North Dakota State Investment Board

ND STATE INVESTMENT BOARD MEETING

Friday, May 25, 2018, 8:30 a.m.
State Capitol, Peace Garden Room
600 E Blvd, Bismarck, ND

AGENDA

Revised May 21, 2018

I. CALL TO ORDER AND ACCEPTANCE OF AGENDA

II. ACCEPTANCE OF MINUTES (April 27, 2018)

III. INVESTMENTS

A. Asset and Investment Performance Overview – Mr. Hunter (15 minutes) *Informational*
B. Callan Performance Review – Mr. Erlendson, Mr. Browning (30 minutes) **Board Acceptance**
   1. Pension Trust – March 31, 2018
   2. Insurance Trust – March 31, 2018
   3. Legacy Fund – March 31, 2018
C. Legacy Asset Allocation & Spending Study - Mr. Kloepfer (1 hour) **Board Action**

========== Break from 10:15 to 10:30 a.m. ==========

D. BND Match Loan CD Program - Mr. Hunter (10 minutes) *Informational*
E. Infrastructure Benchmark Update – Mr. Hunter, Mr. Browning (15 minutes) **Board Action**
F. Investment Policy Statement Revisions
   1. Workforce Safety & Insurance – Mr. Schulz, Mr. Erlendson (10 minutes) **Board Acceptance**

IV. ADMINISTRATION

A. Audit Committee Report – Ms. Sara Sauter (10 minutes) **Board Acceptance**
B. Securities Litigation Committee Update – Mr. Hunter (5 minutes) **Board Acceptance**
C. Executive Review Committee Update – Mr. Lech, Ms. Smith (10 minutes) **Board Acceptance**
D. RIO Budget Planning Update for 2019-21 – Mr. Hunter, Ms. Flanagan (10 minutes) *Informational*
E. Custom Board Member Education – Mr. Hunter, Mr. Erlendson (5 minutes) *Informational*

V. OTHER

Next Meetings: SIB - July 27, 2018, 8:30 a.m. - BSC Energy Center
SIB Securities Litigation Committee - August 23, 2018, 3:00 p.m. - RIO Conference Room
SIB Audit Committee - September 27, 2018, 10:00 a.m. (Tentative) - RIO Conference Room

VI. ADJOURNMENT

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

NORTH DAKOTA STATE INVESTMENT BOARD
MINUTES OF THE
APRIL 27, 2018, BOARD MEETING

MEMBERS PRESENT: Brent Sanford, Lt. Governor, Chair
Rob Lech, TFFR Board, Vice Chair
Mike Gessner, TFFR Board
Jon Godfread, Insurance Commissioner
Adam Miller, PERS Board
Mel Olson, TFFR Board
Kelly Schmidt, State Treasurer
Troy Seibel, PERS Board
Jodi Smith, Commissioner of Trust Lands
Yvonne Smith, PERS Board
Cindy Ternes, WSI Designee

STAFF PRESENT: Bonnie Heit, Assist to the SIB
David Hunter, ED/CIO
Sara Sauter, Audit Svs Suprv
Cody Schmidt, Compliance Officer
Darren Schulz, Dep CIO

OTHERS PRESENT: Gabriella Barschdorff, BlackRock

Lt. Governor Sanford thanked Mr. Mike Gessner for his service to the State and to the Minot Public School District. Mr. Gessner has been serving on the SIB representing the Teachers' Fund for Retirement since July 21, 2006. Mr. Gessner's 47-year teaching career was with the Minot Public School District as a Math instructor. The SIB extended their appreciation to Mr. Gessner for his service and support.

CALL TO ORDER:

Lt. Governor Sanford, Chair, called the State Investment Board (SIB) regular meeting to order at 8:30 a.m. on Friday, April 27, 2018, at the State Capitol, Peace Garden Room, Bismarck, ND.

AGENDA:

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MS. TERNES AND CARRIED BY A VOICE VOTE TO ACCEPT THE AGENDA FOR THE APRIL 27, 2018, MEETING.

AYES: COMMISSIONER SMITH, TREASURER SCHMIDT, MR. MILLER, COMMISSIONER GODFREAD, MR. OLSON, MS. TERNES, MR. GESSNER, MR. SEIBEL, MR. LECH, MS. SMITH, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

MINUTES:

IT WAS MOVED BY MR. LECH AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO ACCEPT THE MINUTES OF THE MARCH 23, 2018, MEETING AS DISTRIBUTED.

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

NAYS: NONE
MOTION CARRIED

GOVERNANCE:

Board Planning Cycle – Mr. Hunter reviewed the SIB's biennial agenda to ensure it is aligned with the SIB's Mission Statement and Strategic Investment Plan. After review and discussion,

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY COMMISSIONER GODFREAD AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE BIENNIAL AGENDA INCLUDING THE ADDITION OF THE BOARD SELF-ASSESSMENT ITEMS.

AYES: MR. OLSON, MR. SEIBEL, COMMISSIONER SMITH, MR. GESSNER, COMMISSIONER GODFREAD, MS. SMITH, MR. MILLER, TREASURER SCHMIDT, MS. TERNES, MR. LECH, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

Board Self-Assessment Summary – The Board reviewed the summary of the self-assessment conducted by Aon Hewitt.

Discussion took place on new board member orientation and continuing education. Mr. Hunter will work with individual board members and put together a custom plan for each member. At the July 27, 2018, meeting, Mr. Hunter will present an educational plan for the Board's consideration.

Discussion took place on the evaluation process of the Executive Director. The evaluation document itself is a work in progress. On an annual basis the document is reviewed by the Executive Review Committee. The Board acknowledged the importance of completing the document in order to give the Executive Director thorough, honest, constructive, and growth oriented feedback.

Discussion took place on attendance, engagement, and designees of elected officials. The SIB statute alone does not provide for statutory members to designate a designee however the authority to designate a "deputy" is allowable under separate statute. Exceptions to the SIB statute is the Director of Workforce Safety and Insurance. Ms. Ternes is currently serving as the designee for the Director of WorkForce Safety and Insurance with full voting privileges. The Teachers' Fund for Retirement and the Public Employees Retirement System Boards are also permitted to send alternate designees with full voting privileges. The Board requested further clarification on statute.

With no further discussion on the self-assessment summary,

IT WAS MOVED BY MR. LECH AND SECONDED BY MS. TERNES AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE BOARD SELF-ASSESSMENT SUMMARY.

AYES: TREASURER SCHMIDT, MR. GESSNER, COMMISSIONER GODFREAD, MS. TERNES, COMMISSIONER SMITH, MS. SMITH, MR. LECH, MR. MILLER, MR. SEIBEL, MR. OLSON, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

Legacy Fund – Mr. Hunter reviewed the Legacy Fund's current asset allocation. The Legacy and Budget Stabilization Fund Advisory Board approved RIO's investment staff recommendation of conducting an asset allocation study on November 28, 2017, by Callan Associates. Best practice is to conduct an asset allocation study every four to five years. Callan Associates will present the results to the Legacy and Budget Stabilization Fund Advisory Board on May 24, 2018, and the SIB at their May 25, 2018, meeting. The previous asset allocation study was completed by RV Kuhns on April 2, 2013.

Discussion followed on the current asset allocation and investment policy statement and the results of the new asset allocation study and the options that will be available to the Legacy and Budget Stabilization Fund Advisory Board to consider. Mr. Hunter and Mr. Schulz will provide additional insight at the May 25, 2018, meeting.

Securities Litigation Committee – Mr. Hunter reviewed the second reading of the Securities Litigation Committee's Charter and the SIB's Securities Litigation policy. The Securities Litigation Committee revised the thresholds for active securities litigation after gathering insight from other states, taking into consideration the SIB's input, and legal advice from Financial Recovery Technologies, Grant & Eisenhofer, Bernstein Litowitz Berger & Grossman, and Robbins Geller Rudman & Dowd.

After review and discussion, Mr. Lech thanked the staff for all of their work on the Securities Litigation Policy and Charter, board members who have participated in the development of the Charter and Policy, and those who are serving on the Committee.

IT WAS MOVED BY MR. LECH AND SECONDED BY MS. TERNES AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE SECURITIES LITIGATION POLICY AND THE SECURITIES LITIGATION COMMITTEE'S CHARTER.

AYES: MS. SMITH, MR. MILLER, MR. OLSON, MR. GESSNER, MR. LECH, MR. SEIBEL, MS. TERNES, COMMISSIONER GODFREAD, COMMISSIONER SMITH, TREASURER SCHMIDT, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MR. OLSON AND CARRIED BY A ROLL CALL VOTE TO ACCEPT THE REVISIONS TO SIB POLICY – GOVERNANCE PROCESS/STANDING COMMITTEES.

AYES: TREASURER SCHMIDT, MR. SEIBEL, MR. OLSON, COMMISSIONER SMITH, MR. LECH, MR. MILLER, COMMISSIONER GODFREAD, MR. GESSNER, MS. SMITH, MS. TERNES, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

The Board recessed at 10:09 a.m. and reconvened at 10:26 a.m.

INVESTMENTS:

Blackrock Risk Review – Mr. Hunter stated RIO investment personnel have been working with BlackRock to build out their Aladdin Risk Management System which offers a comprehensive investment risk management tool. The enhanced risk management framework will enhance staff's ability to analyze various risk factors inherent within the SIB's client portfolios and aid their ability to perform various stress testing scenarios to improve the expected ability to withstand unfavorable market events in the future. RIO investment personnel intend to develop a Risk Dashboard utilizing the enhanced Aladdin Risk Management System to improve downside risk awareness and performance within the SIB client portfolios while expanding the investment risk management reporting metrics.

Ms. Gabriella Barschdorff, BlackRock, presented an overview of identifying alternative ways of defining investment risk; reviewing and quantifying the most basic drivers of risk; comparing and reviewing SIB client portfolios using the risk factor framework; and defining stress testing and the use of stress testing to manage downside investment risk.

Infrastructure – Mr. Schulz updated the Board on the infrastructure search and implementation. The legal documentation for the I Squared Global Infrastructure Fund II will be completed on or before May 1, 2018. The ND Office of the Attorney General appointed Mr. Scott Cheskiewicz, Jackson Walker, as Special Assistant Attorney General effective March 26, 2018.

Mr. Schulz also stated RIO investment personnel requested Callan Associates to review the current benchmark and consider recommending a new benchmark which would better evaluate the contribution of the infrastructure investment within those SIB funds that utilize the asset class.

Callan Associates will present their infrastructure recommendation to the SIB at the May 25, 2018, SIB meeting.

Secondary Offers – Mr. Hunter informed the Board at this time there are no secondary offers on non-core assets at par or above. If something does come up, he will inform the board. Mr. Hunter will continue to provide periodic updates.

ADMINISTRATION:

Executive Review Committee – Ms. Smith, Chair of the SIB Executive Review Committee, updated the board on the Committee's actions since their last meeting on April 25, 2018. The Executive Review Committee reviewed the results of the Executive Director's evaluation by the SIB, Mr. Hunter's self-evaluation, and RIO's effectiveness survey. The Committee will be working on a summary of Mr. Hunter's performance which will be shared with the SIB at their May 25, 2018, meeting. An email will be sent to the SIB asking for their feedback on the actual evaluation tool itself. The document is a work in progress and any feedback from the board is always helpful.

Budget Planning – Mr. Hunter stated RIO is working on their budget for the 2019-21 biennium. Staff has been working with the Office of the Governor for their guidance to present a budget that continues to realize efficiencies but at the same time maintains the level of service to those entities in which it serves. Mr. Hunter will continue to update the board on the process of finalizing RIO's budget for the next biennium.

QUARTERLY MONITORING:

Per Governance Policy, Board/Staff Relationship/Monitoring Executive Performance C-4, the following monitoring reports for the quarter ending March 31, 2018, were provided to the SIB for their consideration: Budget/Financial Conditions, Executive Limitations/Staff Relations, Investment Program, and Retirement Program.

Mr. Hunter also informed the board there are currently no managers on the Watch List.

IT WAS MOVED BY COMMISSIONER SMITH AND SECONDED BY MR. GESSNER AND CARRIED BY A VOICE VOTE TO ACCEPT THE QUARTERLY MONITORING REPORTS FOR THE PERIOD ENDING MARCH 31, 2018.

AYES: MS. TERNES, MR. OLSON, COMMISSIONER GODFREAD, TREASURER SCHMIDT, COMMISSIONER SMITH, MR. SEIBEL, MR. LECH, MR. MILLER, MS. SMITH, MR. GESSNER, AND LT. GOVERNOR SANFORD
NAYS: NONE
MOTION CARRIED

OTHER:

The next meeting of the Securities Litigation Committee meeting is scheduled for May 10, 2018, at 3:00 p.m. at the Retirement and Investment Office.

The next meeting of the SIB Audit Committee is scheduled for May 24, 2018, at 3:00 p.m. at the Retirement and Investment Office.

The next meeting of the SIB is scheduled for May 25, 2018, at 8:30 a.m. at the State Capitol, Peace Garden Room.

ADJOURNMENT:

With no further business to come before the SIB, Lt. Governor Sanford adjourned the meeting at 11:33 a.m.

_____
Lt. Governor Sanford, Chair
State Investment Board

_____
Bonnie Heit
Assistant to the Board

Informational Purposes Only

Asset and Performance Overview

May 18, 2018

Dave Hunter, Executive Director / CIO
Darren Schulz, Deputy Chief Investment Officer
Connie Flanagan, Fiscal and Investment Operations Manager
Eric Chin, Senior Investment Analyst
ND Retirement & Investment Office (RIO)
State Investment Board (SIB)

State Investment Board – Client Assets Under Management

Fund Name	Market Values as of 3/31/18 (1)
Pension Trust Fund	
Teachers' Fund for Retirement (TFFR)	$ 2,466,427,925
Public Employees Retirement System (PERS)	2,999,335,828
City of Bismarck Employees Pension	98,280,546
City of Bismarck Police Pension	39,741,400
City of Grand Forks Employees Pension	64,240,952
Park District of the City of Grand Forks Pension	6,622,154
Subtotal Pension Trust Fund	5,674,648,805
Insurance Trust Fund	
Workforce Safety & Insurance (WSI)	1,925,297,355
State Fire and Tornado Fund	22,869,464
State Bonding Fund	3,411,679
Petroleum Tank Release Compensation Fund	6,466,968
Insurance Regulatory Trust Fund	1,924,358
State Risk Management Fund	5,244,793
State Risk Management Workers Comp Fund	5,278,321
Cultural Endowment Fund	454,379
Budget Stabilization Fund	38,323,931
ND Association of Counties (NDACo) Fund	5,871,740
Bismarck Deferred Sick Leave Account	726,168
City of Fargo FargoDome Permanent Fund	43,891,602
State Board of Medicine Fund	2,231,656
PERS Group Insurance Account	33,474,017
Lewis & Clark Interpretive Center Endowment	700,060
Subtotal Insurance Trust Fund	2,096,166,489
Legacy Trust Fund	5,375,052,531
Job Service of North Dakota Pension	96,405,170
Tobacco Control and Prevention Fund	54,065,143
PERS Retiree Health Insurance Credit Fund	125,145,623
Total Assets Under SIB Management	$ 13,421,483,761

- **SIB client investments exceeded $13.4 billion as of March 31, 2018,** with the Pension Trust exceeding $5.6 billion, Insurance Trust nearing $2.1 billion and Legacy Fund approaching $5.4 billion.
- **The Pension Trust posted a net return of 12.3% in the last year.** During the last 5-years, the Pension Trust generated a net annualized return of 8.3%, exceeding the performance benchmark of 7.3%.
- **The Insurance Trust generated a net return of 7.5% in the last year.** During the last 5-years, the Insurance Trust posted a net annualized return of 5.0%, exceeding the performance benchmark of 3.7%.
- **Legacy Fund generated a net return of 10.2% last year, exceeding its policy benchmark.** During the last 5-years, Legacy Fund earned a net annualized return of 5.8%, exceeding the performance benchmark of 4.8%.
- **RIO conservatively estimates the SIB use of active management enhanced client returns by over $300 million since March 31, 2013** (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 $1.3 million per year** (e.g. $13 billion x 0.01% = $1.3 million).
- **RIO's internal investment cost for administering the investment programs for our SIB clients is less than 1 basis point or 0.01% (i.e. less than 1/100th of 1%).**

(1) Market values are unaudited and subject to change.

Investment Performance Evaluation – March 31, 2018

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 0.70% per annum over the last 5-years, while adhering to approved risk levels and generating at least 0.35% of positive Risk Adjusted Excess Return (over the last 5-years).

TFFR and PERS each earned 8.3% for the 5-years ended March 31, 2018. Global equities were the primary performance driver and earned 10% over the last 5-years with U.S. Equities up 13% and International Equity up 8%. Private equity returns were disappointing at only 2.2% per annum the last 5-years. Fixed Income earned 3.6% annualized over the last 5-years with Investment Grade up 3.5% and Non-Investment Grade up 5.7%. Global Real Assets also performed well and gained earned over 8% per annum for the 5-years ended March 31, 2018, with Real Estate up 12% and Infrastructure up 5.5%, while Timber returns were disappointing at 0.06% per annum the last 5-years.

Non-Pension Trust:

Every Non-Pension Trust client generated positive Excess Return of at least 0.65% per annum and positive Risk Adjusted Excess Returns for the 5-years ended March 31, 2018, with two exceptions for PERS Retiree Health Insurance Credit Fund (-0.08%) and PERS Group Insurance (-0.05%).

Legacy Fund earned 10.2% for the 1-year ended March 31, 2018, which translates into $465 million of net investment income (including unrealized gains). Legacy's U.S. Equity portfolio earned 12.8% last year, while International Equities earned 19.4%. U.S. Fixed Income also performed well with a 3.7% return versus 1.2% for the Bloomberg Aggregate Index. Real Asset returns were mixed with Diversified Real Assets earning 10.7% last year, while Real Estate earned 5.7% and trailed the NCREIF index (of 7.1%). **Our second largest non-Pension Trust client, WSI, also generated strong returns by earning approximately 7.7% and 6.0% for the 1- and 5-years ended March 31, 2018, respectively.**

Risk, as measured by standard deviation, was within approved levels for all SIB clients for the 5-years ended Mar. 31, 2018.

Actual asset allocations are within Target ranges and guidelines as confirmed by Callan as of March 31, 2018.

Note: Amount and returns are unaudited and subject to change.

Pension Trust Return & Risk Summary – **March 31, 2018**

KEY POINT for Returns and Risk: Every Pension Trust client portfolio generated positive "Excess Return" for the 3- and 5-year periods ended March 31, 2018, while adhering to prescribed risk levels (e.g. within 115% of the Policy Benchmark for the 5-years ended 3/31/2018).

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
PERS - $3 billion						
Total Fund Return - Net	8.1%	12.4%	7.3%	8.3%	4.8%	0.49%
Policy Benchmark Return	6.6%	10.2%	6.3%	7.3%	4.5%	
Excess Return	1.5%	2.2%	0.9%	1.0%	107%	
TFFR - $2.5 billion						
Total Fund Return - Net	8.0%	12.2%	7.2%	8.3%	4.8%	0.51%
Policy Benchmark Return	6.6%	10.1%	6.3%	7.3%	4.5%	
Excess Return	1.4%	2.1%	0.9%	1.0%	107%	
Bismarck - $98 million						
Total Fund Return - Net	6.9%	10.8%	6.5%	7.5%	4.1%	0.56%
Policy Benchmark Return	5.5%	8.5%	5.6%	6.5%	3.9%	
Excess Return	1.4%	2.3%	1.0%	1.1%	107%	

Note: Amounts are unaudited and subject to change.

Pension Trust Return & Risk Summary – **March 31, 2018**

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
Bismarck Police - $40 million						
Total Fund Return - Net	7.4%	11.4%	6.8%	7.8%	4.5%	0.52%
Policy Benchmark Return	6.0%	9.2%	5.9%	6.8%	4.2%	
Excess Return	1.4%	2.2%	0.9%	1.0%	107%	
Job Service - $96 million						
Total Fund Return - Net	2.6%	4.2%	4.4%	6.0%	3.7%	0.35%
Policy Benchmark Return	3.1%	4.8%	4.1%	5.3%	3.4%	
Excess Return	-0.5%	-0.6%	0.3%	0.7%	107%	
Grand Forks - $64 million						
Total Fund Return - Net	8.1%	12.1%	7.0%	8.2%	4.8%	0.49%
Policy Benchmark Return	6.8%	10.1%	6.4%	7.4%	4.7%	
Excess Return	1.3%	2.0%	0.6%	0.8%	104%	
G.F.P.D. - $6.6 million						
Total Fund Return - Net	7.9%	11.9%	6.9%	8.4%	4.8%	0.65%
Policy Benchmark Return	6.5%	9.7%	6.1%	7.5%	4.7%	
Excess Return	1.4%	2.1%	0.8%	0.9%	103%	

Risk Adjusted Excess Returns for the 5-years ended Mar. 31, 2018, were positive for all Pension Trust clients ranging from 0.35% for Job Service to 0.66% for City of Grand Forks Park District.

Job Service is 150+% funded & significantly de-risked its portfolio (to 30% equity / 70% 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.

Note: Amounts are unaudited and subject to change.

Non-Pension Trust Return & Risk Summary – **Mar. 31, 2018**

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
WSI - $1.9 billion						
Total Fund Return - Net	4.5%	7.8%	5.3%	6.0%	3.2%	1.23%
Policy Benchmark Return	3.2%	5.3%	3.8%	4.4%	3.0%	
Excess Return	1.3%	2.5%	1.5%	1.6%	OK	
Legacy Fund - $5.4 billion						
Total Fund Return - Net	6.6%	10.2%	6.6%	5.8%	4.2%	0.56%
Policy Benchmark Return	5.4%	8.3%	5.3%	4.7%	3.8%	
Excess Return	1.3%	2.0%	1.3%	1.1%	OK	
Budget Stabilization - $38 million						
Total Fund Return - Net	0.05%	0.35%	1.02%	1.31%	0.72%	0.45%
Policy Benchmark Return	-0.06%	0.22%	0.65%	0.62%	0.55%	
Excess Return	0.12%	0.13%	0.37%	0.69%	OK	
Fire & Tornado - $23 million						
Total Fund Return - Net	4.5%	7.4%	5.3%	6.3%	3.6%	0.70%
Policy Benchmark Return	3.3%	5.5%	3.8%	4.9%	3.2%	
Excess Return	1.2%	1.9%	1.4%	1.4%	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 March 31, 2018. These returns were achieved while adhering to reasonable risk levels which were within 1% of policy levels.**

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.

Note: Amounts are unaudited and subject to change.

Non-Pension Trust Return & Risk Summary – **Mar. 31, 2018**

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
State Bonding - $3.4 million						
Total Fund Return - Net	1.10%	2.57%	2.02%	2.18%	1.9%	0.90%
Policy Benchmark Return	0.28%	1.18%	0.91%	1.17%	1.7%	
Excess Return	0.82%	1.40%	1.11%	1.02%	OK	
Insur.Reg.Trust - $1.9 million						
Total Fund Return - Net	3.86%	6.04%	4.03%	4.85%	2.9%	0.34%
Policy Benchmark Return	3.06%	4.84%	3.21%	3.99%	2.6%	
Excess Return	0.79%	1.20%	0.82%	0.86%	OK	
Petrol.Tank Comp.- $6.5 million						
Total Fund Return - Net	1.10%	2.46%	1.89%	2.02%	1.7%	0.82%
Policy Benchmark Return	0.34%	1.17%	0.88%	1.09%	1.6%	
Excess Return	0.77%	1.29%	1.02%	0.93%	OK	
State Risk - $5.2 million						
Total Fund Return - Net	4.02%	6.49%	5.23%	6.49%	3.3%	0.76%
Policy Benchmark Return	2.94%	4.82%	3.86%	5.07%	3.0%	
Excess Return	1.08%	1.67%	1.37%	1.42%	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 March 31, 2018, including Excess Returns of 0.86% or more.

Note: Current year returns are unaudited and subject to change.

Non-Pension Trust Return & Risk Summary – **Mar. 31, 2018**

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
State Risk W/C - $5.3 million						
Total Fund Return - Net	4.61%	7.11%	5.74%	7.23%	3.7%	0.67%
Policy Benchmark Return	3.65%	5.68%	4.50%	5.87%	3.3%	
Excess Return	0.96%	1.43%	1.24%	1.36%	OK	
NDACO - $5.9 million						
Total Fund Return - Net	3.89%	6.65%	4.73%	5.66%	3.4%	0.67%
Policy Benchmark Return	2.74%	4.80%	3.34%	4.32%	3.0%	
Excess Return	1.15%	1.85%	1.38%	1.35%	OK	
Bis.Def.Sick - $726,000						
Total Fund Return - Net	4.14%	7.15%	5.12%	6.06%	3.6%	0.87%
Policy Benchmark Return	2.71%	4.87%	3.42%	4.46%	3.1%	
Excess Return	1.42%	2.28%	1.70%	1.60%	OK	
FargoDome - $44 million						
Total Fund Return - Net	6.39%	9.83%	6.42%	7.75%	4.7%	0.84%
Policy Benchmark Return	5.10%	7.78%	5.08%	6.39%	4.4%	
Excess Return	1.29%	2.06%	1.34%	1.36%	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 Mar. 31, 2018, including Excess Returns of 1.35% or more.

Note: Current year returns are unaudited and subject to change.

Non-Pension Trust Return & Risk Summary – **Mar. 31, 2018**

	Current FYTD 3/31/2018	1 Yr Ended 3/31/2018	3 Yrs Ended 3/31/2018	5 Yrs Ended 3/31/2018	Risk 5 Yrs Ended 3/31/2018	Risk Adj Excess Return 5 Yrs Ended 3/31/2018
Cultural Endow.- $454,000						
Total Fund Return - Net	6.35%	9.38%	7.00%	8.80%	4.7%	0.53%
Policy Benchmark Return	5.59%	8.25%	6.01%	7.64%	4.4%	
Excess Return	0.76%	1.13%	1.00%	1.16%	OK	
Board of Medicine - $2.2 million						
Total Fund Return - Net	2.44%	3.88%	3.21%			
Policy Benchmark Return	2.01%	3.25%	2.47%			
Excess Return	0.43%	0.63%	0.75%			
PERS RHIC - $125 million						
Total Fund Return - Net	6.40%	9.29%	6.05%	7.56%	5.1%	-0.56%
Policy Benchmark Return	5.79%	8.74%	5.99%	7.63%	4.7%	
Excess Return	0.62%	0.55%	0.06%	-0.08%	OK	
PERS Group Insur. - $33 million						
Total Fund Return - Net	0.13%	0.44%	0.56%	0.36%	0.61%	-0.05%
Policy Benchmark Return	0.04%	0.34%	0.65%	0.41%	0.57%	
Excess Return	0.09%	0.10%	-0.09%	-0.05%	OK	
Tobacco Prev. - $54 million						
Total Fund Return - Net	1.07%	1.55%				
Policy Benchmark Return	1.09%	1.58%				
Excess Return	-0.02%	-0.03%				

SIB Client Specific Commentary:

The Cultural Endowment Fund has generated the highest absolute level of net investment returns (of 8.8%) 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 (7.56%) but disappointing on a risk adjusted excess return basis of -0.56%.

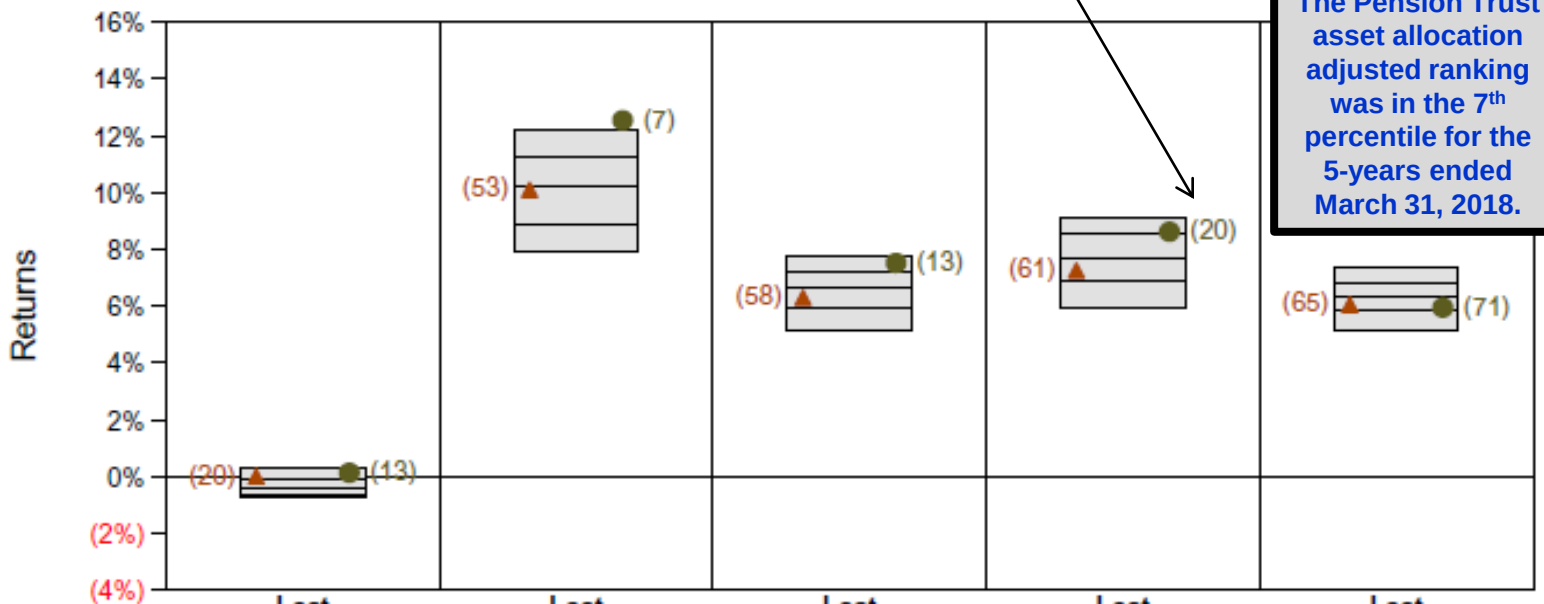
PERS Group Insurance returns for the 5-years ended Mar. 31, 2018 is disappointing but within -0.05% of the Policy Benchmark and on a Risk Adjusted Excess Return basis the last 5-years.

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

Note: Current year returns are unaudited and subject to change.

Pension Trust "gross" returns were ranked in the 20th percentile for the 5-years ended March 31, 2018, based on Callan's "Public Fund Sponsor Database".

Callan Public Fund Sponsor Database



The Pension Trust asset allocation adjusted ranking was in the 7th percentile for the 5-years ended March 31, 2018.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.30	12.18	7.75	9.08	7.39
25th Percentile	(0.08)	11.29	7.21	8.55	6.85
Median	(0.39)	10.21	6.66	7.67	6.33
75th Percentile	(0.62)	8.84	5.96	6.86	5.87
90th Percentile	(0.75)	7.95	5.16	5.95	5.15
Total Fund ●	0.14	12.54	7.52	8.62	5.95
Policy Target ▲	0.01	10.10	6.30	7.26	6.05

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

May 25, 2018

North Dakota
State Investment Board

Performance Evaluation

as of March 31, 2018

Paul Erlendson
Senior Vice President

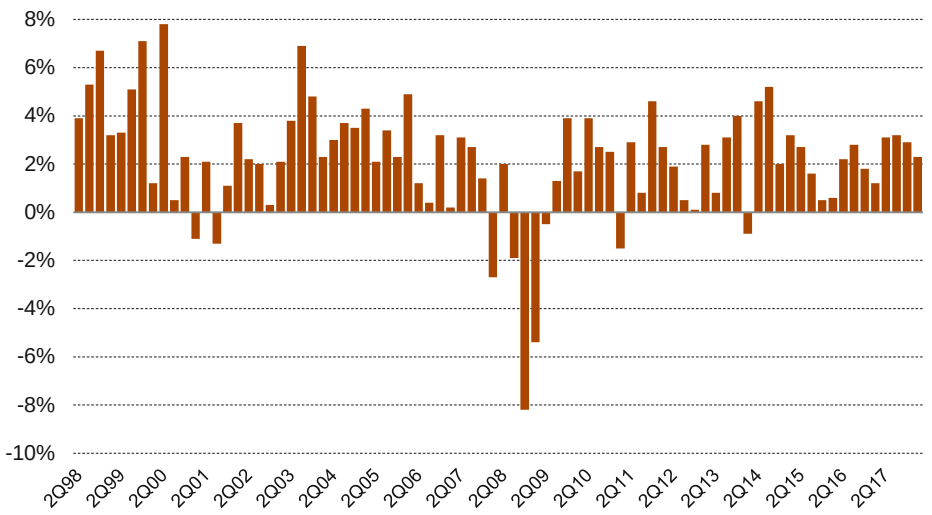
Alex Browning
Senior Vice President

Global Economic Update

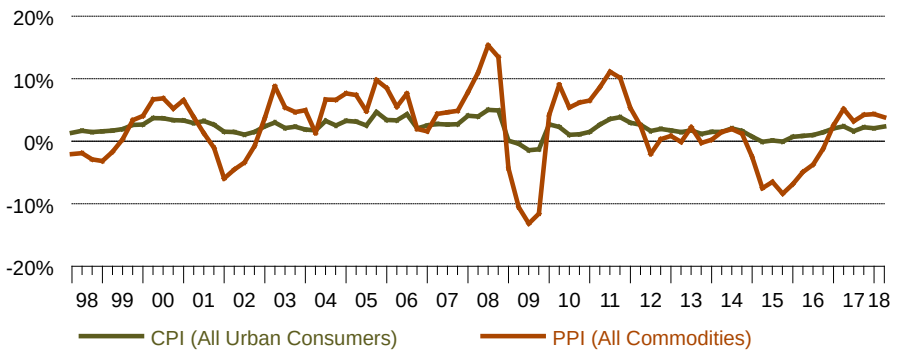
The Big Picture

- The Initial estimate of annualized first quarter GDP was 2.3%; ahead of consensus, but trailing fourth quarter GDP (+2.9%).
- Headline CPI declined 0.1% in March, but increased 0.2% to 2.4% year-over-year. Core CPI, which excludes food and energy prices, increased 0.2% in March, and increased 0.3% to 2.1% over the trailing 12 months.
- The unemployment rate remained constant at the December level of 4.1%, while the labor force participation rate grew modestly to 62.9% (up 0.2%) over the same period.
- Euro zone GDP rose 2.5% in 2017, the fastest annual growth rate since 2007. Meanwhile, inflation remained low at 1.3% year-over-year as of March 2018.
- The Fed hiked the Fed Funds target by 25 basis points at its March meeting to 1.50% - 1.75%. This move marked the first increase of 25 basis points of the year.
- Rates remained unchanged at the Fed's May meeting.
- As expected, the ECB kept its interest rates on hold in the first quarter, with the first interest rate increase expected in 2019. The ECB will continue asset purchases at a pace of €30bn a month through September 2018.

Quarterly Real GDP Growth (20 Years)



Inflation Year-Over-Year



Asset Class Performance

Periodic Table of Investment Returns for Periods Ended March 31, 2018

Best

Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
MSCI:EM Gross 1.5%	MSCI:EM Gross 25.4%	S&P:500 10.8%	S&P:500 13.3%	Russell:2000 Index 9.8%	MSCI:EM Gross 13.2%
3 Month T-Bill 0.4%	MSCI:EAFE 14.8%	MSCI:EM Gross 9.2%	Russell:2000 Index 11.5%	S&P:500 9.5%	Russell:2000 Index 11.5%
Russell:2000 Index (0.1%)	S&P:500 14.0%	Russell:2000 Index 8.4%	MSCI:EAFE 6.5%	Blmbg:Aggregate 3.6%	S&P:500 10.1%
S&P:500 (0.8%)	Russell:2000 Index 11.8%	MSCI:EAFE 5.6%	MSCI:EM Gross 5.4%	MSCI:EM Gross 3.4%	MSCI:EAFE 8.6%
Blmbg:Commodity Price Idx (0.8%)	Blmbg:Commodity Price Idx 2.5%	Blmbg:Aggregate 1.2%	Blmbg:Aggregate 1.8%	MSCI:EAFE 2.7%	Blmbg:Aggregate 3.9%
Blmbg:Aggregate (1.5%)	Blmbg:Aggregate 1.2%	3 Month T-Bill 0.5%	3 Month T-Bill 0.3%	3 Month T-Bill 0.3%	3 Month T-Bill 1.3%
MSCI:EAFE (1.5%)	3 Month T-Bill 1.1%	Blmbg:Commodity Price Idx (3.8%)	Blmbg:Commodity Price Idx (8.6%)	Blmbg:Commodity Price Idx (8.0%)	Blmbg:Commodity Price Idx (1.7%)

Worst

U.S. Equity Market

Periods Ending March 31, 2018

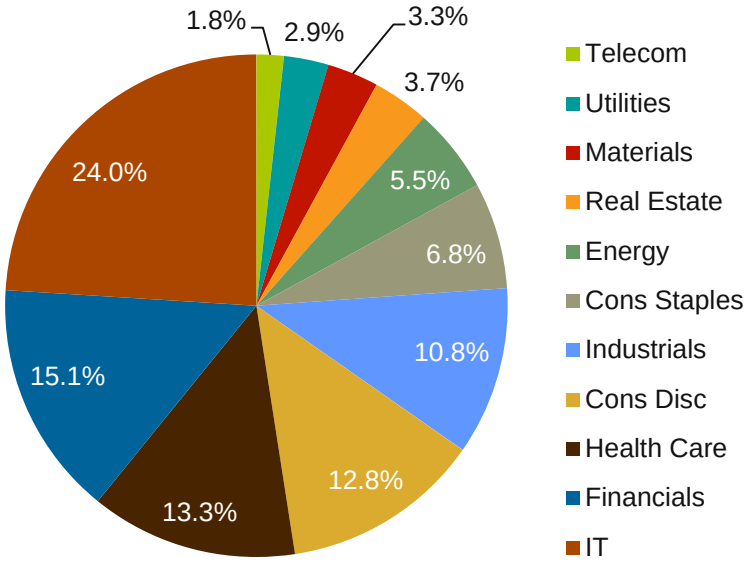
- Volatility returned in the first quarter (February and March, more specifically) spurred by wage gains, uncertainty over the pace of rate hikes, and the threat of a looming trade war.
- Growth continued to outperform value, holding true across the cap spectrum. Small caps outperformed large.
- Consumer Staples and Telecom both fell over 7% for the quarter while Consumer Discretionary and Technology posted gains of more than 3%.
- Volatility, as measured by the VIX, spiked 116% on Feb 5th when the market sank 4%.

Large Cap Equity	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Russell 1000 Growth	1.42	21.25	12.90	15.53	11.34	10.88
Russell 1000 Value	-2.83	6.95	7.88	10.78	7.78	9.71
Mid Cap Equity						
Russell Midcap Growth	2.17	19.74	9.17	13.31	10.61	12.12
Russell Midcap Value	-2.50	6.50	7.23	11.11	9.81	12.08
Small Cap Equity						
Russell 2000 Growth	2.30	18.63	8.77	12.90	10.95	12.04
Russell 2000 Value	-2.64	5.13	7.87	9.96	8.61	10.85

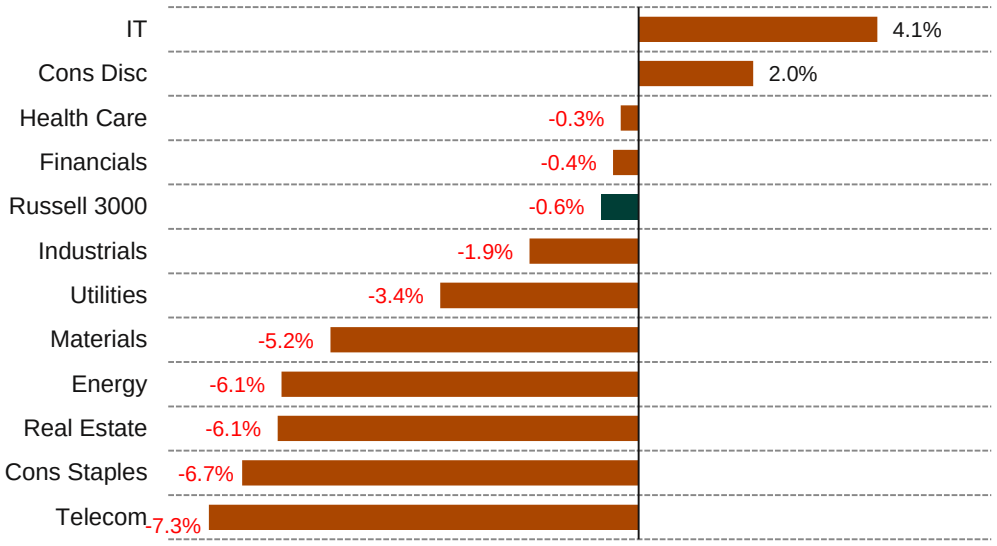
U.S. Equity Returns

Periods Ending March 31, 2018

Economic Sector Exposure (Russell 3000)



Quarterly Returns (Russell 3000)

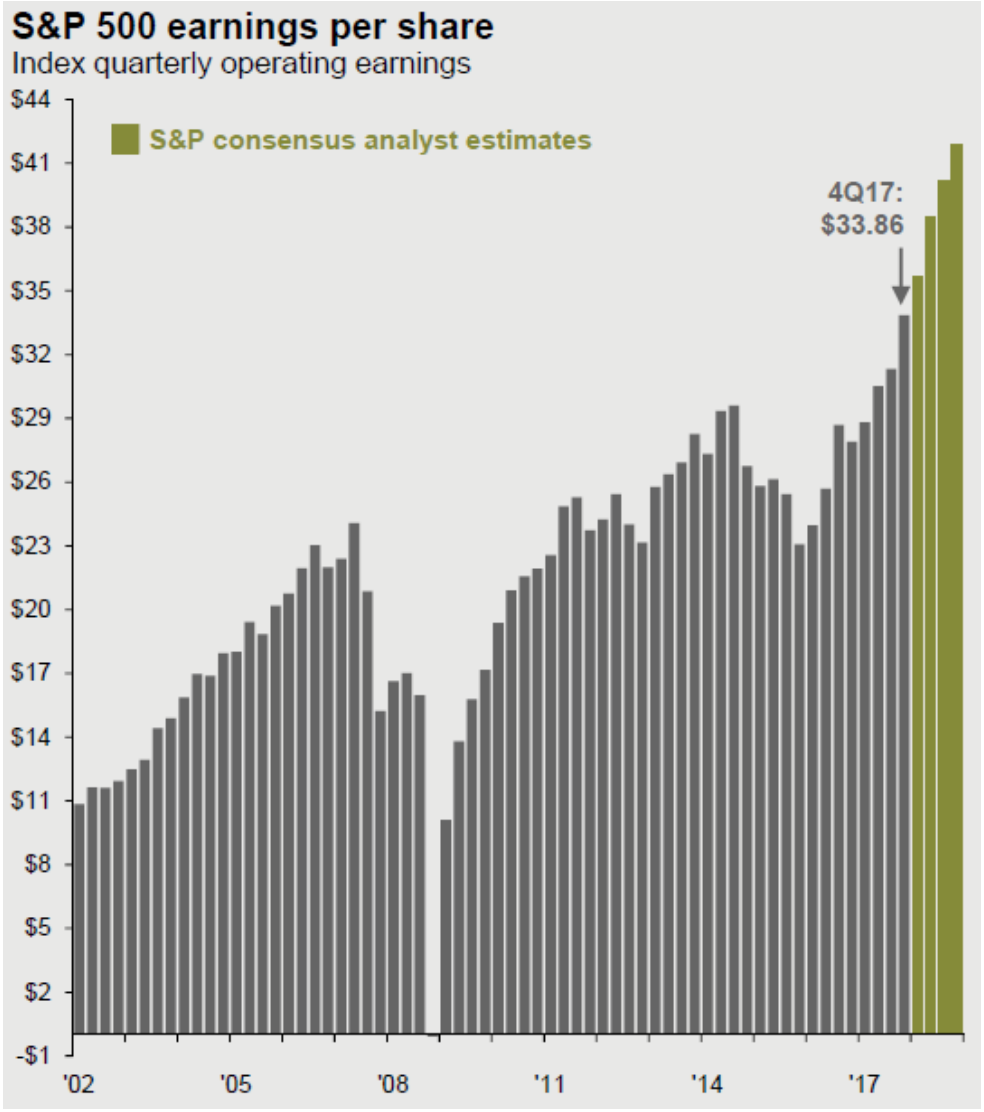


Source: Barrow Hanley Quarterly Benchmark Review

- The Russell 1000 was down -0.7%. Telecom (-7.4%) and Consumer Staples (-6.8%) were the worst performing sectors, while IT recorded the strongest gains (+3.9%).
- The Russell 2000 was down -0.1%. Energy (-11.4%) and Real Estate (-8.0%) weighed on the index's performance, while IT (+6.8%) and Health Care (+6.2%) were the strongest performing sectors.
- Following a relatively benign period of volatility, the VIX index reached a quarterly high of 37 in February, up from 11 on January 1st.

S&P 500 Earnings

- Through 05/11, 91% of companies in the S&P 500 have reported actual results for the first quarter.
- 78% of S&P 500 companies have reported positive EPS surprises and 77% have reported positive sales surprises.
- 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 highest earnings growth since Q3 2010 (34.0%).
- All 11 sectors are reporting year-over-year earnings growth for the quarter, led by the Energy sector.
- Energy (+95%) and Materials (+44%) show the highest year-over-year earnings growth gains (Energy from a low base).



Source: FACTSET; Earnings Insight May 11, 2018

Source: JP Morgan Guide to the Markets 2Q 2018, as of March 31, 2018

Non-U.S. Equity Market

Periods Ending March 31, 2018

- While developed non-U.S. equity (MSCI EAFE Index (local): -4.3%) market returns were negative, results were helped by the U.S. dollar weakness (MSCI EAFE Index: -1.5%).
- The dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve.
- In local terms, Japan fell nearly 5% but the strength of the yen brought returns in U.S. dollar terms to 0.8%.
- Emerging market equities represented one of the few asset classes to deliver a positive quarterly result. The MSCI Emerging Markets Index returned 1.4%. China posted a modest 2% gain.

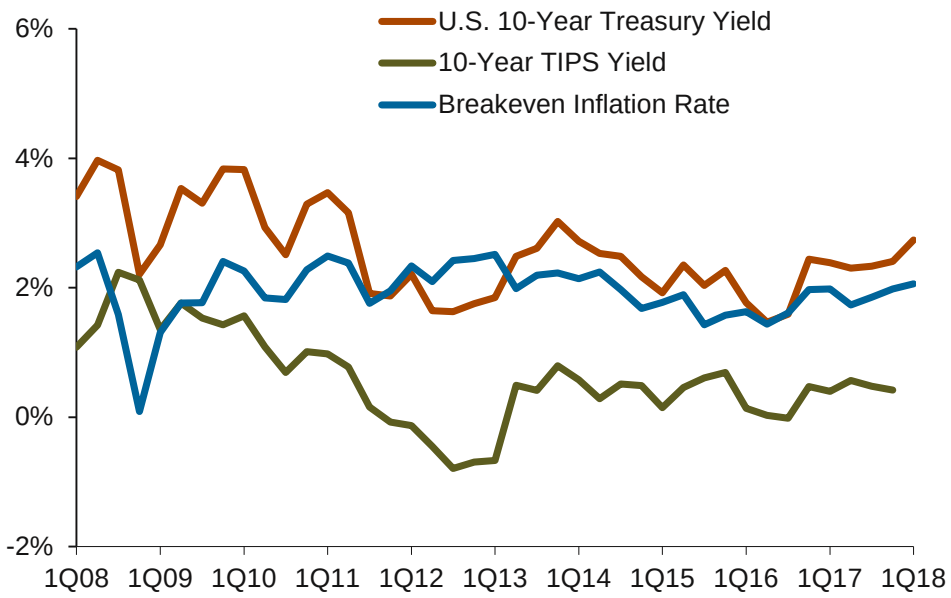
Non-U.S. Equity	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
MSCI ACWI ex USA	-1.18	16.53	6.18	5.89	2.70	9.22
MSCI ACWI ex USA Growth	-0.87	19.92	7.28	6.84	3.26	9.14
MSCI ACWI ex USA Value	-1.50	13.26	5.04	4.88	2.09	9.24
MSCI EAFE	-1.53	14.80	5.55	6.50	2.74	8.62
MSCI EAFE (local)	-4.28	5.34	3.36	8.45	4.53	7.79
Regional Equity						
MSCI Europe	-1.98	14.49	4.79	6.37	2.06	8.59
MSCI Europe (local)	-4.35	2.00	2.91	7.67	4.62	8.07
MSCI Japan	0.83	19.64	8.36	8.92	4.10	7.61
MSCI Japan (local)	-4.81	14.19	4.11	11.64	4.79	6.84
MSCI Pacific ex Japan	-3.73	8.43	5.07	3.25	4.61	11.31
MSCI Pacific ex Japan (loc)	-2.78	7.58	4.88	7.46	5.63	9.76
Emerging/Frontier Markets	**Last Quarter**	**Last Year**	**Last 3 Years**	**Last 5 Years**	**Last 10 Years**	**Last 15 Years**
MSCI Emerging Markets	1.42	24.93	8.81	4.99	3.02	12.88
MSCI Emerging Markets (loc)	0.72	22.01	9.02	8.24	5.44	13.10
MSCI Frontier Markets	5.10	27.26	7.90	8.64	-0.68	8.71
Non-U.S. Small Cap Equity						
MSCI EAFE Small Cap	0.24	23.49	12.25	11.10	6.48	12.47
MSCI Em Mkts Small Cap	0.17	18.62	7.23	4.58	4.36	13.60

Source: Callan, MSCI

Yield Curve Changes

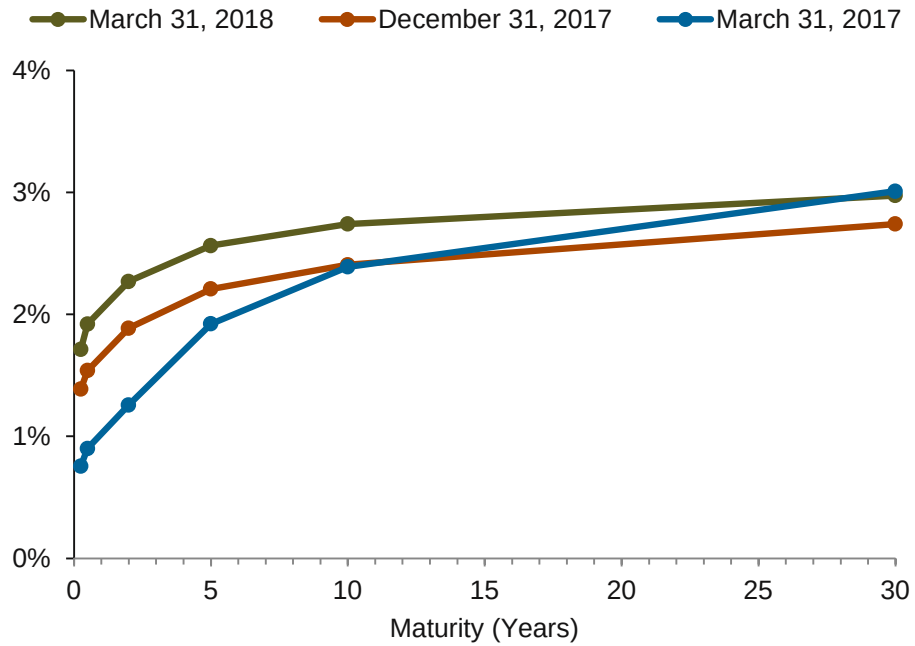
Periods Ending March 31, 2018

Historical 10-Year Yields



Source: Bloomberg

U.S. Treasury Yield Curves



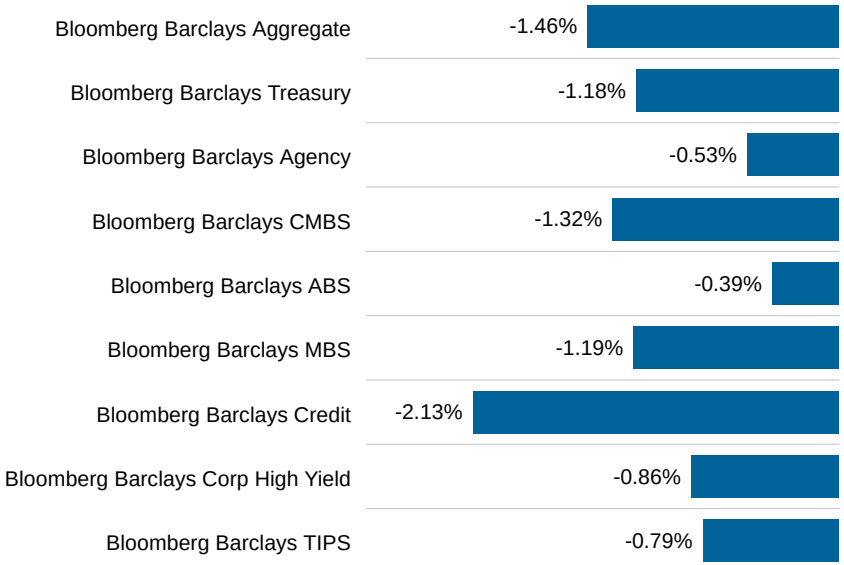
Source: U.S. Department of the Treasury

- The Treasury yield curve flattened during the quarter. The yield on the 2-year increased 38 bps while the yield on the 30-year increased 23 bps.
- The 10-year breakeven inflation rate rose to 2.05% from 1.95% at year end.

Total Rates of Return by Bond Sector

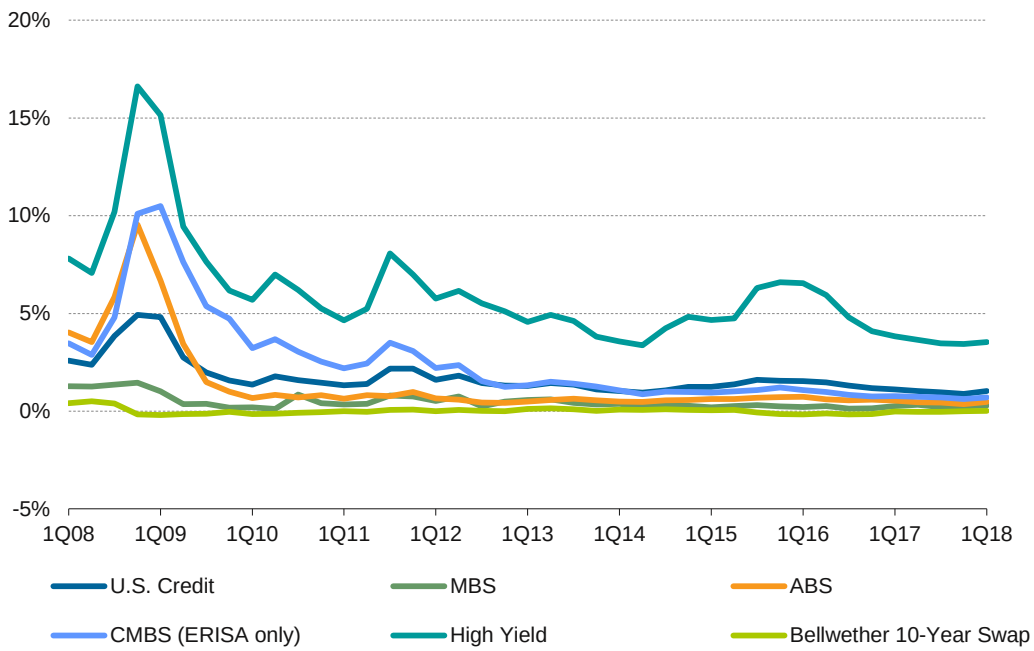
Periods Ending March 31, 2018

Total Returns



Source: Bloomberg Barclays

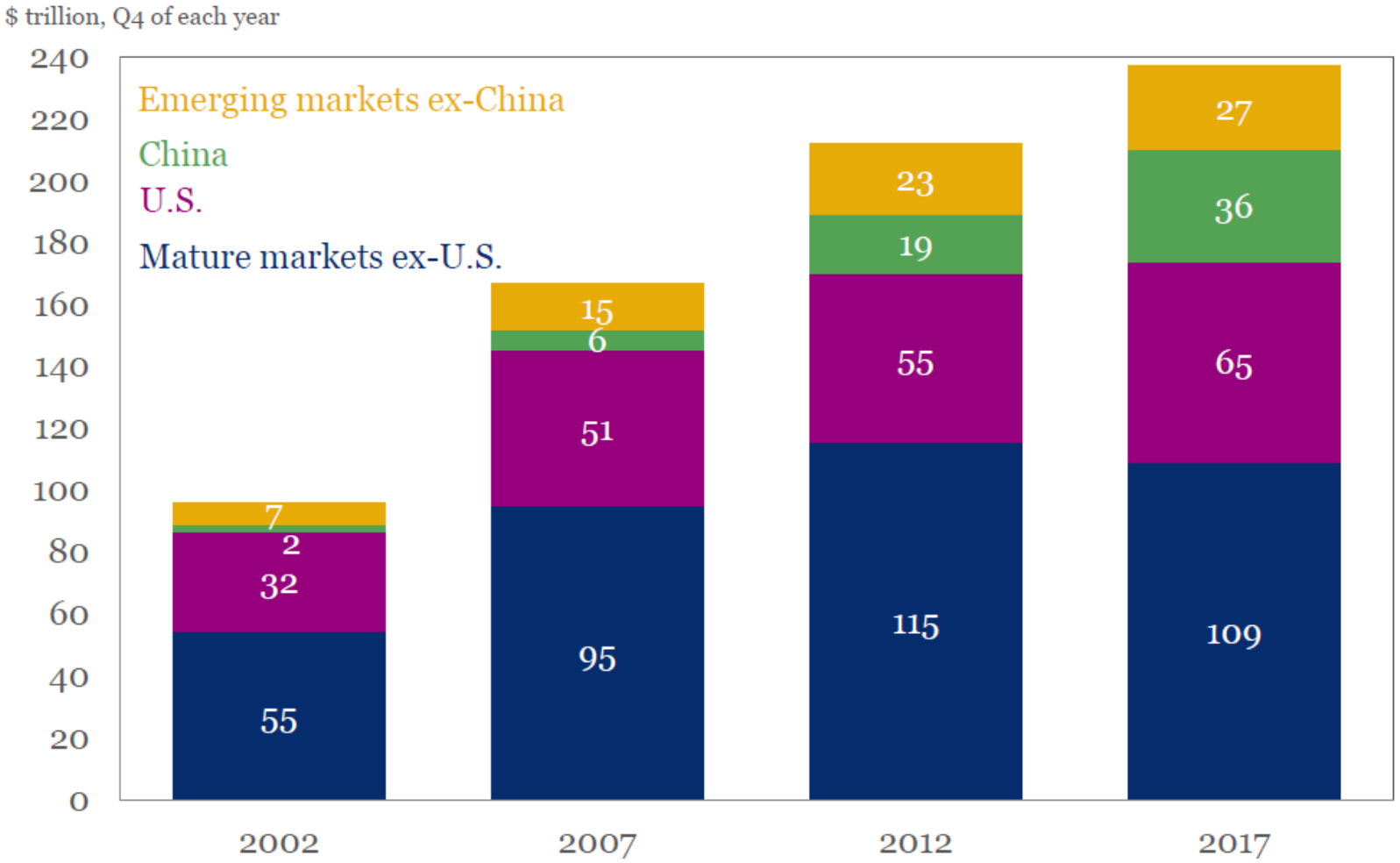
Effective Yield Over Treasuries



- Fixed income markets experienced volatility in the first quarter due to rising wage pressures, uncertainties surrounding new Fed Chair Jerome Powell, and trade tensions between the U.S. and China.
- Securitized sectors outperformed corporates, as they were more insulated from equity volatility.
- Despite recording a 0.9% loss during the quarter, valuations of high yield corporates remained near historical highs, supported by strong fundamentals and low default rates.

Nominal Global Debt Levels

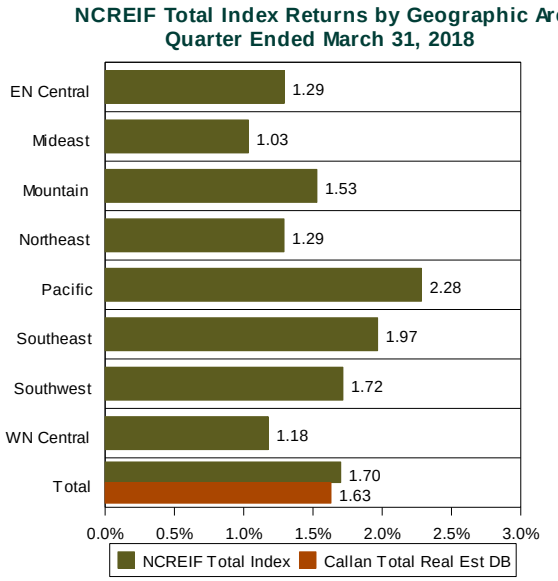
Total Debt (all sectors)

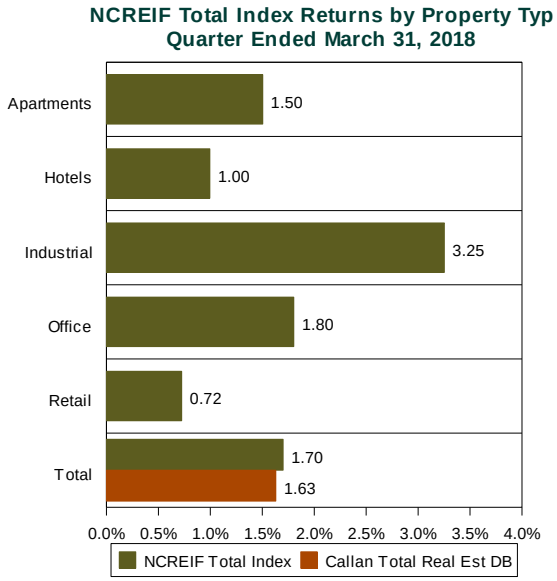


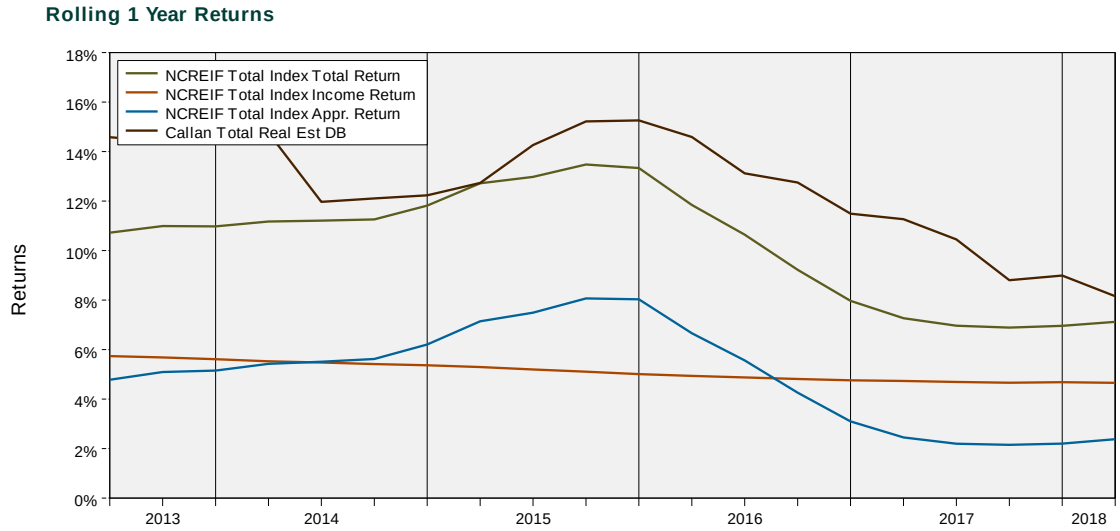
Source: Institute of International Finance "Global Debt Monitor," May 2018

- Both China and the US have led the increase in overall global debt since 2012.

Real Estate Overview







Good News for Private Equity?

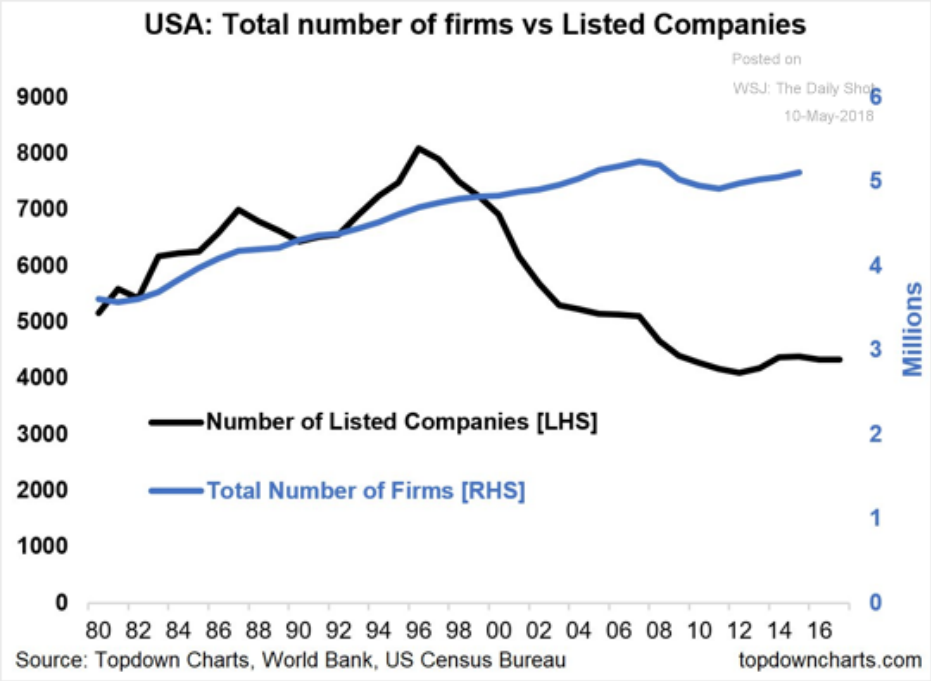


Exhibit 1: Funds Closed Jan. 1 through Dec. 31, 2017

Strategy	# of Funds	$ Amt (MM)	%
Venture Capital	531	37,371	10%
Buyouts	373	227,387	63%
Subordinated Debt	86	36,721	10%
Distressed Debt	31	30,466	8%
Secondary and Other	35	15,274	4%
Fund-of-Funds	99	14,861	4%
Totals	**1,155**	**362,078**	**100%**

Source: *Private Equity Analyst*

- The number of listed (publicly-traded) companies has been declining for two decades.
- US private equity funds raised $362 billion in 2017 which is 10% more than in 2016.
- Masayoshi Son, founder of SoftBank, created the world's largest private equity fund in 2016 – The Vision Fund. It raised over $100 billion; the rest of the VC industry raised $64 billion in that year.

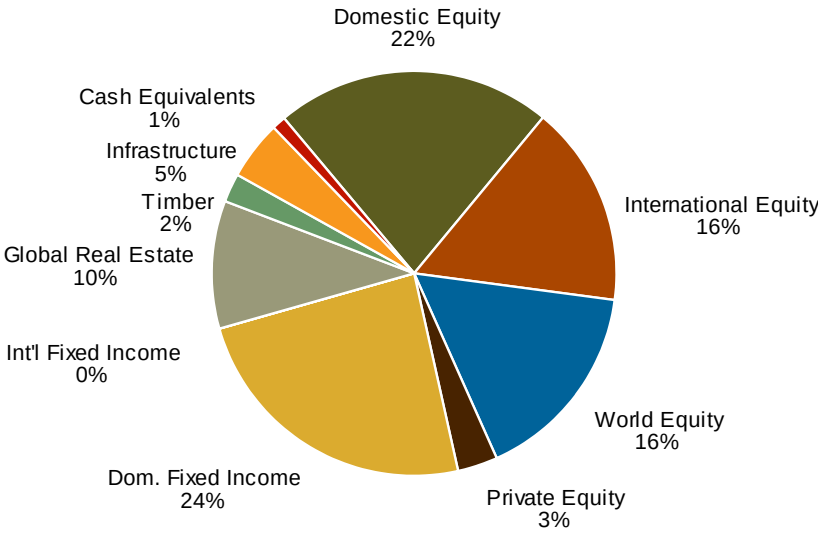
Consolidated Pension Trusts Quarterly Review

- Public Employees Retirement System
- Teachers' Fund for Retirement

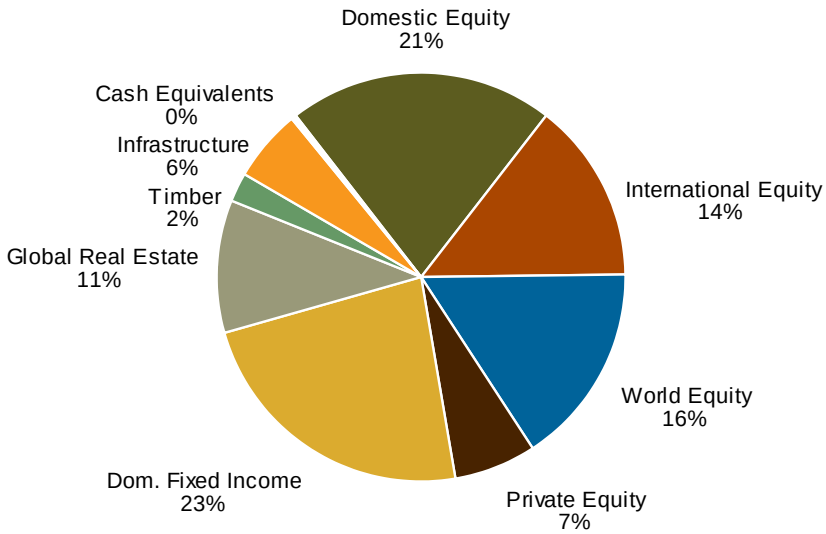
Consolidated Pension Trust Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

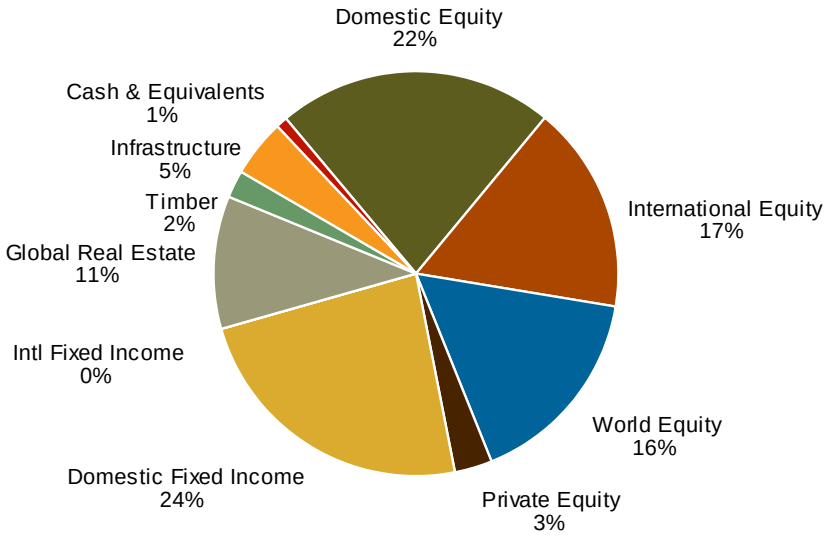


Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	1,252,298,768	22.1%	21.0%	1.1%	60,622,558
International Equity	916,187,276	16.1%	14.3%	1.8%	104,712,460
World Equity	919,079,756	16.2%	16.0%	0.2%	11,135,969
Private Equity	181,873,860	3.2%	6.5%	(3.3%)	(186,978,299)
Dom. Fixed Income	1,366,221,276	24.1%	23.3%	0.8%	44,028,048
Int'l Fixed Income	321	0.0%	0.0%	0.0%	321
Global Real Estate	580,468,130	10.2%	10.5%	(0.3%)	(15,369,975)
Timber	131,305,164	2.3%	2.3%	0.0%	788,241
Infrastructure	265,478,004	4.7%	5.7%	(1.0%)	(57,976,977)
Cash Equivalents	61,736,243	1.1%	0.4%	0.7%	39,037,647
Total	5,674,648,798	100.0%	100.0%		

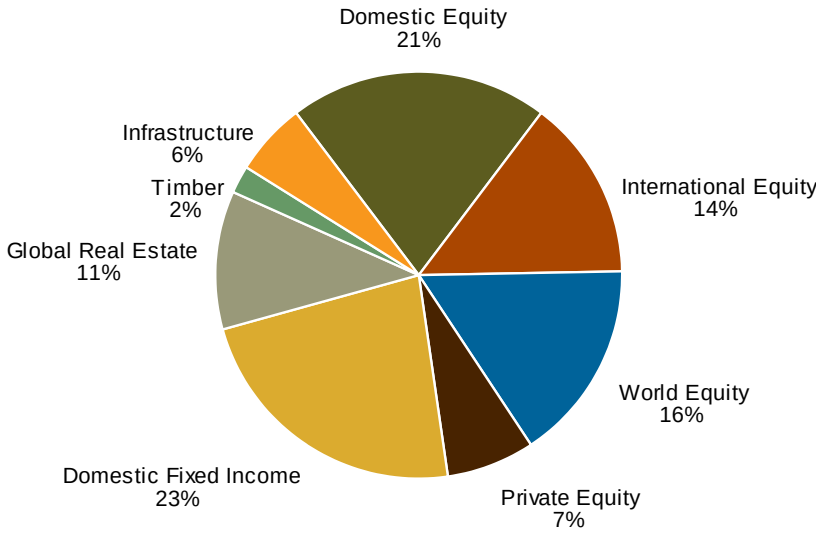
PERS Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

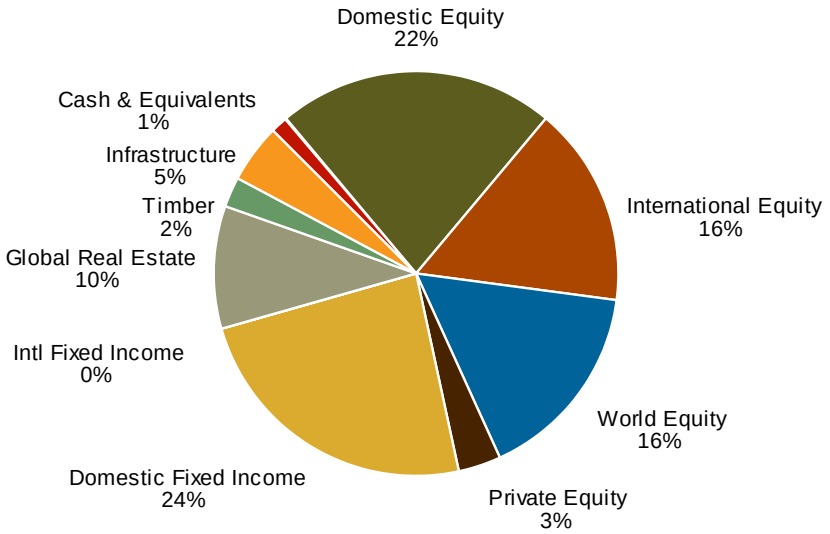


Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	662,458,076	22.1%	20.6%	1.5%	44,594,896
International Equity	496,699,098	16.6%	14.4%	2.2%	64,794,758
World Equity	487,615,573	16.3%	16.0%	0.3%	7,721,852
Private Equity	91,243,383	3.0%	7.0%	(4.0%)	(118,710,126)
Domestic Fixed Income	710,757,801	23.7%	23.0%	0.7%	20,910,593
Intl Fixed Income	161	0.0%	0.0%	0.0%	161
Global Real Estate	317,352,287	10.6%	11.0%	(0.4%)	(12,574,652)
Timber	66,399,779	2.2%	2.2%	0.0%	414,391
Infrastructure	139,163,789	4.6%	5.8%	(1.2%)	(34,797,684)
Cash & Equivalents	27,645,878	0.9%	0.0%	0.9%	27,645,878
Total	2,999,335,825	100.0%	100.0%		

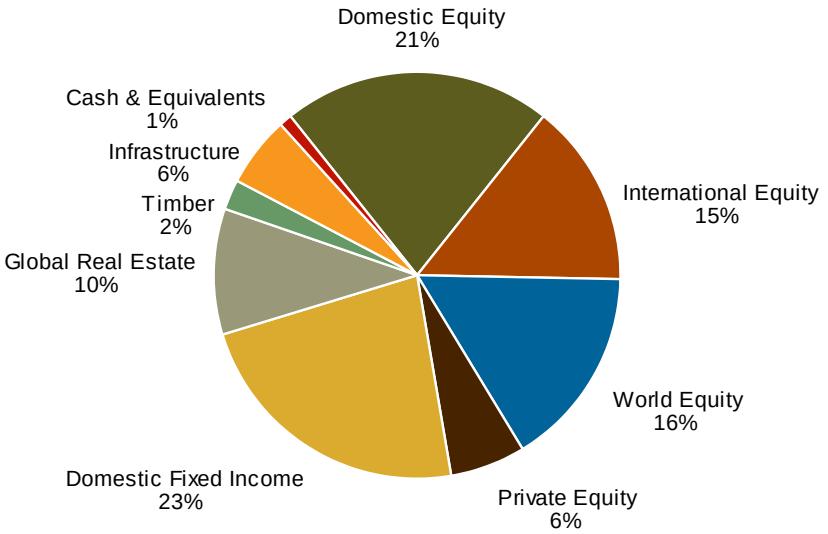
TFFR Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

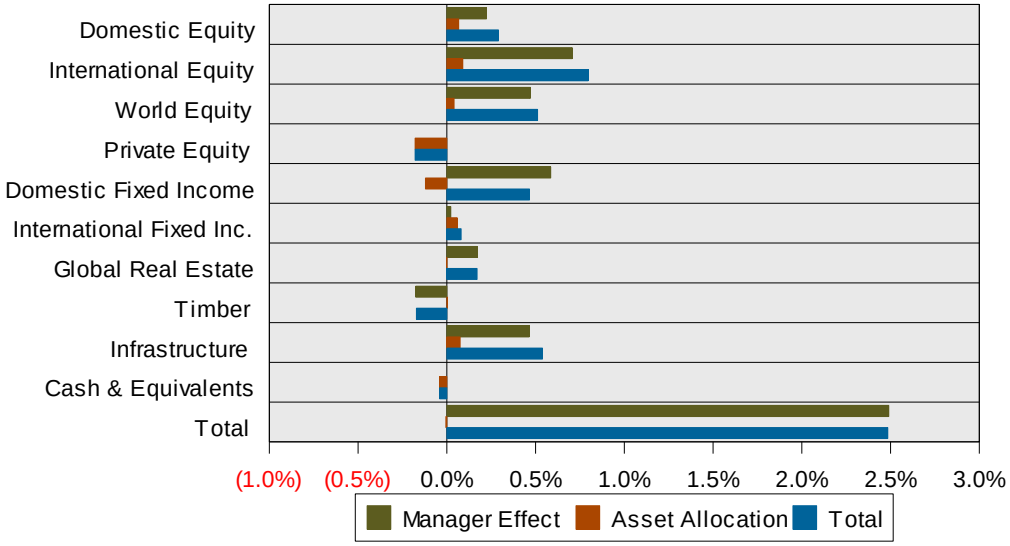


Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	546,980,228	22.2%	21.4%	0.8%	19,164,686
International Equity	394,665,861	16.0%	14.6%	1.4%	34,567,389
World Equity	398,305,986	16.1%	16.0%	0.1%	3,677,527
Private Equity	83,751,011	3.4%	6.0%	(2.6%)	(64,234,661)
Domestic Fixed Income	593,057,636	24.0%	23.0%	1.0%	25,779,241
Intl Fixed Income	149	0.0%	0.0%	0.0%	149
Global Real Estate	242,274,419	9.8%	10.0%	(0.2%)	(4,368,377)
Timber	59,270,344	2.4%	2.4%	0.0%	76,074
Infrastructure	115,393,909	4.7%	5.6%	(0.9%)	(22,726,059)
Cash & Equivalents	32,728,380	1.3%	1.0%	0.3%	8,064,101
Total	2,466,427,922	100.0%	100.0%		

PERS Performance and Attribution

As of March 31, 2018

One Year Relative Attribution Effects



1 Year Ended 03/31/2018	
Gross:	12.65%
Net of fees:	12.38%
Target:	10.16%
Net Added:	2.22%

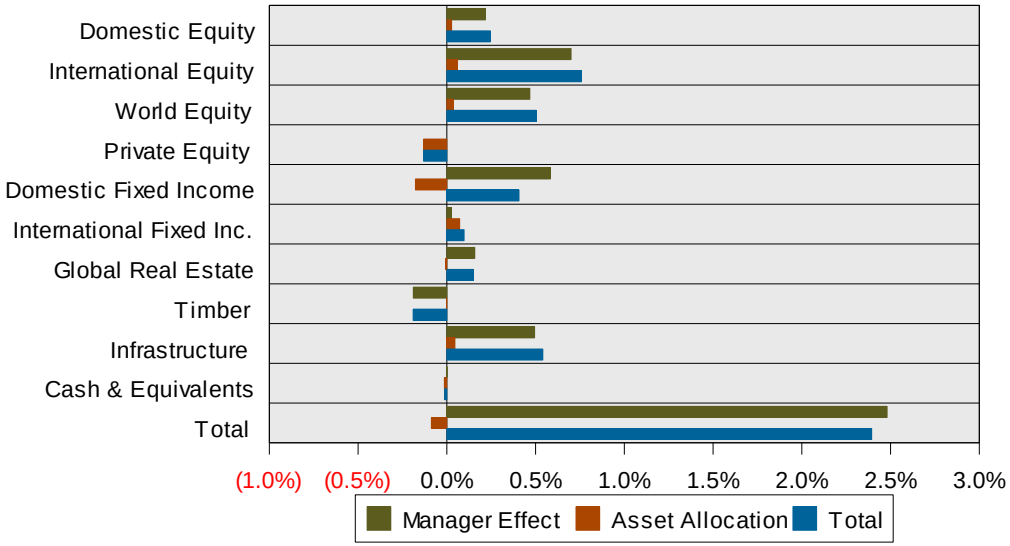
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	14.53%	13.53%	0.22%	0.07%	0.29%
International Equity	16%	14%	21.11%	16.47%	0.71%	0.09%	0.80%
World Equity	17%	16%	16.44%	13.59%	0.47%	0.04%	0.51%
Private Equity	3%	7%	13.83%	13.83%	0.00%	(0.18%)	(0.18%)
Domestic Fixed Income	19%	19%	4.77%	1.89%	0.59%	(0.12%)	0.47%
International Fixed Inc.	4%	4%	(13.75%)	(14.11%)	0.02%	0.06%	0.08%
Global Real Estate	11%	11%	8.69%	7.12%	0.17%	(0.00%)	0.17%
Timber	2%	2%	(2.97%)	3.79%	(0.17%)	0.00%	(0.17%)
Infrastructure	4%	6%	13.07%	2.44%	0.46%	0.08%	0.54%
Cash & Equivalents	1%	0%	1.24%	1.24%	0.00%	(0.04%)	(0.04%)
Total			**12.65%**	**= 10.16%**	**+ 2.49%**	**+ (0.01%)**	**2.48%**

TFFR Performance and Attribution

As of March 31, 2018

One Year Relative Attribution Effects



1 Year Ended 03/31/2018	
Gross:	12.49%
Net of fees:	12.23%
Target:	10.10%
Net Added:	2.13%

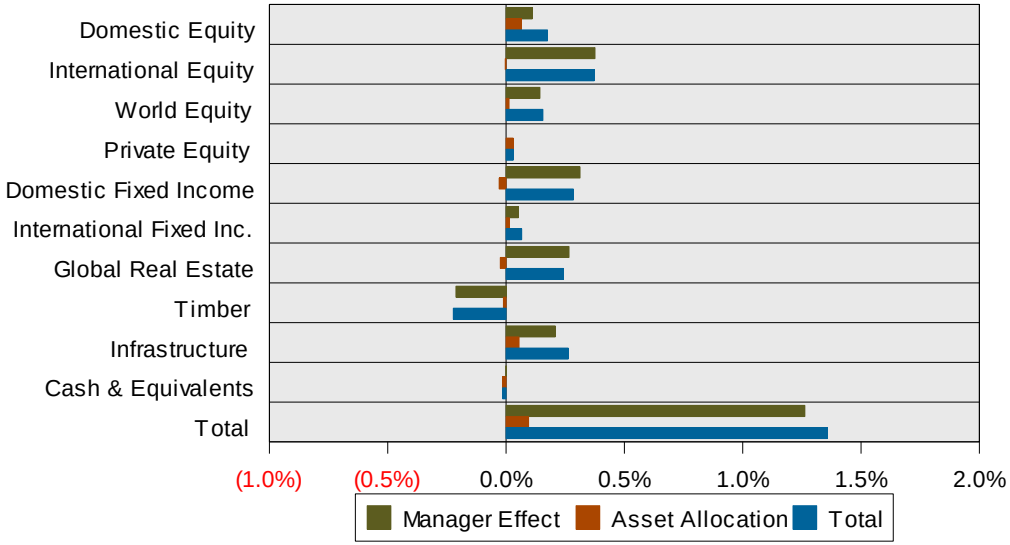
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	14.53%	13.55%	0.22%	0.03%	0.25%
International Equity	16%	15%	20.65%	15.99%	0.70%	0.06%	0.76%
World Equity	17%	16%	16.44%	13.59%	0.47%	0.04%	0.50%
Private Equity	3%	6%	13.83%	13.83%	0.00%	(0.13%)	(0.13%)
Domestic Fixed Income	18%	18%	4.67%	1.73%	0.58%	(0.18%)	0.41%
International Fixed Inc.	5%	5%	(13.74%)	(14.11%)	0.03%	0.07%	0.10%
Global Real Estate	10%	10%	8.70%	7.12%	0.16%	(0.01%)	0.15%
Timber	3%	3%	(2.97%)	3.79%	(0.19%)	(0.00%)	(0.19%)
Infrastructure	5%	5%	13.07%	2.44%	0.49%	0.05%	0.54%
Cash & Equivalents	1%	1%	1.24%	1.11%	0.00%	(0.01%)	(0.01%)
Total			**12.49%**	**= 10.10%**	**+ 2.48%**	**+ (0.09%)**	**2.39%**

PERS Performance and Attribution

As of March 31, 2018

Five Year Annualized Relative Attribution Effects



5 Years Ended 03/31/2018	
Gross:	8.65%
Net of fees:	8.34%
Target:	7.30%
Net Added:	1.04%

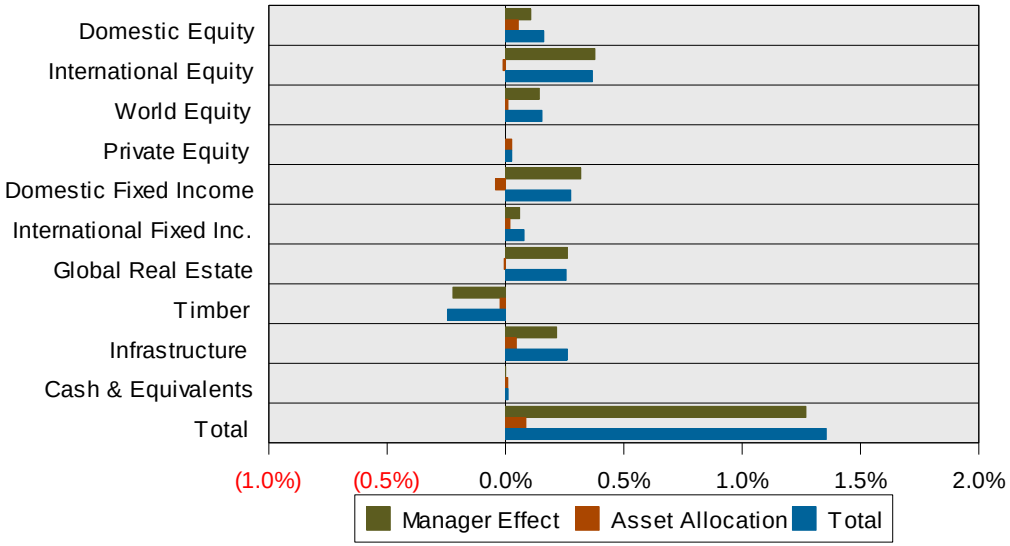
Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	13.37%	12.85%	0.11%	0.06%	0.18%
International Equity	15%	15%	8.51%	6.06%	0.38%	(0.00%)	0.37%
World Equity	16%	16%	10.57%	9.70%	0.14%	0.01%	0.16%
Private Equity	4%	6%	2.20%	2.20%	0.00%	0.03%	0.03%
Domestic Fixed Income	18%	17%	4.40%	2.74%	0.31%	(0.03%)	0.28%
International Fixed Inc.	5%	5%	(2.96%)	(3.96%)	0.05%	0.01%	0.07%
Global Real Estate	10%	10%	12.74%	10.00%	0.27%	(0.02%)	0.24%
Timber	4%	4%	0.06%	6.09%	(0.21%)	(0.01%)	(0.22%)
Infrastructure	4%	5%	6.13%	1.20%	0.21%	0.06%	0.26%
Cash & Equivalents	1%	1%	0.43%	0.40%	0.00%	(0.01%)	(0.01%)
Total			**8.65%**	**= 7.30%**	**+ 1.26%**	**+ 0.10%**	**1.36%**

TFFR Performance and Attribution

As of March 31, 2018

Five Year Annualized Relative Attribution Effects



5 Years Ended 03/31/2018	
Gross:	8.64%
Net of fees:	8.33%
Target:	7.28%
Net Added:	1.05%

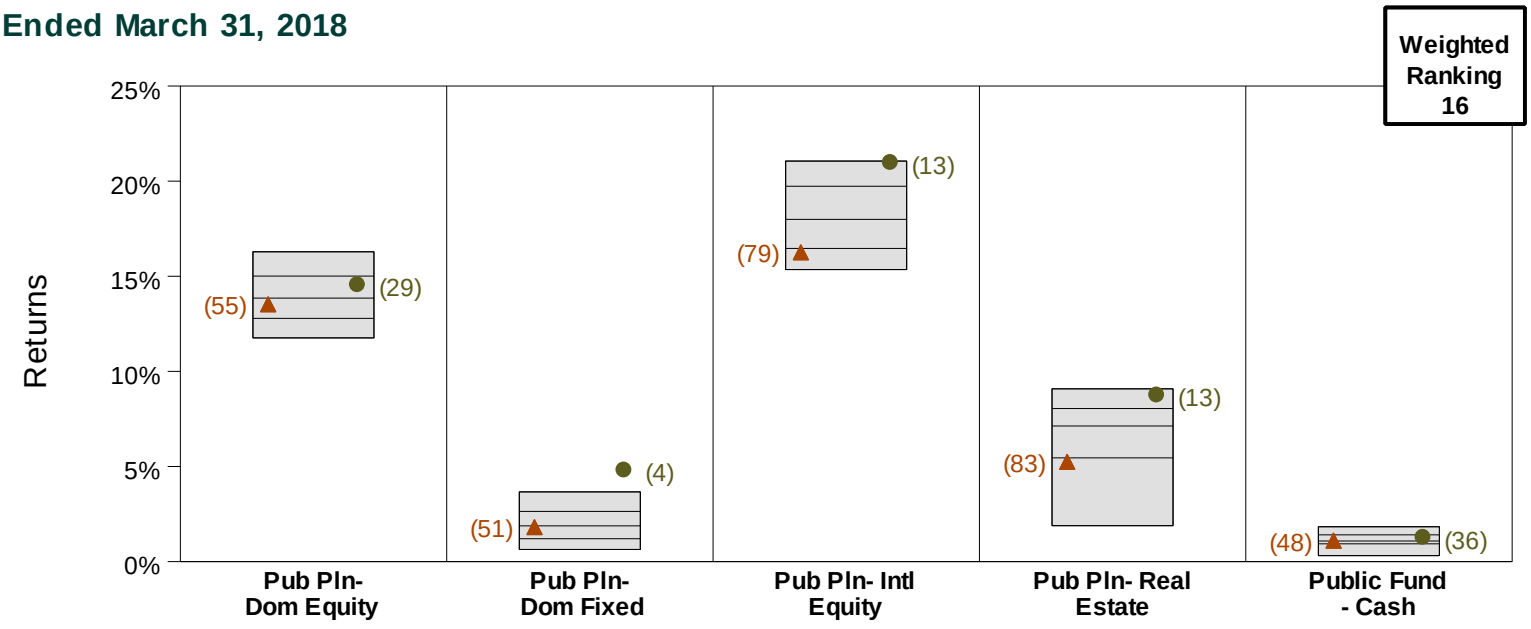
Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	13.37%	12.85%	0.11%	0.05%	0.16%
International Equity	15%	15%	8.58%	6.12%	0.38%	(0.01%)	0.37%
World Equity	16%	16%	10.57%	9.70%	0.14%	0.01%	0.15%
Private Equity	4%	5%	2.21%	2.21%	0.00%	0.03%	0.03%
Domestic Fixed Income	18%	17%	4.32%	2.60%	0.32%	(0.04%)	0.28%
International Fixed Inc.	5%	5%	(2.96%)	(3.96%)	0.06%	0.02%	0.08%
Global Real Estate	10%	10%	12.74%	10.00%	0.26%	(0.01%)	0.26%
Timber	4%	4%	0.06%	6.09%	(0.22%)	(0.02%)	(0.24%)
Infrastructure	4%	5%	6.13%	1.20%	0.22%	0.05%	0.26%
Cash & Equivalents	1%	1%	0.43%	0.34%	0.00%	0.01%	0.01%
Total			**8.64%**	**= 7.28%**	**+ 1.27%**	**+ 0.09%**	**1.36%**

Asset Class Composite Results

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

Total Asset Class Performance
One Year Ended March 31, 2018



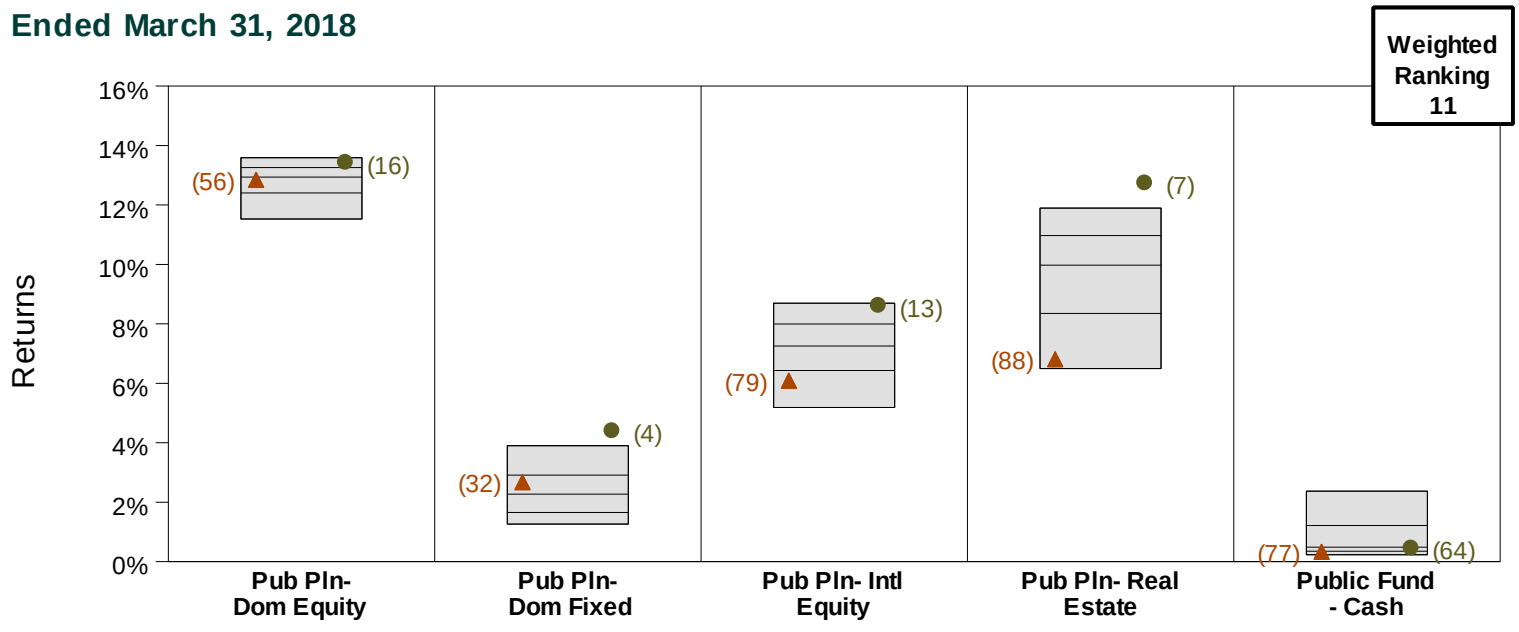
	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	16.29	3.67	21.06	9.09	1.84
25th Percentile	15.01	2.64	19.73	8.05	1.41
Median	13.86	1.89	17.99	7.13	1.09
75th Percentile	12.79	1.21	16.47	5.46	0.94
90th Percentile	11.76	0.65	15.36	1.90	0.32
Asset Class Composite ●	14.49	4.74	20.92	8.70	1.22
Composite Benchmark ▲	13.53	1.82	16.26	5.25	1.11

- All asset classes outperformed their respective benchmarks over the last year.
- Domestic fixed income, international equity and real estate all placed in the top quartile over the last year.

Asset Class Composite Results

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

Total Asset Class Performance
Five Years Ended March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	13.59	3.90	8.70	11.90	2.37
25th Percentile	13.26	2.91	8.00	10.97	1.22
Median	12.94	2.27	7.26	9.98	0.49
75th Percentile	12.41	1.66	6.43	8.35	0.35
90th Percentile	11.53	1.26	5.18	6.49	0.23
Asset Class Composite ●	13.40	4.36	8.58	12.70	0.42
Composite Benchmark ▲	12.85	2.68	6.09	6.81	0.34

- All asset classes led their respective benchmarks over the last five years.
- Domestic equity and fixed income, international equity and real estate are all in the top quartile over the last five years.

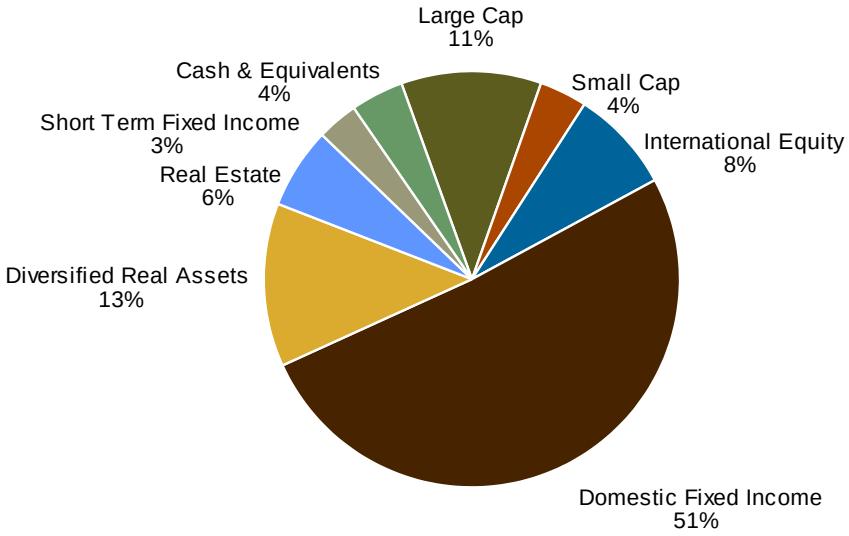
Consolidated Insurance Trust Quarterly Review

- Workforce Safety & Insurance Legacy Fund
- Budget Stabilization Fund

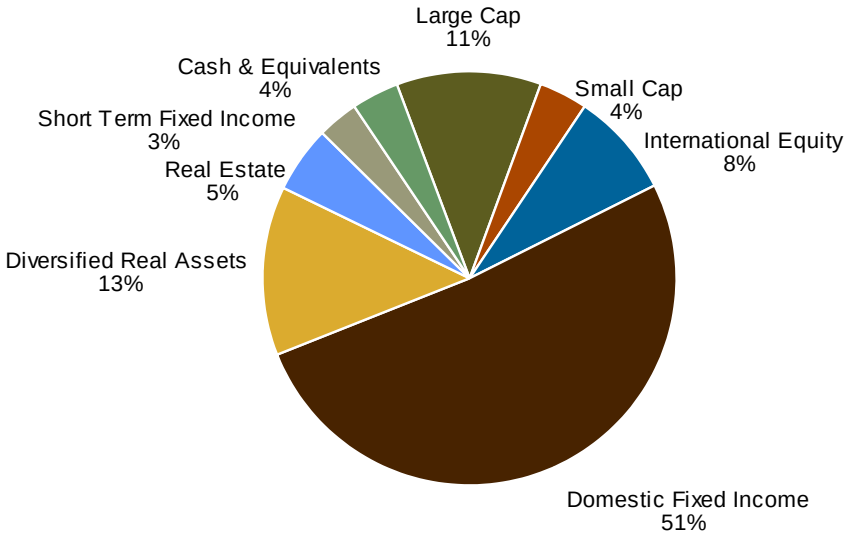
Consolidated Insurance Trust Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

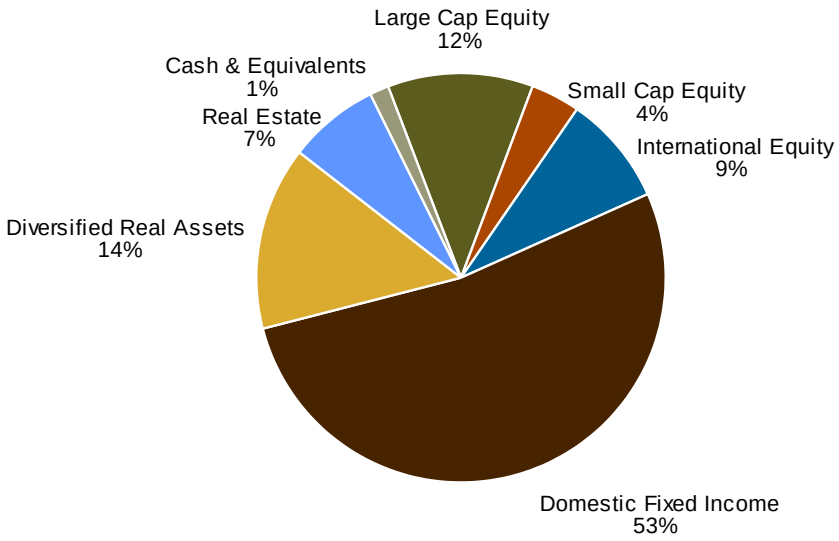


Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap	241,262	10.9%	11.3%	(0.4%)	(9,801)
Small Cap	82,619	3.7%	3.8%	(0.1%)	(1,810)
International Equity	176,959	8.0%	8.2%	(0.2%)	(5,228)
Domestic Fixed Income	1,136,259	51.1%	51.4%	(0.3%)	(5,743)
Diversified Real Assets	283,023	12.7%	13.2%	(0.5%)	(10,253)
Real Estate	139,002	6.3%	5.2%	1.1%	23,469
Short Term Fixed Income	70,468	3.2%	3.2%	(0.0%)	(630)
Cash & Equivalents	92,202	4.1%	3.7%	0.4%	9,995
Total	2,221,794	100.0%	100.0%		

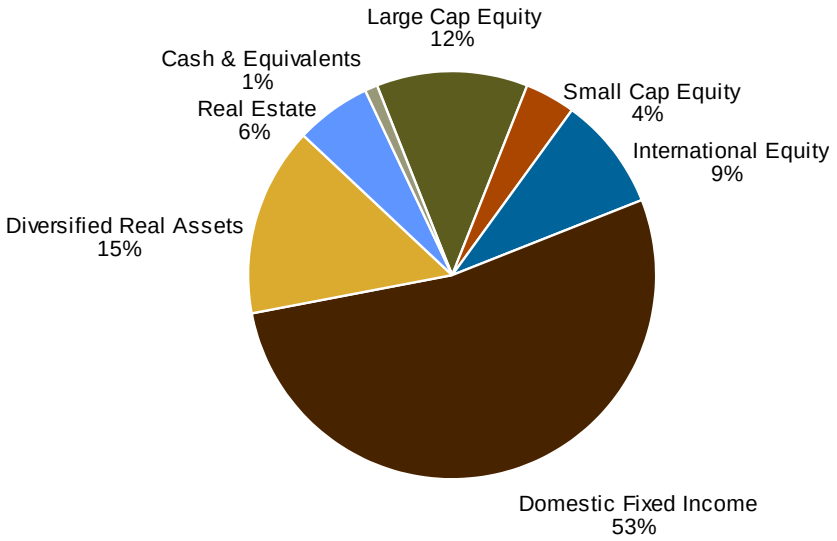
WSI Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

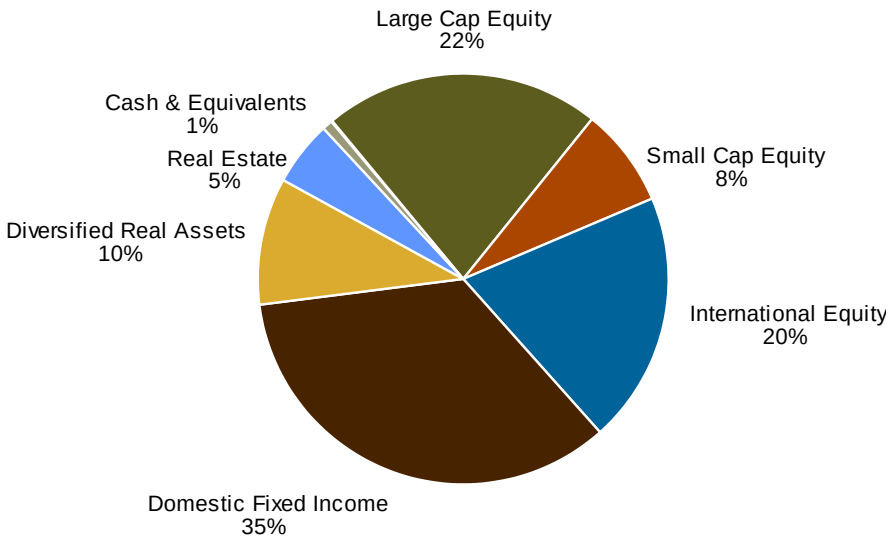


Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap Equity	222,135	11.5%	12.0%	(0.5%)	(8,901)
Small Cap Equity	74,395	3.9%	4.0%	(0.1%)	(2,617)
International Equity	166,883	8.7%	9.0%	(0.3%)	(6,394)
Domestic Fixed Income	1,015,558	52.7%	53.0%	(0.3%)	(4,850)
Diversified Real Assets	278,602	14.5%	15.0%	(0.5%)	(10,193)
Real Estate	138,935	7.2%	6.0%	1.2%	23,417
Cash & Equivalents	28,790	1.5%	1.0%	0.5%	9,537
Total	1,925,297	100.0%	100.0%		

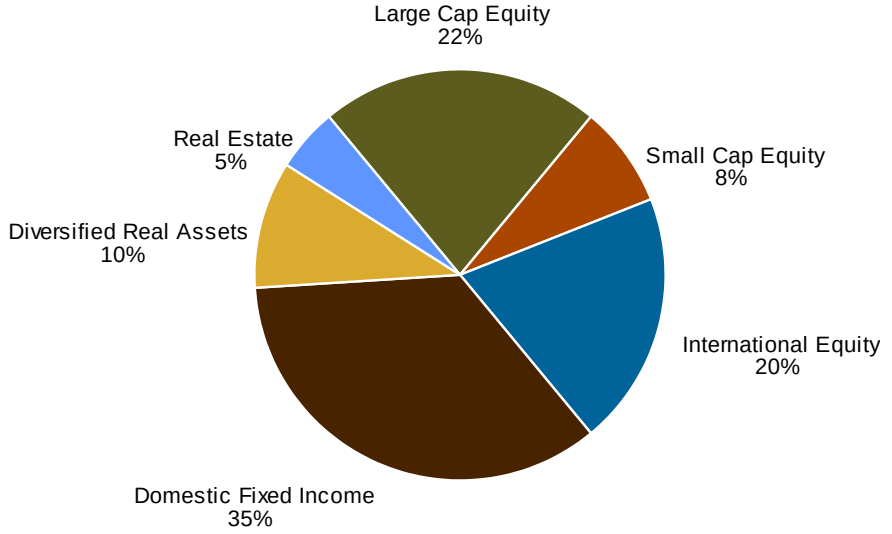
Legacy Fund Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

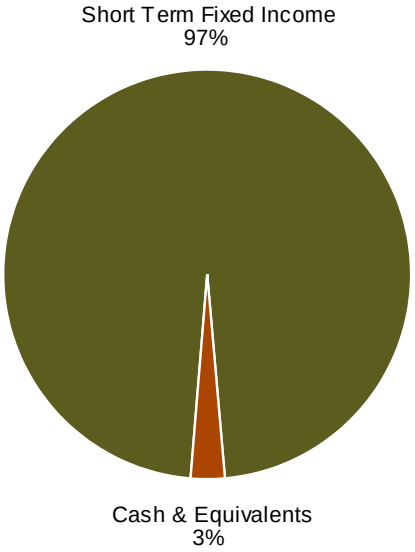


Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap Equity	1,172,062	21.8%	22.0%	(0.2%)	(10,449)
Small Cap Equity	420,931	7.8%	8.0%	(0.2%)	(9,073)
International Equity	1,066,336	19.8%	20.0%	(0.2%)	(8,675)
Domestic Fixed Income	1,862,117	34.6%	35.0%	(0.4%)	(19,151)
Diversified Real Assets	537,030	10.0%	10.0%	(0.0%)	(475)
Real Estate	272,965	5.1%	5.0%	0.1%	4,213
Cash & Equivalents	43,611	0.8%	0.0%	0.8%	43,611
Total	5,375,053	100.0%	100.0%		

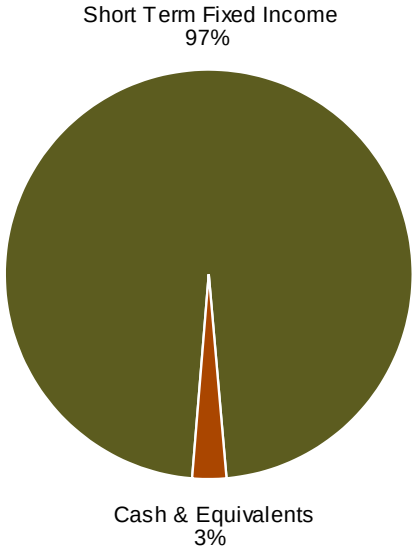
Budget Stabilization Fund Allocation

As of March 31, 2018

Actual Asset Allocation



Target Asset Allocation

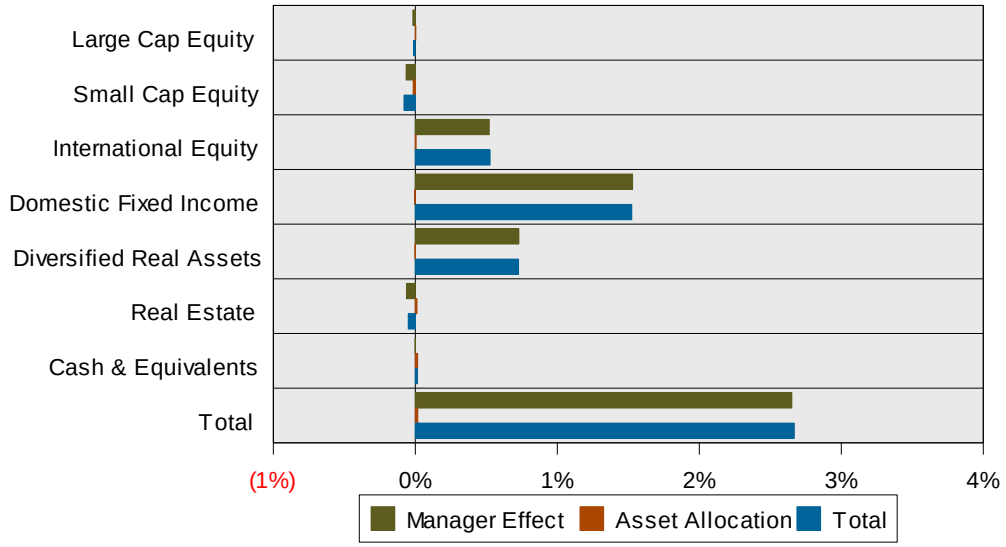


Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Short Term Fixed Income	37,278	97.3%	97.3%	0.0%	0
Cash & Equivalents	1,046	2.7%	2.7%	(0.0%)	(0)
Total	38,324	100.0%	100.0%		

WSI Performance and Attribution

As of March 31, 2018

One Year Relative Attribution Effects



1 Year Ended 03/31/2018	
Gross:	7.97%
Net of fees:	7.76%
Target:	5.30%
Net Added:	2.46%

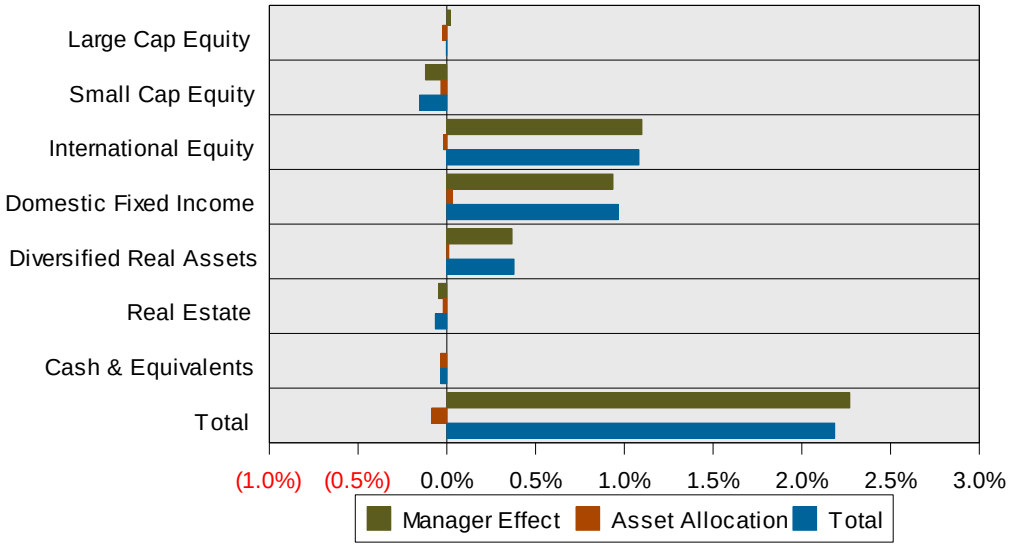
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	12%	13.79%	13.98%	(0.02%)	0.00%	(0.01%)
Small Cap Equity	4%	4%	10.04%	11.79%	(0.06%)	(0.01%)	(0.08%)
International Equity	9%	9%	20.15%	13.92%	0.52%	0.01%	0.53%
Domestic Fixed Income	53%	53%	4.02%	1.20%	1.53%	(0.01%)	1.53%
Diversified Real Assets	14%	15%	11.05%	5.70%	0.73%	(0.00%)	0.73%
Real Estate	7%	6%	6.26%	7.12%	(0.06%)	0.01%	(0.05%)
Cash & Equivalents	1%	1%	0.99%	1.11%	(0.00%)	0.02%	0.02%
Total			**7.97%**	**= 5.30%**	**+ 2.65%**	**+ 0.02%**	**2.67%**

Legacy Fund Performance and Attribution

As of March 31, 2018

One Year Relative Attribution Effects



1 Year Ended 03/31/2018	
Gross:	10.45%
Net of fees:	10.23%
Target:	8.27%
Net Added:	1.96%

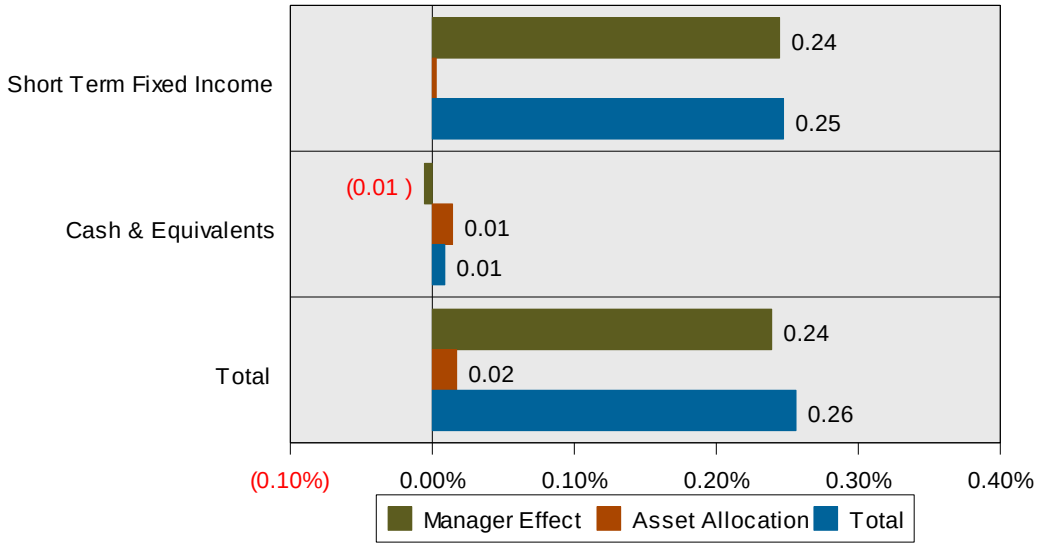
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	22%	22%	14.08%	13.98%	0.02%	(0.02%)	(0.00%)
Small Cap Equity	8%	8%	10.22%	11.79%	(0.12%)	(0.03%)	(0.15%)
International Equity	20%	20%	19.76%	13.92%	1.10%	(0.02%)	1.08%
Domestic Fixed Income	34%	35%	3.80%	1.20%	0.94%	0.03%	0.97%
Diversified Real Assets	10%	10%	11.03%	7.09%	0.37%	0.01%	0.38%
Real Estate	5%	5%	6.24%	7.12%	(0.04%)	(0.02%)	(0.06%)
Cash & Equivalents	1%	0%	0.99%	0.99%	0.00%	(0.03%)	(0.03%)
Total			**10.45%**	**= 8.27%**	**+ 2.27%**	**+ (0.08%)**	**2.19%**

Budget Stabilization Fund Performance and Attribution

As of March 31, 2018

One Year Relative Attribution Effects



1 Year Ended 03/31/2018	
Gross:	0.48%
Net of fees:	0.35%
Target:	0.22%
Net Added:	0.13%

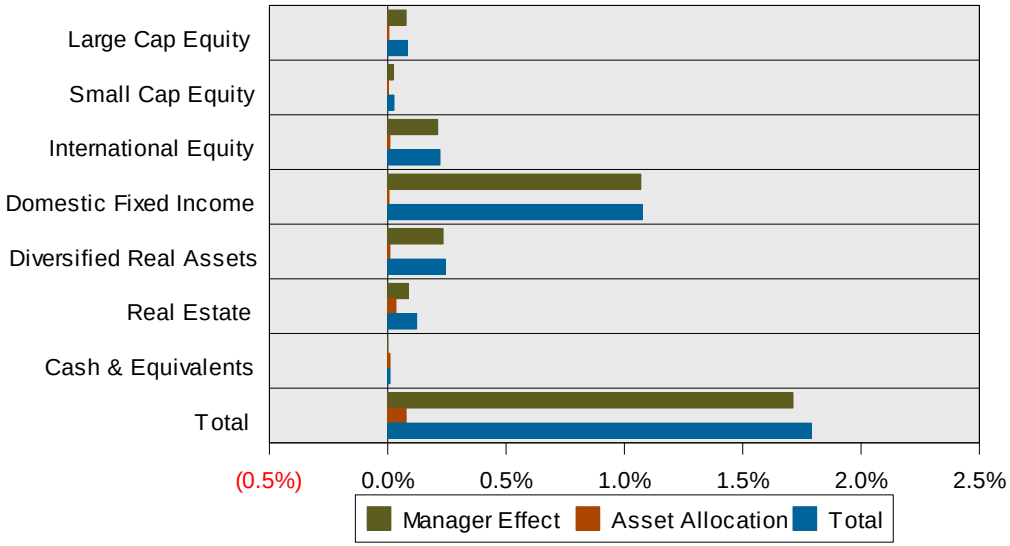
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	95%	95%	0.49%	0.24%	0.24%	0.00%	0.25%
Cash & Equivalents	5%	5%	0.99%	1.11%	(0.01%)	0.01%	0.01%
Total			**0.48%**	**= 0.22%**	**+ 0.24%**	**+ 0.02%**	**0.26%**

WSI Performance and Attribution

As of March 31, 2018

Five Year Annualized Relative Attribution Effects



5 Years Ended 03/31/2018	
Gross:	6.22%
Net of fees:	5.98%
Target:	4.43%
Net Added:	1.55%

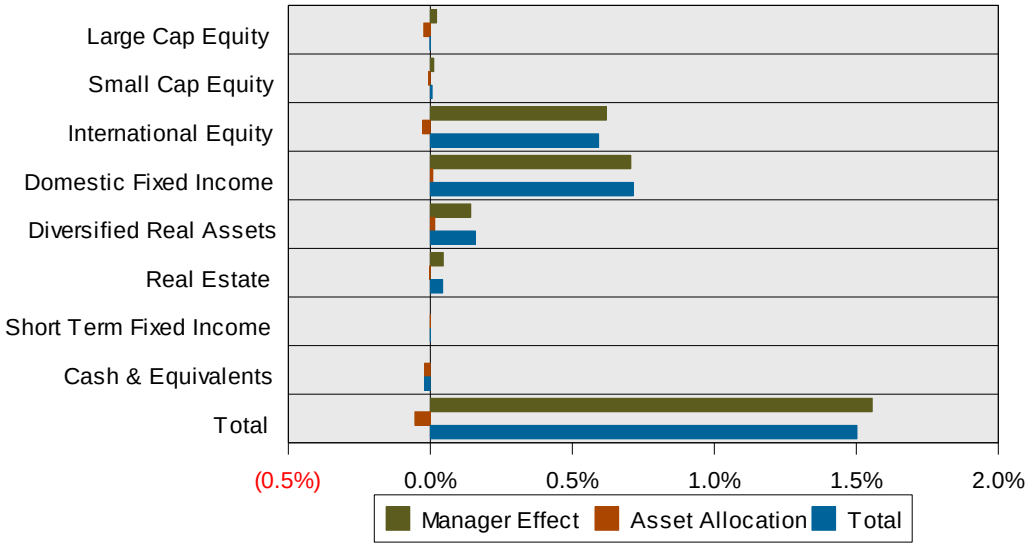
Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	11%	13.93%	13.17%	0.08%	0.00%	0.08%
Small Cap Equity	4%	4%	12.18%	11.47%	0.02%	0.00%	0.03%
International Equity	8%	9%	8.74%	6.29%	0.21%	0.01%	0.22%
Domestic Fixed Income	52%	52%	3.86%	1.82%	1.07%	0.01%	1.08%
Diversified Real Assets	16%	17%	4.01%	2.56%	0.23%	0.01%	0.24%
Real Estate	7%	6%	11.35%	10.00%	0.09%	0.03%	0.12%
Cash & Equivalents	1%	1%	0.29%	0.34%	(0.00%)	0.01%	0.01%
Total			**6.22%**	**= 4.43%**	**+ 1.71%**	**+ 0.08%**	**1.79%**

Legacy Fund Performance and Attribution

As of March 31, 2018

Three Year Annualized Relative Attribution Effects



3 Years Ended 03/31/2018	
Gross:	6.80%
Net of fees:	6.56%
Target:	5.30%
Net Added:	1.26%

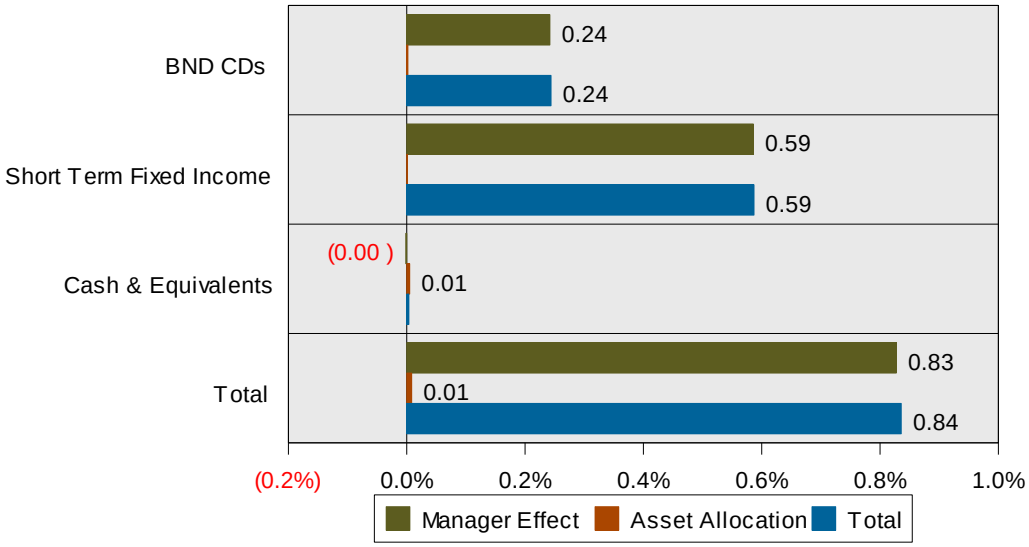
Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	22%	22%	10.52%	10.39%	0.02%	(0.02%)	(0.00%)
Small Cap Equity	8%	8%	8.61%	8.39%	0.01%	(0.01%)	0.01%
International Equity	20%	20%	8.35%	5.22%	0.62%	(0.03%)	0.59%
Domestic Fixed Income	35%	35%	3.23%	1.20%	0.71%	0.01%	0.72%
Diversified Real Assets	10%	10%	4.40%	2.92%	0.14%	0.02%	0.16%
Real Estate	6%	5%	9.57%	8.72%	0.05%	(0.00%)	0.04%
Short Term Fixed Income	0%	0%	-	-	0.00%	(0.00%)	(0.00%)
Cash & Equivalents	0%	0%	0.45%	0.45%	0.00%	(0.02%)	(0.02%)
Total			**6.80%**	**= 5.30%**	**+ 1.56%**	**+ (0.05%)**	**1.50%**

Budget Stabilization Fund Performance and Attribution

As of March 31, 2018

Five Year Annualized Relative Attribution Effects



5 Years Ended 03/31/2018

Gross:	1.46%
Net of fees:	1.31%
Target:	0.62%
Net Added:	0.69%

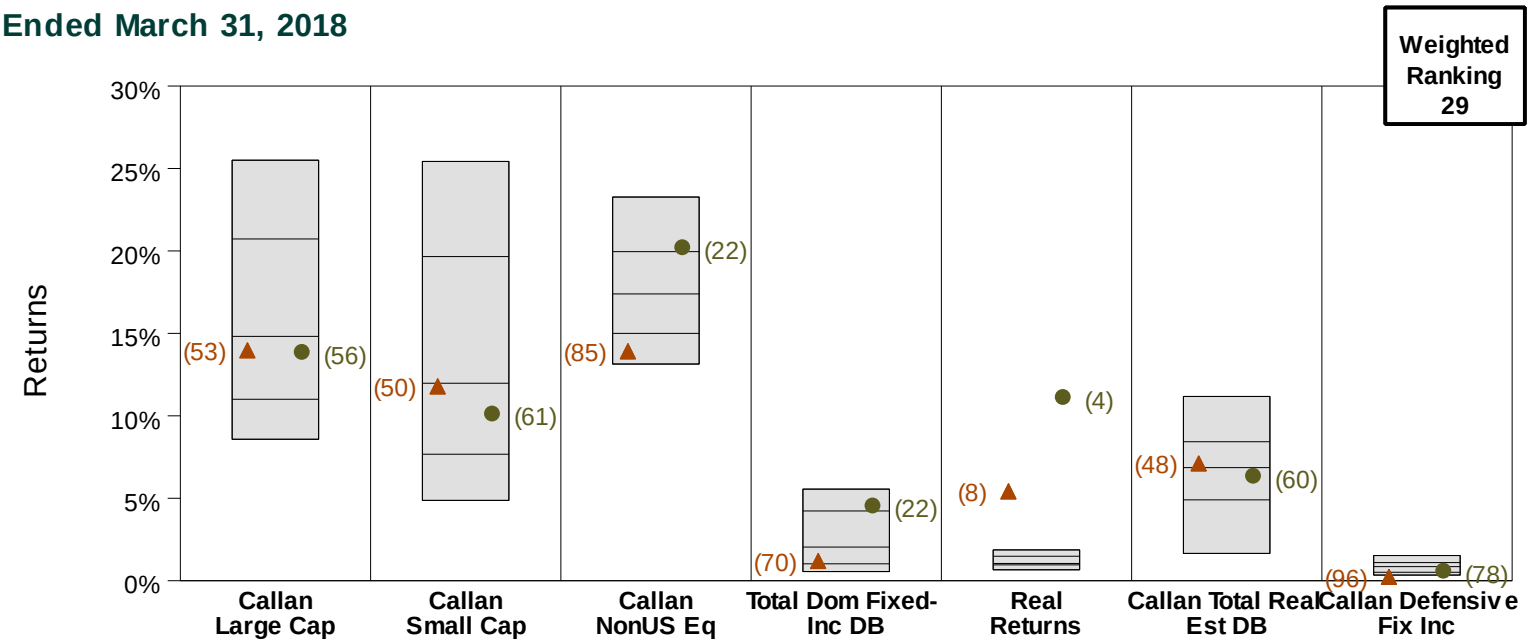
Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	14%	14%	-	-	0.24%	0.00%	0.24%
Short Term Fixed Income	83%	83%	1.28%	0.57%	0.59%	0.00%	0.59%
Cash & Equivalents	3%	3%	0.29%	0.34%	(0.00%)	0.01%	0.00%
Total			**1.46%**	**= 0.62%**	**+ 0.83%**	**+ 0.01%**	**0.84%**

Asset Class Composite Results

Consolidated Insurance Trust Asset Class Results vs. Callan Style Groups

Total Asset Class Performance
One Year Ended March 31, 2018



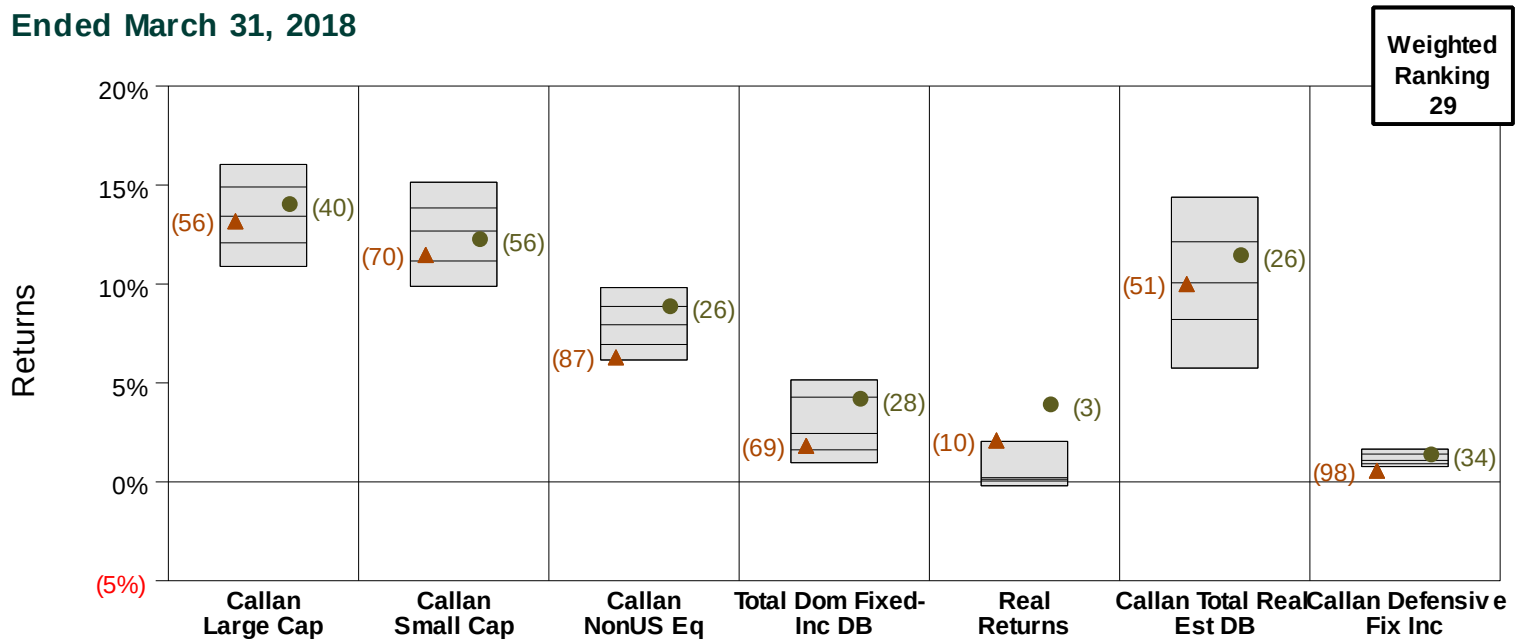
	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Defensive Fix Inc
10th Percentile	25.50	25.43	23.28	5.56	1.88	11.18	1.54
25th Percentile	20.73	19.66	19.97	4.23	1.49	8.44	1.11
Median	14.82	11.98	17.40	2.05	1.05	6.87	0.86
75th Percentile	11.01	7.68	15.01	1.03	0.96	4.91	0.51
90th Percentile	8.58	4.88	13.14	0.56	0.67	1.66	0.35
Asset Class Composite ●	13.77	10.04	20.12	4.45	11.04	6.26	0.50
Composite Benchmark ▲	13.98	11.79	13.92	1.20	5.43	7.12	0.24

- Non-U.S. equity, domestic fixed income and real return placed in the top quartile over the last year.
- Large and small cap equity trailed their benchmarks and placed below median over the last year.

Asset Class Composite Results

Consolidated Insurance Trust Asset Class Results vs. Callan Style Groups

Total Asset Class Performance
Five Years Ended March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Defensive Fix Inc
10th Percentile	16.04	15.15	9.81	5.16	2.05	14.38	1.66
25th Percentile	14.91	13.85	8.87	4.28	0.21	12.13	1.41
Median	13.42	12.68	7.94	2.45	0.13	10.06	1.09
75th Percentile	12.08	11.16	6.95	1.62	0.05	8.21	0.91
90th Percentile	10.89	9.88	6.16	0.97	(0.20)	5.75	0.77
Asset Class Composite ●	13.95	12.17	8.79	4.10	3.82	11.36	1.29
Composite Benchmark ▲	13.17	11.47	6.29	1.82	2.10	10.00	0.57

- All public market asset classes outperformed their respective benchmarks over the last five years.
- Small cap equity placed below median versus peers over the last five years.

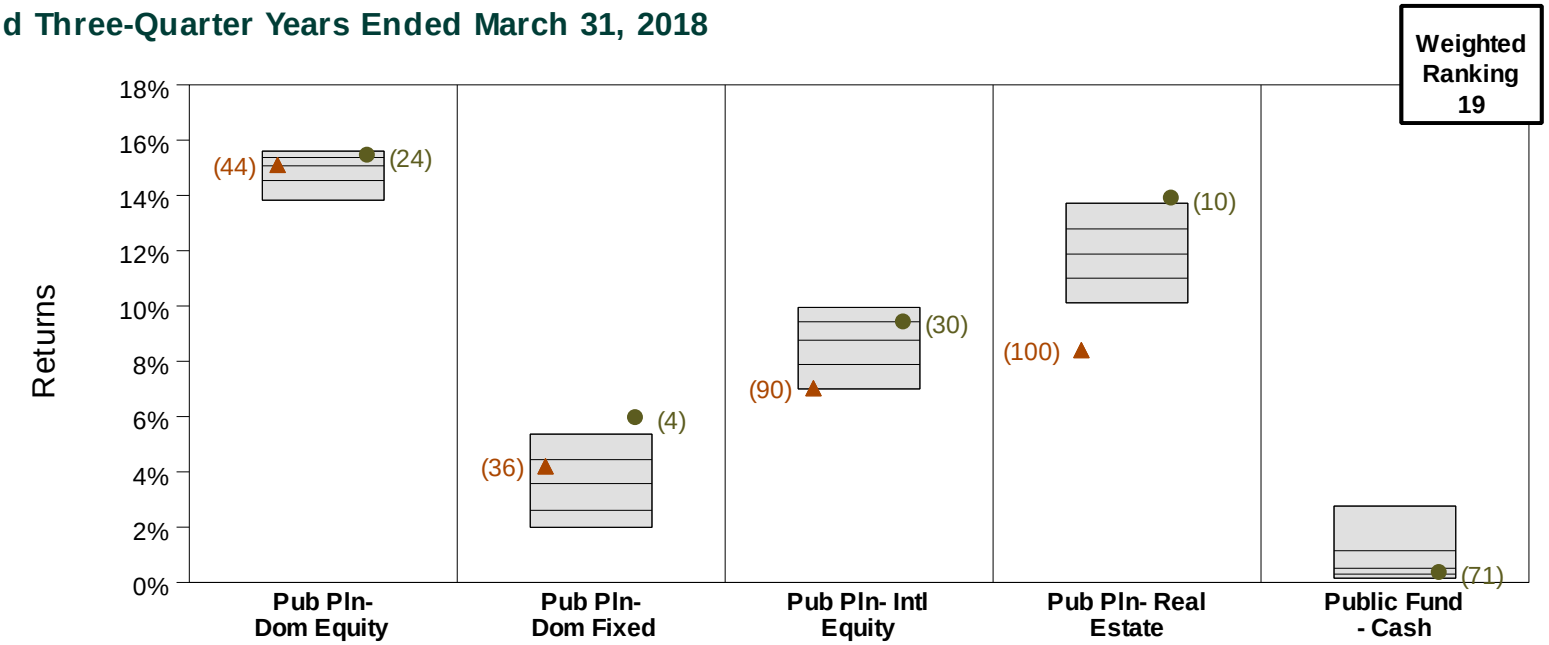
Appendix

Consolidated Asset Class Rankings

Asset Class Composite Results

PERS' Asset Class Results vs. Other Public Pension Funds

Total Asset Class Performance
Seven and Three-Quarter Years Ended March 31, 2018



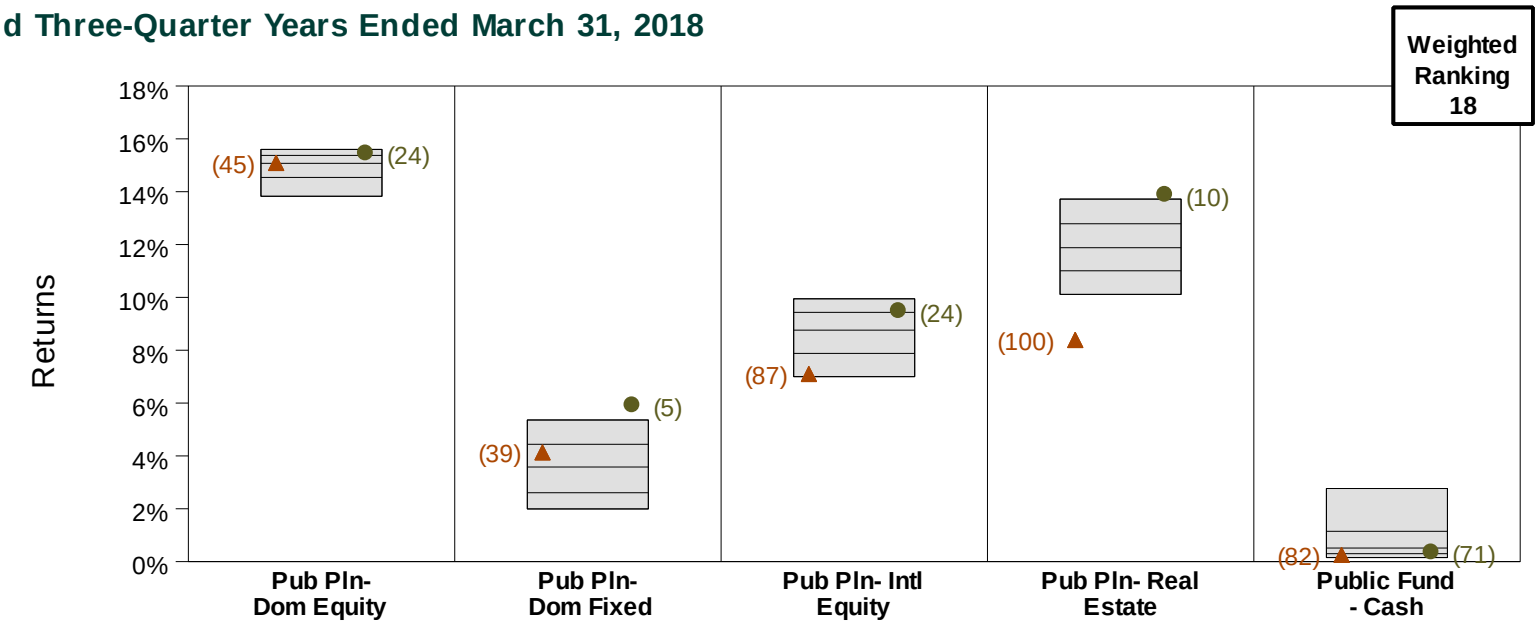
	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	15.60	5.37	9.95	13.72	2.77
25th Percentile	15.37	4.44	9.43	12.79	1.15
Median	15.08	3.58	8.76	11.88	0.51
75th Percentile	14.54	2.61	7.88	11.01	0.30
90th Percentile	13.83	2.00	7.01	10.12	0.16
Asset Class Composite ●	15.42	5.92	9.38	13.85	0.32
Composite Benchmark ▲	15.10	4.20	7.03	8.41	-

- Public market asset classes have outperformed their benchmarks over the last 7¾ years.
- Domestic fixed income and real estate in top decile.

Asset Class Composite Results

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

Total Asset Class Performance
Seven and Three-Quarter Years Ended March 31, 2018



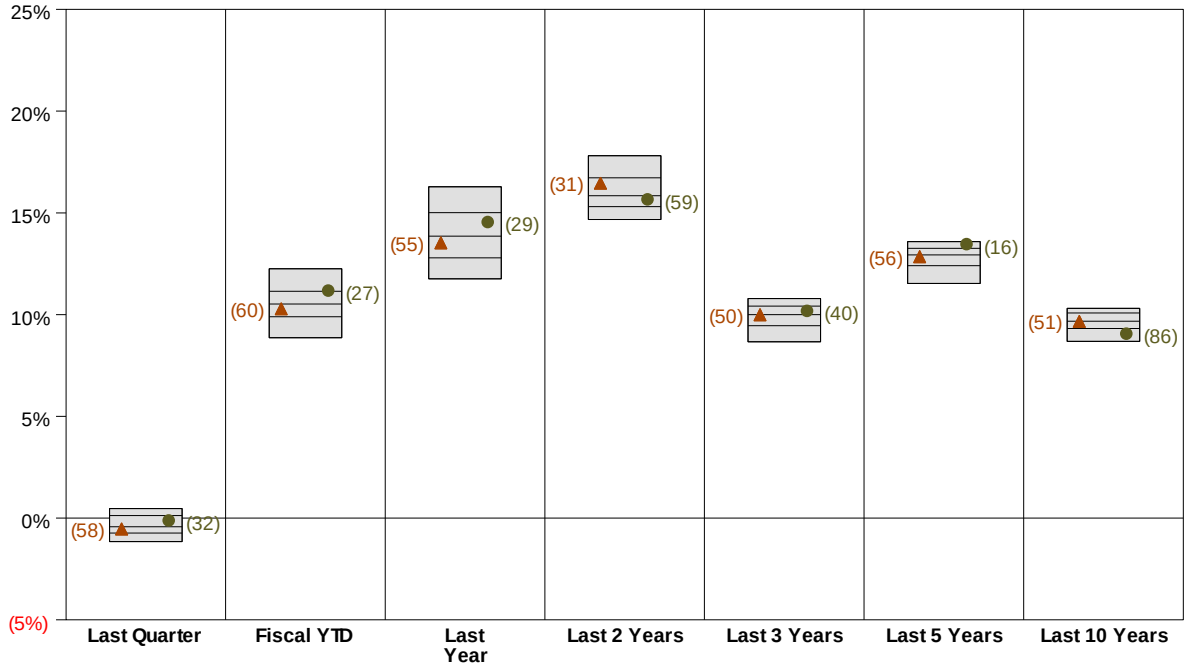
	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	15.60	5.37	9.95	13.72	2.77
25th Percentile	15.37	4.44	9.43	12.79	1.15
Median	15.08	3.58	8.76	11.88	0.51
75th Percentile	14.54	2.61	7.88	11.01	0.30
90th Percentile	13.83	2.00	7.01	10.12	0.16
Asset Class Composite ●	15.41	5.89	9.45	13.85	0.32
Composite Benchmark ▲	15.09	4.13	7.10	8.39	0.26

- Public market asset classes have outperformed their benchmarks over the last 7¾ years.
- Domestic fixed income and real estate in top decile.

Consolidated Pension Trust: Domestic Equity

As of March 31, 2018

Performance vs Public Fund - Domestic Equity (Gross)



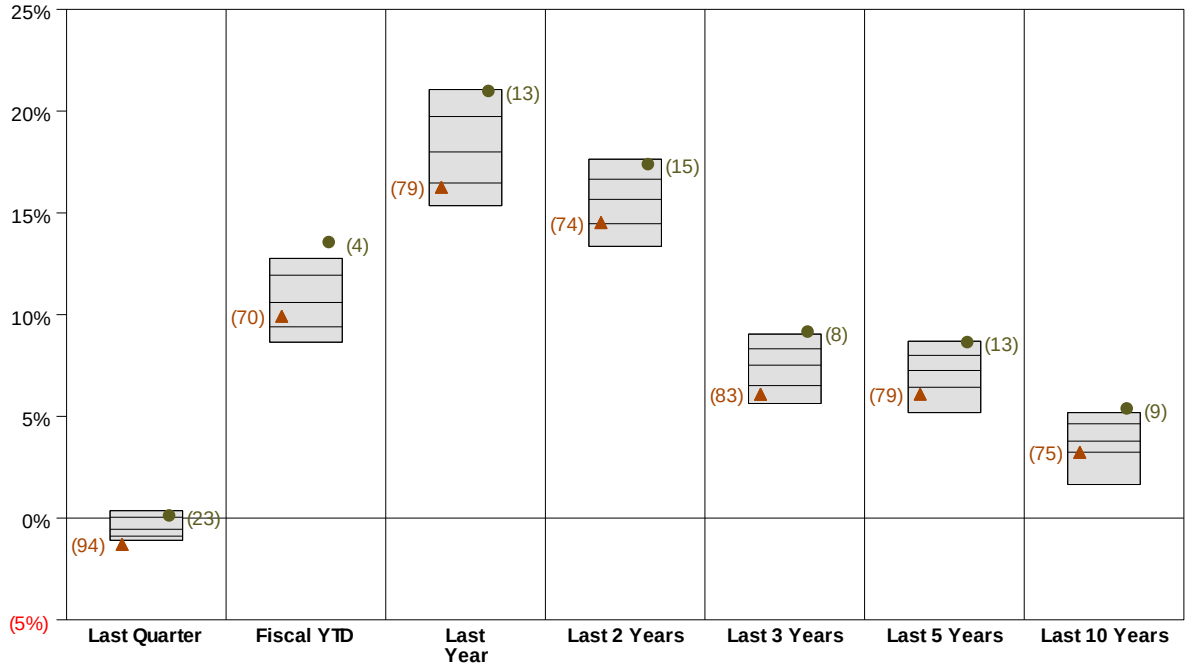
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.47	12.26	16.29	17.81	10.79	13.59	10.31
25th Percentile	0.12	11.15	15.01	16.72	10.42	13.26	10.08
Median	(0.43)	10.52	13.86	15.85	10.00	12.94	9.68
75th Percentile	(0.73)	9.89	12.79	15.31	9.46	12.41	9.32
90th Percentile	(1.15)	8.86	11.76	14.67	8.67	11.53	8.68
Domestic Equity ●	(0.18)	11.12	14.49	15.59	10.12	13.40	8.99
Domestic Equity Target ▲	(0.53)	10.29	13.53	16.46	10.00	12.85	9.67

- Domestic equity was down for the quarter, but managed to outperform its benchmark.

Consolidated Pension Trust: International Equity

As of March 31, 2018

Performance vs Public Fund - International Equity (Gross)



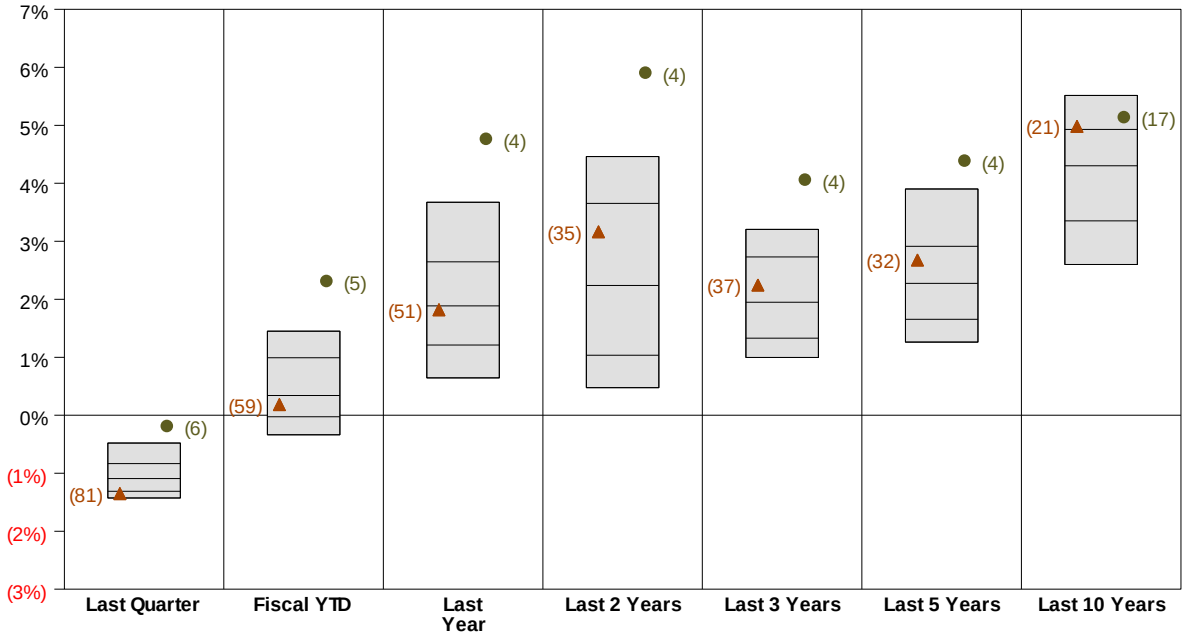
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.37	12.76	21.06	17.64	9.05	8.70	5.19
25th Percentile	0.04	11.94	19.73	16.65	8.32	8.00	4.63
Median	(0.55)	10.60	17.99	15.66	7.52	7.26	3.78
75th Percentile	(0.89)	9.40	16.47	14.46	6.51	6.43	3.24
90th Percentile	(1.09)	8.64	15.36	13.36	5.63	5.18	1.65
International Equity	0.06	13.50	20.92	17.33	9.09	8.58	5.32
International Equity Target	(1.29)	9.92	16.26	14.53	6.09	6.09	3.24

- International equity provided marginally positive returns for the quarter.
- Over longer periods the asset class has performed well, placing in the top decile over 10 years.

Consolidated Pension Trust: Domestic Fixed Income

As of March 31, 2018

Performance vs Public Fund - Domestic Fixed (Gross)



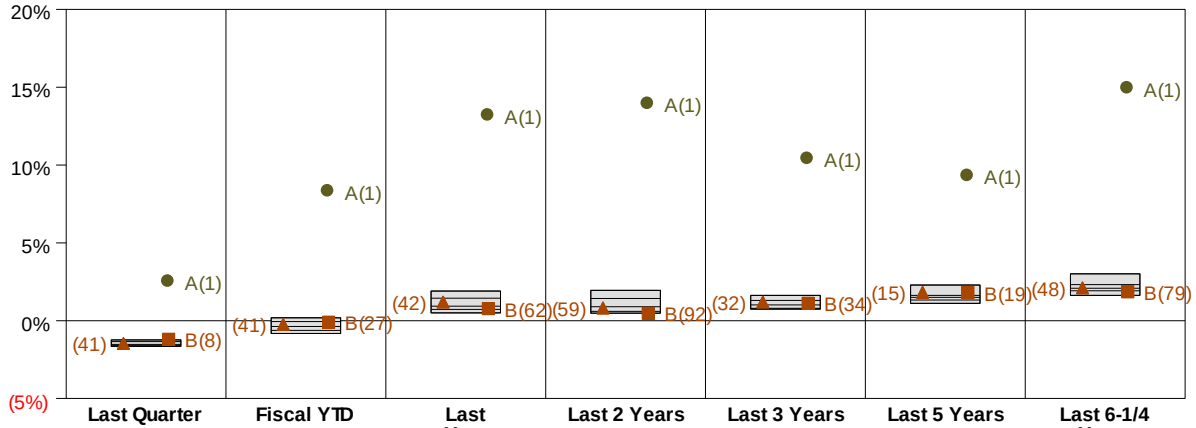
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.48)	1.45	3.67	4.46	3.21	3.90	5.52
25th Percentile	(0.83)	0.99	2.64	3.65	2.73	2.91	4.93
Median	(1.09)	0.34	1.89	2.24	1.95	2.27	4.30
75th Percentile	(1.31)	(0.03)	1.21	1.04	1.33	1.66	3.35
90th Percentile	(1.43)	(0.34)	0.65	0.48	1.00	1.26	2.60
Domestic Fixed Income ●	(0.21)	2.29	4.74	5.88	4.04	4.36	5.12
Domestic Fixed Income Target ▲	(1.35)	0.18	1.82	3.16	2.25	2.68	4.98

- The domestic fixed income program was down for the quarter, but outperformed its benchmark.
- Over the last 10 year period, domestic fixed income placed in the 17th percentile.

Consolidated Pension Trust: PIMCO DiSCO II

As of March 31, 2018

Performance vs Callan Core Bond Mutual Funds (Net)

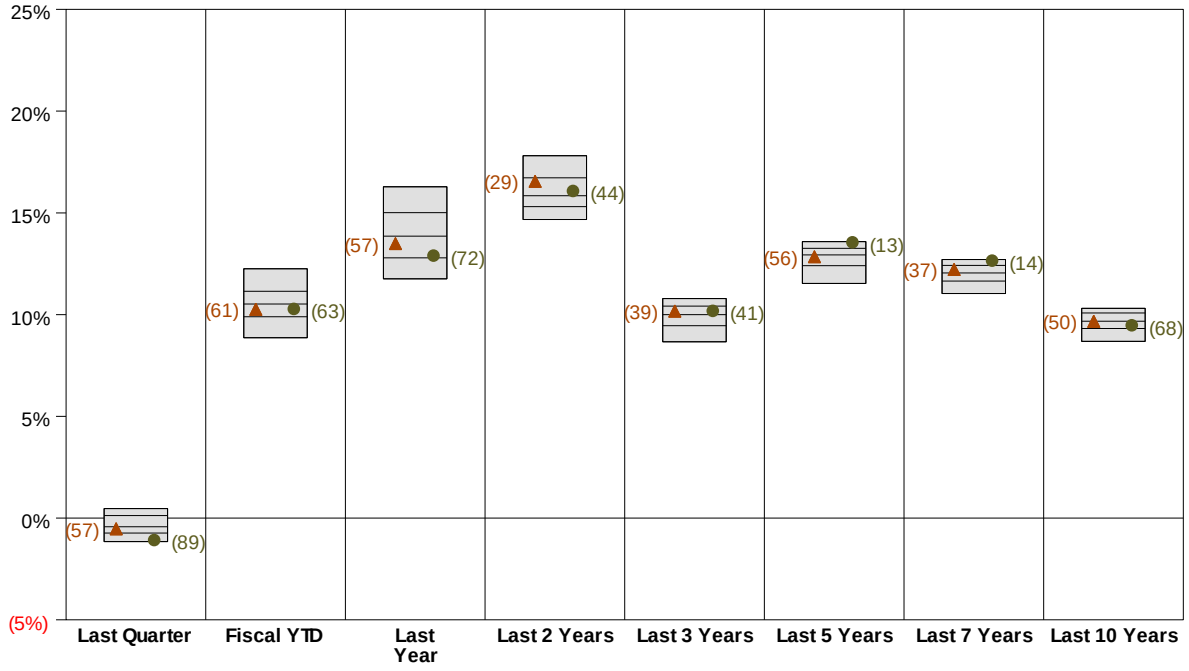


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-1/4 Years
10th Percentile		(1.24)	0.19	1.90	1.94	1.62	2.29	3.01
25th Percentile		(1.34)	(0.06)	1.45	1.43	1.30	1.62	2.32
Median		(1.52)	(0.37)	0.94	0.90	1.01	1.50	2.09
75th Percentile		(1.60)	(0.62)	0.72	0.60	0.79	1.33	1.92
90th Percentile		(1.65)	(0.82)	0.50	0.48	0.74	1.11	1.62
PIMCO DiSCO II	A	2.49	8.29	13.18	13.91	10.38	9.28	14.91
BImbg Mortgage	B	(1.19)	(0.10)	0.77	0.47	1.12	1.80	1.85
BImbg Aggregate	▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	2.11

Consolidated Insurance Trust: Domestic Equity

As of March 31, 2018

Performance vs Public Fund - Domestic Equity (Gross)



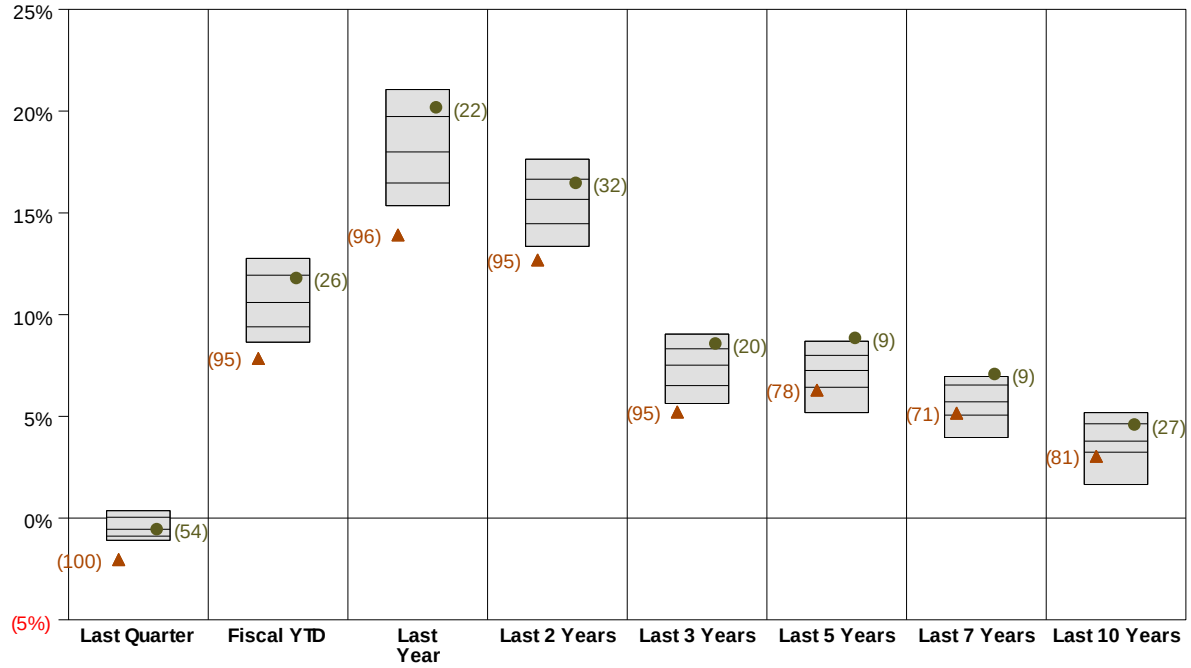
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	0.47	12.26	16.29	17.81	10.79	13.59	12.71	10.31
25th Percentile	0.12	11.15	15.01	16.72	10.42	13.26	12.42	10.08
Median	(0.43)	10.52	13.86	15.85	10.00	12.94	12.05	9.68
75th Percentile	(0.73)	9.89	12.79	15.31	9.46	12.41	11.65	9.32
90th Percentile	(1.15)	8.86	11.76	14.67	8.67	11.53	11.03	8.68
Domestic Equity ●	(1.15)	10.21	12.84	16.01	10.12	13.49	12.58	9.41
Domestic Equity Target ▲	(0.52)	10.26	13.49	16.55	10.17	12.84	12.22	9.67

- Domestic equity in the consolidated insurance trust struggled over the last quarter, placing in the bottom quartile among peers.

Consolidated Insurance Trust: International Equity

As of March 31, 2018

Performance vs Public Fund - International Equity (Gross)



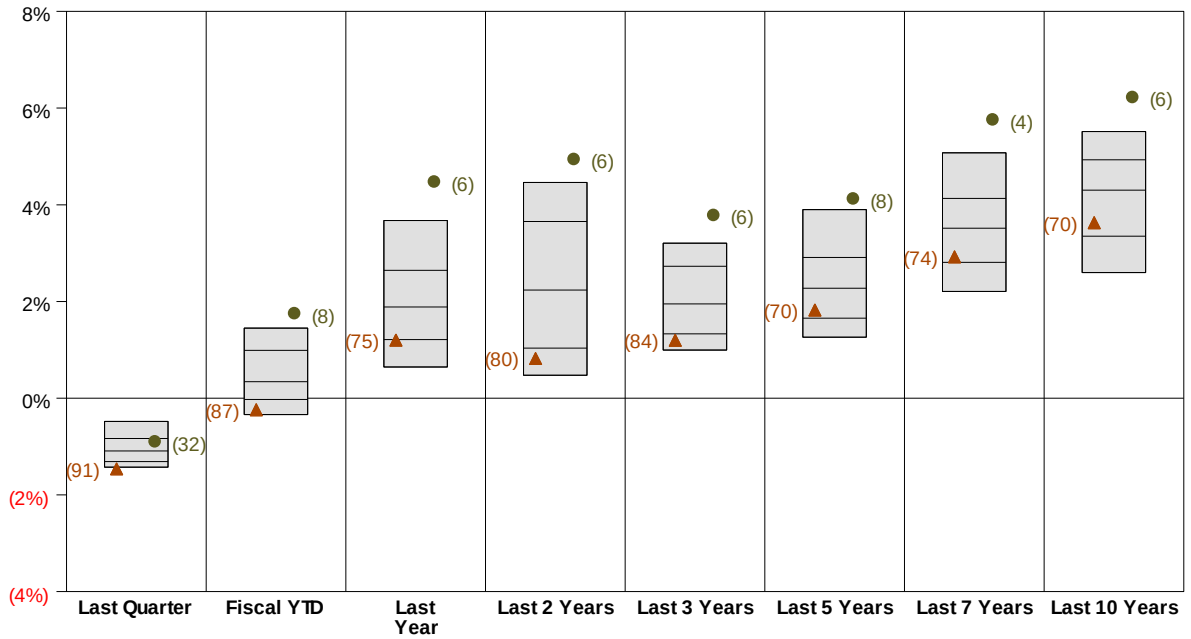
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	0.37	12.76	21.06	17.64	9.05	8.70	6.96	5.19
25th Percentile	0.04	11.94	19.73	16.65	8.32	8.00	6.54	4.63
Median	(0.55)	10.60	17.99	15.66	7.52	7.26	5.72	3.78
75th Percentile	(0.89)	9.40	16.47	14.46	6.51	6.43	5.06	3.24
90th Percentile	(1.09)	8.64	15.36	13.36	5.63	5.18	3.96	1.65
International Equity ●	(0.60)	11.73	20.12	16.41	8.51	8.79	7.02	4.53
International Equity Target ▲	(2.04)	7.85	13.92	12.69	5.22	6.29	5.16	3.04

- International equity placed below median over the last quarter.
- Over the last 10 year, international equity ranked in the 27th percentile among peers.

Consolidated Insurance Trust: Domestic Fixed Income

As of March 31, 2018

Performance vs Public Fund - Domestic Fixed (Gross)



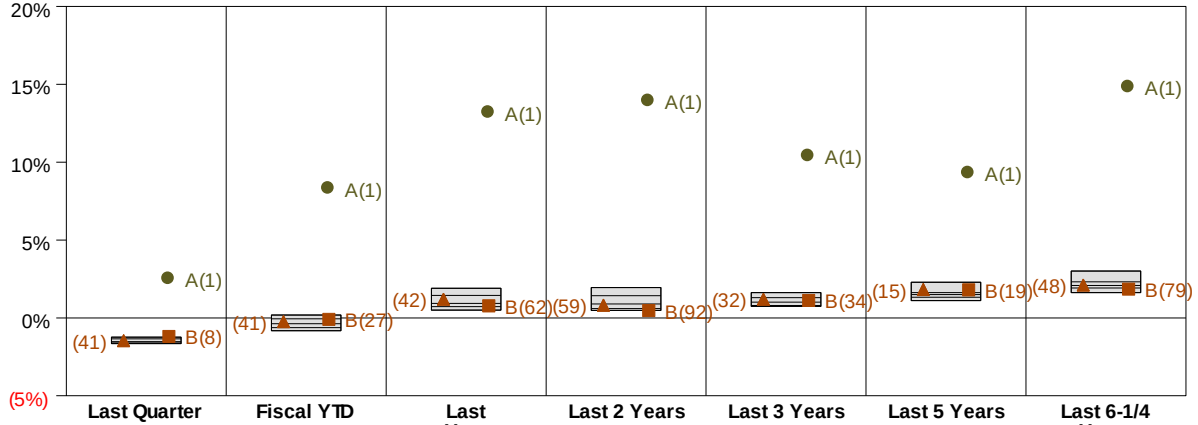
	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	(0.48)	1.45	3.67	4.46	3.21	3.90	5.07	5.52
25th Percentile	(0.83)	0.99	2.64	3.65	2.73	2.91	4.13	4.93
Median	(1.09)	0.34	1.89	2.24	1.95	2.27	3.52	4.30
75th Percentile	(1.31)	(0.03)	1.21	1.04	1.33	1.66	2.81	3.35
90th Percentile	(1.43)	(0.34)	0.65	0.48	1.00	1.26	2.21	2.60
Domestic Fixed Income ●	(0.92)	1.73	4.45	4.92	3.76	4.10	5.74	6.20
Domestic Fixed Inc. Target ▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	2.92	3.63

- The domestic fixed income program ranked above median over the last quarter, and in the 6th percentile over the last 10 years.

Consolidated Insurance Trust: PIMCO DiSCO II

As of March 31, 2018

Performance vs Callan Core Bond Mutual Funds (Net)



		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-1/4 Years
10th Percentile		(1.24)	0.19	1.90	1.94	1.62	2.29	3.01
25th Percentile		(1.34)	(0.06)	1.45	1.43	1.30	1.62	2.32
Median		(1.52)	(0.37)	0.94	0.90	1.01	1.50	2.09
75th Percentile		(1.60)	(0.62)	0.72	0.60	0.79	1.33	1.92
90th Percentile		(1.65)	(0.82)	0.50	0.48	0.74	1.11	1.62
PIMCO DiSCO II	A	2.49	8.29	13.18	13.91	10.38	9.28	14.80
Blmbg Mortgage	B	(1.19)	(0.10)	0.77	0.47	1.12	1.80	1.85
Blmbg Aggregate	▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	2.11

Callan

March 31, 2018

North Dakota State Investment Board Pension Funds

Investment Measurement Service Quarterly Review

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.

Table of Contents
March 31, 2018

Executive Summary

Active Management Overview 2
Capital Market Review 3

NDSIB - Consolidated Pension Trust

Actual vs Target Asset Allocation 19
Quarterly Total Fund Attribution 20
Cumulative Total Fund Attribution 21
Cumulative Performance 25
Historical Asset Allocation 26
Asset Class Risk and Return 27
Total Fund Ranking 28
Asset Class Rankings 29
Investment Manager Asset Allocation 30
Investment Manager Returns 33

NDSIB - Public Employees Retirement System

Actual vs Target Asset Allocation 39
Quarterly Total Fund Attribution 40
Cumulative Total Fund Attribution 41
Cumulative Performance 45
Historical Asset Allocation 46
Asset Class Risk and Return 47
Total Fund Ranking 48
Asset Class Rankings 49
Asset Class Allocation 50
Asset Class Returns 51

NDSIB - Teachers Fund For Retirement

Actual vs Target Asset Allocation 54
Quarterly Total Fund Attribution 55
Cumulative Total Fund Attribution 56
Cumulative Performance 60
Historical Asset Allocation 61
Asset Class Risk and Return 62
Total Fund Ranking 63
Asset Class Rankings 64
Asset Class Allocation 65
Asset Class Returns 66

Table of Contents
March 31, 2018

Domestic Equity

Domestic Equity Composite 69
L.A. Capital Management 70
L.A. Capital Management Enhanced Index 71
Northern Trust AM Enhanced S&P 500 72
Parametric Clifton Enhanced S&P 73
Atlanta Capital 74
Parametric Clifton Enhanced Small Cap 75

International Equity

International Equity Composite 77
DFA International Small Cap Value Fund 78
Northern Trust AM World ex US 79
Wellington Management Company 80
William Blair 81
Axiom Emerging Markets 82
DFA Emerging Markets 83

World Equity

EPOCH Investment Partners 85
LSV Asset Management 86

Private Equity

Investment Manager Returns 88

Domestic Fixed Income

Domestic Fixed Income Composite 90
Declaration Total Return 91
PIMCO DiSCO II 92
PIMCO Core Plus Constrained 93
SSgA Long US Treasury Index 94
Goldman Sachs 2006 Offshore 95
Goldman Sachs Offshore Fund V 96
Loomis Sayles 97
PIMCO Bravo II Fund 98

Real Estate

Global Real Estate Composite 100
Performance vs Total Real Estate Database 101

Timber

TIR Teredo 104
TIR Springbank 105

Table of Contents
March 31, 2018

Infrastructure

JP Morgan Asian Infrastructure 107

JP Morgan Infrastructure Fund 108

Grosvenor Cust. Infrastructure 109

Grosvenor Cust. Infrastructure II 110

Callan Research/Education 111

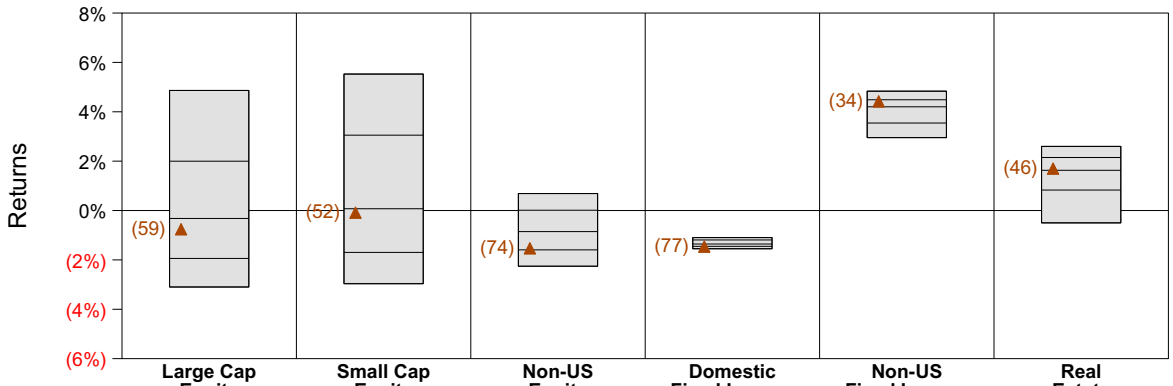
Disclosures 114

Market Overview
Active Management vs Index Returns

Market Overview

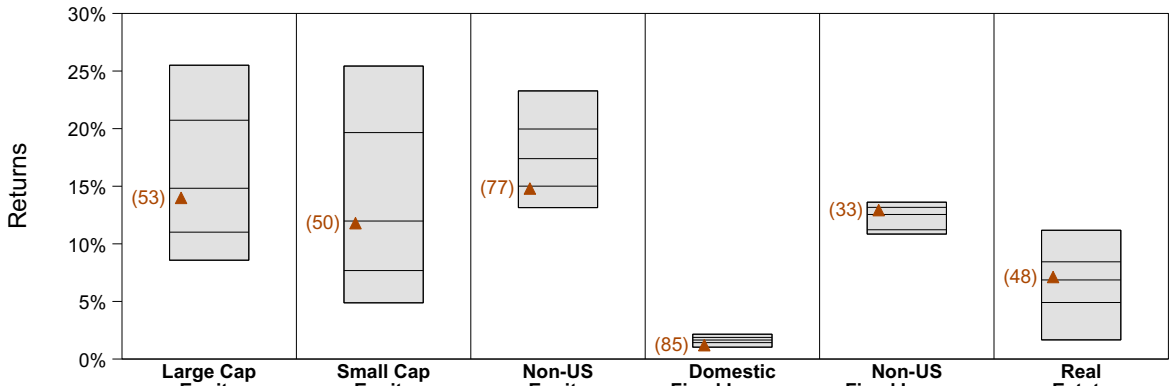
The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also 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 March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	4.86	5.53	0.69	(1.10)	4.83	2.60
25th Percentile	2.00	3.05	0.01	(1.19)	4.49	2.15
Median	(0.32)	0.07	(0.85)	(1.36)	4.20	1.63
75th Percentile	(1.94)	(1.70)	(1.59)	(1.45)	3.54	0.83
90th Percentile	(3.10)	(2.96)	(2.26)	(1.55)	2.95	(0.50)
Index ▲	(0.76)	(0.08)	(1.53)	(1.46)	4.42	1.70

Range of Separate Account Manager Returns by Asset Class
One Year Ended March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	25.50	25.43	23.28	2.16	13.62	11.18
25th Percentile	20.73	19.66	19.97	1.88	13.17	8.44
Median	14.82	11.98	17.40	1.65	12.55	6.87
75th Percentile	11.01	7.68	15.01	1.43	11.22	4.91
90th Percentile	8.58	4.88	13.14	1.03	10.85	1.66
Index ▲	13.99	11.79	14.80	1.20	12.93	7.12

Callan

First Quarter 2018

The Slow Burn of the Current Expansion

ECONOMY

2 PAGE

GDP rose 2.3% in the first quarter, lower than in much of 2017 but higher than estimates, and in spite of the market volatility that started the year. The unemployment rate remains at historically low levels, and there are early signs this is leading to wage pressure.

