

## Executive Summary - Informational

**TO:** State Investment Board  
**FROM:** Dave Hunter  
**DATE:** February 21, 2020  
**SUBJECT:** SIB Meeting Materials – February 28, 2020

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The February SIB meeting will cover the following topics:

1. **Investment Update** – SIB clients earned over \$2.3 billion of net investment income in 2019 with the Legacy Fund earning over 18% (\$1+ billion) and PERS (\$500+ million) and TFFR (\$400+ million) each earning over 17.9% for the year ended 12/31/2019. The vast majority of SIB clients earned at least 0.50% of positive excess return for the 5-years ended 12/31/2019, while net investment returns for PERS and TFFR were ranked in the top quartile based on Callan's Public Fund Database for the 3, 5 and 10 year periods ended 12/31/2019.
2. **Callan Quarterly Investment Review** – The SIB engages Callan to provide quarterly investment performance reviews which includes a reconciliation of RIO's reported investment returns and asset valuations with those reported by Northern Trust, noting that Northern Trust serves as our primary custodian and record keeper of SIB client investments. RIO ties out investment returns and asset valuations directly with our investment managers and Northern Trust after every month-end in addition to assisting Callan in reconciling reported returns and investment valuations directly with Northern Trust after every quarter-end. The State also obtains an outside independent audit of RIO's financial statements and disclosures as of June 30<sup>th</sup> after every fiscal year-end. The SIB Audit Committee and RIO's Internal Audit team is also responsible for reviewing RIO's internal accounting controls, policies, practices, reporting and documentation on behalf of the SIB throughout the year.
3. **U.S. Small Cap Equity Search** – RIO and Callan will provide an update on the U.S. small cap equity search process which will eventually replace the Parametric Russell 2000 synthetic index mandates with (U.S. small cap equity) strategies that have a greater potential for outperformance, as approved by the SIB last month. Parametric manages over \$1 billion for the SIB including \$432 million of U.S. small cap futures exposure in the Legacy Fund, Pension and Insurance pools. In late-2019, the SIB approved expanding an existing \$160 million relationship with Atlanta Capital in U.S. small cap and the proposed search activity will be aligned to complement our existing manager structure, preserve downside risk protection and efficiently capture upside appreciation in a prudent and cost effective manner. RIO notes this search could result in expanding relationship exposures with existing investment firms.

4. **Enhanced Proxy Vote Auditing** – RIO will provide an update on the existing contract discussions with Broadridge Financial Solutions to utilize their “ProxyDisclosure” service to enhance our ability to efficiently audit the proxy voting practices of our equity managers in 2020. In connection with our annual Governance Manual Review in late-2019, the SIB and RIO sought to adopt emerging best practices with regards to efficiently monitoring various proxy voting practices on topics such as executive compensation and board diversity in addition to certain shareholder led initiatives which could potentially be misaligned with the best interests of our stakeholders and constituents.
5. **SIB Client Board and Committee Meetings** – RIO will highlight recent client investment updates provided including the WSI board and PERS Investment Sub-Committee. RIO intends to conduct additional interim investment updates as of 12/31/2019 with most of our SIB client boards over the next quarter.
6. **TFFR Pension Administration System Project Update** – RIO will highlight recent discussions with the TFFR Executive Steering Committee and ND IT relating to our TFFR Pension Administration System enhancement initiative.
7. **Agency Staffing Update** – RIO will provide an update of recent and upcoming staffing changes including succession planning for RIO’s Deputy Executive Director and Chief Retirement Officer Fay Kopp and Retirement Program Manager Shelly Schumacher in addition to the hiring of our new Investment and Compliance Officer Matt Posch on February 3<sup>rd</sup> and Investment Accountant Ann Griffin on March 2<sup>nd</sup>.



# ND STATE INVESTMENT BOARD MEETING

Friday, February 28, 2020, 8:30 a.m.  
Fort Union Room, State Capitol  
600 E Blvd, Bismarck, ND

## Agenda

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

### II. BOARD ACCEPTANCE OF MINUTES (January 24, 2020)

### III. INVESTMENTS (90 minutes)

- A. Asset and Performance Overview - Mr. Hunter *Informational*
- B. Callan LLC - Mr. Alex Browning & Mr. Paul Erlendson **Board Acceptance**
  - 1. Market Update - 12/31/19
  - 2. Pension, Insurance & Legacy Fund Review - 12/31/19
  - 3. U.S. Small Cap Equity Update **(to follow)**
- C. Investment Updates – Mr. Hunter *Informational*
  - 1. PERS – Main Pension Plan, Job Service, Retiree Health Insurance and Group Insurance
  - 2. Workforce Safety & Insurance

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

### IV. GOVERNANCE (1 hour)

- A. SIB Audit Committee – Ms. Sara Sauter **Board Acceptance**
  - 1. February 27, 2020 Meeting Report
  - 2. Executive Limitations Audit
- B. Executive Review Committee Update – Ms. Yvonne Smith *Informational*
  - 1. February 10, 2020 Meeting Review
  - 2. March 16, 2020 Meeting Preview
- C. Proxy Voting Policy Update – Mr. Hunter *Informational*
- D. TFFR Pension Administration System Project Update – Mr. Hunter *Informational*
- E. RIO Agency Update – Mr. Hunter *Informational*

### V. OTHER

Next Meetings: SIB Executive Review Committee - March 16, 2020 8:30 a.m. RIO Conference Room  
SIB - March 27, 2020 8:30 a.m. Fort Union Room - State Capitol  
SIB Securities Litigation Committee - May 19, 2020 1:00 p.m. RIO Conference Room  
SIB Audit Committee - May 21, 2020 3:00 p.m. RIO Conference Room

### VI. ADJOURNMENT

**NORTH DAKOTA STATE INVESTMENT BOARD  
MINUTES OF THE  
JANUARY 24, 2020, BOARD MEETING**

**MEMBERS PRESENT:** Rob Lech, TFFR Board, Vice Chair  
 Troy Seibel, PERS Board, Parliamentarian  
 Jon Godfread, Insurance Commissioner  
 Toni Gumeringer, TFFR Board  
 Gary Kreidt, Legacy/Budget Stab. Adv. Board  
 Adam Miller, PERS Board  
 Mel Olson, TFFR Board  
 Kelly Schmidt, State Treasurer  
 Jodi Smith, Commissioner of Trust Lands  
 Yvonne Smith, PERS Board

**MEMBERS ABSENT:** Brent Sanford, Lt. Governor, Chair  
 Bryan Klipfel, Director of WSI

**STAFF PRESENT:** Eric Chin, Chief Risk Officer/Senior CIO (tlcf)  
 Connie Flanagan, Chief Financial Officer  
 Bonnie Heit, Admin Svs Suprv  
 David Hunter, Exec Dir/CIO  
 Fay Kopp, Dep Exec Dir/CRO  
 Sara Sauter, Suprv of Internal Audit  
 Darren Schulz, Dep CIO  
 Susan Walcker, Senior Financial Acct

**GUESTS:** Jace Beehler, Governor's Office  
 Alex Browning, Callan LLC  
 Sam Coust, Broadridge  
 Jessica Davis, Insurance Dept.  
 Mitchell Goldstein, Ares  
 Kara Herskowitz, Ares  
 Jana Markowicz, Ares

**CALL TO ORDER:**

Dr. Rob Lech, Vice Chair, called the State Investment Board (SIB) regular meeting to order at 8:30 a.m. on Friday, January 24, 2020, at the State Capitol, Ft. Union Room, Bismarck, ND.

**AGENDA:**

The Board considered the agenda for the January 24, 2020, meeting,

**IT WAS MOVED BY MS. SMITH AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO ACCEPT THE AGENDA FOR THE NOVEMBER 22, 2019, MEETING.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: COMMISSIONER GODFREAD, MR. KLIPFEL, LT. GOVERNOR SANFORD**



MINUTES:

IT WAS MOVED BY MR. OLSON AND SECONDED BY MS. SMITH AND CARRIED BY A VOICE VOTE TO APPROVE THE NOVEMBER 22, 2019, MINUTES AS DISTRIBUTED.

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

NAYS: NONE

MOTION CARRIED

ABSENT: MR. KLIPFEL, COMMISSIONER GODFREAD, LT. GOVERNOR SANFORD

INVESTMENTS:

Mr. Hunter provided an update on the status of the investment portfolios the SIB manages on behalf of its' clients for the period ending November 30, 2019. SIB investments exceeded \$16 billion and are at or near all-time highs, given very favorable capital market and economic conditions and strong oil and gas production levels. Clients earned over \$2 billion of net investment income for the 11 months ending November 30, 2019. Interim results for the four largest investment clients - Legacy Fund 16.2% or \$925 million, Public Employees Retirement System (PERS) 15.9% or \$450 million, Teachers' Fund for Retirement (TFFR) 15.9% or \$365 million, and Workforce Safety & Insurance (WSI) 12.6% or \$235 million. The vast majority of the SIB clients earned at least 0.50% of positive excess return in 2019 based on preliminary valuations.

Mr. Hunter also informed the Board the Office of the State Treasurer inquired if the SIB could accept them as a client to oversee the Veterans Cemetery Fund which is approximately \$500,000. The income from this fund would be used to fund maintenance expenses of the U.S. Veterans Cemetery.

After discussion,

IT WAS MOVED BY MR. OLSON AND SECONDED BY MS. SMITH TO AUTHORIZE RIO PERSONNEL TO WORK TOWARDS ACCEPTING THE VETERANS CEMETARY FUND AS A POTENTIAL NEW CLIENT.

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

NAYS: NONE

MOTION CARRIED

ABSENT: COMMISSIONER GODFREAD, MR. KLIPFEL, LT. GOVERNOR SANFORD

For the record, the Industrial Commission will need to authorize the contract prior to its implementation per State Statute 21-10-02.

Fixed Income - Mr. Schulz reviewed the SIB's current direct lending mandate. Staff is recommending an increase in the commitment to bring the allocation to direct lending strategies closer to target in the Pension Pool and the Legacy Fund. The underweight is a result of the significant growth in assets for both of the portfolios.

Ares representatives reviewed the SIB's portfolio currently under their management.

After the review and further discussion on the recommendation,

IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MS. SMITH AND CARRIED BY A ROLL CALL VOTE TO EXPAND THE EXISTING \$200 MILION COMMITMENT TO THE ARES ND CREDIT STRATEGIES FUND LLC (DIRECT LENDING) BY UP TO \$100 MILLION.

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

NAYS: NONE

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

Investment Consulting - Mr. Hunter reached out to the top 10 investment management consulting firms to learn more about how they conduct their business and the areas in which each firm focuses its resources, efforts and expertise. Based on this review, RIO ranked Callan LLC (1), RVK (2), and Aon (3) as the top three general investment consulting firms for U.S. public pension plans and U.S. sovereign wealth funds which are similar in size, complexity and structure to the SIB and RIO.

RIO staff recommended the SIB maintain their existing investment consulting relationship with Callan LLC given their proven track-record in delivering high quality professional investment management consulting services at a reasonable price while enabling the SIB to generate over 0.50% (or ½ of 1 percent) of positive excess return versus board approved policy benchmarks for the 3, 5 and 10 year periods ended June 30, 2019. Based on \$10 billion of investments and 0.50% of positive excess return for the 10-years ended June 30, 2019, the SIB, RIO and Callan LLC have successfully collaborated to generate approximately \$500 million of incremental income and wealth for the vast majority of SIB clients over the past decade.

After discussion,

**IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY COMMISSIONER GODFREAD AND CARRIED BY A ROLL CALL VOTE TO EXTEND THE CALLAN LLC RELATIONSHIP PER STAFF RECOMMENDATION.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

US Small Cap Equity - Mr. Schulz reviewed the small cap equity market. Staff believes, and academic literature supports, that greater opportunity for active management exists within the U.S. small cap equity space.

Staff recommended the SIB engage Callan LLC to conduct a U.S. small cap equity search to replace the Parametric Russell 2000 synthetic index mandates with (U.S. small cap equity) strategies that have a greater potential for outperformance. Parametric manages over \$1 billion for the SIB including \$432 million of U.S. small cap futures exposure in the Legacy Fund, Pension and Insurance pools. In late-2019, the SIB approved expanding an existing \$160 million relationship with Atlanta Capital in U.S. small cap and the proposed search activity will be aligned to complement the existing manager structure, preserve downside risk protection and efficiently capture upside appreciation in a prudent and cost effective manner. RIO notes this search could result in expanding relationship exposures with existing investment firms.

**IT WAS MOVED BY COMMISSIONER SMITH AND SECONDED BY MS. SMITH AND CARRIED BY A ROLL CALL VOTE TO RETAIN CALLAN LLC TO CONDUCT A SMALL CAP MANAGER SEARCH PER STAFF RECOMMENDATION.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

Discussion followed on the process of hiring a new manager and how the roles of staff and Callan are defined.

The Board recessed at 9:50 a.m. and reconvened at 10:09 a.m.

**GOVERNANCE:**

Proxy Voting - Mr. Hunter reviewed revisions to the SIB's proxy voting policy. The SIB, in connection with their annual Governance Manual review, sought to adopt best practices with regards to efficiently monitoring various proxy voting practices which could potentially be misaligned with the interests of their stakeholders and constituents.

RIO staff recommended the SIB engage Broadridge Financial Solutions and utilize their Proxy Disclosure service to enhance the SIB's ability to efficiently audit the proxy voting practices of their equity managers.

After discussion,

**IT WAS MOVED BY TREASURER SCHMIDT AND SECONDED BY MR. SEIBEL AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO CONTRACT NEGOTIATIONS, AND THE PROCESS NEEDED WITH RIO STAFF, TO BRING ON BROADRIDGE FINANCIAL SOLUTIONS CONTINGENT UPON REVIEW BY THE ATTORNEY GENERALS OFFICE.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

Commissioner Smith requested the contract be written in a general sense so as to allow the State the opportunity to contract with any proxy voting vendor not just a specific vendor as the Land Dept. is also looking into contracting with a proxy voting service. The Board concurred.

**IT WAS MOVED BY COMMISSIONER SMITH AND SECONDED BY COMMISSIONER GODFREAD AND CARRIED BY A ROLL CALL VOTE TO ADOPT THE FIRST READING OF THE SIB PROXY VOTING POLICY.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

Meeting Schedule - A proposed meeting schedule for July 24, 2020 - May 28, 2021 was presented for the Board's consideration.

**IT WAS MOVED BY COMMISSIONER GODFREAD AND SECONDED BY MR. OLSON AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE MEETING SCHEDULE.**

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

**NAYS: NONE**

**MOTION CARRIED**

**ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD**

Board Self-Assessment - Mr. Hunter inquired if the Board is interested in conducting a self-assessment. Board self-assessments were completed in 2018 by Aon Hewitt and 2019 by the Executive Review Committee (ERC) with the assistance of RIO's Internal Audit Department.

After discussion,

IT WAS MOVED BY COMMISSIONER GODFREAD AND SECONDED BY MR. OLSON AND CARRIED BY A ROLL CALL VOTE TO CONDUCT A BOARD SELF-ASSESSMENT INTERNALLY.

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

NAYS: NONE

MOTION CARRIED

ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD

The Board requested the ERC review and make a recommendation to the Board on how often a self-assessment should be conducted and if it should be completed internally or externally.

RIO Compensation Study - Mr. Hunter requested authorization to complete a compensation study in order to improve RIO's ability to attract and retain a dedicated team of top performing professionals who are responsible for administering a \$4 billion retirement benefits program and a \$16 billion investment program.

The Board took no action on the request. Board members expressed the building concern among their own agencies as well as many state agencies who are experiencing the same difficulties of attracting and retaining personnel. Agencies need to continue to bring their concerns to the Office of Management and Budget, Human Resource Management Services, and the Legislature. If there is a compensation study done, it should be mandated by the Legislature.

ERC - The ERC was appointed on July 26, 2019, with the following members serving for the period of July 1, 2019 - June 30, 2020; Ms. Smith, Chair, Mr. Olson, and Mr. Miller. The ERC was also established as a standing committee of the SIB. The ERC will be conducting a formal evaluation of the Executive Director/CIO based on accomplishments of Ends and compliance with Executive Limitations.

The following monitoring reports for the quarter ending December 31, 2019 were presented for the Board's acceptance; Budget/Financial Conditions, Executive Limitations/Staff Limitations, Investment Program, and Retirement Program.

IT WAS MOVED BY MS. GUMERINGER AND SECONDED BY COMMISSIONER SMITH AND CARRIED BY A VOICE VOTE TO ACCEPT THE MONITORING REPORTS FOR THE PERIOD ENDING DECEMBER 31, 2019.

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

NAYS: NONE

MOTION CARRIED

ABSENT: MR. KLIPFEL, LT. GOVERNOR SANFORD

#### OTHER:

The next meeting of the Securities Litigation Committee is scheduled for February 4, 2020, at 1:00 p.m. at the Retirement and Investment Office.

The next meeting of the SIB Audit Committee is scheduled for February 27, at 3:00 p.m. at the Retirement and Investment Office.

The next meeting of the SIB for regular business has been scheduled for February 28, 2020, at 8:30 a.m., at the State Capitol, Ft. Union Room.

**ADJOURNMENT:**

With no further business to come before the SIB, Dr. Lech adjourned the meeting at 11:10 a.m.

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Rob Lech, Vice Chair  
State Investment Board

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Bonnie Heit  
Recorder

Informational

# **Asset and Performance Overview**

## **Quarterly Investment Review as of December 31, 2019**

February 24, 2020

Dave Hunter, Executive Director / CIO

Darren Schulz, Deputy Chief Investment Officer

Fay Kopp, Deputy Executive Director / Chief Retirement Officer

Connie Flanagan, Chief Financial Officer

Eric Chin, Chief Risk Officer

ND Retirement & Investment Office (RIO)

State Investment Board (SIB)

# State Investment Board – Client Assets Under Management

<u>Fund Name</u>	<u>Market Values as of 12/31/19 <sup>(1)</sup></u>	<u>Market Values as of 6/30/19 <sup>(2)</sup></u>	<u>Market Values as of 12/31/18 <sup>(1)</sup></u>
<b>Pension Trust Fund</b>			
Public Employees Retirement System (PERS)	3,308,152,275	3,152,930,087	2,852,100,971
Teachers' Fund for Retirement (TFFR)	2,678,768,891	2,573,622,554	2,328,356,868
City of Bismarck Employees Pension	110,429,187	104,517,247	94,907,070
City of Grand Forks Employees Pension	69,231,687	68,419,301	60,622,344
City of Bismarck Police Pension	43,778,774	41,862,976	37,881,069
Grand Forks Park District	7,573,831	7,176,427	6,498,756
<b>Subtotal Pension Trust Fund</b>	<b>6,217,934,643</b>	<b>5,948,528,592</b>	<b>5,380,367,077</b>
<b>Insurance Trust Fund</b>			
Workforce Safety & Insurance (WSI)	2,134,458,100	2,065,400,398	1,859,082,420
Budget Stabilization Fund	678,039,827	118,707,130	115,290,363
City of Fargo FargoDome Permanent Fund	45,135,567	44,840,633	40,952,152
PERS Group Insurance Account	31,614,024	31,067,120	33,055,703
State Fire and Tornado Fund	24,207,015	22,761,457	21,620,527
ND Association of Counties (NDACo) Fund	6,681,677	6,333,052	5,722,576
Petroleum Tank Release Compensation Fund	6,157,730	5,994,235	6,236,648
State Risk Management Fund	4,297,705	4,909,623	4,458,451
State Risk Management Workers Comp Fund	4,100,734	5,187,879	3,494,547
State Bonding Fund	3,719,807	3,609,422	3,449,911
ND Board of Medicine	2,463,415	2,362,384	2,221,853
Insurance Regulatory Trust Fund	1,589,930	6,218,781	1,593,086
Attorney General Settlement Fund	1,145,640		
Lewis & Clark Interpretive Center Endowment Fund	793,075	751,763	678,880
Bismarck Deferred Sick Leave Account	770,387	779,596	709,735
Cultural Endowment Fund	499,937	475,311	423,934
<b>Subtotal Insurance Trust Fund</b>	<b>2,945,674,569</b>	<b>2,319,398,784</b>	<b>2,098,990,786</b>
<b>Legacy Trust Fund</b>			
Legacy Fund	6,915,413,432	6,580,759,920	5,636,643,891
PERS Retiree Insurance Credit Fund	145,143,389	135,962,521	119,091,359
Job Service of North Dakota Pension	98,151,301	97,285,279	94,113,893
ND Tobacco Prevention and Control Trust Fund	7,430,814	9,300,127	48,670,301
<b>Total Assets Under SIB Management</b>	<b>16,329,748,147</b>	<b>15,091,235,223</b>	<b>13,377,877,307</b>

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

<sup>(2)</sup> 6/30/19 market values as stated in the Comprehensive Annual Financial Report.

- ▶ SIB client investments exceeded \$16.3 billion as of Dec. 31, 2019, with the Pension Trust at \$6.2 billion, Insurance Trust over \$2.9 billion and Legacy Fund at \$6.9 billion. **This \$2.95 billion increase represents a 22% rise in the last year and includes over \$2.3 billion of net investment income for SIB clients in 2019.**
- ▶ Equity markets surged in the 4<sup>th</sup> quarter, led by U.S. stocks aided by a Fed rate cut, an easing of trade tension, and low unemployment. Bonds were mixed as yields fell on the short end and rose on the long end, while credit spreads narrowed. In total, global public equities rose roughly 9% in the 4<sup>th</sup> quarter of 2019, while core fixed income returned less than 1%.
- ▶ The Pension Trust posted a net return of **17.9%** in the last year. During the last 5-years, the Pension Trust generated a net annualized return of 7.4%, exceeding the performance benchmark of 6.8%.
- ▶ The Insurance Trust generated a net return of **12.0%** in the last year. During the last 5-years, the Insurance Trust posted a net annualized return of 5.6%, exceeding the performance benchmark of 4.5%.
- ▶ Legacy Fund generated a net return of **18.1%** last year. During the last 5-years, Legacy Fund earned a net annualized return of 7.0%, exceeding the performance benchmark of 6.2% noting the Fund was not fully invested in its current asset allocation until early 2015.

# Pension Return & Risk Summary – Dec. 31, 2019

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>PERS \$3.3 billion</b>						
Total Fund Return - Net	6.09%	17.99%	9.87%	7.39%	6.73%	0.09%
Policy Benchmark Return	5.34%	17.40%	9.09%	6.84%	6.25%	
Total Relative Return	0.75%	0.59%	0.78%	0.55%	108%	
<b>TFFR \$2.7 billion</b>						
Total Fund Return - Net	6.04%	17.97%	9.81%	7.35%	6.71%	0.16%
Policy Benchmark Return	5.42%	17.62%	9.12%	6.83%	6.32%	
Total Relative Return	0.61%	0.35%	0.69%	0.52%	106%	
<b>Bismarck Employees \$109 million</b>						
Total Fund Return - Net	5.41%	16.10%	9.01%	6.87%	5.53%	0.40%
Policy Benchmark Return	5.06%	15.70%	8.13%	6.26%	5.33%	
Total Relative Return	0.35%	0.40%	0.87%	0.61%	104%	

**Key Point:**  
Every Pension client generated positive “Excess Return” for the 5 years ended Dec. 31, 2019, while adhering to prescribed risk levels (e.g. within 115% of the Policy Benchmark the last 5-years).

5-Yr. Returns Dec. 31, 2019	Asset Allocation	Benchmark Return	Allocation x Return
Asset Class	a	b	a x b
Equity	58%	8.4%	4.9%
Fixed Income	23%	4.0%	0.9%
Real Assets	19%	5.7%	1.1%
Policy Benchmark Return (5-years)			6.84%

## PERS Current Policy Benchmark:

**58% Equity** (MSCI ACWI returned 8.4% for the 5 years ended 12/31/2019); **23% Fixed Income** (16% Bloomberg Barclays U.S. Aggregate returned 3% and 7% BBUSA Corporate High Yield returned 6.4% for the 5 years ended 12/31/2019); **19% Real Assets** (11% Real Estate plus 6% Infrastructure plus 2% Timber approved benchmark indices returned 5.7% for the 5 years ended 12/31/2019).



# Pension Return & Risk Summary – Dec. 31, 2019

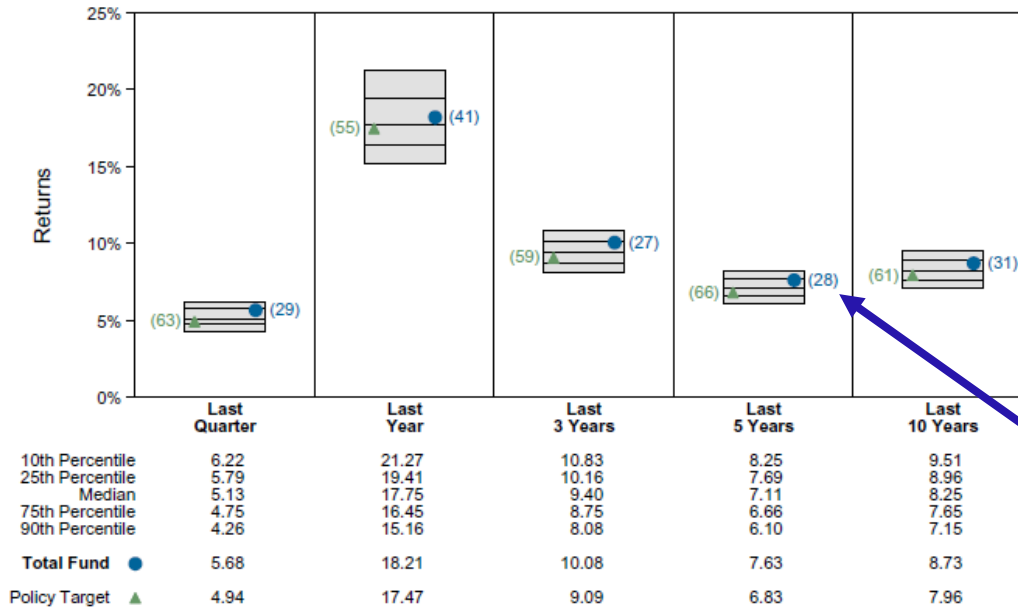
	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>Bismarck Police \$43 million</b>						
Total Fund Return - Net	5.60%	16.71%	9.27%	7.02%	5.97%	0.37%
Policy Benchmark Return	5.06%	16.33%	8.46%	6.46%	5.78%	
Total Relative Return	0.54%	0.38%	0.81%	0.56%	103%	
<b>Grand Forks \$69 million</b>						
Total Fund Return - Net	6.28%	18.79%	10.10%	7.44%	6.86%	0.33%
Policy Benchmark Return	5.74%	18.55%	9.41%	7.01%	6.75%	
Total Relative Return	0.54%	0.24%	0.69%	0.43%	102%	
<b>Grand Forks Park \$8 million</b>						
Total Fund Return - Net	5.82%	17.44%	9.84%	7.29%	6.71%	0.11%
Policy Benchmark Return	5.12%	16.52%	9.14%	6.75%	6.24%	
Total Relative Return	0.70%	0.92%	0.71%	0.54%	107%	
<b>Job Service \$98 million</b>						
Total Fund Return - Net	3.73%	9.29%	5.77%	5.21%	3.42%	-0.02%
Policy Benchmark Return	3.92%	10.15%	6.25%	5.07%	3.29%	
Total Relative Return	-0.19%	-0.86%	-0.48%	0.14%	104%	

**Risk Adjusted Excess Returns for the 5-years ended Dec. 31 2019, were positive for all Pension clients except for Job Service (which is not in the Pension Pool).**

**Job Service is 145% funded & significantly de-risked its portfolio (to 20% equity / 80% debt) in recent years.**

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

## Callan Public Fund Sponsor Database



### Callan – NDSIB Pension Trust Fund Ranking

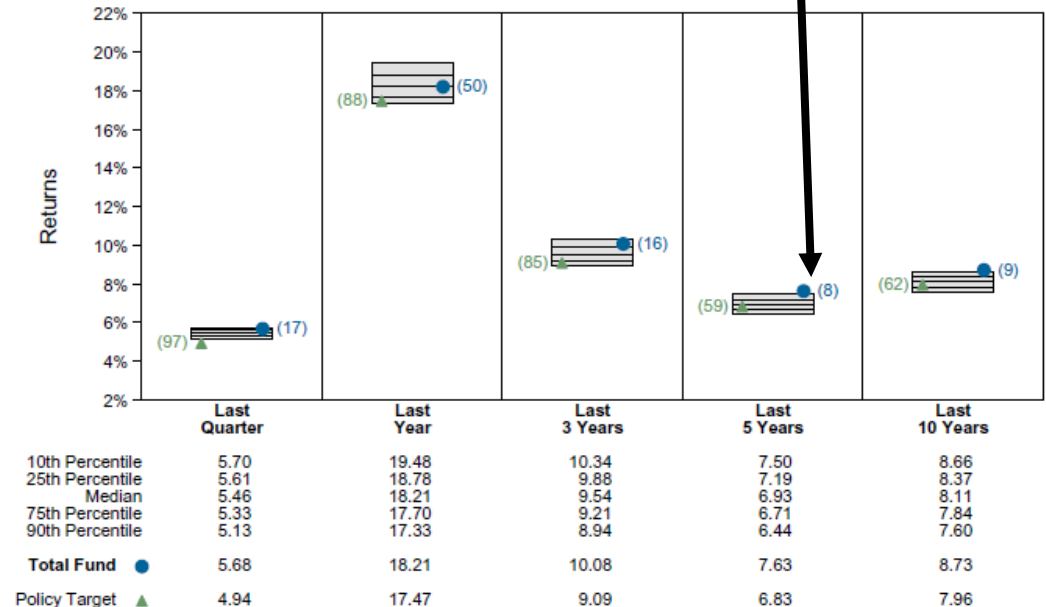
The **Callan** charts show the ranking of the **Total Fund** (SIB Pension Trust) performance relative to that of the Callan Public Fund Sponsor Database for periods ended Dec. 31, 2019.

The top chart is a standard unadjusted ranking. In the bottom chart each fund in the database is adjusted to have the same historical asset allocation as that of the **Total Fund**.

The **NDSIB Pension Trust** was ranked in the **28<sup>TH</sup>** percentile over the last 5 years on an **“Unadjusted Basis”** (and **8<sup>th</sup>** percentile on an **“Asset Allocation Adjusted Basis”**).

**Key Point on Gross versus Net Returns:**  
Callan’s Public Fund Sponsor Database uses **“Gross Returns”**. RIO believes PERS and TFFR “Net Investment Returns” rank in the top quartile for the 3, 5 and 10 year periods ended December 31, 2019.

### Asset Allocation Adjusted Ranking



# Non-Pension Return & Risk Summary – Dec. 31, 2019

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>WSI \$2.1 billion</b>						
Total Fund Return - Net	4.36%	13.57%	7.47%	6.06%	3.91%	0.41%
Policy Benchmark Return	3.78%	12.22%	6.30%	4.92%	3.34%	
Net Excess Return (over Policy Benchmark)	0.58%	1.35%	1.17%	1.14%	OK	
<b>Legacy Fund \$6.9 billion</b>						
Total Fund Return - Net	6.23%	18.13%	8.64%	6.95%	6.57%	0.27%
Policy Benchmark Return	5.53%	17.45%	8.20%	6.24%	6.07%	
Total Relative Return	0.70%	0.68%	0.45%	0.72%	OK	
<b>Budget Stabilization \$674 million</b>						
Total Fund Return - Net	1.70%	4.73%	2.28%	2.09%	1.06%	0.37%
Policy Benchmark Return	1.28%	4.00%	2.09%	1.63%	0.97%	
Total Relative Return	0.42%	0.73%	0.18%	0.46%	OK	
<b>Fire &amp; Tornado \$24 million</b>						
Total Fund Return - Net	5.24%	15.84%	7.58%	6.16%	5.05%	0.38%
Policy Benchmark Return	4.60%	14.64%	6.81%	5.19%	4.47%	
Total Relative Return	0.64%	1.19%	0.77%	0.97%	OK	
<b>State Bonding \$4 million</b>						
Total Fund Return - Net	2.13%	6.86%	3.85%	3.04%	1.93%	0.80%
Policy Benchmark Return	1.82%	5.79%	2.98%	2.17%	1.87%	
Total Relative Return	0.31%	1.07%	0.87%	0.87%	OK	
<b>Insur.Reg.Trust \$1.6 million</b>						
Total Fund Return - Net	4.31%	12.66%	6.10%	4.81%	4.15%	0.13%
Policy Benchmark Return	3.86%	11.89%	5.72%	4.29%	3.71%	
Total Relative Return	0.45%	0.77%	0.38%	0.52%	OK	

**Returns and Risk:**  
**15 out of 16 Non-Pension clients generated positive Excess Return and Risk Adjusted Excess Return for the 5 years ended Dec. 31, 2019.**  
**PERS Retiree Health Insurance Credit Fund underperformed by 0.18%. These returns were achieved while adhering to risk levels within 1% of policy.**

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

# Non-Pension Return & Risk Summary – Dec. 31, 2019

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>Petrol.Tank Release Comp \$6 million</b>						
Total Fund Return - Net	2.02%	6.39%	3.65%	2.86%	1.76%	0.74%
Policy Benchmark Return	1.74%	5.47%	2.86%	2.07%	1.72%	
Total Relative Return	0.27%	0.92%	0.79%	0.78%	OK	
<b>State Risk Mgmt. \$4.3 million</b>						
Total Fund Return - Net	5.08%	15.75%	7.62%	6.40%	4.63%	0.46%
Policy Benchmark Return	4.59%	14.65%	6.86%	5.40%	4.15%	
Total Relative Return	0.49%	1.10%	0.76%	1.00%	OK	
<b>Risk Mgmt.Work.Comp. \$4.1 million</b>						
Total Fund Return - Net	5.63%	17.22%	8.14%	6.88%	5.29%	0.40%
Policy Benchmark Return	5.13%	16.26%	7.58%	6.00%	4.85%	
Total Relative Return	0.50%	0.95%	0.56%	0.89%	OK	
<b>NDACo \$6.7 million</b>						
Total Fund Return - Net	5.46%	16.71%	7.51%	5.96%	5.06%	0.34%
Policy Benchmark Return	4.74%	15.20%	6.70%	5.00%	4.42%	
Total Relative Return	0.72%	1.51%	0.81%	0.96%	OK	
<b>Bismarck Deferred Sick Leave \$767,969</b>						
Total Fund Return - Net	5.02%	15.43%	7.49%	6.09%	4.72%	0.50%
Policy Benchmark Return	4.31%	13.95%	6.46%	4.90%	4.08%	
Total Relative Return	0.71%	1.48%	1.04%	1.19%	OK	
<b>Fargo Dome \$45.6 million</b>						
Total Fund Return - Net	6.29%	18.74%	8.58%	6.95%	6.77%	0.32%
Policy Benchmark Return	5.52%	17.69%	8.03%	6.13%	6.19%	
Total Relative Return	0.77%	1.05%	0.55%	0.83%	OK	

## SIB Client Commentary:

Most Non-Pension funds generated positive Risk Adjusted Excess Returns for the 5-years ended Dec. 31, 2019, including the Legacy Fund, WSI, Budget Stabilization, Fire & Tornado, State Bonding, Insurance Regulatory Trust Fund, Petroleum Tank Release Compensation Fund, State Risk Management, State Risk Management Workers Compensation, NDACO, Bismarck Deferred Sick Leave, Fargo Dome, Board of Medicine, Cultural Endowment Fund and PERS Group Insurance but **excluding PERS Retiree Health Insurance Credit Fund (managed by SEI).** SEI also manages our ND PERS Job Service portfolio.

# Non-Pension Return & Risk Summary – Dec. 31, 2019

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>Cultural Endowment Fund \$506,814</b>						
Total Fund Return - Net	6.71%	19.82%	9.18%	7.73%	7.06%	0.18%
Policy Benchmark Return	6.19%	19.24%	9.03%	7.15%	6.64%	
Total Relative Return	0.52%	0.58%	0.15%	0.58%	OK	
<b>Board of Medicine \$2.5 million</b>						
Total Fund Return - Net	3.98%	10.60%	5.04%	4.22%	2.88%	0.30%
Policy Benchmark Return	3.32%	9.69%	4.73%	3.61%	2.60%	
Total Relative Return	0.65%	0.91%	0.31%	0.61%	OK	
<b>PERS Group Insurance \$31 million</b>						
Total Fund Return - Net	1.10%	3.88%	2.09%	1.45%	1.04%	0.01%
Policy Benchmark Return	0.83%	3.35%	1.93%	1.40%	0.94%	
Total Relative Return	0.28%	0.53%	0.16%	0.05%	OK	
<b>Lewis &amp; Clark \$9.4 million</b>						
Total Fund Return - Net	5.47%	16.87%	N/A	N/A		
Policy Benchmark Return	4.66%	15.09%	N/A	N/A		
Total Relative Return	0.80%	0.80%	N/A	N/A		
<b>PERS Retiree Health \$145 million</b>						
Total Fund Return - Net	6.57%	20.78%	9.15%	6.85%	7.64%	-0.68%
Policy Benchmark Return	6.41%	19.94%	9.15%	7.03%	6.97%	
Total Relative Return	0.16%	0.84%	0.00%	-0.18%	OK	
<b>Tobacco Control &amp; Prevention \$9.4 million</b>						
Total Fund Return - Net	1.07%	4.97%	2.81%	N/A		
Policy Benchmark Return	1.09%	4.82%	2.80%	N/A		
Total Relative Return	-0.02%	0.16%	0.02%	N/A		

## Commentary:

The Board of Medicine became an SIB client in 2014 noting they were previously investing in CD's.

**PERS Retiree Health returns are reasonable the last 5-years (at 6.85%) while appearing to be disappointing on a risk adjusted excess return basis for a 60% equity / 40% fixed income portfolio.**

**Although 5-year returns do not meet trail expectations, more recent returns are strong and 2019 was outstanding at over 20%.**

PERS Group Insurance returns improved materially last year largely due to Fed reducing short-term rates and the underlying managers maintaining moderately longer portfolio duration.

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

Lewis & Clark (Interpretive Center Endowment Fund) became an SIB client in 2018 (moving from CD's).

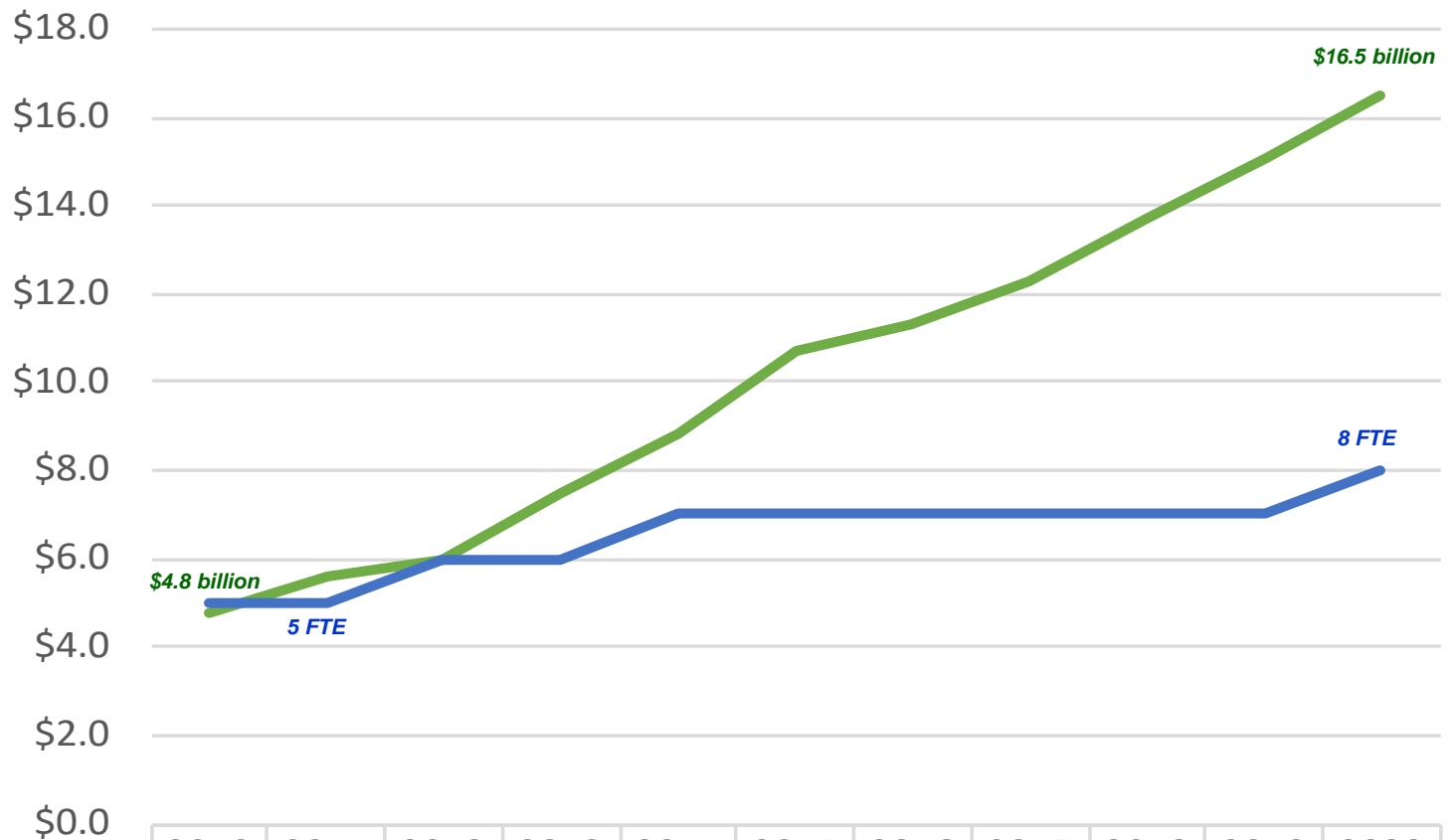
# The North Dakota State Investment Board – A Proven Leader in Accountability and Transparency

- ▶ The North Dakota State Investment Board has experienced significant asset growth since 2010 while driving investment returns up and driving investment fees down (on a percentage basis).
  - ▶ SIB clients Assets Under Management (AUM) have grown from \$4.8 billion in 2010 to \$16.5 billion in early-2020.
  - ▶ SIB client net investment income exceeded \$2.3 billion in 2019 including over \$1 billion in the Legacy Fund.
  - ▶ SIB client investment fees have declined from over 0.65% in 2013 to less than 0.45% in 2019.
  - ▶ Based on \$16.5 billion of AUM and fees declining by 0.20% (between 2013 and 2019), the SIB is reducing investment fees by \$33 million per year (e.g. \$16.5 billion x 0.20% = \$33 million of annual fee savings).
  - ▶ All investment return and fee data is disclosed monthly, quarterly and/or annually on our website.
    - ▶ SIB Publications and Reports <http://www.nd.gov/rio/SIB/Publications/default.htm>
    - ▶ SIB Meeting Materials <http://www.nd.gov/rio/SIB/Board/SIB%20Meeting%20Materials/default.htm>
- ▶ The SIB, TFFR and RIO have generally been able to meet or exceed client expectations in recent years and recognized as an industry leader in financial accountability and investment transparency.
  - ▶ Net investments returns for most of our SIB clients have exceeded approved policy benchmarks by approximately 0.50% for the 5 years ended June 30, 2019, while fees have declined to less than 0.45% per annum in recent years.
  - ▶ TFFR client satisfaction scores have consistently remained strong averaging 3.7 to 3.8 (on a 4.0 scale) the last 5-years.
  - ▶ The Legacy Fund was awarded the highest transparency score (10 out of 10) by the Sovereign Wealth Fund Institute in 2018 and 2019, while the Retirement and Investment Office was awarded a Certificate of Achievement for Excellence in Financial Reporting for 21 consecutive years by the Governmental Finance Officers Association in 2019 (for fiscal 2018).
  - ▶ Legacy Fund net returns for the Last Quarter and 1, 3, 5 and 8.25 years ended December 31, 2019, consistently exceed Policy Target.

	Last	Last	Last 3	Last 5	Since
Periods Ended 12/31/19:	Quarter	Year	Years	Years	Inception
Net Investment Return	5.2%	18.1%	8.6%	7.0%	5.3%
Policy Benchmark	4.5%	17.5%	8.2%	6.2%	4.6%

Note: All amounts are deemed to be materially accurate, but are unaudited and subject to change.

## SIB Investments and SIB FTE (2010 to 2020)



— \$ Billions — SIB FTE

# Interim Investment Update as of December 31, 2019

SIB investments exceed \$16 billion in early-2020, at or near all-time highs, given very favorable capital market and economic conditions and strong oil & gas production levels in 2019.

SIB Interim Investment Returns Calendar Year To Date - Top Five As of Dec. 31, 2019					Since July 1, 2019 Fiscal YTD 12/31/2019	Calendar YTD 12/31/2019	\$16.5 billion TOTAL SIB AUM as of Feb. 10, 2020
	3/31/2019	6/30/2019	9/30/2019	12/31/2019			
<b>Legacy Fund</b>	7.72%	3.24%	1.01%	5.16%	<b>6.23%</b>	<b>18.13%</b>	<b>\$7 billion</b>
<i>Policy Benchmark</i>	7.67%	3.38%	0.97%	4.52%	<b>5.53%</b>	<b>17.47%</b>	<b>Legacy</b>
<b>TFFR</b>	7.46%	3.53%	0.40%	5.62%	<b>6.04%</b>	<b>17.98%</b>	<b>\$2.7 billion</b>
<i>Policy Benchmark</i>	7.66%	3.40%	0.64%	4.98%	<b>5.64%</b>	<b>17.61%</b>	<b>TFFR</b>
<b>PERS</b>	7.46%	3.50%	0.37%	5.69%	<b>6.09%</b>	<b>17.98%</b>	<b>\$3.3 billion</b>
<i>Policy Benchmark</i>	7.53%	3.42%	0.61%	4.93%	<b>5.57%</b>	<b>17.40%</b>	<b>PERS</b>
<b>WSI</b>	5.39%	3.26%	1.70%	2.62%	<b>4.36%</b>	<b>13.57%</b>	<b>\$2.1 billion</b>
<i>Policy Benchmark</i>	4.88%	3.10%	1.60%	2.14%	<b>3.78%</b>	<b>12.22%</b>	<b>WSI</b>
<b>Budget Stabilization Fund</b>	1.35%	1.61%	0.93%	0.76%	<b>1.70%</b>	<b>4.73%</b>	<b>\$1.4 billion</b>
<i>Policy Benchmark</i>	1.19%	1.47%	0.69%	0.59%	<b>1.28%</b>	<b>4.00%</b>	<b>Others (BSF)</b>

*Note: Net investment returns are deemed to be materially accurate, but are unaudited and subject to change.*

1. SIB clients earned over \$2.3 billion of net investment income for the 12 months ended December 31, 2019, including the following interim results for our four largest investment clients:

- Legacy +18% (\$1+ billion)
- TFFR +18% (\$400+ million)
- PERS +18% (\$500+ million)
- WSI +13% (\$250+ million)

2) Net investment returns for the Legacy Fund, TFFR, PERS, WSI and BSF exceeded their respective *Policy Benchmarks* on a fiscal year to date basis (July 1 to Dec. 31, 2019) and calendar year to date basis (Jan. 1 to Dec. 31, 2019).



# SIB Client Return on Investment Fees and Expenses

## Investment Goals for SIB Client Fees and Expenses:

1. The SIB and RIO attempt to keep total fees and expenses at or below 50 bps (0.50%) per annum.
2. We also attempt to generate  $\geq 0.50\%$  of excess return over our stated performance benchmarks (after deducting all investment fees and expenses) over a rolling 5-year period.
3. If we are successful in attaining both of the above goals, we are effectively earning a 2-for-1 return on our investment fee and expense dollars (which is consistent with our fundamental investment belief that the prudent use of active management is beneficial to our clients).

**Key Point:** Over the last 5-years, the vast majority of SIB clients earned 0.50% of excess return, while fees & expenses averaged  $\leq 0.50\%$  per annum since 2014 (see below).

<u>All State Investment Board Clients</u>	<u>Investment Fees and Expenses</u>	<u>Average "Assets Under Management"</u>	<u>% of AUM</u>
Fiscal Year Ended June 30, 2013	\$45 million	\$6.9 billion	0.65%
Fiscal Year Ended June 30, 2014	\$44 million	\$8.6 billion	0.51%
Fiscal Year Ended June 30, 2015	\$48 million	\$10.1 billion	0.48%
Fiscal Year Ended June 30, 2016	\$46 million	\$10.9 billion	0.42%
Fiscal Year Ended June 30, 2017	\$54.5 million	\$11.8 billion	0.46%
Fiscal Year Ended June 30, 2018	\$56 million	\$13.4 billion	0.42%
Fiscal Year Ended June 30, 2019	\$63.2 million	\$14.2 billion	0.44%

**Key Take-Away:** Based on \$10 billion of AUM, a 0.20% decline in fees between fiscal 2013 and 2019 translates into \$20 million of annual fee savings (or \$100 million of savings over 5-years).

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

## Callan Database Median and Index Returns\* for Periods Ended 12/31/19


Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	5.13	17.75	9.40	7.11	8.25	6.73
Corporate Database	4.25	19.87	9.55	6.96	8.40	6.80
Nonprofit Database	5.69	18.81	9.38	6.81	8.12	6.58
Taft-Hartley Database	5.18	18.00	9.36	7.50	8.66	6.59
All Institutional Investors	5.19	18.53	9.41	7.08	8.35	6.67
Large (>\$1 billion)	4.79	17.56	9.59	7.26	8.59	6.88
Medium (\$100mm - \$1bn)	5.20	18.55	9.42	7.15	8.35	6.58
Small (<\$100 million)	5.38	18.93	9.29	6.91	8.16	6.55

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, nonprofits, 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.

### Observations on Callan Database Median and Index Returns for periods ended December 31, 2019:

- 1) **Public DB plan median returns were up 17.75% in 2019** but underperformed **Corporate DB plans up 19.87%** (in 2019) due to the strength of Fixed Income with Bloomberg Barclays Long Gov/Credit Index up 19.6% and Bloomberg Barclays Aggregate Index up 8.7%. Most Corporate DB plans have adopted a Liability Driven Investment framework to de-risk their plans which effectively increases their target asset allocation to Fixed Income (which had a very strong year versus long-term expectations).
- 2) Median return differentials are less significant over longer periods with **U.S. Public DB plan median returns being up 7.11% for the 5 years ended 12/31/2019** versus Corporate DB plans being up 6.96% for the same period. Over the last 15 years, Large Institutional Investors (> \$1 billion) outperformed Small plans (< \$100 million), although Small plans outperformed Large plans in 2019.

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	10 Yrs Ended 12/31/2019
 <b>ND Pension Pool (Net Returns)</b>	17.94%	9.83%	7.36%	8.37%
<b>Public Database (Gross Returns)</b>	17.75%	9.40%	7.11%	8.25%
<b>All Institutional Investors (Gross Returns)</b>	18.53%	9.41%	7.08%	8.35%
<b>- Large (Over \$1 billion) (Gross Returns)</b>	17.56%	9.59%	7.26%	8.59%

NOTE: ND Pension Pool Returns are reported Net of Fees versus Gross of Fees for the Callan Database.



February 2020

## **North Dakota State Investment Board**

Performance Evaluation  
as of December 31, 2019

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**Paul Erlendson**  
Senior Vice President

**Alex Browning**  
Senior Vice President

Callan

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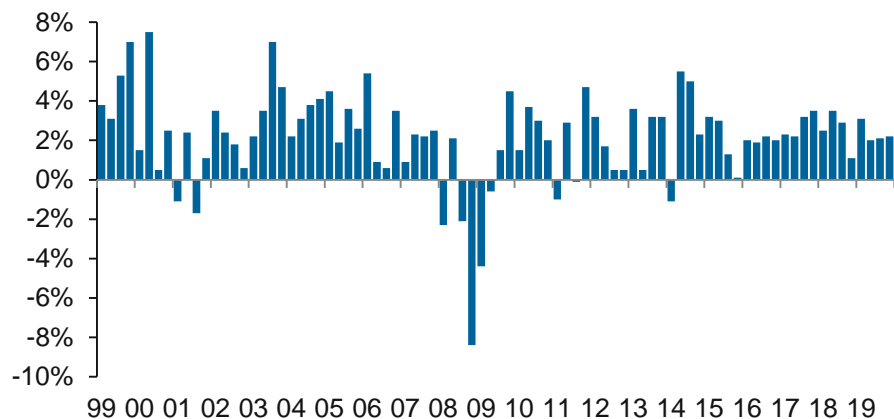
## Market Update

Fourth Quarter 2019

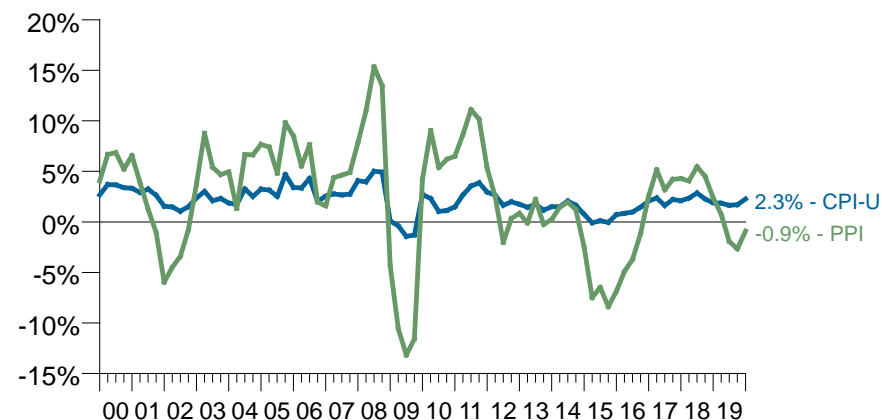
# U.S. Economy—Summary

For periods ended December 31, 2019

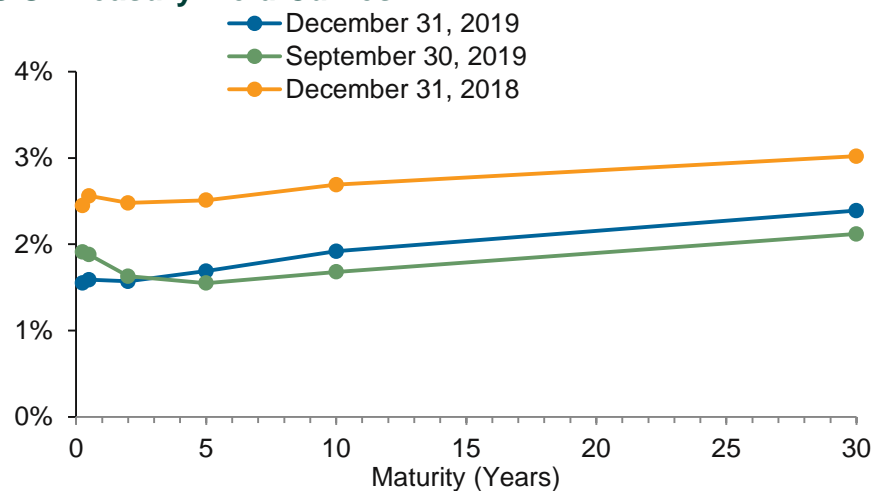
## Quarterly Real GDP Growth



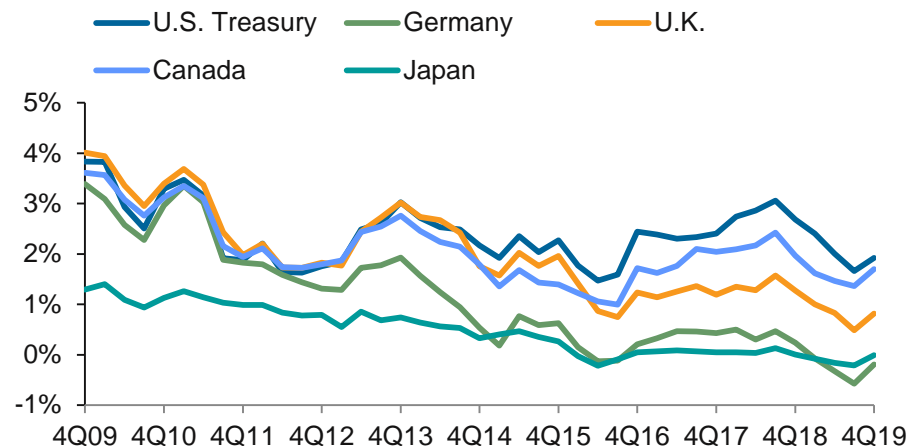
## Inflation Year-Over-Year



## U.S. Treasury Yield Curves



## 10-Year Global Government Bond Yields



Sources: Bloomberg, Bureau of Labor Statistics, Callan

# Fed Policy Reversal Upended Fixed Income Market Expectations

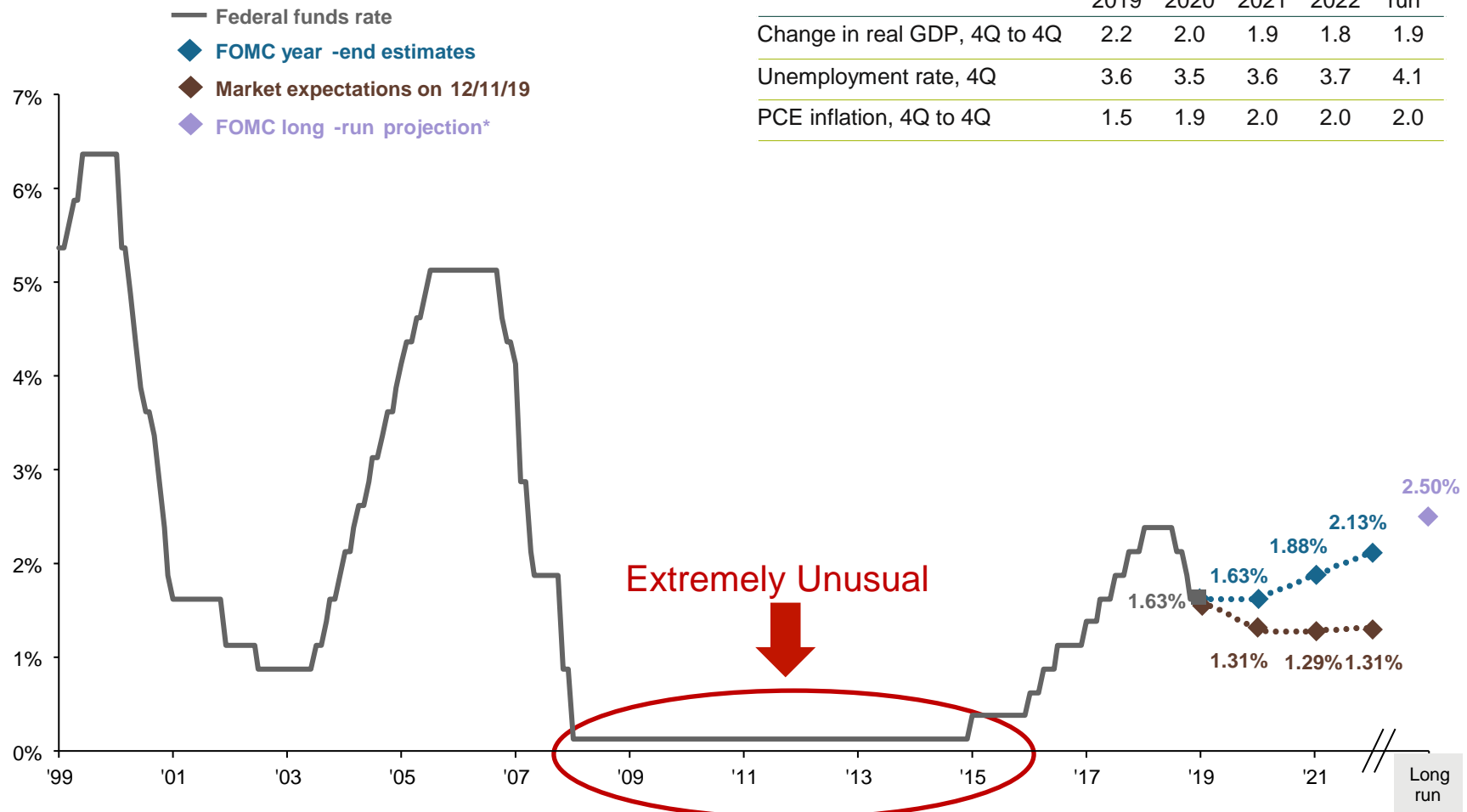
Fed halted interest rate increases in January 2019; cut twice in Q3 and once in Q4 2019

## Federal Funds Rate Expectations

FOMC and market expectations for the fed funds rate

## FOMC December 2019 Forecasts (%)

	2019	2020	2021	2022	Long run*
Change in real GDP, 4Q to 4Q	2.2	2.0	1.9	1.8	1.9
Unemployment rate, 4Q	3.6	3.5	3.6	3.7	4.1
PCE inflation, 4Q to 4Q	1.5	1.9	2.0	2.0	2.0



\*Long-run projections are the rates of growth, unemployment, and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy.

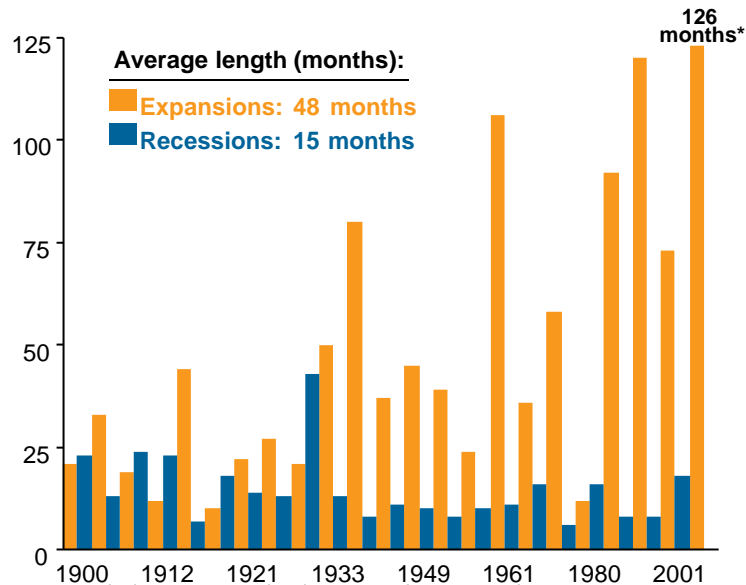
Sources: Bloomberg, FactSet, Federal Reserve, JPMorgan Asset Management. *Guide to the Markets – U.S.* Data are as of December 18, 2019.

Market expectations are the federal funds rates priced into the fed futures market as of the date of the December 2019 FOMC meeting and are through December 2022.

# Expansion Continues, but Not Without Raising Concerns

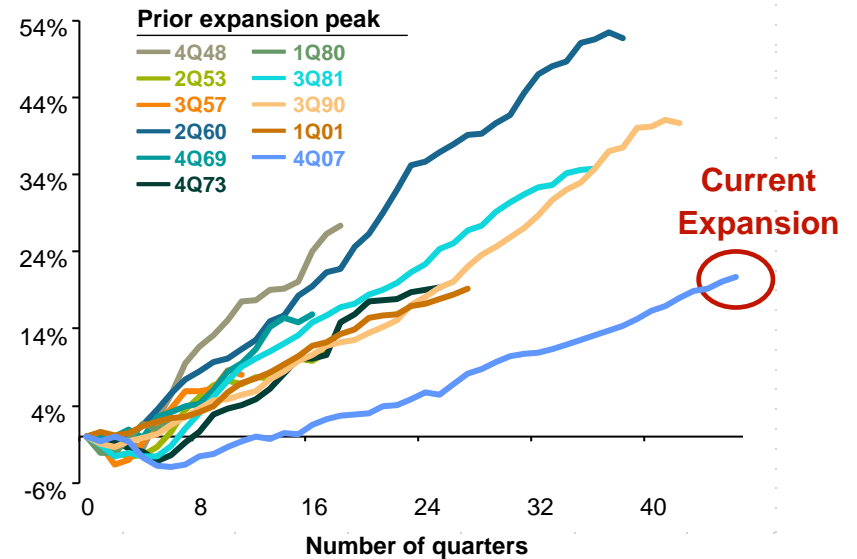
Expansions do not die of old age, but this one has become the longest

## Length of Economic Expansions and Recessions



## Strength of Economic Expansions

Cumulative real GDP growth since prior peak, percent



- The slow burn in the current expansion has enabled it to continue, at the risk of building back up asset price bubbles.
- The current recovery is now the longest, but also one of the slowest, averaging GDP growth in the U.S. of just 2.2%.
- Inverted yield curves typically suggest the onset of recession; the yield curve inverted mid-2019, but was no longer inverted by the end of the year.
- Long rates did not budge as short rates rose during 2017-18; long rates have since dropped over 100 bps.
- The explanatory power of an inverted yield curve has lessened in the wake of the Global Financial Crisis (GFC) and quantitative easing. Demand on the long end and limited supply are holding down the long end.

Source: JPMorgan Asset Management

## 2019 performance in perspective: History of the U.S. stock market (230 years of returns)






# Asset Class Performance

## Periodic Table of Investment Returns for Periods Ended December 31, 2019

Best




Worst

Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
MSCI:EM Gross 11.9%	S&P:500 31.5%	S&P:500 31.5%	S&P:500 15.3%	S&P:500 11.7%	S&P:500 13.6%	Russell:2000 Index 7.6%
Russell:2000 Index 9.9%	Russell:2000 Index 25.5%	Russell:2000 Index 25.5%	MSCI:EM Gross 12.0%	Russell:2000 Index 8.2%	Russell:2000 Index 11.8%	NCREIF:NFI-ODCE Val Wt Nt 7.2%
S&P:500 9.1%	MSCI:EAFE 22.0%	MSCI:EAFE 22.0%	MSCI:EAFE 9.6%	NCREIF:NFI-ODCE Val Wt Nt 8.0%	NCREIF:NFI-ODCE Val Wt Nt 10.4%	MSCI:EM Gross 7.0%
MSCI:EAFE 8.2%	MSCI:EM Gross 18.9%	MSCI:EM Gross 18.9%	Russell:2000 Index 8.6%	MSCI:EM Gross 6.0%	MSCI:EAFE 5.5%	S&P:500 6.1%
Blmbg:Commodity Price Idx 4.0%	Blmbg:Aggregate 8.7%	Blmbg:Aggregate 8.7%	NCREIF:NFI-ODCE Val Wt Nt 6.1%	MSCI:EAFE 5.7%	MSCI:EM Gross 4.0%	Blmbg:Aggregate 5.0%
NCREIF:NFI-ODCE Val Wt Nt 1.3%	Blmbg:Commodity Price Idx 5.4%	Blmbg:Commodity Price Idx 5.4%	Blmbg:Aggregate 4.0%	Blmbg:Aggregate 3.0%	Blmbg:Aggregate 3.7%	MSCI:EAFE 3.3%
3 Month T-Bill 0.5%	NCREIF:NFI-ODCE Val Wt Nt 4.4%	NCREIF:NFI-ODCE Val Wt Nt 4.4%	3 Month T-Bill 1.7%	3 Month T-Bill 1.1%	3 Month T-Bill 0.6%	3 Month T-Bill 1.8%
Blmbg:Aggregate 0.2%	3 Month T-Bill 2.3%	3 Month T-Bill 2.3%	Blmbg:Commodity Price Idx (2.6%)	Blmbg:Commodity Price Idx (5.0%)	Blmbg:Commodity Price Idx (5.3%)	Blmbg:Commodity Price Idx (0.7%)

# 15 Years of Annual Asset Class Performance

Best



Worst

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Emerging Market Equity	Real Estate	Emerging Market Equity	U.S. Fixed Income	Emerging Market Equity	Small Cap Equity	U.S. Fixed Income	Real Estate	Small Cap Equity	Real Estate	Large Cap Equity	Small Cap Equity	Emerging Market Equity	Cash Equivalent	Large Cap Equity
34.00%	42.12%	39.38%	5.24%	78.51%	26.85%	7.84%	27.73%	38.82%	15.02%	1.38%	21.31%	37.28%	1.87%	31.49%
Real Estate	Emerging Market Equity	Dev ex-U.S. Equity	Gbl ex-U.S. Fixed	High Yield	Real Estate	High Yield	Emerging Market Equity	Large Cap Equity	Large Cap Equity	U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	U.S. Fixed Income	Small Cap Equity
15.35%	32.17%	12.44%	4.39%	58.21%	19.63%	4.98%	18.23%	32.39%	13.69%	0.55%	17.13%	24.21%	0.01%	25.52%
Dev ex-U.S. Equity	Dev ex-U.S. Equity	Gbl ex-U.S. Fixed	Cash Equivalent	Real Estate	Emerging Market Equity	Gbl ex-U.S. Fixed	Dev ex-U.S. Equity	Dev ex-U.S. Equity	U.S. Fixed Income	Cash Equivalent	Large Cap Equity	Large Cap Equity	High Yield	Dev ex-U.S. Equity
14.47%	25.71%	11.03%	2.06%	37.13%	18.88%	4.36%	16.41%	21.02%	5.97%	0.05%	11.96%	21.83%	-2.08%	22.49%
Large Cap Equity	Small Cap Equity	U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	High Yield	Large Cap Equity	Small Cap Equity	High Yield	Small Cap Equity	Real Estate	Emerging Market Equity	Small Cap Equity	Gbl ex-U.S. Fixed	Real Estate
4.91%	18.37%	6.97%	-26.16%	33.67%	15.12%	2.11%	16.35%	7.44%	4.89%	-0.79%	11.19%	14.65%	-2.15%	21.91%
Small Cap Equity	Large Cap Equity	Large Cap Equity	Small Cap Equity	Small Cap Equity	Large Cap Equity	Cash Equivalent	Large Cap Equity	Real Estate	High Yield	Dev ex-U.S. Equity	Real Estate	Gbl ex-U.S. Fixed	Large Cap Equity	Emerging Market Equity
4.55%	15.79%	5.49%	-33.79%	27.17%	15.06%	0.10%	16.00%	3.67%	2.45%	-3.04%	4.06%	10.51%	-4.38%	18.44%
Cash Equivalent	High Yield	Cash Equivalent	Large Cap Equity	Large Cap Equity	Dev ex-U.S. Equity	Small Cap Equity	High Yield	Cash Equivalent	Cash Equivalent	Small Cap Equity	Dev ex-U.S. Equity	Real Estate	Real Estate	High Yield
3.07%	11.85%	5.00%	-37.00%	26.47%	8.95%	-4.18%	15.81%	0.07%	0.03%	-4.41%	2.75%	10.36%	-5.63%	14.32%
High Yield	Gbl ex-U.S. Fixed	High Yield	Dev ex-U.S. Equity	Gbl ex-U.S. Fixed	U.S. Fixed Income	Real Estate	U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	High Yield	U.S. Fixed Income	High Yield	Small Cap Equity	U.S. Fixed Income
2.74%	8.16%	1.87%	-43.56%	7.53%	6.54%	-6.46%	4.21%	-2.02%	-2.19%	-4.47%	2.65%	7.50%	-11.01%	8.72%
U.S. Fixed Income	Cash Equivalent	Small Cap Equity	Real Estate	U.S. Fixed Income	Gbl ex-U.S. Fixed	Dev ex-U.S. Equity	Gbl ex-U.S. Fixed	Emerging Market Equity	Gbl ex-U.S. Fixed	Gbl ex-U.S. Fixed	Gbl ex-U.S. Fixed	U.S. Fixed Income	Dev ex-U.S. Equity	Gbl ex-U.S. Fixed
2.43%	4.85%	-1.57%	-48.21%	5.93%	4.95%	-12.21%	4.09%	-2.60%	-3.09%	-6.02%	1.49%	3.54%	-14.09%	5.09%
Gbl ex-U.S. Fixed	U.S. Fixed Income	Real Estate	Emerging Market Equity	Cash Equivalent	Cash Equivalent	Emerging Market Equity	Cash Equivalent	Gbl ex-U.S. Fixed	Dev ex-U.S. Equity	Emerging Market Equity	Cash Equivalent	Cash Equivalent	Emerging Market Equity	Cash Equivalent
-8.65%	4.33%	-7.39%	-53.33%	0.21%	0.13%	-18.42%	0.11%	-3.08%	-4.32%	-14.92%	0.33%	0.86%	-14.57%	2.28%

- On an annual basis, asset class relative performance shows a lot of variation
- Asset allocation seeks to control the inherent risk of year to year asset class over and underperformance

# U.S. Equity Performance Detail

## Shift away from defensive sectors toward cyclicals

- Utilities, Real Estate, and Staples took a back seat to cyclically oriented sectors during the fourth quarter.
- Investors harnessed three interest rate cuts, a potential U.S.-China trade armistice, and some clarity around Brexit in the risk-on environment.

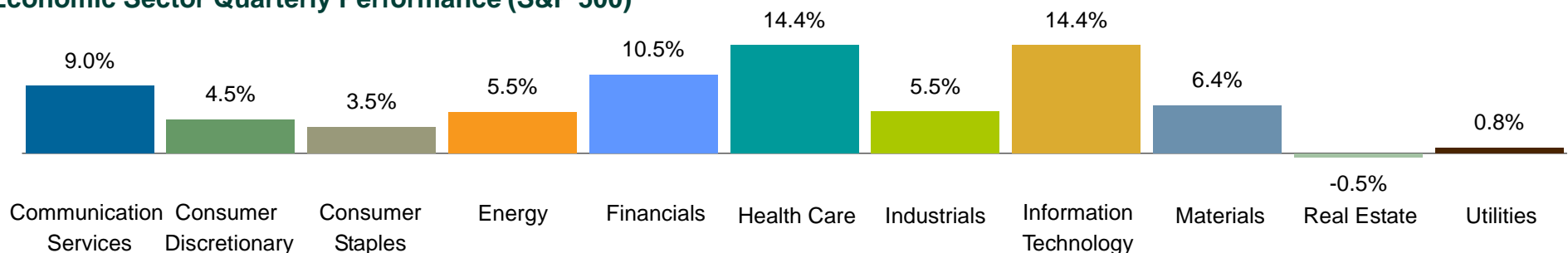
## Small caps outpaced large for quarter but lagged on year.

- Heightened new drug approvals and M&A activity within Health Care's biotech and pharma industries propelled small caps.
- While small cap prevailed in the fourth quarter, large caps led for the third straight year, owing much of the gains to the Tech sector (+50.3%) and Communication Services (+32.7%).
- Apple (+85%) and Microsoft (+54%) hit over \$1 trillion in market cap, accounting for 15% of the S&P 500's annual advance.

## Growth vs. value

- Growth continued its dominance over value during the quarter across the market cap spectrum, closing out a decade-long trend supported by a low-rate environment.

## Economic Sector Quarterly Performance (S&P 500)



Sources: FTSE Russell, S&P Dow Jones Indices

## U.S. Equity: Quarterly Returns



## U.S. Equity: One-Year Returns



# Global ex-U.S. Equity Performance Detail

## Trade war de-escalation and Brexit clarity turned global ex-U.S. markets positive.

- The “phase one” trade deal triggered a “risk-on” market environment.
- The Conservative Party gained command of Parliament in December, adding further clarity to the Brexit withdrawal plan and sparking the pound to rally.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.

## Trade-related sectors prevailed.

- Technology, specifically within Asia, fueled the market as trade tensions receded.
- Factor performance favored risk, including beta and volatility, reflecting risk-on market environment.

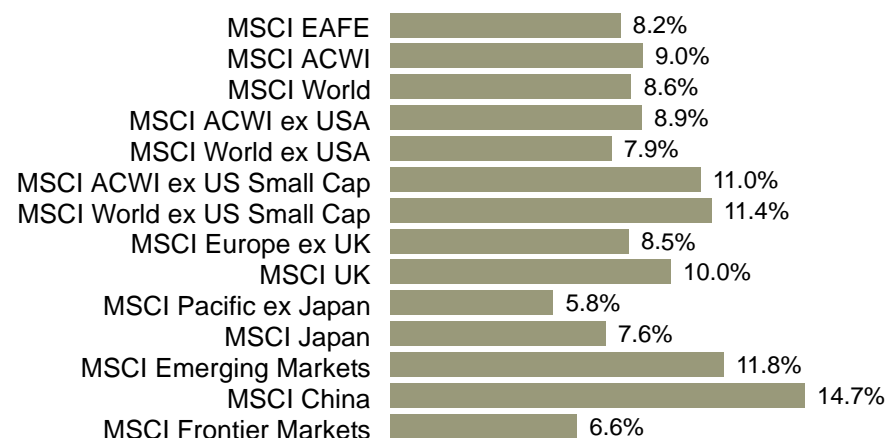
## U.S. dollar vs. other developed and emerging market currencies

- Major developed and emerging market currencies declined vs. the dollar as optimism replaced market anxiety as the phase one trade deal neared.

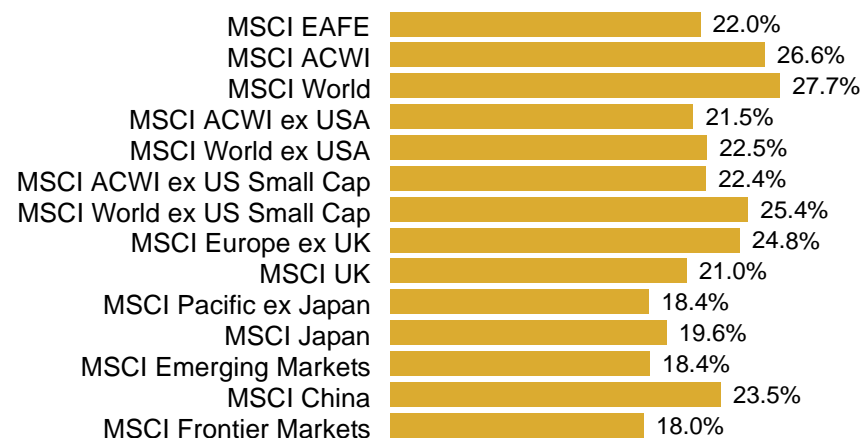
## Growth vs. value

- Growth continued to outperform value within markets and capitalizations, supported by Technology and Health Care.

## Global Equity: Quarterly Returns



## Global Equity: Annual Returns



Source: MSCI

# U.S. Fixed Income Performance

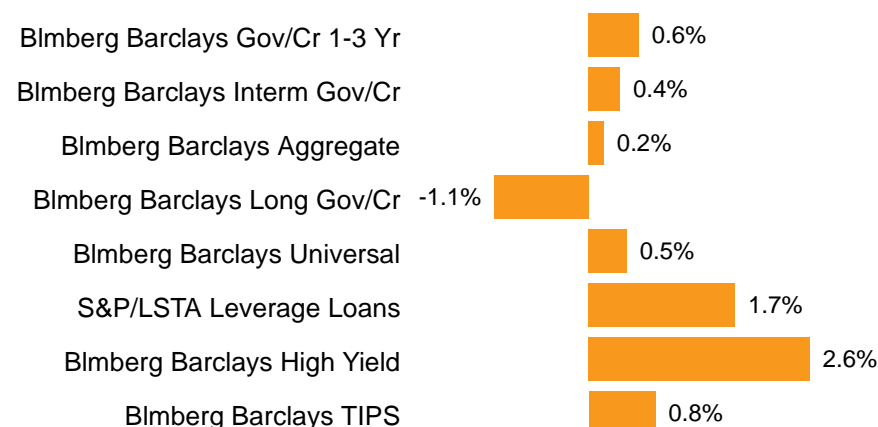
## The yield curve steepened on stronger growth expectations.

- Treasuries declined 0.8% with the steepening yield curve, with yields falling on short end and rising modestly on intermediate to long end of the curve on stronger economic growth expectations.
- Spread between the 2-year and 10-year Treasuries remained positive, ending the year at 34 bps.
- Long Treasuries fell (-4.1%) as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; 10-year breakeven spread was 1.77% as of quarter-end, up from 1.53% as of Sept. 30.

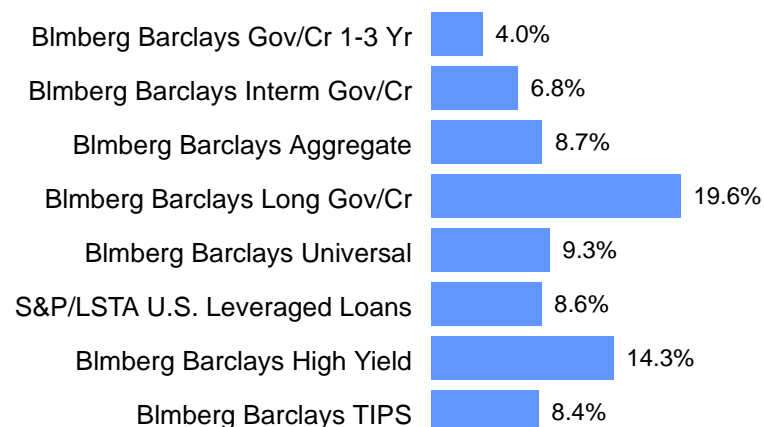
## Corporate bonds rally across credit ratings spectrum.

- IG corporate spreads narrowed and posted best results within BB US Aggregate amid risk-on market; BBB-rated corporates (+1.7%) outperformed single A or higher (+0.7%), indicating investor willingness to extend risk down the credit spectrum.
- Below-investment grade CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvement in credit fundamentals.

## U.S. Fixed Income: Quarterly Returns



## U.S. Fixed Income: Annual Returns



Sources: Bloomberg Barclays, S&P Dow Jones Indices

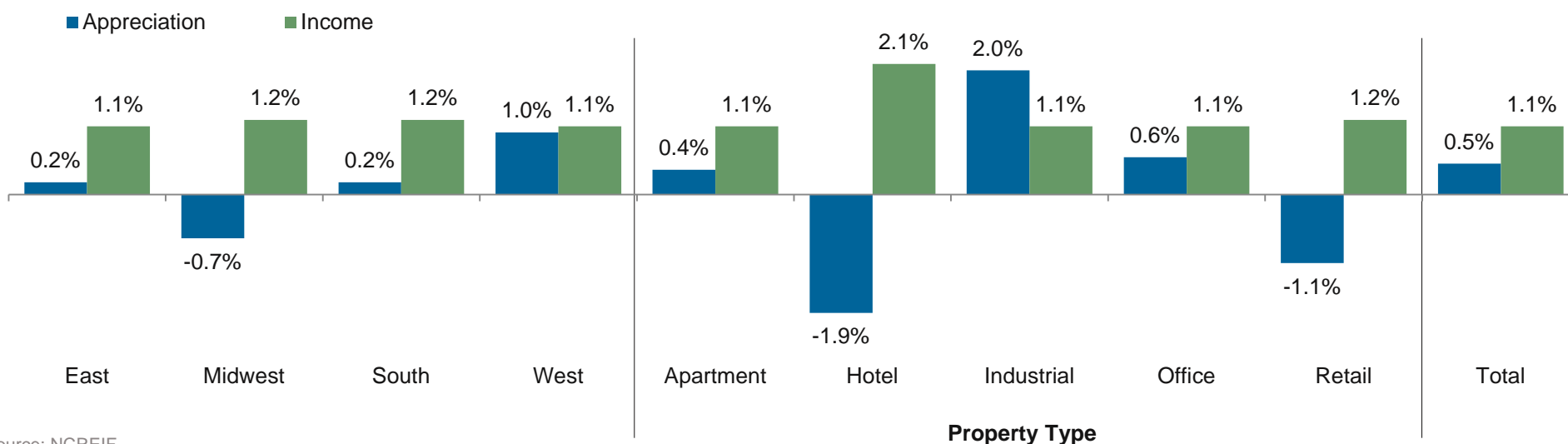
# U.S. Real Estate

## Returns continue to moderate.

- U.S. core real estate returns continue to be driven by income, with limited appreciation this late in the cycle.
- Returns coming from net operating income (NOI) growth rather than further cap rate compression
- Industrial real estate keeps outperforming other property types.
- Retail continues to show signs of depreciation.
- Defensive posturing and disciplined asset acquisitions are key.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
NCREIF ODCE	1.3%	4.4%	6.1%	8.0%	9.2%
Appreciation	0.5%	1.1%	2.8%	4.4%	5.4%
Income	0.8%	3.3%	3.3%	3.5%	3.7%
NCREIF Property Index	1.6%	6.4%	6.7%	8.3%	9.1%
Appreciation	0.5%	1.8%	2.0%	3.4%	4.1%
Income	1.1%	4.5%	4.6%	4.7%	4.9%

## NCREIF Property Index Returns by Region and Property Type



Source: NCREIF

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## **NDSIB Total Performance Summary**

# NDSIB Consolidated Gross Performance Summary

As of December 31, 2019

	Last Quarter	Last Year	Last 5 Years
<b>Consolidated Pension Trust</b>	5.68%	18.21%	7.63%
<i>Consolidated Pension Trust Target</i>	4.94%	17.47%	6.83%
Relative Performance vs. Target	0.74%	0.74%	0.80%
<b>PERS Total Fund</b>	5.74%	18.26%	7.67%
<i>NDSIB PERS Total Fund Target</i>	4.93%	17.41%	6.85%
Relative Performance vs. Target	0.81%	0.85%	0.82%
<b>TFFR Total Fund</b>	5.67%	18.24%	7.63%
<i>NDSIB TFFR Total Fund Target</i>	4.98%	17.61%	6.83%
Relative Performance vs. Target	0.69%	0.63%	0.80%
<b>WSI Total Fund</b>	2.66%	13.76%	6.27%
<i>NDSIB WSI Total Fund Target</i>	2.14%	12.23%	4.92%
Relative Performance vs. Target	0.52%	1.53%	1.35%
<b>Legacy - Total Fund</b>	5.21%	18.35%	7.18%
<i>NDSIB Legacy - Total Fund Target</i>	4.52%	17.47%	6.24%
Relative Performance vs. Target	0.69%	0.88%	0.94%
<b>Budget - Total Fund</b>	0.77%	4.85%	2.24%
<i>NDSIB Budget - Total Fund Target</i>	0.59%	3.99%	1.63%
Relative Performance vs. Target	0.18%	0.86%	0.61%



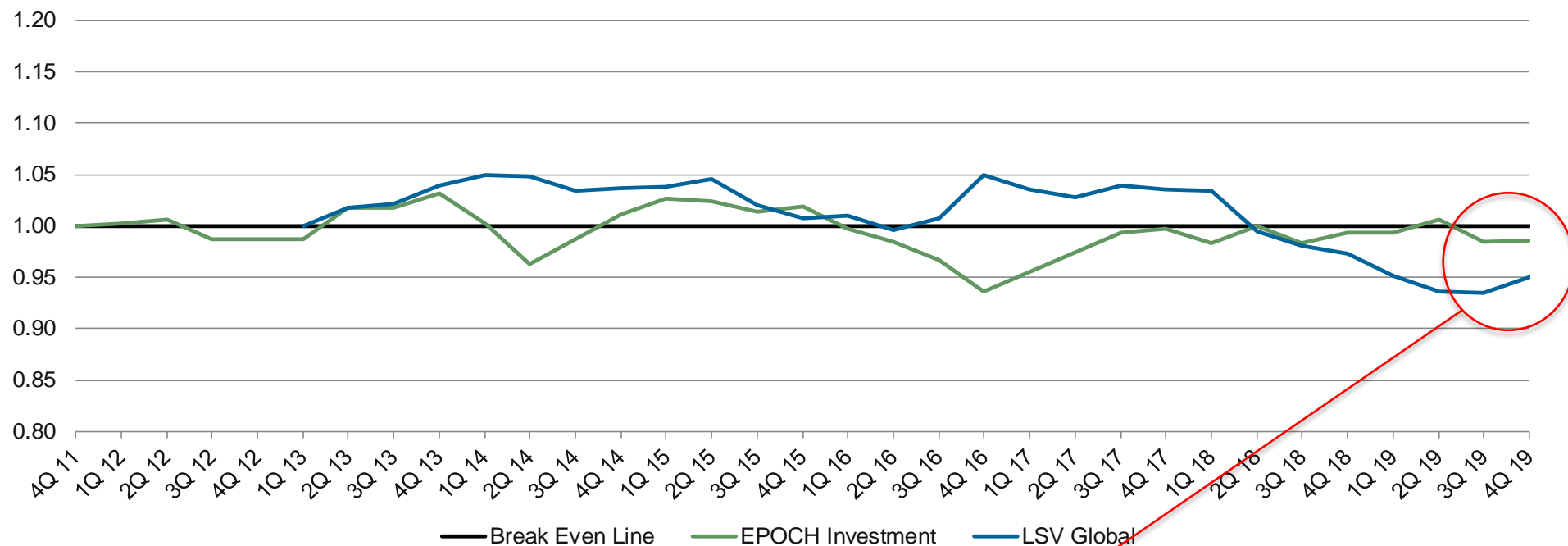
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## **Manager Relative Performance**

# Word Equities

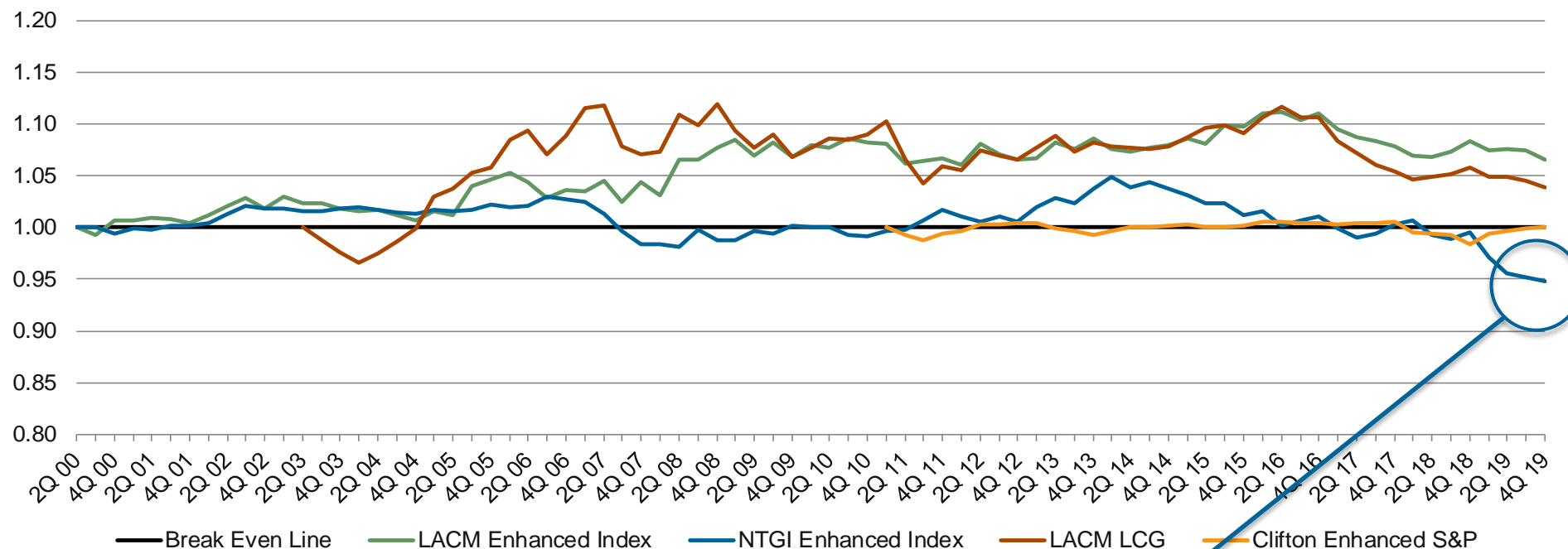
Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
EPOCH Investment	Q1 2012	0.99	MSCI World
LSV Global	Q2 2013	0.95	MSCI ACWI Gross

# U.S. Large Cap Equities

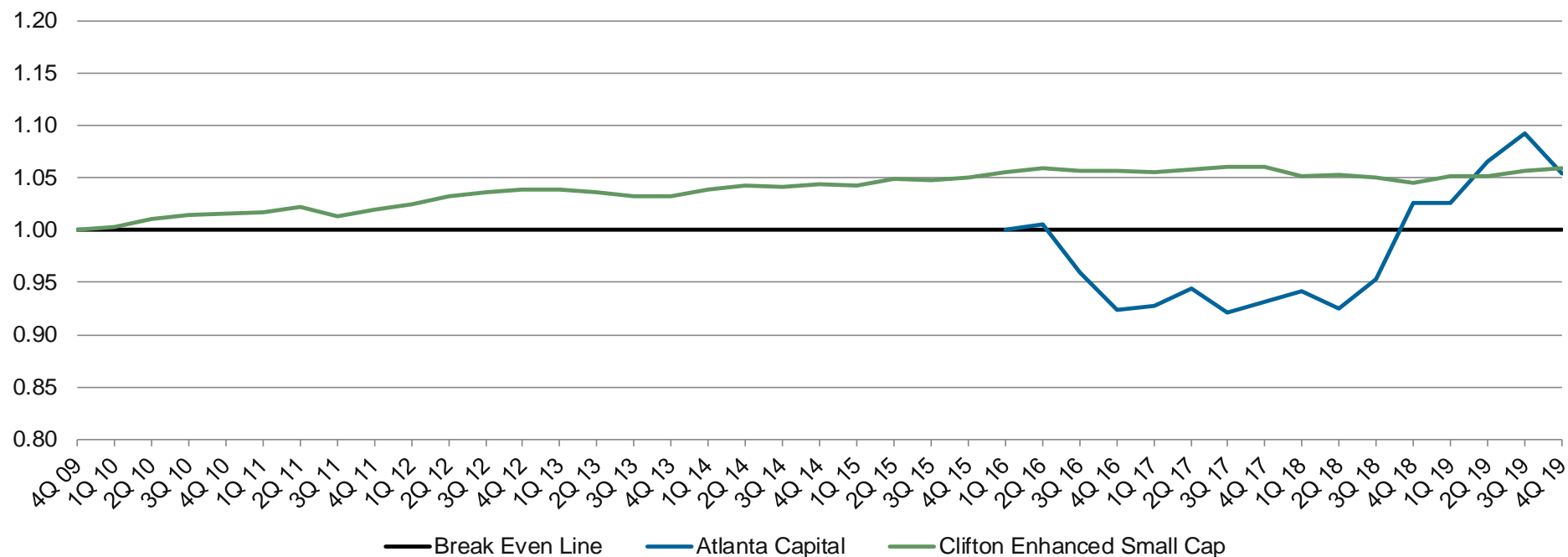
Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
Clifton Enhanced S&P	Q2 2011	1.00	S&P 500
LACM LCG	Q3 2003	1.04	Russell 1000 Growth
LACM Enhanced Index	Q3 2000	1.07	Russell 1000
NTGI Enhanced Index	Q3 2000	0.95	S&P 500

# U.S. Small Cap Equities

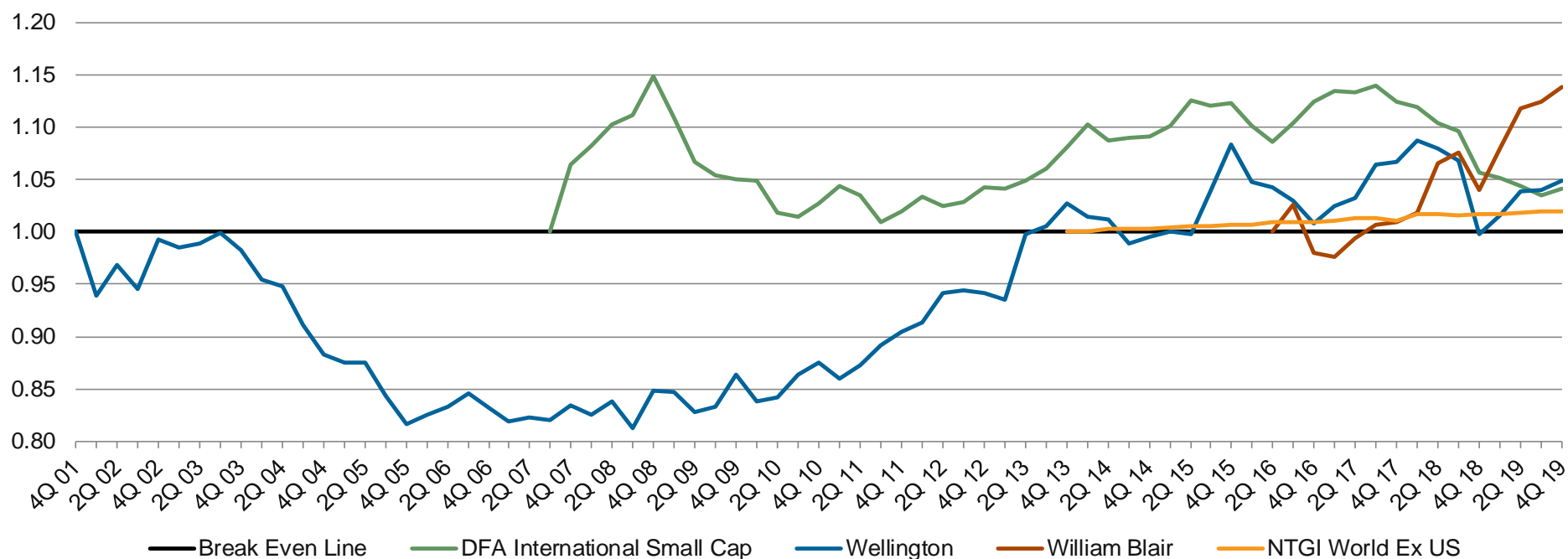
Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
Atlanta Capital	Q2 2016	1.05	S&P 600 Small Cap
Clifton Enhanced Small Cap	Q1 2010	1.06	Russell 2000

## Developed International Equities

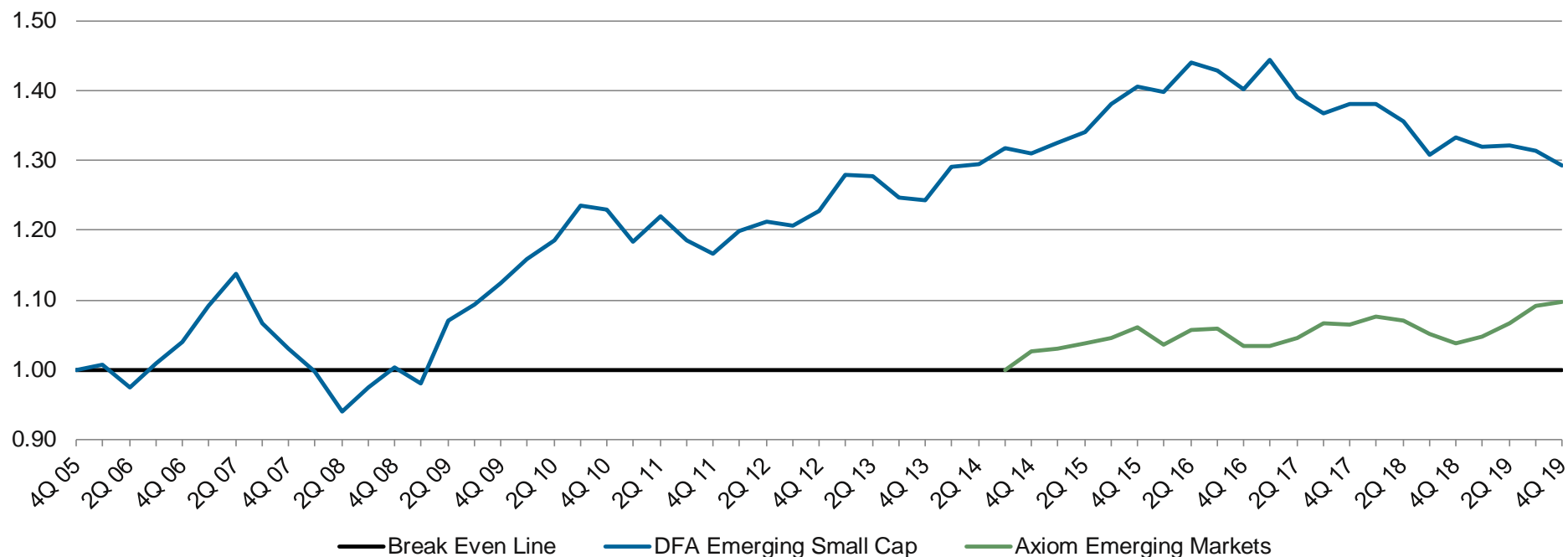
Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
DFA International Small Cap	Q4 2007	1.04	MSCI World Ex US SC Value
NTGI World Ex US	Q1 2014	1.02	MSCI World Ex US
Wellington	Q1 2002	1.05	BMI, EPAC, <\$2 B
William Blair	Q3 2016	1.14	MSCI ACWI Ex US IMI

# Emerging Market Equities

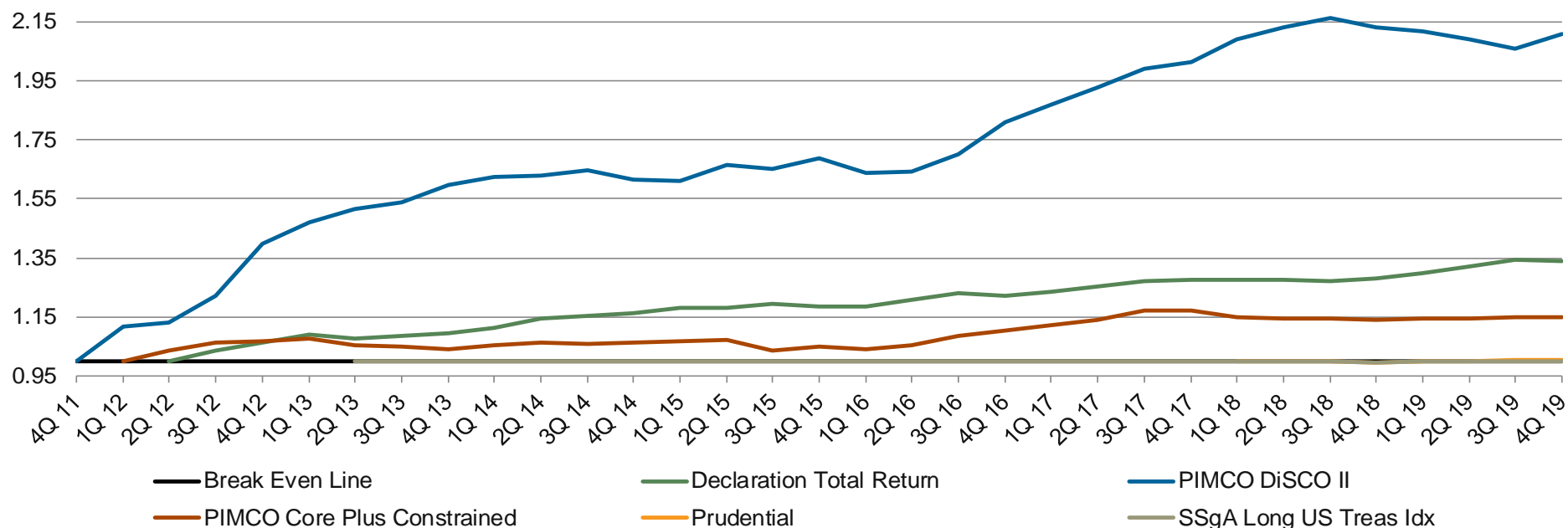
Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
Axiom Emerging Markets	Q4 2014	1.10	MSCI Emerging Market
DFA Emerging Small Cap	Q1 2006	1.29	MSCI Emerging Market

# Investment Grade Fixed Income

Cumulative Net Relative Return Since Inception, as of December 31, 2019

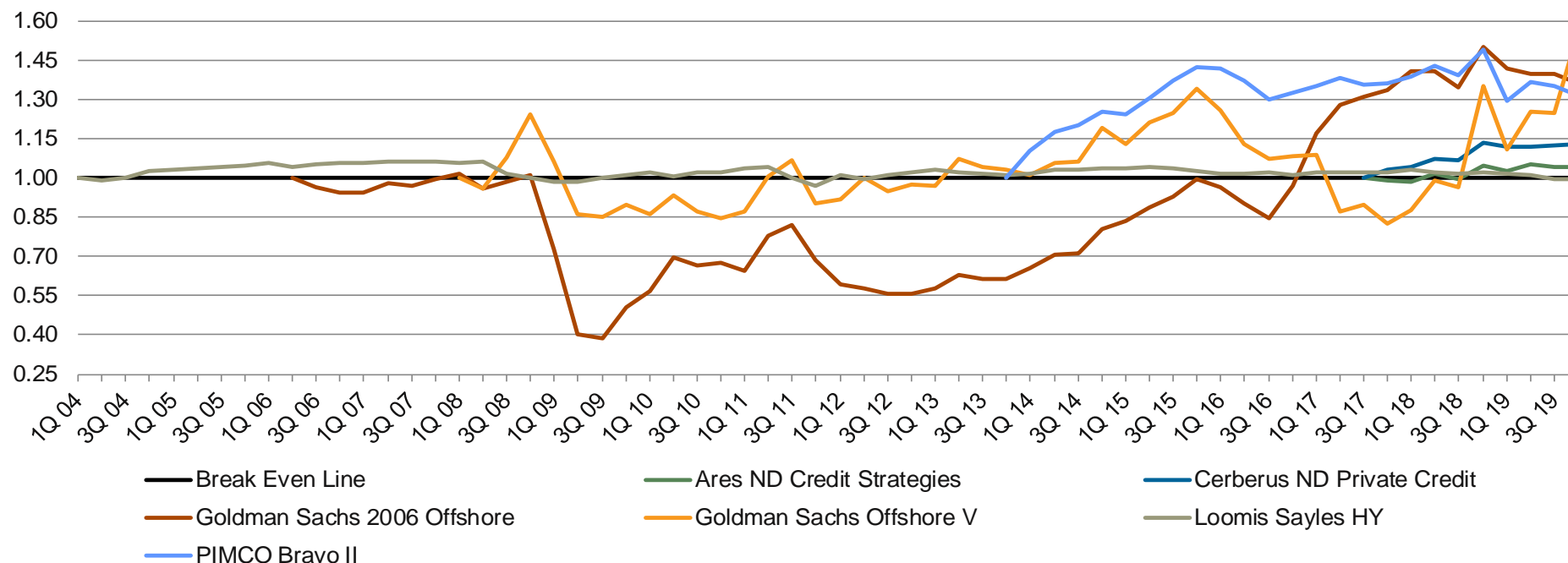


Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
Declaration Total Return	Q3 2012	1.34	3-Month LIBOR
PIMCO DiSCO II	Q1 2012	2.11	Bloomberg Aggregate
PIMCO Core Plus Constrained	Q2 2014	1.15	PIMCO Custom Benchmark
Prudential	Q2 2018	1.01	Bloomberg Aggregate
SSgA Long US Treas Idx	Q3 2013	1.00	Bloomberg Aggregate

The PIMCO Custom Benchmark reflects the returns of 3-month Libor through Feb. 28, 2014; The fund's performance through March 31, 2014; 3-month Libor through June 30, 2018; and the Blmbg Agg thereafter.

## Below Investment Grade Fixed Income

Cumulative Net Relative Return Since Inception, as of December 31, 2019



Fund Name	First Full Quarter of Returns	Cumulative Net Relative Return Since Inception	Benchmark
Ares ND Credit Strategies	Q4 2017	1.04	S&P:LSTA Leveraged Loan B
Cerberus ND Private Credit	Q4 2017	1.13	S&P:LSTA Leveraged Loan B
Goldman Sachs 2006 Offshore	Q3 2006	1.36	Bloomberg: HY Corp 2% Iss Cap
Goldman Sachs Offshore V	Q4 2007	1.56	Bloomberg: HY Corp 2% Iss Cap
Loomis Sayles HY	Q2 2004	0.99	Bloomberg: HY Corp 2% Iss Cap
PIMCO Bravo II	Q1 2014	1.32	Bloomberg: HY Corp 2% Iss Cap



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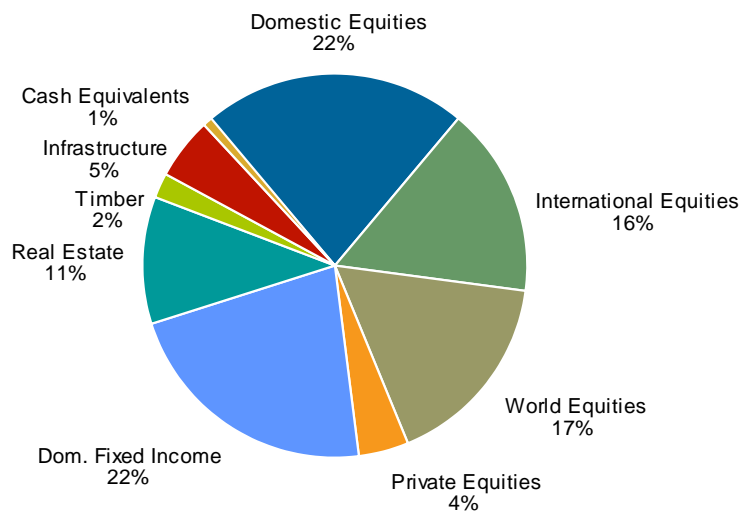
## **Consolidated Pension Trusts Quarterly Review**

- Public Employees Retirement System
- Teachers' Fund for Retirement

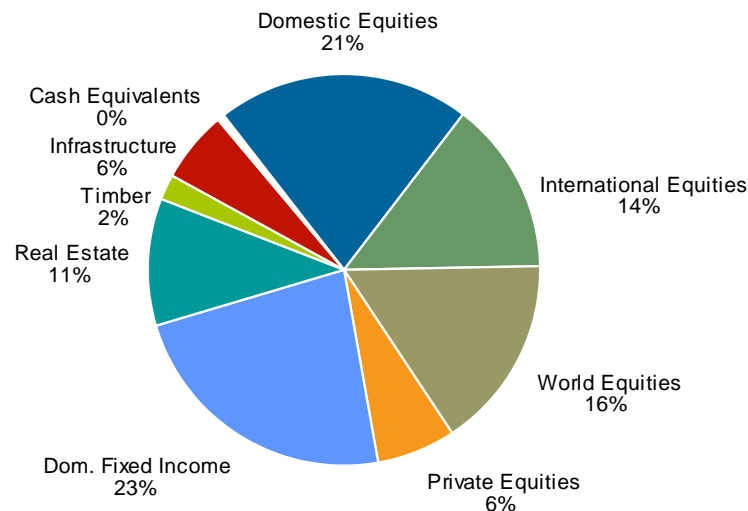
# Consolidated Pension Trust Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

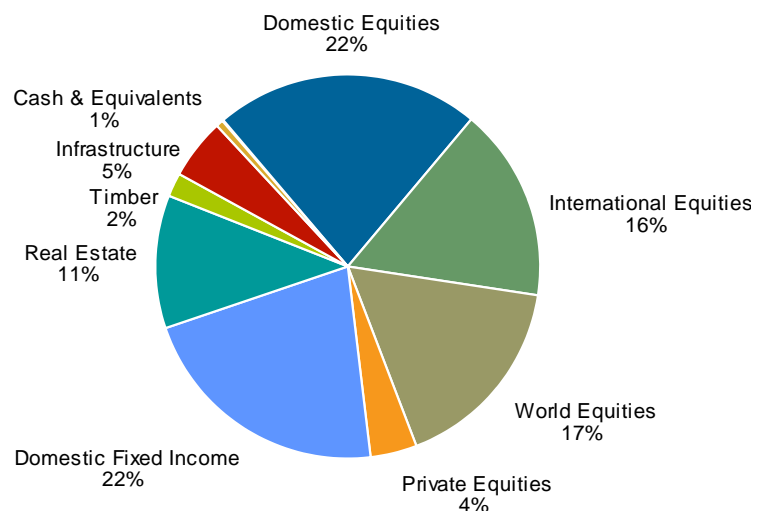


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	1,387,967	22.3%	20.9%	1.3%	82,343
International Equities	995,307	16.0%	14.3%	1.6%	101,022
World Equities	1,039,154	16.7%	16.0%	0.7%	41,429
Private Equities	260,579	4.2%	6.5%	(2.3%)	(143,579)
Dom. Fixed Income	1,379,014	22.1%	23.2%	(1.1%)	(70,655)
Real Estate	667,561	10.7%	10.5%	0.2%	9,819
Timber	131,322	2.1%	2.1%	(0.0%)	(0)
Infrastructure	323,654	5.2%	5.9%	(0.7%)	(44,038)
Cash Equivalents	51,222	0.8%	0.4%	0.4%	23,658
Total	6,235,780	100.0%	100.0%		

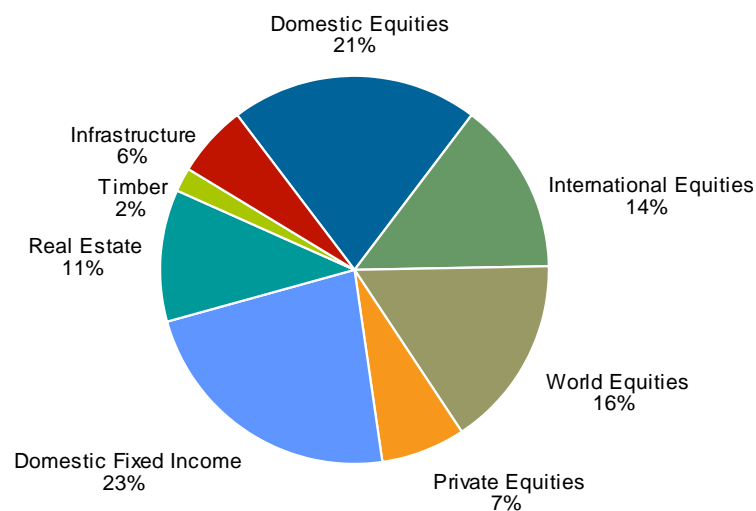
# PERS Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

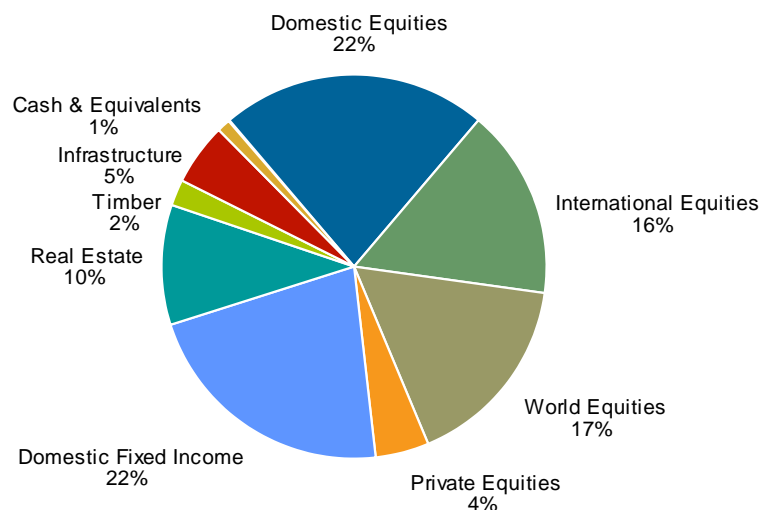


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	741,174	22.3%	20.6%	1.7%	57,705
International Equities	539,641	16.3%	14.4%	1.8%	61,212
World Equities	558,067	16.8%	16.0%	0.8%	26,914
Private Equities	130,128	3.9%	7.0%	(3.1%)	(102,252)
Domestic Fixed Income	721,589	21.7%	23.0%	(1.3%)	(41,944)
Real Estate	371,929	11.2%	11.0%	0.2%	6,762
Timber	66,408	2.0%	2.0%	0.0%	0
Infrastructure	170,741	5.1%	6.0%	(0.9%)	(28,427)
Cash & Equivalents	20,030	0.6%	0.0%	0.6%	20,030
Total	3,319,708	100.0%	100.0%		

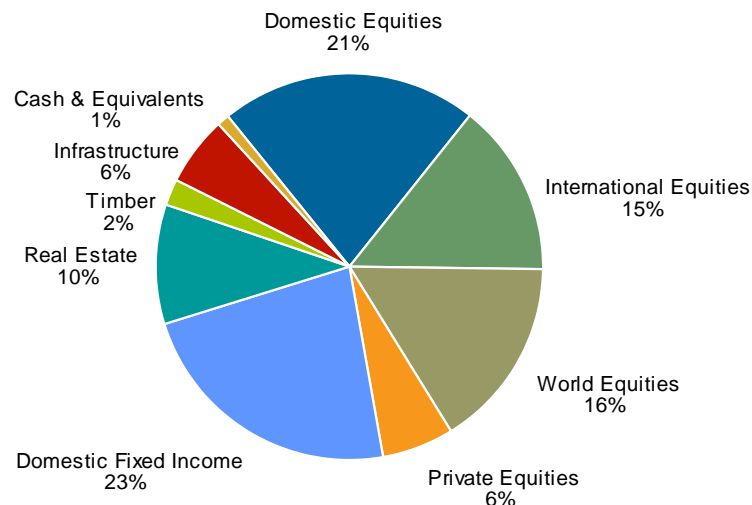
# TFFR Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

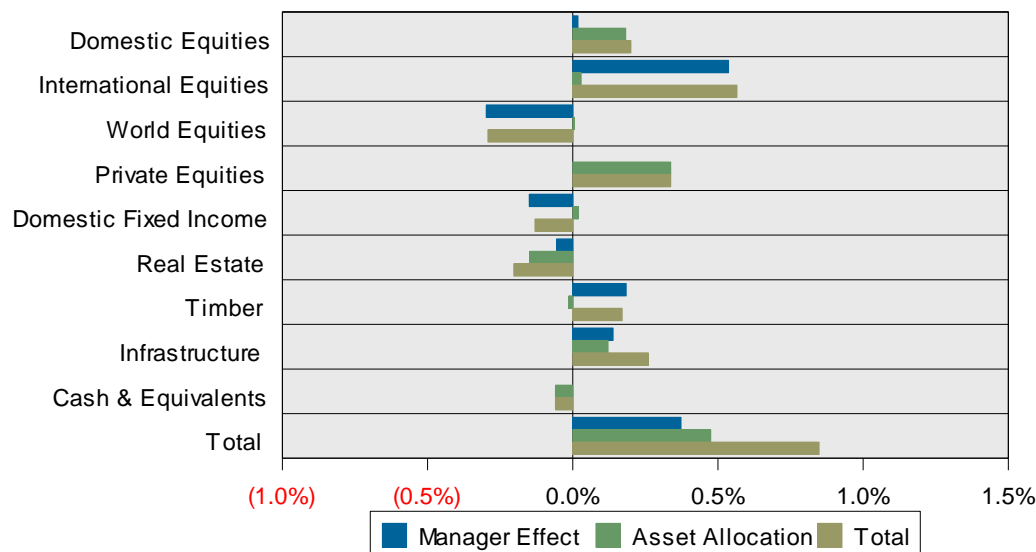


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	601,366	22.4%	21.5%	0.9%	24,641
International Equities	430,470	16.0%	14.5%	1.5%	39,786
World Equities	444,577	16.5%	16.0%	0.5%	14,617
Private Equities	120,097	4.5%	6.0%	(1.5%)	(41,138)
Domestic Fixed Income	589,172	21.9%	23.0%	(1.1%)	(28,896)
Real Estate	271,827	10.1%	10.0%	0.1%	3,102
Timber	59,278	2.2%	2.2%	0.0%	0
Infrastructure	140,471	5.2%	5.8%	(0.6%)	(15,232)
Cash & Equivalents	29,993	1.1%	1.0%	0.1%	3,120
Total	2,687,250	100.0%	100.0%		

# PERS Performance and Attribution

As of December 31, 2019

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 12/31/2019

Return Type	Return (%)
Gross	18.26%
Net of fees	17.99%
Target	17.41%
Net added	0.58%

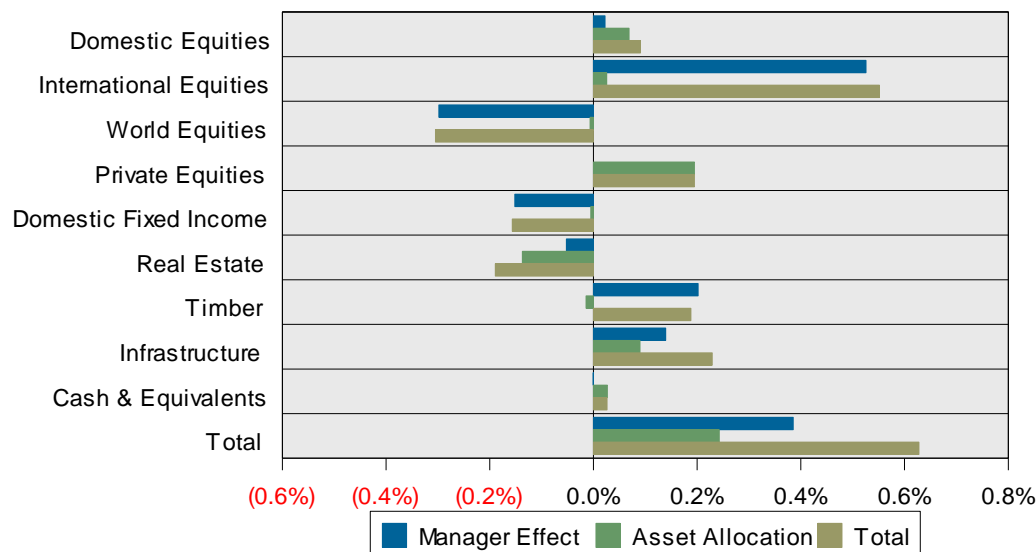
## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return		
Domestic Equities	22%	21%	30.19%	30.07%	0.02%	0.18%	0.20%		
International Equities	16%	14%	25.06%	21.56%	0.54%	0.03%	0.57%		
World Equities	16%	16%	25.74%	27.67%	(0.30%)	0.01%	(0.29%)		
Private Equities	4%	7%	7.06%	7.06%	0.00%	0.34%	0.34%		
Domestic Fixed Income	23%	23%	9.78%	10.44%	(0.15%)	0.02%	(0.13%)		
Real Estate	12%	11%	5.98%	6.42%	(0.06%)	(0.15%)	(0.20%)		
Timber	2%	2%	9.39%	1.30%	0.18%	(0.01%)	0.17%		
Infrastructure	5%	6%	6.02%	3.43%	0.14%	0.12%	0.26%		
Cash & Equivalents	0%	0%	2.23%	2.23%	0.00%	(0.06%)	(0.06%)		
Total			18.26%	= 17.41%	+	0.37%	+	0.48%	0.85%

# TFFR Performance and Attribution

As of December 31, 2019

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 12/31/2019

Return Type	Return (%)
Gross	18.24%
Net of fees	17.97%
Target	17.61%
Net added	0.36%

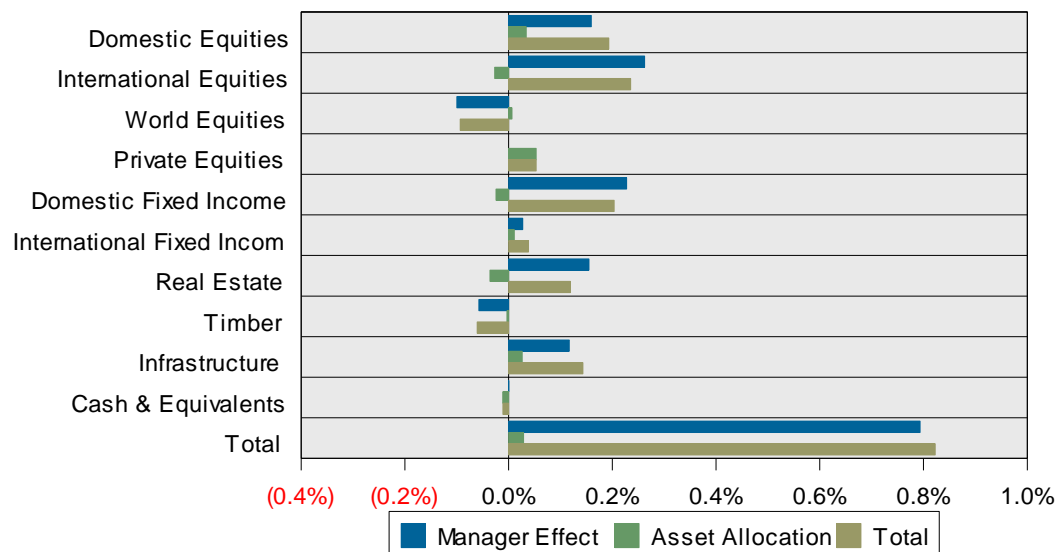
## One Year Relative Attribution Effects

	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return		
Asset Class									
Domestic Equities	22%	21%	30.26%	30.11%	0.02%	0.07%	0.09%		
International Equities	16%	15%	25.22%	21.75%	0.53%	0.03%	0.55%		
World Equities	16%	16%	25.74%	27.67%	(0.30%)	(0.01%)	(0.30%)		
Private Equities	4%	6%	7.04%	7.04%	0.00%	0.19%	0.19%		
Domestic Fixed Income	23%	23%	9.77%	10.44%	(0.15%)	(0.01%)	(0.16%)		
Real Estate	11%	10%	5.98%	6.42%	(0.05%)	(0.14%)	(0.19%)		
Timber	2%	2%	9.39%	1.30%	0.20%	(0.01%)	0.19%		
Infrastructure	5%	6%	6.02%	3.43%	0.14%	0.09%	0.23%		
Cash & Equivalents	1%	1%	2.22%	2.28%	(0.00%)	0.03%	0.03%		
Total			18.24%	= 17.61%	+	0.39%	+	0.24%	0.63%

# PERS Performance and Attribution

As of December 31, 2019

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 12/31/2019

Return Type	Return (%)
Gross	7.67%
Net of fees	7.39%
Target	6.85%
Net added	0.54%

## Five Year Annualized Relative Attribution Effects

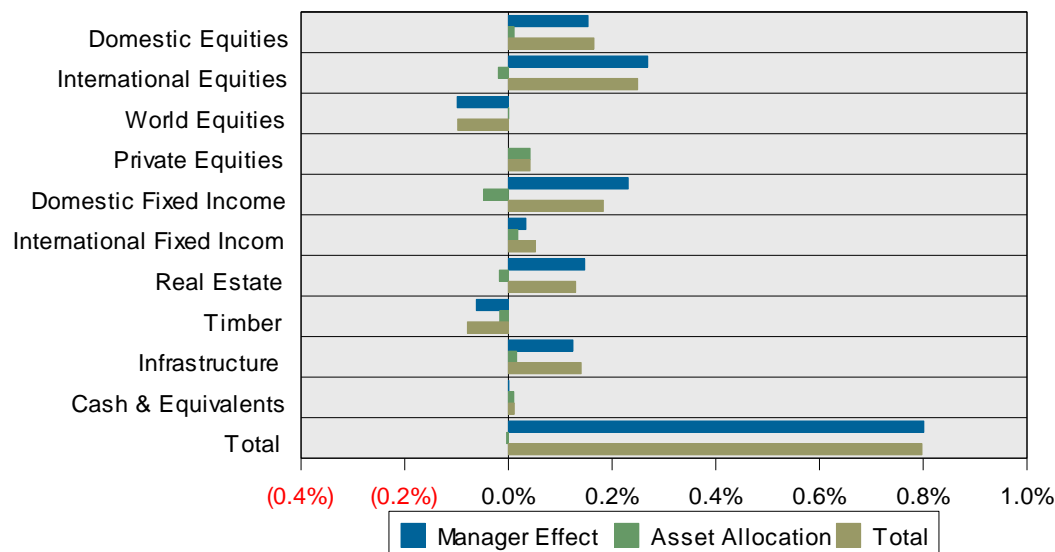
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.50%	10.78%	0.16%	0.03%	0.19%
International Equities	16%	14%	7.32%	5.67%	0.26%	(0.03%)	0.24%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.01%	(0.09%)
Private Equities	3%	6%	2.23%	2.23%	0.00%	0.05%	0.05%
Domestic Fixed Income	20%	20%	5.12%	3.95%	0.23%	(0.02%)	0.20%
International Fixed Income	3%	3%	-	-	0.03%	0.01%	0.04%
Real Estate	11%	11%	9.73%	8.25%	0.16%	(0.04%)	0.12%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.00%)	(0.06%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.03%	0.14%
Cash & Equivalents	1%	0%	1.17%	1.14%	0.00%	(0.01%)	(0.01%)

**Total** **7.67% = 6.85% + 0.79% + 0.03%** **0.82%**

# TFFR Performance and Attribution

As of December 31, 2019

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 12/31/2019

Return Type	Return (%)
Gross	7.63%
Net of fees	7.35%
Target	6.83%
Net added	0.52%

## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.51%	10.80%	0.15%	0.01%	0.16%
International Equities	15%	15%	7.34%	5.66%	0.27%	(0.02%)	0.25%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.00%	(0.10%)
Private Equities	4%	6%	2.22%	2.22%	0.00%	0.04%	0.04%
Domestic Fixed Income	20%	19%	5.03%	3.81%	0.23%	(0.05%)	0.18%
International Fixed Income	3%	3%	-	-	0.03%	0.02%	0.05%
Real Estate	10%	10%	9.73%	8.25%	0.15%	(0.02%)	0.13%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.02%)	(0.08%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.02%	0.14%
Cash & Equivalents	1%	1%	1.17%	1.07%	0.00%	0.01%	0.01%

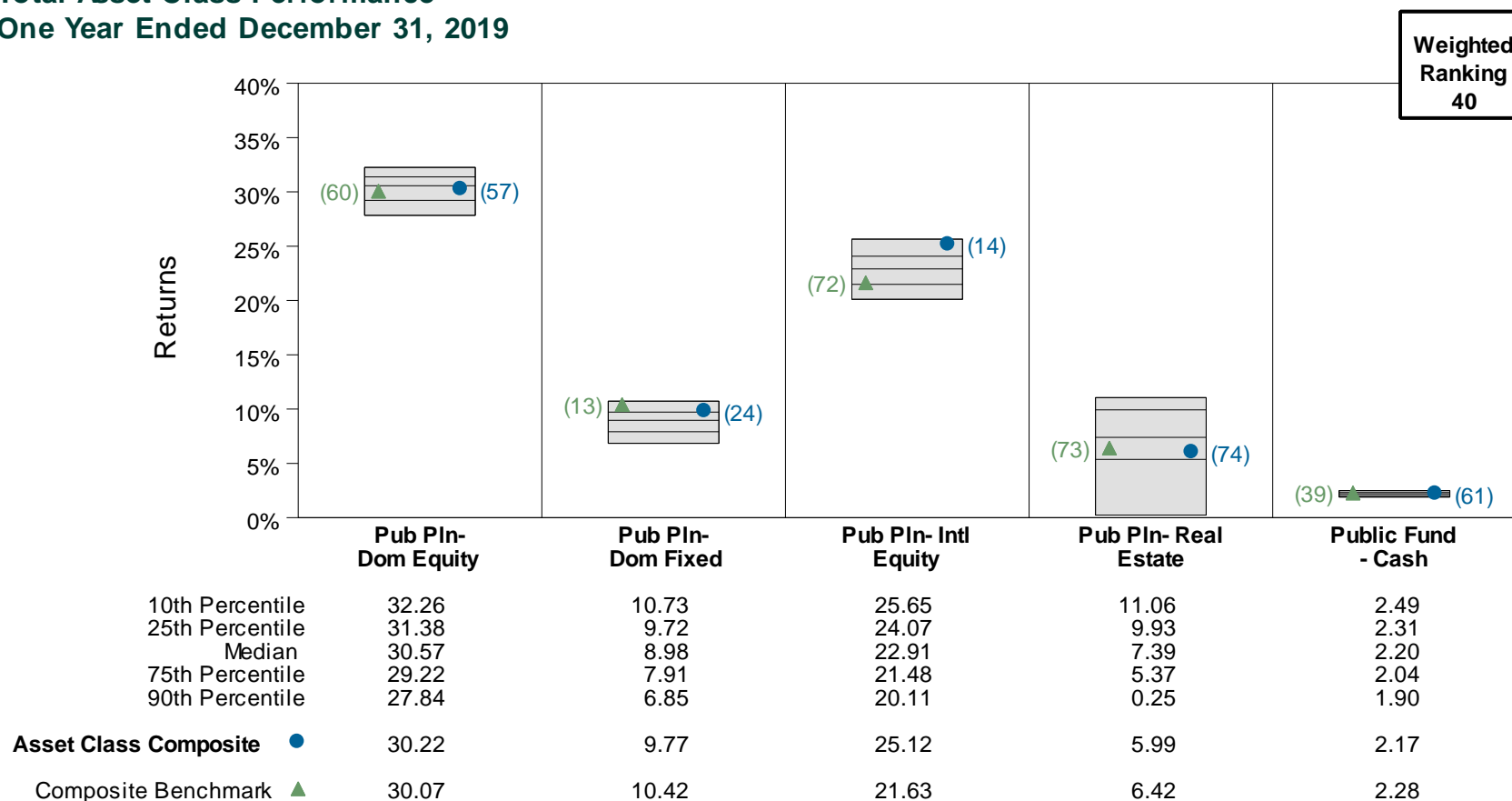
**Total** **7.63% = 6.83% + 0.80% + (0.00%)** **0.80%**



# Asset Class Composite Results

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

### Total Asset Class Performance One Year Ended December 31, 2019

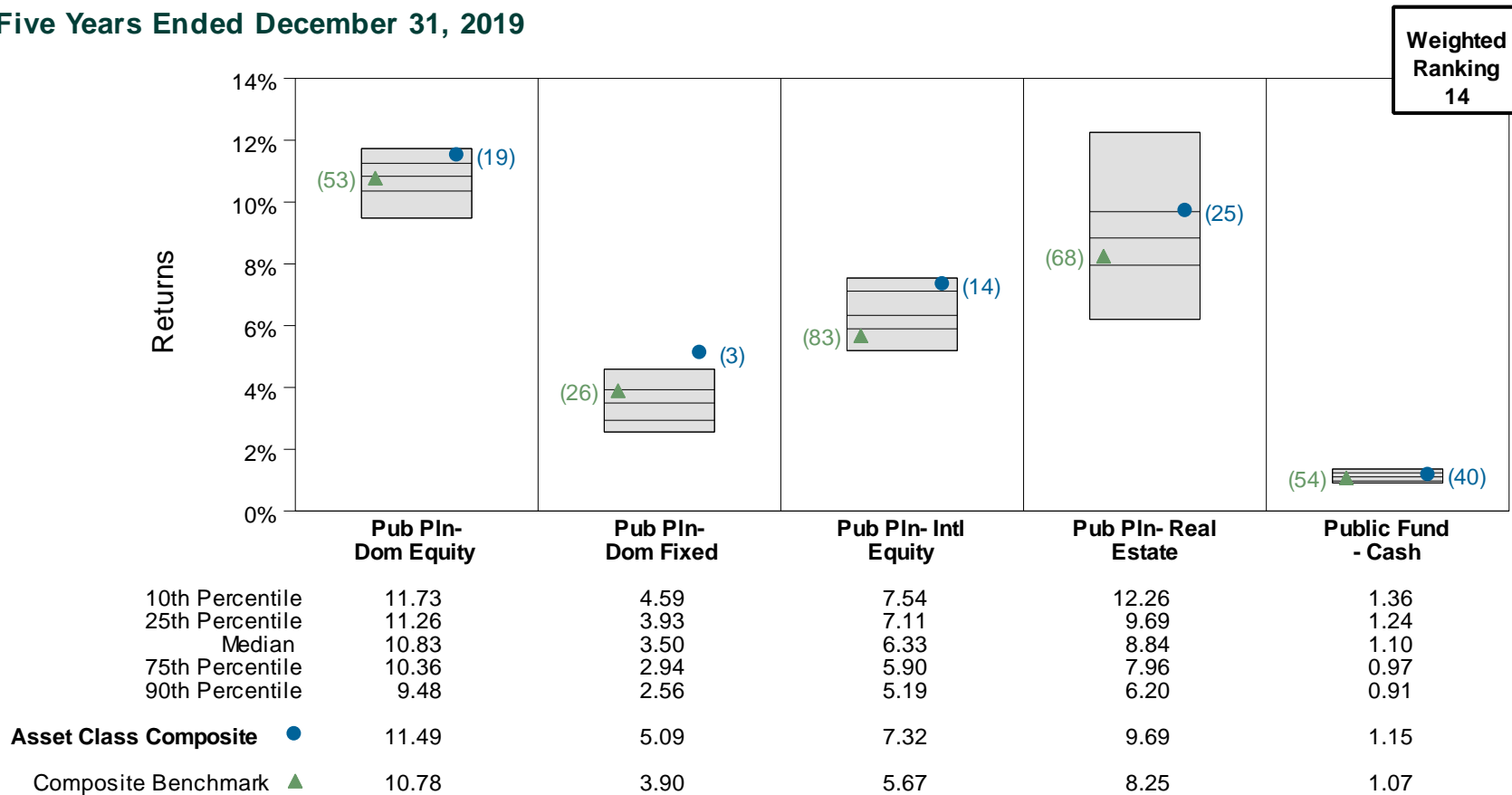


- International equity experienced the strongest relative return in 2019. Domestic equity edged out its benchmark, while domestic fixed income and real estate trailed.
- International equity and domestic fixed income ranked in the top quartile in 2019.

# Asset Class Composite Results

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

**Total Asset Class Performance**  
**Five Years Ended December 31, 2019**



- All asset classes outperformed their respective benchmarks over the trailing five years.
- All asset classes, with the exception of cash, ranked in the top quartile over the trailing five years.

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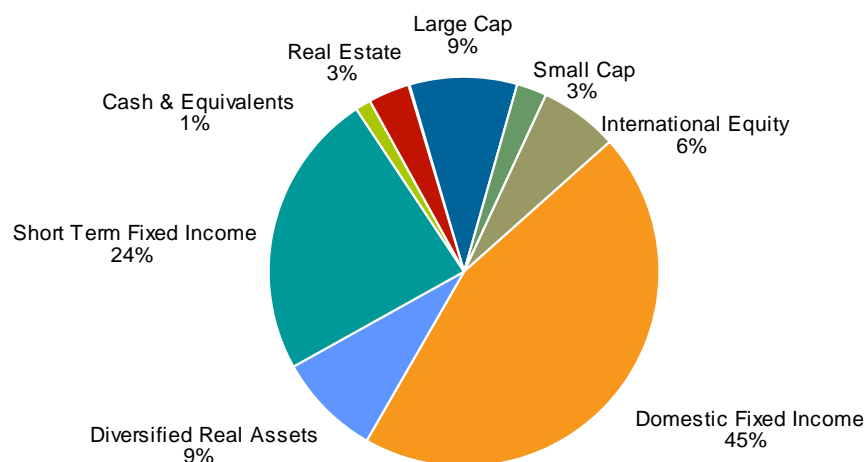
## **Consolidated Insurance Trust Quarterly Review**

- Workforce Safety and Insurance Legacy Fund
- Budget Stabilization Fund

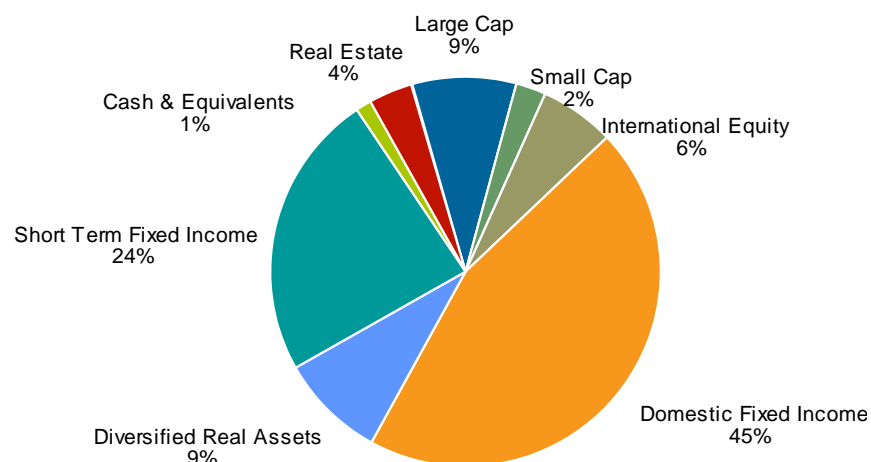
# Consolidated Insurance Trust Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

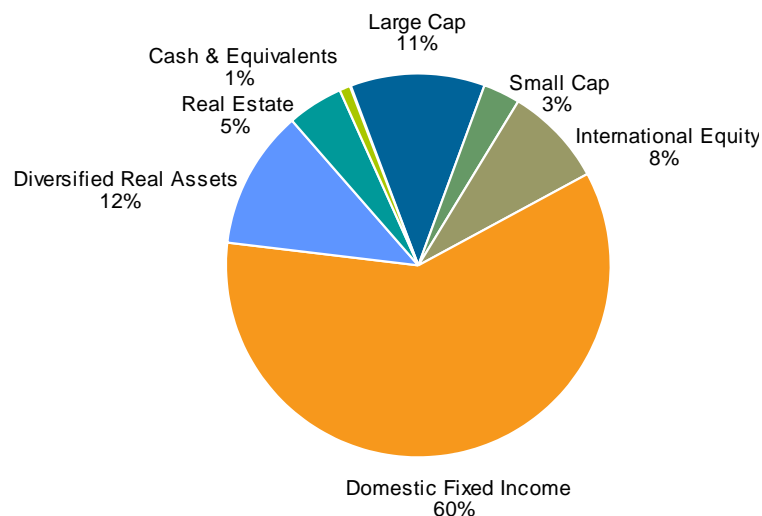


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	259,775	8.9%	8.6%	0.3%	7,337
Small Cap	73,760	2.5%	2.5%	0.1%	1,876
International Equity	189,181	6.5%	6.2%	0.3%	9,124
Domestic Fixed Income	1,314,867	44.9%	45.1%	(0.2%)	(5,071)
Diversified Real Assets	252,404	8.6%	8.8%	(0.2%)	(6,347)
Short Term Fixed Income	697,274	23.8%	23.8%	0.0%	0
Cash & Equivalents	37,951	1.3%	1.3%	(0.1%)	(1,525)
Real Estate	100,690	3.4%	3.6%	(0.2%)	(5,394)
Total	2,925,902	100.0%	100.0%		

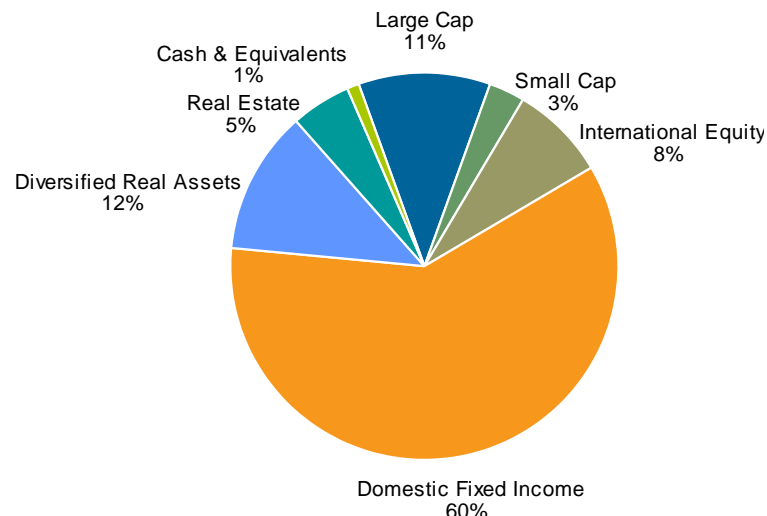
# WSI Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

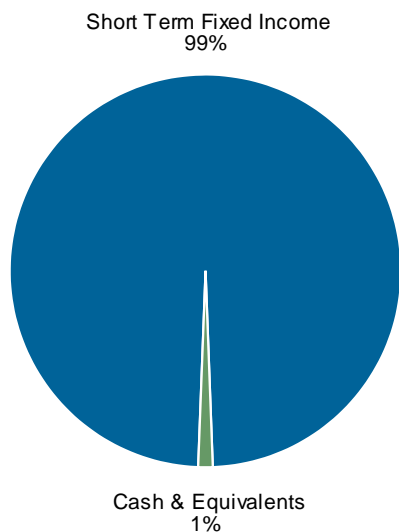


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	240,382	11.3%	11.0%	0.3%	7,375
Small Cap	65,427	3.1%	3.0%	0.1%	1,879
International Equity	178,603	8.4%	8.0%	0.4%	9,144
Domestic Fixed Income	1,265,831	59.8%	60.0%	(0.2%)	(5,115)
Diversified Real Assets	247,845	11.7%	12.0%	(0.3%)	(6,345)
Real Estate	100,521	4.7%	5.0%	(0.3%)	(5,392)
Cash & Equivalents	19,636	0.9%	1.0%	(0.1%)	(1,547)
Total	2,118,243	100.0%	100.0%		

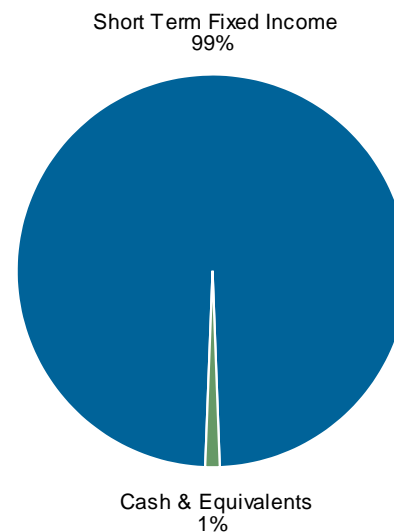
# Budget Stabilization Fund Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

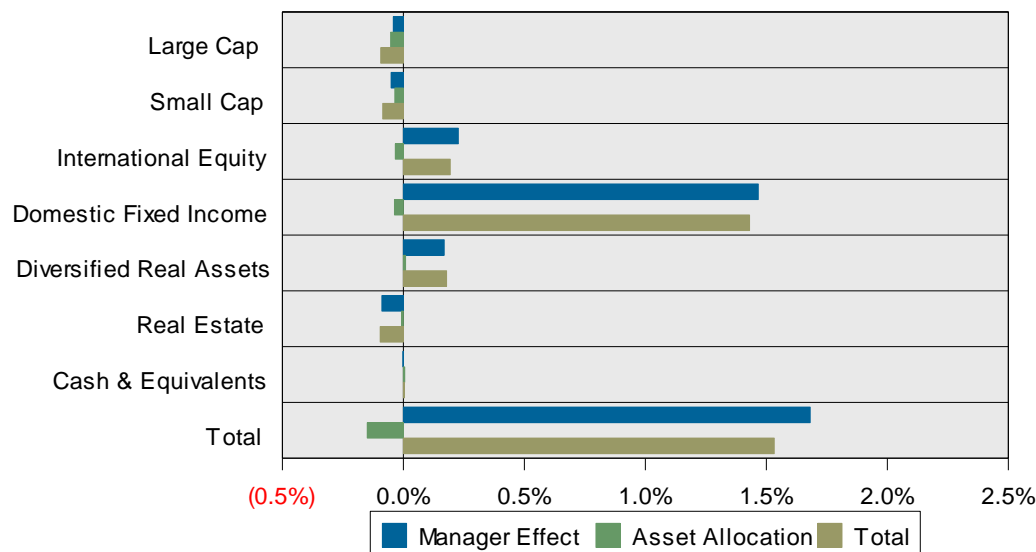


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Short Term Fixed Income	666,050	98.8%	98.8%	(0.0%)	(6)
Cash & Equivalents	8,164	1.2%	1.2%	0.0%	6
Total	674,215	100.0%	100.0%		

# WSI Performance and Attribution

As of December 31, 2019

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 12/31/2019

Return Type	Return (%)
Gross	13.76%
Net of fees	13.57%
Target	12.23%
Net added	1.34%

## One Year Relative Attribution Effects

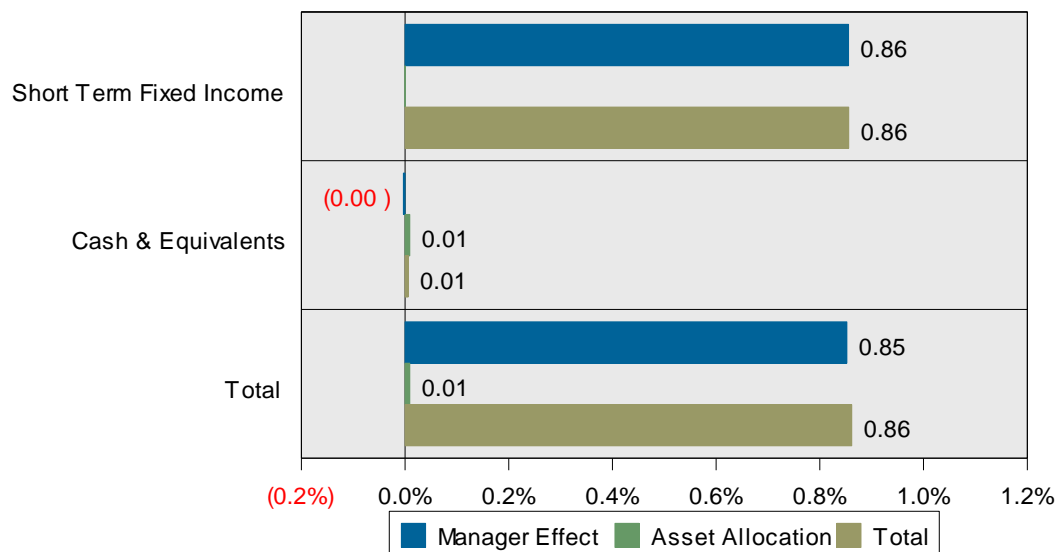
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	30.91%	31.43%	(0.04%)	(0.05%)	(0.09%)
Small Cap	3%	3%	23.78%	25.52%	(0.05%)	(0.03%)	(0.09%)
International Equity	8%	8%	25.39%	22.49%	0.23%	(0.03%)	0.19%
Domestic Fixed Income	60%	60%	11.11%	8.72%	1.47%	(0.04%)	1.43%
Diversified Real Assets	12%	12%	7.20%	5.83%	0.17%	0.01%	0.18%
Real Estate	5%	5%	4.68%	6.42%	(0.09%)	(0.01%)	(0.10%)
Cash & Equivalents	1%	1%	2.11%	2.28%	(0.00%)	0.01%	0.00%

**Total** **13.76% = 12.23% + 1.68% + (0.15%)** **1.53%**

# Budget Performance and Attribution

As of December 31, 2019

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 12/31/2019

Return Type	Return (%)
Gross	4.85%
Net of fees	4.73%
Target	3.99%
Net added	0.74%

## One Year Relative Attribution Effects

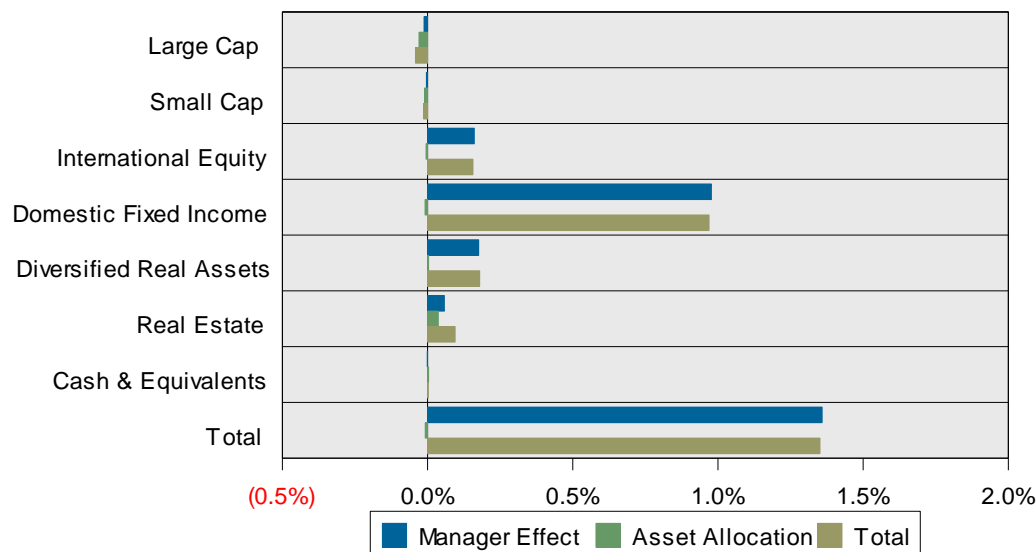
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	98%	98%	4.90%	4.03%	0.86%	0.00%	0.86%
Cash & Equivalents	2%	2%	2.11%	2.28%	(0.00)%	0.01%	0.01%
<b>Total</b>			<b>4.85%</b>	<b>3.99%</b>	<b>+ 0.85%</b>	<b>+ 0.01%</b>	<b>0.86%</b>



# WSI Performance and Attribution

As of December 31, 2019

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 12/31/2019

Return Type	Return (%)
Gross	6.27%
Net of fees	6.06%
Target	4.92%
Net added	1.14%

## Five Year Annualized Relative Attribution Effects

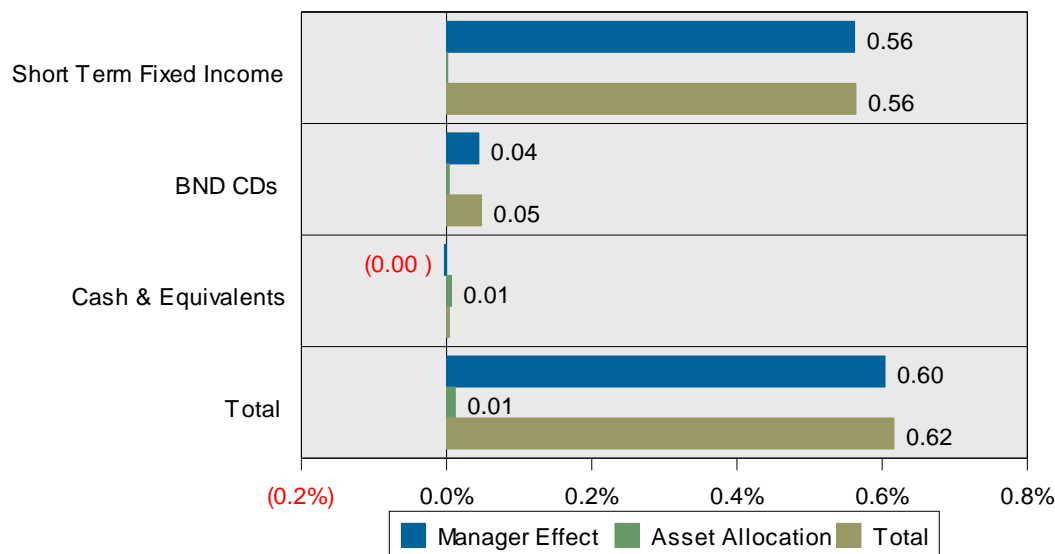
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	11.34%	11.48%	(0.01%)	(0.03%)	(0.04%)
Small Cap	4%	4%	8.08%	8.23%	(0.00%)	(0.01%)	(0.01%)
International Equity	9%	9%	7.26%	5.59%	0.16%	(0.00%)	0.16%
Domestic Fixed Income	55%	55%	4.85%	3.05%	0.98%	(0.01%)	0.97%
Diversified Real Assets	14%	14%	4.09%	2.84%	0.18%	0.00%	0.18%
Real Estate	7%	6%	8.99%	8.25%	0.06%	0.04%	0.10%
Cash & Equivalents	1%	1%	0.98%	1.07%	(0.00%)	0.00%	0.00%

**Total** **6.27% = 4.92% + 1.36% + (0.01%)** **1.35%**

# Budget Performance and Attribution

As of December 31, 2019

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 12/31/2019

Return Type	Return (%)
Gross	2.24%
Net of fees	2.08%
Target	1.63%
Net added	0.45%

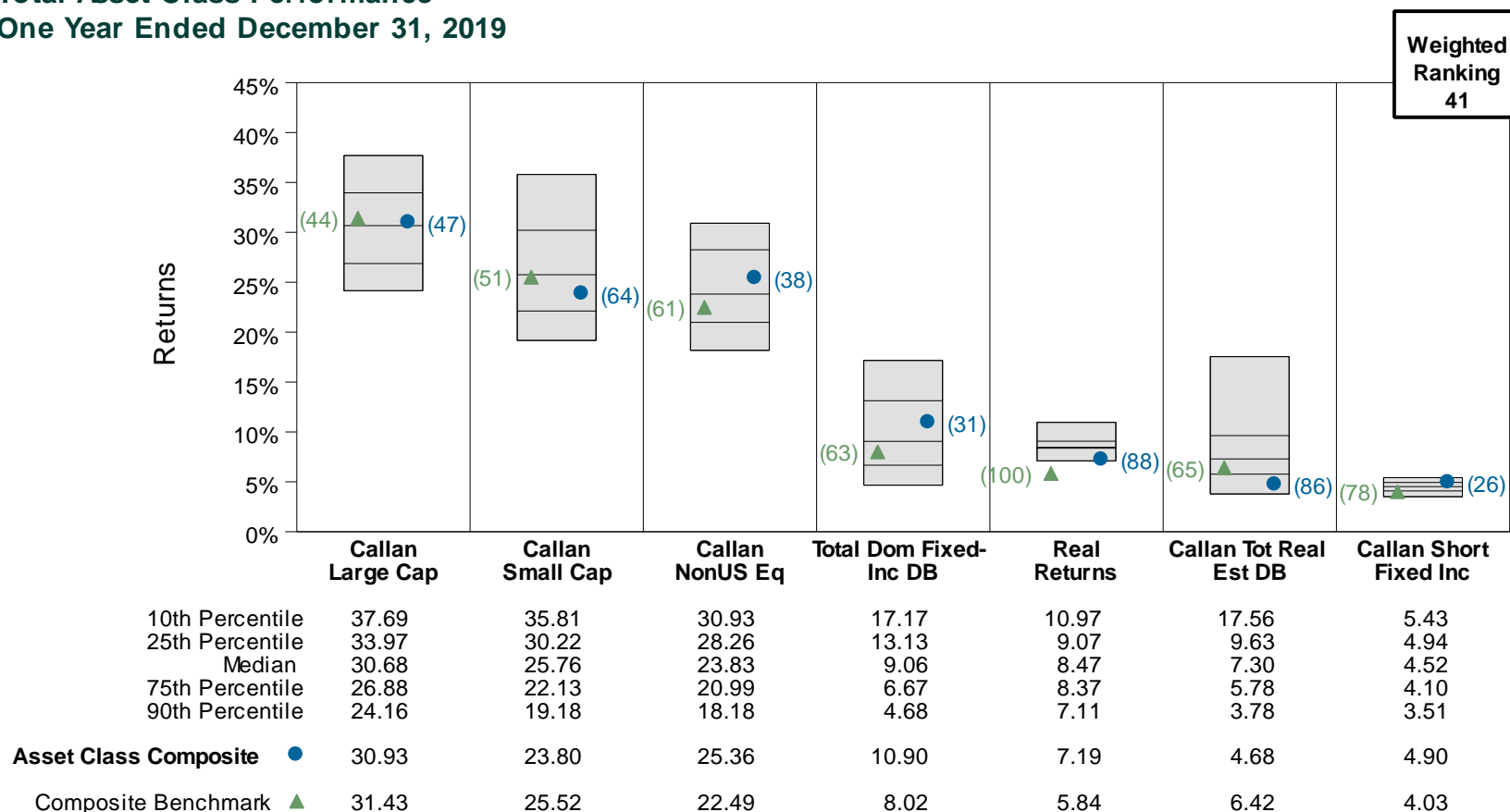
## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	90%	90%	2.19%	1.55%	0.56%	0.00%	0.56%
BND CDs	7%	7%	-	-	0.04%	0.00%	0.05%
Cash & Equivalents	3%	3%	0.97%	1.07%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>2.24%</b>	<b>1.63%</b>	<b>+ 0.60%</b>	<b>+ 0.01%</b>	<b>0.62%</b>

# Asset Class Composite Results

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

Total Asset Class Performance  
One Year Ended December 31, 2019

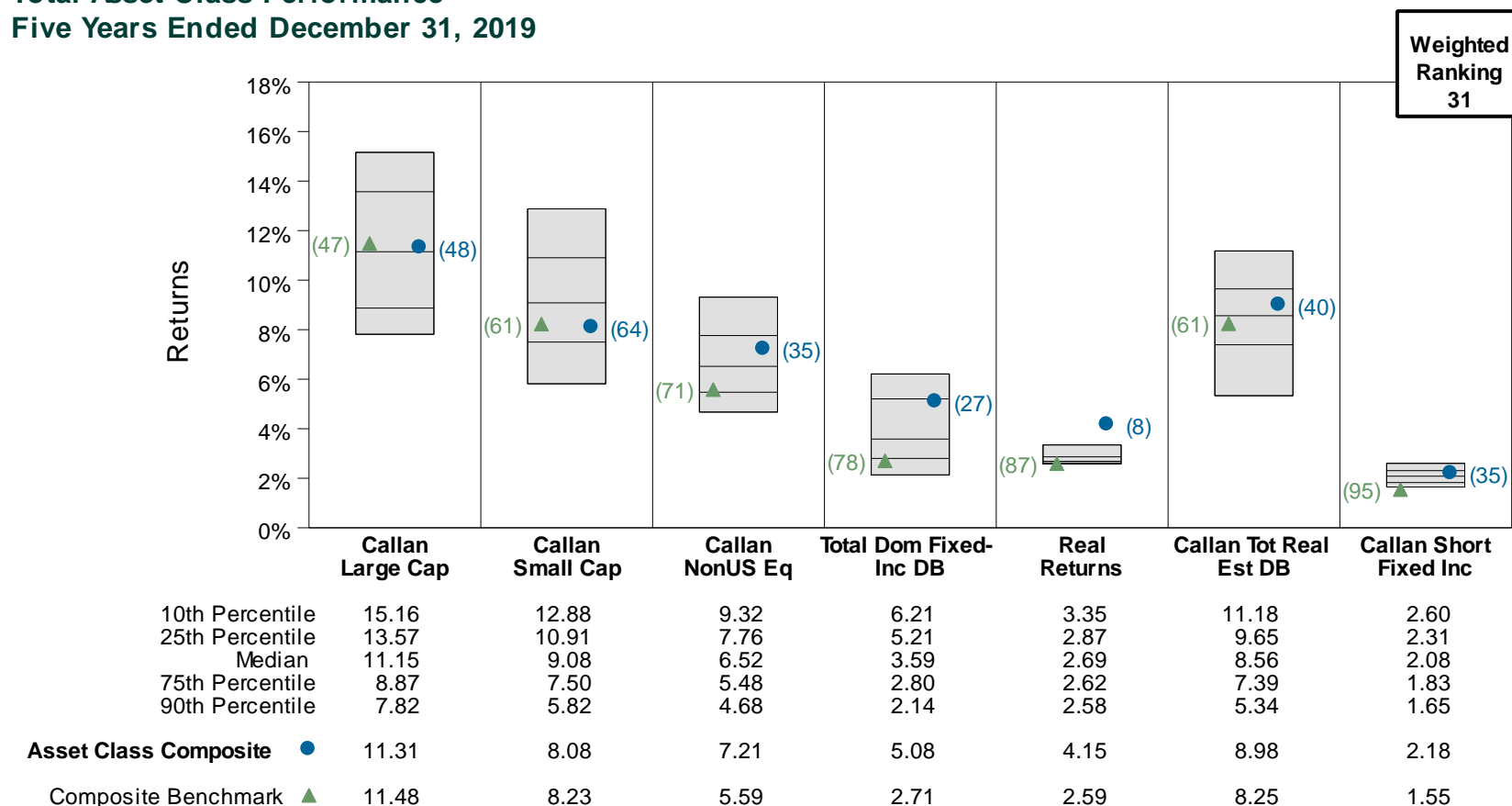


- Small cap equities, real assets, and real estate were the only asset classes to rank below median over the trailing year.
- International equity, domestic fixed income, short-term fixed income and real returns all outperformed their benchmarks.

# Asset Class Composite Results

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

Total Asset Class Performance  
Five Years Ended December 31, 2019



- International equity, domestic fixed income, real assets, real estate, and short-duration fixed income all outperformed their benchmarks.
- Real assets performed in the top decile, while small cap equities were the only asset class to rank below the median of peers over the trailing five years.

Callan

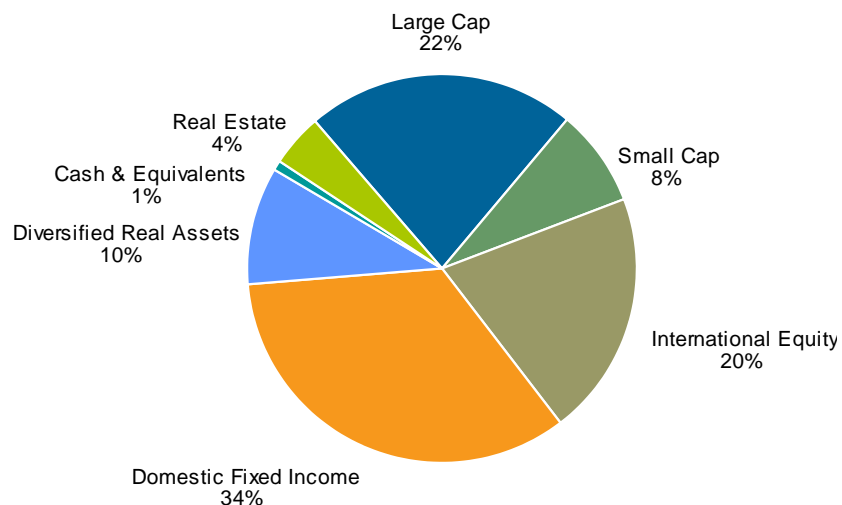
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## Legacy Fund Quarterly Review

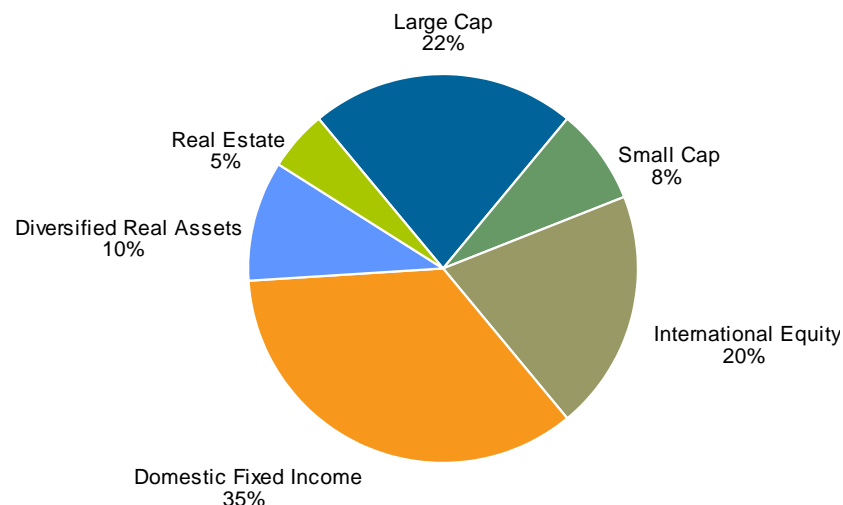
# Legacy Fund Allocation

As of December 31, 2019

**Actual Asset Allocation**



**Target Asset Allocation**

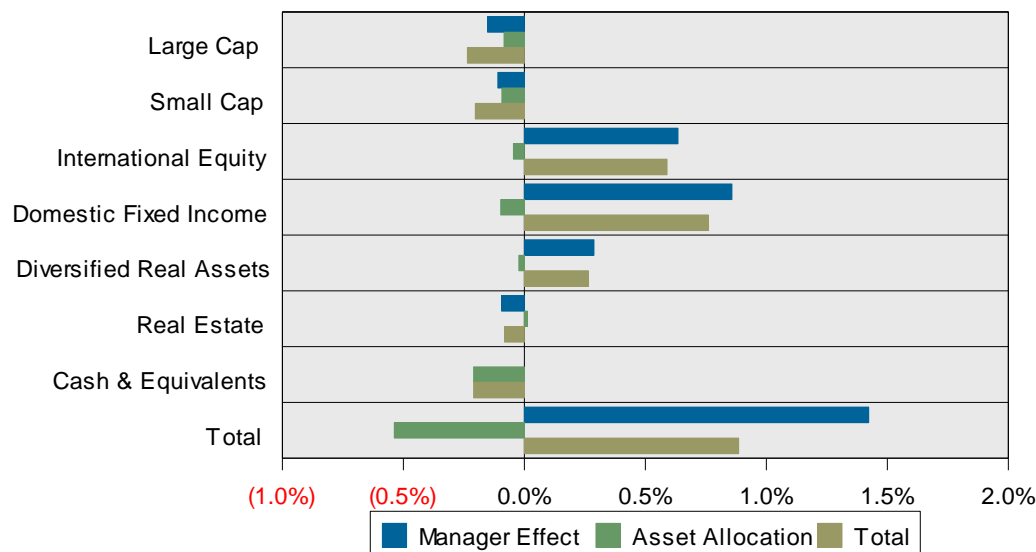


Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	1,537,688	22.4%	22.0%	0.4%	27,889
Small Cap	559,292	8.1%	8.0%	0.1%	10,274
International Equity	1,398,781	20.4%	20.0%	0.4%	26,236
Domestic Fixed Income	2,339,067	34.1%	35.0%	(0.9%)	(62,887)
Diversified Real Assets	675,134	9.8%	10.0%	(0.2%)	(11,139)
Cash & Equivalents	51,954	0.8%	0.0%	0.8%	51,954
Real Estate	300,809	4.4%	5.0%	(0.6%)	(42,328)
Total	6,862,726	100.0%	100.0%		

# Legacy Performance and Attribution

As of December 31, 2019

## One Year Relative Attribution Effects



## Returns for 1 Year Ended 12/31/2019

Return Type	Return (%)
Gross	18.35%
Net of fees	18.13%
Target	17.47%
Net added	0.66%

## One Year Relative Attribution Effects

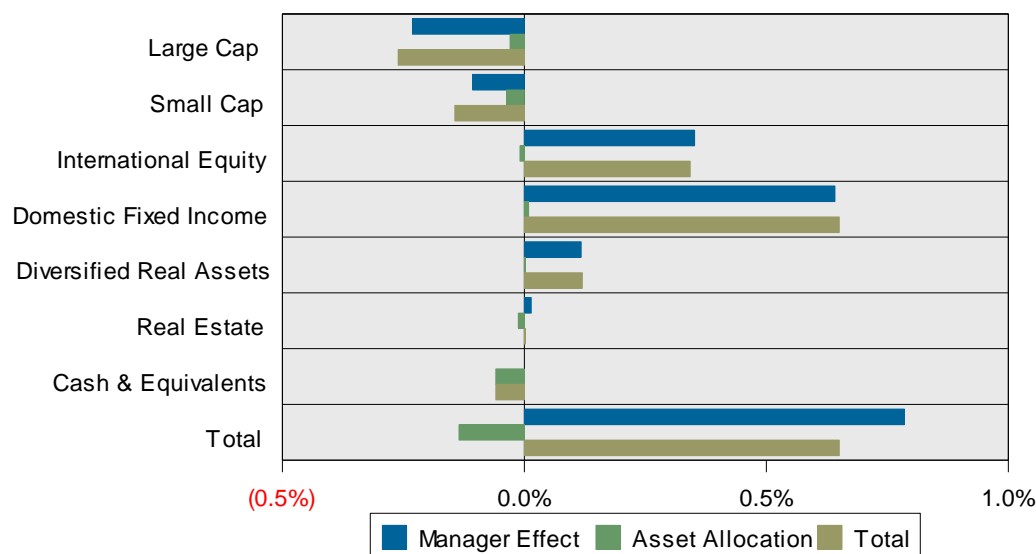
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	30.62%	31.43%	(0.15%)	(0.08%)	(0.24%)
Small Cap	8%	8%	24.16%	25.52%	(0.11%)	(0.09%)	(0.20%)
International Equity	20%	20%	25.75%	22.49%	0.63%	(0.05%)	0.59%
Domestic Fixed Income	34%	35%	11.08%	8.72%	0.86%	(0.10%)	0.76%
Diversified Real Assets	10%	10%	9.77%	7.05%	0.29%	(0.02%)	0.26%
Real Estate	5%	5%	4.57%	6.42%	(0.09%)	0.01%	(0.08%)
Cash & Equivalents	1%	0%	2.10%	2.10%	0.00%	(0.21%)	(0.21%)

**Total** **18.35% = 17.47% + 1.42% + (0.54%)** **0.89%**

# Legacy Performance and Attribution

As of December 31, 2019

## Three Year Annualized Relative Attribution Effects



## Returns for 3 Year Ended 12/31/2019

Return Type	Return (%)
Gross	8.85%
Net of fees	8.64%
Target	8.20%
Net added	0.44%

## Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	13.94%	15.05%	(0.23%)	(0.03%)	(0.26%)
Small Cap	8%	8%	7.32%	8.59%	(0.11%)	(0.04%)	(0.14%)
International Equity	20%	20%	11.01%	9.34%	0.35%	(0.01%)	0.34%
Domestic Fixed Income	34%	35%	5.88%	4.03%	0.64%	0.01%	0.65%
Diversified Real Assets	10%	10%	5.39%	4.19%	0.12%	0.00%	0.12%
Real Estate	5%	5%	6.82%	6.70%	0.01%	(0.01%)	0.00%
Cash & Equivalents	1%	0%	1.54%	1.54%	0.00%	(0.06%)	(0.06%)

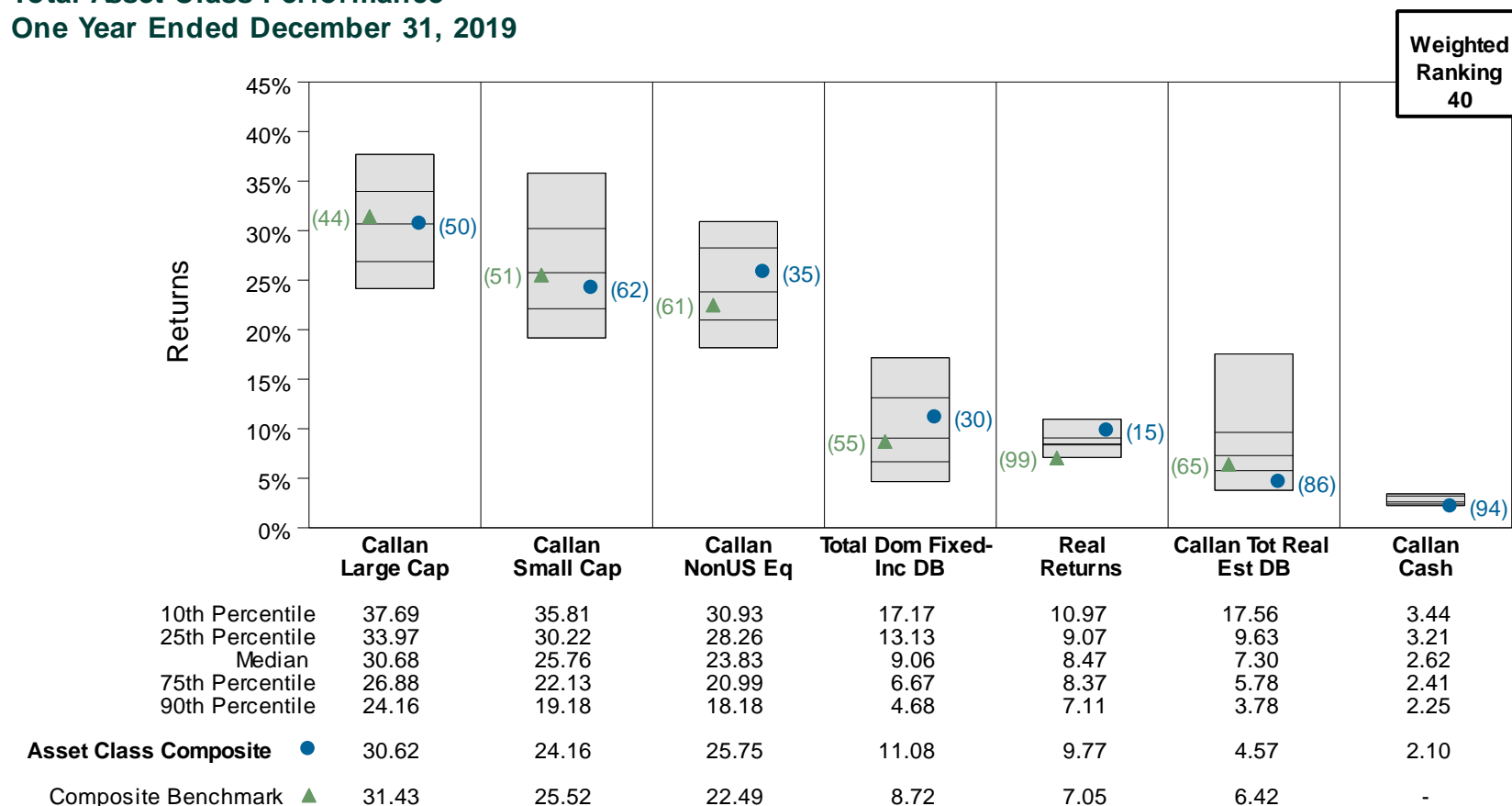
**Total** **8.85% = 8.20% + 0.79% + (0.13%)** **0.65%**



# Asset Class Composite Results

## Legacy Fund Asset Class Results vs. Callan Style Groups

Total Asset Class Performance  
One Year Ended December 31, 2019

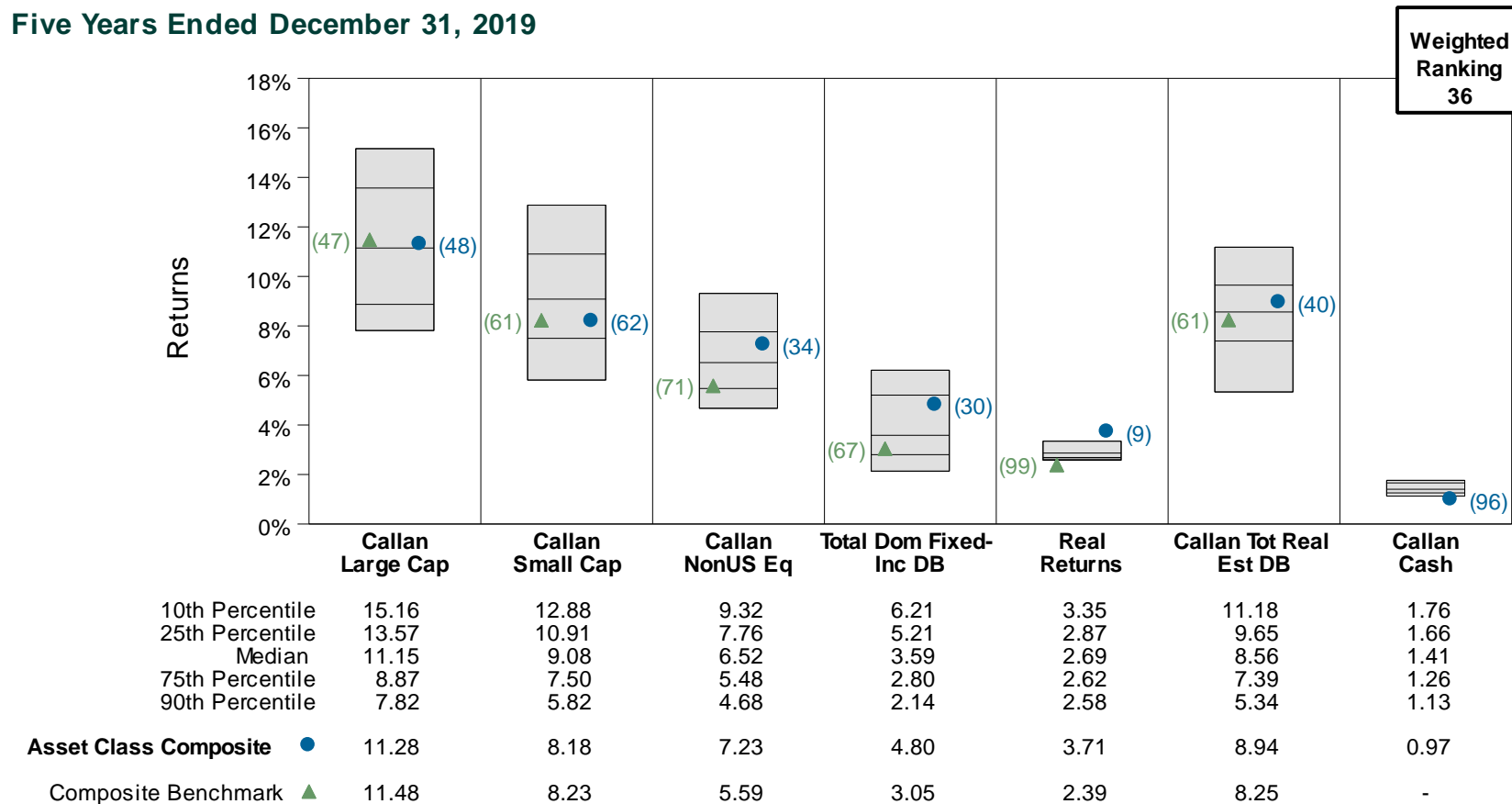


- International equity, domestic fixed income, and real assets outperformed their respective benchmarks.
- Small cap equities and real estate ranked in the bottom half of peers, while all other asset class ranked at, or above median.

# Asset Class Composite Results

## Legacy Fund Asset Class Results vs. Callan Style Groups

Total Asset Class Performance  
Five Years Ended December 31, 2019



- Besides large and small cap domestic equities, all asset classes outperformed their benchmarks.
- Real returns performed in the top decile, with only small cap equities performing below median.

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## Appendix A

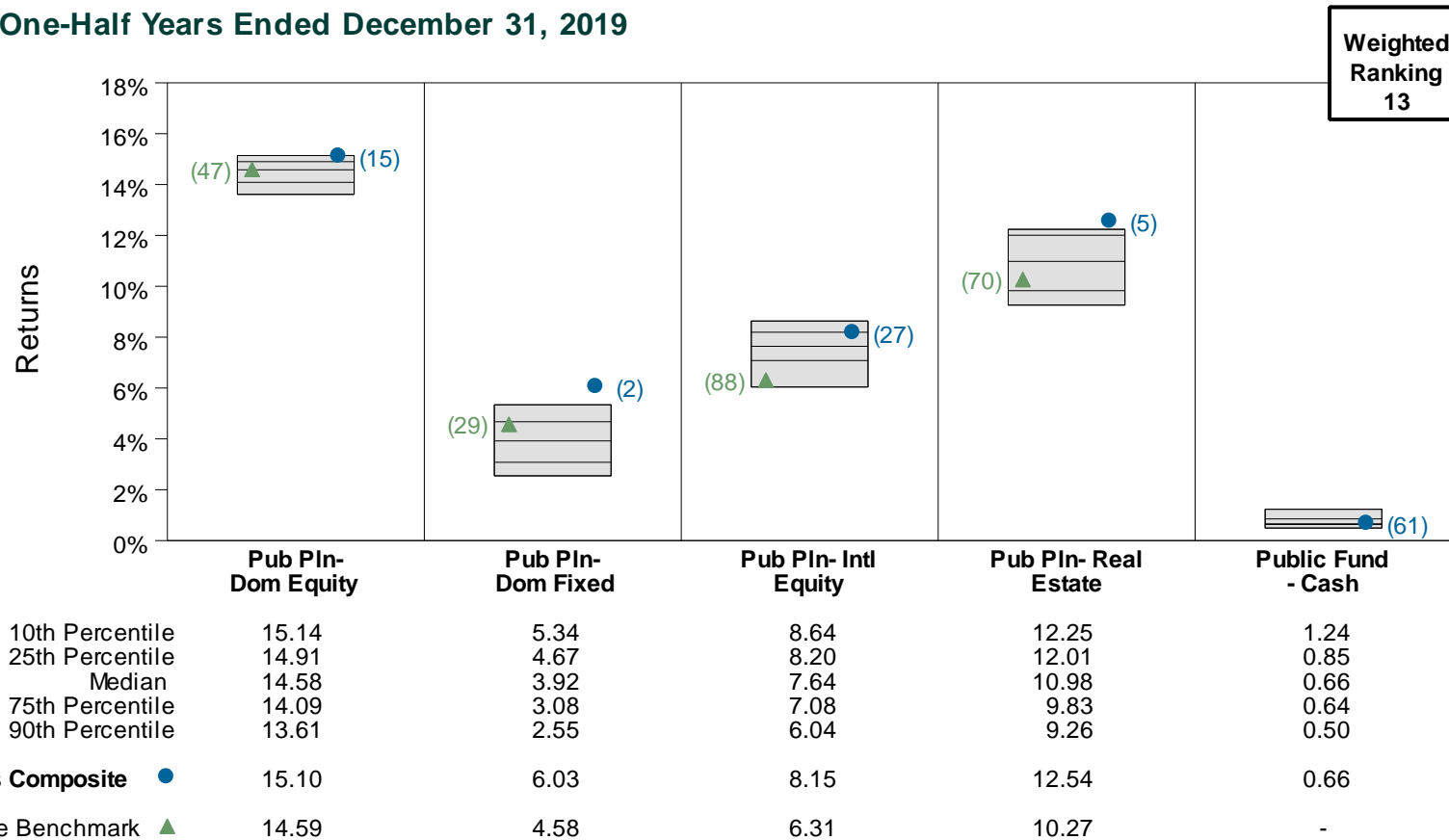
Consolidated Asset Class Rankings

# Asset Class Composite Results

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

### Total Asset Class Performance

Nine and One-Half Years Ended December 31, 2019



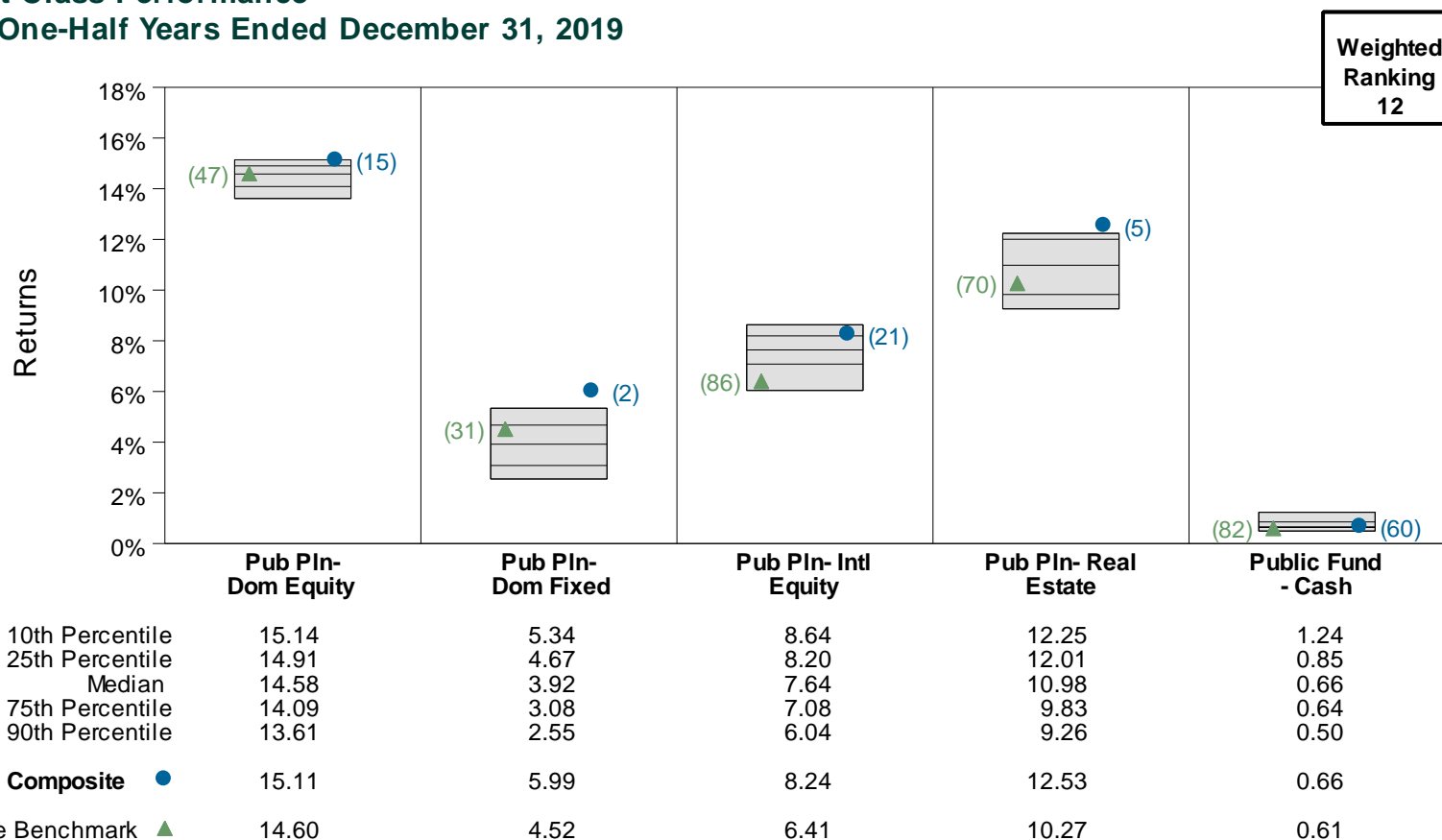
- All asset classes have outperformed their benchmarks and performed above the median of peer public funds over the last 9.5 years (excluding cash).
- Domestic equity, fixed income, and real estate have ranked in the top quartile over the period.

# Asset Class Composite Results

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

### Total Asset Class Performance

Nine and One-Half Years Ended December 31, 2019

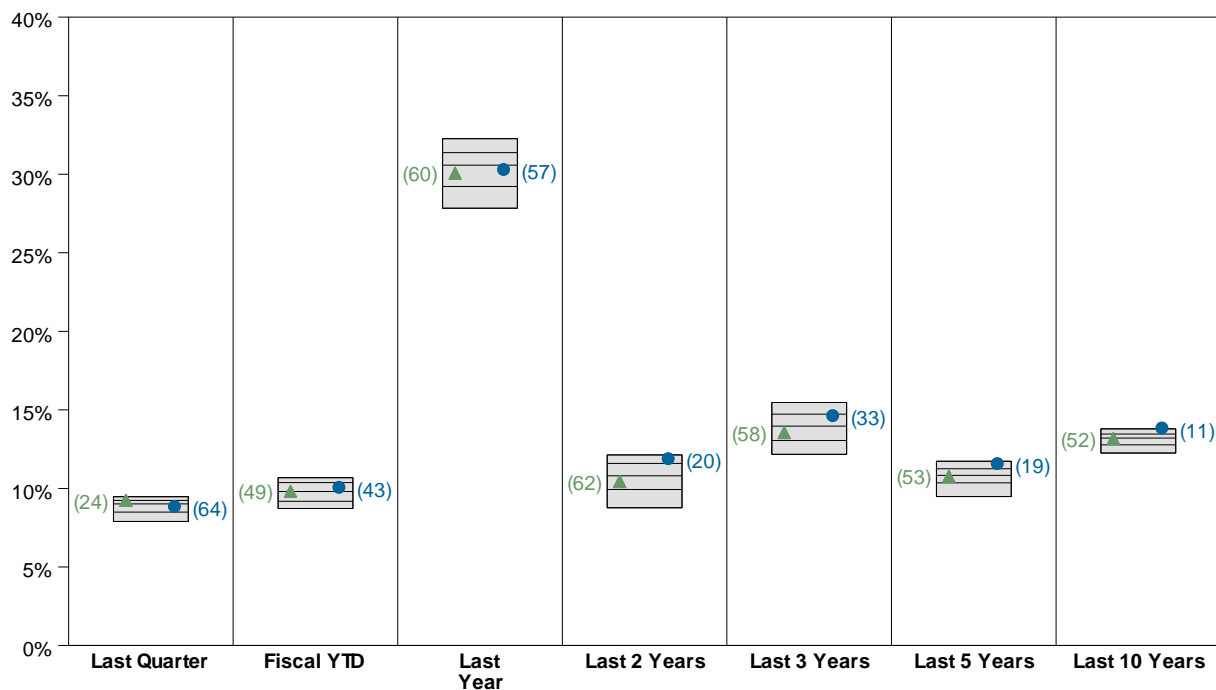


- All asset classes have outperformed their benchmarks over the last 9.5 years.
- With the exception of cash, all asset classes have ranked in the top quartile over the period.

