TUCSON SUPPLEMENTAL RETIREMENT SYSTEM BOARD OF TRUSTEES
Notice of Regular Meeting/Agenda

Pursuant to A.R.S. § 38-431.02, notice is hereby given to the members of the Tucson Supplemental Retirement System (TSRS) Board of Trustees and to the general public that the TSRS Board will hold the following meeting virtually (remotely) using Microsoft Teams on:

Thursday, July 23rd, 2020 at 8:30 A.M.

MEETING NOTE: Due to the impacts of the COVID-19 pandemic, which have prompted declarations of a public health emergency at the local, state and federal levels, this meeting will be conducted using measures to protect public health. This meeting will be held remotely through technological means, as permitted under Arizona law. The meeting will not include any items that will involve time set aside for public comments. The meeting will be recorded and posted to City Boards, Committees, and Commissions website for public review.

IN-PERSON ATTENDANCE BY MEMBERS OF THE PUBLIC WILL BE PROHIBITED.

PLEASE BE AWARE THAT THESE MEASURES ARE IN PLACE TO LIMIT THE NEED FOR MEMBERS OF THE PUBLIC TO PARTICIPATE IN LARGE PUBLIC GATHERINGS, WHILE ENSURING THAT THE DISCUSSIONS, DELIBERATIONS AND ACTIONS OF THE TSRS BOARD ARE TRANSPARENT AND CONDUCTED OPENLY.

For those individuals new to Microsoft Teams, please download the application and be ready when the meeting starts using the following information:

Join Microsoft Teams Meeting

+1 213-293-2303 United States, Los Angeles (Toll)

Conference ID: 423 460 538#

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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A) Call to Order

B) Introductions

C) Consent Agenda
1. Approval of Regular Board meeting minutes from February 27, 2020
2. Approval of Special Board meeting minutes from March 9, 2020
3. June 2020 Budget to Actual Report
4. Approval of March 2020 Ratification Report
5. Approval of April 2020 Ratification Report
6. Approval of May 2020 Ratification Report
7. Approval of June 2020 Ratification Report
8. Approval of July 2020 Ratification Report

Note 1: These materials will be distributed by close of business on Tuesday, July 21

D) Administrative Discussions
   1. TSRS Rate Adoption Update
   2. Payroll Card Update
   3. TSRS Elected Members Term of Office Update
   4. Labor Split for Administrative Services Officer/HR Director
   5. Retreat Update
   6. Update on IFM Global Infrastructure

E) Investment Activity Report
   1. TSRS Quarterly Investment Review for 03/31/2020 – Callan LLC
   2. TSRS Monthly Investment Review for June 2020 – Callan LLC [Note 1]

F) For the Board's Consideration
   1. City Manager Concerned About CalPERS Investment Strategy
   2. How the Experts Are Measuring the Economic Recovery
   3. Public Pension Plans Likely to See Flat Returns for Fiscal Year

G) Future Agenda Items

H) Adjournment

Note 1: These materials will be distributed by close of business on Tuesday, July 21

TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
BOARD OF TRUSTEES
MEETING MINUTES

DATE: **Thursday, February 27, 2020**
TIME: **8:30 a.m.**
PLACE: **Human Resource Conference Room, 3rd floor East**
City Hall, 255 West Alameda
Tucson, Arizona 85701

Members Present: Mark Rubin, Chairman
Kevin Larson, City Manager Appointee (Arrived at 8:47am)
Joyce Garland, Finance Director
James Wysocki, Elected Retiree Representative
Jorge Hernández, Elected Representative
Michael Coffey, Elected Representative (Arrived at 8:53am)

Staff Present Art Cuaron, Pension & Benefits Administrator
Tammy Perry, Pension Assistant
Tina Gamez, Administrative Assistant
Dave Deibel, Chief Deputy City Attorney

Guests Present Catherine Langford, TSRS Legal Counsel (via Telephone at 11:09am)
David Altshuler, IFM Investors
Paul Erlendson, Callan Associates
Gordon Weightman, Callan Associates
Shawn Parris, JP Morgan (Arrived 10:15am)
Nicholas Moller, JP Morgan (Arrived 10:15am)
Michael Barela, Voya Investments

Absent/Excused: Ana Urquijo, HR Director

Chairman Mark Rubin called the meeting to order at 8:31am.

A. **Consent Agenda (00:00-00:23)**
1. Retirement Ratifications for February 2020
2. January 2020 TSRS Budget vs. Actual Expenses
3. January 2020 Board Meeting Minutes
4. TSRS January 2020 Investment Measurement Services Monthly Review

A motion to approve consent agenda was made by James Wysocki, 2nd by Jorge Hernandez, passes unanimously (Ana Urquijo, Michael Coffey and Kevin Larson absent/excused).