Diversification Appears to Pay Off

FUND SPONSOR

4 PAGE

The median fund sponsor in Callan's database fell 0.5% but did better than a 60% equity/40% fixed income portfolio, which dropped 1.0%. Taft-Hartley plans were the best performers by type, while large plans were best by size.

Volatility Returns and Markets Sag

EQUITY

6 PAGE

U.S. equities fell in the quarter amid a resurgence of volatility. Mega-Tech firms were especially hard hit amid a data scandal. Non-U.S. developed markets fell more, while emerging markets rose, helped by oil's rebound and strong economic conditions.

Mixed Results for Bonds Globally

FIXED INCOME

9 PAGE

The 10-year Treasury yield neared 3% before dropping by quarter's end. The Aggregate Index fell, as did investment grade and high yield bonds. Currency movements drove fixed income returns globally. Local currency emerging market debt was a top performer.

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE

11 PAGE

The NCREIF Property Index (NPI) posted positive results, while the NCREIF Open End Diversified Core Equity Index continued to see increased returns. Non-U.S. REITs outperformed U.S. REITs, but still posted negative returns.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY

13 PAGE

With volatility returning to the public markets, private equity activity slowed somewhat, but remained brisk in absolute terms. Fundraising was down moderately. Company investments and exits trended slightly down, although venture capital funding rose.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs

14 PAGE

Despite the quarter's rocky ride for stocks and bonds, hedge fund strategies were mostly positive. The Credit Suisse Hedge Fund Index grew 0.5%, while the median manager in the Callan Hedge Fund-of-Funds Database gained 1.2%, net of all fees and expenses.

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. But the Index trailed the Age 45 Target Date Fund, which gained 19.3%. DC plan balances rose 16.5% over the year, driven primarily by market returns. Non-U.S. equities saw notable inflows.

Broad Market Quarterly Returns

U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Non-U.S. Fixed Income
Russell 3000	MSCI ACWI ex USA	Bloomberg Barclays Agg	Bloomberg Barclays Gbl ex US
-0.6%	-1.2%	-1.5%	+3.6%

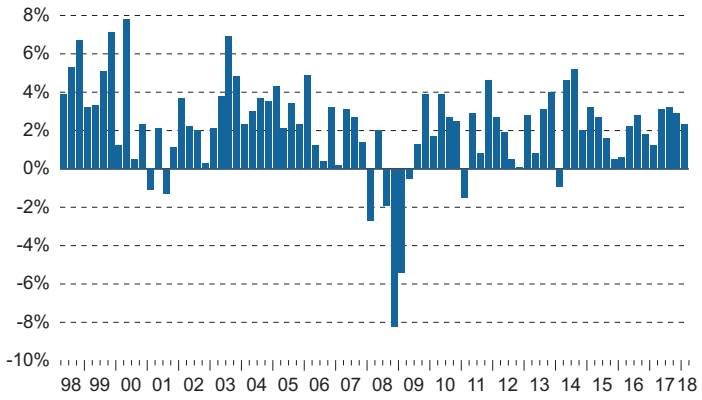
Sources: Bloomberg Barclays, MSCI, FTSE Russell

Slow Burn

ECONOMY | Jay Kloepfer

After a weak first quarter, the U.S. economy closed out 2017 with decent momentum, as GDP grew at a robust 3% annualized rate for the remaining three quarters. The first quarter of 2018 will likely be remembered for its sudden, brief correction and the return of volatility. True to form, however, the U.S. economy continued to post solid growth, ignoring the uncertainty introduced by the stock market gyrations, just as it ignored the geopolitical uncertainty humming in the background over the last 18 months. The 2.3% gain was a step down from the string of 3% increases but actually higher than most estimates. The unexpected strength in first-quarter GDP growth came from net exports (imports were less than expected, exports were greater), from fixed investment in buildings and capital, and from government expenditures.

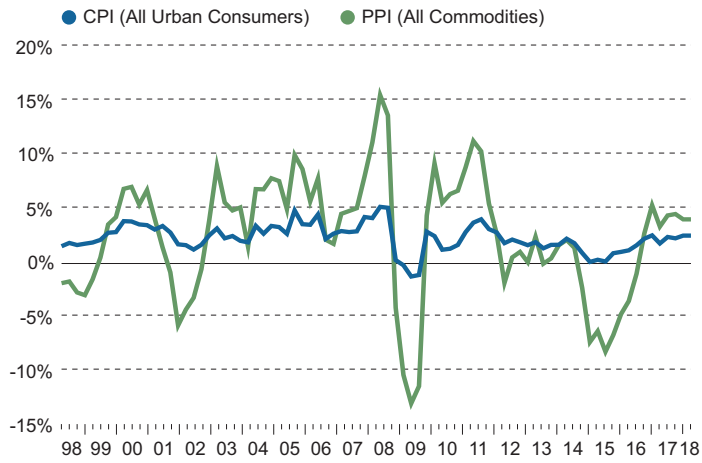
Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Growth expectations had been tempered by the depletion of inventories and signs of slowing consumer spending at the end of 2017. However, consumers remained optimistic during the first quarter, even after the market turmoil in February, with the University of Michigan's Index of Consumer Confidence hitting a 14-year high in March. Strong labor markets are a clear contributor to confidence. In the U.S., the unemployment rate fell to 4.1% in the fourth quarter of 2017, a generational low, and remained at that rate through the first quarter of 2018. Initial claims for unemployment insurance have fallen to the lowest level since 1969.

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

The slow burn in the current expansion may enable it to continue for some time. This recovery is one of the longest on record at 105 months, but also one of the slowest, with average GDP growth in the U.S. of just 2.2%. Expansions do not die of old age; rather they collapse under the weight of imbalances that become untenable. Thus far into this slow burn, signs of severe imbalances are few, although several potential ones come to mind: tight labor markets, inflation, housing shortages in select urban areas, and rich asset prices kept aloft by the continued growth in the economy.

Inflation may finally be poised to become the problem we all expected to arise after years of sustained monetary and fiscal stimulus. The CPI-U notched a year-over-year gain of 2.4% in the first quarter, with core inflation reporting a 2.1% increase. While this sounds very modest, the CPI-U has been inching steadily upward since bottoming out in 2015, when oil prices collapsed. One of the most profound conundrums has been the

lack of wage pressure while the unemployment rate has steadily fallen to historically low levels. Average hourly earnings were stuck at 2% growth, and only recently has the rate of growth begun to rise. In fact, the report of wage growth coming in close to 3% in January was one of the catalysts cited for the spike in market volatility in early February, spurring fears of inflation among investors. Wage growth did not jump higher than 3% in February and March, but stronger wage growth will feed into core inflation. The Employment Cost Index, which includes benefit costs along with wages and salaries, rose 2.7% year-over-year in the first quarter, the highest rate of growth since 2007. Barring another collapse in energy prices or a sudden downturn in global growth, inflation momentum will keep building.

Continued growth and the potential pickup in inflation give the Fed cover for more interest rate hikes. One development of interest is the potential for an inverted yield curve. The Fed raised interest rates three times in 2017 and again in March 2018, which shifted the short end of the yield curve up, but the long end barely budged. As a result, the curve flattened substantially. The Fed is telegraphing up to three more rate hikes this year, and if the long end of the curve remains anchored, the potential increases for the curve to invert, where yields on longer maturities are lower than those for shorter maturities. An inverted yield curve can suggest the onset of recession: investors bid up the price of longer-dated debt (driving down yields) in anticipation of a slowing economy, leading to an expected cut in interest rates and increased demand for bonds. An inverted yield curve does not cause a recession, but it does reflect the opinions and concerns of market participants. Complicating the story here is that while the Fed has begun to unwind its balance sheet, which suggests it could be selling bonds and putting upward pressure on rates, demand remains strong on the long end of the yield curve, as yields in the U.S. are substantially above those overseas.

The Long-Term View

Index	2018 1st Qtr	Periods ended Dec. 31, 2017 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-0.64	21.13	15.58	8.60	9.72
S&P 500	-0.76	21.83	15.79	8.50	9.69
Russell 2000	-0.08	14.65	14.12	8.71	9.54
Non-U.S. Equity					
MSCI ACWI ex USA	-1.18	27.19	6.80	1.84	–
MSCI Emerging Markets	1.42	37.28	4.35	1.68	–
MSCI ACWI ex USA Small Cap	-0.35	31.65	10.03	4.69	–
Fixed Income					
Bloomberg Barclays Agg	-1.46	3.54	2.10	4.01	5.48
90-Day T-Bill	0.35	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-3.58	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	3.62	10.51	-0.20	2.40	5.02
Real Estate					
NCREIF Property	1.70	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	-8.20	5.23	9.46	7.44	10.76
Alternatives					
CS Hedge Fund	0.47	7.12	4.23	3.24	–
Cambridge PE*	5.11	19.38	13.90	9.10	15.62
Bloomberg Commodity	-0.40	1.70	-8.45	-6.83	2.47
Gold Spot Price	1.37	13.68	-4.82	4.56	5.63
Inflation – CPI-U	1.23	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

Recent Quarterly Economic Indicators

	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16	3Q16	2Q16
Employment Cost–Total Compensation Growth	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%	2.3%	2.3%
Nonfarm Business–Productivity Growth	-0.4%	0.0%	2.6%	1.7%	0.2%	1.1%	2.4%	0.9%
GDP Growth	2.3%	2.9%	3.2%	3.1%	1.2%	1.8%	2.8%	2.2%
Manufacturing Capacity Utilization	75.6%	75.2%	74.4%	74.9%	74.6%	74.4%	74.3%	74.4%
Consumer Sentiment Index (1966=100)	98.9	98.4	95.1	96.4	97.2	93.2	90.3	92.4

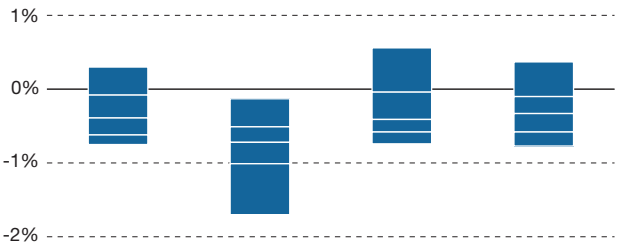
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Diversification Appears to Pay Off in First Quarter

FUND SPONSOR

In the first quarter, the median fund sponsor in Callan's database fell 0.5%, compared to a 1.0% drop for a quarterly rebalanced portfolio made up of 60% S&P 500 Index/40% Bloomberg Barclays US Aggregate Bond Index. Taft-Hartley funds (-0.3%) were the best performers in the quarter, followed by public plans (-0.4%), endowments and foundations (-0.4%), and corporate plans (-0.7%). Large plans with greater than $1 billion in assets under management did best by plan size, falling by 0.4%, followed by medium ($100 million–$1 billion) and small (under $100 million) plans. Plans in Callan's database invest in a wider array of assets than a 60/40 portfolio, indicating diversification may have been a benefit in the quarter, which saw declines for both bonds and stocks.

Callan Fund Sponsor Returns for the Quarter



	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	0.30	-0.13	0.56	0.37
25th Percentile	-0.08	-0.51	-0.04	-0.10
Median	-0.39	-0.72	-0.41	-0.33
75th Percentile	-0.62	-1.01	-0.58	-0.58
90th Percentile	-0.75	-1.70	-0.74	-0.77

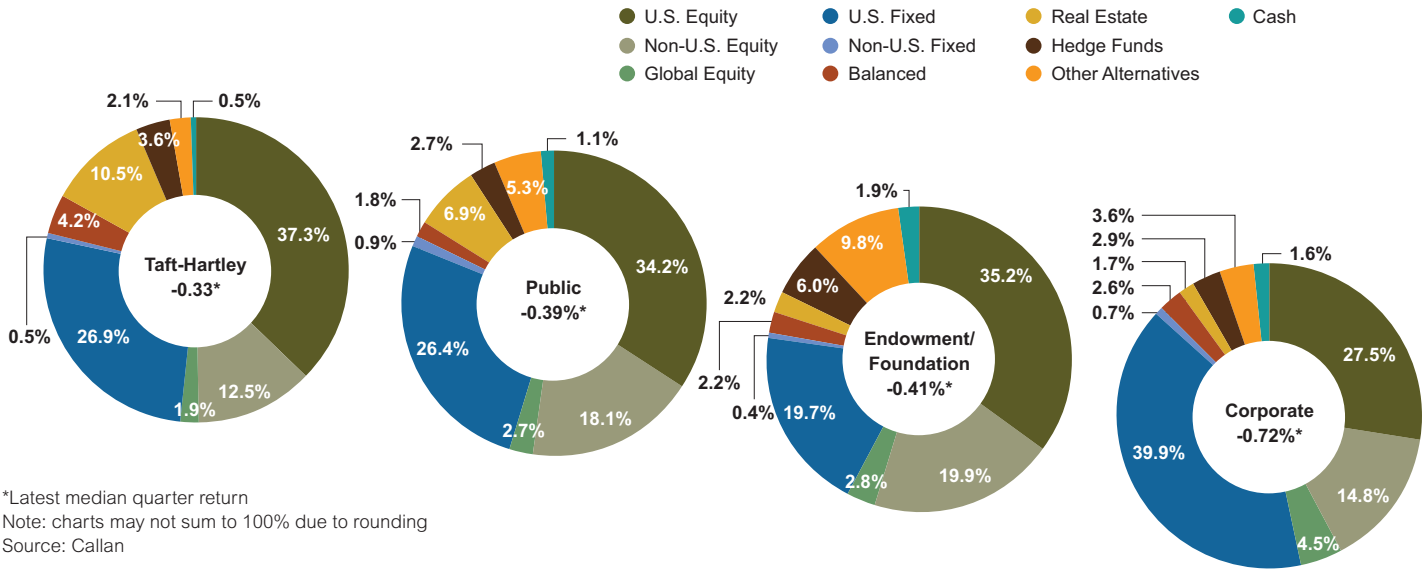
Source: Callan

Over the last 10 years, corporate plans (+6.5%) did best, followed by Taft-Hartley plans (+6.4%), and public plans and E&Fs (both +6.3%). The median plan sponsor increased 6.4%, while the 60-40 portfolio rose 7.5%.

Strategic planning by sponsors has recently touched on a number of common themes:

- The impact of tax reform, particularly its effects on pensions and non-profits, and the varied implications for different asset classes.
- Adjusting to lower capital market return expectations. Callan's 2018 10-year projections are unchanged from last year, which means they remain low. Diversification and discipline remain the key points of emphasis, and Callan advises caution when reaching for return/yield.

Callan Fund Sponsor Average Asset Allocation



*Latest median quarter return
Note: charts may not sum to 100% due to rounding
Source: Callan

Both stock and bond valuations remain high, and market volatility is back—but is within normal bounds. Many clients are wondering if there is a need for inflation-hedging strategies despite inflation being benign.

Low interest rates and low return expectations continue to drive strategic allocation planning. Many fund sponsors feel compelled to take on substantial market risk to reach their return goals. Sponsors are evaluating whether there is anything more they can do to tamp down the risk within the growth allocation, short of actually reducing the allocation to growth assets. Actuarial assumptions and spending rates are being reduced by some sponsors.

Callan research on trends in the institutional investment marketplace found that several interesting themes have developed over the past three years, many related to capital market expectations and fees:

- A continuing interest in passive investing, although the level of interest has decreased slightly
- A meaningful percentage of fund sponsors are considering new or additional investments in private assets

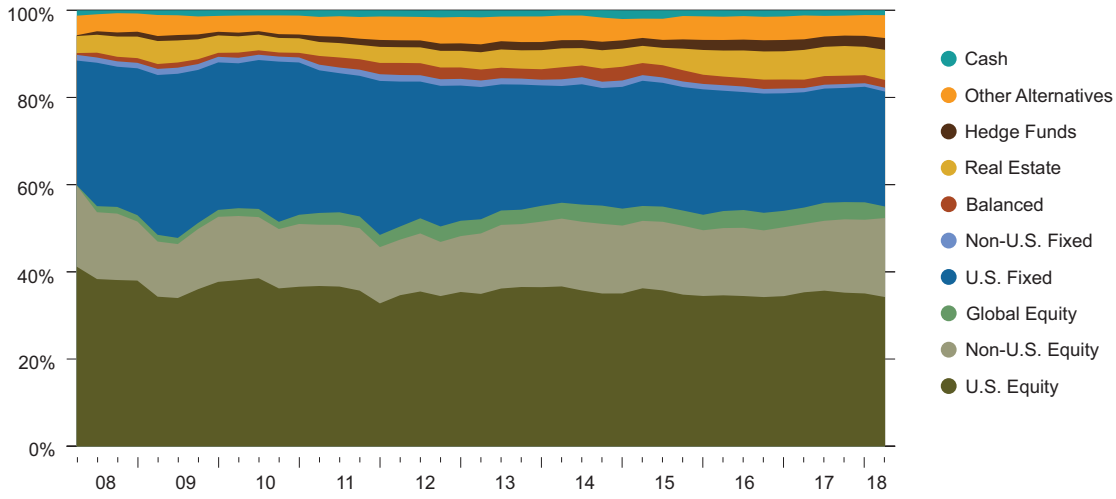
Specific areas of focus by plan types include:

Corporate Funds: Most corporate defined benefit (DB) clients have embraced de-risking (increasing fixed income and extending duration) and are at different stages of this process. The extent to which corporate plan sponsors implement de-risking in the coming year depends largely on the movement of interest rates. As rates rise and DB plans move forward with de-risking plans, allocations to equity and alternative investments are likely to decrease.

Public and E&F Funds: Public plans and endowments and foundations are focused on return enhancement. However, risk—as well as funded status for public plans—were sources of ongoing concerns in the more volatile markets of the first quarter.

Defined Contribution: Driven by regulatory and legislative requirements, DC plans continue to review fees and recordkeepers. Recently, activity has been focused on investment structures that reduce the number of options in a plan.

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. Stocks: Dow, S&P 500 Fall, First Time Since '15

-0.6%
RUSSELL 3000

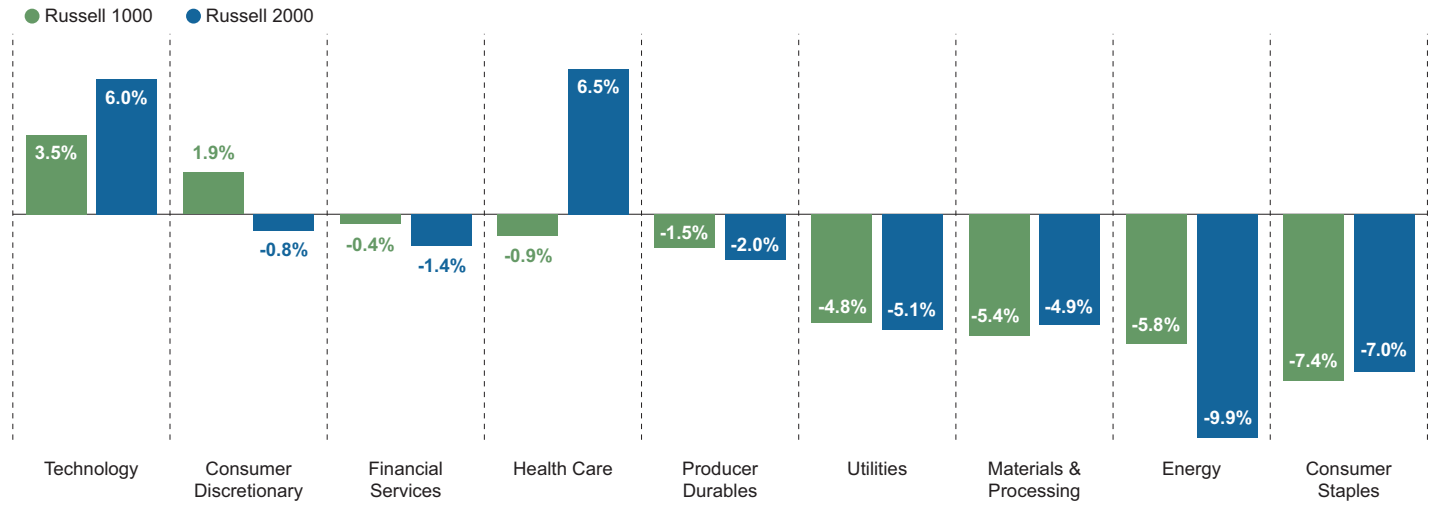
Volatility returned in the first quarter, with the **Dow Jones Industrial Average** and **S&P 500 Index** both finishing lower—a first since the third quarter of 2015. After starting strong on the back of solid earnings and tax law changes, U.S. equities faltered in the second part of the quarter over concerns about a more aggressive global trade policy and uncertainty over the pace of interest rate hikes. The S&P 500's modest quarterly loss (-0.8%) belied volatile intra-quarter results. The Index experienced six days of movements greater than 2% during the quarter (versus none in 2017). And the Index reached a record high on Jan. 26, then fell about 8% to close the quarter. Volatility as measured by the VIX Index skyrocketed by 116% on Feb. 5 when the market sank 4%.

Small capitalization stocks outperformed large caps (**Russell 1000:** -0.7%; **Russell 2000:** -0.1%), though sector performance was mixed. The prospect of a trade war with China weighed on large caps since many of these companies are exposed to international markets (S&P 500 aggregate exposure is approximately 40%) while small caps were less affected as they tend to derive a higher proportion of their revenue from domestic markets (approximately 80-90%) and benefit from a more protectionist policy.

In mid-March, some mega-cap Tech firms saw their stock prices drop in the wake of Facebook's Cambridge Analytica scandal, leading to declining trust for the industry and negative investor sentiment. The market began pricing in the potential for more regulatory oversight for these internet companies. Performance for the "FANGs" split during the quarter, with Facebook and Google down while Netflix and Amazon advanced.

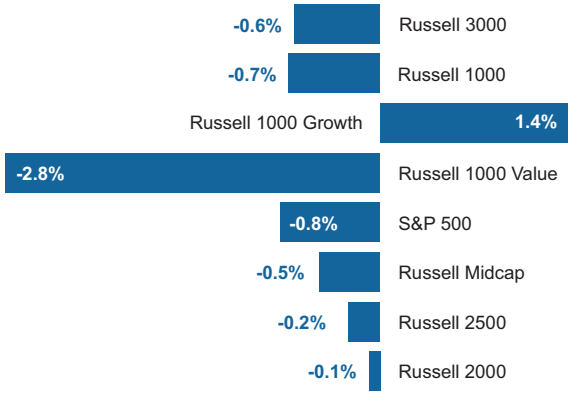
Growth continued to top value (**Russell 1000 Growth:** +1.4%; **Russell 1000 Value:** -2.8%). Value trailed as the prospect of increased inflation and accelerating interest rates weighed on interest rate-sensitive sectors (Financials: -1.0%; Real Estate: -5.0%; Utilities: -3.3%). Energy (-5.9%) also took a hit despite a more promising outlook for the sector as the Saudis agreed to continued oil production cuts into 2019; performance for the first quarter was impacted by Exxon Mobil and Chevron missing fourth quarter earnings expectations.

Quarterly Performance of Select Sectors



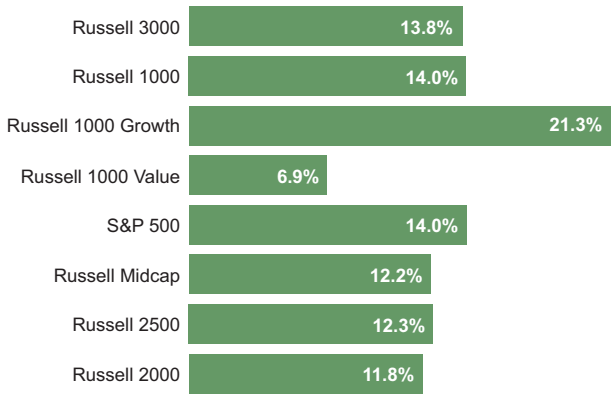
Source: FTSE Russell

U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

U.S. Equity: One-Year Returns



Sources: FTSE Russell and Standard & Poor's

Despite the increased volatility and price drop in the broader index, defensive sectors underperformed cyclicals due in large part to the rising interest rate environment. Technology (+3.5%) and Consumer Discretionary (+3.1%) were the only two sectors that posted positive returns. Telecommunications (-7.5%) and Staples (-7.1%) were the two worst-performing sectors.

Global Stocks: Spooked Markets Lag

-1.2%

MSCI ACWI EX USA

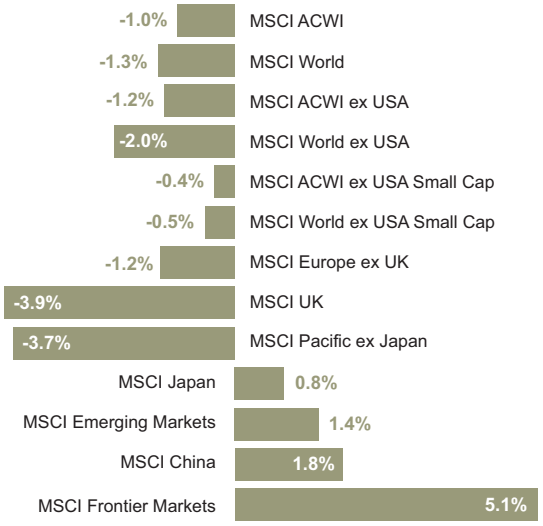
Despite positive economic data, non-U.S. developed equity underperformed U.S. as non-U.S. equity markets were spooked by geopolitical tension and market volatility along with fears of rising U.S. interest rates and inflation (**MSCI World ex USA:** -2.0%; **MSCI Europe:** -2.0%). Emerging markets continued to outpace developed, fueled by a soft dollar and synchronized global growth; however, fears of inflation and its implication on the trajectory of U.S. monetary policy—as well as a potential trade war between the U.S. and China—weighed on the market. Developed non-U.S. small cap outperformed large cap given the risk-on market environment spurred by synchronized global growth.

While developed non-U.S. equity market returns were negative, results were helped by U.S. dollar weakness. Overall, the **MSCI EAFE** fell 4.3% in local terms but only 1.5% in U.S. dollar terms. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. Likewise, Brexit woes sank the U.K. market (-8%) but the pound's appreciation versus the dollar offset a good portion of the loss for U.S. investors; on that basis the country fell 4%. The euro-zone recovery continued, with GDP growth of 2.7% in the quarter year-over-year driving the euro up 2%—and the pound by nearly 4%—relative to the dollar.

Japan's economy grew by 1.6% fueled by infrastructure development ahead of the 2020 Olympics, enabling the yen to surge by 6% relative to the dollar. It hit a 17-month high as worries over trade policy spurred demand for the safe-haven currency and was the best-performing currency among developed markets. In local terms, Japan equities fell nearly 6%, but the strength of the yen brought returns in U.S. dollar terms to +0.8%.

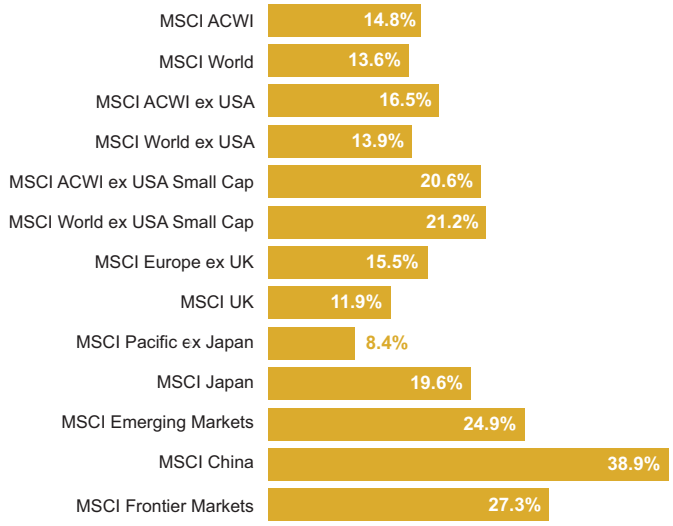
The only sectors that posted positive returns were Consumer Discretionary, Tech, and Utilities. Positive earnings supported the Tech sector (top performer), and Utilities benefited as investors fled to safety amid market volatility and yield curve flattening in March. Telecom struggled as competition for wireless services within the euro-zone eroded profitability, and Staples was notably challenged due to fears of interest rates returning to normal levels and the prospect of beleaguered growth.

Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



Source: MSCI

Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

Growth outpaced value, and earnings growth and quality factors were in favor as markets were jittery in light of the global economy's looming risks. As such, high-beta, cyclical sectors and factors struggled.

Emerging Markets: Oil Propels Shares Higher

+1.4%
MSCI EM

The **MSCI Emerging Markets Index** rose 1.4%. Brazil (+12%) and Russia (+9%) were among the best performers due to climbing oil prices and improving economic conditions. China (+2%) continued to thrive despite trade tension with the United States and a slowdown for Chinese tech companies; China's supply-side reforms are kicking in and economic growth in retail and home sales exceeded expectations, driving up returns for the Financials and Real Estate sectors.

Although India announced better-than-expected GDP growth of 7.2%, the country notably lagged (-7%) due to poor market sentiment surrounding asset-quality issues at large state-owned banks and relative valuations of Indian equities.

Supported by rising oil prices, Energy was the best performing sector; conversely, Consumer Discretionary fared worst, weighed down by India. Value and sentiment factors were in favor as the economic recovery story gained traction and momentum; however, quality factors also added value given that this is the mid-cycle of the recovery.

Non-U.S. Small Cap: Growth in Favor This Quarter

-0.4%
MSCI ACWI EX USA SC

Developed non-U.S. small cap outperformed large cap (**MSCI World ex USA Small Cap:** -0.5%) given the risk-on market environment spurred by synchronized global growth, although within emerging markets, small cap lagged large cap (**MSCI Emerging Markets Small Cap:** +0.2%).

Growth was favored in both developed and emerging market small cap, as growth-oriented sectors such as Health Care and Consumer Staples outperformed cyclical sectors.

Global Fixed Income

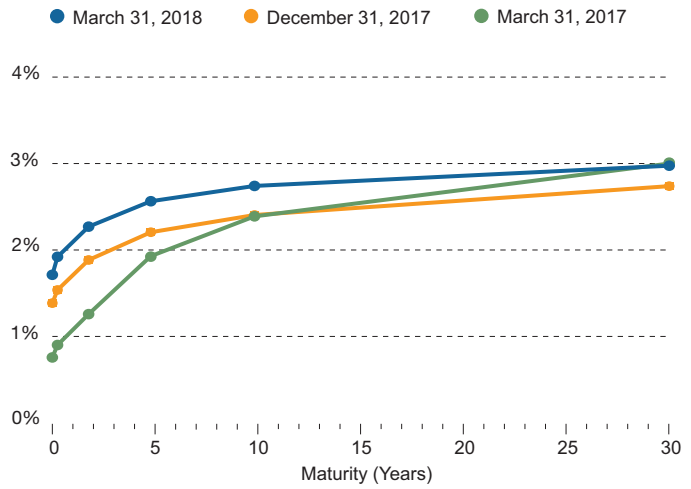
U.S. Bonds: Fear, Uncertainty Roil Markets

-1.5%
BB AGGREGATE

The 10-year U.S. Treasury yield marched steadily higher through most of January and February in response to positive economic data, then equity market weakness and concerns over a looming trade war led to falling yields in March. New Fed Chair Jerome Powell announced his first rate hike (as widely expected) in March, raising the Fed Funds target rate to 1.50%–1.75%. The 10-year U.S. Treasury yield climbed to a peak of nearly 3% during the quarter before closing at 2.74%, 34 basis points higher than at year-end. Two-year U.S. Treasury note yields rose nearly 40 bps to 2.27%, the highest since 2008, and the note fell 0.1% for the quarter, while the 10-year Treasury dropped 2.4% and the 30-year Treasury plunged almost 4%. Interest rates rose approximately 30 bps across the U.S. Treasury yield curve. TIPS outperformed nominal Treasuries, and the 10-year break-even inflation rate rose to 2.05% from 1.96% at year-end.

The **Bloomberg Barclays US Aggregate Bond Index** fell 1.5%, with corporate and securitized sectors underperforming Treasuries. Volatility picked up across risk assets as geopolitical uncertainties took center stage; market expectations reflect the possibility of four rate hikes in 2018, up from a projected three

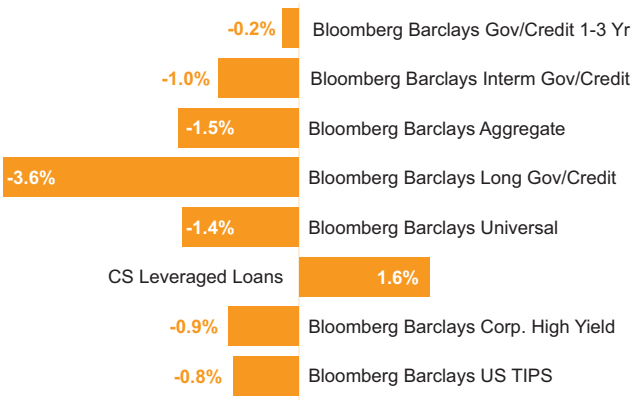
U.S. Treasury Yield Curves



Source: Bloomberg

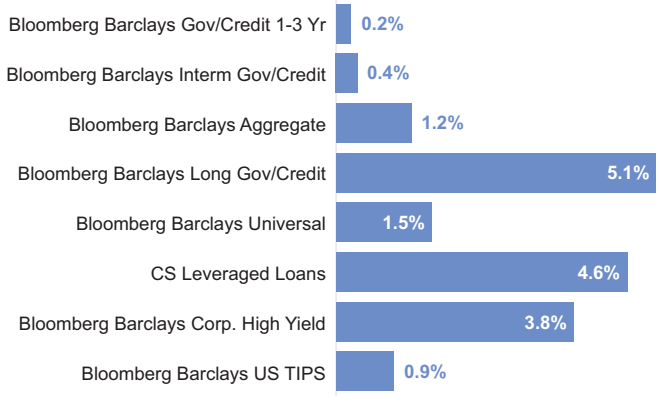
at the end of 2017. In a sharp reversal from 2017's relative performance, investment grade corporates underperformed like-duration Treasuries by 80 bps during the quarter and dropped 2.3%. Investors were fairly sanguine as they reassessed fairly healthy balance sheets juxtaposed with fair-to-rich valuations. New issuance was down 13% when compared to a similar time period a year ago, yet demand remained strong with oversubscriptions by two to three times. Outside of investment grade, the **Bloomberg Barclays High Yield Index** fell 0.9% while the

U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

S&P/LSTA Leveraged Loan Index, which includes floating rate loans and thus benefited from rising rates, rose 1.4%.

High yield corporates dropped 0.9% and outperformed the Aggregate. Corporate fundamentals remained healthy as earnings growth supported debt coverage. Default rates remained benign because many companies had already reorganized debt in 2016. About 75% of new issuance proceeds were used for refinancing. Valuations remained near historical highs.

Bank loans rose 1.4% and outperformed the Aggregate. Healthy balance sheets, strong demand for collateralized loan obligation (CLO) formation, and higher short-term interest rates bode well for the sector this quarter.

Global Bonds: Currency Changes Drive Returns

+3.4%
BB GBL AGG EX US

The **Bloomberg Barclays Global Aggregate Index** (hedged) fell 0.1% (versus a gain of 1.4% for the unhedged version) as developed non-U.S. fixed income market returns were helped by U.S. dollar weakness. Generally, currency movements drove fixed income returns across countries more than interest rate changes in the first quarter. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. As in the U.S., global credit underperformed government bonds.

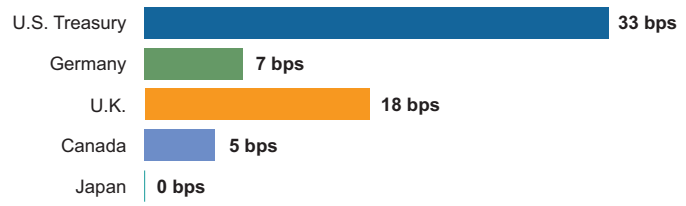
Local currency emerging market debt was a top-performing asset class in the first quarter; the **JPM GBI-EM Global Diversified** gained 4.4%. Returns were positive for most countries in local terms and further boosted by U.S. dollar weakness. U.S. dollar-denominated emerging market debt did not perform as well, dropping 1.7% as measured by **JPM's EMBI Global Diversified Index**.

Municipal bonds underperformed Treasuries in the first quarter in spite of shrinking supply and continued inflows to the sector. As a result, the ratio of the yield of AAA-rated 10-year municipals relative to the 10-year U.S. Treasury climbed to 89% as of quarter-end, up from 81% at the end of the year. Further, the municipal curve steepened as longer maturities underperformed.

Municipal bond fundamentals broadly remained strong, and Moody's reported that ratings upgrades outpaced downgrades for the third consecutive year in 2017. The **Bloomberg Barclays Municipal Bond Index** dropped 1.1% and the shorter duration **1-10 Year Blend Index** fell 0.7%.

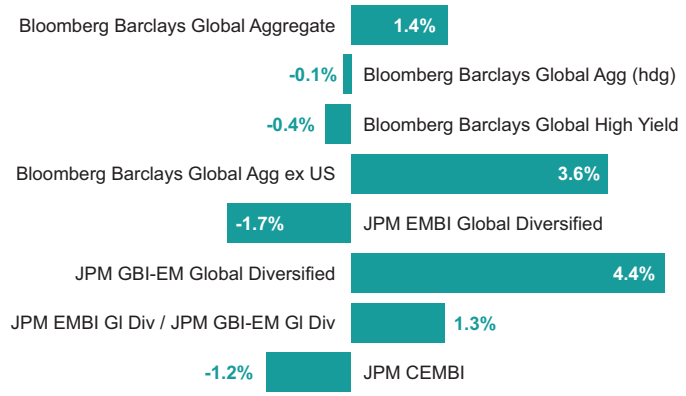
Change in 10-year Global Government Bond Yields

4Q17 to 1Q18



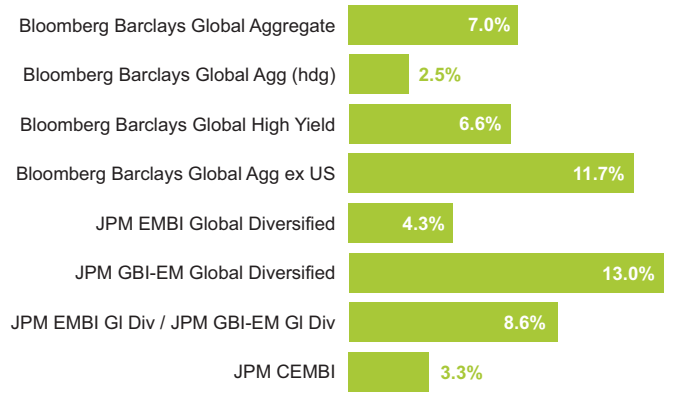
Source: Bloomberg Barclays

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

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE | Kevin Nagy

The **NCREIF Property Index (NPI)** gained 1.7% during the first quarter (1.1% from income and 0.6% from appreciation). This marked the 33rd consecutive quarter of positive returns for the Index.

Industrial (+3.3%) was the best-performing sector for the eighth consecutive quarter with Office (+1.8%) and Apartments (+1.5%) also posting strong returns; Retail (+0.7%) was the worst performer. Retail and Hotels (+1.0%) were the only property types to experience negative appreciation returns, gaining only because of income returns. The West (+2.2%) region was the strongest performer for the seventh quarter in a row, and the East trailed (+1.2%). The West also was the only region with an appreciation return above 1%. Transaction volume decreased more than 22% to $8.95 billion, down from $11.50 billion in the fourth quarter, but up 28% from the first quarter of 2017. Appraisal capitalization rates fell 20 basis points to 4.35%. Transaction capitalization fell further, dropping 44 bps to 5.41%. The spread between appraisal and transactional rates decreased to 106 bps.

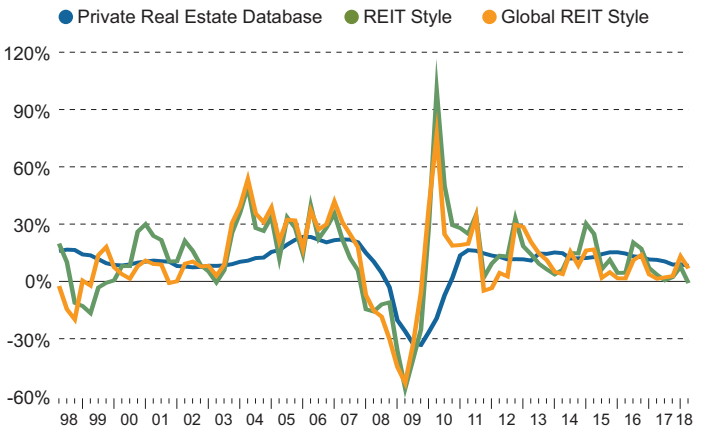
Occupancy rates dropped slightly to 93.5%, down 5 bps from the fourth quarter but up 57 bps from the first quarter of 2017. Apartment, Retail, and Office occupancy rates increased slightly while Industrial ticked down marginally.

The **NCREIF Open End Diversified Core Equity Index** rose 2.2% (1.0% from income and 1.2% from appreciation), a 13 bps increase from the fourth quarter of 2017. The appreciation return increased for the fourth quarter in a row and overtook income for the first time since the fourth quarter of 2015. Leverage dropped 3 bps to 21.1%.

Global Real Estate Investment Trusts (REITs), tracked by the **FTSE EPRA/NAREIT Developed REIT Index** (USD), outperformed U.S. REITs but still lost 4.3% during the first quarter. The median active global REIT manager, as measured by **Callan's Global REIT Peer Group**, fell 3.5%, beating the Index. U.S. REITs, as measured by the **FTSE NAREIT Equity REITs Index,** lost 8.2% for the quarter. The median active U.S. REIT manager, as measured by **Callan's REIT Peer Group**, lost merely 6.6%, also beating the Index.

U.S. REITs had a terrible start to 2018, down 11.6% through the end of February primarily due to an increase in interest rates and concerns over a trade war between the U.S. and China. A stronger March offset some of the damage but was not enough to push performance into positive territory. Timber (+1.8%) and Infrastructure (+1.4%) were the only sectors to experience positive returns. Diversified (-15.8%), Specialty (-11.7%), and Retail (-11.2%) were hit the hardest. Strong earnings and a positive growth outlook for the broader economy helped buoy REITs toward the end of the quarter.

Rolling One-Year Returns

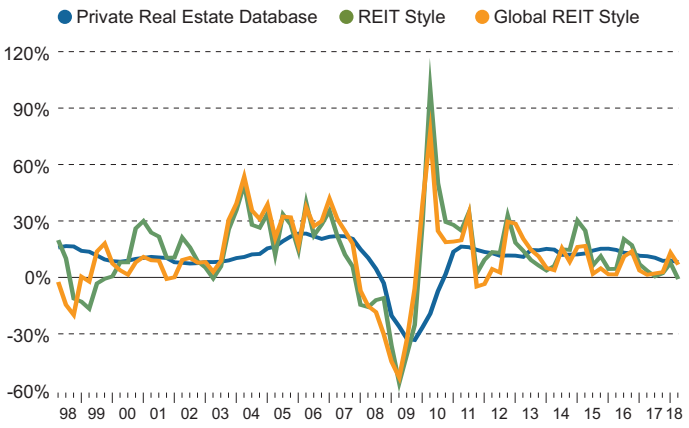


Source: Callan

Europe, as represented by the **FTSE EPRA/NAREIT Europe Index**, outperformed the United States, only losing 0.9% in U.S. dollar terms. U.K. REITs outperformed their continental counterparts in dollar terms but fared worse in local currency terms. The region was held back by geopolitical concerns, and economic growth, while still positive, fell from the frantic pace of late 2017 to more normal levels.

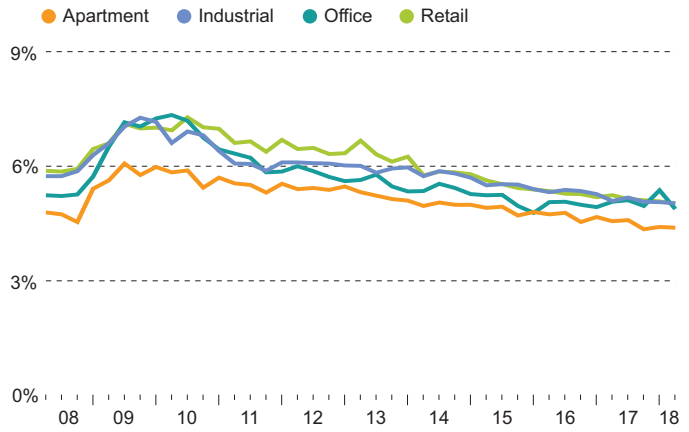
The Asia-Pacific region, represented by the **FTSE EPRA/NAREIT Asia Index,** declined 0.3%, outperforming all other regions. Japan jumped 7.3% in U.S. dollar terms, due mostly to weakness in the American currency, easily outpacing its neighbors to be the best-performing country in the region. Foreign capital flowed into Japanese REITs (J-REITs) and helped boost prices, even as they experienced continued net outflows. Low vacancy and increasing rents also contributed to the large gains.

NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF
Note: Transaction capitalization rate is equal weighted.

NCREIF Capitalization Rates by Property Type



Source: NCREIF
Note: Capitalization rates are appraisal-based.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY | Gary Robertson

Based on preliminary data, first quarter private equity partnership commitments totaled $66.5 billion, with 242 new partnerships formed, according to *Private Equity Analyst.* The number of funds fell 22% from 310 in the first quarter of 2017, and the dollar volume declined 17% from $80.0 billion. The absolute pace of fundraising remains heated, and Callan recommends vigilance in commitment pacing during this frothy market.

According to *Buyouts* newsletter, activity remained brisk as buyout funds closed 587 investments with $29.8 billion in disclosed deal value. The number of investments is larger than in any quarter in 2017, yet the announced dollar volume is lower than in any of last year's quarters. The $5.6 billion purchase of power company Calpine by Energy Capital Partners and others was the quarter's largest buyout. Nine acquisitions with announced values of $1 billion or more closed in the quarter.

According to the National Venture Capital Association, new investments in venture capital companies totaled 1,693 rounds of financing with $28.2 billion of announced value. The number of investments was down 18% from the prior quarter, but the announced value was up 33%. The median pre-money valuation continues to increase; only Series D+ fell, down 20%.

Funds Closed January 1 to March 31, 2018

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	111	6,034	9%
Buyouts	91	52,481	79%
Private Debt	18	4,133	6%
Secondary and Other	10	2,231	3%
Fund-of-funds	12	1,593	2%
Totals	**242**	**66,472**	**100%**

Source: Private Equity Analyst
Figures may not total due to rounding.

There were 164 private M&A exits of buyout-backed companies, *Buyouts* reports, with disclosed values totaling $28.3 billion. The exits count was up from the prior quarter's 159, and the announced value declined from $55.3 billion. There were 11 buyout-backed IPOs in the first quarter raising an aggregate $3.9 billion, up from only four totaling $860 million previously.

Venture-backed M&A exits totaled 188 transactions and disclosed value hit $8.1 billion. Both figures declined from the fourth quarter, which had 200 sales with announced values totaling $12.6 billion. There were 15 VC-backed IPOs in the first quarter with a combined float of $2.1 billion. For comparison, the fourth quarter of 2017 had 22 IPOs and total issuance of $3.1 billion.

Please see our upcoming issue of *Private Markets Trends* for more in-depth coverage.

Private Equity Performance Database (%) (Pooled Horizon IRRs through September 30, 2017*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.52	8.82	12.30	15.51	9.47	9.00	17.94
Growth Equity	4.90	15.83	10.68	13.21	10.06	12.60	13.13
All Buyouts	4.63	19.33	12.61	14.35	8.78	14.39	12.53
Mezzanine	4.16	13.07	9.43	10.15	9.02	9.47	8.64
Distressed	2.34	12.85	5.72	9.73	9.35	10.98	10.34
All Private Equity	**2.39**	**14.92**	**9.03**	**11.35**	**9.13**	**11.33**	**11.34**
S&P 500	4.21	16.02	11.57	13.84	9.08	12.65	12.86

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.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs | Jim McKee

Hints that an overheated U.S. economy may be unable to absorb significant fiscal stimulus ahead spooked markets in the first quarter. The resulting spasm of risk-off behavior caused the VIX, a measure of equity volatility, to more than double on one day, Feb. 5, leading to significant losses among volatility sellers. Despite the quarter's rocky ride for stocks and bonds, with major indices down for the quarter, hedge fund strategies were mostly positive.

As a proxy of unmanaged hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** grew 0.5%. Despite the quarter's negative market beta, *Long/Short Equity* (+1.0%) provided investors with some positive alpha. Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** gained 1.2%, net of all fees and expenses. Within that database, the median *Callan Long/Short Equity FOF* matched the *Callan Absolute Return FOF* with 1.2% gains, while the *Core Diversified FOF* returned 0.9%.

As a benchmark for alternative beta, the **Credit Suisse Neuberger Multi-Asset Risk Premia Index** lost 0.7% in the first quarter based upon a 5% volatility target. Within this Index, *Equity Momentum* and *Equity Value* both lost 4.4%. Most of the **Callan Multi-Asset Class (MAC)** style groups experienced weakness in the quarter, which was consistent with the market index and alternative beta returns cited above. Only *Absolute Return* (+0.2%) eked out a gain. *Risk Parity* (-1.3%) fell the most. Though normally less correlated with markets, *Risk Premia* (-0.7%) exhibited higher-than-expected losses during February's sell-off.

Callan Database Median and Index Returns* for Periods ended March 31, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**1.16**	**5.34**	**2.51**	**4.28**	**3.51**	**5.04**
Callan Absolute Return FOF Style	**1.23**	**4.82**	**2.67**	**4.18**	**3.25**	**4.76**
Callan Core Diversified FOF Style	**0.87**	**5.12**	**1.77**	**3.94**	**3.25**	**5.09**
Callan Long/Short Equity FOF Style	**1.16**	**7.76**	**3.54**	**5.54**	**3.78**	**6.03**
Credit Suisse Hedge Fund Index	0.47	5.43	1.82	3.61	3.49	5.89
HFRI Asset Wtd Composite	0.57	5.17	2.21	4.02	3.66	–
HFRI Fund Wtd Comp	-0.16	5.55	3.51	4.65	4.25	6.44
HFRI Equity Hedge (Total)	0.59	9.70	5.29	5.70	3.87	6.18
HFRI Event-Driven (Total)	0.15	5.18	4.11	4.73	4.54	7.10
HFRI Macro (Total) Index	-1.25	1.02	-0.85	0.89	1.42	4.42
HFRI Relative Value (Total)	0.92	4.51	4.06	4.16	5.84	6.61
90-Day T-Bill + 5%	1.57	6.11	5.53	5.34	5.34	6.28
Liquid Alternative Universe	**Quarter**	**Year**	**3 Years**	**5 Years**	**10 Years**	**15 Years**
Callan Absolute Return MAC	**0.21**	**2.65**	**1.92**	**3.12**	**–**	**–**
Callan Risk Premia MAC	**-0.74**	**3.08**	**1.42**	**3.02**	**6.85**	**–**
Callan Long-Biased MAC	**-0.50**	**9.32**	**3.84**	**5.37**	**5.98**	**8.87**
Callan Risk Parity MAC	**-1.33**	**7.81**	**4.27**	**4.61**	**6.93**	**–**
60% S&P 500/40% BB Agg	-0.97	8.81	6.99	8.72	7.42	7.85
CS NB MARP Index (5%v)	-0.70	-1.81	1.27	3.10	6.54	–
SG Trend Index	-3.88	-0.91	-5.01	1.80	1.91	3.59

*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION | Tom Szkwarla

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. Despite this, the Index trailed the Age 45 Target Date Fund—the average of target date funds appropriate for participants aged 45 and retiring at age 65—which gained 19.3%. Since inception, the DC Index's annual return of 6.3% has trailed the Age 45 Target Date Fund by 79 basis points.

A new feature of the Index, the DC Fee Analysis chart, measures the average total investment management fee by plan size. Mega plans have driven down their fees to an average of 33 basis points, while smaller plans pay progressively more.

The average DC plan balance grew 16.5% for the year ended Dec. 31, 2017, with market returns accounting for nearly all that.

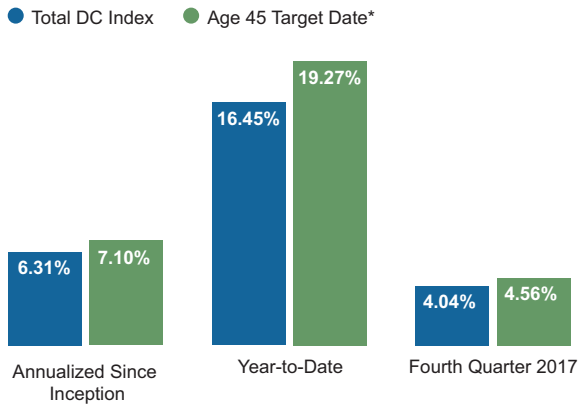
For the third consecutive quarter, non-U.S. equities have experienced notable inflows. Outflows came primarily from stable value (more than a third of the total) and company stock. As usual, target date funds (TDFs) attracted the majority of assets during the quarter, absorbing approximately 62 cents of every dollar that flowed into DC funds. Turnover (i.e., net transfer activity levels within DC plans) for the quarter, at 0.53%, fell below the since-inception average (0.63%).

The Callan DC Index's overall equity allocation ended at 71%, only slightly below its 2007 peak of 73%. TDFs accounted for 30.8% of total assets, an all-time high. U.S. large cap equity continued to hold the second-largest allocation, at 23.6%.

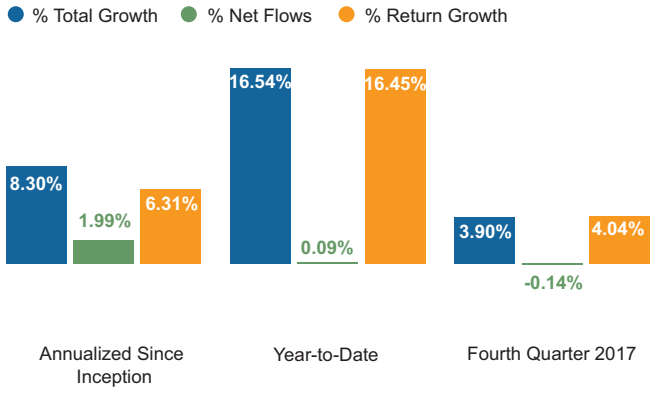
When TDFs are held within a DC plan (92% of the total), they hold 33.6% of assets, more than any other option. U.S. large cap equity funds, offered in all plans, are the second most utilized option (23.6%).

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 (Fourth Quarter 2017)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	61.81%
Non-U.S. Equity	24.86%
Stable Value	-36.21%
Company Stock	-25.94%
Total Turnover**	**0.53%**

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

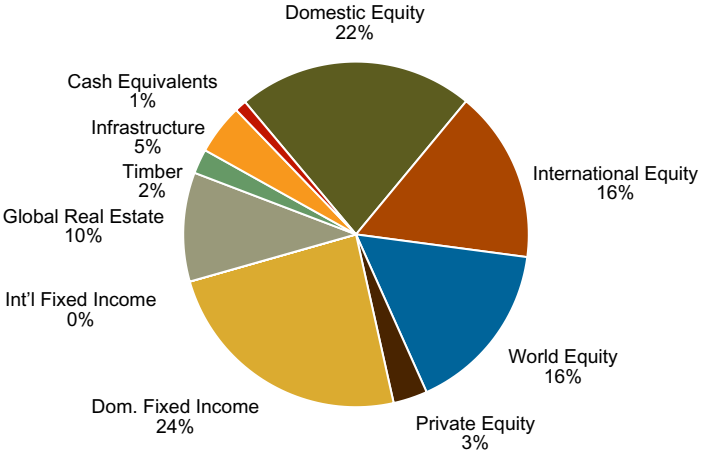
* The Age 45 Fund transitioned from the average 2030 TDF to the 2035 TDF in June 2013.

** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

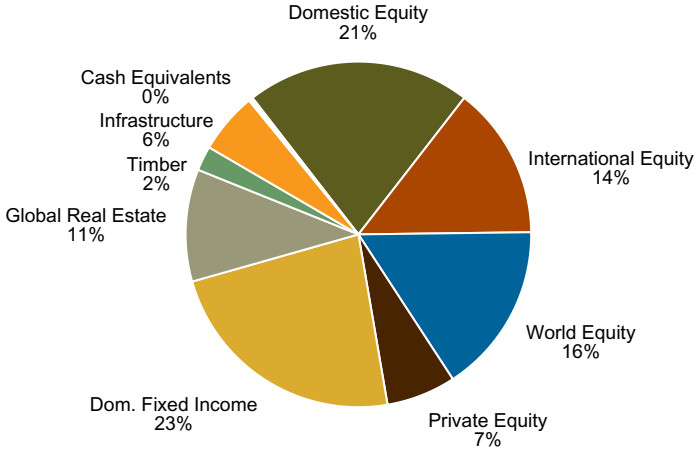
Actual vs Target Asset Allocation
As of March 31, 2018

The top left chart shows the Fund's asset allocation as of March 31, 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.

Actual Asset Allocation

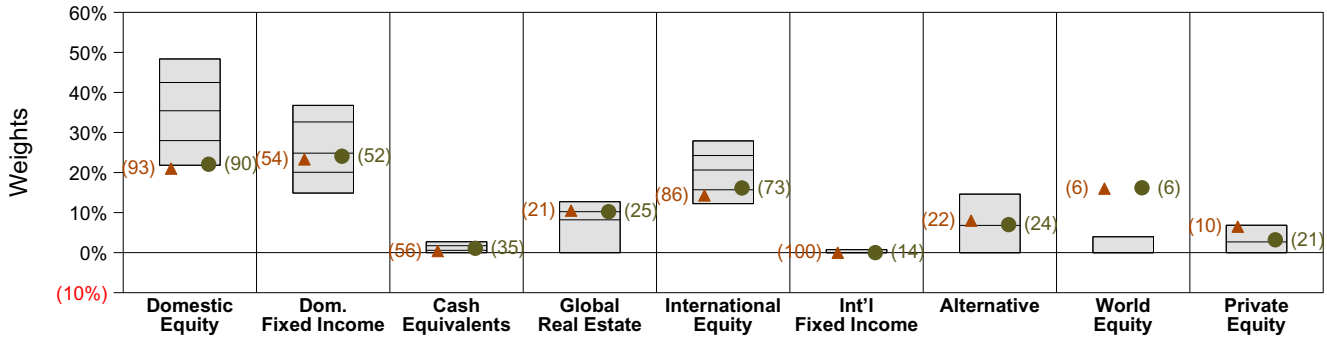


Target Asset Allocation



Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	1,252,298,768	22.1%	21.0%	1.1%	60,622,558
International Equity	916,187,276	16.1%	14.3%	1.8%	104,712,460
World Equity	919,079,756	16.2%	16.0%	0.2%	11,135,969
Private Equity	181,873,860	3.2%	6.5%	(3.3%)	(186,978,299)
Dom. Fixed Income	1,366,221,276	24.1%	23.3%	0.8%	44,028,048
Int'l Fixed Income	321	0.0%	0.0%	0.0%	321
Global Real Estate	580,468,130	10.2%	10.5%	(0.3%)	(15,369,975)
Timber	131,305,164	2.3%	2.3%	0.0%	788,241
Infrastructure	265,478,004	4.7%	5.7%	(1.0%)	(57,976,977)
Cash Equivalents	61,736,243	1.1%	0.4%	0.7%	39,037,647
Total	5,674,648,798	100.0%	100.0%		

Asset Class Weights vs Callan Public Fund Sponsor Database



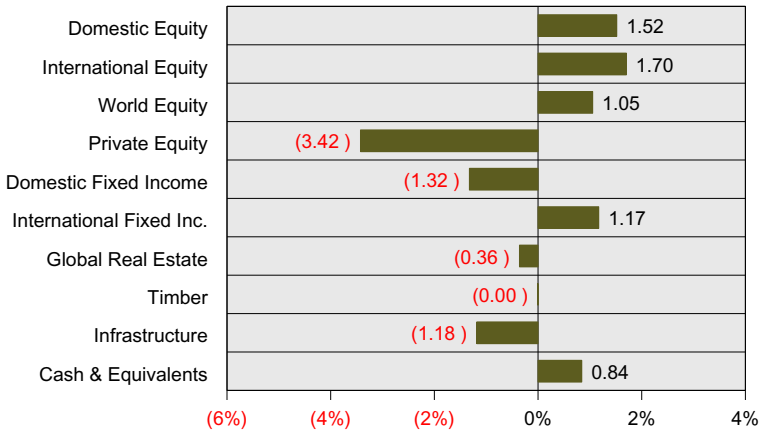
	Domestic Equity	Dom. Fixed Income	Cash Equivalents	Global Real Estate	International Equity	Int'l Fixed Income	Alternative	World Equity	Private Equity
10th Percentile	48.37	36.77	2.72	12.72	27.90	0.75	14.61	3.97	6.84
25th Percentile	42.49	32.63	1.73	10.23	24.25	0.00	6.80	0.00	2.68
Median	35.43	24.84	0.57	8.20	20.63	0.00	0.00	0.00	0.00
75th Percentile	27.97	20.07	0.00	0.00	15.70	0.00	0.00	0.00	0.00
90th Percentile	21.82	14.87	0.00	0.00	12.23	0.00	0.00	0.00	0.00
Fund ●	22.07	24.08	1.09	10.23	16.15	0.00	6.99	16.20	3.21
Target ▲	21.00	23.30	0.40	10.50	14.30	0.00	8.00	16.00	6.50
% Group Invested	96.53%	97.22%	75.00%	70.14%	92.36%	14.58%	14.58%	11.81%	31.25%

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

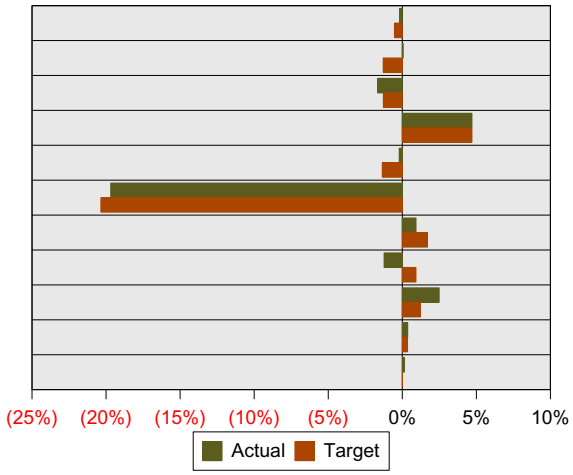
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

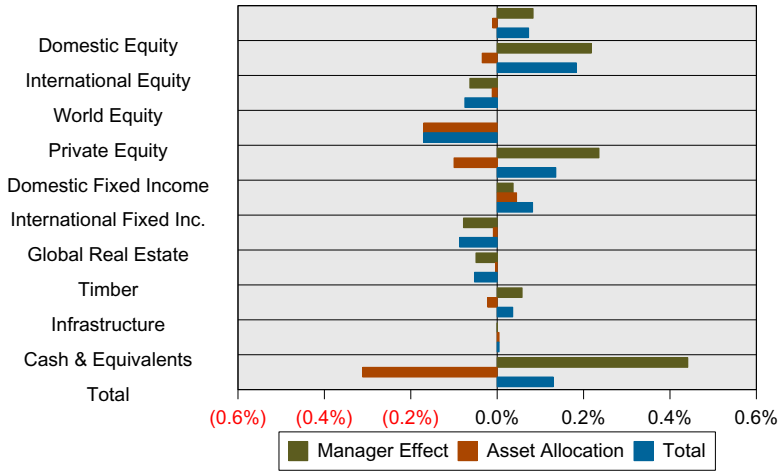
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

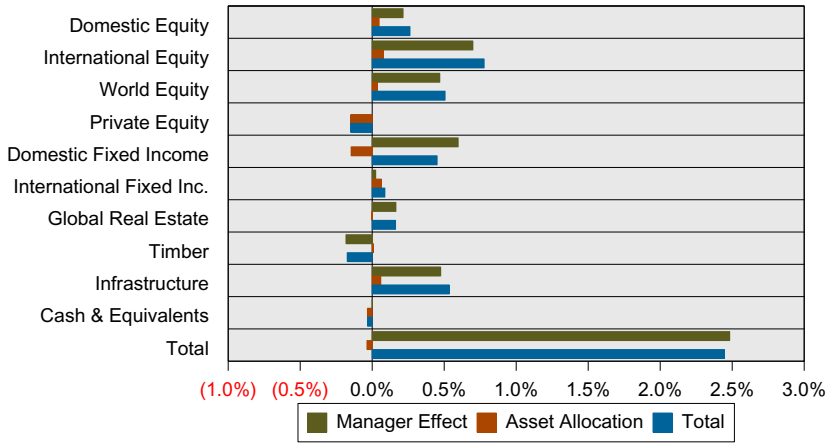
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	(0.18%)	(0.53%)	0.08%	(0.01%)	0.07%
International Equity	16%	14%	0.06%	(1.29%)	0.22%	(0.03%)	0.18%
World Equity	17%	16%	(1.67%)	(1.28%)	(0.06%)	(0.01%)	(0.07%)
Private Equity	3%	6%	4.70%	4.70%	0.00%	(0.17%)	(0.17%)
Domestic Fixed Income	20%	21%	(0.21%)	(1.35%)	0.24%	(0.10%)	0.14%
International Fixed Inc.	3%	2%	(19.69%)	(20.35%)	0.04%	0.04%	0.08%
Global Real Estate	10%	10%	0.93%	1.70%	(0.08%)	(0.01%)	(0.09%)
Timber	2%	2%	(1.23%)	0.92%	(0.05%)	(0.00%)	(0.05%)
Infrastructure	5%	6%	2.49%	1.22%	0.06%	(0.02%)	0.04%
Cash & Equivalents	1%	0%	0.37%	0.35%	0.00%	0.00%	0.00%
Total			**0.14%**	**= 0.01%**	**+ 0.44%**	**+ (0.31%)**	**0.13%**

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

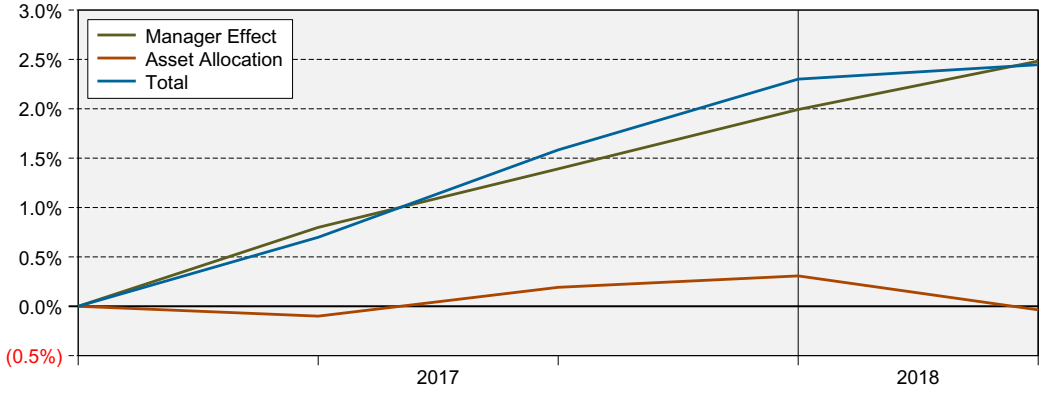
Cumulative Total Fund Relative Attribution - March 31, 2018

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

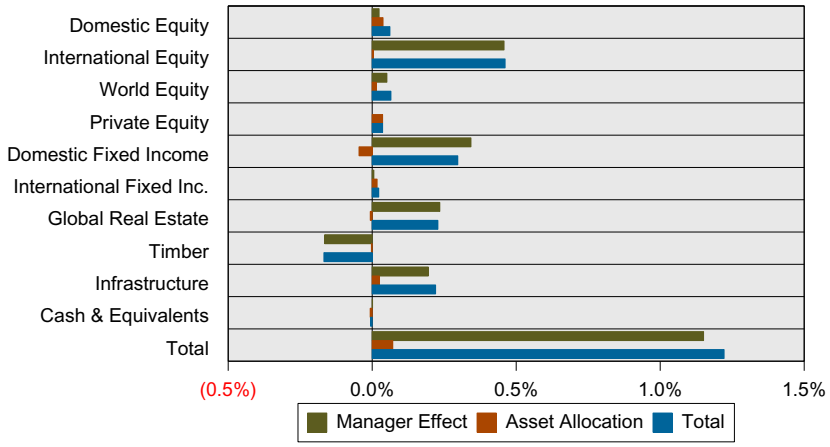
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	14.49%	13.53%	0.21%	0.05%	0.26%
International Equity	16%	14%	20.92%	16.26%	0.70%	0.08%	0.78%
World Equity	17%	16%	16.44%	13.59%	0.47%	0.04%	0.51%
Private Equity	3%	6%	13.81%	13.81%	0.00%	(0.15%)	(0.15%)
Domestic Fixed Income	19%	19%	4.74%	1.82%	0.60%	(0.15%)	0.45%
International Fixed Inc.	4%	5%	(13.73%)	(14.11%)	0.02%	0.06%	0.09%
Global Real Estate	10%	10%	8.70%	7.12%	0.16%	(0.00%)	0.16%
Timber	2%	3%	(2.97%)	3.79%	(0.18%)	0.01%	(0.17%)
Infrastructure	4%	5%	13.07%	2.44%	0.48%	0.06%	0.54%
Cash & Equivalents	1%	0%	1.22%	1.11%	0.00%	(0.03%)	(0.03%)
Total			**12.54%**	**= 10.10%**	**+ 2.48%**	**+ (0.04%)**	**2.45%**

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

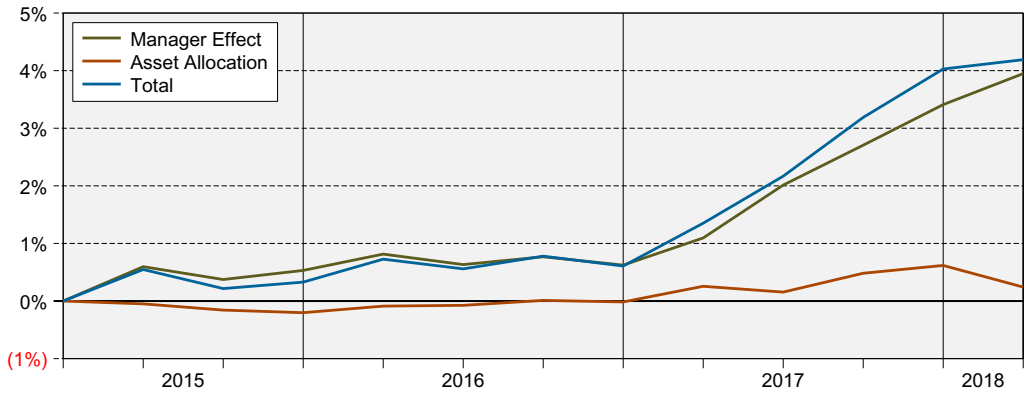
Cumulative Total Fund Relative Attribution - March 31, 2018

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

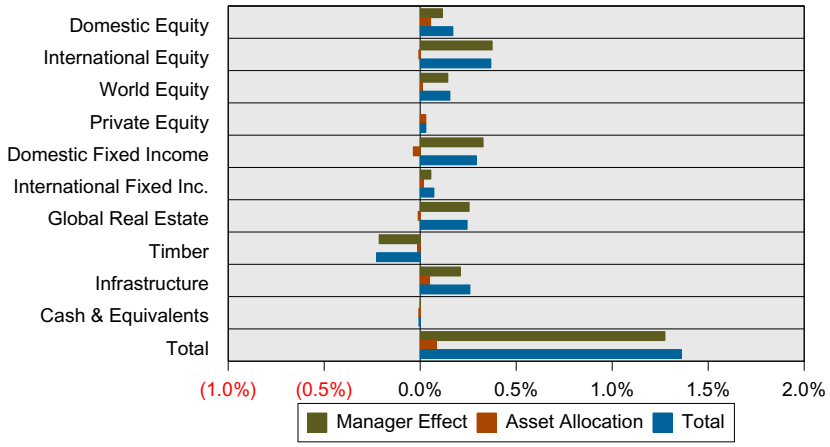
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	10.12%	10.00%	0.02%	0.04%	0.06%
International Equity	15%	14%	9.09%	6.09%	0.46%	0.00%	0.46%
World Equity	16%	16%	8.19%	7.97%	0.05%	0.01%	0.06%
Private Equity	3%	6%	2.17%	2.17%	0.00%	0.04%	0.04%
Domestic Fixed Income	18%	18%	4.04%	2.25%	0.34%	(0.05%)	0.30%
International Fixed Inc.	5%	5%	(4.08%)	(4.16%)	0.01%	0.02%	0.02%
Global Real Estate	10%	10%	11.06%	8.72%	0.23%	(0.01%)	0.23%
Timber	3%	4%	(2.27%)	3.44%	(0.16%)	(0.00%)	(0.17%)
Infrastructure	4%	5%	6.07%	1.76%	0.19%	0.03%	0.22%
Cash & Equivalents	1%	1%	0.67%	0.53%	0.00%	(0.01%)	(0.01%)
Total			**7.52%**	**= 6.30%**	**+ 1.15%**	**+ 0.07%**	**1.22%**

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

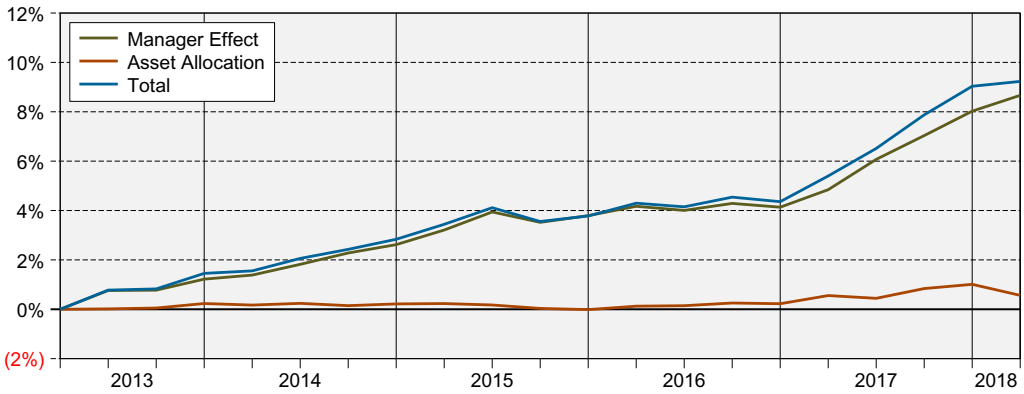
Cumulative Total Fund Relative Attribution - March 31, 2018

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

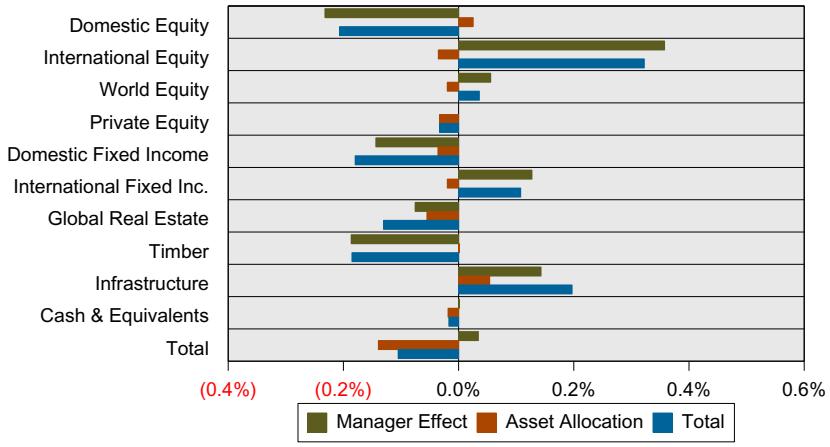
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	13.40%	12.85%	0.12%	0.05%	0.17%
International Equity	15%	14%	8.58%	6.09%	0.37%	(0.01%)	0.37%
World Equity	16%	16%	10.58%	9.70%	0.14%	0.01%	0.15%
Private Equity	4%	5%	2.24%	2.24%	0.00%	0.03%	0.03%
Domestic Fixed Income	19%	18%	4.36%	2.68%	0.33%	(0.04%)	0.29%
International Fixed Inc.	5%	5%	(2.96%)	(3.96%)	0.06%	0.02%	0.07%
Global Real Estate	10%	10%	12.70%	10.00%	0.26%	(0.01%)	0.24%
Timber	4%	4%	0.06%	6.09%	(0.21%)	(0.01%)	(0.23%)
Infrastructure	4%	5%	6.12%	1.20%	0.21%	0.05%	0.26%
Cash & Equivalents	1%	1%	0.42%	0.34%	0.00%	(0.01%)	(0.01%)
Total			**8.62%**	**= 7.26%**	**+ 1.27%**	**+ 0.09%**	**1.36%**

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

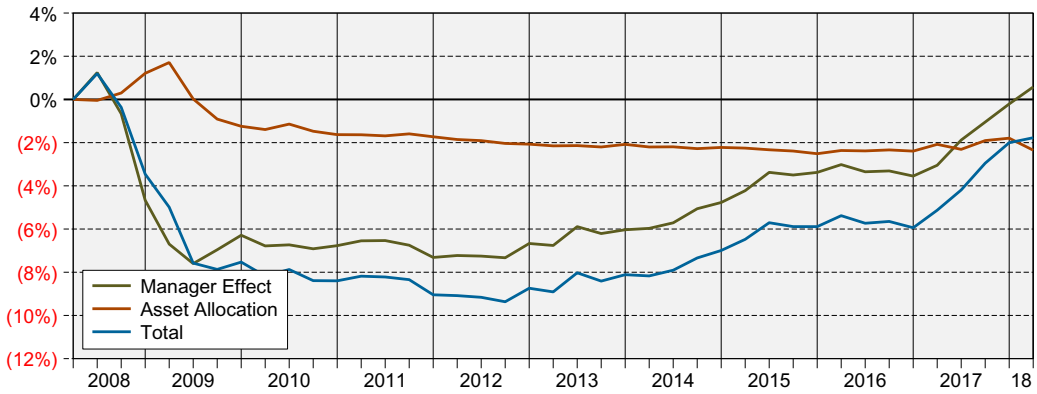
Cumulative Total Fund Relative Attribution - March 31, 2018

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

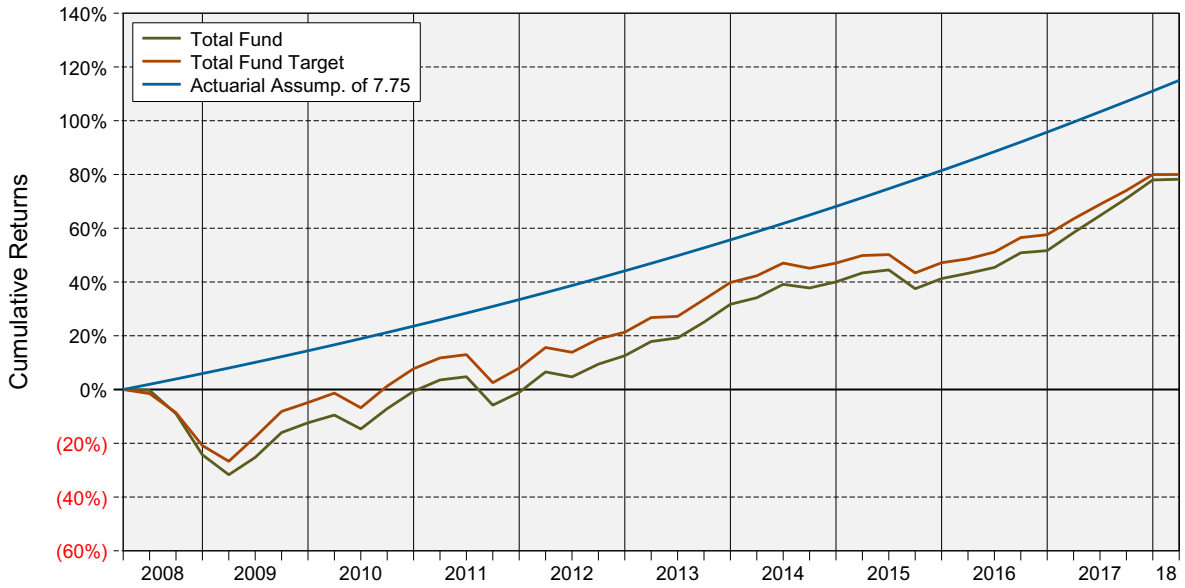
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	28%	28%	8.99%	9.67%	(0.23%)	0.03%	(0.21%)
International Equity	16%	16%	5.32%	3.24%	0.36%	(0.04%)	0.32%
World Equity	9%	9%	-	-	0.06%	(0.02%)	0.04%
Private Equity	4%	5%	(0.04%)	(0.04%)	0.00%	(0.03%)	(0.03%)
Domestic Fixed Income	22%	21%	5.12%	4.98%	(0.14%)	(0.04%)	(0.18%)
International Fixed Inc.	5%	5%	1.54%	(0.71%)	0.13%	(0.02%)	0.11%
Global Real Estate	9%	9%	5.11%	6.09%	(0.08%)	(0.05%)	(0.13%)
Timber	3%	3%	-	-	(0.19%)	0.00%	(0.19%)
Infrastructure	3%	3%	-	-	0.14%	0.05%	0.20%
Cash & Equivalents	1%	1%	0.48%	0.34%	0.00%	(0.02%)	(0.02%)
Total			**5.95%**	**= 6.05%**	**+ 0.03%**	**+ (0.14%)**	**(0.10%)**

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

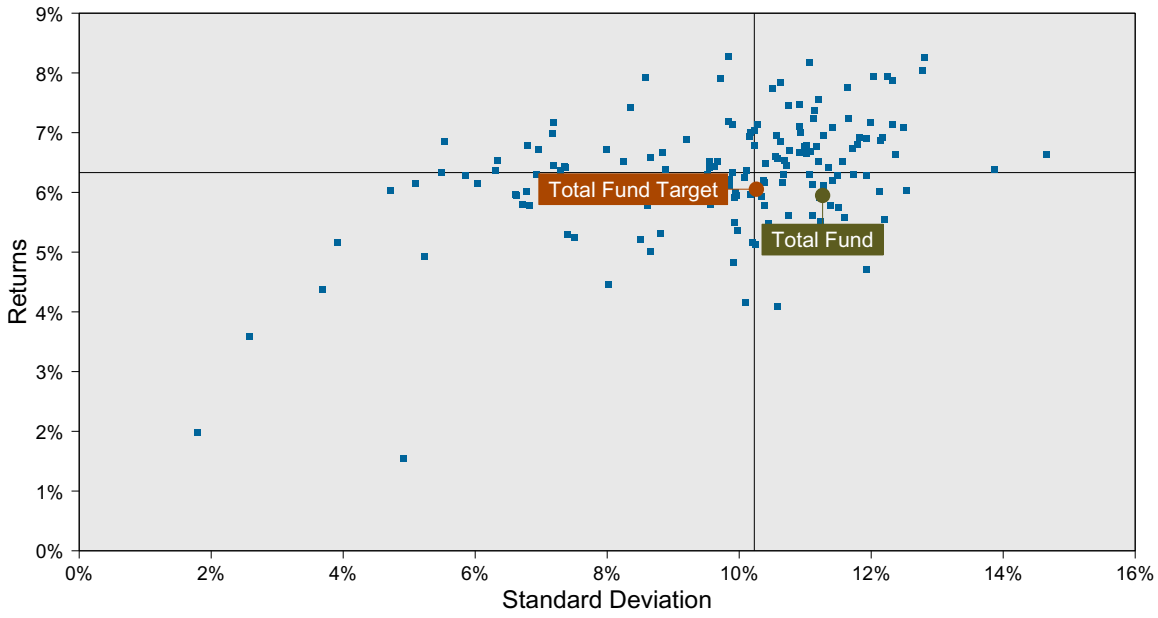
Cumulative Performance Relative to Target

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



Ten Year Annualized Risk vs Return



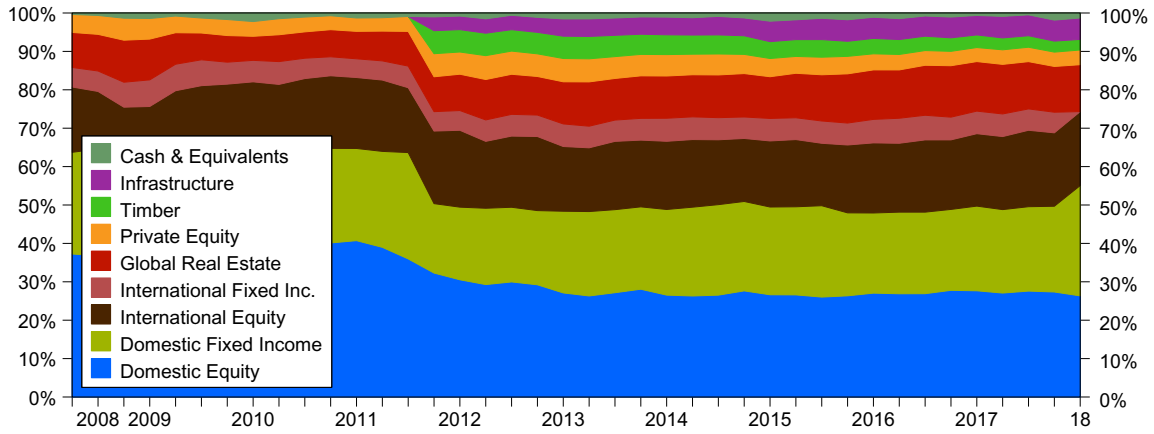
Squares represent membership of the Callan Public Fund Sponsor Database

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

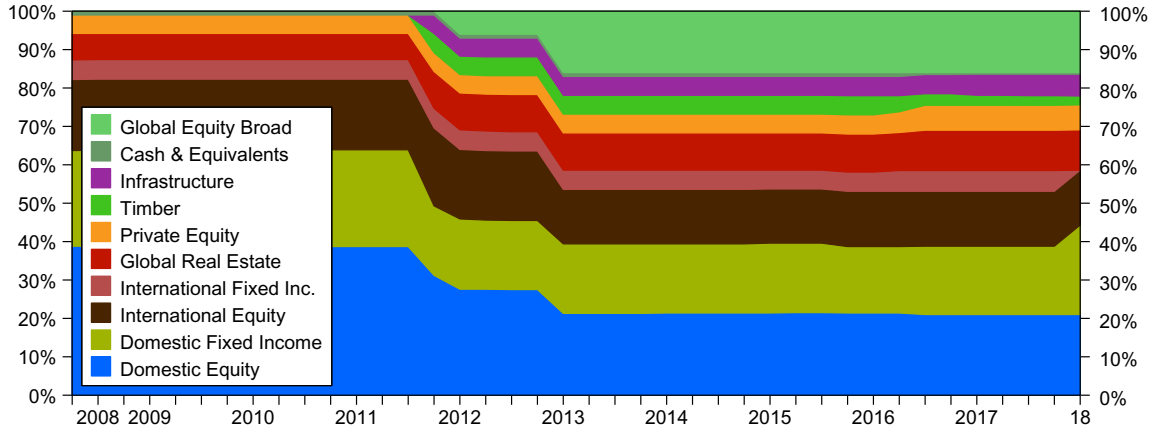
Actual vs Target Historical Asset Allocation

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.

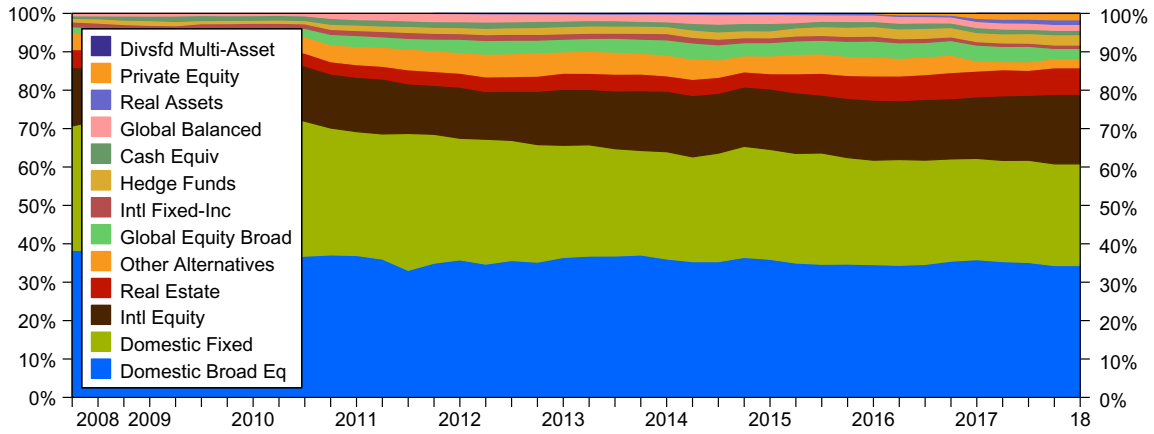
Actual Historical Asset Allocation



Target Historical Asset Allocation



Average Callan Public Fund Sponsor Database Historical Asset Allocation

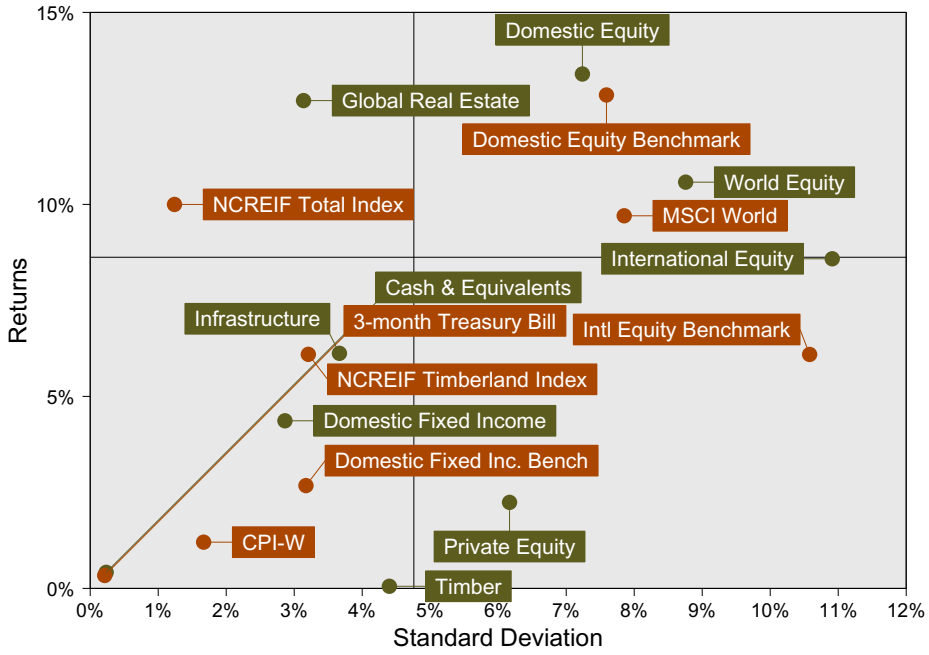


* Current Quarter Target = 16.3% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

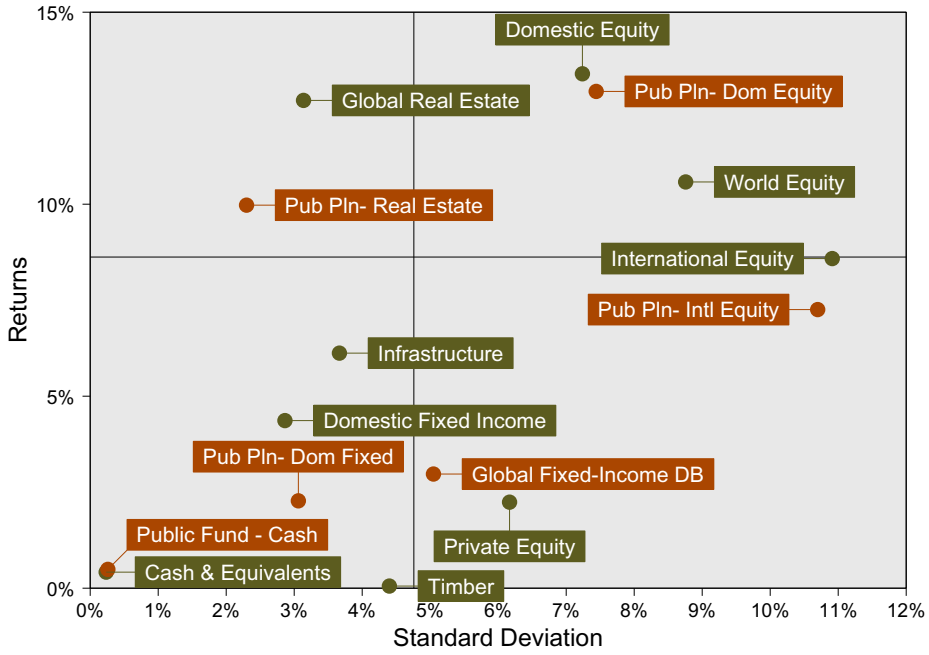
Asset Class Risk and Return

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



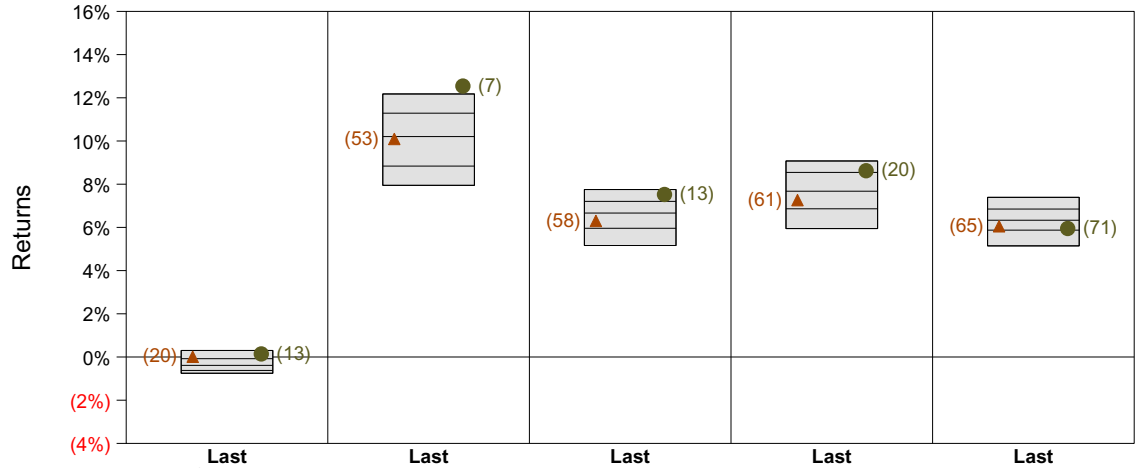
Five Year Annualized Risk vs Return
Asset Classes vs Asset Class Median



Total Fund Ranking

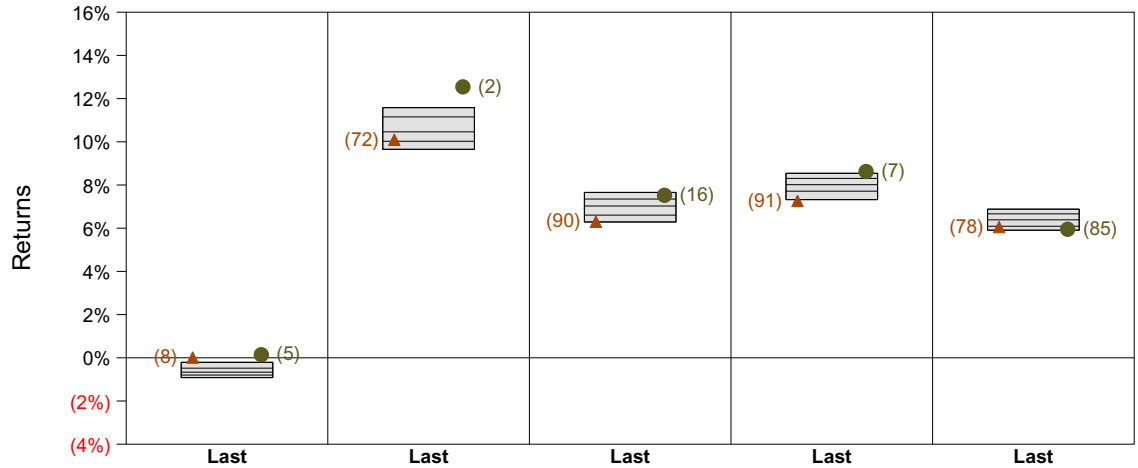
The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended March 31, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

Callan Public Fund Sponsor Database



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.30	12.18	7.75	9.08	7.39
25th Percentile	(0.08)	11.29	7.21	8.55	6.85
Median	(0.39)	10.21	6.66	7.67	6.33
75th Percentile	(0.62)	8.84	5.96	6.86	5.87
90th Percentile	(0.75)	7.95	5.16	5.95	5.15
Total Fund ●	0.14	12.54	7.52	8.62	5.95
Policy Target ▲	0.01	10.10	6.30	7.26	6.05

Asset Allocation Adjusted Ranking



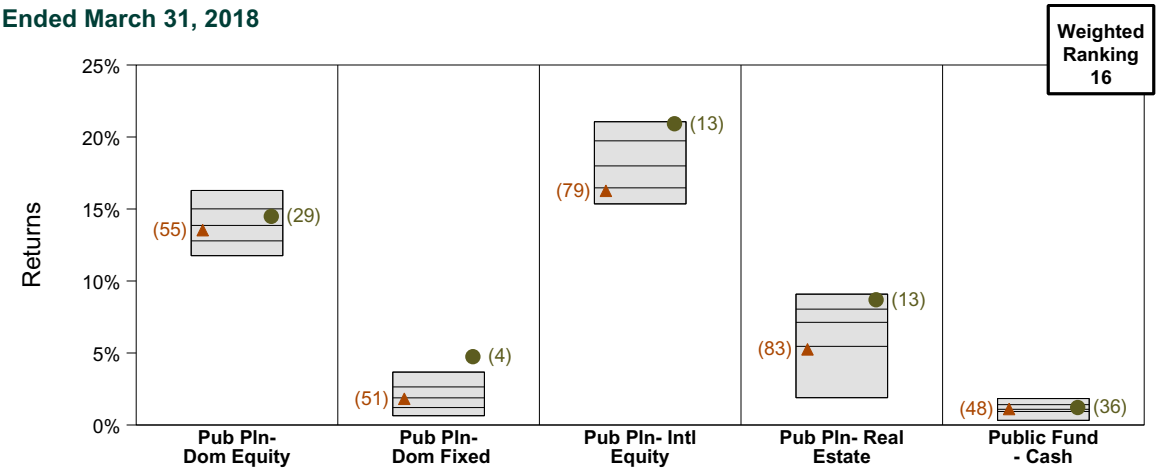
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.21)	11.58	7.66	8.54	6.88
25th Percentile	(0.48)	11.15	7.35	8.30	6.67
Median	(0.67)	10.46	7.03	8.01	6.39
75th Percentile	(0.80)	10.02	6.60	7.71	6.09
90th Percentile	(0.92)	9.65	6.29	7.32	5.91
Total Fund ●	0.14	12.54	7.52	8.62	5.95
Policy Target ▲	0.01	10.10	6.30	7.26	6.05

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

Asset Class Rankings

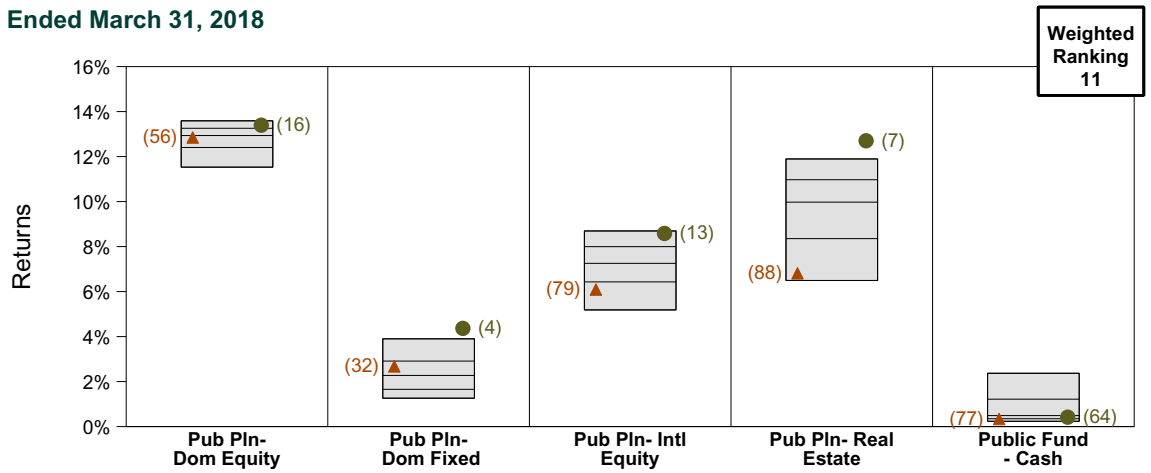
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	16.29	3.67	21.06	9.09	1.84
25th Percentile	15.01	2.64	19.73	8.05	1.41
Median	13.86	1.89	17.99	7.13	1.09
75th Percentile	12.79	1.21	16.47	5.46	0.94
90th Percentile	11.76	0.65	15.36	1.90	0.32
Asset Class Composite ●	14.49	4.74	20.92	8.70	1.22
Composite Benchmark ▲	13.53	1.82	16.26	5.25	1.11

Total Asset Class Performance
Five Years Ended March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	13.59	3.90	8.70	11.90	2.37
25th Percentile	13.26	2.91	8.00	10.97	1.22
Median	12.94	2.27	7.26	9.98	0.49
75th Percentile	12.41	1.66	6.43	8.35	0.35
90th Percentile	11.53	1.26	5.18	6.49	0.23
Asset Class Composite ●	13.40	4.36	8.58	12.70	0.42
Composite Benchmark ▲	12.85	2.68	6.09	6.81	0.34

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% 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 March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
GLOBAL EQUITY	**$3,269,439,660**	**57.61%**	**$(57,912,687)**	**$(9,029,541)**	**$3,336,381,888**	**58.76%**
Domestic Equity	**$1,252,298,768**	**22.07%**	**$(31,502,934)**	**$(2,109,979)**	**$1,285,911,681**	**22.65%**
Large Cap Domestic Equity	**$953,240,774**	**16.80%**	**$(39,253,097)**	**$(3,435,154)**	**$995,929,026**	**17.54%**
L.A. Capital	372,564,954	6.57%	(17,698,201)	3,089,799	387,173,355	6.82%
LACM Enhanced Index	199,614,929	3.52%	(8,054,897)	(3,000,878)	210,670,704	3.71%
Northern Trust AM Enh S&P 500	192,200,480	3.39%	4,000,000	(591,013)	188,791,493	3.32%
Parametric Clifton Enh S&P 500	188,860,412	3.33%	(17,500,000)	(2,933,062)	209,293,474	3.69%
Small Cap Domestic Equity	**$299,057,994**	**5.27%**	**$7,750,163**	**$1,325,176**	**$289,982,655**	**5.11%**
Atlanta Capital	152,021,780	2.68%	7,750,163	2,713,855	141,557,762	2.49%
Parametric Clifton Enh Small Cap	147,036,214	2.59%	0	(1,388,680)	148,424,893	2.61%
International Equity	**$916,187,276**	**16.15%**	**$16,617,877**	**$581,270**	**$898,988,130**	**15.83%**
Developed Int'l Equity	**$685,286,729**	**12.08%**	**$12,117,877**	**$(4,467,102)**	**$677,635,955**	**11.93%**
DFA Int'l Small Cap	90,579,085	1.60%	0	(2,098,046)	92,677,130	1.63%
Northern Trust AM World Ex US	326,204,381	5.75%	(26,358)	(4,451,330)	330,682,069	5.82%
Wellington Management Co.	90,339,739	1.59%	(207,642)	2,107,915	88,439,466	1.56%
William Blair	178,163,524	3.14%	12,351,877	(25,641)	165,837,289	2.92%
Emerging Markets Equity	**$230,900,547**	**4.07%**	**$4,500,000**	**$5,048,372**	**$221,352,175**	**3.90%**
Axiom	167,894,892	2.96%	0	4,226,731	163,668,161	2.88%
DFA	63,005,655	1.11%	4,500,000	821,641	57,684,014	1.02%
World Equity	**$919,079,756**	**16.20%**	**$(40,821,698)**	**$(15,744,867)**	**$975,646,322**	**17.18%**
EPOCH Investment Partners	400,400,325	7.06%	(20,683,632)	(10,346,104)	431,430,062	7.60%
LSV Asset Management	518,679,431	9.14%	(20,138,066)	(5,398,763)	544,216,259	9.58%

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Private Equity	**$181,873,860**	**3.21%**	**$(2,205,931)**	**$8,244,035**	**$175,835,756**	**3.10%**
Adams Street Direct Co-Invest Fd	1,337,757	0.02%	0	(123,445)	1,461,202	0.03%
Adams Street Direct Fund 2010	903,107	0.02%	(79,016)	24,817	957,306	0.02%
Adams Street 1998 Partnership	125,886	0.00%	0	579	125,307	0.00%
Adams Street 1999 Partnership	124,033	0.00%	(205,083)	4,107	325,009	0.01%
Adams Street 2000 Partnership	581,409	0.01%	0	20,512	560,897	0.01%
Adams Street 2001 Partnership	833,485	0.01%	(266,297)	57,049	1,042,733	0.02%
Adams Street 2002 Partnership	158,107	0.00%	0	(2,538)	160,645	0.00%
Adams Street 2003 Partnership	237,368	0.00%	0	6,373	230,995	0.00%
Adams Street 2010 Partnership	6,412,058	0.11%	(250,307)	371,298	6,291,067	0.11%
Adams Street 2008 Fund	7,591,595	0.13%	(561,952)	320,242	7,833,305	0.14%
Adams Street 1999 Non-US	71,376	0.00%	0	420	70,956	0.00%
Adams Street 2000 Non-US	435,643	0.01%	(130,538)	32,250	533,931	0.01%
Adams Street 2001 Non-US	171,139	0.00%	0	10,028	161,111	0.00%
Adams Street 2002 Non-US	89,239	0.00%	(179,907)	7,754	261,392	0.00%
Adams Street 2003 Non-US	206,989	0.00%	0	8,993	197,996	0.00%
Adams Street 2004 Non-US	257,629	0.00%	(39,986)	23,541	274,074	0.00%
Adams Street 2010 Non-US	3,162,967	0.06%	(54,533)	145,905	3,071,595	0.05%
Adams Street 2010 Non-US Emg	1,593,992	0.03%	(61,572)	108,894	1,546,670	0.03%
Adams Street 2015 Global Fd	11,649,256	0.21%	1,499,121	712,308	9,437,827	0.17%
Adams Street 2016 Global Fd	6,207,128	0.11%	405,000	389,866	5,412,262	0.10%
Adams Street 2017 Global Fd	2,666,685	0.05%	0	56,685	2,610,000	0.05%
Adams Street BVCF IV Fund	3,345,617	0.06%	0	2,763	3,342,854	0.06%
BlackRock	28,280,464	0.50%	7,835,818	0	20,444,646	0.36%
Capital International V	1,088,397	0.02%	27,252	(585,106)	1,646,251	0.03%
Capital International VI	27,070,109	0.48%	(218,002)	1,239,505	26,048,606	0.46%
CorsAir III	14,164,690	0.25%	(1,055,527)	1,510,906	13,709,311	0.24%
CorsAir IV	24,880,122	0.44%	(64,353)	429,481	24,514,994	0.43%
EIG Energy Fund XIV	5,560,655	0.10%	0	181,969	5,378,686	0.09%
Hearthstone Advisors MS II	1	0.00%	0	0	1	0.00%
Hearthstone Advisors MS III	2,365,900	0.04%	0	65,541	2,300,359	0.04%
Lewis & Clark, LP	1,638,301	0.03%	56,303	0	1,581,998	0.03%
Lewis & Clark II	6,619,916	0.12%	0	0	6,619,916	0.12%
Matlin Patterson II	1,152,793	0.02%	0	29,219	1,123,574	0.02%
Matlin Patterson III	17,082,516	0.30%	(8,862,351)	3,194,118	22,750,749	0.40%
Quantum Energy Partners	3,807,531	0.07%	0	0	3,807,531	0.07%

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
GLOBAL FIXED INCOME	**$1,366,221,597**	**24.08%**	**$56,861,257**	**$6,842,896**	**$1,302,517,444**	**22.94%**
Domestic Fixed Income	**$1,366,221,276**	**24.08%**	**$315,922,343**	**$350,538**	**$1,049,948,395**	**18.49%**
Inv. Grade Fixed Income	**$977,096,694**	**17.22%**	**$265,040,622**	**$(2,421,418)**	**$714,477,490**	**12.58%**
Declaration Total Return	115,933,897	2.04%	22,772,767	422,415	92,738,715	1.63%
J. P. Morgan MBS	2,594	0.00%	(130,229,922)	(2,104,598)	132,337,114	2.33%
PIMCO DiSCO II	116,274,918	2.05%	0	2,821,801	113,453,117	2.00%
PIMCO MBS	0	0.00%	(920,240)	46,106	874,133	0.02%
PIMCO Core Plus Constrained	310,299,561	5.47%	60,000,000	(3,120,700)	253,420,260	4.46%
Prudential	316,943,890	5.59%	313,499,033	3,444,857	-	-
SSgA Long US Treas Index	117,639,081	2.07%	(7,417)	(4,007,652)	121,654,150	2.14%
Transition Account	2,753	0.00%	(73,599)	76,352	-	-
Below Inv. Grade Fixed Income	**$389,124,583**	**6.86%**	**$50,881,721**	**$2,771,956**	**$335,470,905**	**5.91%**
Ares ND Credit Strategies Fd	70,394,727	1.24%	20,880,000	868,576	48,646,151	0.86%
Cerberus ND Private Credit Fd	67,419,720	1.19%	0	1,681,156	65,738,564	1.16%
Goldman Sachs 2006 Offshore	124,903	0.00%	0	5,418	119,485	0.00%
Goldman Sachs Offshore V	567,424	0.01%	(228,707)	15,272	780,859	0.01%
Loomis Sayles	204,815,521	3.61%	35,588,215	(200,574)	169,427,879	2.98%
PIMCO Bravo II Fund	45,802,288	0.81%	(5,357,787)	402,108	50,757,967	0.89%
Internationall Fixed Income	**$321**	**0.00%**	**$(259,061,086)**	**$6,492,358**	**$252,569,049**	**4.45%**
Brandywine	321	0.00%	(161,643,185)	3,887,346	157,756,160	2.78%
UBS Global Asset Mgmt.	0	0.00%	(97,417,901)	2,605,012	94,812,889	1.67%
GLOBAL REAL ASSETS	**$977,251,298**	**17.22%**	**$14,857,894**	**$10,210,659**	**$952,182,745**	**16.77%**
Global Real Estate	**$580,468,130**	**10.23%**	**$14,754,872**	**$5,430,431**	**$560,282,827**	**9.87%**
Invesco Core Real Estate	291,065,698	5.13%	28,178,255	657	262,886,786	4.63%
Invesco Fund II	190,954	0.00%	0	1,632	189,322	0.00%
Invesco Fund III	18,824,118	0.33%	0	(478,717)	19,302,835	0.34%
Invesco Asia RE Feeder	255,561	0.00%	0	(16,853)	272,414	0.00%
Invesco Asia RE Fund III	14,788,184	0.26%	(11,355,616)	1,045,305	25,098,495	0.44%
Invesco Value Added Fd IV	41,709,320	0.74%	0	751,713	40,957,607	0.72%
JP Morgan	203,566,628	3.59%	(2,067,764)	4,607,530	201,026,863	3.54%
JP Morgan Alternative Fd	314,075	0.01%	0	20,583	293,492	0.01%
JP Morgan China Property Fd	308,044	0.01%	0	(4,406)	312,450	0.01%
JP Morgan Greater European Opp Fd	9,445,548	0.17%	(3)	(497,013)	9,942,564	0.18%
Timber	**$131,305,164**	**2.31%**	**$(1,900,000)**	**$(1,655,860)**	**$134,861,024**	**2.38%**
TIR Teredo	30,567,272	0.54%	0	(460,027)	31,027,299	0.55%
TIR Springbank	100,737,892	1.78%	(1,900,000)	(1,195,833)	103,833,725	1.83%
Infrastructure	**$265,478,004**	**4.68%**	**$2,003,022**	**$6,436,089**	**$257,038,894**	**4.53%**
JP Morgan Asian Infrastructure	23,171,567	0.41%	153,138	401,393	22,617,036	0.40%
JP Morgan IIF	192,911,300	3.40%	(381,264)	5,478,717	187,813,848	3.31%
Grosvenor Cust. Infrastructure	33,753,732	0.59%	0	0	33,753,732	0.59%
Grosvenor Cust. Infrastructure II	15,641,405	0.28%	2,231,148	555,979	12,854,278	0.23%
CASH & CASH EQUIVALENTS	**$61,736,243**	**1.09%**	**$(25,675,029)**	**$290,680**	**$87,120,592**	**1.53%**
Northern Trust Cash Account	51,585,583	0.91%	(25,675,029)	253,149	77,007,463	1.36%
Bank of ND	10,150,660	0.18%	0	37,532	10,113,128	0.18%
Securities Lending Income	**$0**	**0.00%**	**$(78,959)**	**$78,959**	**-**	**-**
Total Fund	**$5,674,648,798**	**100.0%**	**$(11,947,524)**	**$8,393,654**	**$5,678,202,669**	**100.0%**

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Global Equity					
Gross	(0.28%)	16.73%	8.85%	10.60%	-
Net	(0.33%)	16.47%	8.57%	10.26%	-
Wtd Avg Global Equity Benchmark	(0.31%)	14.34%	7.78%	9.37%	-
Domestic Equity					
Gross	(0.18%)	14.49%	10.12%	13.40%	8.99%
Net	(0.22%)	14.30%	9.93%	13.16%	8.72%
Wtd Avg Domestic Equity Benchmark	(0.53%)	13.53%	10.00%	12.85%	9.67%
Large Cap Equity					
Gross	(0.39%)	14.83%	10.81%	14.00%	8.28%
Net	(0.42%)	14.71%	10.67%	13.83%	8.07%
Large Cap Benchmark (1)	(0.69%)	13.98%	10.39%	13.17%	9.50%
L.A. Capital - Gross	0.76%	17.43%	11.68%	15.10%	11.29%
L.A. Capital - Net	0.71%	17.19%	11.46%	14.86%	11.06%
Russell 1000 Growth Index	1.42%	21.25%	12.90%	15.53%	11.34%
LACM Enhanced Index - Goss	(1.50%)	11.46%	9.96%	13.36%	10.16%
LACM Enhanced Index - Net	(1.52%)	11.34%	9.84%	13.23%	10.00%
Russell 1000 Index	(0.69%)	13.98%	10.39%	13.17%	9.61%
Northern Tr AM Enh S&P500 - Gross	(0.34%)	14.83%	9.93%	13.27%	9.94%
Northern Tr AM Enh S&P500 - Net	(0.34%)	14.83%	9.93%	13.01%	9.75%
S&P 500 Index	(0.76%)	13.99%	10.78%	13.31%	9.50%
Parametric Clifton Enh S&P500 - Gross	(1.84%)	13.10%	10.59%	13.16%	-
Parametric Clifton Enh S&P500 - Net	(1.84%)	13.08%	10.50%	13.11%	-
S&P 500 Index	(0.76%)	13.99%	10.78%	13.31%	9.50%
Small Cap Equity					
Gross	0.42%	13.40%	7.70%	11.22%	10.69%
Net	0.34%	12.97%	7.33%	10.79%	10.18%
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	9.84%
Atlanta Capital - Gross	1.85%	15.14%	-	-	-
Atlanta Capital - Net	1.68%	14.34%	-	-	-
S&P 600 Small Cap Index	0.57%	12.68%	10.76%	13.56%	11.35%
Parametric Clifton Enh SmCap - Gross	(0.94%)	11.49%	9.05%	12.14%	-
Parametric Clifton Enh SmCap - Net	(0.94%)	11.36%	8.72%	11.73%	-
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	9.84%

(1) 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
International Equity					
Gross	0.06%	20.92%	9.09%	8.58%	5.32%
Net	0.02%	20.72%	8.90%	8.33%	4.99%
Wtd Avg Int'l Equity Benchmark	(1.29%)	16.26%	6.09%	6.09%	3.24%
Developed Intl Equity					
Gross	(0.66%)	18.92%	8.50%	8.90%	5.13%
Net	(0.72%)	18.66%	8.25%	8.62%	4.82%
Benchmark(1)	(2.04%)	13.92%	5.22%	6.29%	3.04%
DFA Int'l Small Cap Value - Net	(2.26%)	16.11%	10.30%	10.37%	5.93%
World ex US SC Value	(1.77%)	17.66%	9.72%	8.78%	5.58%
Northern Tr AM World ex US - Gross	(1.35%)	14.68%	5.80%	-	-
Northern Tr AM World ex US - Net	(1.35%)	14.65%	5.76%	-	-
MSCI World ex US	(2.04%)	13.92%	5.30%	6.04%	2.59%
Wellington Management - Gross	2.37%	30.57%	16.19%	14.74%	9.61%
Wellington Management - Net	2.15%	29.52%	15.24%	13.80%	8.68%
BMI, EPAC, <$2 B	0.25%	22.13%	12.09%	10.42%	5.73%
William Blair - Gross	(0.06%)	22.60%	-	-	-
William Blair - Net	(0.14%)	22.17%	-	-	-
MSCI ACWI ex US IMI	(1.06%)	17.10%	6.75%	6.24%	3.06%
Emerging Markets Equity					
Gross	2.28%	27.19%	10.35%	6.60%	4.95%
Net	2.28%	27.19%	10.35%	6.43%	4.56%
Emerging Mkts - Net	1.42%	24.93%	8.81%	4.99%	3.02%
Axiom - Net	2.58%	29.98%	10.41%	-	-
Emerging Mkts - Net	1.42%	24.93%	8.81%	4.99%	3.02%
DFA - Net	1.42%	19.47%	10.34%	6.63%	6.42%
Emerging Mkts - Net	1.42%	24.93%	8.81%	4.99%	3.02%
World Equity					
Gross	(1.67%)	16.44%	8.19%	10.58%	-
Net	(1.75%)	16.01%	7.65%	9.95%	-
MSCI World Index	(1.28%)	13.59%	7.97%	9.70%	5.90%
EPOCH Investment - Gross(2)	(2.53%)	17.67%	7.09%	10.35%	-
EPOCH Investment - Net	(2.68%)	16.94%	6.41%	9.62%	-
MSCI World Index	(1.28%)	13.59%	7.97%	9.70%	5.90%
LSV Asset Management - Gross(3)	(0.99%)	15.46%	8.99%	11.08%	-
LSV Asset Management - Net	(1.02%)	15.24%	8.55%	10.53%	-
MSCI ACWI Idx	(0.84%)	15.44%	8.71%	9.79%	6.15%

(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.
(2) EPOCH Investment was removed from the Domestic Equity Composite to the World Equity Composite as of 1/1/2012.
(3) LSV Asset Management was removed from the Domestic Equity and International Equity Composites to the World Equity Composite as of February 1, 2013.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Equity*					
Net	4.70%	13.81%	2.17%	2.22%	(0.09%)
Adams Street Direct Co-Invest Fd	(8.45%)	(4.93%)	(0.06%)	9.44%	4.32%
Adams Street Direct Fund 2010	2.61%	20.79%	11.20%	13.94%	-
Adams Street 1998 Partnership	0.46%	1.01%	1.32%	2.91%	(3.22%)
Adams Street 1999 Partnership	1.63%	1.44%	2.65%	1.70%	0.53%
Adams Street 2000 Partnership	3.66%	7.98%	1.82%	1.05%	1.35%
Adams Street 2001 Partnership	7.35%	8.82%	0.34%	5.03%	3.91%
Adams Street 2002 Partnership	(1.58%)	7.39%	9.79%	6.70%	5.06%
Adams Street 2003 Partnership	2.76%	14.81%	7.44%	12.53%	6.43%
Adams Street 2010 Partnership	6.15%	14.60%	11.37%	14.06%	-
Adams Street 2008 Fund	4.40%	22.86%	14.10%	13.78%	4.44%
Adams Street 1999 Non-US	0.59%	6.32%	4.76%	1.88%	5.76%
Adams Street 2000 Non-US	7.99%	13.75%	2.83%	2.48%	(0.14%)
Adams Street 2001 Non-US	6.22%	16.04%	8.97%	15.17%	3.06%
Adams Street 2002 Non-US	4.36%	5.80%	6.69%	3.98%	1.23%
Adams Street 2003 Non-US	4.54%	9.29%	16.25%	12.71%	8.60%
Adams Street 2004 Non-US	10.06%	19.12%	4.85%	8.02%	2.65%
Adams Street 2010 Non-US	4.76%	28.00%	15.22%	11.69%	-
Adams Street 2010 Non-US Emg	7.14%	20.17%	13.73%	11.80%	-
Adams Street 2015 Global Fd	6.51%	17.83%	-	-	-
Adams Street 2016 Global Fd	6.70%	11.51%	-	-	-
Adams Street 2017 Global Fd	2.17%	-	-	-	-
Adams Street BVCF IV Fund	0.08%	1.07%	9.56%	14.92%	26.86%
BlackRock	0.00%	(3.21%)	-	-	-
Capital International V	(34.97%)	(66.21%)	(42.62%)	(28.04%)	(14.06%)
Capital International VI	4.79%	19.40%	6.40%	(5.54%)	-
CorsAir III	11.94%	15.51%	13.67%	7.77%	4.39%
CorsAir IV	1.76%	24.98%	16.16%	17.55%	-
EIG Energy Fund XIV	3.38%	8.57%	(34.27%)	(24.44%)	(7.77%)
Hearthstone Advisors MS III	2.85%	7.61%	(31.86%)	279.54%	-
Lewis & Clark, LP	0.00%	18.96%	(26.67%)	(19.30%)	(5.05%)
Lewis & Clark II	0.00%	20.02%	2.44%	0.32%	-
Matlin Patterson II	2.60%	(10.85%)	(1.81%)	(7.07%)	(28.47%)
Matlin Patterson III	17.68%	27.66%	10.33%	4.38%	9.66%
Quantum Energy Partners	0.00%	(2.67%)	(16.56%)	(0.69%)	3.54%

* 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Global Fixed Income					
Gross	0.50%	6.00%	4.08%	3.89%	-
Net	0.46%	5.78%	3.84%	3.66%	-
Wtd Avg Global FI Benchmark	(0.49%)	3.87%	2.78%	2.38%	-
Domestic Fixed Income					
Gross	(0.21%)	4.74%	4.04%	4.36%	5.12%
Net	(0.24%)	4.56%	3.83%	4.16%	4.87%
Wtd Avg Domestic FI Benchmark	(1.35%)	1.82%	2.25%	2.68%	4.98%
Inv. Grade Fixed Income					
Gross	(0.74%)	3.94%	3.10%	3.59%	4.09%
Net	(0.74%)	3.83%	2.97%	3.47%	3.87%
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	3.63%
Declaration Total Return - Net	0.37%	4.60%	3.45%	3.83%	-
Libor-3 Month	0.46%	1.46%	0.90%	0.64%	0.74%
PIMCO Core Plus Cons. - Gross(1)	(1.35%)	4.14%	3.80%	2.31%	-
PIMCO Core Plus Cons. - Net	(1.35%)	3.88%	3.45%	2.03%	-
Blended Benchmark(2)	0.46%	1.46%	0.90%	0.68%	-
PIMCO DiSCO II - Net	2.49%	13.18%	10.38%	9.28%	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	3.63%
SSgA Long US Treas Idx - Gross	(3.29%)	3.51%	0.34%	-	-
SSgA Long US Treas Idx - Net	(3.30%)	3.47%	0.30%	-	-
Blmbg Long Treas	(3.29%)	3.51%	0.35%	3.29%	5.78%
Below Inv. Grade Fixed Income					
Gross	0.81%	6.43%	6.27%	6.20%	7.76%
Net	0.75%	6.07%	5.86%	5.77%	7.42%
Blmbg HY Corp 2% Issue	(0.86%)	3.78%	5.18%	5.00%	8.32%
Ares ND Credit Strategies Fd - Net	1.25%	-	-	-	-
Cerberus ND Private Credit Fd - Net	2.56%	-	-	-	-
S&P/LSTA Leveraged Loan B	1.49%	4.63%	4.38%	4.05%	5.88%
Goldman Sachs 2006 Offshore - Net	4.53%	24.58%	25.05%	25.41%	11.91%
Goldman Sachs Offshore V - Net	5.12%	(16.49%)	(3.38%)	2.92%	6.90%
PIMCO Bravo II Fund - Net	0.79%	6.59%	9.13%	-	-
Blmbg HY Corp 2% Issue	(0.86%)	3.78%	5.18%	5.00%	8.32%
Loomis Sayles - Gross	0.00%	5.55%	5.57%	5.47%	8.43%
Loomis Sayles - Net	(0.11%)	5.02%	5.04%	4.94%	8.07%
Blmbg HY Corp 2% Issue	(0.86%)	3.78%	5.18%	5.00%	8.32%

(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 March 31, 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 March 31, 2018

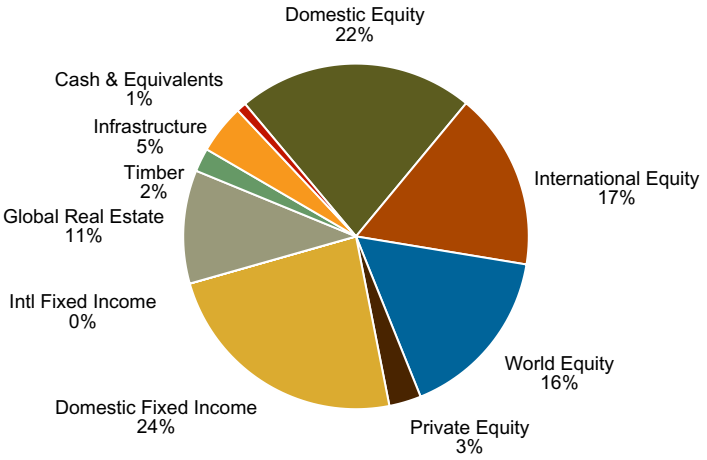
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Global Real Assets					
Gross	1.04%	7.98%	7.49%	8.56%	-
Net	1.01%	7.62%	7.07%	8.14%	-
Wtd Avg Global Real Assets Benchmark	1.46%	5.26%	5.70%	6.81%	-
Global Real Estate					
Gross	0.93%	8.70%	11.06%	12.70%	5.11%
Net	0.93%	8.31%	10.58%	12.19%	3.67%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	6.09%
Invesco Core Real Estate - Gross	0.00%	5.70%	9.56%	11.04%	5.12%
Invesco Core Real Estate - Net	0.00%	5.44%	9.22%	10.67%	4.70%
Invesco Fund II - Net	0.86%	4.80%	10.50%	13.11%	(5.29%)
Invesco Fund III - Net	(2.48%)	(3.74%)	9.58%	15.04%	-
Invesco Asia RE Feeder - Net	(6.19%)	68.11%	188.45%	96.00%	-
Invesco Asia RE Fund III - Net	4.35%	46.14%	-	-	-
Invesco Value Added Fd IV - Net	1.84%	11.81%	-	-	-
JP Morgan - Gross	2.32%	8.16%	10.38%	12.09%	5.71%
JP Morgan - Net	2.32%	7.43%	9.46%	11.07%	4.69%
JP Morgan Alternative Fd - Net	7.01%	9.65%	5.86%	(4.98%)	(5.14%)
JP Morgan China Property Fd - Net	(1.41%)	34.67%	19.89%	25.66%	11.02%
JPM Greater European Opp Fd - Net	(5.00%)	3.85%	13.31%	15.45%	-
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	6.09%
Timber					
Net	(1.23%)	(2.97%)	(2.27%)	0.06%	-
TIR Teredo	(1.48%)	(4.49%)	0.04%	4.92%	4.76%
TIR Springbank	(1.15%)	(2.51%)	(2.99%)	(2.32%)	(3.60%)
NCREIF Timberland Index	0.92%	3.79%	3.44%	6.09%	4.06%
Infrastructure					
Gross	2.49%	13.07%	6.07%	6.12%	-
Net	2.34%	12.52%	5.50%	5.55%	-
JP Morgan Asian Infrastructure - Net	1.76%	(2.06%)	5.45%	4.36%	-
JP Morgan IIF - Gross	2.92%	15.64%	6.11%	5.64%	3.70%
JP Morgan IIF - Net	2.71%	14.87%	5.29%	4.77%	2.47%
Grosvenor Cust. Infrastructure - Net	0.00%	11.05%	6.85%	9.39%	-
Grosvenor Cust. Infrastructure II - Net	3.69%	11.58%	1.77%	-	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.53%
Cash & Cash Equivalents - Net	**0.37%**	**1.22%**	**0.67%**	**0.42%**	**0.48%**
Cash Account - Net	0.36%	1.22%	0.68%	0.42%	0.48%
Bank of ND - Net	0.37%	1.19%	-	-	-
3-month Treasury Bill	0.35%	1.11%	0.53%	0.34%	0.34%
Total Fund					
Gross	0.14%	12.54%	7.52%	8.62%	5.95%
Net	0.10%	12.28%	7.23%	8.30%	5.51%
Target*	0.01%	10.10%	6.30%	7.26%	6.05%

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

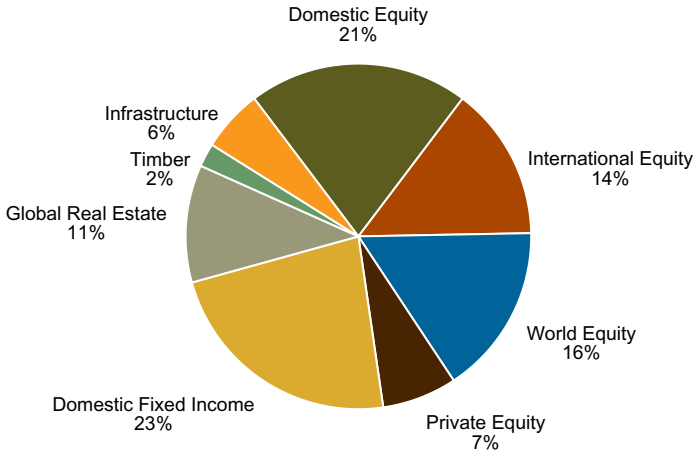
Actual vs Target Asset Allocation
As of March 31, 2018

The top left chart shows the Fund's asset allocation as of March 31, 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.

Actual Asset Allocation

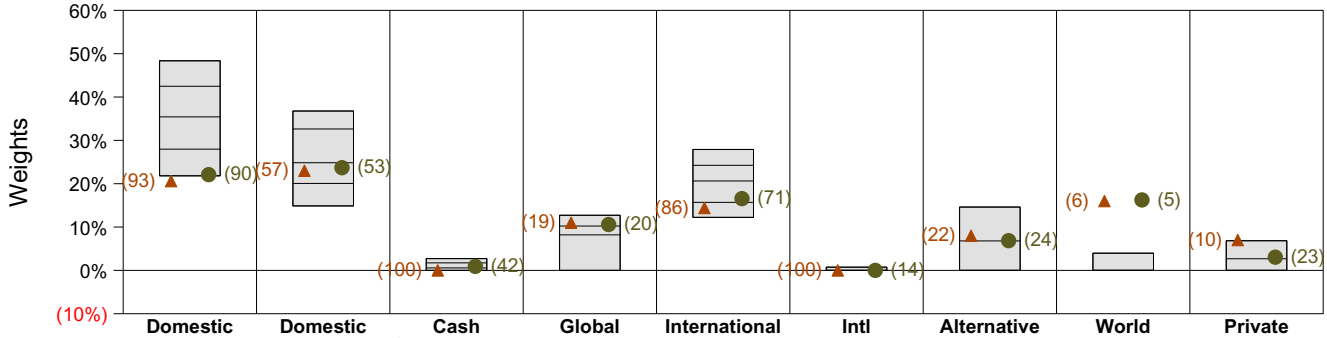


Target Asset Allocation



Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	662,458,076	22.1%	20.6%	1.5%	44,594,896
International Equity	496,699,098	16.6%	14.4%	2.2%	64,794,758
World Equity	487,615,573	16.3%	16.0%	0.3%	7,721,852
Private Equity	91,243,383	3.0%	7.0%	(4.0%)	(118,710,126)
Domestic Fixed Income	710,757,801	23.7%	23.0%	0.7%	20,910,593
Intl Fixed Income	161	0.0%	0.0%	0.0%	161
Global Real Estate	317,352,287	10.6%	11.0%	(0.4%)	(12,574,652)
Timber	66,399,779	2.2%	2.2%	0.0%	414,391
Infrastructure	139,163,789	4.6%	5.8%	(1.2%)	(34,797,684)
Cash & Equivalents	27,645,878	0.9%	0.0%	0.9%	27,645,878
Total	2,999,335,825	100.0%	100.0%		

Asset Class Weights vs Callan Public Fund Sponsor Database



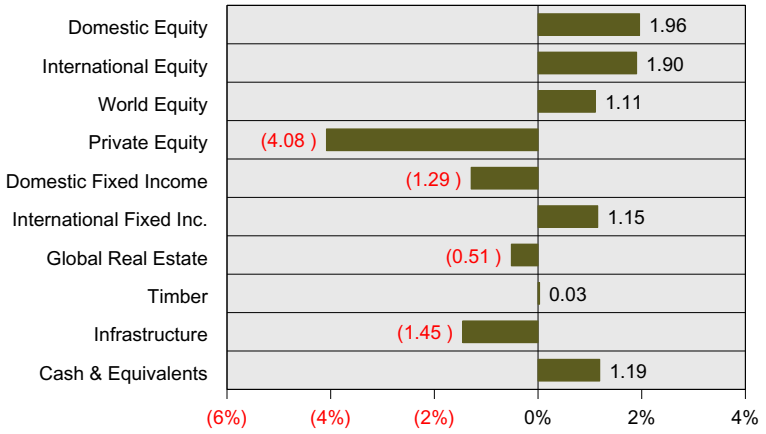
	Domestic Equity	Domestic Fixed Income	Cash & Equivalents	Global Real Estate	International Equity	Intl Fixed Income	Alternative	World Equity	Private Equity
10th Percentile	48.37	36.77	2.72	12.72	27.90	0.75	14.61	3.97	6.84
25th Percentile	42.49	32.63	1.73	10.23	24.25	0.00	6.80	0.00	2.68
Median	35.43	24.84	0.57	8.20	20.63	0.00	0.00	0.00	0.00
75th Percentile	27.97	20.07	0.00	0.00	15.70	0.00	0.00	0.00	0.00
90th Percentile	21.82	14.87	0.00	0.00	12.23	0.00	0.00	0.00	0.00
Fund ●	22.09	23.70	0.92	10.58	16.56	0.00	6.85	16.26	3.04
Target ▲	20.60	23.00	0.00	11.00	14.40	0.00	8.00	16.00	7.00
% Group Invested	96.53%	97.22%	75.00%	70.14%	92.36%	14.58%	14.58%	11.81%	31.25%

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

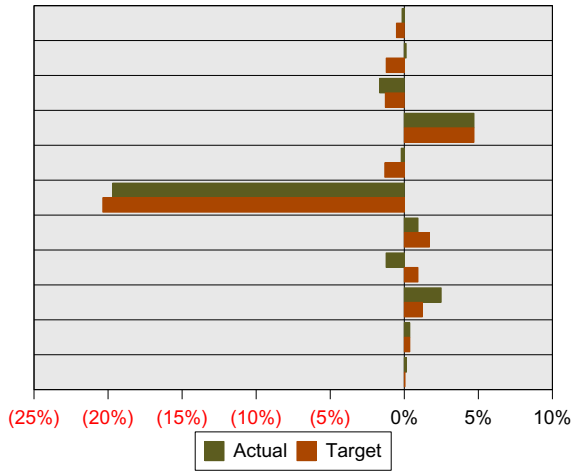
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

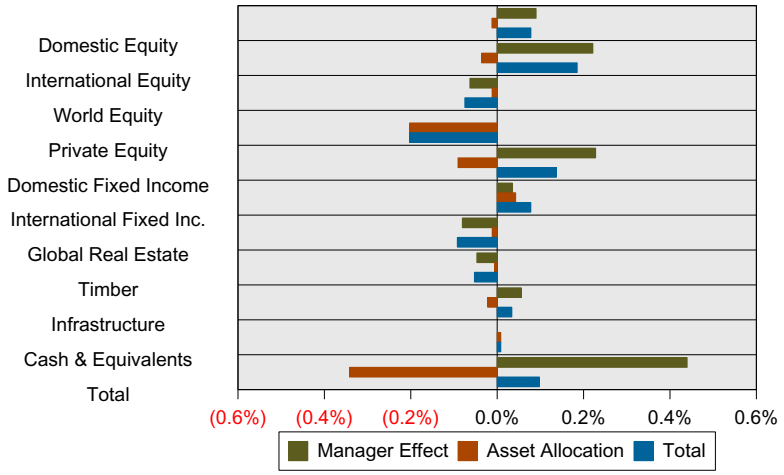
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

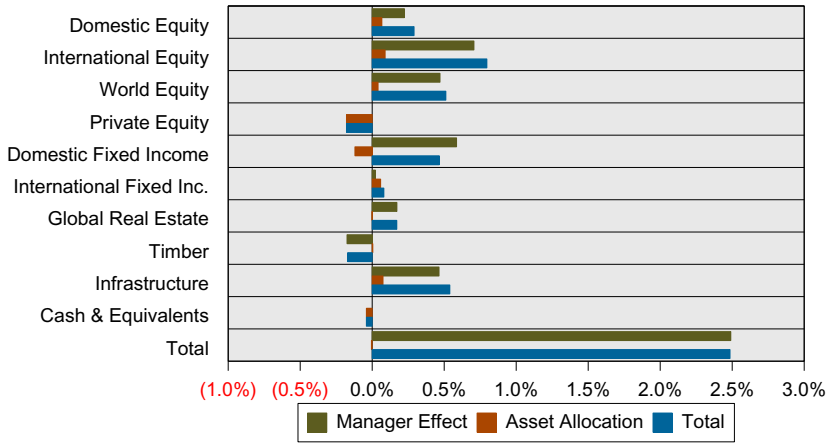
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	(0.15%)	(0.53%)	0.09%	(0.01%)	0.08%
International Equity	16%	14%	0.13%	(1.22%)	0.22%	(0.04%)	0.19%
World Equity	17%	16%	(1.67%)	(1.28%)	(0.06%)	(0.01%)	(0.07%)
Private Equity	3%	7%	4.70%	4.70%	0.00%	(0.20%)	(0.20%)
Domestic Fixed Income	20%	21%	(0.21%)	(1.32%)	0.23%	(0.09%)	0.14%
International Fixed Inc.	3%	2%	(19.69%)	(20.36%)	0.04%	0.04%	0.08%
Global Real Estate	10%	11%	0.93%	1.70%	(0.08%)	(0.01%)	(0.09%)
Timber	2%	2%	(1.23%)	0.92%	(0.05%)	(0.01%)	(0.05%)
Infrastructure	4%	6%	2.49%	1.22%	0.06%	(0.02%)	0.03%
Cash & Equivalents	1%	0%	0.37%	0.37%	0.00%	0.01%	0.01%
Total			**0.15%**	**= 0.05%**	**+ 0.44%**	**+ (0.34%)**	**0.10%**

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

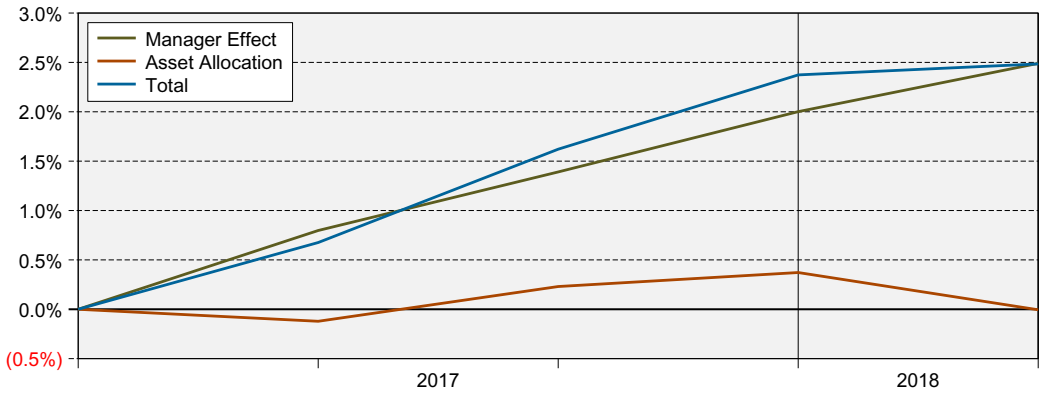
Cumulative Total Fund Relative Attribution - March 31, 2018

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

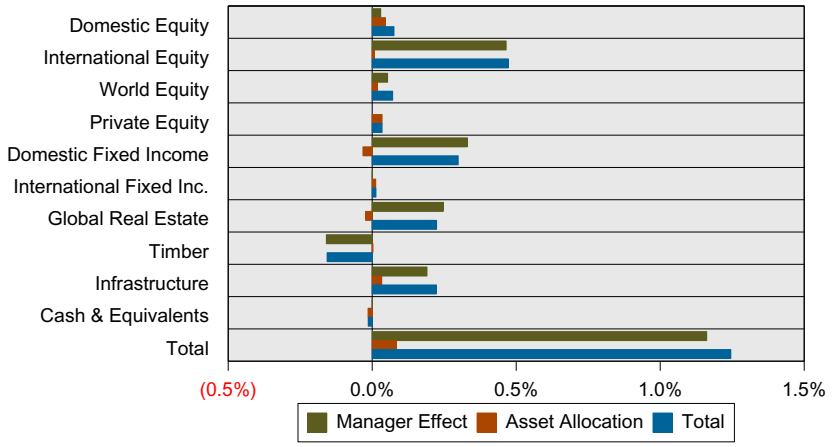
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	14.53%	13.53%	0.22%	0.07%	0.29%
International Equity	16%	14%	21.11%	16.47%	0.71%	0.09%	0.80%
World Equity	17%	16%	16.44%	13.59%	0.47%	0.04%	0.51%
Private Equity	3%	7%	13.83%	13.83%	0.00%	(0.18%)	(0.18%)
Domestic Fixed Income	19%	19%	4.77%	1.89%	0.59%	(0.12%)	0.47%
International Fixed Inc.	4%	4%	(13.75%)	(14.11%)	0.02%	0.06%	0.08%
Global Real Estate	11%	11%	8.69%	7.12%	0.17%	(0.00%)	0.17%
Timber	2%	2%	(2.97%)	3.79%	(0.17%)	0.00%	(0.17%)
Infrastructure	4%	6%	13.07%	2.44%	0.46%	0.08%	0.54%
Cash & Equivalents	1%	0%	1.24%	1.24%	0.00%	(0.04%)	(0.04%)
Total			**12.65%**	**= 10.16%**	**+ 2.49%**	**+ (0.01%)**	**2.48%**

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

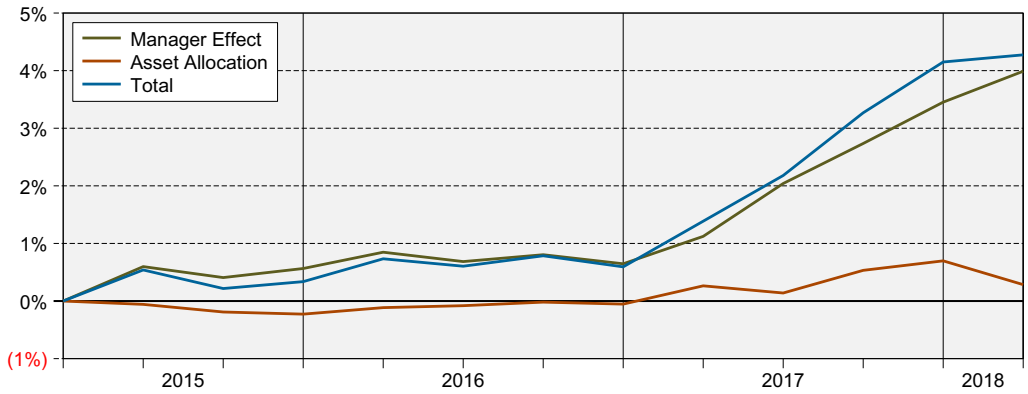
Cumulative Total Fund Relative Attribution - March 31, 2018

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

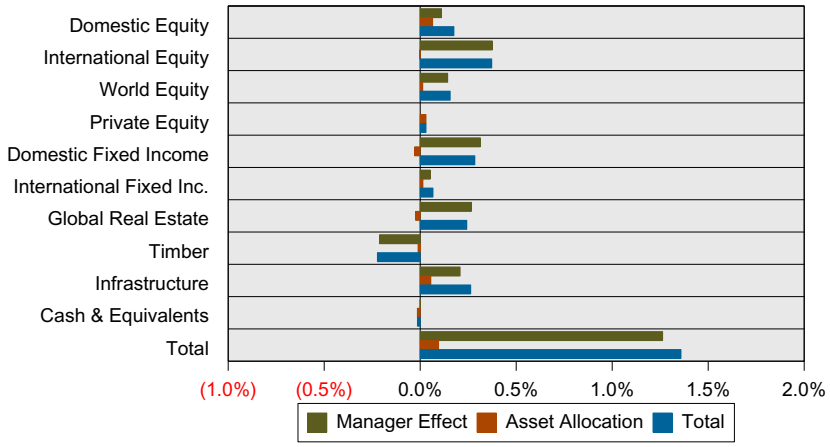
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	10.15%	10.00%	0.03%	0.05%	0.08%
International Equity	16%	14%	9.16%	6.16%	0.47%	0.01%	0.47%
World Equity	16%	16%	8.20%	7.97%	0.05%	0.02%	0.07%
Private Equity	3%	6%	2.18%	2.18%	0.00%	0.03%	0.03%
Domestic Fixed Income	18%	18%	4.08%	2.32%	0.33%	(0.03%)	0.30%
International Fixed Inc.	5%	5%	(4.08%)	(4.16%)	0.00%	0.01%	0.01%
Global Real Estate	11%	11%	11.10%	8.72%	0.25%	(0.02%)	0.22%
Timber	3%	4%	(2.27%)	3.44%	(0.16%)	0.00%	(0.16%)
Infrastructure	4%	5%	6.07%	1.76%	0.19%	0.03%	0.22%
Cash & Equivalents	1%	0%	0.68%	0.63%	0.00%	(0.01%)	(0.01%)
Total			**7.58%**	**= 6.34%**	**+ 1.16%**	**+ 0.08%**	**1.25%**

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

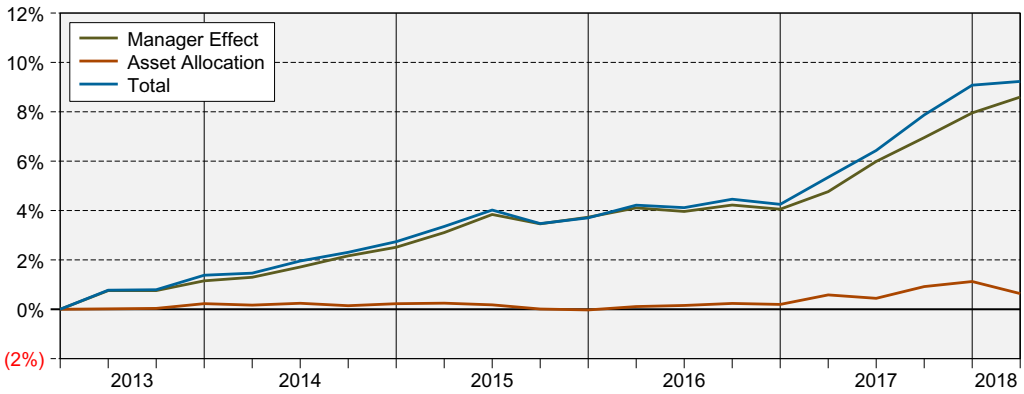
Cumulative Total Fund Relative Attribution - March 31, 2018

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

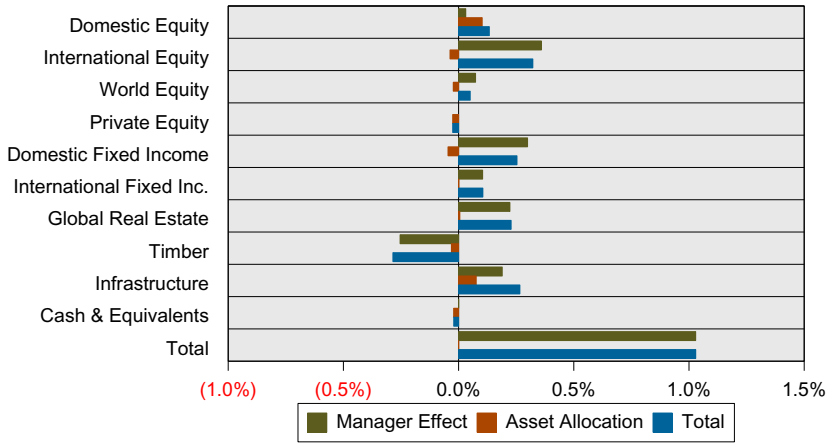
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	13.37%	12.85%	0.11%	0.06%	0.18%
International Equity	15%	15%	8.51%	6.06%	0.38%	(0.00%)	0.37%
World Equity	16%	16%	10.57%	9.70%	0.14%	0.01%	0.16%
Private Equity	4%	6%	2.20%	2.20%	0.00%	0.03%	0.03%
Domestic Fixed Income	18%	17%	4.40%	2.74%	0.31%	(0.03%)	0.28%
International Fixed Inc.	5%	5%	(2.96%)	(3.96%)	0.05%	0.01%	0.07%
Global Real Estate	10%	10%	12.74%	10.00%	0.27%	(0.02%)	0.24%
Timber	4%	4%	0.06%	6.09%	(0.21%)	(0.01%)	(0.22%)
Infrastructure	4%	5%	6.13%	1.20%	0.21%	0.06%	0.26%
Cash & Equivalents	1%	1%	0.43%	0.40%	0.00%	(0.01%)	(0.01%)
Total			**8.65%**	**= 7.30%**	**+ 1.26%**	**+ 0.10%**	**1.36%**

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

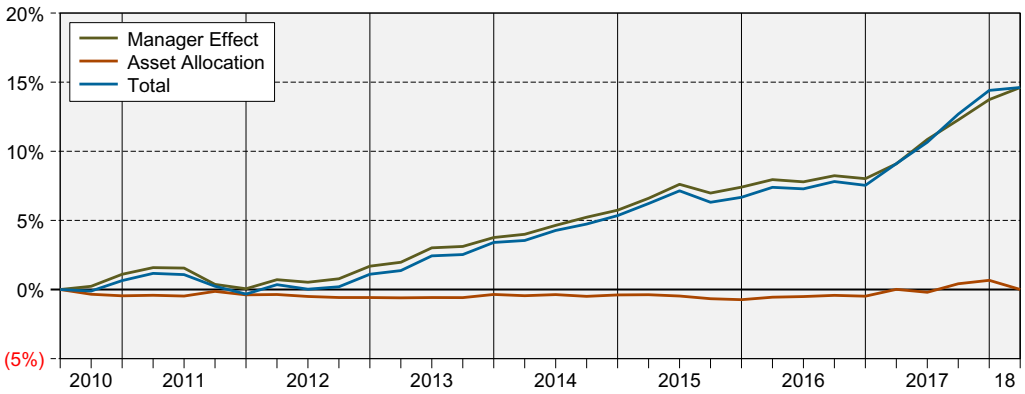
Cumulative Total Fund Relative Attribution - March 31, 2018

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 and Three-Quarter Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Seven and Three-Quarter Year Annualized Relative Attribution Effects

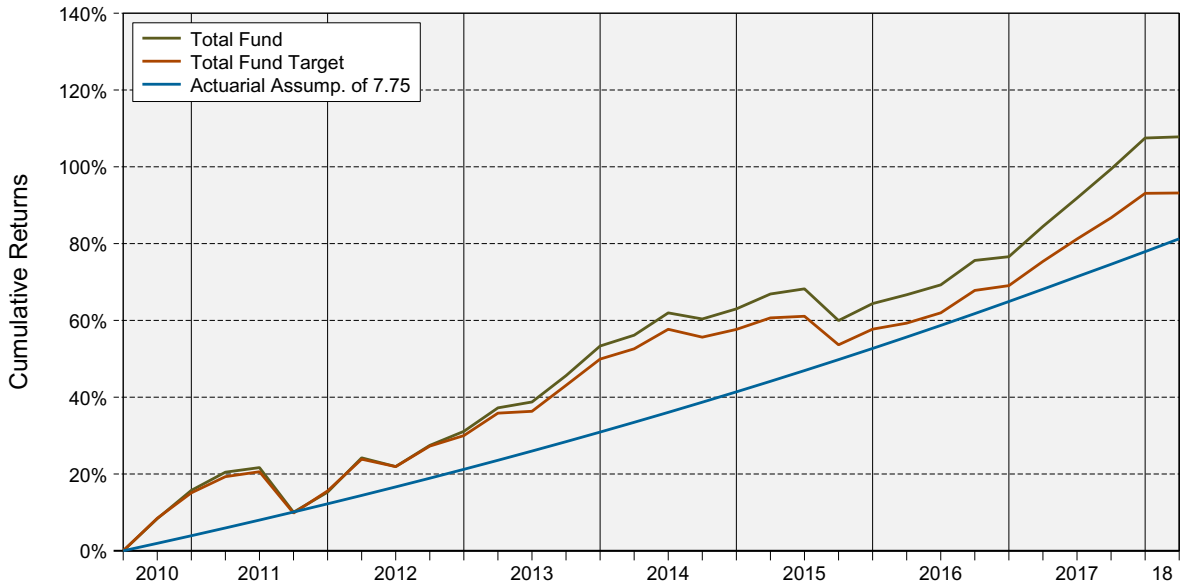
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	27%	25%	15.42%	15.10%	0.03%	0.10%	0.13%
International Equity	16%	15%	9.38%	7.03%	0.36%	(0.04%)	0.32%
World Equity	12%	12%	-	-	0.07%	(0.02%)	0.05%
Private Equity	4%	5%	4.27%	4.27%	0.00%	(0.03%)	(0.03%)
Domestic Fixed Income	20%	19%	5.92%	4.20%	0.30%	(0.05%)	0.25%
International Fixed Inc.	5%	5%	1.08%	(0.84%)	0.10%	0.00%	0.11%
Global Real Estate	9%	9%	13.85%	11.14%	0.22%	0.01%	0.23%
Timber	3%	4%	-	-	(0.25%)	(0.03%)	(0.29%)
Infrastructure	3%	4%	-	-	0.19%	0.08%	0.27%
Cash & Equivalents	1%	1%	0.32%	0.30%	0.00%	(0.02%)	(0.02%)
Total			**9.90%**	**= 8.87%**	**+ 1.03%**	**+ 0.00%**	**1.03%**

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

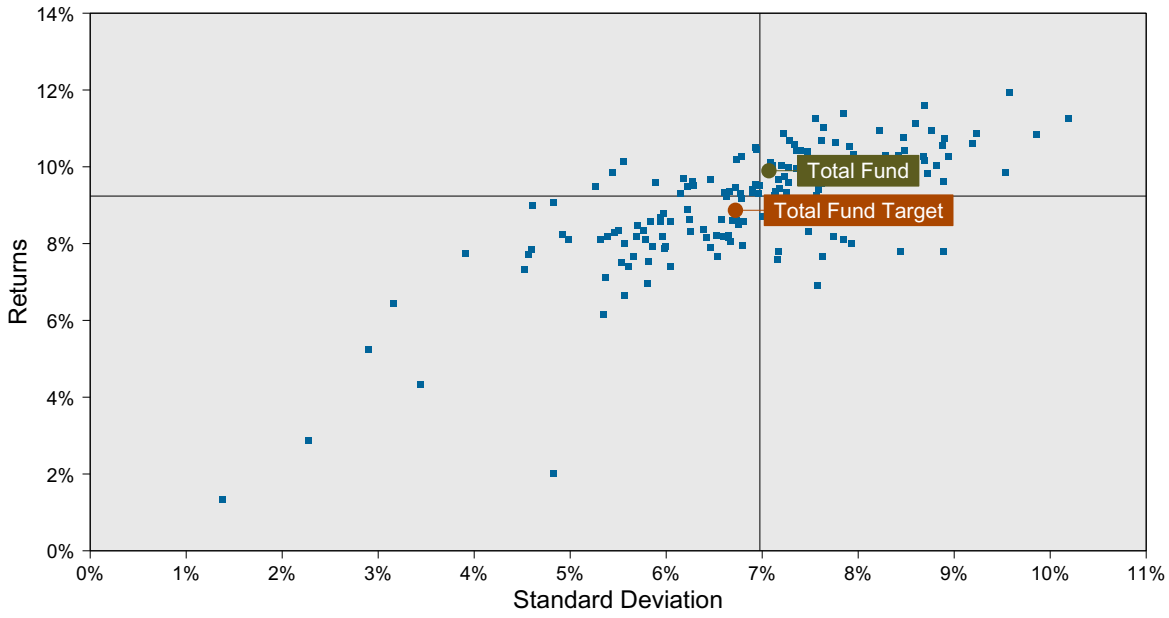
Cumulative Performance Relative to Target

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



Seven and Three-Quarter Year Annualized Risk vs Return



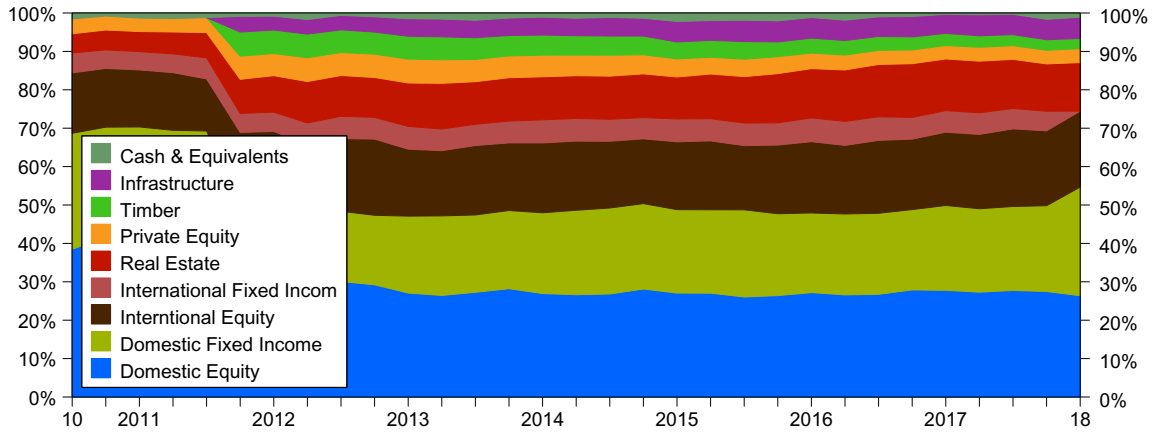
Squares represent membership of the Callan Public Fund Sponsor Database

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

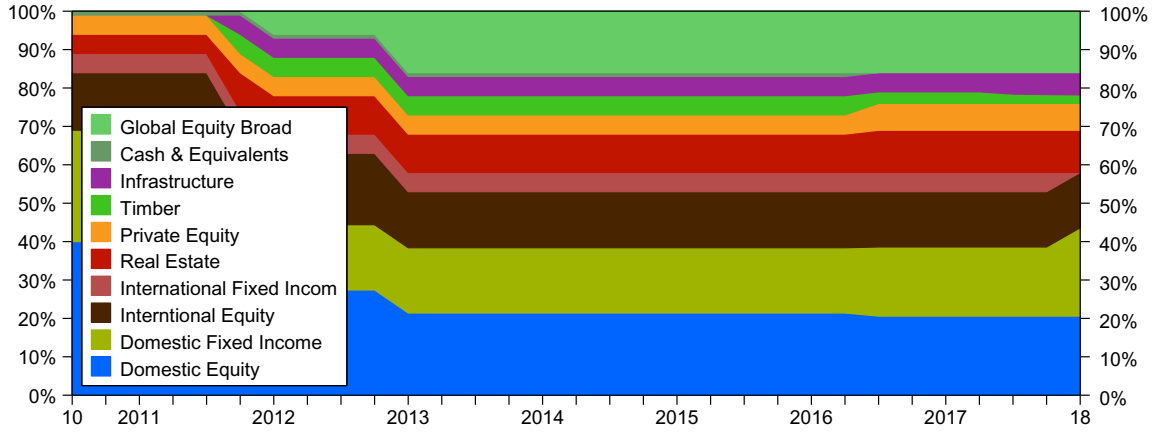
Actual vs Target Historical Asset Allocation

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.

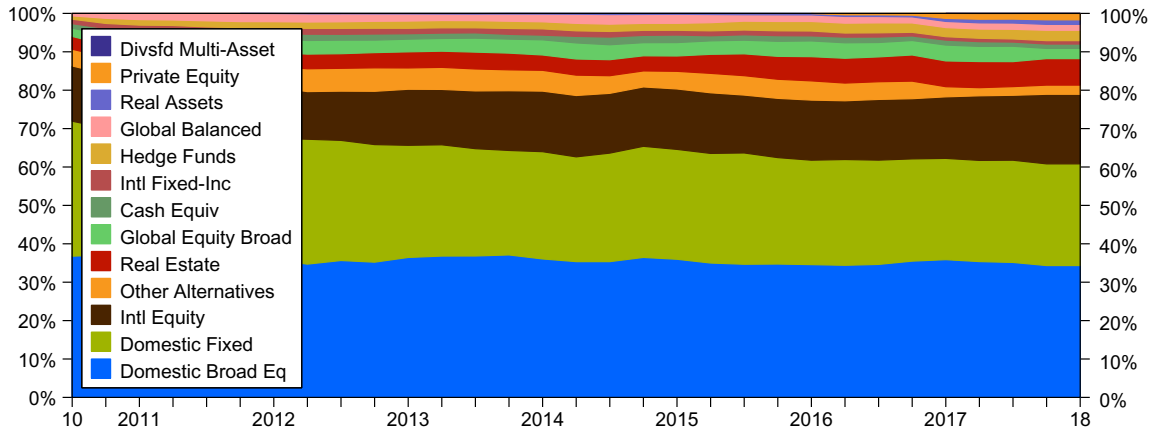
Actual Historical Asset Allocation



Target Historical Asset Allocation



Average Callan Public Fund Sponsor Database Historical Asset Allocation

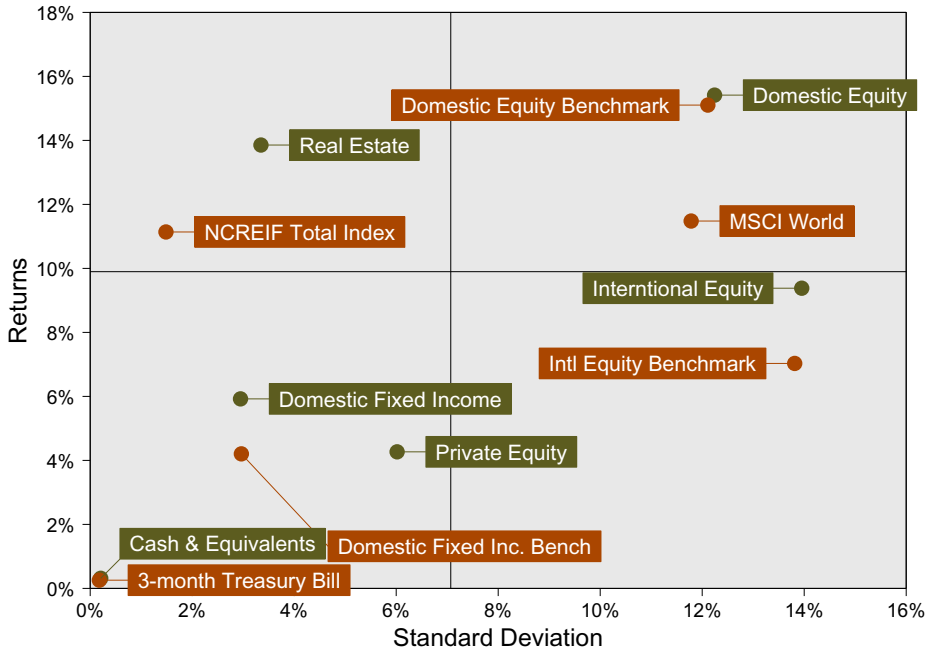


* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

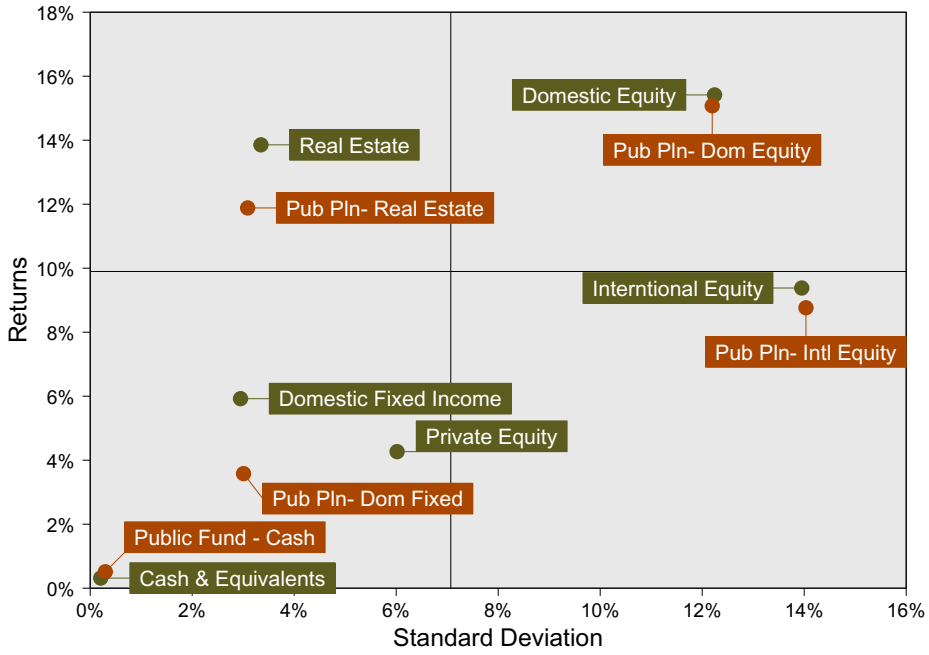
Asset Class Risk and Return

The charts below show the seven and three-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.