# Consolidated Pension Trust: Domestic Equity

As of December 31, 2019

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



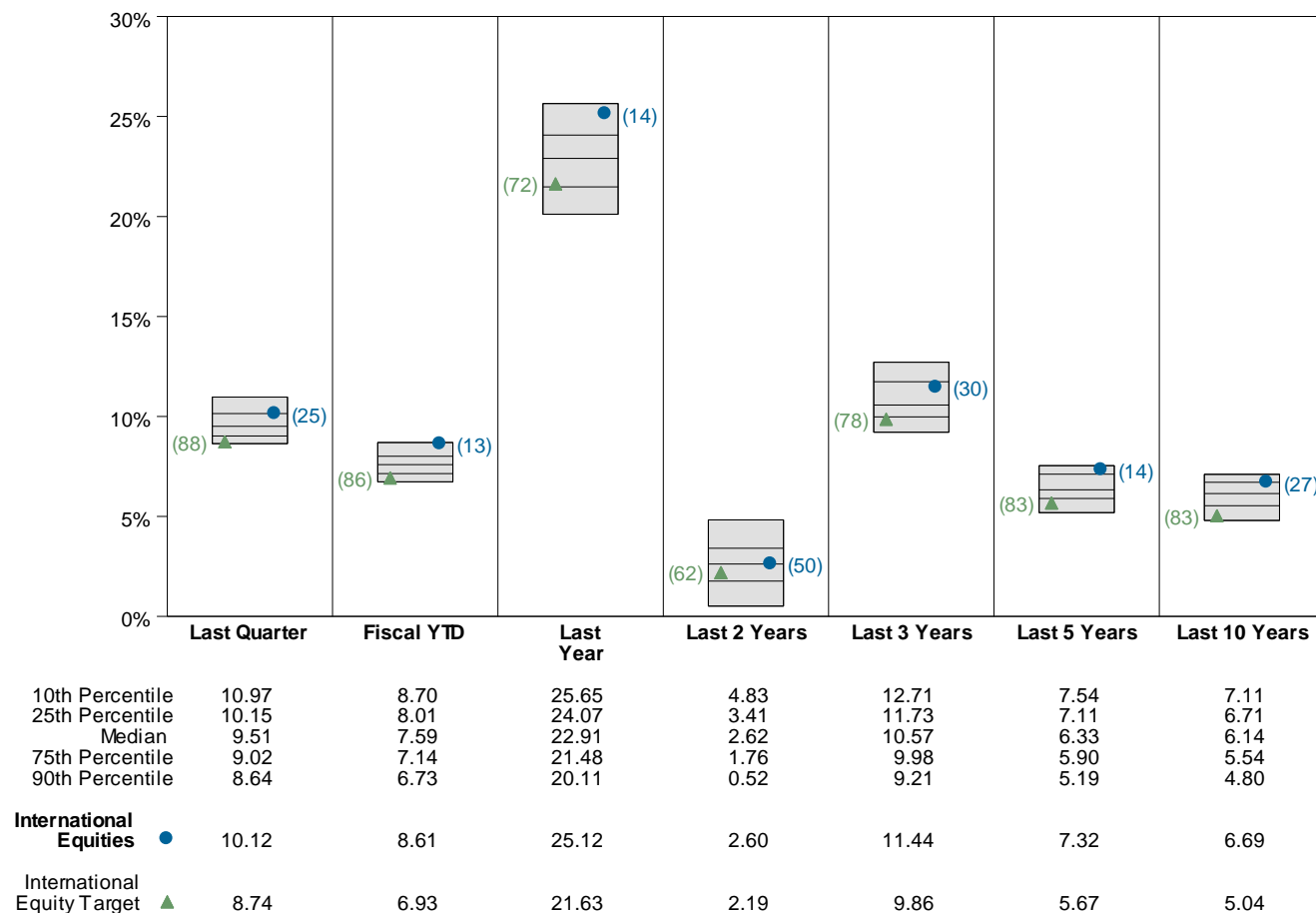
10th Percentile	9.48	10.68	32.26	12.13	15.47	11.73	13.79
25th Percentile	9.24	10.37	31.38	11.59	14.73	11.26	13.46
Median	9.02	9.81	30.57	10.80	13.97	10.83	13.20
75th Percentile	8.49	9.18	29.22	9.93	13.05	10.36	12.77
90th Percentile	7.89	8.72	27.84	8.76	12.17	9.48	12.26
<b>Domestic Equities</b>	● 8.76	9.99	30.22	11.80	14.54	11.49	13.75
Domestic Equity Target	▲ 9.25	9.82	30.07	10.45	13.56	10.78	13.18

- The domestic equity composite trailed the benchmark in the fourth quarter, but outperformed its target in all other observed periods.
- Over the trailing 10-year period the composite ranks in the top quartile.

# Consolidated Pension Trust: International Equity

As of December 31, 2019

## Performance vs Public Fund - International Equity (Gross)

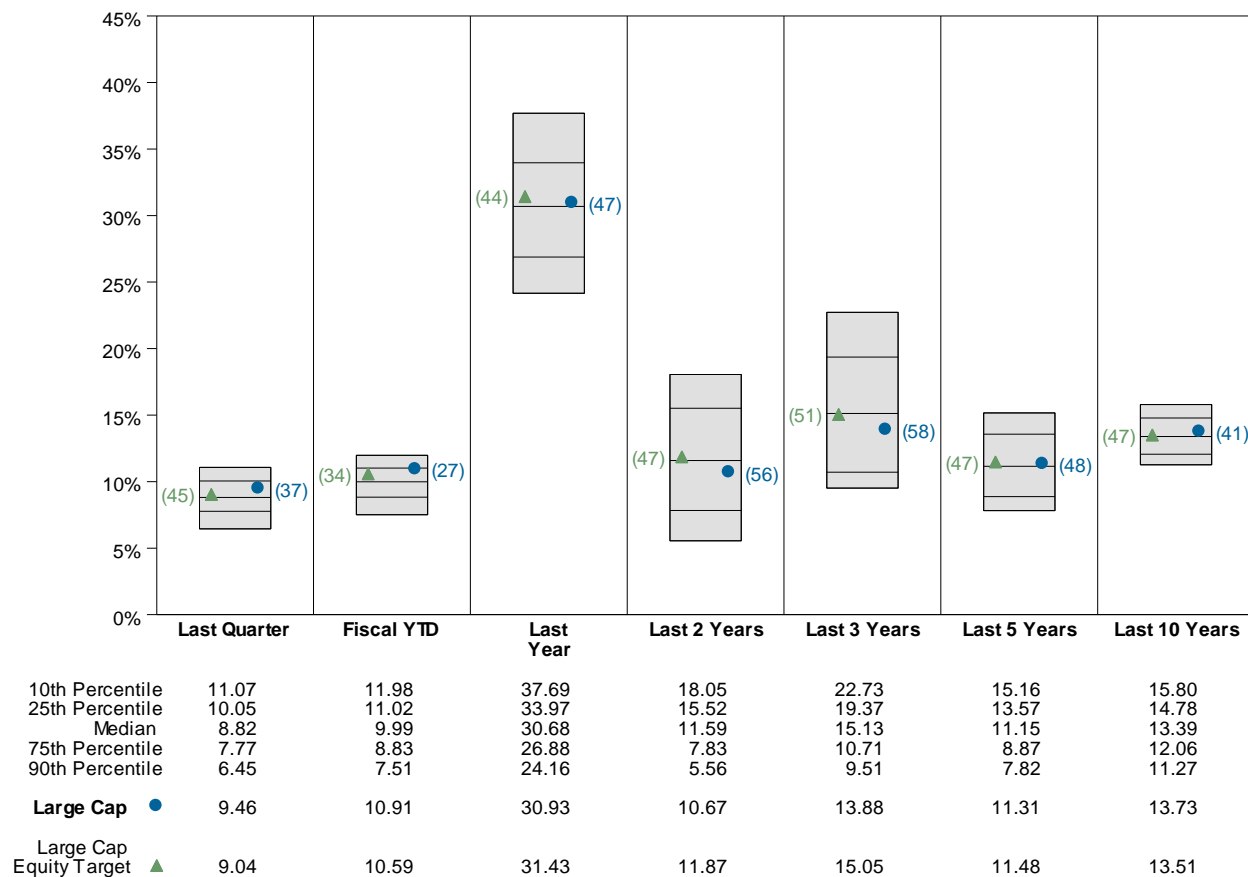


- While non-U.S. equity markets broadly underperformed their domestic counterparts, the realized performance of the Pension Trust's international equity exposure outperformed that of the U.S. allocation.
- The portfolio has performed above, or near the peer median over all trailing periods.

# Consolidated Insurance Trust: Large Cap Equity

As of December 31, 2019

## Performance vs Callan Large Capitalization (Gross)



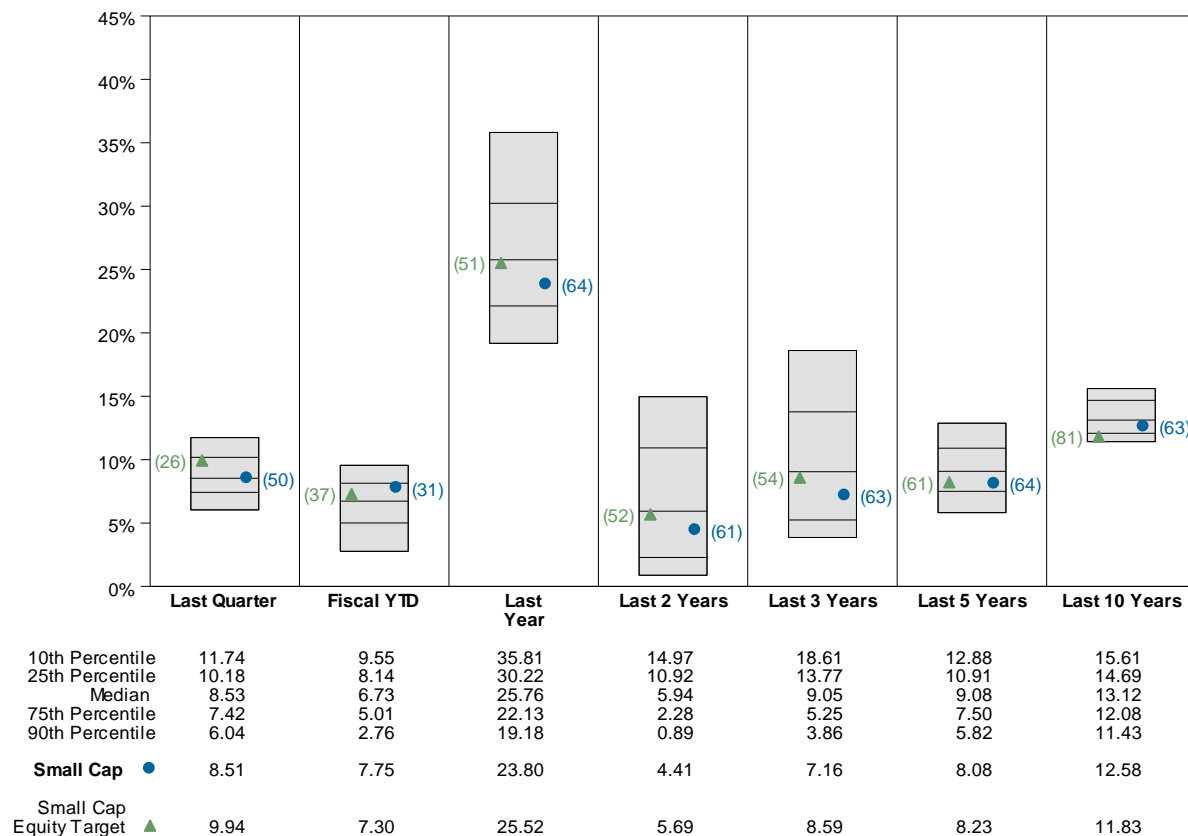
- The large cap equity portfolio produced mixed results relative to the target, but has outperformed over the trailing 10-year period.
- The portfolio fell short of the median over the trailing two and three-year periods, but outperformed across all other measured periods.



# Consolidated Insurance Trust: Small Cap Equity

As of December 31, 2019

## Performance vs Callan Small Capitalization (Gross)

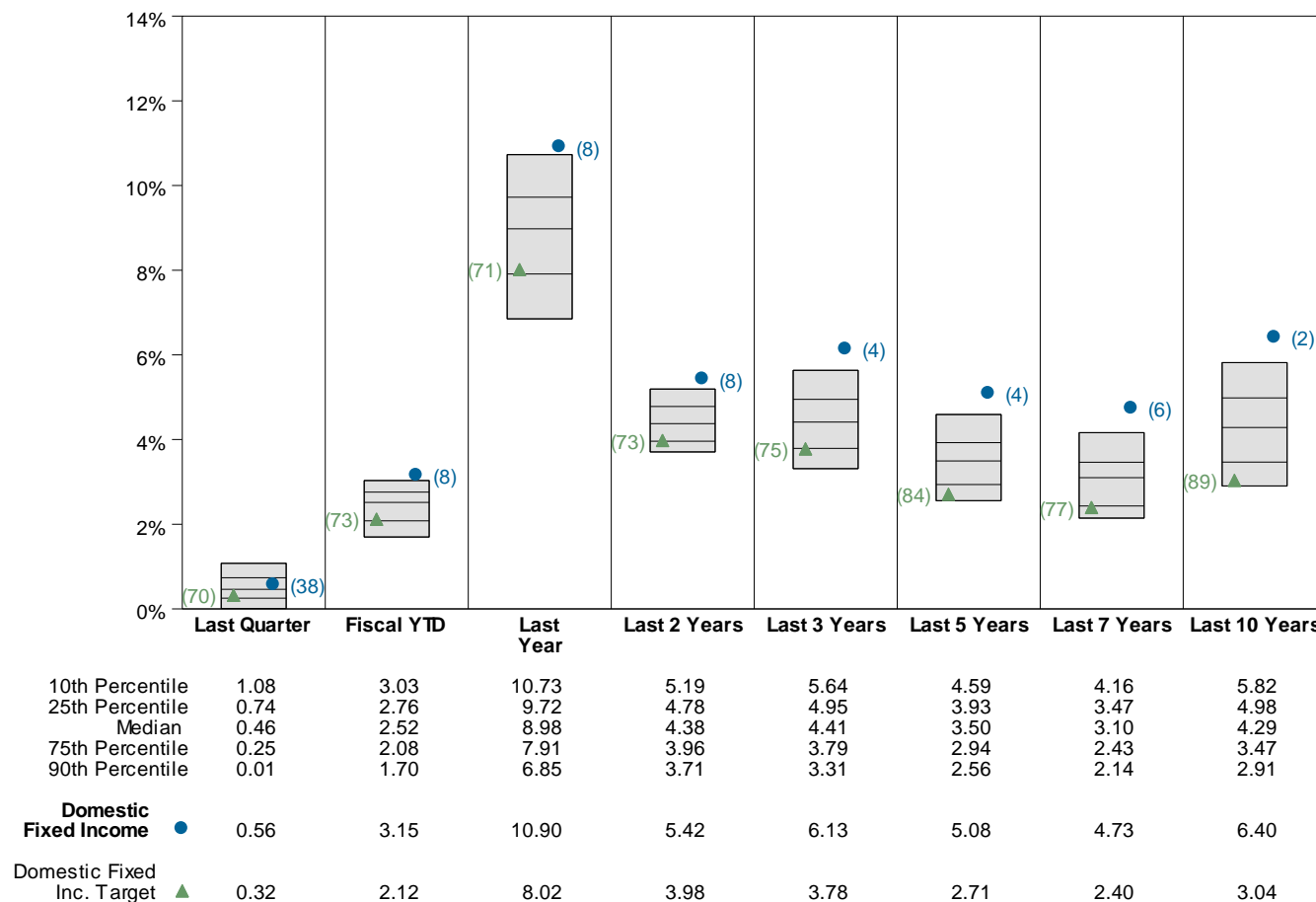


- The small cap equity composite produced mixed performance relative to the benchmark over various rolling periods.
- The asset class underperformed the peer median over all measured periods one year and longer.

# Consolidated Insurance Trust: Domestic Fixed Income

As of December 31, 2019

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



- The domestic fixed income asset class outperformed the target over all observed periods.
- The asset class ranked in the top decile for all observed periods beyond the trialing quarter.

December 31, 2019



## **North Dakota State Investment Board Pension Funds**

**Investment Measurement Service  
Quarterly Review**

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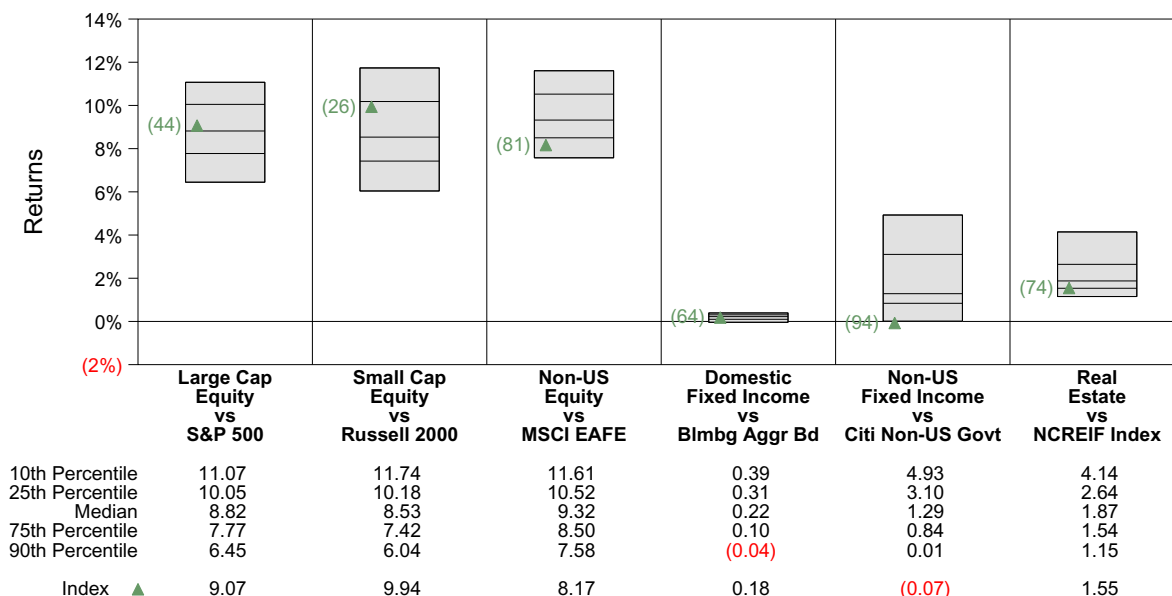
## Market Overview

### Active Management vs Index Returns

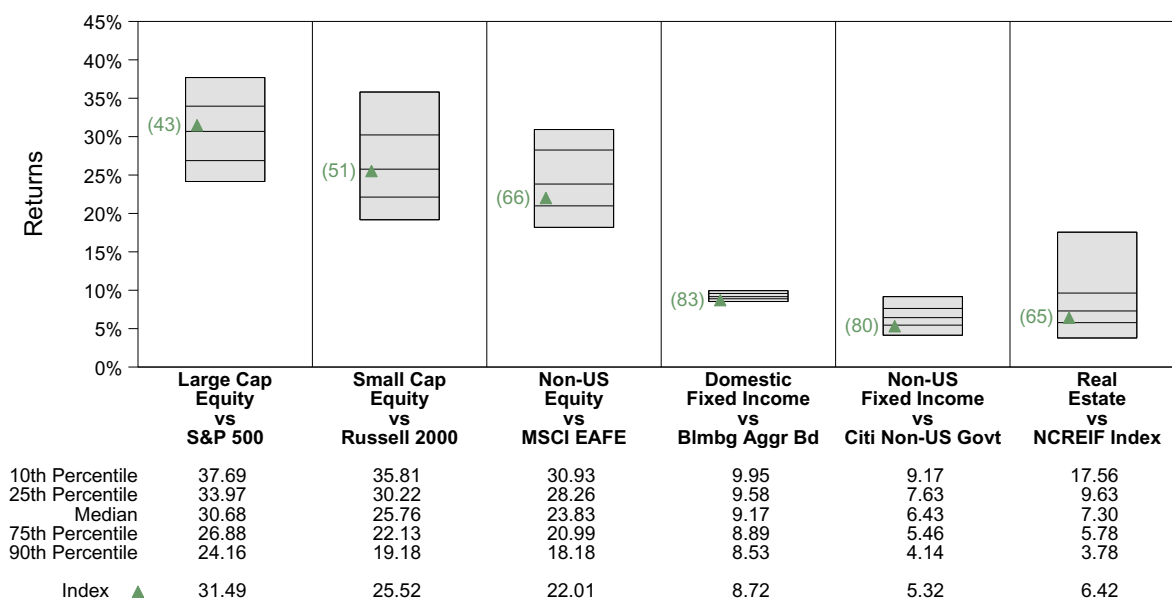
#### Market Overview

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

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended December 31, 2019



#### Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2019



## Anticipated Recession Fails to Materialize

### ECONOMY

**2** GDP grew at 2.1% for the fourth quarter, unemployment fell to a generational low, wages and incomes showed robust gains, inflation remained contained, and, of course, stock and bond markets soared in 2019. So much for the most anticipated recession in history.

## Strong Gains for Year Amid Equity Boom

### INSTITUTIONAL INVESTORS

**4** Corporate DB plans gained the most among plan types in 2019. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%, exceeding a 60% stocks-40% bonds benchmark.

## Jump in Quarter Fuels Notable Year

### EQUITY

**6** The fourth quarter closed out a near-historic year for equity markets; the S&P 500 ended 2019 up 31.5%—enough to become the second-strongest year of the decade. Global equity markets bounced back in the fourth quarter as geopolitical uncertainties abated.

## Yields Are Mixed but Returns Are Strong

### FIXED INCOME

**8** Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations. Major U.S. bond indices showed strong gains for the year. Global fixed income markets also posted broad increases for the quarter and the year.

## Real Estate Healthy; Real Assets Gain

### REAL ESTATE/REAL ASSETS

**10** U.S. core real estate returns continued to moderate; Industrial outperformed other property types. REITs gained but lagged global equities. Asian and European markets were affected by geopolitical tensions. Real assets returns were strong in the quarter.

## Most Activity Fell Moderately in 2019

### PRIVATE EQUITY

**12** Except for fundraising, all private equity activity measures declined moderately in 2019. The drops largely owe to record-level prices throughout the year. But overall private equity and capital market liquidity remained healthy and transaction volume is brisk.

## Party Like It's 1999 ... or Not

### HEDGE FUNDS/MACs

**13** While stocks celebrated the end of 2019, hedge funds were the party's designated driver. Portfolios exposed to EM and long-short equity topped those emphasizing equity market neutral or macro strategies. MAC returns varied depending on net market exposures.

## DC Index Gains, Tops Age 45 TDF

### DEFINED CONTRIBUTION

**15** The Callan DC Index™ rose 0.6% in the third quarter, compared to 0.5% for the Age 45 Target Date Fund. The Index's growth in balances of 0.1% was much smaller than the first and second quarters. Asset allocation to TDFs hit 29.6%, the lowest since the first quarter of 2017.

## Broad Market Quarterly Returns

U.S. Equity  
Russell 3000

**9.1%**

Global ex-U.S. Equity  
MSCI ACWI ex USA

**8.9%**

U.S. Fixed Income  
Bloomberg Barclays Agg

**0.2%**

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

**0.7%**



# The Most Anticipated Recession in History Fails to Materialize

ECONOMY | Jay Kloepfer

Real GDP grew at 2.1% for the fourth quarter of 2019, capping off a year pretty much no one anticipated for growth or the capital markets. GDP growth for the year came in at 2.3%, unemployment fell to yet another generational low, wages and incomes continued to show robust gains, and yet inflation remained contained. The Fed paused on its path to interest rate normalization in January 2019, cut rates twice in the third quarter and once more in October, before declaring its work done. The trade war dominated headlines and jerked around market sentiment, but the actual impact on U.S. GDP growth has been held below a cumulative hit of 1 percentage point.

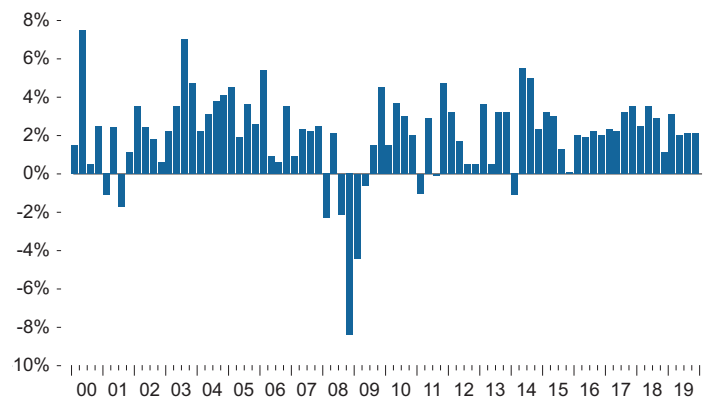
Stock markets around the globe rallied during 2019, with the **S&P 500** climbing 31.5%, **MSCI ACWI ex-USA** up 21.5%, and **MSCI Emerging Markets** up 18.4%. The most eye-opening development of the year was the bond market rally following the Fed pivot in policy, driving a gain of 8.7% for the **Bloomberg Barclays US Aggregate Bond Index** and almost 20% for the **Long Government/Credit Index**. So much for the most anticipated recession in history.

Many analysts have begun touting that we already touched bottom in the global growth cycle during the fourth quarter of 2019. The “growth recession” was over before we knew it was fully upon us. The consensus short-term outlook is far more bullish than it was a year ago, although the medium-term outlook (three to five years) contains more concerns. Persistent low inflation gives central banks the cover to continue supportive monetary policy, but this support could evaporate if inflation is resurgent. The volume of corporate credit has exploded, and much of it is lower rated; any sign of real weakness in the economy raises concerns about quality and spread widening. Finally, it is entirely unclear how the current negative interest rate environment across much of Europe evolves.

Buried in the GDP numbers are several developments that support continuing growth in the U.S. economy, at least over the shorter term. First, the 2.1% increase in the fourth quarter

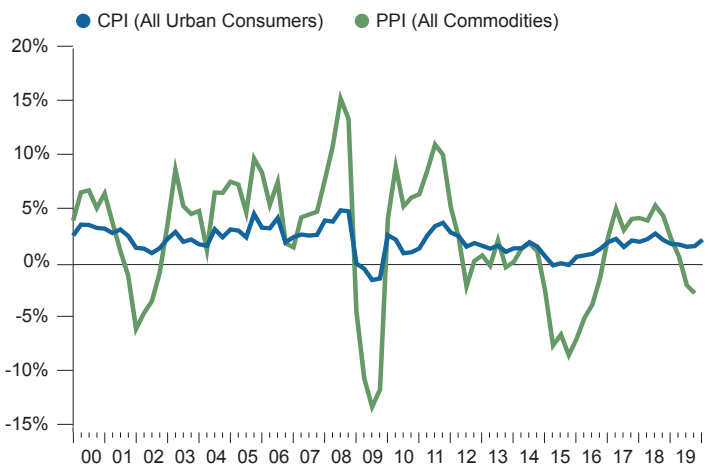
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

includes the drag on growth from the GM strike and the slow-down in Boeing 737 Max production.

Second, inventory accumulation slowed substantially in the fourth quarter, another drag on growth. The end of the GM strike, the eventual resumption of 737 Max production, and the rebuilding of inventories all point toward sustained growth in the U.S. in 2020.

Consumer spending remains strong, fueled by buoyant consumer confidence, a strong labor market, a generational low unemployment rate (3.5%), and personal income growth of just under 4%. The reversal in interest rates will find its way into lower debt costs for consumers, and household debt levels are far below pre-GFC levels. The Fed lowered the federal funds rate by 75 basis points, and given expectations for three rate INCREASES a year ago, rates now sit 150 bps lower than expected. This Fed pivot has greatly benefited interest-sensitive sectors of the economy and consumer balance sheets.

One more support for GDP growth has been a reduction in imports (which are a negative in the GDP calculation), and a corresponding increase in net exports. Imports surged in advance of the application of tariffs early in 2019. U.S. suppliers appear to have quickly found alternatives to China, increasing our imports from Asian countries ex-China to offset some of the decline in imports from China.

Not only did the recession not appear in 2019, near-term recession risks are abating. The announced phase one trade deal between the U.S. and China will suspend some tariffs and address issues of intellectual property and forced transfers of technology. The largest impact is on investor and business sentiment. World GDP growth slowed from 4% at the end of 2017 to below 3% by mid-2019, as a collection of negative shocks (Brexit, trade, geopolitical uncertainty) and lagged effects of monetary tightening hit some of the world's largest economies. The drag from these shocks has faded and monetary policy has loosened around the world. The emerging markets have already embarked on a cyclical upturn, and the developed

### The Long-Term View

Index	2019 4th Qtr	Periods Ended 12/31/19			
		Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	9.1	31.0	11.2	13.4	10.2
S&P 500	9.1	31.5	11.7	13.6	10.2
Russell 2000	9.9	25.5	8.2	11.8	9.4
Global ex-U.S. Equity					
MSCI EAFE	8.2	22.0	5.7	5.5	5.2
MSCI ACWI ex USA	8.9	21.5	5.5	5.0	--
MSCI Emerging Markets	11.8	18.4	5.6	3.7	--
MSCI ACWI ex USA Small Cap	11.0	22.4	7.0	6.9	5.9
Fixed Income					
Bloomberg Barclays Agg	0.2	8.7	3.0	3.7	5.6
90-Day T-Bill	0.5	2.3	1.1	0.6	2.5
Bloomberg Barclays Long G/C	-1.1	19.6	5.4	7.6	7.9
Bloomberg Barclays GI Agg ex US	0.7	5.1	1.6	1.5	4.4
Real Estate					
NCREIF Property	1.5	6.4	8.2	10.2	9.3
FTSE Nareit Equity	-0.8	26.0	7.2	11.9	10.6
Alternatives					
CS Hedge Fund	2.4	9.3	2.6	4.3	7.8
Cambridge PE*	0.9	9.5	12.4	13.8	15.3
Bloomberg Commodity	4.4	16.8	13.8	11.6	15.5
Gold Spot Price	3.4	18.9	5.2	3.3	5.7
Inflation – CPI-U	0.1	2.3	1.8	1.8	2.2

\*Data for most recent period lags by a quarter. Data as of Sept. 30, 2019.  
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Refinitiv/Cambridge

economies are about to join them, led by the U.S. The fourth quarter of 2019 likely marked the trough in global GDP growth. The recovery in trade should help lead the way, after the collapse in trade volumes in late 2018.

### Recent Quarterly Economic Indicators

	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18	1Q18
Employment Cost–Total Compensation Growth	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%	2.7%
Nonfarm Business–Productivity Growth	0.0%*	-0.2%	2.5%	3.5%	0.1%	1.2%	1.8%	0.9%
GDP Growth	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%	2.5%
Manufacturing Capacity Utilization	74.9%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%	76.1%
Consumer Sentiment Index (1966=100)	97.2	93.8	98.4	94.5	98.2	98.1	98.3	98.9

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

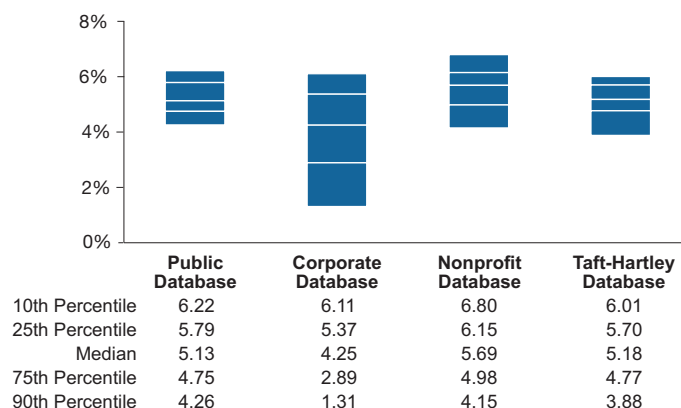
\* Estimated figure provided by IHS Markit

# Steady Returns Continue Amid Equities Rebound

## INSTITUTIONAL INVESTORS

- A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio increased 22.2% over the one year ended Dec. 31, 2019, driven by the stock market's huge gains and exceptionally strong returns from bonds. All broad institutional investor groups underperformed this benchmark.
- U.S. equity markets continued their pattern of outperforming global ex-U.S. equity, a pattern that has persisted since 2018.
- Corporate defined benefit (DB) plans gained the most among plan types over the one-year period. Public DB plans trailed all investor types.
- Over most longer time periods, Taft-Hartley plans have been the top performer. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%. In that time period, all plan types exceeded the stocks-bonds benchmark.
- In the current market environment, institutional investors are focused on reevaluating the purpose and implementation of all diversifiers, including real assets, hedge funds and liquid alternatives, fixed income, and private markets.

### Quarterly Returns, Callan Database Groups



Source: Callan

- Return enhancement remains a top priority for public and corporate DB plans and nonprofits. Corporate DB plans also see funding status as a top priority. DC plans see fees as the top priority.
- Public DB plans are also concerned about their high risk exposures but resist de-risking when their shorter-horizon projected return on assets (ROA) is lower than their long-term ROA.

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

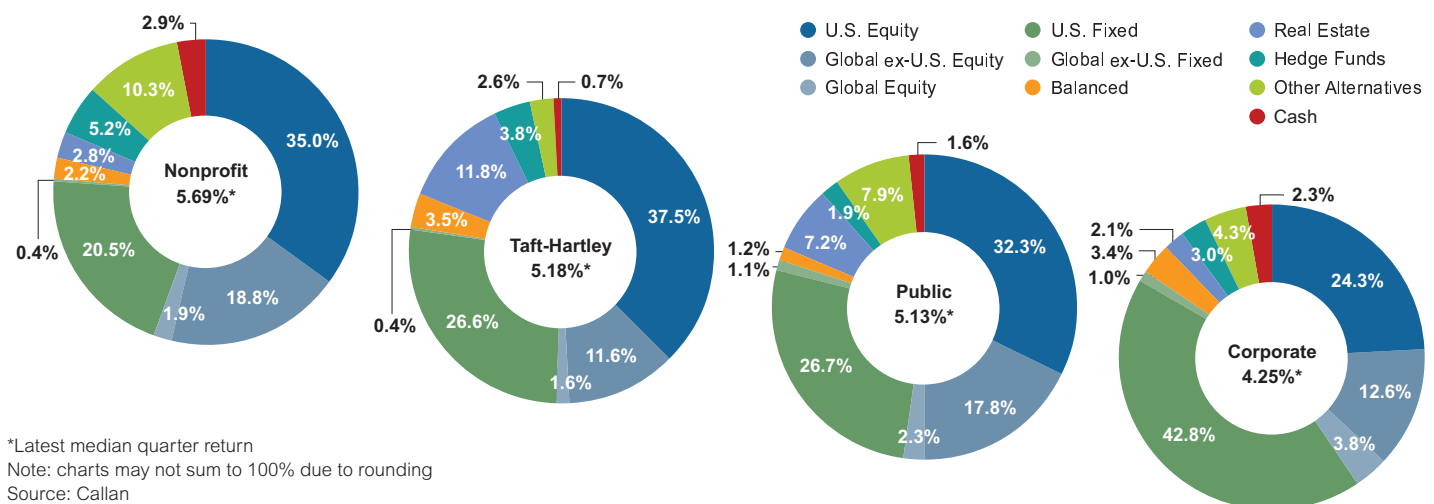
Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	5.13	17.75	9.40	7.11	8.25	6.73
Corporate Database	4.25	19.87	9.55	6.96	8.40	6.80
Nonprofit Database	5.69	18.81	9.38	6.81	8.12	6.58
Taft-Hartley Database	5.18	18.00	9.36	7.50	8.66	6.59
All Institutional Investors	5.19	18.53	9.41	7.08	8.35	6.67
Large (>\$1 billion)	4.79	17.56	9.59	7.26	8.59	6.88
Medium (\$100mm - \$1bn)	5.20	18.55	9.42	7.15	8.35	6.58
Small (<\$100 million)	5.38	18.93	9.29	6.91	8.16	6.55

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, nonprofits, 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.

- Callan has seen a surge in asset-liability studies, with substantial changes to many policy portfolios.
- Institutional investors are also taking steps to de-risk (less equity) and looking at risk mitigation (diversification and implementation), but there is some dissatisfaction with hedge funds, risk premia, and absolute return strategies. Some DB plans have terminated their hedge fund exposures; thus far, nonprofits have largely retained confidence in their hedge fund allocations.
- There are continued signs of interest in environmental, social, and governance (ESG) factors, with many public DB plans having had some discussions around the subject.
- Defined contribution (DC) plans are grappling with the implications of the SECURE Act (for Setting Every Community Up for Retirement Enhancement), whose sweeping nature means that the impact on policy cannot be underestimated within the retirement industry, since major changes (target date funds, auto features, etc.) were largely driven by previous regulatory and legislative catalysts.
- DC plans are also continuing to examine their default option, looking at the suitability of the current option in light of other alternatives both in the same asset class (often target date funds) but also in light of other options (e.g., managed accounts).
- In assessing the capital market environment, institutional investors are focused on how long the current expansion can continue. In evaluating specific investment alternatives, they face three key questions:
  1. Is value dead?
  2. Is there any hope for active management?
  3. Why should they bother with global ex-U.S. equities?
- For investors, the reversal in Fed policy has changed the landscape. It has created an added role for central banks, that of sustaining the expansion, which is a positive for equity ownership. The new yield environment and capital market assumptions going forward also create a challenge for investors, as they try to determine how to diversify their growth/equity risk without incurring a huge opportunity cost.
- In examining alternatives, institutional investors are looking at the most effective ways they can implement allocations in the private market. Is it worth the trouble to create a bespoke program implementation, and at what size and how much effort is required? This applies to private equity, real assets, absolute return, and diversifying assets.

### Average Asset Allocation, Callan Database Groups



# Equity

## U.S. Equities

The fourth quarter closed out a near-historic year for equity markets, in particular the S&P 500, which ended 2019 up 31.5%—enough to claim second place behind 2013 for the strongest year of the decade (during which large cap equities only saw one down year). Both Apple (+85%) and Microsoft (+54%) reached over \$1 trillion in market cap and accounted for 15% of the S&P 500's advance for the year. Investors globally were spurred by three interest rate cuts by the Fed, a potential U.S.-China trade armistice, continued low inflation, and some clarity around Brexit.

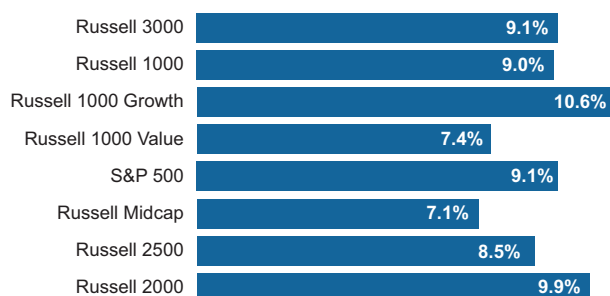
**Small cap vs. large cap** ► *Russell 2000: +9.9% | Russell 1000: +9.0%*

- Small cap trailed for most of 2019 but eclipsed large cap stocks in the fourth quarter due to notable contributions from the Health Care sector, where the biotech and pharmaceutical industries saw heightened new drug approvals and M&A activity during the quarter.
- Small growth outpaced small value for the quarter, the year, and the decade; the **Russell 2000 Growth Index** outpaced the **Russell 2000 Value Index** by 3% annualized over the past 10 years as the low interest rate environment favored growth stocks and challenged the Russell 2000 Value's heavy exposure to Financials.
- While small cap outpaced large cap in the fourth quarter, large cap stocks led for the third straight year, owing much to Tech (+50.3%) and Communication Services (+32.7%).

**Growth vs. Value** ► *Russell 1000 Growth: +10.6% | Russell 1000 Value: +7.4%*

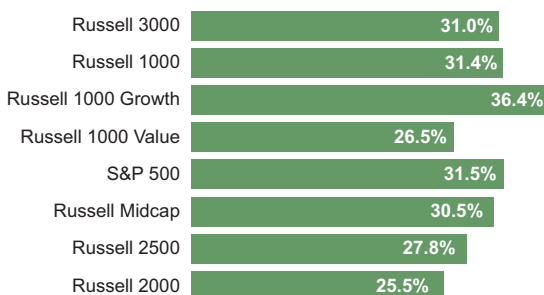
- Growth continued its dominance over value during the quarter, closing out a decade-long trend.
- Tech giants Facebook, Apple, Microsoft, and Alphabet/Google remained meaningful contributors for the quarter, with Health Care (+14.4%) also among the top sector performers.

## U.S. Equity: Quarterly Returns



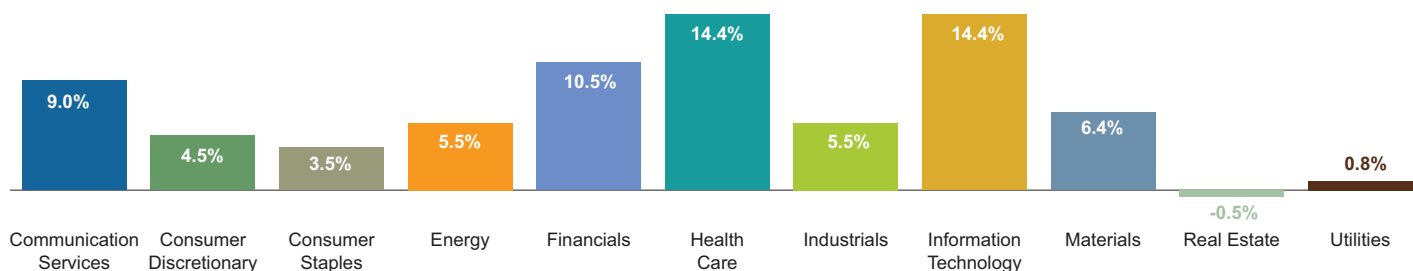
Sources: FTSE Russell and S&P Dow Jones Indices

## U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

## Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices

- The fourth quarter saw a rotation away from the more defensive sectors (e.g., Consumer Staples (+3.5%), Utilities (+0.8%), and Real Estate (-0.5%)) and into Cyclical, further supporting growth stocks.

### Global/Global ex-U.S. Equity

Global equity markets bounced back in the fourth quarter as uncertainties abated. De-escalation of the U.S.-China trade war coupled with some Brexit clarity boosted markets. With this backdrop, trade-related areas of the market led the rally.

**Global/Developed ex-U.S.** ► *MSCI EAFE: +8.2% | MSCI World ex USA: +8.0% | MSCI ACWI ex USA: +8.9% | MSCI Pacific ex Japan: +5.8% | MSCI Japan: +7.6%*

- British Prime Minister Boris Johnson gained command of the Parliament as a result of the Dec. 12 election, adding further clarity to Brexit and sparking the pound to its best quarterly results in a decade by rising 7.5% relative to the dollar.
- Accommodative policies such as a fiscal stimulus program and dovish monetary rhetoric continued to support the Japanese economy and its market.
- Despite GDP contraction of 3.2% and its first recession in a decade due to political protests, Hong Kong rose 7.3% as U.S.-China trade tensions improved.
- Every sector rose, led by Technology.

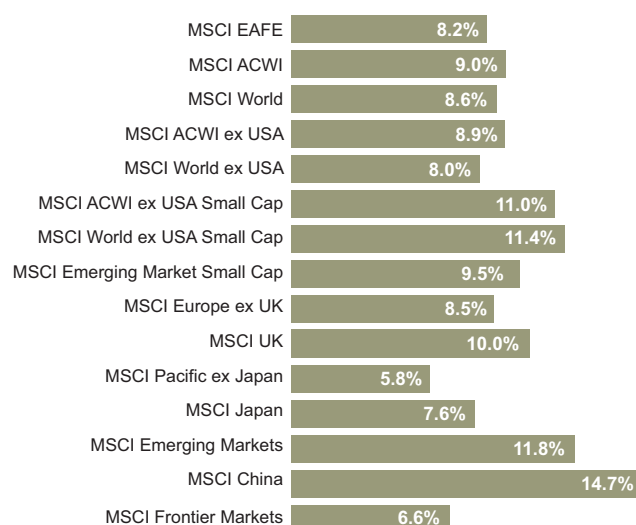
### Emerging Markets ► *MSCI Emerging Markets Index: +11.8%*

- Emerging markets were the best-performing among the global ex-U.S. markets as trade war uncertainty receded.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.
- Brazil posted a 14.2% gain, its best quarter since late 2017, emboldened by President Jair Bolsonaro's deregulation policies, the country's 1.2% GDP growth, and pending pension reform.
- Russia was the best-performing country in 2019 (+50.9%) and a top five performer in the quarter (+16.8%) as rising oil prices over the past year helped fuel sentiment.
- Every sector generated positive returns, led by Asian technology companies, given the "phase one" trade deal, chip demands for 5G, and growth in China.

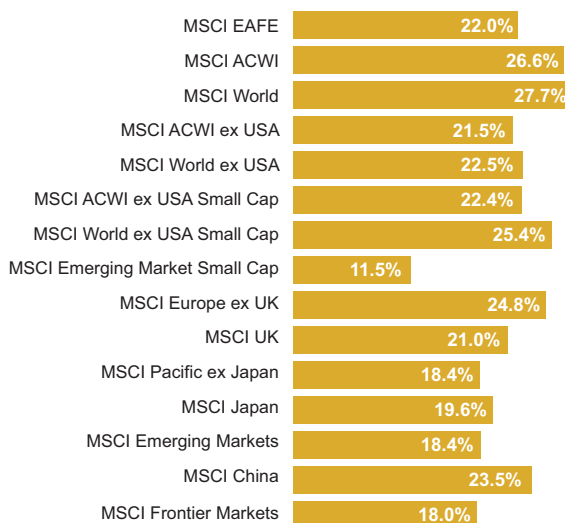
### Global ex-U.S. Small Cap ► *MSCI World ex USA Small Cap: +11.4% | MSCI EM Small Cap: +9.5%*

- The "risk-on" market environment triggered by the U.S.-China trade war de-escalation enabled small caps to outperform large caps.
- Additional Brexit clarity drove the U.K. as the top country performer (+19.4%) within developed ex-U.S.
- Argentina (+33.5%) and Brazil (+24.8%) were two of the top EM country performers as key appointments in the Argentinian government, and deregulation and pension reform in Brazil, boosted market sentiment.

### Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar)



### Global ex-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI



## Fixed Income

The Federal Open Market Committee (FOMC) cut short-term interest rates by 25 basis points once in the fourth quarter to 1.50%-1.75%, citing weak business investment and export data, along with muted inflation. The overall economic backdrop remained strong supported by a solid labor market, which led to a pause in rate cuts at the most recent FOMC meeting. The FOMC indicated its current monetary policy stance is appropriate to sustain the economic expansion. The European Central Bank kept rates steady while continuing to purchase assets in the open market. Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations.

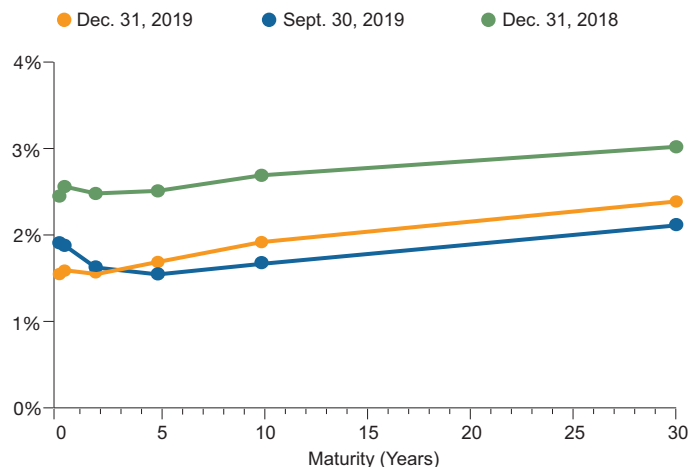
### Core Fixed Income ► *Bloomberg Barclays US Agg: +0.2%*

- Treasuries fell 0.8% as the Treasury yield curve steepened, with yields falling on the short end and rising modestly in the intermediate and long end of the curve on expectations of stronger economic growth.
- The spread between the 2-year and 10-year Treasury remained positive, ending the year at 34 bps.
- Long Treasuries fell 4.1% as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; the 10-year breakeven spread was 1.77% at quarter end, up from 1.53% as of Sept. 30.

### Investment-Grade Corporates ► *Bloomberg Barclays Corporate (Inv. Grade): +1.2%*

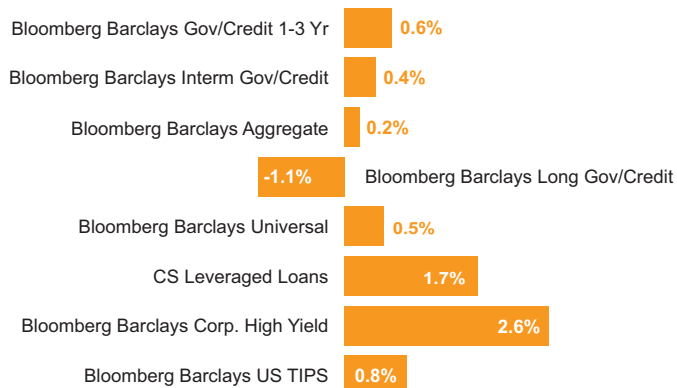
- Investment grade corporate credit spreads narrowed in the fourth quarter and posted the best results within the Bloomberg Barclays US Aggregate Bond Index amid a risk-on market environment; BBB-rated corporates (+1.7%) outperformed single A-rated or higher corporates (+0.7%), indicating investors' willingness to extend risk down the credit spectrum.
- Issuance in the corporate bond market was \$200 billion in the fourth quarter, which was \$8 billion lower than that from a year ago. Issuance was \$140 billion lower compared to

### U.S. Treasury Yield Curves



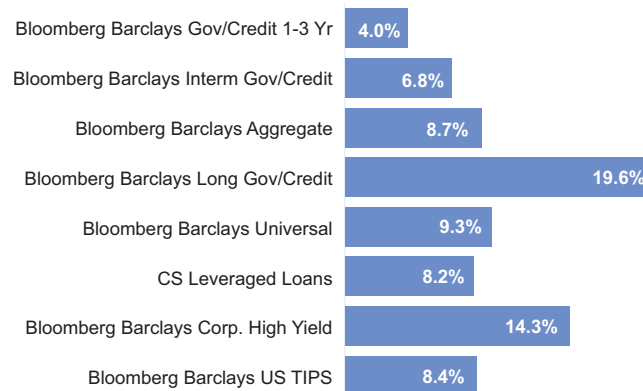
Source: Bloomberg

### 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

## FIXED INCOME (Continued)

the third quarter, as is typical toward year-end; demand remained strong amid the risk-on market tone as global investors continued their hunt for positive-yielding assets.

### High Yield ► *Bloomberg Barclays Corporate HY: +2.6%*

- CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvements in credit fundamentals.

### Leveraged Loans ► *CS Leveraged Loans: +1.7%*

- Bank loans, which have floating-rate coupons, underperformed high yield as investors shunned loans in favor of high yield bonds.
- CLO issuance remained consistent, providing technical support for the leveraged loan market.

### Global Fixed Income ► *Bloomberg Barclays Global Aggregate (unhedged): +0.5% | (hedged): -0.5%*

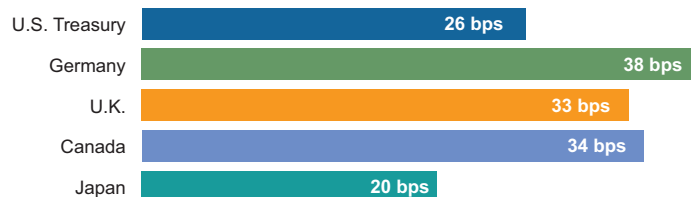
- Developed market sovereign bond yields rose modestly in the fourth quarter as global financial conditions improved, but ended lower on the year. The ECB kept the deposit rate steady at its December meeting; negative-yielding debt totaled less than \$12 trillion, down from \$17 trillion in the third quarter.
- The U.S. dollar declined in the fourth quarter versus the euro, Australian dollar, and British pound; however, it had a modest gain versus the Japanese yen.

### Emerging Market Debt (\$US) ► *JPM EMBI Global Diversified: +1.8% | (Local currency) ► JPM GBI-EM Global Diversified: +5.2%*

- Broadly, emerging market debt benefited from dovish global central banks and a risk-on environment.
- Within the dollar-denominated benchmark, which posted mixed results, Lebanon (-29.4%) was an outlier as the debt-to-GDP ratio continued to swell and anti-government protests persisted; Argentina rallied (+20.8%) to end the year down 23.6% as a new president was inaugurated.

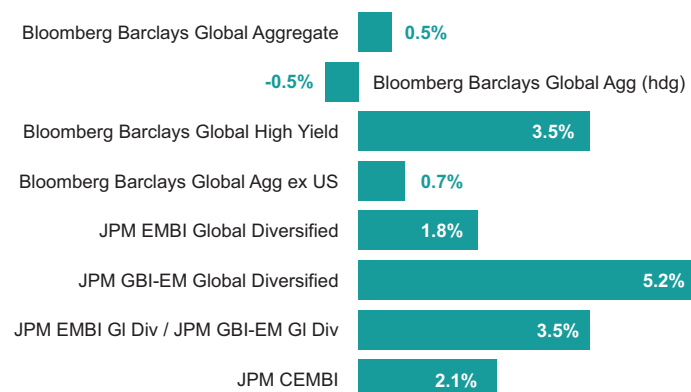
## Change in 10-Year Global Government Bond Yields

### 3Q19 to 4Q19



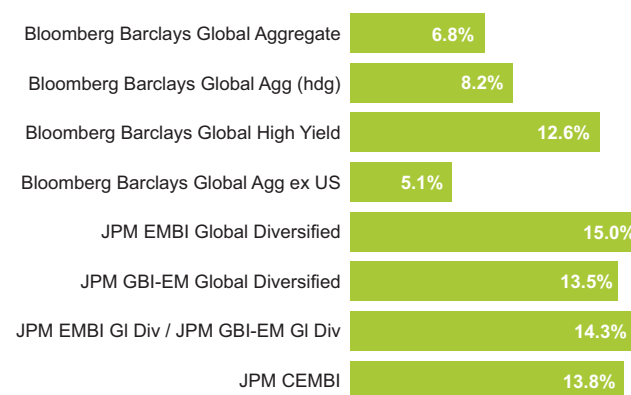
Source: Bloomberg Barclays

## Global ex-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

## Global ex-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Returns in the local debt benchmark were largely positive, with only Chile (-6.2%) and the Dominican Republic (-0.7%) declining. South Africa (+10.2%) and Russia (+10.0%) were top performers.



# Real Estate Stays the Course; Real Assets See Strong Gains

REAL ESTATE/REAL ASSETS | Munir Iman and David Welsch

## Returns continue to moderate

- U.S. core real estate returns continued to be driven by income, with limited appreciation this late in the cycle.
- Returns came from net operating income (NOI) growth rather than further capitalization rate compression.
- Industrial kept outperforming other property types.
- Retail continued to show signs of depreciation.
- Defensive posturing and disciplined asset acquisitions were critical.

## U.S. real estate fundamentals remain healthy

- Steady returns continued, driven by above inflation-level rent growth in many metro areas.
- Within the **NCREIF Property Index**, the vacancy rate for Industrial decreased; all other property types increased.
- NOI has been growing annually and is expected to be the primary return driver. Office, Apartment, and Industrial NOI growth have fallen slightly since the third quarter of 2019.

## Pricing remains expensive in the U.S.

- Transaction volumes increased and remained robust.
- Capitalization rates fell slightly; the market remained close to full valuations.

## Global equities outperform REITs

- Global REITs gained 2.0% in the fourth quarter compared to 9.1% for global equities (**MSCI ACWI IMI**).
- U.S. and global ex-U.S. REITs were trading just below NAV.
- Large cap stocks, especially those with higher debt levels, modestly outperformed.
- U.S. REITs lost 1.0% in the fourth quarter, lagging the S&P 500 Index, which rose 9.1%.

## Asia impacted by trade tensions

- U.S.-China trade talks and unrest in Hong Kong impacted real estate markets in the region. Managers continued to find attractive opportunities in some sectors of the market such

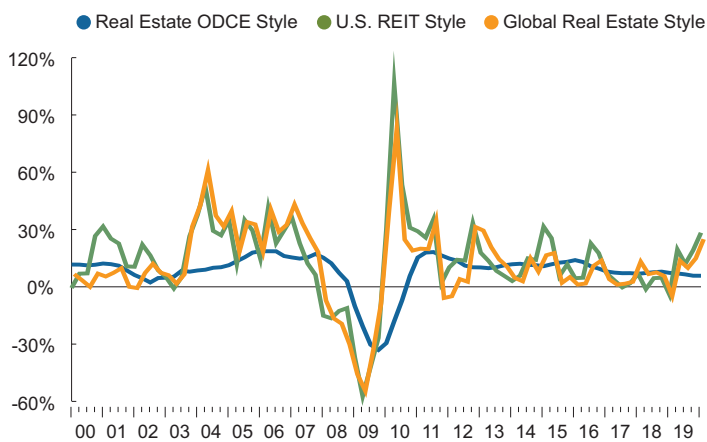
as restructuring opportunities, necessity-based retail, multi-family rental, and logistics.

- The number of open-end core funds operating in the Asia Pacific market, primarily focused on Japan, Australia, South Korea, and Singapore, increased over recent years and includes both sector-diversified and sector-specific (e.g., logistics) funds.
- India had its first successful REIT IPO in 2019, contributing to the institutionalization of the asset class in that country.

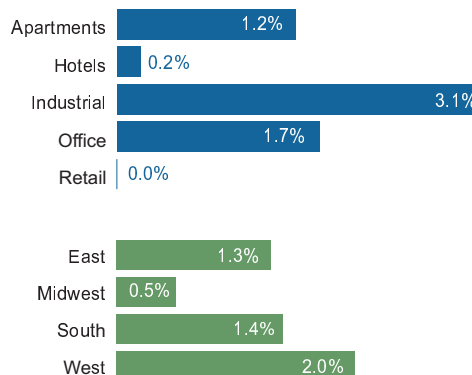
## Fundamentals remain strong in Europe's gateway markets

- Political uncertainty weighed on overall economic growth throughout Europe, but real estate fundamentals remain

## Rolling One-Year Returns



## Sector Quarterly Returns by Property Type and Region



Source: NCREIF

## REAL ESTATE/REAL ASSETS (Continued)

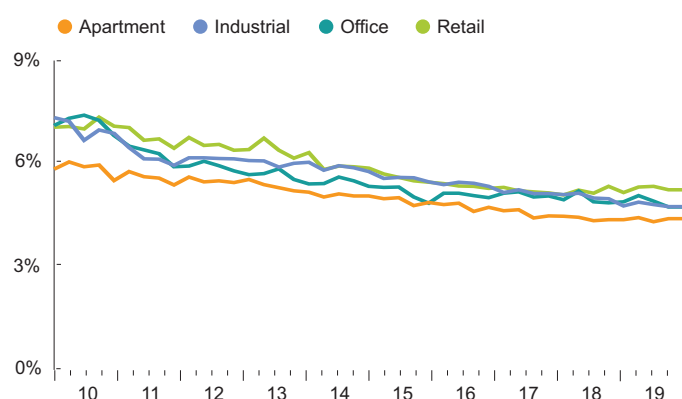
strong in key gateway markets given strong demand and the continued lack of new supply. Cap rates for prime real estate remained low, as real estate continued to be attractive as a result of low interest rates throughout the region.

- Yields between prime and secondary real estate remained wide, providing opportunities for investors targeting transitional assets.

### Infrastructure continues to mature

- Open end funds raised significant capital, and the universe of investible funds increased as the sector matured.
- The closed end fund market kept expanding, with additional offerings in infrastructure debt, emerging markets, and sector-specific areas (e.g., communications and renewables).
- Two mega funds raised in excess of \$20 billion in 2019.

### NCREIF Capitalization Rates by Property Type

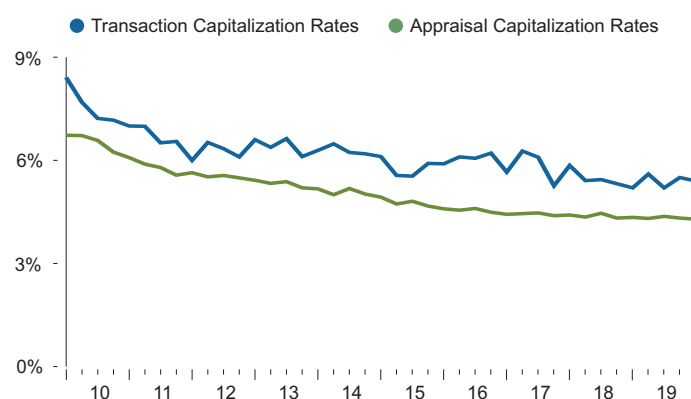


Source: NCREIF. Capitalization rates (net operating income / current market value (or sale price)) are appraisal-based.

### Real assets mostly see gains

- Real assets returns were mostly strong in the fourth quarter. The **Bloomberg Commodity Index** gained 4.4% and the **S&P GSCI Commodity Index** was up 8.3%.
- MLPs, however, declined (**Alerian MLP Index**: -4.1%).
- Spot gold prices were up 3.4%.
- The **DJ-Brookfield Infrastructure Index** rose 4.0%.
- REITs (**FTSE Nareit Equity Index**) modestly fell (-0.8%).
- The **Bloomberg Barclays TIPS Index** rose 0.8%.
- For the year, returns of these indices were positive with Infrastructure (+28.7%) and REITs (+26.0%) leading the pack. MLPs (+6.6%) posted the lowest full-year return.

### NCREIF Transaction and Appraisal Capitalization Rates



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

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
<b>Real Estate ODCE Style</b>	<b>1.6</b>	<b>5.8</b>	<b>5.8</b>	<b>6.8</b>	<b>8.4</b>	<b>10.5</b>	<b>6.8</b>
NFI-ODCE (value wt net)	1.3	4.4	4.4	6.1	8.0	10.4	6.7
NCREIF Property	1.5	6.4	6.4	6.7	8.2	10.2	8.3
NCREIF Farmland	1.0	3.4	3.4	5.4	6.7	10.9	13.3
NCREIF Timberland	0.0	1.3	1.3	2.7	3.1	4.4	6.6
<b>Public Real Estate</b>							
<b>Global Real Estate Style</b>	<b>2.8</b>	<b>24.9</b>	<b>24.9</b>	<b>10.3</b>	<b>7.2</b>	<b>9.9</b>	<b>7.2</b>
FTSE EPRA Nareit Developed	1.7	21.9	21.9	8.3	5.6	8.4	--
<b>Global ex-U.S. Real Estate Style</b>	<b>6.8</b>	<b>25.0</b>	<b>25.0</b>	<b>12.3</b>	<b>7.0</b>	<b>8.4</b>	<b>7.1</b>
FTSE EPRA Nareit Dev ex US	5.6	21.0	21.0	10.8	5.8	6.9	--
<b>U.S. REIT Style</b>	<b>0.0</b>	<b>28.3</b>	<b>28.3</b>	<b>9.2</b>	<b>7.9</b>	<b>12.6</b>	<b>8.6</b>
EPRA Nareit Equity REITs	-0.8	26.0	26.0	8.1	7.2	11.9	7.9

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NCREIF

# Cheap and Dear

## PRIVATE EQUITY | Gary Robertson

Global private equity fundraising has now surpassed 2007's famed peak of \$615 billion for two years in a row, with \$658 billion in 2018 and \$692 billion in 2019 (unless otherwise noted, PitchBook provided all private equity data cited). Private equity market liquidity and transactions were brisk in 2019, albeit with moderate declines relative to 2018. Venture capital prices also increased year-over-year.

In 2019, the \$692 billion raised by private equity partnerships holding final closes globally was across 924 partnerships. The dollar amount rose 5% from 2018, but the number of funds fell 1%. Fourth quarter final closes totaled \$188 billion, down 11% from the third quarter. The number of funds totaled 255, up 9%.

New buyout investments for 2019 totaled 7,555, down 15% from 2018. Dollar volume fell 24% to \$522 billion. The fourth quarter saw 1,642 new investments, a 17% decline, and dollar volume fell 13% to \$137 billion.

The year produced 28,868 rounds of new investment in venture capital (VC) companies, down 12% from 2018. The year's announced volume of \$257 billion was down 13%. The fourth quarter saw 5,301 new rounds, a 27% decline, and dollar volume fell 6% to \$59 billion.

Last year also saw 2,054 buyout-backed private M&A exits, down 28% from 2018, with proceeds of \$608 billion, down 13%. The

### Funds Closed 1/1/2019 to 12/31/2019

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	412	74,014	11%
Growth Equity	66	80,931	12%
Buyouts	256	381,368	55%
Mezzanine Debt	67	76,986	11%
Distressed	11	15,823	2%
Energy	9	9,724	1%
Secondary and Other	59	37,854	5%
Fund-of-funds	44	15,663	2%
<b>Totals</b>	<b>924</b>	<b>692,363</b>	<b>100%</b>

Source: PitchBook (Figures may not total due to rounding.)

fourth quarter had 420 private exits, down 23%, with proceeds of \$154 billion, down 35%. The year's 95 buyout-backed IPOs declined 41% from 2018, with proceeds of \$30 billion, down 32%. Fourth quarter buyout-backed IPOs were a bright spot, with 24 offerings, a jump of 41% from the third quarter, and \$7 billion of proceeds, up 17%.

Venture-backed M&A exits for the year totaled 1,554, down 8% from 2018. Announced dollar volume of \$122 billion was down 13%. The final quarter had 323 exits, down 19%, but announced value was up 22%. The year's 209 venture-backed IPOs fell 5% from 2018, with proceeds of \$42 billion, down 9%. The fourth quarter had 61 VC-backed offerings, an 11% rise, but the \$6 billion of proceeds dropped 33% from the third quarter.

### Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/2019\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	-0.37	13.01	14.56	14.39	14.83	11.41	11.02
Growth Equity	1.32	12.76	16.02	12.77	14.03	13.41	13.13
All Buyouts	1.43	8.85	15.32	12.83	14.59	13.65	12.04
Mezzanine	0.87	6.02	10.86	10.00	10.85	10.58	8.60
Credit Opportunities	-0.36	0.61	7.73	5.49	10.47	9.28	9.90
Control Distressed	1.05	4.38	8.86	7.83	11.17	10.52	10.58
<b>All Private Equity</b>	<b>0.92</b>	<b>9.59</b>	<b>14.41</b>	<b>12.33</b>	<b>14.03</b>	<b>12.72</b>	<b>11.72</b>
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices

\*Most recent data available at time of publication

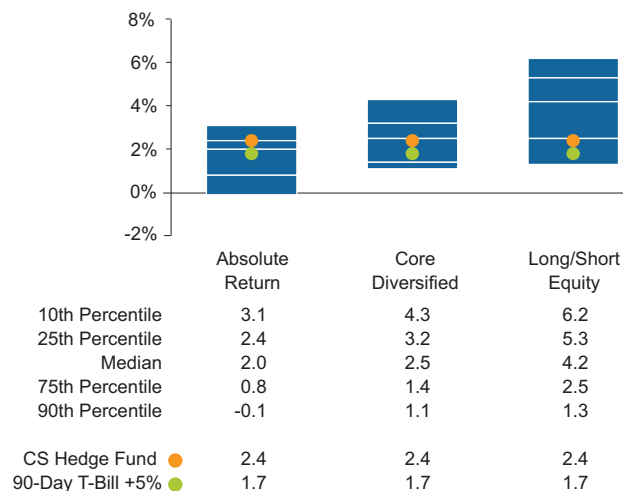
Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Party Like it's 1999 ... or Not

HEDGE FUNDS/MACs | Jim McKee

- Hedge funds participated more cautiously in the fourth quarter risk-on market, as expected.
- Portfolios with exposure to EM and long-short equity fared much better than those emphasizing equity market neutral or macro strategies.
- In the fourth quarter, *Long/Short Equity* (+5.1%) rode the wave of market beta, but alpha was more sporadic, leaving little extra risk-adjusted return. Tech and health care were positive outliers.
- *Equity Market Neutral* (+1.1%) barely clawed back its recent September loss, with stocks lacking dispersion to create trading opportunities.
- *Managed Futures* fell 2.6% as bond rates reversed their downward trend, but it finished 2019 with a solid 9% gain.
- *Distressed* (+1.3%) continued to struggle with chronically weak credits like energy, finishing 2019 up 1.4%, making it the **Credit Suisse Hedge Fund Index's** weakest performer for the year, just below Equity Market Neutral (+1.6%).

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, and Federal Reserve

## Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	2.69	7.10	4.32	3.08	4.49	4.49
Callan Absolute Return FOF Style	1.99	5.63	3.16	3.01	4.46	4.00
Callan Core Diversified FOF Style	2.47	6.70	3.59	2.41	4.25	4.16
Callan Long/Short Equity FOF Style	4.24	12.79	5.95	4.00	5.03	5.49
Credit Suisse Hedge Fund	2.44	9.31	4.27	2.65	4.25	4.75
CS Convertible Arbitrage	3.34	8.15	3.54	3.59	4.17	3.90
CS Distressed	1.27	1.39	2.29	1.52	4.23	4.86
CS Emerging Markets	7.75	13.38	5.98	4.41	4.62	6.06
CS Equity Market Neutral	1.06	1.58	1.53	0.31	1.37	-0.58
CS Event-Driven Multi	2.66	11.42	3.79	1.11	3.17	4.73
CS Fixed Income Arb	2.29	6.10	4.54	3.69	5.44	3.80
CS Global Macro	0.75	10.38	4.04	3.16	4.73	6.18
CS Long/Short Equity	5.06	12.17	6.66	3.94	5.15	5.58
CS Managed Futures	-2.59	9.01	1.67	-0.61	1.56	2.63
CS Multi-Strategy	1.28	7.25	4.27	4.21	6.02	5.76
CS Risk Arbitrage	1.98	4.89	3.59	3.40	2.72	3.68
HFRI Asset Wtd Composite	2.32	7.57	4.45	3.21	4.46	--
90-Day T-Bill + 5%	1.67	7.28	6.67	6.07	5.58	6.39

\*Gross of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

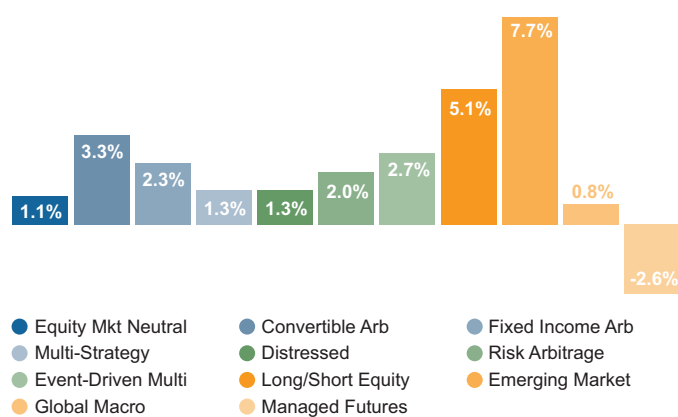
## Long Biased MACs rebounded; Risk Parity settled down

- MAC performance varied depending on net market exposures.
- Last quarter's 5.5% return of the 60% MSCI ACWI and 40% Bloomberg Aggregate benchmark was a tough hurdle to beat.
- Long-Biased MACs* benefited from their typically heavy equity exposure, particularly EM.
- HFR Risk Parity Index** targeting 10% volatility was moderately positive (+2.7%), reflecting strong stock gains partially offset by tepid bond returns.
- Eurekahedge Multi-Factor Risk Premia Index** gained 3.7% based on solid returns from carry trades in risk-on markets offset by a reversal of last year's downward trend in yields.
- Absolute Return MACs* edged ahead with their higher-quality asset bias amid the quarter's less discriminating risk-on market.

## Volatility suppressed

- With the Fed lowering rates by another quarter point in the fourth quarter while rescuing repo funding markets with unprecedented cash infusions, the Fed openly served the punch bowl of liquidity for "risk on" investors.

## Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

- Equity volatility, as illustrated by VIX, continued to settle at below-average levels, indicating fewer trading opportunities for hedge funds.
- While last quarter's melt-up reflected increased comfort with today's easy monetary and fiscal policies, a revived trade war with China or another geopolitical conflict could quickly undo that market sentiment.

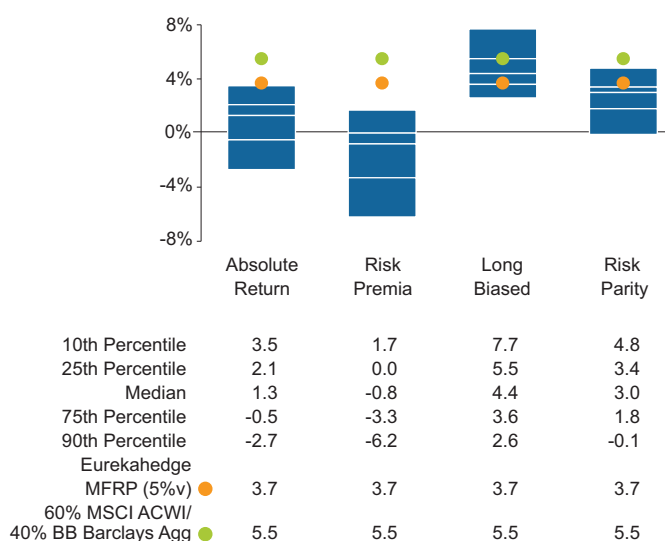
## Falling cash returns remove any hint of a tailwind for hedge funds

- As short rates fell, dwindling cash returns and short interest rebates removed previously favorable trade winds from hedge fund sails.

## Callan Institutional Hedge Fund Peer Group to launch

- To provide a more representative benchmark for our clients directly investing in hedge funds, Callan has created the Callan Institutional Hedge Fund Peer Group, a select collection of hedge funds meeting minimum size and other criteria that make them more attractive to institutional investors.

## MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Eurekahedge, S&P Dow Jones Indices

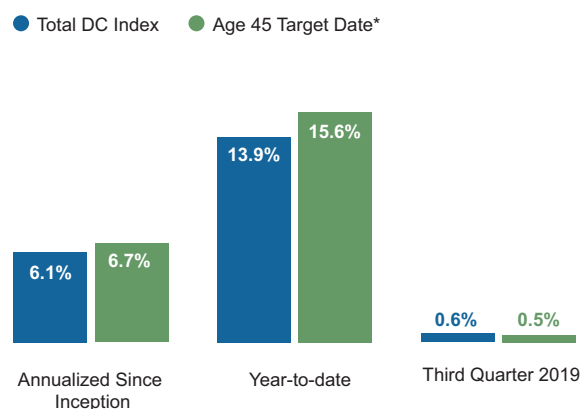
# DC Index Gains Slightly but Tops Age 45 TDF

## DEFINED CONTRIBUTION | Patrick Wisdom

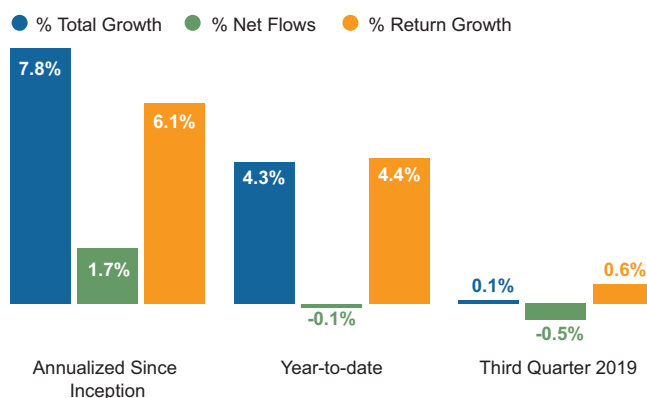
- The **Callan DC Index™** rose 0.6% in the third quarter after gains of 9.6% and 3.3% in the first and second quarters. The Age 45 Target Date Fund's smaller gain of 0.5% was largely due to its higher allocation to equity, which lagged fixed income during the quarter. The Age 45 TDF's bigger equity allocation, however, has contributed to a higher since-inception return (6.7% vs. 6.1%).
- The Index's growth in balances of 0.1% was much smaller than the first quarter (9.8%) and second quarter (3.3%).
- U.S. fixed income saw the largest inflows for the quarter (57.7%), for the first time since the third quarter of 2010. TDFs saw the second-largest inflow (26.2%), much lower than in recent quarters. U.S. large cap equity (-52.2%), and U.S. small/mid cap equity (-19.1%) had the largest outflows.
- Third-quarter turnover (i.e., net transfer activity levels within DC plans) decreased to 0.35% from the previous quarter's 0.54%.
- The allocation to equity within the Index fell to 69.5% from 70.0% in the previous quarter, after two quarters of increases.
- The percentage of assets allocated to U.S. fixed income increased by 0.5% to 6.3%. Similarly, the allocation to stable value increased by 0.3% to an overall allocation of 10.4%.
- TDFs experienced the largest decrease in asset allocation (-0.6%). With this decrease, 29.6% of assets were allocated to TDFs, the lowest since the first quarter of 2017.
- Stable value's prevalence within DC plans decreased for the first time in eight quarters and now sits at 76%, but still up nearly 3 percentage points from a year ago.
- Fees decreased across all plan sizes from the previous year, driven by a combination of increased adoption of passive mandates, as well as lower breakpoints and the use of less expensive vehicles and share classes for active options.

*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 \$150 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 (Third Quarter 2019) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
U.S. Fixed Income	57.73%
Target Date Funds	26.18%
U.S. Smid Cap	-19.09%
U.S. Large Cap	-52.23%
<b>Total Turnover**</b>	<b>0.35%</b>

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

Source: Callan DC Index

Note: DC Index inception date is January 2006.

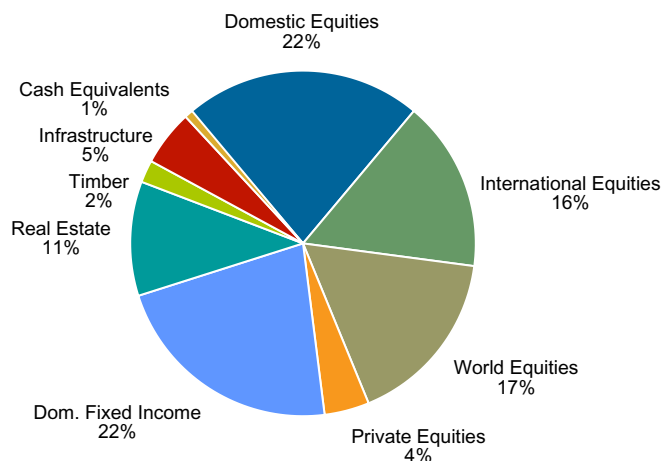
\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

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

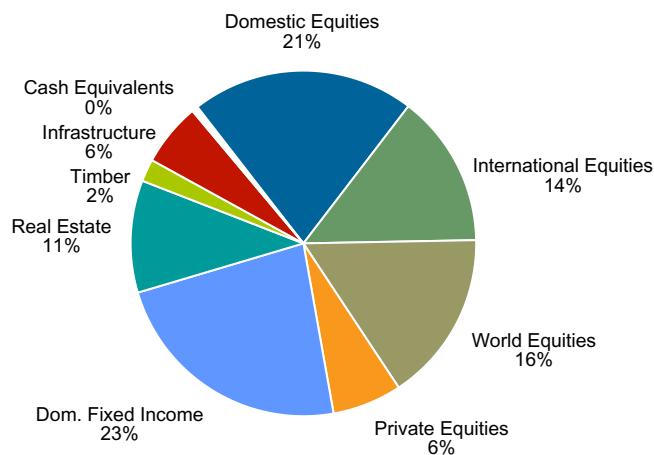
## Actual vs Target Asset Allocation As of December 31, 2019

The top left chart shows the Fund's asset allocation as of December 31, 2019. 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**

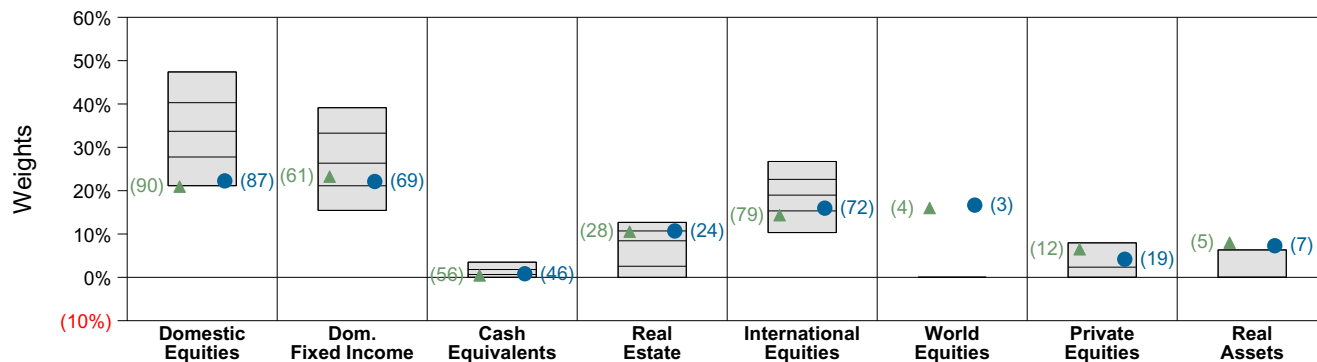


**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	1,387,967	22.3%	20.9%	1.3%	82,343
International Equities	995,307	16.0%	14.3%	1.6%	101,022
World Equities	1,039,154	16.7%	16.0%	0.7%	41,429
Private Equities	260,579	4.2%	6.5%	(2.3%)	(143,579)
Dom. Fixed Income	1,379,014	22.1%	23.2%	(1.1%)	(70,655)
Real Estate	667,561	10.7%	10.5%	0.2%	9,819
Timber	131,322	2.1%	2.1%	(0.0%)	(0)
Infrastructure	323,654	5.2%	5.9%	(0.7%)	(44,038)
Cash Equivalents	51,222	0.8%	0.4%	0.4%	23,658
Total	6,235,780	100.0%	100.0%		

### Asset Class Weights vs Callan Public Fund Sponsor Database



10th Percentile	47.40	39.14	3.50	12.68	26.73	0.00	7.96	6.33
25th Percentile	40.30	33.27	1.81	10.70	22.61	0.00	2.35	0.00
Median	33.70	26.34	0.65	8.44	18.97	0.00	0.00	0.00
75th Percentile	27.77	21.13	0.01	2.56	15.33	0.00	0.00	0.00
90th Percentile	21.15	15.44	0.00	0.00	10.33	0.00	0.00	0.00
<b>Fund</b>	22.26	22.11	0.82	10.71	15.96	16.66	4.18	7.30
<b>Target</b>	20.94	23.25	0.44	10.55	14.34	16.00	6.48	8.00
% Group Invested	96.45%	98.58%	76.60%	78.72%	94.33%	9.93%	31.21%	24.82%

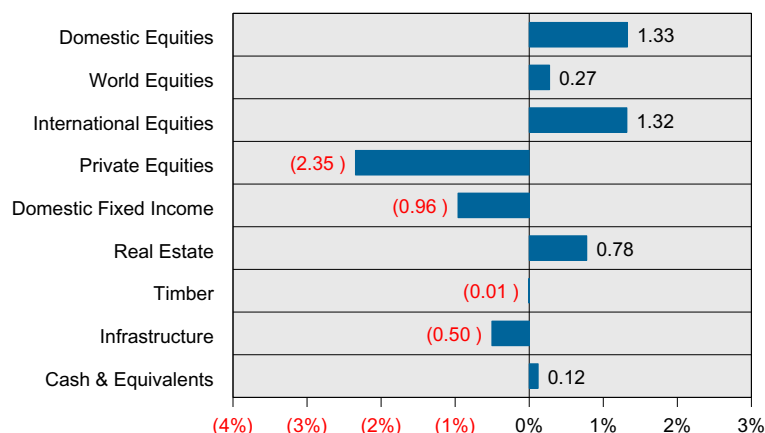
\* Current Quarter Target = 16.2% Blmgb Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmgb:HY Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.



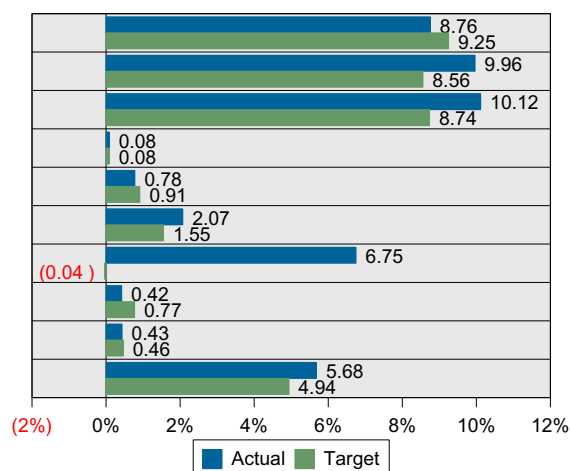
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

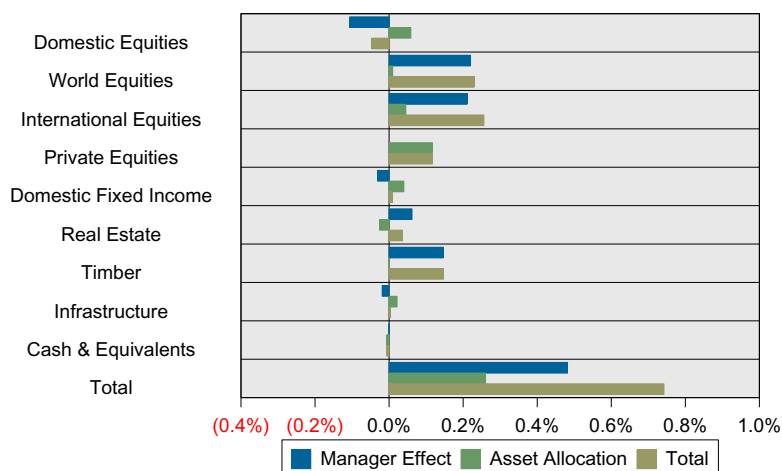
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	8.76%	9.25%	(0.11%)	0.06%	(0.05%)
World Equities	16%	16%	9.96%	8.56%	0.22%	0.01%	0.23%
International Equities	16%	14%	10.12%	8.74%	0.21%	0.05%	0.26%
Private Equities	4%	6%	0.08%	0.08%	0.00%	0.12%	0.12%
Domestic Fixed Income	22%	23%	0.78%	0.91%	(0.03%)	0.04%	0.01%
Real Estate	11%	11%	2.07%	1.55%	0.06%	(0.03%)	0.04%
Timber	2%	2%	6.75%	(0.04%)	0.15%	0.00%	0.15%
Infrastructure	5%	6%	0.42%	0.77%	(0.02%)	0.02%	0.00%
Cash & Equivalents	1%	0%	0.43%	0.46%	(0.00%)	(0.01%)	(0.01%)
<b>Total</b>			<b>5.68%</b>	<b>4.94%</b>	<b>+ 0.48%</b>	<b>+ 0.26%</b>	<b>0.74%</b>

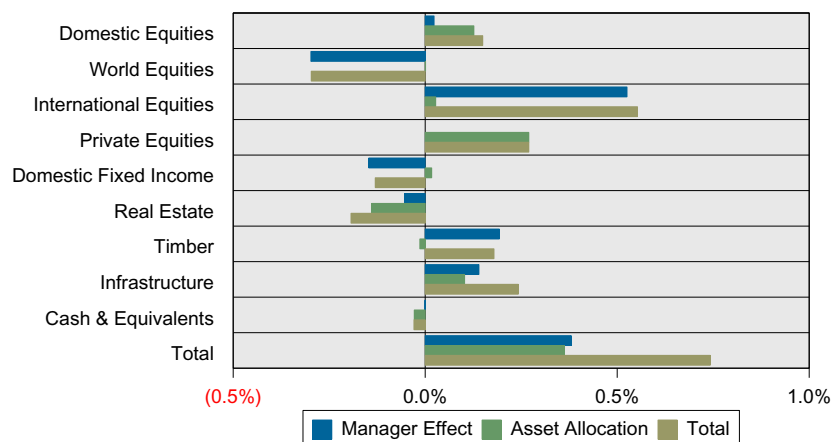
\* Current Quarter Target = 16.2% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.



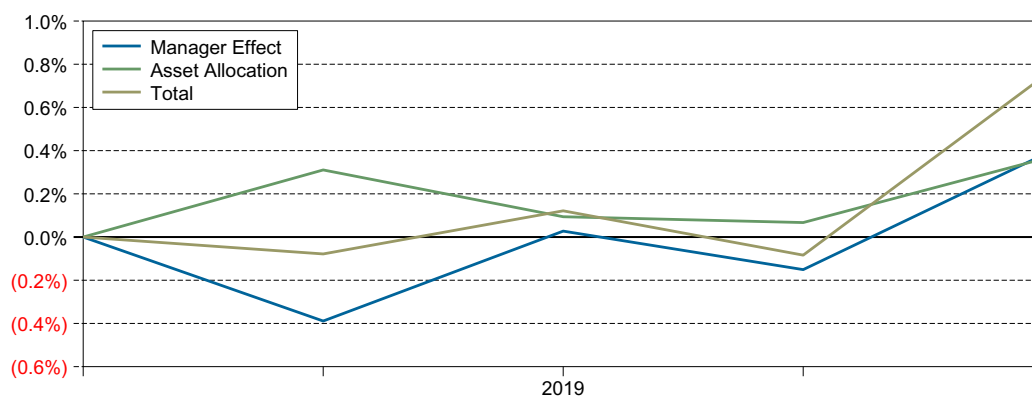
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

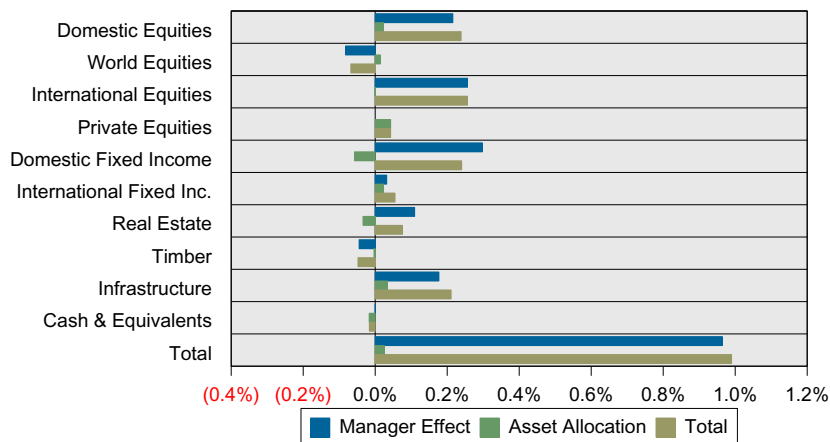
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	30.22%	30.07%	0.02%	0.13%	0.15%
World Equities	16%	16%	25.74%	27.67%	(0.30%)	0.00%	(0.30%)
International Equities	16%	14%	25.12%	21.63%	0.53%	0.03%	0.55%
Private Equities	4%	6%	7.04%	7.04%	0.00%	0.27%	0.27%
Domestic Fixed Income	23%	23%	9.77%	10.42%	(0.15%)	0.02%	(0.13%)
Real Estate	11%	11%	5.99%	6.42%	(0.05%)	(0.14%)	(0.19%)
Timber	2%	2%	9.39%	1.30%	0.19%	(0.01%)	0.18%
Infrastructure	5%	6%	6.01%	3.43%	0.14%	0.10%	0.24%
Cash & Equivalents	1%	0%	2.17%	2.28%	(0.00%)	(0.03%)	(0.03%)
<b>Total</b>			<b>18.21%</b>	<b>17.47%</b>	<b>+ 0.38%</b>	<b>+ 0.36%</b>	<b>0.74%</b>

\* Current Quarter Target = 16.2% 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 Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

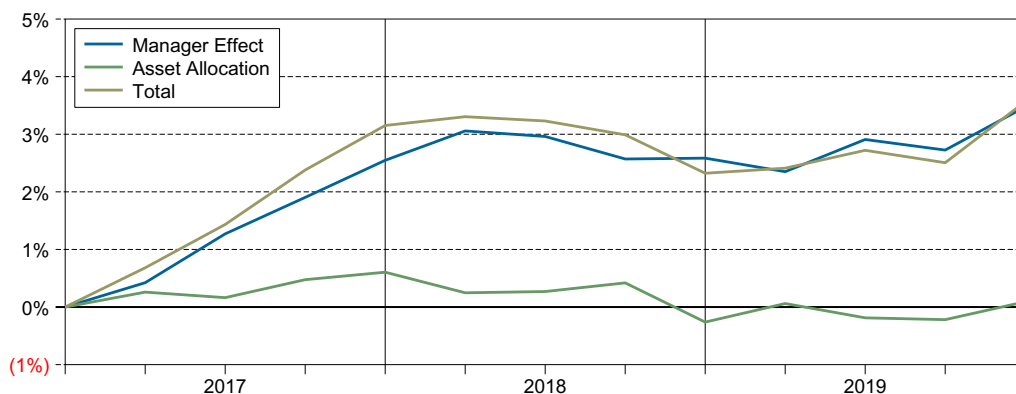
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

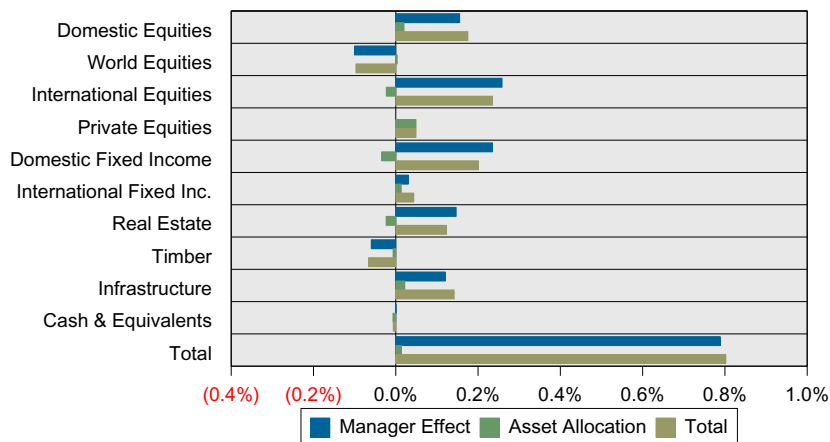
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	14.54%	13.56%	0.22%	0.02%	0.24%
World Equities	17%	16%	12.00%	12.57%	(0.08%)	0.01%	(0.07%)
International Equities	16%	14%	11.44%	9.86%	0.26%	(0.00%)	0.26%
Private Equities	3%	6%	6.63%	6.63%	0.00%	0.04%	0.04%
Domestic Fixed Income	21%	21%	6.13%	4.67%	0.30%	(0.06%)	0.24%
International Fixed Inc.	2%	2%	-	-	0.03%	0.02%	0.05%
Real Estate	11%	11%	7.73%	6.70%	0.11%	(0.03%)	0.08%
Timber	2%	2%	1.46%	2.71%	(0.04%)	(0.00%)	(0.05%)
Infrastructure	5%	6%	7.31%	3.41%	0.18%	0.03%	0.21%
Cash & Equivalents	1%	0%	1.71%	1.67%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>10.08%</b>	<b>9.09%</b>	<b>+ 0.96%</b>	<b>+ 0.03%</b>	<b>0.99%</b>

\* Current Quarter Target = 16.2% 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 Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

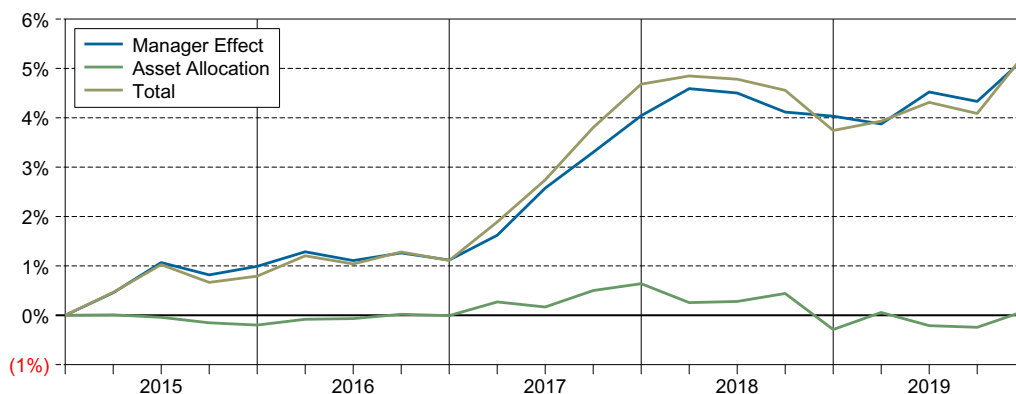
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

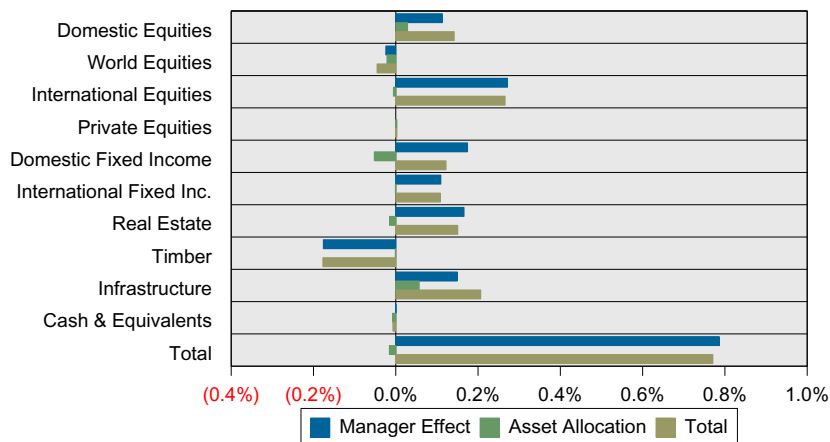
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.49%	10.78%	0.16%	0.02%	0.18%
World Equities	16%	16%	8.07%	8.74%	(0.10)%	0.00%	(0.10)%
International Equities	15%	14%	7.32%	5.67%	0.26%	(0.02)%	0.24%
Private Equities	3%	6%	2.22%	2.22%	0.00%	0.05%	0.05%
Domestic Fixed Income	20%	20%	5.09%	3.90%	0.24%	(0.03)%	0.20%
International Fixed Inc.	3%	3%	-	-	0.03%	0.01%	0.04%
Real Estate	11%	10%	9.69%	8.25%	0.15%	(0.02)%	0.12%
Timber	3%	3%	1.17%	3.13%	(0.06)%	(0.01)%	(0.07)%
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.02%	0.14%
Cash & Equivalents	1%	1%	1.15%	1.07%	0.00%	(0.01)%	(0.01)%
<b>Total</b>			<b>7.63%</b>	<b>6.83%</b>	<b>+ 0.79%</b>	<b>+ 0.01%</b>	<b>0.80%</b>

\* Current Quarter Target = 16.2% 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 Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

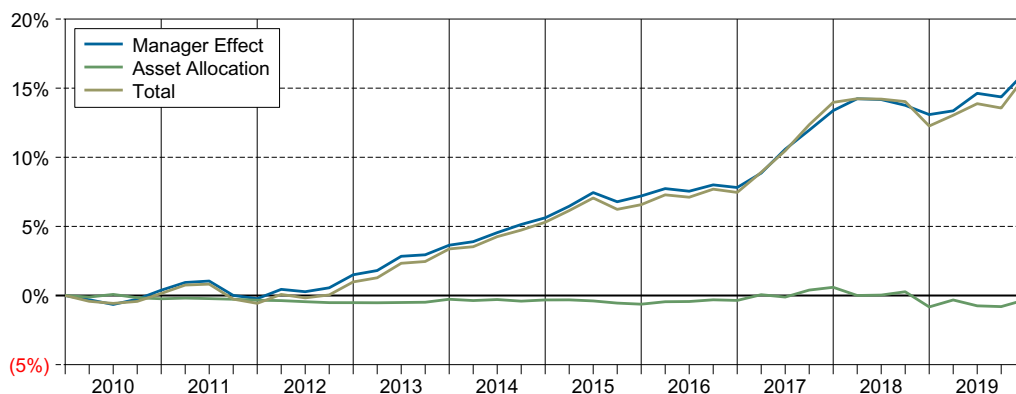
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Ten Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Ten Year Annualized Relative Attribution Effects

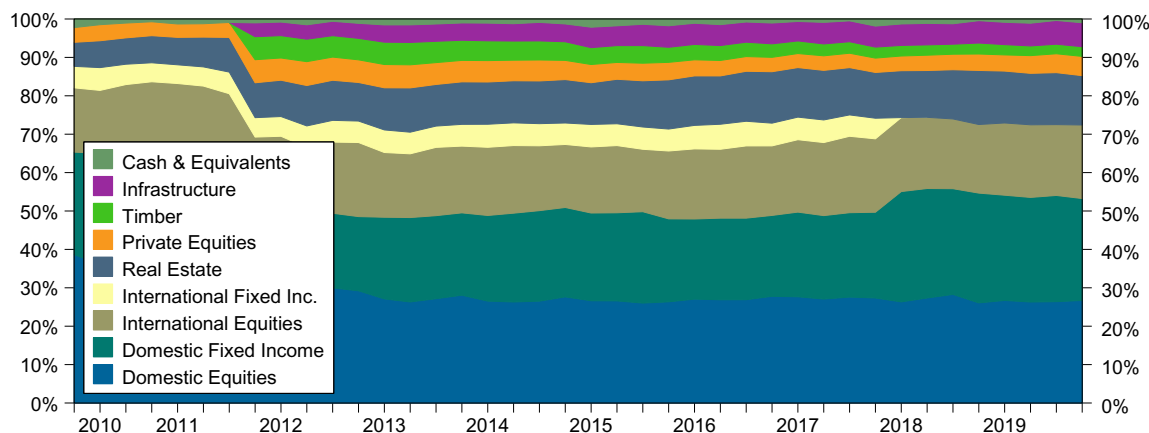
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	26%	25%	13.75%	13.18%	0.11%	0.03%	0.14%
World Equities	12%	12%	-	-	(0.02%)	(0.02%)	(0.05%)
International Equities	16%	16%	6.69%	5.04%	0.27%	(0.01%)	0.27%
Private Equities	4%	5%	4.59%	4.59%	0.00%	0.00%	0.00%
Domestic Fixed Income	21%	20%	5.93%	4.79%	0.17%	(0.05%)	0.12%
International Fixed Inc.	4%	4%	-	-	0.11%	(0.00%)	0.11%
Real Estate	10%	9%	12.04%	10.17%	0.17%	(0.02%)	0.15%
Timber	3%	3%	-	-	(0.18%)	(0.00%)	(0.18%)
Infrastructure	3%	4%	-	-	0.15%	0.06%	0.21%
Cash & Equivalents	1%	1%	0.63%	0.58%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>8.73%</b>	<b>7.96%</b>	<b>+ 0.79%</b>	<b>+ (0.02%)</b>	<b>0.77%</b>

\* Current Quarter Target = 16.2% 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 Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

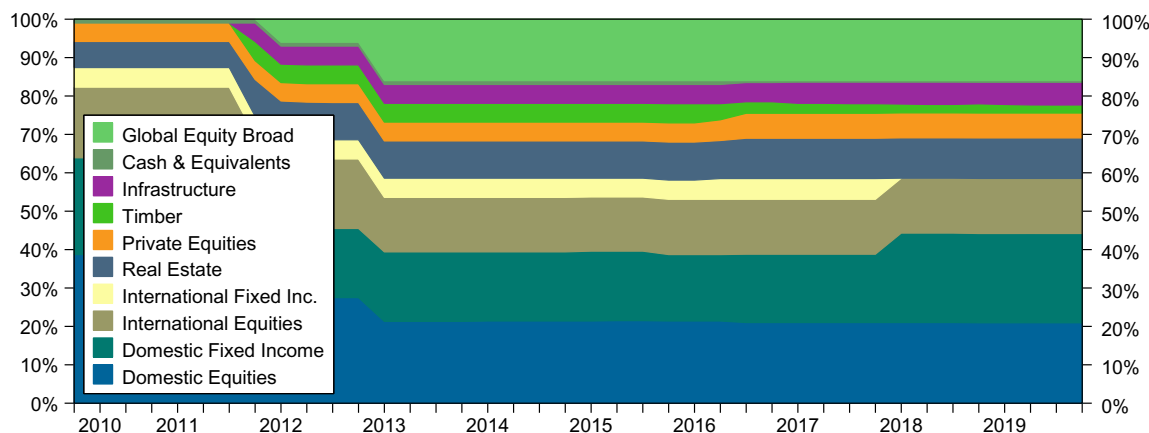
## Actual vs Target Historical Asset Allocation

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.

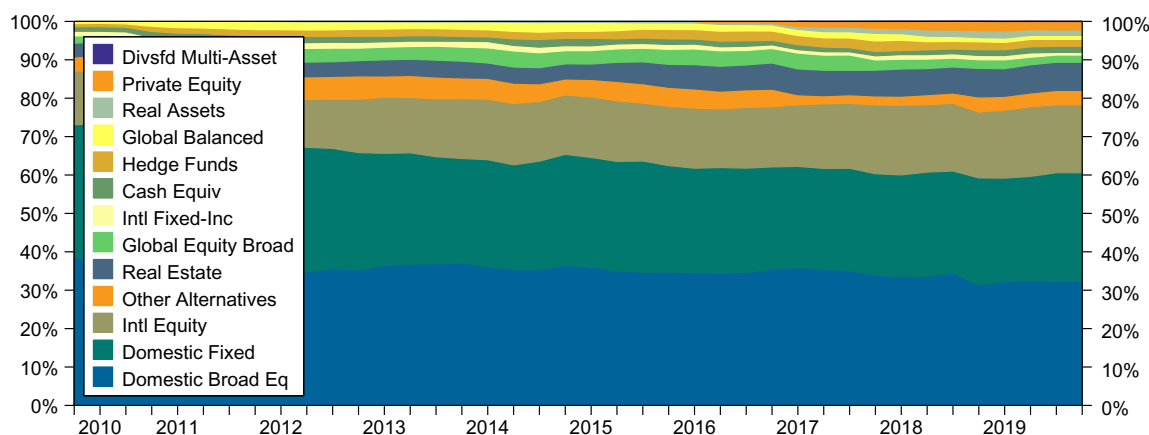
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation

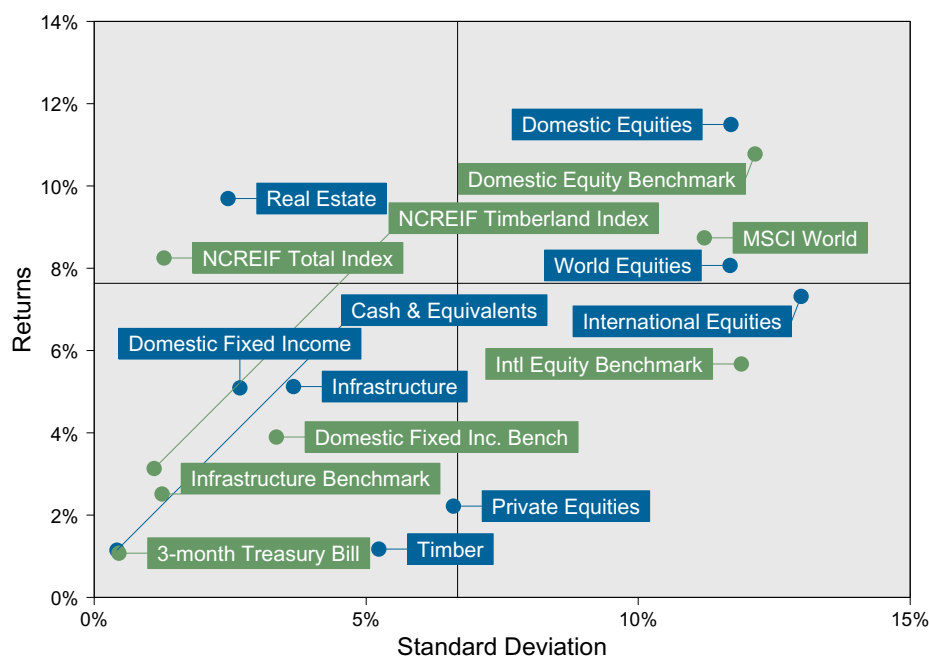


\* Current Quarter Target = 16.2% Blmbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

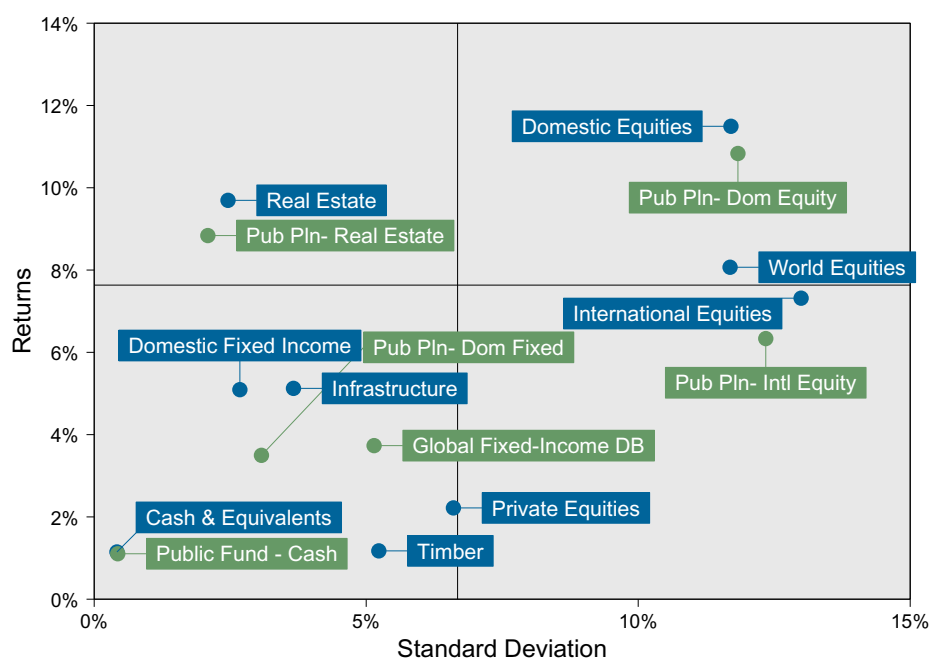
## Asset Class Risk and Return

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



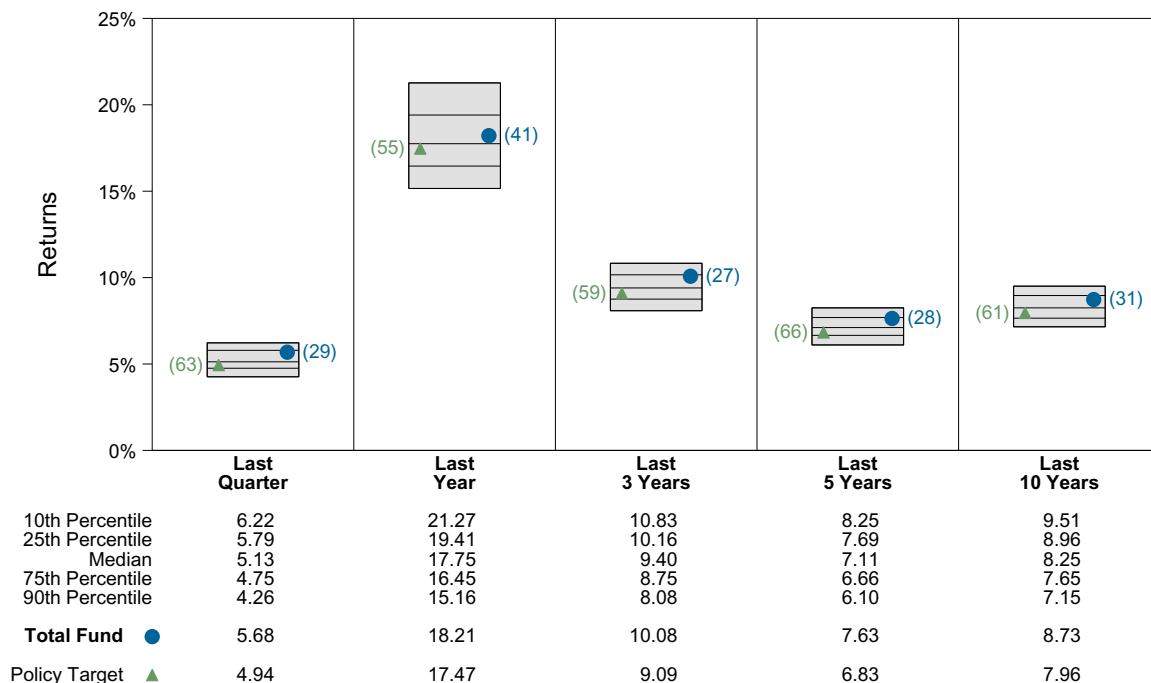
### Five Year Annualized Risk vs Return Asset Classes vs Asset Class Median



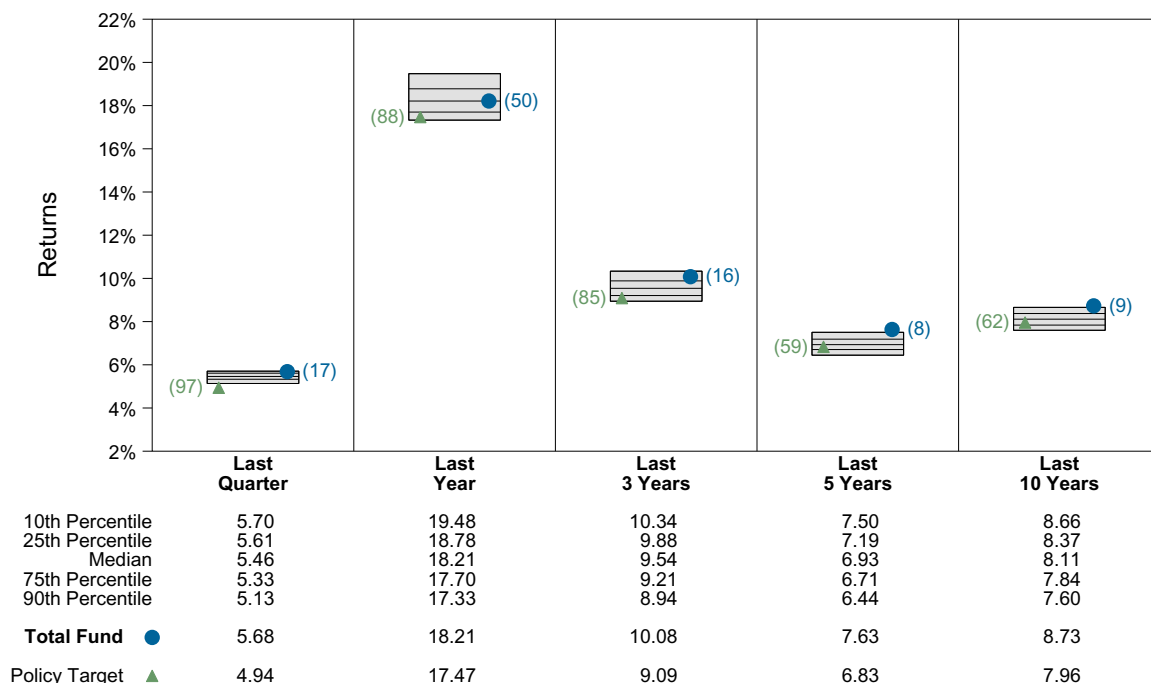
## Total Fund Ranking

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 December 31, 2019. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

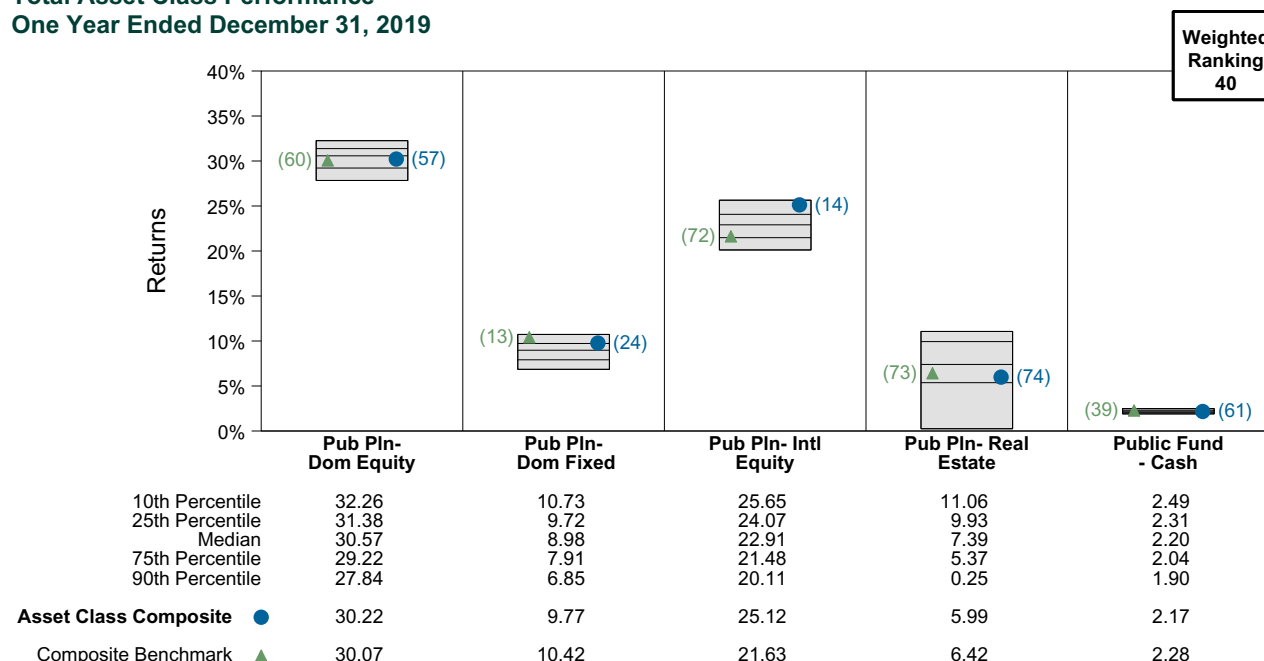


\* Current Quarter Target = 16.2% Bimbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Bimbg:HY Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

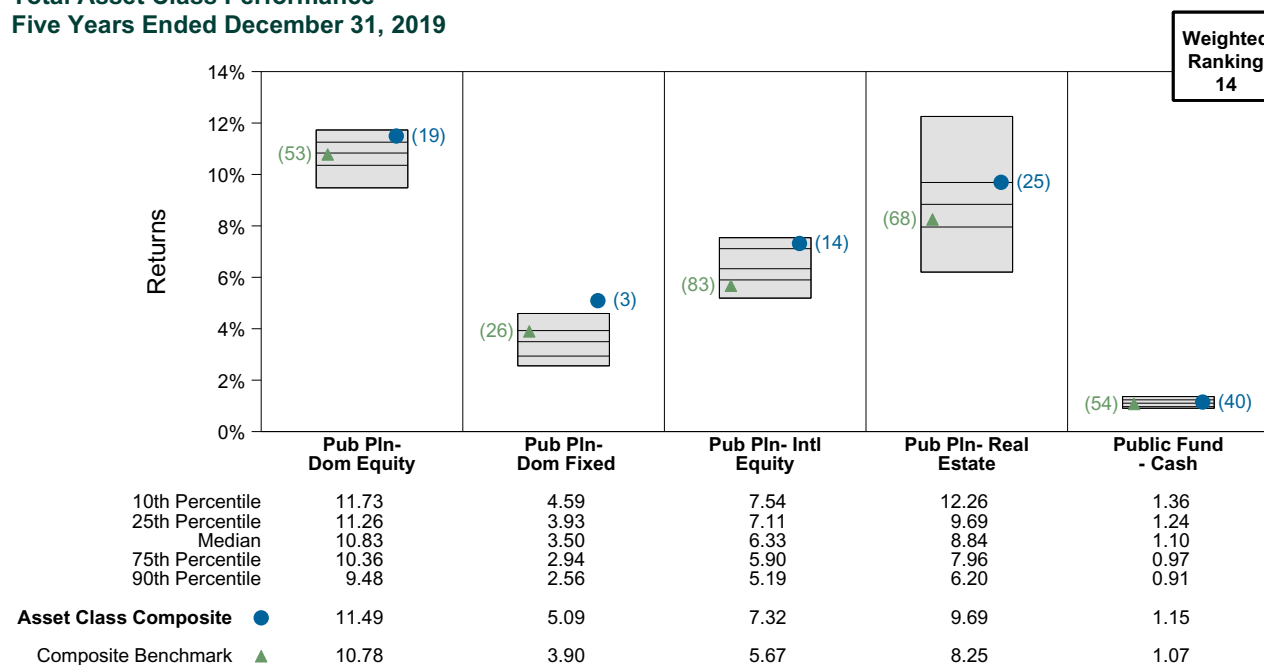
## Asset Class Rankings

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 December 31, 2019



### Total Asset Class Performance Five Years Ended December 31, 2019



\* Current Quarter Target = 16.2% Bimbg Aggregate, 16.1% Russell 1000 Index, 16.0% MSCI World, 11.2% MSCI World ex US, 10.5% NCREIF Total Index, 7.0% Bimbg:HY Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% 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 December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019		Net New Inv.	Inv. Return	September 30, 2019	
	Market Value	Weight			Market Value	Weight
<b>Global Equities</b>	<b>\$3,683,006,999</b>	<b>59.06%</b>	<b>\$(50,169,515)</b>	<b>\$302,312,576</b>	<b>\$3,430,863,938</b>	<b>57.84%</b>
<b>Public Equities</b>	<b>\$3,422,428,318</b>	<b>54.88%</b>	<b>\$(66,239,002)</b>	<b>\$302,099,173</b>	<b>\$3,186,568,147</b>	<b>53.72%</b>
<b>World Equities</b>	<b>\$1,039,154,049</b>	<b>16.66%</b>	<b>\$(11,827,277)</b>	<b>\$94,676,353</b>	<b>\$956,304,972</b>	<b>16.12%</b>
EPOCH Investment Partners	490,488,312	7.87%	10,304,395	40,413,597	439,770,320	7.41%
LSV Asset Management	548,665,737	8.80%	(22,131,672)	54,262,756	516,534,653	8.71%
<b>Domestic Equities</b>	<b>\$1,387,967,316</b>	<b>22.26%</b>	<b>\$(39,542,631)</b>	<b>\$114,796,827</b>	<b>\$1,312,713,120</b>	<b>22.13%</b>
<b>Large Cap</b>	<b>\$1,059,519,297</b>	<b>16.99%</b>	<b>\$(34,264,824)</b>	<b>\$91,607,786</b>	<b>\$1,002,176,335</b>	<b>16.90%</b>
L.A. Capital	425,341,292	6.82%	(10,204,527)	39,480,838	396,064,981	6.68%
LACM Enhanced Index	210,090,302	3.37%	(10,060,298)	16,268,889	203,881,710	3.44%
Northern Trust AM Enh S&P 500	209,130,640	3.35%	(10,000,000)	17,297,596	201,833,044	3.40%
Parametric Clifton Enh S&P 500	214,957,063	3.45%	(4,000,000)	18,560,462	200,396,601	3.38%
<b>Small Cap</b>	<b>\$328,448,019</b>	<b>5.27%</b>	<b>\$(5,277,807)</b>	<b>\$23,189,041</b>	<b>\$310,536,785</b>	<b>5.24%</b>
Atlanta Capital	159,476,918	2.56%	(7,777,807)	7,050,343	160,204,382	2.70%
Parametric Clifton Enh Small Cap	168,971,101	2.71%	2,500,000	16,138,698	150,332,403	2.53%
<b>International Equities</b>	<b>\$995,306,954</b>	<b>15.96%</b>	<b>\$(14,869,094)</b>	<b>\$92,625,993</b>	<b>\$917,550,055</b>	<b>15.47%</b>
<b>Developed</b>	<b>\$758,538,704</b>	<b>12.16%</b>	<b>\$(14,869,094)</b>	<b>\$67,667,859</b>	<b>\$705,739,939</b>	<b>11.90%</b>
DFA Int'l Small Cap	83,812,026	1.34%	0	8,855,409	74,956,617	1.26%
Northern Trust AM World Ex US	363,747,562	5.83%	(14,527,794)	27,217,486	351,057,870	5.92%
Wellington Management Co.	81,385,478	1.31%	(153,385)	9,323,357	72,215,506	1.22%
William Blair	229,593,638	3.68%	(187,915)	22,271,607	207,509,946	3.50%
<b>Emerging Markets</b>	<b>\$236,768,250</b>	<b>3.80%</b>	<b>\$0</b>	<b>\$24,958,134</b>	<b>\$211,810,116</b>	<b>3.57%</b>
Axiom	174,341,788	2.80%	0	19,277,102	155,064,686	2.61%
DFA	62,426,462	1.00%	0	5,681,032	56,745,430	0.96%

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019		Net New Inv.	Inv. Return	September 30, 2019	
	Market Value	Weight			Market Value	Weight
<b>Private Equities</b>	<b>\$260,578,681</b>	<b>4.18%</b>	<b>\$16,069,487</b>	<b>\$213,402</b>	<b>\$244,295,791</b>	<b>4.12%</b>
Adams Street Direct Co-Invest Fd	738,223	0.01%	0	15,942	722,281	0.01%
Adams Street Direct Fund 2010	803,429	0.01%	(24,188)	(5,394)	833,011	0.01%
Adams Street 1998 Partnership	13,402	0.00%	0	(31)	13,433	0.00%
Adams Street 1999 Partnership	121,352	0.00%	0	2,557	118,795	0.00%
Adams Street 2000 Partnership	324,313	0.01%	0	(8,945)	333,258	0.01%
Adams Street 2001 Partnership	526,835	0.01%	0	(33,464)	560,299	0.01%
Adams Street 2002 Partnership	135,556	0.00%	0	(2,026)	137,582	0.00%
Adams Street 2003 Partnership	154,162	0.00%	0	(2,044)	156,206	0.00%
Adams Street 2010 Partnership	6,113,727	0.10%	(627,944)	192,075	6,549,596	0.11%
Adams Street 2008 Fund	6,385,220	0.10%	(560,895)	28,215	6,917,900	0.12%
Adams Street 1999 Non-US	72,478	0.00%	0	206	72,272	0.00%
Adams Street 2000 Non-US	340,804	0.01%	0	10,576	330,228	0.01%
Adams Street 2001 Non-US	93,430	0.00%	0	(291)	93,721	0.00%
Adams Street 2002 Non-US	88,724	0.00%	0	(1,933)	90,657	0.00%
Adams Street 2003 Non-US	174,451	0.00%	0	(2,608)	177,059	0.00%
Adams Street 2004 Non-US	178,305	0.00%	0	(1,889)	180,194	0.00%
Adams Street 2010 Non-US	2,779,111	0.04%	(81,022)	163,927	2,696,206	0.05%
Adams Street 2010 Non-US Emg	1,781,548	0.03%	0	(6,910)	1,788,458	0.03%
Adams Street 2015 Global Fd	23,843,606	0.38%	0	1,222,049	22,621,557	0.38%
Adams Street 2016 Global Fd	17,533,717	0.28%	630,000	231,194	16,672,523	0.28%
Adams Street 2017 Global Fd	28,141,088	0.45%	2,550,000	122,686	25,468,402	0.43%
Adams Street 2018 Global Fd	11,575,408	0.19%	3,135,614	190,597	8,249,197	0.14%
Adams Street 2019 Global Fd	1,852,500	0.03%	1,867,777	(15,277)	-	-
Adams Street BVCF IV Fund	1,109,692	0.02%	0	(2,232,024)	3,341,716	0.06%
BlackRock	91,813,238	1.47%	11,679,221	2,631,716	77,502,301	1.31%
Capital International V	722,275	0.01%	0	(98,238)	820,513	0.01%
Capital International VI	29,054,983	0.47%	38,120	(859,615)	29,876,478	0.50%
CorsAir III	11,538,676	0.19%	(497,931)	(1,677,580)	13,714,187	0.23%
EIG Energy Fund XIV	4,186,228	0.07%	0	(339,245)	4,525,473	0.08%
Hearthstone Advisors MS II	1	0.00%	0	0	1	0.00%
Hearthstone Advisors MS III	129,325	0.00%	0	20,016	109,309	0.00%
Lewis & Clark, LP	1,138,318	0.02%	0	0	1,138,318	0.02%
Lewis & Clark II	4,489,846	0.07%	0	19,959	4,469,887	0.08%
Matlin Patterson II	1,175,164	0.02%	0	(3,912)	1,179,076	0.02%
Matlin Patterson III	10,276,667	0.16%	(2,039,266)	867,979	11,447,954	0.19%
Quantum Energy Partners	1,172,879	0.02%	0	(214,864)	1,387,743	0.02%

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019				September 30, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Fixed Income</b>	<b>\$1,379,014,287</b>	<b>22.11%</b>	<b>\$(7,678,201)</b>	<b>\$10,461,037</b>	<b>\$1,376,231,452</b>	<b>23.20%</b>
<b>Domestic Fixed Income</b>	<b>\$1,379,014,287</b>	<b>22.11%</b>	<b>\$(7,678,201)</b>	<b>\$10,461,037</b>	<b>\$1,376,231,452</b>	<b>23.20%</b>
<b>Investment Grade</b>	<b>\$976,394,689</b>	<b>15.66%</b>	<b>\$17,734,136</b>	<b>\$463,320</b>	<b>\$958,197,233</b>	<b>16.15%</b>
Declaration Total Return	115,822,175	1.86%	(66,159)	383,485	115,504,849	1.95%
PIMCO DiSCO II	97,201,301	1.56%	0	2,482,172	94,719,129	1.60%
PIMCO Core Plus Constrained	333,954,695	5.36%	4,899,646	449,382	328,605,667	5.54%
Prudential Core	332,633,496	5.33%	4,904,264	1,101,940	326,627,291	5.51%
SSgA Long US Treas Index	96,783,022	1.55%	7,996,384	(3,953,658)	92,740,297	1.56%
<b>Below Investment Grade</b>	<b>\$402,619,598</b>	<b>6.46%</b>	<b>\$(25,412,337)</b>	<b>\$9,997,716</b>	<b>\$418,034,218</b>	<b>7.05%</b>
Ares ND Credit Strategies Fd	102,818,591	1.65%	0	2,113,942	100,704,649	1.70%
Cerberus ND Private Credit Fd	105,560,536	1.69%	(2,100,000)	2,939,725	104,720,811	1.77%
Goldman Sachs 2006 Offshore	62,370	0.00%	(31,449)	277	93,542	0.00%
Goldman Sachs Offshore V	419,191	0.01%	0	92,528	326,663	0.01%
Loomis Sayles	170,445,942	2.73%	(21,233,502)	4,878,037	186,801,406	3.15%
PIMCO Bravo II Fund	23,312,968	0.37%	(2,047,386)	(26,793)	25,387,147	0.43%
<b>Global Real Assets</b>	<b>\$1,122,536,688</b>	<b>18.00%</b>	<b>\$(6,263,118)</b>	<b>\$23,667,671</b>	<b>\$1,105,132,135</b>	<b>18.63%</b>
<b>Real Estate</b>	<b>\$667,561,389</b>	<b>10.71%</b>	<b>\$(19,985,365)</b>	<b>\$14,033,154</b>	<b>\$673,513,599</b>	<b>11.36%</b>
Invesco Core Real Estate	329,690,291	5.29%	(280,345)	6,468,134	323,502,503	5.45%
Invesco Fund III	2,039,735	0.03%	(2,160,345)	(673,633)	4,873,713	0.08%
Invesco Asia RE Feeder	1	0.00%	(180,369)	(27,017)	207,387	0.00%
Invesco Asia RE Fund III	24,497,894	0.39%	0	1,372,471	23,125,424	0.39%
Invesco Value Added Fd IV	32,386,978	0.52%	(13,001,298)	2,176,695	43,211,581	0.73%
Invesco Value Added Fd V	17,180,749	0.28%	(219,738)	139,772	17,260,715	0.29%
JP Morgan	261,031,439	4.19%	0	5,118,532	255,912,907	4.31%
JP Morgan Greater European Opp Fd	734,301	0.01%	(4,143,270)	(541,799)	5,419,369	0.09%
<b>Other Real Assets</b>	<b>\$454,975,299</b>	<b>7.30%</b>	<b>\$13,722,247</b>	<b>\$9,634,517</b>	<b>\$431,618,536</b>	<b>7.28%</b>
<b>Infrastructure</b>	<b>\$323,653,612</b>	<b>5.19%</b>	<b>\$14,634,247</b>	<b>\$1,312,127</b>	<b>\$307,707,239</b>	<b>5.19%</b>
ISQ Global Infrastructure II	27,912,864	0.45%	4,631,176	470,917	22,810,771	0.38%
The Rohatyn Group	18,267,044	0.29%	89,418	(658,902)	18,836,528	0.32%
JP Morgan IIF	179,262,960	2.87%	(5,583,615)	257,670	184,588,905	3.11%
Grosvenor Cust. Infrastructure	23,409,828	0.38%	(1,724,739)	(247,731)	25,382,297	0.43%
Grosvenor Cust. Infrastructure II	18,516,517	0.30%	791,467	(65,870)	17,790,920	0.30%
Macquarie Infrs. Partners IV	56,284,399	0.90%	16,430,540	1,556,042	38,297,817	0.65%
<b>Timber</b>	<b>\$131,321,687</b>	<b>2.11%</b>	<b>\$(912,000)</b>	<b>\$8,322,390</b>	<b>\$123,911,297</b>	<b>2.09%</b>
TIR Teredo	31,391,305	0.50%	0	17,257	31,374,048	0.53%
TIR Springbank	99,930,382	1.60%	(912,000)	8,305,133	92,537,249	1.56%
<b>Cash</b>	<b>\$51,221,948</b>	<b>0.82%</b>	<b>\$31,986,079</b>	<b>\$169,837</b>	<b>\$19,066,032</b>	<b>0.32%</b>
Northern Trust Cash Account	40,691,428	0.65%	31,986,079	123,759	8,581,590	0.14%
Bank of ND	10,530,521	0.17%	0	46,079	10,484,442	0.18%
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(91,965)</b>	<b>\$91,965</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$6,235,779,923</b>	<b>100.0%</b>	<b>\$(32,216,720)</b>	<b>\$336,703,086</b>	<b>\$5,931,293,556</b>	<b>100.0%</b>

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Equities</b>					
Gross	8.81%	25.93%	12.48%	8.80%	-
Net	8.76%	25.68%	12.25%	8.54%	-
Weighted Benchmark	7.89%	24.66%	11.71%	8.18%	-
<b>Public Equities</b>					
Gross	9.50%	27.36%	-	-	-
Net	9.45%	27.09%	-	-	-
Weighted Benchmark	8.90%	26.95%	-	-	-
<b>World Equities</b>					
Gross	9.96%	25.74%	12.00%	8.07%	-
Net	9.87%	25.33%	11.61%	7.60%	-
MSCI World	8.56%	27.67%	12.57%	8.74%	9.47%
EPOCH Investment - Gross(1)	8.95%	27.48%	15.26%	8.87%	-
EPOCH Investment - Net	8.78%	26.71%	14.55%	8.19%	-
MSCI World	8.56%	27.67%	12.57%	8.74%	9.47%
LSV Asset Management - Gross(2)	10.90%	24.58%	9.55%	7.42%	-
LSV Asset Management - Net	10.87%	24.46%	9.41%	7.12%	-
Benchmark(4)	9.05%	26.92%	12.94%	8.93%	-
<b>Domestic Equities</b>					
Gross	8.76%	30.22%	14.54%	11.49%	13.75%
Net	8.71%	30.01%	14.36%	11.30%	13.50%
Weighted Benchmark	9.25%	30.07%	13.56%	10.78%	13.18%
<b>Large Cap</b>					
Gross	9.21%	31.26%	15.55%	12.17%	13.93%
Net	9.19%	31.13%	15.43%	12.04%	13.75%
Large Cap Benchmark(3)	9.04%	31.43%	15.05%	11.48%	13.51%
L.A. Capital - Gross	10.06%	34.22%	18.22%	14.02%	15.14%
L.A. Capital - Net	10.01%	33.95%	17.98%	13.78%	14.90%
Russell 1000 Growth Index	10.62%	36.39%	20.49%	14.63%	15.22%
LACM Enhanced Index - Gross	8.14%	29.38%	13.58%	11.29%	13.66%
LACM Enhanced Index - Net	8.11%	29.24%	13.45%	11.17%	13.51%
Russell 1000 Index	9.04%	31.43%	15.05%	11.48%	13.54%
Northern Tr AM Enh S&P500 - Gross	8.73%	25.34%	12.87%	9.77%	13.12%
Northern Tr AM Enh S&P500 - Net	8.73%	25.34%	12.87%	9.72%	12.94%
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	13.56%
Parametric Clifton Enh S&P500 - Gross	9.15%	33.75%	15.13%	11.72%	-
Parametric Clifton Enh S&P500 - Net	9.15%	33.75%	15.12%	11.67%	-
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	13.56%
<b>Small Cap</b>					
Gross	7.33%	26.98%	11.44%	9.25%	13.10%
Net	7.24%	26.55%	11.05%	8.89%	12.62%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	11.83%
Atlanta Capital - Gross	4.52%	26.90%	14.00%	-	-
Atlanta Capital - Net	4.35%	26.05%	13.21%	-	-
S&P 600 Small Cap Index	8.21%	22.78%	8.36%	9.56%	13.35%
Parametric Clifton Enh SmCap - Gross	10.20%	27.18%	8.73%	8.74%	12.81%
Parametric Clifton Enh SmCap - Net	10.20%	27.18%	8.69%	8.55%	12.47%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	11.83%

(1) EPOCH Investment was removed from the Domestic Equities Composite to the World Equities Composite as of 1/1/2012.

(3) LSV Asset Management was removed from the Domestic Equities and Intl Equities Composites to the World Equities Composite as of February 1, 2013.

(3) S&P 500 Index through 12/31/2011 and Russell 1000 Index thereafter.

(4) MSCI ACWI Gross through 6/30/2019 and MSCI ACWI IMI thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>International Equities</b>					
Gross	10.12%	25.12%	11.44%	7.32%	6.69%
Net	10.08%	24.93%	11.26%	7.13%	6.39%
Weighted Benchmark	8.74%	21.63%	9.86%	5.67%	5.04%
<b>Developed</b>					
Gross	9.60%	26.01%	11.08%	7.43%	6.69%
Net	9.54%	25.76%	10.84%	7.18%	6.39%
Benchmark(1)	7.86%	22.49%	9.34%	5.59%	5.30%
DFA Int'l Small Cap Value - Net	11.81%	21.00%	5.90%	5.93%	7.17%
World ex US SC Value	11.19%	22.83%	8.65%	6.93%	7.27%
Northern Tr AM World ex US - Gross	7.77%	22.75%	9.71%	5.79%	-
Northern Tr AM World ex US - Net	7.76%	22.71%	9.67%	5.76%	-
MSCI World ex US	7.86%	22.49%	9.34%	5.42%	5.32%
Wellington Management - Gross	12.93%	25.67%	10.46%	9.54%	10.37%
Wellington Management - Net	12.70%	24.62%	9.54%	8.63%	9.44%
BMI, EPAC, <\$2 B	11.79%	18.56%	8.10%	7.49%	7.32%
William Blair - Gross	10.74%	33.63%	15.88%	-	-
William Blair - Net	10.64%	33.18%	15.47%	-	-
MSCI ACWI ex US IMI	9.20%	21.63%	9.84%	5.71%	5.21%
<b>Emerging Markets</b>					
Gross	11.78%	22.24%	12.44%	6.55%	5.63%
Net	11.78%	22.24%	12.44%	6.55%	5.34%
Emerging Mkts - Net	11.84%	18.44%	11.58%	5.61%	3.68%
Axiom - Net	12.43%	25.11%	13.81%	7.01%	-
Emerging Mkts - Net	11.84%	18.44%	11.58%	5.61%	3.68%
DFA - Net	10.01%	14.89%	8.61%	5.34%	5.15%
Emerging Mkts - Net	11.84%	18.44%	11.58%	5.61%	3.68%

(1) MSCI EAFE through 12/31/1996; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again through 6/30/2016; MSCI World ex-US thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Private Equities*</b>					
Net	0.08%	7.04%	6.63%	2.21%	4.55%
Adams Street Direct Co-Invest Fd	2.21%	(14.15%)	(19.40%)	(8.27%)	4.23%
Adams Street Direct Fund 2010	(0.65%)	(6.45%)	12.75%	11.35%	-
Adams Street 1998 Partnership	(0.24%)	0.68%	2.60%	2.41%	1.93%
Adams Street 1999 Partnership	2.15%	(7.89%)	(0.97%)	(1.00%)	2.61%
Adams Street 2000 Partnership	(2.68%)	(6.38%)	5.32%	2.21%	5.02%
Adams Street 2001 Partnership	(5.97%)	(9.91%)	1.00%	0.23%	5.77%
Adams Street 2002 Partnership	(1.47%)	(12.78%)	(2.70%)	1.79%	6.70%
Adams Street 2003 Partnership	(1.31%)	(6.72%)	6.12%	6.79%	9.15%
Adams Street 2010 Partnership	3.11%	14.95%	14.76%	14.33%	-
Adams Street 2008 Fund	0.43%	6.79%	14.33%	13.06%	10.64%
Adams Street 1999 Non-US	0.28%	1.15%	1.79%	2.25%	7.35%
Adams Street 2000 Non-US	3.20%	(0.51%)	7.50%	4.60%	4.20%
Adams Street 2001 Non-US	(0.31%)	16.05%	9.94%	10.72%	9.40%
Adams Street 2002 Non-US	(2.13%)	(4.35%)	0.16%	4.37%	5.22%
Adams Street 2003 Non-US	(1.47%)	(13.95%)	0.88%	8.14%	10.09%
Adams Street 2004 Non-US	(1.05%)	(0.51%)	4.40%	4.08%	6.35%
Adams Street 2010 Non-US	6.24%	16.02%	19.13%	14.68%	-
Adams Street 2010 Non-US Emg	(0.39%)	7.39%	12.01%	12.35%	-
Adams Street 2015 Global Fd	5.40%	13.04%	19.77%	-	-
Adams Street 2016 Global Fd	1.34%	7.05%	22.97%	-	-
Adams Street 2017 Global Fd	0.44%	5.84%	-	-	-
Adams Street 2018 Global Fd	1.75%	12.63%	-	-	-
Adams Street BVCF IV Fund	(66.79%)	(66.47%)	(30.25%)	(17.75%)	16.88%
BlackRock	3.22%	9.48%	-	-	-
Capital International V	(11.97%)	(29.16%)	(44.57%)	(37.24%)	(18.00%)
Capital International VI	(2.88%)	4.96%	6.66%	0.79%	-
Corsair III	(12.69%)	68.66%	1.48%	6.16%	3.14%
EIG Energy Fund XIV	(7.50%)	(30.20%)	3.92%	(25.09%)	(11.14%)
Lewis & Clark, LP	0.00%	(33.88%)	10.80%	(14.73%)	(4.87%)
Lewis & Clark II	0.45%	(7.76%)	7.99%	1.90%	(3.53%)
Matlin Patterson II	(0.33%)	(4.60%)	(10.11%)	(1.62%)	(24.57%)
Matlin Patterson III	7.58%	9.47%	7.66%	4.94%	11.32%
Quantum Energy Partners	(15.48%)	(46.06%)	(31.81%)	(28.32%)	(5.73%)

\* 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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Fixed Income</b>					
Gross	0.78%	9.77%	6.67%	4.96%	-
Net	0.74%	9.61%	6.49%	4.74%	-
Weighted Benchmark	0.91%	10.42%	5.47%	3.93%	-
<b>Domestic Fixed Income</b>					
Gross	0.78%	9.77%	6.13%	5.09%	5.93%
Net	0.74%	9.61%	5.96%	4.90%	5.72%
Weighted Benchmark	0.91%	10.42%	4.67%	3.90%	4.79%
<b>Investment Grade</b>					
Gross	0.06%	9.86%	5.62%	4.47%	4.85%
Net	0.04%	9.74%	5.51%	4.36%	4.69%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
Declaration Total Return - Net	0.33%	7.16%	5.15%	4.32%	-
Libor-3 Month	0.49%	2.35%	1.99%	1.40%	0.87%
PIMCO Core Plus Cons. - Gross(1)	0.14%	9.64%	5.70%	4.51%	-
PIMCO Core Plus Cons. - Net	0.11%	9.51%	5.49%	4.25%	-
Blended Benchmark(2)	0.18%	8.72%	4.18%	2.70%	-
PIMCO DiSCO II - Net	2.62%	7.76%	9.54%	8.74%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
Prudential Core - Gross	0.35%	9.94%	-	-	-
Prudential Core - Net	0.32%	9.72%	-	-	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
SSgA Long US Treas Idx - Gross	(4.10%)	14.89%	6.96%	4.14%	-
SSgA Long US Treas Idx - Net	(4.11%)	14.88%	6.93%	4.10%	-
Blmbg Long Treas	(4.12%)	14.83%	6.95%	4.13%	7.01%
<b>Below Investment Grade</b>					
Gross	2.44%	9.63%	7.35%	6.58%	8.89%
Net	2.38%	9.36%	7.03%	6.22%	8.57%
Blmbg HY Corp 2% Issue	2.61%	14.32%	6.36%	6.14%	7.55%
Ares ND Credit Strategies Fd - Net	2.10%	8.35%	-	-	-
Cerberus ND Private Credit Fd - Net	2.81%	8.58%	-	-	-
S&P/LSTA Leveraged Loan B	2.11%	8.99%	4.65%	4.72%	5.42%
Goldman Sachs 2006 Offshore - Net	0.14%	3.88%	19.25%	17.94%	18.80%
Goldman Sachs Offshore V - Net	28.33%	31.76%	20.05%	12.04%	13.64%
PIMCO Bravo II Fund - Net	(0.11%)	0.96%	6.04%	7.15%	-
Blmbg HY Corp 2% Issue	2.61%	14.32%	6.36%	6.14%	7.55%
Loomis Sayles - Gross	2.54%	11.67%	6.23%	5.76%	7.77%
Loomis Sayles - Net	2.40%	11.09%	5.69%	5.23%	7.36%
Blmbg HY Corp 2% Issue	2.61%	14.32%	6.36%	6.14%	7.55%

(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 through June 30, 2018; Blmbg Aggregate thereafter.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Real Assets</b>					
Gross	2.12%	6.35%	6.64%	7.09%	-
Net	2.07%	5.89%	6.22%	6.66%	-
Weighted Benchmark	1.12%	4.86%	5.19%	5.71%	-
<b>Real Estate</b>					
Gross	2.07%	5.99%	7.73%	9.69%	12.04%
Net	2.03%	5.43%	7.24%	9.17%	11.35%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.17%
Invesco Core Real Estate - Gross	2.00%	6.46%	7.29%	9.13%	11.42%
Invesco Core Real Estate - Net	1.91%	6.10%	6.96%	8.77%	11.00%
Invesco Fund III - Net	(13.82%)	(30.54%)	(9.33%)	(0.21%)	-
Invesco Asia RE Fund III - Net	5.93%	23.01%	38.43%	-	-
Invesco Value Added Fd IV - Net	5.04%	15.23%	11.60%	-	-
Invesco Value Added Fd V - Net	0.65%	-	-	-	-
JP Morgan - Gross	2.00%	5.21%	7.32%	9.42%	12.07%
JP Morgan - Net	2.00%	4.22%	6.45%	8.43%	11.09%
JPM Greater European Opp Fd - Net	(9.58%)	2.76%	(18.09%)	(7.59%)	*****%)
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.17%
<b>Other Real Assets</b>					
Gross	2.21%	6.93%	-	-	-
Net	2.14%	6.64%	-	-	-
Weighted Benchmark	0.55%	2.85%	-	-	-
<b>Infrastructure</b>					
Gross	0.42%	6.01%	7.31%	5.12%	-
Net	0.33%	5.59%	6.83%	4.61%	-
ISQ Global Infrastructure II - Net	2.09%	26.47%	-	-	-
The Rohatyn Group - Net	(3.49%)	(4.78%)	(0.20%)	(1.95%)	1.83%
JP Morgan IIF - Gross	0.14%	5.79%	8.02%	5.57%	6.02%
JP Morgan IIF - Net	(0.02%)	5.13%	7.32%	4.81%	5.00%
Grosvenor Cust. Infrastructure - Net	(0.98%)	1.61%	5.63%	5.84%	-
Grosvenor Cust. Infrastructure II - Net	(0.32%)	13.02%	9.05%	-	-
Benchmark(1)	0.77%	3.43%	3.41%	2.51%	2.09%
Macquarie Infrs. Partners IV - Net	3.55%	0.26%	-	-	-
Benchmark(2)	0.77%	3.43%	-	-	-
<b>Timber</b>					
Net	6.75%	9.39%	1.46%	1.17%	-
TIR Teredo - Net	0.06%	6.64%	(1.48%)	3.74%	4.69%
TIR Springbank - Net	9.03%	10.31%	2.39%	(0.05%)	(2.74%)
NCREIF Timberland Index	(0.04%)	1.30%	2.71%	3.13%	4.45%
<b>Cash &amp; Cash Equivalents - Net</b>	<b>0.43%</b>	<b>2.17%</b>	<b>1.71%</b>	<b>1.15%</b>	<b>0.63%</b>
Cash Account - Net	0.43%	2.13%	1.71%	1.15%	0.62%
Bank of ND - Net	0.44%	2.19%	1.69%	-	-
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.58%
<b>Total Fund</b>					
Gross	5.68%	18.21%	10.08%	7.63%	8.73%
Net	5.63%	17.94%	9.83%	7.36%	8.37%
Target*	4.94%	17.47%	9.09%	6.83%	7.96%

\* Current Quarter Target = 16.2% 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 Corp 2% Iss Cap, 6.5% NDSIB PEN - Private Equity, 4.9% Russell 2000 Index, 3.1% MSCI EM, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.1% NCREIF Timberland Index and 0.4% 3-month Treasury Bill.

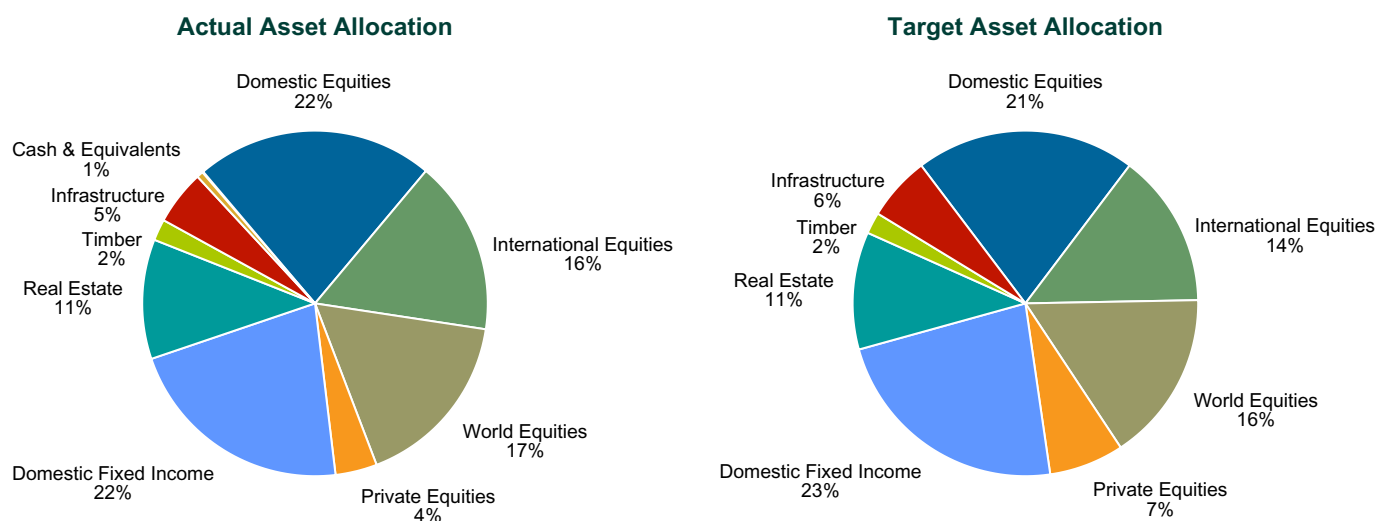
(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

(2) 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.



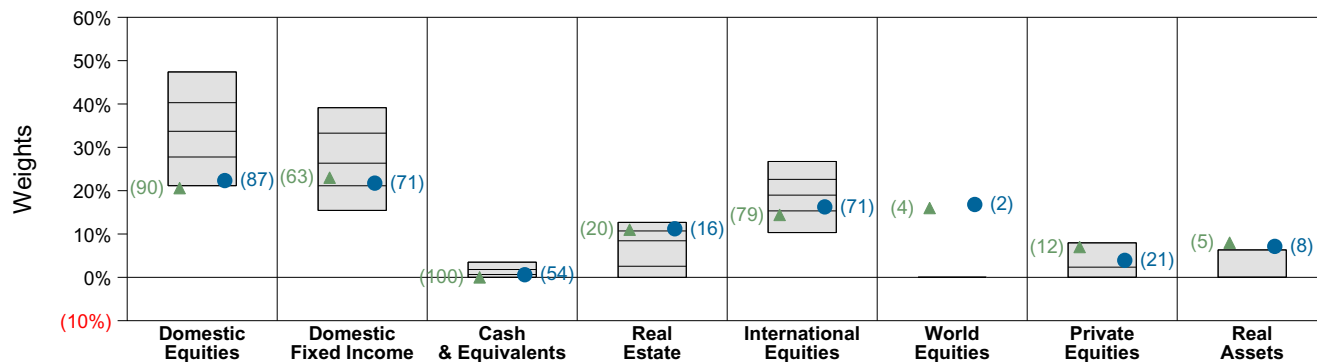
## Actual vs Target Asset Allocation As of December 31, 2019

The top left chart shows the Fund's asset allocation as of December 31, 2019. The top right chart shows the Fund's target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund's asset allocation and the target allocation versus the Callan Public Fund Sponsor Database.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	741,174	22.3%	20.6%	1.7%	57,705
International Equities	539,641	16.3%	14.4%	1.8%	61,212
World Equities	558,067	16.8%	16.0%	0.8%	26,914
Private Equities	130,128	3.9%	7.0%	(3.1%)	(102,252)
Domestic Fixed Income	721,589	21.7%	23.0%	(1.3%)	(41,944)
Real Estate	371,929	11.2%	11.0%	0.2%	6,762
Timber	66,408	2.0%	2.0%	0.0%	0
Infrastructure	170,741	5.1%	6.0%	(0.9%)	(28,427)
Cash & Equivalents	20,030	0.6%	0.0%	0.6%	20,030
Total	3,319,708	100.0%	100.0%		

### Asset Class Weights vs Callan Public Fund Sponsor Database



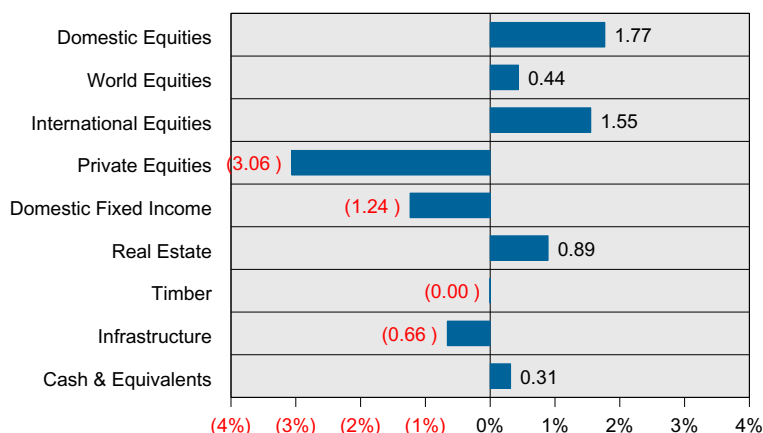
	Domestic Equities	Domestic Fixed Income	Cash & Equivalents	Real Estate	International Equities	World Equities	Private Equities	Real Assets
10th Percentile	47.40	39.14	3.50	12.68	26.73	0.00	7.96	6.33
25th Percentile	40.30	33.27	1.81	10.70	22.61	0.00	2.35	0.00
Median	33.70	26.34	0.65	8.44	18.97	0.00	0.00	0.00
75th Percentile	27.77	21.13	0.01	2.56	15.33	0.00	0.00	0.00
90th Percentile	21.15	15.44	0.00	0.00	10.33	0.00	0.00	0.00
<b>Fund</b> ●	22.33	21.74	0.60	11.20	16.26	16.81	3.92	7.14
<b>Target</b> ▲	20.59	23.00	0.00	11.00	14.41	16.00	7.00	8.00
% Group Invested	96.45%	98.58%	76.60%	78.72%	94.33%	9.93%	31.21%	24.82%

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

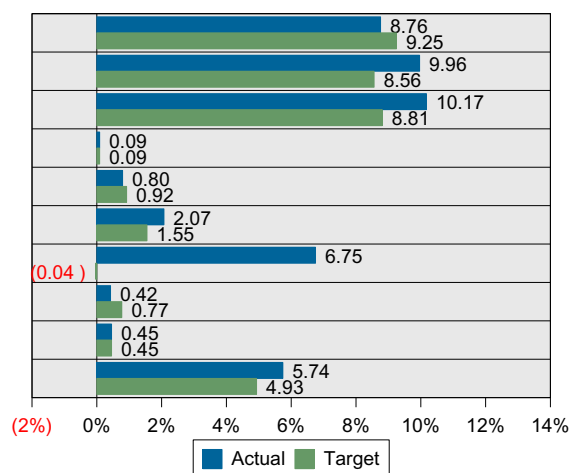
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

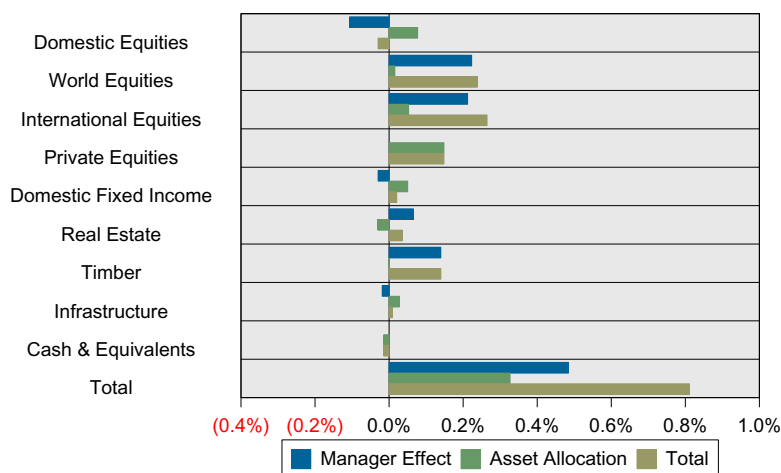
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

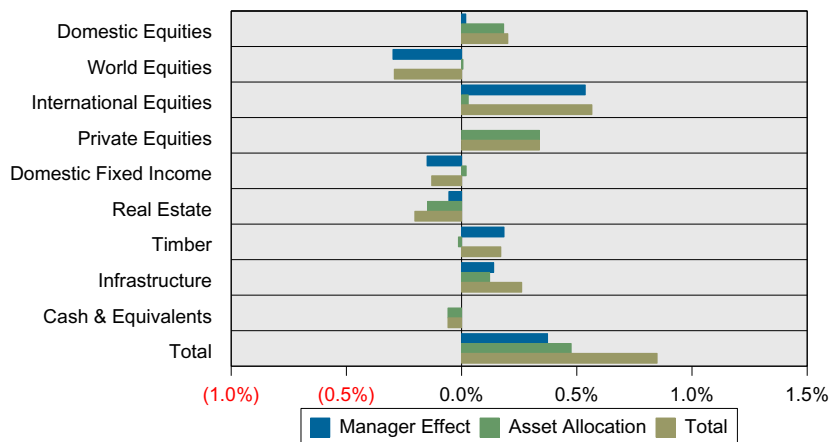
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	8.76%	9.25%	(0.11%)	0.08%	(0.03%)
World Equities	16%	16%	9.96%	8.56%	0.22%	0.02%	0.24%
International Equities	16%	14%	10.17%	8.81%	0.21%	0.05%	0.26%
Private Equities	4%	7%	0.09%	0.09%	0.00%	0.15%	0.15%
Domestic Fixed Income	22%	23%	0.80%	0.92%	(0.03%)	0.05%	0.02%
Real Estate	12%	11%	2.07%	1.55%	0.07%	(0.03%)	0.04%
Timber	2%	2%	6.75%	(0.04%)	0.14%	0.00%	0.14%
Infrastructure	5%	6%	0.42%	0.77%	(0.02%)	0.03%	0.01%
Cash & Equivalents	0%	0%	0.45%	0.45%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>5.74%</b>	<b>4.93%</b>	<b>+ 0.48%</b>	<b>+ 0.33%</b>	<b>0.81%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

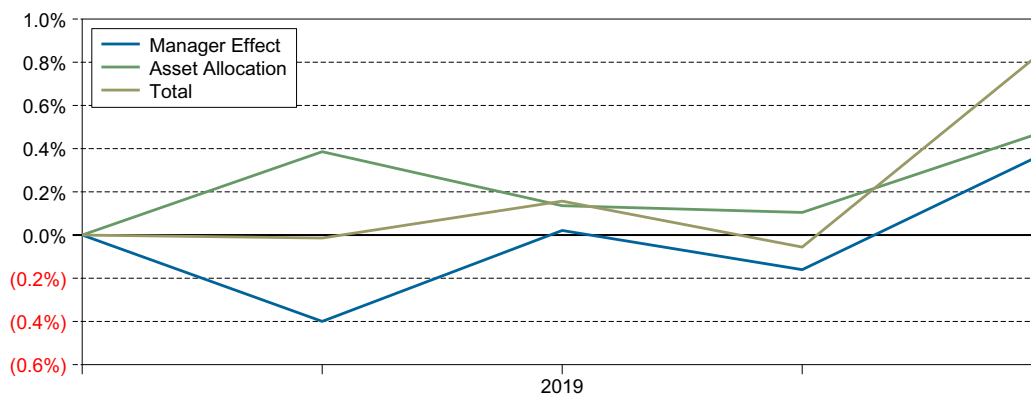
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

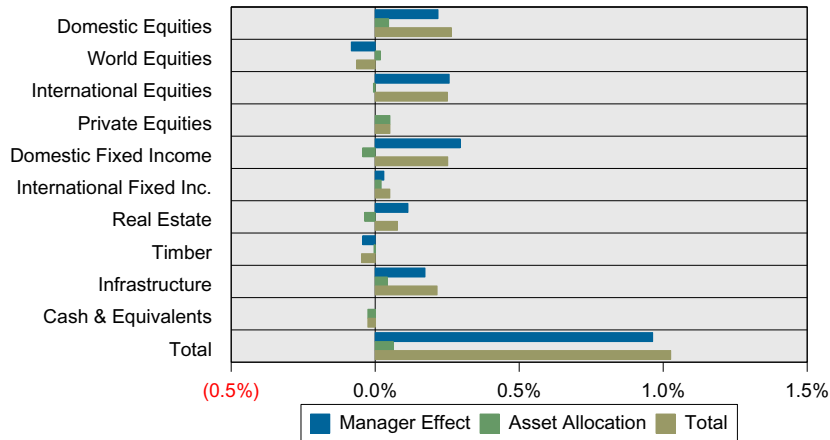
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	30.19%	30.07%	0.02%	0.18%	0.20%
World Equities	16%	16%	25.74%	27.67%	(0.30%)	0.01%	(0.29%)
International Equities	16%	14%	25.06%	21.56%	0.54%	0.03%	0.57%
Private Equities	4%	7%	7.06%	7.06%	0.00%	0.34%	0.34%
Domestic Fixed Income	23%	23%	9.78%	10.44%	(0.15%)	0.02%	(0.13%)
Real Estate	12%	11%	5.98%	6.42%	(0.06%)	(0.15%)	(0.20%)
Timber	2%	2%	9.39%	1.30%	0.18%	(0.01%)	0.17%
Infrastructure	5%	6%	6.02%	3.43%	0.14%	0.12%	0.26%
Cash & Equivalents	0%	0%	2.23%	2.23%	0.00%	(0.06%)	(0.06%)
<b>Total</b>			<b>18.26%</b>	<b>17.41%</b>	<b>+ 0.37%</b>	<b>+ 0.48%</b>	<b>0.85%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

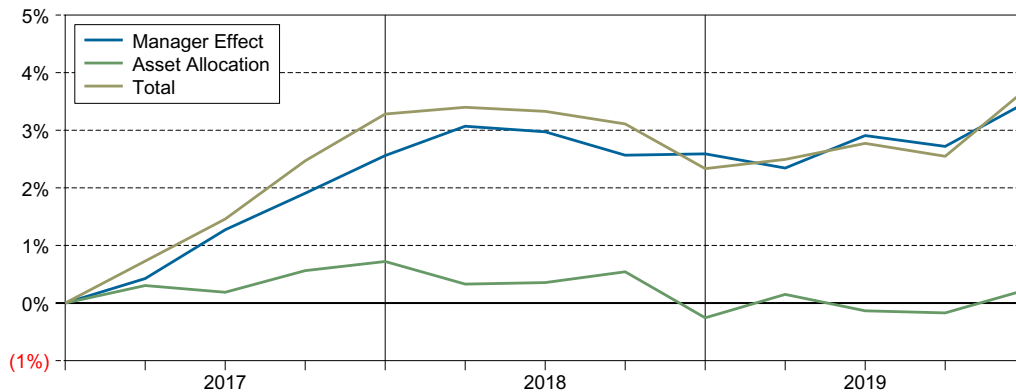
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

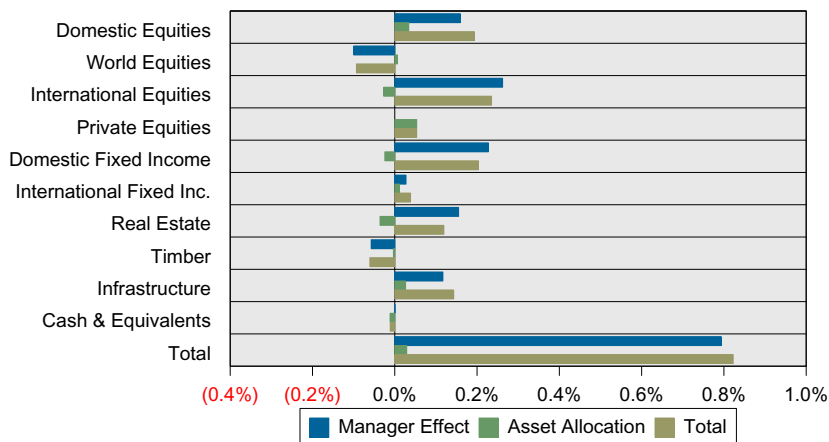
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	14.55%	13.56%	0.22%	0.05%	0.26%
World Equities	17%	16%	12.00%	12.57%	(0.08%)	0.02%	(0.06%)
International Equities	16%	14%	11.47%	9.91%	0.26%	(0.01%)	0.25%
Private Equities	3%	7%	6.65%	6.65%	0.00%	0.05%	0.05%
Domestic Fixed Income	21%	21%	6.16%	4.71%	0.30%	(0.04%)	0.25%
International Fixed Inc.	2%	2%	-	-	0.03%	0.02%	0.05%
Real Estate	11%	11%	7.72%	6.70%	0.11%	(0.04%)	0.08%
Timber	2%	2%	1.46%	2.71%	(0.04%)	(0.00%)	(0.05%)
Infrastructure	5%	6%	7.31%	3.41%	0.17%	0.04%	0.21%
Cash & Equivalents	1%	0%	1.75%	1.75%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>10.12%</b>	<b>9.10%</b>	<b>+ 0.96%</b>	<b>+ 0.06%</b>	<b>1.03%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

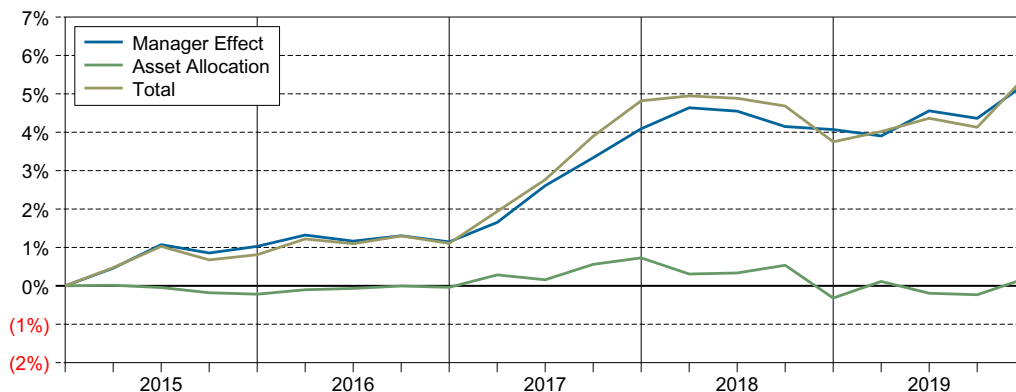
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

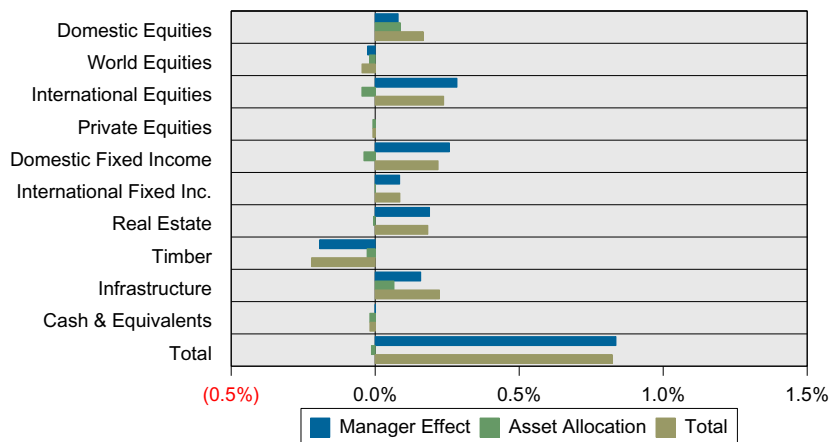
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.50%	10.78%	0.16%	0.03%	0.19%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.01%	(0.09%)
International Equities	16%	14%	7.32%	5.67%	0.26%	(0.03%)	0.24%
Private Equities	3%	6%	2.23%	2.23%	0.00%	0.05%	0.05%
Domestic Fixed Income	20%	20%	5.12%	3.95%	0.23%	(0.02%)	0.20%
International Fixed Inc.	3%	3%	-	-	0.03%	0.01%	0.04%
Real Estate	11%	11%	9.73%	8.25%	0.16%	(0.04%)	0.12%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.00%)	(0.06%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.03%	0.14%
Cash & Equivalents	1%	0%	1.17%	1.14%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>7.67%</b>	<b>6.85%</b>	<b>+ 0.79%</b>	<b>+ 0.03%</b>	<b>0.82%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

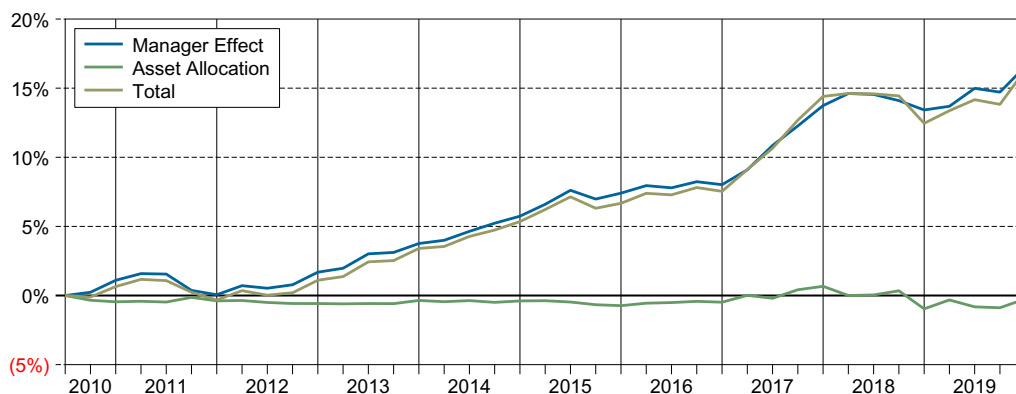
## Cumulative Total Fund Relative Attribution - December 31, 2019

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.

### Nine and One-Half Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Nine and One-Half Year Annualized Relative Attribution Effects

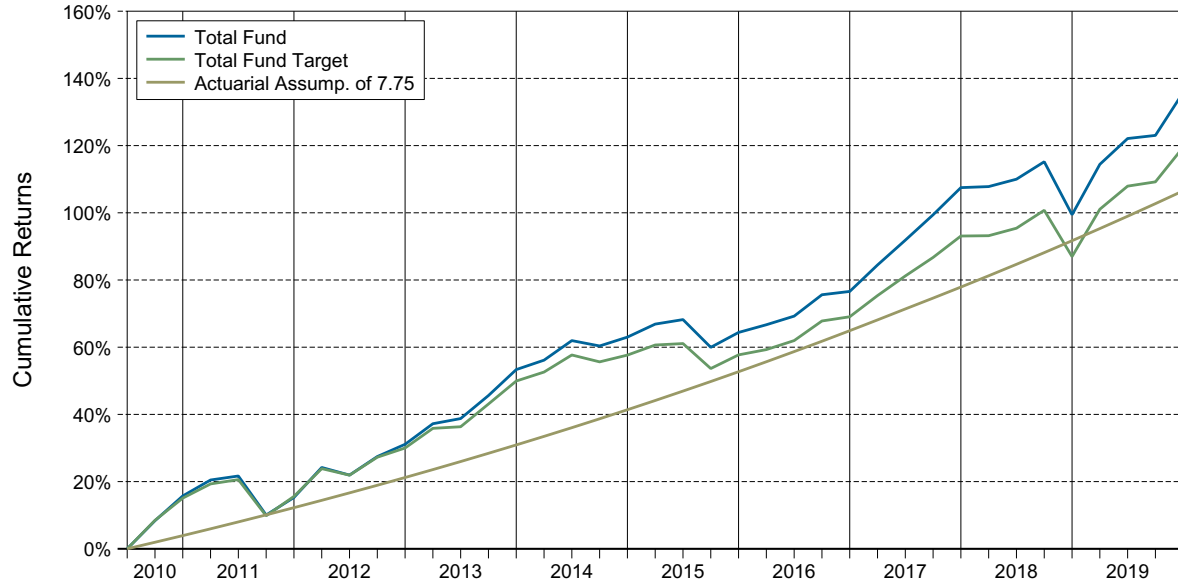
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	26%	24%	15.10%	14.59%	0.08%	0.09%	0.17%
World Equities	13%	12%	-	-	(0.03%)	(0.02%)	(0.05%)
International Equities	16%	15%	8.15%	6.31%	0.28%	(0.05%)	0.24%
Private Equities	4%	6%	4.29%	4.29%	0.00%	(0.01%)	(0.01%)
Domestic Fixed Income	20%	20%	6.03%	4.58%	0.26%	(0.04%)	0.22%
International Fixed Inc.	4%	4%	-	-	0.08%	0.00%	0.09%
Real Estate	10%	10%	12.54%	10.27%	0.19%	(0.01%)	0.18%
Timber	3%	3%	-	-	(0.19%)	(0.03%)	(0.22%)
Infrastructure	4%	5%	-	-	0.16%	0.07%	0.22%
Cash & Equivalents	1%	1%	0.66%	0.64%	0.00%	(0.02%)	(0.02%)
<b>Total</b>			<b>9.45%</b>	<b>8.63%</b>	<b>+ 0.84%</b>	<b>+ (0.01%)</b>	<b>0.82%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

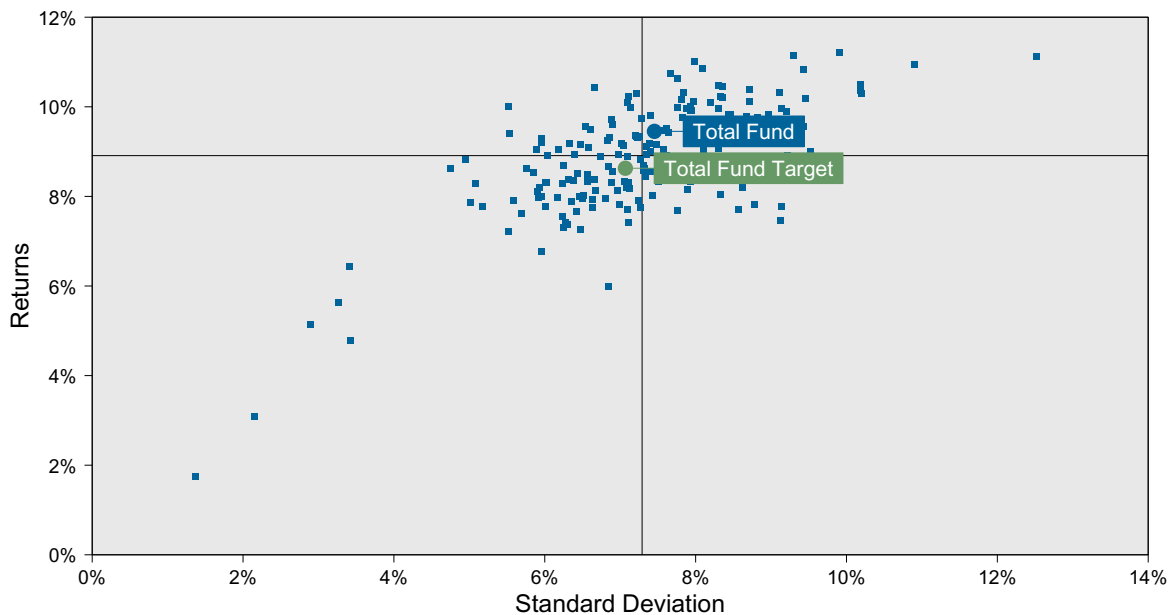
## Cumulative Performance Relative to Target

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



### Nine and One-Half Year Annualized Risk vs Return



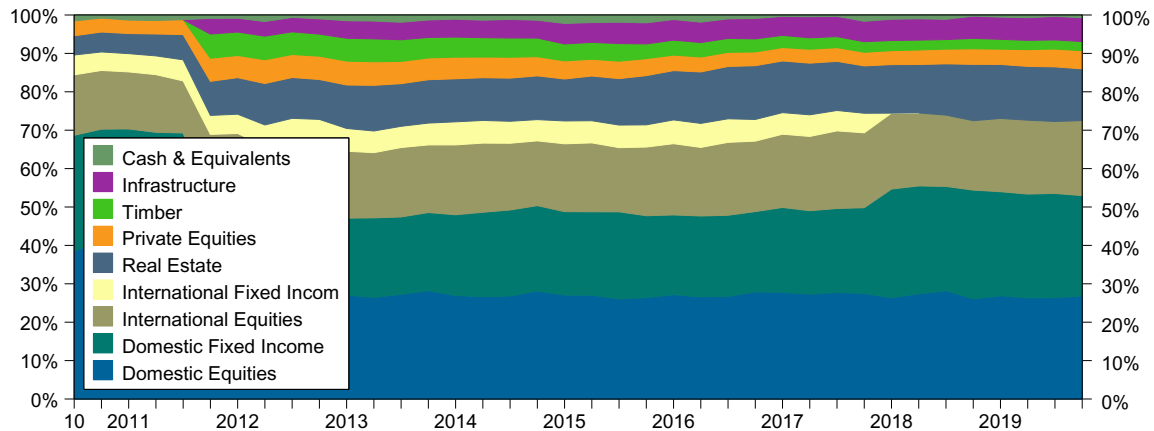
Squares represent membership of the Callan Public Fund Sponsor Database

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

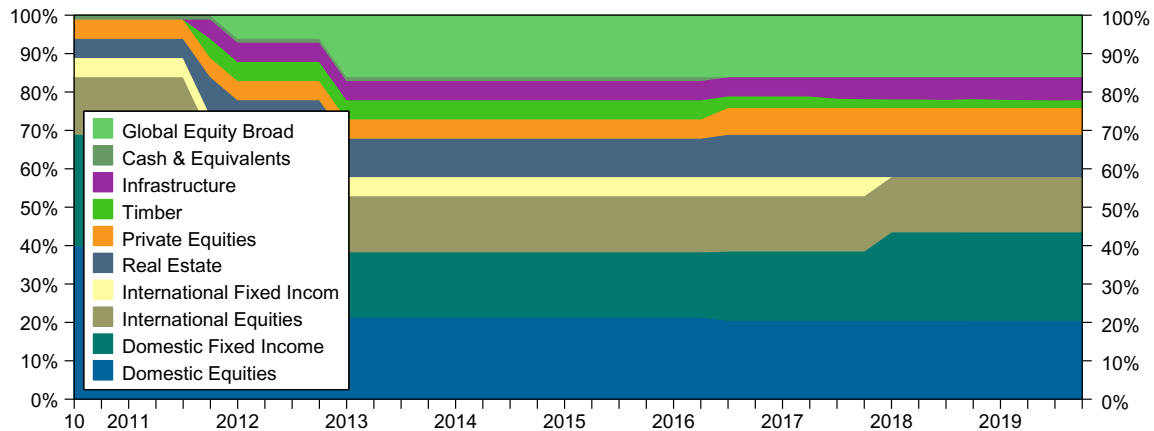
## Actual vs Target Historical Asset Allocation

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.

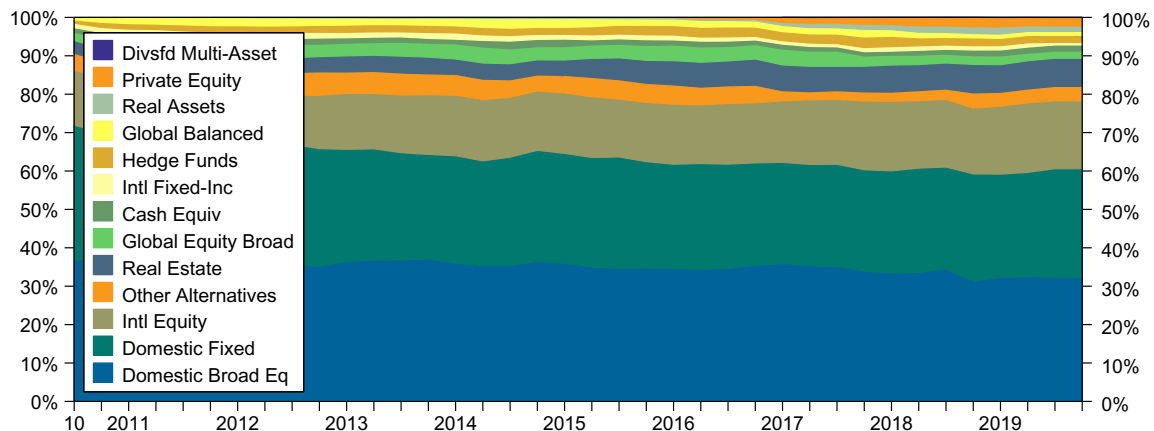
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation



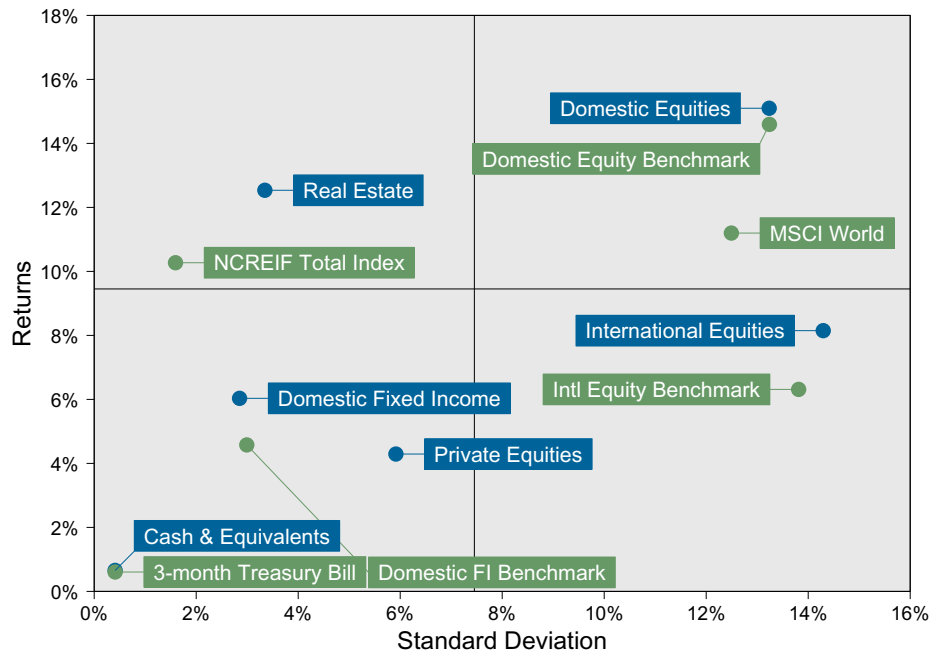
\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.



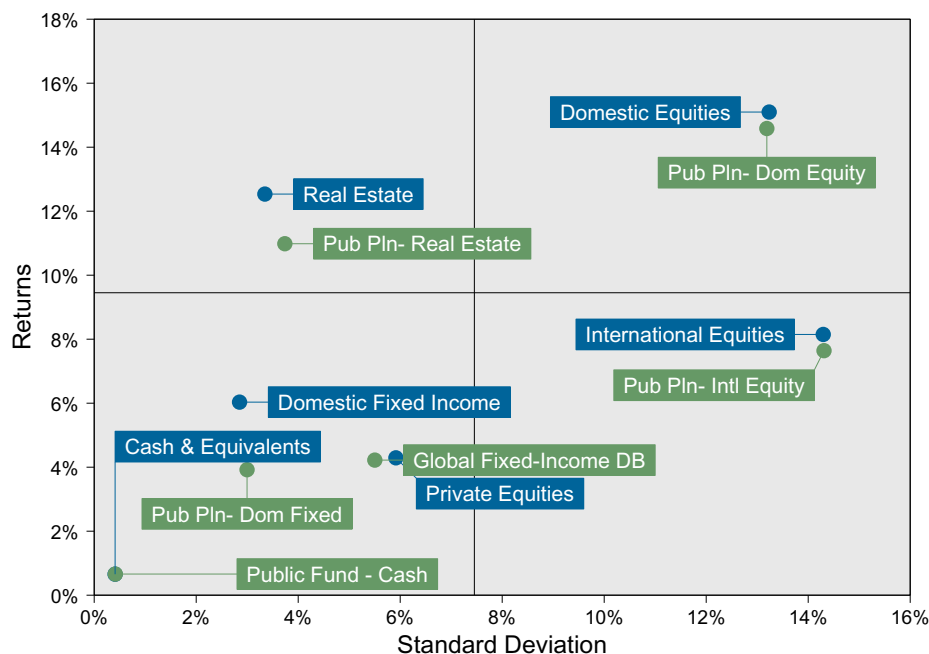
## Asset Class Risk and Return

The charts below show the nine and one-half 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.

**Nine and One-Half Year Annualized Risk vs Return  
Asset Classes vs Benchmark Indices**



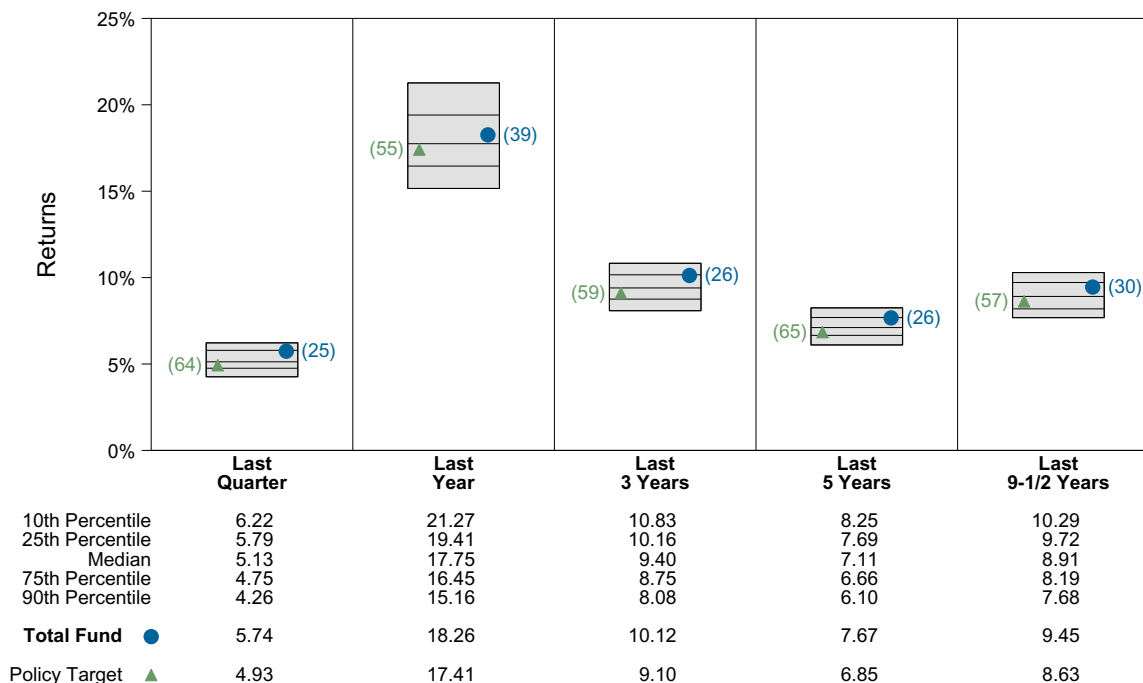
**Nine and One-Half Year Annualized Risk vs Return  
Asset Classes vs Asset Class Median**



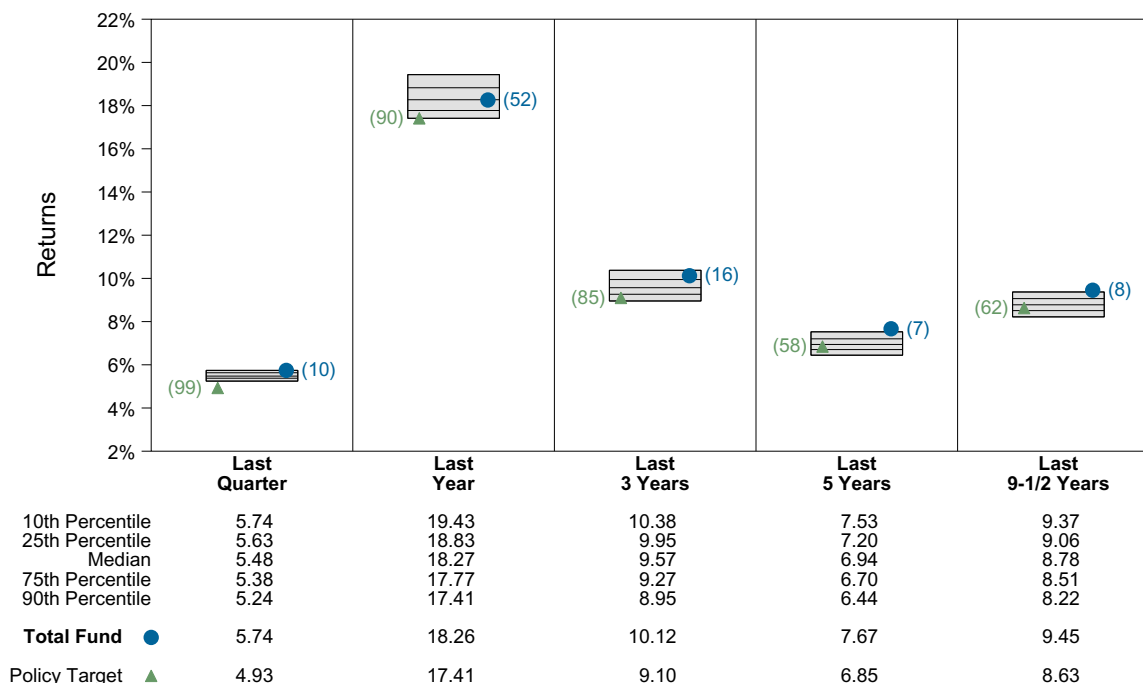
## Total Fund Ranking

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 December 31, 2019. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

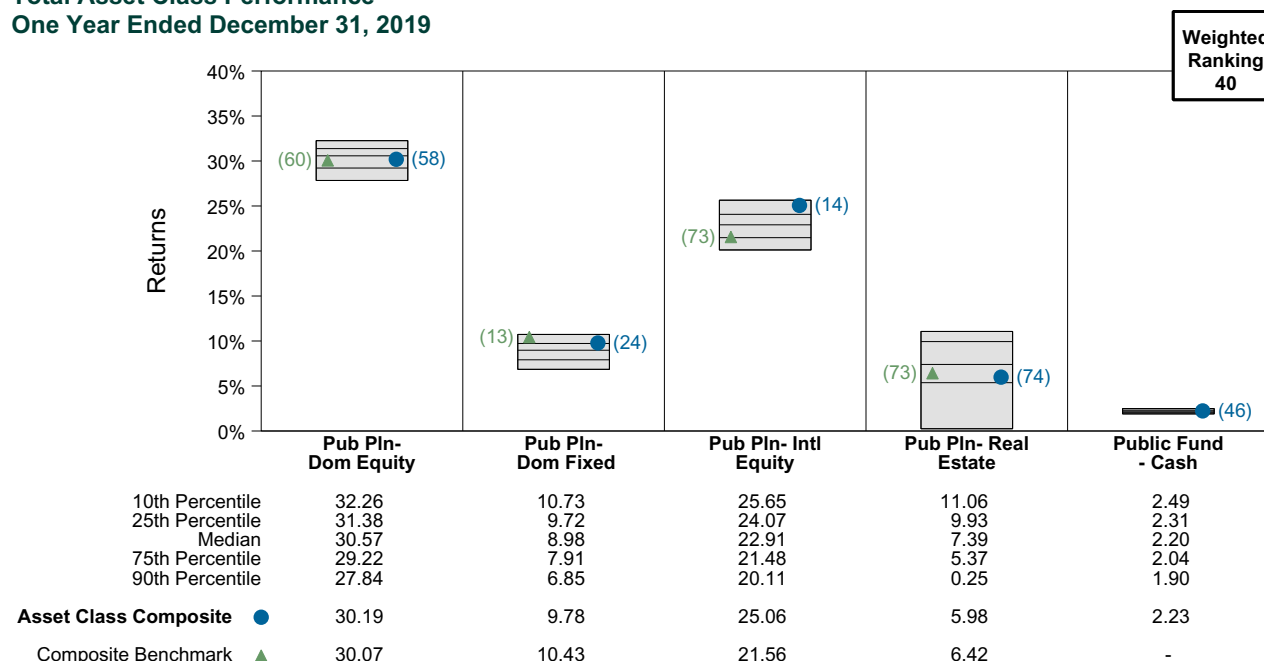


\* Current Quarter Target = 16.0% Bimbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Bimbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

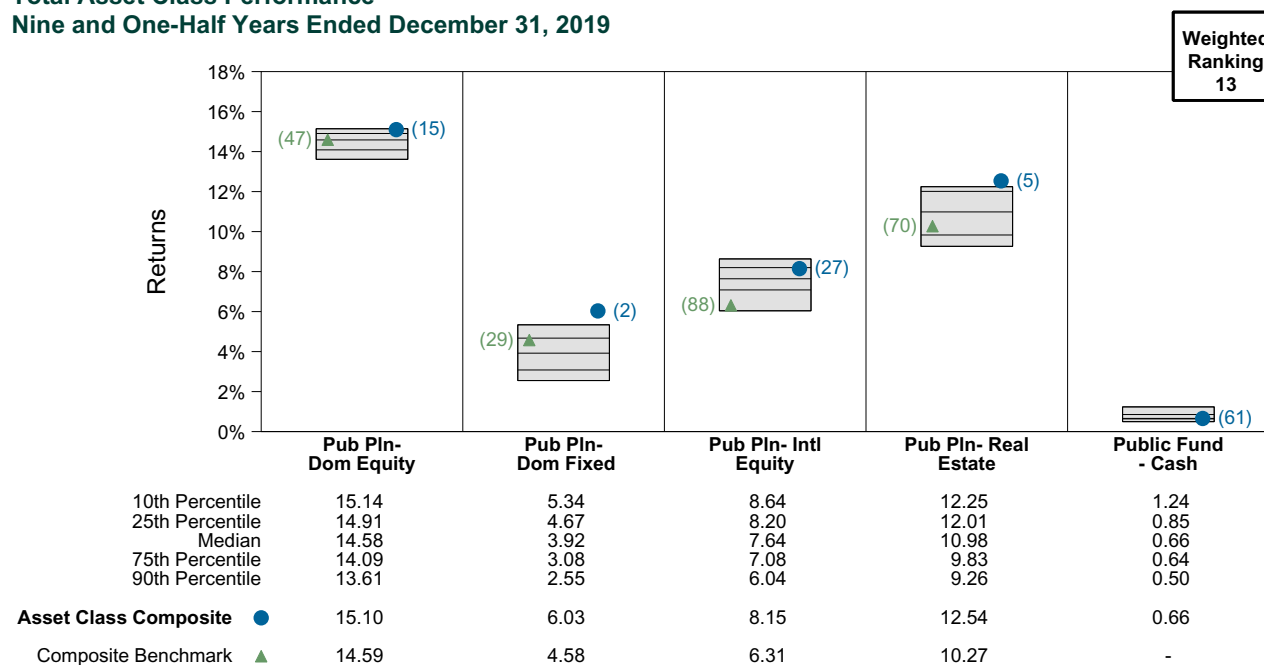
## Asset Class Rankings

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 December 31, 2019



### Total Asset Class Performance Nine and One-Half Years Ended December 31, 2019



\* Current Quarter Target = 16.0% Bimbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Bimbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019				September 30, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Equities</b>	<b>\$1,969,009,470</b>	<b>59.31%</b>	<b>\$(18,367,557)</b>	<b>\$162,294,627</b>	<b>\$1,825,082,399</b>	<b>57.93%</b>
<b>Public Equities</b>	<b>\$1,838,881,637</b>	<b>55.39%</b>	<b>\$(25,828,776)</b>	<b>\$162,187,542</b>	<b>\$1,702,522,871</b>	<b>54.04%</b>
<b>World Equities</b>	<b>\$558,066,839</b>	<b>16.81%</b>	<b>\$(4,423,145)</b>	<b>\$50,698,394</b>	<b>\$511,791,590</b>	<b>16.24%</b>
<b>Domestic Equities</b>	<b>\$741,174,049</b>	<b>22.33%</b>	<b>\$(16,130,786)</b>	<b>\$61,143,791</b>	<b>\$696,161,045</b>	<b>22.10%</b>
Large Cap	564,570,037	17.01%	(12,845,612)	48,639,540	528,776,109	16.78%
Small Cap	176,604,012	5.32%	(3,285,174)	12,504,251	167,384,936	5.31%
<b>International Equities</b>	<b>\$539,640,749</b>	<b>16.26%</b>	<b>\$(5,274,845)</b>	<b>\$50,345,358</b>	<b>\$494,570,236</b>	<b>15.70%</b>
Developed	399,471,851	12.03%	(6,089,845)	35,639,220	369,922,476	11.74%
Emerging Markets	140,168,898	4.22%	815,000	14,706,138	124,647,760	3.96%
<b>Private Equities</b>	<b>\$130,127,832</b>	<b>3.92%</b>	<b>\$7,461,219</b>	<b>\$107,085</b>	<b>\$122,559,528</b>	<b>3.89%</b>
<b>Global Fixed Income</b>	<b>\$721,589,014</b>	<b>21.74%</b>	<b>\$(285,836)</b>	<b>\$5,525,698</b>	<b>\$716,349,153</b>	<b>22.74%</b>
<b>Domestic Fixed Income</b>	<b>\$721,589,014</b>	<b>21.74%</b>	<b>\$(285,836)</b>	<b>\$5,525,698</b>	<b>\$716,349,153</b>	<b>22.74%</b>
Investment Grade	508,348,334	15.31%	13,024,958	233,857	495,089,519	15.71%
Below Investment Grade	213,240,681	6.42%	(13,310,794)	5,291,841	221,259,633	7.02%
<b>Global Real Assets</b>	<b>\$609,079,014</b>	<b>18.35%</b>	<b>\$(3,875,119)</b>	<b>\$12,718,638</b>	<b>\$600,235,496</b>	<b>19.05%</b>
<b>Real Estate</b>	<b>\$371,929,490</b>	<b>11.20%</b>	<b>\$(11,134,133)</b>	<b>\$7,817,880</b>	<b>\$375,245,744</b>	<b>11.91%</b>
<b>Other Real Assets</b>	<b>\$237,149,524</b>	<b>7.14%</b>	<b>\$7,259,014</b>	<b>\$4,900,758</b>	<b>\$224,989,753</b>	<b>7.14%</b>
Infrastructure	170,741,390	5.14%	7,720,203	692,204	162,328,982	5.15%
Timber	66,408,134	2.00%	(461,190)	4,208,554	62,660,770	1.99%
<b>Cash</b>	<b>\$20,030,288</b>	<b>0.60%</b>	<b>\$11,048,980</b>	<b>\$48,977</b>	<b>\$8,932,331</b>	<b>0.28%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(48,773)</b>	<b>\$48,773</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$3,319,707,786</b>	<b>100.0%</b>	<b>\$(11,528,305)</b>	<b>\$180,636,712</b>	<b>\$3,150,599,379</b>	<b>100.0%</b>

PLEASE REFER TO PAGES 29-31 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Global Equities</b>					
Gross	8.87%	25.98%	12.50%	8.81%	-
Net	8.82%	25.74%	12.27%	8.55%	-
Weighted Benchmark	7.85%	24.54%	11.79%	8.17%	-
<b>Public Equities</b>					
Gross	9.52%	27.33%	-	-	-
Net	9.46%	27.07%	-	-	-
Weighted Benchmark	8.92%	26.89%	-	-	-
<b>World Equities</b>					
Gross	9.96%	25.74%	12.00%	8.07%	-
Net	9.87%	25.33%	11.61%	7.60%	-
MSCI World	8.56%	27.67%	12.57%	8.74%	11.20%
<b>Domestic Equities</b>					
Gross	8.76%	30.19%	14.55%	11.50%	15.10%
Net	8.72%	29.98%	14.36%	11.32%	14.86%
Weighted Benchmark	9.25%	30.07%	13.56%	10.78%	14.59%
<b>Large Cap</b>					
Gross	9.21%	31.26%	15.57%	12.17%	15.54%
Net	9.18%	31.13%	15.45%	12.04%	15.33%
Benchmark(1)	9.04%	31.43%	15.05%	11.48%	15.10%
<b>Small Cap Equity</b>					
Gross	7.35%	26.98%	11.44%	9.25%	13.59%
Net	7.26%	26.55%	11.05%	8.89%	13.27%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	12.72%
<b>International Equities</b>					
Gross	10.17%	25.06%	11.47%	7.32%	8.15%
Net	10.13%	24.88%	11.29%	7.13%	7.87%
Weighted Benchmark	8.81%	21.56%	9.91%	5.67%	6.31%
<b>Developed</b>					
Gross	9.62%	26.01%	11.07%	7.43%	8.60%
Net	9.56%	25.75%	10.83%	7.19%	8.31%
Benchmark(2)	7.86%	22.49%	9.34%	5.59%	6.74%
<b>Emerging Markets</b>					
Gross	11.78%	22.29%	12.46%	6.56%	6.30%
Net	11.78%	22.29%	12.46%	6.56%	6.09%
Benchmark(3)	11.84%	18.44%	11.58%	5.61%	4.61%
<b>Private Equities</b>					
Net	0.09%	7.06%	6.64%	2.22%	4.24%

(1) S&P 500 Index through 12/31/2011 and the Russell 1000 Index thereafter.