B. **Call to Audience (00:23-12:58)**

None heard

C. **Investment Activity Report**
1. J.P.Morgan Asset Management Infrastructure Investments Fund Presentation **(01:06:27-02:20:29)**

Shawn Parris and Nicholas Moller presented a brief overview of J.P. Morgan Asset Management's Infrastructure Investments Fund (IIF).

Shawn shared their commitment to Arizona. Investing in skills like non-profits in support of Workplace Readiness. Also, their global workforce readiness initiatives are working with employers to help develop the talent pipelines they need to compete and providing adults and young people with critical support, education and training to build in-demand skills that set them on a stable career path. As well as, building thriving communities and providing grants to several foundations throughout the state.

Nicholas says that when they think of core infrastructure they think of Diversification, Inflation Protection and Yield (DIY) as well as attractive risk-adjusted returns through market cycles. Regulated assets or long term contracted assets. They think the asset class should focus on essential services that operate on a monopolistic (lower risk) basis either by regulatory structure or long-term contract, which drives visibility into cash yield. Paul with Callan asks him to discuss the transformation of JP Morgan and what that means for this fund. Nicholas says, their philosophy is long-term ownership and accountability. ESG integrated across all levels of governance and into investment and asset management processes.

IIF has demonstrated robust returns with less volatility than other asset classes since inception. Net local currency returns represent significant premium to CPI +6.1% and risk-free rate +6.8% over 5 years. The portfolio is currently being held at a 10.1% weighted average equity discount rate which reflects the long-term business plans of the underlying portfolio companies.

This item was taken out of order and discussed after item C2.

Presentation given, discussion held. No formal action taken.

2. IFM Investors Global Infrastructure Fund Presentation **(12:58-01:06:27)**

David Altshuler presented a brief overview of IFM Investors Firm and their IFM Global Infrastructure Fund.

IFM is 100% owned by Australian workers, 27 superannuation (pension) fund shareholders, no bank or private equity owner. They have 48 funds under management, 2 open-end infrastructure equity funds, they have 24 years investing in infrastructure, more than 90 infrastructure investment professionals, 32 portfolio companies and 65 board seats. They manage infrastructure investments for long-term institutional investors globally, with impacts on their investors' 30 million + members and retirees.

They are only long-term investors. They were the first to come up with this open-ended asset structure. Paul with Callan asks him if there are different types of assets that go into an open-ended fund? David said IFM looks for assets with a few different characteristics. They have to provide an essential service to communities, they cannot have a discretionary component. They need to see a path where it can improve, grow and scale the business to deliver a 10% net return.

Chairman Rubin asks how the 9.3%, net return since inception, gets distributed. David said they have bi-annual distributions. We can elect each year to take those distributions as cash or to reinvest it. About 80% of their investors reinvest.

They have a large team that is very stable and strong. 94 professionals; 9 years average tenure at IFM; 21 years average industry experience; 20+ languages spoken and 200+ support staff across legal, tax and ops.

This item was taken out of order and discussed before item C1.

Presentation given, discussion held.

A Motion to invest 100% of TSRS funds with IFM Investors Global Infrastructure Fund was made by James Wysocki, 2nd by Joyce Garland, passes 5 to 1 (Michael Coffey opposed) (Ana Urquijo absent/excused).

3. TSRS Quarterly Investment Review for 12/31/2019 – Callan **(02:20:29-02:38:44)**

Gordie briefly discusses our target asset allocation vs our actual asset allocation, as of December 31, 2019.

He starts with the current effect the coronavirus is causing. We are long-term investors but we still like to look at the short-term effects. The largest impact is what is happening in the supply chain with things slowing down and effecting inventories. Typically, we'll see a pull back in growth then a rebound. Not a full rebound however, because there are some services that can't be replaced. When people aren't going to the movies or staying in hotels that will be revenue that will be lost. The market has reacted pretty severely. It's a sign of the caution and fear that's in the market at this time. As far as our investment portfolio goes they think this is short term and advise we stick to our current plan.

Regarding the investment review, 2019 was a great year considering we were bouncing back from a tough 4th quarter of 2018. US equities had a tremendous year. International equity was below that but still very strong. What helped was interest rates dropping 1%. Paul says 2019 was a great year for us and other public funds. The average public pension fund was up over 17%. TSRS was up 20.5%. Our active managers have done exceptionally well.

Presentation given, discussion held. No formal action taken.

