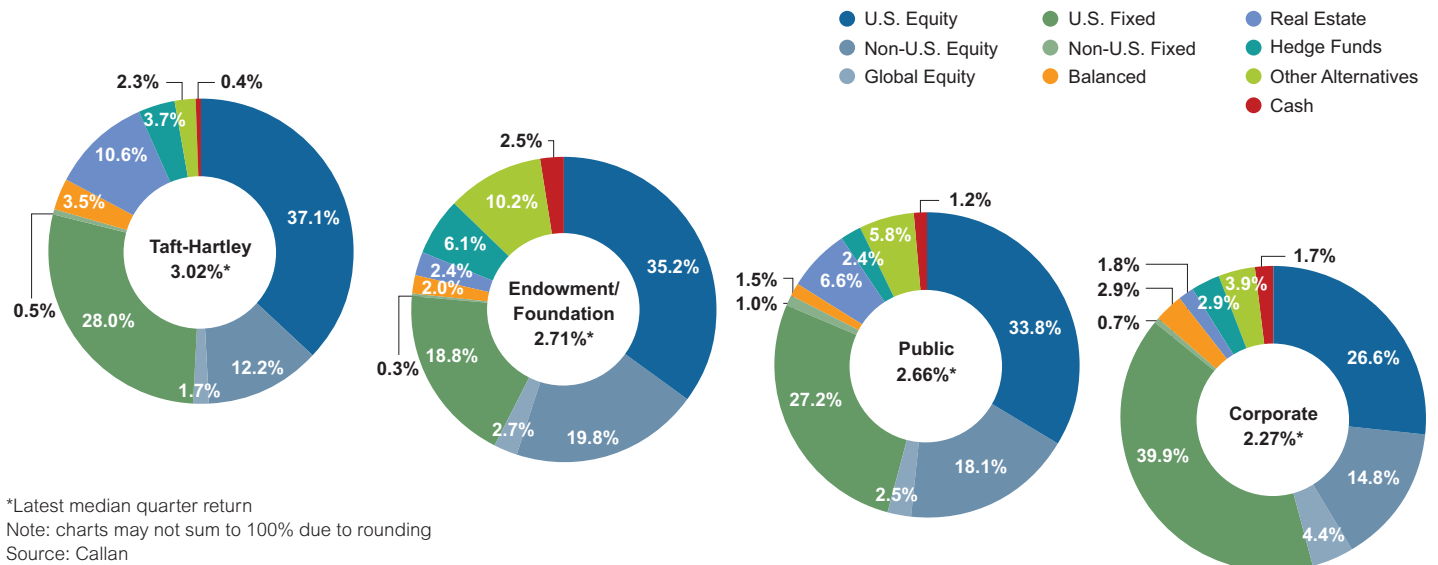
## Callan Fund Sponsor Returns for the Quarter



Source: Callan

- They are refining the definition of growth to include investments such as high yield, convertibles, low-volatility equity, hedge funds, multi-asset class strategies, and options-based strategies.
- Many sponsors are seeking higher returns outside of traditional asset classes such as equity and fixed income, and

## Callan Fund Sponsor Average Asset Allocation



\*Latest median quarter return  
 Note: charts may not sum to 100% due to rounding  
 Source: Callan

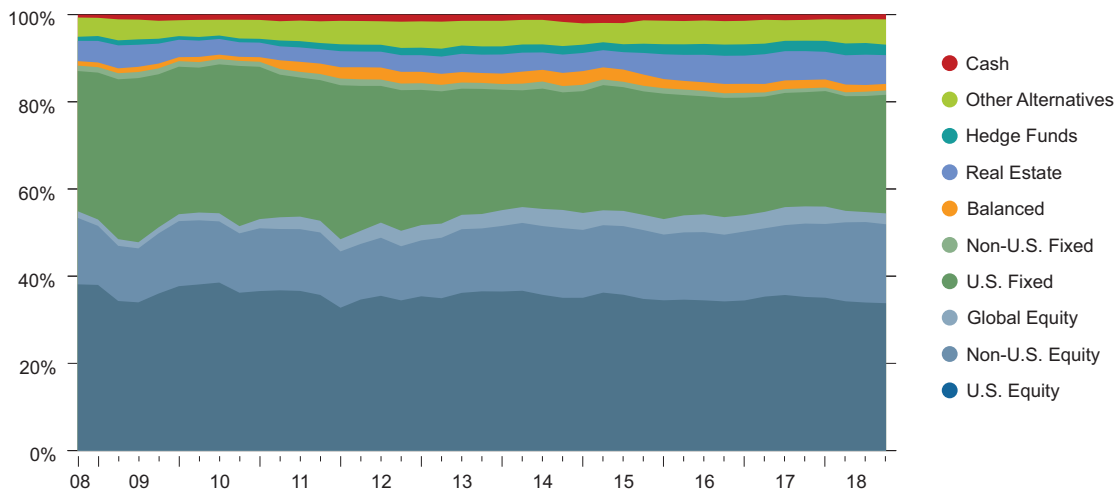
worry about risk mitigation. The late stage of the economic cycle combined with elevated equity valuations and low bond yields is causing sponsors to explore allocations to U.S. Treasuries, managed futures, and tail risk hedging.

- Concerns about fees and controlling costs continue among plan sponsors, and that issue has been an incentive to increase passive exposure.
- For defined contribution plans, fee reduction and disclosure, compliance, and evaluating the structure of fund line-ups are key areas of focus. Target date funds continue to dominate asset flows; they now account for almost 32.5% of DC assets, according to the Callan DC Index™.
- Negotiating fee reductions and fee transparency is ongoing for DC plan sponsors, in some cases to a significant extent. Interest in institutional investment structures is increasing as another path to fee reduction.

- Non-qualified deferred compensation (NQDC) plans are being evaluated on a standalone basis due to their design flexibility.
- Some corporate plan sponsors have made large voluntary contributions in 2018. As a result, plans are reaching full funding. A glidepath strategy for gradual de-risking is no longer needed for some; these plans can fully de-risk immediately.
- Endowments, foundations, and sovereign wealth funds saw a continuing focus on evaluating a sustainable distribution rate to balance intergenerational equity.
- Interest in multi-asset class strategies continues, in particular from public and corporate defined benefit plans. Callan divides the multi-asset class universe into four categories: long biased, absolute return, risk parity, and risk premia.

Callan Public Fund Database Average Asset Allocation

(10 Years)



Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, endowments/foundations, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

# Global Equity

## U.S. Equities

U.S. stocks posted broad-based gains in the third quarter fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several major indices hit record levels during the quarter, and the 7.7% gain for the **S&P 500 Index** was its biggest since the fourth quarter of 2013. Volatility was muted in spite of persistent headlines around threats of trade wars and the ever-changing negotiations to avert them.

### Large Cap Outpaces Small Cap

- Tax reform and U.S. prosperity contributed to an acceleration in corporate earnings growth, and valuations remained elevated as strong sentiment persisted given positive economic data.
- Amazon (+17.8%), Apple (+22.4%), and Microsoft (+16.4%) were strong contributors to large cap outperformance.
- FAANG stocks plus Microsoft had a more muted impact than in previous quarters but still contributed nearly 25% of the S&P 500's quarterly return.
- All sectors landed in positive territory. The strongest performers were Health Care (+14.5%), Industrials (+10%), and Communication Services (+9.9%).
- The new Communication Services sector represents 10% of the S&P 500 and includes several FAANG stocks such as Alphabet, Facebook, and Netflix; Tech and Consumer Discretionary now represent lower weightings in the Index.

## Growth Continues to Outperform Value

- The divergence between growth and value is approaching a historical high; growth is outpacing value this year by the widest margin in 15 years within large cap (**Russell 1000 Growth YTD: +17.1%** vs. **Russell 1000 Value YTD: +3.9%**) due largely to ongoing euphoria over the FAANG stocks.
- Momentum continued as the leading factor for the quarter and year-to-date; value has been the worst-performing style for the last 18 months.

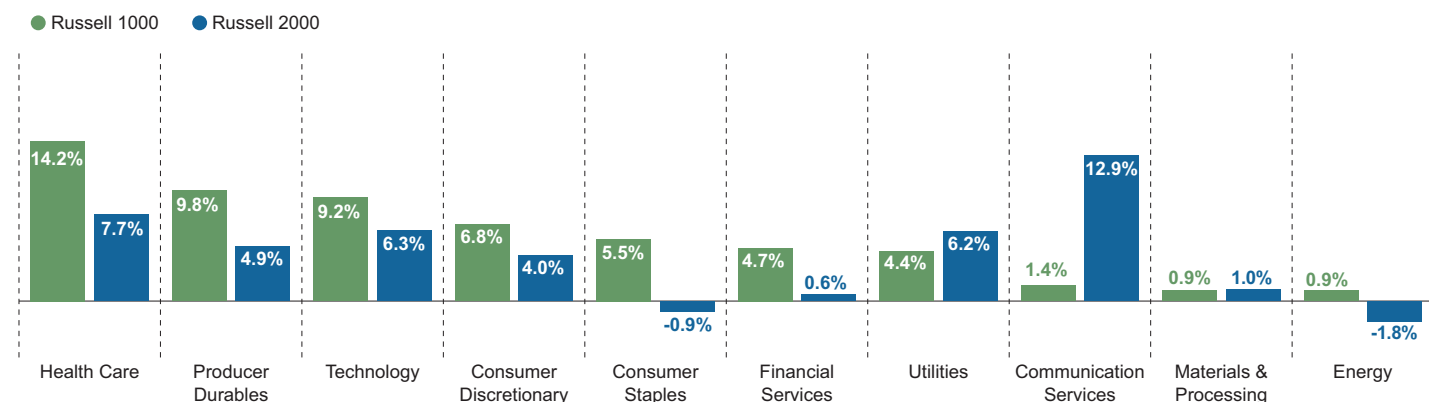
## Non-U.S. / Global Equity

Market divergence has emerged after synchronized growth in 2017. The U.S. continues to post positive returns while non-U.S. developed and emerging markets have lagged year-to-date, dragged down by geopolitical and economic uncertainties.

### Global/Non-U.S. Developed Markets See Slowing Growth

- The dollar rallied against the euro and yen given the fundamentals of the U.S. economy and the Fed's contractionary monetary policy; other central banks maintained the status quo.
- Global trade tensions coupled with Brexit negotiations and Italy's populism concerns tempered the European market despite solid earnings growth. In Japan, GDP growth and the re-election of Prime Minister Shinzo Abe as head of his party and sparked the market.

## Quarterly Performance of Select Sectors



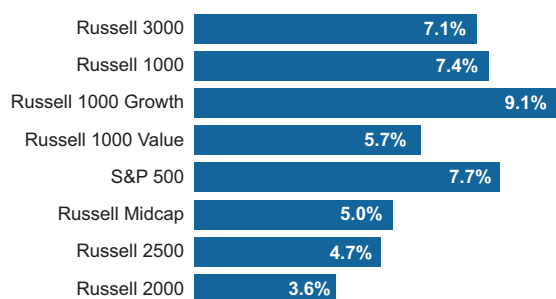
Source: FTSE Russell

- Top sector performers were Health Care, Telecommunication Services, and Energy.
- Real Estate, Financials, and Consumer Staples were hurt by rising interest rates and a flattening yield curve.
- Style had a de minimis impact; however, growth moderately outperformed value. Volatility and small cap factors were out of favor given market uncertainties.

### Emerging Markets Under Pressure

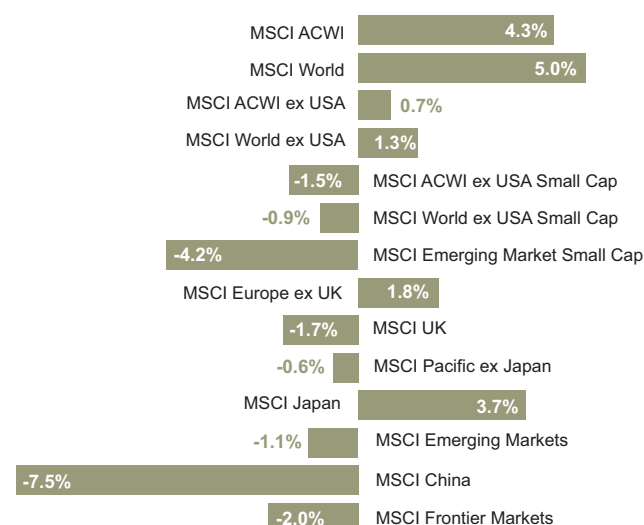
- Emerging markets were under pressure from a rising dollar, U.S. interest rates, and U.S.-China trade frictions.
- Turkey was the worst-performing country within emerging markets as the lira and local currency bonds crashed due to the twin deficit, high level of dollar debt, and inflation.
- The economic slowdown in China and trade tensions with the U.S. weakened the market.

### U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



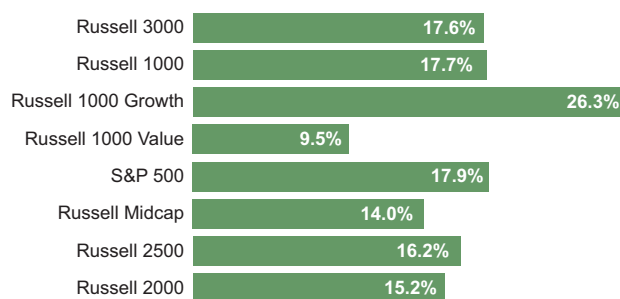
Source: MSCI

- Brazil and Russia were among the best performers due to climbing oil prices.
- Supported by the oil price hike, Energy was the best performer; Consumer Discretionary was the worst sector performer, weighed down by China and India.
- Value and large cap factors were in favor as Energy gained traction, and momentum struggled as market leadership rotated away from Asian tech companies.

### Non-U.S. Small Cap Underperforms

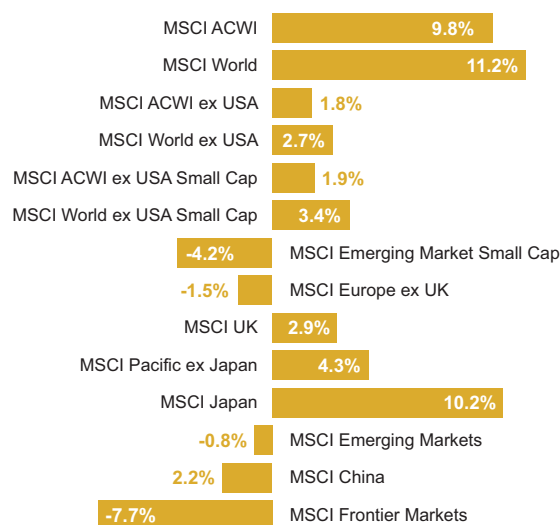
- Both non-U.S. developed and emerging market small cap underperformed large cap as the appetite for risk waned due to rising interest rates and the U.S. dollar, global trade tensions, and geopolitical conflicts.
- Value was favored in both non-U.S. developed and emerging market small cap as the Energy sector thrived.

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



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

# Global Fixed Income

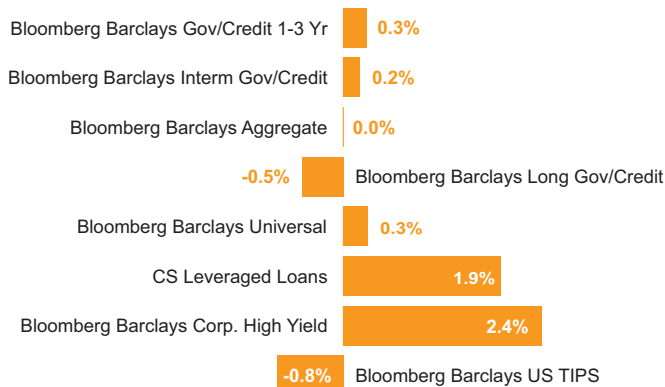
## U.S. Fixed Income

Fixed income markets grappled with multiple issues, resulting in continued volatility. Trade conflicts due to the imposition of tariffs, emerging market elections, and the rising U.S. dollar contributed to the unstable environment. U.S. rates rose in the third quarter and the yield curve continued flattening.

### High Yield Tops the Quarter

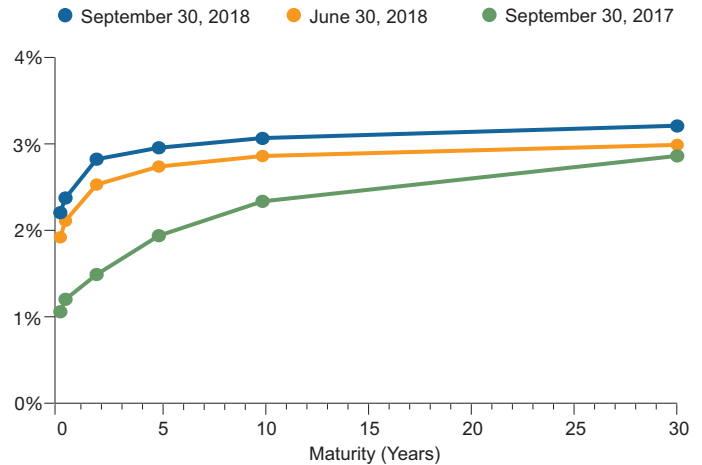
- The **Bloomberg Barclays US Aggregate Bond Index** was essentially flat, rising only 0.02% but gaining 1.6% year-to-date.
- The 10-year U.S. Treasury yield rose steadily, reaching a high of 3.10% before settling at 3.06% as strong economic data repriced investors' inflation expectations and increased the probability of a December rate hike by the Federal Reserve.
- The yield curve flattened, with short-term interest rates rising more quickly than longer-term rates. The spread between the 2-year and 10-year narrowed 9 basis points to 24 bps from last quarter, the tightest in 10 years.
- Investment-grade (IG) corporates gained 1.0% in the third quarter but dropped 2.3% YTD.
- New issuance remained strong with demand for new loans oversubscribed by an average of two to three times throughout the quarter.

### U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

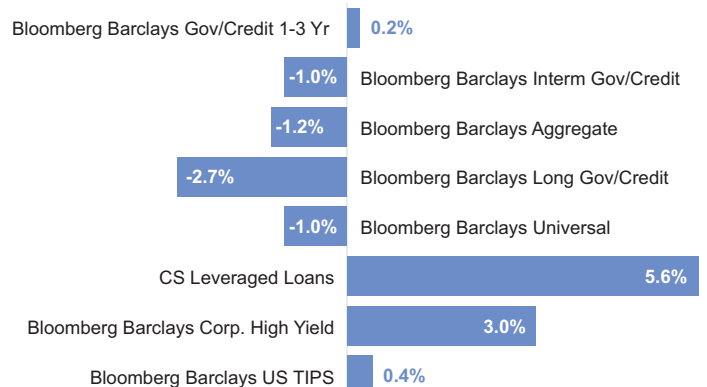
## U.S. Treasury Yield Curves



Source: Bloomberg

- Spreads continued to narrow this quarter.
- Higher rates and weaker overall fundamentals caused the IG sector to post negative results YTD.
- The **Bloomberg Barclays US Corporate High Yield Index** gained 2.4% in the quarter and +2.6% YTD.
- Low new issuance volume and stable fundamentals compressed spreads.

### U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

## GLOBAL FIXED INCOME (Continued)

- Bond issuance was \$41 billion, 33% lower than in the third quarter of 2017.
- Bank loans gained 1.8% in the quarter and 4.0% YTD.
- Demand continues for floating-rate securities despite covenant-light structures and higher spread duration.
- Heavy issuance continued through the quarter; YTD leveraged loan issuance is above \$900 billion, driven by leveraged buyout and mergers-and-acquisitions activities.
- CLO formation also increased demand in the third quarter.

### Non-U.S. Fixed Income

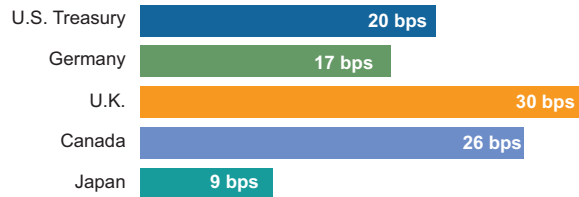
The **JPM EMBI Global Diversified Index** (USD denominated) gained 2.3%, with all sub-regions delivering positive results. Local currency emerging markets (EM), however, fared more poorly. The **JPM GBI-EM Global Diversified Index** fell 1.8% for the quarter but also endured significant intra-quarter volatility, including a 6.1% drop in August.

### Volatility Hinders Local EM Debt

- Return dispersion among countries was significant. Argentina (-35%) has seen its peso fall more than 50% this year to a record low as investors were spooked by previous currency debacles and worries over the economic picture. In addition to securing support from the International Monetary Fund, the country's central bank hiked short-term interest rates 15 percentage points to a global high of 60%.
- Turkey (-27%) endured a similar currency rout, though for different reasons. U.S.-imposed sanctions and concerns over central bank policy were the twin drivers of the lira's weakness. Turkey hiked short rates by 6.25 percentage points to 24% to stem its currency slide.
- Elsewhere, returns were far more modest (positive or negative); only Russia (-6%) and Mexico (+6%) were noteworthy.
- Issuers in Europe faced a different challenge as political uncertainties surrounding Italy caused that market to weaken.

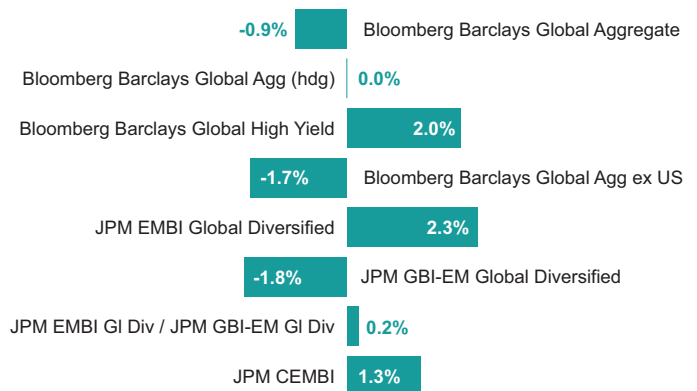
### Change in 10-Year Global Government Bond Yields

2Q18 to 3Q18



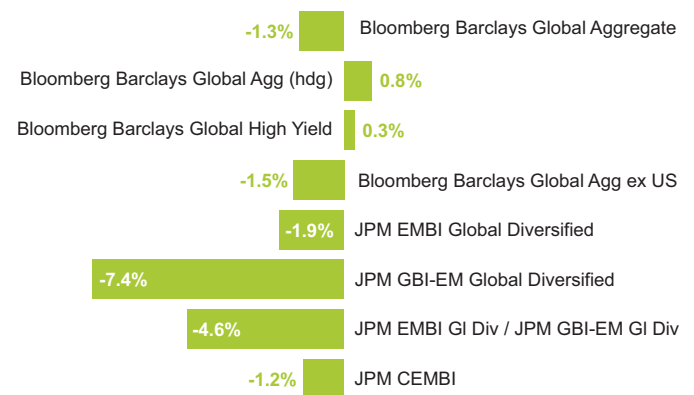
Source: Bloomberg Barclays

### Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

### Non-U.S. Fixed Income: One-Year Returns



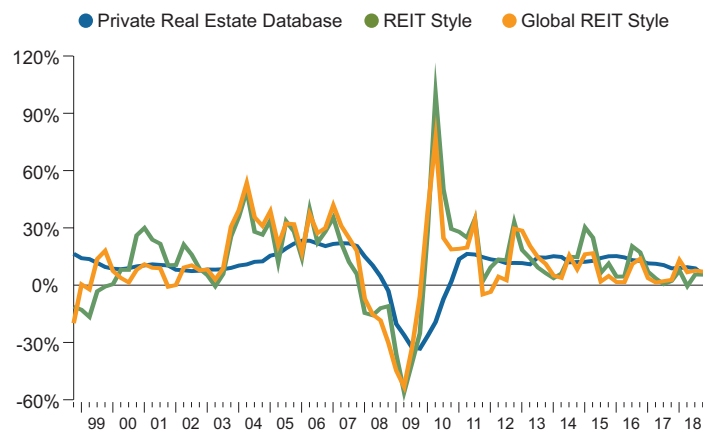
Sources: Bloomberg Barclays and JPMorgan Chase

# Market Robust With Private Valuations at Historic Highs

REAL ESTATE | Kevin Nagy, CAIA

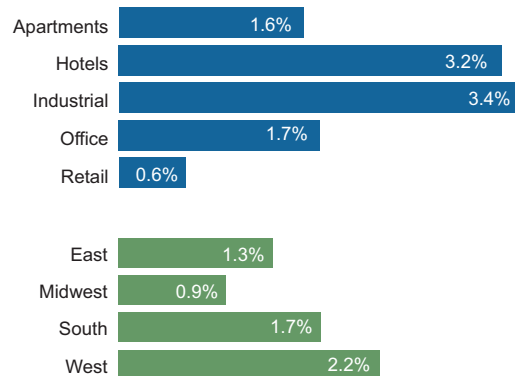
- Supply and demand fundamentals are balanced but peaking. Supply is in check and aided by strict commercial real estate lending standards. Demand continues on the back of strong U.S. growth.
- Transaction volumes took a step back from current cycle peak levels but remain robust, supporting pricing, which remains expensive.
- The Industrial sector is performing the strongest, benefiting from structural shifts in the economy, property markets, and consumer habits, which continue to dampen demand for traditional retail space. Office is performing as expected late in the cycle, and tenant improvements and other capital expenditures are increasingly eroding cash flow. Multi-family remains strong except for very high-end properties in some markets.
- U.S. core real estate returns continue to moderate and shift toward income with limited appreciation. Appreciation that occurs is coming from net operating income growth rather than further cap rate compression.
- Spreads remain relatively tight between core and value-add due to large amounts of capital in both strategies chasing fewer available deals, combined with more core investors chasing yield.
- Both U.S. and non-U.S. real estate investment trusts (REITs) are trading at discounts to net asset value, indicating relative value for public market securities compared to private real estate valuations.
- European real estate markets (ex-U.K.) are gaining momentum due to strong fundamentals in the major cities of Europe despite continued political noise across the region.
- Asian real estate products are seeing strong fundraising momentum, with existing managers reaching target fund sizes and Asia-focused open-end funds increasing.
- Farmland managers in the United States are concerned more about the reworking of the North American Free Trade Agreement than the trade war with China. Chinese tariffs on soybeans are seen as a temporary dislocation as opposed to a long-term headwind.
- As private real estate valuations continue to test historical highs, investors are looking at other sectors, such as real estate debt and REITs, to access the best risk-adjusted returns from real estate. This is resulting in the formation of some products with very wide mandates that allow the investment manager to place capital across real estate debt and equity markets and up and down the capital stack based on relative value.

## Rolling One-Year Returns



Source: Callan

## Sector Quarterly Returns by Property Type and Region

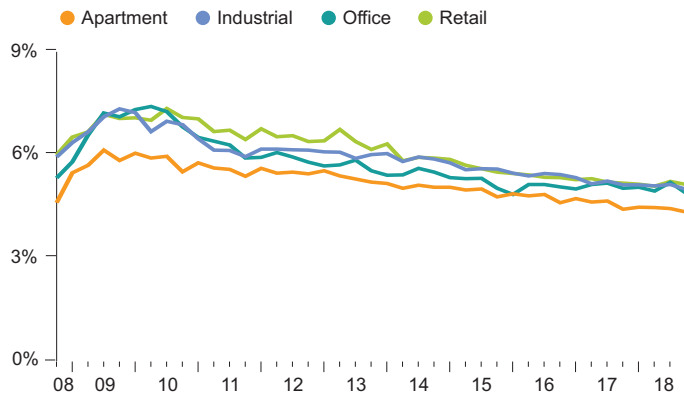


Source: NCREIF



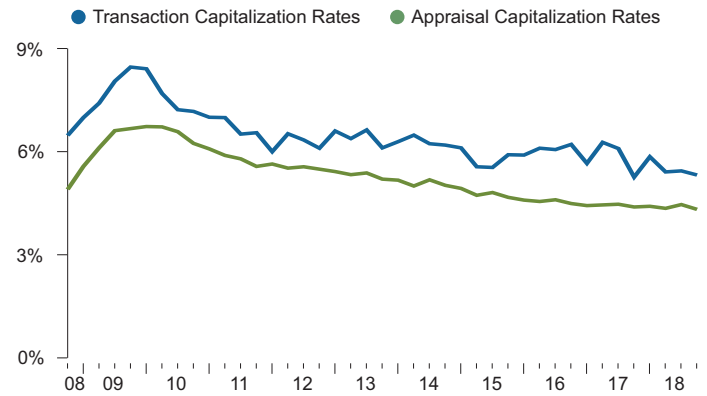
## REAL ESTATE (Continued)

### NCREIF Capitalization Rates by Property Type



Source: NCREIF  
Note: Capitalization rates are appraisal-based.

### NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF  
Note: Transaction capitalization rate is equal weighted.

### Callan Database Median and Index Returns\* for Periods ended September 30, 2018

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
<b>Private Real Assets</b>							
Real Estate ODCE Style	1.51	5.57	7.68	8.32	9.94	4.64	7.09
NFI-ODCE (value wt net)	1.87	5.75	7.71	7.83	9.71	4.62	7.28
NCREIF Property	1.67	5.27	7.16	7.75	9.57	6.42	8.96
NCREIF Farmland	1.13	3.62	6.66	7.12	9.86	11.62	14.62
NCREIF Timberland	1.02	2.44	4.00	3.52	5.99	4.01	7.42
<b>Public Real Estate</b>							
Global Real Estate Style	0.25	1.00	5.57	7.18	7.10	7.64	9.62
EPRA/NAREIT Developed	-0.30	0.06	3.66	6.19	5.43	6.04	--
Global ex-U.S. Real Estate Style	-0.14	1.49	7.08	6.96	5.27	6.83	9.61
EPRA/NAREIT Developed ex US	-0.99	-0.96	5.36	7.25	3.97	6.48	8.58
U.S. REIT Style	0.88	2.14	4.61	7.94	9.72	8.37	10.31
NAREIT Equity REITs	0.79	1.81	3.35	7.64	9.16	7.44	9.41

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NAREIT, NCREIF

# More Tricks Than Treats

PRIVATE EQUITY | Gary Robertson

Third quarter private equity partnerships holding final closes totaled \$140 billion, with 197 new partnerships formed, according to Pitchbook. The dollar volume rose by 30% from \$108 billion, but the number of funds closing declined by 6% from 210 in the prior quarter. Year-to-date, 2018 is running \$64 billion (or 15%) behind a year ago. Investors are pursuing broad diversification with buyouts tracking to less than 50% of capital raised, and all other major strategies receiving significant new allocations.

- New buyout transactions declined although activity remained strong overall, according to PitchBook. Funds closed 1,477 investments with \$126 billion in disclosed deal value, representing a 17% decline in count and a 4% dip in dollar value from the second quarter's 1,775 investments and \$131 billion of announced value. The \$13.8 billion purchase of Unilever's vegetable spread business (e.g., Country Crock) by KKR was the quarter's largest buyout.
- According to PitchBook, new investments in venture capital companies totaled 4,010 rounds of financing with \$53 billion of announced value. The number of investments was down 23% from the prior quarter, and announced value fell 26%. The median pre-money valuations continued to increase across the board, with Series D showing the largest increases.
- There were 454 private M&A exits of private equity-backed companies (excluding venture capital), PitchBook reports, with disclosed values totaling \$131 billion. Both private

## Funds Closed January 1 to September 30, 2018

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	270	45,756	12%
Growth Equity	38	24,553	7%
Buyouts	148	175,110	47%
Mezzanine Debt	44	42,482	11%
Distressed	11	23,103	6%
Energy	22	20,222	5%
Secondary and Other	55	27,368	7%
Fund-of-funds	29	11,496	3%
<b>Totals</b>	<b>617</b>	<b>370,090</b>	<b>100%</b>

Source: PitchBook  
Figures may not total due to rounding.

- sale count and announced dollar volume were down from the prior quarter's 620 sales and \$135 billion. There were 26 private-equity backed IPOs in the third quarter raising an aggregate \$7 billion, down from 53 totaling \$16 billion previously.
- Venture-backed M&A exits totaled 276 transactions with disclosed value of \$34 billion. The number of sales declined from 344 in the second quarter, but announced values increased slightly from \$31 billion in the second quarter. There were 53 VC-backed IPOs in the third quarter with a combined float of \$14 billion. For comparison, the second quarter had 69 IPOs and total issuance of \$19 billion.

Please see our upcoming issue of *Private Equity Trends* for more in-depth coverage.

## Private Equity Performance Database (%) (Pooled Horizon IRRs through June 30, 2018\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.68	12.97	9.23	16.18	9.51	9.70	17.90
Growth Equity	5.83	20.09	12.21	13.63	9.95	13.04	13.47
All Buyouts	5.38	22.64	13.65	14.41	8.83	14.59	12.43
Mezzanine	3.18	14.72	9.70	10.18	8.80	9.67	8.67
Distressed	2.45	10.99	6.72	9.52	9.49	10.77	10.34
<b>All Private Equity</b>	<b>3.63</b>	<b>15.26</b>	<b>10.10</b>	<b>10.82</b>	<b>9.25</b>	<b>11.47</b>	<b>11.24</b>
S&P 500	4.82	19.11	11.94	13.97	9.12	12.97	12.81

Private equity returns are net of fees.

Sources: Standard & Poor's and Thomson Reuters/Cambridge

\*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Active Trading Grinds Forward Under Market Stress

HEDGE FUNDS/MACs | Jim McKee

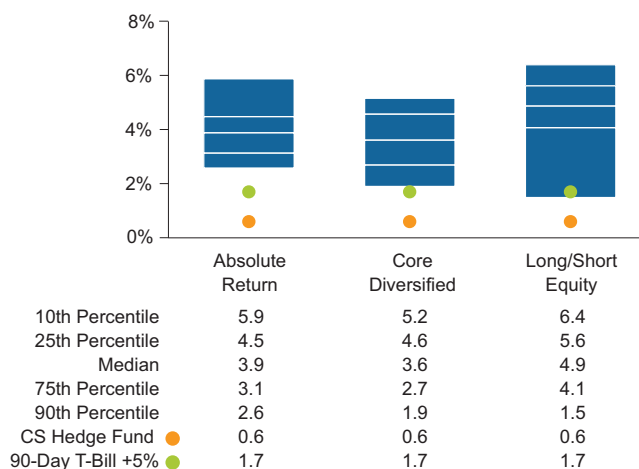
## Hedge Funds

A resilient U.S. economy stimulated by tax cuts and falling unemployment pushed up U.S. stocks and the U.S. dollar in the third quarter. The stronger dollar tied to rising short-term rates undermined a slowing Chinese economy as well as markets linked to it. Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds.

The **Credit Suisse Hedge Fund Index** gained 0.6%.

- Aided by climbing U.S. stock prices, *Long/Short Equity* (+1.5%) topped CS hedge fund strategies.
- Supported by the strong U.S. corporate environment, event-driven strategies (*Event-Driven Multi*, *Distressed*, *Risk Arb*) made modest but steady gains.
- *Emerging Markets* (-4.1%) suffered the most, surrendering its excess returns over passive benchmarks from prior quarters.
- Reflecting live hedge fund portfolios, the **HFRI FOF Composite Index**, net of all fees, inched forward 0.3%.

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, Federal Reserve

## Callan Database Median and Index Returns\* for Periods ended September 30, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	0.37	4.53	3.96	4.04	4.54	4.89
Callan Absolute Return FOF Style	0.42	4.60	3.73	3.88	4.33	4.45
Callan Core Diversified FOF Style	0.68	3.37	3.76	3.61	4.36	5.07
Callan Long/Short Equity FOF Style	-0.30	4.86	5.17	4.87	5.33	5.89
Credit Suisse Hedge Fund	0.59	3.49	3.09	3.39	4.43	5.39
CS Convertible Arbitrage	0.92	1.86	3.97	2.56	6.05	3.97
CS Distressed	0.79	3.36	4.46	3.44	5.00	6.36
CS Emerging Markets	-4.08	-3.98	5.23	3.70	4.69	6.73
CS Equity Market Neutral	-0.24	1.20	1.08	1.77	-3.18	0.20
CS Event-Driven Multi	1.14	4.27	2.37	1.70	3.98	5.72
CS Fixed Income Arb	0.93	4.71	4.41	3.88	5.22	4.06
CS Global Macro	-0.19	3.56	2.66	2.68	4.75	6.36
CS Long/Short Equity	1.54	5.55	4.37	5.40	5.72	6.49
CS Managed Futures	0.63	3.29	-2.66	2.84	1.42	3.15
CS Multi-Strategy	0.98	3.05	4.84	5.67	6.59	6.36
CS Risk Arbitrage	0.82	1.13	4.50	2.54	3.33	3.95
HFRI Asset Wtd Composite	0.37	3.88	3.88	3.87	4.74	--
90-Day T-Bill + 5%	1.70	6.59	5.84	5.52	5.34	6.30

\*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

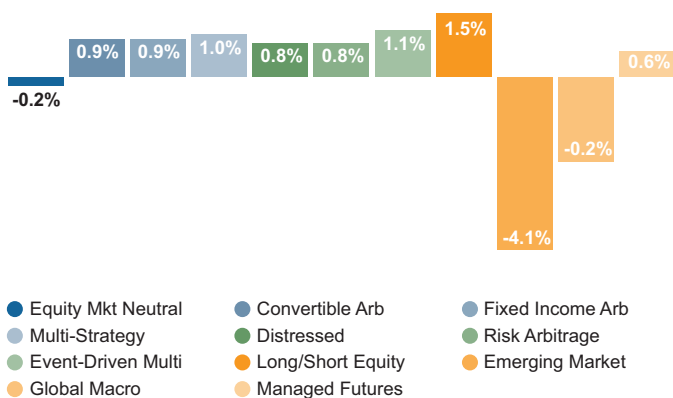
- Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** forged ahead 0.4%, net of all fees and expenses.
- Despite the U.S. equity rally, the median *Callan Long/Short Equity FOF* (-0.3%) slipped behind the *Callan Absolute Return FOF* (+0.4%), which tends to benefit from event-driven deals and credit trades.
- With diversifying exposures to both non-directional and directional styles, the *Core Diversified FOF* gained 0.7%.

### Multi-Asset Class (MAC) Strategies

Callan's **Multi-Asset Class (MAC) Style Groups** continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks, as a stronger dollar and rising rates created a difficult top-down environment.

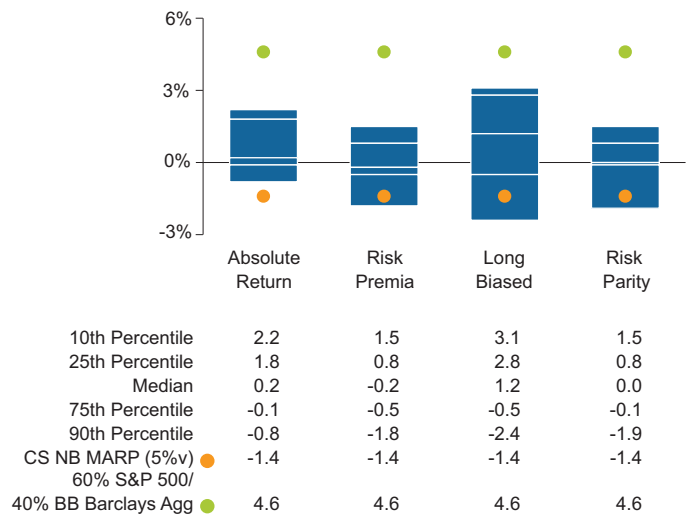
- The **HFR Risk Parity Index** targeting 12% volatility slipped 0.3%, given its typical fixed income bias.
- The **CS NB Multi Asset Risk Premia Index** (-1.4%) is an equal risk-weighted index of alternative risk factors (value, carry, momentum, and liquidity) across four capital markets (equity, fixed income, currency, and commodities) targeting 5% volatility.
- Within CS NB MARP, *Equity Value* (-3.4%) sank again, adding to losses from the prior two quarters for a 11.9% year-to-date loss. Supported by rising energy prices, *Commodity Momentum* (+5.9%) was strong again, leading to a 16% YTD gain.

### Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

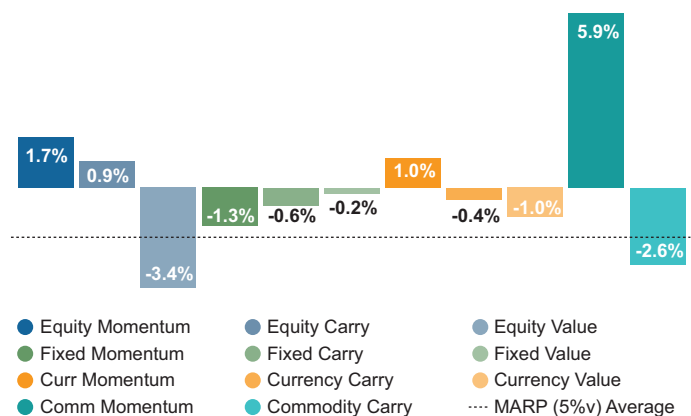
### MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Credit Suisse, Neuberger Berman, Standard & Poor's

- Buoyed by its usually long equity bias within a dynamic asset allocation framework, the *Callan Long Biased MAC* advanced 1.2%.
- Likely impacted by underlying tilts to an equity value risk factor, the median *Callan Risk Premia MAC* slipped 0.2%.
- Typically targeting equal risk-weighted allocations to major asset classes with leverage, the *Callan Risk Parity MAC* (0.0%) was flat.
- As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, the *Callan Absolute Return MAC* edged ahead 0.2%.

### Alternative Risk Factor Breakdown



Sources: Credit Suisse Neuberger Berman

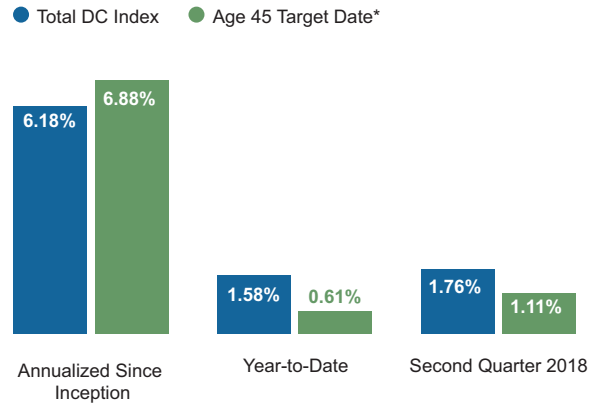
# DC Plans Rebound, TDFs Struggle

DEFINED CONTRIBUTION | James Veneruso, CFA, CAIA

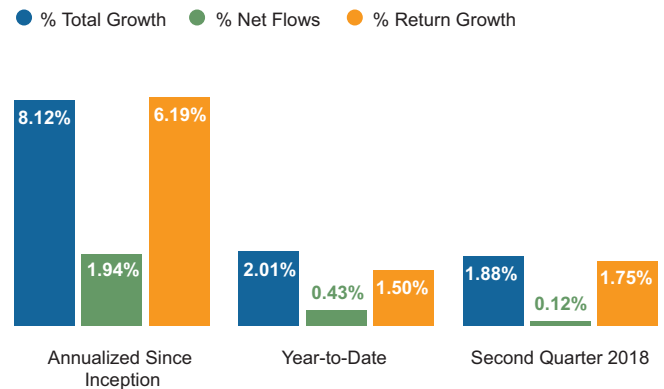
- The Callan DC Index™ rebounded from first quarter losses, returning 1.8% in the second quarter and outpacing the 1.1% gain of the Age 45 Target Date Fund (TDF).
- TDFs suffered from their higher allocation to non-U.S. equity and emerging markets. The average DC plan has a 5.6% allocation to non-U.S. equity and emerging markets, compared to 26.5% for the Age 45 TDF.
- Since inception, the DC Index's annual return of 6.2% trails the Age 45 TDF by 70 basis points.
- DC plan balances grew by 1.9%, driven primarily by market performance. For the quarter, inflows (participant and plan sponsor contributions) accounted for only 12 bps of growth.
- TDFs absorbed approximately 92 cents of every dollar that flowed into DC funds.
- Several DC investments saw material net outflows, including U.S. equities (large and small/mid cap), U.S./global balanced, and U.S. fixed income.
- Second quarter turnover (i.e., net transfer activity levels within DC plans) increased slightly from the first quarter to 0.35%, well below the historical average of 0.62%.
- The Callan DC Index's equity allocation ended the quarter at 70%, modestly above its historical average (68%).
- The second quarter marked another all-time high for TDFs' share of DC assets, expanding to 32.5%. U.S. large cap continues to be the second-highest allocation, at 24.1%.
- While TDFs have a larger overall weight within the Index, they remain less prevalent than the next largest plan holding, U.S. large cap equity. In plans that offer TDFs, they account for 35% of plan assets. U.S. large cap equity funds account for 24% of plan assets, even though they are offered by 100% of DC plans.

*The Callan DC Index is an equally weighted index tracking the cash flows and performance of nearly 90 plans, representing more than one million DC participants and over \$135 billion in assets. The Index is updated quarterly and is available on Callan's website, as is the quarterly DC Observer newsletter.*

## Investment Performance



## Growth Sources



## Net Cash Flow Analysis (Second Quarter 2018) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	91.57%
Brokerage Window	2.33%
Company Stock	-18.29%
U.S. Large Cap	-44.41%
<b>Total Turnover**</b>	<b>0.35%</b>

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

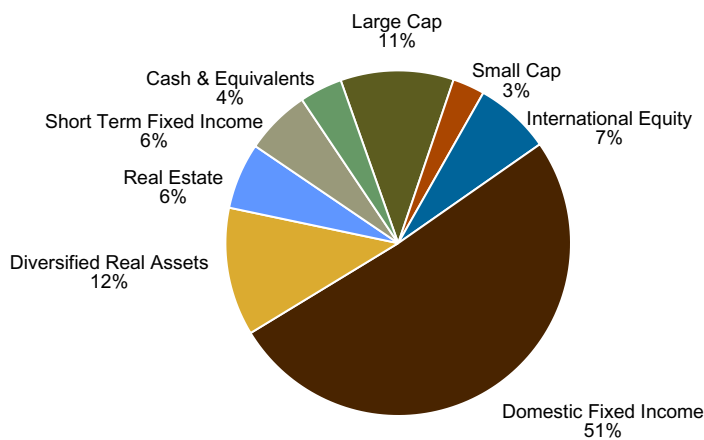
\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

\*\* Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

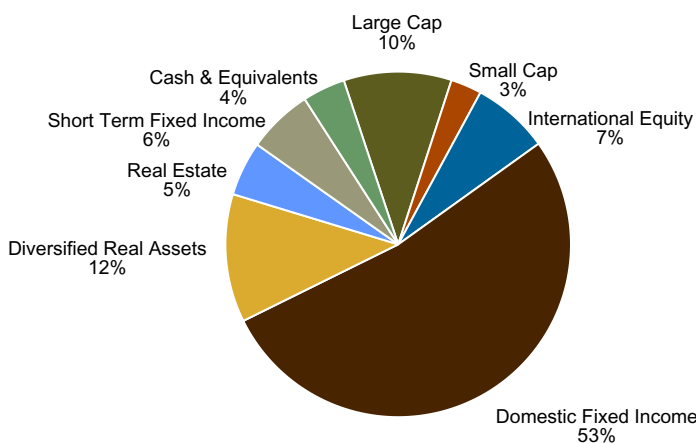
## Actual vs Target Asset Allocation As of September 30, 2018

The first chart below shows the Fund's asset allocation as of September 30, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



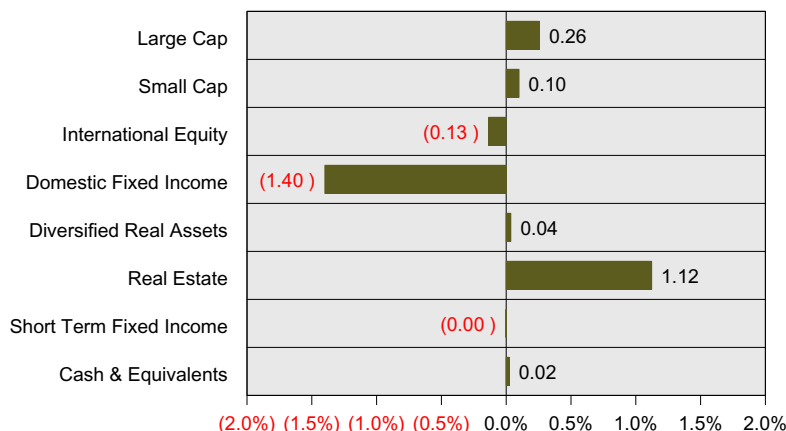
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	243,743	10.6%	10.1%	0.5%	12,058
Small Cap	69,025	3.0%	2.9%	0.1%	2,502
International Equity	163,081	7.1%	7.2%	(0.1%)	(2,080)
Domestic Fixed Income	1,170,606	51.0%	52.6%	(1.6%)	(35,988)
Diversified Real Assets	274,975	12.0%	12.0%	(0.0%)	(293)
Real Estate	141,558	6.2%	5.1%	1.1%	24,569
Short Term Fixed Income	139,499	6.1%	6.1%	(0.0%)	(429)
Cash & Equivalents	91,418	4.0%	4.0%	(0.0%)	(338)
Total	2,293,905	100.0%	100.0%		

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

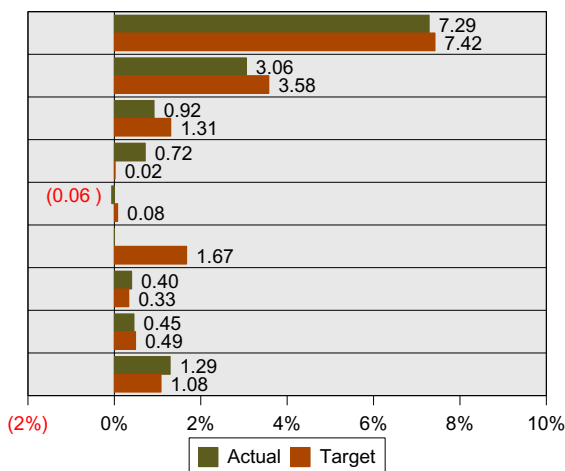
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

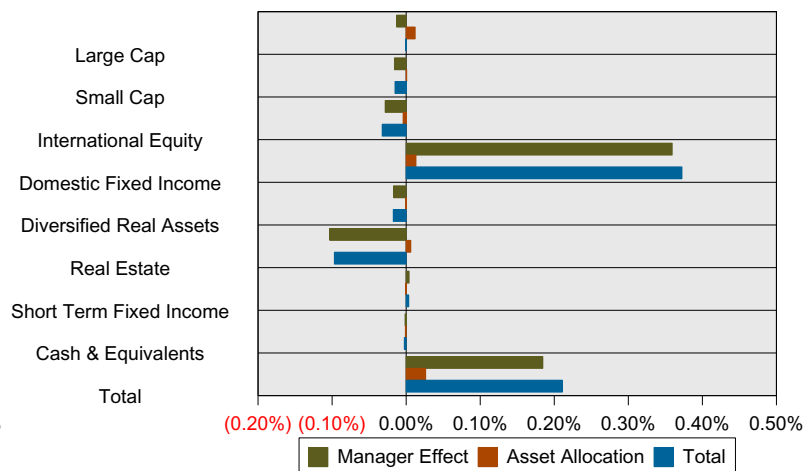
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

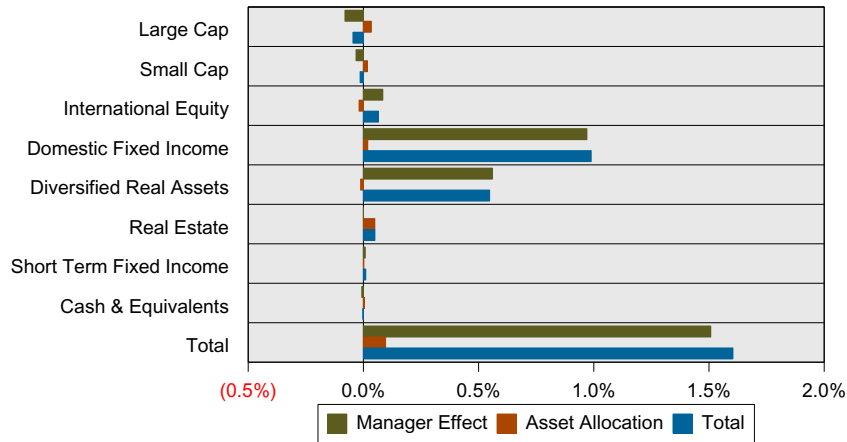
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	10%	10%	7.29%	7.42%	(0.01%)	0.01%	(0.00%)
Small Cap	3%	3%	3.06%	3.58%	(0.02%)	0.00%	(0.02%)
International Equity	7%	7%	0.92%	1.31%	(0.03%)	(0.00%)	(0.03%)
Domestic Fixed Income	51%	53%	0.72%	0.02%	0.36%	0.01%	0.37%
Diversified Real Assets	12%	12%	(0.06%)	0.08%	(0.02%)	(0.00%)	(0.02%)
Real Estate	6%	5%	0.00%	1.67%	(0.10%)	0.01%	(0.10%)
Short Term Fixed Income	6%	6%	0.40%	0.33%	0.00%	(0.00%)	0.00%
Cash & Equivalents	4%	4%	0.45%	0.49%	(0.00%)	(0.00%)	(0.00%)
<b>Total</b>			<b>1.29%</b>	<b>1.08%</b>	<b>+ 0.18%</b>	<b>+ 0.03%</b>	<b>0.21%</b>

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

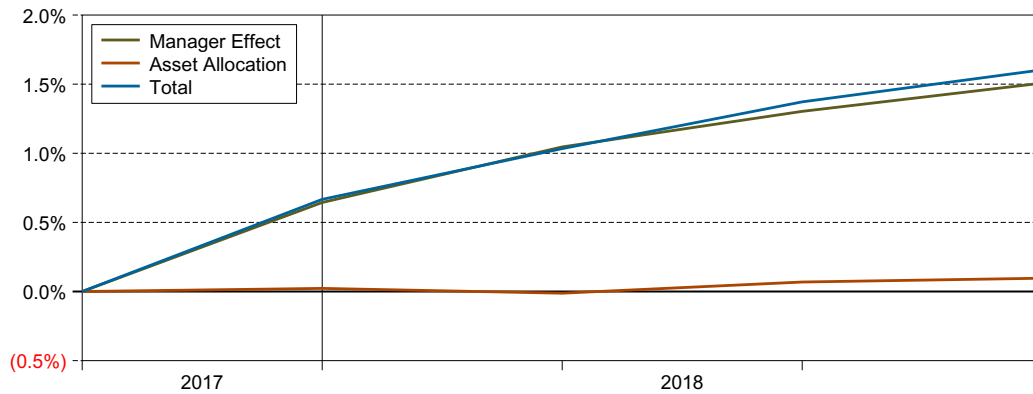
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	16.89%	17.76%	(0.08%)	0.03%	(0.05%)
Small Cap	4%	3%	14.21%	15.24%	(0.03%)	0.02%	(0.01%)
International Equity	8%	8%	3.49%	2.67%	0.08%	(0.02%)	0.07%
Domestic Fixed Income	51%	52%	0.63%	(1.22%)	0.97%	0.02%	0.99%
Diversified Real Assets	12%	13%	6.53%	1.94%	0.56%	(0.01%)	0.55%
Real Estate	6%	5%	7.13%	7.16%	0.00%	0.05%	0.05%
Short Term Fixed Income	4%	4%	0.39%	0.20%	0.01%	0.00%	0.01%
Cash & Equivalents	4%	4%	1.42%	1.59%	(0.01%)	0.00%	(0.00%)
<b>Total</b>			<b>4.24%</b>	<b>2.63%</b>	<b>+ 1.51%</b>	<b>+ 0.10%</b>	<b>1.60%</b>

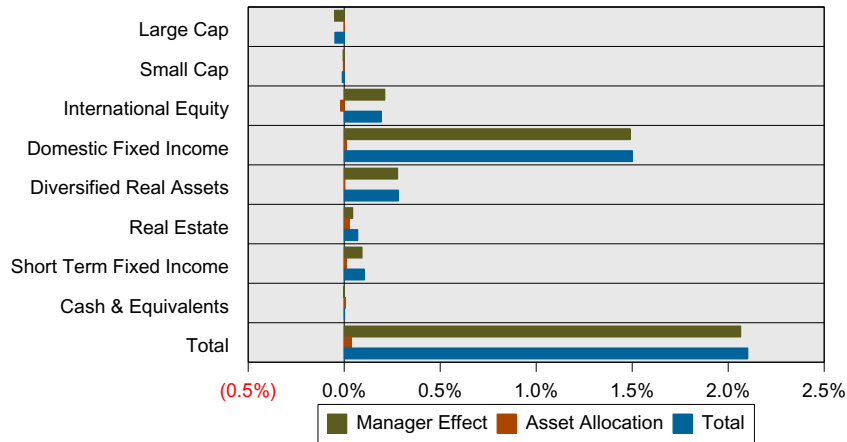
\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.



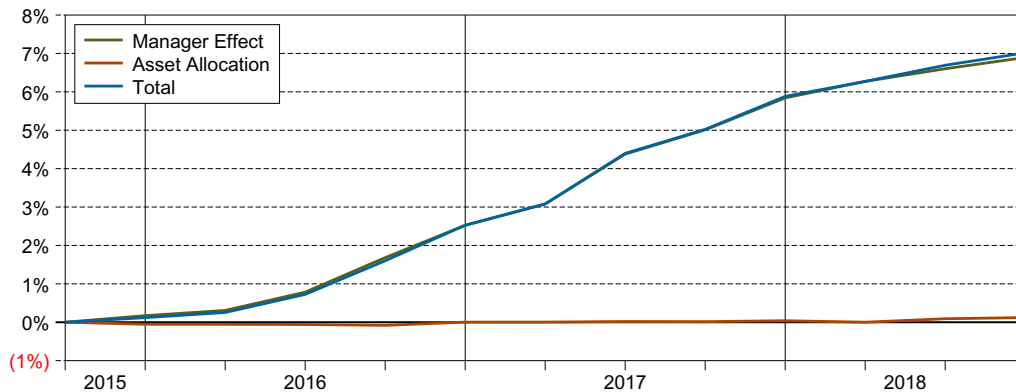
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The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

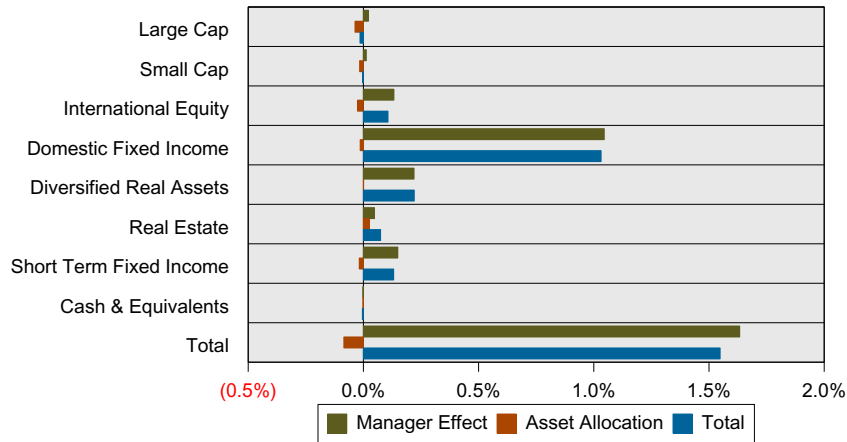
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	10%	16.53%	17.07%	(0.05%)	0.00%	(0.05%)
Small Cap	4%	3%	17.08%	17.12%	(0.01%)	(0.00%)	(0.01%)
International Equity	8%	8%	11.86%	9.05%	0.21%	(0.02%)	0.19%
Domestic Fixed Income	48%	48%	4.35%	1.31%	1.49%	0.01%	1.50%
Diversified Real Assets	12%	12%	4.79%	2.53%	0.28%	0.00%	0.28%
Real Estate	6%	5%	8.52%	7.75%	0.04%	0.03%	0.07%
Short Term Fixed Income	10%	10%	1.11%	0.52%	0.09%	0.01%	0.10%
Cash & Equivalents	3%	3%	0.74%	0.84%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>6.52%</b>	<b>4.42%</b>	<b>+ 2.07%</b>	<b>+ 0.04%</b>	<b>2.10%</b>

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

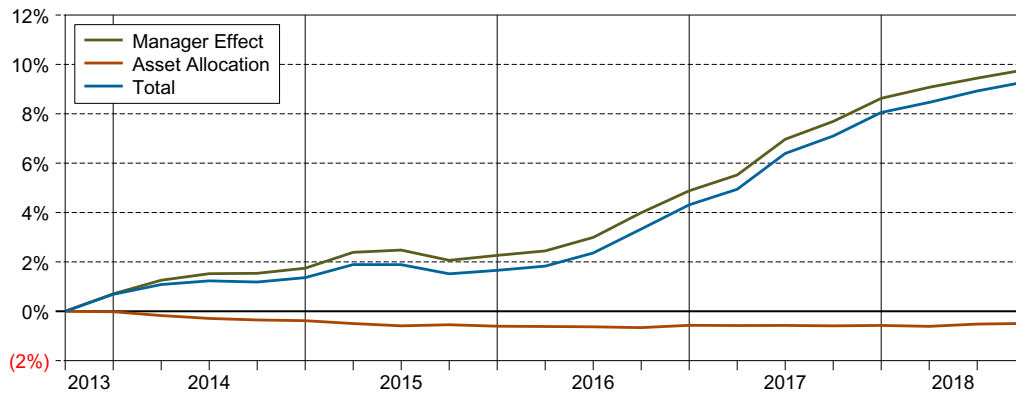
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

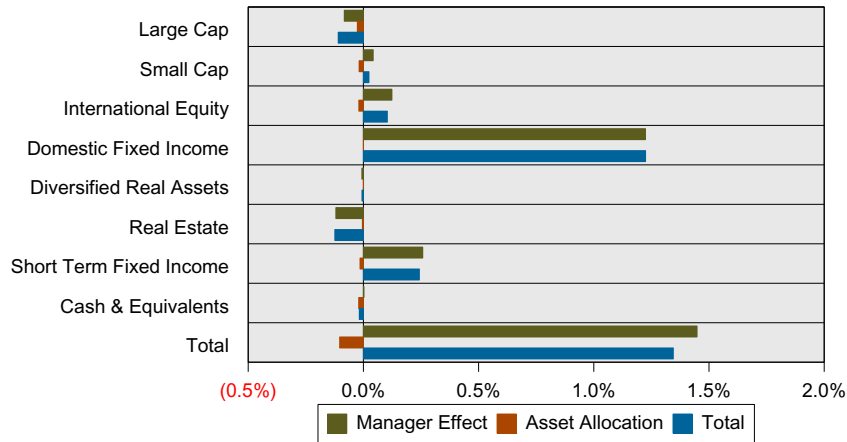
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	12%	14.01%	13.67%	0.02%	(0.04%)	(0.01%)
Small Cap	4%	4%	11.54%	11.07%	0.01%	(0.02%)	(0.00%)
International Equity	8%	8%	6.29%	4.31%	0.13%	(0.03%)	0.11%
Domestic Fixed Income	43%	44%	4.54%	2.16%	1.05%	(0.01%)	1.03%
Diversified Real Assets	11%	11%	4.32%	2.38%	0.22%	0.00%	0.22%
Real Estate	5%	5%	10.50%	9.57%	0.05%	0.03%	0.07%
Short Term Fixed Income	15%	14%	1.38%	0.66%	0.15%	(0.02%)	0.13%
Cash & Equivalents	3%	3%	0.45%	0.52%	(0.00%)	(0.00%)	(0.00%)
<b>Total</b>			<b>5.44%</b>	<b>3.89%</b>	<b>+ 1.63%</b>	<b>+ (0.08%)</b>	<b>1.55%</b>

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

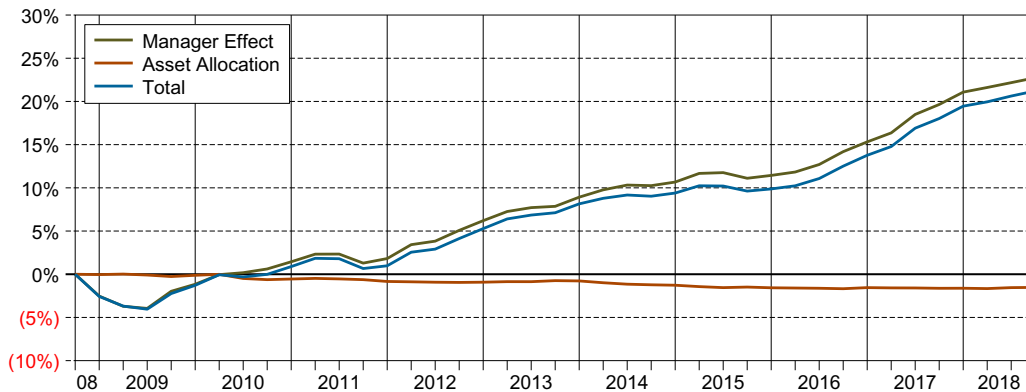
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Ten Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Ten Year Annualized Relative Attribution Effects

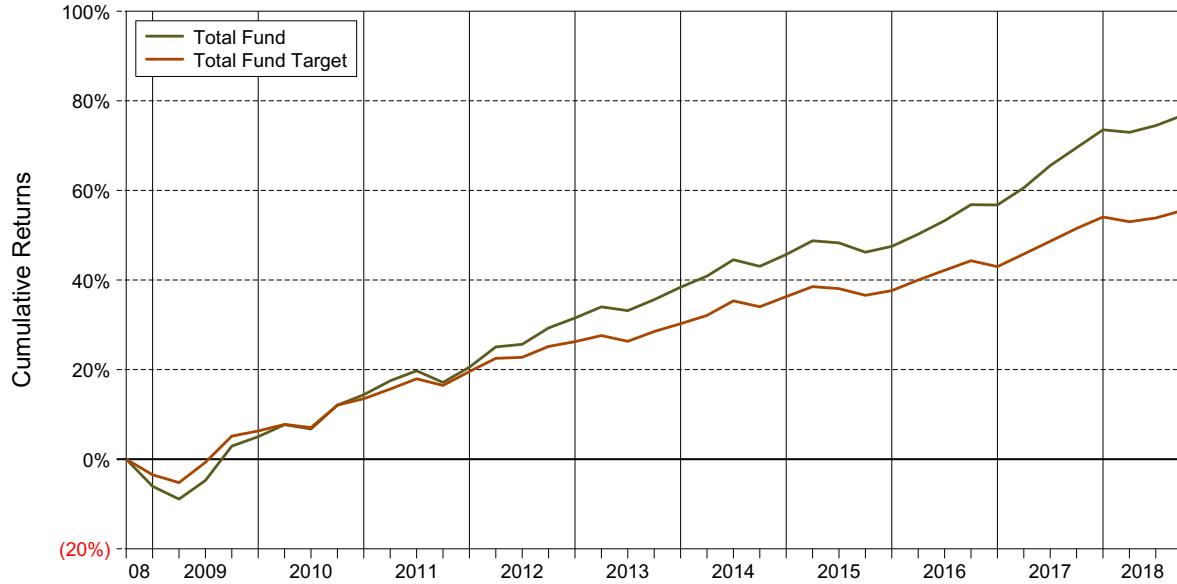
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	10%	10%	11.28%	11.96%	(0.08%)	(0.03%)	(0.11%)
Small Cap	3%	3%	12.47%	11.11%	0.04%	(0.02%)	0.02%
International Equity	7%	7%	7.05%	5.17%	0.12%	(0.02%)	0.10%
Domestic Fixed Income	41%	42%	6.86%	3.77%	1.22%	0.00%	1.22%
Diversified Real Assets	13%	14%	4.14%	3.69%	(0.01%)	0.00%	(0.01%)
Real Estate	5%	5%	3.22%	6.42%	(0.12%)	(0.00%)	(0.12%)
Short Term Fixed Income	17%	17%	2.42%	1.00%	0.26%	(0.01%)	0.24%
Cash & Equivalents	3%	3%	0.40%	0.34%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>5.86%</b>	<b>4.51%</b>	<b>1.45%</b>	<b>(0.10%)</b>	<b>1.35%</b>

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

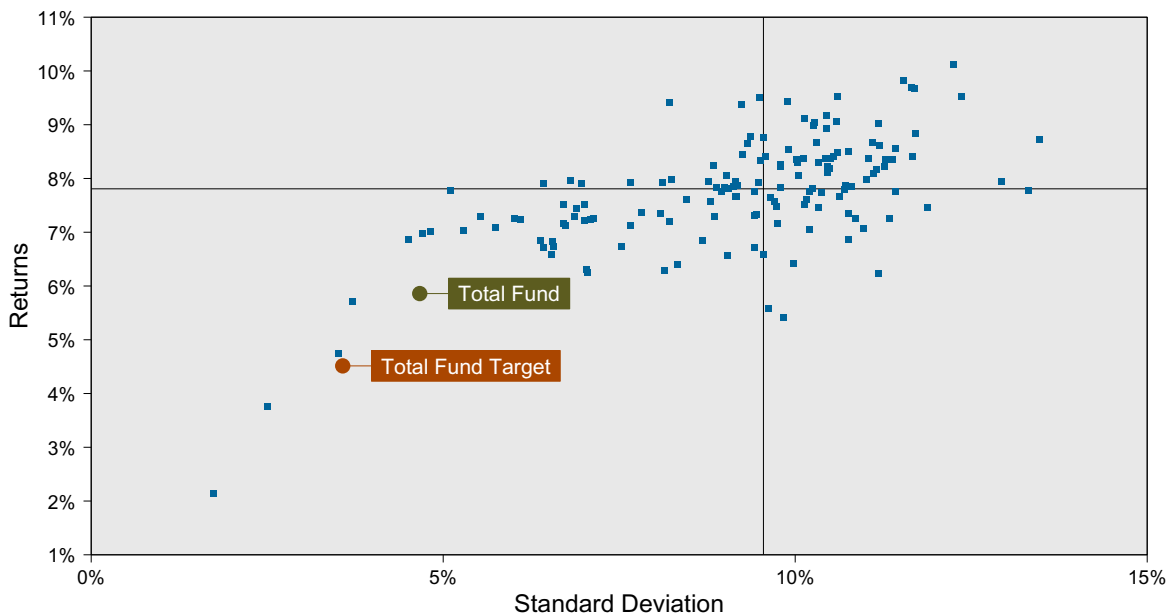
## Cumulative Performance Relative to Target

The first chart below illustrates the cumulative performance of the Total Fund relative to the cumulative performance of the Fund's Target Asset Mix. The Target Mix is assumed to be rebalanced each quarter with no transaction costs. The second chart below shows the return and the risk of the Total Fund and the Target Mix, contrasted with the returns and risks of the funds in the Callan Public Fund Sponsor Database.

### Cumulative Returns Actual vs Target



### Ten Year Annualized Risk vs Return



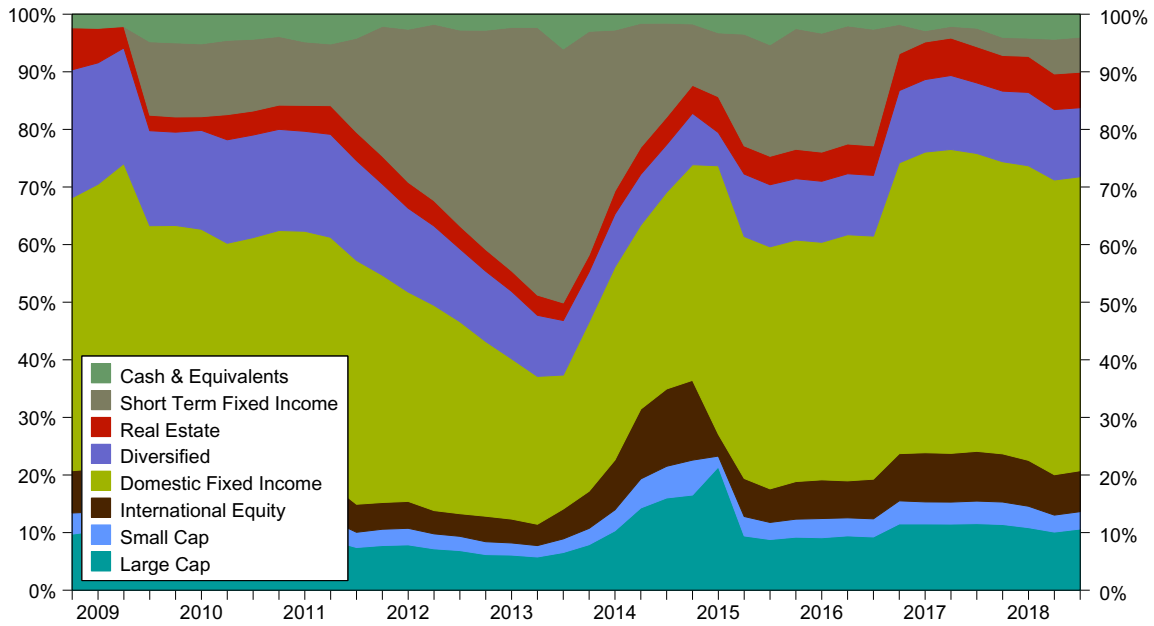
Squares represent membership of the Callan Public Fund Sponsor Database

\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

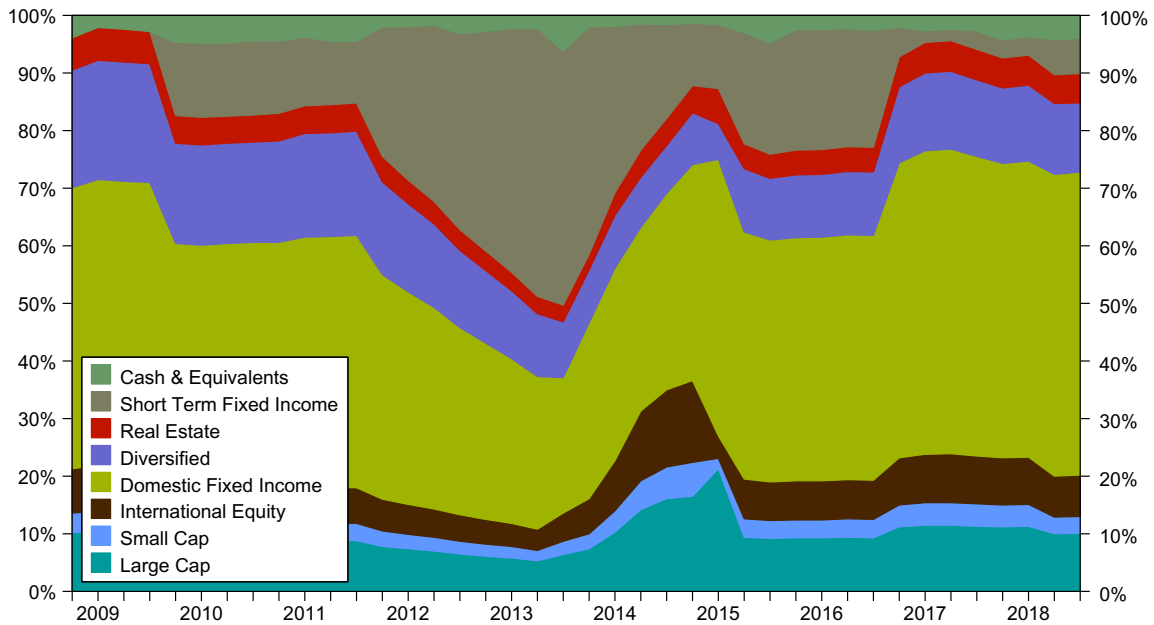
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation

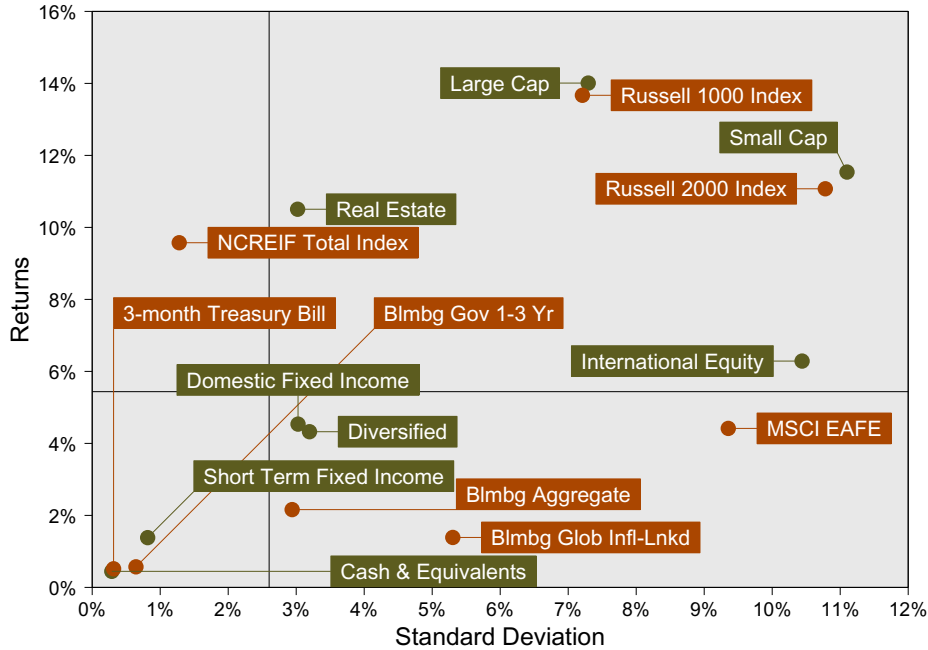


\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

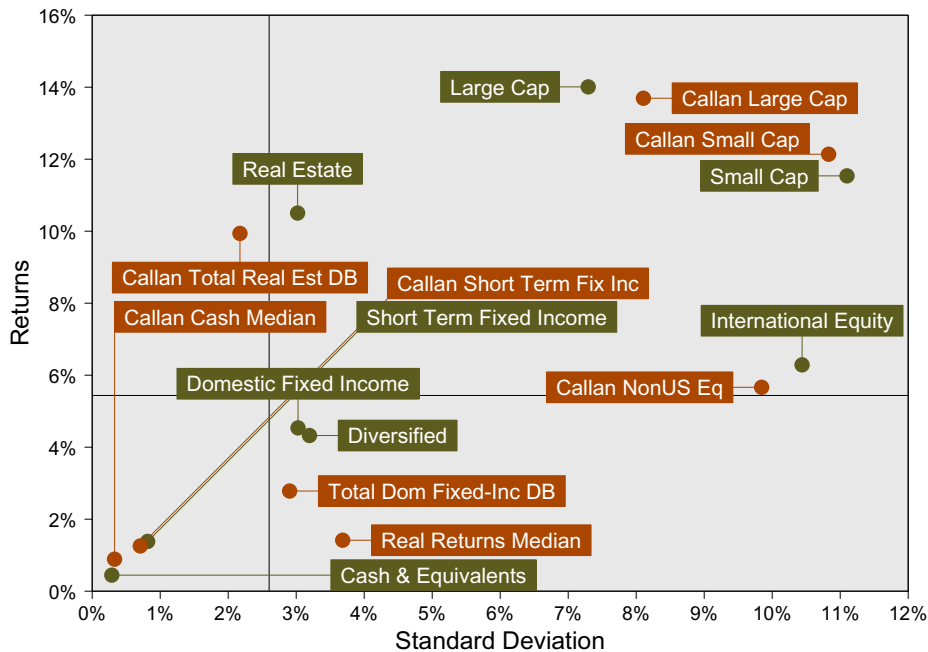
## Asset Class Risk and Return

The charts below show the five year annualized risk and return for each asset class component of the Total Fund. The first graph contrasts these values with those of the appropriate index for each asset class. The second chart contrasts them with the risk and return of the median portfolio in each of the appropriate CAI comparative databases. In each case, the crosshairs on the chart represent the return and risk of the Total Fund.

### Five Year Annualized Risk vs Return Asset Classes vs Benchmark Indices



### Five Year Annualized Risk vs Return Asset Classes vs Asset Class Median



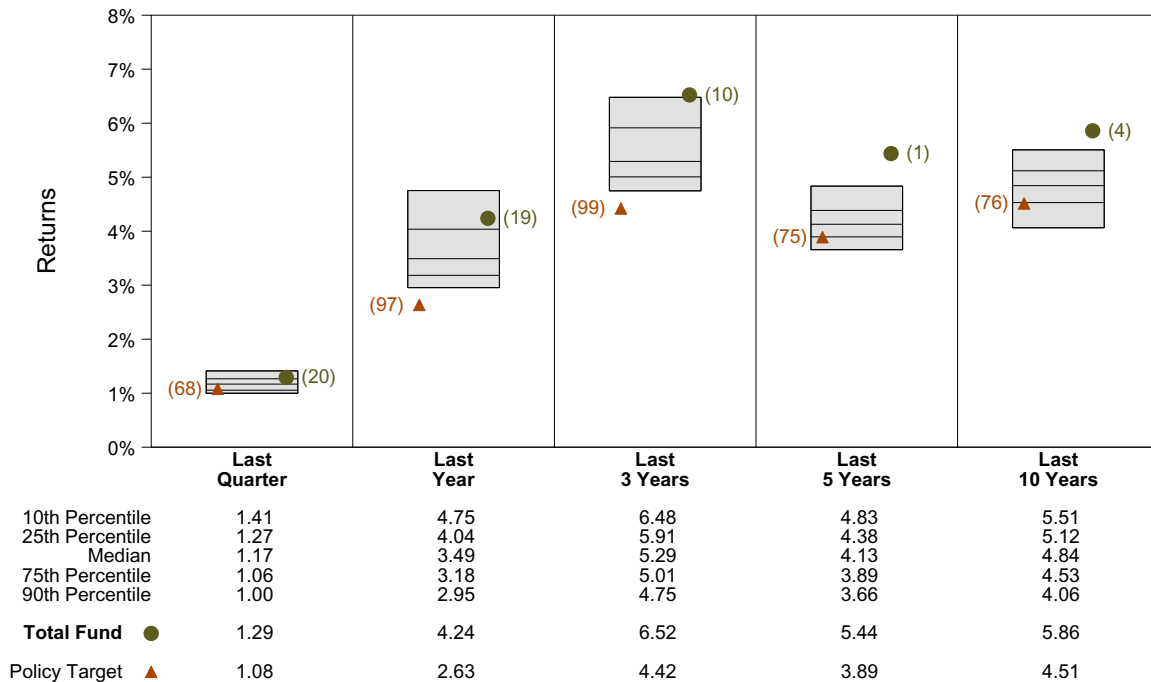
## Total Fund Ranking

The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended September 30, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

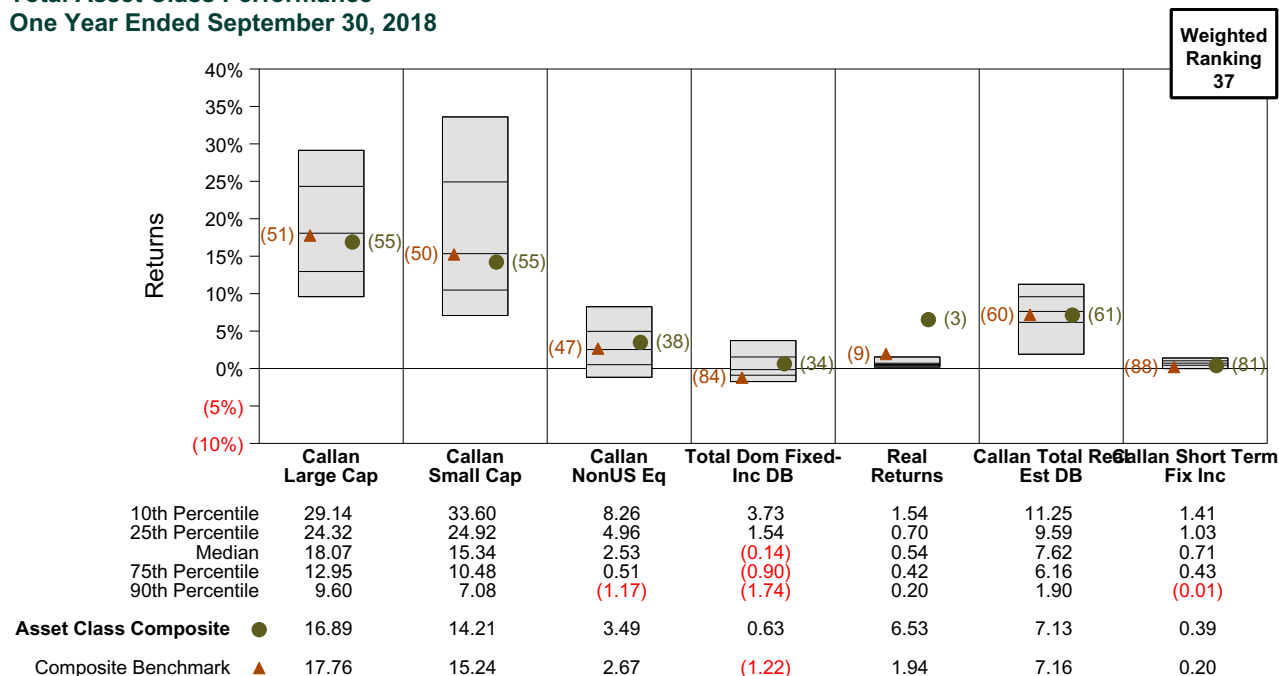


\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

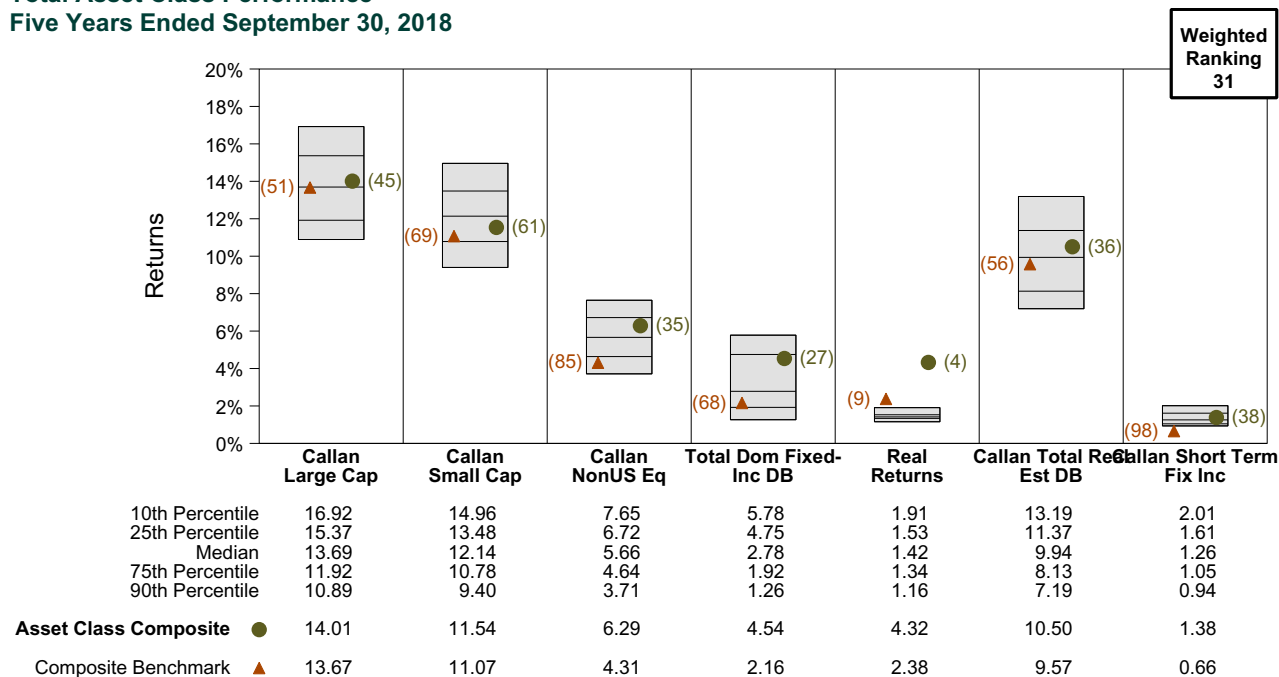
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Five Years Ended September 30, 2018



\* Current Quarter Target = 52.6% Blmbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% Blmbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.



## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Distribution Across Investment Managers

	September 30, 2018			Inv. Return	June 30, 2018	
	Market Value	Weight	Net New Inv.		Market Value	Weight
<b>Global Equity</b>	<b>\$475,849,206</b>	<b>20.74%</b>	<b>\$(7,264,114)</b>	<b>\$20,464,232</b>	<b>\$462,649,088</b>	<b>20.04%</b>
<b>Domestic Equity</b>	<b>\$312,767,711</b>	<b>13.63%</b>	<b>\$(7,131,097)</b>	<b>\$18,976,067</b>	<b>\$300,922,741</b>	<b>13.04%</b>
<b>Large Cap</b>	<b>\$243,742,740</b>	<b>10.63%</b>	<b>\$(6,105,148)</b>	<b>\$16,885,711</b>	<b>\$232,962,177</b>	<b>10.09%</b>
Parametric Clifton Large Cap	48,281,665	2.10%	(2,000,000)	3,467,453	46,814,212	2.03%
L.A. Capital Large Cap Growth	74,953,288	3.27%	(3,038,590)	6,997,543	70,994,336	3.08%
L.A. Capital Enhanced	50,525,903	2.20%	(14,158)	3,674,662	46,865,398	2.03%
LSV Large Cap Value	69,981,885	3.05%	(1,052,399)	2,746,053	68,288,231	2.96%
<b>Small Cap</b>	<b>\$69,024,971</b>	<b>3.01%</b>	<b>\$(1,025,949)</b>	<b>\$2,090,356</b>	<b>\$67,960,565</b>	<b>2.94%</b>
Parametric Clifton Small Cap	34,906,091	1.52%	0	1,121,921	33,784,170	1.46%
PIMCO RAE	34,118,881	1.49%	(1,025,949)	968,435	34,176,395	1.48%
<b>International Equity</b>	<b>\$163,081,495</b>	<b>7.11%</b>	<b>\$(133,017)</b>	<b>\$1,488,166</b>	<b>\$161,726,346</b>	<b>7.01%</b>
DFA Int'l Small Cap Value	15,324,452	0.67%	0	(150,517)	15,474,969	0.67%
LSV Intl Value	63,861,361	2.78%	(64,175)	1,071,438	62,854,098	2.72%
Vanguard Intl Explorer Fund	15,560,233	0.68%	0	(453,584)	16,013,817	0.69%
William Blair	68,335,449	2.98%	(68,842)	1,020,829	67,383,462	2.92%
<b>Domestic Fixed Income</b>	<b>\$1,170,605,642</b>	<b>51.03%</b>	<b>\$(18,662,710)</b>	<b>\$8,048,998</b>	<b>\$1,181,219,354</b>	<b>51.18%</b>
Declaration Total Return	86,847,805	3.79%	(47,615)	346,742	86,548,678	3.75%
PIMCO DiSCO II	81,104,950	3.54%	(26,727,332)	1,628,251	106,204,031	4.60%
PIMCO Bravo II Fund	38,753,721	1.69%	(4,572,767)	(1)	43,326,489	1.88%
Prudential	194,563,215	8.48%	12,892,131	553,551	181,117,533	7.85%
SSgA US Govt Credit Bd Idx	155,370,693	6.77%	0	61,856	155,308,837	6.73%
Wells Capital	276,231,484	12.04%	(105,382)	4,400,390	271,936,476	11.78%
Western Asset Management	337,733,773	14.72%	(101,745)	1,058,208	336,777,310	14.59%
<b>Global Real Assets</b>	<b>\$416,533,075</b>	<b>18.16%</b>	<b>\$(8,172,397)</b>	<b>\$(180,703)</b>	<b>\$424,886,175</b>	<b>18.41%</b>
<b>Real Estate</b>	<b>\$141,557,975</b>	<b>6.17%</b>	<b>\$(1,375,605)</b>	<b>\$30</b>	<b>\$142,933,551</b>	<b>6.19%</b>
Invesco Core Real Estate	68,141,472	2.97%	(505,657)	(0)	68,647,129	2.97%
JP Morgan RE Inc & Growth	73,416,503	3.20%	(869,948)	30	74,286,421	3.22%
<b>Diversified</b>	<b>\$274,975,099</b>	<b>11.99%</b>	<b>\$(6,796,792)</b>	<b>\$(180,733)</b>	<b>\$281,952,624</b>	<b>12.22%</b>
Western Asset Management	115,062,780	5.02%	(36,422)	(1,730,121)	116,829,324	5.06%
JP Morgan Infrastructure	90,704,700	3.95%	(2,964,244)	1,557,697	92,111,246	3.99%
Eastern Timber Opportunities	54,209,757	2.36%	(1,299,831)	(0)	55,509,588	2.40%
Grosvenor Cust. Infrastructure	14,997,863	0.65%	(2,496,294)	(8,309)	17,502,466	0.76%
<b>Short Term Fixed Income</b>	<b>\$139,498,873</b>	<b>6.08%</b>	<b>\$(35,558)</b>	<b>\$556,200</b>	<b>\$138,978,231</b>	<b>6.02%</b>
JP Morgan Short Term Bonds	139,498,873	6.08%	(35,558)	556,200	138,978,231	6.02%
<b>Cash</b>	<b>\$91,418,041</b>	<b>3.99%</b>	<b>\$(9,402,391)</b>	<b>\$459,306</b>	<b>\$100,361,126</b>	<b>4.35%</b>
Northern Trust Cash Account	65,790,609	2.87%	(9,402,391)	331,040	74,861,960	3.24%
Bank of ND	25,627,432	1.12%	0	128,266	25,499,166	1.10%
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(38,375)</b>	<b>\$38,375</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$2,293,904,837</b>	<b>100.0%</b>	<b>\$(43,575,545)</b>	<b>\$29,386,408</b>	<b>\$2,308,093,974</b>	<b>100.0%</b>

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Equity</b>					
Gross	4.44%	-	-	-	-
Net	4.38%	-	-	-	-
Weighted Benchmark	4.69%	-	-	-	-
<b>Domestic Equity</b>					
Gross	6.33%	16.40%	16.76%	13.40%	11.59%
Net	6.28%	16.21%	16.52%	13.16%	11.21%
Weighted Benchmark	6.56%	-	-	-	-
<b>Large Cap</b>					
Gross	7.29%	16.89%	16.53%	14.01%	11.28%
Net	7.24%	16.69%	16.31%	13.80%	10.95%
Benchmark(1)	7.42%	17.76%	17.07%	13.67%	11.96%
Parametric Clifton Large Cap - Gross	7.46%	16.97%	17.45%	14.07%	-
Parametric Clifton Large Cap - Net	7.46%	16.97%	17.37%	13.99%	-
S&P 500 Index	7.71%	17.91%	17.31%	13.95%	11.97%
L.A. Capital - Gross	10.00%	25.43%	18.76%	16.12%	14.15%
L.A. Capital - Net	9.94%	25.18%	18.51%	15.90%	13.92%
Russell 1000 Growth Index	9.17%	26.30%	20.55%	16.58%	14.31%
L.A. Capital Enhanced - Gross	7.84%	16.65%	16.25%	13.68%	12.57%
L.A. Capital Enhanced - Net	7.81%	16.50%	16.09%	13.54%	12.39%
Russell 1000 Index	7.42%	17.76%	17.07%	13.67%	12.09%
LSV Asset Management - Gross	4.01%	8.37%	13.62%	11.89%	11.41%
LSV Asset Management - Net	3.94%	8.06%	13.28%	11.58%	11.05%
Russell 1000 Value Index	5.70%	9.45%	13.55%	10.72%	9.79%
<b>Small Cap</b>					
Gross	3.06%	14.21%	17.08%	11.54%	12.47%
Net	3.02%	14.07%	16.78%	11.21%	11.95%
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	11.11%
Parametric Clifton Small Cap - Gross	3.32%	14.30%	17.54%	11.95%	-
Parametric Clifton SmallCap - Net	3.32%	14.30%	17.25%	11.63%	-
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	11.11%
PIMCO RAE - Gross	2.79%	13.92%	16.69%	10.95%	12.31%
PIMCO RAE - Net	2.71%	13.62%	16.38%	10.64%	11.89%
Russell 2000	3.58%	15.24%	17.12%	11.07%	11.11%
<b>International Equity</b>					
Gross	0.92%	3.49%	11.86%	6.29%	7.05%
Net	0.84%	3.16%	11.51%	5.94%	6.74%
Benchmark(2)	1.31%	2.67%	9.05%	4.31%	5.17%
DFA Intl Small Cap Value - Net	(0.97%)	(3.00%)	10.34%	6.59%	8.51%
World ex US SC Va	(0.30%)	0.79%	11.12%	5.87%	8.66%
LSV Asset Management - Gross	1.70%	0.24%	10.68%	5.73%	6.30%
LSV Asset Management - Net	1.60%	(0.15%)	10.25%	5.32%	5.95%
Benchmark(3)	1.35%	2.74%	9.23%	4.42%	5.22%
Vanguard Intl Explorer Fund - Net	(2.83%)	0.29%	10.93%	8.04%	9.11%
BMI, EPAC, <\$2 B	(0.45%)	4.26%	11.91%	7.49%	8.62%
William Blair - Gross	1.51%	9.13%	-	-	-
William Blair - Net	1.41%	8.71%	-	-	-
MSCI ACWI ex US IMI	0.39%	1.79%	10.14%	4.39%	5.60%

(1) S&P 500 Index through 12/31/2011 and Russell 1000 Index thereafter.

(2) MSCI EAFE through 9/30/2000; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again through 6/30/2016; MSCI World ex-US thereafter.

(3) MSCI EAFE through 9/30/2000; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Domestic Fixed Income</b>					
Gross	0.72%	0.63%	4.35%	4.54%	6.86%
Net	0.69%	0.52%	4.23%	4.41%	6.71%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
Declaration Total Return - Net	0.40%	2.25%	3.47%	-	-
Libor-3 Month	0.60%	2.02%	1.25%	0.85%	0.72%
PIMCO DiSCO II - Net	1.26%	6.87%	10.69%	9.30%	-
PIMCO Bravo II Fund - Net	0.00%	6.00%	8.75%	-	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
Prudential - Gross	0.32%	(0.61%)	3.46%	3.75%	6.17%
Prudential - Net	0.26%	(0.86%)	3.18%	3.48%	6.00%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
Wells Capital - Gross	1.62%	(0.20%)	4.89%	4.80%	7.65%
Wells Capital - Net	1.58%	(0.35%)	4.71%	4.61%	7.44%
Blmbg Credit Baa	1.35%	(0.84%)	3.97%	3.93%	6.65%
Western Asset - Gross	0.31%	(0.37%)	3.17%	3.74%	6.02%
Western Asset - Net	0.28%	(0.49%)	3.03%	3.60%	5.85%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	3.77%
SSgA US Govt Cr Bd Idx - Gross	0.04%	(1.35%)	1.45%	2.23%	-
SSgA US Govt Cr Bd Idx - Net	0.04%	(1.38%)	1.42%	2.19%	-
Blmbg Govt/Credit Bd	0.06%	(1.37%)	1.45%	2.23%	3.95%
<b>Global Real Assets</b>					
Gross	(0.04%)	-	-	-	-
Net	(0.04%)	-	-	-	-
Weighted Benchmark	0.54%	-	-	-	-
<b>Real Estate</b>					
Gross	0.00%	7.13%	8.52%	10.50%	3.22%
Net	0.02%	6.62%	7.87%	9.79%	2.25%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	6.42%
Invesco Core Real Estate - Gross	0.00%	6.72%	8.19%	10.48%	-
Invesco Core Real Estate - Net	0.00%	6.45%	7.85%	10.11%	-
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	6.42%
JP Morgan - Gross	0.00%	7.50%	8.80%	10.55%	3.52%
JP Morgan - Net	0.04%	6.76%	7.87%	9.55%	2.37%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	6.42%

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Diversified</b>					
Gross	(0.06%)	6.53%	4.79%	4.32%	4.14%
Net	(0.06%)	6.25%	4.49%	4.04%	3.80%
Weighted Benchmark	0.08%	1.94%	2.53%	2.38%	3.69%
Western TIPS - Gross	(1.48%)	(1.14%)	2.05%	1.64%	3.16%
Western TIPS - Net	(1.51%)	(1.26%)	1.92%	1.50%	2.97%
BImbg Gbl Infn-Linked(1)	(1.63%)	(0.58%)	2.13%	1.39%	3.19%
JP Morgan Infrastructure - Gross	1.70%	12.48%	7.36%	6.40%	-
JP Morgan Infrastructure - Net	1.73%	11.78%	6.57%	5.54%	-
Benchmark(2)	1.43%	3.64%	2.38%	1.61%	1.51%
Eastern Timber Opportunities - Net	0.00%	13.95%	5.61%	6.35%	4.58%
NCREIF Timberland Index	1.02%	4.00%	3.52%	5.99%	4.01%
Grosvenor Cust. Infrastructure - Net	(0.05%)	7.85%	8.12%	8.75%	-
Benchmark(2)	1.43%	3.64%	2.38%	1.61%	1.51%
<b>Short Term Fixed Income</b>					
Gross	0.40%	0.39%	1.11%	1.38%	-
Net	0.37%	0.28%	0.91%	1.20%	-
Benchmark(3)	0.33%	0.20%	0.52%	0.66%	-
JP Morgan Short Term Bds - Gross	0.40%	0.39%	0.87%	1.02%	-
JP Morgan Short Term Bds - Net	0.37%	0.28%	0.70%	0.88%	-
BImbg Gov/Credit 1-3 Y	0.33%	0.20%	0.73%	0.83%	1.67%
<b>Cash &amp; Equivalents - Net</b>					
Cash Account- Net	0.44%	1.33%	0.65%	0.40%	0.38%
Bank of ND - Net	0.50%	1.64%	-	-	-
90 Day Treasury Bills	0.49%	1.59%	0.84%	0.52%	0.34%
<b>Total Fund</b>					
Gross	1.29%	4.24%	6.52%	5.44%	5.86%
Net	1.27%	4.06%	6.32%	5.23%	5.62%
Target*	1.08%	2.63%	4.42%	3.89%	4.51%

\* Current Quarter Target = 52.6% BImbg Aggregate, 12.0% NDSIB INS DRA Weighted Benchmark, 10.1% Russell 1000 Index, 7.2% MSCI World ex US, 6.1% BImbg Gov/Cred 1-3 Yr, 5.1% NCREIF Total Index, 4.0% 3-month Treasury Bill and 2.9% Russell 2000 Index.

(1) BImbg US TIPS through 12/31/2009 and BImbg Global Inflation-Linked thereafter.

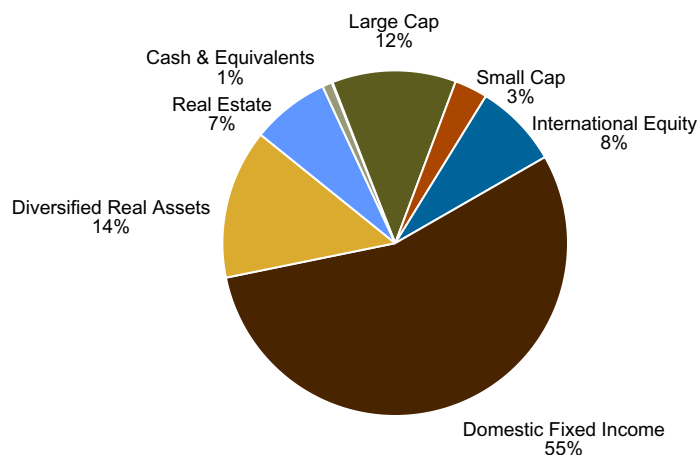
(2) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

(3) BImbg Gov 1-3 Yr through March 31, 2017 and BImbg Gov/Credit 1-3 Yr thereafter.

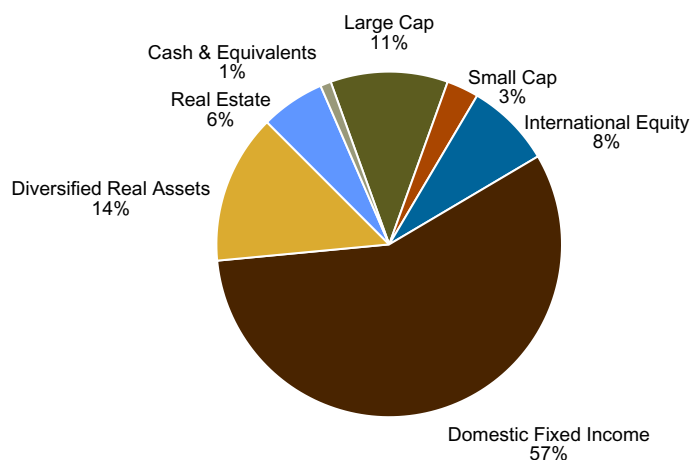
## Actual vs Target Asset Allocation As of September 30, 2018

The first chart below shows the Fund's asset allocation as of September 30, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



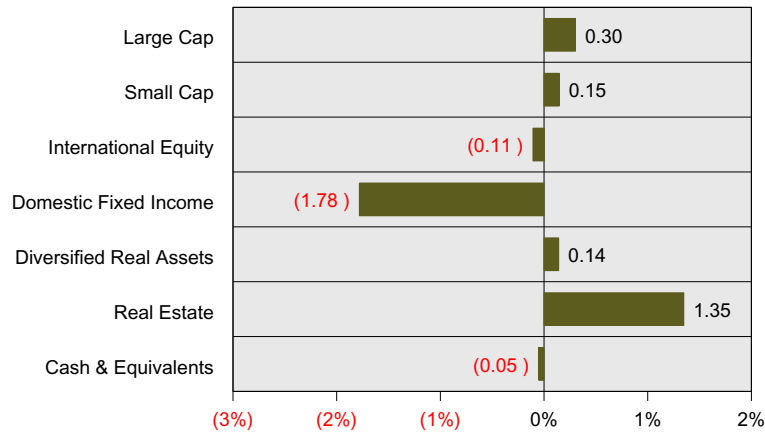
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	224,757	11.6%	11.0%	0.6%	12,064
Small Cap	60,811	3.1%	3.0%	0.1%	2,804
International Equity	152,777	7.9%	8.0%	(0.1%)	(1,909)
Domestic Fixed Income	1,065,481	55.1%	57.0%	(1.9%)	(36,654)
Diversified Real Assets	270,362	14.0%	14.0%	(0.0%)	(338)
Real Estate	141,489	7.3%	6.0%	1.3%	25,474
Cash & Equivalents	17,895	0.9%	1.0%	(0.1%)	(1,441)
<b>Total</b>	<b>1,933,570</b>	<b>100.0%</b>	<b>100.0%</b>		

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

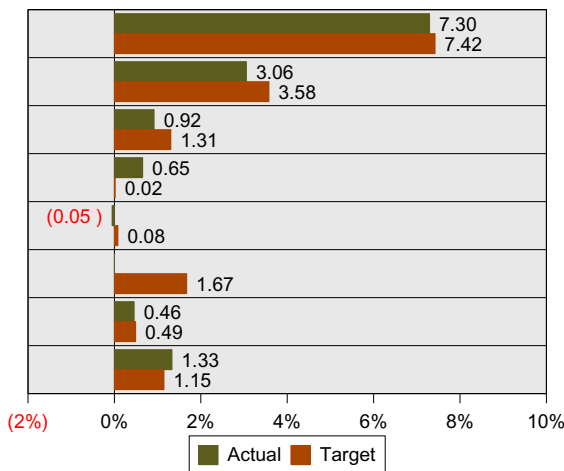
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

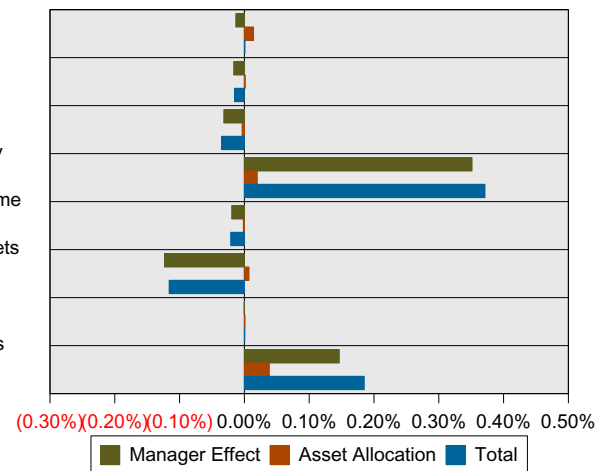
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

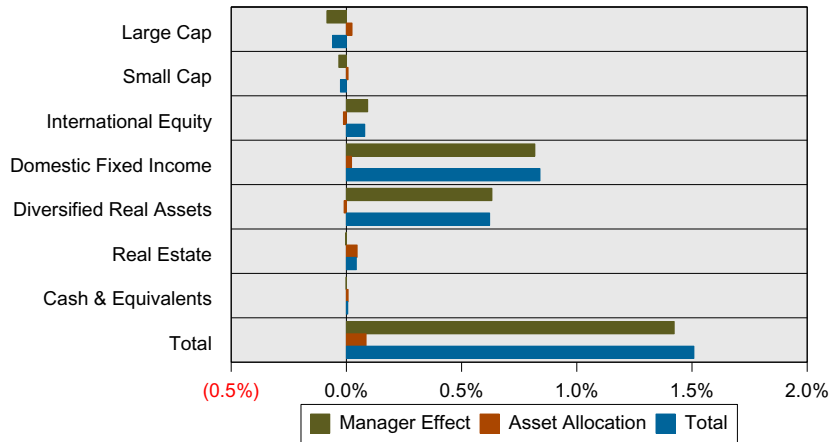
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	7.30%	7.42%	(0.01%)	0.01%	0.00%
Small Cap	3%	3%	3.06%	3.58%	(0.02%)	0.00%	(0.02%)
International Equity	8%	8%	0.92%	1.31%	(0.03%)	(0.00%)	(0.04%)
Domestic Fixed Income	55%	57%	0.65%	0.02%	0.35%	0.02%	0.37%
Diversified Real Assets	14%	14%	(0.05%)	0.08%	(0.02%)	(0.00%)	(0.02%)
Real Estate	7%	6%	0.00%	1.67%	(0.12%)	0.01%	(0.12%)
Cash & Equivalents	1%	1%	0.46%	0.49%	(0.00%)	0.00%	0.00%
<b>Total</b>			<b>1.33%</b>	<b>1.15%</b>	<b>0.15%</b>	<b>0.04%</b>	<b>0.19%</b>

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

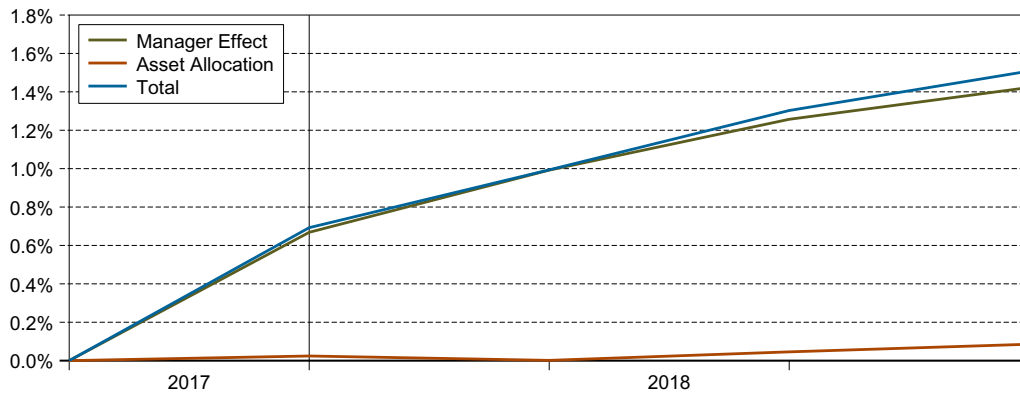
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

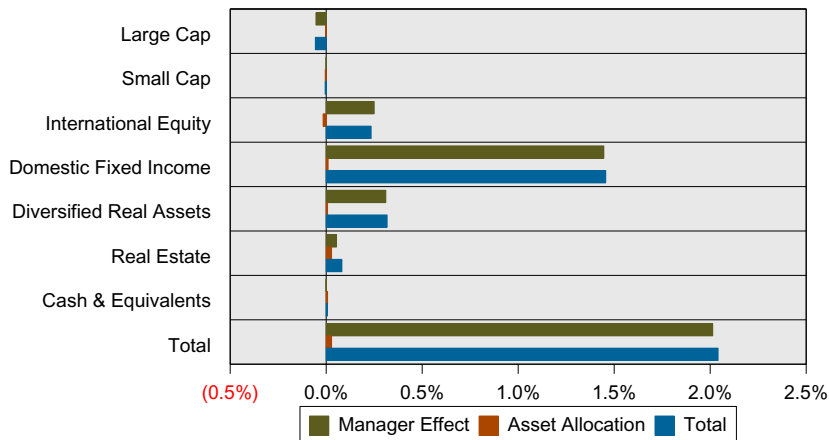
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	16.91%	17.76%	(0.08%)	0.02%	(0.06%)
Small Cap	4%	4%	14.22%	15.24%	(0.03%)	0.01%	(0.03%)
International Equity	9%	9%	3.49%	2.67%	0.09%	(0.01%)	0.08%
Domestic Fixed Income	53%	54%	0.26%	(1.22%)	0.82%	0.02%	0.84%
Diversified Real Assets	14%	15%	6.57%	2.04%	0.63%	(0.01%)	0.62%
Real Estate	7%	6%	7.13%	7.16%	(0.00%)	0.05%	0.04%
Cash & Equivalents	1%	1%	1.42%	1.59%	(0.00%)	0.01%	0.01%
<b>Total</b>			<b>4.37%</b>	<b>2.86%</b>	<b>+ 1.42%</b>	<b>+ 0.09%</b>	<b>1.51%</b>

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

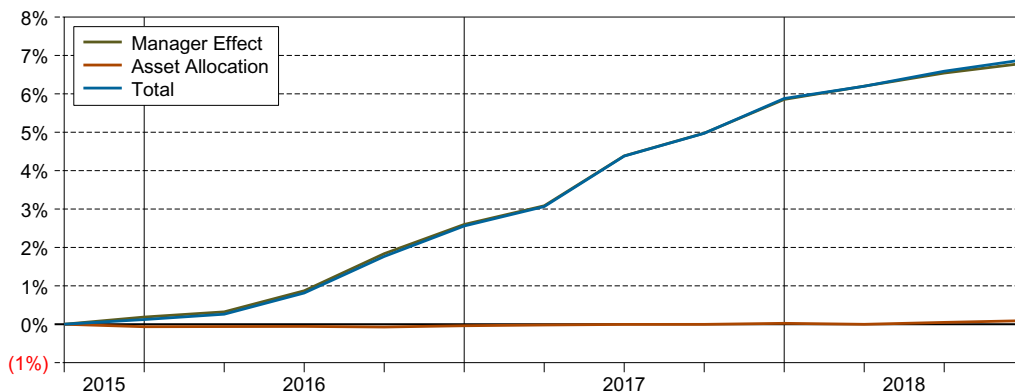
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	16.56%	17.07%	(0.05%)	(0.00%)	(0.06%)
Small Cap	4%	4%	17.07%	17.12%	(0.00%)	(0.00%)	(0.01%)
International Equity	9%	9%	11.86%	9.05%	0.25%	(0.02%)	0.23%
Domestic Fixed Income	53%	53%	3.99%	1.31%	1.45%	0.01%	1.46%
Diversified Real Assets	14%	15%	4.82%	2.65%	0.31%	0.01%	0.32%
Real Estate	7%	6%	8.52%	7.75%	0.05%	0.03%	0.08%
Cash & Equivalents	1%	1%	0.74%	0.84%	(0.00%)	0.01%	0.01%
<b>Total</b>			<b>7.09%</b>	<b>5.05%</b>	<b>+ 2.01%</b>	<b>+ 0.03%</b>	<b>2.04%</b>

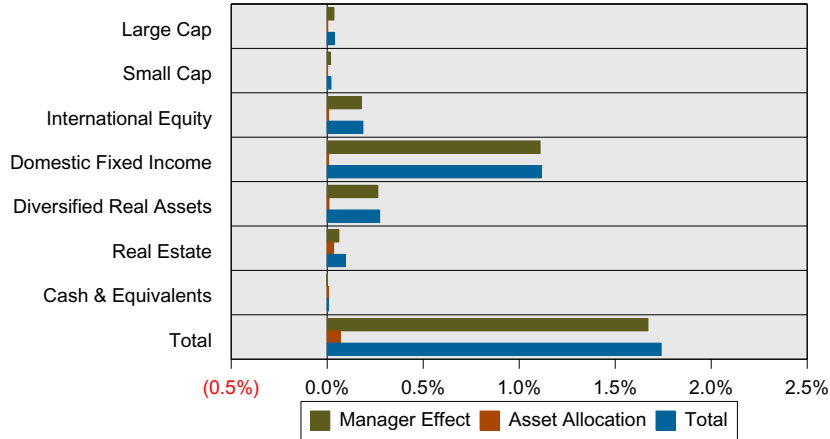
\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.



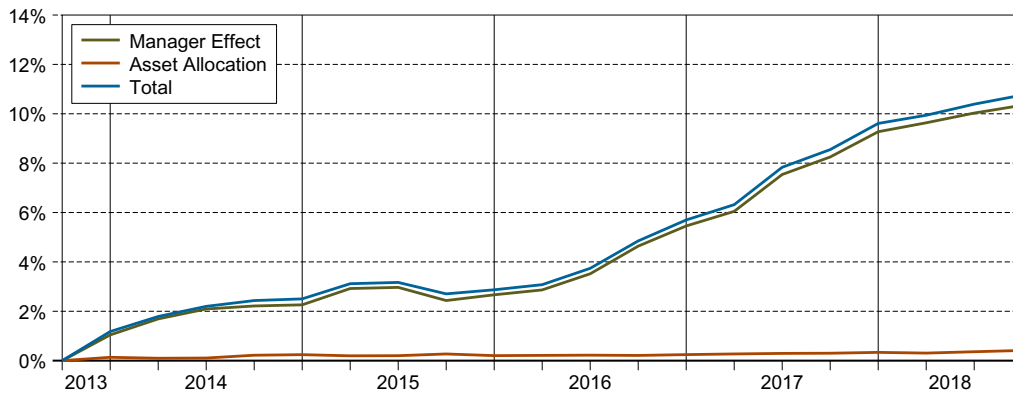
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

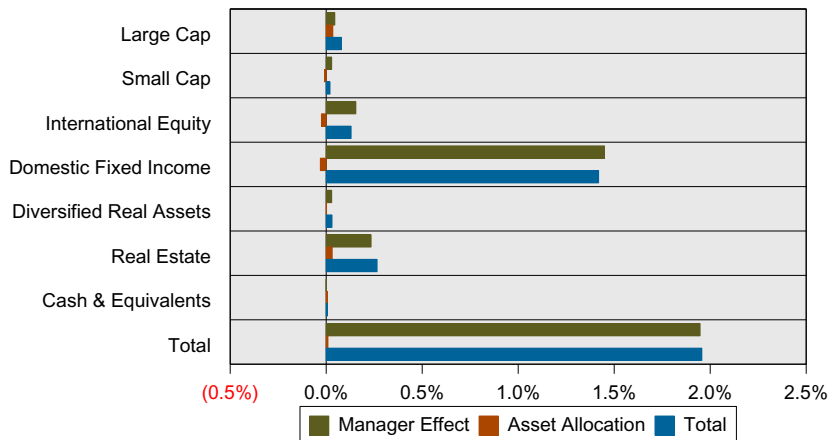
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	14.02%	13.67%	0.04%	0.00%	0.04%
Small Cap	4%	4%	11.56%	11.07%	0.02%	0.00%	0.02%
International Equity	9%	9%	6.25%	4.31%	0.18%	0.01%	0.19%
Domestic Fixed Income	53%	53%	4.27%	2.16%	1.11%	0.01%	1.12%
Diversified Real Assets	16%	16%	4.52%	2.84%	0.26%	0.01%	0.27%
Real Estate	7%	6%	10.50%	9.57%	0.06%	0.03%	0.09%
Cash & Equivalents	1%	1%	0.45%	0.52%	(0.00%)	0.01%	0.01%
<b>Total</b>			<b>6.32%</b>	<b>4.58%</b>	<b>+ 1.67%</b>	<b>+ 0.07%</b>	<b>1.74%</b>

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

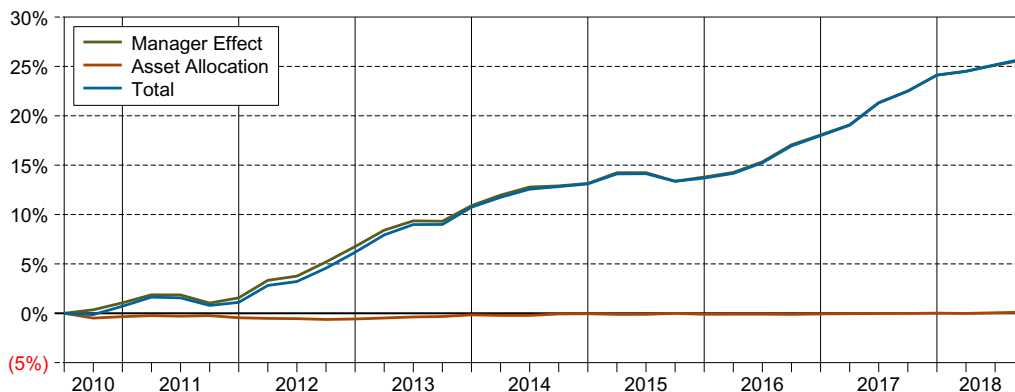
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Eight and One-Quarter Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects

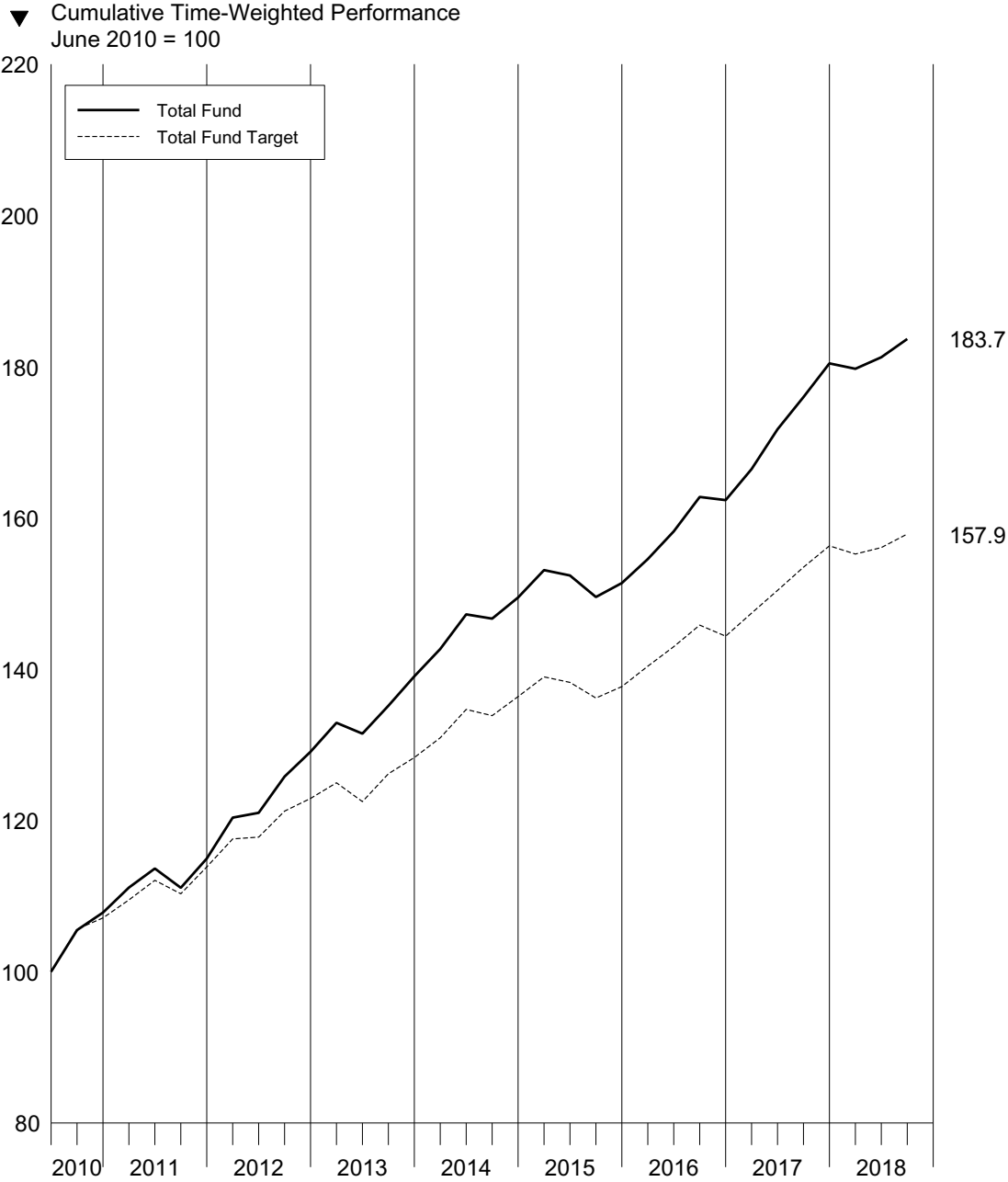


### Eight and One-Quarter Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	16.25%	15.82%	0.04%	0.03%	0.08%
Small Cap	4%	4%	15.62%	14.76%	0.03%	(0.01%)	0.02%
International Equity	8%	8%	8.81%	6.94%	0.15%	(0.02%)	0.13%
Domestic Fixed Income	52%	52%	5.40%	2.65%	1.45%	(0.03%)	1.42%
Diversified Real Assets	18%	18%	4.67%	4.32%	0.03%	0.00%	0.03%
Real Estate	7%	6%	14.81%	10.89%	0.23%	0.03%	0.26%
Cash & Equivalents	1%	1%	0.37%	0.36%	0.00%	0.01%	0.01%
<b>Total</b>			<b>7.65%</b>	<b>5.69%</b>	<b>+ 1.95%</b>	<b>+ 0.01%</b>	<b>1.96%</b>

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

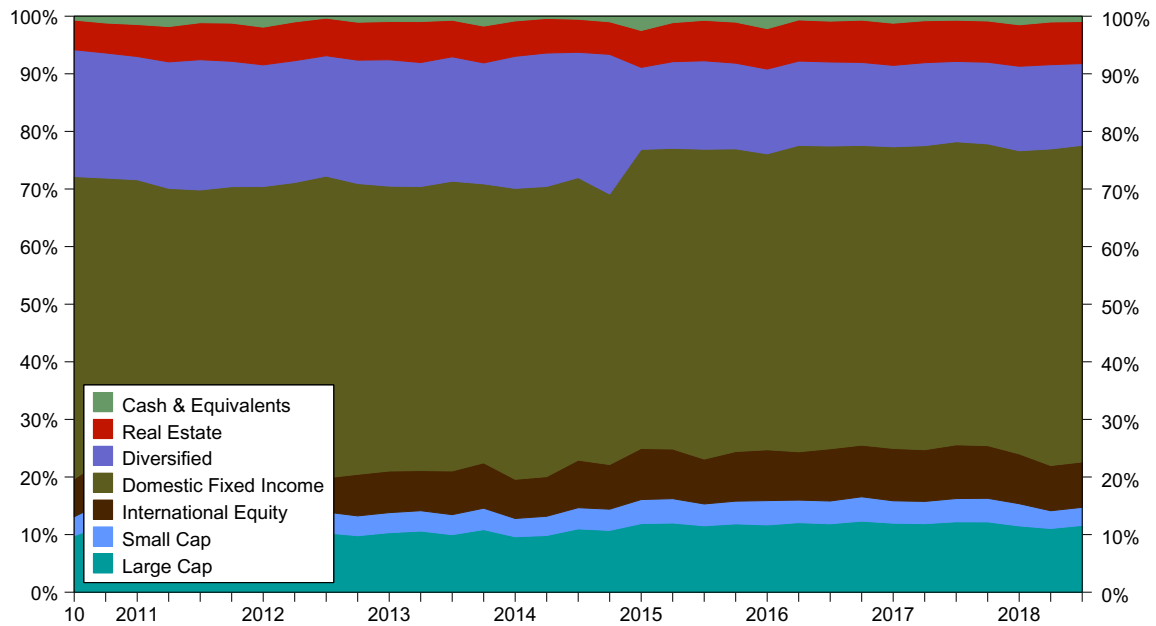
**NDSIB - Workforce Safety & Insurance  
Cumulative Results**



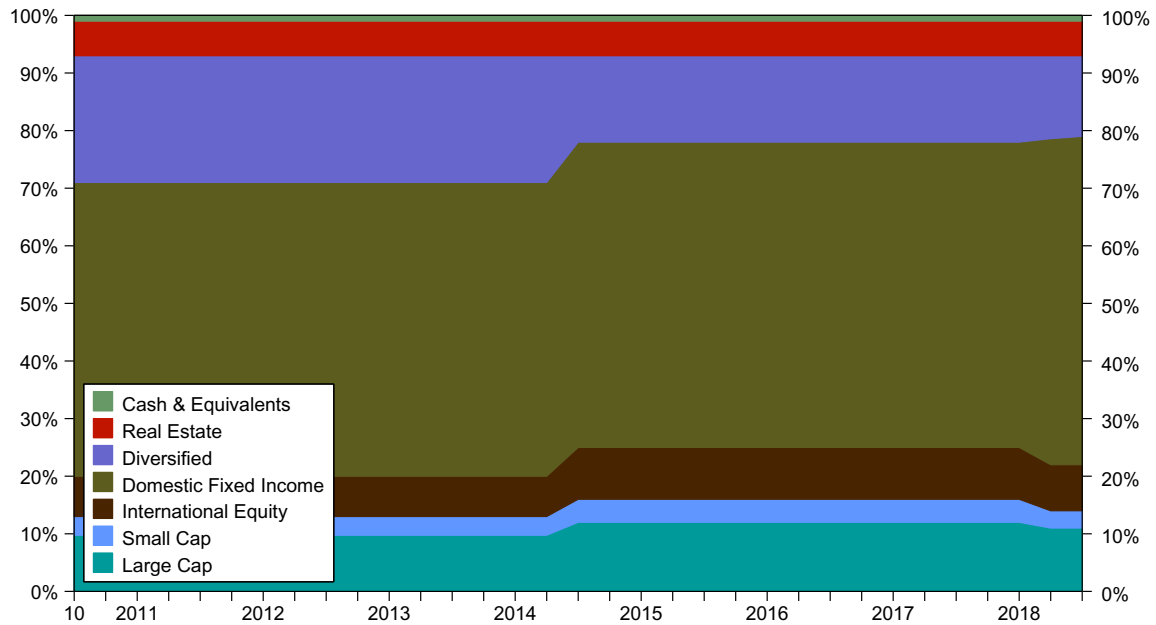
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation

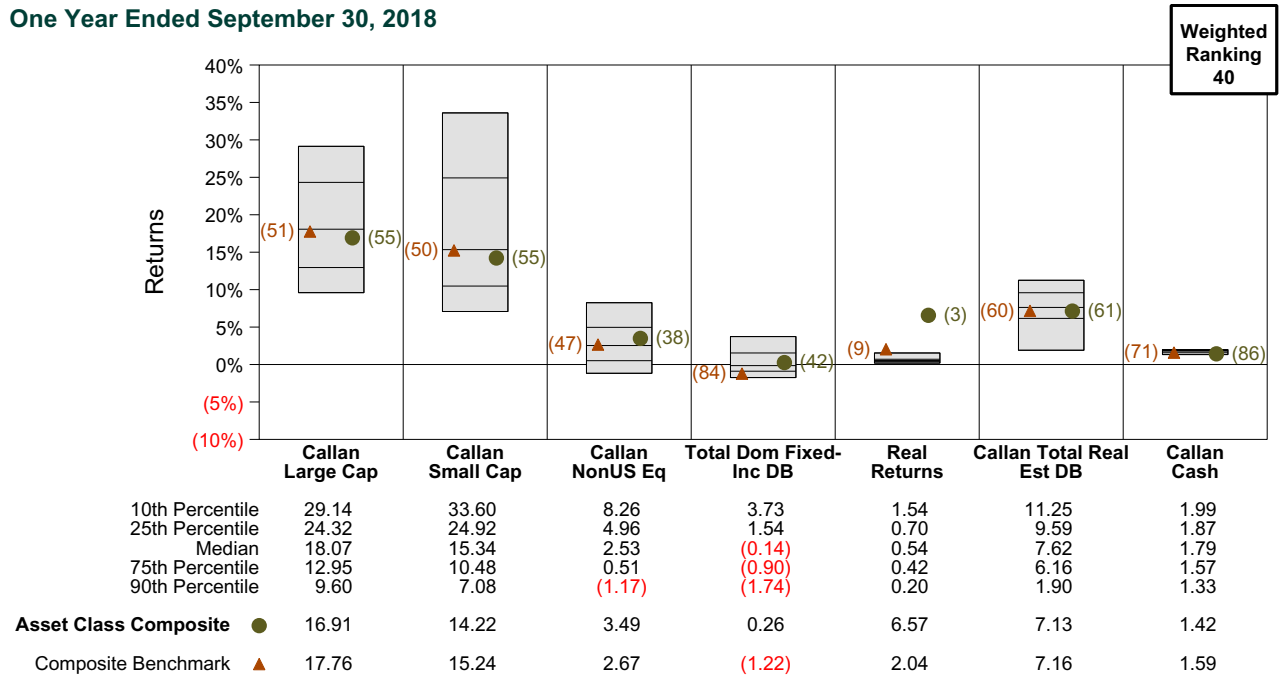


\* Current Quarter Target = 57.0% Blmgb Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

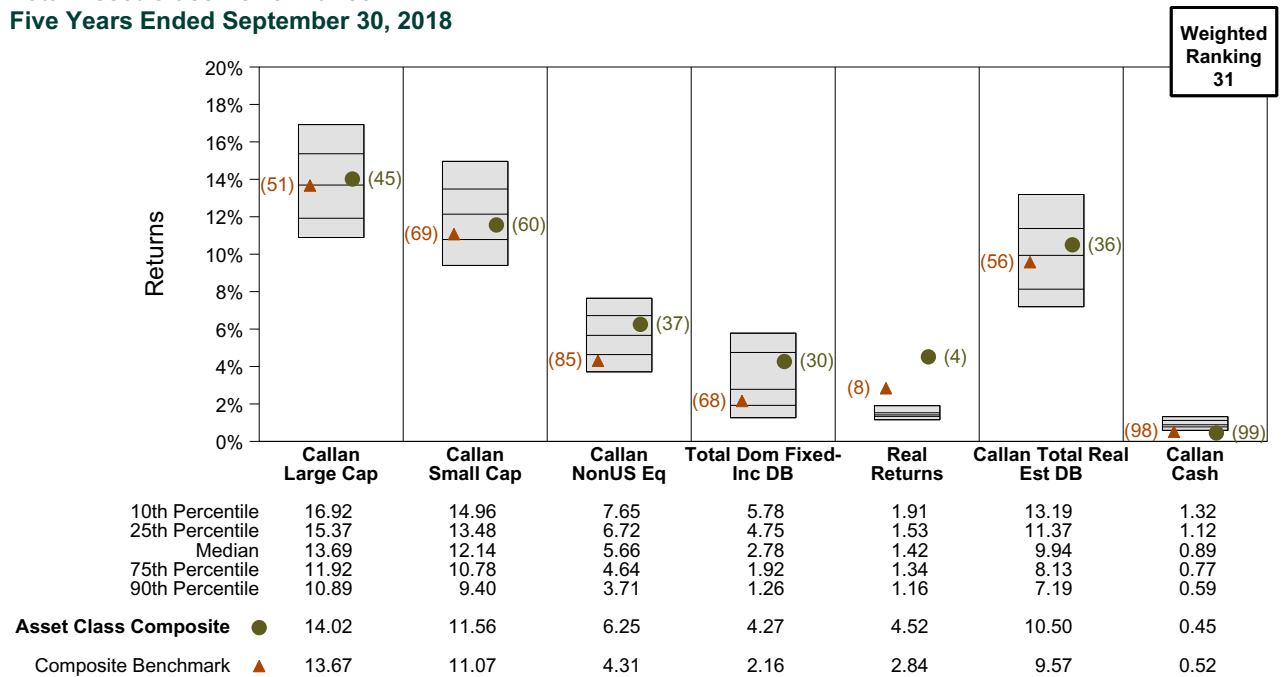
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Five Years Ended September 30, 2018



\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Class Allocation

	September 30, 2018		Net New Inv.	Inv. Return	June 30, 2018	
	Market Value	Weight			Market Value	Weight
<b>Global Equity</b>	<b>\$438,344,013</b>	<b>22.67%</b>	<b>\$(4,237,117)</b>	<b>\$18,688,190</b>	<b>\$423,892,940</b>	<b>22.04%</b>
<b>Domestic Equity</b>	<b>\$285,567,477</b>	<b>14.77%</b>	<b>\$(4,399,695)</b>	<b>\$17,298,156</b>	<b>\$272,669,016</b>	<b>14.18%</b>
Large Cap	224,756,669	11.62%	(3,872,129)	15,471,390	213,157,408	11.08%
Small Cap	60,810,808	3.15%	(527,566)	1,826,766	59,511,608	3.09%
<b>International Equity</b>	<b>\$152,776,536</b>	<b>7.90%</b>	<b>\$162,578</b>	<b>\$1,390,033</b>	<b>\$151,223,924</b>	<b>7.86%</b>
<b>Domestic Fixed Income</b>	<b>\$1,065,480,855</b>	<b>55.10%</b>	<b>\$(1,005,199)</b>	<b>\$6,934,431</b>	<b>\$1,059,551,623</b>	<b>55.10%</b>
<b>Global Real Assets</b>	<b>\$411,850,396</b>	<b>21.30%</b>	<b>\$(8,339,682)</b>	<b>\$(154,609)</b>	<b>\$420,344,687</b>	<b>21.86%</b>
Real Estate	141,488,566	7.32%	(1,376,950)	30	142,865,486	7.43%
Diversified	270,361,830	13.98%	(6,962,732)	(154,640)	277,479,201	14.43%
<b>Cash</b>	<b>\$17,894,536</b>	<b>0.93%</b>	<b>\$(1,520,645)</b>	<b>\$86,776</b>	<b>\$19,328,406</b>	<b>1.01%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(33,793)</b>	<b>\$33,793</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$1,933,569,800</b>	<b>100.0%</b>	<b>\$(15,136,437)</b>	<b>\$25,588,580</b>	<b>\$1,923,117,656</b>	<b>100.0%</b>

PLEASE REFER TO PAGE 30 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.

## Asset Class Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Equity</b>					
Gross	4.42%	-	-	-	-
Net	4.37%	-	-	-	-
Weighted Benchmark	4.68%	-	-	-	-
<b>Domestic Equity</b>					
Gross	6.36%	16.37%	16.76%	13.45%	16.11%
Net	6.32%	16.18%	16.52%	13.21%	15.78%
Weighted Benchmark	6.60%	-	-	-	-
<b>Large Cap</b>					
Gross	7.30%	16.91%	16.56%	14.02%	16.25%
Net	7.25%	16.71%	16.34%	13.81%	16.00%
Benchmark(1)	7.42%	17.76%	17.07%	13.67%	15.82%
<b>Small Cap</b>					
Gross	3.06%	14.22%	17.07%	11.56%	15.62%
Net	3.02%	14.08%	16.78%	11.24%	15.08%
Russell 2000	3.58%	15.24%	17.12%	11.07%	14.76%
<b>International Equity</b>					
Gross	0.92%	3.49%	11.86%	6.25%	8.81%
Net	0.84%	3.16%	11.52%	5.92%	8.43%
Benchmark(2)	1.31%	2.67%	9.05%	4.31%	6.94%
<b>Domestic Fixed Income</b>					
Gross	0.65%	0.26%	3.99%	4.27%	5.40%
Net	0.63%	0.14%	3.86%	4.13%	5.24%
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.65%
<b>Global Real Assets</b>					
Gross	(0.04%)	-	-	-	-
Net	(0.03%)	-	-	-	-
Weighted Benchmark	0.55%	-	-	-	-
<b>Real Estate</b>					
Gross	0.00%	7.13%	8.52%	10.50%	14.81%
Net	0.02%	6.62%	7.87%	9.79%	13.89%
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	10.89%
<b>Diversified</b>					
Gross	(0.05%)	6.57%	4.82%	4.52%	4.67%
Net	(0.05%)	6.57%	4.82%	4.52%	4.67%
Weighted Benchmark	0.08%	2.04%	2.65%	2.84%	4.32%
<b>Cash &amp; Equivalents - Net</b>	<b>0.46%</b>	<b>1.42%</b>	<b>0.74%</b>	<b>0.45%</b>	<b>0.37%</b>
90 Day Treasury Bills	0.49%	1.59%	0.84%	0.52%	0.36%
<b>Total Fund</b>					
Gross	1.33%	4.37%	7.09%	6.32%	7.65%
Net	1.30%	4.17%	6.87%	6.10%	7.37%
Target*	1.15%	2.86%	5.05%	4.58%	5.69%

\* Current Quarter Target = 57.0% Blmbg Aggregate, 14.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 6.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

(1) S&P 500 Index through 12/31/2011 and Russell 1000 Index thereafter.

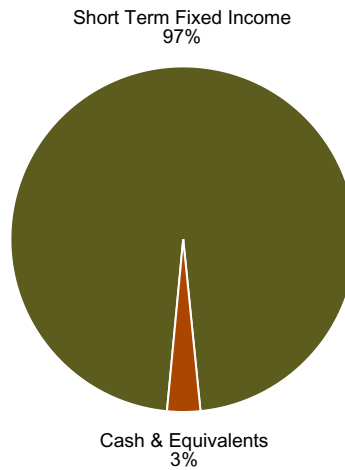
(2) MSCI EAFE through 9/30/2000; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again through 6/30/2016; MSCI World ex-US thereafter.

PLEASE REFER TO PAGE 31-33 FOR INVESTMENT MANAGER LEVEL RETURNS.

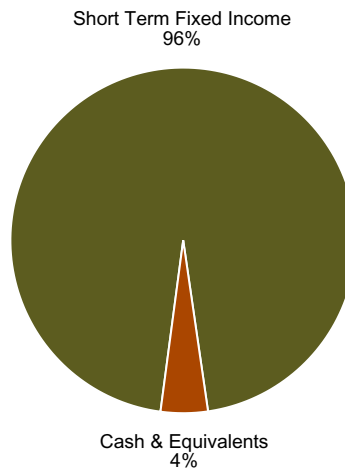
## Actual vs Target Asset Allocation As of September 30, 2018

The first chart below shows the Fund's asset allocation as of September 30, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

### Actual Asset Allocation



### Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Short Term Fixed Income	110,539	96.9%	95.6%	1.3%	1,499
Cash & Equivalents	3,484	3.1%	4.4%	(1.3%)	(1,499)
Total	114,023	100.0%	100.0%		

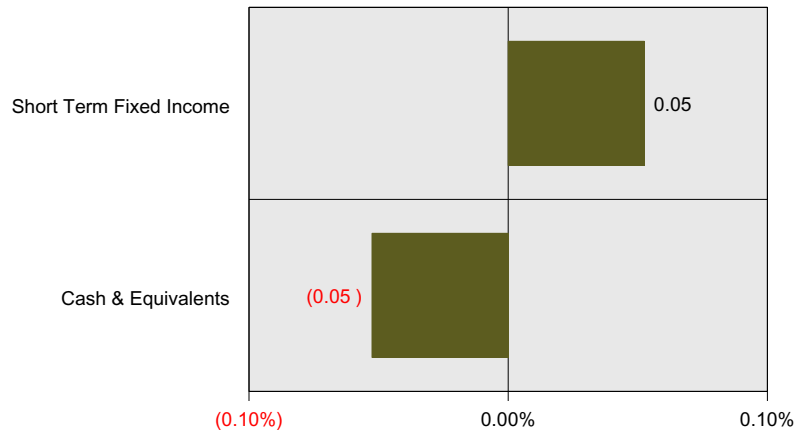
\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.



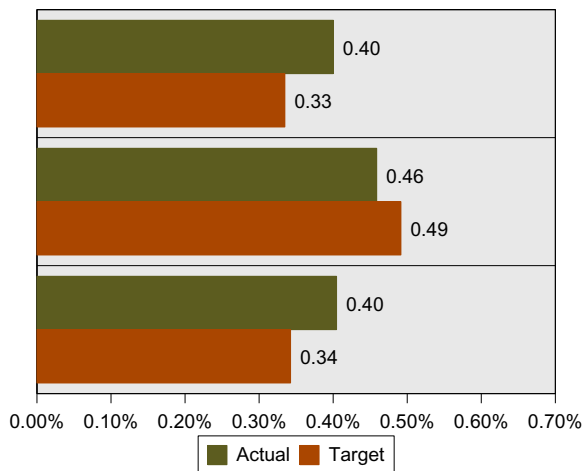
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

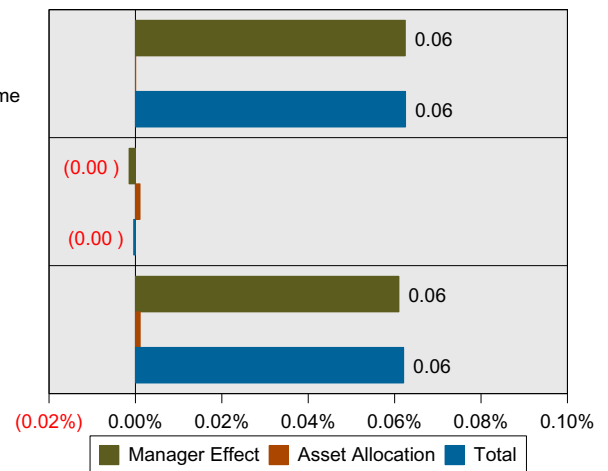
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

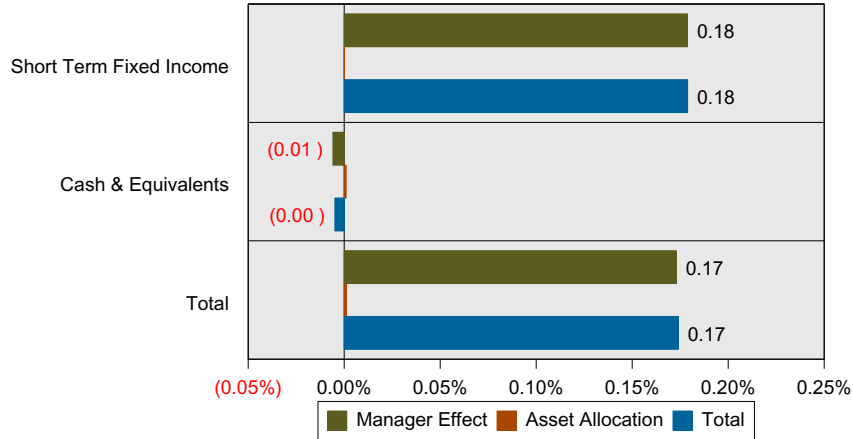
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	95%	95%	0.40%	0.33%	0.06%	0.00%	0.06%
Cash & Equivalents	5%	5%	0.46%	0.49%	(0.00%)	0.00%	(0.00%)
<b>Total</b>			<b>0.40%</b>	<b>0.34%</b>	<b>+ 0.06%</b>	<b>+ 0.00%</b>	<b>0.06%</b>

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

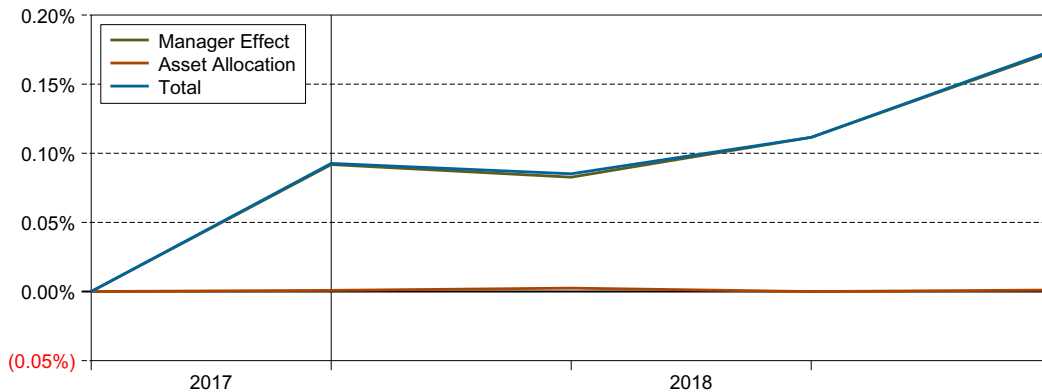
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

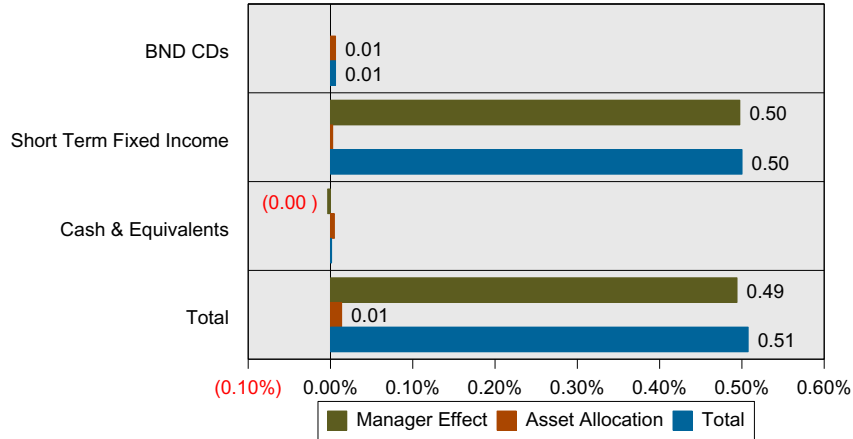
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	97%	97%	0.39%	0.20%	0.18%	0.00%	0.18%
Cash & Equivalents	3%	3%	1.42%	1.59%	(0.01%)	0.00%	(0.00%)
<b>Total</b>			<b>0.42%</b>	<b>0.25%</b>	<b>+ 0.17%</b>	<b>+ 0.00%</b>	<b>0.17%</b>

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

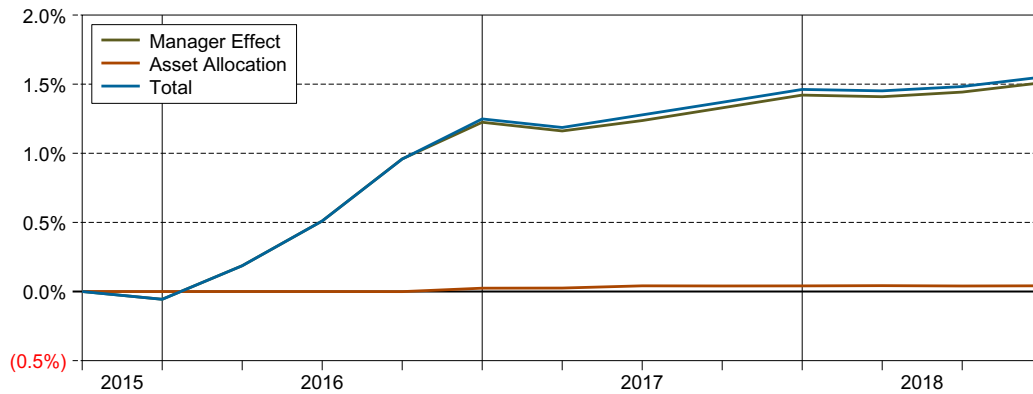
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

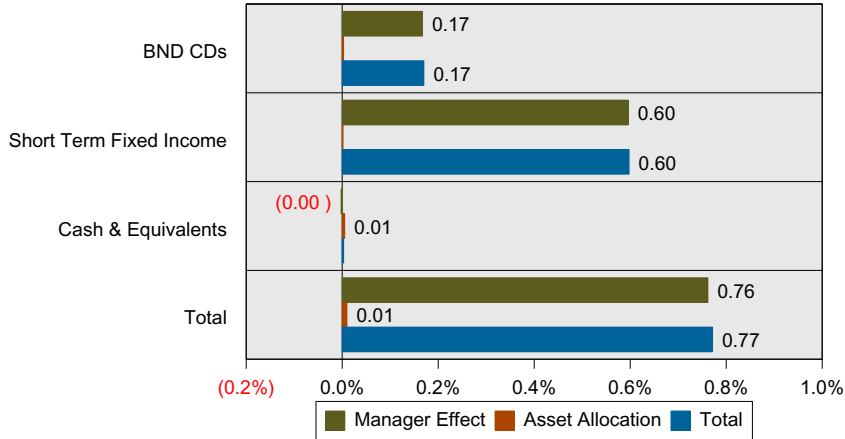
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return	
BND CDs	8%	8%	-	-	0.00%	0.01%	0.01%	
Short Term Fixed Income	89%	89%	1.11%	0.52%	0.50%	0.00%	0.50%	
Cash & Equivalents	4%	4%	0.74%	0.84%	(0.00%)	0.00%	0.00%	
<b>Total</b>			<b>1.20%</b>		<b>= 0.69%</b>	<b>+ 0.49%</b>	<b>+ 0.01%</b>	<b>0.51%</b>

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

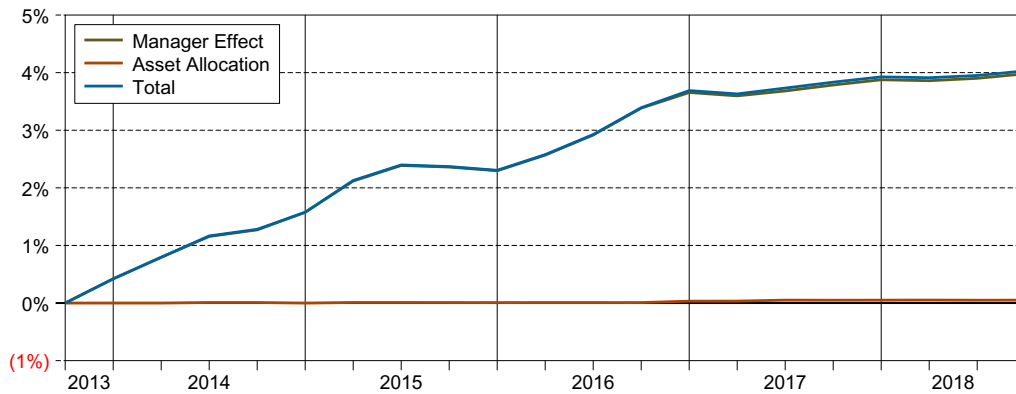
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

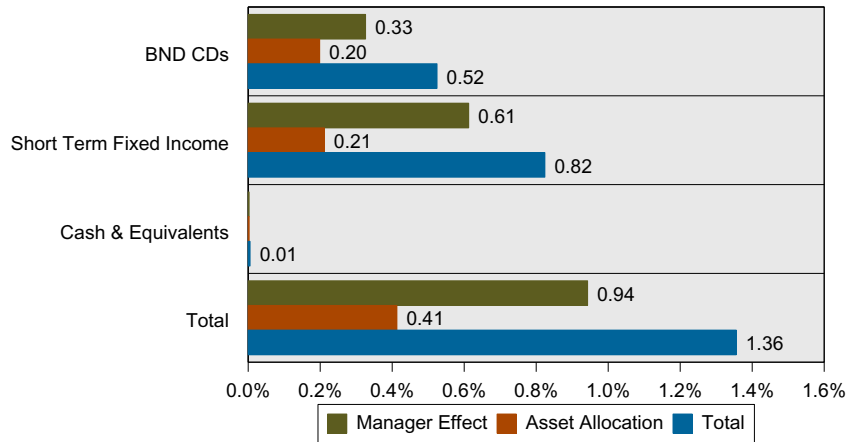
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	12%	12%	-	-	0.17%	0.00%	0.17%
Short Term Fixed Income	85%	85%	1.38%	0.66%	0.60%	0.00%	0.60%
Cash & Equivalents	3%	3%	0.45%	0.52%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>1.49%</b>		<b>0.71%</b>	<b>0.76%</b>	<b>0.77%</b>

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

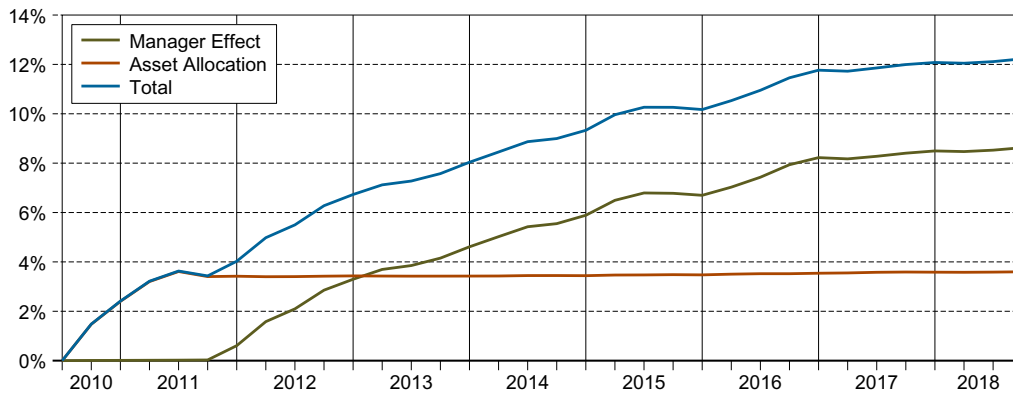
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Eight and One-Quarter Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects

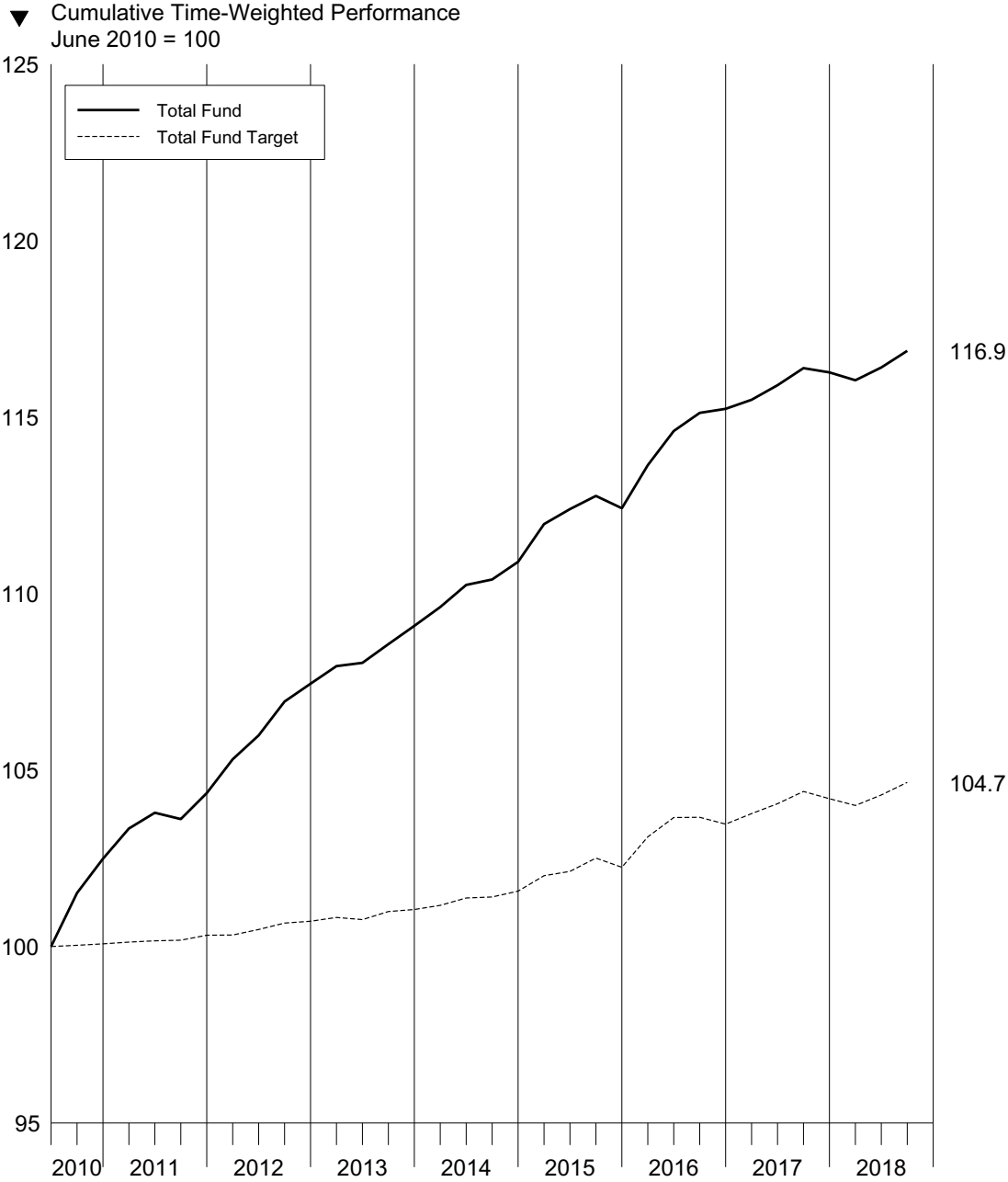


### Eight and One-Quarter Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	18%	13%	-	-	0.33%	0.20%	0.52%
Short Term Fixed Income	78%	69%	1.68%	0.90%	0.61%	0.21%	0.82%
Cash & Equivalents	4%	17%	0.37%	0.36%	0.00%	0.00%	0.01%
<b>Total</b>			<b>1.91%</b>	<b>0.55%</b>	<b>+ 0.94%</b>	<b>+ 0.41%</b>	<b>1.36%</b>

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

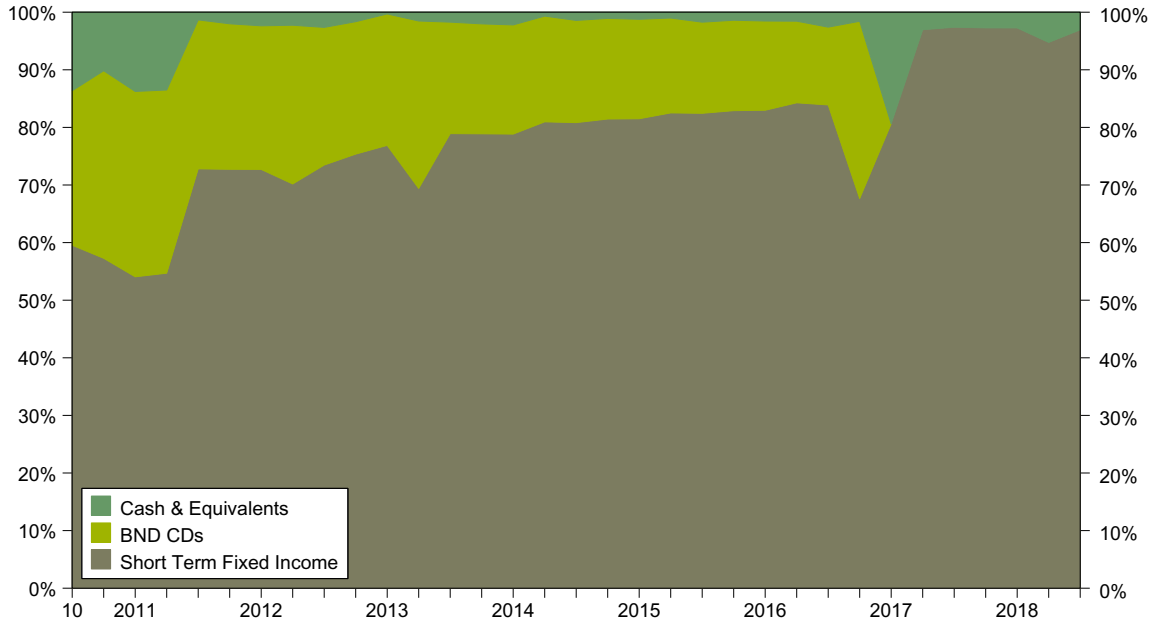
**NDSIB - Budget Stabilization Fund  
Cumulative Results**



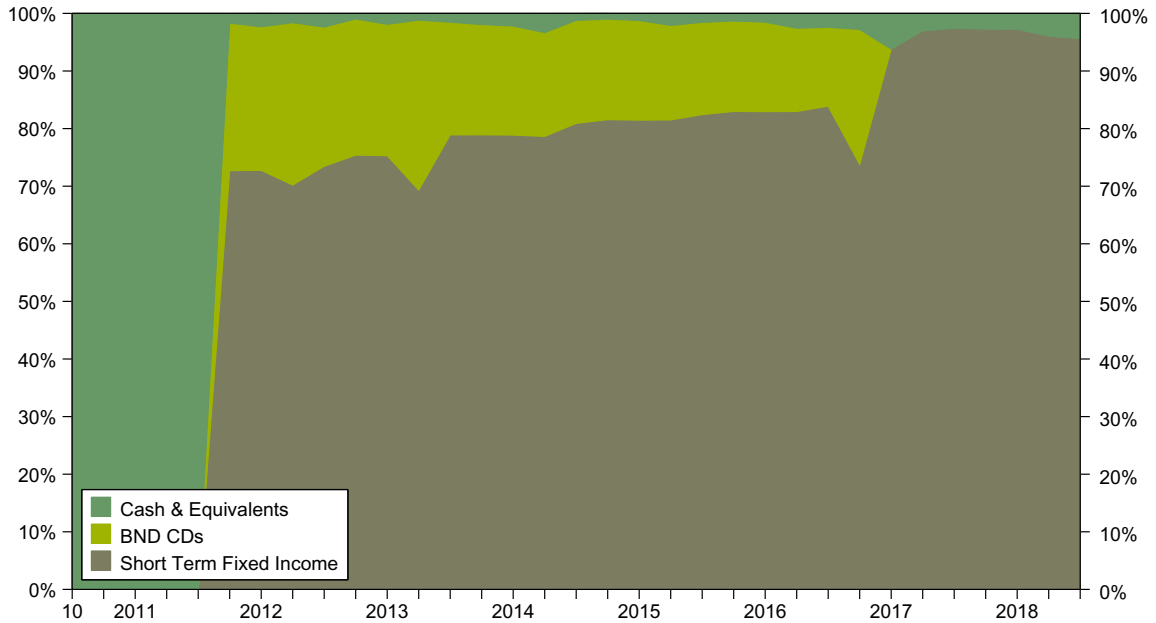
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation



\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

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## Asset Class Allocation

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The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Class Allocation

	September 30, 2018		Net New Inv.	Inv. Return	June 30, 2018	
	Market Value	Weight			Market Value	Weight
Short Term Fixed Income	\$110,539,463	96.94%	\$2,460,005	\$433,973	\$107,645,485	94.76%
Cash & Equivalents	\$3,483,573	3.06%	\$(2,498,733)	\$24,014	\$5,958,293	5.24%
Securities Lending Income	\$0	0.00%	\$(1,619)	\$1,619	-	-
Total Fund	\$114,023,036	100.0%	\$(40,348)	\$459,606	\$113,603,777	100.0%

PLEASE REFER TO PAGE 30 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Short Term Fixed Income</b>					
Gross	0.40%	0.39%	1.11%	1.38%	1.68%
Net	0.37%	0.28%	0.89%	1.20%	1.52%
Blended Benchmark(1)	0.33%	0.20%	0.52%	0.66%	-
<b>Cash &amp; Equivalents - Net</b>	<b>0.46%</b>	<b>1.42%</b>	<b>0.74%</b>	<b>0.45%</b>	<b>0.37%</b>
3-month Treasury Bill	0.49%	1.59%	0.84%	0.52%	0.36%
<b>Total Fund</b>					
Gross	0.40%	0.42%	1.20%	1.49%	1.91%
Net	0.38%	0.32%	1.01%	1.33%	1.78%
Target*	0.34%	0.25%	0.69%	0.71%	0.55%

\* Current Quarter Target = 95.6% Blmbg Gov/Cred 1-3 Yr and 4.4% 3-month Treasury Bill.

(1) Blmbg Gov 1-3 Yr through March 31, 2017 and Blmbg Gov/Credit 1-3 Yr thereafter.

PLEASE REFER TO PAGES 31-33 FOR INVESTMENT MANAGER LEVEL RETURNS.

# Large Cap Period Ended September 30, 2018

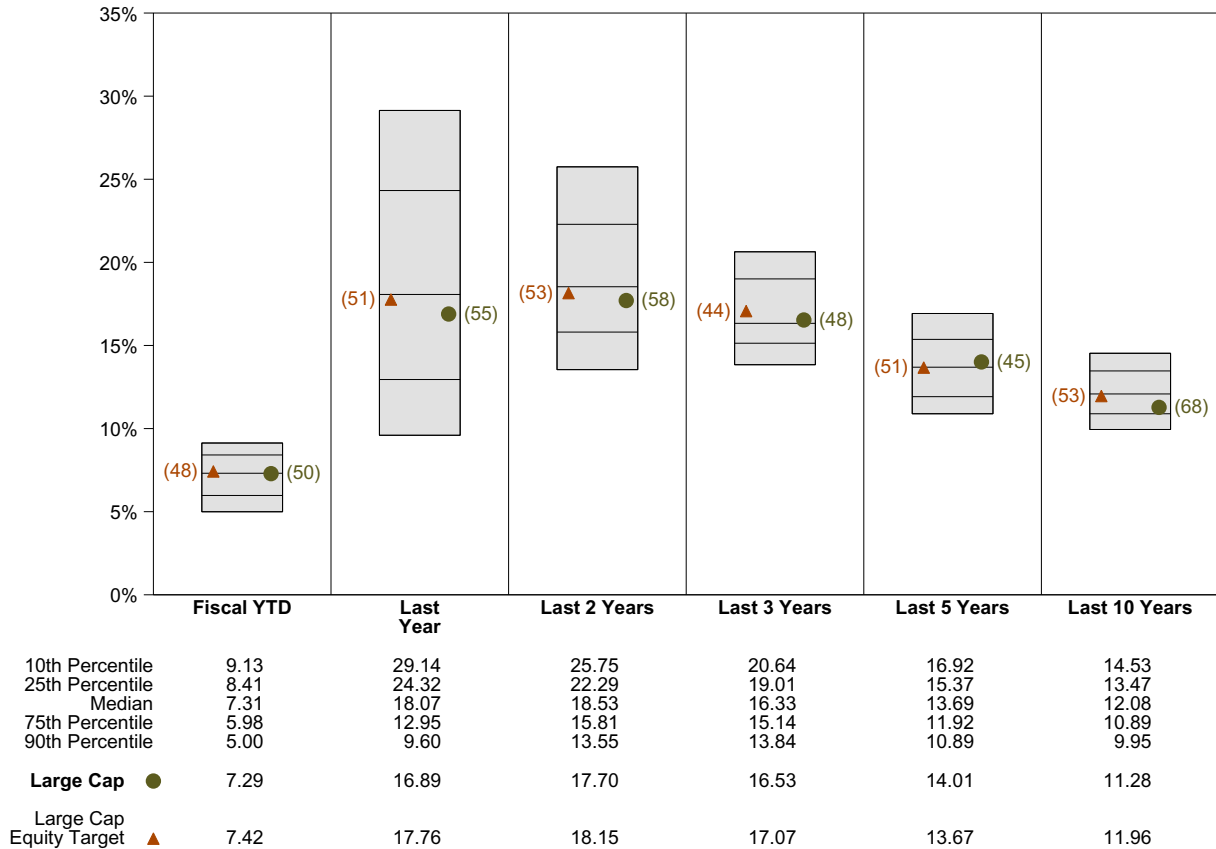
## Quarterly Summary and Highlights

- Large Cap's portfolio posted a 7.29% return for the quarter placing it in the 50 percentile of the Callan Large Capitalization group for the quarter and in the 55 percentile for the last year.
- Large Cap's portfolio underperformed the Large Cap Equity Target by 0.13% for the quarter and underperformed the Large Cap Equity Target for the year by 0.87%.

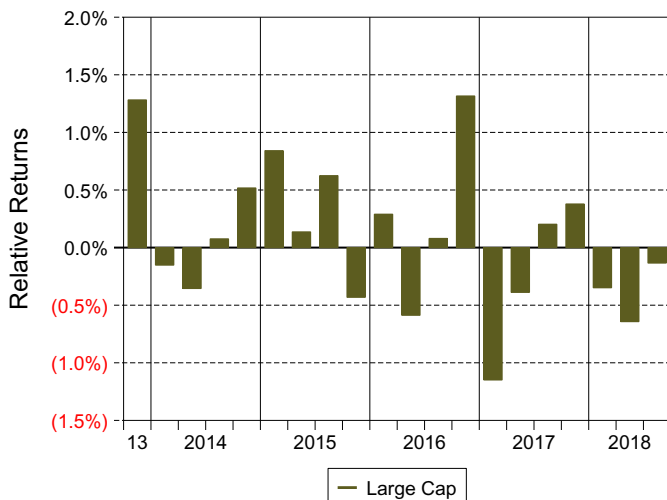
## Quarterly Asset Growth

Beginning Market Value	\$232,962,177
Net New Investment	\$-6,105,148
Investment Gains/(Losses)	\$16,885,711
Ending Market Value	\$243,742,740

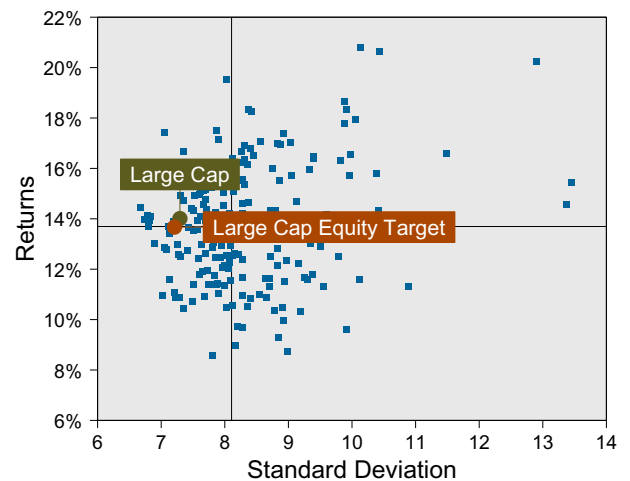
## Performance vs Callan Large Capitalization (Gross)



## Relative Return vs Large Cap Equity Target



## Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



# Parametric Clifton Large Cap Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

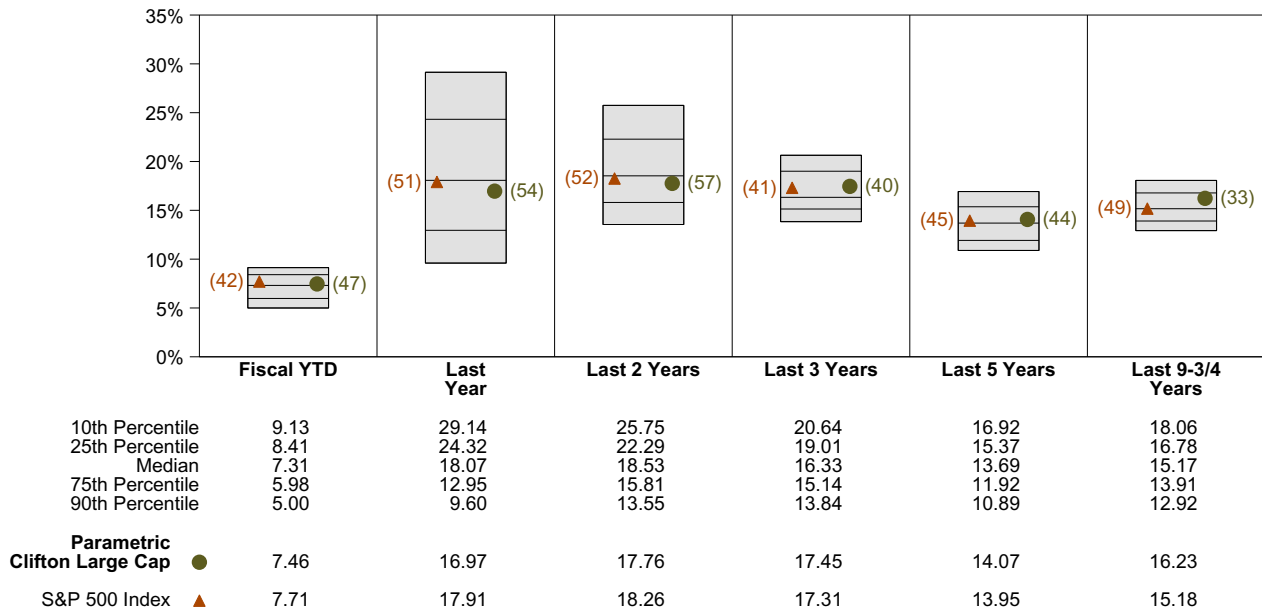
## Quarterly Summary and Highlights

- Parametric Clifton Large Cap's portfolio posted a 7.46% return for the quarter placing it in the 47 percentile of the Callan Large Capitalization group for the quarter and in the 54 percentile for the last year.
- Parametric Clifton Large Cap's portfolio underperformed the S&P 500 Index by 0.25% for the quarter and underperformed the S&P 500 Index for the year by 0.95%.