Seven and Three-Quarter Year Annualized Risk vs Return
Asset Classes vs Benchmark Indices



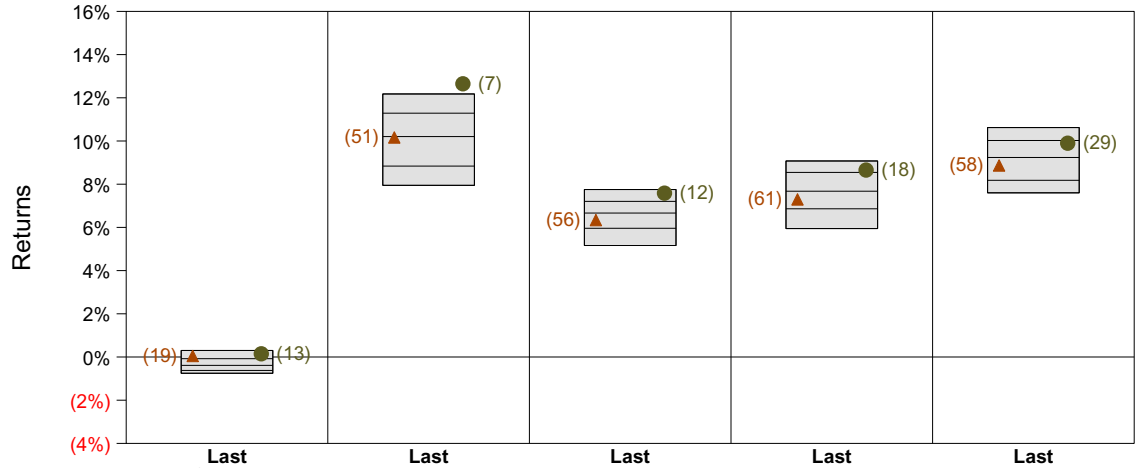
Seven and Three-Quarter Year Annualized Risk vs Return
Asset Classes vs Asset Class Median



Total Fund Ranking

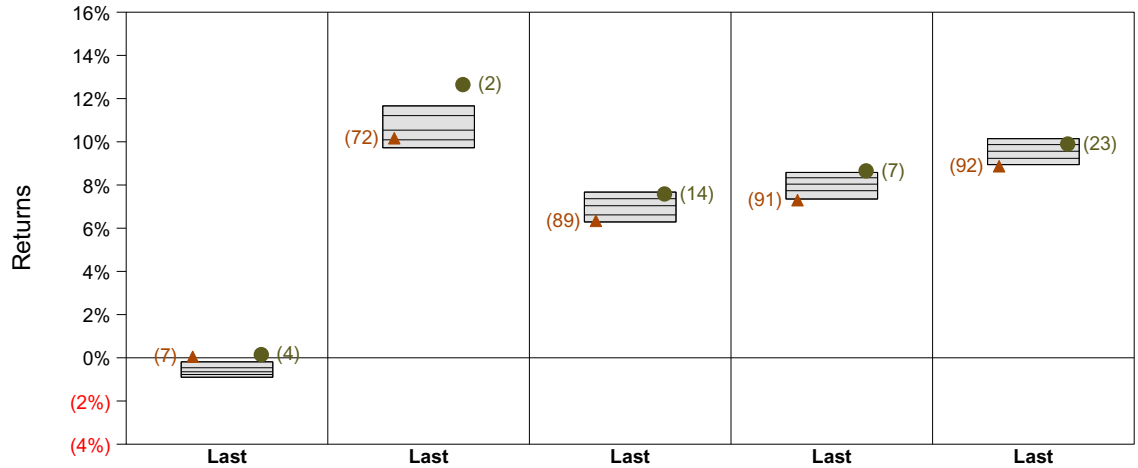
The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended March 31, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

Callan Public Fund Sponsor Database



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
10th Percentile	0.30	12.18	7.75	9.08	10.62
25th Percentile	(0.08)	11.29	7.21	8.55	10.02
Median	(0.39)	10.21	6.66	7.67	9.24
75th Percentile	(0.62)	8.84	5.96	6.86	8.18
90th Percentile	(0.75)	7.95	5.16	5.95	7.60
Total Fund ●	0.15	12.65	7.58	8.65	9.90
Policy Target ▲	0.05	10.16	6.34	7.30	8.87

Asset Allocation Adjusted Ranking



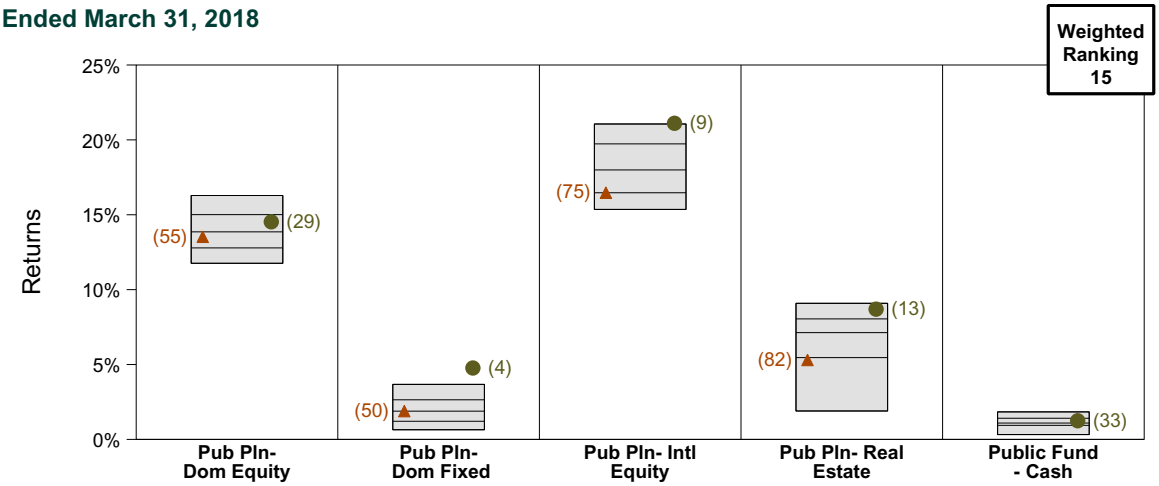
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
10th Percentile	(0.19)	11.66	7.67	8.58	10.15
25th Percentile	(0.46)	11.21	7.37	8.33	9.87
Median	(0.65)	10.54	7.04	8.04	9.56
75th Percentile	(0.77)	10.09	6.62	7.74	9.23
90th Percentile	(0.90)	9.72	6.29	7.35	8.94
Total Fund ●	0.15	12.65	7.58	8.65	9.90
Policy Target ▲	0.05	10.16	6.34	7.30	8.87

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

Asset Class Rankings

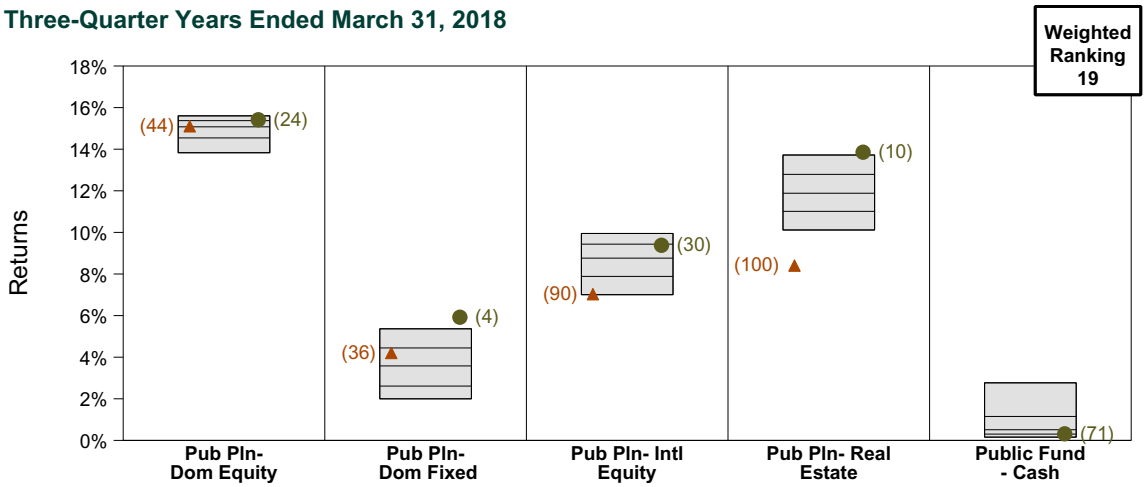
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	16.29	3.67	21.06	9.09	1.84
25th Percentile	15.01	2.64	19.73	8.05	1.41
Median	13.86	1.89	17.99	7.13	1.09
75th Percentile	12.79	1.21	16.47	5.46	0.94
90th Percentile	11.76	0.65	15.36	1.90	0.32
Asset Class Composite ●	14.53	4.77	21.11	8.69	1.25
Composite Benchmark ▲	13.53	1.89	16.47	5.30	-

Total Asset Class Performance
Seven and Three-Quarter Years Ended March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	15.60	5.37	9.95	13.72	2.77
25th Percentile	15.37	4.44	9.43	12.79	1.15
Median	15.08	3.58	8.76	11.88	0.51
75th Percentile	14.54	2.61	7.88	11.01	0.30
90th Percentile	13.83	2.00	7.01	10.12	0.16
Asset Class Composite ●	15.42	5.92	9.38	13.85	0.32
Composite Benchmark ▲	15.10	4.20	7.03	8.41	-

* 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, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
GLOBAL EQUITY	**$1,738,016,130**	**57.95%**	**$(25,951,766)**	**$(4,772,966)**	**$1,768,740,862**	**59.06%**
Domestic Equity	**$662,458,076**	**22.09%**	**$(17,347,942)**	**$(1,076,657)**	**$680,882,676**	**22.73%**
Large Cap	504,419,260	16.82%	(23,209,431)	(1,771,612)	529,400,303	17.68%
Small Cap	158,038,816	5.27%	5,861,489	694,955	151,482,372	5.06%
International Equity	**$496,699,098**	**16.56%**	**$12,790,239**	**$603,626**	**$483,305,233**	**16.14%**
Developed Intl Equity	361,696,422	12.06%	9,790,239	(2,339,262)	354,245,445	11.83%
Emerging Markets	135,002,676	4.50%	3,000,000	2,942,888	129,059,788	4.31%
World Equity	**$487,615,573**	**16.26%**	**$(20,287,380)**	**$(8,435,843)**	**$516,338,797**	**17.24%**
Private Equity	**$91,243,383**	**3.04%**	**$(1,106,683)**	**$4,135,908**	**$88,214,157**	**2.95%**
GLOBAL FIXED INCOME	**$710,757,961**	**23.70%**	**$26,808,853**	**$3,555,909**	**$680,393,199**	**22.72%**
Domestic Fixed Income	**$710,757,801**	**23.70%**	**$156,599,985**	**$303,199**	**$553,854,616**	**18.49%**
Inv. Grade Fixed Income	504,429,844	16.82%	137,640,148	(1,240,069)	368,029,765	12.29%
Below Inv. Grade Fixed Income	206,327,957	6.88%	18,959,838	1,543,268	185,824,851	6.20%
International Fixed Income	**$161**	**0.00%**	**$(129,791,133)**	**$3,252,710**	**$126,538,583**	**4.23%**
GLOBAL REAL ASSETS	**$522,915,855**	**17.43%**	**$12,514,921**	**$5,428,832**	**$504,972,102**	**16.86%**
Real Estate	317,352,287	10.58%	9,165,451	2,968,778	305,218,057	10.19%
Timber	66,399,779	2.21%	(884,727)	(836,407)	68,120,913	2.27%
Infrastructure	139,163,789	4.64%	4,234,196	3,296,461	131,633,132	4.40%
Cash & Equivalents	**$27,645,878**	**0.92%**	**$(13,357,715)**	**$129,372**	**$40,874,222**	**1.36%**
Securities Lending Income	**$0**	**0.00%**	**$(42,070)**	**$42,070**	**-**	**-**
Total Fund	**$2,999,335,825**	**100.0%**	**$(27,777)**	**$4,383,217**	**$2,994,980,385**	**100.0%**

PLEASE REFER TO PAGES 30-32 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Global Equity					
Gross	(0.27%)	16.81%	8.89%	10.56%	-
Net	(0.32%)	16.55%	8.61%	10.25%	-
Wtd Avg Global Equity Benchmark	(0.22%)	14.54%	7.78%	9.26%	-
Domestic Equity					
Gross	(0.15%)	14.53%	10.15%	13.37%	15.42%
Net	(0.19%)	14.33%	9.96%	13.16%	15.17%
Wtd Avg Domestci Equity Benchmark	(0.53%)	13.53%	10.00%	12.85%	15.10%
Large Cap Equity					
Gross	(0.38%)	14.85%	10.80%	13.97%	15.73%
Net	(0.40%)	14.73%	10.67%	13.81%	15.50%
Benchmark(1)	(0.69%)	13.98%	10.39%	13.17%	15.32%
Small Cap Equity					
Gross	0.42%	13.40%	7.70%	11.12%	14.24%
Net	0.34%	12.96%	7.32%	10.78%	13.94%
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	14.16%
International Equity					
Gross	0.13%	21.11%	9.16%	8.51%	9.38%
Net	0.09%	20.92%	8.97%	8.29%	9.08%
Wtd Avg Intl Equity Benchmark	(1.22%)	16.47%	6.16%	6.06%	7.03%
Developed Intl Equity					
Gross	(0.66%)	18.91%	8.51%	8.87%	9.67%
Net	(0.71%)	18.66%	8.26%	8.61%	9.36%
Benchmark(2)	(2.04%)	13.92%	5.22%	6.29%	7.33%
Emerging Markets					
Gross	2.28%	27.19%	10.35%	6.55%	7.85%
Net	2.28%	27.19%	10.35%	6.44%	7.59%
Benchmark(3)	1.42%	24.93%	8.81%	4.99%	5.71%
World Equity					
Gross	(1.67%)	16.44%	8.20%	10.57%	-
Net	(1.74%)	16.01%	7.65%	9.94%	-
MSCI World Index	(1.28%)	13.59%	7.97%	9.70%	11.48%
Private Equity					
Net	4.70%	13.83%	2.18%	2.18%	4.20%

(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 33-37 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Global Fixed Income					
Gross	0.50%	6.00%	4.11%	3.90%	-
Net	0.47%	5.79%	3.86%	3.66%	-
Wtd Avg Global FI Benchmark	(0.52%)	3.70%	2.78%	2.36%	-
Domestic Fixed Income					
Gross	(0.21%)	4.77%	4.08%	4.40%	5.92%
Net	(0.23%)	4.59%	3.87%	4.19%	5.68%
Wtd Avg Domestic FI Benchmark	(1.32%)	1.89%	2.32%	2.74%	4.20%
Inv. Grade Fixed Income					
Gross	(0.74%)	3.94%	3.10%	3.60%	4.82%
Net	(0.74%)	3.83%	2.97%	3.48%	4.65%
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.84%
Below Inv. Grade Fixed Income					
Gross	0.79%	6.48%	6.27%	6.20%	8.78%
Net	0.73%	6.14%	5.87%	5.77%	8.36%
Blmbg HY Corp 2% Issue	(0.86%)	3.78%	5.18%	5.00%	7.54%
Global Real Assets					
Gross	1.04%	8.03%	7.62%	8.66%	-
Net	1.01%	7.66%	7.20%	8.23%	-
Wtd Avg Global Real Assets Benchmark	1.47%	5.30%	5.73%	6.84%	-
Real Estate					
Gross	0.93%	8.69%	11.10%	12.74%	13.85%
Net	0.93%	8.31%	10.62%	12.23%	13.31%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	11.14%
Timber					
Net	(1.23%)	(2.97%)	(2.27%)	0.06%	-
NCREIF Timberland Index	0.92%	3.79%	3.44%	6.09%	5.19%
Infrastructure					
Gross	2.49%	13.07%	6.07%	6.13%	-
Net	2.34%	12.52%	5.50%	5.55%	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.69%
Cash & Equivalents - Net	**0.37%**	**1.25%**	**0.68%**	**0.43%**	**0.32%**
3-month Treasury Bill	0.35%	1.11%	0.53%	0.34%	0.26%
Total Fund					
Gross	0.15%	12.65%	7.58%	8.65%	9.90%
Net	0.10%	12.38%	7.29%	8.34%	9.56%
Target*	0.05%	10.16%	6.34%	7.30%	8.87%

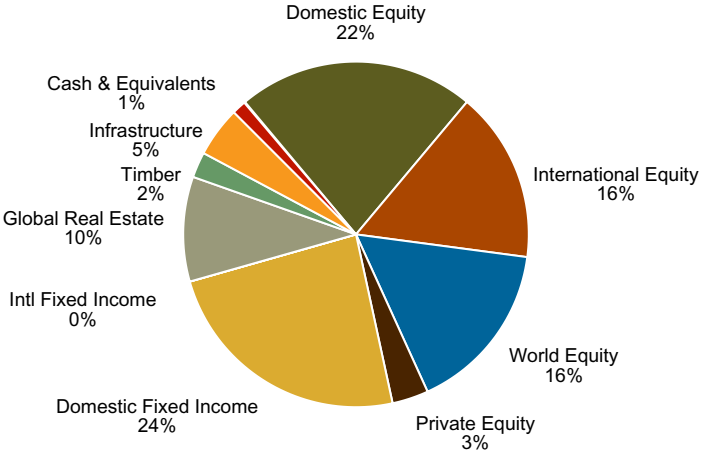
* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% MSCI World ex US, 11.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 5.8% CPI-W, 4.8% Russell 2000 Index, 3.4% MSCI EM and 2.2% NCREIF Timberland Index.

PLEASE REFER TO PAGES 33-37 FOR INVESTMENT MANAGER LEVEL RETURNS.

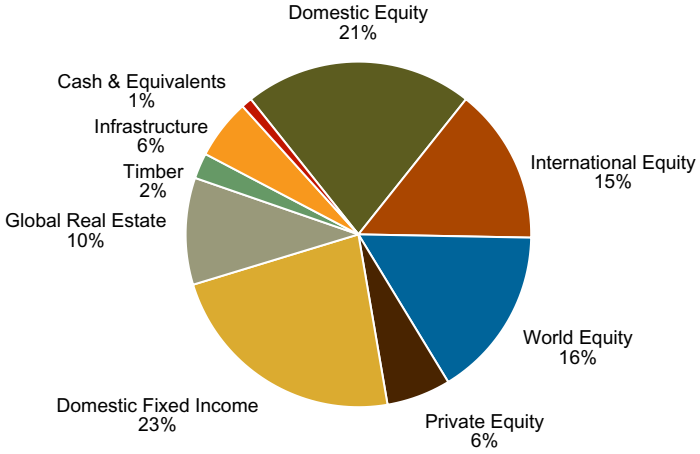
Actual vs Target Asset Allocation
As of March 31, 2018

The top left chart shows the Fund's asset allocation as of March 31, 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.

Actual Asset Allocation

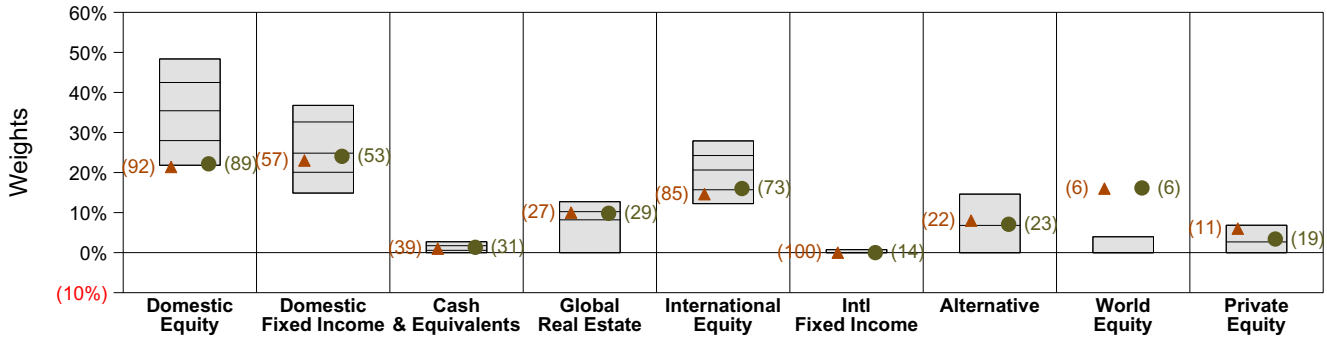


Target Asset Allocation



Asset Class	$Dollars Actual	Weight Actual	Target	Percent Difference	Difference
Domestic Equity	546,980,228	22.2%	21.4%	0.8%	19,164,686
International Equity	394,665,861	16.0%	14.6%	1.4%	34,567,389
World Equity	398,305,986	16.1%	16.0%	0.1%	3,677,527
Private Equity	83,751,011	3.4%	6.0%	(2.6%)	(64,234,661)
Domestic Fixed Income	593,057,636	24.0%	23.0%	1.0%	25,779,241
Intl Fixed Income	149	0.0%	0.0%	0.0%	149
Global Real Estate	242,274,419	9.8%	10.0%	(0.2%)	(4,368,377)
Timber	59,270,344	2.4%	2.4%	0.0%	76,074
Infrastructure	115,393,909	4.7%	5.6%	(0.9%)	(22,726,059)
Cash & Equivalents	32,728,380	1.3%	1.0%	0.3%	8,064,101
Total	2,466,427,922	100.0%	100.0%		

Asset Class Weights vs Callan Public Fund Sponsor Database



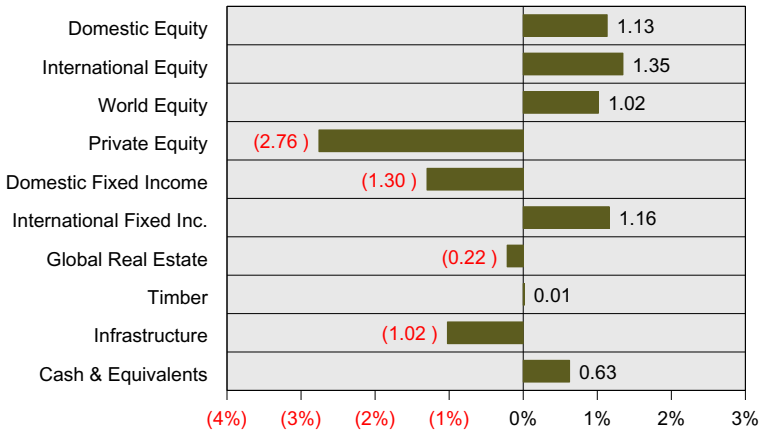
	Domestic Equity	Domestic Fixed Income	Cash & Equivalents	Global Real Estate	International Equity	Intl Fixed Income	Alternative	World Equity	Private Equity
10th Percentile	48.37	36.77	2.72	12.72	27.90	0.75	14.61	3.97	6.84
25th Percentile	42.49	32.63	1.73	10.23	24.25	0.00	6.80	0.00	2.68
Median	35.43	24.84	0.57	8.20	20.63	0.00	0.00	0.00	0.00
75th Percentile	27.97	20.07	0.00	0.00	15.70	0.00	0.00	0.00	0.00
90th Percentile	21.82	14.87	0.00	0.00	12.23	0.00	0.00	0.00	0.00
Fund ●	22.18	24.05	1.33	9.82	16.00	0.00	7.08	16.15	3.40
Target ▲	21.40	23.00	1.00	10.00	14.60	0.00	8.00	16.00	6.00
% Group Invested	96.53%	97.22%	75.00%	70.14%	92.36%	14.58%	14.58%	11.81%	31.25%

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

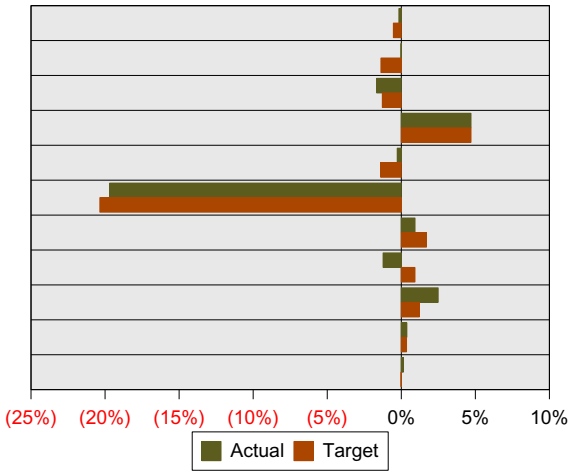
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

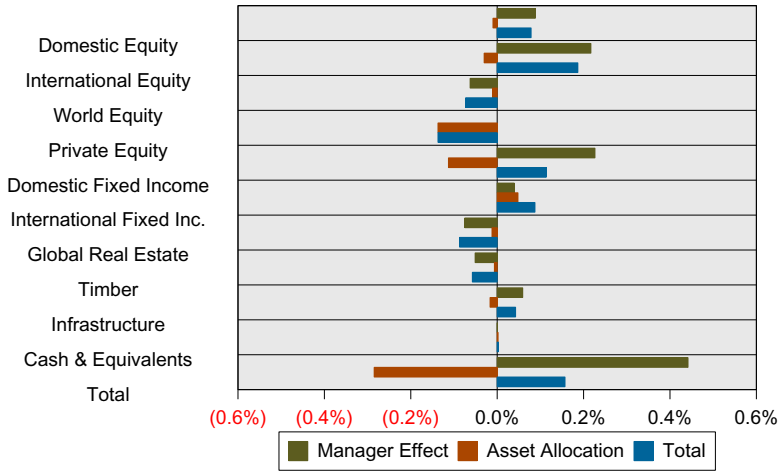
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

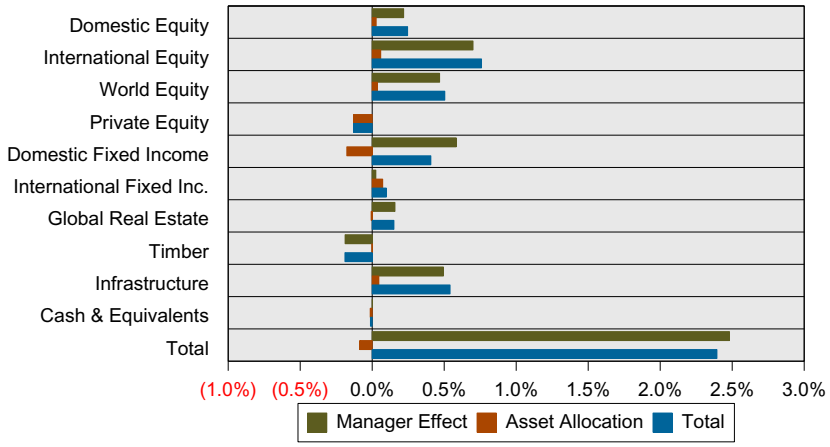
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	(0.16%)	(0.54%)	0.09%	(0.01%)	0.08%
International Equity	16%	15%	(0.02%)	(1.38%)	0.22%	(0.03%)	0.19%
World Equity	17%	16%	(1.67%)	(1.28%)	(0.06%)	(0.01%)	(0.07%)
Private Equity	3%	6%	4.70%	4.70%	0.00%	(0.14%)	(0.14%)
Domestic Fixed Income	20%	21%	(0.27%)	(1.39%)	0.23%	(0.11%)	0.11%
International Fixed Inc.	3%	2%	(19.69%)	(20.35%)	0.04%	0.05%	0.09%
Global Real Estate	10%	10%	0.93%	1.70%	(0.08%)	(0.01%)	(0.09%)
Timber	2%	2%	(1.23%)	0.92%	(0.05%)	(0.01%)	(0.06%)
Infrastructure	5%	6%	2.49%	1.22%	0.06%	(0.02%)	0.04%
Cash & Equivalents	2%	1%	0.37%	0.35%	0.00%	0.00%	0.00%
Total			**0.14%**	**= (0.02%) +**	**0.44%**	**+ (0.28%)**	**0.16%**

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

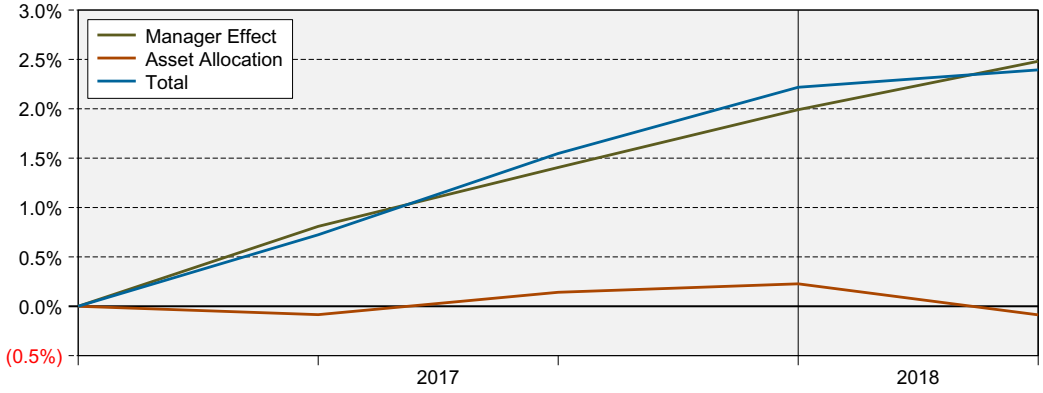
Cumulative Total Fund Relative Attribution - March 31, 2018

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

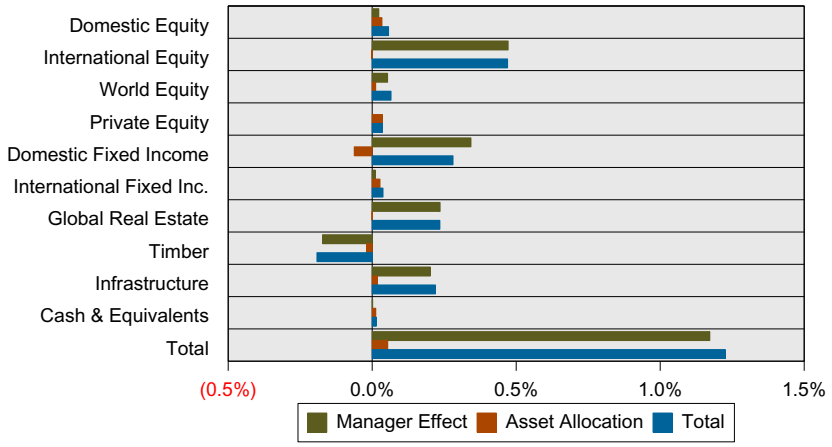
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	14.53%	13.55%	0.22%	0.03%	0.25%
International Equity	16%	15%	20.65%	15.99%	0.70%	0.06%	0.76%
World Equity	17%	16%	16.44%	13.59%	0.47%	0.04%	0.50%
Private Equity	3%	6%	13.83%	13.83%	0.00%	(0.13%)	(0.13%)
Domestic Fixed Income	18%	18%	4.67%	1.73%	0.58%	(0.18%)	0.41%
International Fixed Inc.	5%	5%	(13.74%)	(14.11%)	0.03%	0.07%	0.10%
Global Real Estate	10%	10%	8.70%	7.12%	0.16%	(0.01%)	0.15%
Timber	3%	3%	(2.97%)	3.79%	(0.19%)	(0.00%)	(0.19%)
Infrastructure	5%	5%	13.07%	2.44%	0.49%	0.05%	0.54%
Cash & Equivalents	1%	1%	1.24%	1.11%	0.00%	(0.01%)	(0.01%)
Total			**12.49%**	**= 10.10%**	**+ 2.48%**	**+ (0.09%)**	**2.39%**

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

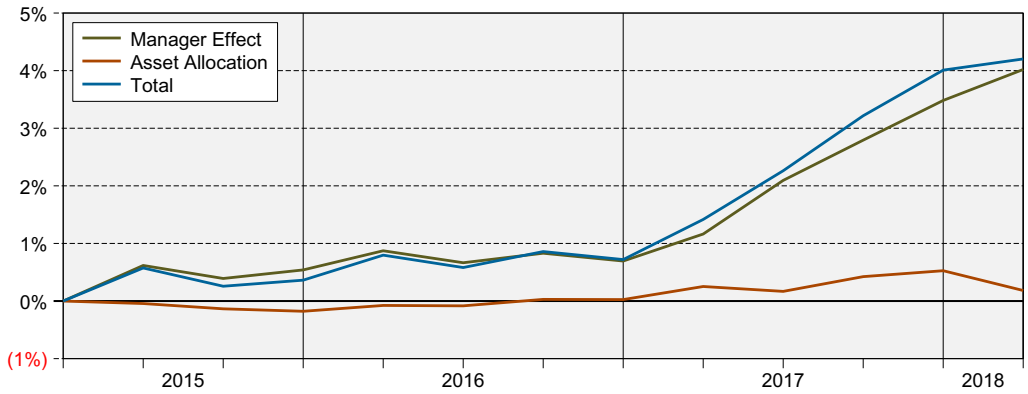
Cumulative Total Fund Relative Attribution - March 31, 2018

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

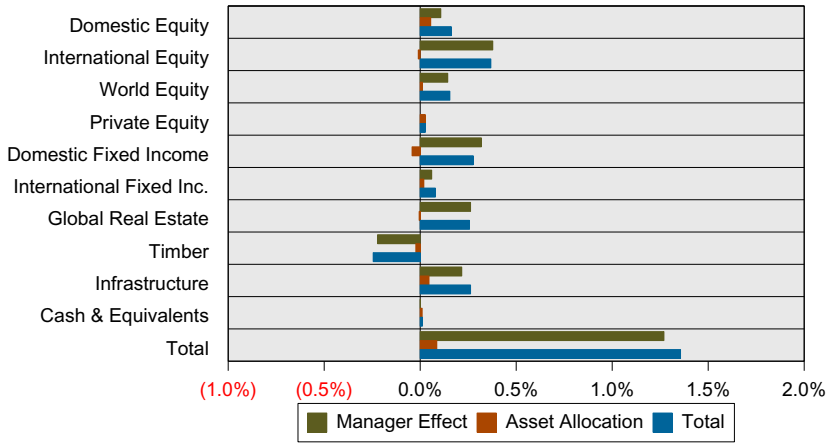
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	10.14%	10.00%	0.02%	0.03%	0.06%
International Equity	16%	15%	9.04%	5.98%	0.47%	(0.00%)	0.47%
World Equity	16%	16%	8.20%	7.97%	0.05%	0.01%	0.07%
Private Equity	4%	6%	2.18%	2.18%	0.00%	0.04%	0.04%
Domestic Fixed Income	18%	17%	3.96%	2.10%	0.34%	(0.06%)	0.28%
International Fixed Inc.	5%	5%	(4.08%)	(4.16%)	0.01%	0.03%	0.04%
Global Real Estate	10%	10%	11.10%	8.72%	0.24%	(0.00%)	0.24%
Timber	3%	4%	(2.27%)	3.44%	(0.17%)	(0.02%)	(0.19%)
Infrastructure	5%	5%	6.07%	1.76%	0.20%	0.02%	0.22%
Cash & Equivalents	1%	1%	0.68%	0.53%	0.00%	0.01%	0.01%
Total			**7.50%**	**= 6.28%**	**+ 1.17%**	**+ 0.05%**	**1.23%**

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

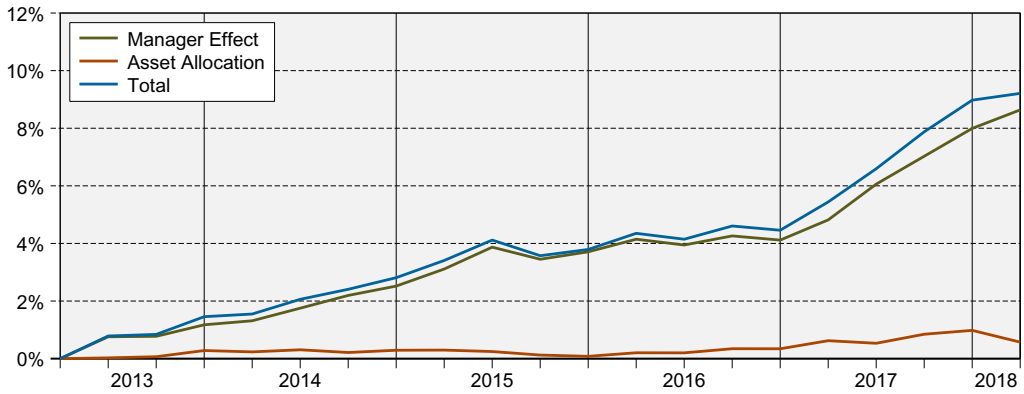
Cumulative Total Fund Relative Attribution - March 31, 2018

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

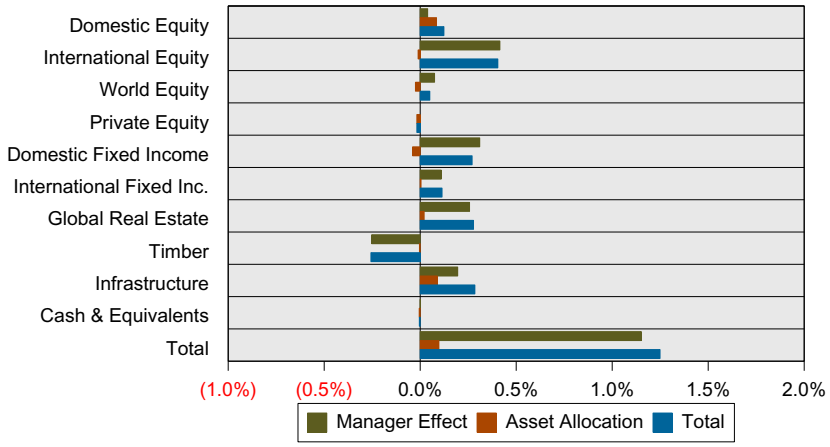
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	23%	21%	13.37%	12.85%	0.11%	0.05%	0.16%
International Equity	15%	15%	8.58%	6.12%	0.38%	(0.01%)	0.37%
World Equity	16%	16%	10.57%	9.70%	0.14%	0.01%	0.15%
Private Equity	4%	5%	2.21%	2.21%	0.00%	0.03%	0.03%
Domestic Fixed Income	18%	17%	4.32%	2.60%	0.32%	(0.04%)	0.28%
International Fixed Inc.	5%	5%	(2.96%)	(3.96%)	0.06%	0.02%	0.08%
Global Real Estate	10%	10%	12.74%	10.00%	0.26%	(0.01%)	0.26%
Timber	4%	4%	0.06%	6.09%	(0.22%)	(0.02%)	(0.24%)
Infrastructure	4%	5%	6.13%	1.20%	0.22%	0.05%	0.26%
Cash & Equivalents	1%	1%	0.43%	0.34%	0.00%	0.01%	0.01%
Total			**8.64%**	**= 7.28%**	**+ 1.27%**	**+ 0.09%**	**1.36%**

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

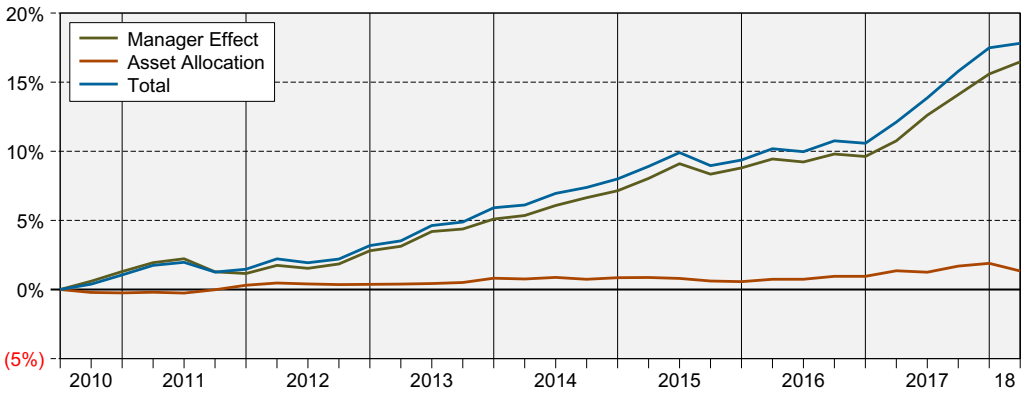
Cumulative Total Fund Relative Attribution - March 31, 2018

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 and Three-Quarter Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Seven and Three-Quarter Year Annualized Relative Attribution Effects

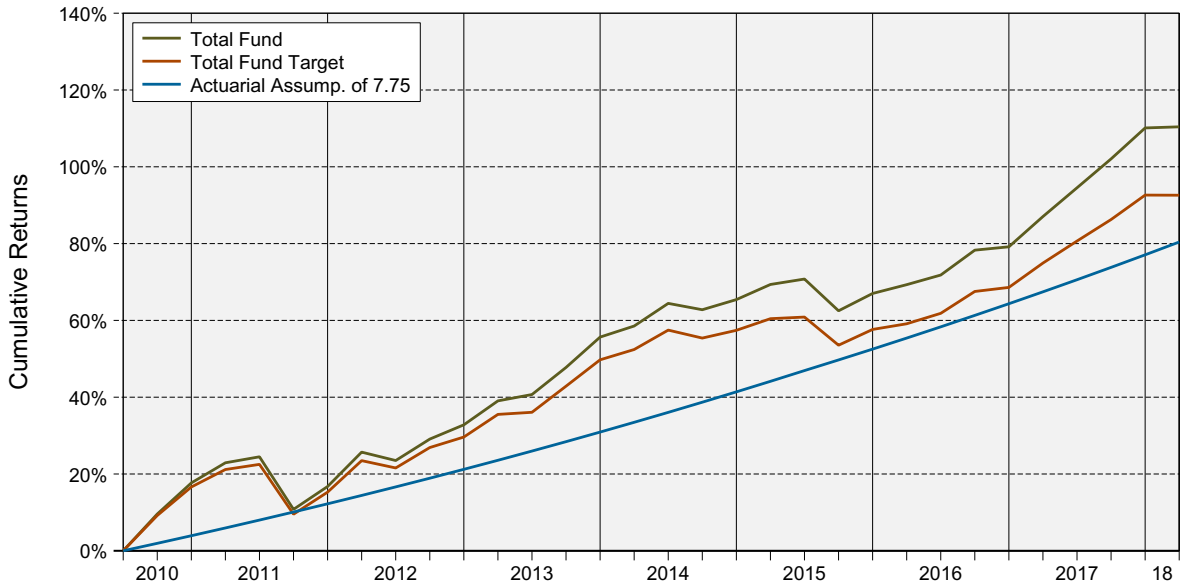
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	26%	25%	15.41%	15.09%	0.04%	0.08%	0.12%
International Equity	17%	17%	9.45%	7.10%	0.42%	(0.01%)	0.40%
World Equity	12%	12%	-	-	0.07%	(0.02%)	0.05%
Private Equity	4%	5%	4.29%	4.29%	0.00%	(0.02%)	(0.02%)
Domestic Fixed Income	18%	17%	5.89%	4.13%	0.31%	(0.04%)	0.27%
International Fixed Inc.	5%	5%	1.09%	(0.84%)	0.11%	0.00%	0.11%
Global Real Estate	10%	10%	13.85%	11.14%	0.26%	0.02%	0.28%
Timber	3%	4%	-	-	(0.25%)	(0.00%)	(0.26%)
Infrastructure	3%	4%	-	-	0.20%	0.09%	0.28%
Cash & Equivalents	1%	1%	0.32%	0.26%	0.00%	(0.01%)	(0.00%)
Total			**10.07%**	**= 8.82%**	**+ 1.15%**	**+ 0.10%**	**1.25%**

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

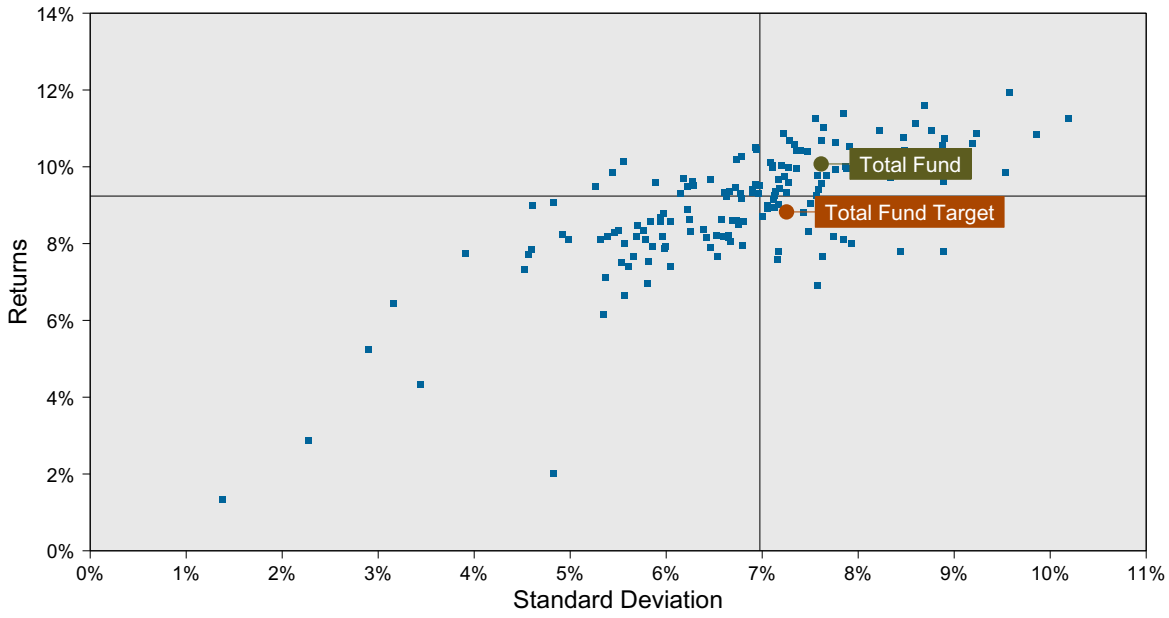
Cumulative Performance Relative to Target

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



Seven and Three-Quarter Year Annualized Risk vs Return



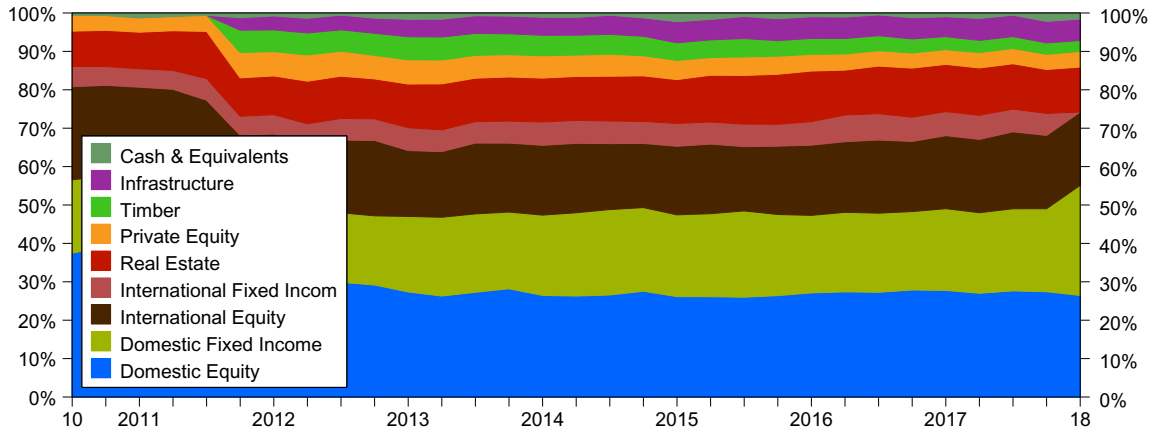
Squares represent membership of the Callan Public Fund Sponsor Database

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

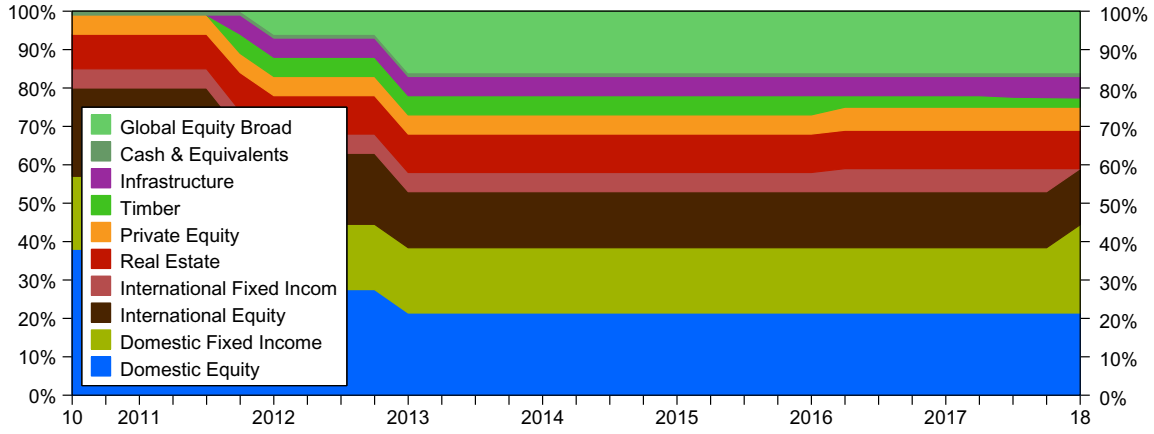
Actual vs Target Historical Asset Allocation

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.

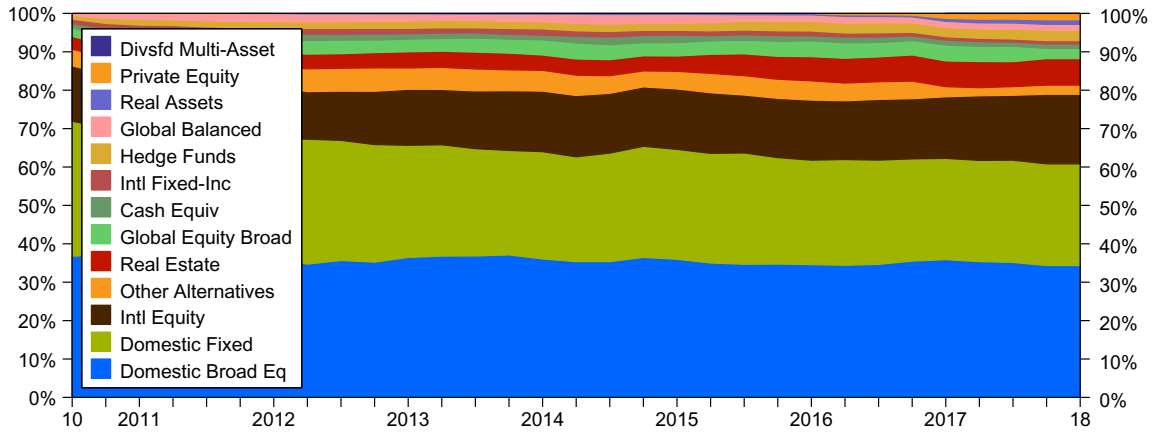
Actual Historical Asset Allocation



Target Historical Asset Allocation



Average Callan Public Fund Sponsor Database Historical Asset Allocation

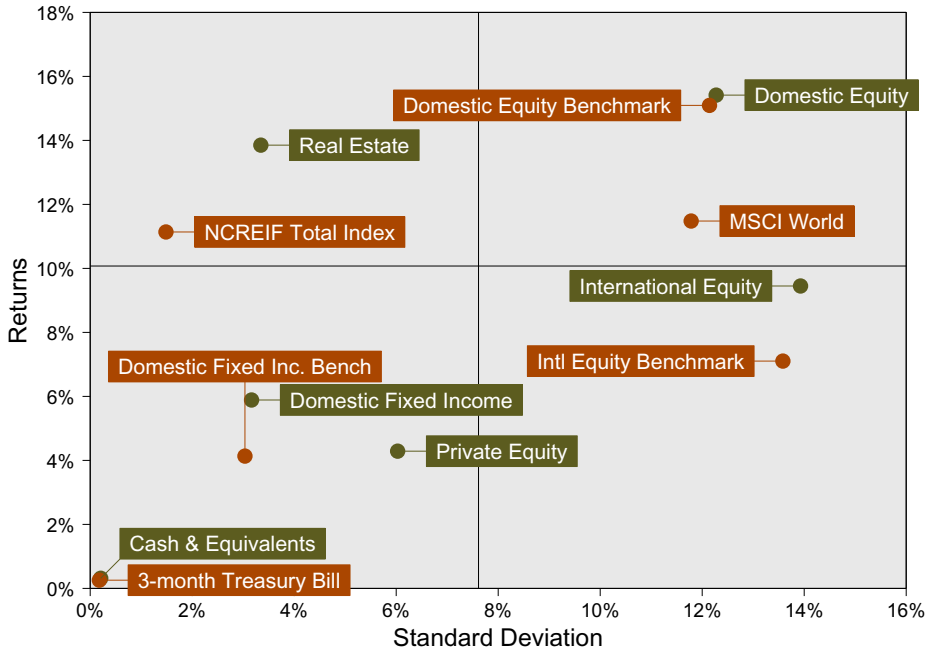


* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg HY 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

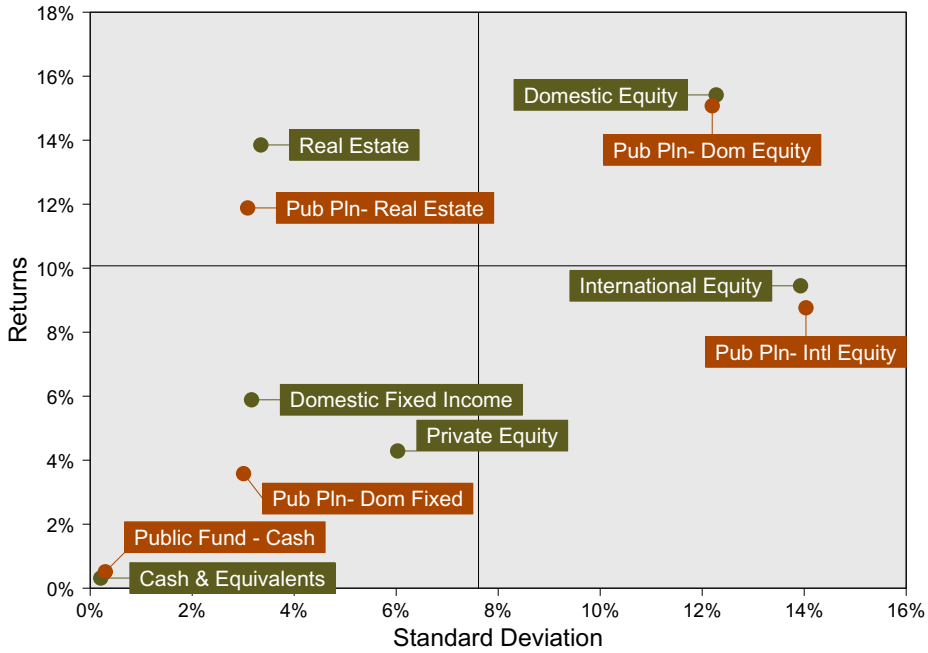
Asset Class Risk and Return

The charts below show the seven and three-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.

Seven and Three-Quarter Year Annualized Risk vs Return
Asset Classes vs Benchmark Indices



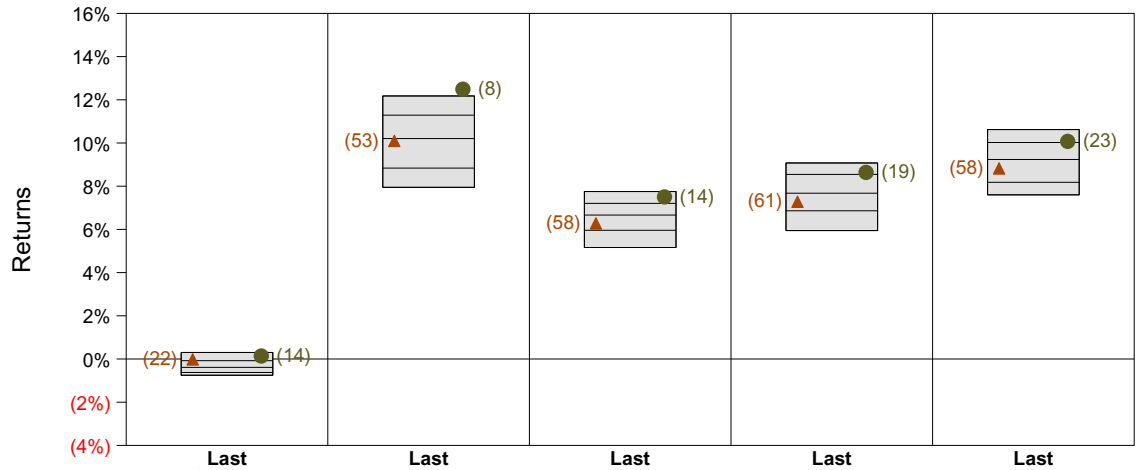
Seven and Three-Quarter Year Annualized Risk vs Return
Asset Classes vs Asset Class Median



Total Fund Ranking

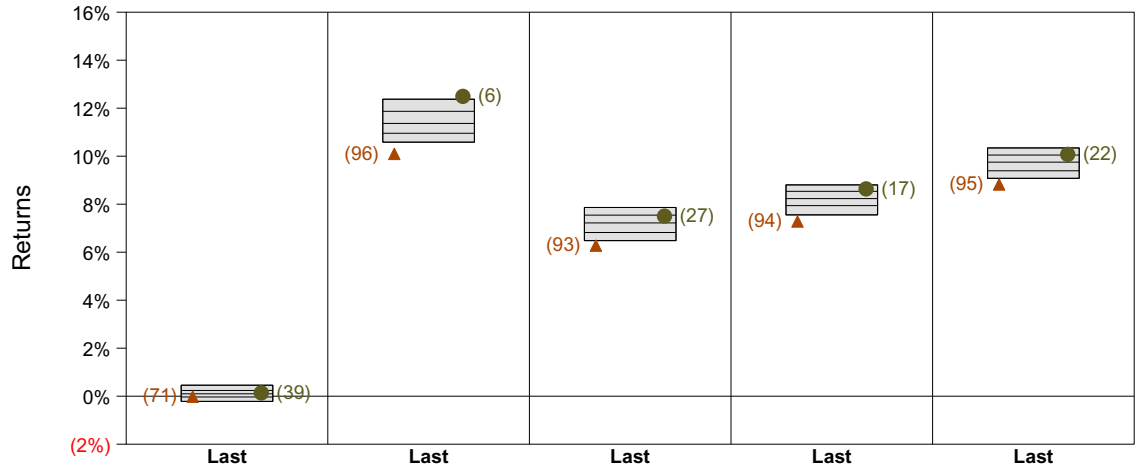
The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended March 31, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

Callan Public Fund Sponsor Database



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
10th Percentile	0.30	12.18	7.75	9.08	10.62
25th Percentile	(0.08)	11.29	7.21	8.55	10.02
Median	(0.39)	10.21	6.66	7.67	9.24
75th Percentile	(0.62)	8.84	5.96	6.86	8.18
90th Percentile	(0.75)	7.95	5.16	5.95	7.60
Total Fund ●	0.14	12.49	7.50	8.64	10.07
Policy Target ▲	(0.02)	10.10	6.28	7.28	8.82

Asset Allocation Adjusted Ranking



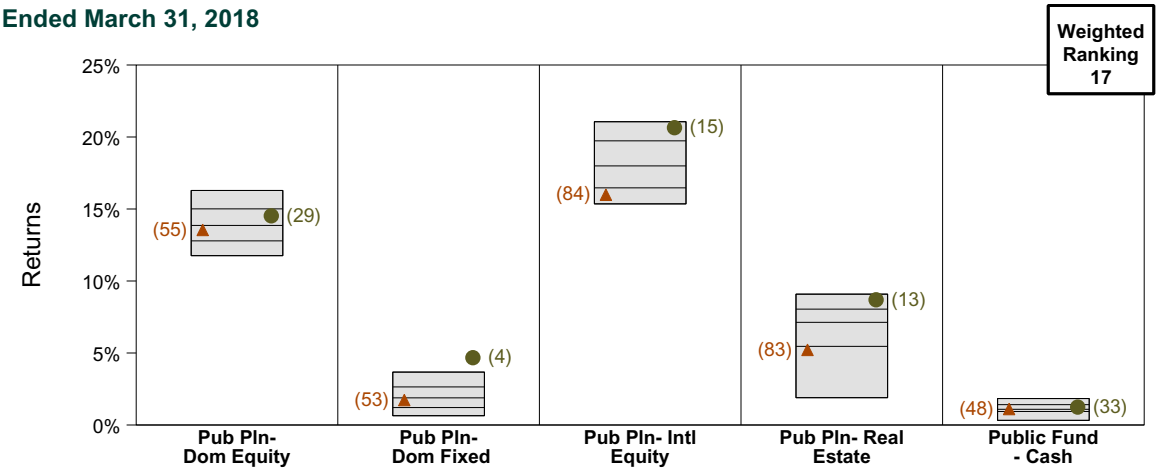
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
10th Percentile	0.46	12.37	7.86	8.80	10.34
25th Percentile	0.24	11.87	7.54	8.54	10.05
Median	0.10	11.37	7.22	8.23	9.75
75th Percentile	(0.03)	10.96	6.82	7.94	9.39
90th Percentile	(0.22)	10.58	6.48	7.55	9.08
Total Fund ●	0.14	12.49	7.50	8.64	10.07
Policy Target ▲	(0.02)	10.10	6.28	7.28	8.82

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

Asset Class Rankings

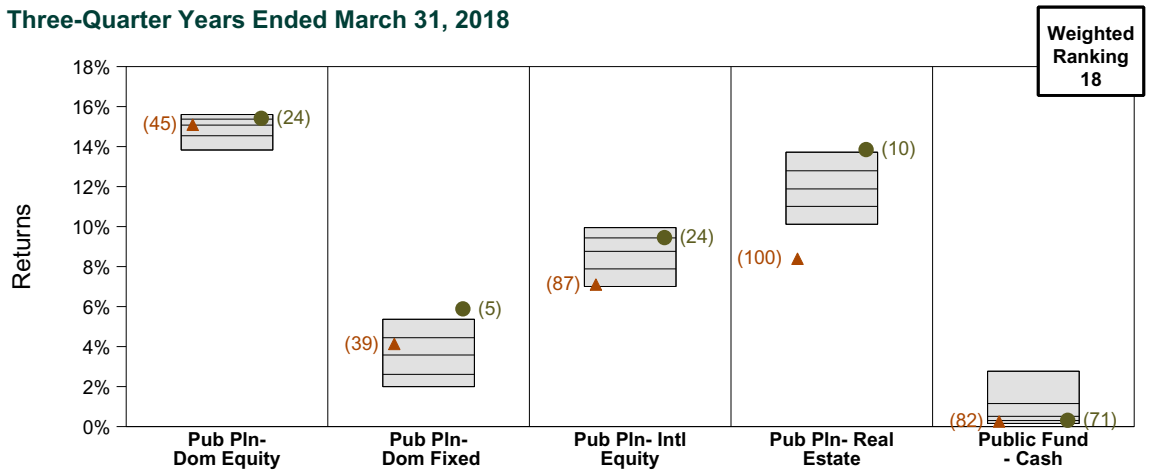
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	16.29	3.67	21.06	9.09	1.84
25th Percentile	15.01	2.64	19.73	8.05	1.41
Median	13.86	1.89	17.99	7.13	1.09
75th Percentile	12.79	1.21	16.47	5.46	0.94
90th Percentile	11.76	0.65	15.36	1.90	0.32
Asset Class Composite ●	14.53	4.67	20.65	8.70	1.24
Composite Benchmark ▲	13.55	1.73	15.99	5.22	1.11

Total Asset Class Performance
Seven and Three-Quarter Years Ended March 31, 2018



	Pub Pln- Dom Equity	Pub Pln- Dom Fixed	Pub Pln- Intl Equity	Pub Pln- Real Estate	Public Fund - Cash
10th Percentile	15.60	5.37	9.95	13.72	2.77
25th Percentile	15.37	4.44	9.43	12.79	1.15
Median	15.08	3.58	8.76	11.88	0.51
75th Percentile	14.54	2.61	7.88	11.01	0.30
90th Percentile	13.83	2.00	7.01	10.12	0.16
Asset Class Composite ●	15.41	5.89	9.45	13.85	0.32
Composite Benchmark ▲	15.09	4.13	7.10	8.39	0.26

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% 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 March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
GLOBAL EQUITY	**$1,423,703,085**	**57.72%**	**$(30,747,899)**	**$(4,024,635)**	**$1,458,475,618**	**58.97%**
Domestic Equity	**$546,980,228**	**22.18%**	**$(13,408,521)**	**$(979,378)**	**$561,368,126**	**22.70%**
Large Cap	420,060,346	17.03%	(15,301,291)	(1,546,011)	436,907,647	17.67%
Small Cap	126,919,882	5.15%	1,892,770	566,633	124,460,479	5.03%
International Equity	**$394,665,861**	**16.00%**	**$3,827,054**	**$(96,486)**	**$390,935,293**	**15.81%**
Developed Intl Equity	307,001,985	12.45%	2,327,054	(2,018,121)	306,693,052	12.40%
Emerging Markets	87,663,876	3.55%	1,500,000	1,921,635	84,242,241	3.41%
World Equity	**$398,305,986**	**16.15%**	**$(20,150,624)**	**$(6,745,063)**	**$425,201,673**	**17.19%**
Private Equity	**$83,751,011**	**3.40%**	**$(1,015,808)**	**$3,796,292**	**$80,970,527**	**3.27%**
GLOBAL FIXED INCOME	**$593,057,785**	**24.05%**	**$29,938,833**	**$3,129,144**	**$559,989,808**	**22.64%**
Fixed Income Comp	**$593,057,636**	**24.05%**	**$150,239,424**	**$114,278**	**$442,703,933**	**17.90%**
Investment Grade Fixed	424,361,798	17.21%	119,537,644	(994,519)	305,818,673	12.37%
Below Inv. Grade Fixed Income	168,695,838	6.84%	30,701,781	1,108,798	136,885,260	5.53%
International Fixed Income	**$149**	**0.00%**	**$(120,300,591)**	**$3,014,866**	**$117,285,874**	**4.74%**
GLOBAL REAL ASSETS	**$416,938,672**	**16.90%**	**$2,845,115**	**$4,390,983**	**$409,702,574**	**16.57%**
Real Estate	242,274,419	9.82%	5,809,874	2,268,559	234,195,986	9.47%
Timber	59,270,344	2.40%	(857,648)	(747,445)	60,875,438	2.46%
Infrastructure	115,393,909	4.68%	(2,107,111)	2,869,869	114,631,151	4.64%
Cash & Equivalents	**$32,728,380**	**1.33%**	**$(12,356,742)**	**$155,254**	**$44,929,868**	**1.82%**
Securities Lending Income	**$0**	**0.00%**	**$(34,077)**	**$34,077**	**-**	**-**
Total Fund	**$2,466,427,922**	**100.0%**	**$(10,354,769)**	**$3,684,823**	**$2,473,097,868**	**100.0%**

PLEASE REFER TO PAGES 30-32 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Global Equity					
Gross	(0.27%)	16.67%	8.82%	10.54%	-
Net	(0.32%)	16.42%	8.54%	10.23%	-
Wtd Avg Global Equity Benchmark	(0.39%)	14.28%	7.69%	9.25%	-
Domestic Equity					
Gross	(0.16%)	14.53%	10.14%	13.37%	15.41%
Net	(0.20%)	14.33%	9.95%	13.16%	15.17%
Wtd Avg Domestic Equity Benchmark	(0.54%)	13.55%	10.00%	12.85%	15.09%
Large Cap Equity					
Gross	(0.38%)	14.85%	10.80%	13.97%	15.72%
Net	(0.40%)	14.73%	10.67%	13.81%	15.49%
Benchmark(1)	(0.69%)	13.98%	10.39%	13.17%	15.32%
Small Cap Equity					
Gross	0.42%	13.40%	7.70%	11.12%	14.27%
Net	0.34%	12.96%	7.32%	10.78%	13.96%
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	14.16%
International Equity					
Gross	(0.02%)	20.65%	9.04%	8.58%	9.45%
Net	(0.07%)	20.44%	8.84%	8.35%	9.15%
Wtd Avg Intl Equity Benchmark	(1.38%)	15.99%	5.98%	6.12%	7.10%
Developed Intl Equity					
Gross	(0.66%)	18.91%	8.51%	8.87%	9.72%
Net	(0.71%)	18.66%	8.26%	8.61%	9.41%
Benchmark(2)	(2.04%)	13.92%	5.22%	6.29%	7.33%
Emerging Markets					
Gross	2.28%	27.19%	10.35%	6.55%	7.83%
Net	2.28%	27.19%	10.35%	6.44%	7.56%
Benchmark(3)	1.42%	24.93%	8.81%	4.99%	5.71%
World Equity					
Gross	(1.67%)	16.44%	8.20%	10.57%	-
Net	(1.74%)	16.01%	7.65%	9.94%	-
MSCI World Index	(1.28%)	13.59%	7.97%	9.70%	11.48%
Private Equity					
Net	4.70%	13.83%	2.18%	2.20%	4.22%

(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 6/3016; 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 33-37 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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Global Fixed Income					
Gross	0.52%	6.06%	4.01%	3.82%	-
Net	0.48%	5.84%	3.76%	3.58%	-
Wtd Avg Global Fixed Inc. Benchmark	(0.41%)	3.95%	2.63%	2.28%	-
Domestic Fixed Income					
Gross	(0.27%)	4.67%	3.96%	4.32%	5.89%
Net	(0.30%)	4.50%	3.75%	4.11%	5.74%
Wtd Avg Domestic FI Benchmark	(1.39%)	1.73%	2.10%	2.60%	4.13%
Inv. Grade Fixed Income					
Gross	(0.74%)	3.94%	3.10%	3.59%	4.82%
Net	(0.74%)	3.83%	2.97%	3.47%	4.66%
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.84%
Below Inv. Grade Fixed Income					
Gross	0.78%	6.47%	6.27%	6.20%	8.78%
Net	0.73%	6.13%	5.87%	5.77%	8.35%
Blmbg HY Corp 2% Issue	(0.86%)	3.78%	5.18%	5.00%	7.54%
Global Real Assets					
Gross	1.05%	7.93%	7.41%	8.54%	-
Net	1.00%	7.57%	7.00%	8.12%	-
Wtd Avg Global Real Assets Benchmark	1.45%	5.21%	5.70%	6.82%	-
Real Estate					
Gross	0.93%	8.70%	11.10%	12.74%	13.85%
Net	0.93%	8.31%	10.62%	12.23%	13.31%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	11.14%
Timber					
Net	(1.23%)	(2.97%)	(2.27%)	0.06%	-
NCREIF Timberland Index	0.92%	3.79%	3.44%	6.09%	5.19%
Infrastructure					
Gross	2.49%	13.07%	6.07%	6.13%	-
Net	2.34%	12.52%	5.51%	5.55%	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.69%
Cash & Equivalents - Net	**0.37%**	**1.24%**	**0.68%**	**0.43%**	**0.32%**
3-month Treasury Bill	0.35%	1.11%	0.53%	0.34%	0.26%
Total Fund					
Gross	0.14%	12.49%	7.50%	8.64%	10.07%
Net	0.09%	12.23%	7.21%	8.33%	9.74%
Target*	(0.02%)	10.10%	6.28%	7.28%	8.82%

* 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, 5.6% CPI-W, 4.8% Russell 2000 Index, 2.8% MSCI EM, 2.4% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

PLEASE REFER TO PAGES 33-37 FOR INVESTMENT MANAGER LEVEL RETURNS.

Domestic Equity
Period Ended March 31, 2018

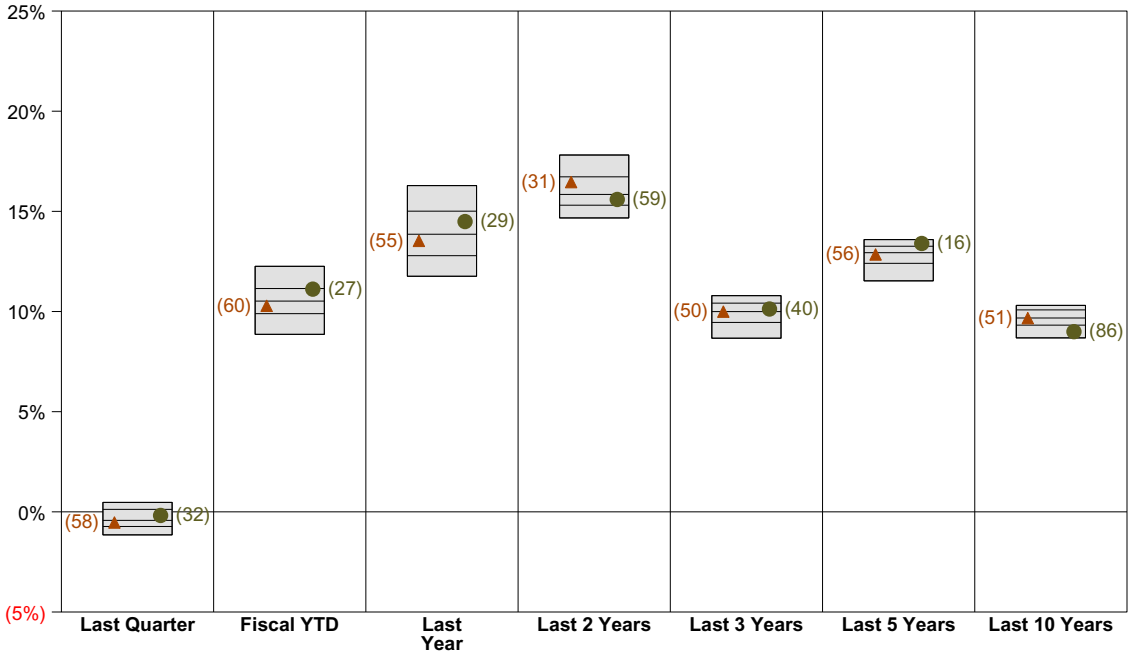
Quarterly Summary and Highlights

- Domestic Equity's portfolio posted a (0.18)% return for the quarter placing it in the 32 percentile of the Public Fund - Domestic Equity group for the quarter and in the 29 percentile for the last year.
- Domestic Equity's portfolio outperformed the Russell 1000 Index by 0.35% for the quarter and outperformed the Russell 1000 Index for the year by 0.96%.

Quarterly Asset Growth

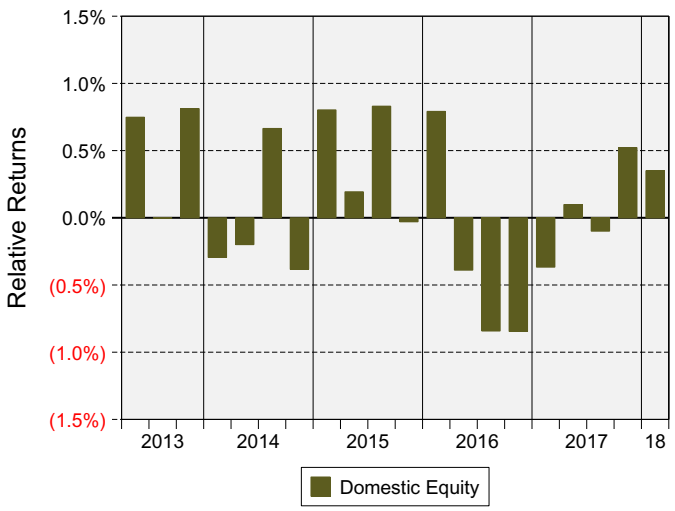
Beginning Market Value	$1,285,911,681
Net New Investment	$-31,502,934
Investment Gains/(Losses)	$-2,109,979
Ending Market Value	$1,252,298,768

Performance vs Public Fund - Domestic Equity (Gross)

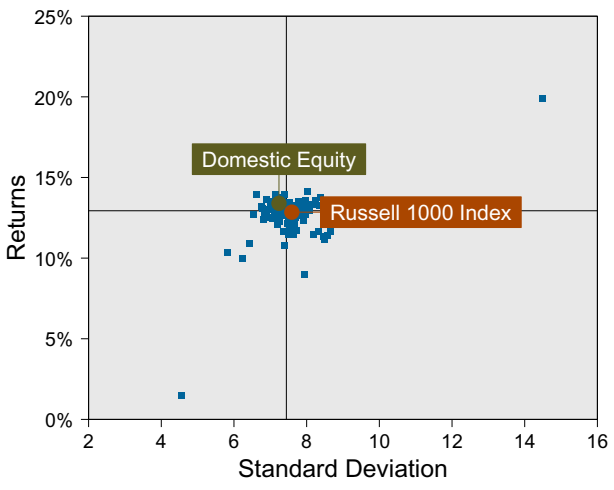


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.47	12.26	16.29	17.81	10.79	13.59	10.31
25th Percentile	0.12	11.15	15.01	16.72	10.42	13.26	10.08
Median	(0.43)	10.52	13.86	15.85	10.00	12.94	9.68
75th Percentile	(0.73)	9.89	12.79	15.31	9.46	12.41	9.32
90th Percentile	(1.15)	8.86	11.76	14.67	8.67	11.53	8.68
Domestic Equity ●	(0.18)	11.12	14.49	15.59	10.12	13.40	8.99
Russell 1000 Index ▲	(0.53)	10.29	13.53	16.46	10.00	12.85	9.67

Relative Return vs Russell 1000 Index



Public Fund - Domestic Equity (Gross) Annualized Five Year Risk vs Return



L.A. Capital
Period Ended March 31, 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.

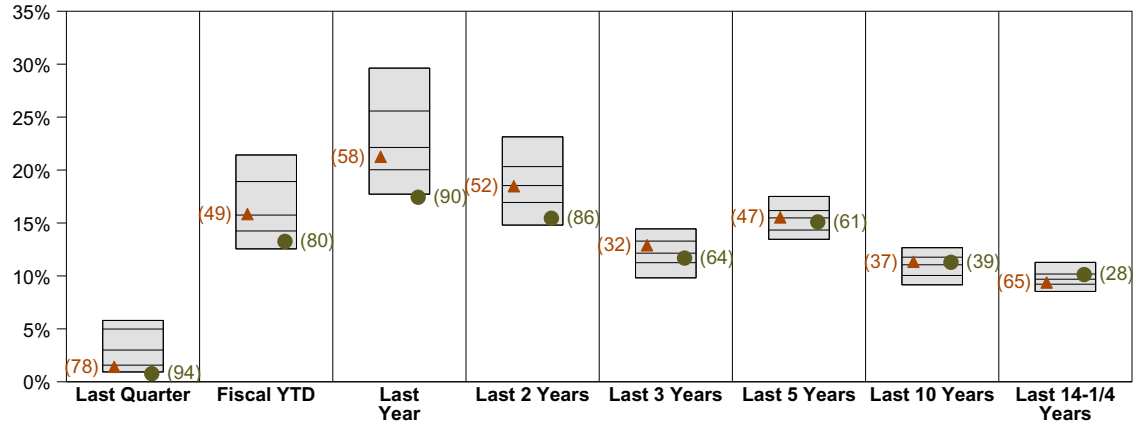
Quarterly Summary and Highlights

- L.A. Capital's portfolio posted a 0.76% return for the quarter placing it in the 94 percentile of the Callan Large Cap Growth group for the quarter and in the 90 percentile for the last year.
- L.A. Capital's portfolio underperformed the Russell 1000 Growth Index by 0.65% for the quarter and underperformed the Russell 1000 Growth Index for the year by 3.82%.

Quarterly Asset Growth

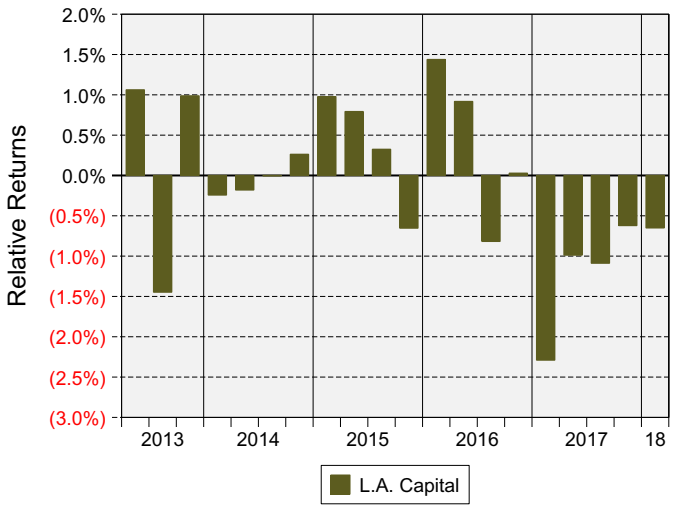
Beginning Market Value	$387,173,355
Net New Investment	$-17,698,201
Investment Gains/(Losses)	$3,089,799
Ending Market Value	$372,564,954

Performance vs Callan Large Cap Growth (Gross)

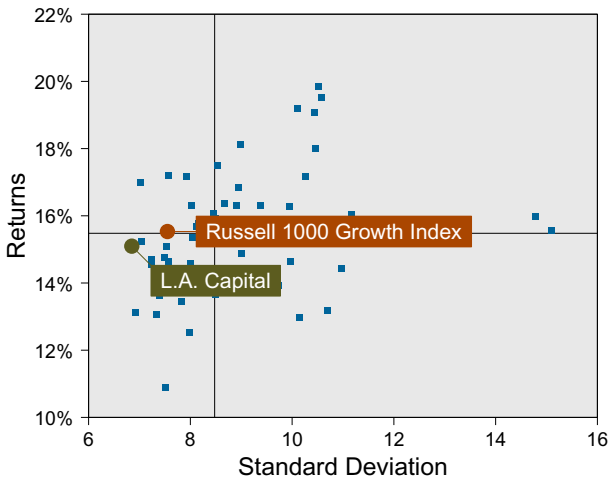


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 14-1/4 Years
10th Percentile	5.80	21.42	29.63	23.14	14.44	17.51	12.67	11.28
25th Percentile	4.98	18.91	25.57	20.33	13.29	16.17	11.77	10.18
Median	3.00	15.75	22.13	18.54	12.15	15.48	11.05	9.69
75th Percentile	1.57	14.25	20.03	16.94	11.25	14.33	10.04	9.22
90th Percentile	0.93	12.56	17.72	14.80	9.82	13.46	9.16	8.53
L.A. Capital ●	0.76	13.26	17.43	15.45	11.68	15.10	11.29	10.13
Russell 1000 Growth Index ▲	1.42	15.84	21.25	18.47	12.90	15.53	11.34	9.38

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 March 31, 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 (1.50)% return for the quarter placing it in the 78 percentile of the Callan Large Cap Core group for the quarter and in the 87 percentile for the last year.
- LACM Enhanced Index's portfolio underperformed the Russell 1000 Index by 0.81% for the quarter and underperformed the Russell 1000 Index for the year by 2.52%.

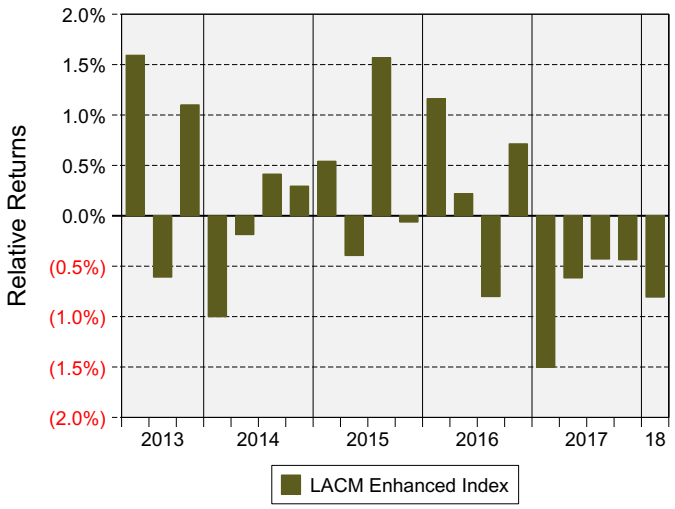
Quarterly Asset Growth

Beginning Market Value	$210,670,704
Net New Investment	$-8,054,897
Investment Gains/(Losses)	$-3,000,878
Ending Market Value	$199,614,929

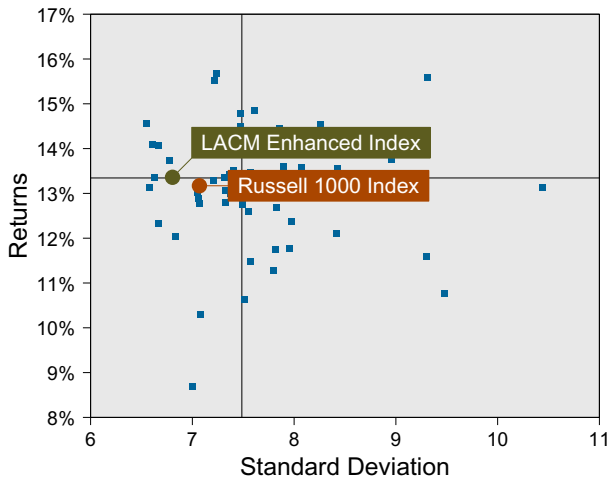
Performance vs Callan Large Cap Core (Gross)

		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 17-1/2 Years
10th Percentile		0.78	13.80	17.40	18.95	12.07	14.61	10.82	7.84
25th Percentile		0.10	12.54	15.90	17.21	11.08	14.08	10.28	7.22
Median		(0.47)	10.89	13.84	15.54	10.01	13.34	9.72	6.40
75th Percentile		(1.28)	9.19	12.37	14.64	9.21	12.64	9.09	6.13
90th Percentile		(2.01)	6.95	9.21	12.68	8.02	11.43	8.28	5.78
LACM Enhanced Index	●	(1.50)	8.80	11.46	13.66	9.96	13.36	10.16	6.34
Russell 1000 Index	▲	(0.69)	10.59	13.98	15.69	10.39	13.17	9.61	5.73

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 March 31, 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.

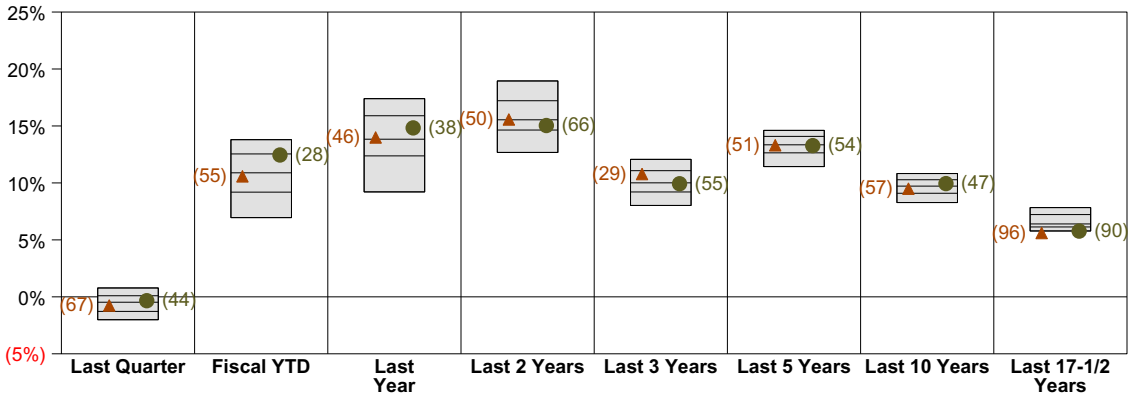
Quarterly Summary and Highlights

- Northern Trust AM Enh S&P500's portfolio posted a (0.34)% return for the quarter placing it in the 44 percentile of the Callan Large Cap Core group for the quarter and in the 38 percentile for the last year.
- Northern Trust AM Enh S&P500's portfolio outperformed the S&P 500 Index by 0.42% for the quarter and outperformed the S&P 500 Index for the year by 0.84%.

Quarterly Asset Growth

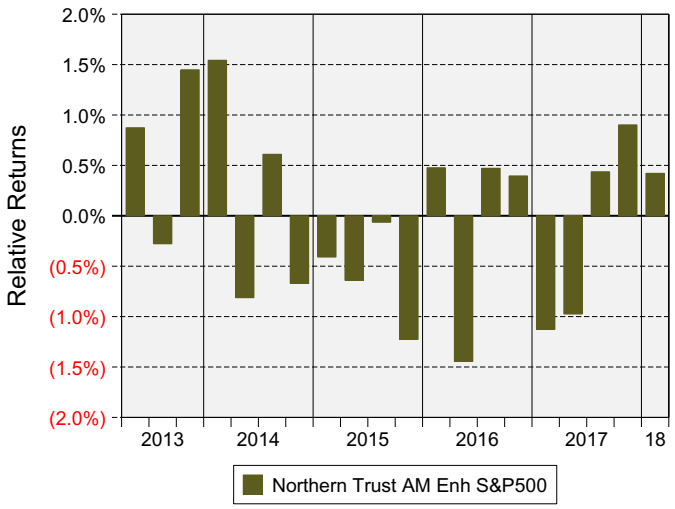
Beginning Market Value	$188,791,493
Net New Investment	$4,000,000
Investment Gains/(Losses)	$-591,013
Ending Market Value	$192,200,480

Performance vs Callan Large Cap Core (Gross)

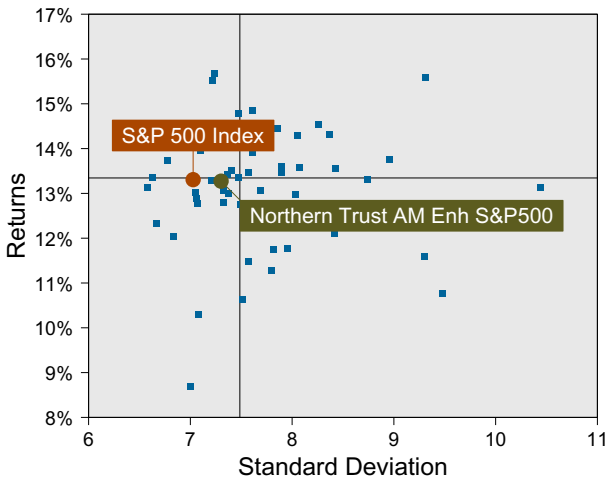


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 17-1/2 Years
10th Percentile		0.78	13.80	17.40	18.95	12.07	14.61	10.82	7.84
25th Percentile		0.10	12.54	15.90	17.21	11.08	14.08	10.28	7.22
Median		(0.47)	10.89	13.84	15.54	10.01	13.34	9.72	6.40
75th Percentile		(1.28)	9.19	12.37	14.64	9.21	12.64	9.09	6.13
90th Percentile		(2.01)	6.95	9.21	12.68	8.02	11.43	8.28	5.78
Northern Trust AM Enh S&P500	●	(0.34)	12.45	14.83	15.04	9.93	13.27	9.94	5.77
S&P 500 Index	▲	(0.76)	10.58	13.99	15.57	10.78	13.31	9.50	5.60

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 March 31, 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.

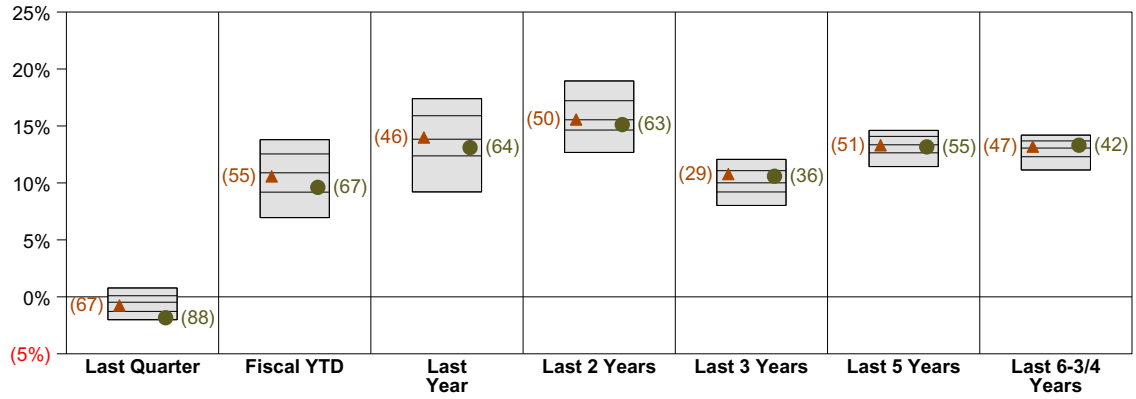
Quarterly Summary and Highlights

- Parametric Clifton Enh S&P's portfolio posted a (1.84)% return for the quarter placing it in the 88 percentile of the Callan Large Cap Core group for the quarter and in the 64 percentile for the last year.
- Parametric Clifton Enh S&P's portfolio underperformed the S&P 500 Index by 1.08% for the quarter and underperformed the S&P 500 Index for the year by 0.89%.

Quarterly Asset Growth

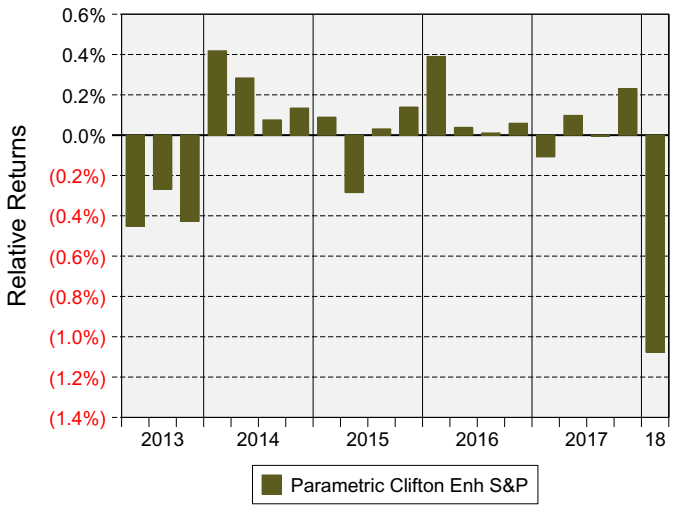
Beginning Market Value	$209,293,474
Net New Investment	$-17,500,000
Investment Gains/(Losses)	$-2,933,062
Ending Market Value	$188,860,412

Performance vs Callan Large Cap Core (Gross)

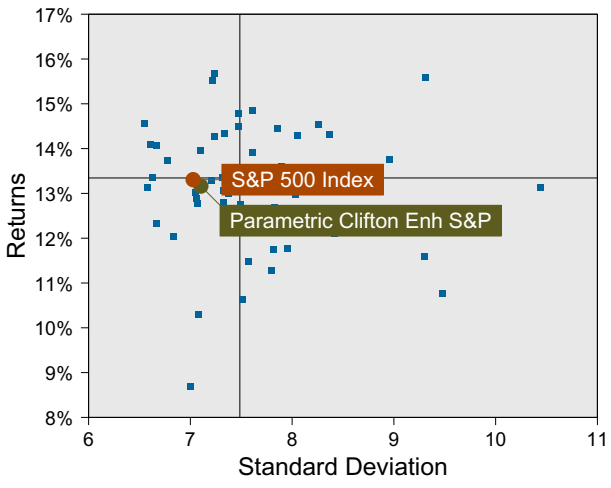


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-3/4 Years
10th Percentile	0.78	13.80	17.40	18.95	12.07	14.61	14.20
25th Percentile	0.10	12.54	15.90	17.21	11.08	14.08	13.69
Median	(0.47)	10.89	13.84	15.54	10.01	13.34	13.06
75th Percentile	(1.28)	9.19	12.37	14.64	9.21	12.64	12.30
90th Percentile	(2.01)	6.95	9.21	12.68	8.02	11.43	11.14
Parametric Clifton Enh S&P	(1.84)	9.61	13.10	15.12	10.59	13.16	13.31
S&P 500 Index	(0.76)	10.58	13.99	15.57	10.78	13.31	13.19

Relative Return vs S&P 500 Index



Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



Atlanta Capital
Period Ended March 31, 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.

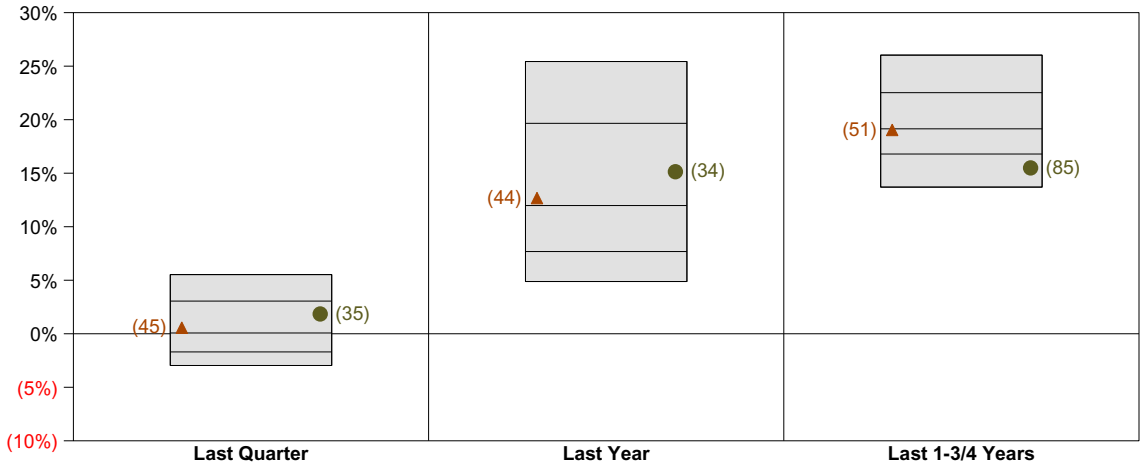
Quarterly Summary and Highlights

- Atlanta Capital's portfolio posted a 1.85% return for the quarter placing it in the 35 percentile of the Callan Small Capitalization group for the quarter and in the 34 percentile for the last year.
- Atlanta Capital's portfolio outperformed the S&P 600 Small Cap Index by 1.28% for the quarter and outperformed the S&P 600 Small Cap Index for the year by 2.46%.

Quarterly Asset Growth

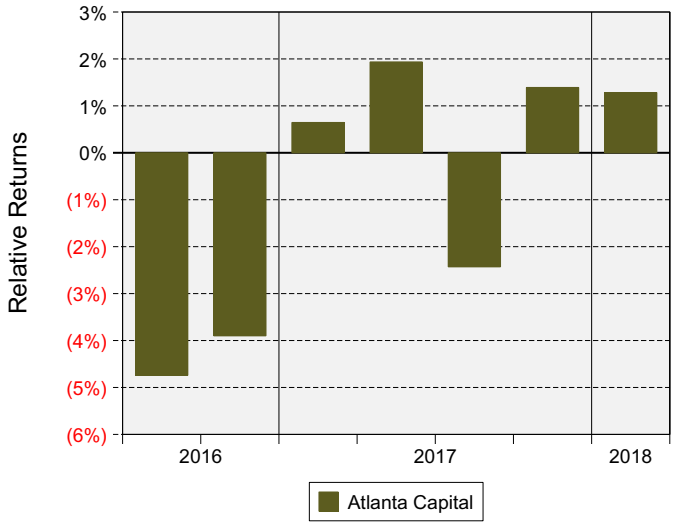
Beginning Market Value	$141,557,762
Net New Investment	$7,750,163
Investment Gains/(Losses)	$2,713,855
Ending Market Value	$152,021,780

Performance vs Callan Small Capitalization (Gross)

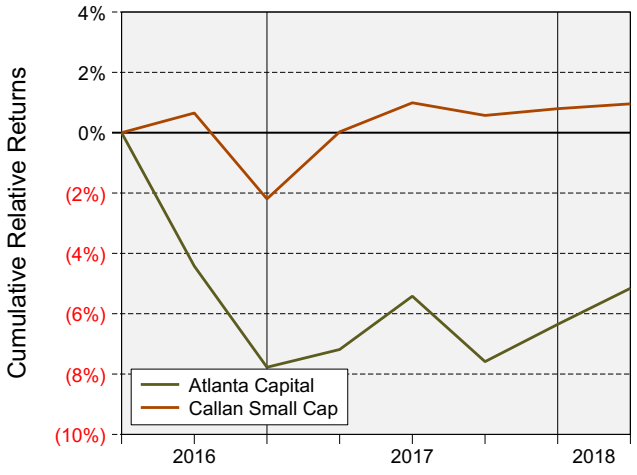


	Last Quarter	Last Year	Last 1-3/4 Years
10th Percentile	5.53	25.43	26.03
25th Percentile	3.05	19.66	22.52
Median	0.07	11.98	19.15
75th Percentile	(1.70)	7.68	16.79
90th Percentile	(2.96)	4.88	13.70
Atlanta Capital ●	1.85	15.14	15.49
S&P 600 Small Cap Index ▲	0.57	12.68	19.04

Relative Return vs S&P 600 Small Cap Index



Cumulative Returns vs S&P 600 Small Cap Index



Parametric Clifton Enh SmCap
Period Ended March 31, 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.

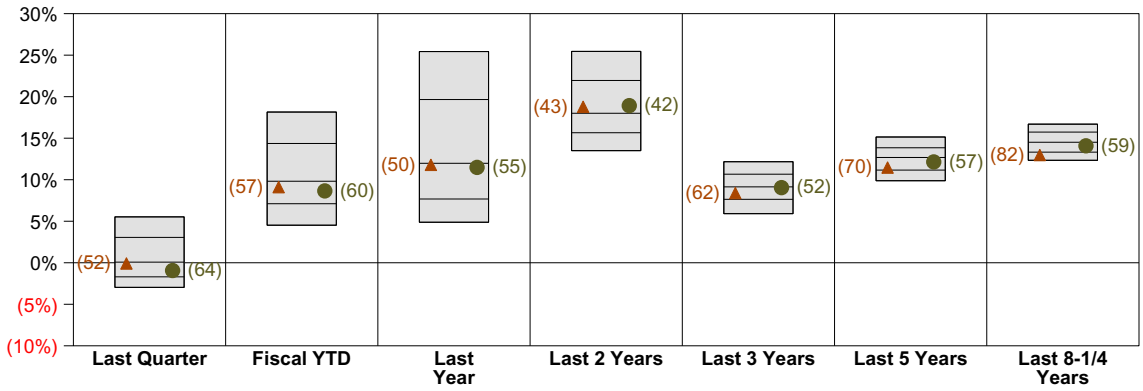
Quarterly Summary and Highlights

- Parametric Clifton Enh SmCap's portfolio posted a (0.94)% return for the quarter placing it in the 64 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 0.85% for the quarter and underperformed the Russell 2000 Index for the year by 0.31%.

Quarterly Asset Growth

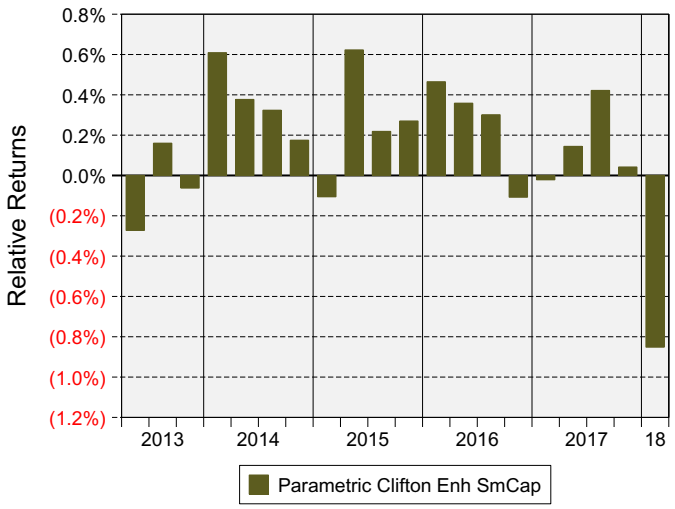
Beginning Market Value	$148,424,893
Net New Investment	$0
Investment Gains/(Losses)	$-1,388,680
Ending Market Value	$147,036,214

Performance vs Callan Small Capitalization (Gross)

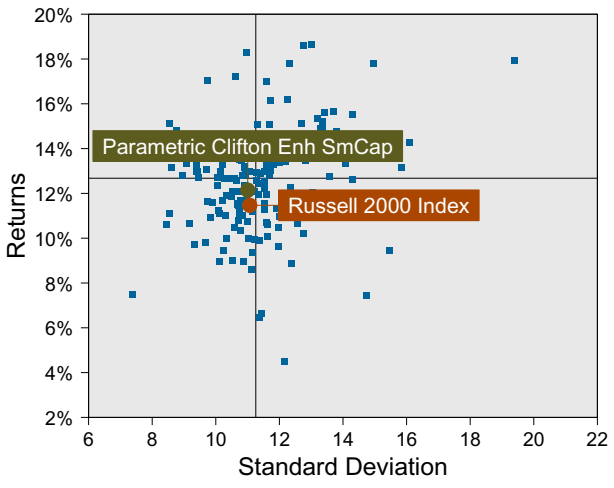


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 8-1/4 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	15.15	16.69
25th Percentile	3.05	14.37	19.66	21.95	10.66	13.85	15.73
Median	0.07	9.82	11.98	18.00	9.14	12.68	14.51
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	11.16	13.32
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	9.88	12.34
Parametric Clifton Enh SmCap ●	(0.94)	8.65	11.49	18.92	9.05	12.14	14.08
Russell 2000 Index ▲	(0.08)	9.11	11.79	18.79	8.39	11.47	12.97

Relative Return vs Russell 2000 Index



Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



International Equity
Period Ended March 31, 2018

Quarterly Summary and Highlights

- International Equity's portfolio posted a 0.06% return for the quarter placing it in the 23 percentile of the Public Fund - International Equity group for the quarter and in the 13 percentile for the last year.
- International Equity's portfolio outperformed the International Equity Target by 1.35% for the quarter and outperformed the International Equity Target for the year by 4.66%.

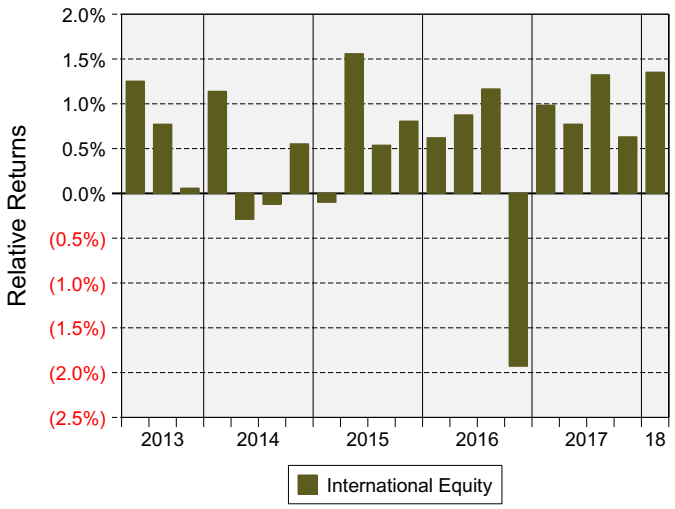
Quarterly Asset Growth

Beginning Market Value	$898,988,130
Net New Investment	$16,617,877
Investment Gains/(Losses)	$581,270
Ending Market Value	$916,187,276

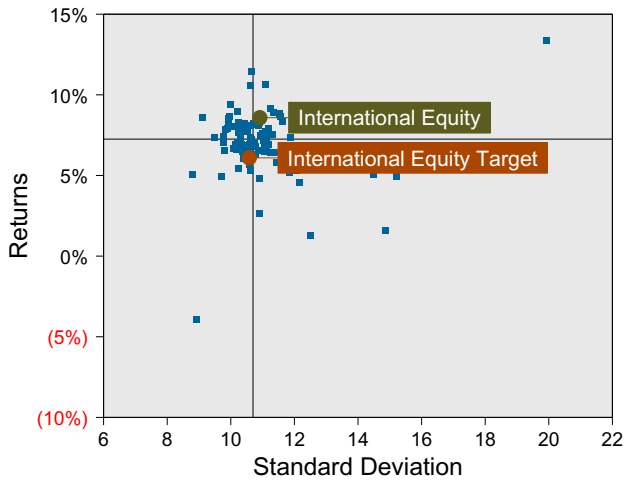
Performance vs Public Fund - International Equity (Gross)

	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.37	12.76	21.06	17.64	9.05	8.70	5.19
25th Percentile	0.04	11.94	19.73	16.65	8.32	8.00	4.63
Median	(0.55)	10.60	17.99	15.66	7.52	7.26	3.78
75th Percentile	(0.89)	9.40	16.47	14.46	6.51	6.43	3.24
90th Percentile	(1.09)	8.64	15.36	13.36	5.63	5.18	1.65
International Equity ●	0.06	13.50	20.92	17.33	9.09	8.58	5.32
International Equity Target ▲	(1.29)	9.92	16.26	14.53	6.09	6.09	3.24

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 March 31, 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 (2.26)% return for the quarter placing it in the 91 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 93 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.49% for the quarter and underperformed the World ex US SC Value for the year by 1.55%.

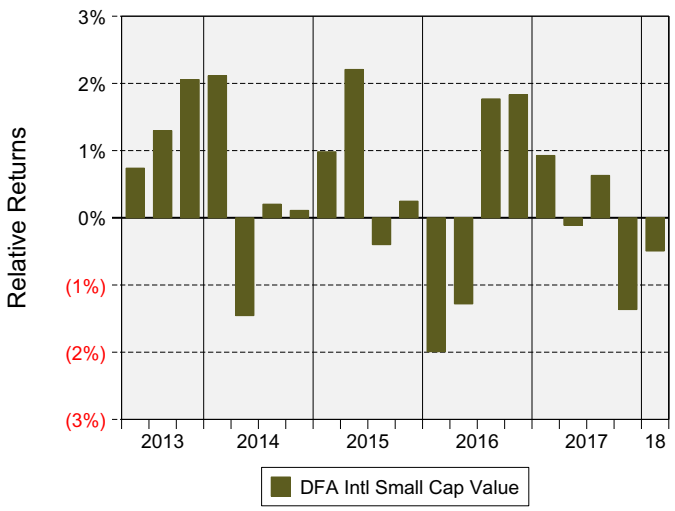
Quarterly Asset Growth

Beginning Market Value	$92,677,130
Net New Investment	$0
Investment Gains/(Losses)	$-2,098,046
Ending Market Value	$90,579,085

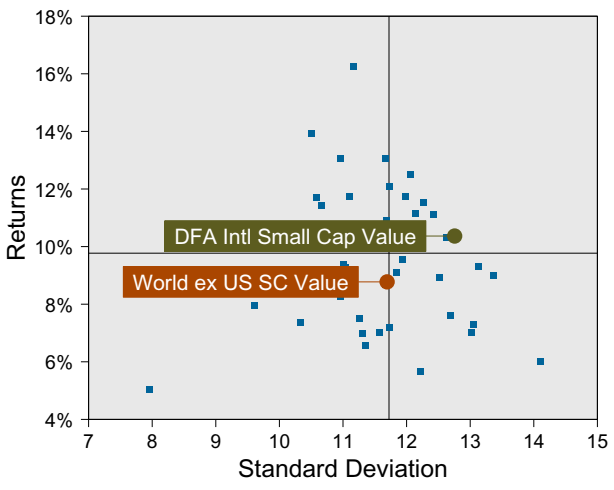
Performance vs Callan International Small Cap Mut Funds (Net)

	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-1/4 Years
10th Percentile	3.86	19.51	29.34	19.93	13.50	12.67	8.74	7.26
25th Percentile	2.15	16.65	28.16	18.16	12.00	11.22	7.51	6.48
Median	0.74	13.77	23.63	17.04	10.78	9.77	6.16	5.27
75th Percentile	(0.61)	11.48	20.14	14.60	8.92	7.59	5.19	4.21
90th Percentile	(2.18)	9.13	17.20	12.51	7.18	6.85	4.48	3.46
DFA Intl Small Cap Value ●	(2.26)	9.19	16.11	16.70	10.30	10.37	5.93	5.39
World ex US SC Value ▲	(1.77)	10.53	17.66	15.74	9.72	8.78	5.58	4.88

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 March 31, 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.

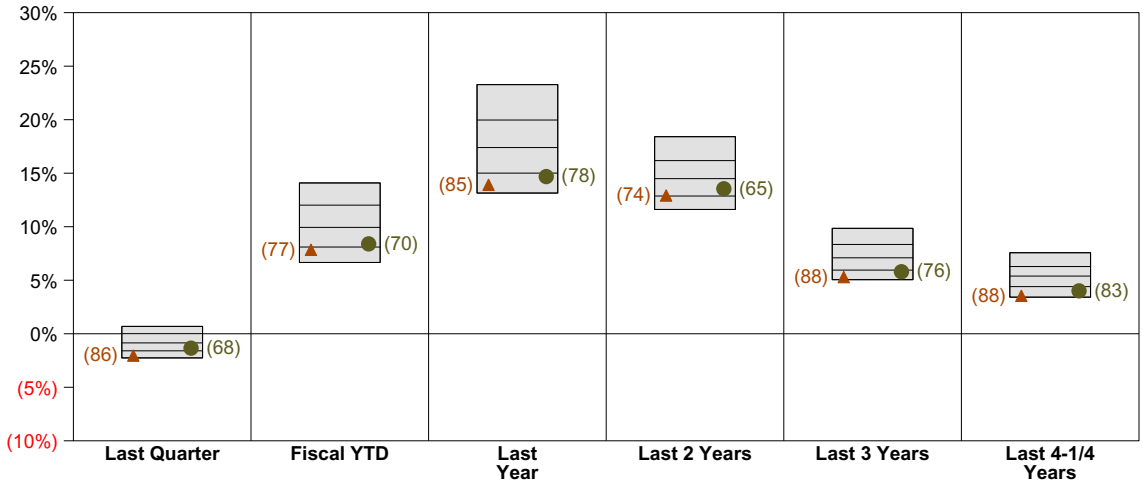
Quarterly Summary and Highlights

- Northern Tr AM Wrld ex US's portfolio posted a (1.35)% return for the quarter placing it in the 68 percentile of the Callan Non-US Equity group for the quarter and in the 78 percentile for the last year.
- Northern Tr AM Wrld ex US's portfolio outperformed the MSCI World ex US by 0.69% for the quarter and outperformed the MSCI World ex US for the year by 0.76%.

Quarterly Asset Growth

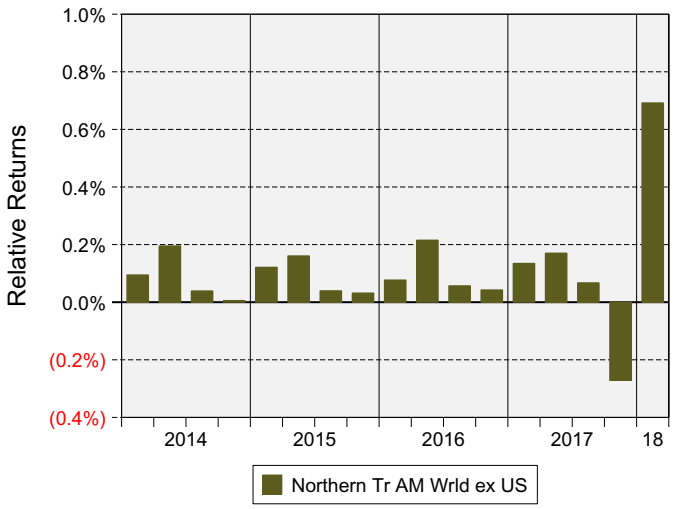
Beginning Market Value	$330,682,069
Net New Investment	$-26,358
Investment Gains/(Losses)	$-4,451,330
Ending Market Value	$326,204,381

Performance vs Callan Non-US Equity (Gross)

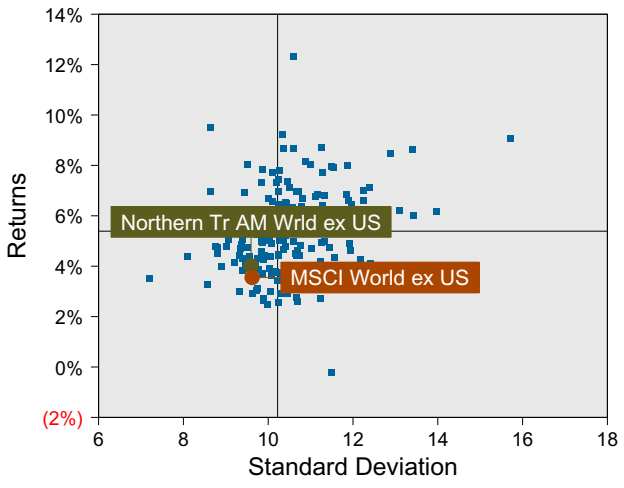


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	0.69	14.09	23.28	18.41	9.85	7.57
25th Percentile	0.01	12.02	19.97	16.18	8.34	6.28
Median	(0.85)	9.94	17.40	14.49	7.10	5.39
75th Percentile	(1.59)	8.10	15.01	12.87	5.95	4.40
90th Percentile	(2.26)	6.66	13.14	11.61	5.05	3.42
Northern Tr AM Wrld ex US ●	(1.35)	8.40	14.68	13.55	5.80	4.01
MSCI World ex US ▲	(2.04)	7.85	13.92	12.92	5.30	3.55

Relative Return vs MSCI World ex US



Callan Non-US Equity (Gross)
Annualized Four and One-Quarter Year Risk vs Return



Wellington Management
Period Ended March 31, 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.

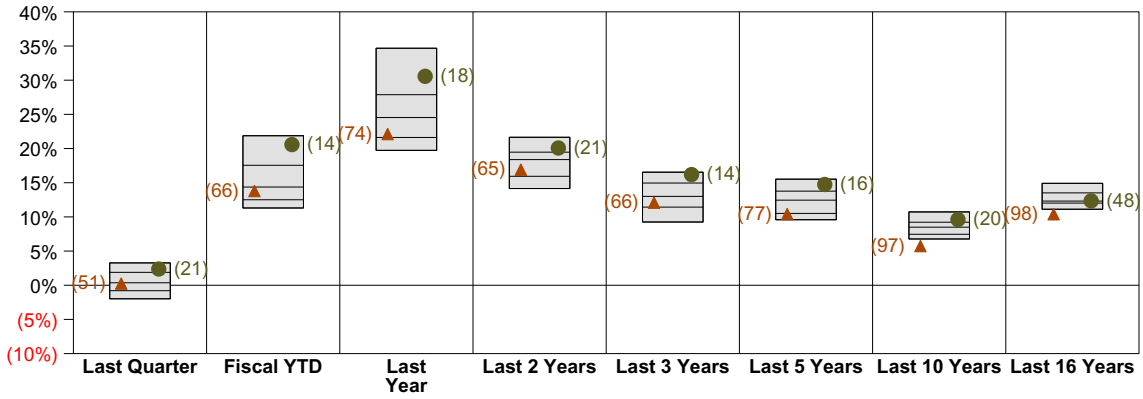
Quarterly Summary and Highlights

- Wellington Management's portfolio posted a 2.37% return for the quarter placing it in the 21 percentile of the Callan International Small Cap group for the quarter and in the 18 percentile for the last year.
- Wellington Management's portfolio outperformed the S&P BMI EPAC <$2 B by 2.12% for the quarter and outperformed the S&P BMI EPAC <$2 B for the year by 8.44%.

Quarterly Asset Growth

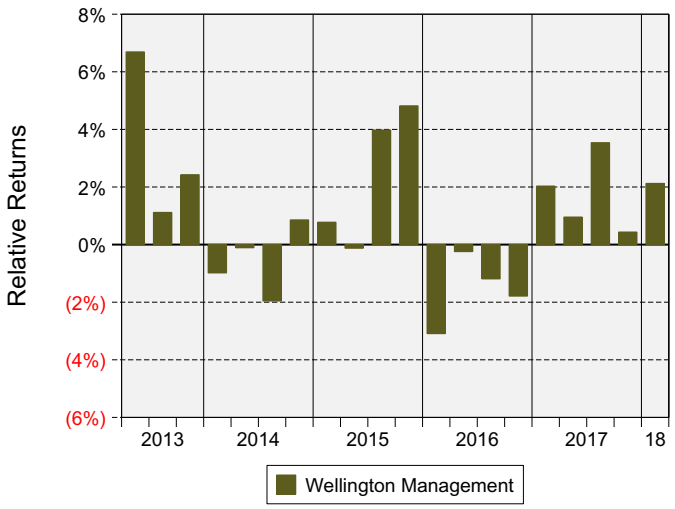
Beginning Market Value	$88,439,466
Net New Investment	$-207,642
Investment Gains/(Losses)	$2,107,915
Ending Market Value	$90,339,739

Performance vs Callan International Small Cap (Gross)

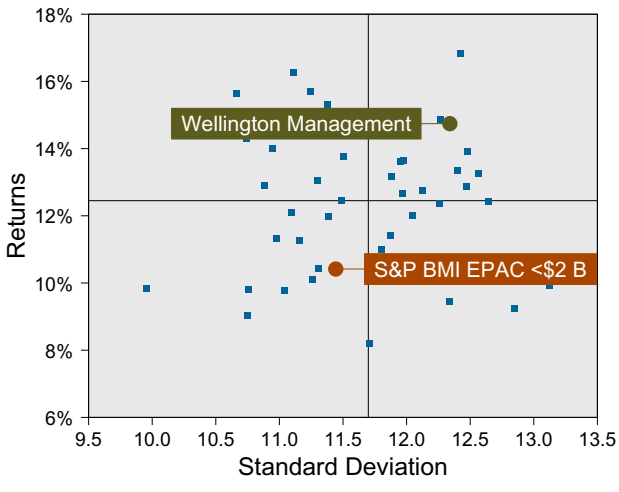


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 16 Years
10th Percentile	3.27	21.87	34.68	21.65	16.54	15.52	10.73	14.91
25th Percentile	1.89	17.55	27.88	19.47	14.95	13.77	9.22	13.51
Median	0.36	14.37	24.53	18.38	13.00	12.45	8.50	12.31
75th Percentile	(0.80)	12.51	21.62	15.94	11.43	10.51	7.46	12.02
90th Percentile	(1.98)	11.30	19.73	14.15	9.25	9.59	6.77	11.12
Wellington Management	2.37	20.58	30.57	20.08	16.19	14.74	9.61	12.34
S&P BMI EPAC <$2 B	0.25	13.79	22.13	16.91	12.09	10.42	5.73	10.39

Relative Return vs S&P BMI EPAC <$2 B



Callan International Small Cap (Gross) Annualized Five Year Risk vs Return



William Blair
Period Ended March 31, 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.

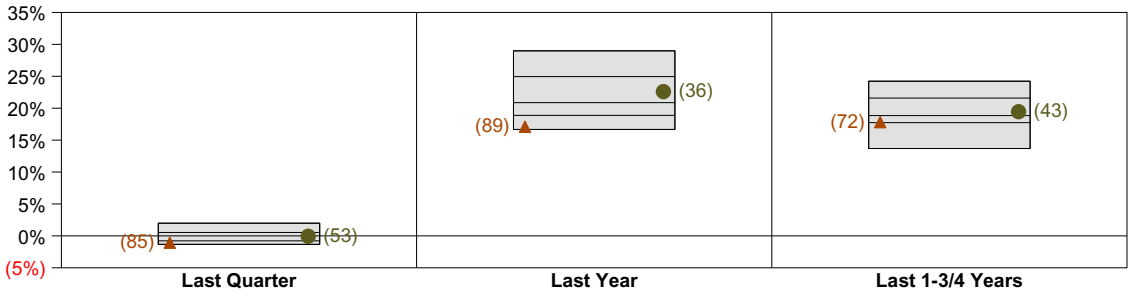
Quarterly Summary and Highlights

- William Blair's portfolio posted a (0.06)% return for the quarter placing it in the 53 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 36 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.00% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 5.50%.

Quarterly Asset Growth

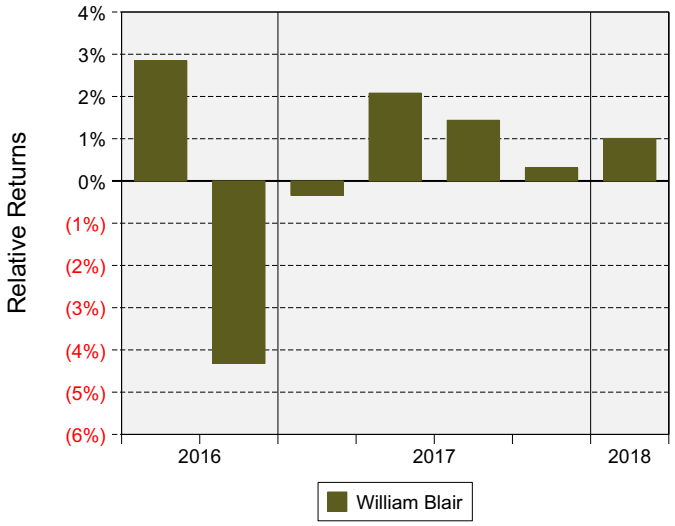
Beginning Market Value	$165,837,289
Net New Investment	$12,351,877
Investment Gains/(Losses)	$-25,641
Ending Market Value	$178,163,524

Performance vs Callan Non-US All Country Growth Equity (Gross)

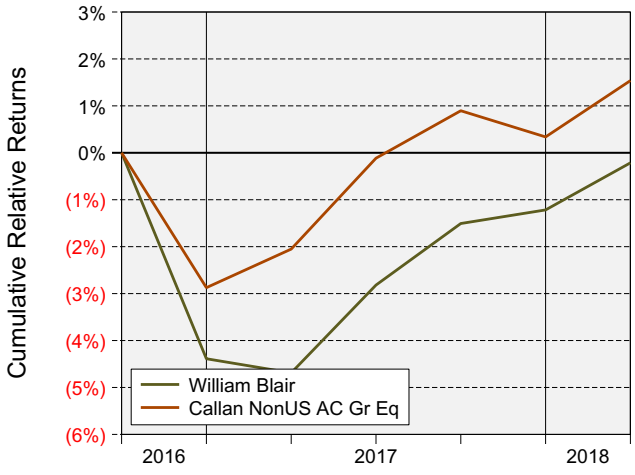


	Last Quarter	Last Year	Last 1-3/4 Years
10th Percentile	1.99	28.99	24.23
25th Percentile	0.53	24.95	21.59
Median	0.01	20.87	18.84
75th Percentile	(0.78)	18.88	17.73
90th Percentile	(1.33)	16.67	13.69
William Blair ●	(0.06)	22.60	19.45
MSCI ACWI ex US IMI ▲	(1.06)	17.10	17.82

Relative Return vs MSCI ACWI ex US IMI



Cumulative Returns vs MSCI ACWI ex US IMI



Axiom Emerging Markets
Period Ended March 31, 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.

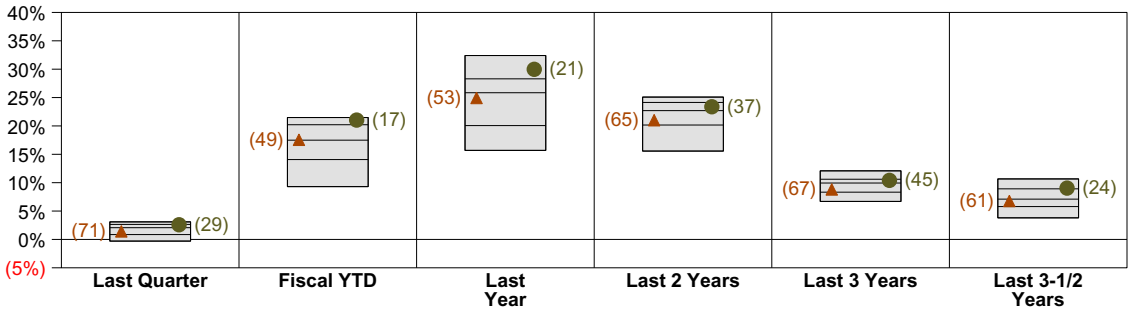
Quarterly Summary and Highlights

- Axiom Emerging Markets's portfolio posted a 2.58% return for the quarter placing it in the 29 percentile of the Callan Emerging Markets Equity Mut Funds group for the quarter and in the 21 percentile for the last year.
- Axiom Emerging Markets's portfolio outperformed the MSCI EM by 1.17% for the quarter and outperformed the MSCI EM for the year by 5.05%.

Quarterly Asset Growth

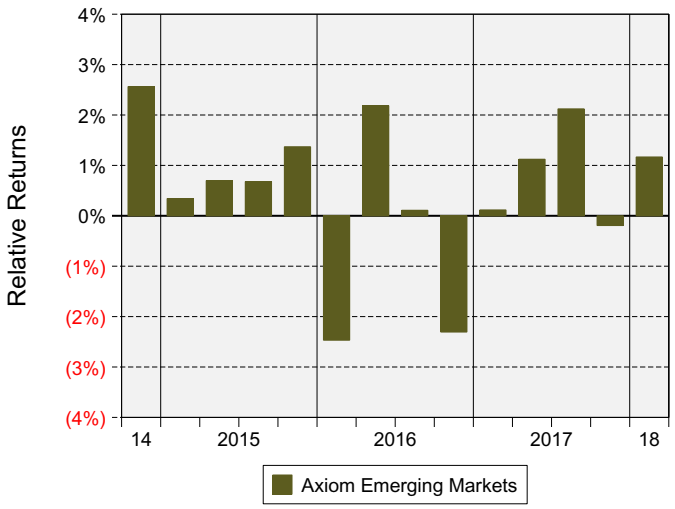
Beginning Market Value	$163,668,161
Net New Investment	$0
Investment Gains/(Losses)	$4,226,731
Ending Market Value	$167,894,892

Performance vs Callan Emerging Markets Equity Mut Funds (Net)

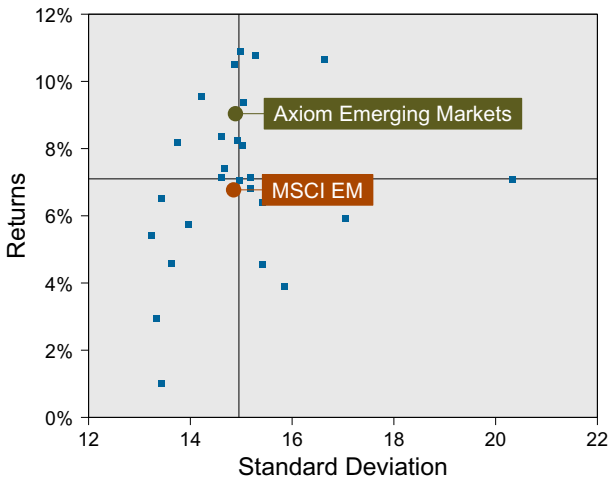


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 3-1/2 Years
10th Percentile	3.09	21.48	32.41	25.09	12.09	10.66
25th Percentile	2.64	20.21	28.30	24.14	10.61	8.91
Median	2.07	17.49	25.85	22.70	9.94	7.10
75th Percentile	0.85	14.07	20.06	20.16	8.33	5.79
90th Percentile	(0.29)	9.30	15.69	15.57	6.70	3.80
Axiom Emerging Markets ●	2.58	21.03	29.98	23.38	10.41	9.04
MSCI EM ▲	1.42	17.56	24.93	21.01	8.81	6.77

Relative Return vs MSCI EM



Callan Emerging Markets Equity Mut Funds (Net) Annualized Three and One-Half Year Risk vs Return



DFA Emerging Markets
Period Ended March 31, 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.

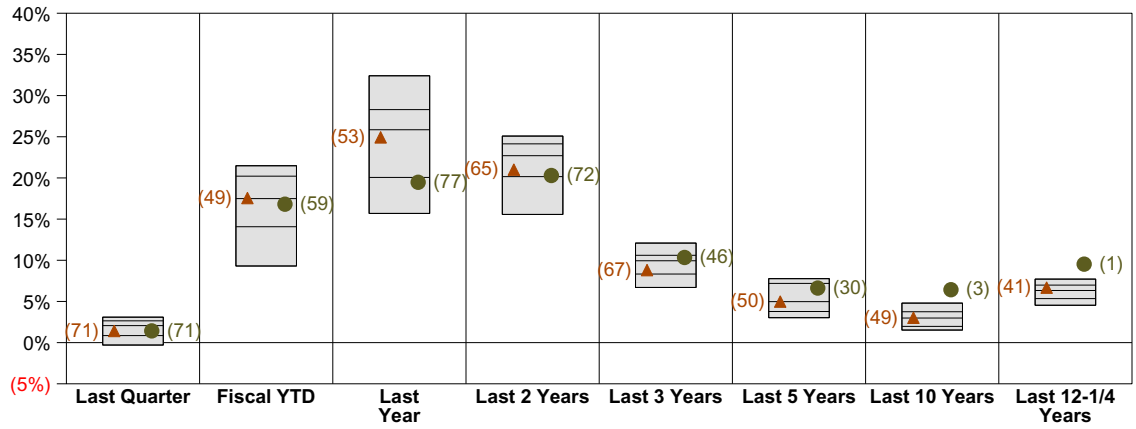
Quarterly Summary and Highlights

- DFA Emerging Markets's portfolio posted a 1.42% return for the quarter placing it in the 71 percentile of the Callan Emerging Markets Equity Mut Funds group for the quarter and in the 77 percentile for the last year.
- DFA Emerging Markets's portfolio outperformed the MSCI EM by 0.01% for the quarter and underperformed the MSCI EM for the year by 5.46%.

Quarterly Asset Growth

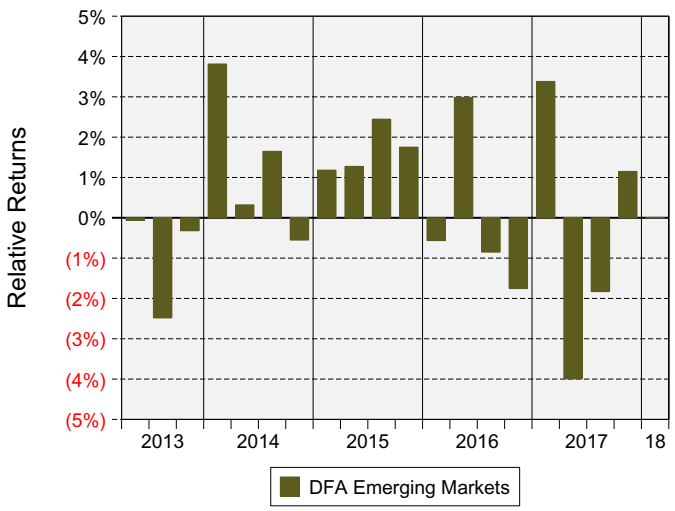
Beginning Market Value	$57,684,014
Net New Investment	$4,500,000
Investment Gains/(Losses)	$821,641
Ending Market Value	$63,005,655

Performance vs Callan Emerging Markets Equity Mut Funds (Net)

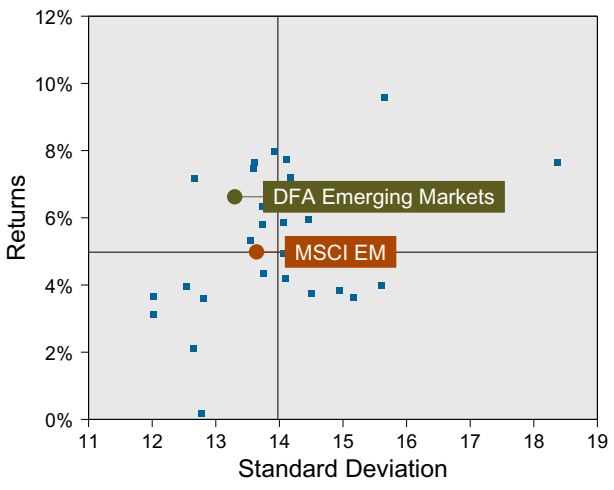


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 12-1/4 Years
10th Percentile	3.09	21.48	32.41	25.09	12.09	7.77	4.80	7.71
25th Percentile	2.64	20.21	28.30	24.14	10.61	7.19	3.75	6.99
Median	2.07	17.49	25.85	22.70	9.94	4.98	2.99	6.33
75th Percentile	0.85	14.07	20.06	20.16	8.33	3.78	1.97	5.35
90th Percentile	(0.29)	9.30	15.69	15.57	6.70	3.03	1.52	4.54
DFA Emerging Markets ●	1.42	16.81	19.47	20.29	10.34	6.63	6.42	9.53
MSCI EM ▲	1.42	17.56	24.93	21.01	8.81	4.99	3.02	6.68

Relative Return vs MSCI EM



Callan Emerging Markets Equity Mut Funds (Net) Annualized Five Year Risk vs Return



EPOCH Investment
Period Ended March 31, 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.

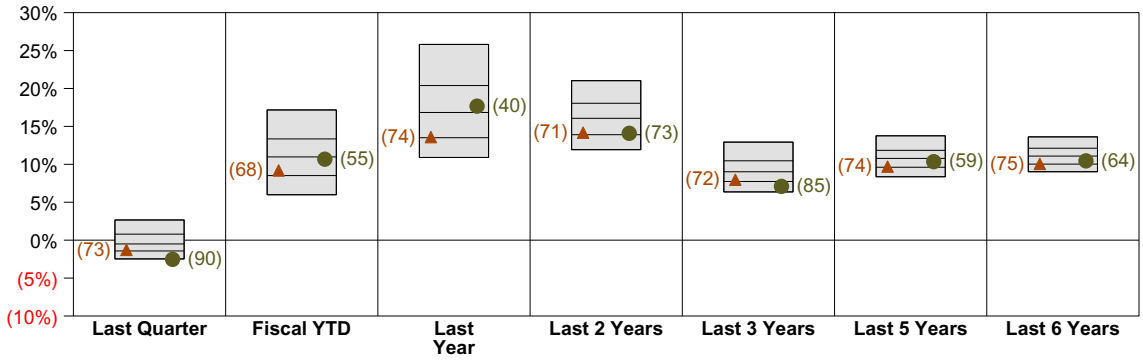
Quarterly Summary and Highlights

- EPOCH Investment's portfolio posted a (2.53)% return for the quarter placing it in the 90 percentile of the Callan Global Equity group for the quarter and in the 40 percentile for the last year.
- EPOCH Investment's portfolio underperformed the MSCI World by 1.25% for the quarter and outperformed the MSCI World for the year by 4.08%.

Quarterly Asset Growth

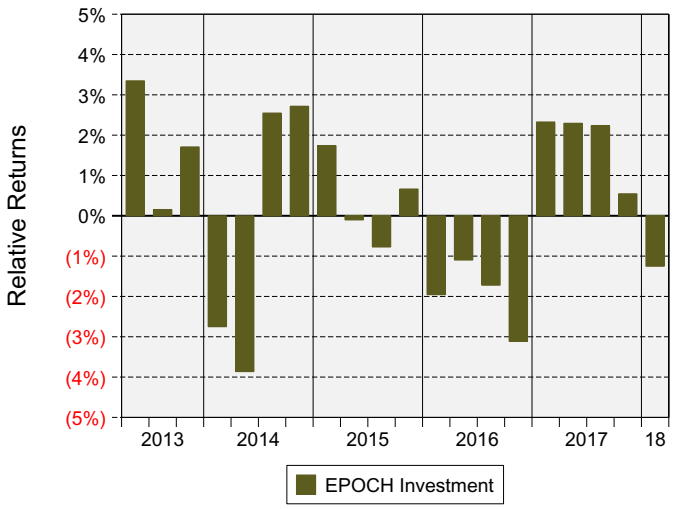
Beginning Market Value	$431,430,062
Net New Investment	$-20,683,632
Investment Gains/(Losses)	$-10,346,104
Ending Market Value	$400,400,325

Performance vs Callan Global Equity (Gross)

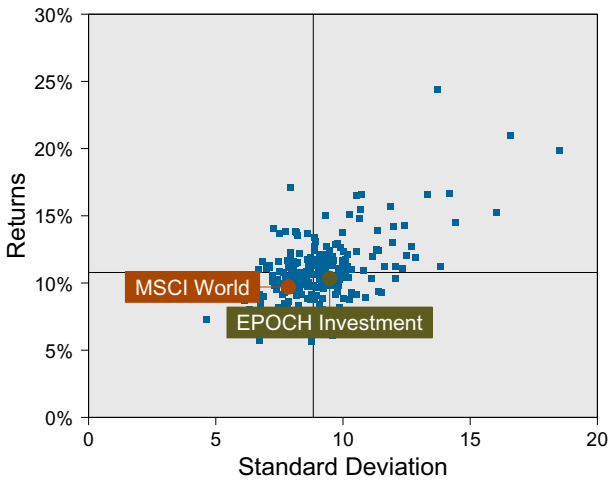


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years
10th Percentile	2.66	17.17	25.81	21.03	12.93	13.76	13.62
25th Percentile	0.79	13.35	20.39	18.05	10.46	11.84	12.12
Median	(0.50)	10.98	16.84	16.07	9.02	10.78	11.08
75th Percentile	(1.42)	8.52	13.51	13.91	7.73	9.61	10.03
90th Percentile	(2.47)	5.99	10.90	11.93	6.36	8.36	9.02
EPOCH Investment ●	(2.53)	10.68	17.67	14.09	7.09	10.35	10.45
MSCI World ▲	(1.28)	9.19	13.59	14.18	7.97	9.70	10.06

Relative Return vs MSCI World



Callan Global Equity (Gross) Annualized Five Year Risk vs Return



LSV Asset Management
Period Ended March 31, 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 explanators of performance.

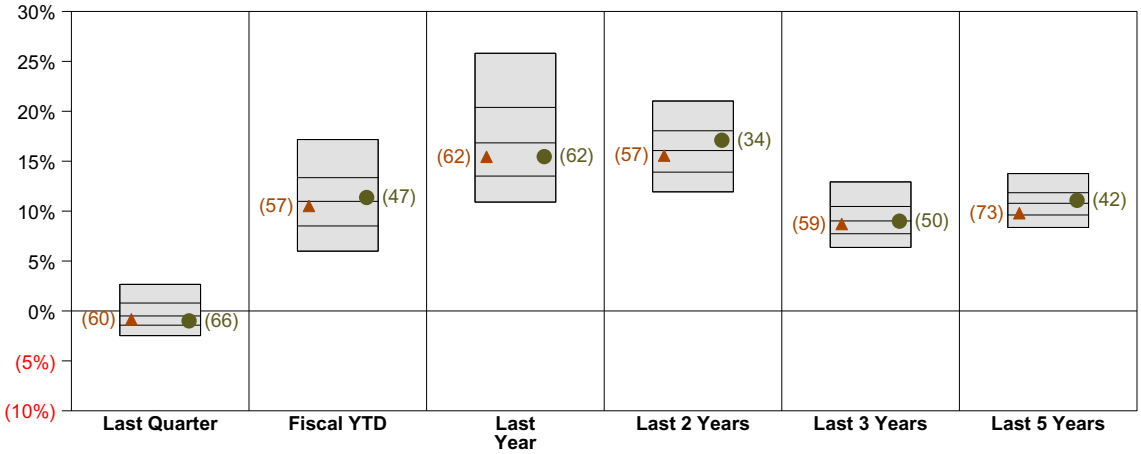
Quarterly Summary and Highlights

- LSV Asset Management's portfolio posted a (0.99)% return for the quarter placing it in the 66 percentile of the Callan Global Equity group for the quarter and in the 62 percentile for the last year.
- LSV Asset Management's portfolio underperformed the MSCI ACWI Gross by 0.15% for the quarter and outperformed the MSCI ACWI Gross for the year by 0.02%.

Quarterly Asset Growth

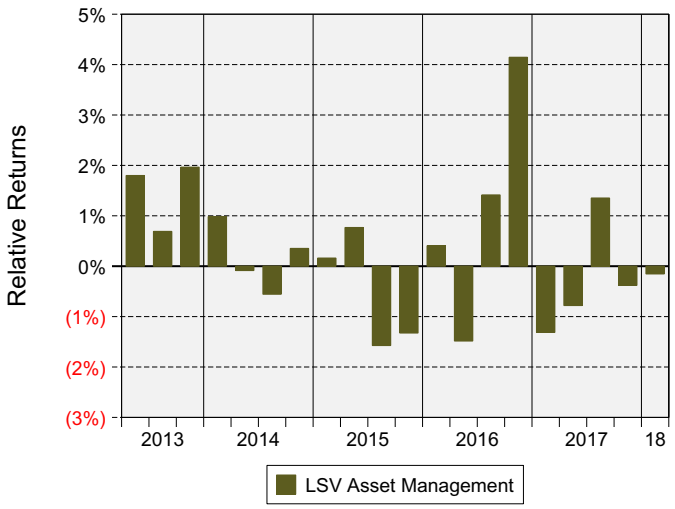
Beginning Market Value	$544,216,259
Net New Investment	$-20,138,066
Investment Gains/(Losses)	$-5,398,763
Ending Market Value	$518,679,431

Performance vs Callan Global Equity (Gross)

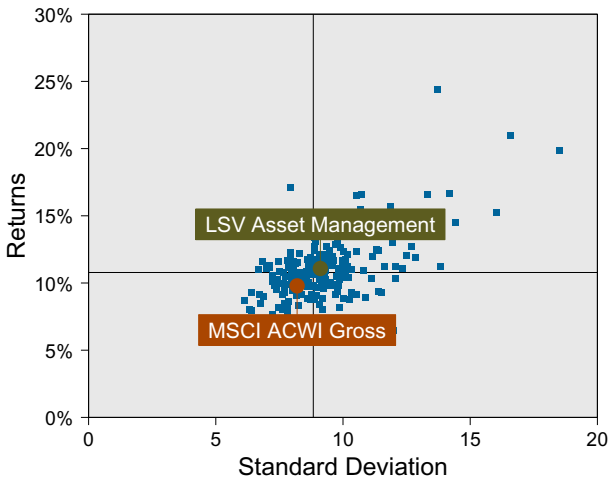


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years
10th Percentile	2.66	17.17	25.81	21.03	12.93	13.76
25th Percentile	0.79	13.35	20.39	18.05	10.46	11.84
Median	(0.50)	10.98	16.84	16.07	9.02	10.78
75th Percentile	(1.42)	8.52	13.51	13.91	7.73	9.61
90th Percentile	(2.47)	5.99	10.90	11.93	6.36	8.36
LSV Asset Management ●	(0.99)	11.36	15.46	17.10	8.99	11.08
MSCI ACWI Gross ▲	(0.84)	10.52	15.44	15.56	8.71	9.79

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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 17-1/4 Years
Private Equity	**4.70%**	**13.81%**	**2.17%**	**2.22%**	**2.59%**
Adams Street Direct Co-Invest Fd	(8.45%)	(4.93%)	(0.06%)	9.44%	-
Adams Street Direct Fd 2010	2.61%	20.79%	11.20%	13.94%	-
Adams Street 1998 Partnership	0.46%	1.01%	1.32%	2.91%	1.61%
Adams Street 1999 Partnership	1.63%	1.44%	2.65%	1.70%	2.50%
Adams Street 2000 Partnership	3.66%	7.98%	1.82%	1.05%	3.36%
Adams Street 2001 Partnership	7.35%	8.82%	0.34%	5.03%	3.79%
Adams Street 2002 Partnership	(1.58%)	7.39%	9.79%	6.70%	-
Adams Street 2003 Partnership	2.76%	14.81%	7.44%	12.53%	-
Adams Street 2010 Partnership	6.15%	14.60%	11.37%	14.06%	-
Adams Street 2008 Fund	4.40%	22.86%	14.10%	13.78%	-
Adams Street 1999 Non-US	0.59%	6.32%	4.76%	1.88%	6.09%
Adams Street 2000 Non-US	7.99%	13.75%	2.83%	2.48%	3.50%
Adams Street 2001 Non-US	6.22%	16.04%	8.97%	15.17%	-
Adams Street 2002 Non-US	4.36%	5.80%	6.69%	3.98%	-
Adams Street 2003 Non-US	4.54%	9.29%	16.25%	12.71%	-
Adams Street 2004 Non-US	10.06%	19.12%	4.85%	8.02%	-
Adams Street 2010 Non-US	4.76%	28.00%	15.22%	11.69%	-
Adams Street 2010 NonUS Emg	7.14%	20.17%	13.73%	11.80%	-
Adams Street 2015 Global Fd	6.51%	17.83%	-	-	-
Adams Street 2016 Global Fd	6.70%	11.51%	-	-	-
Adams Street 2017 Global Fd	2.17%	-	-	-	-
Adams Street BVCF IV Fund	0.08%	1.07%	9.56%	14.92%	16.85%
BlackRock	0.00%	(3.21%)	-	-	-
Capital International V	(34.97%)	(66.21%)	(42.62%)	(28.04%)	-
Capital International VI	4.79%	19.40%	6.40%	(5.54%)	-
CorsAir III	11.94%	15.51%	13.67%	7.77%	-
CorsAir IV	1.76%	24.98%	16.16%	17.55%	-
EIG Energy Fund XIV	3.38%	8.57%	(34.27%)	(24.44%)	-
Hearthstone Advisors MS III	2.85%	7.61%	(31.86%)	279.54%	-
Lewis & Clark	0.00%	18.96%	(26.67%)	(19.30%)	-
Lewis & Clark II	0.00%	20.02%	2.44%	0.32%	-
Matlin Patterson II	2.60%	(10.85%)	(1.81%)	(7.07%)	-
Matlin Patterson III	17.68%	27.66%	10.33%	4.38%	-
Quantum Energy Partners	0.00%	(2.67%)	(16.56%)	(0.69%)	-
Russell 1000 Index	(0.69%)	13.98%	10.39%	13.17%	6.40%
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	8.34%

Domestic Fixed Income
Period Ended March 31, 2018

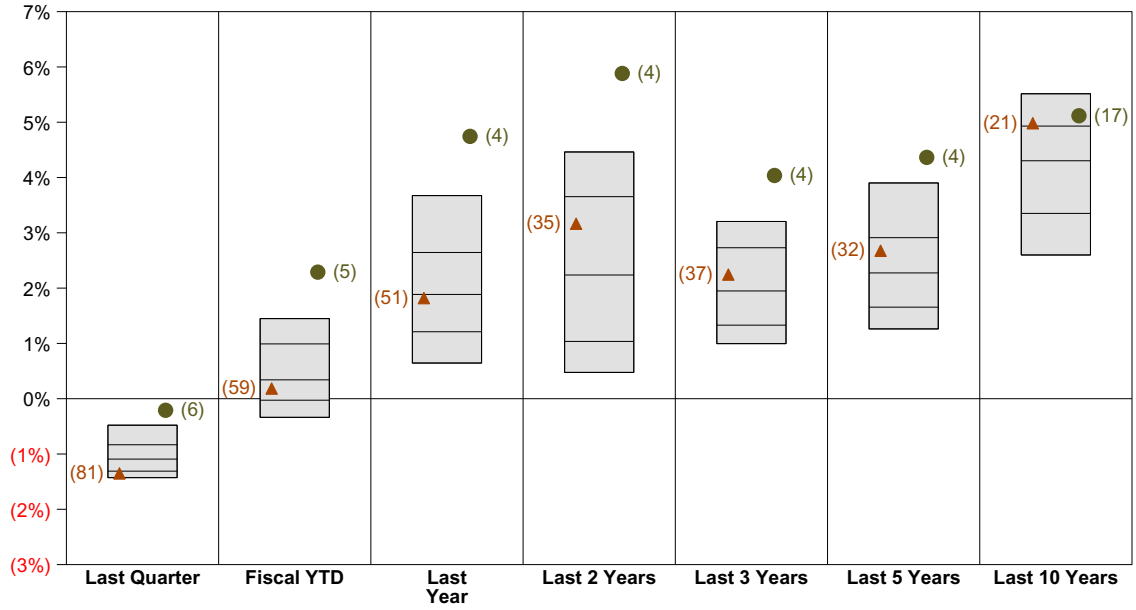
Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a (0.21)% return for the quarter placing it in the 6 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 4 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Income Target by 1.14% for the quarter and outperformed the Domestic Fixed Income Target for the year by 2.92%.

Quarterly Asset Growth

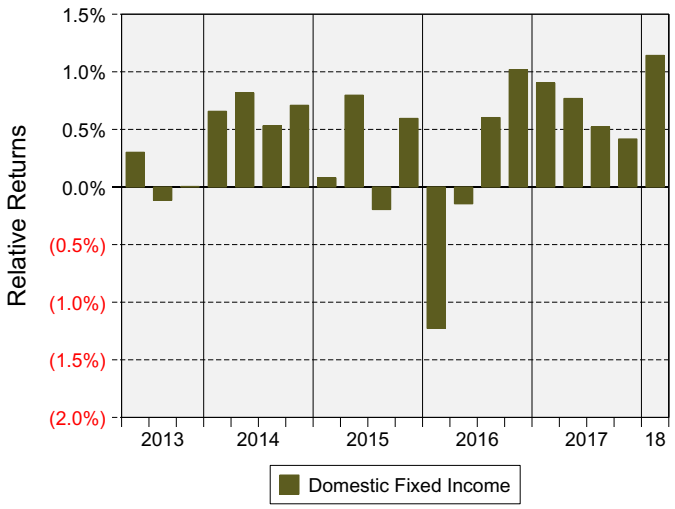
Beginning Market Value	$1,049,948,395
Net New Investment	$315,922,343
Investment Gains/(Losses)	$350,538
Ending Market Value	$1,366,221,276

Performance vs Public Fund - Domestic Fixed (Gross)

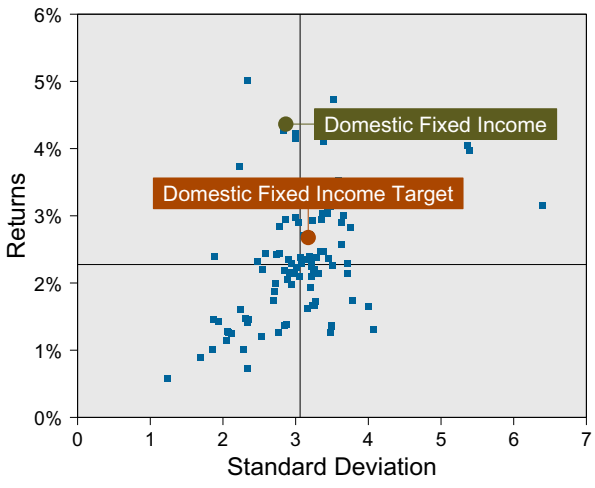


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.48)	1.45	3.67	4.46	3.21	3.90	5.52
25th Percentile	(0.83)	0.99	2.64	3.65	2.73	2.91	4.93
Median	(1.09)	0.34	1.89	2.24	1.95	2.27	4.30
75th Percentile	(1.31)	(0.03)	1.21	1.04	1.33	1.66	3.35
90th Percentile	(1.43)	(0.34)	0.65	0.48	1.00	1.26	2.60
Domestic Fixed Income ●	(0.21)	2.29	4.74	5.88	4.04	4.36	5.12
Domestic Fixed Income Target ▲	(1.35)	0.18	1.82	3.16	2.25	2.68	4.98

Relative Returns vs Domestic Fixed Income Target



Public Fund - Domestic Fixed (Gross) Annualized Five Year Risk vs Return



Declaration Total Return
Period Ended March 31, 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.

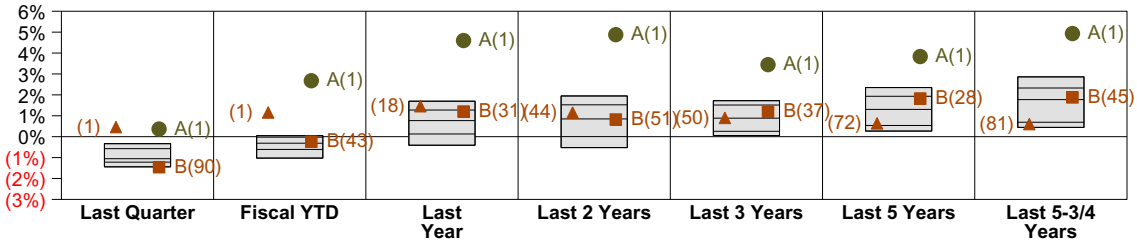
Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.37% return for the quarter placing it in the 1 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 0.09% for the quarter and outperformed the LIBOR - 3 Month for the year by 3.14%.

Quarterly Asset Growth

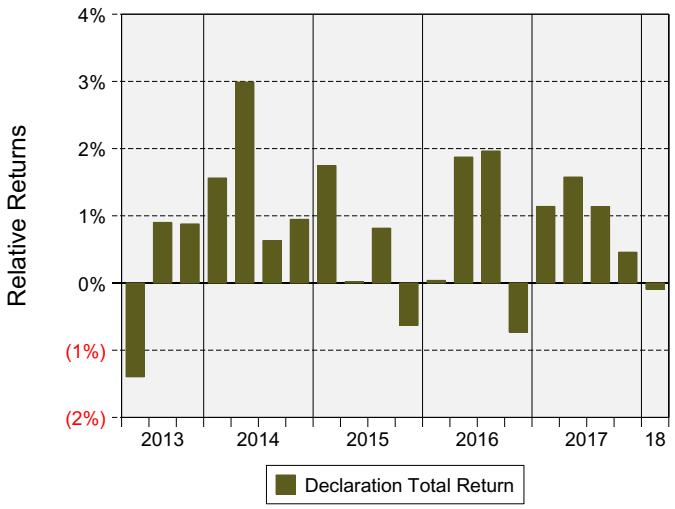
Beginning Market Value	$92,738,715
Net New Investment	$22,772,767
Investment Gains/(Losses)	$422,415
Ending Market Value	$115,933,897

Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)

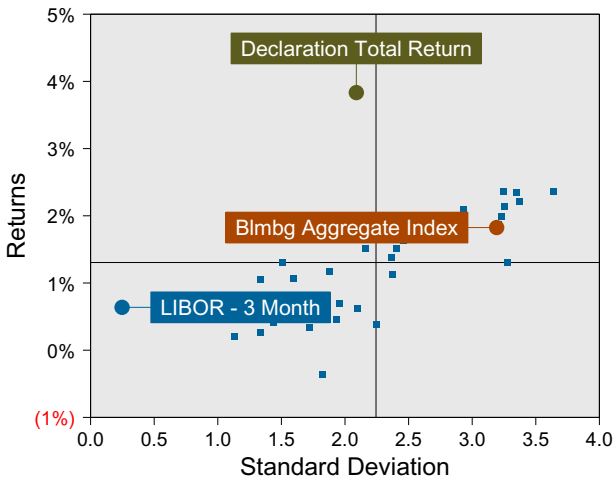


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 5-3/4 Years
10th Percentile		(0.33)	0.05	1.70	1.95	1.72	2.35	2.86
25th Percentile		(0.57)	(0.02)	1.27	1.52	1.51	1.93	2.33
Median		(1.05)	(0.31)	0.77	0.85	0.89	1.30	1.77
75th Percentile		(1.22)	(0.61)	0.13	0.00	0.26	0.54	0.69
90th Percentile		(1.44)	(1.03)	(0.41)	(0.52)	0.06	0.27	0.44
Declaration Total Return	A	0.37	2.68	4.60	4.88	3.45	3.83	4.93
Blmbg Aggregate Index	B	(1.46)	(0.24)	1.20	0.82	1.20	1.82	1.88
LIBOR - 3 Month		0.46	1.16	1.46	1.15	0.90	0.64	0.60

Relative Return vs LIBOR - 3 Month



Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Five Year Risk vs Return



PIMCO DiSCO II
Period Ended March 31, 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.

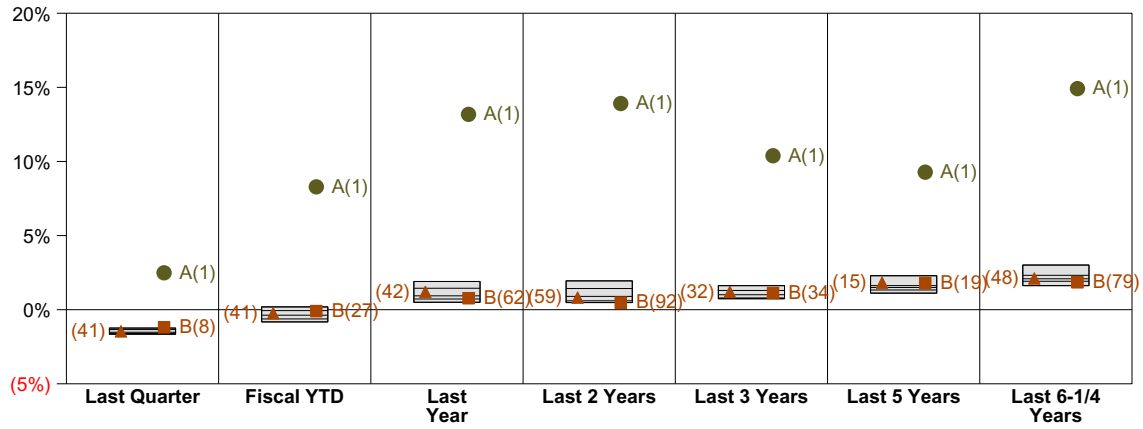
Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 2.49% 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 3.95% for the quarter and outperformed the Blmbg Aggregate for the year by 11.98%.

Quarterly Asset Growth

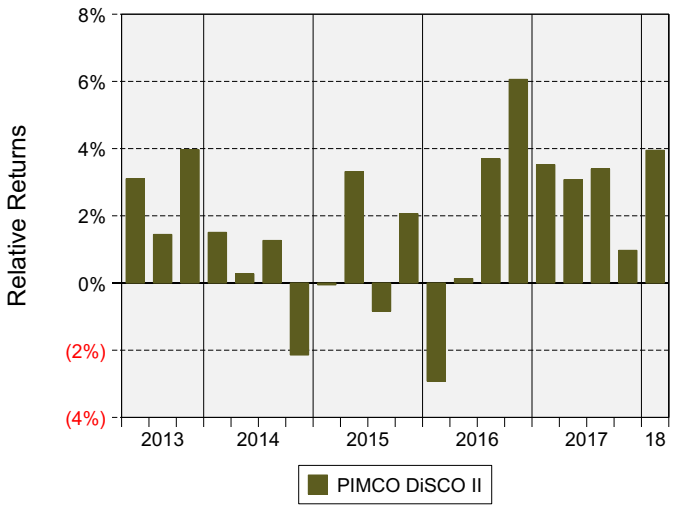
Beginning Market Value	$113,453,117
Net New Investment	$0
Investment Gains/(Losses)	$2,821,801
Ending Market Value	$116,274,918

Performance vs Callan Core Bond Mutual Funds (Net)

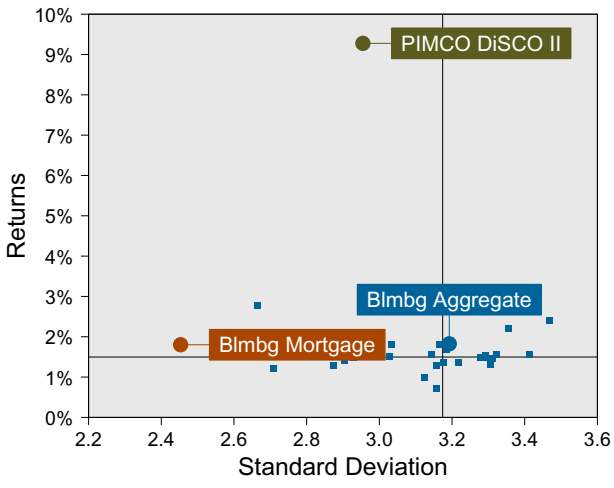


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-1/4 Years
10th Percentile	(1.24)	0.19	1.90	1.94	1.62	2.29	3.01
25th Percentile	(1.34)	(0.06)	1.45	1.43	1.30	1.62	2.32
Median	(1.52)	(0.37)	0.94	0.90	1.01	1.50	2.09
75th Percentile	(1.60)	(0.62)	0.72	0.60	0.79	1.33	1.92
90th Percentile	(1.65)	(0.82)	0.50	0.48	0.74	1.11	1.62
PIMCO DiSCO II ● A	2.49	8.29	13.18	13.91	10.38	9.28	14.91
Blmbg Mortgage ■ B	(1.19)	(0.10)	0.77	0.47	1.12	1.80	1.85
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	2.11

Relative Return vs Blmbg Aggregate



Callan Core Bond Mutual Funds (Net) Annualized Five Year Risk vs Return



PIMCO Core Plus Constrained
Period Ended March 31, 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.**

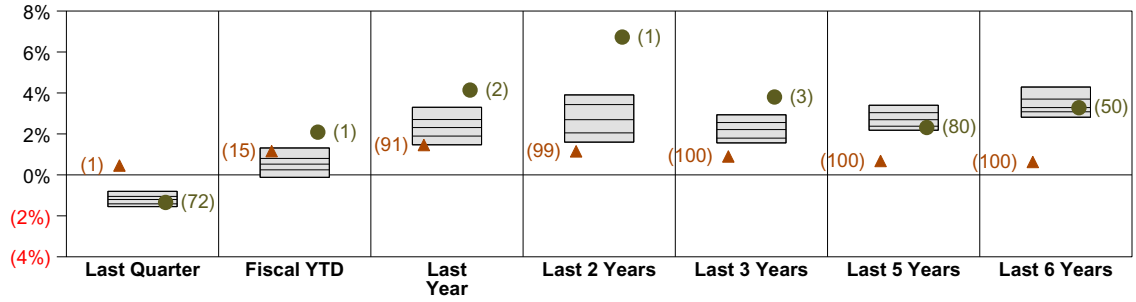
Quarterly Summary and Highlights

- PIMCO Core Plus Constrained's portfolio posted a (1.35)% return for the quarter placing it in the 72 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 2 percentile for the last year.
- PIMCO Core Plus Constrained's portfolio underperformed the Blended Benchmark* by 1.80% for the quarter and outperformed the Blended Benchmark* for the year by 2.68%.

Quarterly Asset Growth

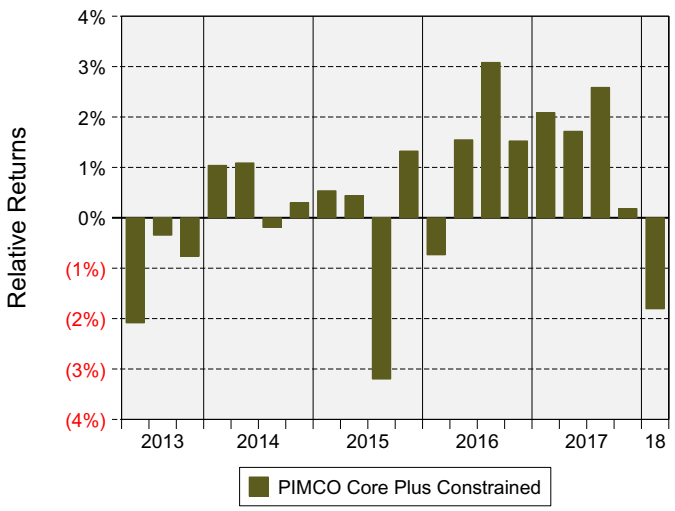
Beginning Market Value	$253,420,260
Net New Investment	$60,000,000
Investment Gains/(Losses)	$-3,120,700
Ending Market Value	$310,299,561

Performance vs Callan Core Plus Fixed Income (Gross)

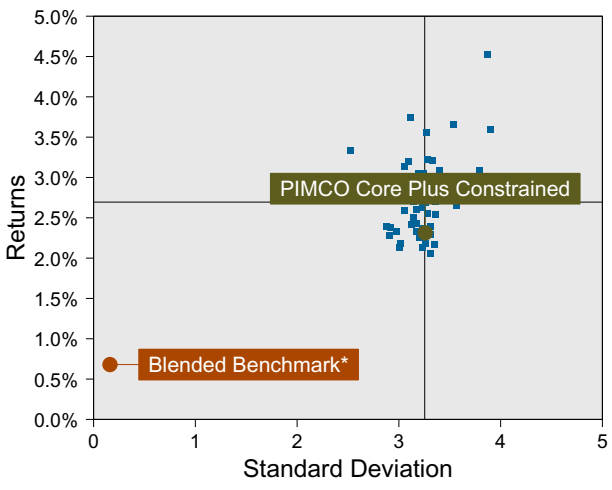


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years
10th Percentile	(0.80)	1.31	3.30	3.90	2.93	3.40	4.29
25th Percentile	(1.05)	0.80	2.70	3.43	2.56	3.04	3.70
Median	(1.20)	0.52	2.31	2.70	2.21	2.69	3.29
75th Percentile	(1.41)	0.25	1.89	2.05	1.79	2.38	3.08
90th Percentile	(1.55)	(0.12)	1.47	1.60	1.56	2.18	2.82
PIMCO Core Plus Constrained	(1.35)	2.09	4.14	6.73	3.80	2.31	3.28
Blended Benchmark*	0.46	1.16	1.46	1.15	0.90	0.68	0.63

Relative Return vs Blended Benchmark*



Callan Core Plus Fixed Income (Gross) Annualized Five Year Risk vs Return



SSgA Long US Treas Index
Period Ended March 31, 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.

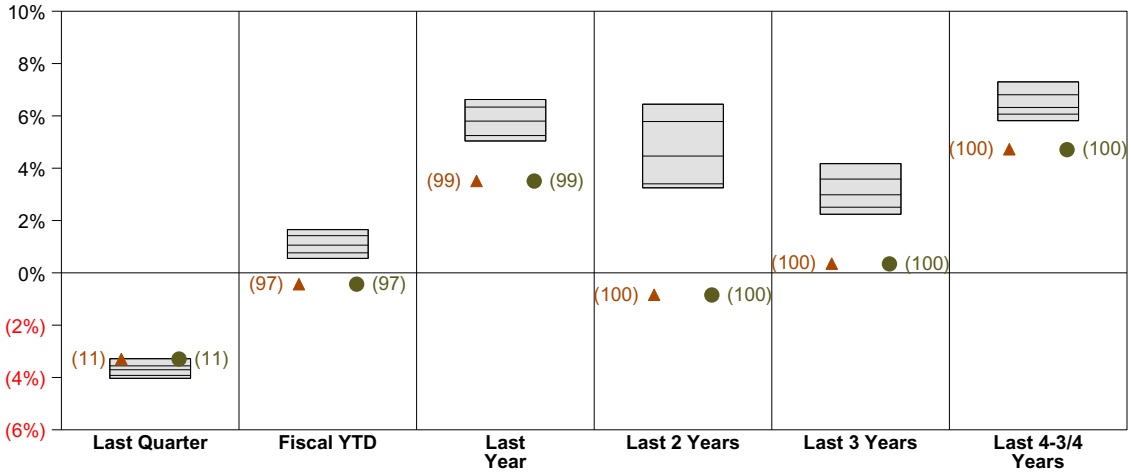
Quarterly Summary and Highlights

- SSgA Long US Treas Index's portfolio posted a (3.29)% return for the quarter placing it in the 11 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 underperformed the Blmbg Treasury Long for the year by 0.00%.

Quarterly Asset Growth

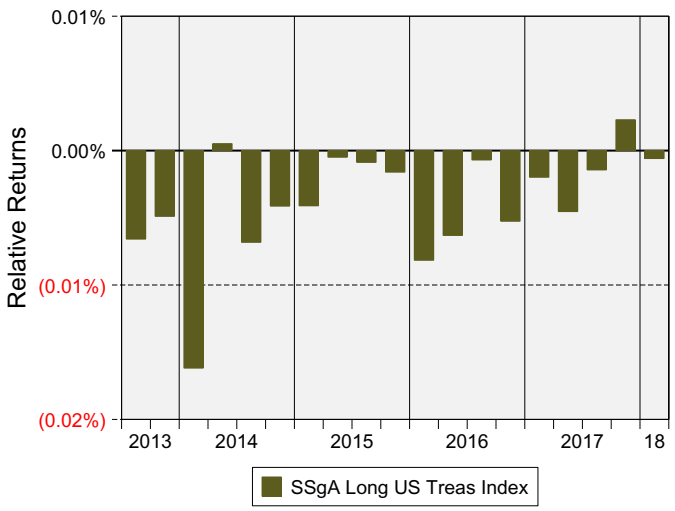
Beginning Market Value	$121,654,150
Net New Investment	$-7,417
Investment Gains/(Losses)	$-4,007,652
Ending Market Value	$117,639,081

Performance vs Callan Extended Maturity Fixed Income (Gross)

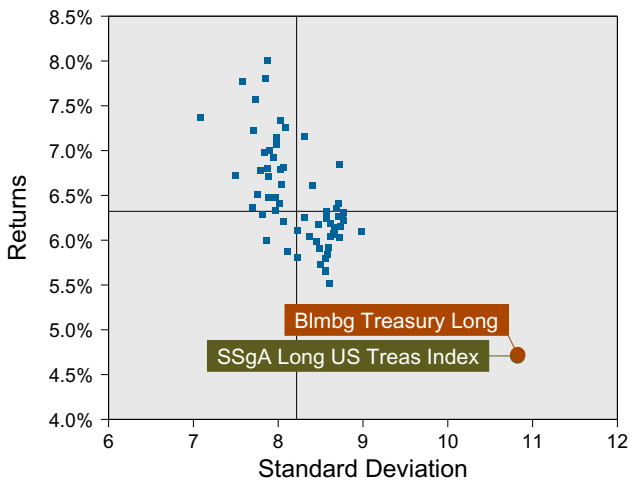


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-3/4 Years
10th Percentile		(3.28)	1.65	6.63	6.45	4.17	7.30
25th Percentile		(3.56)	1.42	6.34	5.78	3.58	6.81
Median		(3.70)	1.06	5.80	4.46	2.98	6.32
75th Percentile		(3.92)	0.76	5.25	3.40	2.51	6.07
90th Percentile		(4.03)	0.55	5.04	3.25	2.24	5.82
SSgA Long US Treas Index	●	(3.29)	(0.43)	3.51	(0.85)	0.34	4.71
Blmbg Treasury Long	▲	(3.29)	(0.43)	3.51	(0.84)	0.35	4.72

Relative Return vs Blmbg Treasury Long



Callan Extended Maturity Fixed Income (Gross) Annualized Four and Three-Quarter Year Risk vs Return



Goldman Sachs 2006 Offshore
Period Ended March 31, 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.

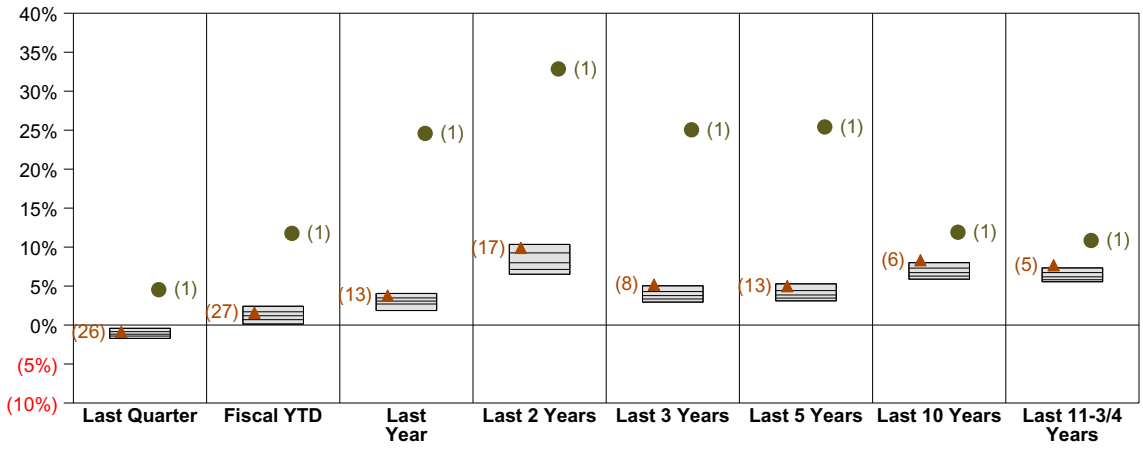
Quarterly Summary and Highlights

- Goldman Sachs's portfolio posted a 4.53% return for the quarter placing it in the 1 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 1 percentile for the last year.
- Goldman Sachs's portfolio outperformed the Blmbg HY 2% Iss Cap by 5.39% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 20.80%.