D. **Administrative Discussions**

1. Investment Policy Statement Review **(02:38:44-02:45:19)**

Art discusses the re-write of the investment policy statement that he, Gordie and Cassie worked on. No action from the board is necessary at this time. He's looking for any comments or feedback they'd like to include. Gordie explains that they reformatted it, removed some sections but kept the historic language. They did not change any roles or responsibilities. They tried to stay true to the original intent of the policy just cleaning it up to make it clearer and more concise, updating terms, etc. Continually having the policy based on more judgement so the board can exercise their judgement rather than rules-based methodology. Cassie said this final version from her legal perspective is a more appropriate investment policy statement that is sustainable.

Presentation given, discussion held. No formal action taken.

Direction was provided for staff to email the board members a copy of the redlined draft.

2. Mayor and Council Presentation **(02:45:19-02:47:58)**

On March 3, 2020, Joyce and Art will go before the Mayor and Council. Art will provide a summary on what TSRS is, for the new council members. Providing them guidance on how the plan works, funding etc. He will then ask them to take action on the contribution rate adoption and the term limits the discussed last year. Anyone is invited to attend. James mentions that there were also changes to the mortality table so they may want to mention that as well. Joyce agrees.

Presentation given, discussion held. No formal action taken.

3. Business Services Director Recruitment Update **(02:47:58-02:49:10)**

The Business Services Director Recruitment will be held March 10th over the span of 2 days. This position will have a seat on the TSRS Board so all board members are invited to sit in on the recruitment.

Presentation given, discussion held. No formal action taken.

4. Internal Audit Update **(02:49:10-02:51:01)**

Art briefly discusses the internal audit update. He has reached out to ERP and they are aware of our request and have recently added some staff. We are not at the top of their priority list so we are in a holding pattern right now. The other item that we're working at is the enhanced banking reconciliations. Business Services and Accounting Ops have had some significant turnover in staff. Plus, their priorities have been with the CAFR. So, we have not been able to undertake portion either but we have reached out and they are in the process of hiring a finance manager to back fill some of the positions that became vacant and CAFR should be done in March. So, we will reach back out when they get settled. The week of March 9th we have a meeting to have internal audit come back and revisit things we've done. Based on their follow up he will discuss with the board accordingly.

Presentation given, discussion held. No formal action taken.

E. **Articles & Readings for Board Member Education / Discussion**
1. Use Better Assumptions to Pay for Pensions
2. Can Stocks Keep Soaring as the U.S. Dollar Surges

F. **Future Agenda Items (02:51:01-02:53:25)**

The TSRS office is in receipt of a disability application and we are going to ask the Board to have a special meeting once we have the packet and Dr. Krasner does his evaluation Art will be sending out a special meeting notice and we will need a quorum at that meeting. It will be within the next 7-10 business days if not sooner. Cassie notes that the Chairman must request the special meeting or we need a motion by 3 Board members to call a special meeting.

Chairman Rubin requests that we schedule this special board meeting to discuss the disability application and that we will need a quorum.

G. **Adjournment**

Adjourned at 11:26am

_____	_____	_____	_____
Mark Rubin	Date	Art Cuaron	Date
Chairman of the Board		Pension & Benefits Administrator	

AUDIO RECORDING ON FILE WITH THE CITY CLERK'S OFFICE

TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
BOARD OF TRUSTEES
Meeting Minutes

DATE:	**Monday, March 9th, 2020**
TIME:	**10:30 a.m.**
PLACE:	**Business Services Conference Room, 4th floor West** **City Hall, 255 West Alameda** **Tucson, Arizona 85701**

Members Present:	Mark Rubin, Chairman James Wysocki, Elected Retiree Representative Jorge Hernández, Elected Representative Michael Coffey, Elected Representative (Arrived at 8:53am)
Staff Present	Art Cuaron, Pension & Benefits Administrator Tammy Perry, Pension Assistant Tina Gamez, Administrative Assistant Dawn Davis, Lead Pension Analyst
Guests Present	Toni Bullington
Absent/Excused:	Joyce Garland, Finance Director Ana Urquijo, HR Director Kevin Larson, City Manager Appointee

Chairman Mark Rubin called the meeting to order at 10:30 am.

A. **Disability Application (00:00-03:48)**
   1. Jonathan Todd Bullington

A motion was made by Jim Wysocki to approve Jonathan Todd Bullington Disability Application, 2nd Jorge Hernandez. The Disability Application of Mr. Bullington was approved unanimously (Joyce Garland, Ana Urquijo and Kevin Larson absent/excused).