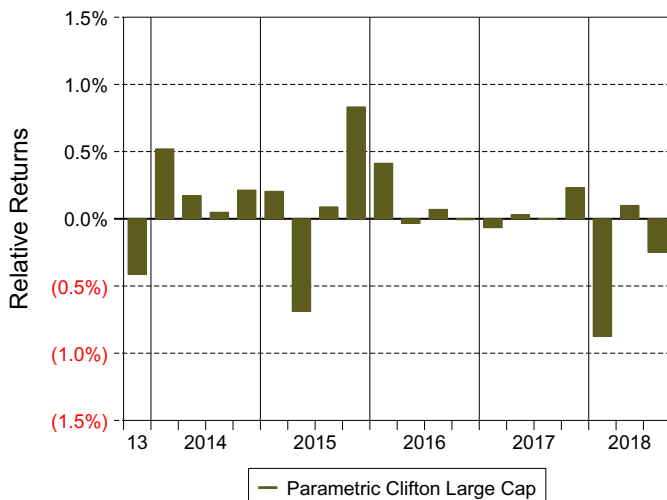
## Quarterly Asset Growth

Beginning Market Value	\$46,814,212
Net New Investment	\$-2,000,000
Investment Gains/(Losses)	\$3,467,453
Ending Market Value	\$48,281,665

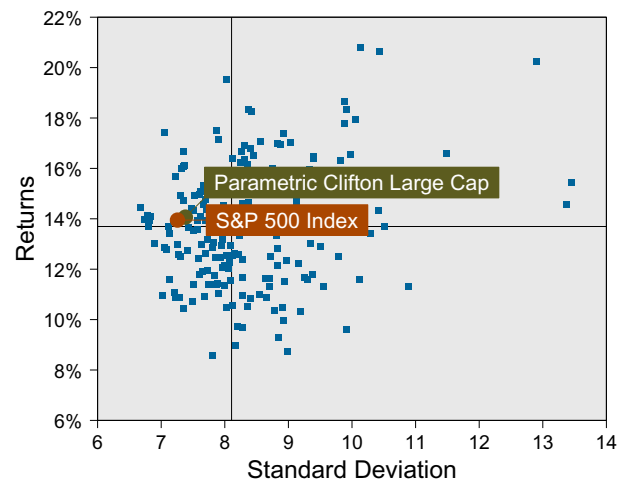
## Performance vs Callan Large Capitalization (Gross)



## Relative Return vs S&P 500 Index



## Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



# L.A. Capital Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Structured portfolio is a large growth portfolio benchmarked to the Russell 1000 Growth Index. It is an active assignment meaning that it targets a 2% alpha and constrains its risk budget (tracking error) to 4% relative to the benchmark. LA Capital believes that investment results are driven by Investor Preferences and thus recognize that when preferences shift a different posture related to that factor is warranted.

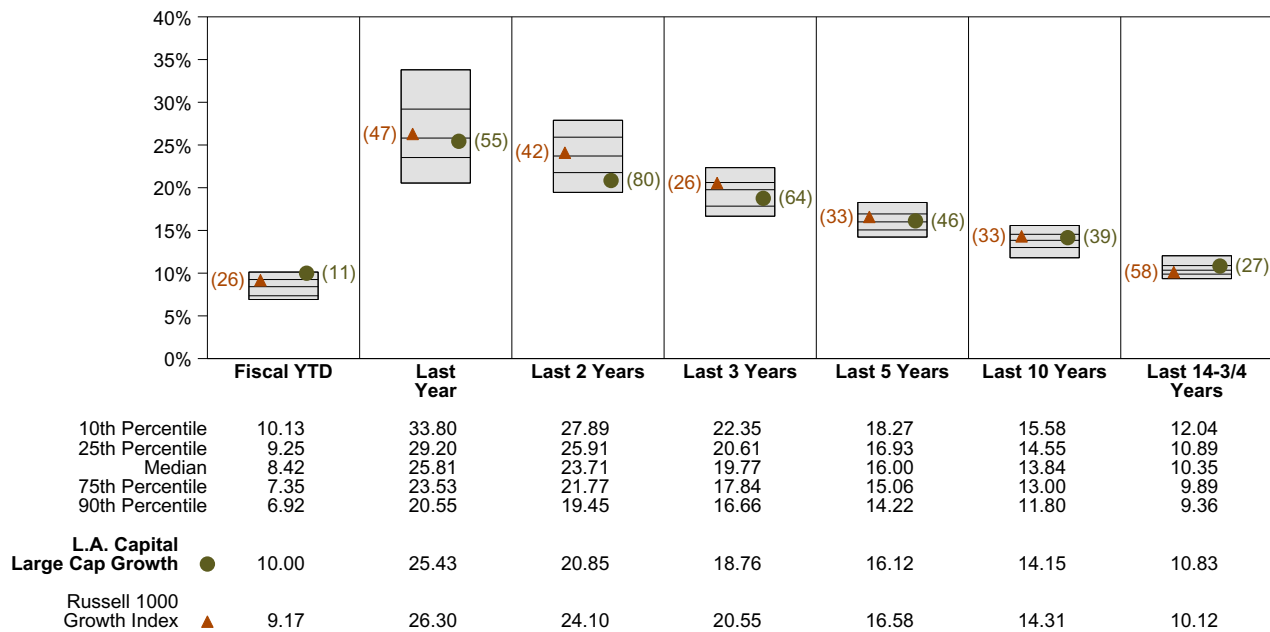
## Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 10.00% return for the quarter placing it in the 11 percentile of the Callan Large Cap Growth group for the quarter and in the 55 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio outperformed the Russell 1000 Growth Index by 0.82% for the quarter and underperformed the Russell 1000 Growth Index for the year by 0.86%.

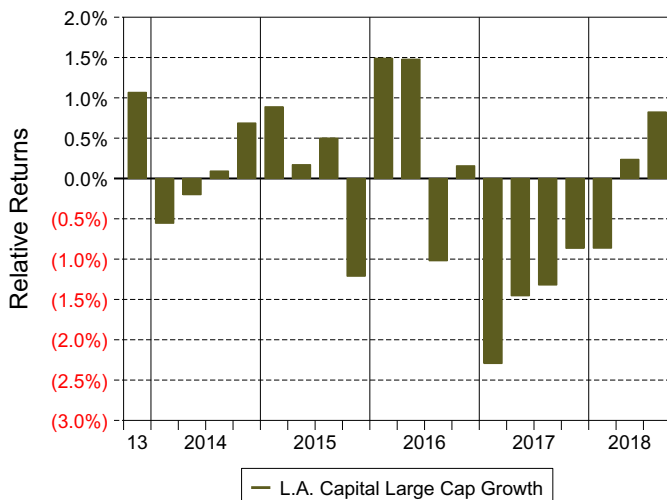
## Quarterly Asset Growth

Beginning Market Value	\$70,994,336
Net New Investment	\$-3,038,590
Investment Gains/(Losses)	\$6,997,543
Ending Market Value	\$74,953,288

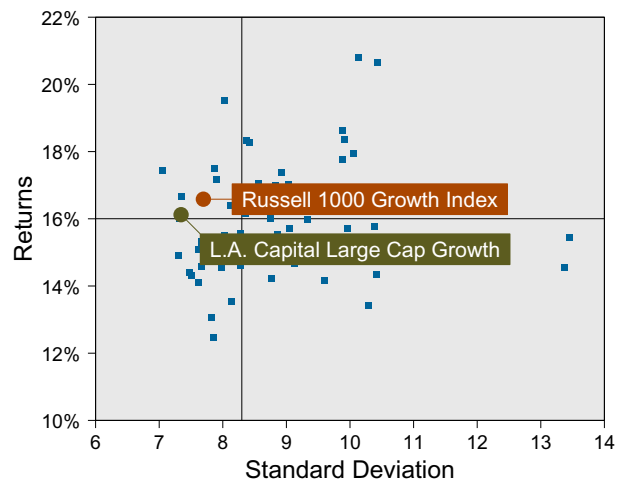
## Performance vs Callan Large Cap Growth (Gross)



## Relative Return vs Russell 1000 Growth Index



## Callan Large Cap Growth (Gross) Annualized Five Year Risk vs Return



# L.A. Capital Enhanced Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Enhanced portfolio is a large core portfolio benchmarked to the Russell 1000 Index. Characterized as an enhanced index assignment, its objective is to track the benchmark with lower variability. The pension portfolio began in August of 2000 and the insurance portfolio was initiated in April of 2004. Since October of 2006 a small portion of each of the two core accounts was allocated into the Large Cap Alpha Fund with intent to add incremental alpha to the assignment given that the information ratio was expected to be higher.

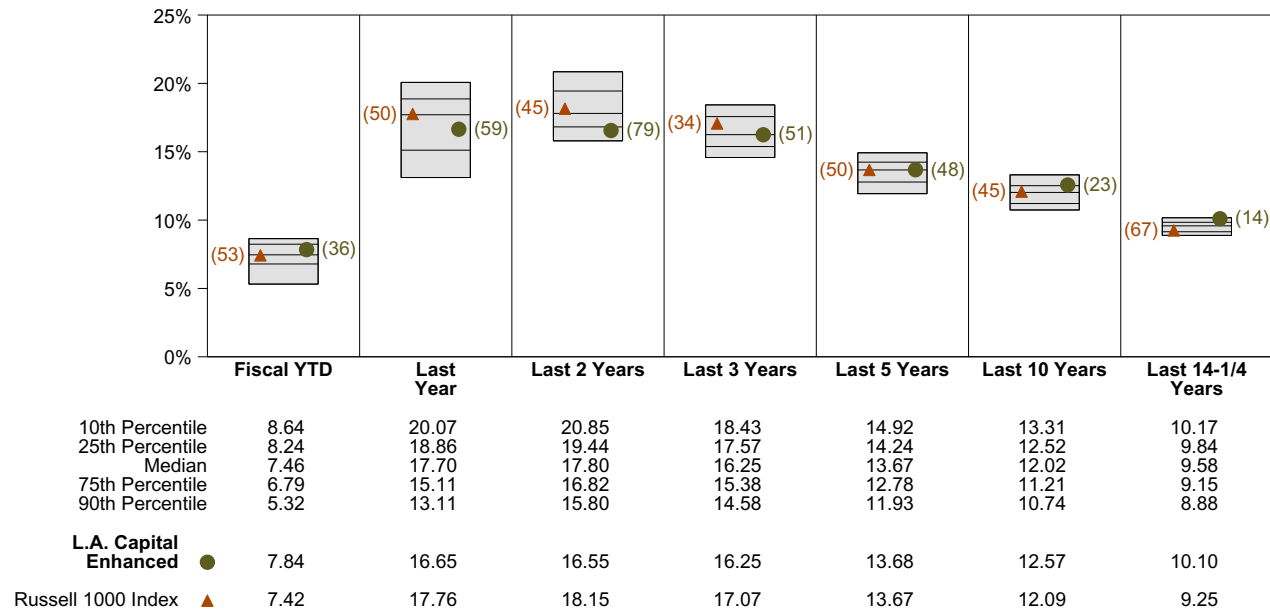
## Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a 7.84% return for the quarter placing it in the 36 percentile of the Callan Large Cap Core group for the quarter and in the 59 percentile for the last year.
- L.A. Capital Enhanced's portfolio outperformed the Russell 1000 Index by 0.42% for the quarter and underperformed the Russell 1000 Index for the year by 1.12%.

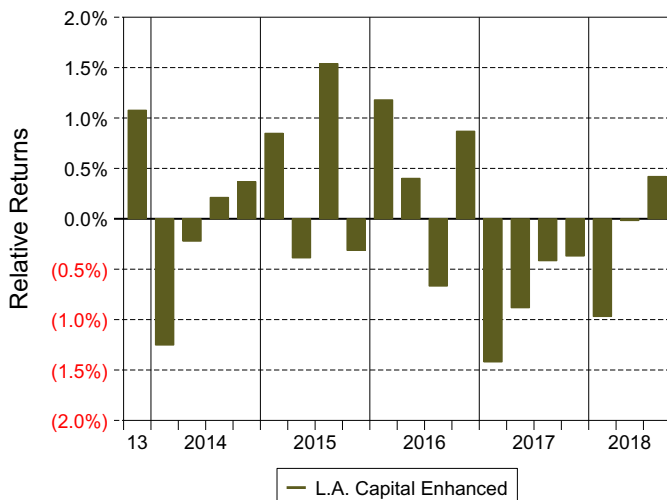
## Quarterly Asset Growth

Beginning Market Value	\$46,865,398
Net New Investment	-\$14,158
Investment Gains/(Losses)	\$3,674,662
Ending Market Value	\$50,525,903

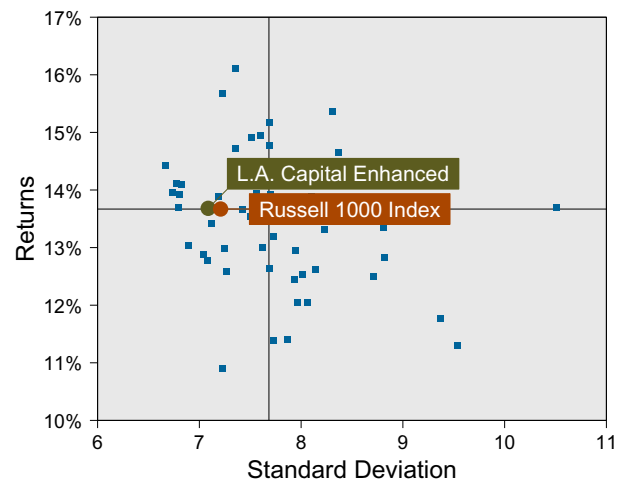
## Performance vs Callan Large Cap Core (Gross)



## Relative Return vs Russell 1000 Index



## Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



# LSV Asset Management

## Period Ended September 30, 2018

### Investment Philosophy

The objective of LSV Asset Management's Large Cap Value Equity (U.S.) strategy is to outperform the Russell 1000 Value by at least 200 basis points (gross of fees) per annum over a 3-5 year period with a tracking error of approximately 4%. Their stock selection process is a quantitative approach that ranks a broad universe of stocks on a combination of value and momentum factors and seeks to invest approximately 100 stocks in the most attractive securities possible within strict risk parameters to control the portfolio's tracking error relative to the benchmark. The resulting portfolio is broadly diversified across industry groups and fully invested.

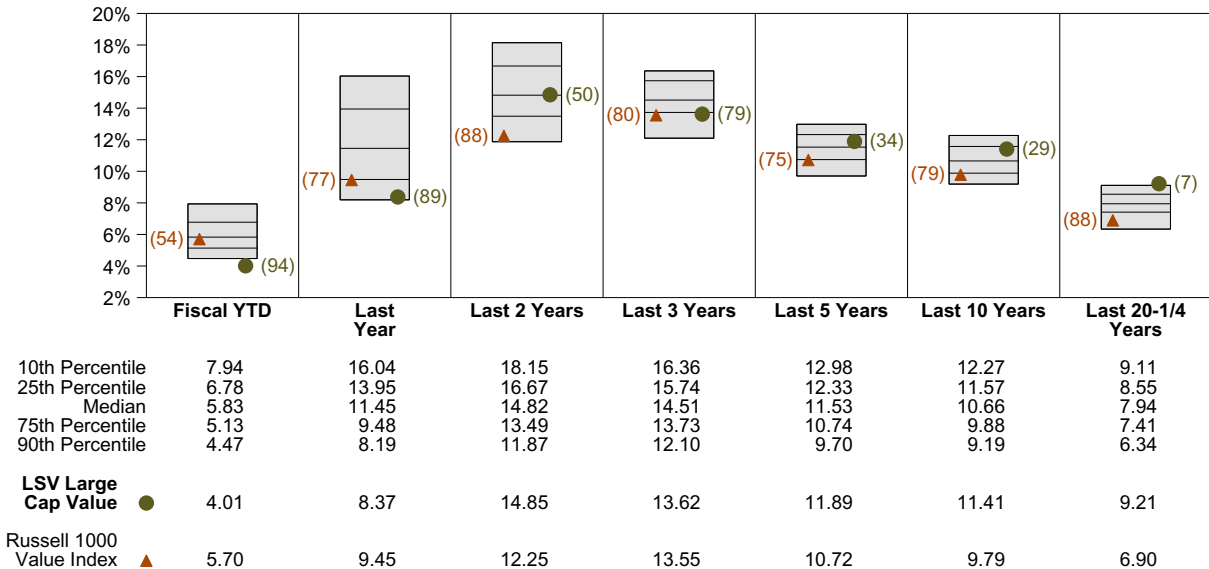
### Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a 4.01% return for the quarter placing it in the 94 percentile of the Callan Large Cap Value group for the quarter and in the 89 percentile for the last year.
- LSV Large Cap Value's portfolio underperformed the Russell 1000 Value Index by 1.69% for the quarter and underperformed the Russell 1000 Value Index for the year by 1.08%.

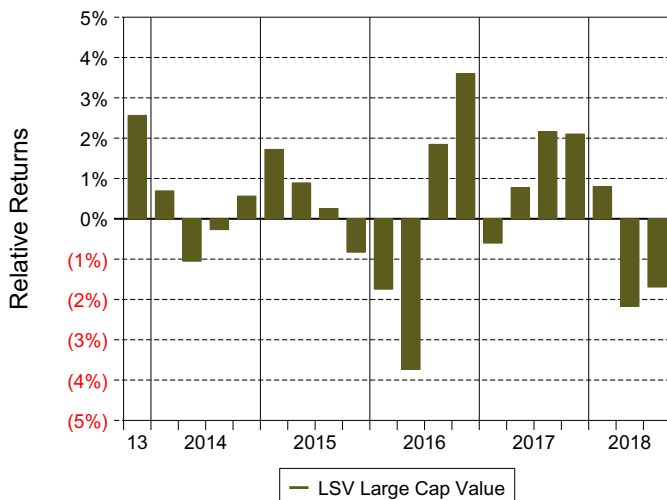
### Quarterly Asset Growth

Beginning Market Value	\$68,288,231
Net Investment	\$-1,052,399
Investment Gains/(Losses)	\$2,746,053
Ending Market Value	\$69,981,885

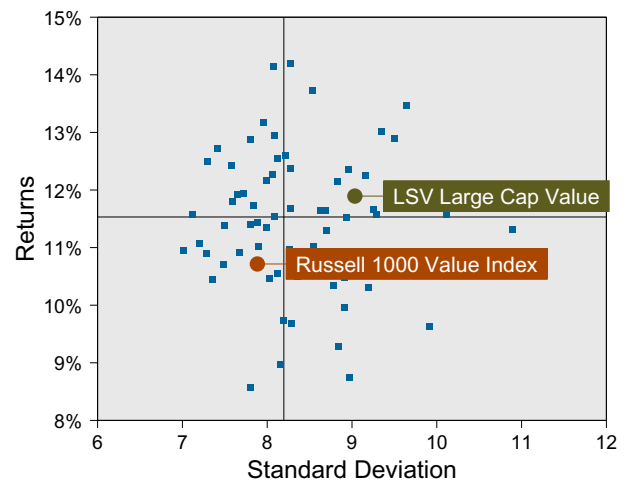
### Performance vs Callan Large Cap Value (Gross)



### Relative Return vs Russell 1000 Value Index



### Callan Large Cap Value (Gross) Annualized Five Year Risk vs Return



# Small Cap Period Ended September 30, 2018

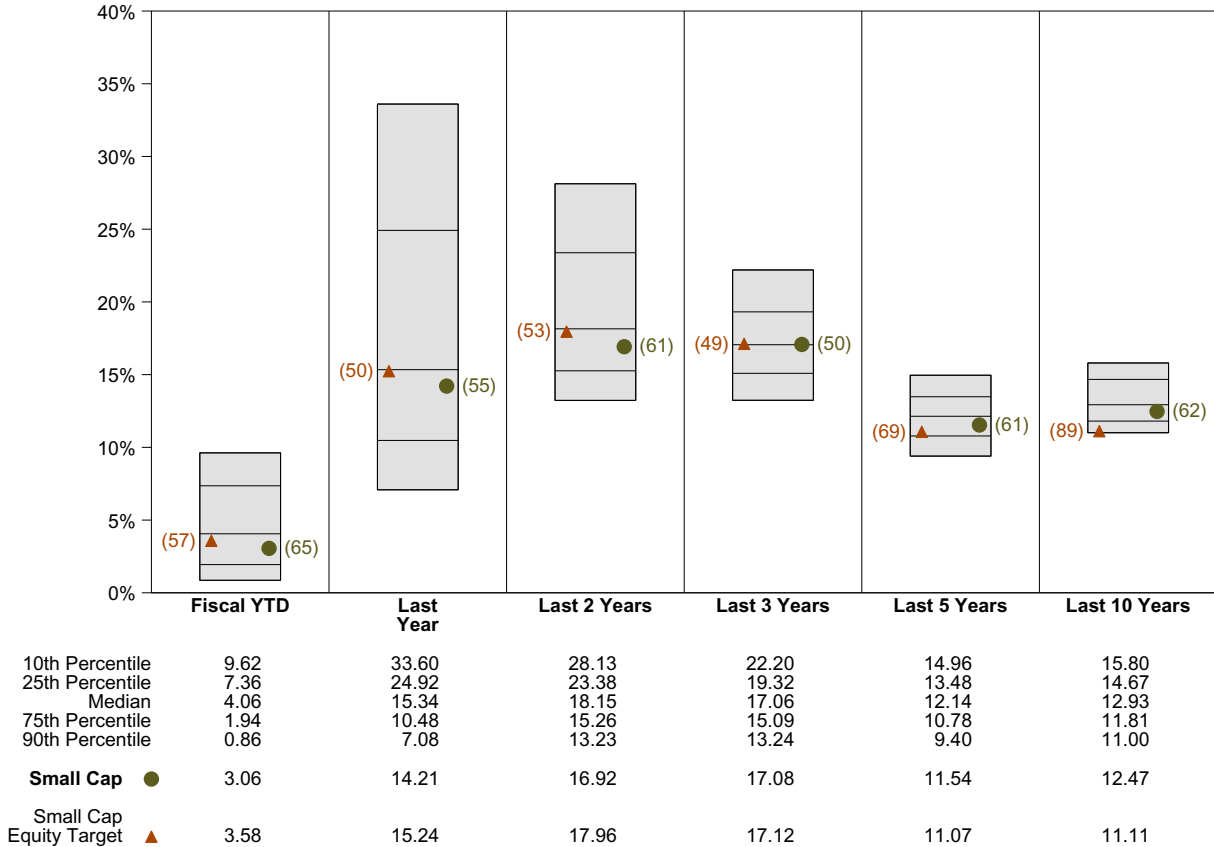
## Quarterly Summary and Highlights

- Small Cap's portfolio posted a 3.06% return for the quarter placing it in the 65 percentile of the Callan Small Capitalization group for the quarter and in the 55 percentile for the last year.
- Small Cap's portfolio underperformed the Small Cap Equity Target by 0.52% for the quarter and underperformed the Small Cap Equity Target for the year by 1.03%.

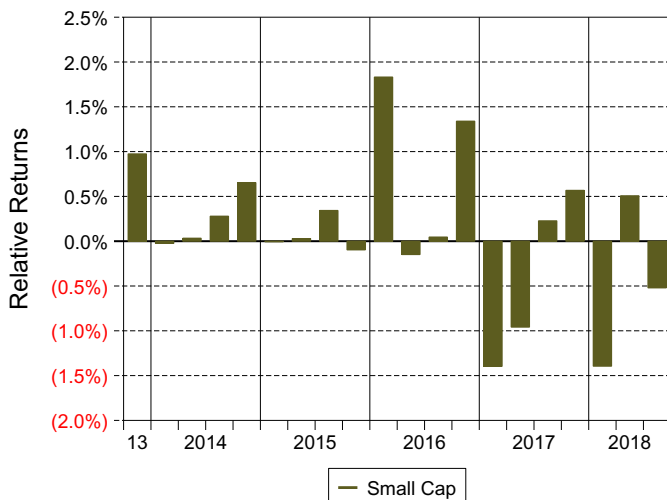
## Quarterly Asset Growth

Beginning Market Value	\$67,960,565
Net New Investment	-\$1,025,949
Investment Gains/(Losses)	\$2,090,356
Ending Market Value	\$69,024,971

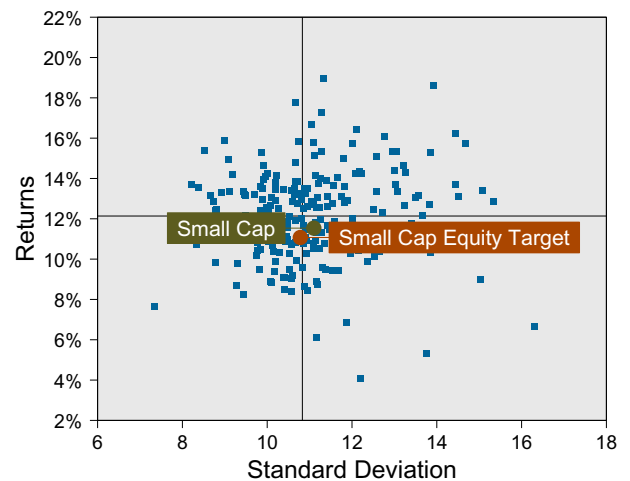
## Performance vs Callan Small Capitalization (Gross)



## Relative Return vs Small Cap Equity Target



## Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



# Parametric Clifton SmallCap Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

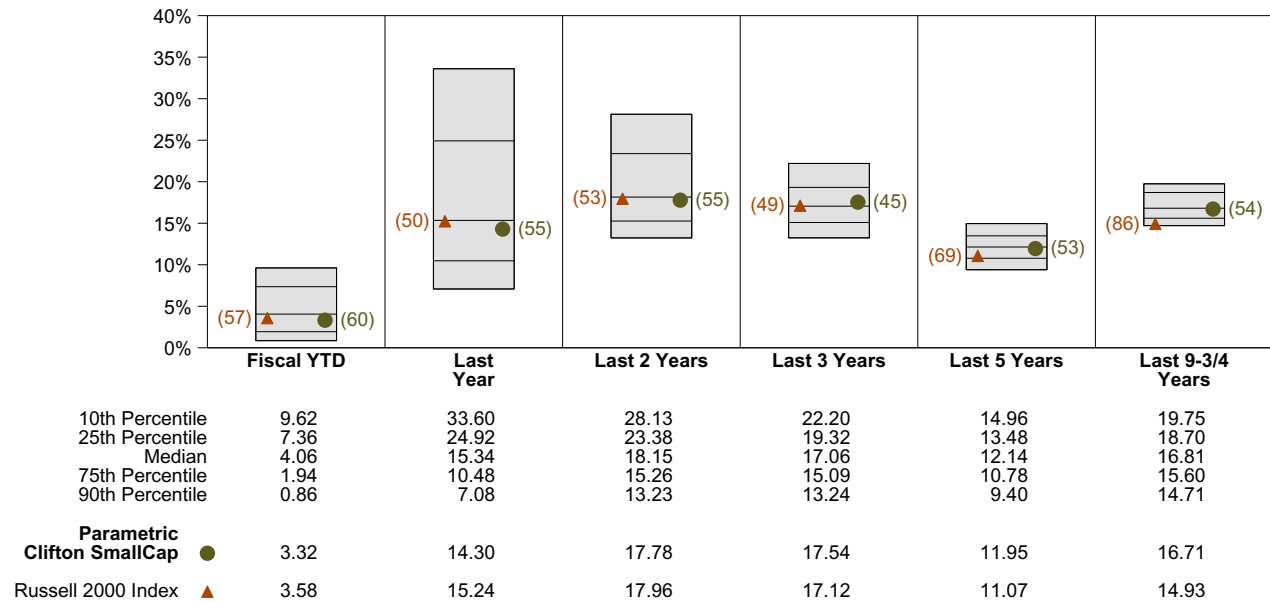
## Quarterly Summary and Highlights

- Parametric Clifton SmallCap's portfolio posted a 3.32% return for the quarter placing it in the 60 percentile of the Callan Small Capitalization group for the quarter and in the 55 percentile for the last year.
- Parametric Clifton SmallCap's portfolio underperformed the Russell 2000 Index by 0.26% for the quarter and underperformed the Russell 2000 Index for the year by 0.94%.

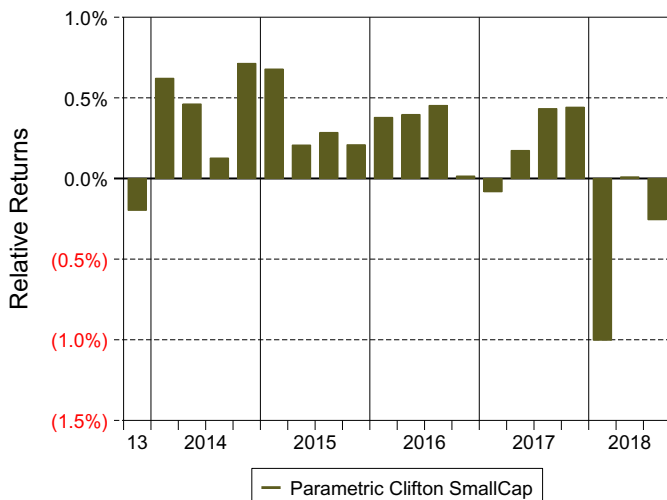
## Quarterly Asset Growth

Beginning Market Value	\$33,784,170
Net New Investment	\$0
Investment Gains/(Losses)	\$1,121,921
Ending Market Value	\$34,906,091

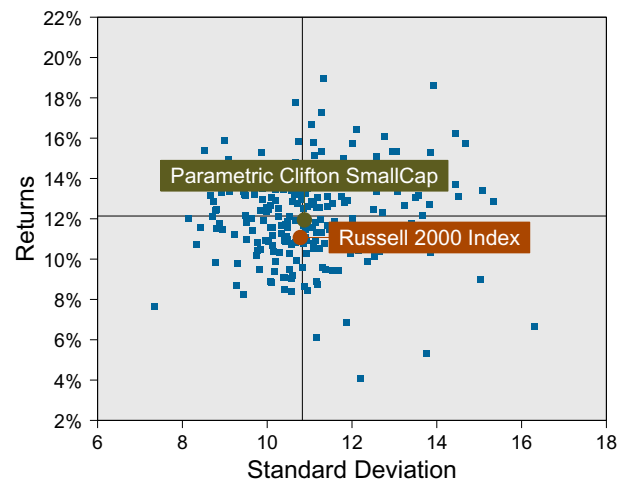
## Performance vs Callan Small Capitalization (Gross)



## Relative Return vs Russell 2000 Index



## Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return





# PIMCO RAE

## Period Ended September 30, 2018

### Investment Philosophy

Small company value equity portfolio utilizing the index strategy and philosophy described as the Enhanced RAFI US Small strategy which relies on portfolio weights derived from firm fundamentals (free cash flow, book equity value, total sales and gross dividend), instead of market capitalization. Additionally, the enhanced portfolio strategy uses a quality of earnings screening and a financial distress screening to augment portfolio returns and reduce portfolio volatility.

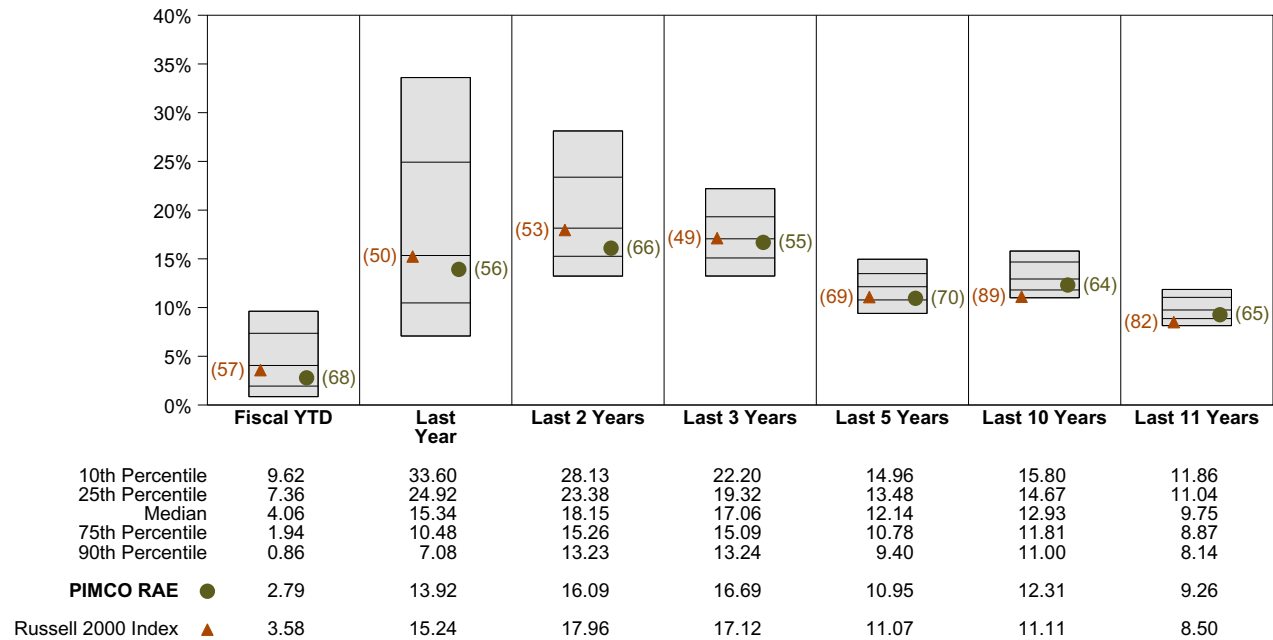
### Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a 2.79% return for the quarter placing it in the 68 percentile of the Callan Small Capitalization group for the quarter and in the 56 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 0.79% for the quarter and underperformed the Russell 2000 Index for the year by 1.32%.

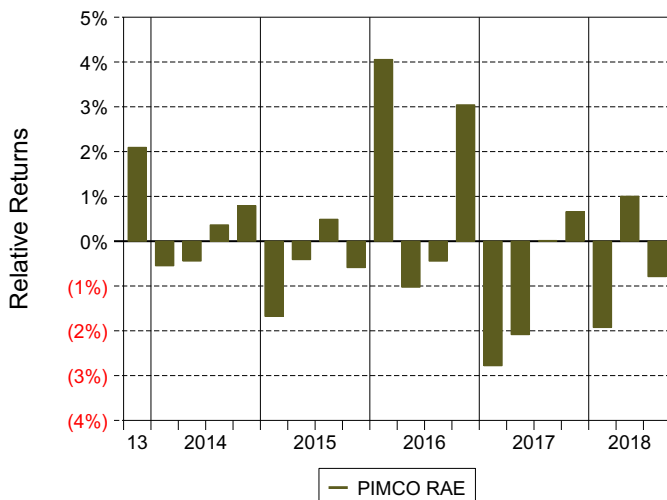
### Quarterly Asset Growth

Beginning Market Value	\$34,176,395
Net New Investment	\$-1,025,949
Investment Gains/(Losses)	\$968,435
Ending Market Value	\$34,118,881

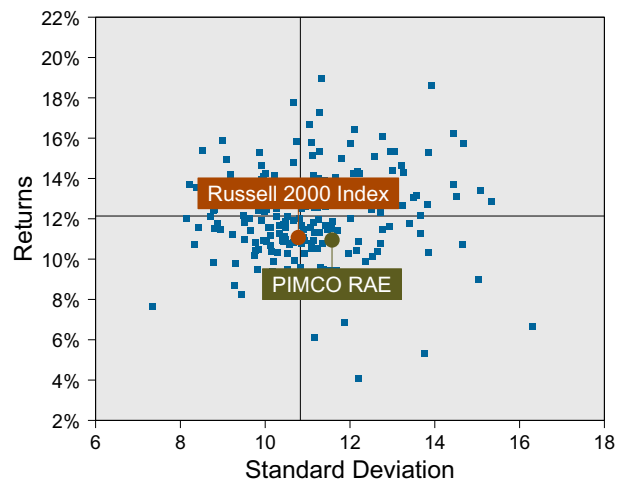
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



### Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



# International Equity Period Ended September 30, 2018

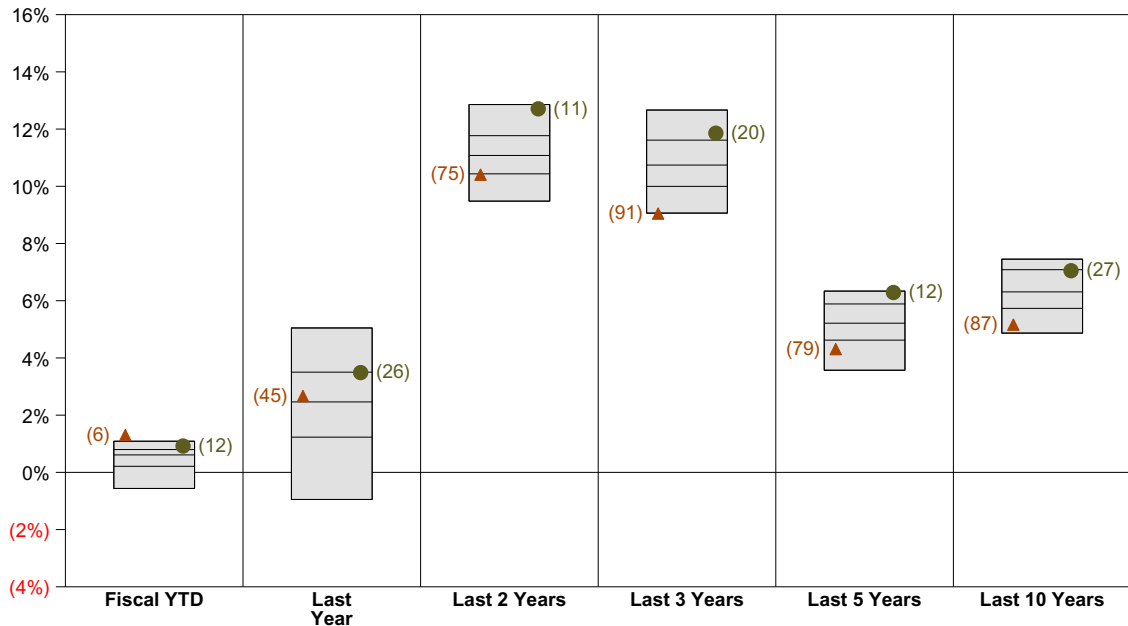
## Quarterly Summary and Highlights

- International Equity's portfolio posted a 0.92% return for the quarter placing it in the 12 percentile of the Public Fund - International Equity group for the quarter and in the 26 percentile for the last year.
- International Equity's portfolio underperformed the International Equity Target by 0.39% for the quarter and outperformed the International Equity Target for the year by 0.82%.

## Quarterly Asset Growth

Beginning Market Value	\$161,726,346
Net New Investment	\$-133,017
Investment Gains/(Losses)	\$1,488,166
Ending Market Value	\$163,081,495

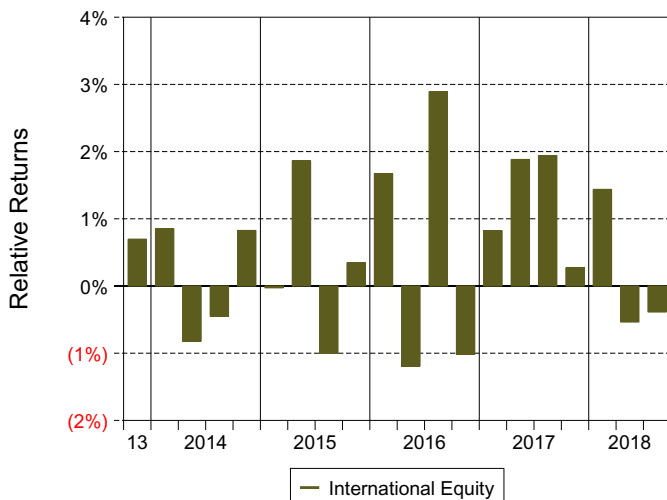
## Performance vs Public Fund - International Equity (Gross)



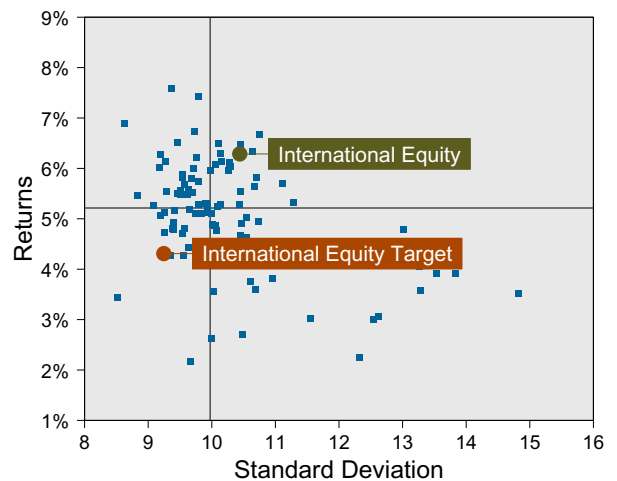
10th Percentile	1.09	5.05	12.86	12.67	6.34	7.45
25th Percentile	0.80	3.50	11.77	11.61	5.89	7.09
Median	0.61	2.46	11.08	10.74	5.21	6.31
75th Percentile	0.21	1.23	10.43	10.00	4.62	5.73
90th Percentile	(0.56)	(0.95)	9.48	9.06	3.57	4.87

<b>International Equity</b> ●	0.92	3.49	12.71	11.86	6.29	7.05
International Equity Target ▲	1.31	2.67	10.41	9.05	4.31	5.17

## Relative Return vs International Equity Target



## Public Fund - International Equity (Gross) Annualized Five Year Risk vs Return



# DFA Intl Small Cap Value Period Ended September 30, 2018

## Investment Philosophy

The International Small Cap Value Portfolio invests in the stocks of small, non-US developed markets companies that Dimensional believes to be value stocks at the time of purchase. Specifically, it looks at companies that fall within the smallest 8-10% of each country's market capitalization, and who's shares have a high book value in relation to their market value (BtM). It does not invest in emerging markets.

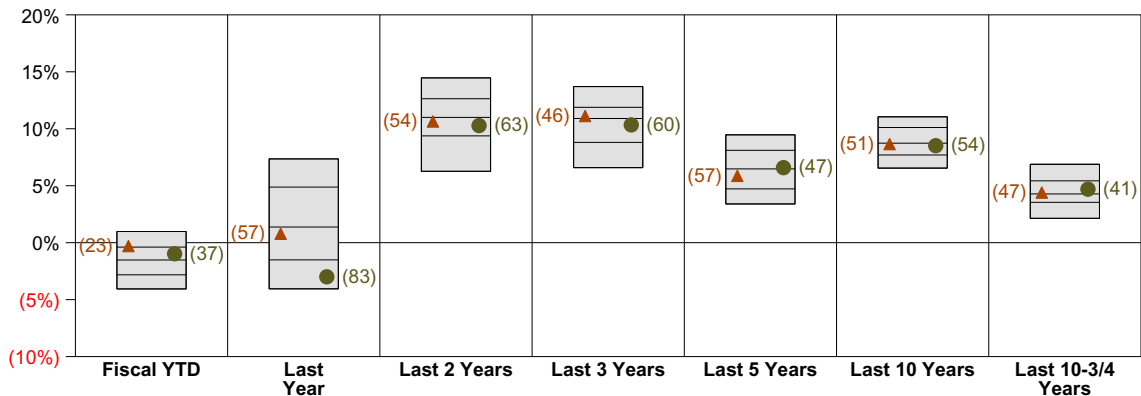
## Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a (0.97)% return for the quarter placing it in the 37 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 83 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.68% for the quarter and underperformed the World ex US SC Value for the year by 3.78%.

## Quarterly Asset Growth

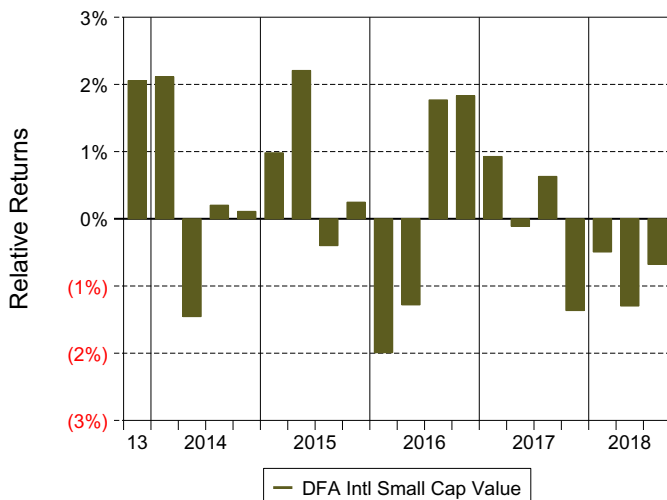
Beginning Market Value	\$15,474,969
Net New Investment	\$0
Investment Gains/(Losses)	\$-150,517
Ending Market Value	\$15,324,452

## Performance vs Callan International Small Cap Mut Funds (Net)

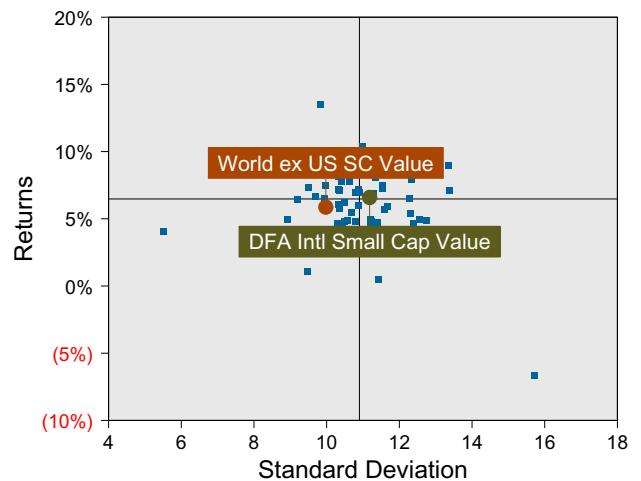


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-3/4 Years
10th Percentile	0.98	7.36	14.47	13.70	9.47	11.05	6.88
25th Percentile	(0.39)	4.88	12.64	11.88	8.11	10.11	5.43
Median	(1.52)	1.37	11.00	10.90	6.48	8.73	4.28
75th Percentile	(2.82)	(1.51)	9.38	8.80	4.72	7.70	3.54
90th Percentile	(4.06)	(4.05)	6.26	6.58	3.40	6.55	2.14
<b>DFA Intl Small Cap Value</b>	<b>(0.97)</b>	<b>(3.00)</b>	10.28	10.34	6.59	8.51	4.70
World ex US SC Value	(0.30)	0.79	10.64	11.12	5.87	8.66	4.40

## Relative Return vs World ex US SC Value



## Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



# LSV Intl Value

## Period Ended September 30, 2018

### Investment Philosophy

The objective of LSV Asset Management's International Large Cap Value strategy is to outperform the MSCI EAFE Index by at least 250 basis points (gross of fees) per annum over an annualized 3-5 year period with a tracking error of approximately 5-6%. Their stock selection process is a quantitative approach that ranks a broad universe of stocks on a combination of value and momentum factors and seeks to invest approximately 150 stocks in the most attractive securities possible within strict risk parameters to control the portfolio's tracking error relative to the benchmark. The resulting portfolio is broadly diversified across industry groups and fully invested. LSV weights countries at a neutral weight relative to the benchmark country weights. 50% of the portfolio is US dollar hedged. **\*MSCI EAFE through 9/30/2000, 50% Hedged EAFE through 3/31/2011 and MSCI EAFE again thereafter.**

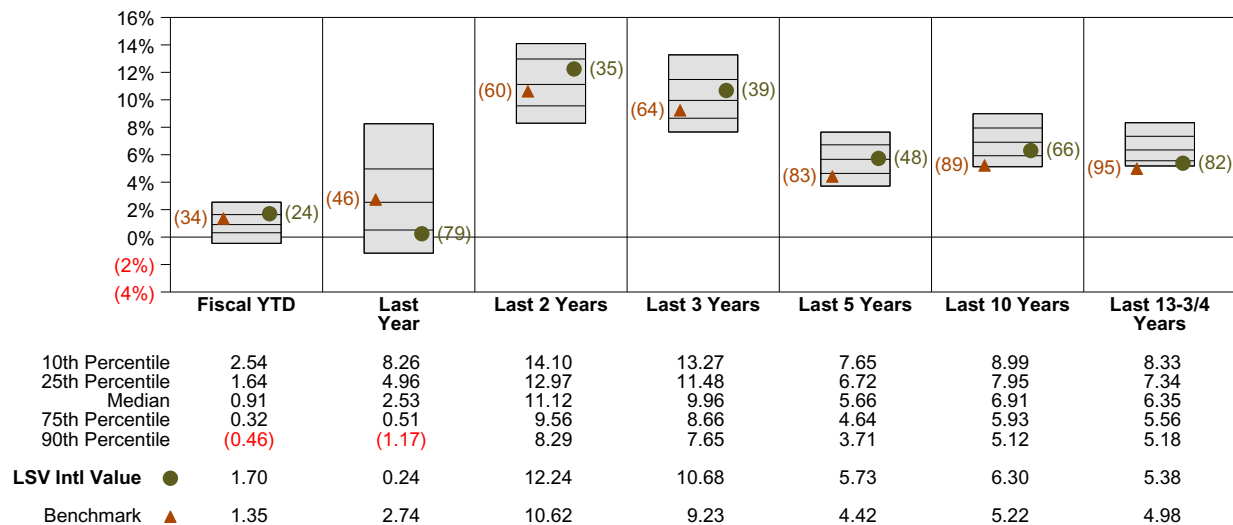
### Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a 1.70% return for the quarter placing it in the 24 percentile of the Callan Non-US Equity group for the quarter and in the 79 percentile for the last year.
- LSV Intl Value's portfolio outperformed the Benchmark by 0.35% for the quarter and underperformed the Benchmark for the year by 2.50%.

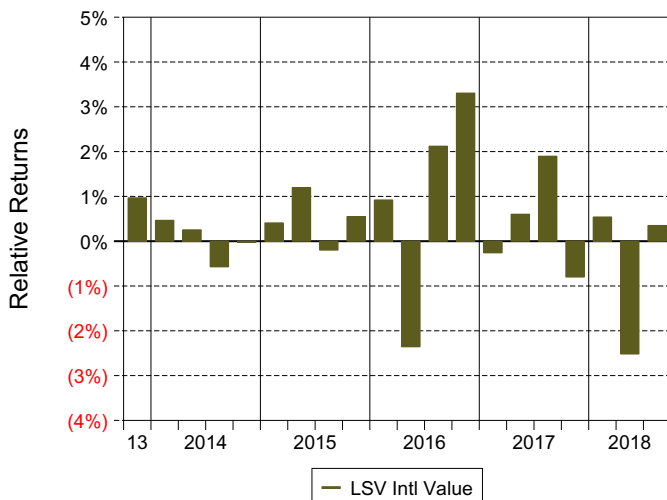
### Quarterly Asset Growth

Beginning Market Value	\$62,854,098
Net New Investment	\$-64,175
Investment Gains/(Losses)	\$1,071,438
Ending Market Value	\$63,861,361

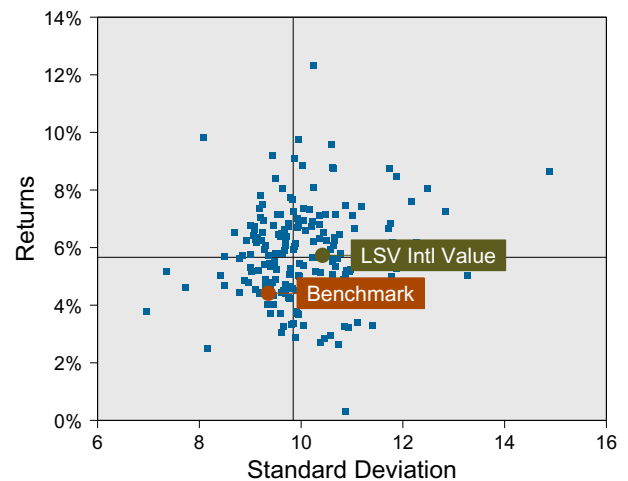
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs Benchmark



### Callan Non-US Equity (Gross) Annualized Five Year Risk vs Return



# Vanguard Intl Explorer Fund Period Ended September 30, 2018

## Investment Philosophy

Vanguard International Explorer Fund invests primarily in the equity securities of small-capitalization companies located outside the United States that the advisor believes offer the potential for long-term capital appreciation. The advisor considers, among other things, whether a company is likely to have above-average earnings growth, whether the company's securities are attractively valued, and whether the company has any proprietary advantages.

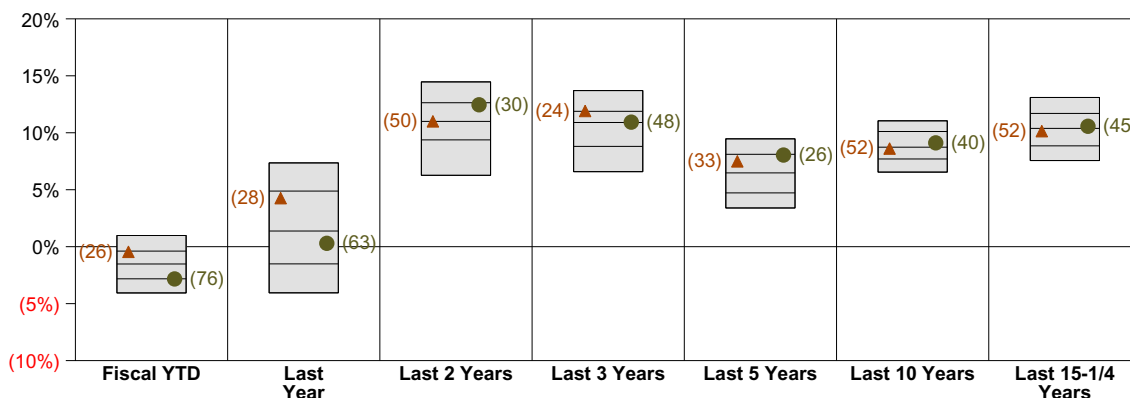
## Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a (2.83)% return for the quarter placing it in the 76 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 63 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio underperformed the S&P BMI EPAC <\$2 B by 2.38% for the quarter and underperformed the S&P BMI EPAC <\$2 B for the year by 3.97%.

## Quarterly Asset Growth

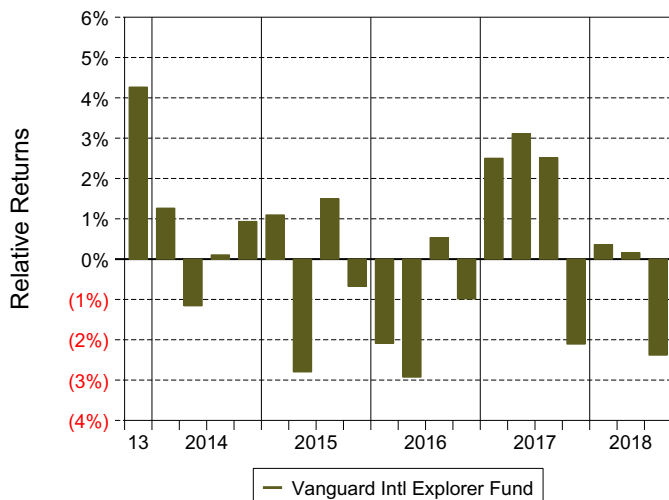
Beginning Market Value	\$16,013,817
Net New Investment	\$0
Investment Gains/(Losses)	\$-453,584
Ending Market Value	\$15,560,233

## Performance vs Callan International Small Cap Mut Funds (Net)

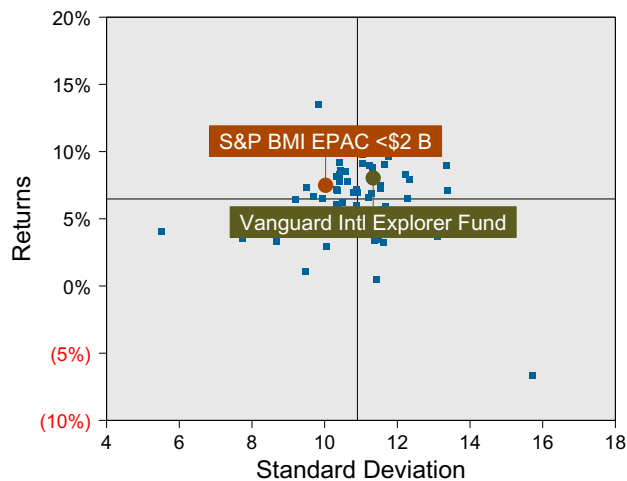


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 15-1/4 Years
10th Percentile	0.98	7.36	14.47	13.70	9.47	11.05	13.10
25th Percentile	(0.39)	4.88	12.64	11.88	8.11	10.11	11.70
Median	(1.52)	1.37	11.00	10.90	6.48	8.73	10.38
75th Percentile	(2.82)	(1.51)	9.38	8.80	4.72	7.70	8.85
90th Percentile	(4.06)	(4.05)	6.26	6.58	3.40	6.55	7.56
<b>Vanguard Intl Explorer Fund</b>	<b>● (2.83)</b>	<b>0.29</b>	<b>12.45</b>	<b>10.93</b>	<b>8.04</b>	<b>9.11</b>	<b>10.57</b>
<b>S&amp;P BMI EPAC &lt;\$2 B</b>	<b>▲ (0.45)</b>	<b>4.26</b>	<b>11.00</b>	<b>11.91</b>	<b>7.49</b>	<b>8.62</b>	<b>10.14</b>

## Relative Return vs S&P BMI EPAC <\$2 B



## Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



# William Blair

## Period Ended September 30, 2018

### Investment Philosophy

One of the basic investment tenets of William Blair & Company has been its focus on quality growth companies. They believe that investing in quality growth companies will generate above average results with generally less risk than the market. This opportunity exists because they believe the market underestimates the durability and rate of growth in companies that have the following characteristics: strong management with a unique vision, competitive advantages that prolong the duration and size of earnings growth, and conservative financing. Internationally, they believe that this philosophy can be combined with strategic flexibility in managing geographic exposure, capitalization, sector emphasis, and relative growth and valuation at the portfolio level in order to provide an appropriate degree of adaptability to cyclical conditions.

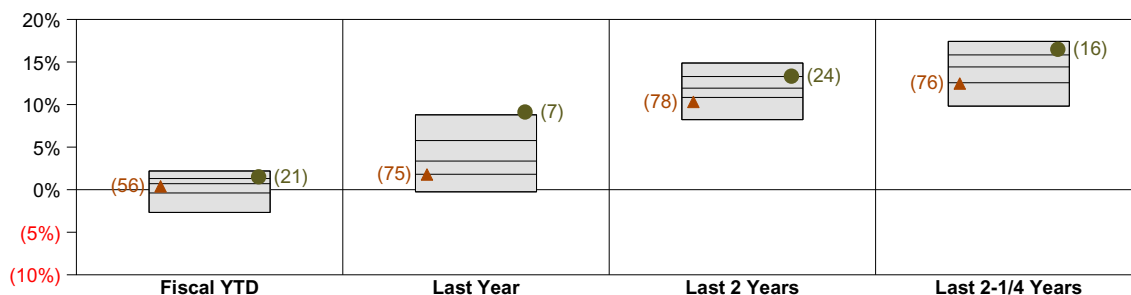
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 1.51% return for the quarter placing it in the 21 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 7 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.12% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 7.34%.

### Quarterly Asset Growth

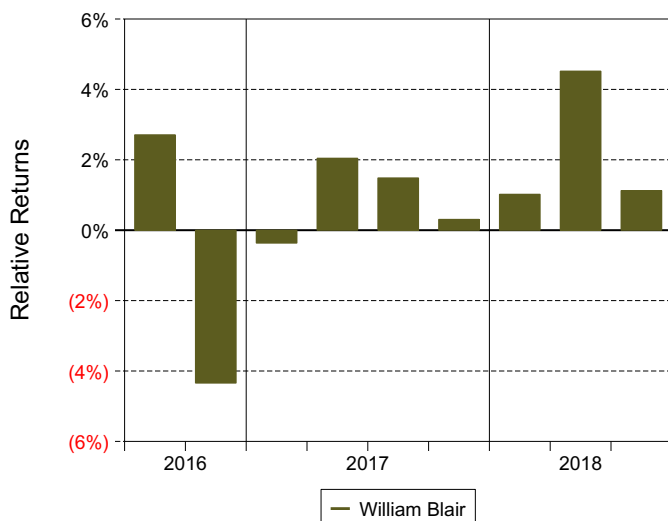
Beginning Market Value	\$67,383,462
Net New Investment	\$-68,842
Investment Gains/(Losses)	\$1,020,829
Ending Market Value	\$68,335,449

### Performance vs Callan Non-US All Country Growth Equity (Gross)

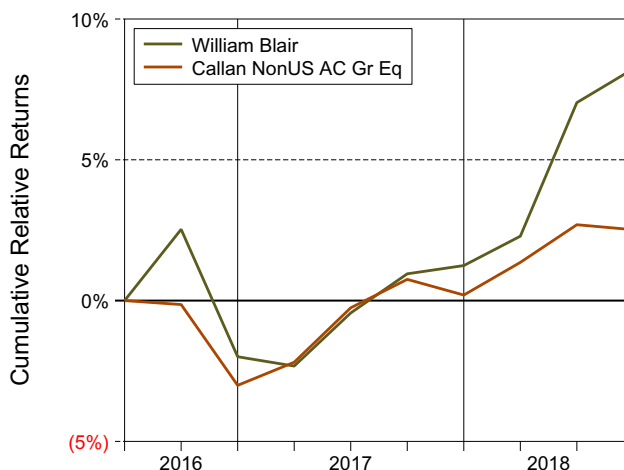


10th Percentile	2.20	8.79	14.88	17.42
25th Percentile	1.31	5.77	13.29	15.83
Median	0.70	3.36	11.93	14.42
75th Percentile	(0.38)	1.81	10.84	12.56
90th Percentile	(2.67)	(0.25)	8.23	9.82
<b>William Blair</b>	1.51	9.13	13.34	16.49
MSCI ACWI ex US IMI	0.39	1.79	10.31	12.47

### Relative Return vs MSCI ACWI ex US IMI



### Cumulative Returns vs MSCI ACWI ex US IMI



# Domestic Fixed Income Period Ended September 30, 2018

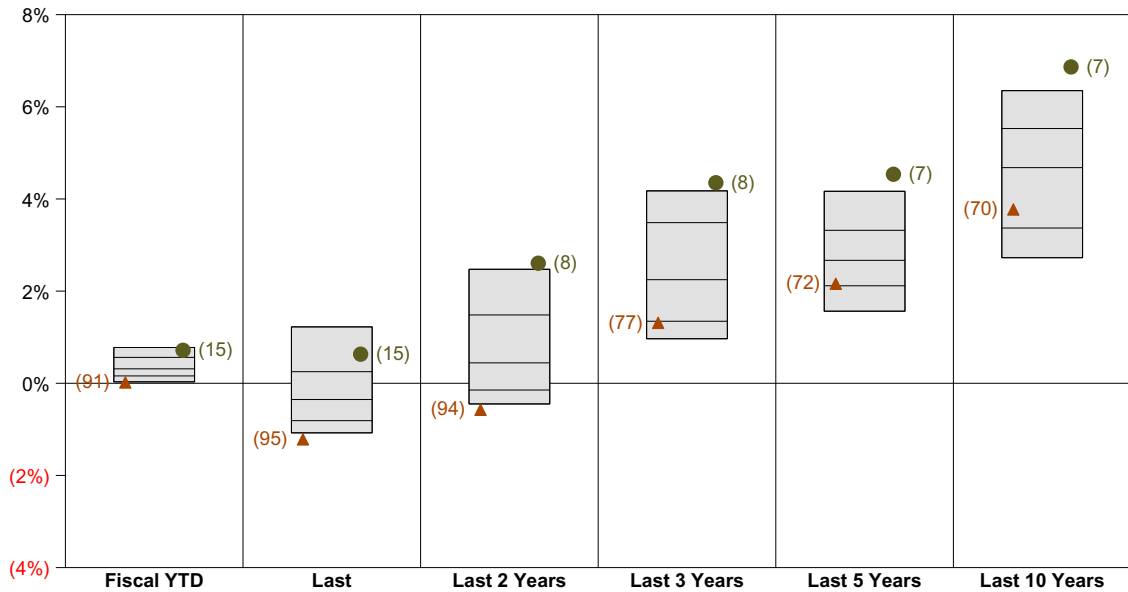
## Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.72% return for the quarter placing it in the 15 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 15 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Inc. Target by 0.70% for the quarter and outperformed the Domestic Fixed Inc. Target for the year by 1.85%.

## Quarterly Asset Growth

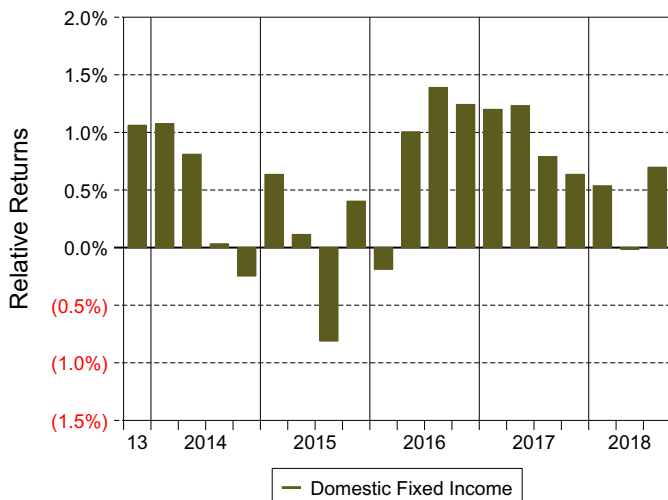
Beginning Market Value	\$1,181,219,354
Net New Investment	\$-18,662,710
Investment Gains/(Losses)	\$8,048,998
Ending Market Value	\$1,170,605,642

## Performance vs Public Fund - Domestic Fixed (Gross)

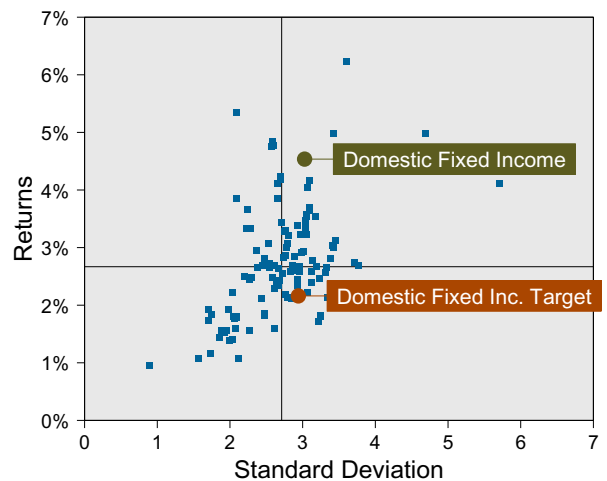


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.78	1.22	2.47	4.18	4.17	6.35
25th Percentile	0.56	0.25	1.48	3.49	3.32	5.53
Median	0.31	(0.35)	0.44	2.25	2.67	4.68
75th Percentile	0.16	(0.81)	(0.15)	1.35	2.12	3.37
90th Percentile	0.03	(1.08)	(0.45)	0.97	1.56	2.73
<b>Domestic Fixed Income</b> ●	0.72	0.63	2.61	4.35	4.54	6.86
Domestic Fixed Inc. Target ▲	0.02	(1.22)	(0.57)	1.31	2.16	3.77

## Relative Return vs Domestic Fixed Inc. Target



## Public Fund - Domestic Fixed (Gross) Annualized Five Year Risk vs Return



# Declaration Total Return Period Ended September 30, 2018

## Investment Philosophy

The Fund's portfolio holdings consist primarily of RMBS issued by private sector companies (Non-Agency RMBS) and government agencies (Agency MBS) and CMBS issued by private sector companies. Agency MBS includes securities issued by the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Government National Mortgage Association (Ginnie Mae). Portfolio holdings may range from short tenure senior classes to stressed issues or subordinated securities with substantial risk of non-payment and correspondingly higher yields. Smaller portfolio allocations may include consumer asset-backed securities (ABS), or other structured credit securities and corporate bonds. As a diversification strategy and a potential hedge to credit risk, the Fund may invest in securities which tend to benefit from slow mortgage prepayments and economic growth, such as interest only (IO) MBS.

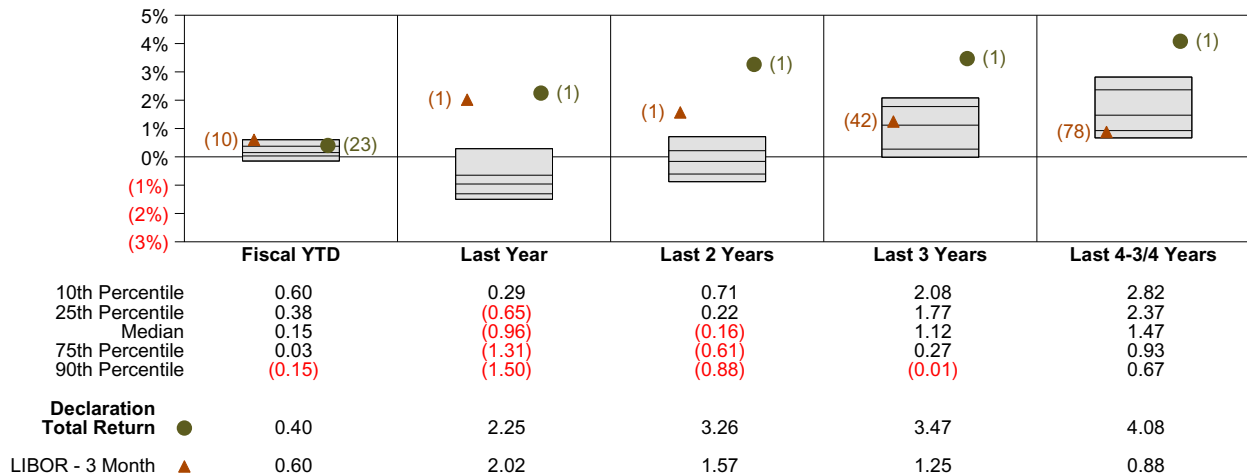
## Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.40% return for the quarter placing it in the 23 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 1 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.20% for the quarter and outperformed the LIBOR - 3 Month for the year by 0.23%.

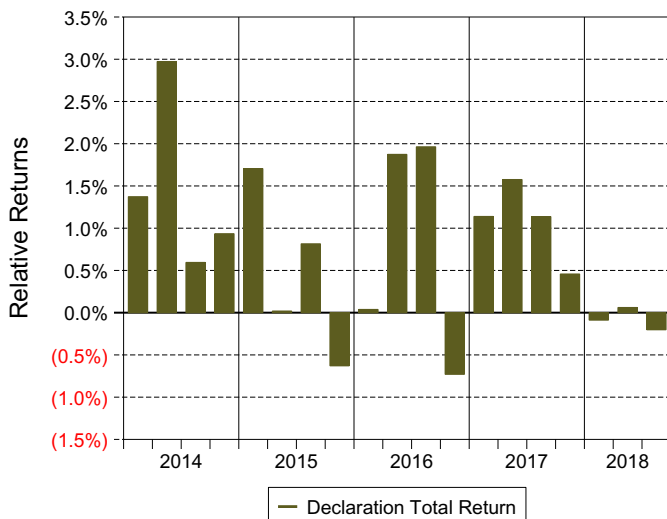
## Quarterly Asset Growth

Beginning Market Value	\$86,548,678
Net New Investment	\$-47,615
Investment Gains/(Losses)	\$346,742
Ending Market Value	\$86,847,805

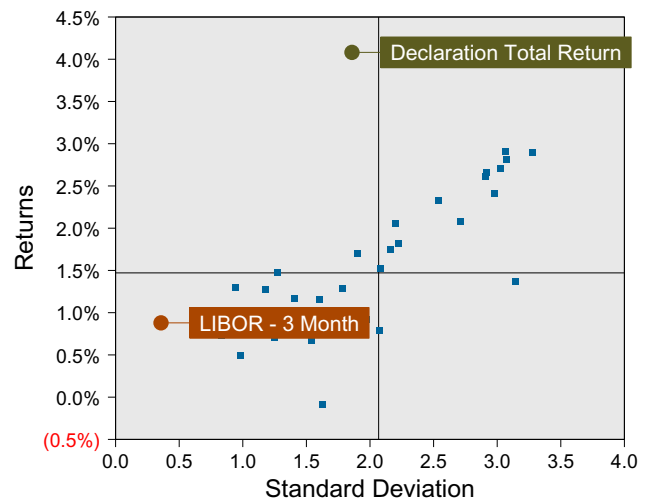
## Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



## Relative Return vs LIBOR - 3 Month



## Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Four and Three-Quarter Year Risk vs Return





# PIMCO DiSCO II

## Period Ended September 30, 2018

### Investment Philosophy

The PIMCO Distressed Senior Credit Opportunities Fund is an opportunistic private-equity style Fund which seeks to provide investors enhanced returns principally through long-biased investments in undervalued senior and super senior structured credit securities that are expected to produce attractive levels of current income and that may also appreciate in value over the long term. The fund will look to capitalize on forced sales by liquidity constrained investors.

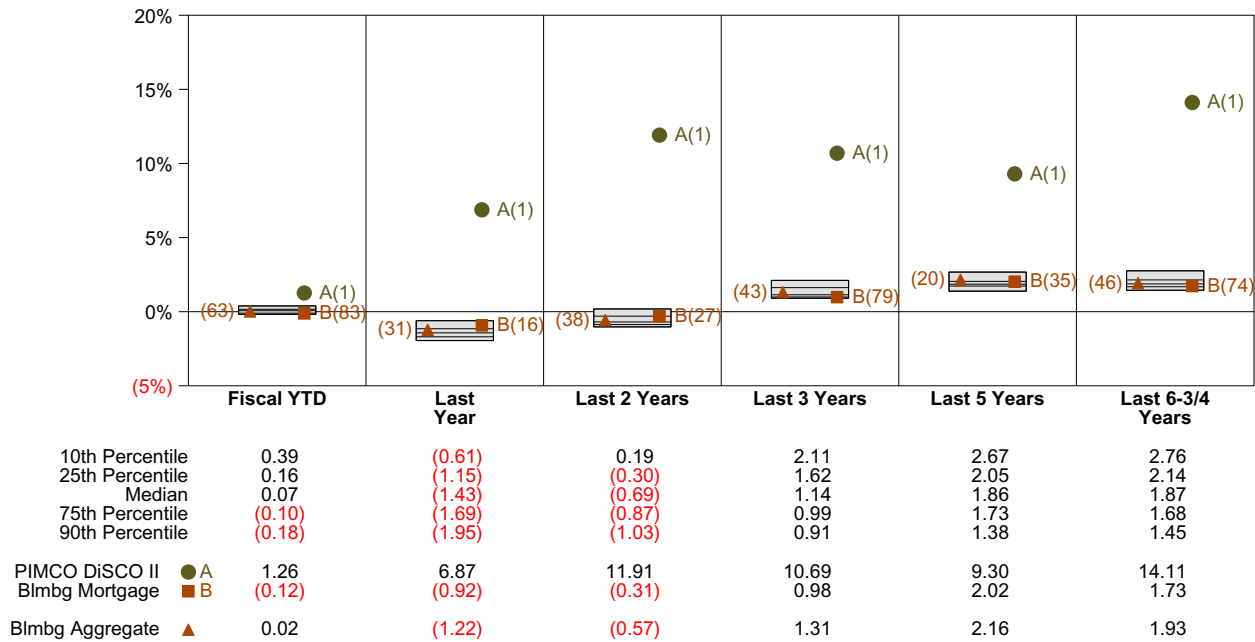
### Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 1.26% return for the quarter placing it in the 1 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 1 percentile for the last year.
- PIMCO DiSCO II's portfolio outperformed the Blmbg Aggregate by 1.24% for the quarter and outperformed the Blmbg Aggregate for the year by 8.09%.

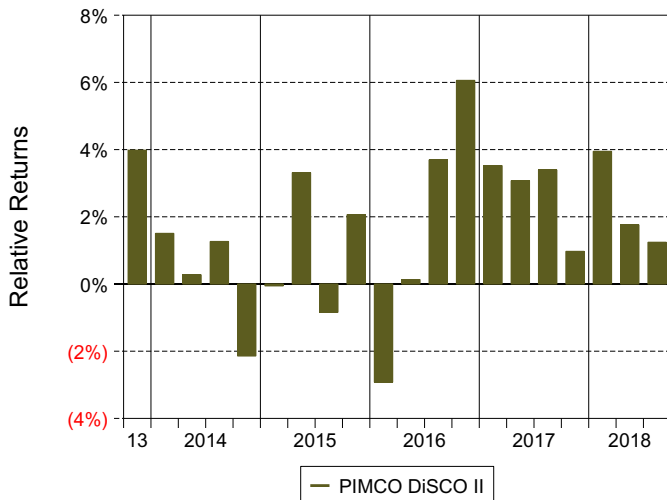
### Quarterly Asset Growth

Beginning Market Value	\$106,204,031
Net New Investment	\$-26,727,332
Investment Gains/(Losses)	\$1,628,251
Ending Market Value	\$81,104,950

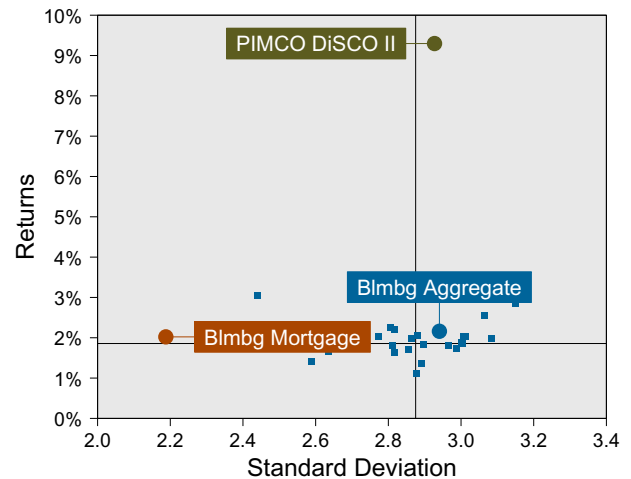
### Performance vs Callan Core Bond Mutual Funds (Net)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Mutual Funds (Net) Annualized Five Year Risk vs Return



# PIMCO Bravo II Fund

## Period Ended September 30, 2018

### Investment Philosophy

The BRAVO II Fund is a private equity style fund targeting an annualized IRR of 15-20% and multiple of 1.8-2x, net of fees and carried interest with an initial 5-year term. The fund will seek to capitalize on non-economic asset sale decisions by global financial institutions. The fund will have the flexibility to acquire attractively discounted, less liquid loans, structured credit and other assets tied to residential or commercial real estate markets in the U.S. and Europe.

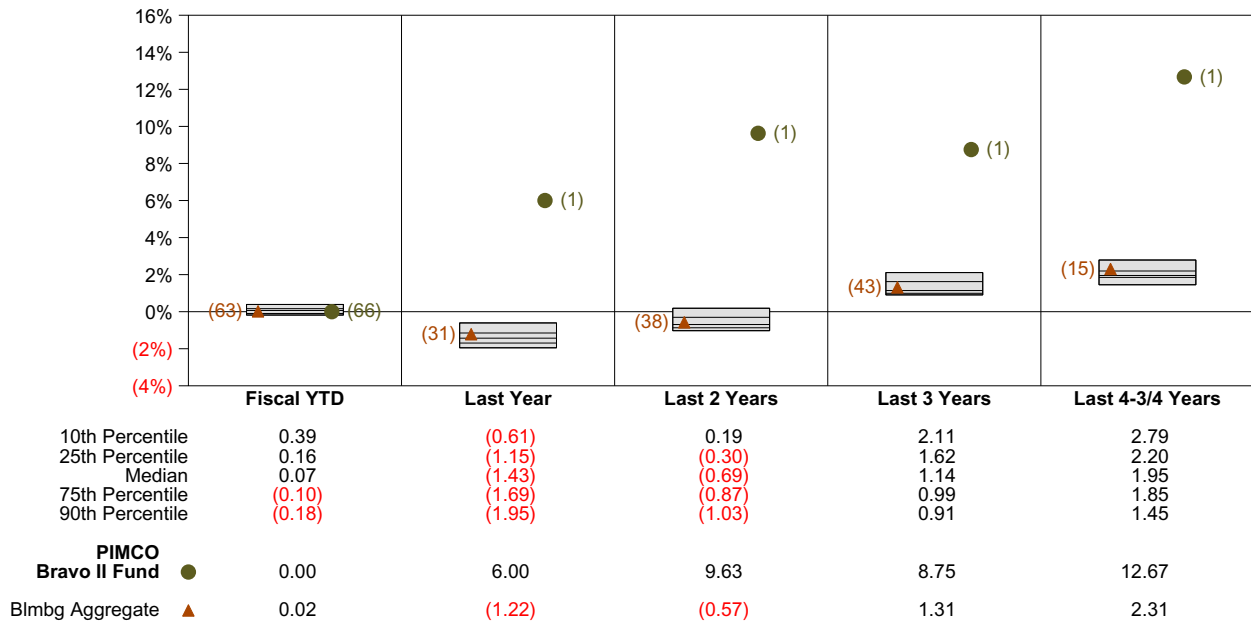
### Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a 0.00% return for the quarter placing it in the 66 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 1 percentile for the last year.
- PIMCO Bravo II Fund's portfolio underperformed the Blmbg Aggregate by 0.02% for the quarter and outperformed the Blmbg Aggregate for the year by 7.22%.

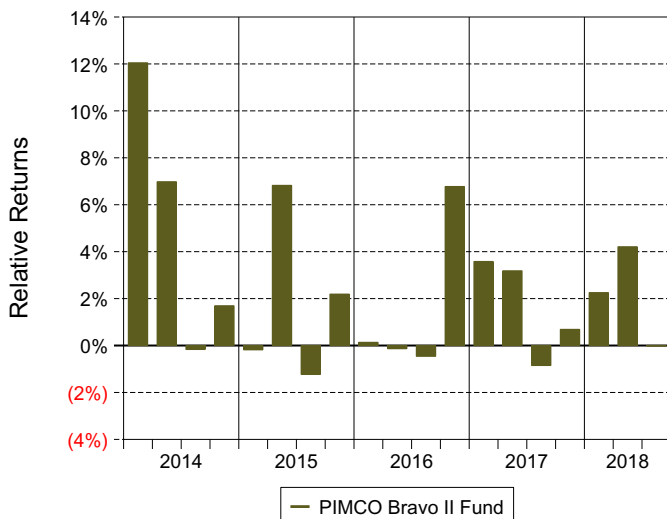
### Quarterly Asset Growth

Beginning Market Value	\$43,326,489
Net New Investment	\$-4,572,767
Investment Gains/(Losses)	\$-1
Ending Market Value	\$38,753,721

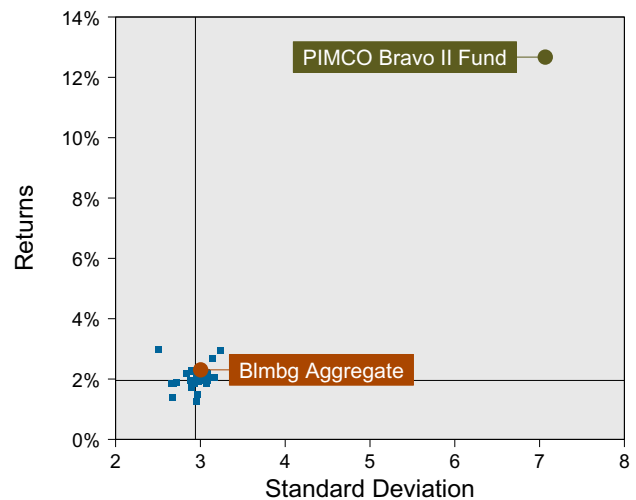
### Performance vs Callan Core Bond Mutual Funds (Net)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Mutual Funds (Net) Annualized Four and Three-Quarter Year Risk vs Return



# Prudential Core Plus Period Ended September 30, 2018

## Investment Philosophy

PGIM Fixed Income's Core Plus Strategy is an actively-managed strategy that seeks +150 bps over the Bloomberg Barclays U.S. Aggregate Bond Index or similar benchmark annualized over a market cycle (three to five years.) The Strategy seeks about half of its excess return from active sector allocation and up to one-third each from subsector/security selection and duration/yield curve/currencies, depending on market opportunities.

## Quarterly Summary and Highlights

- Prudential Core Plus's portfolio posted a 0.32% return for the quarter placing it in the 61 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 63 percentile for the last year.
- Prudential Core Plus's portfolio outperformed the Blmbg Aggregate by 0.30% for the quarter and outperformed the Blmbg Aggregate for the year by 0.61%.

## Quarterly Asset Growth

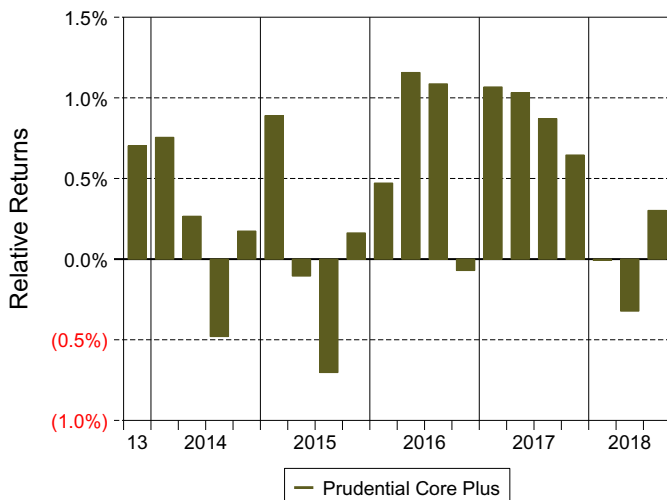
Beginning Market Value	\$181,117,533
Net New Investment	\$12,892,131
Investment Gains/(Losses)	\$553,551
Ending Market Value	\$194,563,215

## Performance vs Callan Core Plus Fixed Income (Gross)

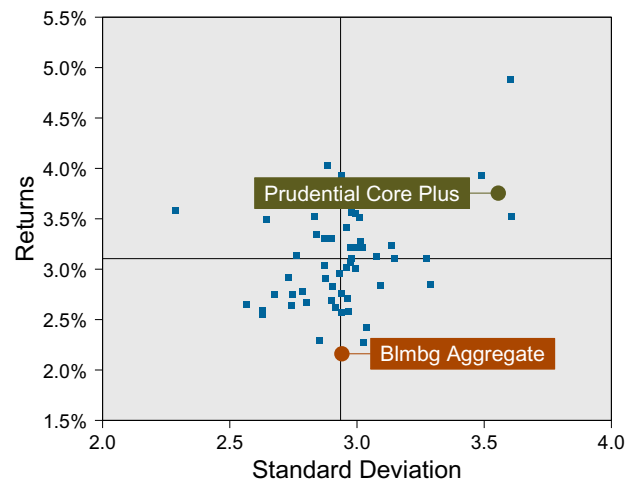


10th Percentile	0.68	0.30	1.48	3.39	3.77	6.45	6.13
25th Percentile	0.53	(0.13)	1.19	3.04	3.50	5.95	5.34
Median	0.39	(0.49)	0.66	2.64	3.10	5.65	4.95
75th Percentile	0.26	(0.85)	0.24	2.11	2.74	5.09	4.61
90th Percentile	0.12	(1.42)	(0.07)	1.81	2.57	4.74	4.37
<b>Prudential Core Plus</b> ●	0.32	(0.61)	1.16	3.46	3.75	6.17	5.72
Blmbg Aggregate ▲	0.02	(1.22)	(0.57)	1.31	2.16	3.77	3.88

## Relative Return vs Blmbg Aggregate



## Callan Core Plus Fixed Income (Gross) Annualized Five Year Risk vs Return



# SSgA US Govt Cr Bd Index Period Ended September 30, 2018

## Investment Philosophy

The Fund seeks an investment return that approximates as closely as practicable, before expenses, the performance of the Barclays Capital U.S. Government/Credit Bond Index over the long term.