Quarterly Asset Growth

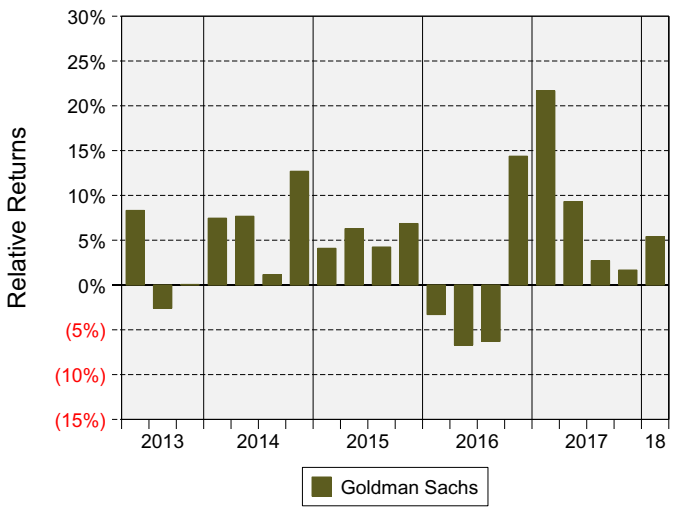
Beginning Market Value	$119,485
Net New Investment	$0
Investment Gains/(Losses)	$5,418
Ending Market Value	$124,903

Performance vs Callan High Yield Mutual Funds (Net)

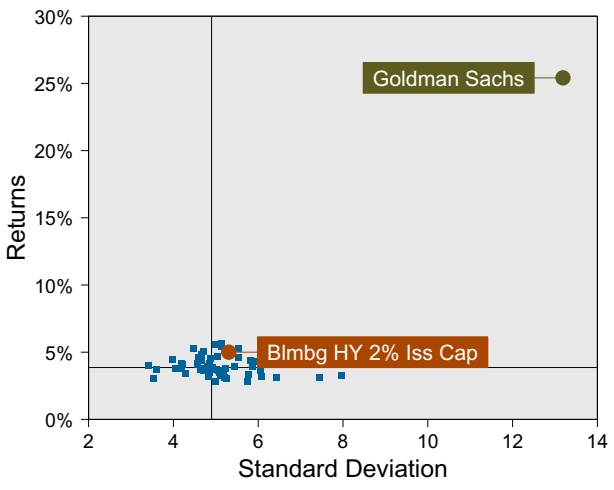


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 11-3/4 Years
10th Percentile		(0.42)	2.41	4.05	10.34	5.03	5.29	8.00	7.33
25th Percentile		(0.85)	1.70	3.48	9.25	4.30	4.42	7.31	6.73
Median		(1.17)	1.19	3.07	7.99	3.78	3.86	6.72	6.18
75th Percentile		(1.42)	0.69	2.70	7.14	3.34	3.46	6.28	5.82
90th Percentile		(1.72)	0.13	1.86	6.51	2.94	3.10	5.88	5.55
Goldman Sachs	●	4.53	11.76	24.58	32.85	25.05	25.41	11.91	10.85
Blmbg HY 2% Iss Cap	▲	(0.86)	1.58	3.78	9.90	5.18	5.00	8.32	7.68

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 March 31, 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.

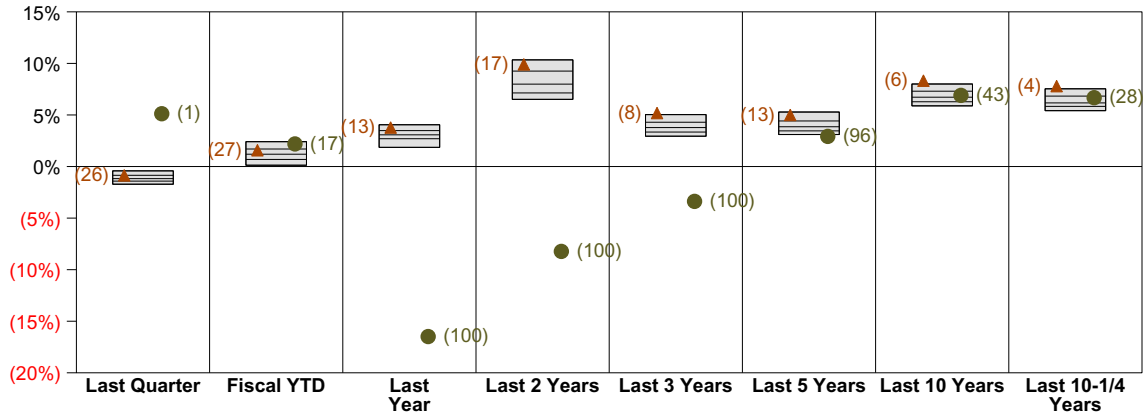
Quarterly Summary and Highlights

- Goldman Sachs Offshore V's portfolio posted a 5.12% return for the quarter placing it in the 1 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 100 percentile for the last year.
- Goldman Sachs Offshore V's portfolio outperformed the Blmbg HY 2% Iss Cap by 5.98% for the quarter and underperformed the Blmbg HY 2% Iss Cap for the year by 20.27%.

Quarterly Asset Growth

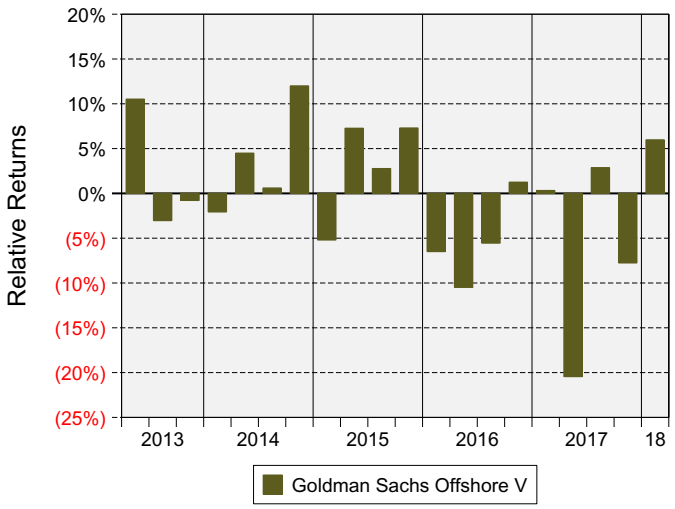
Beginning Market Value	$780,859
Net New Investment	$-228,707
Investment Gains/(Losses)	$15,272
Ending Market Value	$567,424

Performance vs Callan High Yield Mutual Funds (Net)

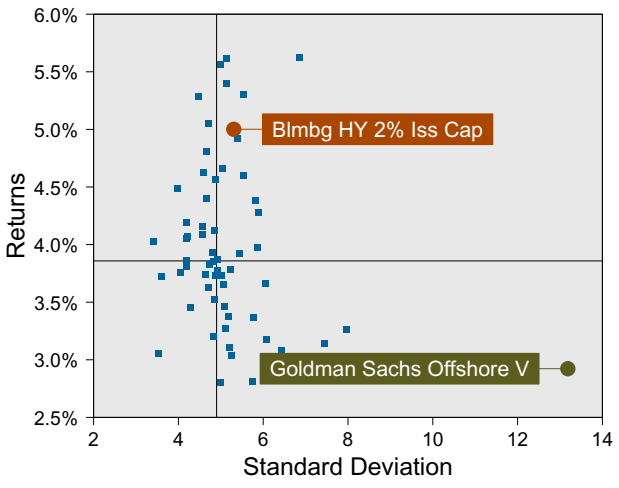


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-1/4 Years
10th Percentile	(0.42)	2.41	4.05	10.34	5.03	5.29	8.00	7.54
25th Percentile	(0.85)	1.70	3.48	9.25	4.30	4.42	7.31	6.83
Median	(1.17)	1.19	3.07	7.99	3.78	3.86	6.72	6.17
75th Percentile	(1.42)	0.69	2.70	7.14	3.34	3.46	6.28	5.83
90th Percentile	(1.72)	0.13	1.86	6.51	2.94	3.10	5.88	5.42
Goldman Sachs Offshore V ●	5.12	2.19	(16.49)	(8.23)	(3.38)	2.92	6.90	6.68
Blmbg HY 2% Iss Cap ▲	(0.86)	1.58	3.78	9.90	5.18	5.00	8.32	7.80

Relative Return vs Blmbg HY 2% Iss Cap



Callan High Yield Mutual Funds (Net) Annualized Five Year Risk vs Return



Loomis Sayles
Period Ended March 31, 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.

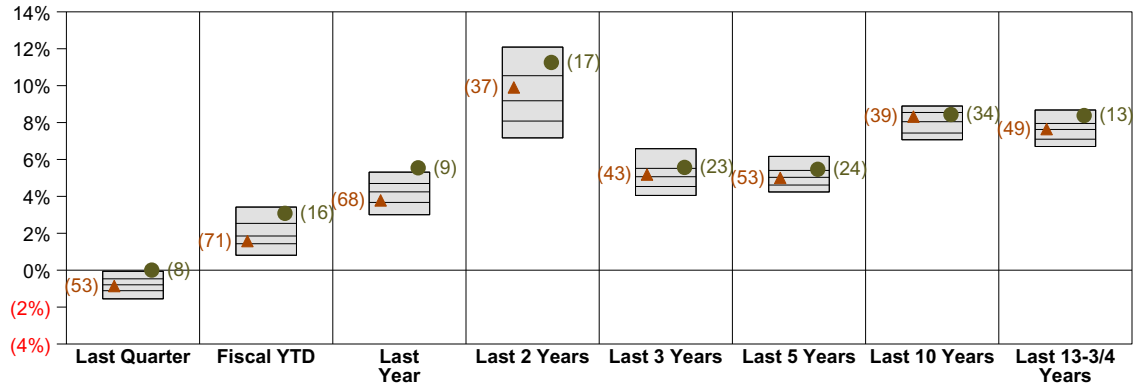
Quarterly Summary and Highlights

- Loomis Sayles's portfolio posted a 0.00% return for the quarter placing it in the 8 percentile of the Callan High Yield Fixed Income group for the quarter and in the 9 percentile for the last year.
- Loomis Sayles's portfolio outperformed the Blmbg HY 2% Iss Cap by 0.86% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 1.77%.

Quarterly Asset Growth

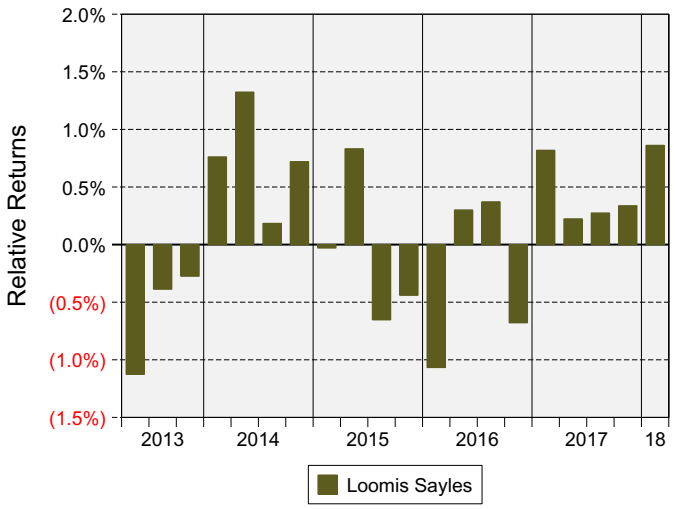
Beginning Market Value	$169,427,879
Net New Investment	$35,588,215
Investment Gains/(Losses)	$-200,574
Ending Market Value	$204,815,521

Performance vs Callan High Yield Fixed Income (Gross)

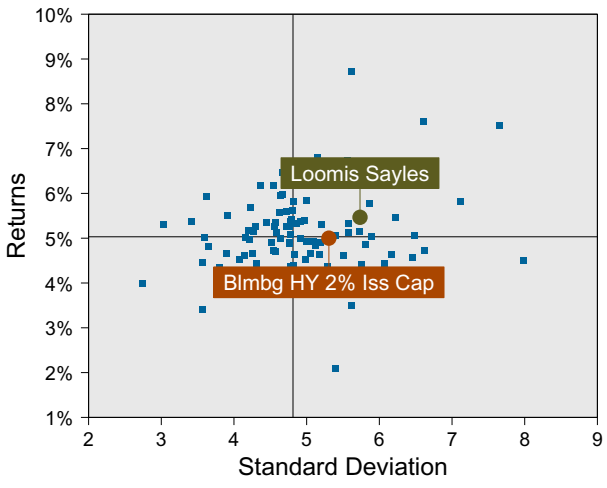


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 13-3/4 Years
10th Percentile		(0.06)	3.42	5.31	12.09	6.58	6.17	8.90	8.68
25th Percentile		(0.47)	2.54	4.70	10.54	5.52	5.41	8.55	7.95
Median		(0.79)	1.85	4.24	9.18	5.06	5.03	8.05	7.63
75th Percentile		(1.11)	1.43	3.67	8.08	4.53	4.61	7.43	7.10
90th Percentile		(1.55)	0.81	3.01	7.17	4.05	4.24	7.07	6.70
Loomis Sayles	●	0.00	3.08	5.55	11.26	5.57	5.47	8.43	8.38
Blmbg HY 2% Iss Cap	▲	(0.86)	1.58	3.78	9.90	5.18	5.00	8.32	7.65

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 March 31, 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.

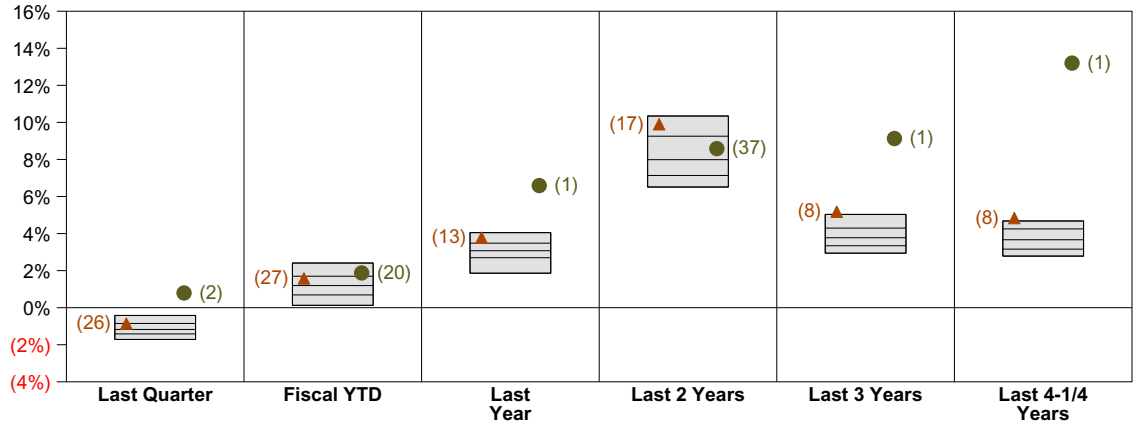
Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a 0.79% return for the quarter placing it in the 2 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 1 percentile for the last year.
- PIMCO Bravo II Fund's portfolio outperformed the Blmbg HY 2% Iss Cap by 1.65% for the quarter and outperformed the Blmbg HY 2% Iss Cap for the year by 2.81%.

Quarterly Asset Growth

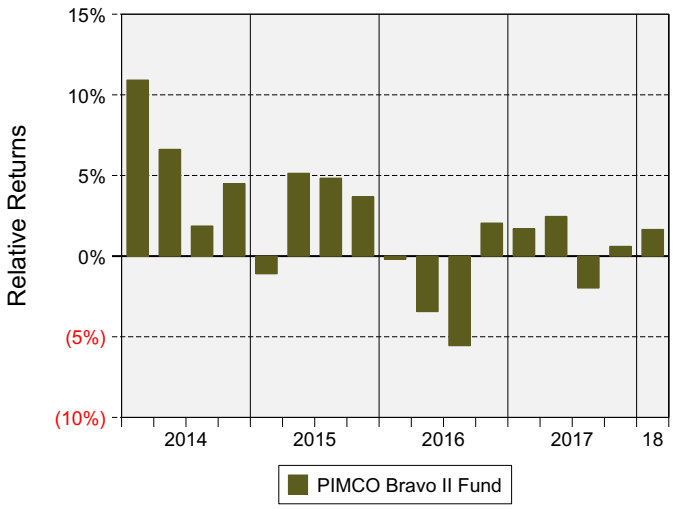
Beginning Market Value	$50,757,967
Net New Investment	$-5,357,787
Investment Gains/(Losses)	$402,108
Ending Market Value	$45,802,288

Performance vs Callan High Yield Mutual Funds (Net)

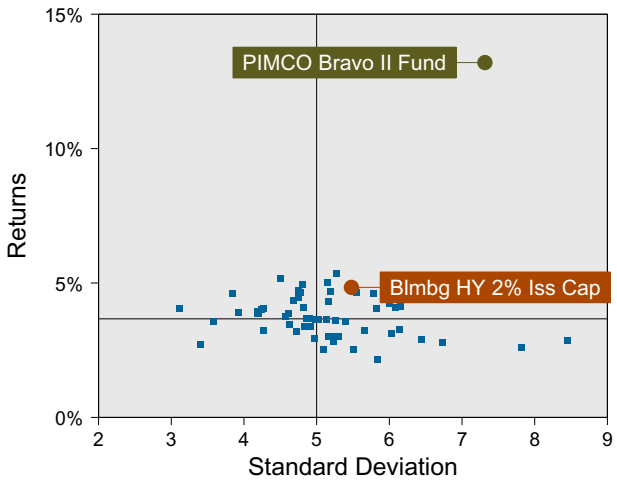


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(0.42)	2.41	4.05	10.34	5.03	4.68
25th Percentile	(0.85)	1.70	3.48	9.25	4.30	4.25
Median	(1.17)	1.19	3.07	7.99	3.78	3.67
75th Percentile	(1.42)	0.69	2.70	7.14	3.34	3.16
90th Percentile	(1.72)	0.13	1.86	6.51	2.94	2.79
PIMCO Bravo II Fund ●	0.79	1.88	6.59	8.58	9.13	13.20
Blmbg HY 2% Iss Cap ▲	(0.86)	1.58	3.78	9.90	5.18	4.84

Relative Return vs Blmbg HY 2% Iss Cap



Callan High Yield Mutual Funds (Net)
Annualized Four and One-Quarter Year Risk vs Return



Global Real Estate Composite
Period Ended March 31, 2018

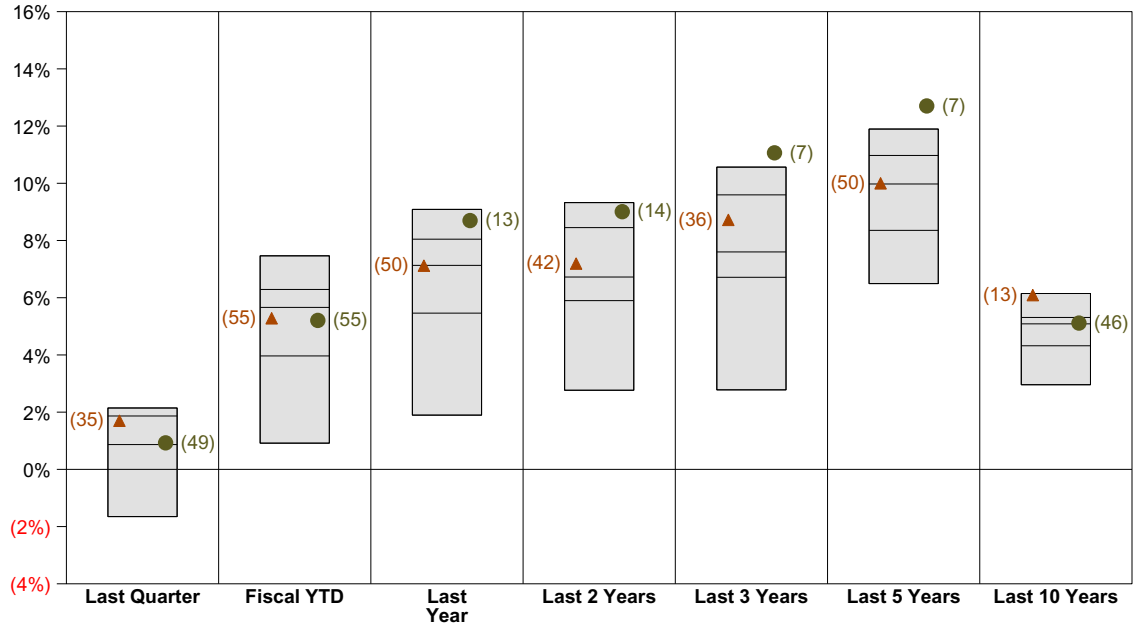
Quarterly Summary and Highlights

- Global Real Estate Composite's portfolio posted a 0.93% return for the quarter placing it in the 49 percentile of the Public Fund - Real Estate group for the quarter and in the 13 percentile for the last year.
- Global Real Estate Composite's portfolio underperformed the NCREIF Total Index by 0.77% for the quarter and outperformed the NCREIF Total Index for the year by 1.58%.

Quarterly Asset Growth

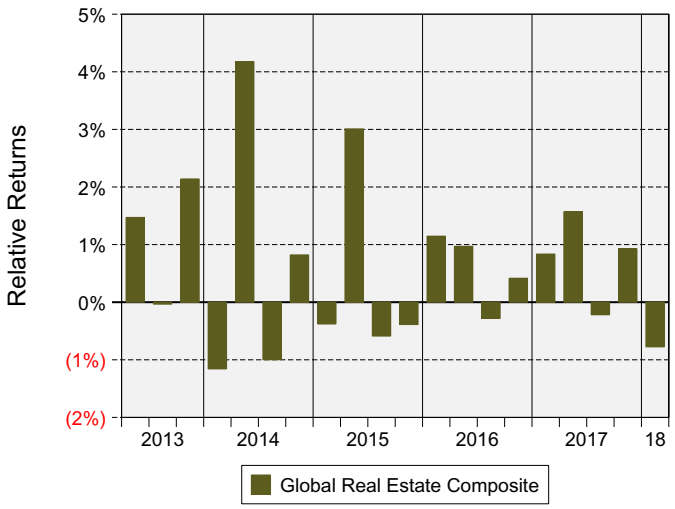
Beginning Market Value	$560,282,827
Net New Investment	$14,754,872
Investment Gains/(Losses)	$5,430,431
Ending Market Value	$580,468,130

Performance vs Public Fund - Real Estate (Gross)

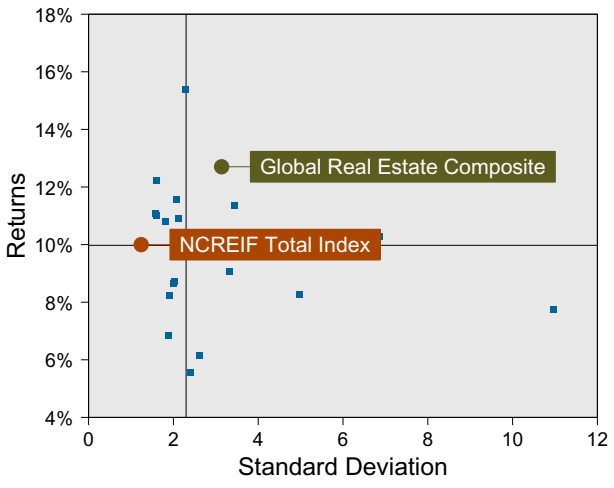


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	2.15	7.46	9.09	9.32	10.57	11.90	6.15
25th Percentile	1.87	6.29	8.05	8.45	9.59	10.97	5.31
Median	0.87	5.66	7.13	6.72	7.60	9.98	5.09
75th Percentile	0.00	3.97	5.46	5.90	6.71	8.35	4.32
90th Percentile	(1.65)	0.92	1.90	2.77	2.78	6.49	2.96
Global Real Estate Composite ●	0.93	5.21	8.70	9.01	11.06	12.70	5.11
NCREIF Total Index ▲	1.70	5.28	7.12	7.19	8.72	10.00	6.09

Relative Return vs NCREIF Total Index



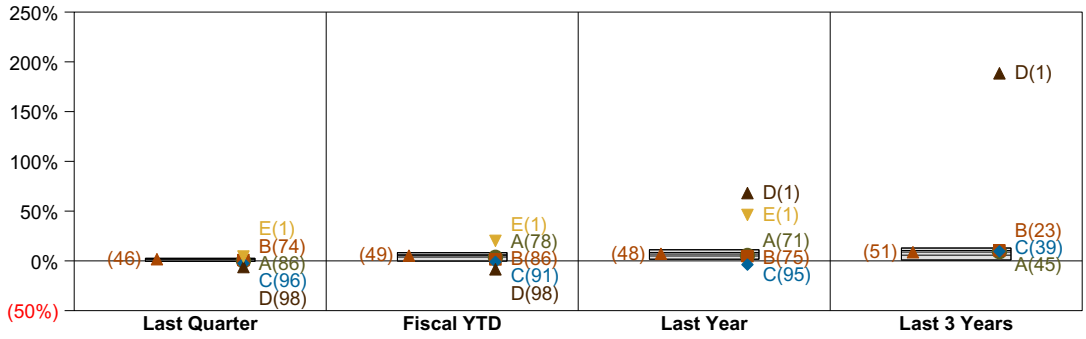
Public Fund - Real Estate (Gross) Annualized Five Year Risk vs Return



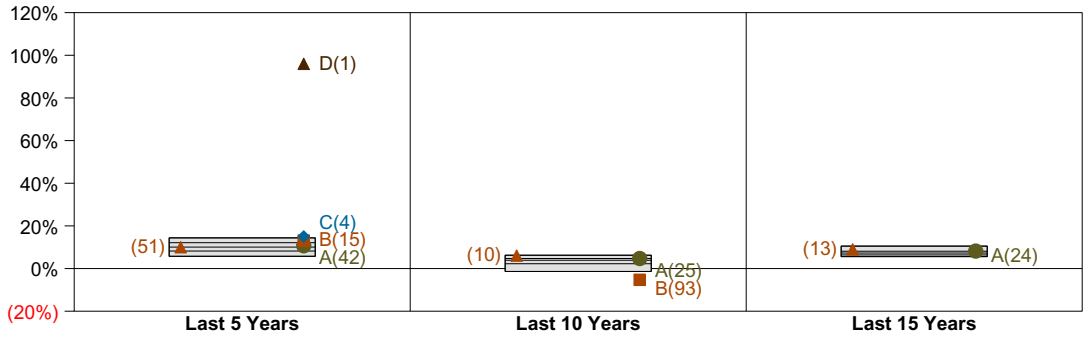
North Dakota State Investment Board Pension Funds
Performance vs Callan Total Domestic Real Estate DB
Periods Ended March 31, 2018

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.



		Last Quarter	Fiscal YTD	Last Year	Last 3 Years
10th Percentile		2.60	8.30	11.18	12.91
25th Percentile		2.15	6.58	8.44	10.43
Median		1.63	5.27	6.87	8.84
75th Percentile		0.83	3.83	4.91	5.73
90th Percentile		(0.50)	(0.13)	1.66	0.87
Invesco Core Real Estate	A	0.00	3.58	5.44	9.22
Invesco Fund II	B	0.86	1.45	4.80	10.50
Invesco Fund III	C	(2.48)	(1.01)	(3.74)	9.58
Invesco Asia RE Feeder	D	(6.19)	(8.45)	68.11	188.45
Invesco Asia RE Fund III	E	4.35	20.10	46.14	-
NCREIF Total Index		1.70	5.28	7.12	8.72

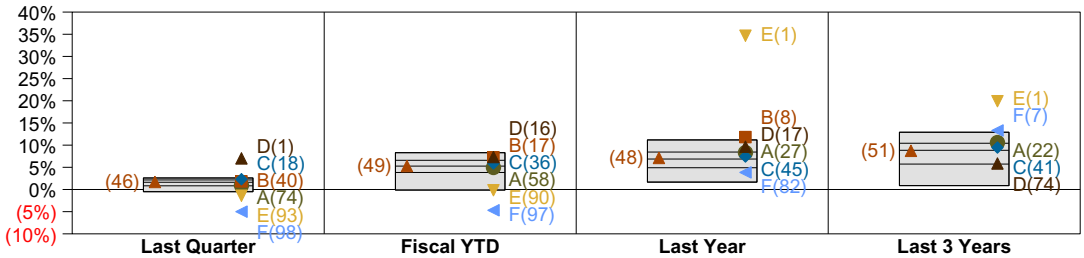


		Last 5 Years	Last 10 Years	Last 15 Years
10th Percentile		14.38	6.25	10.52
25th Percentile		12.13	4.70	8.12
Median		10.06	3.90	7.28
75th Percentile		8.21	2.26	6.39
90th Percentile		5.75	(1.36)	5.59
Invesco Core Real Estate	A	10.67	4.70	8.19
Invesco Fund II	B	13.11	(5.29)	-
Invesco Fund III	C	15.04	-	-
Invesco Asia RE Feeder	D	96.00	-	-
Invesco Asia RE Fund III	E	-	-	-
NCREIF Total Index		10.00	6.09	9.00

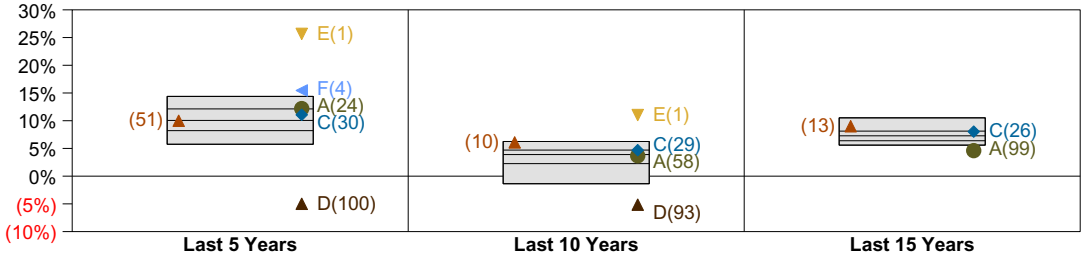
North Dakota State Investment Board Pension Funds
Performance vs Callan Total Domestic Real Estate DB
Periods Ended March 31, 2018

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.



		Last Quarter	Fiscal YTD	Last Year	Last 3 Years
10th Percentile		2.60	8.30	11.18	12.91
25th Percentile		2.15	6.58	8.44	10.43
Median		1.63	5.27	6.87	8.84
75th Percentile		0.83	3.83	4.91	5.73
90th Percentile		(0.50)	(0.13)	1.66	0.87
Total Real Estate	A	0.93	4.96	8.31	10.58
Invesco Value Added Fd IV	B	1.84	7.26	11.81	-
JP Morgan Investment	C	2.32	5.87	7.43	9.46
JP Morgan Alternative Fd	D	7.01	7.32	9.65	5.86
JP Morgan Greater China Fund	E	(1.41)	(0.18)	34.67	19.89
JPM GreaterEur Opp Prop Fd	F	(5.00)	(4.69)	3.85	13.31
NCREIF Total Index		1.70	5.28	7.12	8.72



		Last 5 Years	Last 10 Years	Last 15 Years
10th Percentile		14.38	6.25	10.52
25th Percentile		12.13	4.70	8.12
Median		10.06	3.90	7.28
75th Percentile		8.21	2.26	6.39
90th Percentile		5.75	(1.36)	5.59
Total Real Estate	A	12.19	3.67	4.60
Invesco Value Added Fd IV	B	-	-	-
JP Morgan Investment	C	11.07	4.69	8.03
JP Morgan Alternative Fd	D	(4.98)	(5.14)	-
JP Morgan Greater China Fund	E	25.66	11.02	-
JPM GreaterEur Opp Prop Fd	F	15.45	-	-
NCREIF Total Index		10.00	6.09	9.00

TIR Teredo
Period Ended March 31, 2018

Investment Philosophy

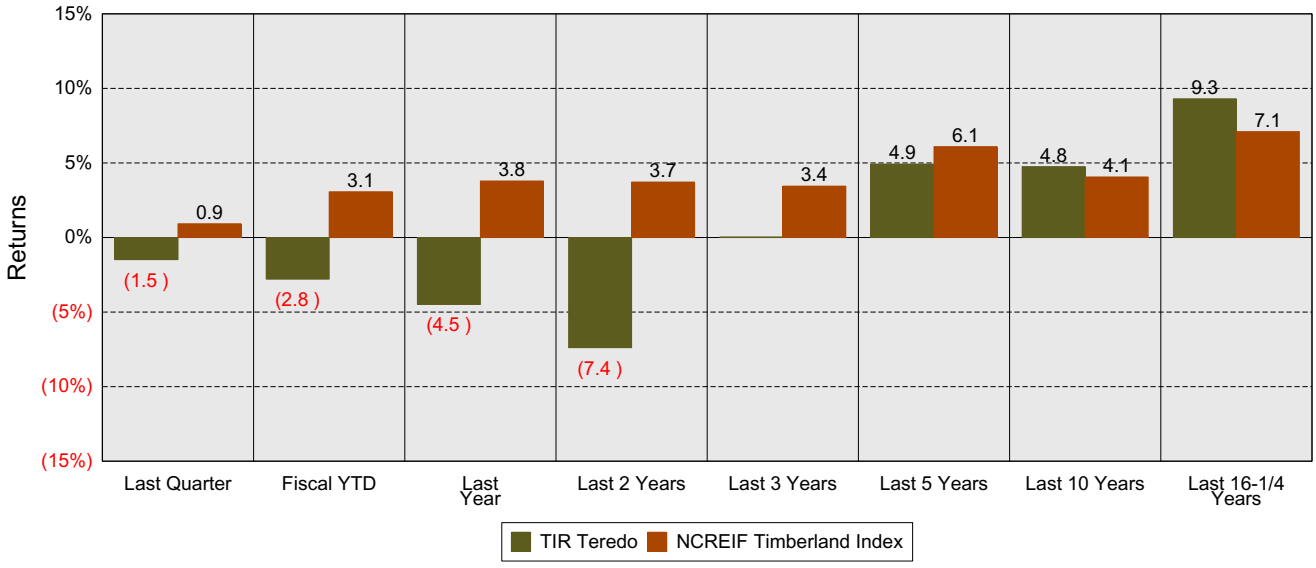
Teredo Timber LLC - The investment objective of Teredo is to provide competitive investment returns from increasing saw timber production through the 20 year term of the partnership. TIR's management strategy is to maximize saw timber volume by applying intensive forest management techniques which accelerate 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

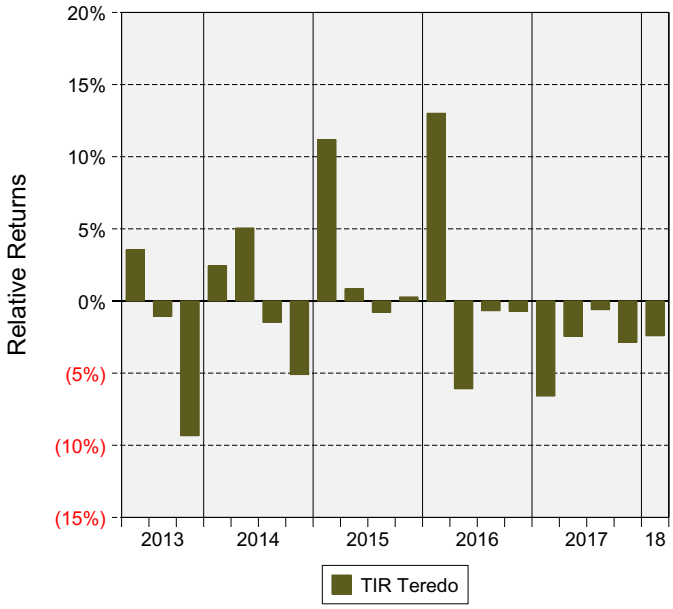
- TIR Teredo's portfolio underperformed the NCREIF Timberland Index by 2.40% for the quarter and underperformed the NCREIF Timberland Index for the year by 8.28%.

Quarterly Asset Growth

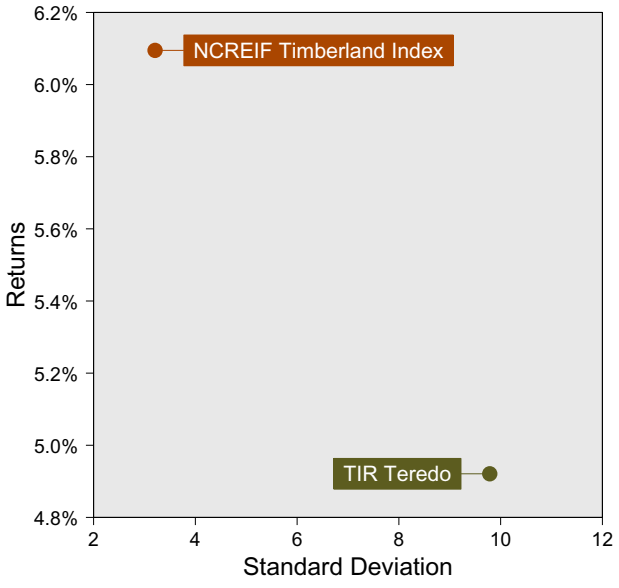
Beginning Market Value	$31,027,299
Net New Investment	$0
Investment Gains/(Losses)	$-460,027
Ending Market Value	$30,567,272



Relative Return vs NCREIF Timberland Index



Annualized Five Year Risk vs Return



TIR Springbank
Period Ended March 31, 2018

Investment Philosophy

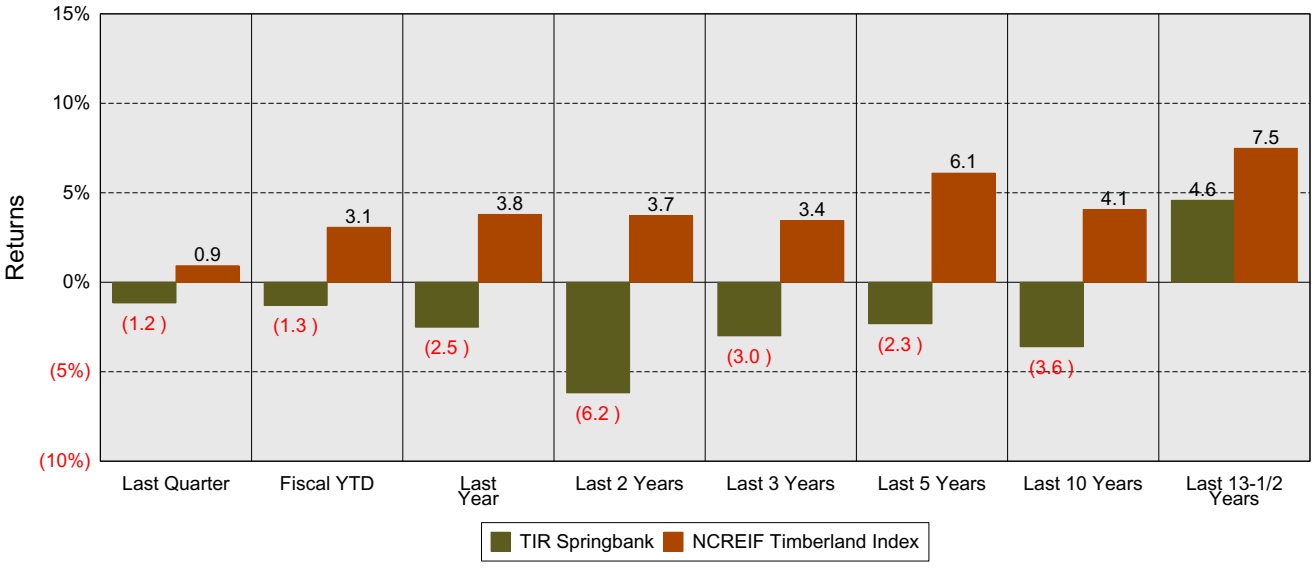
Springbank LLC - The investment objective of Springbank is to maximize long-term investment potential by means of the formation of a dedicated land management group, intensive timber management to increase timber production, the coordination of timber harvesting with land management activities and direct marketing and selective real estate partnerships.

Quarterly Summary and Highlights

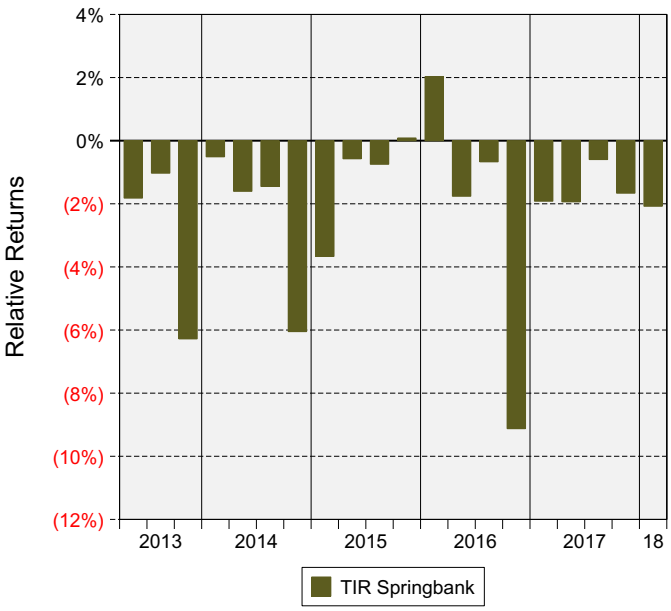
- TIR Springbank's portfolio underperformed the NCREIF Timberland Index by 2.08% for the quarter and underperformed the NCREIF Timberland Index for the year by 6.30%.

Quarterly Asset Growth

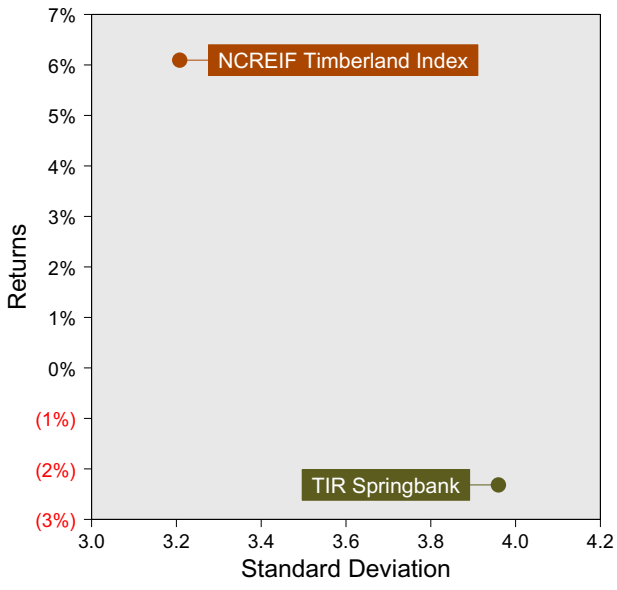
Beginning Market Value	$103,833,725
Net New Investment	$-1,900,000
Investment Gains/(Losses)	$-1,195,833
Ending Market Value	$100,737,892



Relative Return vs NCREIF Timberland Index



Annualized Five Year Risk vs Return



JP Morgan Asian Infrastructure
Period Ended March 31, 2018

Investment Philosophy

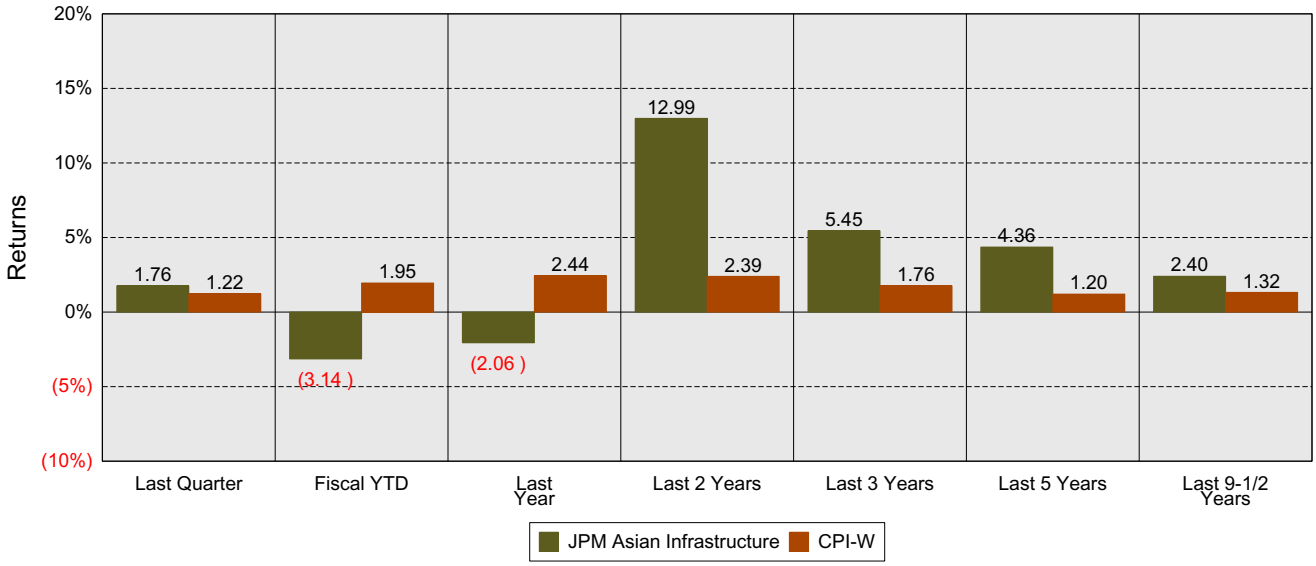
The JPMorgan Asian Infrastructure & Related Resources Opportunity ("AIRRO") Fund seeks to invest in infrastructure and related resources opportunities across the greater Asia Pacific region. The Fund seeks to invest in a broad range of assets, including: core infrastructure, power both from conventional and renewable sources, communications, water and waste-water, public works, urban development and other "social" infrastructure assets and related resources.

Quarterly Summary and Highlights

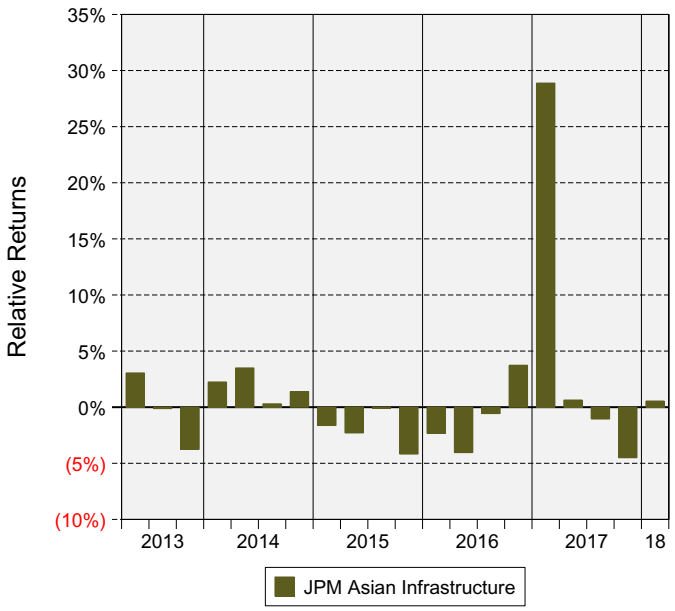
- JPM Asian Infrastructure's portfolio outperformed the CPI-W by 0.54% for the quarter and underperformed the CPI-W for the year by 4.50%.

Quarterly Asset Growth

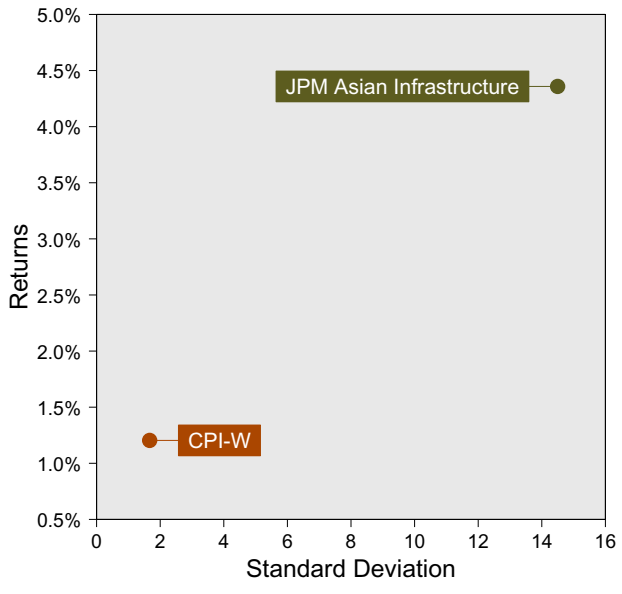
Beginning Market Value	$22,617,036
Net New Investment	$153,138
Investment Gains/(Losses)	$401,393
Ending Market Value	$23,171,567



Relative Return vs CPI-W



Annualized Five Year Risk vs Return



JPM Infrastructure Fund
Period Ended March 31, 2018

Investment Philosophy

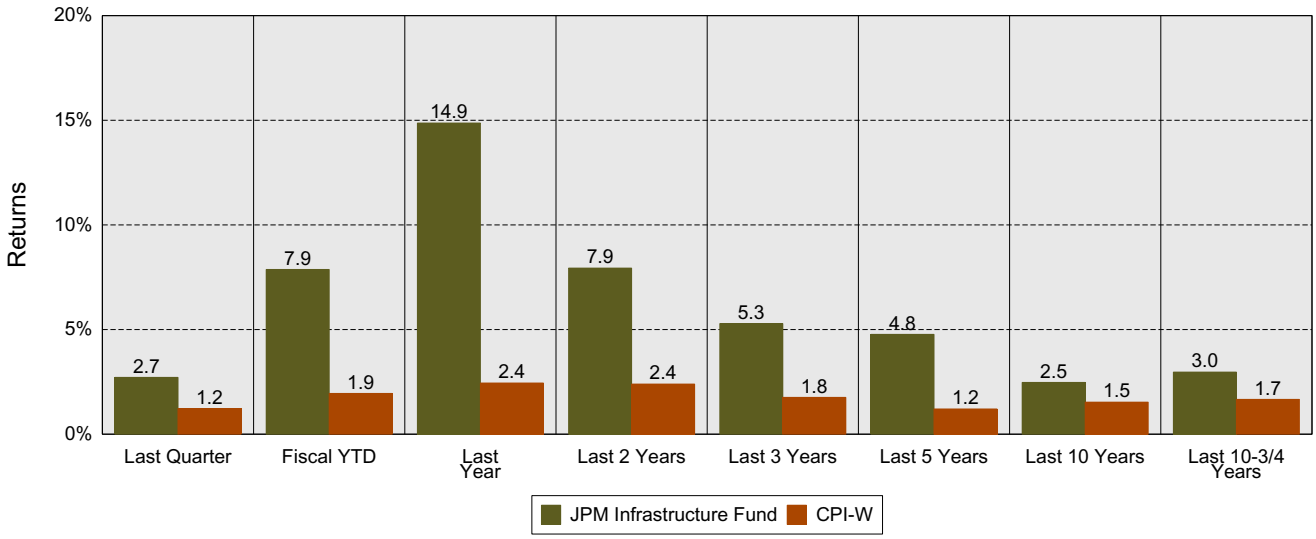
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas 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.

Quarterly Summary and Highlights

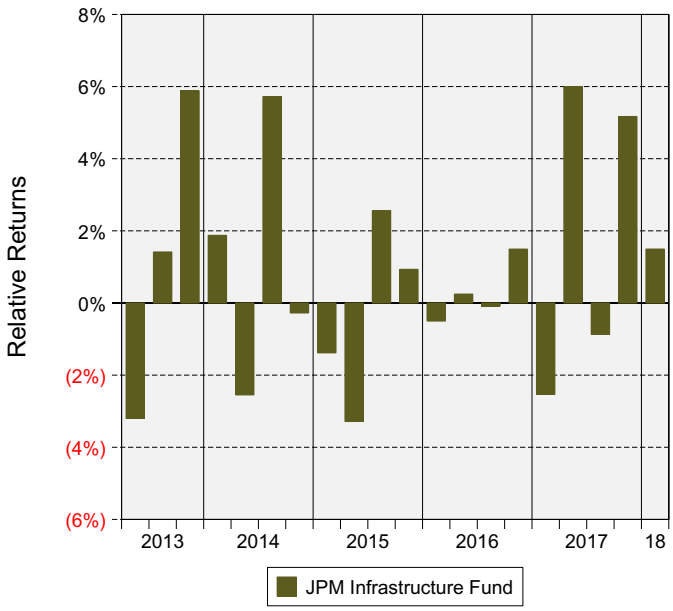
- JPM Infrastructure Fund's portfolio outperformed the CPI-W by 1.49% for the quarter and outperformed the CPI-W for the year by 12.42%.

Quarterly Asset Growth

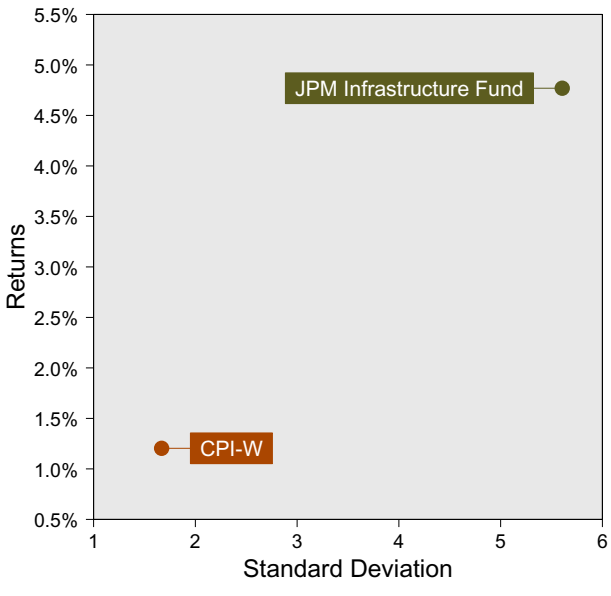
Beginning Market Value	$187,813,848
Net New Investment	$-2
Investment Gains/(Losses)	$5,097,455
Ending Market Value	$192,911,300



Relative Return vs CPI-W



Annualized Five Year Risk vs Return



Grosvenor Cust. Infrastructure
Period Ended March 31, 2018

Investment Philosophy

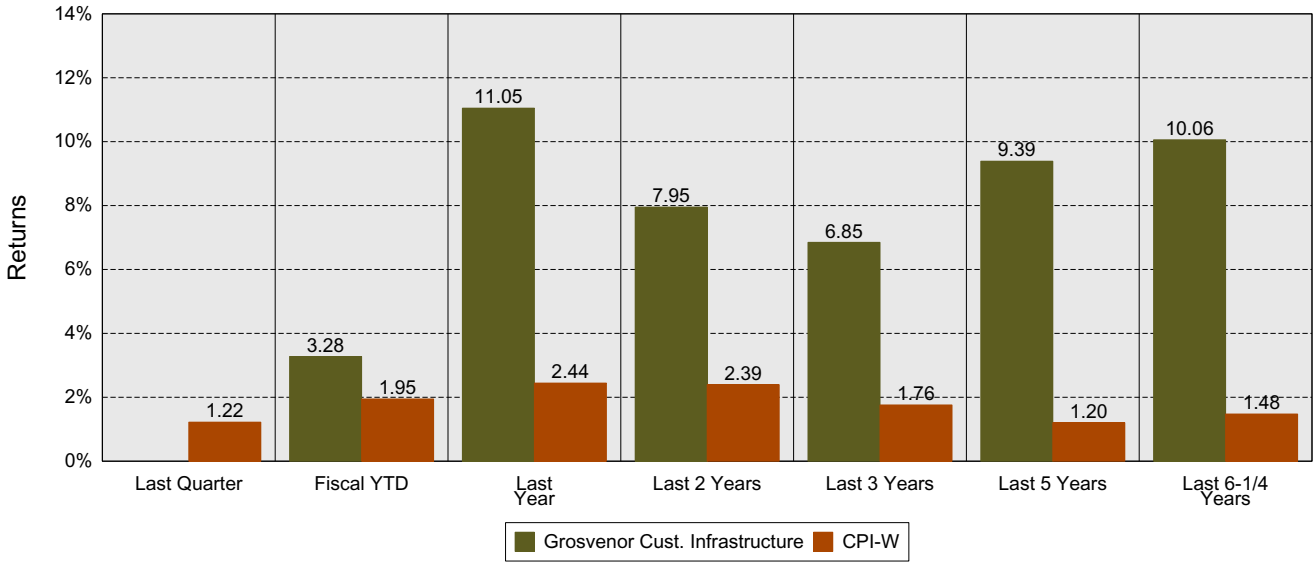
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%).

Quarterly Summary and Highlights

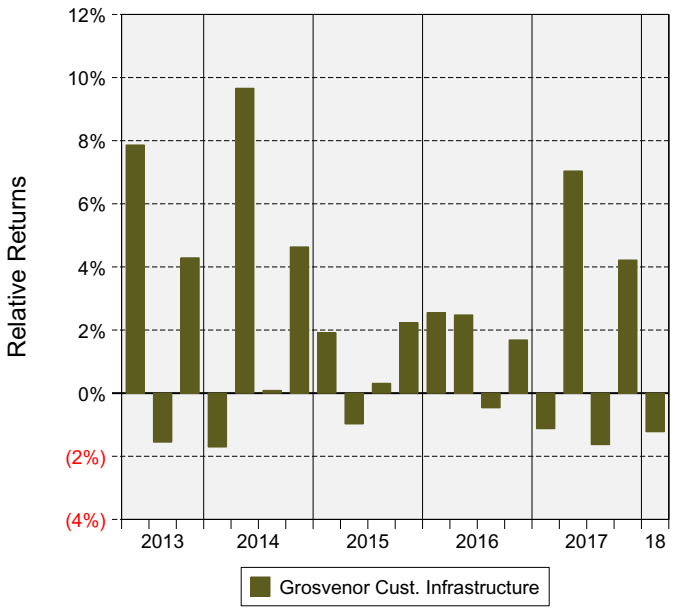
- Grosvenor Cust. Infrastructure's portfolio underperformed the CPI-W by 1.22% for the quarter and outperformed the CPI-W for the year by 8.60%.

Quarterly Asset Growth

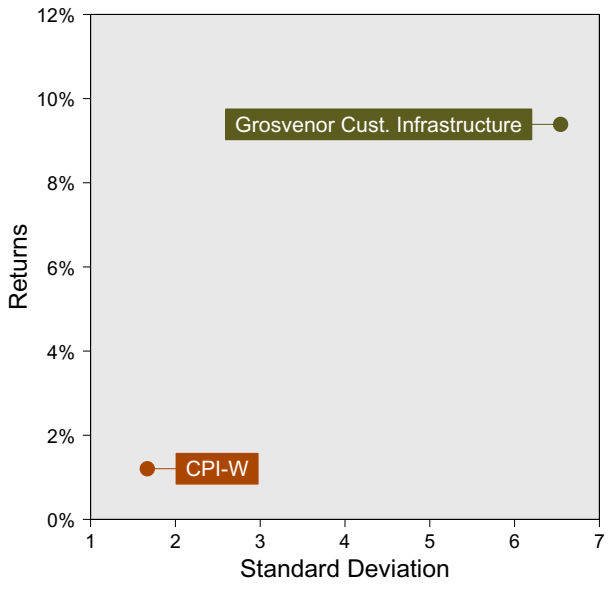
Beginning Market Value	$33,753,732
Net New Investment	$0
Investment Gains/(Losses)	$0
Ending Market Value	$33,753,732



Relative Return vs CPI-W



Annualized Five Year Risk vs Return



Grosvenor Cust. Infrastructure II
Period Ended March 31, 2018

Investment Philosophy

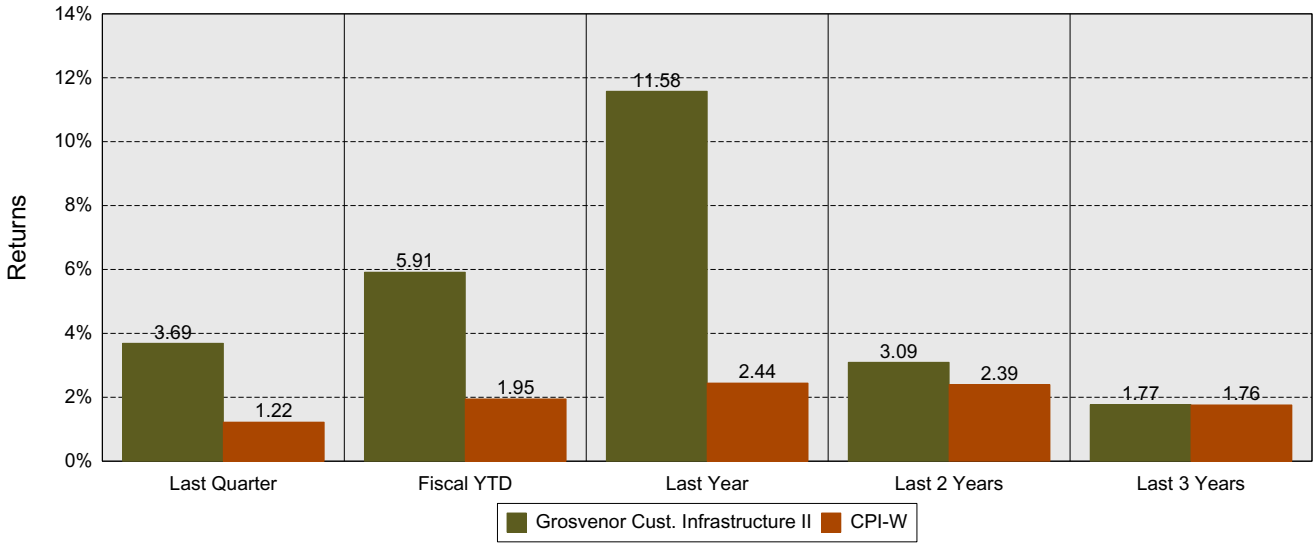
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%).

Quarterly Summary and Highlights

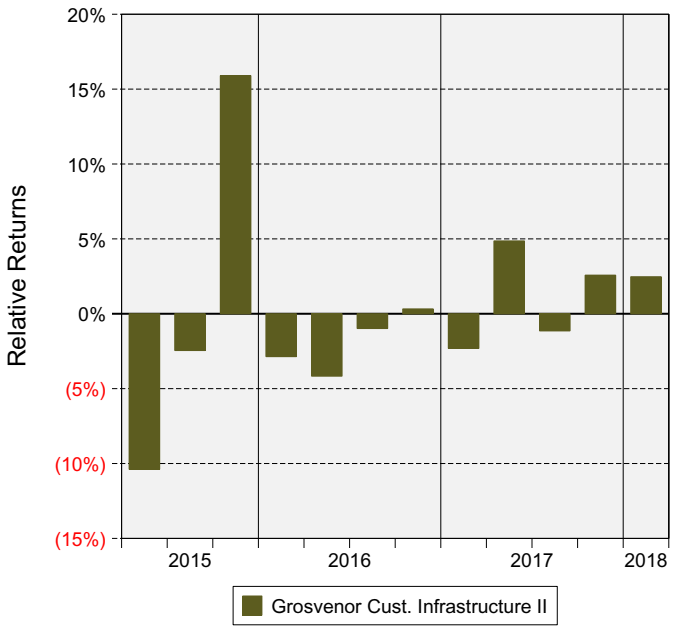
- Grosvenor Cust. Infrastructure II's portfolio outperformed the CPI-W by 2.47% for the quarter and outperformed the CPI-W for the year by 9.13%.

Quarterly Asset Growth

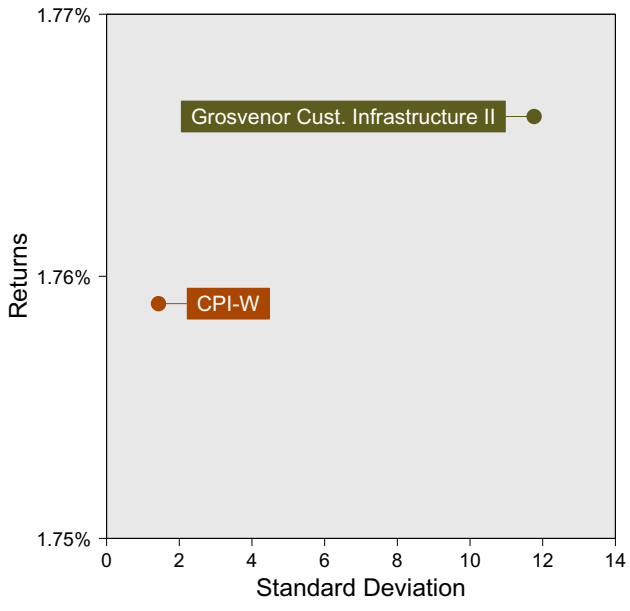
Beginning Market Value	$12,854,278
Net New Investment	$2,231,148
Investment Gains/(Losses)	$555,979
Ending Market Value	$15,641,405



Relative Return vs CPI-W



Annualized Three Year Risk vs Return



Callan

CALLAN INSTITUTE

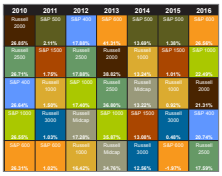
1st Quarter 2018

Education

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 to see all of our publications, and www.callan.com/blog to view our blog "Perspectives." For more information contact Corry Walsh at 312.346.3536 / institute@callan.com.

New Research from Callan's Experts



The Callan Periodic Table of Investment Returns | We are pleased to offer both our Classic Periodic Table, depicting annual returns for 10 asset classes ranked from best to worst performance for each calendar year, and our Collection, offering 10 additional versions, including real estate indices, hedge fund strategy indices, and key indices ranked relative to inflation.

Callan's 2018-2027 Capital Market Projections | Callan develops long-term capital market projections at the start of each year, detailing our expectations for return, volatility, and correlation for broad asset classes. These projections represent our best thinking regarding a longer-term outlook and are critical for strategic planning as our investor clients set investment expectations over five-year, ten-year, and longer time horizons.

How Callan Categorizes Multi-Asset Class Strategies | In the wake of the Global Financial Crisis, a new generation of multi-asset class (MAC) products emerged that emphasized risk management and expanded their toolkits to include shorting and derivatives. Callan groups these "outcome-oriented" MACs into four broad categories: Risk Parity, Risk Premia, Absolute Return, and Long Biased.

Treasuries for the Long Run | Callan's James Van Heuit analyzed whether long-term Treasuries can serve as an effective hedge against equity losses. He concluded that long-term Treasuries have a mixed record of offsetting equity risk. The potential protection offered by long-term Treasuries comes with the risk of underperformance over some time periods. Other types of bonds, he found, may offer less protection, but also have less volatility.

2018 DC Trends Survey | Callan's 11th Annual DC Trends Survey from our Defined Contribution Group highlights plan sponsors' key themes from 2017 and expectations for 2018.

Periodicals

Hedge Fund Monitor, 1st Quarter 2018 | Jim McKee explains Form ADV changes and how to use them to evaluate advisers.

DC Observer, 1st Quarter 2018 | Non-qualified deferred compensation plans (NQDCs) may look and sound like qualified defined contribution (DC) plans, but the two are actually quite different. This quarter's commentary explores approaches to designing the NQDC plan investment menu as well as some of the considerations around informally funding the liabilities.

Active vs. Passive Report, 4th Quarter 2017 | This series of charts maps active managers alongside relevant benchmarks over the last two decades.

Market Pulse Flipbook, 4th Quarter 2017 | 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, 4th Quarter 2017 | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

Private Markets Trends, Winter 2018 | This newsletter offers the latest data on activity in private equity fundraising, buyouts, venture capital, and returns for this asset class.

Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: www.callan.com/library/

Callan's June **Regional Workshops** will be held on June 12 in San Francisco and June 13 in Denver. Please visit our Event page on our website (https://www.callan.com/events/) for additional information on these workshops.

We've added on-demand webinars to our online research library. Access our library of pre-recorded webinars on specific investment-related topics at www.callan.com/ondemandwebinar/.

For more information about events, please contact Barb Gerraty: 415.274.3093 / 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, July 24-25, 2018
Chicago, October 2-3, 2018

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 or contact Kathleen Cunnie: 415.274.3029 / 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, CEO and CRO

Callan

Quarterly List as of March 31, 2018

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
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Artisan Holdings
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford Overseas Limited
Baird Advisors
Bank of America
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
Brown Brothers Harriman & Company
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management

Manager Name
Chartwell Investment Partners
Citi US Pension Investments
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Management Investment Advisers, LLC
Columbus Circle Investors
Cove Street Capital LLC
Credit Suisse Asset Management
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Deutsche Asset Management
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Mgmt. Co.
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fidelity Management & Research
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Franklin Templeton Institutional
Fred Alger Management, Inc.
GAM (USA) Inc.
Geode Capital Management, LLC
GlobeFlex Capital, L.P.
GMO
Goldman Sachs Asset Management

Manager Name
Green Square Capital LLC
Guggenheim Investments
Gurtin Municipal Bond Management
GW&K Investment Management
Harbor Capital Group Trust
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Henderson Global Investors
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
IndexIQ/Mainstay
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
Janus Henderson Investors
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
J.P. Morgan Asset Management
J.P. Morgan Chase & Company
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln Advisors
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
Manulife Asset Management
Marathon 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
Old Mutual 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
Pier Capital, LLC
PineBridge Investments
Pioneer Investments
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Regions Financial Corporation
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management, Inc.
Russell Investments
S&P Global, Inc.
Sands Capital Management
Santander Global Facilities
Schroder Investment Management North America Inc.
Shelton Capital Management
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money 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 Hartford
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
Van Eck Global
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya Financial
Voya Investment Management
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company
Westfield Capital Management Company, LP
William Blair & Company

Callan

March 31, 2018

North Dakota State Investment Board Insurance Trust

Investment Measurement Service Quarterly Review

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.

Table of Contents
March 31, 2018

Executive Summary

Active Management Overview 2
Capital Market Review 3

NDSIB - Consolidated

Insurance Trust

Actual vs Target Asset Allocation 19
Quarterly Total Fund Attribution 20
Cumulative Total Fund Attribution 21
Cumulative Performance 25
Historical Asset Allocation 26
Asset Class Risk and Return 27
Total Fund Ranking 28
Asset Class Rankings 29
Investment Manager Asset Allocation 30
Investment Manager Returns 31

NDSIB - Workforce Safety & Insurance

Actual vs Target Asset Allocation 35
Quarterly Total Fund Attribution 36
Cumulative Total Fund Attribution 37
Cumulative Performance 41
Historical Asset Allocation 42
Asset Class Rankings 43
Asset Class Allocation 44
Asset Class Returns 45

NDSIB - Budget Stabilization Fund

Actual vs Target Asset Allocation 47
Quarterly Total Fund Attribution 48
Cumulative Total Fund Attribution 49
Cumulative Performance 53
Historical Asset Allocation 54
Asset Class Allocation 55
Asset Class Returns 56

Table of Contents
March 31, 2018

Domestic Equity

Large Cap Equity Composite 58
Parametric Clifton Large Cap 59
L.A. Capital Large Cap Growth 60
L.A. Capital Enhanced 61
LSV Large Cap Value 62
Small Cap Equity Composite 63
Parametric Clifton Small Cap 64
PIMCO RAE 65

International Equity

International Equity Composite 67
DFA International Small Cap Value 68
LSV Intl Value 69
Vanguard Intl Explorer Fund 70
William Blair 71

Domestic Fixed Income

Domestic Fixed Income Composite 73
Declaration Total Return 74
PIMCO DiSCO II 75
PIMCO Bravo II 76
Prudential 77
SSgA US Government Credit Bond Index 78
Wells Capital 79
Western Asset Management Company 80

Diversified Real Assets

Western Asset Management TIPS 82
Eastern Timber Opportunities 83
JP Morgan Infrastructure 84
Grosvenor Cust. Infrastructure 85

Real Estate

Real Estate Composite 87
Invesco Core Real Estate 88
JP Morgan 89

Short Term Fixed Income

Short Term Fixed Income Composite 91
JP Morgan Short Term Bonds - Budget Stabilization Fund 92

Callan Research/Education 93

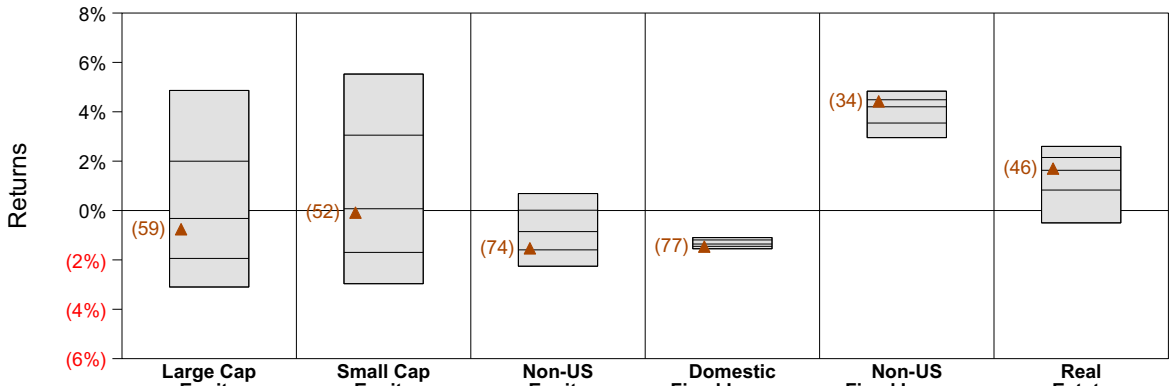
Disclosures 96

Market Overview
Active Management vs Index Returns

Market Overview

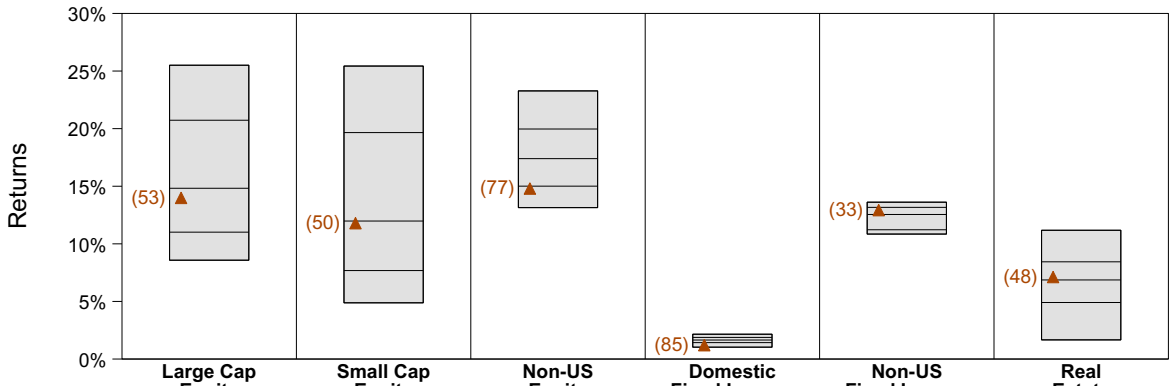
The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also 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 March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	4.86	5.53	0.69	(1.10)	4.83	2.60
25th Percentile	2.00	3.05	0.01	(1.19)	4.49	2.15
Median	(0.32)	0.07	(0.85)	(1.36)	4.20	1.63
75th Percentile	(1.94)	(1.70)	(1.59)	(1.45)	3.54	0.83
90th Percentile	(3.10)	(2.96)	(2.26)	(1.55)	2.95	(0.50)
Index ▲	(0.76)	(0.08)	(1.53)	(1.46)	4.42	1.70

Range of Separate Account Manager Returns by Asset Class
One Year Ended March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	25.50	25.43	23.28	2.16	13.62	11.18
25th Percentile	20.73	19.66	19.97	1.88	13.17	8.44
Median	14.82	11.98	17.40	1.65	12.55	6.87
75th Percentile	11.01	7.68	15.01	1.43	11.22	4.91
90th Percentile	8.58	4.88	13.14	1.03	10.85	1.66
Index ▲	13.99	11.79	14.80	1.20	12.93	7.12

Callan

First Quarter 2018

The Slow Burn of the Current Expansion

ECONOMY

2 PAGE

GDP rose 2.3% in the first quarter, lower than in much of 2017 but higher than estimates, and in spite of the market volatility that started the year. The unemployment rate remains at historically low levels, and there are early signs this is leading to wage pressure.

Diversification Appears to Pay Off

FUND SPONSOR

4 PAGE

The median fund sponsor in Callan's database fell 0.5% but did better than a 60% equity/40% fixed income portfolio, which dropped 1.0%. Taft-Hartley plans were the best performers by type, while large plans were best by size.

Volatility Returns and Markets Sag

EQUITY

6 PAGE

U.S. equities fell in the quarter amid a resurgence of volatility. Mega-Tech firms were especially hard hit amid a data scandal. Non-U.S. developed markets fell more, while emerging markets rose, helped by oil's rebound and strong economic conditions.

Mixed Results for Bonds Globally

FIXED INCOME

9 PAGE

The 10-year Treasury yield neared 3% before dropping by quarter's end. The Aggregate Index fell, as did investment grade and high yield bonds. Currency movements drove fixed income returns globally. Local currency emerging market debt was a top performer.

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE

11 PAGE

The NCREIF Property Index (NPI) posted positive results, while the NCREIF Open End Diversified Core Equity Index continued to see increased returns. Non-U.S. REITs outperformed U.S. REITs, but still posted negative returns.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY

13 PAGE

With volatility returning to the public markets, private equity activity slowed somewhat, but remained brisk in absolute terms. Fundraising was down moderately. Company investments and exits trended slightly down, although venture capital funding rose.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs

14 PAGE

Despite the quarter's rocky ride for stocks and bonds, hedge fund strategies were mostly positive. The Credit Suisse Hedge Fund Index grew 0.5%, while the median manager in the Callan Hedge Fund-of-Funds Database gained 1.2%, net of all fees and expenses.

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. But the Index trailed the Age 45 Target Date Fund, which gained 19.3%. DC plan balances rose 16.5% over the year, driven primarily by market returns. Non-U.S. equities saw notable inflows.

Broad Market Quarterly Returns

U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Non-U.S. Fixed Income
Russell 3000	MSCI ACWI ex USA	Bloomberg Barclays Agg	Bloomberg Barclays Gbl ex US
-0.6%	-1.2%	-1.5%	+3.6%

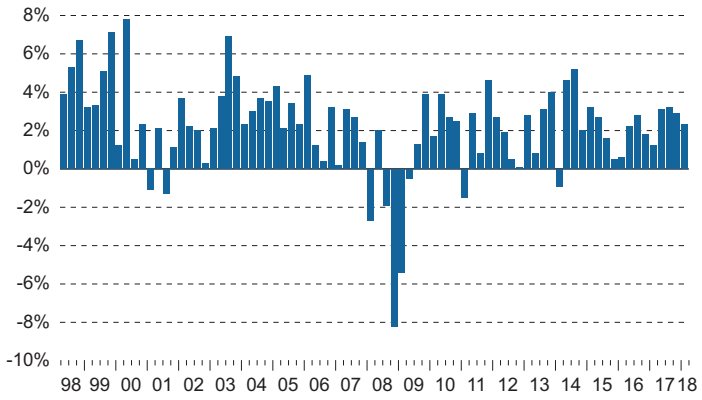
Sources: Bloomberg Barclays, MSCI, FTSE Russell

Slow Burn

ECONOMY | Jay Kloepfer

After a weak first quarter, the U.S. economy closed out 2017 with decent momentum, as GDP grew at a robust 3% annualized rate for the remaining three quarters. The first quarter of 2018 will likely be remembered for its sudden, brief correction and the return of volatility. True to form, however, the U.S. economy continued to post solid growth, ignoring the uncertainty introduced by the stock market gyrations, just as it ignored the geopolitical uncertainty humming in the background over the last 18 months. The 2.3% gain was a step down from the string of 3% increases but actually higher than most estimates. The unexpected strength in first-quarter GDP growth came from net exports (imports were less than expected, exports were greater), from fixed investment in buildings and capital, and from government expenditures.

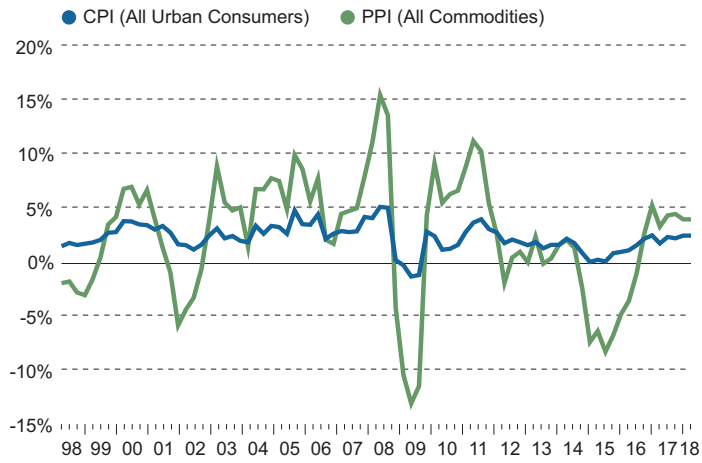
Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Growth expectations had been tempered by the depletion of inventories and signs of slowing consumer spending at the end of 2017. However, consumers remained optimistic during the first quarter, even after the market turmoil in February, with the University of Michigan's Index of Consumer Confidence hitting a 14-year high in March. Strong labor markets are a clear contributor to confidence. In the U.S., the unemployment rate fell to 4.1% in the fourth quarter of 2017, a generational low, and remained at that rate through the first quarter of 2018. Initial claims for unemployment insurance have fallen to the lowest level since 1969.

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

The slow burn in the current expansion may enable it to continue for some time. This recovery is one of the longest on record at 105 months, but also one of the slowest, with average GDP growth in the U.S. of just 2.2%. Expansions do not die of old age; rather they collapse under the weight of imbalances that become untenable. Thus far into this slow burn, signs of severe imbalances are few, although several potential ones come to mind: tight labor markets, inflation, housing shortages in select urban areas, and rich asset prices kept aloft by the continued growth in the economy.

Inflation may finally be poised to become the problem we all expected to arise after years of sustained monetary and fiscal stimulus. The CPI-U notched a year-over-year gain of 2.4% in the first quarter, with core inflation reporting a 2.1% increase. While this sounds very modest, the CPI-U has been inching steadily upward since bottoming out in 2015, when oil prices collapsed. One of the most profound conundrums has been the

lack of wage pressure while the unemployment rate has steadily fallen to historically low levels. Average hourly earnings were stuck at 2% growth, and only recently has the rate of growth begun to rise. In fact, the report of wage growth coming in close to 3% in January was one of the catalysts cited for the spike in market volatility in early February, spurring fears of inflation among investors. Wage growth did not jump higher than 3% in February and March, but stronger wage growth will feed into core inflation. The Employment Cost Index, which includes benefit costs along with wages and salaries, rose 2.7% year-over-year in the first quarter, the highest rate of growth since 2007. Barring another collapse in energy prices or a sudden downturn in global growth, inflation momentum will keep building.

Continued growth and the potential pickup in inflation give the Fed cover for more interest rate hikes. One development of interest is the potential for an inverted yield curve. The Fed raised interest rates three times in 2017 and again in March 2018, which shifted the short end of the yield curve up, but the long end barely budged. As a result, the curve flattened substantially. The Fed is telegraphing up to three more rate hikes this year, and if the long end of the curve remains anchored, the potential increases for the curve to invert, where yields on longer maturities are lower than those for shorter maturities. An inverted yield curve can suggest the onset of recession: investors bid up the price of longer-dated debt (driving down yields) in anticipation of a slowing economy, leading to an expected cut in interest rates and increased demand for bonds. An inverted yield curve does not cause a recession, but it does reflect the opinions and concerns of market participants. Complicating the story here is that while the Fed has begun to unwind its balance sheet, which suggests it could be selling bonds and putting upward pressure on rates, demand remains strong on the long end of the yield curve, as yields in the U.S. are substantially above those overseas.

The Long-Term View

Index	2018 1st Qtr	Periods ended Dec. 31, 2017 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-0.64	21.13	15.58	8.60	9.72
S&P 500	-0.76	21.83	15.79	8.50	9.69
Russell 2000	-0.08	14.65	14.12	8.71	9.54
Non-U.S. Equity					
MSCI ACWI ex USA	-1.18	27.19	6.80	1.84	–
MSCI Emerging Markets	1.42	37.28	4.35	1.68	–
MSCI ACWI ex USA Small Cap	-0.35	31.65	10.03	4.69	–
Fixed Income					
Bloomberg Barclays Agg	-1.46	3.54	2.10	4.01	5.48
90-Day T-Bill	0.35	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-3.58	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	3.62	10.51	-0.20	2.40	5.02
Real Estate					
NCREIF Property	1.70	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	-8.20	5.23	9.46	7.44	10.76
Alternatives					
CS Hedge Fund	0.47	7.12	4.23	3.24	–
Cambridge PE*	5.11	19.38	13.90	9.10	15.62
Bloomberg Commodity	-0.40	1.70	-8.45	-6.83	2.47
Gold Spot Price	1.37	13.68	-4.82	4.56	5.63
Inflation – CPI-U	1.23	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

Recent Quarterly Economic Indicators

	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16	3Q16	2Q16
Employment Cost–Total Compensation Growth	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%	2.3%	2.3%
Nonfarm Business–Productivity Growth	-0.4%	0.0%	2.6%	1.7%	0.2%	1.1%	2.4%	0.9%
GDP Growth	2.3%	2.9%	3.2%	3.1%	1.2%	1.8%	2.8%	2.2%
Manufacturing Capacity Utilization	75.6%	75.2%	74.4%	74.9%	74.6%	74.4%	74.3%	74.4%
Consumer Sentiment Index (1966=100)	98.9	98.4	95.1	96.4	97.2	93.2	90.3	92.4

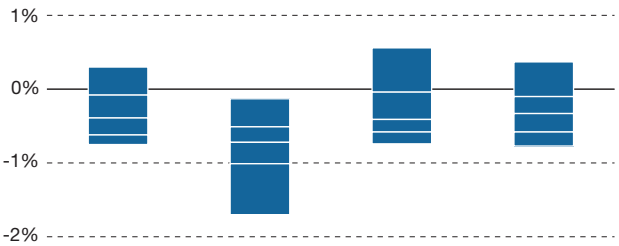
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Diversification Appears to Pay Off in First Quarter

FUND SPONSOR

In the first quarter, the median fund sponsor in Callan's database fell 0.5%, compared to a 1.0% drop for a quarterly rebalanced portfolio made up of 60% S&P 500 Index/40% Bloomberg Barclays US Aggregate Bond Index. Taft-Hartley funds (-0.3%) were the best performers in the quarter, followed by public plans (-0.4%), endowments and foundations (-0.4%), and corporate plans (-0.7%). Large plans with greater than $1 billion in assets under management did best by plan size, falling by 0.4%, followed by medium ($100 million–$1 billion) and small (under $100 million) plans. Plans in Callan's database invest in a wider array of assets than a 60/40 portfolio, indicating diversification may have been a benefit in the quarter, which saw declines for both bonds and stocks.

Callan Fund Sponsor Returns for the Quarter



	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	0.30	-0.13	0.56	0.37
25th Percentile	-0.08	-0.51	-0.04	-0.10
Median	-0.39	-0.72	-0.41	-0.33
75th Percentile	-0.62	-1.01	-0.58	-0.58
90th Percentile	-0.75	-1.70	-0.74	-0.77

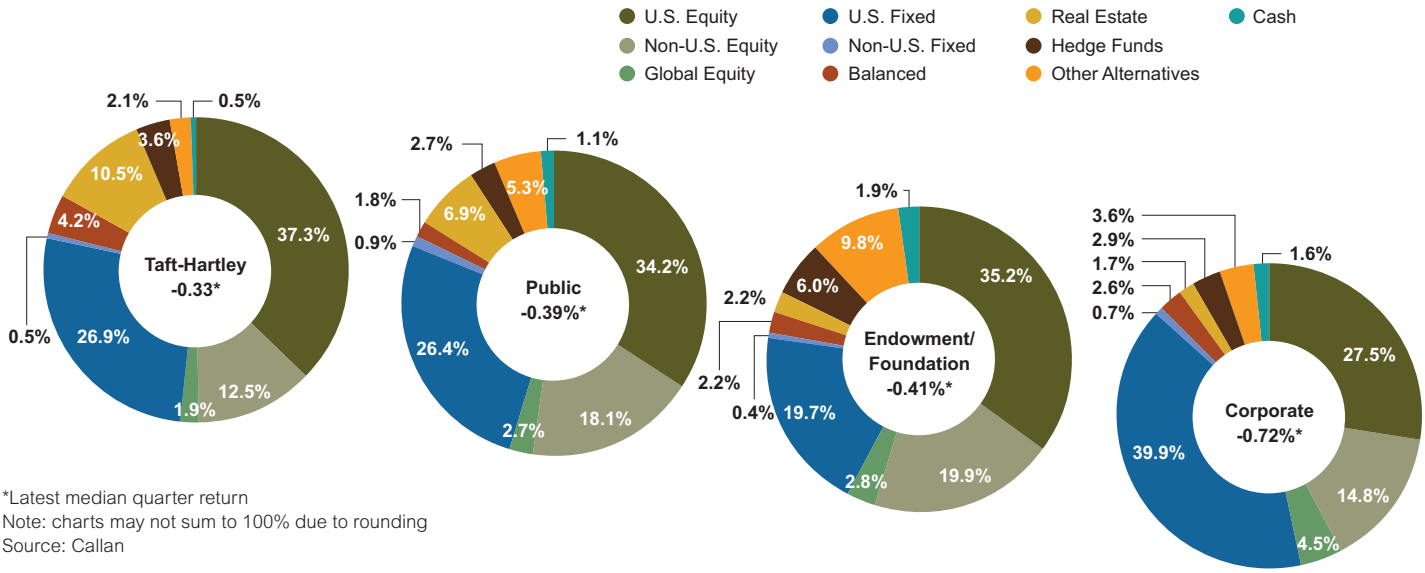
Source: Callan

Over the last 10 years, corporate plans (+6.5%) did best, followed by Taft-Hartley plans (+6.4%), and public plans and E&Fs (both +6.3%). The median plan sponsor increased 6.4%, while the 60-40 portfolio rose 7.5%.

Strategic planning by sponsors has recently touched on a number of common themes:

- The impact of tax reform, particularly its effects on pensions and non-profits, and the varied implications for different asset classes.
- Adjusting to lower capital market return expectations. Callan's 2018 10-year projections are unchanged from last year, which means they remain low. Diversification and discipline remain the key points of emphasis, and Callan advises caution when reaching for return/yield.

Callan Fund Sponsor Average Asset Allocation



*Latest median quarter return
Note: charts may not sum to 100% due to rounding
Source: Callan

Both stock and bond valuations remain high, and market volatility is back—but is within normal bounds. Many clients are wondering if there is a need for inflation-hedging strategies despite inflation being benign.

Low interest rates and low return expectations continue to drive strategic allocation planning. Many fund sponsors feel compelled to take on substantial market risk to reach their return goals. Sponsors are evaluating whether there is anything more they can do to tamp down the risk within the growth allocation, short of actually reducing the allocation to growth assets. Actuarial assumptions and spending rates are being reduced by some sponsors.

Callan research on trends in the institutional investment marketplace found that several interesting themes have developed over the past three years, many related to capital market expectations and fees:

- A continuing interest in passive investing, although the level of interest has decreased slightly
- A meaningful percentage of fund sponsors are considering new or additional investments in private assets

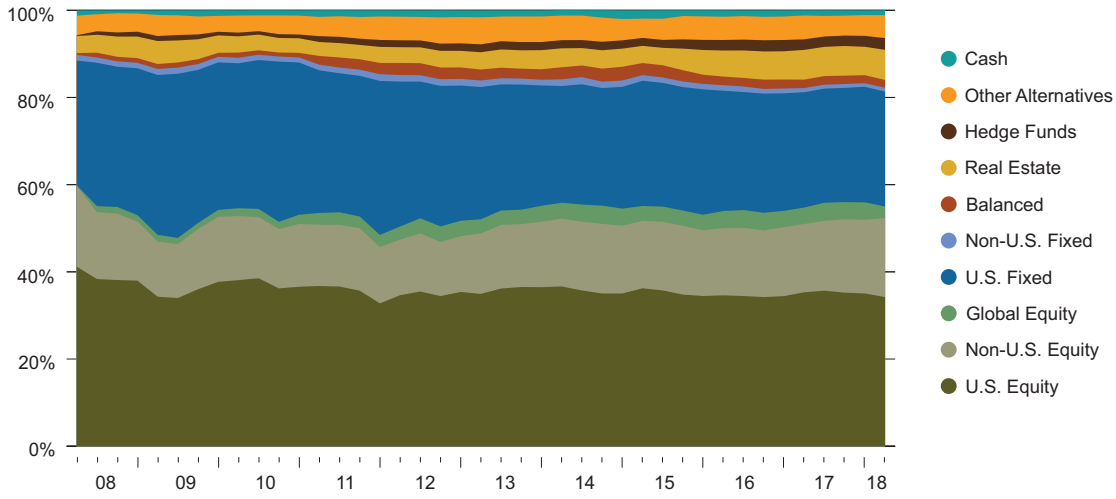
Specific areas of focus by plan types include:

Corporate Funds: Most corporate defined benefit (DB) clients have embraced de-risking (increasing fixed income and extending duration) and are at different stages of this process. The extent to which corporate plan sponsors implement de-risking in the coming year depends largely on the movement of interest rates. As rates rise and DB plans move forward with de-risking plans, allocations to equity and alternative investments are likely to decrease.

Public and E&F Funds: Public plans and endowments and foundations are focused on return enhancement. However, risk—as well as funded status for public plans—were sources of ongoing concerns in the more volatile markets of the first quarter.

Defined Contribution: Driven by regulatory and legislative requirements, DC plans continue to review fees and recordkeepers. Recently, activity has been focused on investment structures that reduce the number of options in a plan.

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. Stocks: Dow, S&P 500 Fall, First Time Since '15

-0.6%
RUSSELL 3000

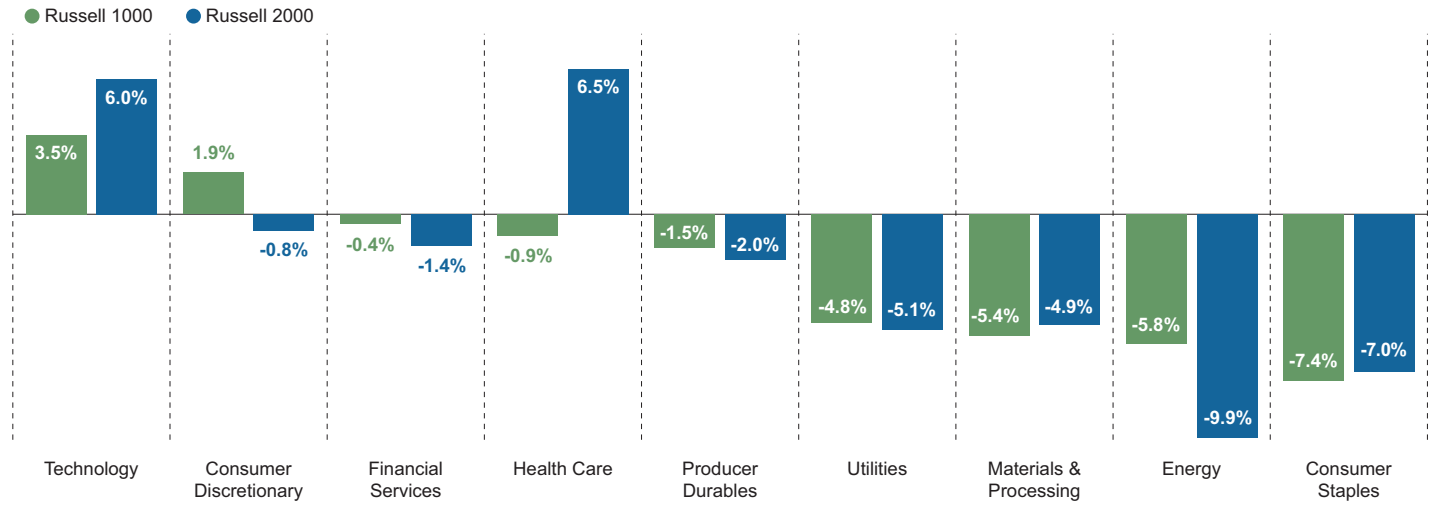
Volatility returned in the first quarter, with the **Dow Jones Industrial Average** and **S&P 500 Index** both finishing lower—a first since the third quarter of 2015. After starting strong on the back of solid earnings and tax law changes, U.S. equities faltered in the second part of the quarter over concerns about a more aggressive global trade policy and uncertainty over the pace of interest rate hikes. The S&P 500's modest quarterly loss (-0.8%) belied volatile intra-quarter results. The Index experienced six days of movements greater than 2% during the quarter (versus none in 2017). And the Index reached a record high on Jan. 26, then fell about 8% to close the quarter. Volatility as measured by the VIX Index skyrocketed by 116% on Feb. 5 when the market sank 4%.

Small capitalization stocks outperformed large caps (**Russell 1000:** -0.7%; **Russell 2000:** -0.1%), though sector performance was mixed. The prospect of a trade war with China weighed on large caps since many of these companies are exposed to international markets (S&P 500 aggregate exposure is approximately 40%) while small caps were less affected as they tend to derive a higher proportion of their revenue from domestic markets (approximately 80-90%) and benefit from a more protectionist policy.

In mid-March, some mega-cap Tech firms saw their stock prices drop in the wake of Facebook's Cambridge Analytica scandal, leading to declining trust for the industry and negative investor sentiment. The market began pricing in the potential for more regulatory oversight for these internet companies. Performance for the "FANGs" split during the quarter, with Facebook and Google down while Netflix and Amazon advanced.

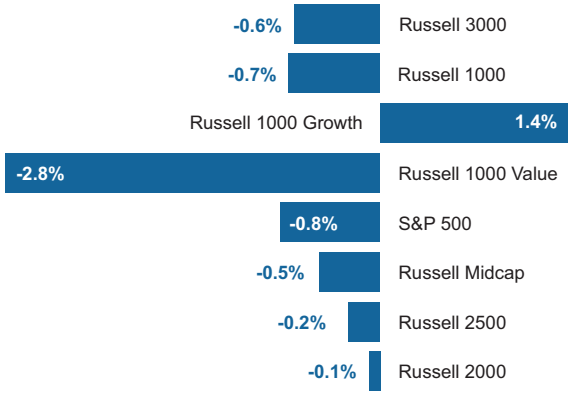
Growth continued to top value (**Russell 1000 Growth:** +1.4%; **Russell 1000 Value:** -2.8%). Value trailed as the prospect of increased inflation and accelerating interest rates weighed on interest rate-sensitive sectors (Financials: -1.0%; Real Estate: -5.0%; Utilities: -3.3%). Energy (-5.9%) also took a hit despite a more promising outlook for the sector as the Saudis agreed to continued oil production cuts into 2019; performance for the first quarter was impacted by Exxon Mobil and Chevron missing fourth quarter earnings expectations.

Quarterly Performance of Select Sectors



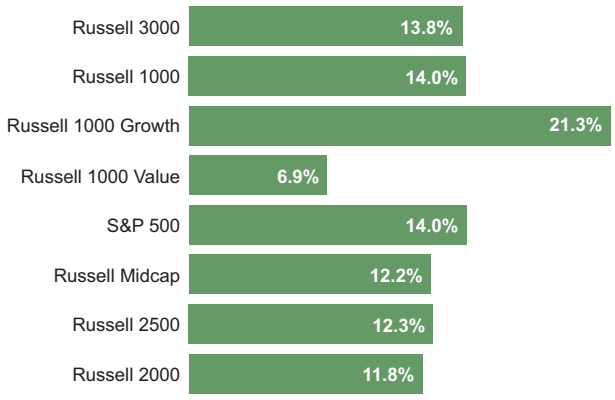
Source: FTSE Russell

U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

U.S. Equity: One-Year Returns



Sources: FTSE Russell and Standard & Poor's

Despite the increased volatility and price drop in the broader index, defensive sectors underperformed cyclicals due in large part to the rising interest rate environment. Technology (+3.5%) and Consumer Discretionary (+3.1%) were the only two sectors that posted positive returns. Telecommunications (-7.5%) and Staples (-7.1%) were the two worst-performing sectors.

Global Stocks: Spooked Markets Lag

-1.2%

MSCI ACWI EX USA

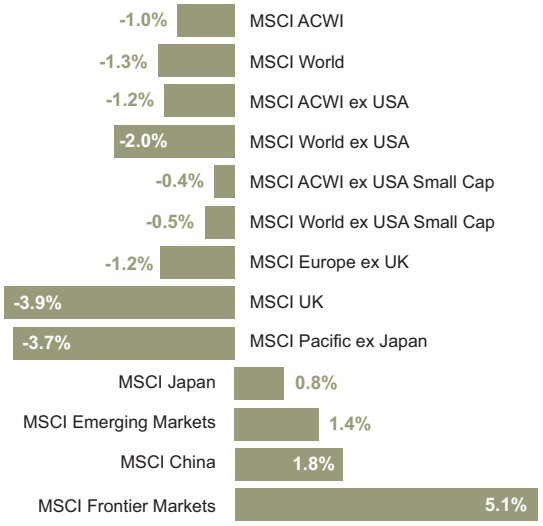
Despite positive economic data, non-U.S. developed equity underperformed U.S. as non-U.S. equity markets were spooked by geopolitical tension and market volatility along with fears of rising U.S. interest rates and inflation (**MSCI World ex USA:** -2.0%; **MSCI Europe:** -2.0%). Emerging markets continued to outpace developed, fueled by a soft dollar and synchronized global growth; however, fears of inflation and its implication on the trajectory of U.S. monetary policy—as well as a potential trade war between the U.S. and China—weighed on the market. Developed non-U.S. small cap outperformed large cap given the risk-on market environment spurred by synchronized global growth.

While developed non-U.S. equity market returns were negative, results were helped by U.S. dollar weakness. Overall, the **MSCI EAFE** fell 4.3% in local terms but only 1.5% in U.S. dollar terms. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. Likewise, Brexit woes sank the U.K. market (-8%) but the pound's appreciation versus the dollar offset a good portion of the loss for U.S. investors; on that basis the country fell 4%. The euro-zone recovery continued, with GDP growth of 2.7% in the quarter year-over-year driving the euro up 2%—and the pound by nearly 4%—relative to the dollar.

Japan's economy grew by 1.6% fueled by infrastructure development ahead of the 2020 Olympics, enabling the yen to surge by 6% relative to the dollar. It hit a 17-month high as worries over trade policy spurred demand for the safe-haven currency and was the best-performing currency among developed markets. In local terms, Japan equities fell nearly 6%, but the strength of the yen brought returns in U.S. dollar terms to +0.8%.

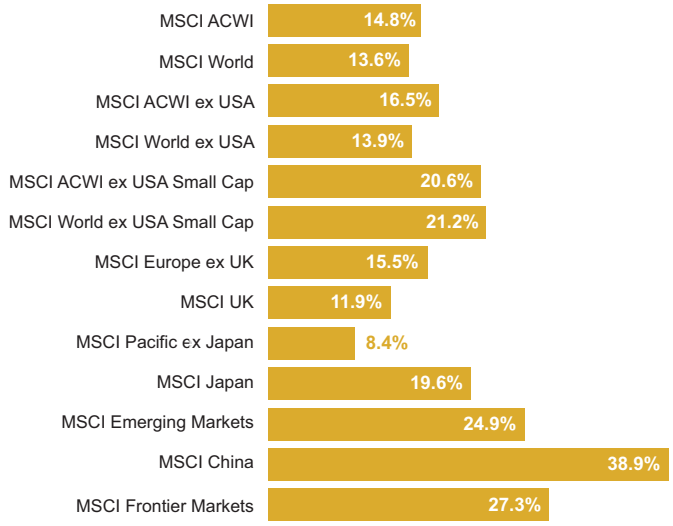
The only sectors that posted positive returns were Consumer Discretionary, Tech, and Utilities. Positive earnings supported the Tech sector (top performer), and Utilities benefited as investors fled to safety amid market volatility and yield curve flattening in March. Telecom struggled as competition for wireless services within the euro-zone eroded profitability, and Staples was notably challenged due to fears of interest rates returning to normal levels and the prospect of beleaguered growth.

Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



Source: MSCI

Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

Growth outpaced value, and earnings growth and quality factors were in favor as markets were jittery in light of the global economy's looming risks. As such, high-beta, cyclical sectors and factors struggled.

Emerging Markets: Oil Propels Shares Higher

+1.4%
MSCI EM

The **MSCI Emerging Markets Index** rose 1.4%. Brazil (+12%) and Russia (+9%) were among the best performers due to climbing oil prices and improving economic conditions. China (+2%) continued to thrive despite trade tension with the United States and a slowdown for Chinese tech companies; China's supply-side reforms are kicking in and economic growth in retail and home sales exceeded expectations, driving up returns for the Financials and Real Estate sectors.

Although India announced better-than-expected GDP growth of 7.2%, the country notably lagged (-7%) due to poor market sentiment surrounding asset-quality issues at large state-owned banks and relative valuations of Indian equities.

Supported by rising oil prices, Energy was the best performing sector; conversely, Consumer Discretionary fared worst, weighed down by India. Value and sentiment factors were in favor as the economic recovery story gained traction and momentum; however, quality factors also added value given that this is the mid-cycle of the recovery.

Non-U.S. Small Cap: Growth in Favor This Quarter

-0.4%
MSCI ACWI EX USA SC

Developed non-U.S. small cap outperformed large cap (**MSCI World ex USA Small Cap:** -0.5%) given the risk-on market environment spurred by synchronized global growth, although within emerging markets, small cap lagged large cap (**MSCI Emerging Markets Small Cap:** +0.2%).

Growth was favored in both developed and emerging market small cap, as growth-oriented sectors such as Health Care and Consumer Staples outperformed cyclical sectors.

Global Fixed Income

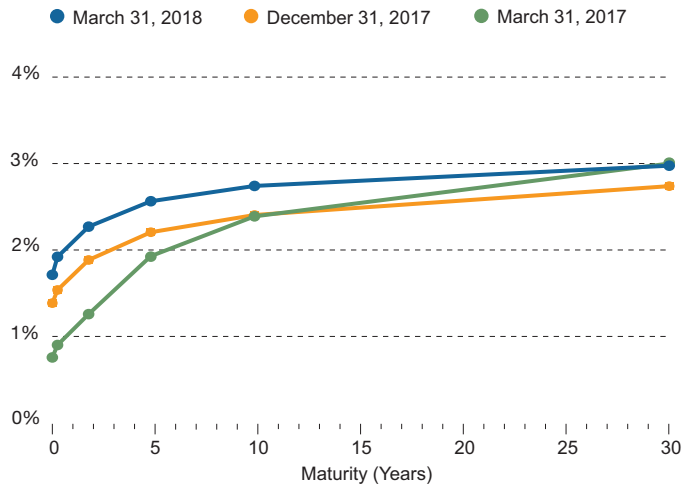
U.S. Bonds: Fear, Uncertainty Roil Markets

-1.5%
BB AGGREGATE

The 10-year U.S. Treasury yield marched steadily higher through most of January and February in response to positive economic data, then equity market weakness and concerns over a looming trade war led to falling yields in March. New Fed Chair Jerome Powell announced his first rate hike (as widely expected) in March, raising the Fed Funds target rate to 1.50%–1.75%. The 10-year U.S. Treasury yield climbed to a peak of nearly 3% during the quarter before closing at 2.74%, 34 basis points higher than at year-end. Two-year U.S. Treasury note yields rose nearly 40 bps to 2.27%, the highest since 2008, and the note fell 0.1% for the quarter, while the 10-year Treasury dropped 2.4% and the 30-year Treasury plunged almost 4%. Interest rates rose approximately 30 bps across the U.S. Treasury yield curve. TIPS outperformed nominal Treasuries, and the 10-year break-even inflation rate rose to 2.05% from 1.96% at year-end.

The **Bloomberg Barclays US Aggregate Bond Index** fell 1.5%, with corporate and securitized sectors underperforming Treasuries. Volatility picked up across risk assets as geopolitical uncertainties took center stage; market expectations reflect the possibility of four rate hikes in 2018, up from a projected three

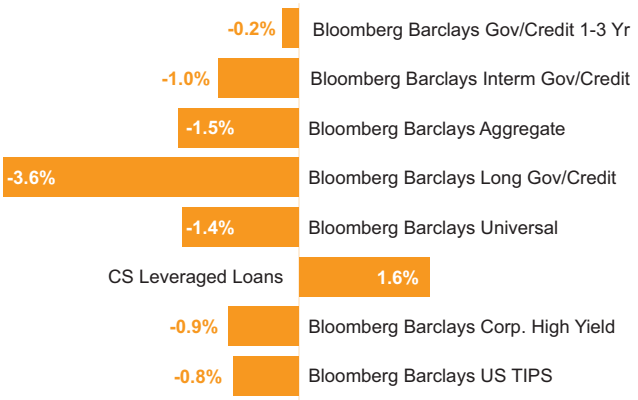
U.S. Treasury Yield Curves



Source: Bloomberg

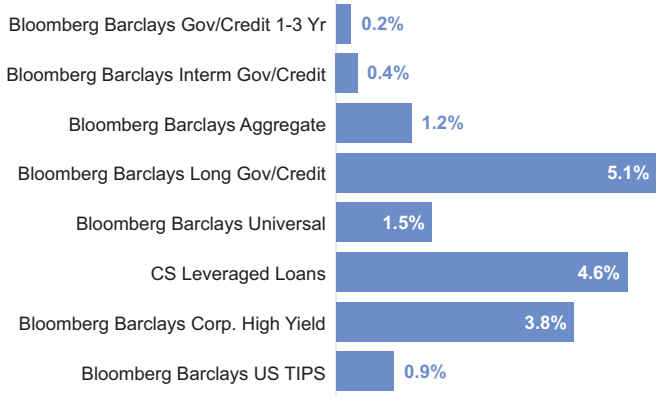
at the end of 2017. In a sharp reversal from 2017's relative performance, investment grade corporates underperformed like-duration Treasuries by 80 bps during the quarter and dropped 2.3%. Investors were fairly sanguine as they reassessed fairly healthy balance sheets juxtaposed with fair-to-rich valuations. New issuance was down 13% when compared to a similar time period a year ago, yet demand remained strong with oversubscriptions by two to three times. Outside of investment grade, the **Bloomberg Barclays High Yield Index** fell 0.9% while the

U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

S&P/LSTA Leveraged Loan Index, which includes floating rate loans and thus benefited from rising rates, rose 1.4%.

High yield corporates dropped 0.9% and outperformed the Aggregate. Corporate fundamentals remained healthy as earnings growth supported debt coverage. Default rates remained benign because many companies had already reorganized debt in 2016. About 75% of new issuance proceeds were used for refinancing. Valuations remained near historical highs.

Bank loans rose 1.4% and outperformed the Aggregate. Healthy balance sheets, strong demand for collateralized loan obligation (CLO) formation, and higher short-term interest rates bode well for the sector this quarter.

Global Bonds: Currency Changes Drive Returns

+3.4%
BB GBL AGG EX US

The **Bloomberg Barclays Global Aggregate Index** (hedged) fell 0.1% (versus a gain of 1.4% for the unhedged version) as developed non-U.S. fixed income market returns were helped by U.S. dollar weakness. Generally, currency movements drove fixed income returns across countries more than interest rate changes in the first quarter. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. As in the U.S., global credit underperformed government bonds.

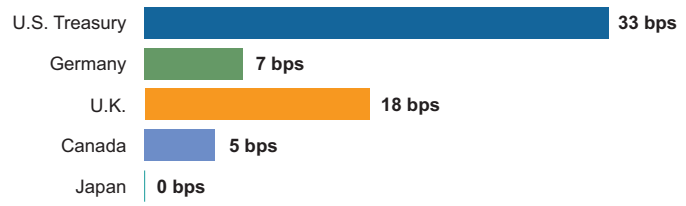
Local currency emerging market debt was a top-performing asset class in the first quarter; the **JPM GBI-EM Global Diversified** gained 4.4%. Returns were positive for most countries in local terms and further boosted by U.S. dollar weakness. U.S. dollar-denominated emerging market debt did not perform as well, dropping 1.7% as measured by **JPM's EMBI Global Diversified Index**.

Municipal bonds underperformed Treasuries in the first quarter in spite of shrinking supply and continued inflows to the sector. As a result, the ratio of the yield of AAA-rated 10-year municipals relative to the 10-year U.S. Treasury climbed to 89% as of quarter-end, up from 81% at the end of the year. Further, the municipal curve steepened as longer maturities underperformed.

Municipal bond fundamentals broadly remained strong, and Moody's reported that ratings upgrades outpaced downgrades for the third consecutive year in 2017. The **Bloomberg Barclays Municipal Bond Index** dropped 1.1% and the shorter duration **1-10 Year Blend Index** fell 0.7%.

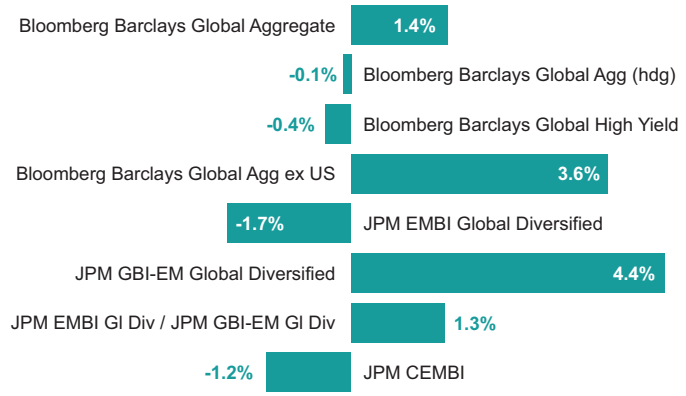
Change in 10-year Global Government Bond Yields

4Q17 to 1Q18



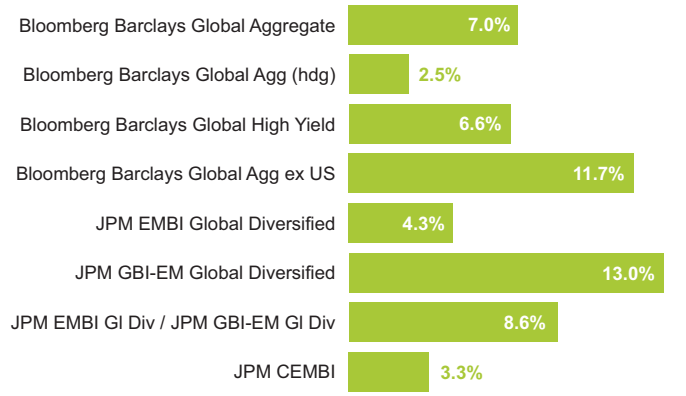
Source: Bloomberg Barclays

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

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE | Kevin Nagy

The **NCREIF Property Index (NPI)** gained 1.7% during the first quarter (1.1% from income and 0.6% from appreciation). This marked the 33rd consecutive quarter of positive returns for the Index.

Industrial (+3.3%) was the best-performing sector for the eighth consecutive quarter with Office (+1.8%) and Apartments (+1.5%) also posting strong returns; Retail (+0.7%) was the worst performer. Retail and Hotels (+1.0%) were the only property types to experience negative appreciation returns, gaining only because of income returns. The West (+2.2%) region was the strongest performer for the seventh quarter in a row, and the East trailed (+1.2%). The West also was the only region with an appreciation return above 1%. Transaction volume decreased more than 22% to $8.95 billion, down from $11.50 billion in the fourth quarter, but up 28% from the first quarter of 2017. Appraisal capitalization rates fell 20 basis points to 4.35%. Transaction capitalization fell further, dropping 44 bps to 5.41%. The spread between appraisal and transactional rates decreased to 106 bps.

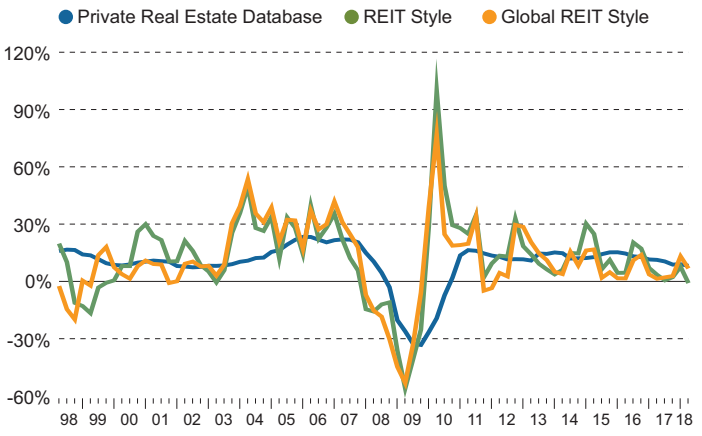
Occupancy rates dropped slightly to 93.5%, down 5 bps from the fourth quarter but up 57 bps from the first quarter of 2017. Apartment, Retail, and Office occupancy rates increased slightly while Industrial ticked down marginally.

The **NCREIF Open End Diversified Core Equity Index** rose 2.2% (1.0% from income and 1.2% from appreciation), a 13 bps increase from the fourth quarter of 2017. The appreciation return increased for the fourth quarter in a row and overtook income for the first time since the fourth quarter of 2015. Leverage dropped 3 bps to 21.1%.

Global Real Estate Investment Trusts (REITs), tracked by the **FTSE EPRA/NAREIT Developed REIT Index** (USD), outperformed U.S. REITs but still lost 4.3% during the first quarter. The median active global REIT manager, as measured by **Callan's Global REIT Peer Group**, fell 3.5%, beating the Index. U.S. REITs, as measured by the **FTSE NAREIT Equity REITs Index,** lost 8.2% for the quarter. The median active U.S. REIT manager, as measured by **Callan's REIT Peer Group**, lost merely 6.6%, also beating the Index.

U.S. REITs had a terrible start to 2018, down 11.6% through the end of February primarily due to an increase in interest rates and concerns over a trade war between the U.S. and China. A stronger March offset some of the damage but was not enough to push performance into positive territory. Timber (+1.8%) and Infrastructure (+1.4%) were the only sectors to experience positive returns. Diversified (-15.8%), Specialty (-11.7%), and Retail (-11.2%) were hit the hardest. Strong earnings and a positive growth outlook for the broader economy helped buoy REITs toward the end of the quarter.

Rolling One-Year Returns

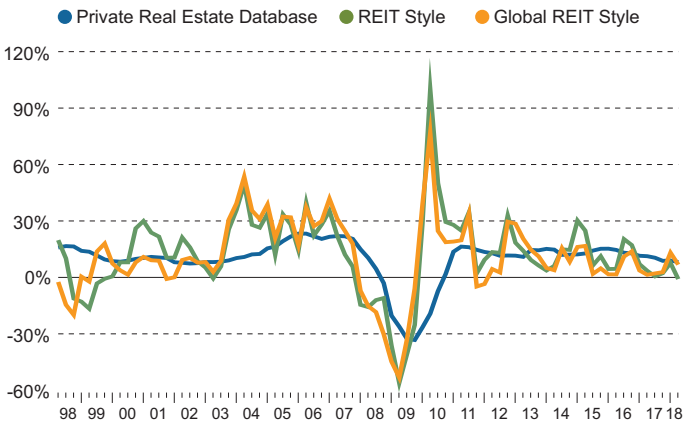


Source: Callan

Europe, as represented by the **FTSE EPRA/NAREIT Europe Index**, outperformed the United States, only losing 0.9% in U.S. dollar terms. U.K. REITs outperformed their continental counterparts in dollar terms but fared worse in local currency terms. The region was held back by geopolitical concerns, and economic growth, while still positive, fell from the frantic pace of late 2017 to more normal levels.

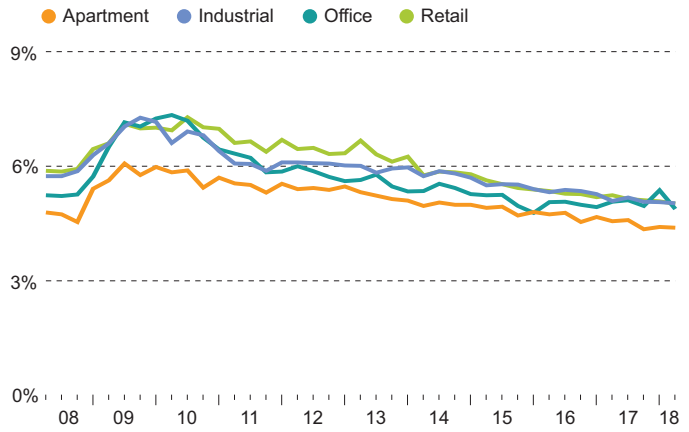
The Asia-Pacific region, represented by the **FTSE EPRA/NAREIT Asia Index,** declined 0.3%, outperforming all other regions. Japan jumped 7.3% in U.S. dollar terms, due mostly to weakness in the American currency, easily outpacing its neighbors to be the best-performing country in the region. Foreign capital flowed into Japanese REITs (J-REITs) and helped boost prices, even as they experienced continued net outflows. Low vacancy and increasing rents also contributed to the large gains.

NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF
Note: Transaction capitalization rate is equal weighted.

NCREIF Capitalization Rates by Property Type



Source: NCREIF
Note: Capitalization rates are appraisal-based.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY | Gary Robertson

Based on preliminary data, first quarter private equity partnership commitments totaled $66.5 billion, with 242 new partnerships formed, according to *Private Equity Analyst.* The number of funds fell 22% from 310 in the first quarter of 2017, and the dollar volume declined 17% from $80.0 billion. The absolute pace of fundraising remains heated, and Callan recommends vigilance in commitment pacing during this frothy market.

According to *Buyouts* newsletter, activity remained brisk as buyout funds closed 587 investments with $29.8 billion in disclosed deal value. The number of investments is larger than in any quarter in 2017, yet the announced dollar volume is lower than in any of last year's quarters. The $5.6 billion purchase of power company Calpine by Energy Capital Partners and others was the quarter's largest buyout. Nine acquisitions with announced values of $1 billion or more closed in the quarter.

According to the National Venture Capital Association, new investments in venture capital companies totaled 1,693 rounds of financing with $28.2 billion of announced value. The number of investments was down 18% from the prior quarter, but the announced value was up 33%. The median pre-money valuation continues to increase; only Series D+ fell, down 20%.

Funds Closed January 1 to March 31, 2018

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	111	6,034	9%
Buyouts	91	52,481	79%
Private Debt	18	4,133	6%
Secondary and Other	10	2,231	3%
Fund-of-funds	12	1,593	2%
Totals	**242**	**66,472**	**100%**

Source: Private Equity Analyst
Figures may not total due to rounding.

There were 164 private M&A exits of buyout-backed companies, *Buyouts* reports, with disclosed values totaling $28.3 billion. The exits count was up from the prior quarter's 159, and the announced value declined from $55.3 billion. There were 11 buyout-backed IPOs in the first quarter raising an aggregate $3.9 billion, up from only four totaling $860 million previously.

Venture-backed M&A exits totaled 188 transactions and disclosed value hit $8.1 billion. Both figures declined from the fourth quarter, which had 200 sales with announced values totaling $12.6 billion. There were 15 VC-backed IPOs in the first quarter with a combined float of $2.1 billion. For comparison, the fourth quarter of 2017 had 22 IPOs and total issuance of $3.1 billion.

Please see our upcoming issue of *Private Markets Trends* for more in-depth coverage.

Private Equity Performance Database (%) (Pooled Horizon IRRs through September 30, 2017*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.52	8.82	12.30	15.51	9.47	9.00	17.94
Growth Equity	4.90	15.83	10.68	13.21	10.06	12.60	13.13
All Buyouts	4.63	19.33	12.61	14.35	8.78	14.39	12.53
Mezzanine	4.16	13.07	9.43	10.15	9.02	9.47	8.64
Distressed	2.34	12.85	5.72	9.73	9.35	10.98	10.34
All Private Equity	**2.39**	**14.92**	**9.03**	**11.35**	**9.13**	**11.33**	**11.34**
S&P 500	4.21	16.02	11.57	13.84	9.08	12.65	12.86

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.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs | Jim McKee

Hints that an overheated U.S. economy may be unable to absorb significant fiscal stimulus ahead spooked markets in the first quarter. The resulting spasm of risk-off behavior caused the VIX, a measure of equity volatility, to more than double on one day, Feb. 5, leading to significant losses among volatility sellers. Despite the quarter's rocky ride for stocks and bonds, with major indices down for the quarter, hedge fund strategies were mostly positive.

As a proxy of unmanaged hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** grew 0.5%. Despite the quarter's negative market beta, *Long/Short Equity* (+1.0%) provided investors with some positive alpha. Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** gained 1.2%, net of all fees and expenses. Within that database, the median *Callan Long/Short Equity FOF* matched the *Callan Absolute Return FOF* with 1.2% gains, while the *Core Diversified FOF* returned 0.9%.

As a benchmark for alternative beta, the **Credit Suisse Neuberger Multi-Asset Risk Premia Index** lost 0.7% in the first quarter based upon a 5% volatility target. Within this Index, *Equity Momentum* and *Equity Value* both lost 4.4%. Most of the **Callan Multi-Asset Class (MAC)** style groups experienced weakness in the quarter, which was consistent with the market index and alternative beta returns cited above. Only *Absolute Return* (+0.2%) eked out a gain. *Risk Parity* (-1.3%) fell the most. Though normally less correlated with markets, *Risk Premia* (-0.7%) exhibited higher-than-expected losses during February's sell-off.

Callan Database Median and Index Returns* for Periods ended March 31, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**1.16**	**5.34**	**2.51**	**4.28**	**3.51**	**5.04**
Callan Absolute Return FOF Style	**1.23**	**4.82**	**2.67**	**4.18**	**3.25**	**4.76**
Callan Core Diversified FOF Style	**0.87**	**5.12**	**1.77**	**3.94**	**3.25**	**5.09**
Callan Long/Short Equity FOF Style	**1.16**	**7.76**	**3.54**	**5.54**	**3.78**	**6.03**
Credit Suisse Hedge Fund Index	0.47	5.43	1.82	3.61	3.49	5.89
HFRI Asset Wtd Composite	0.57	5.17	2.21	4.02	3.66	–
HFRI Fund Wtd Comp	-0.16	5.55	3.51	4.65	4.25	6.44
HFRI Equity Hedge (Total)	0.59	9.70	5.29	5.70	3.87	6.18
HFRI Event-Driven (Total)	0.15	5.18	4.11	4.73	4.54	7.10
HFRI Macro (Total) Index	-1.25	1.02	-0.85	0.89	1.42	4.42
HFRI Relative Value (Total)	0.92	4.51	4.06	4.16	5.84	6.61
90-Day T-Bill + 5%	1.57	6.11	5.53	5.34	5.34	6.28
Liquid Alternative Universe	**Quarter**	**Year**	**3 Years**	**5 Years**	**10 Years**	**15 Years**
Callan Absolute Return MAC	**0.21**	**2.65**	**1.92**	**3.12**	**–**	**–**
Callan Risk Premia MAC	**-0.74**	**3.08**	**1.42**	**3.02**	**6.85**	**–**
Callan Long-Biased MAC	**-0.50**	**9.32**	**3.84**	**5.37**	**5.98**	**8.87**
Callan Risk Parity MAC	**-1.33**	**7.81**	**4.27**	**4.61**	**6.93**	**–**
60% S&P 500/40% BB Agg	-0.97	8.81	6.99	8.72	7.42	7.85
CS NB MARP Index (5%v)	-0.70	-1.81	1.27	3.10	6.54	–
SG Trend Index	-3.88	-0.91	-5.01	1.80	1.91	3.59

*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION | Tom Szkwarla

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. Despite this, the Index trailed the Age 45 Target Date Fund—the average of target date funds appropriate for participants aged 45 and retiring at age 65—which gained 19.3%. Since inception, the DC Index's annual return of 6.3% has trailed the Age 45 Target Date Fund by 79 basis points.

A new feature of the Index, the DC Fee Analysis chart, measures the average total investment management fee by plan size. Mega plans have driven down their fees to an average of 33 basis points, while smaller plans pay progressively more.

The average DC plan balance grew 16.5% for the year ended Dec. 31, 2017, with market returns accounting for nearly all that.

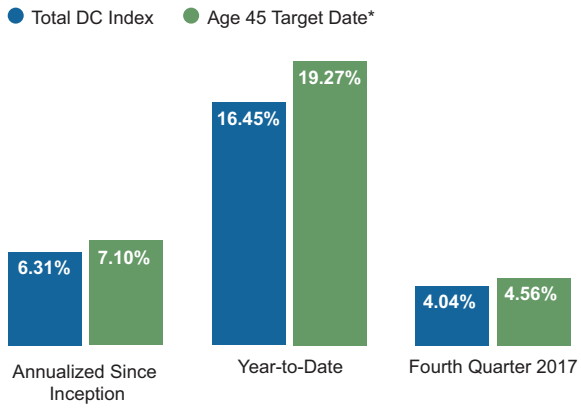
For the third consecutive quarter, non-U.S. equities have experienced notable inflows. Outflows came primarily from stable value (more than a third of the total) and company stock. As usual, target date funds (TDFs) attracted the majority of assets during the quarter, absorbing approximately 62 cents of every dollar that flowed into DC funds. Turnover (i.e., net transfer activity levels within DC plans) for the quarter, at 0.53%, fell below the since-inception average (0.63%).

The Callan DC Index's overall equity allocation ended at 71%, only slightly below its 2007 peak of 73%. TDFs accounted for 30.8% of total assets, an all-time high. U.S. large cap equity continued to hold the second-largest allocation, at 23.6%.

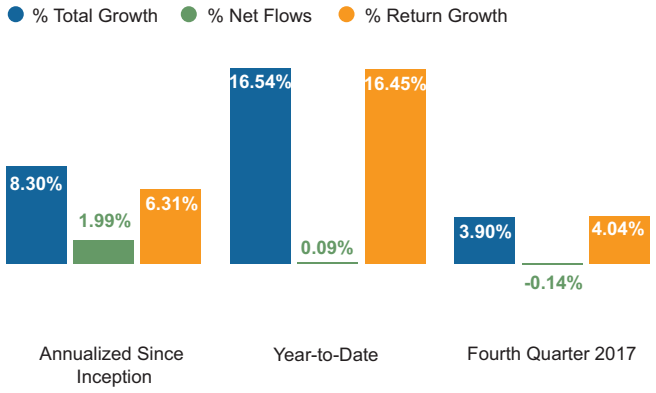
When TDFs are held within a DC plan (92% of the total), they hold 33.6% of assets, more than any other option. U.S. large cap equity funds, offered in all plans, are the second most utilized option (23.6%).

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 (Fourth Quarter 2017)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	61.81%
Non-U.S. Equity	24.86%
Stable Value	-36.21%
Company Stock	-25.94%
Total Turnover**	**0.53%**

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

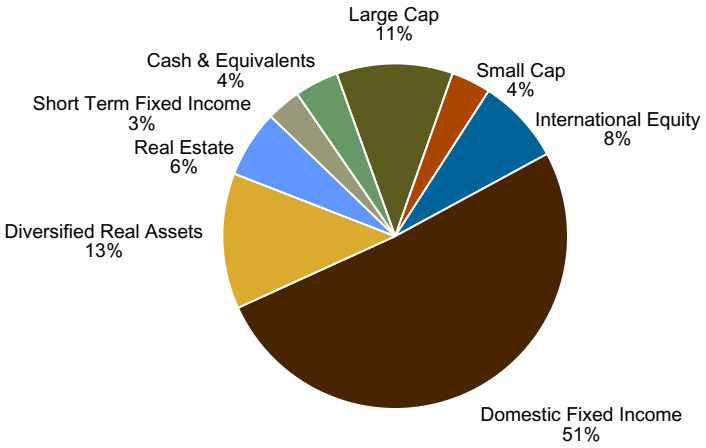
* The Age 45 Fund transitioned from the average 2030 TDF to the 2035 TDF in June 2013.

** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

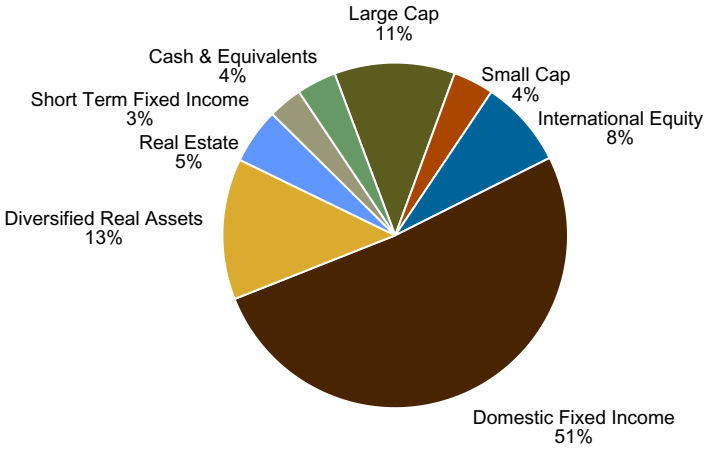
Actual vs Target Asset Allocation
As of March 31, 2018

The first chart below shows the Fund's asset allocation as of March 31, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

Actual Asset Allocation



Target Asset Allocation



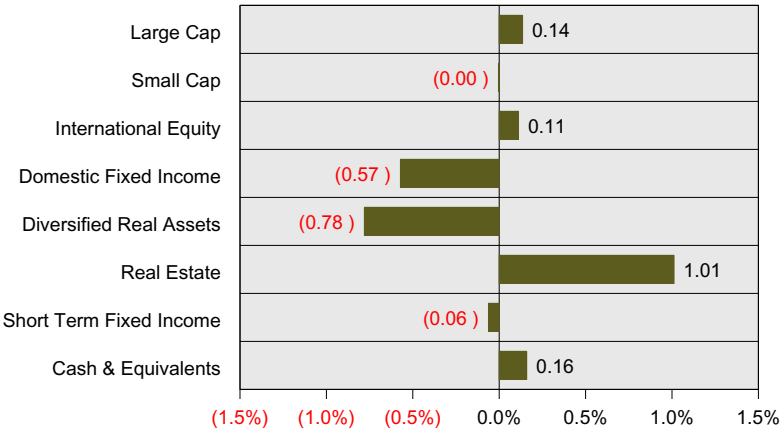
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap	241,262	10.9%	11.3%	(0.4%)	(9,801)
Small Cap	82,619	3.7%	3.8%	(0.1%)	(1,810)
International Equity	176,959	8.0%	8.2%	(0.2%)	(5,228)
Domestic Fixed Income	1,136,259	51.1%	51.4%	(0.3%)	(5,743)
Diversified Real Assets	283,023	12.7%	13.2%	(0.5%)	(10,253)
Real Estate	139,002	6.3%	5.2%	1.1%	23,469
Short Term Fixed Income	70,468	3.2%	3.2%	(0.0%)	(630)
Cash & Equivalents	92,202	4.1%	3.7%	0.4%	9,995
Total	2,221,794	100.0%	100.0%		

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

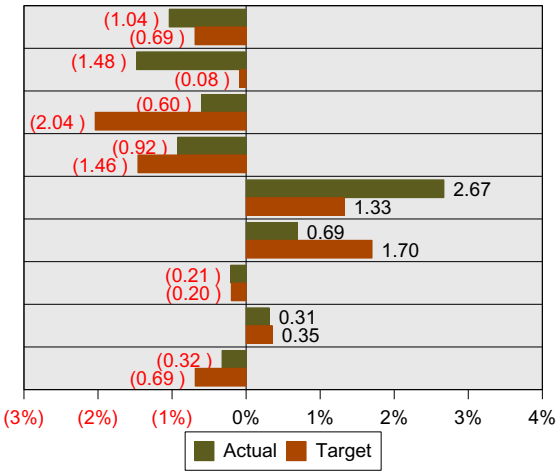
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

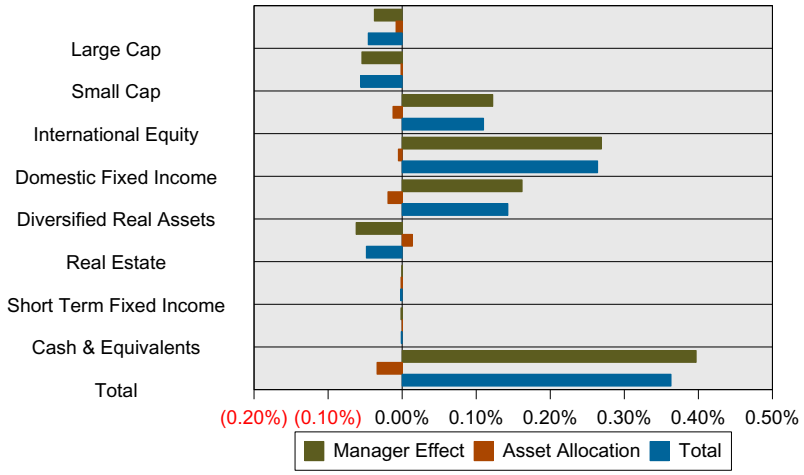
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

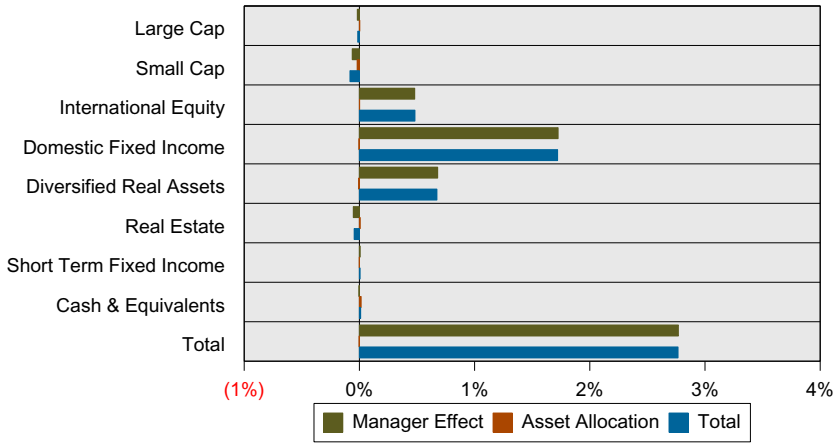
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	(1.04%)	(0.69%)	(0.04%)	(0.01%)	(0.05%)
Small Cap	4%	4%	(1.48%)	(0.08%)	(0.05%)	(0.00%)	(0.06%)
International Equity	8%	8%	(0.60%)	(2.04%)	0.12%	(0.01%)	0.11%
Domestic Fixed Income	51%	51%	(0.92%)	(1.46%)	0.27%	(0.01%)	0.26%
Diversified Real Assets	12%	13%	2.67%	1.33%	0.16%	(0.02%)	0.14%
Real Estate	6%	5%	0.69%	1.70%	(0.06%)	0.01%	(0.05%)
Short Term Fixed Income	3%	3%	(0.21%)	(0.20%)	(0.00%)	(0.00%)	(0.00%)
Cash & Equivalents	4%	4%	0.31%	0.35%	(0.00%)	0.00%	(0.00%)
Total			**(0.32%) =**	**(0.69%)**	**+ 0.40%**	**+ (0.03%)**	**0.36%**

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

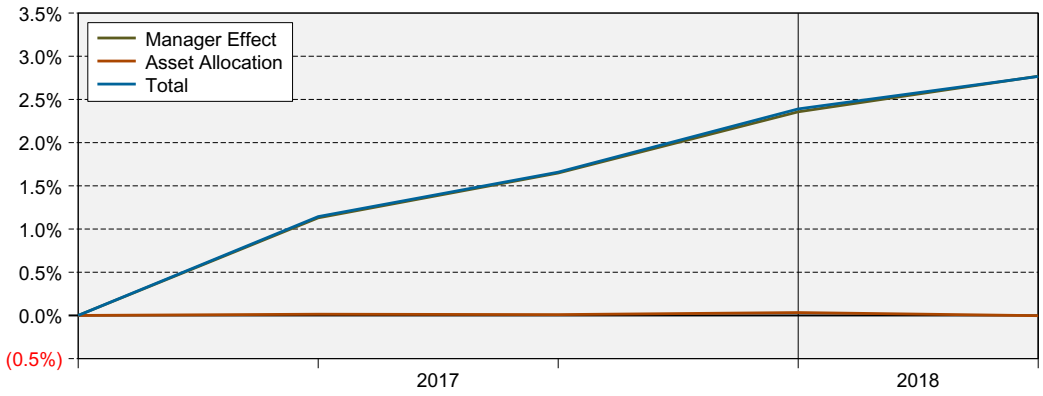
Cumulative Total Fund Relative Attribution - March 31, 2018

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

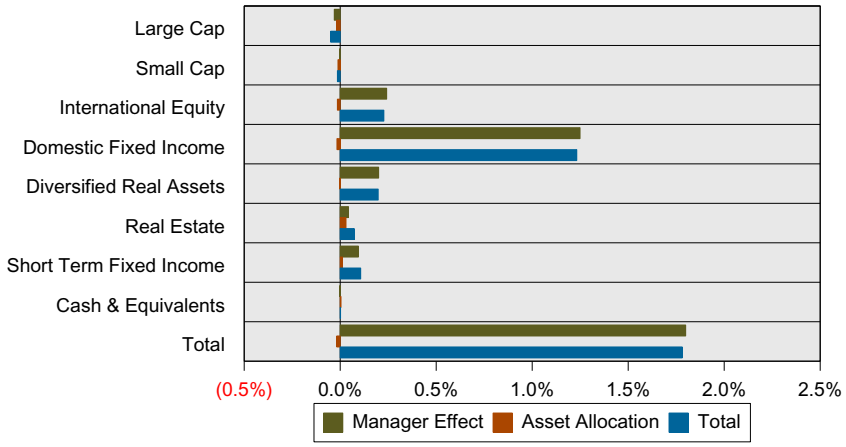
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	13.77%	13.98%	(0.02%)	0.00%	(0.01%)
Small Cap	4%	4%	10.04%	11.79%	(0.06%)	(0.02%)	(0.08%)
International Equity	8%	8%	20.12%	13.92%	0.48%	0.00%	0.48%
Domestic Fixed Income	52%	52%	4.45%	1.20%	1.73%	(0.00%)	1.72%
Diversified Real Assets	12%	13%	11.04%	5.43%	0.68%	(0.01%)	0.67%
Real Estate	6%	5%	6.26%	7.12%	(0.05%)	0.01%	(0.05%)
Short Term Fixed Income	3%	3%	0.50%	0.24%	0.01%	(0.00%)	0.01%
Cash & Equivalents	3%	3%	0.98%	1.11%	(0.00%)	0.02%	0.01%
Total			**7.71%**	**= 4.95%**	**+ 2.77%**	**+ (0.00%)**	**2.77%**

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

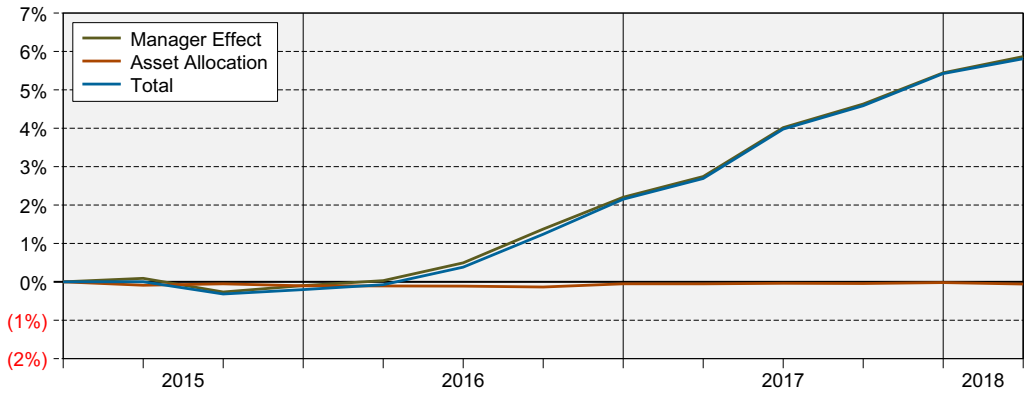
Cumulative Total Fund Relative Attribution - March 31, 2018

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

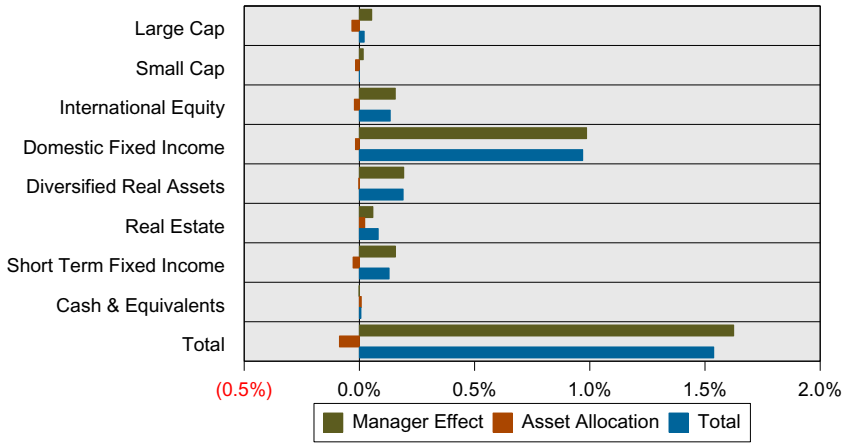
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	10.45%	10.39%	(0.03%)	(0.02%)	(0.05%)
Small Cap	3%	3%	8.51%	8.39%	(0.00%)	(0.01%)	(0.01%)
International Equity	7%	7%	8.51%	5.22%	0.24%	(0.01%)	0.23%
Domestic Fixed Income	46%	47%	3.76%	1.20%	1.25%	(0.02%)	1.23%
Diversified Real Assets	11%	12%	4.30%	2.83%	0.20%	(0.00%)	0.20%
Real Estate	6%	5%	9.57%	8.72%	0.04%	0.03%	0.07%
Short Term Fixed Income	12%	12%	1.06%	0.47%	0.09%	0.01%	0.11%
Cash & Equivalents	3%	3%	0.45%	0.53%	(0.00%)	0.00%	0.00%
Total			**5.15%**	**= 3.37%**	**+ 1.80%**	**+ (0.02%)**	**1.78%**

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

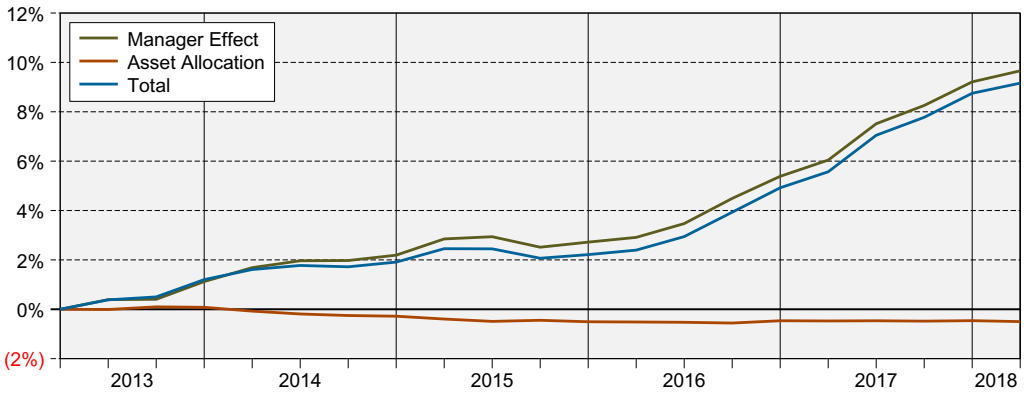
Cumulative Total Fund Relative Attribution - March 31, 2018

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

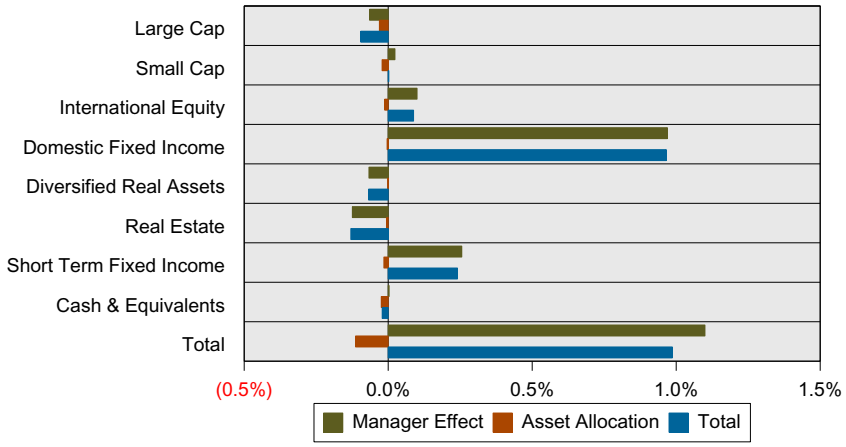
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	13.95%	13.17%	0.05%	(0.03%)	0.02%
Small Cap	4%	4%	12.17%	11.47%	0.02%	(0.02%)	0.00%
International Equity	8%	8%	8.79%	6.29%	0.16%	(0.02%)	0.13%
Domestic Fixed Income	40%	41%	4.10%	1.82%	0.99%	(0.02%)	0.97%
Diversified Real Assets	10%	11%	3.82%	2.10%	0.19%	(0.00%)	0.19%
Real Estate	5%	4%	11.36%	10.00%	0.06%	0.02%	0.08%
Short Term Fixed Income	19%	18%	1.29%	0.57%	0.16%	(0.03%)	0.13%
Cash & Equivalents	3%	3%	0.29%	0.34%	(0.00%)	0.01%	0.01%
Total			**5.24%**	**= 3.70%**	**+ 1.62%**	**+ (0.09%)**	**1.54%**

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

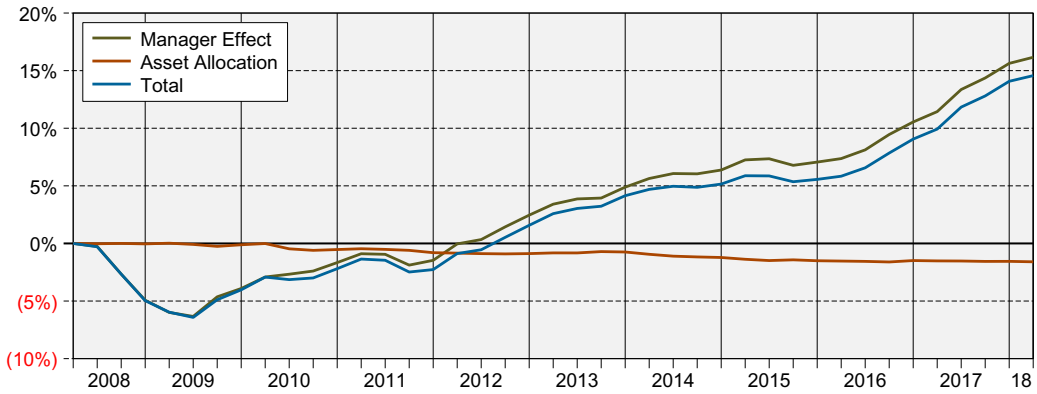
Cumulative Total Fund Relative Attribution - March 31, 2018

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

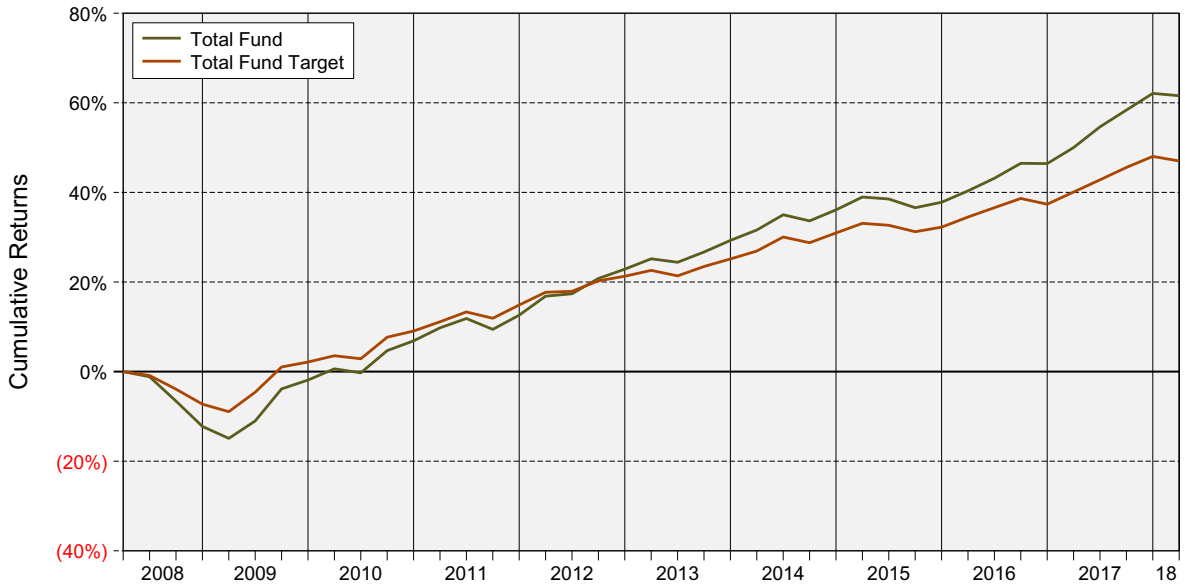
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	10%	10%	9.02%	9.50%	(0.06%)	(0.03%)	(0.10%)
Small Cap	3%	3%	10.59%	9.84%	0.02%	(0.02%)	0.00%
International Equity	7%	7%	4.53%	3.04%	0.10%	(0.01%)	0.09%
Domestic Fixed Income	41%	42%	6.20%	3.63%	0.97%	(0.00%)	0.97%
Diversified Real Assets	14%	14%	3.47%	3.38%	(0.07%)	(0.00%)	(0.07%)
Real Estate	5%	5%	2.82%	6.09%	(0.12%)	(0.01%)	(0.13%)
Short Term Fixed Income	17%	16%	2.35%	0.94%	0.26%	(0.01%)	0.24%
Cash & Equivalents	3%	3%	0.41%	0.34%	0.00%	(0.02%)	(0.02%)
Total			**4.92%**	**= 3.93%**	**+ 1.10%**	**+ (0.11%)**	**0.99%**

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

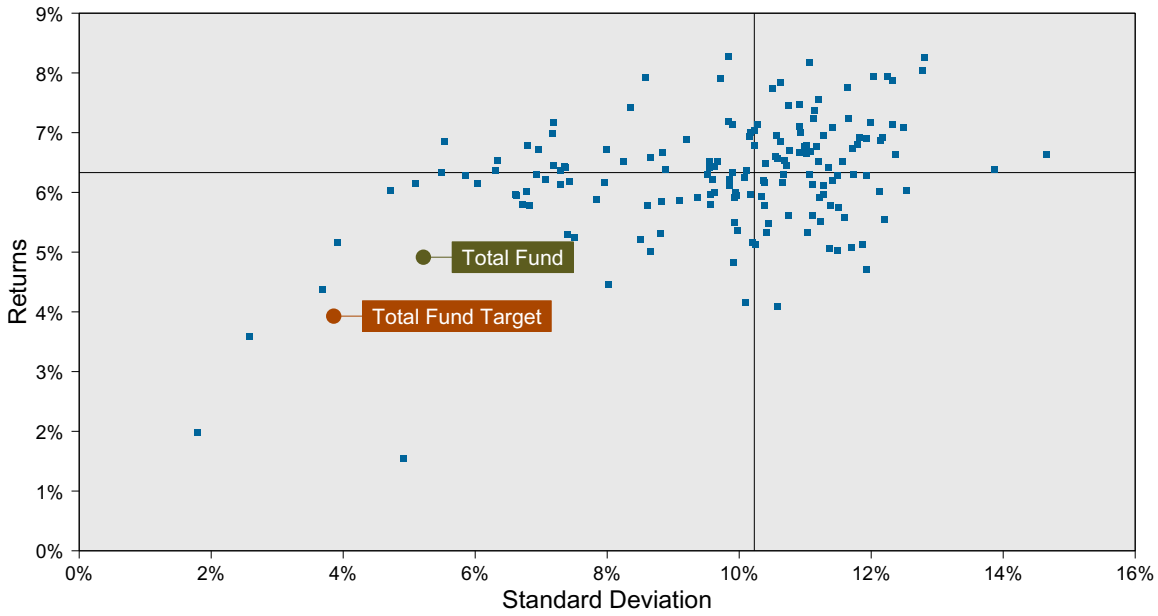
Cumulative Performance Relative to Target

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



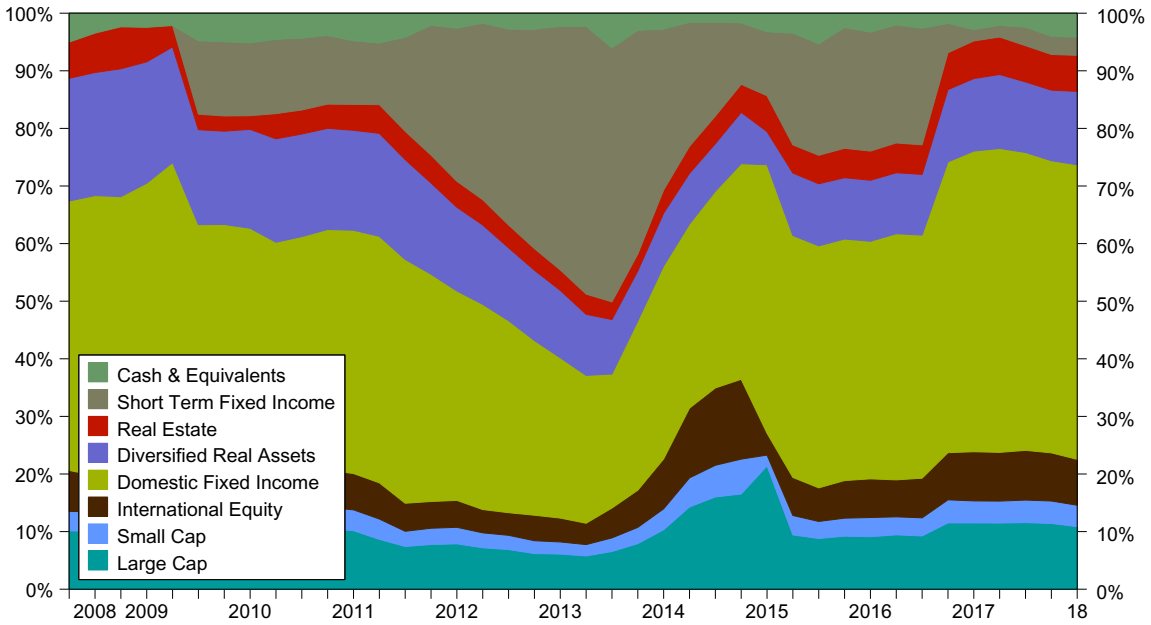
Squares represent membership of the Callan Public Fund Sponsor Database

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

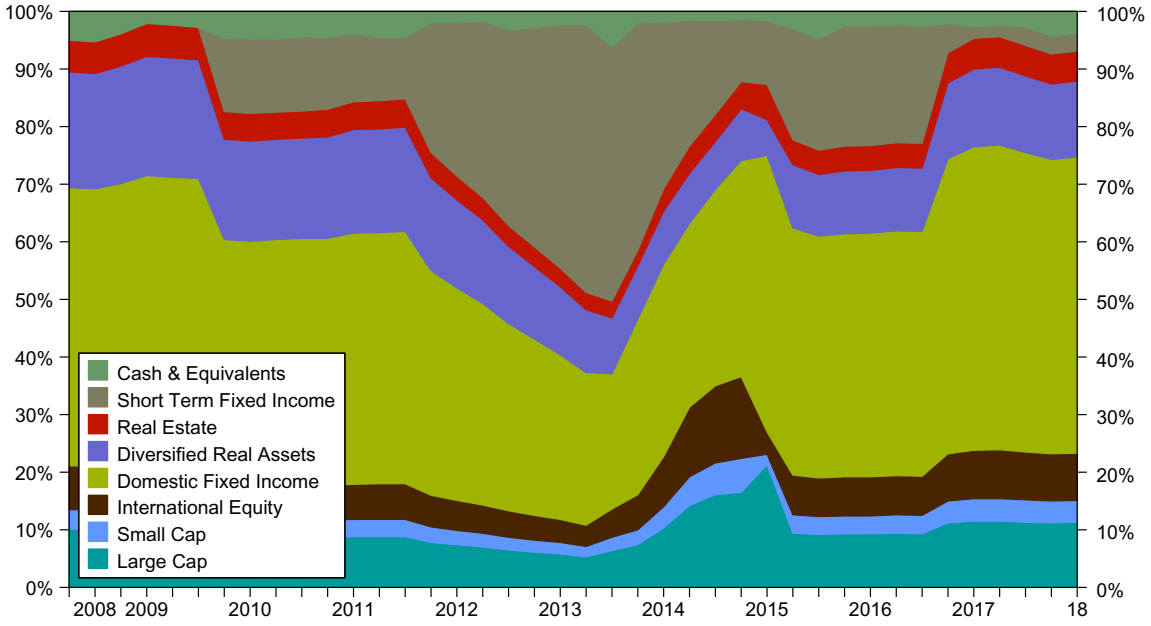
Actual vs Target Historical Asset Allocation

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

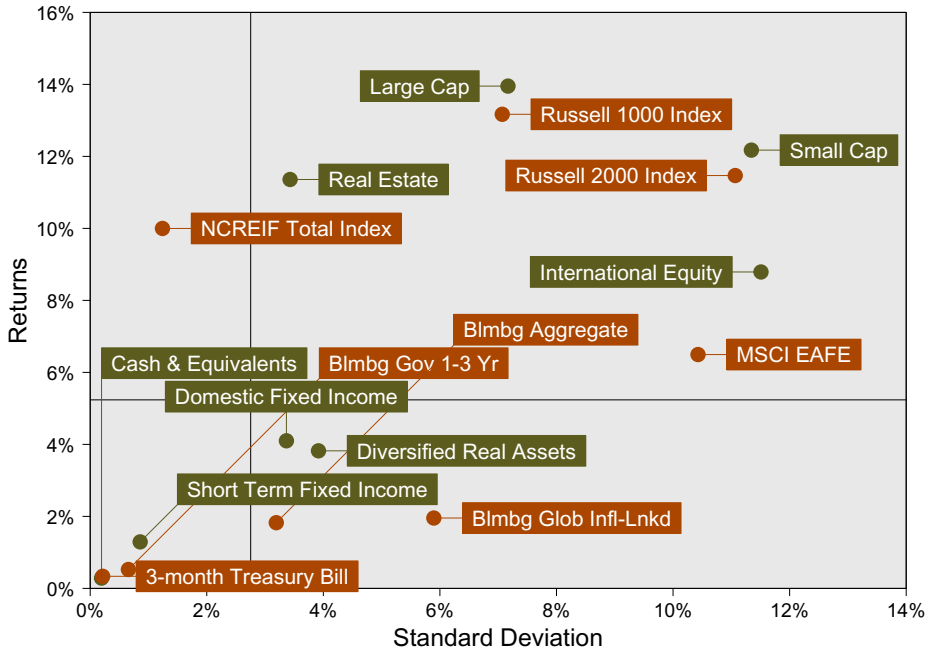


* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

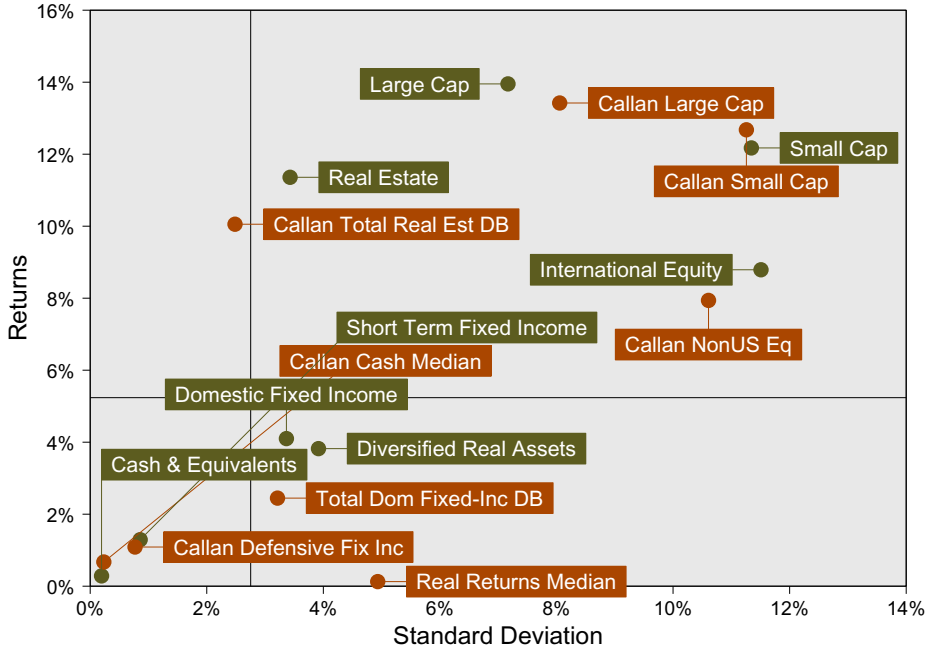
Asset Class Risk and Return

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



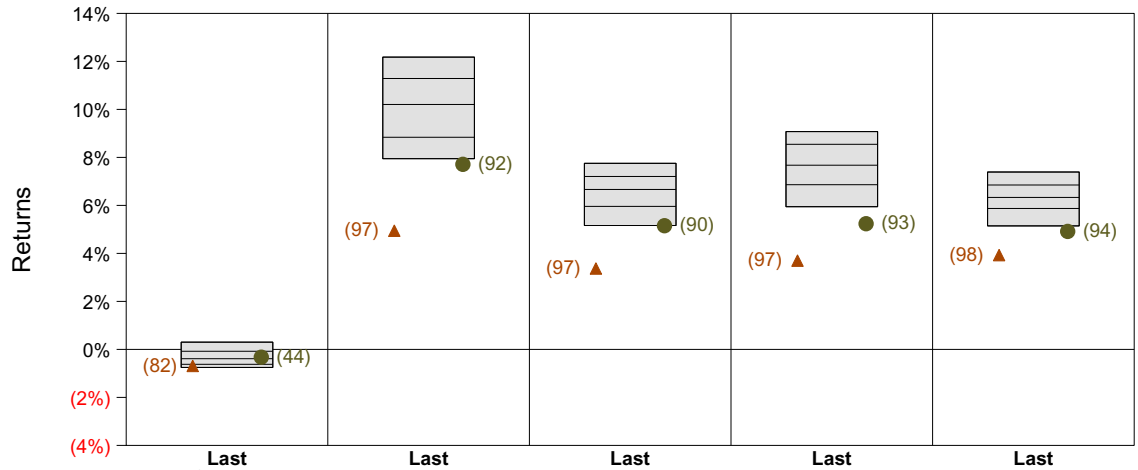
Five Year Annualized Risk vs Return
Asset Classes vs Asset Class Median



Total Fund Ranking

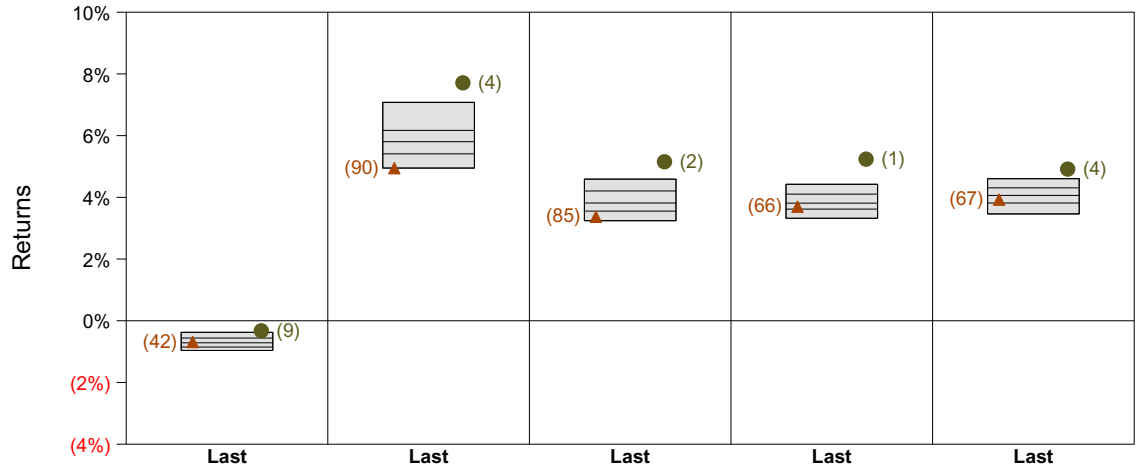
The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended March 31, 2018. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

Callan Public Fund Sponsor Database



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.30	12.18	7.75	9.08	7.39
25th Percentile	(0.08)	11.29	7.21	8.55	6.85
Median	(0.39)	10.21	6.66	7.67	6.33
75th Percentile	(0.62)	8.84	5.96	6.86	5.87
90th Percentile	(0.75)	7.95	5.16	5.95	5.15
Total Fund ●	(0.32)	7.71	5.15	5.24	4.91
Policy Target ▲	(0.69)	4.95	3.37	3.70	3.93

Asset Allocation Adjusted Ranking



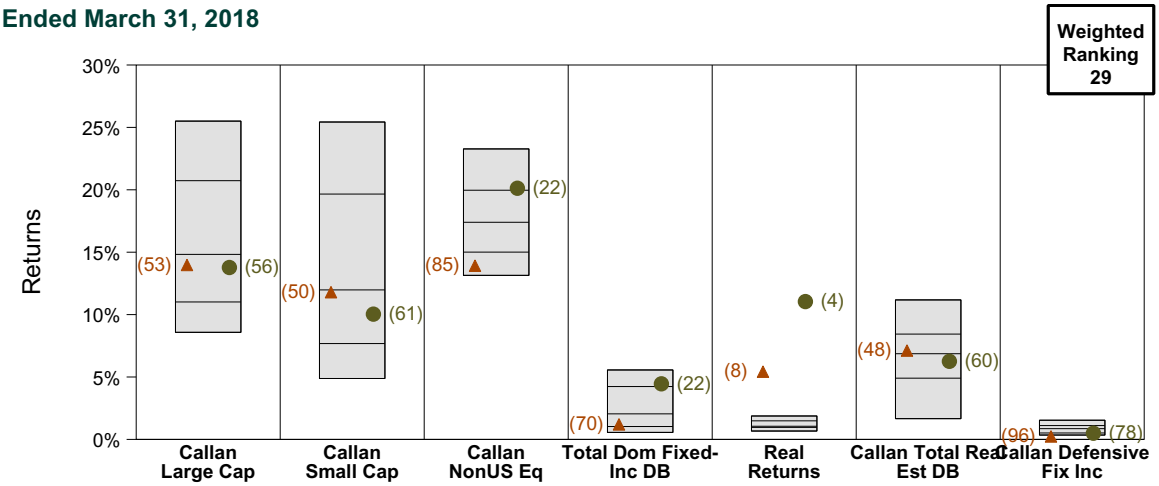
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.37)	7.08	4.59	4.42	4.60
25th Percentile	(0.56)	6.17	4.21	4.10	4.31
Median	(0.71)	5.80	3.82	3.81	4.06
75th Percentile	(0.85)	5.41	3.55	3.62	3.82
90th Percentile	(0.96)	4.95	3.24	3.32	3.46
Total Fund ●	(0.32)	7.71	5.15	5.24	4.91
Policy Target ▲	(0.69)	4.95	3.37	3.70	3.93

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

Asset Class Rankings

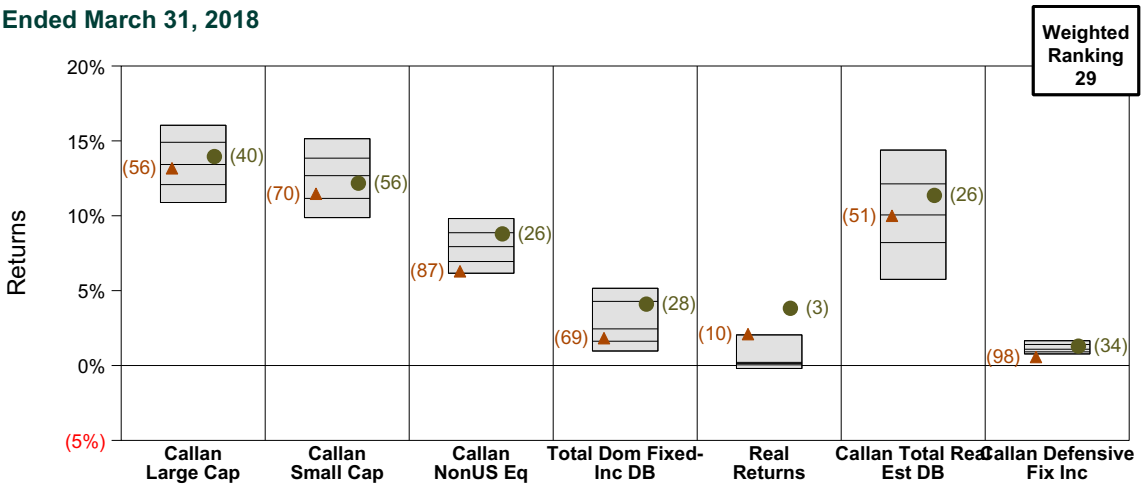
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Defensive Fix Inc
10th Percentile	25.50	25.43	23.28	5.56	1.88	11.18	1.54
25th Percentile	20.73	19.66	19.97	4.23	1.49	8.44	1.11
Median	14.82	11.98	17.40	2.05	1.05	6.87	0.86
75th Percentile	11.01	7.68	15.01	1.03	0.96	4.91	0.51
90th Percentile	8.58	4.88	13.14	0.56	0.67	1.66	0.35
Asset Class Composite ●	13.77	10.04	20.12	4.45	11.04	6.26	0.50
Composite Benchmark ▲	13.98	11.79	13.92	1.20	5.43	7.12	0.24

Total Asset Class Performance
Five Years Ended March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Defensive Fix Inc
10th Percentile	16.04	15.15	9.81	5.16	2.05	14.38	1.66
25th Percentile	14.91	13.85	8.87	4.28	0.21	12.13	1.41
Median	13.42	12.68	7.94	2.45	0.13	10.06	1.09
75th Percentile	12.08	11.16	6.95	1.62	0.05	8.21	0.91
90th Percentile	10.89	9.88	6.16	0.97	(0.20)	5.75	0.77
Asset Class Composite ●	13.95	12.17	8.79	4.10	3.82	11.36	1.29
Composite Benchmark ▲	13.17	11.47	6.29	1.82	2.10	10.00	0.57

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	**$323,880,218**	**14.58%**	**$(17,141,396)**	**$(3,648,855)**	**$344,670,469**	**15.31%**
Large Cap	**$241,261,584**	**10.86%**	**$(13,114,156)**	**$(2,376,727)**	**$256,752,468**	**11.41%**
Parametric Clifton Large Cap	46,674,120	2.10%	(3,000,000)	(657,215)	50,331,335	2.24%
L.A. Capital Large Cap Growth	74,906,014	3.37%	(2,039,681)	475,603	76,470,092	3.40%
L.A. Capital Enhanced	48,583,971	2.19%	(4,016,510)	(716,745)	53,317,227	2.37%
LSV Large Cap Value	71,097,479	3.20%	(4,057,966)	(1,478,370)	76,633,815	3.40%
Small Cap	**$82,618,634**	**3.72%**	**$(4,027,239)**	**$(1,272,128)**	**$87,918,001**	**3.91%**
Parametric Clifton Small Cap	41,262,382	1.86%	(2,000,000)	(442,107)	43,704,489	1.94%
PIMCO RAE	41,356,252	1.86%	(2,027,239)	(830,021)	44,213,512	1.96%
International Equity	**$176,959,280**	**7.96%**	**$(10,147,336)**	**$(1,049,386)**	**$188,156,003**	**8.36%**
DFA Int'l Small Cap Value	17,044,155	0.77%	(1,000,000)	(429,005)	18,473,161	0.82%
LSV Intl Value	69,377,715	3.12%	(4,074,823)	(758,591)	74,211,129	3.30%
Vanguard Intl Explorer Fund	17,466,468	0.79%	(2,000,000)	106,692	19,359,776	0.86%
William Blair	73,070,942	3.29%	(3,072,513)	31,519	76,111,937	3.38%
Domestic Fixed Income	**$1,136,259,244**	**51.14%**	**$5,310,527**	**$(10,606,603)**	**$1,141,555,319**	**50.71%**
Declaration Total Return	86,040,309	3.87%	(25,180)	316,725	85,748,765	3.81%
PIMCO DiSCO II	104,531,563	4.70%	0	2,536,809	101,994,754	4.53%
PIMCO Bravo II Fund	45,802,288	2.06%	(5,357,787)	402,108	50,757,967	2.25%
Prudential	116,515,718	5.24%	(76,003)	(1,737,344)	118,329,065	5.26%
SSgA US Govt Credit Bd Idx	147,367,768	6.63%	5,993,474	(2,299,002)	143,673,295	6.38%
Wells Capital	316,403,609	14.24%	(123,287)	(5,782,523)	322,309,419	14.32%
Western Asset Management	319,597,989	14.38%	4,899,310	(4,043,376)	318,742,054	14.16%
Diversified Real Assets	**$283,023,461**	**12.74%**	**$(219,529)**	**$7,365,095**	**$275,877,895**	**12.26%**
Western Asset Management	121,844,089	5.48%	(37,813)	1,813,558	120,068,344	5.33%
JP Morgan Infrastructure	91,931,394	4.14%	(181,690)	2,610,869	89,502,216	3.98%
Eastern Timber Opportunities	52,371,123	2.36%	(25)	2,940,668	49,430,480	2.20%
Grosvenor Cust. Infrastructure	16,876,855	0.76%	0	0	16,876,855	0.75%
Real Estate	**$139,002,116**	**6.26%**	**$(1,408,062)**	**$963,851**	**$139,446,327**	**6.19%**
Invesco Core Real Estate	66,382,104	2.99%	(463,230)	(0)	66,845,334	2.97%
JP Morgan RE	72,620,012	3.27%	(944,832)	963,851	72,600,994	3.23%
Short Term Fixed Income	**$70,467,645**	**3.17%**	**$0**	**$(146,898)**	**$70,614,543**	**3.14%**
JP Morgan Short Term Bonds	70,467,645	3.17%	0	(146,898)	70,614,543	3.14%
Cash & Equivalents	**$92,201,864**	**4.15%**	**$1,264,232**	**$299,561**	**$90,638,072**	**4.03%**
Northern Trust Cash Account	66,818,306	3.01%	1,264,232	205,706	65,348,368	2.90%
Bank of ND	25,383,558	1.14%	0	93,855	25,289,703	1.12%
Securities Lending Income	**$0**	**0.00%**	**$(36,734)**	**$36,734**	**-**	**-**
Total Fund	**$2,221,793,829**	**100.0%**	**$(22,378,298)**	**$(6,786,500)**	**$2,250,958,627**	**100.0%**

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Equity					
Gross	(1.15%)	12.84%	10.12%	13.49%	9.41%
Net	(1.19%)	12.62%	9.86%	13.23%	9.04%
Large Cap Equity					
Gross	(1.04%)	13.77%	10.45%	13.95%	9.02%
Net	(1.08%)	13.57%	10.24%	13.74%	8.70%
Benchmark(1)	(0.69%)	13.98%	10.39%	13.17%	9.50%
Parametric Clifton Large Cap - Gross	(1.63%)	13.26%	10.75%	13.36%	-
Parametric Clifton Large Cap - Net	(1.63%)	13.25%	10.65%	13.26%	-
S&P 500 Index	(0.76%)	13.99%	10.78%	13.31%	9.50%
L.A. Capital - Gross	0.55%	16.13%	11.11%	14.82%	11.40%
L.A. Capital - Net	0.50%	15.89%	10.89%	14.59%	11.18%
Russell 1000 Growth Index	1.42%	21.25%	12.90%	15.53%	11.34%
L.A. Capital Enhanced - Gross	(1.66%)	11.07%	9.93%	13.37%	10.41%
L.A. Capital Enhanced - Net	(1.69%)	10.93%	9.79%	13.22%	10.24%
Russell 1000 Index	(0.69%)	13.98%	10.39%	13.17%	9.61%
LSV Asset Management - Gross	(2.03%)	13.14%	9.74%	13.71%	9.55%
LSV Asset Management - Net	(2.11%)	12.80%	9.41%	13.39%	9.21%
Russell 1000 Value Index	(2.83%)	6.95%	7.88%	10.78%	7.78%
Small Cap Equity					
Gross	(1.48%)	10.04%	8.51%	12.17%	10.59%
Net	(1.51%)	9.78%	8.12%	11.79%	10.07%
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	9.84%
Parametric Clifton Small Cap - Gross	(1.09%)	11.79%	9.05%	12.35%	-
Parametric Clifton SmallCap - Net	(1.09%)	11.56%	8.61%	11.94%	-
Russell 2000 Index	(0.08%)	11.79%	8.39%	11.47%	9.84%
PIMCO RAE - Gross	(2.01%)	8.11%	7.98%	11.77%	10.53%
PIMCO RAE - Net	(2.07%)	7.84%	7.69%	11.45%	10.13%
Russell 2000	(0.08%)	11.79%	8.39%	11.47%	9.84%
International Equity					
Gross	(0.60%)	20.12%	8.51%	8.79%	4.53%
Net	(0.68%)	19.75%	8.17%	8.42%	4.24%
Benchmark(2)	(2.04%)	13.92%	5.22%	6.29%	3.04%
DFA Intl Small Cap Value - Net	(2.26%)	16.11%	10.30%	10.37%	5.93%
World ex US SC Va	(1.77%)	17.66%	9.72%	8.78%	5.58%
LSV Asset Management - Gross	(0.99%)	17.27%	8.09%	8.51%	3.98%
LSV Asset Management - Net	(1.09%)	16.81%	7.67%	8.08%	3.66%
Benchmark(3)	(1.53%)	14.80%	5.55%	6.50%	3.14%
Vanguard Intl Explorer Fund - Net	0.61%	26.59%	11.56%	12.08%	6.47%
BMI, EPAC, <$2 B	0.25%	22.13%	12.09%	10.42%	5.73%
William Blair - Gross	(0.04%)	22.63%	-	-	-
William Blair - Net	(0.14%)	22.16%	-	-	-
MSCI ACWI ex US IMI	(1.06%)	17.10%	6.75%	6.24%	3.06%

(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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Fixed Income					
Gross	(0.92%)	4.45%	3.76%	4.10%	6.20%
Net	(0.95%)	4.34%	3.64%	3.96%	6.03%
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	3.63%
Declaration Total Return - Net	0.37%	4.60%	3.45%	-	-
Libor-3 Month	0.46%	1.46%	0.90%	0.64%	0.74%
PIMCO DiSCO II - Net	2.49%	13.18%	10.38%	9.28%	-
PIMCO Bravo II Fund - Net	0.79%	6.59%	9.13%	-	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	3.63%
Prudential - Gross	(1.47%)	3.77%	3.07%	3.34%	6.01%
Prudential - Net	(1.53%)	3.50%	2.80%	3.06%	5.85%
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	3.63%
Wells Capital - Gross	(1.79%)	4.56%	3.60%	4.22%	7.20%
Wells Capital - Net	(1.83%)	4.40%	3.42%	4.03%	6.99%
Blmbg Credit Baa	(2.16%)	3.36%	2.54%	3.24%	6.12%
Western Asset - Gross	(1.27%)	2.97%	2.92%	3.36%	5.44%
Western Asset - Net	(1.30%)	2.84%	2.78%	3.22%	5.26%
Blmbg Aggregate	(1.46%)	1.20%	1.20%	1.82%	3.63%
SSgA US Govt Cr Bd Idx - Gross	(1.56%)	1.41%	1.23%	-	-
SSgA US Govt Cr Bd Idx - Net	(1.57%)	1.38%	1.20%	-	-
Blmbg Govt/Credit Bd	(1.58%)	1.38%	1.22%	1.84%	3.65%
Diversified Real Assets					
Gross	2.67%	11.04%	4.30%	3.82%	3.47%
Net	2.59%	10.75%	4.00%	3.53%	3.14%
Weighted Benchmark	1.33%	5.43%	2.83%	2.10%	3.38%
Western TIPS - Gross	1.51%	9.66%	3.30%	2.02%	3.04%
Western TIPS - Net	1.48%	9.52%	3.17%	1.88%	2.86%
Blmbg Glbl Inftn-Linked(1)	1.60%	8.99%	3.45%	1.95%	3.31%
JP Morgan Infrastructure - Gross	2.92%	15.64%	5.60%	5.42%	-
JP Morgan Infrastructure - Net	2.71%	14.87%	4.76%	4.51%	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.53%
Eastern Timber Opportunities - Net	5.95%	7.00%	3.53%	5.06%	-
NCREIF Timberland Index	0.92%	3.79%	3.44%	6.09%	4.06%
Grosvenor Cust. Infrastructure - Net	0.00%	11.05%	6.85%	9.39%	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.53%

(1) Blmbg US TIPS through 12/31/2009 and Blmbg Global Inflation-Linked thereafter.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 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 March 31, 2018

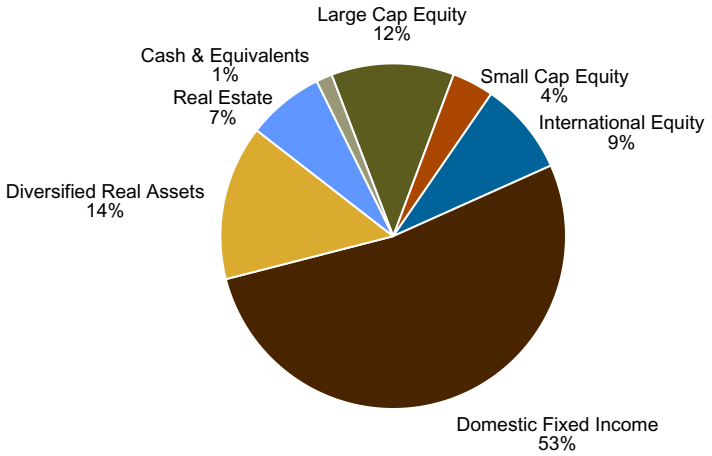
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Real Estate					
Gross	0.69%	6.26%	9.57%	11.36%	2.82%
Net	0.58%	5.71%	8.93%	10.60%	1.84%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	6.09%
Invesco Core Real Estate - Gross	0.00%	5.70%	9.56%	11.05%	-
Invesco Core Real Estate - Net	0.00%	5.43%	9.22%	10.67%	-
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	6.09%
JP Morgan - Gross	1.33%	6.74%	9.57%	11.60%	3.14%
JP Morgan - Net	1.10%	5.95%	8.68%	10.55%	1.99%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	6.09%
Short Term Fixed Income					
Gross	(0.21%)	0.50%	1.06%	1.29%	-
Net	(0.21%)	0.36%	0.87%	1.11%	-
Blended Benchmark(1)	(0.20%)	0.24%	0.47%	0.57%	-
JP Morgan Short Term Bds - Gross	(0.21%)	0.50%	0.78%	0.88%	-
JP Morgan Short Term Bds - Net	(0.21%)	0.36%	0.62%	0.74%	-
Blmbg Gov/Credit 1-3 Y	(0.20%)	0.24%	0.66%	0.76%	1.56%
Cash & Equivalents - Net	**0.31%**	**0.98%**	**0.45%**	**0.29%**	**0.41%**
Cash Account- Net	0.29%	0.86%	0.38%	0.24%	0.39%
Bank of ND - Net	0.37%	1.19%	-	-	-
90 Day Treasury Bills	0.35%	1.11%	0.53%	0.34%	0.34%
Total Fund					
Gross	(0.32%)	7.71%	5.15%	5.24%	4.91%
Net	(0.37%)	7.52%	4.95%	5.03%	4.67%
Target*	(0.69%)	4.95%	3.37%	3.70%	3.93%

* Current Quarter Target = 51.4% Blmbg Aggregate, 13.2% NDSIB INS DRA Weighted Benchmark, 11.3% Russell 1000 Index, 8.2% MSCI World ex US, 5.2% NCREIF Total Index, 3.8% Russell 2000 Index, 3.7% 3-month Treasury Bill and 3.2% Blmbg Gov/Cred 1-3 Yr.
(1) Blmbg Gov 1-3 Yr through March 31, 2017 and Blmbg Gov/Credit 1-3 Yr thereafter.