(2) 50% Hedged EAFE through 3/31/2011, MSCI EAFE through 6/30/2016; MSCI World ex-US thereafter.

(3) MSCI Emerging Mkts Idx (Gross) through 6/30/2011 and MSCI Emerging Mkts Idx Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Global Fixed Income</b>					
Gross	0.80%	9.78%	6.69%	4.98%	-
Net	0.76%	9.61%	6.51%	4.76%	-
Weighted Benchmark	0.92%	10.43%	5.41%	3.92%	-
<b>Domestic Fixed Income</b>					
Gross	0.80%	9.78%	6.16%	5.12%	6.03%
Net	0.76%	9.61%	5.99%	4.93%	5.81%
Weighted Benchmark	0.92%	10.43%	4.71%	3.95%	4.58%
<b>Inv. Grade Fixed Income</b>					
Gross	0.06%	9.85%	5.62%	4.47%	5.11%
Net	0.03%	9.73%	5.51%	4.36%	4.96%
Bmbg Aggregate Index	0.18%	8.72%	4.03%	3.05%	3.38%
<b>Below Inv. Grade Fixed Income</b>					
Gross	2.51%	9.64%	7.38%	6.59%	8.41%
Net	2.46%	9.37%	7.08%	6.24%	8.01%
Bmbg HY Corp 2% Issue	2.61%	14.32%	6.36%	6.14%	7.47%
<b>Global Real Assets</b>					
Gross	2.10%	6.32%	6.69%	7.18%	-
Net	2.05%	5.86%	6.27%	6.74%	-
Weighted Benchmark	1.13%	4.92%	5.23%	5.74%	-
<b>Real Estate</b>					
Gross	2.07%	5.98%	7.72%	9.73%	12.54%
Net	2.03%	5.43%	7.24%	9.20%	11.99%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.27%
<b>Other Real Assets</b>					
Gross	2.16%	6.90%	-	-	-
Net	2.09%	6.60%	-	-	-
Weighted Benchmark	0.57%	2.87%	-	-	-
<b>Infrastructure</b>					
Gross	0.42%	6.02%	7.31%	5.12%	-
Net	0.33%	5.59%	6.83%	4.61%	-
Benchmark(1)	0.77%	3.43%	3.41%	2.51%	-
<b>Timber</b>					
Net	6.75%	9.39%	1.46%	1.18%	-
NCREIF Timberland Index	(0.04%)	1.30%	2.71%	3.13%	4.61%
<b>Cash &amp; Equivalents - Net</b>	<b>0.45%</b>	<b>2.23%</b>	<b>1.75%</b>	<b>1.17%</b>	<b>0.66%</b>
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.61%
<b>Total Fund</b>					
Gross	5.74%	18.26%	10.12%	7.67%	9.45%
Net	5.69%	17.99%	9.87%	7.39%	9.14%
Target*	4.93%	17.41%	9.10%	6.85%	8.63%

\* Current Quarter Target = 16.0% Bmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Bmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

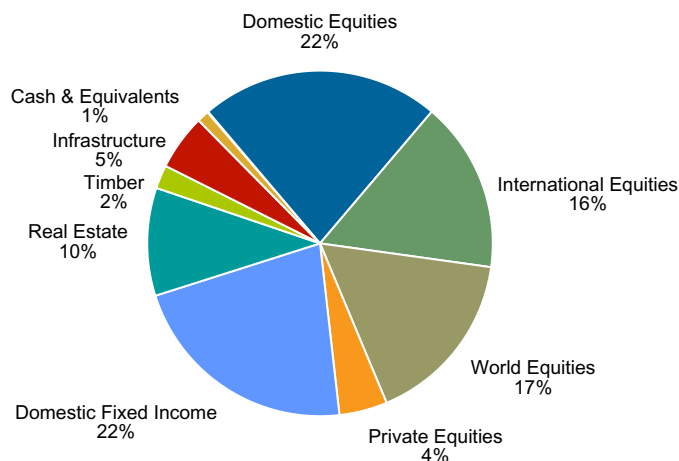
(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

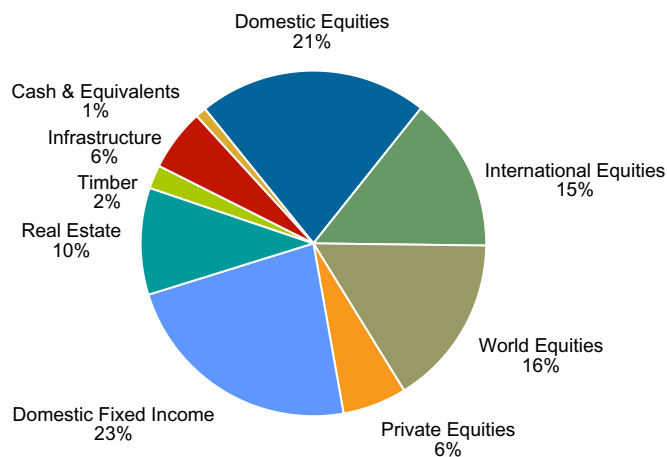
## Actual vs Target Asset Allocation As of December 31, 2019

The top left chart shows the Fund's asset allocation as of December 31, 2019. 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**

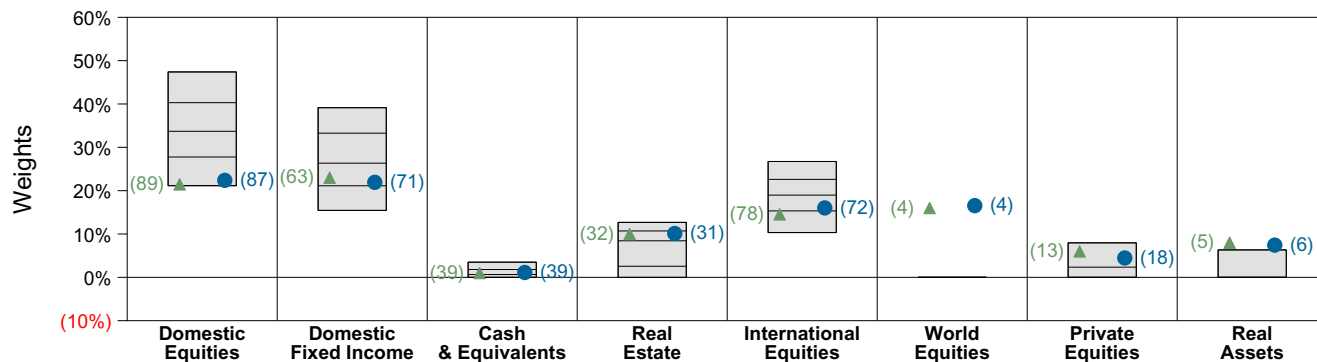


**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	601,366	22.4%	21.5%	0.9%	24,641
International Equities	430,470	16.0%	14.5%	1.5%	39,786
World Equities	444,577	16.5%	16.0%	0.5%	14,617
Private Equities	120,097	4.5%	6.0%	(1.5%)	(41,138)
Domestic Fixed Income	589,172	21.9%	23.0%	(1.1%)	(28,896)
Real Estate	271,827	10.1%	10.0%	0.1%	3,102
Timber	59,278	2.2%	2.2%	0.0%	0
Infrastructure	140,471	5.2%	5.8%	(0.6%)	(15,232)
Cash & Equivalents	29,993	1.1%	1.0%	0.1%	3,120
Total	2,687,250	100.0%	100.0%		

### Asset Class Weights vs Callan Public Fund Sponsor Database



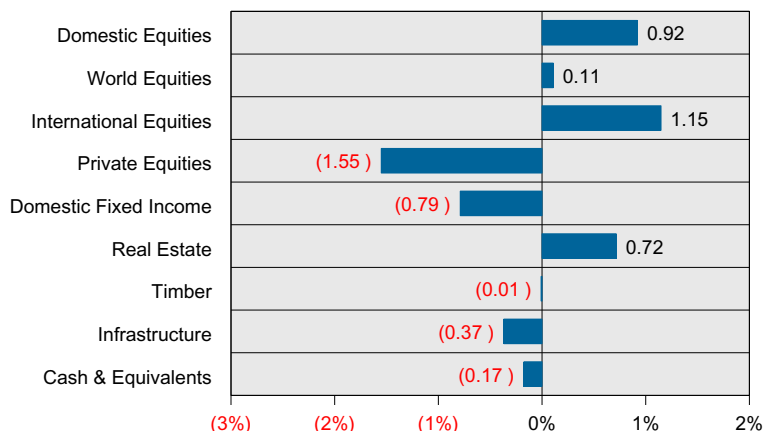
10th Percentile	47.40	39.14	3.50	12.68	26.73	0.00	7.96	6.33
25th Percentile	40.30	33.27	1.81	10.70	22.61	0.00	2.35	0.00
Median	33.70	26.34	0.65	8.44	18.97	0.00	0.00	0.00
75th Percentile	27.77	21.13	0.01	2.56	15.33	0.00	0.00	0.00
90th Percentile	21.15	15.44	0.00	0.00	10.33	0.00	0.00	0.00
<b>Fund</b>	22.38	21.92	1.12	10.12	16.02	16.54	4.47	7.43
<b>Target</b>	21.46	23.00	1.00	10.00	14.54	16.00	6.00	8.00
% Group Invested	96.45%	98.58%	76.60%	78.72%	94.33%	9.93%	31.21%	24.82%

\* 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 Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

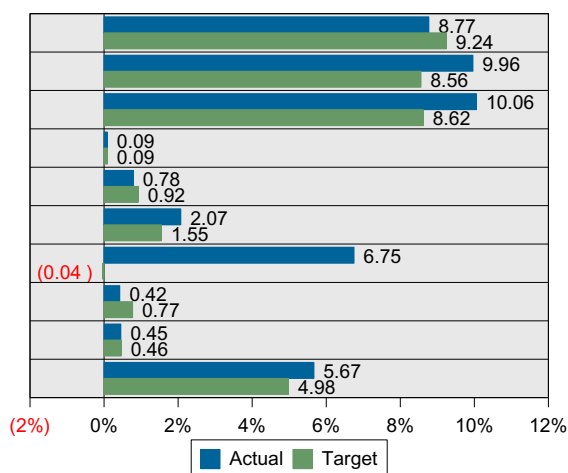
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

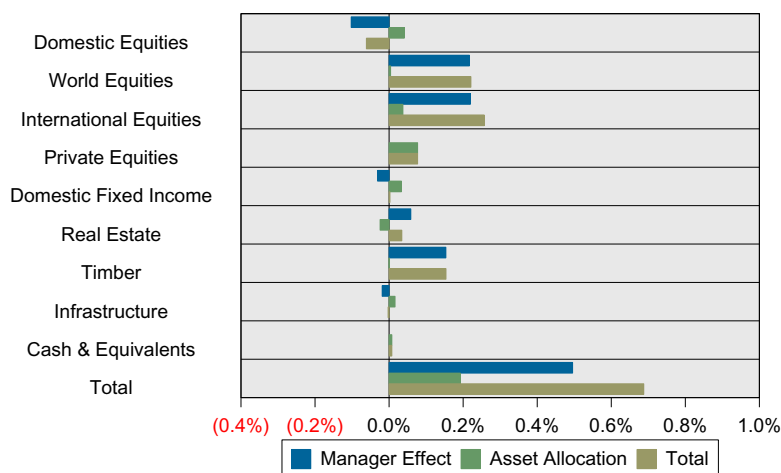
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	8.77%	9.24%	(0.10)%	0.04%	(0.06)%
World Equities	16%	16%	9.96%	8.56%	0.22%	0.00%	0.22%
International Equities	16%	15%	10.06%	8.62%	0.22%	0.04%	0.26%
Private Equities	4%	6%	0.09%	0.09%	0.00%	0.08%	0.08%
Domestic Fixed Income	22%	23%	0.78%	0.92%	(0.03)%	0.03%	0.00%
Real Estate	11%	10%	2.07%	1.55%	0.06%	(0.02)%	0.03%
Timber	2%	2%	6.75%	(0.04)%	0.15%	0.00%	0.15%
Infrastructure	5%	6%	0.42%	0.77%	(0.02)%	0.02%	(0.00)%
Cash & Equivalents	1%	1%	0.45%	0.46%	0.00%	0.01%	0.01%
<b>Total</b>			<b>5.67%</b>	<b>4.98%</b>	<b>+ 0.50%</b>	<b>+ 0.19%</b>	<b>0.69%</b>

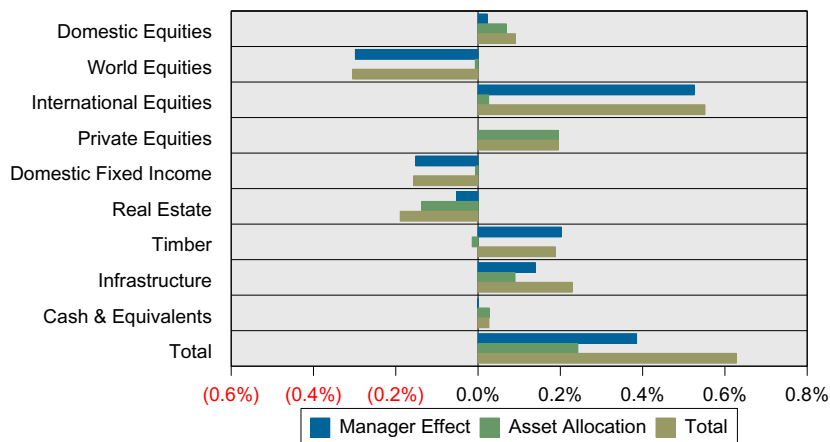
\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.



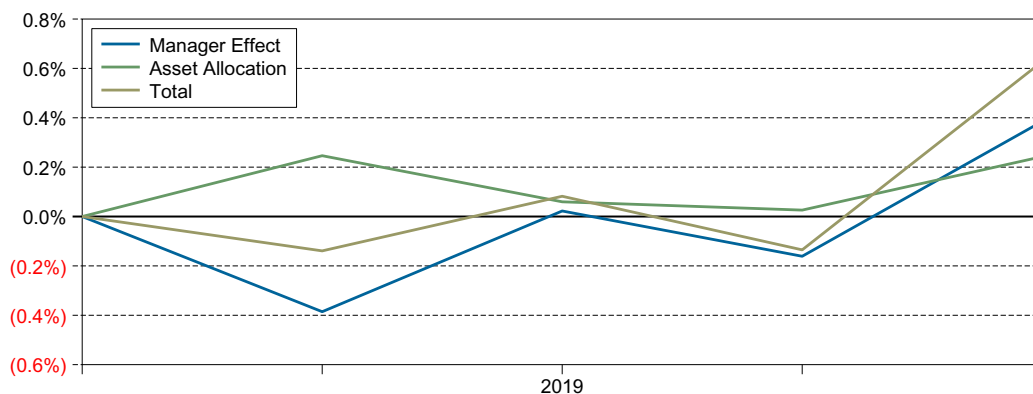
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

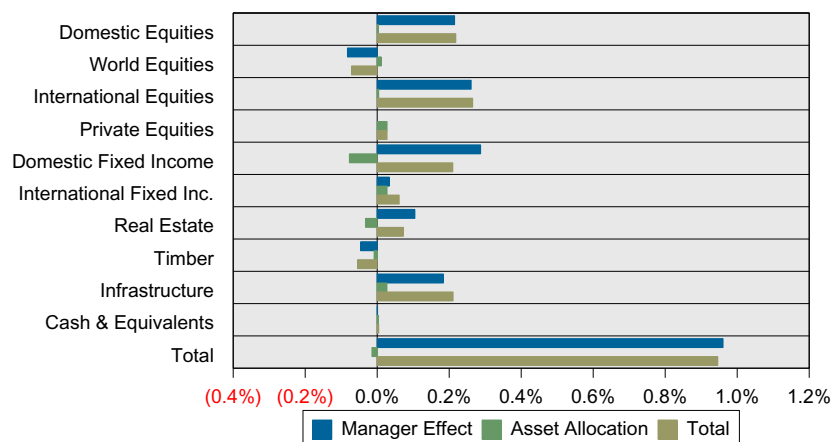
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	30.26%	30.11%	0.02%	0.07%	0.09%
World Equities	16%	16%	25.74%	27.67%	(0.30%)	(0.01%)	(0.30%)
International Equities	16%	15%	25.22%	21.75%	0.53%	0.03%	0.55%
Private Equities	4%	6%	7.04%	7.04%	0.00%	0.19%	0.19%
Domestic Fixed Income	23%	23%	9.77%	10.44%	(0.15%)	(0.01%)	(0.16%)
Real Estate	11%	10%	5.98%	6.42%	(0.05%)	(0.14%)	(0.19%)
Timber	2%	2%	9.39%	1.30%	0.20%	(0.01%)	0.19%
Infrastructure	5%	6%	6.02%	3.43%	0.14%	0.09%	0.23%
Cash & Equivalents	1%	1%	2.22%	2.28%	(0.00%)	0.03%	0.03%
<b>Total</b>			<b>18.24%</b>	<b>17.61%</b>	<b>+ 0.39%</b>	<b>+ 0.24%</b>	<b>0.63%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

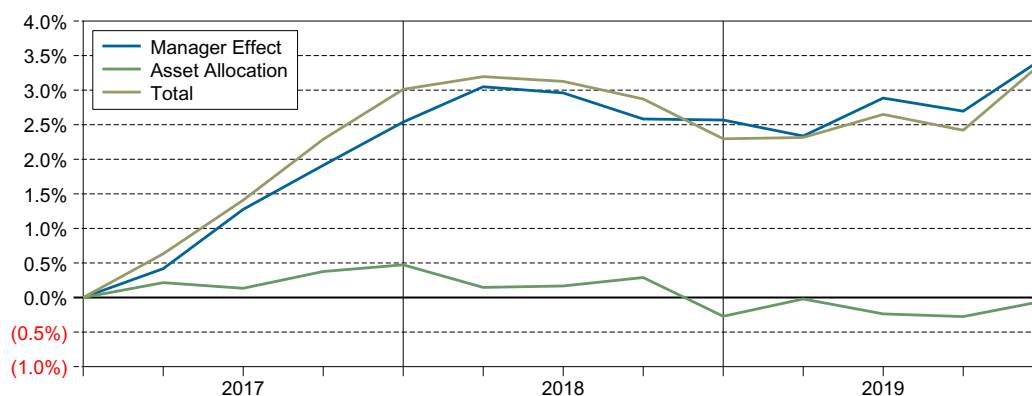
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

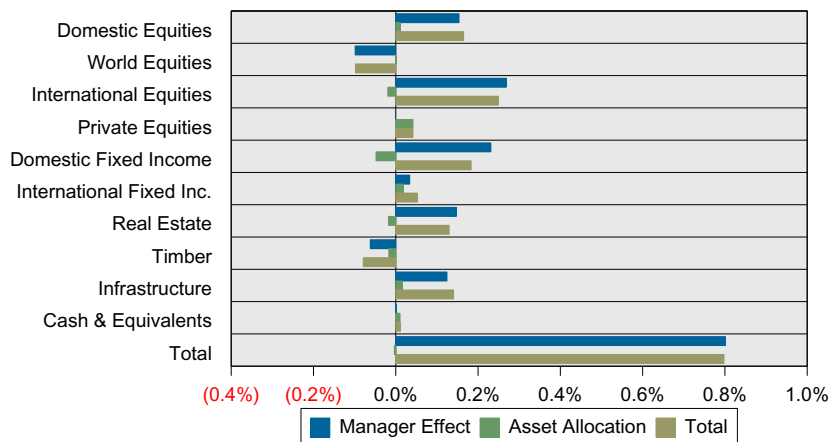
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	14.59%	13.61%	0.21%	0.00%	0.22%
World Equities	17%	16%	12.00%	12.57%	(0.08%)	0.01%	(0.07%)
International Equities	16%	15%	11.39%	9.80%	0.26%	0.00%	0.27%
Private Equities	4%	6%	6.64%	6.64%	0.00%	0.03%	0.03%
Domestic Fixed Income	21%	21%	6.08%	4.63%	0.29%	(0.08%)	0.21%
International Fixed Inc.	2%	2%	-	-	0.03%	0.03%	0.06%
Real Estate	10%	10%	7.73%	6.70%	0.10%	(0.03%)	0.07%
Timber	2%	2%	1.46%	2.71%	(0.05%)	(0.01%)	(0.05%)
Infrastructure	5%	6%	7.31%	3.41%	0.18%	0.03%	0.21%
Cash & Equivalents	1%	1%	1.75%	1.67%	0.00%	0.00%	0.00%
<b>Total</b>			<b>10.06%</b>	<b>9.12%</b>	<b>+ 0.96%</b>	<b>+ (0.01%)</b>	<b>0.95%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

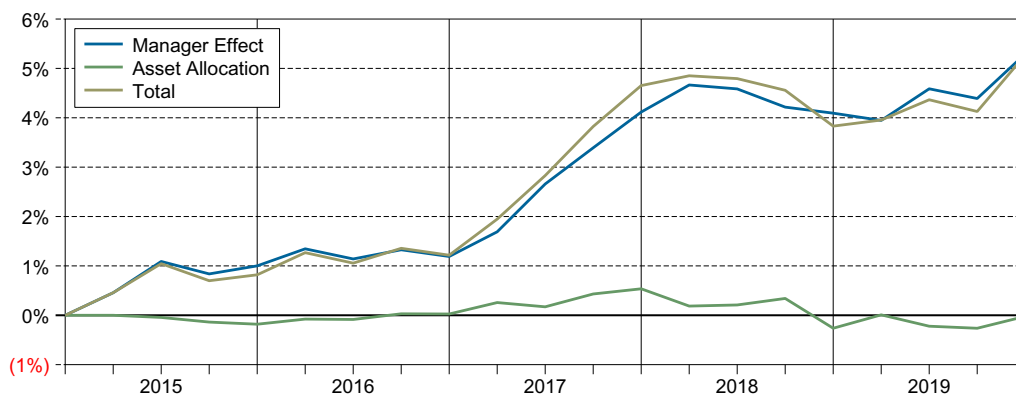
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

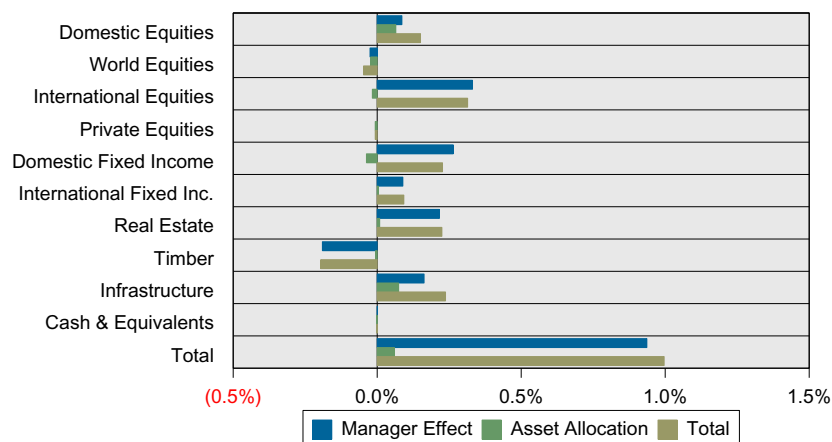
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.51%	10.80%	0.15%	0.01%	0.16%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.00%	(0.10%)
International Equities	15%	15%	7.34%	5.66%	0.27%	(0.02%)	0.25%
Private Equities	4%	6%	2.22%	2.22%	0.00%	0.04%	0.04%
Domestic Fixed Income	20%	19%	5.03%	3.81%	0.23%	(0.05%)	0.18%
International Fixed Inc.	3%	3%	-	-	0.03%	0.02%	0.05%
Real Estate	10%	10%	9.73%	8.25%	0.15%	(0.02%)	0.13%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.02%)	(0.08%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.02%	0.14%
Cash & Equivalents	1%	1%	1.17%	1.07%	0.00%	0.01%	0.01%
<b>Total</b>			<b>7.63%</b>	<b>6.83%</b>	<b>+ 0.80%</b>	<b>(0.00%)</b>	<b>0.80%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

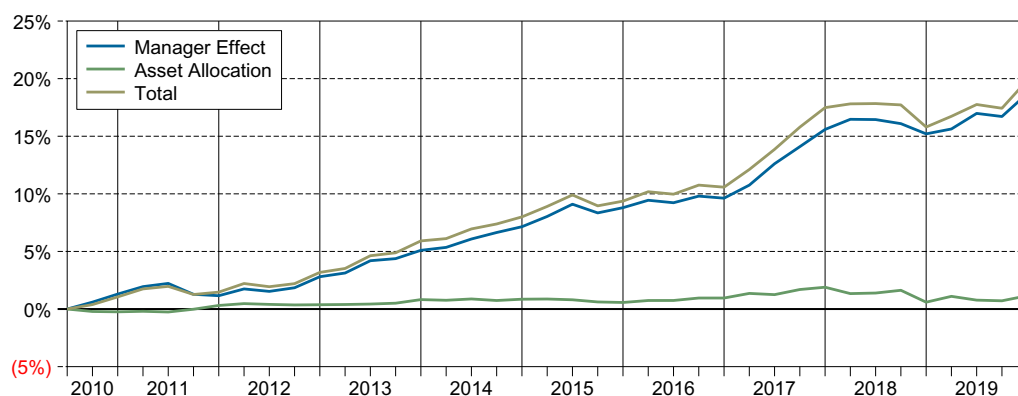
## Cumulative Total Fund Relative Attribution - December 31, 2019

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.

### Nine and One-Half Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Nine and One-Half Year Annualized Relative Attribution Effects

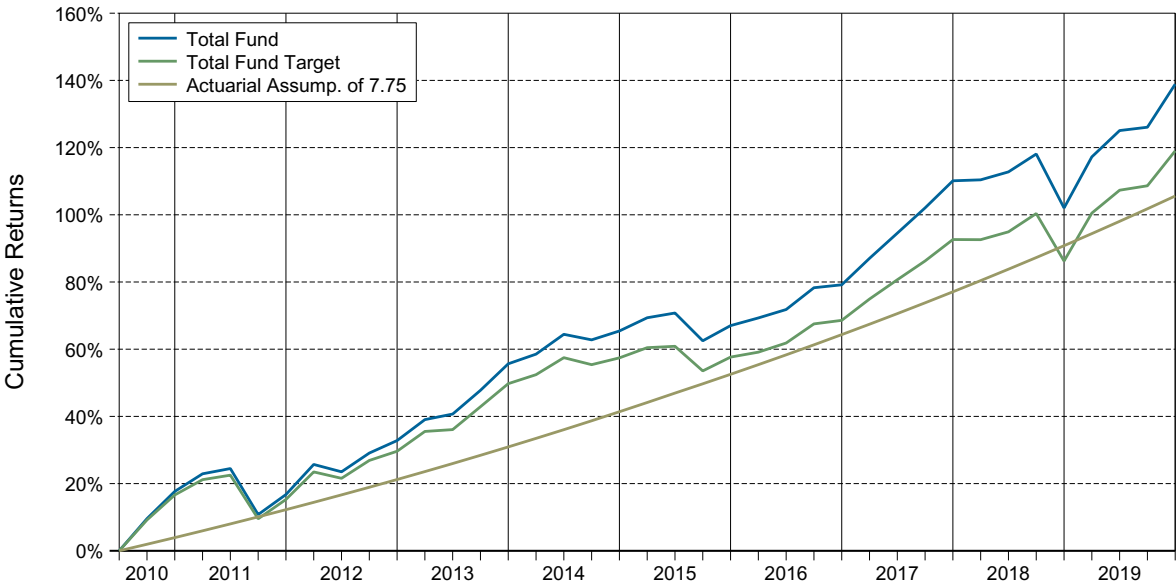
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	25%	25%	15.11%	14.60%	0.09%	0.06%	0.15%
World Equities	12%	12%	-	-	(0.02%)	(0.02%)	(0.05%)
International Equities	17%	16%	8.24%	6.41%	0.33%	0.02%	0.31%
Private Equities	4%	5%	4.31%	4.31%	0.00%	(0.01%)	(0.01%)
Domestic Fixed Income	19%	18%	5.99%	4.52%	0.26%	(0.04%)	0.23%
International Fixed Inc.	4%	4%	-	-	0.09%	0.00%	0.09%
Real Estate	10%	10%	12.53%	10.27%	0.22%	0.01%	0.22%
Timber	3%	3%	-	-	(0.19%)	(0.01%)	(0.20%)
Infrastructure	4%	5%	-	-	0.16%	0.07%	0.24%
Cash & Equivalents	1%	1%	0.66%	0.61%	0.00%	(0.00%)	(0.00%)
<b>Total</b>			<b>9.60%</b>	<b>8.60%</b>	<b>+ 0.94%</b>	<b>+ 0.06%</b>	<b>1.00%</b>

\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

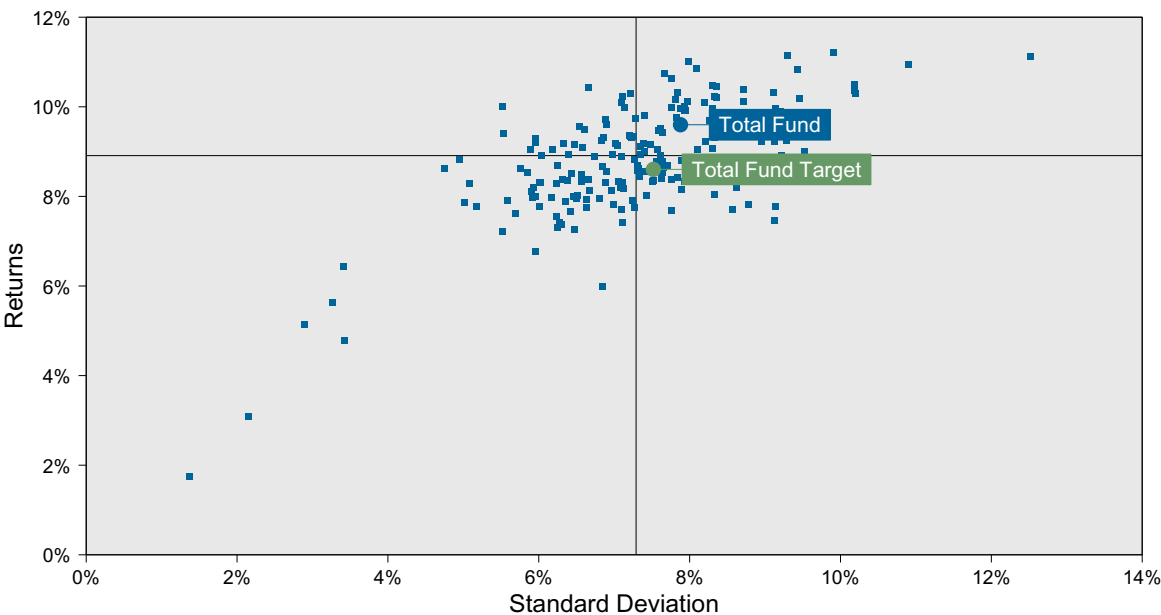
## Cumulative Performance Relative to Target

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



### Nine and One-Half Year Annualized Risk vs Return



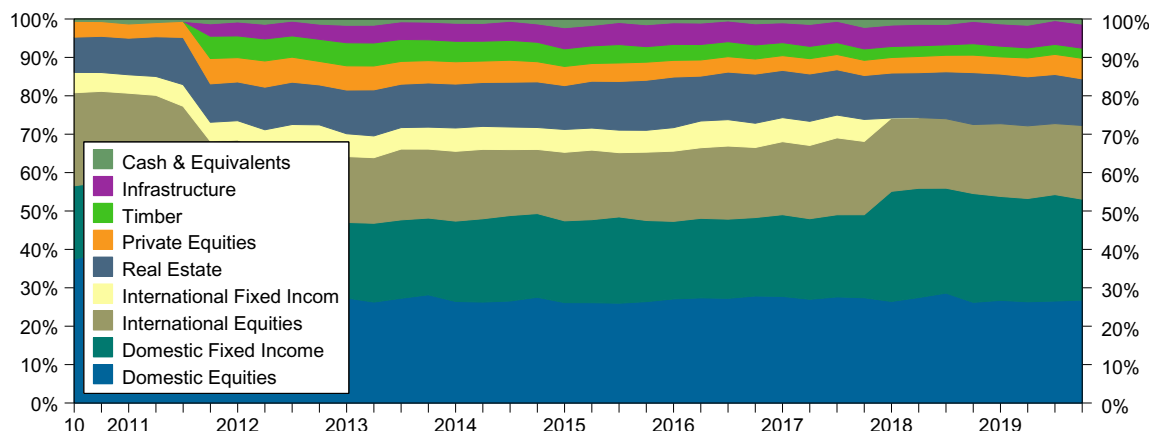
Squares represent membership of the Callan Public Fund Sponsor Database

\* 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 Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

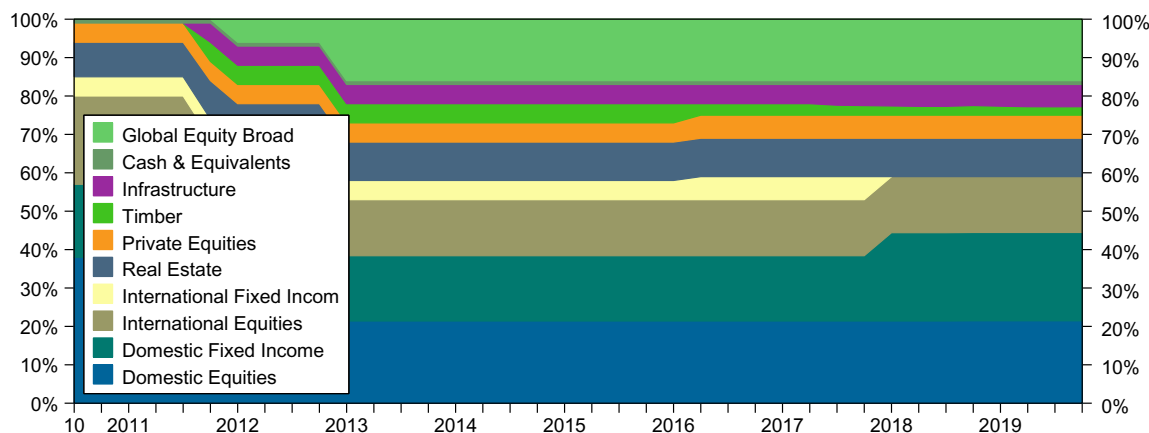
## Actual vs Target Historical Asset Allocation

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.

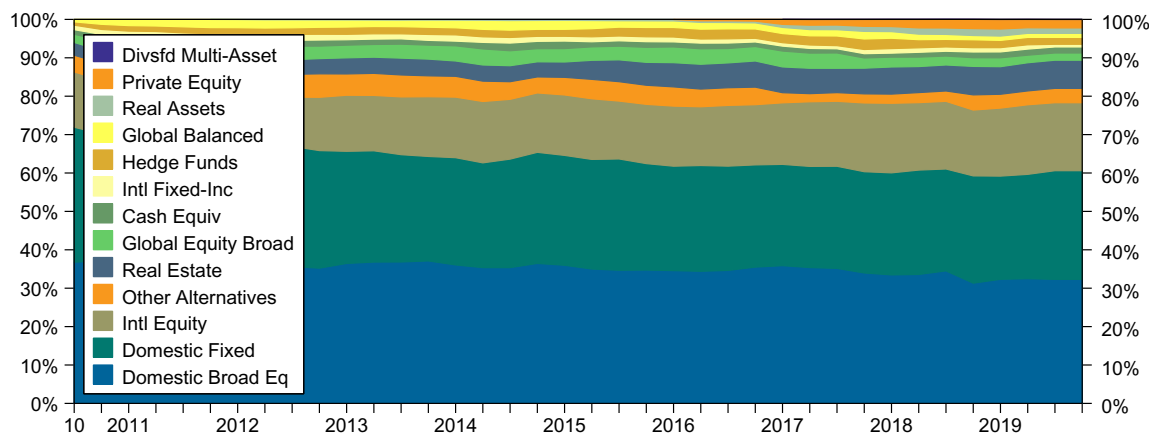
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation

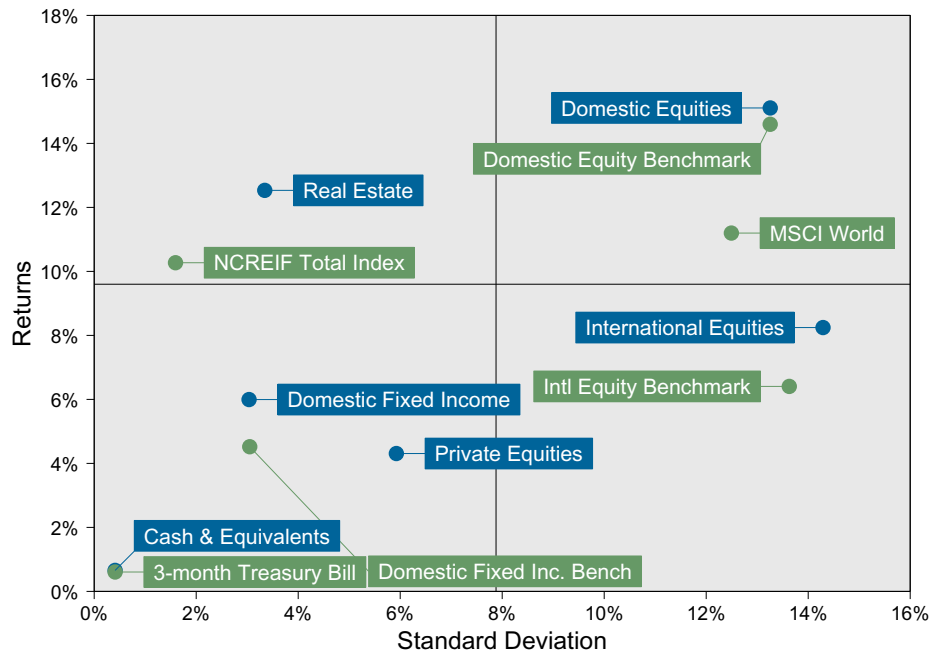


\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

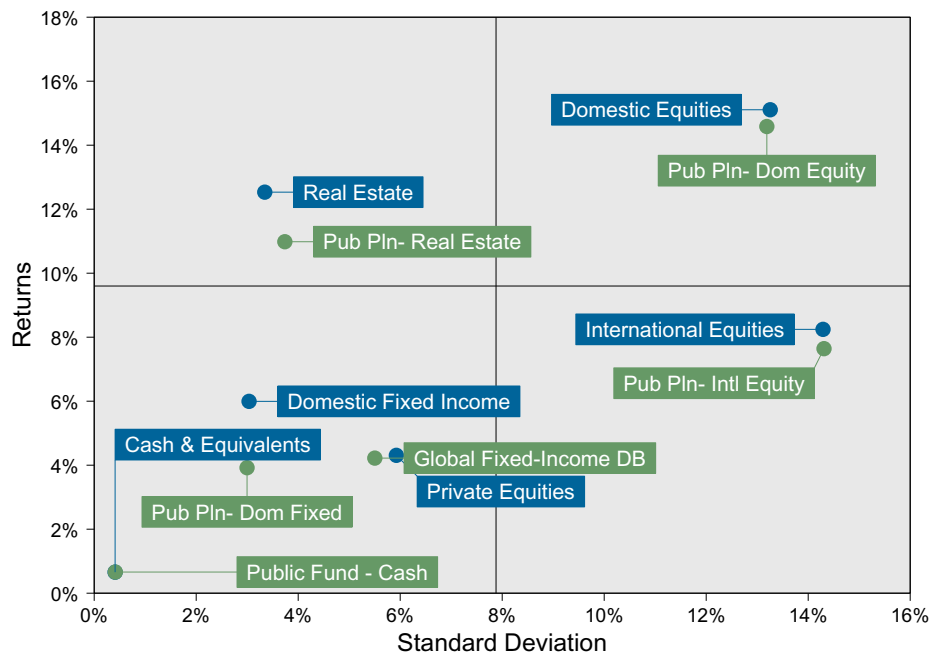
## Asset Class Risk and Return

The charts below show the nine and one-half 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.

**Nine and One-Half Year Annualized Risk vs Return  
Asset Classes vs Benchmark Indices**



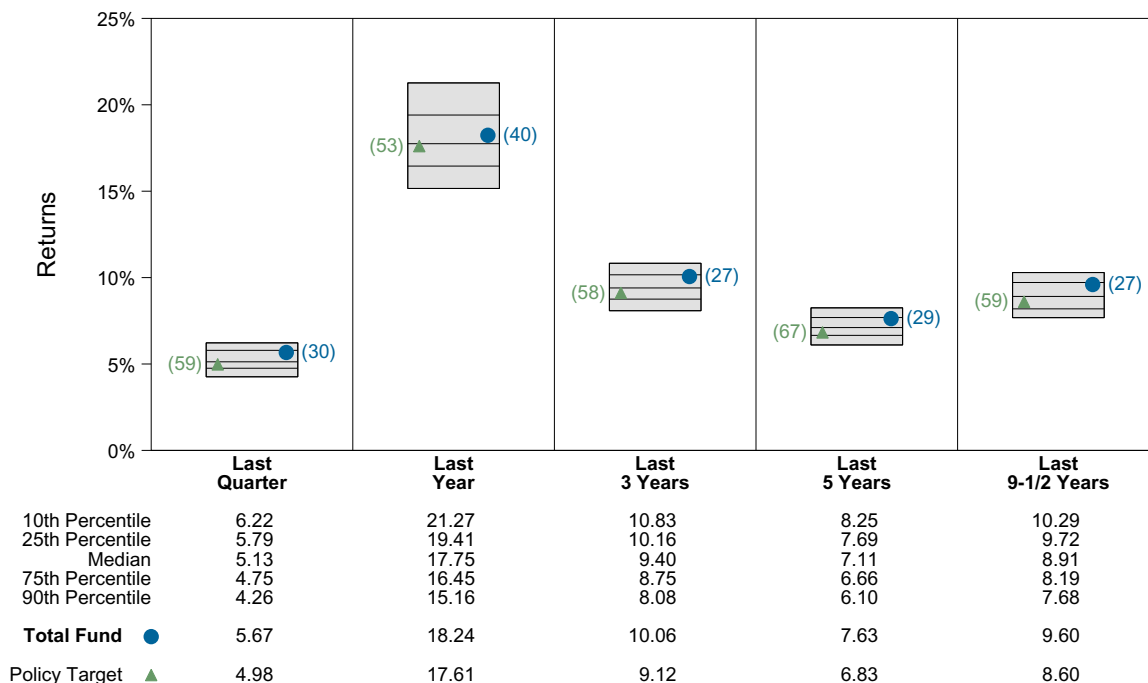
**Nine and One-Half Year Annualized Risk vs Return  
Asset Classes vs Asset Class Median**



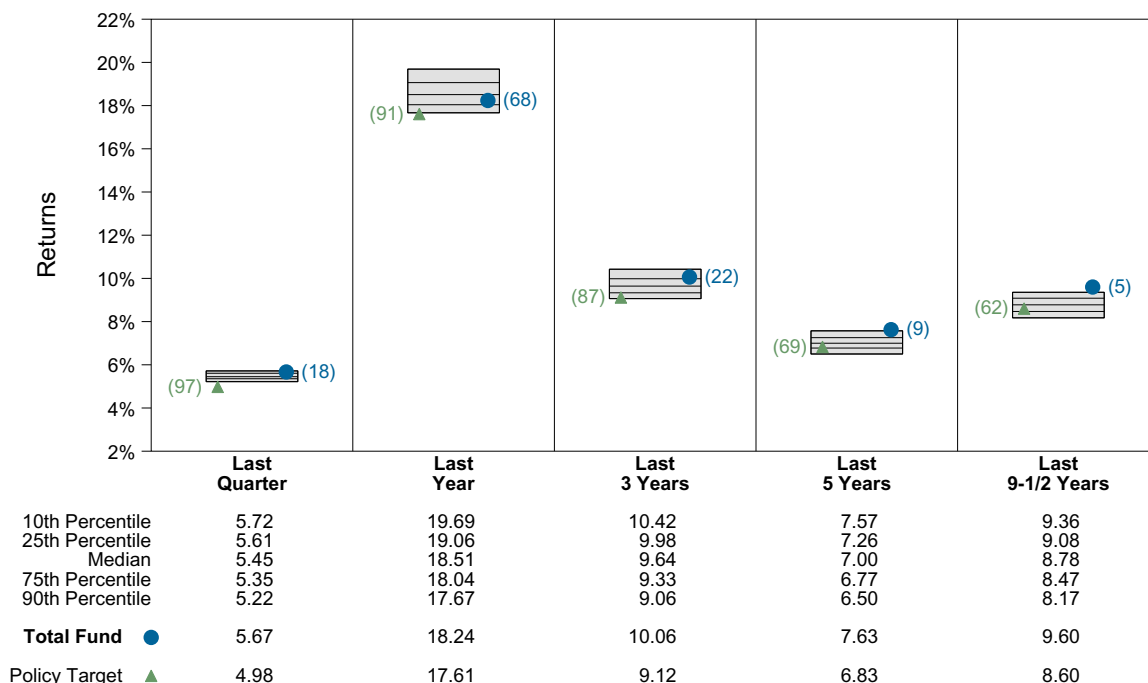
## Total Fund Ranking

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 December 31, 2019. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking



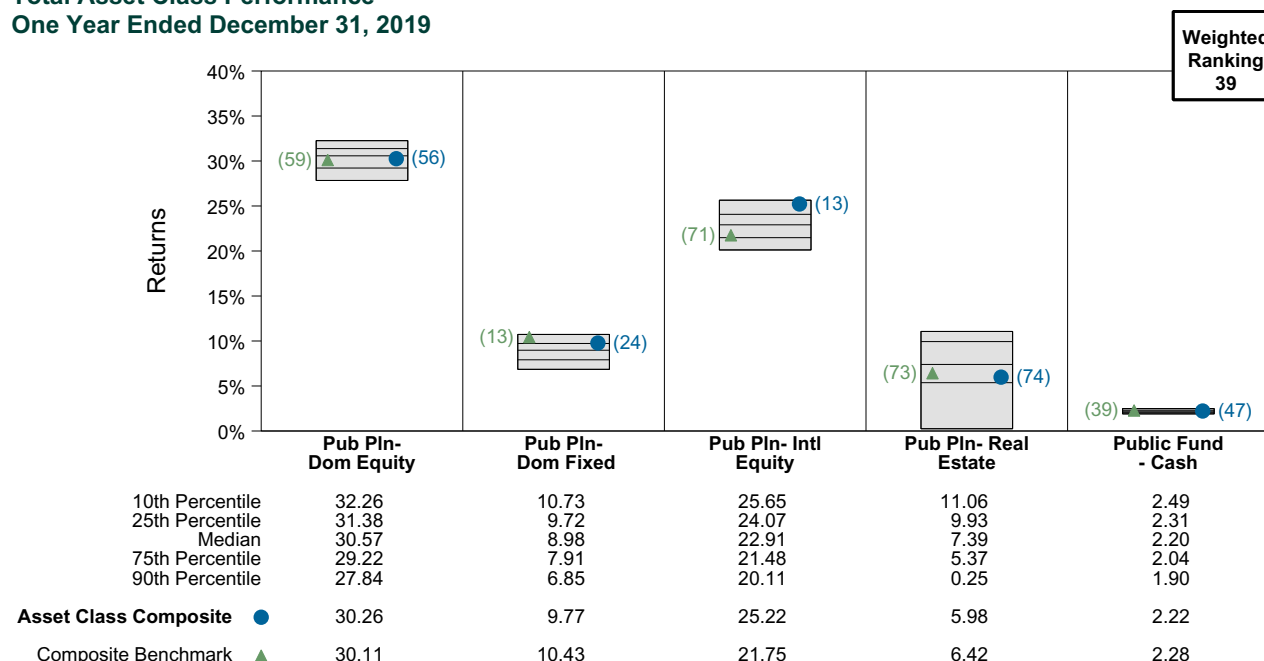
\* Current Quarter Target = 16.6% Russell 1000 Index, 16.0% Blmbg Aggregate, 16.0% MSCI World, 11.8% MSCI World ex US, 10.0% NCREIF Total Index, 7.0% Blmbg:HY Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.



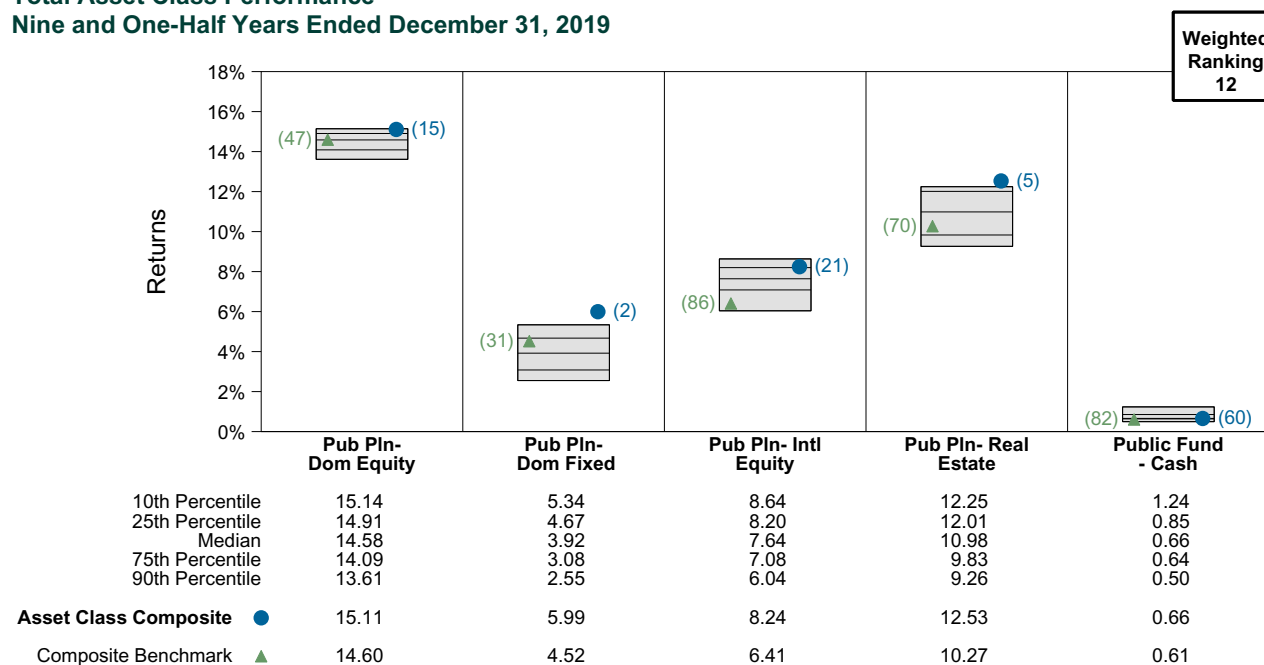
## Asset Class Rankings

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 December 31, 2019



### Total Asset Class Performance Nine and One-Half Years Ended December 31, 2019



\* 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 Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% 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 December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019				September 30, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Equities</b>	<b>\$1,596,510,157</b>	<b>59.41%</b>	<b>\$(23,247,707)</b>	<b>\$130,218,708</b>	<b>\$1,489,539,156</b>	<b>58.21%</b>
<b>Public Equities</b>	<b>\$1,476,413,325</b>	<b>54.94%</b>	<b>\$(30,750,724)</b>	<b>\$130,120,550</b>	<b>\$1,377,043,499</b>	<b>53.81%</b>
<b>World Equities</b>	<b>\$444,577,009</b>	<b>16.54%</b>	<b>\$(3,878,237)</b>	<b>\$40,433,096</b>	<b>\$408,022,150</b>	<b>15.95%</b>
<b>Domestic Equities</b>	<b>\$601,366,032</b>	<b>22.38%</b>	<b>\$(19,761,745)</b>	<b>\$49,927,418</b>	<b>\$571,200,359</b>	<b>22.32%</b>
Large Cap	464,505,628	17.29%	(19,176,609)	40,312,616	443,369,621	17.33%
Small Cap	136,860,404	5.09%	(585,136)	9,614,803	127,830,738	5.00%
<b>International Equities</b>	<b>\$430,470,284</b>	<b>16.02%</b>	<b>\$(7,110,742)</b>	<b>\$39,760,036</b>	<b>\$397,820,989</b>	<b>15.55%</b>
Developed	341,912,532	12.72%	(7,350,742)	30,434,875	318,828,399	12.46%
Emerging Markets	88,557,752	3.30%	240,000	9,325,162	78,992,590	3.09%
<b>Private Equities</b>	<b>\$120,096,832</b>	<b>4.47%</b>	<b>\$7,503,017</b>	<b>\$98,158</b>	<b>\$112,495,657</b>	<b>4.40%</b>
<b>Global Fixed Income</b>	<b>\$589,171,790</b>	<b>21.92%</b>	<b>\$(11,449,250)</b>	<b>\$4,520,746</b>	<b>\$596,100,294</b>	<b>23.30%</b>
<b>Domestic Fixed Income</b>	<b>\$589,171,790</b>	<b>21.92%</b>	<b>\$(11,449,250)</b>	<b>\$4,520,746</b>	<b>\$596,100,294</b>	<b>23.30%</b>
Investment Grade	415,913,211	15.48%	1,093,829	209,914	414,609,468	16.20%
Below Investment Grade	173,258,579	6.45%	(12,543,079)	4,310,832	181,490,826	7.09%
<b>Global Real Assets</b>	<b>\$471,574,972</b>	<b>17.55%</b>	<b>\$(3,103,997)</b>	<b>\$10,056,943</b>	<b>\$464,622,027</b>	<b>18.16%</b>
<b>Real Estate</b>	<b>\$271,826,557</b>	<b>10.12%</b>	<b>\$(8,938,811)</b>	<b>\$5,730,318</b>	<b>\$275,035,050</b>	<b>10.75%</b>
<b>Other Real Assets</b>	<b>\$199,748,415</b>	<b>7.43%</b>	<b>\$5,834,814</b>	<b>\$4,326,624</b>	<b>\$189,586,977</b>	<b>7.41%</b>
Infrastructure	140,470,612	5.23%	6,246,485	569,949	133,654,178	5.22%
Timber	59,277,803	2.21%	(411,671)	3,756,676	55,932,798	2.19%
<b>Cash</b>	<b>\$29,992,847</b>	<b>1.12%</b>	<b>\$21,245,810</b>	<b>\$117,570</b>	<b>\$8,629,467</b>	<b>0.34%</b>
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(39,673)</b>	<b>\$39,673</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$2,687,249,766</b>	<b>100.0%</b>	<b>\$(16,594,817)</b>	<b>\$144,953,639</b>	<b>\$2,558,890,943</b>	<b>100.0%</b>

PLEASE REFER TO PAGES 29-31 FOR INVESTMENT MANAGER LEVEL ASSET ALLOCATION.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Global Equities</b>					
Gross	8.76%	25.89%	12.49%	8.80%	-
Net	8.71%	25.64%	12.26%	8.55%	-
Weighted Benchmark	7.94%	24.89%	11.76%	8.15%	-
<b>Public Equities</b>					
Gross	9.49%	27.40%	-	-	-
Net	9.43%	27.14%	-	-	-
Weighted Benchmark	8.87%	27.01%	-	-	-
<b>World Equities</b>					
Gross	9.96%	25.74%	12.00%	8.07%	-
Net	9.87%	25.33%	11.61%	7.60%	-
MSCI World	8.56%	27.67%	12.57%	8.74%	11.20%
<b>Domestic Equities</b>					
Gross	8.77%	30.26%	14.59%	11.51%	15.11%
Net	8.73%	30.05%	14.41%	11.33%	14.87%
Weighted Benchmark	9.24%	30.11%	13.61%	10.80%	14.60%
<b>Large Cap</b>					
Gross	9.22%	31.27%	15.56%	12.17%	15.53%
Net	9.19%	31.14%	15.45%	12.04%	15.32%
Benchmark(1)	9.04%	31.43%	15.05%	11.48%	15.10%
<b>Small Cap</b>					
Gross	7.34%	26.98%	11.44%	9.25%	13.60%
Net	7.25%	26.55%	11.04%	8.89%	13.28%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	12.72%
<b>International Equities</b>					
Gross	10.06%	25.22%	11.39%	7.34%	8.24%
Net	10.01%	25.01%	11.20%	7.14%	7.97%
Weighted Benchmark	8.62%	21.75%	9.80%	5.66%	6.41%
<b>Developed</b>					
Gross	9.61%	26.01%	11.07%	7.43%	8.63%
Net	9.56%	25.76%	10.84%	7.19%	8.34%
Benchmark(2)	7.86%	22.49%	9.34%	5.59%	6.74%
<b>Emerging Markets</b>					
Gross	11.78%	22.29%	12.46%	6.56%	6.28%
Net	11.78%	22.29%	12.46%	6.56%	6.06%
Benchmark(3)	11.84%	18.44%	11.58%	5.61%	4.61%
<b>Private Equities</b>					
Net	0.09%	7.04%	6.64%	2.22%	4.25%

(1) S&P 500 Index through 12/31/2011 and the Russell 1000 Index thereafter.

(2) 50% Hedged EAFE through 3/31/2011; MSCI EAFE through 6/30/16; MSCI World ex-US thereafter.

(3) MSCI Emerging Mkts Idx (Gross) through 6/30/2011 and MSCI Emerging Mkts Idx Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Global Fixed Income</b>					
Gross	0.78%	9.77%	6.68%	4.89%	-
Net	0.75%	9.60%	6.49%	4.68%	-
Weighted Benchmark	0.92%	10.43%	5.49%	3.83%	-
<b>Domestic Fixed Income</b>					
Gross	0.78%	9.77%	6.08%	5.03%	5.99%
Net	0.75%	9.60%	5.91%	4.84%	5.85%
Weighted Benchmark	0.92%	10.43%	4.63%	3.81%	4.52%
<b>Inv. Grade Fixed Income</b>					
Gross	0.06%	9.85%	5.61%	4.47%	5.12%
Net	0.04%	9.73%	5.51%	4.35%	4.96%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.38%
<b>Below Inv. Grade Fixed Income</b>					
Gross	2.51%	9.75%	7.37%	6.58%	8.40%
Net	2.45%	9.47%	7.05%	6.22%	8.00%
Blmbg HY Corp 2% Issue	2.61%	14.32%	6.36%	6.14%	7.47%
<b>Global Real Assets</b>					
Gross	2.14%	6.37%	6.59%	7.04%	-
Net	2.09%	5.92%	6.18%	6.61%	-
Weighted Benchmark	1.10%	4.82%	5.14%	5.69%	-
<b>Real Estate</b>					
Gross	2.07%	5.98%	7.73%	9.73%	12.53%
Net	2.03%	5.43%	7.24%	9.20%	11.99%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.27%
<b>Other Real Assets</b>					
Gross	2.26%	6.96%	-	-	-
Net	2.19%	6.66%	-	-	-
Weighted Benchmark	0.54%	2.82%	-	-	-
<b>Infrastructure</b>					
Gross	0.42%	6.02%	7.31%	5.12%	-
Net	0.33%	5.59%	6.83%	4.61%	-
Benchmark(1)	0.77%	3.43%	3.41%	2.51%	-
<b>Timber</b>					
Net	6.75%	9.39%	1.46%	1.18%	-
NCREIF Timberland Index	(0.04%)	1.30%	2.71%	3.13%	4.61%
<b>Cash &amp; Equivalents - Net</b>	<b>0.45%</b>	<b>2.22%</b>	<b>1.75%</b>	<b>1.17%</b>	<b>0.66%</b>
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.61%
<b>Total Fund</b>					
Gross	5.67%	18.24%	10.06%	7.63%	9.60%
Net	5.62%	17.97%	9.81%	7.35%	9.28%
Target*	4.98%	17.61%	9.12%	6.83%	8.60%

\* 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 Corp 2% Iss Cap, 6.0% NDSIB TFFR - Private Equity, 4.8% Russell 2000 Index, 2.9% NCREIF NFI-ODCE Eq Wt Net, 2.9% CPI All Urban Cons lagged 3 months, 2.8% MSCI EM, 2.2% NCREIF Timberland Index and 1.0% 3-month Treasury Bill.

(1) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

PLEASE REFER TO PAGES 32-36 FOR INVESTMENT MANAGER LEVEL RETURNS.

## Domestic Equities

### Period Ended December 31, 2019

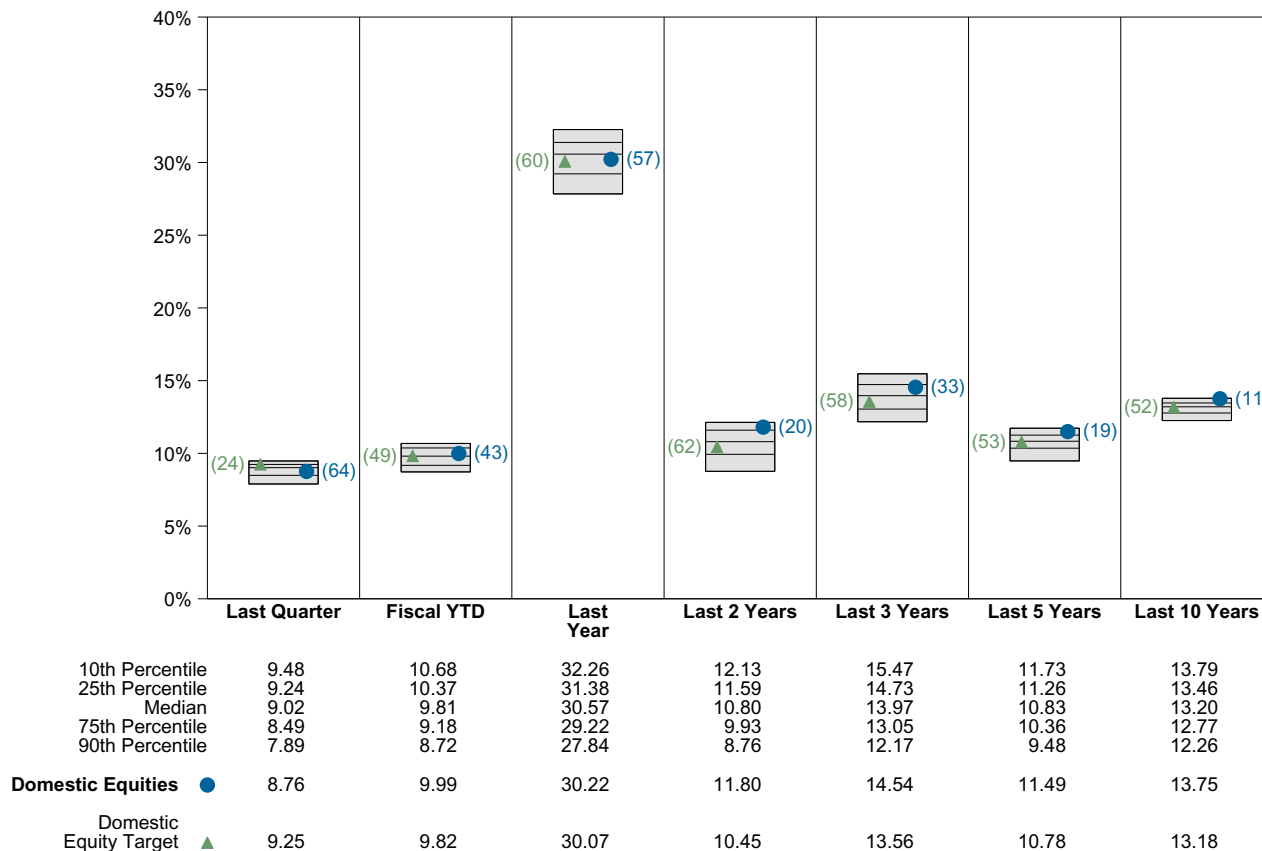
#### Quarterly Summary and Highlights

- Domestic Equities's portfolio posted a 8.76% return for the quarter placing it in the 64 percentile of the Public Fund - Domestic Equity group for the quarter and in the 57 percentile for the last year.
- Domestic Equities's portfolio underperformed the Domestic Equity Target by 0.49% for the quarter and outperformed the Domestic Equity Target for the year by 0.15%.

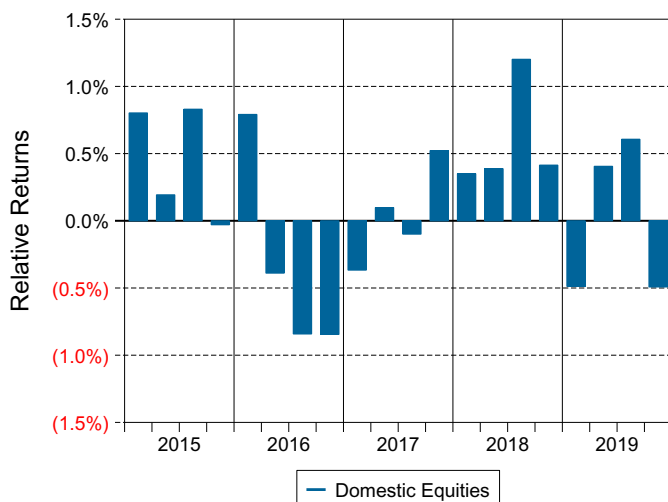
#### Quarterly Asset Growth

Beginning Market Value	\$1,312,713,120
Net New Investment	\$-39,542,631
Investment Gains/(Losses)	\$114,796,827
Ending Market Value	\$1,387,967,316

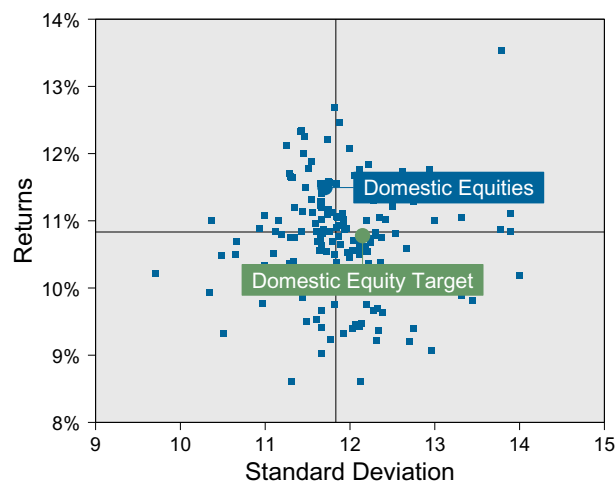
#### Performance vs Public Fund - Domestic Equity (Gross)



#### Relative Return vs Domestic Equity Target



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



## L.A. Capital Period Ended December 31, 2019

### 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.

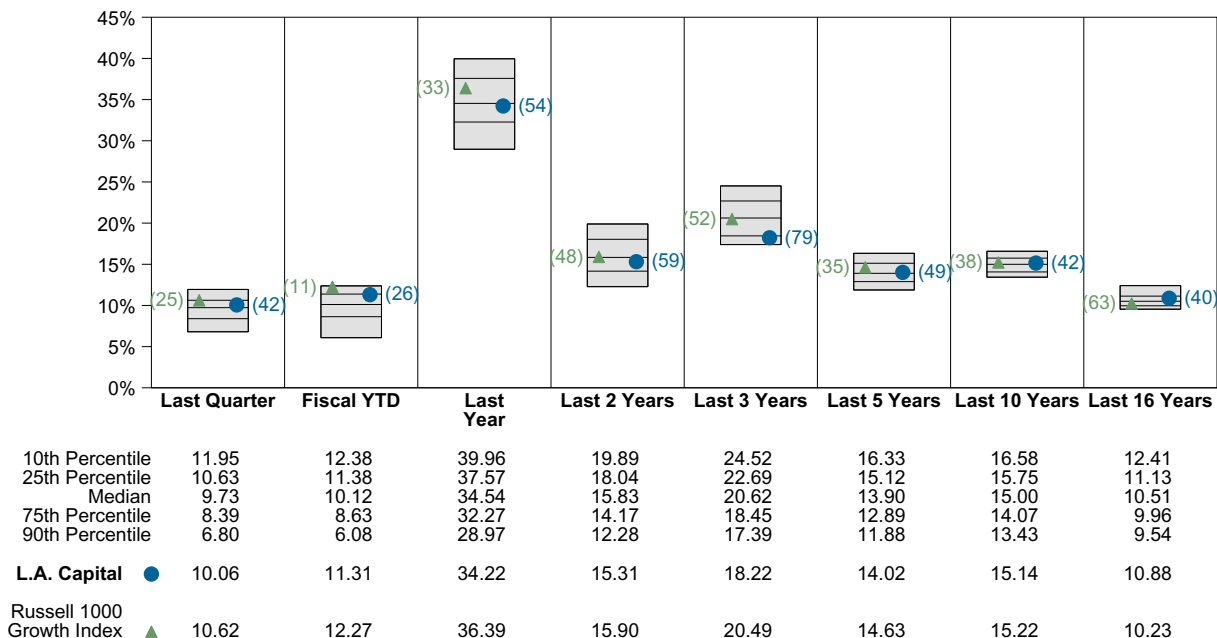
### Quarterly Summary and Highlights

- L.A. Capital's portfolio posted a 10.06% return for the quarter placing it in the 42 percentile of the Callan Large Cap Growth group for the quarter and in the 54 percentile for the last year.
- L.A. Capital's portfolio underperformed the Russell 1000 Growth Index by 0.56% for the quarter and underperformed the Russell 1000 Growth Index for the year by 2.17%.

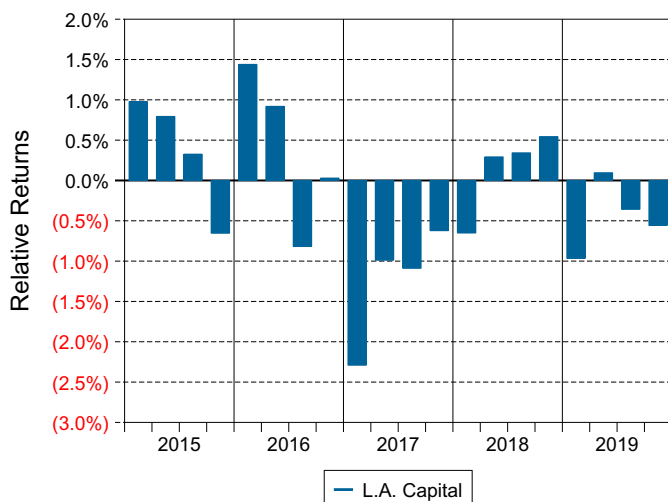
### Quarterly Asset Growth

Beginning Market Value	\$396,064,981
Net New Investment	\$-10,204,527
Investment Gains/(Losses)	\$39,480,838
Ending Market Value	\$425,341,292

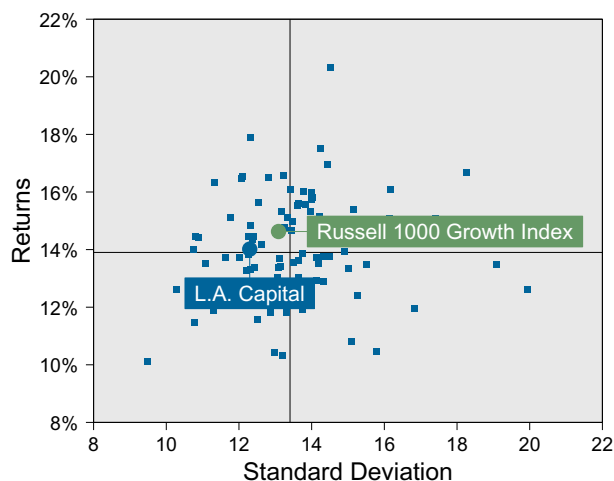
### Performance vs Callan Large Cap Growth (Gross)



### Relative Return vs Russell 1000 Growth Index



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



## L.A. Capital Management Enhanced Index Period Ended December 31, 2019

### Investment Philosophy

The LA Capital Enhanced portfolio is a large core portfolio benchmarked to the Russell 1000 Index. Characterized as an enhanced index assignment, its objective is to track the benchmark with lower variability. The pension portfolio began in August of 2000 and the insurance portfolio was initiated in April of 2004. Since October of 2006 a small portion of each of the two core accounts was allocated into the Large Cap Alpha Fund with intent to add incremental alpha to the assignment given that the information ratio was expected to be higher.

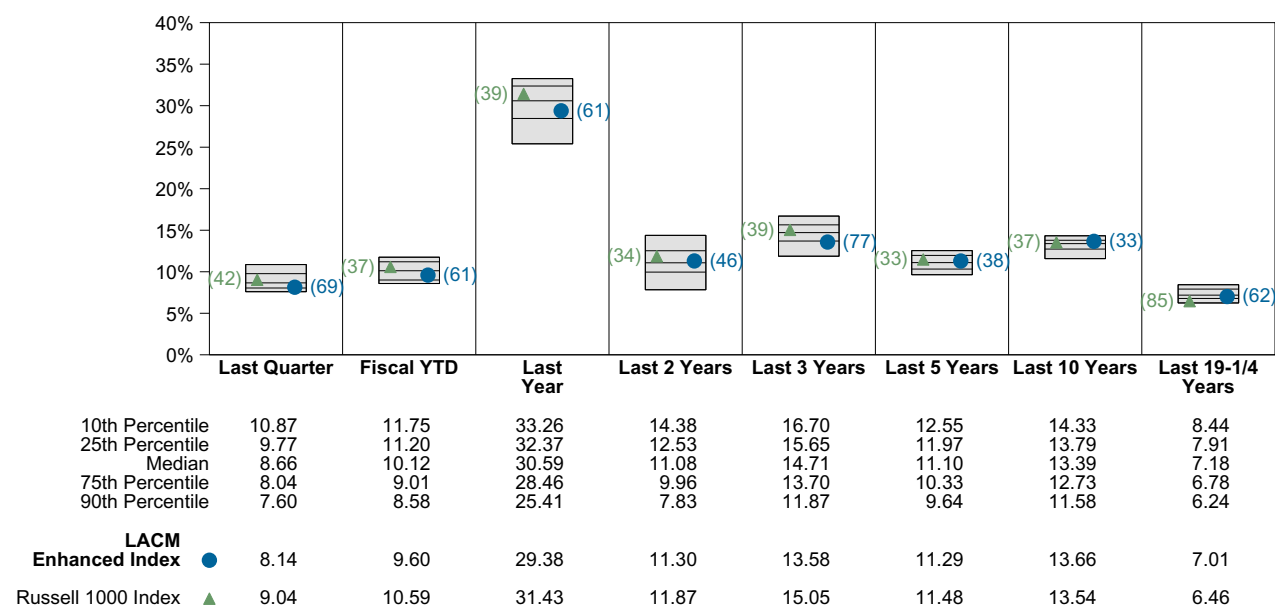
### Quarterly Summary and Highlights

- LACM Enhanced Index's portfolio posted a 8.14% return for the quarter placing it in the 69 percentile of the Callan Large Cap Core group for the quarter and in the 61 percentile for the last year.
- LACM Enhanced Index's portfolio underperformed the Russell 1000 Index by 0.90% for the quarter and underperformed the Russell 1000 Index for the year by 2.04%.

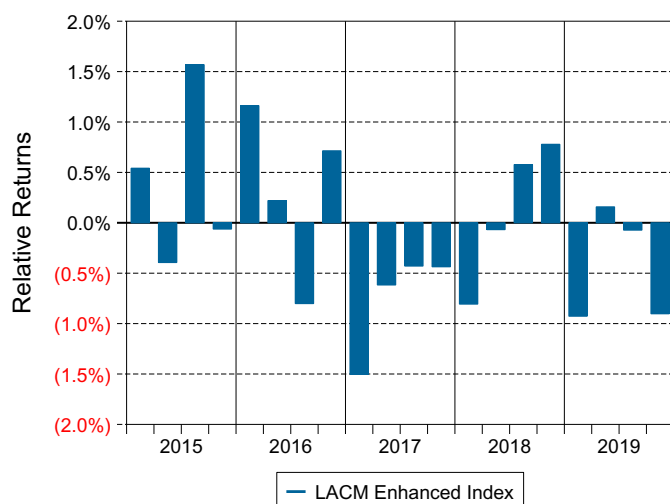
### Quarterly Asset Growth

Beginning Market Value	\$203,881,710
Net New Investment	\$-10,060,298
Investment Gains/(Losses)	\$16,268,889
Ending Market Value	\$210,090,302

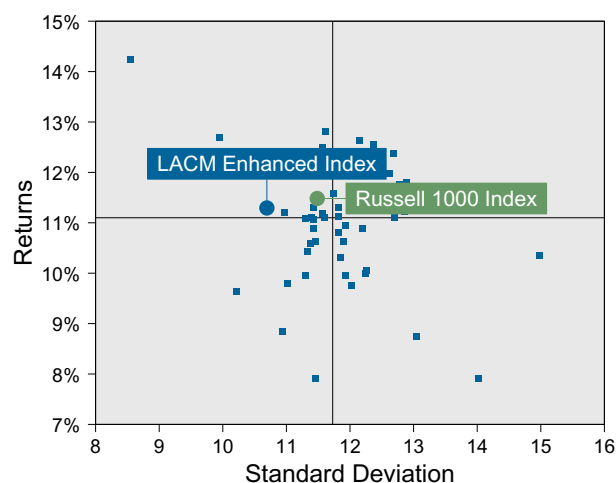
### Performance vs Callan Large Cap Core (Gross)



### Relative Return vs Russell 1000 Index



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



## Northern Trust AM Enh S&P500 Period Ended December 31, 2019

### 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.

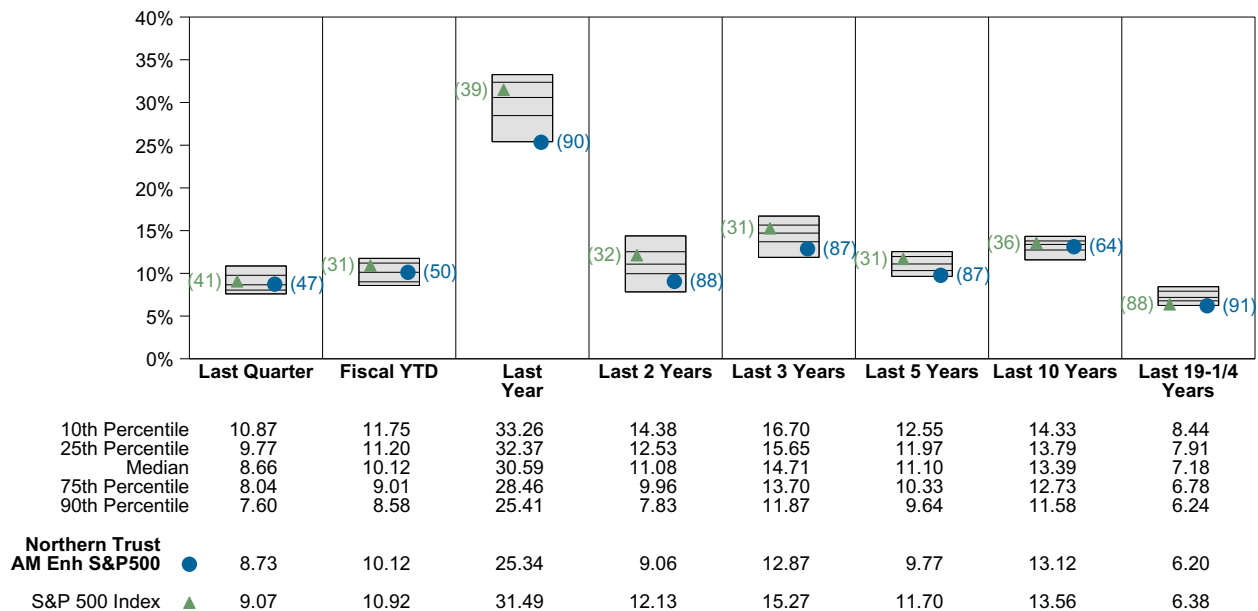
### Quarterly Summary and Highlights

- Northern Trust AM Enh S&P500's portfolio posted a 8.73% return for the quarter placing it in the 47 percentile of the Callan Large Cap Core group for the quarter and in the 90 percentile for the last year.
- Northern Trust AM Enh S&P500's portfolio underperformed the S&P 500 Index by 0.34% for the quarter and underperformed the S&P 500 Index for the year by 6.15%.

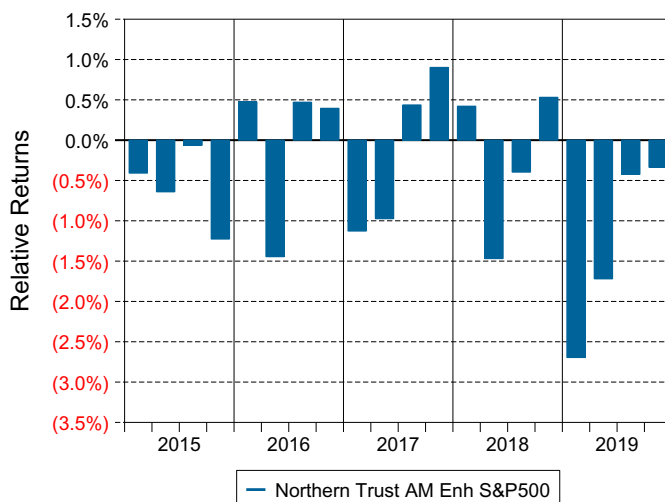
### Quarterly Asset Growth

Beginning Market Value	\$201,833,044
Net New Investment	\$-10,000,000
Investment Gains/(Losses)	\$17,297,596
Ending Market Value	\$209,130,640

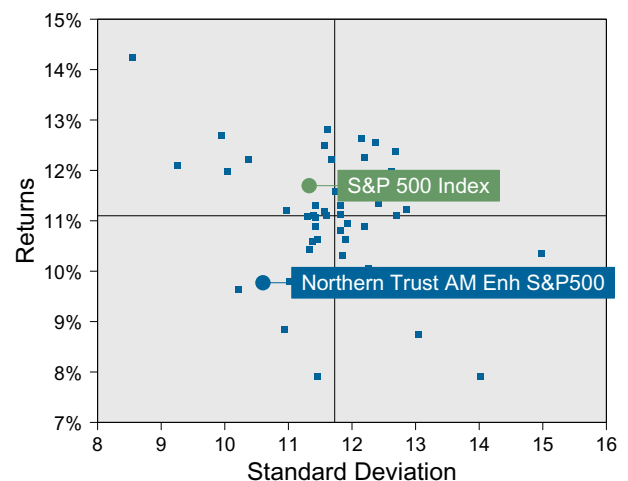
### Performance vs Callan Large Cap Core (Gross)



### Relative Return vs S&P 500 Index



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





## Parametric Clifton Enh S&P Period Ended December 31, 2019

### 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.

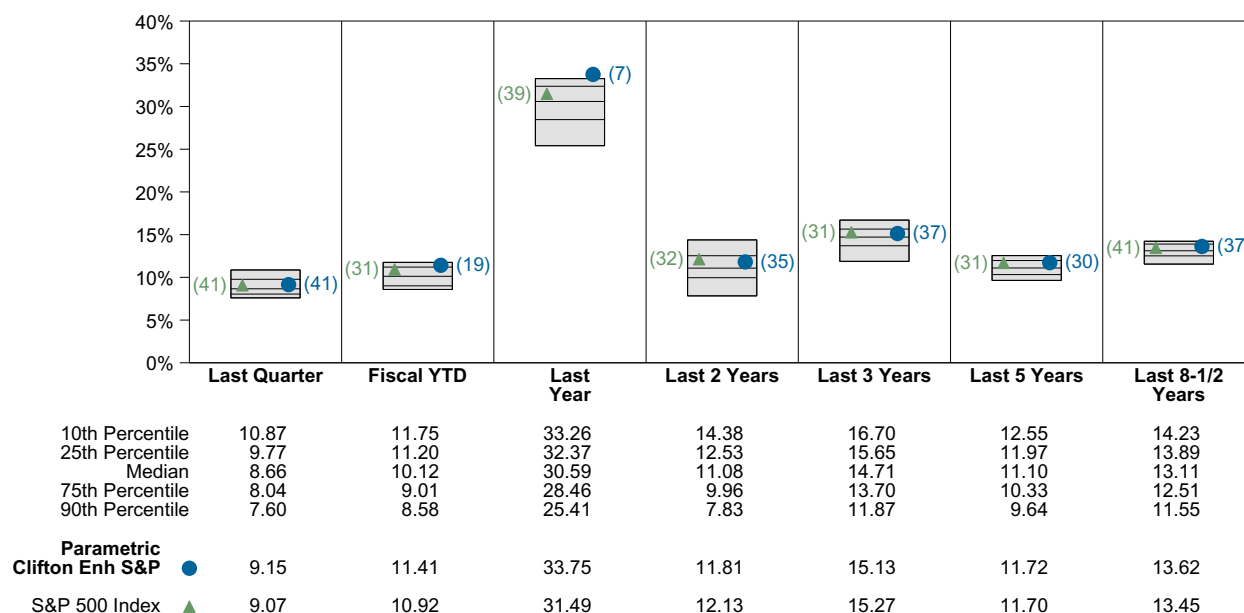
### Quarterly Summary and Highlights

- Parametric Clifton Enh S&P's portfolio posted a 9.15% return for the quarter placing it in the 41 percentile of the Callan Large Cap Core group for the quarter and in the 7 percentile for the last year.
- Parametric Clifton Enh S&P's portfolio outperformed the S&P 500 Index by 0.08% for the quarter and outperformed the S&P 500 Index for the year by 2.27%.

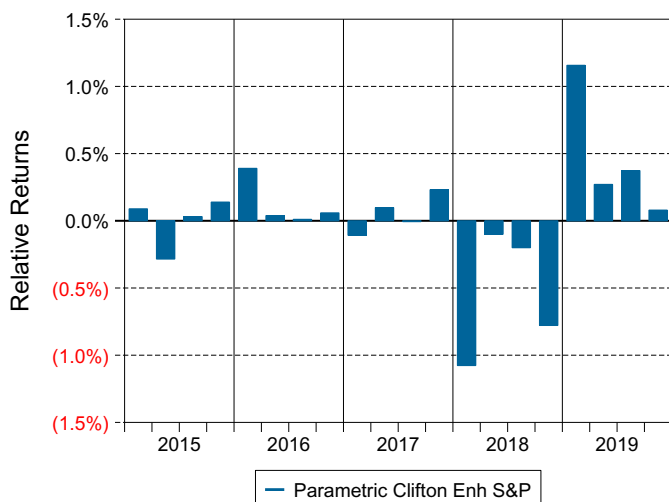
### Quarterly Asset Growth

Beginning Market Value	\$200,396,601
Net New Investment	\$-4,000,000
Investment Gains/(Losses)	\$18,560,462
Ending Market Value	\$214,957,063

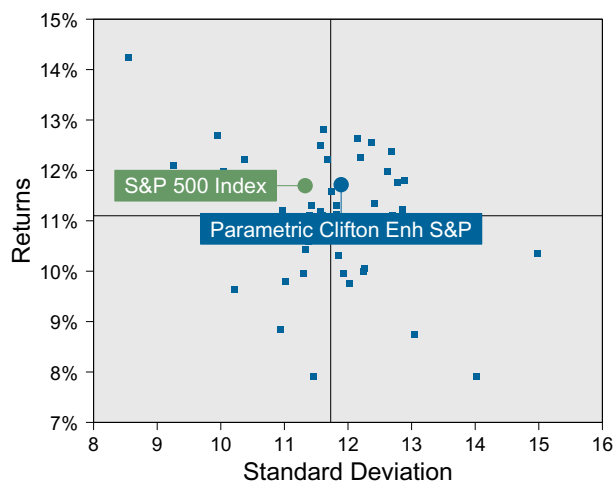
### Performance vs Callan Large Cap Core (Gross)



### Relative Return vs S&P 500 Index



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



# Atlanta Capital

## Period Ended December 31, 2019

### 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.

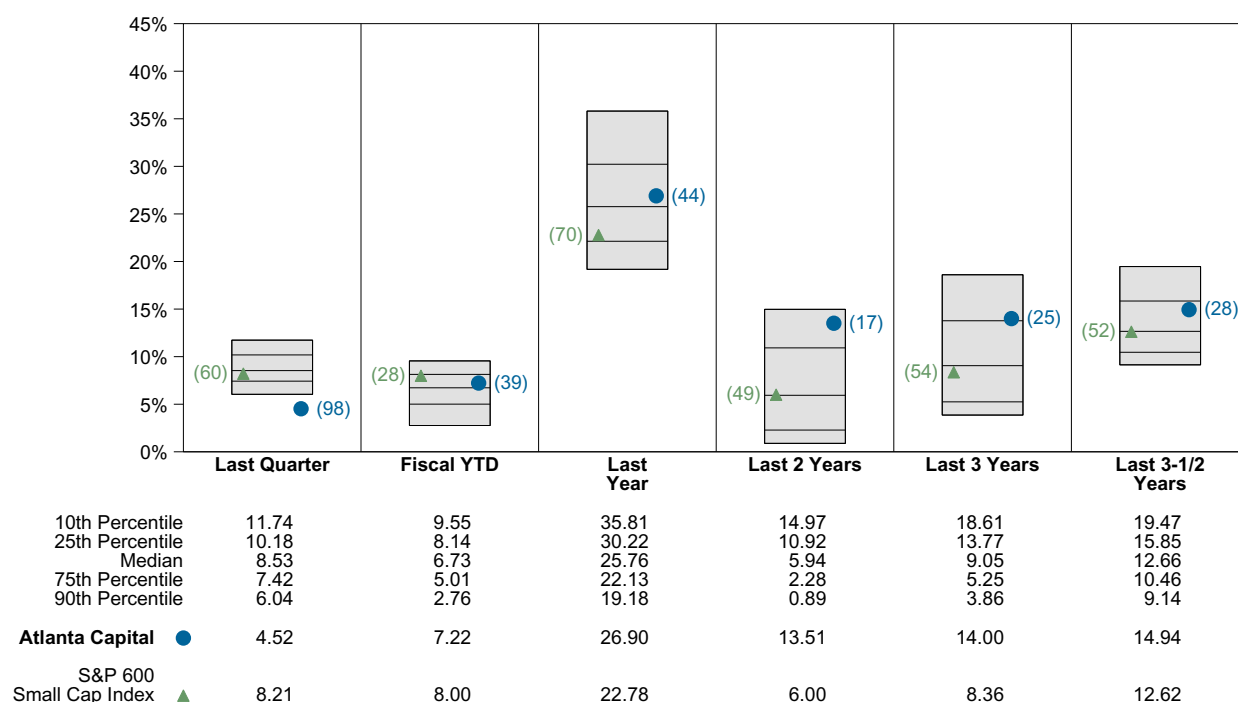
### Quarterly Summary and Highlights

- Atlanta Capital's portfolio posted a 4.52% return for the quarter placing it in the 98 percentile of the Callan Small Capitalization group for the quarter and in the 44 percentile for the last year.
- Atlanta Capital's portfolio underperformed the S&P 600 Small Cap Index by 3.69% for the quarter and outperformed the S&P 600 Small Cap Index for the year by 4.12%.

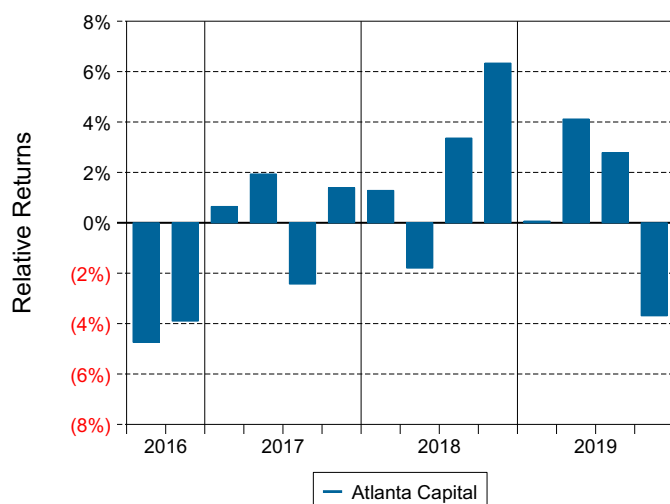
### Quarterly Asset Growth

Beginning Market Value	\$160,204,382
Net New Investment	\$-7,777,807
Investment Gains/(Losses)	\$7,050,343
Ending Market Value	\$159,476,918

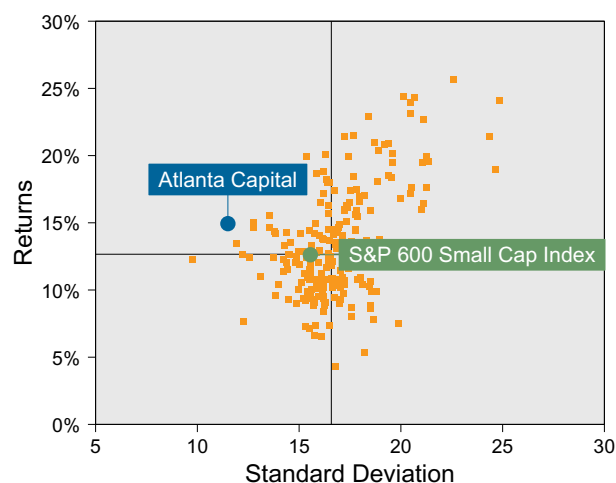
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs S&P 600 Small Cap Index



### Callan Small Capitalization (Gross) Annualized Three and One-Half Year Risk vs Return



## Parametric Clifton Enh SmCap Period Ended December 31, 2019

### 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.

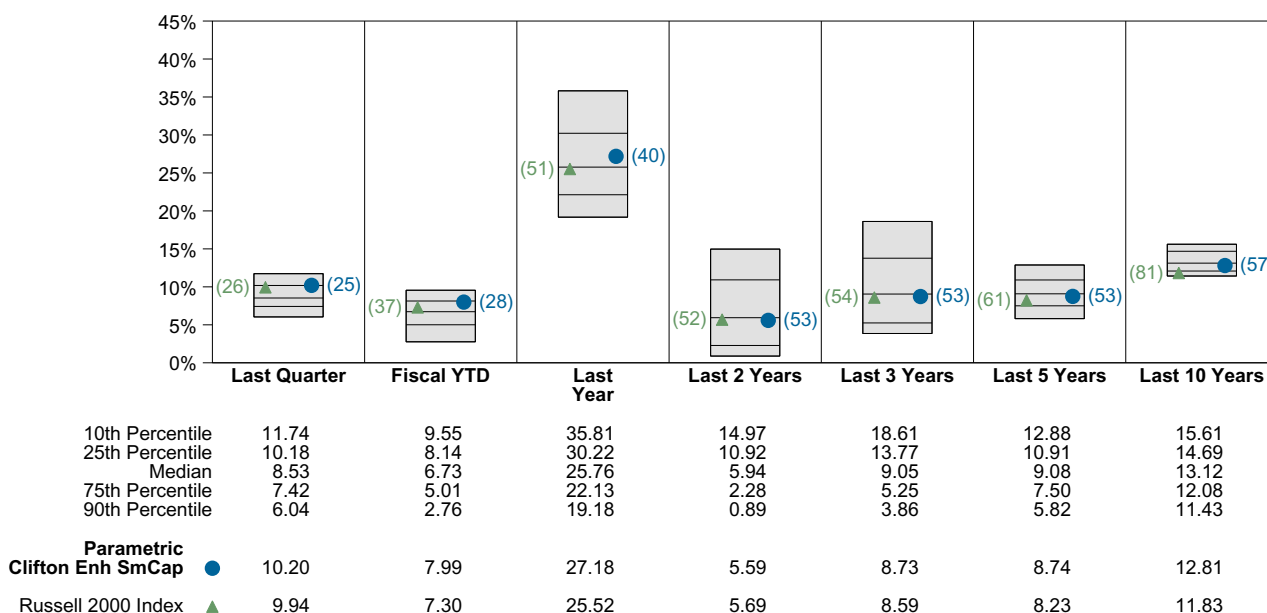
### Quarterly Summary and Highlights

- Parametric Clifton Enh SmCap's portfolio posted a 10.20% return for the quarter placing it in the 25 percentile of the Callan Small Capitalization group for the quarter and in the 40 percentile for the last year.
- Parametric Clifton Enh SmCap's portfolio outperformed the Russell 2000 Index by 0.26% for the quarter and outperformed the Russell 2000 Index for the year by 1.66%.

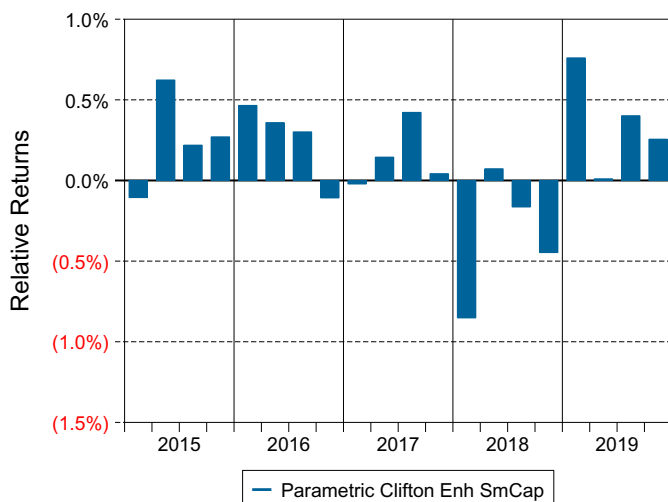
### Quarterly Asset Growth

Beginning Market Value	\$150,332,403
Net New Investment	\$2,500,000
Investment Gains/(Losses)	\$16,138,698
Ending Market Value	\$168,971,101

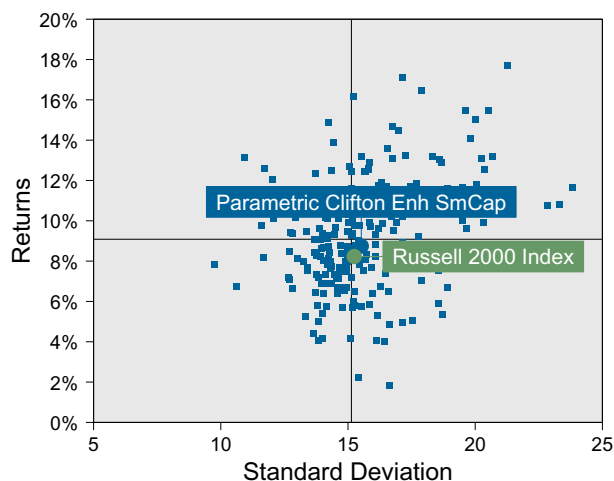
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



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



## International Equities Period Ended December 31, 2019

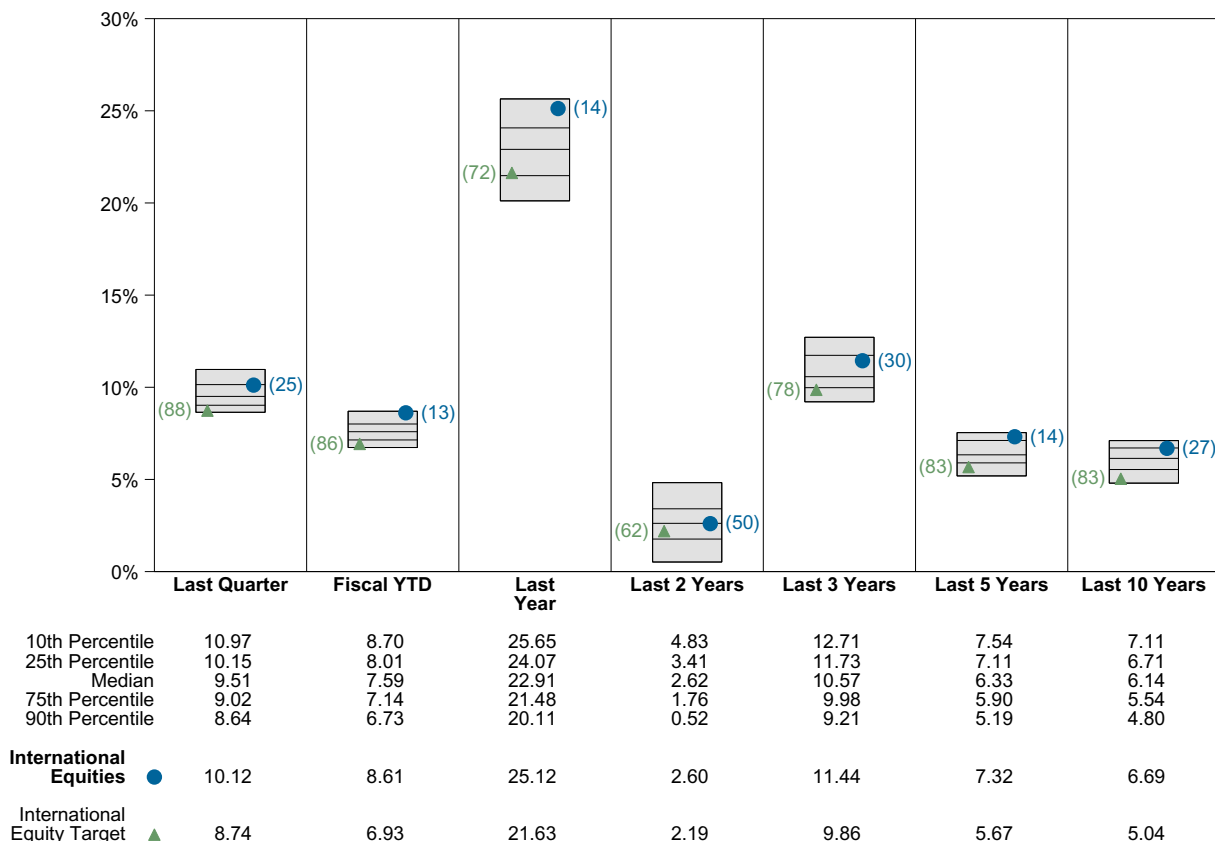
### Quarterly Summary and Highlights

- International Equities's portfolio posted a 10.12% return for the quarter placing it in the 25 percentile of the Public Fund - International Equity group for the quarter and in the 14 percentile for the last year.
- International Equities's portfolio outperformed the International Equity Target by 1.38% for the quarter and outperformed the International Equity Target for the year by 3.49%.

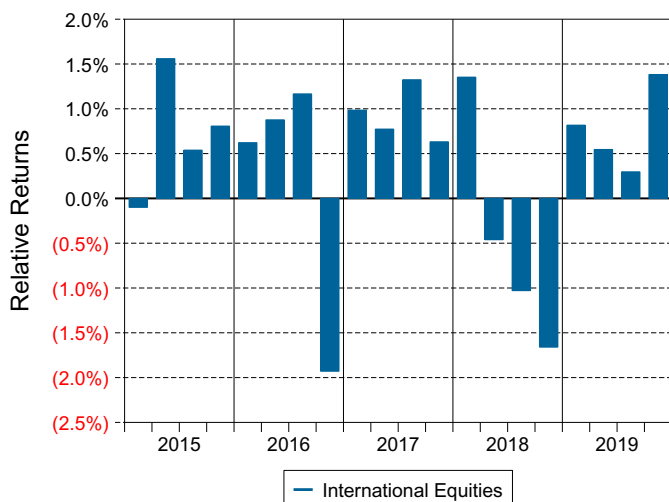
### Quarterly Asset Growth

Beginning Market Value	\$917,550,055
Net New Investment	\$-14,869,094
Investment Gains/(Losses)	\$92,625,993
Ending Market Value	\$995,306,954

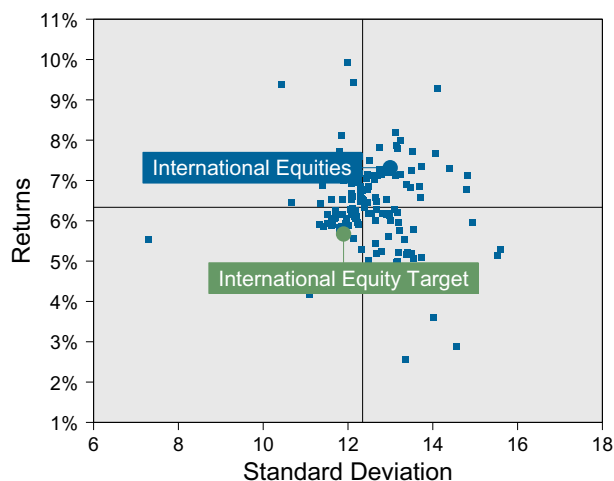
### Performance vs Public Fund - International Equity (Gross)



### Relative Return vs International Equity Target



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



## DFA International Small Cap Value Fund Period Ended December 31, 2019

### 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.

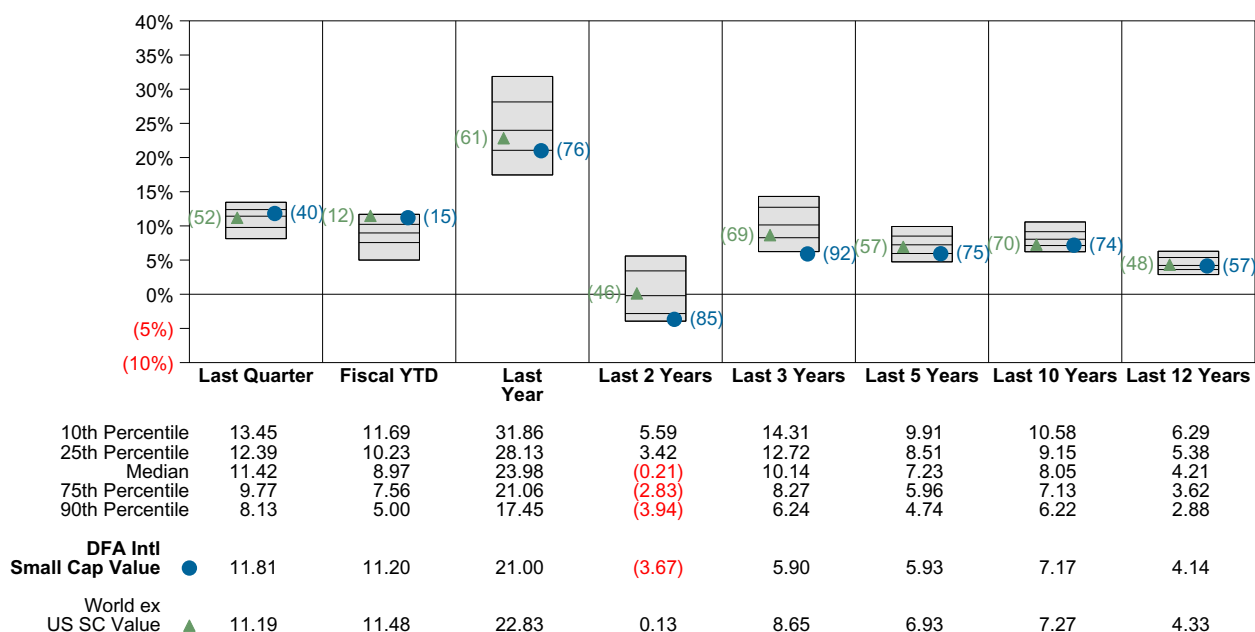
### Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a 11.81% return for the quarter placing it in the 40 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 76 percentile for the last year.
- DFA Intl Small Cap Value's portfolio outperformed the World ex US SC Value by 0.62% for the quarter and underperformed the World ex US SC Value for the year by 1.83%.

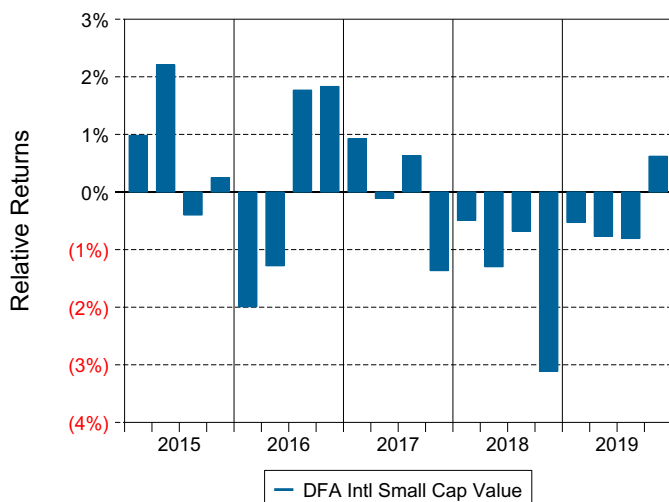
### Quarterly Asset Growth

Beginning Market Value	\$74,956,617
Net New Investment	\$0
Investment Gains/(Losses)	\$8,855,409
Ending Market Value	\$83,812,026

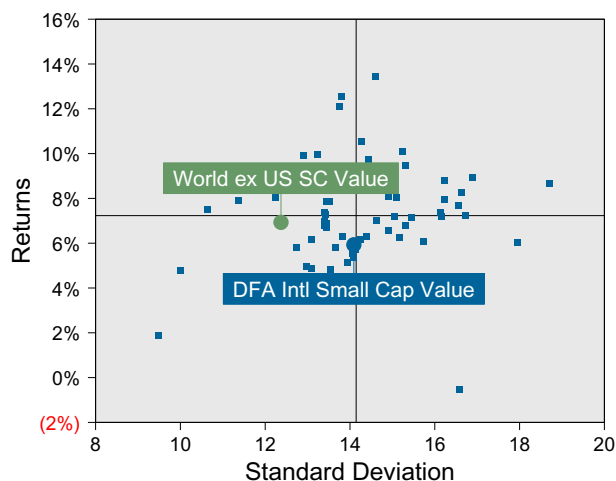
### Performance vs Callan International Small Cap Mut Funds (Net)



### Relative Return vs World ex US SC Value



### Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



## Northern Tr AM Wrld ex US Period Ended December 31, 2019

### Investment Philosophy

The Fund's objective is to provide investment results that approximate the overall performance of the MSCI World ex-US Equity Index.

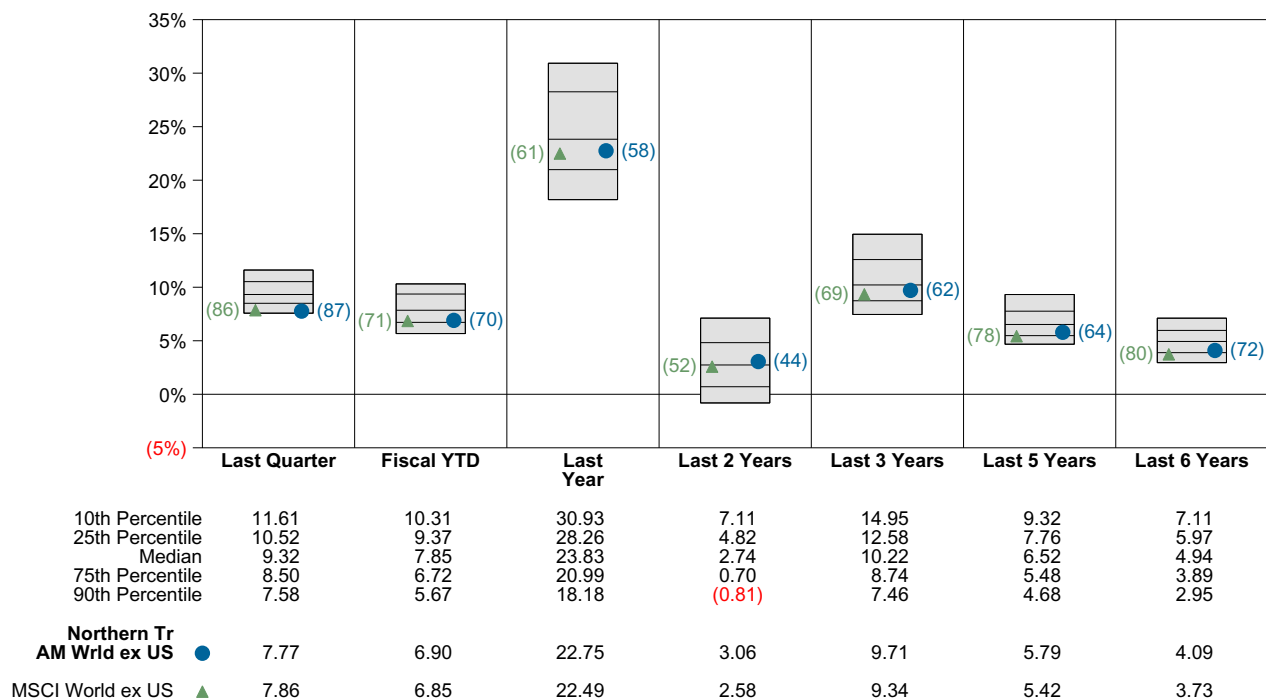
### Quarterly Summary and Highlights

- Northern Tr AM Wrld ex US's portfolio posted a 7.77% return for the quarter placing it in the 87 percentile of the Callan Non-US Equity group for the quarter and in the 58 percentile for the last year.
- Northern Tr AM Wrld ex US's portfolio underperformed the MSCI World ex US by 0.09% for the quarter and outperformed the MSCI World ex US for the year by 0.26%.

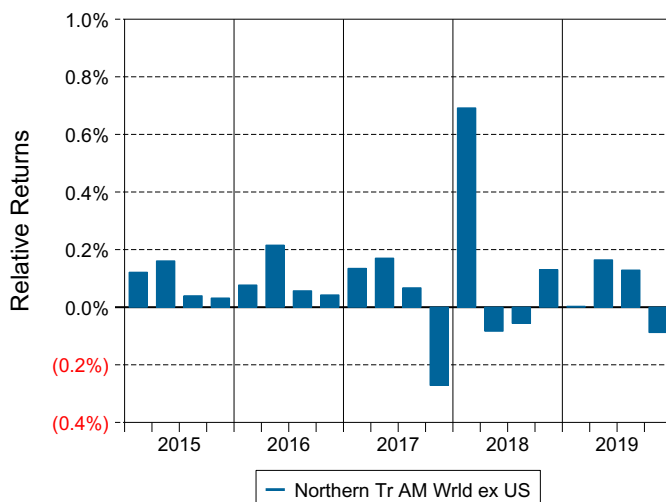
### Quarterly Asset Growth

Beginning Market Value	\$351,057,870
Net New Investment	\$-14,527,794
Investment Gains/(Losses)	\$27,217,486
Ending Market Value	\$363,747,562

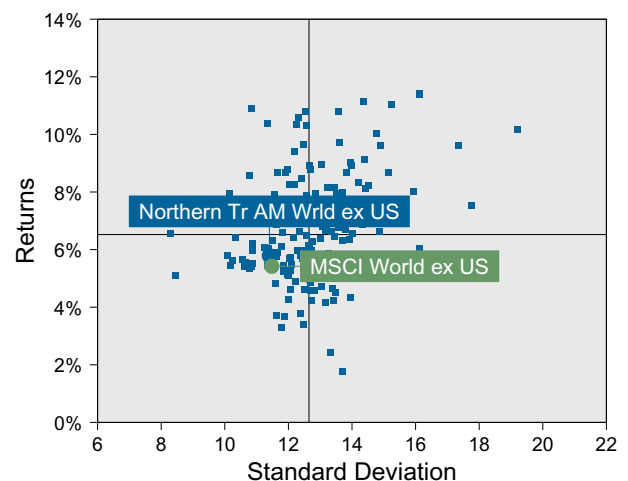
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs MSCI World ex US



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



## Wellington Management Period Ended December 31, 2019

### 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.

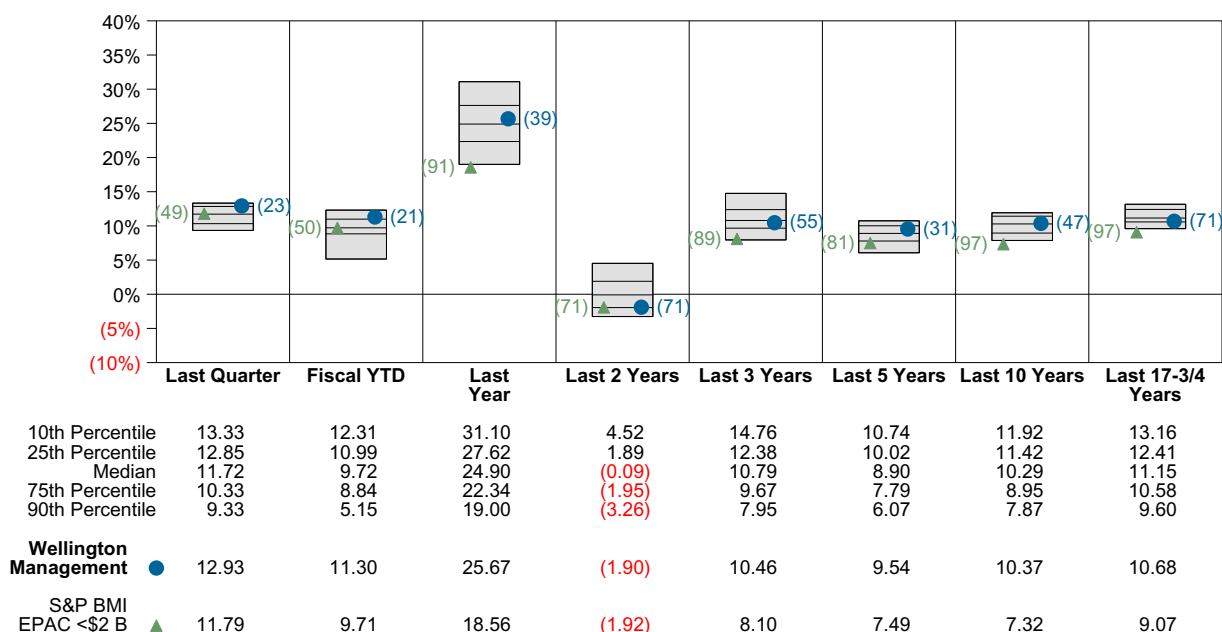
### Quarterly Summary and Highlights

- Wellington Management's portfolio posted a 12.93% return for the quarter placing it in the 23 percentile of the Callan International Small Cap group for the quarter and in the 39 percentile for the last year.
- Wellington Management's portfolio outperformed the S&P BMI EPAC <\$2 B by 1.14% for the quarter and outperformed the S&P BMI EPAC <\$2 B for the year by 7.11%.

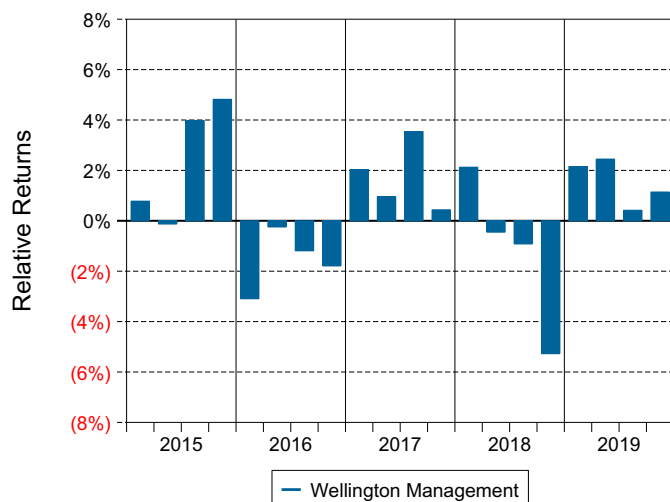
### Quarterly Asset Growth

Beginning Market Value	\$72,215,506
Net New Investment	\$-153,385
Investment Gains/(Losses)	\$9,323,357
Ending Market Value	\$81,385,478

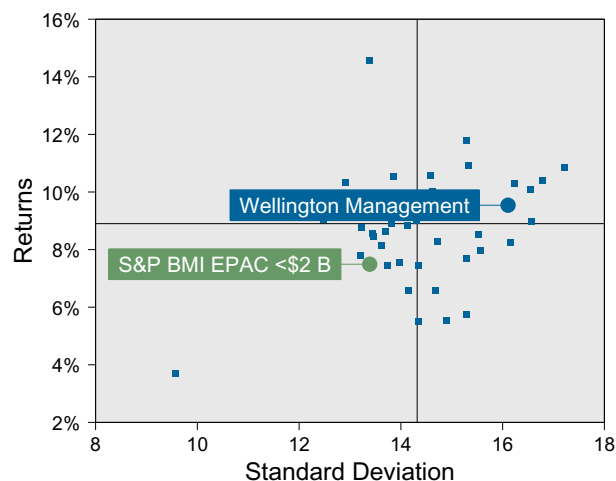
### Performance vs Callan International Small Cap (Gross)



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



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



## William Blair Period Ended December 31, 2019

### 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.

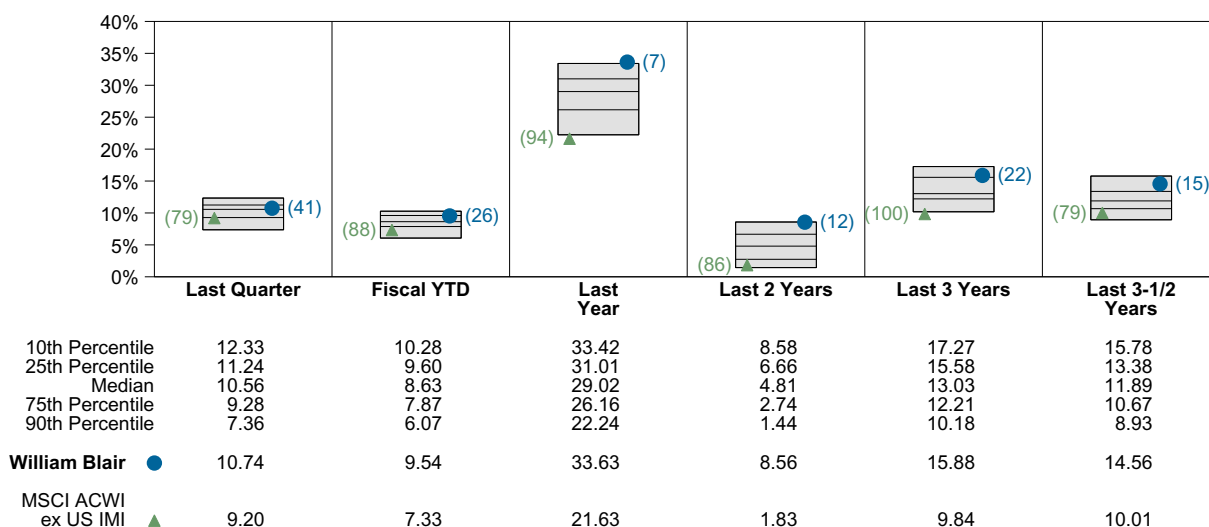
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 10.74% return for the quarter placing it in the 41 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 7 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.54% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 12.00%.

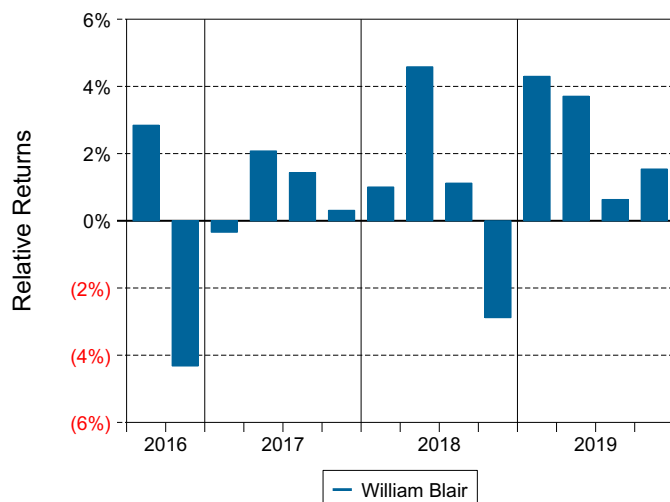
### Quarterly Asset Growth

Beginning Market Value	\$207,509,946
Net New Investment	\$-187,915
Investment Gains/(Losses)	\$22,271,607
Ending Market Value	\$229,593,638

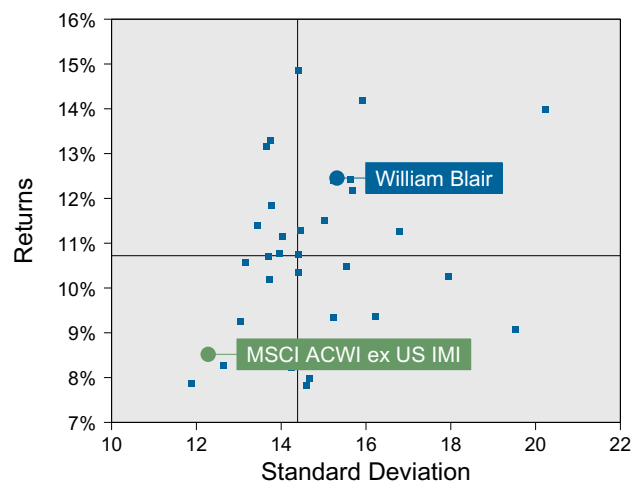
### Performance vs Callan Non-US All Country Growth Equity (Gross)



### Relative Return vs MSCI ACWI ex US IMI



### Callan Non-US All Country Growth Equity (Gross) Annualized Three and One-Quarter Year Risk vs Return





## Axiom Emerging Markets Period Ended December 31, 2019

### 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.

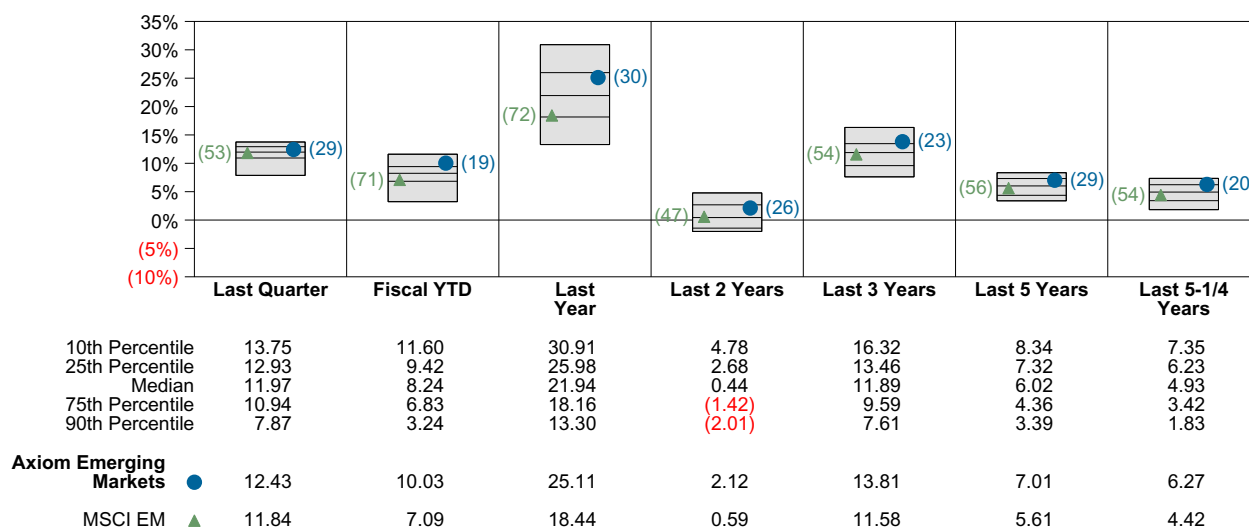
### Quarterly Summary and Highlights

- Axiom Emerging Markets's portfolio posted a 12.43% 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 30 percentile for the last year.
- Axiom Emerging Markets's portfolio outperformed the MSCI EM by 0.59% for the quarter and outperformed the MSCI EM for the year by 6.67%.

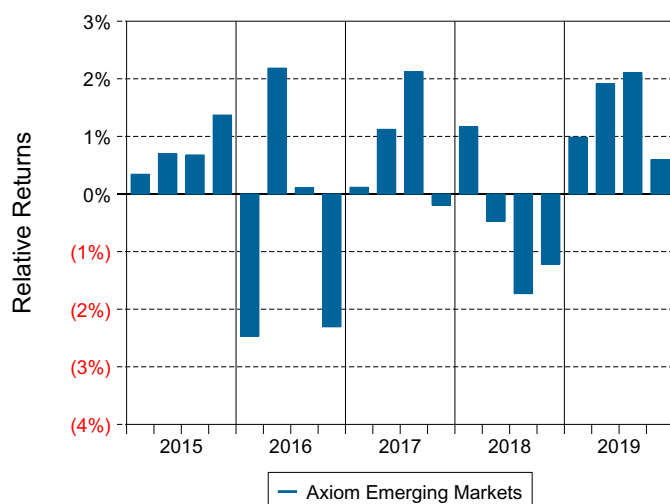
### Quarterly Asset Growth

Beginning Market Value	\$155,064,686
Net New Investment	\$0
Investment Gains/(Losses)	\$19,277,102
Ending Market Value	\$174,341,788

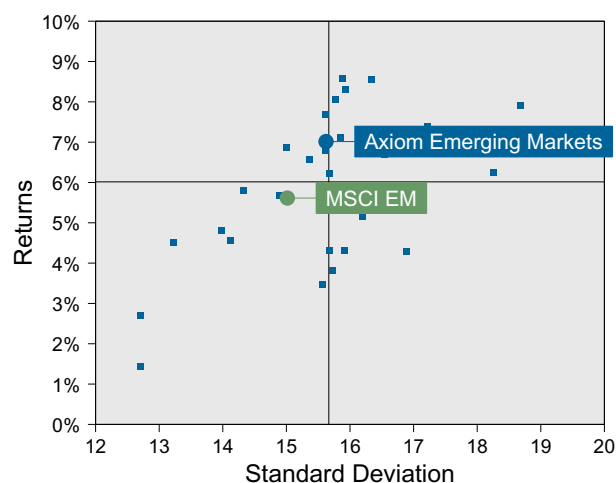
### Performance vs Callan Emerging Markets Equity Mut Funds (Net)



### Relative Return vs MSCI EM



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



## DFA Emerging Markets Period Ended December 31, 2019

### 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.

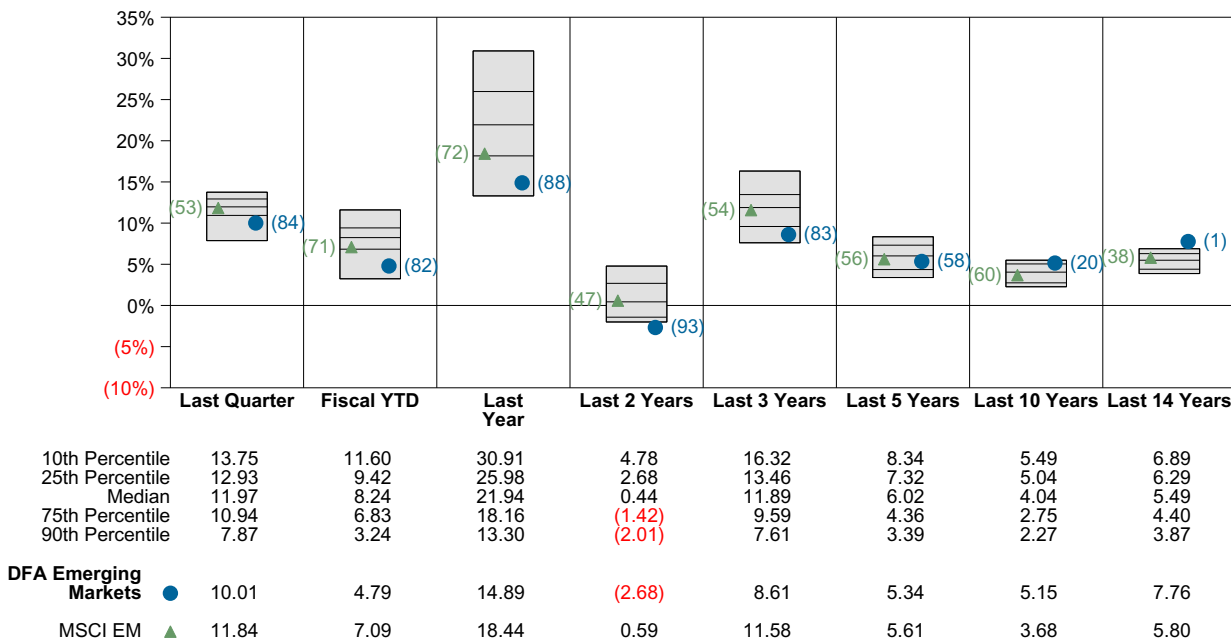
### Quarterly Summary and Highlights

- DFA Emerging Markets's portfolio posted a 10.01% return for the quarter placing it in the 84 percentile of the Callan Emerging Markets Equity Mut Funds group for the quarter and in the 88 percentile for the last year.
- DFA Emerging Markets's portfolio underperformed the MSCI EM by 1.83% for the quarter and underperformed the MSCI EM for the year by 3.54%.

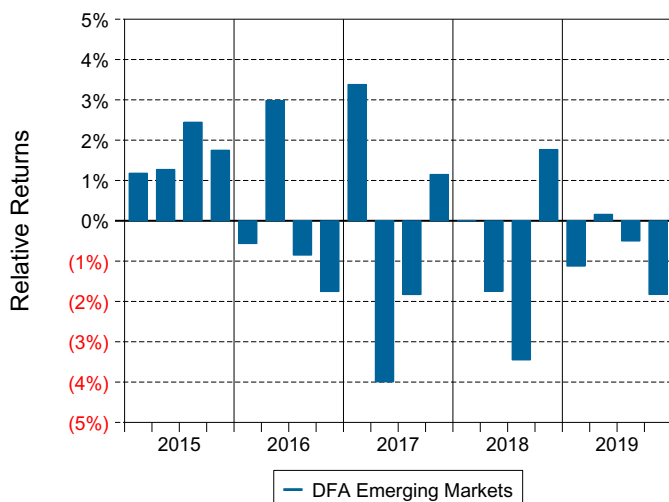
### Quarterly Asset Growth

Beginning Market Value	\$56,745,430
Net New Investment	\$0
Investment Gains/(Losses)	\$5,681,032
Ending Market Value	\$62,426,462

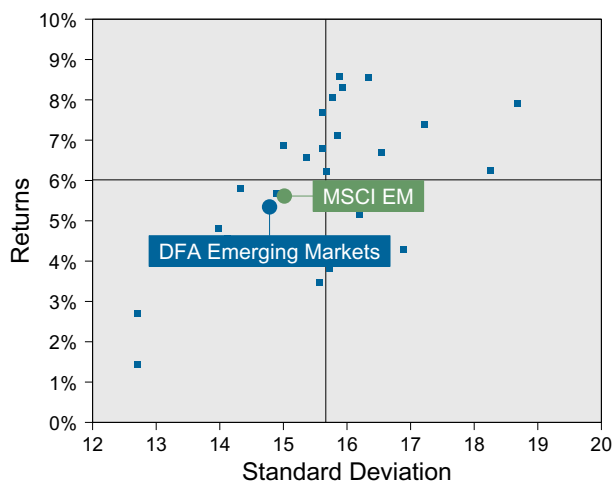
### Performance vs Callan Emerging Markets Equity Mut Funds (Net)



### Relative Return vs MSCI EM



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



## EPOCH Investment Period Ended December 31, 2019

### 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.

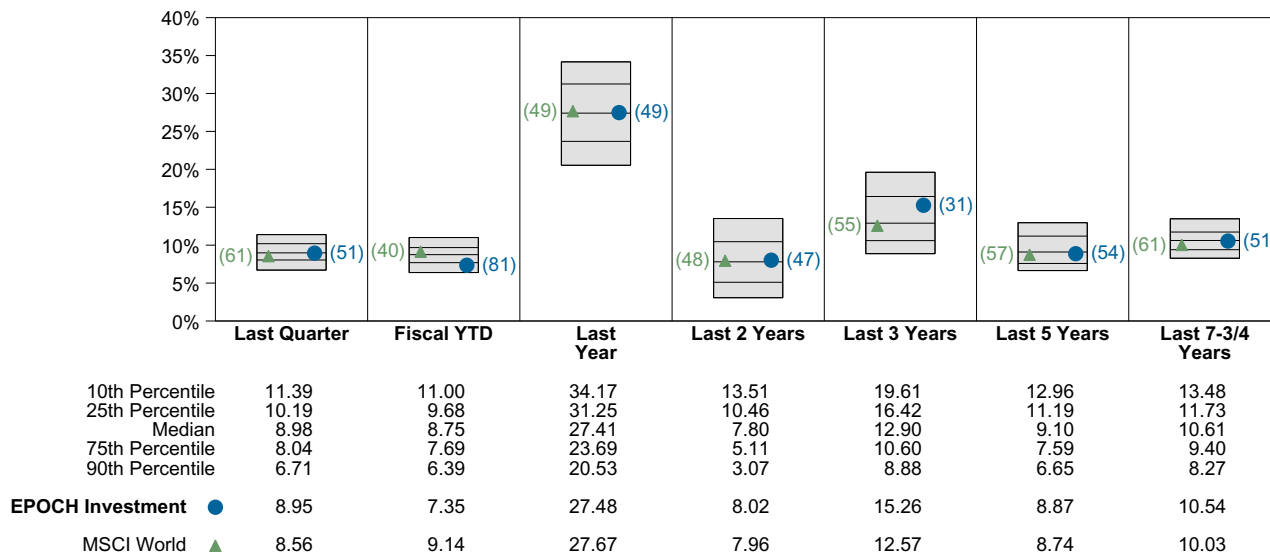
### Quarterly Summary and Highlights

- EPOCH Investment's portfolio posted a 8.95% return for the quarter placing it in the 51 percentile of the Callan Global Equity group for the quarter and in the 49 percentile for the last year.
- EPOCH Investment's portfolio outperformed the MSCI World by 0.39% for the quarter and underperformed the MSCI World for the year by 0.19%.

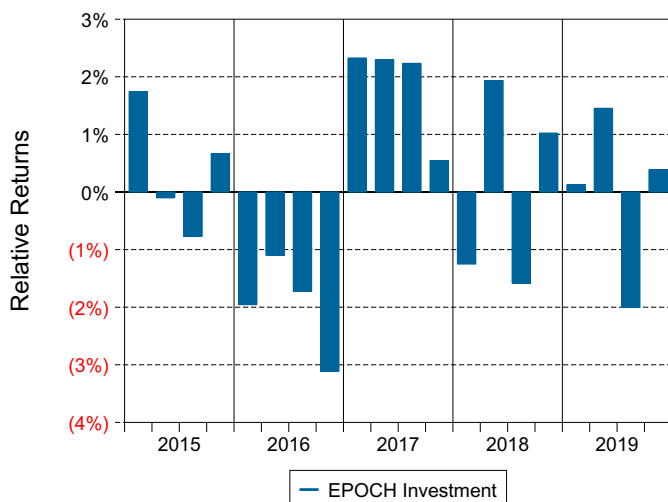
### Quarterly Asset Growth

Beginning Market Value	\$439,770,320
Net New Investment	\$10,304,395
Investment Gains/(Losses)	\$40,413,597
Ending Market Value	\$490,488,312

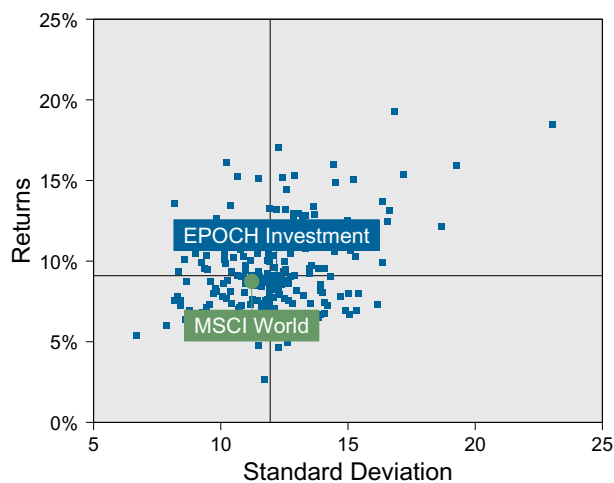
### Performance vs Callan Global Equity (Gross)



### Relative Return vs MSCI World



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



## LSV Asset Management Period Ended December 31, 2019

### 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. **The Benchmark is comprised of MSCI ACWI through June 30, 2019; MSCI ACWI IMI Index thereafter.**

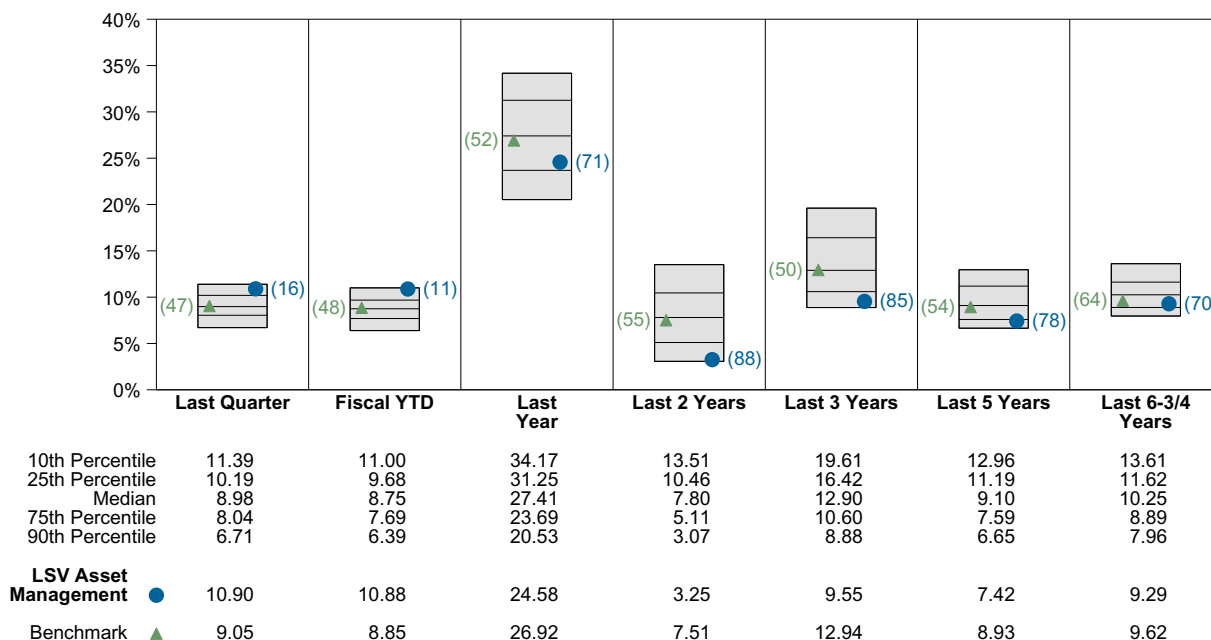
### Quarterly Summary and Highlights

- LSV Asset Management's portfolio posted a 10.90% return for the quarter placing it in the 16 percentile of the Callan Global Equity group for the quarter and in the 71 percentile for the last year.
- LSV Asset Management's portfolio outperformed the Benchmark by 1.85% for the quarter and underperformed the Benchmark for the year by 2.35%.

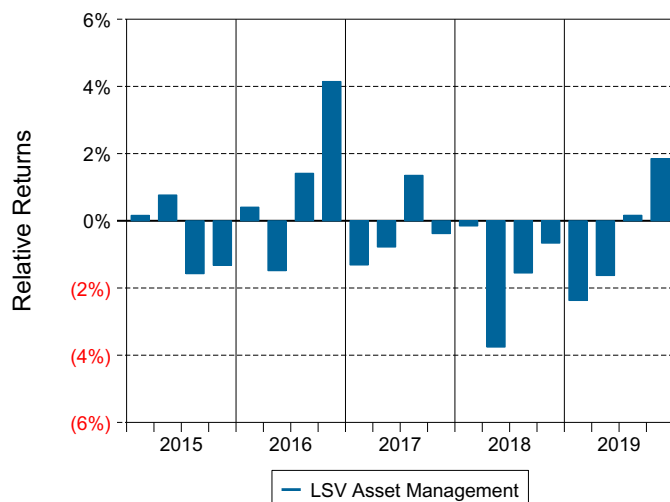
### Quarterly Asset Growth

Beginning Market Value	\$516,534,653
Net New Investment	\$-22,131,672
Investment Gains/(Losses)	\$54,262,756
Ending Market Value	\$548,665,737

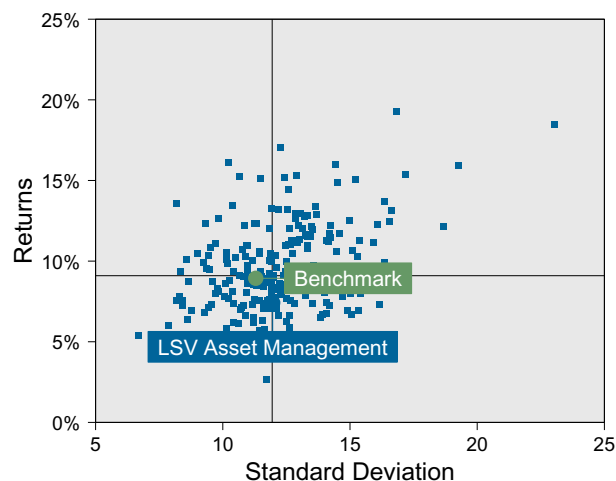
### Performance vs Callan Global Equity (Gross)



### Relative Return vs Benchmark



### 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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 19 Years
<b>Private Equity</b>	<b>0.08%</b>	<b>7.04%</b>	<b>6.63%</b>	<b>2.21%</b>	<b>2.76%</b>
Adams Street Direct Co-Invest Fd	2.21%	(14.15%)	(19.40%)	(8.27%)	-
Adams Street Direct Fd 2010	(0.65%)	(6.45%)	12.75%	11.35%	-
Adams Street 1998 Partnership	(0.24%)	0.68%	2.60%	2.41%	1.84%
Adams Street 1999 Partnership	2.15%	(7.89%)	(0.97%)	(1.00%)	2.15%
Adams Street 2000 Partnership	(2.68%)	(6.38%)	5.32%	2.21%	3.50%
Adams Street 2001 Partnership	(5.97%)	(9.91%)	1.00%	0.23%	3.33%
Adams Street 2002 Partnership	(1.47%)	(12.78%)	(2.70%)	1.79%	-
Adams Street 2003 Partnership	(1.31%)	(6.72%)	6.12%	6.79%	-
Adams Street 2010 Partnership	3.11%	14.95%	14.76%	14.33%	-
Adams Street 2008 Fund	0.43%	6.79%	14.33%	13.06%	-
Adams Street 1999 Non-US	0.28%	1.15%	1.79%	2.25%	5.60%
Adams Street 2000 Non-US	3.20%	(0.51%)	7.50%	4.60%	3.43%
Adams Street 2001 Non-US	(0.31%)	16.05%	9.94%	10.72%	-
Adams Street 2002 Non-US	(2.13%)	(4.35%)	0.16%	4.37%	-
Adams Street 2003 Non-US	(1.47%)	(13.95%)	0.88%	8.14%	-
Adams Street 2004 Non-US	(1.05%)	(0.51%)	4.40%	4.08%	-
Adams Street 2010 Non-US	6.24%	16.02%	19.13%	14.68%	-
Adams Street 2010 NonUS Emg	(0.39%)	7.39%	12.01%	12.35%	-
Adams Street 2015 Global Fd	5.40%	13.04%	19.77%	-	-
Adams Street 2016 Global Fd	1.34%	7.05%	22.97%	-	-
Adams Street 2017 Global Fd	0.44%	5.84%	-	-	-
Adams Street 2018 Global Fd	1.75%	12.63%	-	-	-
Adams Street BVCF IV Fund	(66.79%)	(66.47%)	(30.25%)	(17.75%)	8.76%
BlackRock	3.22%	9.48%	-	-	-
Capital International V	(11.97%)	(29.16%)	(44.57%)	(37.24%)	-
Capital International VI	(2.88%)	4.96%	6.66%	0.79%	-
CorsAir III	(12.69%)	68.66%	1.48%	6.16%	-
EIG Energy Fund XIV	(7.50%)	(30.20%)	3.92%	(25.09%)	-
Lewis & Clark	0.00%	(33.88%)	10.80%	(14.73%)	-
Lewis & Clark II	0.45%	(7.76%)	7.99%	1.90%	-
Matlin Patterson II	(0.33%)	(4.60%)	(10.11%)	(1.62%)	-
Matlin Patterson III	7.58%	9.47%	7.66%	4.94%	-
Quantum Energy Partners	(15.48%)	(46.06%)	(31.81%)	(28.32%)	-
Russell 1000 Index	9.04%	31.43%	15.05%	11.48%	7.09%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	8.18%

## Domestic Fixed Income Period Ended December 31, 2019

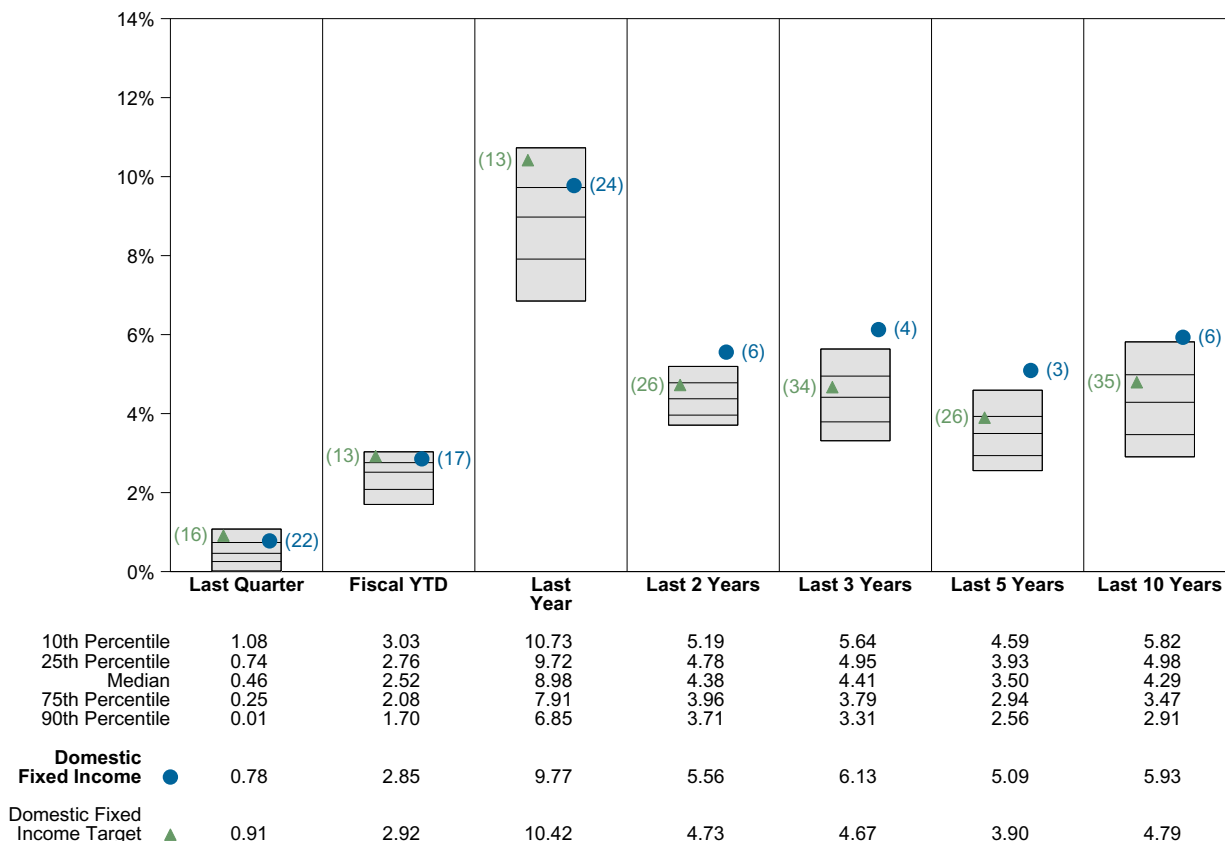
### Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.78% return for the quarter placing it in the 22 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 24 percentile for the last year.
- Domestic Fixed Income's portfolio underperformed the Domestic Fixed Income Target by 0.13% for the quarter and underperformed the Domestic Fixed Income Target for the year by 0.64%.

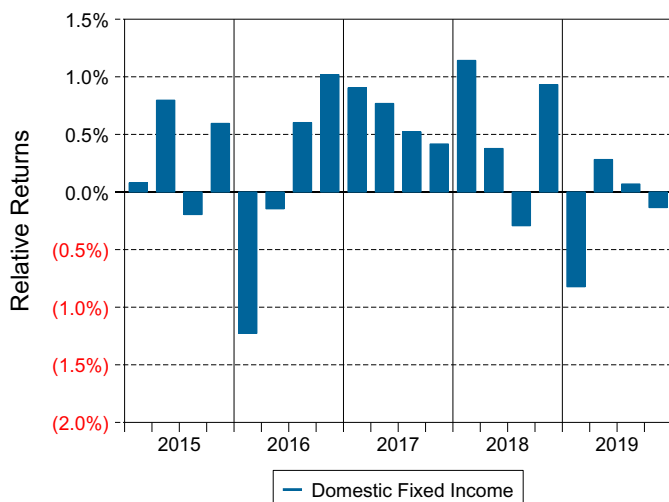
### Quarterly Asset Growth

Beginning Market Value	\$1,376,231,452
Net New Investment	\$-7,678,201
Investment Gains/(Losses)	\$10,461,037
Ending Market Value	\$1,379,014,287

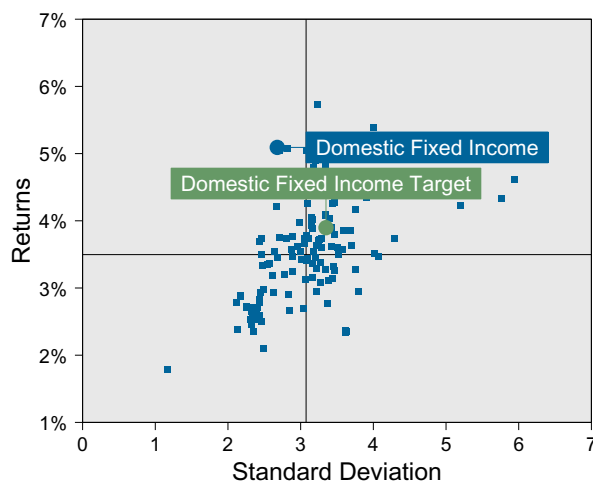
### Performance vs Public Fund - Domestic Fixed (Gross)



### Relative Returns vs Domestic Fixed Income Target



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



## Declaration Total Return Period Ended December 31, 2019

### 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.

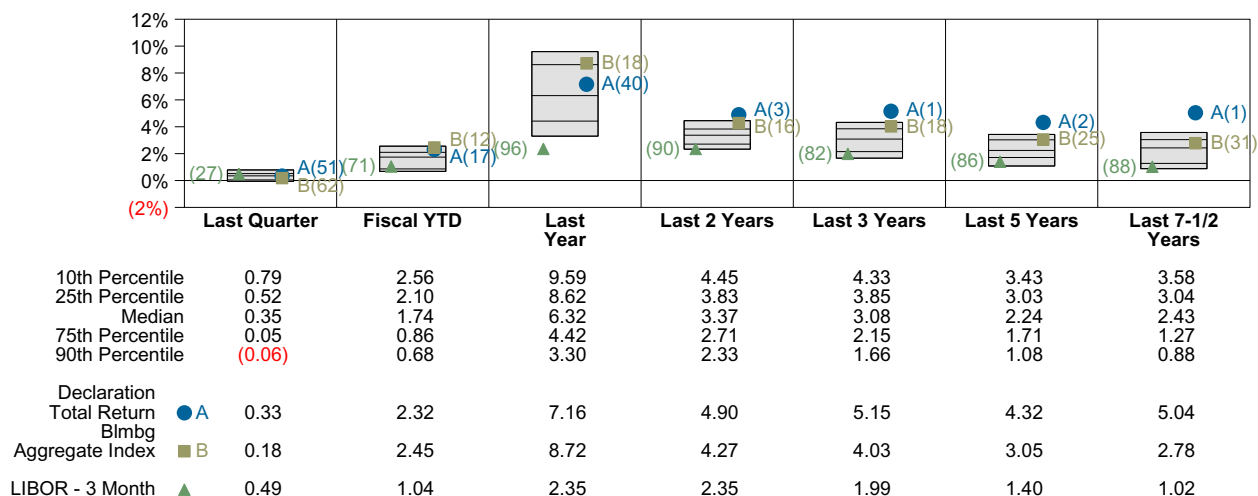
### Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.33% return for the quarter placing it in the 51 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 40 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.16% for the quarter and outperformed the LIBOR - 3 Month for the year by 4.81%.

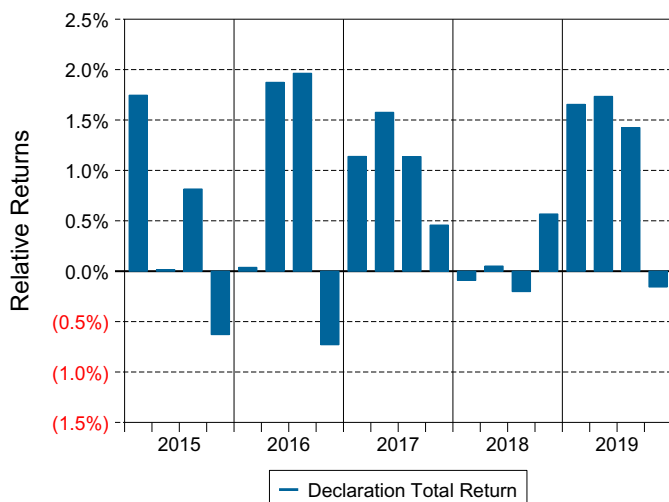
### Quarterly Asset Growth

Beginning Market Value	\$115,504,849
Net New Investment	\$-66,159
Investment Gains/(Losses)	\$383,485
Ending Market Value	\$115,822,175

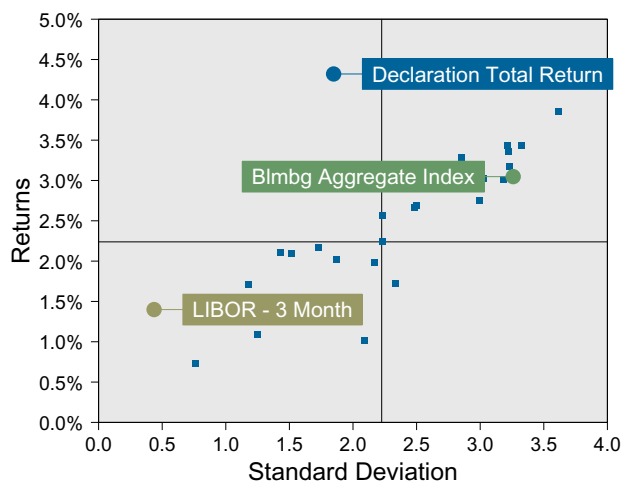
### Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



### Relative Return vs LIBOR - 3 Month



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



## PIMCO DiSCO II

### Period Ended December 31, 2019

#### 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.

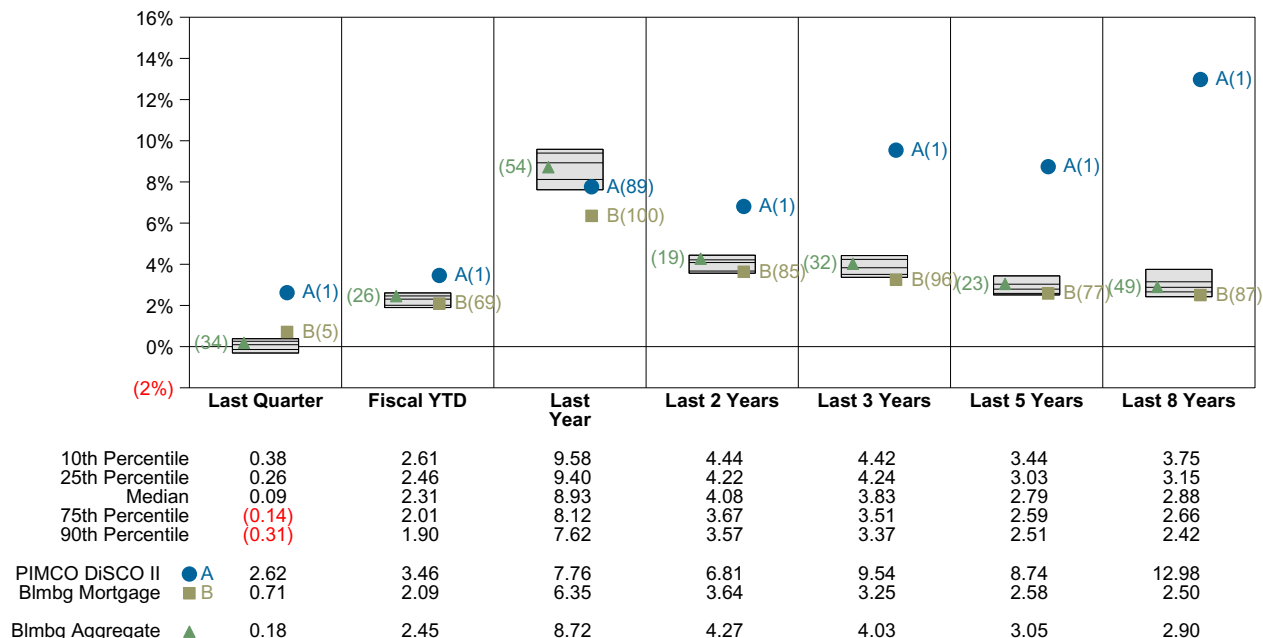
#### Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 2.62% return for the quarter placing it in the 1 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 89 percentile for the last year.
- PIMCO DiSCO II's portfolio outperformed the Blmbg Aggregate by 2.44% for the quarter and underperformed the Blmbg Aggregate for the year by 0.95%.

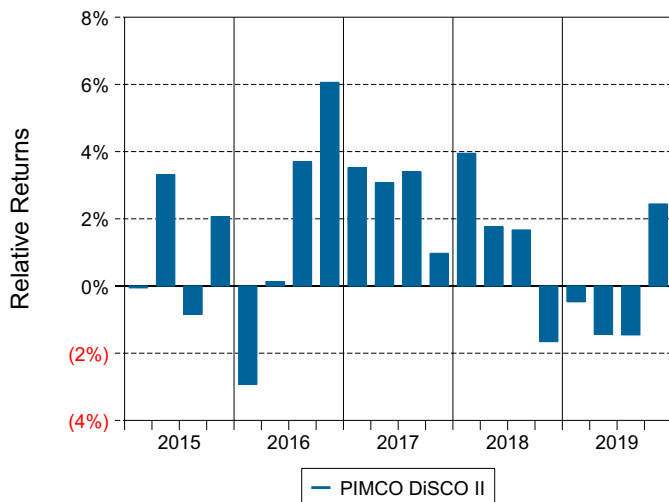
#### Quarterly Asset Growth

Beginning Market Value	\$94,719,129
Net New Investment	\$0
Investment Gains/(Losses)	\$2,482,172
Ending Market Value	\$97,201,301

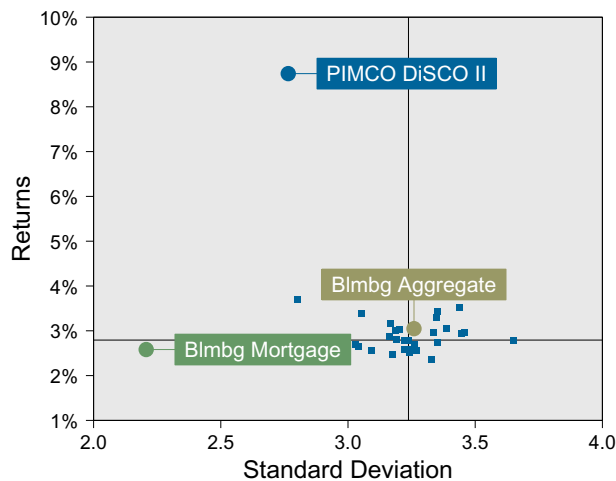
#### Performance vs Callan Core Bond Mutual Funds (Net)



#### Relative Return vs Blmbg Aggregate



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





## PIMCO Core Plus Constrained Period Ended December 31, 2019

### Investment Philosophy

PIMCO's investment process utilizes both "top-down" and "bottom-up" strategies. Top-down strategies focus on duration, yield curve positioning, volatility, and sector rotation. These strategies are deployed from a macro view of the portfolio driven by their secular outlook of the forces likely to influence the economy and financial markets over the next three to five years and their cyclical views of two- to four-quarter trends. Implementation in portfolios is effected by selecting securities that achieve the designated objectives. Bottom-up strategies drive their security selection process and facilitate the identification and analysis of undervalued securities. **The product changed from Commingled Fund to Separate Account in March 2014. \*Libor-3 month through February 28, 2017; Fund's performance through March 31, 2014; Libor-3 month through June 30, 2018; Bloomberg Aggregate thereafter.**

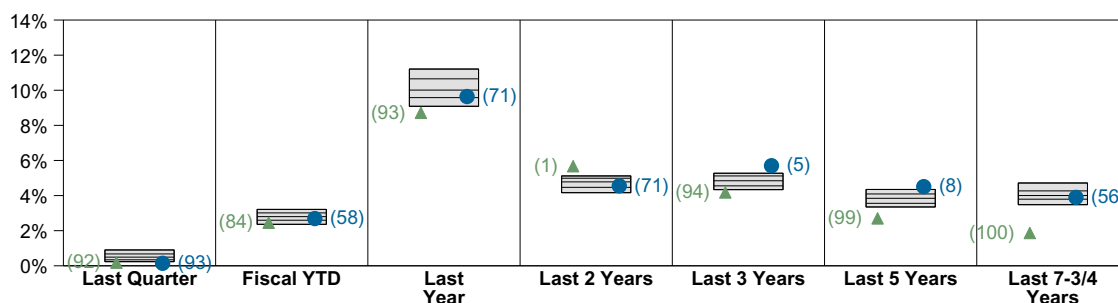
### Quarterly Summary and Highlights

- PIMCO Core Plus Constrained's portfolio posted a 0.14% return for the quarter placing it in the 93 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 71 percentile for the last year.
- PIMCO Core Plus Constrained's portfolio underperformed the Blended Benchmark\* by 0.04% for the quarter and outperformed the Blended Benchmark\* for the year by 0.93%.

### Quarterly Asset Growth

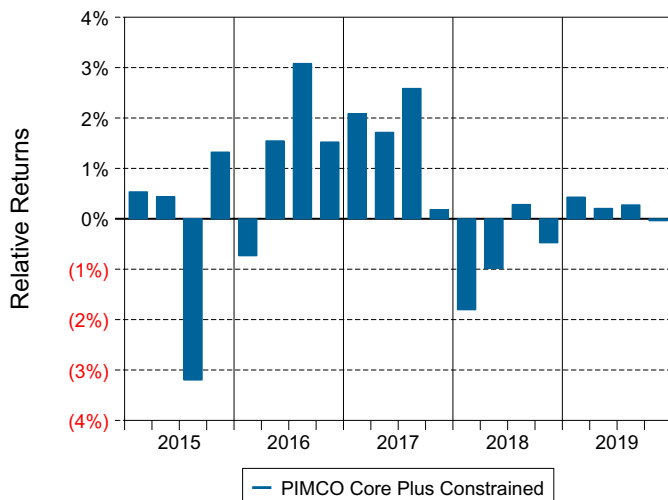
Beginning Market Value	\$328,605,667
Net New Investment	\$4,899,646
Investment Gains/(Losses)	\$449,382
Ending Market Value	\$333,954,695

### Performance vs Callan Core Plus Fixed Income (Gross)

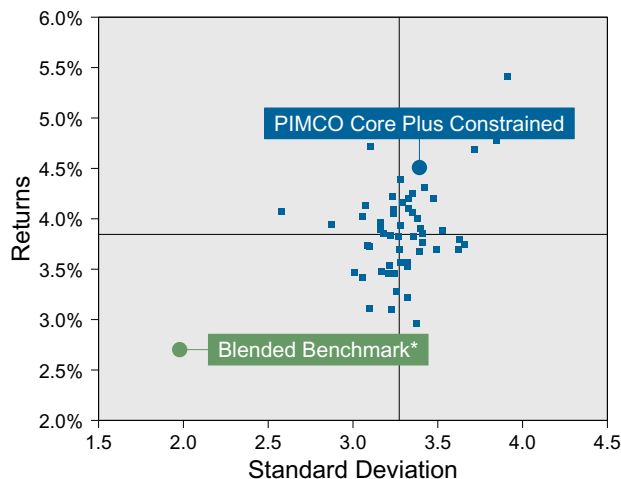


10th Percentile	0.90	3.21	11.21	5.12	5.27	4.35	4.72
25th Percentile	0.68	3.01	10.65	4.99	5.12	4.09	4.27
Median	0.49	2.80	10.01	4.78	4.84	3.85	4.00
75th Percentile	0.34	2.60	9.58	4.47	4.55	3.56	3.79
90th Percentile	0.24	2.36	9.09	4.17	4.34	3.35	3.48
<b>PIMCO Core Plus Constrained</b>	<b>0.14</b>	<b>2.69</b>	<b>9.64</b>	<b>4.55</b>	<b>5.70</b>	<b>4.51</b>	<b>3.90</b>
<b>Blended Benchmark*</b>	<b>0.18</b>	<b>2.45</b>	<b>8.72</b>	<b>5.67</b>	<b>4.18</b>	<b>2.70</b>	<b>1.87</b>

### Relative Return vs Blended Benchmark\*



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



## Prudential Core Period Ended December 31, 2019

### Investment Philosophy

The PGIM Fixed Income Core Fixed Income strategy seeks to provide +60 bps over the Bloomberg Barclays Aggregate Index over a market cycle. The strategy tends to generate its excess return from fairly equal increments of both sector allocation and subsector/security allocation. Duration and yield curve positioning is generally de-emphasized, but will be considered when market opportunities dictate. The primary way they add value is through intensive research-based sector, industry, and security selection. The strategy is predominately investment grade, but may also invest nominally in crossover/high yield bonds and emerging markets debt, when guidelines permit.

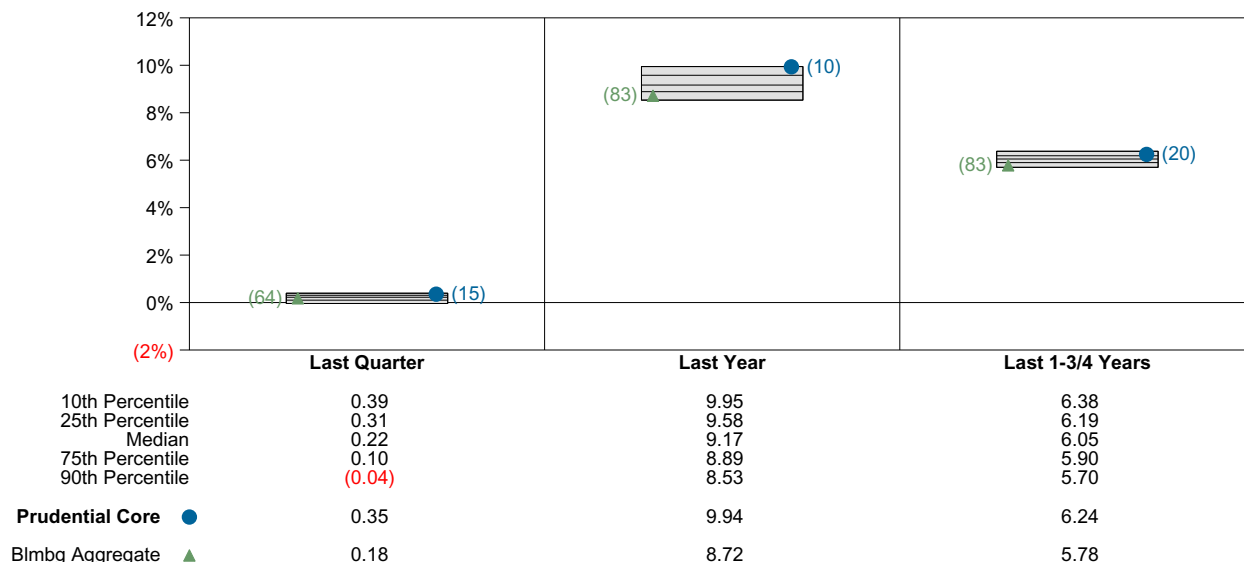
### Quarterly Summary and Highlights

- Prudential Core's portfolio posted a 0.35% return for the quarter placing it in the 15 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 10 percentile for the last year.
- Prudential Core's portfolio outperformed the Blmbg Aggregate by 0.17% for the quarter and outperformed the Blmbg Aggregate for the year by 1.22%.

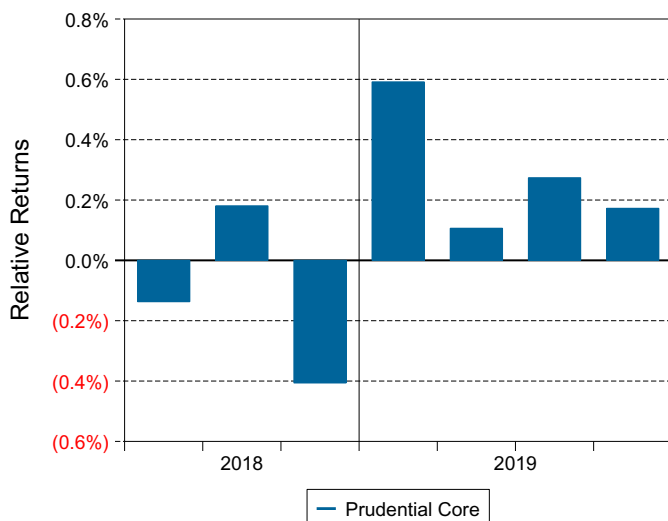
### Quarterly Asset Growth

Beginning Market Value	\$326,627,291
Net New Investment	\$4,904,264
Investment Gains/(Losses)	\$1,101,940
Ending Market Value	\$332,633,496

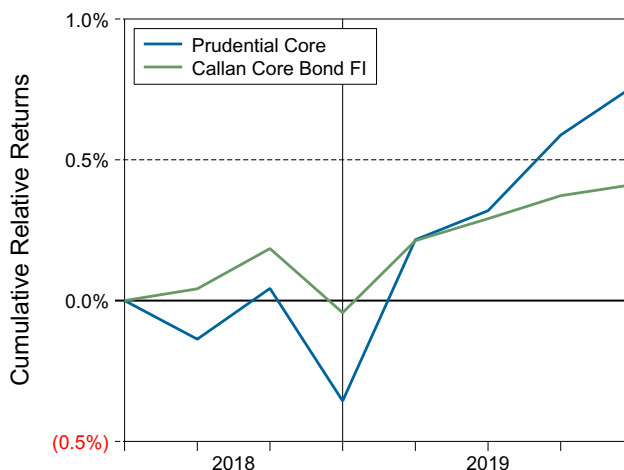
### Performance vs Callan Core Bond Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



### Cumulative Returns vs Blmbg Aggregate



## SSgA Long US Treas Index Period Ended December 31, 2019

### 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.

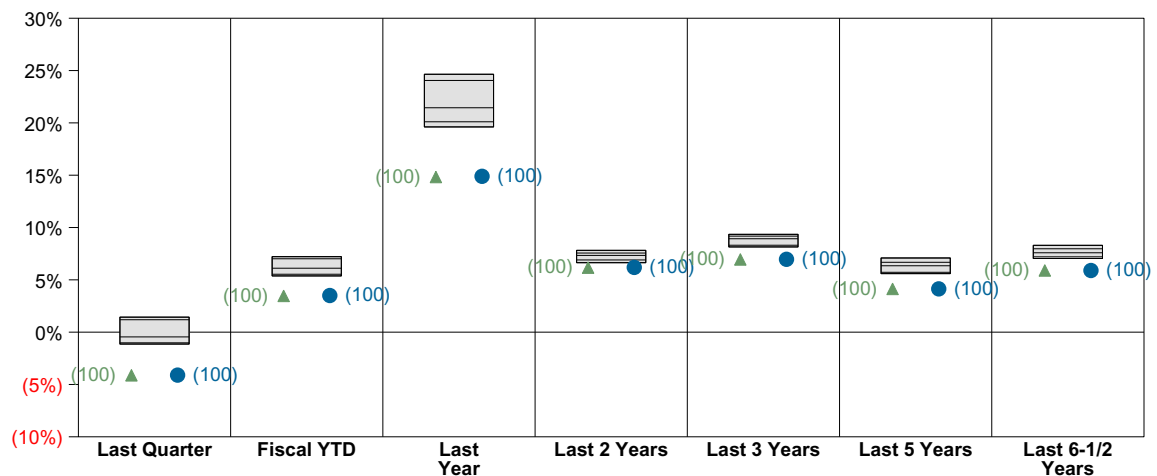
### Quarterly Summary and Highlights

- SSgA Long US Treas Index's portfolio posted a (4.10)% return for the quarter placing it in the 100 percentile of the Callan Extended Maturity Fixed Income group for the quarter and in the 100 percentile for the last year.
- SSgA Long US Treas Index's portfolio outperformed the Blmbg:Long Treasury by 0.02% for the quarter and outperformed the Blmbg:Long Treasury for the year by 0.07%.

### Quarterly Asset Growth

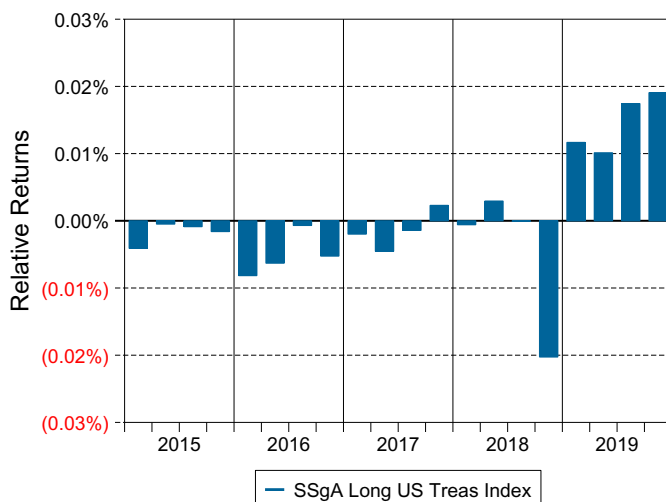
Beginning Market Value	\$92,740,297
Net New Investment	\$7,996,384
Investment Gains/(Losses)	\$-3,953,658
Ending Market Value	\$96,783,022

### Performance vs Callan Extended Maturity Fixed Income (Gross)

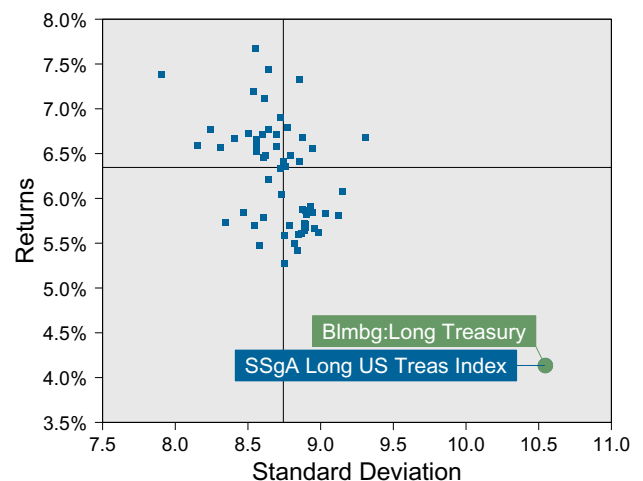


SSgA Long US Treas Index	● (4.10)	3.50	14.89	6.19	6.96	4.14	5.89
Blmbg:Long Treasury	▲ (4.12)	3.47	14.83	6.17	6.95	4.13	5.90

### Relative Return vs Blmbg:Long Treasury



### Callan Extended Maturity Fixed Income (Gross) Annualized Five Year Risk vs Return



## Ares ND Credit Strategies Fd Period Ended December 31, 2019

### Quarterly Summary and Highlights

- Ares ND Credit Strategies Fd's portfolio posted a 2.10% return for the quarter placing it in the 81 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 98 percentile for the last year.
- Ares ND Credit Strategies Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 0.01% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.64%.

### Quarterly Asset Growth

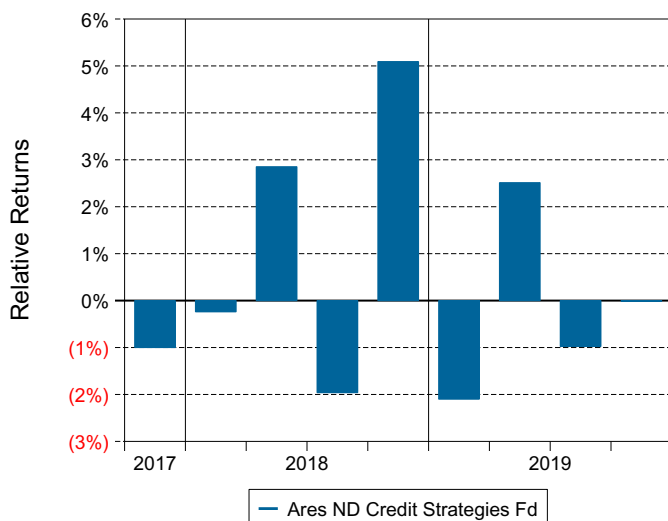
Beginning Market Value	\$100,704,649
Net New Investment	\$0
Investment Gains/(Losses)	\$2,113,942
Ending Market Value	\$102,818,591

### Performance vs Callan High Yield Mutual Funds (Net)

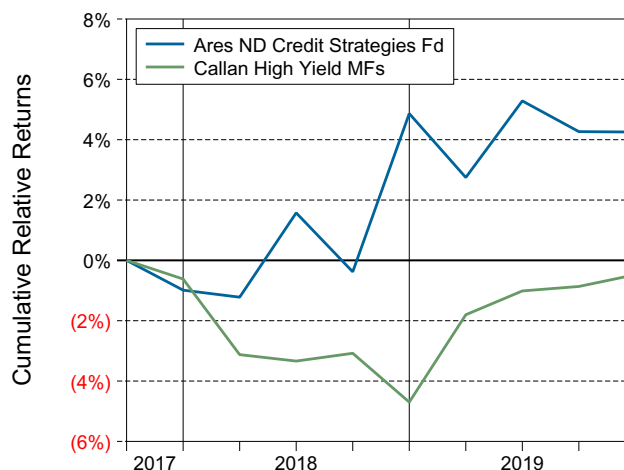


10th Percentile	3.14	4.74	15.76	5.96	5.41
25th Percentile	2.80	4.26	15.01	5.45	5.01
Median	2.49	3.69	14.04	4.90	4.54
75th Percentile	2.15	3.31	12.88	4.49	4.19
90th Percentile	1.89	2.53	11.79	3.98	3.74
Ares ND Credit Strategies Fd	2.10	2.10	8.35	7.58	6.76
S&P/LSTA Leveraged Loan B Index	1.73	2.74	8.64	4.46	4.47
S&P/LSTA Leveraged Loan B Index	2.11	3.11	8.99	4.84	4.80

### Relative Returns vs S&P/LSTA Leveraged Loan B Index



### Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



# Cerberus ND Private Credit Fd

## Period Ended December 31, 2019

### Investment Philosophy

The investment objective of the LLC is to achieve superior risk-adjusted rates of return primarily through origination of, and investment in, secured debt assets consistent with the Loan Opportunities Strategy of the Cerberus Business Finance lending platform ("CBF", "Cerberus Business Finance" or the "Cerberus Lending Platform"). The Cerberus Lending Platform is a direct origination and lending business focused on providing secured debt primarily to U.S. middle-market companies. The LLC expects to generate both current income and capital appreciation.

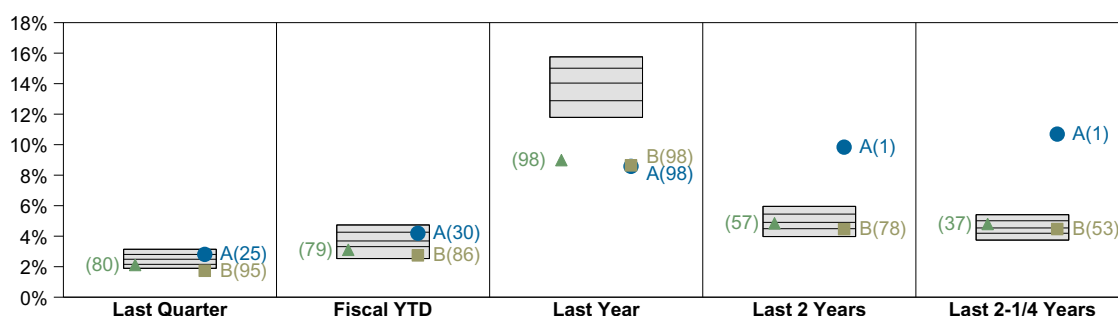
### Quarterly Summary and Highlights

- Cerberus ND Private Credit Fd's portfolio posted a 2.81% return for the quarter placing it in the 25 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 98 percentile for the last year.
- Cerberus ND Private Credit Fd's portfolio outperformed the S&P/LSTA Leveraged Loan B Index by 0.69% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.41%.