Jim Wysocki agrees that both the City doctor and Mr. Bullington doctor are conclusive. His medical evidence does support his application.

Art stated that preliminary benefit for Mr. Bullington is going to be $2,290.90 per month, that is the amount the Board will be ratifying and again at the end of the month with the regular ratification report that list all the other retirees. If these numbers change by ten dollars, the Board will be notified.

A motion to approve the preliminary estimate was approved by Jorge Hernandez, 2nd by Jim Wysocki, passes unanimously (Joyce Garland, Ana Urquijo and Kevin Larson absent/excused).

B. **Adjournment**
   Adjourned 10:34 am.

_____	_____	_____	_____
Mark Rubin	Date	Art Cuaron	Date
Chairman of the Board		Pension & Benefits Administrator	

AUDIO RECORDING ON FILE WITH THE CITY CLERK'S OFFICE

Report ID : FIN-COT-BA-0001
Run Date : 07/17/2020
Run Time : 01:08 PM

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Parameter Page

Parameters and Prompts

Fiscal Year	2020
Accounting Period	12
Fund	072
Department	*
Unit	*
Object Code	*

Report Description

The Expenses vs. Actual Report shows expenditures and encumbrances for the selected accounting period and for the selected fiscal year compared against the current expense budget and the unobligated budget balance. The report is sectioned by Department, Fund and Unit and summarized by Object.

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9001 - Normal Retiree Benefit

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
105 - PAYROLL PENSION	0.00	5,838,025.36	5,838,025.36	0.00	69,469,360.77	69,469,360.77	71,300,000	1,830,639.23	2.57 %
Total for 100 - PAYROLL CHGS	**0.00**	**5,838,025.36**	**5,838,025.36**	**0.00**	**69,469,360.77**	**69,469,360.77**	**71,300,000**	**1,830,639.23**	**2.57 %**
Total for Unit 9001 - Normal Retiree Benefit	**0.00**	**5,838,025.36**	**5,838,025.36**	**0.00**	**69,469,360.77**	**69,469,360.77**	**71,300,000**	**1,830,639.23**	**2.57 %**

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City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM
Fund 072 - TUCSON SUPP RETIREMENT SYSTEM
Unit 9003 - Normal Retiree Beneficiary Benefit

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
105 - PAYROLL PENSION	0.00	404,380.51	404,380.51	0.00	4,642,026.59	4,642,026.59	4,600,000	(42,026.59)	-0.91 %
Total for 100 - PAYROLL CHGS	**0.00**	**404,380.51**	**404,380.51**	**0.00**	**4,642,026.59**	**4,642,026.59**	**4,600,000**	**(42,026.59)**	**-0.91 %**
Total for Unit 9003 - Normal Retiree Beneficiary Benefit	**0.00**	**404,380.51**	**404,380.51**	**0.00**	**4,642,026.59**	**4,642,026.59**	**4,600,000**	**(42,026.59)**	**-0.91 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9020 - Disability Retiree Benefit

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
105 - PAYROLL PENSION	0.00	159,909.00	159,909.00	0.00	1,933,581.06	1,933,581.06	2,100,000	166,418.94	7.92 %
Total for 100 - PAYROLL CHGS	**0.00**	**159,909.00**	**159,909.00**	**0.00**	**1,933,581.06**	**1,933,581.06**	**2,100,000**	**166,418.94**	**7.92 %**
Total for Unit 9020 - Disability Retiree Benefit	**0.00**	**159,909.00**	**159,909.00**	**0.00**	**1,933,581.06**	**1,933,581.06**	**2,100,000**	**166,418.94**	**7.92 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9021 - Pension Fund Administration