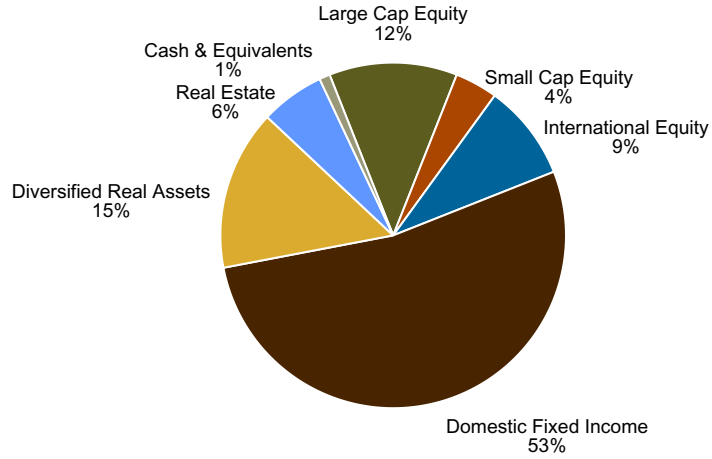
Actual vs Target Asset Allocation
As of March 31, 2018

The first chart below shows the Fund's asset allocation as of March 31, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

Actual Asset Allocation



Target Asset Allocation



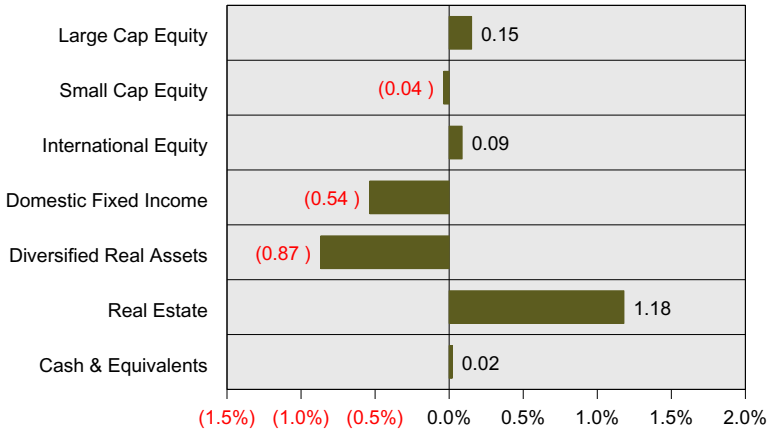
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap Equity	222,135	11.5%	12.0%	(0.5%)	(8,901)
Small Cap Equity	74,395	3.9%	4.0%	(0.1%)	(2,617)
International Equity	166,883	8.7%	9.0%	(0.3%)	(6,394)
Domestic Fixed Income	1,015,558	52.7%	53.0%	(0.3%)	(4,850)
Diversified Real Assets	278,602	14.5%	15.0%	(0.5%)	(10,193)
Real Estate	138,935	7.2%	6.0%	1.2%	23,417
Cash & Equivalents	28,790	1.5%	1.0%	0.5%	9,537
Total	1,925,297	100.0%	100.0%		

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

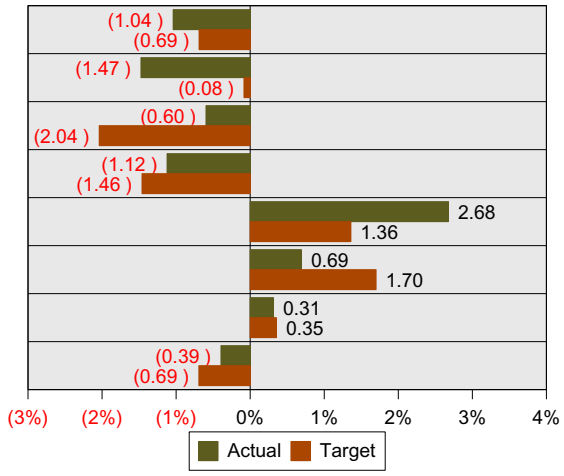
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

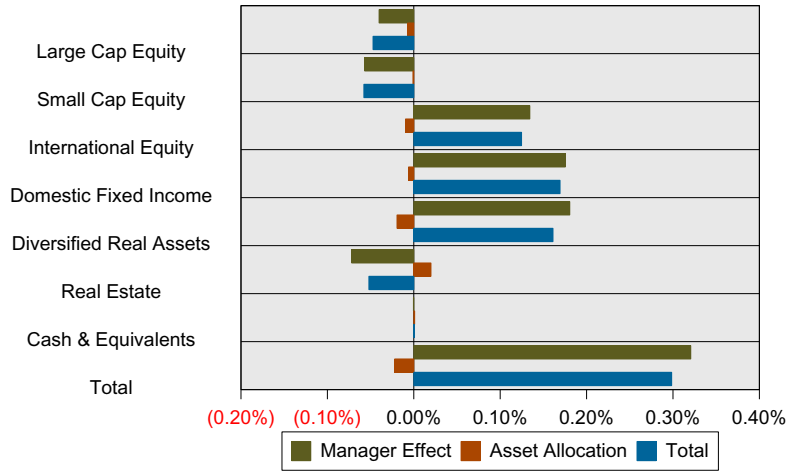
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

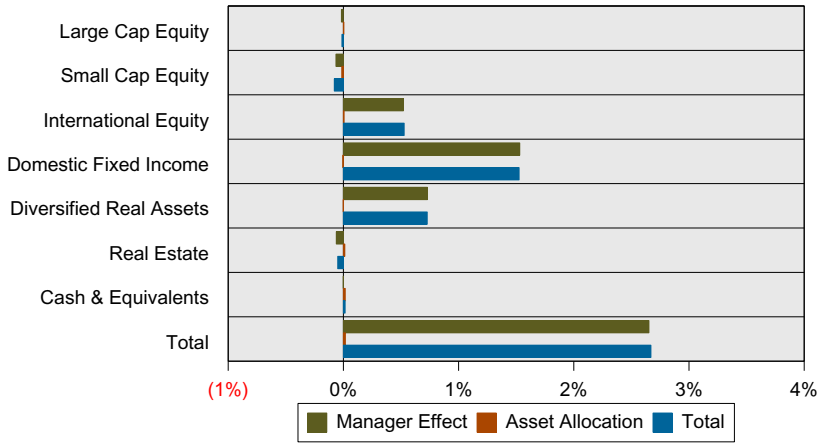
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	12%	(1.04%)	(0.69%)	(0.04%)	(0.01%)	(0.05%)
Small Cap Equity	4%	4%	(1.47%)	(0.08%)	(0.06%)	(0.00%)	(0.06%)
International Equity	9%	9%	(0.60%)	(2.04%)	0.13%	(0.01%)	0.12%
Domestic Fixed Income	52%	53%	(1.12%)	(1.46%)	0.18%	(0.01%)	0.17%
Diversified Real Assets	14%	15%	2.68%	1.36%	0.18%	(0.02%)	0.16%
Real Estate	7%	6%	0.69%	1.70%	(0.07%)	0.02%	(0.05%)
Cash & Equivalents	1%	1%	0.31%	0.35%	(0.00%)	0.00%	0.00%
Total			**(0.39%)**	**= (0.69%)**	**+ 0.32%**	**+ (0.02%)**	**0.30%**

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

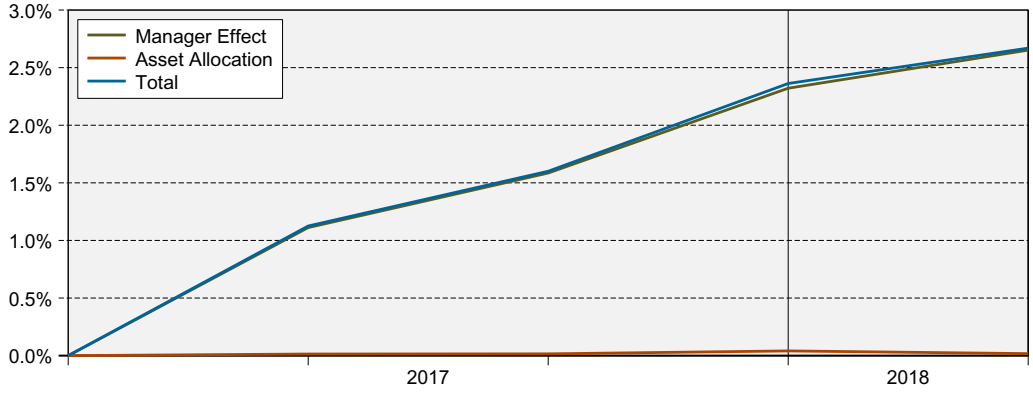
Cumulative Total Fund Relative Attribution - March 31, 2018

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

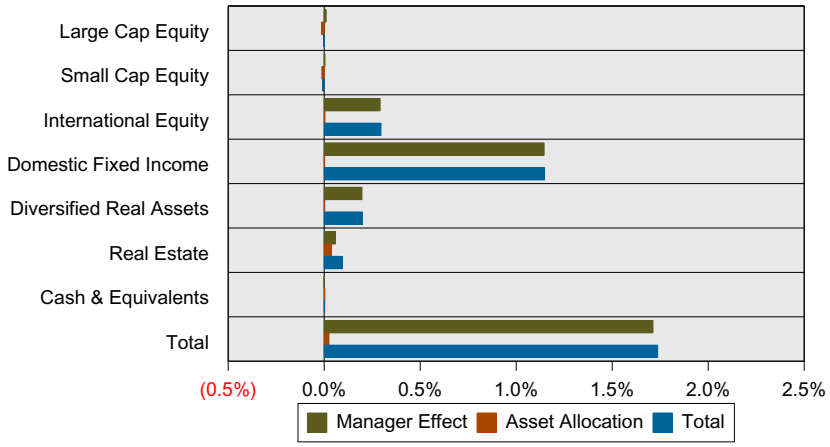
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	12%	13.79%	13.98%	(0.02%)	0.00%	(0.01%)
Small Cap Equity	4%	4%	10.04%	11.79%	(0.06%)	(0.01%)	(0.08%)
International Equity	9%	9%	20.15%	13.92%	0.52%	0.01%	0.53%
Domestic Fixed Income	53%	53%	4.02%	1.20%	1.53%	(0.01%)	1.53%
Diversified Real Assets	14%	15%	11.05%	5.70%	0.73%	(0.00%)	0.73%
Real Estate	7%	6%	6.26%	7.12%	(0.06%)	0.01%	(0.05%)
Cash & Equivalents	1%	1%	0.99%	1.11%	(0.00%)	0.02%	0.02%
Total			**7.97%**	**= 5.30%**	**+ 2.65%**	**+ 0.02%**	**2.67%**

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

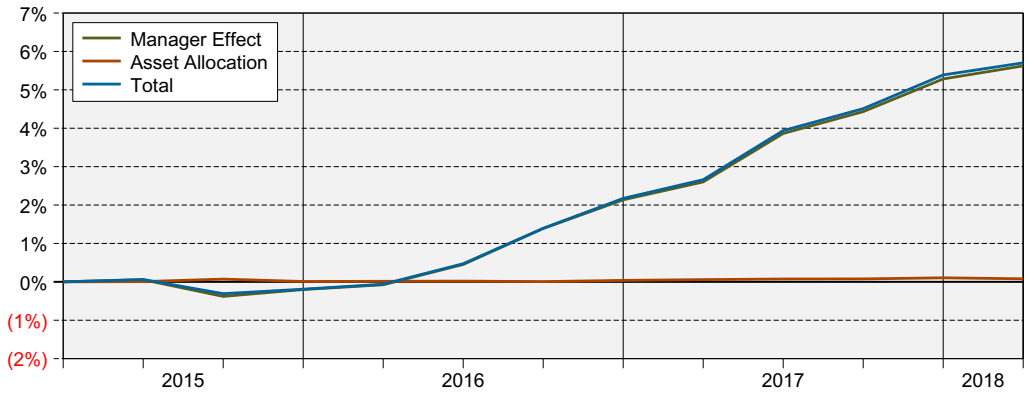
Cumulative Total Fund Relative Attribution - March 31, 2018

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

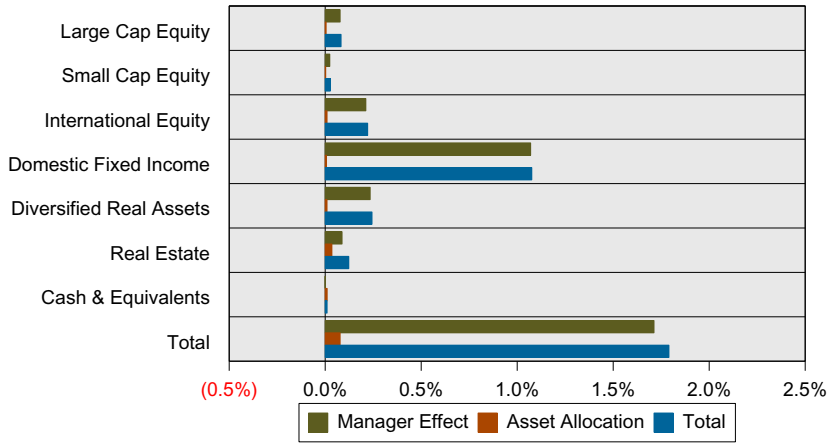
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	12%	10.47%	10.39%	0.01%	(0.01%)	(0.00%)
Small Cap Equity	4%	4%	8.51%	8.39%	0.00%	(0.01%)	(0.01%)
International Equity	9%	9%	8.52%	5.22%	0.29%	0.00%	0.30%
Domestic Fixed Income	53%	53%	3.36%	1.20%	1.15%	0.00%	1.15%
Diversified Real Assets	14%	15%	4.33%	2.96%	0.20%	0.00%	0.20%
Real Estate	7%	6%	9.58%	8.72%	0.06%	0.04%	0.10%
Cash & Equivalents	1%	1%	0.46%	0.53%	(0.00%)	0.00%	0.00%
Total			**5.49%**	**= 3.75%**	**+ 1.71%**	**+ 0.02%**	**1.74%**

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

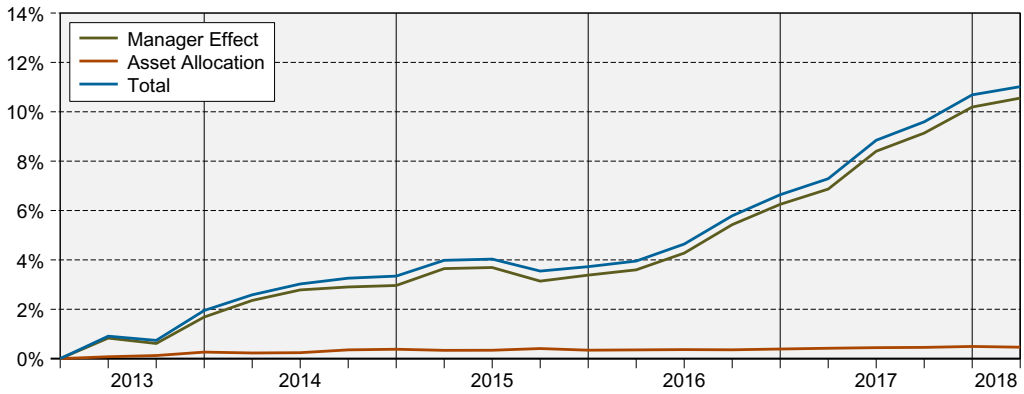
Cumulative Total Fund Relative Attribution - March 31, 2018

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

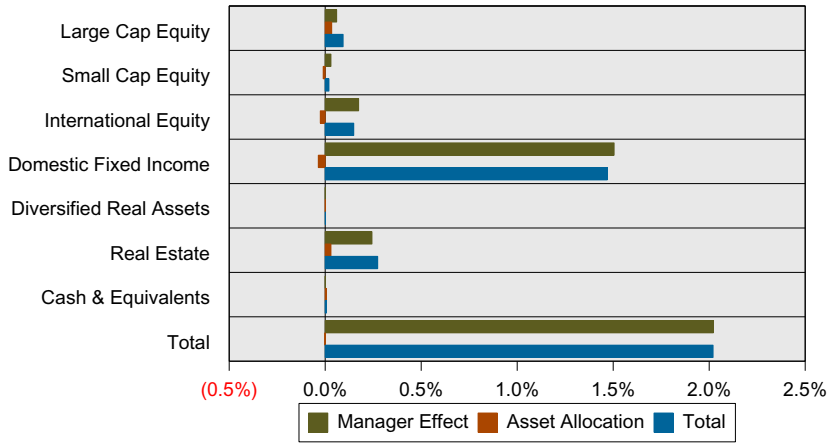
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	12%	11%	13.93%	13.17%	0.08%	0.00%	0.08%
Small Cap Equity	4%	4%	12.18%	11.47%	0.02%	0.00%	0.03%
International Equity	8%	9%	8.74%	6.29%	0.21%	0.01%	0.22%
Domestic Fixed Income	52%	52%	3.86%	1.82%	1.07%	0.01%	1.08%
Diversified Real Assets	16%	17%	4.01%	2.56%	0.23%	0.01%	0.24%
Real Estate	7%	6%	11.35%	10.00%	0.09%	0.03%	0.12%
Cash & Equivalents	1%	1%	0.29%	0.34%	(0.00%)	0.01%	0.01%
Total			**6.22%**	**= 4.43%**	**+ 1.71%**	**+ 0.08%**	**1.79%**

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

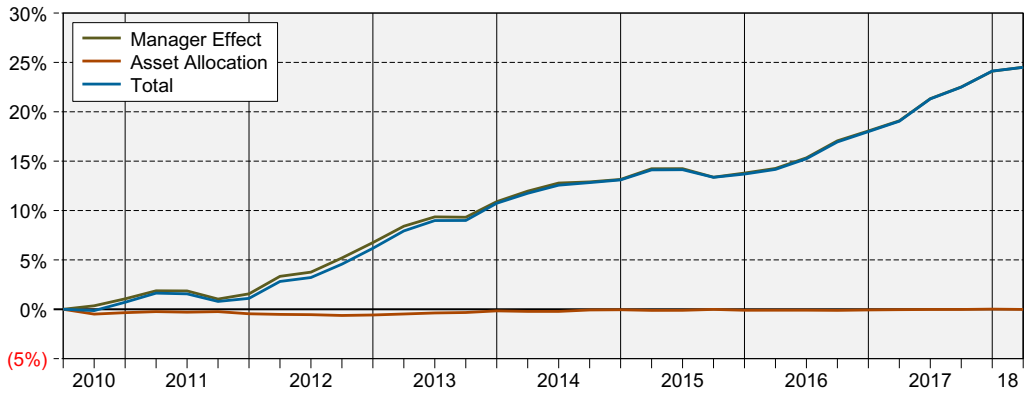
Cumulative Total Fund Relative Attribution - March 31, 2018

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 and Three-Quarter Year Annualized Relative Attribution Effects



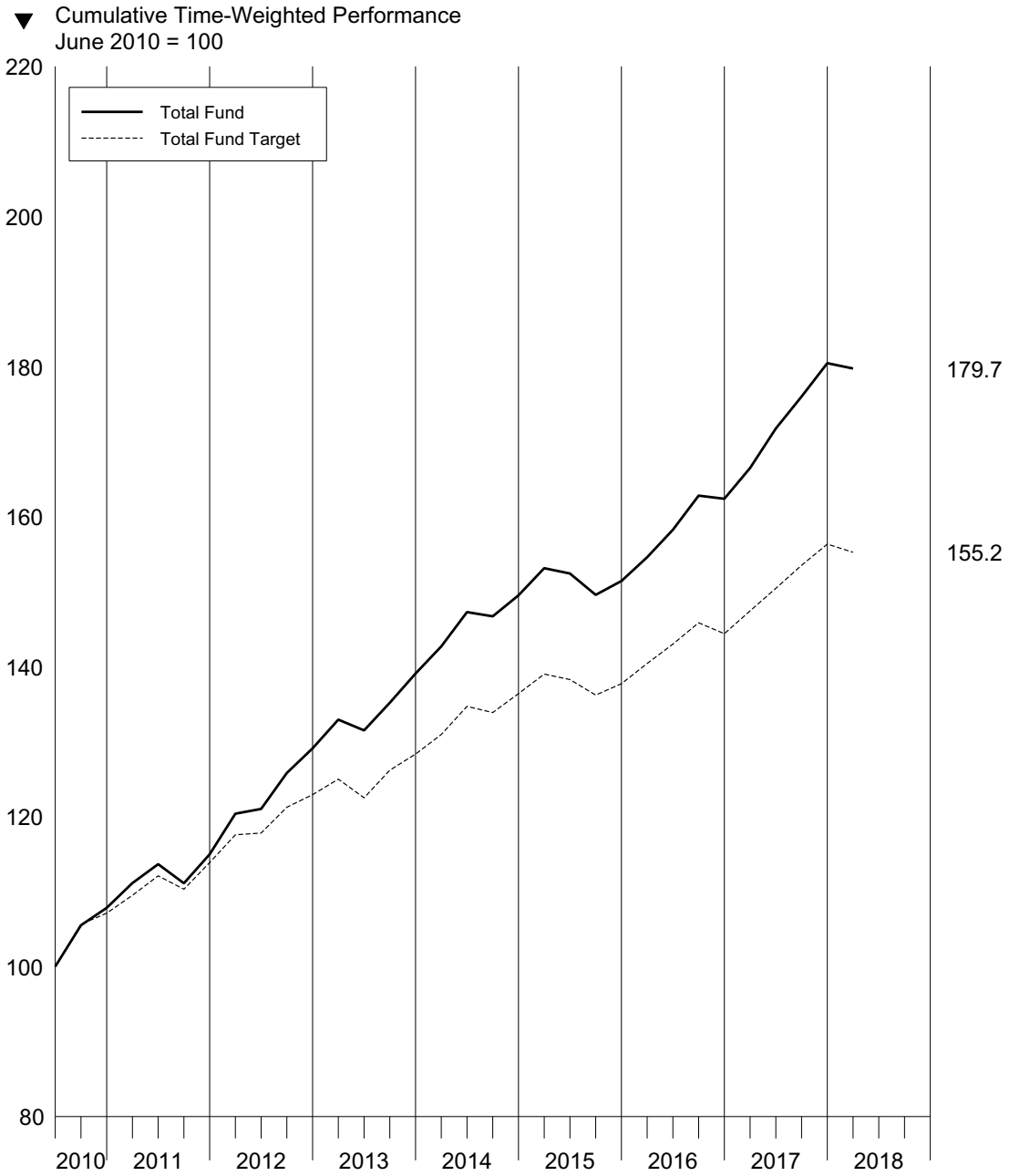
Cumulative Relative Attribution Effects



Seven and Three-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 Equity	11%	11%	15.90%	15.32%	0.06%	0.03%	0.09%
Small Cap Equity	4%	4%	15.07%	14.16%	0.03%	(0.01%)	0.02%
International Equity	8%	8%	9.46%	7.33%	0.17%	(0.03%)	0.15%
Domestic Fixed Income	52%	52%	5.70%	2.84%	1.50%	(0.04%)	1.47%
Diversified Real Assets	18%	19%	4.88%	4.72%	0.00%	0.00%	0.00%
Real Estate	7%	6%	15.24%	11.14%	0.24%	0.03%	0.27%
Cash & Equivalents	1%	1%	0.29%	0.26%	0.00%	0.01%	0.01%
Total			**7.86%**	**= 5.84%**	**+ 2.02%**	**+ (0.00%)**	**2.02%**

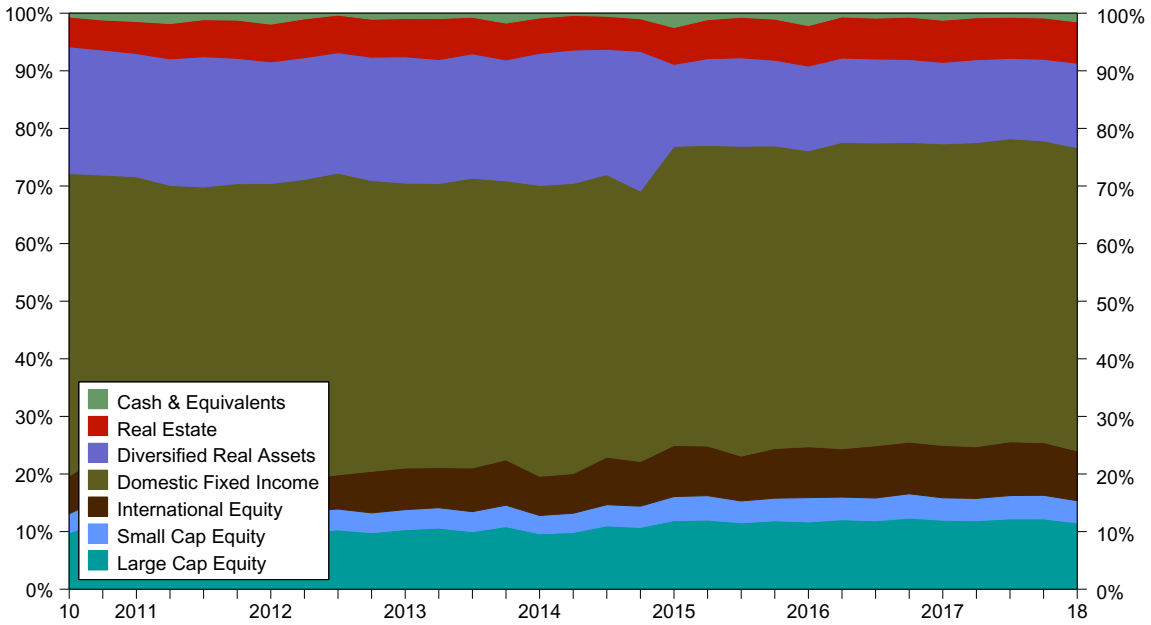
* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.


Cumulative Time-Weighted Performance
June 2010 = 100
Total Fund
Total Fund Target
220
200
180
160
140
120
100
80
2010
2011
2012
2013
2014
2015
2016
2017
2018
179.7
155.2

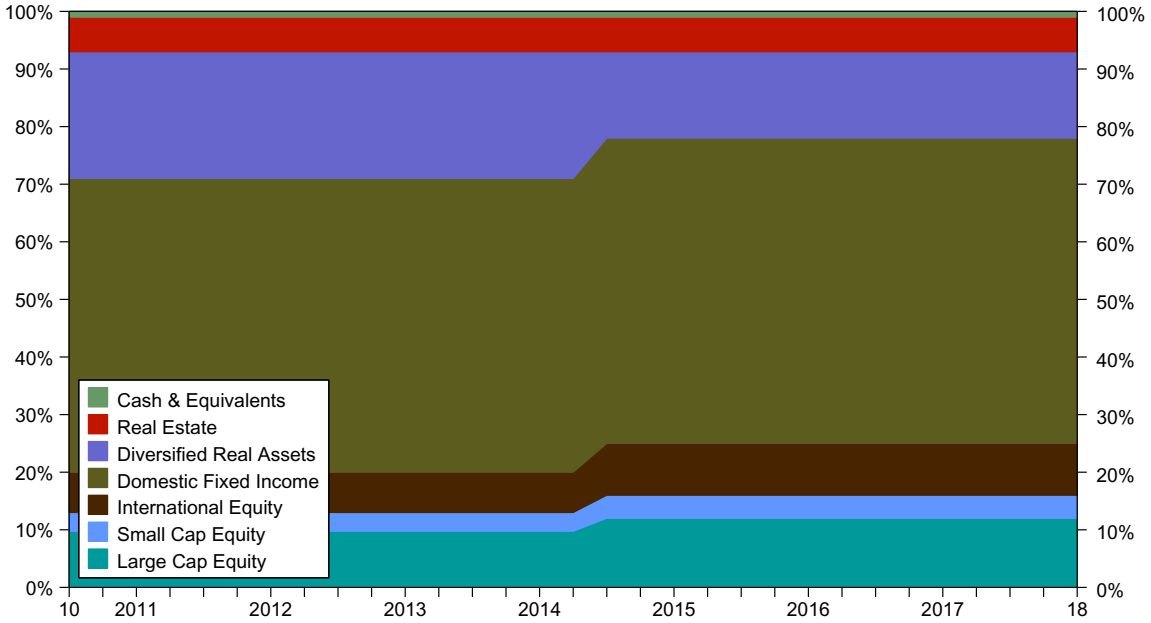
Actual vs Target Historical Asset Allocation

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

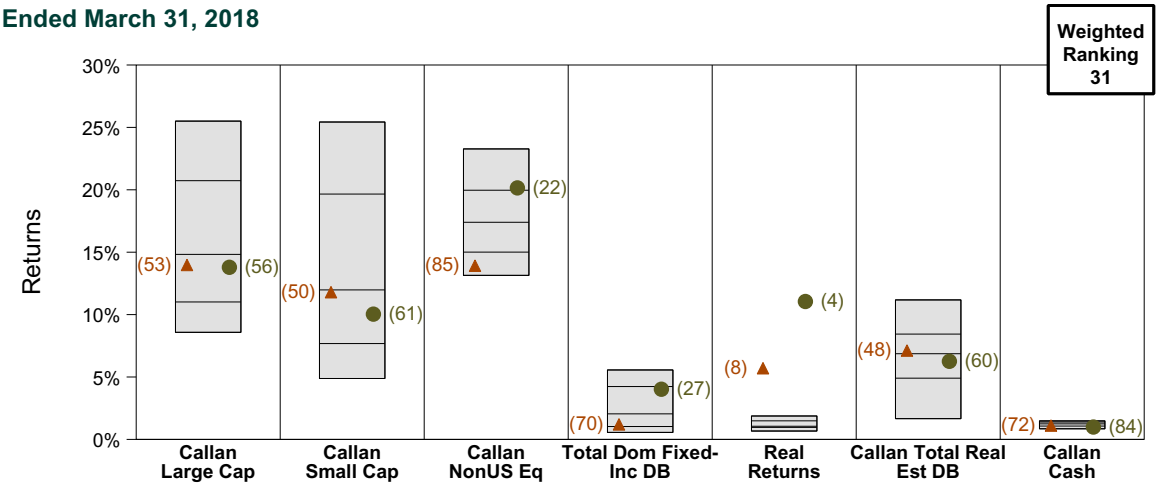


* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

Asset Class Rankings

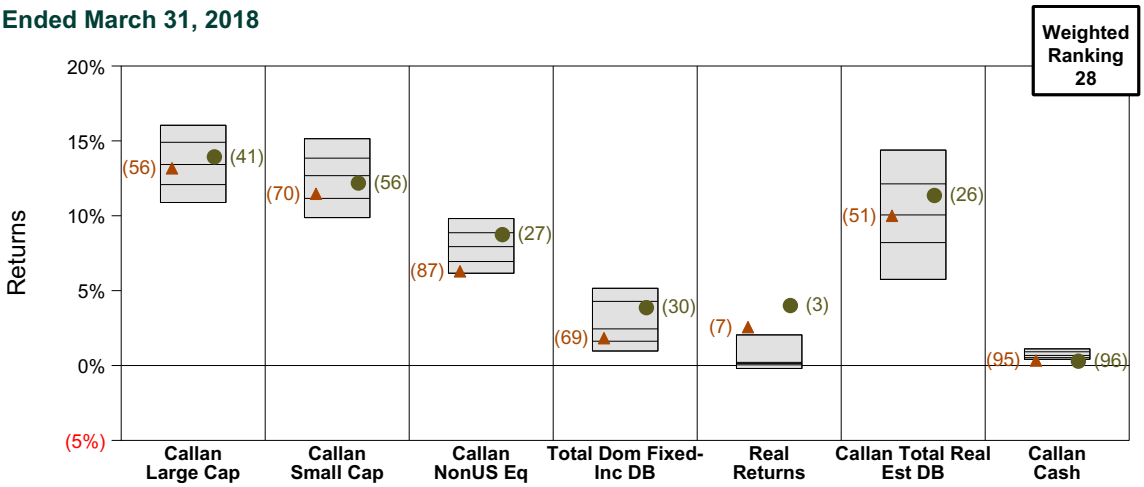
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Cash
10th Percentile	25.50	25.43	23.28	5.56	1.88	11.18	1.48
25th Percentile	20.73	19.66	19.97	4.23	1.49	8.44	1.39
Median	14.82	11.98	17.40	2.05	1.05	6.87	1.25
75th Percentile	11.01	7.68	15.01	1.03	0.96	4.91	1.07
90th Percentile	8.58	4.88	13.14	0.56	0.67	1.66	0.85
Asset Class Composite ●	13.79	10.04	20.15	4.02	11.05	6.26	0.99
Composite Benchmark ▲	13.98	11.79	13.92	1.20	5.70	7.12	1.11

Total Asset Class Performance
Five Years Ended March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Cash
10th Percentile	16.04	15.15	9.81	5.16	2.05	14.38	1.11
25th Percentile	14.91	13.85	8.87	4.28	0.21	12.13	0.92
Median	13.42	12.68	7.94	2.45	0.13	10.06	0.67
75th Percentile	12.08	11.16	6.95	1.62	0.05	8.21	0.53
90th Percentile	10.89	9.88	6.16	0.97	(0.20)	5.75	0.41
Asset Class Composite ●	13.93	12.18	8.74	3.86	4.01	11.35	0.29
Composite Benchmark ▲	13.17	11.47	6.29	1.82	2.56	10.00	0.34

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% 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 March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Large Cap Equity	$222,134,808	11.54%	$(13,198,740)	$(2,193,505)	$237,527,053	12.23%
Small Cap Equity	$74,395,106	3.86%	$(4,184,961)	$(1,150,795)	$79,730,862	4.11%
International Equity	$166,882,996	8.67%	$(10,160,201)	$(992,823)	$178,036,020	9.17%
Domestic Fixed Income	$1,015,557,752	52.75%	$7,392,204	$(11,508,716)	$1,019,674,265	52.51%
Diversified Real Assets	$278,601,720	14.47%	$(84,766)	$7,266,785	$271,419,701	13.98%
Real Estate	$138,935,145	7.22%	$(1,407,383)	$963,386	$139,379,143	7.18%
Cash & Equivalents	$28,789,828	1.50%	$12,570,601	$64,039	$16,155,187	0.83%
Securities Lending Income	$0	0.00%	$(33,192)	$33,192	-	-
Total Fund	$1,925,297,355	100.0%	$(9,106,439)	$(7,518,437)	$1,941,922,231	100.0%

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 March 31, 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 March 31, 2018

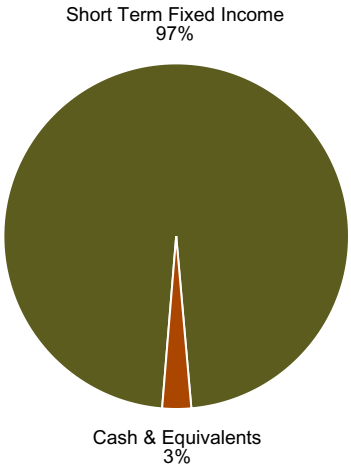
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Large Cap Equity					
Gross	(1.04%)	13.79%	10.47%	13.93%	15.90%
Net	(1.08%)	13.59%	10.26%	13.72%	15.64%
Benchmark(1)	(0.69%)	13.98%	10.39%	13.17%	15.32%
Small Cap Equity					
Gross	(1.47%)	10.04%	8.51%	12.18%	15.07%
Net	(1.51%)	9.78%	8.11%	11.80%	14.51%
Russell 2000	(0.08%)	11.79%	8.39%	11.47%	14.16%
International Equity					
Gross	(0.60%)	20.15%	8.52%	8.74%	9.46%
Net	(0.67%)	19.78%	8.18%	8.39%	9.07%
Benchmark(2)	(2.04%)	13.92%	5.22%	6.29%	7.33%
Domestic Fixed Income					
Gross	(1.12%)	4.02%	3.36%	3.86%	5.70%
Net	(1.15%)	3.90%	3.23%	3.72%	5.54%
Blmbg Aggregate	(1.46%)	1.20%	1.20%	1.82%	2.84%
Diversified Real Assets					
Gross	2.68%	11.05%	4.33%	4.01%	4.88%
Net	2.60%	10.75%	4.03%	3.70%	4.54%
Weighted Benchmark	1.36%	5.70%	2.96%	2.56%	4.72%
Real Estate					
Gross	0.69%	6.26%	9.58%	11.35%	15.24%
Net	0.58%	5.71%	8.94%	10.60%	14.29%
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	11.14%
Cash & Equivalents - Net	**0.31%**	**0.99%**	**0.46%**	**0.29%**	**0.29%**
90 Day Treasury Bills	0.35%	1.11%	0.53%	0.34%	0.26%
Total Fund					
Gross	(0.39%)	7.97%	5.49%	6.22%	7.86%
Net	(0.44%)	7.76%	5.26%	5.98%	7.58%
Target*	(0.69%)	5.30%	3.75%	4.43%	5.84%

* Current Quarter Target = 53.0% Blmbg Aggregate, 15.0% NDSIB WSI DRA Weighted Benchmark, 12.0% Russell 1000 Index, 9.0% MSCI World ex US, 6.0% NCREIF Total Index, 4.0% 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.

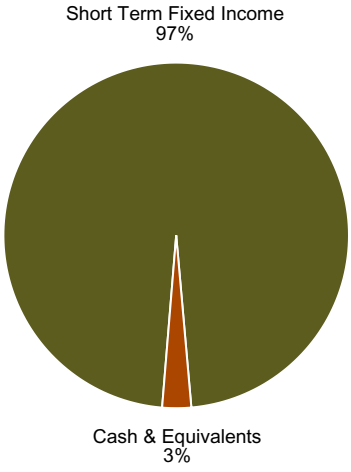
Actual vs Target Asset Allocation
As of March 31, 2018

The first chart below shows the Fund's asset allocation as of March 31, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

Actual Asset Allocation



Target Asset Allocation



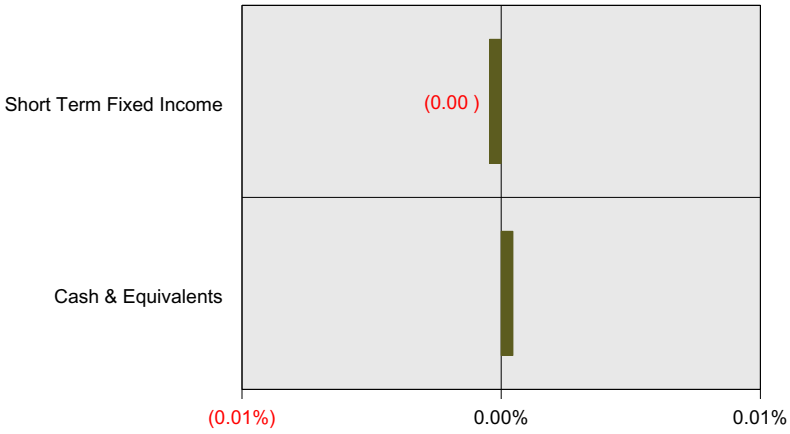
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Short Term Fixed Income	37,278	97.3%	97.3%	0.0%	0
Cash & Equivalents	1,046	2.7%	2.7%	(0.0%)	(0)
Total	38,324	100.0%	100.0%		

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

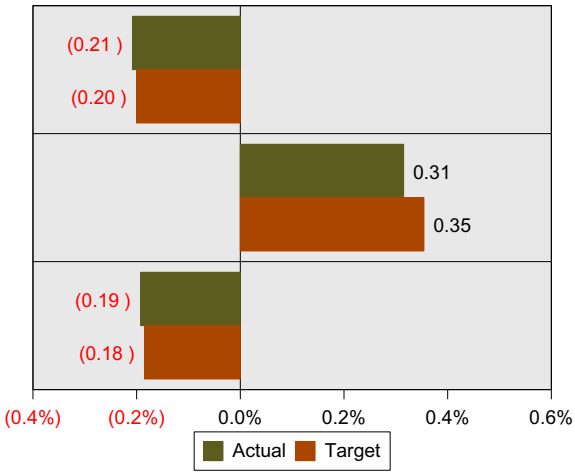
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

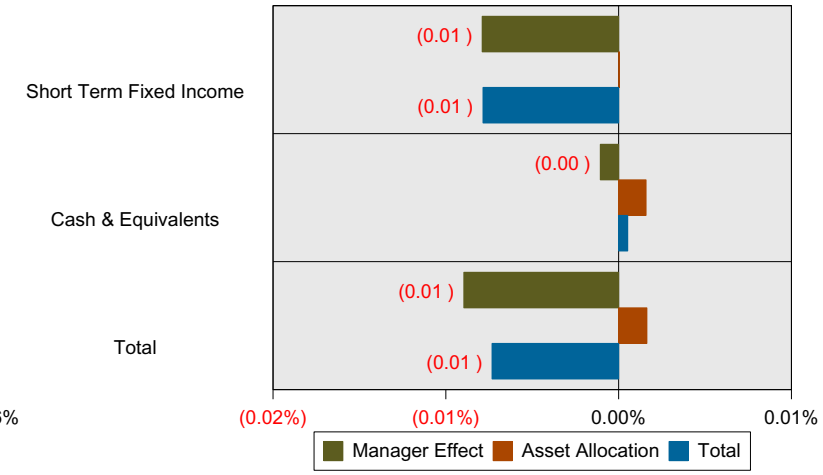
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

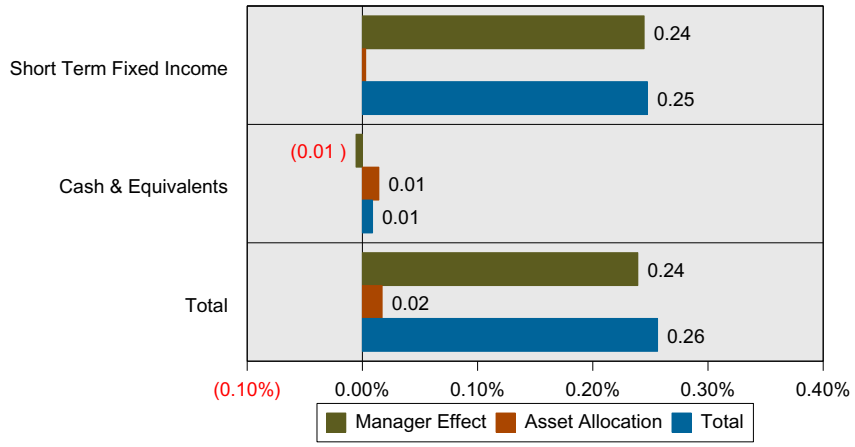
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	97%	97%	(0.21%)	(0.20%)	(0.01%)	0.00%	(0.01%)
Cash & Equivalents	3%	3%	0.31%	0.35%	(0.00%)	0.00%	0.00%
Total			**(0.19%)**	**= (0.18%)**	**+ (0.01%)**	**+ 0.00%**	**(0.01%)**

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

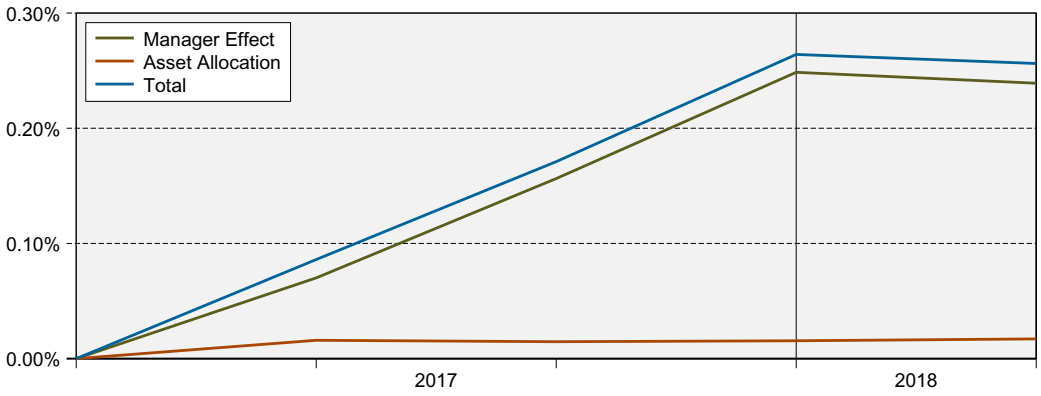
Cumulative Total Fund Relative Attribution - March 31, 2018

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

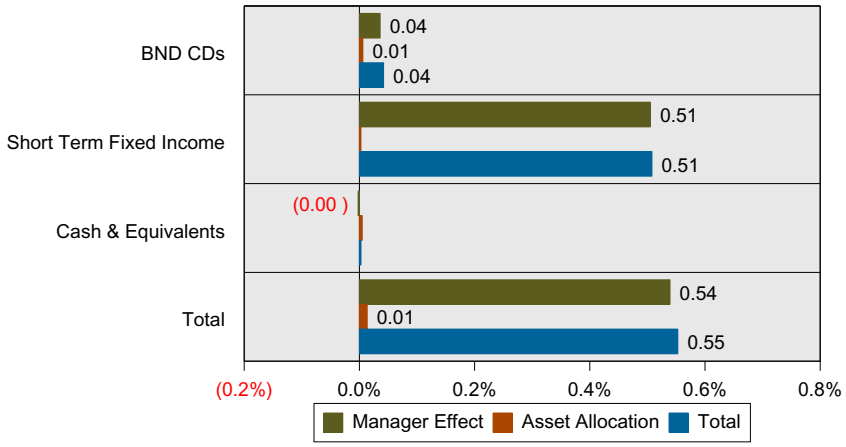
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	95%	95%	0.49%	0.24%	0.24%	0.00%	0.25%
Cash & Equivalents	5%	5%	0.99%	1.11%	(0.01%)	0.01%	0.01%
Total			**0.48%**	**= 0.22%**	**+ 0.24%**	**+ 0.02%**	**0.26%**

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

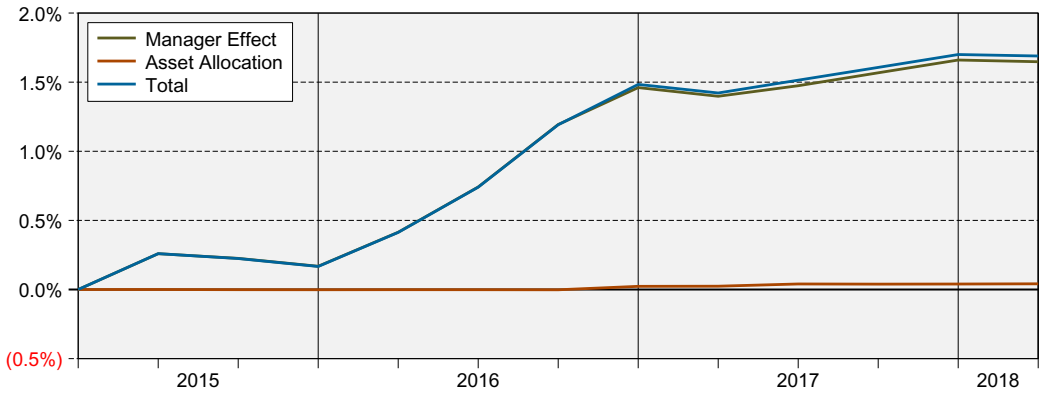
Cumulative Total Fund Relative Attribution - March 31, 2018

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

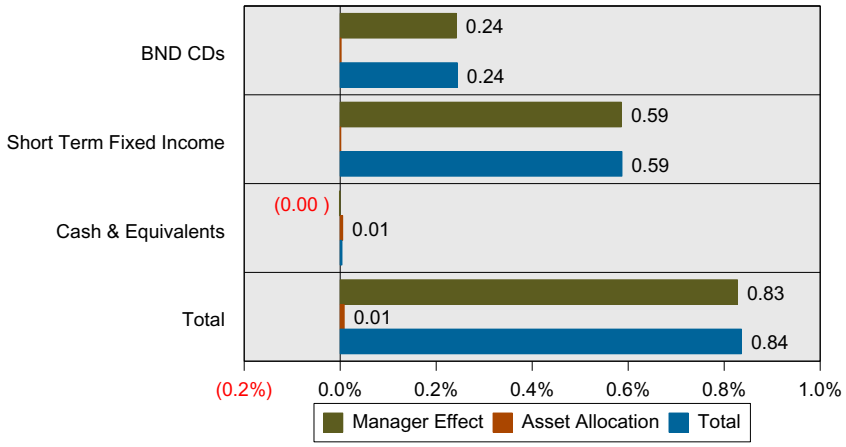
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	10%	10%	-	-	0.04%	0.01%	0.04%
Short Term Fixed Income	86%	86%	1.07%	0.47%	0.51%	0.00%	0.51%
Cash & Equivalents	3%	3%	0.45%	0.53%	(0.00%)	0.00%	0.00%
Total			**1.20%**	**= 0.65%**	**+ 0.54%**	**+ 0.01%**	**0.55%**

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

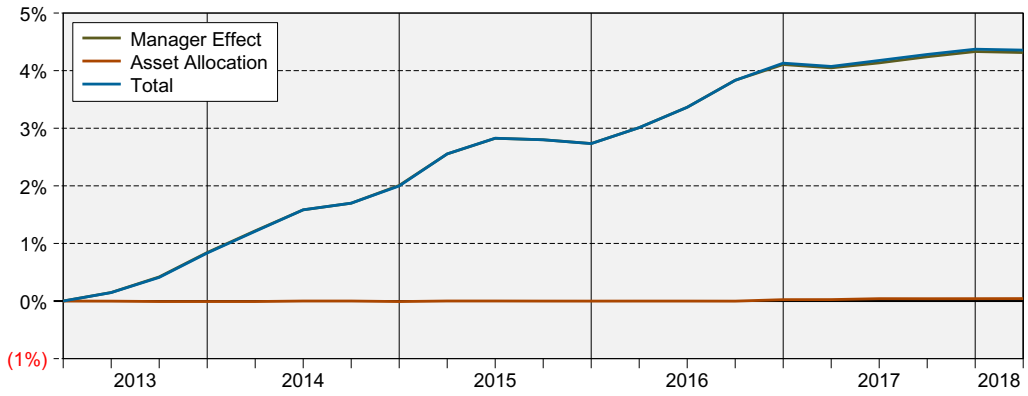
Cumulative Total Fund Relative Attribution - March 31, 2018

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

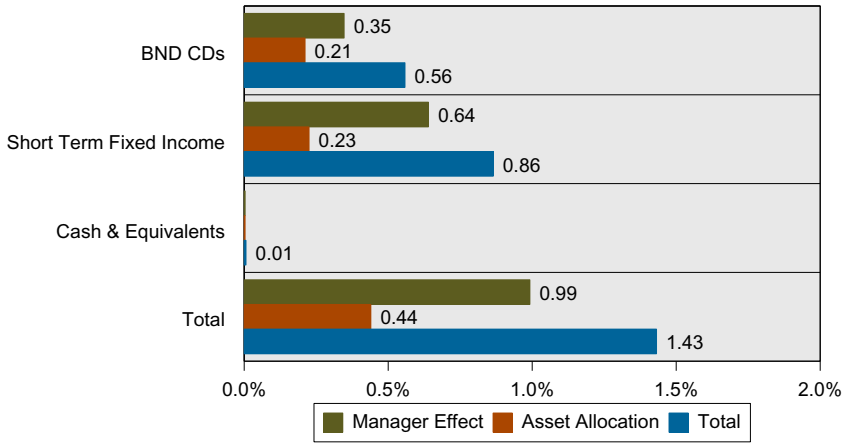
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	14%	14%	-	-	0.24%	0.00%	0.24%
Short Term Fixed Income	83%	83%	1.28%	0.57%	0.59%	0.00%	0.59%
Cash & Equivalents	3%	3%	0.29%	0.34%	(0.00%)	0.01%	0.00%
Total			**1.46%**	**= 0.62%**	**+ 0.83%**	**+ 0.01%**	**0.84%**

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

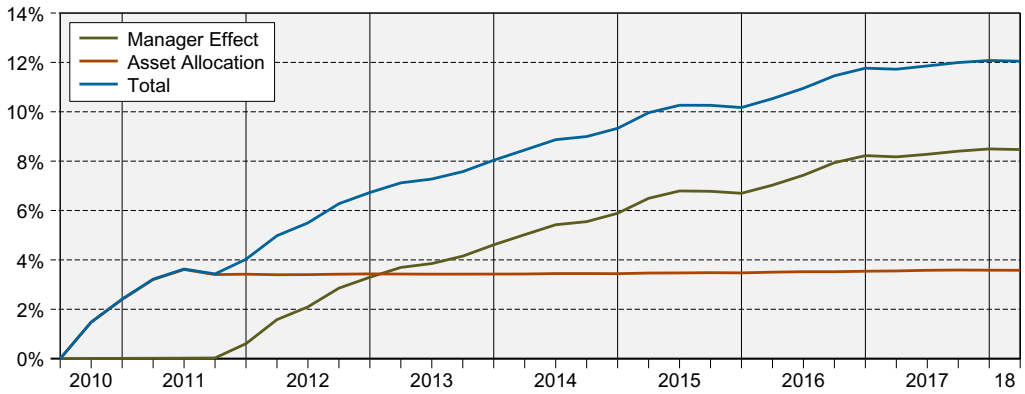
Cumulative Total Fund Relative Attribution - March 31, 2018

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 and Three-Quarter Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects

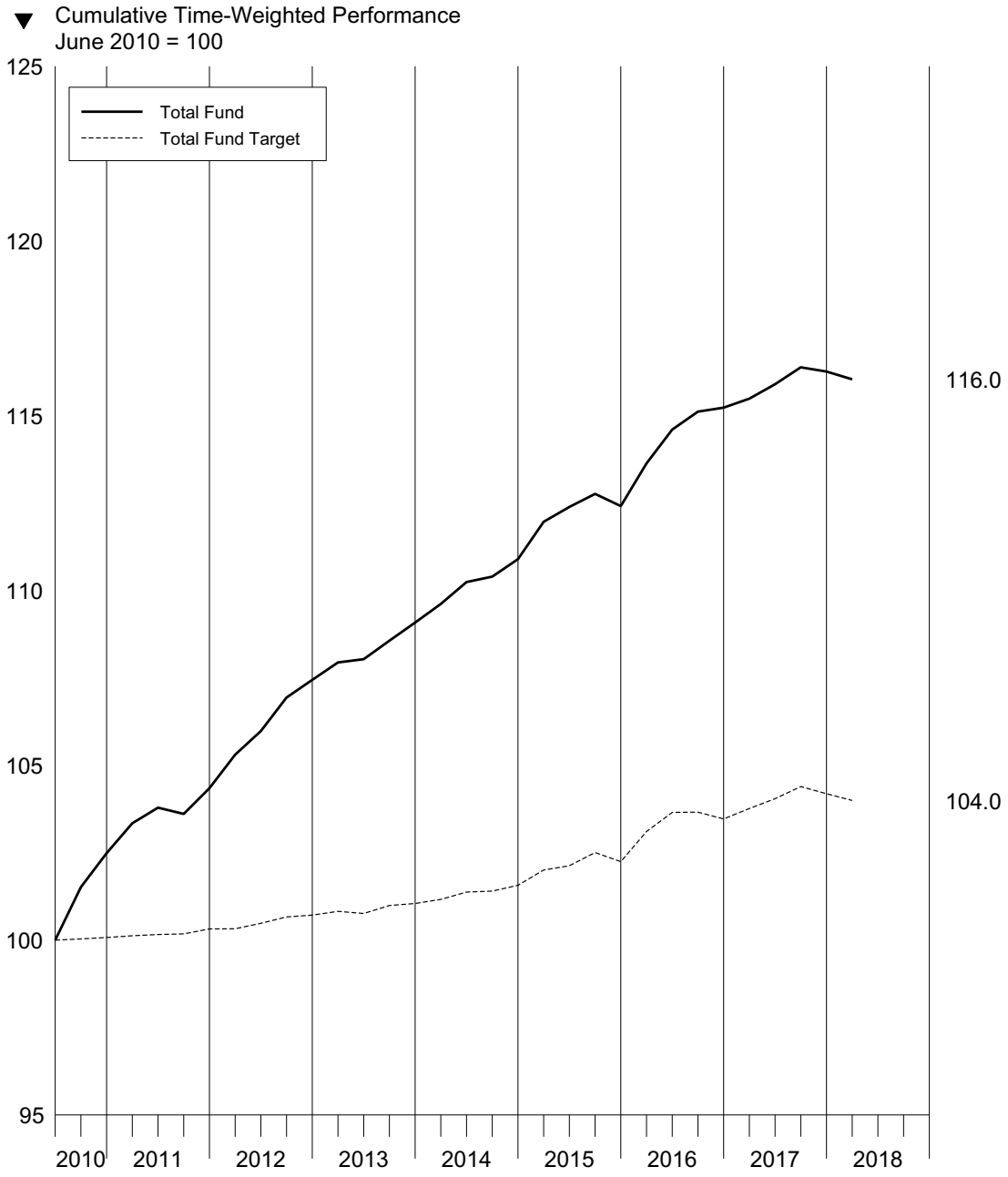


Seven and Three-Quarter Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	19%	14%	-	-	0.35%	0.21%	0.56%
Short Term Fixed Income	77%	68%	1.69%	0.87%	0.64%	0.23%	0.86%
Cash & Equivalents	4%	18%	0.29%	0.26%	0.00%	0.00%	0.01%
Total			**1.94%**	**= 0.51%**	**+ 0.99%**	**+ 0.44%**	**1.43%**

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

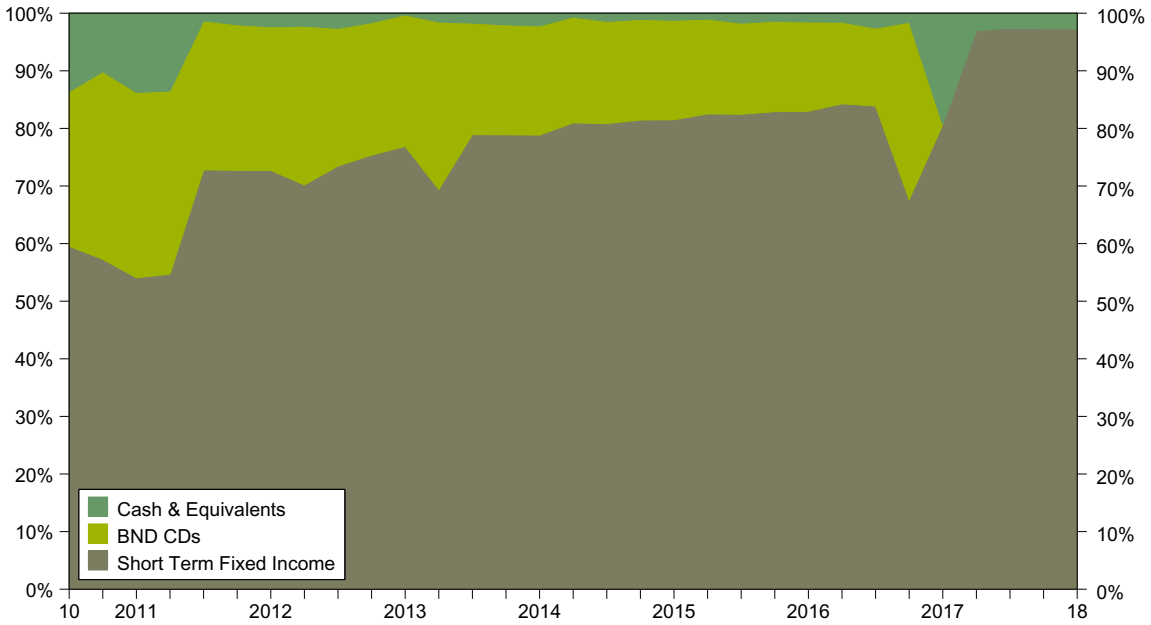
NDSIB - Budget Stabilization Fund
Cumulative Results



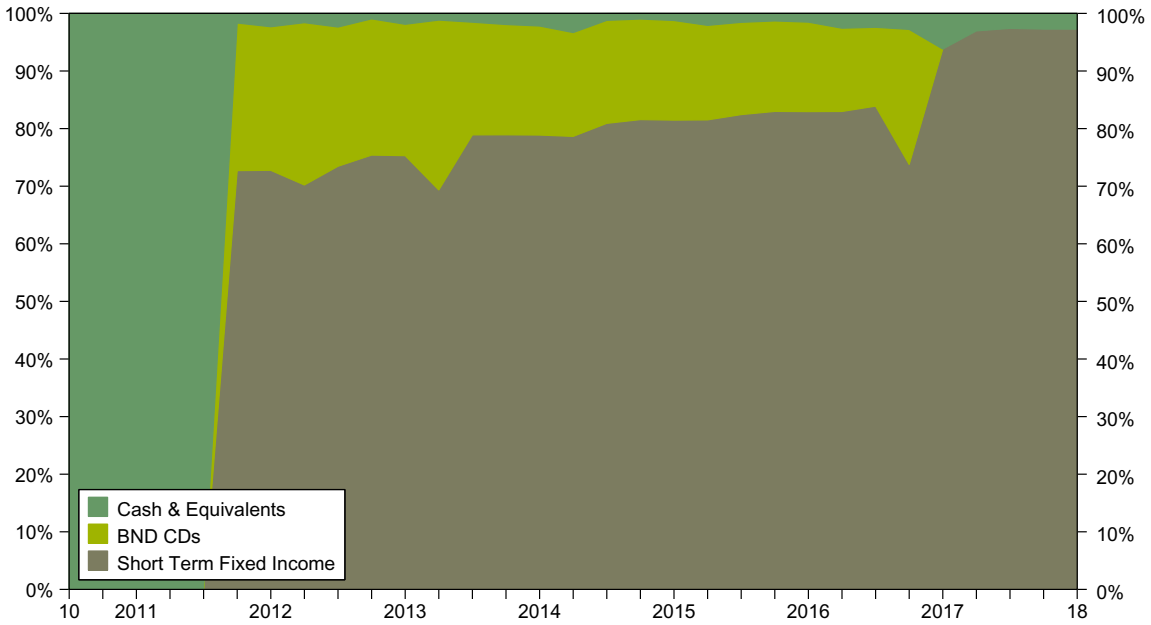
Actual vs Target Historical Asset Allocation

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 = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 3-month Treasury Bill.

Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Short Term Fixed Income	$37,278,184	97.27%	$0	$(77,710)	$37,355,895	97.28%
Cash & Equivalents	$1,045,746	2.73%	$(766)	$3,284	$1,043,228	2.72%
Securities Lending Income	$0	0.00%	$(625)	$625	-	-
Total Fund	$38,323,931	100.0%	$(1,391)	$(73,801)	$38,399,123	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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
Short Term Fixed Income					
Gross	(0.21%)	0.49%	1.07%	1.28%	1.69%
Net	(0.21%)	0.36%	0.86%	1.10%	1.54%
Blended Benchmark(1)	(0.20%)	0.24%	0.47%	0.57%	-
Cash & Equivalents - Net	**0.31%**	**0.99%**	**0.45%**	**0.29%**	**0.29%**
3-month Treasury Bill	0.35%	1.11%	0.53%	0.34%	0.26%
Total Fund					
Gross	(0.19%)	0.48%	1.20%	1.46%	1.94%
Net	(0.19%)	0.35%	1.02%	1.31%	1.82%
Target*	(0.18%)	0.22%	0.65%	0.62%	0.51%

* Current Quarter Target = 97.3% Blmbg Gov/Cred 1-3 Yr and 2.7% 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 Equity
Period Ended March 31, 2018

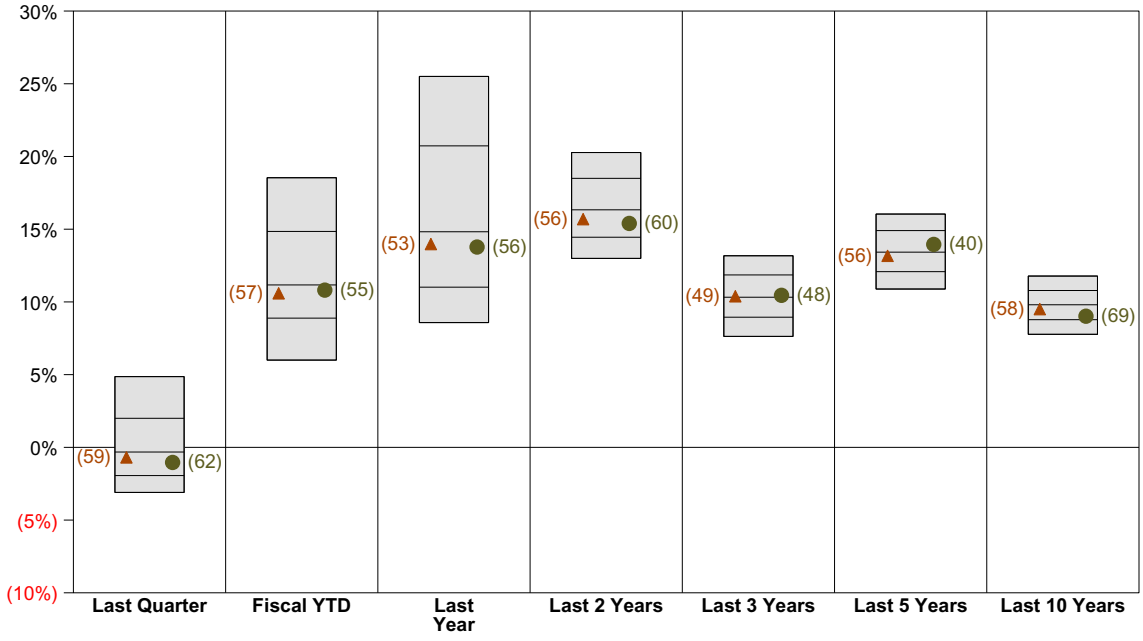
Quarterly Summary and Highlights

- Large Cap Equity's portfolio posted a (1.04)% return for the quarter placing it in the 62 percentile of the Callan Large Capitalization group for the quarter and in the 56 percentile for the last year.
- Large Cap Equity's portfolio underperformed the Large Cap Equity Target by 0.35% for the quarter and underperformed the Large Cap Equity Target for the year by 0.21%.

Quarterly Asset Growth

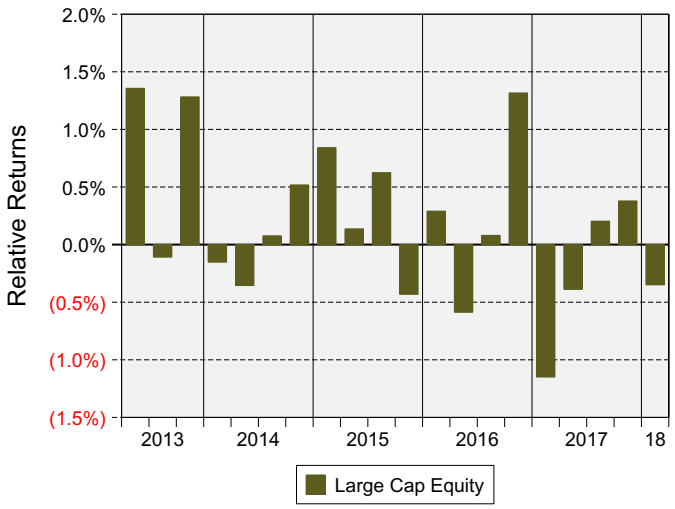
Beginning Market Value	$256,752,468
Net New Investment	$-13,114,156
Investment Gains/(Losses)	$-2,376,727
Ending Market Value	$241,261,584

Performance vs Callan Large Capitalization (Gross)

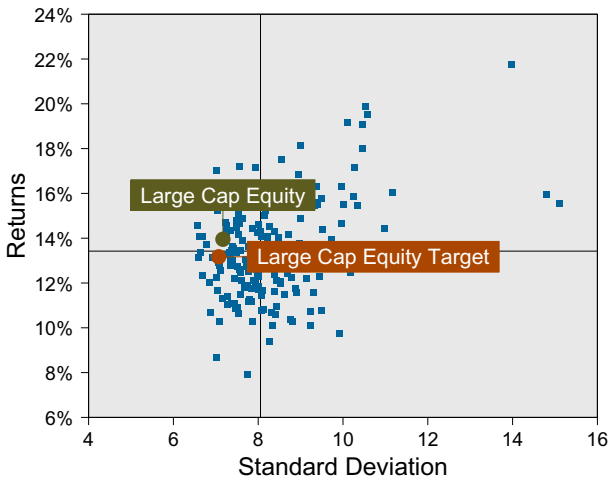


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	4.86	18.54	25.50	20.27	13.17	16.04	11.78
25th Percentile	2.00	14.85	20.73	18.50	11.86	14.91	10.79
Median	(0.32)	11.17	14.82	16.33	10.32	13.42	9.80
75th Percentile	(1.94)	8.89	11.01	14.45	8.95	12.08	8.78
90th Percentile	(3.10)	6.00	8.58	12.99	7.63	10.89	7.77
Large Cap Equity ●	(1.04)	10.81	13.77	15.40	10.45	13.95	9.02
Large Cap Equity Target ▲	(0.69)	10.59	13.98	15.69	10.39	13.17	9.50

Relative Return vs Large Cap Equity Target



Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



Parametric Clifton Large Cap
Period Ended March 31, 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 (1.63)% return for the quarter placing it in the 71 percentile of the Callan Large Capitalization group for the quarter and in the 60 percentile for the last year.
- Parametric Clifton Large Cap's portfolio underperformed the S&P 500 Index by 0.87% for the quarter and underperformed the S&P 500 Index for the year by 0.73%.

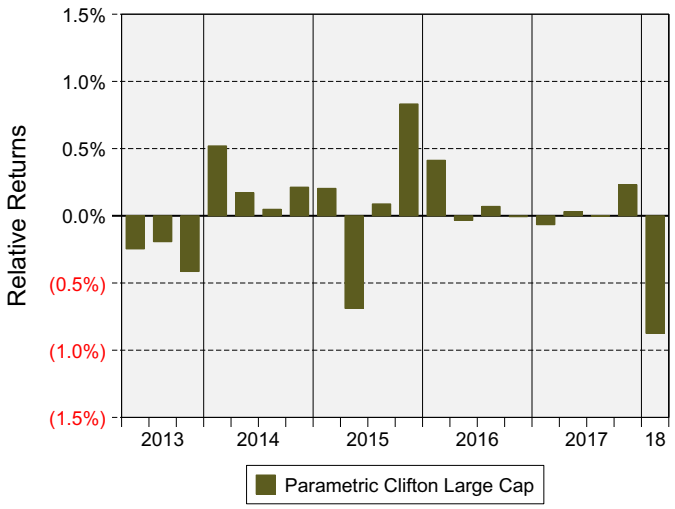
Quarterly Asset Growth

Beginning Market Value	$50,331,335
Net New Investment	$-3,000,000
Investment Gains/(Losses)	$-657,215
Ending Market Value	$46,674,120

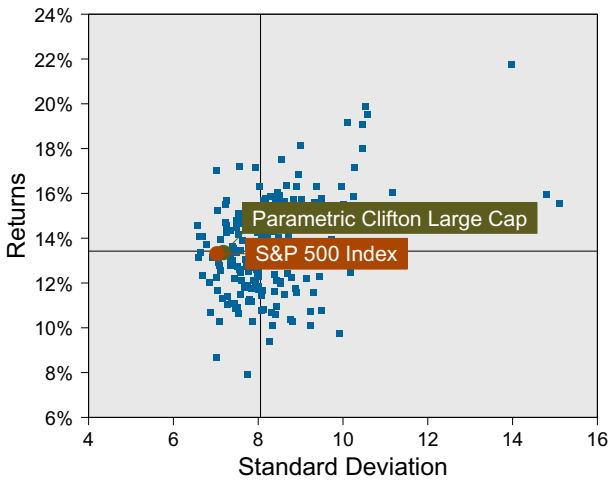
Performance vs Callan Large Capitalization (Gross)

	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 9-1/4 Years
10th Percentile	4.86	18.54	25.50	20.27	13.17	16.04	17.45
25th Percentile	2.00	14.85	20.73	18.50	11.86	14.91	16.22
Median	(0.32)	11.17	14.82	16.33	10.32	13.42	14.81
75th Percentile	(1.94)	8.89	11.01	14.45	8.95	12.08	13.55
90th Percentile	(3.10)	6.00	8.58	12.99	7.63	10.89	12.62
Parametric Clifton Large Cap ●	(1.63)	9.84	13.26	15.18	10.75	13.36	15.83
S&P 500 Index ▲	(0.76)	10.58	13.99	15.57	10.78	13.31	14.72

Relative Return vs S&P 500 Index



Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



L.A. Capital
Period Ended March 31, 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.

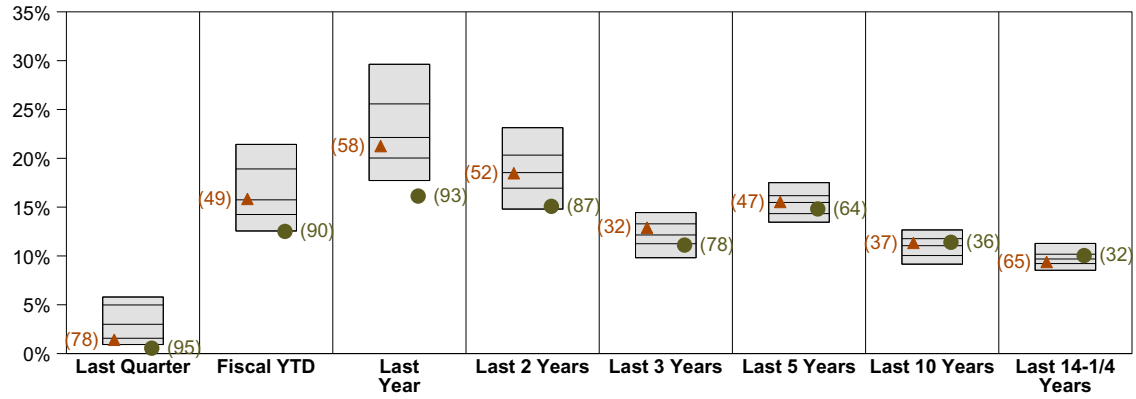
Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 0.55% return for the quarter placing it in the 95 percentile of the Callan Large Cap Growth group for the quarter and in the 93 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio underperformed the Russell 1000 Growth Index by 0.86% for the quarter and underperformed the Russell 1000 Growth Index for the year by 5.12%.

Quarterly Asset Growth

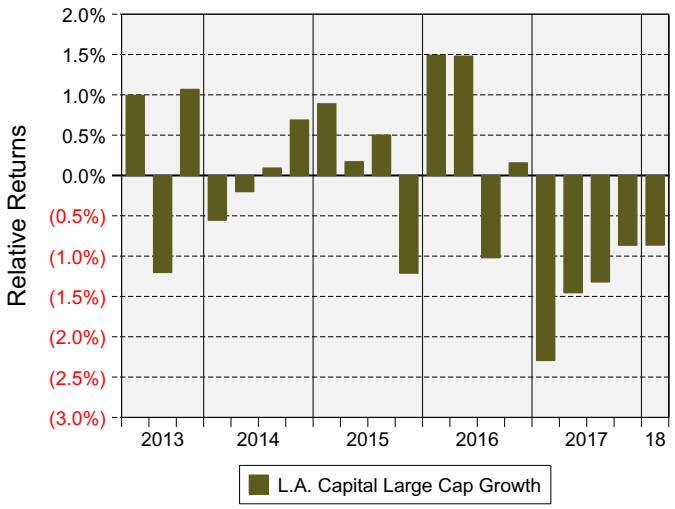
Beginning Market Value	$76,470,092
Net New Investment	$-2,039,681
Investment Gains/(Losses)	$475,603
Ending Market Value	$74,906,014

Performance vs Callan Large Cap Growth (Gross)

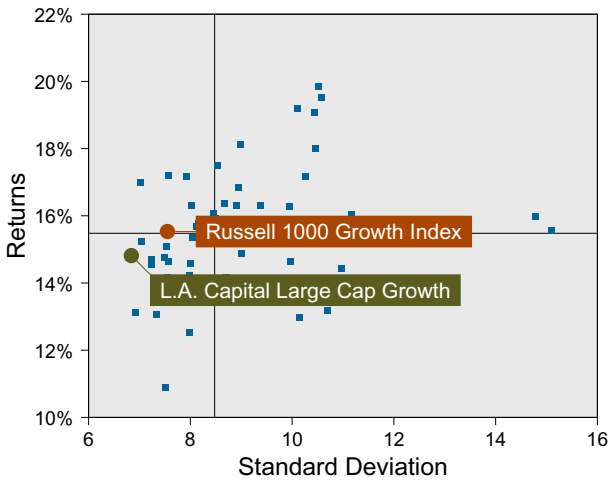


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 14-1/4 Years
10th Percentile	5.80	21.42	29.63	23.14	14.44	17.51	12.67	11.28
25th Percentile	4.98	18.91	25.57	20.33	13.29	16.17	11.77	10.18
Median	3.00	15.75	22.13	18.54	12.15	15.48	11.05	9.69
75th Percentile	1.57	14.25	20.03	16.94	11.25	14.33	10.04	9.22
90th Percentile	0.93	12.56	17.72	14.80	9.82	13.46	9.16	8.53
L.A. Capital Large Cap Growth ●	0.55	12.51	16.13	15.08	11.11	14.82	11.40	10.04
Russell 1000 Growth Index ▲	1.42	15.84	21.25	18.47	12.90	15.53	11.34	9.38

Relative Return vs Russell 1000 Growth Index



Callan Large Cap Growth (Gross) Annualized Five Year Risk vs Return



L.A. Capital Enhanced
Period Ended March 31, 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.

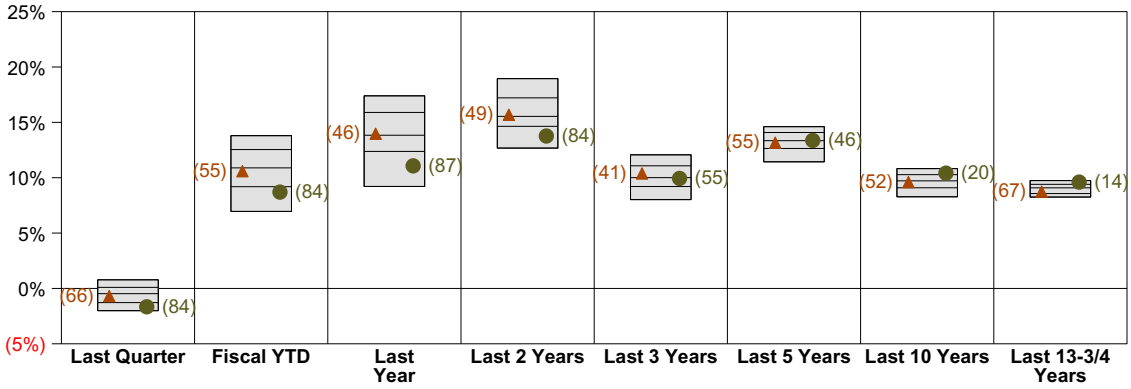
Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a (1.66)% return for the quarter placing it in the 84 percentile of the Callan Large Cap Core group for the quarter and in the 87 percentile for the last year.
- L.A. Capital Enhanced's portfolio underperformed the Russell 1000 Index by 0.97% for the quarter and underperformed the Russell 1000 Index for the year by 2.91%.

Quarterly Asset Growth

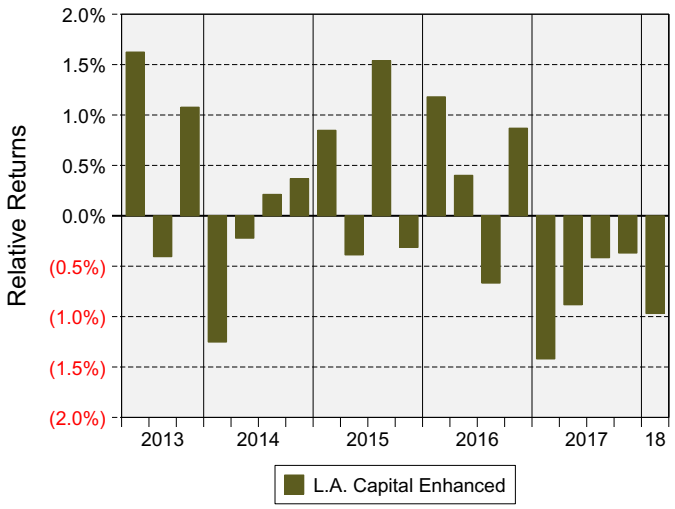
Beginning Market Value	$53,317,227
Net New Investment	$-4,016,510
Investment Gains/(Losses)	$-716,745
Ending Market Value	$48,583,971

Performance vs Callan Large Cap Core (Gross)

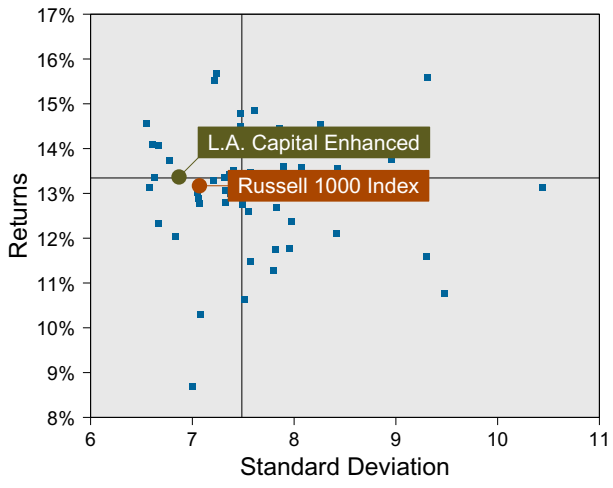


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 13-3/4 Years
10th Percentile	0.78	13.80	17.40	18.95	12.07	14.61	10.82	9.74
25th Percentile	0.10	12.54	15.90	17.21	11.08	14.08	10.28	9.40
Median	(0.47)	10.89	13.84	15.54	10.01	13.34	9.72	9.09
75th Percentile	(1.28)	9.19	12.37	14.64	9.21	12.64	9.09	8.57
90th Percentile	(2.01)	6.95	9.21	12.68	8.02	11.43	8.28	8.25
L.A. Capital Enhanced ●	(1.66)	8.70	11.07	13.77	9.93	13.37	10.41	9.60
Russell 1000 Index ▲	(0.69)	10.59	13.98	15.69	10.39	13.17	9.61	8.75

Relative Return vs Russell 1000 Index



Callan Large Cap Core (Gross) Annualized Five Year Risk vs Return



LSV Asset Management
Period Ended March 31, 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.

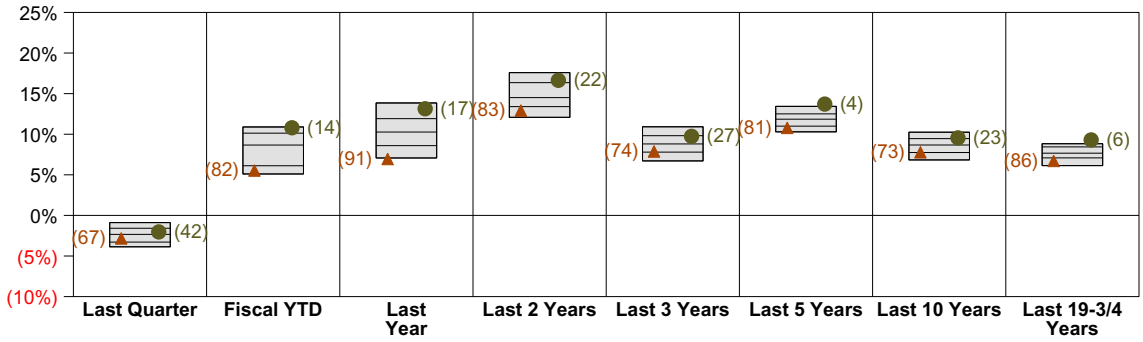
Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a (2.03)% return for the quarter placing it in the 42 percentile of the Callan Large Cap Value group for the quarter and in the 17 percentile for the last year.
- LSV Large Cap Value's portfolio outperformed the Russell 1000 Value Index by 0.80% for the quarter and outperformed the Russell 1000 Value Index for the year by 6.19%.

Quarterly Asset Growth

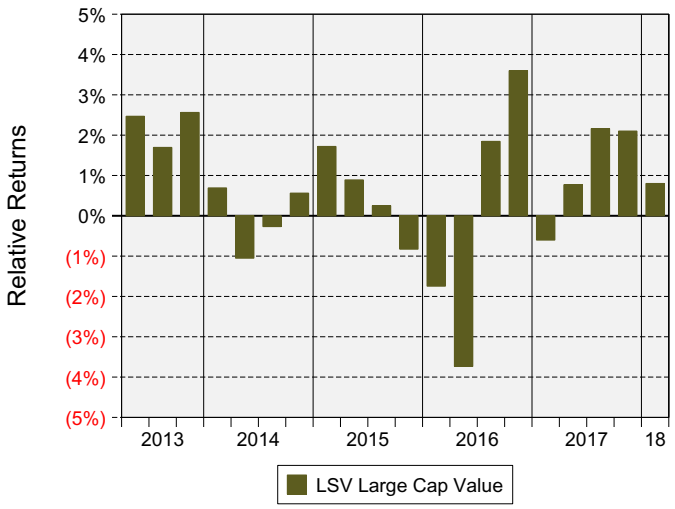
Beginning Market Value	$76,633,815
Net New Investment	$-4,057,966
Investment Gains/(Losses)	$-1,478,370
Ending Market Value	$71,097,479

Performance vs Callan Large Cap Value (Gross)

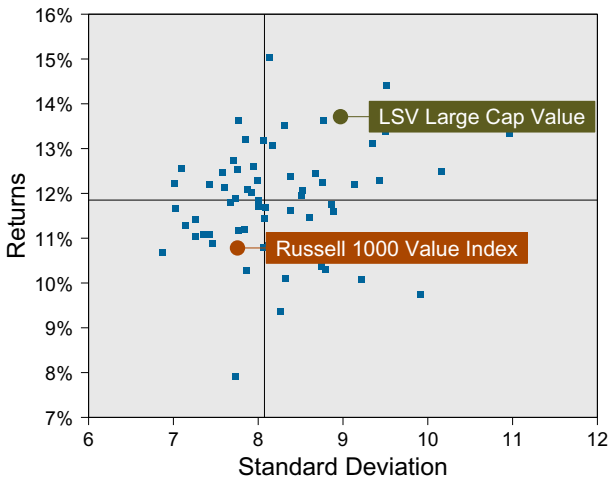


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 19-3/4 Years
10th Percentile	(0.89)	10.89	13.85	17.59	10.92	13.43	10.25	8.83	
25th Percentile	(1.58)	10.13	11.92	16.35	9.82	12.51	9.46	8.44	
Median	(2.34)	8.67	10.27	14.51	8.81	11.85	8.67	7.67	
75th Percentile	(3.29)	6.12	8.59	13.40	7.79	10.99	7.75	7.09	
90th Percentile	(3.87)	5.10	7.07	12.08	6.71	10.29	6.83	6.13	
LSV Large Cap Value ●	(2.03)	10.79	13.14	16.64	9.74	13.71	9.55	9.30	
Russell 1000 Value Index ▲	(2.83)	5.53	6.95	12.92	7.88	10.78	7.78	6.71	

Relative Return vs Russell 1000 Value Index



Callan Large Cap Value (Gross) Annualized Five Year Risk vs Return



Small Cap Equity
Period Ended March 31, 2018

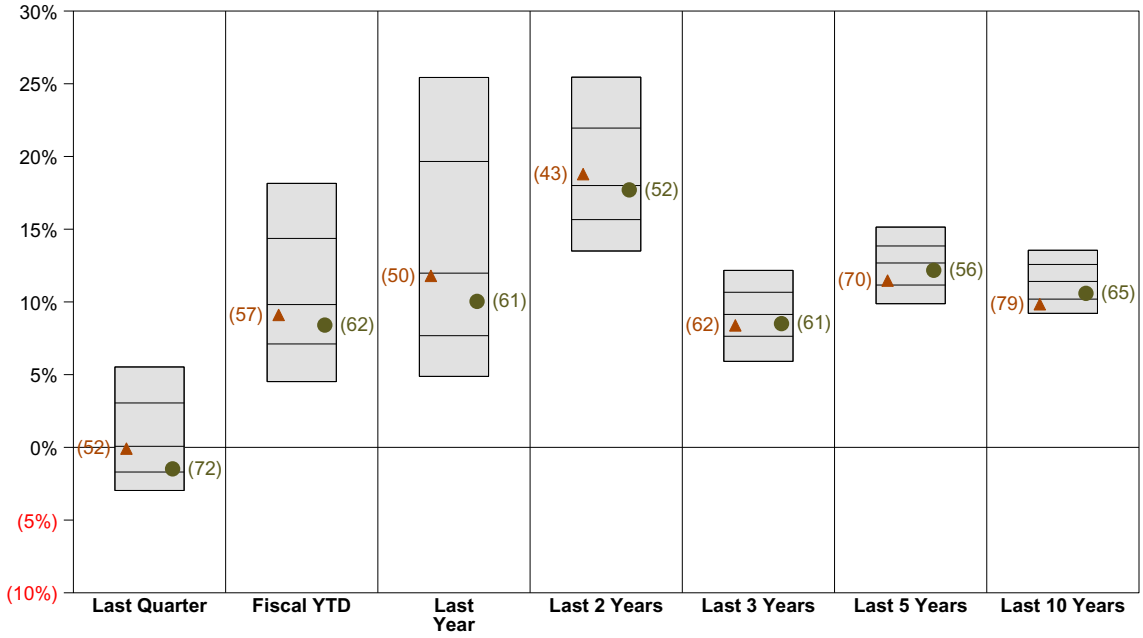
Quarterly Summary and Highlights

- Small Cap Equity's portfolio posted a (1.48)% return for the quarter placing it in the 72 percentile of the Callan Small Capitalization group for the quarter and in the 61 percentile for the last year.
- Small Cap Equity's portfolio underperformed the Small Cap Equity Target by 1.39% for the quarter and underperformed the Small Cap Equity Target for the year by 1.76%.

Quarterly Asset Growth

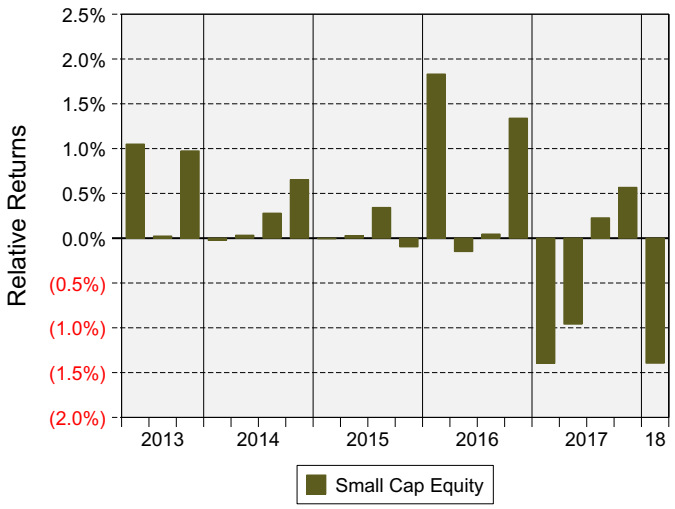
Beginning Market Value	$87,918,001
Net New Investment	$-4,027,239
Investment Gains/(Losses)	$-1,272,128
Ending Market Value	$82,618,634

Performance vs Callan Small Capitalization (Gross)

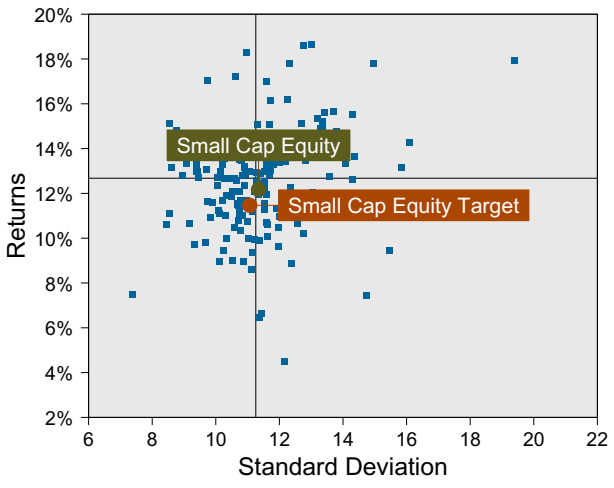


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	15.15	13.55
25th Percentile	3.05	14.37	19.66	21.95	10.66	13.85	12.58
Median	0.07	9.82	11.98	18.00	9.14	12.68	11.41
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	11.16	10.19
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	9.88	9.21
Small Cap Equity ●	(1.48)	8.41	10.04	17.70	8.51	12.17	10.59
Small Cap Equity Target ▲	(0.08)	9.11	11.79	18.79	8.39	11.47	9.84

Relative Return vs Small Cap Equity Target



Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



Parametric Clifton SmallCap
Period Ended March 31, 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.

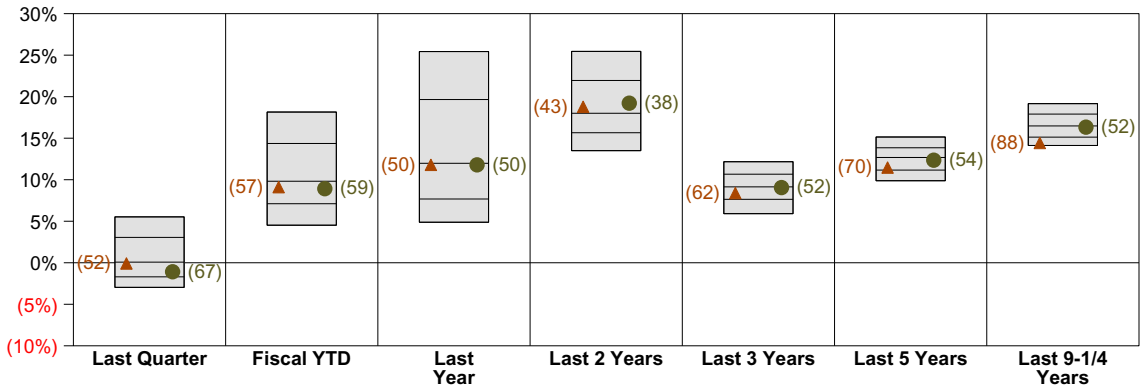
Quarterly Summary and Highlights

- Parametric Clifton SmallCap's portfolio posted a (1.09)% return for the quarter placing it in the 67 percentile of the Callan Small Capitalization group for the quarter and in the 50 percentile for the last year.
- Parametric Clifton SmallCap's portfolio underperformed the Russell 2000 Index by 1.00% for the quarter and underperformed the Russell 2000 Index for the year by 0.00%.

Quarterly Asset Growth

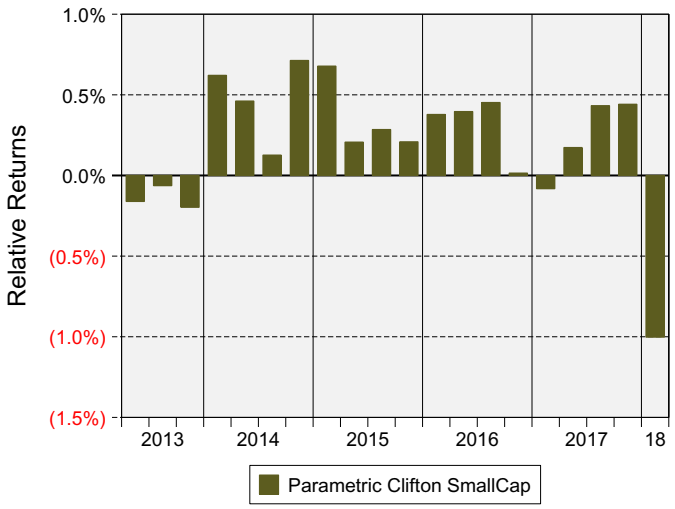
Beginning Market Value	$43,704,489
Net New Investment	$-2,000,000
Investment Gains/(Losses)	$-442,107
Ending Market Value	$41,262,382

Performance vs Callan Small Capitalization (Gross)

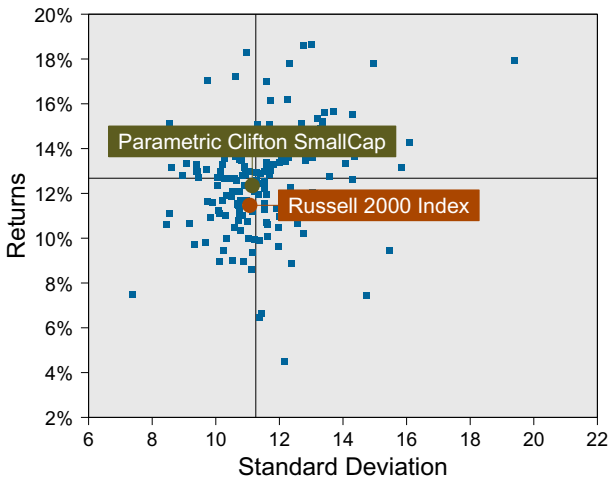


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 9-1/4 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	15.15	19.16
25th Percentile	3.05	14.37	19.66	21.95	10.66	13.85	17.90
Median	0.07	9.82	11.98	18.00	9.14	12.68	16.48
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	11.16	15.13
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	9.88	14.12
Parametric Clifton SmallCap ●	(1.09)	8.92	11.79	19.22	9.05	12.35	16.33
Russell 2000 Index ▲	(0.08)	9.11	11.79	18.79	8.39	11.47	14.43

Relative Return vs Russell 2000 Index



Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



PIMCO RAE
Period Ended March 31, 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.

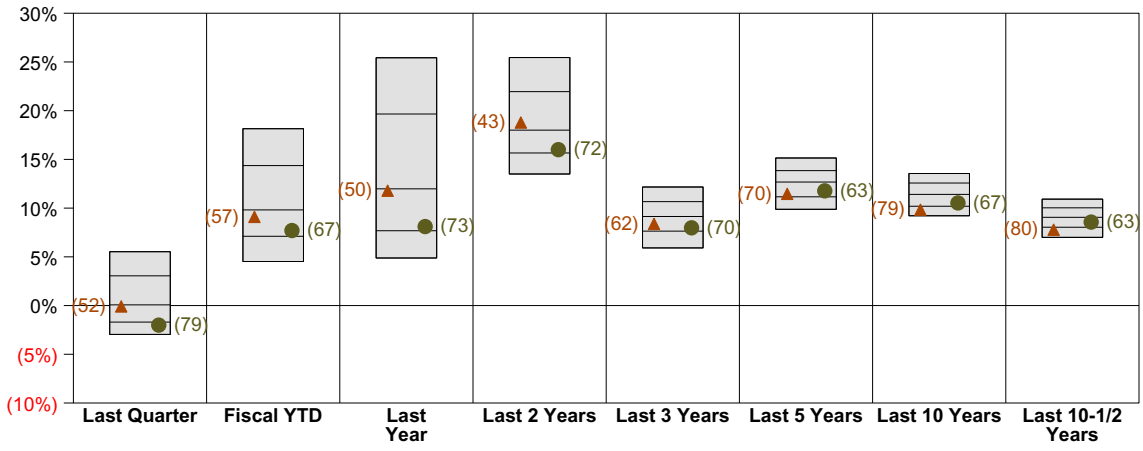
Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a (2.01)% return for the quarter placing it in the 79 percentile of the Callan Small Capitalization group for the quarter and in the 73 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 1.93% for the quarter and underperformed the Russell 2000 Index for the year by 3.69%.

Quarterly Asset Growth

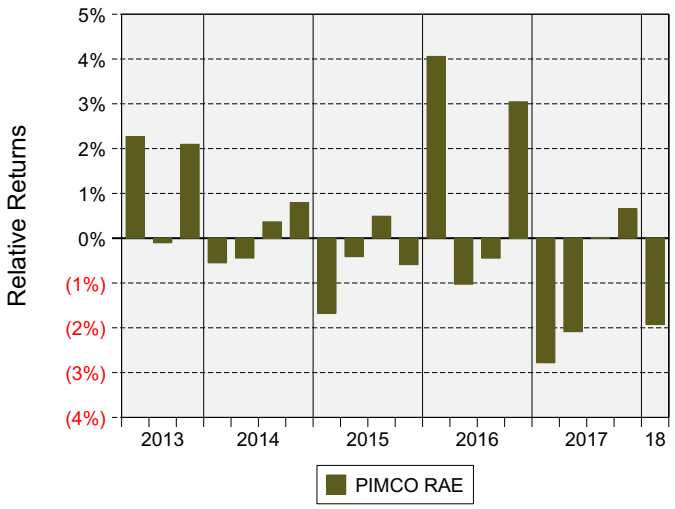
Beginning Market Value	$44,213,512
Net New Investment	$-2,027,239
Investment Gains/(Losses)	$-830,021
Ending Market Value	$41,356,252

Performance vs Callan Small Capitalization (Gross)

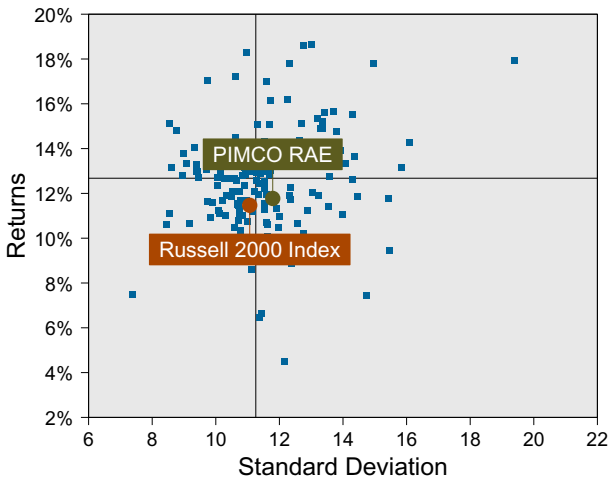


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-1/2 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	15.15	13.55	10.92
25th Percentile	3.05	14.37	19.66	21.95	10.66	13.85	12.58	10.03
Median	0.07	9.82	11.98	18.00	9.14	12.68	11.41	9.06
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	11.16	10.19	8.04
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	9.88	9.21	7.00
PIMCO RAE ●	(2.01)	7.70	8.11	16.00	7.98	11.77	10.53	8.57
Russell 2000 Index ▲	(0.08)	9.11	11.79	18.79	8.39	11.47	9.84	7.79

Relative Return vs Russell 2000 Index



Callan Small Capitalization (Gross) Annualized Five Year Risk vs Return



International Equity
Period Ended March 31, 2018

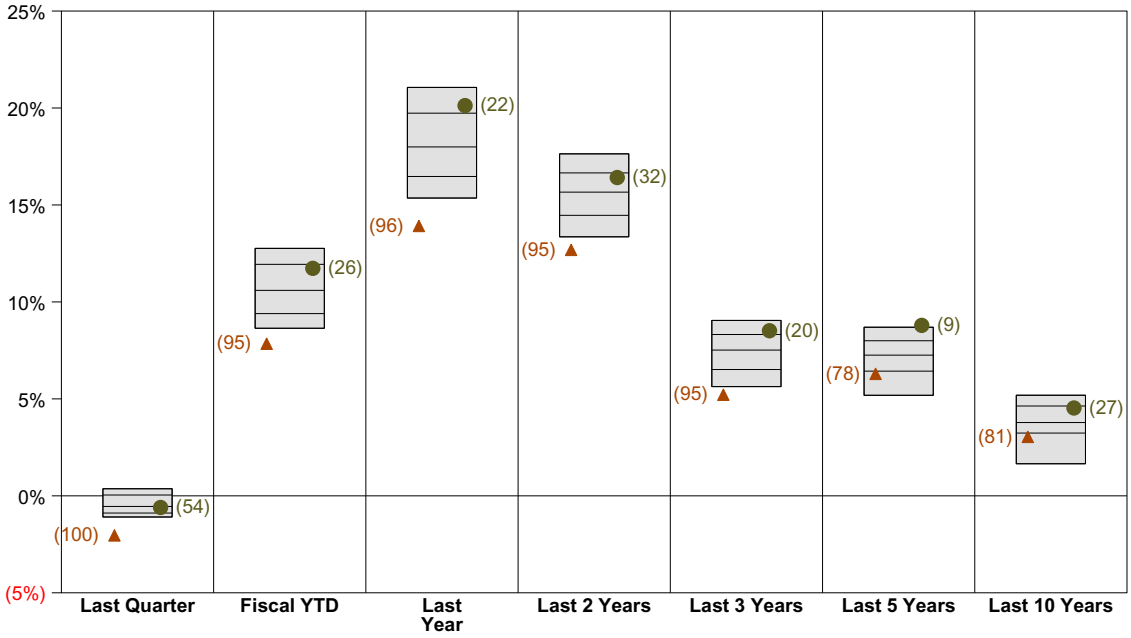
Quarterly Summary and Highlights

- International Equity's portfolio posted a (0.60)% return for the quarter placing it in the 54 percentile of the Public Fund - International Equity group for the quarter and in the 22 percentile for the last year.
- International Equity's portfolio outperformed the International Equity Target by 1.44% for the quarter and outperformed the International Equity Target for the year by 6.21%.

Quarterly Asset Growth

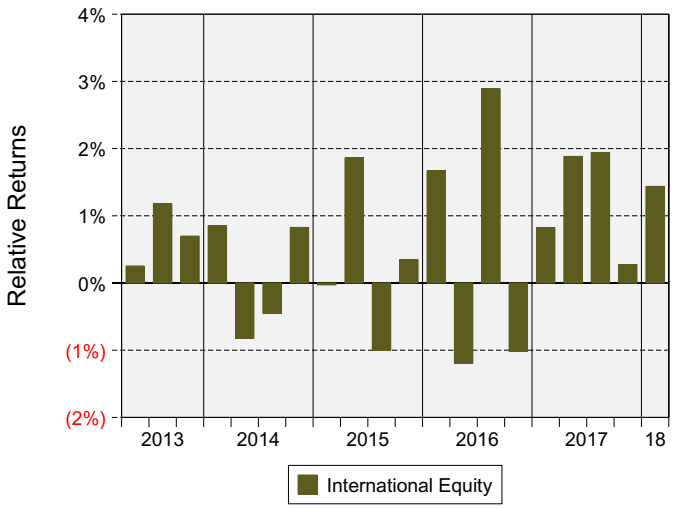
Beginning Market Value	$188,156,003
Net New Investment	$-10,147,336
Investment Gains/(Losses)	$-1,049,386
Ending Market Value	$176,959,280

Performance vs Public Fund - International Equity (Gross)

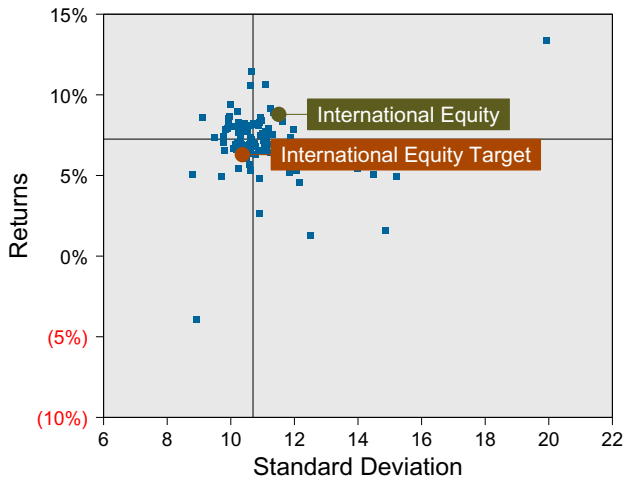


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.37	12.76	21.06	17.64	9.05	8.70	5.19
25th Percentile	0.04	11.94	19.73	16.65	8.32	8.00	4.63
Median	(0.55)	10.60	17.99	15.66	7.52	7.26	3.78
75th Percentile	(0.89)	9.40	16.47	14.46	6.51	6.43	3.24
90th Percentile	(1.09)	8.64	15.36	13.36	5.63	5.18	1.65
International Equity ●	(0.60)	11.73	20.12	16.41	8.51	8.79	4.53
International Equity Target ▲	(2.04)	7.85	13.92	12.69	5.22	6.29	3.04

Relative Return vs International Equity Target



Public Fund - International Equity (Gross) Annualized Five Year Risk vs Return



DFA Intl Small Cap Value
Period Ended March 31, 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 (2.26)% return for the quarter placing it in the 91 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 93 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.49% for the quarter and underperformed the World ex US SC Value for the year by 1.55%.

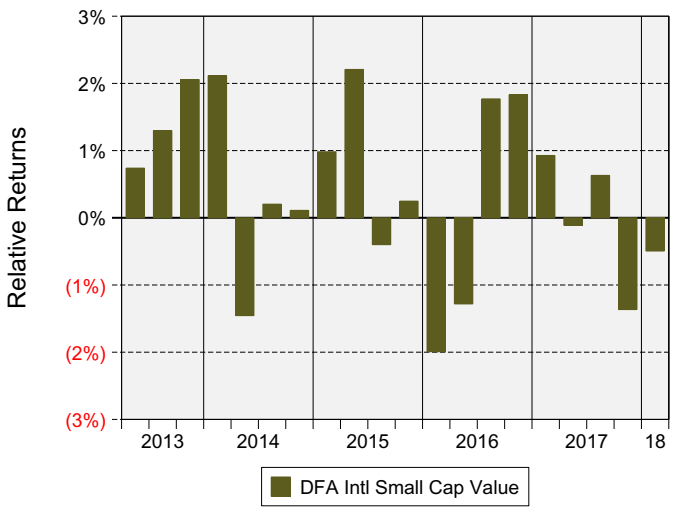
Quarterly Asset Growth

Beginning Market Value	$18,473,161
Net New Investment	$-1,000,000
Investment Gains/(Losses)	$-429,005
Ending Market Value	$17,044,155

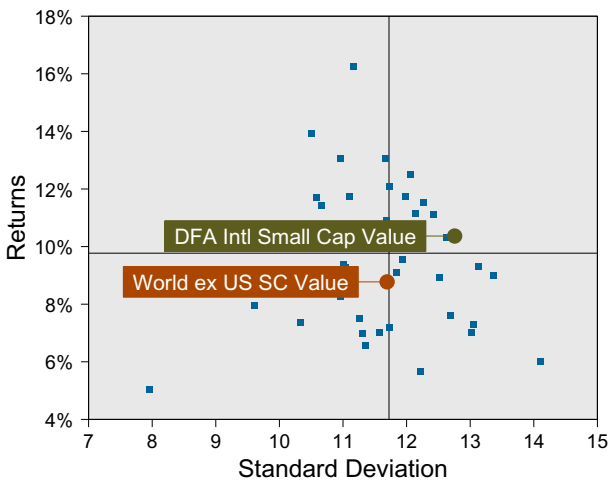
Performance vs Callan International Small Cap Mut Funds (Net)

		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 10-1/4 Years
10th Percentile		3.86	19.51	29.34	19.93	13.50	12.67	8.74	7.26
25th Percentile		2.15	16.65	28.16	18.16	12.00	11.22	7.51	6.48
Median		0.74	13.77	23.63	17.04	10.78	9.77	6.16	5.27
75th Percentile		(0.61)	11.48	20.14	14.60	8.92	7.59	5.19	4.21
90th Percentile		(2.18)	9.13	17.20	12.51	7.18	6.85	4.48	3.46
DFA Intl Small Cap Value	●	(2.26)	9.19	16.11	16.70	10.30	10.37	5.93	5.39
World ex US SC Value	▲	(1.77)	10.53	17.66	15.74	9.72	8.78	5.58	4.88

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 March 31, 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.**

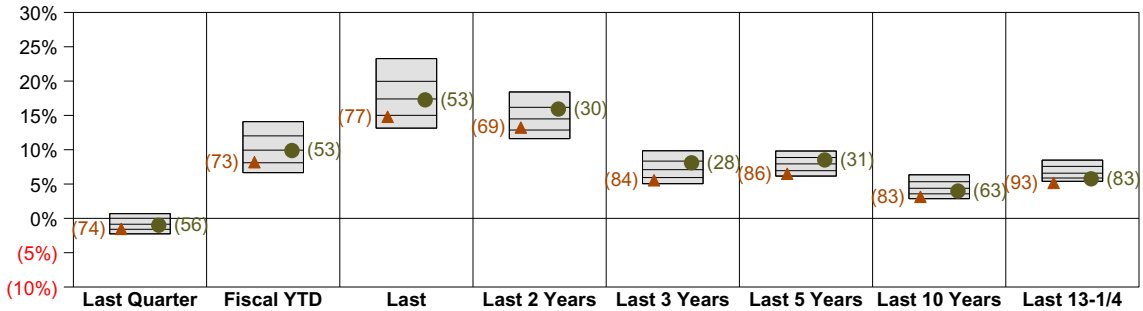
Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a (0.99)% return for the quarter placing it in the 56 percentile of the Callan Non-US Equity group for the quarter and in the 53 percentile for the last year.
- LSV Intl Value's portfolio outperformed the Benchmark by 0.54% for the quarter and outperformed the Benchmark for the year by 2.46%.

Quarterly Asset Growth

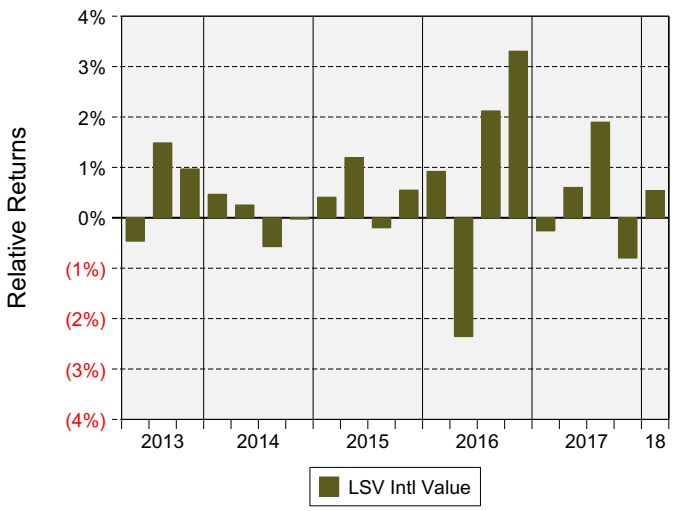
Beginning Market Value	$74,211,129
Net New Investment	$-4,074,823
Investment Gains/(Losses)	$-758,591
Ending Market Value	$69,377,715

Performance vs Callan Non-US Equity (Gross)

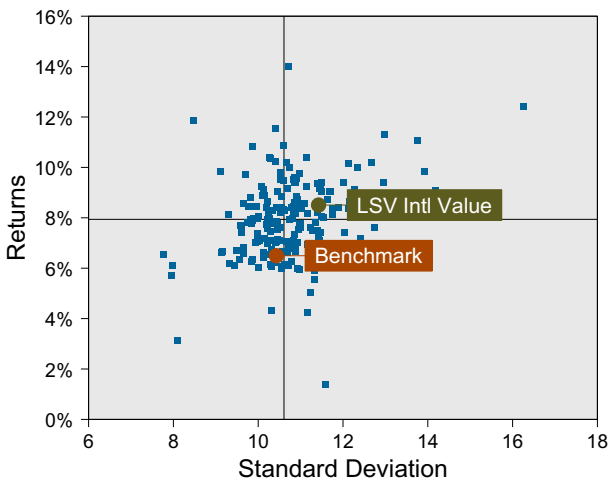


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 13-1/4 Years
10th Percentile	0.69	14.09	23.28	18.41	9.85	9.81	6.35	8.49
25th Percentile	0.01	12.02	19.97	16.18	8.34	8.87	5.34	7.57
Median	(0.85)	9.94	17.40	14.49	7.10	7.94	4.38	6.58
75th Percentile	(1.59)	8.10	15.01	12.87	5.95	6.95	3.57	5.88
90th Percentile	(2.26)	6.66	13.14	11.61	5.05	6.16	2.87	5.40
LSV Intl Value ●	(0.99)	9.88	17.27	15.92	8.09	8.51	3.98	5.76
Benchmark ▲	(1.53)	8.18	14.80	13.23	5.55	6.50	3.14	5.17

Relative Return vs Benchmark



Callan Non-US Equity (Gross) Annualized Five Year Risk vs Return



Vanguard Intl Explorer Fund
Period Ended March 31, 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.

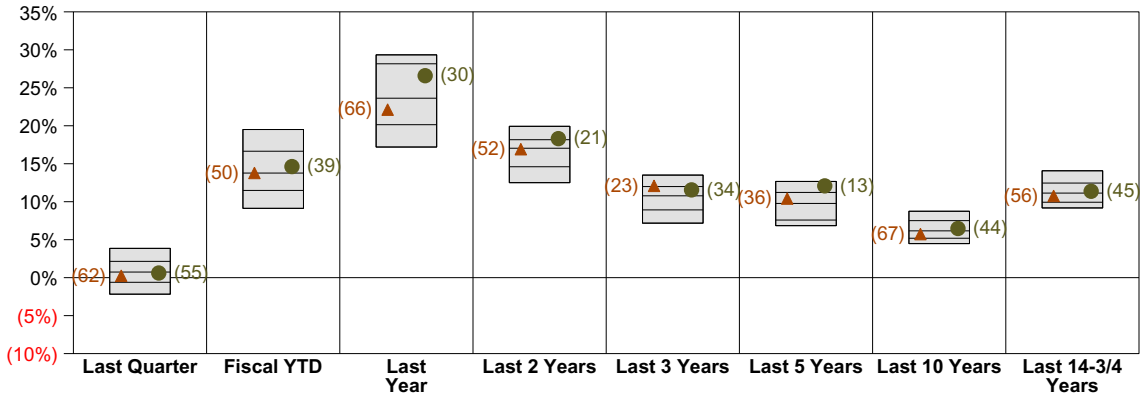
Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a 0.61% return for the quarter placing it in the 55 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 30 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio outperformed the S&P BMI EPAC <$2 B by 0.36% for the quarter and outperformed the S&P BMI EPAC <$2 B for the year by 4.47%.

Quarterly Asset Growth

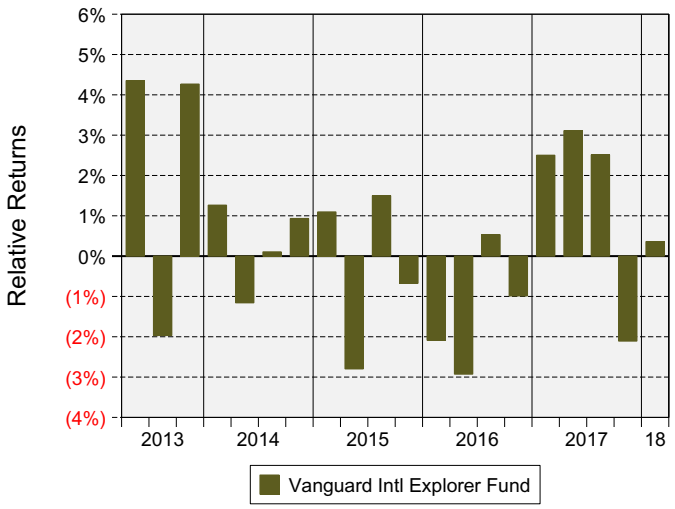
Beginning Market Value	$19,359,776
Net New Investment	$-2,000,000
Investment Gains/(Losses)	$106,692
Ending Market Value	$17,466,468

Performance vs Callan International Small Cap Mut Funds (Net)

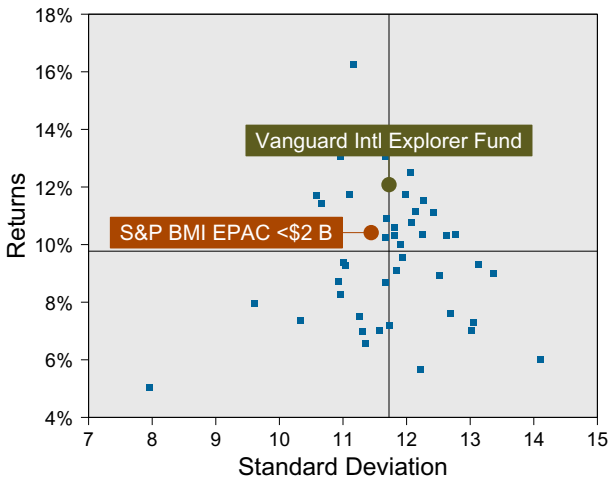


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 14-3/4 Years
10th Percentile	3.86	19.51	29.34	19.93	13.50	12.67	8.74	14.07
25th Percentile	2.15	16.65	28.16	18.16	12.00	11.22	7.51	12.46
Median	0.74	13.77	23.63	17.04	10.78	9.77	6.16	11.13
75th Percentile	(0.61)	11.48	20.14	14.60	8.92	7.59	5.19	9.93
90th Percentile	(2.18)	9.13	17.20	12.51	7.18	6.85	4.48	9.18
Vanguard Intl Explorer Fund ●	0.61	14.63	26.59	18.30	11.56	12.08	6.47	11.37
S&P BMI EPAC <$2 B ▲	0.25	13.79	22.13	16.91	12.09	10.42	5.73	10.76

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 March 31, 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.

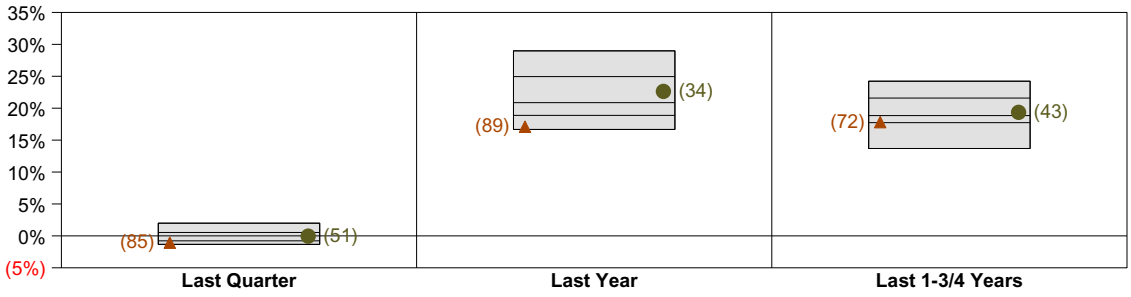
Quarterly Summary and Highlights

- William Blair's portfolio posted a (0.04)% return for the quarter placing it in the 51 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 34 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.02% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 5.53%.

Quarterly Asset Growth

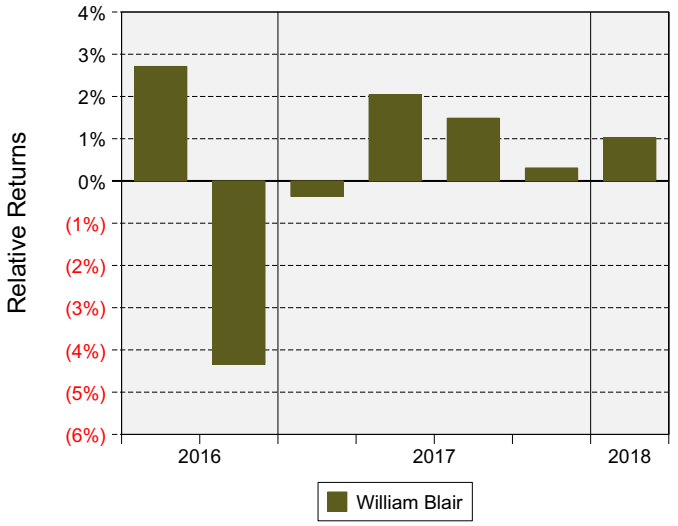
Beginning Market Value	$76,111,937
Net New Investment	$-3,072,513
Investment Gains/(Losses)	$31,519
Ending Market Value	$73,070,942

Performance vs Callan Non-US All Country Growth Equity (Gross)

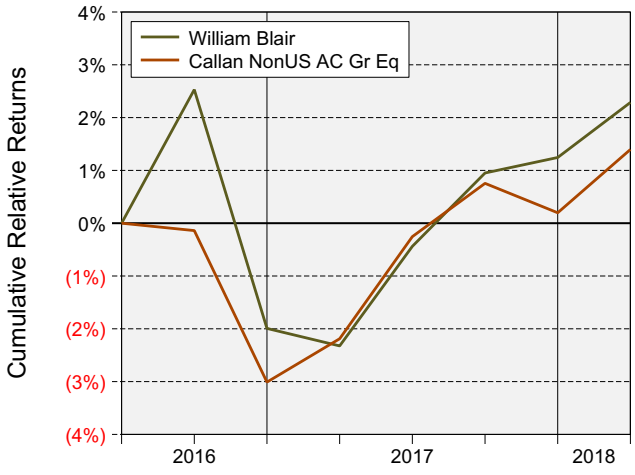


	Last Quarter	Last Year	Last 1-3/4 Years
10th Percentile	1.99	28.99	24.23
25th Percentile	0.53	24.95	21.59
Median	0.01	20.87	18.84
75th Percentile	(0.78)	18.88	17.73
90th Percentile	(1.33)	16.67	13.69
William Blair ●	(0.04)	22.63	19.35
MSCI ACWI ex US IMI ▲	(1.06)	17.10	17.82

Relative Return vs MSCI ACWI ex US IMI



Cumulative Returns vs MSCI ACWI ex US IMI



Domestic Fixed Income
Period Ended March 31, 2018

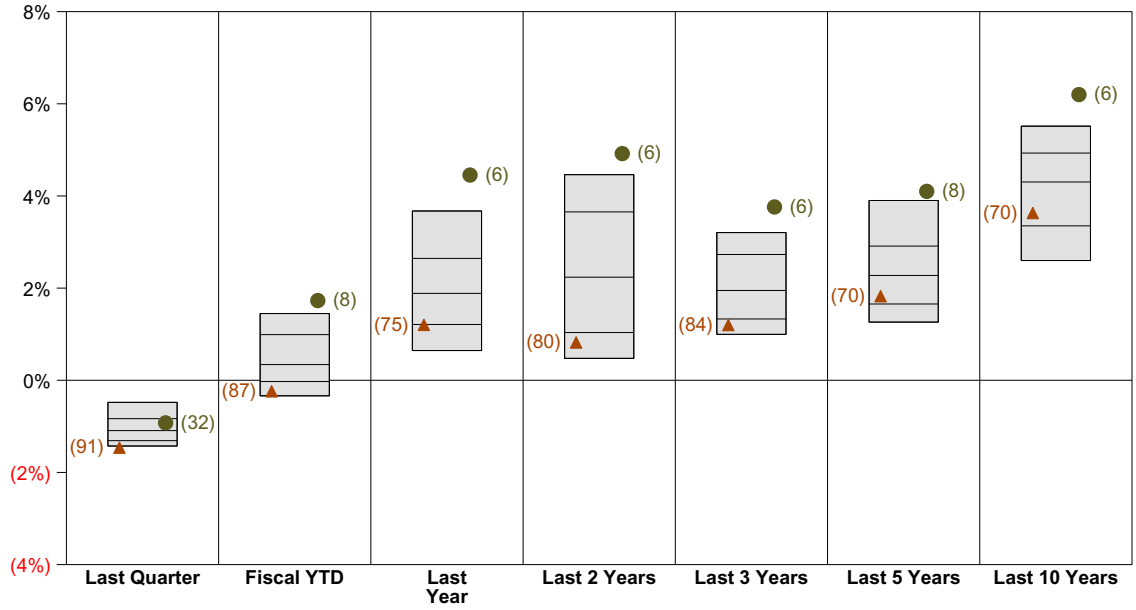
Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a (0.92)% return for the quarter placing it in the 32 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 6 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Inc. Target by 0.54% for the quarter and outperformed the Domestic Fixed Inc. Target for the year by 3.25%.

Quarterly Asset Growth

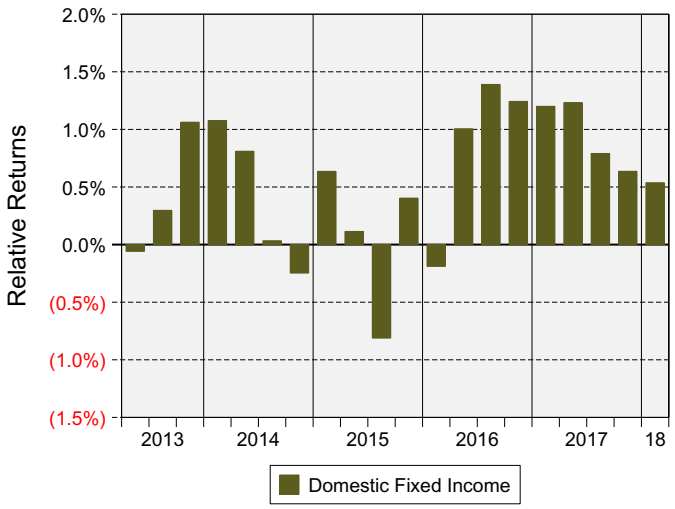
Beginning Market Value	$1,141,555,319
Net New Investment	$5,310,527
Investment Gains/(Losses)	$-10,606,603
Ending Market Value	$1,136,259,244

Performance vs Public Fund - Domestic Fixed (Gross)

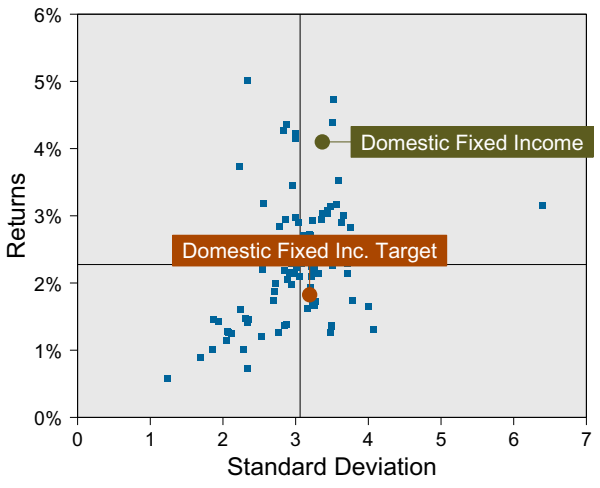


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.48)	1.45	3.67	4.46	3.21	3.90	5.52
25th Percentile	(0.83)	0.99	2.64	3.65	2.73	2.91	4.93
Median	(1.09)	0.34	1.89	2.24	1.95	2.27	4.30
75th Percentile	(1.31)	(0.03)	1.21	1.04	1.33	1.66	3.35
90th Percentile	(1.43)	(0.34)	0.65	0.48	1.00	1.26	2.60
Domestic Fixed Income ●	(0.92)	1.73	4.45	4.92	3.76	4.10	6.20
Domestic Fixed Inc. Target ▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	3.63

Relative Return vs Domestic Fixed Inc. Target



Public Fund - Domestic Fixed (Gross) Annualized Five Year Risk vs Return



Declaration Total Return
Period Ended March 31, 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.

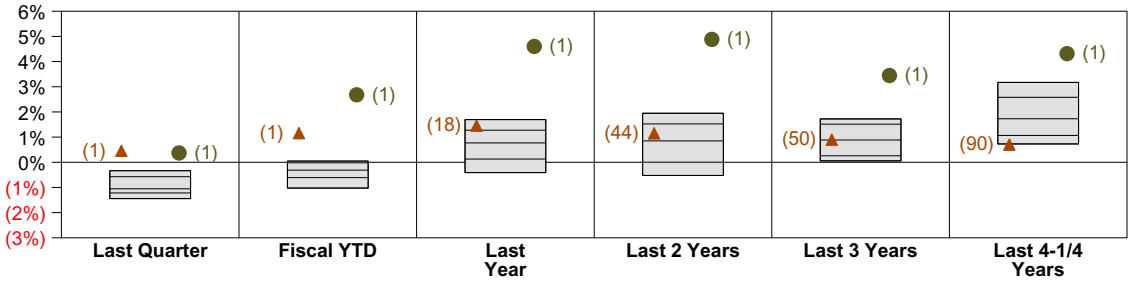
Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.37% return for the quarter placing it in the 1 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 0.09% for the quarter and outperformed the LIBOR - 3 Month for the year by 3.14%.

Quarterly Asset Growth

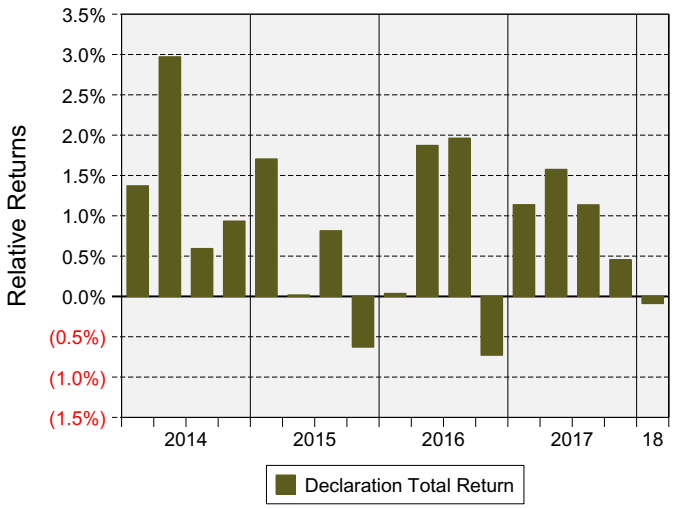
Beginning Market Value	$85,748,765
Net New Investment	$-25,180
Investment Gains/(Losses)	$316,725
Ending Market Value	$86,040,309

Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)

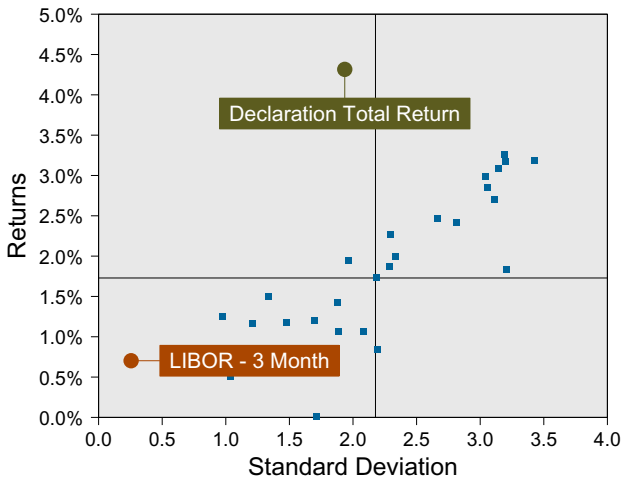


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(0.33)	0.05	1.70	1.95	1.72	3.17
25th Percentile	(0.57)	(0.02)	1.27	1.52	1.51	2.58
Median	(1.05)	(0.31)	0.77	0.85	0.89	1.73
75th Percentile	(1.22)	(0.61)	0.13	0.00	0.26	1.07
90th Percentile	(1.44)	(1.03)	(0.41)	(0.52)	0.06	0.73
Declaration Total Return ●	0.37	2.68	4.60	4.88	3.45	4.32
LIBOR - 3 Month ▲	0.46	1.16	1.46	1.15	0.90	0.70

Relative Return vs LIBOR - 3 Month



Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Four and One-Quarter Year Risk vs Return



PIMCO DiSCO II
Period Ended March 31, 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.

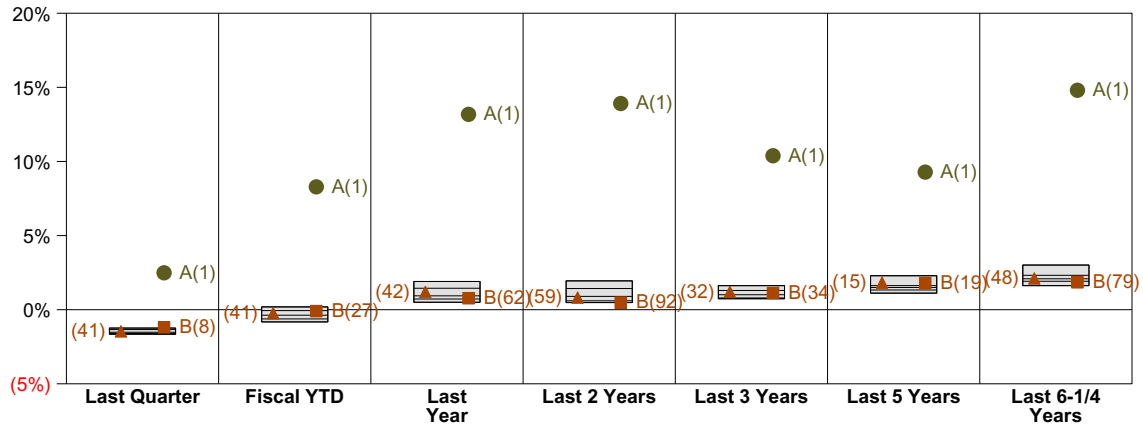
Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 2.49% 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 3.95% for the quarter and outperformed the Blmbg Aggregate for the year by 11.98%.

Quarterly Asset Growth

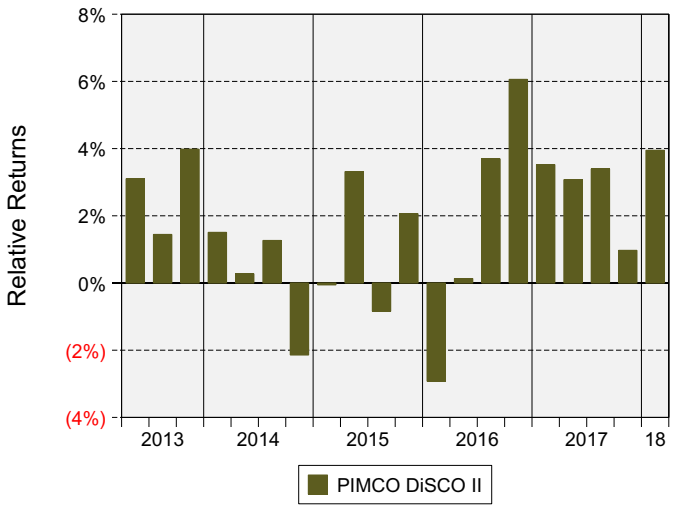
Beginning Market Value	$101,994,754
Net New Investment	$0
Investment Gains/(Losses)	$2,536,809
Ending Market Value	$104,531,563

Performance vs Callan Core Bond Mutual Funds (Net)

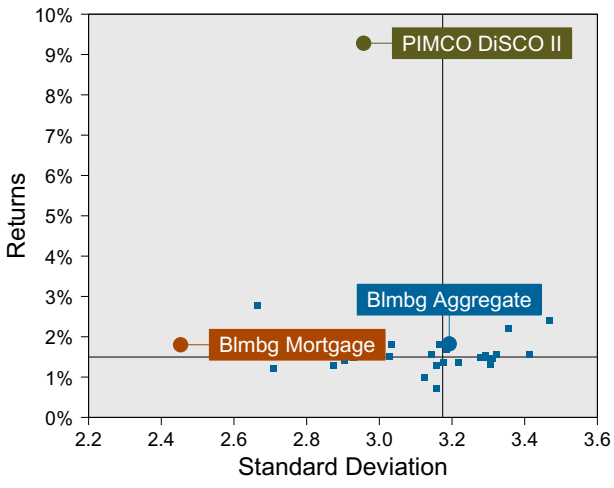


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-1/4 Years
10th Percentile	(1.24)	0.19	1.90	1.94	1.62	2.29	3.01
25th Percentile	(1.34)	(0.06)	1.45	1.43	1.30	1.62	2.32
Median	(1.52)	(0.37)	0.94	0.90	1.01	1.50	2.09
75th Percentile	(1.60)	(0.62)	0.72	0.60	0.79	1.33	1.92
90th Percentile	(1.65)	(0.82)	0.50	0.48	0.74	1.11	1.62
PIMCO DiSCO II ● A	2.49	8.29	13.18	13.91	10.38	9.28	14.80
Blmbg Mortgage ■ B	(1.19)	(0.10)	0.77	0.47	1.12	1.80	1.85
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	2.11

Relative Return vs Blmbg Aggregate



Callan Core Bond Mutual Funds (Net) Annualized Five Year Risk vs Return



PIMCO Bravo II Fund
Period Ended March 31, 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.

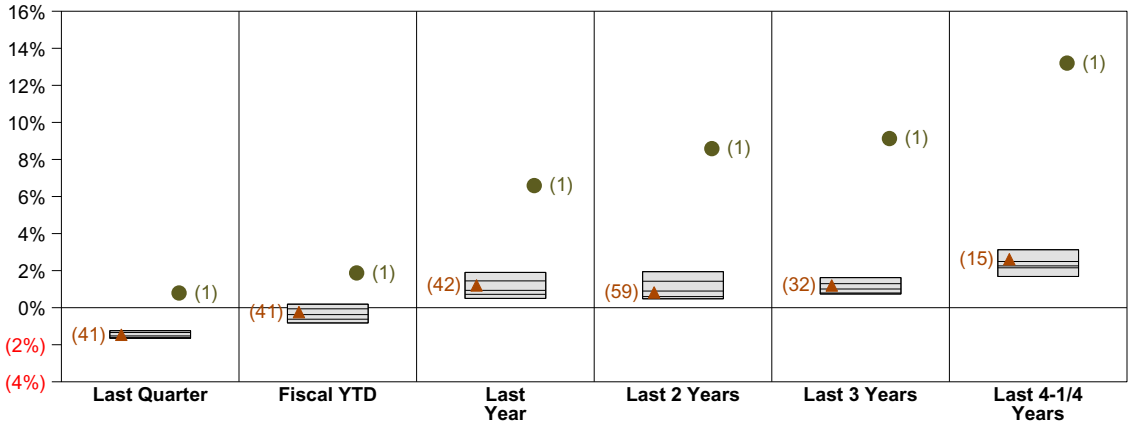
Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a 0.79% 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 Bravo II Fund's portfolio outperformed the Blmbg Aggregate by 2.25% for the quarter and outperformed the Blmbg Aggregate for the year by 5.39%.

Quarterly Asset Growth

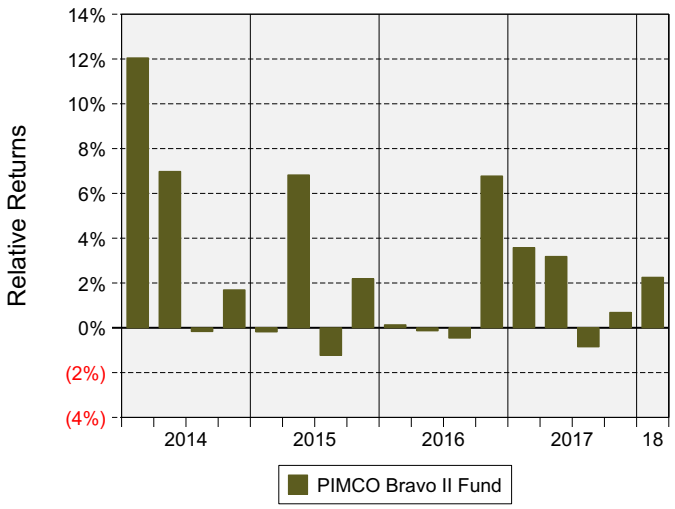
Beginning Market Value	$50,757,967
Net New Investment	$-5,357,787
Investment Gains/(Losses)	$402,108
Ending Market Value	$45,802,288

Performance vs Callan Core Bond Mutual Funds (Net)

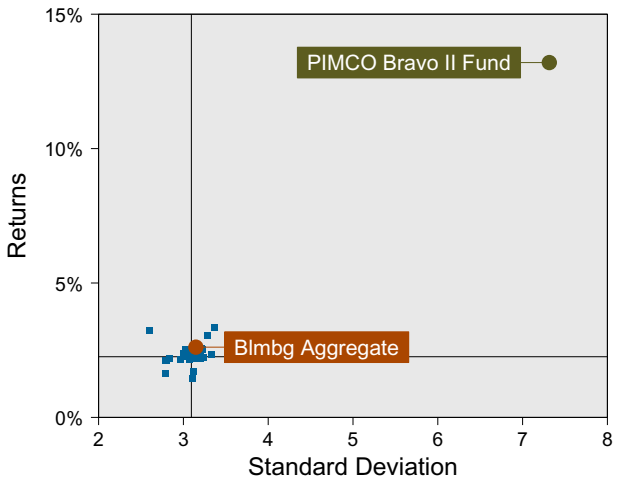


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.24)	0.19	1.90	1.94	1.62	3.13
25th Percentile	(1.34)	(0.06)	1.45	1.43	1.30	2.49
Median	(1.52)	(0.37)	0.94	0.90	1.01	2.26
75th Percentile	(1.60)	(0.62)	0.72	0.60	0.79	2.15
90th Percentile	(1.65)	(0.82)	0.50	0.48	0.74	1.68
PIMCO Bravo II Fund ●	0.79	1.88	6.59	8.58	9.13	13.20
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	2.61

Relative Return vs Blmbg Aggregate



Callan Core Bond Mutual Funds (Net)
Annualized Four and One-Quarter Year Risk vs Return



Prudential
Period Ended March 31, 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.

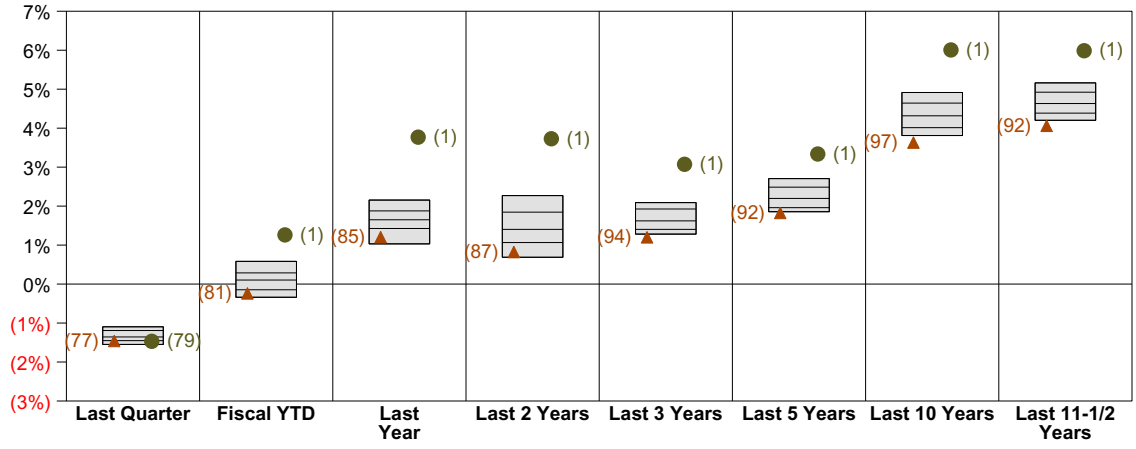
Quarterly Summary and Highlights

- Prudential's portfolio posted a (1.47)% return for the quarter placing it in the 79 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Prudential's portfolio underperformed the Blmbg Aggregate by 0.01% for the quarter and outperformed the Blmbg Aggregate for the year by 2.57%.

Quarterly Asset Growth

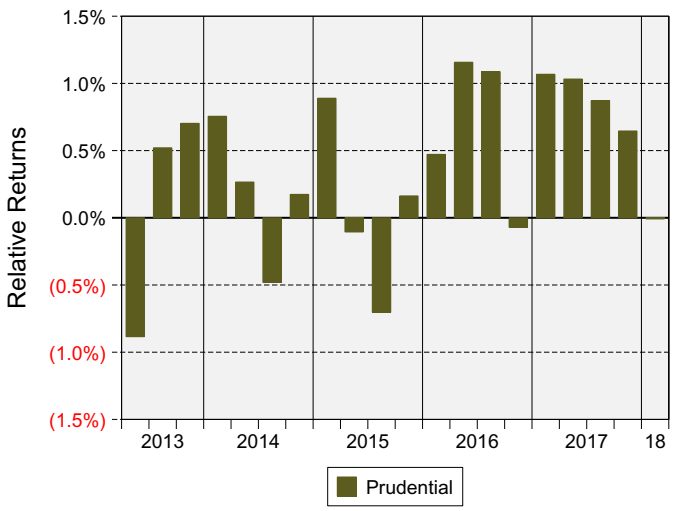
Beginning Market Value	$118,329,065
Net New Investment	$-76,003
Investment Gains/(Losses)	$-1,737,344
Ending Market Value	$116,515,718

Performance vs Callan Core Bond Fixed Income (Gross)

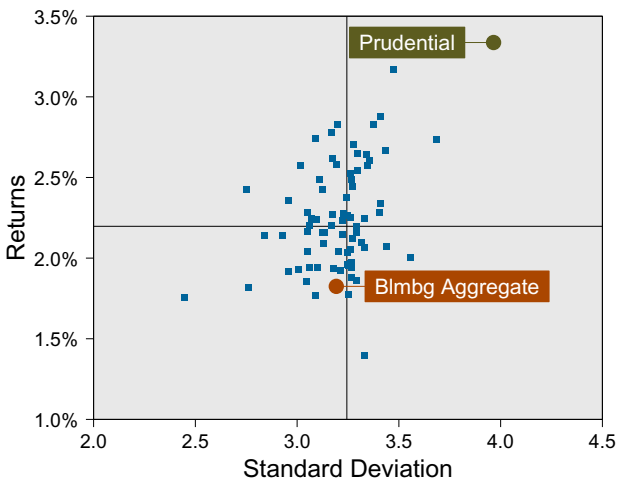


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 11-1/2 Years
10th Percentile	(1.10)	0.58	2.16	2.27	2.09	2.71	4.92	5.16
25th Percentile	(1.19)	0.29	1.88	1.85	1.93	2.49	4.64	4.92
Median	(1.36)	0.10	1.65	1.40	1.62	2.20	4.32	4.63
75th Percentile	(1.45)	(0.15)	1.43	1.07	1.40	1.96	4.01	4.39
90th Percentile	(1.55)	(0.34)	1.03	0.69	1.28	1.86	3.81	4.20
Prudential ●	(1.47)	1.26	3.77	3.73	3.07	3.34	6.01	5.99
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	1.82	3.63	4.06

Relative Return vs Blmbg Aggregate



Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return



SSgA US Govt Cr Bd Index
Period Ended March 31, 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.

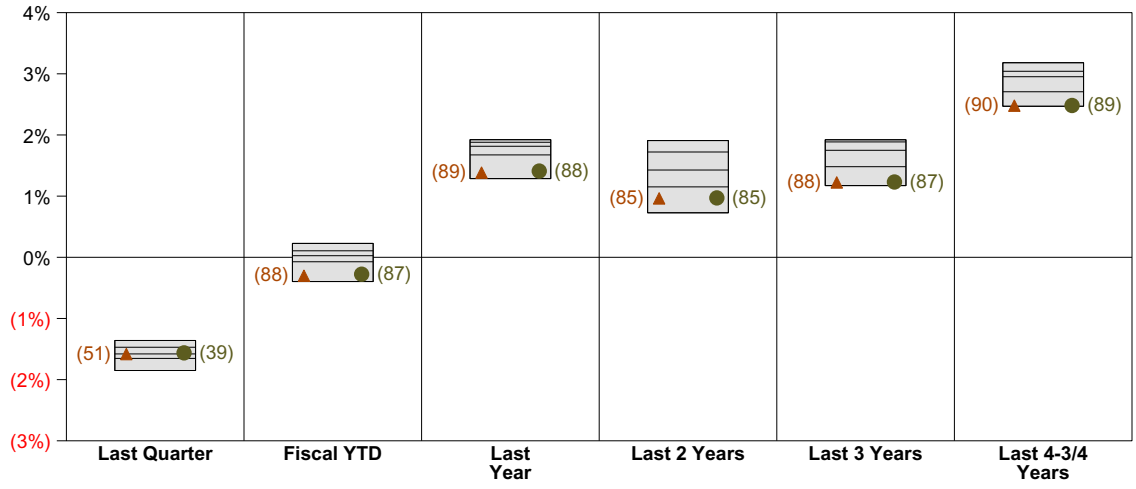
Quarterly Summary and Highlights

- SSgA US Govt Cr Bd Index's portfolio posted a (1.56)% return for the quarter placing it in the 39 percentile of the Callan Government/Credit group for the quarter and in the 88 percentile for the last year.
- SSgA US Govt Cr Bd Index's portfolio outperformed 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

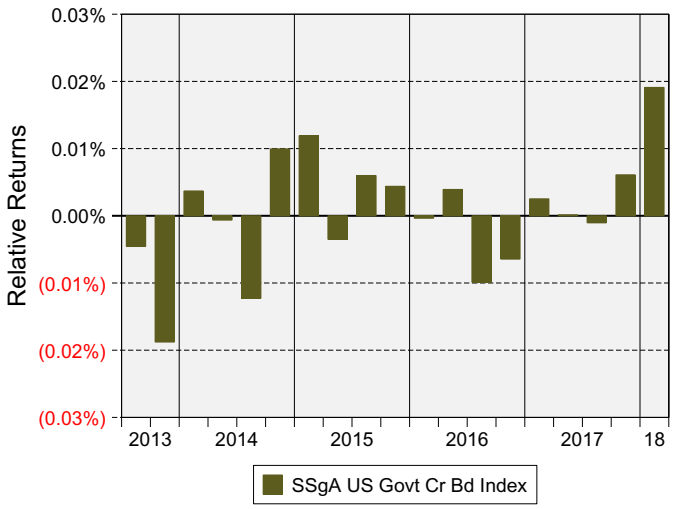
Beginning Market Value	$143,673,295
Net New Investment	$5,993,474
Investment Gains/(Losses)	$-2,299,002
Ending Market Value	$147,367,768

Performance vs Callan Government/Credit (Gross)

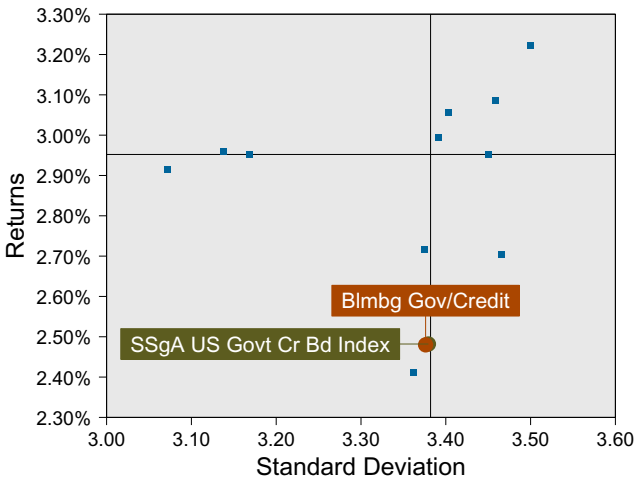


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-3/4 Years
10th Percentile	(1.36)	0.23	1.92	1.91	1.92	3.18
25th Percentile	(1.47)	0.11	1.88	1.72	1.89	3.04
Median	(1.58)	0.03	1.82	1.43	1.75	2.95
75th Percentile	(1.65)	(0.07)	1.67	1.15	1.48	2.71
90th Percentile	(1.85)	(0.40)	1.29	0.73	1.17	2.47
SSgA US Govt Cr Bd Index ●	(1.56)	(0.28)	1.41	0.97	1.23	2.48
Blmbg Gov/Credit ▲	(1.58)	(0.30)	1.38	0.96	1.22	2.48

Relative Return vs Blmbg Gov/Credit



Callan Government/Credit (Gross)
Annualized Four and Three-Quarter Year Risk vs Return



Wells Capital
Period Ended March 31, 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.

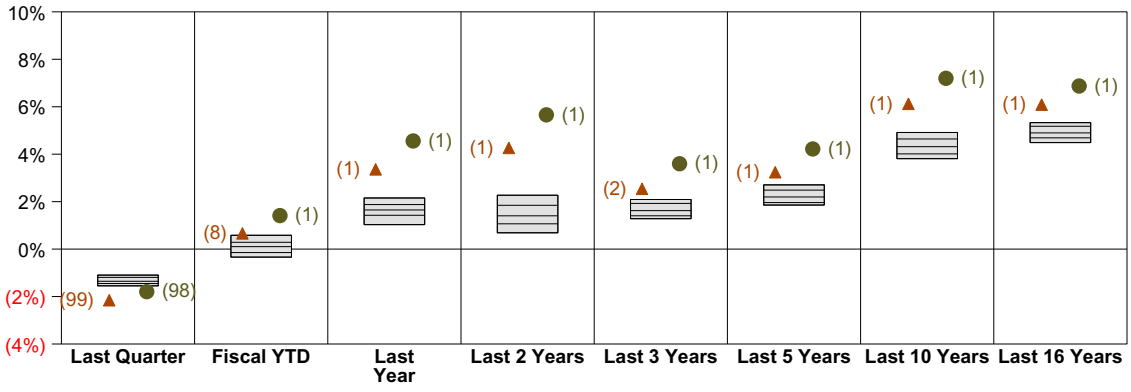
Quarterly Summary and Highlights

- Wells Capital's portfolio posted a (1.79)% return for the quarter placing it in the 98 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.36% for the quarter and outperformed the Blmbg Credit Baa for the year by 1.20%.

Quarterly Asset Growth

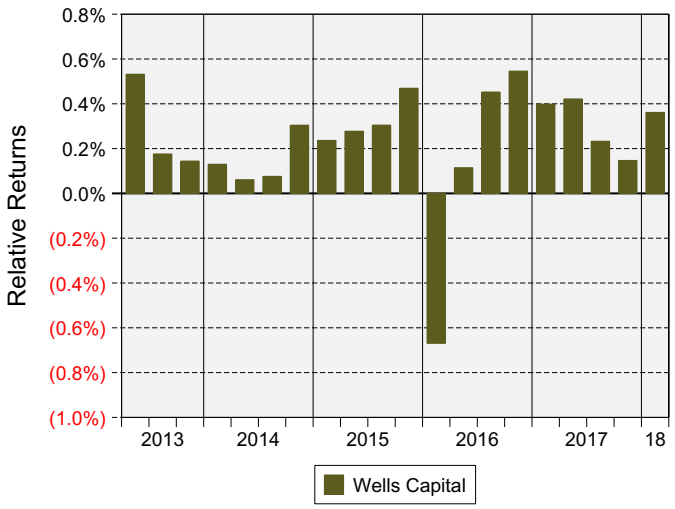
Beginning Market Value	$322,309,419
Net New Investment	$-123,287
Investment Gains/(Losses)	$-5,782,523
Ending Market Value	$316,403,609

Performance vs Callan Core Bond Fixed Income (Gross)

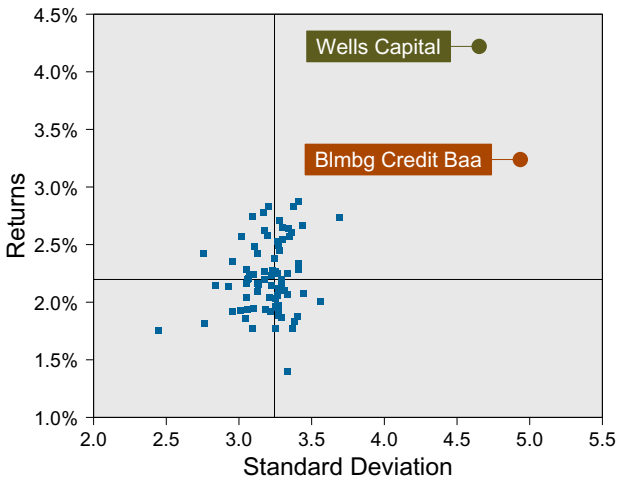


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 16 Years
10th Percentile		(1.10)	0.58	2.16	2.27	2.09	2.71	4.92	5.33
25th Percentile		(1.19)	0.29	1.88	1.85	1.93	2.49	4.64	5.18
Median		(1.36)	0.10	1.65	1.40	1.62	2.20	4.32	4.90
75th Percentile		(1.45)	(0.15)	1.43	1.07	1.40	1.96	4.01	4.69
90th Percentile		(1.55)	(0.34)	1.03	0.69	1.28	1.86	3.81	4.49
Wells Capital	●	(1.79)	1.41	4.56	5.66	3.60	4.22	7.20	6.87
Blmbg Credit Baa	▲	(2.16)	0.66	3.36	4.27	2.54	3.24	6.12	6.09

Relative Return vs Blmbg Credit Baa



Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return



Western Asset Management Company
Period Ended March 31, 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.