### Quarterly Asset Growth

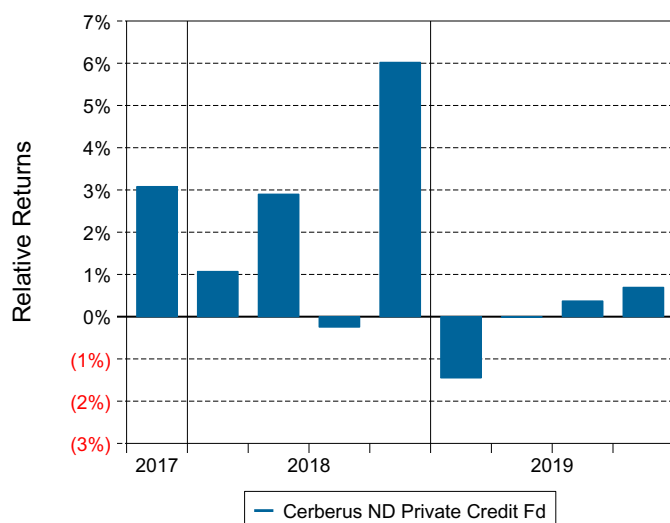
Beginning Market Value	\$104,720,811
Net New Investment	\$-2,100,000
Investment Gains/(Losses)	\$2,939,725
Ending Market Value	\$105,560,536

### Performance vs Callan High Yield Mutual Funds (Net)

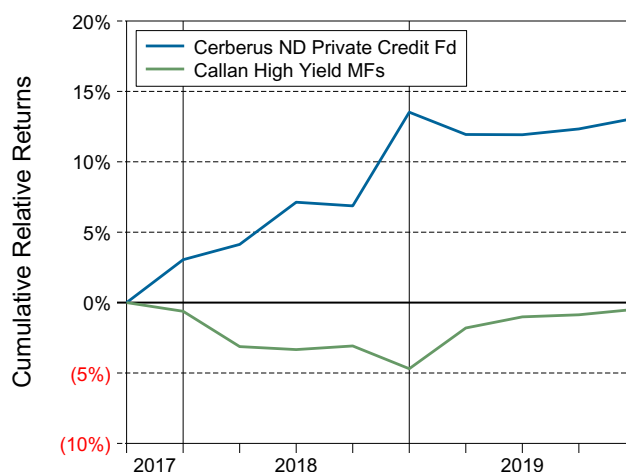


10th Percentile	3.14	4.74	15.76	5.96	5.41
25th Percentile	2.80	4.26	15.01	5.45	5.01
Median	2.49	3.69	14.04	4.90	4.54
75th Percentile	2.15	3.31	12.88	4.49	4.19
90th Percentile	1.89	2.53	11.79	3.98	3.74
Cerberus ND Private Credit Fd	2.81	4.19	8.58	9.84	10.69
S&P/LSTA Leveraged Loan B Index	1.73	2.74	8.64	4.46	4.47
S&P/LSTA Leveraged Loan B Index	2.11	3.11	8.99	4.84	4.80

### Relative Returns vs S&P/LSTA Leveraged Loan B Index



### Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



## Goldman Sachs 2006 Offshore Period Ended December 31, 2019

### 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.

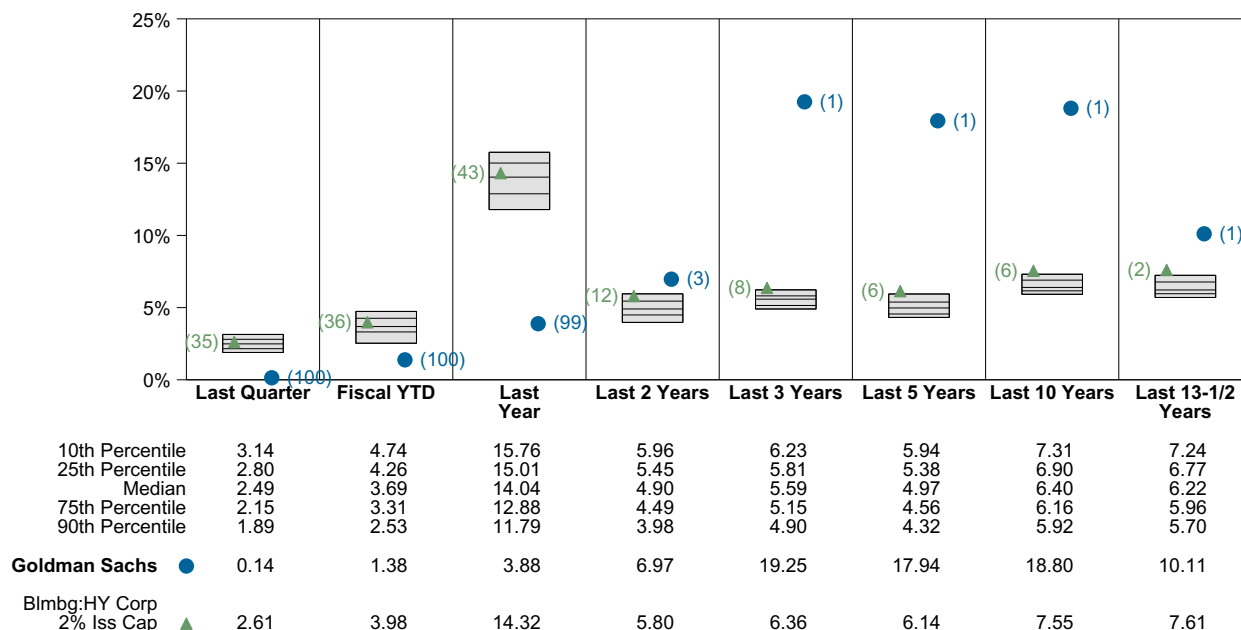
### Quarterly Summary and Highlights

- Goldman Sachs's portfolio posted a 0.14% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 99 percentile for the last year.
- Goldman Sachs's portfolio underperformed the Blmbg:HY Corp 2% Iss Cap by 2.48% for the quarter and underperformed the Blmbg:HY Corp 2% Iss Cap for the year by 10.43%.

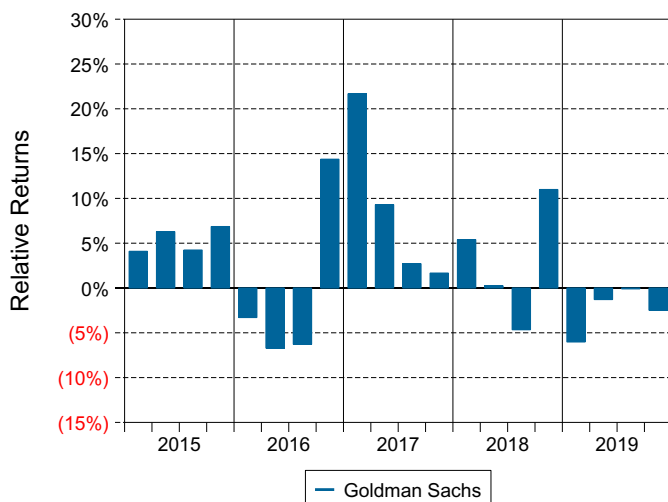
### Quarterly Asset Growth

Beginning Market Value	\$93,542
Net New Investment	\$-31,449
Investment Gains/(Losses)	\$277
Ending Market Value	\$62,370

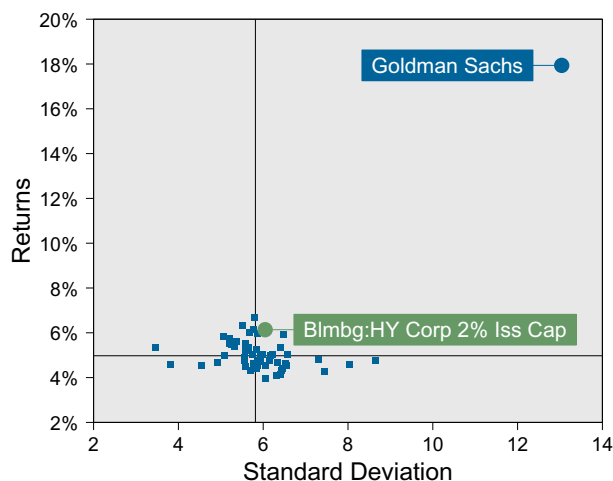
### Performance vs Callan High Yield Mutual Funds (Net)



### Relative Return vs Blmbg:HY Corp 2% Iss Cap



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



## Goldman Sachs Offshore Fund V Period Ended December 31, 2019

### 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.

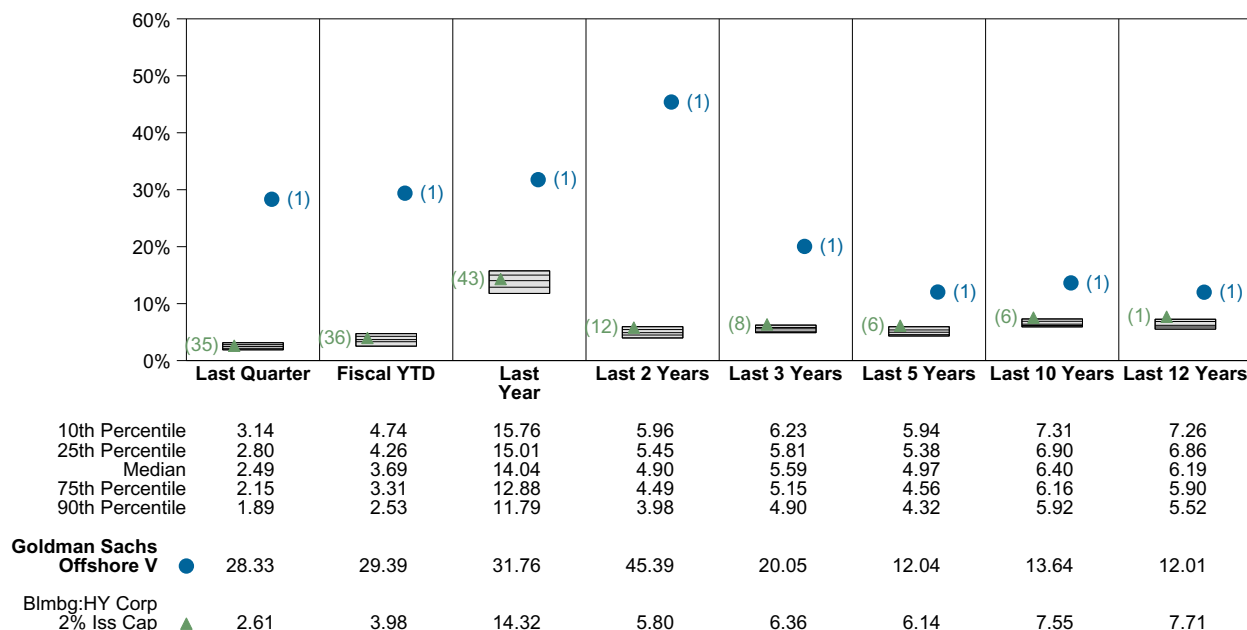
### Quarterly Summary and Highlights

- Goldman Sachs Offshore V's portfolio posted a 28.33% 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 Offshore V's portfolio outperformed the Blmbg:HY Corp 2% Iss Cap by 25.71% for the quarter and outperformed the Blmbg:HY Corp 2% Iss Cap for the year by 17.45%.

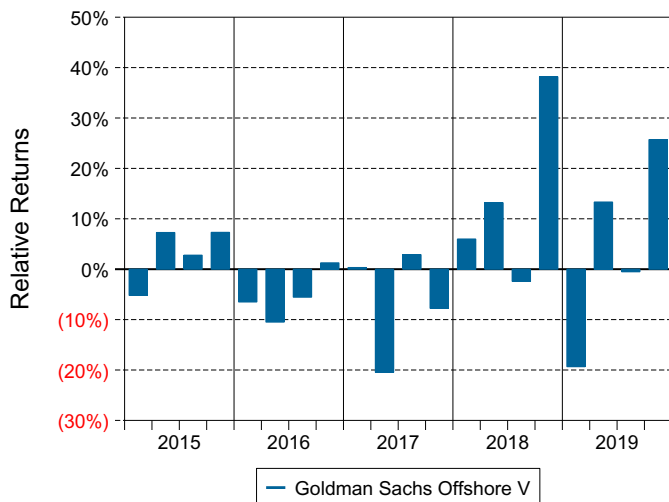
### Quarterly Asset Growth

Beginning Market Value	\$326,663
Net New Investment	\$0
Investment Gains/(Losses)	\$92,528
Ending Market Value	\$419,191

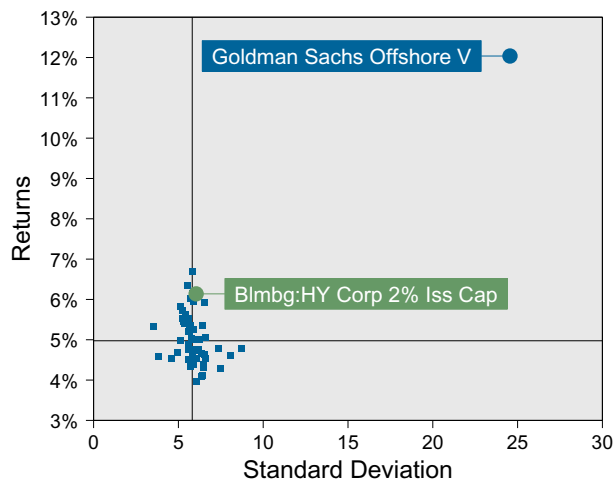
### Performance vs Callan High Yield Mutual Funds (Net)



### Relative Return vs Blmbg:HY Corp 2% Iss Cap



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



## Loomis Sayles Period Ended December 31, 2019

### 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.

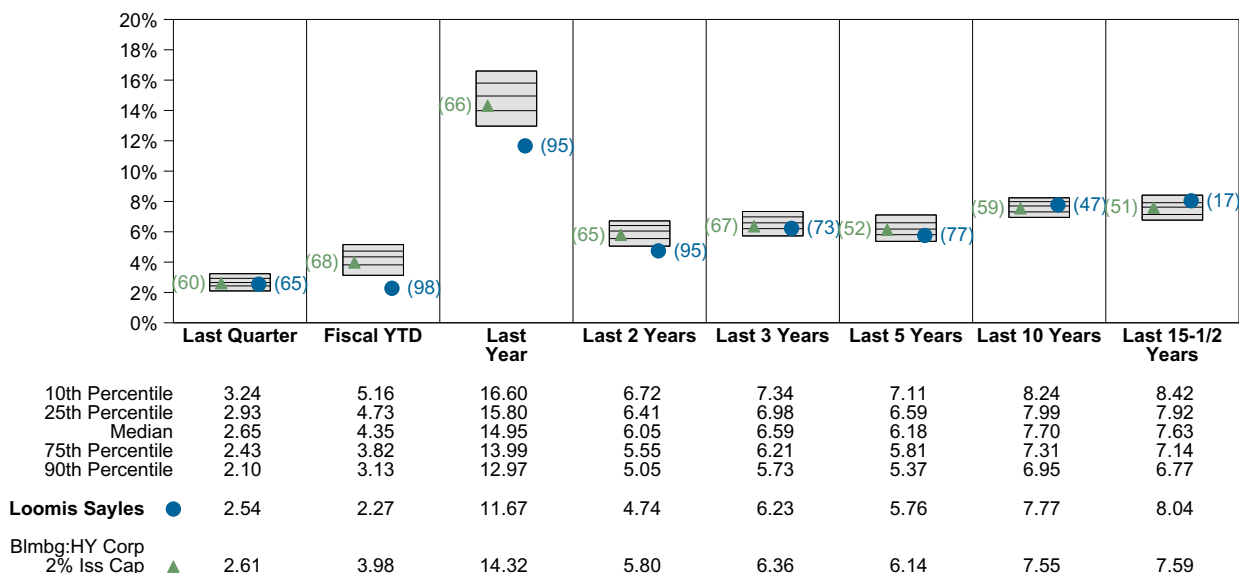
### Quarterly Summary and Highlights

- Loomis Sayles's portfolio posted a 2.54% return for the quarter placing it in the 65 percentile of the Callan High Yield Fixed Income group for the quarter and in the 95 percentile for the last year.
- Loomis Sayles's portfolio underperformed the Blmbg:HY Corp 2% Iss Cap by 0.07% for the quarter and underperformed the Blmbg:HY Corp 2% Iss Cap for the year by 2.65%.

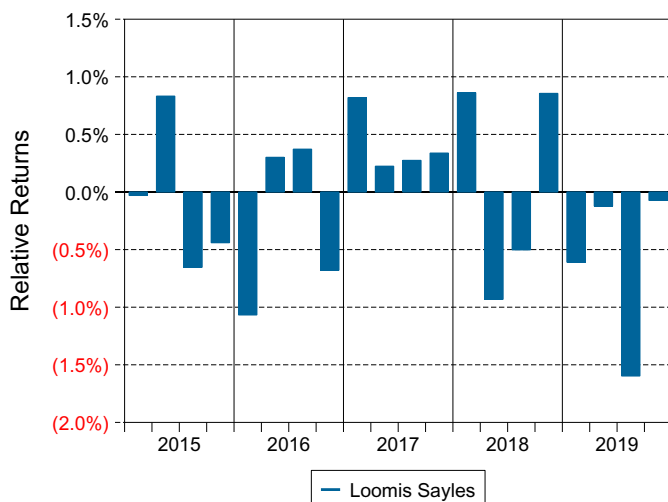
### Quarterly Asset Growth

Beginning Market Value	\$186,801,406
Net New Investment	\$-21,233,502
Investment Gains/(Losses)	\$4,878,037
Ending Market Value	\$170,445,942

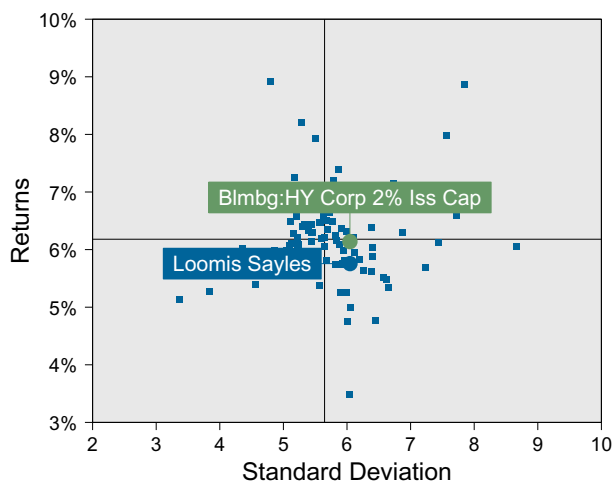
### Performance vs Callan High Yield Fixed Income (Gross)



### Relative Return vs Blmbg:HY Corp 2% Iss Cap



### Callan High Yield Fixed Income (Gross) Annualized Five Year Risk vs Return





## PIMCO Bravo II Fund

### Period Ended December 31, 2019

#### 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.

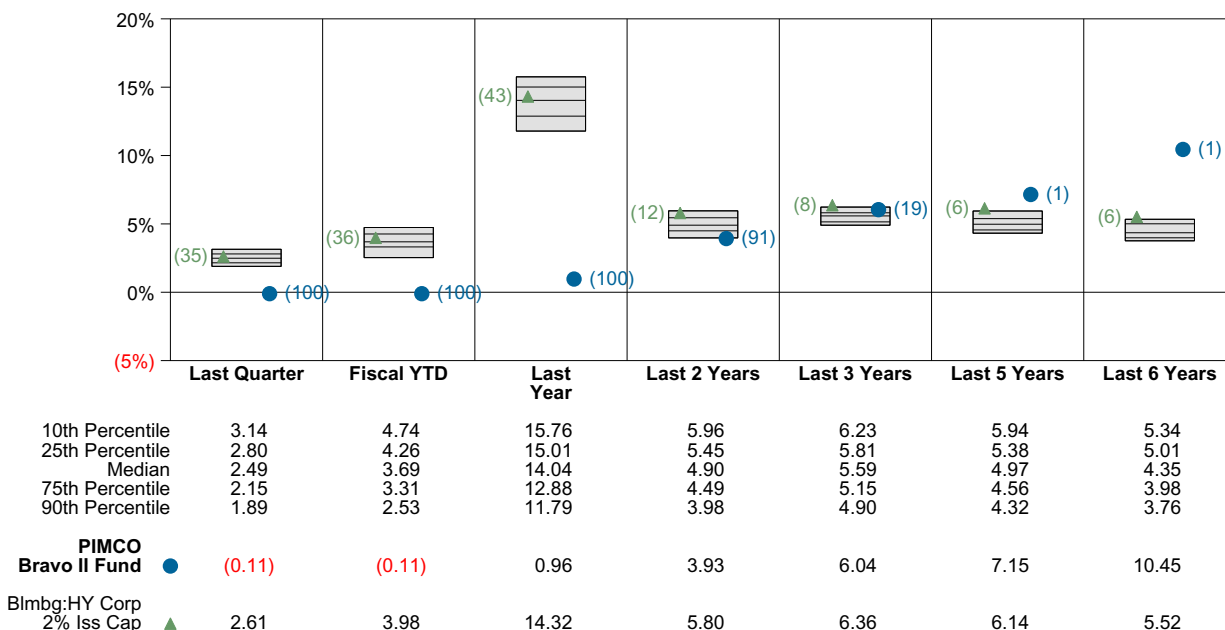
#### Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a (0.11)% return for the quarter placing it in the 100 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 100 percentile for the last year.
- PIMCO Bravo II Fund's portfolio underperformed the Blmbg:HY Corp 2% Iss Cap by 2.72% for the quarter and underperformed the Blmbg:HY Corp 2% Iss Cap for the year by 13.35%.

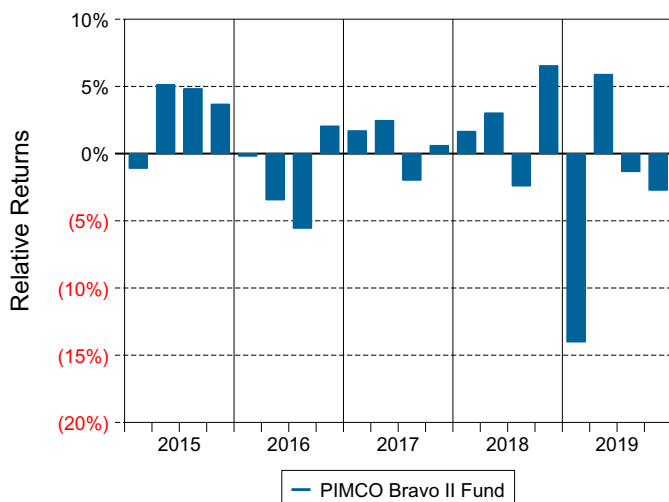
#### Quarterly Asset Growth

Beginning Market Value	\$25,387,147
Net New Investment	\$-2,047,386
Investment Gains/(Losses)	\$-26,793
Ending Market Value	\$23,312,968

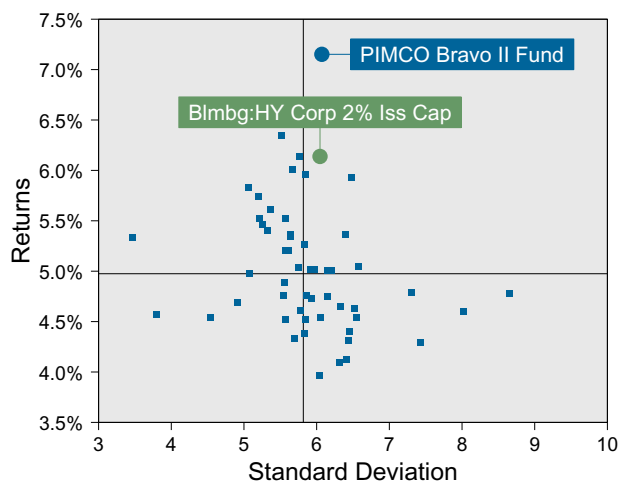
#### Performance vs Callan High Yield Mutual Funds (Net)



#### Relative Return vs Blmbg:HY Corp 2% Iss Cap



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



## Real Estate Period Ended December 31, 2019

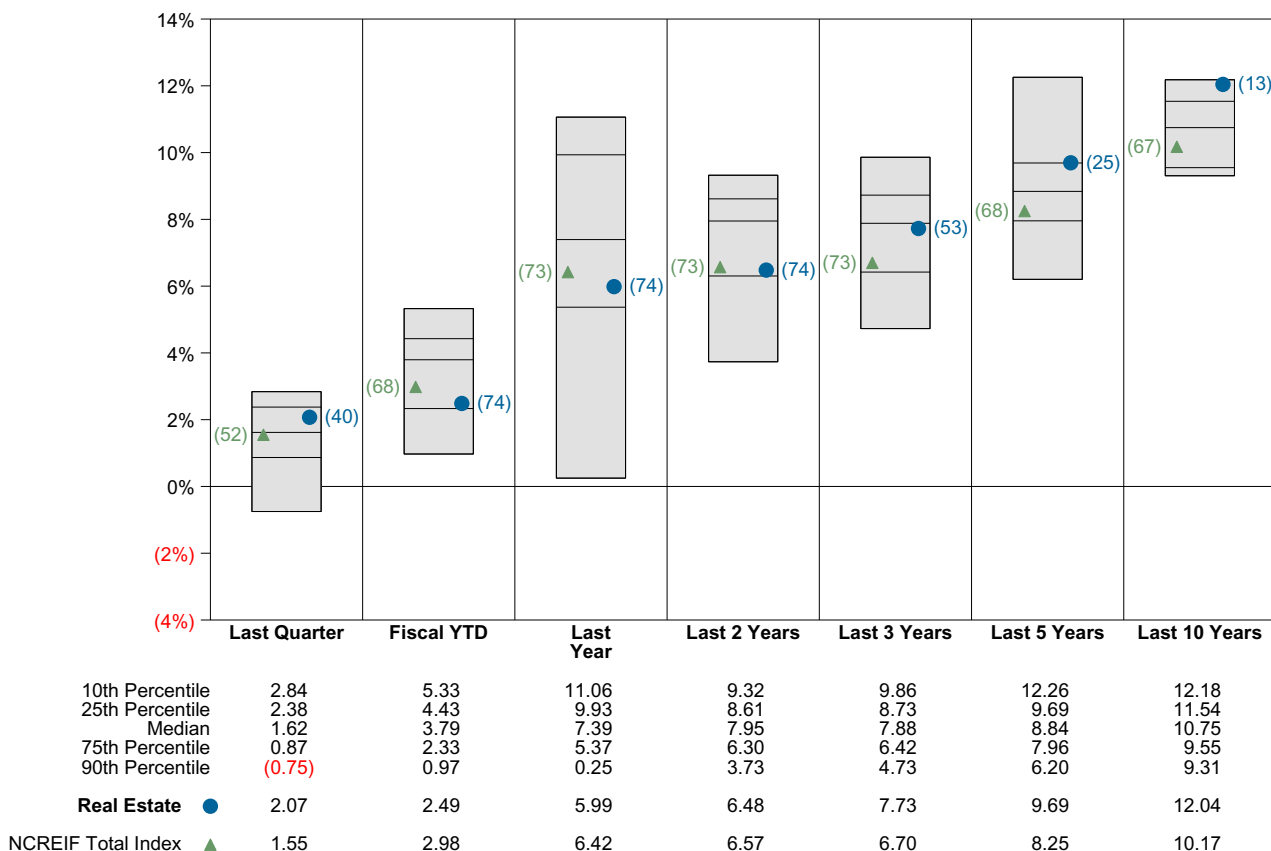
### Quarterly Summary and Highlights

- Real Estate's portfolio posted a 2.07% return for the quarter placing it in the 40 percentile of the Public Fund - Real Estate group for the quarter and in the 74 percentile for the last year.
- Real Estate's portfolio outperformed the NCREIF Total Index by 0.52% for the quarter and underperformed the NCREIF Total Index for the year by 0.44%.

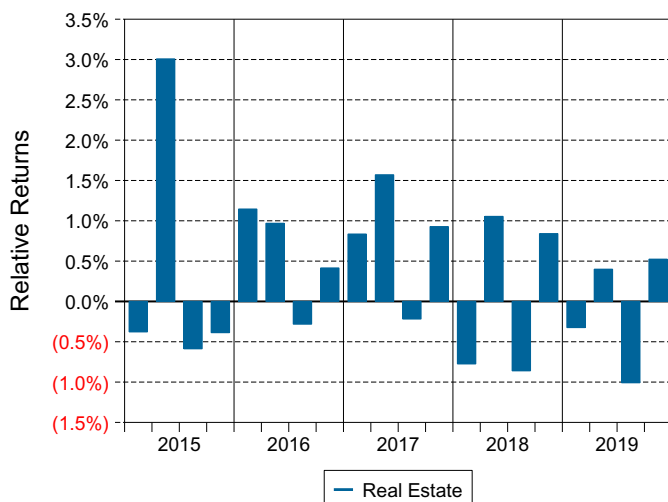
### Quarterly Asset Growth

Beginning Market Value	\$673,513,599
Net New Investment	\$-19,985,365
Investment Gains/(Losses)	\$14,033,154
Ending Market Value	\$667,561,389

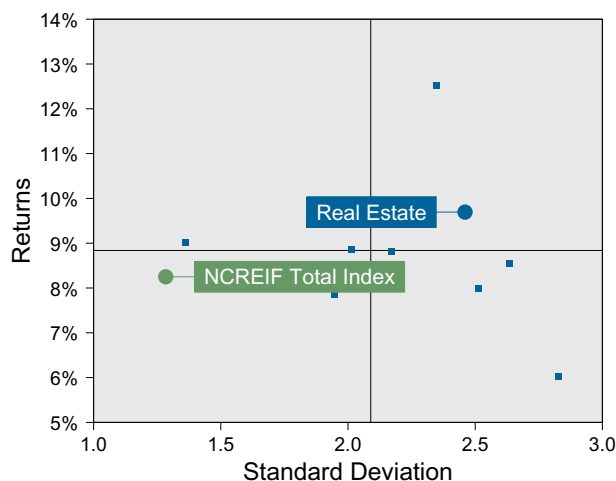
### Performance vs Public Fund - Real Estate (Gross)



### Relative Return vs NCREIF Total Index



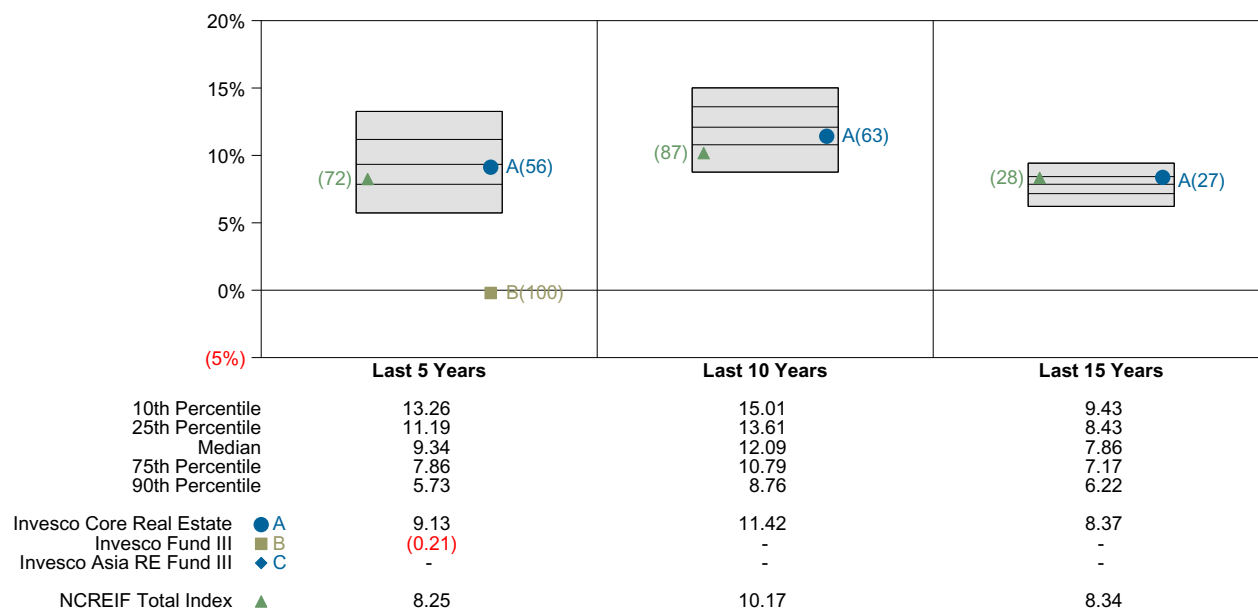
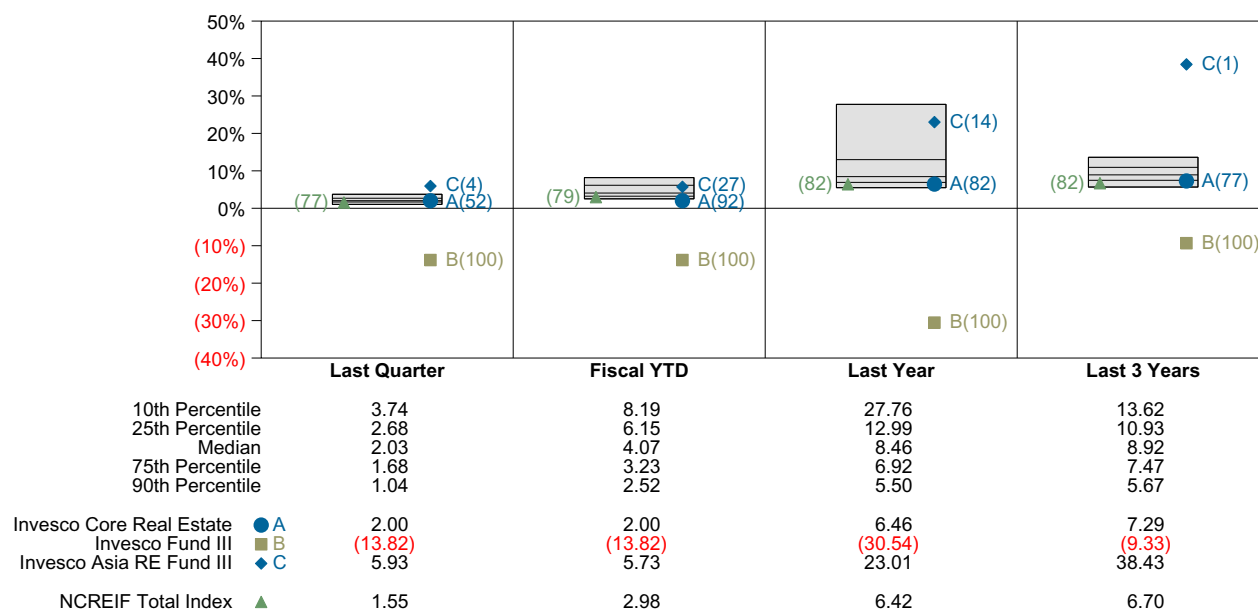
### Public Fund - Real Estate (Gross) Annualized Five Year Risk vs Return



# North Dakota State Investment Board Pension Funds Performance vs Callan Total Domestic Real Estate DB Periods Ended December 31, 2019

## Return Ranking

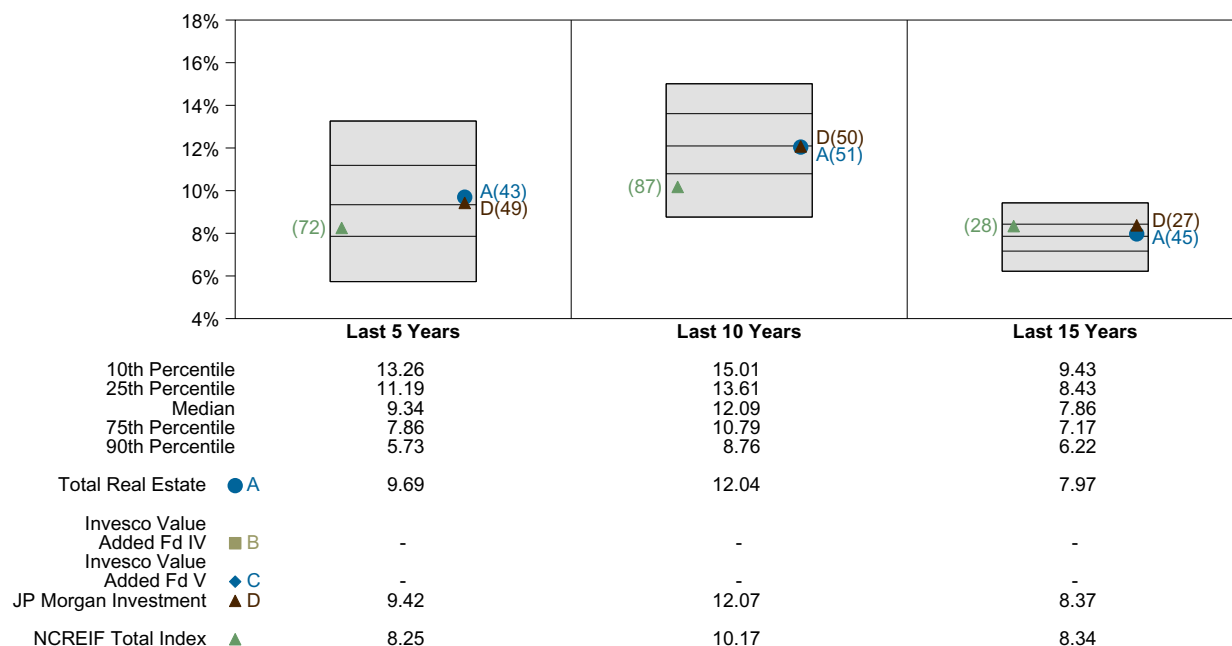
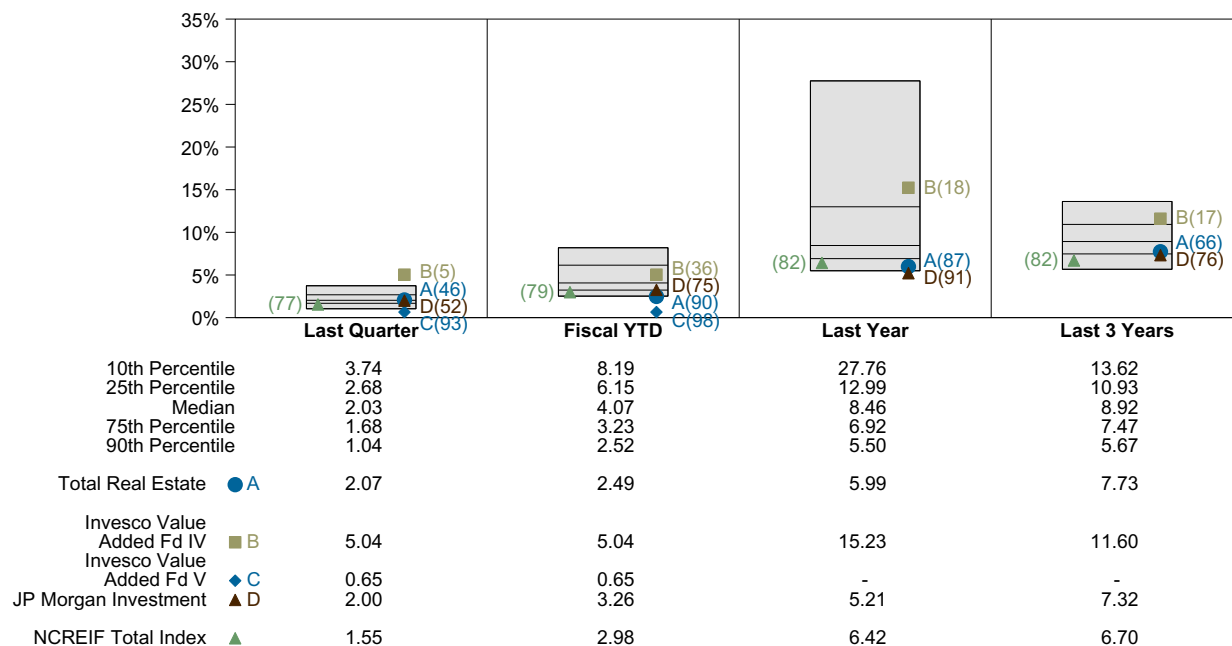
The chart below illustrates fund rankings over various periods versus the Callan Total Domestic Real Estate DB. The bars represent the range of returns from the 10th percentile to the 90th percentile for each period for all funds in the Callan Total Domestic Real Estate DB. The numbers to the right of the bar represent the percentile rankings of the funds being analyzed. The table below the chart details the rates of return plotted in the graph above.



# North Dakota State Investment Board Pension Funds Performance vs Callan Total Domestic Real Estate DB Periods Ended December 31, 2019

## Return Ranking

The chart below illustrates fund rankings over various periods versus the Callan Total Domestic Real Estate DB. The bars represent the range of returns from the 10th percentile to the 90th percentile for each period for all funds in the Callan Total Domestic Real Estate DB. The numbers to the right of the bar represent the percentile rankings of the funds being analyzed. The table below the chart details the rates of return plotted in the graph above.



## TIR Teredo Period Ended December 31, 2019

### Investment Philosophy

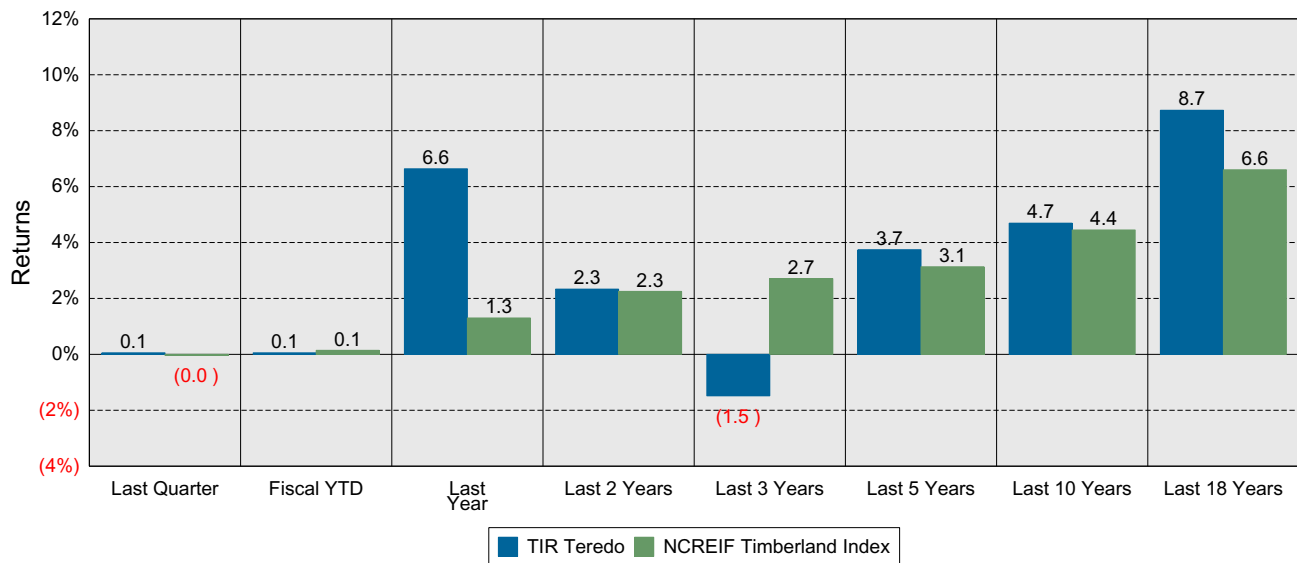
Teredo Timber LLC - The investment objective of Teredo is to provide competitive investment returns from increasing saw timber production through the 20 year term of the partnership. TIR's management strategy is to maximize saw timber volume by applying intensive forest management techniques which accelerate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

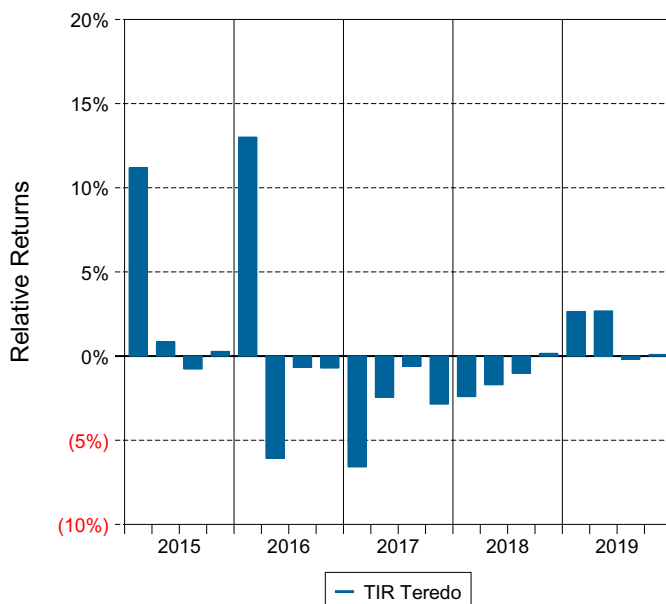
- TIR Teredo's portfolio outperformed the NCREIF Timberland Index by 0.09% for the quarter and outperformed the NCREIF Timberland Index for the year by 5.34%.

### Quarterly Asset Growth

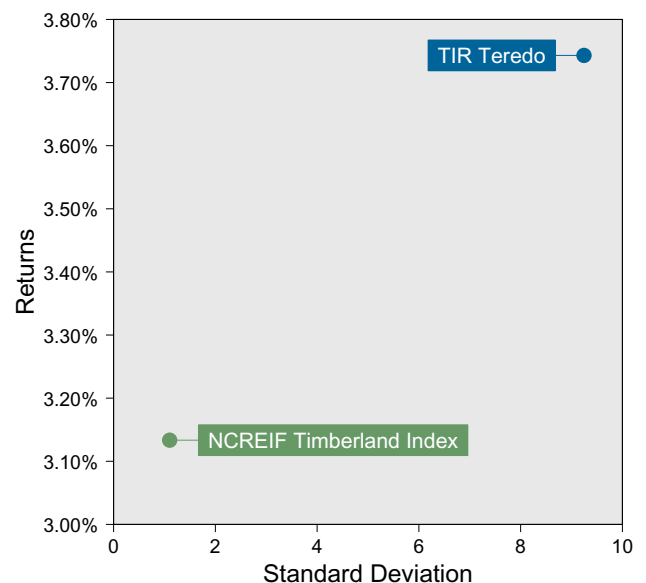
Beginning Market Value	\$31,374,048
Net New Investment	\$0
Investment Gains/(Losses)	\$17,257
Ending Market Value	\$31,391,305



### Relative Return vs NCREIF Timberland Index



### Annualized Five Year Risk vs Return



## TIR Springbank Period Ended December 31, 2019

### Investment Philosophy

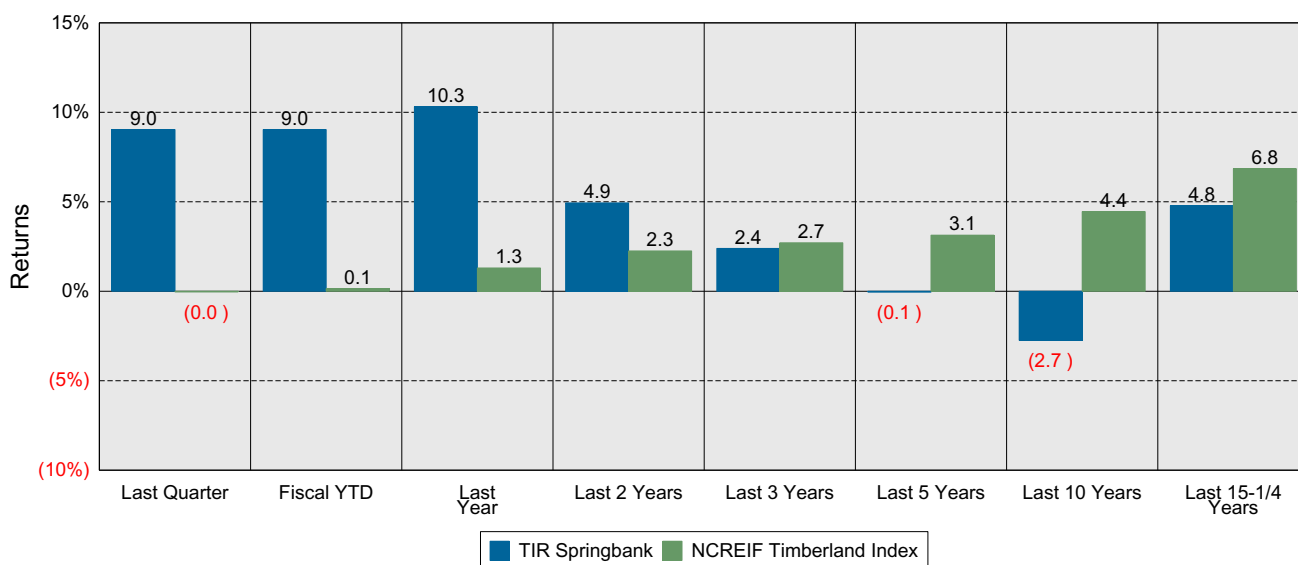
Springbank LLC - The investment objective of Springbank is to maximize long-term investment potential by means of the formation of a dedicated land management group, intensive timber management to increase timber production, the coordination of timber harvesting with land management activities and direct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

### Quarterly Summary and Highlights

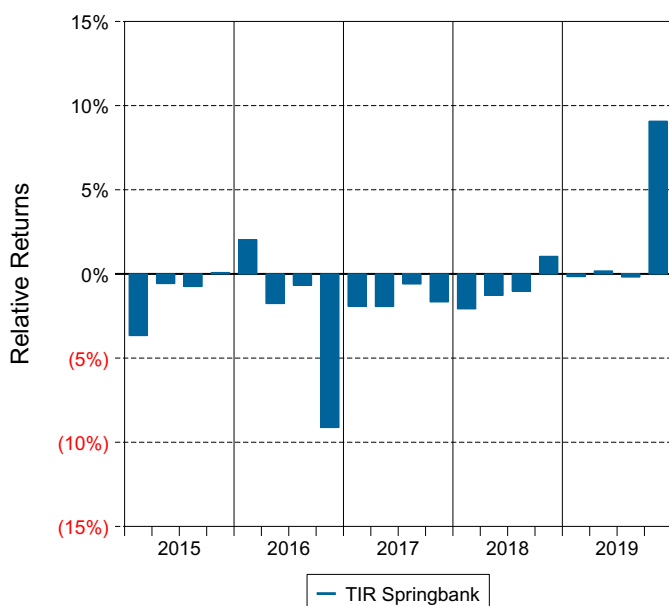
- TIR Springbank's portfolio outperformed the NCREIF Timberland Index by 9.07% for the quarter and outperformed the NCREIF Timberland Index for the year by 9.01%.

### Quarterly Asset Growth

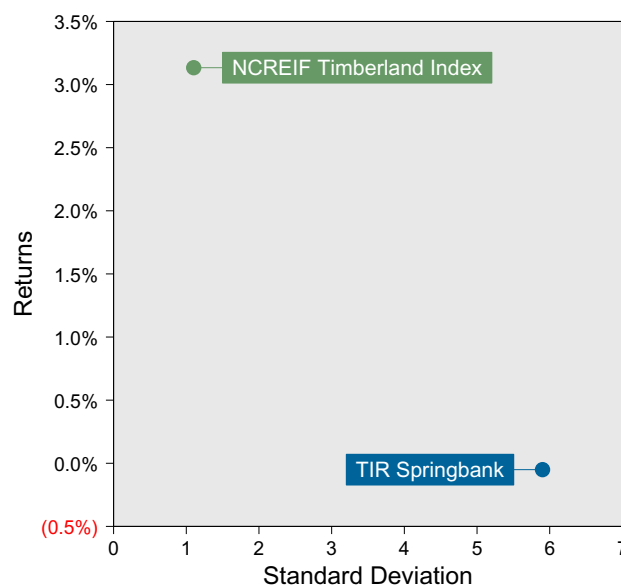
Beginning Market Value	\$92,537,249
Net New Investment	\$-912,000
Investment Gains/(Losses)	\$8,305,133
Ending Market Value	\$99,930,382



### Relative Return vs NCREIF Timberland Index



### Annualized Five Year Risk vs Return



## ISQ Global Infrastructure II Period Ended December 31, 2019

### Investment Philosophy

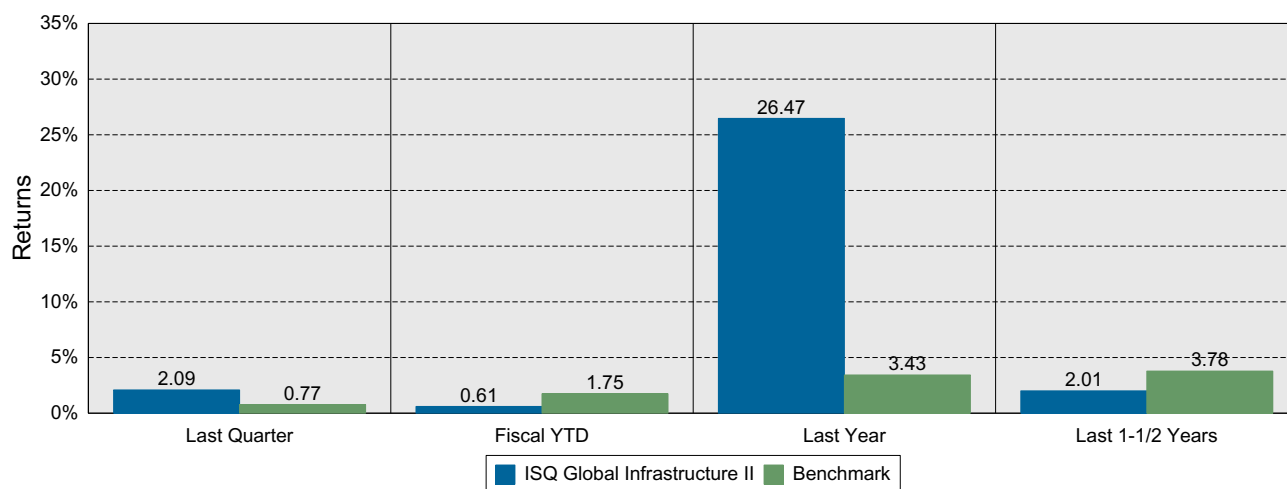
The ISQ Global Infrastructure Fund II seeks to achieve long-term capital appreciation as well as current income through equity and equity related investments in infrastructure and infrastructure related assets located globally, with a focus on North America, Europe, and selected growth economies in Asia and Latin America. The Fund may also invest in debt Securities that have equity-like returns or an equity component, or are related to its equity investments, including without limitation convertible debt, bank loans and participations and other similar instruments. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.**

### Quarterly Summary and Highlights

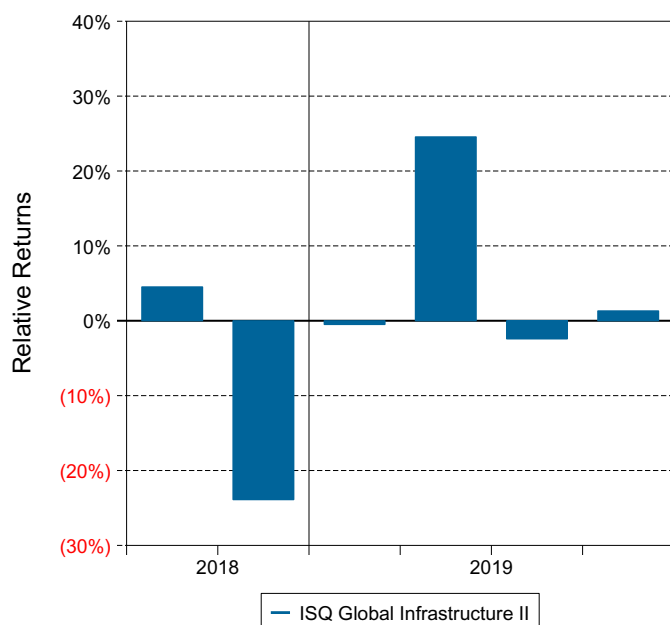
- ISQ Global Infrastructure II's portfolio outperformed the Benchmark by 1.32% for the quarter and outperformed the Benchmark for the year by 23.04%.

### Quarterly Asset Growth

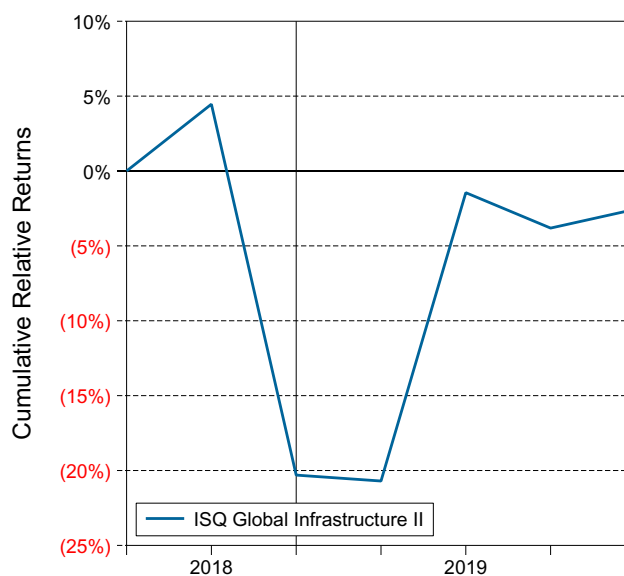
Beginning Market Value	\$22,810,771
Net New Investment	\$4,631,176
Investment Gains/(Losses)	\$470,917
Ending Market Value	\$27,912,864



### Relative Return vs Benchmark



### Cumulative Returns vs Benchmark



## The Rohatyn Group Period Ended December 31, 2019

### Investment Philosophy

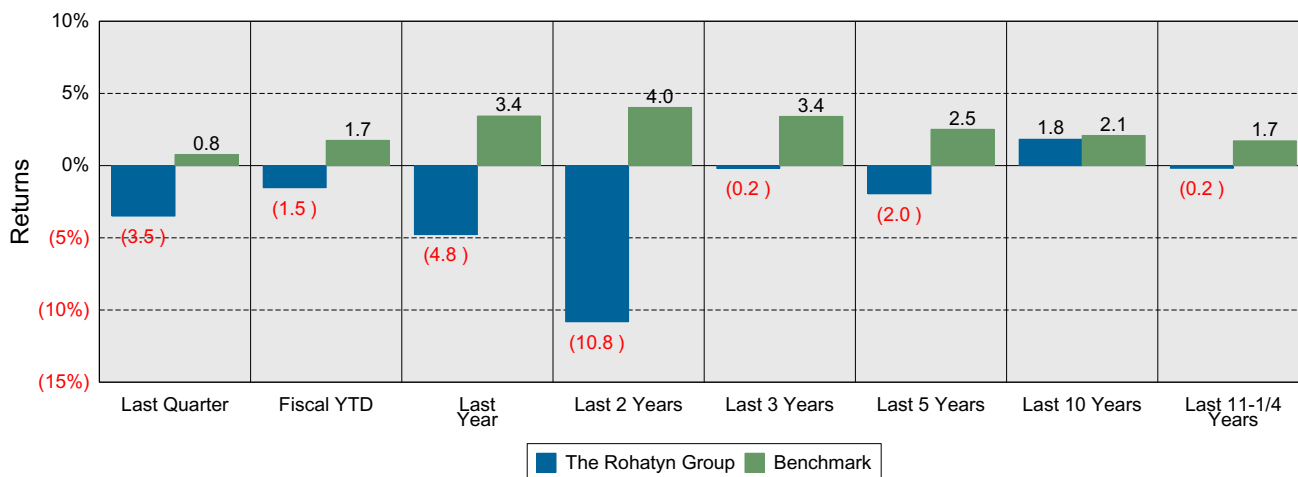
The Rohatyn Group's Asian Infrastructure & Related Resources Opportunity (AIRRO) Fund seeks to invest in infrastructure and related resources opportunities across the greater Asia Pacific region. The Fund seeks to invest in a broad range of assets, including: core infrastructure, power both from conventional and renewable sources, communications, water and waste-water, public works, urban development and other "social" infrastructure assets and related resources. The management of the AIRRO Fund was transferred from JP Morgan to The Rohatyn Group in May, 2018. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

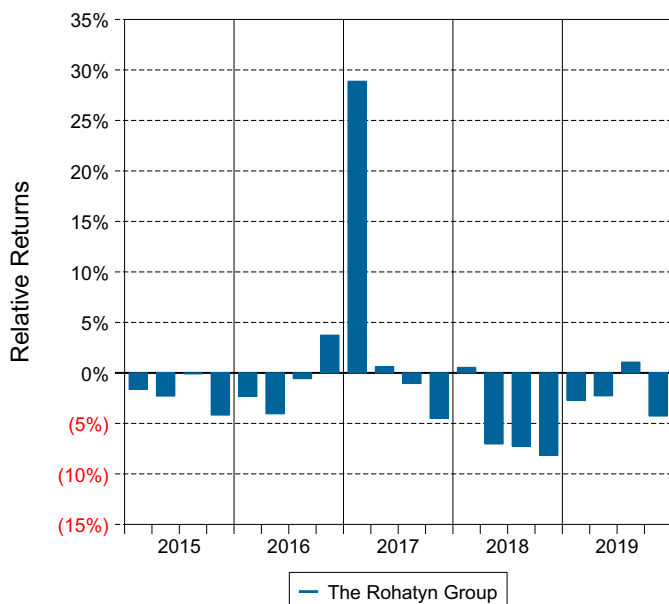
- The Rohatyn Group's portfolio underperformed the Benchmark by 4.26% for the quarter and underperformed the Benchmark for the year by 8.21%.

### Quarterly Asset Growth

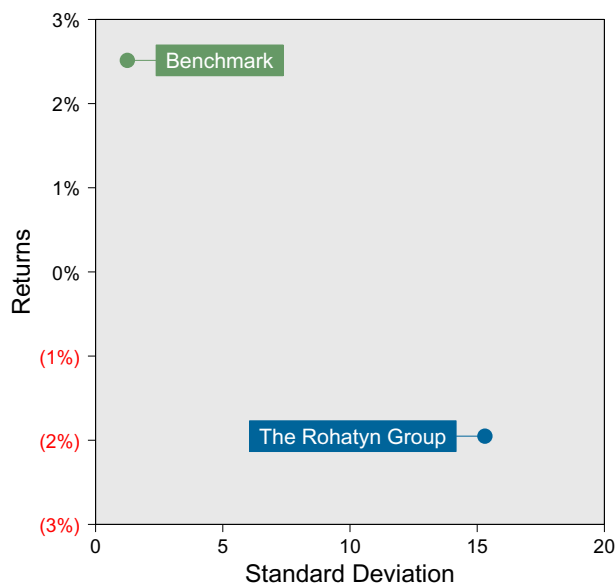
Beginning Market Value	\$18,836,528
Net New Investment	\$89,418
Investment Gains/(Losses)	\$-658,902
Ending Market Value	\$18,267,044



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return





## JPM Infrastructure Fund Period Ended December 31, 2019

### Investment Philosophy

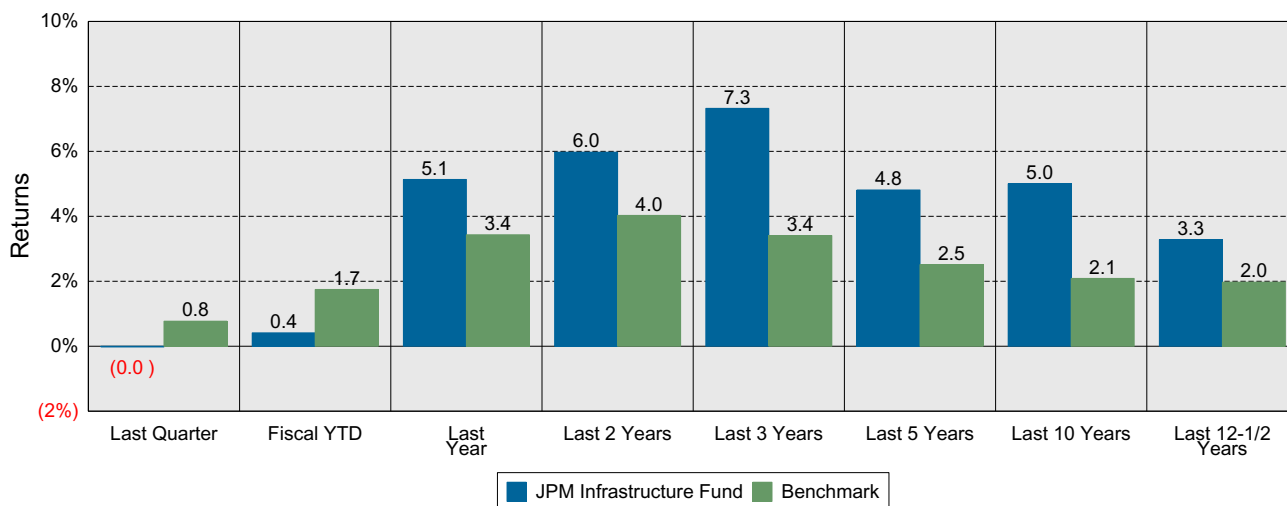
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

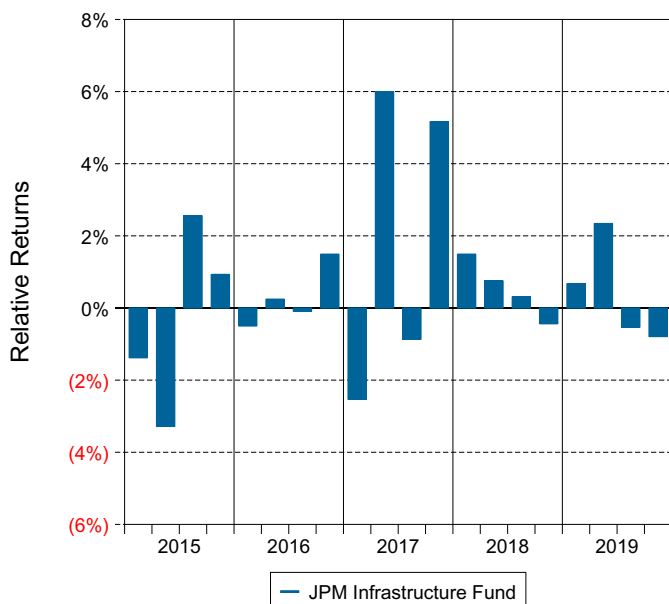
- JPM Infrastructure Fund's portfolio underperformed the Benchmark by 0.79% for the quarter and outperformed the Benchmark for the year by 1.70%.

### Quarterly Asset Growth

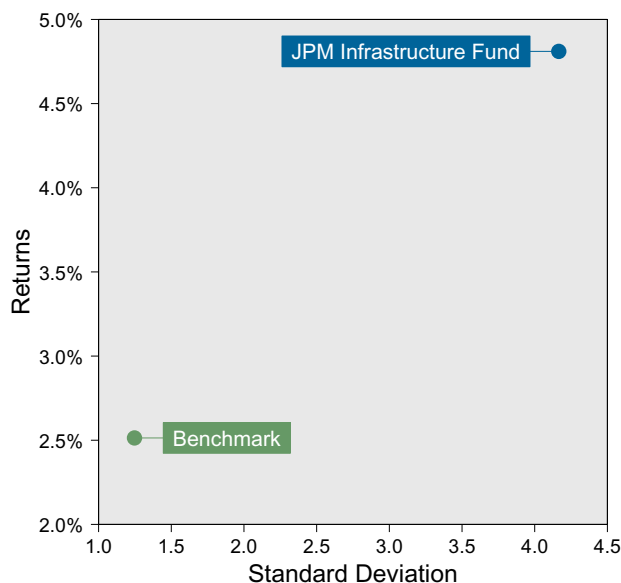
Beginning Market Value	\$184,588,905
Net New Investment	\$-5,284,460
Investment Gains/(Losses)	\$-41,485
Ending Market Value	\$179,262,960



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## Grosvenor Cust. Infrastructure Period Ended December 31, 2019

### Investment Philosophy

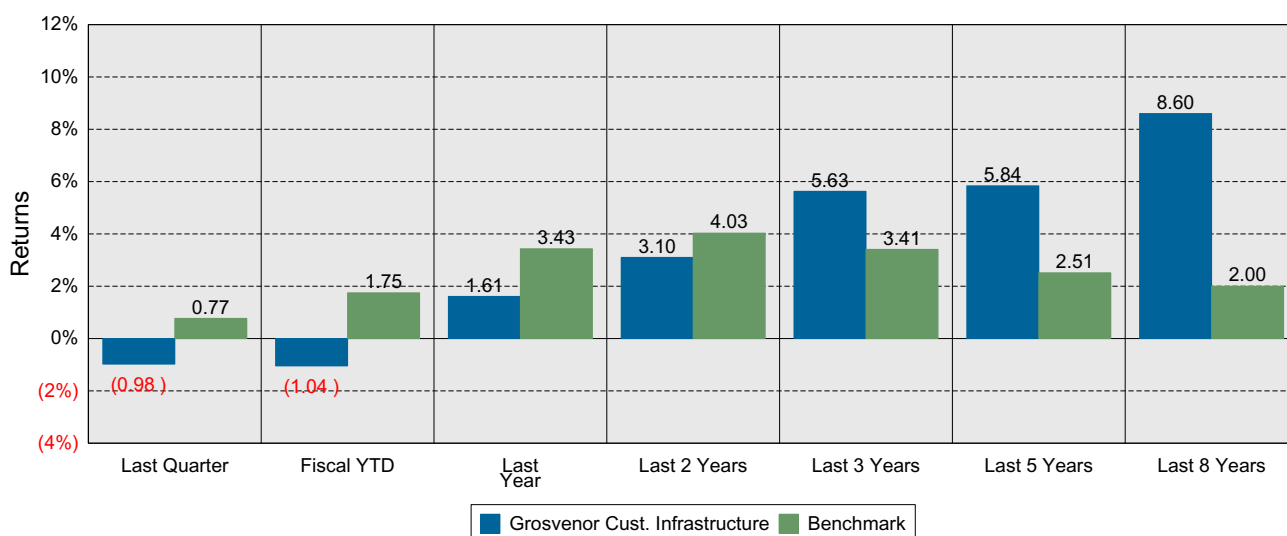
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

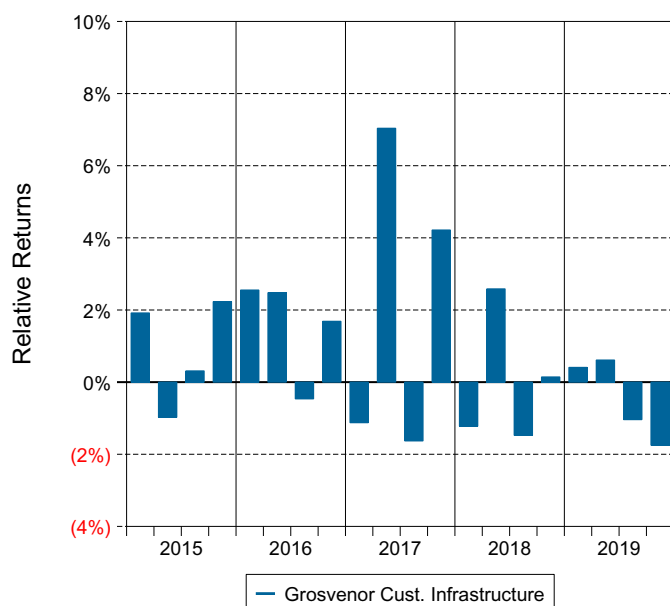
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.75% for the quarter and underperformed the Benchmark for the year by 1.82%.

### Quarterly Asset Growth

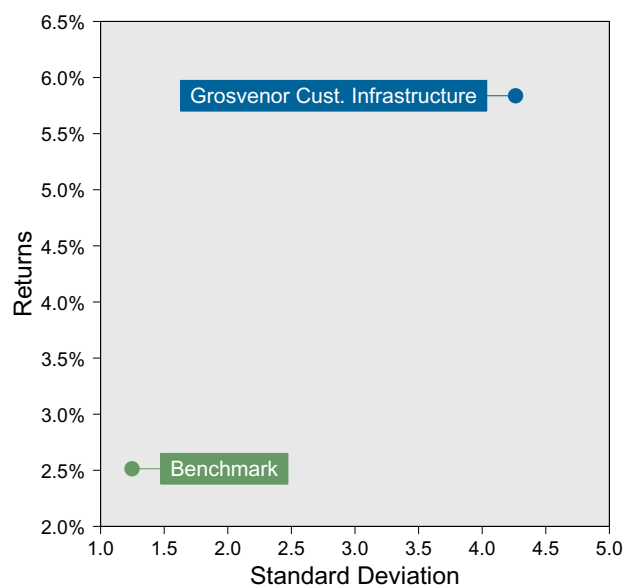
Beginning Market Value	\$25,382,297
Net New Investment	\$-1,724,739
Investment Gains/(Losses)	\$-247,731
Ending Market Value	\$23,409,828



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## Grosvenor Cust. Infrastructure II Period Ended December 31, 2019

### Investment Philosophy

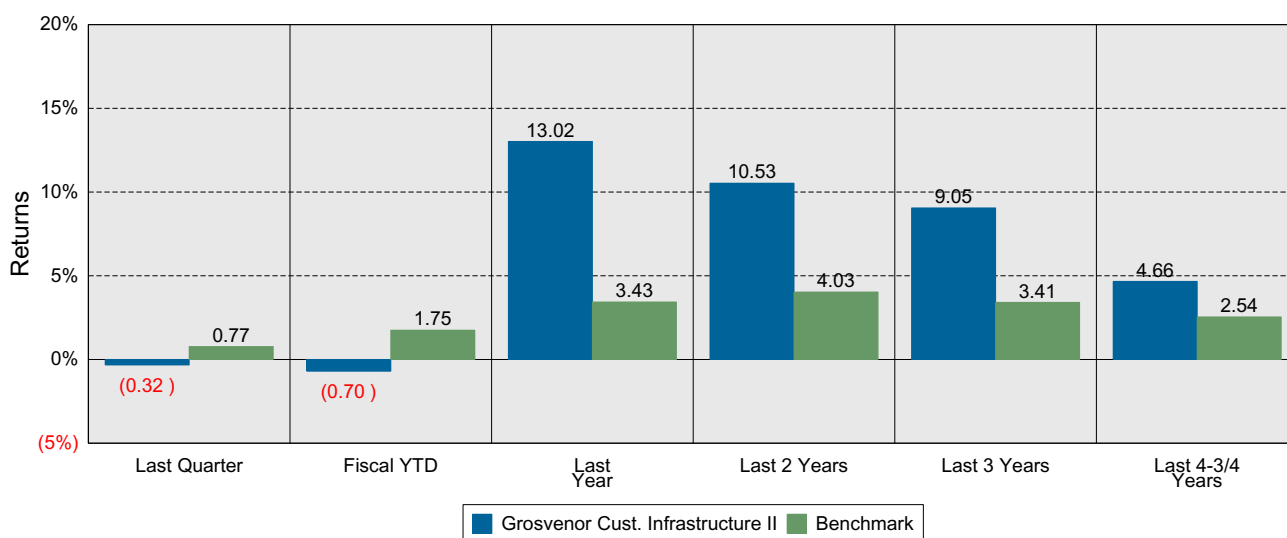
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

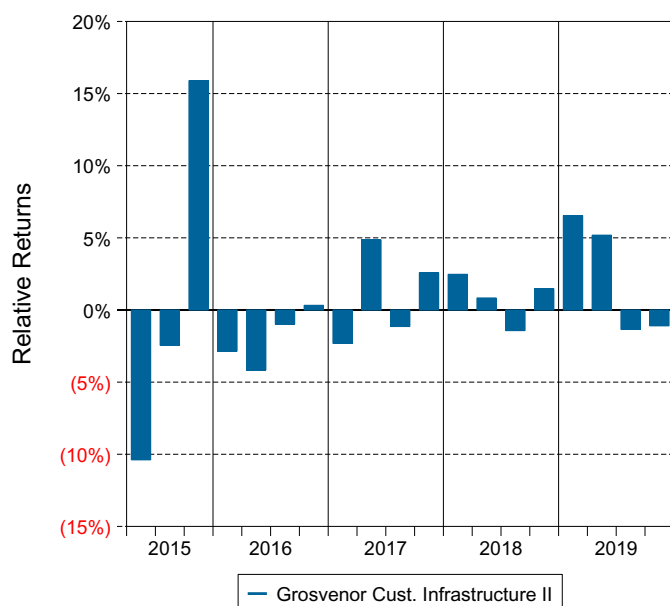
- Grosvenor Cust. Infrastructure II's portfolio underperformed the Benchmark by 1.10% for the quarter and outperformed the Benchmark for the year by 9.59%.

### Quarterly Asset Growth

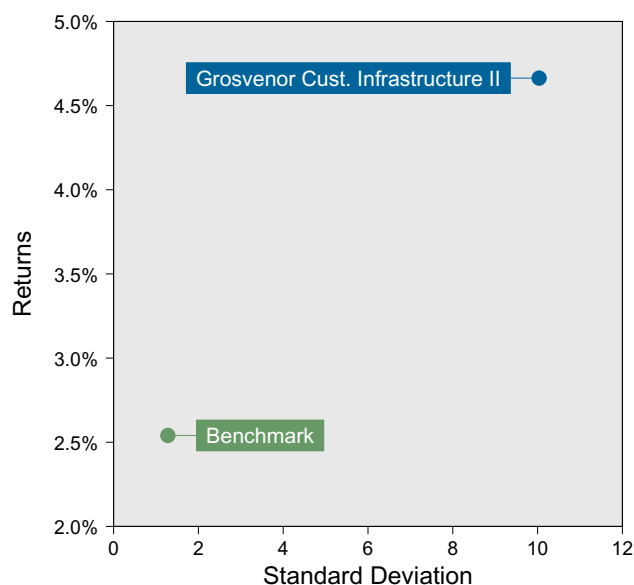
Beginning Market Value	\$17,790,920
Net New Investment	\$791,467
Investment Gains/(Losses)	\$-65,870
Ending Market Value	\$18,516,517



### Relative Return vs Benchmark



### Annualized Four and Three-Quarter Year Risk vs Return



## Macquarie Infrac. Partners IV Period Ended December 31, 2019

### Investment Philosophy

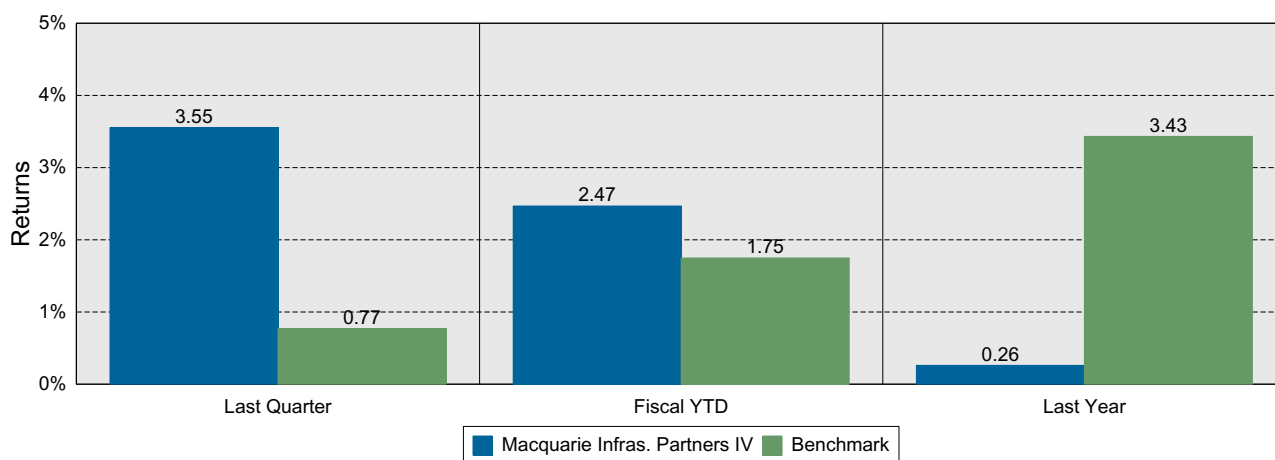
Macquarie's principal investment philosophy is to invest in infrastructure assets that exhibit monopolistic and/or contractual revenue drivers, limited substitution risk and high barriers to entry. The manager has continued to focus on investments where the team's sector expertise and operating experience will provide a competitive advantage in sourcing and due diligence. Furthermore, the manager will also continue to focus on opportunities where its active management capabilities can add value for investors in terms of enhancing returns and the substantial mitigation and/or elimination of material operational risks. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.**

### Quarterly Summary and Highlights

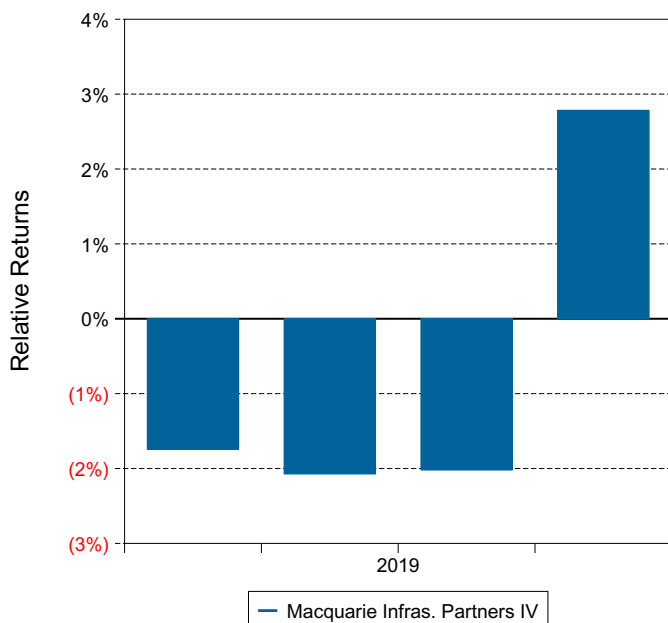
- Macquarie Infrac. Partners IV's portfolio outperformed the Benchmark by 2.78% for the quarter and underperformed the Benchmark for the year by 3.17%.

### Quarterly Asset Growth

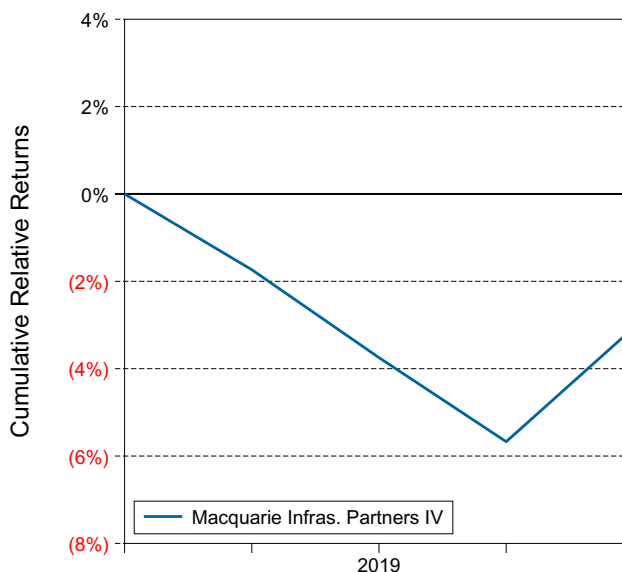
Beginning Market Value	\$38,297,817
Net New Investment	\$16,430,540
Investment Gains/(Losses)	\$1,556,042
Ending Market Value	\$56,284,399



### Relative Return vs Benchmark



### Cumulative Returns vs Benchmark



## Research and Educational Programs

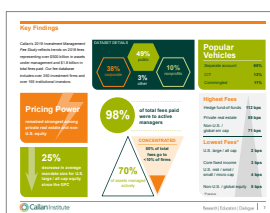
The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog "Perspectives." For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan's Experts

### Long-Dated Private Equity Funds: More Illiquidity Please? |

In this paper, Ashley DeLuce of Callan's Private Equity Consulting Group analyzes long-dated private equity funds, which have terms of 15 years or more (some even have no fixed term), and tend to focus on stable, mature businesses that may not fit a traditional private equity investment profile. Although these companies may not generate the outsized internal rates of return associated with traditional private equity investments, they tend to have stronger downside protection. In evaluating a potential long-dated fund investment, investors need to be wary of the strategy's increased illiquidity and how it can impact annual commitment pacing.

**Callan 2019 Investment Management Fee Study** | This study using Callan's proprietary database is our eighth examination of institutional investment management fee trends. The purpose of the study is to provide a detailed analysis on fee levels and trends across multiple asset classes and mandate sizes, for both active and passive management.



### Gold: Real Asset, Risk Mitigator, or Pet Rock? | In this *Hedge Fund Monitor*, Jim McKee reviews the history of gold as a form of money, the reasons behind the recent renaissance in gold, the potential roles of gold for institutional investors, and the alternative approaches to invest in gold-related themes.



For some institutional investors, gold can play a useful role in diversifying risk or enhancing returns. For others, particularly those with higher risk tolerances and longer time horizons, a strategic gold allocation has about as much purpose as a Pet Rock.

## Quarterly Periodicals

**Private Equity Trends, 3Q19** | This newsletter from Callan's Private Equity Consulting Group provides a high-level summary of private equity activity in the quarter through all the investment stages, from fundraising to exits, as well as long-term performance data.

**Monthly Periodic Table of Investment Returns, November 2019** | A regular update to Callan's Periodic Table covering the major public equity and fixed income asset classes.

**Active vs. Passive Report, 3Q19** | This series of charts compares active managers alongside relevant benchmarks over the long term.

**Market Pulse Flipbook, 3Q19** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data for U.S. and global ex-U.S. equities and fixed income, alternatives, and defined contribution plans.

**Capital Market Review, 3Q19** | This newsletter provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

**Hedge Fund Quarterly, 3Q19** | Callan's Jim McKee of our Hedge Fund Research Group provides commentary on developments for hedge funds and multi-asset class (MAC) strategies.

**Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?** | Callan's Real Assets Consulting Group identifies seven indicators that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

**Real Assets Reporter, 3Q19** | This newsletter from our experts offers Callan's data and insights on real estate and other real asset investment topics.

## Events

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

Please mark your calendar and look forward to upcoming invitations:

### 2020 June Regional Workshops

*June 23 – San Francisco*

*June 25 – Chicago*

### 2020 October Regional Workshops

*October 27 – Atlanta*

*October 29 – Portland*

Please also keep your eye out for upcoming Webinars in 2020! We will be sending invitations to register for these events and will also have registration links on our website at [www.callan.com/webinarsupcoming](http://www.callan.com/webinarsupcoming).

**For more information about events, please contact Barb Gerraty: 415-274-3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## Education: By the Numbers

**50+**

Unique pieces of research the Institute generates each year

**525**

Attendees (on average) of the Institute's annual National Conference

**3,700**

Total attendees of the "Callan College" since 1994



**"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 dialogue to raise the bar across the industry."**

Greg Allen, CEO and Chief Research Officer

## Education

Through the "Callan College," the Callan Institute offers educational sessions for industry professionals involved in the investment decision-making process. It was founded in 1994 to provide both clients and non-clients with basic- to intermediate-level instruction.

### Introduction to Investments for Institutional Investors

*April 21-22, 2020 – San Francisco*

*July 21-22, 2020 – Chicago*

*October 13-14, 2020 – Chicago*

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Learn more at [www.callan.com/callan-college-intro-2/](http://www.callan.com/callan-college-intro-2/)

### Alternative Investments for Institutional Investors

*June 16, 2020 – San Francisco*

*November 3, 2020 – Chicago*

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Learn from some of Callan's senior consultants and experts, including the head of Alternatives Consulting Pete Keliuotis. The session will cover private equity, private credit, hedge funds, real estate, and real assets; why invest in alternatives; risk/return characteristics and liquidity; designing and implementing an alternatives program; and trends and case studies.

Tuition is \$2,000 per person and includes instruction, all materials, and breakfast and lunch with the instructors.

Learn more at: <https://www.callan.com/callan-college-alternatives-2/>

## 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 an 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
Aberdeen Standard Investments
Acadian Asset Management LLC
AEGON USA Investment Management Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
BrightSphere Investment Group
Brown Brothers Harriman & Company
Cadence Capital Management
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management LLC
Ceredex Value Advisers

Manager Name
Camplain Investment Partners, LLC
Chartwell Investment Partners
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
Davy Asset Management Limited
DePrince, Race & Zollo, Inc.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
Financial Engines
First Hawaiian Bank Wealth Management Division
First State Investments
FIS Group, Inc.
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
Fuller & Thaler Asset Management, Inc.
GAM (USA) Inc.
Glenmeade Investment Management, LP
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs
Green Square Capital Advisors, LLC



Manager Name
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Impax Asset Management Limited
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Intercontinental Real Estate Corporation
Invesco
Investec Asset Management North America, Inc.
Iridian Asset Management LLC
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jenson Investment Management
JO Hambro Capital Management Limited
Jobs Peak Advisors
John Hancock Investment Management Services, LLC
Kayne Anderson Rudnick Investment Management, LLC
KeyCorp
Lazard Asset Management
L & B Realty Advisors LLP
Legal & General Investment Management America
Lincoln Advisors
Lincoln National Corporation
Logan Circle Partners, L.P.
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
MacKenzie Investments
Macquarie Investment Management (MIM)
Manulife Investment Management
Marathon Asset Management, L.P.
McKinley Capital Management, LLC
Mellon
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
Mountain Pacific Advisors, LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management

Manager Name
Nuveen
OFI Global Asset Management
Osterweis Capital Management, LLC
Owl Rock
P/E Investments
Pacific Investment Management Company
Parametric Portfolio Associates LLC
Pathway Capital Management
Peregrine Capital Management, LLC.
Perkins Investment Management
PFM Asset Management LLC
PGIM Fixed Income
PineBridge Investments
PNC Capital Advisors, LLC
Polen Capital Management
Principal Global Investors
Putnam Investments, LLC
QMA LLC
RBC Global Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller Capital Management
Rothschild & Co. Asset Management US
Russell Investments
Schroder Investment Management North America Inc.
Segall Bryant & Hamill
Smith Graham & Co. Investment Advisors, L.P.
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Strategic Global Advisors
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
Vulcan Value Partners, LLC
Wasatch Global Investors
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Fargo Asset Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC



December 31, 2019



## **North Dakota State Investment Board Insurance Trust**

**Investment Measurement Service  
Quarterly Review**

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Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see Appendix for Important Information and Disclosures.

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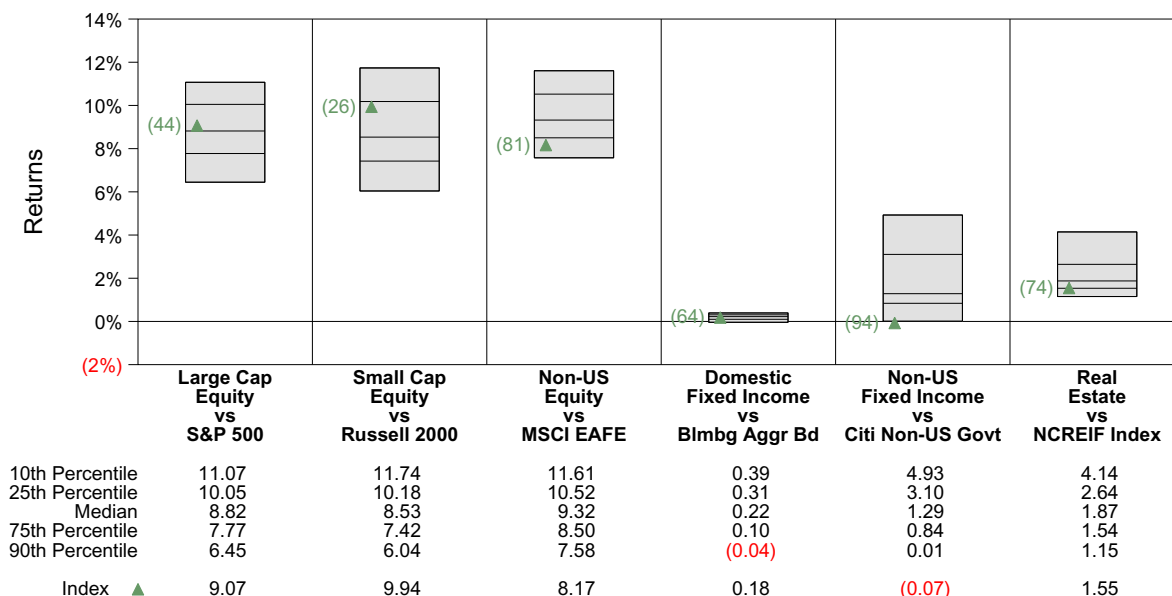
## Market Overview

### Active Management vs Index Returns

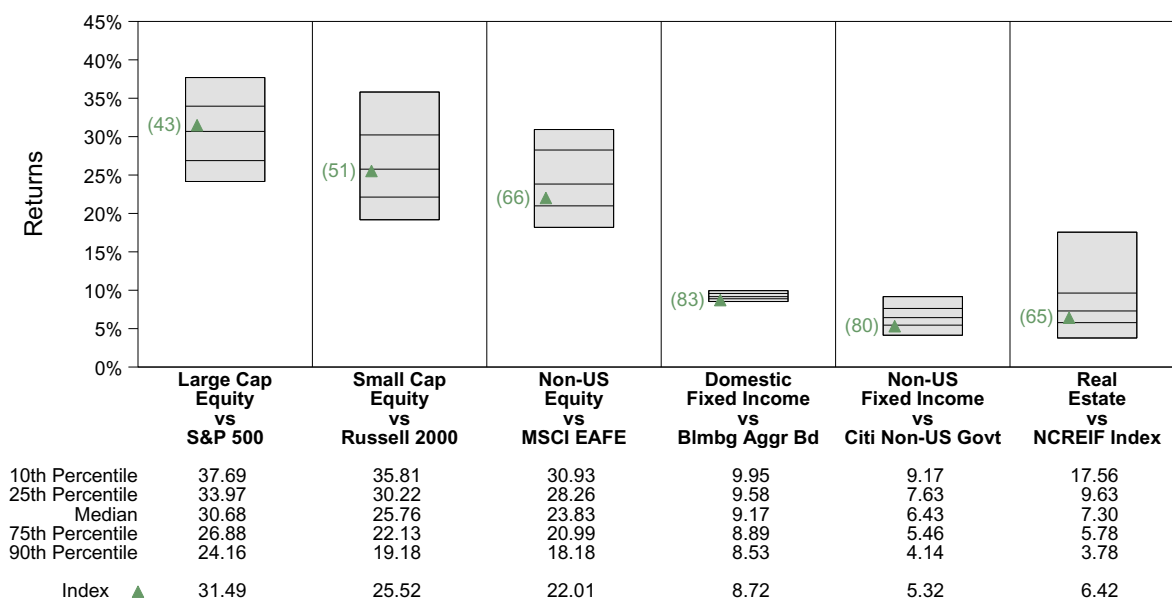
#### Market Overview

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

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended December 31, 2019



#### Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2019



## Anticipated Recession Fails to Materialize

### ECONOMY

**2** GDP grew at 2.1% for the fourth quarter, unemployment fell to a generational low, wages and incomes showed robust gains, inflation remained contained, and, of course, stock and bond markets soared in 2019. So much for the most anticipated recession in history.

## Strong Gains for Year Amid Equity Boom

### INSTITUTIONAL INVESTORS

**4** Corporate DB plans gained the most among plan types in 2019. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%, exceeding a 60% stocks-40% bonds benchmark.

## Jump in Quarter Fuels Notable Year

### EQUITY

**6** The fourth quarter closed out a near-historic year for equity markets; the S&P 500 ended 2019 up 31.5%—enough to become the second-strongest year of the decade. Global equity markets bounced back in the fourth quarter as geopolitical uncertainties abated.

## Yields Are Mixed but Returns Are Strong

### FIXED INCOME

**8** Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations. Major U.S. bond indices showed strong gains for the year. Global fixed income markets also posted broad increases for the quarter and the year.

## Real Estate Healthy; Real Assets Gain

### REAL ESTATE/REAL ASSETS

**10** U.S. core real estate returns continued to moderate; Industrial outperformed other property types. REITs gained but lagged global equities. Asian and European markets were affected by geopolitical tensions. Real assets returns were strong in the quarter.

## Most Activity Fell Moderately in 2019

### PRIVATE EQUITY

**12** Except for fundraising, all private equity activity measures declined moderately in 2019. The drops largely owe to record-level prices throughout the year. But overall private equity and capital market liquidity remained healthy and transaction volume is brisk.

## Party Like It's 1999 ... or Not

### HEDGE FUNDS/MACs

**13** While stocks celebrated the end of 2019, hedge funds were the party's designated driver. Portfolios exposed to EM and long-short equity topped those emphasizing equity market neutral or macro strategies. MAC returns varied depending on net market exposures.

## DC Index Gains, Tops Age 45 TDF

### DEFINED CONTRIBUTION

**15** The Callan DC Index™ rose 0.6% in the third quarter, compared to 0.5% for the Age 45 Target Date Fund. The Index's growth in balances of 0.1% was much smaller than the first and second quarters. Asset allocation to TDFs hit 29.6%, the lowest since the first quarter of 2017.

## Broad Market Quarterly Returns

U.S. Equity  
Russell 3000

**9.1%**

Global ex-U.S. Equity  
MSCI ACWI ex USA

**8.9%**

U.S. Fixed Income  
Bloomberg Barclays Agg

**0.2%**

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

**0.7%**

Sources: Bloomberg Barclays, FTSE Russell, MSCI

# The Most Anticipated Recession in History Fails to Materialize

ECONOMY | Jay Kloepfer

Real GDP grew at 2.1% for the fourth quarter of 2019, capping off a year pretty much no one anticipated for growth or the capital markets. GDP growth for the year came in at 2.3%, unemployment fell to yet another generational low, wages and incomes continued to show robust gains, and yet inflation remained contained. The Fed paused on its path to interest rate normalization in January 2019, cut rates twice in the third quarter and once more in October, before declaring its work done. The trade war dominated headlines and jerked around market sentiment, but the actual impact on U.S. GDP growth has been held below a cumulative hit of 1 percentage point.

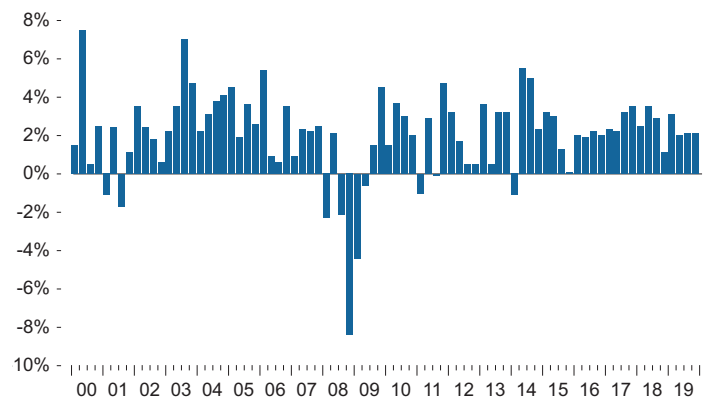
Stock markets around the globe rallied during 2019, with the **S&P 500** climbing 31.5%, **MSCI ACWI ex-USA** up 21.5%, and **MSCI Emerging Markets** up 18.4%. The most eye-opening development of the year was the bond market rally following the Fed pivot in policy, driving a gain of 8.7% for the **Bloomberg Barclays US Aggregate Bond Index** and almost 20% for the **Long Government/Credit Index**. So much for the most anticipated recession in history.

Many analysts have begun touting that we already touched bottom in the global growth cycle during the fourth quarter of 2019. The “growth recession” was over before we knew it was fully upon us. The consensus short-term outlook is far more bullish than it was a year ago, although the medium-term outlook (three to five years) contains more concerns. Persistent low inflation gives central banks the cover to continue supportive monetary policy, but this support could evaporate if inflation is resurgent. The volume of corporate credit has exploded, and much of it is lower rated; any sign of real weakness in the economy raises concerns about quality and spread widening. Finally, it is entirely unclear how the current negative interest rate environment across much of Europe evolves.

Buried in the GDP numbers are several developments that support continuing growth in the U.S. economy, at least over the shorter term. First, the 2.1% increase in the fourth quarter

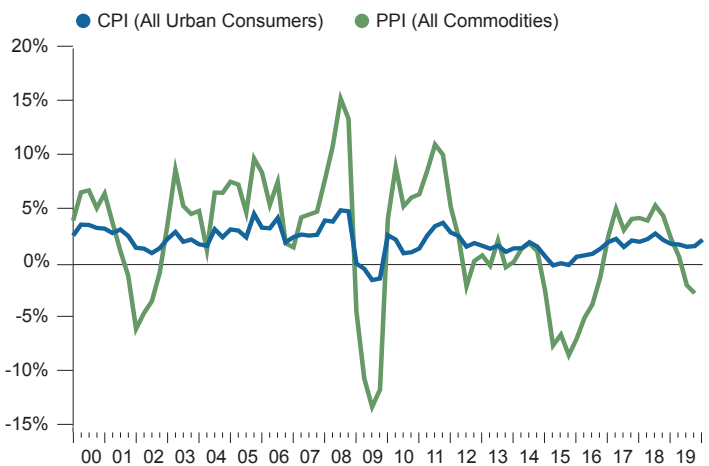
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

includes the drag on growth from the GM strike and the slow-down in Boeing 737 Max production.

Second, inventory accumulation slowed substantially in the fourth quarter, another drag on growth. The end of the GM strike, the eventual resumption of 737 Max production, and the rebuilding of inventories all point toward sustained growth in the U.S. in 2020.

Consumer spending remains strong, fueled by buoyant consumer confidence, a strong labor market, a generational low unemployment rate (3.5%), and personal income growth of just under 4%. The reversal in interest rates will find its way into lower debt costs for consumers, and household debt levels are far below pre-GFC levels. The Fed lowered the federal funds rate by 75 basis points, and given expectations for three rate INCREASES a year ago, rates now sit 150 bps lower than expected. This Fed pivot has greatly benefited interest-sensitive sectors of the economy and consumer balance sheets.

One more support for GDP growth has been a reduction in imports (which are a negative in the GDP calculation), and a corresponding increase in net exports. Imports surged in advance of the application of tariffs early in 2019. U.S. suppliers appear to have quickly found alternatives to China, increasing our imports from Asian countries ex-China to offset some of the decline in imports from China.

Not only did the recession not appear in 2019, near-term recession risks are abating. The announced phase one trade deal between the U.S. and China will suspend some tariffs and address issues of intellectual property and forced transfers of technology. The largest impact is on investor and business sentiment. World GDP growth slowed from 4% at the end of 2017 to below 3% by mid-2019, as a collection of negative shocks (Brexit, trade, geopolitical uncertainty) and lagged effects of monetary tightening hit some of the world's largest economies. The drag from these shocks has faded and monetary policy has loosened around the world. The emerging markets have already embarked on a cyclical upturn, and the developed

### The Long-Term View

Index	2019 4th Qtr	Periods Ended 12/31/19			
		Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	9.1	31.0	11.2	13.4	10.2
S&P 500	9.1	31.5	11.7	13.6	10.2
Russell 2000	9.9	25.5	8.2	11.8	9.4
Global ex-U.S. Equity					
MSCI EAFE	8.2	22.0	5.7	5.5	5.2
MSCI ACWI ex USA	8.9	21.5	5.5	5.0	--
MSCI Emerging Markets	11.8	18.4	5.6	3.7	--
MSCI ACWI ex USA Small Cap	11.0	22.4	7.0	6.9	5.9
Fixed Income					
Bloomberg Barclays Agg	0.2	8.7	3.0	3.7	5.6
90-Day T-Bill	0.5	2.3	1.1	0.6	2.5
Bloomberg Barclays Long G/C	-1.1	19.6	5.4	7.6	7.9
Bloomberg Barclays GI Agg ex US	0.7	5.1	1.6	1.5	4.4
Real Estate					
NCREIF Property	1.5	6.4	8.2	10.2	9.3
FTSE Nareit Equity	-0.8	26.0	7.2	11.9	10.6
Alternatives					
CS Hedge Fund	2.4	9.3	2.6	4.3	7.8
Cambridge PE*	0.9	9.5	12.4	13.8	15.3
Bloomberg Commodity	4.4	16.8	13.8	11.6	15.5
Gold Spot Price	3.4	18.9	5.2	3.3	5.7
Inflation – CPI-U	0.1	2.3	1.8	1.8	2.2

\*Data for most recent period lags by a quarter. Data as of Sept. 30, 2019.  
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Refinitiv/Cambridge

economies are about to join them, led by the U.S. The fourth quarter of 2019 likely marked the trough in global GDP growth. The recovery in trade should help lead the way, after the collapse in trade volumes in late 2018.

### Recent Quarterly Economic Indicators

	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18	1Q18
Employment Cost–Total Compensation Growth	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%	2.7%
Nonfarm Business–Productivity Growth	0.0%*	-0.2%	2.5%	3.5%	0.1%	1.2%	1.8%	0.9%
GDP Growth	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%	2.5%
Manufacturing Capacity Utilization	74.9%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%	76.1%
Consumer Sentiment Index (1966=100)	97.2	93.8	98.4	94.5	98.2	98.1	98.3	98.9

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

\* Estimated figure provided by IHS Markit

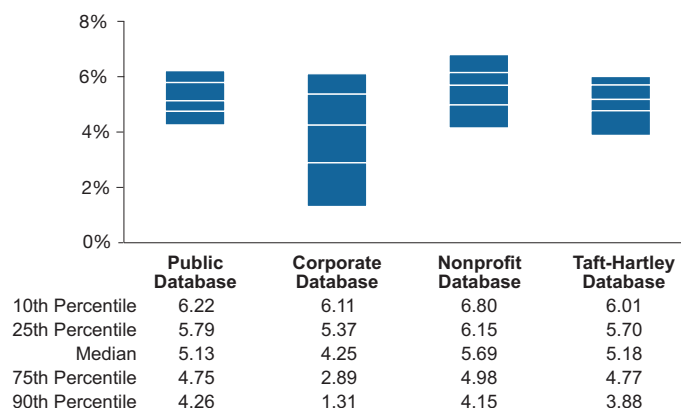


# Steady Returns Continue Amid Equities Rebound

## INSTITUTIONAL INVESTORS

- A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio increased 22.2% over the one year ended Dec. 31, 2019, driven by the stock market's huge gains and exceptionally strong returns from bonds. All broad institutional investor groups underperformed this benchmark.
- U.S. equity markets continued their pattern of outperforming global ex-U.S. equity, a pattern that has persisted since 2018.
- Corporate defined benefit (DB) plans gained the most among plan types over the one-year period. Public DB plans trailed all investor types.
- Over most longer time periods, Taft-Hartley plans have been the top performer. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%. In that time period, all plan types exceeded the stocks-bonds benchmark.
- In the current market environment, institutional investors are focused on reevaluating the purpose and implementation of all diversifiers, including real assets, hedge funds and liquid alternatives, fixed income, and private markets.

### Quarterly Returns, Callan Database Groups



Source: Callan

- Return enhancement remains a top priority for public and corporate DB plans and nonprofits. Corporate DB plans also see funding status as a top priority. DC plans see fees as the top priority.
- Public DB plans are also concerned about their high risk exposures but resist de-risking when their shorter-horizon projected return on assets (ROA) is lower than their long-term ROA.

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

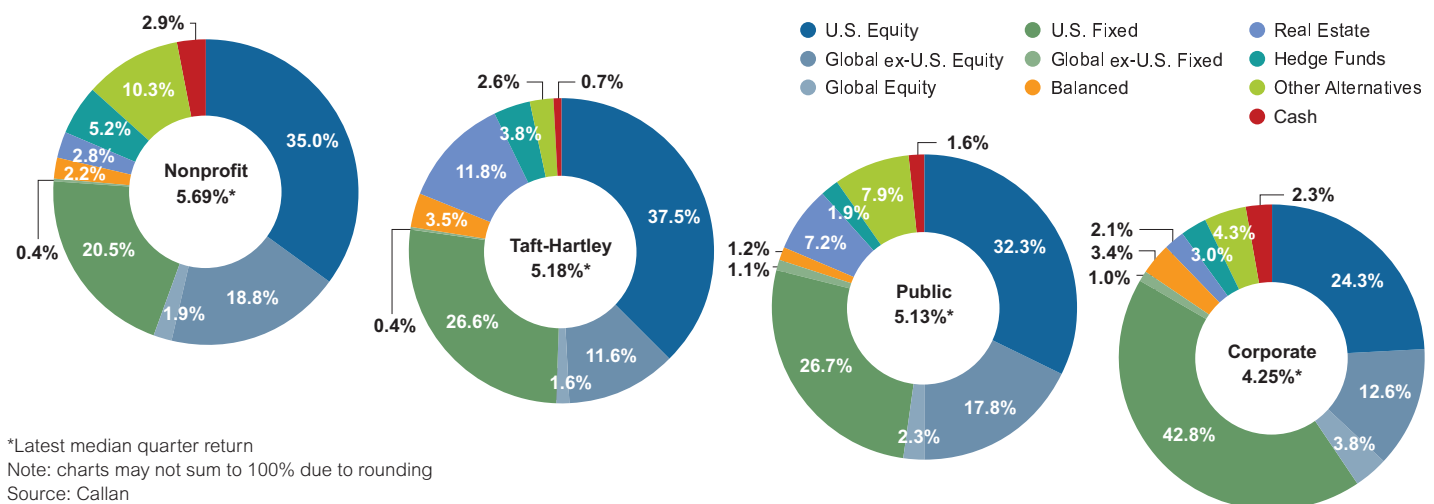
Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	5.13	17.75	9.40	7.11	8.25	6.73
Corporate Database	4.25	19.87	9.55	6.96	8.40	6.80
Nonprofit Database	5.69	18.81	9.38	6.81	8.12	6.58
Taft-Hartley Database	5.18	18.00	9.36	7.50	8.66	6.59
All Institutional Investors	5.19	18.53	9.41	7.08	8.35	6.67
Large (>\$1 billion)	4.79	17.56	9.59	7.26	8.59	6.88
Medium (\$100mm - \$1bn)	5.20	18.55	9.42	7.15	8.35	6.58
Small (<\$100 million)	5.38	18.93	9.29	6.91	8.16	6.55

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, nonprofits, 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.

- Callan has seen a surge in asset-liability studies, with substantial changes to many policy portfolios.
- Institutional investors are also taking steps to de-risk (less equity) and looking at risk mitigation (diversification and implementation), but there is some dissatisfaction with hedge funds, risk premia, and absolute return strategies. Some DB plans have terminated their hedge fund exposures; thus far, nonprofits have largely retained confidence in their hedge fund allocations.
- There are continued signs of interest in environmental, social, and governance (ESG) factors, with many public DB plans having had some discussions around the subject.
- Defined contribution (DC) plans are grappling with the implications of the SECURE Act (for Setting Every Community Up for Retirement Enhancement), whose sweeping nature means that the impact on policy cannot be underestimated within the retirement industry, since major changes (target date funds, auto features, etc.) were largely driven by previous regulatory and legislative catalysts.
- DC plans are also continuing to examine their default option, looking at the suitability of the current option in light of other alternatives both in the same asset class (often target date funds) but also in light of other options (e.g., managed accounts).
- In assessing the capital market environment, institutional investors are focused on how long the current expansion can continue. In evaluating specific investment alternatives, they face three key questions:
  1. Is value dead?
  2. Is there any hope for active management?
  3. Why should they bother with global ex-U.S. equities?
- For investors, the reversal in Fed policy has changed the landscape. It has created an added role for central banks, that of sustaining the expansion, which is a positive for equity ownership. The new yield environment and capital market assumptions going forward also create a challenge for investors, as they try to determine how to diversify their growth/equity risk without incurring a huge opportunity cost.
- In examining alternatives, institutional investors are looking at the most effective ways they can implement allocations in the private market. Is it worth the trouble to create a bespoke program implementation, and at what size and how much effort is required? This applies to private equity, real assets, absolute return, and diversifying assets.

### Average Asset Allocation, Callan Database Groups



# Equity

## U.S. Equities

The fourth quarter closed out a near-historic year for equity markets, in particular the S&P 500, which ended 2019 up 31.5%—enough to claim second place behind 2013 for the strongest year of the decade (during which large cap equities only saw one down year). Both Apple (+85%) and Microsoft (+54%) reached over \$1 trillion in market cap and accounted for 15% of the S&P 500's advance for the year. Investors globally were spurred by three interest rate cuts by the Fed, a potential U.S.-China trade armistice, continued low inflation, and some clarity around Brexit.

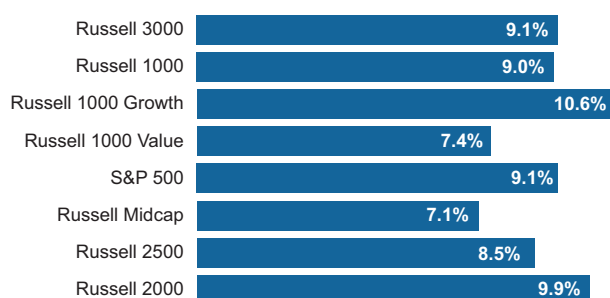
**Small cap vs. large cap** ► *Russell 2000: +9.9% | Russell 1000: +9.0%*

- Small cap trailed for most of 2019 but eclipsed large cap stocks in the fourth quarter due to notable contributions from the Health Care sector, where the biotech and pharmaceutical industries saw heightened new drug approvals and M&A activity during the quarter.
- Small growth outpaced small value for the quarter, the year, and the decade; the **Russell 2000 Growth Index** outpaced the **Russell 2000 Value Index** by 3% annualized over the past 10 years as the low interest rate environment favored growth stocks and challenged the Russell 2000 Value's heavy exposure to Financials.
- While small cap outpaced large cap in the fourth quarter, large cap stocks led for the third straight year, owing much to Tech (+50.3%) and Communication Services (+32.7%).

**Growth vs. Value** ► *Russell 1000 Growth: +10.6% | Russell 1000 Value: +7.4%*

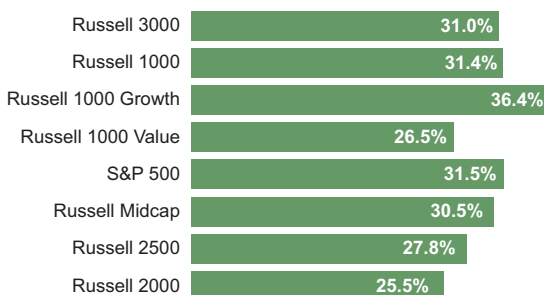
- Growth continued its dominance over value during the quarter, closing out a decade-long trend.
- Tech giants Facebook, Apple, Microsoft, and Alphabet/Google remained meaningful contributors for the quarter, with Health Care (+14.4%) also among the top sector performers.

## U.S. Equity: Quarterly Returns



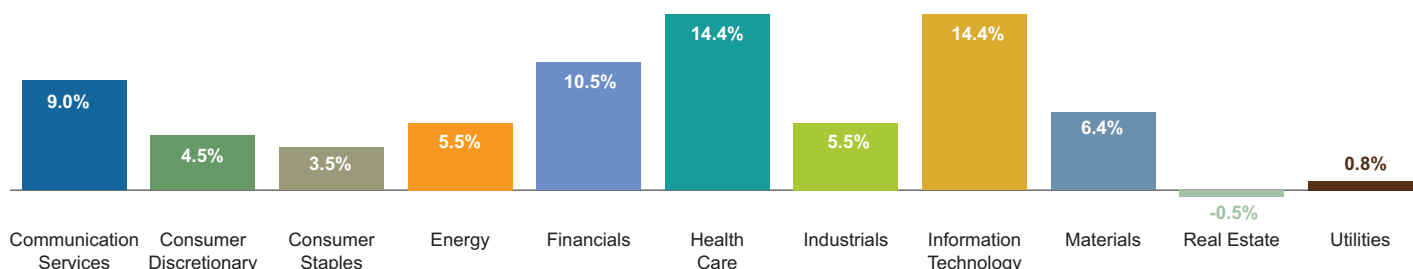
Sources: FTSE Russell and S&P Dow Jones Indices

## U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

## Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices

- The fourth quarter saw a rotation away from the more defensive sectors (e.g., Consumer Staples (+3.5%), Utilities (+0.8%), and Real Estate (-0.5%)) and into Cyclical, further supporting growth stocks.

### Global/Global ex-U.S. Equity

Global equity markets bounced back in the fourth quarter as uncertainties abated. De-escalation of the U.S.-China trade war coupled with some Brexit clarity boosted markets. With this backdrop, trade-related areas of the market led the rally.

**Global/Developed ex-U.S.** ► *MSCI EAFE: +8.2% | MSCI World ex USA: +8.0% | MSCI ACWI ex USA: +8.9% | MSCI Pacific ex Japan: +5.8% | MSCI Japan: +7.6%*

- British Prime Minister Boris Johnson gained command of the Parliament as a result of the Dec. 12 election, adding further clarity to Brexit and sparking the pound to its best quarterly results in a decade by rising 7.5% relative to the dollar.
- Accommodative policies such as a fiscal stimulus program and dovish monetary rhetoric continued to support the Japanese economy and its market.
- Despite GDP contraction of 3.2% and its first recession in a decade due to political protests, Hong Kong rose 7.3% as U.S.-China trade tensions improved.
- Every sector rose, led by Technology.

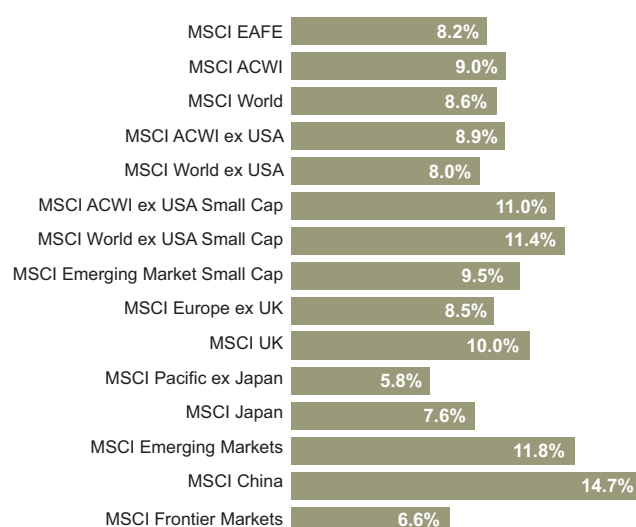
### Emerging Markets ► *MSCI Emerging Markets Index: +11.8%*

- Emerging markets were the best-performing among the global ex-U.S. markets as trade war uncertainty receded.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.
- Brazil posted a 14.2% gain, its best quarter since late 2017, emboldened by President Jair Bolsonaro's deregulation policies, the country's 1.2% GDP growth, and pending pension reform.
- Russia was the best-performing country in 2019 (+50.9%) and a top five performer in the quarter (+16.8%) as rising oil prices over the past year helped fuel sentiment.
- Every sector generated positive returns, led by Asian technology companies, given the "phase one" trade deal, chip demands for 5G, and growth in China.

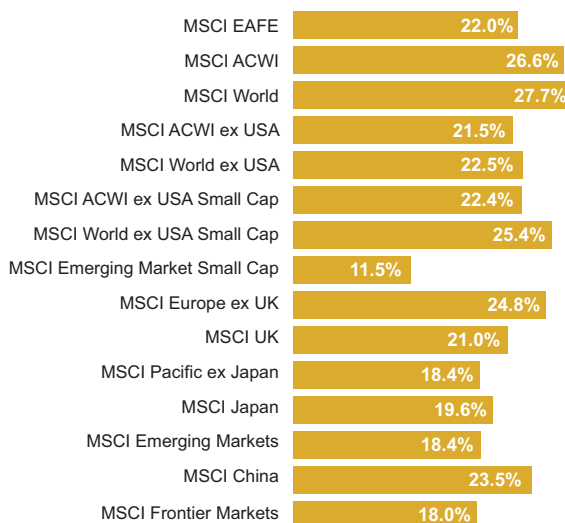
### Global ex-U.S. Small Cap ► *MSCI World ex USA Small Cap: +11.4% | MSCI EM Small Cap: +9.5%*

- The "risk-on" market environment triggered by the U.S.-China trade war de-escalation enabled small caps to outperform large caps.
- Additional Brexit clarity drove the U.K. as the top country performer (+19.4%) within developed ex-U.S.
- Argentina (+33.5%) and Brazil (+24.8%) were two of the top EM country performers as key appointments in the Argentinian government, and deregulation and pension reform in Brazil, boosted market sentiment.

### Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar)



### Global ex-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

## Fixed Income

The Federal Open Market Committee (FOMC) cut short-term interest rates by 25 basis points once in the fourth quarter to 1.50%-1.75%, citing weak business investment and export data, along with muted inflation. The overall economic backdrop remained strong supported by a solid labor market, which led to a pause in rate cuts at the most recent FOMC meeting. The FOMC indicated its current monetary policy stance is appropriate to sustain the economic expansion. The European Central Bank kept rates steady while continuing to purchase assets in the open market. Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations.

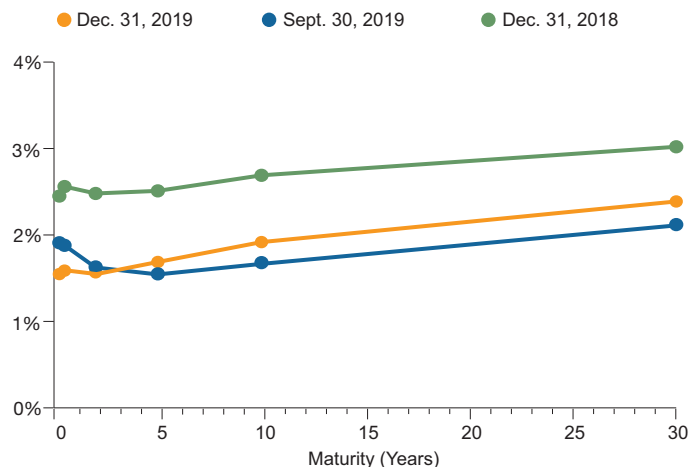
### Core Fixed Income ► *Bloomberg Barclays US Agg: +0.2%*

- Treasuries fell 0.8% as the Treasury yield curve steepened, with yields falling on the short end and rising modestly in the intermediate and long end of the curve on expectations of stronger economic growth.
- The spread between the 2-year and 10-year Treasury remained positive, ending the year at 34 bps.
- Long Treasuries fell 4.1% as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; the 10-year breakeven spread was 1.77% at quarter end, up from 1.53% as of Sept. 30.

### Investment-Grade Corporates ► *Bloomberg Barclays Corporate (Inv. Grade): +1.2%*

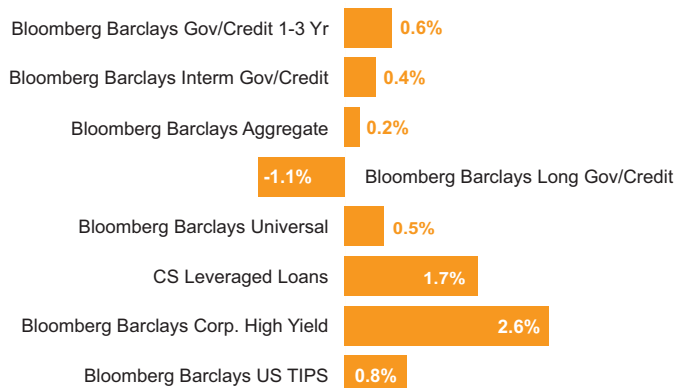
- Investment grade corporate credit spreads narrowed in the fourth quarter and posted the best results within the Bloomberg Barclays US Aggregate Bond Index amid a risk-on market environment; BBB-rated corporates (+1.7%) outperformed single A-rated or higher corporates (+0.7%), indicating investors' willingness to extend risk down the credit spectrum.
- Issuance in the corporate bond market was \$200 billion in the fourth quarter, which was \$8 billion lower than that from a year ago. Issuance was \$140 billion lower compared to

### U.S. Treasury Yield Curves



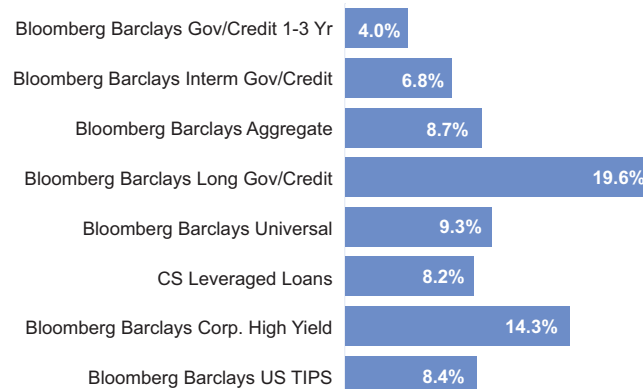
Source: Bloomberg

### 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

## FIXED INCOME (Continued)

the third quarter, as is typical toward year-end; demand remained strong amid the risk-on market tone as global investors continued their hunt for positive-yielding assets.

### High Yield ► *Bloomberg Barclays Corporate HY: +2.6%*

- CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvements in credit fundamentals.

### Leveraged Loans ► *CS Leveraged Loans: +1.7%*

- Bank loans, which have floating-rate coupons, underperformed high yield as investors shunned loans in favor of high yield bonds.
- CLO issuance remained consistent, providing technical support for the leveraged loan market.

### Global Fixed Income ► *Bloomberg Barclays Global Aggregate (unhedged): +0.5% | (hedged): -0.5%*

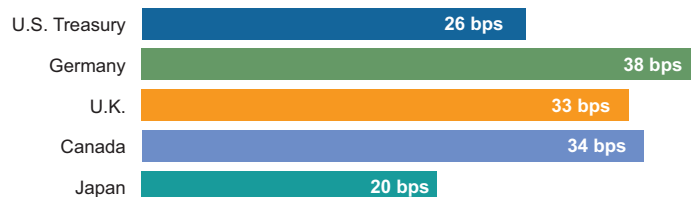
- Developed market sovereign bond yields rose modestly in the fourth quarter as global financial conditions improved, but ended lower on the year. The ECB kept the deposit rate steady at its December meeting; negative-yielding debt totaled less than \$12 trillion, down from \$17 trillion in the third quarter.
- The U.S. dollar declined in the fourth quarter versus the euro, Australian dollar, and British pound; however, it had a modest gain versus the Japanese yen.

### Emerging Market Debt (\$US) ► *JPM EMBI Global Diversified: +1.8% | (Local currency) ► JPM GBI-EM Global Diversified: +5.2%*

- Broadly, emerging market debt benefited from dovish global central banks and a risk-on environment.
- Within the dollar-denominated benchmark, which posted mixed results, Lebanon (-29.4%) was an outlier as the debt-to-GDP ratio continued to swell and anti-government protests persisted; Argentina rallied (+20.8%) to end the year down 23.6% as a new president was inaugurated.

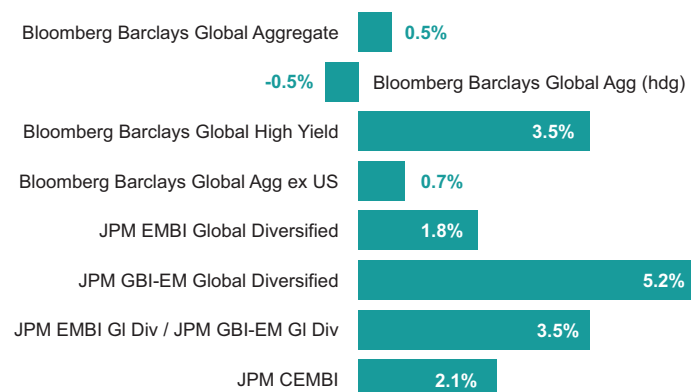
## Change in 10-Year Global Government Bond Yields

### 3Q19 to 4Q19



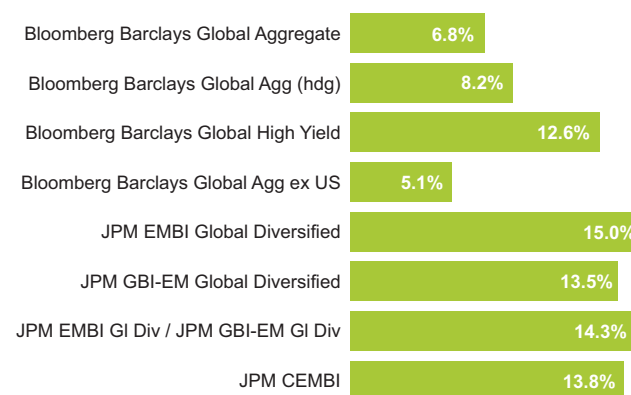
Source: Bloomberg Barclays

## Global ex-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

## Global ex-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Returns in the local debt benchmark were largely positive, with only Chile (-6.2%) and the Dominican Republic (-0.7%) declining. South Africa (+10.2%) and Russia (+10.0%) were top performers.



# Real Estate Stays the Course; Real Assets See Strong Gains

REAL ESTATE/REAL ASSETS | Munir Iman and David Welsch

## Returns continue to moderate

- U.S. core real estate returns continued to be driven by income, with limited appreciation this late in the cycle.
- Returns came from net operating income (NOI) growth rather than further capitalization rate compression.
- Industrial kept outperforming other property types.
- Retail continued to show signs of depreciation.
- Defensive posturing and disciplined asset acquisitions were critical.

## U.S. real estate fundamentals remain healthy

- Steady returns continued, driven by above inflation-level rent growth in many metro areas.
- Within the **NCREIF Property Index**, the vacancy rate for Industrial decreased; all other property types increased.
- NOI has been growing annually and is expected to be the primary return driver. Office, Apartment, and Industrial NOI growth have fallen slightly since the third quarter of 2019.

## Pricing remains expensive in the U.S.

- Transaction volumes increased and remained robust.
- Capitalization rates fell slightly; the market remained close to full valuations.

## Global equities outperform REITs

- Global REITs gained 2.0% in the fourth quarter compared to 9.1% for global equities (**MSCI ACWI IMI**).
- U.S. and global ex-U.S. REITs were trading just below NAV.
- Large cap stocks, especially those with higher debt levels, modestly outperformed.
- U.S. REITs lost 1.0% in the fourth quarter, lagging the S&P 500 Index, which rose 9.1%.

## Asia impacted by trade tensions

- U.S.-China trade talks and unrest in Hong Kong impacted real estate markets in the region. Managers continued to find attractive opportunities in some sectors of the market such

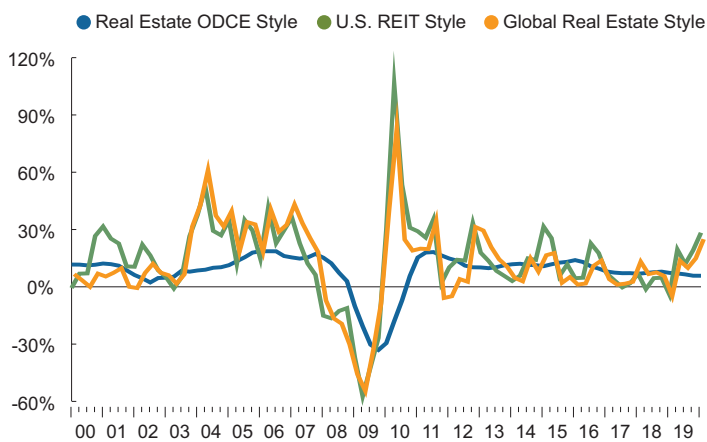
as restructuring opportunities, necessity-based retail, multi-family rental, and logistics.

- The number of open-end core funds operating in the Asia Pacific market, primarily focused on Japan, Australia, South Korea, and Singapore, increased over recent years and includes both sector-diversified and sector-specific (e.g., logistics) funds.
- India had its first successful REIT IPO in 2019, contributing to the institutionalization of the asset class in that country.

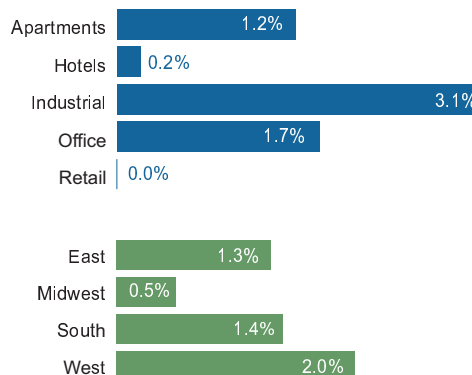
## Fundamentals remain strong in Europe's gateway markets

- Political uncertainty weighed on overall economic growth throughout Europe, but real estate fundamentals remain

## Rolling One-Year Returns



## Sector Quarterly Returns by Property Type and Region



Source: NCREIF

## REAL ESTATE/REAL ASSETS (Continued)

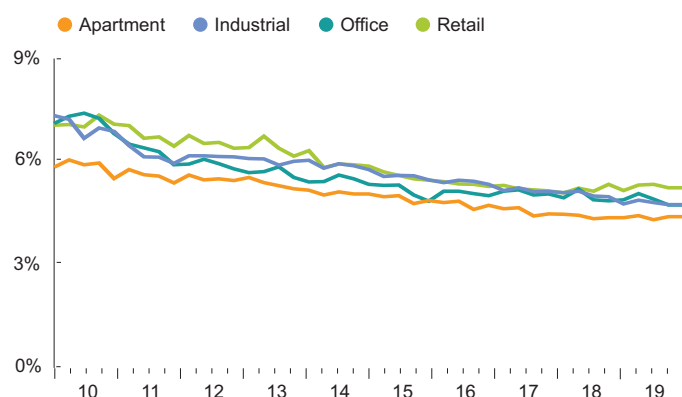
strong in key gateway markets given strong demand and the continued lack of new supply. Cap rates for prime real estate remained low, as real estate continued to be attractive as a result of low interest rates throughout the region.

- Yields between prime and secondary real estate remained wide, providing opportunities for investors targeting transitional assets.

### Infrastructure continues to mature

- Open end funds raised significant capital, and the universe of investible funds increased as the sector matured.
- The closed end fund market kept expanding, with additional offerings in infrastructure debt, emerging markets, and sector-specific areas (e.g., communications and renewables).
- Two mega funds raised in excess of \$20 billion in 2019.

### NCREIF Capitalization Rates by Property Type

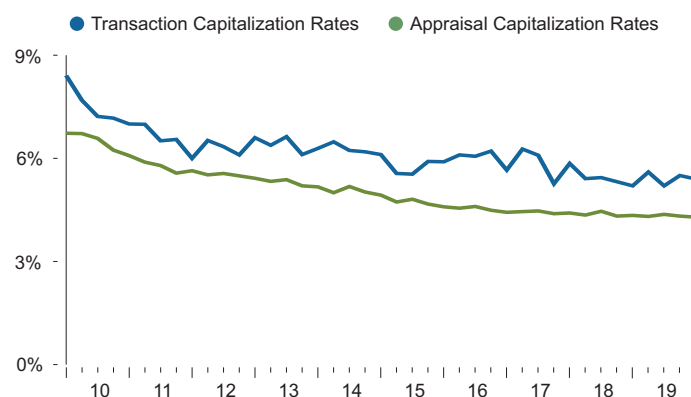


Source: NCREIF. Capitalization rates (net operating income / current market value (or sale price)) are appraisal-based.

### Real assets mostly see gains

- Real assets returns were mostly strong in the fourth quarter. The **Bloomberg Commodity Index** gained 4.4% and the **S&P GSCI Commodity Index** was up 8.3%.
- MLPs, however, declined (**Alerian MLP Index**: -4.1%).
- Spot gold prices were up 3.4%.
- The **DJ-Brookfield Infrastructure Index** rose 4.0%.
- REITs (**FTSE Nareit Equity Index**) modestly fell (-0.8%).
- The **Bloomberg Barclays TIPS Index** rose 0.8%.
- For the year, returns of these indices were positive with Infrastructure (+28.7%) and REITs (+26.0%) leading the pack. MLPs (+6.6%) posted the lowest full-year return.

### NCREIF Transaction and Appraisal Capitalization Rates



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

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
<b>Real Estate ODCE Style</b>	<b>1.6</b>	<b>5.8</b>	<b>5.8</b>	<b>6.8</b>	<b>8.4</b>	<b>10.5</b>	<b>6.8</b>
NFI-ODCE (value wt net)	1.3	4.4	4.4	6.1	8.0	10.4	6.7
NCREIF Property	1.5	6.4	6.4	6.7	8.2	10.2	8.3
NCREIF Farmland	1.0	3.4	3.4	5.4	6.7	10.9	13.3
NCREIF Timberland	0.0	1.3	1.3	2.7	3.1	4.4	6.6
<b>Public Real Estate</b>							
<b>Global Real Estate Style</b>	<b>2.8</b>	<b>24.9</b>	<b>24.9</b>	<b>10.3</b>	<b>7.2</b>	<b>9.9</b>	<b>7.2</b>
FTSE EPRA Nareit Developed	1.7	21.9	21.9	8.3	5.6	8.4	--
<b>Global ex-U.S. Real Estate Style</b>	<b>6.8</b>	<b>25.0</b>	<b>25.0</b>	<b>12.3</b>	<b>7.0</b>	<b>8.4</b>	<b>7.1</b>
FTSE EPRA Nareit Dev ex US	5.6	21.0	21.0	10.8	5.8	6.9	--
<b>U.S. REIT Style</b>	<b>0.0</b>	<b>28.3</b>	<b>28.3</b>	<b>9.2</b>	<b>7.9</b>	<b>12.6</b>	<b>8.6</b>
EPRA Nareit Equity REITs	-0.8	26.0	26.0	8.1	7.2	11.9	7.9

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NCREIF



# Cheap and Dear

## PRIVATE EQUITY | Gary Robertson

Global private equity fundraising has now surpassed 2007's famed peak of \$615 billion for two years in a row, with \$658 billion in 2018 and \$692 billion in 2019 (unless otherwise noted, PitchBook provided all private equity data cited). Private equity market liquidity and transactions were brisk in 2019, albeit with moderate declines relative to 2018. Venture capital prices also increased year-over-year.

In 2019, the \$692 billion raised by private equity partnerships holding final closes globally was across 924 partnerships. The dollar amount rose 5% from 2018, but the number of funds fell 1%. Fourth quarter final closes totaled \$188 billion, down 11% from the third quarter. The number of funds totaled 255, up 9%.

New buyout investments for 2019 totaled 7,555, down 15% from 2018. Dollar volume fell 24% to \$522 billion. The fourth quarter saw 1,642 new investments, a 17% decline, and dollar volume fell 13% to \$137 billion.

The year produced 28,868 rounds of new investment in venture capital (VC) companies, down 12% from 2018. The year's announced volume of \$257 billion was down 13%. The fourth quarter saw 5,301 new rounds, a 27% decline, and dollar volume fell 6% to \$59 billion.

Last year also saw 2,054 buyout-backed private M&A exits, down 28% from 2018, with proceeds of \$608 billion, down 13%. The

### Funds Closed 1/1/2019 to 12/31/2019

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	412	74,014	11%
Growth Equity	66	80,931	12%
Buyouts	256	381,368	55%
Mezzanine Debt	67	76,986	11%
Distressed	11	15,823	2%
Energy	9	9,724	1%
Secondary and Other	59	37,854	5%
Fund-of-funds	44	15,663	2%
<b>Totals</b>	<b>924</b>	<b>692,363</b>	<b>100%</b>

Source: PitchBook (Figures may not total due to rounding.)

fourth quarter had 420 private exits, down 23%, with proceeds of \$154 billion, down 35%. The year's 95 buyout-backed IPOs declined 41% from 2018, with proceeds of \$30 billion, down 32%. Fourth quarter buyout-backed IPOs were a bright spot, with 24 offerings, a jump of 41% from the third quarter, and \$7 billion of proceeds, up 17%.

Venture-backed M&A exits for the year totaled 1,554, down 8% from 2018. Announced dollar volume of \$122 billion was down 13%. The final quarter had 323 exits, down 19%, but announced value was up 22%. The year's 209 venture-backed IPOs fell 5% from 2018, with proceeds of \$42 billion, down 9%. The fourth quarter had 61 VC-backed offerings, an 11% rise, but the \$6 billion of proceeds dropped 33% from the third quarter.

### Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/2019\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	-0.37	13.01	14.56	14.39	14.83	11.41	11.02
Growth Equity	1.32	12.76	16.02	12.77	14.03	13.41	13.13
All Buyouts	1.43	8.85	15.32	12.83	14.59	13.65	12.04
Mezzanine	0.87	6.02	10.86	10.00	10.85	10.58	8.60
Credit Opportunities	-0.36	0.61	7.73	5.49	10.47	9.28	9.90
Control Distressed	1.05	4.38	8.86	7.83	11.17	10.52	10.58
<b>All Private Equity</b>	<b>0.92</b>	<b>9.59</b>	<b>14.41</b>	<b>12.33</b>	<b>14.03</b>	<b>12.72</b>	<b>11.72</b>
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices

\*Most recent data available at time of publication

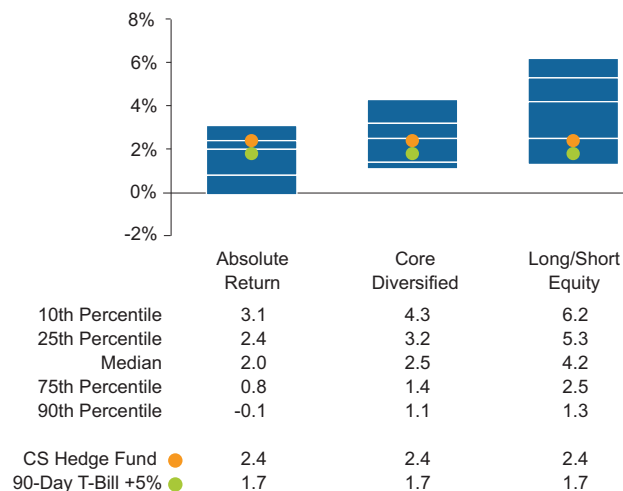
Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Party Like it's 1999 ... or Not

HEDGE FUNDS/MACs | Jim McKee

- Hedge funds participated more cautiously in the fourth quarter risk-on market, as expected.
- Portfolios with exposure to EM and long-short equity fared much better than those emphasizing equity market neutral or macro strategies.
- In the fourth quarter, *Long/Short Equity* (+5.1%) rode the wave of market beta, but alpha was more sporadic, leaving little extra risk-adjusted return. Tech and health care were positive outliers.
- *Equity Market Neutral* (+1.1%) barely clawed back its recent September loss, with stocks lacking dispersion to create trading opportunities.
- *Managed Futures* fell 2.6% as bond rates reversed their downward trend, but it finished 2019 with a solid 9% gain.
- *Distressed* (+1.3%) continued to struggle with chronically weak credits like energy, finishing 2019 up 1.4%, making it the **Credit Suisse Hedge Fund Index's** weakest performer for the year, just below Equity Market Neutral (+1.6%).

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, and Federal Reserve

## Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	2.69	7.10	4.32	3.08	4.49	4.49
Callan Absolute Return FOF Style	1.99	5.63	3.16	3.01	4.46	4.00
Callan Core Diversified FOF Style	2.47	6.70	3.59	2.41	4.25	4.16
Callan Long/Short Equity FOF Style	4.24	12.79	5.95	4.00	5.03	5.49
Credit Suisse Hedge Fund	2.44	9.31	4.27	2.65	4.25	4.75
CS Convertible Arbitrage	3.34	8.15	3.54	3.59	4.17	3.90
CS Distressed	1.27	1.39	2.29	1.52	4.23	4.86
CS Emerging Markets	7.75	13.38	5.98	4.41	4.62	6.06
CS Equity Market Neutral	1.06	1.58	1.53	0.31	1.37	-0.58
CS Event-Driven Multi	2.66	11.42	3.79	1.11	3.17	4.73
CS Fixed Income Arb	2.29	6.10	4.54	3.69	5.44	3.80
CS Global Macro	0.75	10.38	4.04	3.16	4.73	6.18
CS Long/Short Equity	5.06	12.17	6.66	3.94	5.15	5.58
CS Managed Futures	-2.59	9.01	1.67	-0.61	1.56	2.63
CS Multi-Strategy	1.28	7.25	4.27	4.21	6.02	5.76
CS Risk Arbitrage	1.98	4.89	3.59	3.40	2.72	3.68
HFRI Asset Wtd Composite	2.32	7.57	4.45	3.21	4.46	--
90-Day T-Bill + 5%	1.67	7.28	6.67	6.07	5.58	6.39

\*Gross of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

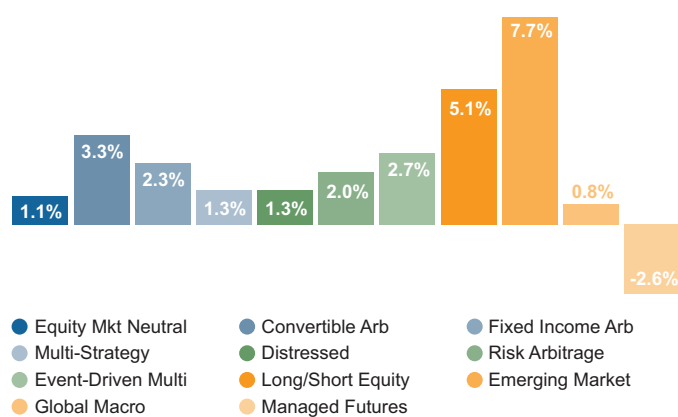
## Long Biased MACs rebounded; Risk Parity settled down

- MAC performance varied depending on net market exposures.
- Last quarter's 5.5% return of the 60% MSCI ACWI and 40% Bloomberg Aggregate benchmark was a tough hurdle to beat.
- Long-Biased MACs* benefited from their typically heavy equity exposure, particularly EM.
- HFR Risk Parity Index** targeting 10% volatility was moderately positive (+2.7%), reflecting strong stock gains partially offset by tepid bond returns.
- Eurekahedge Multi-Factor Risk Premia Index** gained 3.7% based on solid returns from carry trades in risk-on markets offset by a reversal of last year's downward trend in yields.
- Absolute Return MACs* edged ahead with their higher-quality asset bias amid the quarter's less discriminating risk-on market.

## Volatility suppressed

- With the Fed lowering rates by another quarter point in the fourth quarter while rescuing repo funding markets with unprecedented cash infusions, the Fed openly served the punch bowl of liquidity for "risk on" investors.

## Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

- Equity volatility, as illustrated by VIX, continued to settle at below-average levels, indicating fewer trading opportunities for hedge funds.
- While last quarter's melt-up reflected increased comfort with today's easy monetary and fiscal policies, a revived trade war with China or another geopolitical conflict could quickly undo that market sentiment.

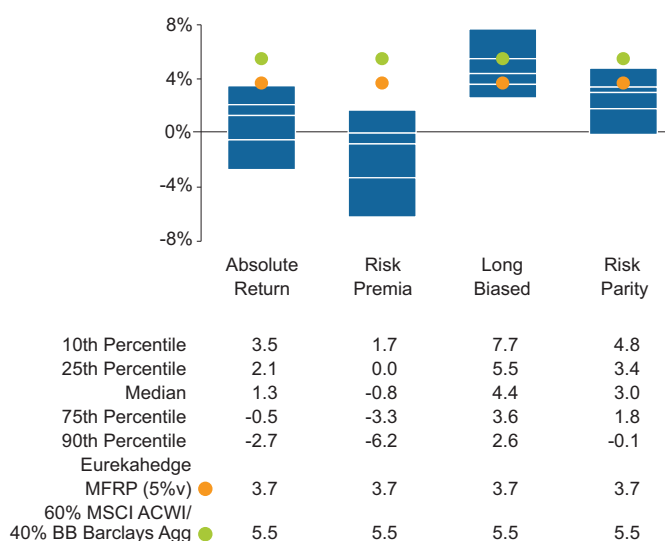
## Falling cash returns remove any hint of a tailwind for hedge funds

- As short rates fell, dwindling cash returns and short interest rebates removed previously favorable trade winds from hedge fund sails.

## Callan Institutional Hedge Fund Peer Group to launch

- To provide a more representative benchmark for our clients directly investing in hedge funds, Callan has created the Callan Institutional Hedge Fund Peer Group, a select collection of hedge funds meeting minimum size and other criteria that make them more attractive to institutional investors.

## MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Eurekahedge, S&P Dow Jones Indices

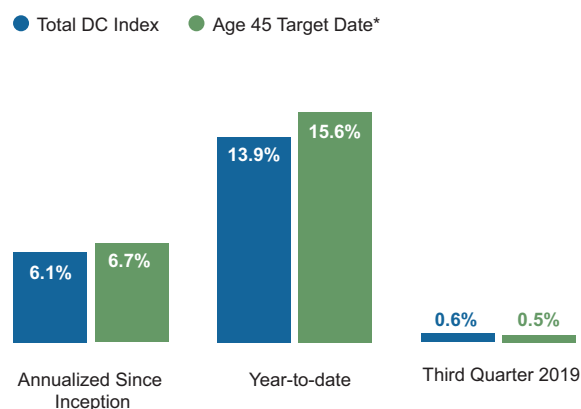
# DC Index Gains Slightly but Tops Age 45 TDF

DEFINED CONTRIBUTION | Patrick Wisdom

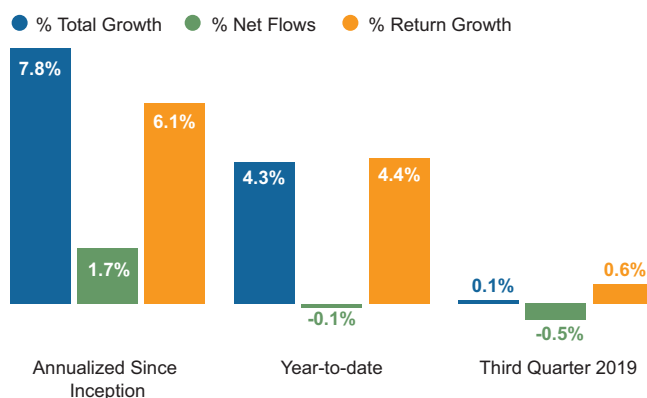
- The **Callan DC Index™** rose 0.6% in the third quarter after gains of 9.6% and 3.3% in the first and second quarters. The Age 45 Target Date Fund's smaller gain of 0.5% was largely due to its higher allocation to equity, which lagged fixed income during the quarter. The Age 45 TDF's bigger equity allocation, however, has contributed to a higher since-inception return (6.7% vs. 6.1%).
- The Index's growth in balances of 0.1% was much smaller than the first quarter (9.8%) and second quarter (3.3%).
- U.S. fixed income saw the largest inflows for the quarter (57.7%), for the first time since the third quarter of 2010. TDFs saw the second-largest inflow (26.2%), much lower than in recent quarters. U.S. large cap equity (-52.2%), and U.S. small/mid cap equity (-19.1%) had the largest outflows.
- Third-quarter turnover (i.e., net transfer activity levels within DC plans) decreased to 0.35% from the previous quarter's 0.54%.
- The allocation to equity within the Index fell to 69.5% from 70.0% in the previous quarter, after two quarters of increases.
- The percentage of assets allocated to U.S. fixed income increased by 0.5% to 6.3%. Similarly, the allocation to stable value increased by 0.3% to an overall allocation of 10.4%.
- TDFs experienced the largest decrease in asset allocation (-0.6%). With this decrease, 29.6% of assets were allocated to TDFs, the lowest since the first quarter of 2017.
- Stable value's prevalence within DC plans decreased for the first time in eight quarters and now sits at 76%, but still up nearly 3 percentage points from a year ago.
- Fees decreased across all plan sizes from the previous year, driven by a combination of increased adoption of passive mandates, as well as lower breakpoints and the use of less expensive vehicles and share classes for active options.

*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 \$150 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 (Third Quarter 2019) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
U.S. Fixed Income	57.73%
Target Date Funds	26.18%
U.S. Smid Cap	-19.09%
U.S. Large Cap	-52.23%
<b>Total Turnover**</b>	<b>0.35%</b>

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

Source: Callan DC Index

Note: DC Index inception date is January 2006.

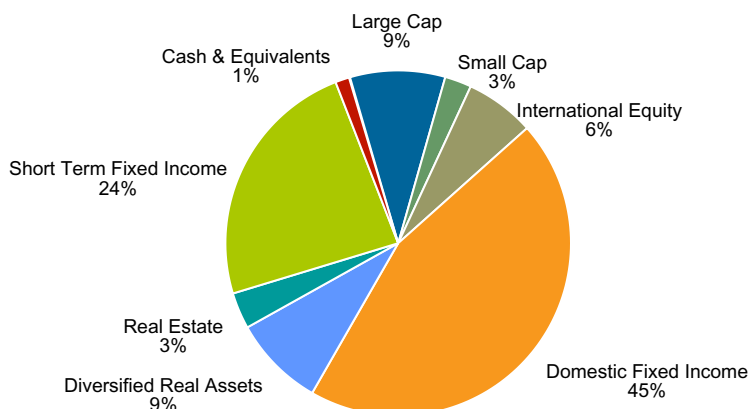
\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

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

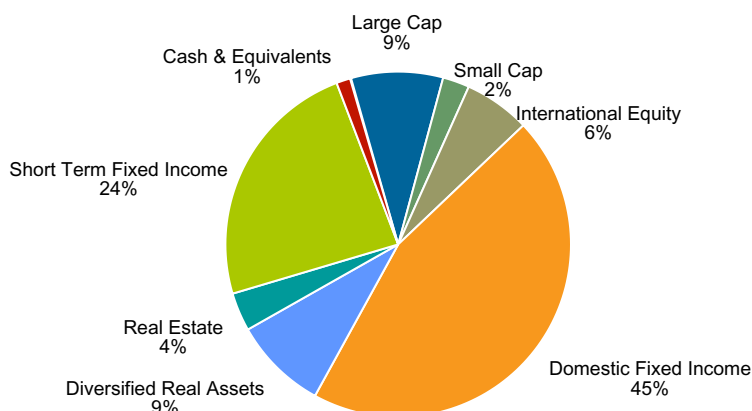
## Actual vs Target Asset Allocation As of December 31, 2019

The first chart below shows the Fund's asset allocation as of December 31, 2019. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



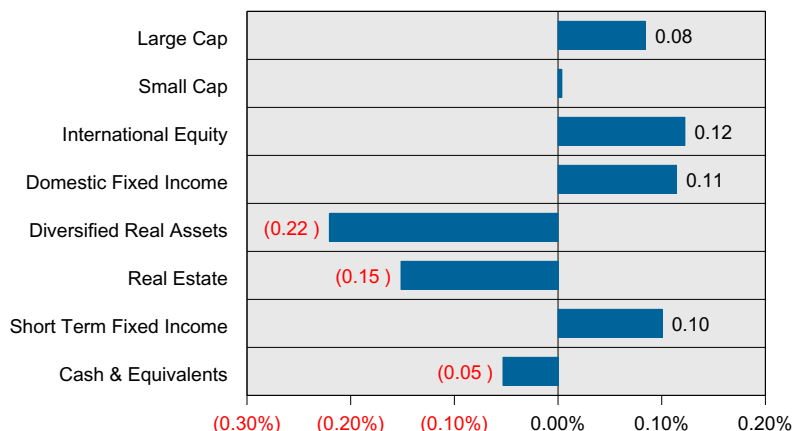
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	259,775	8.9%	8.6%	0.3%	7,337
Small Cap	73,760	2.5%	2.5%	0.1%	1,876
International Equity	189,181	6.5%	6.2%	0.3%	9,124
Domestic Fixed Income	1,314,867	44.9%	45.1%	(0.2%)	(5,071)
Diversified Real Assets	252,404	8.6%	8.8%	(0.2%)	(6,347)
Real Estate	100,690	3.4%	3.6%	(0.2%)	(5,394)
Short Term Fixed Income	697,274	23.8%	23.8%	0.0%	0
Cash & Equivalents	37,951	1.3%	1.3%	(0.1%)	(1,525)
Total	2,925,902	100.0%	100.0%		

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

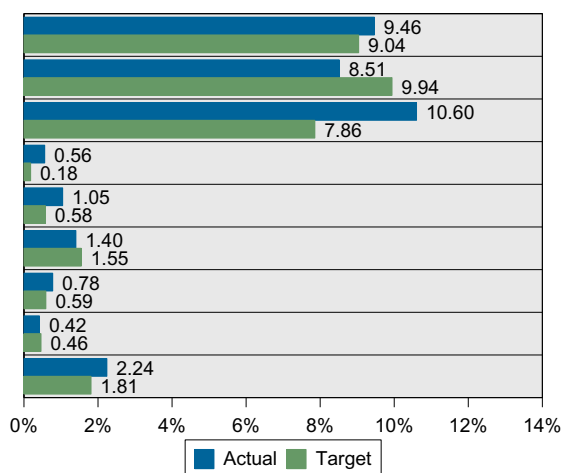
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

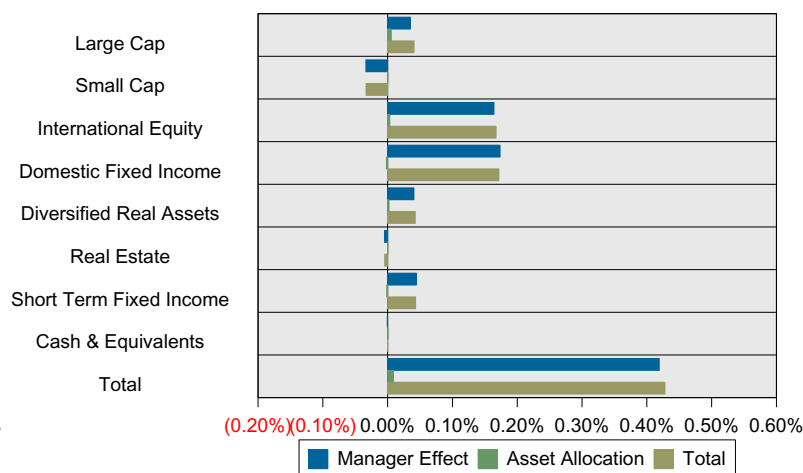
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

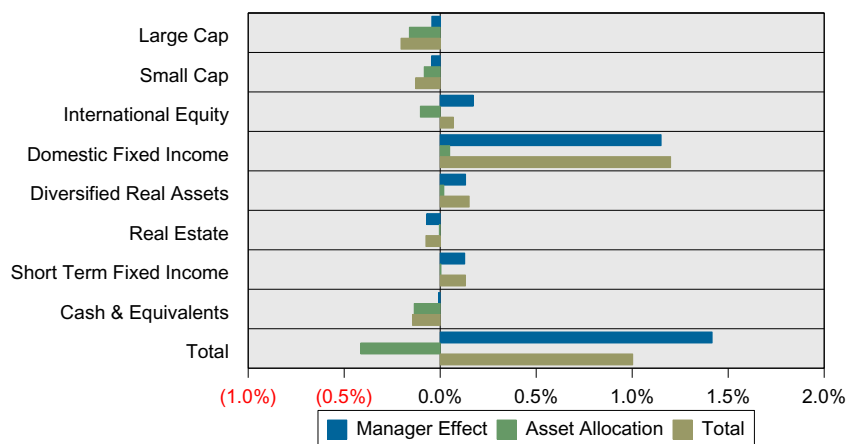
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	9%	9%	9.46%	9.04%	0.04%	0.01%	0.04%
Small Cap	2%	2%	8.51%	9.94%	(0.03%)	0.00%	(0.03%)
International Equity	6%	6%	10.60%	7.86%	0.16%	0.00%	0.17%
Domestic Fixed Income	45%	45%	0.56%	0.18%	0.17%	(0.00%)	0.17%
Diversified Real Assets	9%	9%	1.05%	0.58%	0.04%	0.00%	0.04%
Real Estate	3%	4%	1.40%	1.55%	(0.00%)	0.00%	(0.00%)
Short Term Fixed Income	24%	24%	0.78%	0.59%	0.04%	(0.00%)	0.04%
Cash & Equivalents	1%	1%	0.42%	0.46%	(0.00%)	0.00%	(0.00%)
<b>Total</b>			<b>2.24%</b>	<b>1.81%</b>	<b>+ 0.42%</b>	<b>+ 0.01%</b>	<b>0.43%</b>

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

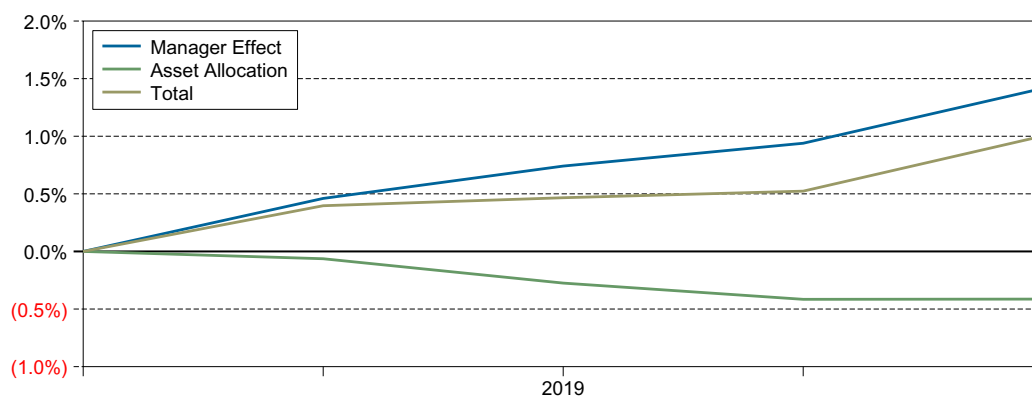
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

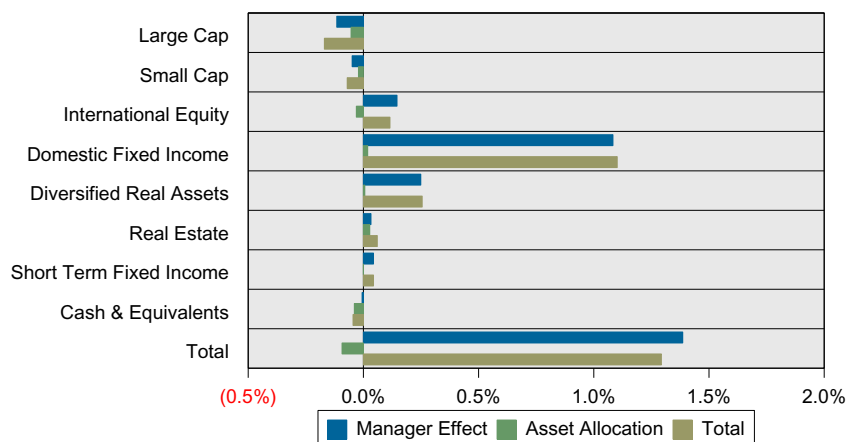
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	10%	9%	30.93%	31.43%	(0.04%)	(0.16%)	(0.20%)
Small Cap	3%	3%	23.80%	25.52%	(0.04%)	(0.08%)	(0.13%)
International Equity	7%	7%	25.36%	22.49%	0.17%	(0.10%)	0.07%
Domestic Fixed Income	51%	51%	10.90%	8.72%	1.15%	0.05%	1.20%
Diversified Real Assets	10%	10%	7.19%	5.84%	0.13%	0.02%	0.15%
Real Estate	4%	4%	4.68%	6.42%	(0.07%)	(0.00%)	(0.07%)
Short Term Fixed Income	13%	13%	4.90%	4.03%	0.13%	0.00%	0.13%
Cash & Equivalents	4%	3%	2.10%	2.28%	(0.01%)	(0.14%)	(0.14%)
<b>Total</b>			<b>12.18%</b>	<b>11.17%</b>	<b>+ 1.42%</b>	<b>+ (0.41%)</b>	<b>1.00%</b>

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

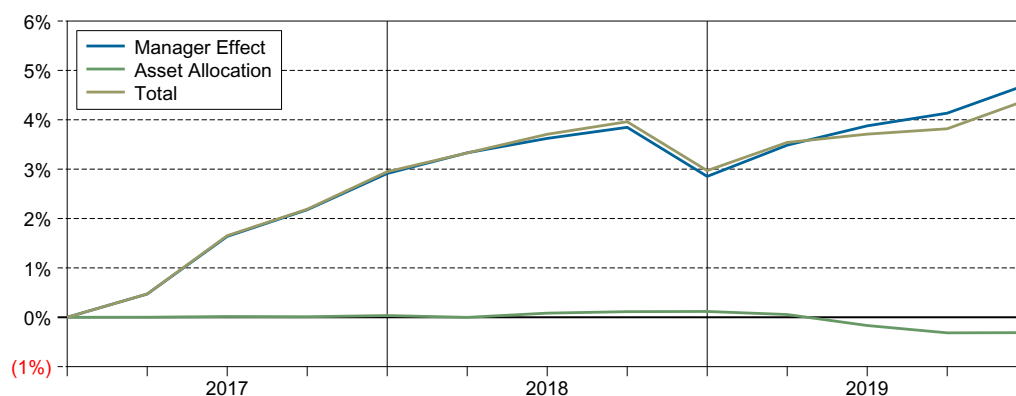
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	10%	13.88%	15.05%	(0.12%)	(0.05%)	(0.17%)
Small Cap	3%	3%	7.16%	8.59%	(0.05%)	(0.02%)	(0.07%)
International Equity	8%	8%	10.97%	9.34%	0.15%	(0.03%)	0.12%
Domestic Fixed Income	51%	52%	6.13%	4.03%	1.08%	0.02%	1.10%
Diversified Real Assets	11%	12%	6.04%	3.96%	0.25%	0.01%	0.26%
Real Estate	5%	5%	6.90%	6.70%	0.03%	0.03%	0.06%
Short Term Fixed Income	7%	7%	2.50%	2.11%	0.04%	0.00%	0.04%
Cash & Equivalents	4%	3%	1.54%	1.67%	(0.01%)	(0.04%)	(0.05%)
<b>Total</b>			<b>7.17%</b>	<b>5.87%</b>	<b>+ 1.39%</b>	<b>+ (0.09%)</b>	<b>1.29%</b>

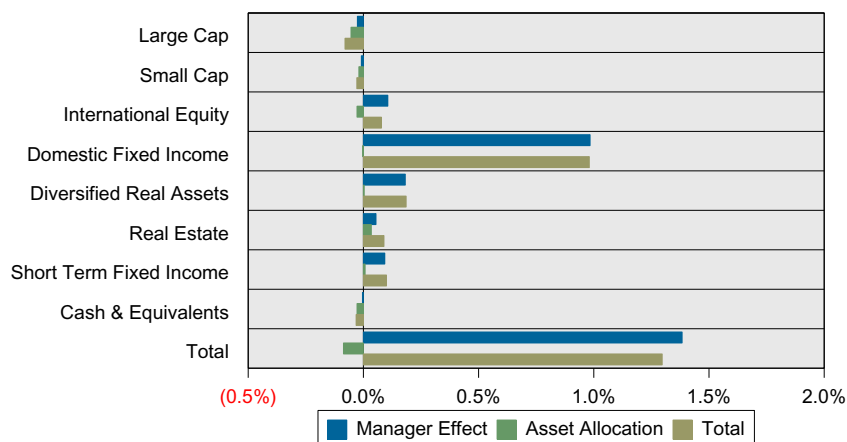
\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.



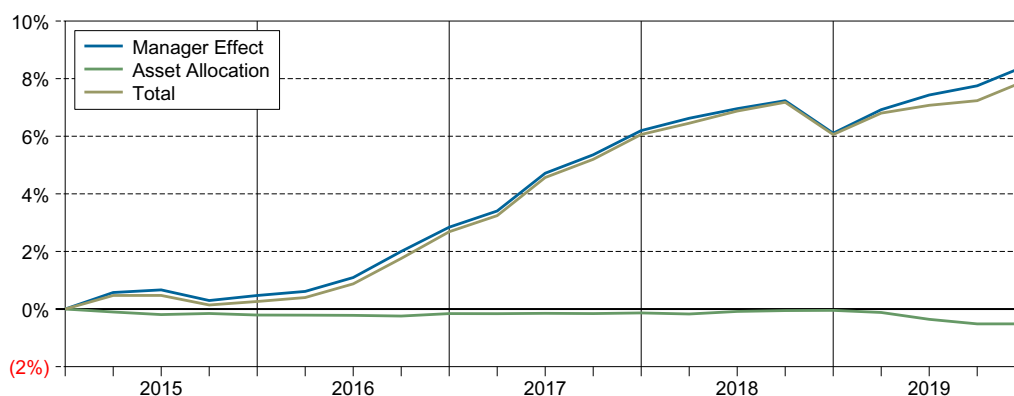
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

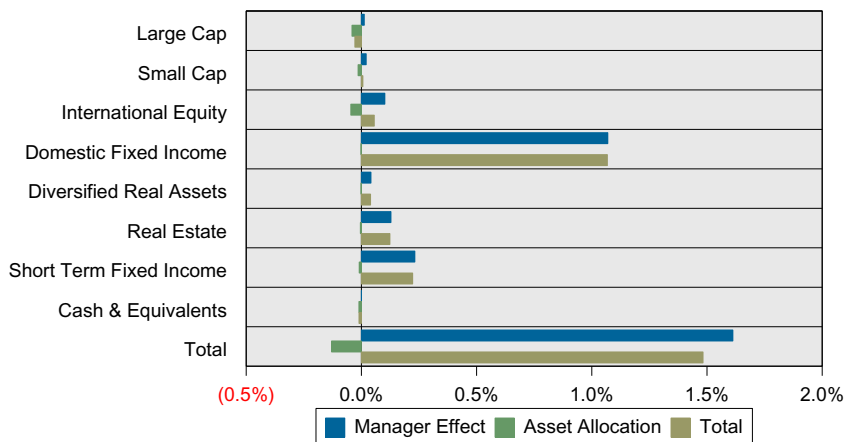
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	11.31%	11.48%	(0.03%)	(0.05%)	(0.08%)
Small Cap	3%	3%	8.08%	8.23%	(0.01%)	(0.02%)	(0.03%)
International Equity	7%	7%	7.21%	5.59%	0.11%	(0.03%)	0.08%
Domestic Fixed Income	48%	48%	5.08%	3.05%	0.98%	(0.00%)	0.98%
Diversified Real Assets	11%	11%	4.15%	2.59%	0.18%	0.00%	0.19%
Real Estate	5%	5%	8.98%	8.25%	0.05%	0.03%	0.09%
Short Term Fixed Income	11%	11%	2.18%	1.55%	0.09%	0.01%	0.10%
Cash & Equivalents	3%	3%	0.97%	1.07%	(0.00%)	(0.03%)	(0.03%)
<b>Total</b>			<b>5.78%</b>	<b>4.48%</b>	<b>+ 1.38%</b>	<b>+ (0.09%)</b>	<b>1.30%</b>

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

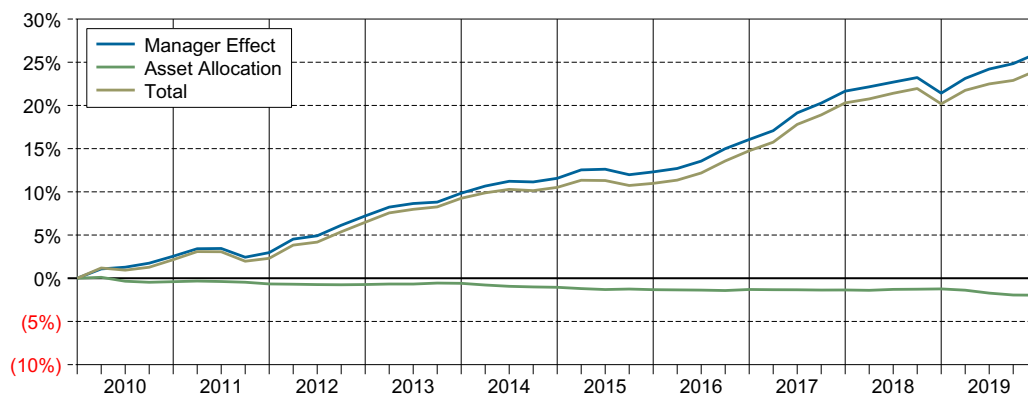
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

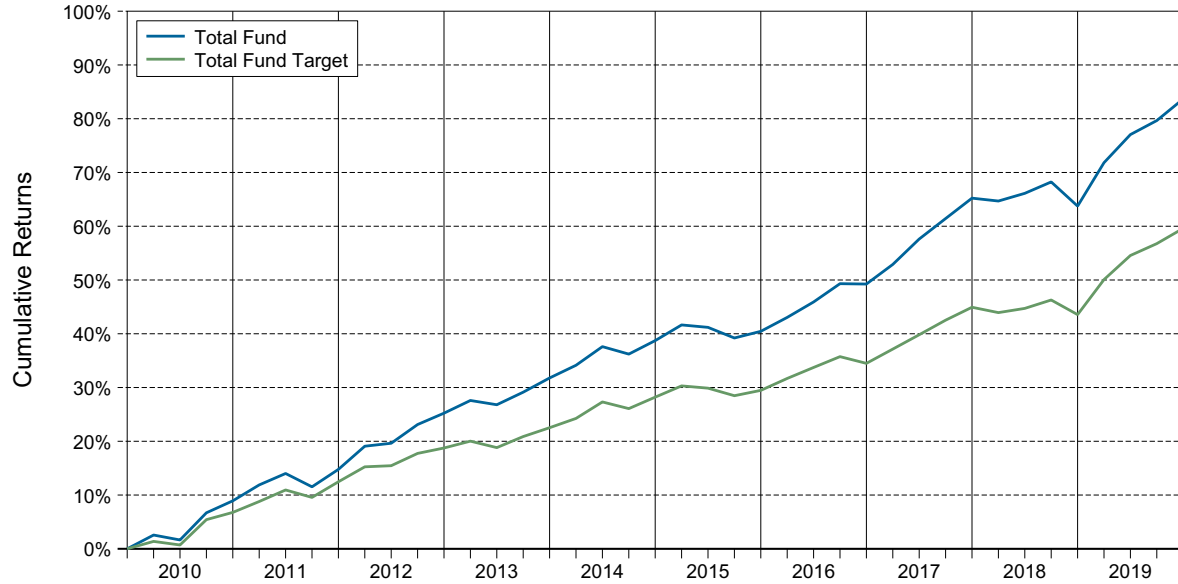
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	10%	10%	13.73%	13.51%	0.01%	(0.04%)	(0.03%)
Small Cap	3%	3%	12.58%	11.83%	0.02%	(0.01%)	0.01%
International Equity	7%	7%	6.96%	5.30%	0.10%	(0.05%)	0.06%
Domestic Fixed Income	42%	42%	6.40%	3.75%	1.07%	(0.00%)	1.07%
Diversified Real Assets	12%	13%	4.25%	3.58%	0.04%	(0.00%)	0.04%
Real Estate	5%	4%	12.11%	10.17%	0.13%	(0.00%)	0.12%
Short Term Fixed Income	18%	18%	2.18%	0.97%	0.23%	(0.01%)	0.22%
Cash & Equivalents	3%	3%	0.59%	0.58%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>6.27%</b>	<b>4.79%</b>	<b>+ 1.61%</b>	<b>+ (0.13%)</b>	<b>1.48%</b>

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 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



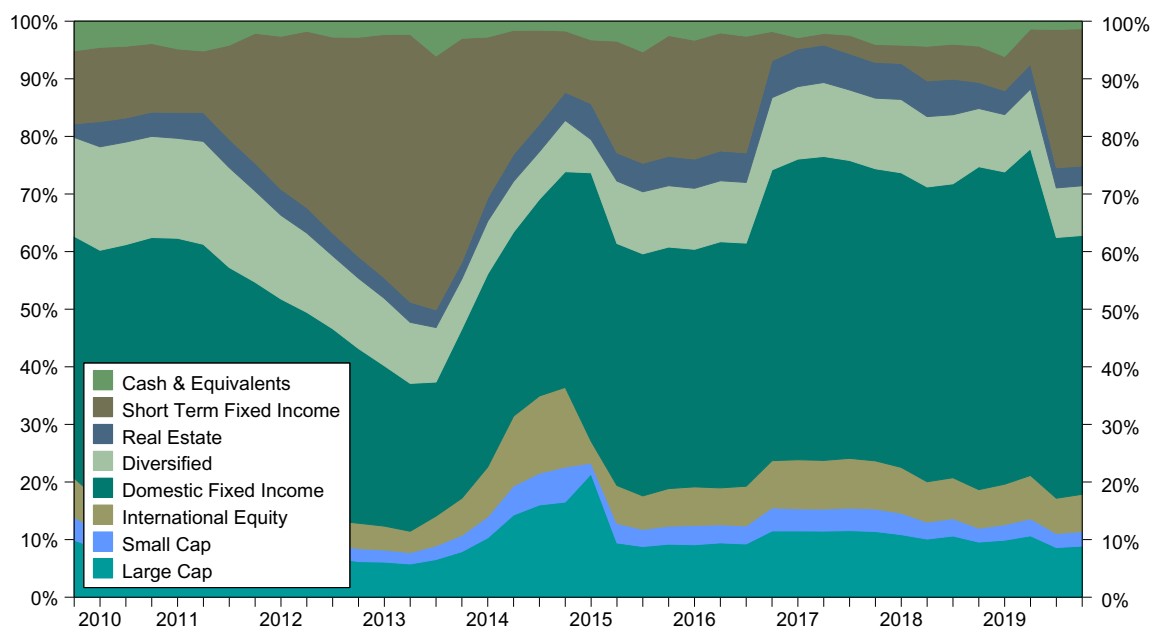
Squares represent membership of the Callan Public Fund Sponsor Database

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

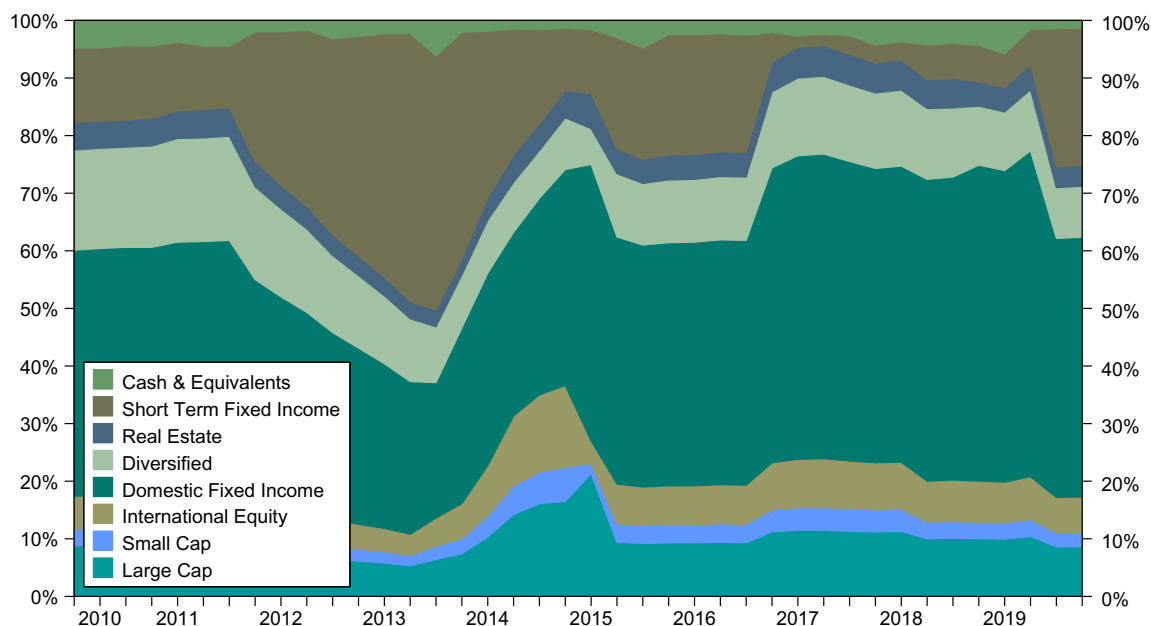
## Actual vs Target Historical Asset Allocation

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, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation

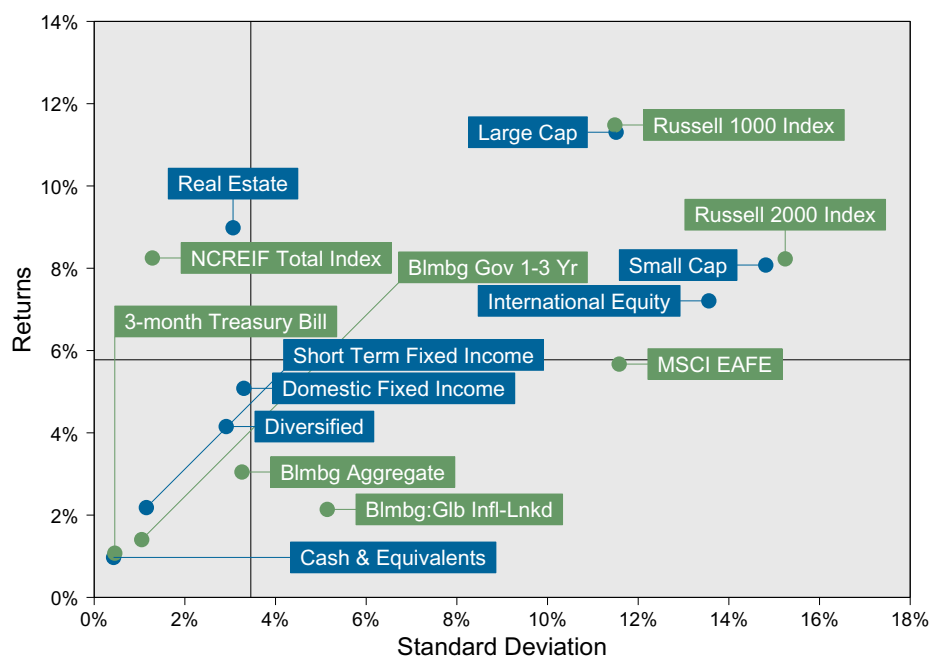


\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

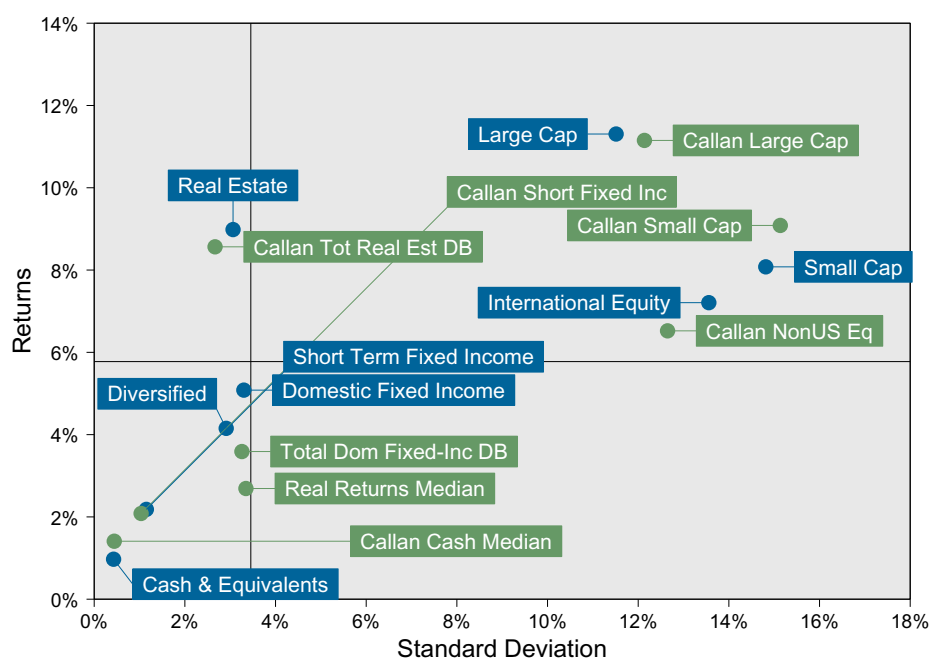
## Asset Class Risk and Return

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**



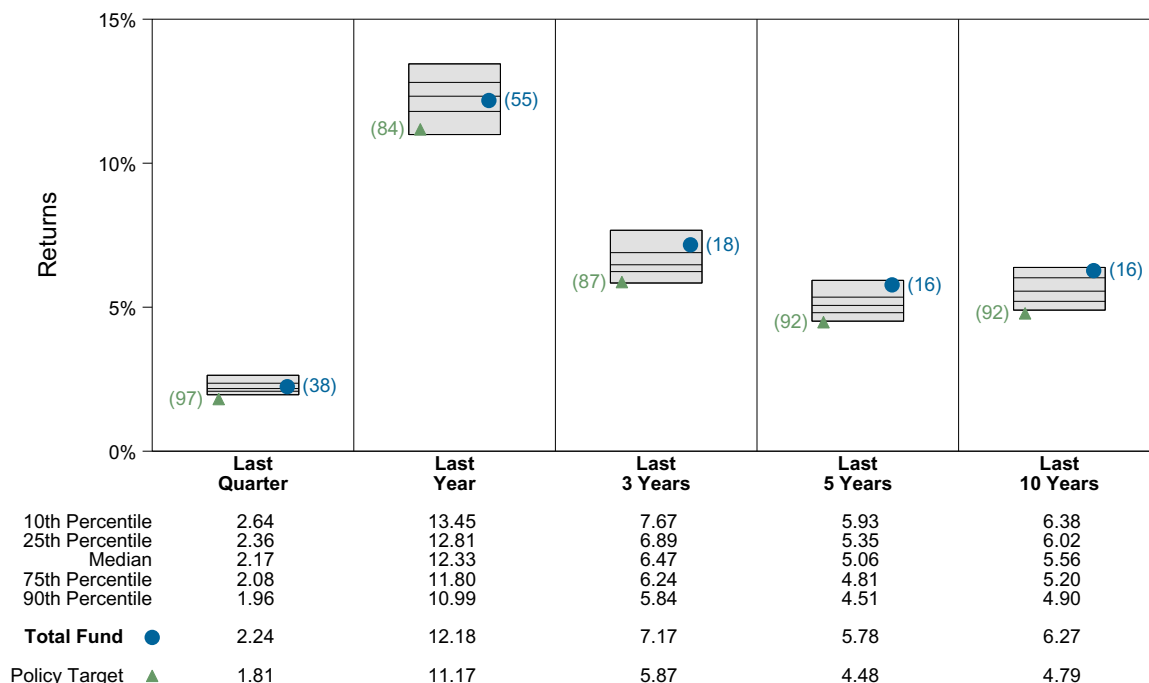
## Total Fund Ranking

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 December 31, 2019. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

### Callan Public Fund Sponsor Database



### Asset Allocation Adjusted Ranking

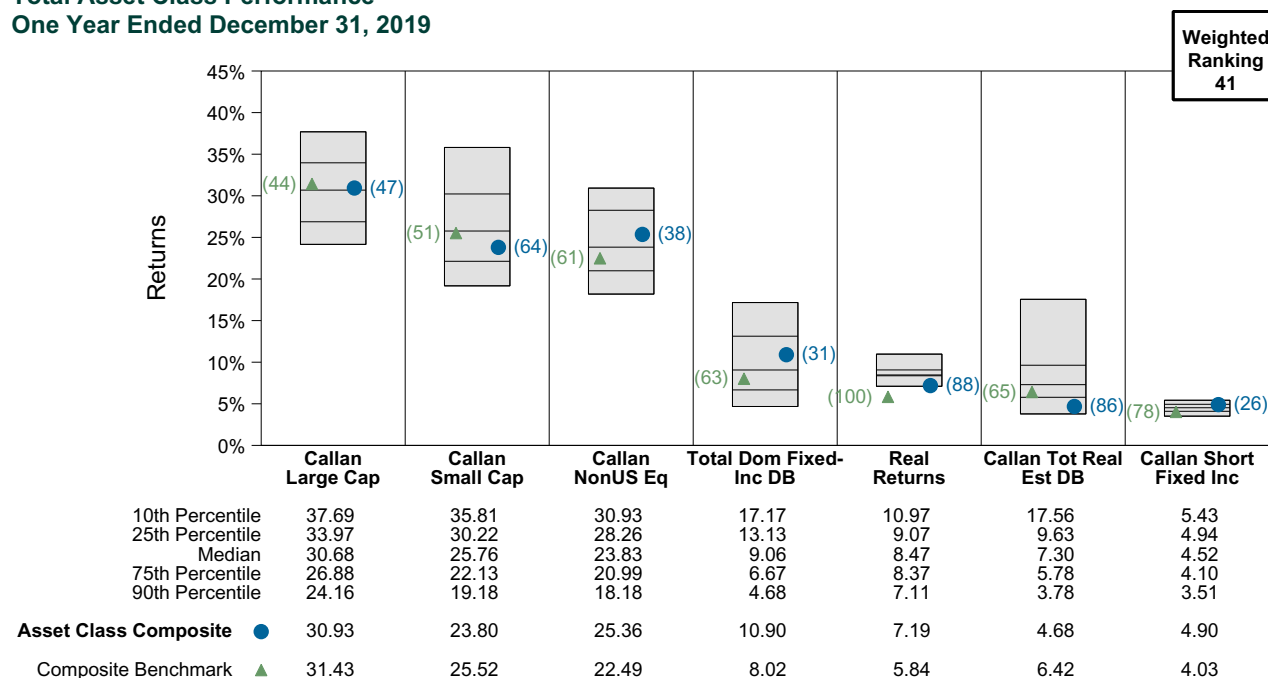


\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

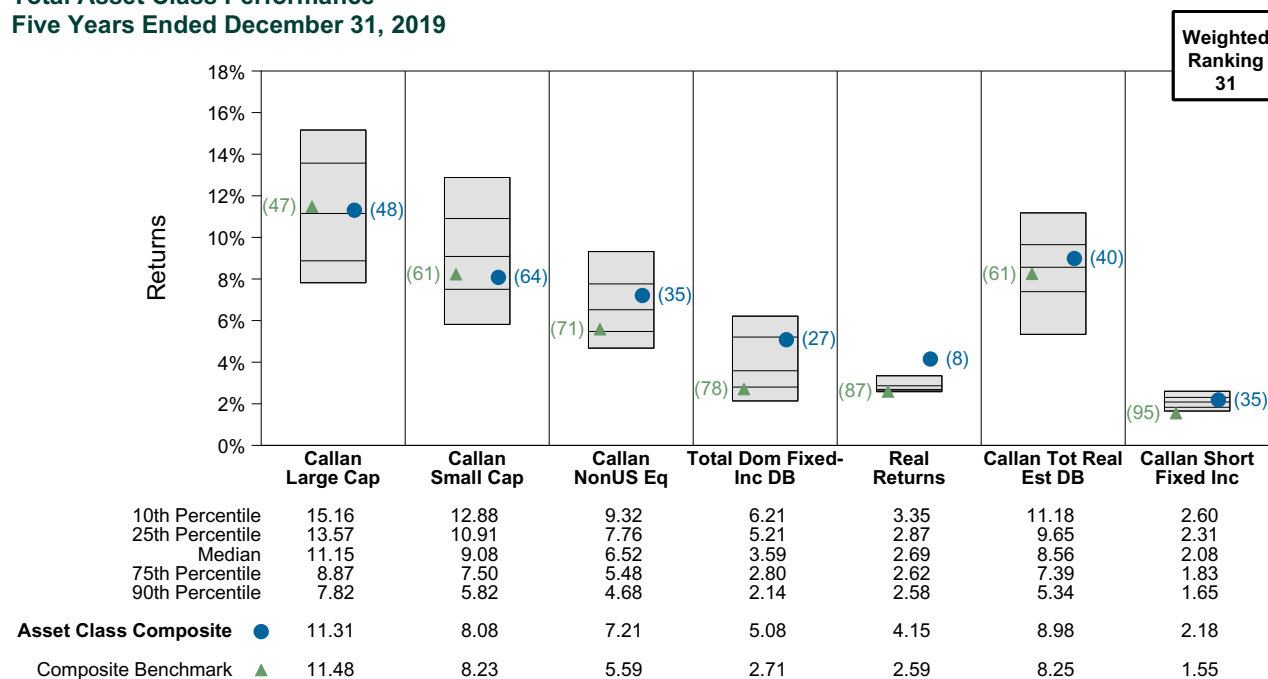
## Asset Class Rankings

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 December 31, 2019



### Total Asset Class Performance Five Years Ended December 31, 2019



\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019				September 30, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Equity</b>	<b>\$522,715,961</b>	<b>17.87%</b>	<b>\$(19,760,503)</b>	<b>\$47,582,067</b>	<b>\$494,894,397</b>	<b>17.18%</b>
<b>Domestic Equity</b>	<b>\$333,535,270</b>	<b>11.40%</b>	<b>\$(13,626,788)</b>	<b>\$29,038,937</b>	<b>\$318,123,121</b>	<b>11.05%</b>
<b>Large Cap</b>	<b>\$259,775,009</b>	<b>8.88%</b>	<b>\$(11,605,857)</b>	<b>\$23,148,295</b>	<b>\$248,232,572</b>	<b>8.62%</b>
Parametric Clifton Large Cap	52,078,906	1.78%	(3,500,000)	4,533,425	51,045,481	1.77%
L.A. Capital Large Cap Growth	78,070,077	2.67%	(4,039,946)	7,393,608	74,716,415	2.59%
L.A. Capital Enhanced	51,986,517	1.78%	(3,014,378)	4,104,025	50,896,871	1.77%
LSV Large Cap Value	77,639,510	2.65%	(1,051,533)	7,117,237	71,573,805	2.49%
<b>Small Cap</b>	<b>\$73,760,261</b>	<b>2.52%</b>	<b>\$(2,020,931)</b>	<b>\$5,890,642</b>	<b>\$69,890,549</b>	<b>2.43%</b>
Atlanta Capital	5,976,752	0.20%	6,000,000	(23,248)	-	-
Parametric Clifton Small Cap	36,123,792	1.23%	(2,000,000)	3,443,633	34,680,158	1.20%
PIMCO RAE	31,659,717	1.08%	(6,020,931)	2,470,257	35,210,391	1.22%
<b>International Equity</b>	<b>\$189,180,692</b>	<b>6.47%</b>	<b>\$(6,133,715)</b>	<b>\$18,543,130</b>	<b>\$176,771,276</b>	<b>6.14%</b>
DFA Int'l Small Cap Value	19,815,549	0.68%	0	2,093,671	17,721,878	0.62%
LSV Intl Value	72,821,749	2.49%	(64,583)	6,556,202	66,330,130	2.30%
Vanguard Intl Explorer Fund	19,981,346	0.68%	0	2,090,329	17,891,017	0.62%
William Blair	76,562,048	2.62%	(6,069,132)	7,802,928	74,828,251	2.60%
<b>Domestic Fixed Income</b>	<b>\$1,314,866,652</b>	<b>44.94%</b>	<b>\$4,006,386</b>	<b>\$7,304,776</b>	<b>\$1,303,555,490</b>	<b>45.26%</b>
Declaration Total Return	93,970,737	3.21%	(53,677)	311,135	93,713,279	3.25%
PIMCO Core Plus Constrained	162,243,420	5.55%	5,456,569	103,598	156,683,252	5.44%
PIMCO DiSCO II	44,644,429	1.53%	0	1,140,058	43,504,371	1.51%
PIMCO Bravo II Fund	11,910,537	0.41%	(1,046,004)	(13,691)	12,970,232	0.45%
Prudential	343,259,775	11.73%	(182,291)	1,985,677	341,456,389	11.86%
SSgA US Govt Credit Bd Idx	185,387,181	6.34%	(6,818)	(13,545)	185,407,544	6.44%
Wells Capital	111,975,417	3.83%	(53,240)	2,199,359	109,829,298	3.81%
Western Asset Management	361,475,156	12.35%	(108,153)	1,592,184	359,991,125	12.50%
<b>Global Real Assets</b>	<b>\$353,094,475</b>	<b>12.07%</b>	<b>\$752,882</b>	<b>\$3,994,429</b>	<b>\$348,347,164</b>	<b>12.10%</b>
<b>Real Estate</b>	<b>\$100,690,131</b>	<b>3.44%</b>	<b>\$(1,022,968)</b>	<b>\$1,404,622</b>	<b>\$100,308,478</b>	<b>3.48%</b>
Invesco Core Real Estate	52,753,858	1.80%	(464,040)	1,043,219	52,174,679	1.81%
JP Morgan RE Inc & Growth	47,936,273	1.64%	(558,929)	361,402	48,133,799	1.67%
<b>Diversified</b>	<b>\$252,404,344</b>	<b>8.63%</b>	<b>\$1,775,850</b>	<b>\$2,589,807</b>	<b>\$248,038,686</b>	<b>8.61%</b>
Western Asset TIPS	143,209,289	4.89%	3,959,106	1,406,926	137,843,258	4.79%
JP Morgan Infrastructure	42,329,763	1.45%	(1,320,893)	63,266	43,587,391	1.51%
Eastern Timber Opportunities	55,160,388	1.89%	0	1,243,482	53,916,906	1.87%
Grosvenor Cust. Infrastructure	11,704,903	0.40%	(862,362)	(123,866)	12,691,132	0.44%
<b>Short Term Fixed Income</b>	<b>\$697,273,545</b>	<b>23.83%</b>	<b>\$(55,953)</b>	<b>\$5,372,791</b>	<b>\$691,956,708</b>	<b>24.03%</b>
Barings Active Short Duration	350,200,626	11.97%	(55,953)	3,253,680	347,002,899	12.05%
JP Morgan Short Term Bonds	347,072,919	11.86%	0	2,119,111	344,953,808	11.98%
<b>Cash</b>	<b>\$37,951,405</b>	<b>1.30%</b>	<b>\$(3,417,633)</b>	<b>\$188,883</b>	<b>\$41,180,155</b>	<b>1.43%</b>
Northern Trust Cash Account	17,792,633	0.61%	(3,417,633)	100,673	21,109,593	0.73%
Bank of ND	20,158,771	0.69%	0	88,209	20,070,562	0.70%
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(29,647)</b>	<b>\$29,647</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$2,925,902,039</b>	<b>100.0%</b>	<b>\$(18,504,468)</b>	<b>\$64,472,592</b>	<b>\$2,879,933,915</b>	<b>100.0%</b>



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Global Equity</b>					
Gross	9.73%	27.92%	-	-	-
Net	9.68%	27.67%	-	-	-
Weighted Benchmark	8.75%	27.40%	-	-	-
<b>Domestic Equity</b>					
Gross	9.25%	29.33%	12.39%	10.60%	13.51%
Net	9.21%	29.14%	12.20%	10.38%	13.21%
Weighted Benchmark	9.24%	30.13%	-	-	-
<b>Large Cap</b>					
Gross	9.46%	30.93%	13.88%	11.31%	13.73%
Net	9.42%	30.72%	13.68%	11.10%	13.49%
Benchmark(1)	9.04%	31.43%	15.05%	11.48%	13.51%
Parametric Clifton Large Cap - Gross	9.10%	33.57%	15.18%	11.83%	13.98%
Parametric Clifton Large Cap - Net	9.10%	33.57%	15.18%	11.77%	13.76%
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	13.56%
L.A. Capital - Gross	10.07%	34.54%	17.93%	13.73%	15.15%
L.A. Capital - Net	10.02%	34.28%	17.69%	13.50%	14.91%
Russell 1000 Growth Index	10.62%	36.39%	20.49%	14.63%	15.22%
L.A. Capital Enhanced - Gross	8.23%	29.75%	13.53%	11.38%	13.71%
L.A. Capital Enhanced - Net	8.20%	29.61%	13.39%	11.24%	13.54%
Russell 1000 Index	9.04%	31.43%	15.05%	11.48%	13.54%
LSV Asset Management - Gross	9.98%	26.35%	8.96%	8.25%	12.64%
LSV Asset Management - Net	9.91%	26.01%	8.64%	7.93%	12.30%
Russell 1000 Value Index	7.41%	26.54%	9.68%	8.29%	11.80%
<b>Small Cap</b>					
Gross	8.51%	23.80%	7.16%	8.08%	12.58%
Net	8.48%	23.66%	7.00%	7.79%	12.13%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	11.83%
Parametric Clifton Small Cap - Gross	10.07%	27.21%	8.67%	8.83%	12.89%
Parametric Clifton SmallCap - Net	10.07%	27.21%	8.60%	8.57%	12.38%
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	11.83%
PIMCO RAE - Gross	7.04%	20.49%	5.58%	7.13%	12.22%
PIMCO RAE - Net	6.98%	20.22%	5.32%	6.85%	11.83%
Russell 2000	9.94%	25.52%	8.59%	8.23%	11.83%
<b>International Equity</b>					
Gross	10.60%	25.36%	10.97%	7.21%	6.96%
Net	10.52%	25.00%	10.64%	6.87%	6.63%
Benchmark(2)	7.86%	22.49%	9.34%	5.59%	5.30%
DFA Intl Small Cap Value - Net	11.81%	21.00%	5.90%	5.93%	7.17%
World ex US SC Va	11.19%	22.83%	8.65%	6.93%	7.27%
LSV Asset Management - Gross	9.89%	19.16%	7.79%	5.83%	5.81%
LSV Asset Management - Net	9.79%	18.73%	7.38%	5.42%	5.43%
Benchmark(3)	8.17%	22.01%	9.56%	5.67%	5.34%
Vanguard Intl Explorer Fund - Net	11.68%	21.91%	9.20%	6.80%	7.38%
BMI, EPAC, <\$2 B	11.79%	18.56%	8.10%	7.49%	7.32%
William Blair - Gross	10.70%	33.55%	15.84%	-	-
William Blair - Net	10.60%	33.08%	15.40%	-	-
MSCI ACWI ex US IMI	9.20%	21.63%	9.84%	5.71%	5.21%

(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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Domestic Fixed Income</b>					
Gross	0.56%	10.90%	6.13%	5.08%	6.40%
Net	0.53%	10.76%	6.00%	4.96%	6.26%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
Declaration Total Return - Net	0.33%	7.16%	5.16%	4.32%	-
Libor-3 Month	0.49%	2.35%	1.99%	1.40%	0.87%
PIMCO Core Plus Cons. - Gross	0.07%	-	-	-	-
PIMCO Core Plus Cons. - Net	0.04%	-	-	-	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
PIMCO DiSCO II - Net	2.62%	7.76%	9.54%	8.74%	-
PIMCO Bravo II Fund - Net	(0.11%)	0.96%	6.04%	7.15%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
Prudential - Gross	0.58%	11.34%	5.95%	4.77%	5.78%
Prudential - Net	0.53%	11.05%	5.70%	4.51%	5.58%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
Wells Capital - Gross	2.00%	17.37%	7.43%	5.78%	6.90%
Wells Capital - Net	1.95%	17.17%	7.24%	5.60%	6.70%
Blmbg Credit Baa	1.69%	16.46%	6.70%	4.97%	5.95%
Western Asset - Gross	0.44%	10.99%	5.53%	4.61%	5.77%
Western Asset - Net	0.41%	10.86%	5.40%	4.48%	5.62%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.75%
SSgA US Govt Cr Bd Idx - Gross	(0.01%)	9.76%	4.38%	3.26%	-
SSgA US Govt Cr Bd Idx - Net	(0.01%)	9.75%	4.36%	3.23%	-
Blmbg Govt/Credit Bd	(0.01%)	9.71%	4.35%	3.23%	3.96%
<b>Global Real Assets</b>					
Gross	1.15%	6.46%	-	-	-
Net	1.08%	6.18%	-	-	-
Weighted Benchmark	0.86%	6.01%	-	-	-
<b>Real Estate</b>					
Gross	1.40%	4.68%	6.90%	8.98%	12.11%
Net	1.27%	4.14%	6.33%	8.33%	11.18%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.17%
Invesco Core Real Estate - Gross	2.00%	6.47%	7.31%	9.14%	-
Invesco Core Real Estate - Net	1.92%	6.11%	6.96%	8.78%	-
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.17%
JP Morgan - Gross	0.75%	2.79%	6.37%	8.74%	12.19%
JP Morgan - Net	0.56%	2.08%	5.60%	7.82%	11.05%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.17%

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Diversified</b>					
Gross	1.05%	7.19%	6.04%	4.15%	4.25%
Net	1.00%	7.01%	5.79%	3.88%	3.93%
Weighted Benchmark	0.58%	5.84%	3.96%	2.59%	3.58%
Western Asset TIPS - Gross	1.02%	10.27%	4.29%	2.50%	3.00%
Western Asset TIPS - Net	0.99%	10.14%	4.16%	2.37%	2.83%
Benchmark(1)	0.74%	8.75%	4.52%	2.43%	3.31%
JP Morgan Infrastructure - Gross	0.15%	5.79%	8.02%	5.33%	5.90%
JP Morgan Infrastructure - Net	(0.02%)	5.18%	7.34%	4.56%	4.87%
Benchmark(2)	0.77%	3.43%	3.41%	2.51%	2.09%
Eastern Timber Opportunities - Net	2.31%	2.50%	5.88%	4.19%	4.42%
NCREIF Timberland Index	(0.04%)	1.30%	2.71%	3.13%	4.45%
Grosvenor Cust. Infrastructure - Net	(0.98%)	1.61%	5.63%	5.84%	-
Benchmark(2)	0.77%	3.43%	3.41%	2.51%	2.09%
<b>Short Term Fixed Income</b>					
Gross	0.78%	4.90%	2.50%	2.18%	2.18%
Net	0.77%	4.78%	2.33%	2.01%	2.06%
Benchmark(3)	0.59%	4.03%	2.11%	1.55%	0.97%
Barings Active Short Duration - Gross	0.94%	-	-	-	-
Barings Active Short Duration - Net	0.92%	-	-	-	-
Blmbg Gov/Cred 1-3 Yr	0.59%	4.03%	2.15%	1.67%	1.54%
JP Morgan Short Term Bds - Gross	0.61%	4.60%	2.45%	1.89%	-
JP Morgan Short Term Bds - Net	0.61%	4.48%	2.28%	1.75%	-
Blmbg Gov/Credit 1-3 Yr	0.59%	4.03%	2.15%	1.67%	1.54%
<b>Cash &amp; Equivalents - Net</b>	<b>0.42%</b>	<b>2.10%</b>	<b>1.54%</b>	<b>0.97%</b>	<b>0.59%</b>
Cash Account- Net	0.39%	2.01%	1.43%	0.90%	0.55%
Bank of ND - Net	0.44%	2.19%	1.69%	-	-
90 Day Treasury Bills	0.46%	2.28%	1.67%	1.07%	0.58%
<b>Total Fund</b>					
Gross	2.24%	12.18%	7.17%	5.78%	6.27%
Net	2.21%	12.04%	6.99%	5.58%	6.05%
Target*	1.81%	11.17%	5.87%	4.48%	4.79%

\* Current Quarter Target = 45.1% Blmbg Aggregate, 23.8% Blmbg Gov/Cred 1-3 Yr, 8.8% NDSIB INS DRA Weighted Benchmark, 8.6% Russell 1000 Index, 6.2% MSCI World ex US, 3.6% NCREIF Total Index, 2.5% Russell 2000 Index and 1.3% 3-month Treasury Bill.