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
101 - SALARIES & WAGES FOR PERMANENT EMPLOYEES	0.00	25,716.48	25,716.48	0.00	262,920.71	262,920.71	300,770	37,849.29	12.58 %
108 - DOWNTOWN ALLOWANCE & DISCOUNTED TRANSIT PASSES	0.00	109.62	109.62	0.00	1,168.01	1,168.01	2,700	1,531.99	56.74 %
113 - TSRS PENSION CONTRIBUTION	0.00	6,992.18	6,992.18	0.00	72,047.26	72,047.26	82,720	10,672.74	12.90 %
114 - FICA (SOCIAL SECURITY)	0.00	1,762.98	1,762.98	0.00	19,258.45	19,258.45	21,680	2,421.55	11.17 %
115 - WORKERS COMPENSATION INSURANCE	0.00	53.68	53.68	0.00	1,264.32	1,264.32	6,550	5,285.68	80.70 %
116 - GROUP PLAN INSURANCE	0.00	3,970.23	3,970.23	0.00	34,912.66	34,912.66	34,840	(72.66)	-0.21 %
125 - ONE-TIME DISTRIBUTION	0.00	0.00	0.00	0.00	3,750.00	3,750.00	0	(3,750.00)	0.00%
196 - INTERDEPARTMENTAL LABOR	0.00	0.00	0.00	0.00	0.00	0.00	96,000	96,000.00	100.00 %
Total for 100 - PAYROLL CHGS	**0.00**	**38,605.17**	**38,605.17**	**0.00**	**395,321.41**	**395,321.41**	**545,260**	**149,938.59**	**27.50 %**
202 - TRAVEL	0.00	0.00	0.00	0.00	9,170.36	9,170.36	18,000	8,829.64	49.05 %
204 - TRAINING	0.00	400.00	400.00	0.00	6,015.00	6,015.00	14,000	7,985.00	57.04 %
205 - PARKING SERVICE	0.00	0.00	0.00	0.00	421.00	421.00	500	79.00	15.80 %
212 - CONSULTANTS AND SURVEYS	0.00	0.00	0.00	0.00	231,050.44	231,050.44	436,000	204,949.56	47.01 %
213 - LEGAL	0.00	0.00	0.00	0.00	25,935.00	25,935.00	50,000	24,065.00	48.13 %
215 - AUDITING AND BANK SERVICES	0.00	0.00	0.00	0.00	19,800.00	19,800.00	380,000	360,200.00	94.79 %
219 - MISCELLANEOUS PROFESSIONAL SERVICES	0.00	10.00	10.00	0.00	7,380.00	7,380.00	884,000	876,620.00	99.17 %
221 - INSUR-PUBLIC LIABILITY	0.00	78.05	78.05	0.00	34,003.65	34,003.65	2,970	(31,033.65)	#######
228 - HAZARDOUS WASTE INSURANCE	0.00	4.69	4.69	0.00	619.98	619.98	660	40.02	6.06 %

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM
Fund 072 - TUCSON SUPP RETIREMENT SYSTEM
Unit 9021 - Pension Fund Administration

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
232 - R&M MACHINERY & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	1,200	1,200.00	100.00 %
245 - TELEPHONE	0.00	0.00	0.00	0.00	0.00	0.00	1,200	1,200.00	100.00 %
260 - COMPUTER SOFTWARE MAINTENANCE AGREEMENTS	0.00	0.00	0.00	681.26	70,935.21	71,616.47	51,000	(20,616.47)	-40.42 %
263 - PUBLIC RELATIONS	0.00	0.00	0.00	0.00	0.00	0.00	2,560	2,560.00	100.00 %
264 - INVESTMENT MGT FEES & COMMISSIONS	0.00	0.00	0.00	0.00	1,629,522.79	1,629,522.79	3,750,000	2,120,477.21	56.55 %
265 - SECURITIES LENDING (STOCK FEES)	0.00	0.00	0.00	0.00	0.00	0.00	60,000	60,000.00	100.00 %
277 - CARRIED INTEREST EXPENSE	0.00	0.00	0.00	0.00	0.00	0.00	4,500,000	4,500,000.00	100.00 %
284 - MEMBERSHIPS AND SUBSCRIPTIONS	0.00	261.00	261.00	0.00	911.00	911.00	1,500	589.00	39.27 %
Total for 200 - PROF CHARGES	**0.00**	**753.74**	**753.74**	**681.26**	**2,035,764.43**	**2,036,445.69**	**10,153,590**	**8,117,144.31**	**79.94 %**
311 - OFFICE SUPPLIES	0.00	0.00	0.00	0.00	794.48	794.48	8,500	7,705.52	90.65 %
312 - PRINTING,PHOTOGRAPHY,REPRODUCTION	0.00	812.15	812.15	0.00	6,824.79	6,824.79	9,000	2,175.21	24.17 %
314 - POSTAGE	0.00	30.47	30.47	0.00	8,033.05	8,033.05	12,000	3,966.95	33.06 %
317 - COMPUTER SOFTWARE < $100,000	0.00	73.10	73.10	0.00	360.19	360.19	500	139.81	27.96 %
341 - BOOK, PERIODICALS AND RECORDS	0.00	0.00	0.00	0.00	0.00	0.00	250	250.00	100.00 %
345 - FURNISHINGS, EQUIPMENT AND TOOLS < $5,000	0.00	0.00	0.00	0.00	0.00	0.00	1,000	1,000.00	100.00 %
346 - COMPUTER EQUIPMENT < $5,000	0.00	0.00	0.00	0.00	642.33	642.33	1,000	357.67	35.77 %
359 - NON OFFICE SUPPLIES	0.00	0.00	0.00	0.00	2,048.97	2,048.97	0	(2,048.97)	0.00%
Total for 300 - SUPPLIES	**0.00**	**915.72**	**915.72**	**0.00**	**18,703.81**	**18,703.81**	**32,250**	**13,546.19**	**42.00 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9021 - Pension Fund Administration