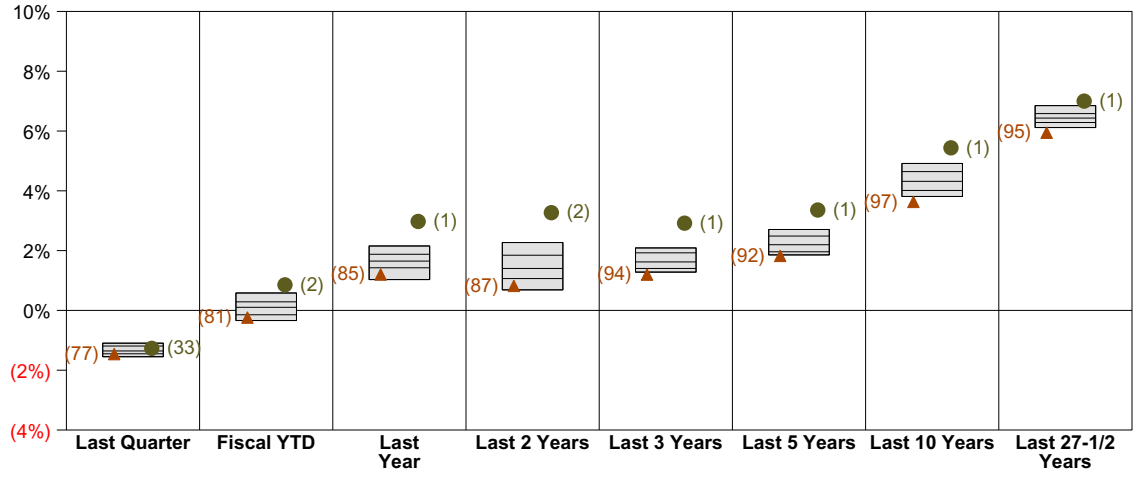
Quarterly Summary and Highlights

- Western Asset's portfolio posted a (1.27)% return for the quarter placing it in the 33 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Western Asset's portfolio outperformed the Blmbg Aggregate by 0.19% for the quarter and outperformed the Blmbg Aggregate for the year by 1.77%.

Quarterly Asset Growth

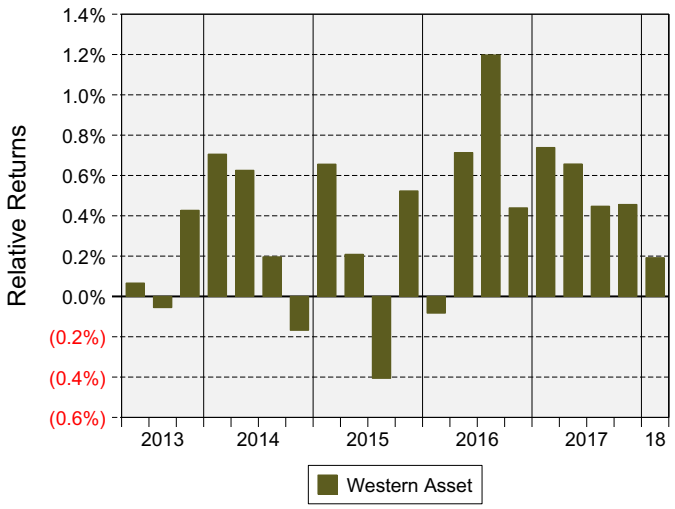
Beginning Market Value	$318,742,054
Net New Investment	$4,899,310
Investment Gains/(Losses)	$-4,043,376
Ending Market Value	$319,597,989

Performance vs Callan Core Bond Fixed Income (Gross)

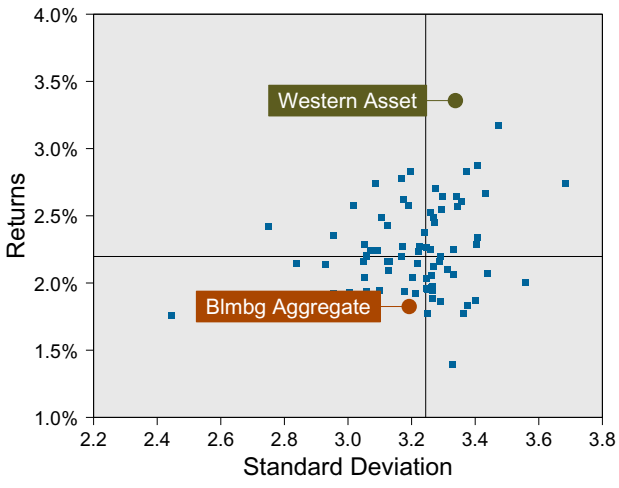


10th Percentile	(1.10)	0.58	2.16	2.27	2.09	2.71	4.92	6.85
25th Percentile	(1.19)	0.29	1.88	1.85	1.93	2.49	4.64	6.58
Median	(1.36)	0.10	1.65	1.40	1.62	2.20	4.32	6.43
75th Percentile	(1.45)	(0.15)	1.43	1.07	1.40	1.96	4.01	6.28
90th Percentile	(1.55)	(0.34)	1.03	0.69	1.28	1.86	3.81	6.12
Western Asset	(1.27)	0.85	2.97	3.27	2.92	3.36	5.44	7.00
Blmbg Aggregate	(1.46)	(0.24)	1.20	0.82	1.20	1.82	3.63	5.94

Relative Return vs Blmbg Aggregate



Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return



Western TIPS
Period Ended March 31, 2018

Investment Philosophy

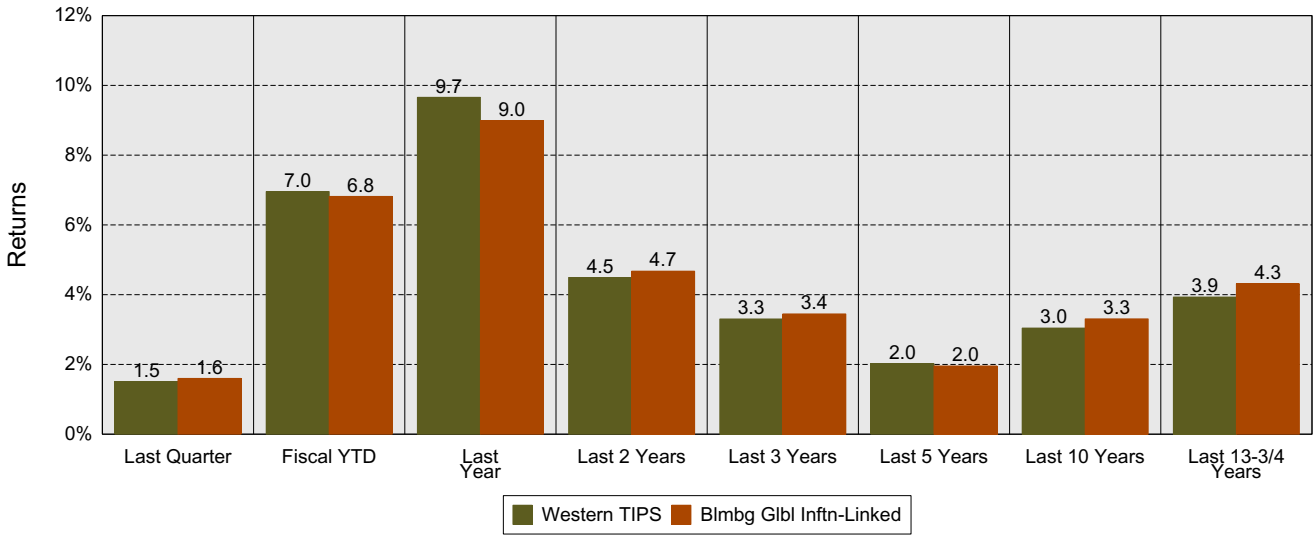
Western Asset's Global Inflation-Linked composite includes portfolios that employ an active, team-managed investment approach around a long-term, value-oriented investment philosophy. Constructed primarily of inflation-indexed securities, these portfolios use diversified strategies in seeking to add 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

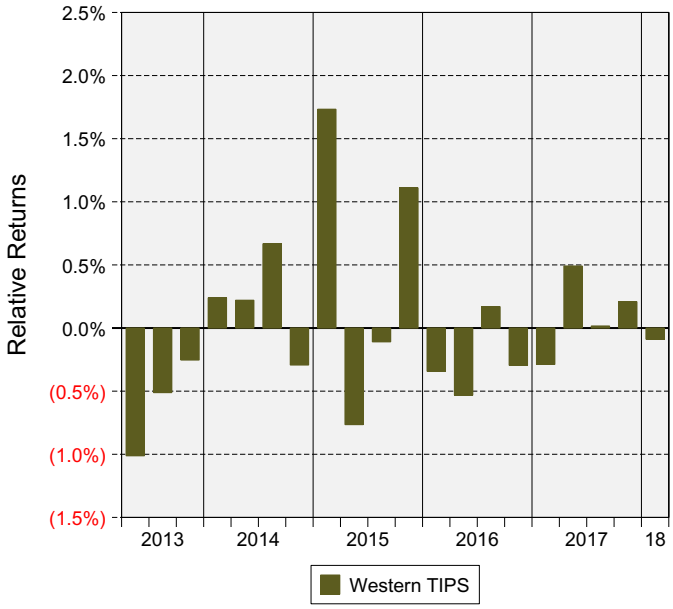
- Western TIPS's portfolio underperformed the Blmbg Glbl Inftn-Linked by 0.09% for the quarter and outperformed the Blmbg Glbl Inftn-Linked for the year by 0.67%.

Quarterly Asset Growth

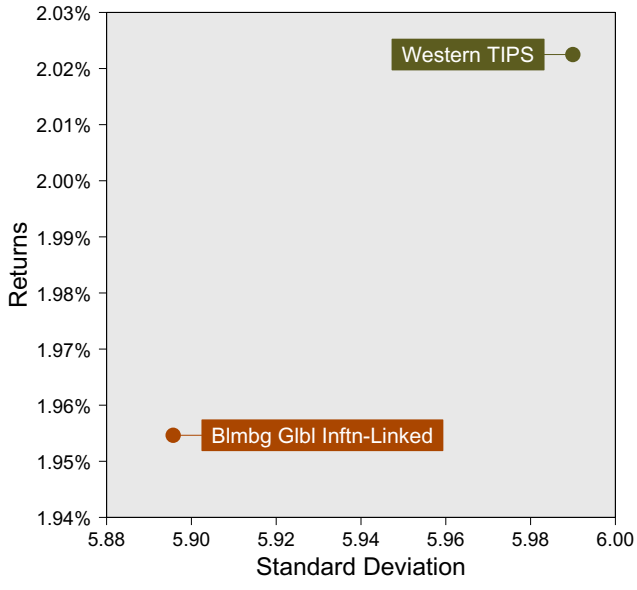
Beginning Market Value	$120,068,344
Net New Investment	$-37,813
Investment Gains/(Losses)	$1,813,558
Ending Market Value	$121,844,089



Relative Return vs Blmbg Glbl Inftn-Linked



Annualized Five Year Risk vs Return



Eastern Timber Opportunities
Period Ended March 31, 2018

Investment Philosophy

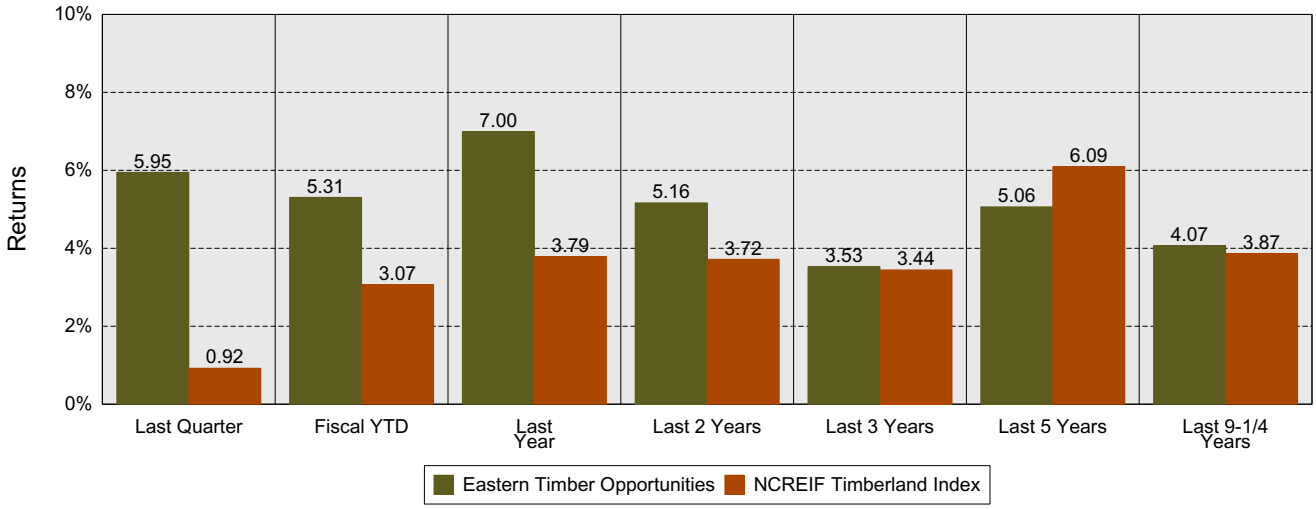
The investment objective of the Eastern Timberland Opportunities fund is to provide competitive timberland investment returns from Eastern US timberland investments by pursuing management strategies to increase timber production and land values through the investment term. TIR will maximize timber values 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

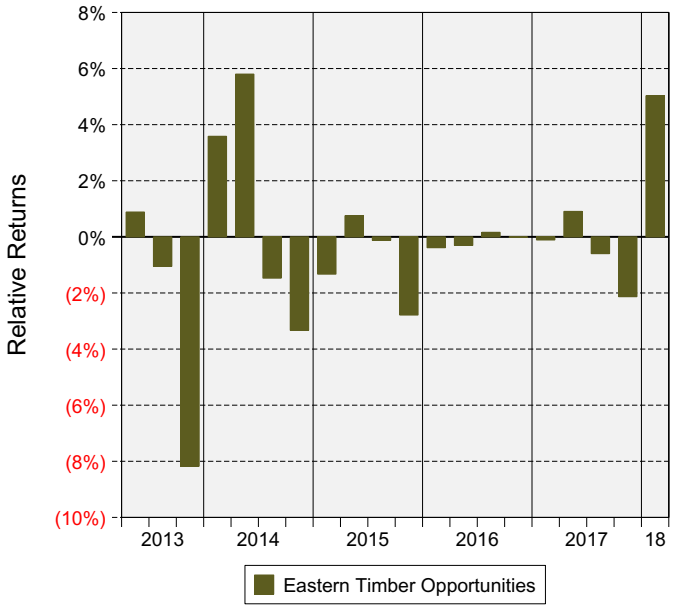
- Eastern Timber Opportunities's portfolio outperformed the NCREIF Timberland Index by 5.03% for the quarter and outperformed the NCREIF Timberland Index for the year by 3.21%.

Quarterly Asset Growth

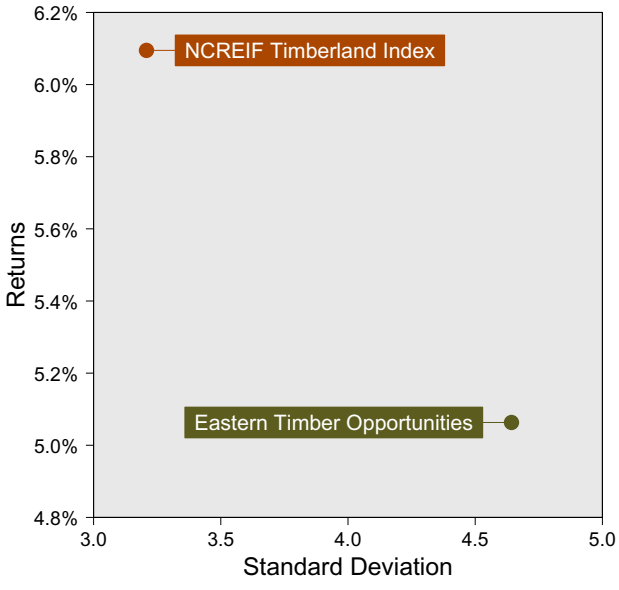
Beginning Market Value	$49,430,480
Net New Investment	$-25
Investment Gains/(Losses)	$2,940,668
Ending Market Value	$52,371,123



Relative Return vs NCREIF Timberland Index



Annualized Five Year Risk vs Return



JP Morgan Infrastructure
Period Ended March 31, 2018

Investment Philosophy

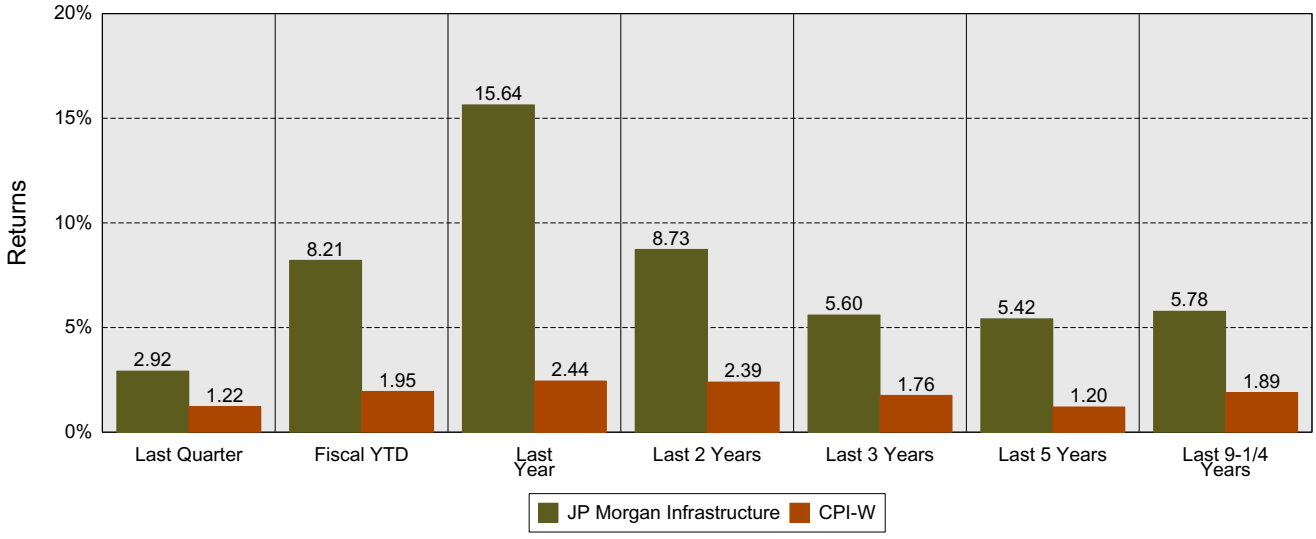
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas 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.

Quarterly Summary and Highlights

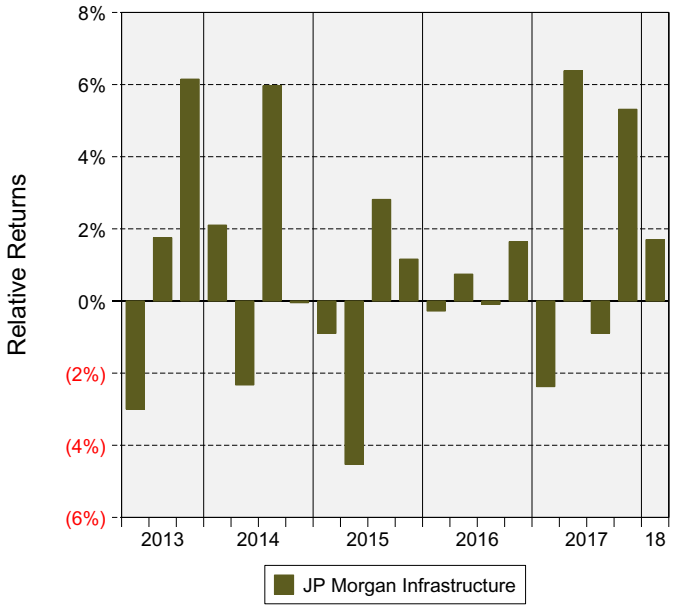
- JP Morgan Infrastructure's portfolio outperformed the CPI-W by 1.70% for the quarter and outperformed the CPI-W for the year by 13.20%.

Quarterly Asset Growth

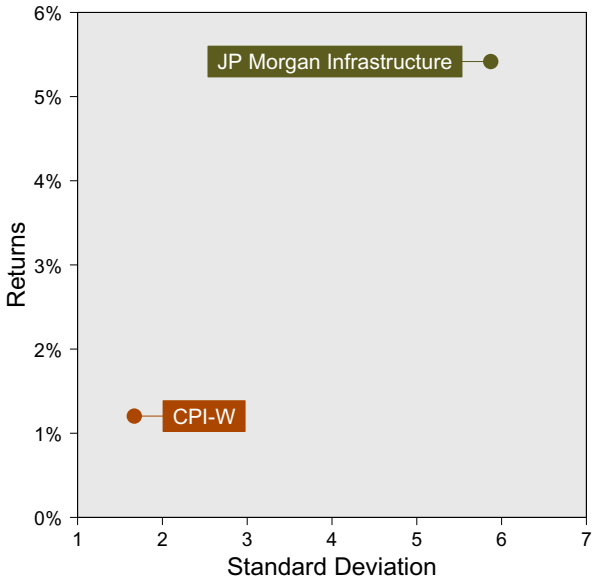
Beginning Market Value	$89,502,216
Net New Investment	$-181,690
Investment Gains/(Losses)	$2,610,869
Ending Market Value	$91,931,394



Relative Return vs CPI-W



Annualized Five Year Risk vs Return



Grosvenor Cust. Infrastructure
Period Ended March 31, 2018

Investment Philosophy

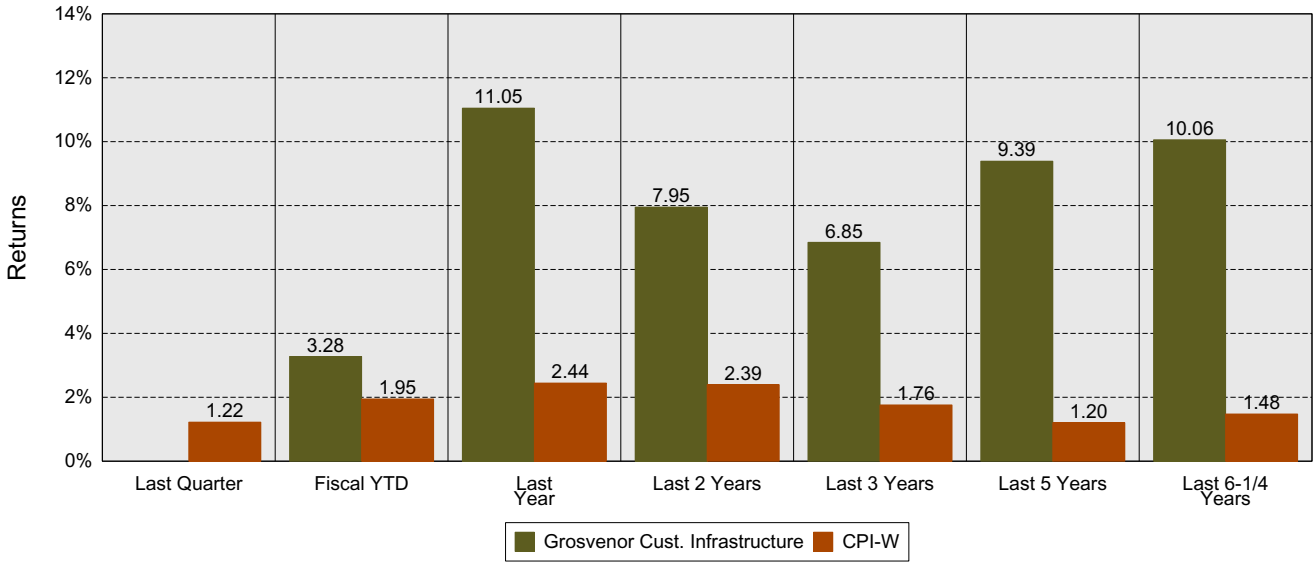
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%).

Quarterly Summary and Highlights

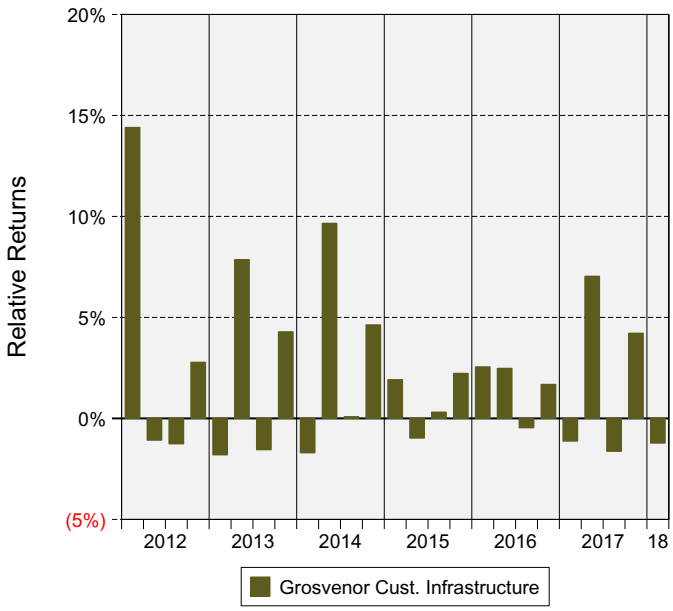
- Grosvenor Cust. Infrastructure's portfolio underperformed the CPI-W by 1.22% for the quarter and outperformed the CPI-W for the year by 8.60%.

Quarterly Asset Growth

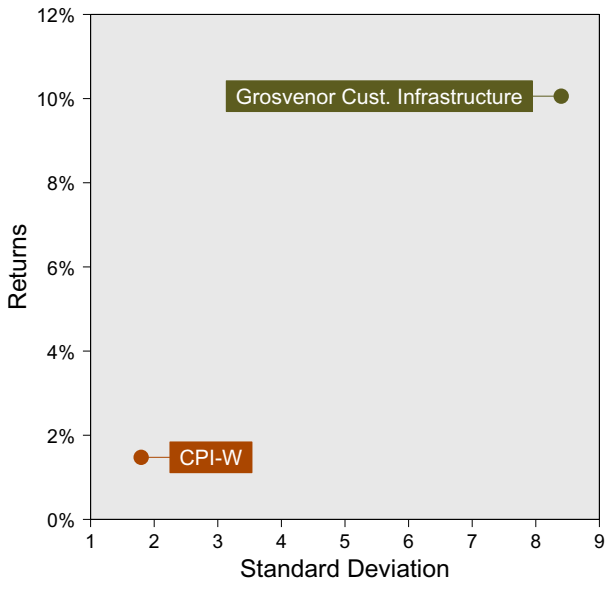
Beginning Market Value	$16,876,855
Net New Investment	$0
Investment Gains/(Losses)	$0
Ending Market Value	$16,876,855



Relative Return vs CPI-W



Annualized Six and One-Quarter Year Risk vs Return



Real Estate
Period Ended March 31, 2018

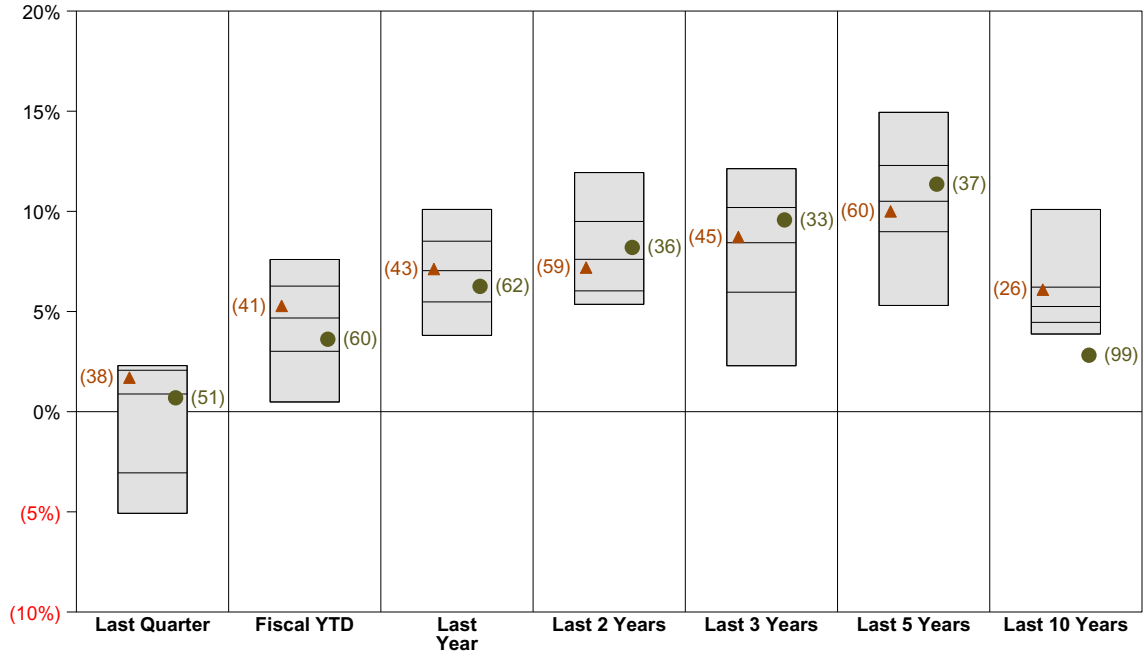
Quarterly Summary and Highlights

- Real Estate's portfolio posted a 0.69% return for the quarter placing it in the 51 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 62 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 1.01% for the quarter and underperformed the NCREIF Total Index for the year by 0.86%.

Quarterly Asset Growth

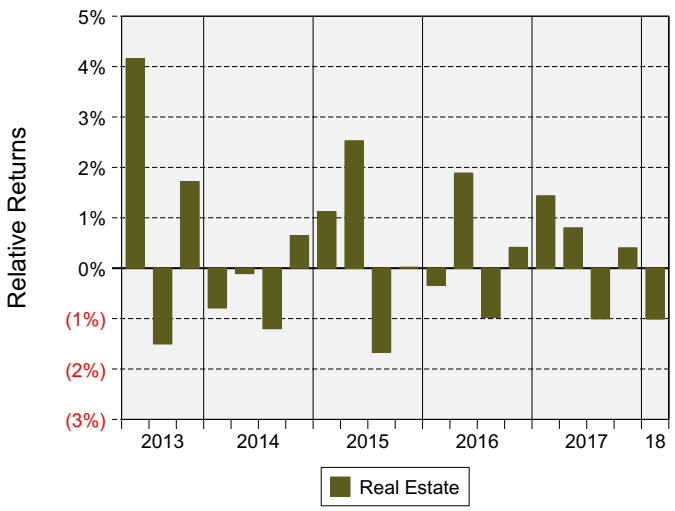
Beginning Market Value	$139,446,327
Net New Investment	$-1,408,062
Investment Gains/(Losses)	$963,851
Ending Market Value	$139,002,116

Performance vs Callan Total Domestic Real Estate DB (Gross)

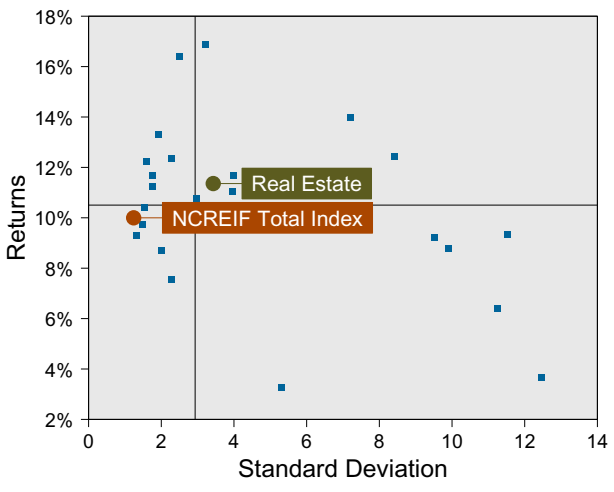


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	2.30	7.60	10.10	11.94	12.13	14.94	10.09
25th Percentile	2.07	6.27	8.51	9.50	10.19	12.29	6.22
Median	0.88	4.68	7.04	7.61	8.43	10.50	5.25
75th Percentile	(3.05)	3.01	5.48	6.03	5.97	8.98	4.46
90th Percentile	(5.07)	0.48	3.81	5.36	2.29	5.30	3.88
Real Estate ●	0.69	3.62	6.26	8.20	9.57	11.36	2.82
NCREIF Total Index ▲	1.70	5.28	7.12	7.19	8.72	10.00	6.09

Relative Return vs NCREIF Total Index



Callan Total Domestic Real Estate DB (Gross) Annualized Five Year Risk vs Return



Invesco Core Real Estate
Period Ended March 31, 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.

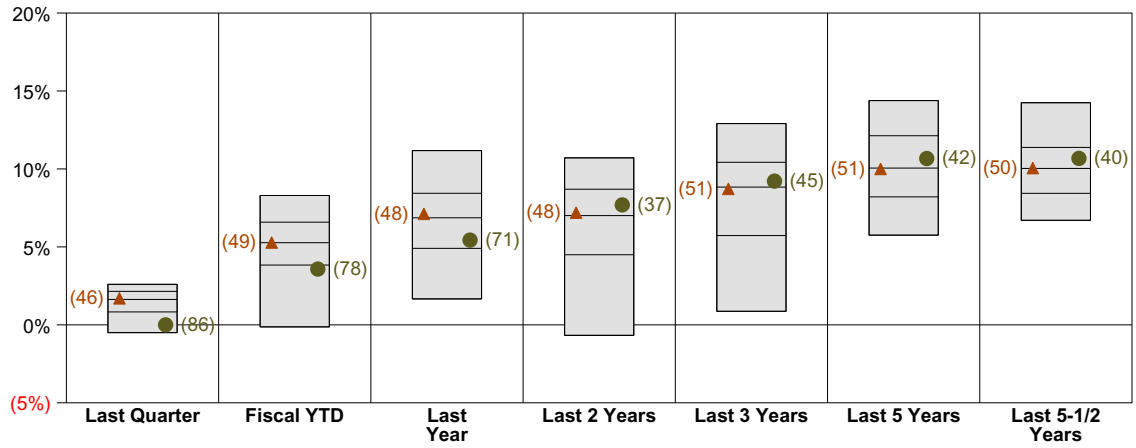
Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a 0.00% return for the quarter placing it in the 86 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 71 percentile for the last year.
- Invesco Core Real Estate's portfolio underperformed the NCREIF Total Index by 1.70% for the quarter and underperformed the NCREIF Total Index for the year by 1.69%.

Quarterly Asset Growth

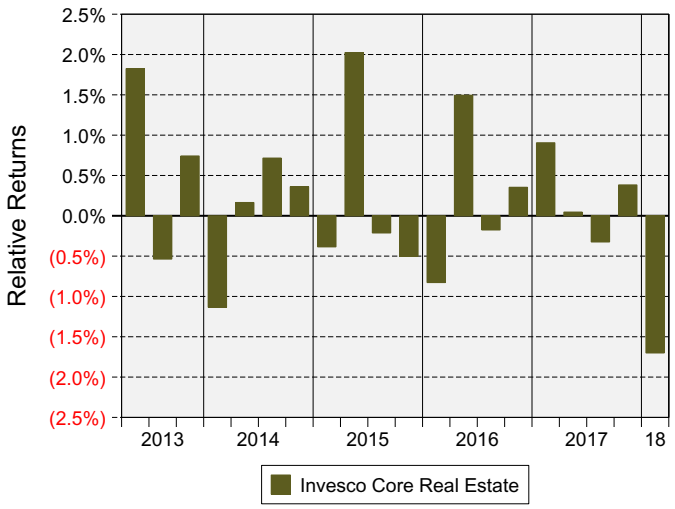
Beginning Market Value	$66,845,334
Net New Investment	$-463,230
Investment Gains/(Losses)	$0
Ending Market Value	$66,382,104

Performance vs Callan Total Domestic Real Estate DB (Net)

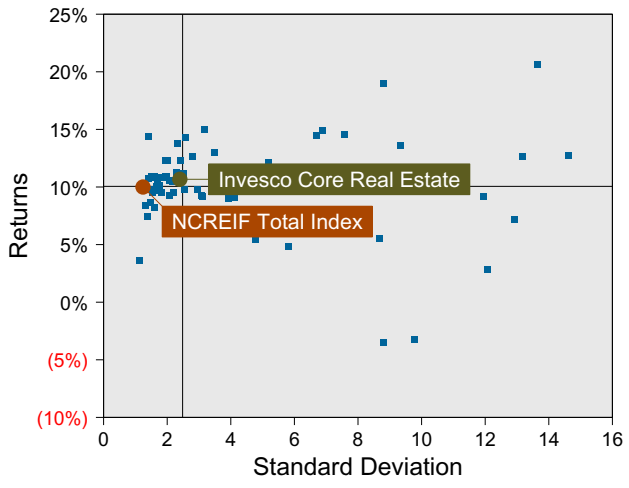


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 5-1/2 Years
10th Percentile	2.60	8.30	11.18	10.71	12.91	14.38	14.25
25th Percentile	2.15	6.58	8.44	8.70	10.43	12.13	11.38
Median	1.63	5.27	6.87	7.01	8.84	10.06	10.03
75th Percentile	0.83	3.83	4.91	4.50	5.73	8.21	8.44
90th Percentile	(0.50)	(0.13)	1.66	(0.67)	0.87	5.75	6.70
Invesco Core Real Estate ●	0.00	3.58	5.43	7.69	9.22	10.67	10.68
NCREIF Total Index ▲	1.70	5.28	7.12	7.19	8.72	10.00	10.05

Relative Return vs NCREIF Total Index



Callan Total Domestic Real Estate DB (Net) Annualized Five Year Risk vs Return



JP Morgan Real Estate
Period Ended March 31, 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.

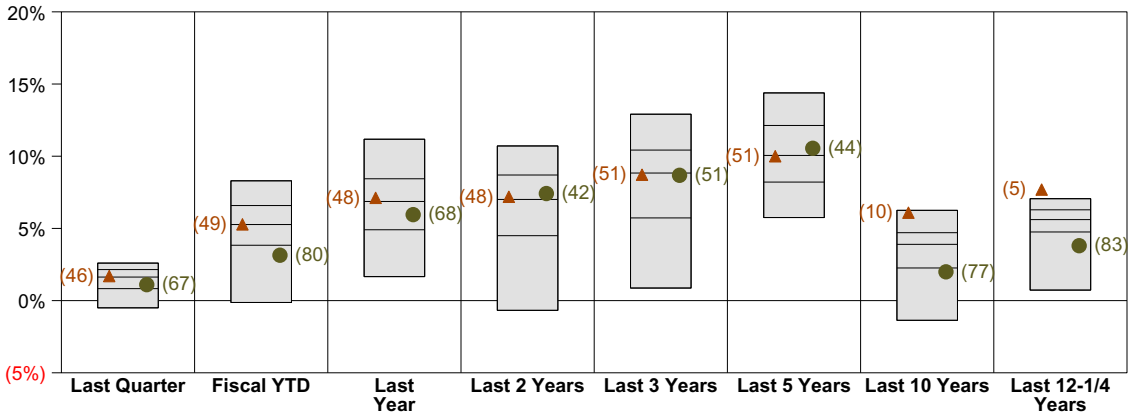
Quarterly Summary and Highlights

- JP Morgan Real Estate's portfolio posted a 1.10% return for the quarter placing it in the 67 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 68 percentile for the last year.
- JP Morgan Real Estate's portfolio underperformed the NCREIF Total Index by 0.60% for the quarter and underperformed the NCREIF Total Index for the year by 1.17%.

Quarterly Asset Growth

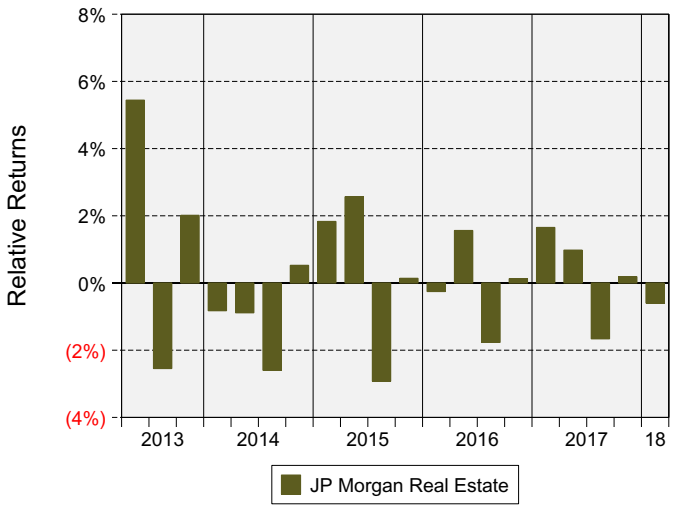
Beginning Market Value	$72,600,994
Net New Investment	$-782,733
Investment Gains/(Losses)	$801,751
Ending Market Value	$72,620,012

Performance vs Callan Total Domestic Real Estate DB (Net)

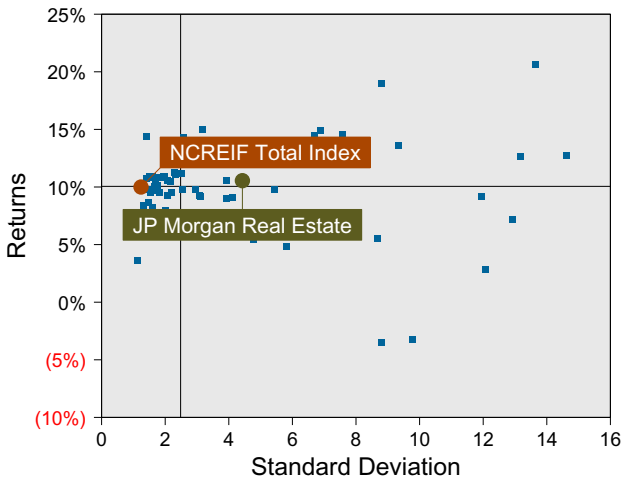


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 10 Years	Last 12-1/4 Years
10th Percentile	2.60	8.30	11.18	10.71	12.91	14.38	6.25	7.06
25th Percentile	2.15	6.58	8.44	8.70	10.43	12.13	4.70	6.29
Median	1.63	5.27	6.87	7.01	8.84	10.06	3.90	5.61
75th Percentile	0.83	3.83	4.91	4.50	5.73	8.21	2.26	4.75
90th Percentile	(0.50)	(0.13)	1.66	(0.67)	0.87	5.75	(1.36)	0.73
JP Morgan Real Estate ●	1.10	3.14	5.95	7.42	8.68	10.55	1.99	3.80
NCREIF Total Index ▲	1.70	5.28	7.12	7.19	8.72	10.00	6.09	7.69

Relative Return vs NCREIF Total Index



Callan Total Domestic Real Estate DB (Net) Annualized Five Year Risk vs Return



Short Term Fixed Income
Period Ended March 31, 2018

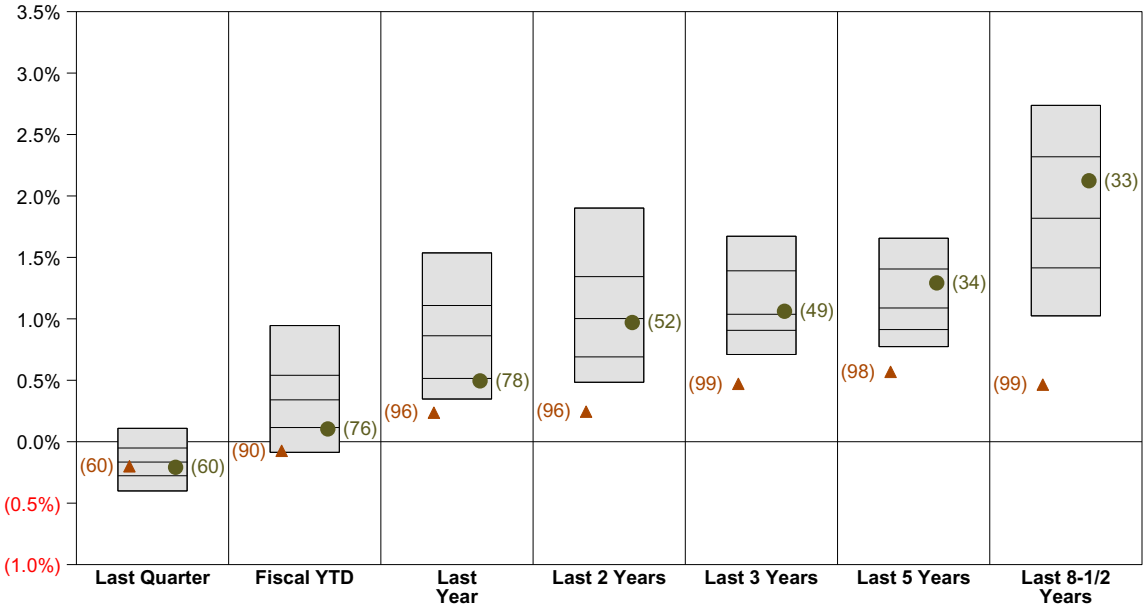
Quarterly Summary and Highlights

- Short Term Fixed Income's portfolio posted a (0.21)% return for the quarter placing it in the 60 percentile of the Callan Defensive Fixed Income group for the quarter and in the 78 percentile for the last year.
- Short Term Fixed Income's portfolio underperformed the Short Term Fixed Target by 0.01% for the quarter and outperformed the Short Term Fixed Target for the year by 0.26%.

Quarterly Asset Growth

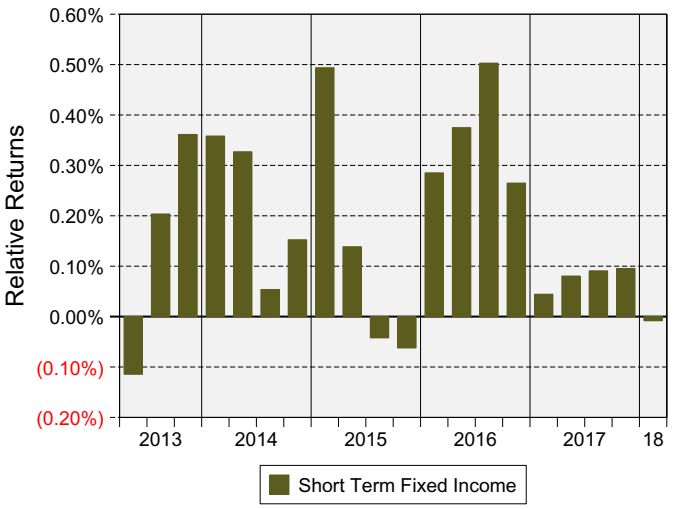
Beginning Market Value	$70,614,543
Net New Investment	$0
Investment Gains/(Losses)	$-146,898
Ending Market Value	$70,467,645

Performance vs Callan Defensive Fixed Income (Gross)

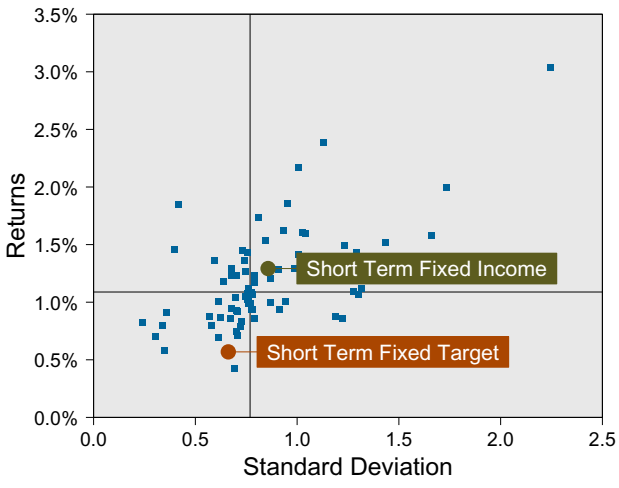


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 8-1/2 Years
10th Percentile	0.11	0.95	1.54	1.90	1.67	1.66	2.74
25th Percentile	(0.05)	0.54	1.11	1.34	1.39	1.41	2.32
Median	(0.17)	0.34	0.86	1.00	1.04	1.09	1.82
75th Percentile	(0.28)	0.12	0.51	0.69	0.91	0.91	1.41
90th Percentile	(0.40)	(0.09)	0.35	0.48	0.71	0.77	1.02
Short Term Fixed Income	(0.21)	0.10	0.50	0.97	1.06	1.29	2.12
Short Term Fixed Target	(0.20)	(0.07)	0.24	0.24	0.47	0.57	0.46

Relative Return vs Short Term Fixed Target



Callan Defensive Fixed Income (Gross) Annualized Five Year Risk vs Return



JP Morgan Short Term Bonds
Period Ended March 31, 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.

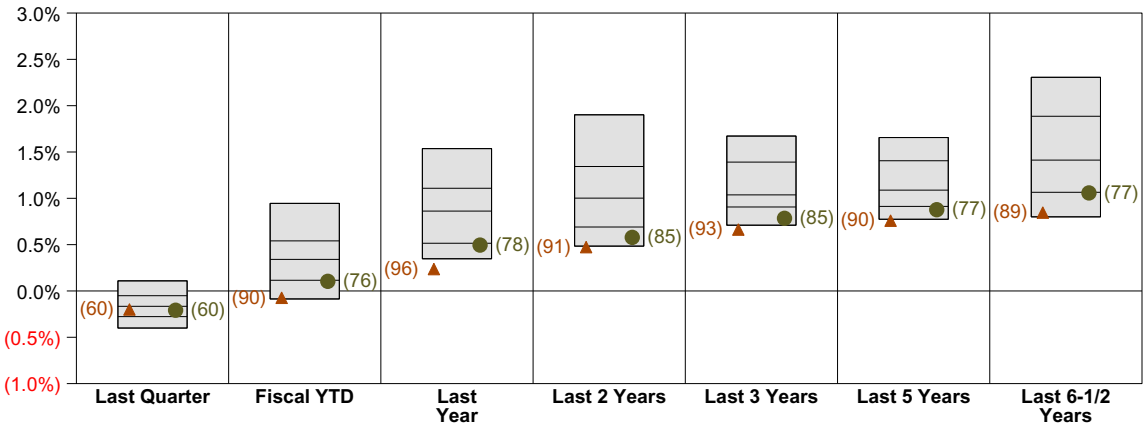
Quarterly Summary and Highlights

- JP Morgan Short Term Bonds's portfolio posted a (0.21)% return for the quarter placing it in the 60 percentile of the Callan Defensive Fixed Income group for the quarter and in the 78 percentile for the last year.
- JP Morgan Short Term Bonds's portfolio underperformed the Blmbg Gov/Cred 1-3 Yr by 0.01% for the quarter and outperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.26%.

Quarterly Asset Growth

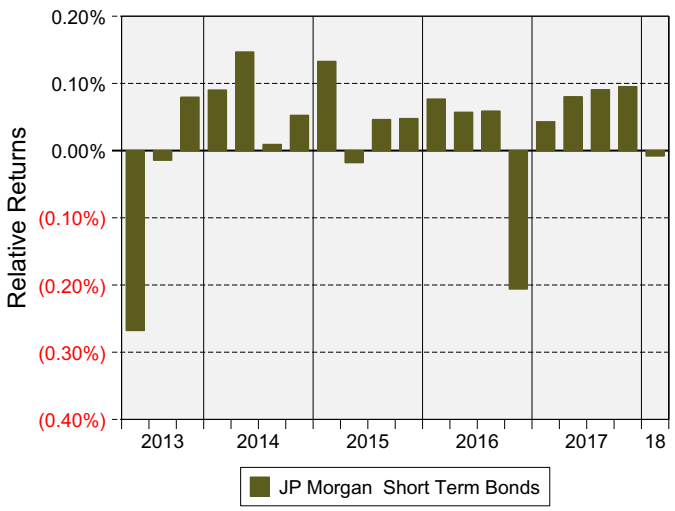
Beginning Market Value	$70,614,543
Net New Investment	$0
Investment Gains/(Losses)	$-146,898
Ending Market Value	$70,467,645

Performance vs Callan Defensive Fixed Income (Gross)

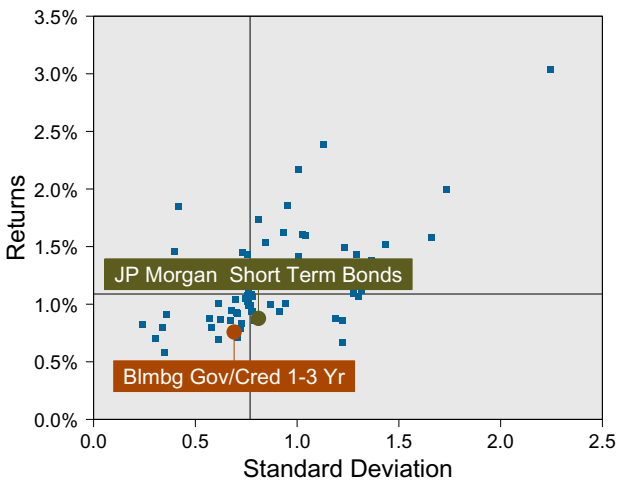


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6-1/2 Years
10th Percentile	0.11	0.95	1.54	1.90	1.67	1.66	2.31
25th Percentile	(0.05)	0.54	1.11	1.34	1.39	1.41	1.89
Median	(0.17)	0.34	0.86	1.00	1.04	1.09	1.41
75th Percentile	(0.28)	0.12	0.51	0.69	0.91	0.91	1.06
90th Percentile	(0.40)	(0.09)	0.35	0.48	0.71	0.77	0.80
JP Morgan Short Term Bonds	(0.21)	0.10	0.50	0.58	0.78	0.88	1.06
Blmbg Gov/Cred 1-3 Yr	(0.20)	(0.07)	0.24	0.47	0.66	0.76	0.85

Relative Return vs Blmbg Gov/Cred 1-3 Yr



Callan Defensive Fixed Income (Gross) Annualized Five Year Risk vs Return



Callan

CALLAN INSTITUTE

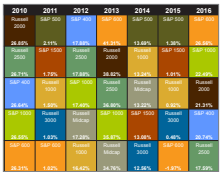
1st Quarter 2018

Education

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 to see all of our publications, and www.callan.com/blog to view our blog "Perspectives." For more information contact Corry Walsh at 312.346.3536 / institute@callan.com.

New Research from Callan's Experts



The Callan Periodic Table of Investment Returns | We are pleased to offer both our Classic Periodic Table, depicting annual returns for 10 asset classes ranked from best to worst performance for each calendar year, and our Collection, offering 10 additional versions, including real estate indices, hedge fund strategy indices, and key indices ranked relative to inflation.

Callan's 2018-2027 Capital Market Projections | Callan develops long-term capital market projections at the start of each year, detailing our expectations for return, volatility, and correlation for broad asset classes. These projections represent our best thinking regarding a longer-term outlook and are critical for strategic planning as our investor clients set investment expectations over five-year, ten-year, and longer time horizons.

How Callan Categorizes Multi-Asset Class Strategies | In the wake of the Global Financial Crisis, a new generation of multi-asset class (MAC) products emerged that emphasized risk management and expanded their toolkits to include shorting and derivatives. Callan groups these "outcome-oriented" MACs into four broad categories: Risk Parity, Risk Premia, Absolute Return, and Long Biased.

Treasuries for the Long Run | Callan's James Van Heuit analyzed whether long-term Treasuries can serve as an effective hedge against equity losses. He concluded that long-term Treasuries have a mixed record of offsetting equity risk. The potential protection offered by long-term Treasuries comes with the risk of underperformance over some time periods. Other types of bonds, he found, may offer less protection, but also have less volatility.

2018 DC Trends Survey | Callan's 11th Annual DC Trends Survey from our Defined Contribution Group highlights plan sponsors' key themes from 2017 and expectations for 2018.

Periodicals

Hedge Fund Monitor, 1st Quarter 2018 | Jim McKee explains Form ADV changes and how to use them to evaluate advisers.

DC Observer, 1st Quarter 2018 | Non-qualified deferred compensation plans (NQDCs) may look and sound like qualified defined contribution (DC) plans, but the two are actually quite different. This quarter's commentary explores approaches to designing the NQDC plan investment menu as well as some of the considerations around informally funding the liabilities.

Active vs. Passive Report, 4th Quarter 2017 | This series of charts maps active managers alongside relevant benchmarks over the last two decades.

Market Pulse Flipbook, 4th Quarter 2017 | 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, 4th Quarter 2017 | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

Private Markets Trends, Winter 2018 | This newsletter offers the latest data on activity in private equity fundraising, buyouts, venture capital, and returns for this asset class.

Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: www.callan.com/library/

Callan's June **Regional Workshops** will be held on June 12 in San Francisco and June 13 in Denver. Please visit our Event page on our website (https://www.callan.com/events/) for additional information on these workshops.

We've added on-demand webinars to our online research library. Access our library of pre-recorded webinars on specific investment-related topics at www.callan.com/ondemandwebinar/.

For more information about events, please contact Barb Gerraty: 415.274.3093 / 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, July 24-25, 2018
Chicago, October 2-3, 2018

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 or contact Kathleen Cunnie: 415.274.3029 / 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, CEO and CRO

Callan

Quarterly List as of March 31, 2018

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
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Artisan Holdings
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford Overseas Limited
Baird Advisors
Bank of America
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
Brown Brothers Harriman & Company
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management

Manager Name
Chartwell Investment Partners
Citi US Pension Investments
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Management Investment Advisers, LLC
Columbus Circle Investors
Cove Street Capital LLC
Credit Suisse Asset Management
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Deutsche Asset Management
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Mgmt. Co.
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fidelity Management & Research
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Franklin Templeton Institutional
Fred Alger Management, Inc.
GAM (USA) Inc.
Geode Capital Management, LLC
GlobeFlex Capital, L.P.
GMO
Goldman Sachs Asset Management

Manager Name
Green Square Capital LLC
Guggenheim Investments
Gurtin Municipal Bond Management
GW&K Investment Management
Harbor Capital Group Trust
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Henderson Global Investors
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
IndexIQ/Mainstay
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
Janus Henderson Investors
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
J.P. Morgan Asset Management
J.P. Morgan Chase & Company
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln Advisors
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
Manulife Asset Management
Marathon 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
Old Mutual 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
Pier Capital, LLC
PineBridge Investments
Pioneer Investments
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Regions Financial Corporation
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management, Inc.
Russell Investments
S&P Global, Inc.
Sands Capital Management
Santander Global Facilities
Schroder Investment Management North America Inc.
Shelton Capital Management
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money 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 Hartford
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
Van Eck Global
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya Financial
Voya Investment Management
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company
Westfield Capital Management Company, LP
William Blair & Company

Callan

March 31, 2018

North Dakota State Investment Board Legacy Fund

Investment Measurement Service Quarterly Review

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.

Table of Contents
March 31, 2018

Executive Summary

Active Management Overview 2
Capital Market Review 3

Asset Allocation and Performance

Actual vs Target Asset Allocation 19
Quarterly Total Fund Attribution 20
Cumulative Total Fund Attribution 21
Historical Asset Allocation 25
Asset Class Rankings 26
Asset Class Allocation 27
Asset Class Returns 28

Manager Evaluation

Domestic Equity

Domestic Equity Composite 31
Parametric Clifton Large Cap 32
L.A. Capital Large Cap Growth 33
L.A. Capital Enhanced 34
LSV Large Cap Value 35
Parametric Clifton Small Cap 36
PIMCO RAE 37

International Equity

International Equity Composite 39
DFA International Small Cap Value 40
LSV International Value 41
Vanguard Intl Explorer Fund 42
William Blair 43

Domestic Fixed Income

Domestic Fixed Income Composite 45
Declaration Total Return 46
Prudential 47
SSgA US Government Credit Bond Index 48
Wells Capital 49
Western Asset Management Company 50

Diversified Real Assets

Western Asset Management TIPS 52
JP Morgan Infrastructure 53
Grosvenor Cust. Infrastructure 54

Table of Contents
March 31, 2018

Real Estate

Invesco Core Real Estate 56

JP Morgan RE Income & Growth 57

Callan Research/Education 58

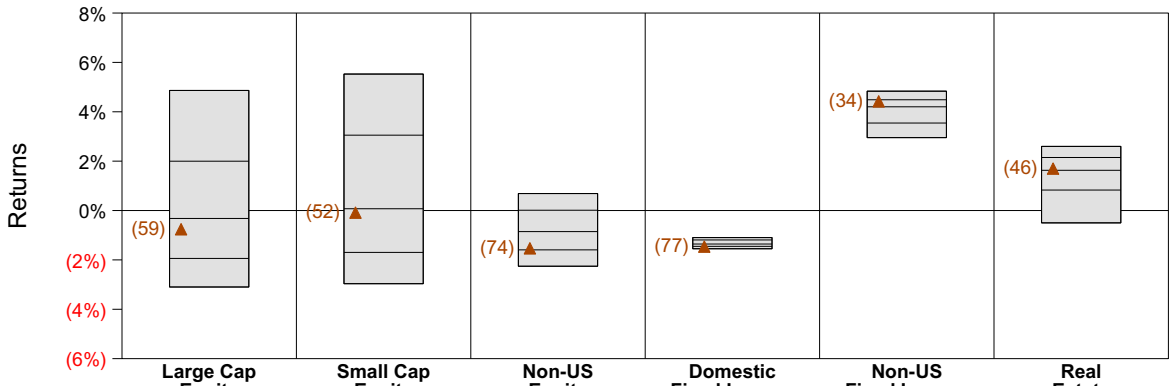
Disclosures 61

Market Overview
Active Management vs Index Returns

Market Overview

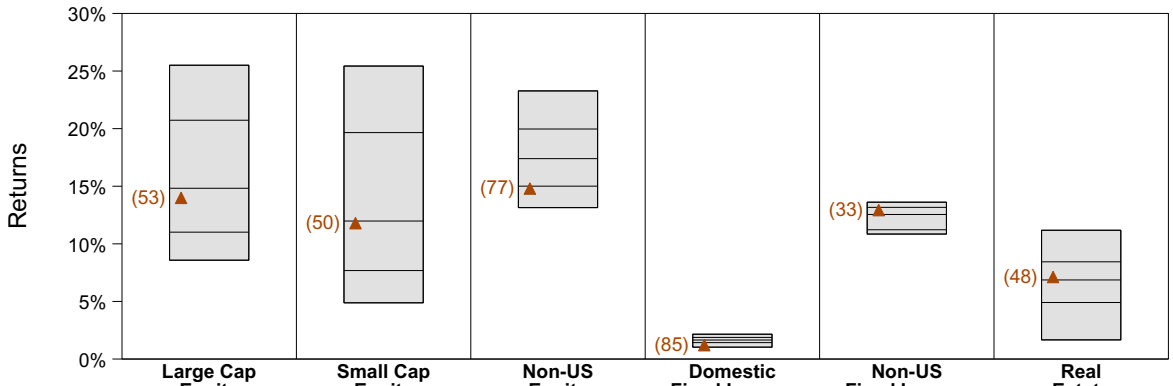
The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also 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 March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	4.86	5.53	0.69	(1.10)	4.83	2.60
25th Percentile	2.00	3.05	0.01	(1.19)	4.49	2.15
Median	(0.32)	0.07	(0.85)	(1.36)	4.20	1.63
75th Percentile	(1.94)	(1.70)	(1.59)	(1.45)	3.54	0.83
90th Percentile	(3.10)	(2.96)	(2.26)	(1.55)	2.95	(0.50)
Index ▲	(0.76)	(0.08)	(1.53)	(1.46)	4.42	1.70

Range of Separate Account Manager Returns by Asset Class
One Year Ended March 31, 2018



	Large Cap Equity vs S&P 500	Small Cap Equity vs Russell 2000	Non-US Equity vs MSCI EAFE	Domestic Fixed Income vs Blmbg Aggr Bd	Non-US Fixed Income vs Citi Non-US Govt	Real Estate vs NCREIF Index
10th Percentile	25.50	25.43	23.28	2.16	13.62	11.18
25th Percentile	20.73	19.66	19.97	1.88	13.17	8.44
Median	14.82	11.98	17.40	1.65	12.55	6.87
75th Percentile	11.01	7.68	15.01	1.43	11.22	4.91
90th Percentile	8.58	4.88	13.14	1.03	10.85	1.66
Index ▲	13.99	11.79	14.80	1.20	12.93	7.12

Callan

First Quarter 2018

The Slow Burn of the Current Expansion

ECONOMY

2 PAGE

GDP rose 2.3% in the first quarter, lower than in much of 2017 but higher than estimates, and in spite of the market volatility that started the year. The unemployment rate remains at historically low levels, and there are early signs this is leading to wage pressure.

Diversification Appears to Pay Off

FUND SPONSOR

4 PAGE

The median fund sponsor in Callan's database fell 0.5% but did better than a 60% equity/40% fixed income portfolio, which dropped 1.0%. Taft-Hartley plans were the best performers by type, while large plans were best by size.

Volatility Returns and Markets Sag

EQUITY

6 PAGE

U.S. equities fell in the quarter amid a resurgence of volatility. Mega-Tech firms were especially hard hit amid a data scandal. Non-U.S. developed markets fell more, while emerging markets rose, helped by oil's rebound and strong economic conditions.

Mixed Results for Bonds Globally

FIXED INCOME

9 PAGE

The 10-year Treasury yield neared 3% before dropping by quarter's end. The Aggregate Index fell, as did investment grade and high yield bonds. Currency movements drove fixed income returns globally. Local currency emerging market debt was a top performer.

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE

11 PAGE

The NCREIF Property Index (NPI) posted positive results, while the NCREIF Open End Diversified Core Equity Index continued to see increased returns. Non-U.S. REITs outperformed U.S. REITs, but still posted negative returns.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY

13 PAGE

With volatility returning to the public markets, private equity activity slowed somewhat, but remained brisk in absolute terms. Fundraising was down moderately. Company investments and exits trended slightly down, although venture capital funding rose.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs

14 PAGE

Despite the quarter's rocky ride for stocks and bonds, hedge fund strategies were mostly positive. The Credit Suisse Hedge Fund Index grew 0.5%, while the median manager in the Callan Hedge Fund-of-Funds Database gained 1.2%, net of all fees and expenses.

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. But the Index trailed the Age 45 Target Date Fund, which gained 19.3%. DC plan balances rose 16.5% over the year, driven primarily by market returns. Non-U.S. equities saw notable inflows.

Broad Market Quarterly Returns

U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Non-U.S. Fixed Income
Russell 3000	MSCI ACWI ex USA	Bloomberg Barclays Agg	Bloomberg Barclays Gbl ex US
-0.6%	-1.2%	-1.5%	+3.6%

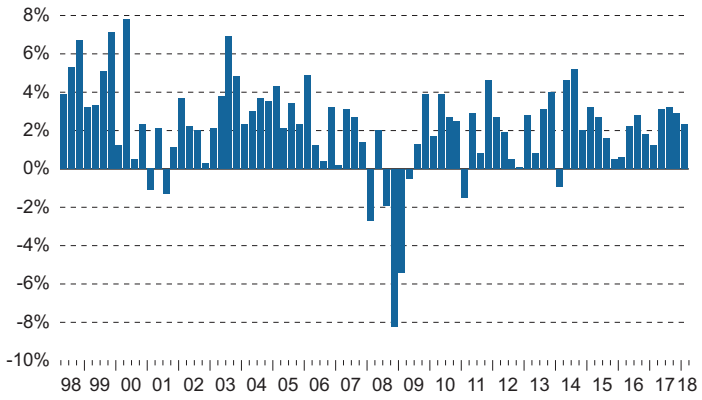
Sources: Bloomberg Barclays, MSCI, FTSE Russell

Slow Burn

ECONOMY | Jay Kloepfer

After a weak first quarter, the U.S. economy closed out 2017 with decent momentum, as GDP grew at a robust 3% annualized rate for the remaining three quarters. The first quarter of 2018 will likely be remembered for its sudden, brief correction and the return of volatility. True to form, however, the U.S. economy continued to post solid growth, ignoring the uncertainty introduced by the stock market gyrations, just as it ignored the geopolitical uncertainty humming in the background over the last 18 months. The 2.3% gain was a step down from the string of 3% increases but actually higher than most estimates. The unexpected strength in first-quarter GDP growth came from net exports (imports were less than expected, exports were greater), from fixed investment in buildings and capital, and from government expenditures.

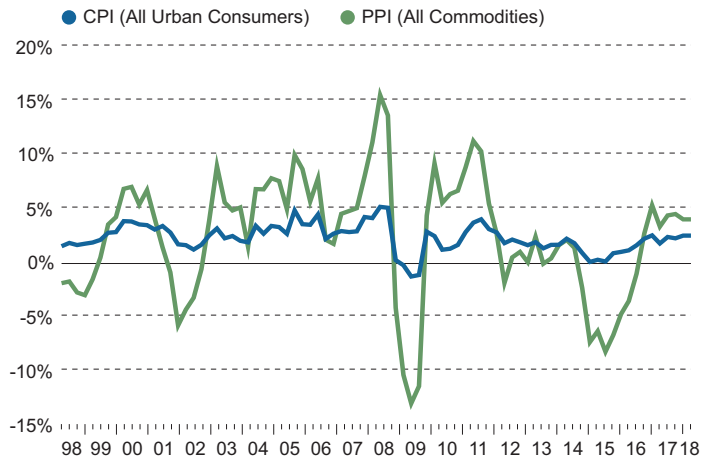
Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Growth expectations had been tempered by the depletion of inventories and signs of slowing consumer spending at the end of 2017. However, consumers remained optimistic during the first quarter, even after the market turmoil in February, with the University of Michigan's Index of Consumer Confidence hitting a 14-year high in March. Strong labor markets are a clear contributor to confidence. In the U.S., the unemployment rate fell to 4.1% in the fourth quarter of 2017, a generational low, and remained at that rate through the first quarter of 2018. Initial claims for unemployment insurance have fallen to the lowest level since 1969.

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

The slow burn in the current expansion may enable it to continue for some time. This recovery is one of the longest on record at 105 months, but also one of the slowest, with average GDP growth in the U.S. of just 2.2%. Expansions do not die of old age; rather they collapse under the weight of imbalances that become untenable. Thus far into this slow burn, signs of severe imbalances are few, although several potential ones come to mind: tight labor markets, inflation, housing shortages in select urban areas, and rich asset prices kept aloft by the continued growth in the economy.

Inflation may finally be poised to become the problem we all expected to arise after years of sustained monetary and fiscal stimulus. The CPI-U notched a year-over-year gain of 2.4% in the first quarter, with core inflation reporting a 2.1% increase. While this sounds very modest, the CPI-U has been inching steadily upward since bottoming out in 2015, when oil prices collapsed. One of the most profound conundrums has been the

lack of wage pressure while the unemployment rate has steadily fallen to historically low levels. Average hourly earnings were stuck at 2% growth, and only recently has the rate of growth begun to rise. In fact, the report of wage growth coming in close to 3% in January was one of the catalysts cited for the spike in market volatility in early February, spurring fears of inflation among investors. Wage growth did not jump higher than 3% in February and March, but stronger wage growth will feed into core inflation. The Employment Cost Index, which includes benefit costs along with wages and salaries, rose 2.7% year-over-year in the first quarter, the highest rate of growth since 2007. Barring another collapse in energy prices or a sudden downturn in global growth, inflation momentum will keep building.

Continued growth and the potential pickup in inflation give the Fed cover for more interest rate hikes. One development of interest is the potential for an inverted yield curve. The Fed raised interest rates three times in 2017 and again in March 2018, which shifted the short end of the yield curve up, but the long end barely budged. As a result, the curve flattened substantially. The Fed is telegraphing up to three more rate hikes this year, and if the long end of the curve remains anchored, the potential increases for the curve to invert, where yields on longer maturities are lower than those for shorter maturities. An inverted yield curve can suggest the onset of recession: investors bid up the price of longer-dated debt (driving down yields) in anticipation of a slowing economy, leading to an expected cut in interest rates and increased demand for bonds. An inverted yield curve does not cause a recession, but it does reflect the opinions and concerns of market participants. Complicating the story here is that while the Fed has begun to unwind its balance sheet, which suggests it could be selling bonds and putting upward pressure on rates, demand remains strong on the long end of the yield curve, as yields in the U.S. are substantially above those overseas.

The Long-Term View

Index	2018 1st Qtr	Periods ended Dec. 31, 2017 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-0.64	21.13	15.58	8.60	9.72
S&P 500	-0.76	21.83	15.79	8.50	9.69
Russell 2000	-0.08	14.65	14.12	8.71	9.54
Non-U.S. Equity					
MSCI ACWI ex USA	-1.18	27.19	6.80	1.84	–
MSCI Emerging Markets	1.42	37.28	4.35	1.68	–
MSCI ACWI ex USA Small Cap	-0.35	31.65	10.03	4.69	–
Fixed Income					
Bloomberg Barclays Agg	-1.46	3.54	2.10	4.01	5.48
90-Day T-Bill	0.35	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-3.58	10.71	4.43	7.26	7.67
Bloomberg Barclays GI Agg ex US	3.62	10.51	-0.20	2.40	5.02
Real Estate					
NCREIF Property	1.70	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	-8.20	5.23	9.46	7.44	10.76
Alternatives					
CS Hedge Fund	0.47	7.12	4.23	3.24	–
Cambridge PE*	5.11	19.38	13.90	9.10	15.62
Bloomberg Commodity	-0.40	1.70	-8.45	-6.83	2.47
Gold Spot Price	1.37	13.68	-4.82	4.56	5.63
Inflation – CPI-U	1.23	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

Recent Quarterly Economic Indicators

	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16	3Q16	2Q16
Employment Cost–Total Compensation Growth	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%	2.3%	2.3%
Nonfarm Business–Productivity Growth	-0.4%	0.0%	2.6%	1.7%	0.2%	1.1%	2.4%	0.9%
GDP Growth	2.3%	2.9%	3.2%	3.1%	1.2%	1.8%	2.8%	2.2%
Manufacturing Capacity Utilization	75.6%	75.2%	74.4%	74.9%	74.6%	74.4%	74.3%	74.4%
Consumer Sentiment Index (1966=100)	98.9	98.4	95.1	96.4	97.2	93.2	90.3	92.4

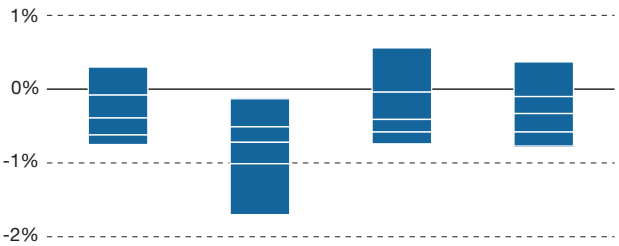
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Diversification Appears to Pay Off in First Quarter

FUND SPONSOR

In the first quarter, the median fund sponsor in Callan's database fell 0.5%, compared to a 1.0% drop for a quarterly rebalanced portfolio made up of 60% S&P 500 Index/40% Bloomberg Barclays US Aggregate Bond Index. Taft-Hartley funds (-0.3%) were the best performers in the quarter, followed by public plans (-0.4%), endowments and foundations (-0.4%), and corporate plans (-0.7%). Large plans with greater than $1 billion in assets under management did best by plan size, falling by 0.4%, followed by medium ($100 million–$1 billion) and small (under $100 million) plans. Plans in Callan's database invest in a wider array of assets than a 60/40 portfolio, indicating diversification may have been a benefit in the quarter, which saw declines for both bonds and stocks.

Callan Fund Sponsor Returns for the Quarter



	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	0.30	-0.13	0.56	0.37
25th Percentile	-0.08	-0.51	-0.04	-0.10
Median	-0.39	-0.72	-0.41	-0.33
75th Percentile	-0.62	-1.01	-0.58	-0.58
90th Percentile	-0.75	-1.70	-0.74	-0.77

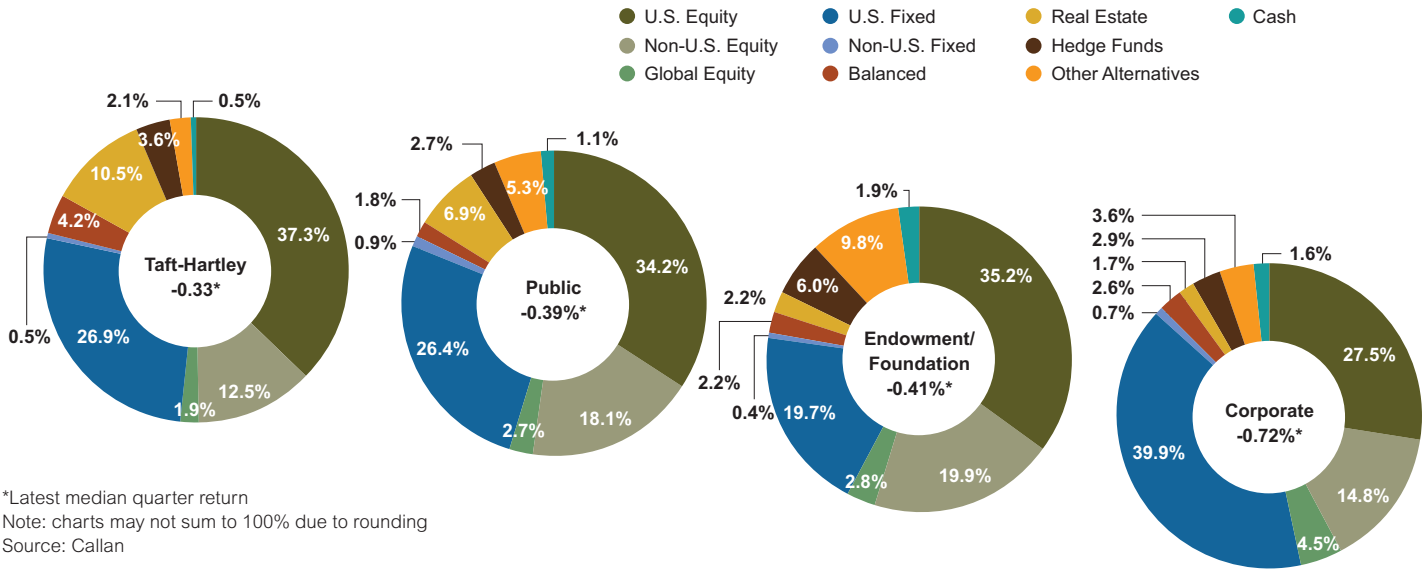
Source: Callan

Over the last 10 years, corporate plans (+6.5%) did best, followed by Taft-Hartley plans (+6.4%), and public plans and E&Fs (both +6.3%). The median plan sponsor increased 6.4%, while the 60-40 portfolio rose 7.5%.

Strategic planning by sponsors has recently touched on a number of common themes:

- The impact of tax reform, particularly its effects on pensions and non-profits, and the varied implications for different asset classes.
- Adjusting to lower capital market return expectations. Callan's 2018 10-year projections are unchanged from last year, which means they remain low. Diversification and discipline remain the key points of emphasis, and Callan advises caution when reaching for return/yield.

Callan Fund Sponsor Average Asset Allocation



*Latest median quarter return
Note: charts may not sum to 100% due to rounding
Source: Callan

Both stock and bond valuations remain high, and market volatility is back—but is within normal bounds. Many clients are wondering if there is a need for inflation-hedging strategies despite inflation being benign.

Low interest rates and low return expectations continue to drive strategic allocation planning. Many fund sponsors feel compelled to take on substantial market risk to reach their return goals. Sponsors are evaluating whether there is anything more they can do to tamp down the risk within the growth allocation, short of actually reducing the allocation to growth assets. Actuarial assumptions and spending rates are being reduced by some sponsors.

Callan research on trends in the institutional investment marketplace found that several interesting themes have developed over the past three years, many related to capital market expectations and fees:

- A continuing interest in passive investing, although the level of interest has decreased slightly
- A meaningful percentage of fund sponsors are considering new or additional investments in private assets

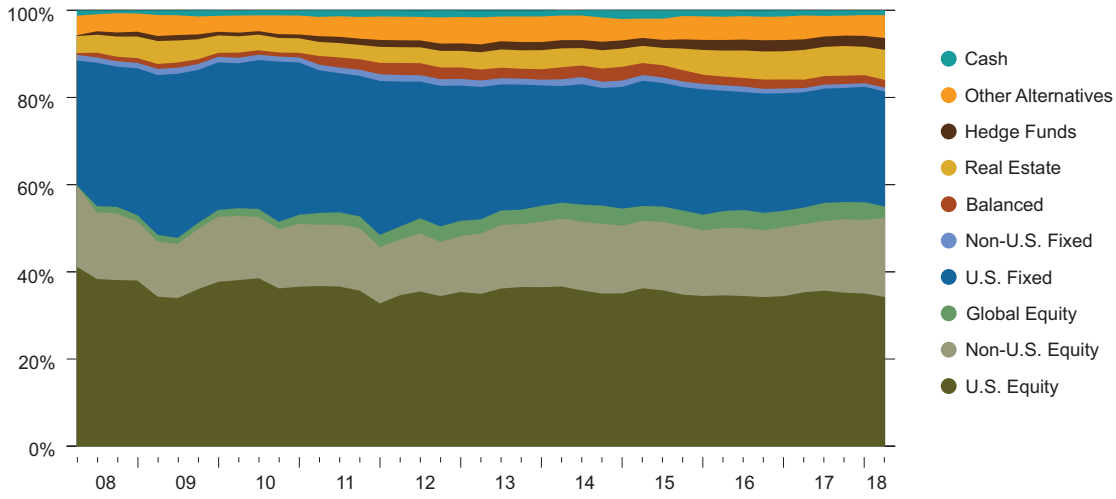
Specific areas of focus by plan types include:

Corporate Funds: Most corporate defined benefit (DB) clients have embraced de-risking (increasing fixed income and extending duration) and are at different stages of this process. The extent to which corporate plan sponsors implement de-risking in the coming year depends largely on the movement of interest rates. As rates rise and DB plans move forward with de-risking plans, allocations to equity and alternative investments are likely to decrease.

Public and E&F Funds: Public plans and endowments and foundations are focused on return enhancement. However, risk—as well as funded status for public plans—were sources of ongoing concerns in the more volatile markets of the first quarter.

Defined Contribution: Driven by regulatory and legislative requirements, DC plans continue to review fees and recordkeepers. Recently, activity has been focused on investment structures that reduce the number of options in a plan.

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. Stocks: Dow, S&P 500 Fall, First Time Since '15

-0.6%
RUSSELL 3000

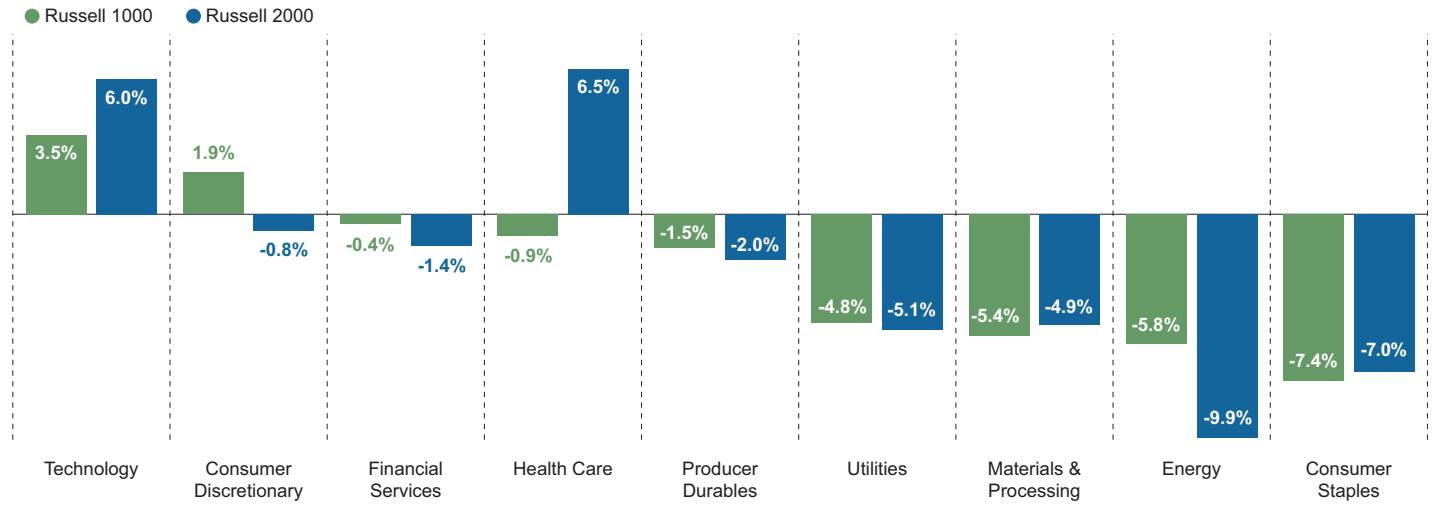
Volatility returned in the first quarter, with the **Dow Jones Industrial Average** and **S&P 500 Index** both finishing lower—a first since the third quarter of 2015. After starting strong on the back of solid earnings and tax law changes, U.S. equities faltered in the second part of the quarter over concerns about a more aggressive global trade policy and uncertainty over the pace of interest rate hikes. The S&P 500's modest quarterly loss (-0.8%) belied volatile intra-quarter results. The Index experienced six days of movements greater than 2% during the quarter (versus none in 2017). And the Index reached a record high on Jan. 26, then fell about 8% to close the quarter. Volatility as measured by the VIX Index skyrocketed by 116% on Feb. 5 when the market sank 4%.

Small capitalization stocks outperformed large caps (**Russell 1000:** -0.7%; **Russell 2000:** -0.1%), though sector performance was mixed. The prospect of a trade war with China weighed on large caps since many of these companies are exposed to international markets (S&P 500 aggregate exposure is approximately 40%) while small caps were less affected as they tend to derive a higher proportion of their revenue from domestic markets (approximately 80-90%) and benefit from a more protectionist policy.

In mid-March, some mega-cap Tech firms saw their stock prices drop in the wake of Facebook's Cambridge Analytica scandal, leading to declining trust for the industry and negative investor sentiment. The market began pricing in the potential for more regulatory oversight for these internet companies. Performance for the "FANGs" split during the quarter, with Facebook and Google down while Netflix and Amazon advanced.

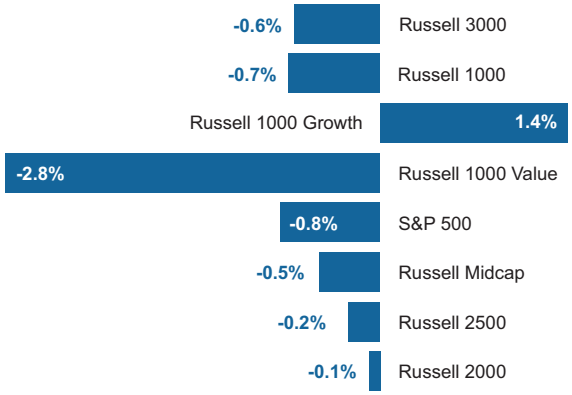
Growth continued to top value (**Russell 1000 Growth:** +1.4%; **Russell 1000 Value:** -2.8%). Value trailed as the prospect of increased inflation and accelerating interest rates weighed on interest rate-sensitive sectors (Financials: -1.0%; Real Estate: -5.0%; Utilities: -3.3%). Energy (-5.9%) also took a hit despite a more promising outlook for the sector as the Saudis agreed to continued oil production cuts into 2019; performance for the first quarter was impacted by Exxon Mobil and Chevron missing fourth quarter earnings expectations.

Quarterly Performance of Select Sectors



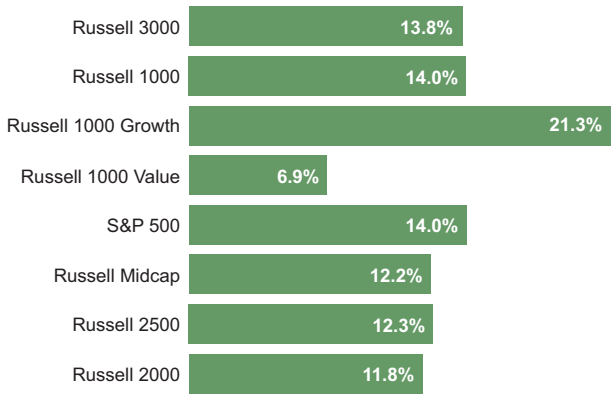
Source: FTSE Russell

U.S. Equity: Quarterly Returns



Sources: FTSE Russell and Standard & Poor's

U.S. Equity: One-Year Returns



Sources: FTSE Russell and Standard & Poor's

Despite the increased volatility and price drop in the broader index, defensive sectors underperformed cyclicals due in large part to the rising interest rate environment. Technology (+3.5%) and Consumer Discretionary (+3.1%) were the only two sectors that posted positive returns. Telecommunications (-7.5%) and Staples (-7.1%) were the two worst-performing sectors.

Global Stocks: Spooked Markets Lag

-1.2%

MSCI ACWI EX USA

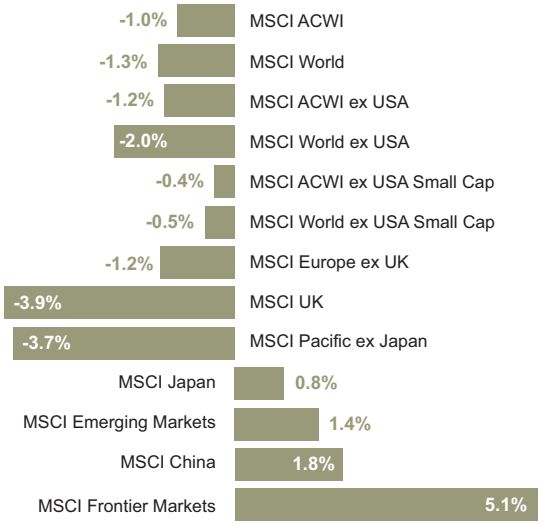
Despite positive economic data, non-U.S. developed equity underperformed U.S. as non-U.S. equity markets were spooked by geopolitical tension and market volatility along with fears of rising U.S. interest rates and inflation (**MSCI World ex USA:** -2.0%; **MSCI Europe:** -2.0%). Emerging markets continued to outpace developed, fueled by a soft dollar and synchronized global growth; however, fears of inflation and its implication on the trajectory of U.S. monetary policy—as well as a potential trade war between the U.S. and China—weighed on the market. Developed non-U.S. small cap outperformed large cap given the risk-on market environment spurred by synchronized global growth.

While developed non-U.S. equity market returns were negative, results were helped by U.S. dollar weakness. Overall, the **MSCI EAFE** fell 4.3% in local terms but only 1.5% in U.S. dollar terms. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. Likewise, Brexit woes sank the U.K. market (-8%) but the pound's appreciation versus the dollar offset a good portion of the loss for U.S. investors; on that basis the country fell 4%. The euro-zone recovery continued, with GDP growth of 2.7% in the quarter year-over-year driving the euro up 2%—and the pound by nearly 4%—relative to the dollar.

Japan's economy grew by 1.6% fueled by infrastructure development ahead of the 2020 Olympics, enabling the yen to surge by 6% relative to the dollar. It hit a 17-month high as worries over trade policy spurred demand for the safe-haven currency and was the best-performing currency among developed markets. In local terms, Japan equities fell nearly 6%, but the strength of the yen brought returns in U.S. dollar terms to +0.8%.

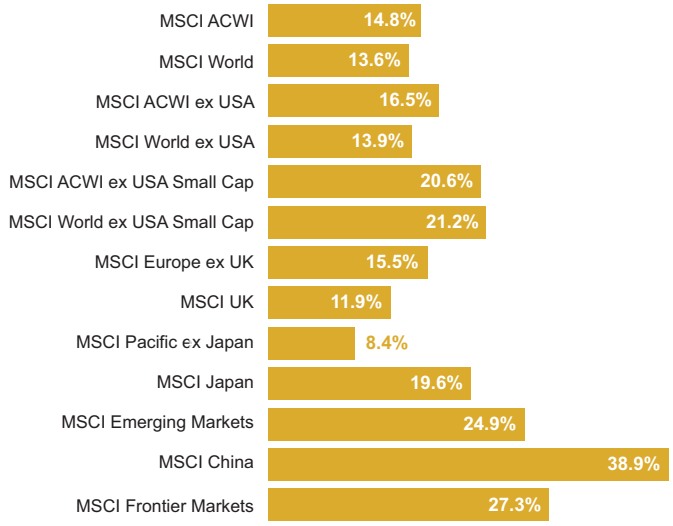
The only sectors that posted positive returns were Consumer Discretionary, Tech, and Utilities. Positive earnings supported the Tech sector (top performer), and Utilities benefited as investors fled to safety amid market volatility and yield curve flattening in March. Telecom struggled as competition for wireless services within the euro-zone eroded profitability, and Staples was notably challenged due to fears of interest rates returning to normal levels and the prospect of beleaguered growth.

Non-U.S. Equity: Quarterly Returns (U.S. Dollar)



Source: MSCI

Non-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

Growth outpaced value, and earnings growth and quality factors were in favor as markets were jittery in light of the global economy's looming risks. As such, high-beta, cyclical sectors and factors struggled.

Emerging Markets: Oil Propels Shares Higher

+1.4%
MSCI EM

The **MSCI Emerging Markets Index** rose 1.4%. Brazil (+12%) and Russia (+9%) were among the best performers due to climbing oil prices and improving economic conditions. China (+2%) continued to thrive despite trade tension with the United States and a slowdown for Chinese tech companies; China's supply-side reforms are kicking in and economic growth in retail and home sales exceeded expectations, driving up returns for the Financials and Real Estate sectors.

Although India announced better-than-expected GDP growth of 7.2%, the country notably lagged (-7%) due to poor market sentiment surrounding asset-quality issues at large state-owned banks and relative valuations of Indian equities.

Supported by rising oil prices, Energy was the best performing sector; conversely, Consumer Discretionary fared worst, weighed down by India. Value and sentiment factors were in favor as the economic recovery story gained traction and momentum; however, quality factors also added value given that this is the mid-cycle of the recovery.

Non-U.S. Small Cap: Growth in Favor This Quarter

-0.4%
MSCI ACWI EX USA SC

Developed non-U.S. small cap outperformed large cap (**MSCI World ex USA Small Cap:** -0.5%) given the risk-on market environment spurred by synchronized global growth, although within emerging markets, small cap lagged large cap (**MSCI Emerging Markets Small Cap:** +0.2%).

Growth was favored in both developed and emerging market small cap, as growth-oriented sectors such as Health Care and Consumer Staples outperformed cyclical sectors.

Global Fixed Income

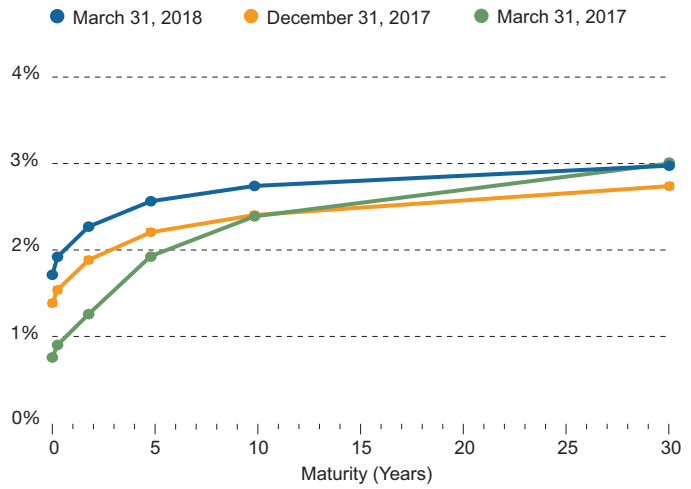
U.S. Bonds: Fear, Uncertainty Roil Markets

-1.5%
BB AGGREGATE

The 10-year U.S. Treasury yield marched steadily higher through most of January and February in response to positive economic data, then equity market weakness and concerns over a looming trade war led to falling yields in March. New Fed Chair Jerome Powell announced his first rate hike (as widely expected) in March, raising the Fed Funds target rate to 1.50%–1.75%. The 10-year U.S. Treasury yield climbed to a peak of nearly 3% during the quarter before closing at 2.74%, 34 basis points higher than at year-end. Two-year U.S. Treasury note yields rose nearly 40 bps to 2.27%, the highest since 2008, and the note fell 0.1% for the quarter, while the 10-year Treasury dropped 2.4% and the 30-year Treasury plunged almost 4%. Interest rates rose approximately 30 bps across the U.S. Treasury yield curve. TIPS outperformed nominal Treasuries, and the 10-year break-even inflation rate rose to 2.05% from 1.96% at year-end.

The **Bloomberg Barclays US Aggregate Bond Index** fell 1.5%, with corporate and securitized sectors underperforming Treasuries. Volatility picked up across risk assets as geopolitical uncertainties took center stage; market expectations reflect the possibility of four rate hikes in 2018, up from a projected three

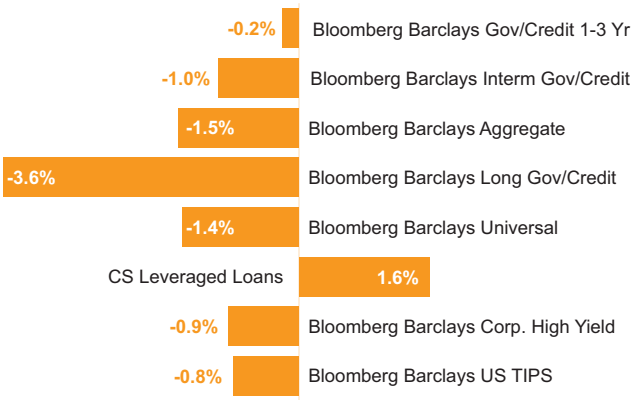
U.S. Treasury Yield Curves



Source: Bloomberg

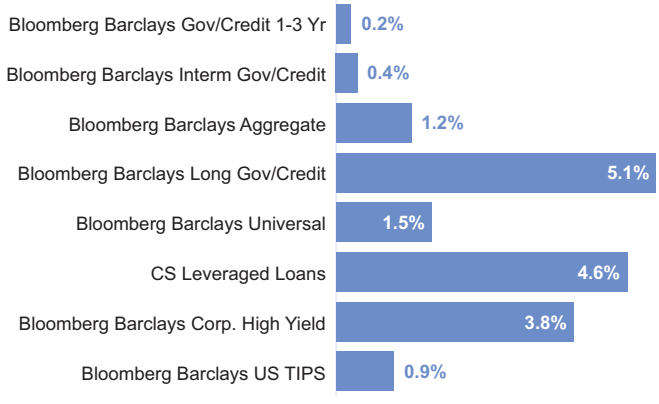
at the end of 2017. In a sharp reversal from 2017's relative performance, investment grade corporates underperformed like-duration Treasuries by 80 bps during the quarter and dropped 2.3%. Investors were fairly sanguine as they reassessed fairly healthy balance sheets juxtaposed with fair-to-rich valuations. New issuance was down 13% when compared to a similar time period a year ago, yet demand remained strong with oversubscriptions by two to three times. Outside of investment grade, the **Bloomberg Barclays High Yield Index** fell 0.9% while the

U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

S&P/LSTA Leveraged Loan Index, which includes floating rate loans and thus benefited from rising rates, rose 1.4%.

High yield corporates dropped 0.9% and outperformed the Aggregate. Corporate fundamentals remained healthy as earnings growth supported debt coverage. Default rates remained benign because many companies had already reorganized debt in 2016. About 75% of new issuance proceeds were used for refinancing. Valuations remained near historical highs.

Bank loans rose 1.4% and outperformed the Aggregate. Healthy balance sheets, strong demand for collateralized loan obligation (CLO) formation, and higher short-term interest rates bode well for the sector this quarter.

Global Bonds: Currency Changes Drive Returns

+3.4%
BB GBL AGG EX US

The **Bloomberg Barclays Global Aggregate Index** (hedged) fell 0.1% (versus a gain of 1.4% for the unhedged version) as developed non-U.S. fixed income market returns were helped by U.S. dollar weakness. Generally, currency movements drove fixed income returns across countries more than interest rate changes in the first quarter. The U.S. dollar has been hurt by growing worries over a trade war with China as well as signs that rates may be poised to rise in other countries as global economies improve. As in the U.S., global credit underperformed government bonds.

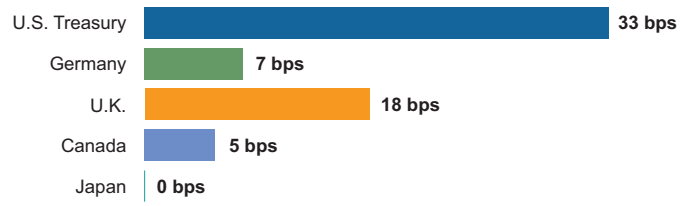
Local currency emerging market debt was a top-performing asset class in the first quarter; the **JPM GBI-EM Global Diversified** gained 4.4%. Returns were positive for most countries in local terms and further boosted by U.S. dollar weakness. U.S. dollar-denominated emerging market debt did not perform as well, dropping 1.7% as measured by **JPM's EMBI Global Diversified Index**.

Municipal bonds underperformed Treasuries in the first quarter in spite of shrinking supply and continued inflows to the sector. As a result, the ratio of the yield of AAA-rated 10-year municipals relative to the 10-year U.S. Treasury climbed to 89% as of quarter-end, up from 81% at the end of the year. Further, the municipal curve steepened as longer maturities underperformed.

Municipal bond fundamentals broadly remained strong, and Moody's reported that ratings upgrades outpaced downgrades for the third consecutive year in 2017. The **Bloomberg Barclays Municipal Bond Index** dropped 1.1% and the shorter duration **1-10 Year Blend Index** fell 0.7%.

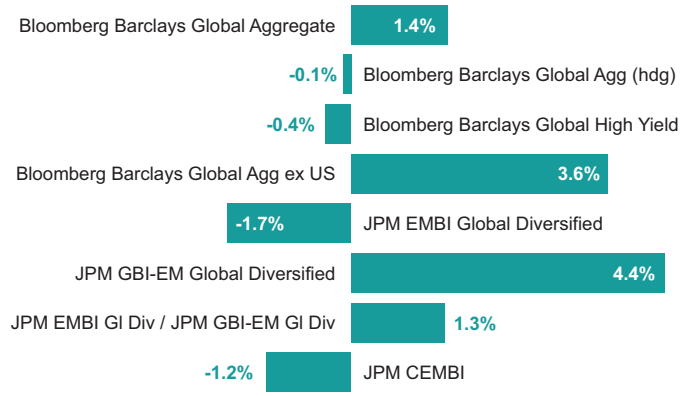
Change in 10-year Global Government Bond Yields

4Q17 to 1Q18



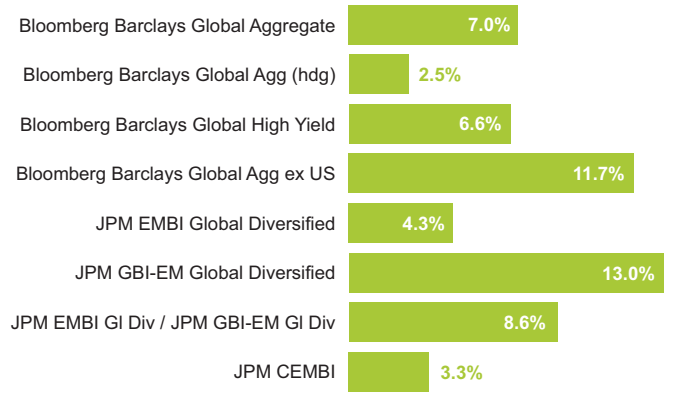
Source: Bloomberg Barclays

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

NPI Chugs Along; REITs Take a Big Hit

REAL ESTATE | Kevin Nagy

The **NCREIF Property Index (NPI)** gained 1.7% during the first quarter (1.1% from income and 0.6% from appreciation). This marked the 33rd consecutive quarter of positive returns for the Index.

Industrial (+3.3%) was the best-performing sector for the eighth consecutive quarter with Office (+1.8%) and Apartments (+1.5%) also posting strong returns; Retail (+0.7%) was the worst performer. Retail and Hotels (+1.0%) were the only property types to experience negative appreciation returns, gaining only because of income returns. The West (+2.2%) region was the strongest performer for the seventh quarter in a row, and the East trailed (+1.2%). The West also was the only region with an appreciation return above 1%. Transaction volume decreased more than 22% to $8.95 billion, down from $11.50 billion in the fourth quarter, but up 28% from the first quarter of 2017. Appraisal capitalization rates fell 20 basis points to 4.35%. Transaction capitalization fell further, dropping 44 bps to 5.41%. The spread between appraisal and transactional rates decreased to 106 bps.

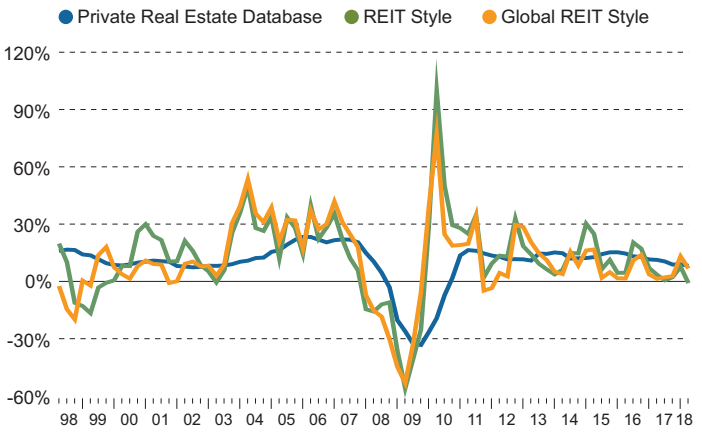
Occupancy rates dropped slightly to 93.5%, down 5 bps from the fourth quarter but up 57 bps from the first quarter of 2017. Apartment, Retail, and Office occupancy rates increased slightly while Industrial ticked down marginally.

The **NCREIF Open End Diversified Core Equity Index** rose 2.2% (1.0% from income and 1.2% from appreciation), a 13 bps increase from the fourth quarter of 2017. The appreciation return increased for the fourth quarter in a row and overtook income for the first time since the fourth quarter of 2015. Leverage dropped 3 bps to 21.1%.

Global Real Estate Investment Trusts (REITs), tracked by the **FTSE EPRA/NAREIT Developed REIT Index** (USD), outperformed U.S. REITs but still lost 4.3% during the first quarter. The median active global REIT manager, as measured by **Callan's Global REIT Peer Group**, fell 3.5%, beating the Index. U.S. REITs, as measured by the **FTSE NAREIT Equity REITs Index,** lost 8.2% for the quarter. The median active U.S. REIT manager, as measured by **Callan's REIT Peer Group**, lost merely 6.6%, also beating the Index.

U.S. REITs had a terrible start to 2018, down 11.6% through the end of February primarily due to an increase in interest rates and concerns over a trade war between the U.S. and China. A stronger March offset some of the damage but was not enough to push performance into positive territory. Timber (+1.8%) and Infrastructure (+1.4%) were the only sectors to experience positive returns. Diversified (-15.8%), Specialty (-11.7%), and Retail (-11.2%) were hit the hardest. Strong earnings and a positive growth outlook for the broader economy helped buoy REITs toward the end of the quarter.

Rolling One-Year Returns

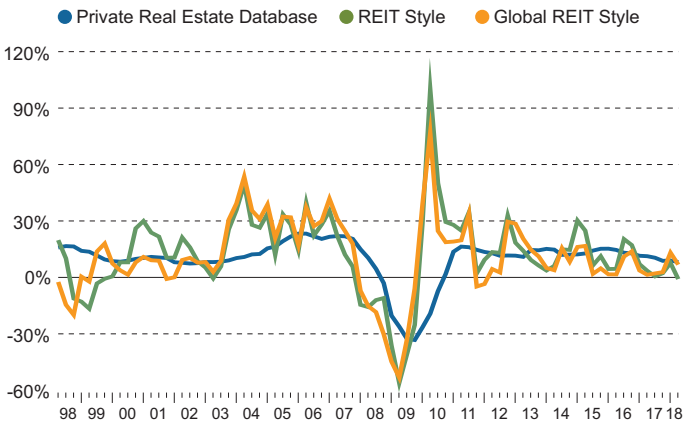


Source: Callan

Europe, as represented by the **FTSE EPRA/NAREIT Europe Index**, outperformed the United States, only losing 0.9% in U.S. dollar terms. U.K. REITs outperformed their continental counterparts in dollar terms but fared worse in local currency terms. The region was held back by geopolitical concerns, and economic growth, while still positive, fell from the frantic pace of late 2017 to more normal levels.

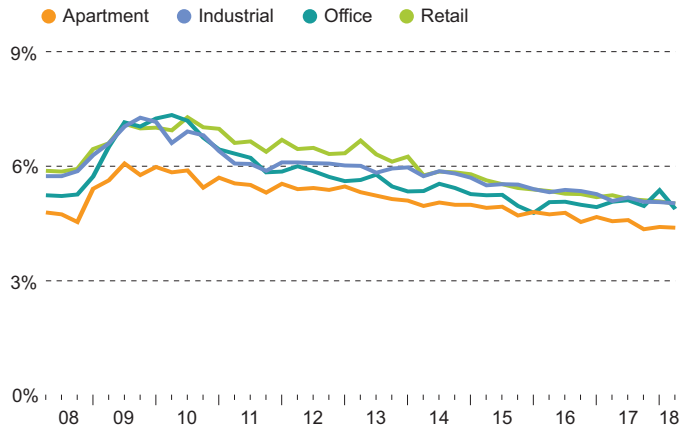
The Asia-Pacific region, represented by the **FTSE EPRA/NAREIT Asia Index,** declined 0.3%, outperforming all other regions. Japan jumped 7.3% in U.S. dollar terms, due mostly to weakness in the American currency, easily outpacing its neighbors to be the best-performing country in the region. Foreign capital flowed into Japanese REITs (J-REITs) and helped boost prices, even as they experienced continued net outflows. Low vacancy and increasing rents also contributed to the large gains.

NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF
Note: Transaction capitalization rate is equal weighted.

NCREIF Capitalization Rates by Property Type



Source: NCREIF
Note: Capitalization rates are appraisal-based.

Choppy Conditions Hit Private Markets

PRIVATE EQUITY | Gary Robertson

Based on preliminary data, first quarter private equity partnership commitments totaled $66.5 billion, with 242 new partnerships formed, according to *Private Equity Analyst.* The number of funds fell 22% from 310 in the first quarter of 2017, and the dollar volume declined 17% from $80.0 billion. The absolute pace of fundraising remains heated, and Callan recommends vigilance in commitment pacing during this frothy market.

According to *Buyouts* newsletter, activity remained brisk as buyout funds closed 587 investments with $29.8 billion in disclosed deal value. The number of investments is larger than in any quarter in 2017, yet the announced dollar volume is lower than in any of last year's quarters. The $5.6 billion purchase of power company Calpine by Energy Capital Partners and others was the quarter's largest buyout. Nine acquisitions with announced values of $1 billion or more closed in the quarter.

According to the National Venture Capital Association, new investments in venture capital companies totaled 1,693 rounds of financing with $28.2 billion of announced value. The number of investments was down 18% from the prior quarter, but the announced value was up 33%. The median pre-money valuation continues to increase; only Series D+ fell, down 20%.

Funds Closed January 1 to March 31, 2018

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	111	6,034	9%
Buyouts	91	52,481	79%
Private Debt	18	4,133	6%
Secondary and Other	10	2,231	3%
Fund-of-funds	12	1,593	2%
Totals	**242**	**66,472**	**100%**

Source: Private Equity Analyst
Figures may not total due to rounding.

There were 164 private M&A exits of buyout-backed companies, *Buyouts* reports, with disclosed values totaling $28.3 billion. The exits count was up from the prior quarter's 159, and the announced value declined from $55.3 billion. There were 11 buyout-backed IPOs in the first quarter raising an aggregate $3.9 billion, up from only four totaling $860 million previously.

Venture-backed M&A exits totaled 188 transactions and disclosed value hit $8.1 billion. Both figures declined from the fourth quarter, which had 200 sales with announced values totaling $12.6 billion. There were 15 VC-backed IPOs in the first quarter with a combined float of $2.1 billion. For comparison, the fourth quarter of 2017 had 22 IPOs and total issuance of $3.1 billion.

Please see our upcoming issue of *Private Markets Trends* for more in-depth coverage.

Private Equity Performance Database (%) (Pooled Horizon IRRs through September 30, 2017*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.52	8.82	12.30	15.51	9.47	9.00	17.94
Growth Equity	4.90	15.83	10.68	13.21	10.06	12.60	13.13
All Buyouts	4.63	19.33	12.61	14.35	8.78	14.39	12.53
Mezzanine	4.16	13.07	9.43	10.15	9.02	9.47	8.64
Distressed	2.34	12.85	5.72	9.73	9.35	10.98	10.34
All Private Equity	**2.39**	**14.92**	**9.03**	**11.35**	**9.13**	**11.33**	**11.34**
S&P 500	4.21	16.02	11.57	13.84	9.08	12.65	12.86

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.

Boy, That Escalated Quickly!

HEDGE FUNDS/MACs | Jim McKee

Hints that an overheated U.S. economy may be unable to absorb significant fiscal stimulus ahead spooked markets in the first quarter. The resulting spasm of risk-off behavior caused the VIX, a measure of equity volatility, to more than double on one day, Feb. 5, leading to significant losses among volatility sellers. Despite the quarter's rocky ride for stocks and bonds, with major indices down for the quarter, hedge fund strategies were mostly positive.

As a proxy of unmanaged hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** grew 0.5%. Despite the quarter's negative market beta, *Long/Short Equity* (+1.0%) provided investors with some positive alpha. Representing actual hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** gained 1.2%, net of all fees and expenses. Within that database, the median *Callan Long/Short Equity FOF* matched the *Callan Absolute Return FOF* with 1.2% gains, while the *Core Diversified FOF* returned 0.9%.

As a benchmark for alternative beta, the **Credit Suisse Neuberger Multi-Asset Risk Premia Index** lost 0.7% in the first quarter based upon a 5% volatility target. Within this Index, *Equity Momentum* and *Equity Value* both lost 4.4%. Most of the **Callan Multi-Asset Class (MAC)** style groups experienced weakness in the quarter, which was consistent with the market index and alternative beta returns cited above. Only *Absolute Return* (+0.2%) eked out a gain. *Risk Parity* (-1.3%) fell the most. Though normally less correlated with markets, *Risk Premia* (-0.7%) exhibited higher-than-expected losses during February's sell-off.

Callan Database Median and Index Returns* for Periods ended March 31, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**1.16**	**5.34**	**2.51**	**4.28**	**3.51**	**5.04**
Callan Absolute Return FOF Style	**1.23**	**4.82**	**2.67**	**4.18**	**3.25**	**4.76**
Callan Core Diversified FOF Style	**0.87**	**5.12**	**1.77**	**3.94**	**3.25**	**5.09**
Callan Long/Short Equity FOF Style	**1.16**	**7.76**	**3.54**	**5.54**	**3.78**	**6.03**
Credit Suisse Hedge Fund Index	0.47	5.43	1.82	3.61	3.49	5.89
HFRI Asset Wtd Composite	0.57	5.17	2.21	4.02	3.66	–
HFRI Fund Wtd Comp	-0.16	5.55	3.51	4.65	4.25	6.44
HFRI Equity Hedge (Total)	0.59	9.70	5.29	5.70	3.87	6.18
HFRI Event-Driven (Total)	0.15	5.18	4.11	4.73	4.54	7.10
HFRI Macro (Total) Index	-1.25	1.02	-0.85	0.89	1.42	4.42
HFRI Relative Value (Total)	0.92	4.51	4.06	4.16	5.84	6.61
90-Day T-Bill + 5%	1.57	6.11	5.53	5.34	5.34	6.28
Liquid Alternative Universe	**Quarter**	**Year**	**3 Years**	**5 Years**	**10 Years**	**15 Years**
Callan Absolute Return MAC	**0.21**	**2.65**	**1.92**	**3.12**	**–**	**–**
Callan Risk Premia MAC	**-0.74**	**3.08**	**1.42**	**3.02**	**6.85**	**–**
Callan Long-Biased MAC	**-0.50**	**9.32**	**3.84**	**5.37**	**5.98**	**8.87**
Callan Risk Parity MAC	**-1.33**	**7.81**	**4.27**	**4.61**	**6.93**	**–**
60% S&P 500/40% BB Agg	-0.97	8.81	6.99	8.72	7.42	7.85
CS NB MARP Index (5%v)	-0.70	-1.81	1.27	3.10	6.54	–
SG Trend Index	-3.88	-0.91	-5.01	1.80	1.91	3.59

*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

DC Plans Post Best Returns in Four Years

DEFINED CONTRIBUTION | Tom Szkwarla

The Callan DC Index™ gained 16.5% in 2017, its best year since 2013. Despite this, the Index trailed the Age 45 Target Date Fund—the average of target date funds appropriate for participants aged 45 and retiring at age 65—which gained 19.3%. Since inception, the DC Index's annual return of 6.3% has trailed the Age 45 Target Date Fund by 79 basis points.

A new feature of the Index, the DC Fee Analysis chart, measures the average total investment management fee by plan size. Mega plans have driven down their fees to an average of 33 basis points, while smaller plans pay progressively more.

The average DC plan balance grew 16.5% for the year ended Dec. 31, 2017, with market returns accounting for nearly all that.

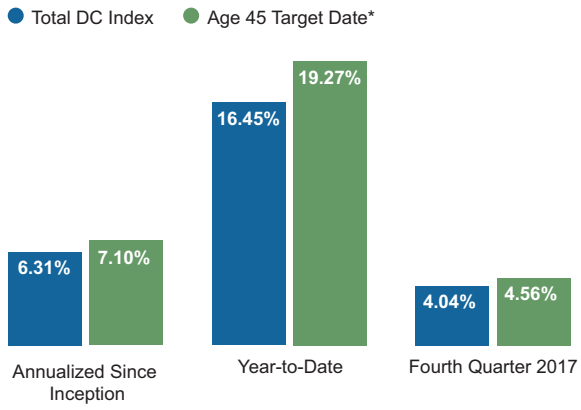
For the third consecutive quarter, non-U.S. equities have experienced notable inflows. Outflows came primarily from stable value (more than a third of the total) and company stock. As usual, target date funds (TDFs) attracted the majority of assets during the quarter, absorbing approximately 62 cents of every dollar that flowed into DC funds. Turnover (i.e., net transfer activity levels within DC plans) for the quarter, at 0.53%, fell below the since-inception average (0.63%).

The Callan DC Index's overall equity allocation ended at 71%, only slightly below its 2007 peak of 73%. TDFs accounted for 30.8% of total assets, an all-time high. U.S. large cap equity continued to hold the second-largest allocation, at 23.6%.

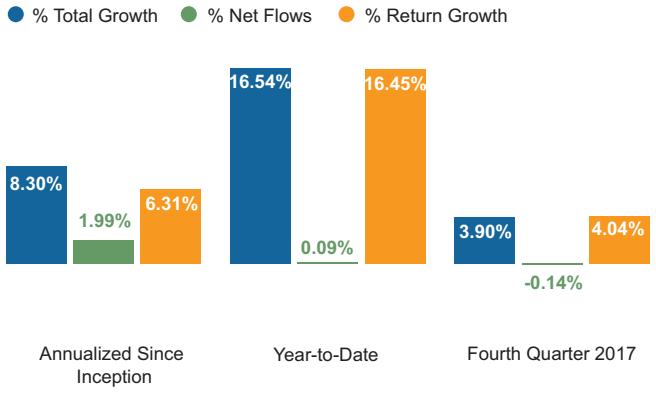
When TDFs are held within a DC plan (92% of the total), they hold 33.6% of assets, more than any other option. U.S. large cap equity funds, offered in all plans, are the second most utilized option (23.6%).

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 (Fourth Quarter 2017)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	61.81%
Non-U.S. Equity	24.86%
Stable Value	-36.21%
Company Stock	-25.94%
Total Turnover**	**0.53%**

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

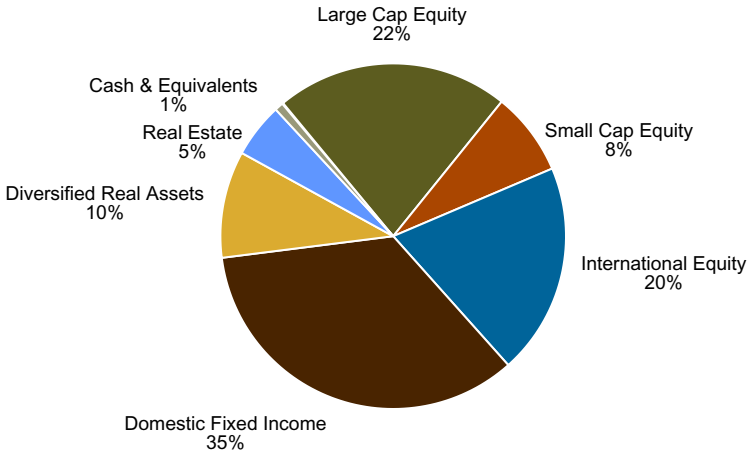
* The Age 45 Fund transitioned from the average 2030 TDF to the 2035 TDF in June 2013.

** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

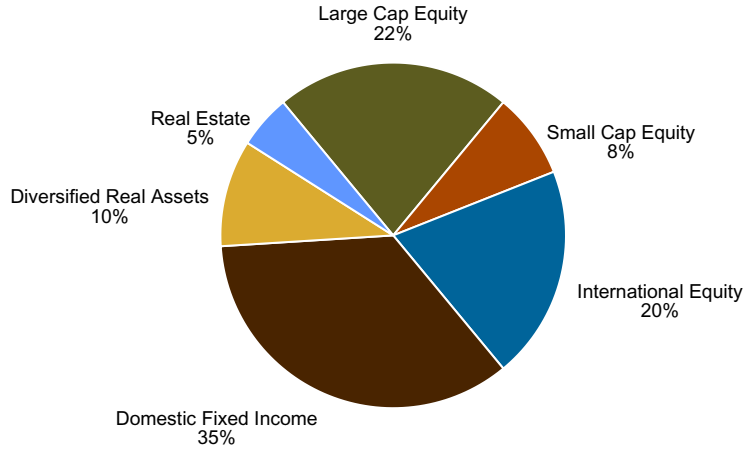
Actual vs Target Asset Allocation
As of March 31, 2018

The first chart below shows the Fund's asset allocation as of March 31, 2018. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

Actual Asset Allocation



Target Asset Allocation



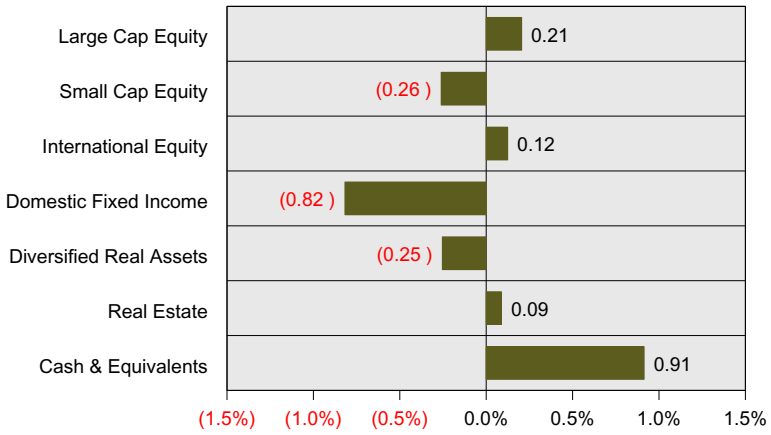
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Large Cap Equity	1,172,062	21.8%	22.0%	(0.2%)	(10,449)
Small Cap Equity	420,931	7.8%	8.0%	(0.2%)	(9,073)
International Equity	1,066,336	19.8%	20.0%	(0.2%)	(8,675)
Domestic Fixed Income	1,862,117	34.6%	35.0%	(0.4%)	(19,151)
Diversified Real Assets	537,030	10.0%	10.0%	(0.0%)	(475)
Real Estate	272,965	5.1%	5.0%	0.1%	4,213
Cash & Equivalents	43,611	0.8%	0.0%	0.8%	43,611
Total	5,375,053	100.0%	100.0%		

* 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.

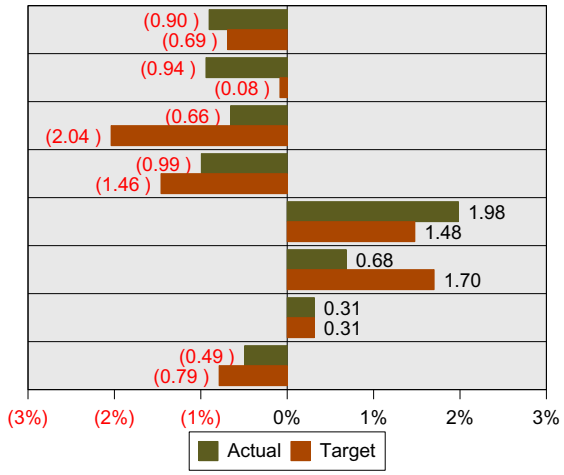
Quarterly Total Fund Relative Attribution - March 31, 2018

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.

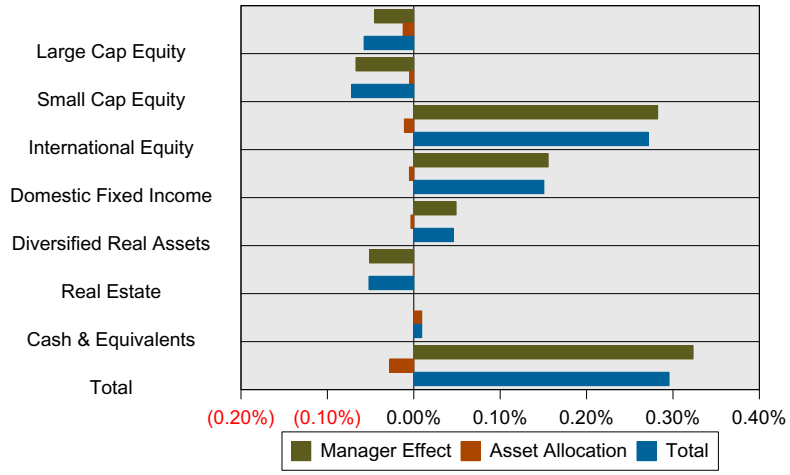
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2018

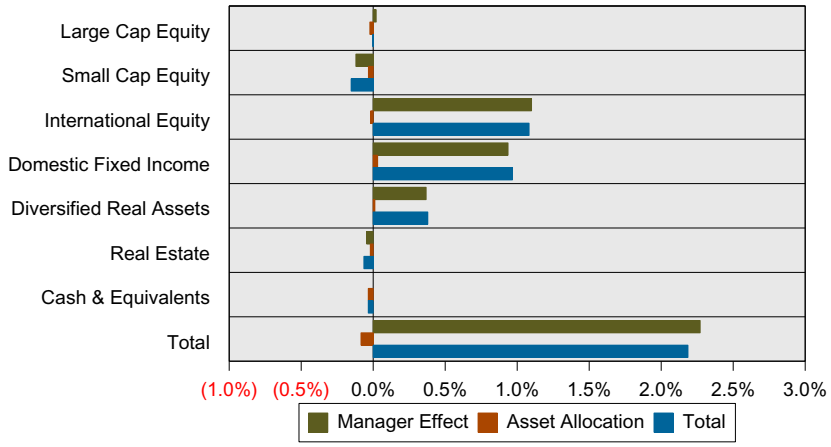
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	22%	22%	(0.90%)	(0.69%)	(0.05%)	(0.01%)	(0.06%)
Small Cap Equity	8%	8%	(0.94%)	(0.08%)	(0.07%)	(0.00%)	(0.07%)
International Equity	20%	20%	(0.66%)	(2.04%)	0.28%	(0.01%)	0.27%
Domestic Fixed Income	34%	35%	(0.99%)	(1.46%)	0.16%	(0.01%)	0.15%
Diversified Real Assets	10%	10%	1.98%	1.48%	0.05%	(0.00%)	0.05%
Real Estate	5%	5%	0.68%	1.70%	(0.05%)	(0.00%)	(0.05%)
Cash & Equivalents	1%	0%	0.31%	0.31%	0.00%	0.01%	0.01%
Total			**(0.49%) =**	**(0.79%) +**	**0.32% +**	**(0.03%)**	**0.30%**

* 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.

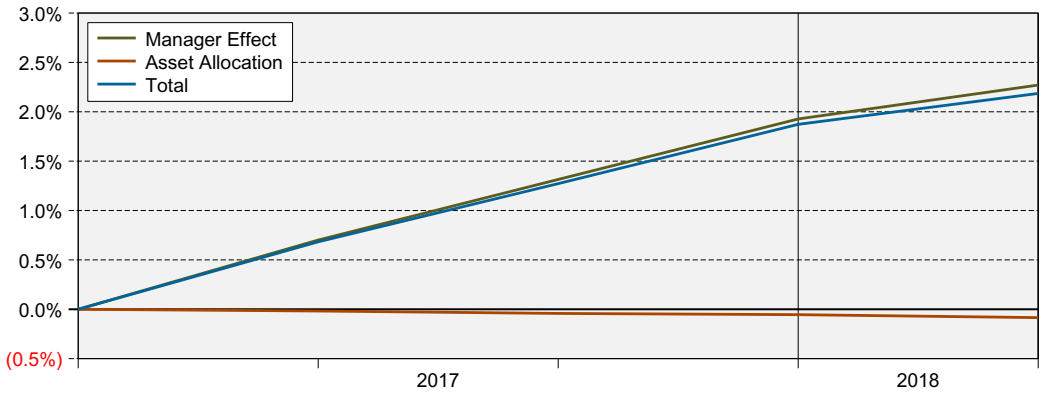
Cumulative Total Fund Relative Attribution - March 31, 2018

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

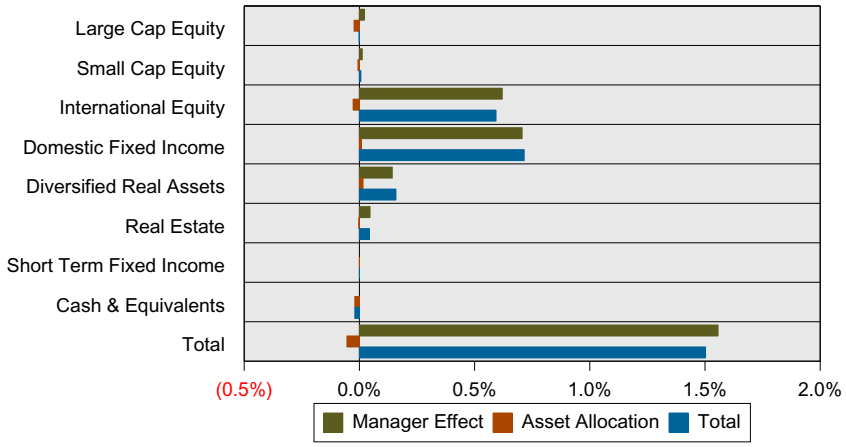
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	22%	22%	14.08%	13.98%	0.02%	(0.02%)	(0.00%)
Small Cap Equity	8%	8%	10.22%	11.79%	(0.12%)	(0.03%)	(0.15%)
International Equity	20%	20%	19.76%	13.92%	1.10%	(0.02%)	1.08%
Domestic Fixed Income	34%	35%	3.80%	1.20%	0.94%	0.03%	0.97%
Diversified Real Assets	10%	10%	11.03%	7.09%	0.37%	0.01%	0.38%
Real Estate	5%	5%	6.24%	7.12%	(0.04%)	(0.02%)	(0.06%)
Cash & Equivalents	1%	0%	0.99%	0.99%	0.00%	(0.03%)	(0.03%)
Total			**10.45%**	**= 8.27%**	**+ 2.27%**	**+ (0.08%)**	**2.19%**

* 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.

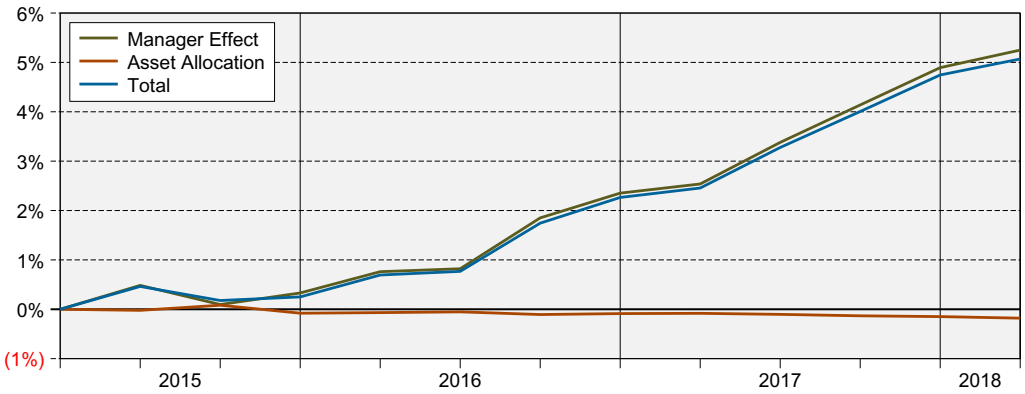
Cumulative Total Fund Relative Attribution - March 31, 2018

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

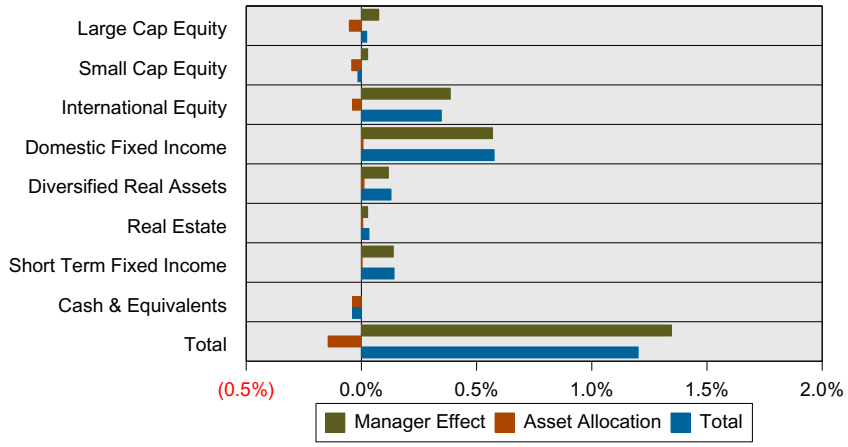
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return		Target Return		Manager Effect		Asset Allocation	Total Relative Return
Large Cap Equity	22%	22%	10.52%		10.39%		0.02%		(0.02%)	(0.00%)
Small Cap Equity	8%	8%	8.61%		8.39%		0.01%		(0.01%)	0.01%
International Equity	20%	20%	8.35%		5.22%		0.62%		(0.03%)	0.59%
Domestic Fixed Income	35%	35%	3.23%		1.20%		0.71%		0.01%	0.72%
Diversified Real Assets	10%	10%	4.40%		2.92%		0.14%		0.02%	0.16%
Real Estate	6%	5%	9.57%		8.72%		0.05%		(0.00%)	0.04%
Short Term Fixed Income	0%	0%	-		-		0.00%		(0.00%)	(0.00%)
Cash & Equivalents	0%	0%	0.45%		0.45%		0.00%		(0.02%)	(0.02%)
Total			**6.80%**	**=**	**5.30%**	**+**	**1.56%**	**+**	**(0.05%)**	**1.50%**

* 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.

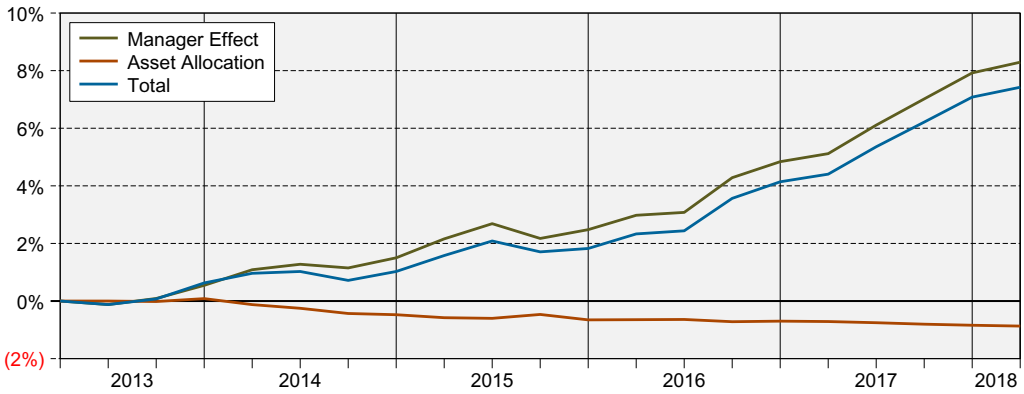
Cumulative Total Fund Relative Attribution - March 31, 2018

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

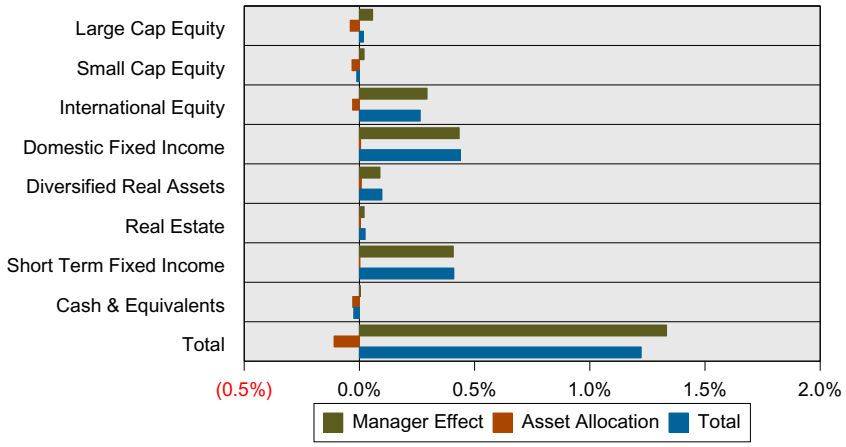
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	18%	18%	-	-	0.08%	(0.05%)	0.02%
Small Cap Equity	7%	7%	-	-	0.03%	(0.04%)	(0.02%)
International Equity	16%	17%	-	-	0.39%	(0.04%)	0.35%
Domestic Fixed Income	28%	28%	-	-	0.57%	0.01%	0.58%
Diversified Real Assets	7%	7%	-	-	0.12%	0.01%	0.13%
Real Estate	5%	4%	-	-	0.03%	0.01%	0.03%
Short Term Fixed Income	18%	19%	-	-	0.14%	0.00%	0.14%
Cash & Equivalents	1%	0%	0.29%	0.29%	0.00%	(0.04%)	(0.04%)
Total			**6.04%**	**= 4.84%**	**+ 1.35%**	**+ (0.14%)**	**1.20%**

* 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.

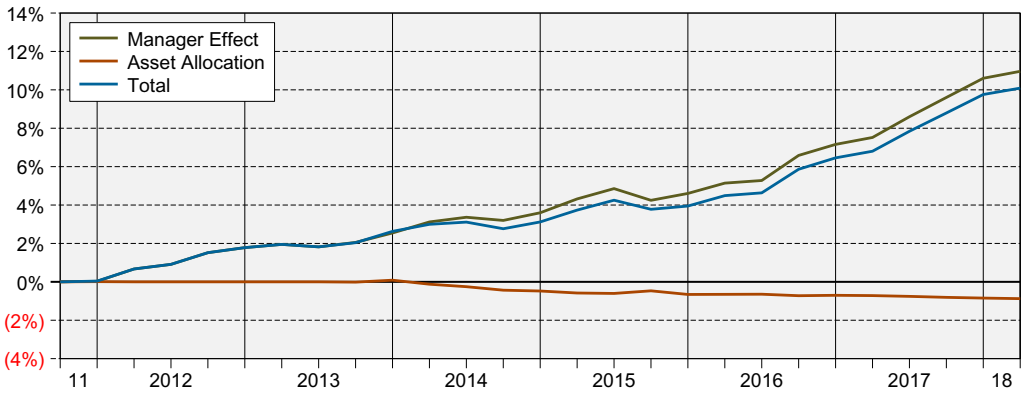
Cumulative Total Fund Relative Attribution - March 31, 2018

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.

Six and One-Half Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Six and One-Half Year Annualized Relative Attribution Effects

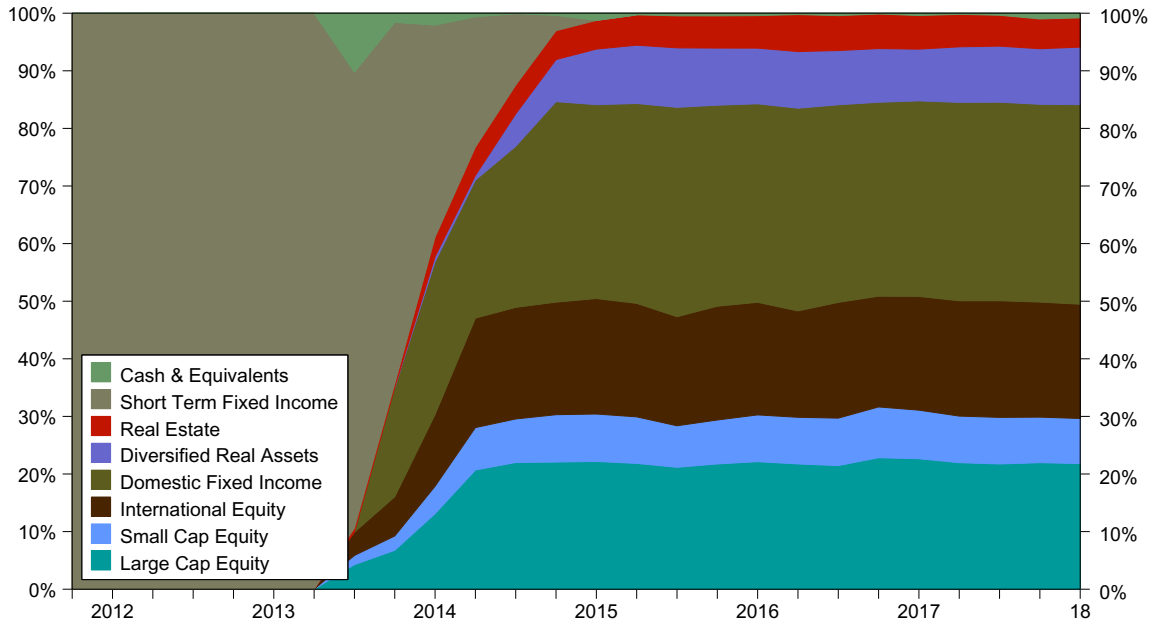
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap Equity	14%	14%	-	-	0.06%	(0.04%)	0.02%
Small Cap Equity	5%	5%	-	-	0.02%	(0.03%)	(0.01%)
International Equity	13%	13%	-	-	0.29%	(0.03%)	0.26%
Domestic Fixed Income	22%	22%	-	-	0.43%	0.01%	0.44%
Diversified Real Assets	5%	5%	-	-	0.09%	0.01%	0.10%
Real Estate	4%	3%	-	-	0.02%	0.00%	0.03%
Short Term Fixed Income	34%	35%	-	-	0.41%	0.00%	0.41%
Cash & Equivalents	3%	3%	0.27%	0.27%	0.00%	(0.03%)	(0.02%)
Total			**5.03%**	**= 3.81%**	**+ 1.33%**	**+ (0.11%)**	**1.22%**

* 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.

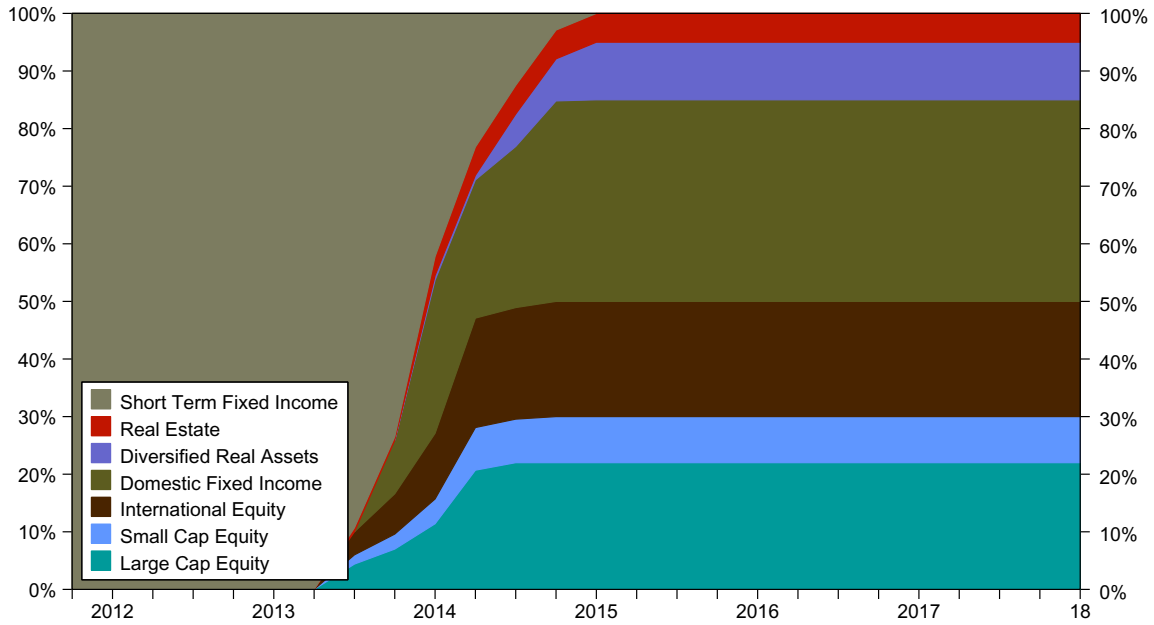
Actual vs Target Historical Asset Allocation

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

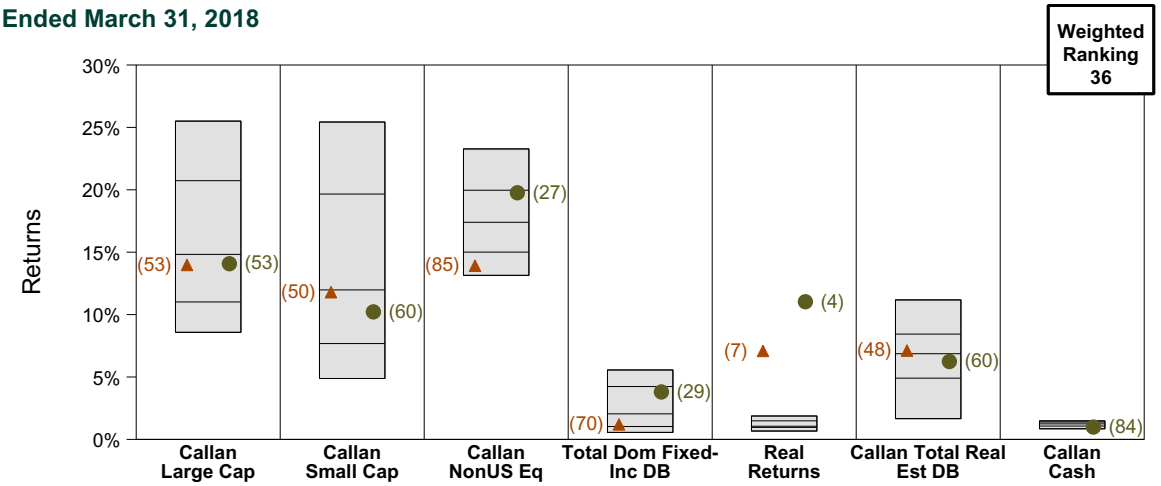


* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

Asset Class Rankings

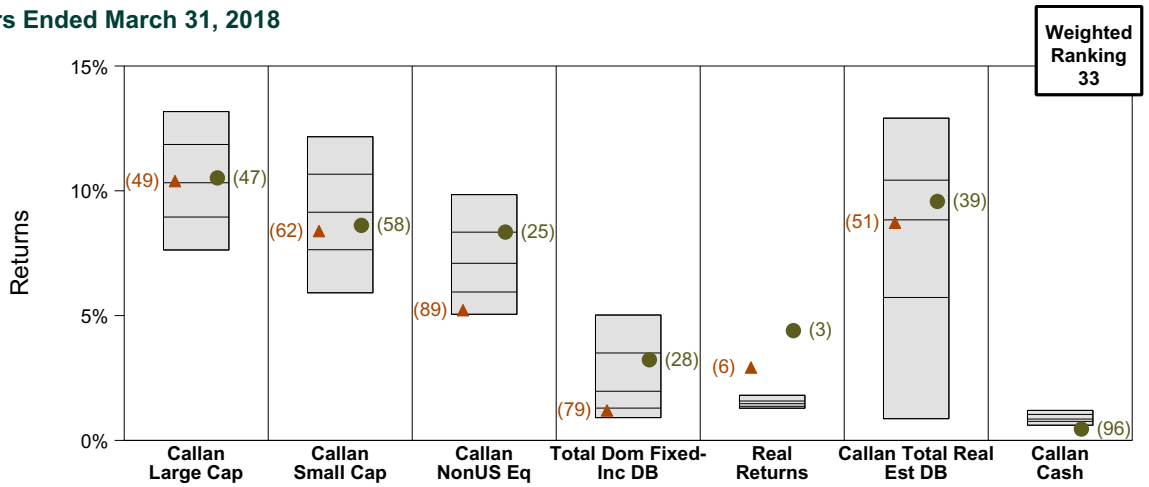
The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used 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 March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Cash
10th Percentile	25.50	25.43	23.28	5.56	1.88	11.18	1.48
25th Percentile	20.73	19.66	19.97	4.23	1.49	8.44	1.39
Median	14.82	11.98	17.40	2.05	1.05	6.87	1.25
75th Percentile	11.01	7.68	15.01	1.03	0.96	4.91	1.07
90th Percentile	8.58	4.88	13.14	0.56	0.67	1.66	0.85
Asset Class Composite ●	14.08	10.22	19.76	3.80	11.03	6.24	0.99
Composite Benchmark ▲	13.98	11.79	13.92	1.20	7.09	7.12	-

Total Asset Class Performance
Three Years Ended March 31, 2018



	Callan Large Cap	Callan Small Cap	Callan NonUS Eq	Total Dom Fixed-Inc DB	Real Returns	Callan Total Real Est DB	Callan Cash
10th Percentile	13.17	12.17	9.85	5.02	1.81	12.91	1.20
25th Percentile	11.86	10.66	8.34	3.50	1.58	10.43	1.04
Median	10.32	9.14	7.10	1.97	1.47	8.84	0.86
75th Percentile	8.95	7.64	5.95	1.29	1.37	5.73	0.76
90th Percentile	7.63	5.91	5.05	0.91	1.29	0.87	0.61
Asset Class Composite ●	10.52	8.61	8.35	3.23	4.40	9.57	0.45
Composite Benchmark ▲	10.39	8.39	5.22	1.20	2.92	8.72	-

* 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 March 31, 2018, with the distribution as of December 31, 2017. 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

	March 31, 2018				December 31, 2017	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	**$1,592,993,035**	**29.64%**	**$39,373,792**	**$(15,140,986)**	**$1,568,760,230**	**29.87%**
Large Cap Equity	**$1,172,062,257**	**21.81%**	**$29,489,386**	**$(10,992,654)**	**$1,153,565,525**	**21.96%**
L.A. Capital Enhanced	228,316,099	4.25%	9,927,492	(3,229,508)	221,618,115	4.22%
L.A. Capital Large Cap Growth	352,800,064	6.56%	(179,715)	2,007,170	350,972,609	6.68%
Parametric Clifton Large Cap	234,421,476	4.36%	10,000,000	(3,079,035)	227,500,511	4.33%
LSV Large Cap Value	356,524,619	6.63%	9,741,610	(6,691,281)	353,474,289	6.73%
Small Cap Equity	**$420,930,778**	**7.83%**	**$9,884,406**	**$(4,148,333)**	**$415,194,705**	**7.91%**
Parametric Clifton SmallCap	227,111,505	4.23%	0	(296,771)	227,408,276	4.33%
PIMCO RAE	193,819,273	3.61%	9,884,406	(3,851,561)	187,786,429	3.58%
International Equity	**$1,066,335,672**	**19.84%**	**$24,193,550**	**$(7,201,018)**	**$1,049,343,140**	**19.98%**
DFA Intl SmallCap Value	102,260,514	1.90%	0	(2,368,618)	104,629,132	1.99%
LSV Intl Value	423,305,870	7.88%	16,596,049	(5,018,816)	411,728,637	7.84%
Vanguard Intl Explorer Fund	107,420,444	2.00%	0	651,945	106,768,499	2.03%
William Blair	433,348,844	8.06%	7,597,501	(465,529)	426,216,872	8.11%
Domestic Fixed Income	**$1,862,116,994**	**34.64%**	**$76,342,244**	**$(17,878,154)**	**$1,803,652,904**	**34.34%**
Ares ND Credit Strategies Fd	46,929,817	0.87%	13,920,000	579,050	32,430,767	0.62%
BND CDs	63,222,719	1.18%	(426,255)	406,279	63,242,695	1.20%
Cerberus ND Private Credit Fd	44,946,480	0.84%	0	1,120,770	43,825,710	0.83%
Declaration Total Return	144,662,471	2.69%	14,962,073	545,904	129,154,494	2.46%
Prudential	195,000,668	3.63%	(127,111)	(2,771,104)	197,898,883	3.77%
SSgA US Govt Credit Bd Idx	260,878,283	4.85%	9,986,171	(3,888,102)	254,780,214	4.85%
Wells Capital	513,387,692	9.55%	14,805,758	(9,224,099)	507,806,032	9.67%
Western Asset Management	519,560,201	9.67%	25,842,114	(6,084,284)	499,802,371	9.52%
Pooled Fixed Income(1)	73,528,662	1.37%	(2,620,507)	1,437,432	74,711,738	1.42%
Diversified Real Assets	**$537,030,436**	**9.99%**	**$20,226,959**	**$10,277,877**	**$506,525,600**	**9.64%**
Western TIPS	375,957,022	6.99%	14,890,145	5,423,962	355,642,915	6.77%
JP Morgan Infrastructure	121,969,900	2.27%	(241,058)	3,463,968	118,746,989	2.26%
Grosvenor Cust. Infrastructure	39,103,514	0.73%	5,577,871	1,389,948	32,135,695	0.61%
Real Estate	**$272,965,486**	**5.08%**	**$(312,216)**	**$1,856,409**	**$271,421,292**	**5.17%**
Invesco Core Real Estate	131,584,803	2.45%	0	0	131,584,803	2.51%
JP Morgan RE Inc & Growth	141,380,682	2.63%	(312,216)	1,856,409	139,836,489	2.66%
Cash & Equivalents	**$43,610,910**	**0.81%**	**$(9,132,121)**	**$145,256**	**$52,597,775**	**1.00%**
Securities Lending Income	**$0**	**0.00%**	**$(133,559)**	**$133,559**	**-**	**-**
Total Fund	**$5,375,052,532**	**100.0%**	**$150,558,649**	**$(27,807,057)**	**$5,252,300,940**	**100.0%**

(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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 6-1/2 Years
Domestic Equity				
Gross	(0.91%)	13.03%	10.05%	-
Net	(0.95%)	12.84%	9.80%	-
Large Cap Equity				
Gross	(0.90%)	14.08%	10.52%	-
Net	(0.95%)	13.89%	10.30%	-
Russell 1000 Index	(0.69%)	13.98%	10.39%	16.39%
L.A. Capital Enhanced - Gross	(1.46%)	11.06%	9.69%	-
L.A. Capital Enhanced - Net	(1.49%)	10.91%	9.54%	-
Russell 1000 Index	(0.69%)	13.98%	10.39%	16.39%
L.A. Capital LargeCap Growth - Gross	0.57%	16.70%	11.12%	-
L.A. Capital LargeCap Growth - Net	0.52%	16.47%	10.89%	-
Russell 1000 Growth Index	1.42%	21.25%	12.90%	17.64%
Parametric Clifton Large Cap - Gross	(1.31%)	13.55%	10.85%	-
Parametric Clifton Large Cap - Net	(1.31%)	13.62%	10.77%	-
S&P 500 Index	(0.76%)	13.99%	10.78%	16.37%
LSV Large Cap Value - Gross	(1.81%)	13.71%	10.12%	-
LSV Large Cap Value - Net	(1.88%)	13.38%	9.79%	-
Russell 1000 Value Index	(2.83%)	6.95%	7.88%	15.07%
Small Cap Equity				
Gross	(0.94%)	10.22%	8.61%	-
Net	(0.97%)	10.03%	8.26%	-
Russell 2000 Index	(0.08%)	11.79%	8.39%	15.83%
Parametric Clifton Small Cap - Gross	(0.13%)	12.01%	9.09%	-
Parametric Clifton Small Cap - Net	(0.13%)	11.89%	8.70%	-
Russell 2000 Index	(0.08%)	11.79%	8.39%	15.83%
PIMCO RAE - Gross	(1.96%)	8.04%	7.99%	-
PIMCO RAE - Net	(2.02%)	7.78%	7.71%	-
Russell 2000 Index	(0.08%)	11.79%	8.39%	15.83%
International Equity				
Gross	(0.66%)	19.76%	8.35%	-
Net	(0.73%)	19.41%	8.03%	-
Benchmark(1)	(2.04%)	13.92%	5.22%	8.79%
DFA Intl Small Cap Value	(2.26%)	16.11%	10.30%	-
World ex US SC Va	(1.77%)	17.66%	9.72%	11.03%
LSV Intl Value - Gross	(1.15%)	16.35%	7.99%	-
LSV Intl Value - Net	(1.24%)	15.90%	7.58%	-
MSCI EAFE Index	(1.53%)	14.80%	5.55%	8.95%
Vanguard Intl Explorer Fund	0.61%	26.59%	11.56%	-
BMI, EPAC, <$2 B	0.25%	22.13%	12.09%	11.85%
William Blair - Gross	(0.10%)	22.52%	-	-
William Blair - Net	(0.19%)	22.07%	-	-
MSCI ACWI ex US IMI	(1.06%)	17.10%	6.75%	8.46%

(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 March 31, 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 March 31, 2018

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 6-1/2 Years
Domestic Fixed Income					
Gross	(0.99%)	3.80%	3.23%	-	-
Net	(1.02%)	3.68%	3.10%	-	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.20%
Ares ND Credit Strategies Fd - Net	1.25%	-	-	-	-
Cerberus ND Private Credit Fd - Net	2.56%	-	-	-	-
S&P/LSTA Leveraged Loan B	1.49%	4.63%	4.38%	4.05%	5.62%
BND CDs - Net	0.65%	2.73%	-	-	-
Declaration Total Return - Net	0.37%	4.60%	3.45%	-	-
Libor-3 Month	0.46%	1.46%	0.90%	0.64%	0.59%
Prudential - Gross	(1.40%)	3.70%	3.28%	-	-
Prudential - Net	(1.46%)	3.43%	3.01%	-	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.20%
Wells Capital - Gross	(1.81%)	4.38%	3.51%	-	-
Wells Capital - Net	(1.85%)	4.22%	3.34%	-	-
Blmbg Credit Baa	(2.16%)	3.36%	2.54%	3.24%	4.59%
Western Asset - Gross	(1.22%)	2.78%	2.70%	-	-
Western Asset - Net	(1.25%)	2.65%	2.56%	-	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.20%
SSgA US Govt Credit Bd Idx - Gross	(1.56%)	1.41%	1.23%	-	-
SSgA US Govt Credit Bd Idx - Net	(1.57%)	1.38%	1.20%	-	-
Blmbg Govt/Credit Bd	(1.58%)	1.38%	1.22%	1.84%	2.30%
Pooled Fixed Income - Net(1)	1.93%	10.82%	9.85%	-	-
Blmbg Aggregate Index	(1.46%)	1.20%	1.20%	1.82%	2.20%
Diversified Real Assets					
Gross	1.98%	11.03%	4.40%	-	-
Net	1.91%	10.76%	4.13%	-	-
Weighted Benchmark	1.48%	7.09%	2.92%	-	-
Western Asset TIPS - Gross	1.51%	9.66%	3.31%	-	-
Western Asset TIPS - Net	1.48%	9.52%	3.18%	-	-
Blmbg Glbl Inftn-Lnked	1.60%	8.99%	3.45%	1.95%	2.95%
JP Morgan Infrastructure - Gross	2.92%	15.64%	7.88%	-	-
JP Morgan Infrastructure - Net	2.71%	14.86%	7.12%	-	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.31%
Grosvenor Cust. Infrastructure - Net	3.69%	11.57%	1.77%	-	-
CPI-W	1.22%	2.44%	1.76%	1.20%	1.31%
Real Estate					
Gross	0.68%	6.24%	9.57%	-	-
Net	0.57%	5.70%	8.96%	-	-
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	10.20%
Invesco Core Real Estate - Gross	0.00%	5.70%	9.56%	-	-
Invesco Core Real Estate - Net	0.00%	5.43%	9.22%	-	-
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	10.20%
JP Morgan RE Inc & Growth - Gross	1.33%	6.74%	9.61%	-	-
JP Morgan RE Inc & Growth - Net	1.10%	5.95%	8.71%	-	-
NCREIF Total Index	1.70%	7.12%	8.72%	10.00%	10.20%
Cash & Equivalents - Net	**0.31%**	**0.99%**	**0.45%**	**0.29%**	**0.27%**
90 Day Treasury Bills	0.35%	1.11%	0.53%	0.34%	0.28%
Total Fund					
Gross	(0.49%)	10.45%	6.80%	6.04%	5.03%
Net	(0.54%)	10.23%	6.56%	5.82%	4.85%
Target*	(0.79%)	8.27%	5.30%	4.84%	3.81%

* 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.

Domestic Equity
Period Ended March 31, 2018

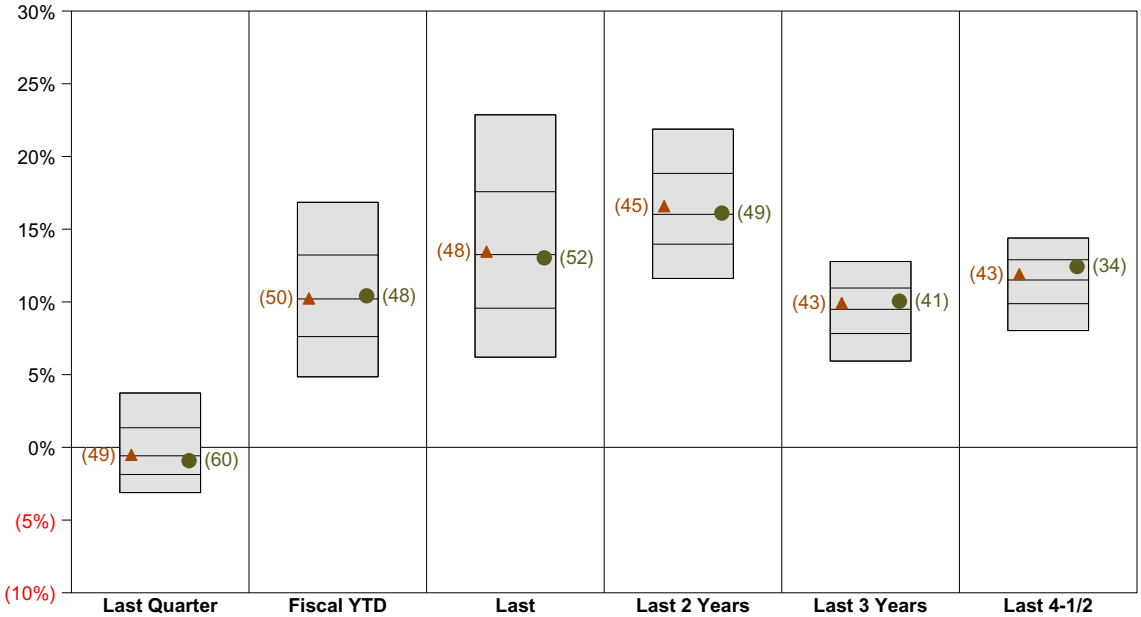
Quarterly Summary and Highlights

- Domestic Equity's portfolio posted a (0.91)% return for the quarter placing it in the 60 percentile of the Total Domestic Equity Database group for the quarter and in the 52 percentile for the last year.
- Domestic Equity's portfolio underperformed the Domestic Equity Target by 0.41% for the quarter and underperformed the Domestic Equity Target for the year by 0.43%.

Quarterly Asset Growth

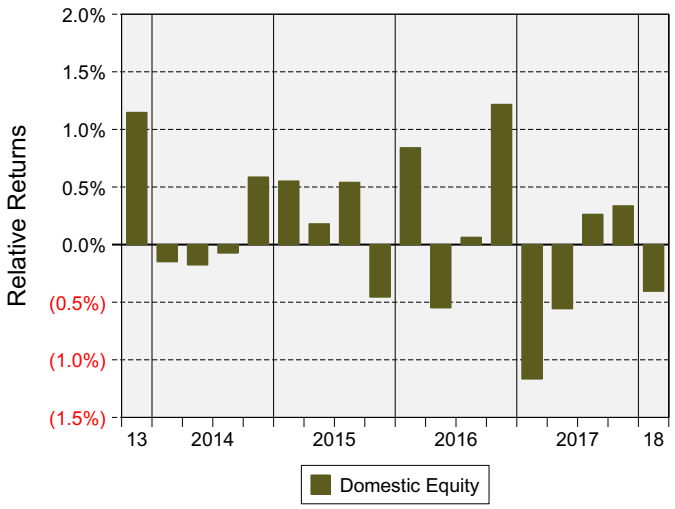
Beginning Market Value	$1,568,760,230
Net New Investment	$39,373,792
Investment Gains/(Losses)	$-15,140,986
Ending Market Value	$1,592,993,035

Performance vs Total Domestic Equity Database (Gross)

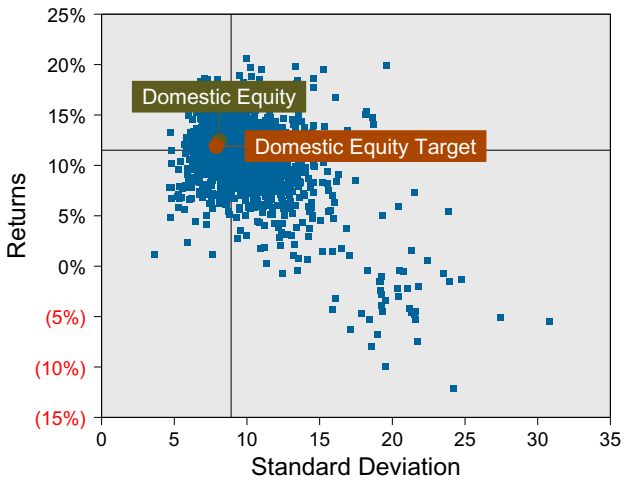


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	3.74	16.85	22.87	21.88	12.78	14.39
25th Percentile	1.35	13.23	17.58	18.84	10.96	12.90
Median	(0.58)	10.20	13.25	16.02	9.49	11.51
75th Percentile	(1.87)	7.62	9.57	13.97	7.83	9.88
90th Percentile	(3.11)	4.85	6.20	11.61	5.93	8.03
Domestic Equity ●	(0.91)	10.42	13.03	16.10	10.05	12.43
Domestic Equity Target ▲	(0.51)	10.24	13.46	16.58	9.92	11.91

Relative Return vs Domestic Equity Target



Total Domestic Equity Database (Gross) Annualized Four and One-Half Year Risk vs Return



Parametric Clifton Large Cap
Period Ended March 31, 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.

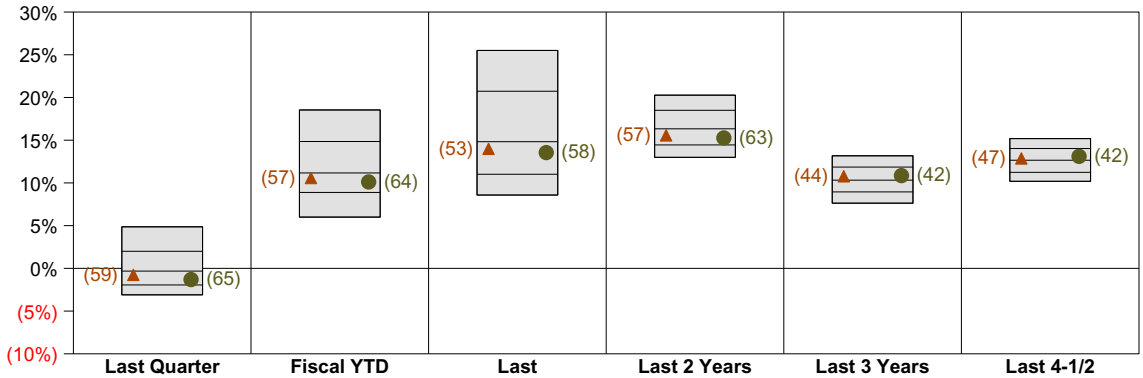
Quarterly Summary and Highlights

- Parametric Clifton Large Cap's portfolio posted a (1.31)% return for the quarter placing it in the 65 percentile of the Callan Large Capitalization group for the quarter and in the 58 percentile for the last year.
- Parametric Clifton Large Cap's portfolio underperformed the S&P 500 Index by 0.55% for the quarter and underperformed the S&P 500 Index for the year by 0.44%.

Quarterly Asset Growth

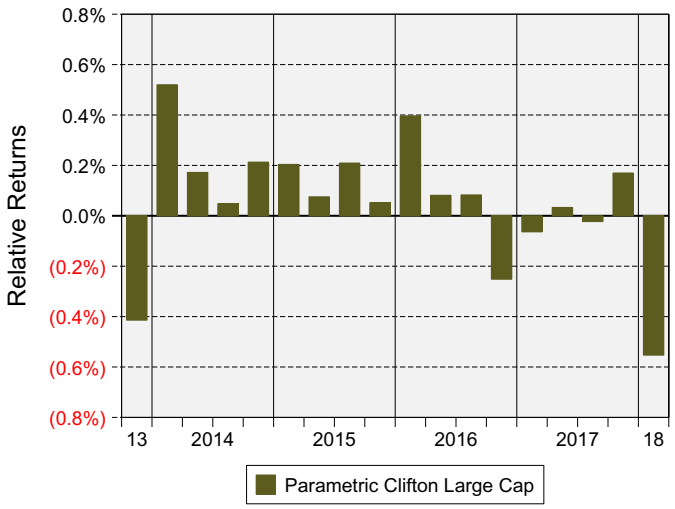
Beginning Market Value	$227,500,511
Net New Investment	$10,000,000
Investment Gains/(Losses)	$-3,079,035
Ending Market Value	$234,421,476

Performance vs Callan Large Capitalization (Gross)

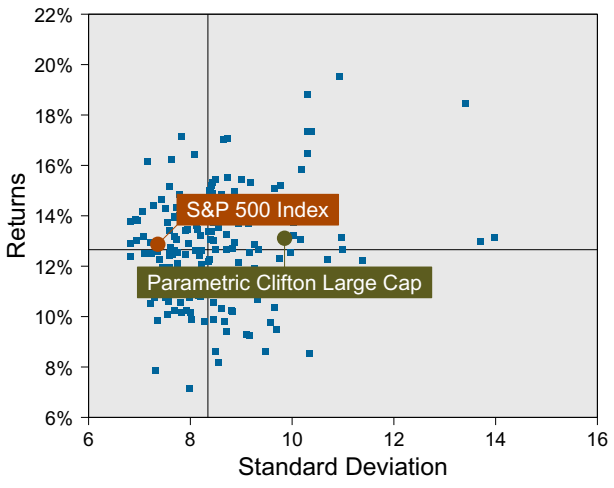


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	4.86	18.54	25.50	20.27	13.17	15.19
25th Percentile	2.00	14.85	20.73	18.50	11.86	14.03
Median	(0.32)	11.17	14.82	16.33	10.32	12.65
75th Percentile	(1.94)	8.89	11.01	14.45	8.95	11.24
90th Percentile	(3.10)	6.00	8.58	12.99	7.63	10.19
Parametric Clifton Large Cap ●	(1.31)	10.11	13.55	15.26	10.85	13.11
S&P 500 Index ▲	(0.76)	10.58	13.99	15.57	10.78	12.87

Relative Return vs S&P 500 Index



Callan Large Capitalization (Gross)
Annualized Four and One-Half Year Risk vs Return



L.A. Capital
Period Ended March 31, 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.