(1) Blmbg US TIPS through 12/31/2009; Blmbg Global Inflation-Linked through 10/31/18; Blmbg US Government Inflation Bond Index thereafter.

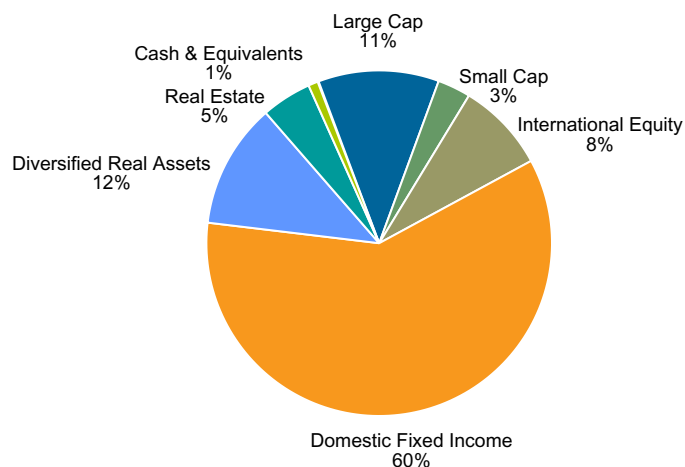
(2) CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

(3) Blmbg Gov 1-3 Yr through March 31, 2017 and Blmbg Gov/Credit 1-3 Yr thereafter.

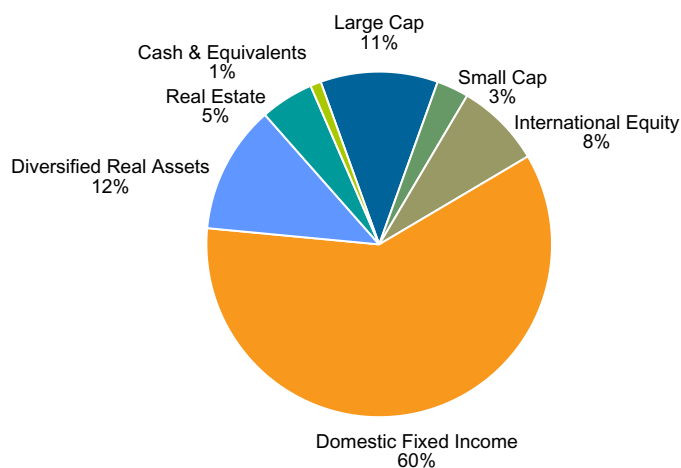
## Actual vs Target Asset Allocation As of December 31, 2019

The first chart below shows the Fund's asset allocation as of December 31, 2019. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



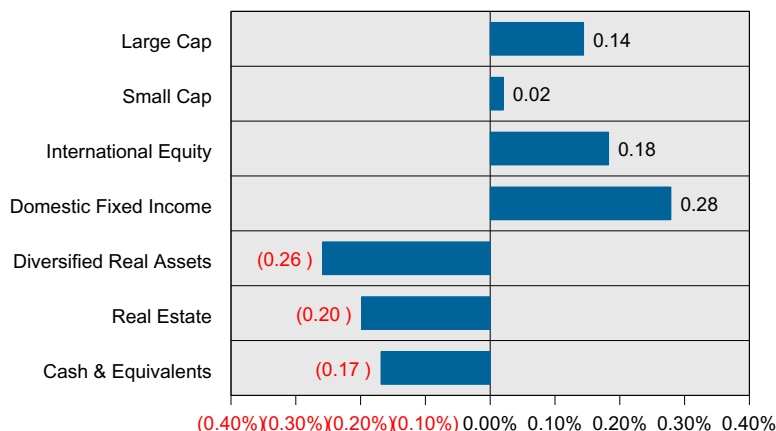
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	240,382	11.3%	11.0%	0.3%	7,375
Small Cap	65,427	3.1%	3.0%	0.1%	1,879
International Equity	178,603	8.4%	8.0%	0.4%	9,144
Domestic Fixed Income	1,265,831	59.8%	60.0%	(0.2%)	(5,115)
Diversified Real Assets	247,845	11.7%	12.0%	(0.3%)	(6,345)
Real Estate	100,521	4.7%	5.0%	(0.3%)	(5,392)
Cash & Equivalents	19,636	0.9%	1.0%	(0.1%)	(1,547)
Total	2,118,243	100.0%	100.0%		

\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

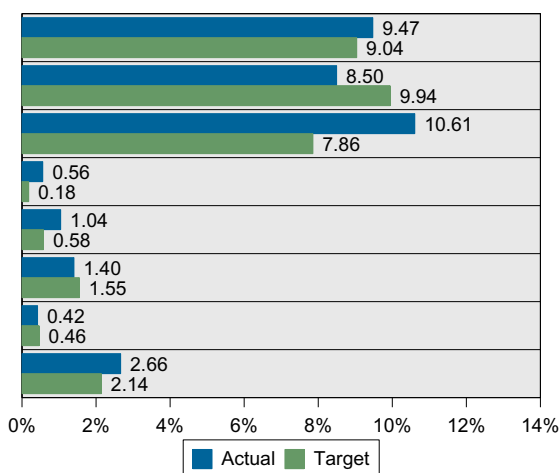
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

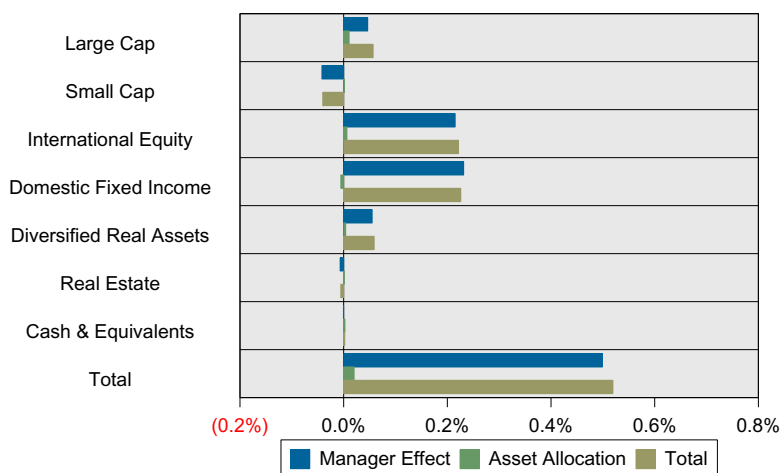
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

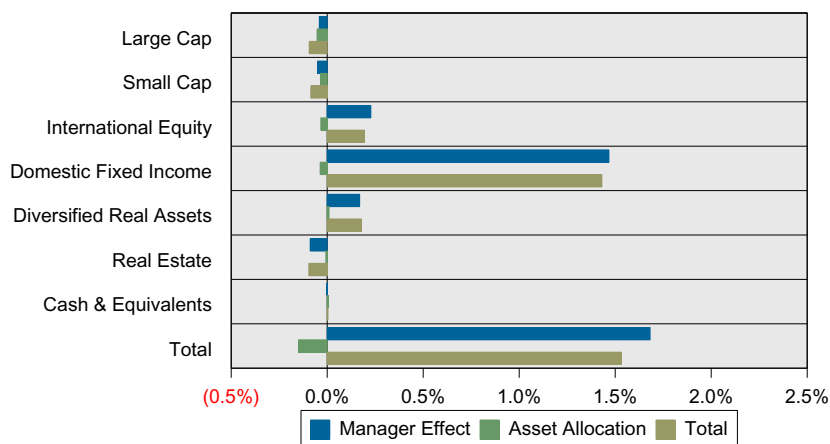
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	9.47%	9.04%	0.05%	0.01%	0.06%
Small Cap	3%	3%	8.50%	9.94%	(0.04%)	0.00%	(0.04%)
International Equity	8%	8%	10.61%	7.86%	0.22%	0.01%	0.23%
Domestic Fixed Income	60%	60%	0.56%	0.18%	0.23%	(0.01%)	0.22%
Diversified Real Assets	12%	12%	1.04%	0.58%	0.05%	0.00%	0.06%
Real Estate	5%	5%	1.40%	1.55%	(0.01%)	0.00%	(0.01%)
Cash & Equivalents	1%	1%	0.42%	0.46%	(0.00%)	0.00%	0.00%
<b>Total</b>			<b>2.66%</b>	<b>2.14%</b>	<b>+ 0.50%</b>	<b>+ 0.02%</b>	<b>0.52%</b>

\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

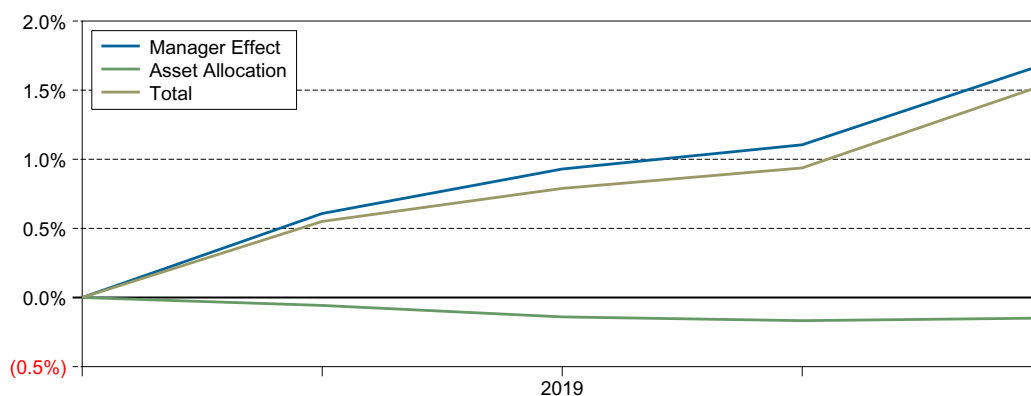
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

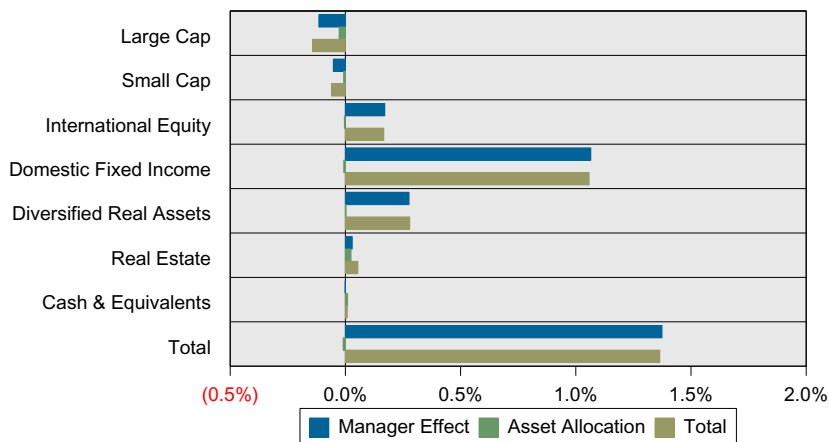
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	30.91%	31.43%	(0.04%)	(0.05%)	(0.09%)
Small Cap	3%	3%	23.78%	25.52%	(0.05%)	(0.03%)	(0.09%)
International Equity	8%	8%	25.39%	22.49%	0.23%	(0.03%)	0.19%
Domestic Fixed Income	60%	60%	11.11%	8.72%	1.47%	(0.04%)	1.43%
Diversified Real Assets	12%	12%	7.20%	5.83%	0.17%	0.01%	0.18%
Real Estate	5%	5%	4.68%	6.42%	(0.09%)	(0.01%)	(0.10%)
Cash & Equivalents	1%	1%	2.11%	2.28%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>13.76%</b>	<b>12.23%</b>	<b>+ 1.68%</b>	<b>+ (0.15%)</b>	<b>1.53%</b>

\* Current Quarter Target = 60.0% Blmgb Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

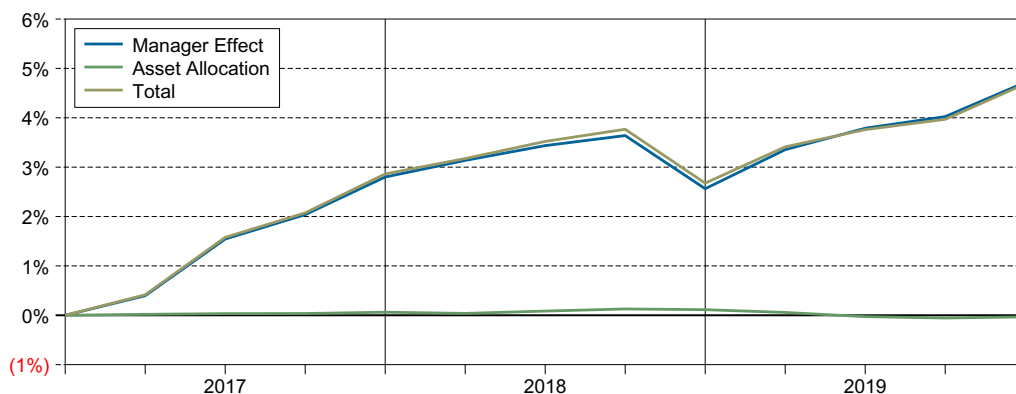
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

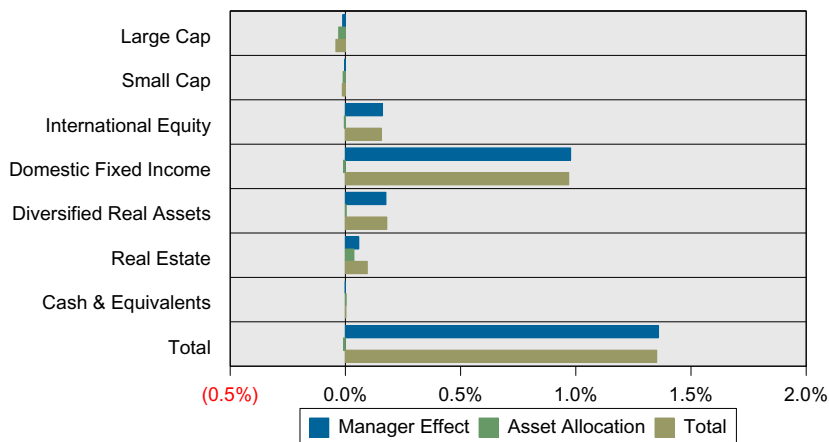
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	11%	13.95%	15.05%	(0.12%)	(0.03%)	(0.14%)
Small Cap	3%	3%	7.15%	8.59%	(0.05%)	(0.01%)	(0.06%)
International Equity	8%	8%	11.02%	9.34%	0.17%	(0.00%)	0.17%
Domestic Fixed Income	56%	56%	5.95%	4.03%	1.07%	(0.01%)	1.06%
Diversified Real Assets	13%	14%	6.06%	4.05%	0.28%	0.00%	0.28%
Real Estate	6%	6%	6.90%	6.70%	0.03%	0.02%	0.05%
Cash & Equivalents	1%	1%	1.54%	1.67%	(0.00%)	0.01%	0.01%
<b>Total</b>			<b>7.67%</b>	<b>6.30%</b>	<b>+ 1.37%</b>	<b>+ (0.01%)</b>	<b>1.36%</b>

\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

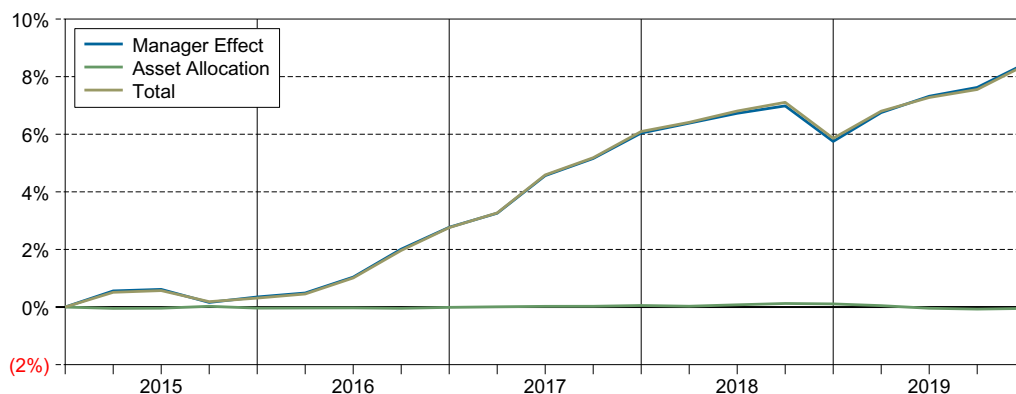
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Five Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	11.34%	11.48%	(0.01%)	(0.03%)	(0.04%)
Small Cap	4%	4%	8.08%	8.23%	(0.00%)	(0.01%)	(0.01%)
International Equity	9%	9%	7.26%	5.59%	0.16%	(0.00%)	0.16%
Domestic Fixed Income	55%	55%	4.85%	3.05%	0.98%	(0.01%)	0.97%
Diversified Real Assets	14%	14%	4.09%	2.84%	0.18%	0.00%	0.18%
Real Estate	7%	6%	8.99%	8.25%	0.06%	0.04%	0.10%
Cash & Equivalents	1%	1%	0.98%	1.07%	(0.00%)	0.00%	0.00%
<b>Total</b>			<b>6.27%</b>	<b>4.92%</b>	<b>+ 1.36%</b>	<b>+ (0.01%)</b>	<b>1.35%</b>

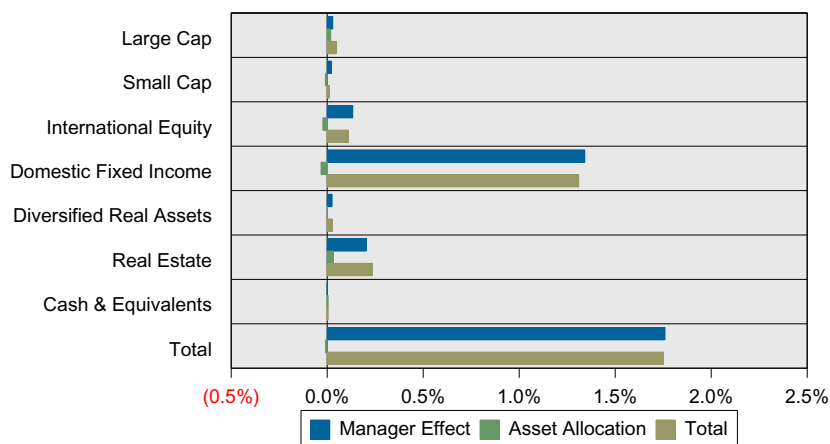
\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.



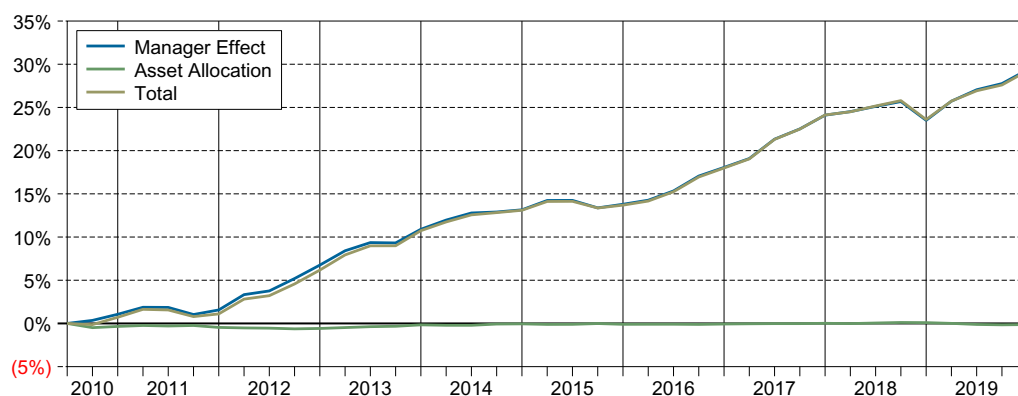
## Cumulative Total Fund Relative Attribution - December 31, 2019

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.

### Nine and One-Half Year Annualized Relative Attribution Effects



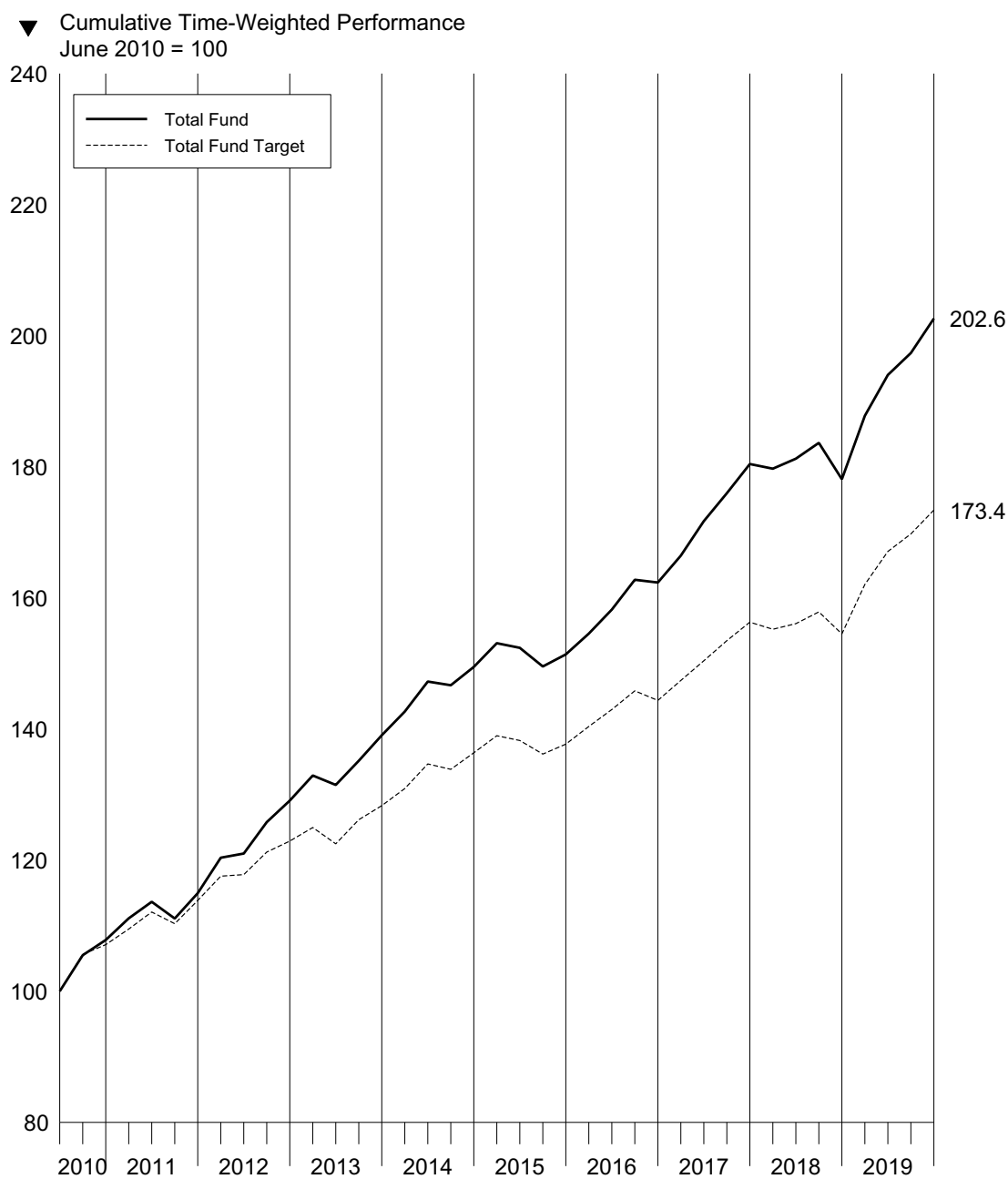
### Cumulative Relative Attribution Effects



### Nine 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	11%	11%	15.37%	15.10%	0.03%	0.02%	0.05%
Small Cap	4%	4%	13.33%	12.72%	0.02%	(0.01%)	0.01%
International Equity	8%	8%	8.29%	6.74%	0.13%	(0.02%)	0.11%
Domestic Fixed Income	53%	53%	5.91%	3.38%	1.34%	(0.03%)	1.31%
Diversified Real Assets	17%	18%	4.74%	4.41%	0.03%	0.00%	0.03%
Real Estate	6%	6%	13.57%	10.27%	0.20%	0.03%	0.23%
Cash & Equivalents	1%	1%	0.60%	0.61%	0.00%	0.01%	0.01%
<b>Total</b>			<b>7.72%</b>	<b>5.97%</b>	<b>+ 1.76%</b>	<b>+ (0.01%)</b>	<b>1.75%</b>

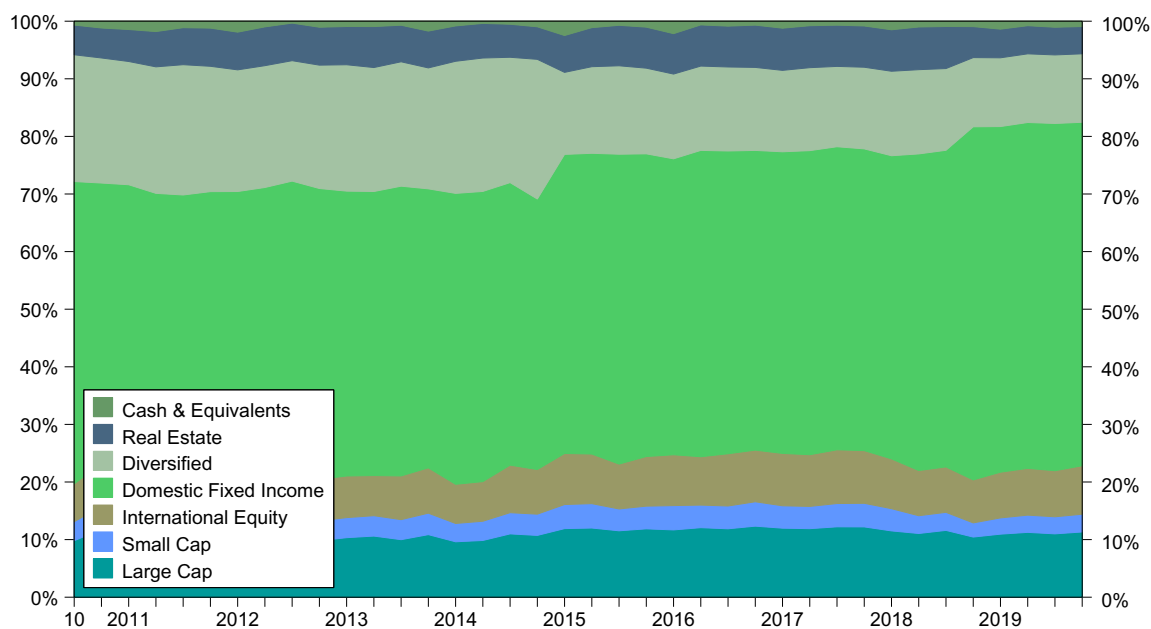
\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.



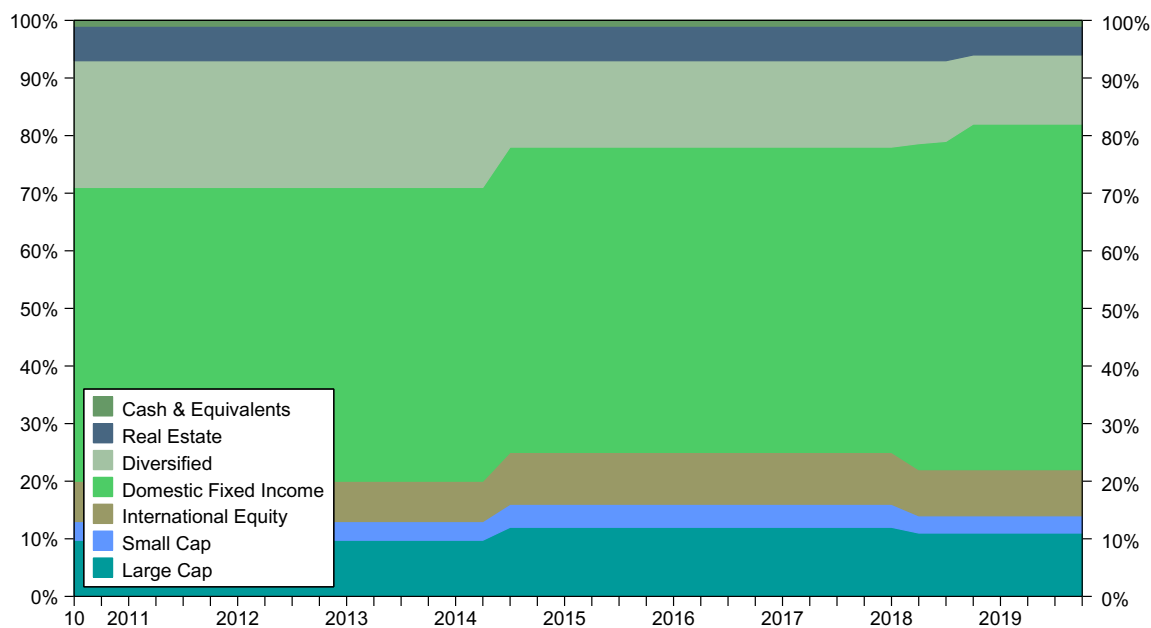
## Actual vs Target Historical Asset Allocation

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, and the fund's historical target asset allocation.

### Actual Historical Asset Allocation



### Target Historical Asset Allocation

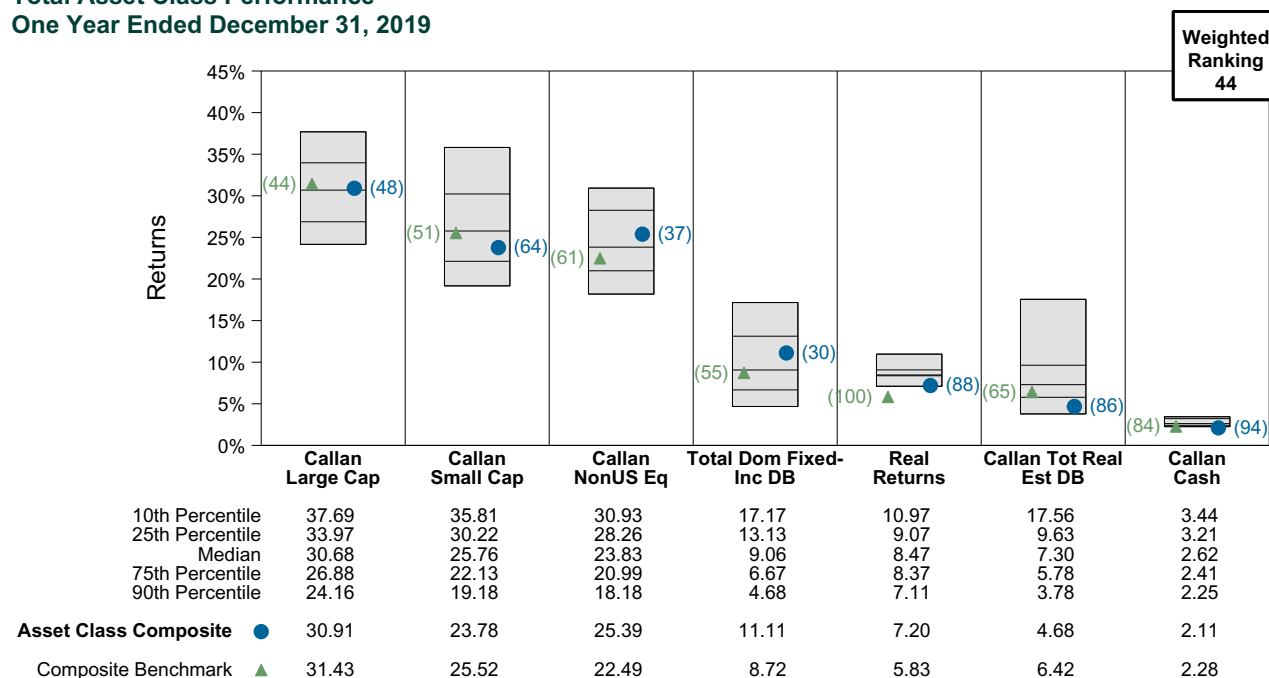


\* Current Quarter Target = 60.0% Blmgb Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

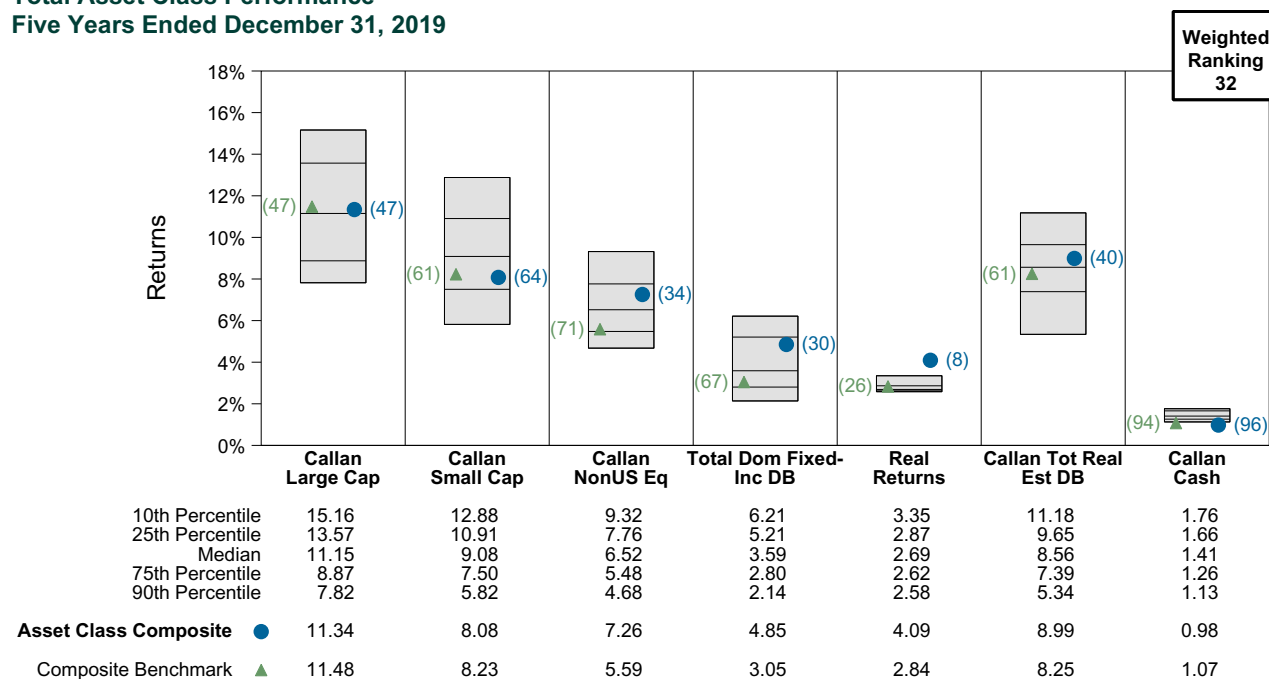
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.

### Total Asset Class Performance One Year Ended December 31, 2019



### Total Asset Class Performance Five Years Ended December 31, 2019



\* Current Quarter Target = 60.0% Bimbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019		Net New Inv.	Inv. Return	September 30, 2019	
	Market Value	Weight			Market Value	Weight
Global Equity	\$484,411,443	22.87%	\$(17,507,422)	\$44,124,871	\$457,793,994	22.00%
Domestic Equity	\$305,808,283	14.44%	\$(11,824,684)	\$26,635,179	\$290,997,788	13.99%
Large Cap	240,381,545	11.35%	(10,281,106)	21,413,471	229,249,181	11.02%
Small Cap	65,426,737	3.09%	(1,543,578)	5,221,708	61,748,607	2.97%
International Equity	\$178,603,161	8.43%	\$(5,682,738)	\$17,489,693	\$166,796,206	8.02%
Domestic Fixed Income	\$1,265,830,550	59.76%	\$1,788,407	\$7,029,120	\$1,257,013,022	60.41%
Global Real Assets	\$348,365,092	16.45%	\$457,241	\$3,946,538	\$343,961,313	16.53%
Real Estate	100,520,515	4.75%	(1,118,547)	1,402,260	100,236,802	4.82%
Diversified	247,844,577	11.70%	1,575,787	2,544,279	243,724,511	11.71%
Cash	\$19,635,858	0.93%	\$(2,359,093)	\$76,155	\$21,918,796	1.05%
Securities Lending Income	\$0	0.00%	\$(23,750)	\$23,750	-	-
Total Fund	\$2,118,242,943	100.0%	\$(17,644,617)	\$55,200,435	\$2,080,687,125	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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Global Equity</b>					
Gross	9.75%	27.97%	-	-	-
Net	9.70%	27.71%	-	-	-
Weighted Benchmark	8.74%	27.37%	-	-	-
<b>Domestic Equity</b>					
Gross	9.26%	29.37%	12.46%	10.68%	14.93%
Net	9.22%	29.18%	12.27%	10.45%	14.63%
Weighted Benchmark	9.23%	30.18%	-	-	-
<b>Large Cap</b>					
Gross	9.47%	30.91%	13.95%	11.34%	15.37%
Net	9.43%	30.69%	13.75%	11.13%	15.12%
Benchmark(1)	9.04%	31.43%	15.05%	11.48%	15.10%
<b>Small Cap</b>					
Gross	8.50%	23.78%	7.15%	8.08%	13.33%
Net	8.47%	23.63%	6.98%	7.79%	12.86%
Russell 2000	9.94%	25.52%	8.59%	8.23%	12.72%
<b>International Equity</b>					
Gross	10.61%	25.39%	11.02%	7.26%	8.29%
Net	10.53%	25.03%	10.68%	6.92%	7.92%
Benchmark(2)	7.86%	22.49%	9.34%	5.59%	6.74%
<b>Domestic Fixed Income</b>					
Gross	0.56%	11.11%	5.95%	4.85%	5.91%
Net	0.53%	10.97%	5.82%	4.72%	5.75%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	3.38%
<b>Global Real Assets</b>					
Gross	1.15%	6.45%	-	-	-
Net	1.08%	6.16%	-	-	-
Weighted Benchmark	0.86%	6.00%	-	-	-
<b>Real Estate</b>					
Gross	1.40%	4.68%	6.90%	8.99%	13.57%
Net	1.27%	4.14%	6.33%	8.33%	12.70%
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	10.27%
<b>Diversified</b>					
Gross	1.04%	7.20%	6.06%	4.09%	4.74%
Net	1.00%	7.02%	5.81%	3.82%	4.42%
Weighted Benchmark	0.58%	5.83%	4.05%	2.84%	4.41%
<b>Cash &amp; Equivalents - Net</b>	<b>0.42%</b>	<b>2.11%</b>	<b>1.54%</b>	<b>0.98%</b>	<b>0.60%</b>
90 Day Treasury Bills	0.46%	2.28%	1.67%	1.07%	0.61%
<b>Total Fund</b>					
Gross	2.66%	13.76%	7.67%	6.27%	7.72%
Net	2.62%	13.57%	7.47%	6.06%	7.45%
Target*	2.14%	12.23%	6.30%	4.92%	5.97%

\* Current Quarter Target = 60.0% Blmbg Aggregate, 12.0% NDSIB WSI DRA Weighted Benchmark, 11.0% Russell 1000 Index, 8.0% MSCI World ex US, 5.0% NCREIF Total Index, 3.0% Russell 2000 Index and 1.0% 3-month Treasury Bill.

(1) S&P 500 Index through 12/31/2011 and Russell 1000 Index thereafter.

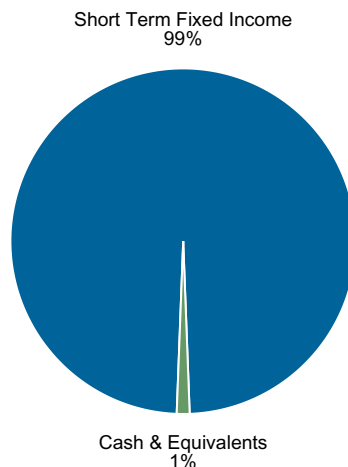
(2) MSCI EAFE through 9/30/2000; 50% Hedged EAFE through 3/31/2011; MSCI EAFE again through 6/30/2016; MSCI World ex-US thereafter.

PLEASE REFER TO PAGE 31-33 FOR INVESTMENT MANAGER LEVEL RETURNS.

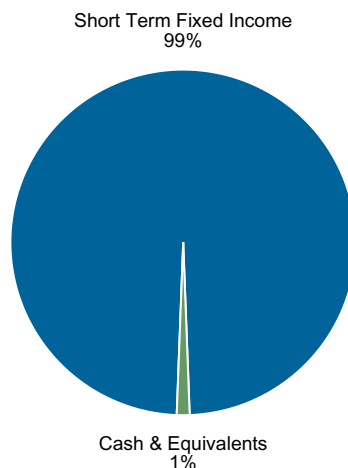
## Actual vs Target Asset Allocation As of December 31, 2019

The first chart below shows the Fund's asset allocation as of December 31, 2019. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

### Actual Asset Allocation



### Target Asset Allocation



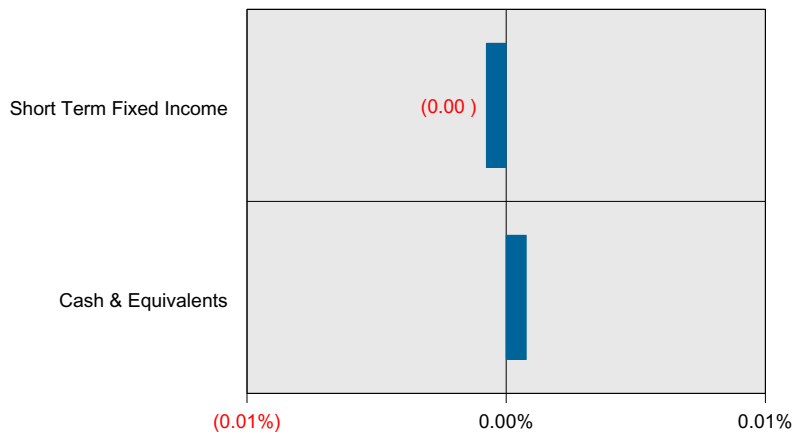
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Short Term Fixed Income	666,050	98.8%	98.8%	(0.0%)	(6)
Cash & Equivalents	8,164	1.2%	1.2%	0.0%	6
Total	674,215	100.0%	100.0%		

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

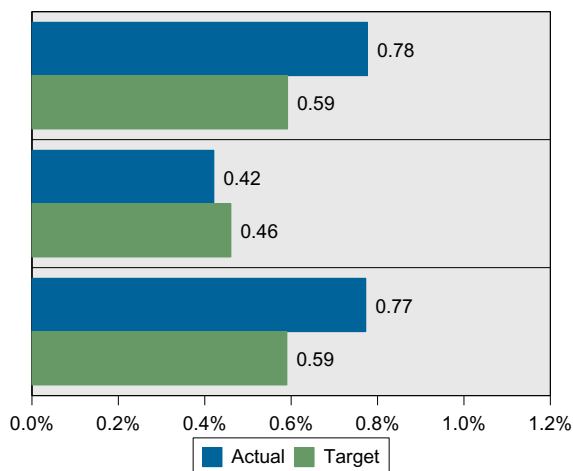
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

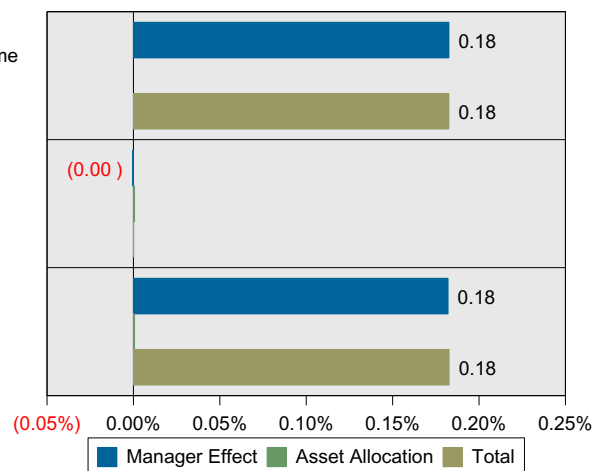
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	99%	99%	0.78%	0.59%	0.18%	0.00%	0.18%
Cash & Equivalents	1%	1%	0.42%	0.46%	(0.00%)	0.00%	0.00%
<b>Total</b>			<b>0.77%</b>	<b>0.59%</b>	<b>+ 0.18%</b>	<b>+ 0.00%</b>	<b>0.18%</b>

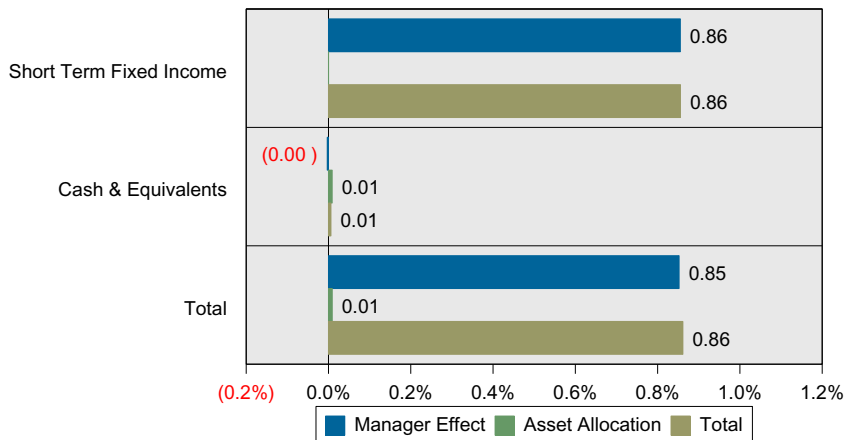
\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.



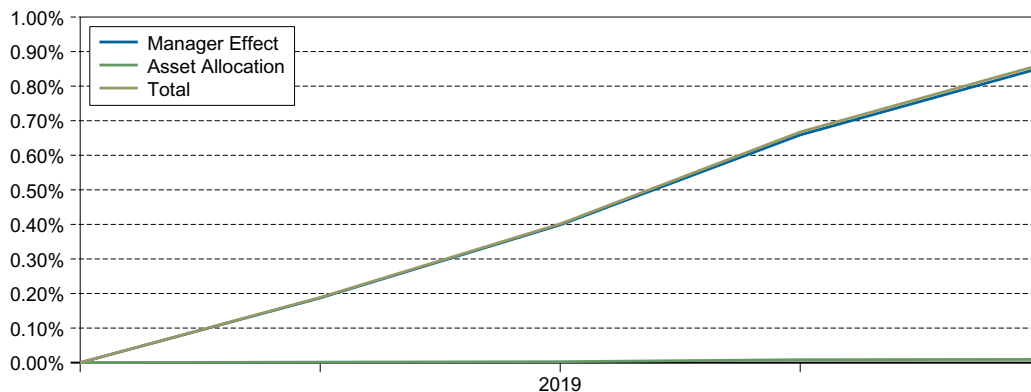
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

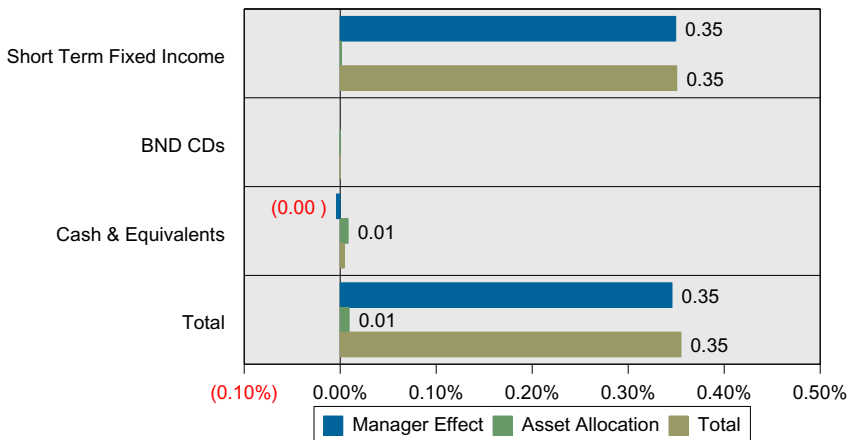
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	98%	98%	4.90%	4.03%	0.86%	0.00%	0.86%
Cash & Equivalents	2%	2%	2.11%	2.28%	(0.00)%	0.01%	0.01%
<b>Total</b>			<b>4.85%</b>	<b>= 3.99%</b>	<b>+ 0.85%</b>	<b>+ 0.01%</b>	<b>0.86%</b>

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

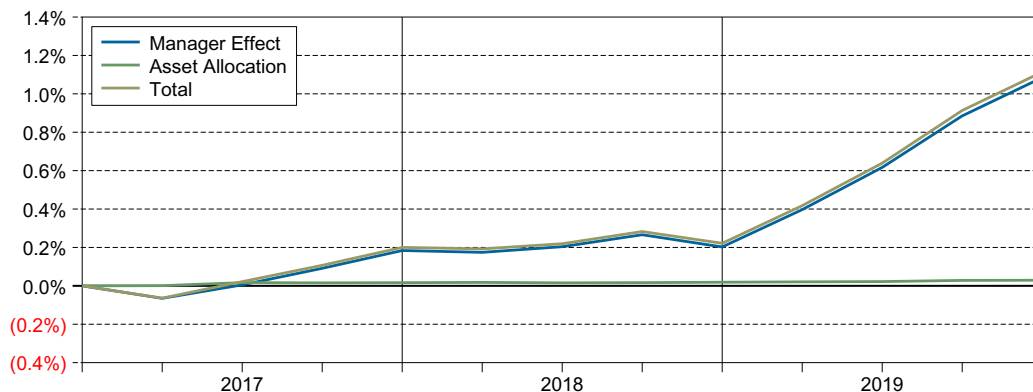
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

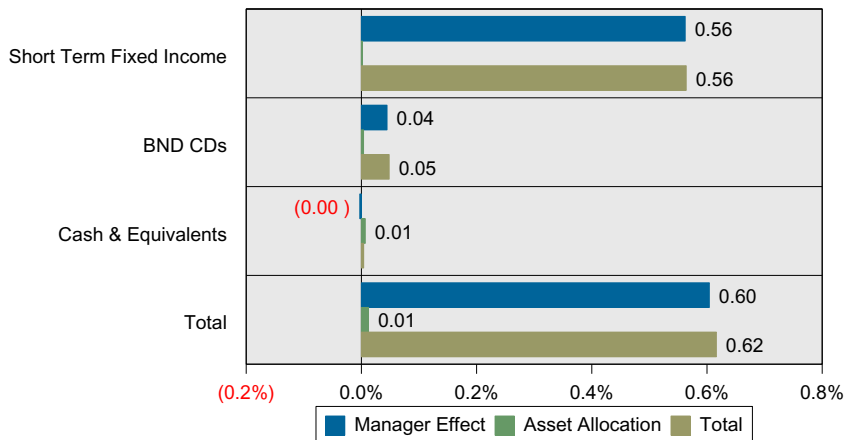
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	96%	95%	2.46%	2.11%	0.35%	0.00%	0.35%
BND CDs	1%	1%	-	-	0.00%	0.00%	0.00%
Cash & Equivalents	4%	4%	1.54%	1.67%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>2.45%</b>	<b>= 2.09%</b>	<b>+ 0.35%</b>	<b>+ 0.01%</b>	<b>0.35%</b>

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

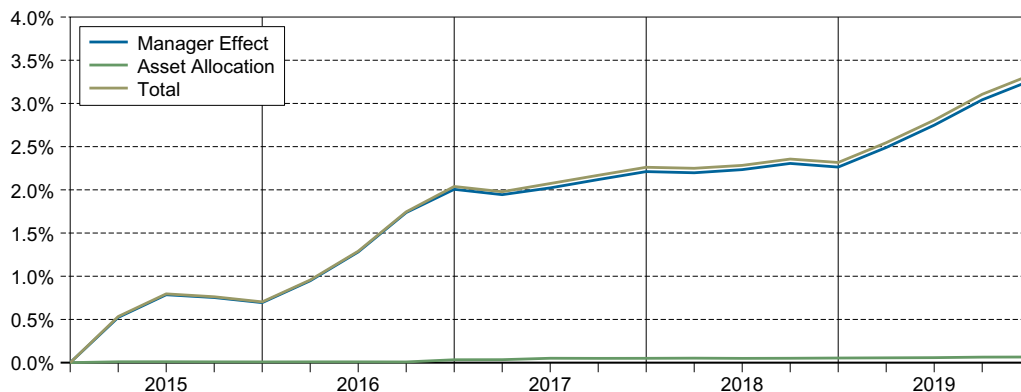
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

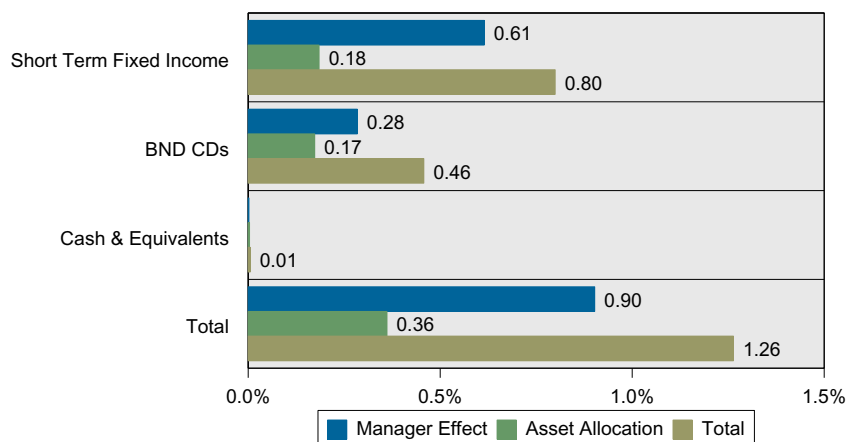
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	90%	90%	2.19%	1.55%	0.56%	0.00%	0.56%
BND CDs	7%	7%	-	-	0.04%	0.00%	0.05%
Cash & Equivalents	3%	3%	0.97%	1.07%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>2.24%</b>	<b>1.63%</b>	<b>+ 0.60%</b>	<b>+ 0.01%</b>	<b>0.62%</b>

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

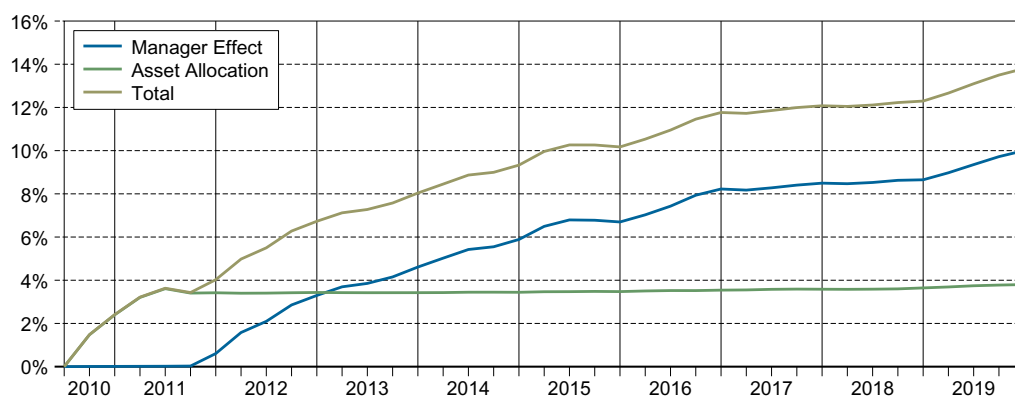
## Cumulative Total Fund Relative Attribution - December 31, 2019

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.

### Nine and One-Half Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects

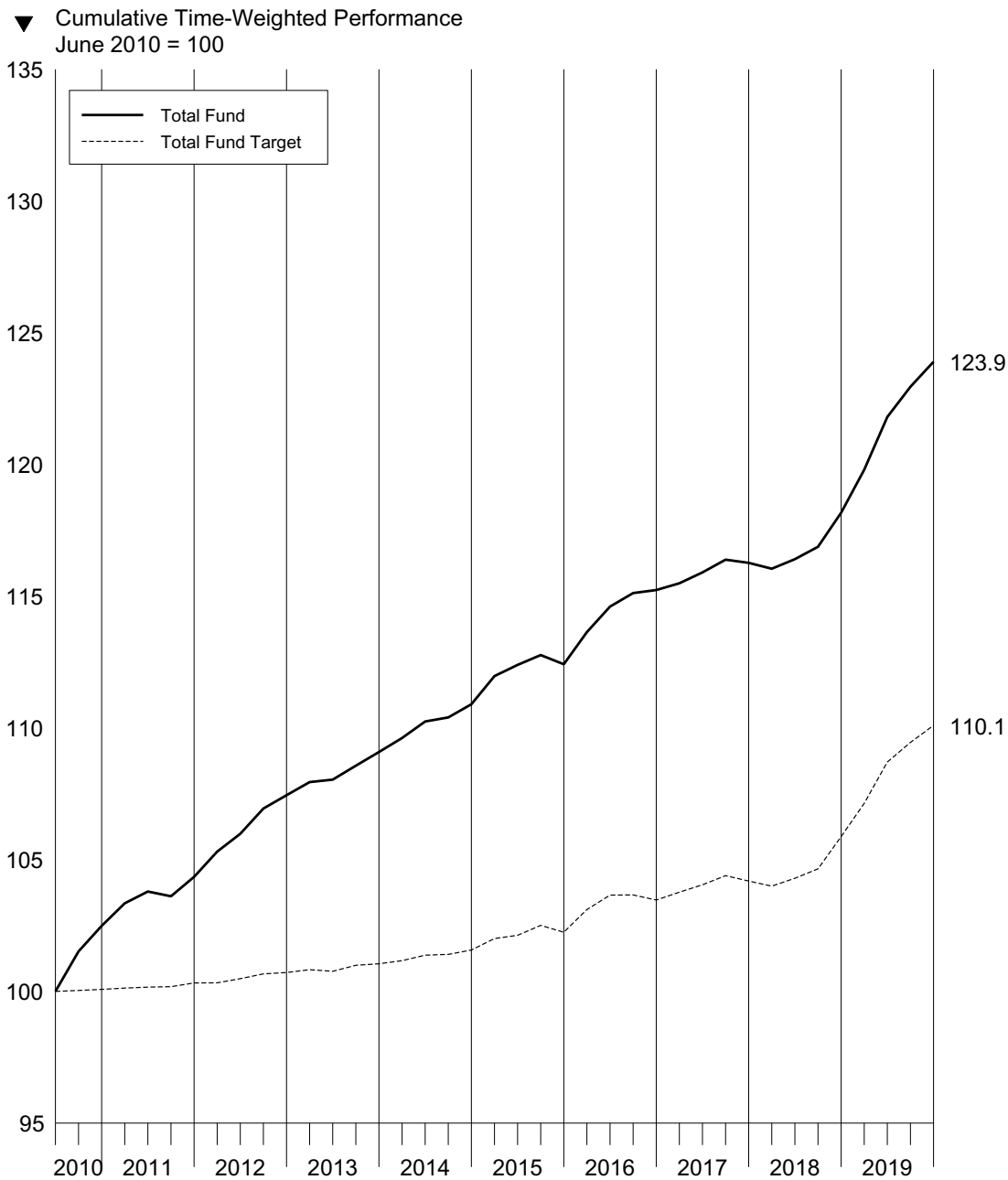


### Nine and One-Half Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Short Term Fixed Income	81%	73%	2.09%	1.32%	0.61%	0.18%	0.80%
BND CDs	15%	11%	-	-	0.28%	0.17%	0.46%
Cash & Equivalents	4%	15%	0.60%	0.61%	0.00%	0.00%	0.01%
<b>Total</b>			<b>2.28%</b>	<b>1.02%</b>	<b>+ 0.90%</b>	<b>+ 0.36%</b>	<b>1.26%</b>

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

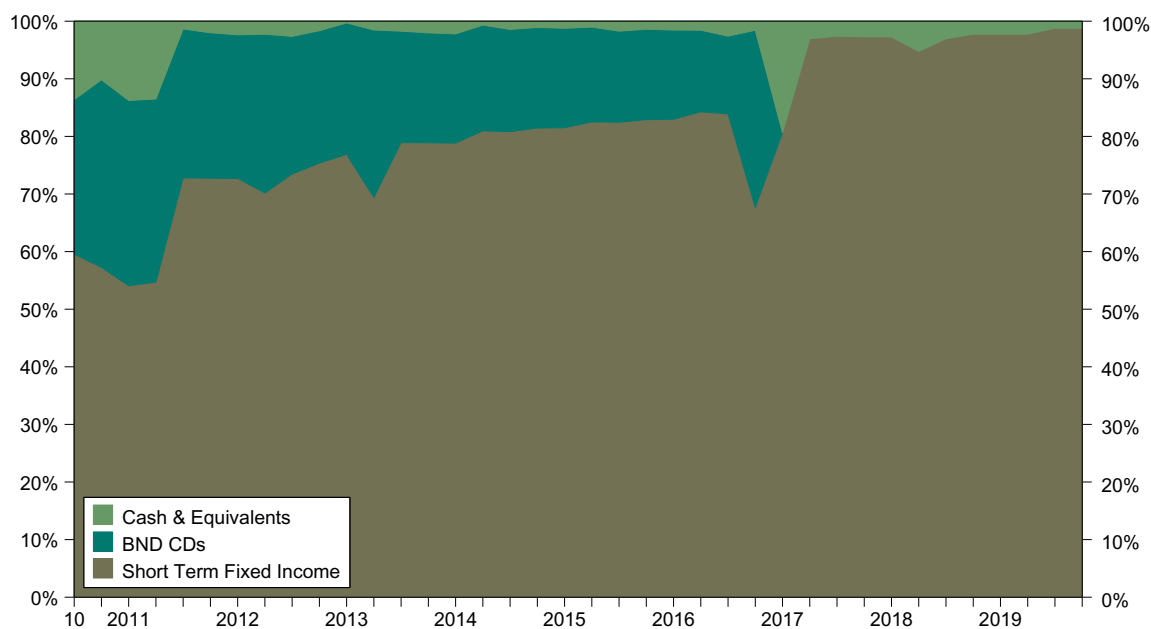
NDSIB - Budget Stabilization Fund  
Cumulative Results



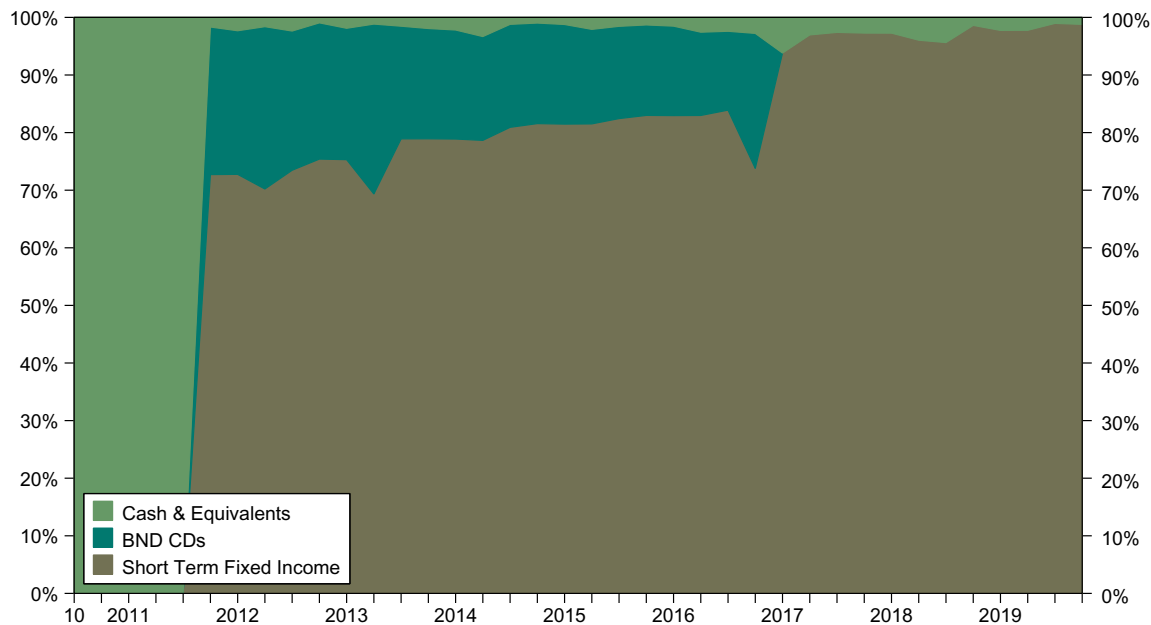
## Actual vs Target Historical Asset Allocation

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 = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

## Asset Class Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019		Net New Inv.	Inv. Return	September 30, 2019	
	Market Value	Weight			Market Value	Weight
Short Term Fixed Income	\$666,050,443	98.79%	\$(57,548)	\$5,132,192	\$660,975,799	98.78%
Cash & Equivalents	\$8,164,310	1.21%	\$(16,642)	\$34,253	\$8,146,699	1.22%
Securities Lending Income	\$0	0.00%	\$(4,080)	\$4,080	-	-
Total Fund	\$674,214,754	100.0%	\$(78,270)	\$5,170,526	\$669,122,498	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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years
<b>Short Term Fixed Income</b>					
Gross	0.78%	4.90%	2.46%	2.19%	2.09%
Net	0.77%	4.78%	2.27%	2.01%	1.94%
Blended Benchmark(1)	0.59%	4.03%	2.11%	1.55%	-
<b>Cash &amp; Equivalents - Net</b>	<b>0.42%</b>	<b>2.11%</b>	<b>1.54%</b>	<b>0.97%</b>	<b>0.60%</b>
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.61%
<b>Total Fund</b>					
Gross	0.77%	4.85%	2.45%	2.24%	2.28%
Net	0.76%	4.73%	2.27%	2.08%	2.16%
Target*	0.59%	3.99%	2.09%	1.63%	1.02%

\* Current Quarter Target = 98.8% Blmbg Gov/Cred 1-3 Yr and 1.2% 3-month Treasury Bill.

(1) Blmbg Gov 1-3 Yr through March 31, 2017 and Blmbg Gov/Credit 1-3 Yr thereafter.

PLEASE REFER TO PAGES 31-33 FOR INVESTMENT MANAGER LEVEL RETURNS.



## Large Cap Period Ended December 31, 2019

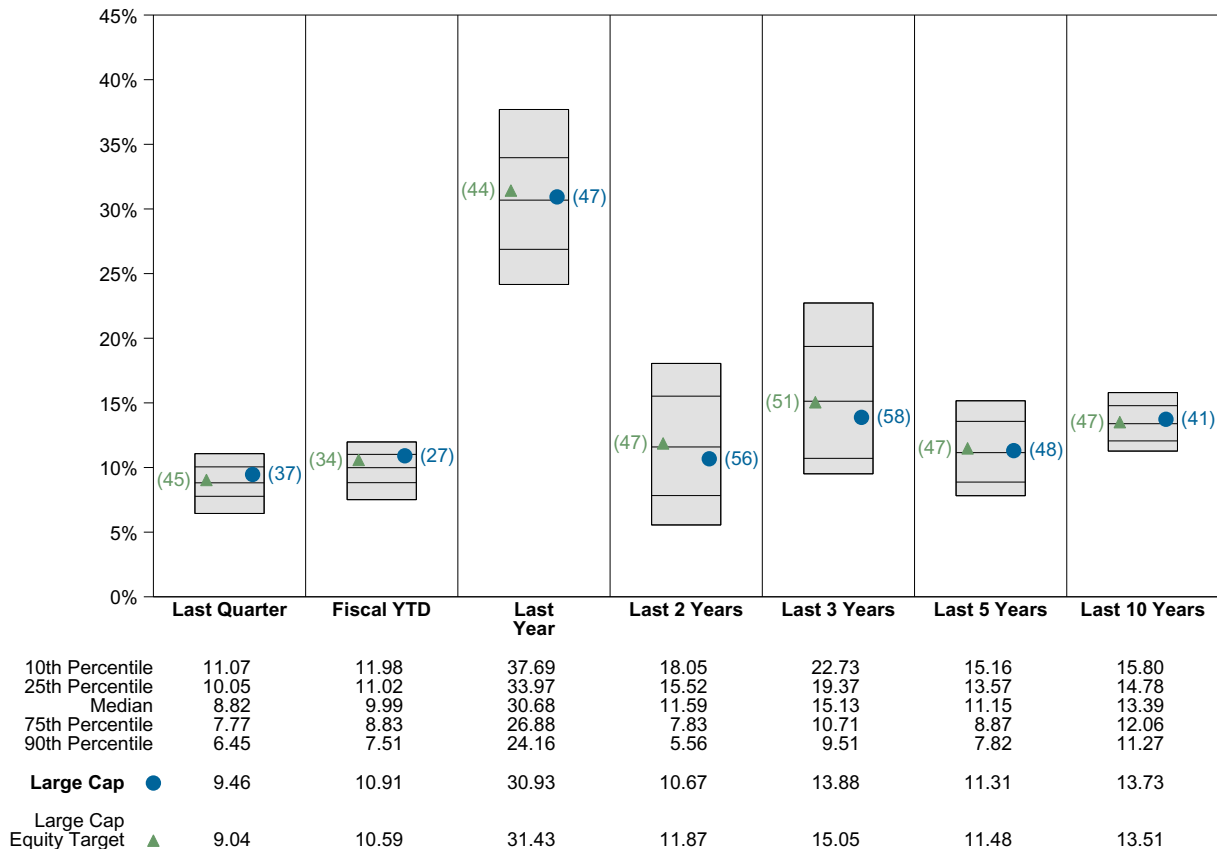
### Quarterly Summary and Highlights

- Large Cap's portfolio posted a 9.46% return for the quarter placing it in the 37 percentile of the Callan Large Capitalization group for the quarter and in the 47 percentile for the last year.
- Large Cap's portfolio outperformed the Large Cap Equity Target by 0.42% for the quarter and underperformed the Large Cap Equity Target for the year by 0.49%.

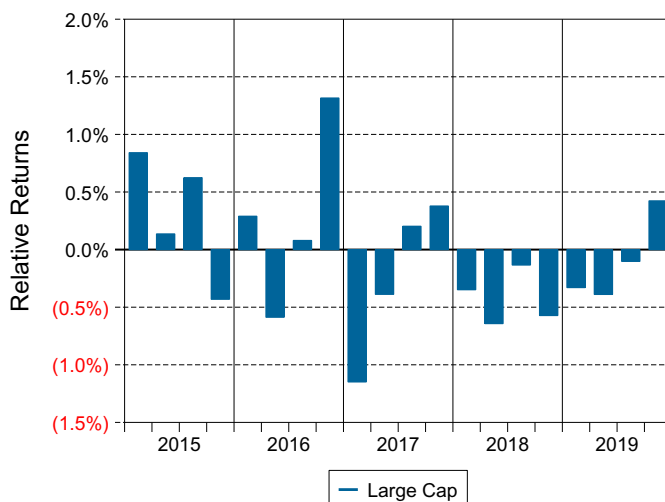
### Quarterly Asset Growth

Beginning Market Value	\$248,232,572
Net New Investment	\$-11,605,857
Investment Gains/(Losses)	\$23,148,295
Ending Market Value	\$259,775,009

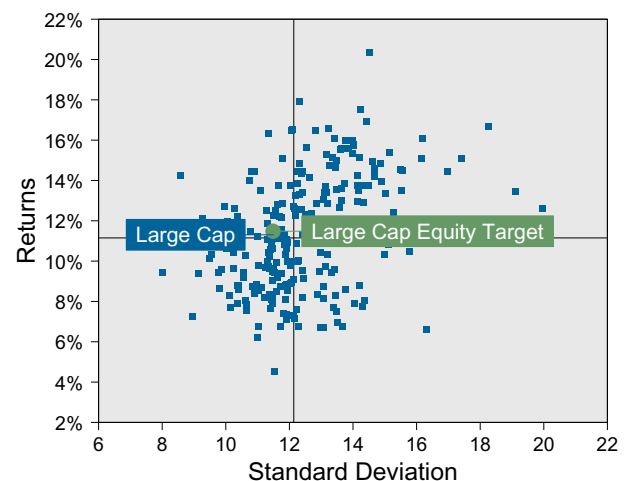
### Performance vs Callan Large Capitalization (Gross)



### Relative Return vs Large Cap Equity Target



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



## Parametric Clifton Large Cap Period Ended December 31, 2019

### 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.

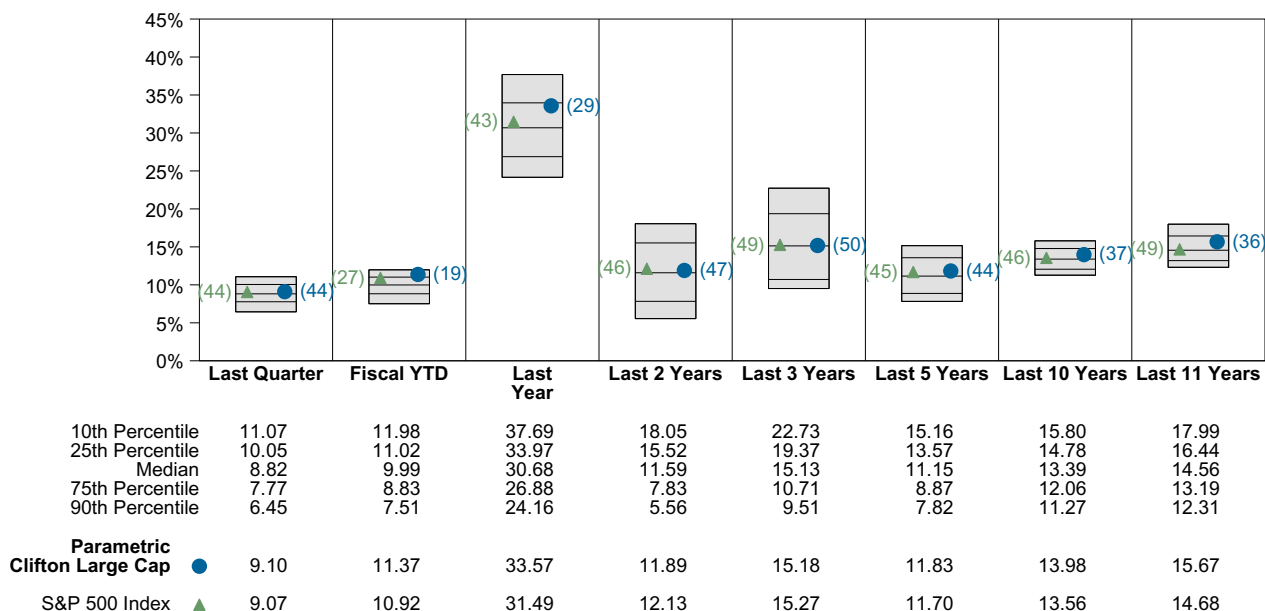
### Quarterly Summary and Highlights

- Parametric Clifton Large Cap's portfolio posted a 9.10% return for the quarter placing it in the 44 percentile of the Callan Large Capitalization group for the quarter and in the 29 percentile for the last year.
- Parametric Clifton Large Cap's portfolio outperformed the S&P 500 Index by 0.03% for the quarter and outperformed the S&P 500 Index for the year by 2.08%.

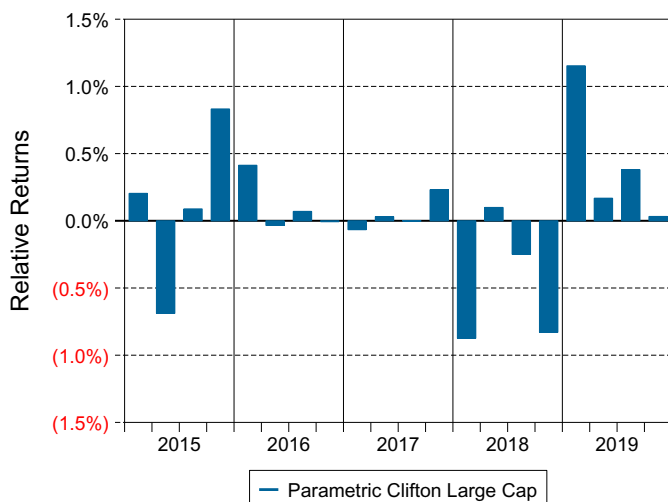
### Quarterly Asset Growth

Beginning Market Value	\$51,045,481
Net New Investment	\$-3,500,000
Investment Gains/(Losses)	\$4,533,425
Ending Market Value	\$52,078,906

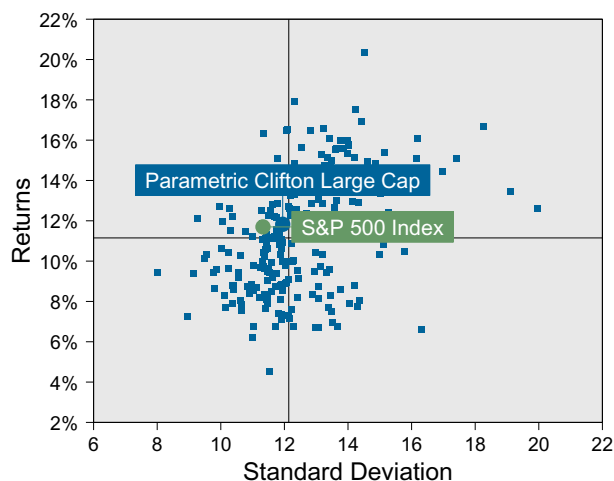
### Performance vs Callan Large Capitalization (Gross)



### Relative Return vs S&P 500 Index



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



## L.A. Capital Period Ended December 31, 2019

### Investment Philosophy

The LA Capital Structured portfolio is a large growth portfolio benchmarked to the Russell 1000 Growth Index. It is an active assignment meaning that it targets a 2% alpha and constrains its risk budget (tracking error) to 4% relative to the benchmark. LA Capital believes that investment results are driven by Investor Preferences and thus recognize that when preferences shift a different posture related to that factor is warranted.

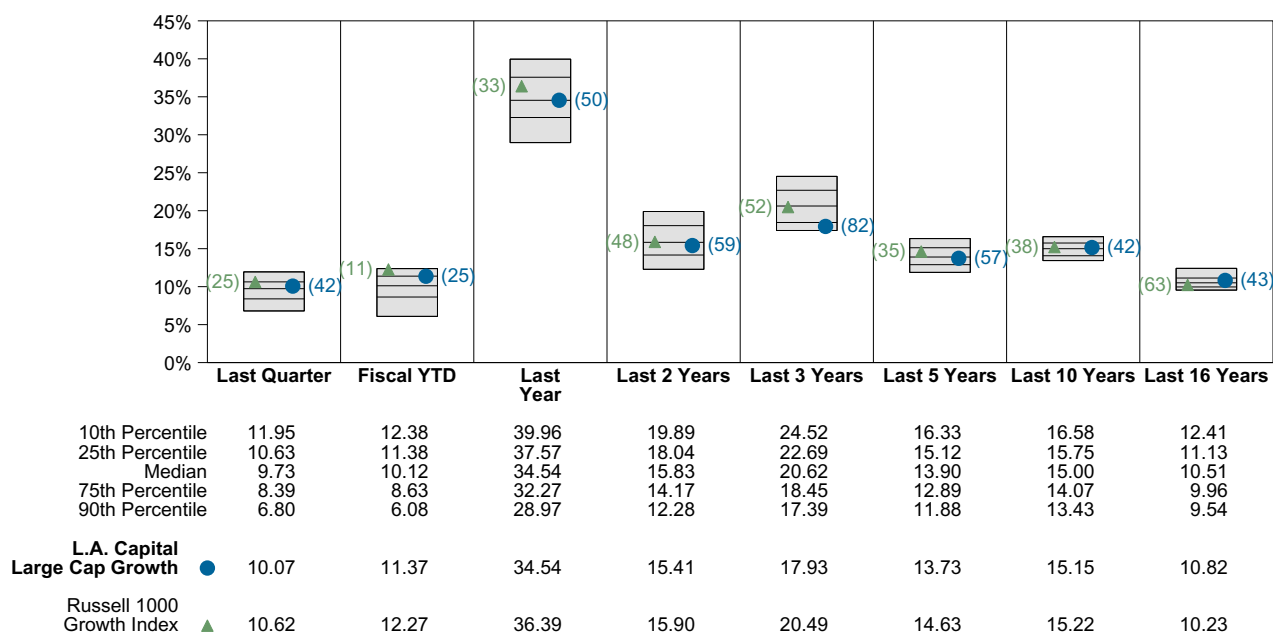
### Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 10.07% return for the quarter placing it in the 42 percentile of the Callan Large Cap Growth group for the quarter and in the 50 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio underperformed the Russell 1000 Growth Index by 0.55% for the quarter and underperformed the Russell 1000 Growth Index for the year by 1.85%.

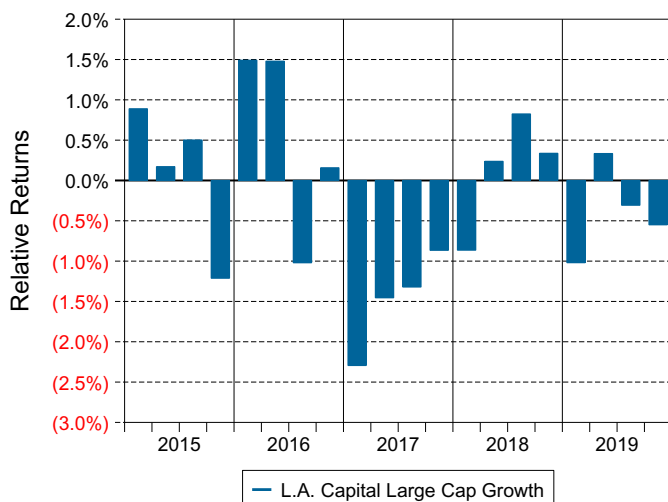
### Quarterly Asset Growth

Beginning Market Value	\$74,716,415
Net New Investment	\$-4,039,946
Investment Gains/(Losses)	\$7,393,608
Ending Market Value	\$78,070,077

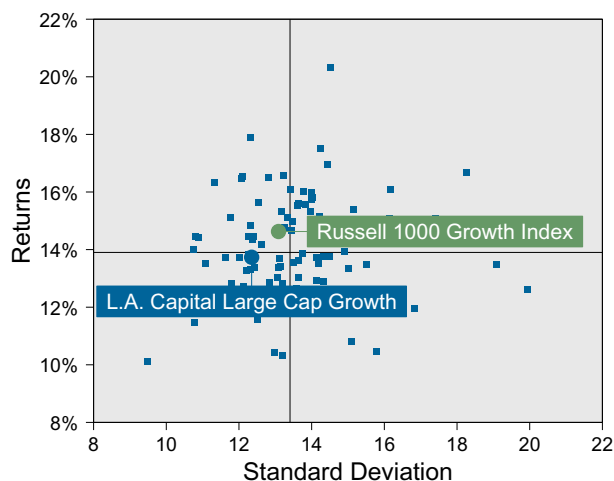
### Performance vs Callan Large Cap Growth (Gross)



### Relative Return vs Russell 1000 Growth Index



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



## L.A. Capital Enhanced Period Ended December 31, 2019

### 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.

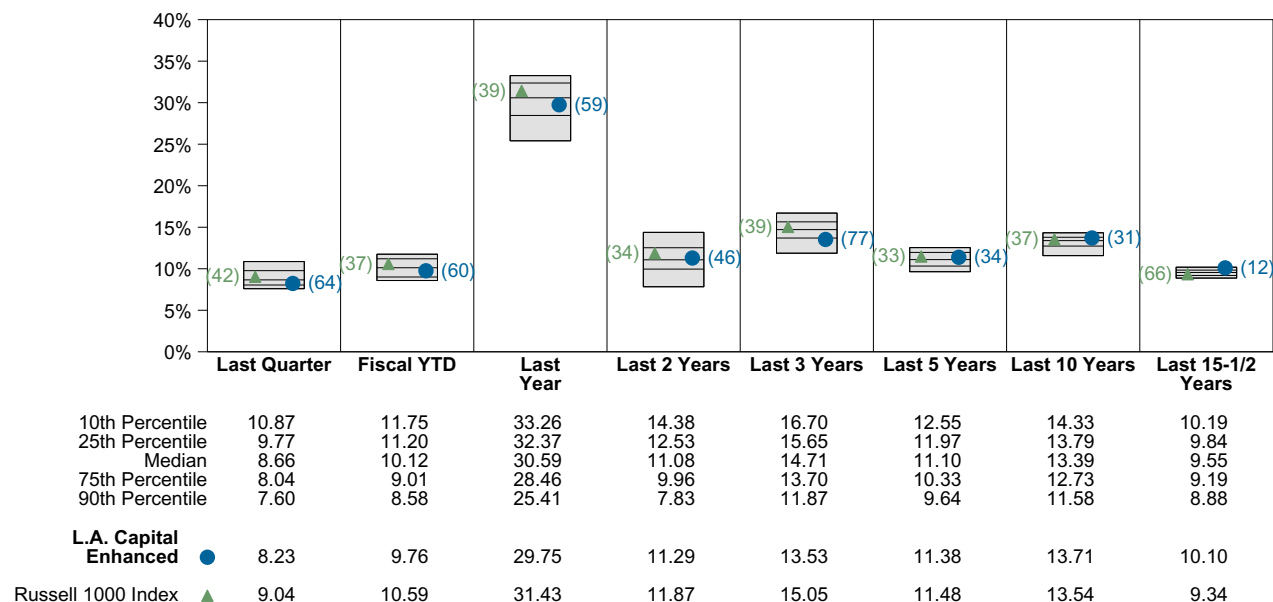
### Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a 8.23% return for the quarter placing it in the 64 percentile of the Callan Large Cap Core group for the quarter and in the 59 percentile for the last year.
- L.A. Capital Enhanced's portfolio underperformed the Russell 1000 Index by 0.81% for the quarter and underperformed the Russell 1000 Index for the year by 1.68%.

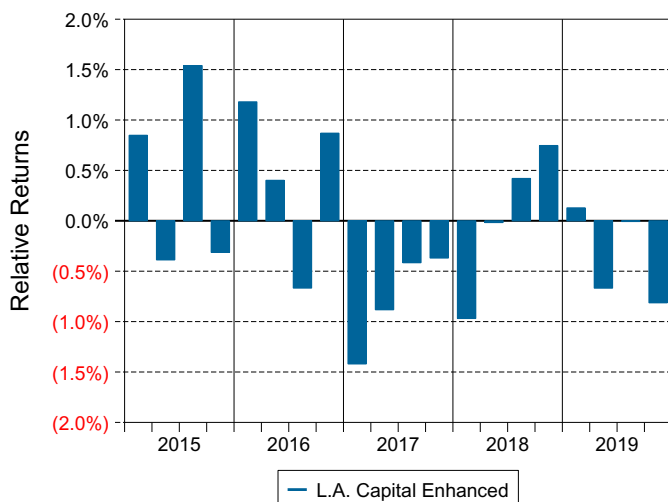
### Quarterly Asset Growth

Beginning Market Value	\$50,896,871
Net New Investment	\$-3,014,378
Investment Gains/(Losses)	\$4,104,025
Ending Market Value	\$51,986,517

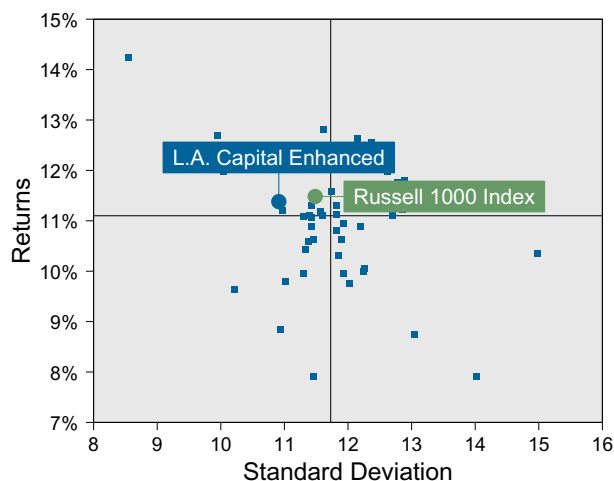
### Performance vs Callan Large Cap Core (Gross)



### Relative Return vs Russell 1000 Index



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



## LSV Asset Management Period Ended December 31, 2019

### 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.

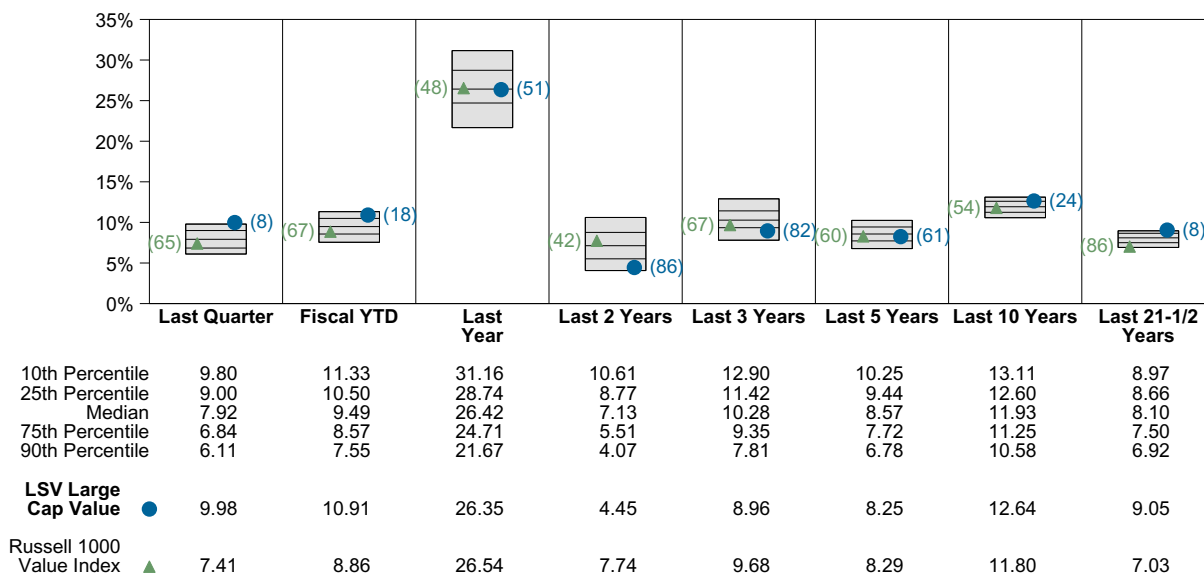
### Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a 9.98% return for the quarter placing it in the 8 percentile of the Callan Large Cap Value group for the quarter and in the 51 percentile for the last year.
- LSV Large Cap Value's portfolio outperformed the Russell 1000 Value Index by 2.57% for the quarter and underperformed the Russell 1000 Value Index for the year by 0.19%.

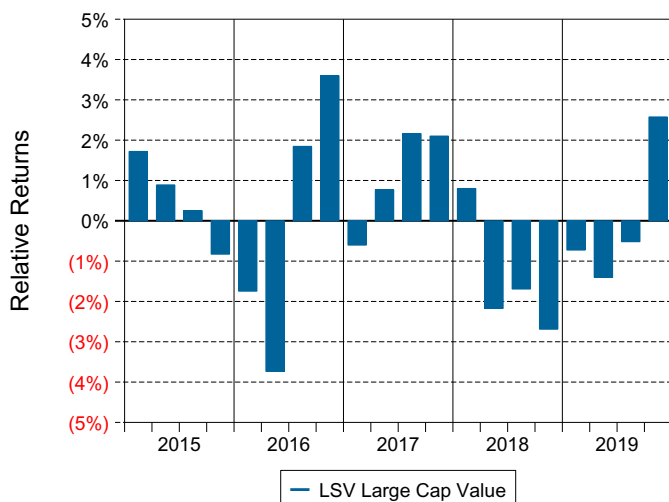
### Quarterly Asset Growth

Beginning Market Value	\$71,573,805
Net New Investment	\$-1,051,533
Investment Gains/(Losses)	\$7,117,237
Ending Market Value	\$77,639,510

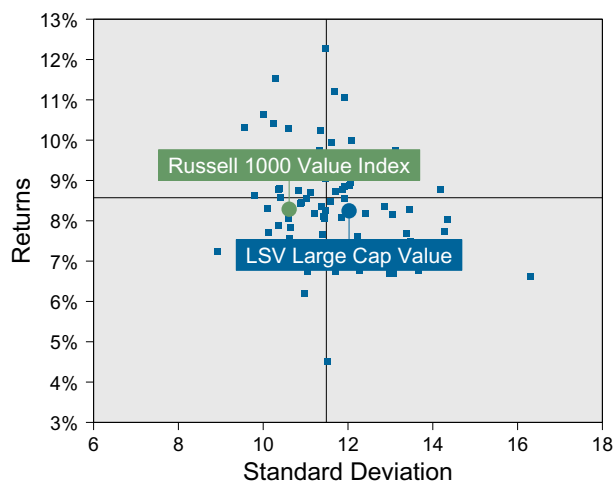
### Performance vs Callan Large Cap Value (Gross)



### Relative Return vs Russell 1000 Value Index



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



## Small Cap Period Ended December 31, 2019

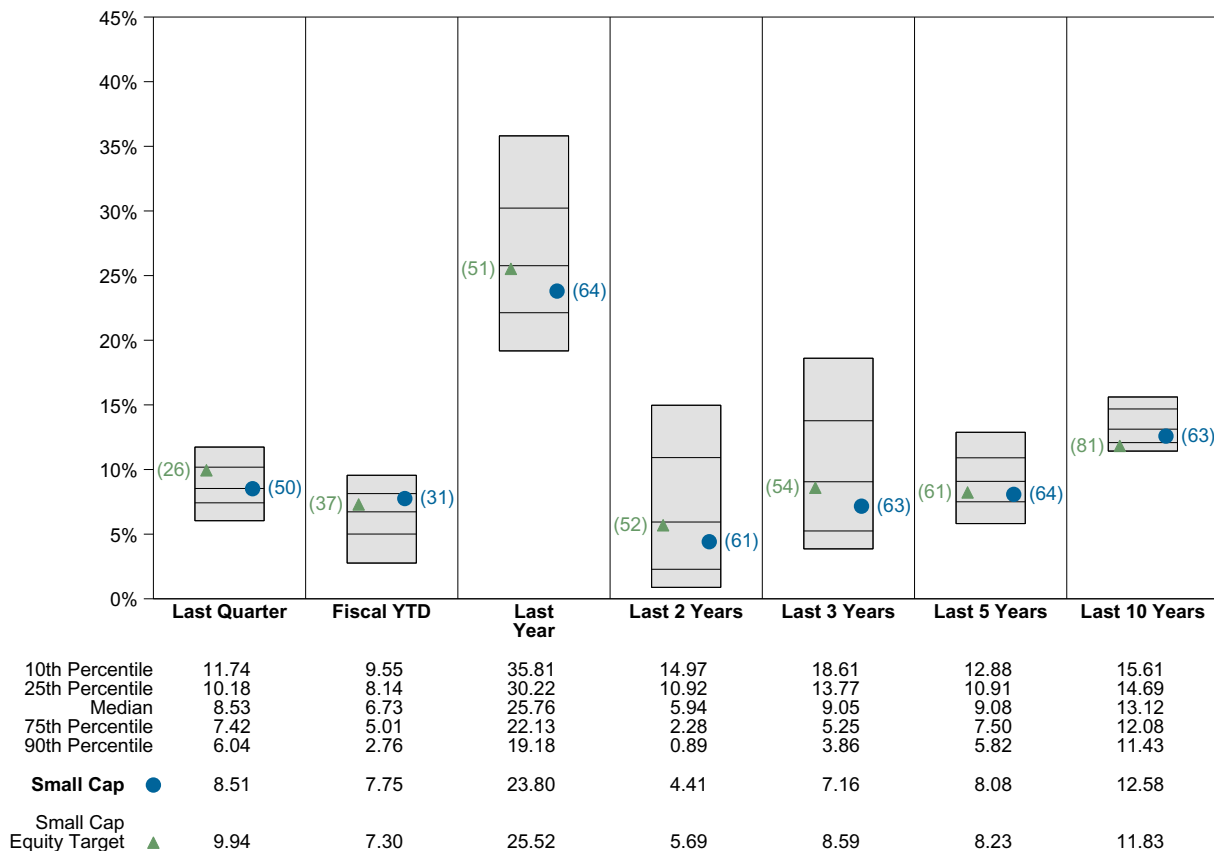
### Quarterly Summary and Highlights

- Small Cap's portfolio posted a 8.51% return for the quarter placing it in the 50 percentile of the Callan Small Capitalization group for the quarter and in the 64 percentile for the last year.
- Small Cap's portfolio underperformed the Small Cap Equity Target by 1.43% for the quarter and underperformed the Small Cap Equity Target for the year by 1.72%.

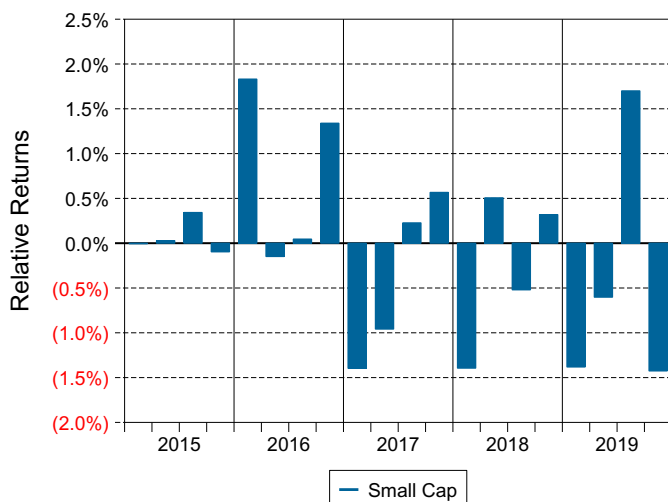
### Quarterly Asset Growth

Beginning Market Value	\$69,890,549
Net New Investment	\$-2,020,931
Investment Gains/(Losses)	\$5,890,642
Ending Market Value	\$73,760,261

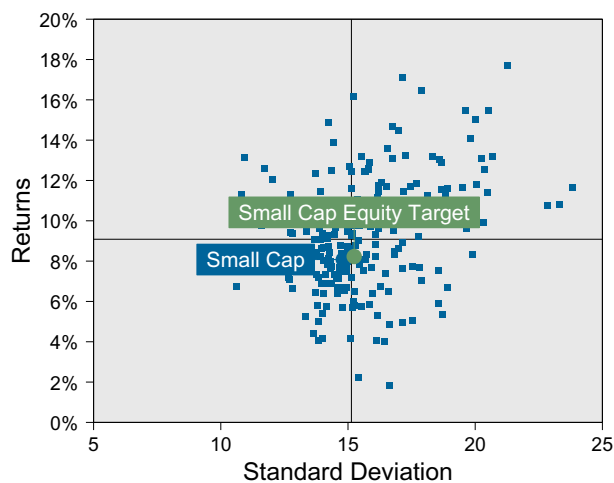
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Small Cap Equity Target



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



## Parametric Clifton SmallCap Period Ended December 31, 2019

### 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.

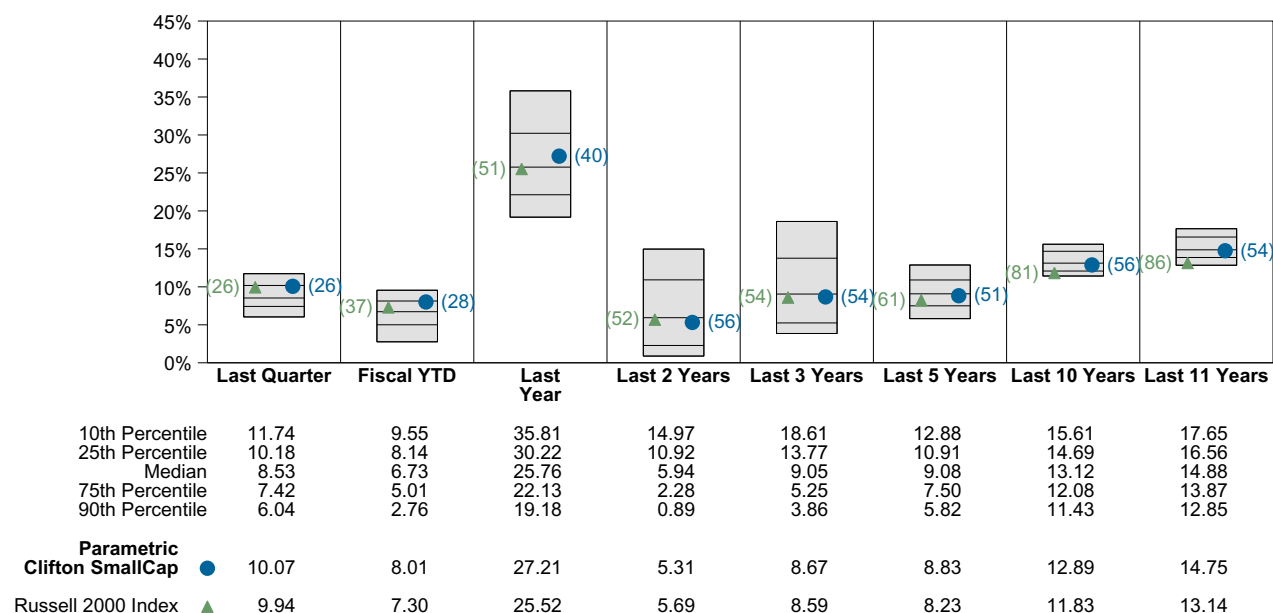
### Quarterly Summary and Highlights

- Parametric Clifton SmallCap's portfolio posted a 10.07% return for the quarter placing it in the 26 percentile of the Callan Small Capitalization group for the quarter and in the 40 percentile for the last year.
- Parametric Clifton SmallCap's portfolio outperformed the Russell 2000 Index by 0.13% for the quarter and outperformed the Russell 2000 Index for the year by 1.68%.

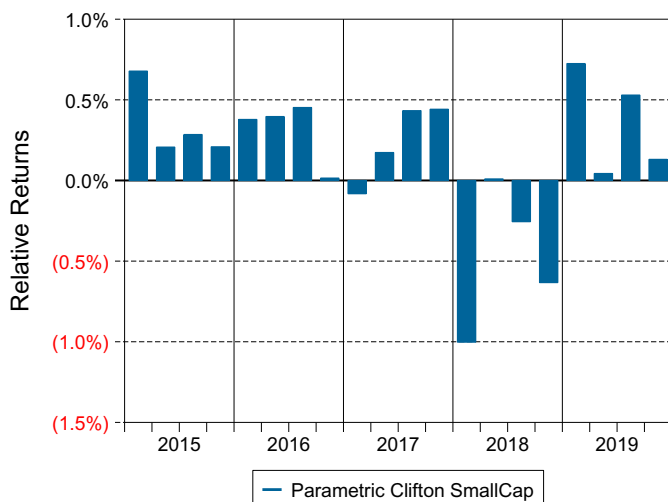
### Quarterly Asset Growth

Beginning Market Value	\$34,680,158
Net New Investment	\$-2,000,000
Investment Gains/(Losses)	\$3,443,633
Ending Market Value	\$36,123,792

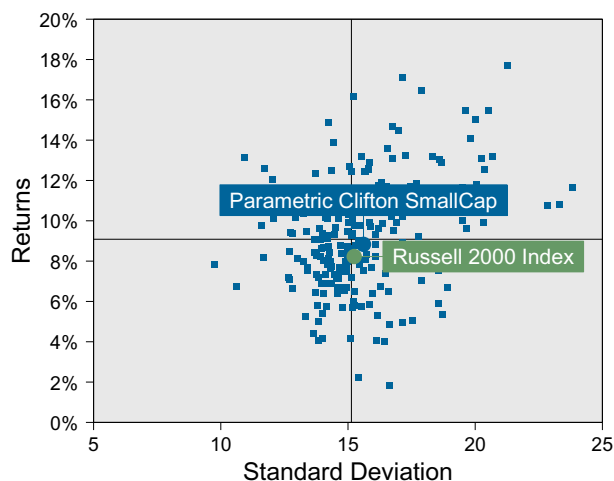
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



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



## PIMCO RAE Period Ended December 31, 2019

### 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.

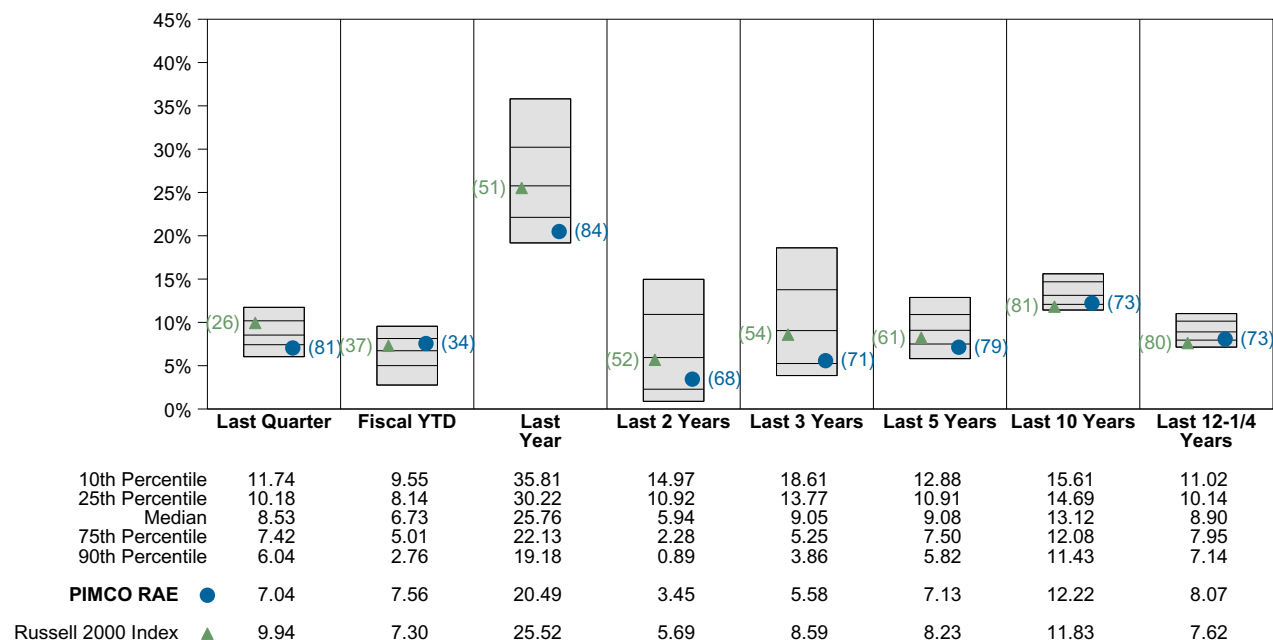
### Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a 7.04% return for the quarter placing it in the 81 percentile of the Callan Small Capitalization group for the quarter and in the 84 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 2.90% for the quarter and underperformed the Russell 2000 Index for the year by 5.03%.

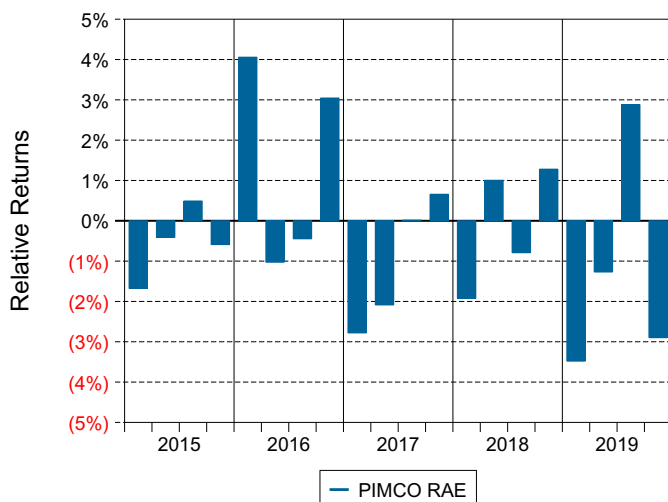
### Quarterly Asset Growth

Beginning Market Value	\$35,210,391
Net New Investment	\$-6,020,931
Investment Gains/(Losses)	\$2,470,257
Ending Market Value	\$31,659,717

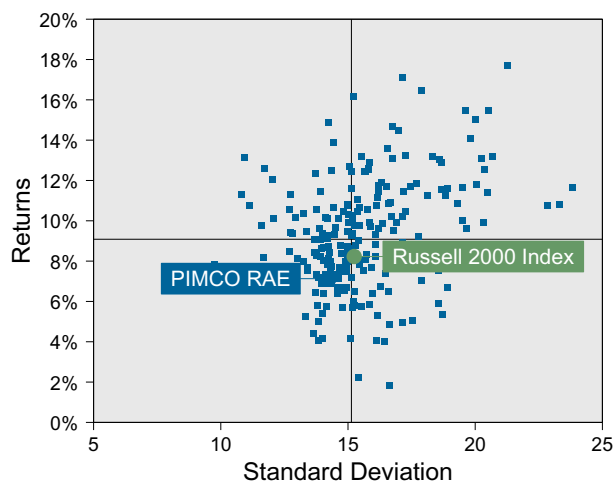
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



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





## International Equity Period Ended December 31, 2019

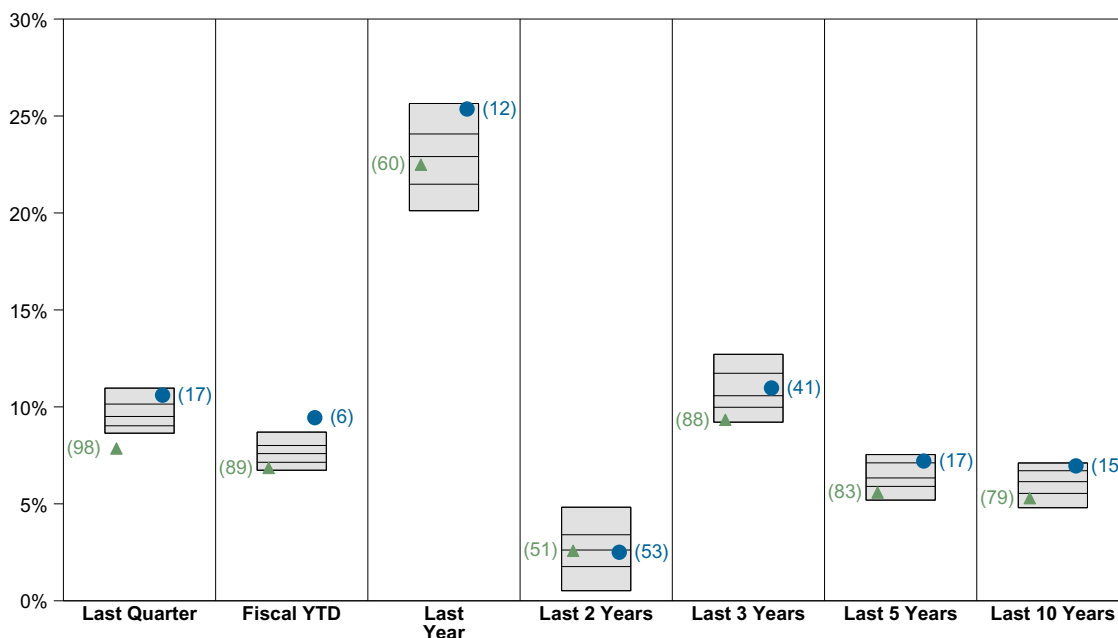
### Quarterly Summary and Highlights

- International Equity's portfolio posted a 10.60% return for the quarter placing it in the 17 percentile of the Public Fund - International Equity group for the quarter and in the 12 percentile for the last year.
- International Equity's portfolio outperformed the International Equity Target by 2.75% for the quarter and outperformed the International Equity Target for the year by 2.87%.

### Quarterly Asset Growth

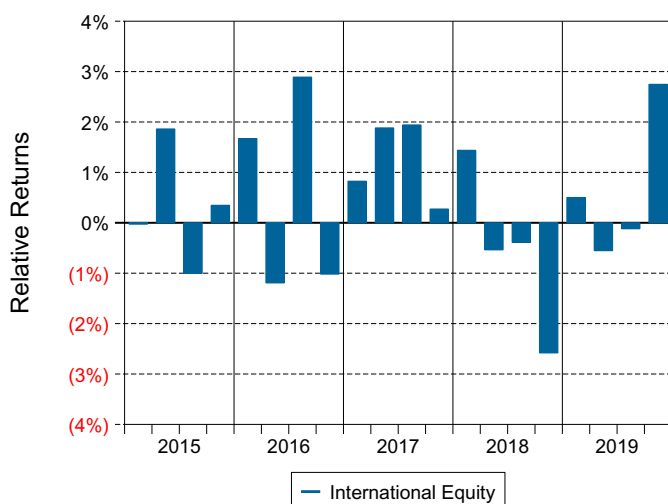
Beginning Market Value	\$176,771,276
Net New Investment	\$-6,133,715
Investment Gains/(Losses)	\$18,543,130
Ending Market Value	\$189,180,692

### Performance vs Public Fund - International Equity (Gross)

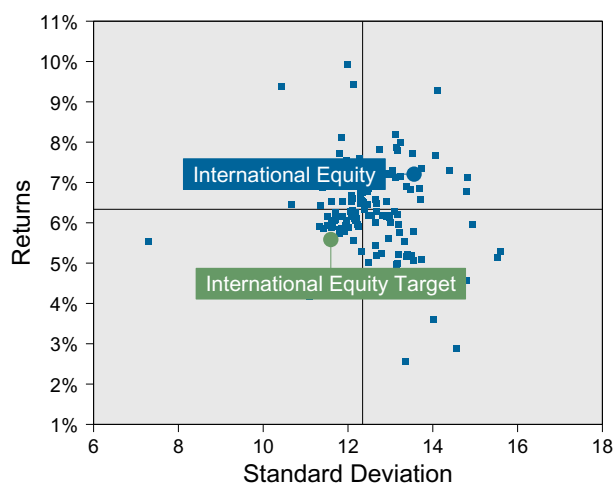


10th Percentile	10.97	8.70	25.65	4.83	12.71	7.54	7.11
25th Percentile	10.15	8.01	24.07	3.41	11.73	7.11	6.71
Median	9.51	7.59	22.91	2.62	10.57	6.33	6.14
75th Percentile	9.02	7.14	21.48	1.76	9.98	5.90	5.54
90th Percentile	8.64	6.73	20.11	0.52	9.21	5.19	4.80
International Equity	10.60	9.44	25.36	2.50	10.97	7.21	6.96
International Equity Target	7.86	6.85	22.49	2.58	9.34	5.59	5.30

### Relative Return vs International Equity Target



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



## DFA Intl Small Cap Value Period Ended December 31, 2019

### 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.

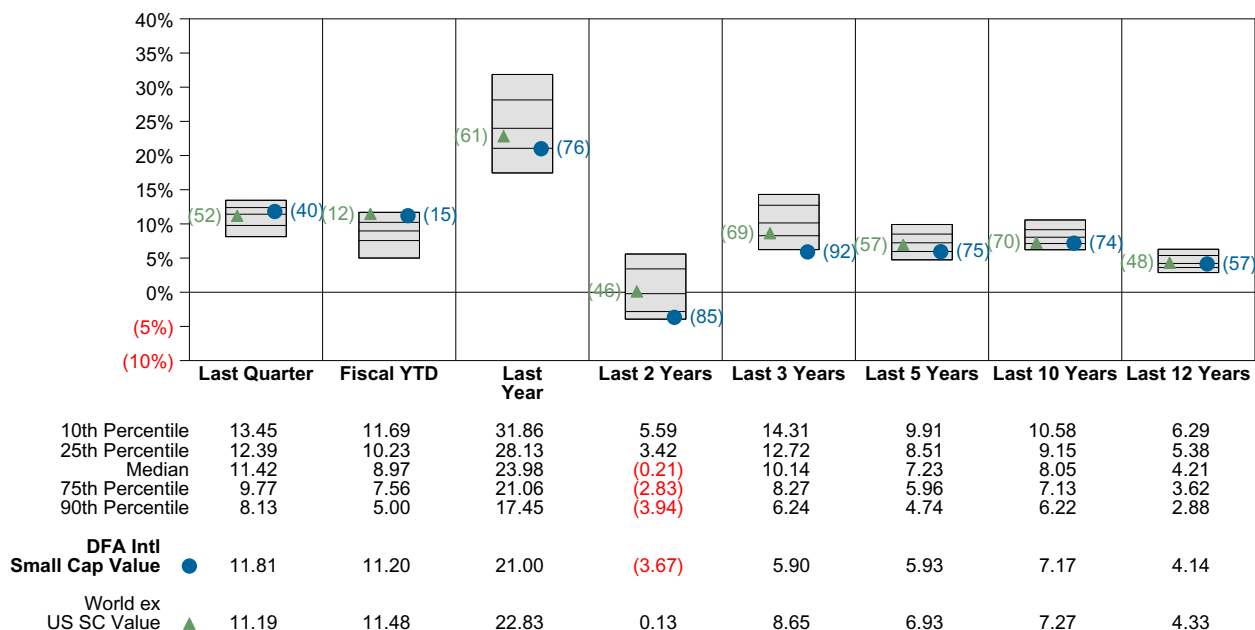
### Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a 11.81% return for the quarter placing it in the 40 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 76 percentile for the last year.
- DFA Intl Small Cap Value's portfolio outperformed the World ex US SC Value by 0.62% for the quarter and underperformed the World ex US SC Value for the year by 1.83%.

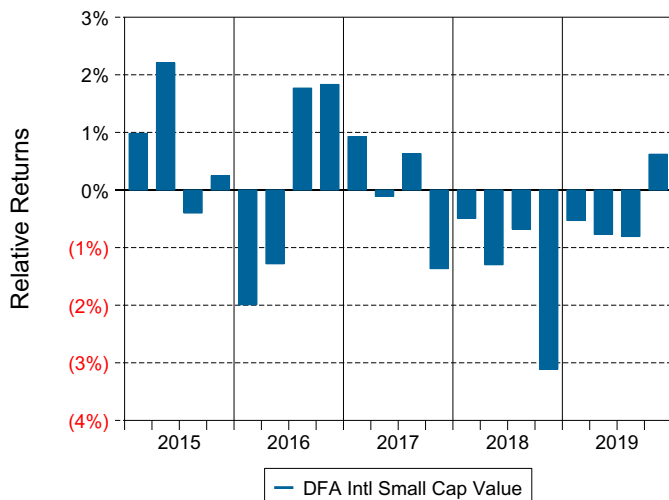
### Quarterly Asset Growth

Beginning Market Value	\$17,721,878
Net New Investment	\$0
Investment Gains/(Losses)	\$2,093,671
Ending Market Value	\$19,815,549

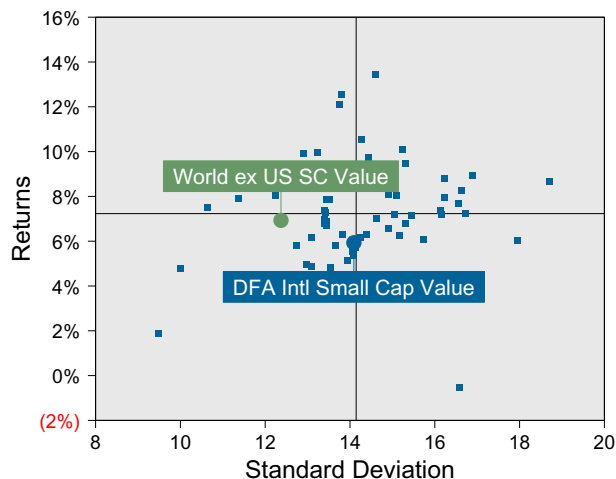
### Performance vs Callan International Small Cap Mut Funds (Net)



### Relative Return vs World ex US SC Value



### Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



## LSV Intl Value Period Ended December 31, 2019

### 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.**

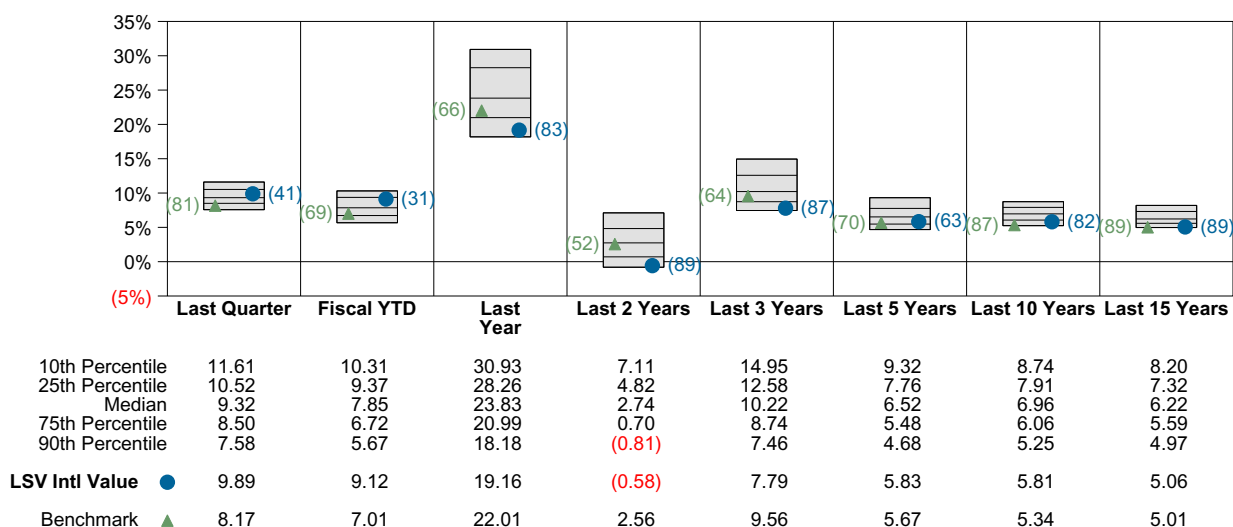
### Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a 9.89% return for the quarter placing it in the 41 percentile of the Callan Non-US Equity group for the quarter and in the 83 percentile for the last year.
- LSV Intl Value's portfolio outperformed the Benchmark by 1.72% for the quarter and underperformed the Benchmark for the year by 2.85%.

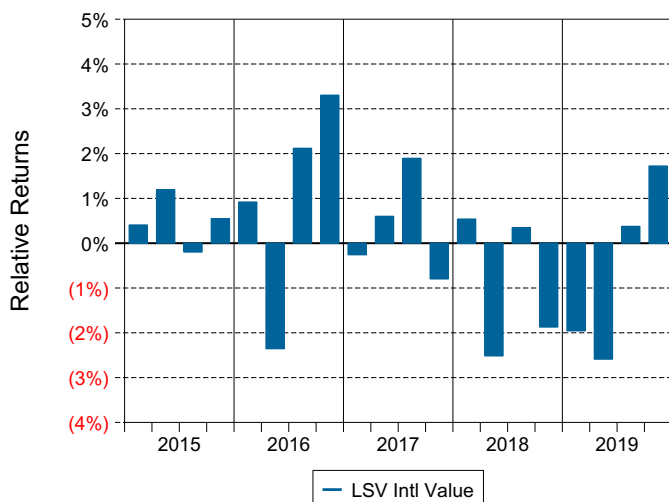
### Quarterly Asset Growth

Beginning Market Value	\$66,330,130
Net New Investment	\$-64,583
Investment Gains/(Losses)	\$6,556,202
Ending Market Value	\$72,821,749

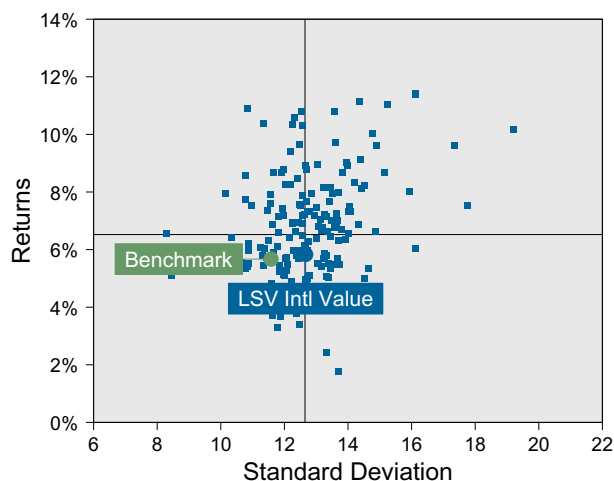
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs Benchmark



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



# Vanguard Intl Explorer Fund

## Period Ended December 31, 2019

### 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.

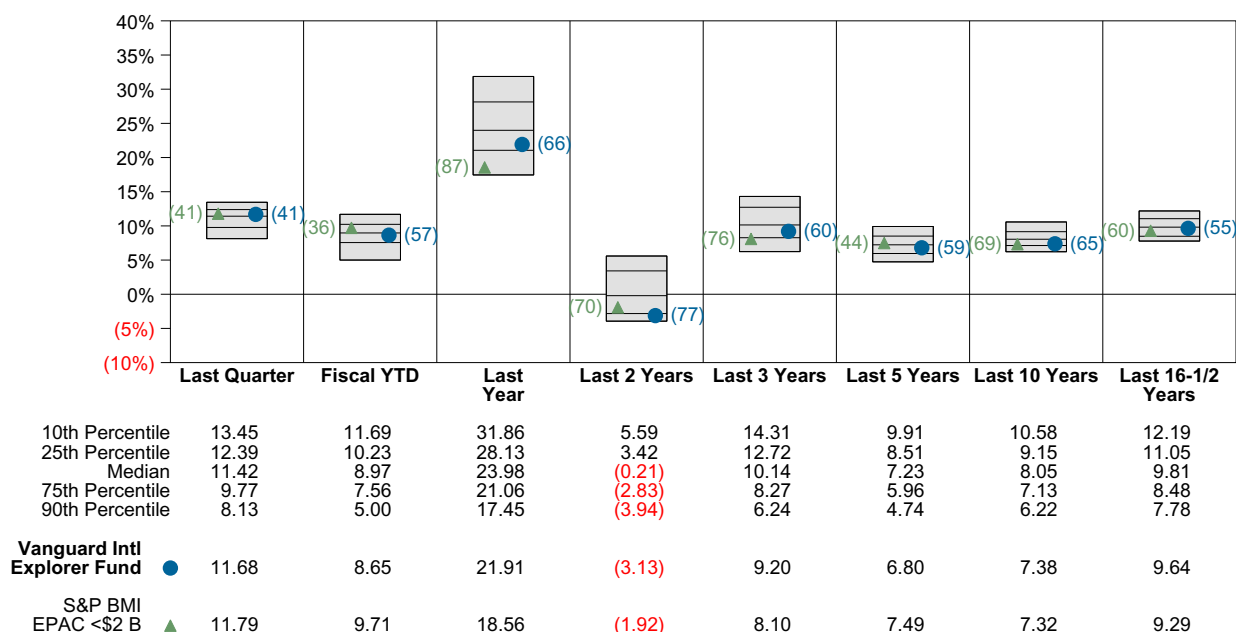
### Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a 11.68% return for the quarter placing it in the 41 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 66 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio underperformed the S&P BMI EPAC <\$2 B by 0.10% for the quarter and outperformed the S&P BMI EPAC <\$2 B for the year by 3.35%.

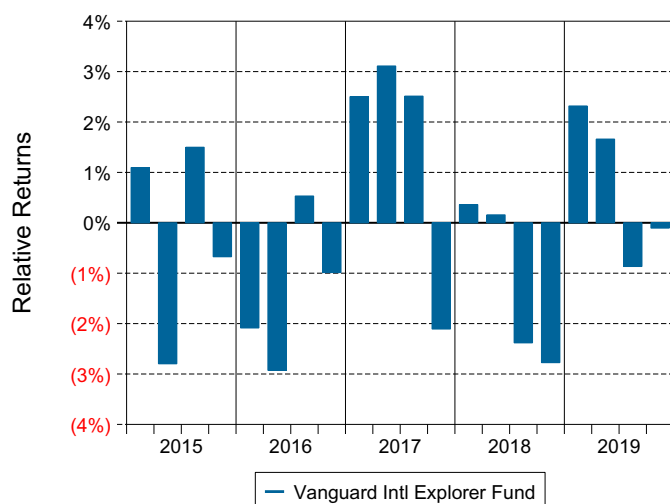
### Quarterly Asset Growth

Beginning Market Value	\$17,891,017
Net New Investment	\$0
Investment Gains/(Losses)	\$2,090,329
Ending Market Value	\$19,981,346

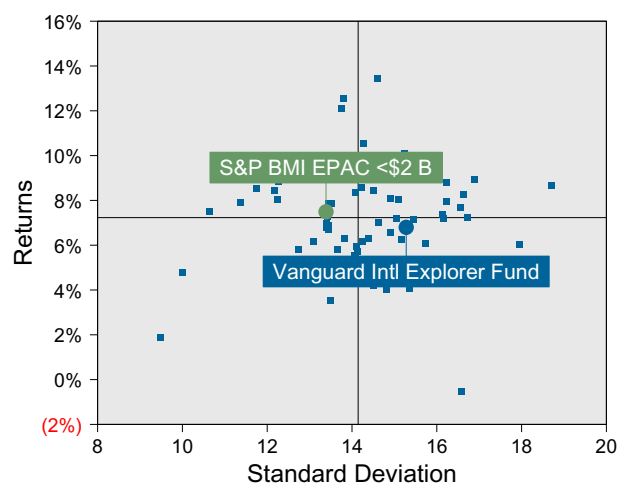
### Performance vs Callan International Small Cap Mut Funds (Net)



### 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 December 31, 2019

### 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.

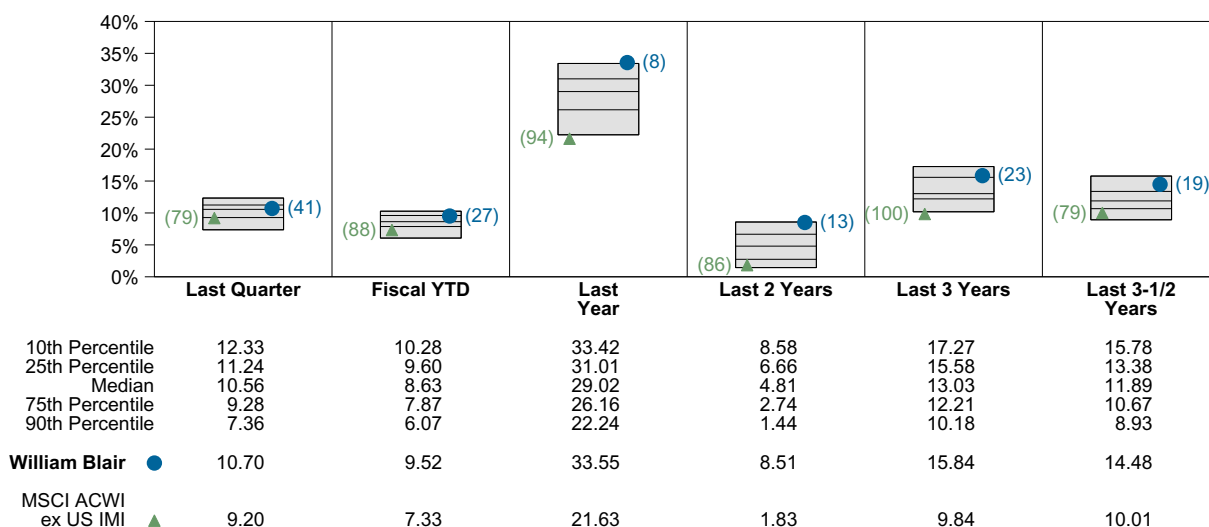
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 10.70% return for the quarter placing it in the 41 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 8 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.50% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 11.92%.

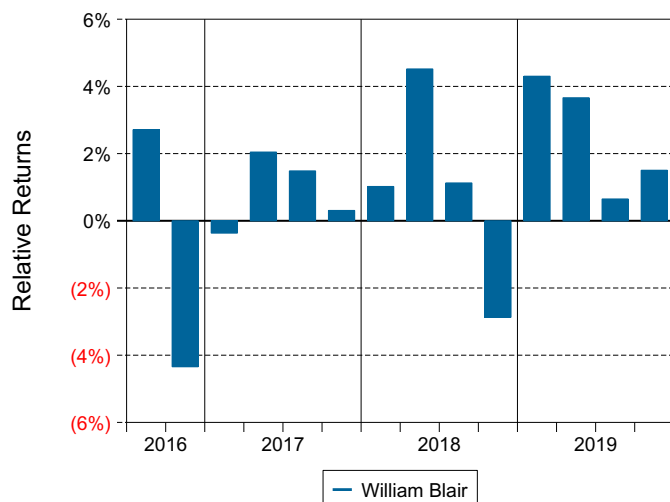
### Quarterly Asset Growth

Beginning Market Value	\$74,828,251
Net New Investment	\$-6,069,132
Investment Gains/(Losses)	\$7,802,928
Ending Market Value	\$76,562,048

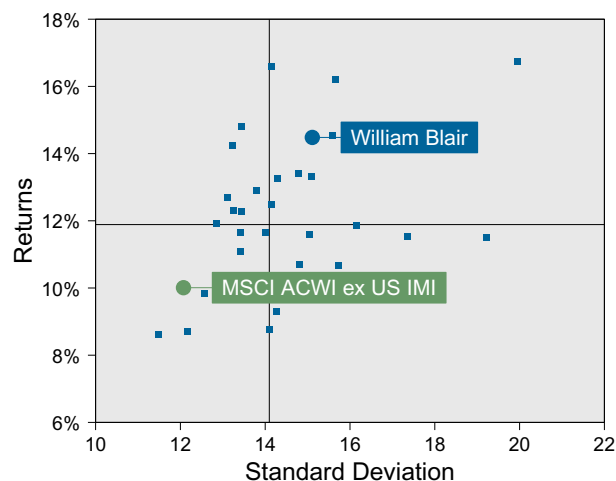
### Performance vs Callan Non-US All Country Growth Equity (Gross)



### Relative Return vs MSCI ACWI ex US IMI



### Callan Non-US All Country Growth Equity (Gross) Annualized Three and One-Half Year Risk vs Return



## Domestic Fixed Income Period Ended December 31, 2019

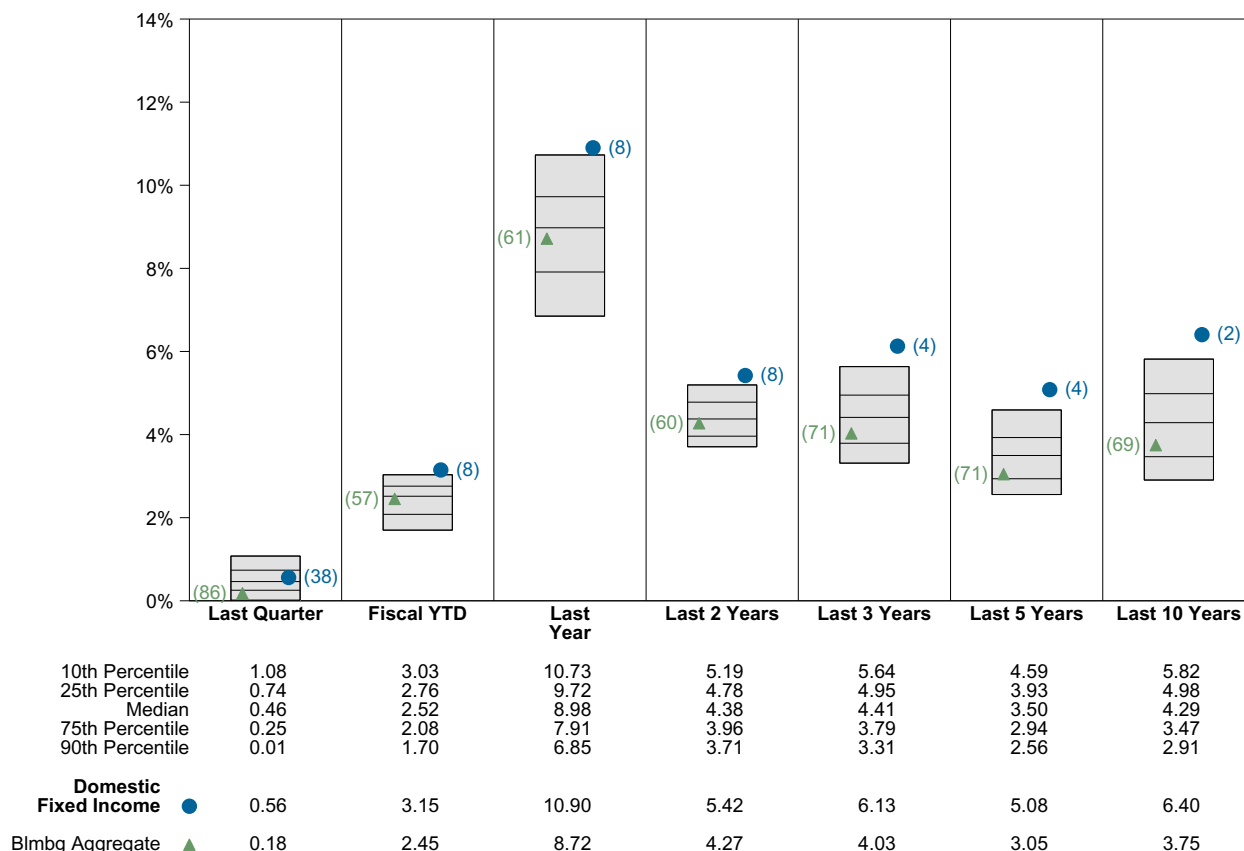
### Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.56% return for the quarter placing it in the 38 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 8 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Blmbg Aggregate by 0.38% for the quarter and outperformed the Blmbg Aggregate for the year by 2.18%.

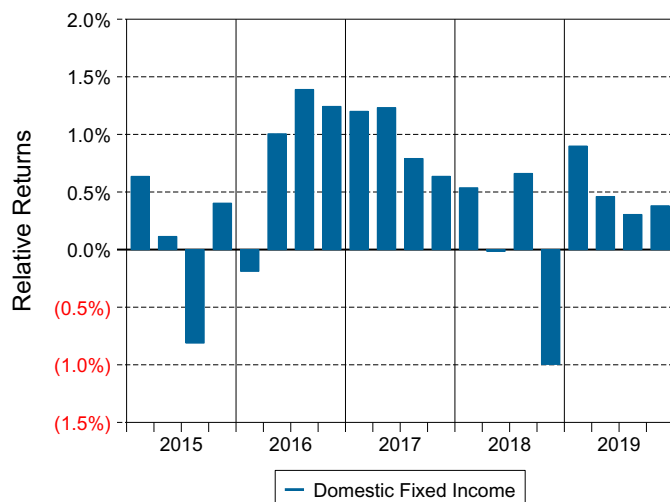
### Quarterly Asset Growth

Beginning Market Value	\$1,303,555,490
Net New Investment	\$4,006,386
Investment Gains/(Losses)	\$7,304,776
Ending Market Value	\$1,314,866,652

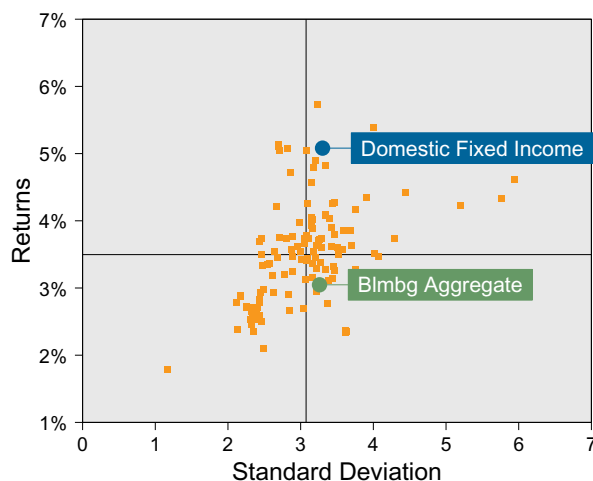
### Performance vs Public Fund - Domestic Fixed (Gross)



### Relative Return vs Blmbg Aggregate



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



## Declaration Total Return Period Ended December 31, 2019

### 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.

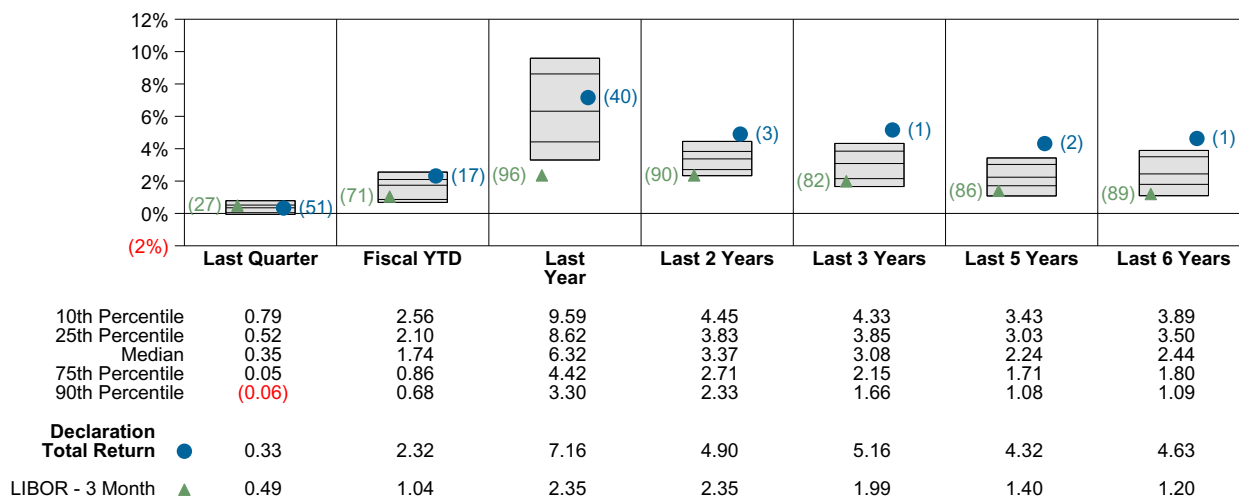
### Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.33% return for the quarter placing it in the 51 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 40 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.16% for the quarter and outperformed the LIBOR - 3 Month for the year by 4.80%.

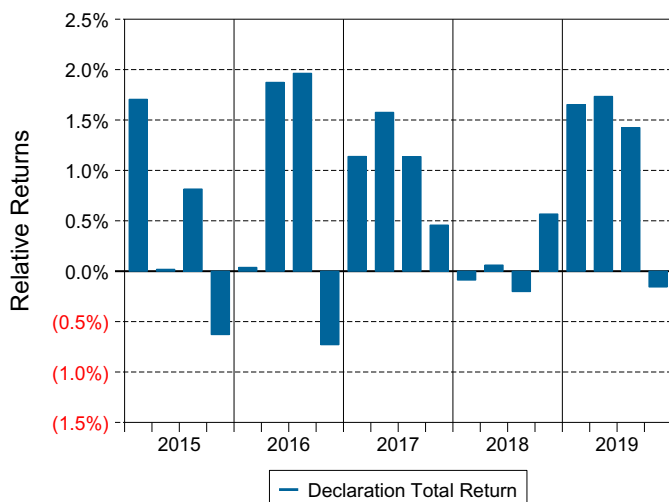
### Quarterly Asset Growth

Beginning Market Value	\$93,713,279
Net New Investment	\$-53,677
Investment Gains/(Losses)	\$311,135
Ending Market Value	\$93,970,737

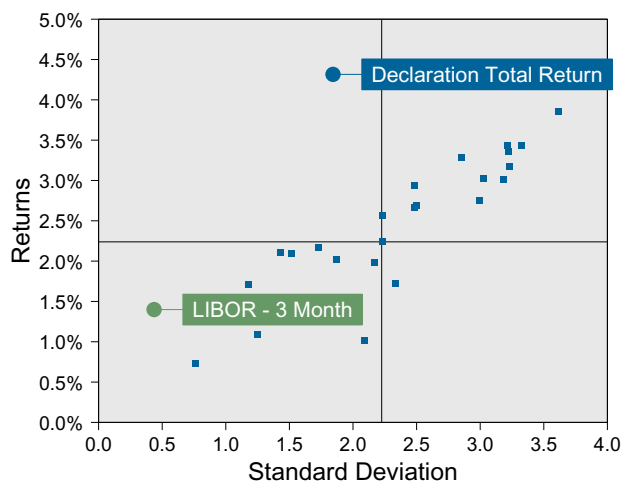
### Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



### Relative Return vs LIBOR - 3 Month



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



## PIMCO Core Plus Constrained Period Ended December 31, 2019

### Investment Philosophy

PIMCO's investment process utilizes both "top-down" and "bottom-up" strategies. Top-down strategies focus on duration, yield curve positioning, volatility, and sector rotation. These strategies are deployed from a macro view of the portfolio driven by their secular outlook of the forces likely to influence the economy and financial markets over the next three to five years and their cyclical views of two- to four-quarter trends. Implementation in portfolios is effected by selecting securities that achieve the designated objectives. Bottom-up strategies drive their security selection process and facilitate the identification and analysis of undervalued securities.

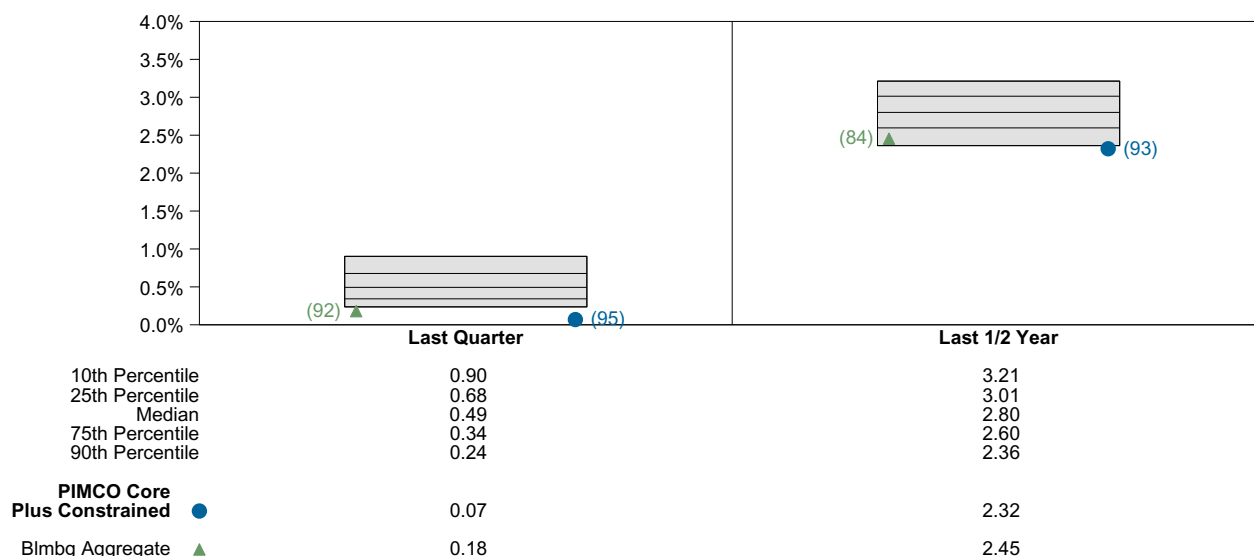
### Quarterly Summary and Highlights

- PIMCO Core Plus Constrained's portfolio posted a 0.07% return for the quarter placing it in the 95 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 93 percentile for the last one-half year.
- PIMCO Core Plus Constrained's portfolio underperformed the Blmbg Aggregate by 0.11% for the quarter and underperformed the Blmbg Aggregate for the one-half year by 0.13%.

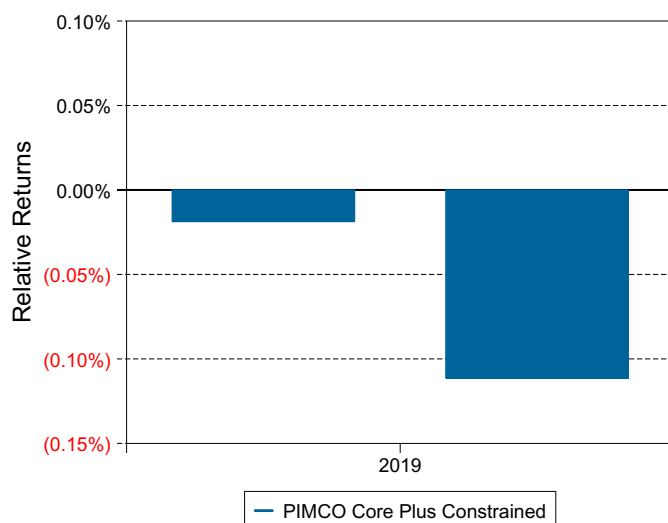
### Quarterly Asset Growth

Beginning Market Value	\$156,683,252
Net New Investment	\$5,456,569
Investment Gains/(Losses)	\$103,598
Ending Market Value	\$162,243,420

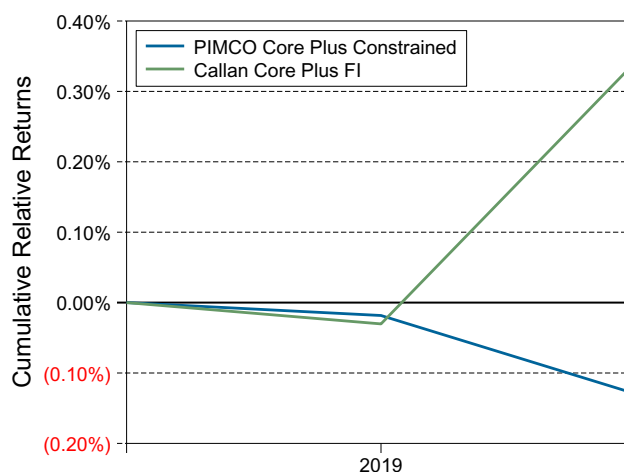
### Performance vs Callan Core Plus Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



### Cumulative Returns vs Blmbg Aggregate





## PIMCO DiSCO II

### Period Ended December 31, 2019

#### 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.

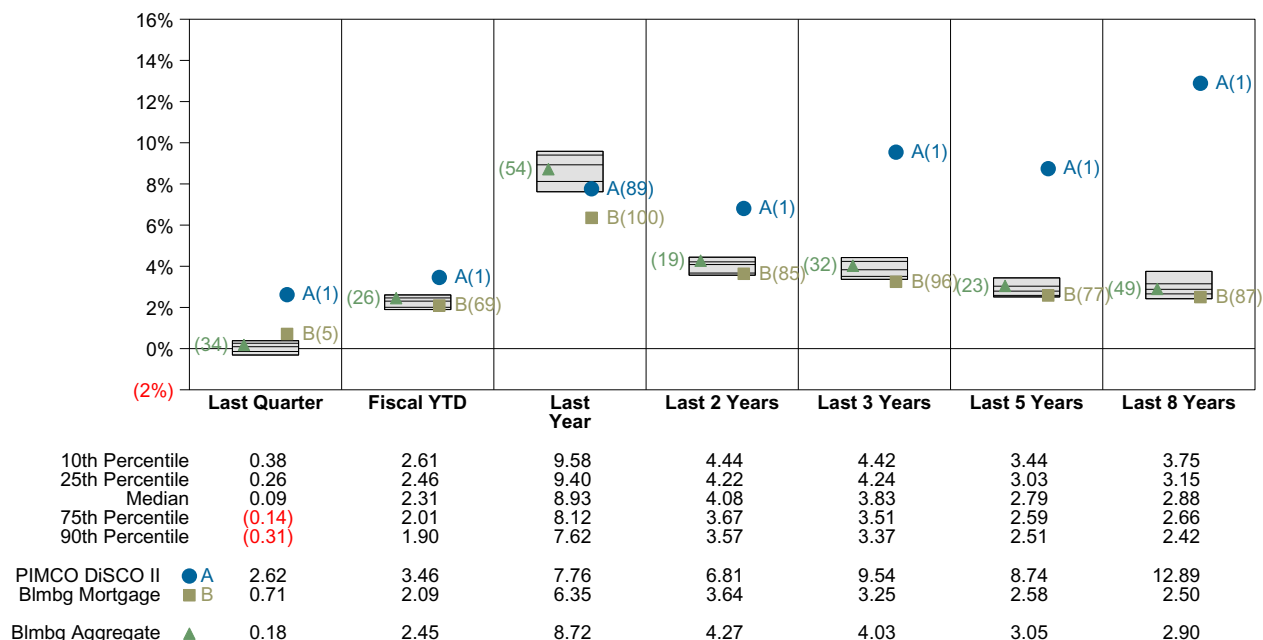
#### Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 2.62% return for the quarter placing it in the 1 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 89 percentile for the last year.
- PIMCO DiSCO II's portfolio outperformed the Blmbg Aggregate by 2.44% for the quarter and underperformed the Blmbg Aggregate for the year by 0.95%.

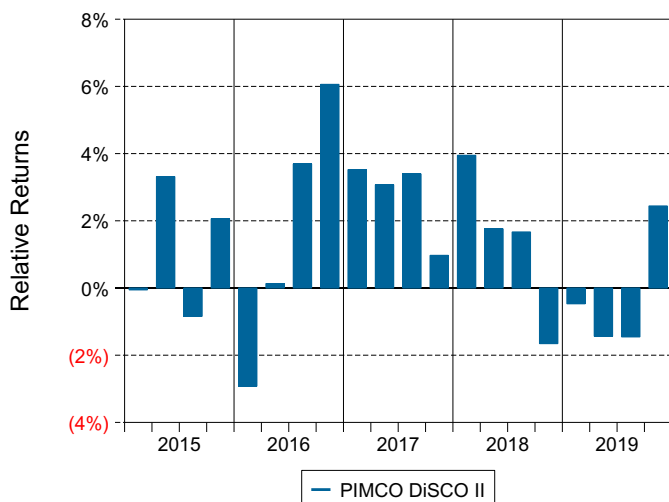
#### Quarterly Asset Growth

Beginning Market Value	\$43,504,371
Net New Investment	\$0
Investment Gains/(Losses)	\$1,140,058
Ending Market Value	\$44,644,429

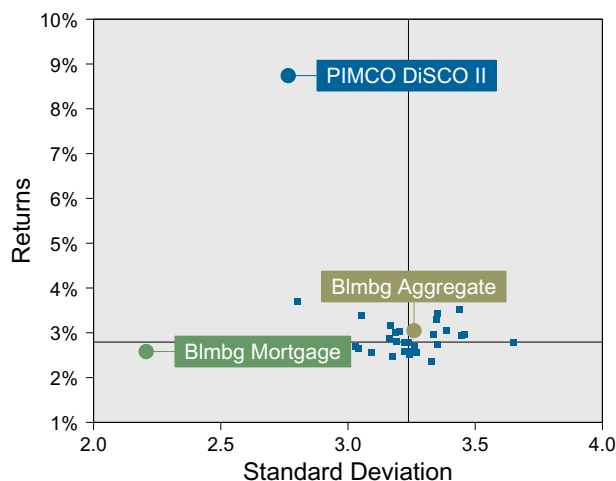
#### Performance vs Callan Core Bond Mutual Funds (Net)



#### Relative Return vs Blmbg Aggregate



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



## PIMCO Bravo II Fund Period Ended December 31, 2019

### 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.

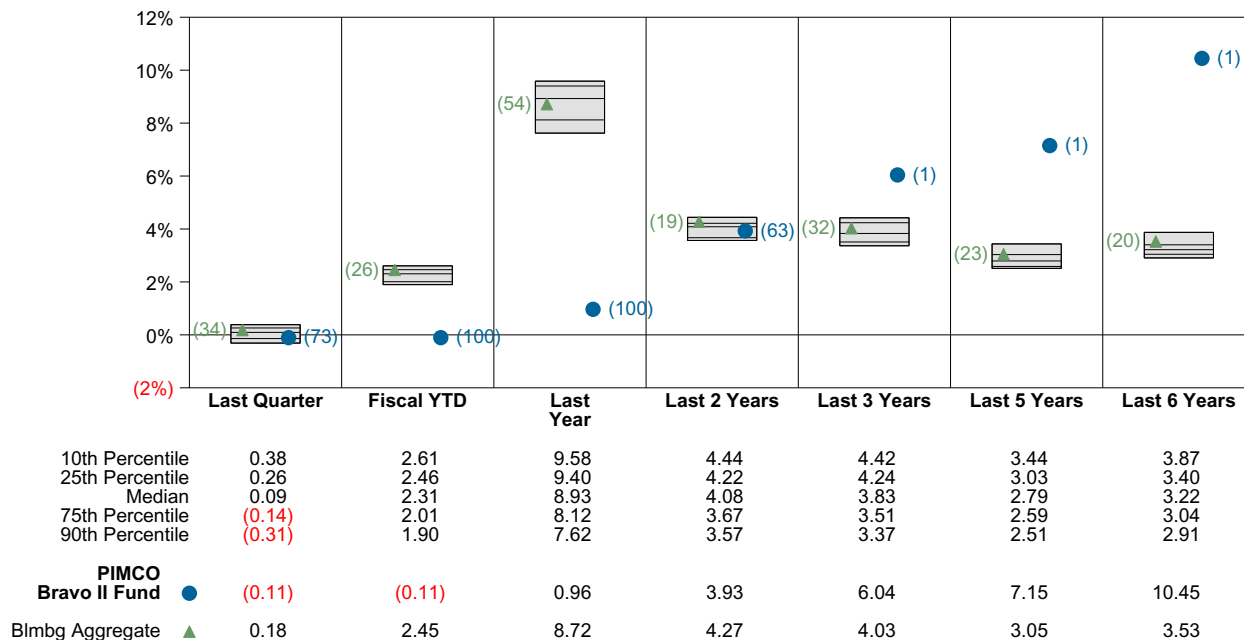
### Quarterly Summary and Highlights

- PIMCO Bravo II Fund's portfolio posted a (0.11)% return for the quarter placing it in the 73 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 100 percentile for the last year.
- PIMCO Bravo II Fund's portfolio underperformed the Blmbg Aggregate by 0.29% for the quarter and underperformed the Blmbg Aggregate for the year by 7.75%.

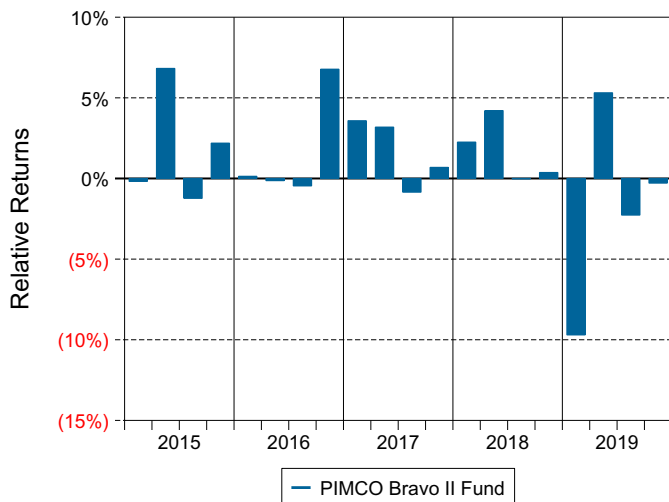
### Quarterly Asset Growth

Beginning Market Value	\$12,970,232
Net New Investment	\$-1,046,004
Investment Gains/(Losses)	\$-13,691
Ending Market Value	\$11,910,537

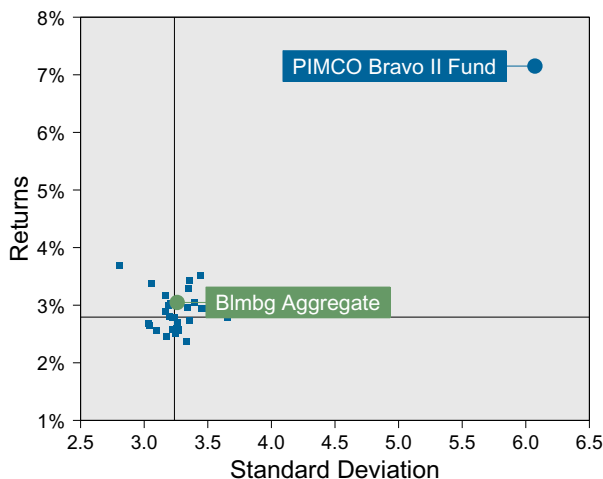
### Performance vs Callan Core Bond Mutual Funds (Net)



### Relative Return vs Blmbg Aggregate



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



## Prudential Core Plus Period Ended December 31, 2019

### Investment Philosophy

PGIM Fixed Income's Core Plus Strategy is an actively-managed strategy that seeks +150 bps over the Bloomberg Barclays U.S. Aggregate Bond Index or similar benchmark annualized over a market cycle (three to five years.) The Strategy seeks about half of its excess return from active sector allocation and up to one-third each from subsector/security selection and duration/yield curve/currencies, depending on market opportunities.

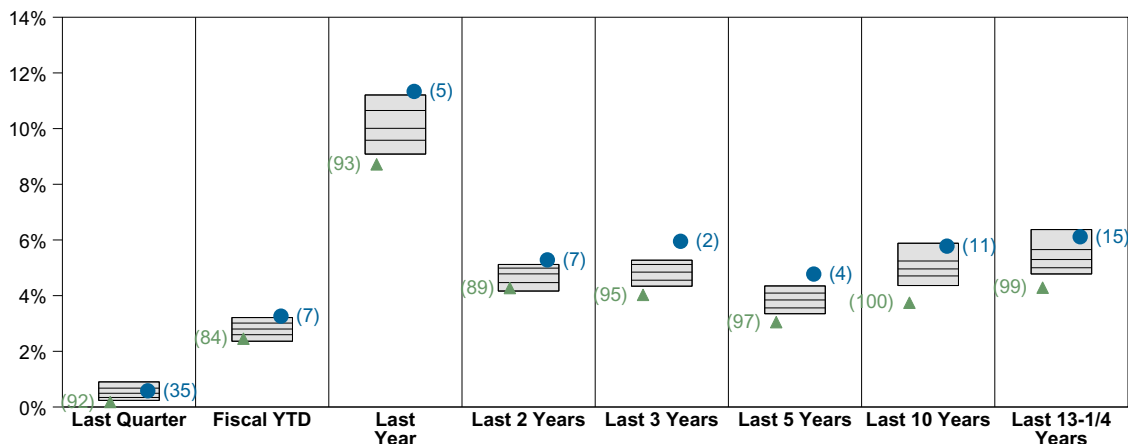
### Quarterly Summary and Highlights

- Prudential Core Plus's portfolio posted a 0.58% return for the quarter placing it in the 35 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 5 percentile for the last year.
- Prudential Core Plus's portfolio outperformed the Blmbg Aggregate by 0.40% for the quarter and outperformed the Blmbg Aggregate for the year by 2.62%.

### Quarterly Asset Growth

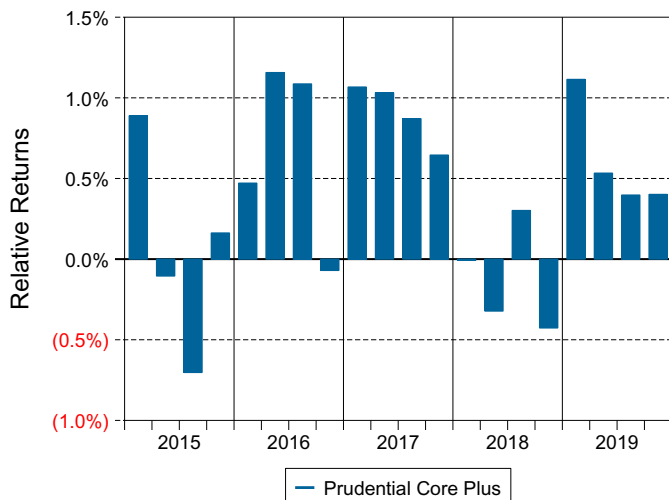
Beginning Market Value	\$341,456,389
Net New Investment	\$-182,291
Investment Gains/(Losses)	\$1,985,677
Ending Market Value	\$343,259,775

### Performance vs Callan Core Plus Fixed Income (Gross)

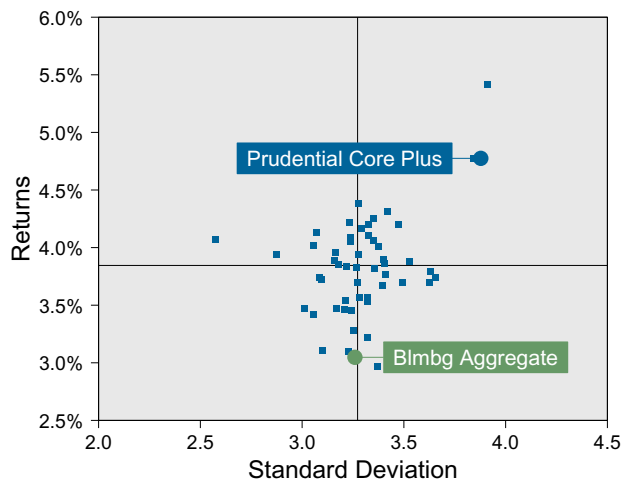


10th Percentile	0.90	3.21	11.21	5.12	5.27	4.35	5.88	6.37
25th Percentile	0.68	3.01	10.65	4.99	5.12	4.09	5.24	5.65
Median	0.49	2.80	10.01	4.78	4.84	3.85	4.96	5.30
75th Percentile	0.34	2.60	9.58	4.47	4.55	3.56	4.71	5.00
90th Percentile	0.24	2.36	9.09	4.17	4.34	3.35	4.36	4.78
<b>Prudential Core Plus</b>	<b>0.58</b>	<b>3.26</b>	<b>11.34</b>	<b>5.28</b>	<b>5.95</b>	<b>4.77</b>	<b>5.78</b>	<b>6.11</b>
<b>Blmbg Aggregate</b>	<b>0.18</b>	<b>2.45</b>	<b>8.72</b>	<b>4.27</b>	<b>4.03</b>	<b>3.05</b>	<b>3.75</b>	<b>4.29</b>

### Relative Return vs Blmbg Aggregate



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



## SSgA US Govt Cr Bd Index Period Ended December 31, 2019

### Investment Philosophy

The Fund seeks an investment return that approximates as closely as practicable, before expenses, the performance of the Barclays Capital U.S. Government/Credit Bond Index over the long term.

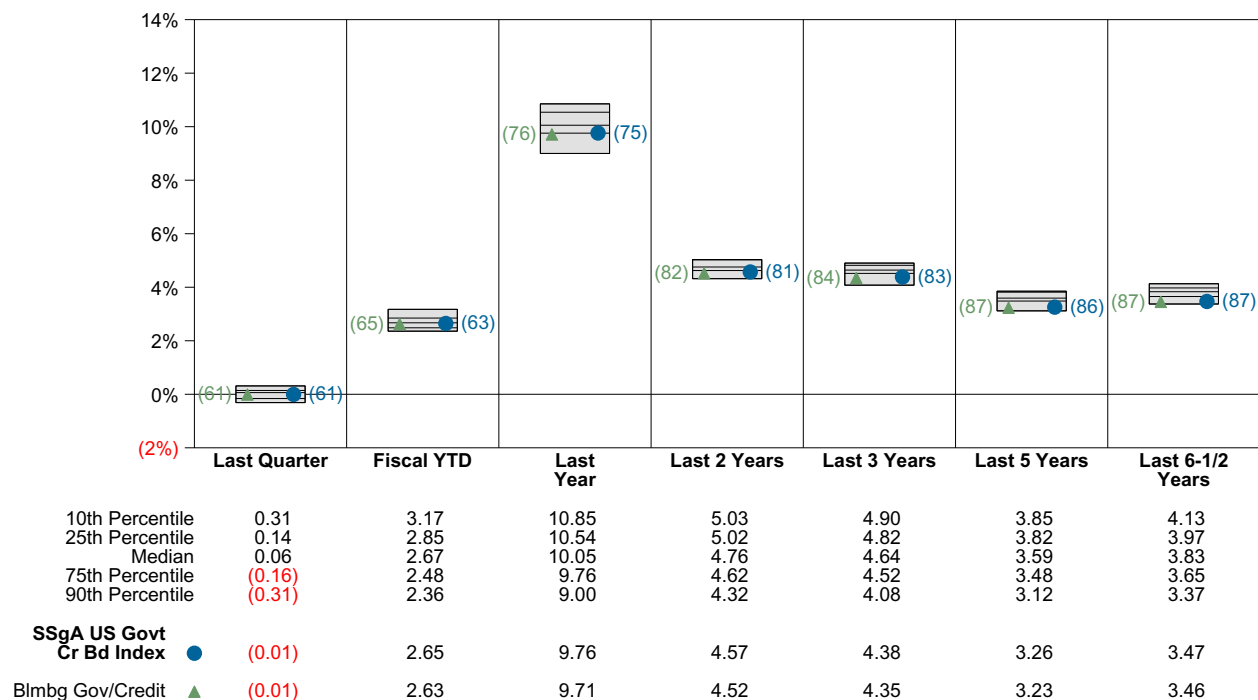
### Quarterly Summary and Highlights

- SSgA US Govt Cr Bd Index's portfolio posted a (0.01)% return for the quarter placing it in the 61 percentile of the Callan Government/Credit group for the quarter and in the 75 percentile for the last year.
- SSgA US Govt Cr Bd Index's portfolio outperformed the Blmbg Gov/Credit by 0.00% for the quarter and outperformed the Blmbg Gov/Credit for the year by 0.05%.

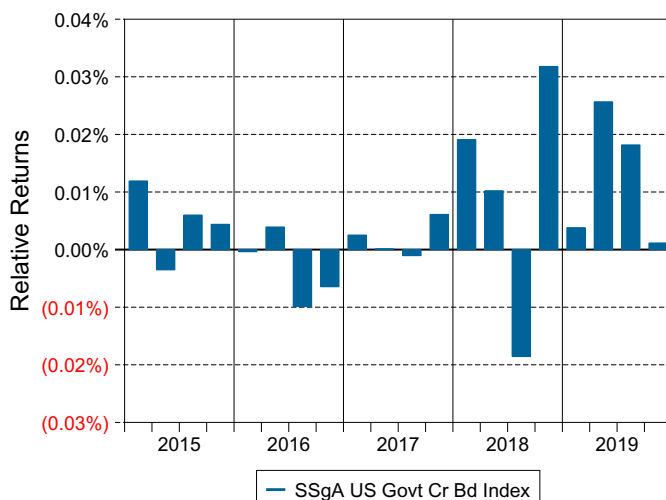
### Quarterly Asset Growth

Beginning Market Value	\$185,407,544
Net New Investment	\$-6,818
Investment Gains/(Losses)	\$-13,545
Ending Market Value	\$185,387,181

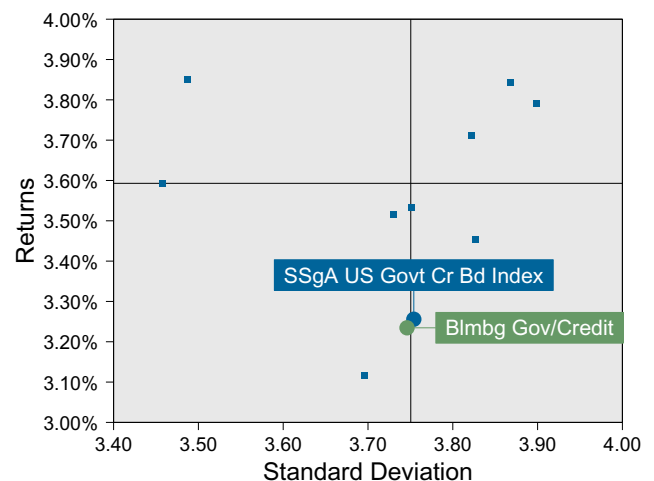
### Performance vs Callan Government/Credit (Gross)



### Relative Return vs Blmbg Gov/Credit



### Callan Government/Credit (Gross) Annualized Five Year Risk vs Return



## Wells Capital Period Ended December 31, 2019

### 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.

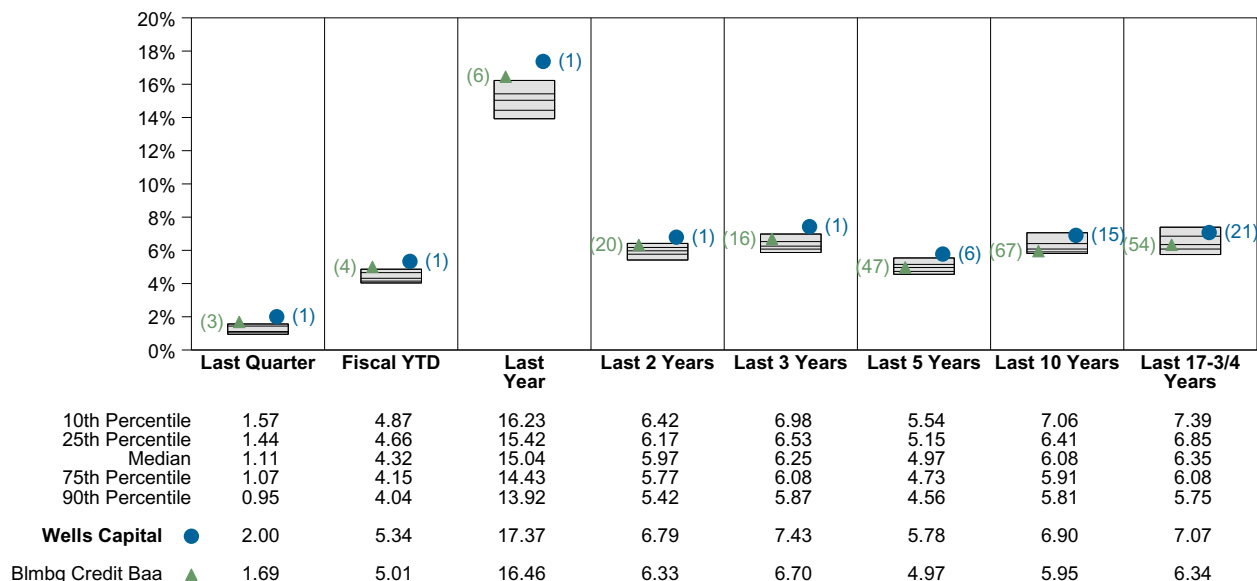
### Quarterly Summary and Highlights

- Wells Capital's portfolio posted a 2.00% return for the quarter placing it in the 1 percentile of the Callan Investment Grade Credit Fixed Inc group for the quarter and in the 1 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.31% for the quarter and outperformed the Blmbg Credit Baa for the year by 0.92%.

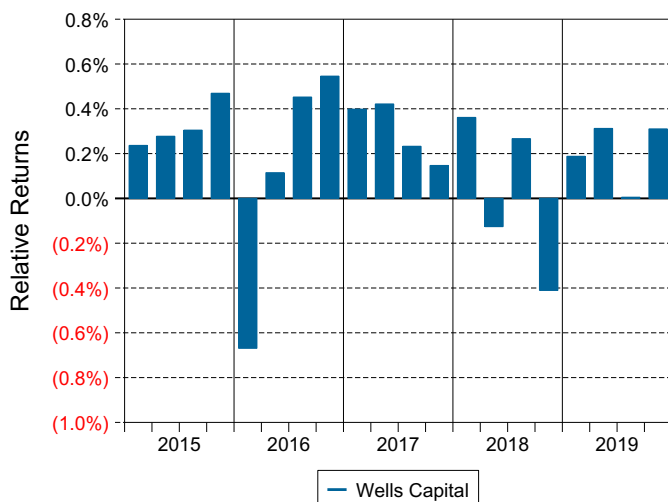
### Quarterly Asset Growth

Beginning Market Value	\$109,829,298
Net New Investment	\$-53,240
Investment Gains/(Losses)	\$2,199,359
Ending Market Value	\$111,975,417

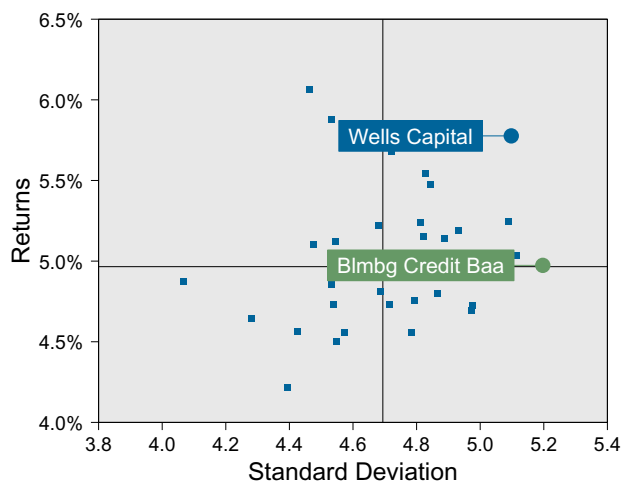
### Performance vs Callan Investment Grade Credit Fixed Inc (Gross)



### Relative Return vs Blmbg Credit Baa



### Callan Investment Grade Credit Fixed Inc (Gross) Annualized Five Year Risk vs Return



## Western Asset Management Company

### Period Ended December 31, 2019

#### Investment Philosophy

Western Asset designs this portfolio using all major fixed-income sectors with a bias towards non-Treasuries, especially corporate, mortgage-backed and asset-backed securities. Value can be added through sector rotation, issue selection, duration and term structure weighting.

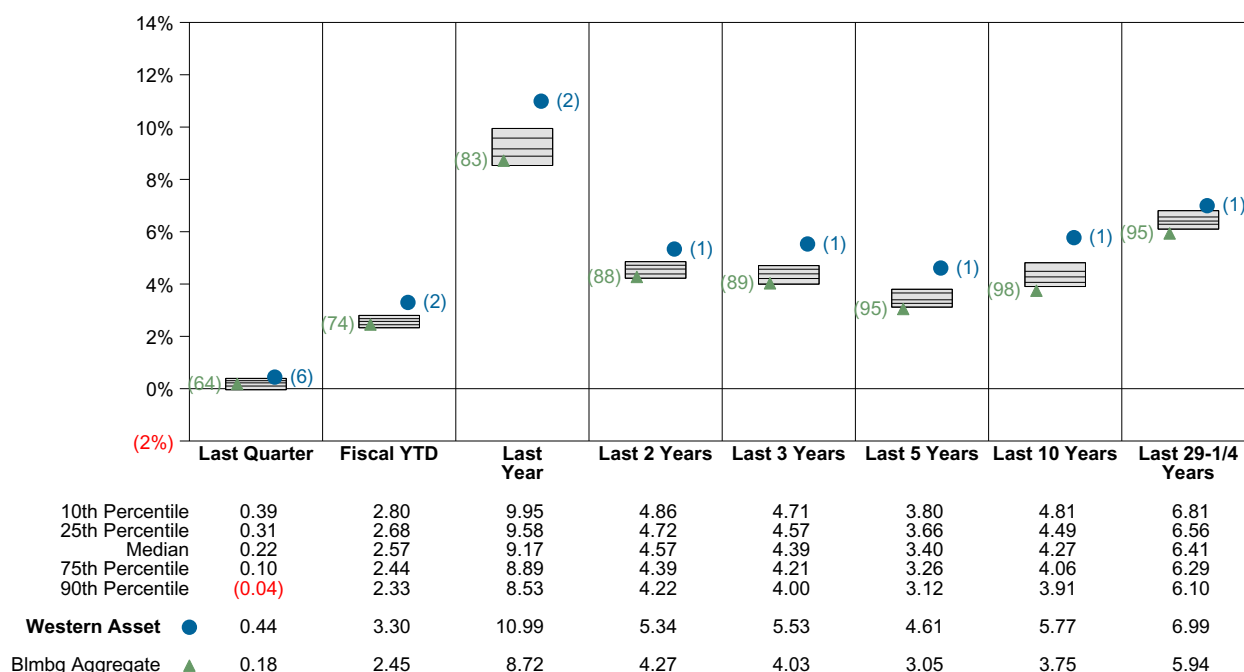
#### Quarterly Summary and Highlights

- Western Asset's portfolio posted a 0.44% return for the quarter placing it in the 6 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 2 percentile for the last year.
- Western Asset's portfolio outperformed the Blmbg Aggregate by 0.26% for the quarter and outperformed the Blmbg Aggregate for the year by 2.27%.