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
Total for Unit 9021 - Pension Fund Administration	**0.00**	**40,274.63**	**40,274.63**	**681.26**	**2,449,789.65**	**2,450,470.91**	**10,731,100**	**8,280,629.09**	**77.16 %**

Report ID : FIN-COT-BA-0001
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City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM
Fund 072 - TUCSON SUPP RETIREMENT SYSTEM
Unit 9022 - Disability Retiree Beneficiary Benefit

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
105 - PAYROLL PENSION	0.00	35,641.80	35,641.80	0.00	426,489.69	426,489.69	370,000	(56,489.69)	-15.27 %
Total for 100 - PAYROLL CHGS	**0.00**	**35,641.80**	**35,641.80**	**0.00**	**426,489.69**	**426,489.69**	**370,000**	**(56,489.69)**	**-15.27 %**
Total for Unit 9022 - Disability Retiree Beneficiary Bene	**0.00**	**35,641.80**	**35,641.80**	**0.00**	**426,489.69**	**426,489.69**	**370,000**	**(56,489.69)**	**-15.27 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9023 - ACTIVE MEMBER REFUNDS-CONTRBS

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
186 - TSRS REFUNDS	0.00	67,054.88	67,054.88	0.00	1,329,241.15	1,329,241.15	2,736,000	1,406,758.85	51.42 %
Total for 100 - PAYROLL CHGS	**0.00**	**67,054.88**	**67,054.88**	**0.00**	**1,329,241.15**	**1,329,241.15**	**2,736,000**	**1,406,758.85**	**51.42 %**
Total for Unit 9023 - ACTIVE MEMBER REFUNDS-CON	**0.00**	**67,054.88**	**67,054.88**	**0.00**	**1,329,241.15**	**1,329,241.15**	**2,736,000**	**1,406,758.85**	**51.42 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9025 - INTEREST ON REFUNDS

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
186 - TSRS REFUNDS	0.00	150.12	150.12	0.00	11,036.35	11,036.35	50,000	38,963.65	77.93 %
Total for 100 - PAYROLL CHGS	**0.00**	**150.12**	**150.12**	**0.00**	**11,036.35**	**11,036.35**	**50,000**	**38,963.65**	**77.93 %**
Total for Unit 9025 - INTEREST ON REFUNDS	**0.00**	**150.12**	**150.12**	**0.00**	**11,036.35**	**11,036.35**	**50,000**	**38,963.65**	**77.93 %**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9026 - DWE SYSTEM BENEFIT PAYMENT

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
186 - TSRS REFUNDS	0.00	82,418.10	82,418.10	0.00	447,941.58	447,941.58	200,000	(247,941.58)	#######
Total for 100 - PAYROLL CHGS	**0.00**	**82,418.10**	**82,418.10**	**0.00**	**447,941.58**	**447,941.58**	**200,000**	**(247,941.58)**	**#######**
Total for Unit 9026 - DWE SYSTEM BENEFIT PAYMENT	**0.00**	**82,418.10**	**82,418.10**	**0.00**	**447,941.58**	**447,941.58**	**200,000**	**(247,941.58)**	**#######**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9027 - CREDITABLE SERVICE TRANS(ASRS)

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
186 - TSRS REFUNDS	0.00	0.00	0.00	0.00	38,999.90	38,999.90	0	(38,999.90)	0.00%
Total for 100 - PAYROLL CHGS	**0.00**	**0.00**	**0.00**	**0.00**	**38,999.90**	**38,999.90**	**0**	**(38,999.90)**	**0.00%**
Total for Unit 9027 - CREDITABLE SERVICE TRANS(AS	**0.00**	**0.00**	**0.00**	**0.00**	**38,999.90**	**38,999.90**	**0**	**(38,999.90)**	**0.00%**

City of Tucson
Budget vs Actual Expenses
Through: June, 2020
For Fiscal Year 2020

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9028 - EXCESS SER TRS/CTY CONT(ASRS)