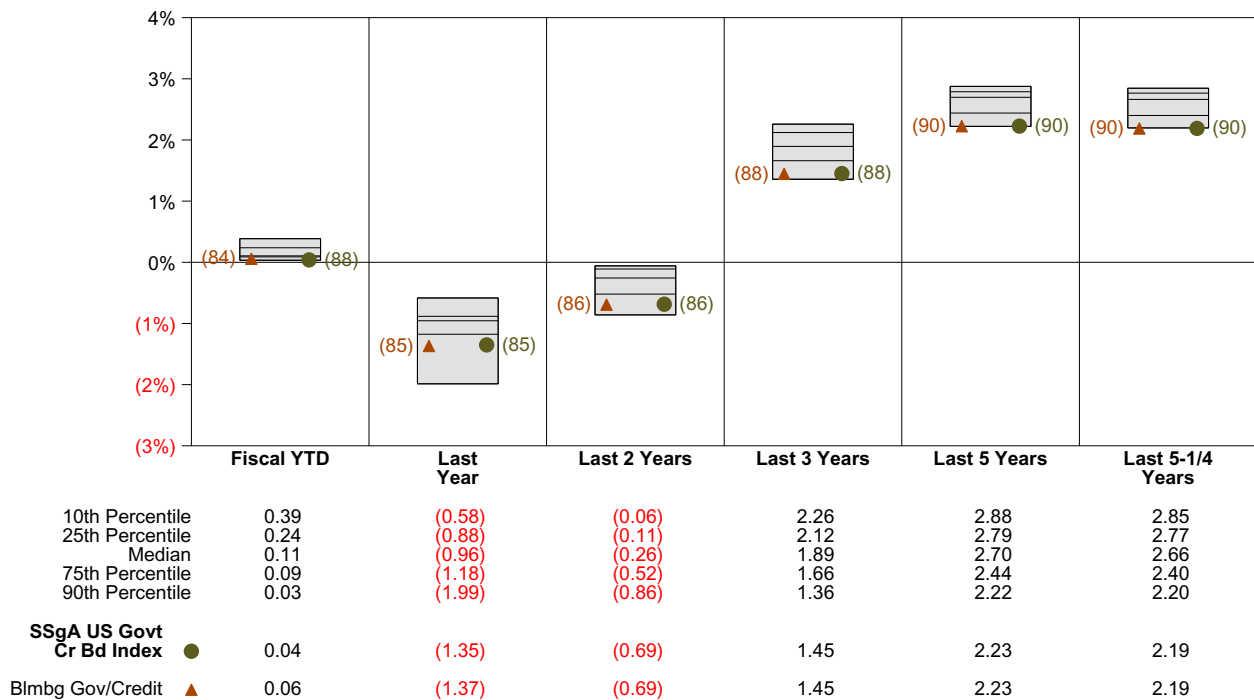
## Quarterly Summary and Highlights

- SSgA US Govt Cr Bd Index's portfolio posted a 0.04% return for the quarter placing it in the 88 percentile of the Callan Government/Credit group for the quarter and in the 85 percentile for the last year.
- SSgA US Govt Cr Bd Index's portfolio underperformed the Blmbg Gov/Credit by 0.02% for the quarter and outperformed the Blmbg Gov/Credit for the year by 0.02%.

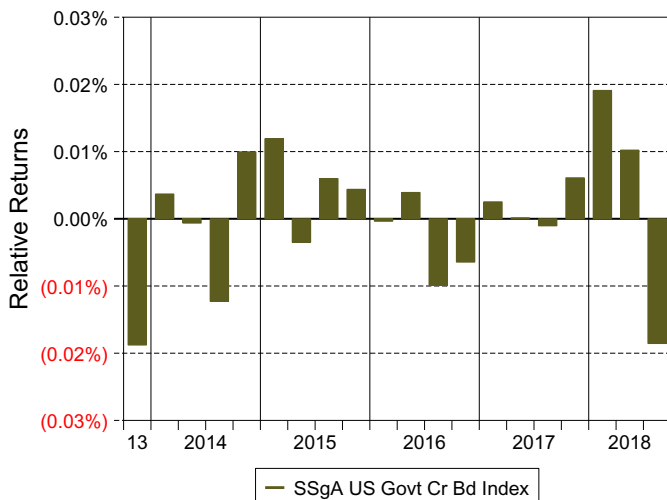
## Quarterly Asset Growth

Beginning Market Value	\$155,308,837
Net New Investment	\$0
Investment Gains/(Losses)	\$61,856
Ending Market Value	\$155,370,693

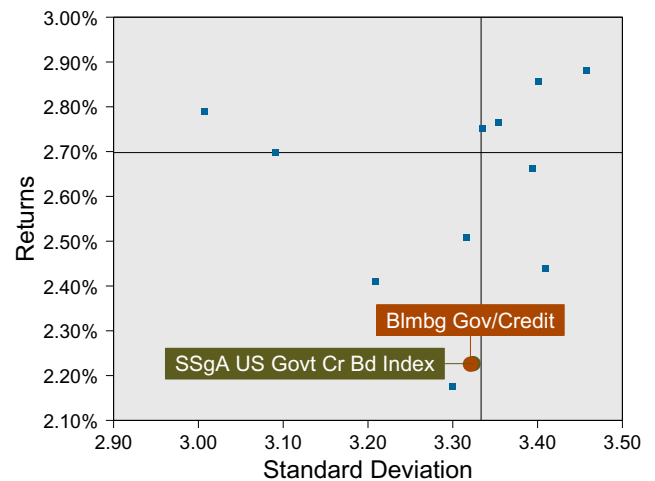
## Performance vs Callan Government/Credit (Gross)



## Relative Return vs Blmbg Gov/Credit



## Callan Government/Credit (Gross) Annualized Five Year Risk vs Return



# Wells Capital Period Ended September 30, 2018

## Investment Philosophy

The Medium Quality Credit fixed income strategy is designed to maximize total return from the high-grade corporate bond market while maintaining a strategic allocation to the BBB portion of the high yield market. The investment process for this fund starts with a "top-down" strategy. Security selection is determined by in-depth credit research, holding that in-depth knowledge of industries, companies, and their management teams can help identify credit trends that can lead to investment opportunities. Furthermore, a disciplined relative value framework is applied to help determine the optimal position to invest within an industry and within an individual issuer's capital structure.

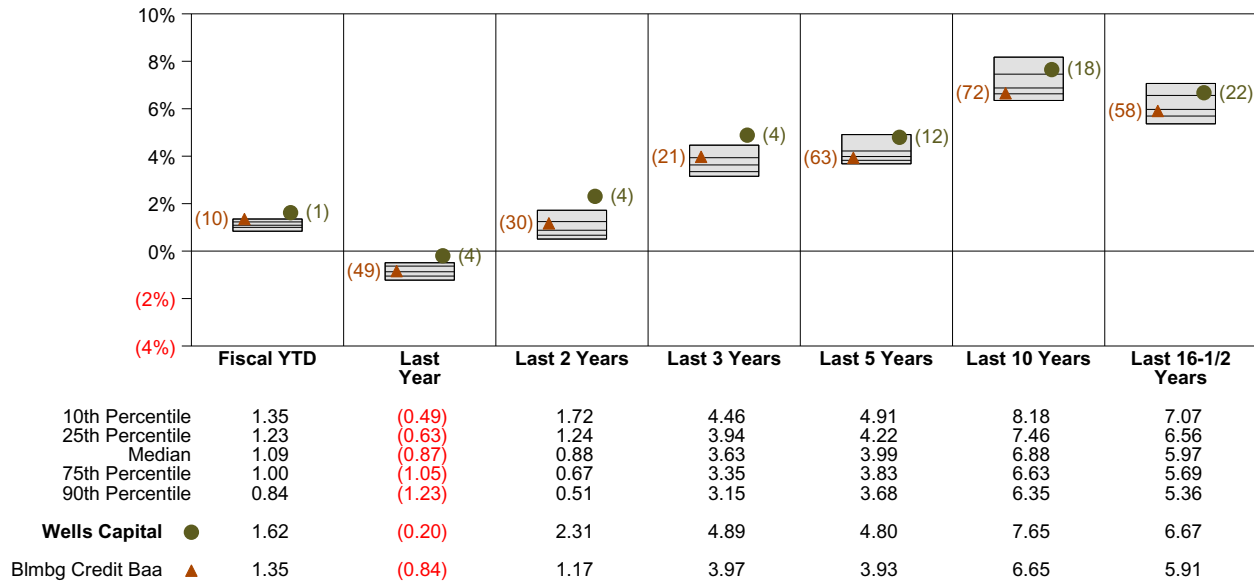
## Quarterly Summary and Highlights

- Wells Capital's portfolio posted a 1.62% return for the quarter placing it in the 1 percentile of the Callan Investment Grade Credit Fixed Inc group for the quarter and in the 4 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.27% for the quarter and outperformed the Blmbg Credit Baa for the year by 0.65%.

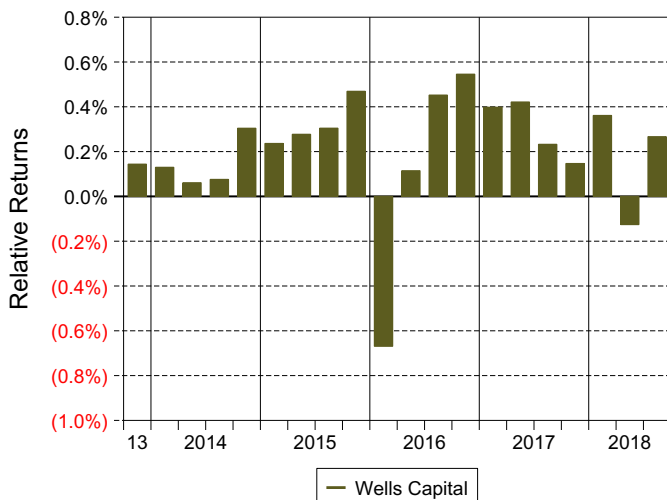
## Quarterly Asset Growth

Beginning Market Value	\$271,936,476
Net New Investment	\$-105,382
Investment Gains/(Losses)	\$4,400,390
Ending Market Value	\$276,231,484

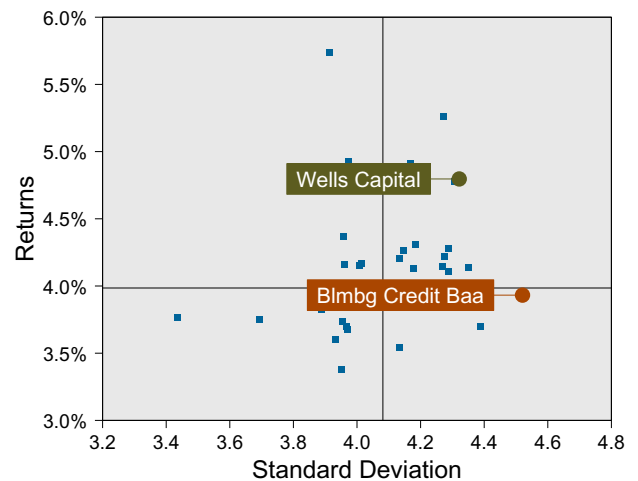
## Performance vs Callan Investment Grade Credit Fixed Inc (Gross)



## Relative Return vs Blmbg Credit Baa



## Callan Investment Grade Credit Fixed Inc (Gross) Annualized Five Year Risk vs Return



# Western Asset Management Company

## Period Ended September 30, 2018

### Investment Philosophy

Western Asset designs this portfolio using all major fixed-income sectors with a bias towards non-Treasuries, especially corporate, mortgage-backed and asset-backed securities. Value can be added through sector rotation, issue selection, duration and term structure weighting.

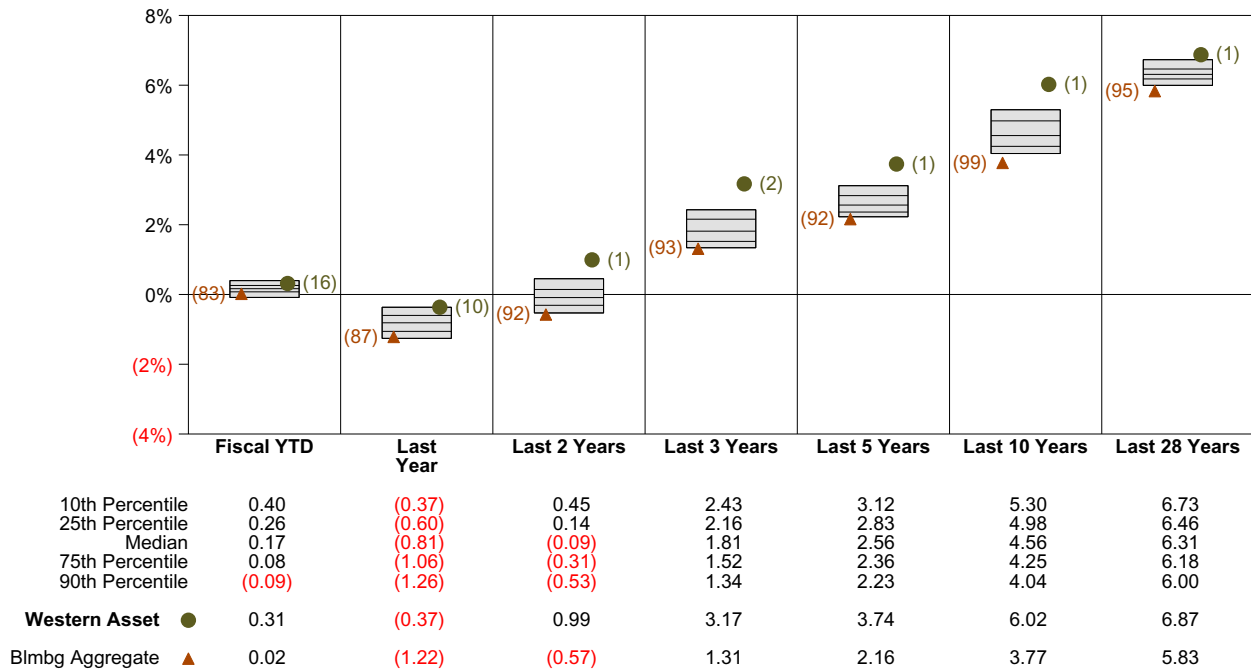
### Quarterly Summary and Highlights

- Western Asset's portfolio posted a 0.31% return for the quarter placing it in the 16 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 10 percentile for the last year.
- Western Asset's portfolio outperformed the Blmbg Aggregate by 0.30% for the quarter and outperformed the Blmbg Aggregate for the year by 0.85%.

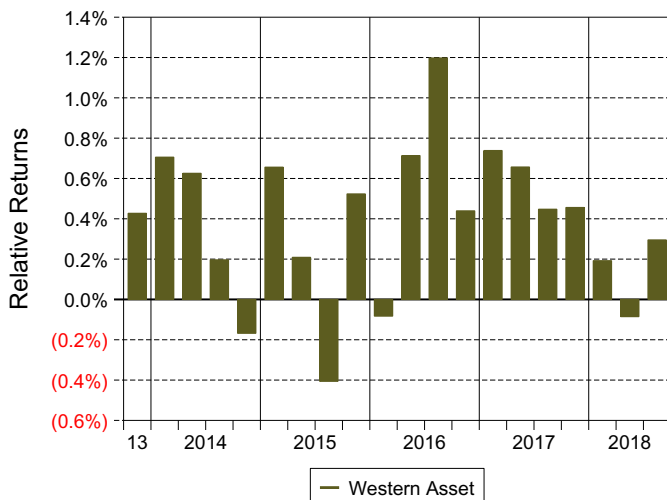
### Quarterly Asset Growth

Beginning Market Value	\$336,777,310
Net New Investment	\$-101,745
Investment Gains/(Losses)	\$1,058,208
Ending Market Value	\$337,733,773

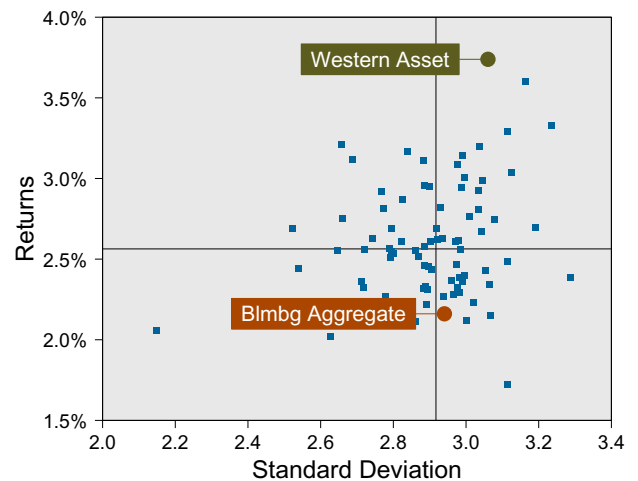
### Performance vs Callan Core Bond Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return



# Real Estate

## Period Ended September 30, 2018

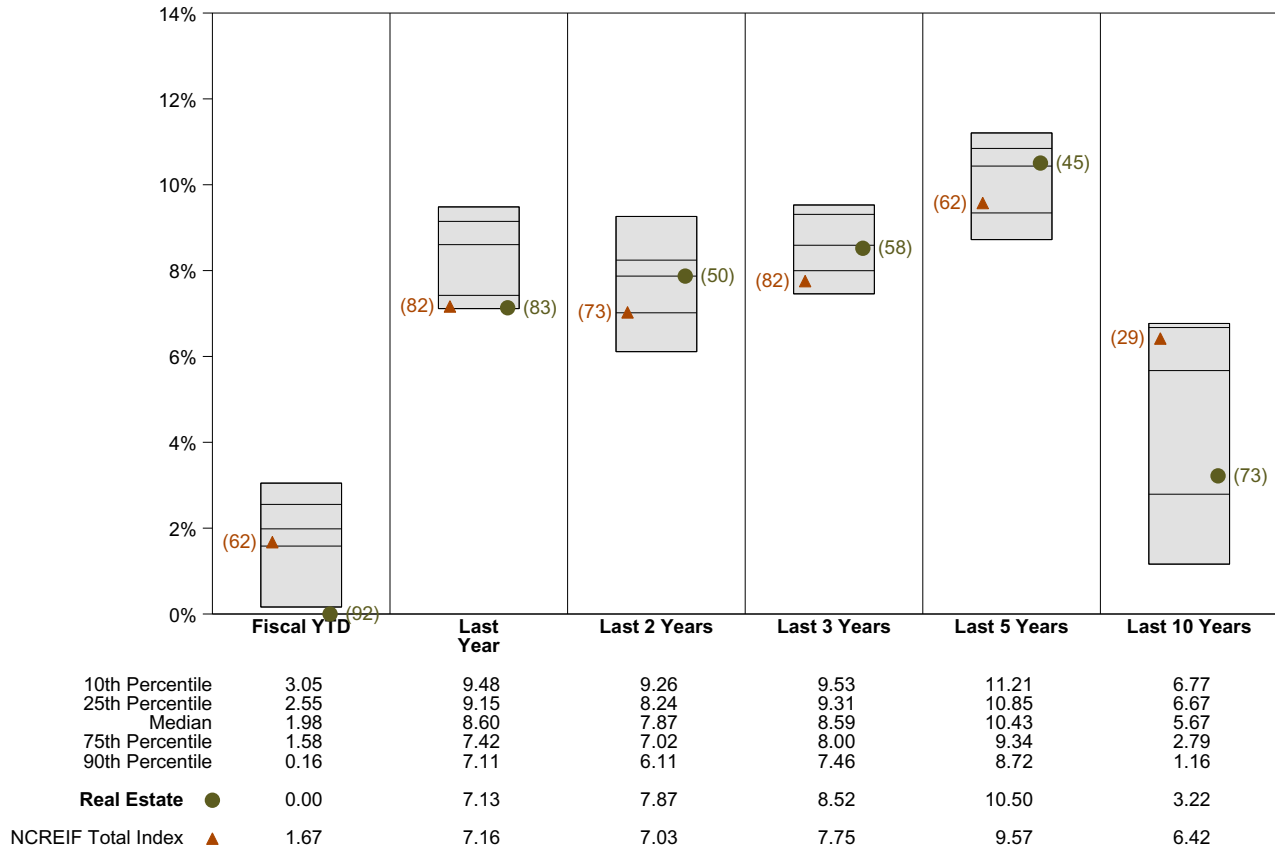
### Quarterly Summary and Highlights

- Real Estate's portfolio posted a 0.00% return for the quarter placing it in the 92 percentile of the Public Fund - Real Estate group for the quarter and in the 83 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 1.67% for the quarter and underperformed the NCREIF Total Index for the year by 0.03%.

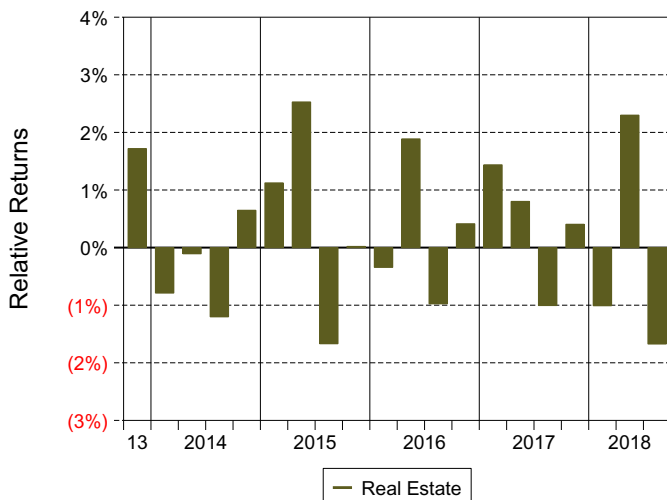
### Quarterly Asset Growth

Beginning Market Value	\$142,933,551
Net New Investment	\$-1,375,605
Investment Gains/(Losses)	\$30
Ending Market Value	\$141,557,975

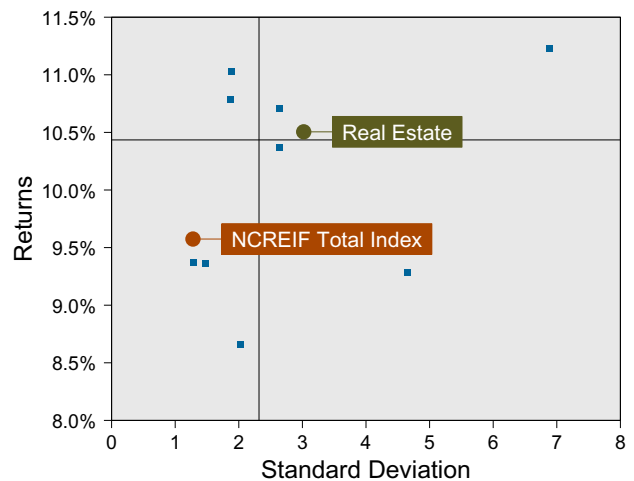
### Performance vs Public Fund - Real Estate (Gross)



### Relative Return vs NCREIF Total Index



### Public Fund - Real Estate (Gross) Annualized Five Year Risk vs Return



# Invesco Core Real Estate Period Ended September 30, 2018

## Investment Philosophy

IRE's investment philosophy is comprised of two fundamental principles: (1) maximize the predictability and consistency of investment returns and (2) minimize the risk of capital loss. This philosophy forms the cornerstone of the company's real estate investment philosophy.

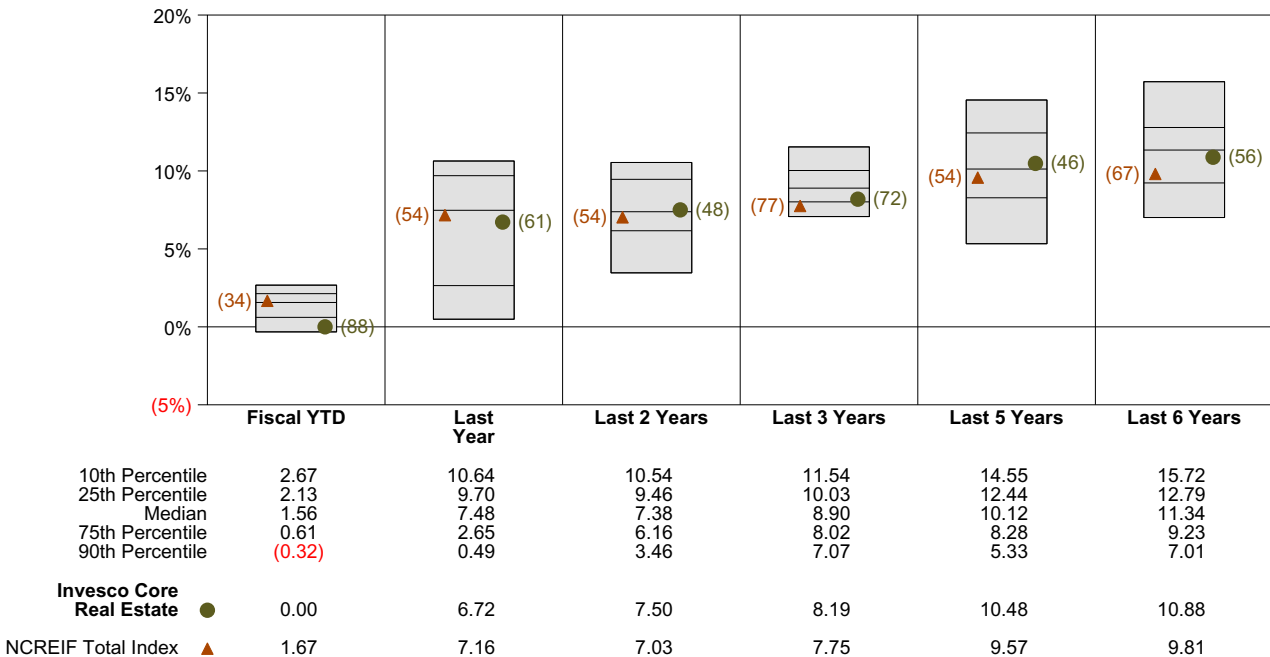
## Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a 0.00% return for the quarter placing it in the 88 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 61 percentile for the last year.
- Invesco Core Real Estate's portfolio underperformed the NCREIF Total Index by 1.67% for the quarter and underperformed the NCREIF Total Index for the year by 0.44%.

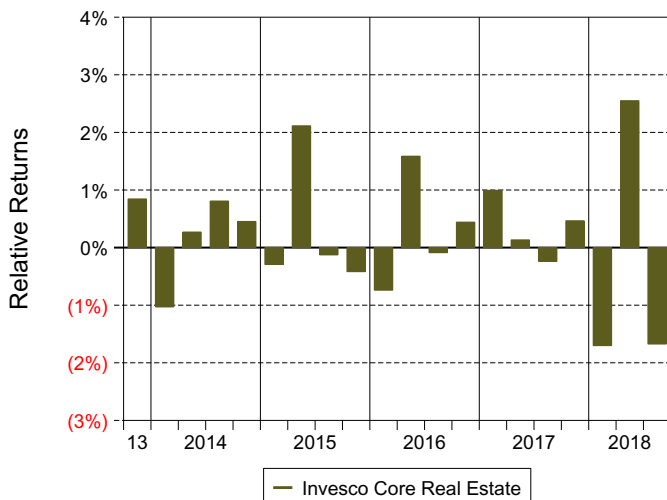
## Quarterly Asset Growth

Beginning Market Value	\$68,647,129
Net New Investment	\$-505,657
Investment Gains/(Losses)	\$0
Ending Market Value	\$68,141,472

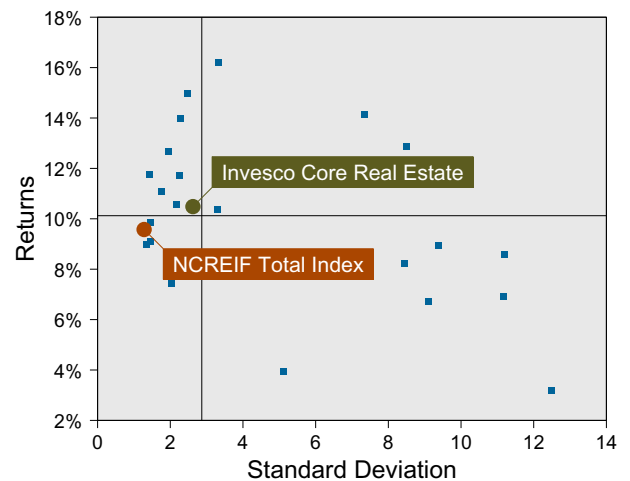
## Performance vs Callan Total Domestic Real Estate DB (Gross)



## Relative Return vs NCREIF Total Index



## Callan Total Domestic Real Estate DB (Gross) Annualized Five Year Risk vs Return





# JP Morgan Real Estate Period Ended September 30, 2018

## Investment Philosophy

The J.P. Morgan U.S. Real Estate Income and Growth Fund seeks to construct and opportunistically manage a portfolio of core direct real estate investments, complemented by other real estate and real estate-related assets. The Fund pursues a broadly diversified absolute-return strategy and pursues all property investments on an opportunistic basis. The majority of the Fund's investments will be in direct core properties in the office, industrial, retail and residential sectors.

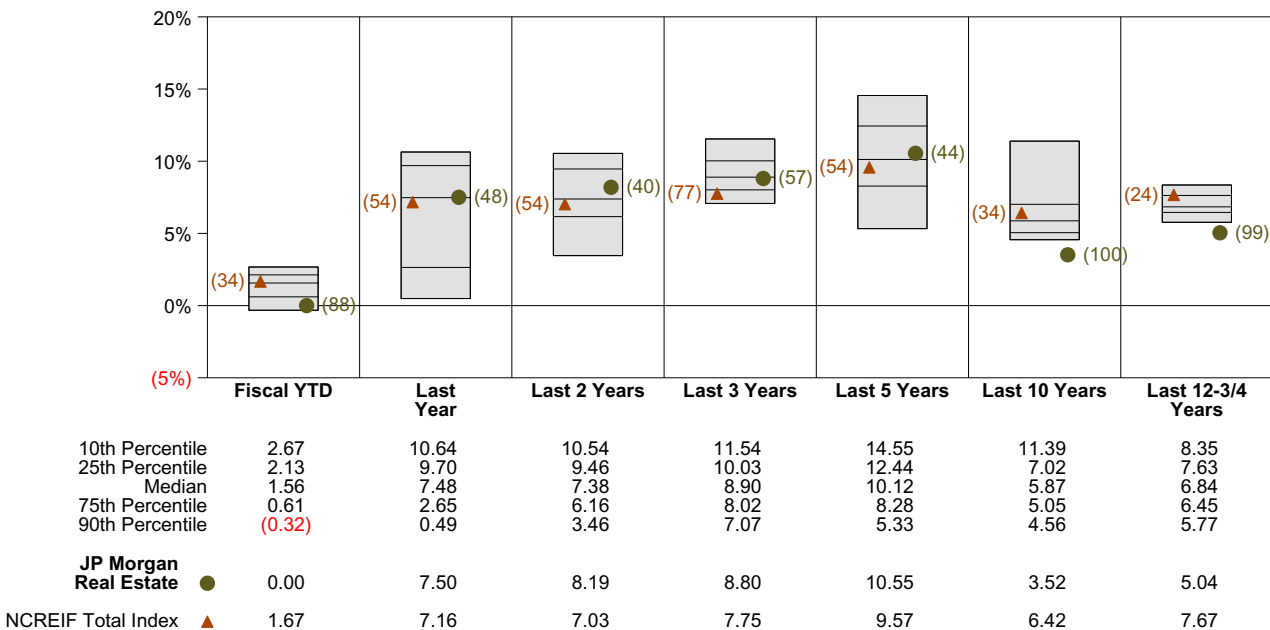
## Quarterly Summary and Highlights

- JP Morgan Real Estate's portfolio posted a 0.00% return for the quarter placing it in the 88 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 48 percentile for the last year.
- JP Morgan Real Estate's portfolio underperformed the NCREIF Total Index by 1.67% for the quarter and outperformed the NCREIF Total Index for the year by 0.34%.

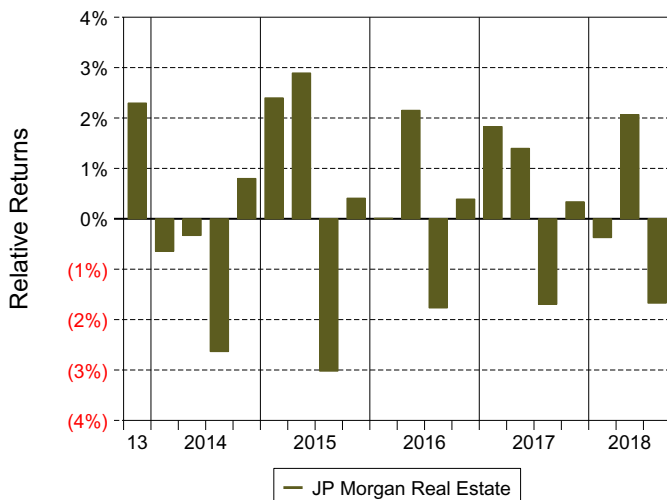
## Quarterly Asset Growth

Beginning Market Value	\$74,286,421
Net New Investment	\$-869,948
Investment Gains/(Losses)	\$30
Ending Market Value	\$73,416,503

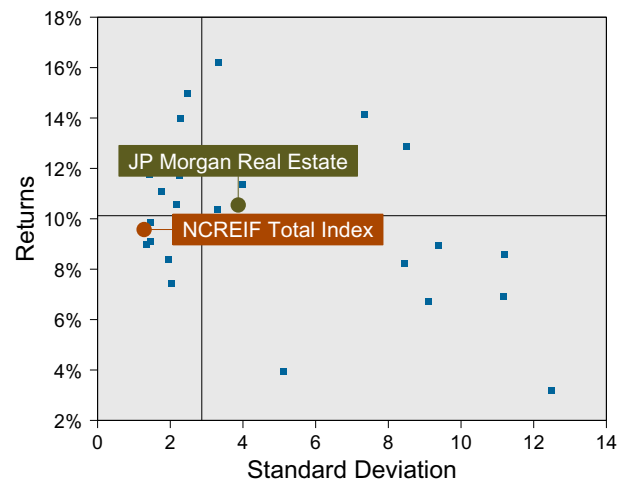
## Performance vs Callan Total Domestic Real Estate DB (Gross)



## Relative Return vs NCREIF Total Index



## Callan Total Domestic Real Estate DB (Gross) Annualized Five Year Risk vs Return



# Western TIPS Period Ended September 30, 2018

## Investment Philosophy

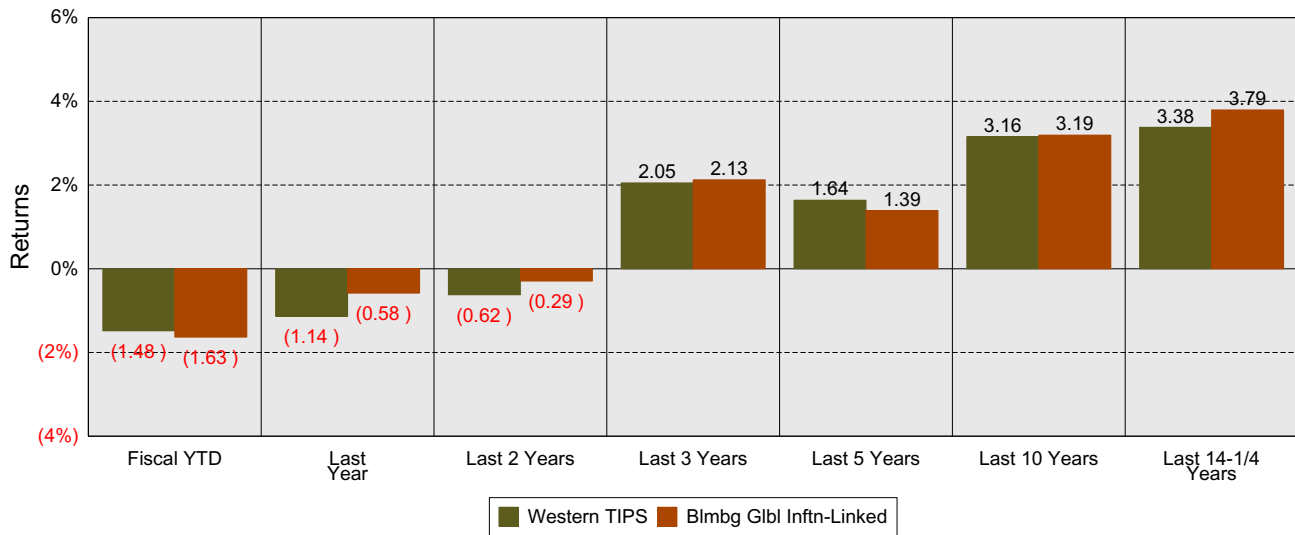
Western Asset's Global Inflation-Linked composite includes portfolios that employ an active, team-managed investment approach around a long-term, value-oriented investment philosophy. Constructed primarily of inflation-indexed securities, these portfolios use diversified strategies in seeking to add value while minimizing risk. Value can be added through country selection, term structure, issue selection, duration management and currency management. **Bloomberg US TIPS through 12/31/2009 and Bloomberg Global Inflation-Linked thereafter.**

## Quarterly Summary and Highlights

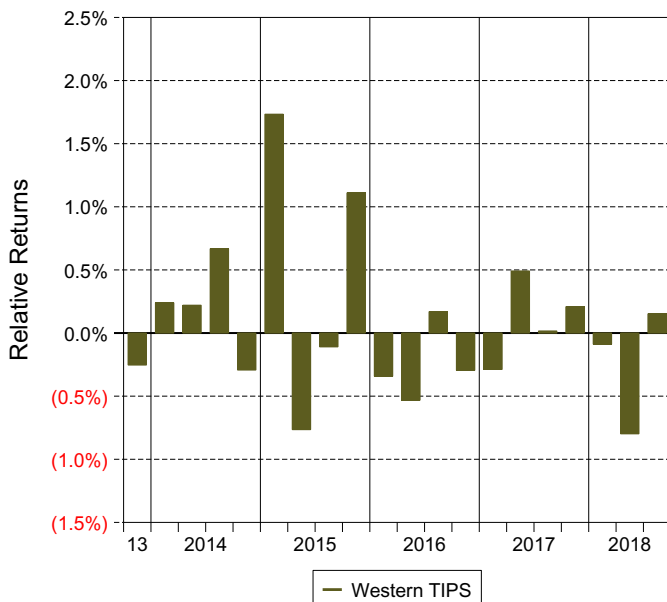
- Western TIPS's portfolio outperformed the Blmbg Gbl Inftn-Linked by 0.15% for the quarter and underperformed the Blmbg Gbl Inftn-Linked for the year by 0.55%.

## Quarterly Asset Growth

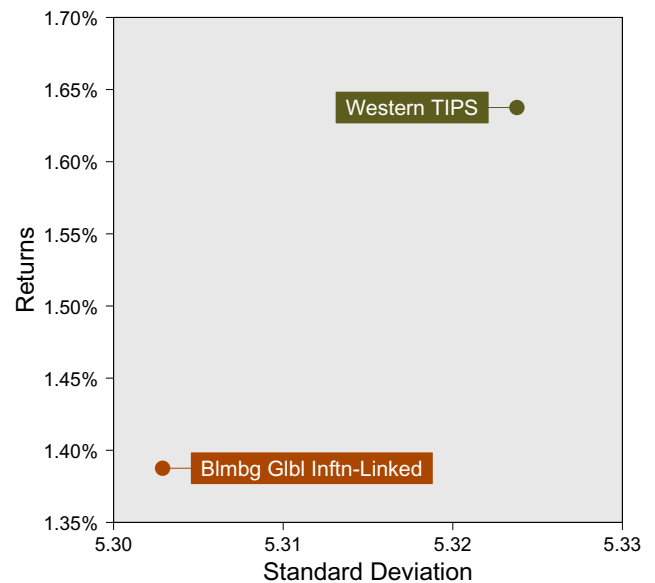
Beginning Market Value	\$116,829,324
Net New Investment	\$-36,422
Investment Gains/(Losses)	\$-1,730,121
Ending Market Value	\$115,062,780



Relative Return vs Blmbg Gbl Inftn-Linked



Annualized Five Year Risk vs Return



# Eastern Timber Opportunities Period Ended September 30, 2018

## Investment Philosophy

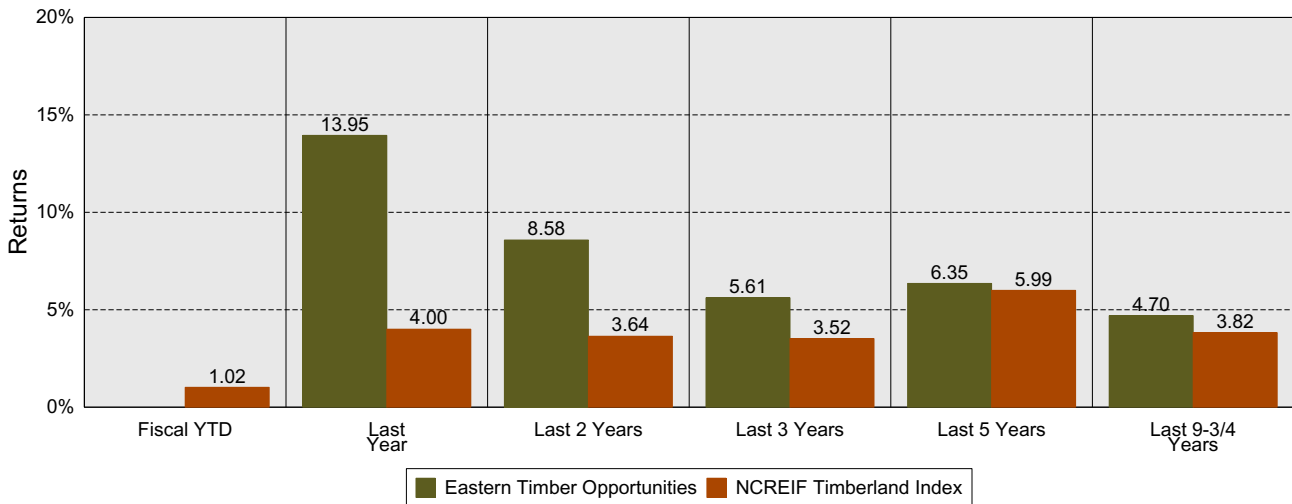
The investment objective of the Eastern Timberland Opportunities fund is to provide competitive timberland investment returns from Eastern US timberland investments by pursuing management strategies to increase timber production and land values through the investment term. TIR will maximize timber values within the portfolio with the application of intensive forest management techniques to accelerate the growth in timber volume and movement into higher value product categories. Additional value will be captured by realizing higher and better use opportunities for select timberland properties throughout the portfolio.

## Quarterly Summary and Highlights

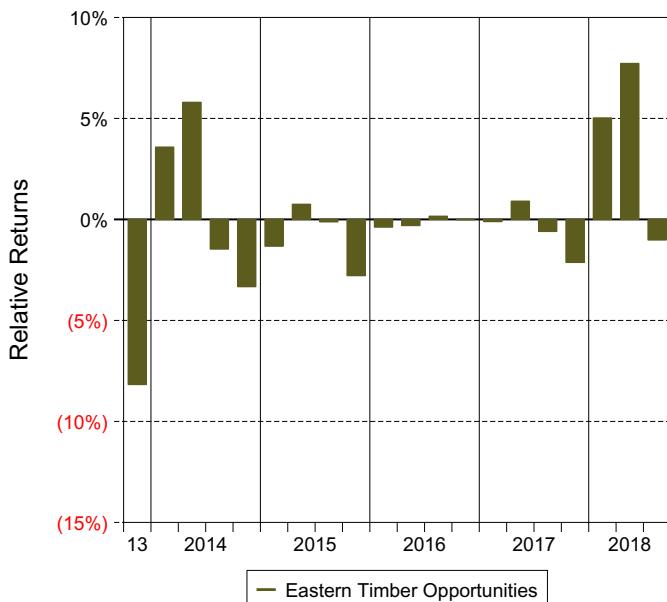
- Eastern Timber Opportunities's portfolio underperformed the NCREIF Timberland Index by 1.02% for the quarter and outperformed the NCREIF Timberland Index for the year by 9.94%.

## Quarterly Asset Growth

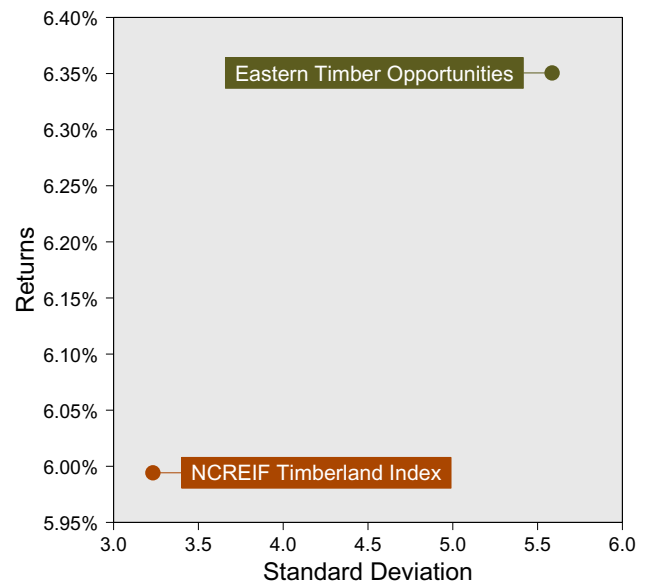
Beginning Market Value	\$55,509,588
Net New Investment	\$-1,299,831
Investment Gains/(Losses)	\$0
Ending Market Value	\$54,209,757



## Relative Return vs NCREIF Timberland Index



## Annualized Five Year Risk vs Return



# JP Morgan Infrastructure Period Ended September 30, 2018

## Investment Philosophy

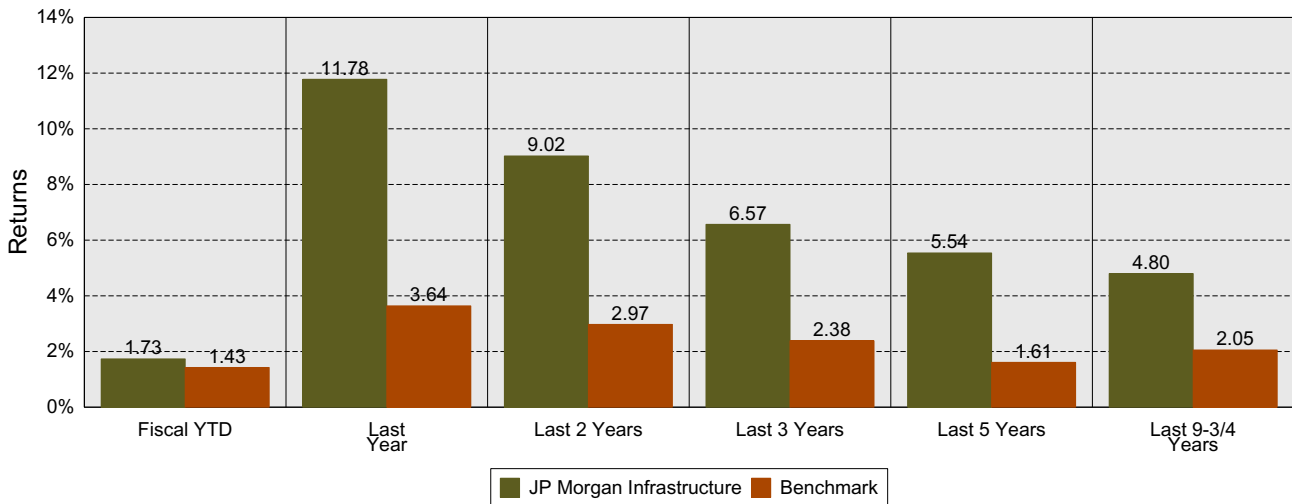
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

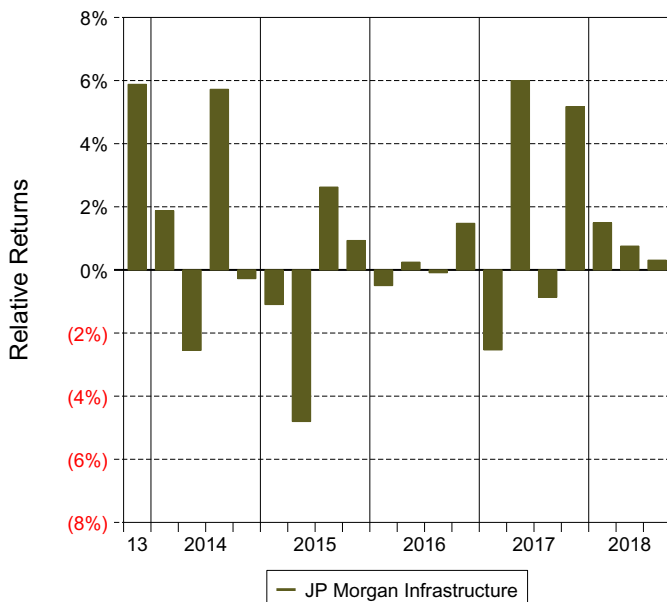
- JP Morgan Infrastructure's portfolio outperformed the Benchmark by 0.31% for the quarter and outperformed the Benchmark for the year by 8.14%.

## Quarterly Asset Growth

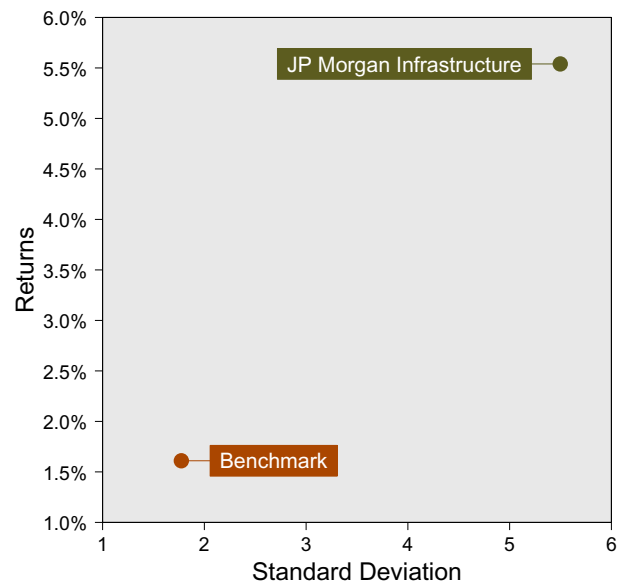
Beginning Market Value	\$92,111,246
Net New Investment	\$-2,996,295
Investment Gains/(Losses)	\$1,589,748
Ending Market Value	\$90,704,700



Relative Return vs Benchmark



Annualized Five Year Risk vs Return



# Grosvenor Cust. Infrastructure Period Ended September 30, 2018

## Investment Philosophy

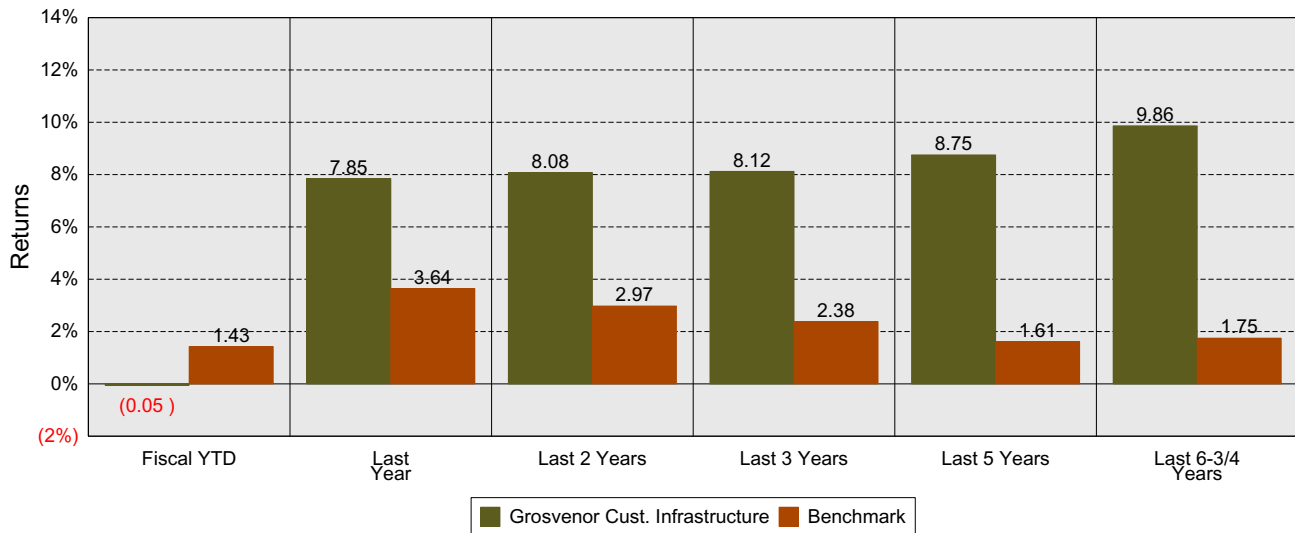
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

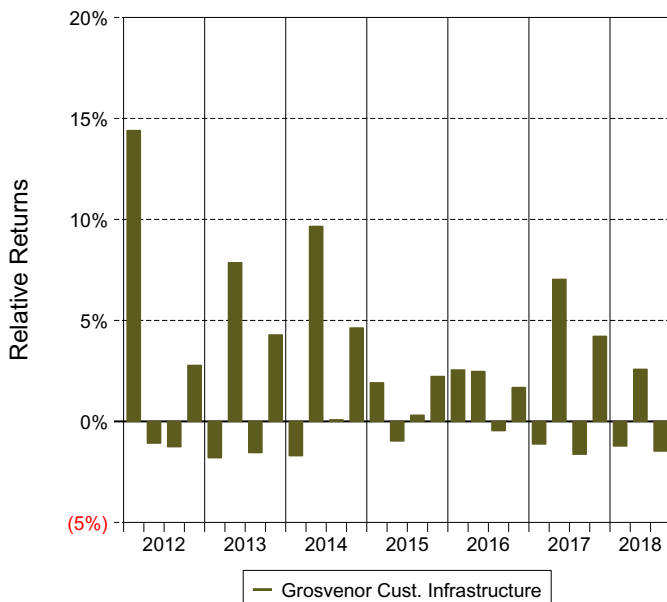
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.47% for the quarter and outperformed the Benchmark for the year by 4.21%.

## Quarterly Asset Growth

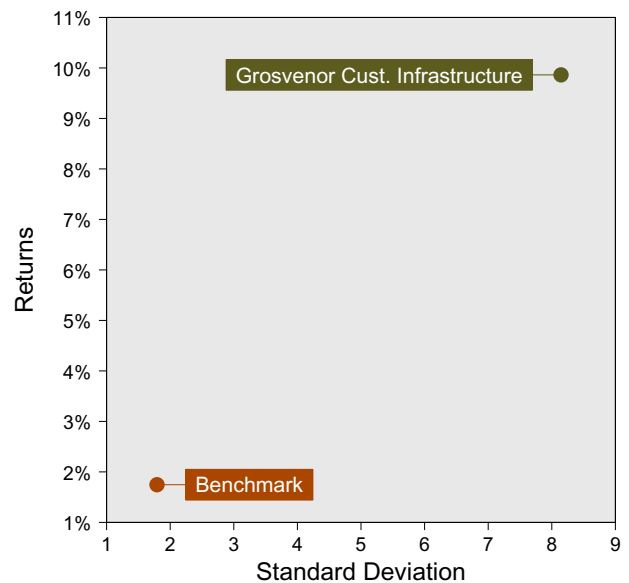
Beginning Market Value	\$17,502,466
Net New Investment	\$-2,496,294
Investment Gains/(Losses)	\$-8,309
Ending Market Value	\$14,997,863



## Relative Return vs Benchmark



## Annualized Six and Three-Quarter Year Risk vs Return



# Short Term Fixed Income Period Ended September 30, 2018

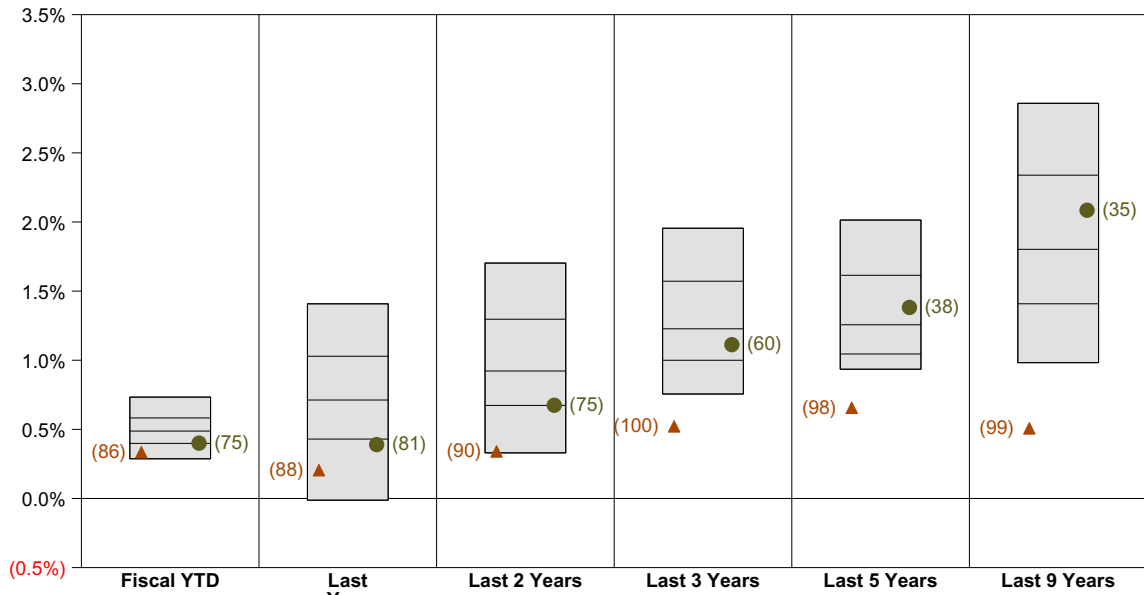
## Quarterly Summary and Highlights

- Short Term Fixed Income's portfolio posted a 0.40% return for the quarter placing it in the 75 percentile of the Callan Short Term Fixed Income group for the quarter and in the 81 percentile for the last year.
- Short Term Fixed Income's portfolio outperformed the Short Term Fixed Target by 0.07% for the quarter and outperformed the Short Term Fixed Target for the year by 0.19%.

## Quarterly Asset Growth

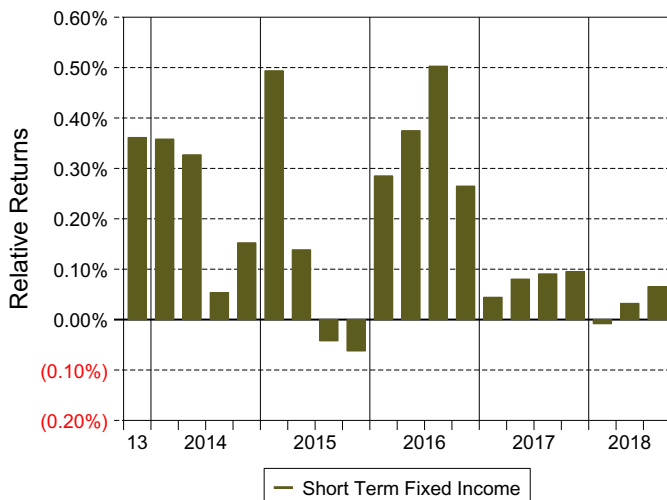
Beginning Market Value	\$138,978,231
Net New Investment	\$-35,558
Investment Gains/(Losses)	\$556,200
Ending Market Value	\$139,498,873

## Performance vs Callan Short Term Fixed Income (Gross)

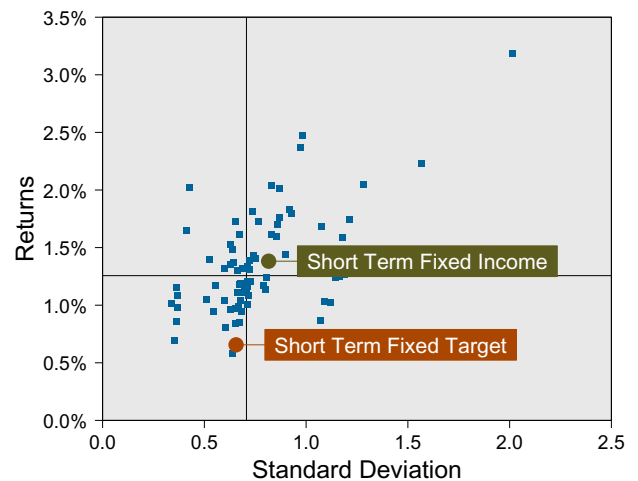


10th Percentile	0.73	1.41	1.70	1.96	2.01	2.86
25th Percentile	0.58	1.03	1.30	1.57	1.61	2.34
Median	0.49	0.71	0.92	1.23	1.26	1.80
75th Percentile	0.40	0.43	0.67	1.00	1.05	1.41
90th Percentile	0.29	(0.01)	0.33	0.76	0.94	0.98
<b>Short Term Fixed Income</b>	● 0.40	0.39	0.67	1.11	1.38	2.09
Short Term Fixed Target	▲ 0.33	0.20	0.34	0.52	0.66	0.51

## Relative Return vs Short Term Fixed Target



## Callan Short Term Fixed Income (Gross) Annualized Five Year Risk vs Return



# JP Morgan Short Term Bonds Period Ended September 30, 2018

## Investment Philosophy

The investment objective of this account is to outperform the Barclays Capital 1-3 year Government/Credit Index while maintaining total return risk similar to that of the benchmark as measured over a market cycle. The weighted average effective duration of the portfolio will typically remain within +/- 30% of the benchmark.

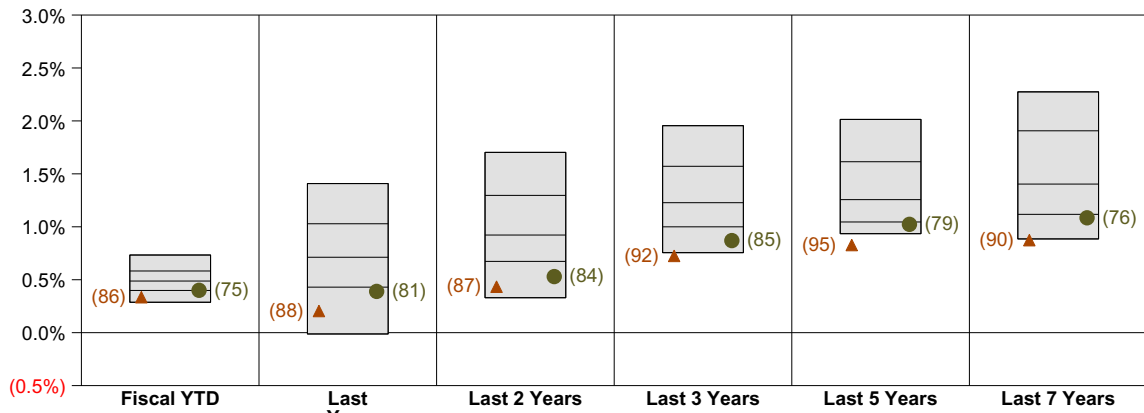
## Quarterly Summary and Highlights

- JP Morgan Short Term Bonds's portfolio posted a 0.40% return for the quarter placing it in the 75 percentile of the Callan Short Term Fixed Income group for the quarter and in the 81 percentile for the last year.
- JP Morgan Short Term Bonds's portfolio outperformed the Blmbg Gov/Cred 1-3 Yr by 0.07% for the quarter and outperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.19%.

## Quarterly Asset Growth

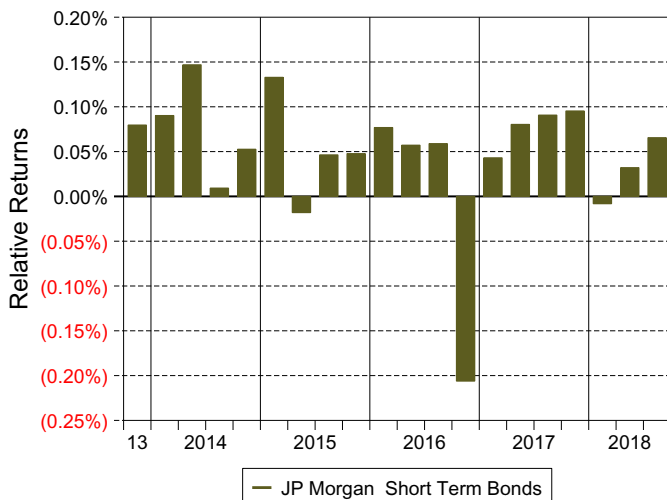
Beginning Market Value	\$138,978,231
Net New Investment	\$-35,558
Investment Gains/(Losses)	\$556,200
Ending Market Value	\$139,498,873

## Performance vs Callan Short Term Fixed Income (Gross)

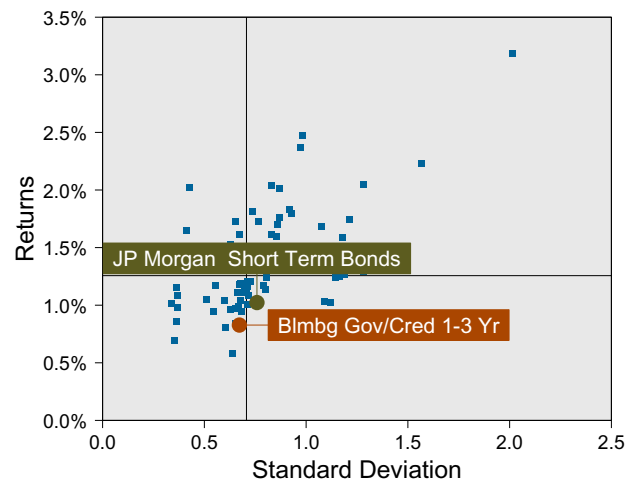


10th Percentile	0.73	1.41	1.70	1.96	2.01	2.27
25th Percentile	0.58	1.03	1.30	1.57	1.61	1.91
Median	0.49	0.71	0.92	1.23	1.26	1.40
75th Percentile	0.40	0.43	0.67	1.00	1.05	1.12
90th Percentile	0.29	(0.01)	0.33	0.76	0.94	0.89
<b>JP Morgan Short Term Bonds</b>	● 0.40	0.39	0.53	0.87	1.02	1.08
<b>Blmbg Gov/Cred 1-3 Yr</b>	▲ 0.33	0.20	0.43	0.73	0.83	0.87

## Relative Return vs Blmbg Gov/Cred 1-3 Yr



## Callan Short Term Fixed Income (Gross) Annualized Five Year Risk vs Return



## Research and Educational Programs

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog “Perspectives.” For more information contact Corry Walsh at 312.346.3536 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan’s Experts



**An Investor Framework for Addressing Climate Change** | Callan’s Anna West lays out the top issues for investors about this issue. We also identify solutions and areas of progress for those seeking to address climate-related risks as well as benefit from emerging opportunities.

**Promoting Gender Diversity in the Investment Industry** | Callan Executive Chairman Ron Peyton offers his observations on what has worked for gender inclusion at the firm over the last 45 years and what we have learned in the hope that it will inform others on how to progress toward equality in senior roles industry-wide.



**Helping DC Plan Participants in the “Distribution” Phase** | Callan’s Tom Shingler and James Veneruso discuss our research on the “distribution phase” of defined contribution plans, when participants are drawing down assets, and the issues that plan sponsors should address.

**Picking Through the Alpha Graveyard: Correcting for Survivorship Bias in Investment Product Universes** | In this paper from the *Journal of Investment Management*, Callan’s Greg Allen, Ivan Cliff, and Wally Meerschaert propose a technique to correct for survivorship bias in investment product universes. It uses all available data for survivors and non-survivors, corrects for bias across the full distribution (from 1st to 99th percentile), and can be applied to other return-based statistics such as the Sharpe ratio.

**Infrastructure: No Longer a Niche Option** | Callan’s Jan Mende discusses investing in infrastructure. Institutional investors are increasing allocations, managers are creating more investment options, and benchmarks are being refined.

**The Shape of Risk: Making Cents of the Irrational With Options** | In the third quarter’s *Hedge Fund Monitor*, Jim McKee discusses the use of options as insurance for institutional portfolios.

**2018 ESG Survey** | Callan’s sixth annual survey on the status of environmental, social, and governance (ESG) investing in the U.S. institutional investment market reveals more than 40% of investors are incorporating ESG factors into investment decisions.

**Your Plan Will Face a Cyberattack; Here’s How to Prepare** | The third quarter’s edition of the *DC Observer* is designed to assist plan sponsors with formulating and executing their cybersecurity strategy to protect their information and their assets.

## Quarterly Periodicals

**Private Equity Trends** | This newsletter offers the latest data on private equity fundraising, buyouts, venture capital, and returns.

**Market Pulse Flipbook** | A quarterly market reference guide covering investment and fund sponsor trends in the U.S. economy, U.S. and non-U.S. equities and fixed income, alternatives, and defined contribution.

**Capital Market Review** | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity across a wide range of asset classes.

**Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?** | Callan’s Real Assets Consulting group identifies seven indicators—based on spreads in real estate and fixed income markets—that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.



## Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: [www.callan.com/library/](http://www.callan.com/library/)

Callan's **2019 National Conference** will be held January 28-30, 2019. Mark your calendars for this upcoming event! And please visit the Events page on our website ([www.callan.com/events/](http://www.callan.com/events/)) for additional information as it becomes available.

**For more information about events, please contact Barb Gerraty: 415.274.3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## The Center for Investment Training Educational Sessions

The Center for Investment Training, better known as the "Callan College," provides a foundation of knowledge for industry professionals who are involved in the investment decision-making process. It was founded in 1994 to provide clients and non-clients alike with basic- to intermediate-level instruction. Our next sessions are:

### Introduction to Investments

*San Francisco, April 16-17, 2019*

*San Francisco, July 16-17, 2019*

*Chicago, October 22-23, 2019*

This program familiarizes fund sponsor trustees, staff, and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals who have less than two years of experience with asset-management oversight and/or support responsibilities. Tuition for the Introductory "Callan College" session is \$2,350 per person. Tuition includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

### Customized Sessions

The "Callan College" is equipped to customize a curriculum to meet the training and educational needs of a specific organization. These tailored sessions range from basic to advanced and can take place anywhere—even at your office.

**Learn more at [www.callan.com/events/callan-college-intro](http://www.callan.com/events/callan-college-intro) or contact Kathleen Cunnie: 415.274.3029 / [cunnie@callan.com](mailto:cunnie@callan.com)**

## Education: By the Numbers

**525** Attendees (on average) of the Institute's annual National Conference

**50+** Unique pieces of research the Institute generates each year

**3,700** Total attendees of the "Callan College" since 1994

**1980** Year the Callan Institute was founded



**"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialog to raise the bar across the industry."**

Greg Allen, Chief Executive Officer and Chief Research Officer

## List of Callan's Investment Manager Clients

Confidential – For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor and disclose potential conflicts on an on-going basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g. attending and educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance Department.

Manager Name
Acadian Asset Management LLC
AEGON USA Investment Management
Aether Investment Partners
AEW Capital Management
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
Black Creek Investment Management, Inc.
BlackRock
BMO Global Asset Management
BNP Paribas Asset Management
BNY Mellon Asset Management
Boston Partners
Brandes Investment Partners, L.P.
Brandywine Global Investment Management, LLC
Breckinridge Capital Advisors, Inc.
BrightSphere Investment Group (FKA Old Mutual Asset)
Brown Brothers Harriman & Company
Cambiar Investors, LLC

Manager Name
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management
CenterSquare Investment Management
Chartwell Investment Partners
Christian Brothers Investment Services
CIM Group
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
CS McKee, L.P.
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS (Formerly Deutsche Asset Management)
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
GAM (USA) Inc.

Manager Name
Gerding Edlen
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs Asset Management
Green Square Capital LLC
Greenwich Investment Management, Inc.
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Harding Loevner L.P.
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln National Corporation
LMCG Investments, LLC
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
Macquarie Investment Management (MIM)
Manulife Asset Management
McKinley Capital Management, LLC
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management
Nuveen Investments, Inc.
OFI Global Asset Management
O'Shaughnessy Asset Management, LLC
P/E Investments

Manager Name
Pacific Investment Management Company
Pathway Capital Management
Peregrine Capital Management, Inc.
Perkins Investment Management
PGIM
PGIM Fixed Income
PineBridge Investments
Pictet Asset Management Ltd.
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Reaves Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management Inc.
Russell Investments
Santander Global Facilities
Schroder Investment Management North America Inc.
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
Standard Life Investments Limited
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The Boston Company Asset Management, LLC
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
WCM Investment Management
WEDGE Capital Management
Wedgewood Partners, Inc.
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC

September 30, 2018



## **North Dakota State Investment Board Legacy Fund**

**Investment Measurement Service  
Quarterly Review**

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Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see Appendix for Important Information and Disclosures.

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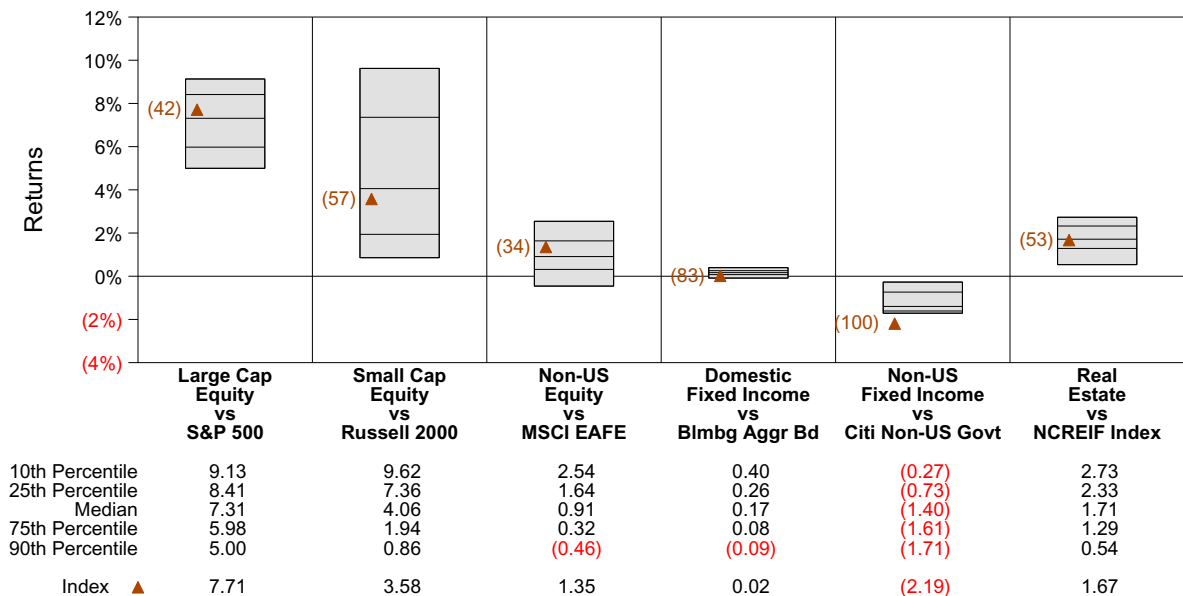
## Market Overview

### Active Management vs Index Returns

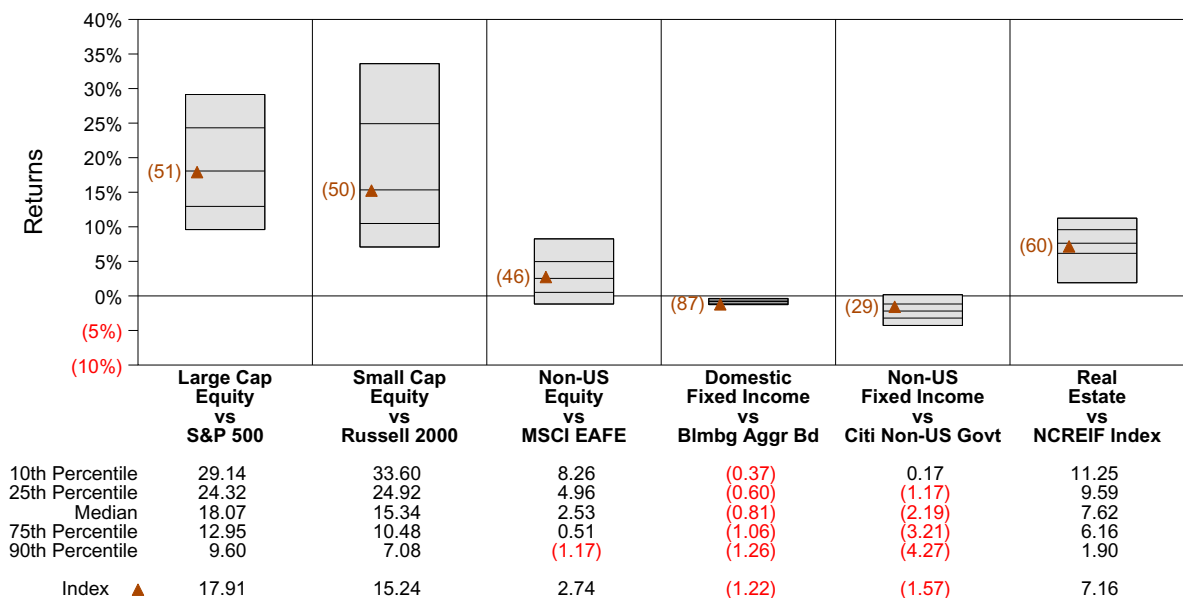
#### Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended September 30, 2018



#### Range of Separate Account Manager Returns by Asset Class One Year Ended September 30, 2018



### Everything Is Going Great! Right?

**ECONOMY**

**2** The U.S. economy has been firing on all cylinders, and the accompanying run-up in the equity market in the first three quarters buoyed confidence that all was not just well, but great! If only we knew in September what Halloween fright awaited us in October.

### Equity Risk Looms Large for Plans

**FUND SPONSOR**

**4** The median plan sponsor in Callan's database gained 2.7% in the quarter, lagging the 4.6% gain of a 60% S&P 500/40% Bloomberg Barclays Aggregate benchmark. Sponsors are focused on equity exposure, market volatility, and mitigating risk in the event of an equity correction.

### Markets Diverge, With U.S. Staying Strong

**EQUITY**

**6** U.S. stocks posted broad-based gains, fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several indices hit records. Non-U.S. developed and emerging markets faltered due to geopolitical and economic uncertainties.

### U.S. Returns Mostly Flat; EM Debt Volatile

**FIXED INCOME**

**8** The U.S. Treasury yield curve rose across the maturity spectrum on better-than-expected corporate earnings and solid U.S. economic data. The JPM EMBI Global Diversified Index (USD denominated) gained 2.3%, but the JPM GBI-EM Global Diversified Index fell 1.8%.

### Strong Market Both Here and Abroad

**REAL ESTATE**

**10** Supply and demand fundamentals were balanced but peaking. The Industrial sector performed the strongest. U.S. and non-U.S. REITs were trading at discounts to net asset value. European markets (ex-U.K.) and Asian products saw momentum.

### Boo! More Tricks Than Treats

**PRIVATE EQUITY**

**12** Private equity investment and exit activity showed a general slowdown during the third quarter. Company investments and exits trended slightly down, fewer new partnerships were closed, but dollar commitments increased. Investors are pursuing broad diversification.

### Active Traders Grind Forward; MACs Falter

**HEDGE FUNDS/MACs**

**13** Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds. Callan's Multi-Asset Class Peer Groups continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks.

### DC Plans Rebound, TDFs Struggle

**DEFINED CONTRIBUTION**

**15** The Callan DC Index™ rose 1.8% in the second quarter and outpaced the 1.1% gain of the Age 45 Target Date Fund (TDF). DC plan balances grew by 1.9%, driven primarily by market performance. The second quarter marked another all-time high for TDFs' share of DC assets.

## Broad Market Quarterly Returns

**U.S. Equity**  
Russell 3000



**+7.1%**

**Non-U.S. Equity**  
MSCI ACWI ex USA



**+0.7%**

**U.S. Fixed Income**  
Bloomberg Barclays Agg



**0.0%**

**Non-U.S. Fixed Income**  
Bloomberg Barclays GBI ex US



**-1.7%**

Sources: Bloomberg Barclays, MSCI, FTSE Russell



# Everything Is Great! Right?

ECONOMY | Jay Kloepfer

September 20 marked the capstone of a summer run-up in the U.S. equity market. We saw a true market correction in February (S&P 500 Index down 10.1%) and a drawdown of more than 7% in March, but the memory of those experiences was obliterated by a smooth, steady climb, with the S&P 500 gaining 12% in the first three quarters. Economic reports came in mixed for most economies outside the U.S. during 2018, but the U.S. economy has been firing on all cylinders, with the job market, investment, and output all showing robust gains. GDP grew 3.5% in the third quarter and 4.2% in the second. The accompanying run-up in the equity market buoyed confidence that all was not just well, but great, and this economic expansion and bull market still had fresh legs to keep going.

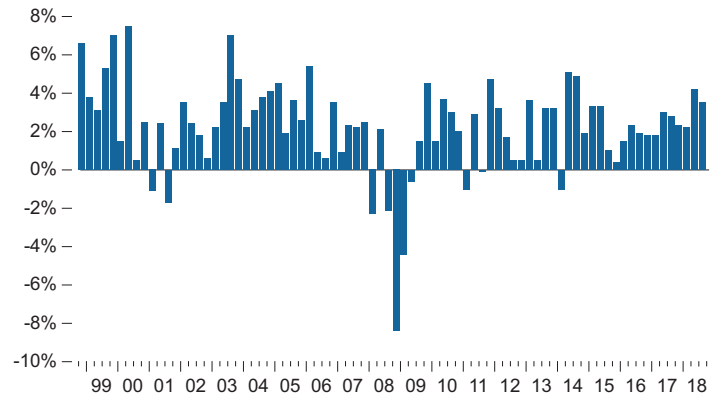
If only we knew in September what Halloween fright awaited us in October.

Since the start of the year, investors had been growing increasingly concerned that the expansion was getting long in the tooth, and that both the economy and the stock market must be nearing peaks. While elapsed time is not an economic variable, the fact that the current expansion set a record for length heightened fears of a downturn. Richly priced capital markets across all asset classes and a new peak in the level of corporate earnings reported during the summer earnings season suggested that a market correction was inevitable. Through the end of September, such fears contrasted with the continuing stream of good economic news, and the market roared. The unemployment rate dropped to 3.7% in September, the lowest since 2000. Wages continue to inch up, with average hourly earnings growth rising from 2% toward 3%. While potentially inflationary and certainly a cost to business, stronger wage growth kept consumer spending robust, and boosted consumer (and business) confidence.

Against this backdrop, the Fed raised rates three times in 2018, bringing the Fed Funds rate to 2.0-2.25%. The Fed expects one

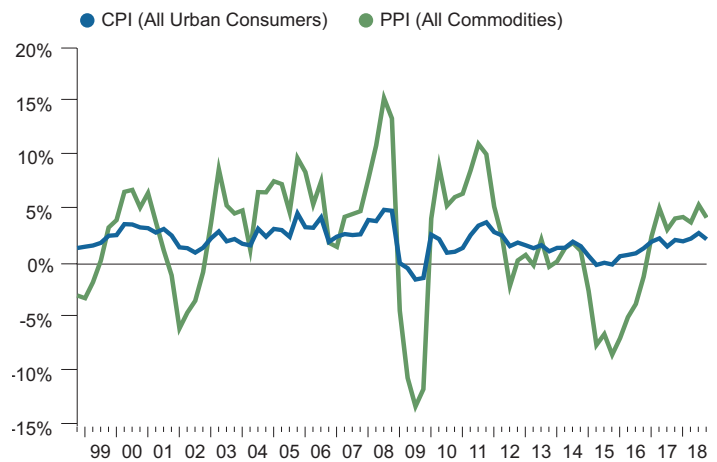
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

more rate hike this year and three in 2019. The Fed has now raised rates 200 basis points over the past two years. Since inflation has not changed over this period, real rates have essentially risen by 2 percentage points. Much of the growth in the first half of 2018 was attributed to the tax cut and spending, and trade activity in advance of tariffs imposed in July by the U.S. and China. Monetary policy has incrementally become

a more significant headwind, and it began showing up in the third quarter. While it is true that real rates are low relative to history, the change in rates is important. Since the mid-1980s real rates have risen by 2 percentage points four times; three of those occurrences resulted in recessions. In a study by Capital Economics, monetary policy tightening was a major contributing factor in 29 out of 45 recessions in G7 countries since 1960.

Higher interest rates are beginning to squeeze some of the most rate-sensitive segments of the economy. Housing has been an ongoing mystery; starts surged to an 11-year high in May, only to stall during the summer. Home sales are also clearly feeling the pressure of higher rates, and from the supply side, a shortage of houses. Residential investment contracted by 4% in the third quarter, following declines in each of the first two quarters. Home prices rose substantially in certain markets through the summer, but early indications are that rates began to crimp prices and sales in September. Housing can often be the canary in the coal mine: an early indicator of slowing economic activity and lower confidence.

Inflation had been gradually trending up, reaching 2.9% in June, finally fulfilling the expectations of many market observers, but the year-over-year gain in the CPI slowed to 2.3% in the third quarter. Much of the rise in the first half was attributable to a rebound in oil prices. Once oil prices stabilize as expected, the increase in inflation will likely abate. One reason for the stability of inflation is the growing dominance of services in the inflation calculation. The services inflation rate has been much steadier than the goods rate and consistently positive near 2%. Goods prices are more volatile and much more influenced than services by factors such as trade, currency, supply and demand of raw materials, and geopolitics.

### Recent Quarterly Economic Indicators

	3Q18	2Q18	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16
Employment Cost–Total Compensation Growth	2.8%	2.8%	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%
Nonfarm Business–Productivity Growth	2.2%	3.0%	0.3%	-0.3%	2.3%	1.6%	0.4%	1.3%
GDP Growth	3.5%	4.2%	2.2%	2.3%	2.8%	3.0%	1.8%	1.8%
Manufacturing Capacity Utilization	75.8%	75.5%	75.3%	75.2%	74.4%	74.9%	74.6%	74.4%
Consumer Sentiment Index (1966=100)	98.1	98.3	98.9	98.4	95.1	96.4	97.2	93.2

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

### The Long-Term View

Index	2018 3rd Qtr	Periods ended Dec. 31, 2017			
		Year	5 Yrs	10 Yrs	25 Yrs
<b>U.S. Equity</b>					
Russell 3000	7.12	21.13	15.58	8.60	9.72
S&P 500	7.71	21.83	15.79	8.50	9.69
Russell 2000	3.58	14.65	14.12	8.71	9.54
<b>Non-U.S. Equity</b>					
MSCI ACWI ex USA	0.71	27.19	6.80	1.84	--
MSCI Emerging Markets	-1.09	37.28	4.35	1.68	--
MSCI ACWI ex USA Small Cap	-1.51	31.65	10.03	4.69	--
<b>Fixed Income</b>					
Bloomberg Barclays Agg	0.02	3.54	2.10	4.01	5.48
90-Day T-Bill	0.49	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-0.47	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	-1.74	10.51	-0.20	2.40	5.02
<b>Real Estate</b>					
NCREIF Property	1.67	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	0.79	5.23	9.46	7.44	10.76
<b>Alternatives</b>					
CS Hedge Fund	0.59	7.12	4.23	3.24	–
Cambridge PE*	4.51	19.48	13.97	9.14	15.65
Bloomberg Commodity	-2.02	1.70	-8.45	-6.83	2.47
Gold Spot Price	-4.65	13.68	-4.82	4.56	5.63
<b>Inflation – CPI-U</b>	0.18	2.11	1.43	1.61	2.23

\*Data for most recent period lags by a quarter

Sources: Bloomberg Barclays, Bloomberg, Credit Suisse, FTSE, MSCI, NCREIF, FTSE Russell, Standard & Poor's, Thomson Reuters/Cambridge, Bureau of Economic Analysis

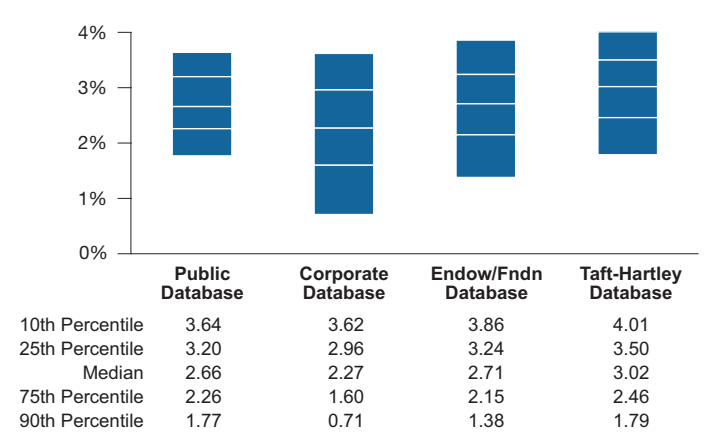
Related to goods prices, the ISM manufacturing index had reached a 14-year high earlier this year, but fell back in September, as manufacturers and exporters face the triple threat of a stronger dollar (up 8% since mid-April), the imposition of tariffs in July and anticipation of more in October, and weakening of global growth.

# Equity Risk Looms Large for Plans

## FUND SPONSOR

- The median fund sponsor in Callan’s database gained 2.7% in the third quarter.
- Taft-Hartley plans (+3.0%) were the best-performing sponsor by type, as they were the previous quarter; corporate plans (+2.3%) showed the lowest increase.
- By size, the strongest returns came from small plans (under \$100 million), which rose 2.9%, compared to a 2.6% gain for medium plans (\$100 million-\$1 billion) and 2.3% for large plans (more than \$1 billion).
- All types and sizes lagged a 60% S&P 500/40% Bloomberg Barclays US Aggregate benchmark, which rose 4.6%.
- Over the last year, three years, and five years, Taft-Hartley plans had the strongest returns of all fund types, while public plans have done best over the last 10 years.
- Investors are focused on concerns about equity exposure, market volatility, and how to mitigate risk in the event of an equity market correction in a rising interest rate environment.
- But they face competing fears: an equity market downturn vs. the fear of missing out (FOMO!).