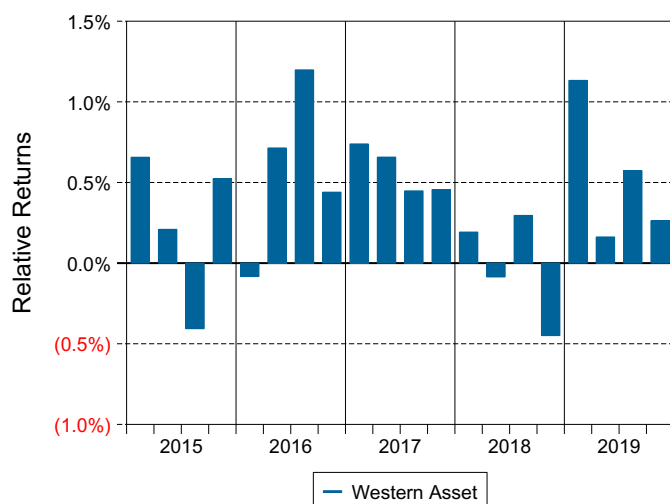
#### Quarterly Asset Growth

Beginning Market Value	\$359,991,125
Net New Investment	\$-108,153
Investment Gains/(Losses)	\$1,592,184
Ending Market Value	\$361,475,156

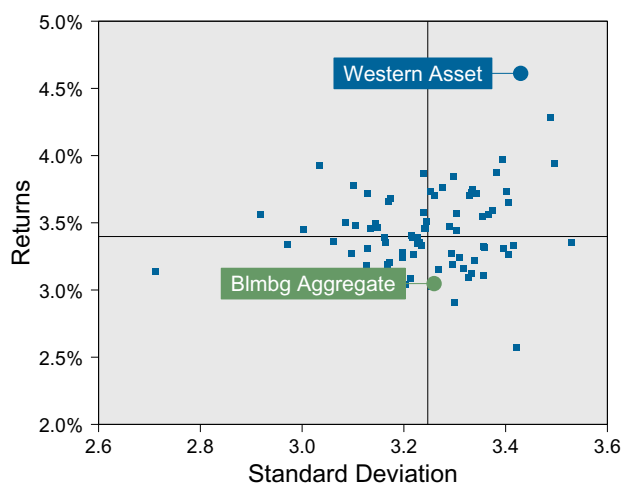
#### Performance vs Callan Core Bond Fixed Income (Gross)



#### Relative Return vs Blmbg Aggregate



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



## Real Estate Period Ended December 31, 2019

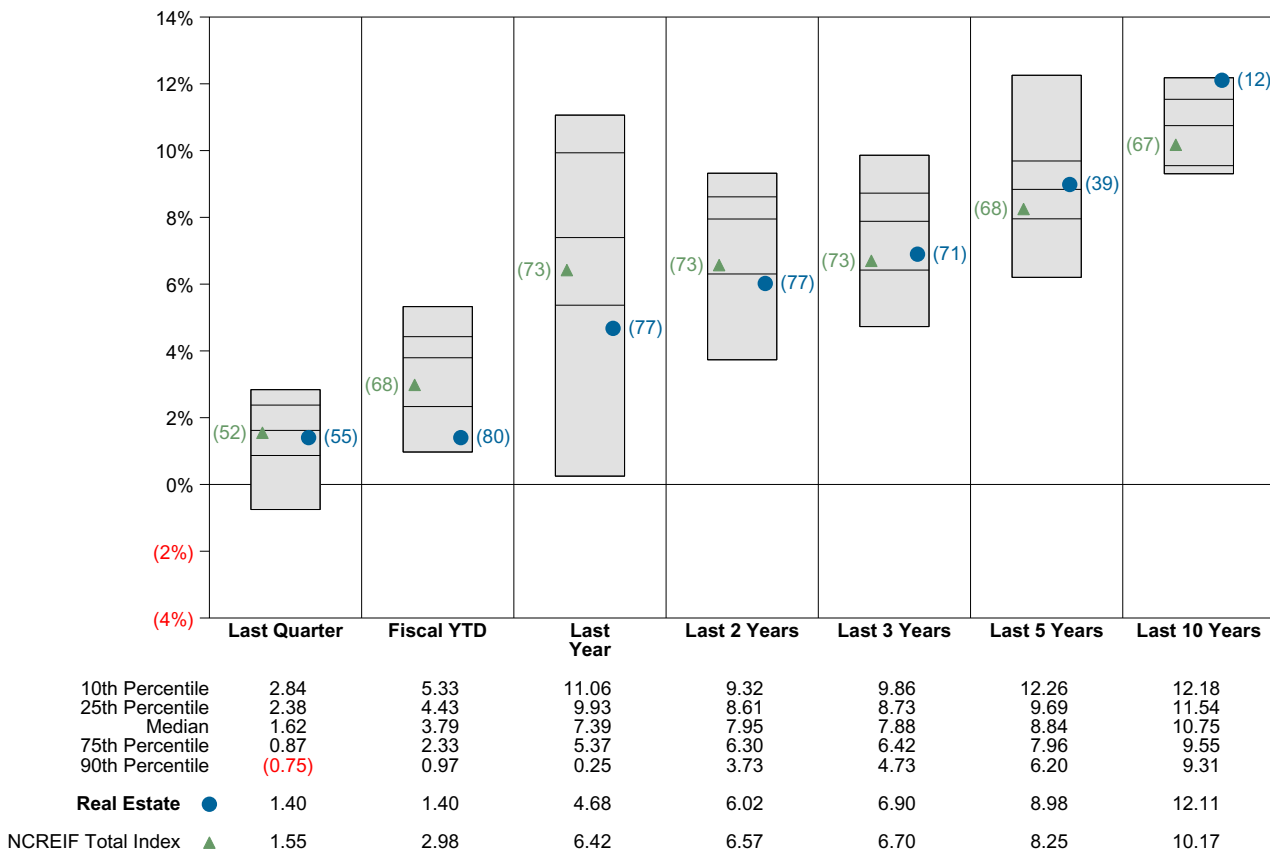
### Quarterly Summary and Highlights

- Real Estate's portfolio posted a 1.40% return for the quarter placing it in the 55 percentile of the Public Fund - Real Estate group for the quarter and in the 77 percentile for the last year.
- Real Estate's portfolio underperformed the NCREIF Total Index by 0.15% for the quarter and underperformed the NCREIF Total Index for the year by 1.75%.

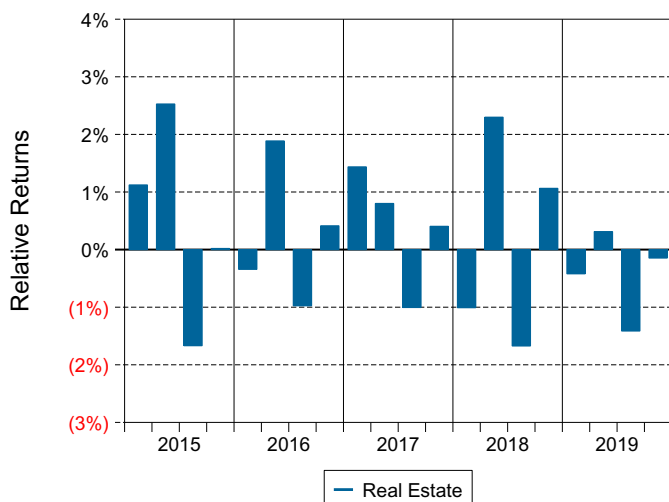
### Quarterly Asset Growth

Beginning Market Value	\$100,308,478
Net New Investment	\$-1,022,968
Investment Gains/(Losses)	\$1,404,622
Ending Market Value	\$100,690,131

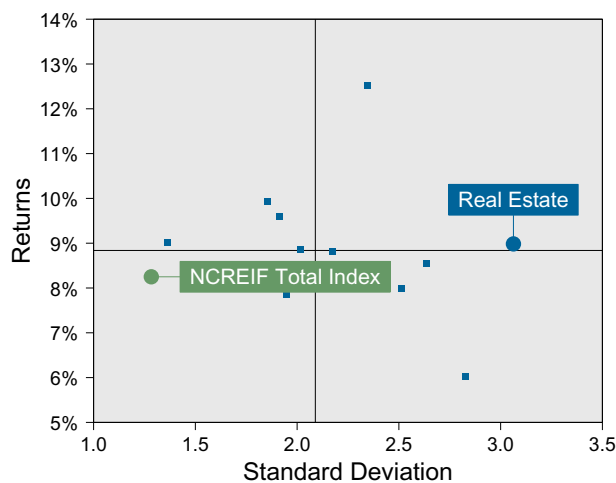
### Performance vs Public Fund - Real Estate (Gross)



### Relative Return vs NCREIF Total Index



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



## Invesco Core Real Estate Period Ended December 31, 2019

### 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.

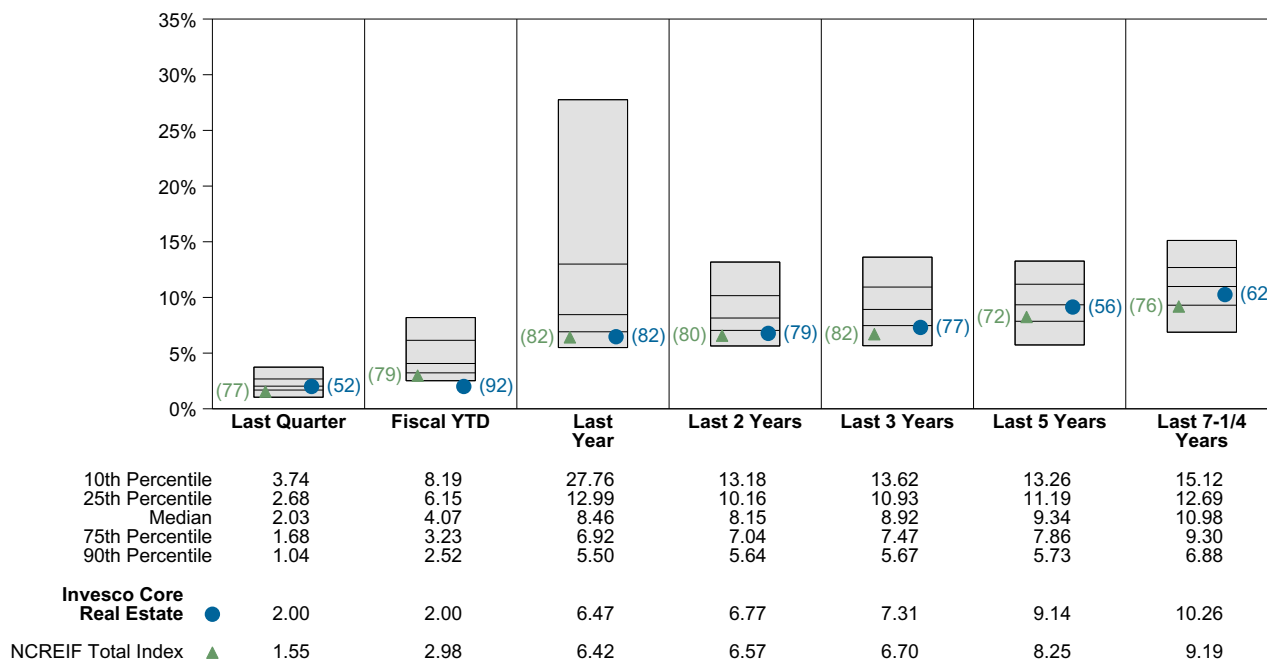
### Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a 2.00% return for the quarter placing it in the 52 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 82 percentile for the last year.
- Invesco Core Real Estate's portfolio outperformed the NCREIF Total Index by 0.46% for the quarter and outperformed the NCREIF Total Index for the year by 0.05%.

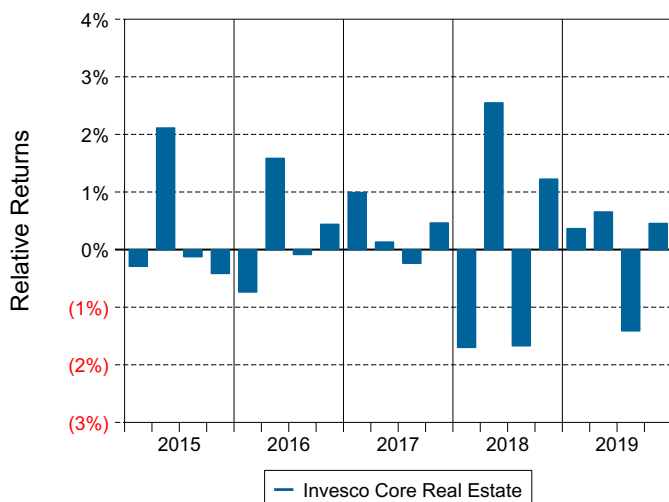
### Quarterly Asset Growth

Beginning Market Value	\$52,174,679
Net New Investment	\$-464,040
Investment Gains/(Losses)	\$1,043,219
Ending Market Value	\$52,753,858

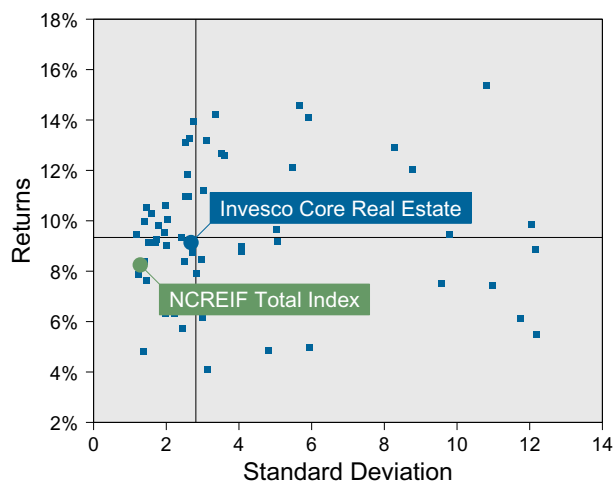
### Performance vs Callan Total Domestic Real Estate DB (Gross)



### Relative Return vs NCREIF Total Index



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





## JP Morgan Real Estate Period Ended December 31, 2019

### Investment Philosophy

The J.P. Morgan U.S. Real Estate Income and Growth Fund seeks to construct and opportunistically manage a portfolio of core direct real estate investments, complemented by other real estate and real estate-related assets. The Fund pursues a broadly diversified absolute-return strategy and pursues all property investments on an opportunistic basis. The majority of the Fund's investments will be in direct core properties in the office, industrial, retail and residential sectors.

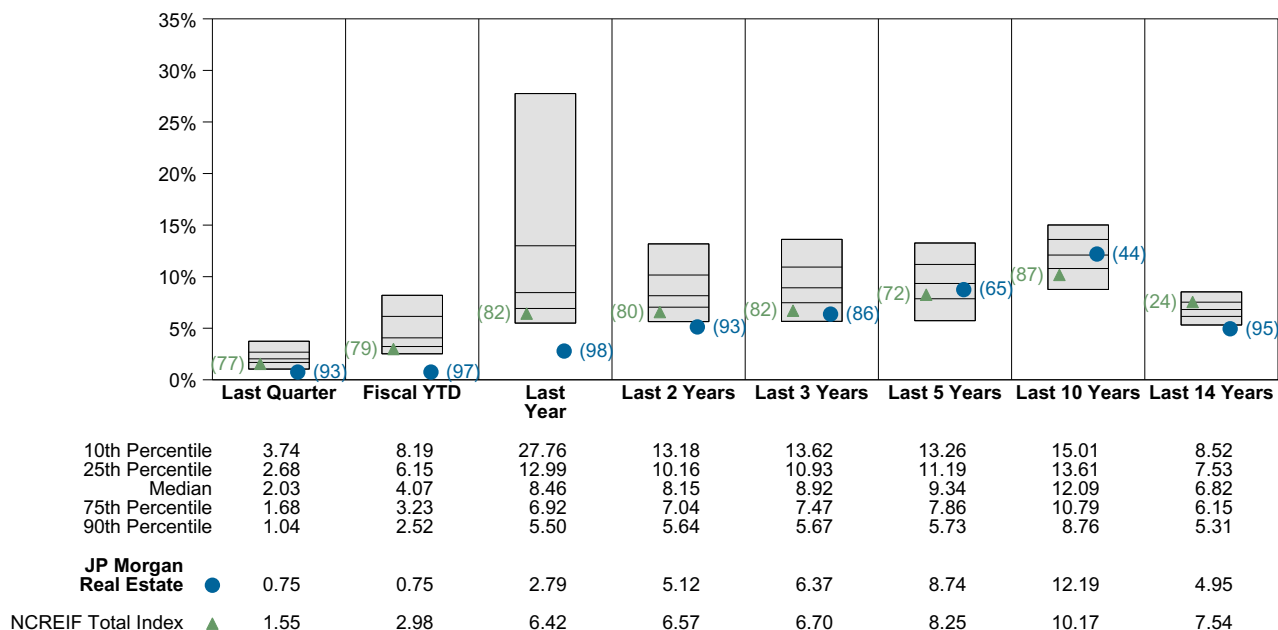
### Quarterly Summary and Highlights

- JP Morgan Real Estate's portfolio posted a 0.75% return for the quarter placing it in the 93 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 98 percentile for the last year.
- JP Morgan Real Estate's portfolio underperformed the NCREIF Total Index by 0.80% for the quarter and underperformed the NCREIF Total Index for the year by 3.63%.

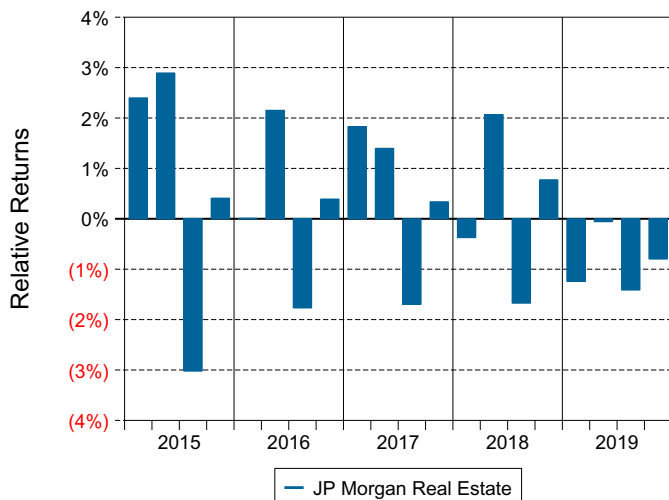
### Quarterly Asset Growth

Beginning Market Value	\$48,133,799
Net New Investment	\$-558,929
Investment Gains/(Losses)	\$361,402
Ending Market Value	\$47,936,273

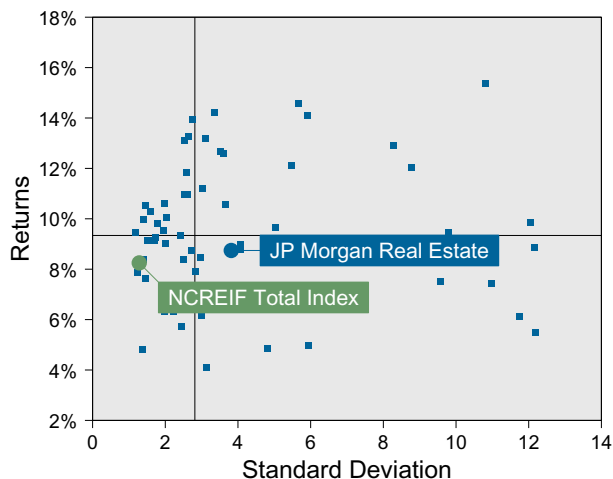
### Performance vs Callan Total Domestic Real Estate DB (Gross)



### Relative Return vs NCREIF Total Index



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



## Western Asset TIPS Period Ended December 31, 2019

### Investment Philosophy

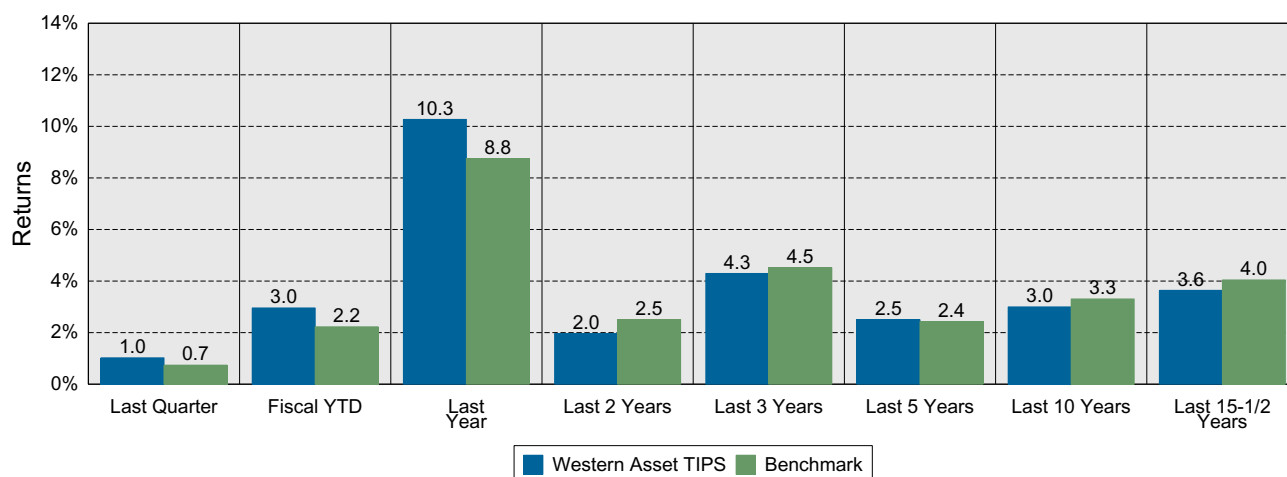
The Western Asset US TIPS Full Discretion strategy is an inflation-protected strategy that aims to maximize total return and add value through duration and curve positioning, sector allocation, and security selection, while approximating benchmark risk. The strategy invests in a diversified portfolio using higher-yielding inflation-protected instruments with a bias toward Treasury Inflation-Protected Securities (TIPS). Opportunistic investments include high-yield, emerging markets, non-dollar securities, commodities and bank loans that may also be employed using derivatives. **Benchmark: Bloomberg US TIPS through 12/31/2009; Bloomberg Global Inflation-Linked through 10/31/2018; Bloomberg US Govt Inflation Linked Bond Index thereafter.**

### Quarterly Summary and Highlights

- Western Asset TIPS's portfolio outperformed the Benchmark by 0.28% for the quarter and outperformed the Benchmark for the year by 1.52%.

### Quarterly Asset Growth

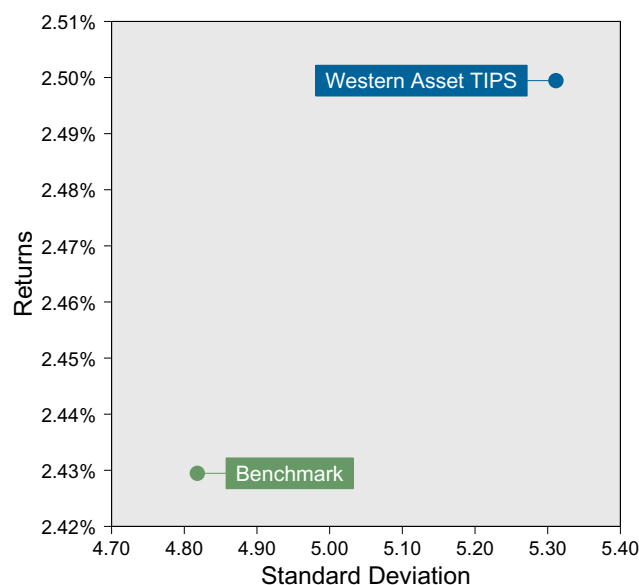
Beginning Market Value	\$137,843,258
Net New Investment	\$3,959,106
Investment Gains/(Losses)	\$1,406,926
Ending Market Value	\$143,209,289



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## Eastern Timber Opportunities Period Ended December 31, 2019

### Investment Philosophy

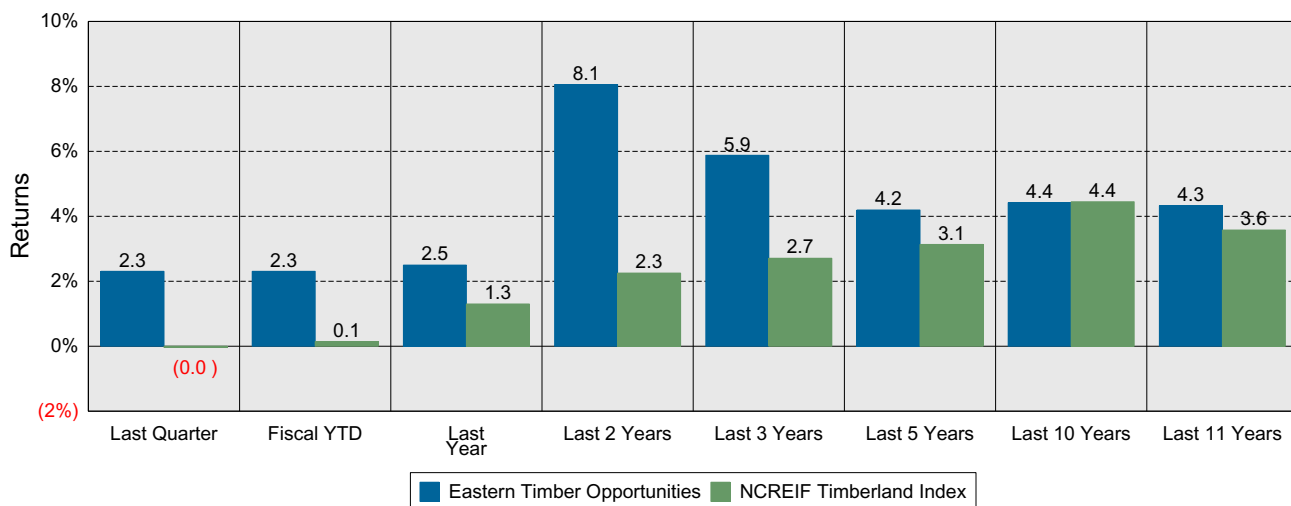
The investment objective of the Eastern Timberland Opportunities fund is to provide competitive timberland investment returns from Eastern US timberland investments by pursuing management strategies to increase timber production and land values through the investment term. TIR will maximize timber values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

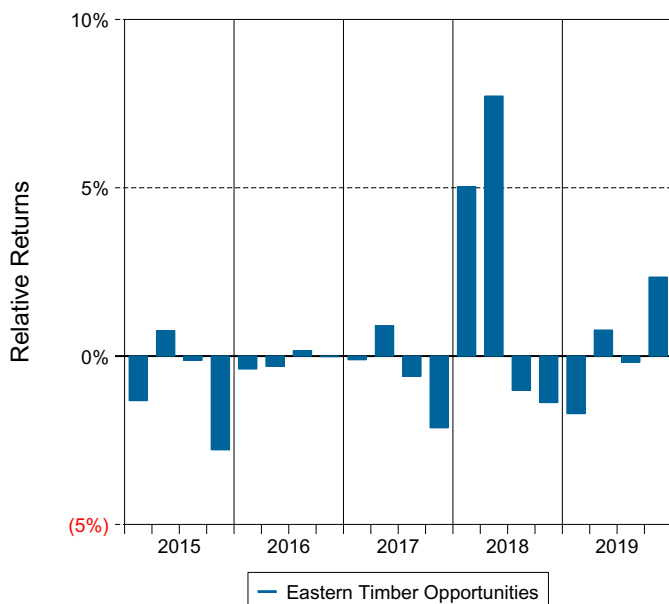
- Eastern Timber Opportunities's portfolio outperformed the NCREIF Timberland Index by 2.35% for the quarter and outperformed the NCREIF Timberland Index for the year by 1.20%.

### Quarterly Asset Growth

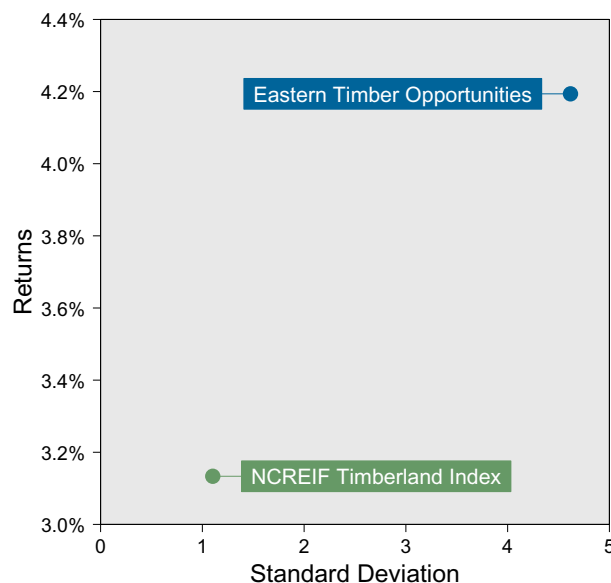
Beginning Market Value	\$53,916,906
Net New Investment	\$0
Investment Gains/(Losses)	\$1,243,482
Ending Market Value	\$55,160,388



### Relative Return vs NCREIF Timberland Index



### Annualized Five Year Risk vs Return



# JP Morgan Infrastructure

## Period Ended December 31, 2019

### Investment Philosophy

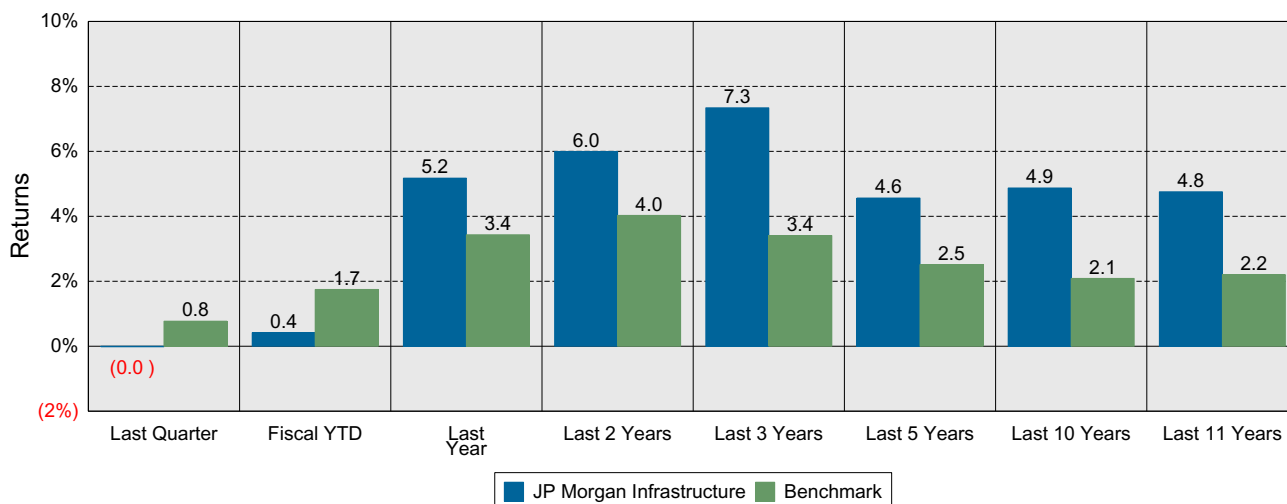
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

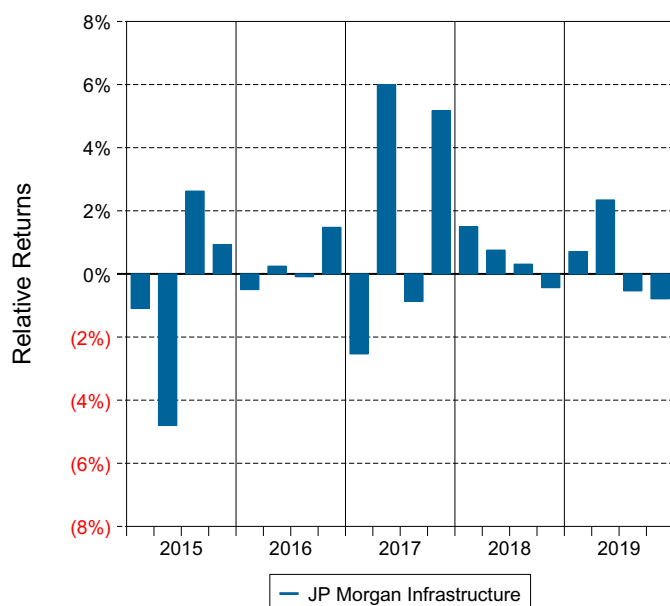
- JP Morgan Infrastructure's portfolio underperformed the Benchmark by 0.79% for the quarter and outperformed the Benchmark for the year by 1.74%.

### Quarterly Asset Growth

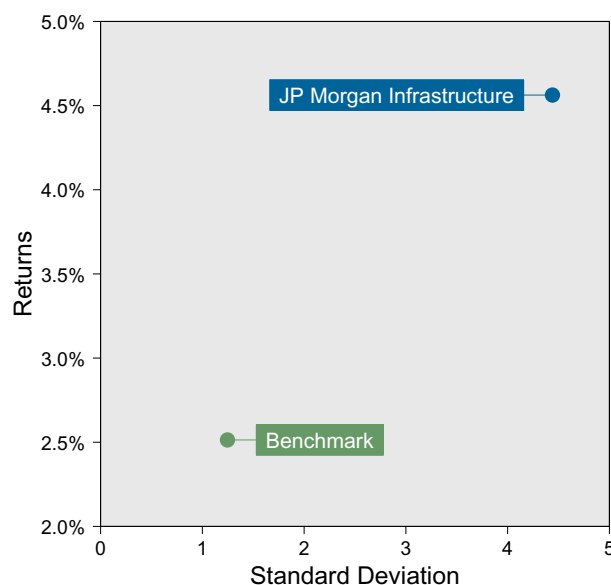
Beginning Market Value	\$43,587,391
Net New Investment	\$-1,250,253
Investment Gains/(Losses)	\$-7,374
Ending Market Value	\$42,329,763



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## Grosvenor Cust. Infrastructure Period Ended December 31, 2019

### Investment Philosophy

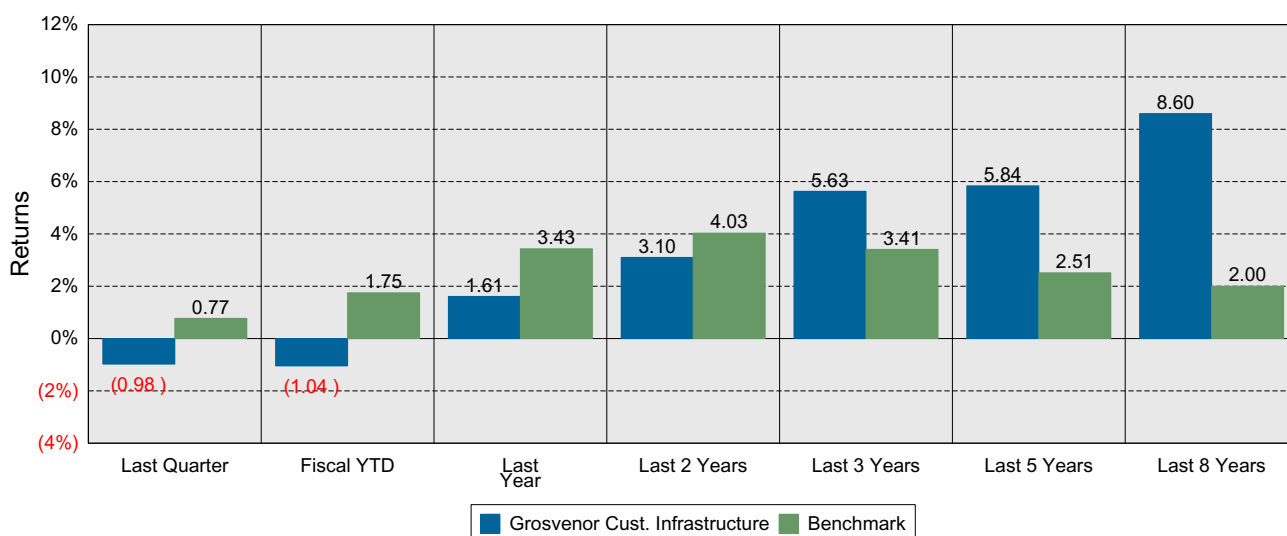
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

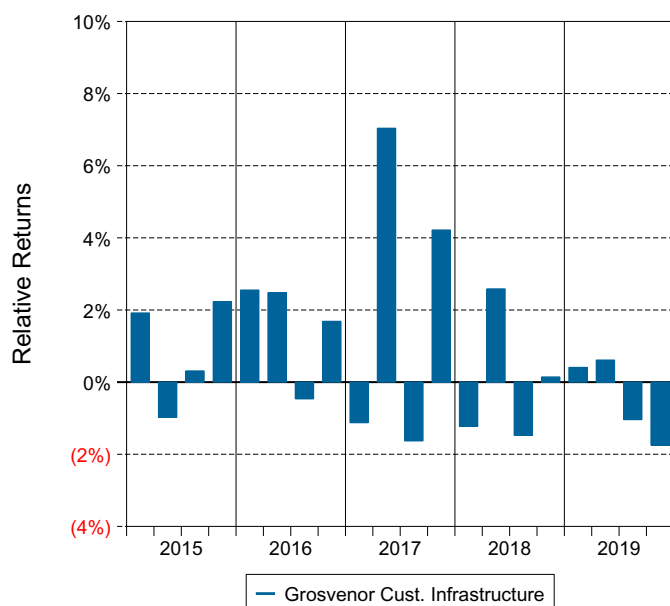
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.75% for the quarter and underperformed the Benchmark for the year by 1.82%.

### Quarterly Asset Growth

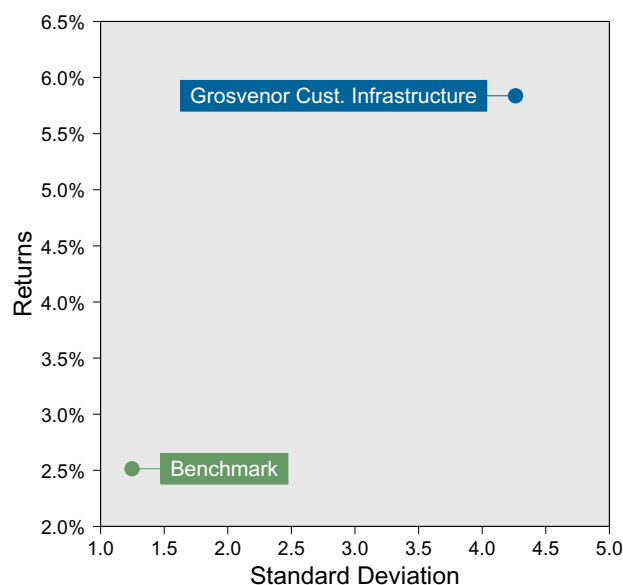
Beginning Market Value	\$12,691,132
Net New Investment	\$-862,362
Investment Gains/(Losses)	\$-123,866
Ending Market Value	\$11,704,903



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## Short Term Fixed Income Period Ended December 31, 2019

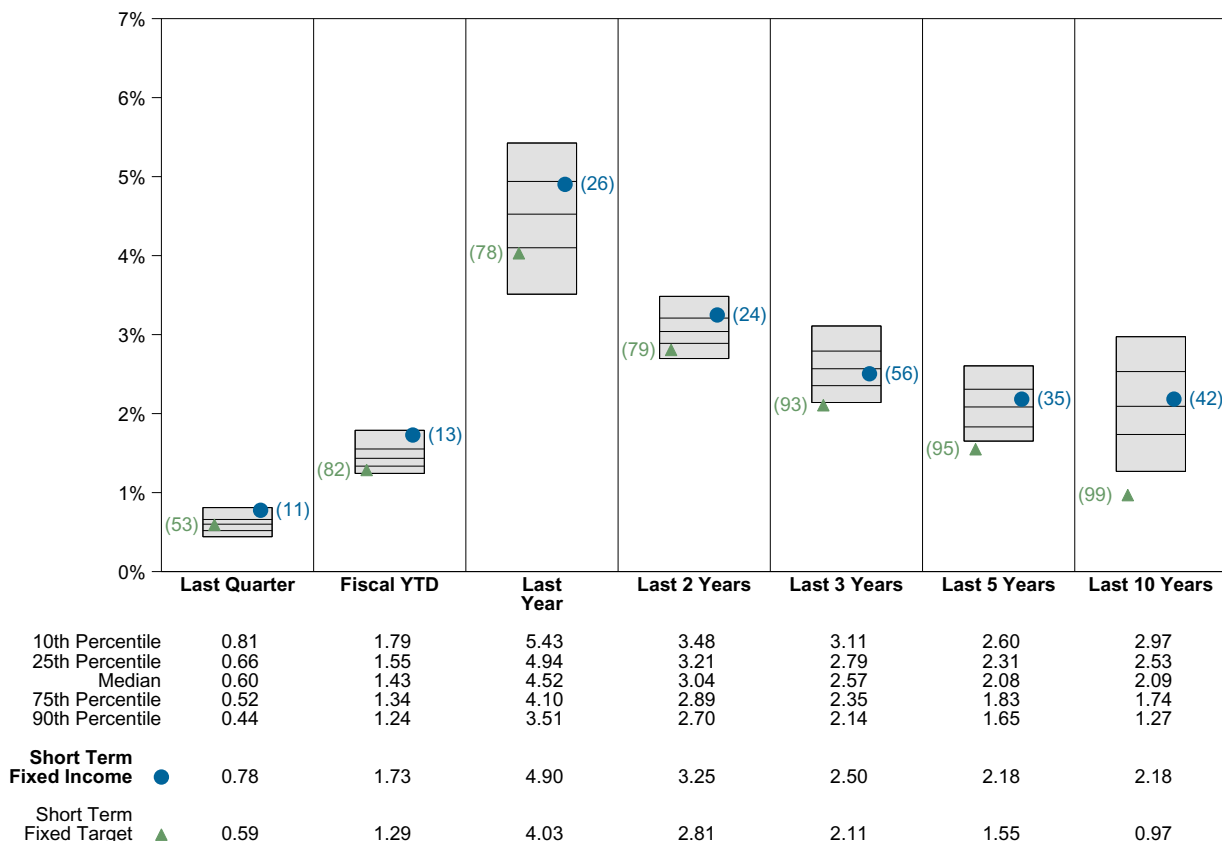
### Quarterly Summary and Highlights

- Short Term Fixed Income's portfolio posted a 0.78% return for the quarter placing it in the 11 percentile of the Callan Short Term Fixed Income group for the quarter and in the 26 percentile for the last year.
- Short Term Fixed Income's portfolio outperformed the Short Term Fixed Target by 0.18% for the quarter and outperformed the Short Term Fixed Target for the year by 0.87%.

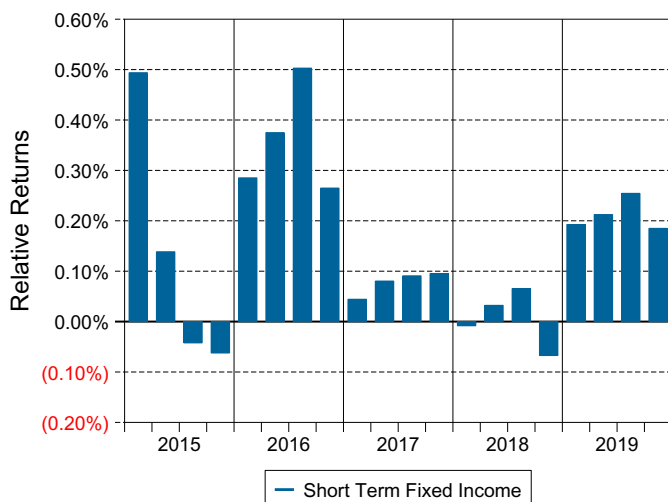
### Quarterly Asset Growth

Beginning Market Value	\$691,956,708
Net New Investment	\$-55,953
Investment Gains/(Losses)	\$5,372,791
Ending Market Value	\$697,273,545

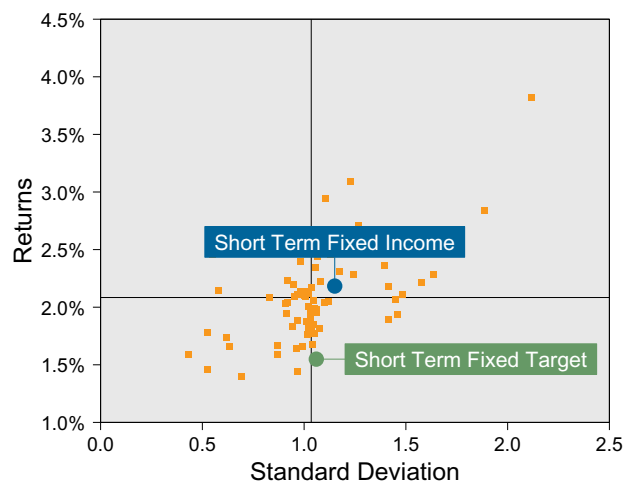
### Performance vs Callan Short Term Fixed Income (Gross)



### Relative Return vs Short Term Fixed Target



### Callan Short Term Fixed Income (Gross) Annualized Five Year Risk vs Return



## Barings Active Short Duration Period Ended December 31, 2019

### Investment Philosophy

Babson's Active Short Duration team employs a total return management style, which dynamically adjusts duration in response to actual yield curve conditions. The approach seeks to take advantage of a variety of relative value opportunities, predominantly in the investment grade universe, which should provide steady income and potential capital appreciation. Value is also added through security selection. The end result is a high quality/short duration portfolio that has historically captured most of the returns of moderate duration bonds.

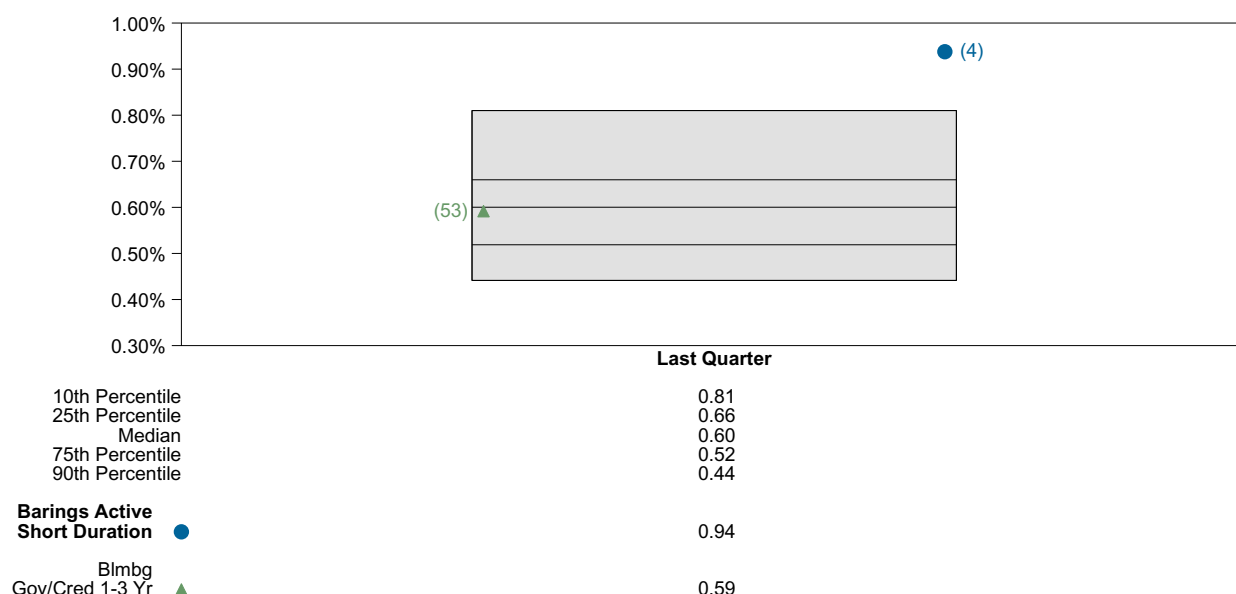
### Quarterly Summary and Highlights

- Barings Active Short Duration's portfolio posted a 0.94% return for the quarter placing it in the 4 percentile of the Callan Short Term Fixed Income group for the quarter.
- Barings Active Short Duration's portfolio outperformed the Blmbg Gov/Cred 1-3 Yr by 0.35% for the quarter.

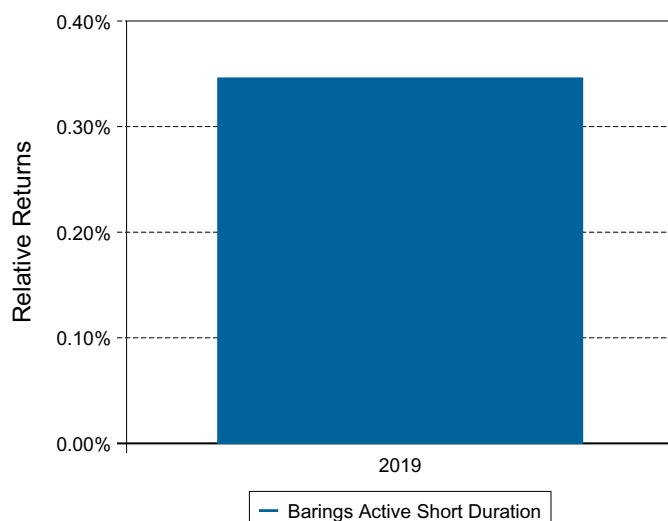
### Quarterly Asset Growth

Beginning Market Value	\$347,002,899
Net New Investment	\$-55,953
Investment Gains/(Losses)	\$3,253,680
Ending Market Value	\$350,200,626

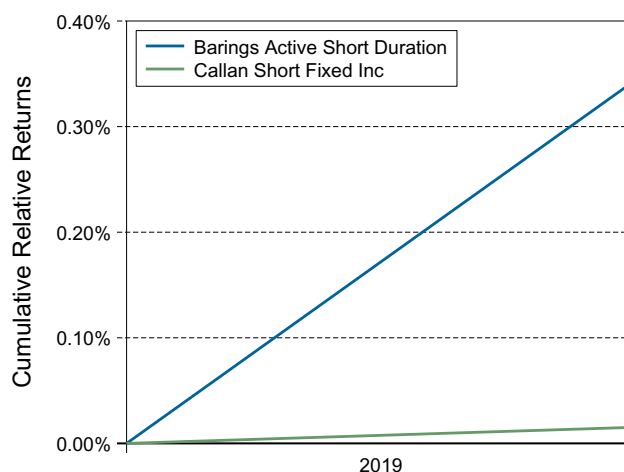
### Performance vs Callan Short Term Fixed Income (Gross)



### Relative Return vs Blmbg Gov/Cred 1-3 Yr



### Cumulative Returns vs Blmbg Gov/Cred 1-3 Yr



## JP Morgan Short Term Bonds Period Ended December 31, 2019

### 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.

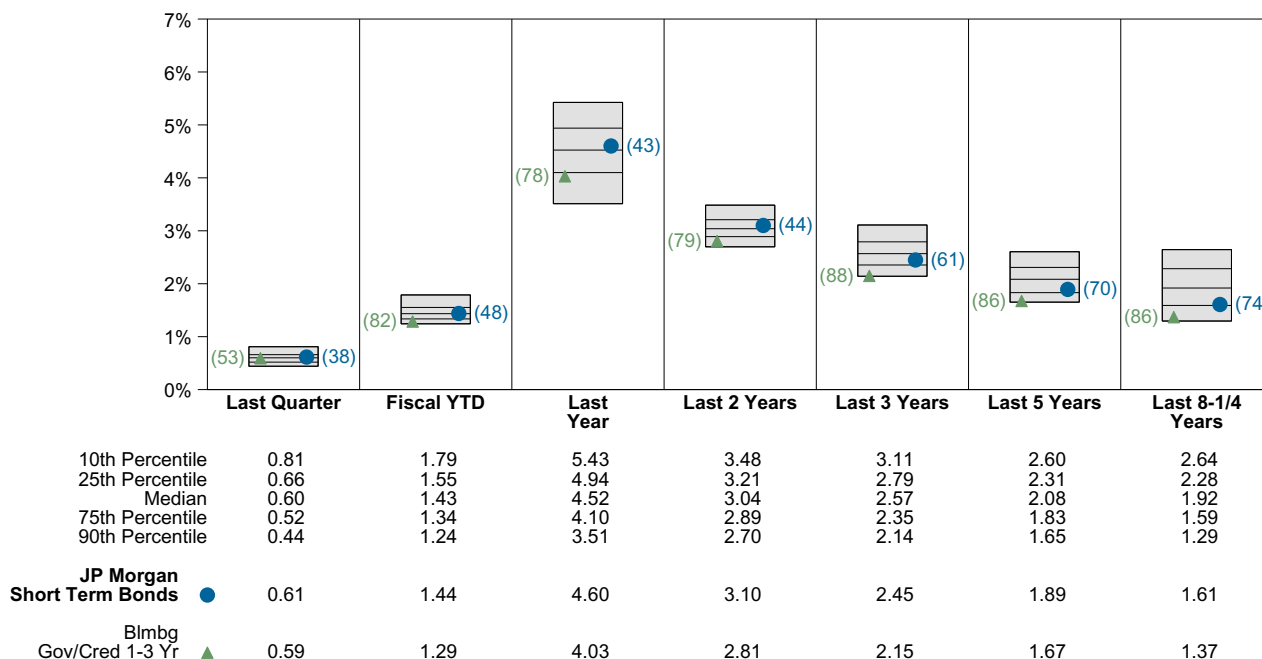
### Quarterly Summary and Highlights

- JP Morgan Short Term Bonds's portfolio posted a 0.61% return for the quarter placing it in the 38 percentile of the Callan Short Term Fixed Income group for the quarter and in the 43 percentile for the last year.
- JP Morgan Short Term Bonds's portfolio outperformed the Blmbg Gov/Cred 1-3 Yr by 0.02% for the quarter and outperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.57%.

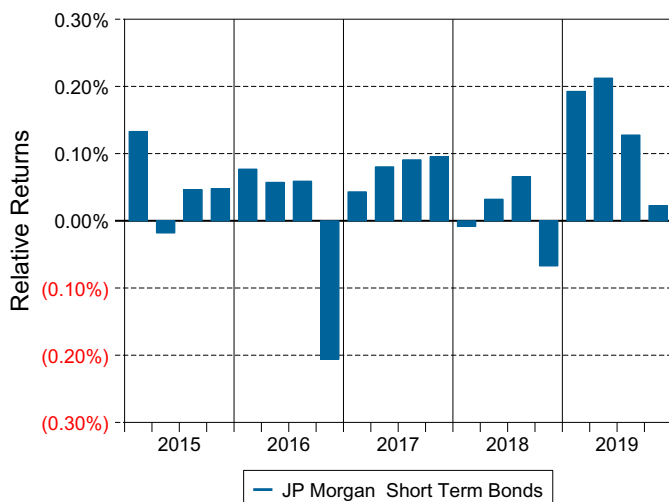
### Quarterly Asset Growth

Beginning Market Value	\$344,953,808
Net New Investment	\$0
Investment Gains/(Losses)	\$2,119,111
Ending Market Value	\$347,072,919

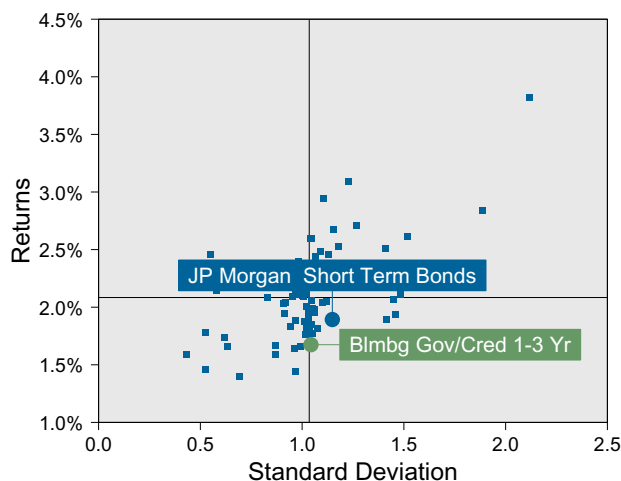
### Performance vs Callan Short Term Fixed Income (Gross)



### Relative Return vs Blmbg Gov/Cred 1-3 Yr



### Callan Short Term Fixed Income (Gross) Annualized Five Year Risk vs Return





## Research and Educational Programs

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog "Perspectives." For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

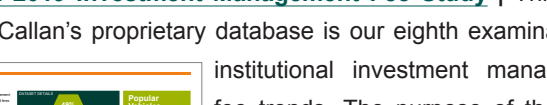
## New Research from Callan's Experts

## Long-Dated Private Equity Funds: More Illiquidity Please?

In this paper, Ashley DeLuce of Callan's Private Equity Consulting Group analyzes long-dated private equity funds, which have terms of 15 years or more (some even have no fixed term), and tend to focus on stable, mature businesses that may not fit a traditional private equity investment profile. Although these companies may not generate the outsized internal rates of return associated with traditional private equity investments, they tend to have stronger downside protection. In evaluating a potential long-dated fund investment, investors need to be wary of the strategy's increased illiquidity and how it can impact annual commitment pacing.

## Callan 2019 Investment Management Fee Study | This study

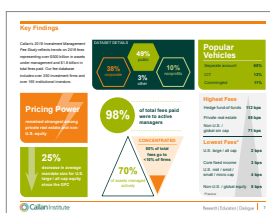
using Callan's proprietary database is our eighth examination of institutional investment management fee trends. The purpose of the study is to provide a detailed analysis on fee levels and trends across multiple asset classes and mandate sizes, for both active and passive management.



The infographic is divided into several sections:

- Key Findings:**
  - Callan's 2019 Investment Management Fee Study examined 10,000 investment management mandates with assets under management of \$100 million or more.
  - Investment management fees averaged 1.02% of assets under management.
  - Investment management fees averaged 0.50% of assets under management.
- Pricing Power:**
  - Investment management fees increased 0.01% from 2018 to 2019.
  - Investment management fees increased 0.01% from 2018 to 2019.
  - Investment management fees increased 0.01% from 2018 to 2019.
- Asset Class Breakdown:**
  - Equity: 40%
  - Fixed Income: 35%
  - Alternatives: 15%
  - Multi-Asset: 10%
- Popular Vehicles:**
  - Equity: 40%
  - Fixed Income: 35%
  - Alternatives: 15%
  - Multi-Asset: 10%
- Original Fees:**
  - Equity: 40%
  - Fixed Income: 35%
  - Alternatives: 15%
  - Multi-Asset: 10%
- Current Fees:**
  - Equity: 40%
  - Fixed Income: 35%
  - Alternatives: 15%
  - Multi-Asset: 10%
- Fee Trends:**
  - Equity: 40%
  - Fixed Income: 35%
  - Alternatives: 15%
  - Multi-Asset: 10%

Callan's 2019 Investment Management Fee Study examined 10,000 investment management mandates with assets under management of \$100 million or more. Investment management fees averaged 1.02% of assets under management. Investment management fees averaged 0.50% of assets under management.



**Gold: Real Asset, Risk Mitigator, or Pet Rock?** | In this *Hedge*

*Fund Monitor, Jim McKee* reviews the history of gold as a form of money, the reasons behind the recent renaissance in gold, the potential roles of gold for institutional investors, and the alternative approaches to invest in gold-related themes.

For some institutional investors, gold can play a useful role in diversifying risk or enhancing returns. For others, particularly those with higher risk tolerances and longer time horizons, a strategic gold allocation has about as much purpose as a Pet Rock.



## Quarterly Periodicals

**Private Equity Trends, 3Q19** | This newsletter from Callan's Private Equity Consulting Group provides a high-level summary of private equity activity in the quarter through all the investment stages, from fundraising to exits, as well as long-term performance data.

## Monthly Periodic Table of Investment Returns, November 2019

| A regular update to Callan's Periodic Table covering the major public equity and fixed income asset classes.

**Active vs. Passive Report, 3Q19** | This series of charts compares active managers alongside relevant benchmarks over the long term.

**Market Pulse Flipbook, 3Q19** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data for U.S. and global ex-U.S. equities and fixed income, alternatives, and defined contribution plans.

**Capital Market Review, 3Q19** | This newsletter provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

**Hedge Fund Quarterly, 3Q19** | Callan's Jim McKee of our Hedge Fund Research Group provides commentary on developments for hedge funds and multi-asset class (MAC) strategies.

## Real Estate Indicators: Too Hot to Touch or Cool Enough to

**Handle?** | Callan's Real Assets Consulting Group identifies seven indicators that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

**Real Assets Reporter, 3Q19** | This newsletter from our experts offers Callan's data and insights on real estate and other real asset investment topics.

## Events

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

Please mark your calendar and look forward to upcoming invitations:

### 2020 June Regional Workshops

*June 23 – San Francisco*

*June 25 – Chicago*

### 2020 October Regional Workshops

*October 27 – Atlanta*

*October 29 – Portland*

Please also keep your eye out for upcoming Webinars in 2020! We will be sending invitations to register for these events and will also have registration links on our website at [www.callan.com/webinarsupcoming](http://www.callan.com/webinarsupcoming).

**For more information about events, please contact Barb Gerraty: 415-274-3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## Education: By the Numbers

**50+**

Unique pieces of research the Institute generates each year

**525**

Attendees (on average) of the Institute's annual National Conference

**3,700**

Total attendees of the "Callan College" since 1994



**"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 dialogue to raise the bar across the industry."**

Greg Allen, CEO and Chief Research Officer

## Education

Through the "Callan College," the Callan Institute offers educational sessions for industry professionals involved in the investment decision-making process. It was founded in 1994 to provide both clients and non-clients with basic- to intermediate-level instruction.

### Introduction to Investments for Institutional Investors

*April 21-22, 2020 – San Francisco*

*July 21-22, 2020 – Chicago*

*October 13-14, 2020 – Chicago*

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Learn more at [www.callan.com/callan-college-intro-2/](http://www.callan.com/callan-college-intro-2/)

### Alternative Investments for Institutional Investors

*June 16, 2020 – San Francisco*

*November 3, 2020 – Chicago*

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Learn from some of Callan's senior consultants and experts, including the head of Alternatives Consulting Pete Keliuotis. The session will cover private equity, private credit, hedge funds, real estate, and real assets; why invest in alternatives; risk/return characteristics and liquidity; designing and implementing an alternatives program; and trends and case studies.

Tuition is \$2,000 per person and includes instruction, all materials, and breakfast and lunch with the instructors.

Learn more at: <https://www.callan.com/callan-college-alternatives-2/>

## 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 an 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
Aberdeen Standard Investments
Acadian Asset Management LLC
AEGON USA Investment Management Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
BrightSphere Investment Group
Brown Brothers Harriman & Company
Cadence Capital Management
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management LLC
Ceredex Value Advisers

Manager Name
Camplain Investment Partners, LLC
Chartwell Investment Partners
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
Davy Asset Management Limited
DePrince, Race & Zollo, Inc.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
Financial Engines
First Hawaiian Bank Wealth Management Division
First State Investments
FIS Group, Inc.
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
Fuller & Thaler Asset Management, Inc.
GAM (USA) Inc.
Glenmeade Investment Management, LP
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs
Green Square Capital Advisors, LLC

Manager Name
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Impax Asset Management Limited
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Intercontinental Real Estate Corporation
Invesco
Investec Asset Management North America, Inc.
Iridian Asset Management LLC
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jenson Investment Management
JO Hambro Capital Management Limited
Jobs Peak Advisors
John Hancock Investment Management Services, LLC
Kayne Anderson Rudnick Investment Management, LLC
KeyCorp
Lazard Asset Management
L & B Realty Advisors LLP
Legal & General Investment Management America
Lincoln Advisors
Lincoln National Corporation
Logan Circle Partners, L.P.
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
MacKenzie Investments
Macquarie Investment Management (MIM)
Manulife Investment Management
Marathon Asset Management, L.P.
McKinley Capital Management, LLC
Mellon
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
Mountain Pacific Advisors, LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management

Manager Name
Nuveen
OFI Global Asset Management
Osterweis Capital Management, LLC
Owl Rock
P/E Investments
Pacific Investment Management Company
Parametric Portfolio Associates LLC
Pathway Capital Management
Peregrine Capital Management, LLC.
Perkins Investment Management
PFM Asset Management LLC
PGIM Fixed Income
PineBridge Investments
PNC Capital Advisors, LLC
Polen Capital Management
Principal Global Investors
Putnam Investments, LLC
QMA LLC
RBC Global Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller Capital Management
Rothschild & Co. Asset Management US
Russell Investments
Schroder Investment Management North America Inc.
Segall Bryant & Hamill
Smith Graham & Co. Investment Advisors, L.P.
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Strategic Global Advisors
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
Vulcan Value Partners, LLC
Wasatch Global Investors
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Fargo Asset Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC

December 31, 2019



## North Dakota State Investment Board Legacy Fund

Investment Measurement Service  
Quarterly Review

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## Market Overview

### Active Management vs Index Returns

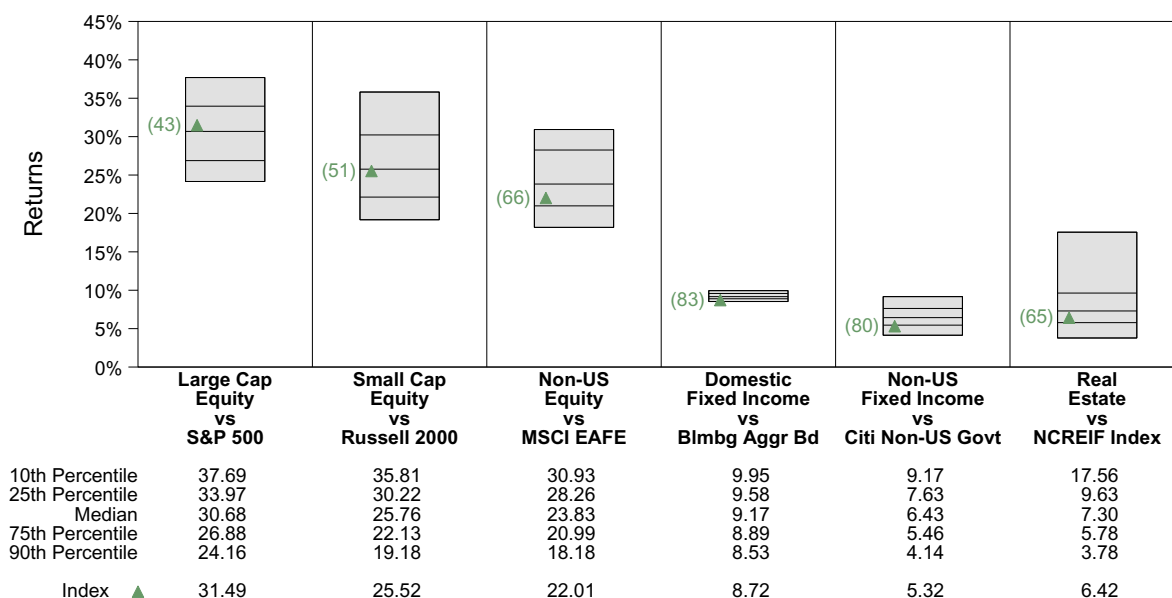
#### Market Overview

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

#### Range of Separate Account Manager Returns by Asset Class One Quarter Ended December 31, 2019



#### Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2019





## Anticipated Recession Fails to Materialize

### ECONOMY

**2** GDP grew at 2.1% for the fourth quarter, unemployment fell to a generational low, wages and incomes showed robust gains, inflation remained contained, and, of course, stock and bond markets soared in 2019. So much for the most anticipated recession in history.

## Strong Gains for Year Amid Equity Boom

### INSTITUTIONAL INVESTORS

**4** Corporate DB plans gained the most among plan types in 2019. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%, exceeding a 60% stocks-40% bonds benchmark.

## Jump in Quarter Fuels Notable Year

### EQUITY

**6** The fourth quarter closed out a near-historic year for equity markets; the S&P 500 ended 2019 up 31.5%—enough to become the second-strongest year of the decade. Global equity markets bounced back in the fourth quarter as geopolitical uncertainties abated.

## Yields Are Mixed but Returns Are Strong

### FIXED INCOME

**8** Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations. Major U.S. bond indices showed strong gains for the year. Global fixed income markets also posted broad increases for the quarter and the year.

## Real Estate Healthy; Real Assets Gain

### REAL ESTATE/REAL ASSETS

**10** U.S. core real estate returns continued to moderate; Industrial outperformed other property types. REITs gained but lagged global equities. Asian and European markets were affected by geopolitical tensions. Real assets returns were strong in the quarter.

## Most Activity Fell Moderately in 2019

### PRIVATE EQUITY

**12** Except for fundraising, all private equity activity measures declined moderately in 2019. The drops largely owe to record-level prices throughout the year. But overall private equity and capital market liquidity remained healthy and transaction volume is brisk.

## Party Like It's 1999 ... or Not

### HEDGE FUNDS/MACs

**13** While stocks celebrated the end of 2019, hedge funds were the party's designated driver. Portfolios exposed to EM and long-short equity topped those emphasizing equity market neutral or macro strategies. MAC returns varied depending on net market exposures.

## DC Index Gains, Tops Age 45 TDF

### DEFINED CONTRIBUTION

**15** The Callan DC Index™ rose 0.6% in the third quarter, compared to 0.5% for the Age 45 Target Date Fund. The Index's growth in balances of 0.1% was much smaller than the first and second quarters. Asset allocation to TDFs hit 29.6%, the lowest since the first quarter of 2017.

## Broad Market Quarterly Returns

U.S. Equity  
Russell 3000

**9.1%**

Global ex-U.S. Equity  
MSCI ACWI ex USA

**8.9%**

U.S. Fixed Income  
Bloomberg Barclays Agg

**0.2%**

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

**0.7%**

# The Most Anticipated Recession in History Fails to Materialize

ECONOMY | Jay Kloepfer

Real GDP grew at 2.1% for the fourth quarter of 2019, capping off a year pretty much no one anticipated for growth or the capital markets. GDP growth for the year came in at 2.3%, unemployment fell to yet another generational low, wages and incomes continued to show robust gains, and yet inflation remained contained. The Fed paused on its path to interest rate normalization in January 2019, cut rates twice in the third quarter and once more in October, before declaring its work done. The trade war dominated headlines and jerked around market sentiment, but the actual impact on U.S. GDP growth has been held below a cumulative hit of 1 percentage point.

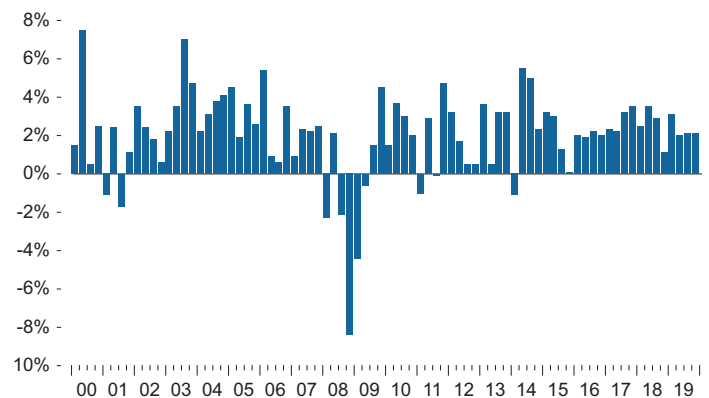
Stock markets around the globe rallied during 2019, with the **S&P 500** climbing 31.5%, **MSCI ACWI ex-USA** up 21.5%, and **MSCI Emerging Markets** up 18.4%. The most eye-opening development of the year was the bond market rally following the Fed pivot in policy, driving a gain of 8.7% for the **Bloomberg Barclays US Aggregate Bond Index** and almost 20% for the **Long Government/Credit Index**. So much for the most anticipated recession in history.

Many analysts have begun touting that we already touched bottom in the global growth cycle during the fourth quarter of 2019. The “growth recession” was over before we knew it was fully upon us. The consensus short-term outlook is far more bullish than it was a year ago, although the medium-term outlook (three to five years) contains more concerns. Persistent low inflation gives central banks the cover to continue supportive monetary policy, but this support could evaporate if inflation is resurgent. The volume of corporate credit has exploded, and much of it is lower rated; any sign of real weakness in the economy raises concerns about quality and spread widening. Finally, it is entirely unclear how the current negative interest rate environment across much of Europe evolves.

Buried in the GDP numbers are several developments that support continuing growth in the U.S. economy, at least over the shorter term. First, the 2.1% increase in the fourth quarter

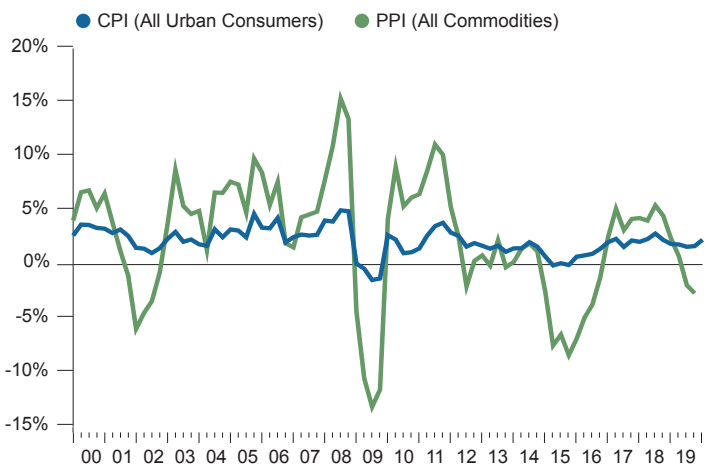
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

includes the drag on growth from the GM strike and the slow-down in Boeing 737 Max production.

Second, inventory accumulation slowed substantially in the fourth quarter, another drag on growth. The end of the GM strike, the eventual resumption of 737 Max production, and the rebuilding of inventories all point toward sustained growth in the U.S. in 2020.

Consumer spending remains strong, fueled by buoyant consumer confidence, a strong labor market, a generational low unemployment rate (3.5%), and personal income growth of just under 4%. The reversal in interest rates will find its way into lower debt costs for consumers, and household debt levels are far below pre-GFC levels. The Fed lowered the federal funds rate by 75 basis points, and given expectations for three rate INCREASES a year ago, rates now sit 150 bps lower than expected. This Fed pivot has greatly benefited interest-sensitive sectors of the economy and consumer balance sheets.

One more support for GDP growth has been a reduction in imports (which are a negative in the GDP calculation), and a corresponding increase in net exports. Imports surged in advance of the application of tariffs early in 2019. U.S. suppliers appear to have quickly found alternatives to China, increasing our imports from Asian countries ex-China to offset some of the decline in imports from China.

Not only did the recession not appear in 2019, near-term recession risks are abating. The announced phase one trade deal between the U.S. and China will suspend some tariffs and address issues of intellectual property and forced transfers of technology. The largest impact is on investor and business sentiment. World GDP growth slowed from 4% at the end of 2017 to below 3% by mid-2019, as a collection of negative shocks (Brexit, trade, geopolitical uncertainty) and lagged effects of monetary tightening hit some of the world's largest economies. The drag from these shocks has faded and monetary policy has loosened around the world. The emerging markets have already embarked on a cyclical upturn, and the developed

### The Long-Term View

Index	2019 4th Qtr	Periods Ended 12/31/19			
		Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	9.1	31.0	11.2	13.4	10.2
S&P 500	9.1	31.5	11.7	13.6	10.2
Russell 2000	9.9	25.5	8.2	11.8	9.4
Global ex-U.S. Equity					
MSCI EAFE	8.2	22.0	5.7	5.5	5.2
MSCI ACWI ex USA	8.9	21.5	5.5	5.0	--
MSCI Emerging Markets	11.8	18.4	5.6	3.7	--
MSCI ACWI ex USA Small Cap	11.0	22.4	7.0	6.9	5.9
Fixed Income					
Bloomberg Barclays Agg	0.2	8.7	3.0	3.7	5.6
90-Day T-Bill	0.5	2.3	1.1	0.6	2.5
Bloomberg Barclays Long G/C	-1.1	19.6	5.4	7.6	7.9
Bloomberg Barclays GI Agg ex US	0.7	5.1	1.6	1.5	4.4
Real Estate					
NCREIF Property	1.5	6.4	8.2	10.2	9.3
FTSE Nareit Equity	-0.8	26.0	7.2	11.9	10.6
Alternatives					
CS Hedge Fund	2.4	9.3	2.6	4.3	7.8
Cambridge PE*	0.9	9.5	12.4	13.8	15.3
Bloomberg Commodity	4.4	16.8	13.8	11.6	15.5
Gold Spot Price	3.4	18.9	5.2	3.3	5.7
Inflation – CPI-U	0.1	2.3	1.8	1.8	2.2

\*Data for most recent period lags by a quarter. Data as of Sept. 30, 2019.  
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Refinitiv/Cambridge

economies are about to join them, led by the U.S. The fourth quarter of 2019 likely marked the trough in global GDP growth. The recovery in trade should help lead the way, after the collapse in trade volumes in late 2018.

### Recent Quarterly Economic Indicators

	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18	1Q18
Employment Cost–Total Compensation Growth	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%	2.7%
Nonfarm Business–Productivity Growth	0.0%*	-0.2%	2.5%	3.5%	0.1%	1.2%	1.8%	0.9%
GDP Growth	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%	2.5%
Manufacturing Capacity Utilization	74.9%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%	76.1%
Consumer Sentiment Index (1966=100)	97.2	93.8	98.4	94.5	98.2	98.1	98.3	98.9

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

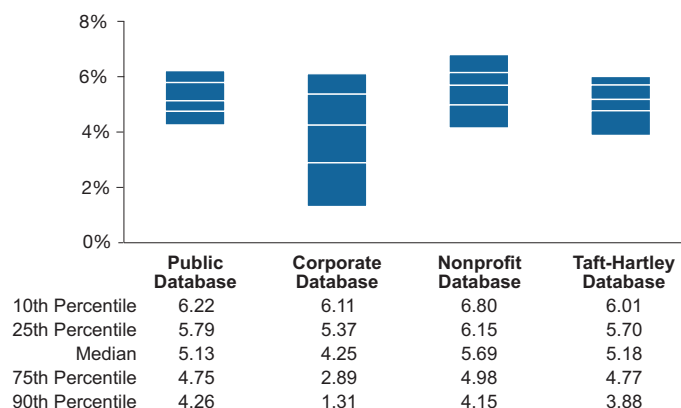
\* Estimated figure provided by IHS Markit

# Steady Returns Continue Amid Equities Rebound

## INSTITUTIONAL INVESTORS

- A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio increased 22.2% over the one year ended Dec. 31, 2019, driven by the stock market's huge gains and exceptionally strong returns from bonds. All broad institutional investor groups underperformed this benchmark.
- U.S. equity markets continued their pattern of outperforming global ex-U.S. equity, a pattern that has persisted since 2018.
- Corporate defined benefit (DB) plans gained the most among plan types over the one-year period. Public DB plans trailed all investor types.
- Over most longer time periods, Taft-Hartley plans have been the top performer. Over the last 20 years, public DB plans topped the performance list, but all plan types rose in a narrowly bound range between 6.0%-6.1%. In that time period, all plan types exceeded the stocks-bonds benchmark.
- In the current market environment, institutional investors are focused on reevaluating the purpose and implementation of all diversifiers, including real assets, hedge funds and liquid alternatives, fixed income, and private markets.

### Quarterly Returns, Callan Database Groups



Source: Callan

- Return enhancement remains a top priority for public and corporate DB plans and nonprofits. Corporate DB plans also see funding status as a top priority. DC plans see fees as the top priority.
- Public DB plans are also concerned about their high risk exposures but resist de-risking when their shorter-horizon projected return on assets (ROA) is lower than their long-term ROA.

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

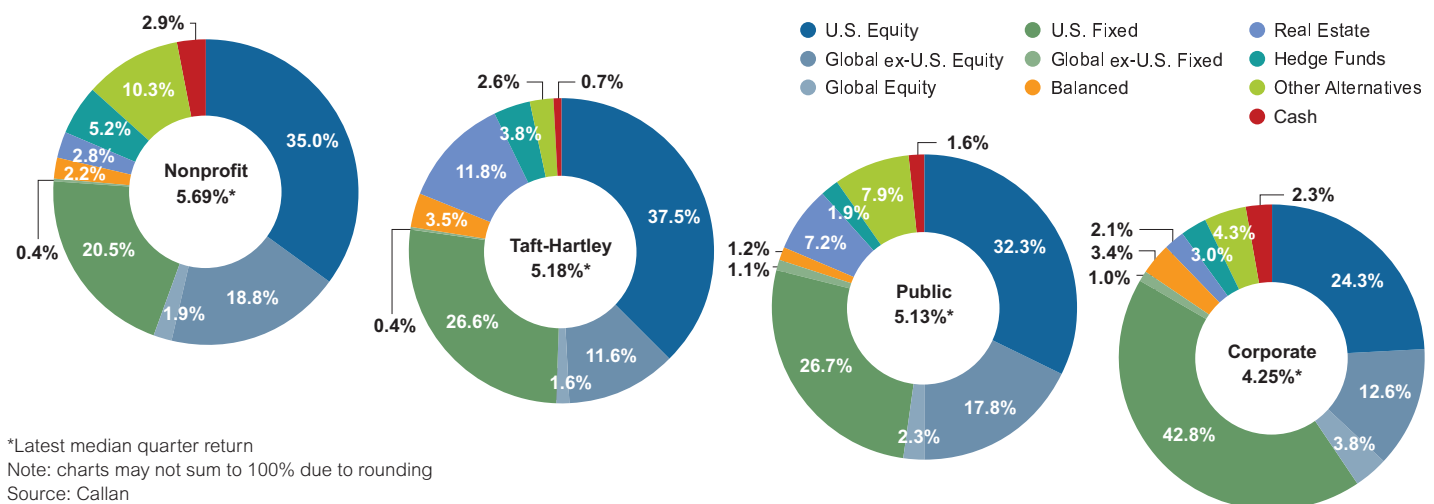
Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	5.13	17.75	9.40	7.11	8.25	6.73
Corporate Database	4.25	19.87	9.55	6.96	8.40	6.80
Nonprofit Database	5.69	18.81	9.38	6.81	8.12	6.58
Taft-Hartley Database	5.18	18.00	9.36	7.50	8.66	6.59
All Institutional Investors	5.19	18.53	9.41	7.08	8.35	6.67
Large (>\$1 billion)	4.79	17.56	9.59	7.26	8.59	6.88
Medium (\$100mm - \$1bn)	5.20	18.55	9.42	7.15	8.35	6.58
Small (<\$100 million)	5.38	18.93	9.29	6.91	8.16	6.55

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, nonprofits, 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.

- Callan has seen a surge in asset-liability studies, with substantial changes to many policy portfolios.
- Institutional investors are also taking steps to de-risk (less equity) and looking at risk mitigation (diversification and implementation), but there is some dissatisfaction with hedge funds, risk premia, and absolute return strategies. Some DB plans have terminated their hedge fund exposures; thus far, nonprofits have largely retained confidence in their hedge fund allocations.
- There are continued signs of interest in environmental, social, and governance (ESG) factors, with many public DB plans having had some discussions around the subject.
- Defined contribution (DC) plans are grappling with the implications of the SECURE Act (for Setting Every Community Up for Retirement Enhancement), whose sweeping nature means that the impact on policy cannot be underestimated within the retirement industry, since major changes (target date funds, auto features, etc.) were largely driven by previous regulatory and legislative catalysts.
- DC plans are also continuing to examine their default option, looking at the suitability of the current option in light of other alternatives both in the same asset class (often target date funds) but also in light of other options (e.g., managed accounts).
- In assessing the capital market environment, institutional investors are focused on how long the current expansion can continue. In evaluating specific investment alternatives, they face three key questions:
  1. Is value dead?
  2. Is there any hope for active management?
  3. Why should they bother with global ex-U.S. equities?
- For investors, the reversal in Fed policy has changed the landscape. It has created an added role for central banks, that of sustaining the expansion, which is a positive for equity ownership. The new yield environment and capital market assumptions going forward also create a challenge for investors, as they try to determine how to diversify their growth/equity risk without incurring a huge opportunity cost.
- In examining alternatives, institutional investors are looking at the most effective ways they can implement allocations in the private market. Is it worth the trouble to create a bespoke program implementation, and at what size and how much effort is required? This applies to private equity, real assets, absolute return, and diversifying assets.

### Average Asset Allocation, Callan Database Groups



# Equity

## U.S. Equities

The fourth quarter closed out a near-historic year for equity markets, in particular the S&P 500, which ended 2019 up 31.5%—enough to claim second place behind 2013 for the strongest year of the decade (during which large cap equities only saw one down year). Both Apple (+85%) and Microsoft (+54%) reached over \$1 trillion in market cap and accounted for 15% of the S&P 500's advance for the year. Investors globally were spurred by three interest rate cuts by the Fed, a potential U.S.-China trade armistice, continued low inflation, and some clarity around Brexit.

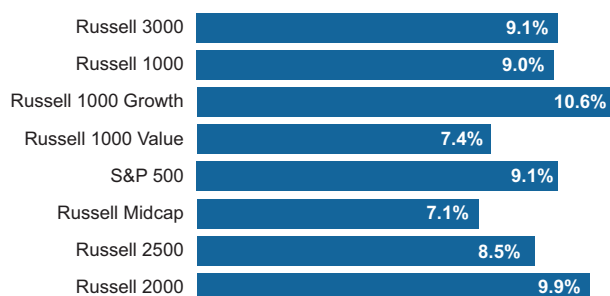
**Small cap vs. large cap** ► *Russell 2000: +9.9% | Russell 1000: +9.0%*

- Small cap trailed for most of 2019 but eclipsed large cap stocks in the fourth quarter due to notable contributions from the Health Care sector, where the biotech and pharmaceutical industries saw heightened new drug approvals and M&A activity during the quarter.
- Small growth outpaced small value for the quarter, the year, and the decade; the **Russell 2000 Growth Index** outpaced the **Russell 2000 Value Index** by 3% annualized over the past 10 years as the low interest rate environment favored growth stocks and challenged the Russell 2000 Value's heavy exposure to Financials.
- While small cap outpaced large cap in the fourth quarter, large cap stocks led for the third straight year, owing much to Tech (+50.3%) and Communication Services (+32.7%).

**Growth vs. Value** ► *Russell 1000 Growth: +10.6% | Russell 1000 Value: +7.4%*

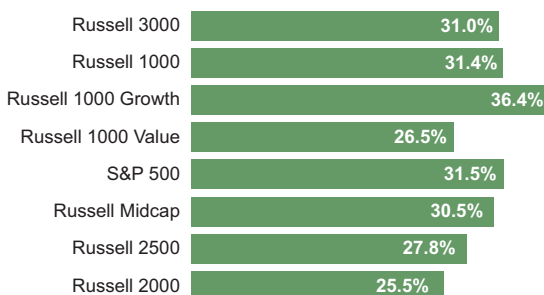
- Growth continued its dominance over value during the quarter, closing out a decade-long trend.
- Tech giants Facebook, Apple, Microsoft, and Alphabet/Google remained meaningful contributors for the quarter, with Health Care (+14.4%) also among the top sector performers.

## U.S. Equity: Quarterly Returns



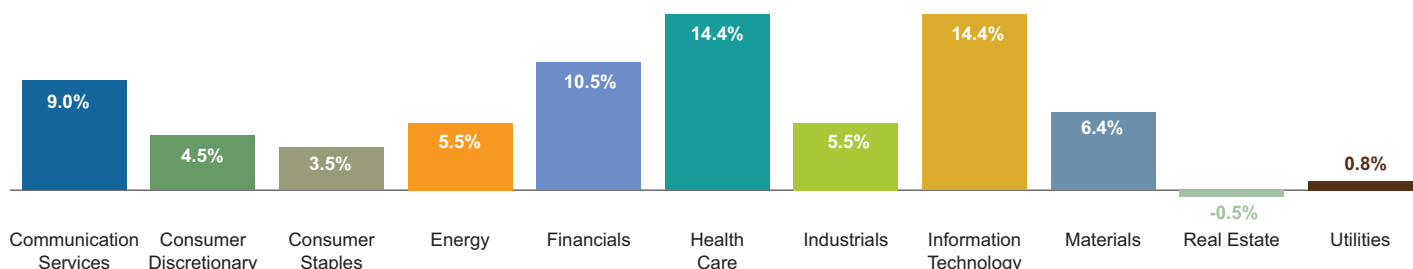
Sources: FTSE Russell and S&P Dow Jones Indices

## U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

## Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices



- The fourth quarter saw a rotation away from the more defensive sectors (e.g., Consumer Staples (+3.5%), Utilities (+0.8%), and Real Estate (-0.5%)) and into Cyclical, further supporting growth stocks.

### Global/Global ex-U.S. Equity

Global equity markets bounced back in the fourth quarter as uncertainties abated. De-escalation of the U.S.-China trade war coupled with some Brexit clarity boosted markets. With this backdrop, trade-related areas of the market led the rally.

**Global/Developed ex-U.S.** ► *MSCI EAFE: +8.2% | MSCI World ex USA: +8.0% | MSCI ACWI ex USA: +8.9% | MSCI Pacific ex Japan: +5.8% | MSCI Japan: +7.6%*

- British Prime Minister Boris Johnson gained command of the Parliament as a result of the Dec. 12 election, adding further clarity to Brexit and sparking the pound to its best quarterly results in a decade by rising 7.5% relative to the dollar.
- Accommodative policies such as a fiscal stimulus program and dovish monetary rhetoric continued to support the Japanese economy and its market.
- Despite GDP contraction of 3.2% and its first recession in a decade due to political protests, Hong Kong rose 7.3% as U.S.-China trade tensions improved.
- Every sector rose, led by Technology.

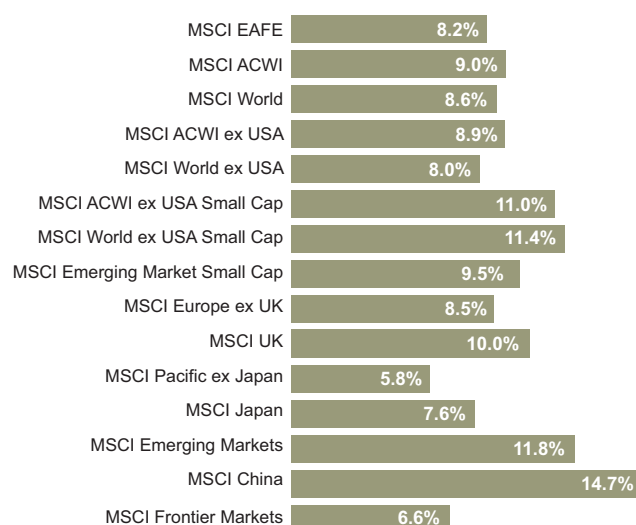
### Emerging Markets ► *MSCI Emerging Markets Index: +11.8%*

- Emerging markets were the best-performing among the global ex-U.S. markets as trade war uncertainty receded.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.
- Brazil posted a 14.2% gain, its best quarter since late 2017, emboldened by President Jair Bolsonaro's deregulation policies, the country's 1.2% GDP growth, and pending pension reform.
- Russia was the best-performing country in 2019 (+50.9%) and a top five performer in the quarter (+16.8%) as rising oil prices over the past year helped fuel sentiment.
- Every sector generated positive returns, led by Asian technology companies, given the "phase one" trade deal, chip demands for 5G, and growth in China.

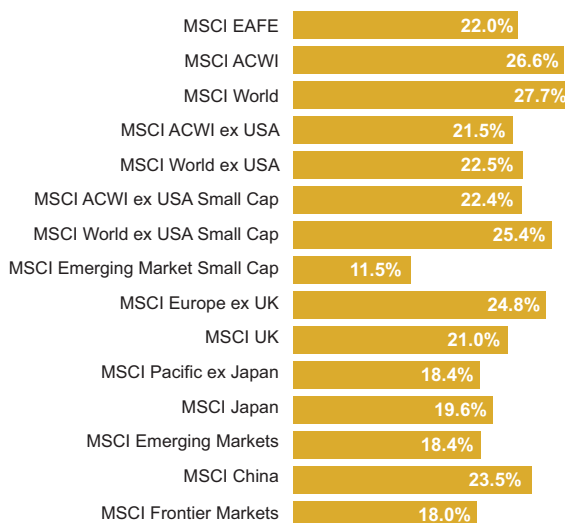
### Global ex-U.S. Small Cap ► *MSCI World ex USA Small Cap: +11.4% | MSCI EM Small Cap: +9.5%*

- The "risk-on" market environment triggered by the U.S.-China trade war de-escalation enabled small caps to outperform large caps.
- Additional Brexit clarity drove the U.K. as the top country performer (+19.4%) within developed ex-U.S.
- Argentina (+33.5%) and Brazil (+24.8%) were two of the top EM country performers as key appointments in the Argentinian government, and deregulation and pension reform in Brazil, boosted market sentiment.

### Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar)



### Global ex-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

## Fixed Income

The Federal Open Market Committee (FOMC) cut short-term interest rates by 25 basis points once in the fourth quarter to 1.50%-1.75%, citing weak business investment and export data, along with muted inflation. The overall economic backdrop remained strong supported by a solid labor market, which led to a pause in rate cuts at the most recent FOMC meeting. The FOMC indicated its current monetary policy stance is appropriate to sustain the economic expansion. The European Central Bank kept rates steady while continuing to purchase assets in the open market. Yield movement was mixed in the U.S. as short-term rates fell and long-term rates rose amid ongoing trade negotiations.

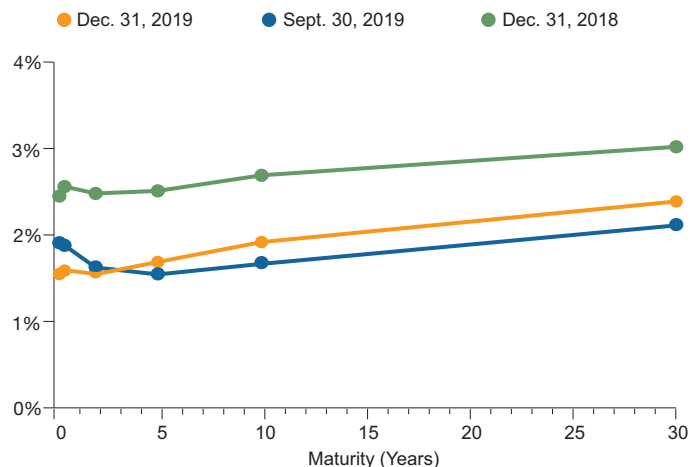
### Core Fixed Income ► *Bloomberg Barclays US Agg: +0.2%*

- Treasuries fell 0.8% as the Treasury yield curve steepened, with yields falling on the short end and rising modestly in the intermediate and long end of the curve on expectations of stronger economic growth.
- The spread between the 2-year and 10-year Treasury remained positive, ending the year at 34 bps.
- Long Treasuries fell 4.1% as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; the 10-year breakeven spread was 1.77% at quarter end, up from 1.53% as of Sept. 30.

### Investment-Grade Corporates ► *Bloomberg Barclays Corporate (Inv. Grade): +1.2%*

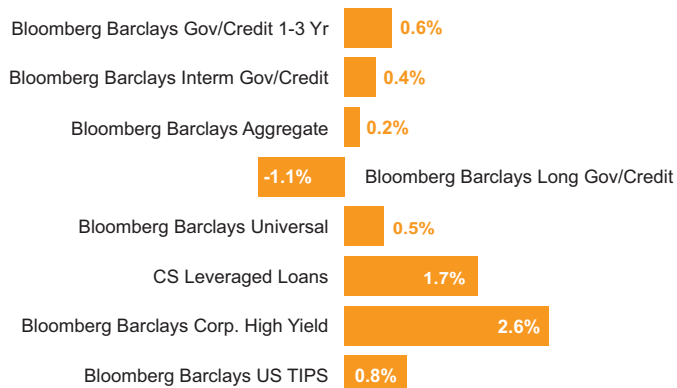
- Investment grade corporate credit spreads narrowed in the fourth quarter and posted the best results within the Bloomberg Barclays US Aggregate Bond Index amid a risk-on market environment; BBB-rated corporates (+1.7%) outperformed single A-rated or higher corporates (+0.7%), indicating investors' willingness to extend risk down the credit spectrum.
- Issuance in the corporate bond market was \$200 billion in the fourth quarter, which was \$8 billion lower than that from a year ago. Issuance was \$140 billion lower compared to

### U.S. Treasury Yield Curves



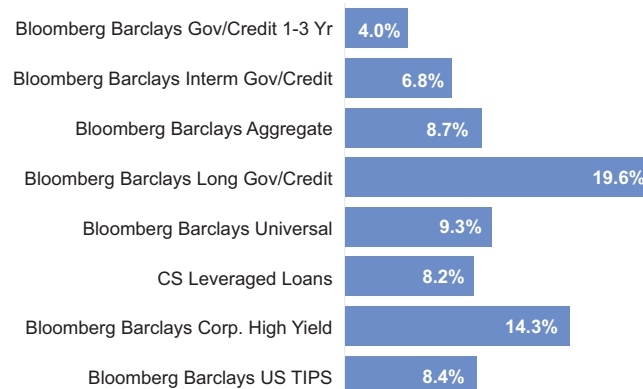
Source: Bloomberg

### 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



## FIXED INCOME (Continued)

the third quarter, as is typical toward year-end; demand remained strong amid the risk-on market tone as global investors continued their hunt for positive-yielding assets.

### High Yield ► *Bloomberg Barclays Corporate HY: +2.6%*

- CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvements in credit fundamentals.

### Leveraged Loans ► *CS Leveraged Loans: +1.7%*

- Bank loans, which have floating-rate coupons, underperformed high yield as investors shunned loans in favor of high yield bonds.
- CLO issuance remained consistent, providing technical support for the leveraged loan market.

### Global Fixed Income ► *Bloomberg Barclays Global Aggregate (unhedged): +0.5% | (hedged): -0.5%*

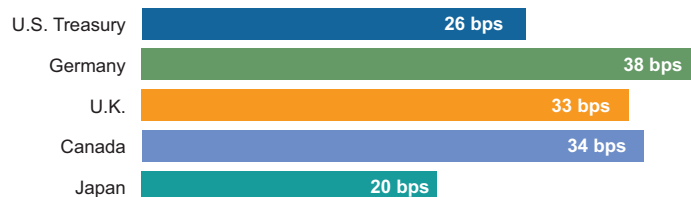
- Developed market sovereign bond yields rose modestly in the fourth quarter as global financial conditions improved, but ended lower on the year. The ECB kept the deposit rate steady at its December meeting; negative-yielding debt totaled less than \$12 trillion, down from \$17 trillion in the third quarter.
- The U.S. dollar declined in the fourth quarter versus the euro, Australian dollar, and British pound; however, it had a modest gain versus the Japanese yen.

### Emerging Market Debt (\$US) ► *JPM EMBI Global Diversified: +1.8% | (Local currency) ► JPM GBI-EM Global Diversified: +5.2%*

- Broadly, emerging market debt benefited from dovish global central banks and a risk-on environment.
- Within the dollar-denominated benchmark, which posted mixed results, Lebanon (-29.4%) was an outlier as the debt-to-GDP ratio continued to swell and anti-government protests persisted; Argentina rallied (+20.8%) to end the year down 23.6% as a new president was inaugurated.

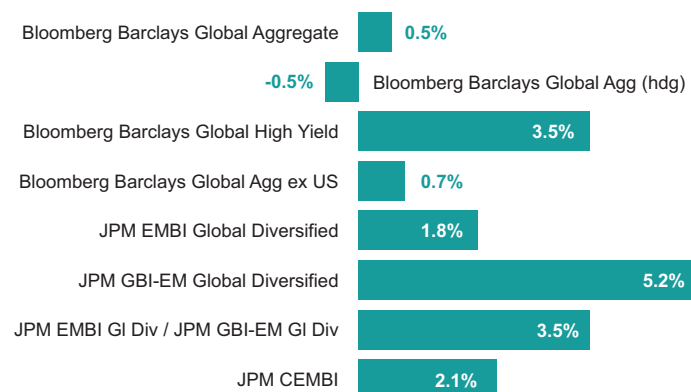
## Change in 10-Year Global Government Bond Yields

### 3Q19 to 4Q19



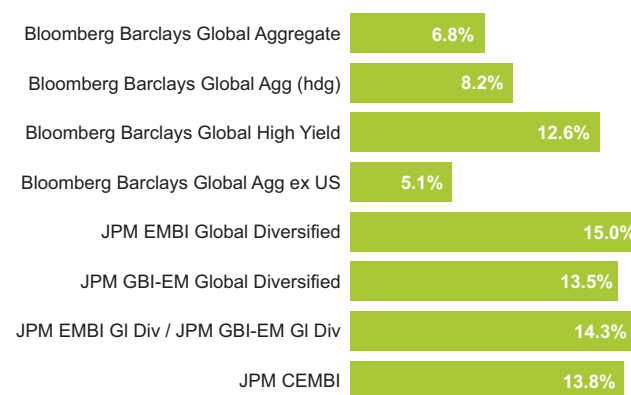
Source: Bloomberg Barclays

## Global ex-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

## Global ex-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Returns in the local debt benchmark were largely positive, with only Chile (-6.2%) and the Dominican Republic (-0.7%) declining. South Africa (+10.2%) and Russia (+10.0%) were top performers.

# Real Estate Stays the Course; Real Assets See Strong Gains

REAL ESTATE/REAL ASSETS | Munir Iman and David Welsch

## Returns continue to moderate

- U.S. core real estate returns continued to be driven by income, with limited appreciation this late in the cycle.
- Returns came from net operating income (NOI) growth rather than further capitalization rate compression.
- Industrial kept outperforming other property types.
- Retail continued to show signs of depreciation.
- Defensive posturing and disciplined asset acquisitions were critical.

## U.S. real estate fundamentals remain healthy

- Steady returns continued, driven by above inflation-level rent growth in many metro areas.
- Within the **NCREIF Property Index**, the vacancy rate for Industrial decreased; all other property types increased.
- NOI has been growing annually and is expected to be the primary return driver. Office, Apartment, and Industrial NOI growth have fallen slightly since the third quarter of 2019.

## Pricing remains expensive in the U.S.

- Transaction volumes increased and remained robust.
- Capitalization rates fell slightly; the market remained close to full valuations.

## Global equities outperform REITs

- Global REITs gained 2.0% in the fourth quarter compared to 9.1% for global equities (**MSCI ACWI IMI**).
- U.S. and global ex-U.S. REITs were trading just below NAV.
- Large cap stocks, especially those with higher debt levels, modestly outperformed.
- U.S. REITs lost 1.0% in the fourth quarter, lagging the S&P 500 Index, which rose 9.1%.

## Asia impacted by trade tensions

- U.S.-China trade talks and unrest in Hong Kong impacted real estate markets in the region. Managers continued to find attractive opportunities in some sectors of the market such

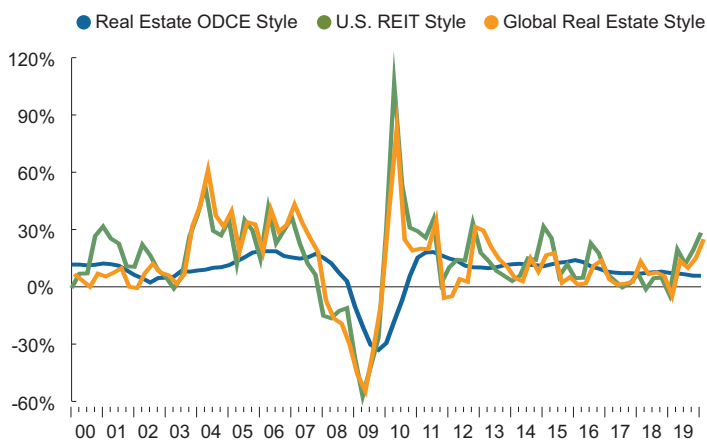
as restructuring opportunities, necessity-based retail, multi-family rental, and logistics.

- The number of open-end core funds operating in the Asia Pacific market, primarily focused on Japan, Australia, South Korea, and Singapore, increased over recent years and includes both sector-diversified and sector-specific (e.g., logistics) funds.
- India had its first successful REIT IPO in 2019, contributing to the institutionalization of the asset class in that country.

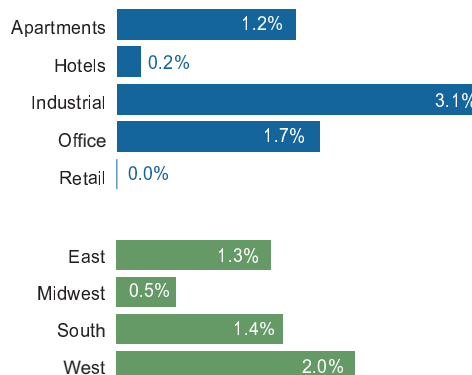
## Fundamentals remain strong in Europe's gateway markets

- Political uncertainty weighed on overall economic growth throughout Europe, but real estate fundamentals remain

## Rolling One-Year Returns



## Sector Quarterly Returns by Property Type and Region



Source: NCREIF

## REAL ESTATE/REAL ASSETS (Continued)

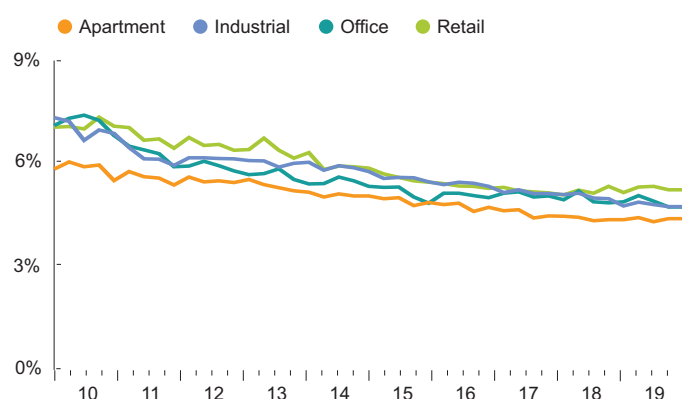
strong in key gateway markets given strong demand and the continued lack of new supply. Cap rates for prime real estate remained low, as real estate continued to be attractive as a result of low interest rates throughout the region.

- Yields between prime and secondary real estate remained wide, providing opportunities for investors targeting transitional assets.

### Infrastructure continues to mature

- Open end funds raised significant capital, and the universe of investible funds increased as the sector matured.
- The closed end fund market kept expanding, with additional offerings in infrastructure debt, emerging markets, and sector-specific areas (e.g., communications and renewables).
- Two mega funds raised in excess of \$20 billion in 2019.

### NCREIF Capitalization Rates by Property Type

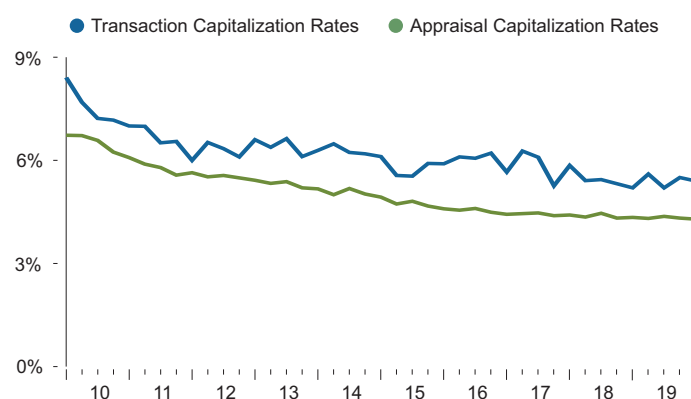


Source: NCREIF. Capitalization rates (net operating income / current market value (or sale price)) are appraisal-based.

### Real assets mostly see gains

- Real assets returns were mostly strong in the fourth quarter. The **Bloomberg Commodity Index** gained 4.4% and the **S&P GSCI Commodity Index** was up 8.3%.
- MLPs, however, declined (**Alerian MLP Index**: -4.1%).
- Spot gold prices were up 3.4%.
- The **DJ-Brookfield Infrastructure Index** rose 4.0%.
- REITs (**FTSE Nareit Equity Index**) modestly fell (-0.8%).
- The **Bloomberg Barclays TIPS Index** rose 0.8%.
- For the year, returns of these indices were positive with Infrastructure (+28.7%) and REITs (+26.0%) leading the pack. MLPs (+6.6%) posted the lowest full-year return.

### NCREIF Transaction and Appraisal Capitalization Rates



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

### Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
<b>Real Estate ODCE Style</b>	<b>1.6</b>	<b>5.8</b>	<b>5.8</b>	<b>6.8</b>	<b>8.4</b>	<b>10.5</b>	<b>6.8</b>
NFI-ODCE (value wt net)	1.3	4.4	4.4	6.1	8.0	10.4	6.7
NCREIF Property	1.5	6.4	6.4	6.7	8.2	10.2	8.3
NCREIF Farmland	1.0	3.4	3.4	5.4	6.7	10.9	13.3
NCREIF Timberland	0.0	1.3	1.3	2.7	3.1	4.4	6.6
<b>Public Real Estate</b>							
<b>Global Real Estate Style</b>	<b>2.8</b>	<b>24.9</b>	<b>24.9</b>	<b>10.3</b>	<b>7.2</b>	<b>9.9</b>	<b>7.2</b>
FTSE EPRA Nareit Developed	1.7	21.9	21.9	8.3	5.6	8.4	--
<b>Global ex-U.S. Real Estate Style</b>	<b>6.8</b>	<b>25.0</b>	<b>25.0</b>	<b>12.3</b>	<b>7.0</b>	<b>8.4</b>	<b>7.1</b>
FTSE EPRA Nareit Dev ex US	5.6	21.0	21.0	10.8	5.8	6.9	--
<b>U.S. REIT Style</b>	<b>0.0</b>	<b>28.3</b>	<b>28.3</b>	<b>9.2</b>	<b>7.9</b>	<b>12.6</b>	<b>8.6</b>
EPRA Nareit Equity REITs	-0.8	26.0	26.0	8.1	7.2	11.9	7.9

\*Returns less than one year are not annualized.  
Sources: Callan, FTSE Russell, NCREIF

# Cheap and Dear

## PRIVATE EQUITY | Gary Robertson

Global private equity fundraising has now surpassed 2007's famed peak of \$615 billion for two years in a row, with \$658 billion in 2018 and \$692 billion in 2019 (unless otherwise noted, PitchBook provided all private equity data cited). Private equity market liquidity and transactions were brisk in 2019, albeit with moderate declines relative to 2018. Venture capital prices also increased year-over-year.

In 2019, the \$692 billion raised by private equity partnerships holding final closes globally was across 924 partnerships. The dollar amount rose 5% from 2018, but the number of funds fell 1%. Fourth quarter final closes totaled \$188 billion, down 11% from the third quarter. The number of funds totaled 255, up 9%.

New buyout investments for 2019 totaled 7,555, down 15% from 2018. Dollar volume fell 24% to \$522 billion. The fourth quarter saw 1,642 new investments, a 17% decline, and dollar volume fell 13% to \$137 billion.

The year produced 28,868 rounds of new investment in venture capital (VC) companies, down 12% from 2018. The year's announced volume of \$257 billion was down 13%. The fourth quarter saw 5,301 new rounds, a 27% decline, and dollar volume fell 6% to \$59 billion.

Last year also saw 2,054 buyout-backed private M&A exits, down 28% from 2018, with proceeds of \$608 billion, down 13%. The

### Funds Closed 1/1/2019 to 12/31/2019

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	412	74,014	11%
Growth Equity	66	80,931	12%
Buyouts	256	381,368	55%
Mezzanine Debt	67	76,986	11%
Distressed	11	15,823	2%
Energy	9	9,724	1%
Secondary and Other	59	37,854	5%
Fund-of-funds	44	15,663	2%
<b>Totals</b>	<b>924</b>	<b>692,363</b>	<b>100%</b>

Source: PitchBook (Figures may not total due to rounding.)

fourth quarter had 420 private exits, down 23%, with proceeds of \$154 billion, down 35%. The year's 95 buyout-backed IPOs declined 41% from 2018, with proceeds of \$30 billion, down 32%. Fourth quarter buyout-backed IPOs were a bright spot, with 24 offerings, a jump of 41% from the third quarter, and \$7 billion of proceeds, up 17%.

Venture-backed M&A exits for the year totaled 1,554, down 8% from 2018. Announced dollar volume of \$122 billion was down 13%. The final quarter had 323 exits, down 19%, but announced value was up 22%. The year's 209 venture-backed IPOs fell 5% from 2018, with proceeds of \$42 billion, down 9%. The fourth quarter had 61 VC-backed offerings, an 11% rise, but the \$6 billion of proceeds dropped 33% from the third quarter.

### Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/2019\*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	-0.37	13.01	14.56	14.39	14.83	11.41	11.02
Growth Equity	1.32	12.76	16.02	12.77	14.03	13.41	13.13
All Buyouts	1.43	8.85	15.32	12.83	14.59	13.65	12.04
Mezzanine	0.87	6.02	10.86	10.00	10.85	10.58	8.60
Credit Opportunities	-0.36	0.61	7.73	5.49	10.47	9.28	9.90
Control Distressed	1.05	4.38	8.86	7.83	11.17	10.52	10.58
<b>All Private Equity</b>	<b>0.92</b>	<b>9.59</b>	<b>14.41</b>	<b>12.33</b>	<b>14.03</b>	<b>12.72</b>	<b>11.72</b>
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices

\*Most recent data available at time of publication

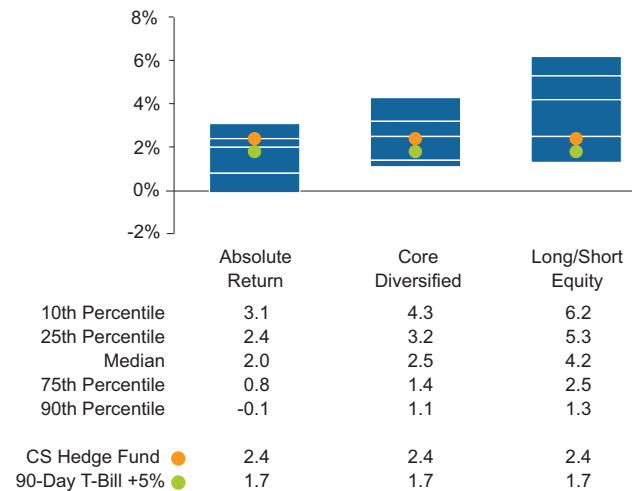
Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

# Party Like it's 1999 ... or Not

HEDGE FUNDS/MACs | Jim McKee

- Hedge funds participated more cautiously in the fourth quarter risk-on market, as expected.
- Portfolios with exposure to EM and long-short equity fared much better than those emphasizing equity market neutral or macro strategies.
- In the fourth quarter, *Long/Short Equity* (+5.1%) rode the wave of market beta, but alpha was more sporadic, leaving little extra risk-adjusted return. Tech and health care were positive outliers.
- *Equity Market Neutral* (+1.1%) barely clawed back its recent September loss, with stocks lacking dispersion to create trading opportunities.
- *Managed Futures* fell 2.6% as bond rates reversed their downward trend, but it finished 2019 with a solid 9% gain.
- *Distressed* (+1.3%) continued to struggle with chronically weak credits like energy, finishing 2019 up 1.4%, making it the **Credit Suisse Hedge Fund Index's** weakest performer for the year, just below Equity Market Neutral (+1.6%).

## Hedge Fund-of-Funds Style Group Returns



Sources: Callan, Credit Suisse, and Federal Reserve

## Callan Database Median and Index Returns\* for Periods Ended 12/31/19

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	2.69	7.10	4.32	3.08	4.49	4.49
Callan Absolute Return FOF Style	1.99	5.63	3.16	3.01	4.46	4.00
Callan Core Diversified FOF Style	2.47	6.70	3.59	2.41	4.25	4.16
Callan Long/Short Equity FOF Style	4.24	12.79	5.95	4.00	5.03	5.49
Credit Suisse Hedge Fund	2.44	9.31	4.27	2.65	4.25	4.75
CS Convertible Arbitrage	3.34	8.15	3.54	3.59	4.17	3.90
CS Distressed	1.27	1.39	2.29	1.52	4.23	4.86
CS Emerging Markets	7.75	13.38	5.98	4.41	4.62	6.06
CS Equity Market Neutral	1.06	1.58	1.53	0.31	1.37	-0.58
CS Event-Driven Multi	2.66	11.42	3.79	1.11	3.17	4.73
CS Fixed Income Arb	2.29	6.10	4.54	3.69	5.44	3.80
CS Global Macro	0.75	10.38	4.04	3.16	4.73	6.18
CS Long/Short Equity	5.06	12.17	6.66	3.94	5.15	5.58
CS Managed Futures	-2.59	9.01	1.67	-0.61	1.56	2.63
CS Multi-Strategy	1.28	7.25	4.27	4.21	6.02	5.76
CS Risk Arbitrage	1.98	4.89	3.59	3.40	2.72	3.68
HFRI Asset Wtd Composite	2.32	7.57	4.45	3.21	4.46	--
90-Day T-Bill + 5%	1.67	7.28	6.67	6.07	5.58	6.39

\*Gross of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

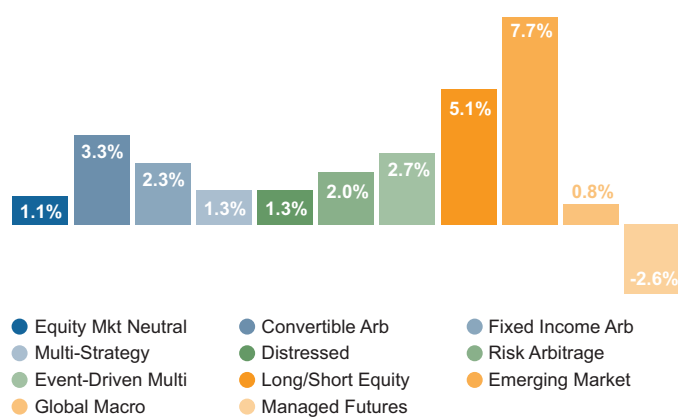
## Long Biased MACs rebounded; Risk Parity settled down

- MAC performance varied depending on net market exposures.
- Last quarter's 5.5% return of the 60% MSCI ACWI and 40% Bloomberg Aggregate benchmark was a tough hurdle to beat.
- Long-Biased MACs* benefited from their typically heavy equity exposure, particularly EM.
- HFR Risk Parity Index** targeting 10% volatility was moderately positive (+2.7%), reflecting strong stock gains partially offset by tepid bond returns.
- Eurekahedge Multi-Factor Risk Premia Index** gained 3.7% based on solid returns from carry trades in risk-on markets offset by a reversal of last year's downward trend in yields.
- Absolute Return MACs* edged ahead with their higher-quality asset bias amid the quarter's less discriminating risk-on market.

## Volatility suppressed

- With the Fed lowering rates by another quarter point in the fourth quarter while rescuing repo funding markets with unprecedented cash infusions, the Fed openly served the punch bowl of liquidity for "risk on" investors.

## Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

- Equity volatility, as illustrated by VIX, continued to settle at below-average levels, indicating fewer trading opportunities for hedge funds.
- While last quarter's melt-up reflected increased comfort with today's easy monetary and fiscal policies, a revived trade war with China or another geopolitical conflict could quickly undo that market sentiment.

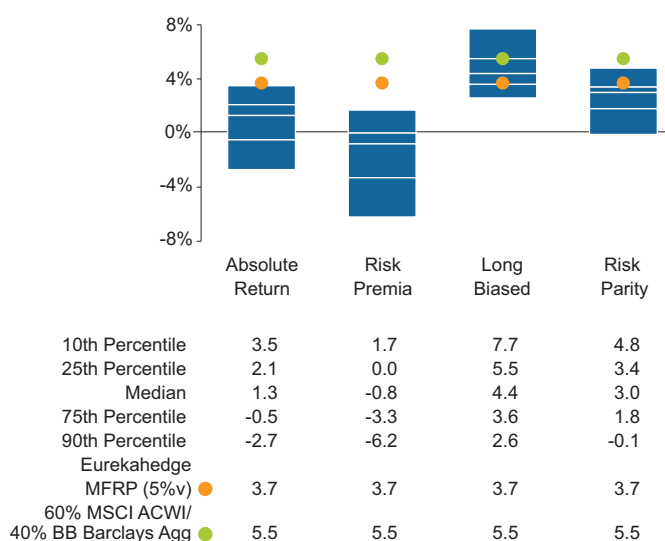
## Falling cash returns remove any hint of a tailwind for hedge funds

- As short rates fell, dwindling cash returns and short interest rebates removed previously favorable trade winds from hedge fund sails.

## Callan Institutional Hedge Fund Peer Group to launch

- To provide a more representative benchmark for our clients directly investing in hedge funds, Callan has created the Callan Institutional Hedge Fund Peer Group, a select collection of hedge funds meeting minimum size and other criteria that make them more attractive to institutional investors.

## MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Eurekahedge, S&P Dow Jones Indices



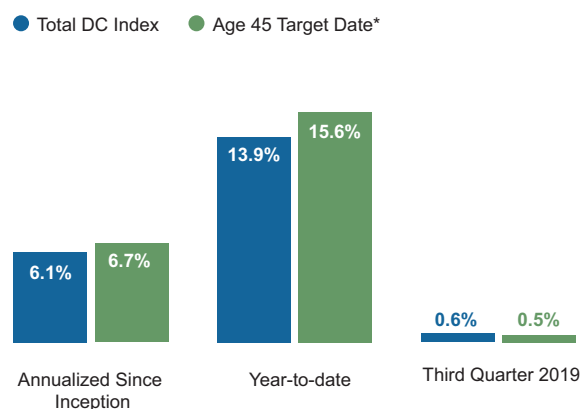
# DC Index Gains Slightly but Tops Age 45 TDF

## DEFINED CONTRIBUTION | Patrick Wisdom

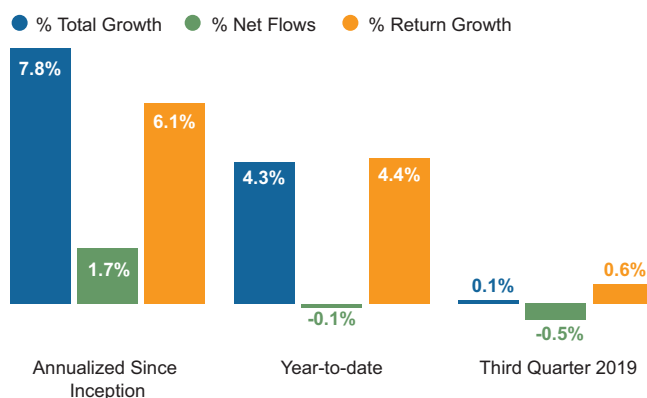
- The **Callan DC Index™** rose 0.6% in the third quarter after gains of 9.6% and 3.3% in the first and second quarters. The Age 45 Target Date Fund's smaller gain of 0.5% was largely due to its higher allocation to equity, which lagged fixed income during the quarter. The Age 45 TDF's bigger equity allocation, however, has contributed to a higher since-inception return (6.7% vs. 6.1%).
- The Index's growth in balances of 0.1% was much smaller than the first quarter (9.8%) and second quarter (3.3%).
- U.S. fixed income saw the largest inflows for the quarter (57.7%), for the first time since the third quarter of 2010. TDFs saw the second-largest inflow (26.2%), much lower than in recent quarters. U.S. large cap equity (-52.2%), and U.S. small/mid cap equity (-19.1%) had the largest outflows.
- Third-quarter turnover (i.e., net transfer activity levels within DC plans) decreased to 0.35% from the previous quarter's 0.54%.
- The allocation to equity within the Index fell to 69.5% from 70.0% in the previous quarter, after two quarters of increases.
- The percentage of assets allocated to U.S. fixed income increased by 0.5% to 6.3%. Similarly, the allocation to stable value increased by 0.3% to an overall allocation of 10.4%.
- TDFs experienced the largest decrease in asset allocation (-0.6%). With this decrease, 29.6% of assets were allocated to TDFs, the lowest since the first quarter of 2017.
- Stable value's prevalence within DC plans decreased for the first time in eight quarters and now sits at 76%, but still up nearly 3 percentage points from a year ago.
- Fees decreased across all plan sizes from the previous year, driven by a combination of increased adoption of passive mandates, as well as lower breakpoints and the use of less expensive vehicles and share classes for active options.

*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 \$150 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 (Third Quarter 2019) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
U.S. Fixed Income	57.73%
Target Date Funds	26.18%
U.S. Smid Cap	-19.09%
U.S. Large Cap	-52.23%
<b>Total Turnover**</b>	<b>0.35%</b>

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

Source: Callan DC Index

Note: DC Index inception date is January 2006.

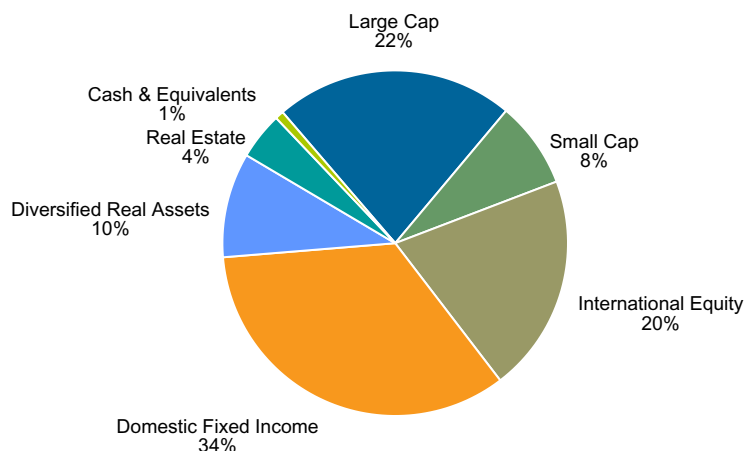
\* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

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

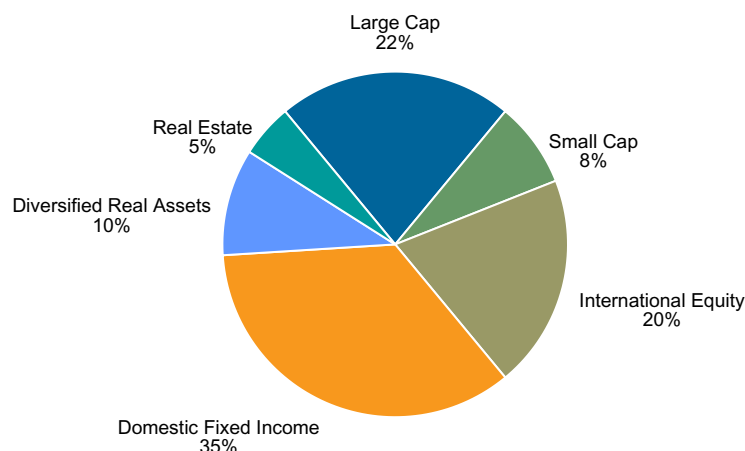
## Actual vs Target Asset Allocation As of December 31, 2019

The first chart below shows the Fund's asset allocation as of December 31, 2019. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	1,537,688	22.4%	22.0%	0.4%	27,889
Small Cap	559,292	8.1%	8.0%	0.1%	10,274
International Equity	1,398,781	20.4%	20.0%	0.4%	26,236
Domestic Fixed Income	2,339,067	34.1%	35.0%	(0.9%)	(62,887)
Diversified Real Assets	675,134	9.8%	10.0%	(0.2%)	(11,139)
Real Estate	300,809	4.4%	5.0%	(0.6%)	(42,328)
Cash & Equivalents	51,954	0.8%	0.0%	0.8%	51,954
Total	6,862,726	100.0%	100.0%		

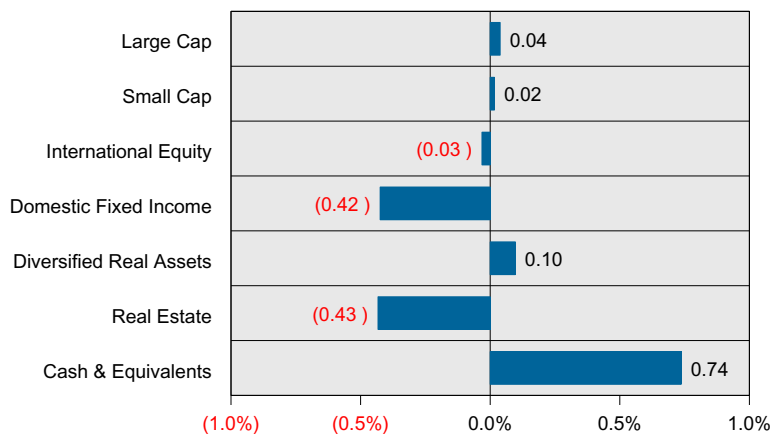
\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI EAFE, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.



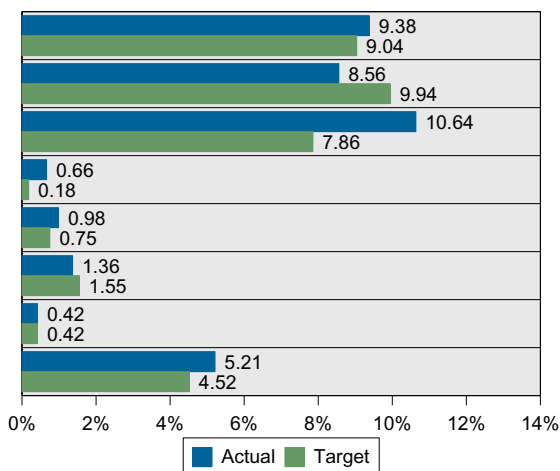
## Quarterly Total Fund Relative Attribution - December 31, 2019

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.

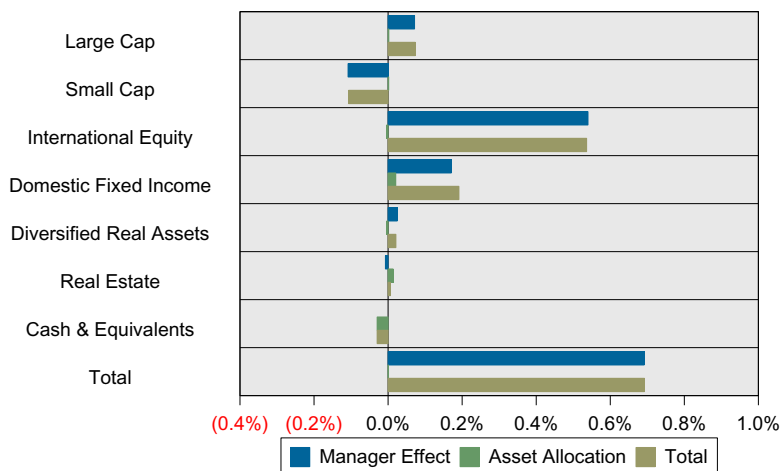
### Asset Class Under or Overweighting



### Actual vs Target Returns



### Relative Attribution by Asset Class



### Relative Attribution Effects for Quarter ended December 31, 2019

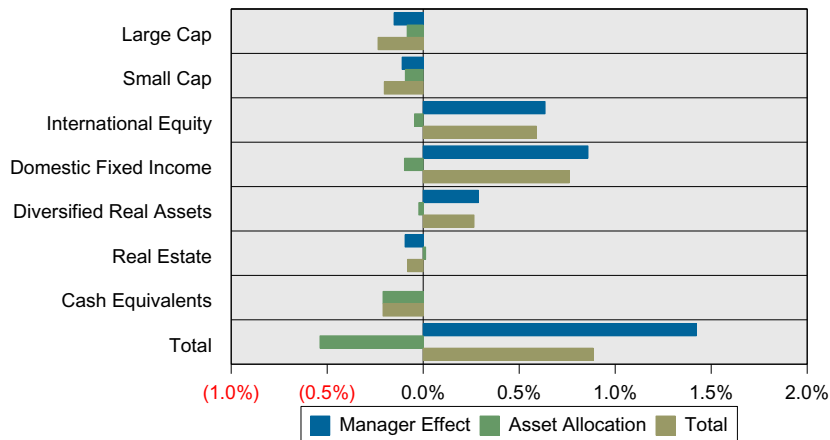
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	9.38%	9.04%	0.07%	0.00%	0.07%
Small Cap	8%	8%	8.56%	9.94%	(0.11%)	0.00%	(0.11%)
International Equity	20%	20%	10.64%	7.86%	0.54%	(0.00%)	0.54%
Domestic Fixed Income	35%	35%	0.66%	0.18%	0.17%	0.02%	0.19%
Diversified Real Assets	10%	10%	0.98%	0.75%	0.02%	(0.00%)	0.02%
Real Estate	5%	5%	1.36%	1.55%	(0.01%)	0.01%	0.01%
Cash & Equivalents	1%	0%	0.42%	0.42%	0.00%	(0.03%)	(0.03%)
<b>Total</b>			<b>5.21%</b>	<b>4.52%</b>	<b>+ 0.69%</b>	<b>+ 0.00%</b>	<b>0.69%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

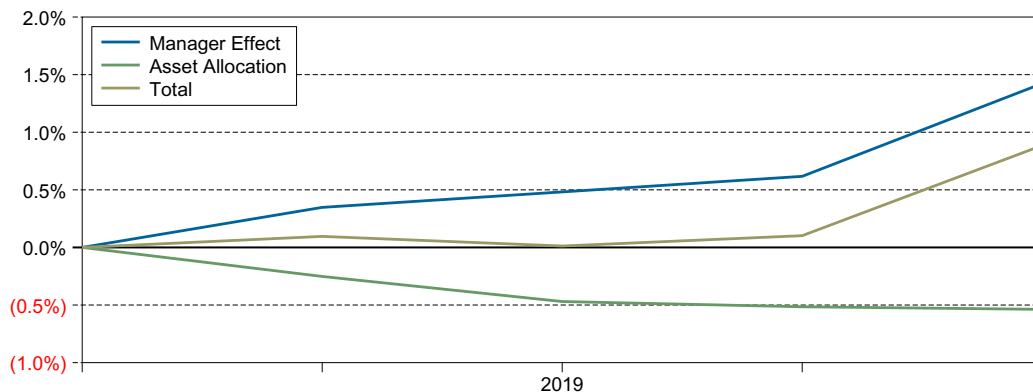
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### One Year Relative Attribution Effects



### Cumulative Relative Attribution Effects



### One Year Relative Attribution Effects

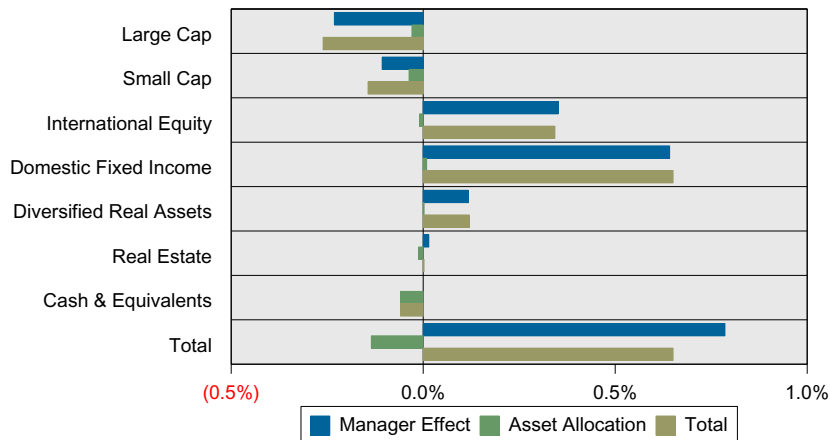
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	30.62%	31.43%	(0.15%)	(0.08%)	(0.24%)
Small Cap	8%	8%	24.16%	25.52%	(0.11%)	(0.09%)	(0.20%)
International Equity	20%	20%	25.75%	22.49%	0.63%	(0.05%)	0.59%
Domestic Fixed Income	34%	35%	11.08%	8.72%	0.86%	(0.10%)	0.76%
Diversified Real Assets	10%	10%	9.77%	7.05%	0.29%	(0.02%)	0.26%
Real Estate	5%	5%	4.57%	6.42%	(0.09%)	0.01%	(0.08%)
Cash Equivalents	1%	0%	2.10%	2.10%	0.00%	(0.21%)	(0.21%)
<b>Total</b>			<b>18.35%</b>	<b>17.47%</b>	<b>+ 1.42%</b>	<b>+ (0.54%)</b>	<b>0.89%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

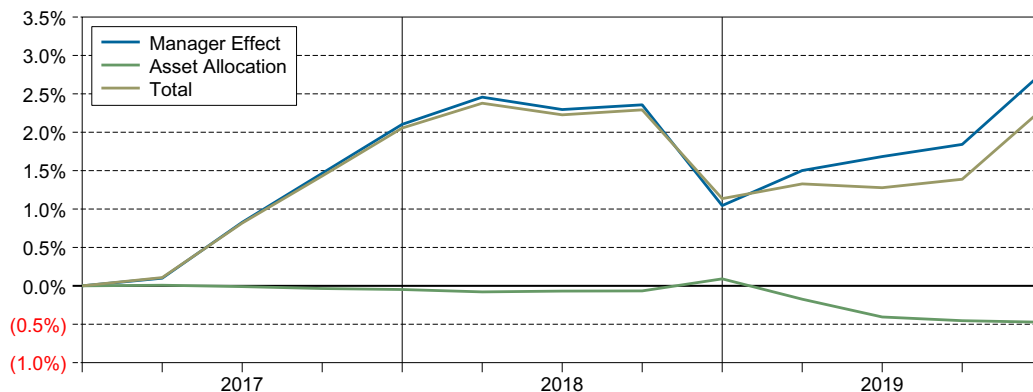
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Three Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Three Year Annualized Relative Attribution Effects

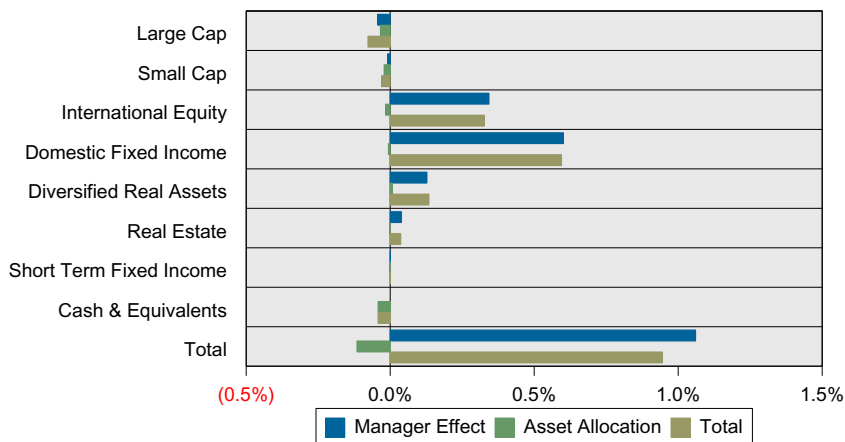
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	13.94%	15.05%	(0.23%)	(0.03%)	(0.26%)
Small Cap	8%	8%	7.32%	8.59%	(0.11%)	(0.04%)	(0.14%)
International Equity	20%	20%	11.01%	9.34%	0.35%	(0.01%)	0.34%
Domestic Fixed Income	34%	35%	5.88%	4.03%	0.64%	0.01%	0.65%
Diversified Real Assets	10%	10%	5.39%	4.19%	0.12%	0.00%	0.12%
Real Estate	5%	5%	6.82%	6.70%	0.01%	(0.01%)	0.00%
Cash & Equivalents	1%	0%	1.54%	1.54%	0.00%	(0.06%)	(0.06%)
<b>Total</b>			<b>8.85%</b>	<b>8.20%</b>	<b>+ 0.79%</b>	<b>(0.13%)</b>	<b>0.65%</b>

\* Current Quarter Target = 35.0% Blmbg Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

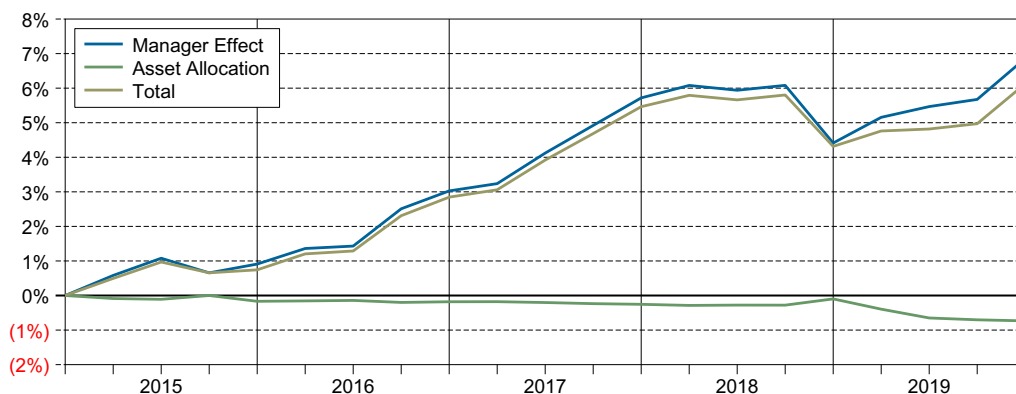
## Cumulative Total Fund Relative Attribution - December 31, 2019

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

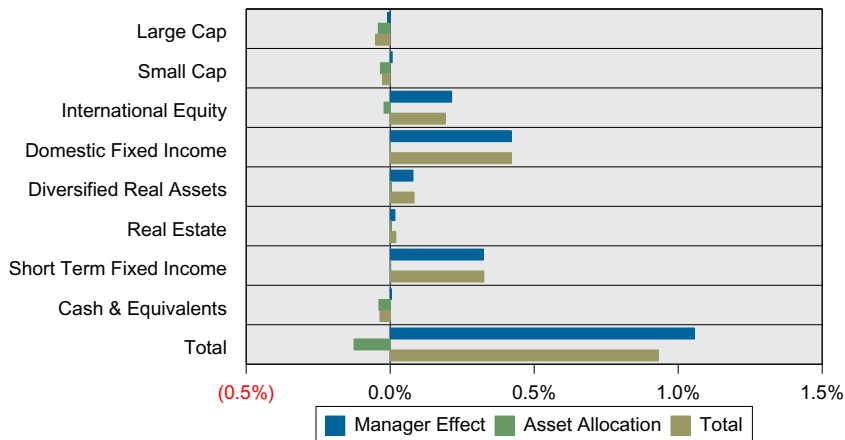
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	22%	22%	11.28%	11.48%	(0.04%)	(0.03%)	(0.08%)
Small Cap	8%	8%	8.18%	8.23%	(0.01%)	(0.02%)	(0.03%)
International Equity	20%	20%	7.23%	5.59%	0.34%	(0.02%)	0.33%
Domestic Fixed Income	35%	35%	4.80%	3.05%	0.60%	(0.01%)	0.59%
Diversified Real Assets	10%	10%	3.71%	2.39%	0.13%	0.01%	0.13%
Real Estate	5%	5%	8.94%	8.25%	0.04%	(0.00%)	0.04%
Short Term Fixed Income	0%	0%	-	-	0.00%	(0.00%)	(0.00%)
Cash & Equivalents	1%	0%	0.97%	0.97%	0.00%	(0.04%)	(0.04%)
<b>Total</b>			<b>7.18%</b>	<b>6.24%</b>	<b>+ 1.06%</b>	<b>+ (0.12%)</b>	<b>0.95%</b>

\* Current Quarter Target = 35.0% Bimbg 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.

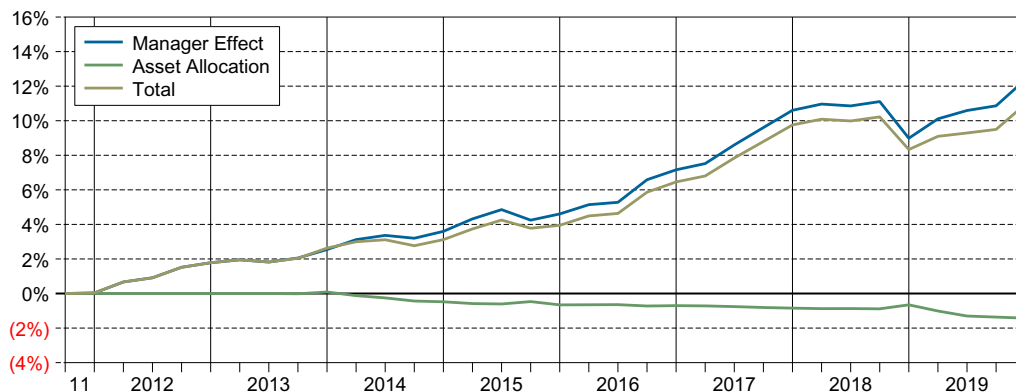
## Cumulative Total Fund Relative Attribution - December 31, 2019

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

### Eight and One-Quarter Year Annualized Relative Attribution Effects



### Cumulative Relative Attribution Effects



### Eight and One-Quarter Year Annualized Relative Attribution Effects

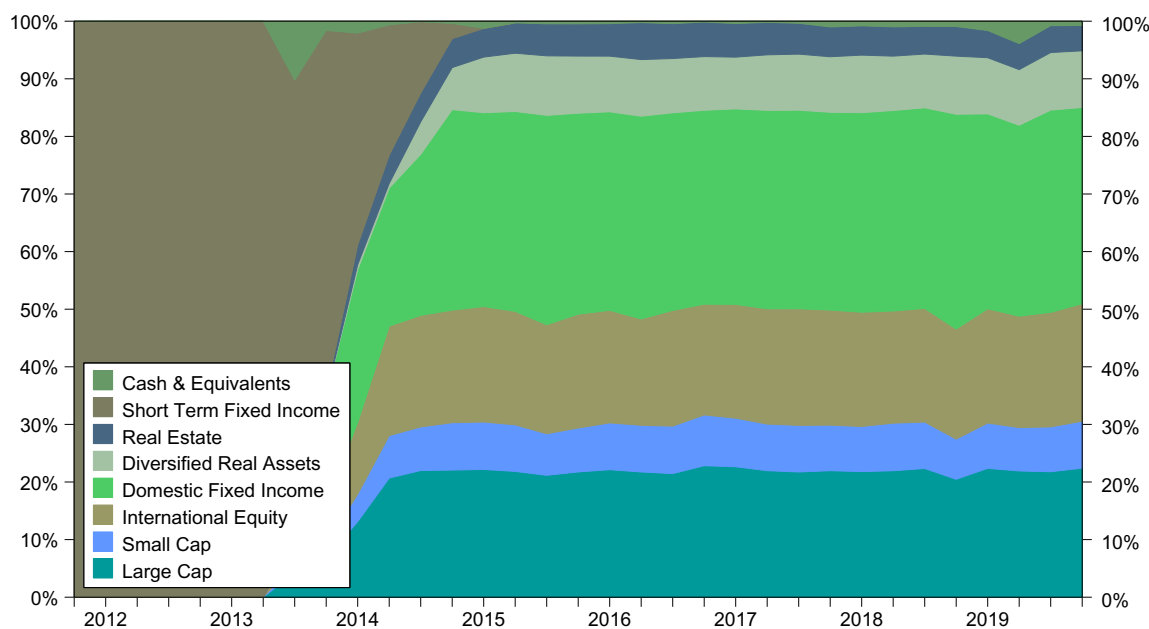
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	16%	16%	-	-	(0.01%)	(0.04%)	(0.05%)
Small Cap	6%	6%	-	-	0.01%	(0.03%)	(0.03%)
International Equity	14%	14%	-	-	0.21%	(0.02%)	0.19%
Domestic Fixed Income	25%	25%	-	-	0.42%	0.00%	0.42%
Diversified Real Assets	6%	6%	-	-	0.08%	0.00%	0.08%
Real Estate	4%	4%	-	-	0.02%	0.00%	0.02%
Short Term Fixed Income	27%	28%	-	-	0.32%	0.00%	0.33%
Cash & Equivalents	3%	2%	0.64%	0.63%	0.00%	(0.04%)	(0.04%)
<b>Total</b>			<b>5.48%</b>	<b>4.55%</b>	<b>+ 1.06%</b>	<b>+ (0.13%)</b>	<b>0.93%</b>

\* Current Quarter Target = 35.0% Blmgb 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.

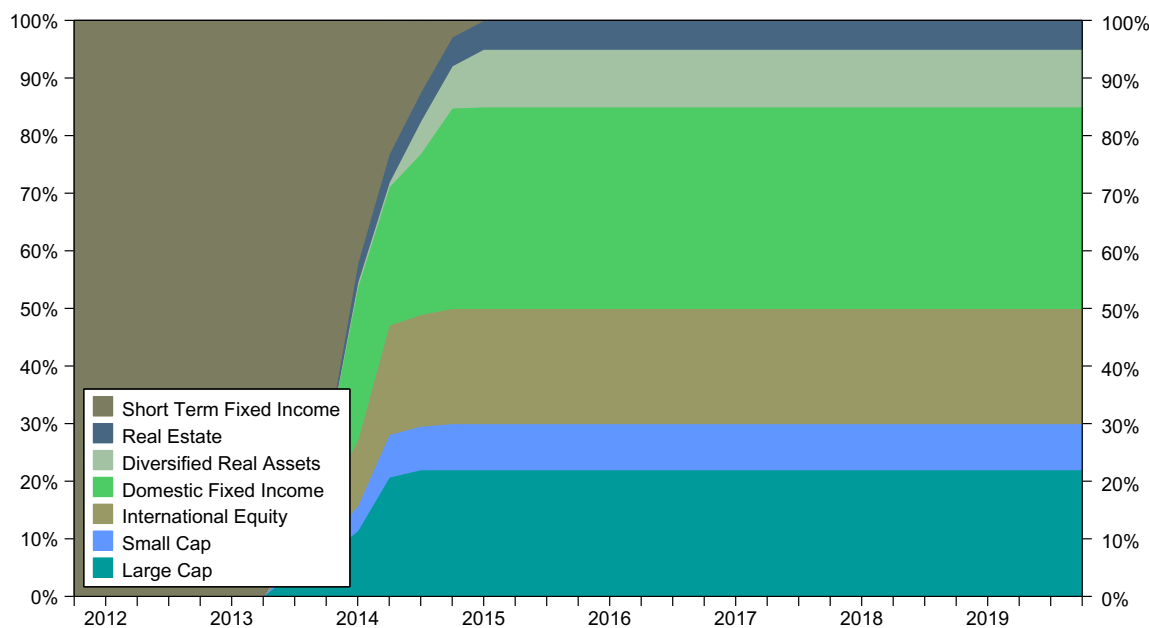
## Actual vs Target Historical Asset Allocation

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

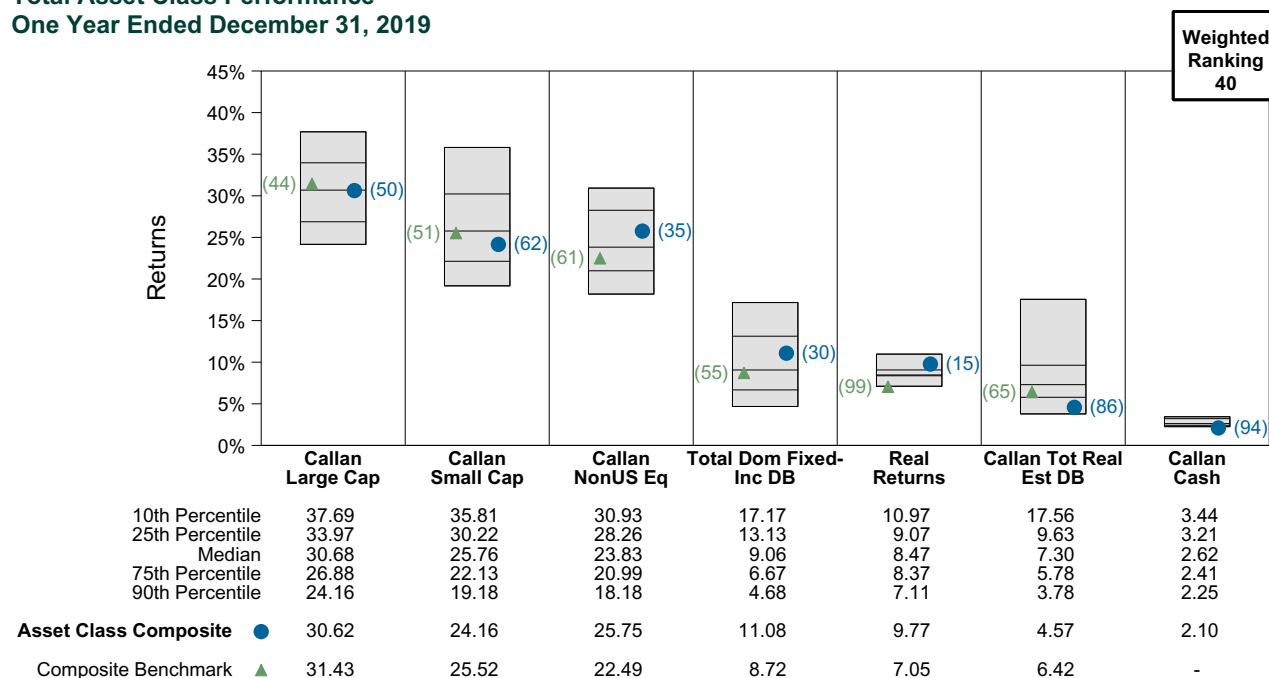


\* Current Quarter Target = 35.0% Blmgb Aggregate, 22.0% Russell 1000 Index, 20.0% MSCI World ex US, 10.0% NDSIB Legacy DRA Weighted Benchmark, 8.0% Russell 2000 Index and 5.0% NCREIF Total Index.

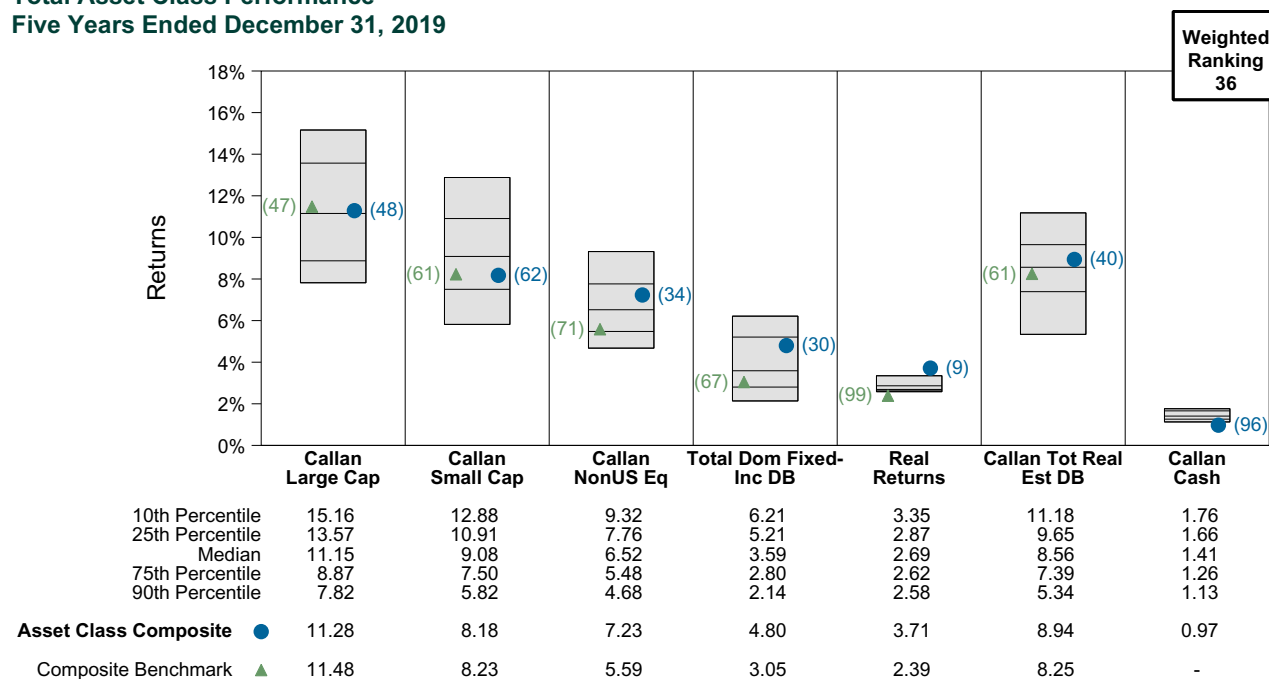
## Asset Class Rankings

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 December 31, 2019



### Total Asset Class Performance Five Years Ended December 31, 2019



\* Current Quarter Target = 35.0% Bimbg 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 December 31, 2019, with the distribution as of September 30, 2019. 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

	December 31, 2019				September 30, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Global Equity</b>	<b>\$3,495,761,646</b>	<b>50.94%</b>	<b>\$38,310,710</b>	<b>\$310,056,447</b>	<b>\$3,147,394,489</b>	<b>49.45%</b>
<b>Domestic Equity</b>	<b>\$2,096,980,587</b>	<b>30.56%</b>	<b>\$39,259,309</b>	<b>\$175,526,208</b>	<b>\$1,882,195,071</b>	<b>29.57%</b>
<b>Large Cap</b>	<b>\$1,537,688,240</b>	<b>22.41%</b>	<b>\$19,404,084</b>	<b>\$131,758,120</b>	<b>\$1,386,526,036</b>	<b>21.78%</b>
L.A. Capital Enhanced	307,742,672	4.48%	9,915,329	23,243,603	274,583,739	4.31%
L.A. Capital Large Cap Growth	463,475,136	6.75%	9,787,325	42,027,662	411,660,149	6.47%
Parametric Clifton Large Cap	312,369,075	4.55%	0	26,059,612	286,309,462	4.50%
LSV Large Cap Value	454,101,358	6.62%	(298,570)	40,427,242	413,972,686	6.50%
<b>Small Cap</b>	<b>\$559,292,347</b>	<b>8.15%</b>	<b>\$19,855,225</b>	<b>\$43,768,087</b>	<b>\$495,669,035</b>	<b>7.79%</b>
Atlanta Capital	44,825,663	0.65%	45,000,000	(174,337)	-	-
Parametric Clifton SmallCap	293,156,534	4.27%	20,000,000	26,452,940	246,703,594	3.88%
PIMCO RAE	221,310,151	3.22%	(45,144,775)	17,489,485	248,965,441	3.91%
<b>International Equity</b>	<b>\$1,398,781,058</b>	<b>20.38%</b>	<b>\$(948,599)</b>	<b>\$134,530,239</b>	<b>\$1,265,199,418</b>	<b>19.88%</b>
DFA Intl SmallCap Value	147,039,642	2.14%	0	15,535,917	131,503,725	2.07%
LSV Intl Value	528,585,177	7.70%	(469,029)	47,735,110	481,319,096	7.56%
Vanguard Intl Explorer Fund	142,892,271	2.08%	0	14,948,532	127,943,740	2.01%
William Blair	580,263,968	8.46%	(479,570)	56,310,681	524,432,857	8.24%
<b>Domestic Fixed Income</b>	<b>\$2,339,067,336</b>	<b>34.08%</b>	<b>\$89,179,727</b>	<b>\$14,834,848</b>	<b>\$2,235,052,761</b>	<b>35.12%</b>
Ares ND Credit Strategies Fd	68,545,728	1.00%	0	1,409,295	67,136,433	1.05%
BND CDs	91,252,635	1.33%	48,829,601	415,673	42,007,361	0.66%
Cerberus ND Private Credit Fd	83,873,691	1.22%	12,100,000	1,959,817	69,813,874	1.10%
Declaration Total Return	168,853,882	2.46%	(96,450)	559,070	168,391,262	2.65%
PIMCO Bravo II	11,402,431	0.17%	(1,001,381)	(13,104)	12,416,916	0.20%
PIMCO DiSCO II	42,739,884	0.62%	0	1,091,437	41,648,447	0.65%
Prudential	682,266,705	9.94%	(367,405)	3,042,980	679,591,130	10.68%
SSgA US Govt Credit Bd Idx	323,832,048	4.72%	14,988,643	(12,914)	308,856,319	4.85%
Wells Capital	181,402,859	2.64%	(86,246)	3,571,601	177,917,504	2.80%
Western Asset Management	684,897,472	9.98%	14,812,965	2,810,992	667,273,515	10.48%
<b>Global Real Assets</b>	<b>\$975,942,654</b>	<b>14.22%</b>	<b>\$32,182,409</b>	<b>\$10,468,513</b>	<b>\$933,291,732</b>	<b>14.66%</b>
<b>Real Estate</b>	<b>\$300,808,784</b>	<b>4.38%</b>	<b>\$(466,040)</b>	<b>\$4,056,820</b>	<b>\$297,218,004</b>	<b>4.67%</b>
Invesco Core Real Estate	149,044,386	2.17%	(126,737)	2,923,435	146,247,688	2.30%
JP Morgan RE Inc & Growth	151,764,398	2.21%	(339,302)	1,133,384	150,970,316	2.37%
<b>Diversified</b>	<b>\$675,133,870</b>	<b>9.84%</b>	<b>\$32,648,449</b>	<b>\$6,411,694</b>	<b>\$636,073,728</b>	<b>9.99%</b>
Western Asset TIPS	418,351,276	6.10%	9,878,334	4,094,417	404,378,526	6.35%
ISQ Global Infrastructure II	32,207,150	0.47%	5,343,667	543,364	26,320,119	0.41%
JP Morgan Infrastructure	113,340,614	1.65%	(3,510,534)	143,157	116,707,991	1.83%
Grosvenor Cust. Infrastructure	46,291,292	0.67%	1,978,667	(164,679)	44,477,304	0.70%
Macquarie Infrs. Partners IV	64,943,538	0.95%	18,958,315	1,795,435	44,189,788	0.69%
<b>Cash</b>	<b>\$51,954,008</b>	<b>0.76%</b>	<b>\$2,591,424</b>	<b>\$221,887</b>	<b>\$49,140,697</b>	<b>0.77%</b>
Insurance Cash Pool Account	0	0.00%	(370)	(1)	371	0.00%
Northern Trust Cash Account	29,141,196	0.42%	2,591,794	117,473	26,431,928	0.42%
Bank of ND	22,812,813	0.33%	0	104,415	22,708,398	0.36%
<b>Securities Lending Income</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$(122,948)</b>	<b>\$122,948</b>	<b>-</b>	<b>-</b>
<b>Total Fund</b>	<b>\$6,862,725,644</b>	<b>100.0%</b>	<b>\$162,141,323</b>	<b>\$335,704,643</b>	<b>\$6,364,879,678</b>	<b>100.0%</b>



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Equity</b>					
Gross	9.75%	27.65%	-	-	-
Net	9.70%	27.39%	-	-	-
Weighted Benchmark	8.72%	26.91%	-	-	-
<b>Domestic Equity</b>					
Gross	9.16%	28.90%	12.14%	10.49%	-
Net	9.12%	28.71%	11.97%	10.27%	-
Weighted Benchmark	9.28%	29.88%	-	-	-
<b>Large Cap</b>					
Gross	9.38%	30.62%	13.94%	11.28%	-
Net	9.33%	30.41%	13.75%	11.08%	-
Russell 1000 Index	9.04%	31.43%	15.05%	11.48%	15.91%
L.A. Capital Enhanced - Gross	8.18%	29.51%	13.37%	11.18%	-
L.A. Capital Enhanced - Net	8.15%	29.35%	13.23%	11.03%	-
Russell 1000 Index	9.04%	31.43%	15.05%	11.48%	15.91%
L.A. Capital LargeCap Growth - Gross	9.99%	33.87%	17.77%	13.52%	-
L.A. Capital LargeCap Growth - Net	9.94%	33.60%	17.54%	13.29%	-
Russell 1000 Growth Index	10.62%	36.39%	20.49%	14.63%	17.59%
Parametric Clifton Large Cap - Gross	9.10%	32.59%	15.25%	11.88%	-
Parametric Clifton Large Cap - Net	9.10%	32.59%	15.28%	11.82%	-
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	15.97%
LSV Large Cap Value - Gross	9.77%	26.68%	9.57%	8.65%	-
LSV Large Cap Value - Net	9.69%	26.35%	9.27%	8.34%	-
Russell 1000 Value Index	7.41%	26.54%	9.68%	8.29%	14.13%
<b>Small Cap</b>					
Gross	8.56%	24.16%	7.32%	8.18%	-
Net	8.53%	24.02%	7.18%	7.92%	-
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	13.80%
Parametric Clifton Small Cap - Gross	10.06%	27.53%	8.93%	8.99%	-
Parametric Clifton Small Cap - Net	10.06%	27.53%	8.90%	8.75%	-
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	13.80%
PIMCO RAE - Gross	7.05%	20.81%	5.51%	7.06%	-
PIMCO RAE - Net	6.99%	20.54%	5.26%	6.79%	-
Russell 2000 Index	9.94%	25.52%	8.59%	8.23%	13.80%
<b>International Equity</b>					
Gross	10.64%	25.75%	11.01%	7.23%	-
Net	10.56%	25.39%	10.68%	6.91%	-
Benchmark(1)	7.86%	22.49%	9.34%	5.59%	7.79%
DFA Intl Small Cap Value	11.81%	21.00%	5.90%	5.93%	-
World ex US SC Va	11.19%	22.83%	8.65%	6.93%	8.86%
LSV Intl Value - Gross	9.92%	19.65%	7.71%	5.94%	-
LSV Intl Value - Net	9.82%	19.21%	7.30%	5.54%	-
MSCI EAFE Index	8.17%	22.01%	9.56%	5.67%	7.85%
Vanguard Intl Explorer Fund	11.68%	21.91%	9.20%	6.80%	-
BMI, EPAC, <\$2 B	11.79%	18.56%	8.10%	7.49%	8.68%
William Blair - Gross	10.74%	33.67%	15.89%	-	-
William Blair - Net	10.65%	33.20%	15.46%	-	-
MSCI ACWI ex US IMI	9.20%	21.63%	9.84%	5.71%	7.21%

(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 December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Domestic Fixed Income</b>					
Gross	0.66%	11.08%	5.88%	4.80%	-
Net	0.63%	10.95%	5.76%	4.68%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.95%
Ares ND Credit Strategies Fd - Net	2.10%	8.35%	-	-	-
Cerberus ND Private Credit Fd - Net	2.80%	8.57%	-	-	-
S&P/LSTA Leveraged Loan B	2.11%	8.99%	4.65%	4.72%	5.42%
BND CDs - Net	0.72%	3.50%	3.12%	-	-
Declaration Total Return - Net	0.33%	7.16%	5.16%	4.31%	-
Libor-3 Month	0.49%	2.35%	1.99%	1.40%	0.98%
PIMCO Bravo II - Net(1)	(0.11%)	0.96%	6.04%	7.15%	-
PIMCO DiSCO II - Net (1)	2.62%	7.76%	9.54%	8.74%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.95%
Prudential - Gross	0.45%	11.31%	6.04%	4.95%	-
Prudential - Net	0.39%	11.04%	5.80%	4.70%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.95%
Wells Capital - Gross	2.01%	17.37%	7.33%	5.71%	-
Wells Capital - Net	1.96%	17.16%	7.14%	5.53%	-
Blmbg Credit Baa	1.69%	16.46%	6.70%	4.97%	5.43%
Western Asset - Gross	0.42%	10.93%	5.48%	4.49%	-
Western Asset - Net	0.39%	10.80%	5.35%	4.36%	-
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.95%
SSgA US Govt Credit Bd Idx - Gross	(0.01%)	9.76%	4.38%	3.25%	-
SSgA US Govt Credit Bd Idx - Net	(0.01%)	9.74%	4.35%	3.23%	-
Blmbg Govt/Credit Bd	(0.01%)	9.71%	4.35%	3.23%	3.11%

(1) Prior to 7/1/2019, the Legacy Fund participated in these portfolios via the Insurance Pool. Beginning 7/1/2019, its portion of the pool was segregated into its own portfolios. Returns prior to that date reflect the data from the Insurance pool.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended December 31, 2019. 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 December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years
<b>Global Real Assets</b>					
Gross	1.11%	8.04%	-	-	-
Net	1.03%	7.71%	-	-	-
Weighted Benchmark	1.02%	6.85%	-	-	-
<b>Real Estate</b>					
Gross	1.36%	4.57%	6.82%	8.94%	-
Net	1.23%	4.02%	6.26%	8.30%	-
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	9.41%
Invesco Core Real Estate - Gross	2.00%	6.46%	7.29%	9.13%	-
Invesco Core Real Estate - Net	1.91%	6.10%	6.96%	8.77%	-
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	9.41%
JP Morgan RE Inc & Growth - Gross	0.75%	2.79%	6.35%	8.76%	-
JP Morgan RE Inc & Growth - Net	0.56%	2.06%	5.59%	7.83%	-
NCREIF Total Index	1.55%	6.42%	6.70%	8.25%	9.41%
<b>Diversified</b>					
Gross	0.98%	9.77%	5.39%	3.71%	-
Net	0.94%	9.55%	5.16%	3.47%	-
Weighted Benchmark	0.75%	7.05%	4.19%	2.39%	-
Western Asset TIPS - Gross	1.02%	10.31%	4.30%	2.52%	-
Western Asset TIPS - Net	0.99%	10.18%	4.18%	2.39%	-
Benchmark(3)	0.74%	8.75%	4.52%	2.43%	2.73%
JP Morgan Infrastructure - Gross	0.12%	5.77%	8.01%	-	-
JP Morgan Infrastructure - Net	(0.04%)	5.12%	7.31%	-	-
Grosvenor Cust. Infrastructure - Net	(0.32%)	13.02%	9.05%	-	-
Benchmark(1)	0.77%	3.43%	3.41%	2.51%	1.85%
Macquarie Infrast. Partners IV - Net	3.55%	0.26%	-	-	-
ISQ Global Infrastructure II - Net	2.09%	26.47%	-	-	-
Benchmark(2)	0.77%	3.43%	-	-	-
<b>Cash &amp; Equivalents - Net</b>	<b>0.42%</b>	<b>2.10%</b>	<b>1.54%</b>	<b>0.97%</b>	<b>0.64%</b>
NT Cash Account - Net	0.39%	-	-	-	-
Bank of ND - Net	0.44%	-	-	-	-
90 Day Treasury Bills	0.46%	2.28%	1.67%	1.07%	0.68%
<b>Total Fund</b>					
Gross	5.21%	18.35%	8.85%	7.18%	5.48%
Net	5.16%	18.13%	8.64%	6.95%	5.30%
Target*	4.52%	17.47%	8.20%	6.24%	4.55%

\* 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) CPI-W through 6/30/2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.

(2) 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.

(3) Blmbg Global Inflation-Linked through 10/31/2018 and Blmbg US Govt Inflation Linked Bond Index thereafter.

## Domestic Equity Period Ended December 31, 2019

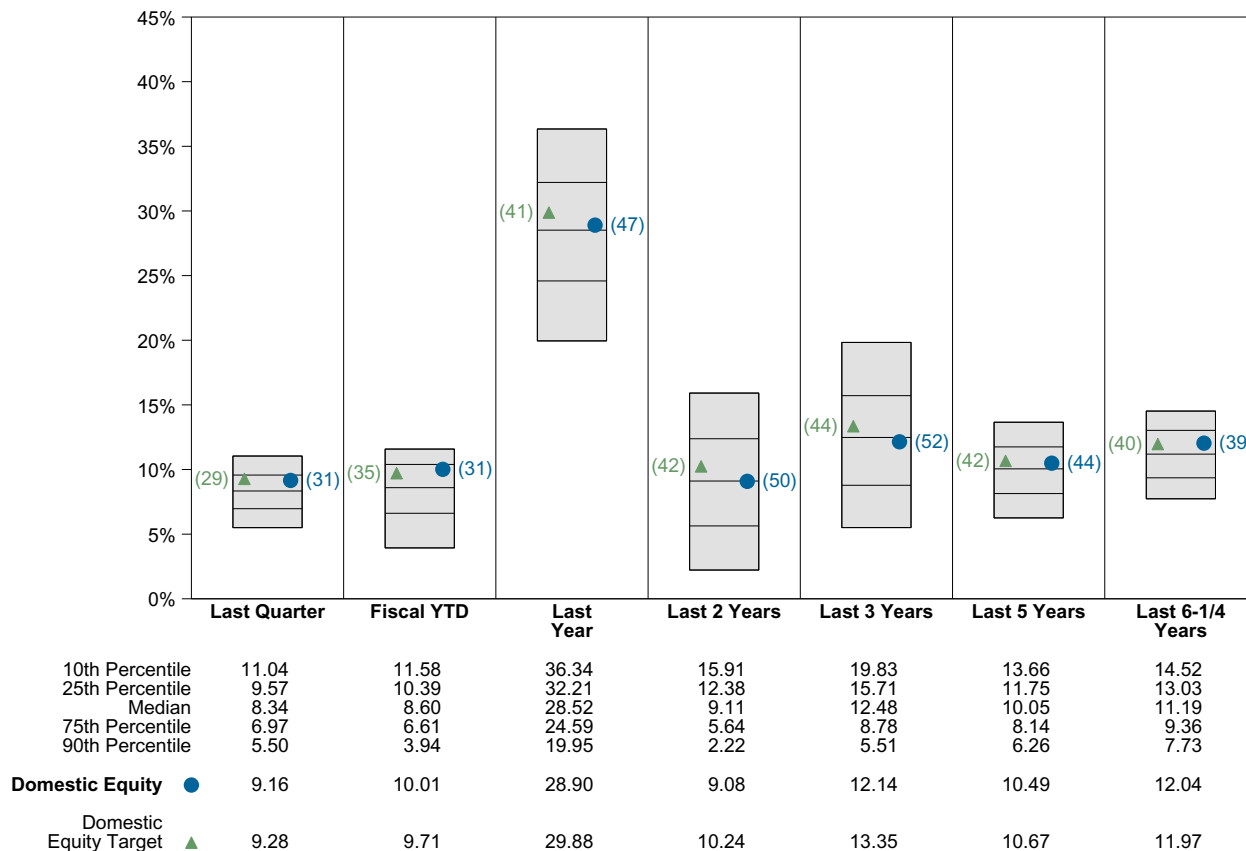
### Quarterly Summary and Highlights

- Domestic Equity's portfolio posted a 9.16% return for the quarter placing it in the 31 percentile of the Total Domestic Equity Database group for the quarter and in the 47 percentile for the last year.
- Domestic Equity's portfolio underperformed the Domestic Equity Target by 0.12% for the quarter and underperformed the Domestic Equity Target for the year by 0.97%.

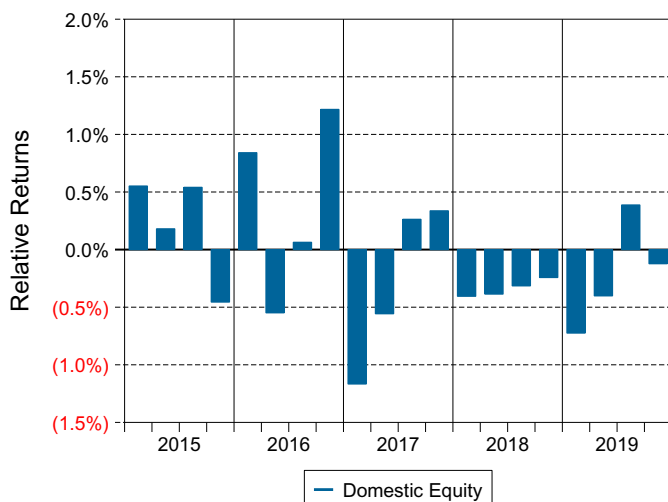
### Quarterly Asset Growth

Beginning Market Value	\$1,882,195,071
Net New Investment	\$39,259,309
Investment Gains/(Losses)	\$175,526,208
Ending Market Value	\$2,096,980,587

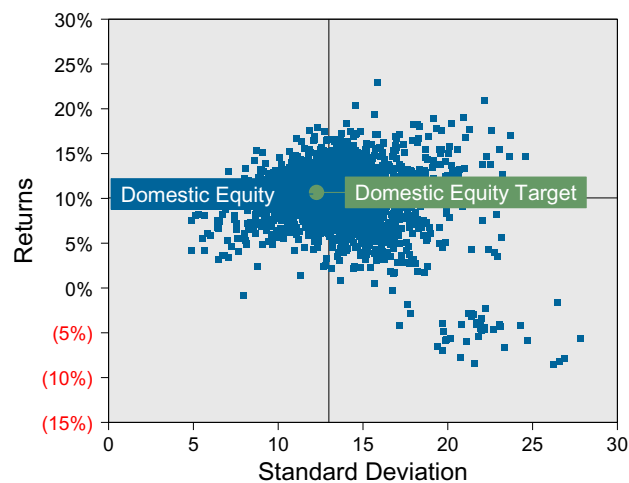
### Performance vs Total Domestic Equity Database (Gross)



### Relative Return vs Domestic Equity Target



### Total Domestic Equity Database (Gross) Annualized Five Year Risk vs Return



## Parametric Clifton Large Cap Period Ended December 31, 2019

### 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.

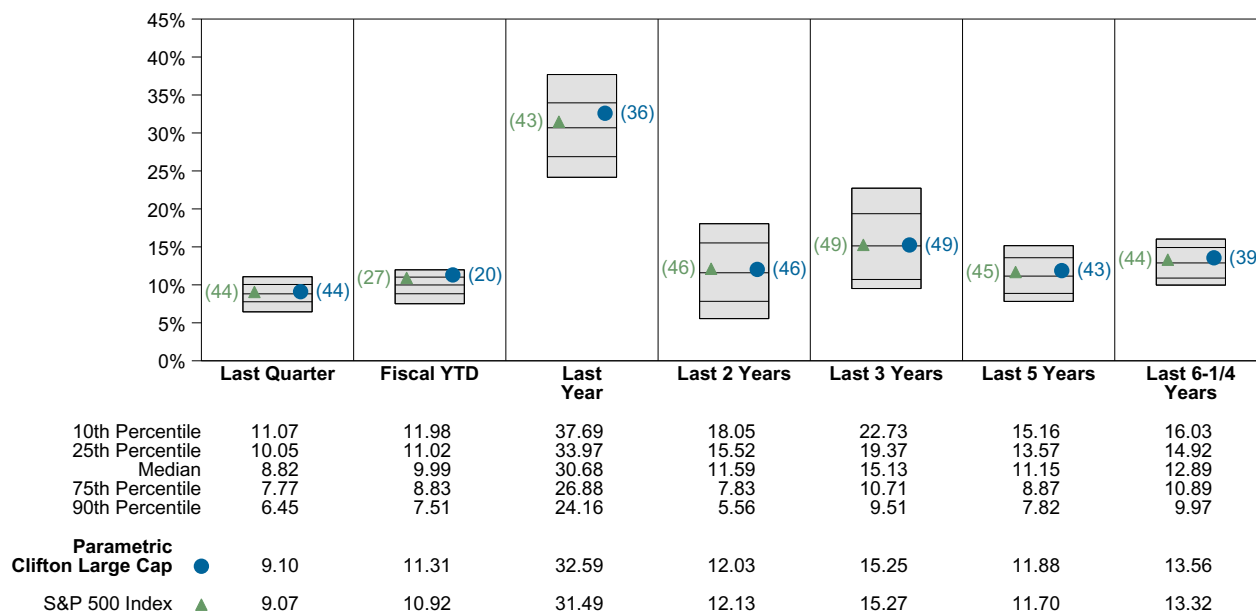
### Quarterly Summary and Highlights

- Parametric Clifton Large Cap's portfolio posted a 9.10% return for the quarter placing it in the 44 percentile of the Callan Large Capitalization group for the quarter and in the 36 percentile for the last year.
- Parametric Clifton Large Cap's portfolio outperformed the S&P 500 Index by 0.03% for the quarter and outperformed the S&P 500 Index for the year by 1.11%.

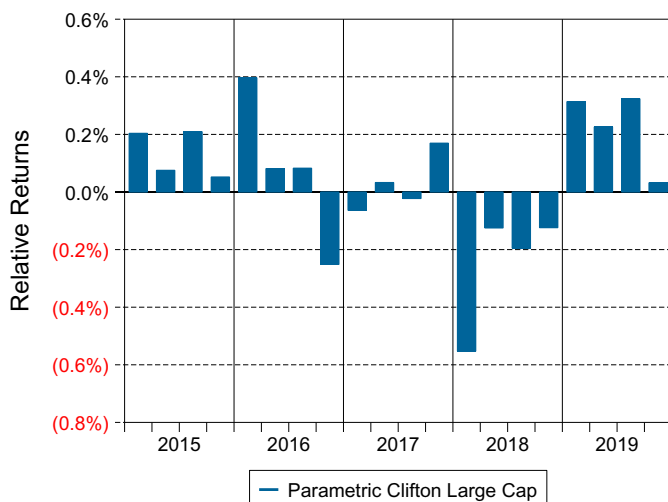
### Quarterly Asset Growth

Beginning Market Value	\$286,309,462
Net New Investment	\$0
Investment Gains/(Losses)	\$26,059,612
Ending Market Value	\$312,369,075

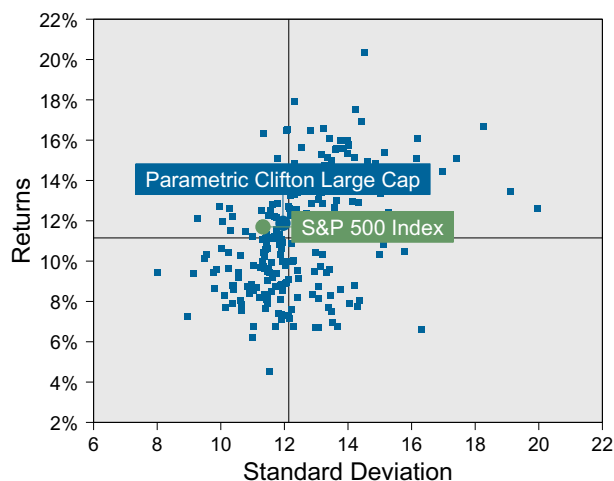
### Performance vs Callan Large Capitalization (Gross)



### Relative Return vs S&P 500 Index



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



## L.A. Capital Period Ended December 31, 2019

### Investment Philosophy

The LA Capital Structured portfolio is a large growth portfolio benchmarked to the Russell 1000 Growth Index. It is an active assignment meaning that it targets a 2% alpha and constrains its risk budget (tracking error) to 4% relative to the benchmark. LA Capital believes that investment results are driven by Investor Preferences and thus recognize that when preferences shift a different posture related to that factor is warranted.

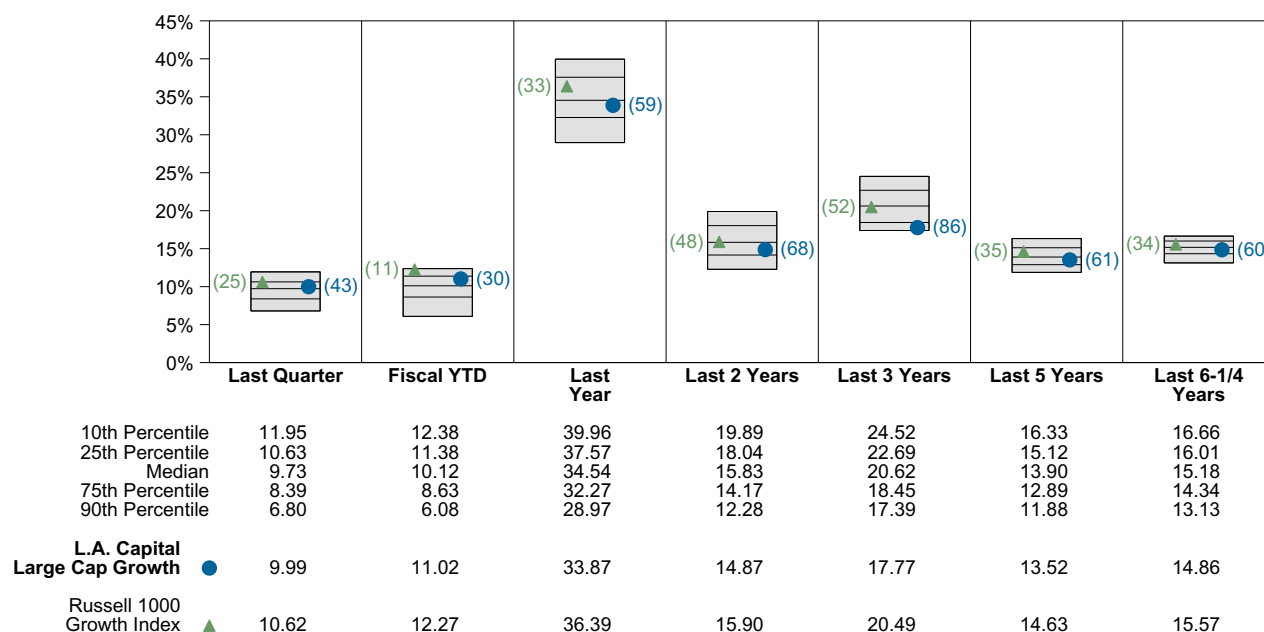
### Quarterly Summary and Highlights

- L.A. Capital Large Cap Growth's portfolio posted a 9.99% return for the quarter placing it in the 43 percentile of the Callan Large Cap Growth group for the quarter and in the 59 percentile for the last year.
- L.A. Capital Large Cap Growth's portfolio underperformed the Russell 1000 Growth Index by 0.63% for the quarter and underperformed the Russell 1000 Growth Index for the year by 2.52%.

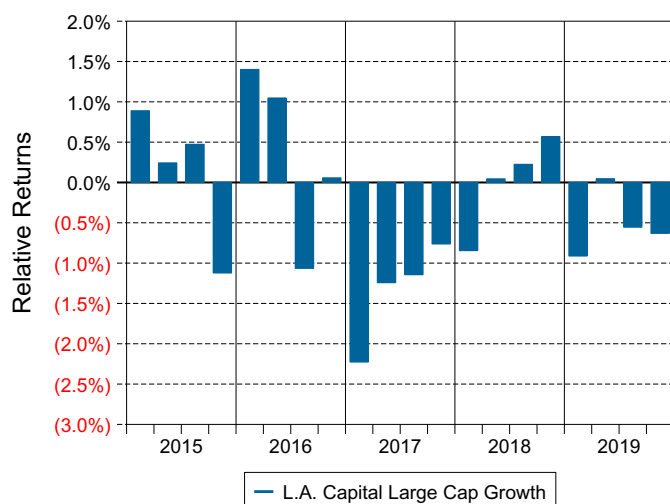
### Quarterly Asset Growth

Beginning Market Value	\$411,660,149
Net New Investment	\$9,787,325
Investment Gains/(Losses)	\$42,027,662
Ending Market Value	\$463,475,136

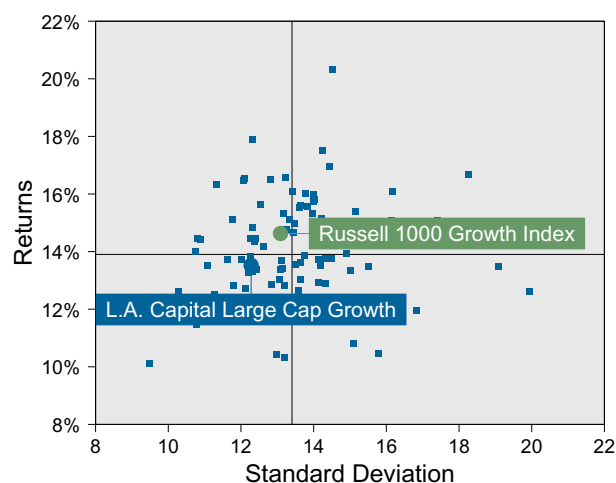
### Performance vs Callan Large Cap Growth (Gross)



### Relative Return vs Russell 1000 Growth Index



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



## L.A. Capital Enhanced Period Ended December 31, 2019

### 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.

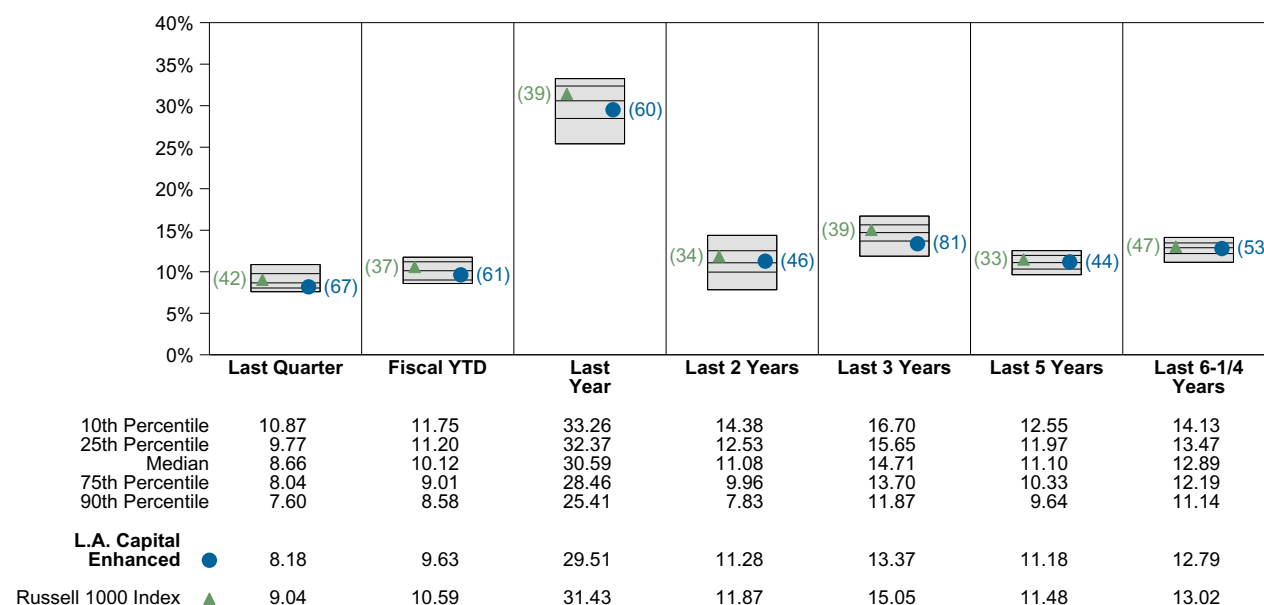
### Quarterly Summary and Highlights

- L.A. Capital Enhanced's portfolio posted a 8.18% return for the quarter placing it in the 67 percentile of the Callan Large Cap Core group for the quarter and in the 60 percentile for the last year.
- L.A. Capital Enhanced's portfolio underperformed the Russell 1000 Index by 0.86% for the quarter and underperformed the Russell 1000 Index for the year by 1.92%.

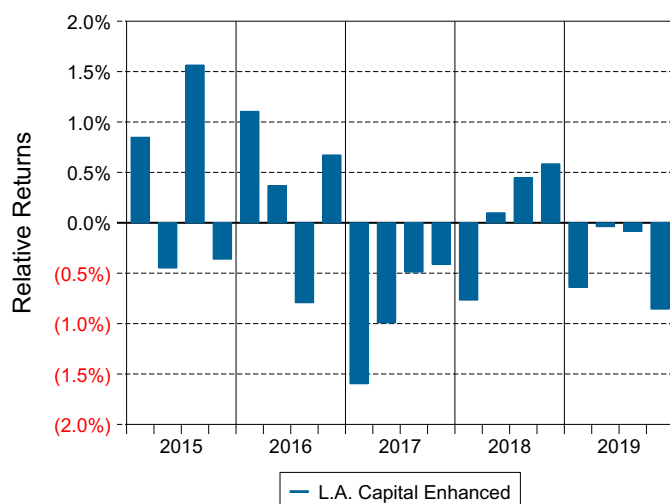
### Quarterly Asset Growth

Beginning Market Value	\$274,583,739
Net New Investment	\$9,915,329
Investment Gains/(Losses)	\$23,243,603
Ending Market Value	\$307,742,672

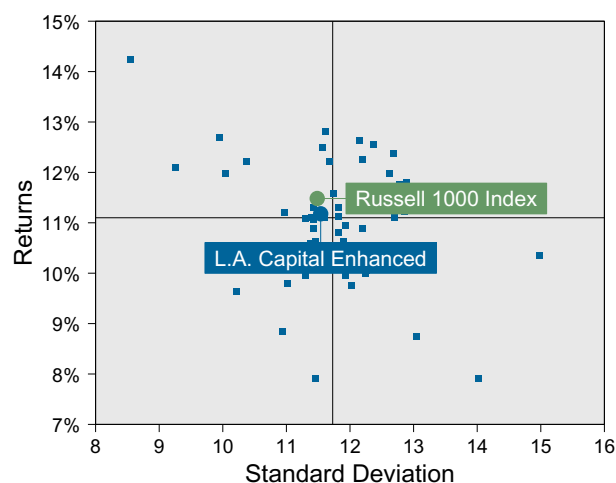
### Performance vs Callan Large Cap Core (Gross)



### Relative Return vs Russell 1000 Index



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



# LSV Asset Management

## Period Ended December 31, 2019

### 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.

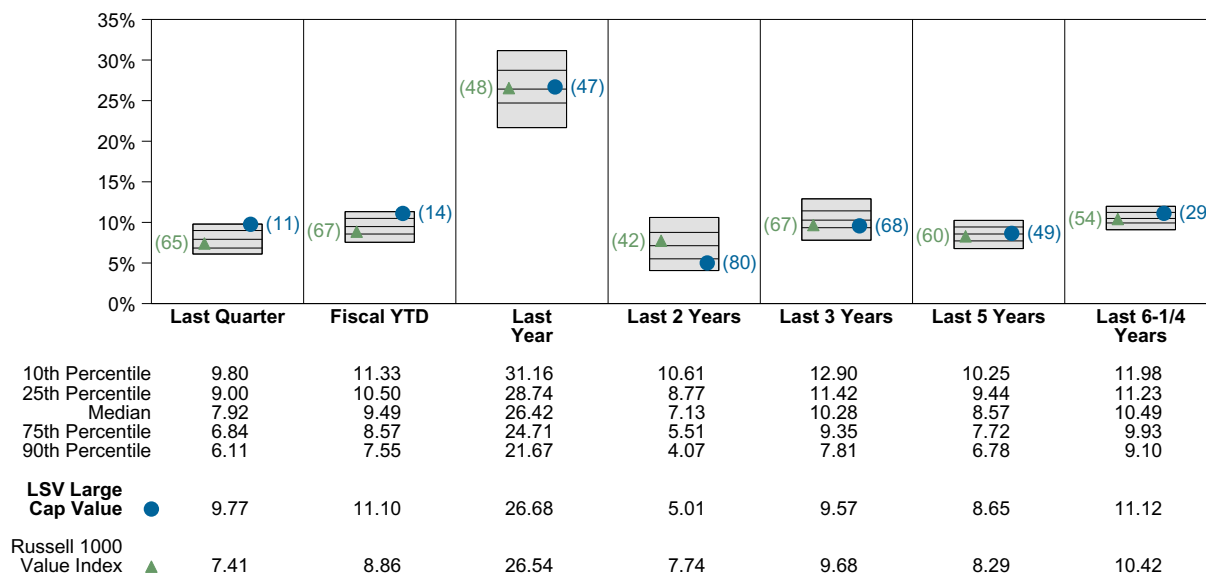
### Quarterly Summary and Highlights

- LSV Large Cap Value's portfolio posted a 9.77% return for the quarter placing it in the 11 percentile of the Callan Large Cap Value group for the quarter and in the 47 percentile for the last year.
- LSV Large Cap Value's portfolio outperformed the Russell 1000 Value Index by 2.36% for the quarter and outperformed the Russell 1000 Value Index for the year by 0.14%.