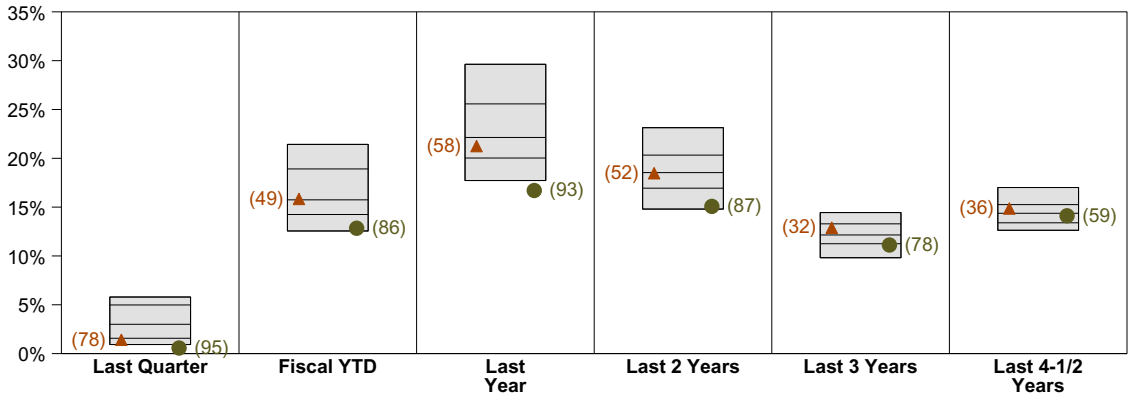
Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 0.57% return for the quarter placing it in the 95 percentile of the Callan Large Cap Growth group for the quarter and in the 93 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio underperformed the Russell 1000 Growth Index by 0.84% for the quarter and underperformed the Russell 1000 Growth Index for the year by 4.55%.

Quarterly Asset Growth

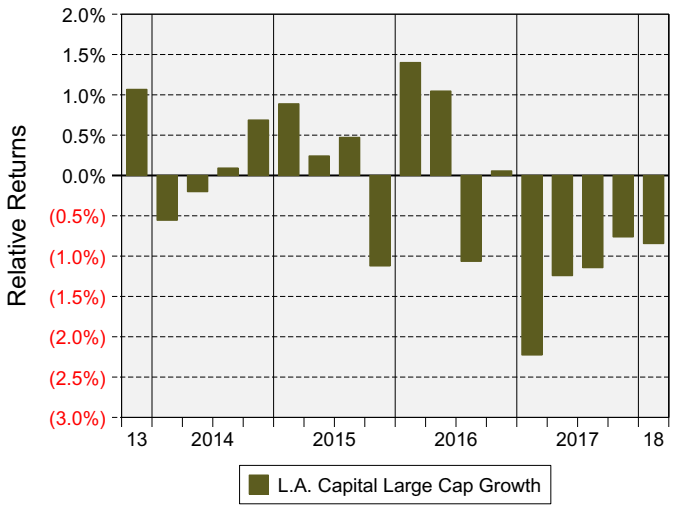
Beginning Market Value	$350,972,609
Net New Investment	$-179,715
Investment Gains/(Losses)	$2,007,170
Ending Market Value	$352,800,064

Performance vs Callan Large Cap Growth (Gross)

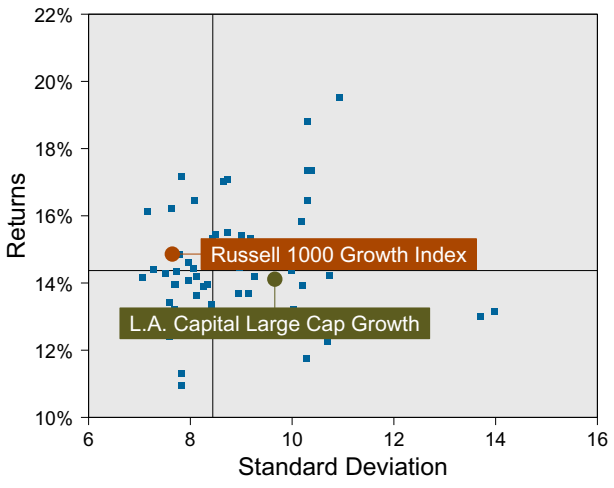


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	5.80	21.42	29.63	23.14	14.44	17.01
25th Percentile	4.98	18.91	25.57	20.33	13.29	15.26
Median	3.00	15.75	22.13	18.54	12.15	14.37
75th Percentile	1.57	14.25	20.03	16.94	11.25	13.39
90th Percentile	0.93	12.56	17.72	14.80	9.82	12.63
L.A. Capital Large Cap Growth ●	0.57	12.84	16.70	15.07	11.12	14.11
Russell 1000 Growth Index ▲	1.42	15.84	21.25	18.47	12.90	14.86

Relative Return vs Russell 1000 Growth Index



Callan Large Cap Growth (Gross) Annualized Four and One-Half Year Risk vs Return



L.A. Capital Enhanced
Period Ended March 31, 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.

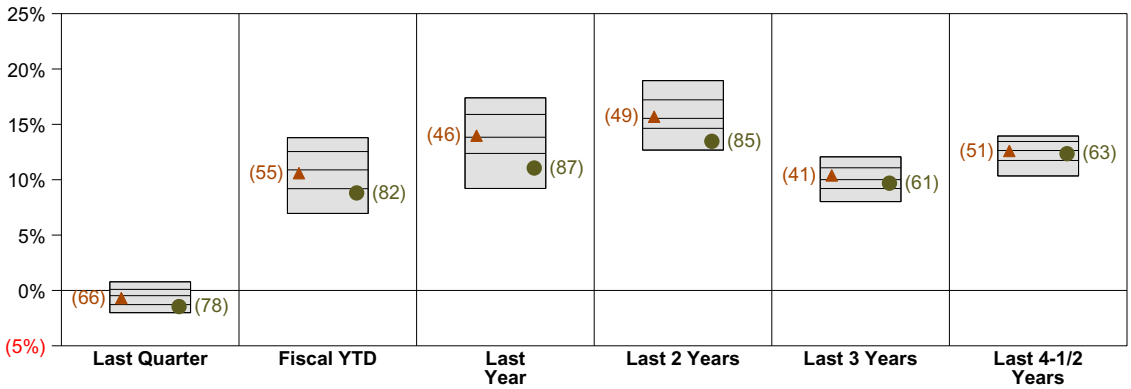
Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a (1.46)% return for the quarter placing it in the 78 percentile of the Callan Large Cap Core group for the quarter and in the 87 percentile for the last year.
- L.A. Capital Enhanced's portfolio underperformed the Russell 1000 Index by 0.77% for the quarter and underperformed the Russell 1000 Index for the year by 2.92%.

Quarterly Asset Growth

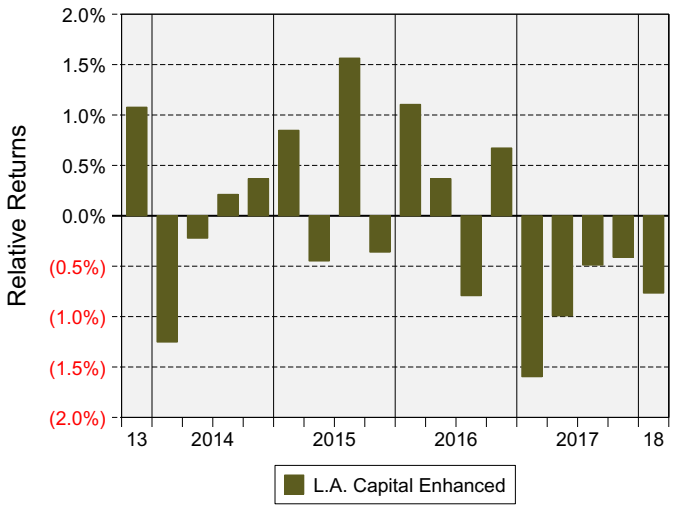
Beginning Market Value	$221,618,115
Net New Investment	$9,927,492
Investment Gains/(Losses)	$-3,229,508
Ending Market Value	$228,316,099

Performance vs Callan Large Cap Core (Gross)

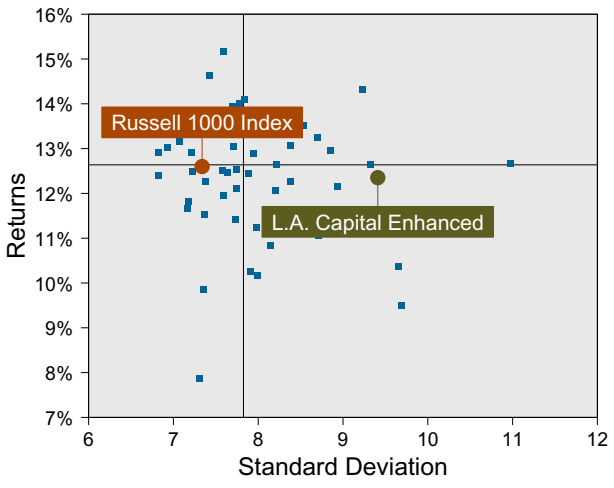


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	0.78	13.80	17.40	18.95	12.07	13.95
25th Percentile	0.10	12.54	15.90	17.21	11.08	13.45
Median	(0.47)	10.89	13.84	15.54	10.01	12.64
75th Percentile	(1.28)	9.19	12.37	14.64	9.21	11.74
90th Percentile	(2.01)	6.95	9.21	12.68	8.02	10.34
L.A. Capital Enhanced ●	(1.46)	8.80	11.06	13.47	9.69	12.35
Russell 1000 Index ▲	(0.69)	10.59	13.98	15.69	10.39	12.60

Relative Return vs Russell 1000 Index



Callan Large Cap Core (Gross)
Annualized Four and One-Half Year Risk vs Return



LSV Asset Management
Period Ended March 31, 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.

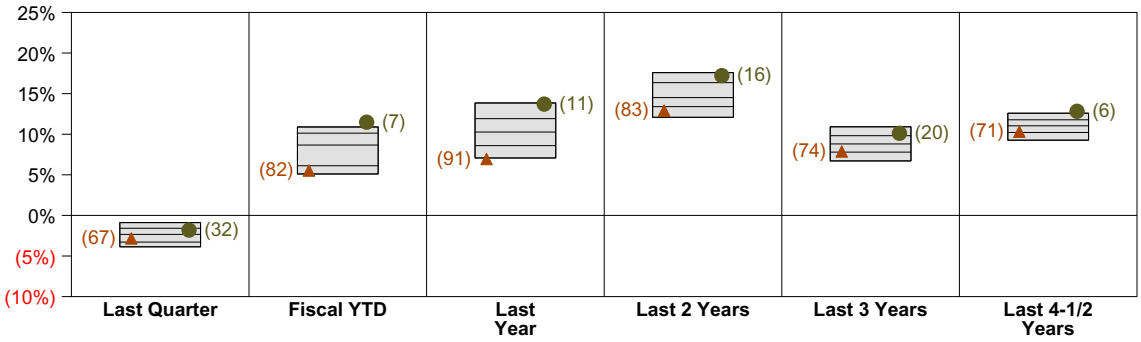
Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a (1.81)% return for the quarter placing it in the 32 percentile of the Callan Large Cap Value group for the quarter and in the 11 percentile for the last year.
- LSV Large Cap Value's portfolio outperformed the Russell 1000 Value Index by 1.02% for the quarter and outperformed the Russell 1000 Value Index for the year by 6.76%.

Quarterly Asset Growth

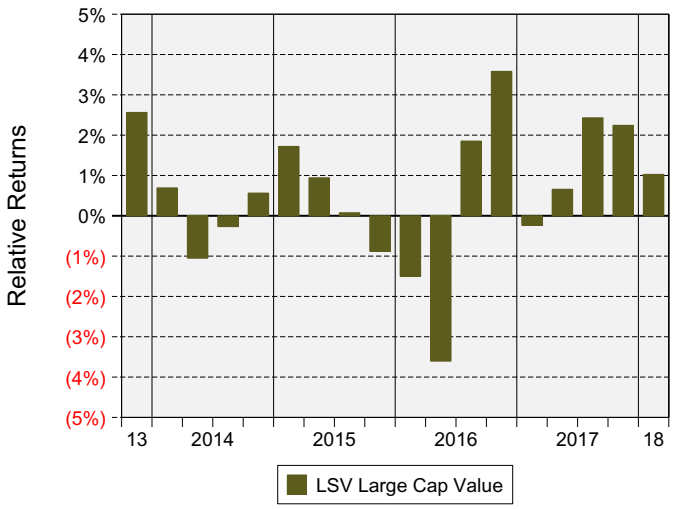
Beginning Market Value	$353,474,289
Net New Investment	$9,741,610
Investment Gains/(Losses)	$-6,691,281
Ending Market Value	$356,524,619

Performance vs Callan Large Cap Value (Gross)

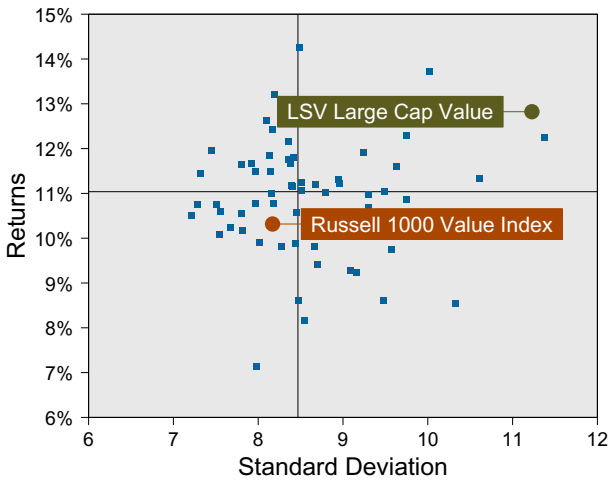


		Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile		(0.89)	10.89	13.85	17.59	10.92	12.59
25th Percentile		(1.58)	10.13	11.92	16.35	9.82	11.78
Median		(2.34)	8.67	10.27	14.51	8.81	11.04
75th Percentile		(3.29)	6.12	8.59	13.40	7.79	10.22
90th Percentile		(3.87)	5.10	7.07	12.08	6.71	9.26
LSV Large Cap Value	●	(1.81)	11.48	13.71	17.22	10.12	12.82
Russell 1000 Value Index	▲	(2.83)	5.53	6.95	12.92	7.88	10.32

Relative Return vs Russell 1000 Value Index



Callan Large Cap Value (Gross)
Annualized Four and One-Half Year Risk vs Return



Parametric Clifton Small Cap
Period Ended March 31, 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.

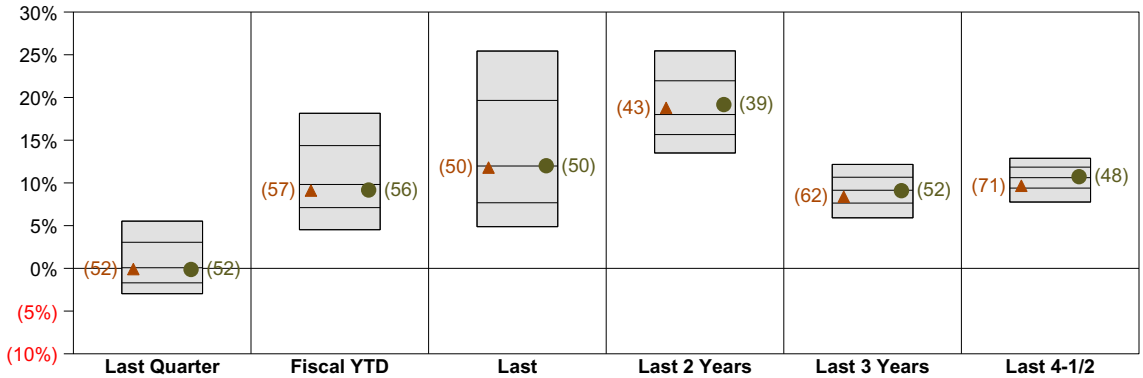
Quarterly Summary and Highlights

- Parametric Clifton Small Cap's portfolio posted a (0.13)% return for the quarter placing it in the 52 percentile of the Callan Small Capitalization group for the quarter and in the 50 percentile for the last year.
- Parametric Clifton Small Cap's portfolio underperformed the Russell 2000 Index by 0.05% for the quarter and outperformed the Russell 2000 Index for the year by 0.22%.

Quarterly Asset Growth

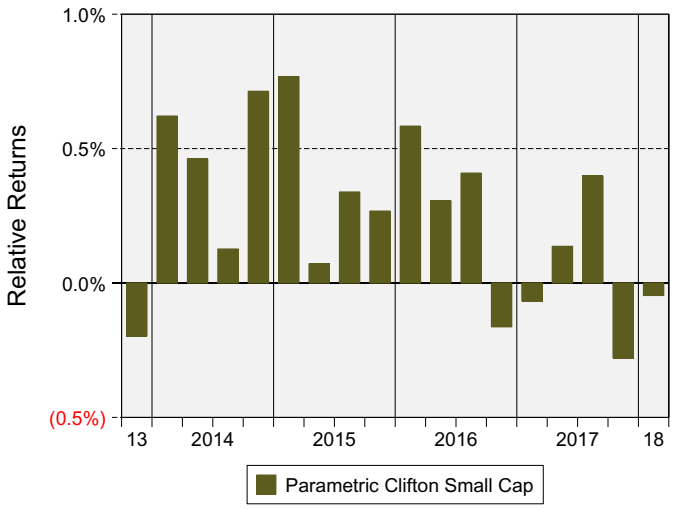
Beginning Market Value	$227,408,276
Net New Investment	$0
Investment Gains/(Losses)	$-296,771
Ending Market Value	$227,111,505

Performance vs Callan Small Capitalization (Gross)

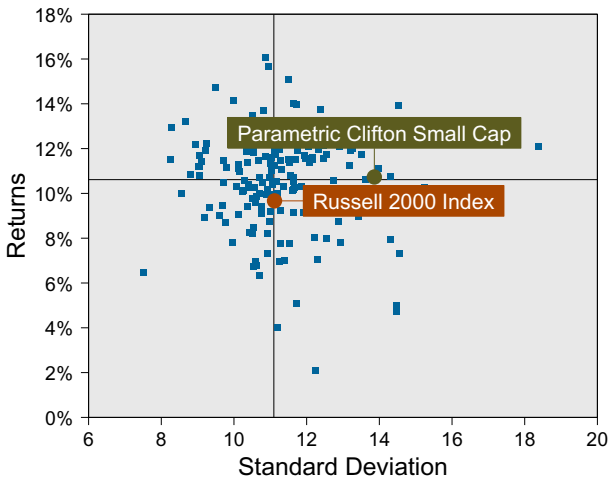


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	12.89
25th Percentile	3.05	14.37	19.66	21.95	10.66	11.85
Median	0.07	9.82	11.98	18.00	9.14	10.61
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	9.39
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	7.76
Parametric Clifton Small Cap ●	(0.13)	9.17	12.01	19.17	9.09	10.73
Russell 2000 Index ▲	(0.08)	9.11	11.79	18.79	8.39	9.67

Relative Return vs Russell 2000 Index



Callan Small Capitalization (Gross) Annualized Four and One-Half Year Risk vs Return



PIMCO RAE
Period Ended March 31, 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.

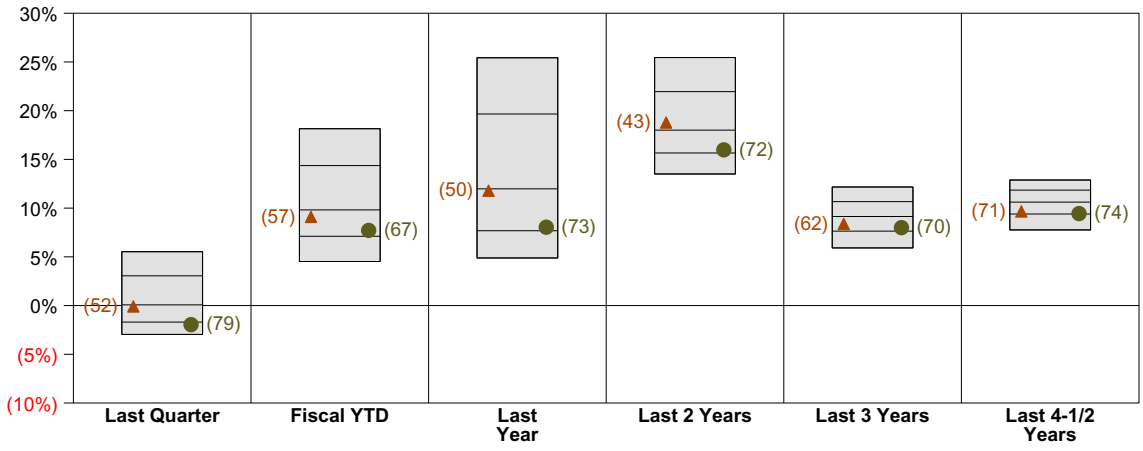
Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a (1.96)% return for the quarter placing it in the 79 percentile of the Callan Small Capitalization group for the quarter and in the 73 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 1.88% for the quarter and underperformed the Russell 2000 Index for the year by 3.75%.

Quarterly Asset Growth

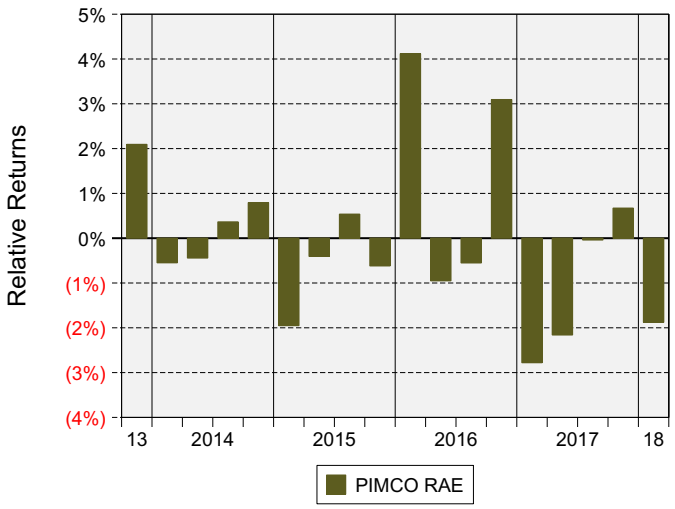
Beginning Market Value	$187,786,429
Net New Investment	$9,884,406
Investment Gains/(Losses)	$-3,851,561
Ending Market Value	$193,819,273

Performance vs Callan Small Capitalization (Gross)

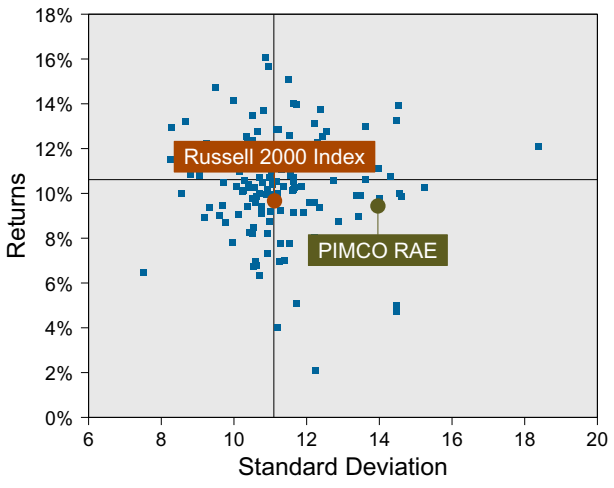


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	5.53	18.15	25.43	25.45	12.17	12.89
25th Percentile	3.05	14.37	19.66	21.95	10.66	11.85
Median	0.07	9.82	11.98	18.00	9.14	10.61
75th Percentile	(1.70)	7.11	7.68	15.66	7.64	9.39
90th Percentile	(2.96)	4.52	4.88	13.50	5.91	7.76
PIMCO RAE ●	(1.96)	7.71	8.04	15.98	7.99	9.44
Russell 2000 Index ▲	(0.08)	9.11	11.79	18.79	8.39	9.67

Relative Return vs Russell 2000 Index



Callan Small Capitalization (Gross) Annualized Four and One-Half Year Risk vs Return



International Equity
Period Ended March 31, 2018

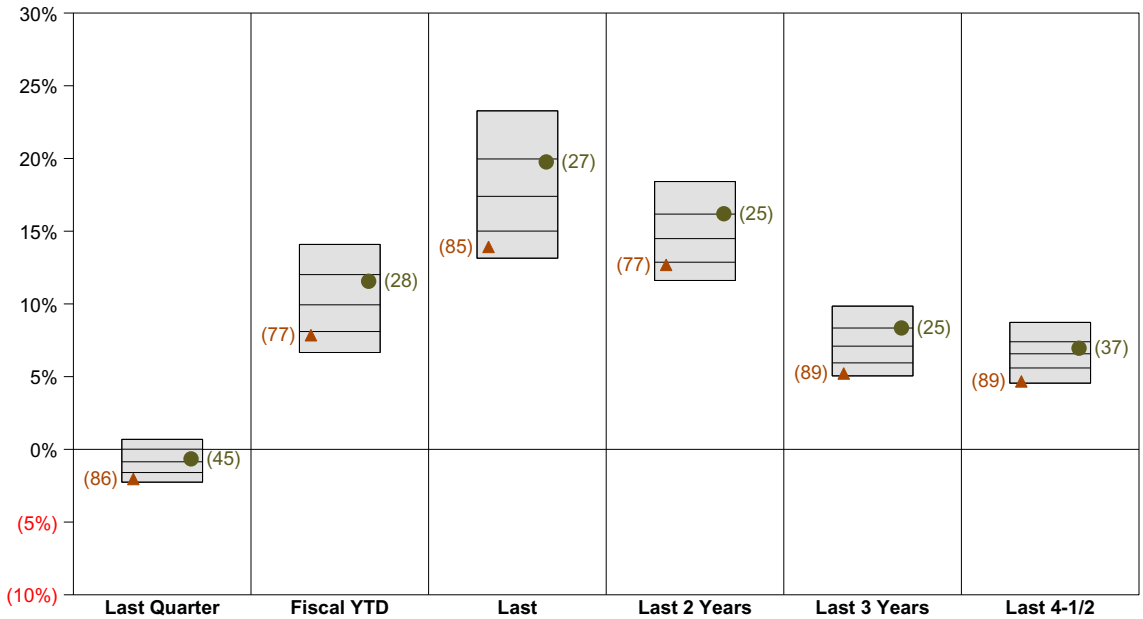
Quarterly Summary and Highlights

- International Equity's portfolio posted a (0.66)% return for the quarter placing it in the 45 percentile of the Callan Non-US Equity group for the quarter and in the 27 percentile for the last year.
- International Equity's portfolio outperformed the International Equity Target by 1.38% for the quarter and outperformed the International Equity Target for the year by 5.84%.

Quarterly Asset Growth

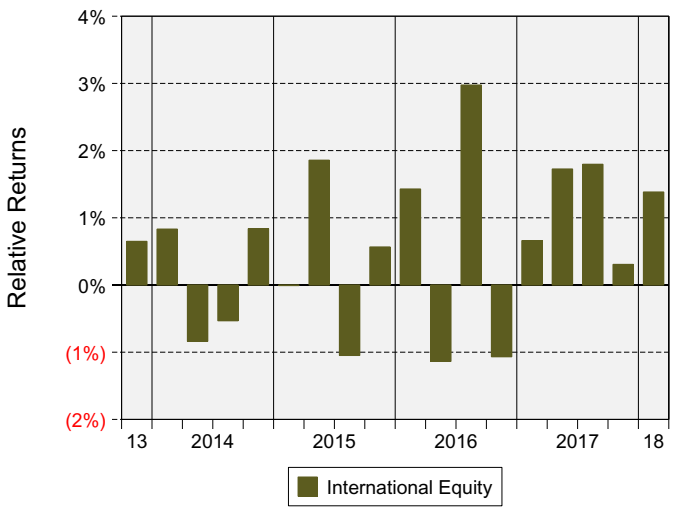
Beginning Market Value	$1,049,343,140
Net New Investment	$24,193,550
Investment Gains/(Losses)	$-7,201,018
Ending Market Value	$1,066,335,672

Performance vs Callan Non-US Equity (Gross)

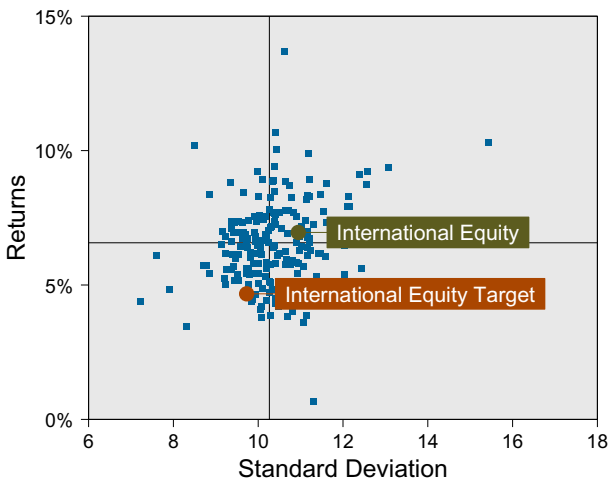


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	0.69	14.09	23.28	18.41	9.85	8.73
25th Percentile	0.01	12.02	19.97	16.18	8.34	7.40
Median	(0.85)	9.94	17.40	14.49	7.10	6.57
75th Percentile	(1.59)	8.10	15.01	12.87	5.95	5.60
90th Percentile	(2.26)	6.66	13.14	11.61	5.05	4.55
International Equity ●	(0.66)	11.56	19.76	16.20	8.35	6.96
International Equity Target ▲	(2.04)	7.85	13.92	12.69	5.22	4.67

Relative Return vs International Equity Target



Callan Non-US Equity (Gross)
Annualized Four and One-Half Year Risk vs Return



DFA Intl Small Cap Value
Period Ended March 31, 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.

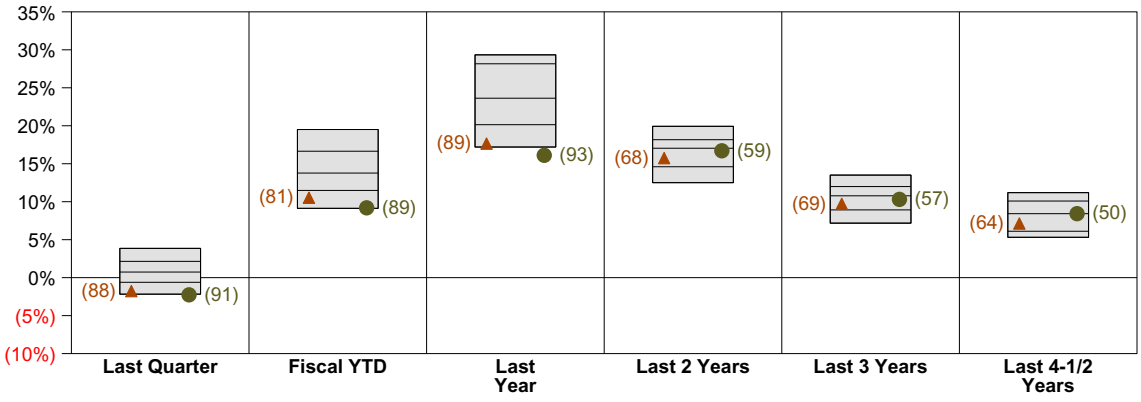
Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a (2.26)% return for the quarter placing it in the 91 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 93 percentile for the last year.
- DFA Intl Small Cap Value's portfolio underperformed the World ex US SC Value by 0.49% for the quarter and underperformed the World ex US SC Value for the year by 1.55%.

Quarterly Asset Growth

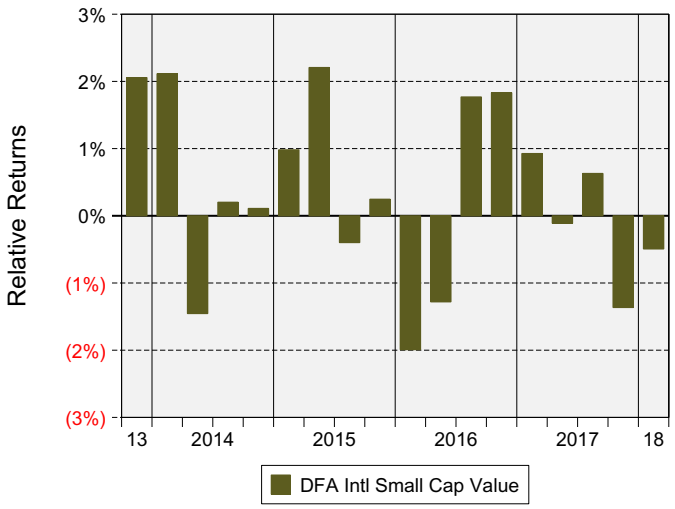
Beginning Market Value	$104,629,132
Net New Investment	$0
Investment Gains/(Losses)	$-2,368,618
Ending Market Value	$102,260,514

Performance vs Callan International Small Cap Mut Funds (Net)

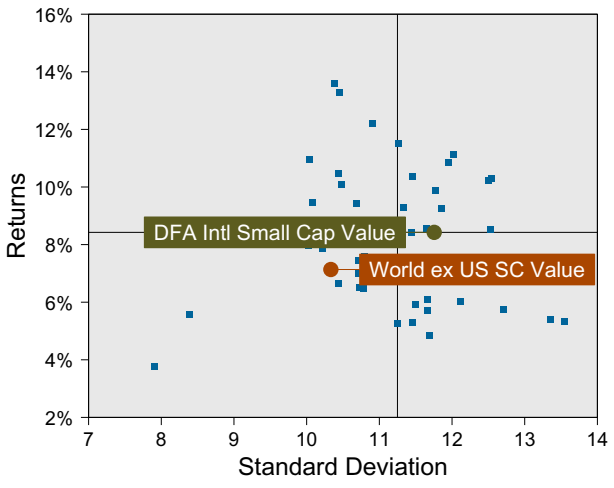


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	3.86	19.51	29.34	19.93	13.50	11.19
25th Percentile	2.15	16.65	28.16	18.16	12.00	10.09
Median	0.74	13.77	23.63	17.04	10.78	8.43
75th Percentile	(0.61)	11.48	20.14	14.60	8.92	6.11
90th Percentile	(2.18)	9.13	17.20	12.51	7.18	5.31
DFA Intl Small Cap Value ●	(2.26)	9.19	16.11	16.70	10.30	8.43
World ex US SC Value ▲	(1.77)	10.53	17.66	15.74	9.72	7.14

Relative Return vs World ex US SC Value



Callan International Small Cap Mut Funds (Net) Annualized Four and One-Half Year Risk vs Return



LSV Intl Value
Period Ended March 31, 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.

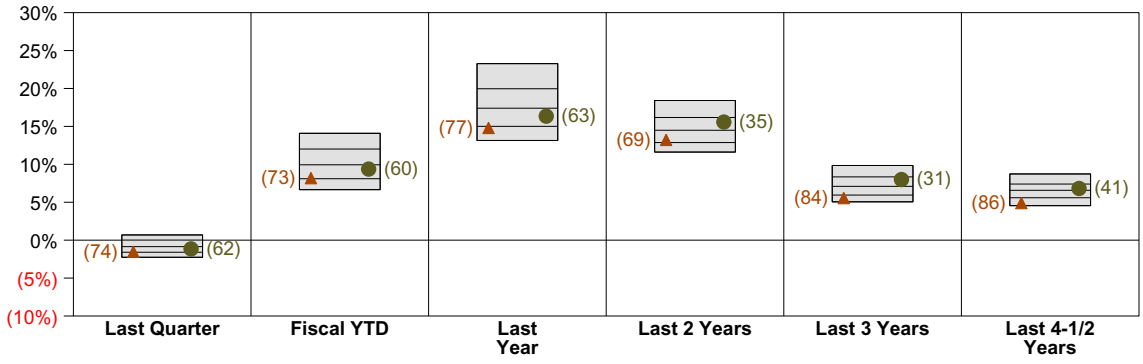
Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a (1.15)% return for the quarter placing it in the 62 percentile of the Callan Non-US Equity group for the quarter and in the 63 percentile for the last year.
- LSV Intl Value's portfolio outperformed the MSCI EAFE by 0.38% for the quarter and outperformed the MSCI EAFE for the year by 1.54%.

Quarterly Asset Growth

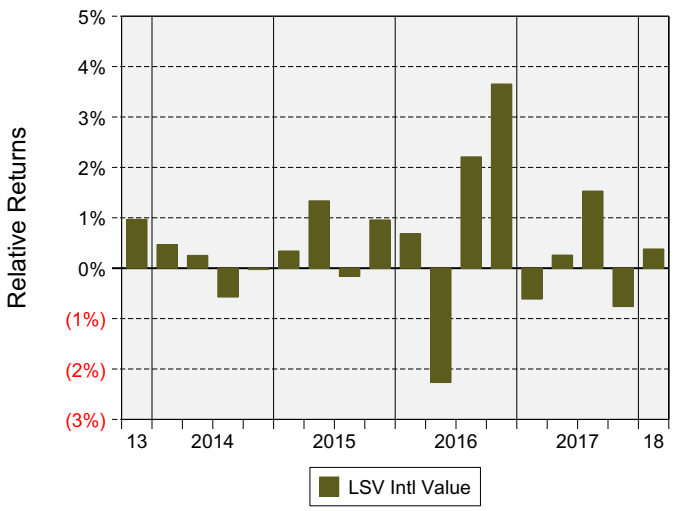
Beginning Market Value	$411,728,637
Net New Investment	$16,596,049
Investment Gains/(Losses)	$-5,018,816
Ending Market Value	$423,305,870

Performance vs Callan Non-US Equity (Gross)

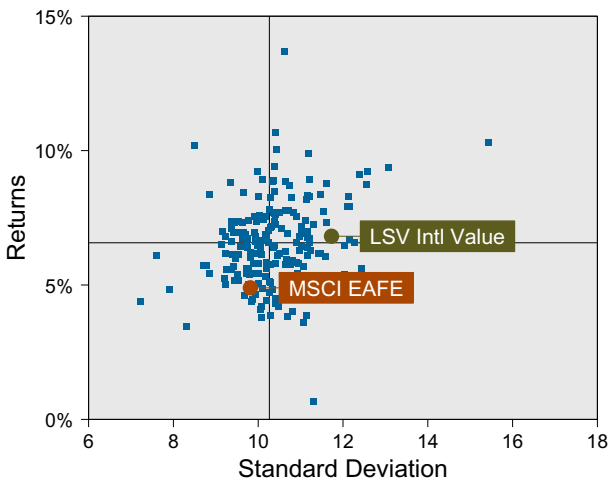


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	0.69	14.09	23.28	18.41	9.85	8.73
25th Percentile	0.01	12.02	19.97	16.18	8.34	7.40
Median	(0.85)	9.94	17.40	14.49	7.10	6.57
75th Percentile	(1.59)	8.10	15.01	12.87	5.95	5.60
90th Percentile	(2.26)	6.66	13.14	11.61	5.05	4.55
LSV Intl Value ●	(1.15)	9.37	16.35	15.57	7.99	6.81
MSCI EAFE ▲	(1.53)	8.18	14.80	13.23	5.55	4.90

Relative Return vs MSCI EAFE



Callan Non-US Equity (Gross)
Annualized Four and One-Half Year Risk vs Return



Vanguard Intl Explorer Fund
Period Ended March 31, 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.

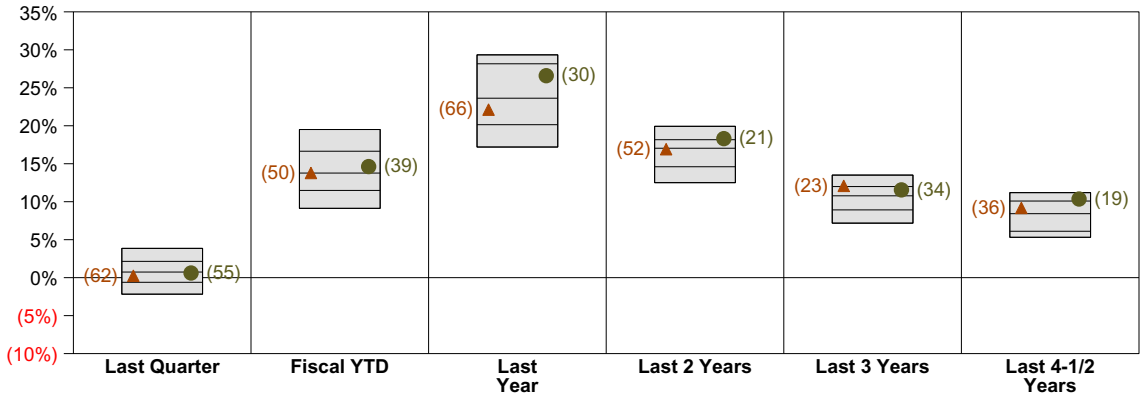
Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a 0.61% return for the quarter placing it in the 55 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 30 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio outperformed the S&P BMI EPAC <$2 B by 0.36% for the quarter and outperformed the S&P BMI EPAC <$2 B for the year by 4.47%.

Quarterly Asset Growth

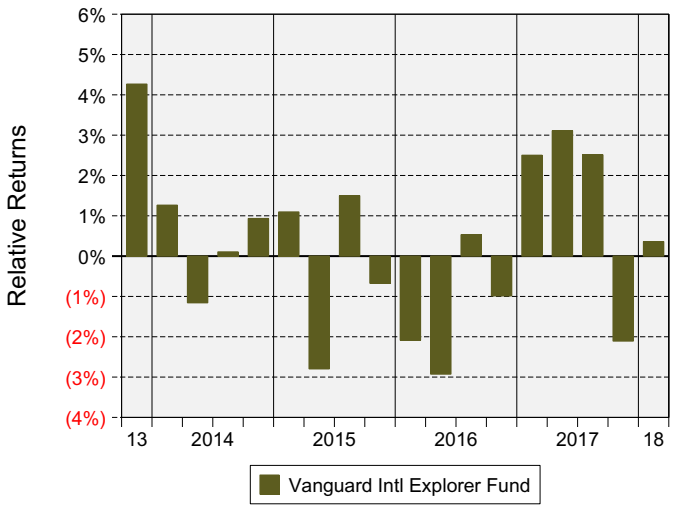
Beginning Market Value	$106,768,499
Net New Investment	$0
Investment Gains/(Losses)	$651,945
Ending Market Value	$107,420,444

Performance vs Callan International Small Cap Mut Funds (Net)

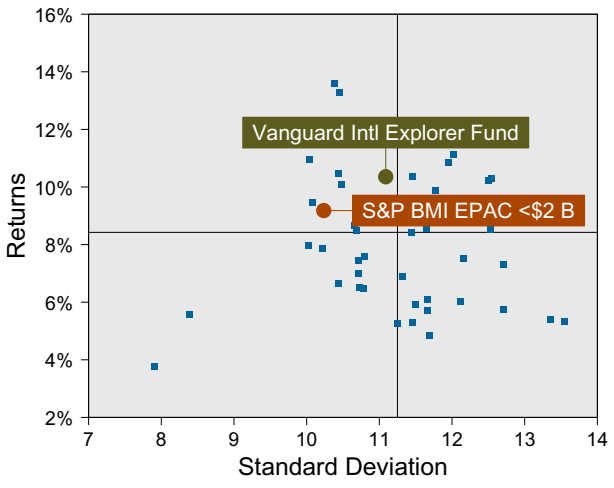


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	3.86	19.51	29.34	19.93	13.50	11.19
25th Percentile	2.15	16.65	28.16	18.16	12.00	10.09
Median	0.74	13.77	23.63	17.04	10.78	8.43
75th Percentile	(0.61)	11.48	20.14	14.60	8.92	6.11
90th Percentile	(2.18)	9.13	17.20	12.51	7.18	5.31
Vanguard Intl Explorer Fund ●	0.61	14.63	26.59	18.30	11.56	10.36
S&P BMI EPAC <$2 B ▲	0.25	13.79	22.13	16.91	12.09	9.18

Relative Return vs S&P BMI EPAC <$2 B



Callan International Small Cap Mut Funds (Net) Annualized Four and One-Half Year Risk vs Return



William Blair
Period Ended March 31, 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.

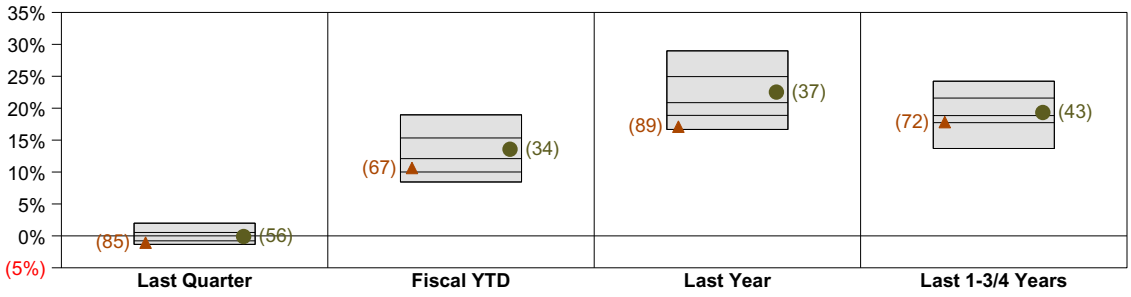
Quarterly Summary and Highlights

- William Blair's portfolio posted a (0.10)% return for the quarter placing it in the 56 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 37 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 0.96% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 5.42%.

Quarterly Asset Growth

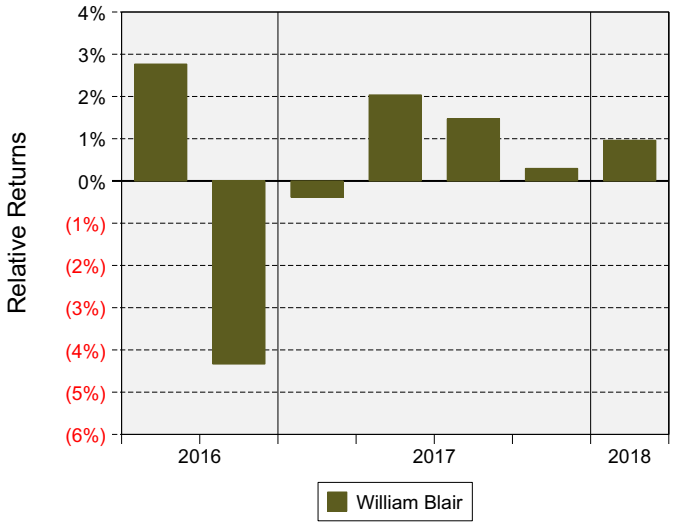
Beginning Market Value	$426,216,872
Net New Investment	$7,597,501
Investment Gains/(Losses)	$-465,529
Ending Market Value	$433,348,844

Performance vs Callan Non-US All Country Growth Equity (Gross)

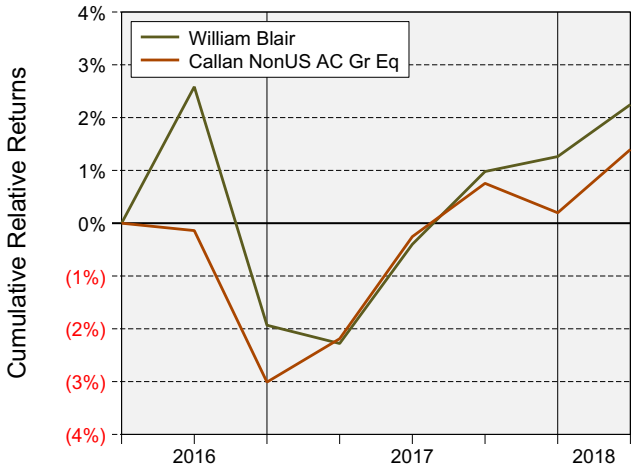


	Last Quarter	Fiscal YTD	Last Year	Last 1-3/4 Years
10th Percentile	1.99	18.96	28.99	24.23
25th Percentile	0.53	15.34	24.95	21.59
Median	0.01	12.10	20.87	18.84
75th Percentile	(0.78)	10.01	18.88	17.73
90th Percentile	(1.33)	8.44	16.67	13.69
William Blair ●	(0.10)	13.57	22.52	19.33
MSCI ACWI ex US IMI ▲	(1.06)	10.63	17.10	17.82

Relative Return vs MSCI ACWI ex US IMI



Cumulative Returns vs MSCI ACWI ex US IMI



Domestic Fixed Income
Period Ended March 31, 2018

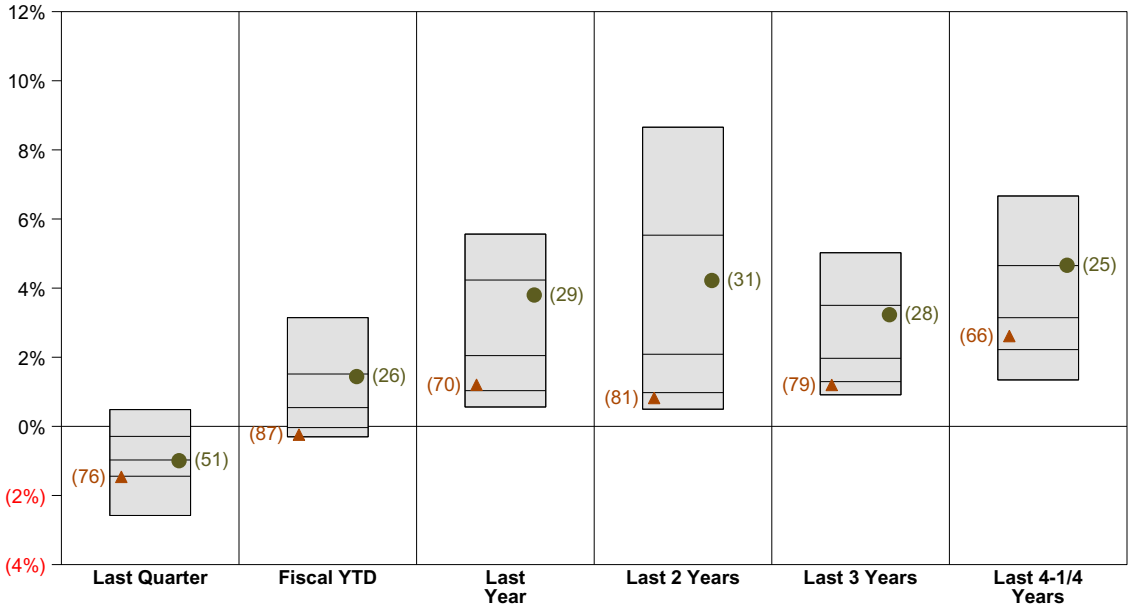
Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a (0.99)% return for the quarter placing it in the 51 percentile of the Total Domestic Fixed-Inc Database group for the quarter and in the 29 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Income Target by 0.47% for the quarter and outperformed the Domestic Fixed Income Target for the year by 2.60%.

Quarterly Asset Growth

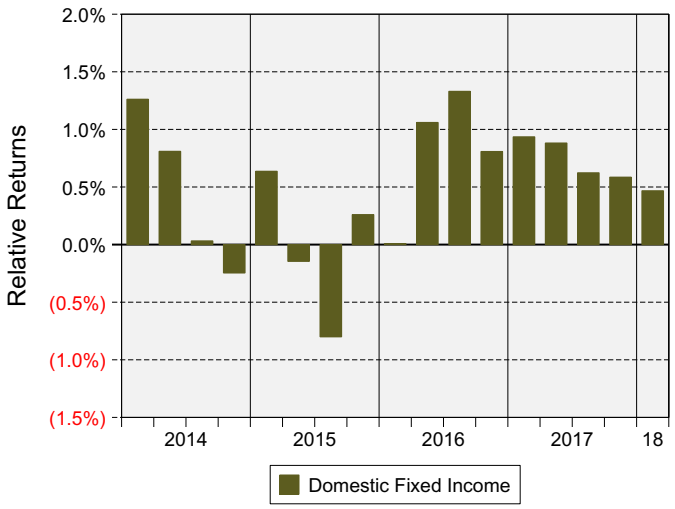
Beginning Market Value	$1,803,652,904
Net New Investment	$76,342,244
Investment Gains/(Losses)	$-17,878,154
Ending Market Value	$1,862,116,994

Performance vs Total Domestic Fixed-Inc Database (Gross)

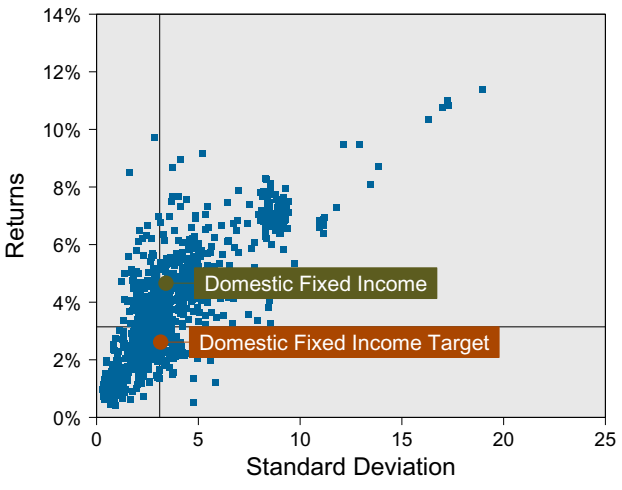


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	0.49	3.15	5.56	8.66	5.02	6.67
25th Percentile	(0.29)	1.51	4.23	5.53	3.50	4.65
Median	(0.97)	0.54	2.05	2.09	1.97	3.14
75th Percentile	(1.44)	(0.04)	1.03	0.98	1.29	2.22
90th Percentile	(2.58)	(0.30)	0.56	0.50	0.91	1.34
Domestic Fixed Income ●	(0.99)	1.44	3.80	4.22	3.23	4.66
Domestic Fixed Income Target ▲	(1.46)	(0.24)	1.20	0.82	1.20	2.61

Relative Returns vs Domestic Fixed Income Target



Total Domestic Fixed-Inc Database (Gross) Annualized Four and One-Quarter Year Risk vs Return



Declaration Total Return
Period Ended March 31, 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.

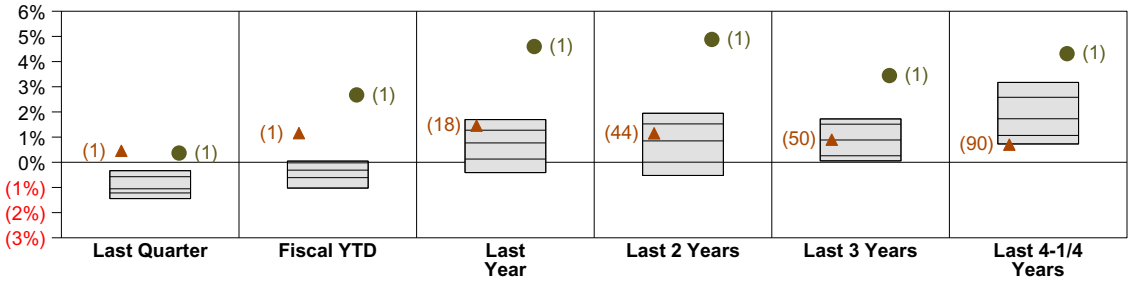
Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.37% return for the quarter placing it in the 1 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 0.09% for the quarter and outperformed the LIBOR - 3 Month for the year by 3.14%.

Quarterly Asset Growth

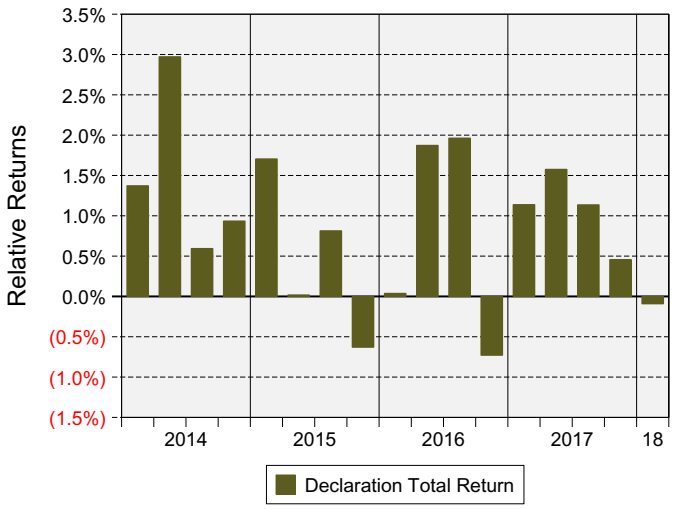
Beginning Market Value	$129,154,494
Net New Investment	$14,962,073
Investment Gains/(Losses)	$545,904
Ending Market Value	$144,662,471

Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)

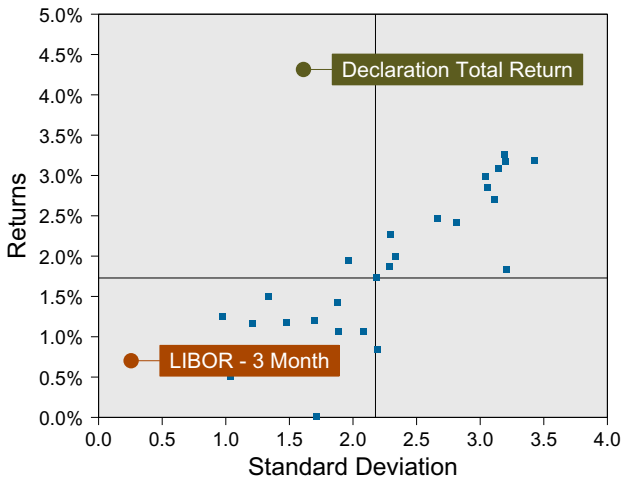


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(0.33)	0.05	1.70	1.95	1.72	3.17
25th Percentile	(0.57)	(0.02)	1.27	1.52	1.51	2.58
Median	(1.05)	(0.31)	0.77	0.85	0.89	1.73
75th Percentile	(1.22)	(0.61)	0.13	0.00	0.26	1.07
90th Percentile	(1.44)	(1.03)	(0.41)	(0.52)	0.06	0.73
Declaration Total Return ●	0.37	2.68	4.60	4.88	3.45	4.31
LIBOR - 3 Month ▲	0.46	1.16	1.46	1.15	0.90	0.70

Relative Return vs LIBOR - 3 Month



Callan Intermediate Fixed Inc Mut Funds (Net) Annualized Four and One-Quarter Year Risk vs Return



Prudential
Period Ended March 31, 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.

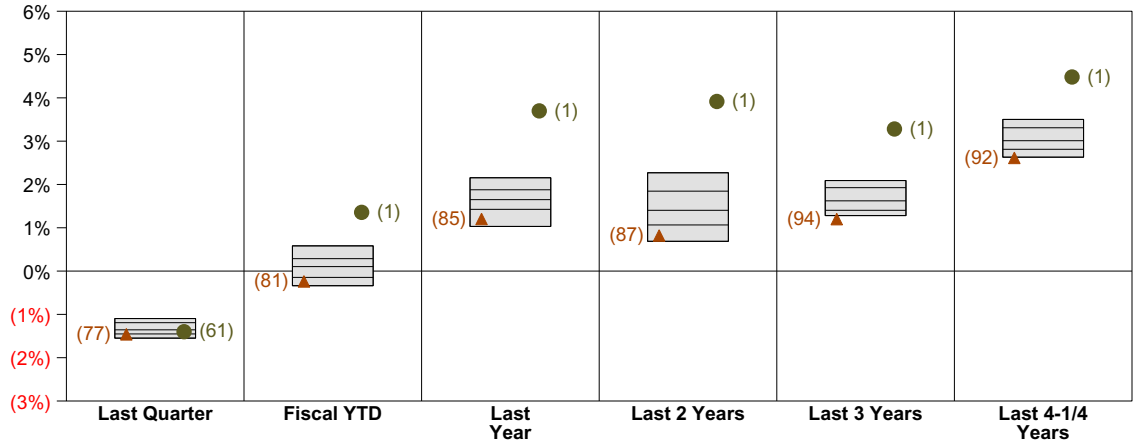
Quarterly Summary and Highlights

- Prudential's portfolio posted a (1.40)% return for the quarter placing it in the 61 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Prudential's portfolio outperformed the Blmbg Aggregate by 0.06% for the quarter and outperformed the Blmbg Aggregate for the year by 2.50%.

Quarterly Asset Growth

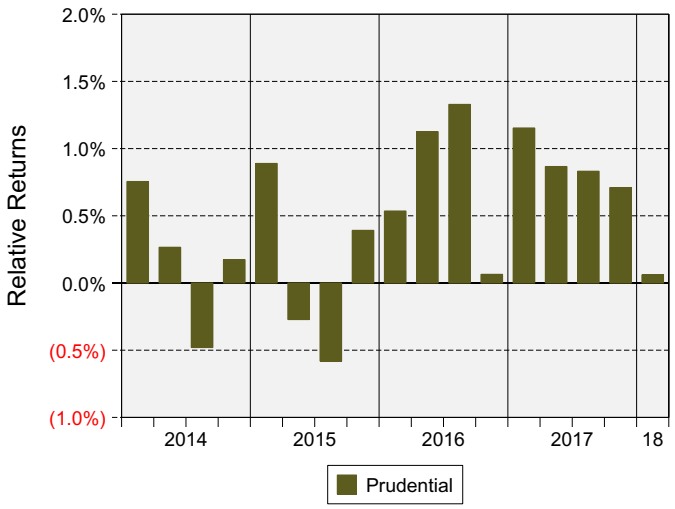
Beginning Market Value	$197,898,883
Net New Investment	$-127,111
Investment Gains/(Losses)	$-2,771,104
Ending Market Value	$195,000,668

Performance vs Callan Core Bond Fixed Income (Gross)

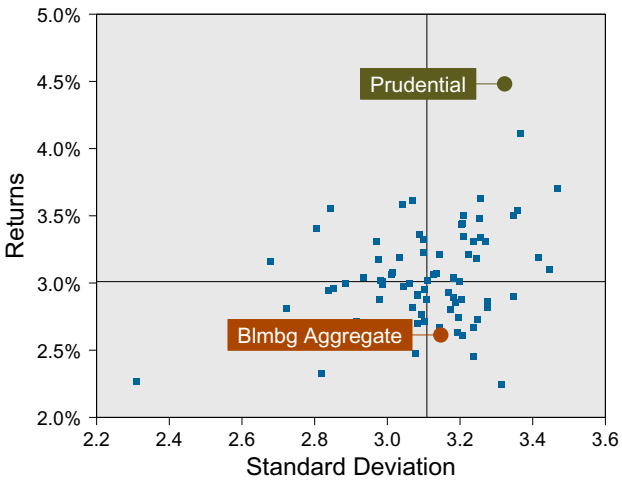


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.10)	0.58	2.16	2.27	2.09	3.50
25th Percentile	(1.19)	0.29	1.88	1.85	1.93	3.31
Median	(1.36)	0.10	1.65	1.40	1.62	3.01
75th Percentile	(1.45)	(0.15)	1.43	1.07	1.40	2.81
90th Percentile	(1.55)	(0.34)	1.03	0.69	1.28	2.63
Prudential ●	(1.40)	1.36	3.70	3.92	3.28	4.48
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	2.61

Relative Return vs Blmbg Aggregate



Callan Core Bond Fixed Income (Gross) Annualized Four and One-Quarter Year Risk vs Return



SSgA US Govt Credit Bd Idx
Period Ended March 31, 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.

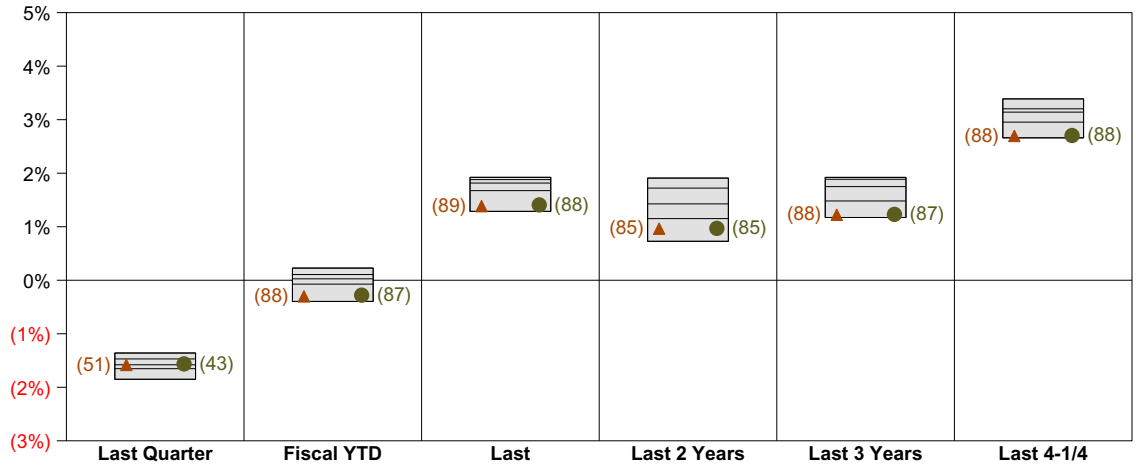
Quarterly Summary and Highlights

- SSgA US Govt Credit Bd Idx's portfolio posted a (1.56)% return for the quarter placing it in the 43 percentile of the Callan Government/Credit group for the quarter and in the 88 percentile for the last year.
- SSgA US Govt Credit Bd Idx's portfolio outperformed 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

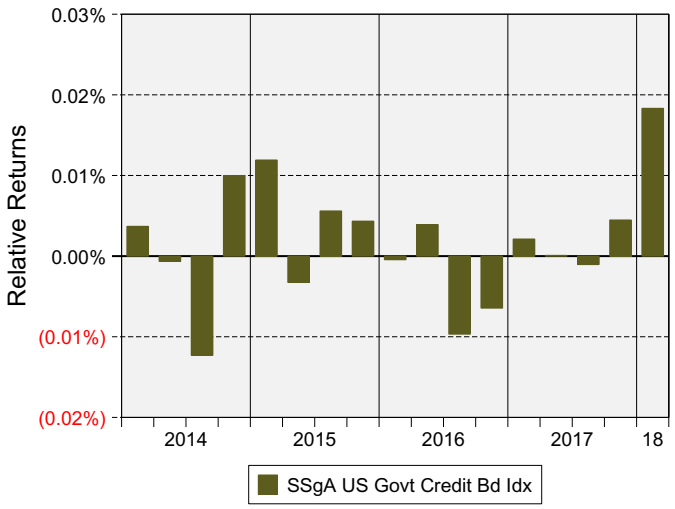
Beginning Market Value	$254,780,214
Net New Investment	$9,986,171
Investment Gains/(Losses)	$-3,888,102
Ending Market Value	$260,878,283

Performance vs Callan Government/Credit (Gross)

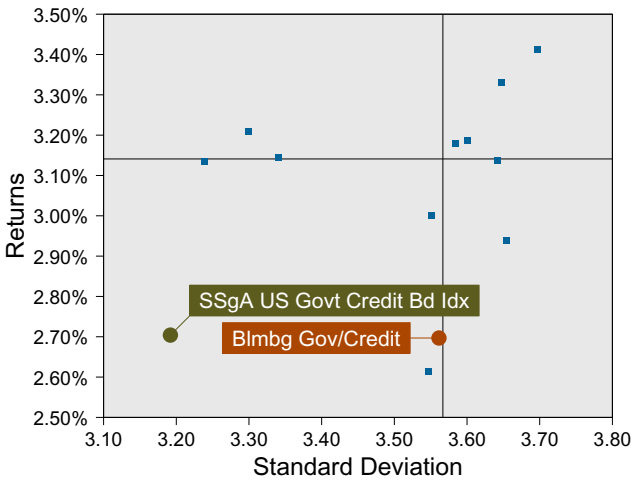


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.36)	0.23	1.92	1.91	1.92	3.39
25th Percentile	(1.47)	0.11	1.88	1.72	1.89	3.20
Median	(1.58)	0.03	1.82	1.43	1.75	3.14
75th Percentile	(1.65)	(0.07)	1.67	1.15	1.48	2.95
90th Percentile	(1.85)	(0.40)	1.29	0.73	1.17	2.66
SSgA US Govt Credit Bd Idx ●	(1.56)	(0.28)	1.41	0.97	1.23	2.70
Blmbg Gov/Credit ▲	(1.58)	(0.30)	1.38	0.96	1.22	2.70

Relative Return vs Blmbg Gov/Credit



Callan Government/Credit (Gross)
Annualized Four and One-Quarter Year Risk vs Return



Wells Capital
Period Ended March 31, 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.

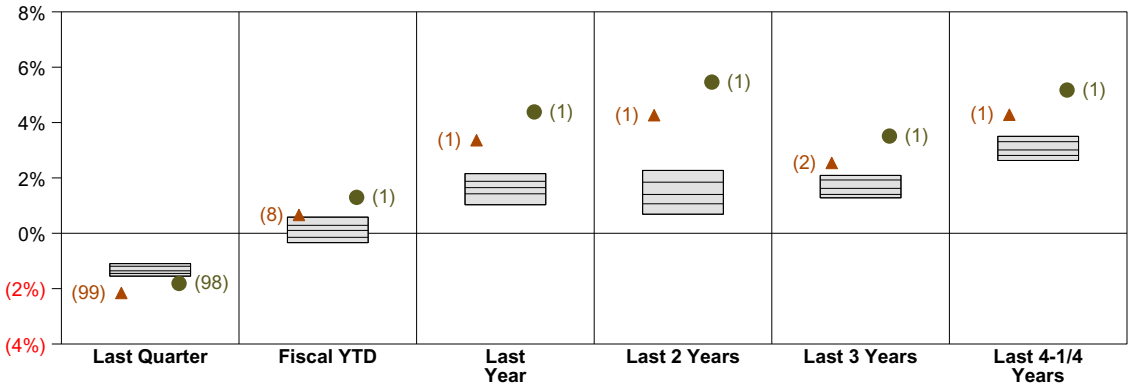
Quarterly Summary and Highlights

- Wells Capital's portfolio posted a (1.81)% return for the quarter placing it in the 98 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.34% for the quarter and outperformed the Blmbg Credit Baa for the year by 1.02%.

Quarterly Asset Growth

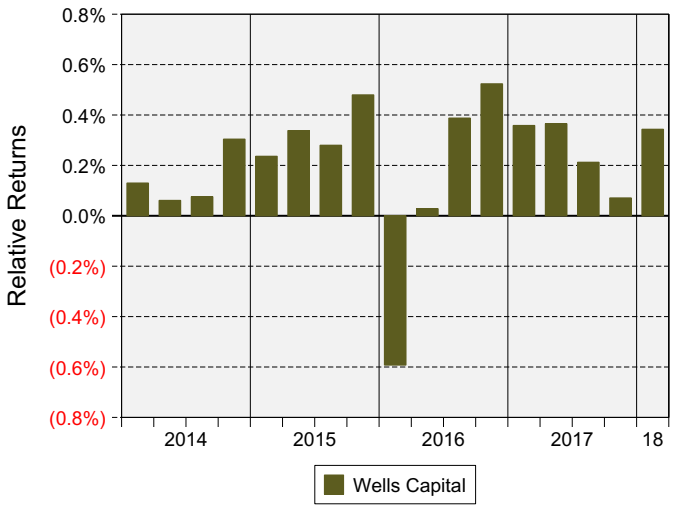
Beginning Market Value	$507,806,032
Net New Investment	$14,805,758
Investment Gains/(Losses)	$-9,224,099
Ending Market Value	$513,387,692

Performance vs Callan Core Bond Fixed Income (Gross)

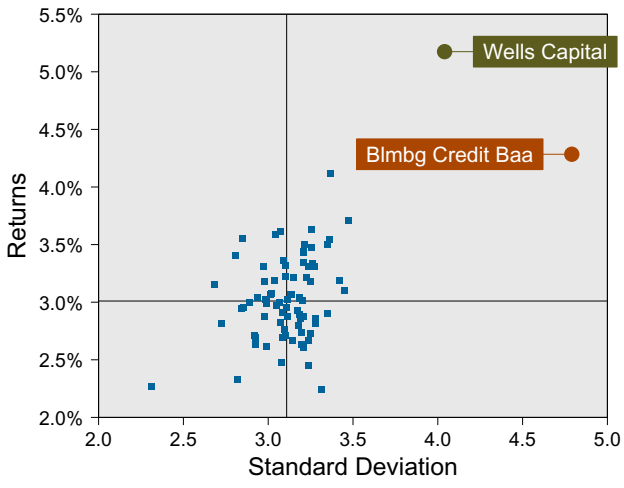


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.10)	0.58	2.16	2.27	2.09	3.50
25th Percentile	(1.19)	0.29	1.88	1.85	1.93	3.31
Median	(1.36)	0.10	1.65	1.40	1.62	3.01
75th Percentile	(1.45)	(0.15)	1.43	1.07	1.40	2.81
90th Percentile	(1.55)	(0.34)	1.03	0.69	1.28	2.63
Wells Capital ●	(1.81)	1.30	4.38	5.46	3.51	5.17
Blmbg Credit Baa ▲	(2.16)	0.66	3.36	4.27	2.54	4.28

Relative Return vs Blmbg Credit Baa



Callan Core Bond Fixed Income (Gross) Annualized Four and One-Quarter Year Risk vs Return



Western Asset Management Company
Period Ended March 31, 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.

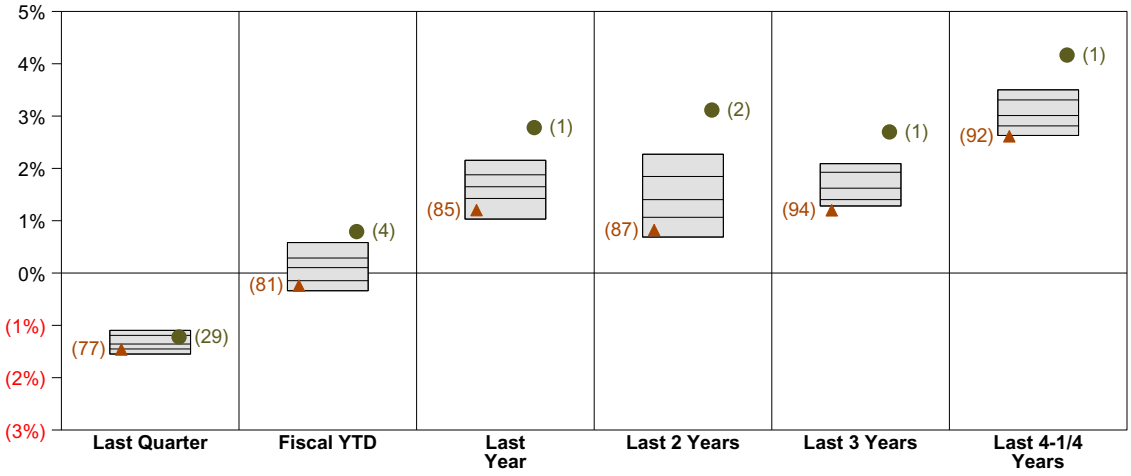
Quarterly Summary and Highlights

- Western Asset's portfolio posted a (1.22)% return for the quarter placing it in the 29 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 1 percentile for the last year.
- Western Asset's portfolio outperformed the Blmbg Aggregate by 0.24% for the quarter and outperformed the Blmbg Aggregate for the year by 1.58%.

Quarterly Asset Growth

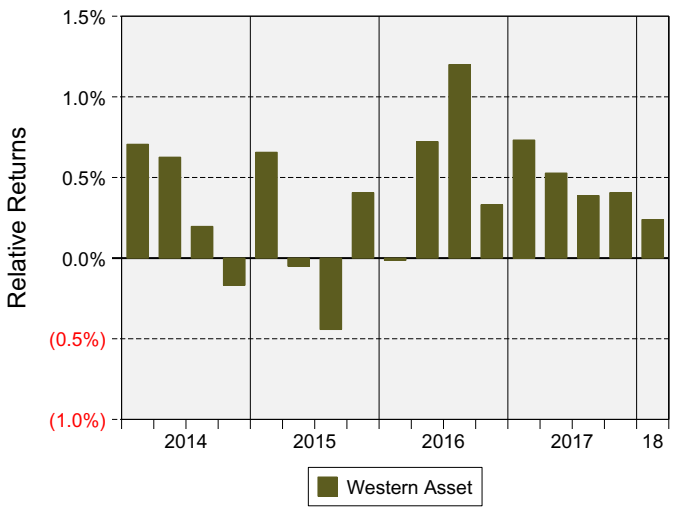
Beginning Market Value	$499,802,371
Net New Investment	$25,842,114
Investment Gains/(Losses)	$-6,084,284
Ending Market Value	$519,560,201

Performance vs Callan Core Bond Fixed Income (Gross)

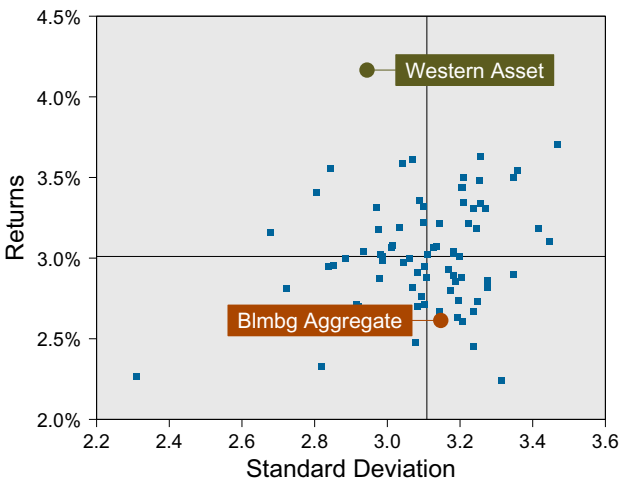


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.10)	0.58	2.16	2.27	2.09	3.50
25th Percentile	(1.19)	0.29	1.88	1.85	1.93	3.31
Median	(1.36)	0.10	1.65	1.40	1.62	3.01
75th Percentile	(1.45)	(0.15)	1.43	1.07	1.40	2.81
90th Percentile	(1.55)	(0.34)	1.03	0.69	1.28	2.63
Western Asset ●	(1.22)	0.79	2.78	3.12	2.70	4.17
Blmbg Aggregate ▲	(1.46)	(0.24)	1.20	0.82	1.20	2.61

Relative Return vs Blmbg Aggregate



Callan Core Bond Fixed Income (Gross)
Annualized Four and One-Quarter Year Risk vs Return



Western Asset TIPS
Period Ended March 31, 2018

Investment Philosophy

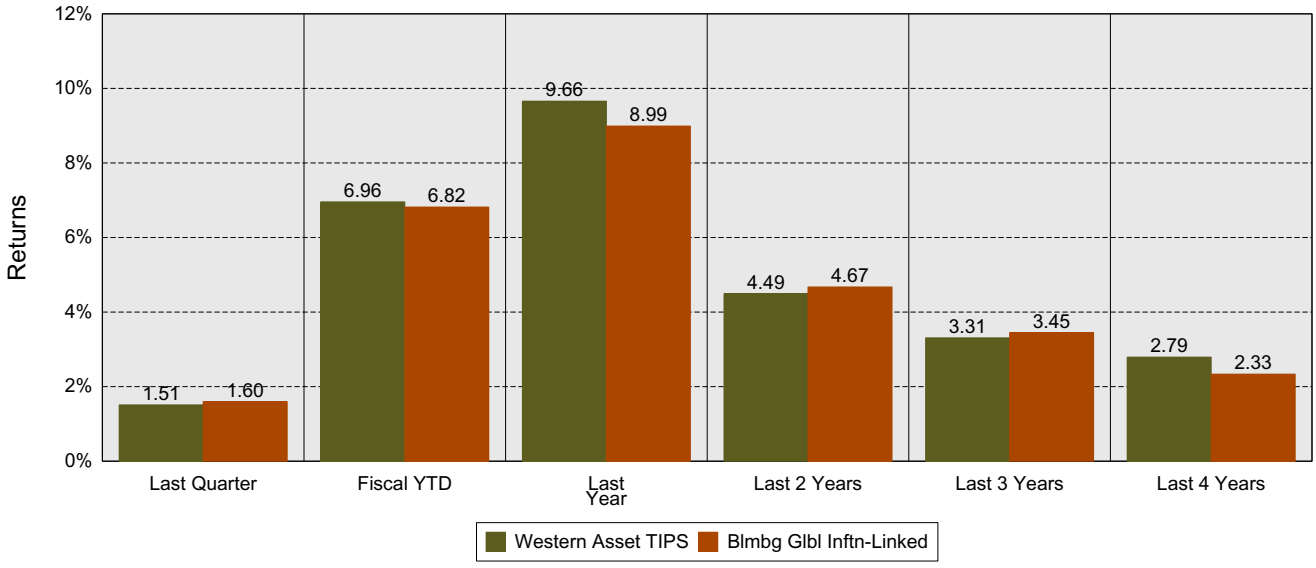
Western Asset's Global Inflation-Linked composite includes portfolios that employ an active, team-managed investment approach around a long-term, value-oriented investment philosophy. Constructed primarily of inflation-indexed securities, these portfolios use diversified strategies in seeking to add value while minimizing risk. Value can be added through country selection, term structure, issue selection, duration management and currency management.

Quarterly Summary and Highlights

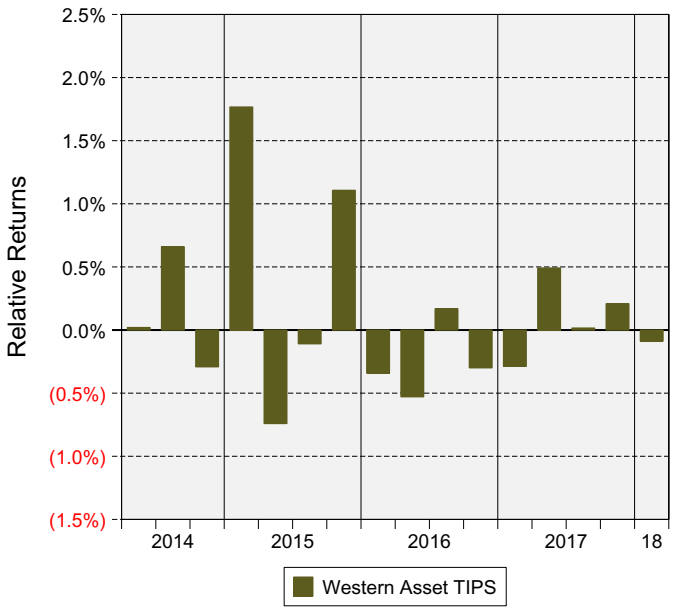
- Western Asset TIPS's portfolio underperformed the Blmbg Glbl Inftn-Linked by 0.09% for the quarter and outperformed the Blmbg Glbl Inftn-Linked for the year by 0.67%.

Quarterly Asset Growth

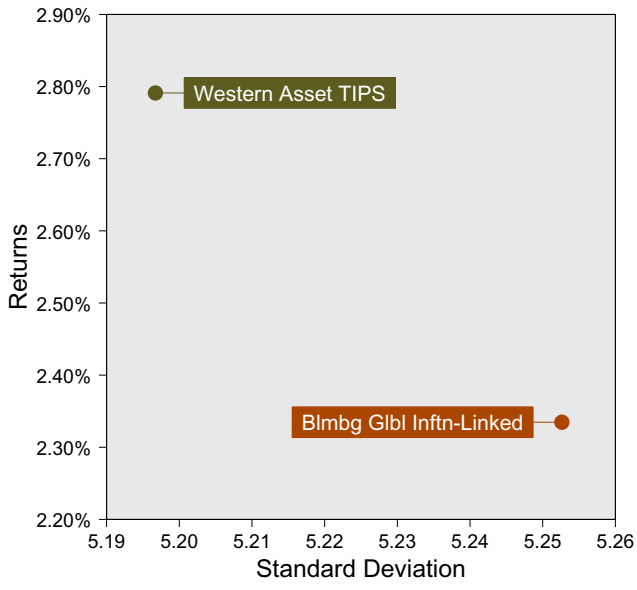
Beginning Market Value	$355,642,915
Net New Investment	$14,890,145
Investment Gains/(Losses)	$5,423,962
Ending Market Value	$375,957,022



Relative Return vs Blmbg Glbl Inftn-Linked



Annualized Four Year Risk vs Return



JP Morgan Infrastructure
Period Ended March 31, 2018

Investment Philosophy

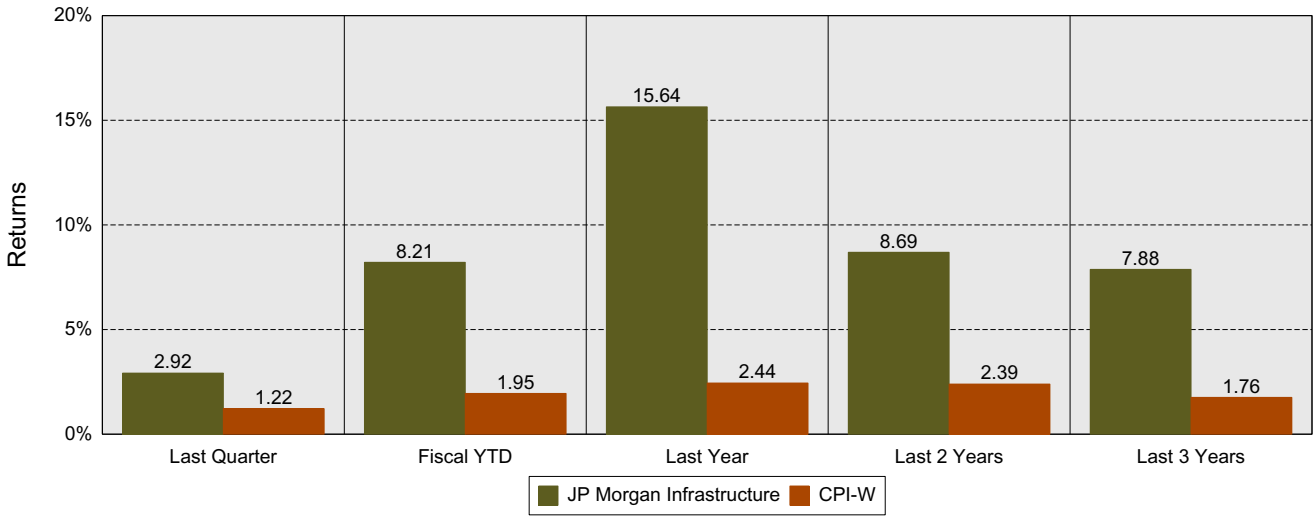
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas 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.

Quarterly Summary and Highlights

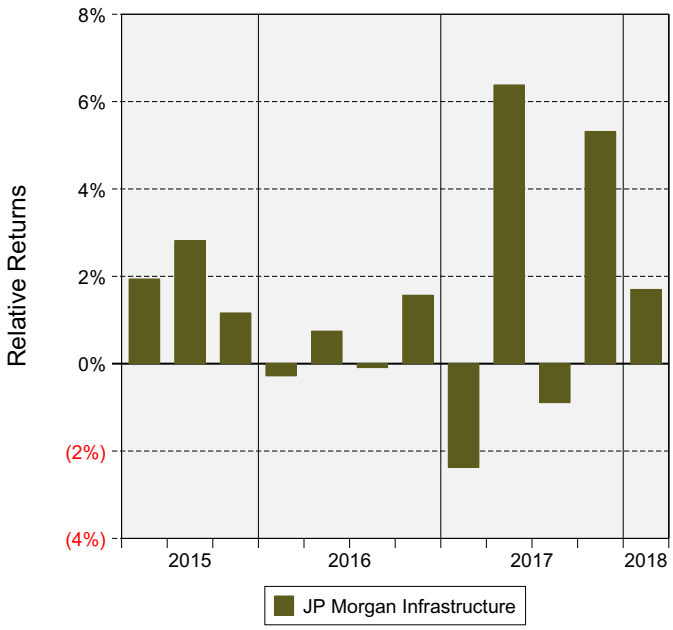
- JP Morgan Infrastructure's portfolio outperformed the CPI-W by 1.70% for the quarter and outperformed the CPI-W for the year by 13.20%.

Quarterly Asset Growth

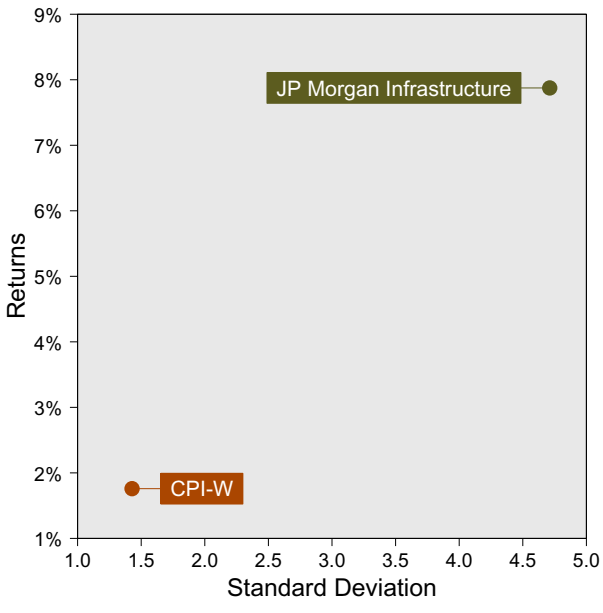
Beginning Market Value	$118,746,989
Net New Investment	$-241,058
Investment Gains/(Losses)	$3,463,968
Ending Market Value	$121,969,900



Relative Return vs CPI-W



Annualized Three Year Risk vs Return



Grosvenor Cust. Infrastructure
Period Ended March 31, 2018

Investment Philosophy

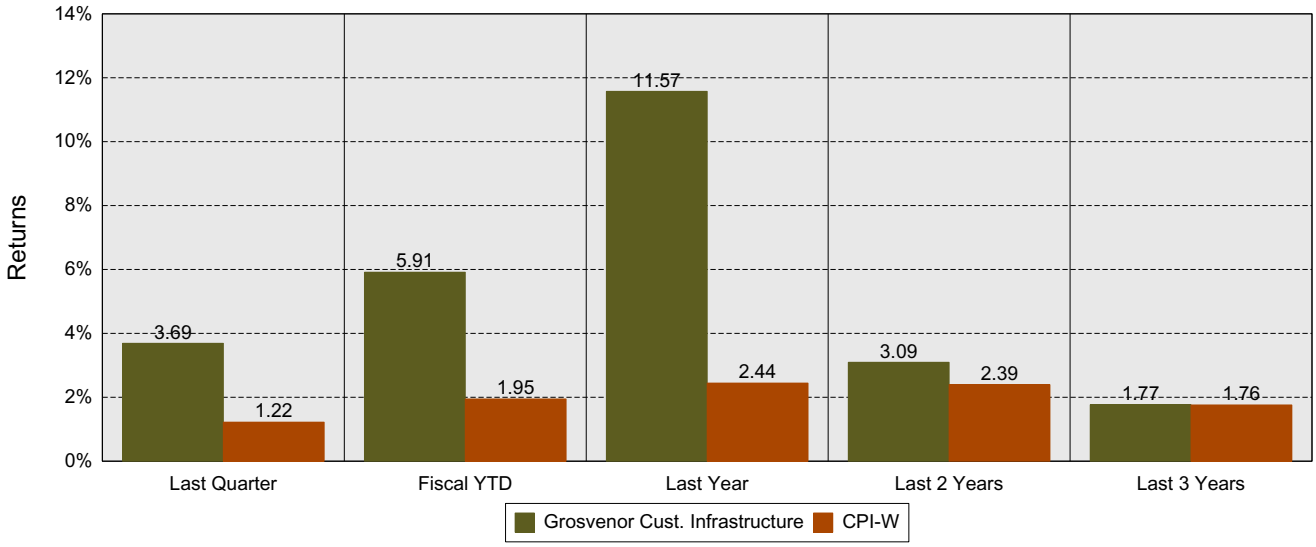
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%).

Quarterly Summary and Highlights

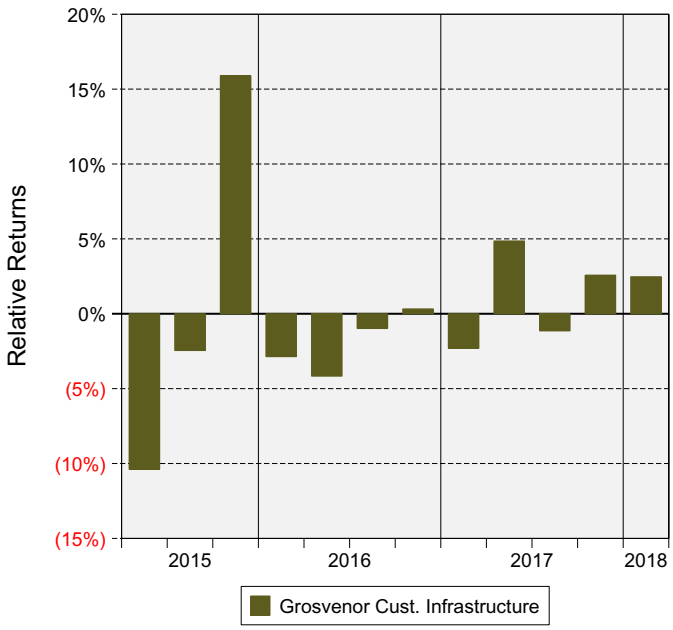
- Grosvenor Cust. Infrastructure's portfolio outperformed the CPI-W by 2.47% for the quarter and outperformed the CPI-W for the year by 9.13%.

Quarterly Asset Growth

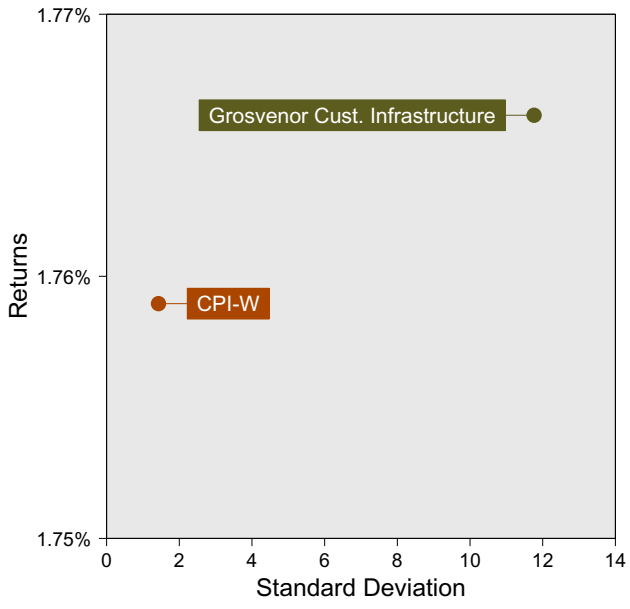
Beginning Market Value	$32,135,695
Net New Investment	$5,577,871
Investment Gains/(Losses)	$1,389,948
Ending Market Value	$39,103,514



Relative Return vs CPI-W



Annualized Three Year Risk vs Return



Invesco Core Real Estate
Period Ended March 31, 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.

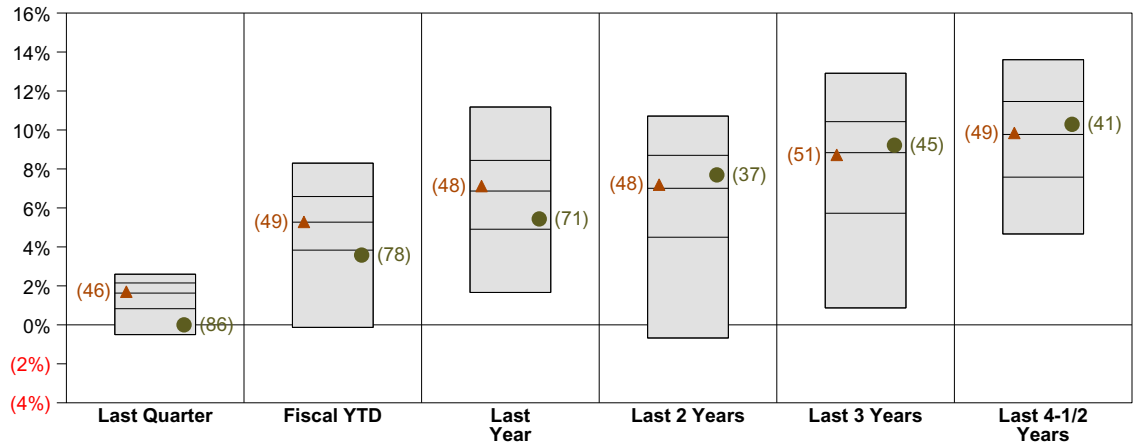
Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a 0.00% return for the quarter placing it in the 86 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 71 percentile for the last year.
- Invesco Core Real Estate's portfolio underperformed the NCREIF Total Index by 1.70% for the quarter and underperformed the NCREIF Total Index for the year by 1.69%.

Quarterly Asset Growth

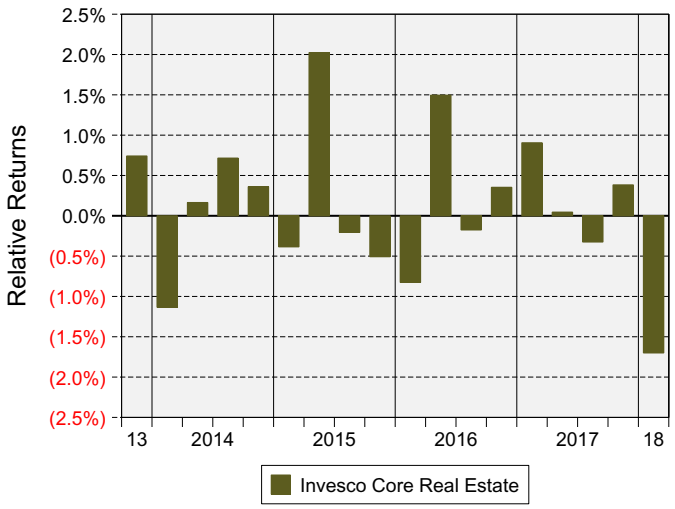
Beginning Market Value	$131,584,803
Net New Investment	$0
Investment Gains/(Losses)	$0
Ending Market Value	$131,584,803

Performance vs Callan Total Domestic Real Estate DB (Net)

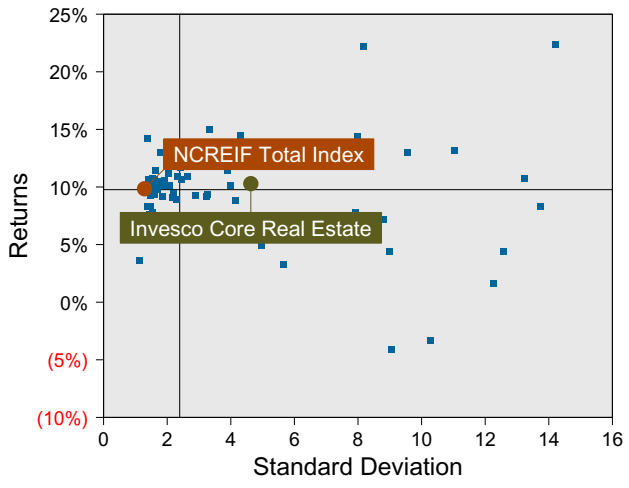


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	2.60	8.30	11.18	10.71	12.91	13.61
25th Percentile	2.15	6.58	8.44	8.70	10.43	11.46
Median	1.63	5.27	6.87	7.01	8.84	9.77
75th Percentile	0.83	3.83	4.91	4.50	5.73	7.58
90th Percentile	(0.50)	(0.13)	1.66	(0.67)	0.87	4.66
Invesco Core Real Estate ●	0.00	3.58	5.43	7.69	9.22	10.29
NCREIF Total Index ▲	1.70	5.28	7.12	7.19	8.72	9.85

Relative Return vs NCREIF Total Index



Callan Total Domestic Real Estate DB (Net) Annualized Four and One-Half Year Risk vs Return



JP Morgan RE Inc & Growth
Period Ended March 31, 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.

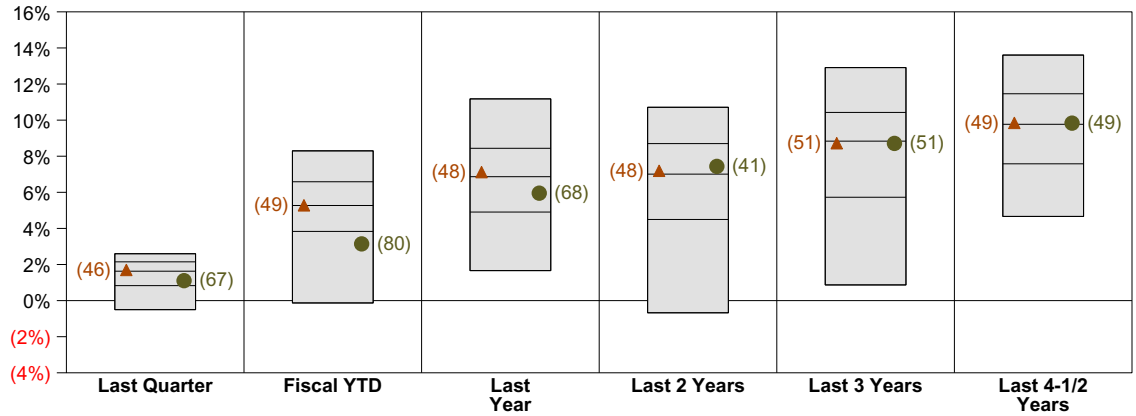
Quarterly Summary and Highlights

- JP Morgan RE Inc & Growth's portfolio posted a 1.10% return for the quarter placing it in the 67 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 68 percentile for the last year.
- JP Morgan RE Inc & Growth's portfolio underperformed the NCREIF Total Index by 0.60% for the quarter and underperformed the NCREIF Total Index for the year by 1.17%.

Quarterly Asset Growth

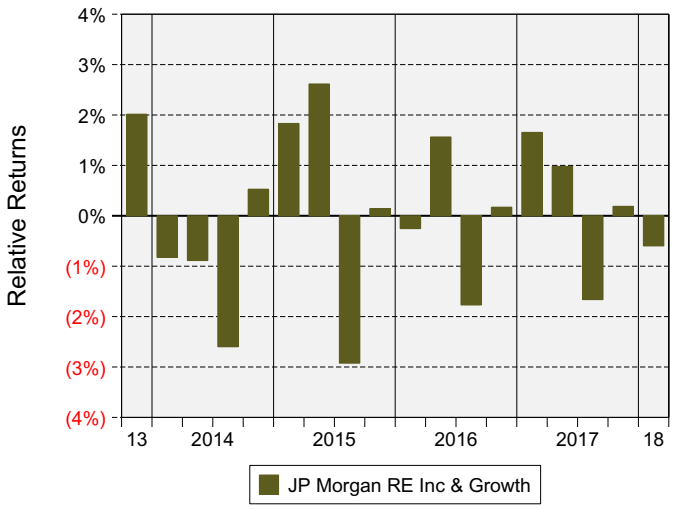
Beginning Market Value	$139,836,489
Net New Investment	$-2
Investment Gains/(Losses)	$1,544,195
Ending Market Value	$141,380,682

Performance vs Callan Total Domestic Real Estate DB (Net)

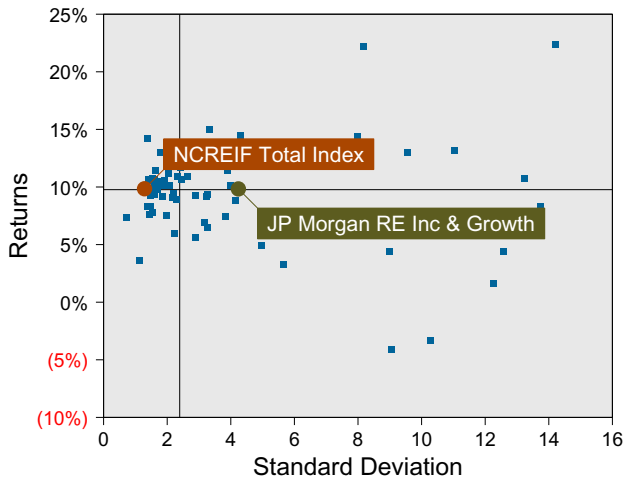


	Last Quarter	Fiscal YTD	Last Year	Last 2 Years	Last 3 Years	Last 4-1/2 Years
10th Percentile	2.60	8.30	11.18	10.71	12.91	13.61
25th Percentile	2.15	6.58	8.44	8.70	10.43	11.46
Median	1.63	5.27	6.87	7.01	8.84	9.77
75th Percentile	0.83	3.83	4.91	4.50	5.73	7.58
90th Percentile	(0.50)	(0.13)	1.66	(0.67)	0.87	4.66
JP Morgan RE Inc & Growth	1.10	3.14	5.95	7.44	8.71	9.83
NCREIF Total Index	1.70	5.28	7.12	7.19	8.72	9.85

Relative Return vs NCREIF Total Index



Callan Total Domestic Real Estate DB (Net) Annualized Four and One-Half Year Risk vs Return



Callan

CALLAN INSTITUTE

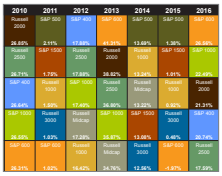
1st Quarter 2018

Education

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 to see all of our publications, and www.callan.com/blog to view our blog "Perspectives." For more information contact Corry Walsh at 312.346.3536 / institute@callan.com.

New Research from Callan's Experts



The Callan Periodic Table of Investment Returns | We are pleased to offer both our Classic Periodic Table, depicting annual returns for 10 asset classes ranked from best to worst performance for each calendar year, and our Collection, offering 10 additional versions, including real estate indices, hedge fund strategy indices, and key indices ranked relative to inflation.

Callan's 2018-2027 Capital Market Projections | Callan develops long-term capital market projections at the start of each year, detailing our expectations for return, volatility, and correlation for broad asset classes. These projections represent our best thinking regarding a longer-term outlook and are critical for strategic planning as our investor clients set investment expectations over five-year, ten-year, and longer time horizons.

How Callan Categorizes Multi-Asset Class Strategies | In the wake of the Global Financial Crisis, a new generation of multi-asset class (MAC) products emerged that emphasized risk management and expanded their toolkits to include shorting and derivatives. Callan groups these "outcome-oriented" MACs into four broad categories: Risk Parity, Risk Premia, Absolute Return, and Long Biased.

Treasuries for the Long Run | Callan's James Van Heuit analyzed whether long-term Treasuries can serve as an effective hedge against equity losses. He concluded that long-term Treasuries have a mixed record of offsetting equity risk. The potential protection offered by long-term Treasuries comes with the risk of underperformance over some time periods. Other types of bonds, he found, may offer less protection, but also have less volatility.

2018 DC Trends Survey | Callan's 11th Annual DC Trends Survey from our Defined Contribution Group highlights plan sponsors' key themes from 2017 and expectations for 2018.

Periodicals

Hedge Fund Monitor, 1st Quarter 2018 | Jim McKee explains Form ADV changes and how to use them to evaluate advisers.

DC Observer, 1st Quarter 2018 | Non-qualified deferred compensation plans (NQDCs) may look and sound like qualified defined contribution (DC) plans, but the two are actually quite different. This quarter's commentary explores approaches to designing the NQDC plan investment menu as well as some of the considerations around informally funding the liabilities.

Active vs. Passive Report, 4th Quarter 2017 | This series of charts maps active managers alongside relevant benchmarks over the last two decades.

Market Pulse Flipbook, 4th Quarter 2017 | 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, 4th Quarter 2017 | This quarterly publication provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

Private Markets Trends, Winter 2018 | This newsletter offers the latest data on activity in private equity fundraising, buyouts, venture capital, and returns for this asset class.

Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: www.callan.com/library/

Callan's June **Regional Workshops** will be held on June 12 in San Francisco and June 13 in Denver. Please visit our Event page on our website (https://www.callan.com/events/) for additional information on these workshops.

We've added on-demand webinars to our online research library. Access our library of pre-recorded webinars on specific investment-related topics at www.callan.com/ondemandwebinar/.

For more information about events, please contact Barb Gerraty: 415.274.3093 / 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, July 24-25, 2018
Chicago, October 2-3, 2018

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 or contact Kathleen Cunnie: 415.274.3029 / 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, CEO and CRO

Callan

Quarterly List as of March 31, 2018

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
Affiliated Managers Group, Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Apollo Global Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Artisan Holdings
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford Overseas Limited
Baird Advisors
Bank of America
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
Brown Brothers Harriman & Company
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management

Manager Name
Chartwell Investment Partners
Citi US Pension Investments
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Management Investment Advisers, LLC
Columbus Circle Investors
Cove Street Capital LLC
Credit Suisse Asset Management
DePrince, Race & Zollo, Inc.
D.E. Shaw Investment Management, L.L.C.
Deutsche Asset Management
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Mgmt. Co.
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fidelity Management & Research
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
Fisher Investments
Franklin Templeton
Franklin Templeton Institutional
Fred Alger Management, Inc.
GAM (USA) Inc.
Geode Capital Management, LLC
GlobeFlex Capital, L.P.
GMO
Goldman Sachs Asset Management

Manager Name
Green Square Capital LLC
Guggenheim Investments
Gurtin Municipal Bond Management
GW&K Investment Management
Harbor Capital Group Trust
Hartford Funds
Hartford Investment Management Co.
Heitman LLC
Henderson Global Investors
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Income Research + Management, Inc.
IndexIQ/Mainstay
Insight Investment Management Limited
Intech Investment Management, LLC
Invesco
Investec Asset Management
Ivy Investments
Janus Henderson Investors
Jennison Associates LLC
Jensen Investment Management
Jobs Peak Advisors
J.P. Morgan Asset Management
J.P. Morgan Chase & Company
KeyCorp
Lazard Asset Management
Legal & General Investment Management America
Lincoln Advisors
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
Manulife Asset Management
Marathon 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
Old Mutual 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
Pier Capital, LLC
PineBridge Investments
Pioneer Investments
PNC Capital Advisors, LLC
Principal Global Investors
Private Advisors, LLC
Putnam Investments, LLC
QMA
RBC Global Asset Management
Regions Financial Corporation
Robeco Institutional Asset Management, US Inc.
Rockefeller & Co., Inc.
Rothschild Asset Management, Inc.
Russell Investments
S&P Global, Inc.
Sands Capital Management
Santander Global Facilities
Schroder Investment Management North America Inc.
Shelton Capital Management
Smith Graham & Co. Investment Advisors, L.P.
Smith Group Asset Management
South Texas Money 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 Hartford
The London Company
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
Van Eck Global
Velanne Asset Management Ltd.
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya Financial
Voya Investment Management
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Capital Management
Western Asset Management Company
Westfield Capital Management Company, LP
William Blair & Company

North Dakota State Investment Board

Callan

May 19, 2018

Asset Allocation and Spending Study

North Dakota Legacy Fund

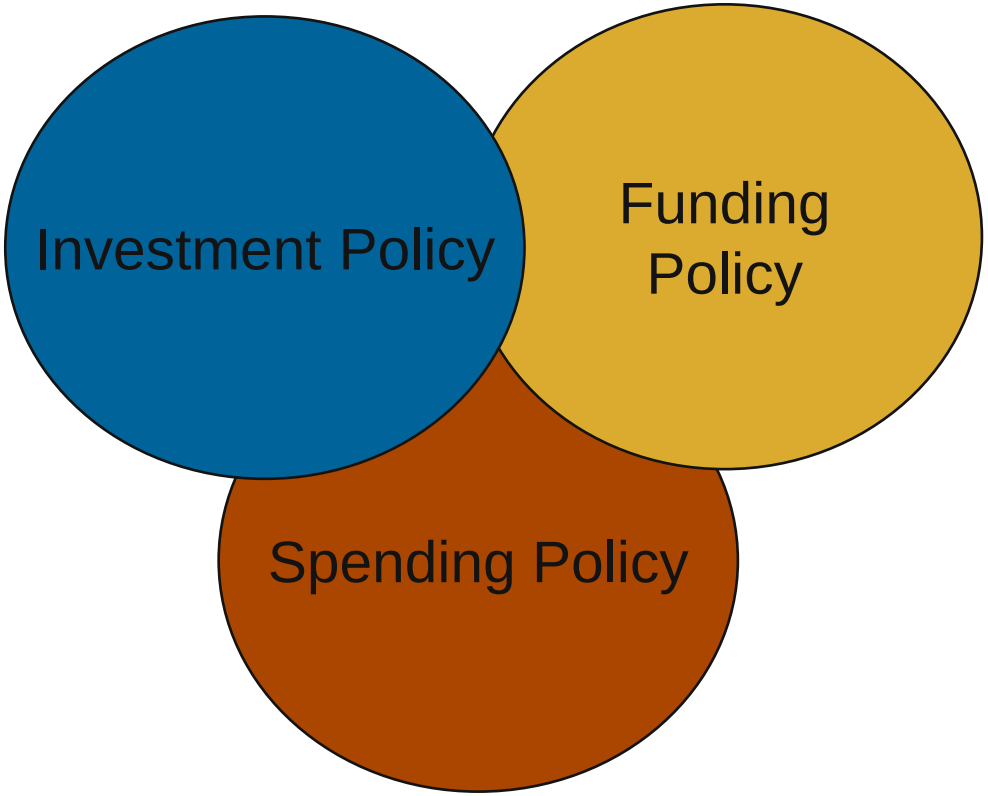
Paul Erlendson
Fund Sponsor Consulting

Alex Browning
Fund Sponsor Consulting

Jay Kloepfer
Capital Market Research

What is an Asset Allocation and Spending Study?

- How will the assets supporting spending be invested?
- What risk/return objectives?
- How to manage cash flows?



- What is the source of funds for the trust?
- What level of inflow can be expected?
- What are the Fund's expenses?

- What type of spending policy?
- What level of spending?
- What sources of spending?

The Board is implementing a "best practice" by conducting an asset allocation study every 4-to-5 years (or whenever there is a material change in the Funding or Spending policy).

Why Conduct an Asset Allocation and Spending Study?

- **Cornerstone of Strategic Planning:**
  - Acknowledge change and uncertainty in the capital markets.
  - Project and evaluate impact of uncertainty on assets and spending levels.
  - Establish reasonable return expectations.
  - Determine the objectives of the Fund.
  - Determine the Fund's risk tolerance.
  - Provide basis for selecting an asset allocation policy that appropriately reflects risk & return objectives.
- **Last study conducted in 2013.**
  - Establishment of the Legacy Fund.
  - Accumulation with no spending for first five years.
  - Substantial deposits of oil & gas tax revenues, plus strong investment earnings built Fund to more than $5 billion
    - *Substantial variability in both energy production and prices – currently on the upswing.*
  - **Current legislation calls for transfer of "Earnings" to General Fund to commence in Fiscal Year 2019.**
    - ***NDCC 21-10 defines "Earnings" as interest and dividend income plus or minus net realized capital gains or losses.***
    - ***"Earnings" or "Income"*** *accrues through the end of each biennium, and is to be transferred at the start of the next biennium.*
    - *Legislature is permitted to spend up to 15% of the Fund principal in each biennium (e.g. 7.5% year). These funds are expected to be transferred at the start of the next biennium.*
    - *Assuming current interest rates, "earnings" or "income" is expected to amount to between 2% and 3% of fund assets. The legislation establishes a spending policy of as much as 10.5% per year (e.g. 3% + 7.5% = 10.5%). This rate is much higher than most endowments or permanent funds.*
    - *Strong inflows from energy tax revenues can offset high rate of spending. Lower inflows may require tempering of spending rate attached to the market value of the Fund.*

NDCC 21-10-12. Legacy Fund – Earnings For the purposes of section 26 of article X of the Constitution of North Dakota, the term "earnings" means net income in accordance with generally accepted accounting principles, excluding any unrealized gains or losses.

Efficient Asset Mix Alternatives

The Current Policy Target of 50% Equity, 35% Fixed Income and 15% Real Assets (with an Expected Return of 5.8%) is closest to "Mix 3".

Existing Legacy Fund Asset Classes

Asset Class	Policy Target	Optimal Mixes min	max	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
Broad US Equity	30%	0%	100%	18%	23%	29%	34%	40%
Broad Non-US Equity	20%	0%	100%	12%	16%	20%	24%	28%
Domestic Fixed Income	35%	0%	100%	55%	45%	35%	25%	15%
TIPS	5%	0%	100%	8%	7%	5%	4%	3%
Infrastructure	5%	0%	100%	2%	2%	3%	3%	3%
Real Estate	5%	0%	100%	5%	7%	8%	10%	11%
Total	**100%**			**100%**	**100%**	**100%**	**100%**	**100%**
Expected Return	**5.82%**			**4.88%**	**5.35%**	**5.79%**	**6.17%**	**6.52%**
Expected Real Return	**3.57%**			**2.63%**	**3.10%**	**3.54%**	**3.92%**	**4.27%**
Expected Standard Deviation	**10.75%**			**6.77%**	**8.63%**	**10.59%**	**12.59%**	**14.62%**
Projected Yield	**3.11%**			**3.27%**	**3.20%**	**3.12%**	**3.05%**	**2.97%**
Total Equity (%)	**50%**			**30%**	**39%**	**49%**	**58%**	**68%**
Total Fixed Income (%)	**40%**			**63%**	**52%**	**40%**	**29%**	**18%**
% Illiquid	**15%**			**12%**	**14%**	**16%**	**18%**	**19%**

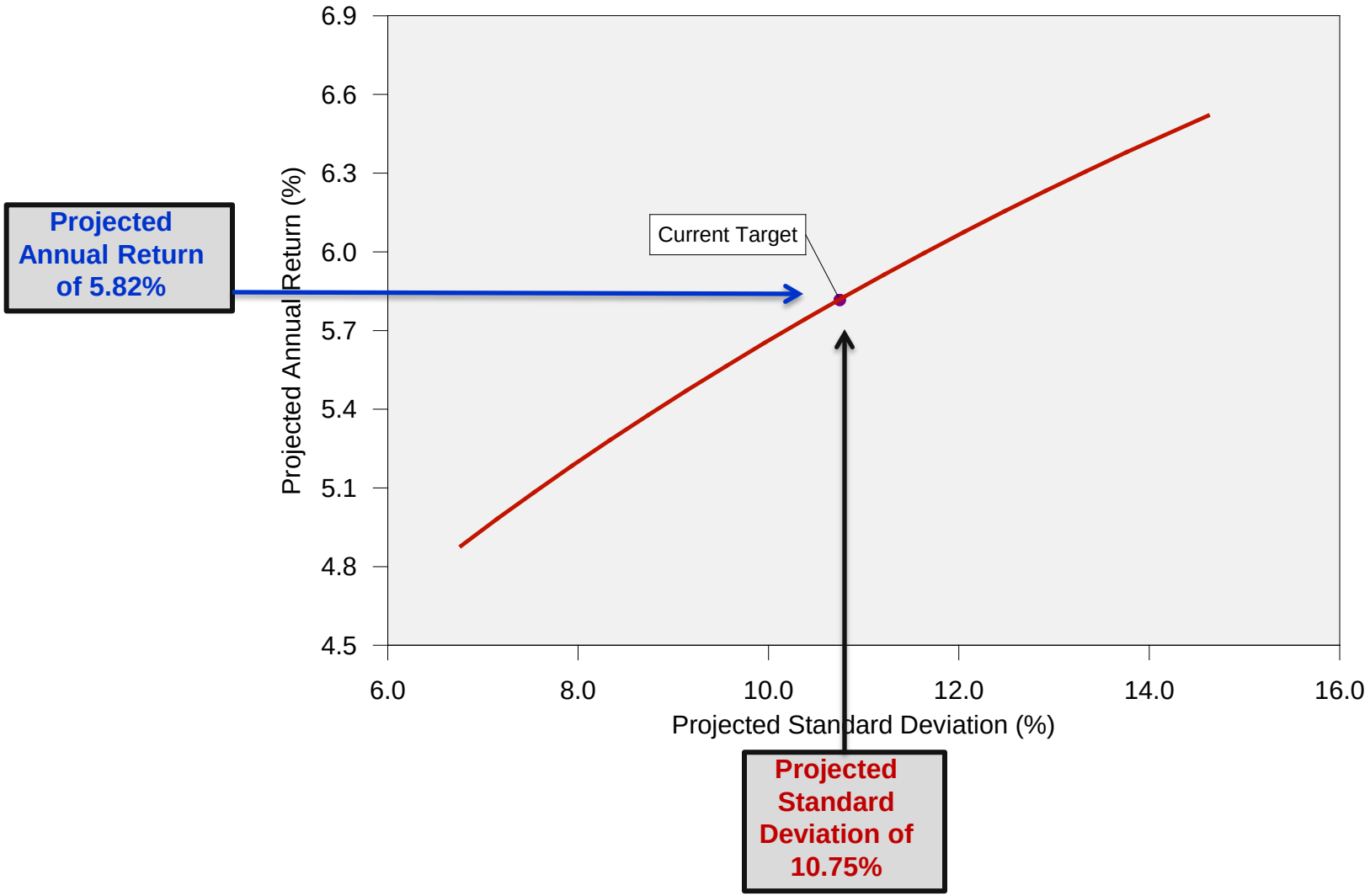
"Illiquid" Investments targeted at less than 20%.

- The policy target adopted by Legacy Fund in 2013. Reflects existing asset classes invested in the Legacy Fund, including broad international equity and diversified real assets.
- No constraints imposed on the allocation to any asset class.
- Real estate, private credit (5% of assets under fixed income) and infrastructure are the illiquid asset classes.
- Expected return for the target represents 10-year compound rate of 5.8%, similar to that of alternative Mix 3. Moderate expectations for the capital markets means even portfolios with greater than 70% exposure to risky assets (Mix 5) will be challenged to reach 7%.
- Current spending policy = all investment income (defined as dividends, yield and realized capital gains), plus the legislature may spend up to 15% of the principal value of the Fund in each biennium. The distributions are taken from the Fund at the end of each biennium. The effective annual spending rate for the maximum allowable is 7.5% of market value plus income (currently close t o 3%) for a total of 10.5%.
- Absent inflows into a permanent fund , sustainable spending policies are typically set at or just below the long-term real return expectation.
- Policy target real return expectation is 3.6%, compared to the potential to spend up to 10.5% of the Legacy Fund.
- Strong inflows from oil & gas tax revenues can support spending policy in excess of the Fund's real rate of return.
- Legacy Fund asset allocation with 35% in fixed income is somewhat conservative compared to Endowment and Foundation peer group.

Key Point: Mix 3 is broadly defined as 49% Equity, 35% Fixed Income and 16% Real Assets (including TIPS).

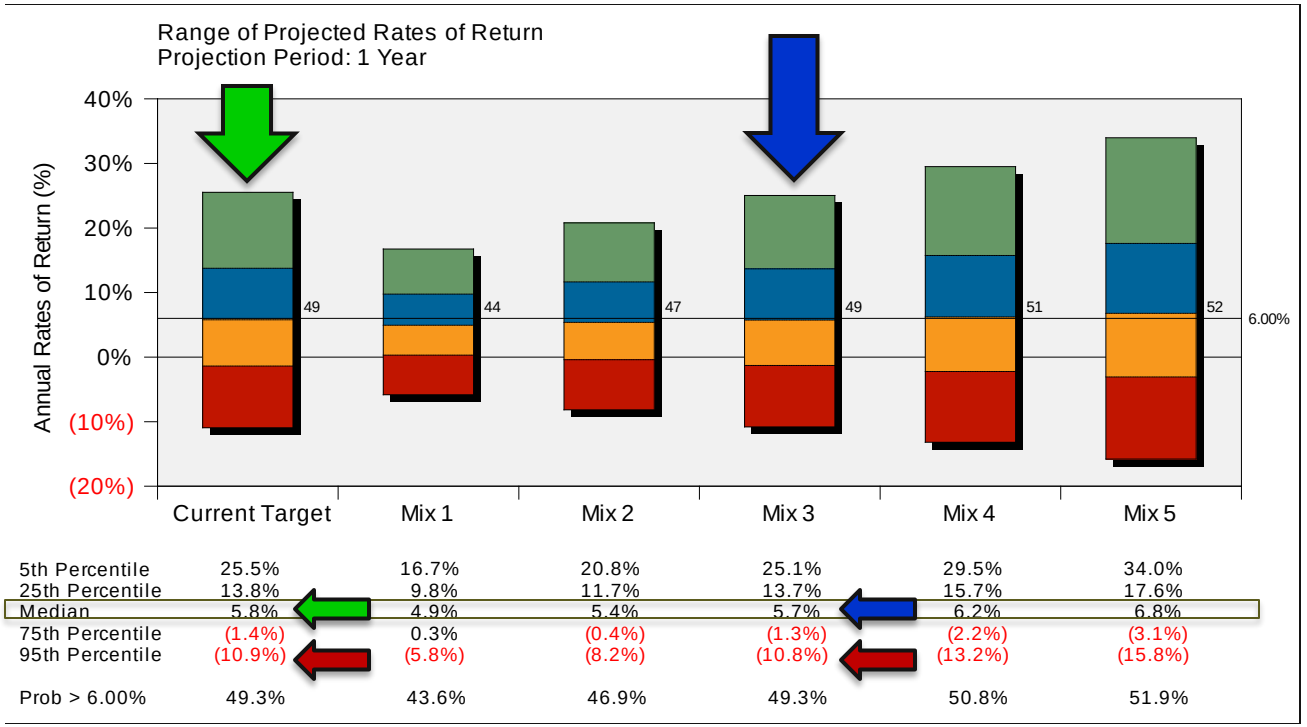
Efficient Asset Mix Alternatives

Efficient Frontier Depicting Risk and Return



Asset Mix Alternatives

Range of Projected Returns – One Year



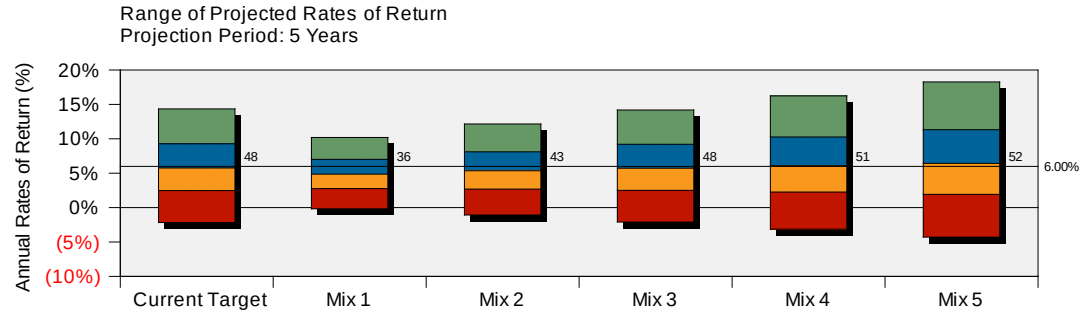
	Current Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
5th Percentile	25.5%	16.7%	20.8%	25.1%	29.5%	34.0%
25th Percentile	13.8%	9.8%	11.7%	13.7%	15.7%	17.6%
Median	5.8%	4.9%	5.4%	5.7%	6.2%	6.8%
75th Percentile	(1.4%)	0.3%	(0.4%)	(1.3%)	(2.2%)	(3.1%)
95th Percentile	(10.9%)	(5.8%)	(8.2%)	(10.8%)	(13.2%)	(15.8%)
Prob > 6.00%	49.3%	43.6%	46.9%	49.3%	50.8%	51.9%

- **The "Current Target" has a "Median" annual expected return of 5.8% with a 95th Percentile return of -10.9%**
- **Callan's "Mix 3" has a "Median" annual expected return of 5.7% with a 95th Percentile return of -10.8%**

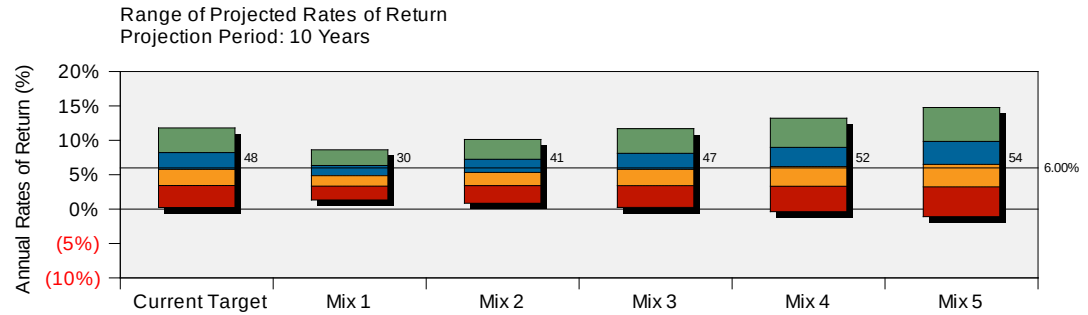
- We use simulation to derive a range of expected returns and the likelihood of their occurrence.
- Increased volatility with greater equity exposure.

Asset Mix Alternatives

Range of Projected Returns – Five and Ten Years



	Current Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
5th Percentile	14.4%	10.2%	12.2%	14.2%	16.2%	18.3%
25th Percentile	9.3%	7.0%	8.1%	9.2%	10.3%	11.3%
Median	5.8%	4.9%	5.4%	5.7%	6.1%	6.4%
75th Percentile	2.5%	2.8%	2.7%	2.5%	2.3%	1.9%
95th Percentile	(2.2%)	(0.2%)	(1.1%)	(2.1%)	(3.1%)	(4.3%)
Prob > 6.00%	48.4%	36.3%	43.3%	48.0%	50.6%	52.1%



	Current Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
5th Percentile	11.8%	8.6%	10.1%	11.7%	13.2%	14.8%
25th Percentile	8.2%	6.4%	7.2%	8.1%	9.0%	9.8%
Median	5.8%	4.9%	5.3%	5.8%	6.2%	6.5%
75th Percentile	3.4%	3.3%	3.4%	3.4%	3.3%	3.2%
95th Percentile	0.2%	1.3%	0.9%	0.3%	(0.4%)	(1.1%)
Prob > 6.00%	47.6%	30.2%	40.9%	47.5%	51.5%	54.0%

- Range of returns narrows over longer time period. This is the benefit of “time diversification”, where extreme events offset one another producing less volatility.
- Negative returns are less likely over longer time period (roughly 1 in 20 chance).

Consider Alternative Asset Classes

Legacy's current allocation is 50% Equity, 35% Fixed Income, 15% Real Assets

- Legacy Fund has established a diversified investment portfolio:
  - Broad exposure to equity investments, including U.S., developed and emerging international markets, and across large, mid and small cap
  - Established a 15% target to real assets, comprised of 5% in private real estate and 10% in diversified real assets (private infrastructure and global inflation-linked bonds).
  - Diversified fixed income exposure currently includes core, core plus, opportunistic, intermediate, private credit and CDs (with the latter issued by the Bank of North Dakota).
- Other alternatives employed by institutional investors, including other state trust funds:
  - Private equity
  - Absolute return – includes hedge funds and Multi-Asset Class (MAC) strategies
  - Other inflation hedges:
    - *Commodities*
    - *Energy*
- Key consideration: interaction of Legacy Fund investment and distribution policy with expected oil & gas inflows.
  - Funds pursuing substantial exposure to alternatives typically engage in market-value-related distribution policies = current Legacy Fund policy.
  - Previous study recommended in 2013 that the Legacy Fund board first consider a tilt toward higher return/higher risk asset classes, then consider diversification into alternative and illiquid strategies.

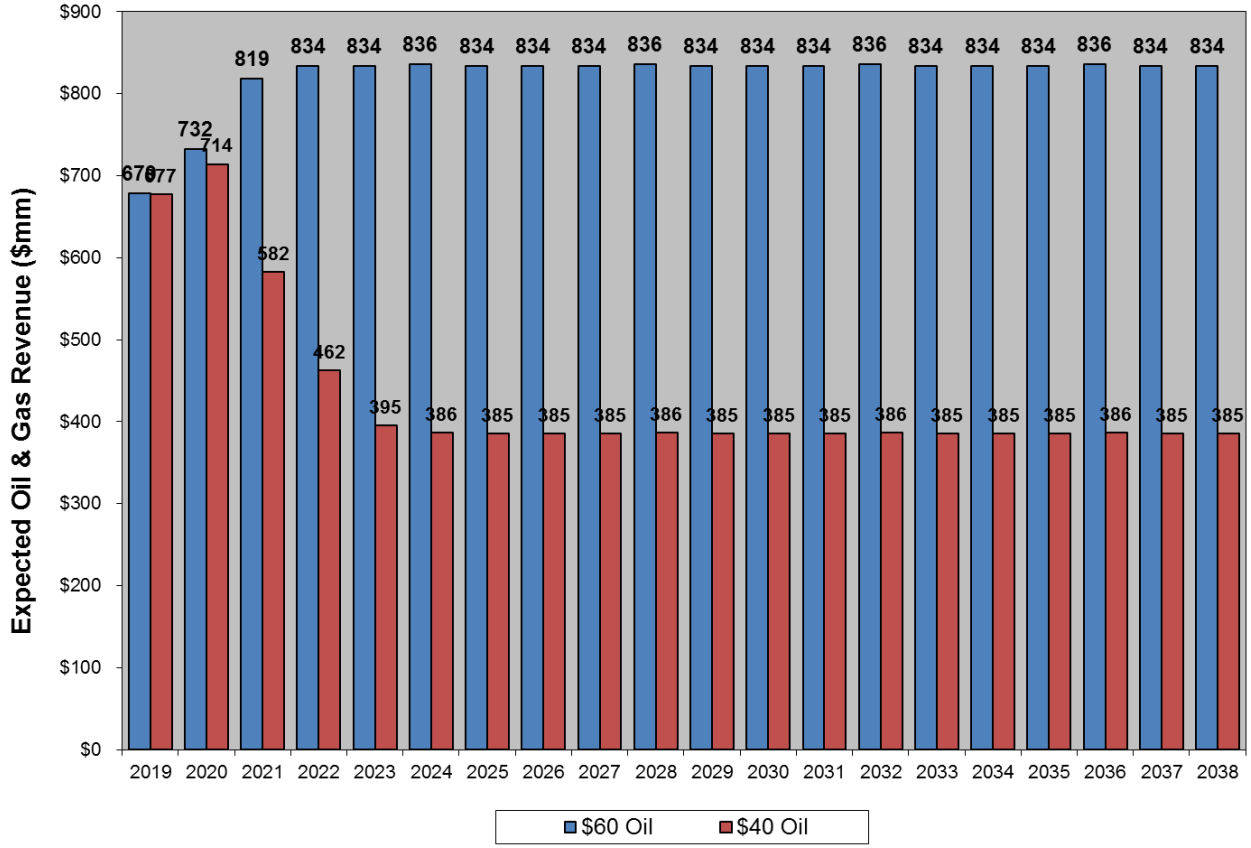
Key Point: Callan and RIO deem the current "Target" allocation to be reasonable, but seek to review Mix 2, 3 and 4, with the Board based on their desire to reduce, hold or increase "targeted" risk levels.

Legacy Fund Spending Policy

Deterministic Projections

Project Oil and Gas Tax Deposits Into Legacy Fund

Baseline Scenario of $60 Oil, Alternative Scenario of $40 Oil and Lower Production



WTI Crude was $71.50 on May 17th 1:50pm CT.

- **Baseline assumes oil prices rise from current $55 to $60 and hold steady over the forecast. Forecast for the next four years comes from State of North Dakota; Callan extends the forecast to 20 years.**
- **Production rises from current level of 1.1 mm barrels per day (BOPD) to 1.4 mm over next 3 years, then holds steady for the forecast.**
- **Alternative scenario assumes oil prices rise in line with the baseline for two years, then fall to $40 and hold steady over the forecast. Production is assumed to rise in line with the baseline for two years, then fall back to 1.0 mm BOPD.**
- **Resulting projections of asset values and spending from the alternative oil price & production scenario differ substantially from baseline, and will have an impact on the future financial condition of Fund.**

Spending Policy Considerations

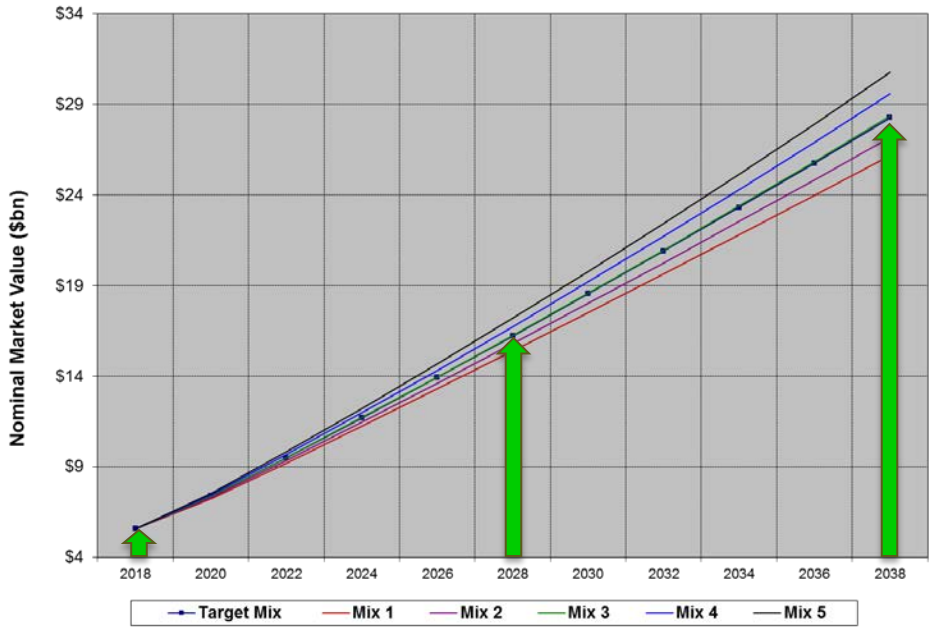
- **General rule of thumb: to balance intergenerational equity in the absence of inflows, a policy can't spend more than the expected real return on investments over the long run.**
- **Rule leads many endowments, foundations and state natural resource funds to seek a higher return to support higher real spending.**
  - Inflation of 2.5%-3% plus a nominal return target of 8% results in a real return expectation of 5%-5.5%
  - 5% is very typical of the spending targeted by a majority of foundations & endowments.
  - Challenge in today's environment: generating a real return of 5%. Many institutions are reconsidering spending policies in light of expectations for the capital markets.
- **How to accommodate potential inflows from royalties?**
  - Ignore – dedicate to growing the endowment for future spending.
  - Acknowledge – supports spending in excess of the real investment return.
  - Projections for strong royalty revenue suggests that the Legacy Fund could support spending well in excess of the expected real return; reduction in royalty expectations would suggest reconsideration of the effective rate of spending by the Fund.
  - Most similar funds calculate spending from market value of assets smoothed over a rolling time period, 3 to 5 years. Purpose of rolling Market Value (MV) calculation is to smooth spending in light of volatile capital markets.
  - **Legacy Fund distribution policy is unique.**
    - ***Income accrues over the biennium and is transferred to the General Fund at the beginning of the next biennium. Realized capital gains introduce an asymmetry into spending, with a zero floor when gains turn to losses in a market downturn.***
    - ***The Legislature may spend up to 15% of the market value of the fund each biennium. This distribution is also assumed to take place in the next biennium.***
    - *Income and the increase in market value accrues over a set two year period that contracts as each month and quarter passes, and then a large chunk of the assets are sent over to the general fund at the conclusion of the biennium.*

Note: NDCC Earnings approximated $170 million for the 9 months ended March 31, 2018.

Projected Growth in Legacy Fund Market Value – Base Case 1

Spending Policy of Income (NDCC Earnings) and 0% of Principal, $60 Oil

Nominal Market Value

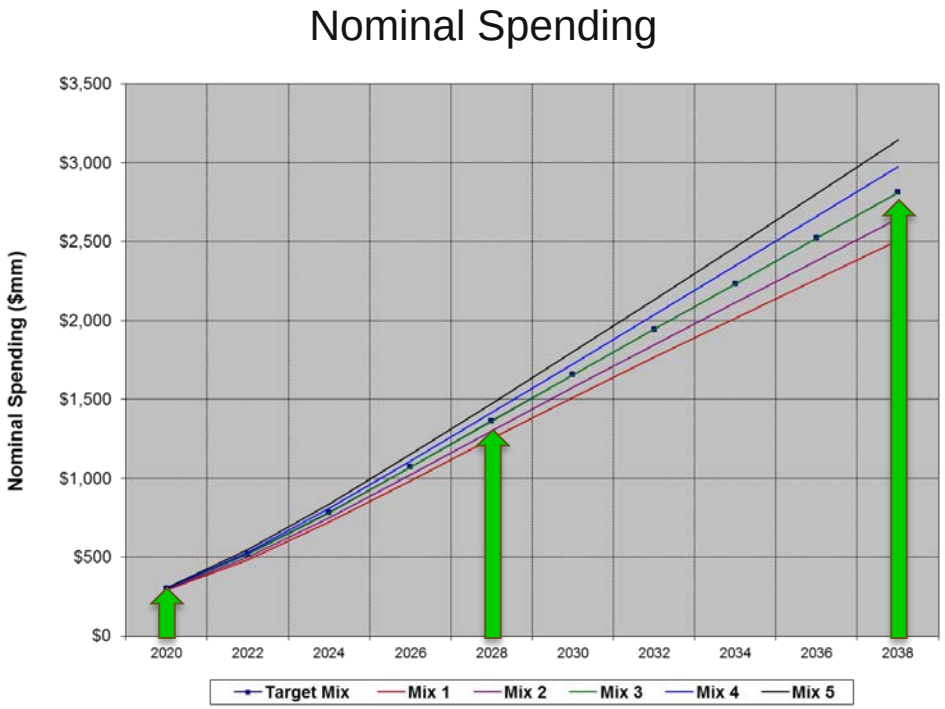


Target Mix/Mix 3 = Legacy Fund grows to $16 billion in 2028 and $28 billion by 2038.

- Base Case 1 = $60 Oil, Spending Policy = 100% of Income Plus 0% of Principal
- Charts show nominal and real (inflation-adjusted) market value for the year following each biennium, after transfers to the General Fund have been removed.
- Nominal and real market values increase under all asset allocations, supported by strong inflows from $60 oil and 1.4 mm BOPD production.
- Purchasing power of the Legacy Fund (real value of Fund assets) can be sustained over the long run under a spending policy of income plus 0% of fund value each biennium. Spending at the maximum rate allowed for the Fund (income plus 15% of fund value) would eventually catch up to inflows from oil and gas, and real value of the fund begins to decline after 15 years for all mixes (not shown above).
- Higher equity allocations (Current Target, Mix 4 and 5) result in higher expected return and greater growth in the real value of the corpus.

Projected Growth in Spending – Base Case 1

Spending Policy of Income (NDCC Earnings) and 0% of Principal, $60 Oil



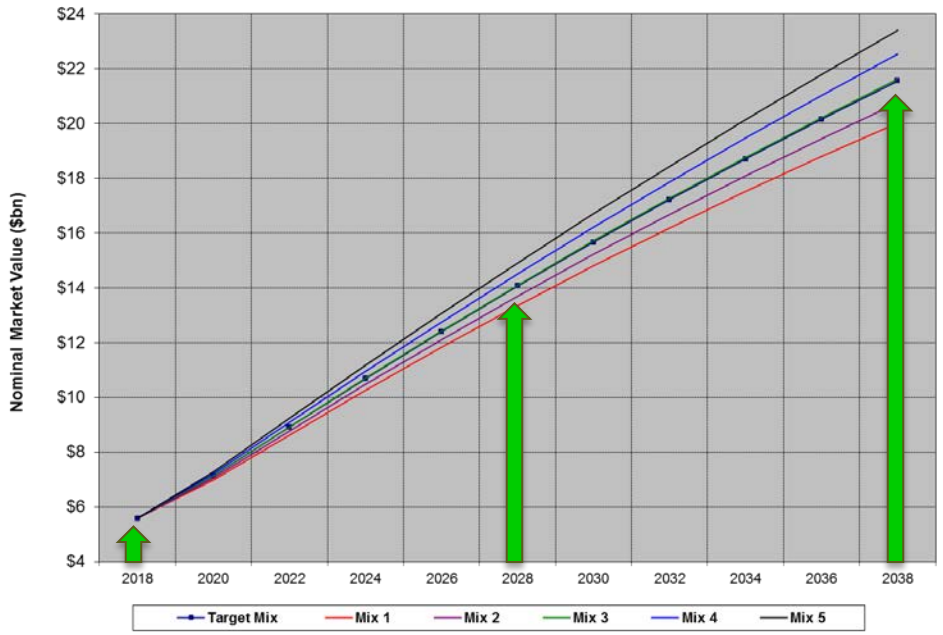
Target Mix/Mix 3 = NDCC Earnings grow to $1.4 billion in 2028 and $2.8 billion by 2038.

- Charts show nominal and real spending (transfers to the General Fund) for the year following each biennium.
- Nominal and real spending increases under each asset allocation mix. Spending from income grows from two sources:
  - As interest rates are projected to rise and the corpus against which yields are calculated grows
  - Realized capital gains grow as the corpus increases
  - Effective spending rate from total investment income rises over time, adding to the total rate of spending.
- Higher equity allocations (Current Target, Mix 4 and 5) result in greater growth in the nominal spending.
- Real spending at the maximum rate allowed for the Fund (income plus 15% of fund value) would increase under each asset allocation mix for about 15 years, then begin to decline (not shown above).

Projected Growth in Legacy Fund Market Value – Base Case 2

Spending Policy of Income and 5% of Principal, $60 Oil

Nominal Market Value

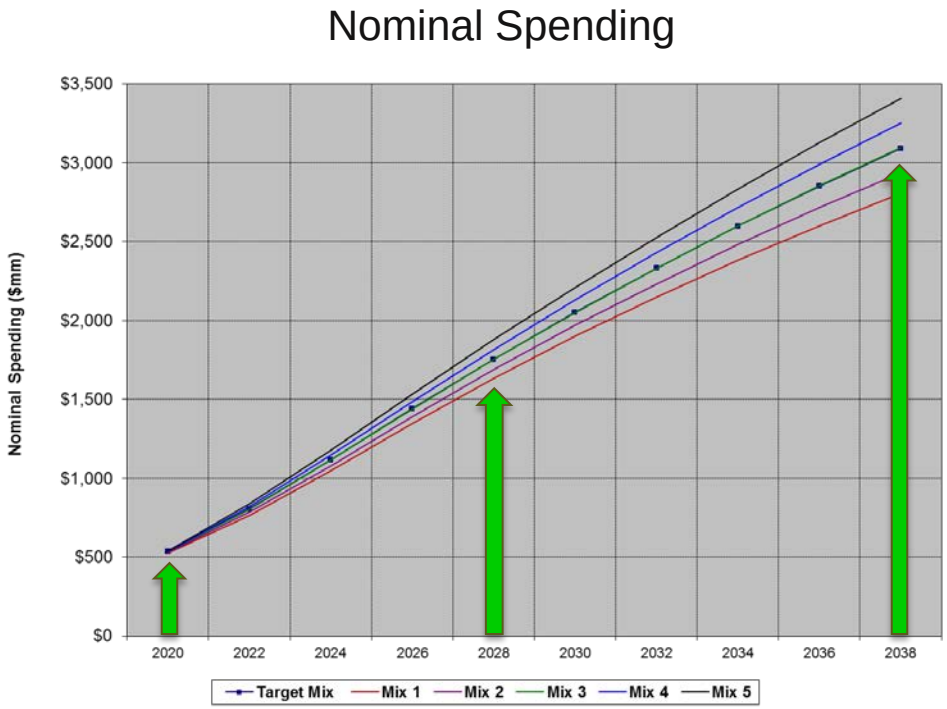


Target Mix/Mix 3 = Legacy Fund grows to $14 billion in 2028 and $21.5 billion by 2038.

- Charts show nominal and real (inflation-adjusted) market value for the year following each biennium, after transfers to the General Fund have been removed.
- Nominal and real market values increase under all asset allocations, supported by strong inflows from $60 oil and 1.4 mm BOPD production.
- Purchasing power of the Legacy Fund (real value of Fund assets) can be sustained over the long run under a spending policy of income plus 5% of fund value each biennium. Spending at the maximum rate allowed for the Fund (income plus 15% of fund value) would eventually catch up to inflows from oil and gas, and real value of the fund begins to decline after 15 years for all mixes (not shown above).
- Higher equity allocations (Current Target, Mix 4 and 5) result in higher expected return and greater growth in the real value of the corpus.

Projected Growth in Spending – Base Case 2

Spending Policy of Income and 5% of Principal, $60 Oil



Target Mix/Mix 3 = Total spending grows to $1.75 billion in 2028 and $3.1 billion by 2038.

- Charts show nominal and real spending (transfers to the General Fund) for the year following each biennium.
- Nominal and real spending increases under each asset allocation mix. Spending from income grows from three sources:
  - As interest rates are projected to rise and the corpus against which yields are calculated grows
  - Realized capital gains grow as the corpus increases
  - Spend 5% of Fund principal as the corpus increases
  - Effective spending rate from total investment income rises over time, adding to the total rate of spending.
- Higher equity allocations (Current Target, Mix 4 and 5) result in greater growth in the nominal spending.
- Real spending at the maximum rate allowed for the Fund (income plus 15% of fund value) would increase under each asset allocation mix for about 15 years, then begin to decline (not shown above).

Conclusions – Deterministic Results

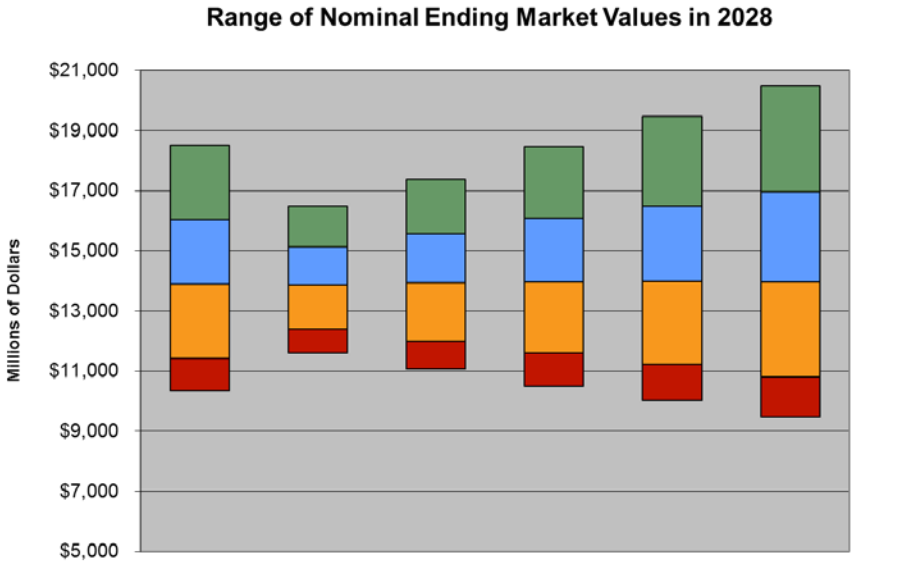
- **The Legacy Fund spending policy (via distributions to General Fund) is expected to generate a lumpy spending pattern, with large outflows moving from the fund at the start of a biennium & no outflows in the following year.**
- Spending is based on the income earned during the previous biennium and the market value net of spending at the start of the previous biennium. The real value of Fund assets is projected to grow over the next 10 and 20 years for all asset mixes, fueled by strong projections of oil & gas revenues. A spending rate of income plus 0% of Fund value over each biennium is expected to result in growth in both the real value of Fund assets and spending, supported by the expected strong inflows of oil & gas revenues assuming $60 oil and 1.4 mm BOPD production.
- **Current projections of oil & gas production and prices suggest deposits will ultimately be insufficient to offset spending at the maximum rate (15% of principal plus income each biennium) allowed in the founding legislation. Under the maximum rate, the sum of income plus 15% of principal spending would result in net outflows (spending less oil & gas revenues) that are well in excess of the real (inflation-adjusted) investment return.**
- A spending policy that targets a reduced rate of principal (for instance, Income plus 5% of Market Value) can preserve and increase the purchasing power of the Legacy Fund.
- **The impact of oil & gas tax inflows on the purchasing power and real spending can be profound. With no inflows, preserving the purchasing power (real market value) and real spending would be challenged at an annual rate beyond the real investment return (current target real return is 3.6%). The current projections of $60 oil and 1.4 mm BOPD are expected to support a policy of income plus 5% of Fund principal. Under the maximum spending rate allowed, the current revenue projections will be challenged eventually, even for the most aggressive asset mixes.**
- Lower oil prices, which likely come with lower production, will require lower spending in excess of income to meet the goal of preserving the purchasing power of the fund.
- **A lower principal spending rate of 0% to 5% can improve the preservation of purchasing power in a lower return or energy tax revenue environment, at the cost of lower expected distributions.**

Limitations of Deterministic Projections

- A deterministic projection does not reflect capital market uncertainty (risk).
- 10-year (and 20-year) returns with no volatility - a deterministic projection with the same return each year - may yield substantially different results from a series of 10 annual returns with substantial volatility but the same 10-year average return. The sequence of the returns matter, as do the size of the swings. Negative returns earlier in the period may cause less harm than later in the period, when more money may be at stake.
- Simulation models that take volatility and probabilities into account typically generate median returns - those with a 50% probability of occurring - that are below those of the deterministic or average projections.
- The deterministic projections paint a more optimistic view of the Legacy Fund over the next 20 years than under a regime of capital market uncertainty.

Simulated Market Values in 2028 – Base Case 1

Spending Policy of Income and 0% of Principal



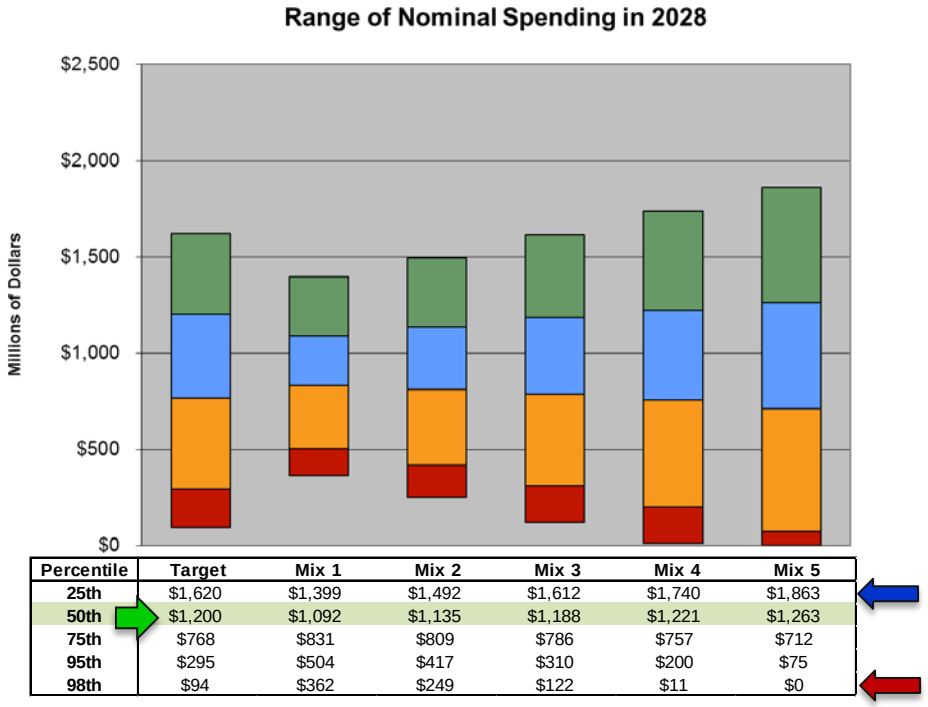
Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$18,500	$16,467	$17,389	$18,453	$19,484	$20,490
50th	$16,029	$15,130	$15,571	$16,070	$16,486	$16,956
75th	$13,906	$13,883	$13,939	$13,973	$13,994	$13,964
95th	$11,422	$12,395	$12,005	$11,595	$11,230	$10,804
98th	$10,336	$11,604	$11,084	$10,493	$10,040	$9,478

The Legacy Fund is forecasted to reach $16 billion in 2028 under the current "Target" asset allocation, while ranging from $9.5 billion to $20.5 billion under Mix 5 (Nominal).

- Nominal (non-inflation-adjusted) Fund market value for the current Target in 10 years can range from $10.4 b in the worse case scenario (98th percentile, or approximately 2 standard deviation event on the downside) to $18.5 b at the 25th percentile, with a median of $16 b.
- Range of potential results widens as equity exposure increases (moving from Mix 1 to Mix 5). Erosion of purchasing power occurs if projected real market value falls below today's market value ($5,372 mm at March 31, 2018) as represented by the blue line.
- Purchasing power under spending policy of income plus 0% of Fund principal over ten and twenty years can be maintained in the expected case across all of the asset mixes, thanks to the strong inflows of oil & gas tax receipts. Worse case scenarios for all asset mixes suggest the potential for erosion of purchasing power is low.

Simulated Spending in 2028 – Base Case 1

Spending Policy of Income and 0% of Principal



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$1,620	$1,399	$1,492	$1,612	$1,740	$1,863
50th	$1,200	$1,092	$1,135	$1,188	$1,221	$1,263
75th	$768	$831	$809	$786	$757	$712
95th	$295	$504	$417	$310	$200	$75
98th	$94	$362	$249	$122	$11	$0

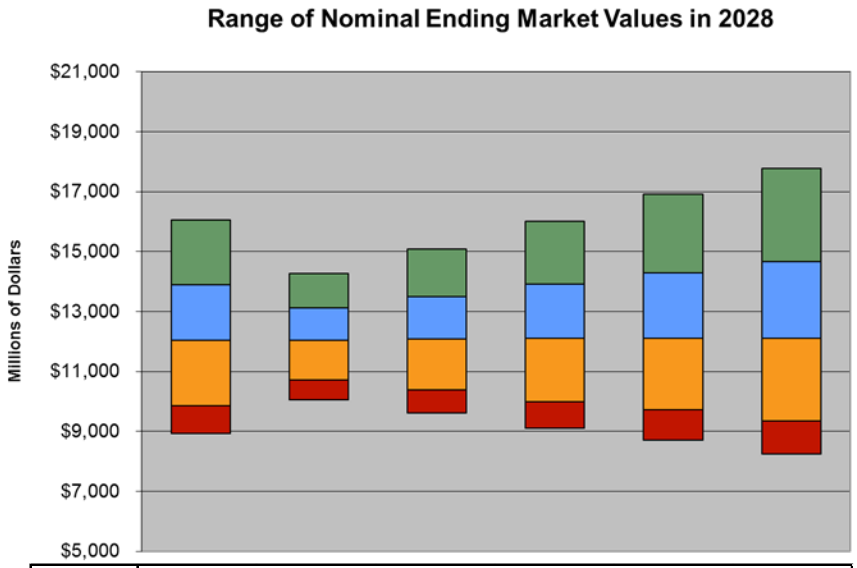
Nominal Spending is expected to reach $1.2 billion per biennium in 2028 under the current "Target" mix, while ranging from $0 to $1.863 billion under Mix 5.

- Nominal (non-inflation-adjusted) total spending in 10 years (attributable to biennium ending with FY 2027) reaches $1.2 b for the current target mix.
- Expected case (50th percentile) spending rises with equity exposure, at the expense of a lower worse case outcome. Greater realized capital gains in mixes with more equity makes up for the lower interest income. Real (inflation-adjusted) total spending in 10 years (attributable to biennium ending with FY 2027) reaches $953 mm for the current target mix.
- Range of real spending widens over time, and with increasing exposure to equity. Realized capital losses offset income in worse case scenarios, with the zero floor under spending limiting the downside only in the extreme cases.

Compare Market Values in 2028 – Alternative Spending Policy

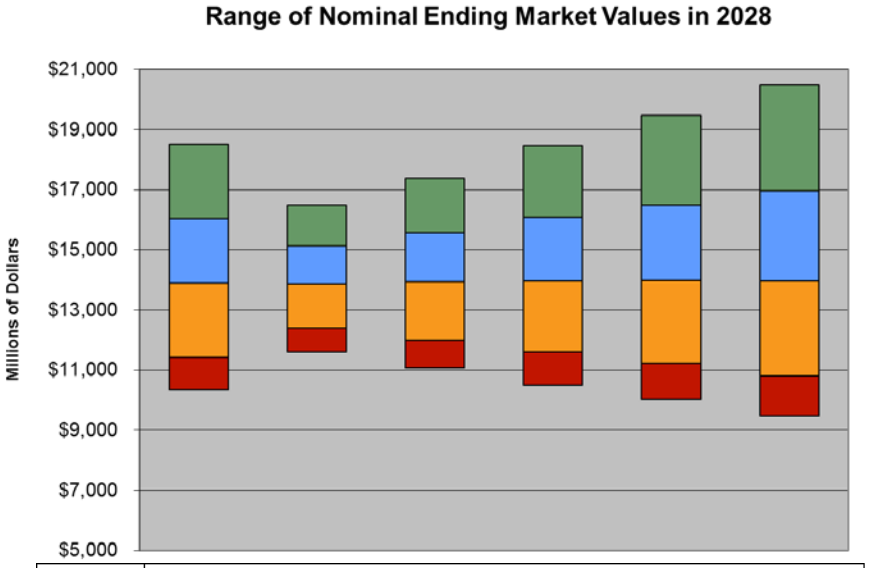
Base Case 2 (Spend 5% of Principal) vs. Base Case 1 (Spend 0% of Principal)

5% of Principal



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$16,050	$14,270	$15,080	$16,008	$16,914	$17,779
50th	$13,906	$13,114	$13,499	$13,909	$14,294	$14,663
75th	$12,048	$12,040	$12,099	$12,109	$12,112	$12,109
95th	$9,861	$10,730	$10,393	$10,002	$9,722	$9,353
98th	$8,938	$10,069	$9,619	$9,112	$8,720	$8,244

0% of Principal



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$18,500	$16,467	$17,389	$18,453	$19,484	$20,490
50th	$16,029	$15,130	$15,571	$16,070	$16,486	$16,956
75th	$13,906	$13,883	$13,939	$13,973	$13,994	$13,964
95th	$11,422	$12,395	$12,005	$11,595	$11,230	$10,804
98th	$10,336	$11,604	$11,084	$10,493	$10,040	$9,478

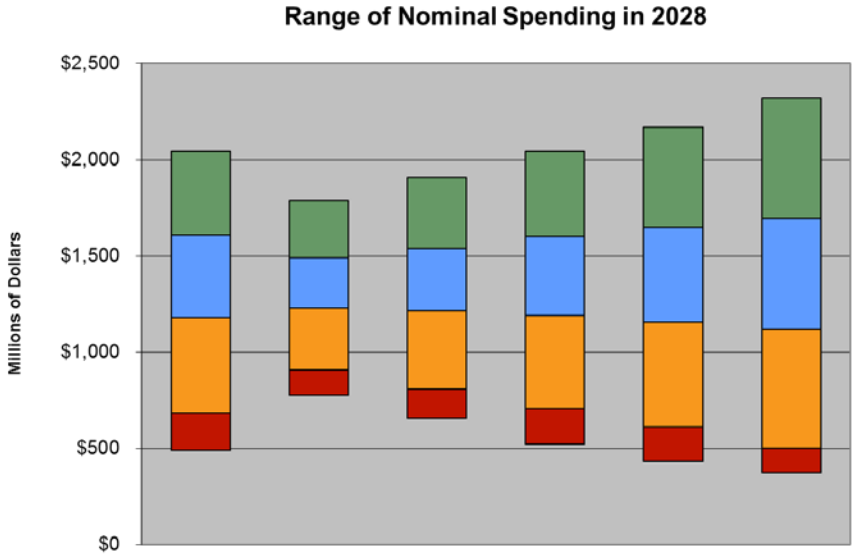
Target/Mix 3 = The Median Fund Value is forecasted to reach $13.7 billion with a 5% Principal Spending Policy vs $16 billion with a 0% Principal Spending Policy in 2028.

- Nominal (non-inflation-adjusted) Fund market value for the current Target in 10 years can range from $7 b to $15 b, with a median of $10.3 b.
- Range of potential results widens as equity exposure increases (moving from Mix 1 to Mix 5).

Compare Spending in 2028 – Alternative Spending Policy

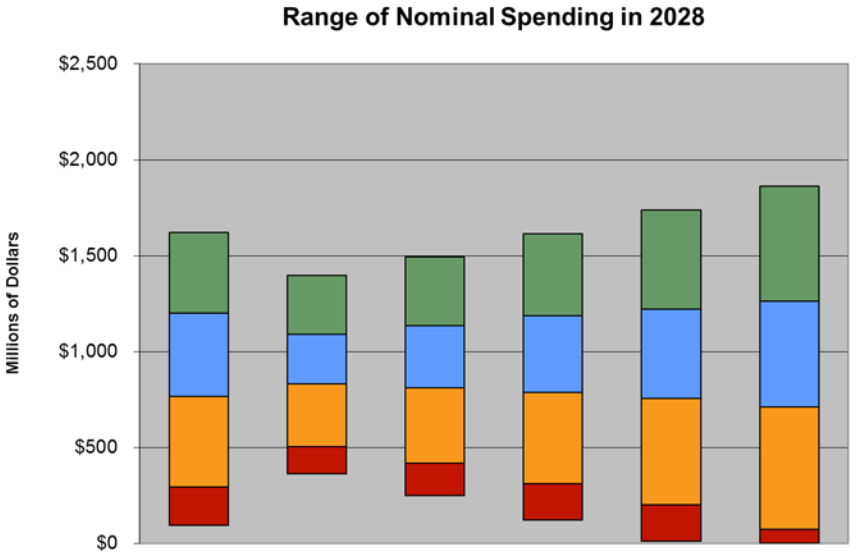
Base Case 2 (Spend 5% of Principal) vs. Base Case 1 (Spend 0% of Principal)

5% of Principal



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$2,044	$1,786	$1,906	$2,045	$2,170	$2,322
50th	$1,607	$1,490	$1,539	$1,601	$1,650	$1,695
75th	$1,181	$1,229	$1,213	$1,189	$1,155	$1,117
95th	$685	$909	$808	$707	$611	$501
98th	$490	$776	$658	$521	$430	$374

0% of Principal



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$1,620	$1,399	$1,492	$1,612	$1,740	$1,863
50th	$1,200	$1,092	$1,135	$1,188	$1,221	$1,263
75th	$768	$831	$809	$786	$757	$712
95th	$295	$504	$417	$310	$200	$75
98th	$94	$362	$249	$122	$11	$0

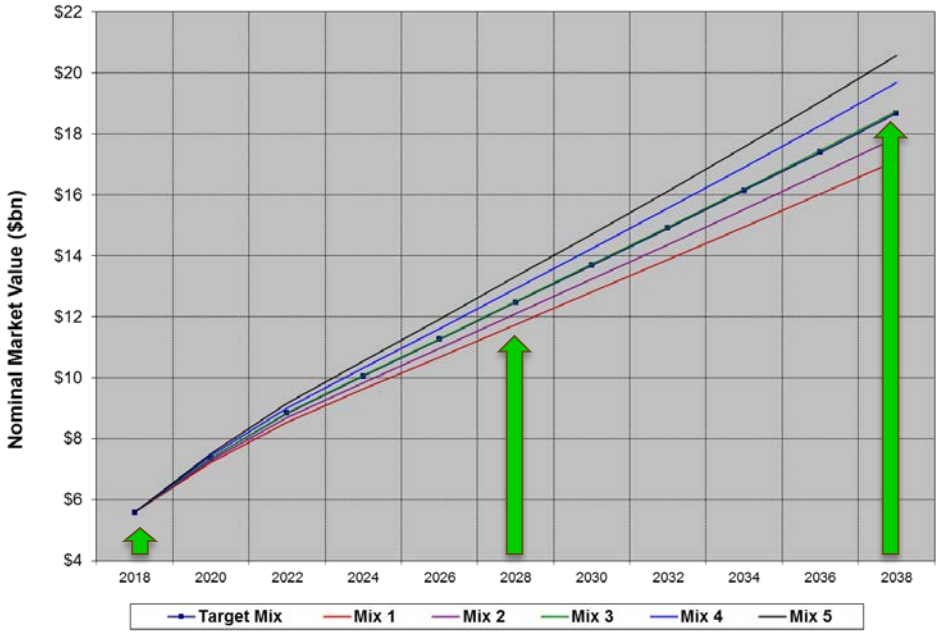
Target/Mix 3 = Median Nominal Spending is forecasted to reach $1.6 billion with a 5% Principal Spending Policy vs $1.2 billion with a 0% Principal Spending Policy in 2028.

- Nominal (non-inflation-adjusted) total spending in 10 years (attributable to biennium ending with FY 2027) reaches $2 b for the current target mix.
- Total spending in 20 years (attributable to FY 2037 biennium) reaches almost $3 b.
- Expected case spending rises with equity exposure, at the expense of a lower worse case outcome.

Projected Growth in Legacy Fund Market Value – Base Case 3

Spending Policy of Income (NDCC Earnings) and 0% of Principal, $40 Oil

Nominal Market Value

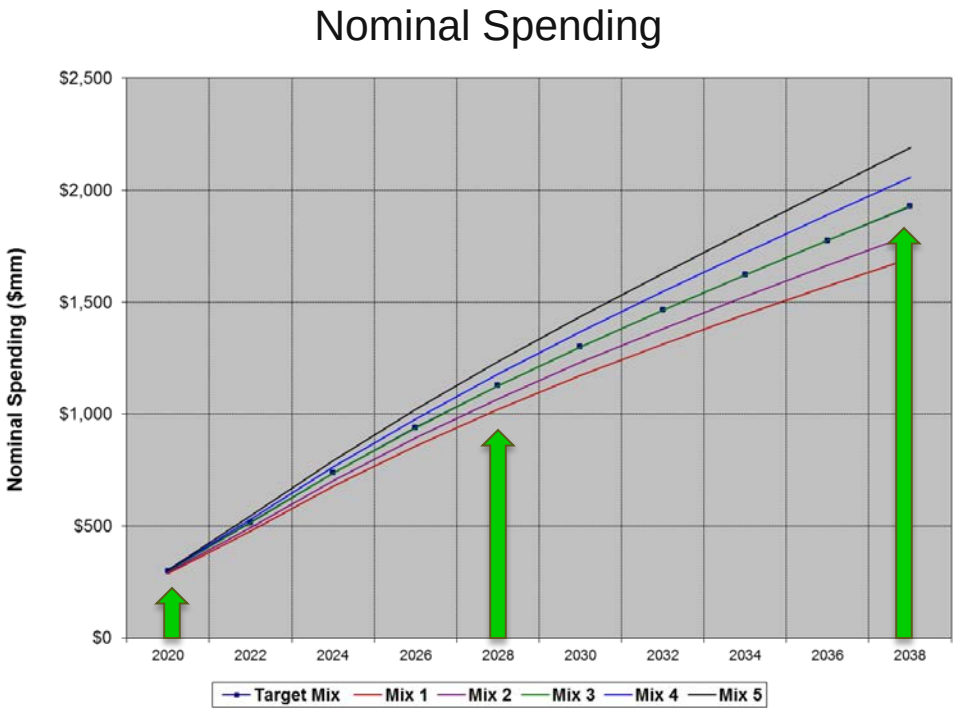


Target Mix/Mix 3 = Legacy Fund grows to $13 billion in 2028 and $19 billion by 2038.

- Base Case 3 = $40 Oil, Spending Policy = 100% of Income Plus 0% of Principal
- Charts show nominal and real (inflation-adjusted) market value for the year following each biennium, after transfers to the General Fund have been removed.
- Nominal and real market values increase under all asset allocations, supported by inflows from $40 oil and 1.0 mm BOPD production.
- Purchasing power of the Legacy Fund (real value of Fund assets) can be sustained over the long run under a spending policy of income plus 0% of fund value each biennium.
- Higher equity allocations (Current Target, Mix 4 and 5) result in higher expected return and greater growth in the real value of the corpus.