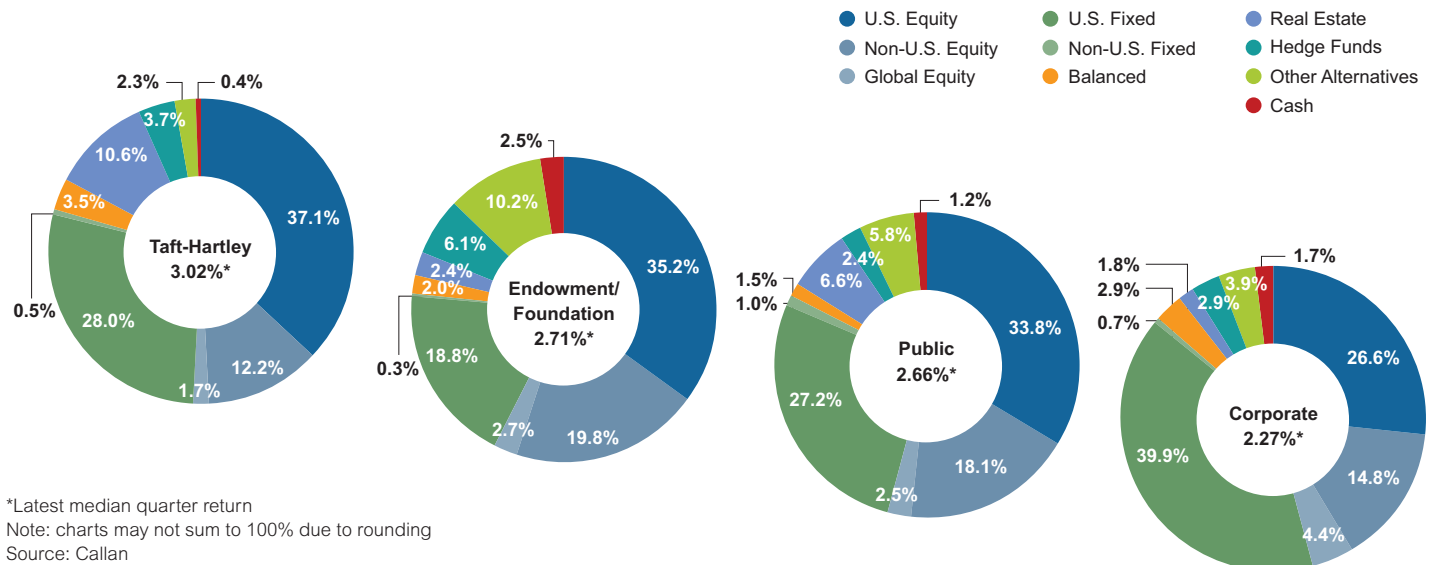
## Callan Fund Sponsor Returns for the Quarter



Source: Callan

- They are refining the definition of growth to include investments such as high yield, convertibles, low-volatility equity, hedge funds, multi-asset class strategies, and options-based strategies.
- Many sponsors are seeking higher returns outside of traditional asset classes such as equity and fixed income, and

## Callan Fund Sponsor Average Asset Allocation

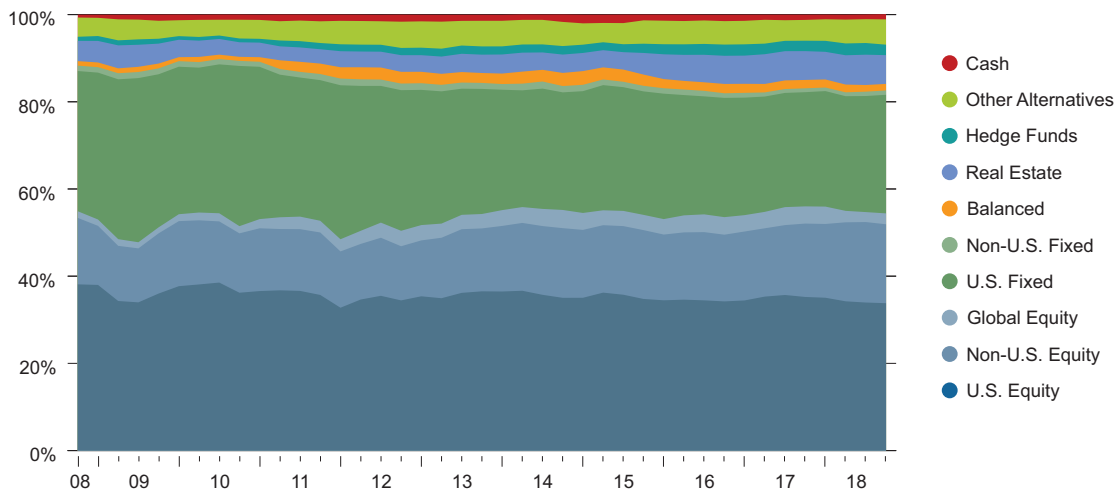


\*Latest median quarter return  
 Note: charts may not sum to 100% due to rounding  
 Source: Callan

- worry about risk mitigation. The late stage of the economic cycle combined with elevated equity valuations and low bond yields is causing sponsors to explore allocations to U.S. Treasuries, managed futures, and tail risk hedging.
- Concerns about fees and controlling costs continue among plan sponsors, and that issue has been an incentive to increase passive exposure.
  - For defined contribution plans, fee reduction and disclosure, compliance, and evaluating the structure of fund line-ups are key areas of focus. Target date funds continue to dominate asset flows; they now account for almost 32.5% of DC assets, according to the Callan DC Index™.
  - Negotiating fee reductions and fee transparency is ongoing for DC plan sponsors, in some cases to a significant extent. Interest in institutional investment structures is increasing as another path to fee reduction.
  - Non-qualified deferred compensation (NQDC) plans are being evaluated on a standalone basis due to their design flexibility.
  - Some corporate plan sponsors have made large voluntary contributions in 2018. As a result, plans are reaching full funding. A glidepath strategy for gradual de-risking is no longer needed for some; these plans can fully de-risk immediately.
  - Endowments, foundations, and sovereign wealth funds saw a continuing focus on evaluating a sustainable distribution rate to balance intergenerational equity.
  - Interest in multi-asset class strategies continues, in particular from public and corporate defined benefit plans. Callan divides the multi-asset class universe into four categories: long biased, absolute return, risk parity, and risk premia.

Callan Public Fund Database Average Asset Allocation

(10 Years)



Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, endowments/foundations, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

# Global Equity

## U.S. Equities

U.S. stocks posted broad-based gains in the third quarter fueled by strong economic growth, robust corporate earnings, and heightened stock buybacks. Several major indices hit record levels during the quarter, and the 7.7% gain for the **S&P 500 Index** was its biggest since the fourth quarter of 2013. Volatility was muted in spite of persistent headlines around threats of trade wars and the ever-changing negotiations to avert them.

### Large Cap Outpaces Small Cap

- Tax reform and U.S. prosperity contributed to an acceleration in corporate earnings growth, and valuations remained elevated as strong sentiment persisted given positive economic data.
- Amazon (+17.8%), Apple (+22.4%), and Microsoft (+16.4%) were strong contributors to large cap outperformance.
- FAANG stocks plus Microsoft had a more muted impact than in previous quarters but still contributed nearly 25% of the S&P 500's quarterly return.
- All sectors landed in positive territory. The strongest performers were Health Care (+14.5%), Industrials (+10%), and Communication Services (+9.9%).
- The new Communication Services sector represents 10% of the S&P 500 and includes several FAANG stocks such as Alphabet, Facebook, and Netflix; Tech and Consumer Discretionary now represent lower weightings in the Index.

## Growth Continues to Outperform Value

- The divergence between growth and value is approaching a historical high; growth is outpacing value this year by the widest margin in 15 years within large cap (**Russell 1000 Growth YTD: +17.1%** vs. **Russell 1000 Value YTD: +3.9%**) due largely to ongoing euphoria over the FAANG stocks.
- Momentum continued as the leading factor for the quarter and year-to-date; value has been the worst-performing style for the last 18 months.

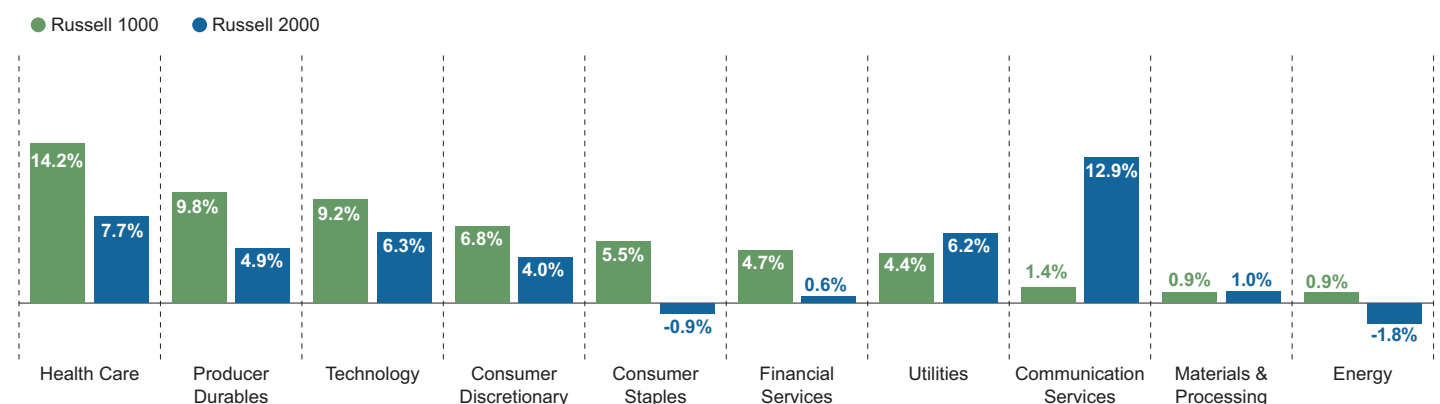
## Non-U.S. / Global Equity

Market divergence has emerged after synchronized growth in 2017. The U.S. continues to post positive returns while non-U.S. developed and emerging markets have lagged year-to-date, dragged down by geopolitical and economic uncertainties.

### Global/Non-U.S. Developed Markets See Slowing Growth

- The dollar rallied against the euro and yen given the fundamentals of the U.S. economy and the Fed's contractionary monetary policy; other central banks maintained the status quo.
- Global trade tensions coupled with Brexit negotiations and Italy's populism concerns tempered the European market despite solid earnings growth. In Japan, GDP growth and the re-election of Prime Minister Shinzo Abe as head of his party and sparked the market.

## Quarterly Performance of Select Sectors



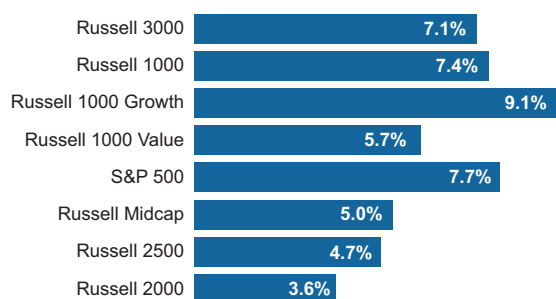
Source: FTSE Russell

- Top sector performers were Health Care, Telecommunication Services, and Energy.
- Real Estate, Financials, and Consumer Staples were hurt by rising interest rates and a flattening yield curve.
- Style had a de minimis impact; however, growth moderately outperformed value. Volatility and small cap factors were out of favor given market uncertainties.

### Emerging Markets Under Pressure

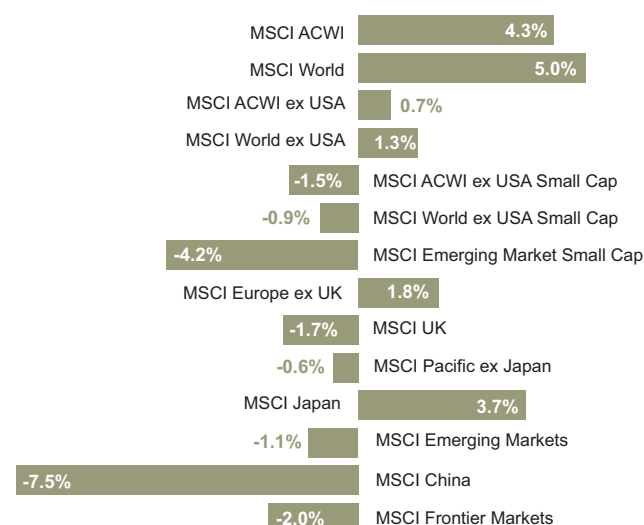
- Emerging markets were under pressure from a rising dollar, U.S. interest rates, and U.S.-China trade frictions.
- Turkey was the worst-performing country within emerging markets as the lira and local currency bonds crashed due to the twin deficit, high level of dollar debt, and inflation.
- The economic slowdown in China and trade tensions with the U.S. weakened the market.

### U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



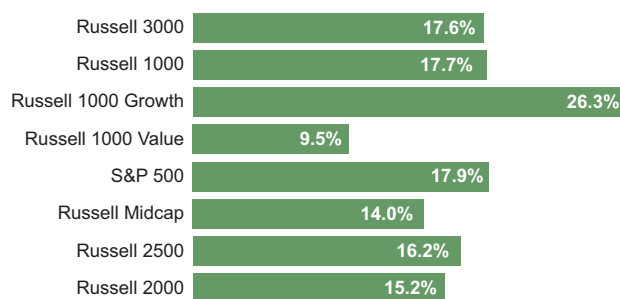
Source: MSCI

- Brazil and Russia were among the best performers due to climbing oil prices.
- Supported by the oil price hike, Energy was the best performer; Consumer Discretionary was the worst sector performer, weighed down by China and India.
- Value and large cap factors were in favor as Energy gained traction, and momentum struggled as market leadership rotated away from Asian tech companies.

### Non-U.S. Small Cap Underperforms

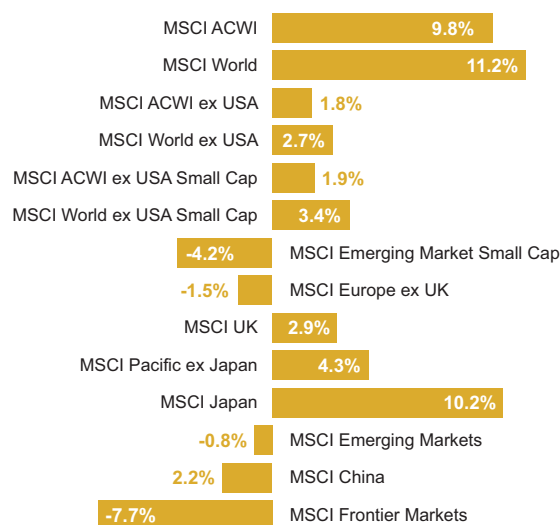
- Both non-U.S. developed and emerging market small cap underperformed large cap as the appetite for risk waned due to rising interest rates and the U.S. dollar, global trade tensions, and geopolitical conflicts.
- Value was favored in both non-U.S. developed and emerging market small cap as the Energy sector thrived.

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



Sources: FTSE Russell and Standard & Poor's

### Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

# Global Fixed Income

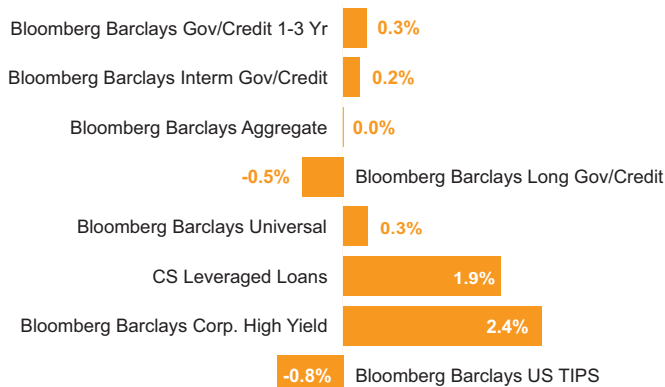
## U.S. Fixed Income

Fixed income markets grappled with multiple issues, resulting in continued volatility. Trade conflicts due to the imposition of tariffs, emerging market elections, and the rising U.S. dollar contributed to the unstable environment. U.S. rates rose in the third quarter and the yield curve continued flattening.

### High Yield Tops the Quarter

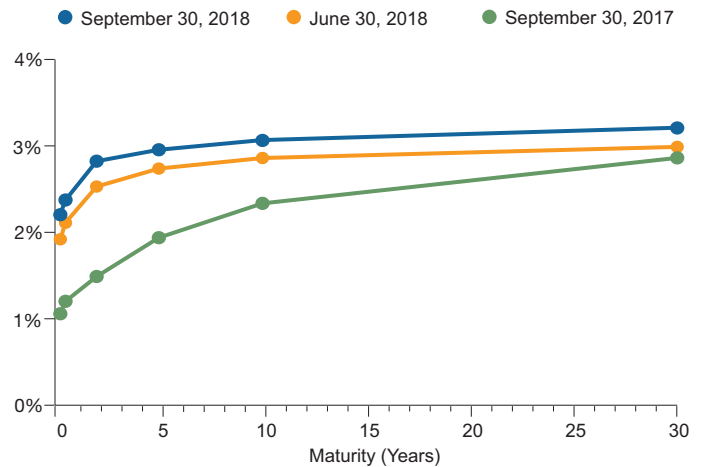
- The **Bloomberg Barclays US Aggregate Bond Index** was essentially flat, rising only 0.02% but gaining 1.6% year-to-date.
- The 10-year U.S. Treasury yield rose steadily, reaching a high of 3.10% before settling at 3.06% as strong economic data repriced investors' inflation expectations and increased the probability of a December rate hike by the Federal Reserve.
- The yield curve flattened, with short-term interest rates rising more quickly than longer-term rates. The spread between the 2-year and 10-year narrowed 9 basis points to 24 bps from last quarter, the tightest in 10 years.
- Investment-grade (IG) corporates gained 1.0% in the third quarter but dropped 2.3% YTD.
- New issuance remained strong with demand for new loans oversubscribed by an average of two to three times throughout the quarter.

### U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

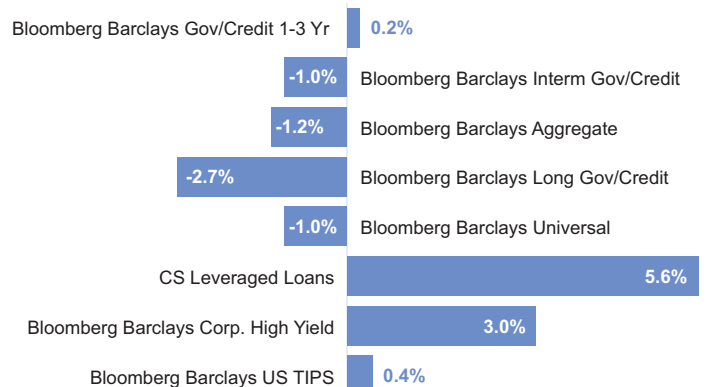
## U.S. Treasury Yield Curves



Source: Bloomberg

- Spreads continued to narrow this quarter.
- Higher rates and weaker overall fundamentals caused the IG sector to post negative results YTD.
- The **Bloomberg Barclays US Corporate High Yield Index** gained 2.4% in the quarter and +2.6% YTD.
- Low new issuance volume and stable fundamentals compressed spreads.

### U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

## GLOBAL FIXED INCOME (Continued)

- Bond issuance was \$41 billion, 33% lower than in the third quarter of 2017.
- Bank loans gained 1.8% in the quarter and 4.0% YTD.
- Demand continues for floating-rate securities despite covenant-light structures and higher spread duration.
- Heavy issuance continued through the quarter; YTD leveraged loan issuance is above \$900 billion, driven by leveraged buyout and mergers-and-acquisitions activities.
- CLO formation also increased demand in the third quarter.

### Non-U.S. Fixed Income

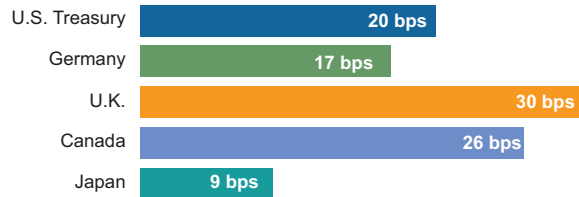
The **JPM EMBI Global Diversified Index** (USD denominated) gained 2.3%, with all sub-regions delivering positive results. Local currency emerging markets (EM), however, fared more poorly. The **JPM GBI-EM Global Diversified Index** fell 1.8% for the quarter but also endured significant intra-quarter volatility, including a 6.1% drop in August.

### Volatility Hinders Local EM Debt

- Return dispersion among countries was significant. Argentina (-35%) has seen its peso fall more than 50% this year to a record low as investors were spooked by previous currency debacles and worries over the economic picture. In addition to securing support from the International Monetary Fund, the country's central bank hiked short-term interest rates 15 percentage points to a global high of 60%.
- Turkey (-27%) endured a similar currency rout, though for different reasons. U.S.-imposed sanctions and concerns over central bank policy were the twin drivers of the lira's weakness. Turkey hiked short rates by 6.25 percentage points to 24% to stem its currency slide.
- Elsewhere, returns were far more modest (positive or negative); only Russia (-6%) and Mexico (+6%) were noteworthy.
- Issuers in Europe faced a different challenge as political uncertainties surrounding Italy caused that market to weaken.

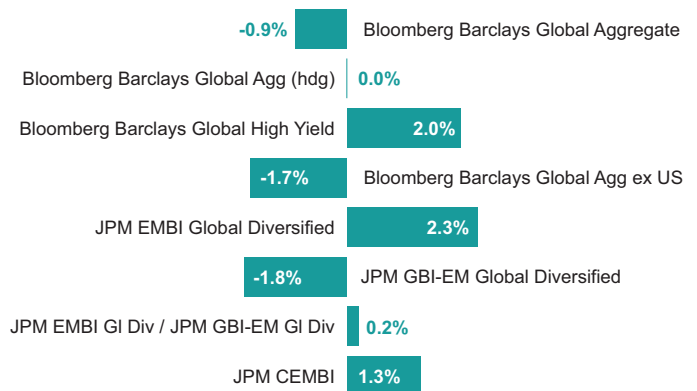
### Change in 10-Year Global Government Bond Yields

2Q18 to 3Q18



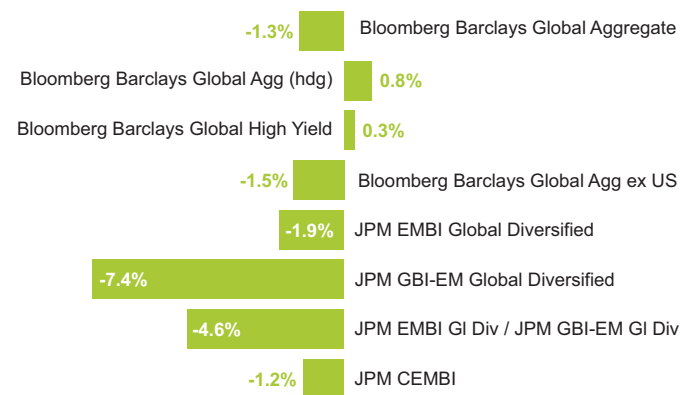
Source: Bloomberg Barclays

### Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

### Non-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase



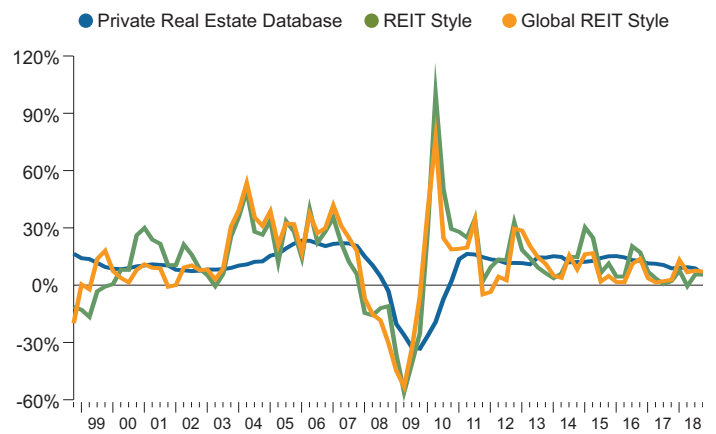
# Market Robust With Private Valuations at Historic Highs

REAL ESTATE | Kevin Nagy, CAIA

- Supply and demand fundamentals are balanced but peaking. Supply is in check and aided by strict commercial real estate lending standards. Demand continues on the back of strong U.S. growth.
- Transaction volumes took a step back from current cycle peak levels but remain robust, supporting pricing, which remains expensive.
- The Industrial sector is performing the strongest, benefiting from structural shifts in the economy, property markets, and consumer habits, which continue to dampen demand for traditional retail space. Office is performing as expected late in the cycle, and tenant improvements and other capital expenditures are increasingly eroding cash flow. Multi-family remains strong except for very high-end properties in some markets.
- U.S. core real estate returns continue to moderate and shift toward income with limited appreciation. Appreciation that occurs is coming from net operating income growth rather than further cap rate compression.
- Spreads remain relatively tight between core and value-add due to large amounts of capital in both strategies chasing fewer available deals, combined with more core investors chasing yield.
- Both U.S. and non-U.S. real estate investment trusts (REITs) are trading at discounts to net asset value, indicating relative value for public market securities compared to private real estate valuations.
- European real estate markets (ex-U.K.) are gaining momentum due to strong fundamentals in the major cities of Europe despite continued political noise across the region.
- Asian real estate products are seeing strong fundraising momentum, with existing managers reaching target fund sizes and Asia-focused open-end funds increasing.
- Farmland managers in the United States are concerned more about the reworking of the North American Free Trade Agreement than the trade war with China. Chinese tariffs on soybeans are seen as a temporary dislocation as opposed to a long-term headwind.

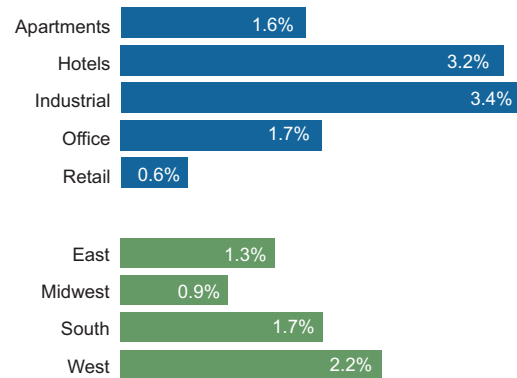
- As private real estate valuations continue to test historical highs, investors are looking at other sectors, such as real estate debt and REITs, to access the best risk-adjusted returns from real estate. This is resulting in the formation of some products with very wide mandates that allow the investment manager to place capital across real estate debt and equity markets and up and down the capital stack based on relative value.

## Rolling One-Year Returns



Source: Callan

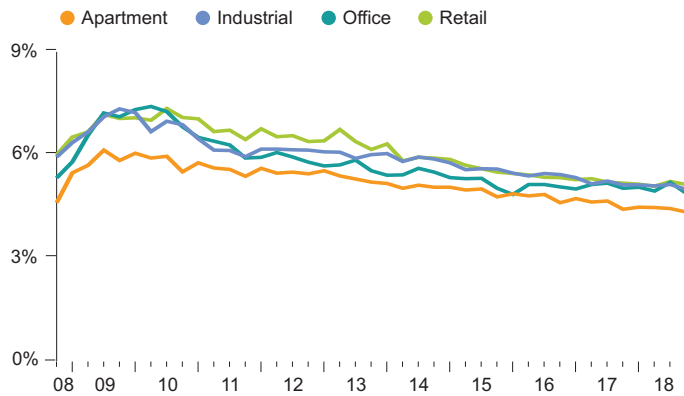
## Sector Quarterly Returns by Property Type and Region



Source: NCREIF

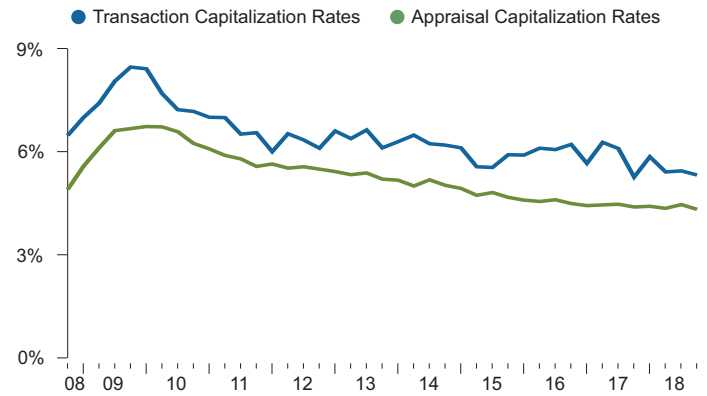
## REAL ESTATE (Continued)

### NCREIF Capitalization Rates by Property Type



Source: NCREIF  
Note: Capitalization rates are appraisal-based.

### NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF  
Note: Transaction capitalization rate is equal weighted.

### Callan Database Median and Index Returns\* for Periods ended September 30, 2018

Private Real Assets	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Real Estate ODCE Style	1.51	5.57	7.68	8.32	9.94	4.64	7.09
NFI-ODCE (value wt net)	1.87	5.75	7.71	7.83	9.71	4.62	7.28
NCREIF Property	1.67	5.27	7.16	7.75	9.57	6.42	8.96
NCREIF Farmland	1.13	3.62	6.66	7.12	9.86	11.62	14.62
NCREIF Timberland	1.02	2.44	4.00	3.52	5.99	4.01	7.42
<b>Public Real Estate</b>							
Global Real Estate Style	0.25	1.00	5.57	7.18	7.10	7.64	9.62
EPRA/NAREIT Developed	-0.30	0.06	3.66	6.19	5.43	6.04	--
Global ex-U.S. Real Estate Style	-0.14	1.49	7.08	6.96	5.27	6.83	9.61
EPRA/NAREIT Developed ex US	-0.99	-0.96	5.36	7.25	3.97	6.48	8.58
U.S. REIT Style	0.88	2.14	4.61	7.94	9.72	8.37	10.31
NAREIT Equity REITs	0.79	1.81	3.35	7.64	9.16	7.44	9.41

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NAREIT, NCREIF

# More Tricks Than Treats

PRIVATE EQUITY | Gary Robertson

Third quarter private equity partnerships holding final closes totaled \$140 billion, with 197 new partnerships formed, according to Pitchbook. The dollar volume rose by 30% from \$108 billion, but the number of funds closing declined by 6% from 210 in the prior quarter. Year-to-date, 2018 is running \$64 billion (or 15%) behind a year ago. Investors are pursuing broad diversification with buyouts tracking to less than 50% of capital raised, and all other major strategies receiving significant new allocations.

- New buyout transactions declined although activity remained strong overall, according to PitchBook. Funds closed 1,477 investments with \$126 billion in disclosed deal value, representing a 17% decline in count and a 4% dip in dollar value from the second quarter's 1,775 investments and \$131 billion of announced value. The \$13.8 billion purchase of Unilever's vegetable spread business (e.g., Country Crock) by KKR was the quarter's largest buyout.
- According to PitchBook, new investments in venture capital companies totaled 4,010 rounds of financing with \$53 billion of announced value. The number of investments was down 23% from the prior quarter, and announced value fell 26%. The median pre-money valuations continued to increase across the board, with Series D showing the largest increases.
- There were 454 private M&A exits of private equity-backed companies (excluding venture capital), PitchBook reports, with disclosed values totaling \$131 billion. Both private

## Funds Closed January 1 to September 30, 2018

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	270	45,756	12%
Growth Equity	38	24,553	7%
Buyouts	148	175,110	47%
Mezzanine Debt	44	42,482	11%
Distressed	11	23,103	6%
Energy	22	20,222	5%
Secondary and Other	55	27,368	7%
Fund-of-funds	29	11,496	3%
<b>Totals</b>	<b>617</b>	<b>370,090</b>	<b>100%</b>

Source: PitchBook  
Figures may not total due to rounding.

- sale count and announced dollar volume were down from the prior quarter's 620 sales and \$135 billion. There were 26 private-equity backed IPOs in the third quarter raising an aggregate \$7 billion, down from 53 totaling \$16 billion previously.
- Venture-backed M&A exits totaled 276 transactions with disclosed value of \$34 billion. The number of sales declined from 344 in the second quarter, but announced values increased slightly from \$31 billion in the second quarter. There were 53 VC-backed IPOs in the third quarter with a combined float of \$14 billion. For comparison, the second quarter had 69 IPOs and total issuance of \$19 billion.

Please see our upcoming issue of *Private Equity Trends* for more in-depth coverage.

## Private Equity Performance Database (%) (Pooled Horizon IRRs through June 30, 2018\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.68	12.97	9.23	16.18	9.51	9.70	17.90
Growth Equity	5.83	20.09	12.21	13.63	9.95	13.04	13.47
All Buyouts	5.38	22.64	13.65	14.41	8.83	14.59	12.43
Mezzanine	3.18	14.72	9.70	10.18	8.80	9.67	8.67
Distressed	2.45	10.99	6.72	9.52	9.49	10.77	10.34
<b>All Private Equity</b>	<b>3.63</b>	<b>15.26</b>	<b>10.10</b>	<b>10.82</b>	<b>9.25</b>	<b>11.47</b>	<b>11.24</b>
S&P 500	4.82	19.11	11.94	13.97	9.12	12.97	12.81

Private equity returns are net of fees.

Sources: Standard & Poor's and Thomson Reuters/Cambridge

\*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Active Trading Grinds Forward Under Market Stress

HEDGE FUNDS/MACs | Jim McKee

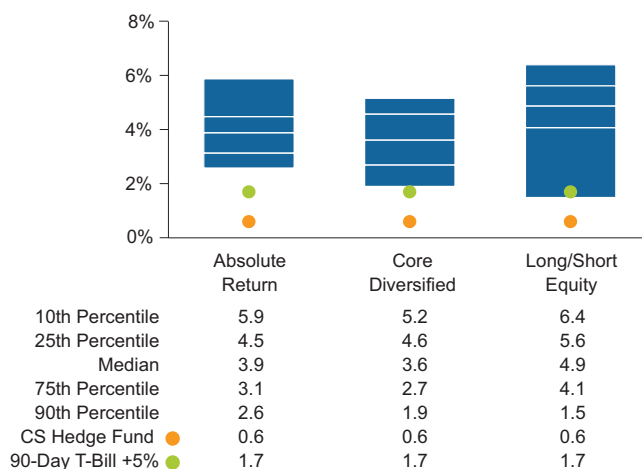
## Hedge Funds

A resilient U.S. economy stimulated by tax cuts and falling unemployment pushed up U.S. stocks and the U.S. dollar in the third quarter. The stronger dollar tied to rising short-term rates undermined a slowing Chinese economy as well as markets linked to it. Divergent economic forces around the globe created a modestly profitable trading environment for most hedge funds.

The **Credit Suisse Hedge Fund Index** gained 0.6%.

- Aided by climbing U.S. stock prices, *Long/Short Equity* (+1.5%) topped CS hedge fund strategies.
- Supported by the strong U.S. corporate environment, event-driven strategies (*Event-Driven Multi*, *Distressed*, *Risk Arb*) made modest but steady gains.
- *Emerging Markets* (-4.1%) suffered the most, surrendering its excess returns over passive benchmarks from prior quarters.
- Reflecting live hedge fund portfolios, the **HFRI FOF Composite Index**, net of all fees, inched forward 0.3%.

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, Federal Reserve

## Callan Database Median and Index Returns\* for Periods ended September 30, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	0.37	4.53	3.96	4.04	4.54	4.89
Callan Absolute Return FOF Style	0.42	4.60	3.73	3.88	4.33	4.45
Callan Core Diversified FOF Style	0.68	3.37	3.76	3.61	4.36	5.07
Callan Long/Short Equity FOF Style	-0.30	4.86	5.17	4.87	5.33	5.89
Credit Suisse Hedge Fund	0.59	3.49	3.09	3.39	4.43	5.39
CS Convertible Arbitrage	0.92	1.86	3.97	2.56	6.05	3.97
CS Distressed	0.79	3.36	4.46	3.44	5.00	6.36
CS Emerging Markets	-4.08	-3.98	5.23	3.70	4.69	6.73
CS Equity Market Neutral	-0.24	1.20	1.08	1.77	-3.18	0.20
CS Event-Driven Multi	1.14	4.27	2.37	1.70	3.98	5.72
CS Fixed Income Arb	0.93	4.71	4.41	3.88	5.22	4.06
CS Global Macro	-0.19	3.56	2.66	2.68	4.75	6.36
CS Long/Short Equity	1.54	5.55	4.37	5.40	5.72	6.49
CS Managed Futures	0.63	3.29	-2.66	2.84	1.42	3.15
CS Multi-Strategy	0.98	3.05	4.84	5.67	6.59	6.36
CS Risk Arbitrage	0.82	1.13	4.50	2.54	3.33	3.95
HFRI Asset Wtd Composite	0.37	3.88	3.88	3.87	4.74	--
90-Day T-Bill + 5%	1.70	6.59	5.84	5.52	5.34	6.30

\*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

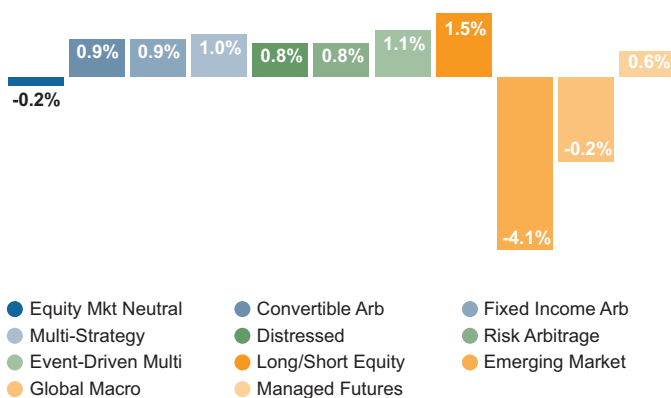
- Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** forged ahead 0.4%, net of all fees and expenses.
- Despite the U.S. equity rally, the median *Callan Long/Short Equity FOF* (-0.3%) slipped behind the *Callan Absolute Return FOF* (+0.4%), which tends to benefit from event-driven deals and credit trades.
- With diversifying exposures to both non-directional and directional styles, the *Core Diversified FOF* gained 0.7%.

### Multi-Asset Class (MAC) Strategies

Callan's **Multi-Asset Class (MAC) Style Groups** continued to struggle in the third quarter, particularly those overweighting bonds and underweighting U.S. growth stocks, as a stronger dollar and rising rates created a difficult top-down environment.

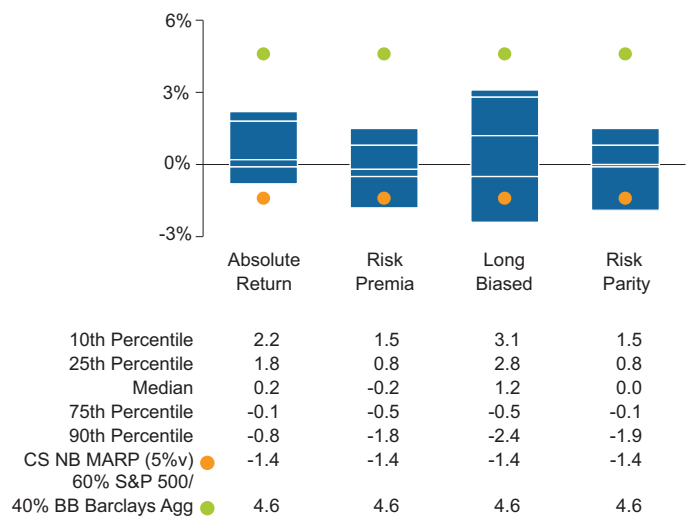
- The **HFR Risk Parity Index** targeting 12% volatility slipped 0.3%, given its typical fixed income bias.
- The **CS NB Multi Asset Risk Premia Index** (-1.4%) is an equal risk-weighted index of alternative risk factors (value, carry, momentum, and liquidity) across four capital markets (equity, fixed income, currency, and commodities) targeting 5% volatility.
- Within CS NB MARP, *Equity Value* (-3.4%) sank again, adding to losses from the prior two quarters for a 11.9% year-to-date loss. Supported by rising energy prices, *Commodity Momentum* (+5.9%) was strong again, leading to a 16% YTD gain.

### Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

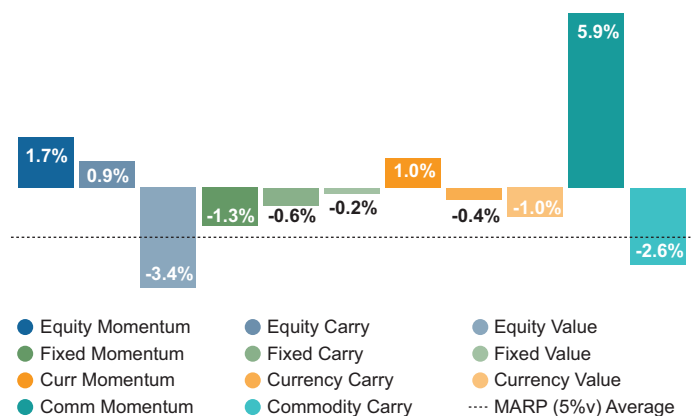
### MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Credit Suisse, Neuberger Berman, Standard & Poor's

- Buoyed by its usually long equity bias within a dynamic asset allocation framework, the *Callan Long Biased MAC* advanced 1.2%.
- Likely impacted by underlying tilts to an equity value risk factor, the median *Callan Risk Premia MAC* slipped 0.2%.
- Typically targeting equal risk-weighted allocations to major asset classes with leverage, the *Callan Risk Parity MAC* (0.0%) was flat.
- As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, the *Callan Absolute Return MAC* edged ahead 0.2%.

### Alternative Risk Factor Breakdown



Sources: Credit Suisse Neuberger Berman

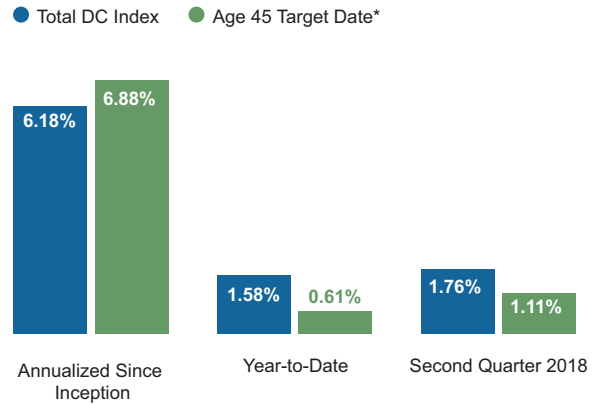
# DC Plans Rebound, TDFs Struggle

DEFINED CONTRIBUTION | James Veneruso, CFA, CAIA

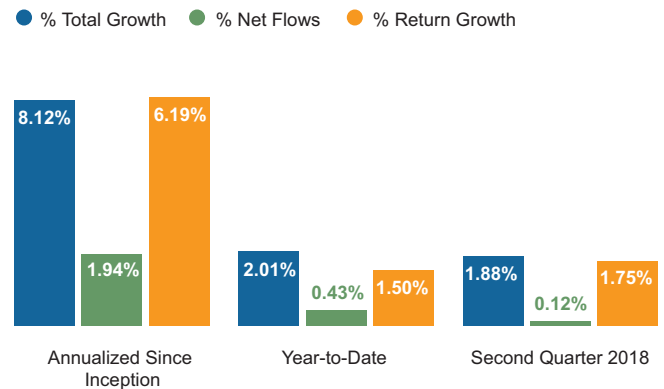
- The Callan DC Index™ rebounded from first quarter losses, returning 1.8% in the second quarter and outpacing the 1.1% gain of the Age 45 Target Date Fund (TDF).
- TDFs suffered from their higher allocation to non-U.S. equity and emerging markets. The average DC plan has a 5.6% allocation to non-U.S. equity and emerging markets, compared to 26.5% for the Age 45 TDF.
- Since inception, the DC Index's annual return of 6.2% trails the Age 45 TDF by 70 basis points.
- DC plan balances grew by 1.9%, driven primarily by market performance. For the quarter, inflows (participant and plan sponsor contributions) accounted for only 12 bps of growth.
- TDFs absorbed approximately 92 cents of every dollar that flowed into DC funds.
- Several DC investments saw material net outflows, including U.S. equities (large and small/mid cap), U.S./global balanced, and U.S. fixed income.
- Second quarter turnover (i.e., net transfer activity levels within DC plans) increased slightly from the first quarter to 0.35%, well below the historical average of 0.62%.
- The Callan DC Index's equity allocation ended the quarter at 70%, modestly above its historical average (68%).
- The second quarter marked another all-time high for TDFs' share of DC assets, expanding to 32.5%. U.S. large cap continues to be the second-highest allocation, at 24.1%.
- While TDFs have a larger overall weight within the Index, they remain less prevalent than the next largest plan holding, U.S. large cap equity. In plans that offer TDFs, they account for 35% of plan assets. U.S. large cap equity funds account for 24% of plan assets, even though they are offered by 100% of DC plans.

*The Callan DC Index is an equally weighted index tracking the cash flows and performance of nearly 90 plans, representing more than one million DC participants and over \$135 billion in assets. The Index is updated quarterly and is available on Callan's website, as is the quarterly DC Observer newsletter.*

## Investment Performance



## Growth Sources



## Net Cash Flow Analysis (Second Quarter 2018) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	91.57%
Brokerage Window	2.33%
Company Stock	-18.29%
U.S. Large Cap	-44.41%
<b>Total Turnover**</b>	<b>0.35%</b>

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

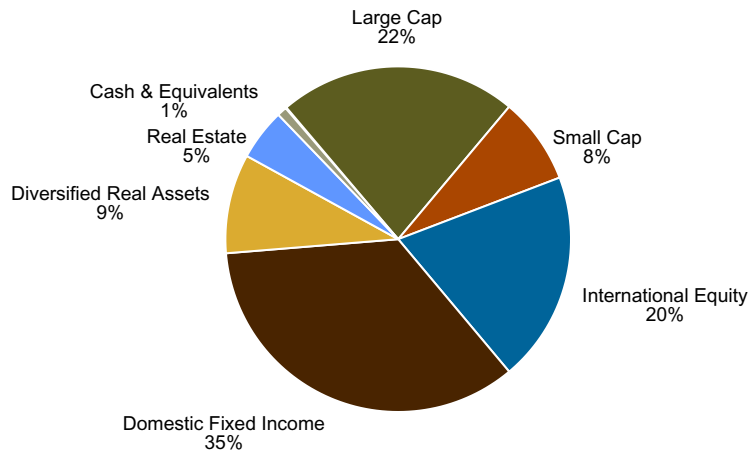
\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

\*\* Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

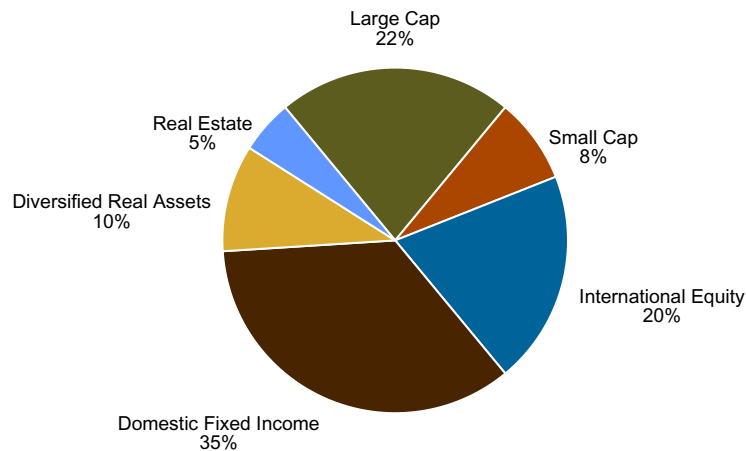
## Actual vs Target Asset Allocation As of September 30, 2018

The first chart below shows the Fund's asset allocation as of September 30, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

### Actual Asset Allocation



### Target Asset Allocation



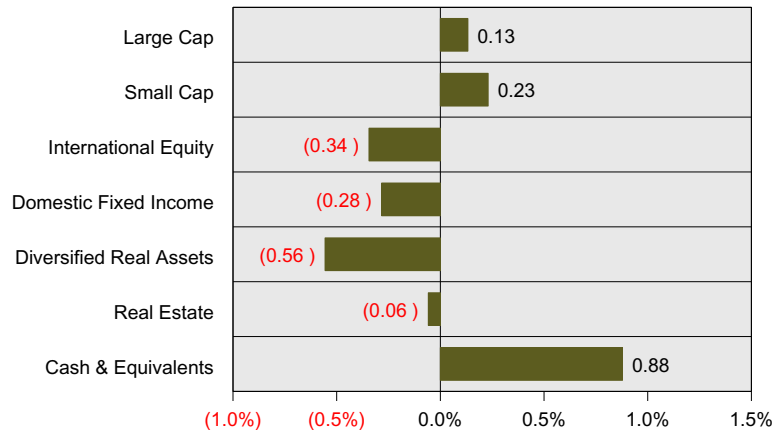
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	1,315,453	22.3%	22.0%	0.3%	20,507
Small Cap	474,473	8.1%	8.0%	0.1%	3,584
International Equity	1,160,993	19.7%	20.0%	(0.3%)	(16,230)
Domestic Fixed Income	2,050,114	34.8%	35.0%	(0.2%)	(10,026)
Diversified Real Assets	549,288	9.3%	10.0%	(0.7%)	(39,324)
Real Estate	283,299	4.8%	5.0%	(0.2%)	(11,007)
Cash & Equivalents	52,496	0.9%	0.0%	0.9%	52,496
<b>Total</b>	<b>5,886,116</b>	<b>100.0%</b>	<b>100.0%</b>		

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI EAFE, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

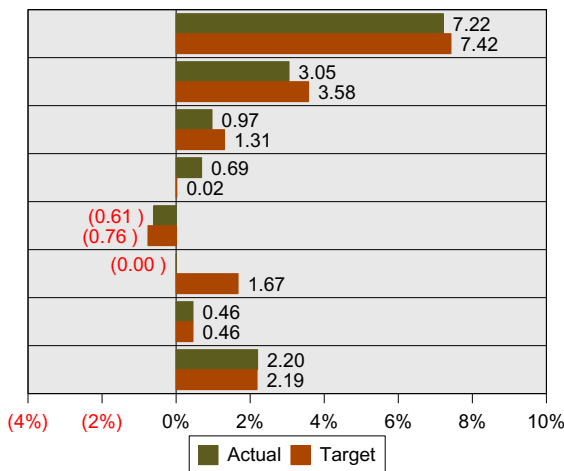
## Quarterly Total Fund Relative Attribution - September 30, 2018

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

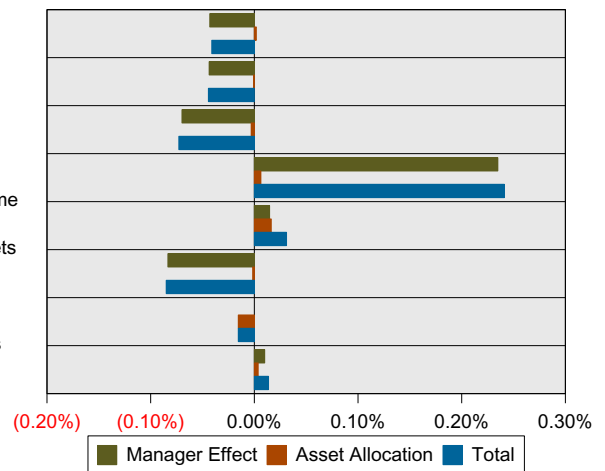
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended September 30, 2018

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	7.22%	7.42%	(0.04%)	0.00%	(0.04%)
Small Cap	8%	8%	3.05%	3.58%	(0.04%)	(0.00%)	(0.04%)
International Equity	20%	20%	0.97%	1.31%	(0.07%)	(0.00%)	(0.07%)
Domestic Fixed Income	35%	35%	0.69%	0.02%	0.23%	0.01%	0.24%
Diversified Real Assets	9%	10%	(0.61%)	(0.76%)	0.01%	0.02%	0.03%
Real Estate	5%	5%	(0.00%)	1.67%	(0.08%)	(0.00%)	(0.08%)
Cash & Equivalents	1%	0%	0.46%	0.46%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>2.20%</b>	<b>2.19%</b>	<b>0.01%</b>	<b>0.00%</b>	<b>0.01%</b>

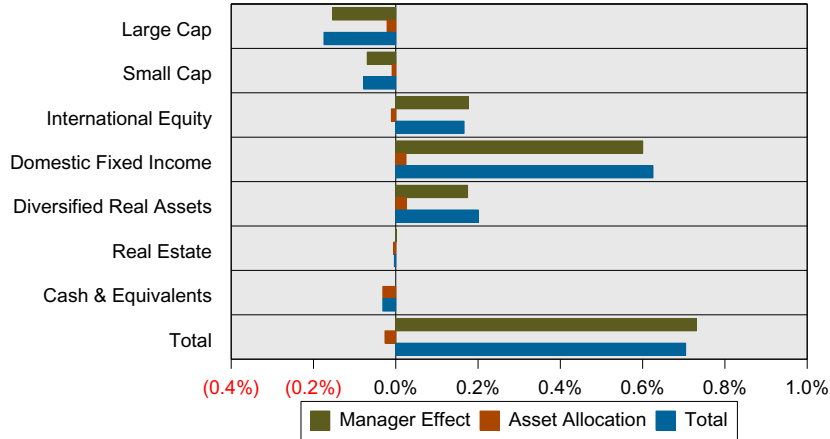
\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.



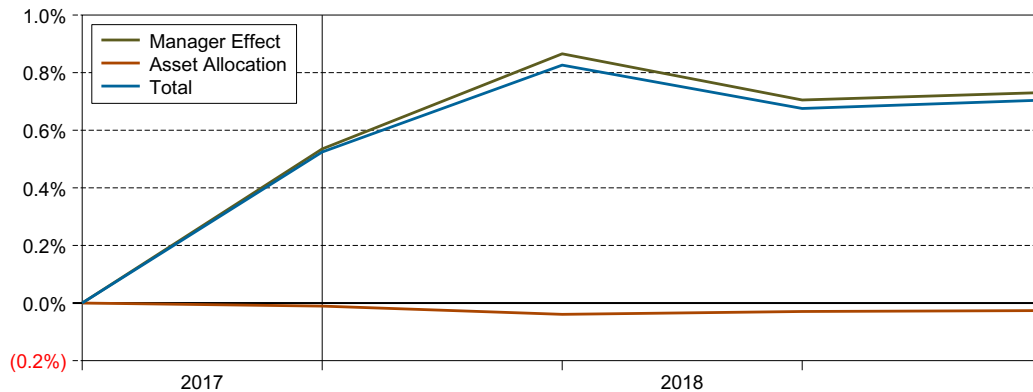
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

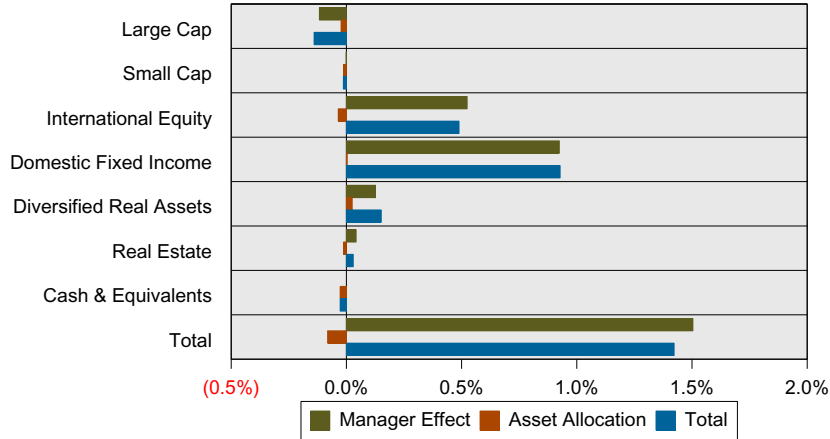
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	16.98%	17.76%	(0.15%)	(0.02%)	(0.17%)
Small Cap	8%	8%	14.29%	15.24%	(0.07%)	(0.01%)	(0.08%)
International Equity	20%	20%	3.50%	2.67%	0.18%	(0.01%)	0.17%
Domestic Fixed Income	34%	35%	0.45%	(1.22%)	0.60%	0.02%	0.63%
Diversified Real Assets	10%	10%	2.42%	0.66%	0.17%	0.03%	0.20%
Real Estate	5%	5%	7.12%	7.16%	0.00%	(0.00%)	(0.00%)
Cash & Equivalents	1%	0%	1.42%	1.42%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>6.24%</b>	<b>5.53%</b>	<b>+ 0.73%</b>	<b>+ (0.03%)</b>	<b>0.70%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

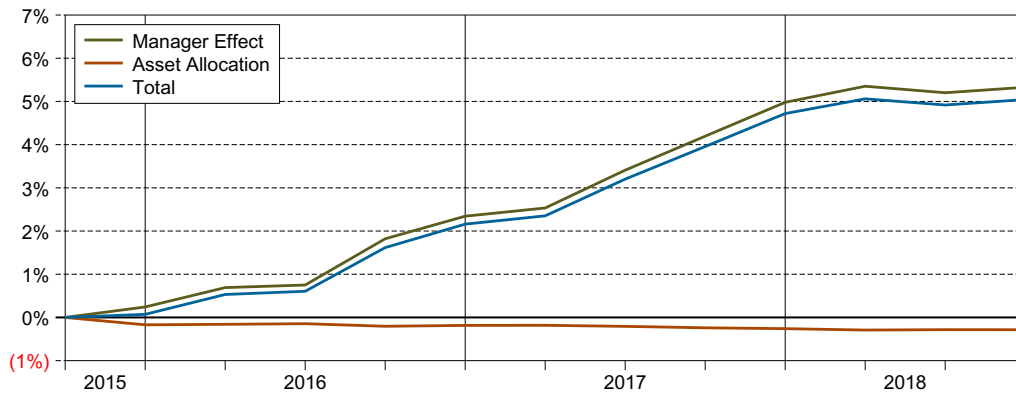
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

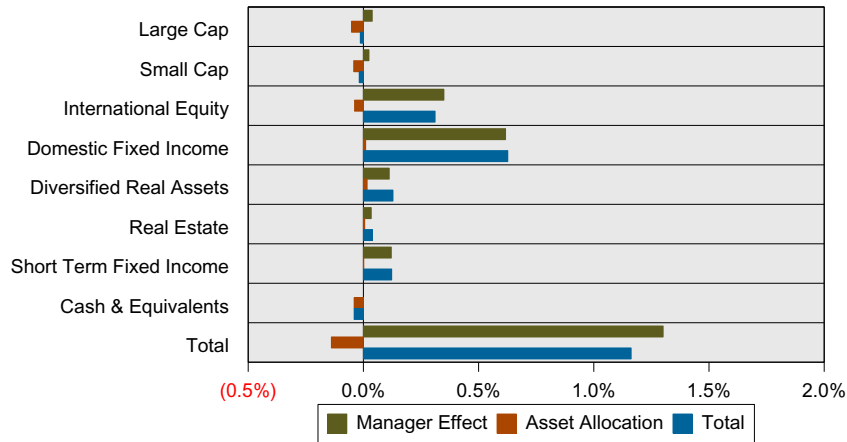
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	16.51%	17.07%	(0.12%)	(0.02%)	(0.14%)
Small Cap	8%	8%	17.17%	17.12%	(0.00%)	(0.01%)	(0.01%)
International Equity	20%	20%	11.72%	9.05%	0.52%	(0.04%)	0.49%
Domestic Fixed Income	35%	35%	3.88%	1.31%	0.92%	0.00%	0.93%
Diversified Real Assets	10%	10%	3.48%	2.21%	0.13%	0.03%	0.15%
Real Estate	6%	5%	8.47%	7.75%	0.04%	(0.01%)	0.03%
Cash & Equivalents	1%	0%	0.74%	0.74%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>9.42%</b>	<b>8.00%</b>	<b>+ 1.50%</b>	<b>+ (0.08%)</b>	<b>1.42%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

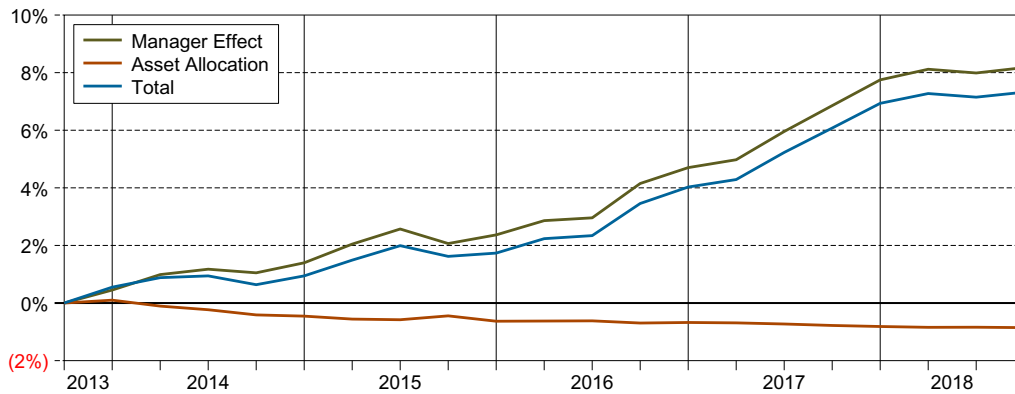
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

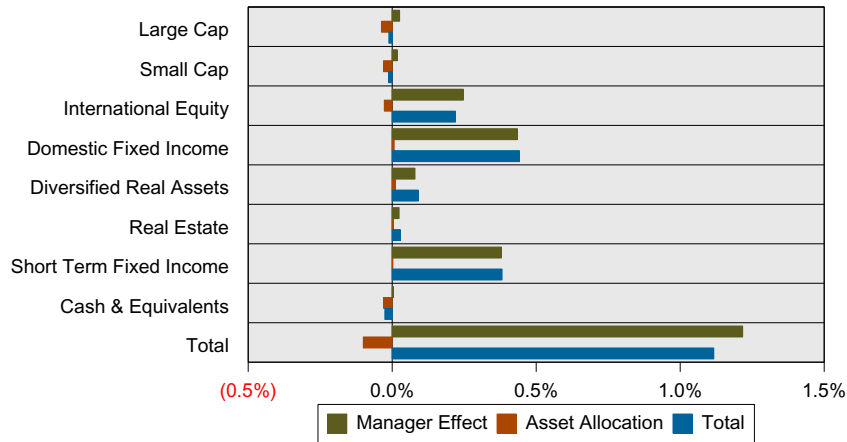
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	20%	20%	14.02%	13.67%	0.04%	(0.05%)	(0.01%)
Small Cap	7%	7%	11.57%	11.07%	0.02%	(0.04%)	(0.02%)
International Equity	18%	19%	6.17%	4.31%	0.35%	(0.04%)	0.31%
Domestic Fixed Income	32%	32%	4.24%	2.28%	0.62%	0.01%	0.63%
Diversified Real Assets	8%	8%	-	-	0.11%	0.02%	0.13%
Real Estate	5%	5%	10.50%	9.57%	0.03%	0.01%	0.04%
Short Term Fixed Income	9%	9%	-	-	0.12%	0.00%	0.12%
Cash & Equivalents	1%	0%	0.45%	0.45%	0.00%	(0.04%)	(0.04%)
<b>Total</b>			<b>6.53%</b>	<b>5.37%</b>	<b>+ 1.30%</b>	<b>+ (0.14%)</b>	<b>1.16%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

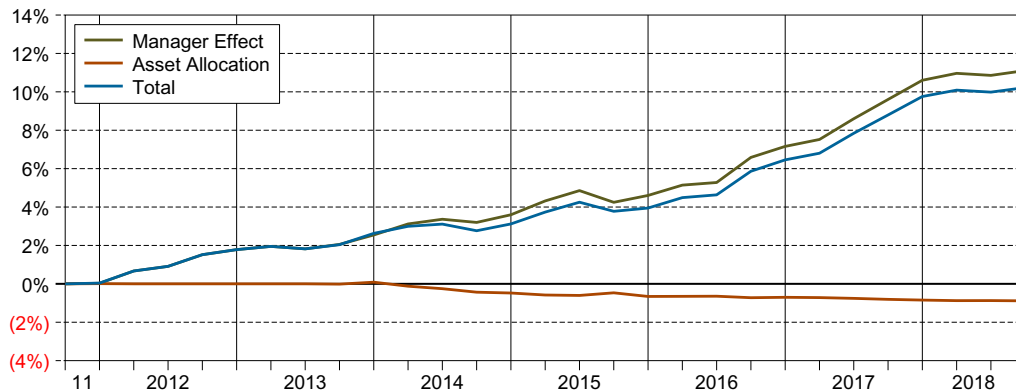
## Cumulative Total Fund Relative Attribution - September 30, 2018

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Seven Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Seven Year Annualized Relative Attribution Effects

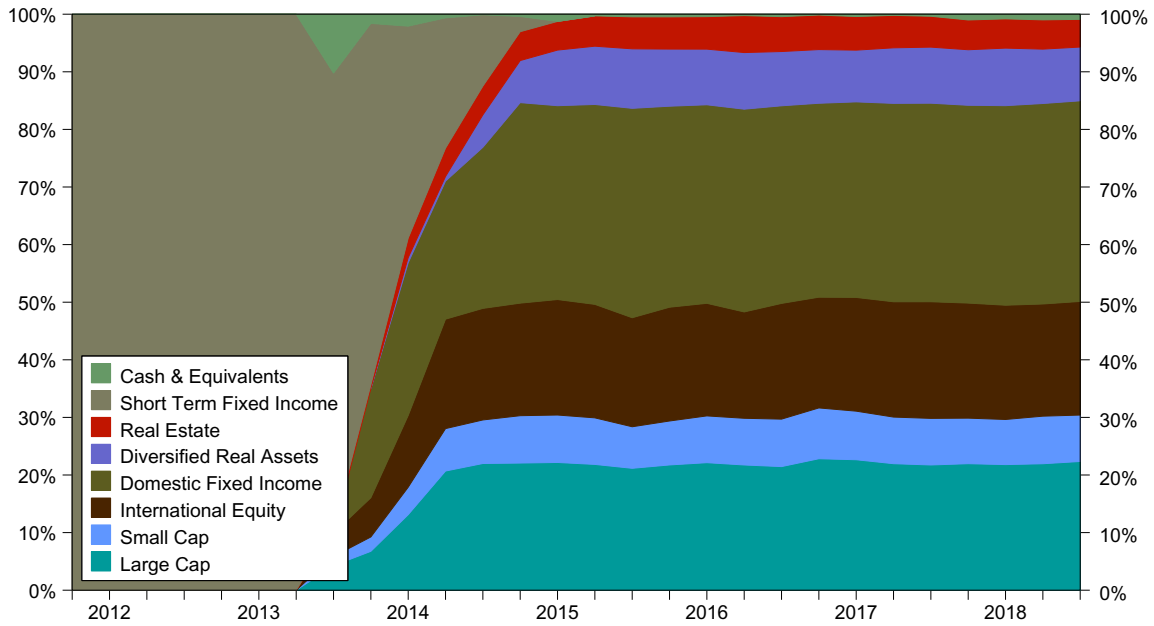
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	15%	15%	-	-	0.03%	(0.04%)	(0.01%)
Small Cap	5%	5%	-	-	0.02%	(0.03%)	(0.01%)
International Equity	13%	13%	-	-	0.25%	(0.03%)	0.22%
Domestic Fixed Income	23%	23%	-	-	0.43%	0.01%	0.44%
Diversified Real Assets	6%	6%	-	-	0.08%	0.01%	0.09%
Real Estate	4%	3%	-	-	0.02%	0.00%	0.03%
Short Term Fixed Income	32%	33%	-	-	0.38%	0.00%	0.38%
Cash & Equivalents	3%	2%	0.37%	0.37%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>5.13%</b>	<b>4.01%</b>	<b>1.22%</b>	<b>(0.10%)</b>	<b>1.12%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

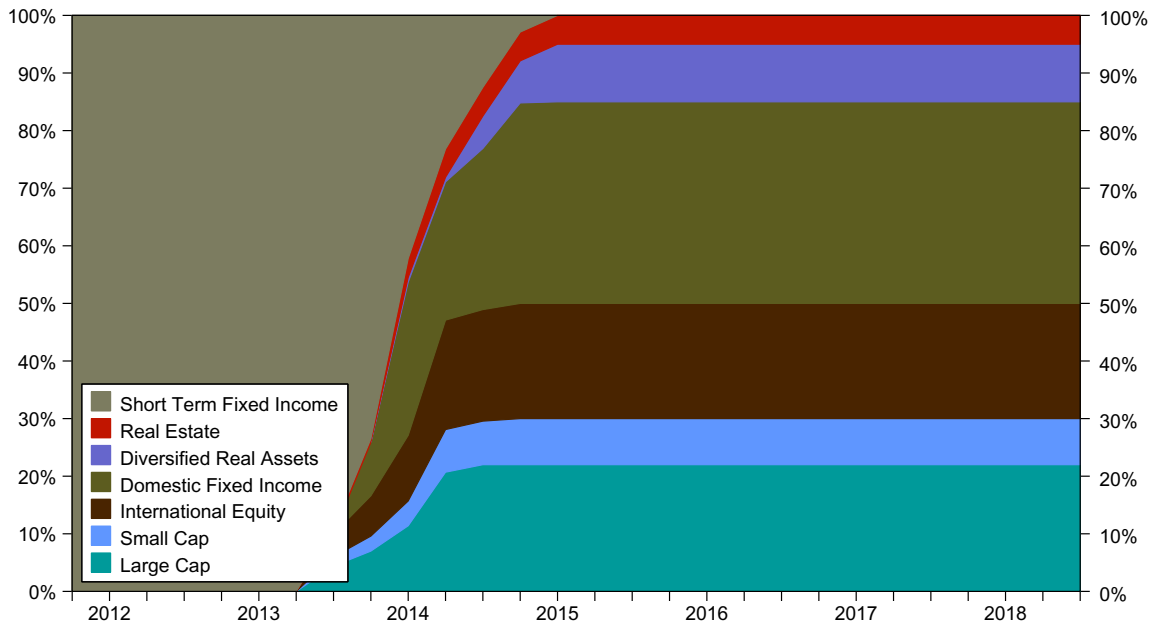
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation

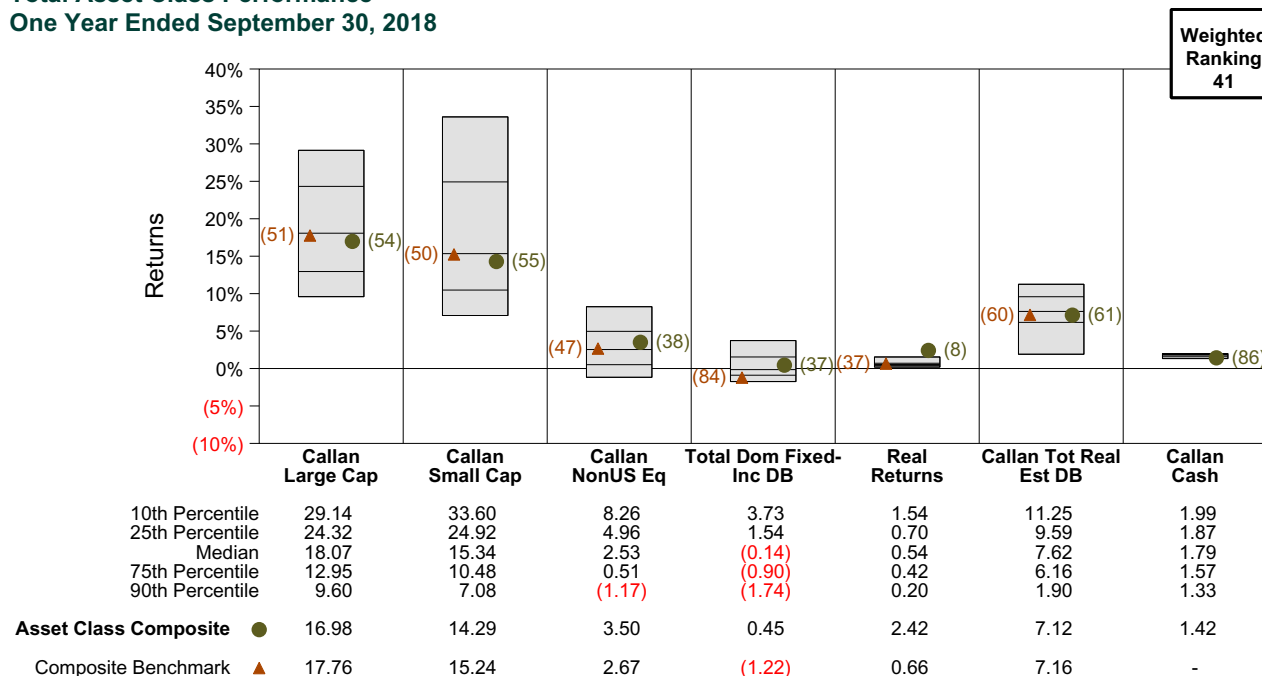


\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

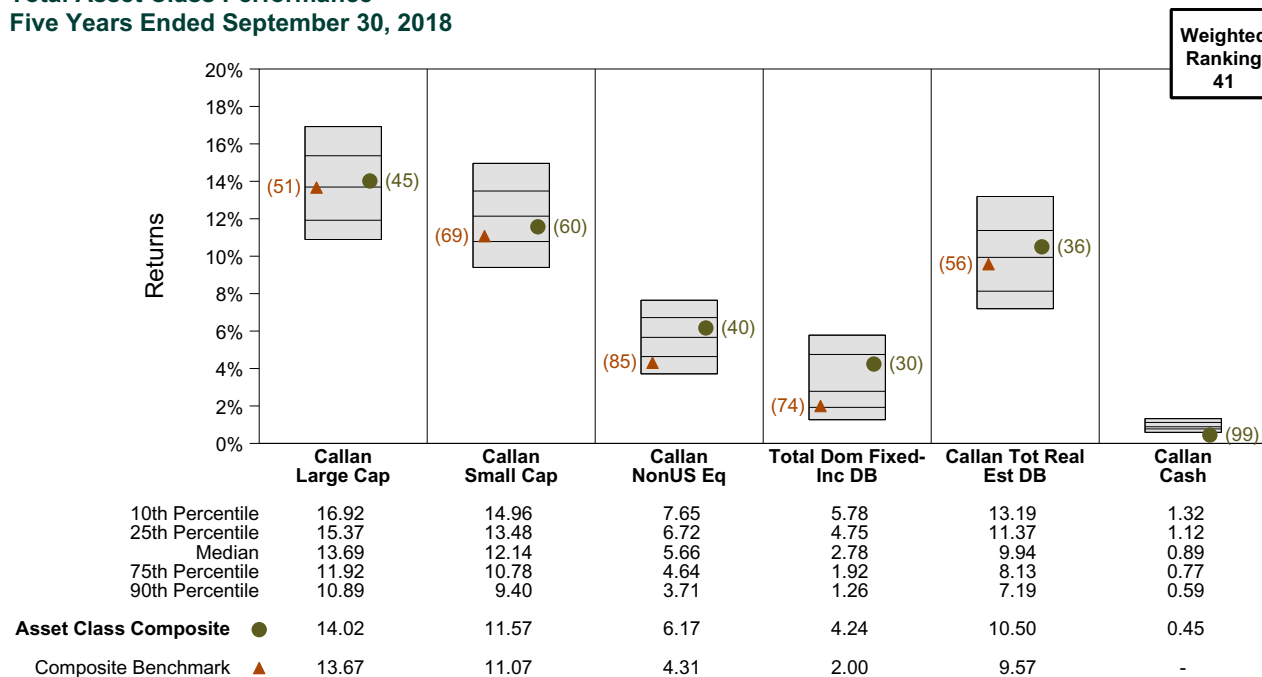
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended September 30, 2018



### Total Asset Class Performance Five Years Ended September 30, 2018



\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2018, with the distribution as of June 30, 2018. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

### Asset Class Allocation

	September 30, 2018		Net New Inv.	Inv. Return	June 30, 2018	
	Market Value	Weight			Market Value	Weight
<b>Global Equity</b>	<b>\$2,950,918,872</b>	<b>50.13%</b>	<b>\$66,521,815</b>	<b>\$113,065,894</b>	<b>\$2,771,331,164</b>	<b>49.69%</b>
<b>Domestic Equity</b>	<b>\$1,789,925,915</b>	<b>30.41%</b>	<b>\$2,348,521</b>	<b>\$102,521,331</b>	<b>\$1,685,056,062</b>	<b>30.21%</b>
<b>Large Cap</b>	<b>\$1,315,452,713</b>	<b>22.35%</b>	<b>\$2,476,188</b>	<b>\$88,479,837</b>	<b>\$1,224,496,687</b>	<b>21.95%</b>
L.A. Capital Enhanced	260,633,079	4.43%	(76,487)	19,016,416	241,693,150	4.33%
L.A. Capital Large Cap Growth	416,835,541	7.08%	(191,076)	35,807,341	381,219,276	6.84%
Parametric Clifton Large Cap	266,924,394	4.53%	0	18,659,462	248,264,932	4.45%
LSV Large Cap Value	371,059,699	6.30%	2,743,751	14,996,619	353,319,329	6.33%
<b>Small Cap</b>	<b>\$474,473,202</b>	<b>8.06%</b>	<b>\$(127,667)</b>	<b>\$14,041,494</b>	<b>\$460,559,375</b>	<b>8.26%</b>
Parametric Clifton SmallCap	253,018,530	4.30%	0	8,203,191	244,815,339	4.39%
PIMCO RAE	221,454,672	3.76%	(127,667)	5,838,303	215,744,036	3.87%
<b>International Equity</b>	<b>\$1,160,992,958</b>	<b>19.72%</b>	<b>\$64,173,294</b>	<b>\$10,544,562</b>	<b>\$1,086,275,102</b>	<b>19.48%</b>
DFA Intl SmallCap Value	112,706,396	1.91%	10,000,000	(991,979)	103,698,376	1.86%
LSV Intl Value	466,307,036	7.92%	34,597,577	7,835,823	423,873,636	7.60%
Vanguard Intl Explorer Fund	110,338,328	1.87%	5,000,000	(3,055,333)	108,393,661	1.94%
William Blair	471,641,197	8.01%	14,575,717	6,756,051	450,309,429	8.07%
<b>Domestic Fixed Income</b>	<b>\$2,050,114,204</b>	<b>34.83%</b>	<b>\$95,546,940</b>	<b>\$13,278,246</b>	<b>\$1,941,289,018</b>	<b>34.81%</b>
Ares ND Credit Strategies Fd	51,038,254	0.87%	2,400,000	0	48,638,254	0.87%
BND CDs	55,131,218	0.94%	(3,953,818)	448,752	58,636,284	1.05%
Cerberus ND Private Credit Fd	47,403,139	0.81%	0	798,708	46,604,431	0.84%
Declaration Total Return	146,020,141	2.48%	(80,057)	582,989	145,517,209	2.61%
Prudential	322,832,976	5.48%	84,858,609	570,960	237,403,408	4.26%
SSgA US Govt Credit Bd Idx	283,758,363	4.82%	13,000,000	130,121	270,628,242	4.85%
Wells Capital	535,973,504	9.11%	(204,585)	8,247,627	527,930,462	9.47%
Western Asset Management	549,333,434	9.33%	14,835,749	1,702,707	532,794,978	9.55%
Pooled Fixed Income(1)	58,623,176	1.00%	(15,308,957)	796,381	73,135,751	1.31%
<b>Global Real Assets</b>	<b>\$832,586,998</b>	<b>14.14%</b>	<b>\$25,954,949</b>	<b>\$(3,226,681)</b>	<b>\$809,858,731</b>	<b>14.52%</b>
<b>Real Estate</b>	<b>\$283,299,250</b>	<b>4.81%</b>	<b>\$0</b>	<b>\$(229)</b>	<b>\$283,299,479</b>	<b>5.08%</b>
Invesco Core Real Estate	137,080,387	2.33%	0	(229)	137,080,616	2.46%
JP Morgan RE Inc & Growth	146,218,863	2.48%	0	0	146,218,863	2.62%
<b>Diversified</b>	<b>\$549,287,748</b>	<b>9.33%</b>	<b>\$25,954,949</b>	<b>\$(3,226,452)</b>	<b>\$526,559,251</b>	<b>9.44%</b>
Western TIPS	384,800,014	6.54%	29,887,757	(5,571,882)	360,484,139	6.46%
ISQ Global Infrastructure II	4,278,756	0.07%	0	278,756	4,000,000	0.07%
JP Morgan Infrastructure	120,342,376	2.04%	(3,932,808)	2,066,674	122,208,511	2.19%
Grosvenor Cust. Infrastructure	39,866,601	0.68%	0	0	39,866,601	0.71%
<b>Cash</b>	<b>\$52,495,795</b>	<b>0.89%</b>	<b>\$(2,575,535)</b>	<b>\$231,124</b>	<b>\$54,840,206</b>	<b>0.98%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(157,940)</b>	<b>\$157,940</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$5,886,115,870</b>	<b>100.0%</b>	<b>\$185,290,228</b>	<b>\$123,506,522</b>	<b>\$5,577,319,120</b>	<b>100.0%</b>

(1) Comprised of PIMCO DiSCO II and PIMCO Bravo II.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Global Equity</b>					
Gross	4.06%	-	-	-	-
Net	4.01%	-	-	-	-
Weighted Benchmark	4.37%	-	-	-	-
<b>Domestic Equity</b>					
Gross	6.08%	16.26%	16.73%	13.39%	-
Net	6.04%	16.08%	16.50%	13.17%	-
Weighted Benchmark	6.39%	-	-	-	-
<b>Large Cap</b>					
Gross	7.22%	16.98%	16.51%	14.02%	-
Net	7.17%	16.78%	16.30%	13.81%	-
Russell 1000 Index	7.42%	17.76%	17.07%	13.67%	16.90%
L.A. Capital Enhanced - Gross	7.87%	17.00%	16.05%	13.56%	-
L.A. Capital Enhanced - Net	7.84%	16.85%	15.90%	13.41%	-
Russell 1000 Index	7.42%	17.76%	17.07%	13.67%	16.90%
L.A. Capital LargeCap Growth - Gross	9.39%	24.67%	18.46%	15.96%	-
L.A. Capital LargeCap Growth - Net	9.34%	24.42%	18.23%	15.73%	-
Russell 1000 Growth Index	9.17%	26.30%	20.55%	16.58%	18.69%
Parametric Clifton Large Cap - Gross	7.52%	17.09%	17.15%	14.10%	-
Parametric Clifton Large Cap - Net	7.52%	17.09%	17.09%	14.03%	-
S&P 500 Index	7.71%	17.91%	17.31%	13.95%	16.91%
LSV Large Cap Value - Gross	4.23%	9.17%	14.21%	12.21%	-
LSV Large Cap Value - Net	4.15%	8.86%	13.88%	11.90%	-
Russell 1000 Value Index	5.70%	9.45%	13.55%	10.72%	15.02%
<b>Small Cap</b>					
Gross	3.05%	14.29%	17.17%	11.57%	-
Net	3.02%	14.17%	16.91%	11.27%	-
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	16.43%
Parametric Clifton Small Cap - Gross	3.35%	14.67%	17.64%	12.00%	-
Parametric Clifton Small Cap - Net	3.35%	14.67%	17.40%	11.72%	-
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	16.43%
PIMCO RAE - Gross	2.71%	13.77%	16.61%	10.86%	-
PIMCO RAE - Net	2.65%	13.50%	16.32%	10.56%	-
Russell 2000 Index	3.58%	15.24%	17.12%	11.07%	16.43%
<b>International Equity</b>					
Gross	0.97%	3.50%	11.72%	6.17%	-
Net	0.89%	3.19%	11.39%	5.86%	-
Benchmark(1)	1.31%	2.67%	9.05%	4.31%	8.22%
DFA Intl Small Cap Value	(0.97%)	(3.00%)	10.34%	6.59%	-
World ex US SC Va	(0.30%)	0.79%	11.12%	5.87%	9.81%
LSV Intl Value - Gross	1.83%	0.33%	10.58%	5.70%	-
LSV Intl Value - Net	1.74%	(0.05%)	10.17%	5.30%	-
MSCI EAFE Index	1.35%	2.74%	9.23%	4.42%	8.30%
Vanguard Intl Explorer Fund	(2.83%)	0.29%	10.93%	8.04%	-
BMI, EPAC, <\$2 B	(0.45%)	4.26%	11.91%	7.49%	10.42%
William Blair - Gross	1.50%	9.08%	-	-	-
William Blair - Net	1.41%	8.68%	-	-	-
MSCI ACWI ex US IMI	0.39%	1.79%	10.14%	4.39%	7.49%

\* Current Quarter Target = 73.3% Russell 1000 Index and 26.7% Russell 2000 Index.

(1) MSCI EAFE through 6/30/2016 and MSCI World ex-US thereafter.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended September 30, 2018. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended September 30, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Domestic Fixed Income</b>					
Gross	0.69%	0.45%	3.88%	4.24%	-
Net	0.66%	0.34%	3.76%	4.11%	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.00%	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.02%
Ares ND Credit Strategies Fd - Net	0.00%	5.03%	-	-	-
Cerberus ND Private Credit Fd - Net	1.71%	12.68%	-	-	-
S&P/LSTA Leveraged Loan B	1.96%	5.43%	5.52%	4.32%	5.62%
BND CDs - Net	0.81%	2.96%	-	-	-
Declaration Total Return - Net	0.40%	2.25%	3.47%	-	-
Libor-3 Month	0.60%	2.02%	1.25%	0.85%	0.72%
Prudential - Gross	0.32%	(0.31%)	3.74%	-	-
Prudential - Net	0.27%	(0.55%)	3.47%	-	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.02%
Wells Capital - Gross	1.56%	(0.39%)	4.75%	-	-
Wells Capital - Net	1.52%	(0.54%)	4.58%	-	-
Blmbg Credit Baa	1.35%	(0.84%)	3.97%	3.93%	4.27%
Western Asset - Gross	0.32%	(0.43%)	3.03%	-	-
Western Asset - Net	0.29%	(0.55%)	2.90%	-	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.02%
SSgA US Govt Credit Bd Idx - Gross	0.04%	(1.35%)	1.45%	-	-
SSgA US Govt Credit Bd Idx - Net	0.04%	(1.38%)	1.42%	-	-
Blmbg Govt/Credit Bd	0.06%	(1.37%)	1.45%	2.23%	2.10%
Pooled Fixed Income - Net(1)	1.19%	6.88%	10.08%	-	-
Blmbg Aggregate	0.02%	(1.22%)	1.31%	2.16%	2.02%
<b>Global Real Assets</b>					
Gross	(0.40%)	-	-	-	-
Net	(0.40%)	-	-	-	-
Weighted Benchmark	0.05%	-	-	-	-
<b>Real Estate</b>					
Gross	(0.00%)	7.12%	8.47%	10.50%	-
Net	0.02%	6.61%	7.84%	9.80%	-
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	9.98%
Invesco Core Real Estate - Gross	(0.00%)	6.72%	8.19%	10.48%	-
Invesco Core Real Estate - Net	(0.00%)	6.45%	7.85%	10.11%	-
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	9.98%
JP Morgan RE Inc & Growth - Gross	0.00%	7.50%	8.82%	10.57%	-
JP Morgan RE Inc & Growth - Net	0.04%	6.76%	7.89%	9.57%	-
NCREIF Total Index	1.67%	7.16%	7.75%	9.57%	9.98%
<b>Diversified</b>					
Gross	(0.61%)	2.42%	3.48%	-	-
Net	(0.62%)	2.17%	3.22%	-	-
Weighted Benchmark	(0.76%)	0.66%	2.21%	-	-
Western Asset TIPS - Gross	(1.48%)	(1.14%)	2.05%	-	-
Western Asset TIPS - Net	(1.51%)	(1.26%)	1.92%	-	-
Blmbg Gbl Inftn-Lnked	(1.63%)	(0.58%)	2.13%	1.39%	2.00%
JP Morgan Infrastructure - Gross	1.70%	12.48%	7.33%	-	-
JP Morgan Infrastructure - Net	1.73%	11.77%	6.55%	-	-
Grosvenor Cust. Infrastructure - Net	0.00%	8.25%	6.83%	-	-
Benchmark(2)	1.43%	3.64%	2.38%	1.61%	1.58%
ISQ Global Infrastructure II - Net	6.97%	-	-	-	-
Benchmark(3)	1.43%	-	-	-	-
<b>Cash &amp; Equivalents - Net</b>					
90 Day Treasury Bills	0.46%	1.42%	0.74%	0.45%	0.37%
	0.49%	1.59%	0.84%	0.52%	0.39%
<b>Total Fund</b>					
Gross	2.20%	6.24%	9.42%	6.53%	5.13%
Net	2.16%	6.04%	9.19%	6.31%	4.95%
Target*	2.19%	5.53%	8.00%	5.37%	4.01%

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

(1) Comprised of PIMCO DiSCO II and PIMCO Bravo II.