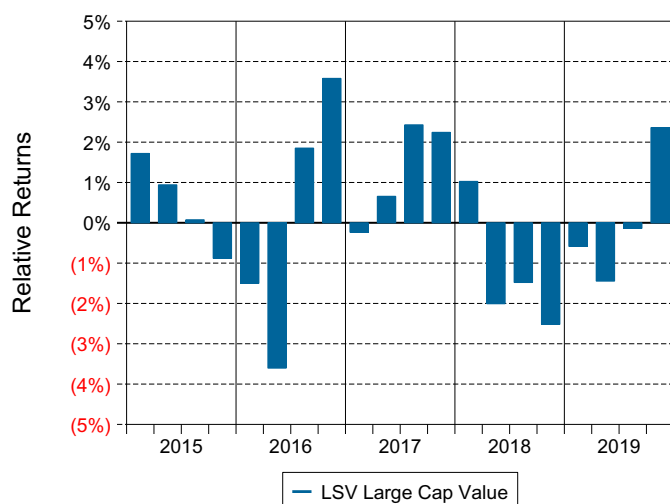
### Quarterly Asset Growth

Beginning Market Value	\$413,972,686
Net New Investment	\$-298,570
Investment Gains/(Losses)	\$40,427,242
Ending Market Value	\$454,101,358

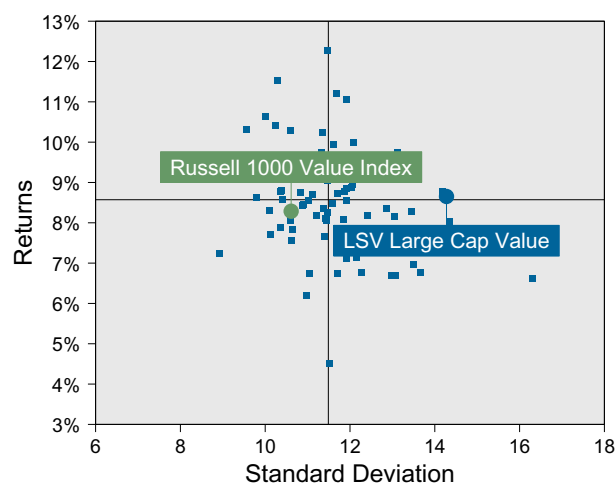
### Performance vs Callan Large Cap Value (Gross)



### Relative Return vs Russell 1000 Value Index



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





## Parametric Clifton Small Cap Period Ended December 31, 2019

### 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.

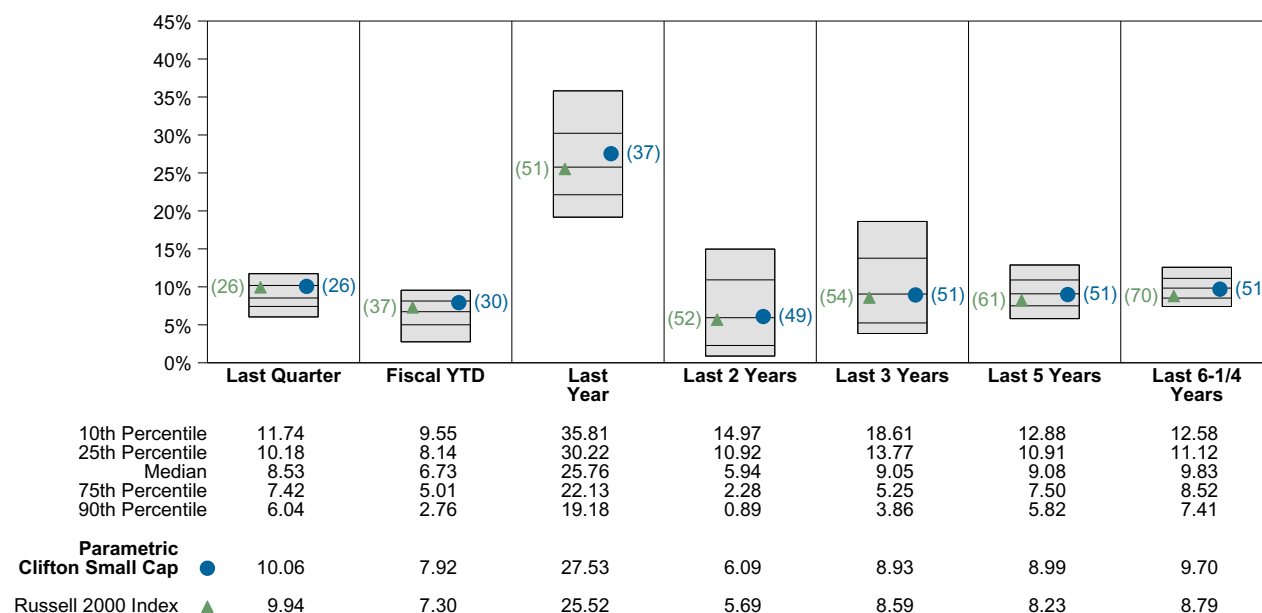
### Quarterly Summary and Highlights

- Parametric Clifton Small Cap's portfolio posted a 10.06% return for the quarter placing it in the 26 percentile of the Callan Small Capitalization group for the quarter and in the 37 percentile for the last year.
- Parametric Clifton Small Cap's portfolio outperformed the Russell 2000 Index by 0.12% for the quarter and outperformed the Russell 2000 Index for the year by 2.01%.

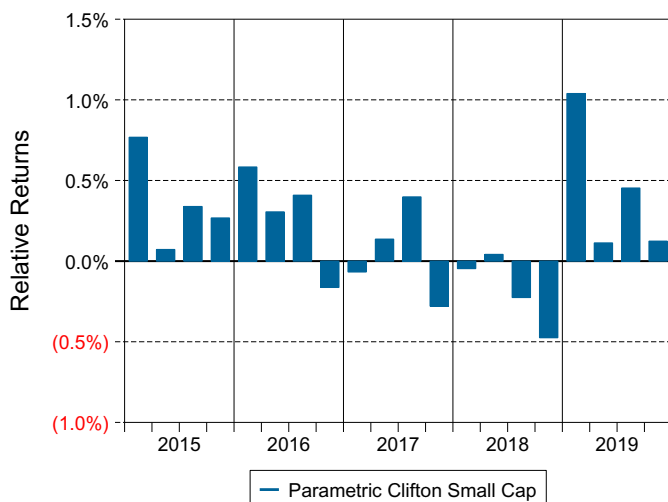
### Quarterly Asset Growth

Beginning Market Value	\$246,703,594
Net New Investment	\$20,000,000
Investment Gains/(Losses)	\$26,452,940
Ending Market Value	\$293,156,534

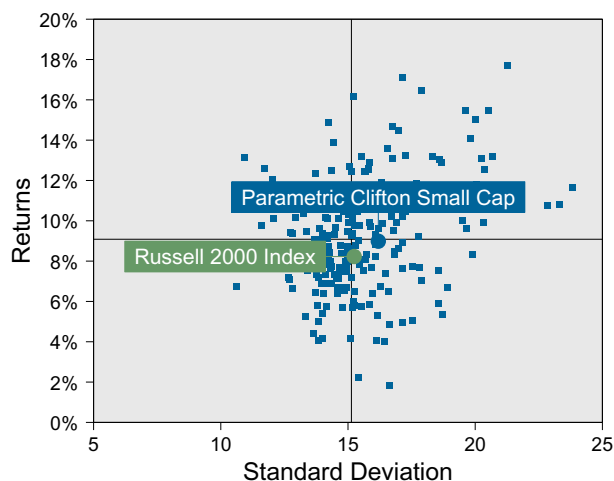
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



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



## PIMCO RAE Period Ended December 31, 2019

### 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.

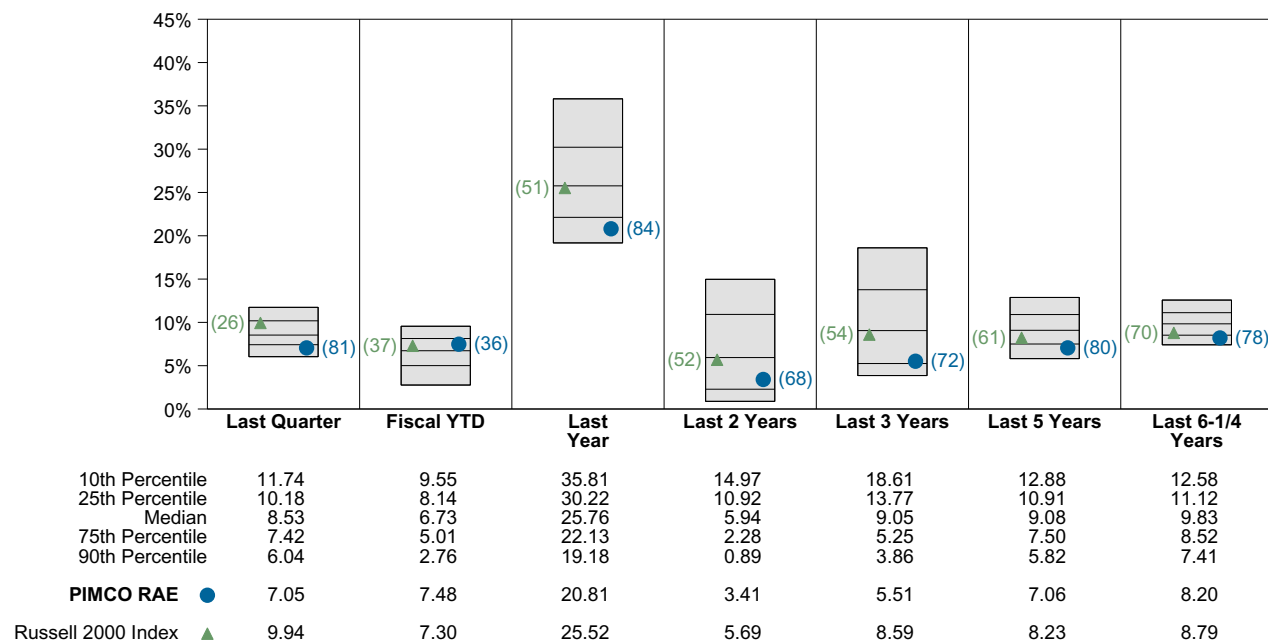
### Quarterly Summary and Highlights

- PIMCO RAE's portfolio posted a 7.05% return for the quarter placing it in the 81 percentile of the Callan Small Capitalization group for the quarter and in the 84 percentile for the last year.
- PIMCO RAE's portfolio underperformed the Russell 2000 Index by 2.89% for the quarter and underperformed the Russell 2000 Index for the year by 4.72%.

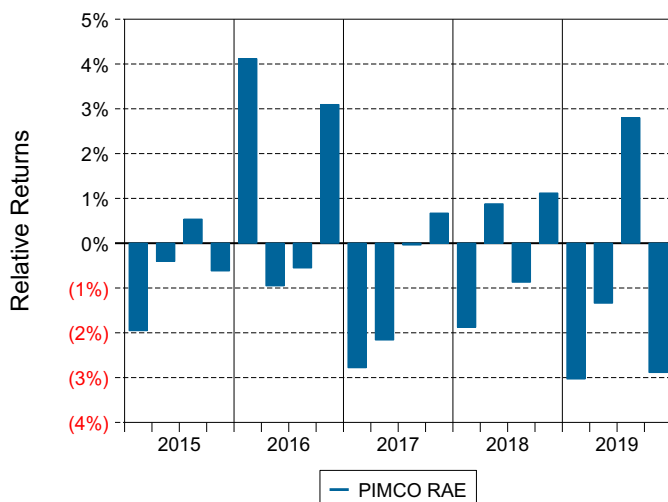
### Quarterly Asset Growth

Beginning Market Value	\$248,965,441
Net New Investment	\$-45,144,775
Investment Gains/(Losses)	\$17,489,485
Ending Market Value	\$221,310,151

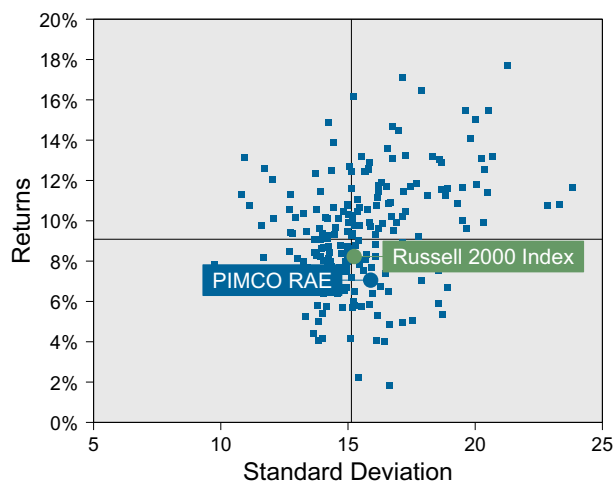
### Performance vs Callan Small Capitalization (Gross)



### Relative Return vs Russell 2000 Index



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



## International Equity Period Ended December 31, 2019

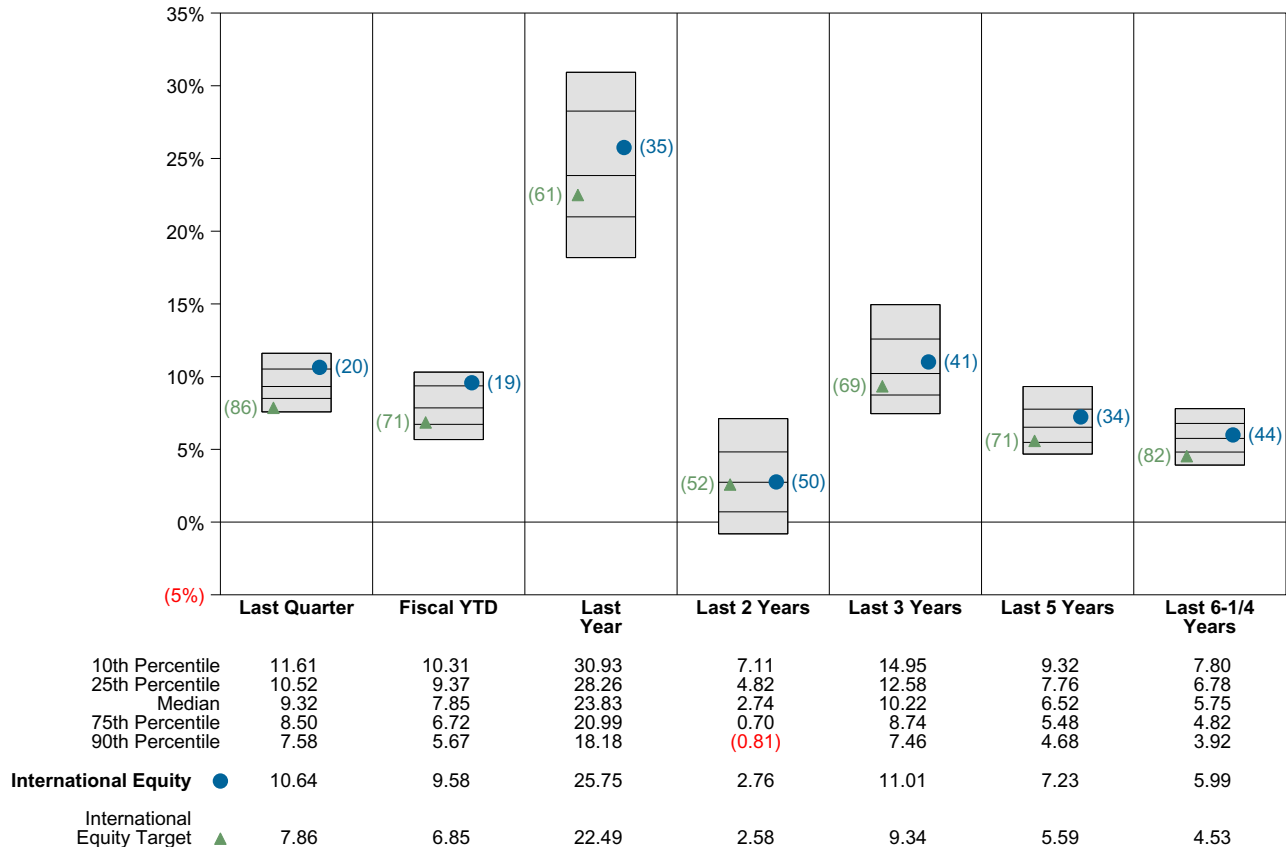
### Quarterly Summary and Highlights

- International Equity's portfolio posted a 10.64% return for the quarter placing it in the 20 percentile of the Callan Non-US Equity group for the quarter and in the 35 percentile for the last year.
- International Equity's portfolio outperformed the International Equity Target by 2.78% for the quarter and outperformed the International Equity Target for the year by 3.26%.

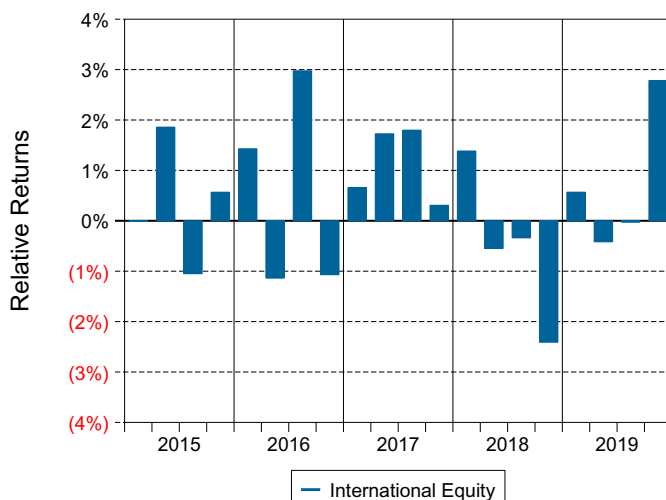
### Quarterly Asset Growth

Beginning Market Value	\$1,265,199,418
Net New Investment	\$-948,599
Investment Gains/(Losses)	\$134,530,239
Ending Market Value	\$1,398,781,058

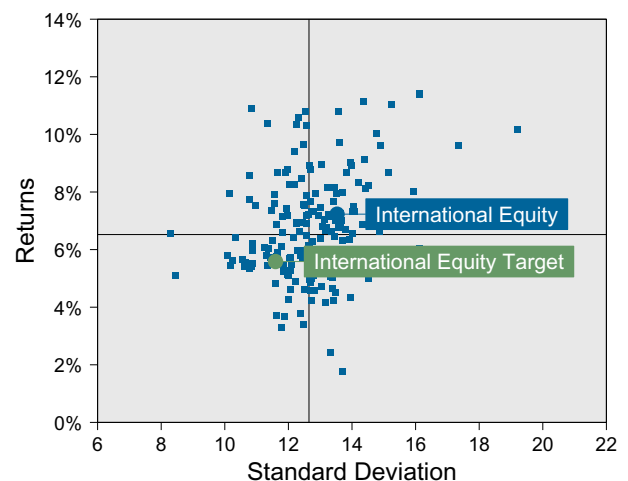
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs International Equity Target



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



## DFA Intl Small Cap Value Period Ended December 31, 2019

### 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.

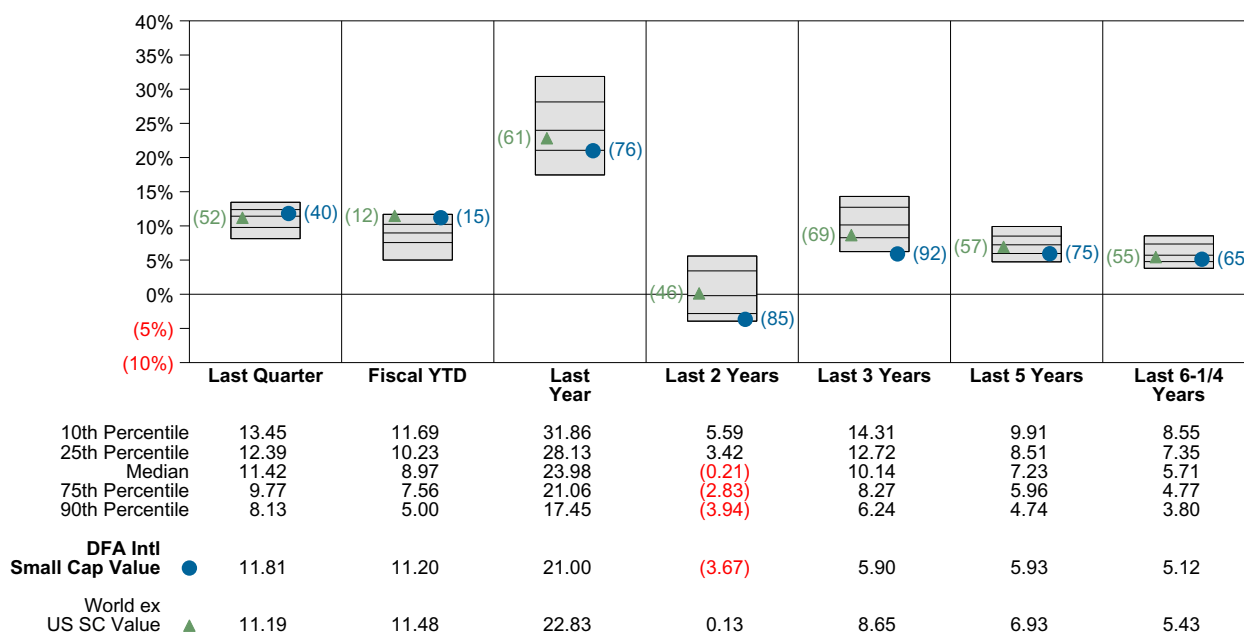
### Quarterly Summary and Highlights

- DFA Intl Small Cap Value's portfolio posted a 11.81% return for the quarter placing it in the 40 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 76 percentile for the last year.
- DFA Intl Small Cap Value's portfolio outperformed the World ex US SC Value by 0.62% for the quarter and underperformed the World ex US SC Value for the year by 1.83%.

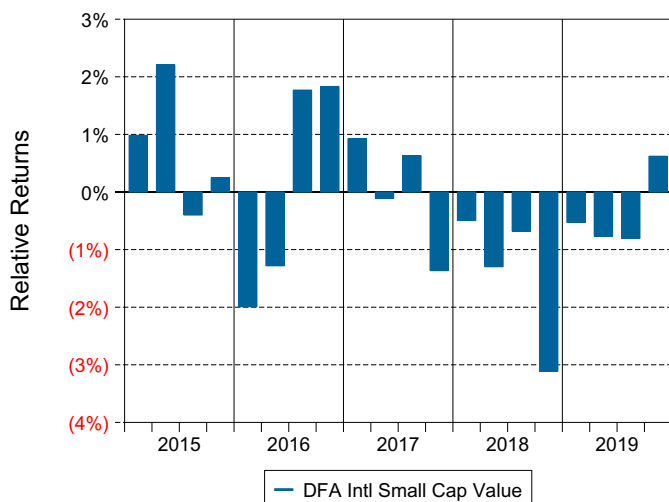
### Quarterly Asset Growth

Beginning Market Value	\$131,503,725
Net New Investment	\$0
Investment Gains/(Losses)	\$15,535,917
Ending Market Value	\$147,039,642

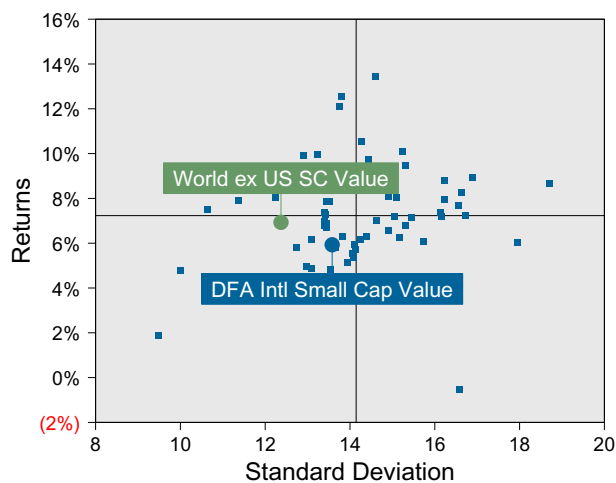
### Performance vs Callan International Small Cap Mut Funds (Net)



### Relative Return vs World ex US SC Value



### Callan International Small Cap Mut Funds (Net) Annualized Five Year Risk vs Return



## LSV Intl Value Period Ended December 31, 2019

### 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.

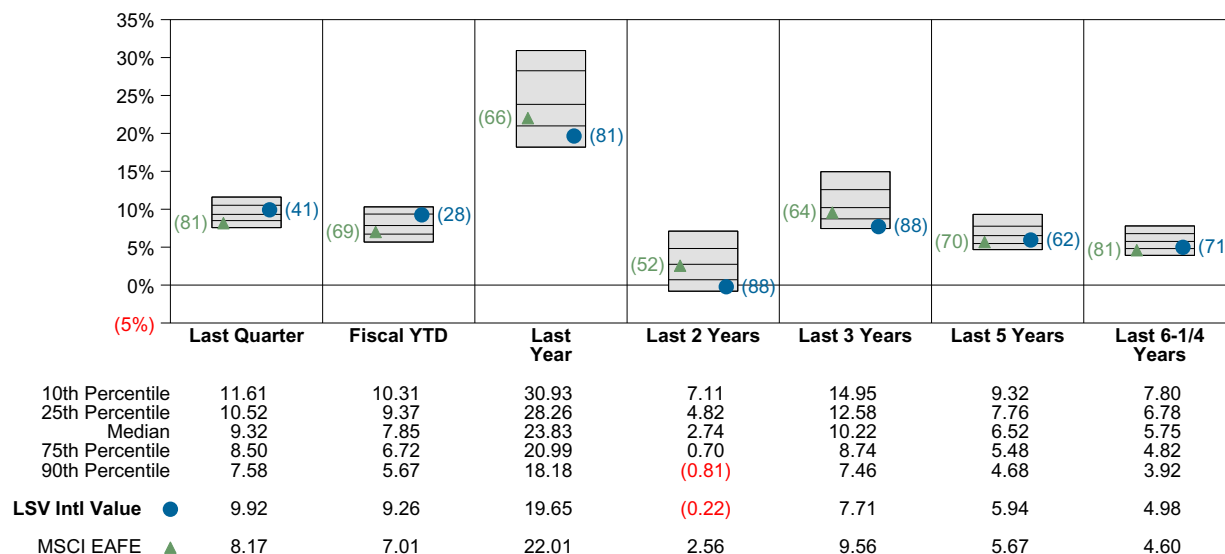
### Quarterly Summary and Highlights

- LSV Intl Value's portfolio posted a 9.92% return for the quarter placing it in the 41 percentile of the Callan Non-US Equity group for the quarter and in the 81 percentile for the last year.
- LSV Intl Value's portfolio outperformed the MSCI EAFE by 1.76% for the quarter and underperformed the MSCI EAFE for the year by 2.36%.

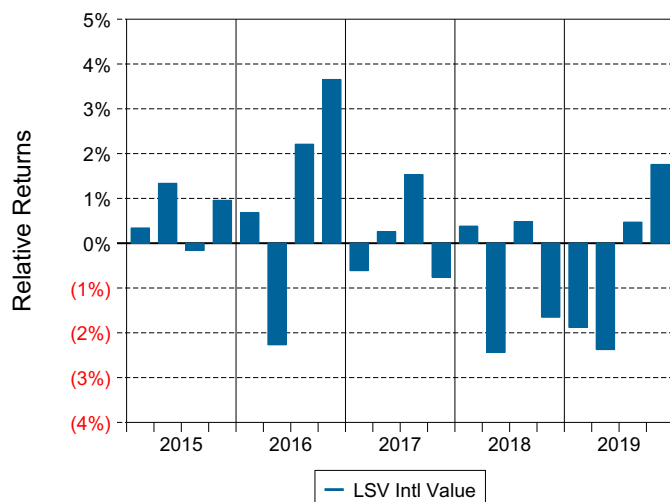
### Quarterly Asset Growth

Beginning Market Value	\$481,319,096
Net New Investment	\$-469,029
Investment Gains/(Losses)	\$47,735,110
Ending Market Value	\$528,585,177

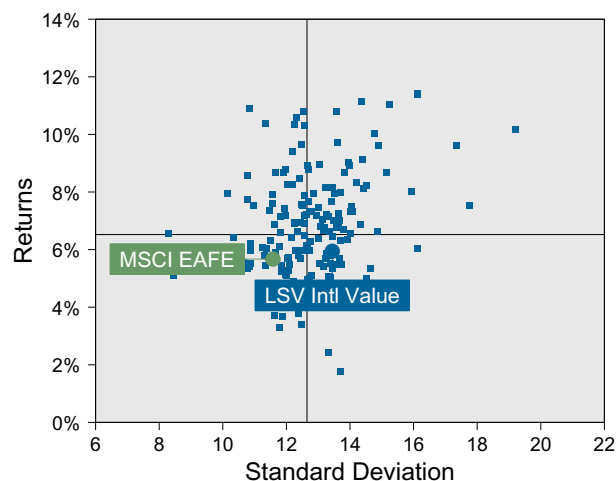
### Performance vs Callan Non-US Equity (Gross)



### Relative Return vs MSCI EAFE



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



# Vanguard Intl Explorer Fund

## Period Ended December 31, 2019

### 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.

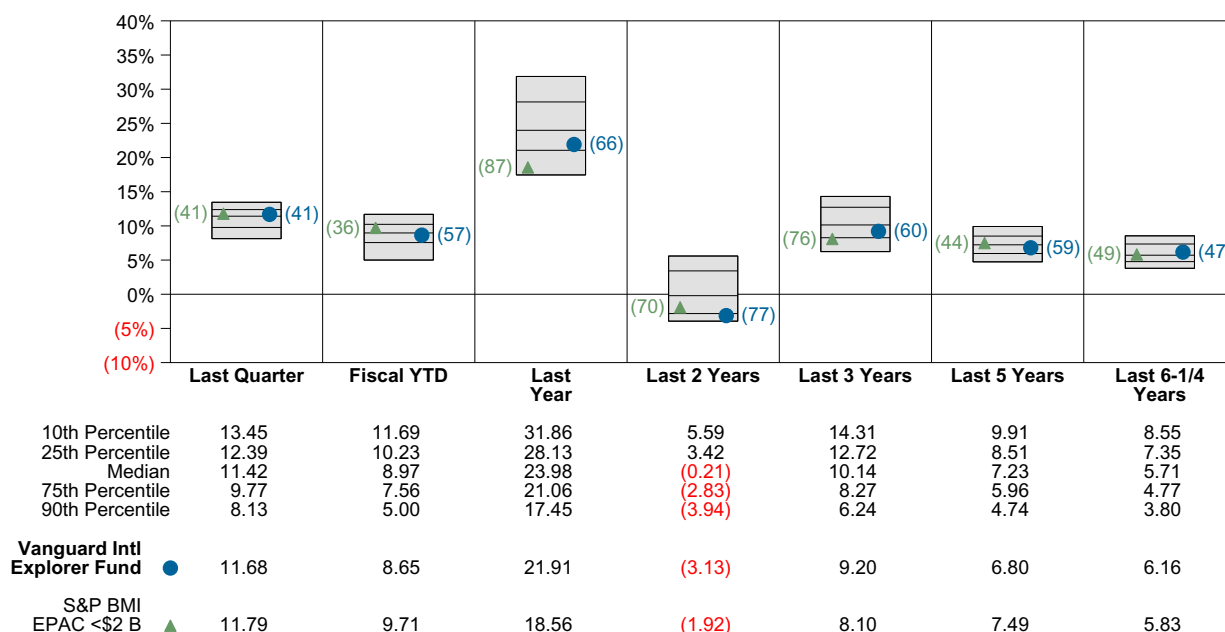
### Quarterly Summary and Highlights

- Vanguard Intl Explorer Fund's portfolio posted a 11.68% return for the quarter placing it in the 41 percentile of the Callan International Small Cap Mut Funds group for the quarter and in the 66 percentile for the last year.
- Vanguard Intl Explorer Fund's portfolio underperformed the S&P BMI EPAC <\$2 B by 0.10% for the quarter and outperformed the S&P BMI EPAC <\$2 B for the year by 3.35%.

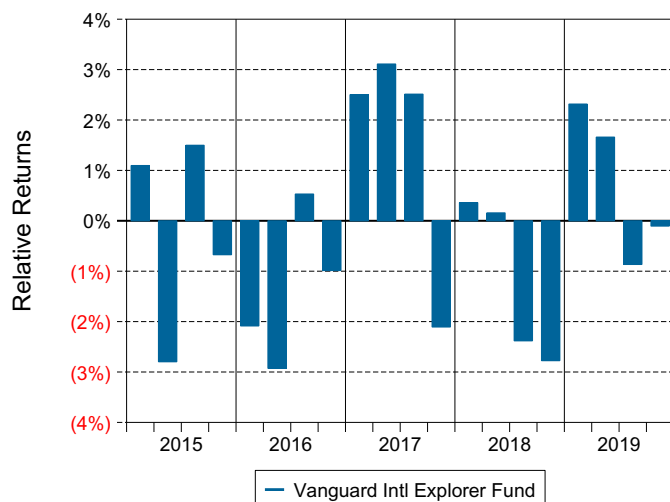
### Quarterly Asset Growth

Beginning Market Value	\$127,943,740
Net New Investment	\$0
Investment Gains/(Losses)	\$14,948,532
Ending Market Value	\$142,892,271

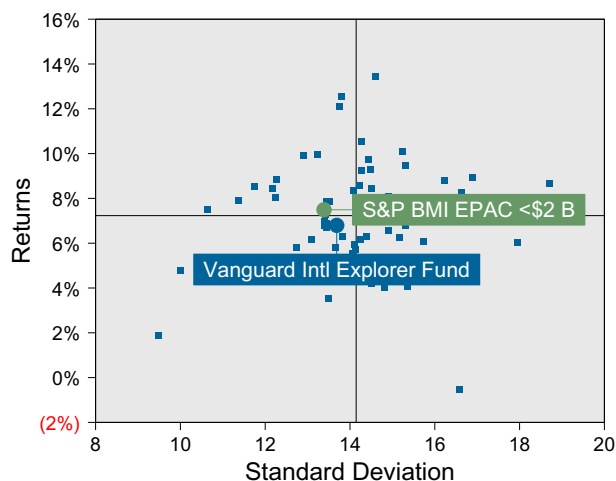
### Performance vs Callan International Small Cap Mut Funds (Net)



### 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 December 31, 2019

### 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.

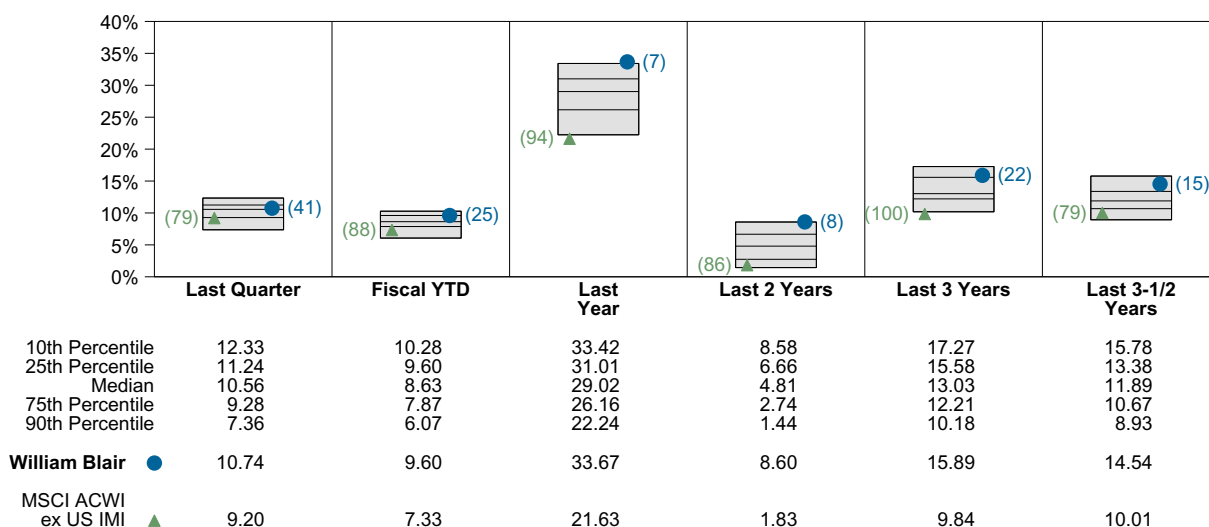
### Quarterly Summary and Highlights

- William Blair's portfolio posted a 10.74% return for the quarter placing it in the 41 percentile of the Callan Non-US All Country Growth Equity group for the quarter and in the 7 percentile for the last year.
- William Blair's portfolio outperformed the MSCI ACWI ex US IMI by 1.54% for the quarter and outperformed the MSCI ACWI ex US IMI for the year by 12.03%.

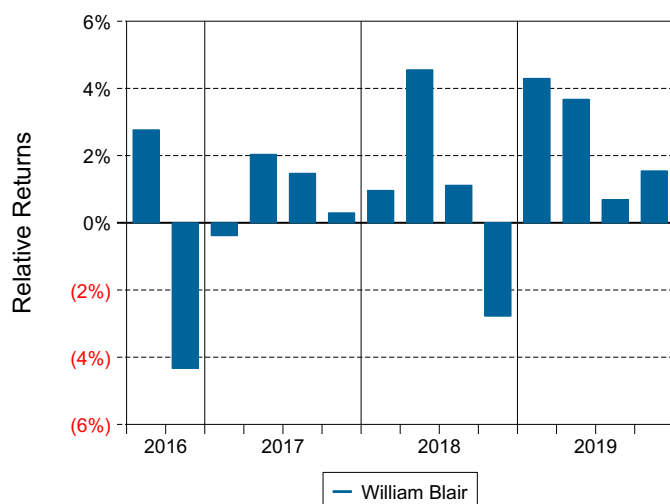
### Quarterly Asset Growth

Beginning Market Value	\$524,432,857
Net New Investment	\$-479,570
Investment Gains/(Losses)	\$56,310,681
Ending Market Value	\$580,263,968

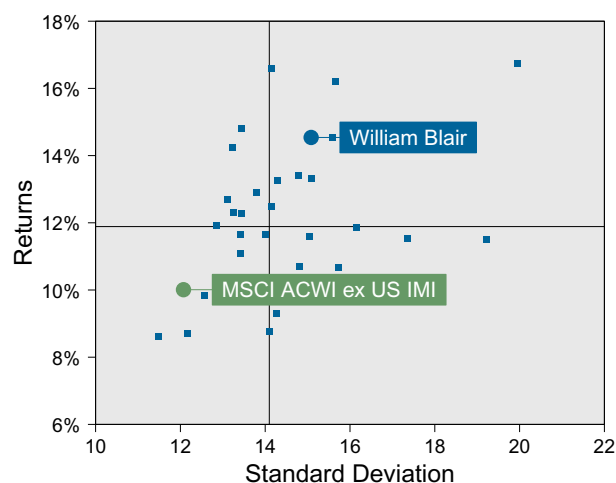
### Performance vs Callan Non-US All Country Growth Equity (Gross)



### Relative Return vs MSCI ACWI ex US IMI



### Callan Non-US All Country Growth Equity (Gross) Annualized Three and One-Half Year Risk vs Return



## Domestic Fixed Income Period Ended December 31, 2019

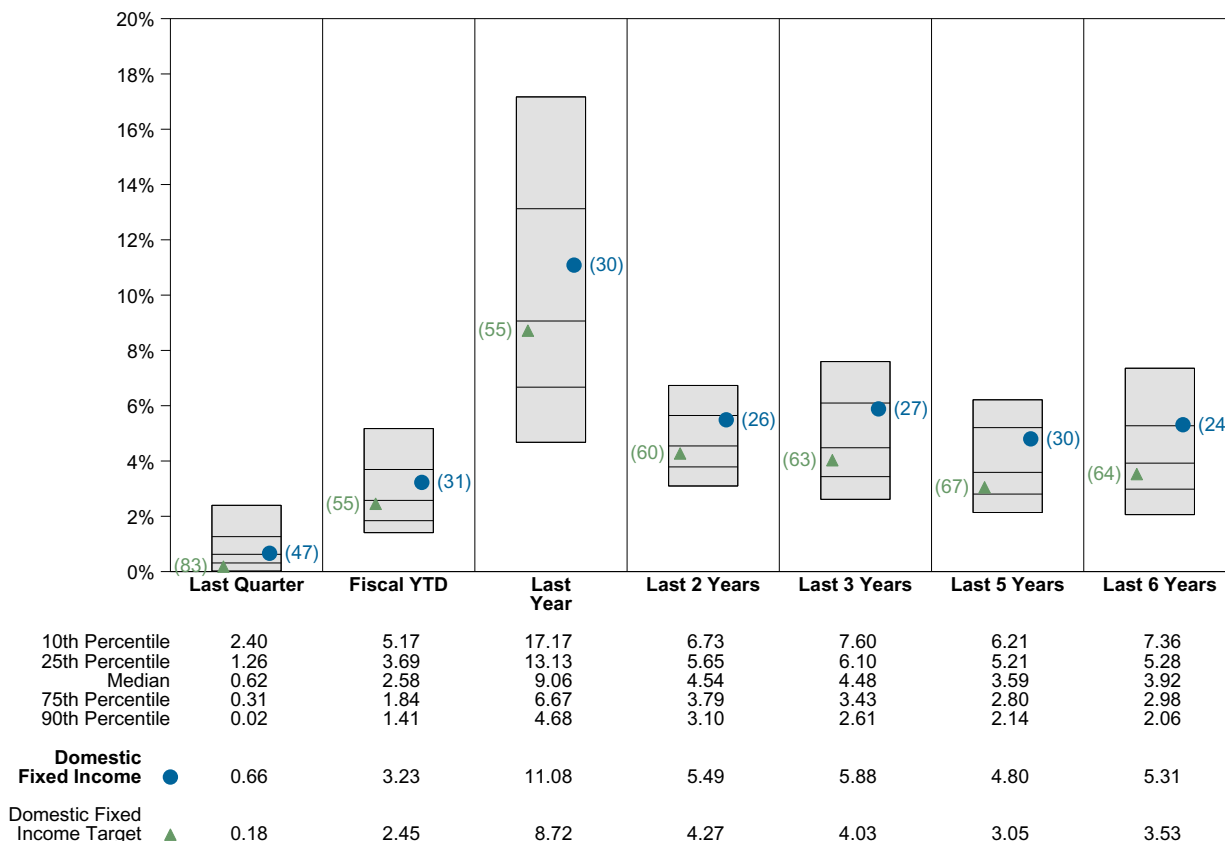
### Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.66% return for the quarter placing it in the 47 percentile of the Total Domestic Fixed-Inc Database group for the quarter and in the 30 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Domestic Fixed Income Target by 0.48% for the quarter and outperformed the Domestic Fixed Income Target for the year by 2.37%.

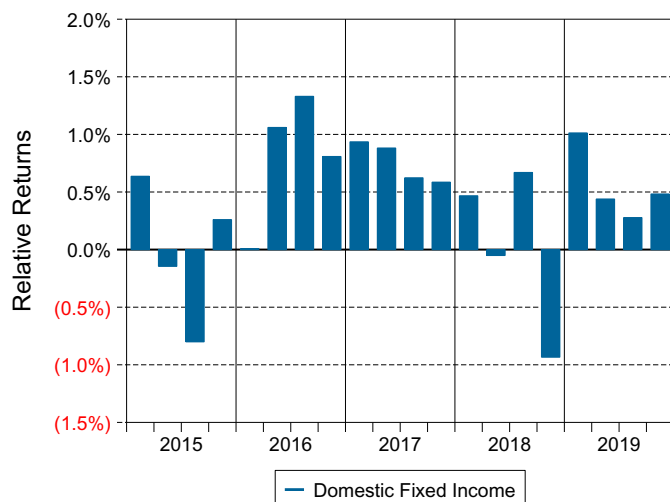
### Quarterly Asset Growth

Beginning Market Value	\$2,235,052,761
Net New Investment	\$89,179,727
Investment Gains/(Losses)	\$14,834,848
Ending Market Value	\$2,339,067,336

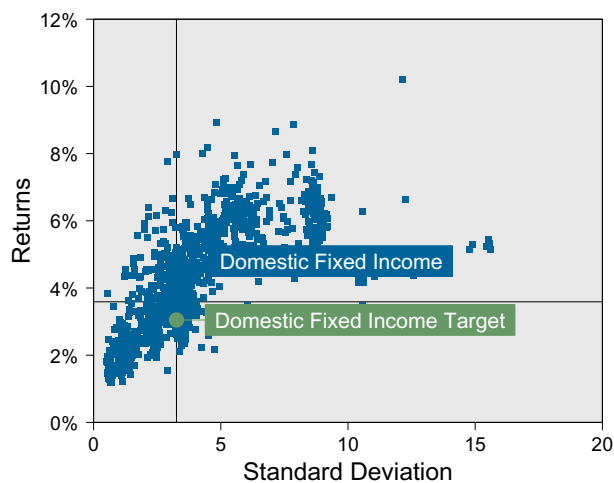
### Performance vs Total Domestic Fixed-Inc Database (Gross)



### Relative Returns vs Domestic Fixed Income Target



### Total Domestic Fixed-Inc Database (Gross) Annualized Five Year Risk vs Return





## Ares ND Credit Strategies Fd Period Ended December 31, 2019

### Quarterly Summary and Highlights

- Ares ND Credit Strategies Fd's portfolio posted a 2.10% return for the quarter placing it in the 81 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 98 percentile for the last year.
- Ares ND Credit Strategies Fd's portfolio underperformed the S&P/LSTA Leveraged Loan B Index by 0.01% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.64%.

### Quarterly Asset Growth

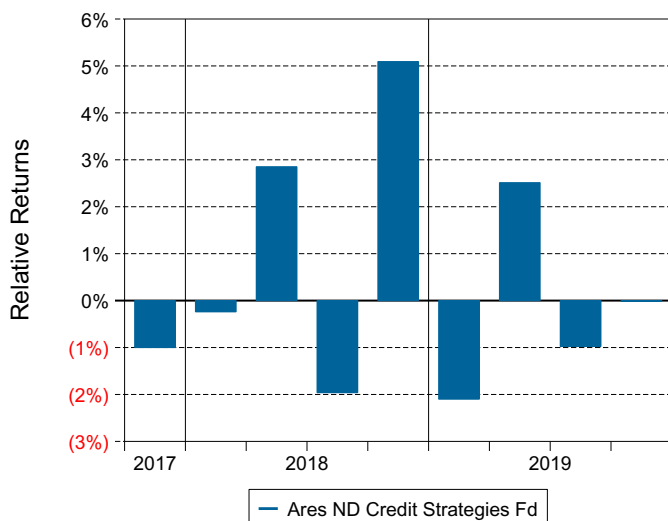
Beginning Market Value	\$67,136,433
Net New Investment	\$0
Investment Gains/(Losses)	\$1,409,295
Ending Market Value	\$68,545,728

### Performance vs Callan High Yield Mutual Funds (Net)

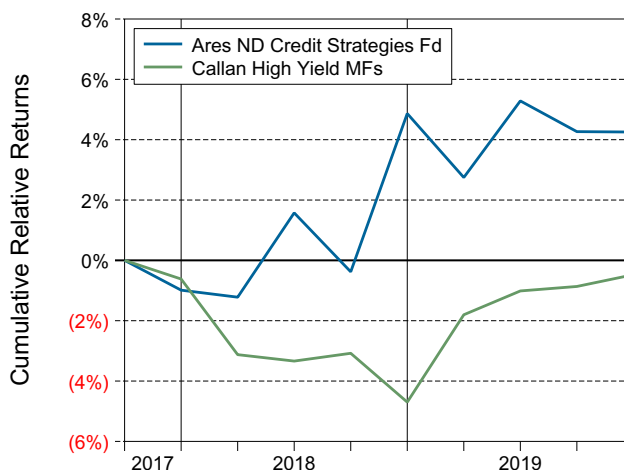


10th Percentile	3.14	4.74	15.76	5.96	5.41
25th Percentile	2.80	4.26	15.01	5.45	5.01
Median	2.49	3.69	14.04	4.90	4.54
75th Percentile	2.15	3.31	12.88	4.49	4.19
90th Percentile	1.89	2.53	11.79	3.98	3.74
Ares ND Credit Strategies Fd	2.10	2.10	8.35	7.58	6.76
S&P/LSTA Leveraged Loan	1.73	2.74	8.64	4.46	4.47
S&P/LSTA Leveraged Loan B Index	2.11	3.11	8.99	4.84	4.80

### Relative Returns vs S&P/LSTA Leveraged Loan B Index



### Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



## Cerberus ND Private Credit Fd Period Ended December 31, 2019

### Investment Philosophy

The investment objective of the LLC is to achieve superior risk-adjusted rates of return primarily through origination of, and investment in, secured debt assets consistent with the Loan Opportunities Strategy of the Cerberus Business Finance lending platform ("CBF", "Cerberus Business Finance" or the "Cerberus Lending Platform"). The Cerberus Lending Platform is a direct origination and lending business focused on providing secured debt primarily to U.S. middle-market companies. The LLC expects to generate both current income and capital appreciation.

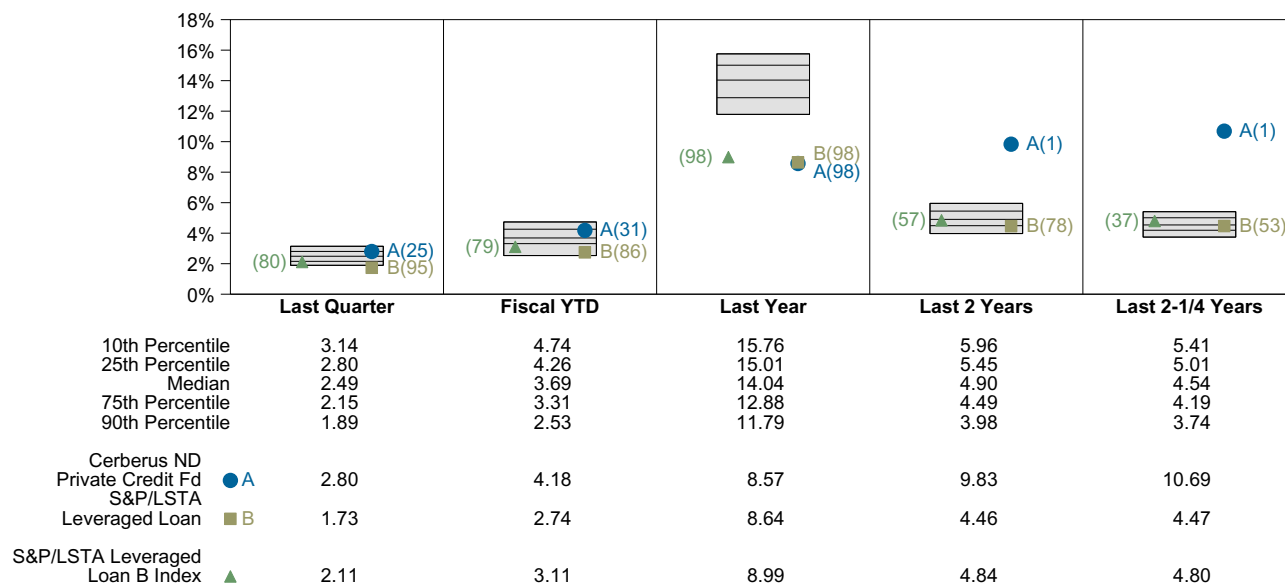
### Quarterly Summary and Highlights

- Cerberus ND Private Credit Fd's portfolio posted a 2.80% return for the quarter placing it in the 25 percentile of the Callan High Yield Mutual Funds group for the quarter and in the 98 percentile for the last year.
- Cerberus ND Private Credit Fd's portfolio outperformed the S&P/LSTA Leveraged Loan B Index by 0.69% for the quarter and underperformed the S&P/LSTA Leveraged Loan B Index for the year by 0.42%.

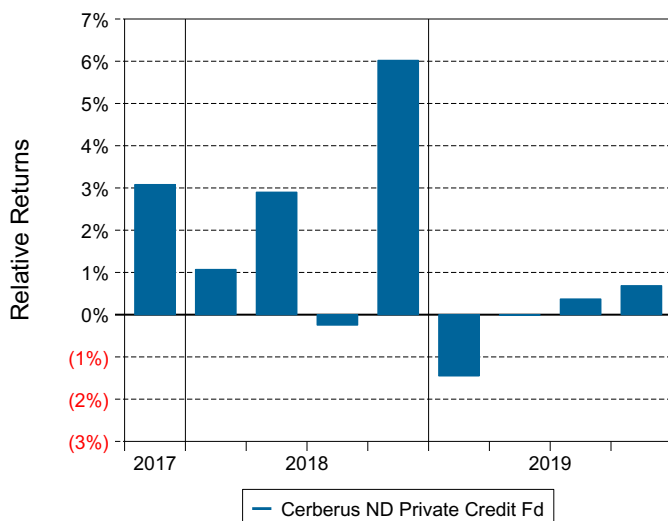
### Quarterly Asset Growth

Beginning Market Value	\$69,813,874
Net New Investment	\$12,100,000
Investment Gains/(Losses)	\$1,959,817
Ending Market Value	\$83,873,691

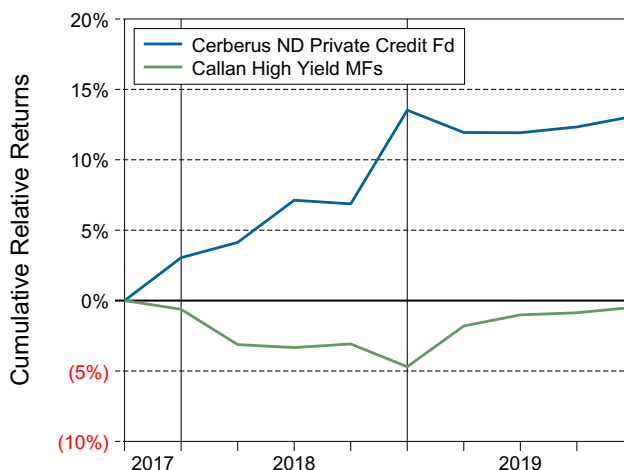
### Performance vs Callan High Yield Mutual Funds (Net)



### Relative Returns vs S&P/LSTA Leveraged Loan B Index



### Cumulative Returns vs S&P/LSTA Leveraged Loan B Index



## Declaration Total Return Period Ended December 31, 2019

### 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.

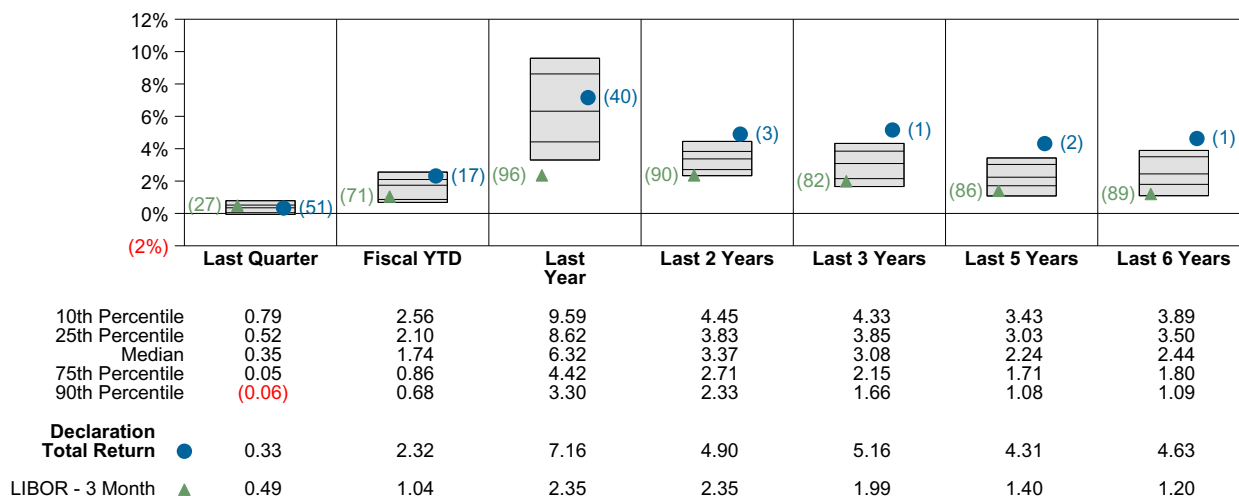
### Quarterly Summary and Highlights

- Declaration Total Return's portfolio posted a 0.33% return for the quarter placing it in the 51 percentile of the Callan Intermediate Fixed Inc Mut Funds group for the quarter and in the 40 percentile for the last year.
- Declaration Total Return's portfolio underperformed the LIBOR - 3 Month by 0.16% for the quarter and outperformed the LIBOR - 3 Month for the year by 4.80%.

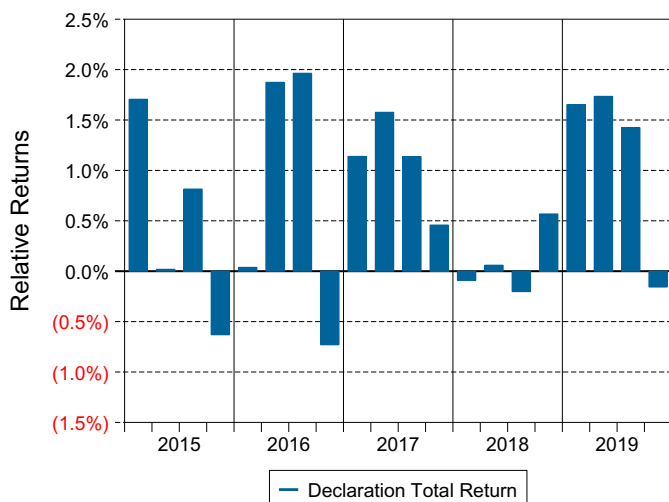
### Quarterly Asset Growth

Beginning Market Value	\$168,391,262
Net New Investment	\$-96,450
Investment Gains/(Losses)	\$559,070
Ending Market Value	\$168,853,882

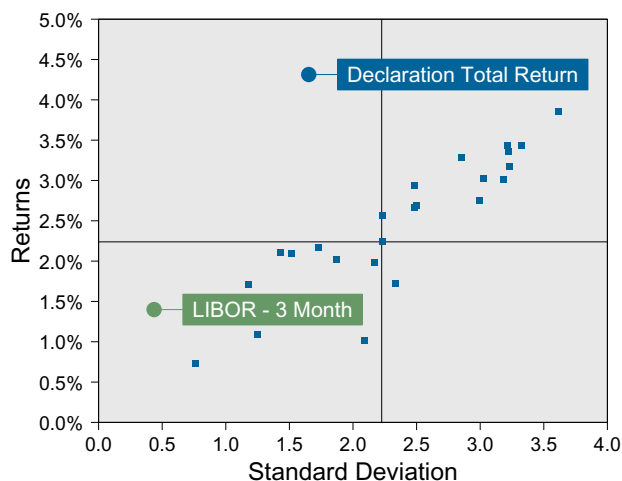
### Performance vs Callan Intermediate Fixed Inc Mut Funds (Net)



### Relative Return vs LIBOR - 3 Month



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



## PIMCO Bravo II

### Period Ended December 31, 2019

#### 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. **Prior to July 1, 2019, the Legacy Fund participated in these portfolios via the Insurance Pool. Beginning July 1, 2019, its portion of the pool was segregated into its own portfolios. Returns prior to that date reflect the data from the Insurance pool.**

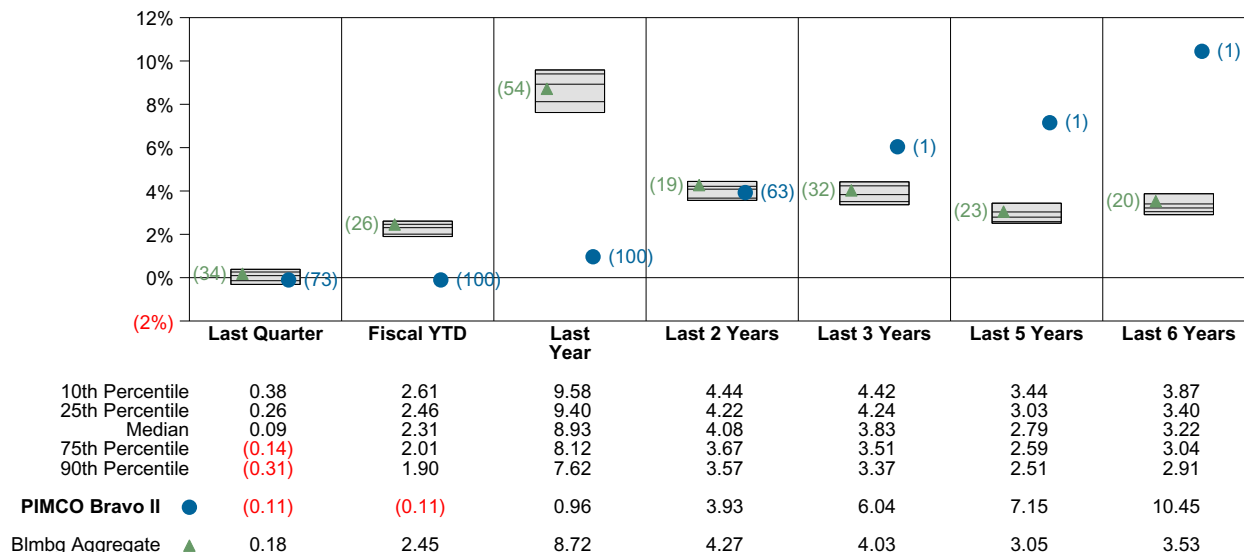
#### Quarterly Summary and Highlights

- PIMCO Bravo II's portfolio posted a (0.11)% return for the quarter placing it in the 73 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 100 percentile for the last year.
- PIMCO Bravo II's portfolio underperformed the Blmbg Aggregate by 0.29% for the quarter and underperformed the Blmbg Aggregate for the year by 7.75%.

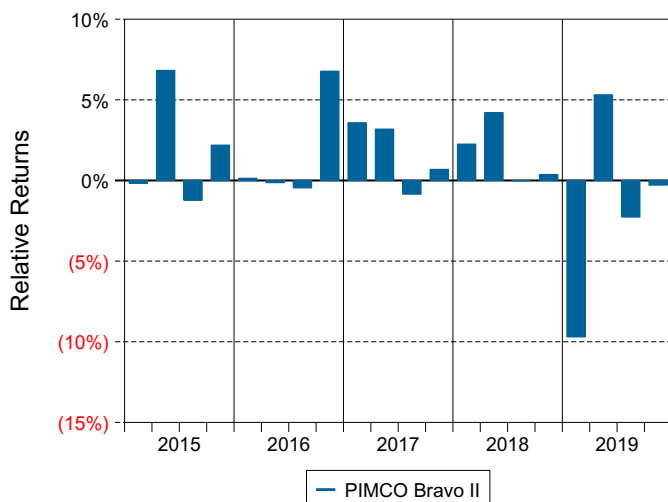
#### Quarterly Asset Growth

Beginning Market Value	\$12,416,916
Net New Investment	\$-1,001,381
Investment Gains/(Losses)	\$-13,104
Ending Market Value	\$11,402,431

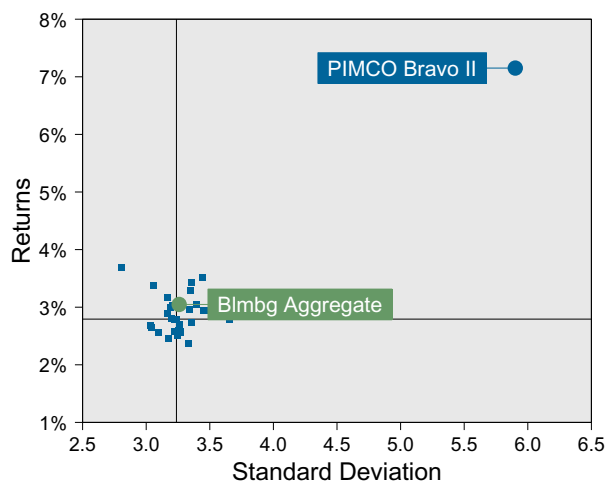
#### Performance vs Callan Core Bond Mutual Funds (Net)



#### Relative Return vs Blmbg Aggregate



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



## PIMCO DiSCO II

### Period Ended December 31, 2019

#### 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. **Prior to July 1, 2019, the Legacy Fund participated in these portfolios via the Insurance Pool. Beginning July 1, 2019, its portion of the pool was segregated into its own portfolios. Returns prior to that date reflect the data from the Insurance pool.**

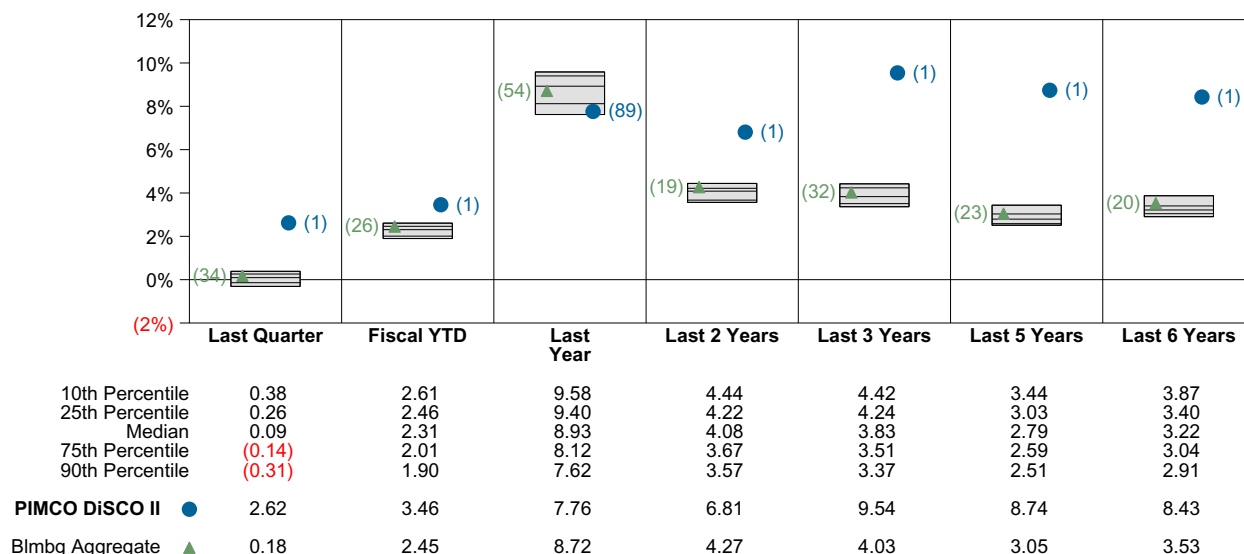
#### Quarterly Summary and Highlights

- PIMCO DiSCO II's portfolio posted a 2.62% return for the quarter placing it in the 1 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 89 percentile for the last year.
- PIMCO DiSCO II's portfolio outperformed the Blmbg Aggregate by 2.44% for the quarter and underperformed the Blmbg Aggregate for the year by 0.95%.

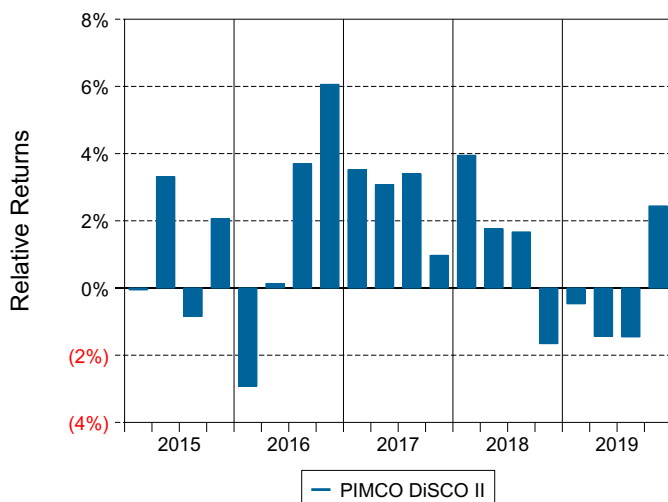
#### Quarterly Asset Growth

Beginning Market Value	\$41,648,447
Net New Investment	\$0
Investment Gains/(Losses)	\$1,091,437
Ending Market Value	\$42,739,884

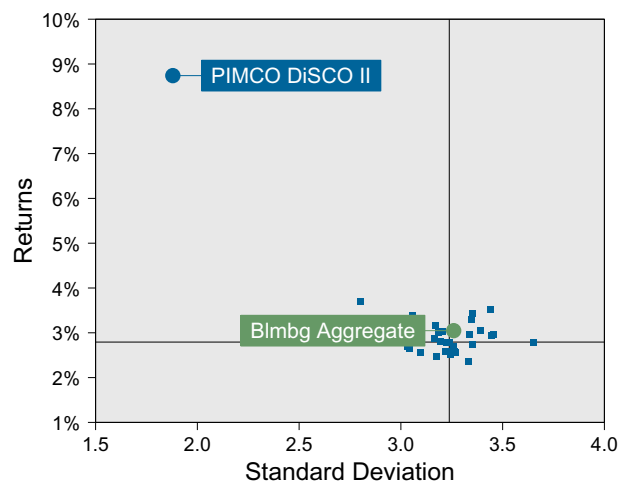
#### Performance vs Callan Core Bond Mutual Funds (Net)



#### Relative Return vs Blmbg Aggregate



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



## Prudential Period Ended December 31, 2019

### Investment Philosophy

PGIM Fixed Income's Core Plus Strategy is an actively-managed strategy that seeks +150 bps over the Bloomberg Barclays U.S. Aggregate Bond Index or similar benchmark annualized over a market cycle (three to five years.) The Strategy seeks about half of its excess return from active sector allocation and up to one-third each from subsector/security selection and duration/yield curve/currencies, depending on market opportunities.

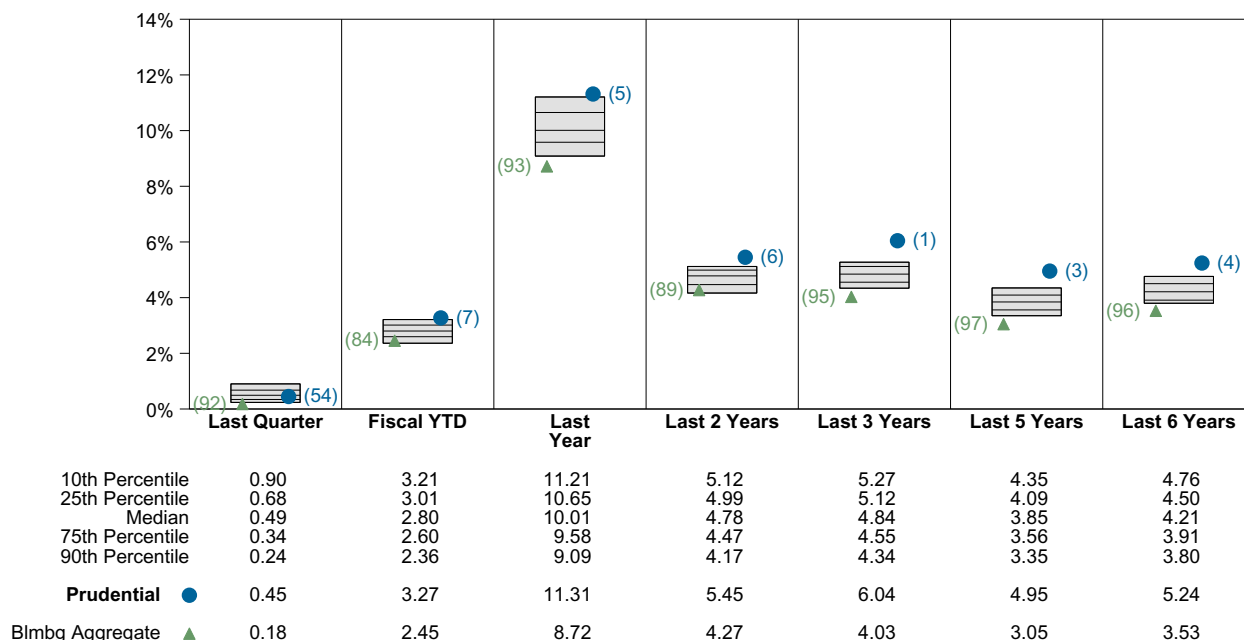
### Quarterly Summary and Highlights

- Prudential's portfolio posted a 0.45% return for the quarter placing it in the 54 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 5 percentile for the last year.
- Prudential's portfolio outperformed the Blmbg Aggregate by 0.27% for the quarter and outperformed the Blmbg Aggregate for the year by 2.60%.

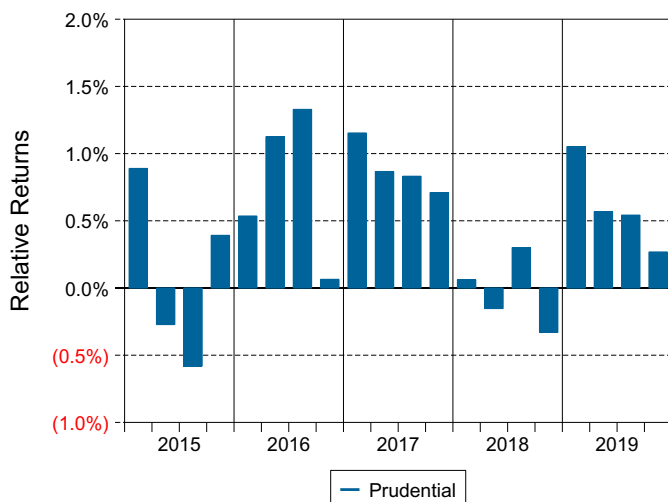
### Quarterly Asset Growth

Beginning Market Value	\$679,591,130
Net New Investment	\$-367,405
Investment Gains/(Losses)	\$3,042,980
Ending Market Value	\$682,266,705

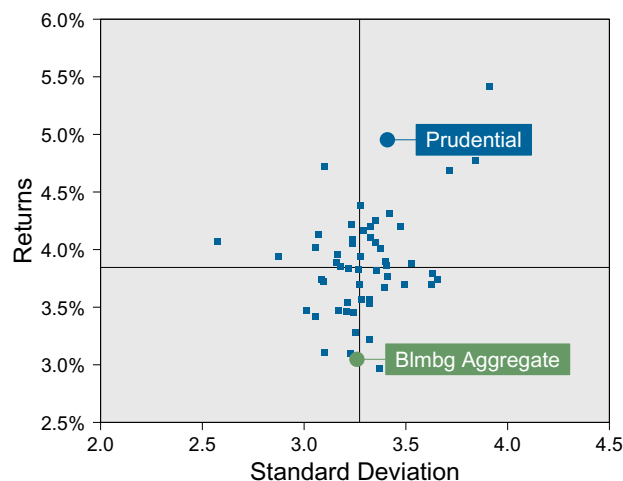
### Performance vs Callan Core Plus Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



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



## SSgA US Govt Credit Bd Idx Period Ended December 31, 2019

### Investment Philosophy

The Fund seeks an investment return that approximates as closely as practicable, before expenses, the performance of the Barclays Capital U.S. Government/Credit Bond Index over the long term.

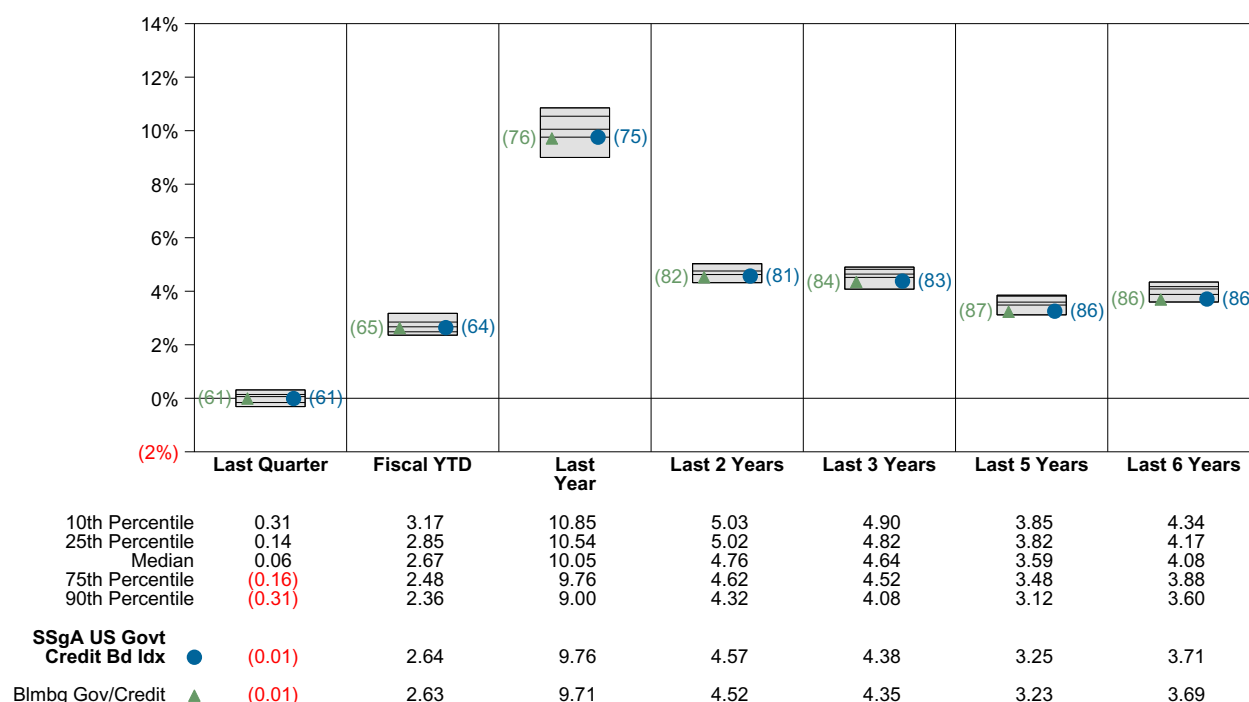
### Quarterly Summary and Highlights

- SSgA US Govt Credit Bd Idx's portfolio posted a (0.01)% return for the quarter placing it in the 61 percentile of the Callan Government/Credit group for the quarter and in the 75 percentile for the last year.
- SSgA US Govt Credit Bd Idx's portfolio underperformed the Blmbg Gov/Credit by 0.00% for the quarter and outperformed the Blmbg Gov/Credit for the year by 0.05%.

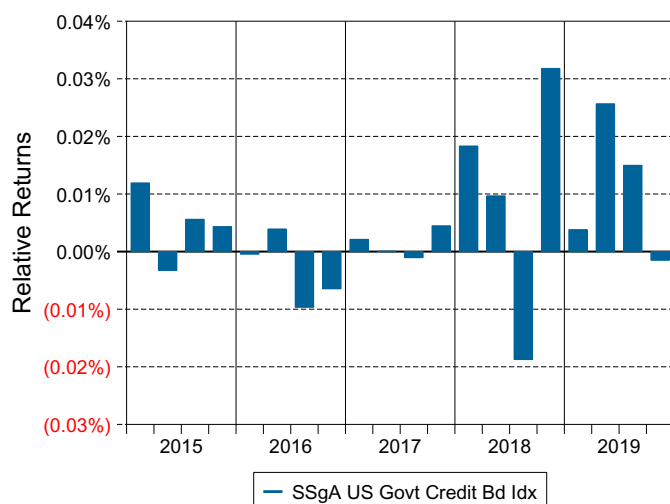
### Quarterly Asset Growth

Beginning Market Value	\$308,856,319
Net New Investment	\$14,988,643
Investment Gains/(Losses)	\$-12,914
Ending Market Value	\$323,832,048

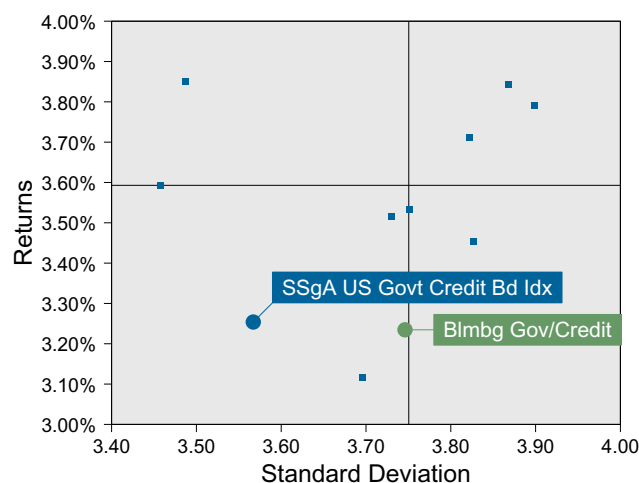
### Performance vs Callan Government/Credit (Gross)



### Relative Return vs Blmbg Gov/Credit



### Callan Government/Credit (Gross) Annualized Five Year Risk vs Return



## Wells Capital Period Ended December 31, 2019

### 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.

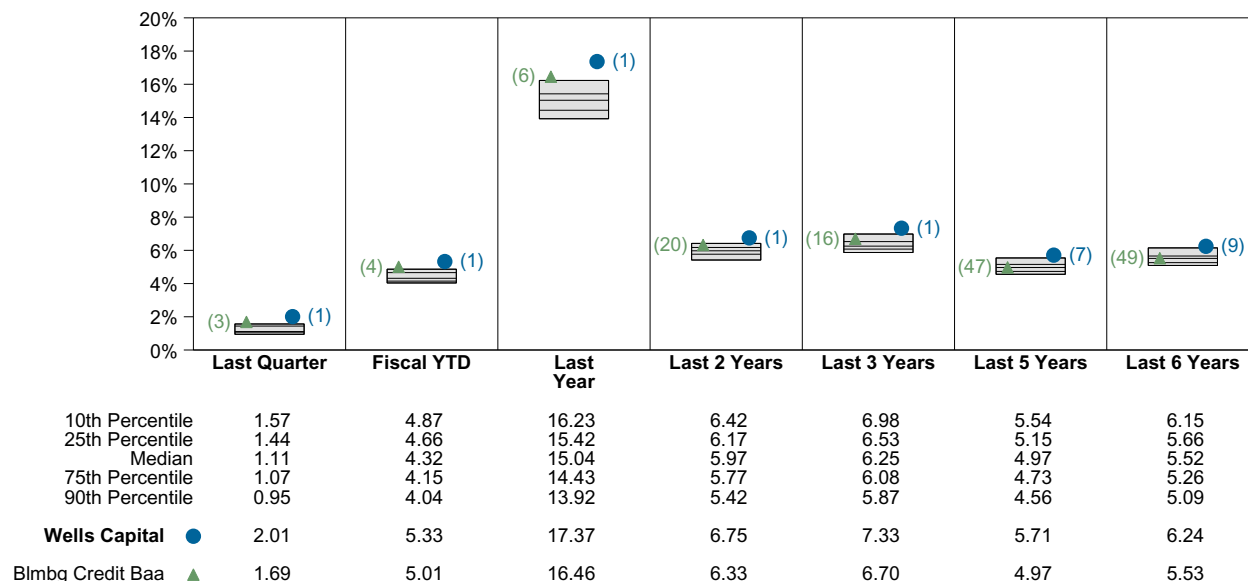
### Quarterly Summary and Highlights

- Wells Capital's portfolio posted a 2.01% return for the quarter placing it in the 1 percentile of the Callan Investment Grade Credit Fixed Inc group for the quarter and in the 1 percentile for the last year.
- Wells Capital's portfolio outperformed the Blmbg Credit Baa by 0.31% for the quarter and outperformed the Blmbg Credit Baa for the year by 0.91%.

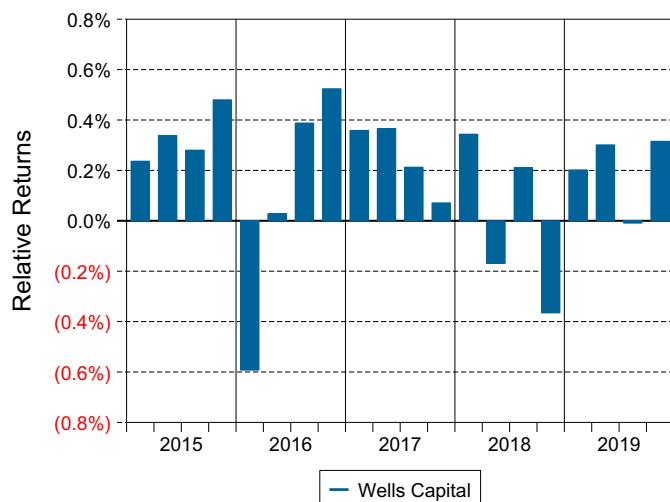
### Quarterly Asset Growth

Beginning Market Value	\$177,917,504
Net New Investment	\$-86,246
Investment Gains/(Losses)	\$3,571,601
Ending Market Value	\$181,402,859

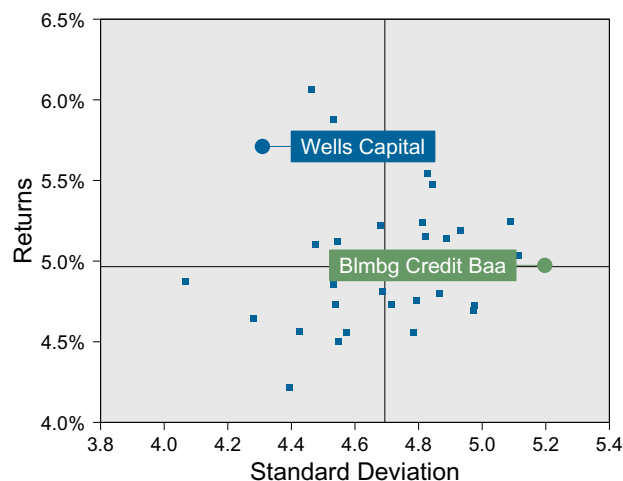
### Performance vs Callan Investment Grade Credit Fixed Inc (Gross)



### Relative Return vs Blmbg Credit Baa



### Callan Investment Grade Credit Fixed Inc (Gross) Annualized Five Year Risk vs Return





## Western Asset Management Company Period Ended December 31, 2019

### Investment Philosophy

Western Asset designs this portfolio using all major fixed-income sectors with a bias towards non-Treasuries, especially corporate, mortgage-backed and asset-backed securities. Value can be added through sector rotation, issue selection, duration and term structure weighting.

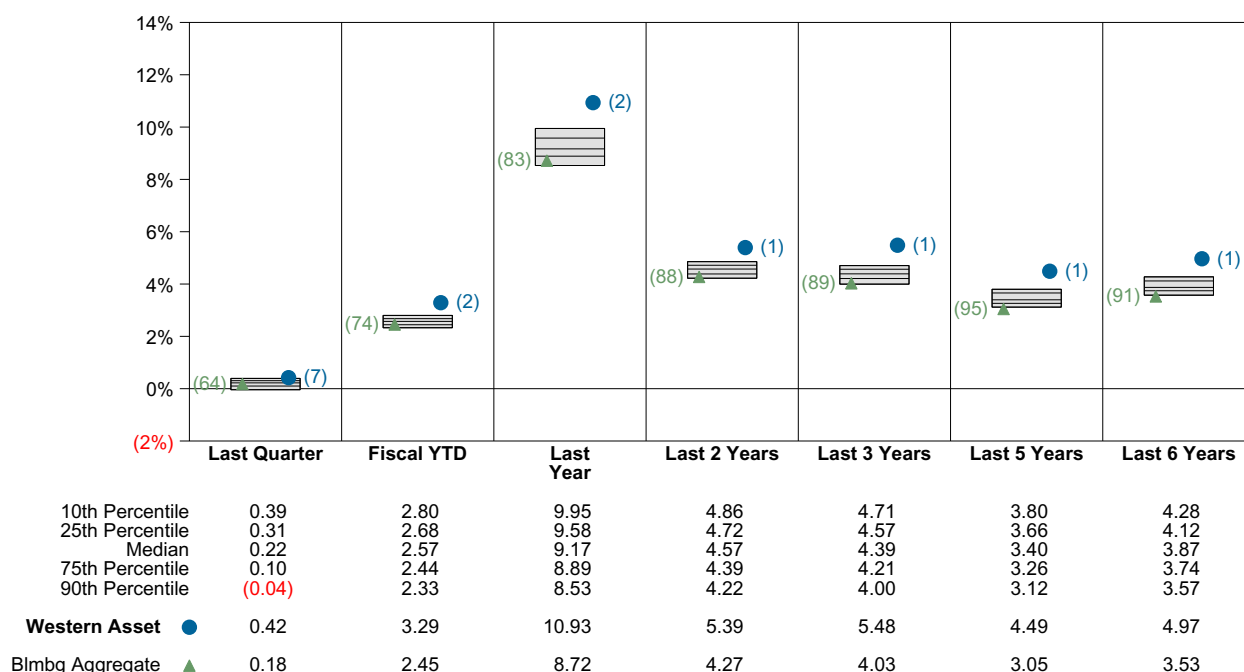
### Quarterly Summary and Highlights

- Western Asset's portfolio posted a 0.42% return for the quarter placing it in the 7 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 2 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 2.22%.

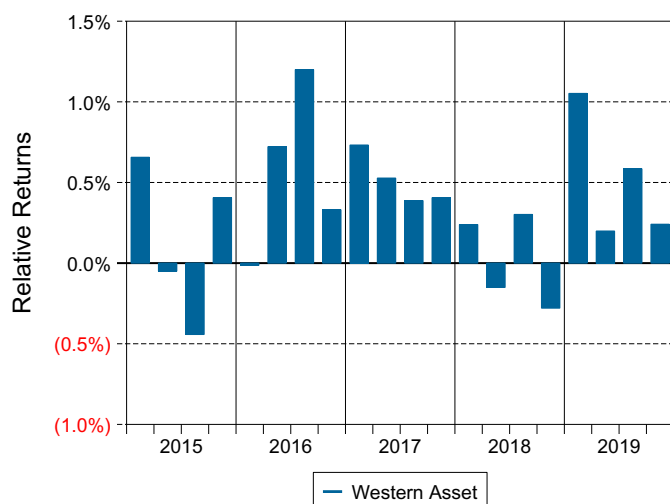
### Quarterly Asset Growth

Beginning Market Value	\$667,273,515
Net New Investment	\$14,812,965
Investment Gains/(Losses)	\$2,810,992
Ending Market Value	\$684,897,472

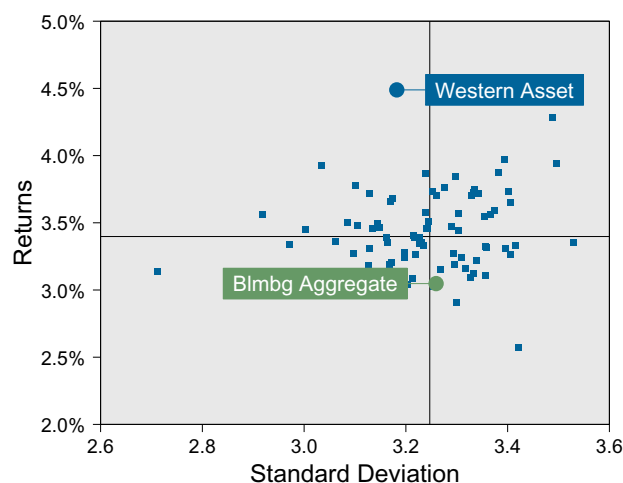
### Performance vs Callan Core Bond Fixed Income (Gross)



### Relative Return vs Blmbg Aggregate



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



## Invesco Core Real Estate Period Ended December 31, 2019

### 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.

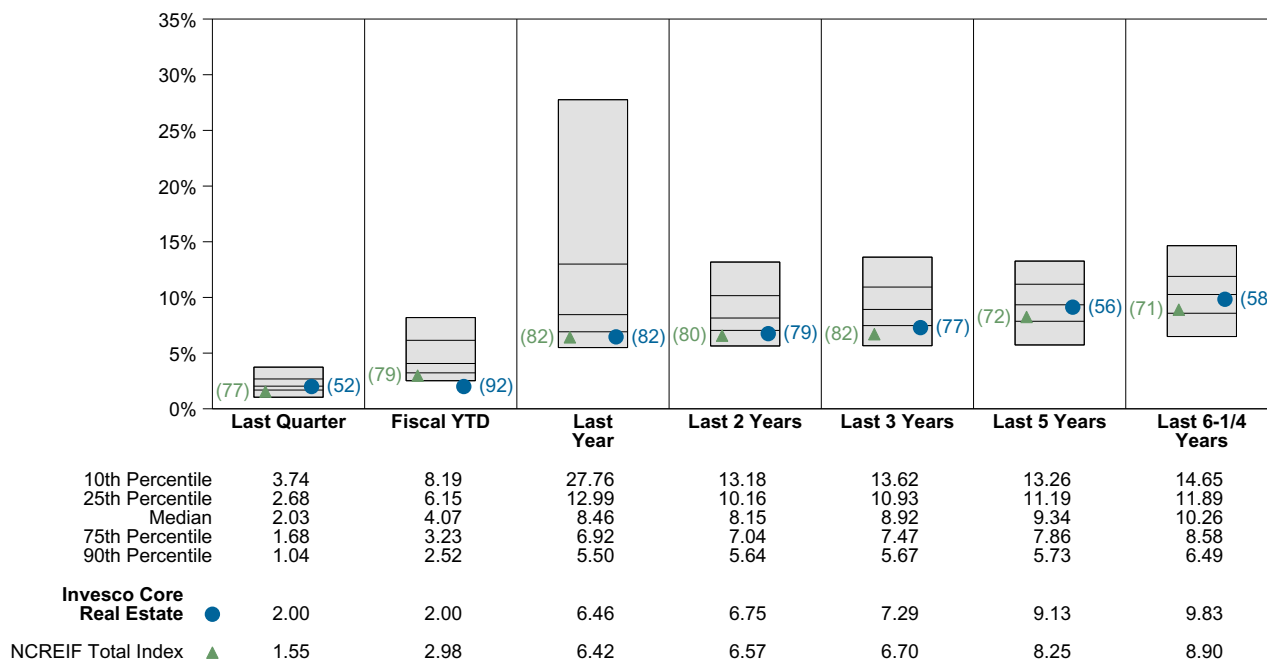
### Quarterly Summary and Highlights

- Invesco Core Real Estate's portfolio posted a 2.00% return for the quarter placing it in the 52 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 82 percentile for the last year.
- Invesco Core Real Estate's portfolio outperformed the NCREIF Total Index by 0.45% for the quarter and outperformed the NCREIF Total Index for the year by 0.04%.

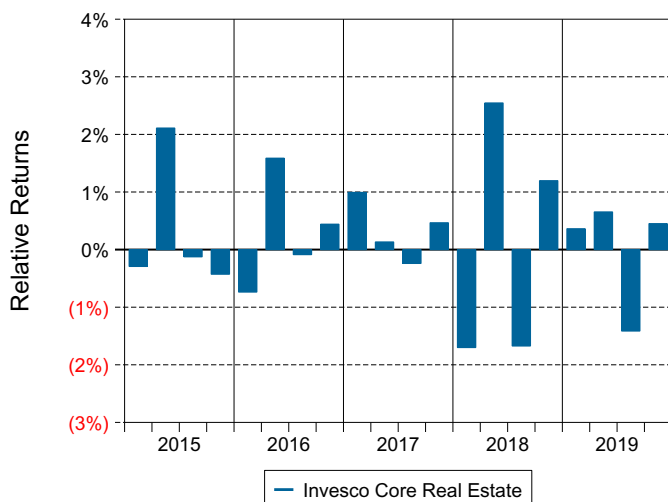
### Quarterly Asset Growth

Beginning Market Value	\$146,247,688
Net New Investment	\$-126,737
Investment Gains/(Losses)	\$2,923,435
Ending Market Value	\$149,044,386

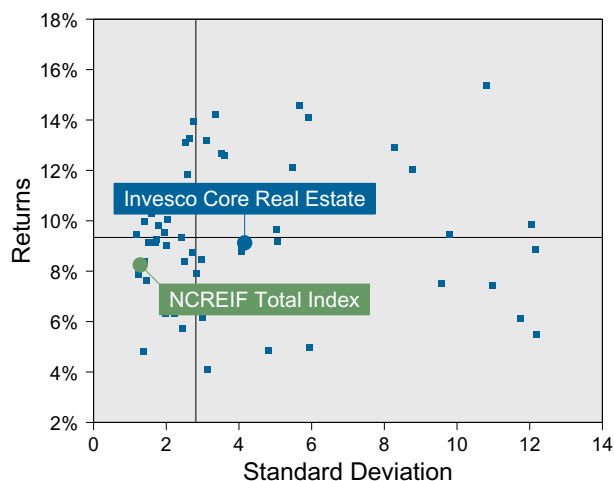
### Performance vs Callan Total Domestic Real Estate DB (Gross)



### Relative Return vs NCREIF Total Index



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



## JP Morgan RE Inc & Growth Period Ended December 31, 2019

### Investment Philosophy

The J.P. Morgan U.S. Real Estate Income and Growth Fund seeks to construct and opportunistically manage a portfolio of core direct real estate investments, complemented by other real estate and real estate-related assets. The Fund pursues a broadly diversified absolute-return strategy and pursues all property investments on an opportunistic basis. The majority of the Fund's investments will be in direct core properties in the office, industrial, retail and residential sectors.

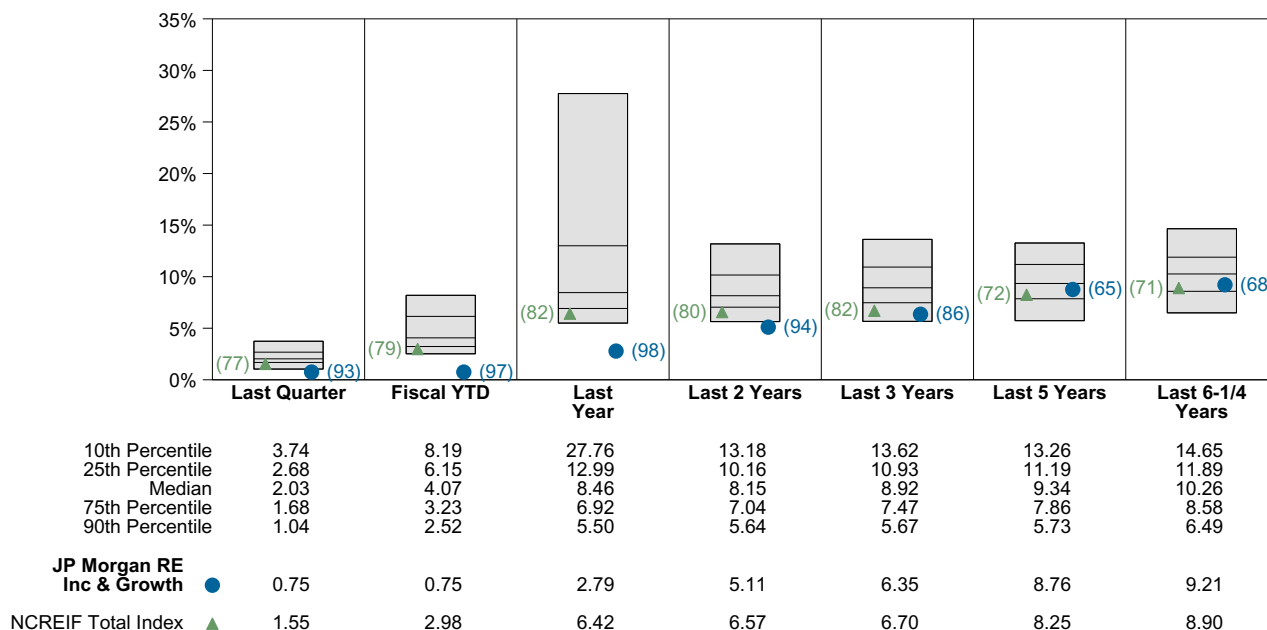
### Quarterly Summary and Highlights

- JP Morgan RE Inc & Growth's portfolio posted a 0.75% return for the quarter placing it in the 93 percentile of the Callan Total Domestic Real Estate DB group for the quarter and in the 98 percentile for the last year.
- JP Morgan RE Inc & Growth's portfolio underperformed the NCREIF Total Index by 0.80% for the quarter and underperformed the NCREIF Total Index for the year by 3.63%.

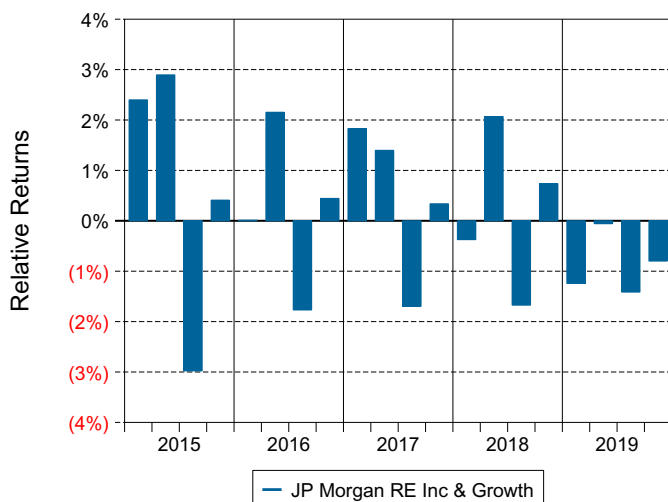
### Quarterly Asset Growth

Beginning Market Value	\$150,970,316
Net New Investment	\$-339,302
Investment Gains/(Losses)	\$1,133,384
Ending Market Value	\$151,764,398

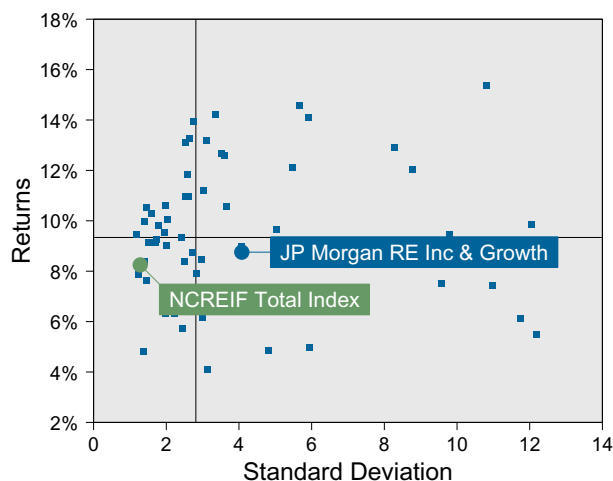
### Performance vs Callan Total Domestic Real Estate DB (Gross)



### Relative Return vs NCREIF Total Index



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



## Western Asset TIPS Period Ended December 31, 2019

### Investment Philosophy

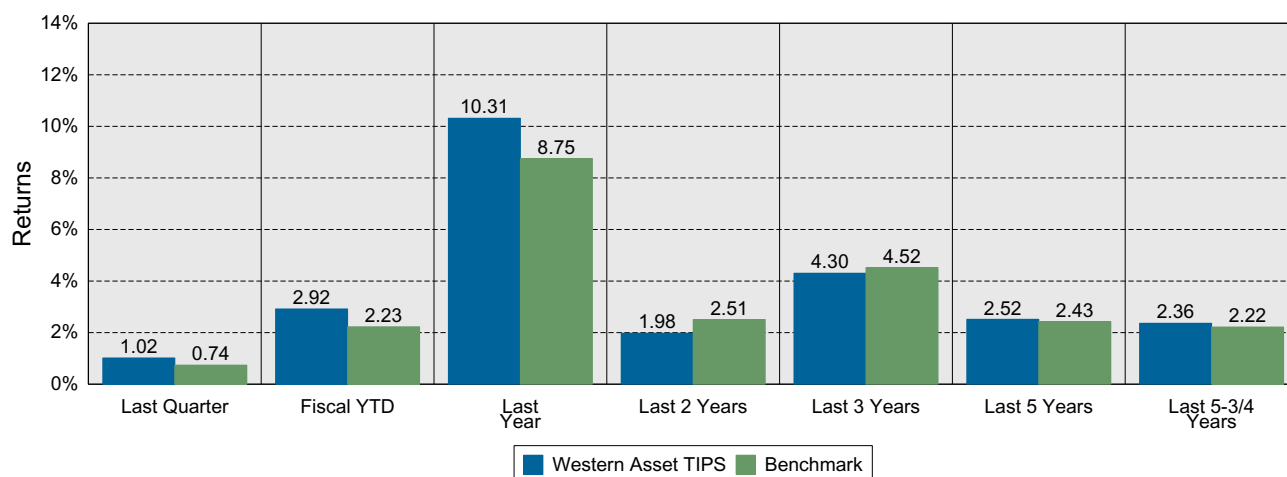
The Western Asset US TIPS Full Discretion strategy is an inflation-protected strategy that aims to maximize total return and add value through duration and curve positioning, sector allocation, and security selection, while approximating benchmark risk. The strategy invests in a diversified portfolio using higher-yielding inflation-protected instruments with a bias toward Treasury Inflation-Protected Securities (TIPS). Opportunistic investments include high-yield, emerging markets, non-dollar securities, commodities and bank loans that may also be employed using derivatives. **Benchmark: Bloomberg US TIPS through 12/31/2009; Bloomberg Global Inflation-Linked through 10/31/2018; Bloomberg US Govt Inflation Linked Bond Index thereafter.**

### Quarterly Summary and Highlights

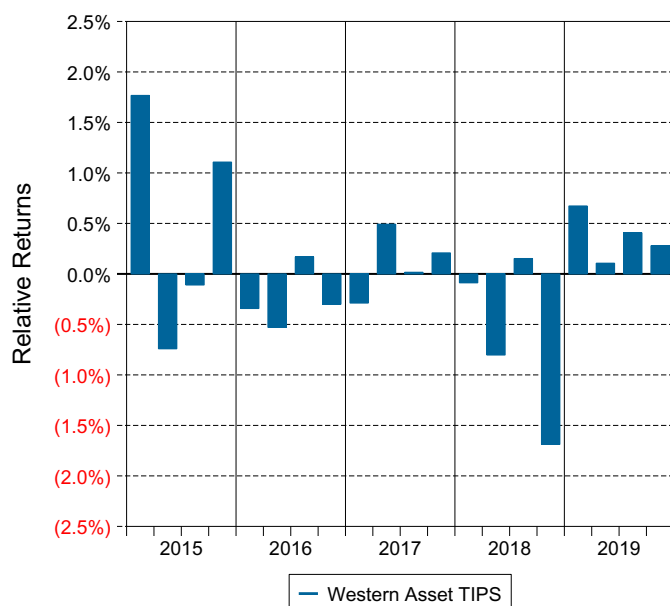
- Western Asset TIPS's portfolio outperformed the Benchmark by 0.28% for the quarter and outperformed the Benchmark for the year by 1.56%.

### Quarterly Asset Growth

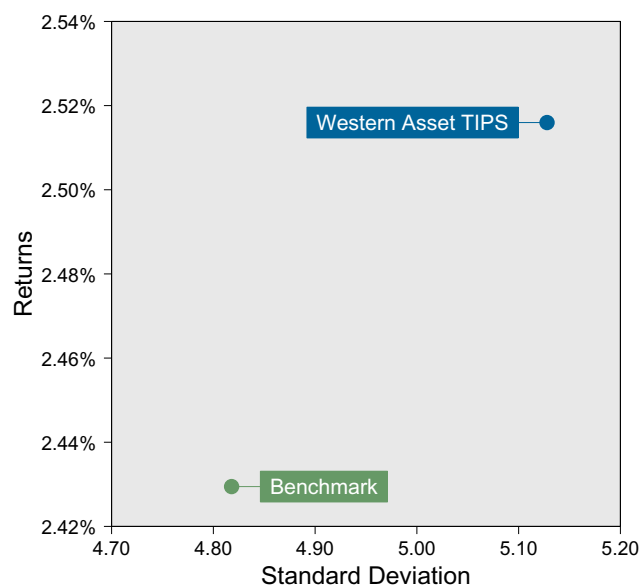
Beginning Market Value	\$404,378,526
Net New Investment	\$9,878,334
Investment Gains/(Losses)	\$4,094,417
Ending Market Value	\$418,351,276



### Relative Return vs Benchmark



### Annualized Five Year Risk vs Return



## ISQ Global Infrastructure II Period Ended December 31, 2019

### Investment Philosophy

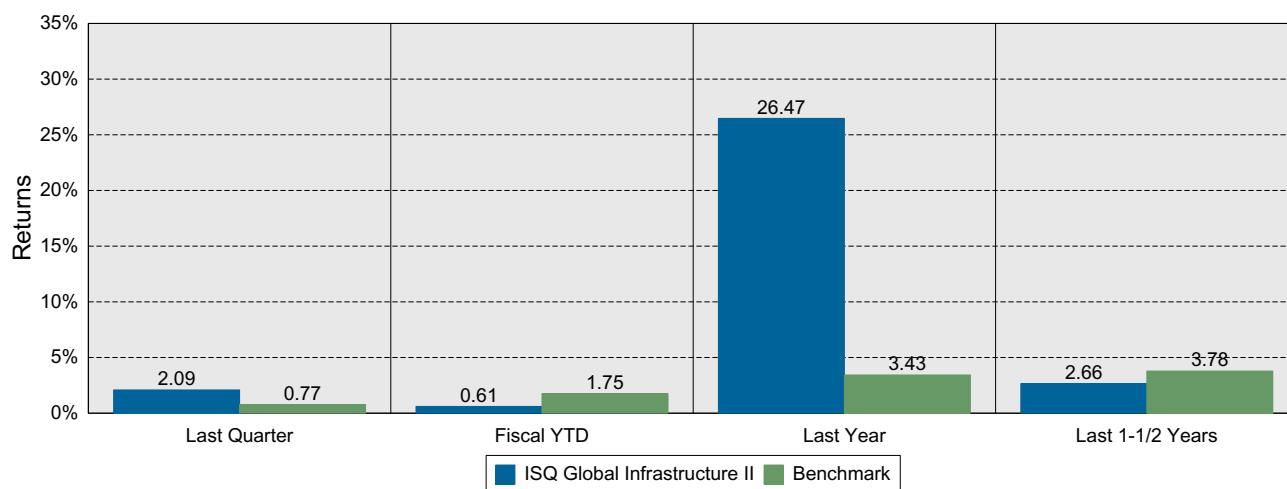
The ISQ Global Infrastructure Fund II seeks to achieve long-term capital appreciation as well as current income through equity and equity related investments in infrastructure and infrastructure related assets located globally, with a focus on North America, Europe, and selected growth economies in Asia and Latin America. The Fund may also invest in debt Securities that have equity-like returns or an equity component, or are related to its equity investments, including without limitation convertible debt, bank loans and participations and other similar instruments. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.**

### Quarterly Summary and Highlights

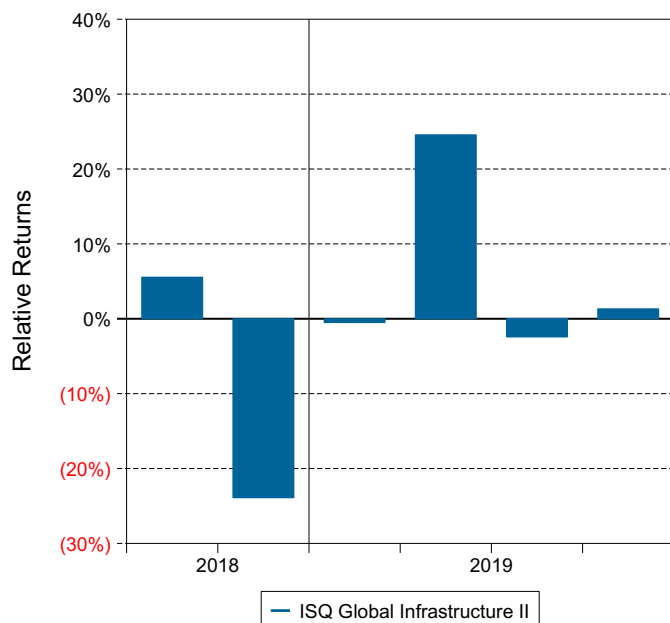
- ISQ Global Infrastructure II's portfolio outperformed the Benchmark by 1.32% for the quarter and outperformed the Benchmark for the year by 23.04%.

### Quarterly Asset Growth

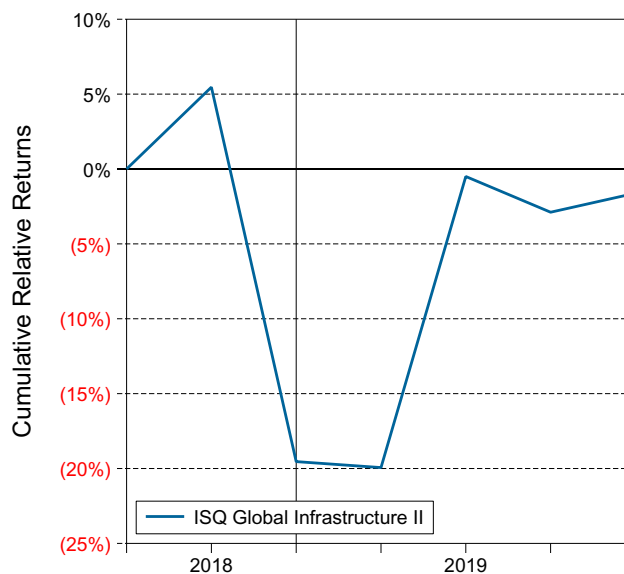
Beginning Market Value	\$26,320,119
Net New Investment	\$5,343,667
Investment Gains/(Losses)	\$543,364
Ending Market Value	\$32,207,150



### Relative Return vs Benchmark



### Cumulative Returns vs Benchmark



## JP Morgan Infrastructure Period Ended December 31, 2019

### Investment Philosophy

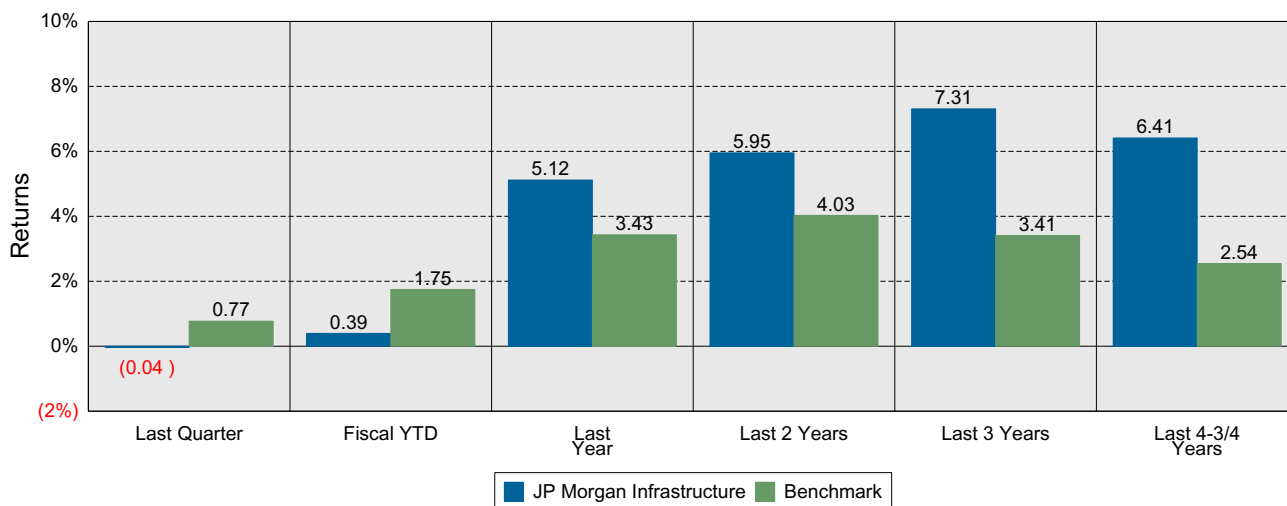
The only open-ended private commingled infrastructure fund in the U.S, the JPMorgan Infrastructure Investments Fund invests in stabilized assets in OECD countries with selected value-added opportunities, across infrastructure industry sub-sectors, including: toll roads, bridges and tunnels; oil and gas pipelines; electricity transmission and distribution facilities; contracted power generation assets; water distribution; waste-water collection and processing; railway lines and rapid rail links; and seaports and airports. **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

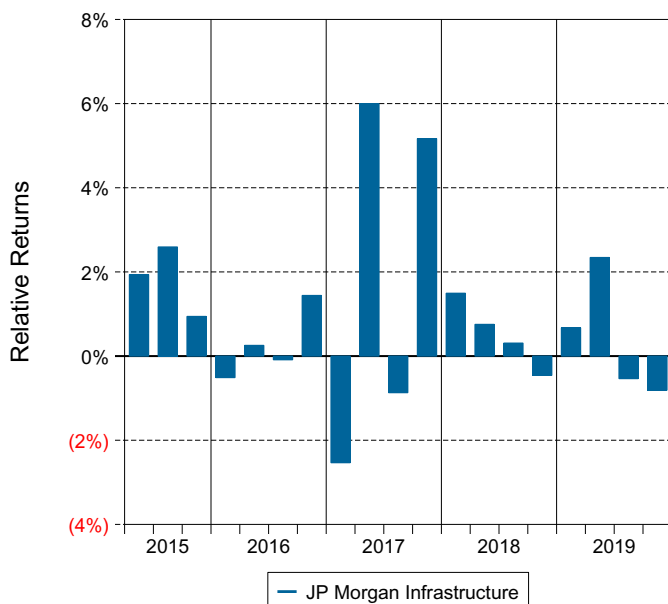
- JP Morgan Infrastructure's portfolio underperformed the Benchmark by 0.81% for the quarter and outperformed the Benchmark for the year by 1.68%.

### Quarterly Asset Growth

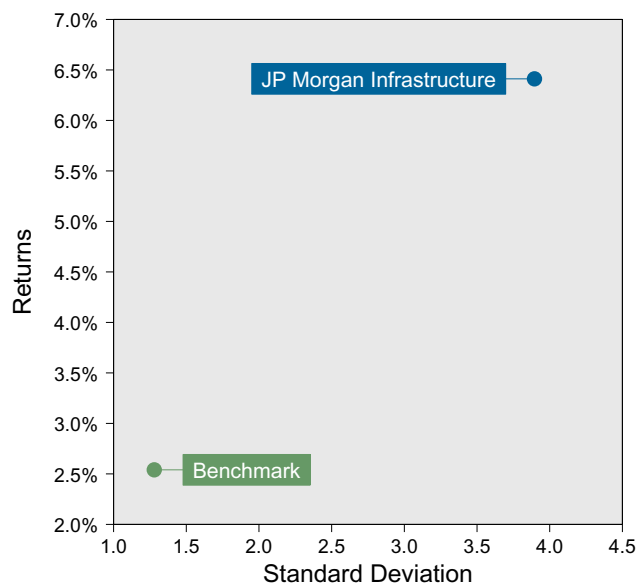
Beginning Market Value	\$116,707,991
Net New Investment	\$-3,321,390
Investment Gains/(Losses)	\$-45,987
Ending Market Value	\$113,340,614



### Relative Return vs Benchmark



### Annualized Four and Three-Quarter Year Risk vs Return



## Grosvenor Cust. Infrastructure Period Ended December 31, 2019

### Investment Philosophy

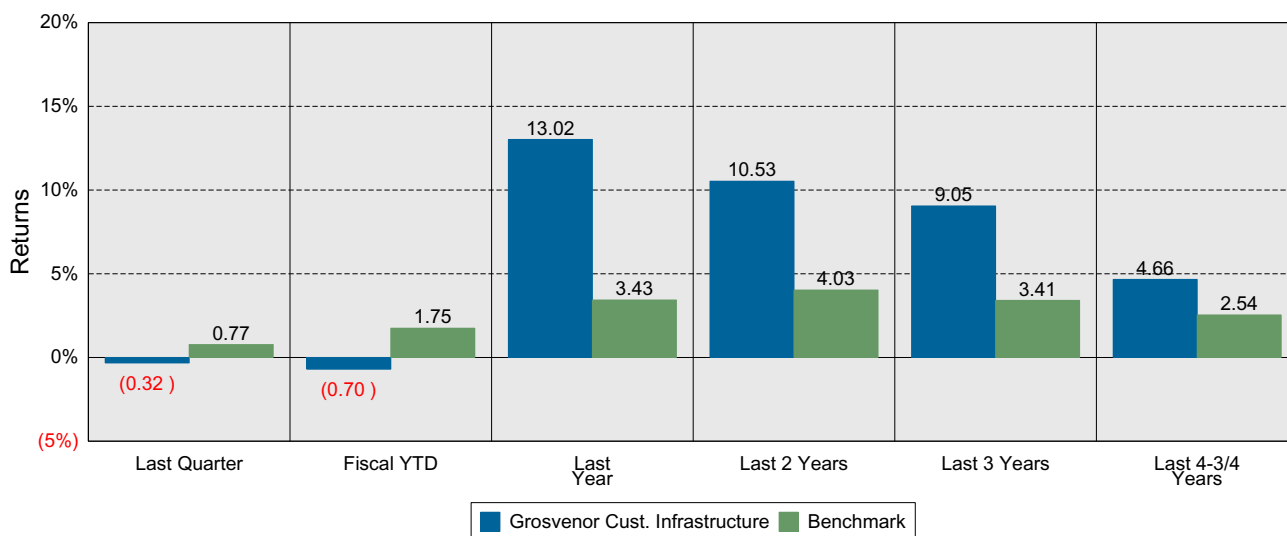
The Customized Infrastructure Strategies LP is a commingled fund focused on providing a comprehensive, diversified solution for investors looking to access the infrastructure asset class. The Fund seeks to generate stable, long-term yield and attractive risk-adjusted returns by investing in a diversified portfolio of primary core and core plus infrastructure funds (30%), co-investments (40%) and opportunistic secondary fund purchases (30%). **The Benchmark is comprised of CPI-W through June 30, 2018; 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net thereafter.**

### Quarterly Summary and Highlights

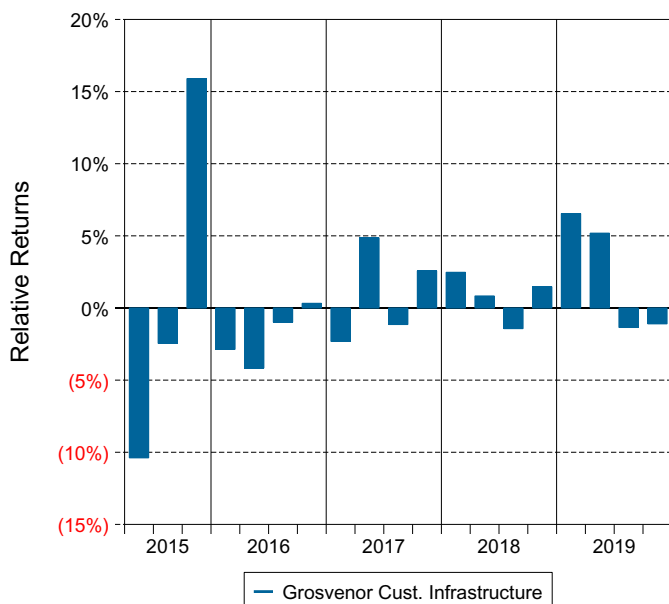
- Grosvenor Cust. Infrastructure's portfolio underperformed the Benchmark by 1.10% for the quarter and outperformed the Benchmark for the year by 9.59%.

### Quarterly Asset Growth

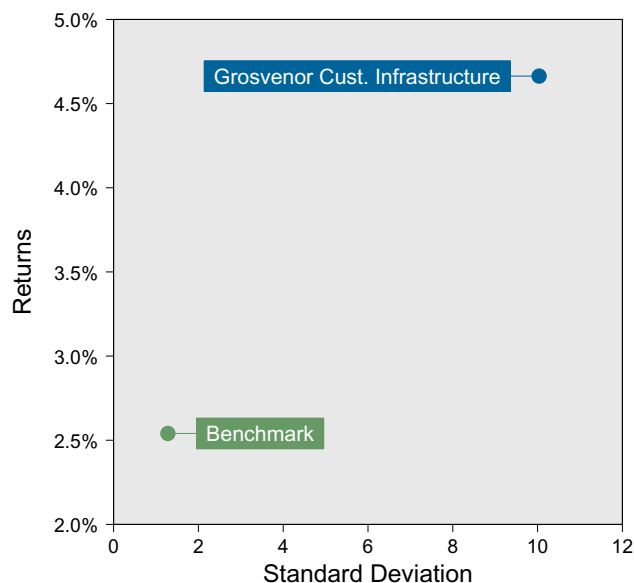
Beginning Market Value	\$44,477,304
Net New Investment	\$1,978,667
Investment Gains/(Losses)	\$-164,679
Ending Market Value	\$46,291,292



### Relative Return vs Benchmark



### Annualized Four and Three-Quarter Year Risk vs Return



## Macquarie Infrac. Partners IV Period Ended December 31, 2019

### Investment Philosophy

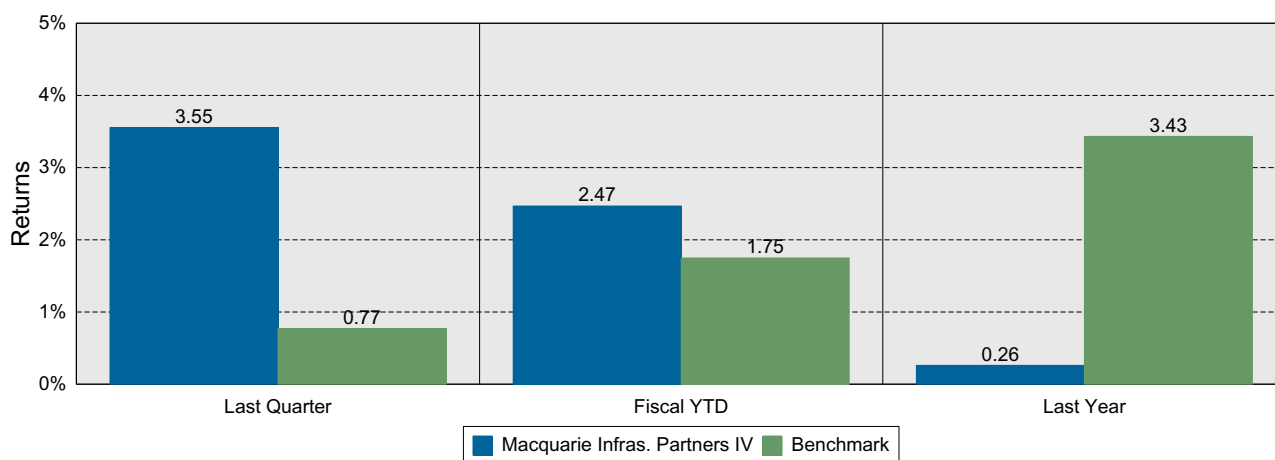
Macquarie's principal investment philosophy is to invest in infrastructure assets that exhibit monopolistic and/or contractual revenue drivers, limited substitution risk and high barriers to entry. The manager has continued to focus on investments where the team's sector expertise and operating experience will provide a competitive advantage in sourcing and due diligence. Furthermore, the manager will also continue to focus on opportunities where its active management capabilities can add value for investors in terms of enhancing returns and the substantial mitigation and/or elimination of material operational risks. **The Benchmark is comprised of 50% CPI-U lagged one quarter and 50% NFI-ODCE Equal Weight Net.**

### Quarterly Summary and Highlights

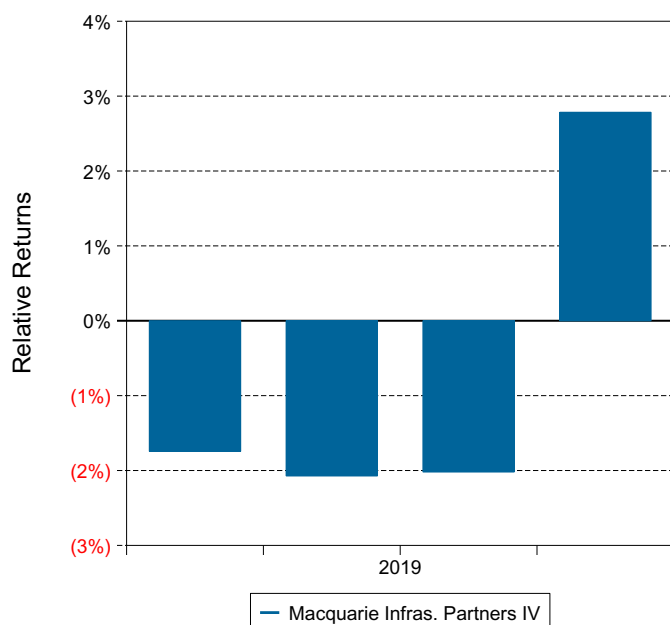
- Macquarie Infrac. Partners IV's portfolio outperformed the Benchmark by 2.78% for the quarter and underperformed the Benchmark for the year by 3.17%.

### Quarterly Asset Growth

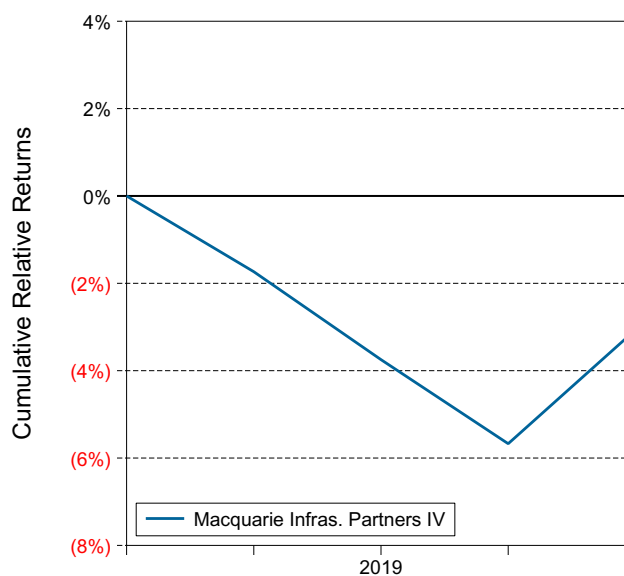
Beginning Market Value	\$44,189,788
Net New Investment	\$18,958,315
Investment Gains/(Losses)	\$1,795,435
Ending Market Value	\$64,943,538



### Relative Return vs Benchmark



### Cumulative Returns vs Benchmark





## Research and Educational Programs

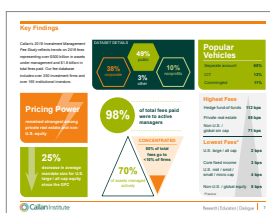
The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/library](http://www.callan.com/library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog "Perspectives." For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan's Experts

## Long-Dated Private Equity Funds: More Illiquidity Please?

In this paper, Ashley DeLuce of Callan's Private Equity Consulting Group analyzes long-dated private equity funds, which have terms of 15 years or more (some even have no fixed term), and tend to focus on stable, mature businesses that may not fit a traditional private equity investment profile. Although these companies may not generate the outsized internal rates of return associated with traditional private equity investments, they tend to have stronger downside protection. In evaluating a potential long-dated fund investment, investors need to be wary of the strategy's increased illiquidity and how it can impact annual commitment pacing.

**Callan 2019 Investment Management Fee Study** | This study using Callan's proprietary database is our eighth examination of institutional investment management fee trends. The purpose of the study is to provide a detailed analysis on fee levels and trends across multiple asset classes and mandate sizes, for both active and passive management.



**Gold: Real Asset, Risk Mitigator, or Pet Rock?** | In this *Hedge*

*Fund Monitor, Jim McKee* reviews the history of gold as a form of money, the reasons behind the recent renaissance in gold, the potential roles of gold for institutional investors, and the alternative approaches to invest in gold-related themes.

For some institutional investors, gold can play a useful role in diversifying risk or enhancing returns. For others, particularly those with higher risk tolerances and longer time horizons, a strategic gold allocation has as much purpose as a Pet Rock.



## Quarterly Periodicals

**Private Equity Trends, 3Q19** | This newsletter from Callan's Private Equity Consulting Group provides a high-level summary of private equity activity in the quarter through all the investment stages, from fundraising to exits, as well as long-term performance data.

## Monthly Periodic Table of Investment Returns, November 2019

| A regular update to Callan's Periodic Table covering the major public equity and fixed income asset classes.

**Active vs. Passive Report, 3Q19** | This series of charts compares active managers alongside relevant benchmarks over the long term.

**Market Pulse Flipbook, 3Q19** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data for U.S. and global ex-U.S. equities and fixed income, alternatives, and defined contribution plans.

**Capital Market Review, 3Q19** | This newsletter provides analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes.

**Hedge Fund Quarterly, 3Q19** | Callan's Jim McKee of our Hedge Fund Research Group provides commentary on developments for hedge funds and multi-asset class (MAC) strategies.

**Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?** | Callan's Real Assets Consulting Group identifies seven indicators that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

**Real Assets Reporter, 3Q19** | This newsletter from our experts offers Callan's data and insights on real estate and other real asset investment topics.

## Events

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

Please mark your calendar and look forward to upcoming invitations:

### 2020 June Regional Workshops

*June 23 – San Francisco*

*June 25 – Chicago*

### 2020 October Regional Workshops

*October 27 – Atlanta*

*October 29 – Portland*

Please also keep your eye out for upcoming Webinars in 2020! We will be sending invitations to register for these events and will also have registration links on our website at [www.callan.com/webinarsupcoming](http://www.callan.com/webinarsupcoming).

**For more information about events, please contact Barb Gerraty: 415-274-3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## Education: By the Numbers

**50+**

Unique pieces of research the Institute generates each year

**525**

Attendees (on average) of the Institute's annual National Conference

**3,700**

Total attendees of the "Callan College" since 1994



**"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 dialogue to raise the bar across the industry."**

Greg Allen, CEO and Chief Research Officer

## Education

Through the "Callan College," the Callan Institute offers educational sessions for industry professionals involved in the investment decision-making process. It was founded in 1994 to provide both clients and non-clients with basic- to intermediate-level instruction.

### Introduction to Investments for Institutional Investors

*April 21-22, 2020 – San Francisco*

*July 21-22, 2020 – Chicago*

*October 13-14, 2020 – Chicago*

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Learn more at [www.callan.com/callan-college-intro-2/](http://www.callan.com/callan-college-intro-2/)

### Alternative Investments for Institutional Investors

*June 16, 2020 – San Francisco*

*November 3, 2020 – Chicago*

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Learn from some of Callan's senior consultants and experts, including the head of Alternatives Consulting Pete Keliuotis. The session will cover private equity, private credit, hedge funds, real estate, and real assets; why invest in alternatives; risk/return characteristics and liquidity; designing and implementing an alternatives program; and trends and case studies.

Tuition is \$2,000 per person and includes instruction, all materials, and breakfast and lunch with the instructors.

Learn more at: <https://www.callan.com/callan-college-alternatives-2/>

## 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 an 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
Aberdeen Standard Investments
Acadian Asset Management LLC
AEGON USA Investment Management Inc.
Alcentra
AllianceBernstein
Allianz Global Investors
Allianz Life Insurance Company of North America
American Century Investments
Amundi Pioneer Asset Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
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
BrightSphere Investment Group
Brown Brothers Harriman & Company
Cadence Capital Management
Cambiar Investors, LLC
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Causeway Capital Management LLC
Ceredex Value Advisers

Manager Name
Camplain Investment Partners, LLC
Chartwell Investment Partners
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments
Columbus Circle Investors
Credit Suisse Asset Management
Davy Asset Management Limited
DePrince, Race & Zollo, Inc.
Diamond Hill Capital Management, Inc.
Dimensional Fund Advisors LP
Doubleline
Duff & Phelps Investment Management Co.
DWS
EARNEST Partners, LLC
Eaton Vance Management
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Investors
Fidelity Institutional Asset Management
Fiera Capital Corporation
Financial Engines
First Hawaiian Bank Wealth Management Division
First State Investments
FIS Group, Inc.
Fisher Investments
Franklin Templeton
Fred Alger Management, Inc.
Fuller & Thaler Asset Management, Inc.
GAM (USA) Inc.
Glenmeade Investment Management, LP
GlobeFlex Capital, L.P.
GMO LLC
Goldman Sachs
Green Square Capital Advisors, LLC

Manager Name
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Hartford Investment Management Co.
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
HSBC Global Asset Management
Impax Asset Management Limited
Income Research + Management, Inc.
Insight Investment Management Limited
Intech Investment Management, LLC
Intercontinental Real Estate Corporation
Invesco
Investec Asset Management North America, Inc.
Iridian Asset Management LLC
Ivy Investments
J.P. Morgan
Janus
Jennison Associates LLC
Jenson Investment Management
JO Hambro Capital Management Limited
Jobs Peak Advisors
John Hancock Investment Management Services, LLC
Kayne Anderson Rudnick Investment Management, LLC
KeyCorp
Lazard Asset Management
L & B Realty Advisors LLP
Legal & General Investment Management America
Lincoln Advisors
Lincoln National Corporation
Logan Circle Partners, L.P.
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
Los Angeles Capital Management
LSV Asset Management
MacKay Shields LLC
MacKenzie Investments
Macquarie Investment Management (MIM)
Manulife Investment Management
Marathon Asset Management, L.P.
McKinley Capital Management, LLC
Mellon
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
Mountain Lake Investment Management LLC
Mountain Pacific Advisors, LLC
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Nikko Asset Management Co., Ltd.
Northern Trust Asset Management

Manager Name
Nuveen
OFI Global Asset Management
Osterweis Capital Management, LLC
Owl Rock
P/E Investments
Pacific Investment Management Company
Parametric Portfolio Associates LLC
Pathway Capital Management
Peregrine Capital Management, LLC.
Perkins Investment Management
PFM Asset Management LLC
PGIM Fixed Income
PineBridge Investments
PNC Capital Advisors, LLC
Polen Capital Management
Principal Global Investors
Putnam Investments, LLC
QMA LLC
RBC Global Asset Management
Regions Financial Corporation
Riverbridge Partners LLC
Robeco Institutional Asset Management, US Inc.
Rockefeller Capital Management
Rothschild & Co. Asset Management US
Russell Investments
Schroder Investment Management North America Inc.
Segall Bryant & Hamill
Smith Graham & Co. Investment Advisors, L.P.
South Texas Money Management, Ltd.
Sprucegrove Investment Management Ltd.
State Street Global Advisors
Stone Harbor Investment Partners, L.P.
Strategic Global Advisors
Sun Life Investment Management
T. Rowe Price Associates, Inc.
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Thornburg Investment Management, Inc.
Tri-Star Trust Bank
UBS Asset Management
VanEck
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management, Inc.
Voya
Vulcan Value Partners, LLC
Wasatch Global Investors
WCM Investment Management
WEDGE Capital Management
Wellington Management Company, LLP
Wells Fargo Asset Management
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC

# Manager Search Process Overview

- The Process:

- Every search starts from scratch, no “Approved” or “Buy” lists
- Backed by extensive due diligence and accumulated knowledge of specialist and generalist consultants
- Disciplined and consistent
- Client driven, customized
- Utilizes peer review—Manager Search Committee to ensure quality control

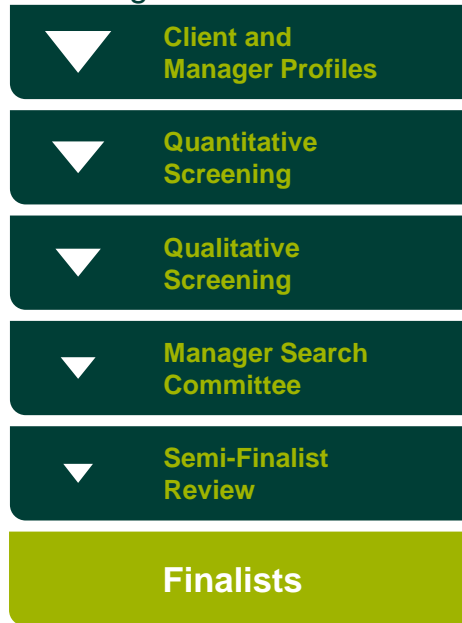
- The Outcome:

- The identification of the managers and products that are the best fit for the investment program and the specific mandate

- Client Participation:

- All parts of this process are transparent

## Manager Search Process



## Candidate Profile

### 1. Manager Type

Only qualified investment counselors or organizations registered under the Investment Advisers Act of 1940 that are currently managing assets will be considered. This includes investment counselors and investment counseling subsidiaries of banks, brokerage houses and insurance companies.

### 2. Investment Style

Client desires a manager employing a fundamental U.S. small cap core/value strategy. The manager will serve a core/value role in a structure with an incumbent concentrated U.S. small cap core/growth manager (Atlanta Capital) and a yet to be selected diversified core-centric U.S. small cap manager. No index provider preference.

### 3. Managed Assets

The client prefers a minimum of \$1 billion in strategy assets and/or firm assets over \$5 billion. Firms that don't meet these minimums will be considered on a case by case basis.

### 4. Professional Staff

Investment staff should be stable and of sufficient depth and breadth to perform the ongoing duties of the firm and to ensure continuity of the investment process. The firm's executive management team should be experienced and stable. Additionally, there should be a sufficient number of client service professionals relative to the firm's client base to ensure that the client has reasonable access to the firm.

### 5. Portfolio Manager Structure & Experience

Team approach preferred but not required. Key professionals should have at least 10 years of investment experience. Teams that have worked together for at least five years are preferred.

### 6. Investment Vehicle

Separate account and if available CIT or other commingled structure. Liquidity dependent on strategy fit; all else being equal, more liquidity is preferred to less.

The client intends to keep the three pools of assets separate and any pooled vehicle needs to accept non-qualified assets as a result of the Insurance Trust.

### 7. Historical Performance & Risk Criteria

Performance over multiple cumulative, annual and rolling periods will be evaluated relative to the appropriate peer group and index. Risk-adjusted measures and holdings-based portfolio characteristics will also be considered.

## Candidate Profile (continued)

### 8. Qualities Specifically Sought

- The firm must be a viable, ongoing business
- Well established organization with institutional focus
- Disciplined and time-tested investment process with risk controls
- Low turnover of personnel
- Low dispersion of returns within appropriate composite
- Commitment to client service and an ability to effectively articulate their investment process
- Willingness to visit client as needed

### 9. Qualities To Be Avoided

- Concentrated client base
- Candidates currently involved in a merger, acquisition, or recent transaction impacting the firm's senior executives
- Excessive recent personnel turnover

### 10. Specific Client Requests & Additional Considerations

The client would like to review five candidates

# **PERS Interim Investment Update**

**For the Periods Ended December 31, 2019**

February 24, 2020

Note: This document contains preliminary data which is deemed to be materially accurate, but is unaudited and subject to change.

Dave Hunter, Executive Director / CIO

Darren Schulz, Deputy Chief Investment Officer

Connie Flanagan, Chief Financial Officer

Eric Chin, Chief Risk Officer

ND Retirement & Investment Office (RIO)

State Investment Board (SIB)



# PERS Investment Ends – December 31, 2019

SIB clients should receive net investment returns consistent with their written investment policies and market variables. This “End” is evaluated based on comparison of each client’s (a) actual net investment return, (b) standard deviation and (c) risk adjusted excess return, to the client’s policy benchmark over 5 years.

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
Total Fund Return - Net	6.09%	17.99%	9.87%	7.39%	6.7%	0.09%
Policy Benchmark Return	5.34%	17.40%	9.09%	6.84%	6.2%	
Total Relative Return	0.75%	0.59%	0.78%	0.55%	108%	

**Key:** PERS investments have averaged over \$2.6 billion the last 5-years and Excess Return has generally exceeded **0.50%** per annum. **PERS use of active management has enhanced Net Investment Returns by \$65 million for the 5-years ended December 31, 2019** (or  $\$2.6 \text{ billion} \times 0.50\% = \$13 \text{ million per year} \times 5 \text{ years} = \$65 \text{ million}$ ). These returns were achieved while adhering to prescribed Risk limits (e.g. 108% versus a policy limit of 115%).

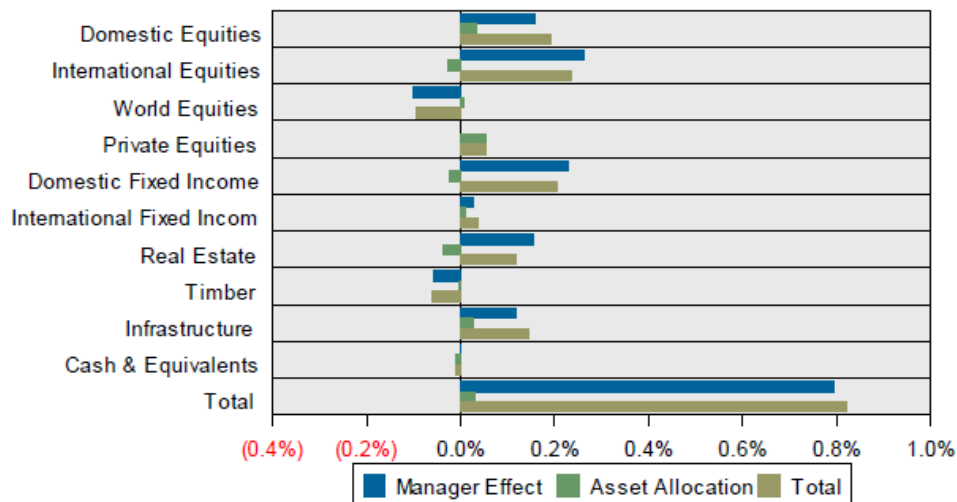
5-Yr. Returns Dec. 31, 2019	Asset Allocation	Benchmark Return	Allocation x Return
<i>Asset Class</i>	<i>a</i>	<i>b</i>	<i>a x b</i>
Equity	58%	8.4%	4.9%
Fixed Income	23%	4.0%	0.9%
Real Assets	19%	5.7%	1.1%
Policy Benchmark Return (5-years)			6.84%

**Current Policy Benchmark:** 58% Equity (30% U.S., 21% Non-U.S., 7% Private); 23% Fixed Income (16% Investment Grade, 7% High Yield); 19% Real Assets (11% Real Estate; 6% Infrastructure; 2% Timber).

# PERS Performance and Attribution

As of December 31, 2019

## Five Year Annualized Relative Attribution Effects



## Returns for 5 Year Ended 12/31/2019

Return Type	Return (%)
Gross	7.67%
Net of fees	7.39%
Target	6.85%
Net added	0.54%

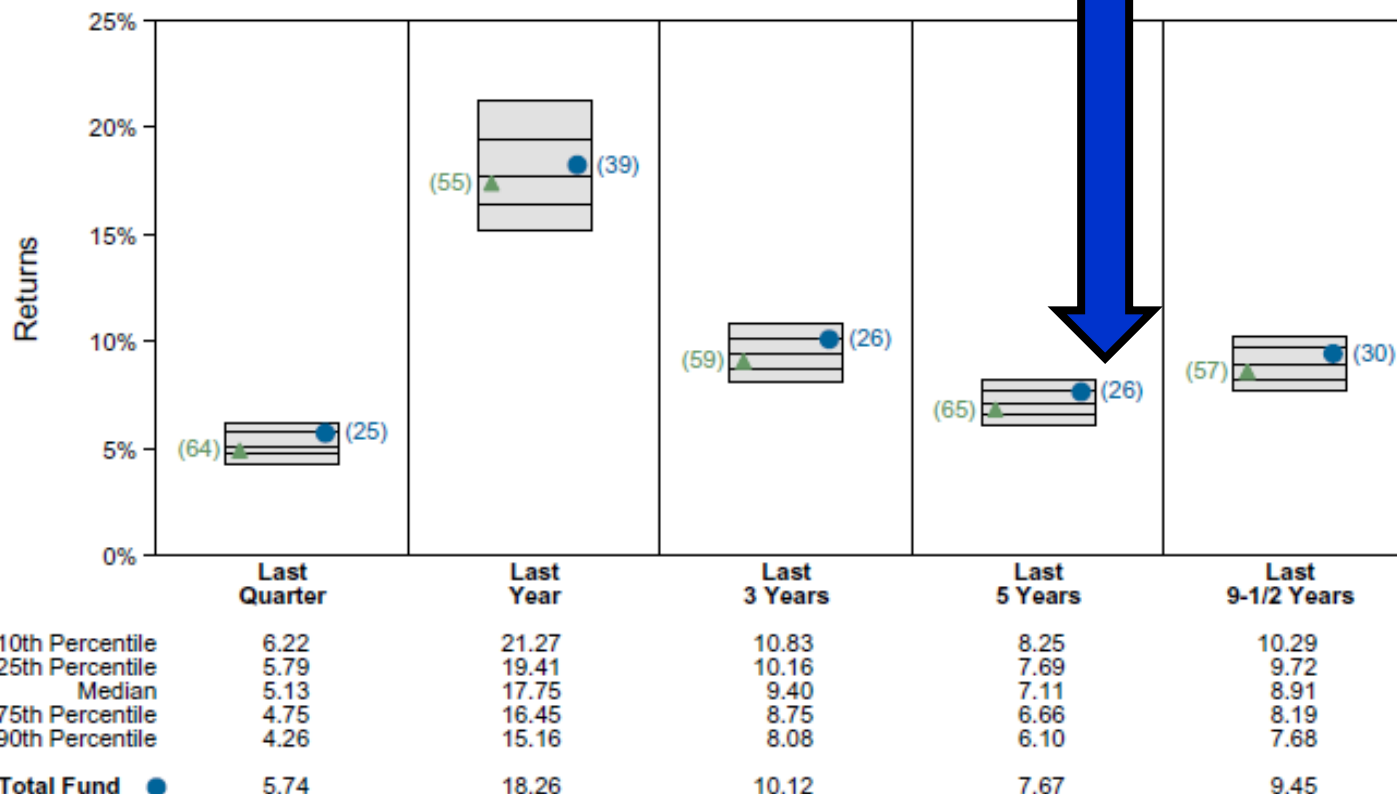
## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.50%	10.78%	0.16%	0.03%	0.19%
International Equities	16%	14%	7.32%	5.67%	0.26%	(0.03%)	0.24%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.01%	(0.09%)
Private Equities	3%	6%	2.23%	2.23%	0.00%	0.05%	0.05%
Domestic Fixed Income	20%	20%	5.12%	3.95%	0.23%	(0.02%)	0.20%
International Fixed Income	3%	3%	-	-	0.03%	0.01%	0.04%
Real Estate	11%	11%	9.73%	8.25%	0.16%	(0.04%)	0.12%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.00%)	(0.06%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.03%	0.14%
Cash & Equivalents	1%	0%	1.17%	1.14%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>7.67%</b>	<b>6.85%</b>	<b>+ 0.79%</b>	<b>+ 0.03%</b>	<b>0.82%</b>

**PERS (Main Plan) gross investment returns were ranked in the 26<sup>th</sup> percentile for the 5-years ended Dec. 31, 2019, based on the “Callan Public Fund Sponsor Database” (which includes over 200 U.S. public pension plans).**

### Callan Public Fund Sponsor Database

**PERS (Main Plan)**  
gross returns  
were ranked in  
the 7<sup>th</sup> percentile  
for the 5-years  
ended 12/31/2019  
on an Asset  
Allocation  
Adjusted Basis  
within Callan's  
Public Fund  
Sponsor Database.

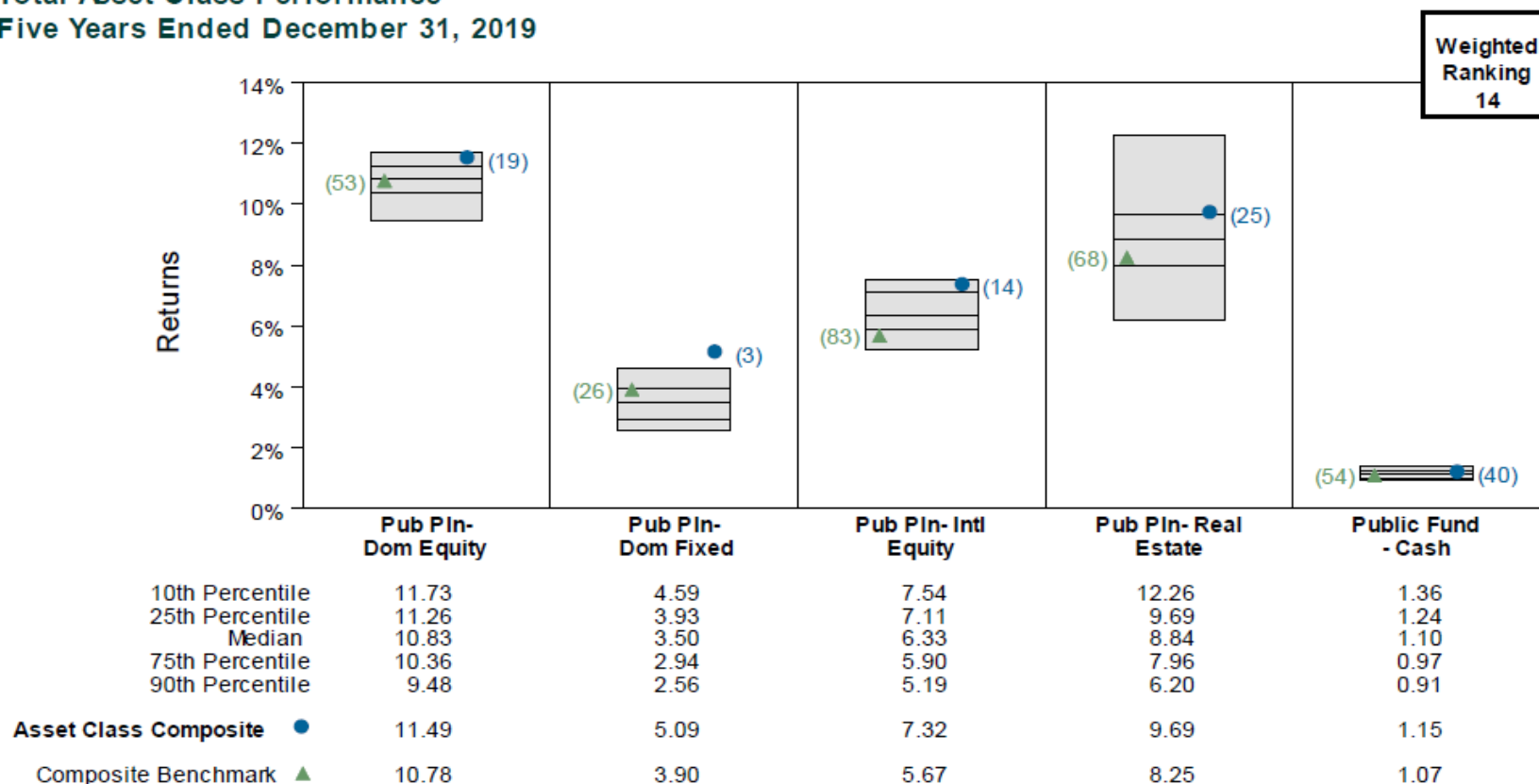


\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

# Asset Class Composite Results

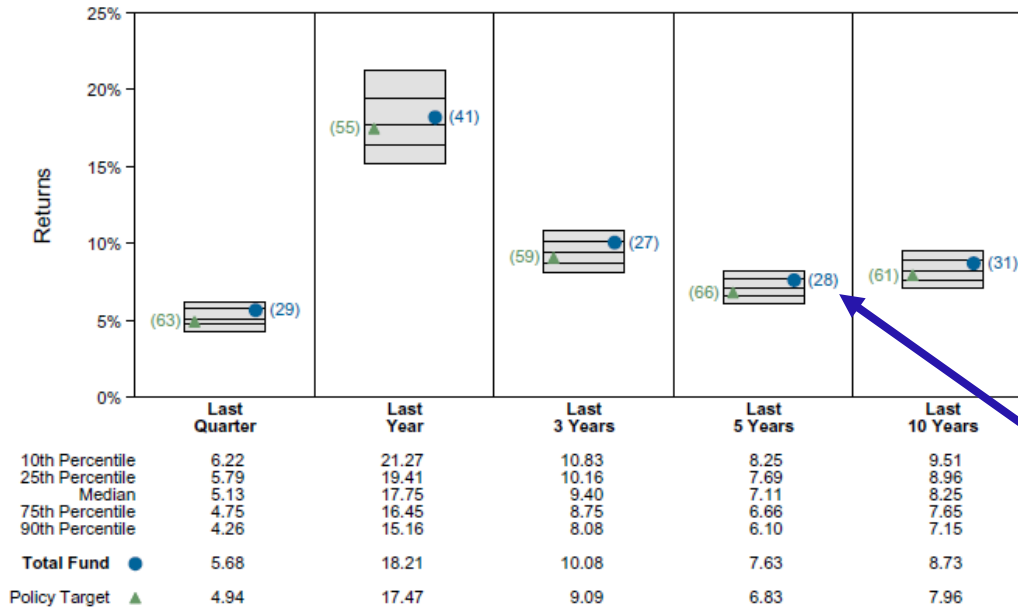
## Consolidated Pension Trust Asset Class Results vs. Other Public Pension Funds

Total Asset Class Performance  
Five Years Ended December 31, 2019



- All asset classes outperformed their respective benchmarks over the trailing five years.
- All asset classes, with the exception of cash, ranked in the top quartile over the trailing five years.

## Callan Public Fund Sponsor Database



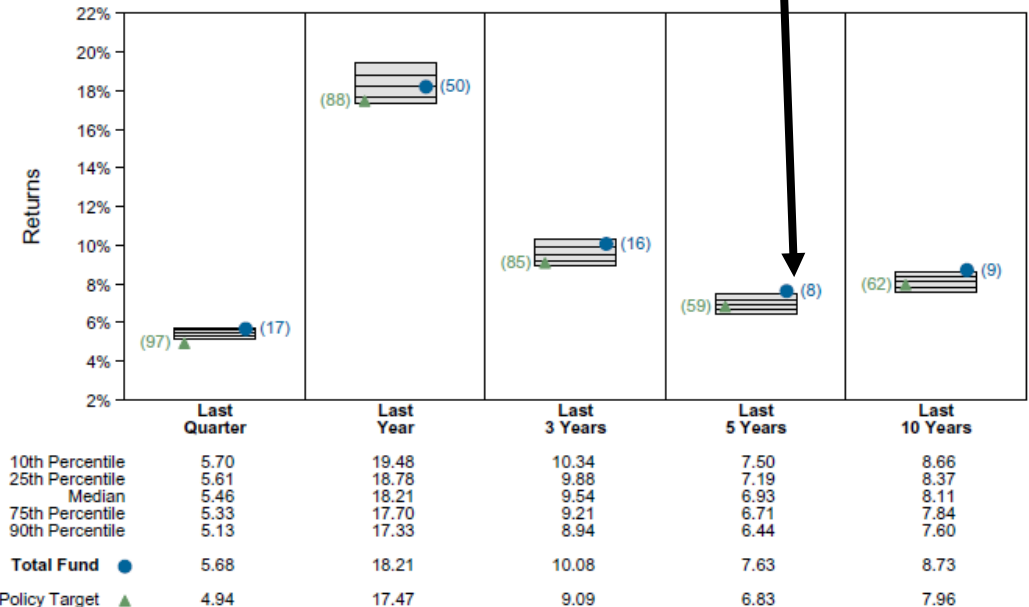
### Callan – ND SIB Pension Trust Fund Ranking

The **Callan** charts show the ranking of the **Total Fund** (ND Pension Trust) performance relative to that of the Callan Public Fund Sponsor Database for periods ended Dec. 31, 2019.

The top chart is a standard unadjusted ranking. In the bottom chart each fund in the database is adjusted to have the same historical asset allocation as that of the **Total Fund**.

The **NDSIB Pension Trust** was ranked in the **28<sup>TH</sup>** percentile over the last 5 years on an “**Unadjusted Basis**” (and **8<sup>th</sup>** percentile on an “Asset Allocation Adjusted Basis”).

### Asset Allocation Adjusted Ranking



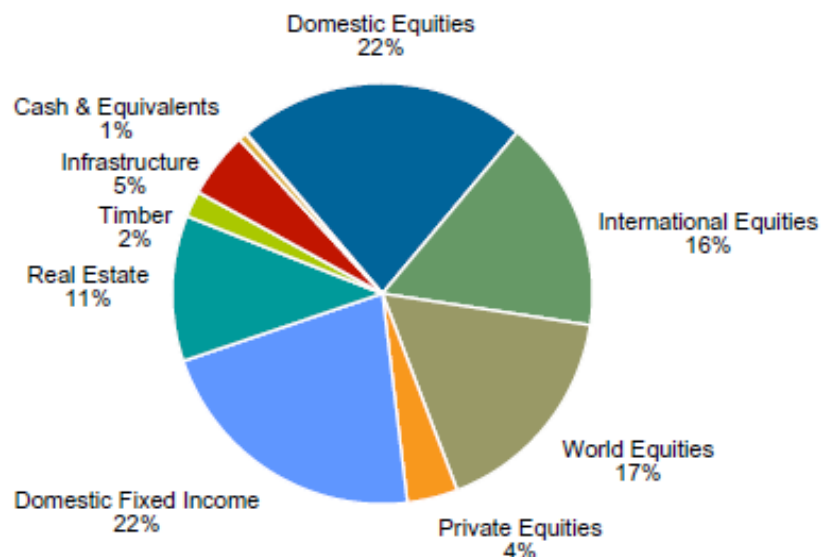
**Key Point on Gross versus Net Returns:**  
Callan's Public Fund Sponsor Database uses “**Gross Returns**”. RIO believes PERS and TFFR “Net Investment Returns” rank in the top quartile for the 3, 5 and 10 year periods ended December 31, 2019.

Note: Amounts are unaudited and subject to change.

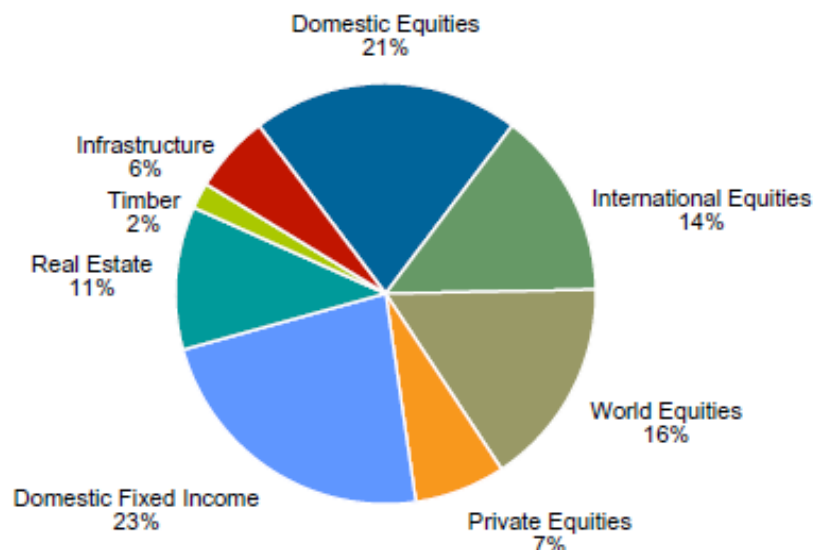
# Actual and Target Asset Allocations are Consistent

The **Private Equity Underweight of 3.1%** is more than offset by **Overweight allocations to Domestic Equities of 1.7%, International Equities of 1.8% and World Equities of 0.8%.**

**Actual Asset Allocation**



**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equities	741,174	22.3%	20.6%	1.7%	57,705
International Equities	539,641	16.3%	14.4%	1.8%	61,212
World Equities	558,067	16.8%	16.0%	0.8%	26,914
Private Equities	130,128	3.9%	7.0%	(3.1%)	(102,252)
Domestic Fixed Income	721,589	21.7%	23.0%	(1.3%)	(41,944)
Real Estate	371,929	11.2%	11.0%	0.2%	6,762
Timber	66,408	2.0%	2.0%	0.0%	0
Infrastructure	170,741	5.1%	6.0%	(0.9%)	(28,427)
Cash & Equivalents	20,030	0.6%	0.0%	0.6%	20,030
Total	3,319,708	100.0%	100.0%		

Note: Amounts are unaudited and subject to change.

# PERS Net Investment Returns Exceed Policy Benchmarks

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019
<b>PERS \$3.3 billion</b>			
<b>Total Fund Return - Net</b>	<b>17.99%</b>	<b>9.87%</b>	<b>7.39%</b>
<b>Policy Benchmark Return</b>	<b>17.40%</b>	<b>9.09%</b>	<b>6.84%</b>
<b>Total Relative Return</b>	<b>0.59%</b>	<b>0.78%</b>	<b>0.55%</b>

Net 1-Yr. Return Dec. 31, 2019	Asset Allocation	Benchmark Return	Allocation Return
<i>Asset Class</i>	<i>a</i>	<i>b</i>	<i>a x b</i>
<b>Equity</b>	<b>58%</b>		
- Public Equity	51%	26.60%	13.57%
- Private Equity	7%	7.74%	0.54%
<b>Fixed Income:</b>	<b>23%</b>		
- Investment Grade	16%	8.72%	1.40%
- High Yield	7%	14.32%	1.00%
<b>Real Assets:</b>	<b>19%</b>		
- Real Estate	11%	6.42%	0.71%
- Infrastructure	6%	3.43%	0.21%
- Timber	2%	1.30%	0.03%
<b>Policy Benchmark Return (1 Year)</b>			<b>17.4%</b>

## Current Policy Benchmark:

- **58% Equity** (30% U.S. Equity and 21% Non-U.S. Public Equity and 7% Private)
- **23% Fixed Income** (16% Investment Grade Debt and 7% High Yield Debt)
- **19% Real Assets** (11% Real Estate, 6% Infrastructure and 2% Timber)

**Public Equity (51%) - MSCI All Country World Index** is a broad global equity investment benchmark used by many institutional investors (such as pension funds) to measure their investment performance using a broadly diversified pool of more than 2,700 stocks in 47 countries.

**Private Equity (7%) - Cambridge Associates U.S. Private Equity Index** is broadly utilized by consultants when developing long-term capital market assumptions upon which asset allocation frameworks are based.

**Investment Grade Debt (16%) - Investopedia** states the **Bloomberg Barclays U.S. Aggregate** bond index is "broadly considered to be the best total bond market index used by > 90% of the investors in the U.S."

**High Yield (7%) - The Bloomberg Barclays U.S. Aggregate Corporate High Yield** index is broadly considered to be the best high yield bond index used by > 80% of High Yield (or Nov-Investment Grade) investors in the U.S.

**Real Estate (11%) - NCREIF Property Index** is "a quarterly unleveraged composite total return for private commercial real estate properties held for investment purposes only" and generally considered to be 1 of the 2 best private real estate benchmarks (with ODCE index).

Note: Amounts are unaudited and subject to change.



# Callan Periodic Table of Investment Returns

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Real Estate 13.84%	U.S. Fixed Income 8.43%	Gbl ex-U.S. Fixed 22.37%	Emerging Market Equity 55.82%	Real Estate 37.96%	Emerging Market Equity 34.00%	Real Estate 42.12%	Emerging Market Equity 39.38%	U.S. Fixed Income 5.24%	Emerging Market Equity 78.51%	Small Cap Equity 26.85%	U.S. Fixed Income 7.84%	Real Estate 27.73%	Small Cap Equity 38.82%	Real Estate 15.02%	Large Cap Equity 1.38%	Small Cap Equity 21.31%	Emerging Market Equity 37.28%	Cash Equivalent 1.87%	Large Cap Equity 31.49%
U.S. Fixed Income 11.63%	High Yield 5.28%	U.S. Fixed Income 10.26%	Small Cap Equity 47.25%	Emerging Market Equity 25.55%	Real Estate 15.35%	Emerging Market Equity 32.17%	Dev ex-U.S. Equity 12.44%	Gbl ex-U.S. Fixed 4.39%	High Yield 58.21%	Real Estate 19.63%	High Yield 4.98%	Emerging Market Equity 18.23%	Large Cap Equity 32.39%	Large Cap Equity 13.69%	U.S. Fixed Income 0.55%	High Yield 17.13%	Dev ex-U.S. Equity 24.21%	U.S. Fixed Income 0.01%	Small Cap Equity 25.52%
Cash Equivalent 6.18%	Cash Equivalent 4.42%	Real Estate 2.82%	Real Estate 40.69%	Dev ex-U.S. Equity 20.38%	Dev ex-U.S. Equity 14.47%	Dev ex-U.S. Equity 25.71%	Gbl ex-U.S. Fixed 11.03%	Cash Equivalent 2.06%	Real Estate 37.13%	Emerging Market Equity 18.88%	Gbl ex-U.S. Fixed 4.36%	Dev ex-U.S. Equity 16.41%	Dev ex-U.S. Equity 21.02%	U.S. Fixed Income 5.97%	Cash Equivalent 0.05%	Large Cap Equity 11.96%	Large Cap Equity 21.83%	High Yield -2.08%	Dev ex-U.S. Equity 22.49%
Small Cap Equity -3.02%	Small Cap Equity 2.49%	Cash Equivalent 1.78%	Dev ex-U.S. Equity 39.42%	Small Cap Equity 18.33%	Large Cap Equity 4.91%	Small Cap Equity 18.37%	U.S. Fixed Income 6.97%	High Yield -26.16%	Dev ex-U.S. Equity 33.67%	High Yield 15.12%	Large Cap Equity 2.11%	Small Cap Equity 16.35%	High Yield 7.44%	Small Cap Equity 4.89%	Real Estate -0.79%	Emerging Market Equity 11.19%	Small Cap Equity 14.65%	Gbl ex-U.S. Fixed -2.15%	Real Estate 21.91%
Gbl ex-U.S. Fixed -3.91%	Emerging Market Equity -2.61%	High Yield -1.37%	High Yield 28.97%	Gbl ex-U.S. Fixed 12.54%	Small Cap Equity 4.55%	Large Cap Equity 15.79%	Large Cap Equity 5.49%	Small Cap Equity -33.79%	Small Cap Equity 27.17%	Large Cap Equity 15.06%	Cash Equivalent 0.10%	Large Cap Equity 16.00%	Real Estate 3.67%	High Yield 2.45%	Dev ex-U.S. Equity -3.04%	Real Estate 4.06%	Gbl ex-U.S. Fixed 10.51%	Large Cap Equity -4.38%	Emerging Market Equity 18.44%
High Yield -5.86%	Gbl ex-U.S. Fixed -3.75%	Emerging Market Equity -6.16%	Large Cap Equity 28.68%	High Yield 11.13%	Cash Equivalent 3.07%	High Yield 11.85%	Cash Equivalent 5.00%	Large Cap Equity -37.00%	Large Cap Equity 26.47%	Dev ex-U.S. Equity 8.95%	Small Cap Equity -4.18%	High Yield 15.81%	Cash Equivalent 0.07%	Cash Equivalent 0.03%	Small Cap Equity -4.41%	Dev ex-U.S. Equity 2.75%	Real Estate 10.36%	Real Estate -5.63%	High Yield 14.32%
Large Cap Equity -9.11%	Real Estate -3.81%	Dev ex-U.S. Equity -15.80%	Gbl ex-U.S. Fixed 19.36%	Large Cap Equity 10.88%	High Yield 2.74%	Gbl ex-U.S. Fixed 8.16%	High Yield 1.87%	Dev ex-U.S. Equity -43.56%	Gbl ex-U.S. Fixed 7.53%	U.S. Fixed Income 6.54%	Real Estate -6.46%	U.S. Fixed Income 4.21%	U.S. Fixed Income -2.02%	Emerging Market Equity -2.19%	High Yield -4.47%	U.S. Fixed Income 2.65%	High Yield 7.50%	Small Cap Equity -11.01%	U.S. Fixed Income 8.72%
Dev ex-U.S. Equity -13.37%	Large Cap Equity -11.89%	Small Cap Equity -20.48%	U.S. Fixed Income 4.10%	U.S. Fixed Income 4.34%	U.S. Fixed Income 2.43%	Cash Equivalent 4.85%	Small Cap Equity -1.57%	Real Estate -48.21%	U.S. Fixed Income 5.93%	Gbl ex-U.S. Fixed 4.95%	Dev ex-U.S. Equity -12.21%	Gbl ex-U.S. Fixed 4.09%	Emerging Market Equity -2.60%	Gbl ex-U.S. Fixed -3.09%	Gbl ex-U.S. Fixed -6.02%	Gbl ex-U.S. Fixed 1.49%	U.S. Fixed Income 3.54%	Dev ex-U.S. Equity -14.09%	Gbl ex-U.S. Fixed 5.09%
	Dev ex-U.S. Equity -21.40%	Large Cap Equity -22.10%	Cash Equivalent 1.15%	Cash Equivalent 1.33%	Gbl ex-U.S. Fixed -8.65%	U.S. Fixed Income 4.33%	Real Estate -7.39%	Emerging Market Equity -53.33%	Cash Equivalent 0.21%	Cash Equivalent 0.13%	Emerging Market Equity -18.42%	Cash Equivalent 0.11%	Gbl ex-U.S. Fixed -3.08%	Dev ex-U.S. Equity -4.32%	Emerging Market Equity -14.92%	Cash Equivalent 0.33%	Cash Equivalent 0.86%	Emerging Market Equity -14.57%	Cash Equivalent 2.28%

Sources: ● Bloomberg Barclays Aggregate ● Bloomberg Barclays Corp High Yield ● Bloomberg Barclays Global Aggregate ex US  
 ● FTSE EPRA/NAREIT Developed REIT ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500



## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	22%	21%	30.19%	30.07%	0.02%	0.18%	0.20%
World Equities	16%	16%	25.74%	27.67%	(0.30%)	0.01%	(0.29%)
International Equities	16%	14%	25.06%	21.56%	0.54%	0.03%	0.57%
Private Equities	4%	7%	7.06%	7.06%	0.00%	0.34%	0.34%
Domestic Fixed Income	23%	23%	9.78%	10.44%	(0.15%)	0.02%	(0.13%)
Real Estate	12%	11%	5.98%	6.42%	(0.06%)	(0.15%)	(0.20%)
Timber	2%	2%	9.39%	1.30%	0.18%	(0.01%)	0.17%
Infrastructure	5%	6%	6.02%	3.43%	0.14%	0.12%	0.26%
Cash & Equivalents	0%	0%	2.23%	2.23%	0.00%	(0.06%)	(0.06%)
<b>Total</b>			<b>18.26%</b>	<b>= 17.41%</b>	<b>+ 0.37%</b>	<b>+ 0.48%</b>	<b>0.85%</b>

## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	21%	11.50%	10.78%	0.16%	0.03%	0.19%
World Equities	16%	16%	8.07%	8.74%	(0.10%)	0.01%	(0.09%)
International Equities	16%	14%	7.32%	5.67%	0.26%	(0.03%)	0.24%
Private Equities	3%	6%	2.23%	2.23%	0.00%	0.05%	0.05%
Domestic Fixed Income	20%	20%	5.12%	3.95%	0.23%	(0.02%)	0.20%
International Fixed Inc.	3%	3%	-	-	0.03%	0.01%	0.04%
Real Estate	11%	11%	9.73%	8.25%	0.16%	(0.04%)	0.12%
Timber	3%	3%	1.18%	3.13%	(0.06%)	(0.00%)	(0.06%)
Infrastructure	5%	5%	5.12%	2.51%	0.12%	0.03%	0.14%
Cash & Equivalents	1%	0%	1.17%	1.14%	0.00%	(0.01%)	(0.01%)
<b>Total</b>			<b>7.67%</b>	<b>= 6.85%</b>	<b>+ 0.79%</b>	<b>+ 0.03%</b>	<b>0.82%</b>

\* Current Quarter Target = 16.0% Blmbg Aggregate, 16.0% MSCI World, 15.8% Russell 1000 Index, 11.0% NCREIF Total Index, 11.0% MSCI World ex US, 7.0% Blmbg:HY Corp 2% Iss Cap, 7.0% NDSIB PERS - Private Equity, 4.8% Russell 2000 Index, 3.4% MSCI EM, 3.0% NCREIF NFI-ODCE Eq Wt Net, 3.0% CPI All Urban Cons lagged 3 months and 2.0% NCREIF Timberland Index.

## Callan Database Median and Index Returns\* for Periods Ended 12/31/19


Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	5.13	17.75	9.40	7.11	8.25	6.73
Corporate Database	4.25	19.87	9.55	6.96	8.40	6.80
Nonprofit Database	5.69	18.81	9.38	6.81	8.12	6.58
Taft-Hartley Database	5.18	18.00	9.36	7.50	8.66	6.59
All Institutional Investors	5.19	18.53	9.41	7.08	8.35	6.67
Large (>\$1 billion)	4.79	17.56	9.59	7.26	8.59	6.88
Medium (\$100mm - \$1bn)	5.20	18.55	9.42	7.15	8.35	6.58
Small (<\$100 million)	5.38	18.93	9.29	6.91	8.16	6.55

\*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, nonprofits, 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.

### Observations on Callan Database Median and Index Returns for periods ended December 31, 2019:

- 1) **Public DB plan median returns were up 17.75% in 2019 but underperformed Corporate DB plans up 19.87% (in 2019)** due to the strength of Fixed Income with Bloomberg Barclays Long Gov/Credit Index up 19.6% and Bloomberg Barclays Aggregate Index up 8.7%. Most Corporate DB plans have adopted a Liability Driven Investment framework to de-risk their plans which effectively increases their target asset allocation to Fixed Income (which had a very strong year versus long-term expectations).
- 2) **Median return differentials are less significant over longer periods with U.S. Public DB plan median returns being up 7.11% for the 5 years ended 12/31/2019 versus Corporate DB plans being up 6.96% for the same period.** Over the last 15 years, Large Institutional Investors (> \$1 billion) outperformed Small plans (< \$100 million), although Small plans outperformed Large plans in 2019.

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	10 Yrs Ended 12/31/2019
 <b>ND Pension Pool (Net Returns)</b>	17.94%	9.83%	7.36%	8.37%
<b>Public Database (Gross Returns)</b>	17.75%	9.40%	7.11%	8.25%
<b>All Institutional Investors (Gross Returns)</b>	18.53%	9.41%	7.08%	8.35%
<b>- Large (Over \$1 billion) (Gross Returns)</b>	17.56%	9.59%	7.26%	8.59%

**NOTE: ND Pension Pool Returns are reported Net of Fees versus Gross of Fees for the Callan Database.**

*Note: Amounts are unaudited and subject to change.*

# PERS Main Pension Plan versus Job Service and PERS Retiree Health Insurance Credit Fund and Group Insurance

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>PERS Main Plan \$3.3 billion</b> (58% Equity 23% Debt 19 % Real)					
Total Fund Return - Net	17.99%	9.87%	7.39%	6.73%	0.09%
Policy Benchmark Return	17.40%	9.09%	6.84%	6.25%	
Total Relative Return	0.59%	0.78%	0.55%	108%	
<b>Job Service \$98 million</b> (20% Equity 80% Debt)					
Total Fund Return - Net	9.29%	5.77%	5.21%	3.42%	-0.02%
Policy Benchmark Return	10.15%	6.25%	5.07%	3.29%	
Total Relative Return	-0.86%	-0.48%	0.14%	104%	

**PERS Main Plan earned 18% in 2019 and 7.4% the last 5 years with 6.73% of Risk and a target asset allocation of 58% Equity, 23% Debt and 19% Real Assets with an Expected Long-Term Return of 7.5%.**

**Job Service earned 9.3% in 2019 and 5.2% the last 5 years with 3.4% of Risk and a target asset allocation of 20% Equity / 80% Debt) with an Expected Long-Term Return of 4.5%.**

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
<b>PERS Retiree Health \$145 million</b> (60% Equity / 40% Debt)					
Total Fund Return - Net	20.78%	9.15%	6.85%	7.64%	-0.68%
Policy Benchmark Return	19.94%	9.15%	7.03%	6.97%	
Total Relative Return	0.84%	0.00%	-0.18%	110%	
<b>PERS Group Insurance \$31 million</b> (90% Short-Term Debt / 10% Cash)					
Total Fund Return - Net	3.88%	2.09%	1.45%	1.04%	0.01%
Policy Benchmark Return	3.35%	1.93%	1.40%	0.94%	
Total Relative Return	0.53%	0.16%	0.05%	111%	

**PERS Retiree Health Insurance Credit Fund earned 20.8% in 2019 and 6.85% the last 5 years with 7.64% of Risk and target asset allocation of 50% Public Equity and 40% Debt (or Fixed Income) with an Expected Long-Term Rate of Return of 7.5%.**

**Group Insurance earned 3.9% in 2019 and 1.45% the last 5 years with 1.04% of Risk and a target asset allocation of 90% short-term bonds and 10% cash.**



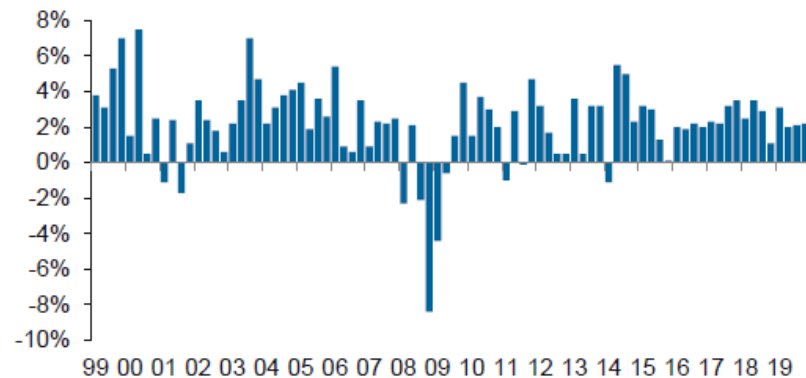
# **Capital Markets Update**

## **As of December 31, 2019**

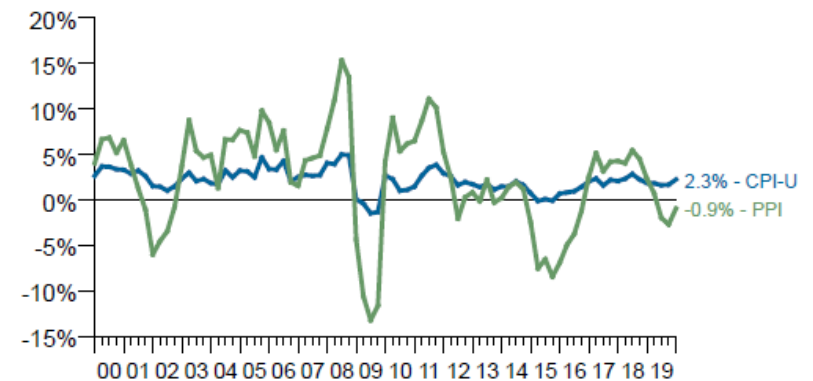
# U.S. Economy—Summary

For periods ended December 31, 2019

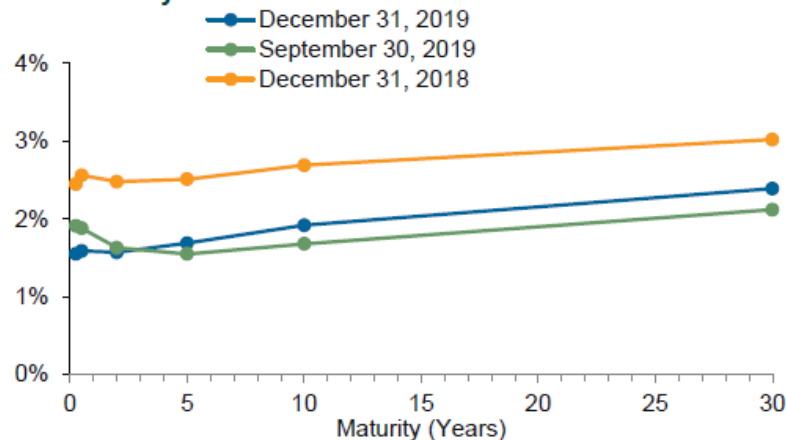
## Quarterly Real GDP Growth



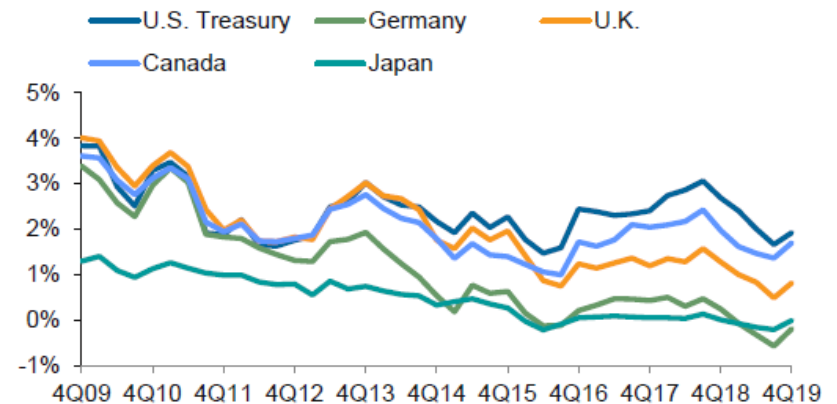
## Inflation Year-Over-Year



## U.S. Treasury Yield Curves



## 10-Year Global Government Bond Yields



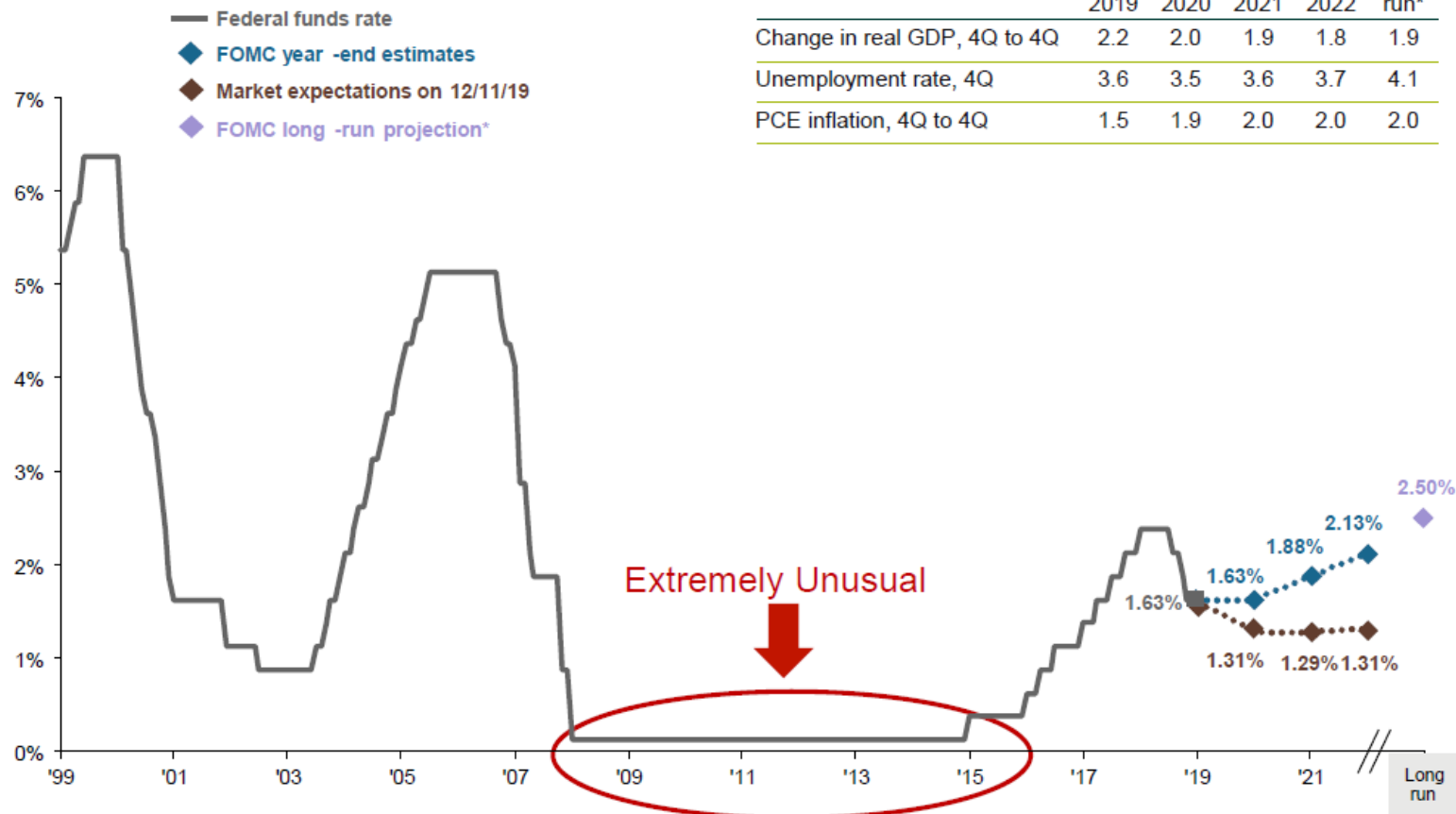
Sources: Bloomberg, Bureau of Labor Statistics, Callan

# Fed Policy Reversal Upended Fixed Income Market Expectations

Fed halted interest rate increases in January 2019; cut twice in Q3 and once in Q4 2019

## Federal Funds Rate Expectations

FOMC and market expectations for the fed funds rate



\*Long-run projections are the rates of growth, unemployment, and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy.

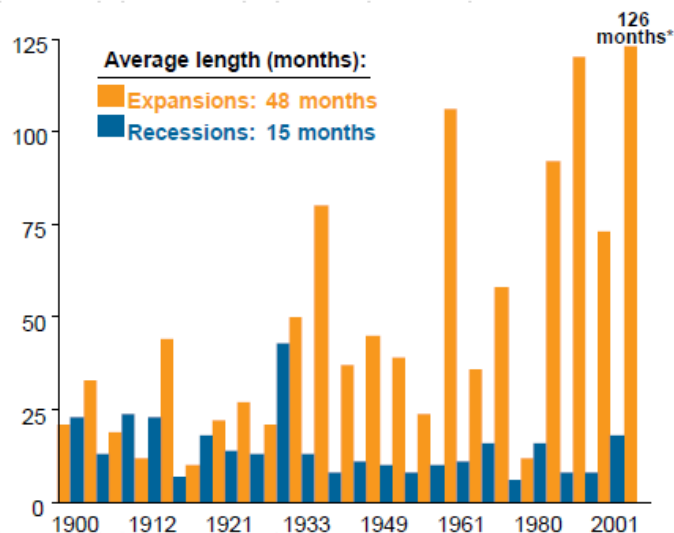
Sources: Bloomberg, FactSet, Federal Reserve, JPMorgan Asset Management. *Guide to the Markets* – U.S. Data are as of December 18, 2019.

Market expectations are the federal funds rates priced into the fed futures market as of the date of the December 2019 FOMC meeting and are through December 2022.

## Expansion Continues, but Not Without Raising Concerns

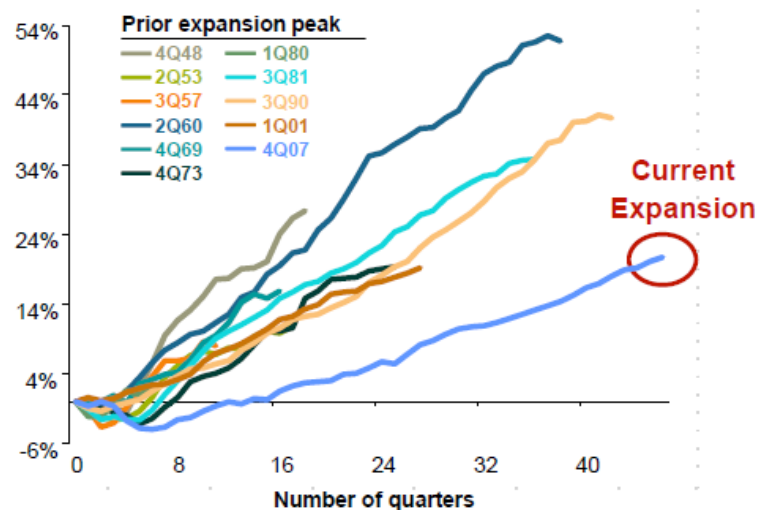
Expansions do not die of old age, but this one has become the longest

### Length of Economic Expansions and Recessions



### Strength of Economic Expansions

Cumulative real GDP growth since prior peak, percent



- The slow burn in the current expansion has enabled it to continue, at the risk of building back up asset price bubbles.
- The current recovery is now the longest, but also one of the slowest, averaging GDP growth in the U.S. of just 2.2%.
- Inverted yield curves typically suggest the onset of recession; the yield curve inverted mid-2019, but was no longer inverted by the end of the year.
- Long rates did not budge as short rates rose during 2017-18; long rates have since dropped over 100 bps.
- The explanatory power of an inverted yield curve has lessened in the wake of the Global Financial Crisis (GFC) and quantitative easing. Demand on the long end and limited supply are holding down the long end.



## U.S. Equity Performance Detail

### Shift away from defensive sectors toward cyclicals

- Utilities, Real Estate, and Staples took a back seat to cyclically oriented sectors during the fourth quarter.
- Investors harnessed three interest rate cuts, a potential U.S.-China trade armistice, and some clarity around Brexit in the risk-on environment.

### Small caps outpaced large for quarter but lagged on year.

- Heightened new drug approvals and M&A activity within Health Care's biotech and pharma industries propelled small caps.
- While small cap prevailed in the fourth quarter, large caps led for the third straight year, owing much of the gains to the Tech sector (+50.3%) and Communication Services (+32.7%).
- Apple (+85%) and Microsoft (+54%) hit over \$1 trillion in market cap, accounting for 15% of the S&P 500's annual advance.

### Growth vs. value

- Growth continued its dominance over value during the quarter across the market cap spectrum, closing out a decade-long trend supported by a low-rate environment.