Projected Growth in Spending – Base Case 3

Spending Policy of Income (NDCC Earnings) and 0% of Principal, $40 Oil

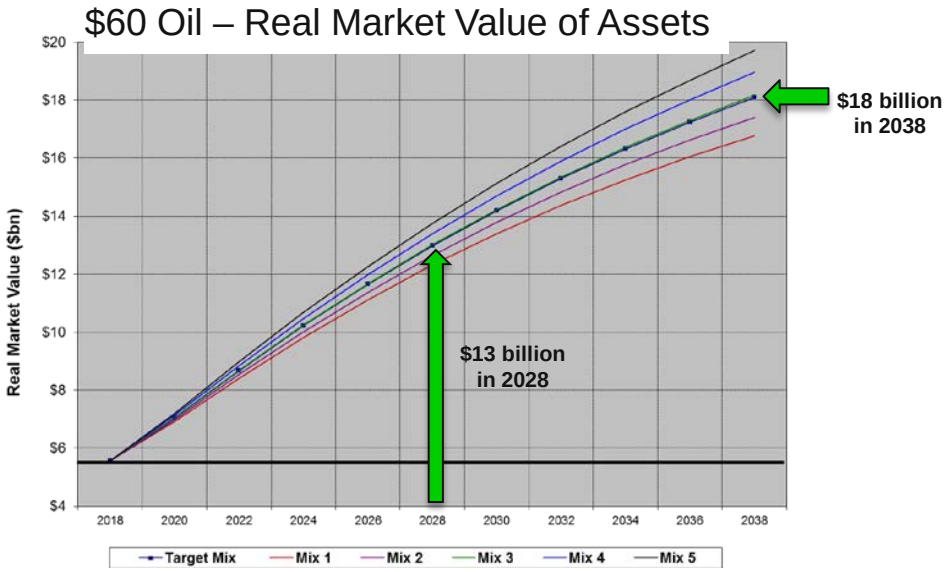


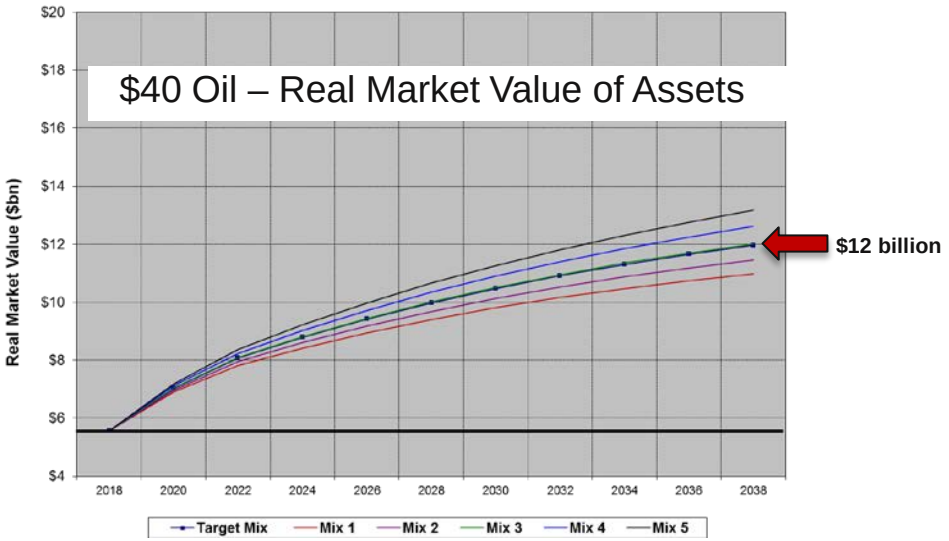
Target Mix/Mix 3 = NDCC Earnings grow to $1.2 billion in 2028 and $1.8 billion by 2038.

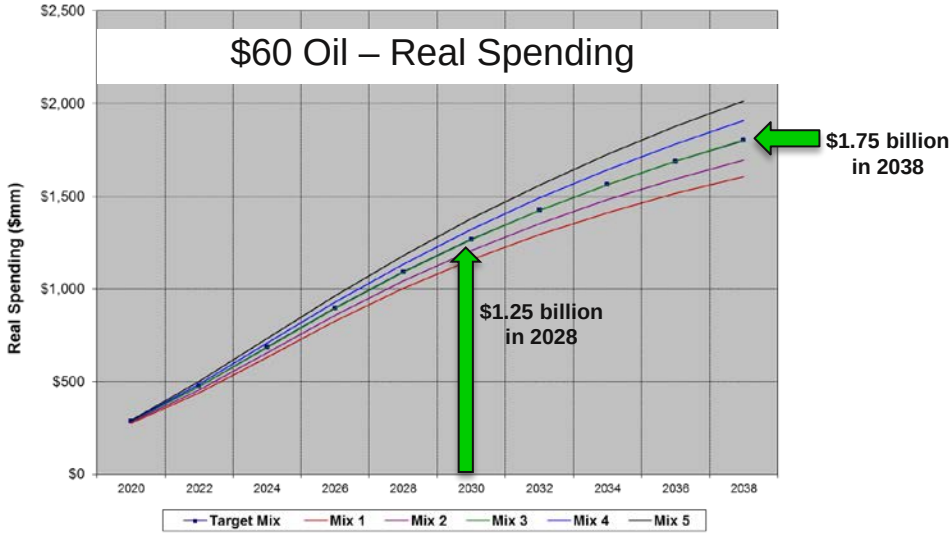
- Charts show nominal and real spending (transfers to the General Fund) for the year following each biennium.
- Nominal and real spending increases under each asset allocation mix. Spending from income grows from two sources:
  - As interest rates are projected to rise and the corpus against which yields are calculated grows
  - Realized capital gains grow as the corpus increases
  - Effective spending rate from total investment income rises over time, adding to the total rate of spending.
- Higher equity allocations (Current Target, Mix 4 and 5) result in greater growth in the nominal spending.

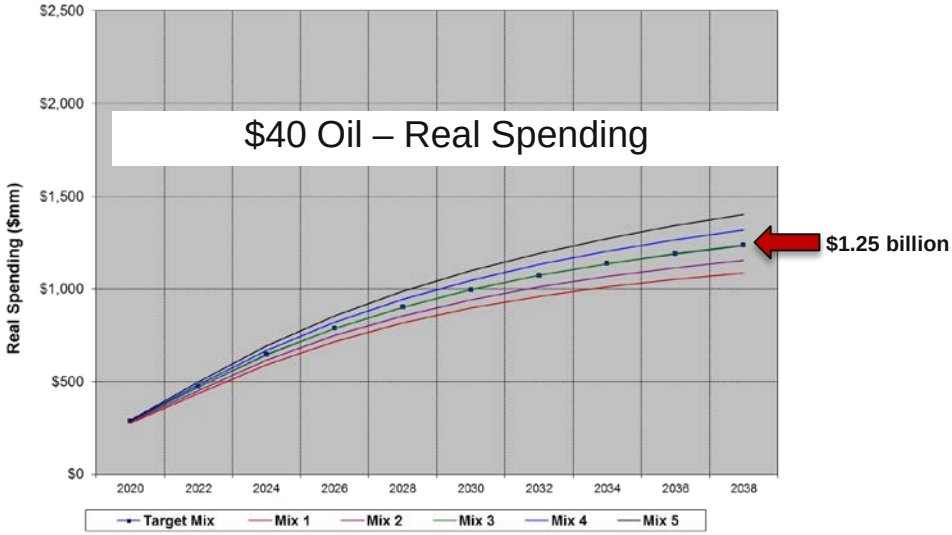
Impact of Lower Oil Price and Production

$40 Oil/1.0 mm BOPD versus $60 Oil/1.4 mm BOPD (Spend Income Plus 0% of Principal)





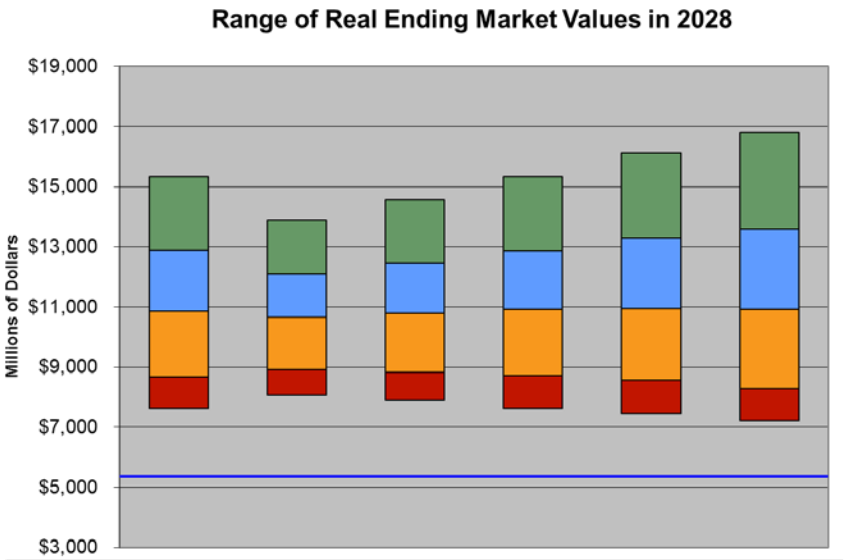




Compare Real Market Values in 2028 – $40 Oil vs. $60 Oil

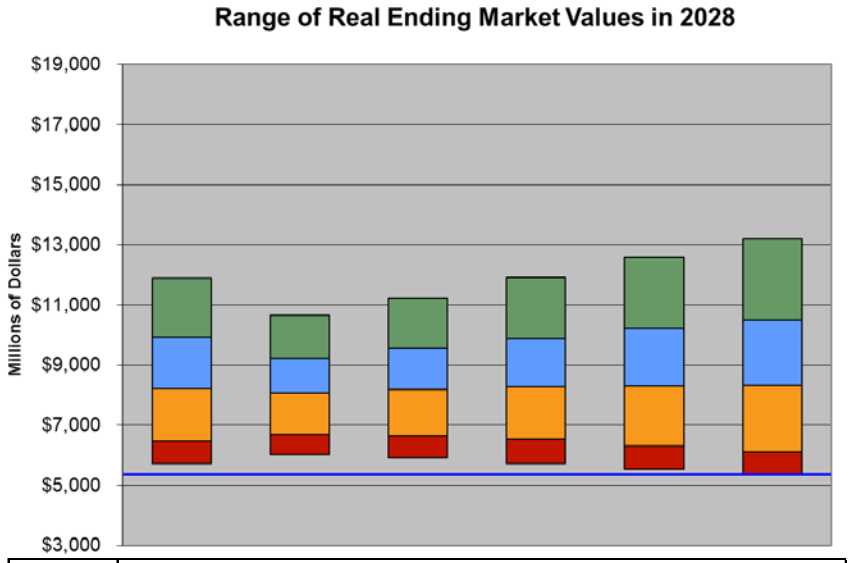
Spending Policy of Income and 0% of Principal

$60 Oil



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$15,329	$13,878	$14,567	$15,332	$16,122	$16,824
50th	$12,897	$12,094	$12,465	$12,861	$13,289	$13,596
75th	$10,851	$10,671	$10,804	$10,915	$10,955	$10,936
95th	$8,685	$8,908	$8,836	$8,713	$8,557	$8,269
98th	$7,619	$8,071	$7,901	$7,608	$7,453	$7,221

$40 Oil



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
25th	$11,895	$10,652	$11,241	$11,923	$12,577	$13,203
50th	$9,923	$9,231	$9,549	$9,900	$10,224	$10,517
75th	$8,211	$8,077	$8,191	$8,280	$8,309	$8,327
95th	$6,477	$6,683	$6,651	$6,526	$6,313	$6,124
98th	$5,715	$6,037	$5,913	$5,728	$5,551	$5,354

Downside Case Scenario: Assuming 1.0 million BOPD at $40 (instead of 1.4 million BOPD at $60), the Fund Median Value declines from $12.9 billion to $9.9 billion in 2028.

- Real (inflation-adjusted) Fund market value for all asset mixes can fall below the current asset value (blue line) for all mixes in downside case scenarios under $40 oil/1.0 mm BOPD. Illustrates the impact of oil & gas revenue inflows on the financial condition of the Fund.

Projected Real Market Value Table

Spending Policy of Income and 0% of Principal

	Probability of Preserving Purchasing Power of Legacy Fund	Real Market Value Growth Over The Next 20 years (geometric)	
		Expected Case (50th Percentile)	Worse Case Scenarion (98th Percentile)
Target Mix	80%-85%	6.0%	2.3%
Mix 1	75%-80%	5.4%	2.3%
Mix 2	75%-80%	5.7%	2.3%
Mix 3	80%-85%	6.0%	2.3%
Target Mix	80%-85%	6.0%	2.3%
Mix 4	85%-90%	6.2%	2.1%
Mix 5	85%-90%	6.4%	2.0%

- Regardless of the asset allocation decision, oil & gas tax revenue is sufficient to support spending in excess of the real investment return as dictated by the allowable spending policy over the next 20 years. All of the asset mixes, including the Current Target are expected to generate expected real returns equal to or in excess of the effective spending rate under a policy of income plus 0% of principal. The effective spending rate under a policy of income plus 5% results in a spending rate in excess of the real return for all mixes. However, under a 5% spending policy, the oil & gas revenues as projected ($60 per bbl, 1.4 mm BOPD) will improve the purchasing power of the Fund over 10 and 20 years. Spending at the maximum allowable rate of 15% of principal would result in spending catching up with the projected revenues and both the real value of the Fund and real spending would be expected to decline after 15 years.
- A more aggressive asset allocation increases the level to which the real value of the Fund will be built, at the cost of greater volatility, which translates into greater downside risk. The more aggressive asset mixes appear to do better even in the worse case results than more conservative mixes after 20 years.
- Risk/reward trade-off at 20 years appears suggests that a mix as aggressive as Mix 5 offers a positive trade-off between reward (improvement in real asset value) and risk (worsening in the worse case).
- Lower oil price and production introduce the potential for the real value of the fund assets and real spending to fall below the current value, eroding the purchasing power of the fund. In this scenario, asset mixes with greater equity exposure will see greater declines in real purchasing power. A less aggressive asset allocation combined with a spending rate of income plus 5% of principal in a lower oil & gas tax revenue environment can help preserve purchasing power; the trade-off is lower expected spending from the Fund.

Summary of Results

Recommendation: Maintain the current asset allocation of 50% Equity, 35% Debt and 15% Real Assets including ranges of 45% to 55% for Equity, 30% to 40% for Fixed Income and 12% to 18% Real Assets.

- The appropriate asset allocation will attempt to balance the dual objectives of maintaining or increasing real spending while maintaining or growing the real (inflation-protected) value of the Legacy Fund over the projection period.
- In the absence of any inflows:
  - A spending policy with an effective rate less than or equal to the real return on the fund investments is required to maintain the real value of the corpus and therefore sustain intergenerational equity. Given that investment income is assumed to be transferred out each biennium at a rate of between 3% and 4% of fund assets annually, the Legislature would need to limit spending attached to the market value of the Fund's principal such that the sum of the income and MV spending level are sustainable in the long run –effectively no greater than the real investment return over time.
- Under the current projection of oil & gas tax revenue inflows:
  - Inflows are sufficient to offset the spending generated by a 5% of MV spending level (in addition to income) for all asset mixes over the next 20 years. The real value of the corpus increases under all asset mixes, implying that the purchasing power of the Legacy Fund increases over time. Spending 0% of the principal will serve to increase Fund assets even more over time. Spending at the maximum allowable rate (15% of principal plus income) will eventually cause growth in the real value of the corpus and spending will stop after 15 years, and both measures will begin to decline as spending catches up to the inflows.
- If the current projection of inflows is lower, the MV spending policy and/or the asset allocation policy would need to be adjusted if sustaining the real value of the fund corpus remains a goal. Lower inflows under the assumed 0% MV spending policy means all asset mixes, including the current Target, could see worse case outcomes in which the real market value of the principal would decline, thereby eroding the purchasing power of the Fund.
- **Increase/Maintain Real Market Value Objective**
- Current spending policy – to be completed
- **Increase/Maintain Real Spending Objective**
- Current spending policy – to be completed

2018 Capital Market Projections – Return and Risk

Capital Market Assumptions play a major role in developing our asset allocation policy.

Summary of Callan's Long-Term Capital Market Projections (2018 – 2027)

		PROJECTED RETURN			PROJECTED RISK		
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Sharpe Ratio	Projected Yield
Equities							
Broad Domestic Equity	Russell 3000	8.30%	6.85%	4.60%	18.25%	0.332	2.00%
Large Cap	S&P 500	8.05%	6.75%	4.50%	17.40%	0.333	2.10%
Small/Mid Cap	Russell 2500	9.30%	7.00%	4.75%	22.60%	0.312	1.55%
Global ex-U.S. Equity	MSCI ACWI ex USA	8.95%	7.00%	4.75%	21.00%	0.319	3.10%
International Equity	MSCI World ex USA	8.45%	6.75%	4.50%	19.70%	0.315	3.25%
Emerging Markets Equity	MSCI Emerging Markets	10.50%	7.00%	4.75%	27.45%	0.301	2.65%
Fixed Income							
Short Duration	Barclays G/C 1-3	2.60%	2.60%	0.35%	2.10%	0.167	2.85%
Domestic Fixed	Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	0.213	3.50%
Long Duration	Barclays Long G/C	3.50%	3.00%	0.95%	10.95%	0.116	4.45%
TIPS	Barclays TIPS	3.10%	3.00%	0.75%	5.25%	0.162	3.35%
High Yield	Barclays High Yield	5.20%	4.75%	2.50%	10.35%	0.285	7.75%
Non-U.S. Fixed	Barclays Global Aggregate ex US	1.80%	1.40%	-0.85%	9.20%	-0.049	2.50%
Emerging Market Debt	EMBI Global Diversified	4.85%	4.50%	2.25%	9.60%	0.271	5.75%
Other							
Real Estate	Callan Real Estate	6.90%	5.75%	3.50%	16.35%	0.284	4.75%
Private Equity	TR Post Venture Cap	12.45%	7.35%	5.10%	32.90%	0.310	0.00%
Hedge Funds	Callan Hedge FOF Database	5.35%	5.05%	2.80%	9.15%	0.339	2.25%
Commodities	Bloomberg Commodity	4.25%	2.65%	0.40%	18.30%	0.109	2.25%
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	0.000	2.25%
Inflation	CPI-U		2.25%		1.50%		

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

Source: Callan LLC

2018 Capital Market Projections – Correlation Coefficient Matrix

Key to Constructing Efficient Portfolios

Asset Class Correlations play a key role in Constructing Efficient Portfolios

	Broad US Eq	Large Cap	Sm/Mid Cap	Global ex-US	Non-US Equity	Em Mkt Eq	Sht Dur	US Fixed	Long Duration	TIPS	High Yield	Non-US Fixed	Em Mkt Debt	Real Estate	Private Equity	Hedge Funds	Comm	Cash Equiv	Inflation
Broad US Equity	1.000																		
Large Cap	0.996	1.000																	
Small/Mid Cap	0.966	0.940	1.000																
Global ex-US Equity	0.874	0.872	0.839	1.000															
Non-US Equity	0.840	0.840	0.800	0.987	1.000														
Em Mkts Equity	0.866	0.860	0.845	0.936	0.865	1.000													
Short Duration	-0.250	-0.240	-0.270	-0.271	-0.250	-0.290	1.000												
US Fixed	-0.110	-0.100	-0.135	-0.130	-0.115	-0.160	0.870	1.000											
Long Duration	0.133	0.136	0.119	0.104	0.117	0.066	0.730	0.925	1.000										
TIPS	-0.054	-0.045	-0.080	-0.049	-0.030	-0.085	0.525	0.600	0.528	1.000									
High Yield	0.636	0.635	0.610	0.627	0.605	0.615	-0.140	0.020	0.217	0.060	1.000								
Non-US Fixed	0.013	0.050	-0.100	0.013	0.060	-0.090	0.480	0.510	0.542	0.340	0.120	1.000							
Em Mkt Debt	0.573	0.570	0.555	0.577	0.550	0.580	-0.040	0.100	0.157	0.180	0.600	0.010	1.000						
Real Estate	0.732	0.730	0.705	0.677	0.660	0.650	-0.165	-0.030	0.188	0.000	0.560	-0.050	0.440	1.000					
Private Equity	0.948	0.945	0.915	0.927	0.895	0.910	-0.260	-0.200	0.020	-0.110	0.640	-0.060	0.570	0.715	1.000				
Hedge Funds	0.802	0.800	0.770	0.760	0.730	0.755	-0.130	0.080	0.301	0.075	0.570	-0.080	0.540	0.605	0.780	1.000			
Commodities	0.152	0.150	0.150	0.161	0.155	0.160	-0.220	-0.100	-0.041	0.120	0.100	0.050	0.190	0.200	0.180	0.210	1.000		
Cash Equivalents	-0.043	-0.030	-0.080	-0.040	-0.010	-0.100	0.300	0.100	-0.048	0.070	-0.110	-0.090	-0.070	-0.060	0.000	-0.070	0.070	1.000	
Inflation	-0.010	-0.020	0.020	0.010	0.000	0.030	-0.200	-0.280	-0.285	0.180	0.070	-0.150	0.000	0.100	0.060	0.200	0.400	0.000	1.000

- Relationships between asset classes is as important as standard deviation.
- To determine portfolio mixes, Callan employs mean-variance optimization.
- Return, standard deviation and correlation determine the composition of efficient asset mixes.

Source: Callan LLC

AGENDA ITEM III.D.

Informational

TO: State Investment Board

FROM: Dave Hunter and Darren Schulz

DATE: May 21, 2018

SUBJECT: **Bank of North Dakota (BND) Match Loan CD Program Background**

Background:

On June 17, 2017, the Legacy Fund Advisory Board approved the Legacy Fund Investment Policy Statement (IPS), which acknowledged the transfer of the BND Match Loan CD Program from the Budget Stabilization Fund into the Legacy Fund in early-2017. **On July 28, 2017, the SIB formally accepted the IPS as approved by the Advisory Board. The revised IPS noted "The BND CD investment will be limited to the lesser of $200 million or 5% of the Legacy Fund (and represent a sector allocation within fixed income.)"** In addition, "BND will be requested to guarantee a minimum 1.75% investment return. **The minimum return requirement will be periodically reviewed in connection with the Legacy Fund's overall asset allocation framework.** BND CD's are rated AA by S&P."

Legacy Fund Advisory Board Meeting *"Minutes"* – November 27, 2017:

"Bank of North Dakota Matching and Infrastructure Loan Programs

At the request of Chairman Kempenich, Mr. Hardmeyer presented information (Appendix D) regarding the Bank of North Dakota's matching loan program ***and the possibility of increasing legacy fund investments in Bank certificates of deposits (CDs) in order for the Bank to increase funding available for the matching loan program and an infrastructure loan program****. He said there is no risk to the legacy fund as the risk of loss lies with the Bank and the Bank has never had a loss on a loan in its match program.*

In response to a question from Representative Kreidt, Mr. Hardmeyer said the CD rate would be the U.S. Treasury rate plus an agreed upon markup. He said the match program currently includes a fixed interest rate for a 5-year period with terms of 15 to 20 years. He said the political subdivisions would prefer to have a longer period in which the interest rate is fixed.

No further business appearing, Chairman Kempenich adjourned the meeting at 2:50 p.m."

At the meeting, Mr. Hunter stated that RIO would consider this "infrastructure loan program" request in connection with the Legacy Fund asset allocation study being conducted by Callan. Mr. Hunter referenced prior discussions with BND representatives including BND's requested $200 million program size increase (spread over four years in $50 million annual increments). **In April of 2018 Callan recommended that RIO seek indicative pricing on BND CD's from its fixed income managers in order to determine the appropriate credit and liquidity spreads for the proposed program.**

Indicative Pricing Estimates:

RIO reached out to three large fixed income managers for the SIB to obtain indicative pricing for BND CD's issued for terms of up to 10-years. Indicative pricing estimates widened at the 5-year term and ranged from a negative 0.08% to 1-year U.S. Treasury yields to a positive 1.00% to 10-year U.S. Treasury yields. **Based on this indicative pricing analysis, RIO proposed the following spreads to BND representatives on May 18, 2018:**

0.00% spread to like-term U.S. Treasuries for terms up to 5-years;
0.50% spread to U.S. Treasuries for terms over 5-years, but less than 6-years;
0.60% spread to U.S. Treasuries for terms from 6-years, but less than 7-years;
0.70% spread to U.S. Treasuries for terms from 7-years, but less than 8-years;
0.80% spread to U.S. Treasuries for terms from 8-years, but less than 9-years;
0.90% spread to U.S. Treasuries for terms from 9-years, but less than 10-years;
1.00% spread to U.S. Treasuries for a 10-year term.

Summary:

Based on preliminary discussion, BND did not appear to be interested in aggressively pursuing this option at the above indicative pricing levels. RIO intends to meet with BND representatives in June to continue this discussion further noting that pricing levels, including credit and liquidity spreads, change over time.

Concept Paper
Utilizing Legacy Funding to Finance North Dakota Infrastructure

Purpose: To create a program that utilizes a portion of the Fixed Income Allocation of the Legacy Fund to finance local political sub-division infrastructure in North Dakota.

Background
In 2010, North Dakota voters approved a measure creating the "Legacy Fund" utilizing 30% of the state's share of oil and gas tax revenues. The intent is to create an on-going source of revenue from the one-time extraction of natural resources. Today, the Legacy Fund is over Five Billion dollars with an average deposit of $34m per month in 2017. The investment goal of the Legacy Fund is principal preservation while maximizing total return.

Determining the investment strategy for the Legacy Fund is a two-step process. The first step is for the Legacy and Budget Stabilization Fund Advisory Board to develop recommendations for presentation to the State Investment Board. The second step in the process is for the State Investment Board to receive and act on the recommendations.

In addition to the Legacy Fund, the SIB also guides investments for other state funds. Examples include: the state bonding fund; teachers' fund for retirement, state fire and tornado fund; WSI, Public Employee Retirement System, Insurance Regulatory Trust Fund, etc.

The Infrastructure Challenge
Communities across North Dakota need financing for infrastructure development and re-development. The size and scope of infrastructure financing need varies greatly depending on the size of the community and type of project. Redeveloping a road in a smaller community might only cost a million or two. Larger scale projects in the biggest communities easily run into the hundreds of millions of dollars.

Examples of projects that could be financed include:

- Road and Street Projects including curb and gutter
- Water and Waste Water Treatment Plants
- Extension of new Sewer and Water lines that do not qualify for SRF financing
- Essential regional water supply for municipal, rural and industrial purposes
- Permanent community flood protection across the state
- Intra-state natural gas pipeline capacity to provide an industrial gas supply enhancing the competitive position of a community and value-added economic development
- Real estate development that meets critical local demand for affordable housing
- Alternative transportation systems to serve evolving state and community needs

Proposal

The concept of this white paper is to utilize a portion of the North Dakota Legacy Fund to finance investment in North Dakota Infrastructure. Creating a program to provide financing for infrastructure development can benefit the state in multiple ways.

1. A program can be structured to provide a return on investment to the corpus of the Legacy Fund.
2. Instead of state funds leaving North Dakota to be invested in large-scale infrastructure funds, it keeps the money in state with the added benefit of building local communities.
3. Funding will allow local political subdivisions to build or rehabilitate infrastructure in their community in a cost-effective way, lowering the cost to North Dakota taxpayers.

Program Administration

The Bank of North Dakota will develop and administer the infrastructure loan program. Some key concepts related to this proposal.

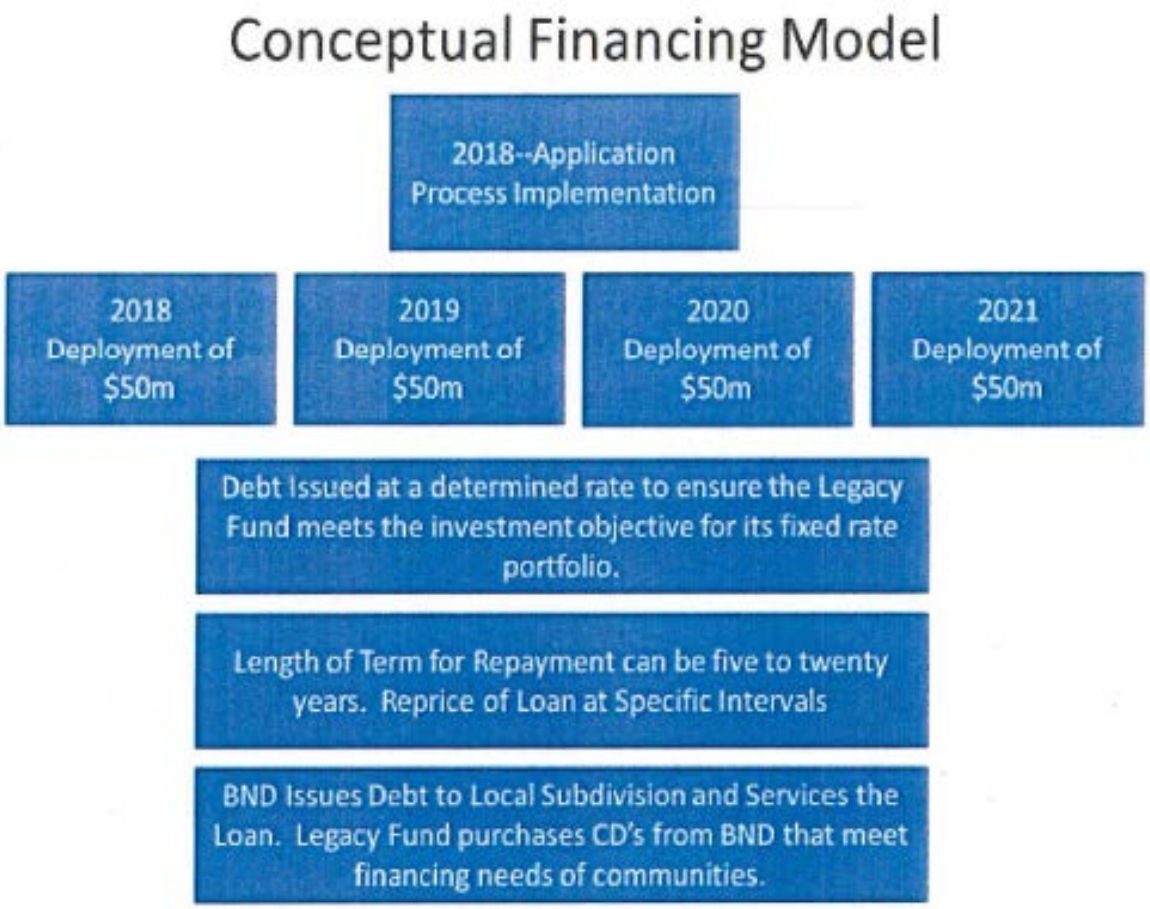
1. This is a loan program administered by BND. Loans will meet underwriting guidelines with a source of repayment and securitization of the note by a political subdivision.

2. As this is an investment of the Legacy Fund administered by BND, interest rates will be market rates.

3. As opposed to utilizing the earnings of the Legacy Fund, this proposal suggests the program be considered part of the investments or debt instruments of the fund. It is a part of the corpus, contributing to the earnings of the Fund.

Program Structure

The Infrastructure Loan Program will mirror the structure of the existing BND Match Program. In this structure, the Retirement and Investment Office will purchase a Certificate of Deposit (CD) from the Bank of North Dakota with a specified rate return structure. BND will then utilize the investment to provide loans for infrastructure development to political subdivisions in North Dakota.



BND Match Program

Eligibility

Businesses that create new wealth for North Dakota and provide new jobs outside of the retail sector, especially in manufacturing, processing and value-added industries, are primary candidates. These companies shall provide evidence of considerable financial strength as demonstrated by a long-term investment grade rating. If a company does not have an adequate rating, it has three options to meet this requirement:

- Credit enhancement by a financial institution. The bank or credit union can provide a letter of credit acceptable to BND or pledge Fed Book entry securities.
- Guarantee from a federal guaranty agency or another company with an investment grade rating
- Pledge a certificate of deposit or marketable securities of a quality and level satisfactory to BND

This enhancement must provide 100 percent of BND's portion of the loan.

Interest rate: Interest rate on BND's portion of the loan is 0.25% over the 1- to 5- year US Treasury Yield Rate with a 2% floor. The interest rate may be adjusted periodically throughout the term of the loan depending upon the conditions of the MATCH funding and the ability of the borrower to maintain its long-term credit rating. The interest rate may reset at 1- to 5-year re-pricing windows consistent with the loan pricing options and may be subject to a prepayment penalty satisfactory to BND.

The borrower must provide evidence each year that the company's long term rating has remained at the investment grade level. Should the rating fall below investment grade, the interest rate on the note will be adjusted to reflect the market rate for the subsequent rating.

BND Match Loan CD Program History and Background:

BND has a strong desire to maintain the CD Program which provides low cost financing to companies seeking to develop new businesses in North Dakota. RIO notes this economic development program has been in place for nearly 30 years although the funding source has migrated among various funds overseen by the SIB. Given the nature and size of the Legacy Fund, RIO most recently suggested the Legacy Fund as an alternative funding source to the Budget Stabilization Fund (which was reduced to support the General Fund). RIO notes "the retirement funds belonging to TFFR and PERS must be invested exclusively for the benefit of their members". Given these "exclusive benefit" provisions, RIO does not intend to explore funding alternatives within the Pension Trust.

Budget Stabilization Fund Performance Review – March 31, 2017:

The BND Match Loan CD Program was the best performing investment within the BSF over the last five years generating a 2.88% return while the Short Term Fixed Income portfolio posted a 1.61% return during this same period. BND's strong performance is due to most of the CD rates being set at a fixed rate during a period of higher rates. As a result, the BND CD Program locked in rates several years ago when they were above current market rates available today. (BND CD's were fully transferred into the Legacy Fund by January 31, 2017.)

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	19%	19%	2.88%	0.87%	0.43%	0.00%	0.43%
Short Term Fixed Income	79%	79%	1.61%	0.65%	0.75%	0.00%	0.75%
Cash & Equivalents	2%	2%	0.15%	0.14%	0.00%	0.00%	0.00%
Total			**1.86%**	**= 0.68%**	**+ 1.18%**	**+ 0.01%**	**1.19%**

During the past year, the BND CD Program has continued to outperform other Short-Term Fixed Income investments although the level of the outperformance has declined as older CD's bearing higher interest rates have been replaced with CD's bearing lower interest rates given the current rate environment.

One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
BND CDs	15%	15%	2.21%	2.21%	0.00%	0.02%	0.02%
Short Term Fixed Income	82%	82%	1.43%	0.25%	0.97%	0.01%	0.97%
Cash & Equivalents	3%	3%	0.31%	0.36%	(0.00%)	0.00%	0.00%
Total			**1.63%**	**= 0.64%**	**+ 0.97%**	**+ 0.02%**	**0.99%**

The current interest rate environment poses a substantial risk to the future BND CD Program particularly in the event interest rates were to rise sharply in the near future. RIO notes the BND CD's are backed by the full faith and credit of the State of North Dakota.

Legacy Fund Fixed Income Returns – December 31, 2017:

The Legacy Fund fully implemented a revised target asset allocation policy of 50% Equity, 35% Fixed Income, 10% Diversified Real Assets and 5% Real Estate in early-2015. BND CD's were transferred into the Legacy Fund (from the Budget Stabilization Fund) during the fourth quarter of 2016. **BND CD's generated a 2.71% net investment return for the Legacy Fund in 2017 which was approximately 0.83% below the Bloomberg Aggregate Index while being rated AA.**

Returns for Periods Ended December 31, 2017

	Last Quarter	Last Year	Last 3 Years
Domestic Fixed Income			
Gross	0.97%	6.68%	4.34%
Net	0.95%	6.54%	4.21%
Blmbg Aggregate Index	0.39%	3.54%	2.24%
Ares ND Credit Strategies Fd - Net	0.09%	-	-
Cerberus ND Private Credit Fd - Net	4.17%	-	-
S&P/LSTA Leveraged Loan B	1.09%	4.27%	4.64%
BND CDs - Net	0.66%	2.71%	-
Declaration Total Return - Net	0.82%	5.67%	3.93%
Libor-3 Month	0.36%	1.26%	0.77%
Prudential - Gross	1.10%	7.24%	4.62%
Prudential - Net	1.03%	6.97%	4.35%
Blmbg Aggregate Index	0.39%	3.54%	2.24%
Wells Capital - Gross	1.30%	8.51%	5.02%
Wells Capital - Net	1.26%	8.29%	4.84%
Blmbg Baa Credit 3% In	1.22%	7.45%	4.09%
Western Asset - Gross	0.79%	5.66%	3.89%
Western Asset - Net	0.76%	5.53%	3.75%
Blmbg Aggregate Index	0.39%	3.54%	2.24%
SSgA US Govt Credit Bd Idx - Gross	0.49%	4.01%	2.39%
SSgA US Govt Credit Bd Idx - Net	0.48%	3.97%	2.35%
Blmbg Govt/Credit Bd	0.49%	4.00%	2.38%
Pooled Fixed Income - Net(1)	1.26%	13.44%	-
Blmbg Aggregate Index	0.39%	3.54%	2.24%

NDSIB Governance Policy: Bank of North Dakota Match Loan Program (E-12)

The SIB has a commitment to the Bank of North Dakota Match Loan Program. The purpose of the program is to encourage and attract financially strong companies to North Dakota. The program is targeted to manufacturing, processing and value-added industries.

The SIB provides capital to the program by purchasing Certificates of Deposit (CD's) from the Bank of North Dakota. The CD's are guaranteed by the state, typically have seven to fifteen year maturities and pay interest pegged to US Treasury notes.

The source of funding for CD's shall be determined by the Investment Director; that funding to be from the most appropriate source consistent with liquidity and relative yield and return objectives and constraints.

NDCC 21-10-11. Legacy and budget stabilization fund advisory board.

The legacy and budget stabilization fund advisory board is created to develop recommendations for the investment of funds in the legacy fund and the budget stabilization fund to present to the state investment board. The goal of investment for the legacy fund is principal preservation while maximizing total return. The board consists of two members of the Senate appointed by the Senate Majority Leader, two members of the House of Representatives appointed by the House Majority Leader, the Director of the Office of Management and Budget or designee, the President of the Bank of North Dakota or designee, and the Tax Commissioner or designee. The board shall select a chairman and must meet at the call of the chairman. The board shall report at least semiannually to the budget section. Legislative members are entitled to receive compensation and expense reimbursement as provided under section 54-03-20 and reimbursement for mileage as provided by law for state officers. The legislative council shall pay the compensation and expense reimbursement for the legislative members. The legislative council shall provide staff services to the legacy and budget stabilization fund advisory board. The staff and consultants of the state retirement and investment office shall advise the board in developing asset allocation and investment policies.

NDCC 21-10-02. Board - Powers and duties.

The board is charged with the investment of the funds enumerated in section 21-10-06. It shall approve general types of securities for investment by these funds and set policies and procedures regulating securities transactions on behalf of the various funds. Representatives of the funds enumerated in section 21-10-06 may make recommendations to the board in regard to investments. The board or its designated agents must be custodian of securities purchased on behalf of funds under the management of the board. The board may appoint an investment director or advisory service, or both, who must be experienced in, and hold considerable knowledge of, the field of investments. The investment director or advisory service shall serve at the pleasure of the board. The investment director or advisory service may be an individual, corporation, limited liability company, partnership, or any legal entity which meets the qualifications established herein. The board may authorize the investment director to lend securities held by the funds. These securities must be collateralized as directed by the board. The board may create investment fund pools in which the funds identified in section 21-10-06 may invest.

NDCC 21-10-02.1. Board - Policies on investment goals and objectives and asset allocation.

1. The governing body of each fund enumerated in section 21-10-06 shall establish policies on investment goals and objectives and asset allocation for each respective fund. The policies must provide for:
   a. The definition and assignment of duties and responsibilities to advisory services and persons employed by the board.
   b. Rate of return objectives, including liquidity requirements and acceptable levels of risk.
   c. Long-range asset allocation goals.
   d. Guidelines for the selection and redemption of investments.
   e. Investment diversification, investment quality, qualification of advisory services, and amounts to be invested by advisory services.
   f. The type of reports and procedures to be used in evaluating performance.

2. The asset allocation and any subsequent allocation changes for each fund must be approved by the governing body of that fund and the state investment board. The governing body of each fund shall use the staff and consultants of the retirement and investment office in developing asset allocation and investment policies.

Agenda Item III.E.

Board Action

TO: **State Investment Board**
FROM: **RIO Investment Staff**
DATE: **May 18, 2018**
SUBJECT: **Infrastructure Update – Benchmark Recommendation**

Background:

On October 27, 2017, the SIB approved RIO's recommendation to conduct an infrastructure consultant search to assist staff in identifying at least one new manager to complement existing infrastructure mandates with JPMorgan and Grosvenor. RIO noted the proposed timing of this search was favorable given the upcoming Legacy Fund asset allocation policy review.

On November 17, 2017, the SIB approved RIO's recommendation to engage Mercer to assist staff in conducting a search to identify one or two infrastructure managers which would provide complementary exposures to our existing global real asset portfolios.

On March 23, 2017, the SIB approved the recommendation of RIO and Mercer to invest up to $140 million with I-Squared Capital's Global Infrastructure Fund II (including up to $65 million for the Pension Trust and up to $75 million for the Legacy Fund).

On May 11, 2018, RIO completed legal review and business negotiations to close on a $140 million commitment for ISQ Global Infrastructure Fund II. Outstanding legal guidance was provided by our AG Office in closing this important transaction in a timely and diligent manner.

Infrastructure Benchmark Review:

Based on recent infrastructure investment due diligence, RIO requested Callan to review our current benchmark and consider recommending a new benchmark which would better evaluate the contribution of the infrastructure investment within those SIB funds that utilize this asset class. RIO notes that we have historically utilized CPI-W to benchmark our infrastructure investments (including JPMorgan and Grosvenor).

Please see the attached Infrastructure Benchmark Analysis produced by Callan for further background. RIO notes a custom built index is necessary because there is not a passive investible index and there is no robust private peer index available.

Recommendation:

Following Callan's presentation, RIO requests the SIB approve to Callan's recommendation to adopt a new custom benchmark for infrastructure on a prospective basis starting on July 1, 2018.

April 11, 2018

North Dakota
State Investment Board

Infrastructure Benchmark Analysis

Paul Erlendson
Senior Vice President

Alex Browning
Senior Vice President

Adam Lozinski, CFA
Assistant Vice President

Introduction

Objective:

- Select a benchmark (a representative performance proxy) to evaluate the investment contribution of the infrastructure asset class within those NDSIB Funds that utilize the asset class.
- A custom built index is necessary because there is not a passive investible index and there is not a robust private peer index available.

Analysis Inputs:

- To model the NDSIB Infrastructure Composite, Callan equal-weighted the four current managers: Grosvenor Custom Infra, Grosvenor Custom Infra II, JP Morgan Infra, and JP Morgan Asian Infra.
  - The data goes back to July 2007. However not all managers have data histories extending back to 7/2007.
  - As a consequence of the non-contemporaneous benchmark histories, our analysis equal weighted those managers with available data in each sub-period across the entire timeframe of the analysis.
- Alternative benchmarks and corresponding economic rationale:
  - **NCREIF ODCE**: Should exhibit income and equity replacement values similar to infrastructure
  - **NCREIF Total**: Should exhibit income and equity replacement values similar to infrastructure
  - **FTSE Global 50/50**: Public equity infrastructure benchmark should have similar assets
  - **CPI-U**: Inflation adjustments are frequently part of the long-term lease contracting
  - **Bloomberg Long Credit**: Long duration of infrastructure cash-flows should exhibit interest rate sensitivity
  - **Bloomberg Long Gov/Credit**: Long duration of infrastructure cash-flows should exhibit interest rate sensitivity
- Additionally, multiple time lags were applied to each benchmark to test various measures of fit.

Approaches

Returns, Risk, and Statistics:

- The NDSIB Infrastructure Composite proxy was compared to the various index returns using the following measures:
  - Returns and Standard Deviation
  - Correlation of quarterly returns, rolling 3-year returns, and incorporated time lags
  - Return/Risk ratios
- In pursuit of the best fit custom benchmark we used various techniques including:
  - Correlation analysis
  - Regression
  - Returns-based style analysis
  - Optimization
- Given the risk of over-engineering a model to fit historical data, these analyses were used as a guide, not as a definitive answer.
- Looking at the potential custom benchmarks through various analytical lenses we were able to identify the indices that were routinely "chosen" by the models.
- It is important to note that return-based analyses do not directly replicate the unique factors influencing infrastructure asset class returns or specific manager strategies.

Conclusion

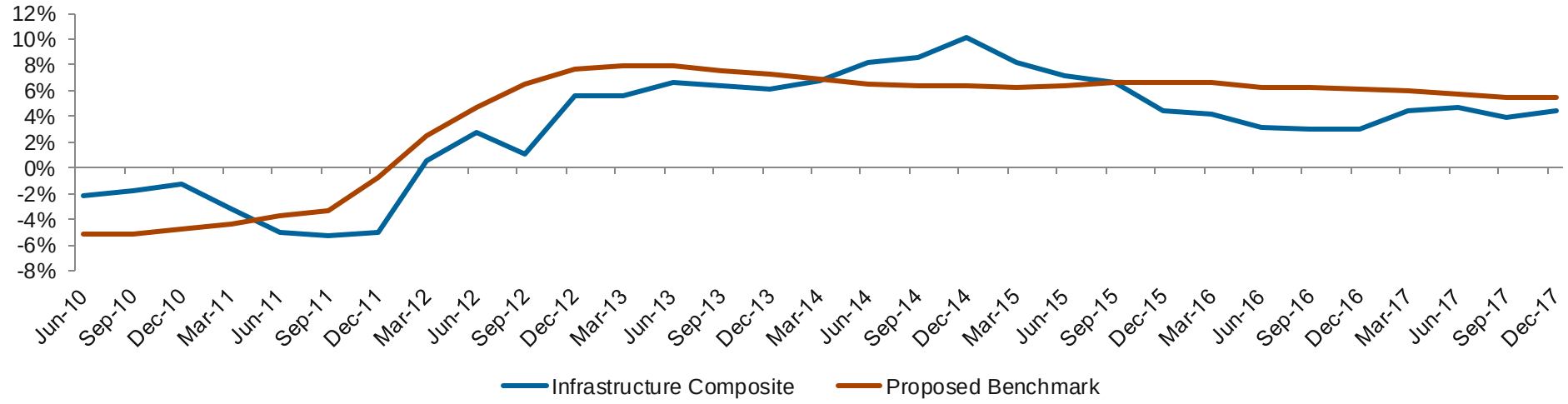
- Given the results of our analysis, we recommend considering the following custom benchmark:

50% NCREIF ODCE and 50% CPI-U Lagged 1 Quarter.

- The NCREIF ODCE represents a proxy for private income-oriented real assets; the lagged CPI-U accounts for the repricing of infrastructure leases and contracts based on observed inflation.

	Portfolio Statistics for Periods 7/2007 to 12/2017				
	Annualized Returns (%)	Standard Deviation (%)	Return/Risk Ratio	Correlation of Quarterly Returns	Correlation of Rolling 3-Year Returns
Infrastructure Composite	3.51	7.42	0.47	0.52	0.86
Proposed Benchmark	3.12	4.64	0.67		

Rolling 3-Year Returns



AGENDA ITEM III.F.

BOARD ACTION

TO: State Investment Board
FROM: Dave Hunter & Darren Schulz
DATE: May 18, 2018
SUBJECT: **Investment Policy Statement – Workforce Safety & Insurance (WSI)**

RIO requests the SIB accept investment policy statement (IPS) changes recently approved by Governor Doug Burgum following the recommendation of the WSI Board of Directors.

WSI engaged Callan to conduct a comprehensive Asset Allocation Study during the first calendar quarter of 2018. Callan presented the results of this Study to the WSI Board on April 25, 2018, in a meeting attended by Paul Erlendson and Karen Harris of Callan in addition to RIO representatives Dave Hunter and Darren Schulz.

The WSI Board unanimously approved Callan's recommended asset allocation changes on April 25, 2018. RIO ED/CIO Dave Hunter and Deputy CIO Darren Schulz concurred with Callan's recommendation to support the WSI's desire to adopt a more conservative risk profile. RIO notes the revised investment policy statement incorporating the recommended asset allocation changes was signed by Governor Doug Burgum on May 2, 2018, and then signed by WSI Director Bryan Klipfel on May 4, 2018.

Asset Allocation Changes:

The recommended asset allocation changes are relatively small including a 1% reduction in U.S. Large Cap, U.S. Small Cap and International Equity (for a total 3% reduction in Global Equity) in addition to a 3% reduction in Diversified Real Assets and 1% reduction in Real Estate. This aggregate 7% reduction in Equity and Real Assets is offset by a 7% increase in Fixed Income, as shown below:

Asset Allocation Change

	Current %	New %
Global Equity:	**25.00**	**22.00**
- U.S. Larg Cap	12.00	11.00
- U.S. Small Cap	4.00	3.00
- International	9.00	8.00
Domestic Fixed Income	**53.00**	**60.00**
Global Real Asset	**21.00**	**17.00**
- TIPS	*5.00*	*9.00*
- Infrastructure/ Timber	*10.00*	*3.00*
- Real Estate	*6.00*	*5.00*
Cash Equivalents	**1.00**	**1.00**
	100.00	**100.00**

Callan's Alternative Asset Mix Comparison:

Asset Class	WSI Target	Actual 12/31/17	Mix 1	Mix 2	Mix 3	Mix 4
Cash	1%	1%	1%	1%	1%	1%
Domestic Fixed Income	53%	53%	70%	60%	49%	40%
Diversified Real Assets (DRA)	15%	14%	12%	12%	13%	12%
DRA includes TIPS	*5%*	*6%*	*10%*	*9%*	*8%*	*7%*
Infrastructure	*5%*	*5%*	*2%*	*3%*	*5%*	*5%*
Timber	*5%*	*3%*	*0%*	*0%*	*0%*	*0%*
Real Estate	6%	7%	4%	5%	6%	7%
Large Cap Equity	12%	12%	6%	11%	15%	19%
Small Cap Equity	4%	4%	2%	3%	5%	6%
International Equity	9%	9%	5%	8%	11%	15%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Fixed Income	59%	60%	81%	70%	58%	48%
10 Yr Expected Return	4.93%	4.92%	4.00%	4.52%	5.00%	5.45%
Standard Deviation	7.00%	6.95%	4.20%	5.57%	7.25%	9.07%
Projected Sharpe Ratio	0.403	0.404	0.421	0.420	0.401	0.384

The WSI Advisory Board, Callan and RIO selected Mix 2 in the above matrix in order to reduce downside risk noting that standard deviation declines from 7.00% under the current WSI Target (in column 1) to 5.57% under Mix 2 (in column 4). There is also a corresponding decline in the 10-Year Expected Return of 4.93% under the current WSI Target (in column 1) to 4.52% in Mix 2 (in column 4). RIO notes that SIB client investment managers have been successful in generating over 100 basis points (1.00%) of excess return (over passive benchmark indices upon which the above expected returns are based) for the 1, 3, 5, and 7 year periods ended March 31, 2018.

Please see the attached presentation for additional details.

WORKFORCE SAFETY & INSURANCE

INVESTMENT POLICY STATEMENT

1. PLAN CHARACTERISTICS AND FUND CONSTRAINTS.

North Dakota Workforce Safety & Insurance (WSI) is an exclusive state workers' compensation fund (Fund), which exists for the mutual benefit of North Dakota employers and employees. The assets of the Fund are utilized to pay benefits to injured workers or their survivors.

Section 65-04-01 of the North Dakota Century Code requires WSI to establish premium rates for funding sufficiently high to provide for:

1. The payment of the expenses of administration of the organization,
2. The payment of compensation according to the provisions and schedules contained in this title, and
3. The maintenance by the Fund of adequate reserves and surplus to the end that it may be kept at all times in an entirely solvent condition.

2. RESPONSIBILITIES AND DISCRETION OF THE STATE INVESTMENT BOARD (SIB).

The governing body of WSI is charged by law under NDCC 21-10-02.1 with the responsibility of establishing policies on investment goals and asset allocation of the Fund. WSI fulfills this responsibility through its Board of Directors, under the oversight and approval of the Governor. The SIB is charged with implementing these policies and asset allocation and investing the assets of the Fund in a manner consistent with the prudent investor rule as provided in NDCC 21-10-07. The Fund must be invested exclusively for the benefit of the members and their beneficiaries in accordance with this investment policy.

At the discretion of the SIB, the Fund's assets may be pooled with other funds. In pooling funds, the SIB may establish whatever asset class pools it deems necessary with specific quality, diversification, restrictions, and performance objectives appropriate to the prudent investor rule and the objectives of the funds participating in the pools.

The SIB may delegate investment responsibility to professional money managers. Where a money manager has been retained, the SIB's role in determining investment strategy and security selection is supervisory not advisory.

The SIB is responsible for establishing criteria, procedures, and making decisions with respect to hiring, keeping, and terminating money managers. SIB investment responsibility also includes selecting performance measurement services, consultants, report formats, and frequency of meetings with managers.

The SIB will implement changes to this policy as promptly as is prudent.

3. INVESTMENT OBJECTIVES.

The investment goal of WSI is to supplement premiums, through various investments, to accomplish its statutory obligations.

The following investment objectives are established as of the date adopted and are in keeping with the fiduciary requirements as set forth in federal and state law and as expected by the members. WSI expects to receive results from the SIB that are consistent with the policies included herein. These objectives and guidelines will provide a basis for evaluating the effectiveness of the investment program over time. It is clearly understood these objectives and standards are to be viewed over the long term and have been established after full consideration of all factors set out in the Statement of Investment Policy.

The operating and liquidity needs of WSI are generally to be met by the cash equivalents allocation.

Funds in excess of those required for operating and liquidity needs will be invested in domestic equity, international equity, real estate and fixed income securities. The objective of these assets is to obtain the maximum total return on investments consistent with safety of principal on funds in excess of those required for operating and liquidity needs.

4. STANDARDS OF INVESTMENT PERFORMANCE.

The Fund's investment objectives and characteristics give rise to an asset allocation that is considered to have greater than a 50% probability of achieving the results desired. For evaluation purposes, the following performance targets will apply:

a. The rate of return, net of fees and expenses, should at least match that of the policy portfolio, over a minimum evaluation period of five years.

b. Risk, as measured by the annual standard deviation of net returns for the Fund, should not exceed that of the policy portfolio by more than 100 basis points over a minimum evaluation period of five years.

c. Risk adjusted excess returns of the Fund, net of fees and expenses, should match or exceed the policy benchmark over a minimum evaluation period of five years.

5. POLICY AND GUIDELINES

The asset allocation policy developed herein is based on an evaluation of WSI's ability and willingness to assume investment risk in light of WSI's financial goals and objectives. In recognition of these goals and objectives, coupled with a liability-sensitive asset allocation study conducted by Callan Associates in April of 2018, the following asset allocation is deemed appropriate for WSI. The portfolio mix shall be in accordance with the following asset allocation and periodically reviewed by WSI.

Global Equity		**22%**
- U.S. Large Cap	11%	
- U.S. Small Cap	3%	
- International	8%	
Domestic Fixed Income		**60%**
Global Real Assets		**17%**
- Diversified		
o TIPS	9%	
o Infrastructure/Timber	3%	
- Real Estate	5%	
Cash Equivalents		**1%**

Rebalancing of the Fund to this target will be done in accordance with the SIB's rebalancing policy, but not less than annually.

While the SIB is responsible for establishing specific quality, diversification, restrictions, and performance objectives for the investment vehicles in which the Fund's assets will be invested, it is understood that:

a. Futures and options may be used to hedge or replicate underlying index exposure, but not for speculation.

b. Derivatives use will be monitored to ensure that undue risks are not taken by the money managers.

c. No transaction shall be made which threatens the tax exempt status of the Fund.

d. All assets will be held in custody by the SIB's master custodian or such other custodians as are acceptable to the SIB.

e. No unhedged short sales or speculative margin purchases shall be made.

f. Social investing is prohibited unless it meets the Exclusive Benefit Rule and it can be substantiated that the investment must provide an equivalent or superior rate of return for a similar investment with a similar time horizon and similar risk.

   For the purpose of this document, Social Investing is defined as *"The investment or commitment of public pension fund money for the purpose of obtaining an effect other than a maximized return to the intended beneficiaries."*

g. Economically targeted investing is prohibited unless the investment meets the Exclusive Benefit Rule.

   For the purpose of this document economically targeted investment is defined as an investment designed to produce a competitive rate of return commensurate with risk

involved, as well as to create collateral economic benefits for a targeted geographic area, group of people, or sector of the economy.

Also, for the purpose of this document, the Exclusive Benefit Rule is met if the following four conditions are satisfied:

(1) The cost does not exceed the fair market value at the time of investment.
(2) The investment provides the Fund with an equivalent or superior rate of return for a similar investment with a similar time horizon and similar risk.
(3) Sufficient liquidity is maintained in the Fund to permit distributions in accordance with the terms of the plan.
(4) The safeguards and diversity that a prudent investor would adhere to are present.

Where investment characteristics, including yield, risk, and liquidity are equivalent, the Board's policy favors investments which will have a positive impact on the economy of North Dakota.

6. EVALUATION AND REVIEW.

Investment management of the Fund will be evaluated against the Fund's investment objectives and investment performance standards. Evaluation will be conducted quarterly by the SIB through its review of funds participating in the Insurance Trust.

Money managers will be evaluated by the SIB quarterly. In-state meetings will be held with the money managers at least annually.

Approved by:

WORKFORCE SAFETY & INSURANCE

Bryan Klipfel

Bryan Klipfel
Director, WSI

Date: 5/4/2018

STATE INVESTMENT BOARD

_____

David Hunter
Executive Director/CIO, RIO

Date: _____

Recommended by WSI Board April 25, 2018
Approved by Governor May 2, 2018

State of
North Dakota
Office of the Governor

Doug Burgum
Governor

April 30, 2018

Bryan Klipfel, Director
North Dakota Workforce Safety & Insurance
1600 E. Century Ave., #1
Bismarck, ND 58503

Dear Bryan:

Thank you for providing the Asset Allocation Study prepared by Callen Associates, as well as the Resolution of the Workforce Safety & Insurance (WSI) Board of Directors on April 25, 2018, recommending a modification of WSI's investment policy statement and changes to the fund's asset allocation.

Pursuant to NDCC § 65-02-03.3(4), I hereby concur with the recommendations of the WSI Board and approve the revised investment policy and changes to the fund's asset allocation.

Sincerely,

Doug Burgum
Governor

Callan

April 25, 2018

North Dakota Workforce Safety & Insurance
WSI
Putting Safety to Work

2018 Asset Allocation Study

Paul Erlendson, SVP
Denver Consulting

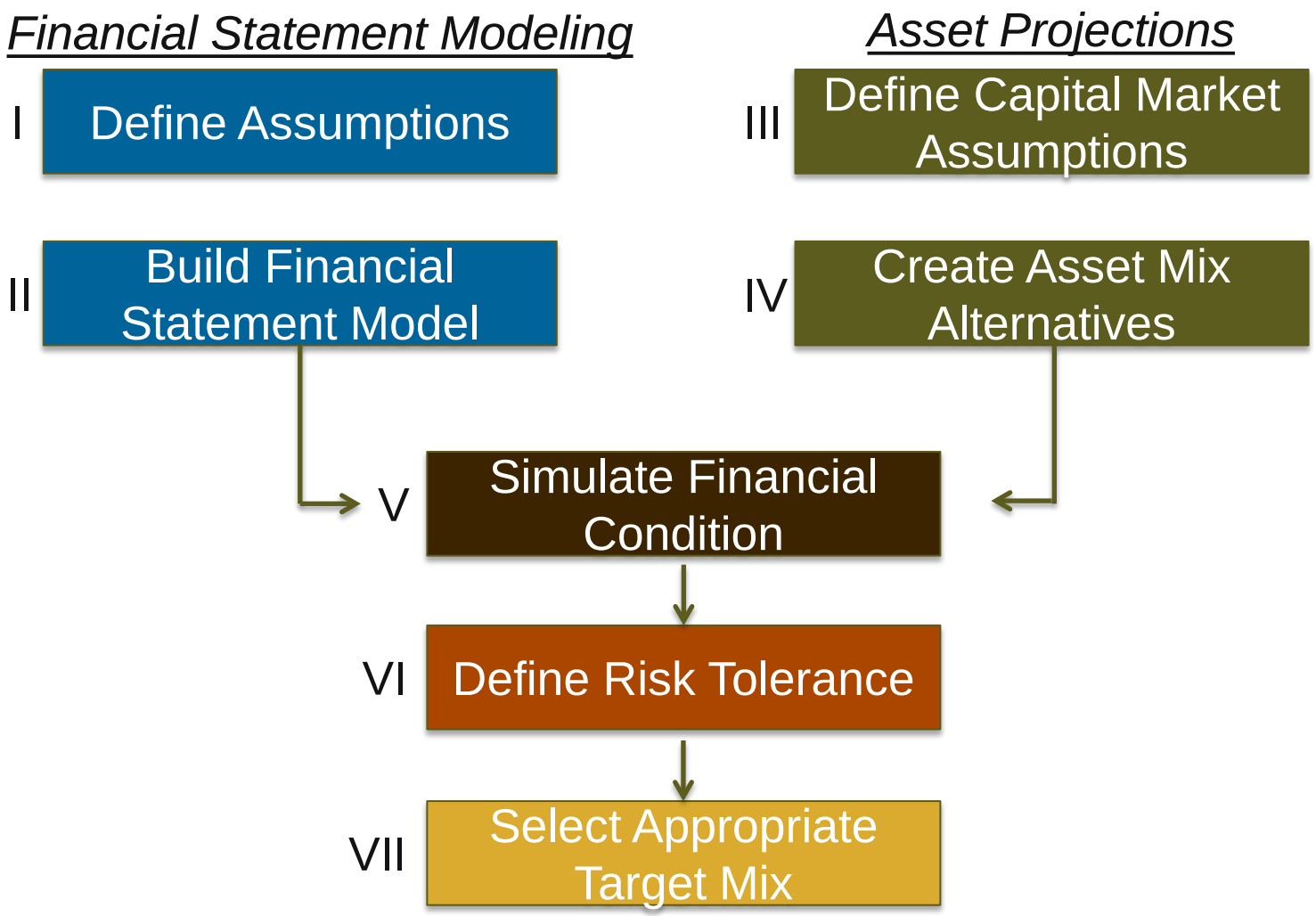
Karen Harris, ASA, CFA
Capital Markets Research Group

Overview of the Process

Financial Statement Modeling

- Build a financial statement model to examine asset allocation decisions:
  - Income statement, balance sheet, surplus position and cash flow statement
  - Reflect June 30, 2017 results, and then project 10 years forward.
- Use actuarial forecasts for premiums, expected losses & loss adjustment expense (LAE) and reserves provided by the Fund's actuaries
  - Baseline forecast that assumes coverage remains close to current levels
  - Incorporates assumption for future inflation (medical and indemnity).
- Model the impact of changing the asset allocation on three key variables:
  1. Investment income and the resulting market value of assets
  2. Surplus position (assets – liabilities)
  3. Dividend policy, which is dependent on the level of surplus (expressed as a % of the reserves).
- Deterministic Projection: one scenario using the expected return.
- Stochastic Projections: 2,000 capital market scenarios
  - Understanding how capital market risk leads to a range of outcomes and the likelihood of their occurrence
  - Examine risk and reward tradeoffs
  - Examine worse-case drawdown relative to the expected case.
- Incorporate the views from the Board members' risk tolerance survey.
- The final objective is to choose a strategic asset allocation policy to guide future investments

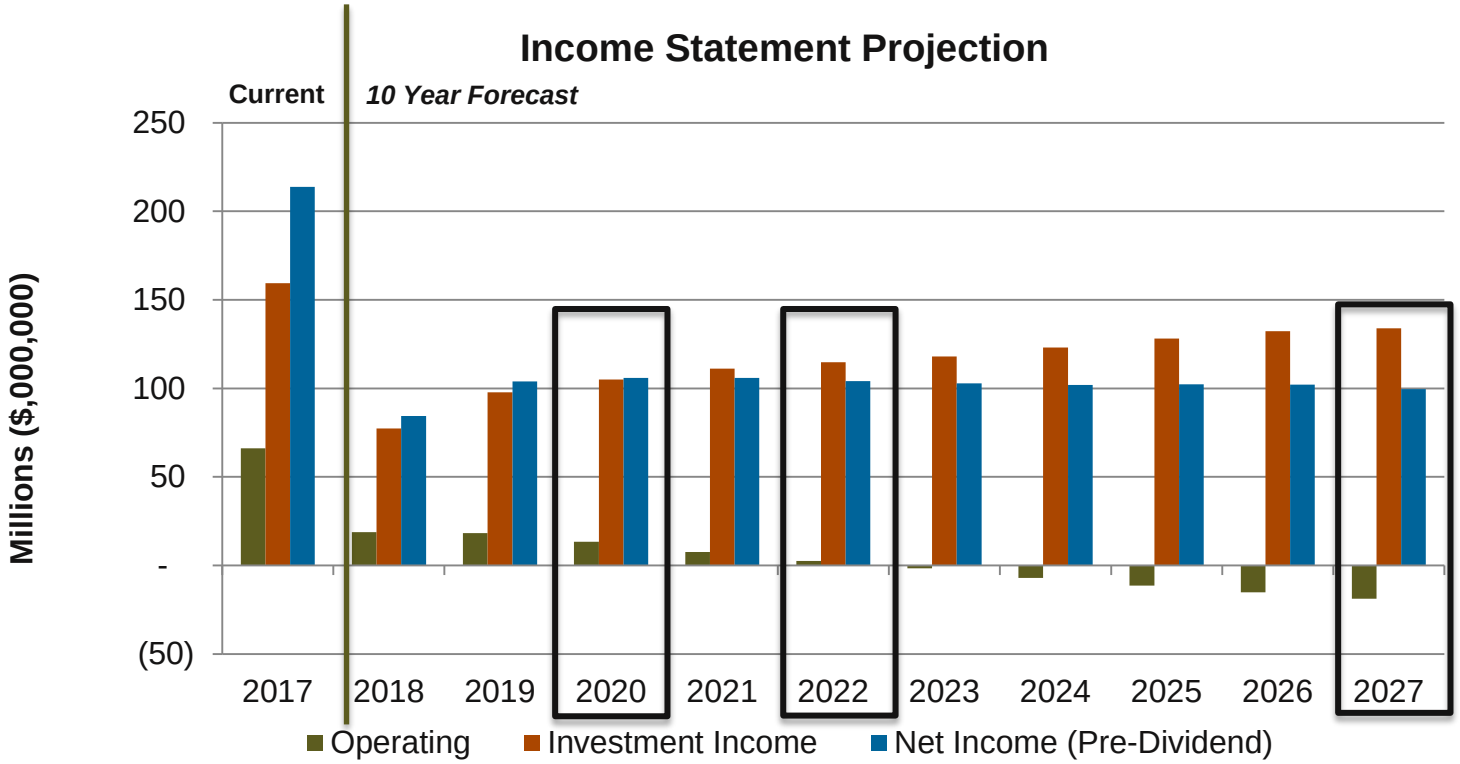
Overview of the Modeling Process



II. Build Financial Statement Model

Income Statement

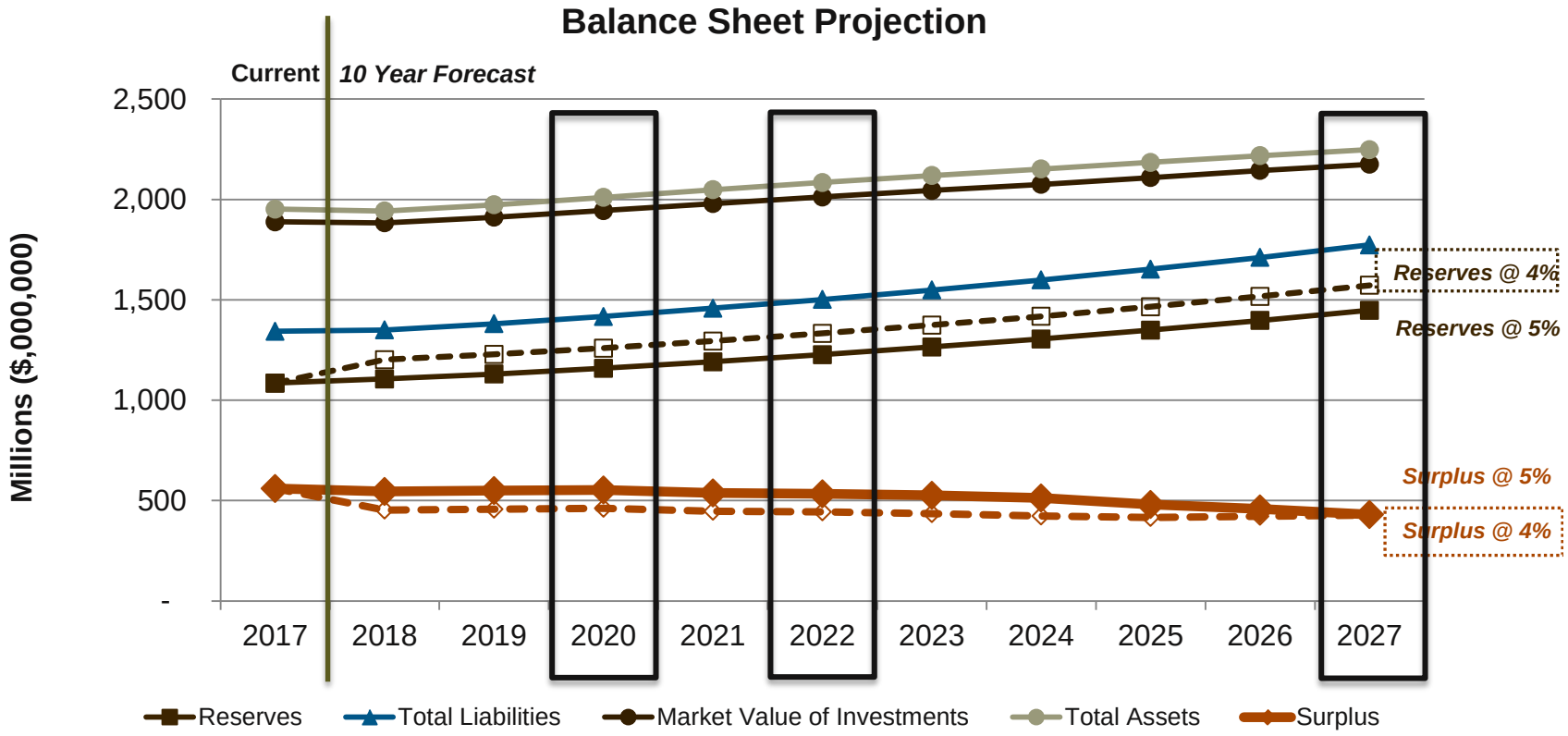
- We began with a ***deterministic projection***: a 'straight line' scenario in which capital market returns align with Callan's 2018 expectations.
- Capital market returns will impact the investment income reported on WSI's income statement
  - Return volatility (risk) is introduced via a stochastic forecast. The amount of return volatility depends on the amount of return-seeking assets in the mix.
- Focus on three time horizons: 3 years; 5 years; and 10 years.



II. Build Financial Statement Model

Balance Sheet

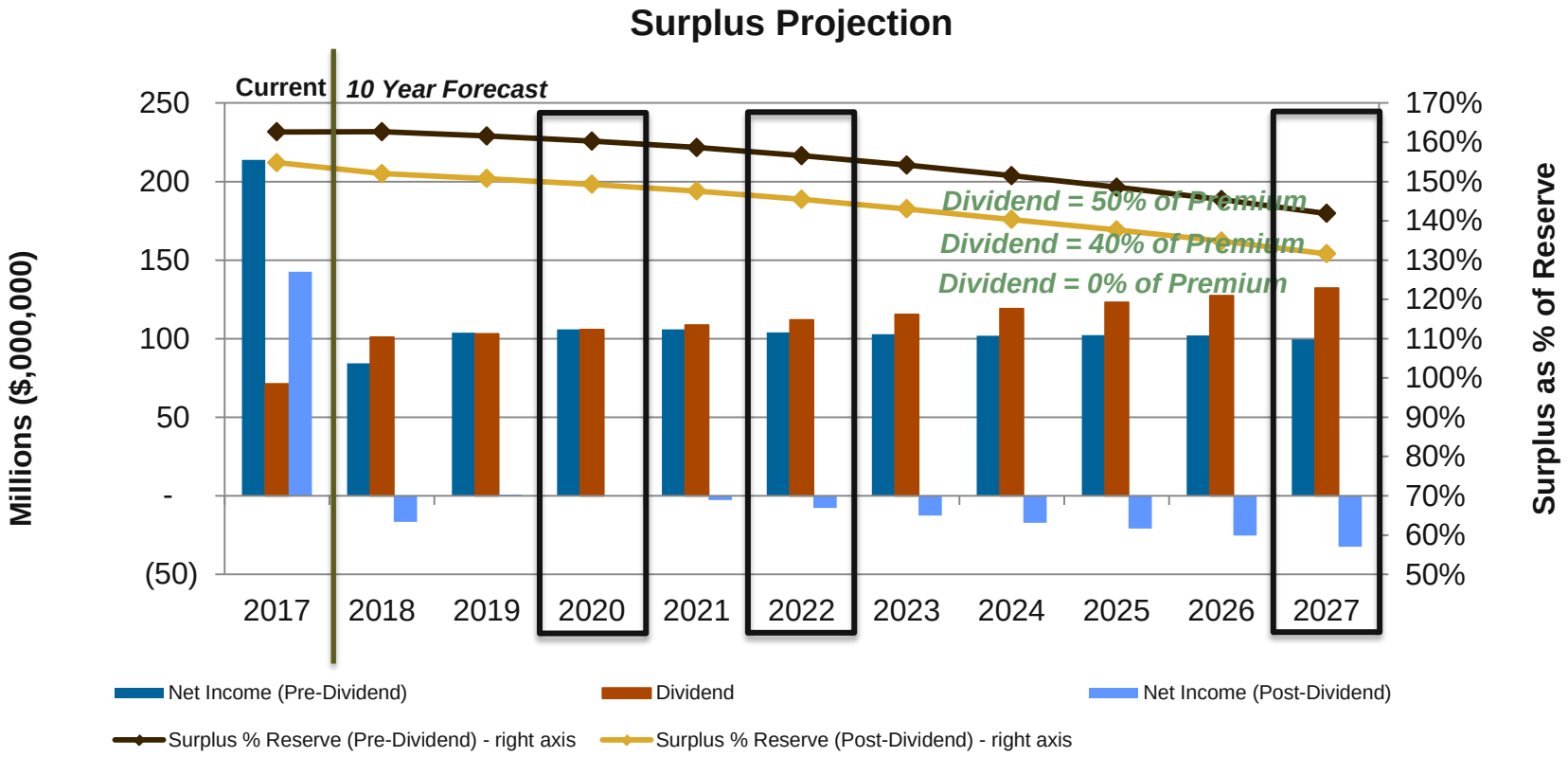
- Capital market returns impact the market value of investments reported on the balance sheet , and the resulting surplus position.
  - While invested assets are expected grow over time, the surplus position is expected to decline from dividends
- Financial forecast model can also be used to test the impact of lowering the actuarial discount rate.
  - Implication of lowering the discount rate is to increase the reserves shown on the balance sheet, thus lowering the surplus position of the Fund.



II. Build Financial Statement Model

Surplus Position and Dividend Policy

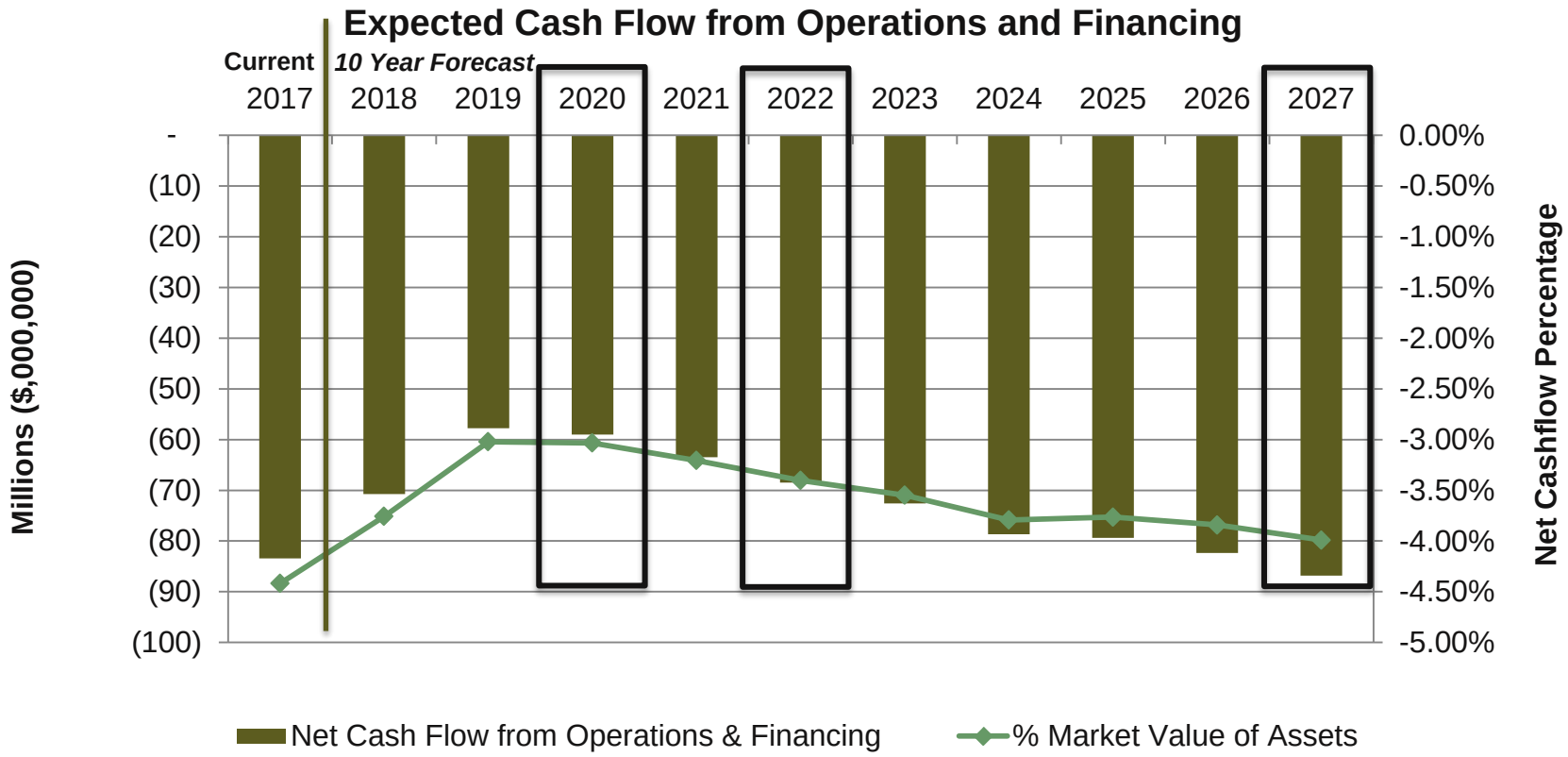
- Capital market returns impact the level of future dividends that may be provided by the system .
- Dividends are dependent on the surplus position of the Fund
  - If 120 to 130%, no dividend
  - If 130 to 140%, up to 40% of paid premiums
  - If >140%, up to 50% of paid premiums.



II. Build Financial Statement Model

Cash Flow Statement

- Cash flow projections impact the Fund's liquidity needs and the ability to commit to less liquid asset classes like private investments.
- The expectation is to draw from the assets each year to fund operations and financing needs.
- Liquidity demands are of manageable size and may permit investments in less liquid strategies.



II. Financial Statement Projection

General Observations

- Insurance perspective:
  - Written premiums drive cash received
  - Cash invested to generated investment income
  - Premiums and investment income pay claims when due
  - Therefore, premium rates are set acknowledging investment income and the time horizon to invest
    - *WSI's reserves have a long time horizon of ~10 year duration.*
  - WSI discounts reserves at 5%; assumed income earned between policy issuance and claim payment
  - The discount rate defines WSI targeted return
    - *What combination of IG fixed income, public equities and real assets gets to a 5% return target?*
  - How the discount rate changes each year defines duration sensitivity of the reserves
    - *WSI uses a "static"" discount rate that does not change with bond yields, hence a core Intermediate duration IG fixed income portfolio (~ 6 year duration) aligns with the discount rate methodology and the accounting basis (total return vs amortized cost)*
- In general, a traditional investing approach used by National Association of Insurance Commissioners (NAIC) regulated insurance companies is:
  - Assets supporting reserves invested in fixed income securities with an equivalent risk-duration
    - *At a 5% discount rate, WSI's reserves are currently 57% of invested assets (current bond allocation is 59%)*
  - Assets associated with surplus can have a view towards total return with managed volatility through diversification
    - *Surplus-at-risk with equity investments is currently 79%, meaning a large portion of the surplus is being used to generate extra return*
  - Investment decisions should not lead to excessive volatility in surplus or premiums
    - *First order of risk taking is the underwriting of insurance.*
    - *WSI's current surplus position is 155% of reserves, a portion of which could be used to reduce the return target to 4%.*

IV. Create Alternative Asset Mixes

Asset Class Selection

- Asset classes used in the WSI study are consistent with those currently being used by the North Dakota State Investment Board
- Relevant broad asset classes
  - Domestic Equity
  - International Equity
  - Domestic Core Fixed Income
  - Private Real Estate (core, income oriented investments)
  - Diversified Real Asset, including:
    - *Global TIP*
    - *Infrastructure*
  - Cash and Cash Equivalents
- Timber investments are in the process of winding down and will not be included in the Diversified Real Asset category.
- Net negative cash flow projections indicate that a small allocation to cash is warranted in any asset mixes to manage the return drag.

IV. Create Alternative Asset Mixes

Peer Comparisons

Asset Class	WSI Current	NYSIF	OBWC	NAIC P&C
Fixed Income	**59%**	**90%**	**57%**	**61%**
Nominal Bonds	53%	88%	55%	56%
Real Rate Bonds (TIPs)	5%	n/a	n/a	n/a
Cash	1%	2%	2%	5%
Real Estate	**6%**		**10%**	**1%**
Other	**10%**			**8%**
Equity	**25%**	**11%**	**33%**	**30%**
US Equity	16%	n/a	23%	
Non-US Equity	9%	n/a	10%	
Surplus % Reserves	155%	145%	157%	n/a
Discount Rate	5%	5%	4%	n/a
Reserves % Assets	57%	59%	63%	n/a
Surplus-at-Risk with Equity	80%	38%	91%	n/a

- The New York State Insurance Fund (NYSIF) and the National Association of Insurance Commissioners (NAIC) Property & Casualty (P&C) data reflects 2016 year-end results.
- NAIC P&C represents the average allocation in the private sector.
  - Property & Casualty (P&C) companies insure more than just worker's compensation
  - Personal lines like auto and home are short duration liabilities, which would argue for more bonds
  - Other includes real assets, private equity and hedge funds, mineral rights, aircraft leases, surplus notes, secured and unsecured loans to corporations and individuals, and housing tax credits.

IV. Create Alternative Asset Mixes

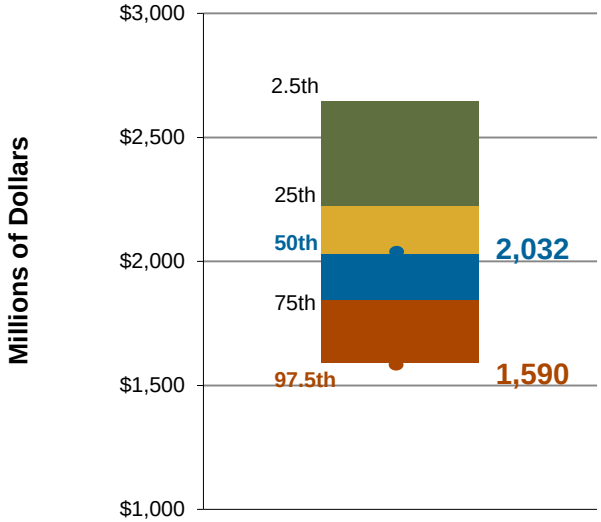
Portfolio Optimization

Asset Class	WSI Target	Actual 12/31/17	Mix 1	Mix 2	Mix 3	Mix 4
Cash	1%	1%	1%	1%	1%	1%
Domestic Fixed Income	53%	53%	70%	60%	49%	40%
Diversified Real Assets (DRA)	15%	14%	12%	12%	13%	12%
DRA includes TIPS	*5%*	*6%*	*10%*	*9%*	*8%*	*7%*
Infrastructure	*5%*	*5%*	*2%*	*3%*	*5%*	*5%*
Timber	*5%*	*3%*	*0%*	*0%*	*0%*	*0%*
Real Estate	6%	7%	4%	5%	6%	7%
Large Cap Equity	12%	12%	6%	11%	15%	19%
Small Cap Equity	4%	4%	2%	3%	5%	6%
International Equity	9%	9%	5%	8%	11%	15%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Fixed Income	59%	60%	81%	70%	58%	48%
10 Yr Expected Return	4.93%	4.92%	4.00%	4.52%	5.00%	5.45%
Standard Deviation	7.00%	6.95%	4.20%	5.57%	7.25%	9.07%
Projected Sharpe Ratio	0.403	0.404	0.421	0.420	0.401	0.384

- Mixes 1 through 4 are “optimized” portfolios lying on an efficient frontier. That is, for a given level of expected return, the asset allocation minimizes the standard deviation of return (or portfolio risk). The Sharpe Ratio is a measure of the expected return (over cash) per unit of risk. Higher Sharpe Ratios are better than lower ones.
- Mix 1 significantly reduces risk relative to WSI’s actual or target, and aligns with a lower discount rate target of 4%.
- Mix 3 targets a discount rate of 5%. Relative to WSI’s current Target Mix, Mix 3 contains 4% less in fixed income (49% in Mix 3 versus 53% in the current Target). Mix 3 also reduces Diversified Real Assets (from 15% to 13%). Allocations to the equity categories in Mix 3 increase by an offsetting amount.
- Mix 4 increases return and risk relative to the Fund’s current Target Mix.

V. Simulate Financial Condition

Market Value of Assets Year 5 (2022)



Percentile	Mix 3
2.5th	$2,646
25th	2,225
50th	**2,032**
75th	1,846
97.5th	**1,590**
Downside	442

The market value of assets as of June 30, 2017 was $1,888 (Millions)

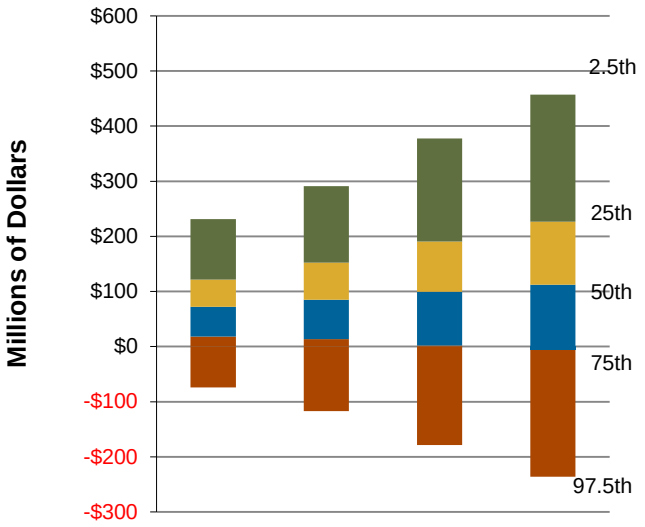
Mix 3 has a similar return / risk profile to WSI's current policy

- Move to a ***stochastic forecast*** : 2,000 scenarios of different inflation, interest rates and returns.
- Each bar represents a potential range of outcomes (e.g. Market Value of Assets end of 5th year). **50th percentile** represents the expected case.
- Worse-case scenario is represented by the **97.5th percentile** which has 2.5% chance of happening.
  - In dollar terms, "Downside Risk" is $442 Million (i.e. the difference between the expected and worse cases).

V. Simulate Financial Condition

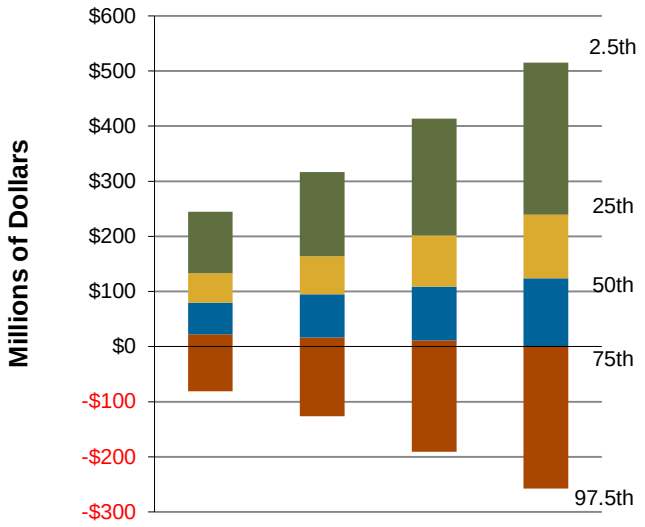
Annual Investment Income Over Time

Year 3



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$231	$291	$378	$457
25th	121	152	191	226
50th	**72**	**85**	**100**	**112**
75th	18	14	2	-6
97.5th	**-74**	**-117**	**-178**	**-236**
Downside	146	202	278	349

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$244	$316	$414	$515
25th	133	164	201	240
50th	**80**	**95**	**109**	**124**
75th	22	17	11	0
97.5th	**-81**	**-126**	**-191**	**-258**
Downside	161	221	300	382

Year 10

Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$281	$366	$481	$603
25th	159	192	238	283
50th	**95**	**109**	**128**	**145**
75th	31	27	17	6
97.5th	**-86**	**-134**	**-217**	**-304**
Downside	182	243	344	449

- Ranges widen over longer time horizons – more variability the further we look into the future.
- Mix 1 has a more conservative investment risk profile than Mix 3, resulting in a tighter range of outcomes. Analysis also shows Mix 1 providing comparatively better downside protection than Mix 3.
- Mix 4 expands both expected and worse-case results as it represents a more aggressive asset mix.

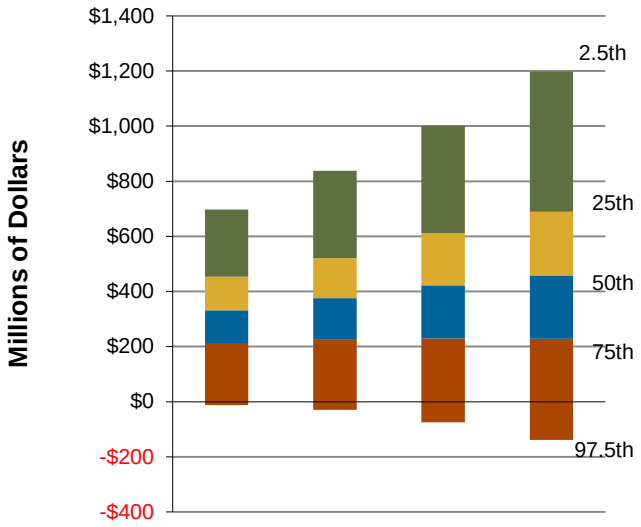
V. Simulate Financial Condition

Real Cumulative Investment Income Over Time

Year 3

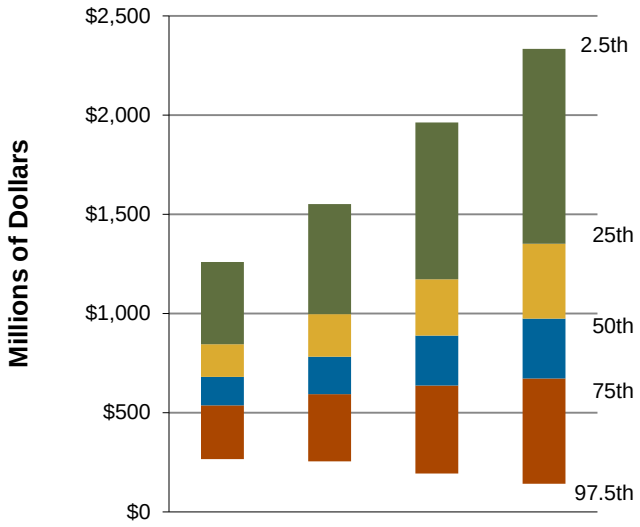
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$476	$556	$664	$754
25th	289	324	370	413
50th	**192**	**216**	**236**	**254**
75th	96	99	101	96
97.5th	**-87**	**-112**	**-146**	**-194**
Downside	279	328	382	448

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$697	$838	$1,002	$1,198
25th	453	521	611	690
50th	**331**	**376**	**423**	**459**
75th	209	227	229	228
97.5th	**-13**	**-30**	**-75**	**-139**
Downside	344	406	498	597

Year 10

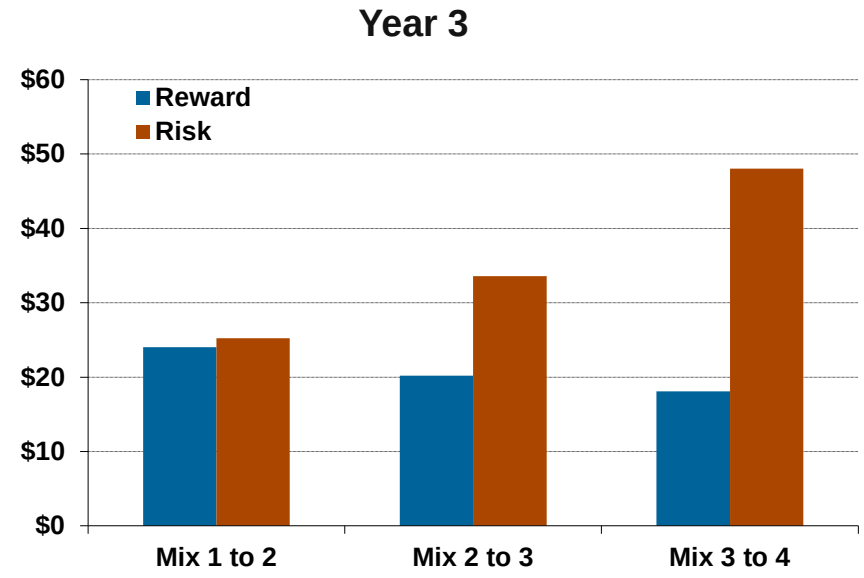


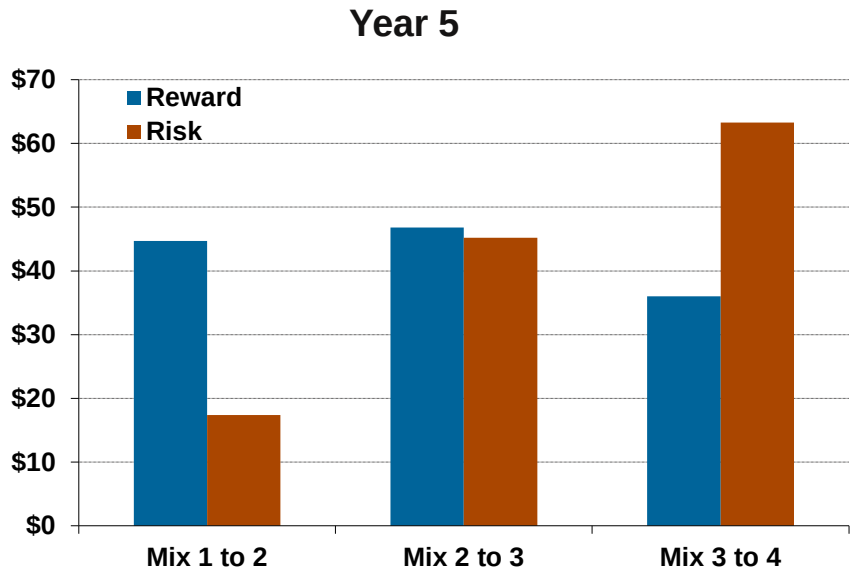
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$1,259	$1,551	$1,962	$2,333
25th	845	998	1,173	1,351
50th	**680**	**782**	**889**	**974**
75th	538	593	637	672
97.5th	**265**	**255**	**193**	**142**
Downside	415	526	696	832

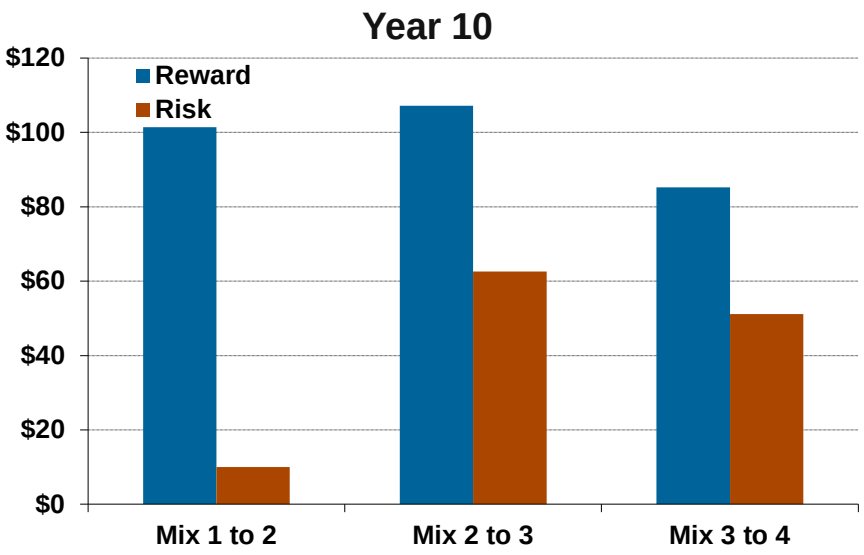
- The exhibits above illustrate the potential accumulation of investment income over multiple years.
- "Real" cumulative income discounts the investment income to reflect the effect of future inflation.
- Real Cumulative Investment Income is a variable that describes the investment risk associated with pursuing a particular asset mix relative to future purchasing power.

V. Simulate Financial Condition

Real Cumulative Investment Income – Risk/Reward Tradeoff





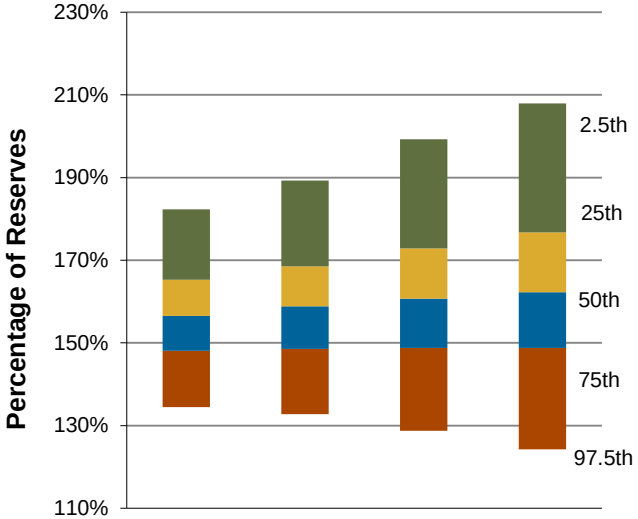


- **Reward** (blue bars) measures the difference between the expected case (50th percentile).
- **Risk** (red bars) measures the increase in worse-case scenario (97.5th percentile).
- A favorable tradeoff is one where reward is greater than risk (the blue bar is higher than red bar).
- Over medium term horizons like 3-5 years, Mix 2 and Mix 3 are favored. Over longer time horizons like 10 years, Mix 4 is favored.

V. Simulate Financial Condition

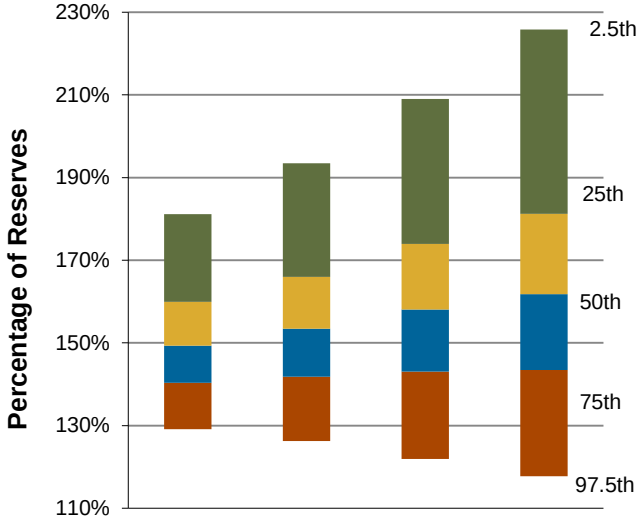
Available Surplus as % Reserves (Pre-Dividend)

Year 3



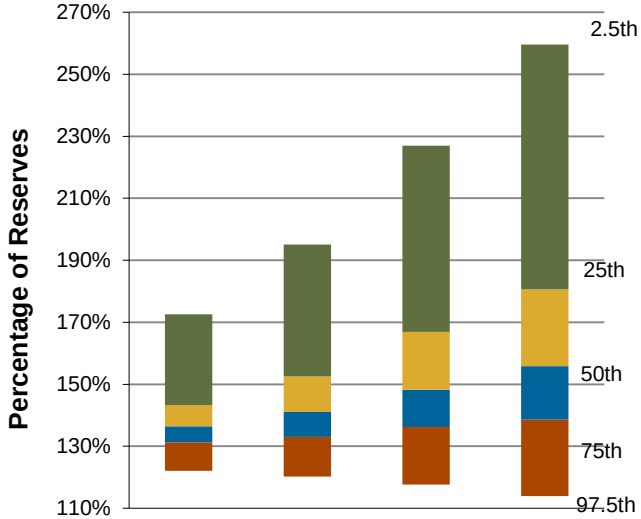
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	182%	189%	199%	208%
25th	165%	169%	173%	177%
50th	**157%**	**159%**	**161%**	**162%**
75th	148%	149%	149%	149%
97.5th	**134%**	**133%**	**129%**	**124%**
Downside	22%	26%	32%	38%

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	181%	193%	209%	226%
25th	160%	166%	174%	181%
50th	**149%**	**153%**	**158%**	**162%**
75th	140%	142%	143%	143%
97.5th	**129%**	**126%**	**122%**	**118%**
Downside	20%	27%	36%	44%

Year 10



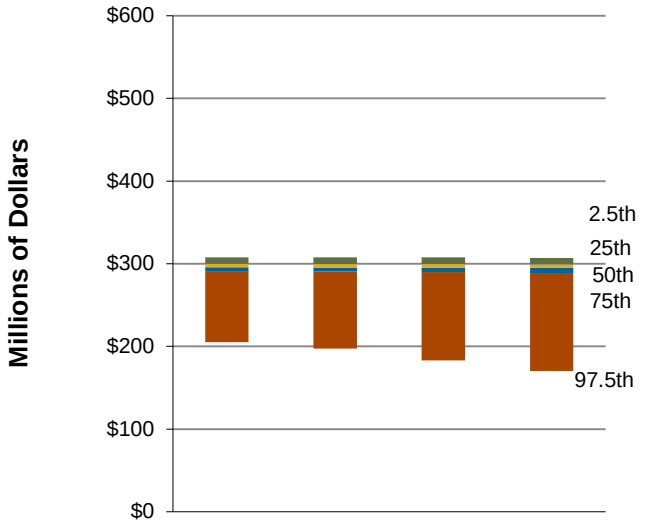
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	173%	195%	227%	260%
25th	143%	153%	167%	181%
50th	**136%**	**141%**	**148%**	**156%**
75th	131%	133%	136%	139%
97.5th	**122%**	**120%**	**118%**	**114%**
Downside	14%	21%	31%	42%

- Available Surplus (pre-dividend refund) considers the full balance sheet and impact of liabilities, and captures cumulative investment income (realized and unrealized capital gains)
- Available Surplus is another way of describing the investment risk associated with pursuing a particular asset mix.
- Surplus pre-dividend determines the size of future dividends.

V. Simulate Financial Condition

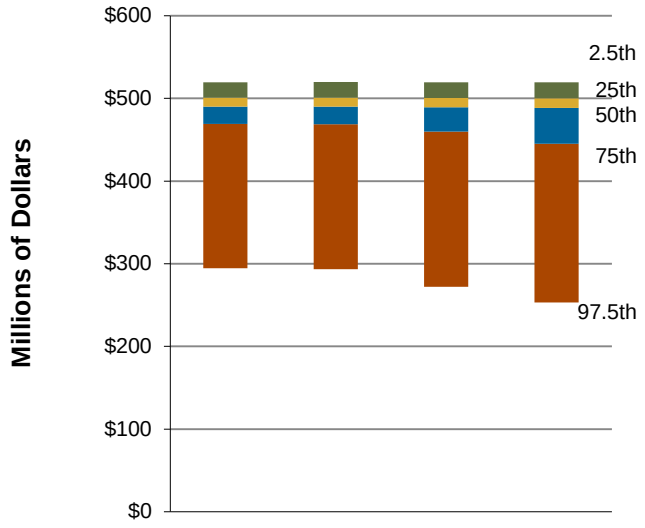
Real Cumulative Dividend Refunds

Year 3



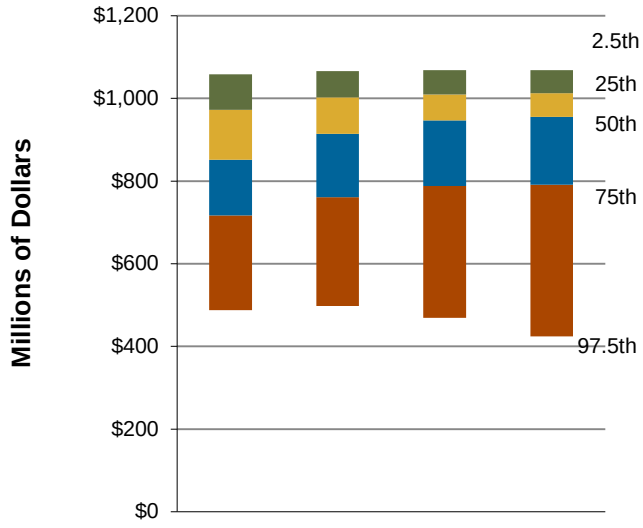
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$308	$308	$308	$307
25th	300	300	300	299
50th	**296**	**295**	**295**	**295**
75th	291	291	290	289
97.5th	**205**	**198**	**183**	**170**
Downside	90	98	112	124

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$520	$520	$520	$519
25th	501	501	501	500
50th	**490**	**490**	**489**	**489**
75th	469	469	460	445
97.5th	**295**	**294**	**272**	**253**
Downside	195	197	217	235

Year 10



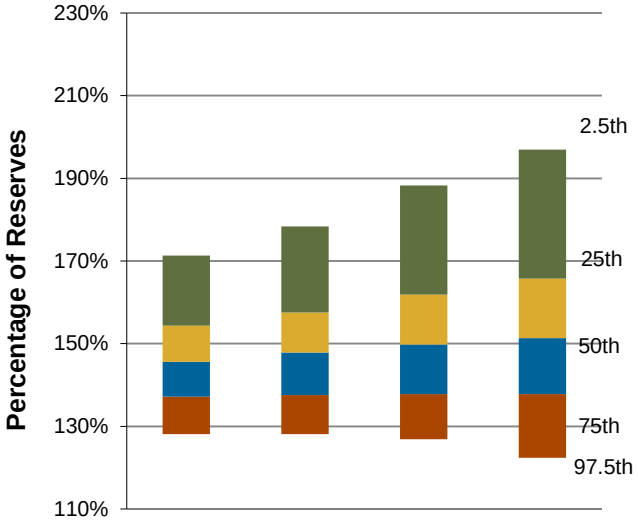
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$1,058	$1,066	$1,068	$1,068
25th	972	1,003	1,010	1,013
50th	**851**	**914**	**947**	**956**
75th	717	761	788	791
97.5th	**488**	**498**	**470**	**424**
Downside	363	417	478	532

- Investment income and surplus levels (pre-dividend) drives WSI's ability to provide dividend refunds.
  - The analysis applied a formulaic approach to the analysis, using thresholds >130% and >140%.
  - The formula does not account for the Board's discretion ability to lower the dividend amount.
- Given the current level of surplus at 160%, the analysis confirms a high probability for dividend payments over the next 3 to 5 year time horizons. Over this period, more aggressive mixes only increased downside risk so Mix 1 or Mix 2 are favored.

V. Simulate Financial Condition

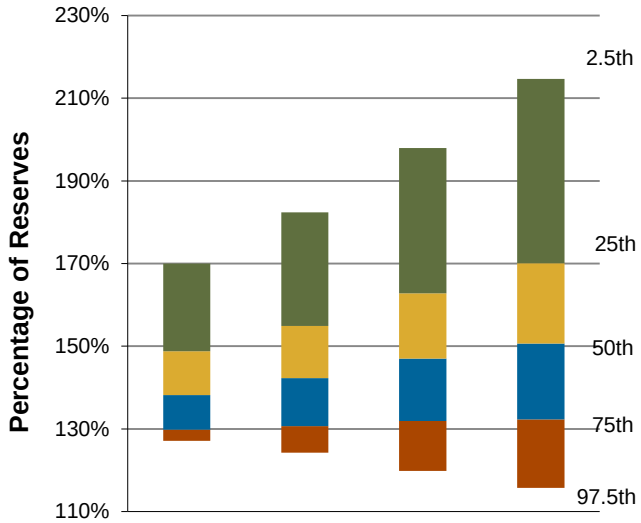
Ending Surplus as % Reserves (Post-Dividend)

Year 3



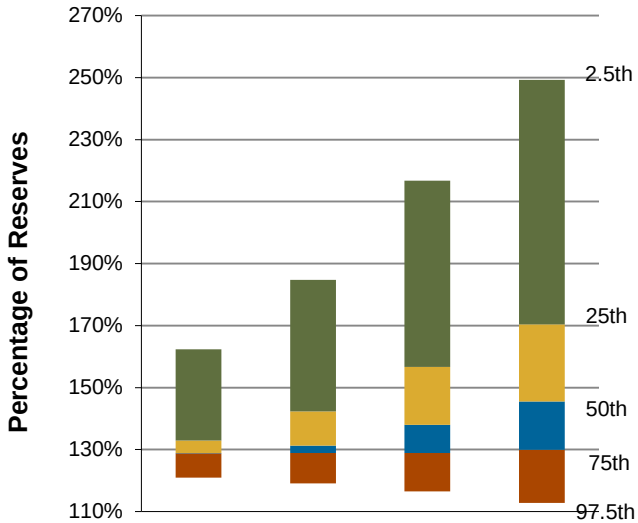
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	171%	178%	188%	197%
25th	154%	158%	162%	166%
50th	**146%**	**148%**	**150%**	**151%**
75th	137%	138%	138%	138%
97.5th	**128%**	**128%**	**127%**	**122%**
Downside	17%	20%	23%	29%

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	170%	182%	198%	215%
25th	149%	155%	163%	170%
50th	**138%**	**142%**	**147%**	**151%**
75th	130%	131%	132%	132%
97.5th	**127%**	**124%**	**120%**	**116%**
Downside	11%	18%	27%	35%

Year 10



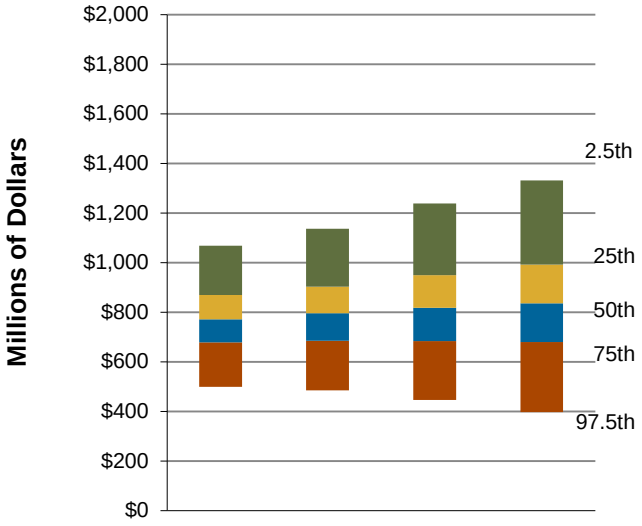
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	162%	185%	217%	249%
25th	133%	142%	157%	170%
50th	**129%**	**131%**	**138%**	**146%**
75th	129%	129%	129%	130%
97.5th	**121%**	**119%**	**117%**	**113%**
Downside	8%	12%	21%	33%

- Ending Surplus factors in both investment income and dividends (shown above post-dividend).
- The range of Ending Surplus over the next 3 to 5 year time horizons shows that the current large surplus position provides a cushion for worse-case scenarios like the 97.5th percentile
  - Favorable surplus levels above 120% for Mix 1, Mix 2 or Mix 3 (but not Mix 4).

V. Simulate Financial Condition

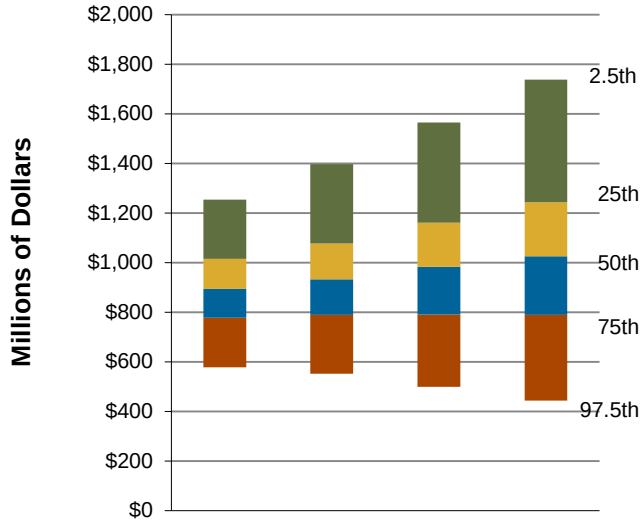
Ultimate Net Profit (UNP)

Year 3



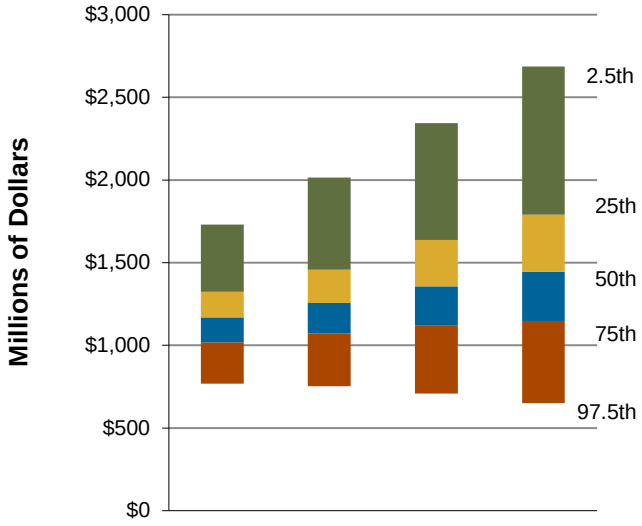
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$1,069	$1,136	$1,239	$1,331
25th	869	903	950	993
50th	**772**	**797**	**818**	**836**
75th	679	686	684	680
97.5th	**499**	**485**	**446**	**397**
Downside	273	311	372	439

Year 5



Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$1,254	$1,398	$1,565	$1,739
25th	1,015	1,078	1,161	1,244
50th	**895**	**933**	**983**	**1,026**
75th	777	789	791	790
97.5th	**578**	**552**	**500**	**444**
Downside	316	381	484	582

Year 10

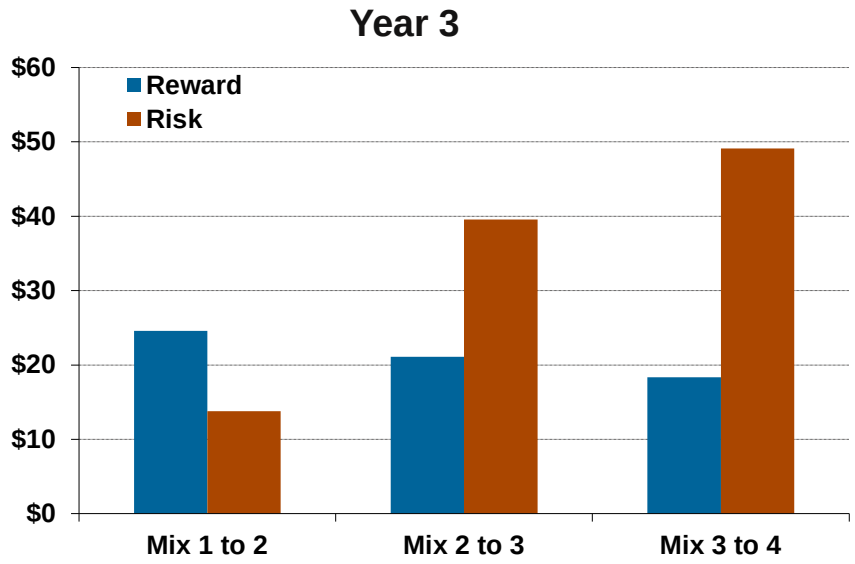


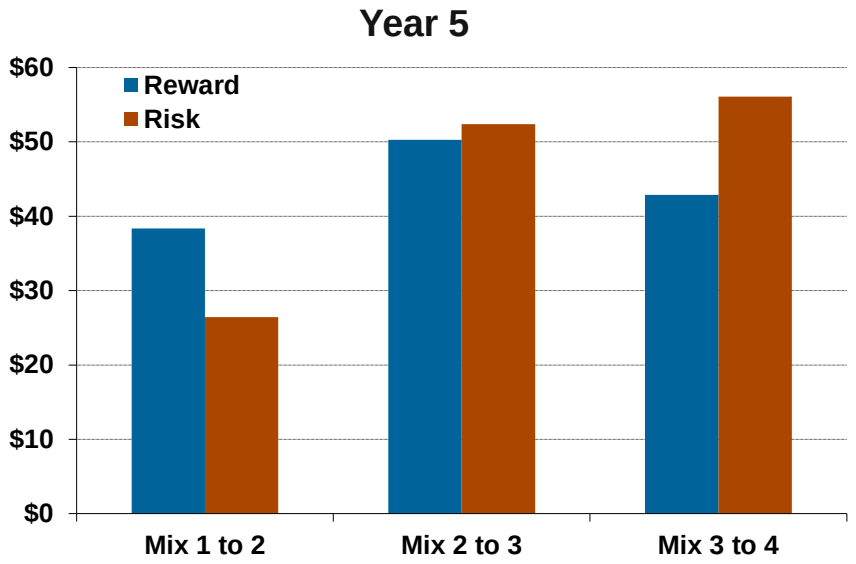
Percentile	Mix 1	Mix 2	Mix 3	Mix 4
2.5th	$1,731	$2,015	$2,343	$2,687
25th	1,323	1,457	1,637	1,790
50th	**1,169**	**1,257**	**1,357**	**1,445**
75th	1,019	1,072	1,119	1,142
97.5th	**768**	**752**	**709**	**651**
Downside	401	505	648	794

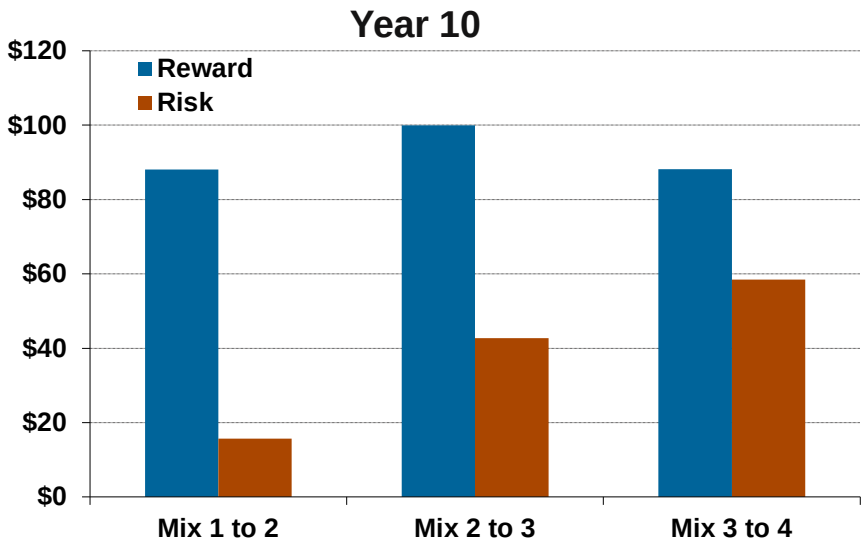
- Ultimate Net Profit = Real Cumulative Dividends + Real Ending Surplus (Post-Dividend).
- Ultimate Net Profit quantifies the interaction of how future investment income can be used to both grow the surplus and pay dividends.

V. Simulate Financial Condition

UNP – Risk/Reward Tradeoff







- A favorable tradeoff is one where the size of the potential reward exceeds the potential risk (i.e.– the blue bar is higher than the red bar).
- Over medium term horizons like 3-5 years, the analysis favors Mix 2, while longer term horizons like 10 years support more aggressive positions like Mix 3 and Mix 4.

Simulate Financial Condition

Scenario Analysis

- Scenario analysis provides specific examples of how a worse-case outcomes (trials A and B) can unfold as compared to an expected cases (trials C and D).
  - Worse-case outcome trials A and B are indicative of the tech bubble and the credit crises and show the benefit of de-risking to Mix 1 or Mix 2 to secure both a higher ending surplus and dividends.
  - Expected outcome trials B and C reveal that Mix 2 and Mix 3 support a defensible level of surplus combined with full dividends.

	US Broad Equity Returns							*Domestic Fixed Income Returns*						
Trial	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Year 5***	**3 Yrs**	**5 Yrs**	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Year 5***	**3 Yrs**	**5 Yrs**
A	*-8.7%*	*-14.5%*	*-21.5%*	*27.0%*	*-27.8%*	**-15.1%**	**-10.9%**	*0.2%*	*1.6%*	*6.4%*	*-1.6%*	*1.4%*	**2.7%**	**1.6%**
B	*1.8%*	*-20.4%*	*-3.0%*	*-11.5%*	*15.7%*	**-7.7%**	**-4.3%**	*-5.1%*	*2.9%*	*5.4%*	*1.2%*	*-3.9%*	**1.0%**	**0.0%**
C	*-1.3%*	*18.8%*	*2.1%*	*-2.8%*	*21.8%*	**6.2%**	**7.2%**	*1.6%*	*2.5%*	*1.2%*	*-2.6%*	*3.1%*	**1.8%**	**1.1%**
D	*8.0%*	*13.9%*	*-1.7%*	*11.8%*	*-2.0%*	**6.5%**	**5.8%**	*4.7%*	*-3.2%*	*2.5%*	*2.2%*	*4.5%*	**1.3%**	**2.1%**

	Surplus % (Post Dividend) Year 3					***Real Cumulative Dividend Year 3***			
Trial	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**		**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
A	130%	128%	128%	124%		298	260	202	198
B	128%	128%	128%	128%		272	227	176	138
C	137%	141%	146%	151%		288	288	288	288
D	137%	139%	142%	144%		304	304	304	304

	Surplus % (Post Dividend) Year 5					***Real Cumulative Dividend Year 5***			
Trial	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**		**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
A	123%	120%	117%	111%		376	343	305	301
B	127%	128%	128%	128%		272	239	214	191
C	129%	132%	139%	146%		415	467	486	486
D	129%	132%	136%	137%		505	505	505	505

V. Simulate Financial Condition

Impact of Lowering the Actuarial Discount Rate on Ending Surplus (Post – Dividend)

5%

Year 3				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	171%	178%	188%	197%
25th	154%	158%	162%	166%
50th	**146%**	**148%**	**150%**	**151%**
75th	137%	138%	138%	138%
97.5th	**128%**	**128%**	**127%**	**122%**
Downside	17%	20%	23%	29%

Year 5				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	170%	182%	198%	215%
25th	149%	155%	163%	170%
50th	**138%**	**142%**	**147%**	**151%**
75th	130%	131%	132%	132%
97.5th	**127%**	**124%**	**120%**	**116%**
Downside	11%	18%	27%	35%

Year 10				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	162%	185%	217%	249%
25th	133%	142%	157%	170%
50th	**129%**	**131%**	**138%**	**146%**
75th	129%	129%	129%	130%
97.5th	**121%**	**119%**	**117%**	**113%**
Downside	8%	12%	21%	33%

4%

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	158%	165%	175%	183%
25th	143%	146%	150%	154%
50th	**135%**	**137%**	**139%**	**141%**
75th	130%	130%	130%	130%
97.5th	**128%**	**126%**	**122%**	**117%**
Downside	7%	12%	18%	25%

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	158%	169%	184%	199%
25th	139%	145%	152%	159%
50th	**131%**	**135%**	**139%**	**142%**
75th	128%	128%	129%	129%
97.5th	**124%**	**122%**	**116%**	**113%**
Downside	7%	13%	23%	29%

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	153%	173%	204%	233%
25th	132%	139%	152%	164%
50th	**129%**	**131%**	**136%**	**143%**
75th	129%	129%	129%	129%
97.5th	**121%**	**119%**	**116%**	**112%**
Downside	8%	12%	21%	31%

- Tables in the blue box above show the range Ending Surplus using a 4% actuarial discount rate for the reserves.
  - Using June 30, 2017 results, the impact would immediate lower ending surplus from 155% to 143% (increases reserves by ~$94M and lowers surplus by the same amount).
- The overall impact of lowering the discount rate is to reduce the range of outcomes while still preserving capital in the worse-case scenarios because of the Dividend policy.
  - The range of outcomes for Mix 1 and Mix 2 show favorable worse-case surplus levels over 3- to 5-year horizons with room for significant upside.
- Using the 4% discount results, the risk and reward tradeoff analysis over medium term horizons like 3 to 5 years favors slightly more conservative mixes like Mixes 1 and 2.

V. Simulate Financial Condition

Impact of Lowering the Actuarial Discount Rate on Real Cumulative Dividends

- The largest impact observed from lowering the discount rate is on long-term dividends
  - The 4% discount rate results maintain the expected level of dividends over 3- to 5-year horizons (2.5th to 75th percentile), but results in lower dividends in worse-case scenarios and therefore increased downside risk
  - Over longer-term horizons like 10 years, both the expected and worse-case scenarios show marginally lower dividends overall (25th – 97.5th)
  - A lower range of dividends shows less downside risk than in the ending surplus position on the previous slide.

5%

Year 3				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$308	$308	$308	$307
25th	300	300	300	299
50th	**296**	**295**	**295**	**295**
75th	291	291	290	289
97.5th	**205**	**198**	**183**	**170**
Downside	90	98	112	124

Year 5				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$520	$520	$520	$519
25th	501	501	501	500
50th	**490**	**490**	**489**	**489**
75th	469	469	460	445
97.5th	**295**	**294**	**272**	**253**
Downside	195	197	217	235

Year 10				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,058	$1,066	$1,068	$1,068
25th	972	1,003	1,010	1,013
50th	**851**	**914**	**947**	**956**
75th	717	761	788	791
97.5th	**488**	**498**	**470**	**424**
Downside	363	417	478	532

4%

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$313	$313	$313	$313
25th	304	304	304	304
50th	**298**	**298**	**297**	**297**
75th	263	258	247	236
97.5th	**106**	**102**	**101**	**100**
Downside	192	195	197	197

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$526	$528	$528	$528
25th	504	505	506	506
50th	**473**	**479**	**480**	**480**
75th	383	388	383	377
97.5th	**196**	**200**	**184**	**167**
Downside	277	279	296	312

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,071	$1,079	$1,082	$1,084
25th	909	985	1,011	1,018
50th	**777**	**843**	**882**	**903**
75th	637	688	713	720
97.5th	**402**	**409**	**381**	**337**
Downside	375	434	501	565

V. Simulate Financial Condition

Impact of Lowering the Actuarial Discount Rate on Ultimate Net Profit

- Ultimate Net Profit comparisons for each discount rate option are shown below
  - The range of outcomes with a 4% discount rate are narrower for each asset mix because there are fewer dollars of surplus at the start of the forecast period.
  - Downside risk is very similar across the asset mixes.
  - Risk and reward tradeoffs for a 4% discount rate are similar to those shown on slide 21.
  - Mix 2 is more attractive over medium-term horizons like 3 to 5 years. In contrast, longer-term horizons tend to favor more aggressive mixes of assets, like those contained in Mixes 3 and 4.

5%

Year 3				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,069	$1,136	$1,239	$1,331
25th	869	903	950	993
50th	**772**	**797**	**818**	**836**
75th	679	686	684	680
97.5th	**499**	**485**	**446**	**397**
Downside	273	311	372	439

Year 5				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,254	$1,398	$1,565	$1,739
25th	1,015	1,078	1,161	1,244
50th	**895**	**933**	**983**	**1,026**
75th	777	789	791	790
97.5th	**578**	**552**	**500**	**444**
Downside	316	381	484	582

Year 10				
Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,731	$2,015	$2,343	$2,687
25th	1,323	1,457	1,637	1,790
50th	**1,169**	**1,257**	**1,357**	**1,445**
75th	1,019	1,072	1,119	1,142
97.5th	**768**	**752**	**709**	**651**
Downside	401	505	648	794

4%

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$987	$1,057	$1,159	$1,252
25th	790	824	872	913
50th	**693**	**718**	**738**	**756**
75th	599	606	603	599
97.5th	**421**	**402**	**362**	**313**
Downside	272	316	376	443

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,182	$1,325	$1,498	$1,668
25th	944	1,009	1,093	1,174
50th	**825**	**863**	**916**	**959**
75th	706	719	720	719
97.5th	**502**	**475**	**422**	**367**
Downside	322	388	493	592

Percentile	**Mix 1**	**Mix 2**	**Mix 3**	**Mix 4**
2.5th	$1,684	$1,970	$2,304	$2,655
25th	1,282	1,419	1,601	1,755
50th	**1,128**	**1,219**	**1,323**	**1,412**
75th	975	1,033	1,073	1,100
97.5th	**716**	**698**	**650**	**588**
Downside	411	521	673	825

VI. Define Risk Tolerance

WSI Board Members' Survey Results

Investment Goals	A	B	C	D	E	F	G	H	I	J	One	Two
preservation of capital	1	2	2		2	2			2	2	1	6
income generation			1	1		1	1	1	1		6	0
preservation of purchasing power	2			2	1					1	2	2
wealth creation		1					2	2			1	2

Objectives	A	B	C	D	E	F	G	H	I	J	Count
lower volatility					x	x			x	x	4
grow surplus		x		x			x	x		x	5

Time Horizon	A	B	C	D	E	F	G	H	I	J	
greater than 5 years		x		x			x	x	x		5
3-5 years										x	1
1-3 years					x						1

- Overall, the investment goals reflected in the survey results favor more conservative approaches with income generation and preservation of capital being the top choices
  - The implication of these two choices is to lean towards asset mixes that have more fixed income like Mix 1 or Mix 2
- The majority of respondents support growing the surplus as well as favor an investment horizon of five years. The implication of these two observations is a view to putting a larger portion of the current surplus by increasing the allocation to risk assets like equity and other growth investments
  - Based on the results of the study, Mix 2 or Mix 3 appears to comport with the Board's overall risk tolerance.
- Preferences revealed in the survey suggested no new asset classes be added.

VI. Define Risk Tolerance

Considerations for taking a decision

- Investable assets are expected to continue to grow at the margin over the next 5 to 10 years, which supports a long term investment horizon. However, the nature of insurance business suggest that medium term horizons may be more appropriate for decision making purposes.
- Nevertheless, net negative cash flows expected from operations and financing will impact the Fund's liquidity needs but are manageable with the current Policy Mix.
- Callan supports using the core intermediate duration fixed income approach in light of slightly longer duration of the reserves, given the discount rate methodology and the accounting basis.
- In the comparative analyses, risk-reward trade-offs and potential ranges of financial outcomes support either Mix 2 or Mix 3
  - Mix 2 is favored most often, particularly when considered over medium-term horizons such as 3 to 5 years.
  - Mix 3 may result in superior risk / reward tradeoffs over longer time horizons such as 5 to10 years.
- The composition of Mix 3 is broadly similar to a peer group of other insurance companies. It maintains the allocation to fixed income investments at a level consistent with the current Target.
- Mix 2 increases the fixed income allocation. It would be favored if WSI wants more predictable (i.e.—less variable) investment outcomes. Mix 2 would allow WSI to maintain better financial outcomes in worse-case scenarios, thereby financially strengthening the organization during poor investment environments.

VII. Select Appropriate Target Mix

Asset Class	WSI Target	Actual 12/31/17	Mix 2	Change	Mix 3	Change
Cash	1%	1%	1%	0%	1%	0%
Domestic Fixed Income	53%	53%	60%	7%	49%	-4%
Diversified Real Assets (DRA)	15%	14%	12%	-3%	13%	-2%
DRA includes TIPS	*5%*	*6%*	*9%*	*4%*	*8%*	*3%*
Infrastructure	*5%*	*5%*	*3%*	*-2%*	*5%*	*0%*
Timber	*5%*	*3%*	*0%*	*-5%*	*0%*	*-5%*
Real Estate	6%	7%	5%	-1%	6%	0%
Large Cap Equity	12%	12%	11%	-1%	15%	3%
Small Cap Equity	4%	4%	3%	-1%	5%	1%
International Equity	9%	9%	8%	-1%	11%	2%
Total	**100%**	**100%**	**100%**	**0%**	**100%**	**0%**
Total Fixed Income	59%	60%	70%	11%	58%	-1%
10 Yr Expected Return	4.93%	4.92%	4.52%	-0.41%	5.00%	0.07%
Standard Deviation	7.00%	6.95%	5.57%	-1.43%	7.25%	0.25%
Projected Sharpe Ratio	0.403	0.404	0.420	0.017	0.401	-0.002

- Mix 2 is favored if WSI wants more predictable (i.e.—less volatile) investment outcomes. Mix 2 would allow WSI to use surplus assets to financially strengthen the organization.
- Mix 3 is favored if WSI wants to maintain a longer-term orientation and focus on surplus growth.

Next steps

Decisions and Implementation

1. Once WSI selects it asset allocation policy for the future, that policy will be submitted to the North Dakota State Investment Board (“SIB”) for acceptance and implementation.
   - If WSI favors the possible addition of a global natural resources strategy, negotiations on timing will need be conducted with the SIB as a global natural resources strategy is not currently available.
2. Following WSI formally adopts an investment policy, Callan will work with the SIB and Retirement & Investment Office staff on a timely implementation plan.
   - WSI and SIB should mutually agree upon an effective date for implementation of the new WSI policy.
3. Callan does currently provide the SIB with a performance report on the WSI fund. The benchmark will be revised, if necessary, on a go-forward basis to reflect WSI’s new asset mix.

APPENDIX

2018 Capital Market Projections—Return and Risk

Summary of Callan's 10 Year Capital Market Projections (2018 – 2027)

Source: Callan Associates

		PROJECTED RETURN			PROJECTED RISK	
Asset Class	**Index**	**1-Year Arithmetic**	**10-Year Geometric***	**Real**	**Standard Deviation**	**Projected Yield**
Equities						
Broad Domestic Equity	Russell 3000	8.30%	6.85%	4.60%	18.25%	2.00%
Large Cap	S&P 500	8.05%	6.75%	4.50%	17.40%	2.10%
Small/Mid Cap	Russell 2500	9.30%	7.00%	4.75%	22.60%	1.55%
Global ex-US Equity	MSCI ACWI ex USA	8.95%	7.00%	4.75%	21.00%	3.10%
International Equity	MSCI World ex USA	8.45%	6.75%	4.50%	19.70%	3.25%
Emerging Markets Equity	MSCI Emerging Markets	10.50%	7.00%	4.75%	27.45%	2.65%
Fixed Income						
Short Duration	Bloomberg Barclays 1-3 Yr G/C	2.60%	2.60%	0.35%	2.10%	2.85%
Domestic Fixed	Bloomberg Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	3.50%
Long Duration	Bloomberg Barclays Long G/C	3.50%	3.00%	0.75%	10.95%	4.45%
TIPS	Bloomberg Barclays TIPS	3.10%	3.00%	0.75%	5.25%	3.35%
High Yield	Bloomberg Barclays High Yield	5.20%	4.75%	2.50%	10.35%	7.75%
Non-US Fixed	Bloomberg Barclays Glbl Agg xUSD	1.80%	1.40%	-0.85%	9.20%	2.50%
Emerging Market Debt	EMBI Global Diversified	4.85%	4.50%	2.25%	9.60%	5.75%
Other						
Real Estate	Callan Real Estate Database	6.90%	5.75%	3.50%	16.35%	4.75%
Private Equity	TR Post Venture Capital	12.45%	7.35%	5.10%	32.90%	0.00%
Hedge Funds	Callan Hedge FoF Database	5.35%	5.05%	2.80%	9.15%	2.25%
Commodities	Bloomberg Commodity	4.25%	2.65%	0.40%	18.30%	2.25%
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	2.25%
Inflation	CPI-U		2.25%		1.50%	

** Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).*

- Unhedged ($US dollar) returns are net of fees:
  - Passive implementation assumed for public markets
  - Active implementation assumed for alternatives and private market investments

2018 Capital Market Projections—Correlation Coefficient Matrix

Key to Constructing Efficient Portfolios

	Correlation Matrix	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Broad Domestic Equity	1.00																		
2	Large Cap	1.00	1.00																	
3	Small/Mid Cap	0.97	0.94	1.00																
4	Global ex-US Equity	0.87	0.87	0.84	1.00															
5	International Equity	0.84	0.84	0.80	0.99	1.00														
6	Emerging Markets Equity	0.87	0.86	0.85	0.94	0.87	1.00													
7	Short Duration	-0.25	-0.24	-0.27	-0.27	-0.25	-0.29	1.00												
8	Domestic Fixed	-0.11	-0.10	-0.14	-0.13	-0.11	-0.16	0.87	1.00											
9	Long Duration	0.11	0.11	0.10	0.08	0.09	0.04	0.74	0.93	1.00										
10	TIPS	-0.05	-0.05	-0.08	-0.05	-0.03	-0.09	0.53	0.60	0.53	1.00									
11	High Yield	0.64	0.64	0.61	0.63	0.61	0.62	-0.14	0.02	0.19	0.06	1.00								
12	Non-US Fixed	0.01	0.05	-0.10	0.01	0.06	-0.09	0.48	0.51	0.54	0.34	0.12	1.00							
13	EMD	0.57	0.57	0.56	0.58	0.55	0.58	-0.04	0.10	0.14	0.18	0.60	0.01	1.00						
14	Real Estate	0.73	0.73	0.71	0.68	0.66	0.65	-0.17	-0.03	0.17	0.00	0.56	-0.05	0.44	1.00					
15	Private Equity	0.95	0.95	0.92	0.93	0.90	0.91	-0.26	-0.20	0.00	-0.11	0.64	-0.06	0.57	0.72	1.00				
16	Hedge Funds	0.80	0.80	0.77	0.76	0.73	0.76	-0.13	0.08	0.29	0.08	0.57	-0.08	0.54	0.61	0.78	1.00			
17	Commodities	0.15	0.15	0.15	0.16	0.16	0.16	-0.22	-0.10	-0.04	0.12	0.10	0.05	0.19	0.20	0.18	0.21	1.00		
18	Cash Equivalents	-0.04	-0.03	-0.08	-0.04	-0.01	-0.10	0.30	0.10	-0.04	0.07	-0.11	-0.09	-0.07	-0.06	0.00	-0.07	0.07	1.00	
19	Inflation	-0.01	-0.02	0.02	0.01	0.00	0.03	-0.20	-0.28	-0.29	0.18	0.07	-0.15	0.00	0.10	0.06	0.20	0.40	0.00	1.00

Source: Callan Associates

ND STATE INVESTMENT BOARD
AUDIT COMMITTEE MEETING

Thursday May 24, 2018 – 3:00 PM
Retirement and Investment Office
3442 E Century Ave, Bismarck, ND 58507

AGENDA

1. Call to Order and Approval of Agenda – Chair (committee action) (5 minutes)

2. Approval of February 22, 2018 Minutes – Chair (committee action) (5 minutes)

3. Presentation of July 1, 2017 to June 30, 2018 Fiscal Year Financial Audit Scope and Approach and Final GASB 68 Schedule Audit Report – CliftonLarsonAllen (to follow)(committee action)(30 minutes)

4. 2017 – 2018 Third Quarter Audit Activities Report – Sara Sauter (committee action)(10 minutes)

5. What is Internal Audit? – Sara Sauter (education)(30 minutes)

6. 2018-2019 Audit Services Workplan, Budgeted Hours, and Employer Risk Assessment– Sara Sauter (committee action)(45 minutes)

7. TFFR Employer Audit Reporting Process – Fay Kopp & Sara Sauter (information)(5 minutes)

8. 2018-2019 SIB Audit Committee Meeting Schedule – Sara Sauter (committee action)(5 minutes)

9. 2018-2019 SIB Audit Committee Membership – Sara Sauter (information)(5 minutes)

10. Other – Next SIB Audit Committee Meeting

    PENDING APPROVAL
    Retirement and Investment Office
    Thursday September 27, 2018 - 10:00 AM
    RIO Conference Room
    3442 E Century Ave
    Bismarck, ND

11. 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.

STATE INVESTMENT BOARD
AUDIT COMMITTEE MEETING
MINUTES OF THE
FEBRUARY 22, 2018 MEETING

COMMITTEE MEMBERS PRESENT: Rebecca Dorwart, Chair
Yvonne Smith, PERS Board, Vice Chair
Mike Gessner, TFFR Board (TLCF)
Cindy Ternes, Workforce Safety & Insurance
Josh Wiens, External Representative

STAFF PRESENT: Bonnie Heit, Assist to the Audit Committee
David Hunter, ED/CIO
Fay Kopp, Dep ED/CRO
Sara Sauter, Audit Svs Suprv
Dottie Thorsen, Internal Auditor

GUEST: Patrick Brooke, Attorney General's Office
Sandy DePountis, Attorney General's Office

CALL TO ORDER:

Ms. Dorwart called the State Investment Board (SIB) Audit Committee meeting to order at 3:00 p.m. on Thursday, February 22, 2018, at the Retirement and Investment Office (RIO), 3442 E Century Ave., Bismarck, ND.

A quorum was present for conducting business.

AGENDA:

IT WAS MOVED BY MS. TERNES AND SECONDED BY MS. SMITH AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE FEBRUARY 22,2018, MEETING AS DISTRIBUTED.

AYES: MS. SMITH, MS. TERNES, MR. WIENS, AND MS. DORWART
NAYS: NONE
MOTION CARRIED
ABSENT: MR. GESSNER

MINUTES:

IT WAS MOVED BY MR. WIENS AND SECONDED BY MS. TERNES AND CARRIED BY A VOICE VOTE TO ACCEPT THE NOVEMBER 16, 2017, MINUTES.

AYES: MS. SMITH, MS. TERNES, MR. WIENS, AND MS. DORWART
NAYS: NONE
MOTION CARRIED
ABSENT: MR. GESSNER

AUDIT SUPERVISOR:

Mr. Hunter introduced Ms. Sara Sauter. Ms. Sauter joined RIO January 1, 2018, as Supervisor of Audit Services.

EDUCATION:

Ms. Sandy DePountis and Mr. Patrick Brooke presented an educational segment on North Dakota Open Meetings and Records laws.

CHARTER:

The Committee discussed revisions needed to their Charter as a result of the Open Meetings educational segment.

Mr. Brooke and Ms. Sauter will revise the Charter accordingly and present it at the next Audit Committee meeting for review and possible acceptance and then it will be brought before the SIB for their approval.

AUDIT ACTIVITIES REPORT:

Ms. Sauter reviewed first quarter activities of the Audit Division for the period of October 1, 2017 – December 31, 2017.

TFFR Employer Audits – Eight had been completed, one was in progress, and six were pending but not yet started.

The 2016-17 Benefit Payments Audit was completed and a report was issued on October 30, 2017.

The TFFR File Maintenance Audit for the fourth quarter of 2016-17 was completed at the end of the first quarter with a final report issued October 2, 2017.

The Executive Limitations Audit was completed for the 2017 calendar year. This year RIO employees participated in the State survey administered in December 2017. The results were issued to the SIB at their January 26, 2018 meeting.

Audit Services continues to participate in the IIA Central NoDak Chapter for professional development.

IT WAS MOVED BY MR. WIENS AND SECONDED BY MS. SMITH AND CARRIED BY A VOICE VOTE TO ACCEPT THE SECOND QUARTER ACTIVITIES REPORT FOR THE PERIOD OF OCTOBER 1, 2017 – DECEMBER 30, 2017.

AYES: MS. TERNES, MR. WIENS, MS. SMITH, MR. GESSNER, AND MS. DORWART
NAYS: NONE
MOTION CARRIED

EXECUTIVE LIMITATIONS AUDIT:

Audit Services completed the annual review of the Executive Director's/CIO's level of compliance with SIB Governance Manual Executive Limitations Policies A-1 through A-11 for the calendar year beginning January 1, 2017 and ending December 31, 2017. Audit Services is sufficiently satisfied that the Executive Director/CIO was in compliance.

IT WAS MOVED BY MS. TERNES AND SECONDED BY MR. WIENS AND CARRIED BY A VOICE VOTE TO ACCEPT THE EXECUTIVE LIMITATIONS AUDIT FOR CALENDAR YEAR 2017.

AYES: MR. GESSNER, MR. WIENS, MS. SMITH, MS. TERNES, AND MS. DORWART
NAYS: NONE
MOTION CARRIED

GASB 68 SCHEDULE AUDIT:

CliftonLarsonAllen (CLA) concluded their audit of the GASB 68 schedules and a final report was issued in December 2017 and presented to the Audit Committee. CLA will be in attendance at the SIB Audit Committee's May 24, 2018 meeting to present the results of the audit as well as the audit scope and approach for the upcoming financial audit of RIO for fiscal year July 1, 2017 – June 30, 2018.

OTHER:

Mr. Gessner informed the Board that he will be retiring at the end of the 2017-18 school year. Mr. Gessner's 47-year teaching career was with the Minot Public School District as a Math instructor. Mr. Gessner has been representing the Teachers' Fund for Retirement on the Audit Committee since August 18, 2006. The Audit Committee extended their appreciation to Mr. Gessner for his service and support.

The next Audit Committee meeting is scheduled for Thursday, May 24, 2018, at 3:00 pm at the Retirement and Investment Office, 3442 East Century Ave., Bismarck, ND.

With no further business to come before the Audit Committee, Ms. Dorwart adjourned the meeting at 4:04 p.m.

Respectfully Submitted:

_____
Ms. Rebecca Dorwart, Chair
SIB Audit Committee

_____
Bonnie Heit
Assistant to the Audit Committee

AGENDA ITEM IV.B.

Board Acceptance Requested

TO: State Investment Board

FROM: Dave Hunter on behalf of the SIB Securities Litigation Committee (SLC)

DATE: May 18, 2018

SUBJECT: **SLC Update**

The SLC met on May 10, 2018, to review the FRT Claims Filing Report for the most recent quarter noting no unusual items or material concerns. The SLC and RIO look forward to providing a comprehensive update of our enhance securities litigation monitoring program, including a summary of claims filing activity for the fiscal year ended June 30, 2018, during the 3rd calendar quarter of 2018.

In the interim, the SLC requests the SIB to accept this update which includes the Minutes from the SLC meeting on March 14, 2018, and Agenda from the SLC meeting on May 10, 2018, if the Board so desires.

North Dakota State Investment Board

ND STATE INVESTMENT BOARD
SECURITIES LITIGATION COMMITTEE MEETING

Wednesday May 10, 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 (March 14, 2018)

3. Securities Litigation Charter and Policy Update – Mr. Hunter (Informational) (5 minutes)

4. FRT Claims Filing Report (March/April) – Ms. Flanagan (Informational) (15 minutes)

5. Securities Litigation Education (Informational):

   - Bernstein Litowitz Berger & Grossman - Mr. Michael Blatchley (40 minutes)

   ========== Break from 4:00 to 4:10 pm ==========

   - Robbins Geller Rudman & Dowd – Ms. Roxana Pierce and Mr. Patrick Daniels (40 minutes)

6. Other - Next SIB Securities Litigation Committee Meeting

   North Dakota Retirement and Investment Office
   3442 E Century Ave, Bismarck, ND 58503
   Thursday, August 23, 2018 @ 3:00 PM

7. 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 MARCH 14, 2018, MEETING

BOARD MEMBERS PRESENT: Troy Seibel, Chair
Treasurer Kelly Schmidt, Vice Chair
Patrick Brooke, Attorney General's Office (TLCF)
Connie Flanagan, Fiscal/Investment Opr Mgr
David Hunter, ED/CIO

STAFF PRESENT: Bonnie Heit, Assistant to the Board
Sara Sauter, Audit Svs Suprv

CALL TO ORDER:

Mr. Seibel called the State Investment Board (SIB) Securities Litigation Committee meeting to order at 3:02 p.m. on Wednesday, March 14, 2018, at the Retirement and Investment Office, 3442 E Century Ave, Bismarck, ND.

AGENDA:

IT WAS MOVED BY MR. HUNTER AND SECONDED BY MR. BROOKE AND CARRIED BY A VOICE VOTE TO APPROVE THE MARCH 14, 2018, AGENDA.

AYES: TREASURER SCHMIDT, MR. SEIBEL, MR. HUNTER, MS. FLANAGAN, MR. BROOKE
NAYS: NONE
MOTION CARRIED

MINUTES:

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MS. FLANAGAN AND CARRIED BY A VOICE VOTE TO ACCEPT THE MINUTES OF THE FEBRUARY 16, 2018, MEETING AS DISTRIBUTED.

AYES: MS. FLANAGAN, MR. BROOKE, TREASURER SCHMIDT, MR. SEIBLE, AND MR. HUNTER
NAYS: NONE
MOTION CARRIED

CHARTER:

The Committee reviewed a second draft of the Committee's Charter. The Charter was reviewed by the SIB at their February 23, 2018, meeting. Mr. Hunter reviewed the changes as a result of the SIB's review.

Discussion followed on the roles of the SIB and the Securities Litigation Committee.

After discussion, the Committee concurred with the revisions to the Charter. The Charter will be presented at the SIB's March 23, 2018, meeting for additional review/discussion and possible acceptance.

SECURITIES LITIGATION POLICY:

The Committee reviewed a second draft of the SIB's Securities Litigation policy.

Ms. Flanagan shared information that she had gathered from other States regarding the content of their securities litigation policies and thresholds. Ms. Flanagan also received additional insight from Financial Recovery Technologies (FRT) on appropriate thresholds for US and Non US Accounts. Ms. Flanagan reviewed changes to the policy as a result of the information she had gathered.

After review and discussion, the Committee concurred with the revisions to the Securities Litigation policy. The policy will be presented to the SIB at their March 23, 2018, meeting for additional review/discussion and possible acceptance.

SECURITIES LITIGATION MONITORING TRANSITION:

Ms. Flanagan updated the Committee on transitioning The Northern Trust's oversite of the SIB's securities litigation program to FRT.

As of March 1, 2018 FRT has been overseeing any new US or Canadian claims. FRT is also providing information on Non US claims but nothing has come forward that would require the Securities Litigation Committee to act on or to bring before the SIB.

ADJOURNMENT:

With no further business to come before the Committee, Mr. Seibel adjourned the meeting at 3:48 p.m.

_____
Mr. Seibel, Chair

_____
Bonnie Heit
Assistant to the Board

AGENDA ITEM IV.C.

Board Acceptance Requested

TO: State Investment Board

FROM: Dave Hunter on behalf of the Executive Review Committee

DATE: May 18, 2018

SUBJECT: **Executive Review Committee Update**

The Executive Review Committee consists of Chair Yvonne Smith, Vice Chair Rob Lech and Land Commissioner Jodi Smith, as appointed by SIB Chairman Brent Sanford on February 23, 2018.

The Executive Review Committee conducted a comprehensive performance evaluation of the Executive Director over the last three months and reviewed his overall evaluation with the ED/CIO on May 17, 2018. The Committee intends to provide a verbal update of the performance evaluation process to the SIB at our meeting on May 25, 2018.

The Executive Review Committee will request the SIB accept the attached performance evaluation of the Executive Director on May 25, 2018.

Executive Review
Mr. David Hunter, Executive Director/Chief Investment Officer
May 17, 2018

Evaluation Process:

In compliance with the State Investment Board (SIB) Governance Policy, The SIB conducted a formal evaluation of the Executive Director/Chief Investment Officer, based on accomplishment of *Ends* and *Compliance with Executive Limitations.* An Executive Review Subcommittee, consisting of SIB board members Jodi Smith, Rob Lech and Yvonne Smith, was appointed to oversee the evaluation process. Staff assistance was provided by Sara Sauter, Supervisor of Audit Services, and by Bonnie Heit, Assistant to the Board.

- The primary feedback tool for this evaluation was a survey instrument designed to evaluate compliance with the SIB Governance Ends Policy and Executive Limitations Policies.
    - The survey instrument focused on board meetings, board relations, office operations, investment programs and program operations, public/legislative relations, and professional skills and development.
    - The instrument used the following three-point scale: 1- Does Not Meet Expectations, 2-Meets Expectations, and 3 - Exceeds Expectations.
    -
- In addition to the survey, the following reports were taken into account:
    - Executive Limitations Audit (January 1, 2017 - December 31, 2017)
    - Executive Director/CIO Effectiveness Survey Results (issued March 26, 2018)
    - Comprehensive Annual Financial Report (Fiscal Years 2016 and 2017)
    - RIO Financial Audit (Fiscal Year Ended 06/31/2017)
    - RIO Team Member Survey Results (December 2017)
    - Quarterly Monitoring Reports.

- Mr. Hunter also completed a self-assessment of his performance for consideration.

On April 25, 2018 the Executive Review Subcommittee reviewed the results and discussed areas of strength and developmental opportunities. The results and subsequent discussion form the basis for the formal evaluation. The evaluation will be presented to the SIB for final approval at the May 25, 2018 SIB Board Meeting.

Findings and Conclusions:

Ten of the eleven SIB board members completed the 23-item evaluation survey. The composite results were as follows:

- "Meets Expectations" or "Exceeds Expectations" comprised 96% (221 of 230) of the responses.
    - "Does Not Meet Expectations" comprised 2.7% (6 of 230) of the responses.
    - "Not Applicable" comprised 1.3% (3 of 230) of the responses.
- The composite score has continually improved over the past three years, as illustrated in the table below.

Category	2017	2016	2015
Board Meetings	2.47	2.32	2.10
Board Relations	2.33	2.27	2.10
Office Operations	2.35	2.25	1.98
Investment Programs and Operations	2.47	2.24	2.10
Public/Legislative Relations	2.31	2.16	2.02
Professional Skills & Development	2.33	2.24	2.05
Overall Average Rating	*2.38*	*2.25*	*2.06*

- Themes of the comments regarding Mr. Hunter's included:
    - Concise and understandable presentation of complicated material.
    - Excellent investment results and successful reduction of fees.
    - High fiduciary standards and exemplary due diligence.
    - Positive relationships with clients, stakeholders, and board members.
    - Courteous and respectful leader.
- Opportunities for improvement include addressing the "office culture" issues, refining board member orientation process, and continual improvement of clarity in communication.

Seventeen of the eighteen employees participated in the ED/CIO Effectiveness Survey Results for Calendar Year 2017, resulting in the following:

- High marks with regards to leadership.
- Provides a clear sense of purpose and direction and defines roles and responsibilities for team members.
- Employees are confident in Mr. Hunter and overwhelmingly believe that he demonstrates integrity, sets an example for others, shows genuine concern for staff, and treats everyone with respect.
- Communication continues to be an area where employees find opportunity for improvement.

Investment Performance

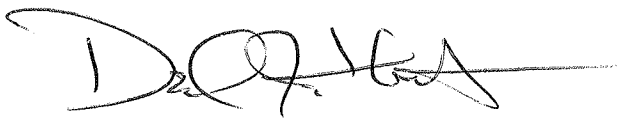
Based upon information contained in the Asset and Performance Overview, presented to the SIB in February 2018, the following investment returns were realized in 2017.

- SIB client assets grew by 17% or $1.9 billion in 2017 largely due to $1.7 billion of net investment income including $635 million for Legacy, $440 million for PERS, $360 million for TFFR and $195 million for WSI.
- The Pension Trust posted a net return of 17.1% in the last year. During the last five years, the Pension Trust generated a net annualized return of 9.3%, exceeding the performance benchmark of 8.2%.
- The Insurance Trust generated a net return of 10.5% in the last year. During the last five years, the Insurance Trust posted a net annualized return of 5.5%, exceeding the performance benchmark of 4.1%.
- Legacy Fund generated a net return of 14.6% last year, exceeding its policy benchmark. During the last five years, Legacy Fund earned a net annualized return of 6.0%, exceeding the performance benchmark of 5.0%.
- Risk as measured by standard deviation, was within approved levels for all SIB clients for the five years ended Dec. 31, 2017.

Summary

This evaluation shows that Mr. Hunter continues to provide excellent leadership as the Executive Director/Chief Investment Officer. He is highly regarded among board members, stakeholders, clients, and staff. During the past year, the agency has continued to make strides in transparency, efficiency, and investment performance, while reducing management fees and carefully assessing and monitoring risk.

Mr. Hunter welcomes the opportunities for improvement that have been voiced by board members and staff. He will continue to work toward the goals of improving office culture, clarity of communication, and developing the orientation/education of board members.



David J. Hunter
NORIO EDICIO
May 17, 2018

AGENDA ITEM IV.D.

Informational

TO: State Investment Board
FROM: Dave Hunter and Connie Flanagan
DATE: May 18, 2018
SUBJECT: **RIO Budget Planning Update for 2019-2021**

On April 18, 2018, Governor Burgum released budget guidelines for 2019-2021. The Governor is requesting all agencies (including special fund agencies) to adopt the following guidelines:

1. Agencies with an appropriation less than $5 million should submit a base budget with a 5% reduction in ongoing expenditures;
2. Agencies with an appropriation of $5 million or more should submit a base budget with a 10% reduction in ongoing expenditures; and
3. Agencies with 20 or more FTE should submit a base budget with a 5% FTE reduction.

RIO currently has 19 authorized FTE and our appropriation for 2017-19 is $5.3 million. Given that RIO's budget is over $5 million, we will need to submit a base budget which includes a 10% reduction which will likely translate into 1-to-3 less FTE. The FTE reduction is assumed due to RIO's budget largely consisting of salaries and benefits (for $4.4 million or 83%) while operating expenses and contingencies have already been reduced to historically low levels. As evidence, RIO's operating expenses declined by 13% over the past 20 years (to less than $863,000 in 2017-19) due to our agency consistently being very cost conscious. RIO's contingency line has also been subject to extreme budget pressures and was reduced by over 36% in the last biennium (to $52,000).

	2017-19 Base Appropriation	Requested 10% Budget Cut	Governor's Base Budget
Salaries and wages	$ 4,425,570	$ (572,066)	$ 3,853,504
Operating expenses	$ 862,484	$ 38,061	$ 900,545
Contingencies	$ 52,000	$ -	$ 52,000
Total Special Funds	$ 5,340,054	$ (534,005)	$ 4,806,049
Full-time equivalent	19.00	-1.00	18.00

RIO management believes our agency has operated in a fiscally conservative manner for many years, while maintaining favorable client satisfaction survey scores (for both TFFR and SIB) despite a 38% increase in TFFR membership (from 15,781 in 1998 to 21,853 in 2017) and 80% increase in assets under management (AUM) since 2013. During the last 20-years, RIO's FTE has only grown by 1 person including two new investment professionals in the last 6-years (which coincided with an 80% increase in AUM between 2013 and 2018). RIO's overall performance has generally been strong as evidenced by solid client survey scores while investment performance has generally met or exceeded expectations in recent years including above benchmark returns, favorable peer rankings, and a keen focus on optimizing risk adjusted returns. Given significant growth in AUM and desire to further enhance our overall data analytics and risk management systems, RIO initially planned to add 1 FTE (a Chief Investment Risk Officer) in 2019-21. In light of current budget pressures, RIO will be unable to include this request in the base budget. RIO looks forward to submitting an optional package which includes 1 new FTE and a major system upgrade for our 13-year old benefits system (as well as other important technological upgrades to enhance operational efficiency and cybersecurity).

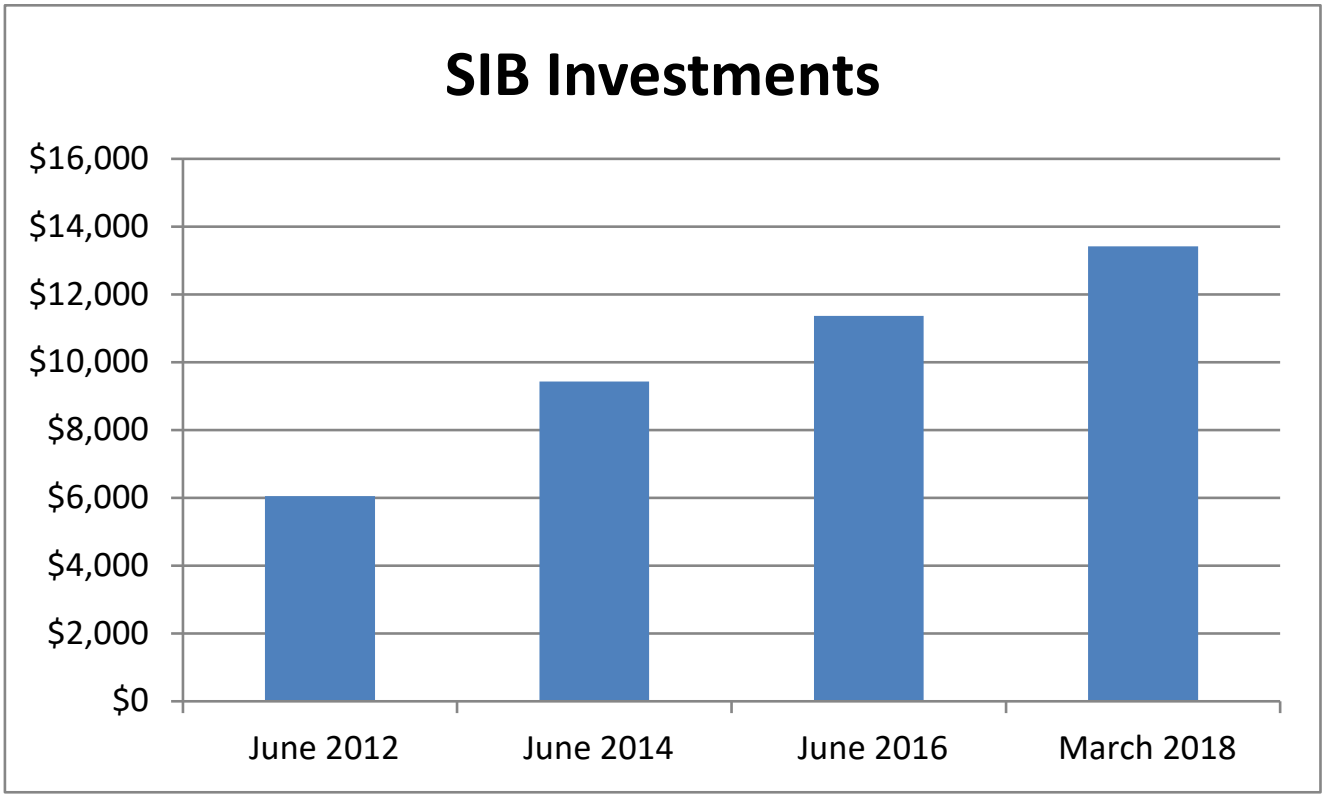
In the event RIO was required to adhere to a 10% reduction (of $534,005) in our $5.3 million budget while seeking to only eliminate one FTE, the ED/CIO position would need to be considered. Due to compensation levels, all other options would require the elimination of two or more FTE which would be deemed to be even more challenging from an operational perspective, while likely having a

material adverse impact on agency morale and management trust. **Given that RIO has consistently operated in a fiscally conservative manner for many years as evidenced by the addition of only 1 FTE over the past 20 years in addition to implementing a 13% operating expense reduction (in 20 years) and 36% cut in contingencies (in 2017-19), RIO requests the SIB support our willingness to submit an optional package which reinstates the ED/CIO position.**

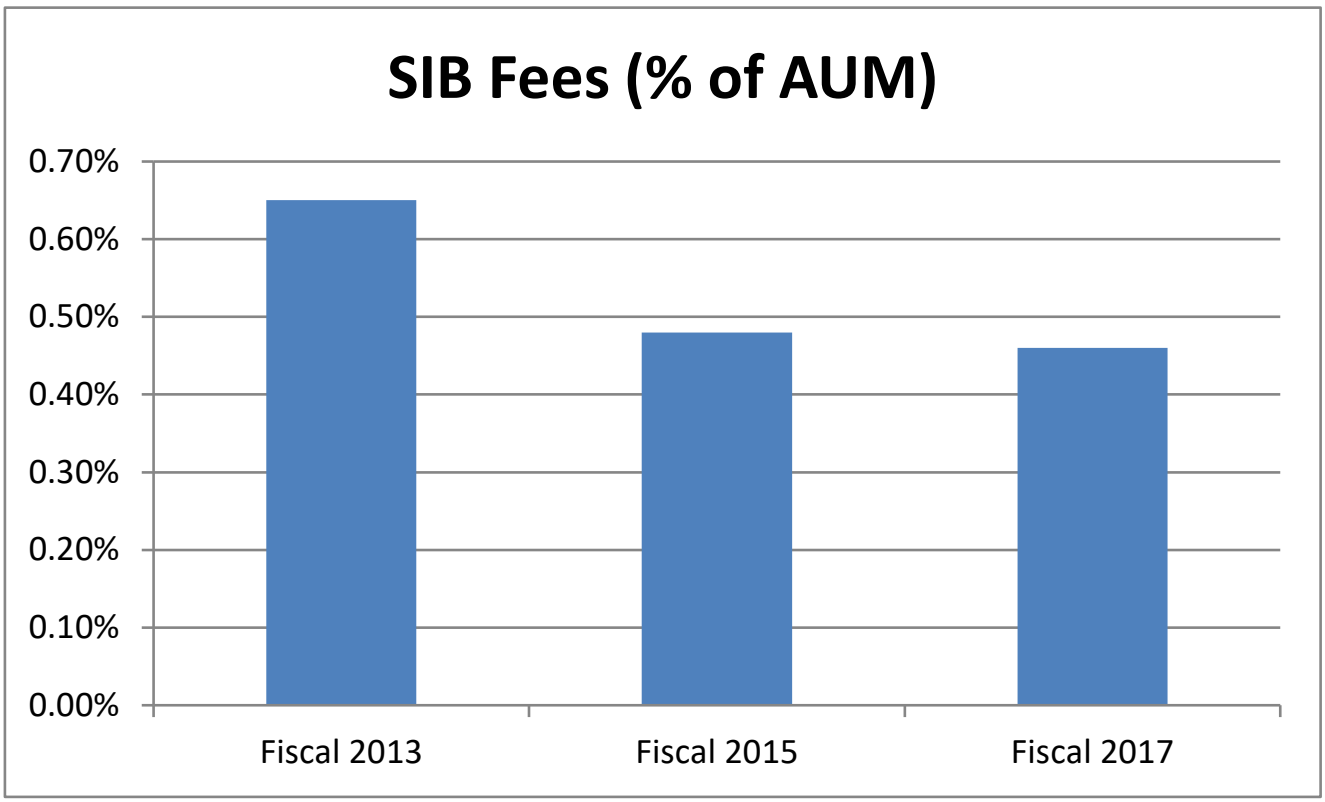
We are also seeking Board input on the following initiatives relating to optional packages:

1. **TFFR Pension Administration Modernization** – The current TFFR pension administration software has been in operation since 2005. The functionality and technical architecture of this client-server technology is 13 years old, and is at the end of its product release life cycle. In order to move towards a more technologically advanced, web based system which would provide significant self-service functionality for members and employers, RIO is exploring the potential benefits, risks & costs of upgrading or replacing our current application to improve & streamline TFFR pension administration processes, reporting capabilities communications & services to members and employers. Most of the desired features needed to reinvent the way TFFR conducts business are standard functions of modern pension administration software, either out of the box, or implemented with configuration. An updated pension administration system will enable TFFR to adopt current best practices in self services for members and employers, and achieve greater efficiencies in daily administration. Employers will be enabled to take greater ownership of their data with the ability to securely upload contribution data, including optional electronic submission methods available to paper-based reporting employers, receive immediate validation results, & confirm contribution remittances. Members using self-service can access and update their personal information, and run their own benefit estimates. Communications will be timelier with members being able to initiate requests online and receive statements and notifications securely through the web portal. Further, digital communication is direct and secure, saves on mailing costs, and reduces reliance on paper. As part of its study, RIO is also collaborating with other state agencies to review available options and identify potential synergies to enhance operational efficiencies, reduce costs, and improve agency cybersecurity preparedness.

2. **Enhance Investment Risk Analysis** – SIB client investments have increased by $6 billion (or 80%) in the last 5-years, while internal investment management expenses have trended downward from 1.2 bps in fiscal 2013 to less than 0.9 bps in fiscal 2018. If the SIB concurs, RIO desires to add one FTE (a Chief Investment Risk Officer) to further enhance our overall agency risk management abilities given the continued growth expected in AUM. RIO believes this incremental cost can be incorporated without increasing internal investment management expenses above 0.01% (or 1.0 basis point) which compares favorably with other public pension plans in which this fee generally ranges from 0.01% to 0.02%. **It is important to note the SIB and RIO have been successful in prudently managing overall investment costs in recent years noting that these fees declined by 30% between fiscal 2013 (at 0.65%) and fiscal 2017 (at 0.46%)**. The fiscal 2017 investment fee level of 0.46% also compares favorably to other public pension plans noting the median investment fee quoted in the Public Fund Date Exchange (PFDE) for 2017 was 0.49%. The PFDE median was based on 59 other U.S. public pension plans with a median fund size of $28 billion and actual asset allocation of 58% equity, 24% fixed income, 11% real assets, 5% hedge funds and 2% cash. RIO notes that SIB clients have earned a reasonable return on their investment fees as the prudent use of active management has improved client returns by approximately $300 million (or 0.60%) over the last 5-years (including $120 million in 2017) after deducting all internal and external investment management fees and expenses.



SIB investments have increased by 120% from $6 billion in 2012 to over $13 billion in 2018. RIO's FTE budget has remained at 19.00 positions despite this significant asset growth, while SIB and TFFR client satisfaction scores remain strong at 3.6 and 3.8 (on a 4.0 scale).



SIB Fees have declined by nearly 30% from 0.65% in Fiscal 2013 to 0.46% in Fiscal 2017. Based on $13 billion of AUM (Assets Under Management), this 0.19% reduction translates into over $24 million of annual fee savings (e.g. $13 billion x 0.19% = $24.7 million).

ND Pension Trust Peer Rankings have improved from the 71st percentile in the Last 10 Years to the 20th Percentile for the Last 5 Years and 13th percentile in the Last 3 Years.

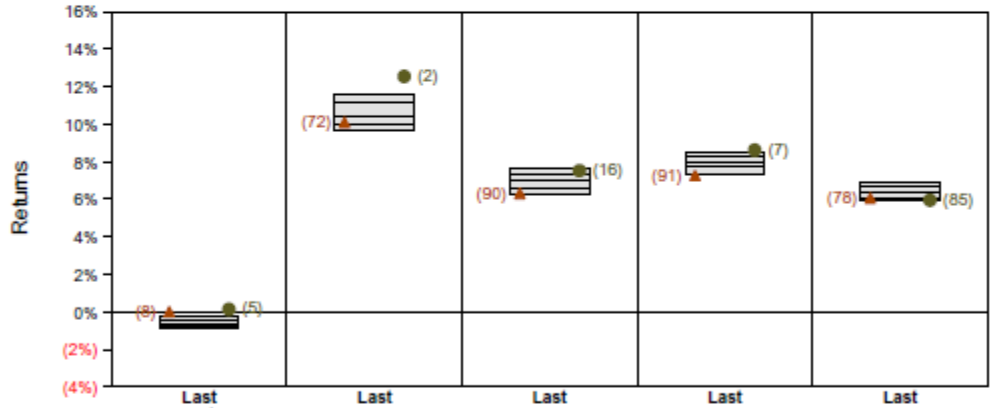
Total Fund Ranking

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 March 31, 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

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	0.30	12.18	7.75	9.08	7.39
25th Percentile	(0.08)	11.29	7.21	8.55	6.85
Median	(0.39)	10.21	6.66	7.67	6.33
75th Percentile	(0.62)	8.84	5.96	6.86	5.87
90th Percentile	(0.75)	7.95	5.16	5.95	5.15
Total Fund ●	0.14	12.54	7.52	8.62	5.95
Policy Target ▲	0.01	10.10	6.30	7.26	6.05

Asset Allocation Adjusted Ranking



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.21)	11.58	7.66	8.54	6.88
25th Percentile	(0.48)	11.15	7.35	8.30	6.67
Median	(0.67)	10.46	7.03	8.01	6.39
75th Percentile	(0.80)	10.02	6.60	7.71	6.09
90th Percentile	(0.92)	9.65	6.29	7.32	5.91
Total Fund ●	0.14	12.54	7.52	8.62	5.95
Policy Target ▲	0.01	10.10	6.30	7.26	6.05

* 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, 5.7% CPI-W, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.3% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

AGENDA ITEM IV.E.

Informational

TO: State Investment Board

FROM: Dave Hunter, Paul Erlendson & Alex Browning

DATE: May 18, 2018

SUBJECT: **Custom Board Member Education**

Based on the SIB Self-Assessment Survey and Executive Review process, RIO intends to work with Callan and each Board member to develop a custom investment education program for consideration by each SIB member. The Executive Director intends to reach out to individual board members in June and July to gain insight into the types and format of investment education best suited for the needs of each SIB member. Callan will be consulted in the development of these investment education plans given their long-history of working with the SIB and the excellent educational courses and conferences their firm offers to a wide variety of board members with fiduciary responsibility. **RIO intends to present these offerings to the SIB for their consideration at our next SIB meeting on Friday, July 27, 2018, at the Bismarck State College Energy Center.**