(2) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

(3) 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.

# Domestic Equity

## Period Ended September 30, 2018

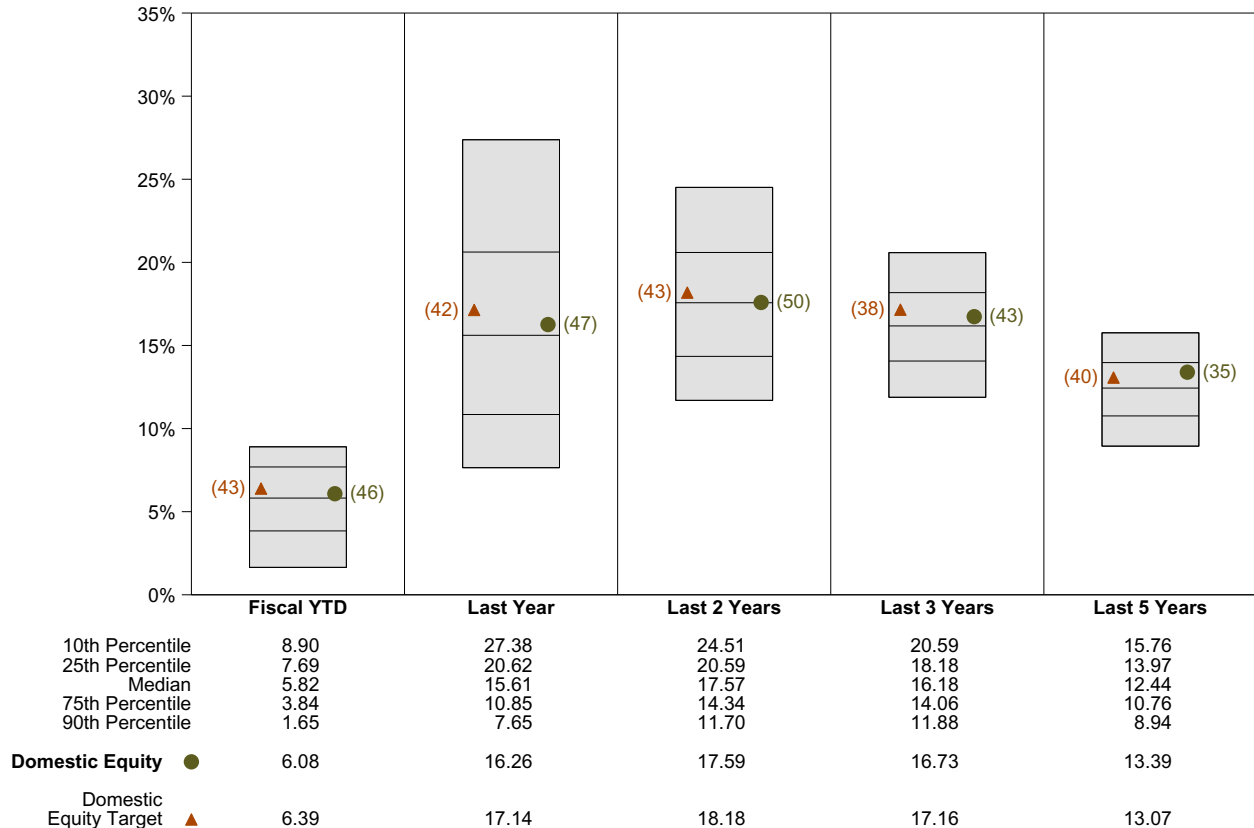
### Quarterly Summary and Highlights

- Domestic Equity's portfolio posted a 6.08% return for the quarter placing it in the 46 percentile of the Total Domestic Equity Database group for the quarter and in the 47 percentile for the last year.
- Domestic Equity's portfolio underperformed the Domestic Equity Target by 0.31% for the quarter and underperformed the Domestic Equity Target for the year by 0.88%.

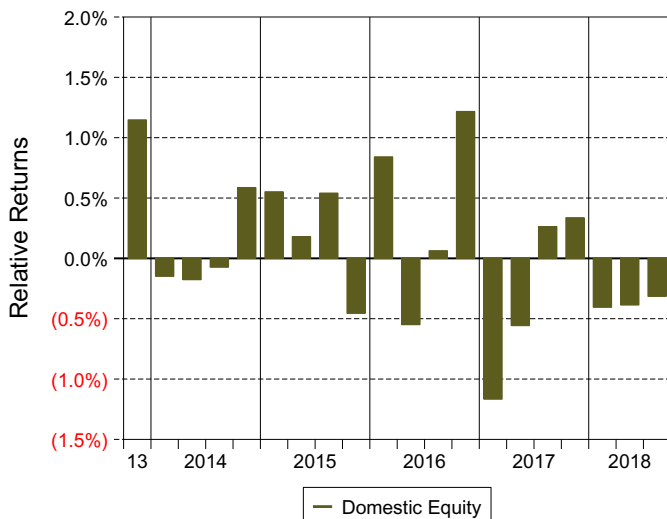
### Quarterly Asset Growth

Beginning Market Value	\$1,685,056,062
Net New Investment	\$2,348,521
Investment Gains/(Losses)	\$102,521,331
Ending Market Value	\$1,789,925,915

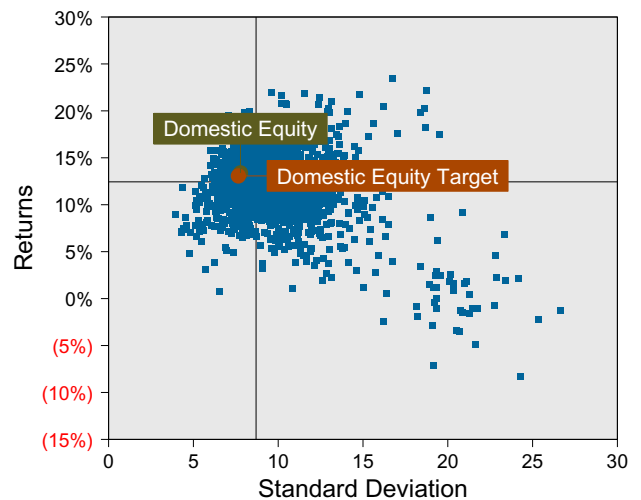
### Performance vs Total Domestic Equity Database (Gross)



### Relative Return vs Domestic Equity Target



### Total Domestic Equity Database (Gross) Annualized Five Year Risk vs Return



# Parametric Clifton Large Cap Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

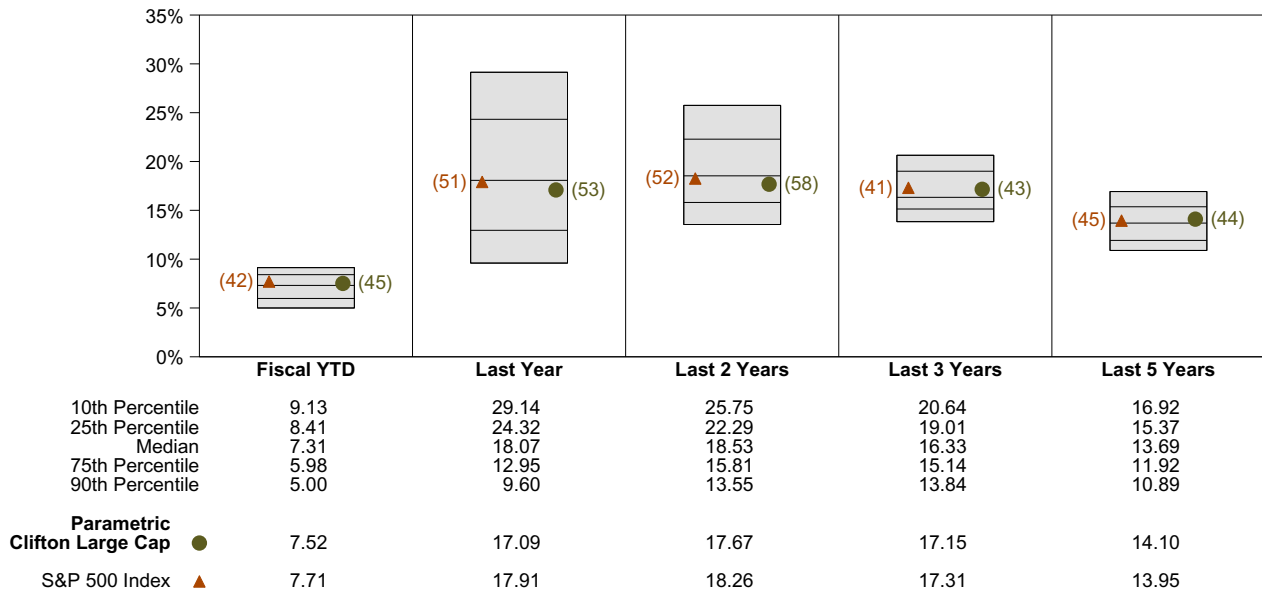
## Quarterly Summary and Highlights

- Parametric Clifton Large Cap's portfolio posted a 7.52% return for the quarter placing it in the 45 percentile of the Callan Large Capitalization group for the quarter and in the 53 percentile for the last year.
- Parametric Clifton Large Cap's portfolio underperformed the S&P 500 Index by 0.19% for the quarter and underperformed the S&P 500 Index for the year by 0.82%.

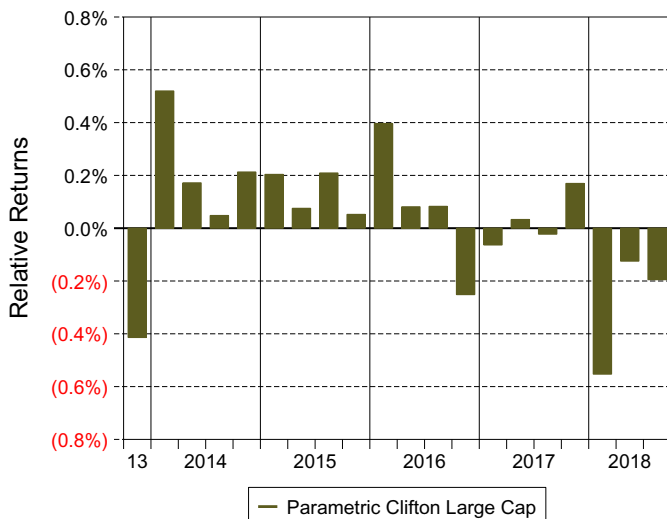
## Quarterly Asset Growth

Beginning Market Value	\$248,264,932
Net New Investment	\$0
Investment Gains/(Losses)	\$18,659,462
Ending Market Value	\$266,924,394

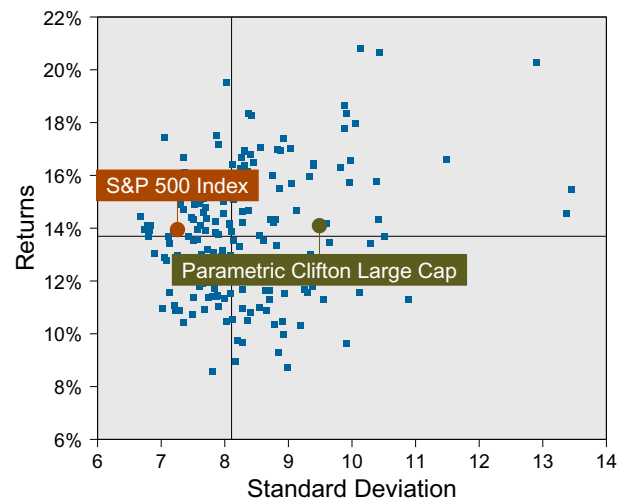
## Performance vs Callan Large Capitalization (Gross)



## Relative Return vs S&P 500 Index



## Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



# L.A. Capital Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Structured portfolio is a large growth portfolio benchmarked to the Russell 1000 Growth Index. It is an active assignment meaning that it targets a 2% alpha and constrains its risk budget (tracking error) to 4% relative to the benchmark. LA Capital believes that investment results are driven by Investor Preferences and thus recognize that when preferences shift a different posture related to that factor is warranted.

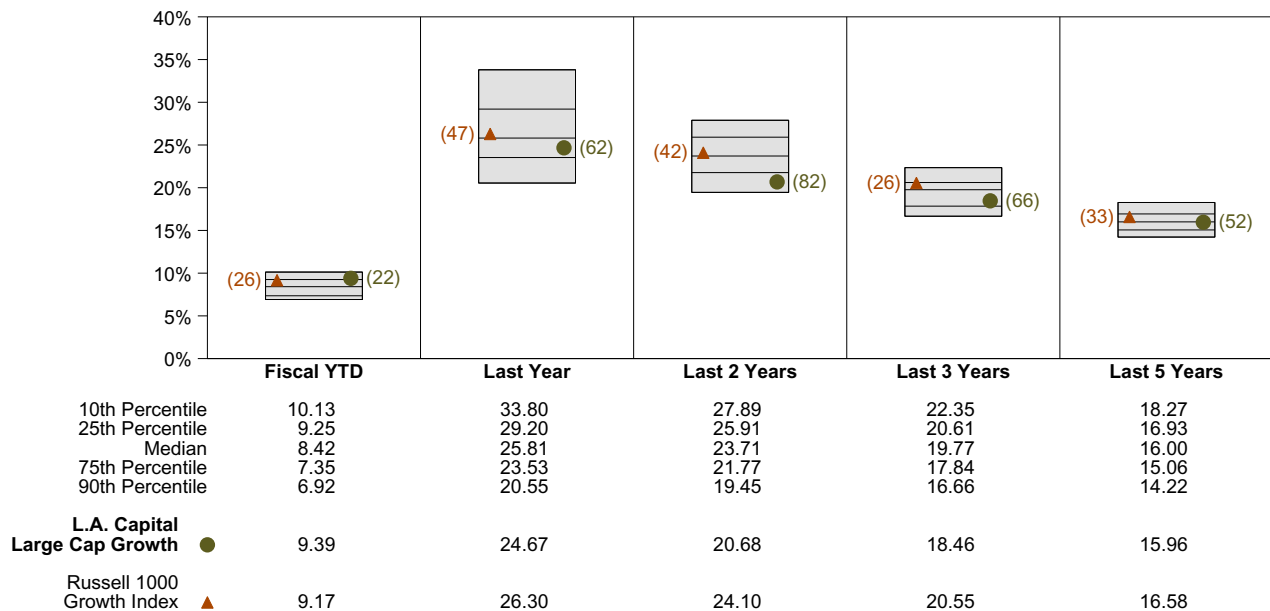
## Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 9.39% return for the quarter placing it in the 22 percentile of the Callan Large Cap Growth group for the quarter and in the 62 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio outperformed the Russell 1000 Growth Index by 0.22% for the quarter and underperformed the Russell 1000 Growth Index for the year by 1.63%.

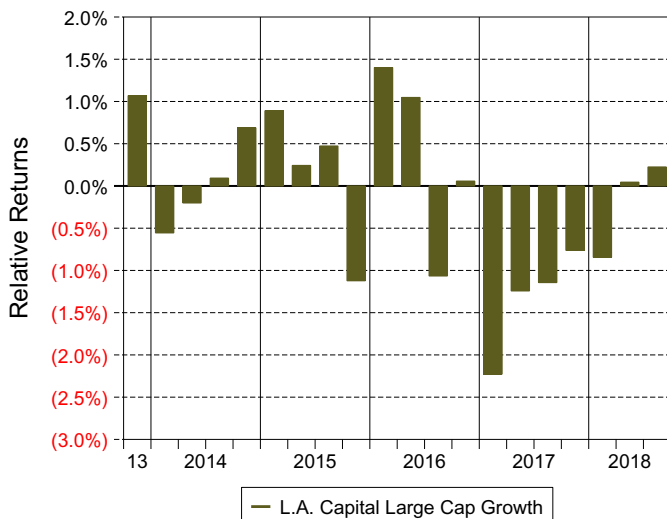
## Quarterly Asset Growth

Beginning Market Value	\$381,219,276
Net New Investment	\$-191,076
Investment Gains/(Losses)	\$35,807,341
Ending Market Value	\$416,835,541

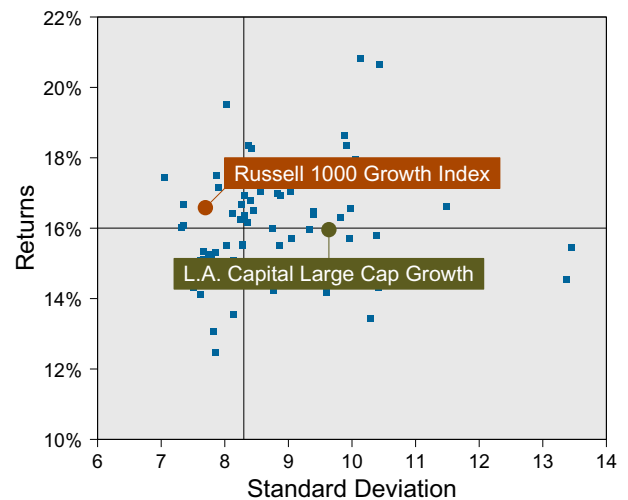
## Performance vs Callan Large Cap Growth (Gross)



## Relative Return vs Russell 1000 Growth Index



## Callan Large Cap Growth (Gross) Annualized Five Year Risk vs Return



# L.A. Capital Enhanced Period Ended September 30, 2018

## Investment Philosophy

The LA Capital Enhanced portfolio is a large core portfolio benchmarked to the Russell 1000 Index. Characterized as an enhanced index assignment, its objective is to track the benchmark with lower variability. The pension portfolio began in August of 2000 and the insurance portfolio was initiated in April of 2004. Since October of 2006 a small portion of each of the two core accounts was allocated into the Large Cap Alpha Fund with intent to add incremental alpha to the assignment given that the information ratio was expected to be higher.

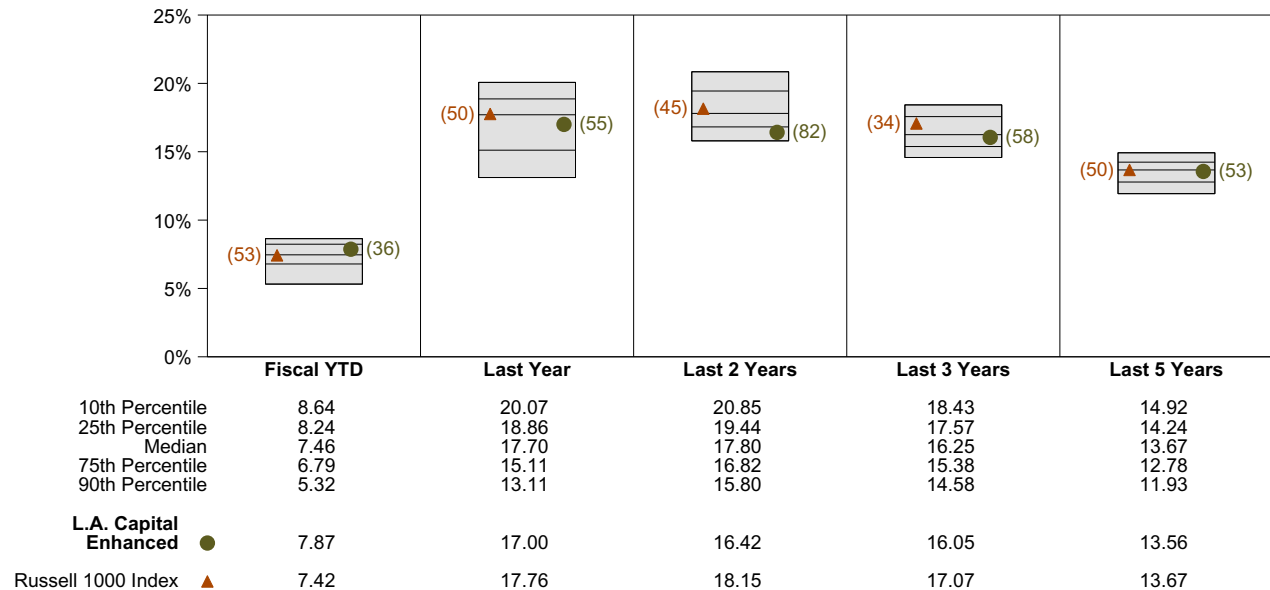
## Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a 7.87% return for the quarter placing it in the 36 percentile of the Callan Large Cap Core group for the quarter and in the 55 percentile for the last year.
- L.A. Capital Enhanced's portfolio outperformed the Russell 1000 Index by 0.45% for the quarter and underperformed the Russell 1000 Index for the year by 0.76%.

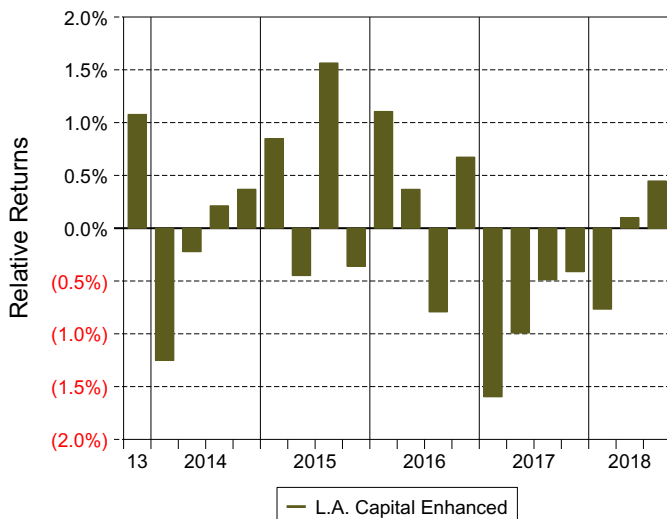
## Quarterly Asset Growth

Beginning Market Value	\$241,693,150
Net New Investment	\$-76,487
Investment Gains/(Losses)	\$19,016,416
Ending Market Value	\$260,633,079

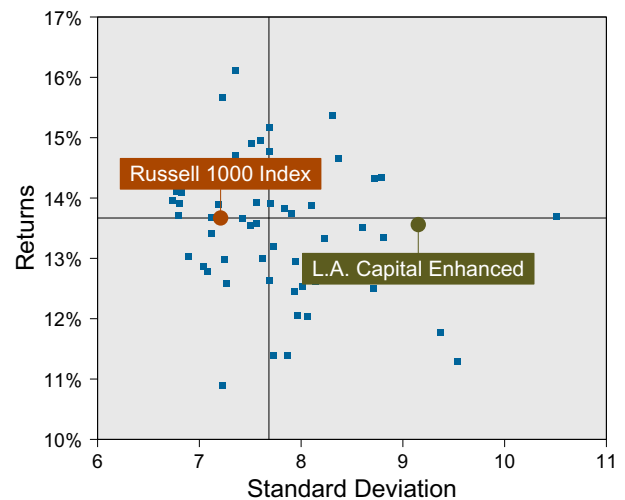
## Performance vs Callan Large Cap Core (Gross)



## Relative Return vs Russell 1000 Index



## Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



# LSV Asset Management

## Period Ended September 30, 2018

### Investment Philosophy

The objective of LSV Asset Management's Large Cap Value Equity (U.S.) strategy is to outperform the Russell 1000 Value by at least 200 basis points (gross of fees) per annum over a 3-5 year period with a tracking error of approximately 4%. Their stock selection process is a quantitative approach that ranks a broad universe of stocks on a combination of value and momentum factors and seeks to invest approximately 100 stocks in the most attractive securities possible within strict risk parameters to control the portfolio's tracking error relative to the benchmark. The resulting portfolio is broadly diversified across industry groups and fully invested.

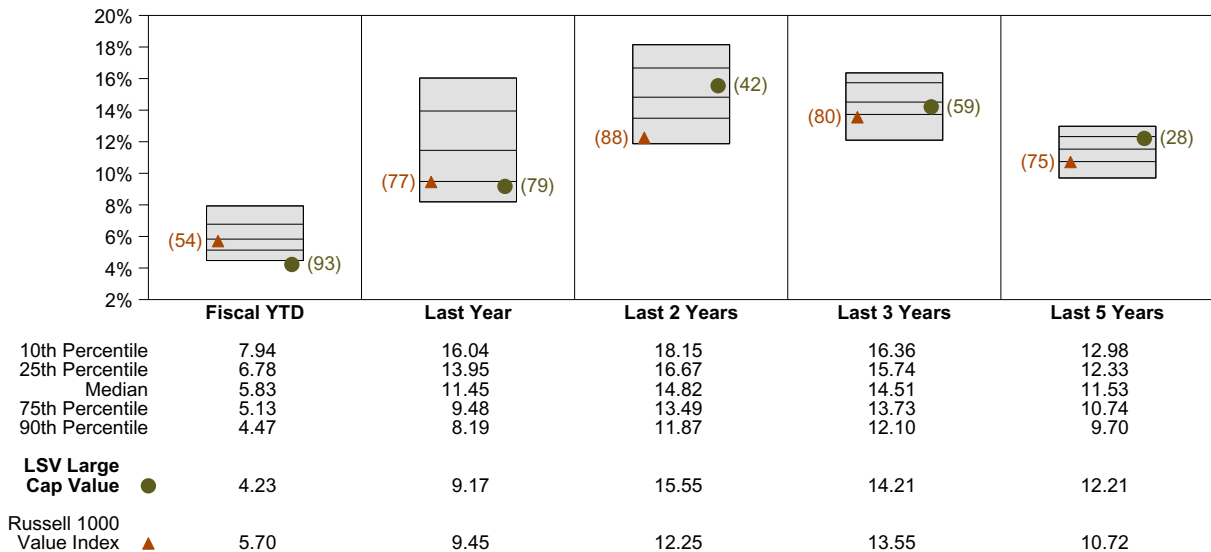
### Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a 4.23% return for the quarter placing it in the 93 percentile of the Callan Large Cap Value group for the quarter and in the 79 percentile for the last year.
- LSV Large Cap Value's portfolio underperformed the Russell 1000 Value Index by 1.48% for the quarter and underperformed the Russell 1000 Value Index for the year by 0.28%.

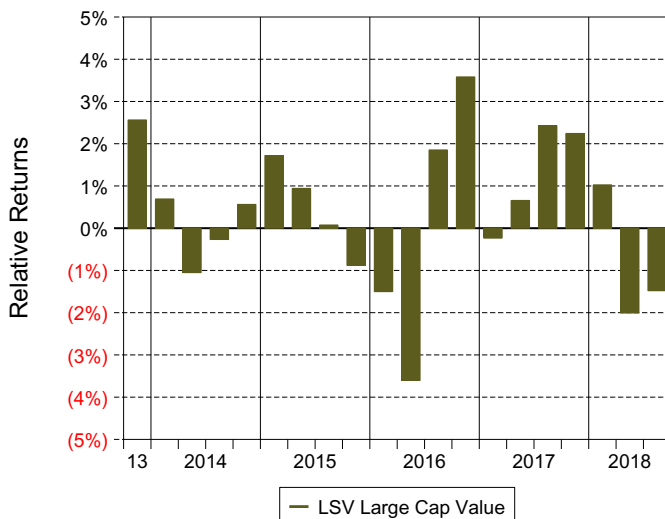
### Quarterly Asset Growth

Beginning Market Value	\$353,319,329
Net New Investment	\$2,743,751
Investment Gains/(Losses)	\$14,996,619
Ending Market Value	\$371,059,699

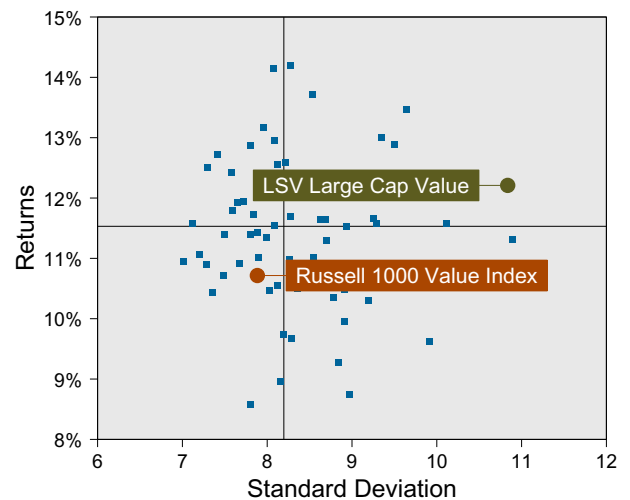
### Performance vs Callan Large Cap Value (Gross)



### Relative Return vs Russell 1000 Value Index



### Callan Large Cap Value (Gross) Annualized Five Year Risk vs Return



# Parametric Clifton Small Cap Period Ended September 30, 2018

## Investment Philosophy

Parametric Clifton utilizes equity futures to gain benchmark exposure in constructing the portfolio it believes provides the greatest likelihood of outperforming the index. In this construction the underlying cash portfolio is invested in a liquid, high quality short duration fixed income portfolio. Over market cycles excess return generated by the short duration portfolio, when added to the performance of futures is expected to allow the strategy to achieve 0.50% to 1.00% of gross excess annual performance.

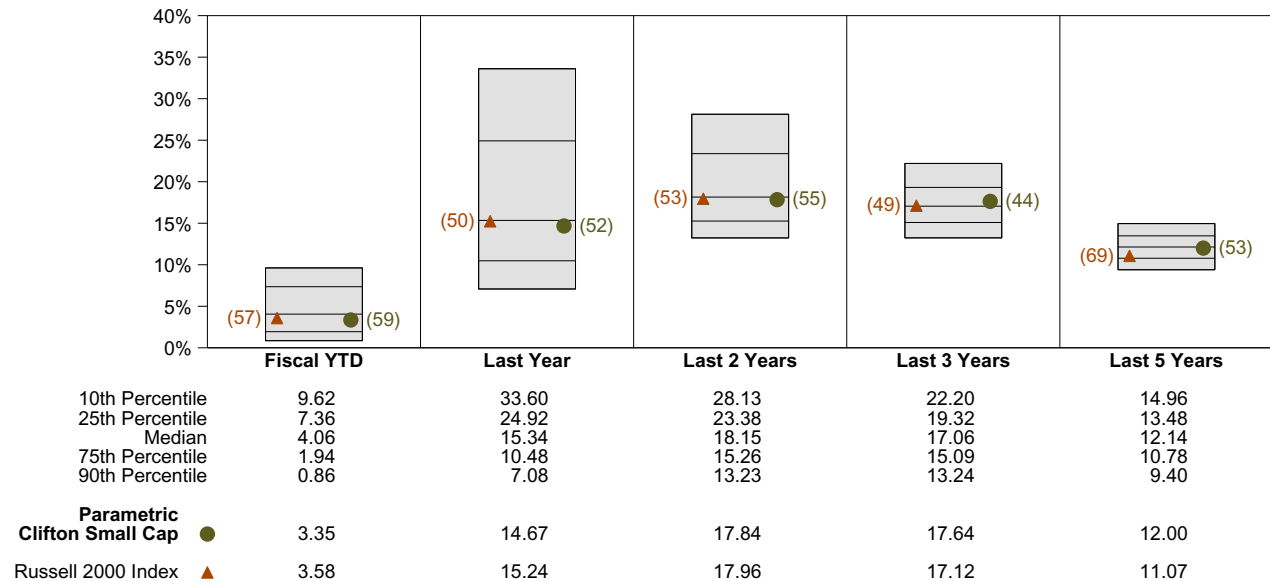
## Quarterly Summary and Highlights

- Parametric Clifton Small Cap's portfolio posted a 3.35% return for the quarter placing it in the 59 percentile of the Callan Small Capitalization group for the quarter and in the 52 percentile for the last year.
- Parametric Clifton Small Cap's portfolio underperformed the Russell 2000 Index by 0.23% for the quarter and underperformed the Russell 2000 Index for the year by 0.57%.

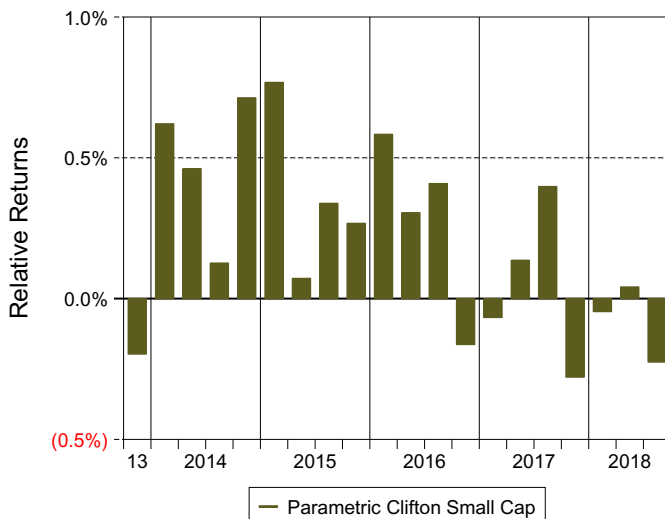
## Quarterly Asset Growth

Beginning Market Value	\$244,815,339
Net New Investment	\$0
Investment Gains/(Losses)	\$8,203,191
Ending Market Value	\$253,018,530

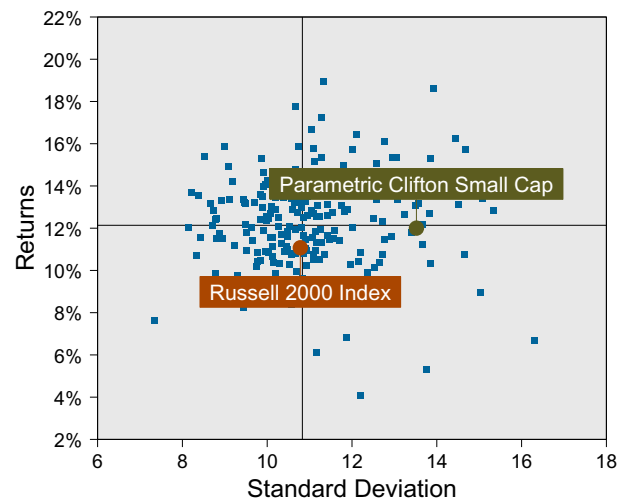
## Performance vs Callan Small Capitalization (Gross)



## Relative Return vs Russell 2000 Index



## Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



# PIMCO RAE

## Period Ended September 30, 2018

### Investment Philosophy

Small company value equity portfolio utilizing the index strategy and philosophy described as the Enhanced RAFI US Small strategy which relies on portfolio weights derived from firm fundamentals (free cash flow, book equity value, total sales and gross dividend), instead of market capitalization. Additionally, the enhanced portfolio strategy uses a quality of earnings screening and a financial distress screening to augment portfolio returns and reduce portfolio volatility.

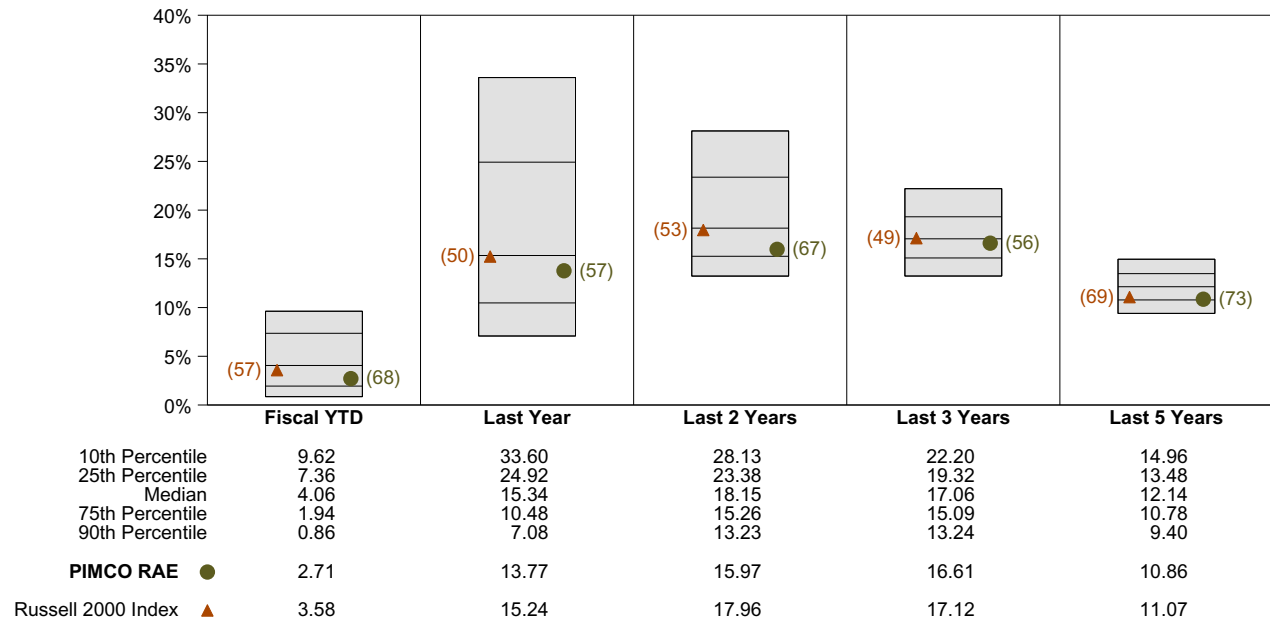
### Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a 2.71% return for the quarter placing it in the 68 percentile of the Callan Small Capitalization group for the quarter and in the 57 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 0.87% for the quarter and underperformed the Russell 2000 Index for the year by 1.47%.

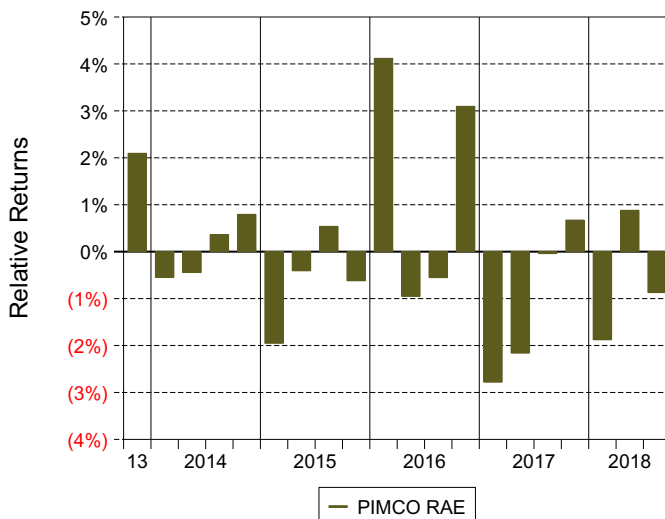
### Quarterly Asset Growth

Beginning Market Value	\$215,744,036
Net New Investment	\$-127,667
Investment Gains/(Losses)	\$5,838,303
Ending Market Value	\$221,454,672

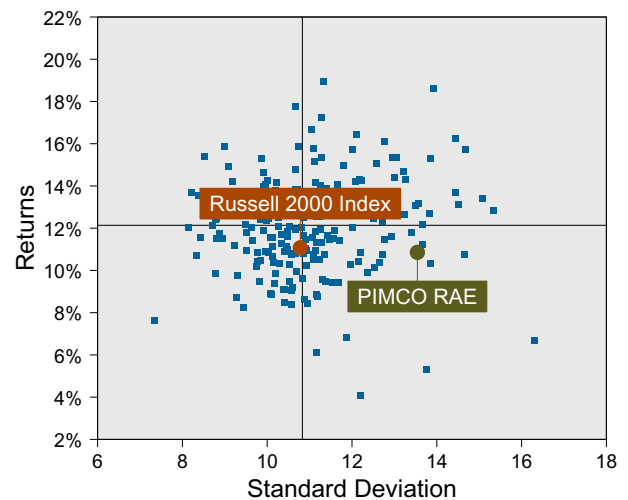
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



### Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return





# International Equity

## Period Ended September 30, 2018

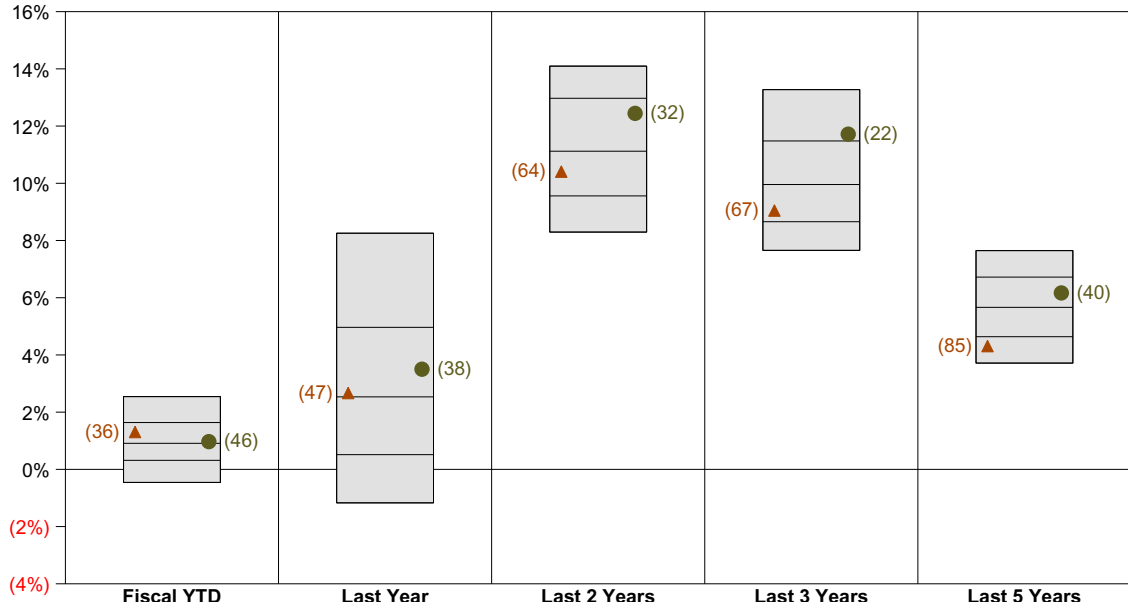
### Quarterly Summary and Highlights

- International Equity's portfolio posted a 0.97% return for the quarter placing it in the 46 percentile of the Callan Non-US Equity group for the quarter and in the 38 percentile for the last year.
- International Equity's portfolio underperformed the International Equity Target by 0.34% for the quarter and outperformed the International Equity Target for the year by 0.83%.

### Quarterly Asset Growth

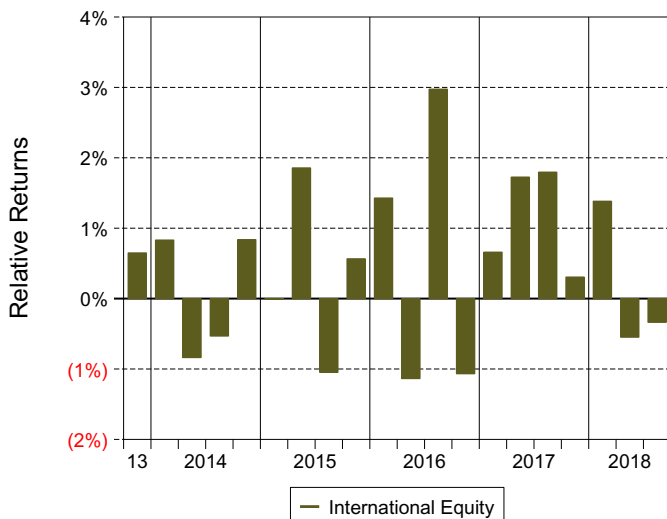
Beginning Market Value	\$1,086,275,102
Net New Investment	\$64,173,294
Investment Gains/(Losses)	\$10,544,562
Ending Market Value	\$1,160,992,958

### Performance vs Callan Non-US Equity (Gross)

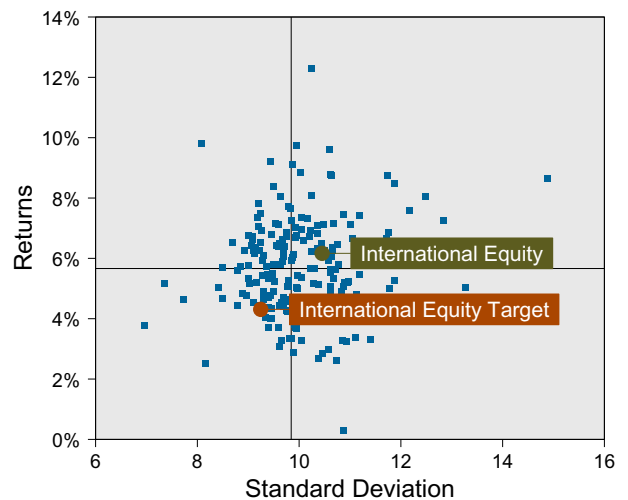


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years
10th Percentile	2.54	8.26	14.10	13.27	7.65
25th Percentile	1.64	4.96	12.97	11.48	6.72
Median	0.91	2.53	11.12	9.96	5.66
75th Percentile	0.32	0.51	9.56	8.66	4.64
90th Percentile	(0.46)	(1.17)	8.29	7.65	3.71
<b>International Equity</b> ●	0.97	3.50	12.44	11.72	6.17
International Equity Target ▲	1.31	2.67	10.41	9.05	4.31

### Relative Return vs International Equity Target



### Callan Non-US Equity (Gross) Annualized Five Year Risk vs Return



# DFA Intl Small Cap Value Period Ended September 30, 2018

## Investment Philosophy

The International Small Cap Value Portfolio invests in the stocks of small, non-US developed markets companies that Dimensional believes to be value stocks at the time of purchase. Specifically, it looks at companies that fall within the smallest 8-10% of each country's market capitalization, and who's shares have a high book value in relation to their market value (BtM). It does not invest in emerging markets.

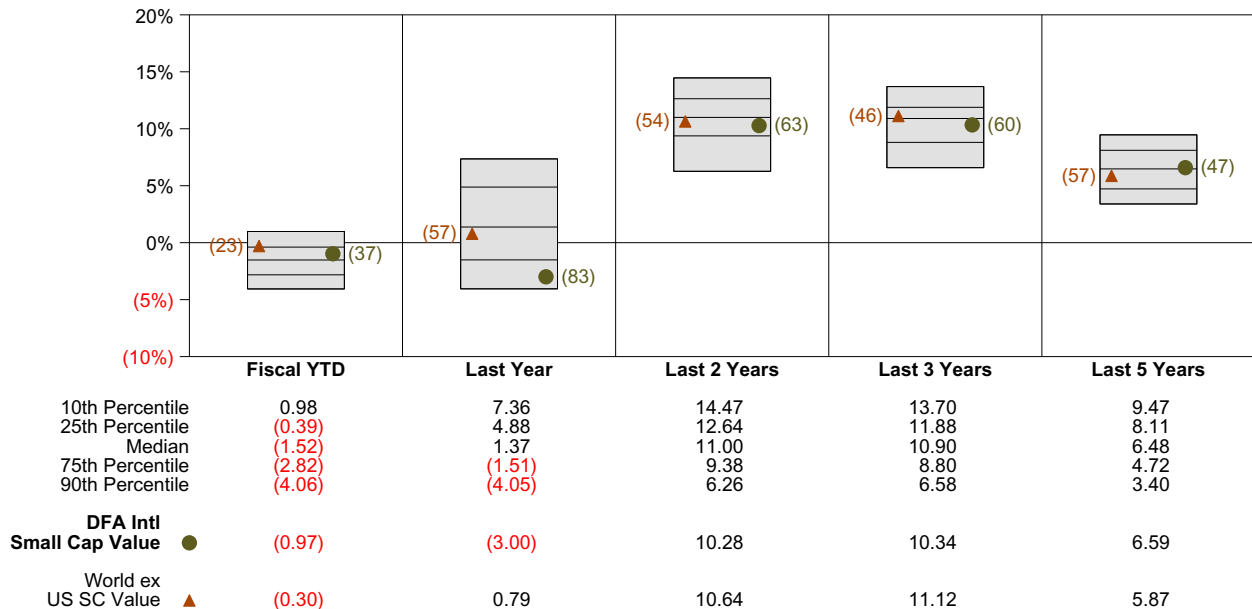
## Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a (0.97)% return for the quarter placing it in the 37 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 83 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.68% for the quarter and underperformed the World ex US SC Value for the year by 3.78%.

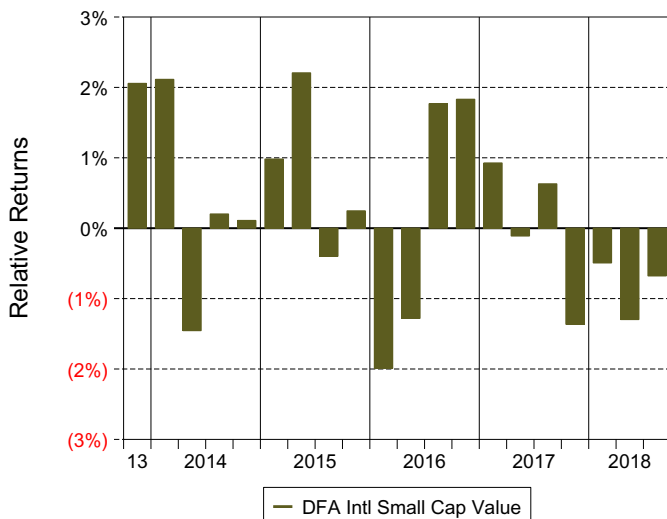
## Quarterly Asset Growth

Beginning Market Value	\$103,698,376
Net New Investment	\$10,000,000
Investment Gains/(Losses)	\$-991,979
Ending Market Value	\$112,706,396

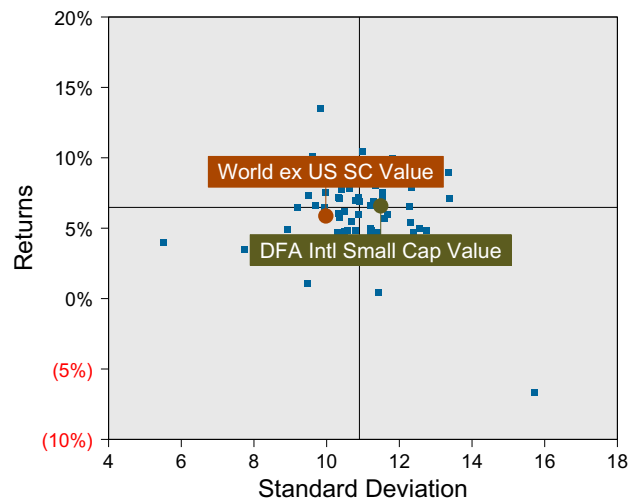
## Performance vs Callan International Small Cap Mut Funds (Net)



## Relative Return vs World ex US SC Value



## Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



# LSV Intl Value

## Period Ended September 30, 2018

### Investment Philosophy

The objective of LSV Asset Management's International Large Cap Value strategy is to outperform the MSCI EAFE Index by at least 250 basis points (gross of fees) per annum over an annualized 3-5 year period with a tracking error of approximately 5-6%. Their stock selection process is a quantitative approach that ranks a broad universe of stocks on a combination of value and momentum factors and seeks to invest approximately 150 stocks in the most attractive securities possible within strict risk parameters to control the portfolio's tracking error relative to the benchmark. The resulting portfolio is broadly diversified across industry groups and fully invested. LSV weights countries at a neutral weight relative to the benchmark country weights. 50% of the portfolio is US dollar hedged.

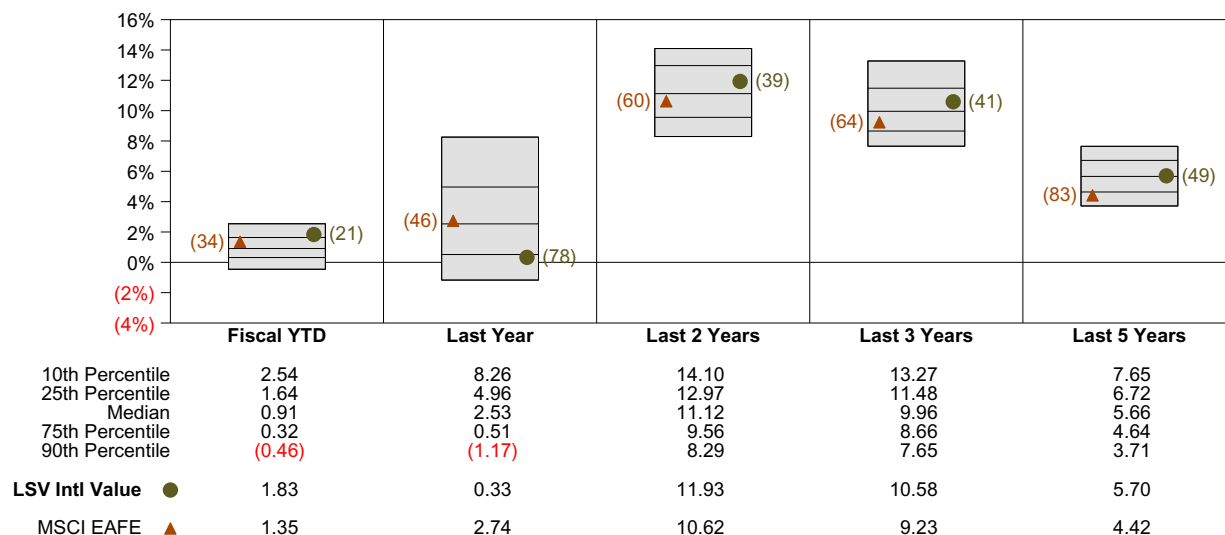
### Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a 1.83% return for the quarter placing it in the 21 percentile of the Callan Non-US Equity group for the quarter and in the 78 percentile for the last year.
- LSV Intl Value's portfolio outperformed the MSCI EAFE by 0.48% for the quarter and underperformed the MSCI EAFE for the year by 2.41%.

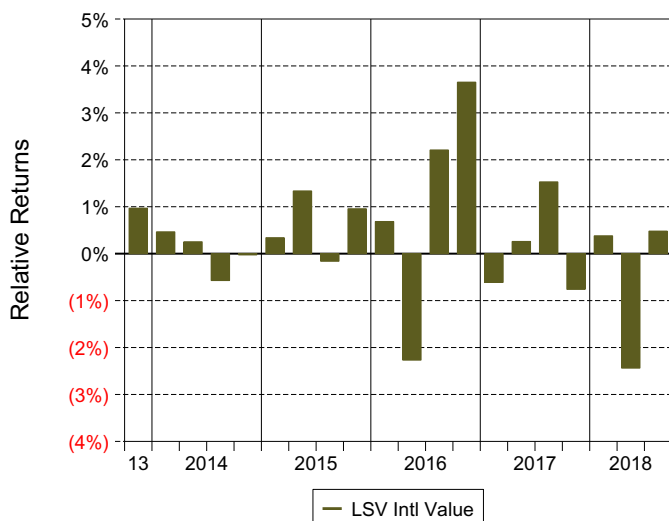
### Quarterly Asset Growth

Beginning Market Value	\$423,873,636
Net New Investment	\$34,597,577
Investment Gains/(Losses)	\$7,835,823
Ending Market Value	\$466,307,036

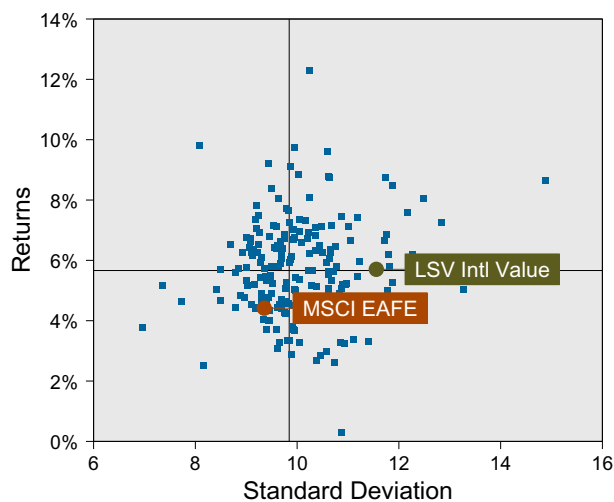
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs MSCI EAFE



### Callan Non-US Equity (Gross) Annualized Five Year Risk vs Return



# Vanguard Intl Explorer Fund

## Period Ended September 30, 2018

### Investment Philosophy

Vanguard International Explorer Fund invests primarily in the equity securities of small-capitalization companies located outside the United States that the advisor believes offer the potential for long-term capital appreciation. The advisor considers, among other things, whether a company is likely to have above-average earnings growth, whether the company's securities are attractively valued, and whether the company has any proprietary advantages.

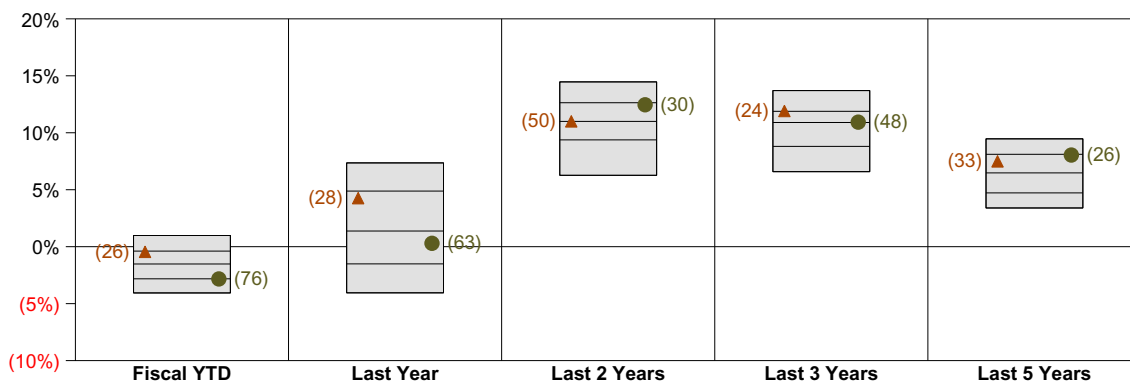
### Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a (2.83)% return for the quarter placing it in the 76 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 63 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio underperformed the S&P BMI EPAC <\$2 B by 2.38% for the quarter and underperformed the S&P BMI EPAC <\$2 B for the year by 3.97%.

### Quarterly Asset Growth

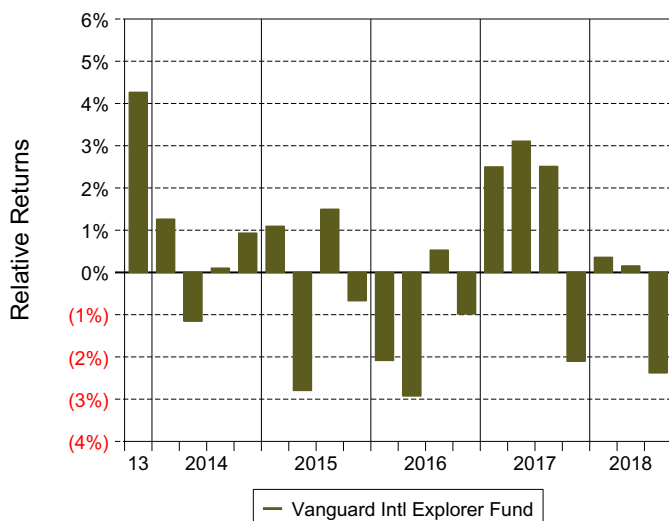
Beginning Market Value	\$108,393,661
Net New Investment	\$5,000,000
Investment Gains/(Losses)	\$-3,055,333
Ending Market Value	\$110,338,328

### Performance vs Callan International Small Cap Mut Funds (Net)

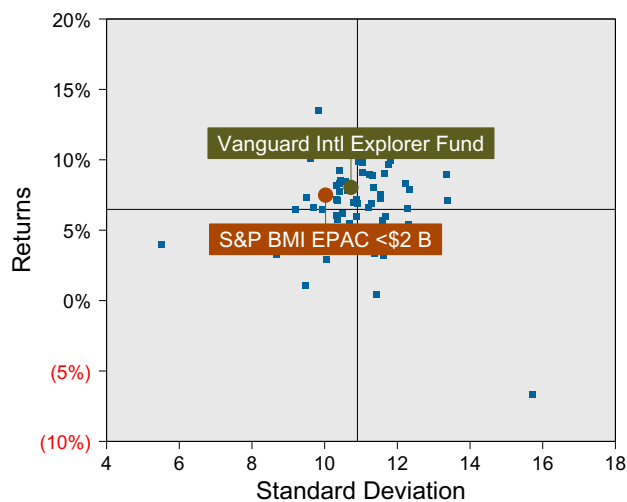


	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years
10th Percentile	0.98	7.36	14.47	13.70	9.47
25th Percentile	(0.39)	4.88	12.64	11.88	8.11
Median	(1.52)	1.37	11.00	10.90	6.48
75th Percentile	(2.82)	(1.51)	9.38	8.80	4.72
90th Percentile	(4.06)	(4.05)	6.26	6.58	3.40
<b>Vanguard Intl Explorer Fund</b>	<b>(2.83)</b>	<b>0.29</b>	<b>12.45</b>	<b>10.93</b>	<b>8.04</b>
<b>S&amp;P BMI EPAC &lt;\$2 B</b>	<b>(0.45)</b>	<b>4.26</b>	<b>11.00</b>	<b>11.91</b>	<b>7.49</b>

### Relative Return vs S&P BMI EPAC <\$2 B



### Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



# William Blair

## Period Ended September 30, 2018

### Investment Philosophy

One of the basic investment tenets of William Blair & Company has been its focus on quality growth companies. They believe that investing in quality growth companies will generate above average results with generally less risk than the market. This opportunity exists because they believe the market underestimates the durability and rate of growth in companies that have the following characteristics: strong management with a unique vision, competitive advantages that prolong the duration and size of earnings growth, and conservative financing. Internationally, they believe that this philosophy can be combined with strategic flexibility in managing geographic exposure, capitalization, sector emphasis, and relative growth and valuation at the portfolio level in order to provide an appropriate degree of adaptability to cyclical conditions.

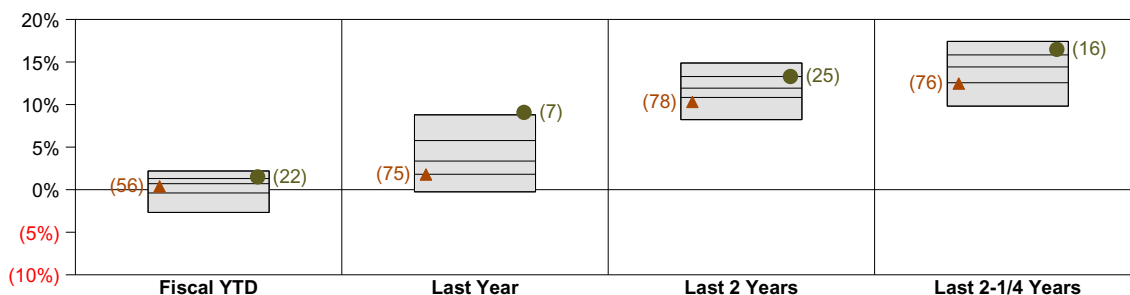
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 1.50% return for the quarter placing it in the 22 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 7 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.12% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 7.29%.

### Quarterly Asset Growth

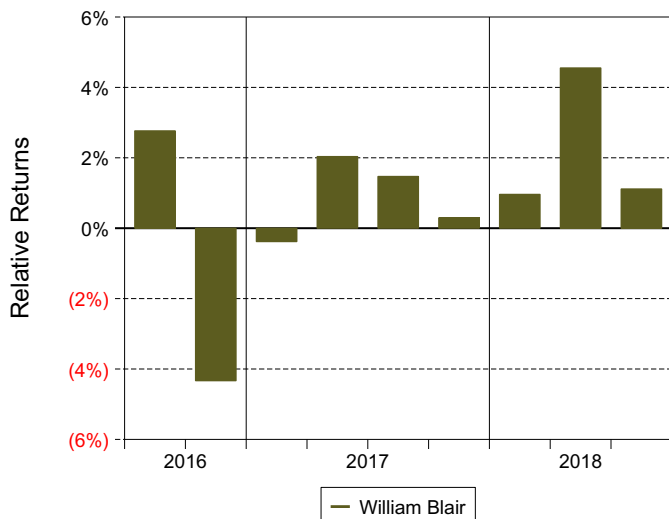
Beginning Market Value	\$450,309,429
Net New Investment	\$14,575,717
Investment Gains/(Losses)	\$6,756,051
Ending Market Value	\$471,641,197

### Performance vs Callan Non-US All Country Growth Equity (Gross)

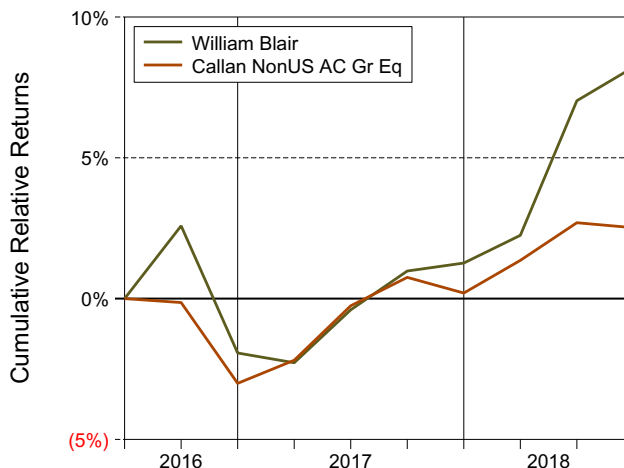


10th Percentile	2.20	8.79	14.88	17.42
25th Percentile	1.31	5.77	13.29	15.83
Median	0.70	3.36	11.93	14.42
75th Percentile	(0.38)	1.81	10.84	12.56
90th Percentile	(2.67)	(0.25)	8.23	9.82
<b>William Blair</b> ●	1.50	9.08	13.30	16.49
MSCI ACWI ex US IMI ▲	0.39	1.79	10.31	12.47

### Relative Return vs MSCI ACWI ex US IMI



### Cumulative Returns vs MSCI ACWI ex US IMI



# Domestic Fixed Income Period Ended September 30, 2018

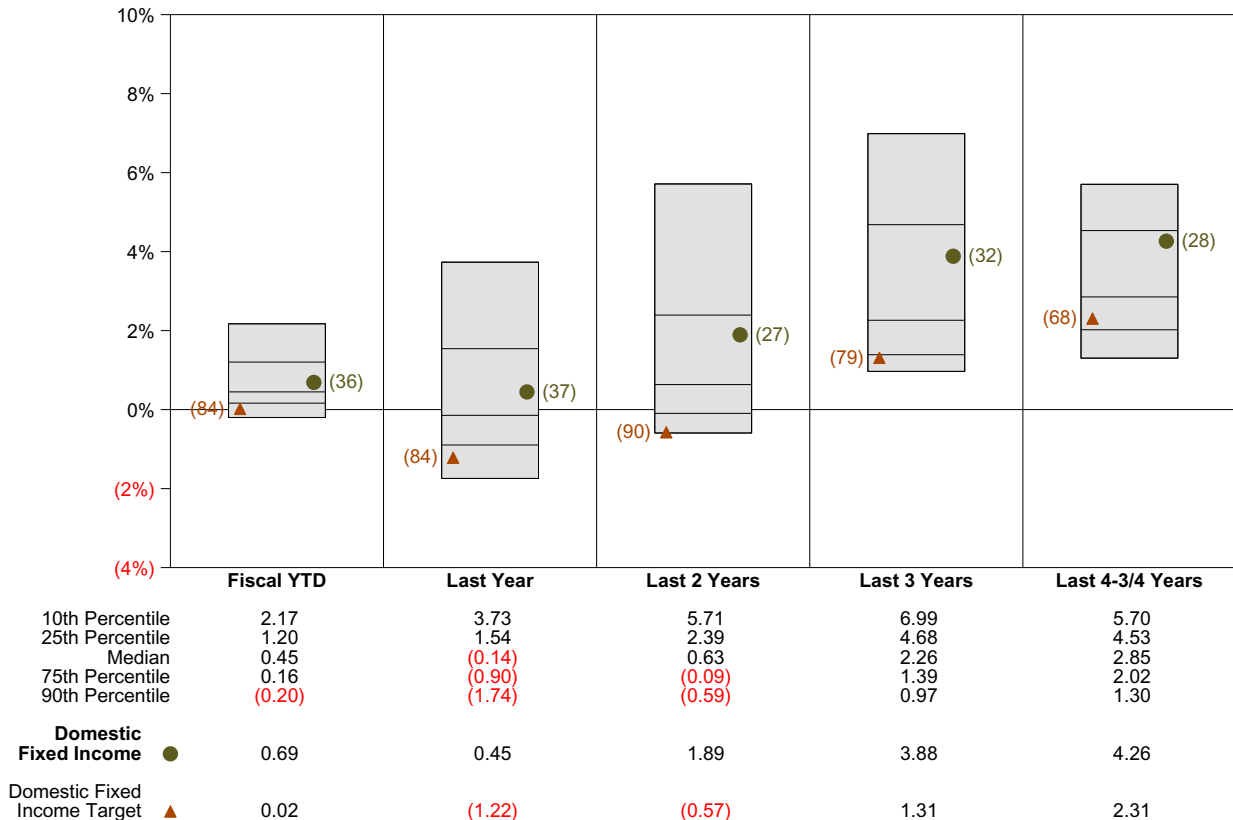
## Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.69% return for the quarter placing it in the 36 percentile of the Total Domestic Fixed-Inc Database group for the quarter and in the 37 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Income Target by 0.67% for the quarter and outperformed the Domestic Fixed Income Target for the year by 1.66%.

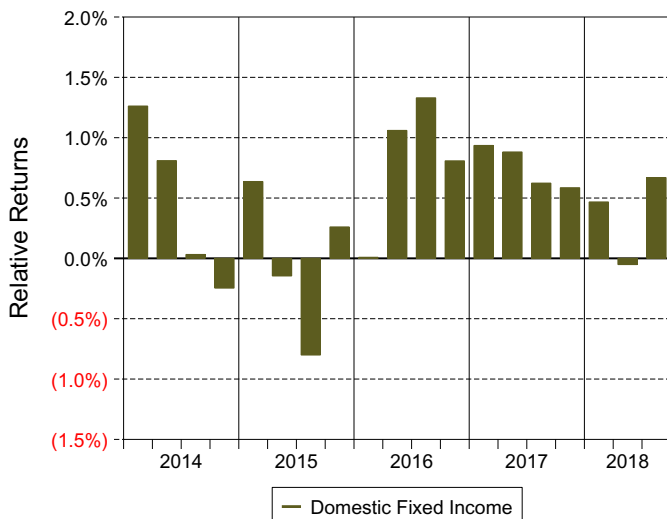
## Quarterly Asset Growth

Beginning Market Value	\$1,941,289,018
Net New Investment	\$95,546,940
Investment Gains/(Losses)	\$13,278,246
Ending Market Value	\$2,050,114,204

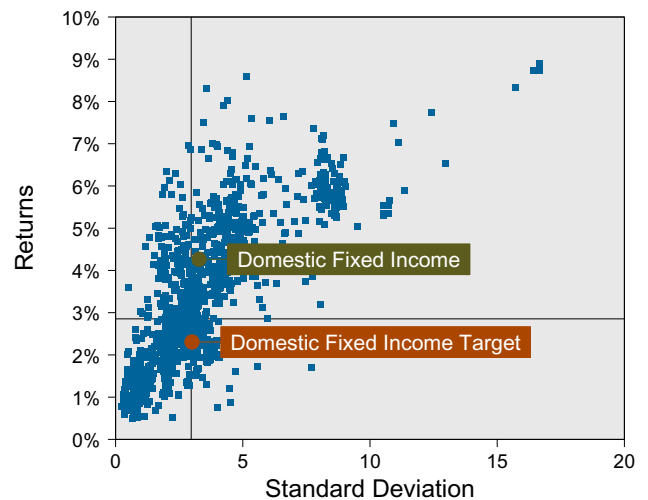
## Performance vs Total Domestic Fixed-Inc Database (Gross)



## Relative Returns vs Domestic Fixed Income Target



## Total Domestic Fixed-Inc Database (Gross) Annualized Four and Three-Quarter Year Risk vs Return



# Ares ND Credit Strategies Fd Period Ended September 30, 2018

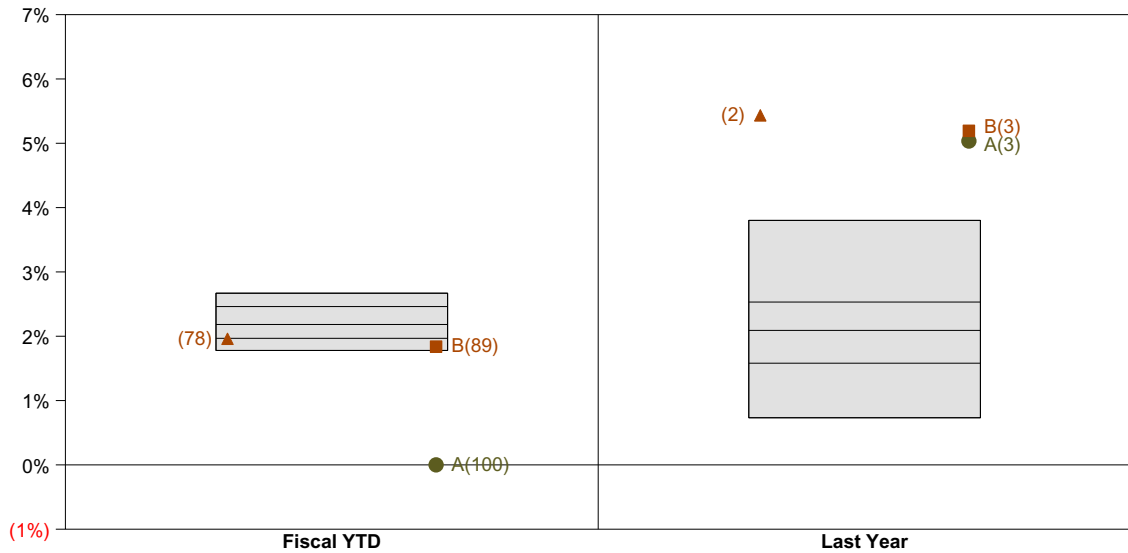
## Quarterly Summary and Highlights

- Ares ND Credit Strategies Fd's portfolio posted a 0.00% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 3 percentile for the last year.
- Ares ND Credit Strategies Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 1.96% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.40%.

## Quarterly Asset Growth

Beginning Market Value	\$48,638,254
Net New Investment	\$2,400,000
Investment Gains/(Losses)	\$0
Ending Market Value	\$51,038,254

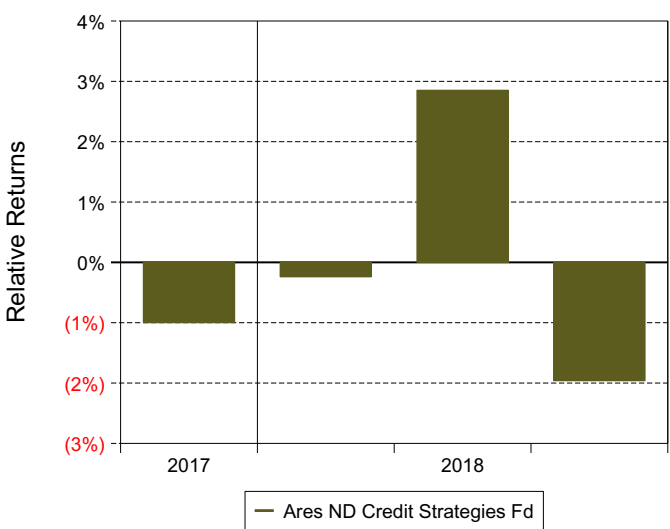
## Performance vs Callan High Yield Mutual Funds (Net)



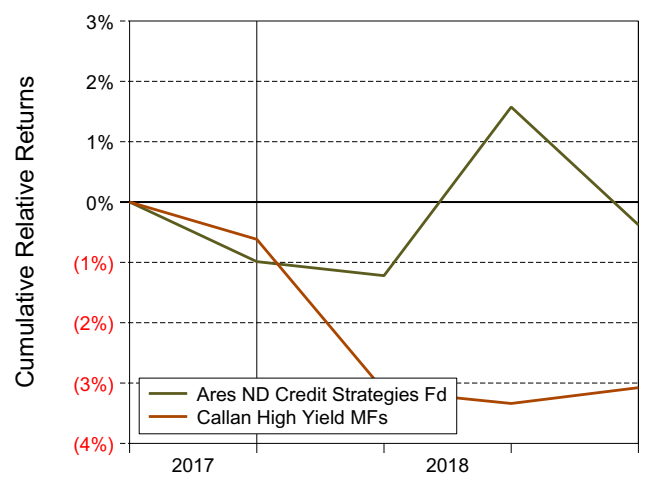
10th Percentile	2.67
25th Percentile	2.46
Median	2.18
75th Percentile	1.97
90th Percentile	1.78

Ares ND Credit Strategies Fd S&P/LSTA Leveraged Loan	● A	0.00	5.03
S&P/LSTA Leveraged Loan B Index	▲ B	1.84	5.19
			5.43

## Relative Returns vs S&P/LSTA Leveraged Loan B Index



## Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



# Cerberus ND Private Credit Fd Period Ended September 30, 2018

## Investment Philosophy

The investment objective of the LLC is to achieve superior risk-adjusted rates of return primarily through origination of, and investment in, secured debt assets consistent with the Loan Opportunities Strategy of the Cerberus Business Finance lending platform ("CBF", "Cerberus Business Finance" or the "Cerberus Lending Platform"). The Cerberus Lending Platform is a direct origination and lending business focused on providing secured debt primarily to U.S. middle-market companies. The LLC expects to generate both current income and capital appreciation.

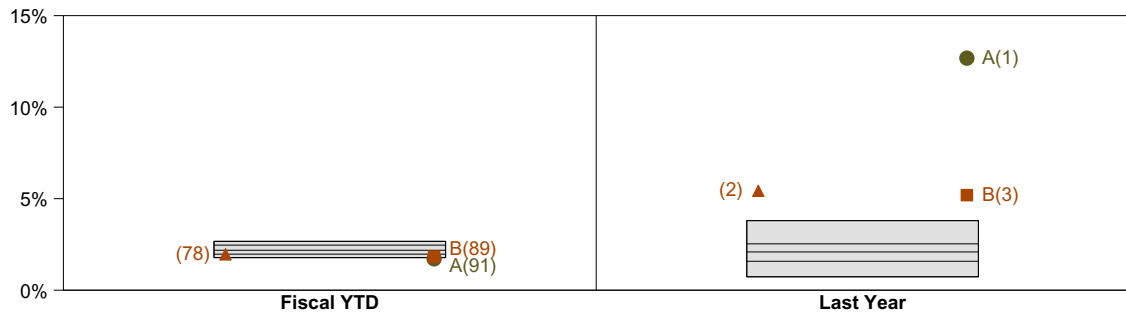
## Quarterly Summary and Highlights

- Cerberus ND Private Credit Fd's portfolio posted a 1.71% return for the quarter placing it in the 91 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 1st percentile for the last year.
- Cerberus ND Private Credit Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 0.25% for the quarter and outperformed the S&P/LSTA Leveraged Loan B Index for the year by 7.24%.

## Quarterly Asset Growth

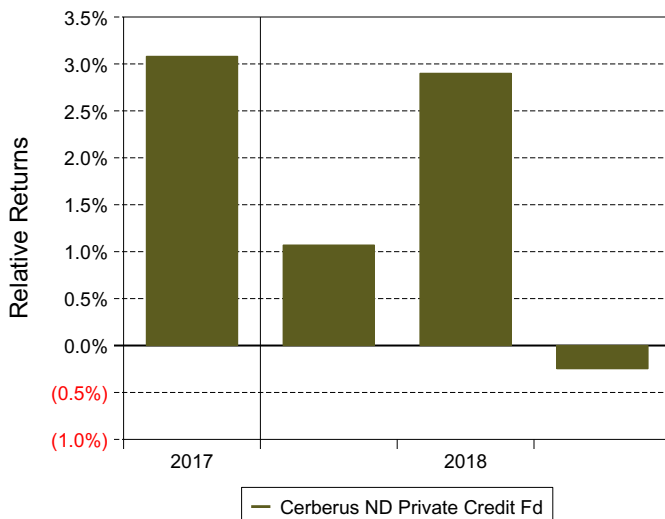
Beginning Market Value	\$46,604,431
Net New Investment	\$0
Investment Gains/(Losses)	\$798,708
Ending Market Value	\$47,403,139

## Performance vs Callan High Yield Mutual Funds (Net)

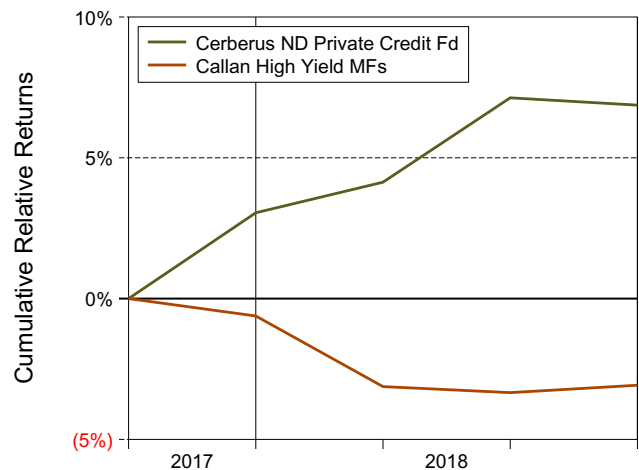


10th Percentile	2.67
25th Percentile	2.46
Median	2.18
75th Percentile	1.97
90th Percentile	1.78
Cerberus ND Private Credit Fd S&P/LSTA Leveraged Loan	1.71
S&P/LSTA Leveraged Loan B Index	1.84
S&P/LSTA Leveraged Loan B Index	1.96

## Relative Returns vs S&P/LSTA Leveraged Loan B Index



## Cumulative Returns vs S&P/LSTA Leveraged Loan B Index





# Declaration Total Return Period Ended September 30, 2018

## Investment Philosophy

The Fund's portfolio holdings consist primarily of RMBS issued by private sector companies (Non-Agency RMBS) and government agencies (Agency MBS) and CMBS issued by private sector companies. Agency MBS includes securities issued by the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Government National Mortgage Association (Ginnie Mae). Portfolio holdings may range from short tenure senior classes to stressed issues or subordinated securities with substantial risk of non-payment and correspondingly higher yields. Smaller portfolio allocations may include consumer asset-backed securities (ABS), or other structured credit securities and corporate bonds. As a diversification strategy and a potential hedge to credit risk, the Fund may invest in securities which tend to benefit from slow mortgage prepayments and economic growth, such as interest only (IO) MBS.

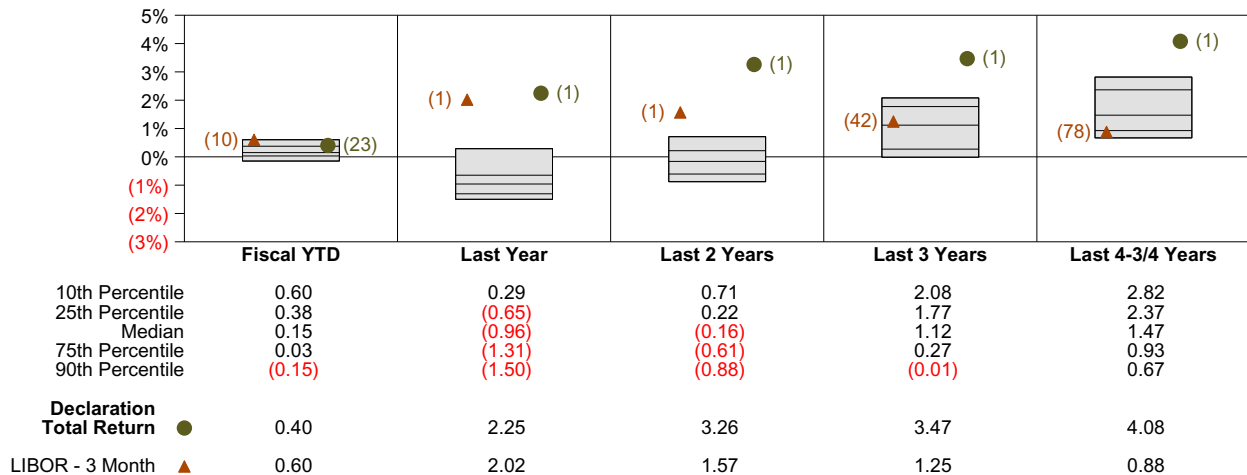
## Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.40% return for the quarter placing it in the 23 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 1 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.20% for the quarter and outperformed the LIBOR - 3 Month for the year by 0.23%.

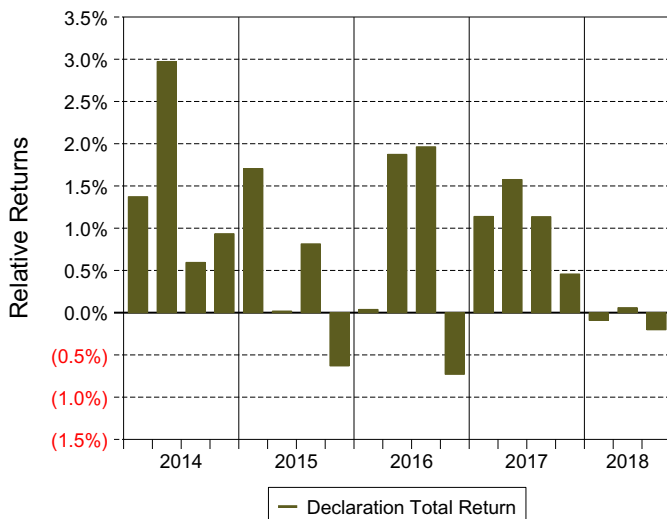
## Quarterly Asset Growth

Beginning Market Value	\$145,517,209
Net New Investment	\$-80,057
Investment Gains/(Losses)	\$582,989
Ending Market Value	\$146,020,141

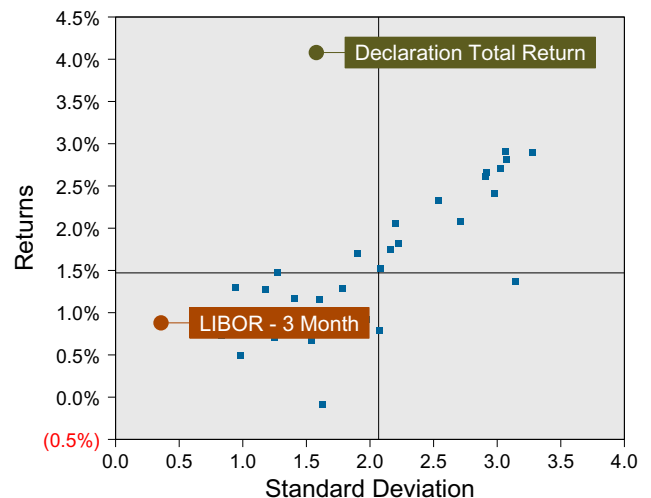
## Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



## Relative Return vs LIBOR - 3 Month



## Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Four and Three-Quarter Year Risk vs Return



# Prudential

## Period Ended September 30, 2018

### Investment Philosophy

PGIM Fixed Income's Core Plus Strategy is an actively-managed strategy that seeks +150 bps over the Bloomberg Barclays U.S. Aggregate Bond Index or similar benchmark annualized over a market cycle (three to five years.) The Strategy seeks about half of its excess return from active sector allocation and up to one-third each from subsector/security selection and duration/yield curve/currencies, depending on market opportunities.

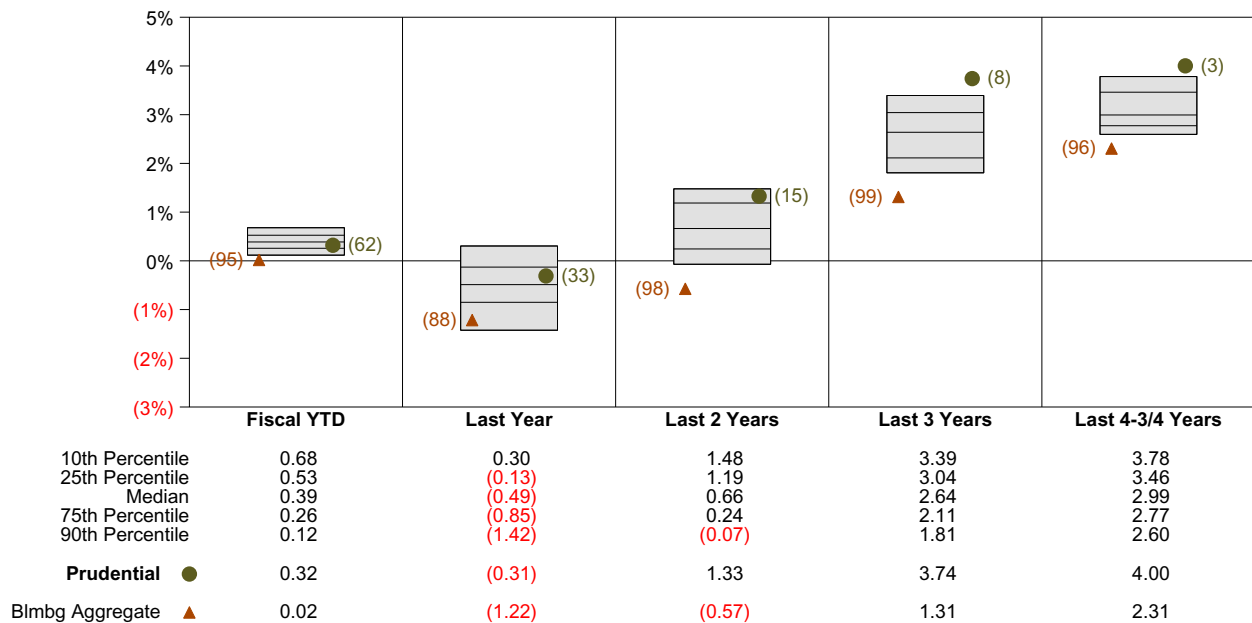
### Quarterly Summary and Highlights

- Prudential's portfolio posted a 0.32% return for the quarter placing it in the 62 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 33 percentile for the last year.
- Prudential's portfolio outperformed the Blmbg Aggregate by 0.30% for the quarter and outperformed the Blmbg Aggregate for the year by 0.91%.