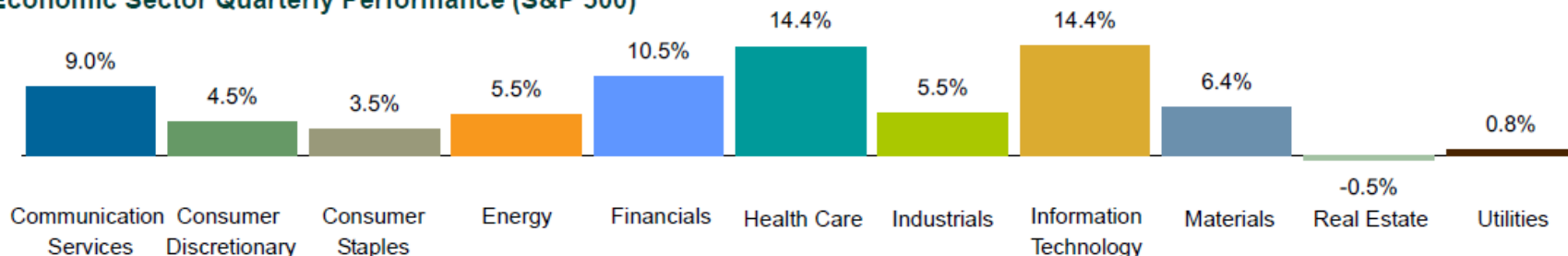
### U.S. Equity: Quarterly Returns



### U.S. Equity: One-Year Returns



### Economic Sector Quarterly Performance (S&P 500)

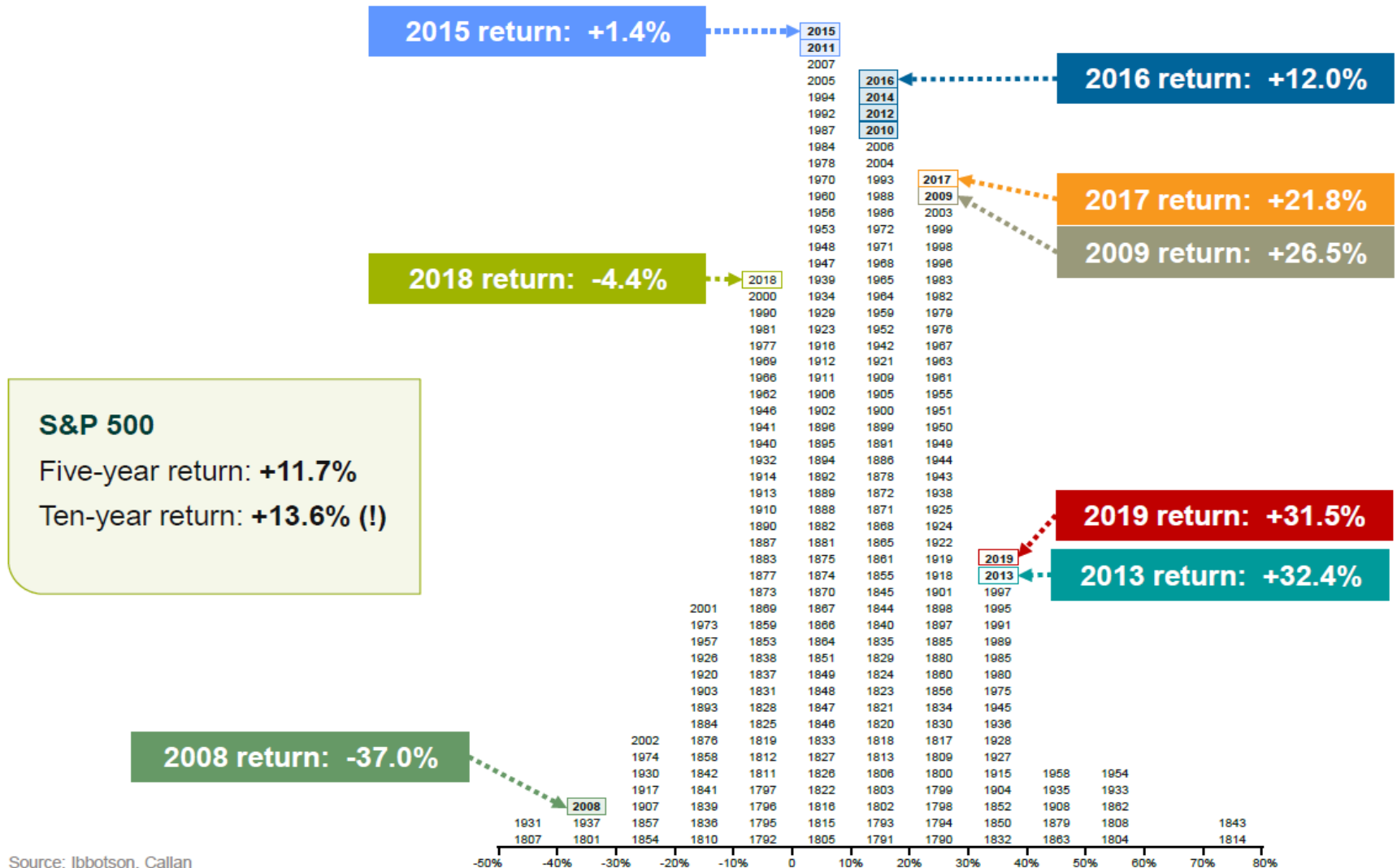


Sources: FTSE Russell, S&P Dow Jones Indices



## Stock Market Returns by Calendar Year

2019 performance in perspective: History of the U.S. stock market (230 years of returns)



# Global ex-U.S. Equity Performance Detail

## Trade war de-escalation and Brexit clarity turned global ex-U.S. markets positive.

- The “phase one” trade deal triggered a “risk-on” market environment.
- The Conservative Party gained command of Parliament in December, adding further clarity to the Brexit withdrawal plan and sparking the pound to rally.
- China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.

## Trade-related sectors prevailed.

- Technology, specifically within Asia, fueled the market as trade tensions receded.
- Factor performance favored risk, including beta and volatility, reflecting risk-on market environment.

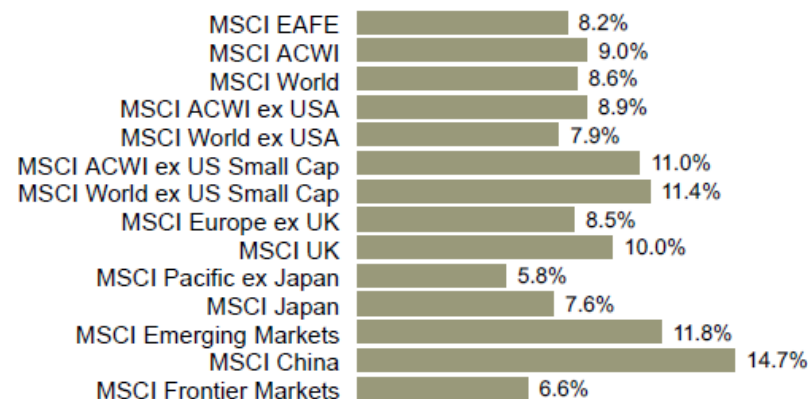
## U.S. dollar vs. other developed and emerging market currencies

- Major developed and emerging market currencies declined vs. the dollar as optimism replaced market anxiety as the phase one trade deal neared.

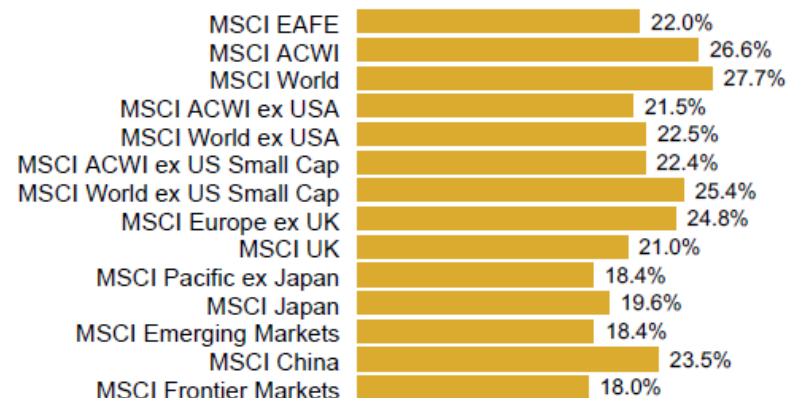
## Growth vs. value

- Growth continued to outperform value within markets and capitalizations, supported by Technology and Health Care.

## Global Equity: Quarterly Returns



## Global Equity: Annual Returns



Source: MSCI

## U.S. Fixed Income Performance

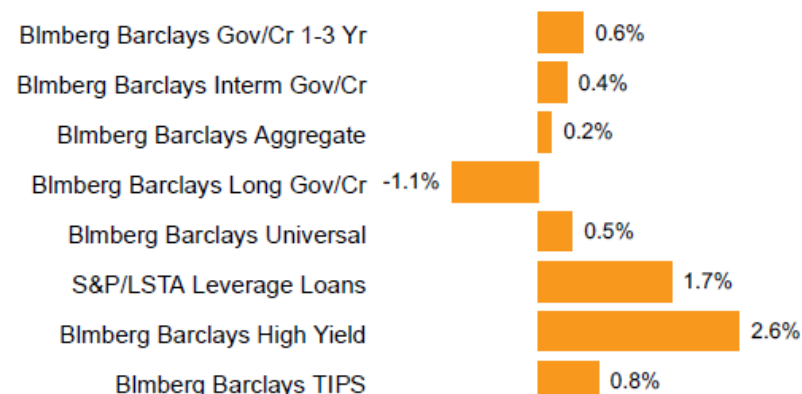
### The yield curve steepened on stronger growth expectations.

- Treasuries declined 0.8% with the steepening yield curve, with yields falling on short end and rising modestly on intermediate to long end of the curve on stronger economic growth expectations.
- Spread between the 2-year and 10-year Treasuries remained positive, ending the year at 34 bps.
- Long Treasuries fell (-4.1%) as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
- TIPS outperformed nominal Treasuries as inflation expectations rose; 10-year breakeven spread was 1.77% as of quarter-end, up from 1.53% as of Sept. 30.

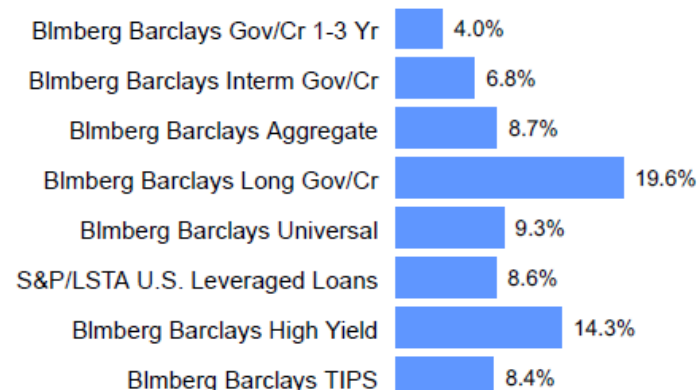
### Corporate bonds rally across credit ratings spectrum.

- IG corporate spreads narrowed and posted best results within BB US Aggregate amid risk-on market; BBB-rated corporates (+1.7%) outperformed single A or higher (+0.7%), indicating investor willingness to extend risk down the credit spectrum.
- Below-investment grade CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
- Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvement in credit fundamentals.

### U.S. Fixed Income: Quarterly Returns



### U.S. Fixed Income: Annual Returns



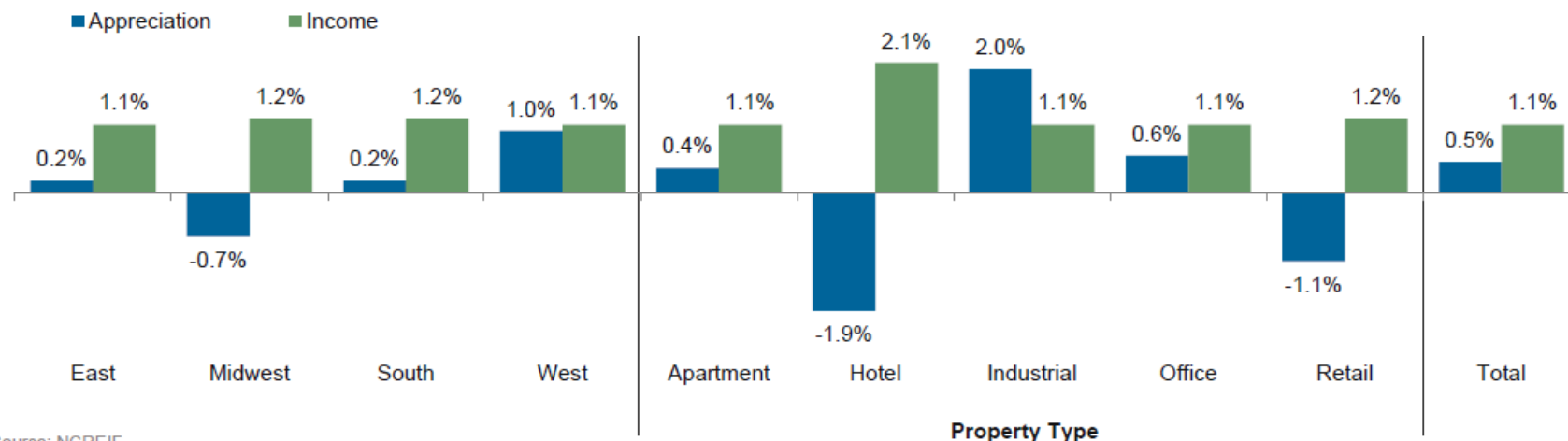
## U.S. Real Estate

### Returns continue to moderate.

- U.S. core real estate returns continue to be driven by income, with limited appreciation this late in the cycle.
- Returns coming from net operating income (NOI) growth rather than further cap rate compression
- Industrial real estate keeps outperforming other property types.
- Retail continues to show signs of depreciation.
- Defensive posturing and disciplined asset acquisitions are key.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
NCREIF ODCE	1.3%	4.4%	6.1%	8.0%	9.2%
Appreciation	0.5%	1.1%	2.8%	4.4%	5.4%
Income	0.8%	3.3%	3.3%	3.5%	3.7%
NCREIF Property Index	1.6%	6.4%	6.7%	8.3%	9.1%
Appreciation	0.5%	1.8%	2.0%	3.4%	4.1%
Income	1.1%	4.5%	4.6%	4.7%	4.9%

### NCREIF Property Index Returns by Region and Property Type




Source: NCREIF

# Asset Class Performance

Periodic Table of Investment Returns for Periods Ended December 31, 2019

Best



Worst

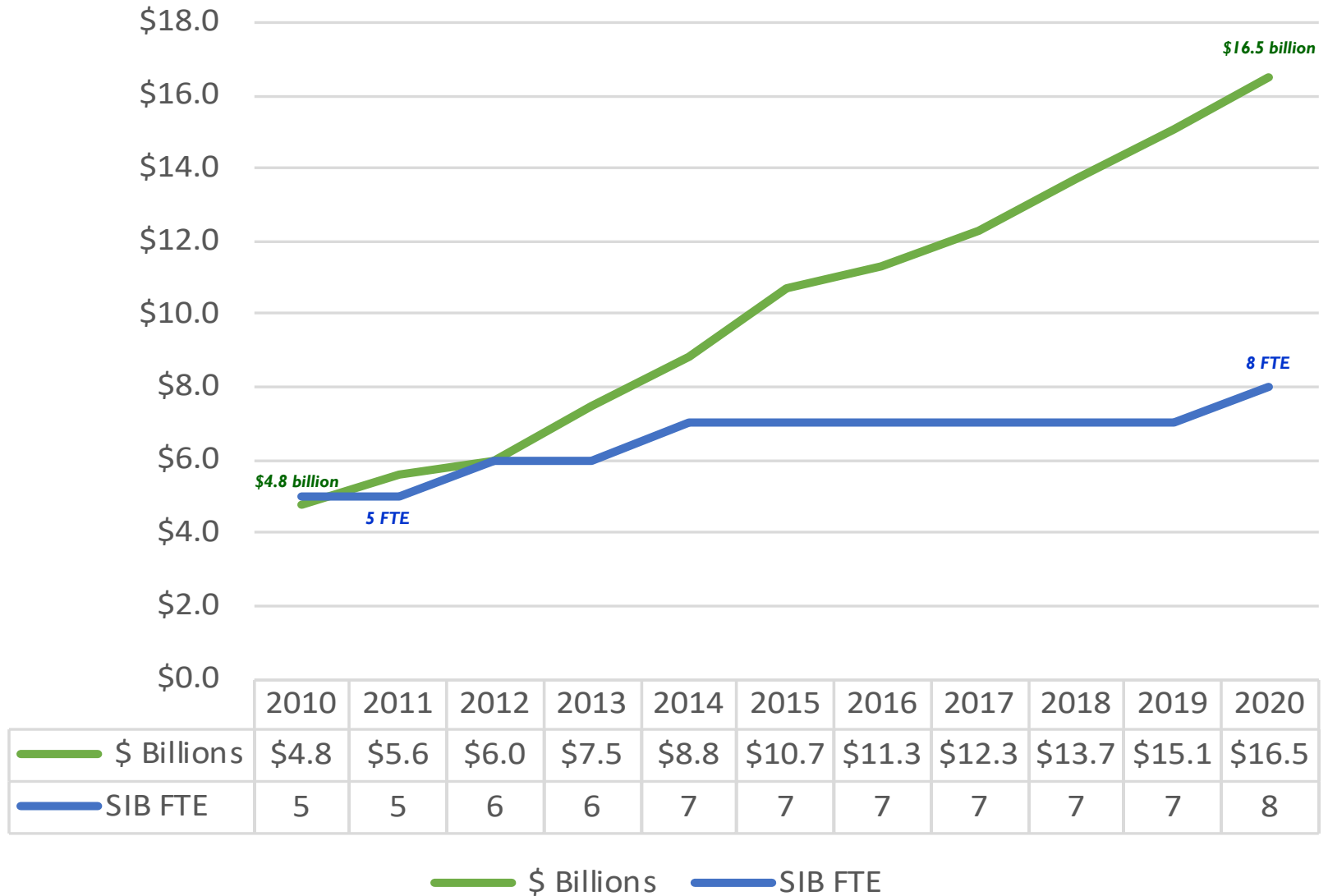
Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
MSCI:EM Gross 11.9%	S&P:500 31.5%	S&P:500 31.5%	S&P:500 15.3%	S&P:500 11.7%	S&P:500 13.6%	Russell:2000 Index 7.6%
Russell:2000 Index 9.9%	Russell:2000 Index 25.5%	Russell:2000 Index 25.5%	MSCI:EM Gross 12.0%	Russell:2000 Index 8.2%	Russell:2000 Index 11.8%	NCREIF:NFI-ODCE Val Wt Nt 7.2%
S&P:500 9.1%	MSCI:EAFE 22.0%	MSCI:EAFE 22.0%	MSCI:EAFE 9.6%	NCREIF:NFI-ODCE Val Wt Nt 8.0%	NCREIF:NFI-ODCE Val Wt Nt 10.4%	MSCI:EM Gross 7.0%
MSCI:EAFE 8.2%	MSCI:EM Gross 18.9%	MSCI:EM Gross 18.9%	Russell:2000 Index 8.6%	MSCI:EM Gross 6.0%	MSCI:EAFE 5.5%	S&P:500 6.1%
Blmbg:Commodity Price Idx 4.0%	Blmbg:Aggregate 8.7%	Blmbg:Aggregate 8.7%	NCREIF:NFI-ODCE Val Wt Nt 6.1%	MSCI:EAFE 5.7%	MSCI:EM Gross 4.0%	Blmbg:Aggregate 5.0%
NCREIF:NFI-ODCE Val Wt Nt 1.3%	Blmbg:Commodity Price Idx 5.4%	Blmbg:Commodity Price Idx 5.4%	Blmbg:Aggregate 4.0%	Blmbg:Aggregate 3.0%	Blmbg:Aggregate 3.7%	MSCI:EAFE 3.3%
3 Month T-Bill 0.5%	NCREIF:NFI-ODCE Val Wt Nt 4.4%	NCREIF:NFI-ODCE Val Wt Nt 4.4%	3 Month T-Bill 1.7%	3 Month T-Bill 1.1%	3 Month T-Bill 0.6%	3 Month T-Bill 1.8%
Blmbg:Aggregate 0.2%	3 Month T-Bill 2.3%	3 Month T-Bill 2.3%	Blmbg:Commodity Price Idx (2.6%)	Blmbg:Commodity Price Idx (5.0%)	Blmbg:Commodity Price Idx (5.3%)	Blmbg:Commodity Price Idx (0.7%)

# The North Dakota State Investment Board – A Proven Leader in Accountability and Transparency

- ▶ **The North Dakota State Investment Board has experienced significant asset growth since 2010 while driving investment returns up and driving investment fees down (on a percentage basis).**
  - ▶ SIB clients Assets Under Management (AUM) have grown from \$4.8 billion in 2010 to over \$16.5 billion in 2020.
  - ▶ SIB client net investment income exceeded \$2.3 billion in 2019 including over \$1 billion in the Legacy Fund.
  - ▶ SIB client investment fees have declined from over 0.65% in 2013 to less than 0.45% in 2019.
  - ▶ Based on \$16.5 billion of AUM and fees declining by 0.20% (between 2013 and 2019), the SIB is reducing investment fees by \$33 million per year (e.g. \$16.5 billion x 0.20% = \$33 million of annual fee savings).
  - ▶ All investment return and fee data is disclosed monthly, quarterly and/or annually on our website.
    - ▶ SIB Publications and Reports <http://www.nd.gov/rio/SIB/Publications/default.htm>
    - ▶ SIB Meeting Materials <http://www.nd.gov/rio/SIB/Board/SIB%20Meeting%20Materials/default.htm>
- ▶ **The SIB, TFFR and RIO have generally been able to meet or exceed client expectations in recent years and recognized as an industry leader in financial accountability and investment transparency.**
  - ▶ Net investments returns for most of our SIB clients have exceeded approved policy benchmarks by approximately 0.50% for the 5 years ended June 30, 2019, while fees have declined to less than 0.45% per annum in recent years.
  - ▶ TFFR client satisfaction scores have consistently remained strong averaging 3.7 to 3.8 (on a 4.0 scale) the last 5-years.
  - ▶ The Legacy Fund was awarded the highest transparency score (10 out of 10) by the Sovereign Wealth Fund Institute in 2018 and 2019, while the Retirement and Investment Office was awarded a Certificate of Achievement for Excellence in Financial Reporting for 21 consecutive years by the Governmental Finance Officers Association in 2019 (for fiscal 2018).
  - ▶ Legacy Fund net returns for the Last Quarter and 1, 3, 5 and 8.25 years ended December 31, 2019, consistently exceed Policy Target.

	Last	Last	Last 3	Last 5	Since
<u>Periods Ended 12/31/19:</u>	<u>Quarter</u>	<u>Year</u>	<u>Years</u>	<u>Years</u>	<u>Inception</u>
Net Investment Return	5.2%	18.1%	8.6%	7.0%	5.3%
Policy Benchmark	4.5%	17.5%	8.2%	6.2%	4.6%

## SIB Investments and SIB FTE (2010 to 2020)





# Interim Investment Update as of December 31, 2019

SIB investments exceeded \$16 billion as of December 31, 2019, at or near all-time highs, given very favorable capital market and economic conditions and strong oil & gas production levels.

SIB Interim Investment Returns Calendar Year To Date - Top Five As of Dec. 31, 2019					Since July 1, 2019 Fiscal YTD 12/31/2019	Calendar YTD 12/31/2019	\$16.5 billion TOTAL SIB AUM as of Feb. 10, 2020
	3/31/2019	6/30/2019	9/30/2019	12/31/2019			
<b>Legacy Fund</b>	7.72%	3.24%	1.01%	5.16%	<b>6.23%</b>	<b>18.13%</b>	<b>\$7 billion</b>
<i>Policy Benchmark</i>	7.67%	3.38%	0.97%	4.52%	<b>5.53%</b>	<b>17.47%</b>	<b>Legacy</b>
<b>TFFR</b>	7.46%	3.53%	0.40%	5.62%	<b>6.04%</b>	<b>17.98%</b>	<b>\$2.7 billion</b>
<i>Policy Benchmark</i>	7.66%	3.40%	0.64%	4.98%	<b>5.64%</b>	<b>17.61%</b>	<b>TFFR</b>
<b>PERS</b>	7.46%	3.50%	0.37%	5.69%	<b>6.09%</b>	<b>17.98%</b>	<b>\$3.3 billion</b>
<i>Policy Benchmark</i>	7.53%	3.42%	0.61%	4.93%	<b>5.57%</b>	<b>17.40%</b>	<b>PERS</b>
<b>WSI</b>	5.39%	3.26%	1.70%	2.62%	<b>4.36%</b>	<b>13.57%</b>	<b>\$2.1 billion</b>
<i>Policy Benchmark</i>	4.88%	3.10%	1.60%	2.14%	<b>3.78%</b>	<b>12.22%</b>	<b>WSI</b>
<b>Budget Stabilization Fund</b>	1.35%	1.61%	0.93%	0.76%	<b>1.70%</b>	<b>4.73%</b>	<b>\$1.4 billion</b>
<i>Policy Benchmark</i>	1.19%	1.47%	0.69%	0.59%	<b>1.28%</b>	<b>4.00%</b>	<b>Others (BSF)</b>

*Note: Net investment returns are deemed to be materially accurate, but are unaudited and subject to change.*

1. SIB clients earned over \$2.3 billion of net investment income for the 12 months ended December 31, 2019, including the following interim results for our four largest investment clients:

- Legacy +18% (\$1+ billion)
- TFFR +18% (\$400+ million)
- PERS +18% (\$500+ million)
- WSI +13% (\$250+ million)

2) Net investment returns for the Legacy Fund, TFFR, PERS, WSI and BSF exceeded their respective *Policy Benchmarks* on a fiscal year to date basis (July 1 to Dec. 31, 2019) and calendar year to date basis (Jan. 1 to Dec. 31, 2019).



# Return on Investment Fees and Expenses

## Investment Goals for SIB Client Fees and Expenses:

1. The SIB and RIO attempt to keep total fees and expenses at or below 50 bps (0.50%) per annum.
2. We also attempt to generate  $\geq 0.50\%$  of excess return over our stated performance benchmarks (after deducting all investment fees and expenses) over a rolling 5-year period.
3. If we are successful in attaining both of the above goals, we are effectively earning a 2-for-1 return on our investment fee and expense dollars (which is consistent with our fundamental investment belief that the prudent use of active management is beneficial to our clients).

**Key Point:** Over the last 5-years, the vast majority of SIB clients earned 0.50% of excess return, while fees & expenses averaged  $\leq 0.50\%$  per annum since 2014 (see below).

<u>All State Investment Board Clients</u>	<u>Investment Fees and Expenses</u>	<u>Average "Assets Under Management"</u>	<u>% of AUM</u>
Fiscal Year Ended June 30, 2013	\$45 million	\$6.9 billion	0.65%
Fiscal Year Ended June 30, 2014	\$44 million	\$8.6 billion	0.51%
Fiscal Year Ended June 30, 2015	\$48 million	\$10.1 billion	0.48%
Fiscal Year Ended June 30, 2016	\$46 million	\$10.9 billion	0.42%
Fiscal Year Ended June 30, 2017	\$54.5 million	\$11.8 billion	0.46%
Fiscal Year Ended June 30, 2018	\$56 million	\$13.4 billion	0.42%
Fiscal Year Ended June 30, 2019	\$63.2 million	\$14.2 billion	0.44%

**Key Take-Away:** Based on \$10 billion of AUM, a 0.20% decline in fees between fiscal 2013 and 2019 translates into \$20 million of annual fee savings.

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

# LEGACY FUND

## Statement of Net Position

### As of 12/31/2019

	As of 12-31-19	As of 6-30-19
<b>ASSETS:</b>		
INVESTMENTS (AT FAIR VALUE)		
GLOBAL EQUITIES	\$ 3,489,792,673	\$ 3,203,129,265
GLOBAL FIXED INCOME	2,327,268,625	2,170,475,305
GLOBAL REAL ASSETS	971,110,246	923,488,586
INVESTED CASH (NOTE 1)	51,912,103	255,829,361
<b>TOTAL INVESTMENTS</b>	<b>6,840,083,647</b>	<b>6,552,922,517</b>
RECEIVABLES		
DIVIDEND/INTEREST RECEIVABLE	22,641,994	27,837,411
MISCELLANEOUS RECEIVABLE	6,164	14,323
<b>TOTAL RECEIVABLES</b>	<b>22,648,158</b>	<b>27,851,734</b>
OTHER ASSETS		
INVESTED SECURITIES LENDING COLLATERAL (NOTE 2)	18,844,245	19,392,771
OPERATING CASH	137,201	113,720
<b>TOTAL ASSETS</b>	<b>6,881,713,251</b>	<b>6,600,280,742</b>
DEFERRED OUTFLOWS OF RESOURCES		
DEFERRED OUTFLOWS RELATED TO PENSIONS	204,624	234,169
<b>LIABILITIES:</b>		
SECURITIES LENDING COLLATERAL (NOTE 2)	18,844,245	19,392,771
ACCOUNTS PAYABLE	6,350	137,902
ACCRUED EXPENSES	492,133	545,406
DUE TO OTHER FUNDS (NOTE 5)	-	455,263,216
INVESTMENT EXPENSE PAYABLE	2,917,084	2,917,084
<b>TOTAL LIABILITIES</b>	<b>22,259,812</b>	<b>478,256,379</b>
DEFERRED INFLOWS OF RESOURCES		
DEFERRED INFLOWS RELATED TO PENSIONS	30,661	30,661
<b>NET POSITION:</b>		
HELD IN TRUST	6,859,627,402	6,122,227,871
<b>TOTAL NET POSITION</b>	<b>\$ 6,859,627,402</b>	<b>\$ 6,122,227,871</b>

These financial statements are preliminary, unaudited and subject to change.

1/31/2020

# LEGACY FUND

## Statement of Changes in Net Position

### For the Month Ended 12/31/2019

	Month Ended 12-31-19	Year-to-Date
<b>ADDITIONS:</b>		
INVESTMENT INCOME		
GAIN ON SALE OF INVESTMENTS	\$ 104,327,264	\$ 613,472,231
LOSS ON SALE OF INVESTMENTS	72,412,000	483,835,276
NET GAINS (LOSSES) INVESTMENTS	31,915,264	129,636,955
NET APPREC (DEPREC) MARKET VALUE	62,918,729	203,441,159
<b>NET CHANGE IN FAIR VALUE OF INVESTMENTS</b>	<b>94,833,993</b>	<b>333,078,114</b>
INTEREST, DIVIDEND & OTHER INVESTMENT INCOME	15,335,993	69,220,899
	110,169,986	402,299,013
LESS INVESTMENT EXPENSES	446,562	6,070,682
<b>NET INCOME FROM INVESTING ACTIVITIES</b>	<b>109,723,424</b>	<b>396,228,331</b>
SECURITIES LENDING INCOME	42,408	352,191
SECURITIES LENDING EXPENSES	8,473	70,376
NET SECURITIES LENDING INCOME	33,935	281,815
<b>NET INVESTMENT INCOME</b>	<b>109,757,359</b>	<b>396,510,146</b>

## NOTE 6

### EARNINGS AVAILABLE

Section 26 of Article X of the Constitution of North Dakota dictates that earnings of the Legacy Fund accruing after June 30, 2017, shall be transferred to the general fund at the end of each biennium. Earnings accrued prior to June 30, 2017, became part of the principal of the fund.

NDCC 21-10-12 defines "earnings" for the purposes of Section 26, Article X as "net income in accordance with generally accepted accounting principles, excluding any unrealized gains or losses."

As of the date of these financial statements, the principal balance of the Legacy Fund is \$ 5,941,085,096

As of the date of these financial statements, the amount of earnings transferrable to the General Fund at the end of the 2019-21 biennium is \$ 239,758,018

# **Appendix of Supporting Materials**

## **PERS Investment Update as of December 31, 2019**

**Callan's Quarterly Reports of investment performance are available on the following web address:**

<http://www.nd.gov/rio/SIB/Publications/Callan%20Quarterly%20reports/Invest%20Quarterly.htm>

**Board members can review monthly manager level performance using the following web address:**

[http://www.nd.gov/rio/SIB/Publications/Fund%20Reports/report\\_type.asp?reportType=performance](http://www.nd.gov/rio/SIB/Publications/Fund%20Reports/report_type.asp?reportType=performance)

**LSV is the only investment manager on our Watch List as of Dec. 31, 2019, and there are no material legal or legislative proceedings affecting the SIB.**



# 2020 Capital Market Assumptions

**Jim Callahan, CFA**  
President

**Jay Kloepfer**  
Director  
Capital Markets Research Group

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## Why Make Capital Market Assumptions?

Guiding objectives and process

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**The cornerstone of a prudent process is a long-term strategic investment plan, and capital market assumptions are key elements.**

- reasonable return and risk expectations for the appropriate time horizon
- Represent our best thinking regarding the long-term (10-year) outlook, recognizing our median projections represent the midpoint of a range, rather than a specific number
- Develop results that are readily defensible both for individual asset classes and for total portfolios
- Be conscious of the level of change suggested in strategic allocations for long-term investors: defined benefit plan sponsors, foundations, endowments, trusts, defined contribution participants, families, and individuals
- Reflect common sense and recent market developments, within reason

**Callan's assumptions are informed by current market conditions but not built directly from them.**

- Balance recent, immediate performance and valuation against long-term equilibrium expectations

## How Are Capital Market Assumptions Constructed?

Guiding objectives and process



**Underlying beliefs guide the development of the assumptions:**

- An initial bias toward long-run averages
- A conservative bias
- An awareness of risk premiums
- A presumption that markets are ultimately clear and rational

Reflect our beliefs that long-term equilibrium relationships between the capital markets and lasting trends in global economic growth are key drivers to setting capital market expectations

Long-term compensated risk premiums represent “beta”—exposure to each broad market, whether traditional or “exotic,” with limited dependence on successful realization of alpha

**The projection process is built around several key building blocks:**

- Advanced modeling at the individual asset class level (e.g., a detailed bond model, an equity model)
- A path for interest rates and inflation
- A cohesive economic outlook

## How Are Capital Market Assumptions Constructed?

**Assumptions are 10-year forward-looking, representing a medium- to long-term planning horizon:**

- Differs from the actuarial assumptions, which tend to reflect longer-term horizons of 30-40 years

**Assumptions consist of return and two measures that contribute to portfolio volatility: standard deviation and correlation**

**Cover most broad asset classes and inflation**

- Broad U.S. equity
  - Large cap
  - Small/mid cap
- Global ex-U.S. equity
  - Developed market
  - Emerging market
- U.S. fixed income
  - Short duration
  - Core U.S. fixed
  - TIPS
  - High yield
  - Long duration (government, credit, and G/C)
- Global ex-U.S. fixed income
- Real estate
- Alternative investments: private equity, hedge funds, private debt
- Cash
- Inflation

# 2020 Callan Capital Market Assumptions



## Risk and return: 2020–2029

Asset Class	Index	PROJECTED RETURN			PROJECTED RISK	
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Projected Yield
Equities						
Broad U.S. Equity	Russell 3000	8.55%	7.15%	4.90%	18.10%	2.00%
Large Cap U.S. Equity	S&P 500	8.35%	7.00%	4.75%	17.70%	2.10%
Small/Mid Cap U.S. Equity	Russell 2500	9.25%	7.25%	5.00%	21.20%	1.55%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.10%	7.25%	5.00%	20.50%	3.10%
Developed ex-U.S. Equity	MSCI World ex USA	8.70%	7.00%	4.75%	19.70%	3.25%
Emerging Market Equity	MSCI Emerging Markets	10.25%	7.25%	5.00%	25.70%	2.65%
Fixed Income						
Short Duration Gov't/Credit	Bloomberg Barclays 1-3 Yr G/C	2.70%	2.70%	0.45%	2.10%	2.85%
Core U.S. Fixed	Bloomberg Barclays Aggregate	2.80%	2.75%	0.50%	3.75%	3.40%
Long Government	Bloomberg Barclays Long Gov	2.55%	1.80%	-0.45%	12.50%	3.40%
Long Credit	Bloomberg Barclays Long Cred	3.75%	3.25%	1.00%	10.50%	5.05%
Long Government/Credit	Bloomberg Barclays Long G/C	3.25%	2.75%	0.50%	10.60%	4.45%
TIPS	Bloomberg Barclays TIPS	2.50%	2.40%	0.15%	5.05%	3.15%
High Yield	Bloomberg Barclays High Yield	5.10%	4.65%	2.40%	10.25%	7.30%
Global ex-U.S. Fixed	Bloomberg Barclays Gbl Agg xUSD	1.30%	0.90%	-1.35%	9.20%	2.05%
Emerging Market Sovereign Debt	EMBI Global Diversified	4.70%	4.35%	2.10%	9.50%	6.70%
Other						
Core Real Estate	NCREIF ODCE	7.05%	6.25%	4.00%	14.00%	4.75%
Private Equity	Cambridge Private Equity	12.00%	8.50%	6.25%	27.80%	0.00%
Hedge Funds	Callan Hedge FOF Database	5.25%	5.00%	2.75%	8.70%	0.00%
Commodities	Bloomberg Commodity	4.50%	2.75%	0.50%	18.00%	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%	

Note that return projections for public markets assume index returns with no premium for active management.

- Geometric returns are derived from arithmetic returns and the associated risk (standard deviation); Projected yields represent the expected 10-year average
- Source: Callan



# 2020 Callan Capital Market Assumptions

Correlation: 2020 - 2029



Large Cap U.S. Eq	1.000																		
Small/Mid Cap U.S. Eq	0.915	1.000																	
Dev. ex-U.S. Eq	0.765	0.775	1.000																
Emerging Market Eq	0.775	0.765	0.845	1.000															
Short Duration	-0.040	-0.065	-0.050	-0.080	1.000														
Core U.S. Fixed	-0.100	-0.125	-0.105	-0.140	0.845	1.000													
Long Government	-0.100	-0.125	-0.110	-0.170	0.770	0.900	1.000												
Long Credit	0.300	0.275	0.230	0.230	0.640	0.840	0.750	1.000											
TIPS	-0.040	-0.075	-0.050	-0.085	0.555	0.640	0.530	0.480	1.000										
High Yield	0.600	0.585	0.570	0.560	-0.030	0.030	-0.100	0.400	0.055	1.000									
Global ex-U.S. Fixed	0.010	0.000	0.050	0.100	0.495	0.530	0.470	0.540	0.400	0.120	1.000								
EM Sovereign Debt	0.530	0.515	0.515	0.545	0.050	0.110	-0.010	0.350	0.180	0.600	0.010	1.000							
Core Real Estate	0.695	0.665	0.660	0.625	-0.005	-0.035	-0.045	0.320	0.000	0.455	-0.050	0.360	1.000						
Private Equity	0.830	0.805	0.795	0.765	-0.160	-0.185	-0.250	0.190	-0.135	0.525	0.060	0.425	0.600	1.000					
Hedge Funds	0.775	0.750	0.745	0.720	0.055	0.100	0.120	0.390	0.085	0.560	-0.050	0.540	0.525	0.635	1.000				
Commodities	0.220	0.210	0.205	0.200	-0.195	-0.100	-0.030	-0.045	0.120	0.100	0.150	0.190	0.200	0.180	0.210	1.000			
Cash Equivalents	-0.030	-0.045	-0.030	-0.065	0.300	0.100	0.040	-0.100	0.120	-0.110	0.000	-0.070	-0.060	0.000	-0.070	0.070	1.000		
Inflation	-0.020	0.020	0.000	0.030	-0.205	-0.280	-0.250	-0.250	0.100	0.070	-0.100	0.000	0.100	0.060	0.200	0.400	0.000	1.000	
	Lg Cap	Sm/Mid	Dev ex-US	Em Market Eq	Sht Dur	Core Fix	Long Gov	Long Credit	TIPS	Hi Yield	Global ex-US Fixed	EMD	Core Real Estate	Private Equity	Hedge Funds	Comm	Cash Equiv	Inflation	

- Relationships between asset classes are 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

## 2020 Callan Capital Market Assumptions: Efficient Mixes

### Subdued returns even for higher risk portfolios

- A portfolio with approximately 40% fixed income is expected to earn 6.0% over the next 10 years.
- The fixed income allocation has to fall below 20% to earn more than 7%.
- Total alternatives allocations in excess of 15% are common for diversified asset mixes.
- Private equity is constrained to be no more than 25% of the total public equity exposure. The purpose of the constraint is to hold private equity to a relative share of total equity that is appropriate at each place along the efficient frontier. The assumed premium for private equity would cause an unconstrained optimization to allocate a disproportionate amount to private equity that would be neither prudent nor implementable.

Asset Classes	Constraints		Optimal Mixes					
	Min	Max	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
Broad U.S. Equity	0	100	15	19	23	28	33	39
Global ex-U.S. Equity	0	100	9	12	15	18	21	25
Core U.S. Fixed	0	100	60	50	40	29	17	4
Core Real Estate	0	100	5	6	8	10	11	13
Hedge Funds	0	100	5	5	5	4	4	3
Private Equity	0	100	6	8	9	11	14	16
Totals			100	100	100	100	100	100
Projected Arithmetic Return			5.14	5.74	6.38	7.08	7.85	8.72
Projected Standard Deviation			6.88	8.50	10.32	12.34	14.59	17.17
10 Yr. Geometric Mean Return			5.00	5.50	6.00	6.50	7.00	7.50
Public Equity			24	31	38	46	54	64
Public Fixed Income			59	50	40	29	17	4
Alternatives			16	19	22	25	29	33

Source: Callan

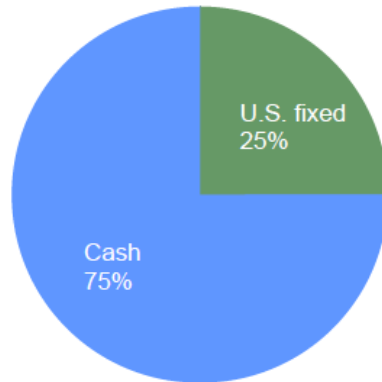




## 7.5% Expected Returns Over Past 30+ Years

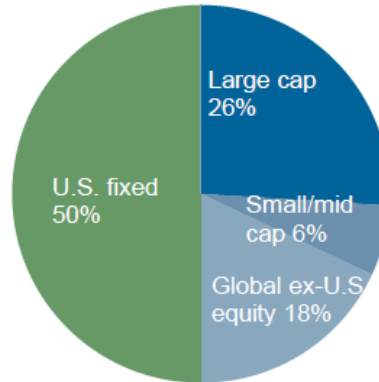


Increasing Complexity



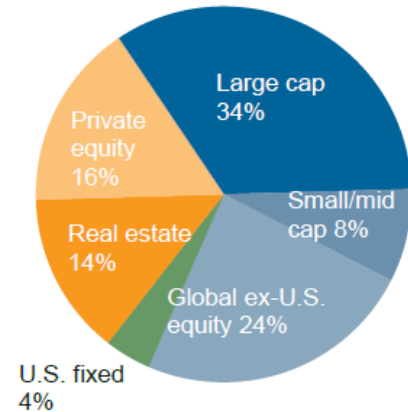
**1989**

**Return:** 7.5%  
**Risk:** 3.1%



**2004**

**Return:** 7.5%  
**Risk:** 8.9%



**2019**

**Return:** 7.5%  
**Risk:** 18.0%

Increasing Risk

In 1989, our expectations for cash and broad U.S. fixed income were 6.80% and 9.35%, respectively.

Growth assets were not required to earn a 7.5% expected return.

15 years later, an investor would have needed half of the portfolio in public equities to achieve a 7.5% expected return, nearly tripling the portfolio volatility of 1989.

Today an investor is required to include 96% in growth assets to earn a 7.5% expected return at almost 6x the volatility compared to 1989.

# Equity Assumptions

## Summary



### Fundamental relationship

**Equity Return = Capital Appreciation + Income + Valuation Change**

### Broad U.S. equity

**Return = 7.15%, Risk = 18.1%**

- Earnings growth likely to moderate
  - Coming off strong period of gains, despite modest GDP growth
  - Benefited from expansive economic policies
- Dividend yield consistent with recent history
  - Payout ratios close to historical norms
  - Yields stable for 20 years in the face of changing interest rates

### Broad global ex-U.S. equity

**Return = 7.25%, Risk = 20.50%**

- Earnings growth likely to be moderate
  - Significant uncertainty in future economic policies
- Relatively high dividend yields will support returns.
- Long period of relative undervaluation, potential for growth

## Alternative Investment Assumptions

Core real estate



**Return = 6.25%, Risk = 14.0%**

**Real estate represented by the NCREIF ODCE**

## Alternative Investment Assumptions

Private equity

**Return = 8.50%, Risk = 27.80%**

**Private equity represented by the Cambridge Private Equity Index**

## Alternative Investment Assumptions

Hedge funds

**Return = 5.0%, Risk = 8.7%**

**Hedge funds represented by the Callan Hedge Fund of Funds database**

# **Workforce Safety & Insurance**

## **Interim Investment Update**

**For the periods ended December 31, 2019**

February 19, 2020

Dave Hunter, Executive Director/CIO

Darren Schulz, Deputy Chief Investment Officer

ND Retirement & Investment Office (RIO)

State Investment Board (SIB)

# WSI Net Investment Returns exceed Policy Benchmarks at 12/31/19

	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019
Total Fund Return - Net (after fees & expenses)	13.57%	7.47%	6.06%	3.91%
Policy Benchmark Return	12.22%	6.30%	4.92%	3.34%
Net Excess Return (over Policy Benchmark)	1.35%	1.17%	1.14%	OK

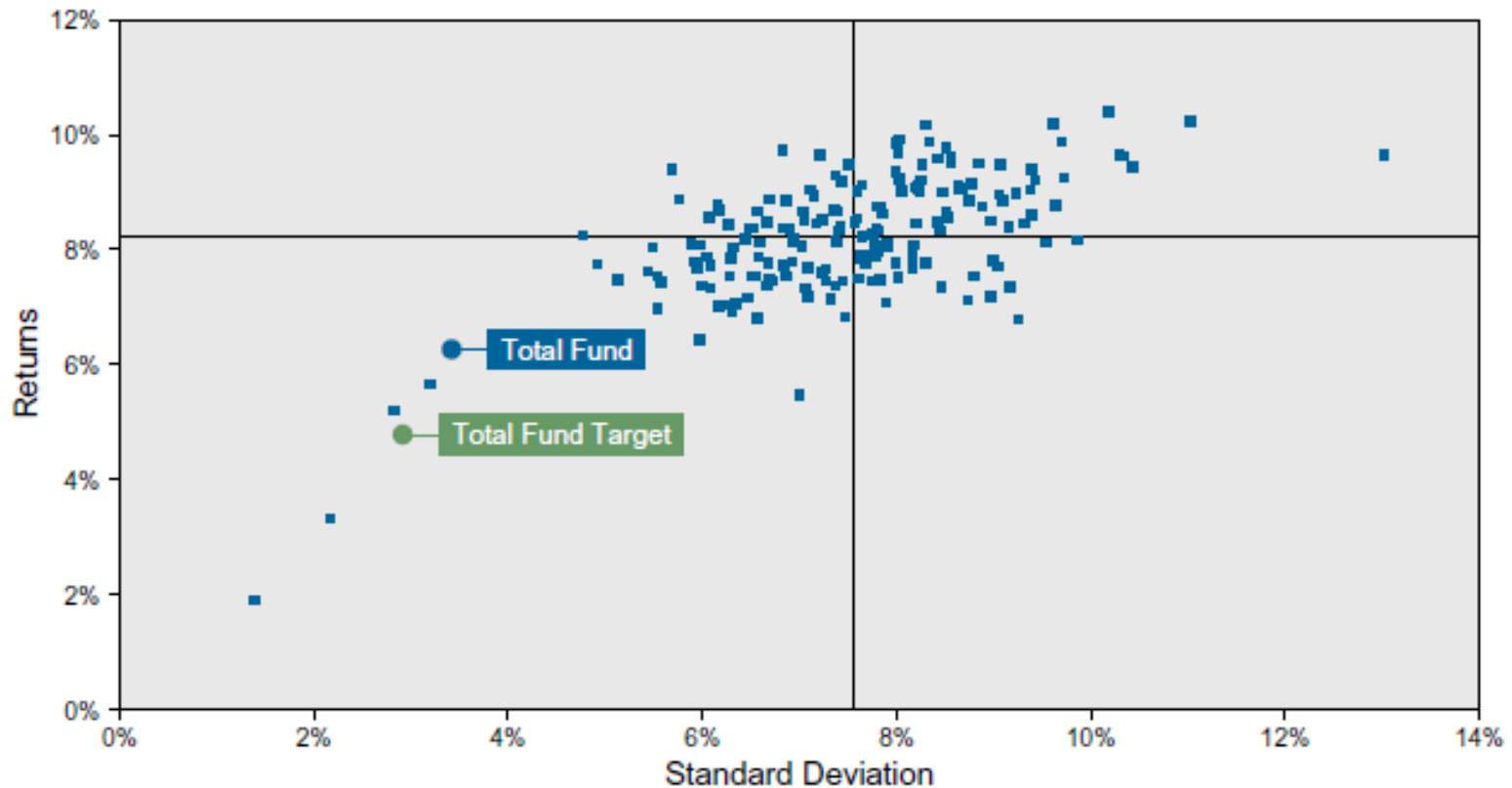
## Key Points:

- 1) WSI Net Returns exceed the Policy Benchmark Return by over 1% for the 1, 3 and 5-years ended 12/31/2019.
- 2) Risk, as measured by standard deviation of 3.91% for the 5-years ended 12/31/2019 was within 1% of the Policy Benchmark standard deviation of 3.34%, and reflective of the WSI's conservative asset allocation policy.
- 3) WSI's target asset allocation is 60% fixed income, 22% equities, 17% real assets (real estate, infrastructure, timber and Treasury Inflation Protected Securities) and 1% cash (and cash equivalents).

Manager selection was responsible for creating **\$20 million** of incremental income for WSI (after fees) for the 1-year ended December 31, 2019 (e.g. \$2 billion times 1% = **\$20 million**). During the last 5 years, RIO estimates that WSI has earned roughly **\$100 million** of incremental income (e.g. \$2 billion times 1% = **\$20 million** per year for 5 years) by selecting investment firms which outperformed approved investment benchmarks while paying far less than \$50 million for aggregate investment fees and expenses since 2015 (or \$150 million before deducting fees).

## WSI's Asset Allocation is Conservative vs Callan's Public Fund Sponsor Database

### Ten Year Annualized Risk vs Return



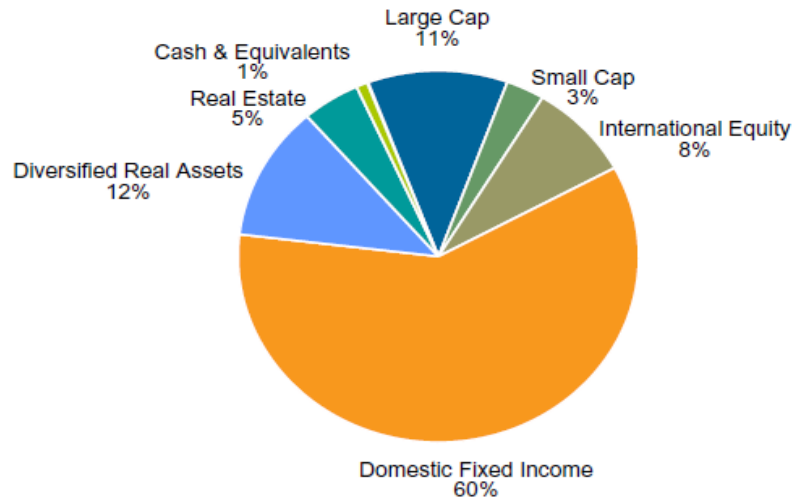
Squares represent membership of the Callan Public Fund Sponsor Database

The chart shows the return and risk of WSI (Total Fund) versus WSI's Target asset allocation, contrasted with the returns and risks of the funds in the Callan Public Fund Sponsor Database.

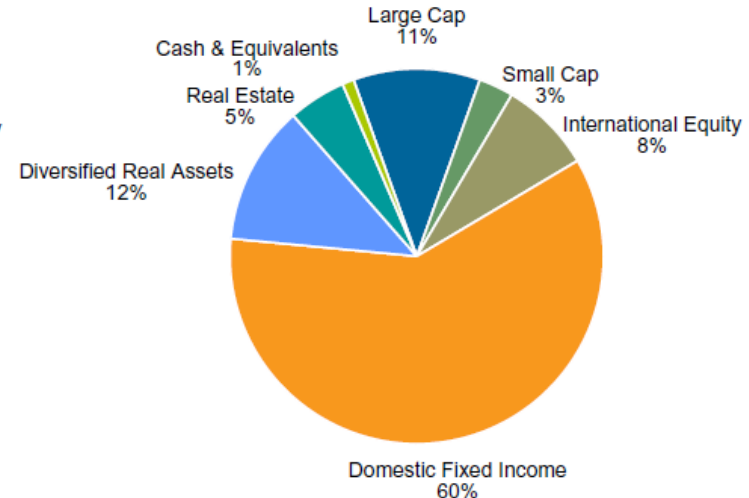
# WSI -Actual versus Target Asset Allocation

## As of December 31, 2019

Actual Asset Allocation



Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Large Cap	240,382	11.3%	11.0%	0.3%	7,375
Small Cap	65,427	3.1%	3.0%	0.1%	1,879
International Equity	178,603	8.4%	8.0%	0.4%	9,144
Domestic Fixed Income	1,265,831	59.8%	60.0%	(0.2%)	(5,115)
Diversified Real Assets	247,845	11.7%	12.0%	(0.3%)	(6,345)
Real Estate	100,521	4.7%	5.0%	(0.3%)	(5,392)
Cash & Equivalents	19,636	0.9%	1.0%	(0.1%)	(1,547)
Total	2,118,243	100.0%	100.0%		

**Asset allocations are within 1% of Target noting WSI approved a de-risking plan in mid-2018 to reduce Equities to 22% (from 25%) and Real Assets to 17% (from 21%) while increasing Fixed Income to 60% (from 53%).**

# The Callan Periodic Table of Investment Returns

Annual Returns for Key Indices Ranked in Order of Performance (1999–2018)

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Non-U.S. Equity	Real Estate	U.S. Fixed Income	Non-U.S. Fixed Income	Emerging Market Equity	Real Estate	Emerging Market Equity	Real Estate	Emerging Market Equity	U.S. Fixed Income	Emerging Market Equity	Small Cap Equity	U.S. Fixed Income	Real Estate	Small Cap Equity	Real Estate	Large Cap Equity	Small Cap Equity	Emerging Market Equity	Cash Equivalent
27.92%	13.84%	8.43%	22.37%	55.82%	37.96%	34.00%	42.12%	39.38%	5.24%	78.51%	26.85%	7.84%	27.73%	38.82%	15.02%	1.38%	21.31%	37.28%	1.87%
Small Cap Equity	U.S. Fixed Income	High Yield	U.S. Fixed Income	Small Cap Equity	Emerging Market Equity	Real Estate	Emerging Market Equity	Non-U.S. Equity	Non-U.S. Fixed Income	High Yield	Real Estate	High Yield	Emerging Market Equity	Large Cap Equity	Large Cap Equity	U.S. Fixed Income	High Yield	Non-U.S. Equity	U.S. Fixed Income
21.26%	11.63%	5.28%	10.26%	47.25%	25.55%	15.35%	32.17%	12.44%	4.39%	58.21%	19.63%	4.98%	18.23%	32.39%	13.69%	0.55%	17.13%	24.21%	0.01%
Large Cap Equity	Cash Equivalent	Cash Equivalent	Real Estate	Real Estate	Non-U.S. Equity	Non-U.S. Equity	Non-U.S. Equity	Non-U.S. Fixed Income	Cash Equivalent	Real Estate	Emerging Market Equity	Non-U.S. Fixed Income	Non-U.S. Equity	Non-U.S. Equity	U.S. Fixed Income	Cash Equivalent	Large Cap Equity	Large Cap Equity	High Yield
21.04%	6.18%	4.42%	2.82%	40.69%	20.38%	14.47%	25.71%	11.03%	2.06%	37.13%	18.88%	4.36%	16.41%	21.02%	5.97%	0.05%	11.96%	21.83%	-2.08%
Real Estate	Small Cap Equity	Small Cap Equity	Cash Equivalent	Non-U.S. Equity	Small Cap Equity	Large Cap Equity	Small Cap Equity	U.S. Fixed Income	High Yield	Non-U.S. Equity	High Yield	Large Cap Equity	Small Cap Equity	High Yield	Small Cap Equity	Real Estate	Emerging Market Equity	Small Cap Equity	Non-U.S. Fixed Income
8.87%	-3.02%	2.49%	1.78%	39.42%	18.33%	4.91%	18.37%	6.97%	-26.16%	33.67%	15.12%	2.11%	16.35%	7.44%	4.89%	-0.79%	11.19%	14.65%	-2.15%
Cash Equivalent	Non-U.S. Fixed Income	Emerging Market Equity	High Yield	High Yield	Non-U.S. Fixed Income	Small Cap Equity	Large Cap Equity	Large Cap Equity	Small Cap Equity	Small Cap Equity	Large Cap Equity	Cash Equivalent	Large Cap Equity	Real Estate	High Yield	Non-U.S. Equity	Real Estate	Non-U.S. Fixed Income	Large Cap Equity
4.85%	-3.91%	-2.61%	-1.37%	28.97%	12.54%	4.55%	15.79%	5.49%	-33.79%	27.17%	15.06%	0.10%	16.00%	3.67%	2.45%	-3.04%	4.06%	10.51%	-4.38%
High Yield	High Yield	Non-U.S. Fixed Income	Emerging Market Equity	Large Cap Equity	High Yield	Cash Equivalent	High Yield	Cash Equivalent	Large Cap Equity	Large Cap Equity	Non-U.S. Equity	Small Cap Equity	High Yield	Cash Equivalent	Cash Equivalent	Small Cap Equity	Non-U.S. Equity	Real Estate	Real Estate
2.39%	-5.86%	-3.75%	-6.16%	28.68%	11.13%	3.07%	11.85%	5.00%	-37.00%	26.47%	8.95%	-4.18%	15.81%	0.07%	0.03%	-4.41%	2.75%	10.36%	-5.63%
U.S. Fixed Income	Large Cap Equity	Real Estate	Non-U.S. Equity	Non-U.S. Fixed Income	Large Cap Equity	High Yield	Non-U.S. Fixed Income	High Yield	Non-U.S. Equity	Non-U.S. Fixed Income	U.S. Fixed Income	Real Estate	U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	High Yield	U.S. Fixed Income	High Yield	Small Cap Equity
-0.83%	-9.11%	-3.81%	-15.80%	19.36%	10.88%	2.74%	8.16%	1.87%	-43.56%	7.53%	6.54%	-6.46%	4.21%	-2.02%	-2.19%	-4.47%	2.65%	7.50%	-11.01%
Non-U.S. Fixed Income	Non-U.S. Equity	Large Cap Equity	Small Cap Equity	U.S. Fixed Income	U.S. Fixed Income	U.S. Fixed Income	Cash Equivalent	Small Cap Equity	Real Estate	U.S. Fixed Income	Non-U.S. Fixed Income	Non-U.S. Equity	Non-U.S. Fixed Income	Emerging Market Equity	Non-U.S. Fixed Income	Non-U.S. Fixed Income	Non-U.S. Fixed Income	U.S. Fixed Income	Non-U.S. Equity
-8.83%	-13.37%	-11.89%	-20.48%	4.10%	4.34%	2.43%	4.85%	-1.57%	-48.21%	5.93%	4.95%	-12.21%	4.09%	-2.60%	-3.09%	-6.02%	1.49%	3.54%	-14.09%
	Non-U.S. Equity	Large Cap Equity	Cash Equivalent	Cash Equivalent	Non-U.S. Fixed Income	U.S. Fixed Income	Real Estate	Emerging Market Equity	Cash Equivalent	Cash Equivalent	Emerging Market Equity	Cash Equivalent	Non-U.S. Fixed Income	Non-U.S. Equity	Emerging Market Equity	Cash Equivalent	Cash Equivalent	Cash Equivalent	Emerging Market Equity
	-21.40%	-22.10%	1.15%	1.33%	-8.65%	4.33%	-7.39%	-53.33%	0.21%	0.13%	-18.42%	0.11%	-3.08%	-4.32%	-14.92%	0.33%	0.86%	-14.58%	

The Callan Periodic Table of Investment Returns conveys the strong **case for diversification** across asset classes (stocks vs. bonds), capitalizations (large vs. small), and equity markets (U.S. vs. non-U.S.). The Table highlights the uncertainty inherent in all capital markets. Rankings change every year. Also noteworthy is the difference between absolute and relative performance, as returns for the top-performing asset class span a wide range over the past 20 years.

**20th** Anniversary Edition



# The Callan Periodic Table of Investment Returns 2000–2019

Callan's Periodic Table of Investment Returns depicts annual returns for 8 asset classes, ranked from best to worst performance for each calendar year. The asset classes are color-coded to enable easy tracking over time. We describe the well-known, industry-standard market indices that we use as proxies for each asset class below.

- **Large Cap Equity (S&P 500)** measures the performance of large capitalization U.S. stocks. The S&P 500 is a market-value-weighted index of 500 stocks. The weightings make each company's influence on the Index performance directly proportional to that company's market value.
- **Small Cap Equity (Russell 2000)** measures the performance of small capitalization U.S. stocks. The Russell 2000 is a market-value-weighted index of the 2,000 smallest stocks in the broad-market Russell 3000 Index.
- **Developed ex-U.S. Equity (MSCI World ex USA)** is an international index that is designed to measure the performance of large and mid cap equities in developed markets in Europe, the Middle East, the Pacific region, and Canada.
- **Emerging Market Equity (MSCI Emerging Markets)** is an international index that is designed to measure the performance of equity markets in 26 emerging countries around the world.
- **U.S. Fixed Income (Bloomberg Barclays US Aggregate Bond Index)** includes U.S. government, corporate, and mortgage-backed securities with maturities of at least one year.
- **High Yield (Bloomberg Barclays High Yield Bond Index)** measures the market of USD-denominated, non-investment grade, fixed-rate, taxable corporate bonds. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below, excluding emerging market debt.
- **Global ex-U.S. Fixed Income (Bloomberg Barclays Global Aggregate ex US Bond Index)** is an unmanaged index that is comprised of several other Bloomberg Barclays indices that measure the fixed income performance of regions around the world, excluding the U.S.
- **Real Estate (FTSE EPRA Nareit Developed REIT Index)** is designed to measure the stock performance of companies engaged in specific real estate activities in the North American, European, and Asian real estate markets.
- **Cash Equivalent (90-day T-bill)** is a short-term debt obligation backed by the Treasury Department of the U.S. government.

## Callan's Periodic Table Follows up a Milestone Year in 2018 With a Blowout Year in 2019!

2018 marked a milestone year when virtually all broad asset classes (except for cash) posted negative returns, the first time we saw such a result in the history of the Callan Periodic Table stretching back to 1979. 2019 then followed up with one of the strongest years for asset class performance across the board. Large cap U.S. equity posted a 31.5% return, triple its long-run average, while developed ex-U.S. equity (+22.5%) and emerging markets (+18.4%) both notched robust rebounds from 14% declines the year before. Even more remarkable, given the expectations for the Federal Reserve to raise interest rates at the start of 2019, U.S. fixed income rose 8.7%, the best result since 2002. With most forecasters expecting rising rates in 2019, this strong result for fixed income was in direct contrast to losses predicted for the year, and two to three times higher than most longer-term return expectations. Recall that the fourth quarter of 2018 saw a sharp decline in equity markets around the world, and losses in fixed income following the ninth rate hike since the Fed began tightening in 2017. The Fed announced a pivot in policy in January 2019 to take a pause on rate hikes, and then enacted three rate cuts in July, August, and October. Confidence in the U.S. economy soared and the Fed reversal fueled both an equity and bond market rally, an unusual development during the later stages of an economic cycle.

## Callan

Callan was founded as an employee-owned investment consulting firm in 1973. Ever since, we have empowered institutional clients with creative, customized investment solutions backed by proprietary research, exclusive data, and ongoing education. Today, Callan advises on more than \$2 trillion in total institutional investor assets, which makes it among the largest independently owned investment consulting firms in the U.S. We use a client-focused consulting model to serve pension and defined contribution plan sponsors, endowments, foundations, independent investment advisers, investment managers, and other asset owners. Callan has six offices throughout the U.S. Learn more at [www.callan.com](http://www.callan.com).

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# The Callan Periodic Table of Investment Returns

Annual Returns for Key Indices Ranked in Order of Performance (2000–2019)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Real Estate 13.84%	U.S. Fixed Income 8.43%	Gbl ex-U.S. Fixed 22.37%	Emerging Market Equity 55.82%	Real Estate 37.96%	Emerging Market Equity 34.00%	Real Estate 42.12%	Emerging Market Equity 39.38%	U.S. Fixed Income 5.24%	Emerging Market Equity 78.51%	Small Cap Equity 26.85%	U.S. Fixed Income 7.84%	Real Estate 27.73%	Small Cap Equity 38.82%	Real Estate 15.02%	Large Cap Equity 1.38%	Small Cap Equity 21.31%	Emerging Market Equity 37.28%	Cash Equivalent 1.87%	Large Cap Equity 31.49%
U.S. Fixed Income 11.63%	High Yield 5.28%	U.S. Fixed Income 10.26%	Small Cap Equity 47.25%	Emerging Market Equity 25.55%	Real Estate 15.35%	Emerging Market Equity 32.17%	Dev ex-U.S. Equity 12.44%	Gbl ex-U.S. Fixed 4.39%	High Yield 58.21%	Real Estate 19.63%	High Yield 4.98%	Emerging Market Equity 18.23%	Large Cap Equity 32.39%	Large Cap Equity 13.69%	U.S. Fixed Income 0.55%	High Yield 17.13%	Dev ex-U.S. Equity 24.21%	U.S. Fixed Income 0.01%	Small Cap Equity 25.52%
Cash Equivalent 6.18%	Cash Equivalent 4.42%	Real Estate 2.82%	Real Estate 40.69%	Dev ex-U.S. Equity 20.38%	Dev ex-U.S. Equity 14.47%	Dev ex-U.S. Equity 25.71%	Gbl ex-U.S. Fixed 11.03%	Cash Equivalent 2.06%	Real Estate 37.13%	Emerging Market Equity 18.88%	Gbl ex-U.S. Fixed 4.36%	Dev ex-U.S. Equity 16.41%	Dev ex-U.S. Equity 21.02%	U.S. Fixed Income 5.97%	Cash Equivalent 0.05%	Large Cap Equity 11.96%	Large Cap Equity 21.83%	High Yield -2.08%	Dev ex-U.S. Equity 22.49%
Small Cap Equity -3.02%	Small Cap Equity 2.49%	Cash Equivalent 1.78%	Dev ex-U.S. Equity 39.42%	Small Cap Equity 18.33%	Large Cap Equity 4.91%	Small Cap Equity 18.37%	U.S. Fixed Income 6.97%	High Yield -26.16%	Dev ex-U.S. Equity 33.67%	High Yield 15.12%	Large Cap Equity 2.11%	Small Cap Equity 16.35%	High Yield 7.44%	Small Cap Equity 4.89%	Real Estate -0.79%	Emerging Market Equity 11.19%	Small Cap Equity 14.65%	Gbl ex-U.S. Fixed -2.15%	Real Estate 21.91%
Gbl ex-U.S. Fixed -3.91%	Emerging Market Equity -2.61%	High Yield -1.37%	High Yield 28.97%	Gbl ex-U.S. Fixed 12.54%	Small Cap Equity 4.55%	Large Cap Equity 15.79%	Large Cap Equity 5.49%	Small Cap Equity -33.79%	Small Cap Equity 27.17%	Large Cap Equity 15.06%	Cash Equivalent 0.10%	Large Cap Equity 16.00%	Real Estate 3.67%	High Yield 2.45%	Dev ex-U.S. Equity -3.04%	Real Estate 4.06%	Gbl ex-U.S. Fixed 10.51%	Large Cap Equity -4.38%	Emerging Market Equity 18.44%
High Yield -5.86%	Gbl ex-U.S. Fixed -3.75%	Emerging Market Equity -6.16%	Large Cap Equity 28.68%	High Yield 11.13%	Cash Equivalent 3.07%	High Yield 11.85%	Cash Equivalent 5.00%	Large Cap Equity -37.00%	Large Cap Equity 26.47%	Dev ex-U.S. Equity 8.95%	Small Cap Equity -4.18%	High Yield 15.81%	Cash Equivalent 0.07%	Cash Equivalent 0.03%	Small Cap Equity -4.41%	Dev ex-U.S. Equity 2.75%	Real Estate 10.36%	Real Estate -5.63%	High Yield 14.32%
Large Cap Equity -9.11%	Real Estate -3.81%	Dev ex-U.S. Equity -15.80%	Gbl ex-U.S. Fixed 19.36%	Large Cap Equity 10.88%	High Yield 2.74%	Gbl ex-U.S. Fixed 8.16%	High Yield 1.87%	Dev ex-U.S. Equity -43.56%	Gbl ex-U.S. Fixed 7.53%	U.S. Fixed Income 6.54%	Real Estate -6.46%	U.S. Fixed Income 4.21%	U.S. Fixed Income -2.02%	Emerging Market Equity -2.19%	High Yield -4.47%	U.S. Fixed Income 2.65%	High Yield 7.50%	Small Cap Equity -11.01%	U.S. Fixed Income 8.72%
Dev ex-U.S. Equity -13.37%	Large Cap Equity -11.89%	Small Cap Equity -20.48%	U.S. Fixed Income 4.10%	U.S. Fixed Income 4.34%	U.S. Fixed Income 2.43%	Cash Equivalent 4.85%	Small Cap Equity -1.57%	Real Estate -48.21%	U.S. Fixed Income 5.93%	Gbl ex-U.S. Fixed 4.95%	Dev ex-U.S. Equity -12.21%	Gbl ex-U.S. Fixed 4.09%	Emerging Market Equity -2.60%	Gbl ex-U.S. Fixed -3.09%	Gbl ex-U.S. Fixed -6.02%	Gbl ex-U.S. Fixed 1.49%	U.S. Fixed Income 3.54%	Dev ex-U.S. Equity -14.09%	Gbl ex-U.S. Fixed 5.09%
	Dev ex-U.S. Equity -21.40%	Large Cap Equity -22.10%	Cash Equivalent 1.15%	Cash Equivalent 1.33%	Gbl ex-U.S. Fixed -8.65%	U.S. Fixed Income 4.33%	Real Estate -7.39%	Emerging Market Equity -53.33%	Cash Equivalent 0.21%	Cash Equivalent 0.13%	Emerging Market Equity -18.42%	Cash Equivalent 0.11%	Gbl ex-U.S. Fixed -3.08%	Dev ex-U.S. Equity -4.32%	Emerging Market Equity -14.92%	Cash Equivalent 0.33%	Cash Equivalent 0.86%	Emerging Market Equity -14.57%	Cash Equivalent 2.28%

The Callan Periodic Table of Investment Returns conveys the strong case for *diversification* across asset classes (stocks vs. bonds), capitalizations (large vs. small), and equity markets (U.S. vs. global ex-U.S.). The Table highlights the uncertainty inherent in all capital markets. Rankings change every year. Also noteworthy is the difference between absolute and relative performance, as returns for the top-performing asset class span a wide range over the past 20 years.

A printable copy of *The Callan Periodic Table of Investment Returns* is available on our website at [www.callan.com](http://www.callan.com).

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# WSI Net Investment Returns exceed Policy Benchmarks at 12/31/19

	Current FYTD 12/31/2019	1 Yr Ended 12/31/2019	3 Yrs Ended 12/31/2019	5 Yrs Ended 12/31/2019	Risk 5 Yrs Ended 12/31/2019	Risk Adj Excess Return 5 Yrs Ended 12/31/2019
Total Fund Return - Net (after fees & expenses)	4.36%	13.57%	7.47%	6.06%	3.91%	0.41%
Policy Benchmark Return	3.78%	12.22%	6.30%	4.92%	3.34%	OK
Net Excess Return (over Policy Benchmark)	0.58%	1.35%	1.17%	1.14%	OK	

1-Year Return Dec. 31, 2019	Asset Allocation	Benchmark Return	Performance Benchmark	Allocation Return
<i>Asset Class</i>	<i>(a)</i>	<i>(b)</i>		<i>(a x b)</i>
Equity	22%	26.6%	MSCI All Country World Index	5.85%
Fixed Income	60%	8.7%	Bloomberg Barclays U.S. Aggregate	5.22%
Real Assets/Cash	18%	6.4%	NCREIF Property Index	1.15%
Policy Benchmark Return (5-years)				12.22%

## Key Point:

If WSI Net Investment Returns exceed Policy Benchmarks by 1%, WSI earns \$20 million of annual incremental income (\$2 billion x 1% = \$20 million).

## Performance Benchmarks:

The **MSCI All Country World Index** is a broad global equity investment benchmark used by many institutional investors (such as pension funds) to measure their investment performance using a broadly diversified pool of more than 2,700 stocks in 47 countries.

Investopedia states the **Bloomberg Barclays U.S. Aggregate** bond index is "broadly considered to be the best total bond market index, as it used by more than 90% of the investors in the U.S."

The **NCREIF Property Index** is "a quarterly, unleveraged composite total return for private commercial real estate properties held for investment purposes only" and generally considered to be one of the two best private real estate benchmarks (with the other ODCE index).

# Callan Quarterly Investment Measurement Review

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- 1) **The SIB has engaged Callan to provide quarterly investment performance reviews which includes a reconciliation of RIO's reported investment returns and asset valuations with those reported by Northern Trust, noting that Northern Trust serves as our primary custodian and record keeper of SIB client investments.** RIO ties out investment returns and asset valuations directly with our investment managers and Northern Trust after each month-end in addition to assisting Callan in reconciling reported returns and investments valuations directly with Northern Trust after every quarter-end. The State also obtains an outside independent audit of our financial statements and disclosures as of June 30<sup>th</sup> after every fiscal year end. The SIB Audit Committee and RIO's Internal Audit team is also responsible for reviewing RIO's internal accounting controls, policies, practices, reporting and documentation on behalf of the SIB throughout the year.
- 2) **In 2014, RIO recommended that Callan's quarterly investment measurement services be expanded to provide additional detailed investment reporting for our five largest SIB investment clients including TFFR, PERS, WSI, Legacy Fund and Budget Stabilization Fund.** As a result, the SIB, RIO and Callan are now able to offer comprehensive performance reporting for our five largest asset pools which represents over 95% of our total \$16 billion of SIB client investments.
- 3) **WSI's investment results are detailed in Callan's Investment Measurement Services Report for the Insurance Trust generally within 45 to 60 days after every calendar quarter end.**



## One Year Relative Attribution Effects

### One-Year Ended June 30, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	8.59%	10.02%	(0.15%)	(0.10%)	(0.25%)
Small Cap	3%	3%	(5.16%)	(3.31%)	(0.06%)	(0.01%)	(0.08%)
International Equity	8%	8%	(2.07%)	1.29%	(0.26%)	(0.01%)	(0.28%)
Domestic Fixed Income	58%	59%	9.12%	7.87%	0.71%	(0.02%)	0.69%
Diversified Real Assets	13%	13%	4.28%	4.72%	(0.08%)	(0.01%)	(0.09%)
Real Estate	6%	5%	5.74%	6.51%	(0.05%)	0.05%	(0.00%)
Cash & Equivalents	1%	1%	2.17%	2.31%	(0.00%)	(0.00%)	(0.00%)
<b>Total</b>			<b>7.05%</b>	<b>7.06%</b>	<b>0.09%</b>	<b>(0.11%)</b>	<b>(0.01%)</b>

### Comparison of 1-Year WSI Returns at 6/30/19 vs 12/31/19:

The top left table reports WSI gross investment returns for the 1-year ended June 30, 2019, while the lower left table reports WSI gross investment returns for the 1-year ended Dec. 31, 2019. Most SIB clients experienced below benchmark returns in 2018, as highlighted with an orange arrow at left in comparison to strong relative returns in 2019 as highlighted with a green arrow at left (and a positive 1.53% relative return).

## One Year Relative Attribution Effects

### One-Year Ended Dec. 31, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	11%	11%	30.91%	31.43%	(0.04%)	(0.05%)	(0.09%)
Small Cap	3%	3%	23.78%	25.52%	(0.05%)	(0.03%)	(0.09%)
International Equity	8%	8%	25.39%	22.49%	0.23%	(0.03%)	0.19%
Domestic Fixed Income	60%	60%	11.11%	8.72%	1.47%	(0.04%)	1.43%
Diversified Real Assets	12%	12%	7.20%	5.83%	0.17%	0.01%	0.18%
Real Estate	5%	5%	4.68%	6.42%	(0.09%)	(0.01%)	(0.10%)
Cash & Equivalents	1%	1%	2.11%	2.28%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>13.76%</b>	<b>12.23%</b>	<b>1.68%</b>	<b>(0.15%)</b>	<b>1.53%</b>

### Comparison of 5-Year WSI Returns at 6/30/19 vs 12/31/19:

The top right table reports WSI gross investment returns for the 5-years ended June 30, 2019, while the lower right table reports WSI gross investment returns for the 5-years ended Dec. 31, 2019. Most SIB clients are long-term investors. As a result, the SIB and RIO have historically focused on performance periods of 5-years (or more) when assessing relative performance versus benchmarks.

## Five Year Annualized Relative Attribution Effects

### Five-Years Ended June 30, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	10.37%	10.45%	(0.01%)	(0.03%)	(0.03%)
Small Cap	4%	4%	7.02%	7.06%	0.00%	(0.00%)	(0.00%)
International Equity	9%	9%	3.37%	2.19%	0.12%	0.00%	0.13%
Domestic Fixed Income	54%	54%	4.57%	2.95%	0.86%	(0.00%)	0.86%
Diversified Real Assets	14%	15%	3.84%	2.50%	0.19%	0.01%	0.20%
Real Estate	7%	6%	9.79%	8.83%	0.07%	0.04%	0.11%
Cash & Equivalents	1%	1%	0.79%	0.87%	(0.00%)	0.01%	0.00%
<b>Total</b>			<b>5.67%</b>	<b>4.41%</b>	<b>1.24%</b>	<b>0.02%</b>	<b>1.26%</b>

## Five Year Annualized Relative Attribution Effects

### Five-Years Ended Dec. 31, 2019

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Large Cap	12%	12%	11.34%	11.48%	(0.01%)	(0.03%)	(0.04%)
Small Cap	4%	4%	8.08%	8.23%	(0.00%)	(0.01%)	(0.01%)
International Equity	9%	9%	7.26%	5.59%	0.16%	(0.00%)	0.16%
Domestic Fixed Income	55%	55%	4.85%	3.05%	0.98%	(0.01%)	0.97%
Diversified Real Assets	14%	14%	4.09%	2.84%	0.18%	0.00%	0.18%
Real Estate	7%	6%	8.99%	8.25%	0.06%	0.04%	0.10%
Cash & Equivalents	1%	1%	0.98%	1.07%	(0.00%)	0.00%	0.00%
<b>Total</b>			<b>6.27%</b>	<b>4.92%</b>	<b>1.36%</b>	<b>(0.01%)</b>	<b>1.35%</b>

## Domestic Fixed Income Period Ended December 31, 2019

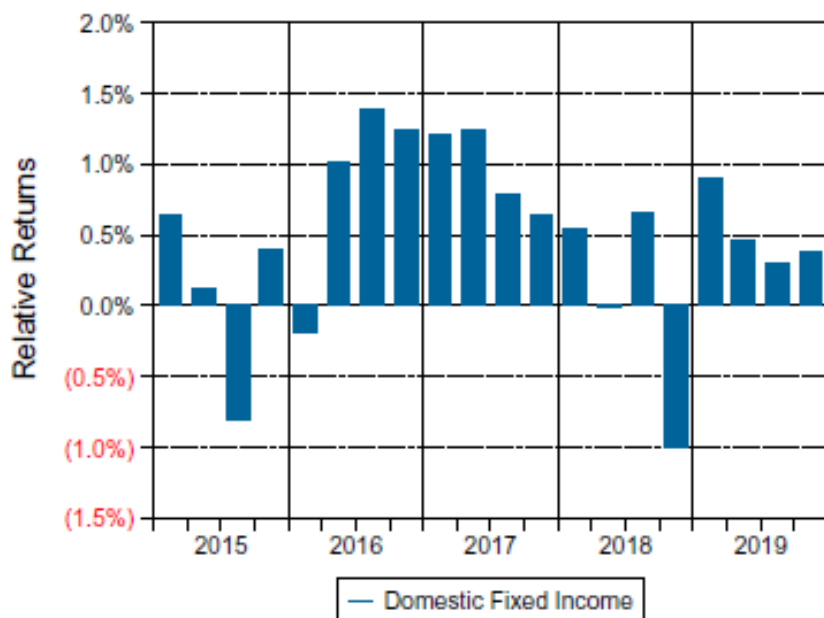
### Quarterly Summary and Highlights

- Domestic Fixed Income's portfolio posted a 0.56% return for the quarter placing it in the 38 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 8 percentile for the last year.
- Domestic Fixed Income's portfolio outperformed the Blmbg Aggregate by 0.38% for the quarter and outperformed the Blmbg Aggregate for the year by 2.18%.

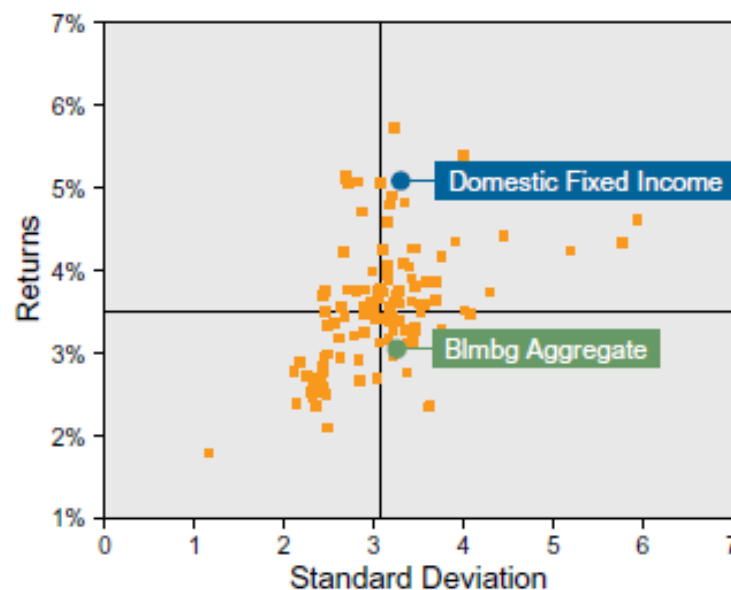
### Quarterly Asset Growth

Beginning Market Value	\$1,303,555,490
Net New Investment	\$4,006,386
Investment Gains/(Losses)	\$7,304,776
Ending Market Value	\$1,314,866,652

Relative Return vs Blmbg Aggregate

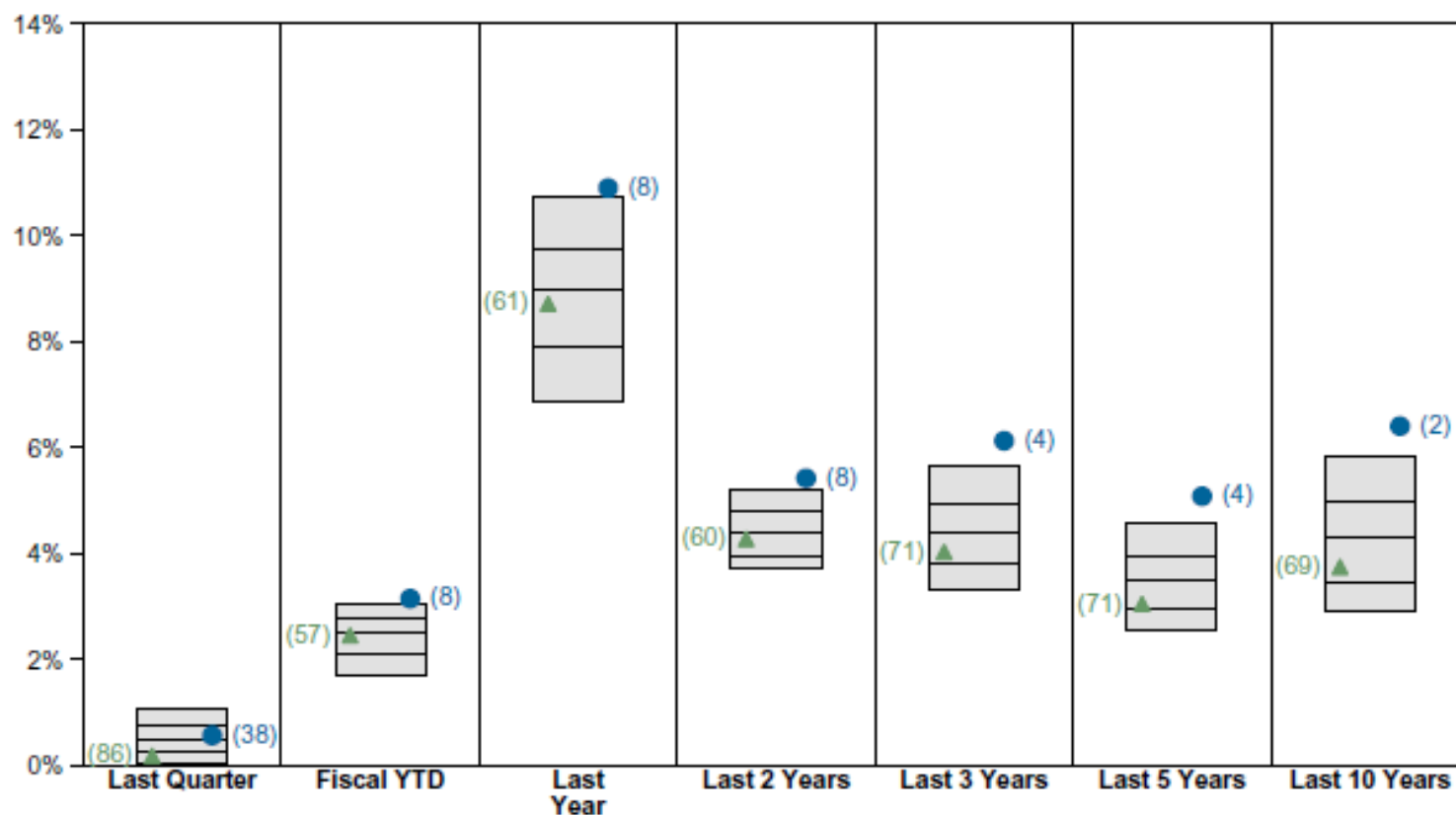


Public Fund - Domestic Fixed (Gross)  
Annualized Five Year Risk vs Return



## Domestic Fixed Income Period Ended December 31, 2019

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



10th Percentile	1.08	3.03	10.73	5.19	5.64	4.59	5.82
25th Percentile	0.74	2.76	9.72	4.78	4.95	3.93	4.98
Median	0.46	2.52	8.98	4.38	4.41	3.50	4.29
75th Percentile	0.25	2.08	7.91	3.96	3.79	2.94	3.47
90th Percentile	0.01	1.70	6.85	3.71	3.31	2.56	2.91

**Domestic  
Fixed Income**



0.56	3.15	10.90	5.42	6.13	5.08	6.40
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**Blmbg Aggregate**



0.18	2.45	8.72	4.27	4.03	3.05	3.75
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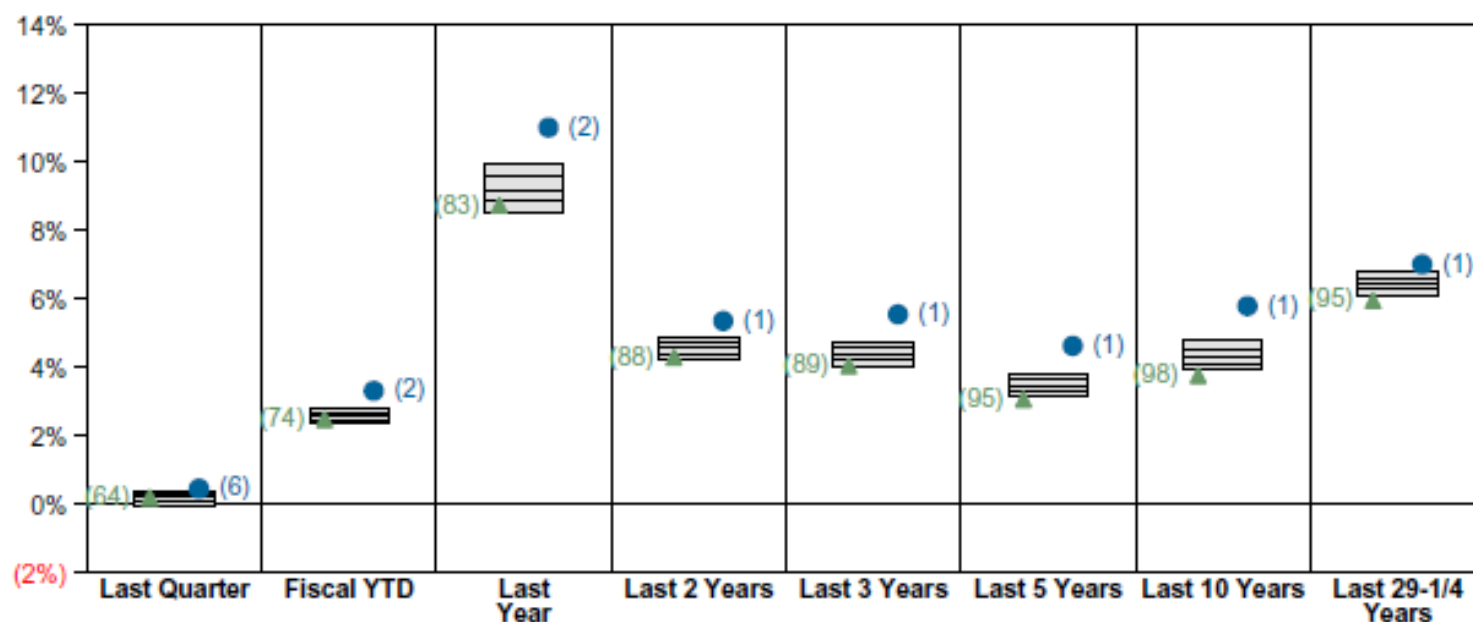
## Western Asset Management Company

### Period Ended December 31, 2019

#### 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.

#### Performance vs Callan Core Bond Fixed Income (Gross)



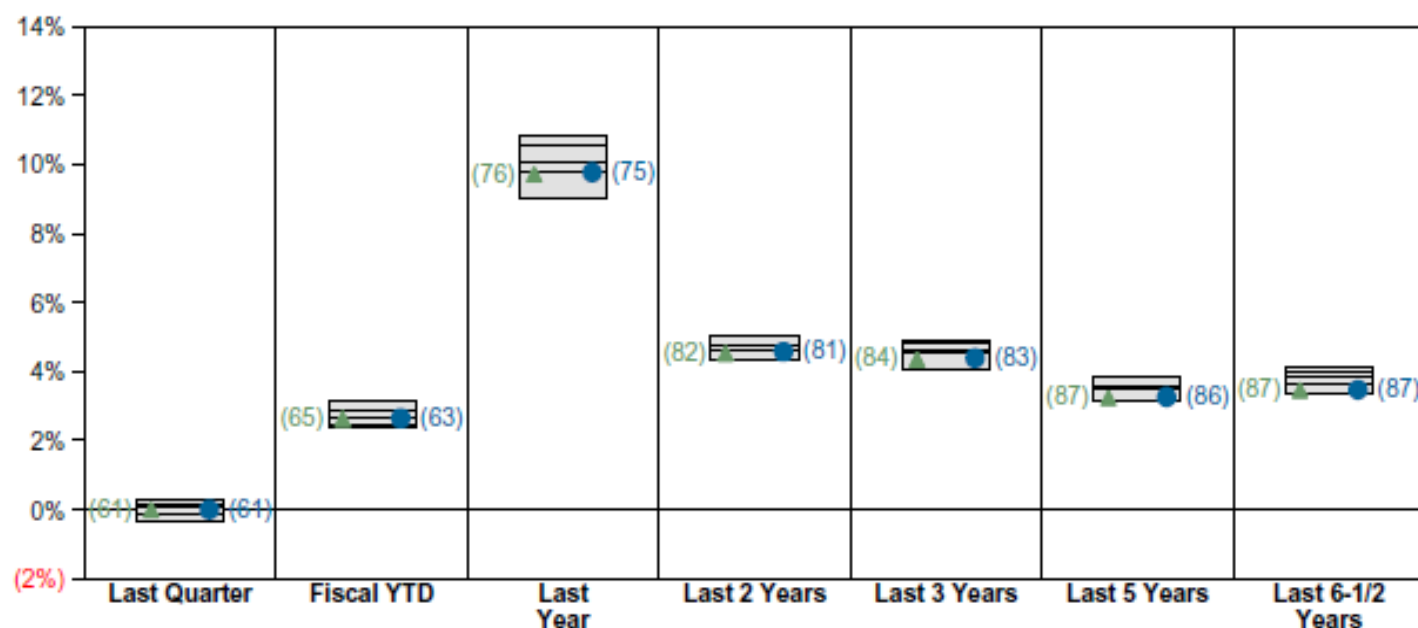


## SSgA US Govt Cr Bd Index Period Ended December 31, 2019

### 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.

### Performance vs Callan Government/Credit (Gross)



10th Percentile	0.31	3.17	10.85	5.03	4.90	3.85	4.13
25th Percentile	0.14	2.85	10.54	5.02	4.82	3.82	3.97
Median	0.06	2.67	10.05	4.76	4.64	3.59	3.83
75th Percentile	(0.16)	2.48	9.76	4.62	4.52	3.48	3.65
90th Percentile	(0.31)	2.36	9.00	4.32	4.08	3.12	3.37

**SSgA US Govt  
Cr Bd Index**

● (0.01)

2.65

9.76

4.57

4.38

3.26

3.47

Bloomberg Gov/Credit

▲ (0.01)

2.63

9.71

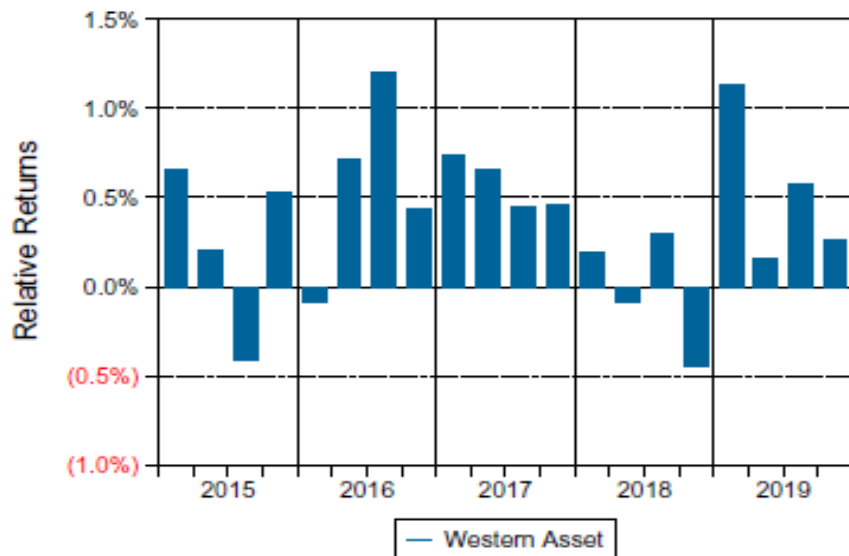
4.52

4.35

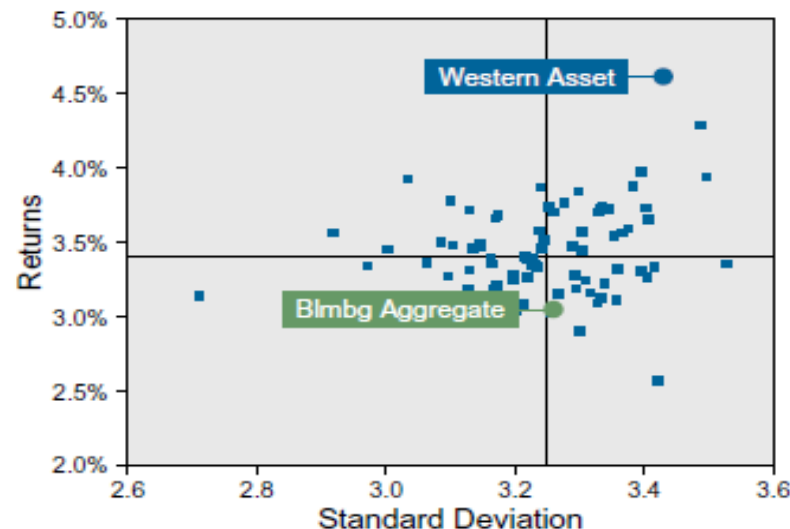
3.23

3.46

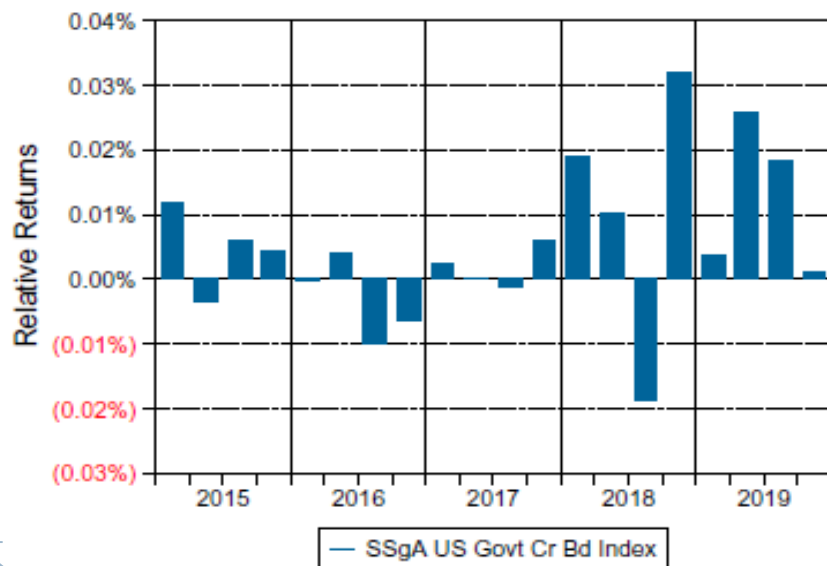
Relative Return vs Blmbg Aggregate



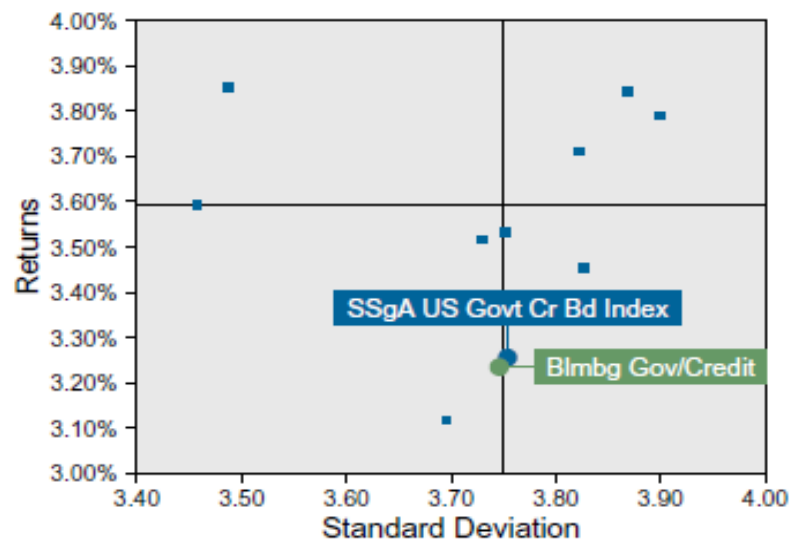
Callan Core Bond Fixed Income (Gross)  
Annualized Five Year Risk vs Return




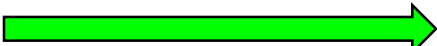
Relative Return vs Blmbg Gov/Credit



Callan Government/Credit (Gross)  
Annualized Five Year Risk vs Return



## WSI Fund Schedule of Investment Expenses

	FY 2019			FY 2018		
	Average Market Value	Fees in \$	Fees in %	Average Market Value	Fees in \$	Fees in %
Investment managers' fees:						
Domestic large cap equity managers	218,291,644	426,575	0.20%	227,079,176	190,170	0.08%
Domestic small cap equity managers	56,371,918	113,501	0.20%	72,903,372	40,693	0.06%
International equity managers	155,036,549	636,198	0.41%	168,974,116	714,087	0.42%
Domestic fixed income managers	1,165,503,513	2,721,468	0.23%	1,027,289,753	3,272,794	0.32%
Diversified real assets managers	242,270,855	1,088,007	0.45%	273,049,518	1,315,597	0.48%
Real estate managers	110,809,025	604,237	0.55%	139,777,042	765,668	0.55%
Cash & equivalents managers	19,867,588	28,642	0.14%	19,396,368	32,686	0.17%
<b>Total investment managers' fees</b>	<b>1,968,151,091</b>	<b>5,618,628</b>	<b>0.29%</b>	<b>1,928,469,346</b>	<b>6,331,695</b>	<b>0.33%</b>
Custodian fees		176,867	0.01%		160,338	0.01%
Investment consultant fees		91,932	0.00%		111,348	0.01%
<b>Total investment expenses</b>		<b>5,887,427</b>	<b>0.30%</b>		<b>6,603,381</b>	<b>0.34%</b>
<b>Actual Investment Performance (Net of Fees)</b>			<b>6.87%</b>			<b>5.34%</b>
<b>Policy Benchmark</b>			<b>7.06%</b>			<b>3.77%</b>
<b>Outperformance</b>				<b>-0.19%</b>		

➤ **Investment fees and expenses declined to 0.30% in fiscal 2019 from 0.34% in fiscal 2018** largely due to a significant decline in performance fees (as **Outperformance** was **-0.19%** in FY 2019 versus **1.57%** in FY 2018).

# Net Investment Returns approximated 5.8% the last 15 years and exceeded 7.3% for the 30 years ended June 30, 2019

ND RETIREMENT AND INVESTMENT OFFICE  
ND STATE INVESTMENT BOARD  
INVESTMENT PERFORMANCE SUMMARY - **WORKFORCE SAFETY & INSURANCE**  
AS OF JUNE 30, 2019

Investment Performance (net of fees)															
Quarter Ended					Fiscal Years ended June 30				Periods ended 6/30/19 (annualized)						
9/30/18	12/31/18	3/31/19	6/30/19	2019	2018	2017	2016	2015	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years	30 Years
1.30%	-3.06%	5.39%	3.26%	6.87%	5.34%	8.29%	3.58%	3.26%	6.83%	5.45%	7.82%	5.84%	5.87%	7.15%	7.39%

- Over the last 5-years, WSI's net investment return has ranged from as low as 3.26% in fiscal 2015 to as high as 8.29% in fiscal 2017 while averaging 5.45% for the 5-years ended June 30, 2019.
- Asset allocation is the primary driver of investment performance and should be taken into consideration when comparing investment returns.

**ND State Investment Board**  
**Investment Performance Summary**  
**As of June 30, 2019**

Investment Performance Summary As of June 30, 2019			Investment Performance (net of fees)									
Fund Name	Market Values as of 6/30/19	FYTD 2019	Fiscal Years ended June 30					Periods ended 6/30/19 (annualized)				
			2018	2017	2016	2015	2014	3 Years	5 Years	10 Years	20 Years	30 Years
Pension Pool												
Teachers' Fund for Retirement (TFFR)	\$ 2,573,622,554	5.54%	9.11%	12.93%	0.28%	3.52%	16.53%	9.15%	6.18%	9.57%	5.68%	7.68%
Public Employees Retirement System (PERS)	3,152,930,087	5.52%	9.19%	13.05%	0.28%	3.53%	16.38%	9.21%	6.22%	9.41%	6.00%	7.90%
City of Bismarck Employees Pension	104,517,247	5.94%	7.86%	11.56%	0.82%	3.69%	14.56%	8.43%	5.91%	8.99%	5.93%	*
City of Bismarck Police Pension	41,862,976	5.76%	8.36%	12.24%	0.32%	3.56%	15.27%	8.76%	5.97%	9.24%	5.86%	*
City of Grand Forks Employees Pension	68,419,301	6.17%	9.46%	12.84%	0.11%	3.53%	16.33%	9.46%	6.33%	9.71%	*	*
Park District of the City of Grand Forks Pension	7,176,427	6.02%	9.33%	12.74%	0.36%	4.22%	16.44%	9.33%	6.45%	*	*	*
Subtotal Pension Pool	5,948,528,592											
Insurance Pool												
Workforce Safety & Insurance (WSI)	2,065,400,398	6.87%	5.34%	8.29%	3.58%	3.26%	11.71%	6.83%	5.45%	7.82%	5.87%	7.39%
State Fire and Tornado Fund	22,761,457	6.41%	5.32%	9.30%	2.67%	3.16%	12.78%	7.00%	5.34%	8.34%	5.87%	6.82%
State Bonding Fund	3,609,422	5.83%	1.07%	2.40%	3.48%	1.25%	4.06%	3.08%	2.79%	3.98%	3.48%	5.24%
Petroleum Tank Release Compensation Fund	5,994,235	5.47%	1.13%	2.23%	3.17%	1.13%	3.68%	2.93%	2.61%	3.67%	3.25%	*
Insurance Regulatory Trust Fund	6,218,781	5.03%	4.53%	7.40%	1.46%	2.04%	9.88%	5.65%	4.07%	6.29%	5.01%	5.89%
State Risk Management Fund	4,909,623	7.67%	5.14%	8.27%	4.46%	4.08%	12.29%	7.02%	5.91%	8.94%	5.58%	*
State Risk Management Workers Comp Fund	5,187,879	7.56%	6.03%	9.41%	4.21%	4.57%	13.68%	7.66%	6.34%	9.62%	*	*
Cultural Endowment Fund	475,311	6.02%	8.27%	12.71%	2.18%	5.22%	16.94%	8.96%	6.82%	10.62%	*	*
Budget Stabilization Fund	118,707,130	4.51%	0.32%	0.80%	1.82%	1.86%	1.94%	1.86%	1.85%	2.61%	*	*
ND Association of Counties (NDACo) Fund	6,333,052	7.12%	4.48%	8.30%	2.76%	2.77%	11.61%	6.62%	5.06%	8.00%	5.21%	*
Bismarck Deferred Sick Leave Account	779,596	6.90%	4.66%	8.85%	3.26%	2.95%	12.32%	6.79%	5.30%	8.28%	*	*
City of Fargo FargoDome Permanent Fund	44,840,633	5.13%	7.64%	12.25%	1.19%	3.38%	16.34%	8.30%	5.85%	9.67%	*	*
State Board of Medicine Fund	2,362,384	4.98%	3.12%	5.29%	1.63%	2.70%	*	4.46%	3.54%	*	*	*
PERS Group Insurance Account	31,067,120	4.20%	0.41%	0.08%	1.49%	0.01%	0.06%	1.55%	1.23%	0.74%	*	*
Lewis & Clark Interpretive Center Endowment	751,763	6.99%	*	*	*	*	*	*	*	*	*	*
Subtotal Insurance Pool	2,319,398,785											
Legacy Fund	6,580,759,920	4.98%	7.57%	12.03%	1.06%	3.31%	6.64%	8.15%	5.72%	*	*	*
Job Service of North Dakota Pension	97,285,279	6.86%	3.15%	5.63%	5.45%	3.30%	13.54%	5.20%	4.87%	8.17%	5.53%	*
Tobacco Control and Prevention Fund	9,300,127	4.47%	1.63%	1.66%	*	*	*	2.58%	*	*	*	*
PERS Retiree Health Insurance Credit Fund	135,962,521	6.51%	7.15%	11.81%	0.72%	3.06%	16.53%	8.47%	5.79%	9.76%	5.22%	*
Total Assets Under SIB Management	\$ 15,091,235,224											

Note: Asset allocation largely drives investment performance. Each fund has a unique allocation that takes into consideration return objectives, risk tolerance, liquidity constraints, and unique circumstances. Such considerations must be taken into account when comparing investment returns. **All figures are preliminary and subject to revision.**

# The North Dakota State Investment Board – A Proven Leader in Accountability and Transparency

- ▶ The North Dakota State Investment Board has experienced significant asset growth since 2010 while driving investment returns up and driving investment fees down (on a percentage basis).
  - ▶ SIB clients Assets Under Management (AUM) have grown from \$4.8 billion in 2010 to over \$16.5 billion in 2020.
  - ▶ SIB client net investment income exceeded \$2.3 billion in 2019 including over \$1 billion in the Legacy Fund.
  - ▶ SIB client investment fees have declined from over 0.65% in 2013 to less than 0.45% in 2019.
  - ▶ Based on \$16.5 billion of AUM and fees declining by 0.20% (between 2013 and 2019), the SIB is reducing investment fees by \$33 million per year (e.g. \$16.5 billion x 0.20% = \$33 million of annual fee savings).
  - ▶ All investment return and fee data is disclosed monthly, quarterly and/or annually on our website.
    - ▶ SIB Publications and Reports <http://www.nd.gov/rio/SIB/Publications/default.htm>
    - ▶ SIB Meeting Materials <http://www.nd.gov/rio/SIB/Board/SIB%20Meeting%20Materials/default.htm>
- ▶ The SIB, TFFR and RIO have generally been able to meet or exceed client expectations in recent years and recognized as an industry leader in financial accountability and investment transparency.
  - ▶ Net investments returns for most of our SIB clients have exceeded approved policy benchmarks by approximately 0.50% for the 5 years ended June 30, 2019, while fees have declined to less than 0.45% per annum in recent years.
  - ▶ TFFR client satisfaction scores have consistently remained strong averaging 3.7 to 3.8 (on a 4.0 scale) the last 5-years.
  - ▶ The Legacy Fund was awarded the highest transparency score (10 out of 10) by the Sovereign Wealth Fund Institute in 2018 and 2019, while the Retirement and Investment Office was awarded a Certificate of Achievement for Excellence in Financial Reporting for 21 consecutive years by the Governmental Finance Officers Association in 2019 (for fiscal 2018).
  - ▶ Legacy Fund net returns for the Last Quarter and 1, 3, 5 and 8.25 years ended December 31, 2019, consistently exceed Policy Target.

	Last	Last	Last 3	Last 5	Since
<u>Periods Ended 12/31/19:</u>	<u>Quarter</u>	<u>Year</u>	<u>Years</u>	<u>Years</u>	<u>Inception</u>
Net Investment Return	5.2%	18.1%	8.6%	7.0%	5.3%
Policy Benchmark	4.5%	17.5%	8.2%	6.2%	4.6%

# Interim Investment Update as of December 31, 2019

SIB investments exceeded \$16 billion as of December 31, 2019, at or near all-time highs, given very favorable capital market and economic conditions and strong oil & gas production levels.

SIB Interim Investment Returns Calendar Year To Date - Top Five As of Dec. 31, 2019					Since July 1, 2019 Fiscal YTD 12/31/2019	Calendar YTD 12/31/2019	\$16.5 billion TOTAL SIB AUM as of Feb. 10, 2020
	3/31/2019	6/30/2019	9/30/2019	12/31/2019			
<b>Legacy Fund</b>	7.72%	3.24%	1.01%	5.16%	<b>6.23%</b>	<b>18.13%</b>	<b>\$7 billion</b>
<i>Policy Benchmark</i>	7.67%	3.38%	0.97%	4.52%	<b>5.53%</b>	<b>17.47%</b>	<b>Legacy</b>
<b>TFFR</b>	7.46%	3.53%	0.40%	5.62%	<b>6.04%</b>	<b>17.98%</b>	<b>\$2.7 billion</b>
<i>Policy Benchmark</i>	7.66%	3.40%	0.64%	4.98%	<b>5.64%</b>	<b>17.61%</b>	<b>TFFR</b>
<b>PERS</b>	7.46%	3.50%	0.37%	5.69%	<b>6.09%</b>	<b>17.98%</b>	<b>\$3.3 billion</b>
<i>Policy Benchmark</i>	7.53%	3.42%	0.61%	4.93%	<b>5.57%</b>	<b>17.40%</b>	<b>PERS</b>
<b>WSI</b>	5.39%	3.26%	1.70%	2.62%	<b>4.36%</b>	<b>13.57%</b>	<b>\$2.1 billion</b>
<i>Policy Benchmark</i>	4.88%	3.10%	1.60%	2.14%	<b>3.78%</b>	<b>12.22%</b>	<b>WSI</b>
<b>Budget Stabilization Fund</b>	1.35%	1.61%	0.93%	0.76%	<b>1.70%</b>	<b>4.73%</b>	<b>\$1.4 billion</b>
<i>Policy Benchmark</i>	1.19%	1.47%	0.69%	0.59%	<b>1.28%</b>	<b>4.00%</b>	<b>Others (BSF)</b>

*Note: Net investment returns are deemed to be materially accurate, but are unaudited and subject to change.*

1. SIB clients earned over \$2.3 billion of net investment income for the 12 months ended December 31, 2019, including the following interim results for our four largest investment clients:

- Legacy +18% (\$1+ billion)
- TFFR +18% (\$400+ million)
- PERS +18% (\$500+ million)
- WSI +13% (\$250+ million)

2) Net investment returns for the Legacy Fund, TFFR, PERS, WSI and BSF exceeded their respective *Policy Benchmarks* on a fiscal year to date basis (July 1 to Dec. 31, 2019) and calendar year to date basis (Jan. 1 to Dec. 31, 2019).

# Return on Investment Fees and Expenses

## Investment Goals for SIB Client Fees and Expenses:

1. The SIB and RIO attempt to keep total fees and expenses at or below 50 bps (0.50%) per annum.
2. We also attempt to generate  $\geq 0.50\%$  of excess return over our stated performance benchmarks (after deducting all investment fees and expenses) over a rolling 5-year period.
3. If we are successful in attaining both of the above goals, we are effectively earning a 2-for-1 return on our investment fee and expense dollars (which is consistent with our fundamental investment belief that the prudent use of active management is beneficial to our clients).

**Key Point:** Over the last 5-years, the vast majority of SIB clients earned 0.50% of excess return, while fees & expenses averaged  $\leq 0.50\%$  per annum since 2014 (see below).

<u>All State Investment Board Clients</u>	<u>Investment Fees and Expenses</u>	<u>Average "Assets Under Management"</u>	<u>% of AUM</u>
Fiscal Year Ended June 30, 2013	\$45 million	\$6.9 billion	0.65%
Fiscal Year Ended June 30, 2014	\$44 million	\$8.6 billion	0.51%
Fiscal Year Ended June 30, 2015	\$48 million	\$10.1 billion	0.48%
Fiscal Year Ended June 30, 2016	\$46 million	\$10.9 billion	0.42%
Fiscal Year Ended June 30, 2017	\$54.5 million	\$11.8 billion	0.46%
Fiscal Year Ended June 30, 2018	\$56 million	\$13.4 billion	0.42%
Fiscal Year Ended June 30, 2019	\$63.2 million	\$14.2 billion	0.44%

**Key Take-Away:** Based on \$10 billion of AUM, a 0.20% decline in fees between fiscal 2013 and 2019 translates into \$20 million of annual fee savings.

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



# Investment Consulting Update

January 24, 2020

**Summary:** The SIB approved RIO's recommendation to maintain our existing general investment consulting relationship with Callan given their proven track-record in delivering high quality professional investment management consulting services at a reasonable price while enabling the SIB to generate over 0.50% (or ½ of 1 percent) of positive excess return versus board approved Policy Benchmarks for the 3, 5 and 10 year periods ended June 30, 2019. Based on \$10 billion of investments and 0.50% of positive excess return for the 10-years ended June 30, 2019, the SIB, RIO and Callan have successfully collaborated to generate approximately \$500 million of incremental income and wealth for the vast majority of our valued SIB clients over the past decade.

## Consultants Ranked by Assets Under Advisement (AUA)

As of June 30, 2019

	Assets Under Advisement (\$ in trillions)
1 Mercer	\$15.0
2 Aon	\$3.5
3 Willis Towers Watson	\$2.6
4 Callan	\$2.5
5 Russell Investments	\$2.5
6 RVK	\$2.4
7 Cambridge Associates	\$2.2
8 Meketa Investments (PCA)	\$1.4
9 NEPC	\$1.1
10 Wilshire Associates	\$1.0

Source: Pensions & Investments data deemed to be materially accurate but unaudited.

During the past year, RIO engaged with the top 10 investment management consulting firms to learn more about how they conduct their business and the areas in which each firm focuses its resources, efforts and expertise. Please note that several firms do not aggressively pursue public fund clients for general investment consulting and several firms have a strong desire to focus on higher fee, private market (or **OCIO**) engagements or projects.

Based on this review, RIO ranked **Callan (1), RVK (2) and Aon (3)** as our top three general investment consulting firms for U.S. public pension plans and U.S. sovereign wealth funds which are similar in size, complexity and structure to the North Dakota State Investment Board (SIB) and Retirement and Investment Office (RIO).

The presentations shared by our top three firms – **Aon, Callan and RVK**, are highlighted later in these materials.

State Investment Offices with Over \$2 billion in SWF AUM Ranked by Total Assets Under Management (AUM)		---- U.S. \$ in Billions ----		Latest Asset	General
		Total \$	SWF \$	Report Date	Consultant
1	Alaska Permanent Fund Corporation (APFC)	\$ 68.0	\$ 68.0	1/16/2020	Callan
2	University of Texas Investment Management Co. (UTIMCO)	\$ 50.4	\$ 38.0	12/31/2019	-
3	Texas Permanent School Fund	\$ 46.5	\$ 46.5	9/30/2019	NEPC
4	New Mexico State Investment Council (ND SIC)	\$ 26.3	\$ 25.0	9/30/2019	RVK
5	Wyoming's Treasurer Office <sup>1</sup>	\$ 21.0	\$ 12.1	6/30/2019	RVK
6	Arizona State Treasurer Office <sup>2</sup>	\$ 17.5	\$ 6.4	1/16/2020	-
7	North Dakota State Investment Board <sup>3</sup>	\$ 16.4	\$ 6.9	1/16/2020	Callan
8	North Dakota Department of Trust Lands <sup>4</sup>	\$ 5.8	\$ 5.0	11/30/2019	RVK
9	Alabama Treasurers' Office <sup>5</sup>	\$ 5.8	\$ 3.3	9/30/2019	Callan
10	Utah School & Institutional Trust Funds Office (USITFO)	\$ 2.6	\$ 2.6	6/30/2019	F.E.G.
11	Idaho Endowment Fund Investment Board (IEF) <sup>6</sup>	\$ 2.5	\$ 2.5	12/31/2019	Callan

1 - Wyoming Treasurer's Office oversees the \$8 billion Perm. Mineral Trust, \$4 billion Common Schools Permanent Land Fund and \$2 billion Workers Comp. Fund

2 - Arizona Treasurer's Office reports \$17.5 billion in Assets Under Management (AUM) and \$6.4 billion in the Permanent Land Endowment Fund.

3 - ND SIB oversees \$16.4 billion including the \$6.9 billion Legacy Fund, \$6.3 Pension Pool and 2.9 billion Insurance Pool as of January 16, 2020.

4 - ND DTL oversees \$5 billion in Permanent Trust Funds and \$729 million in the Strategic Investments & Improvements Fund as of November 30, 2019.

5 - Alabama's Treasurer Office is responsible for cash management duties and investing all state funds including the Alabama Trust Fund.

6 - The Idaho Endowment Fund asset allocation is 66% public equity, 26% fixed income and 8% real estate.

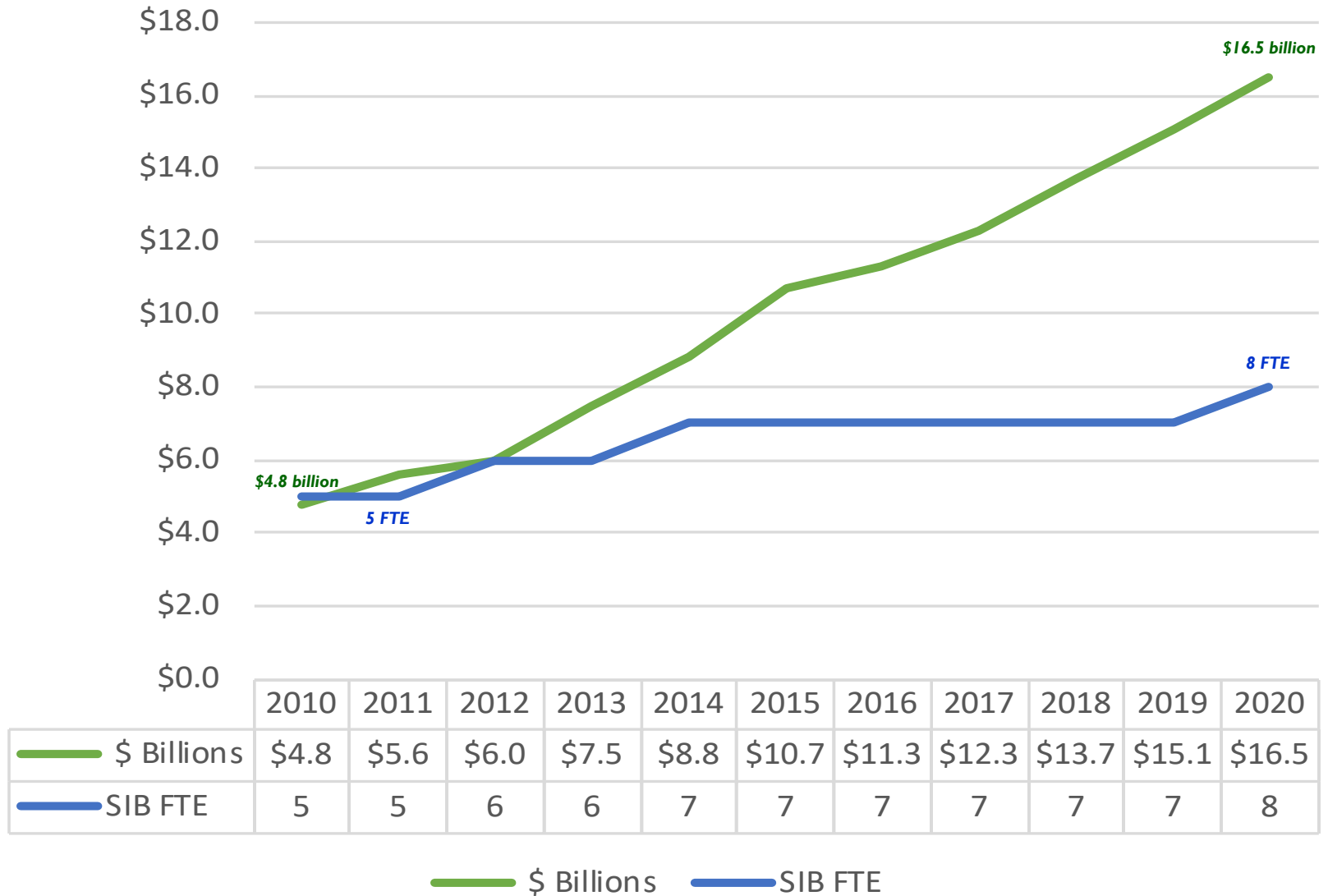
RIO sought to identify the largest state investment offices or organizations which manage over \$2 billion in sovereign wealth fund type investments. RIO engaged with the U.S. Sovereign Wealth Fund (SWF) community in addition to the Sovereign Wealth Fund Institute (SWFI) to gather this data. The information provided in this section is deemed to be materially accurate, but is preliminary, unaudited and subject to change. It is difficult to compare the absolute returns of various organizations given differences in their investment objectives, asset allocation, investment restrictions, liquidity needs, governance structure, and staffing and compensation levels. As example, the Alaska Permanent Fund employs nearly 50 staff with \$68 billion of investments, while the Idaho Endowment Fund has two investment professionals with oversight of \$2.5 billion of assets.

## Net Returns for NDSIB Clients AUM > \$1 billion – June 30, 2019

State Fund	For the FYE period ended June 30 >	2019	2018	2017	2016	2015	3 Years	5 Years	10 Years	20 Years	30 Years
<b>ND TFR</b>	<b>\$2,647,826,535</b>	<b>5.54%</b>	<b>9.11%</b>	<b>12.92%</b>	<b>0.28%</b>	<b>3.52%</b>	<b>9.15%</b>	<b>6.18%</b>	<b>9.57%</b>	<b>5.68%</b>	<b>7.68%</b>
<i>Policy Benchmark</i>		6.35%	7.90%	11.63%	0.61%	2.15%	8.61%	5.66%	8.89%	5.74%	7.87%
<b>ND PERS</b>	<b>\$3,263,943,356</b>	<b>5.52%</b>	<b>9.19%</b>	<b>13.05%</b>	<b>0.28%</b>	<b>3.53%</b>	<b>9.21%</b>	<b>6.22%</b>	<b>9.41%</b>	<b>6.00%</b>	<b>7.90%</b>
<i>Policy Benchmark</i>		6.40%	7.82%	11.88%	0.56%	2.15%	8.68%	5.69%	8.96%	6.05%	8.09%
<b>ND WSI</b>	<b>\$2,107,167,353</b>	<b>6.87%</b>	<b>5.34%</b>	<b>8.29%</b>	<b>3.58%</b>	<b>3.27%</b>	<b>6.83%</b>	<b>5.45%</b>	<b>7.82%</b>	<b>5.87%</b>	<b>7.39%</b>
<i>Policy Benchmark</i>		7.05%	3.77%	5.20%	3.41%	2.66%	5.33%	4.41%	6.05%	5.46%	-
<b>ND Legacy Fund</b>	<b>\$6,698,362,597</b>	<b>4.98%</b>	<b>7.57%</b>	<b>12.03%</b>	<b>1.06%</b>	<b>3.31%</b>	<b>8.15%</b>	<b>5.72%</b>	-	-	-
<i>Policy Benchmark</i>		6.12%	6.50%	9.90%	1.03%	2.38%	7.49%	5.14%	-	-	-

**Net investment returns for the vast majority of our SIB clients have outperformed their Policy Benchmarks by over 0.50% for the 3, 5 and 10 year periods ended June 30, 2019, including TFR, PERS and WSI.**

## SIB Investments and SIB FTE (2010 to 2020)



**ND STATE INVESTMENT BOARD  
AUDIT COMMITTEE MEETING**

Thursday February 27, 2020 – 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 November 13, 2019 Minutes – Chair (committee action) (5 minutes)
3. RIO Agency Update – (informational) Mr. Hunter (10 minutes)
4. 2019 - 2020 Second Quarter Audit Activities Report – Ms. Sauter (committee action) (30 minutes)
5. Executive Limitation Audit – Ms. Sauter (committee action) (20 minutes)
6. Update on Current Internal Audit Activities – Ms. Sauter (committee action) (20 minutes)
7. GASB 68 Schedule Audit Update – Ms. Sauter (information) (5 minutes)

8. Other – Next SIB Audit Committee Meeting  
North Dakota Retirement and Investment Office  
Thursday May 21, 2020 - 3:00 PM  
RIO Conference Room  
3442 East Century Avenue  
Bismarck, ND

9. 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.

**RETIREMENT AND INVESTMENT OFFICE**  
**Internal Audit**  
**2019-2020 2<sup>nd</sup> Quarter Audit Activities Report**  
**October 1, 2019 – December 31, 2019**

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

Audit coverage is based on the July 1, 2019 through June 30, 2020 work plan approved by the SIB Audit Committee. The audit activities undertaken are consistent with the Internal Audit charter and goals, and the goals of RIO. To the extent possible, our audits are being carried out in accordance with the International Standards for the Professional Practice of Internal Auditing. Audit effort is being directed to the needs of RIO and the concerns of management and the SIB Audit Committee.

**Investment and Agency Audit Activities**

• **Executive Limitation Audit**

On an annual basis, Internal Audit reviews the Executive Director/CIO's level of compliance with SIB Governance Manual Executive Limitation Policies A- 1 through A-11. The Executive Limitations Audit was started in December 2019.

The audit will be completed and report issued in February 2020.

• **External Audit Support**

Internal Audit provided support to our external audit partners, CliftonLarsonAllen (CLA), during the GASB 68 Census Data Audits. CLA GASB 68 Census Data Audit work concluded in October. Internal Audit worked with the external audit partners on reconciling GASB 68 census testing data.

• **Administrative Expense Audit**

A review of RIO's policies pertaining to travel and expenses which will be compared to OMB policy and state purchasing requirements. A sample of travel vouchers from both board members and staff will be reviewed, including in-state, out-of-state, and international travel to ensure compliance with policy and regulations. A sample of invoices (ex. rent, cleaning, etc.) will also be selected. These invoices will be reviewed to ensure proper approvals were obtained, verify invoice with expense voucher, review contract, and review that payment was issued and cleared.

The audit report will be issued January 2020.

**Retirement Program Audit Activities**

• **TFFR Employer Salary Reviews**

Internal Audit examines employer reporting to the Teachers' Fund for Retirement (TFFR) to determine whether retirement salaries and contributions reported for members of TFFR for accuracy with the definition of salary as it appears in the TFFR Employer Guide. Other reporting procedures reviewed during the audit process are calculation of service hours and eligibility for TFFR membership. A written report is issued after each review is completed to Retirement Services.

Status of TFFR Employer Audits as of September 30, 2019:

- Three (3) employer audits had been completed.
- One (1) employer audit was in progress.

- **Salary Verification Audit**

On an annual basis Internal Audit verifies retirement salaries and contributions reported to TFFR for the prior fiscal year for 65 randomly selected member accounts from 60 different employers. The sample has been selected, notifications for information have been requested and information has been returned by the employers. The reconciliation of salaries is scheduled to start during the third quarter.

This audit is currently in progress.

- **File Maintenance**

A review of changes made to TFFR member account data by Retirement and Investment Office employees is reviewed on an annual basis. Internal Audit reviews system generated (CPAS) audit tables to ensure transactions initiated by staff are expected and appropriate given an individual's role within the organization. Member accounts are also reviewed to ensure contact and demographic information has been updated correctly per Member Action Forms on file. Other procedures reviewed are change of addresses and the posting of beneficiary deaths that are not in pay status.

The audit fieldwork has been completed and a report will be issued February 2020.

- **Benefit Payment Audit**

A review of deaths, long outstanding checks, and long term annuitants was completed to determine that established policies and procedures were being followed by the staff of Retirement Services.

This audit will be completed in February 2020.

- **Data Analytics**

Internal Audit and RIO's Information Technology Division has been working with North Dakota Information Technology Department (NDIT) to develop data analytics to help streamline the TFFR Employer Salary, Service Hours, Eligibility Review process. RIO's IT staff has been working on testing the data analytics and meeting with NDIT to get the data analytics implemented.

### **Administrative Activities**

The Supervisor of Internal Audit attended the monthly RIO staff meetings, monthly RIO manager's meetings, divisional meetings, three SIB meetings, and one TFFR meeting. The Internal Audit staff member attended the monthly RIO staff meetings, divisional meetings, two TFFR meetings. Internal Audit staff also continues to educate RIO staff on internal audit as needed.

### **Professional Development/CE/General Education**

The Supervisor Internal Audit is pursuing a Master's in Business Administration with a concentration in Public Administration and completed the following courses: Leadership in the Public Sector, Public Finance and Budgeting, and Managerial Finance. The Supervisor of Internal Audit also attended the Association of Public Pension Fund Auditors conference at the end of October. Topics covered were implementation of a new pension software, future risks, data analytics, risk management, private equity expenses, risk and assurance mapping, risk assessments, and ethics.



**NORTH DAKOTA RETIREMENT AND INVESTMENT OFFICE**  
**AUDIT SERVICES DIVISION**  
**FISCAL YEAR 2019 -2020**

**Audit Activities**

**Retirement Program Audits:**

	FY 2019 1st QTR	FY 2019 2nd QTR	FY 2020 3rd QTR	FY 2020 4th QTR	FY 2020 TOTAL
<b>Audit Activities</b>					
<b>Retirement Program Audits:</b>					
TFFR Employer Audit Program					367
<i>New England-working with census data file</i>	42				42.25
<i>Warwick Public School District</i>	5				5.25
<i>Wilton</i>	76				76.25
<i>Jamestown Public Schools</i>	67	38			104.8
<i>Minot</i>		3			3.25
<i>General Employer Audits</i>					
<i>Audit Peer Reviews/TFFR Meeting(s)/Audit Planning/Audit Notifications</i>	92	43			135.25
Benefits Audit - Deaths, Long-Outstanding Checks, Long-term Members	1	147			148
TFFR Cost Effective Benefit Payment Audit	0				0
TFFR Data Analytics	1	3			4
TFFR File Maintenance Audit	37	80			117
TFFR Purchase-Refund Audit	0				0
TFFR Task reports	56	26			81
Annual Salary Verification Project	30	48			78
Audit Continuous Improvement Project - Employer Audit Program - Census Data Audit File	0				0
<b>Agency Administrative and Investment Audits:</b>					
Executive Limitations Audit	10	26			36
Investment Due Diligence	48				48
Administrative Expense Audit		68			68
Risk Assessment	0				0
Consulting	11	22			33
RIO External Auditor Assistance	41	5			46
<b>Administrative Activities</b>					
Administrative - Staff Mtgs, Time Reports, Email, Records Retention, General Reporting	170	200			370
Audit Committee/SIB/TFFR Attendance and Preparation	162	114			276
Professional Development/CE/General Education	2	30			32
Annual Leave, Sick Leave, and Holidays	190	187			377
<b>Quarterly Total:</b>	<b>1040</b>	<b>1040</b>	<b>0</b>	<b>0</b>	<b>2080</b>

Total Hours for 2019-2020

4,160

D. Thorsen Total Hours 2019-2020

2,080

S. Sauter Total Hours 2019-2020

2080

Internal Audit  
North Dakota Retirement and Investment Office  
**Administrative Expense Audit Report**  
**Final Audit Report**  
January 30, 2020

### **Background**

Internal Audit of the Retirement and Investment Office (RIO) has developed an Audit Program to review administrative expenses. The review includes RIO's travel policy, travel expense reimbursement vouchers, and a sample of invoices. Employees of RIO travel for a variety of work-related reasons. Board members may travel to attend board meetings and conferences. The audit was also completed to ensure that expenses claimed on expense vouchers were in compliance with RIO and state policies. Other administrative expenses were also reviewed to ensure they matched contracts and cleared in a timely manner.

### **Results Summary**

Internal Audit (IA) reviewed RIO's travel policy, a sample of travel expense reimbursement vouchers, and a sample of expenditures. IA found that the sample of travel vouchers were in compliance with policy. While RIO's travel policy is adequate, IA recommends the following: (1) Enhancing the travel policy, (2) Using a uniformed travel expense reimbursement voucher for travel for both employees and board members, (3) training on completing forms should be done periodically for board members and staff, and (4) travel expense reimbursement vouchers should only be processed with the proper signatures.

IA found that the sample of administrative expenditures matched invoices and cleared in a timely manner.

The Executive Director, Chief Financial Officer (CFO), and Supervisor of Administrative Services should notify Internal Audit with their responses to the recommendations noted in this audit within 30 days of receipt of this report.

### **Scope**

The timeframe reviewed was fiscal year 2019. A review of RIO's policies pertaining to travel and expenses will be compared to OMB policy and state purchasing requirements. A sample of travel vouchers from both board members and staff were reviewed, including in-state, out-of-state, and international travel to ensure compliance with policy and regulations.

A sample of invoices (ex. rent, cleaning, etc.) were selected for review. These invoices will be reviewed to ensure proper approvals were obtained, verify invoice with expense voucher, review contract, and review that payment was issued and cleared.

### **Observations, Conclusions and Recommendations – Travel Policy and Reimbursements**

IA reviewed RIO's travel policy. Overall the travel policy is adequate, but minor enhancements are recommended to clarify a variety of situations.

The travel policy should expand and address emergency returns, voluntary flight bumps, and reimbursement for Wi-Fi access. The travel policy does address emergency situations when traveling, but additional language is needed to strengthen this section. Additional language is also needed to address voluntary flight bumps on what expenses can be claimed. And lastly, the policy should address what Wi-Fi access charges will be reimbursed. Sample language to enhance the travel policy has been provided to the CFO.

The travel policy does not include any timeframe on when travel expense reimbursement vouchers should be submitted. The end of RIO's fiscal year is June 30th of each year. It is recommended that the travel policy state that all travel expense reimbursement vouchers should be submitted within 60 days of return. It is also recommended that travel expense reimbursement vouchers will not be processed if they are turned in after July 15 for the previous fiscal year. This will ensure the fiscal division has ample time to process the reimbursement and are able to close out the fiscal year timely.

#### **Management Response**

The travel policy is being reviewed and additional language will be added to cover emergencies during travel status, voluntary flight bumps, Wi-Fi access charges and deadlines for requesting reimbursements.

In the sample of travel expense reimbursement vouchers that were reviewed, all receipts and amounts claimed were within policy. However, there were two travel expense reimbursement vouchers paid that were not signed by board members. The two travel expense reimbursement vouchers were paid for mileage and hotel lodging. All travel expense reimbursement vouchers should be signed before being processed. It is recommended that board members receive periodic training on how to properly complete travel expense reimbursement vouchers for both out and in-state travel.

#### **Management Response**

Management agrees that all travel reimbursement requests should be signed by the traveler. This will be addressed with board members in conjunction with the additions to the travel policy at future board meetings and monitored more closely by staff.

There does not appear to be a uniform travel expense reimbursement form used for out of state travel. There was one instance where two board members attended the same conference but each completed different travel expense reimbursement forms. It is unclear why two different travel expense reimbursement forms were used. Having one travel expense reimbursement form to be used for both staff and board members when traveling out of state is recommended.

#### **Management Response**

Due to changes over time, it appears different versions of the travel reimbursement form were saved in different places and provided to board members and staff. Going forward, all staff and board members will be directed to the state form on the OMB website.

#### **Observations, Conclusions and Recommendations – Expenses**

A sample of expense invoices were selected for review. The sample was selected from the itemized transaction register for fiscal year 2019. Payments were reviewed to ensure they cleared the banking account and that the invoice total matched up with the contract, if applicable. There were no issues noted with any of the invoices sampled. The sample of invoices that were selected appeared to have been also reported in the correct fiscal year.

Overall, IA did not find any significant issues within the scope of this audit. All expenses reviewed appeared to be within policy and have the proper documentation. The above recommendations help strengthen an already sound policy and procedures.

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#### **Distribution:**

State Investment Board  
State Investment Board Audit Committee  
David Hunter, Executive Director/Chief Investment Officer  
Connie Flanagan, Chief Financial Officer  
Bonnie Heit, Supervisor of Administrative Services

## **MEMORANDUM**

**TO:** State Investment Board (SIB)  
State Investment Board (SIB) Audit Committee  
David Hunter, Executive Director/CIO

**FROM:** Sara Sauter, Supervisor of Internal Audit

**DATE:** February 27, 2020

**SUBJECT:** Executive Limitations Final Audit Report

Internal Audit has completed the annual review of the Executive Director/CIO's level of compliance with State Investment Board (SIB) Governance Manual Executive Limitation policies for the calendar year beginning January 1, 2019 and ending December 31, 2019.

The policies reviewed during the course of the audit were:

- General Executive Constraint (A-1)
- Staff Relations (A-2)
- Relating to Public and Government (A-3)
- Budgeting (A-4)
- Financial Condition (A-5)
- Communication and Counsel to the Board (A-6)
- Asset Protection (A-7)
- Compensation and Benefits (A-8)
- Conflict of Interest (A-9)
- Code of Conduct (A-10)
- Unrelated Business Interests (A-11)

Internal Audit is sufficiently satisfied that the Executive Director/CIO was in compliance with SIB Governance Manual Executive Limitation Policies A-1 through A-11 during calendar year 2019.

**RETIREMENT AND INVESTMENT OFFICE  
AUDIT SERVICES  
EXECUTIVE LIMITATIONS AUDIT REPORT  
January 1, 2019 – December 31, 2019**

**Executive Limitations – General Executive Constraint (A-1)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-1:

- Executive Team Members – Communication Questionnaires
- State Investment Board (SIB) Meeting Agendas, Materials, and Minutes

The executive team indicated that frequent communication occurs regarding board and executive issues and processes. Executive team members believe they are well informed and not lacking pertinent or relevant information. The executive team continues to demonstrate great cohesiveness. There is still a consensus regarding the most important issues facing the organization. Executive team members overwhelmingly agree that the depth of knowledge and experience currently held by executive staff will insulate the organization from any risk associated with the sudden loss of executive services.

**Executive Limitations – Staff Relations (A-2)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-2:

- RIO Administrative Manual and Employee Acknowledgements
- RIO Termination Checklist, Exit Interview, and Employee Termination Documents
- 2019 Employee Survey Results
- 2019 SIB Executive Review Committee Survey, Results, and Meeting Minutes

RIO maintains an Administrative Manual which includes personnel rules for staff, provides for the effective handling of grievances, and protects against wrongful conditions or violations of state and federal law. All staff members signed acknowledgements indicating that they reviewed and understood all policies contained within the Administrative Manual. Staff and SIB survey responses were generally positive regarding staff relations.

**Executive Limitations – Relating to Public and Government (A-3)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-3:

- 2019 SIB Client Satisfaction Survey and Responses
- RIO Administrative Manual (Media Policy), Media Inquiry, and Open Records Request
- 2019 SIB Executive Review Committee Survey, Results, and Meeting Minutes

SIB clients were asked to rate the services provided by RIO staff on behalf of the SIB. A score of 3.62 was received on a 4.0 weighted average scale. Comments received were generally positive and indicated clients have a great deal of trust in staff, staff is knowledgeable and helpful. The Executive Director/CIO routinely responds to media requests and open records requests. The requests reviewed revealed that information provided by staff was accurate and when applicable distinguished between fact and personal opinion. Members of the SIB overwhelmingly agreed that the Executive Director/CIO effectively promotes the SIB and provides necessary information to various stakeholders, constituencies,

**Executive Limitations – Relating to Public and Government (A-3) (continued)**

political subdivisions, and the state legislature. This is most often accomplished with appropriately timed and relevant communications, presentations, and general discussions.

**Executive Limitations – Budgeting (A-4) and Financial Condition (A-5)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-4 and A-5:

- RIO 2019-2021 Biennium Budget and Other Supporting Documentation
- Budget and Financial Condition Quarterly Monitoring Reports – SIB Meeting Materials
- 2019 Executive Review Committee Survey, Results, and Meeting Minutes
- 2019-2021 Budget Guidelines

A review of the quarterly monitoring reports for fiscal year 2019 revealed that RIO operated well within budget and had not made any expenditure which exceeded the appropriation authorized by the legislature. This confirms that the budget planning process currently used by RIO is adequate and results in the development of credible expense projections. RIO submitted the 2019-2021 biennial budget that was within the governor's guideline. During calendar year 2019, RIO did not reduce the level of service of any programs nor request the assistance of the Emergency Commission. Continuing appropriations are reviewed by third parties, one of the largest expenditures is related to investment management fees and consulting expenses. Staff has been successful in reducing overall investment management fees to 0.46% in fiscal year 2019 (from 0.65% in fiscal 2013). SIB members surveyed indicated they are satisfied with the Executive Director/CIO's budgeting actions and RIO's overall financial condition.

**Executive Limitations – Communication and Counsel to the Board (A-6)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-6:

- 2019 SIB Executive Review Committee Survey, Results, and Meeting Minutes
- SIB Governance Manual Policy C-4 (Monitoring Executive Performance Policy)
- SIB Meeting Agendas, Materials, and Minutes – Calendar Year 2019

SIB members indicated that the Executive Director/CIO routinely provides information to assist in decision making, board education, updates on current issues, and timely problem identification. The Executive Director/CIO also adequately monitors investment performance, managers, and strategies. The Executive Director/CIO met all reporting requirements detailed in SIB Governance Manual Policy C-4.

**Executive Limitations – Asset Protection (A-7)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-7:

- State Fire and Tornado Fund Insurance Policy – FY 2019 and FY 2020
- OMB/Risk Management – Risk Management Fund Manual
- State Bonding Fund – Commercial Blanket Bond – CY 2019
- RIO Financial Audit - Fiscal Year Ended June 30, 2019
- SIB Executive Review Committee Survey, Results, and Meeting Minutes
- SIB Meeting Agendas, Materials, and Minutes – Nov 22, 2019

RIO has obtained adequate insurance to protect against theft and casualty losses as well as to protect against liability losses to board members, staff, and the organization. All RIO personnel who have access

**Executive Limitations – Asset Protection (A-7) (continued)**

to funds are properly bonded. External auditors confirmed that funds are received, processed, and distributed under controls which are sufficient to meet State Auditor standards. The financial audit for the fiscal year ended June 30, 2019 received a clean unmodified opinion. Information on actual versus target asset allocation, excess returns for the 3 and 5-year time periods, and current level of risk assumed indicates that the investment process undertaken by RIO is in compliance with the SIB policy on investment.

**Executive Limitations – Compensation and Benefits (A-8)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-8:

- OMB ND Salary Ranges – July 1, 2019 – June 30, 2020
- RIO Salaries & Pay Grades
- Retention Bonus Documentation
- SIB Executive Review Committee – Executive Director/CIO Performance Review
- ND Administrative Code, Chapter 04-07-02
- SIB Meeting Agenda, Materials, and Minutes – June 19, 2019

A review of available documents confirmed that compensation and benefits for staff are in compliance with the ND Administrative Code, Chapter 04-07-02. Current salary and benefits for the Executive Director/CIO are consistent with the recommendations of the SIB Executive Review Committee.

**Executive Limitations – General Executive Constraint (A-1), Conflict of Interest (A-9), Code of Conduct (A-10), and Unrelated Business Interests (A-11)**

The following documents were reviewed and found to support the Executive Director/CIO's compliance with Executive Limitation A-1, A-9, A-10, and A-11:

- 2019 Executive Limitation/CIO Effectiveness Survey and Results
- 2019 Executive Review Committee Survey and Results
- SIB Governance Manual Policy A-9 and Conflict of Interest Statement
- SIB Meeting Agenda, Materials, and Minutes – Feb 22, 2019 and July 26, 2019
- SIB Audit Committee Agenda, Materials, and Minutes – Feb 21, 2019

The Executive Director/CIO affirmed understanding of the Executive Limitation Conflict of Interest Policy (A-9) located within the SIB Governance Manual. Executive team members independently confirmed that they are not aware of any actual or perceived conflicts of interest concerning the Executive Director/CIO. SIB members indicated they believe the Executive Director/CIO maintains high fiduciary standards and adheres to all laws, rules, policies, procedures, and professional ethics. Staff overwhelmingly believes that the Executive Director/CIO demonstrates integrity and sets an example for others to follow.

**Informational**

**TO:** State Investment Board  
**FROM:** Ms. Yvonne Smith (and Dave Hunter)  
**DATE:** February 24, 2020  
**SUBJECT:** Executive Review Committee (ERC) Update

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On February 10<sup>th</sup>, the ERC discussed the timeline for the SIB self-assessment. The ERC felt the self-assessment should be completed prior to commencing the executive review.

As a result, the ERC instructed RIO' Supervisor of Internal Audit, Sara Sauter, to send the self-assessment out on Wednesday, February 12, 2020, with a due date of Wednesday, February 26, 2020. The results of the self-assessment will be shared with the SIB at their March 27, 2020, meeting.

**SELF-ASSESSMENT:**

The ERC reviewed the self-assessment and made one revision requesting a comment with regards to Question 28 relating to the "Overall Assessment". In general, the ERC felt the document is well written and reflects the position of the trustees themselves and the Board as a whole.

**NEXT MEETING:**

The ERC's next meeting has been scheduled for March 16, 2020, at 8:30 a.m. at RIO, 3442 East Century Avenue, Bismarck, ND.



**Informational**

**TO:** State Investment Board  
**FROM:** Dave Hunter  
**DATE:** February 24, 2020  
**SUBJECT:** Proxy Voting Policy Update

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**Background:**

In connection with our annual Governance Manual Review in late-2019, the SIB and RIO sought to adopt emerging best practices with regards to efficiently monitoring various proxy voting practices on topics such as executive compensation and board diversity in addition to certain shareholder led initiatives which could potentially be misaligned with the best interests of our stakeholders and constituents.

**On January 24, 2020, the SIB approved RIO's recommendation to engage Boardridge Financial Solutions and utilize their "Proxy Disclosure" service to enhance our ability to efficiently audit the proxy voting practices and actions of our equity managers in 2020.**

**Update:**

**RIO recently engaged with Northern Trust and Broadridge Financial Solutions to gain a greater understanding of how Northern Trust's proxy voting reporting service compares with the enhanced services offered by Broadridge.**

**RIO intends to share a more comprehensive update at our next SIB meeting in March which will include a second reading of proposed revisions to our existing Proxy Voting Policy.** RIO also continues to engage with investment professionals from Department of Trust Lands on this important initiative.

**Informational**

**TO:** State Investment Board  
**FROM:** Dave Hunter  
**DATE:** February 24, 2020  
**SUBJECT:** TFFR Pension Administration System Modernization Project Update

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The TFFR Board approved the Project Charter for the TFFR Pension Administration System (PAS) Modernization Project on January 23, 2020, as previously approved by the Executive Steering Committee on January 21, 2020. Please see the attached TFFR PAS Project Update Memo for additional details including the approved Project Charter.



## MEMORANDUM

**TO:** TFFR Board  
**FROM:** Fay Kopp  
**DATE:** January 21, 2020  
**SUBJ:** Pension Administration System Modernization Project Update

The TFFR Pension Administration System (PAS) Modernization Project Executive Steering Committee (ESC) met on Tuesday, January 21. Statutory Committee members include:

- Fay Kopp, TFFR Project Sponsor
- Dave Hunter, RIO Executive Director
- Becky Deichert, OMB Designee
- Justin Data, NDIT Large Project Oversight
- Shawn Riley, NDIT Chief Information Officer

Others attending the ESC meeting include:

- Kris Vollmer, NDIT Project Manager
- Dave Schaibley, Attorney General's Office
- Jace Beehler, Governor's Office
- Rich Nagel, RIO Supervisor of Information Technology

After discussion of the ESC purpose, member roles and responsibilities, and the TFFR Modernization Project Charter (attached) the Charter was approved by the Committee. During the project planning stage, monthly ESC meetings will be scheduled. Once the project gets underway, meetings will likely be held less frequently, on a bi-monthly or quarterly basis. It was a productive meeting, and NDIT support and guidance is appreciated.

The next step will be to establish a Procurement Team to develop an RFP for an external PAS business consultant.

I can respond to any questions at the Board meeting.

### BOARD ACTION

Board Motion to Approve Project Charter for TFFR PAS Modernization Project.

**Meeting Information:**

<b>Meeting Title</b>	TFFR PAS Modernization Project	<b>Time</b>	10:30 AM – 12:00 PM
<b>Date</b>	January 21, 2020	<b>Location</b>	NDIT -North Conf. Room 103
<b>Facilitator</b>	Faye Kopp/ Kris Vollmer	<b>Note Taker</b>	Kris Vollmer

**Invitees/Attendees:**

Required/ Optional	Attended (Y/N)	Name	Required/ Optional	Attended (Y/N)	Name
R		Fay Kopp – TFFR Sponsor	R		Kris Vollmer, PM
R		David Hunter – RIO Exec	R		Justin Data, LPO
R		Becky Deichert – OMB Designee	R		Shawn Riley, CIO
O		Rich Nagel – TFFR	O		Danelle Hopkins, GO
O		Dave Schaibley - AG	O		Jace Beehler, GO

**Agenda/Minutes:**

Item	Topic	Owner
1.	Call to order	Faye/Kris
2.	New Business <ul style="list-style-type: none"> <li>Purpose and scope of the Executive Steering Committee</li> <li>Project Charter</li> <li>Project Planning</li> </ul>	
3.	Other Business <ul style="list-style-type: none"> <li>Committee meeting frequency</li> <li>Other discussion</li> </ul>	
4.	Meeting adjournment	

# **Teachers' Fund for Retirement's Pension Administration System Modernization Project Project Charter**

<b>Project Sponsor:</b>	<b>TFFR Board</b>
<b>Author:</b>	<b>Richard Nagel</b>
<b>Version:</b>	<b>1.0</b>
<b>Revision Date:</b>	<b>01/17/2020</b>

**NORTH**  
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# 1 Project Description

## 1.1 Project History

The Teachers' Fund for Retirement's (TFFR) current Pension Administration System (PAS) administrator interface is 15 years old and was deployed in 2005 as a client-server application.

The PAS supports the administration of the TFFR benefits program for over 22,000 active, inactive, and retired members and 213 employers. The system maintains the demographic and account information, payroll reporting, contributions accounting, benefits calculations for refunds, retirement, disability, and death benefits, service credit purchases, pension calculations and processing, benefits payroll, tax processing, reporting and integration.

A member self-service portal is available to all members and provides basic viewing functionality (read-only access). Currently, just over 4,500 members are utilizing the member self-service portal.

An employer self-service portal is available to all employers and provides the ability to upload payroll contribution and earnings data files for processing by staff. However, employers cannot perform any business rule validations of the member data contained in the file. TFFR staff must perform the validations, evaluate data exceptions and any action for data corrections that are to be addressed and resubmitted by the employer. Currently, 182 employers are utilizing the employer self-service portal.

## 1.2 Strategic Alignment

The project aligns TFFR's initiatives and goals to be more efficient, streamline processes, reinvent business plans/processes, and do more with less effort to ensure a more user-friendly experience for staff members as well as citizens. In order to accomplish these initiatives and goals, TFFR will need to upgrade or replace the current Pension Administration System.

Most of the desired features needed to reinvent the way TFFR conducts business are standard functions of modern PAS, either out of the box or implemented with configuration.

The project will increase citizen experience by improving the functionality available on member and employer online portals and providing information and feedback in a secure, timely manner.

## 1.3 Business Need

1. TFFR's current PAS has been in operation for 15 years and is outdated. The functionality and technical architecture of this client-server technology is at the end of its product release lifecycle.
2. Reinvent and transform the way TFFR conducts business by utilizing updated technology, provide enhanced security and streamline processes throughout the new system.
3. Enhance and improve Member and Employer self-service portal experience.

## 1.4 Solution Statement

The project will procure and implement a modernized upgrade or replacement of the current TFFR PAS utilizing a commercial off-the-shelf (COTS), modified off-the-shelf (MOTS) or software as a service (SaaS) solution with customization abilities to fit TFFR's business needs. An RFP will be developed to contract with an external PAS consultant to assist with the project including review of internal processes. A separate RFP will be developed to solicit bids from potential vendors to find the best solution for TFFR.

The overall goal is to upgrade/replace TFFR's current PAS system with a modern solution that allows TFFR to reinvent and streamline business processes and functionality to provide more interaction within

TFFR staff, as well as the members and employers that utilize the system. Since the current system is 15 years old, it would be very costly to implement the necessary functionality to achieve a more efficient, secure, and user-friendly system.

## 2 Project Scope

### 2.1 Scope Statement

The project will upgrade or replace the current business processes as well as the existing PAS for TFFR. The upgrade/replacement solution should utilize a web-based platform or other solution.

### 2.2 In Scope

- The project is considered a Major Information Technology (IT) Project and will follow the ND State Major IT Project Management standard and ND Century Code.
- Procurement:
  - RFP to acquire a PAS Consultant to review business processes
  - RFP for PAS replacement system
- Initiation and Planning:
  - Kickoff Meetings
  - Project Plan and Schedule
  - Large Project Oversight (LPO) Startup Report
- Execution and Testing
  - Key deliverables will be fully defined in the statement of work, agreed upon at time of contract negotiation
- Closing
  - Project Team Surveys
  - Closeout Meeting
  - Post Implementation Report (PIR)
  - LPO Closeout Report

### 2.3 Out of Scope

Any element not listed as “in scope” above is considered “out of the scope” of the project.

- Ongoing maintenance funding of PAS



### 3 Business Analysis

**Table 1: Project Objectives and Measurements**

Objective	Lag Measurement(s)	Lead Measurement(s)
<p>1 Business need: Provide citizen focused functional self-service portals.</p> <p>Objective: Create and enhance functionality of Member and Employer self-service portals to meet the needs of citizen user groups (active and retired teachers and employers).</p>	<p>Increase new member logins by 20% within one-year of go-live.</p> <p>Beginning one-month post go-live, IT staff will run monthly reports to determine use of self-service functionality. Counts will be taken by members (active and retired teachers) and by employer accesses.</p>	<p>The measure of number of times the current PAS is accessed online, count by members (active and retired teachers) and by employer accesses are taken on a monthly basis.</p> <p>Additional measurements may be identified during the planning process.</p>
<p>2 Business need: Reinvent and Transform current processes.</p> <p>Objective: Reinvent and transform the way TFFR conducts business by redefining business plan and processes to increase efficiencies.</p>	<p>Baseline processes that were automated; compare to manual process (before automation) as identified during business process modeling.</p> <p>One year post go-live, decrease time spent on manual tasks by 10-15%.</p>	<p>Baseline measurement of manual processing will be taken during business process review and modeling. Measurements will be defined during the business process modeling step and identified in the Project Plan.</p>
<p>3 Business need: Modernize TFFR's outdated PAS.</p> <p>Objective: Provide an interactive web-based solution that is accessible from multiple device types.</p>	<p>Implement a solution that uses modern technology.</p>	<p>The current PAS is client server based and uses an old technology that limits functionality and the ability to support desired citizen experience; and support pension administration best practices.</p>

**Table 2: Anticipated Wins**

Anticipated Wins	
1	By utilizing automated processes, efficiencies will be created for TFFR staff.
2	Increasing functionality through the use of web portals allows citizens (members and employers) to update information in real-time rather than calling or mailing forms.
3	A web-based system will be accessible from multiple devices allowing citizens (member and employers) more flexibility.

## 4 Cost Analysis

The table below illustrates the project funding. The state legislature has given spending authority for \$9,000,000.00.

**Table 3: Project Funding**

Funding Source	Funded Amount	Funding Explanation
General Funds		
Federal Funds		
Special Funds	\$9,000,000	TFFR Trust Fund
Other Funds		
<b>Budget Total</b>	<b>\$9,000,000</b>	

The following will be used as budgeting guidelines during the planning phase of the project:

- The total funds initially requested for the project was \$9,139,000.
- The total funds approved by the Legislature for the project was \$9,000,000.
- The project budget will be finalized during the project planning phase and approved by the Executive Steering committee (ESC) and the TFFR Board of Trustees.

## 5 Business Risk Analysis

### 5.1 Risks of Performing the Project

**Table 4: Risks of Performing the Project**

Risk	Impact	Response
Staff availability	Lower priority tasks will be delayed	Agency will review and prioritize all projects as needed.
Scope	Specifications and scope not properly defined will cause delays and cost	Hire external IT pension consultant to assist with project. Monitor project scope.
Security	PII must be secured and limit risk for breaches of any kind	Work with NDIT and vendor to ensure the solution utilizes world class technology and security measures

## 5.2 Risks of Not Performing the Project

**Table 5: Risks of Not Performing the Project**

Risk	Impact	Response
Less Secure PAS	Limits portal security for members and employers PII data	Limit what data is visible on current PAS to try and eliminate security risks
Limited support and increased costs	As the PAS ages, vendor resources and support are limited with older technology	Request additional budget funding or reallocate existing budget to support and fix the outdated PAS
Reduced efficiency	Staff is less efficient, and work takes longer. No new projects are introduced due to old processes that take time to do manually	Continue manual processes with outdated PAS.
Limited functionality	Limits the self-service portals for members and employers. Also limits what staff can do internally.	Continue manual processes with outdated PAS.

## 6 Organizational Change Analysis

This project is anticipated to reinvent and transform the way TFFR conducts pension plan administration by upgrading to an interactive web-based PAS platform. This web-based platform will allow TFFR to change business plans and processes by implementing a modernized PAS that allows for more user functionality, better self-service portals for 20,000+ members and 213 employers, automated processes for internal staff, and provides external users with a more user-friendly environment across multiple devices.

The overall impact this project will have on TFFR relates to updating all business plans and processes to change how tasks are currently completed. By utilizing a modernized PAS, more efficiencies will be created through automated process that allows TFFR staff to do more with less effort compared to the current manual processes.

The TFFR Board recognizes that a modern PAS is needed to modernize the way the TFFR pension plan is administered and is committed to this project. Agency Retirement and IT managers are leading this project with full support from the TFFR Board, RIO executive management, and staff.

## 7 Resource Analysis

The planning of this project is estimated to take approximately 16 weeks. The following identifies the resources required for planning only. It also includes the percentage of time and anticipated hours that will be required from each resource for the planning period.

**Planning Start Date: February 3, 2020      Planning End Date: May 29, 2020**

**Table 6: Resource Analysis**

Resource	Role	% Time Expected
Rich Nagel	Agency IT Lead	Will vary depending on stage of project x%
Len Wall	Agency IT Coordinator	
Fay Kopp	TFFR Project Sponsor	
Shelly Schumacher	Retirement Subject Matter Expert	
Connie Flanagan	Agency Budget-Procurement	
PAS Consultant	Business Consultant	
Kristine Vollmer	Project Manager	

## 8 Project Authority

### 8.1 Assumptions and Constraints

#### 8.1.1 Assumptions

Assumptions are factors that, for planning purposes, are considered to be true, real, or certain without proof or demonstration.

The project has the following assumptions:

- RFP required for external PAS consultant
- RFP required for vendor solution

#### 8.1.2 Constraints

Constraints are defined as the state, quality, or sense of being restricted to a given course of action or inaction. An applicable restriction or limitation, either internal or external, to the project that will affect the performance of the project or a process.

The project has the following constraints:

- Cost, schedule, scope, and quality are often in conflict during projects. The sponsor elected to prioritize as follows:
  1. Quality
  2. Scope
  3. Cost
  4. Schedule
- Staff Limitations

## 8.2 Authority/Escalation

Authority to proceed with this charter is granted to the Project Manager. The ESC and TFFR Board must approve any diversion from the scope which would materially impact the project.

The Project Manager is authorized to utilize the resources necessary to plan the project based on the information above and will be required to receive sign-off on the project plan prior to execution.

## 9 Approval

### Project Charter Approval

Project Sponsor Name: xx

Project Sponsor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Agreement to Secure Required Resources

Approver Name: xx

Approver Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Informational

To: State Investment Board  
From: Dave Hunter  
Date: February 24, 2020  
RE: RIO Agency Update

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**Background:**

On September 26, 2019, RIO's Deputy Executive Director and Chief Retirement Officer Fay Kopp announced her intent to retire from RIO effective on March 31. On January 10, RIO's Retirement Program Manager Shelly Schumacher also announced her intent to retire effective on February 29. Given that we are losing two of our most experienced, helpful, trusted and top performing leaders, RIO management and SIB and TFFR leadership met in late-2019 and early-2020 to discuss the best ways to position our agency for continued future success. RIO consulted with HRMS throughout this process.

**2020 Update:**

On January 9, RIO externally posted our Deputy Executive Director and Chief Retirement Officer position on our State website in addition to our RIO website and NCTR, NASRA and IFEBP websites shortly thereafter. The posting closed on January 30 with 16 submitted applications including eight of which met minimum qualifications as determined by HRMS. RIO and HRMS independently scored these eight applications and identified the five highest scoring candidates for phone interviews in early February. RIO notes that one of the five highest scoring candidates did not complete the phone interview process due to scheduling difficulties in addition to compensation and relocation concerns. Based on the average score assigned by HRMS and RIO to the four candidates which completed the phone interviews, HRMS and RIO jointly confirmed the top three candidates should be advanced as finalists. On February 21, SIB Vice Chairman and TFFR Board President Dr. Rob Lech, State Treasurer Kelly Schmidt, RIO Retirement Program Manager Denise Weeks and myself conducted in person interviews with the top three finalists. Upon completing the interviews, the committee conducted an in-depth discussion of the perceived strengths and potential growth opportunities for each of the three finalists. After this discussion, the interview committee members unanimously identified our top finalist. **As of February 24, RIO and HRMS are in the process of working towards formally extending an offer to our top finalist.**

On January 10, we internally posted our Retirement Program Manager position within our agency. I am pleased to report that we received one internal application from our most seasoned retirement benefits specialist. After conducting an interview process in mid and late January, Fay and Dave extended this compelling advancement opportunity to Denise Weeks. **I am very pleased to report that Denise Weeks formally accepted this offer to be promoted to RIO's Retirement Program Manager effective on March 1, 2020.** Given the upcoming promotion of Denise Weeks, RIO intends to hire a new Retirement Benefits Specialist in the near future.

**During the last legislative sessions, RIO obtained budget approval to add one investment FTE effective July 1, 2019 (thereby increasing our agency FTE up to 20) noting that SIB client assets under management have grown from \$5 billion in 2010 to over \$16 billion in early-2020.** It is also important to note that RIO's prior Compliance Officer accepted a new advancement opportunity at North Dakota's Securities Department on July 10, 2019. Given these events, RIO took advantage of these actions to redefine several positions within our agency and re-engineer our Fiscal and Investment teams to further improve operational efficiencies and enhance expanding compliance initiatives. After conducting internal analysis along with strong HRMS assistance, RIO upgraded our Compliance Officer position in order to address growing agency needs. RIO then conducted a search for a new Investment and Compliance Officer position which attracted national and international interest. After reviewing minimum candidate qualifications, RIO sought to conduct phone interviews with the top five (to eight) scoring candidates and in person interviews with the top three finalists. RIO notes one of the three finalists did not complete an in person interview due to scheduling challenges in late December and early January. On January 9<sup>th</sup>, RIO formally extended an offer to our highest scoring finalist. **I am pleased to report that Matt Posch accepted our offer the next day and started at RIO as our Investment and Compliance Officer on February 3.**

**RIO was sad to inform the SIB and TFFR boards our Investment Accountant was unable to successfully complete a probationary period effective as of January 10, 2020.** RIO re-posted the Investment Accountant position on January 15 with the helpful guidance of HRMS. RIO's Chief Financial Officer Connie Flanagan, RIO's Senior Financial Accountant Susan Walcker and myself interviewed our top four Investment Accountant candidates on February 6 and 7. Upon completing the interviews, the interview committee conducted an in-depth discussion of the perceived strengths and potential growth opportunities for each of the top four candidates. After this discussion and completing additional professional background checks on our top candidates the following week, the interview committee members unanimously identified our top selection. **I am pleased to report that Ann Griffin accepted our offer to become RIO's Investment Accountant and is scheduled to start at RIO on Monday, March 2.**

**RIO sincerely appreciates the exceptional guidance and expert assistance provided by HRMS professionals Hope Wedul, Lynn Hart and Sara Leno during the past six months in addition to the strong support, governance leadership and continued patience offered by the SIB and TFFR boards and committees during this period of significant agency change, development and growth.**





# BOARD LEADERSHIP

## INNOVATIVE APPROACHES TO GOVERNANCE

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## Best Practices for Board Leadership During Times of Uncertainty and Instability

By Sandeep Aujla

*Sandeep Aujla is the president and founder of Multilevel Leadership Consulting, based in Brampton, Ontario, Canada. In this article, she explores the role of the board of directors during times of acute uncertainty, and lays out a series of best practices for corporate governance when organizations operate in an unstable and unpredictable political climate.*

**V**olatility, uncertainty, complexity, and ambiguity are the four tenets of the VUCA world that create the shared reality in which corporate and not-for-profit organizations exist today. Moreover, organizations across all sectors consistently face strong forces of change from political, environmental, social, technology, legal, and economic (PESTLE) domains. Such harsh and volatile conditions amplify the need for effective corporate governance.

The role of corporate governance has evolved over the past century, with the board of directors requiring greater access to relevant and appropriate information.<sup>1</sup> Moreover, the scandals from the early 21st century relating to the failure of governance controls, including Enron and WorldCom, forced a shift in the governance role from monitoring to a more acute and critical appraisal of internal controls and organizational performance. They also

broadened the interest and scrutiny from diverse stakeholders, including politicians, regulators, and the public. In addition, they led to significant reforms, including the Sarbanes-Oxley Act (2002) in the United States of America. Nevertheless, there remain several criticisms about the limitations and flaws in contemporary corporate governance,<sup>2</sup> highlighted by the continuing exposure of scandals such as those of Lehman Brothers and Madoff Investment.

The viability periods for organizations continue to decrease globally, with corporate longevity forecasts of S&P 500 companies projecting an average tenure of companies to shrink to 12 years by 2027.<sup>3</sup> Anthony et al. predict that “at the current churn rate, about half of S&P companies will be replaced over the next ten years.”<sup>4</sup> Furthermore, the average tenure of CEOs continues to decrease, with median tenure noted at five years for the CEOs of S&P 500 companies.<sup>5</sup>

The governance role now requires further transformation, forced by the rapid decrease in organizations’ lifespans, along with the average tenure of CEOs leading those organizations—both constituting strong forces

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## NEWS

Candid webinar looks at ‘high-performance’ practices for nonprofits

Candid will host a webinar titled “High-Performance Practices Successful Nonprofits Need” on Feb. 6 at 2:00 p.m. ET.

The webinar, hosted on the organization’s *Grantspace.org* platform, will be led by two nonprofit leaders, Terri Sorensen and Juan De Angulo, who will share how the Performance Imperative and the Performance Practice, which are core resources drawn from the Leap Ambassadors Community, can help nonprofits advance their missions. The webinar – which targets nonprofit boards and executive leadership – will look at case-study examples, including how Friends of the Children used the resources to align chapters across the country around their joint goal of achieving the best possible results for as many children as possible. As another example, the leaders will discuss how Congreso, a multiservice organization, integrated the resources into a broader organizational improvement effort.

Upon completion of this webinar, attendees should be able to:

- introduce a framework for continuous improvement in their organizations,
- use an organizational self-assessment to engage stakeholders in identifying organizational needs and articulating a plan for improvement

This webinar is free to the public.

For more information, visit

<https://bit.ly/36VVl9l>. ■

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# Uncertainty

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of uncertainty and instability for organizations. Given these risks to organizational viability and the instability of leadership, with typical CEO tenures close to five years, boards of directors have an amplified need to focus on the long-term viability of the organization. Although some may argue that such focus has long been the mandate for boards of directors, there is an urgency heightened by the rise in political instability and, therefore, political risk, not just from local, provincial or federal political action, but also from the domino effect of critical political actions across the globe.<sup>6</sup> That political stability is expected to worsen over the next two to five years, according to a survey of Canadian directors by the Institute of Corporate Directors (ICD).<sup>7</sup>

Although no one could ever predict the future, increased instability and uncertainty widen the range of risks the organization gets exposed to while reducing the response time to mitigate those emergent risks appropriately. The volatility of such times amplifies the need for the directing role of boards of directors, wherefore they systematically and frequently assess the current state of their organization in the context of the changing environment and direct where the organization needs to go, not just in terms of strategy, but also pivoting the strategy, if needed.

## Best Practices

Included below are five best practices organizations can adopt to mitigate the inherent risks associated with the rising instability and uncertainty.

### **1. Commit to proactive learning and internal controls to acquire relevant information in a timely manner**

The rapid fluctuations in an organization's environment require frequent and timely information exchange between an organization and the board of directors. However, instead of relying on the judgment of the organization's leaders to ascertain the relevance and quantity of information shared, the directors could take

a more proactive role. Moreover, directors need to proactively gather information from a variety of sources and determine a planned and vigilant response for unplanned disturbances.

The increasing information needs of the directors could be fulfilled through the creation of routines and procedures that would require senior leadership to provide regular updates on the critical emergent issues and concerns that could potentially impact the organization's viability. Furthermore, the directors would be better equipped to sustain these practices through personal awareness of any emergent trends and issues that could be relevant to the organizations they govern.

In theory, boards of directors often believe they do a good job of directing the CEO about the strategy and future of the organization. In practice, however, the boards of directors usually exclusively rely on the information provided to them by the CEO. Also, boards of directors are often significantly removed from the actual context, which disallows them to meaningfully determine the next steps for the company without an objective and meaningful understanding of the current state of the organization. Without internal routines and their raised self-awareness, directors would not be adequately informed to fulfill their role of enhanced and focused directing of the organization that goes beyond the typical auditing function the boards of directors perform in practice.

This challenge is commonly seen in the case of cybersecurity. Most directors do not have the technical expertise or understanding to meaningfully ask for information to gauge whether their organizations are adequately prepared to defend themselves against cybersecurity threats. Concurrently, there is a prevalence of general levels of low confidence in the quality of information boards of directors receive from their senior management. So even though there is a common consensus about cybersecurity as an emergent critical risk that boards of directors need to attend to, without proactive learning and establishment of internal routines that may include regular audit reports

from external experts, the boards of directors may not optimally perform their fiduciary duty and the duty of care for their respective organizations.

Boards of directors should also make personal and proactive commitments to learning. The board could collectively take courses or attend industry events that would keep them informed about the emergent trends. These learning initiatives could inform them of the considerations they must make in their decision-making while also equipping them with specifics on which to probe their senior management. The increased awareness and understanding among the board of directors will be essential during times of uncertainty and instability, when immediate attention and response will prove critical for the appropriate handling of challenges and opportunities facing the organizations.

### **2. Ensure political acuity, resilience, and innovation as vital traits in and among the board of directors**

As per the seminal decision of the Supreme Court of Canada in *BCE Inc.*, the directors owe their duty, above all, to the corporation.<sup>8</sup> As such, they must consider the interests of a broad range of stakeholders related to the organization. The *BCE Inc.* decision also highlighted the directors' role in creating value over the long term. These expectations require high levels of political acuity, resilience, and innovation in the business decision-making of the directors who are trying to create value over the long term for organizations working in a highly politicized environment that is rapidly changing and requires creative solutions and perseverance.

The governments at the municipal, provincial, and federal levels can change unexpectedly, requiring directors' ability to maintain a nonpartisan brand so that their organizations do not have to suffer because of associations with previous governments. Furthermore, the directors need to be familiar with the key political, government, and influencer networks in order to anticipate alignments and diversions in political versus organizational agendas. These two skillsets comprise the



political acuity necessary for boards of directors to support the organization during times of uncertainty and instability.

Resilience refers to the will and skill to bounce back from any adversity. There are bound to be a few unanticipated events that may negatively impact the organization. At those times, directors need to be able to practice crisis management, caution, prudence, and optimism in how they talk about the organization and how they support it. Resilience also refers to the directors' ability to be nimble and pivot faster than others, which can positively impact the viability of the organizations.

Last, the long-term viability of the organization will require creative thinking from its directors in order to not just solve current problems facing the organization, but also to determine new directions for the organization to explore. Also, creativity can help directors reduce their blind spots by actively engaging their imagination.<sup>9</sup> As such, it is useful not only in understanding the hidden risks for an organization, but also in protecting against groupthink.<sup>10</sup> Nevertheless, creativity is only one part of innovation; the other critical part requires discipline.<sup>11</sup> The board plays a critical role in enabling innovation when it pairs the softer creative criteria with the rigor of discipline and management. Yet, innovation does not get identified as a top priority for boards, which could be "a major blind spot and a potential liability" for organizations.<sup>12</sup>

Even if all boards of directors did not possess these three skills, it would be beneficial for the board to ensure these skillsets existed in their skill mix for the selection of new directors.

### **3. Commit to a systematic and scheduled focus on organizational culture and health**

The board of directors has two principal duties—fiduciary duty and duty of care. Although most directors pay adequate attention to their fiduciary duty to act honestly and in good faith, there is an equally important mandate for directors to practice their duty of care. According to this, they must

spend adequate time and attention on the matters of the corporation to exercise sound business judgment just as another reasonably prudent person would do in comparable circumstances.

This duty of care requires that the board of directors incorporate a systematic and scheduled focus on discussions related to organizational culture and health to ensure a psychologically safe and healthy work environment for its employees—one of the largest stakeholder groups for the corporation. With the changes in legislative requirements in some Canadian provinces mandating formal investigations to be conducted for any claims of workplace harassment and bullying, it is valuable for directors to monitor any ongoing or new claims.

The #MeToo movement in the last two years has illustrated how politically charged such alleged or proven accusations can be for any organization. The impact of such scandals negatively impacts not only the victims of these experiences, but also the organization's brand, share prices, and litigation costs.<sup>13</sup> Such conduct within an organization is demonstrative of toxic workplace culture, which further disallows a focus and capacity to advance the organizational strategy.

Peter Drucker allegedly popularized culture as the lynchpin of successfully executing organizational strategy. The Institute of Corporate Directors purports that directors should acknowledge the culture imperative and match their perceived focus on organizational culture with appropriate oversight measures that get reviewed systematically.<sup>14</sup> In contrast, the ICD's Spring 2019 Director Lens Survey found "that while 62 per cent of respondents say that they are spending the right amount of time discussing organizational culture, only 34 per cent indicate that they have agreed on oversight measures and discuss them frequently."<sup>15</sup>

Furthermore, organizations that anticipate the war for talent should pay even more attention to their culture and organizational health, because top talent proactively seeks a healthy and progressive workplace culture. Moreover, organizations are at risk of losing

top talent if the organizational culture is festering with claims of misconduct and harassment. Focusing on organizational culture and health, therefore, allows boards to fulfill both their fiduciary duty and the duty of care.

### **4. Adopt an expanded focus on risk, especially political risk beyond the layers of government**

In recent times, politics has adopted an expanded definition far beyond the layers of government within any country. Globalization now impacts not just the multinationals operating in different countries. Most businesses can expect to be impacted by the outcomes of Brexit in the United Kingdom, civil unrest in Venezuela, the impeachment discussions involving the U.S. president, and the prolonged trade tensions between the United States and China. These events impact consumer behavior, such as reduced automobile sales in China, contributing to the reduction of automobile production in the United States and the European Union.<sup>16</sup>

Laker and Roulet note, "This uncertainty has a significant impact [on] economic conditions, such as the cost of inputs (work, resources) and customer behaviour. But it also threatens business continuity: the simple ability for firms to carry out their daily activities. Operations may have to stop because goods can no longer cross the frontiers or because service provision becomes impossible."<sup>17</sup> The board of directors, therefore, needs to review and expand its current Enterprise Risk Programs to include political risk resulting from the uncertainty created by major global events.

Furthermore, there is a growing need to integrate the broad range of emergent risks into current decision-making models.<sup>18</sup> Bekefi and Epstein recommended a framework in 2006 that could help directors anticipate, evaluate, prepare for, and mitigate risks while managing alternatives by measuring and integrating risks into return-on investment calculations. Nevertheless, there is limited evidence of it being applied consistently across boards of directors.

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# Insured Capacity: Owner-Designee Directors Should Not Take Their D&O Coverage for Granted

By Daniel J. Struck

*Daniel J. Struck is partner at Culhane Meadows, a Dallas-based law firm serving major corporations and emerging companies across industry. In this article, he discusses some of the complexities of directors and officers liability insurance and the protections and limitations it can offer corporate boards in light of a changing, and newly activist, corporate landscape.*

**D**irectors and officers liability (D&O) insurance is an important business asset, with considerable value both for the insured entity and individual insureds. Directors and officers assume that D&O policies will cover them, even if they are not indemnified by the company, in the event of a claim alleging they committed a wrongful act, error, or omission, or otherwise committed some breach in the course of carrying out their duties. As a backstop for what are often high-stakes claims—claims that are costly to defend and can, on occasion, expose the directors and officers of an insured business to personal liability—the terms and conditions of D&O policies have significant legal and financial consequences. But the terms of standard D&O policy forms do not always keep pace with business developments or the changing liability landscape. Unfortunately, all too often there is a gulf between the scrutiny afforded to insurance coverage terms and the potential significance of those terms for coverage. But seemingly minor variations in basic policy terms and conditions can significantly alter the outcome of a claim for coverage.

Insured capacity is one such policy condition that can have unexpected coverage implications. Insured capacity is a fundamental concept that, to some extent, underlies virtually any kind of insurance. D&O policies, which provide coverage for the wrongful acts, errors and omissions, or breaches of duty committed by directors and officers,

necessarily incorporate an insured capacity requirement. D&O insurance policies cover individual directors and officers only for claims that result from their conduct as directors and officers. No one reasonably expects a D&O policy to cover corporate officers or directors for purely personal disputes. If the director of an insured business has a payment dispute with a home contractor or is involved in a dispute with the extended family over the distribution of a relative's estate, the business's D&O insurance is not likely to provide coverage, because those disputes do not arise out of the director's conduct as a director. This much is obvious. But insured capacity is a deceptively simple principle. Insured capacity provisions can have adverse, and costly, consequences for sophisticated insured businesses and individuals—including private equity firms, distressed asset investors, and directors seated as owner-designees—particularly when seemingly innocuous insured capacity requirements are taken for granted or treated as interchangeable.

## A Cautionary Tale of Capacity and the Dual-Role Director

The following scenario illustrates how uninsured capacity provisions in a D&O policy can result in consequences contrary to the expectations of insureds who serve in dual or multiple capacities.

OmniGlobal Partners is a private equity company pursuing a strategy of rolling up troubled regional sprocket

distributors. OmniGlobal identifies Spacely Sprockets as an investment target. Spacely is itself the product of an attempted rollup and is heavily indebted. OmniGlobal acquires a substantial portion of Spacely's senior debt and negotiates the right to designate two directors, Judy Jetson and Rosie Robot, to Spacely's board. Both Jetson and Robot are executives with OmniGlobal. OmniGlobal extends considerable financing to Spacely in order to provide it with operating capital in exchange for options to acquire ownership of Spacely.

OmniGlobal's efforts to improve Spacely's fortunes prove to be unsuccessful, and eventually a group of Spacely's other creditors force Spacely into a Chapter 7 bankruptcy proceeding. The trustee sues OmniGlobal, Jetson, and Robot. Among other things, the trustee alleges Jetson and Robot breached the fiduciary duties owed as directors to Spacely by putting the interests of OmniGlobal ahead of those of Spacely, securing for themselves and OmniGlobal inflated investment returns, and negotiating unfair loan terms that afford OmniGlobal preferential treatment in the event of liquidation.

Jetson and Robot promptly provide notice under Spacely's D&O insurance policy seeking coverage for the claims that they engaged in wrongful conduct as directors of Spacely. The D&O insurer denies coverage, relying on an uninsured capacity exclusion that states:

The Insurer shall not be liable to make any payment for Loss in connection with any Claim made against an Insured ... arising out of, alleging, based upon, or attributable to any actual or alleged act or omission of an Individual Person serving in any capacity, other than as an Executive or Employee of the [Insured] Company.

The insurer asserts that the exclusion applies to the claims against Jetson and Robot because, as alleged by the trustee, Jetson and Robot did not act solely in their capacities as directors of Spacely. In the view of the insurer, this



version of the uninsured capacity exclusion should be construed so that the exclusion applies to claims alleging that an individual insured acted in any outside capacity—whether in a dual capacity or on behalf of an uninsured entity. According to the insurer, Jetson and Robot are trying to use their status as directors of Spacely to bootstrap coverage under the Spacely D&O policy for conduct that, substantively, was taken in furtherance of their interests as officers of OmniGlobal.

In support of coverage, Jetson and Robot argue that but for their position as directors of Spacely, the breach-of-duty and conflict-of-interest claims could not have been brought against them. It is only because of their status as directors of Spacely that the trustee brought claims against them. Under this approach, the uninsured capacity exclusion should be construed only to exclude conduct that is taken in a wholly uninsured, outside capacity. After fruitless attempts to resolve the dispute, and with their defense costs mounting, Jetson and Robot sue the insurer.

Construing this version of an uninsured capacity exclusion, at least one court (see *Goggin v. National Union Fire Ins. Co.*, C.A. No. N17C-10-083 PRW CCLD [Del. Sup. Nov. 30, 2018]) has held that the uninsured capacity exclusion is clear and unambiguous in barring coverage under similar circumstances. Given the broad “arising out of, alleging, based upon, or attributable to” formulation of the exclusion, the court determined that the uninsured capacity exclusion applies if the individual insureds acted in any capacity other than solely as directors of the insured entity.

Applying the same logic as *Goggin*, the court hearing our coverage dispute turns Jetson and Robot’s but-for argument on its head, concluding that but for Jetson and Robot’s uninsured capacity as officers of OmniGlobal, there would have been no basis for the allegations that they breached their duties to Spacely. In other words, it was because Jetson and Robot were acting in an uninsured capacity on behalf of OmniGlobal that they caused

injury to Spacely. As such, Jetson and Robot find themselves uninsured under Spacely’s D&O coverage for the trustee’s claims alleging that they breached their duty of loyalty while serving as directors of Spacely.

Out of an abundance of caution, Jetson and Robot also seek coverage under the relevant OmniGlobal D&O policy. For the purposes of the OmniGlobal D&O coverage, Jetson and Robot argue that the trustee alleges that they made misleading statements or misstatements, or otherwise acted wrongfully, while acting in their capacities as officers of OmniGlobal. As characterized by Jetson and Robot, the trustee alleges that they wrongly favored their roles as officers of OmniGlobal, to the detriment of Spacely.

OmniGlobal’s D&O insurer denies coverage, taking the position that the trustee’s claims do not make a claim for a wrongful act under the terms of OmniGlobal’s D&O policy. In support of this position, the insurer relies on the D&O policy’s definition of a wrongful act as:

... any error, misstatement, misleading statement, omission or act, neglect, or breach of duty, actually or allegedly committed or attempted by such Insured Person by reason of their capacity as an Insured Person.

In the D&O insurer’s view, the trustee does not allege that Jetson and Robot committed any wrongful acts as officers of OmniGlobal. As depicted by OmniGlobal’s D&O insurer, the trustee does not allege that Jetson and Robot committed any errors or misstatements while acting as officers of OmniGlobal or breached any duties that they owed to OmniGlobal. The duties that Jetson and Robot owed to Spacely arose solely because they were directors of Spacely. Indeed, as alleged by the trustee, Jetson and Robot faithfully served the interests of OmniGlobal, but those interests conflicted with the duties they owed to Spacely. But Spacely is not an insured entity under OmniGlobal’s D&O policy.

Thus, by virtue of their dual capacity, Jetson and Robot find themselves

uninsured for the trustee’s claims under both Spacely’s and OmniGlobal’s D&O coverage. This scenario illustrates the obstacles to D&O coverage that can arise for individuals when they are asked to serve on a board of directors as designees or representatives of an investor or outside interest. An uninsured capacity exclusion may be construed to exclude coverage for claims brought against owner-designee directors on the basis of an alleged conflict of interest between their board service and their status as a representative of an investor or owner. Compounding the hazards for individuals serving in a dual capacity, they may find themselves falling into a coverage gap—excluded under an uninsured capacity exclusion under a portfolio company’s D&O insurance but unable to satisfy the definition of an insured wrongful act (or be subject to a corresponding uninsured capacity exclusion) under the D&O insurance of the entity that designated them for board service.

### What Is an Insured to Do?

Certainly, there is ample basis for an insured to dispute the coverage determinations discussed earlier. Although some courts have construed the uninsured capacity exclusion to apply to dual-capacity directors, the proposition that the exclusion applies whenever individual insureds act in a dual capacity and not solely as directors of an insured entity is premised on an extremely broad interpretation of the exclusion. It is not a foregone conclusion that a different court dealing with similar facts would impose a requirement that the alleged wrongful conduct was committed “solely” in an insured capacity. Nor is it a foregone conclusion that a different court would be convinced by the argument that but for their uninsured capacity, no claim could have been brought against directors in the position of Jetson and Robot.

But the ability to contest a coverage determination and the possibility of convincing a court of a more favorable application of a disputed insurance policy term provides little immediate comfort to an individual insured who

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# Warnings for Boards When Governing Brilliant Jerks

By Dr. Marc J. Epstein and Rob Shelton

*Dr. Marc J. Epstein, PhD, and Rob Shelton are authors of two books, most recently The Brilliant Jerk Conundrum: Thriving with and Governing a Dominant Visionary. Dr. Epstein is a former distinguished research professor of management at the Jones Graduate School of Business at Rice University in Houston, Texas, as well as a professor at Stanford Business School, Harvard Business School, and INSEAD. Shelton is a globally recognized Silicon Valley-based consultant, author, and speaker on entrepreneurial excellence, breakthrough innovation, and scaling to drive rapid growth. This article is about how betting on a dominant visionary is one of the biggest business gambles an investor, employee, or board member will ever make and how those on corporate boards need to know the difference.*

**B**etting on a dominant visionary is one of the biggest business gambles an investor, employee, or board member will ever make. If things go right, a visionary's wizardry changes entire industries and generates massive value for shareholders, employees, and society. But if things go wrong, millions (possibly billions) of dollars are lost—and sometimes people go to jail. The challenge is knowing the difference between an inspired visionary such as Steve Jobs, a firebrand entrepreneur like Elon Musk, and an idealistic time bomb like Elizabeth Holmes, and if, when, and how to intervene. Those in senior leadership and corporate board positions need to know the difference.

Steve Jobs has been referred to as a "brilliant jerk." And one exasperated Uber board member proposed adding "No brilliant jerks allowed" to Uber's list of cultural values. In addition to our rich personal experience in innovation and corporate governance and extensive backgrounds in researching, speaking, teaching, and advising in corporate governance and innovation, we interviewed leading board members and executives to write our new book, *The Brilliant Jerk Conundrum: Thriving with and Governing a Dominant Visionary*.

Core board roles and responsibilities include senior-level staffing and evaluation, strategic oversight, and accountability. For companies led by dominant visionaries, additional board practices are necessary for success.

These CEOs often have tight organizational and board control through dual-class ownership, a strong and charismatic personality, and a control of information flow. They are rule-breakers and creative geniuses and they are often overconfident.

Corporate governance principles and practices apply to all organizations. But we have found that the application of the core corporate governance principles and practices must be enhanced when there is a particularly strong leader.

- Recognize that dominant visionaries really are different. Dominant visionaries show up in new Silicon Valley start-ups and also in old established companies. They can be the CEO and founder, or they can be other executives who are not afraid to exercise their power. No matter what their origin or position, they are charismatic leaders with a disruptive vision. And their magnetic personality and story attract investors, customers, and employees. They are all confident. But sometimes they have hubris and are overconfident.
- Watch for how they lead with executive omniscience, including asymmetric power (including dual-class share ownership), cult of personality, and opaqueness (control of information flow). The presence of any of these three

elements does not guarantee there will be a problem. But when these are present, it is a clear signal there could be a problem.

## Red Flags

Here are some of the CEO red flags we heard from members of the boards and others involved in governance:

- Blinding dazzle—slick presentations and strict control of the agenda
- Secrecy—access to information is blocked
- Overconfidence—alarming disregard for alternate opinions and advice
- Insensitivity—thoughtlessness and total lack of respect for employees' feelings
- Executive exodus—senior executives leaving in droves or after a short stay

So, what should board members do?

1. Hold executive sessions that get to the heart of board involvement.
2. Fill in managerial gaps in the CEO's repertoire of skills.
3. Add structure and board resources to increase collaboration.
4. Build board processes to monitor the company culture the CEO is creating.
5. Make early discussion of alternatives standard practice.
6. Build a process to handle disagreements and flare-ups before they happen.
7. Establish one-on-one channels between the board and CEO.

## There Is a Lot at Stake Here

Two important lessons emerged from our discussions with board members, extensive research, and experience dealing with the conundrums of multiple brilliant jerks:

1. The presence of an authoritarian trailblazer requires special handling. The traditional corporate governance principles are needed but must be supplemented with additional practices. With an inspired and highly controlling powerhouse at the helm, boards, investors, and employees need to be ready for a different journey.

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## Uncertainty

(continued from page 3)

Although no one can predict the future, organizations can reduce uncertainty through rigorous analysis; boards of directors should demand that.<sup>19</sup> "In the end, the most effective organizations have three big things in common: they take [the] political risk seriously, they approach it systematically and with humility, and they lead from the top," Rice and Zegart wrote.<sup>20</sup>

### 5. Leverage board structure to enable deep dives into emergent topics that require more time and deliberation

Board meetings are already usually full of operational issues that need attention, prohibiting any meaningful discussion of predicting risks on the horizon or innovative breakthroughs to strengthen the long-term viability of the organizations. As such, the board should leverage its committees to enable deep dives into emergent topics that require more time and deliberation.

Adopting this best practice could be especially useful in the early stages of implementing some of the other best practices noted in this article (e.g., a committee dedicated to increasing transparency to support positive organizational culture and health). Furthermore, these committees could be appropriately resourced with relevant senior managers, and, therefore, strengthening the relationship between the respective directors and senior managers while increasing their shared level of understanding of business operations and board mandate.

## Conclusion

The board of directors owes it to its organization to execute its fiduciary duties and duty of care most responsibly. With the rise in instability and uncertainty, the board of directors must adopt best practices that can set it up to position the organization for maximum success in the long term while mitigating risks that may hurt the long-term viability of the organization.

The aforementioned best practices can help the board of directors effectively accomplish that mandate. □

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## WHEN WE SAY...

**B**oard Leadership's mission is "to discover, explain and discuss innovative approaches to board governance with the goal of helping organizations achieve effective, meaningful and successful leadership to fulfill their missions."

Board Leadership aims to fulfill this mission by engaging its readers in a lively and illuminating inquiry into how board governance can be made more effective. This inquiry is based on three key assumptions:

- Boards exist to lead organizations, not merely monitor them.
- Effective board governance is not about either systems, structures, processes, theories, practices, culture, or behaviors—it is about all of them.
- Significant improvements are likely to come only through challenging the status quo and trying out new ideas in theory and in practice.

Uniquely among regular publications on board governance, *Board Leadership* primarily focuses on the job of board leadership as a whole, rather than on individual elements of practice within the overall job.

Over time, *Board Leadership* will provide a repository of different approaches to governance created through its regular "One Way to Govern" feature.

Here's what a few of the key terms we use mean to us:

- **Innovative:** Creating significant positive change
- **Approaches:** Principles, theories, ideas, methodologies and practices.
- **Board governance:** The job of governing whole organizations. □



## Uncertainty

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## Insurance

(continued from page 5)

is being sued and reasonably expects that D&O insurance coverage will be available to cover defense costs, and potentially the costs of settlement or damages.

The hazards posed by the potentially broad application of an uninsured capacity exclusion or the insured capacity conditions that are implicit in the definition of a term such as "wrongful act" underscore the importance of treating a D&O insurance policy as a significant commercial contract and not simply as a commodity. The purchase of D&O insurance should not be taken for granted, should not be treated as a purely ministerial task that is delegated by management, and should not be determined solely by price. Seemingly minor differences in the wording of insurance policy terms can have significant consequences. Not all D&O insurance policy forms contain an uninsured capacity exclusion, and not every version of that exclusion is worded as broadly as the example of the exclusion discussed earlier. At a minimum, it

is imperative to take care to review the terms of D&O policies for exclusions that have the potential to frustrate the reasonable expectations of insureds. Careful scrutiny of an insurance contract during the placement process, with an eye to identifying problematic terms and with an understanding of how these terms are applied by insurers and interpreted by courts, can provide significant value. In the case of an uninsured capacity exclusion, it may be possible to identify and obtain more favorable or suitable policy terms that ultimately may make the difference between being covered and paying for defense and settlement costs out of pocket. It is important for the insured and its advisors to be attentive to and aware of the consequences and implications of policy terms before being caught by surprise by an insurer's denial of coverage based on an expansive reading of an unfavorable exclusion or definition. □

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## Brilliant

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2. The best actions to govern, thrive, and survive depend on the type of visionary you are dealing with. Dominant visionaries are not all the same. With some visionaries, there is a risk of getting in the way and curtailing the value they could create. With other types, complacency is a huge mistake. Left unsupervised, their behavior could destroy the company.

The challenge for board members, investors, and employees alike is how to deal with these dominant visionaries who are often brilliant, unpredictable, difficult to work with, and sometimes downright mean. But it is also how to support the creative talent of brilliant new leaders while still maintaining the necessary structure, systems, and guidance required for effective corporate governance. This is the conundrum. □

## BOARD LEADERSHIP

INNOVATIVE APPROACHES TO GOVERNANCE

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