Object	Current Period Encumbrance	Current Period Expenditure	Current Total Obligations	YTD Encumbrance	YTD Expenditure	YTD Total Obligations	Current Budgeted Amount	Unobligated Budget Balance	Percent
186 - TSRS REFUNDS	0.00	0.00	0.00	0.00	0.08	0.08	0	(0.08)	0.00%
Total for 100 - PAYROLL CHGS	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0**	**(0.08)**	**0.00%**
Total for Unit 9028 - EXCESS SER TRS/CTY CONT(ASR	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0**	**(0.08)**	**0.00%**
Total for Fund 072 - TUCSON SUPP RETIREMENT SYS	**0.00**	**6,627,854.40**	**6,627,854.40**	**681.26**	**80,748,466.82**	**80,749,148.08**	**92,087,100**	**11,337,951.92**	**12.31 %**
Total for Department 900 - TUCSON SUPPL RETIREME	**0.00**	**6,627,854.40**	**6,627,854.40**	**681.26**	**80,748,466.82**	**80,749,148.08**	**92,087,100**	**11,337,951.92**	**12.31 %**
Grand Totals	**0.00**	**6,627,854.40**	**6,627,854.40**	**681.26**	**80,748,466.82**	**80,749,148.08**	**92,087,100**	**11,337,951.92**	**12.31 %**

Ratification Report for TSRS Board of Trustees

Application Dates: 02/11/20 - 03/10/20 | **Report Date: March 2020**

Name of Applicant	Type	Retirement Date	Age	Credited Service	Estimated calc or Final calc*	Avg Final Monthly Pay	Option	Pension Amount
Terry Gallegos	Normal Retirement	2/14/2020	61.85	40.0046	Final	8,092.87	J&S 100	6,636.84
Jesus Santamaria	Normal Retirement	2/29/2020	54.77	27.2776	Estimate	3,751.88	Single Life	2,302.71
Gerald Bessler	Normal Retirement	2/29/2020	70.47	29.2535	Estimate	5,575.55	Single Life	3,669.85
Cheryl Bard	Normal Retirement	2/29/2020	66.02	30.0246	Estimate	4,298.86	Single Life	2,904.11
Angela Spencer	Normal Retirement	3/3/2020	52.09	28.0274	Estimate	7,933.63	J&S 50	4,682.98
Jeffrey Britt	Normal Retirement	3/4/2020	65.73	39.8171	Estimate	4,787.60	Single Life	4,289.14
Todd Bullington	Disability Retirement	3/9/2020	56.62	16.4634	Estimate	6,743.72	J&S 100	2,327.28
Catherine Beddard	Normal Retirement	3/6/2020	63.01	16.4586	Estimate	4,353.23	Single Life	1,612.08
Sheri Rico	Early Retirement	3/10/2020	57.19	20.0000	Estimate	6,512.78	J&S 75	2,288.98
Randy Stenquist	Deferred Retirement	2/19/2020	62.00	9.4730	Final	3,323.03	J&S 100	619.67

* Calculation of average final monthly pay and pension amount is estimated based on all available data and becomes a final calculation after the applicant has received payment for all accrued leave balances.

Source Material: GRS/Payroll

Prepared By: [signature]

Reviewed By: Pete Sutton

Ratification Report for TSRS Board of Trustees

Application Dates: 03/11/20 - 04/10/20 | **Report Date: April 2020**

Name of Applicant	Type	Retirement Date	Age	Credited Service	Estimated calc or Final calc*	Avg Final Monthly Pay	Option	Pension Amount
Laurence B Winn	Normal Retirement	4/2/2020	71.98	12.8600	Estimate	5,548.55	J&S 100	1,330.47
Michael E Dew	Normal Retirement	4/4/2020	65.59	22.3000	Estimate	8,231.18	J&S 100	3,588.63
Vicente Acuna Jr	Normal Retirement	4/4/2020	63.65	23.6700	Estimate	4,032.99	J&S 100	1,875.68
Michael P Pollard	Normal Retirement	4/10/2020	74.81	29.9300	Estimate	9,206.59	J&S 50	5,068.27
Frank A Varela	Normal Retirement	4/9/2020	62.01	18.9500	Estimate	3,314.85	J&S 100	1,253.84
Joanne S Hershenhorn	Normal Retirement	4/9/2020	63.25	34.0200	Estimate	5,364.11	Single Life	4,106.38

* Calculation of average final monthly pay and pension amount is estimated based on all available data and becomes a final calculation after the applicant has received payment for all accrued leave balances.