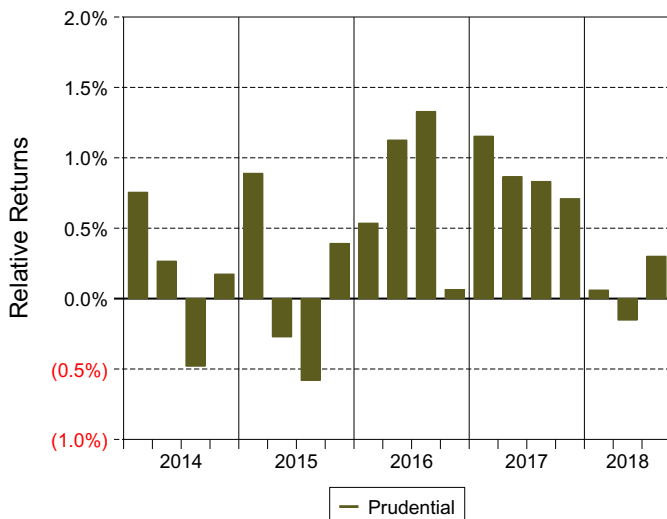
### Quarterly Asset Growth

Beginning Market Value	\$237,403,408
Net New Investment	\$84,858,609
Investment Gains/(Losses)	\$570,960
Ending Market Value	\$322,832,976

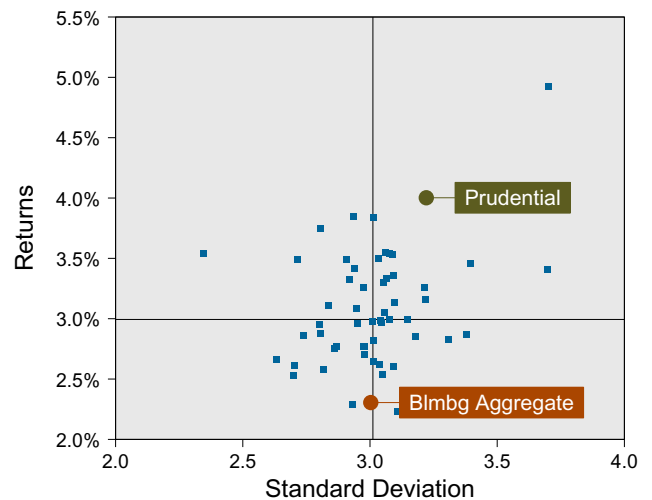
### Performance vs Callan Core Plus Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



### Callan Core Plus Fixed Income (Gross) Annualized Four and Three-Quarter Year Risk vs Return



# SSgA US Govt Credit Bd Idx Period Ended September 30, 2018

## Investment Philosophy

The Fund seeks an investment return that approximates as closely as practicable, before expenses, the performance of the Barclays Capital U.S. Government/Credit Bond Index over the long term.

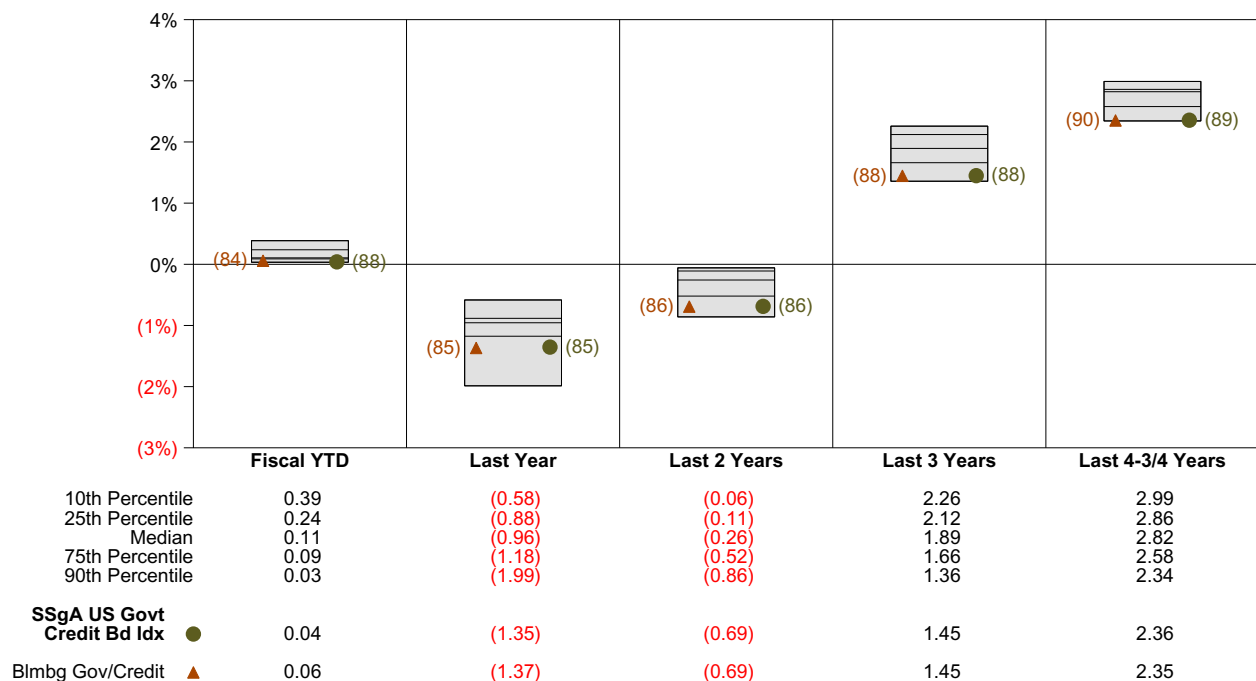
## Quarterly Summary and Highlights

- SSgA US Govt Credit Bd Idx's portfolio posted a 0.04% return for the quarter placing it in the 88 percentile of the Callan Government/Credit group for the quarter and in the 85 percentile for the last year.
- SSgA US Govt Credit Bd Idx's portfolio underperformed the Blmbg Gov/Credit by 0.02% for the quarter and outperformed the Blmbg Gov/Credit for the year by 0.01%.

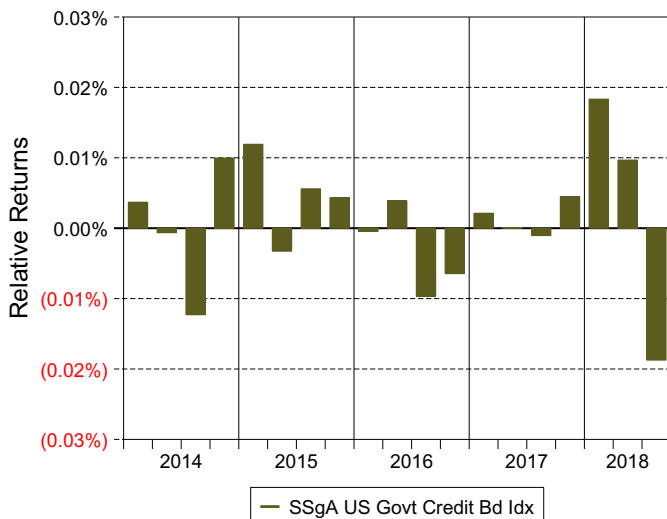
## Quarterly Asset Growth

Beginning Market Value	\$270,628,242
Net New Investment	\$13,000,000
Investment Gains/(Losses)	\$130,121
Ending Market Value	\$283,758,363

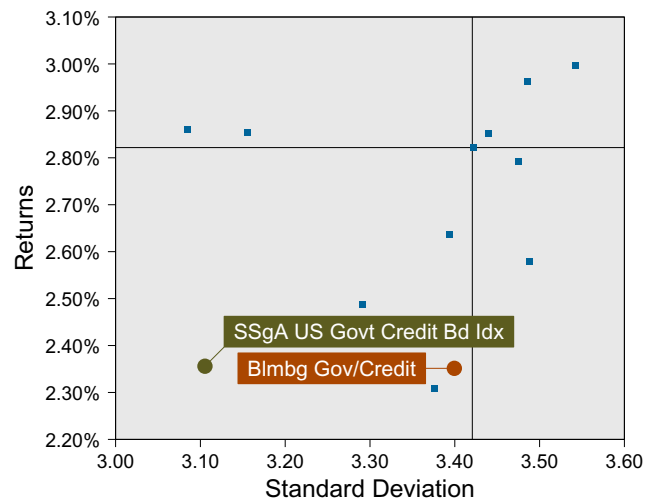
## Performance vs Callan Government/Credit (Gross)



## Relative Return vs Blmbg Gov/Credit



## Callan Government/Credit (Gross) Annualized Four and Three-Quarter Year Risk vs Return



# Wells Capital Period Ended September 30, 2018

## Investment Philosophy

The Medium Quality Credit fixed income strategy is designed to maximize total return from the high-grade corporate bond market while maintaining a strategic allocation to the BBB portion of the high yield market. The investment process for this fund starts with a "top-down" strategy. Security selection is determined by in-depth credit research, holding that in-depth knowledge of industries, companies, and their management teams can help identify credit trends that can lead to investment opportunities. Furthermore, a disciplined relative value framework is applied to help determine the optimal position to invest within an industry and within an individual issuer's capital structure.

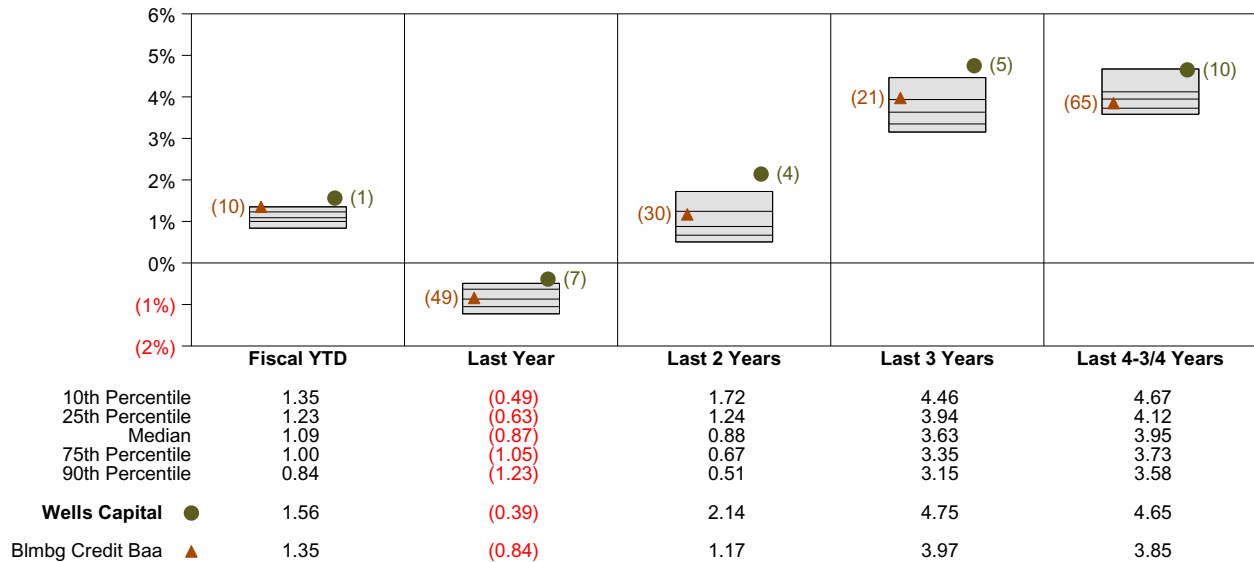
## Quarterly Summary and Highlights

- Wells Capital's portfolio posted a 1.56% return for the quarter placing it in the 1 percentile of the Callan Investment Grade Credit Fixed Inc group for the quarter and in the 7 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.21% for the quarter and outperformed the Blmbg Credit Baa for the year by 0.45%.

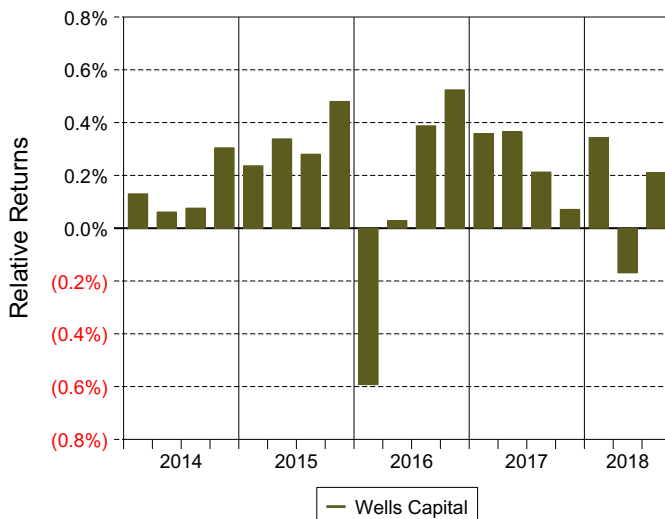
## Quarterly Asset Growth

Beginning Market Value	\$527,930,462
Net New Investment	\$-204,585
Investment Gains/(Losses)	\$8,247,627
Ending Market Value	\$535,973,504

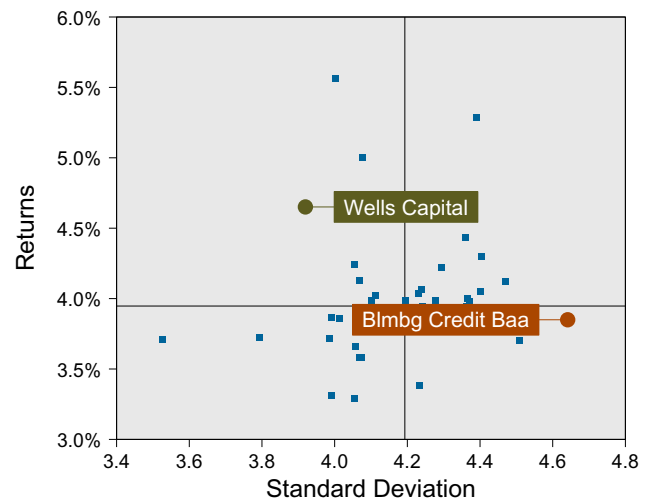
## Performance vs Callan Investment Grade Credit Fixed Inc (Gross)



## Relative Return vs Blmbg Credit Baa



## Callan Investment Grade Credit Fixed Inc (Gross) Annualized Four and Three-Quarter Year Risk vs Return



# Western Asset Management Company

## Period Ended September 30, 2018

### Investment Philosophy

Western Asset designs this portfolio using all major fixed-income sectors with a bias towards non-Treasuries, especially corporate, mortgage-backed and asset-backed securities. Value can be added through sector rotation, issue selection, duration and term structure weighting.

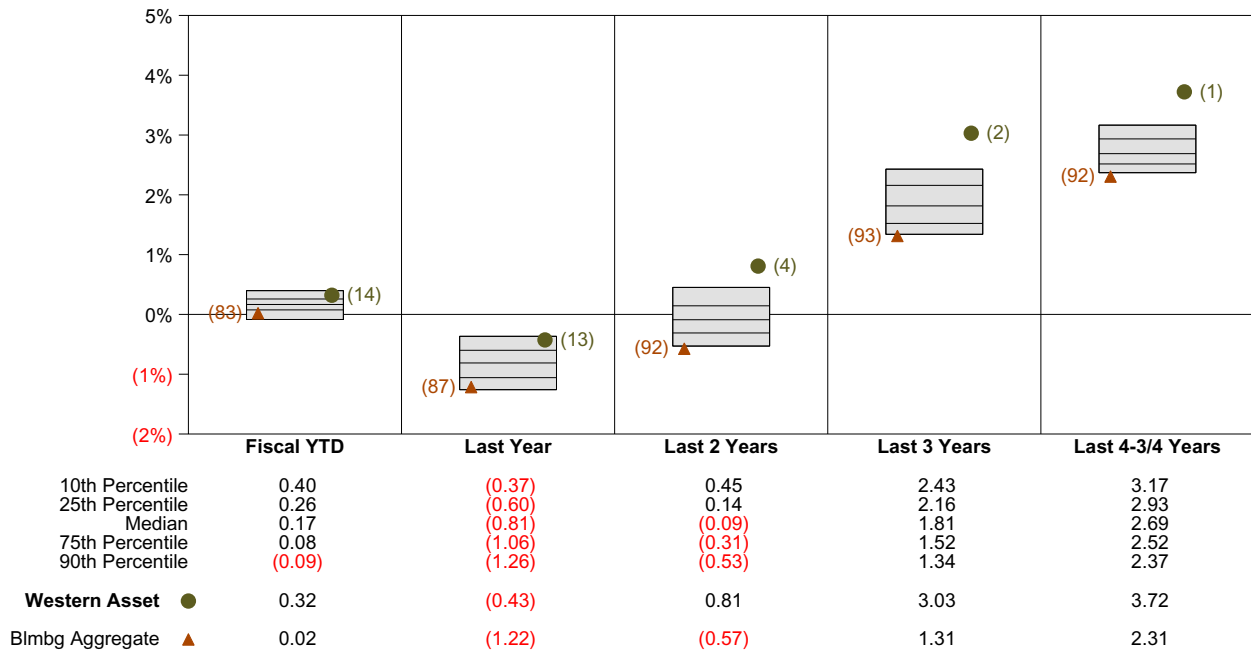
### Quarterly Summary and Highlights

- Western Asset's portfolio posted a 0.32% return for the quarter placing it in the 14 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 13 percentile for the last year.
- Western Asset's portfolio outperformed the Blmbg Aggregate by 0.30% for the quarter and outperformed the Blmbg Aggregate for the year by 0.79%.

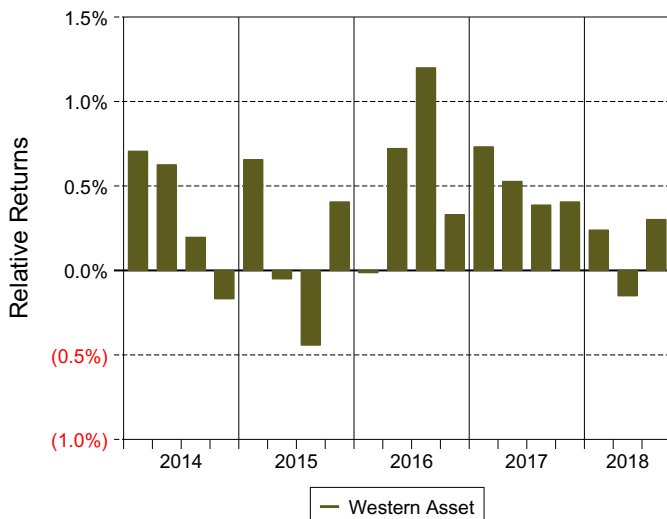
### Quarterly Asset Growth

Beginning Market Value	\$532,794,978
Net New Investment	\$14,835,749
Investment Gains/(Losses)	\$1,702,707
Ending Market Value	\$549,333,434

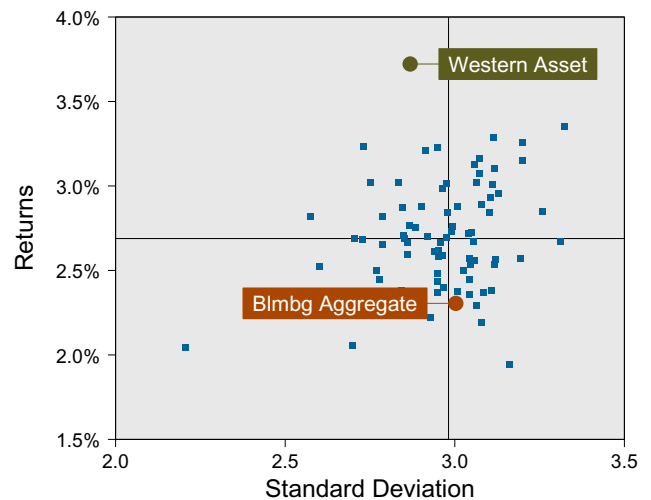
### Performance vs Callan Core Bond Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



### Callan Core Bond Fixed Income (Gross) Annualized Four and Three-Quarter Year Risk vs Return



# Invesco Core Real Estate Period Ended September 30, 2018

## Investment Philosophy

IRE's investment philosophy is comprised of two fundamental principles: (1) maximize the predictability and consistency of investment returns and (2) minimize the risk of capital loss. This philosophy forms the cornerstone of the company's real estate investment philosophy.

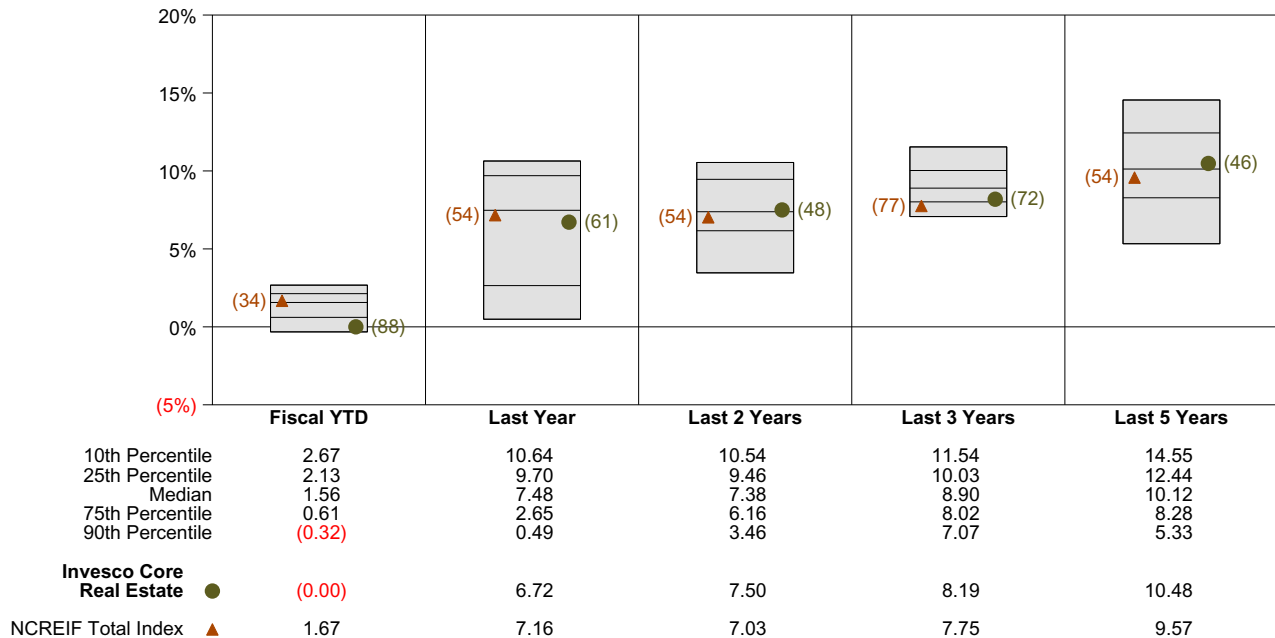
## Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a (0.00)% return for the quarter placing it in the 88 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 61 percentile for the last year.
- Invesco Core Real Estate's portfolio underperformed the NCREIF Total Index by 1.67% for the quarter and underperformed the NCREIF Total Index for the year by 0.45%.

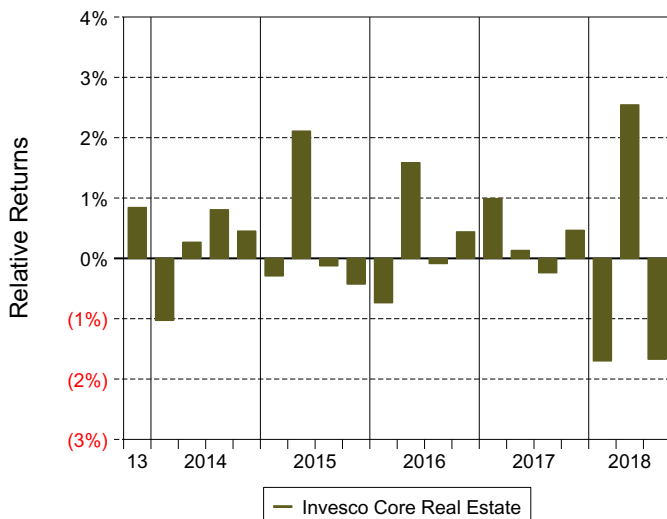
## Quarterly Asset Growth

Beginning Market Value	\$137,080,616
Net New Investment	\$0
Investment Gains/(Losses)	\$-229
Ending Market Value	\$137,080,387

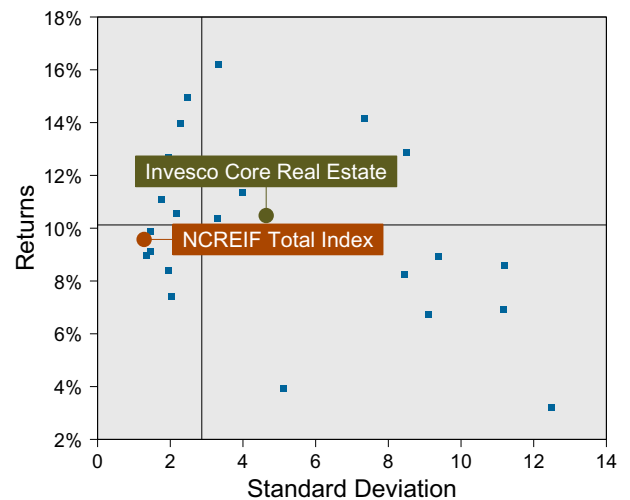
## Performance vs Callan Total Domestic Real Estate DB (Gross)



## Relative Return vs NCREIF Total Index



## Callan Total Domestic Real Estate DB (Gross) Annualized Five Year Risk vs Return



# JP Morgan RE Inc & Growth Period Ended September 30, 2018

## Investment Philosophy

The J.P. Morgan U.S. Real Estate Income and Growth Fund seeks to construct and opportunistically manage a portfolio of core direct real estate investments, complemented by other real estate and real estate-related assets. The Fund pursues a broadly diversified absolute-return strategy and pursues all property investments on an opportunistic basis. The majority of the Fund's investments will be in direct core properties in the office, industrial, retail and residential sectors.

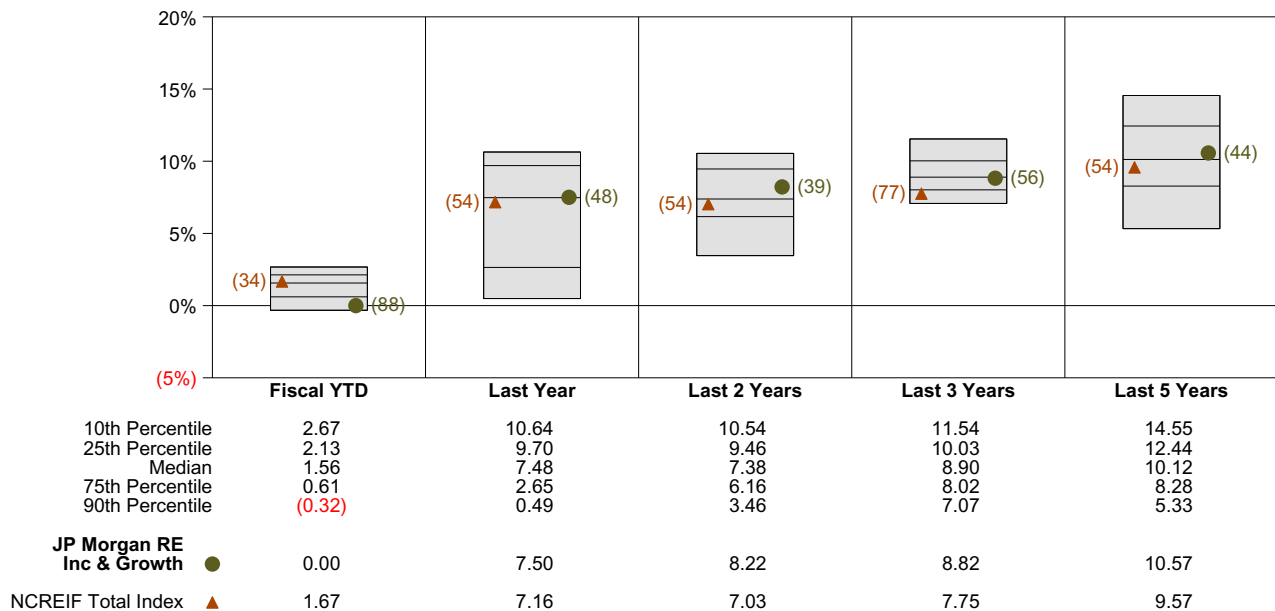
## Quarterly Summary and Highlights

- JP Morgan RE Inc & Growth's portfolio posted a 0.00% return for the quarter placing it in the 88 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 48 percentile for the last year.
- JP Morgan RE Inc & Growth's portfolio underperformed the NCREIF Total Index by 1.67% for the quarter and outperformed the NCREIF Total Index for the year by 0.34%.

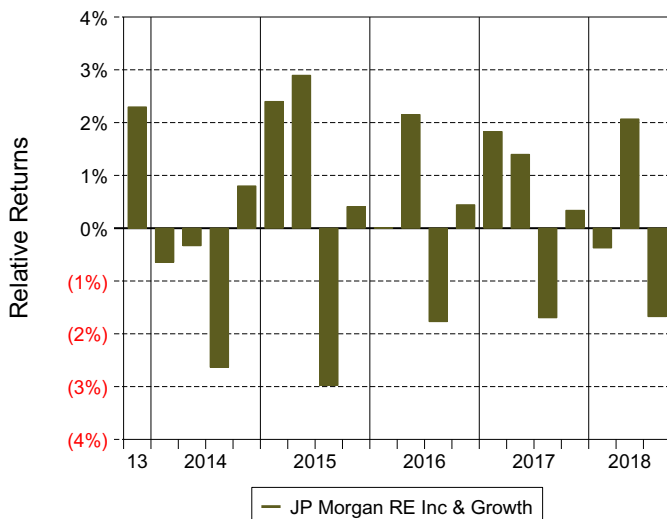
## Quarterly Asset Growth

Beginning Market Value	\$146,218,863
Net New Investment	\$0
Investment Gains/(Losses)	\$0
Ending Market Value	\$146,218,863

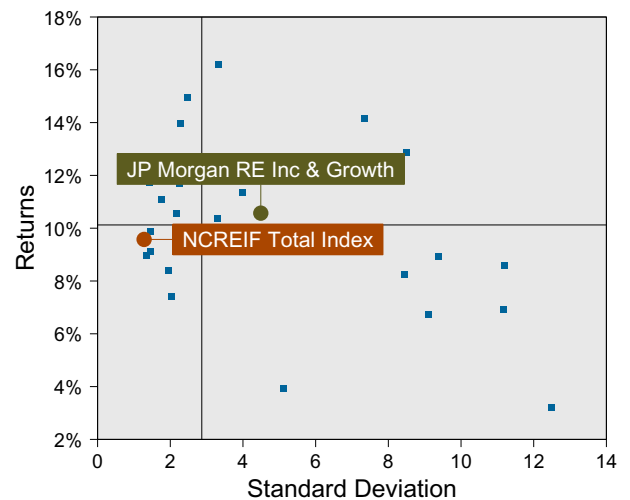
## Performance vs Callan Total Domestic Real Estate DB (Gross)



## Relative Return vs NCREIF Total Index



## Callan Total Domestic Real Estate DB (Gross) Annualized Five Year Risk vs Return



# Western Asset TIPS Period Ended September 30, 2018

## Investment Philosophy

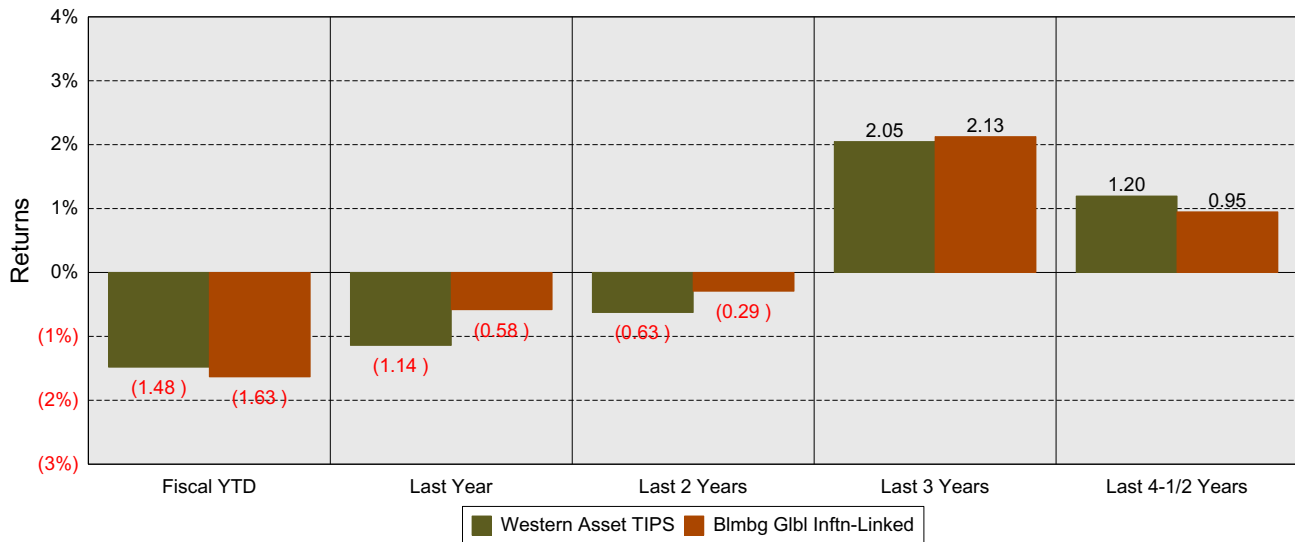
Western Asset's Global Inflation-Linked composite includes portfolios that employ an active, team-managed investment approach around a long-term, value-oriented investment philosophy. Constructed primarily of inflation-indexed securities, these portfolios use diversified strategies in seeking to add value while minimizing risk. Value can be added through country selection, term structure, issue selection, duration management and currency management.

## Quarterly Summary and Highlights

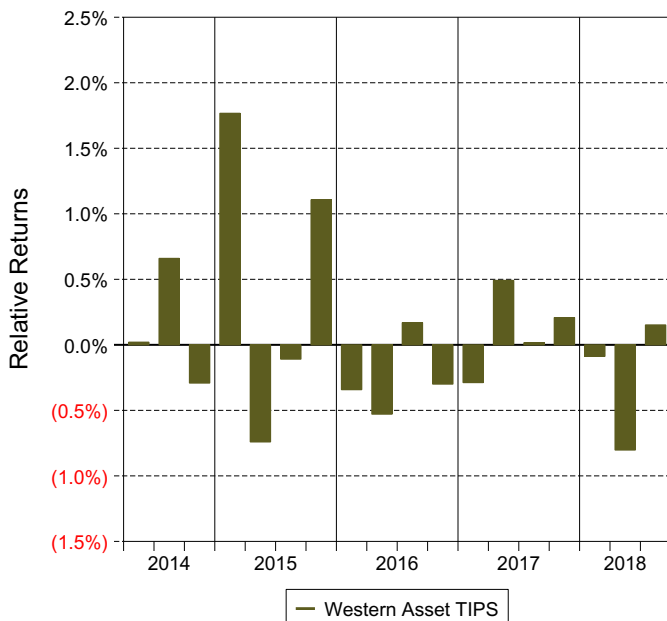
- Western Asset TIPS's portfolio outperformed the Blmbg Gbl Inftn-Linked by 0.15% for the quarter and underperformed the Blmbg Gbl Inftn-Linked for the year by 0.56%.

## Quarterly Asset Growth

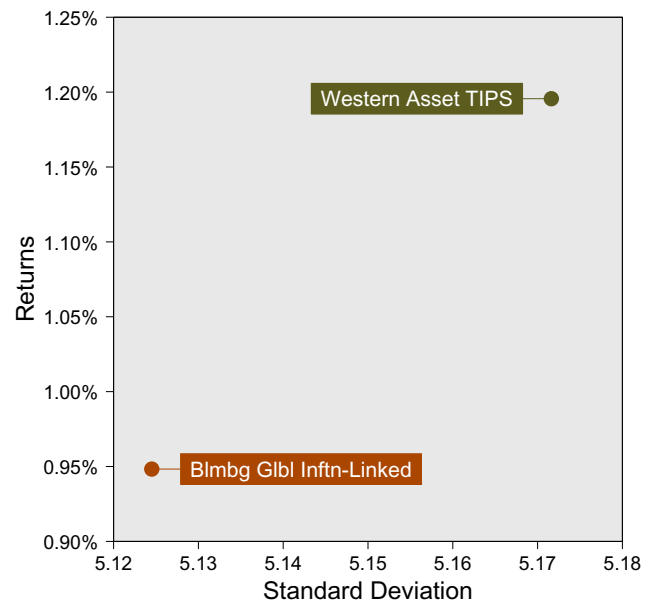
Beginning Market Value	\$360,484,139
Net New Investment	\$29,887,757
Investment Gains/(Losses)	\$-5,571,882
Ending Market Value	\$384,800,014



Relative Return vs Blmbg Gbl Inftn-Linked



Annualized Four and One-Half Year Risk vs Return





# ISQ Global Infrastructure II

## Period Ended September 30, 2018

### Investment Philosophy

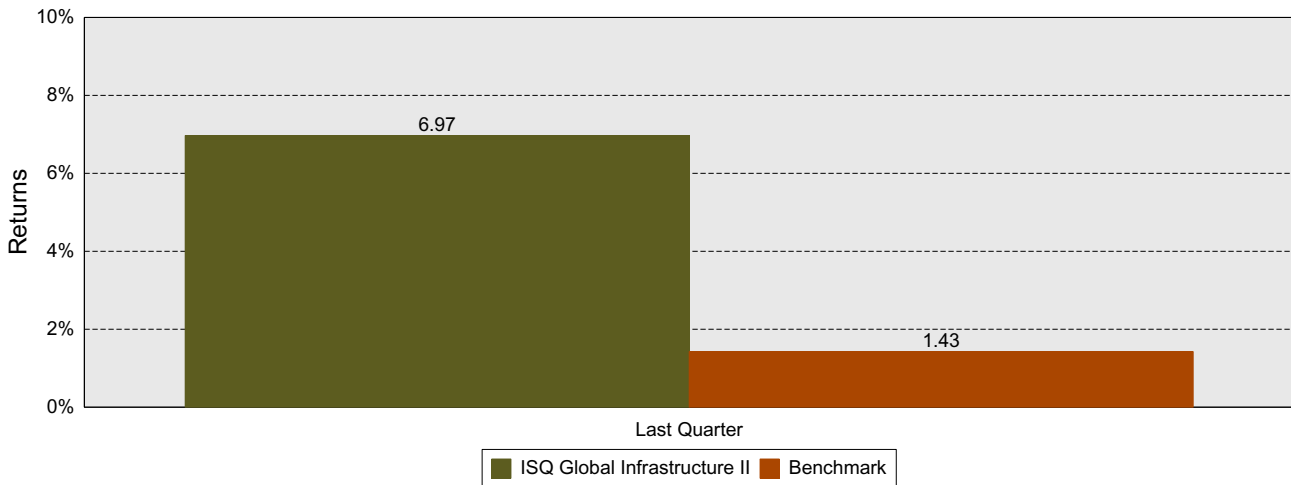
The ISQ Global Infrastructure Fund II seeks to achieve long-term capital appreciation as well as current income through equity and equity related investments in infrastructure and infrastructure related assets located globally, with a focus on North America, Europe, and selected growth economies in Asia and Latin America. The Fund may also invest in debt Securities that have equity-like returns or an equity component, or are related to its equity investments, including without limitation convertible debt, bank loans and participations and other similar instruments. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

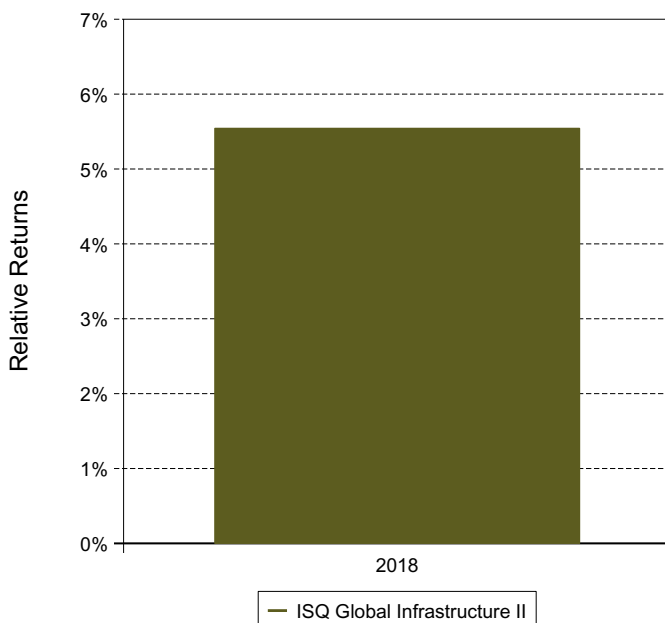
- ISQ Global Infrastructure II's portfolio outperformed the Benchmark by 5.54% for the quarter.

### Quarterly Asset Growth

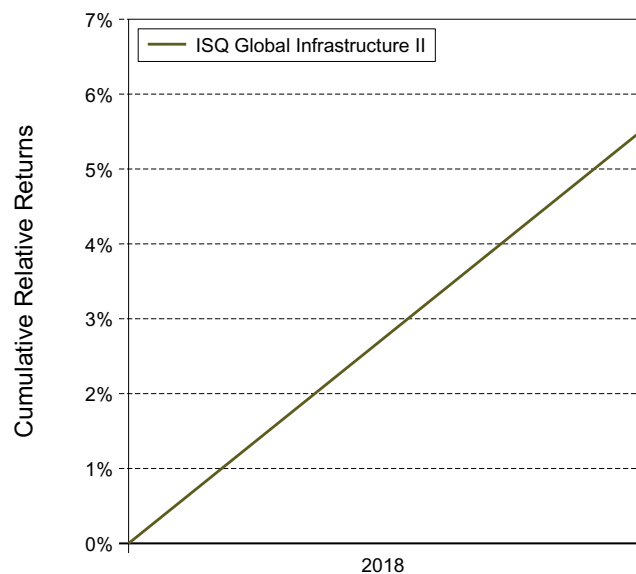
Beginning Market Value	\$4,000,000
Net New Investment	\$0
Investment Gains/(Losses)	\$278,756
Ending Market Value	\$4,278,756



Relative Return vs Benchmark



Cumulative Returns vs Benchmark



# JP Morgan Infrastructure Period Ended September 30, 2018

## Investment Philosophy

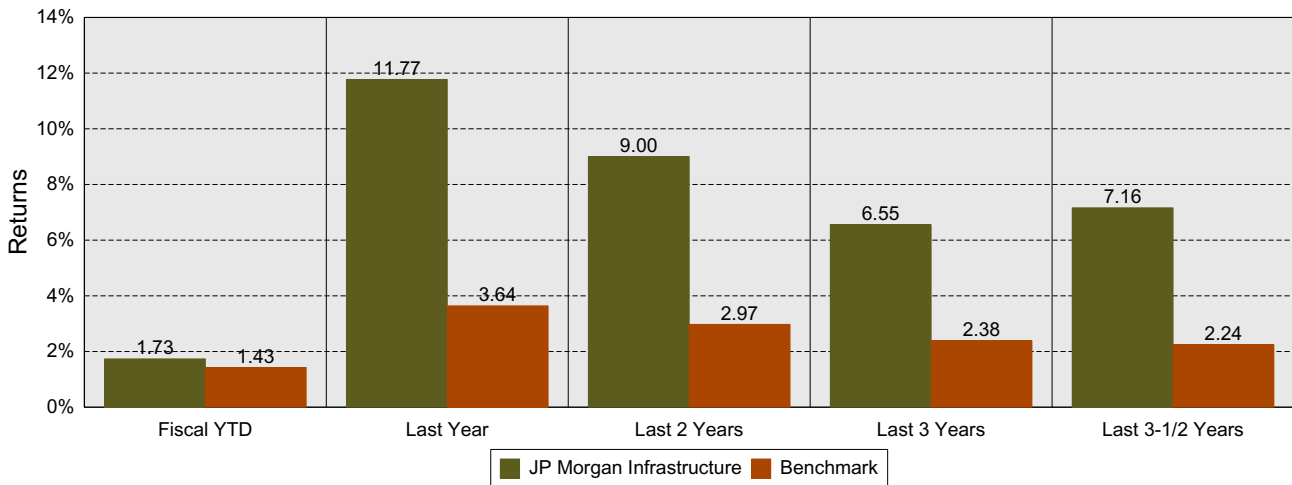
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

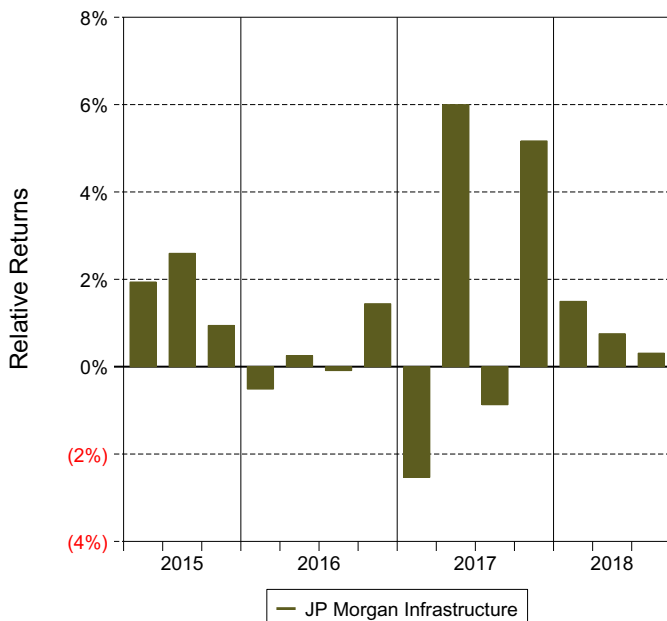
- JP Morgan Infrastructure's portfolio outperformed the Benchmark by 0.31% for the quarter and outperformed the Benchmark for the year by 8.13%.

## Quarterly Asset Growth

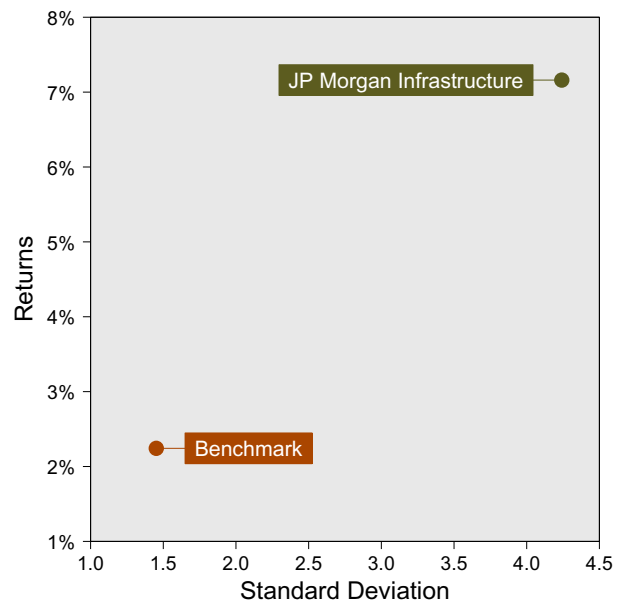
Beginning Market Value	\$122,208,511
Net New Investment	\$-3,975,331
Investment Gains/(Losses)	\$2,109,196
Ending Market Value	\$120,342,376



## Relative Return vs Benchmark



## Annualized Three and One-Half Year Risk vs Return



# Grosvenor Cust. Infrastructure Period Ended September 30, 2018

## Investment Philosophy

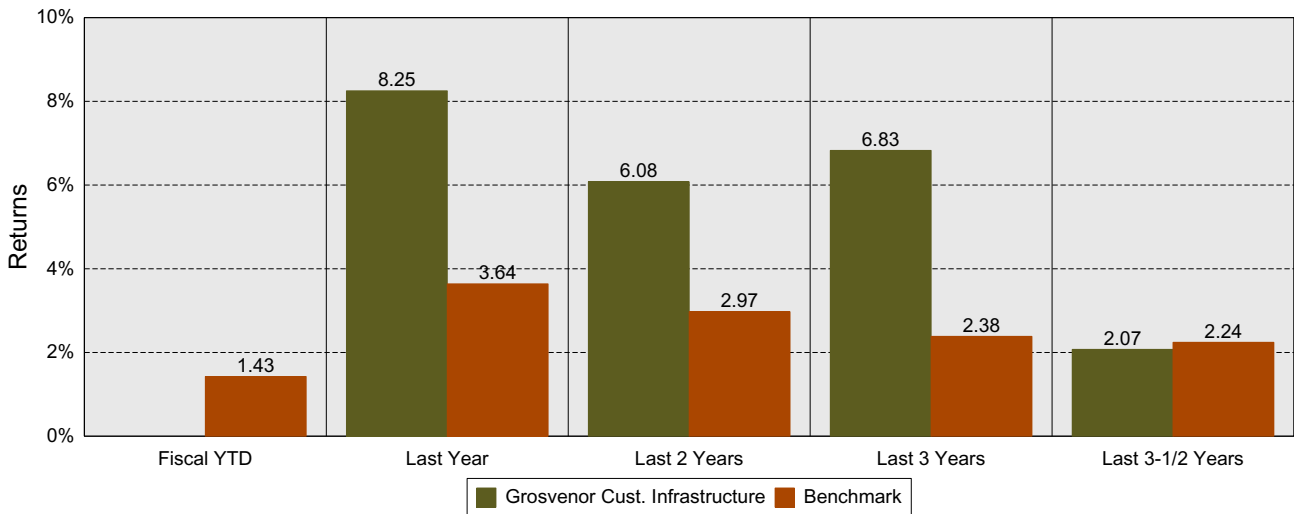
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

## Quarterly Summary and Highlights

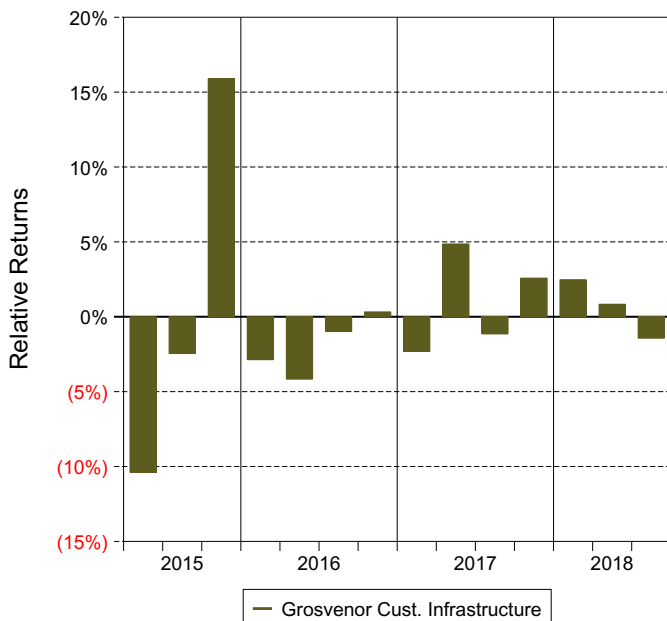
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.43% for the quarter and outperformed the Benchmark for the year by 4.61%.

## Quarterly Asset Growth

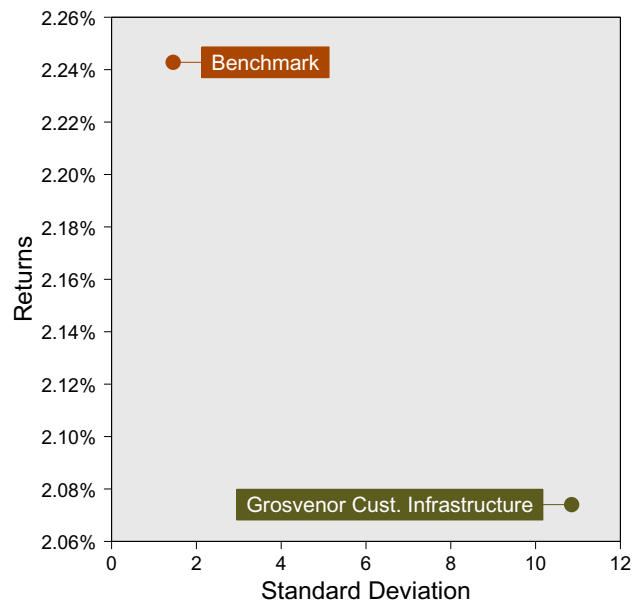
Beginning Market Value	\$39,866,601
Net New Investment	\$0
Investment Gains/(Losses)	\$0
Ending Market Value	\$39,866,601



Relative Return vs Benchmark



Annualized Three and One-Half Year Risk vs Return



## Research and Educational Programs

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog “Perspectives.” For more information contact Corry Walsh at 312.346.3536 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan’s Experts



**An Investor Framework for Addressing Climate Change** | Callan’s Anna West lays out the top issues for investors about this issue. We also identify solutions and areas of progress for those seeking to address climate-related risks as well as benefit from emerging opportunities.

**Promoting Gender Diversity in the Investment Industry** | Callan Executive Chairman Ron Peyton offers his observations on what has worked for gender inclusion at the firm over the last 45 years and what we have learned in the hope that it will inform others on how to progress toward equality in senior roles industry-wide.



**Helping DC Plan Participants in the “Distribution” Phase** | Callan’s Tom Shingler and James Veneruso discuss our research on the “distribution phase” of defined contribution plans, when participants are drawing down assets, and the issues that plan sponsors should address.

**Picking Through the Alpha Graveyard: Correcting for Survivorship Bias in Investment Product Universes** | In this paper from the *Journal of Investment Management*, Callan’s Greg Allen, Ivan Cliff, and Wally Meerschaert propose a technique to correct for survivorship bias in investment product universes. It uses all available data for survivors and non-survivors, corrects for bias across the full distribution (from 1st to 99th percentile), and can be applied to other return-based statistics such as the Sharpe ratio.

**Infrastructure: No Longer a Niche Option** | Callan’s Jan Mende discusses investing in infrastructure. Institutional investors are increasing allocations, managers are creating more investment options, and benchmarks are being refined.

**The Shape of Risk: Making Cents of the Irrational With Options** | In the third quarter’s *Hedge Fund Monitor*, Jim McKee discusses the use of options as insurance for institutional portfolios.

**2018 ESG Survey** | Callan’s sixth annual survey on the status of environmental, social, and governance (ESG) investing in the U.S. institutional investment market reveals more than 40% of investors are incorporating ESG factors into investment decisions.

**Your Plan Will Face a Cyberattack; Here’s How to Prepare** | The third quarter’s edition of the *DC Observer* is designed to assist plan sponsors with formulating and executing their cybersecurity strategy to protect their information and their assets.

## Quarterly Periodicals

**Private Equity Trends** | This newsletter offers the latest data on private equity fundraising, buyouts, venture capital, and returns.

**Market Pulse Flipbook** | A quarterly market reference guide covering investment and fund sponsor trends in the U.S. economy, U.S. and non-U.S. equities and fixed income, alternatives, and defined contribution.

**Capital Market Review** | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity across a wide range of asset classes.

**Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?** | Callan’s Real Assets Consulting group identifies seven indicators—based on spreads in real estate and fixed income markets—that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

## Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: [www.callan.com/library/](http://www.callan.com/library/)

Callan's **2019 National Conference** will be held January 28-30, 2019. Mark your calendars for this upcoming event! And please visit the Events page on our website ([www.callan.com/events/](http://www.callan.com/events/)) for additional information as it becomes available.

**For more information about events, please contact Barb Gerraty: 415.274.3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## The Center for Investment Training Educational Sessions

The Center for Investment Training, better known as the "Callan College," provides a foundation of knowledge for industry professionals who are involved in the investment decision-making process. It was founded in 1994 to provide clients and non-clients alike with basic- to intermediate-level instruction. Our next sessions are:

### Introduction to Investments

*San Francisco, April 16-17, 2019*

*San Francisco, July 16-17, 2019*

*Chicago, October 22-23, 2019*

This program familiarizes fund sponsor trustees, staff, and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals who have less than two years of experience with asset-management oversight and/or support responsibilities. Tuition for the Introductory "Callan College" session is \$2,350 per person. Tuition includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

### Customized Sessions

The "Callan College" is equipped to customize a curriculum to meet the training and educational needs of a specific organization. These tailored sessions range from basic to advanced and can take place anywhere—even at your office.

**Learn more at [www.callan.com/events/callan-college-intro](http://www.callan.com/events/callan-college-intro) or contact Kathleen Cunnie: 415.274.3029 / [cunnie@callan.com](mailto:cunnie@callan.com)**

## Education: By the Numbers

**525** Attendees (on average) of the Institute's annual National Conference

**50+** Unique pieces of research the Institute generates each year

**3,700** Total attendees of the "Callan College" since 1994

**1980** Year the Callan Institute was founded



**"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialog to raise the bar across the industry."**

Greg Allen, Chief Executive Officer and Chief Research Officer

## List of Callan's Investment Manager Clients

Confidential – For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor and disclose potential conflicts on an on-going basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g. attending and educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance Department.

Manager Name
Acadian Asset Management LLC
AEGON USA Investment Management
Aether Investment Partners
AEW Capital Management
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
Black Creek Investment Management, Inc.
BlackRock
BMO Global Asset Management
BNP Paribas Asset Management
BNY Mellon Asset Management
Boston Partners
Brandes Investment Partners, L.P.
Brandywine Global Investment Management, LLC
Breckinridge Capital Advisors, Inc.
BrightSphere Investment Group (FKA Old Mutual Asset)
Brown Brothers Harriman & Company
Cambiar Investors, LLC

Manager Name
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management
CenterSquare Investment Management
Chartwell Investment Partners
Christian Brothers Investment Services
CIM Group
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
CS McKee, L.P.
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS (Formerly Deutsche Asset Management)
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
GAM (USA) Inc.

Manager Name
Gerding Edlen
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs Asset Management
Green Square Capital LLC
Greenwich Investment Management, Inc.
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Harding Loevner L.P.
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln National Corporation
LMCG Investments, LLC
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
Macquarie Investment Management (MIM)
Manulife Asset Management
McKinley Capital Management, LLC
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management
Nuveen Investments, Inc.
OFI Global Asset Management
O'Shaughnessy Asset Management, LLC
P/E Investments

Manager Name
Pacific Investment Management Company
Pathway Capital Management
Peregrine Capital Management, Inc.
Perkins Investment Management
PGIM
PGIM Fixed Income
PineBridge Investments
Pictet Asset Management Ltd.
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Reaves Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management Inc.
Russell Investments
Santander Global Facilities
Schroder Investment Management North America Inc.
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
Standard Life Investments Limited
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The Boston Company Asset Management, LLC
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
WCM Investment Management
WEDGE Capital Management
Wedgewood Partners, Inc.
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC

## INFORMATIONAL

**TO:** State Investment Board (“SIB”)  
**FROM:** Dave Hunter  
**DATE:** November 9, 2018  
**SUBJECT:** **Investment Fee Reviews – Summary Memo**

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**Background:**

SIB Governance Policy D-1 on **Ends** states that “SIB clients receive investment returns ... in a cost effective manner ...” and Policy E-1 on **Fiduciary Duties** states that “investment expenses must be controlled”. As consistent with prior years, the SIB approved RIO’s recommendation to engage Callan to conduct a review of investment fee levels. (RIO notes the Callan contract includes two projects per fiscal year and the fee study represents one of the two projects for the current fiscal year.) RIO will continue to work with our existing managers on various fee reduction initiatives. Most recently, this includes SIB approval to engage XTP to perform a comprehensive review of our investment fee structures and underlying expenses in 2019 (noting that Novarca was previously engaged to perform a similar contingent fee review in November of 2014).

**Summary:**

The following page summarizes the fee ranking of each asset class within the Pension Trust, Insurance Trust and Legacy Fund. The lowest fee level is highlighted in **blue**, the second lowest fee level is **green**, median pricing is **brown**, above average pricing is **orange** and the highest fee level is **yellow**. Based on this quartile ranking system for “All-In Pricing”, most of the asset classes are ranked in the two best quartiles (e.g. **blue is best** and **green is good**) and generally include our equity allocations. In contrast, some of the asset classes are ranked in the two worst quartiles (e.g. **orange** or **yellow**) and generally includes fixed income and real assets. Although fixed income and real assets are often ranked in the two worst quartiles from a fee perspective, it is important to note that these sectors have generated above average levels of excess return (as highlighted in the *RIO Commentary* section on the next page). As such, RIO firmly believes this significant level of outperformance justifies the above median fee levels within these sectors.

**RIO believes that investment expenses are reasonable overall** noting that management fees have been trending downward on a % basis since fiscal 2013. More importantly, RIO notes the return on investment fees has been meaningfully positive and exceeded 50 bps per annum (or \$300 million in aggregate) over the last five years. As such, the SIB has been successful in prudently using active management to generate positive risk adjusted rates of return while significantly reducing fee levels for nearly all of our clients.



**Callan Fee Study  
Financial Dashboard  
As of November 9, 2018**



Blue - 4th Quartile ("Blue is Best" or Lowest Fee Level)
Green - 3rd Quartile ("Green is Good")
Brown = Median or Average Industry Pricing
Orange - 2nd Quartile (Below Average)
Yellow - 1st Quartile (Highest Fee Level)

n.a. or n.m. = not available or not meaningful  
bp = basis point (1 basis point = 1/100th of 1%)

Column A	Column B	Column C	Column D	Column E	
	----- ND SIB -----				
	Asset Based	All-In	Callan	All	
	Pricing	Pricing	Median	Strategies	<b>RIO Commentary</b>
<b>PENSION TRUST:</b>				<b>Quartile</b>	
World Equity	0.64%	0.34%	0.49%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Large Cap Equity	0.21%	0.13%	0.30%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Small Cap Equity	0.70%	0.45%	0.56%	4th	ND SIB fees are in the lowest or "Best" quartile.
Developed International Equity	0.31%	0.31%	0.49%	4th	ND SIB fees are in the lowest or "Best" quartile.
Emerging Markets Equity	0.82%	0.82%	0.79%	2nd	ND SIB fees are within 3 bps of the "Industry Median".
Investment Grade Fixed Income	0.17%	0.44%	0.19%	1st	Excess returns > 1.4% (4.5% net vs 3.1% 5-yr. index) justify All-In Pricing
Non-Invest. Grade Fixed Income	0.50%	1.32%	0.50%	1st	Excess returns > 0.90% (6.5% net vs 5.6% 5-yr. index) justify All-In Pricing
International Fixed Income	0.31%	0.31%	0.42%	4th	ND SIB fees are in the lowest or "Best" quartile.
Real Estate	0.57%	1.12%	9.20%	1st	Excess returns > 1.9% (11.5% net vs 9.6% index) justify All-In Pricing
Timber	n.m.	0.66%	n.a.	n.a.	<i>"Callan cannot produce an informationally viable industry fee universe for comparisons due to the highly varied &amp; customized approach of in these assets classes."</i>
Infrastructure	n.m.	1.16%	n.a.	n.a.	
Private Equity ("P/E")	n.m.	1.84%	n.a.	n.a.	
Cash	0.11%	0.11%	< 0.20%	n.a.	Callan notes that fees "are well within industry norms".
<b>INSURANCE TRUST:</b>					
Domestic Large Cap Equity	0.26%	0.20%	0.41%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Small Cap Equity	0.26%	0.13%	0.75%	4th	ND SIB fees are in the lowest or "Best" quartile.
International Equity	0.42%	0.42%	0.66%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Fixed Income	0.16%	0.32%	0.19%	1st	Excess returns > 2.2% (4.4% net vs 2.2% index) justify "All-In Pricing".
Diversified Real - Infra/Tree/TIPS	0.13%	0.48%	0.93%	4th	ND SIB fees are in the lowest or "Best" quartile.
Real Estate	0.55%	0.55%	0.92%	4th	ND SIB fees are in the lowest or "Best" quartile.
Short-Term Fixed Income	0.13%	0.13%	0.20%	4th	ND SIB fees are in the lowest or "Best" quartile.
Cash & Cash Equivalents	0.17%	0.17%	< 0.20%	n.a.	Callan notes that fees "are well within industry norms".
<b>LEGACY FUND:</b>					
Domestic Large Cap Equity	0.25%	0.19%	0.30%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Small Cap Equity	0.24%	0.17%	0.56%	4th	ND SIB fees are in the lowest or "Best" quartile.
International Equity	0.41%	0.41%	0.49%	4th	ND SIB fees are in the lowest or "Best" quartile.
Domestic Fixed Income	0.15%	0.32%	0.19%	1st	Excess returns > 1.9% (4.1% net vs 2.2% 5-yr. index) justify All-In Pricing
Diversified Real - Infra/Tree/TIPS	0.12%	0.53%	0.93%	4th	ND SIB fees are in the lowest or "Best" quartile.
Real Estate	0.55%	0.55%	0.92%	4th	ND SIB fees are in the lowest or "Best" quartile.

**RIO SUMMARY: Overall fees are reasonable, although investment manager fees are comparatively higher in the Pension Trust than the Insurance Trust. In recent years, RIO and SIB has been successful in reducing overall investment management fees to less than 0.45% (from 0.65% in fiscal 2013). RIO will continue to work with Callan and our managers on additional fee reductions but expect fees to approximate 0.50% per annum over the long-term.**

November 16, 2018



**NDSIB Fee Study:  
Fiscal Year 2018**

Pension Trust, Insurance Trust,  
and Legacy Fund

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**Paul Erlendson**  
Senior Vice President

**Alex Browning**  
Senior Vice President

**Perry Hopper**  
Assistant Vice President

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# Summary Notes and Comments on 2018 Fee Study

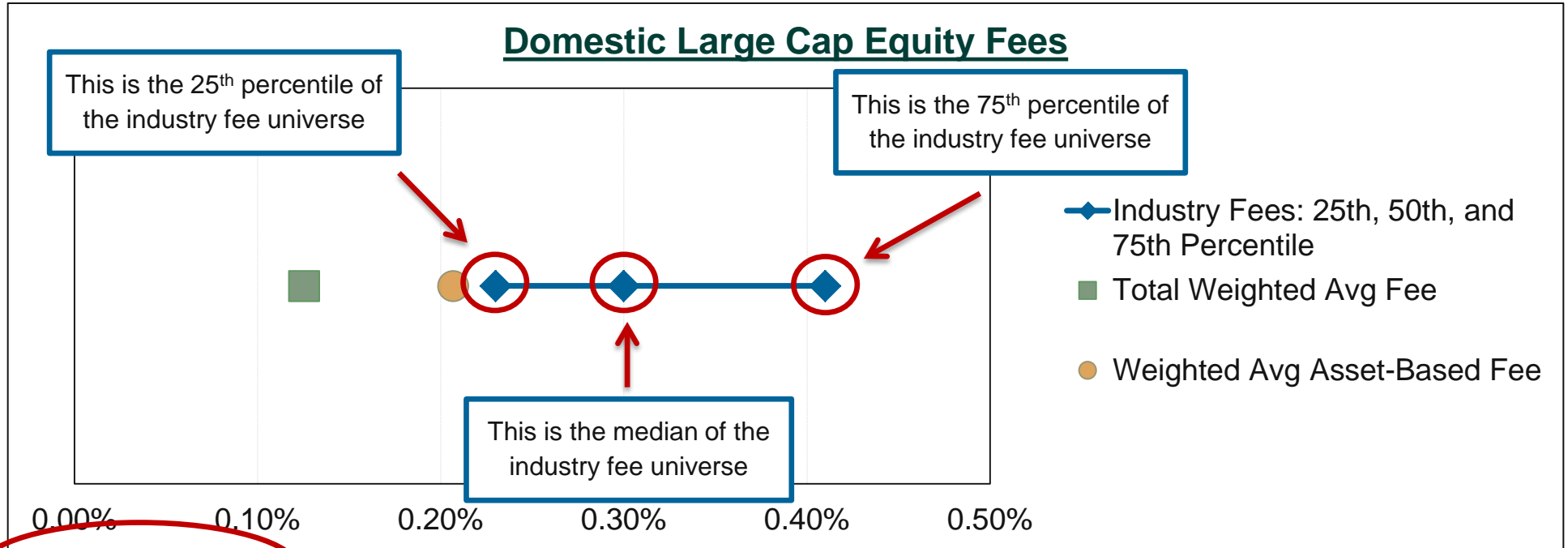
## NDSIB – Pension Trust, Insurance Trust, and Legacy Fund

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- All market values and fee data are as of the fiscal year ending June 30, 2018.
- Investment managers employ three primary fee calculation methods to charge for their services;
  - **Asset-Based Fees:** fees are calculated as a percentage of assets under management
  - **Performance-Based Fees:** fees are calculated on outperformance relative to a pre-specified benchmark during a contracted measurement period
  - **Hybrid Fees:** A combination of an asset-based fee and a performance-based fee schedule
- Fees are calculated as weighted averages in three different ways within the asset classes:
  - **Weighted Average Asset-based Fee:** calculated using only managers that employ an asset-based fee schedule
  - **Weighted Average Performance / Hybrid Fee:** calculated using only managers that employ a performance or hybrid fee schedule
  - **Total Weighted Average Fee:** calculated across all managers in the asset class
- Regardless of the method used by a particular manager, Callan calculated fees as a percentage of assets under management for each manager for the purposes of comparison.
- In many instances, fees paid by the individual trusts benefit from fee schedules that account for the aggregate level of assets invested with a particular manager or in a specific strategy.
- Fee universes used in the study reflect either:
  - **Actual Fees** paid by Callan survey respondents who invest in similar mandates,
  - **Published Fees** calculated using a universe of manager fee schedules for similar mandates, or;
  - An **Average of Actual and Published Fee** universes. This method was employed where the Actual Fee universe was smaller than 30.
- All fee universes are explicitly noted beneath each chart where “n=” will denote the applicable sample size.
- Greater detail on fee measurements and data are available on the last page of the report.

# Sample Chart

## Explanatory Slide



*N=61, Actual Fee Universe*

This illustrates the number of constituents and the type of fee that was surveyed to create the sample universe

# Sample Table

## Explanatory Slide

Domestic Large Cap Equity		
Managers with asset-based fees	{	<b>Asset-Based Fee Strategies</b> <span style="float: right;"><b>Fee %</b></span>
		L.A. Capital Growth <span style="float: right;">0.21%</span>
		<b>Weighted Average Asset-Based Fee</b> <span style="float: right;"><b>0.21%</b></span>
Managers with performance and hybrid Fees	{	<b>Performance and Hybrid Fee Strategies</b> <span style="float: right;"><b>Fee %</b></span>
		L.A. Capital Enhanced Index <span style="float: right;">0.21%</span>
		Northern Trust Enhanced S&P 500 <span style="float: right;">0.00%</span>
		Clifton Enhanced S&P 500 <span style="float: right;">0.00%</span>
		<b>Weighted Average Performance and Hybrid Fee</b> <span style="float: right;"><b>0.07%</b></span>
		<b>Total Weighted Average U.S. Lg Cap Fee</b> <span style="float: right;"><b>0.13%</b></span>
Industry fee distribution	{	Industry Fee - 25th Percentile <span style="float: right;">0.23%</span>
		Industry Fee - Median <span style="float: right;">0.30%</span>
		Industry Fee - 75th Percentile <span style="float: right;">0.41%</span>

*N=61, Actual Fee Universe*

This is the weighted average fee rate paid to managers with an asset-based fee

This is the weighted average fee rate paid to managers with a performance / hybrid based fee

This is the weighted average fee rate paid to all managers

Callan

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**Pension Trust**

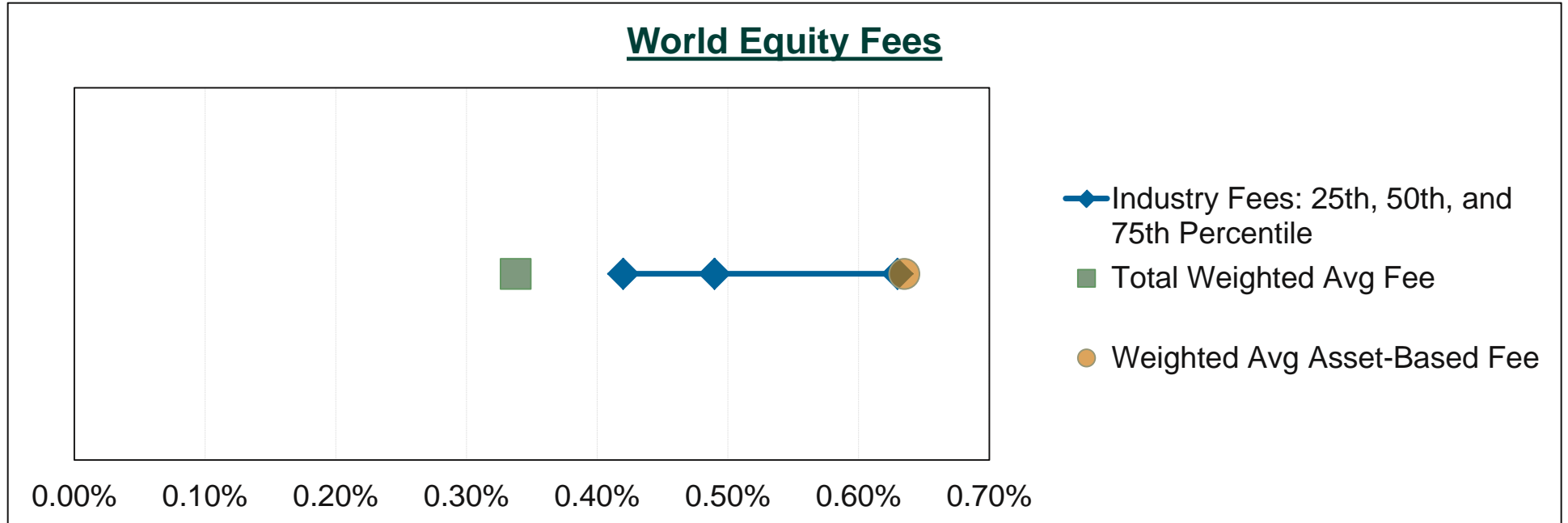
# Pension Trust

## NDSIB Fee Study Fiscal Year 2018 Executive Summary

- Total Equity manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
  - Total Global Equity fees fell below the 25<sup>th</sup> percentile of the industry universe, helped in part by performance/hybrid fee based strategies
  - Total Domestic Large Cap Equity asset-based and performance/hybrid fee strategies were below the 25<sup>th</sup> percentile of the industry universe
  - Total Small Cap Equity fees were close to the 25<sup>th</sup> percentile with asset-based fees falling above the 75<sup>th</sup> percentile
  - Developed International Equity fees were below the 25<sup>th</sup> percentile and represented only asset-based fee strategies
  - Emerging Market Equity fees fell just above median and represented only asset-based fee strategies
- Total Fixed Income manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
  - Total Investment Grade Fixed Income fees paid were above the 75<sup>th</sup> percentile, driven largely by performance/hybrid fee based strategies
  - Total Below Investment Grade Fixed Income fees paid were above the 75<sup>th</sup> percentile, driven largely by performance/hybrid fee based strategies
  - Total International Fixed Income fees paid were below the 25<sup>th</sup> percentile of industry averages and represented only asset-based fee strategies
- Total Real Estate manager fees paid represented a mix of asset-based and performance/hybrid fee strategies. Asset based fee strategies fell well below the 25<sup>th</sup> percentile with performance/hybrid fee strategies pushing the total fees paid just above the 75<sup>th</sup> percentile.
- Total Real Assets represents a variety of inflation-sensitive strategies including Timber and Infrastructure. Due to the custom nature of these strategies, no applicable manager fee distribution is available.
  - Fee structures do however appear to follow industry norms and standards
- Private Equity represents a variety of strategies and investment vehicles that cannot produce a reasonable industry fee universe for comparison.
  - Fee structures do however appear to follow industry norms and standards

# World Equity

## Pension Trust



*N=648, Average of Actual Fee Universe (N=28) and Published Fee Universe (N=620)*

- World equity managers invest in stocks traded in both U.S. and non-U.S. markets.
- North Dakota's average World Equity account size for FY 2018 was \$470mm
- The orange circle represents North Dakota's World Equity weighted average asset-based management fee of 0.64%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.34%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$300mm and \$2bn



# World Equity

## Pension Trust

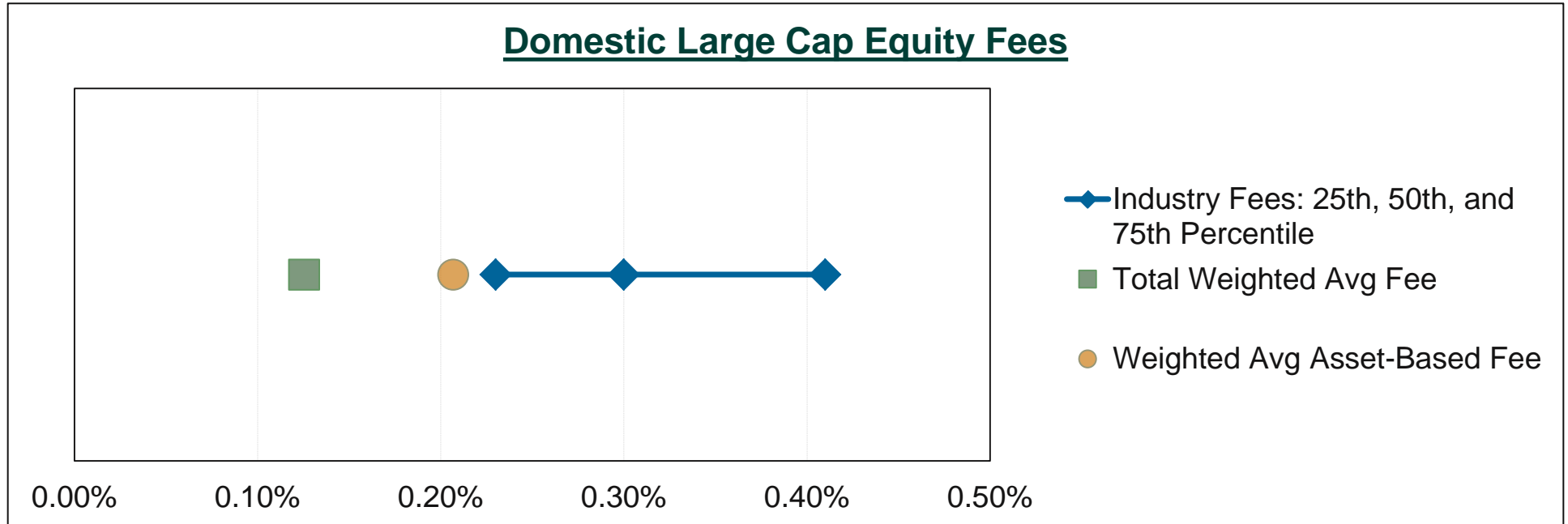
World Equity	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
EPOCH Inv. Partners	0.64%
<b>Weighted Average Asset-Based Fee</b>	<b>0.64%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
LSV Asset Management	0.10%
<b>Weighted Average Performance &amp; Hybrid Fee</b>	<b>0.10%</b>
<b>Total Weighted Average World Equity Fee</b>	<b>0.34%</b>
Industry Fee - 25th Percentile	0.42%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.63%

*N=648, Average of Actual Fee Universe (N=28) and Published Fee Universe (N=620)*

- During the 2018 FY, the World Equity portfolio fees were below those of industry peers. This is largely attributable to the hybrid fee structure of LSV Asset Management.
  - Performance fees are paid to the fund on excess return against the index; however, LSV underperformed the MSCI ACWI by 3.33 percentage points on a gross basis in FY 2018.
  - *LSV charges a flat fee of 0.10% on assets under management plus 25% of the net outperformance relative to its benchmark with totals fees capped at 0.85%.*

# Domestic Large Cap Equity

Pension Trust



*N=61, Actual Fee Universe*

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$243mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.21%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.13%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

# Domestic Large Cap Equity

Pension Trust

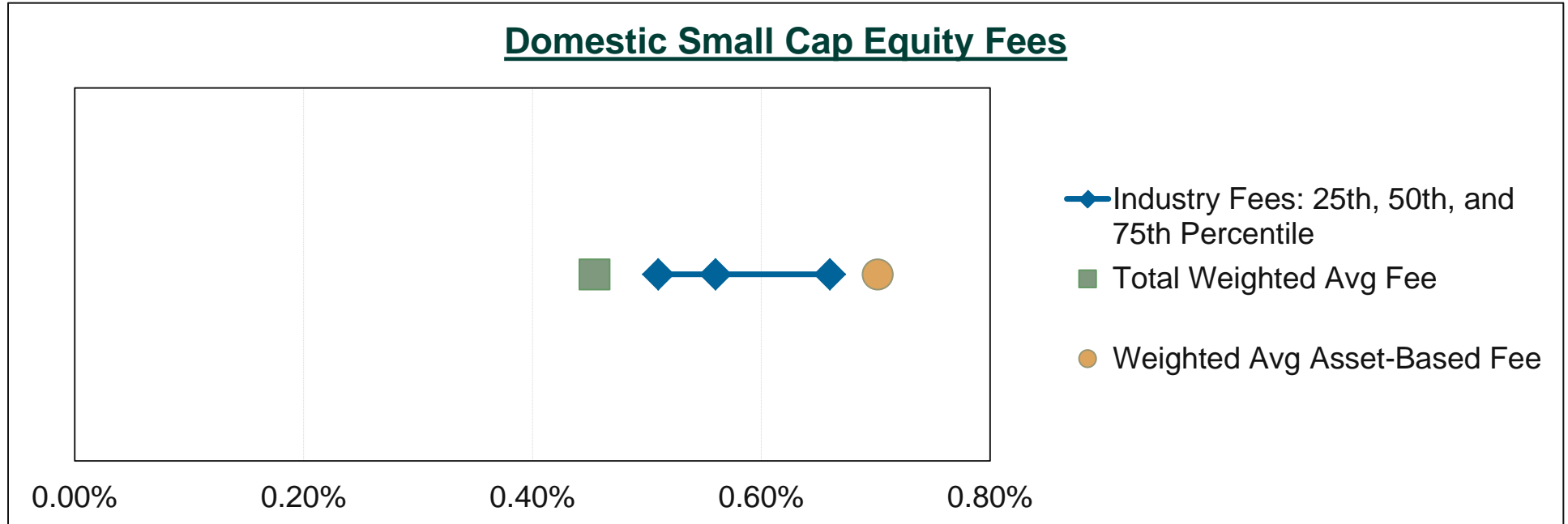
Domestic Large Cap Equity	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Growth	0.21%
<b>Weighted Average Asset-Based Fee</b>	<b>0.21%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Enhanced Index	0.21%
Northern Trust Enhanced S&P 500	0.00%
Clifton Enhanced S&P 500*	0.00%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.07%</b>
<b>Total Weighted Average U.S. Lg Cap Fee</b>	<b>0.13%</b>
Industry Fee - 25th Percentile	0.23%
Industry Fee - Median	0.30%
Industry Fee - 75th Percentile	0.41%

*N=61, Actual Fee Universe*

- The Domestic Large Cap Equity portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
  - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
  - Northern Trust Enhanced Index charges no base management fee. The only fee charged is 25% of the excess return generated.
  - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
    - *\*Note that Clinton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$2.1mm in performance fee credit against future fees.*

# Domestic Small Cap Equity

Pension Trust



*N=38, Actual Fee Universe*

- Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$152mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.70%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.45%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

# Domestic Small Cap Equity

Pension Trust

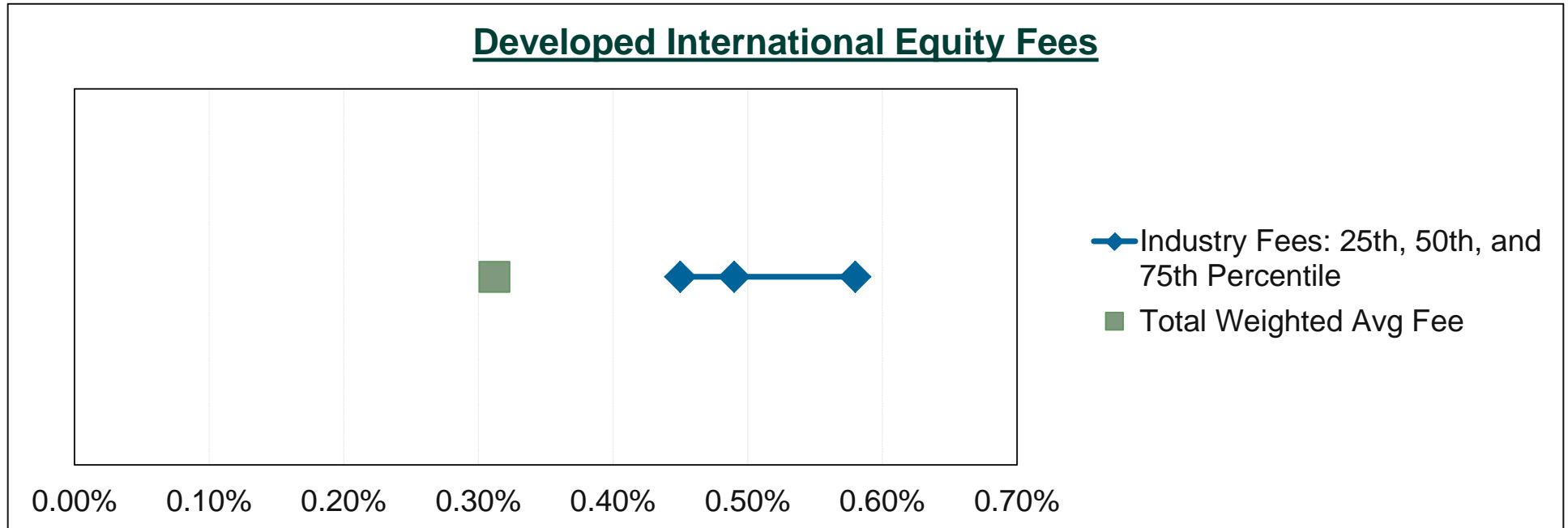
<b>Domestic Small Cap Equity</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Atlanta Capital	0.70%
<b>Weighted Average Asset-Based Fee</b>	<b>0.70%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
Clifton Enhanced Small Cap	0.22%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.22%</b>
<b>Total Weighted Average U.S. Sm Cap Fee</b>	<b>0.45%</b>
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.56%
Industry Fee - 75th Percentile	0.66%

*N=38, Actual Fee Universe*

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
  - Parametric Clifton Enhanced Small Cap charges no base management fee. The only fee charged is 35% of the excess return generated over the index. Fees are paid once a year for performance through June 30.
- Note that the Asset-Based fee of Atlanta Capital exceeds the 75<sup>th</sup> percentile of respondents to the Callan 2017 Investment Management Fee Survey.

# Developed International Equity

## Pension Trust



*N=53, Actual Fee Universe*

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average Developed International Equity account size for FY 2018 was \$170mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.31%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

## Developed International Equity

### Pension Trust

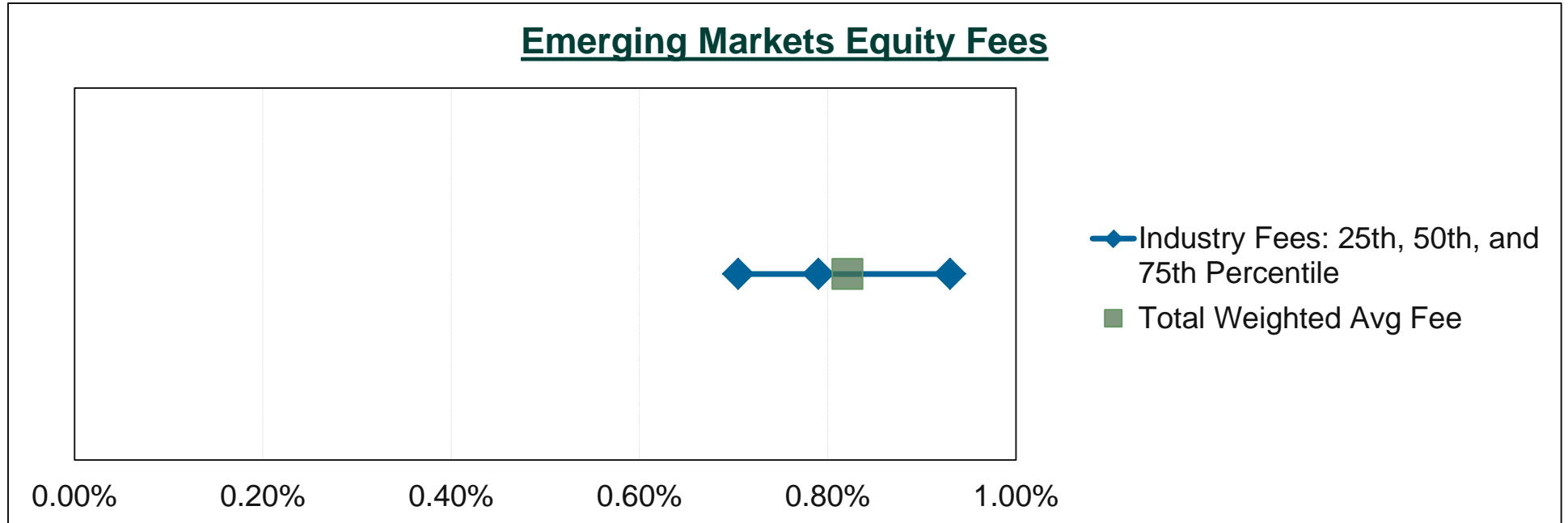
<b>Developed International Equity</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
DFA International Small Cap Value	0.67%
Northern Trust World ex-US	0.03%
Wellington Intl SC Opp	0.86%
William Blair	0.36%
<b>Total Weighted Average Dev. Intl Equity Fee</b>	<b>0.31%</b>
<hr/>	
Industry Fee - 25th Percentile	0.45%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.58%

*N=53, Actual Fee Universe*

- All managers for this asset class fall into the asset-based fee category.
- The total weighted average fee for the asset class falls well below the industry average for active managers.
  - However, note that Northern Trust is a passive manager and passive strategies tend to charge lower fees than active ones do. The inclusion of Northern Trust therefore skews the weighted average fee below what the weighted average fee would be if the fund was excluded from the group.

# Emerging Markets Equity

Pension Trust



*N=437, Average of Actual Fee Universe (N=18) and Published Fee Universe (N=419)*

- Emerging Markets Equity managers invest in stocks that gain exposure to emerging market economies.
- North Dakota's average Emerging Markets Equity account size for FY 2018 was \$111mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.82%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm



# Emerging Markets Equity

Pension Trust

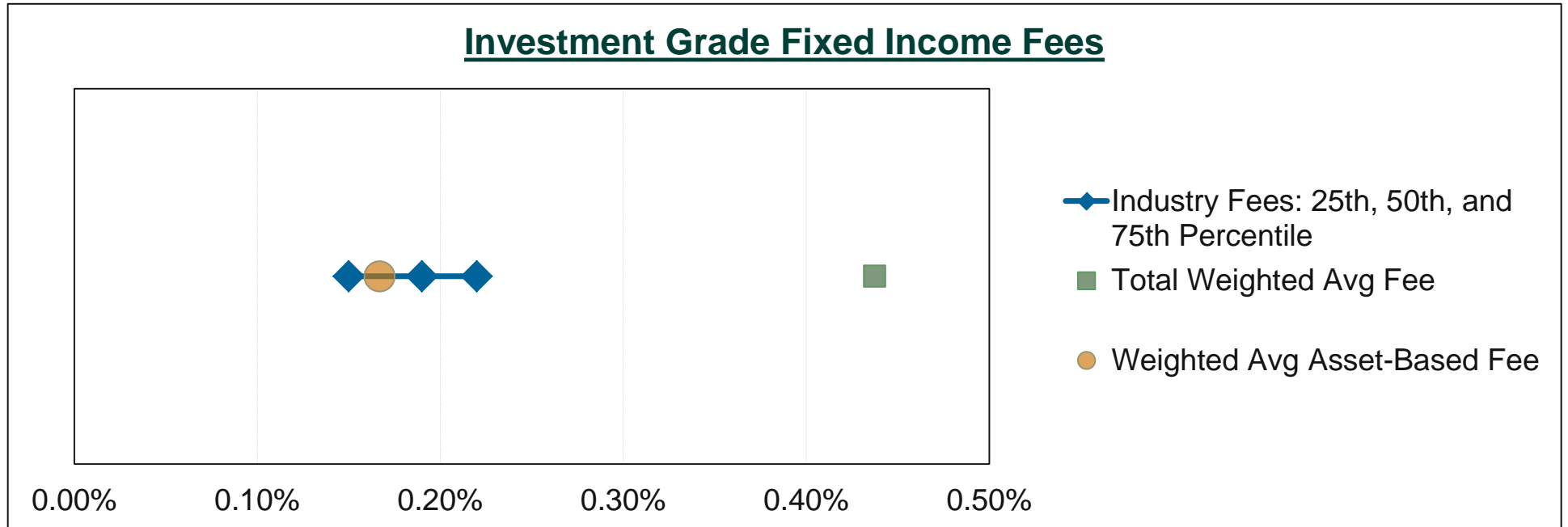
Emerging Markets Equity	
Asset-Based Fee Strategies	Fee %
DFA Emerging	0.69%
Axiom	0.87%
<b>Total Weighted Average EM Equity Fee</b>	<b>0.82%</b>
Industry Fee - 25th Percentile	0.71%
Industry Fee - Median	0.79%
Industry Fee - 75th Percentile	0.93%

*N=437, Average of Actual Fee Universe (N=18) and Published Fee Universe (N=419)*

- All managers for this asset class fall into the asset-based fee category.
- North Dakota's weighted average fee for the asset class is roughly in line with the median of industry peers.

# Investment Grade Fixed Income

Pension Trust



*N=39, Actual Fee Universe*

- Investment Grade Fixed Income managers invest in bonds and other debt instruments that are rated “investment grade” by rating agencies and/or investment analysts.
- North Dakota's average Investment Grade Fixed Income account size for FY 2018 was \$121mm
- The orange circle represents North Dakota's Investment Grade Fixed Income weighted average asset-based management fee of 0.17%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.44%
- Fee universe was constructed using Callan’s 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

# Investment Grade Fixed Income

## Pension Trust

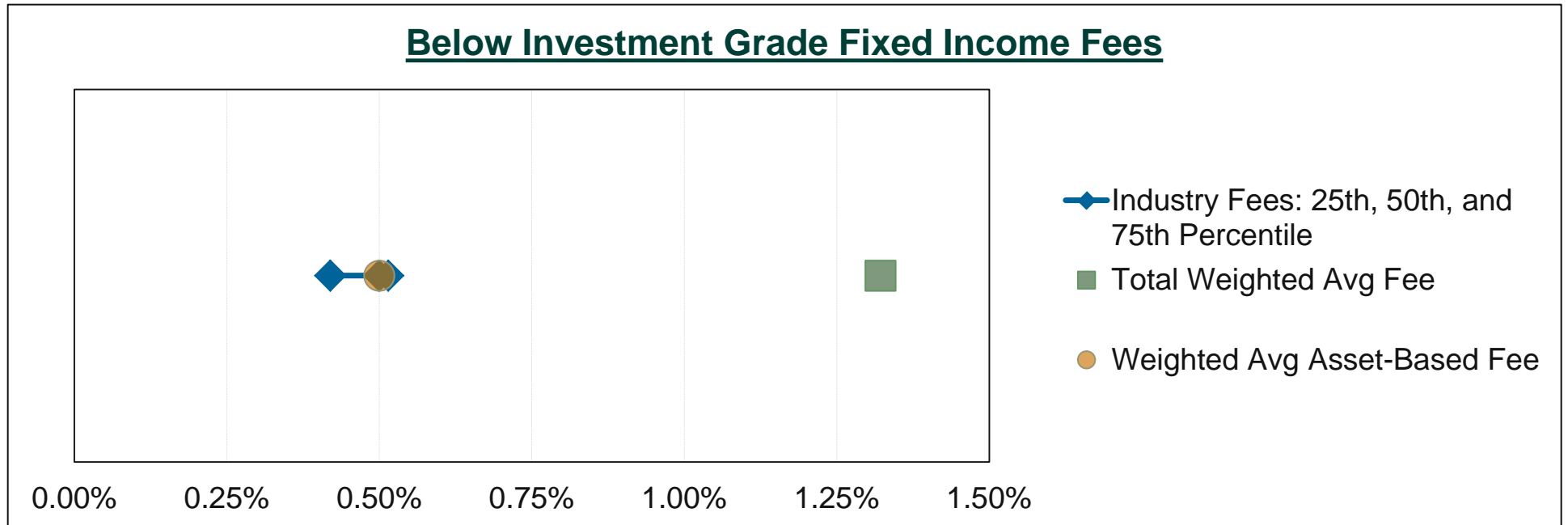
Investment Grade Fixed Income		Investment Grade Fixed Income	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>	<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
Declaration Total Return	0.37%	PIMCO DiSCO II	2.16%
JP Morgan MBS	0.26%	<b>Weighted Average Performance and Hybrid Fee</b>	<b>2.16%</b>
PIMCO MBS	0.23%		
PIMCO Unconstrained	0.14%	<b>Total Weighted Average IG Fixed Income Fee</b>	<b>0.44%</b>
Prudential	0.12%		
SSgA Long U.S. Treasury Index	0.03%	Industry Fee - 25th Percentile	0.15%
<b>Weighted Average Asset-Based Fee</b>	<b>0.17%</b>	Industry Fee - Median	0.19%
		Industry Fee - 75th Percentile	0.22%

*N=39, Actual Fee Universe*

- Declaration Total Return charges an Asset-Based Fee of 0.60%. 1/12 of the Asset-Based fee is charged monthly. However, fees charged on amounts in excess of \$75mm are rebated back to the Pension Trust on a quarterly basis. This rebate process is a specially negotiated arrangement made necessary by the partnership structure.
- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- Note that PIMCO MBS and J.P. Morgan MBS were both fully redeemed during the fiscal year. Assets were redeployed to Prudential, which was a new subscription in the first quarter of 2018. The portfolio's allocation to PIMCO Unconstrained was also increased in the first quarter of 2018.

# Below Investment Grade Fixed Income

Pension Trust



*N=240, Average of Actual Fee Universe (N=23) and Published Fee Universe (N=217)*

- Below Investment Grade (I.G.) Fixed Income managers invest in bonds and other debt instruments that are rated below “investment grade” by rating agencies and/or investment analysts.
- North Dakota's average Below Investment Grade Fixed Income account size for FY 2018 was \$58mm
- The orange circle represents North Dakota's Below Investment Grade Fixed Income weighted average asset-based management fee of 0.5%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 1.32%
- Fee universe was constructed using Callan’s 2017 Investment Management Fee Survey for mandate sizes below \$200mm

## Below Investment Grade Fixed Income

### Pension Trust

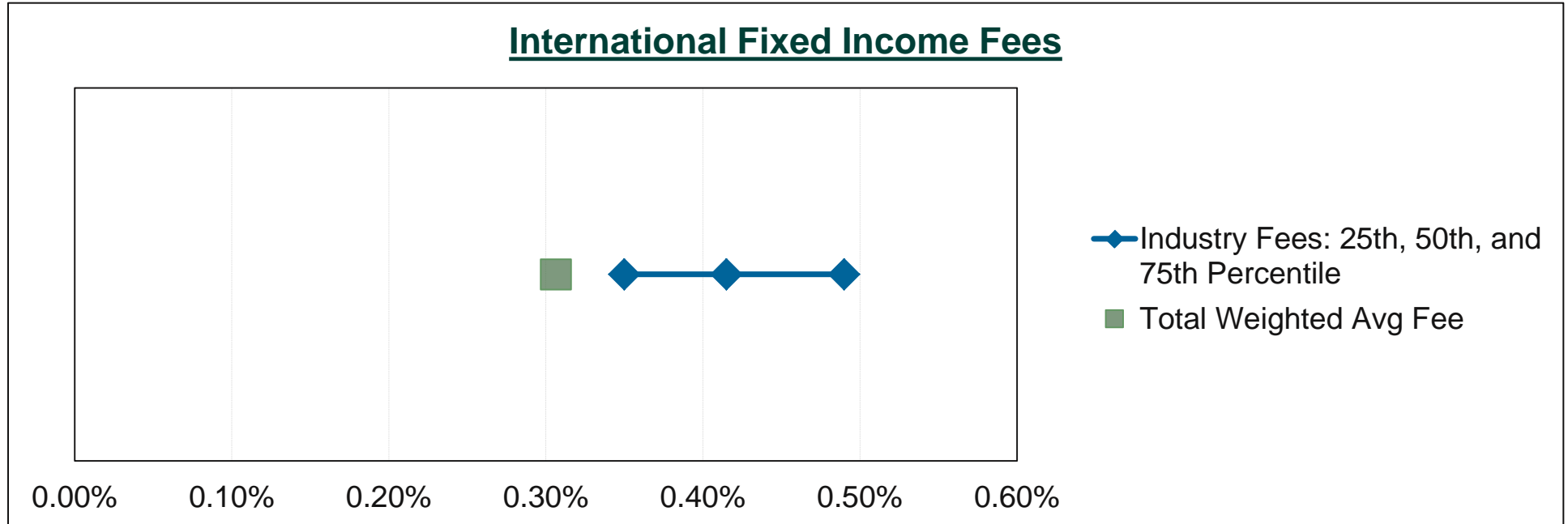
Below Investment Grade Fixed Income	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Loomis Sayles	0.50%
<b>Weighted Average Asset-Based Fee</b>	<b>0.50%</b>
Industry Fee - 25th Percentile	0.42%
Industry Fee - Median	0.50%
Industry Fee - 75th Percentile	0.52%
<i>N=240, Average of Actual Fee Universe (N=23) and Published Fee Universe (N=217)</i>	

Below Investment Grade Fixed Income	
<b>Performance &amp; Hybrid Fee Strategies</b>	<b>Fee %</b>
Ares Credit Strategies	3.10%
Cerberus Private Credit	1.08%
Goldman Sachs 2006 Offshore	6.62%
Goldman Sachs V Offshore	1.27%
PIMCO Bravo II	2.84%
<b>Weighted Average Performance &amp; Hybrid Fee</b>	<b>2.31%</b>
<b>Total Weighted Average Below-IG FI Fee</b>	<b>1.32%</b>

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
  - Both Goldman Sachs investment products charge a management fee of 1.5% based on the original commitment plus a performance-based fee.
  - PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%.
  - Cerberus Private Credit charges a fee of 0.90% based on assets under management plus a performance fee.
  - Ares Credit Strategies charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 10% of the net appreciation of the fund.

# International Fixed Income

## Pension Trust



*N=195, Average of Actual Fee Universe (N=22) and Published Fee Universe (N=173)*

- International Fixed Income managers invest in bonds and other debt instruments that gain exposure to foreign entities and currencies that typically trade outside the U.S.
- North Dakota's average International Fixed Income account size for FY 2018 was \$95mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.31%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$100mm

# International Fixed Income

## Pension Trust

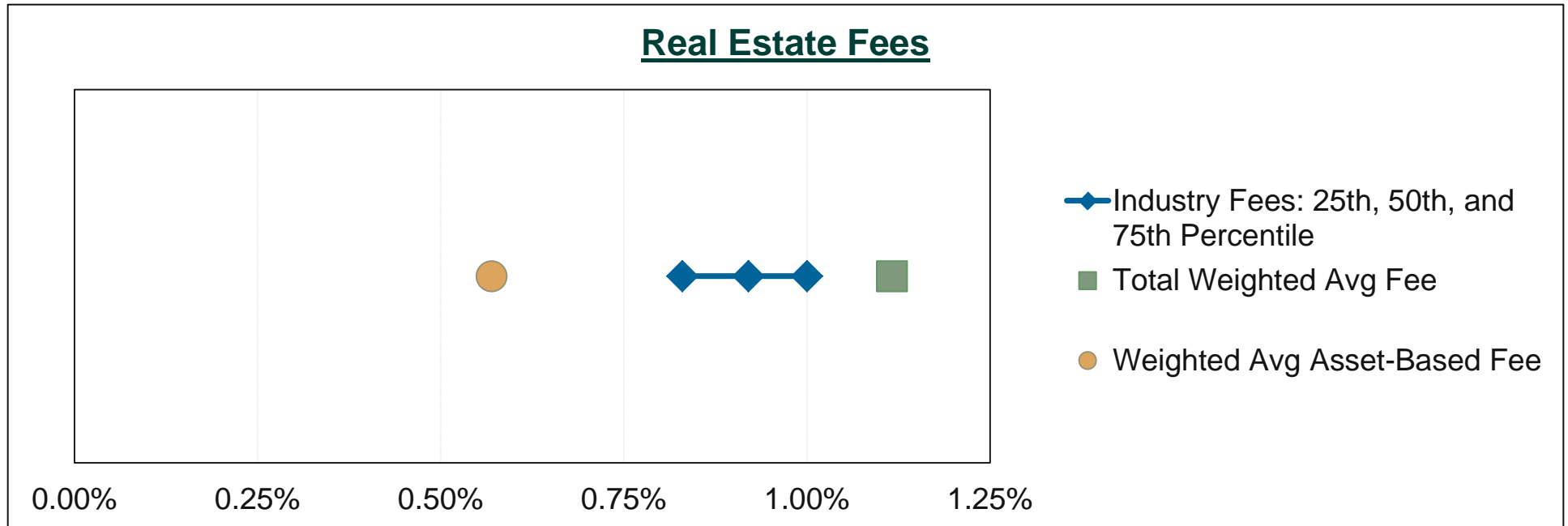
International Fixed Income	
Asset-Based Fee Strategies	Fee %
Brandywine	0.31%
UBS Global Asset Management	0.29%
<b>Total Weighted Intl Fixed Income Fee</b>	<b>0.31%</b>
<hr/>	
Industry Fee - 25th Percentile	0.35%
Industry Fee - Median	0.42%
Industry Fee - 75th Percentile	0.49%

*N=195, Average of Actual Fee Universe (N=22) and Published Fee Universe (N=173)*

- All managers for this asset class fall into the asset-based fee category.
- Both managers were redeemed during the fiscal year, as the plan entirely eliminated its allocation to the asset class.
- Brandywine charged an annual asset-based fee of 0.45% on the first \$50mm invested with the fund, 0.40% on the next \$50mm, and 0.35% on the next \$50mm. During the first two quarters, the Pension Trust had \$158mm invested with the fund on average and therefore would have paid an annualized fee rate of roughly 0.40% during those quarters.
- UBS had a similar asset-based fee structure that was tiered. The Pension Trust's average balance with the manager during the first two quarters was roughly \$94mm. The Trust's effective annual fee rate during those quarters would have been roughly 0.33%.

# Real Estate

## Pension Trust



*N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)*

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$57mm
- The orange circle represents North Dakota's Real Estate weighted average asset-based management fee of 0.57%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 1.12%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm



# Real Estate

## Pension Trust

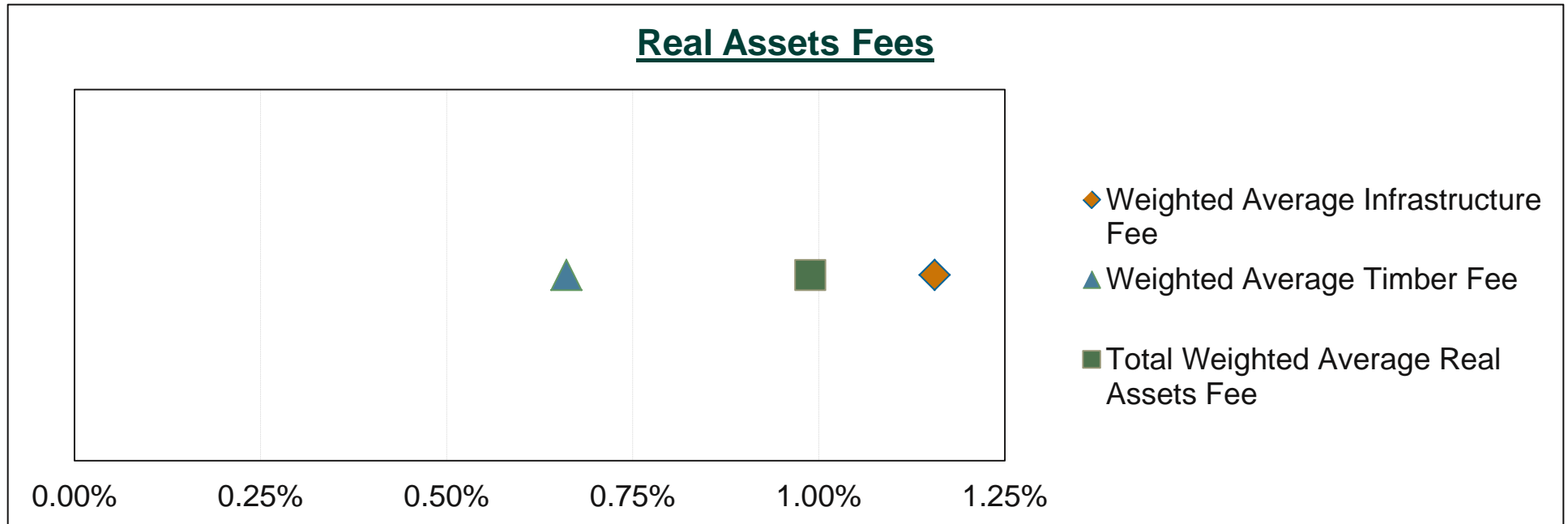
Real Estate	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
INVESCO Core Real Estate	0.34%
JP Morgan Special and Strategic	0.89%
<b>Weighted Average Asset-Based Fee</b>	<b>0.57%</b>
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%
<i>N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)</i>	
<b>Total Weighted Average Real Estate Fee</b>	<b>1.12%</b>

Real Estate	
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
INVESCO Real Estate Fund II	0.00%
INVESCO Real Estate Fund III	1.39%
INVESCO Asia RE Feeder	0.00%
INVESCO Asia RE Fund III	9.04%
INVESCO Value Added Fund IV	3.82%
JP Morgan Alternative Property Fd.	0.00%
JP Morgan Greater China Fund	0.03%
JP Morgan Greater European Opp	2.92%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>4.08%</b>

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
  - Invesco Real Estate Fund II, Invesco Real Estate Fund III, Invesco Asia RE Feeder Fund, Invesco Asia RE Fund III, and Invesco Valued Added Fund IV each charge a base management fee on assets and charge a performance fee of 20% for performance exceeding a “preferred” return set by each fund.
  - The JP Morgan Greater European Opportunity Fund charges a base management fee on assets and a sliding scale performance fee for performance exceeding a “preferred” return.
  - The JP Morgan Alternative Fund, JP Morgan Greater China Fund, Invesco Real Estate Fund II, and Invesco Asia RE Feeder are currently being liquidated. The managers are not presently charging a fee to manage these funds during liquidation.

# Real Assets

## Pension Trust



- Real Assets encompass asset classes that typically provide inflation protection, often times including investments in tangible goods or resources.
- North Dakota's average Real Assets account size for FY 2018 was \$56mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.99%
- The blue triangle represents the weighted average fee for all Timber assets: 0.66%
- The orange diamond represents the weighted average fee for all Infrastructure assets: 1.16%

## Real Assets

### Pension Trust

<b>Real Assets</b>	
<b>Timber</b>	<b>Fee %</b>
TIR - Teredo	0.57%
TIR - Springbank	0.69%
<b>Weighted Average Timber Fee</b>	<b>0.66%</b>
<b>Infrastructure</b>	<b>Fee %</b>
JP Morgan Asian Infrastructure	1.64%
JP Morgan Infrastructure Inv. Fund	0.67%
Grosvenor Infrastructure Fund I	0.82%
Grosvenor Infrastructure Fund II	1.16%
ISQ Global Infrastructure II	*
<b>Weighted Average Infrastructure Fee</b>	<b>1.16%</b>
<b>Total Weighted Average Real Assets Fee</b>	<b>0.99%</b>

- All managers in the Real Assets asset class charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by each fund.
- \*ISQ was added in the fourth quarter of fiscal year 2018. The management fee is charged on committed capital (the total amount that SIB is contractually obligated to invest), not invested capital (the amount actually invested). NDSIB’s committed amount is \$65 million; ISQ’s fee rate equates to a dollar payment during fiscal 2018 of \$925,951. SIB’s invested total with ISQ as of June 30, 2018 was \$3.5 million.

# Private Equity

## Pension Trust

Private Equity	
<b>Total Weighted Average Private Equity Fee</b>	<b>1.84%</b>

- Due to a number of factors, such as maturity of the portfolio, point in the business cycle, and the highly varied and customized approach of Private Equity strategies, Callan cannot produce an informationally viable industry fee universe for comparison.
- At the end of fiscal year 2018 private equity accounted for 3.3% of Total Fund assets.
- The average Private Equity fund in the North Dakota Pension Trust had a net asset value of \$8.2mm during FY 2018, with total assets allocated to private equity of \$191.4mm as of June 30, 2018.
- Total asset class weighted average fee for FY 2018: 1.83%
- Similar to the fiscal 2016 fee study, the management fees for NDSIB's private equity portfolio are at levels for similar strategies and are in line with industry norms.
- Note that the Adam's Street Direct Co-Investment only charged fees for the first quarter of the 2018 Fiscal Year. The fees amounted to nearly \$14,000. During the subsequent quarters the Trust accrued a performance fee credit of \$28,000 against future fees due to poor performance of the fund. For the purposes of this calculation, the fee charged by Adam's Street Direct Co-Investment was valued at zero.

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## Cash

### Pension Trust

<b>Cash and Equivalents</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.13%
<b>Total Weighted Average Cash Equivalents Fee</b>	<b>0.11%</b>

- The managers for this asset class fall into the asset-based fee category.
- Fees for cash management are typically below 20 basis points (0.20%) per annum. Fees paid by the North Dakota State Investment Board's Pension Trust cash management are well within industry norms.
- North Dakota's average Cash account size for FY 2018 was \$28.2mm

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**Insurance Trust**

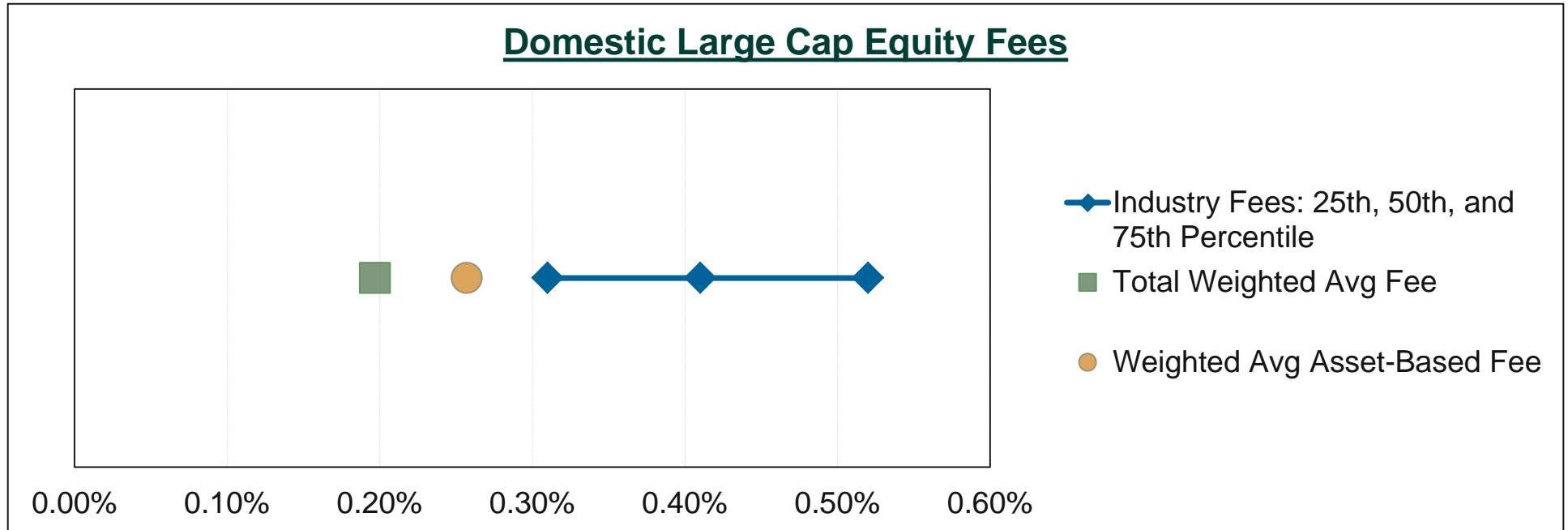
# Insurance Trust

## NDSIB Fee Study Fiscal Year 2018 Executive Summary

- Total Equity Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies. In aggregate all equity strategy composites had fees below their respective 25<sup>th</sup> percentiles.
  - Total Domestic Large Cap Equity fees were well below the 25<sup>th</sup> percentile of the industry fee universe
  - Total Small Cap Equity fees were well below the 25<sup>th</sup> percentile, with the Trust having paid no performance based fees during the fiscal year
  - Total Developed International Equity fees were below the 25<sup>th</sup> percentile and represented only asset-based fee strategies
- Total Domestic Fixed Income Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
  - Total Domestic Fixed Income fees paid were above the 75<sup>th</sup> percentile, driven largely by performance/hybrid fee based strategies, while total asset-based fee strategies were below the median
- Diversified Real Assets Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies spanning public and private markets. asset-based fee strategies fell below the 25<sup>th</sup> percentile with performance/hybrid fee strategies pushing the total fees rate paid higher, but still below the 25<sup>th</sup> percentile.
  - Due to the custom nature of non-core public strategies and their closed-end fund structures, there is no applicable manager fee distribution and so it presents a skew to the asset-based fee universe for the comparison
- Total Real Estate manager fees paid represented asset-based fee strategies only.
  - Total Real Estate manager fees paid were well below the 25<sup>th</sup> percentile
- Short-term Fixed Income manager fees paid represented asset-based fee strategies only.
  - Fees paid fell below the 25<sup>th</sup> percentile of the strategy universe

# Domestic Large Cap Equity

Insurance Trust



*N=69, Actual Fee Universe*

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$62mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.26%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.2%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm



# Domestic Large Cap Equity

## Insurance Trust

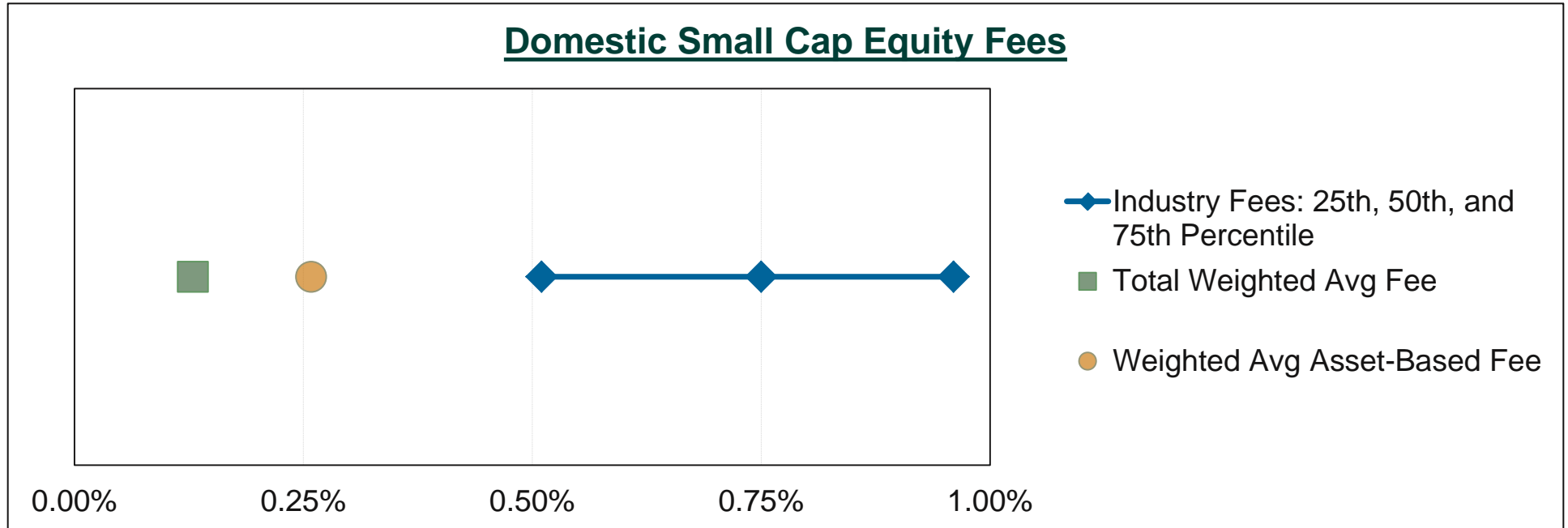
Domestic Large Cap Equity	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Growth	0.21%
LSV Large Cap Value	0.30%
<b>Weighted Average Asset-Based Fee</b>	<b>0.26%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Enhanced Index	0.21%
Clifton Enhanced S&P 500*	0.00%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.11%</b>
<b>Total Weighted Average U.S. Lg Cap Fee</b>	<b>0.20%</b>
Industry Fee - 25th Percentile	0.31%
Industry Fee - Median	0.41%
Industry Fee - 75th Percentile	0.52%

*N=69, Actual Fee Universe*

- The Domestic Large Cap Equity Portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
  - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
  - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
    - *\*Note that Clifton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$280,000 in performance fee credit.*

# Domestic Small Cap Equity

## Insurance Trust



*N=121, Actual Fee Universe*

- Domestic Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$41mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.26%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.13%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$50mm

# Domestic Small Cap Equity

## Insurance Trust

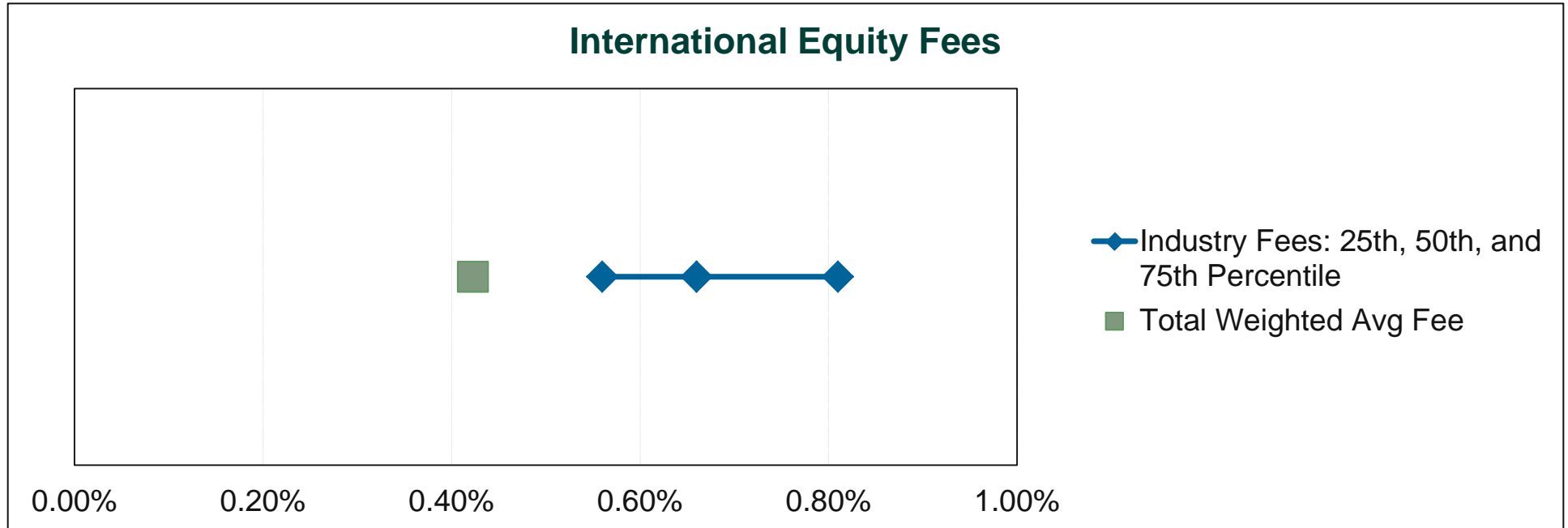
Domestic Small Cap Equity	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
PIMCO (Research Affiliates)	0.26%
<b>Weighted Average Asset-Based Fee</b>	<b>0.26%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
Clifton Enhanced Small Cap*	0.00%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.00%</b>
<b>Total Weighted Average U.S. Sm Cap Fee</b>	<b>0.13%</b>
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.75%
Industry Fee - 75th Percentile	0.96%

*N=121, Actual Fee Universe*

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
  - Parametric Clifton Small Cap Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated over the benchmark. Fees are paid once a year for performance through June 30.
    - *\*Note that Clinton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$60,000 in performance fee credit.*

# International Equity

## Insurance Trust



*N=112, Actual Fee Universe*

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average International Equity account size for FY 2018 was \$45mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.42%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes below \$50mm

# International Equity

## Insurance Trust

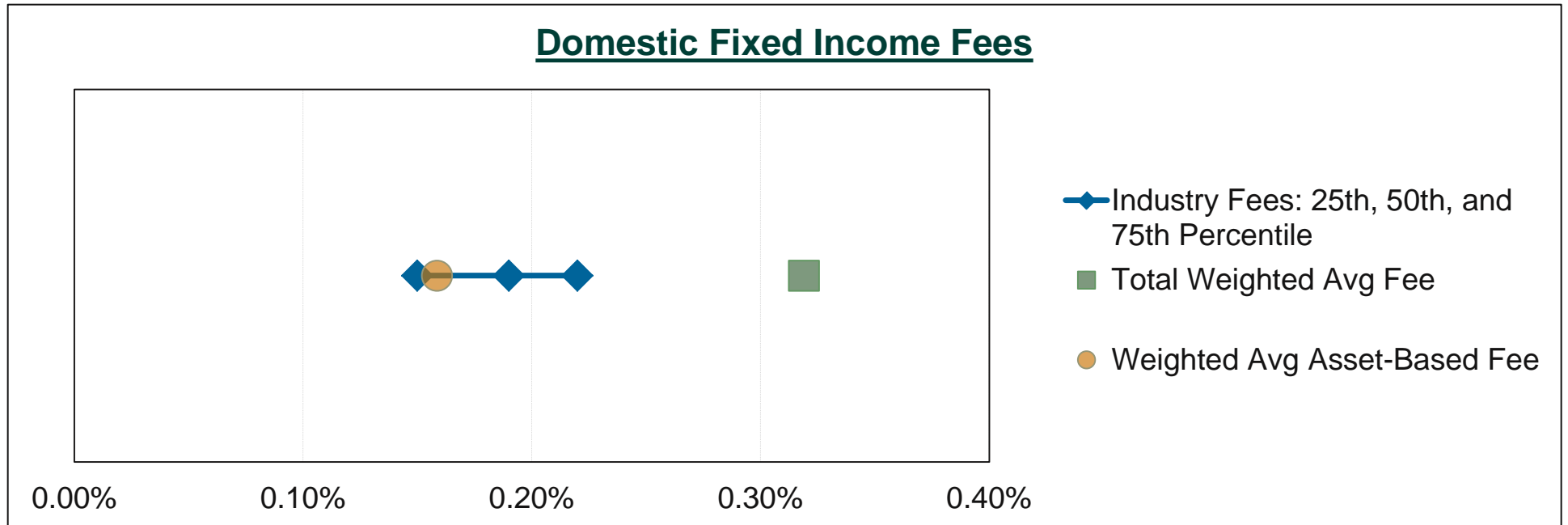
<b>International Equity</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
LSV International Value	0.40%
DFA Int'l Small Cap	0.69%
William Blair	0.39%
Vanguard Int'l Explorer Fund	0.38%
<b>Total Weighted Average Intl Equity Fee</b>	<b>0.42%</b>
<hr/>	
Industry Fee - 25th Percentile	0.56%
Industry Fee - Median	0.66%
Industry Fee - 75th Percentile	0.81%

*N=112, Actual Fee Universe*

- All managers for this asset class fall into the asset-based fee category.

# Domestic Fixed Income

## Insurance Trust



*N=39, Actual Fee Universe*

- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average Domestic Fixed Income account size for FY 2018 was \$153mm
- The orange circle represents North Dakota's Domestic Fixed Income weighted average asset-based management fee of 0.16%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.32%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

## Domestic Fixed Income

### Insurance Trust

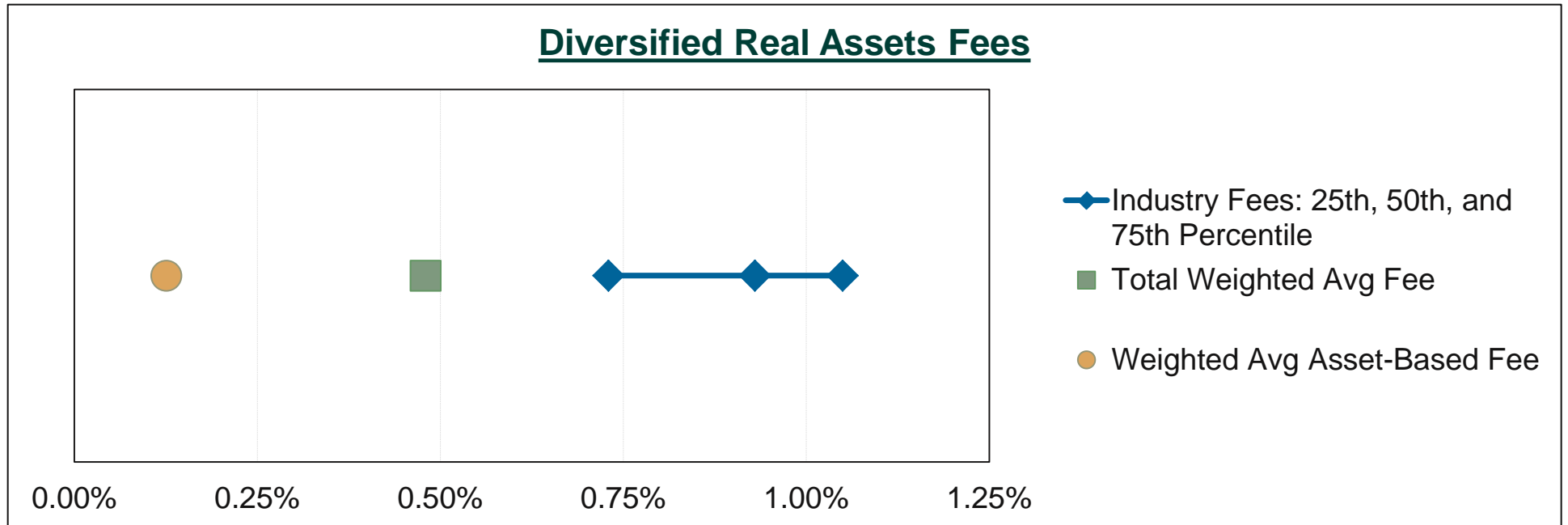
<b>Domestic Fixed Income</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Declaration Total Return	0.39%
Prudential	0.25%
SSgA U.S. Govt Credit Bond Index	0.02%
Wells Capital	0.15%
Western Asset Management	0.12%
<b>Weighted Average Asset-Based Fee</b>	<b>0.16%</b>
<b>Performance and Hybrid Fee Strategies</b>	
	<b>Fee %</b>
PIMCO DiSCO II	2.16%
PIMCO Bravo II	2.84%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>2.38%</b>
<b>Total Weighted Average U.S. Fixed Income Fee</b>	<b>0.32%</b>
Industry Fee - 25th Percentile	0.15%
Industry Fee - Median	0.19%
Industry Fee - 75th Percentile	0.22%

*N=39, Actual Fee Universe*

- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%.

# Diversified Real Assets

## Insurance Trust



*N=23, Callan's Diversified Real Assets Peer Group*

- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average Diversified Real Assets account size for FY 2018 was \$69mm
- The orange circle represents North Dakota's Diversified Real Assets weighted average asset-based management fee of 0.13%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.48%
- Fee universe was constructed using Callan's Diversified Real Assets Peer Group of 23 investment manager constituents.



## Diversified Real Assets

### Insurance Trust

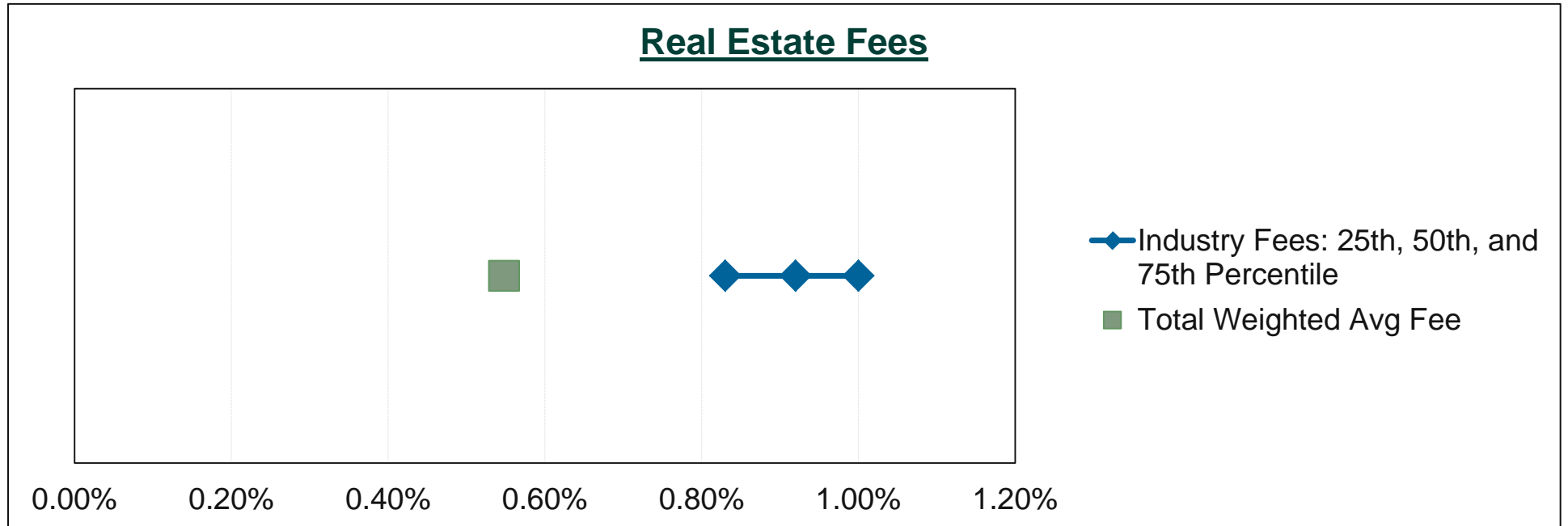
<b>Diversified Real Assets</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Western Asset Management TIPS	0.13%
<b>Weighted Average Asset-Based Fee</b>	<b>0.13%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
JP Morgan Infrastructure	0.67%
Grosvenor Infrastructure Fund I	0.82%
TIR - Eastern Timber Opportunities	0.85%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.75%</b>
<b>Total Weighted Average Real Assets Fee</b>	<b>0.48%</b>
Industry Fee - 25th Percentile	0.73%
Industry Fee - Median	0.93%
Industry Fee - 75th Percentile	1.05%

*N=23, Callan's Diversified Real Assets Peer Group*

- JP Morgan Infrastructure Fund charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.
- Grosvenor Infrastructure Fund I charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.
- TIR Easter Timber Opportunities Fund charges a base management fee on assets and charges a performance fee for performance exceeding a “preferred” return set by the fund.

# Real Estate

## Insurance Trust



*N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)*

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$70mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.55%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

# Real Estate

## Insurance Trust

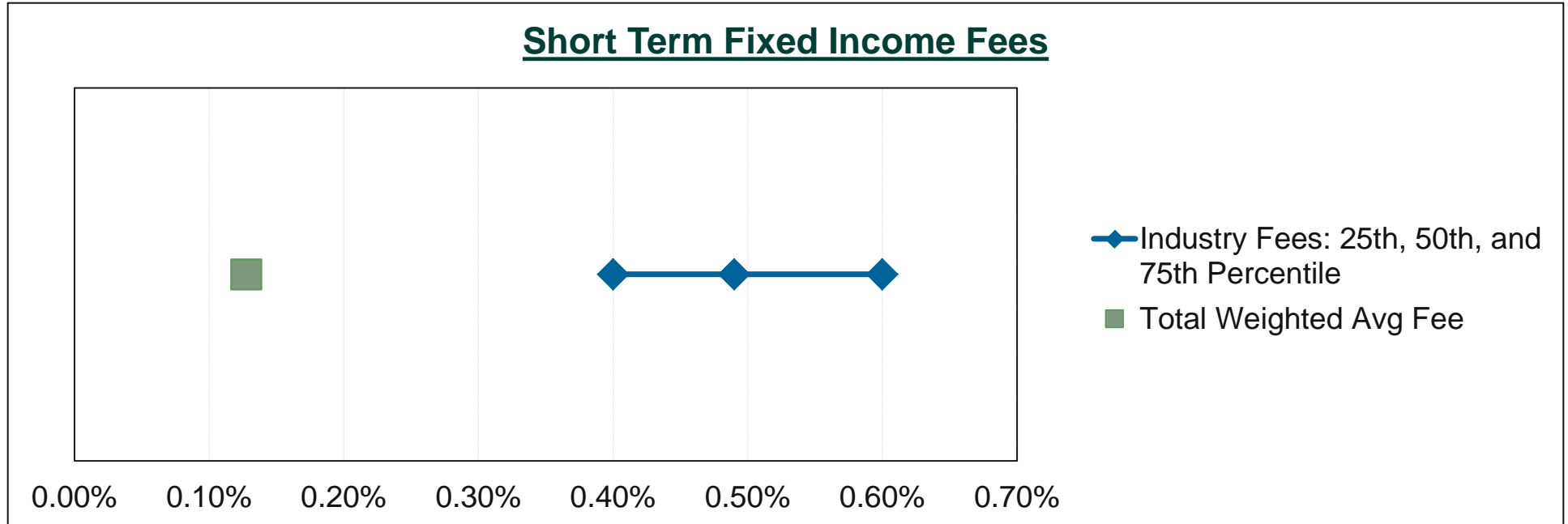
Real Estate	
Asset-Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	0.74%
<b>Total Weighted Average Real Estate Fee</b>	<b>0.55%</b>
<hr/>	
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%

*N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)*

- All managers for this asset class fall into the asset-based fee category.

# Short Term Fixed Income

Insurance Trust



N=136, Callan Short Investment Grade Bond Mutual Funds

- Short Term Fixed Income managers invest in bonds that have short maturity dates.
- North Dakota's average Short Term Fixed Income account size for FY 2018 was \$88mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.13%
- The fee universe was constructed using Callan's Short Investment Grade Bond Mutual Funds Peer Group

## Short Term Fixed Income and Cash

### Insurance Trust

Short Term Fixed Income	
Asset-Based Fee Strategies	Fee %
JPM Short Term	0.13%
<b>Total Weighted Average ST Fixed Income Fee</b>	<b>0.13%</b>
Industry Fee - 25th Percentile	0.40%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.60%

*N=136, Callan Short Investment Grade Bond Mutual Funds*

Cash and Equivalents	
Asset-Based Fee Strategies	Fee %
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.24%
<b>Total Weighted Average Cash Equivalents Fee</b>	<b>0.17%</b>

- All managers for these asset classes fall into the asset-based fee category.
- North Dakota's average Cash account size for FY 2018 was \$30mm
- Fees for cash management are typically below 20 basis points (0.20%). Fees paid by the North Dakota State Investment Board's Insurance Trust cash and short-term fixed income management are well within industry norms.

Callan

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**Legacy Trust**

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# Legacy Trust

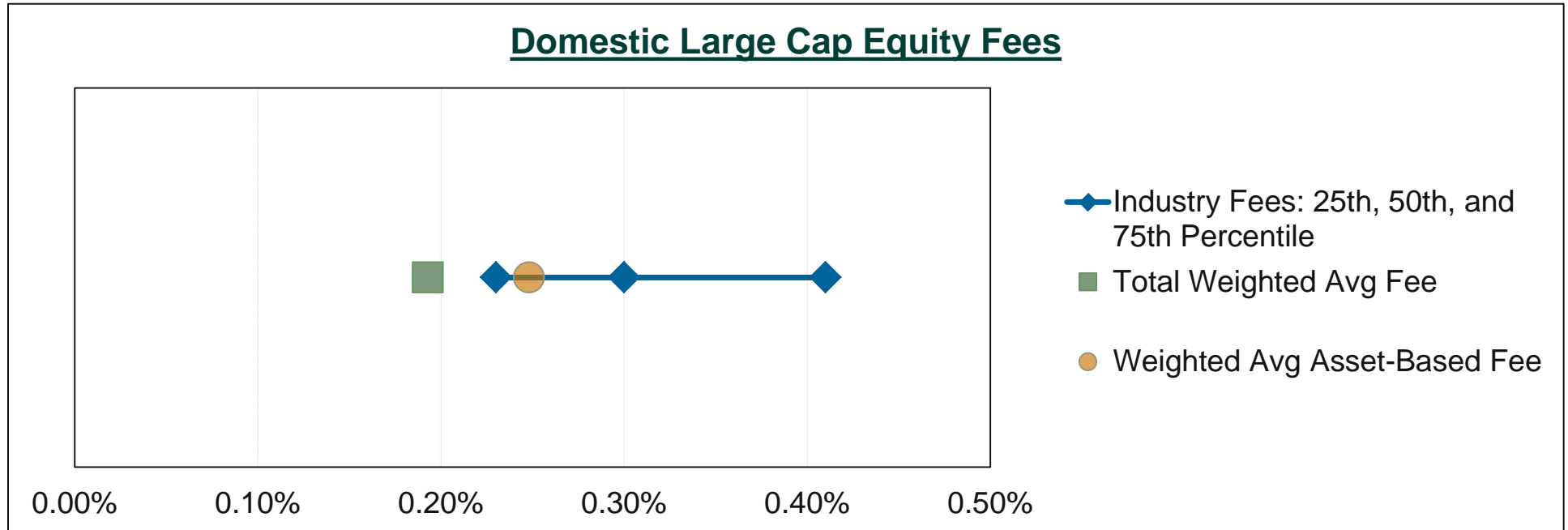
## NDSIB Fee Study Fiscal Year 2018 Executive Summary

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- Total Equity Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies.
  - Total Domestic Large Cap Equity fees were below the 25<sup>th</sup> percentile of industry fees. The average fees paid by the Trust were pressed lower by performance based fee structures.
  - Total Small Cap Equity fees were well below the 25<sup>th</sup> percentile with performance based fee strategies lower than asset-based fee strategies.
  - Developed International Equity fees were slightly below the 25<sup>th</sup> percentile and represented only asset-based fee strategies.
- Total Domestic Fixed Income Manager fees paid represented both asset-based and performance/hybrid fee strategies.
  - Total Domestic Fixed Income fees paid were above the 75<sup>th</sup> percentile of industry fees. This was largely due to the impact of performance-based fee schedules. Asset based fees paid by the trust were on par with the 25<sup>th</sup> percentile of industry fees.
- Diversified Real Assets Manager fees paid represented a mix of asset-based and performance/hybrid fee strategies spanning public and private markets. Asset based fee strategies fell well below the 25<sup>th</sup> percentile, with performance/hybrid fee strategies pushing the total fees paid higher, but still below the 25<sup>th</sup> percentile.
  - Due to the custom nature of the private strategies and their closed-end fund structures, there is no applicable manager fee distribution and so it presents a skew to the asset-based fee universe for the comparison
- Total Real Estate manager fees paid represented asset-based fee strategies only.
  - Total Real Estate manager fees paid were well below the 25<sup>th</sup> percentile

# Domestic Large Cap Equity

Legacy Trust



*N=61, Actual Fee Universe*

- Domestic Large Cap Equity managers invest in large company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Large Cap Equity account size for FY 2018 was \$289mm
- The orange circle represents North Dakota's Domestic Large Cap Equity weighted average asset-based management fee of 0.25%
- The green box represents total asset class weighted average fee (asset based & performance/hybrid fees) in FY 2018: 0.19%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm



## Domestic Large Cap Equity

Legacy Trust

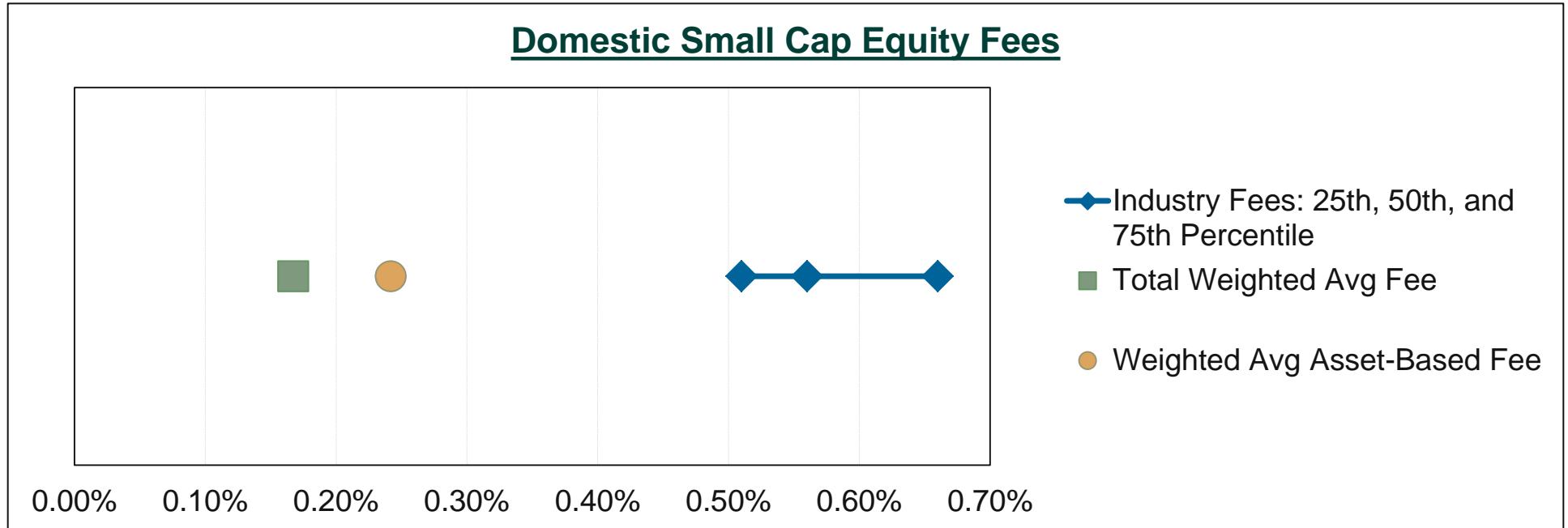
Domestic Large Cap Equity	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Growth	0.21%
LSV Large Cap Value	0.29%
<b>Weighted Average Asset-Based Fee</b>	<b>0.25%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
L.A. Capital Enhanced Index	0.22%
Clifton Enhanced S&P 500*	0.00%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.11%</b>
<b>Total Weighted Average U.S. Lg Cap Fee</b>	<b>0.19%</b>
Industry Fee - 25th Percentile	0.23%
Industry Fee - Median	0.30%
Industry Fee - 75th Percentile	0.41%

*N=61, Actual Fee Universe*

- The Domestic Large Cap Equity Portfolio employs several managers with performance and hybrid fee structures and is therefore difficult to compare directly to industry averages.
  - L.A. Capital Enhanced Index charges a base management fee on all assets under management. A performance based fee of 20% of returns in excess of the benchmark is charged on approximately 40% of the assets.
  - Parametric Clifton Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated. Fees are paid once a year for performance through June 30.
    - *\*Note that Clifton Enhanced underperformed its benchmark over the past fiscal year and therefore is below its high water mark. Due to the underperformance, North Dakota accrued roughly \$1.3mm in performance fee credit.*

# Domestic Small Cap Equity

Legacy Trust



*N=38, Actual Fee Universe*

- Domestic Small Cap Equity managers invest in smaller company stocks that are typically listed and traded within the U.S.
- North Dakota's average Domestic Small Cap Equity account size for FY 2018 was \$212mm
- The orange circle represents North Dakota's Domestic Small Cap Equity weighted average asset-based management fee of 0.24%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.17%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

# Domestic Small Cap Equity

Legacy Trust

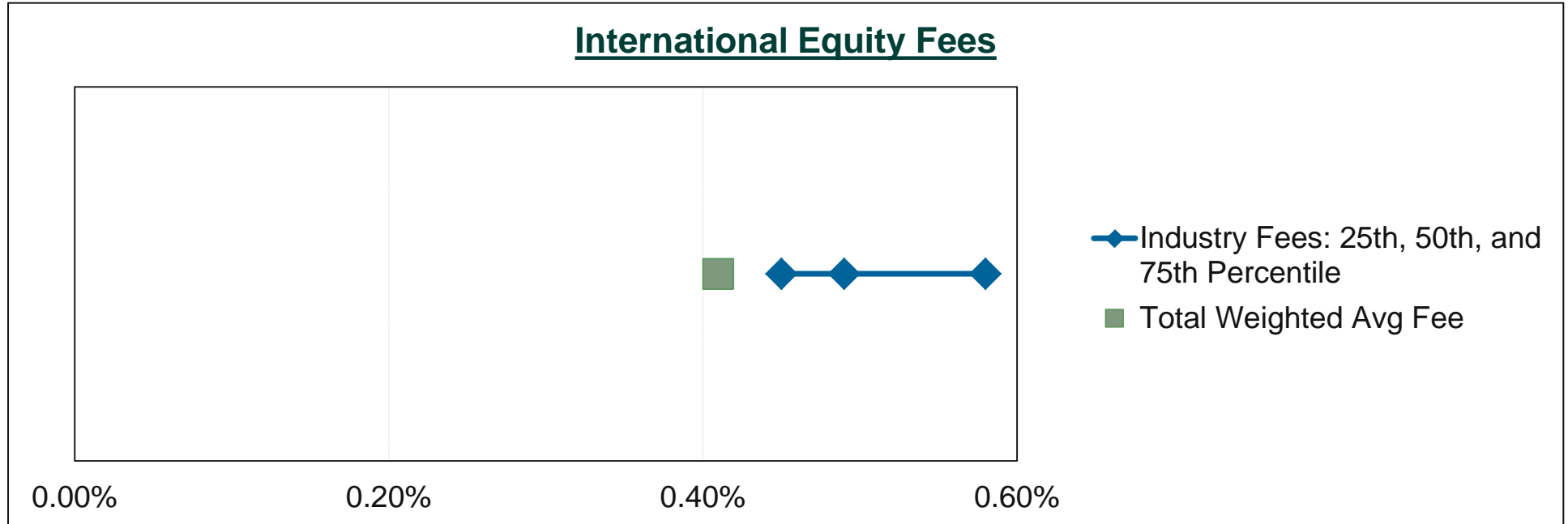
<b>Domestic Small Cap Equity</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
PIMCO (Research Affiliates)	0.24%
<b>Weighted Average Asset-Based Fee</b>	<b>0.24%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
Clifton Enhanced Small Cap	0.10%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>0.10%</b>
<b>Total Weighted Average U.S. Sm Cap Fee</b>	<b>0.17%</b>
Industry Fee - 25th Percentile	0.51%
Industry Fee - Median	0.56%
Industry Fee - 75th Percentile	0.66%

*N=38, Actual Fee Universe*

- Due to the fee structure of the funds in the Performance and Hybrid Fee Strategies category, the Total Weighted Average Fees are not comparable to industry fees from Callan's 2017 Investment Management Fee Survey.
  - Parametric Clifton Small Cap Enhanced Index charges no base management fee. The only fee charged is 35% of the excess return generated over the benchmark. Fees are paid once a year for performance through June 30.

# International Equity

## Legacy Trust



*N=53, Actual Fee Universe*

- Developed International Equity managers invest in stocks that trade and gain exposure to developed markets and economies outside of the U.S.
- North Dakota's average International Equity account size for FY 2018 was \$263mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.41%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$150mm and \$300mm

# International Equity

Legacy Trust

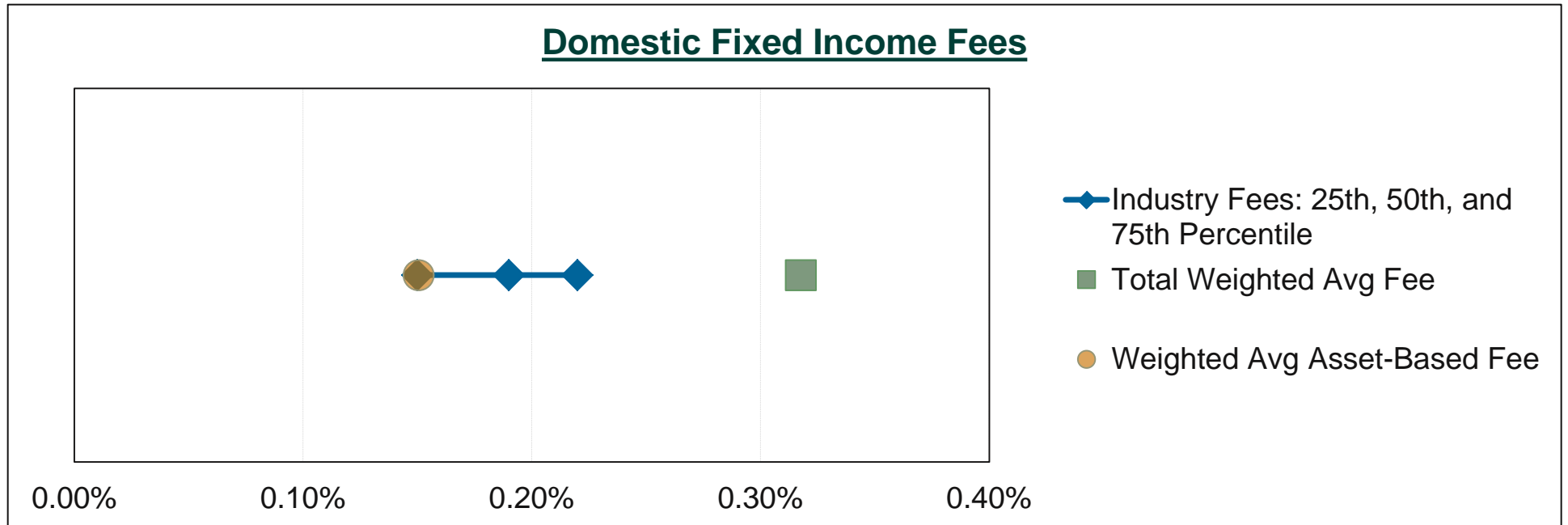
<b>International Equity</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
LSV International Value	0.39%
DFA Int'l Small Cap	0.66%
William Blair	0.38%
Vanguard Int'l Explorer Fund	0.38%
<b>Total Weighted Average Intl Equity Fee</b>	<b>0.41%</b>
<hr/>	
Industry Fee - 25th Percentile	0.45%
Industry Fee - Median	0.49%
Industry Fee - 75th Percentile	0.58%

*N=53, Actual Fee Universe*

- All managers for this asset class fall into the asset-based fee category.

# Domestic Fixed Income

Legacy Trust



*N=39, Actual Fee Universe*

- Domestic Fixed Income managers invest in bonds and other debt instruments.
- North Dakota's average Domestic Fixed Income account size for FY 2018 was \$183mm
- The orange circle represents North Dakota's Domestic Fixed Income weighted average asset-based management fee of 0.15%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.32%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$100mm and \$300mm

## Domestic Fixed Income

### Legacy Trust

Domestic Fixed Income	
Asset-Based Fee Strategies	Fee %
Declaration Total Return	0.39%
Prudential	0.25%
SSgA U.S. Govt Credit Bond Index	0.03%
Wells Capital	0.15%
Western Asset Management	0.12%
Bank of North Dakota CDs	0.00%
<b>Weighted Average Asset-Based Fee</b>	<b>0.15%</b>

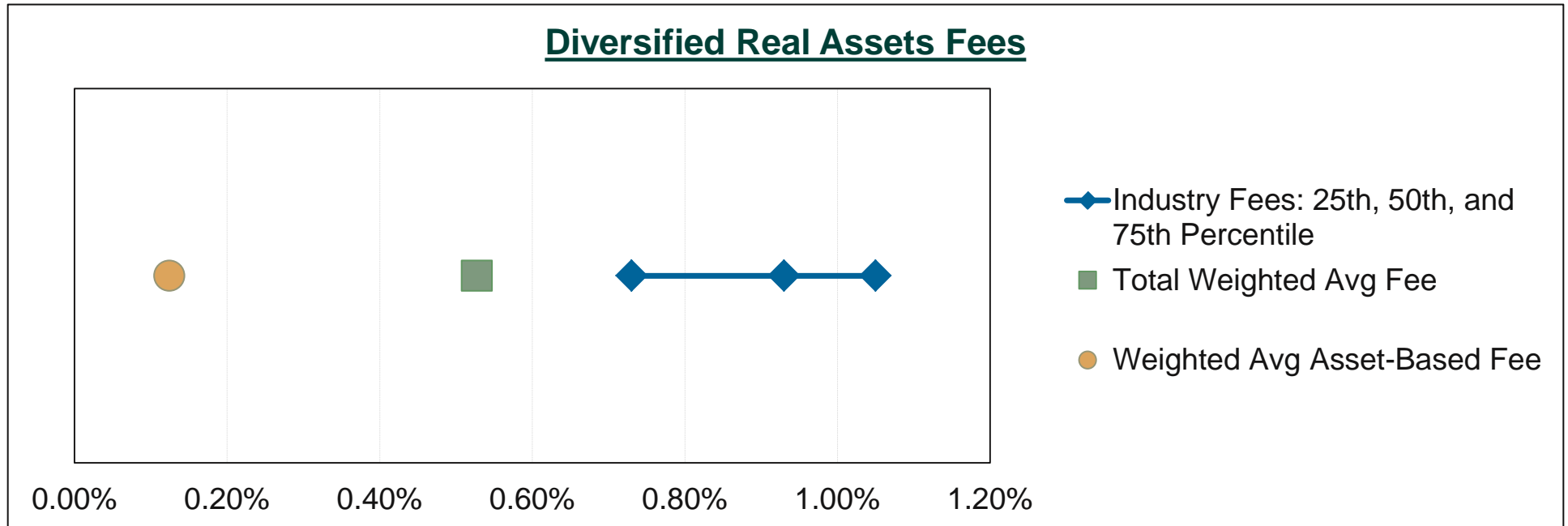
Domestic Fixed Income	
Performance and Hybrid Fee Strategies	Fee %
Cerberus Private Credit	2.96%
PIMCO DiSCO II	2.16%
PIMCO Bravo II	2.84%
Ares Credit Strategies	1.13%
<b>Weighted Average Performance and Hybrid Fee</b>	<b>2.22%</b>
<hr/>	
<b>Total Weighted Average U.S. Fixed Income Fee</b>	<b>0.32%</b>
<hr/>	
Industry Fee - 25th Percentile	0.15%
Industry Fee - Median	0.19%
Industry Fee - 75th Percentile	0.22%

*N=39, Actual Fee Universe*

- PIMCO DiSCO II charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 15% of the excess return above a variable hurdle rate.
- PIMCO Bravo Fund II charges a fee of 1.45% based on assets under management plus a performance fee. The performance fee is 20% of excess returns over a “preferred” return of 8%
- Cerberus Private Credit charges a fee of 0.90% based on assets under management plus a performance fee.
- Ares Credit Strategies charges a fee of 0.75% based on assets under management plus a performance fee. The performance fee is 10% of the net appreciation of the fund.

# Diversified Real Assets

Legacy Trust



*N=23, Callan's Diversified Real Assets Peer Group*

- Diversified Real Assets managers invest in assets that are expected to perform well during periods of inflation.
- North Dakota's average Diversified Real Assets account size for FY 2018 was \$128mm
- The orange circle represents North Dakota's Diversified Real Assets weighted average asset-based management fee of 0.12%
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.53%
- Fee universe was constructed using Callan's Diversified Real Assets Peer Group of 23 investment manager constituents.



## Diversified Real Assets

### Legacy Trust

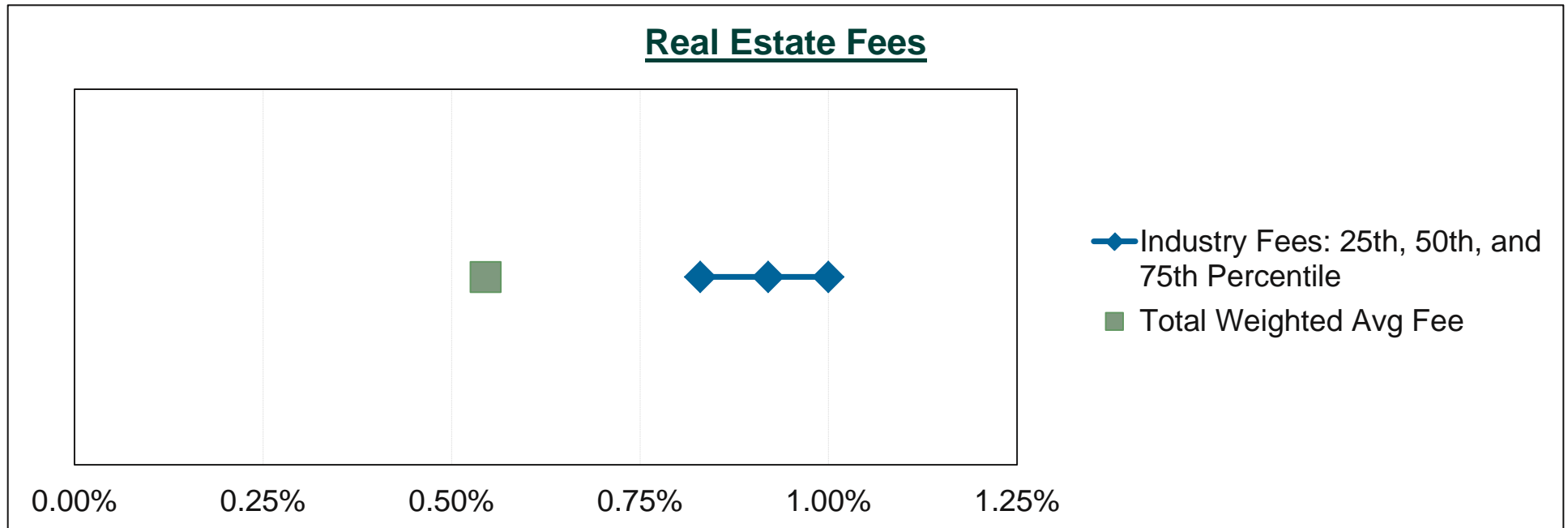
<b>Diversified Real Assets</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Western Asset Management TIPS	0.12%
<b>Weighted Average Asset-Based Fee</b>	<b>0.12%</b>
<b>Performance and Hybrid Fee Strategies</b>	<b>Fee %</b>
JP Morgan Infrastructure	0.67%
Grosvenor Infrastructure Fund II	1.16%
ISQ Global Infrastructure II	*
<b>Weighted Average Performance and Hybrid Fee</b>	<b>1.47%</b>
<b>Total Weighted Average Real Assets Fee</b>	<b>0.53%</b>
Industry Fee - 25th Percentile	0.73%
Industry Fee - Median	0.93%
Industry Fee - 75th Percentile	1.05%

*N=23, Callan's Diversified Real Assets Peer Group*

- JP Morgan Infrastructure Fund and Grosvenor Infrastructure Fund II charge a base management fee on assets and charge a performance fee for performance exceeding a “preferred” return set by the fund.
- \*ISQ was added in the fourth quarter of fiscal year 2018. The management fee is charged on committed capital (the total amount that SIB is contractually obligated to invest), not invested capital (the amount actually invested). NDSIB’s committed amount is \$75 million; ISQ’s fee rate equates to a dollar payment during fiscal 2018 of \$1,068,405. SIB’s invested total with ISQ as of June 30, 2018 was \$4.0 million.

# Real Estate

## Legacy Trust



*N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)*

- Real Estate managers invest directly in real properties (e.g. offices, multi-family, retail, and other physical properties) and securities that gain access to such economic interests.
- North Dakota's average Real Estate account size for FY 2018 was \$137mm
- The green box represents total asset class weighted average fee (asset-based and performance/hybrid fees) in FY 2018: 0.55%
- Fee universe was constructed using Callan's 2017 Investment Management Fee Survey for mandate sizes between \$50mm and \$150mm

# Real Estate

## Legacy Trust

Real Estate	
Asset-Based Fee Strategies	Fee %
Invesco Core Real Estate	0.34%
JP Morgan Real Estate	0.74%
<b>Total Weighted Average Real Estate Fee</b>	<b>0.55%</b>
<hr/>	
Industry Fee - 25th Percentile	0.83%
Industry Fee - Median	0.92%
Industry Fee - 75th Percentile	1.00%

*N=54, Average of Actual Fee Universe (N=26) and Published Fee Universe (N=28)*

- All managers for this asset class fall into the asset-based fee category.

# Cash

## Legacy Trust

<b>Cash and Equivalents</b>	
<b>Asset-Based Fee Strategies</b>	<b>Fee %</b>
Bank of North Dakota Cash Account	0.00%
Northern Trust Cash Account	0.24%
<b>Total Weighted Average Cash Equivalents Fee</b>	<b>0.17%</b>

- The managers for this asset class fall into the asset-based fee category.
- North Dakota's average Cash account size for FY 2018 was \$21mm
- Fees for cash management are typically below 20 basis points (0.20%). Fees paid by the North Dakota State Investment Board's Legacy Trust cash management are well within industry norms.

# Notes and Comments Regarding Report Measurements

## NDSIB – Pension Trust, Insurance Trust, and Legacy Fund

- All market values, fee data and other information is as of the fiscal year ending June 30, 2018.
- Fee data was provided by NDSIB; no audit of the fees paid by NDSIB was conducted.
- Average account sizes are measured by using the balances at quarter-end for each quarter in the fiscal year 2018. To calculate the average value during the course of the fiscal year, the quarter-end assets (including zero values) for all four quarters were added together and divided by four.
  - In some cases, an account’s value changed significantly during the fiscal year due to external capital flows. These flows, especially when occurring intra-quarter, can skew the accuracy of some calculations.
- Fees charged by investment managers who did not have assets under management for the entire fiscal year are included in this study for only the period during which that manager was utilized.
- Investment managers employ three primary fee calculation methods to charge for their services;
  - **Asset-based fees:** fees are calculated as a percentage of assets under management
  - **Performance-based fees:** fees are calculated based on the manager’s ability to outperform a pre-specified benchmark during a contracted measurement period
  - **Hybrid fees:** base management fees are calculated as a percentage of assets under management and a performance fee is calculated based on the managers ability to outperform a pre-specified benchmark during a contracted measurement period.
- Regardless of the method used by a particular manager, Callan has calculated fees as a percentage of assets under management for each manager for the purposes of comparison.
- In many instances, fees paid by the individual trusts benefit from fee schedules that account for the aggregate level of assets invested with a particular manager or in a specific strategy.
- Fee universes used in the study reflect either **Actual Fees** paid by Callan clients in similar mandates, fees calculated using a universe of **Published Fees** representing manager fee schedules for similar mandates, or an Average of **Actual and Published Fee** universes where the actual fee universe was smaller than 10. All fee universes are explicitly noted beneath each chart where “n=” will denote the applicable sample size.

**Legacy Fund Earnings Update  
November 8, 2018**

**Overview:**

**RIO was requested to provide a revised Legacy Fund earnings estimate for the remaining 2017-19 and upcoming 2019-21 biennia.** RIO relied on oil and gas tax estimates provided by OMB and expected investment earnings over the next three years. Estimates are based on the anticipated average balance of the Legacy Fund during the forecast period acknowledging that commodity prices are volatile in addition to the impact of this price volatility on oil and gas production and related tax collections.

**Background:**

**The North Dakota State Investment Board (SIB) and Legacy Fund Advisory Board completed an asset liability study in May of 2018 which confirmed the current target asset allocation of 50% equity, 35% fixed income and 15% diversified real assets.** Given that our current investment policy includes a 50% target allocation to public equities which are inherently subject to significant return volatility including the potential for negative investment returns over any defined time period, RIO notes it is reasonable to expect the Legacy Fund to lose money during certain periods when the equity markets are experiencing losses, credit markets are experiencing elevated defaults and/or when liquidity in the private markets is challenged. Despite these investment concerns (which are present in most any return seeking portfolio), RIO is confident the Legacy Fund will meet or exceed its targeted investment return of 6% over the long term. In order to be prudent and diligent and in light of our significant fiduciary responsibility, the SIB and RIO work with expert consultants and professional investment management firms to confirm the reasonableness of our future capital market assumptions which serve as the foundation for long-term return expectations.

**RIO notes the original earnings estimate of \$200 million for the 2017-19 biennium was based on a 2% average “earnings” rate and anticipated Legacy Fund average balance of approximately \$5 billion** ( $\$5 \text{ billion} \times 2\% = \$100 \text{ million per year or } \$200 \text{ million per biennium}$ ). *The 2% average “earnings” rate was originally based on the midpoint of the RV Kuhn consultant forecast including a 6% Base Case and -2% Worst Case, noting the Worst Case was raised by 1% (from -3%) based on the expected strength of the capital markets during the prescribed time period.* **RIO notes that NDCC 21-10-12 defines “earnings” as “net income in accordance with generally accepted accounting principles, excluding any unrealized gains or losses.” This definition of “earnings” is materially different than net investment return which includes both unrealized and realized gains and losses.** For comparison, the Legacy Fund generated over \$1.2 billion of net investment earnings since inception (as of September 30, 2018) whereas “earnings” as defined in accordance with NDCC 21-10-12 exceeded \$700 million during this same time period.

## Legacy Fund “Transferrable Earnings” Estimate:

On August 8, 2018, RIO raised the “transferrable earnings” estimate for the Legacy Fund from \$300 million to \$350 million based on the expected strength and resiliency of the capital markets over the next year. **However, in light of recently increasing downward price volatility in the capital markets, RIO is reducing its’ current “transferrable earnings” estimate back to \$300 million for the 2017-19 biennium while holding its’ “transferrable earnings” estimate at \$300 million for the 2019-21 biennium.** The reduction in the 2017-19 estimate reflects the 7% equity market correction experienced in October, while noting the Legacy Fund generated over \$120 million of *net investment income* in the 3<sup>rd</sup> quarter. The **\$300 million estimate for the 2017-19 biennium** also closely approximates actual “transferrable earnings” of **\$306 million** for the 15 months ended Sep. 30, 2018 (see table below). RIO does not deem it to be prudent to extrapolate the actual “transferrable earnings” rate through Sep. 30, 2018, for the entire biennium given recent market events (and noting the extrapolated value is \$490 million or \$306 million divided by 15 months and times 24 months). RIO notes U.S. equities experienced a 7% market correction in October after posting a 7% gain for the 3<sup>rd</sup> calendar quarter of 2018 (while international equities were down 8% in October after posting a 1% gain in the 3<sup>rd</sup> quarter).

**The \$300 million “transferrable earnings” estimate for the 2019-21 biennia is based on OMB’s latest forecasted oil and gas tax deposits causing average Legacy Fund investments to approximate \$7.5 billion in the 2019-21 biennia while continuing to use our 2% average “earnings” rate (\$7.5 billion x 2% “earnings” rate = \$150 million x 2 years = \$300 million).**

	Fiscal Year Ended June 30, 2018	Fiscal Year To Date Sept. 30, 2018	July 1, 2017 to Sept. 30, 2018
Interest, Divident & Other Income	\$ 117,456,240	\$ 27,819,296	\$ 145,275,536
Investment Expenses	\$ (10,018,870)	\$ (2,200,473)	\$ (12,219,343)
Administrative Expenses	\$ (834,828)	\$ (128,583)	\$ (963,411)
<b>Net Interest, Divident &amp; Other Income</b>	<b>\$ 106,602,542</b>	<b>\$ 25,490,240</b>	<b>\$ 132,092,782</b>
Net Realized Gains and Losses on Investments	\$ 135,608,963	\$ 38,005,566	\$ 173,614,529
Net Securities Lending Income	\$ 648,335	\$ 157,940	\$ 806,275
<b>NDCC 21-10-12 Earnings</b>	<b>\$ 242,859,840</b>	<b>\$ 63,653,746</b>	<b>\$ 306,513,586</b>
Net Unrealized Gains and Losses	\$ 117,715,692	\$ 57,529,586	\$ 175,245,278
Net Investment Income after Administrative Expen:	\$ 360,575,532	\$ 121,183,332	\$ 481,758,864
Net Investment Income before Administrative Expenses	\$ 361,410,360	\$ 121,311,915	\$ 482,722,275

## Appendix

### **Review of Legacy Fund “Transferrable Earnings” definition:**

Although there is a reasonable belief that the long-term “transferrable earnings” rate will trend upwards towards 3% to 4% in the next decade, **it is important to acknowledge that “realized earnings” will likely be negative in some future 2-year time frame.**

**Given the risk of a moderate market correction in the foreseeable future, RIO notes the definition of “transferrable earnings” could be revised to exclude both realized and unrealized gains and losses to minimize volatility and the potential adverse impact on our State’s budgeting process. If “transferrable earnings” were revised to only include “net investment income without any realized or unrealized gains or losses”, the impact of a market correction would be significantly reduced.**

### **Example:**

**RIO notes that “net investment income without realized and unrealized gains or losses” approximated \$132 million for the 15 months ended September 30, 2018 (see table on prior page). Based on this current earnings rate, net investment income without realized and unrealized gains or losses is forecasted to exceed \$200 million for 2017-19. In contrast, “transferrable earnings as currently defined under NDCC 21-10-12 approximated \$306 million for the 15 months ended September 30, 2018.**



## **Board Acceptance**

**To: State Investment Board**

**From: RIO Staff**

**Date: November 15, 2018**

**RE: State Historical Society Endowment Funds**

In late September of 2018, RIO staff was approached by the State Historical Society of North Dakota (SHS) inquiring about investment management services for their Endowment Funds (Funds). The Funds include five (5) separate trust accounts ranging in size from \$5,000 to \$400,000 and totaling over \$640,000. RIO understands all of trust funds have the same relatively simple and straight forward investment guidelines (and believe they are currently invested in Certificates of Deposit issued by the Bank of North Dakota). RIO understands the Funds are to be used for a variety of purposes including special projects, designated building maintenance, and to fund staff salary. RIO also understands the SHS receives a biennial appropriation to fund annual operating expenses. SHS representatives are exploring the opportunity to increase annual returns if investment oversight was contractually transferred to the SIB.

As per SIB Governance Policy E-13 "Accepting New Clients", the following steps have been taken by staff.

1. Staff has conducted initial discussions with SHS representatives regarding the Fund and services to be provided by the SIB. The Fund would likely be invested with other short-term, high quality, and liquid debt strategies. RIO does not believe the SHS will seek to change their investment guidelines in the near term which should prevent this potential new client from becoming an administrative burden.
2. Due to the relatively small size of the Fund, staff feels a formal asset/liability study is not necessary and will assist the Fund in determining the proper asset allocation for the Fund. Initial discussions have contemplated a 100% high quality, short term debt asset allocation (similar to the Budget Stabilization Fund), which would need to be consistent with existing trust investment guidelines.
3. An initial review by RIO legal counsel concluded that the Fund would be eligible under NDCC to be invested by the SIB as a contractual investment client. Based on the initial discussions, SHS has expressed interest in pursuing this strategy to contract with the SIB for investment management services. They are awaiting preliminary approval of the SIB before taking further action.

Per Policy E-13, the SIB should take the following into consideration in determining if a new investor request will be accepted.

- a. Internal staff administrative capacity – RIO staff has recently been able to better automate some of its monthly accounting processes which has freed up staff time. Based on that, the relatively small size of the Fund, and the fact that staff would recommend pooling the Fund with the existing Insurance Trust, staff capacity should be sufficient to absorb this fund.
- b. Compatibility of new investor's goals and risk tolerances with the existing SIB program structure would also suggest pooling the Funds within the Insurance Trust would not be problematic.

- c. Whatever other factors the SIB determines to be appropriate to the decision – the SIB program offers a very cost effective solution for state agencies and political subdivisions to invest public funds. Funds of this size do not have institutional investment options available at the fee levels offered in these pooled accounts. A minimum administrative fee of \$1,000 per year will apply to this fund. The administrative contract fees collected are then used to offset the administrative fees charged to the statutory funds.

**If the SIB concurs, RIO staff will work with SHS representatives in the upcoming months to further consider the appropriateness of this client for the SIB based on RIO's current staffing levels.** Per SIB Governance Policy E-13, RIO will bring the final documentation, including an Investment Policy Statement, to the SIB for further consideration and/or final acceptance at a future meeting.