Source Material: GRS/Payroll

Prepared By: Dawn Davis 4/16/2020

Reviewed By: Pete Saxton 4-16-2020

Ratification Report for TSRS Board of Trustees

Application Dates: 04/11/20 - 05/10/20 | **Report Date: May 2020**

Name of Applicant	Type	Retirement Date	Age	Credited Service	Estimated calc or Final calc*	Avg Final Monthly Pay	Option	Pension Amount
John A Varela	Normal Retirement	4/30/2020	62.07	16.0400	Estimate	3,537.99	J&S 100	1,121.06
Richard E Marotta	Normal Retirement	5/1/2020	65.72	20.1900	Estimate	3,486.59	J&S 100	1,376.17

* Calculation of average final monthly pay and pension amount is estimated based on all available data and becomes a final calculation after the applicant has received payment for all accrued leave balances.

Source Material: GRS/Payroll

Prepared By: Dawn Davis 5/13/2020

Reviewed By: Pete Saxton 5/15/2020

Ratification Report for TSRS Board of Trustees

Application Dates: 05/11/20 - 06/10/20 | **Report Date: JUNE 2020**

Name of Applicant	Type	Retirement Date	Age	Credited Service	Estimated calc or Final calc*	Avg Final Monthly Pay	Option	Pension Amount
Belyani, Seyed	Normal Retirement	5/14/2020	68.59	30.7500	Final	7,156.70	J&S 100	4,537.94
Pena, Martin	Normal Retirement	5/15/2020	58.47	26.4453	Final	4,161.47	Single Life	2,475.99
McGee, Kathleen M	Normal Retirement	5/22/2020	60.81	26.6471	Final	3,701.69	Single Life	2,219.39
McCall-Danner, Dianna	Normal Retirement	5/23/2020	66.28	5.7400	Final	2,234.09	J&S 100	218.38
Beaubien, Mary	Normal Retirement	6/2/2020	49.26	30.8611	Estimate	3,927.21	J&S 50	2,612.25
Haro, Ronnie G	Normal Retirement	6/2/2020	65.34	7.4837	Estimate	2,827.74	15 year term	396.94
Lopez, Marco A	Normal Retirement	6/2/2020	57.92	26.8876	Estimate	4,995.59	J&S 100	2,675.76
Chavez, Noemi	Normal Retirement	6/4/2020	59.22	20.8557	Estimate	3,363.16	J&S 50	1,515.23
Lomeli, Antonio B	Normal Retirement	6/5/2020	62.31	25.0547	Estimate	3,207.61	J&S 100	1,647.48
Figueroa, Jacinta	Normal Retirement	6/6/2020	59.47	26.0179	Estimate	8,997.40	Single Life	5,267.10
Curtis, Kara	Normal Retirement	6/6/2020	58.62	23.8537	Estimate	3,991.23	J&S 50	1,937.94
Peterson, Yvette	Normal Retirement	6/6/2020	54.55	30.3939	Estimate	4,872.36	J&S 50	3,187.48
Conway, Steve	Normal Retirement	6/7/2020	63.61	12.7933	Estimate	2,603.90	J&S 100	650.48
Brown, Martin	Normal Retirement	6/9/2020	67.00	15.6505	Estimate	6,773.93	J&S 50	2,211.21
Whitlock, Colette M	Deferred Retirement	6/9/2020	62.00	14.6579	Final	3,204.94	Single Life	1,057.00

* Calculation of average final monthly pay and pension amount is estimated based on all available data and becomes a final calculation after the applicant has received payment for all accrued leave balances.

Source Material: GRS/Payroll

Prepared By: Dawn Davis 6/26/2020

Reviewed By: _Art Cuaron for Pete Saxton - 06/26/2020_____

Ratification Report for TSRS Board of Trustees

Application Dates: 06/11/20 - 07/10/20 | **Report Date: July 2020**

Name of Applicant	Type	Retirement Date	Age	Credited Service	Estimated calc or Final calc*	Avg Final Monthly Pay	Option	Pension Amount
Turchik, Merle J	Deferred Retirement	6/27/2020	62.00	16.19	Final	7,666.40	15 Year Term	2,651.74
Zukas, Wallace J II	Normal Retirement	6/27/2020	51.24	29.51	Estimate	7,758.96	J&S 100	4,769.83
Hays, Laurie	Deferred Retirement	6/29/2020	62.00	16.47	Final	2,715.21	Single Life	1,006.24
Rivera, Gina D	Normal Retirement	7/2/2020	64.07	16.24	Estimate	2,812.07	J&S 50	899.14
McNellis, Shylah A	Normal Retirement	7/4/2020	76.93	23.43	Estimate	3,123.97	Single Life	1,646.66
Carson, Michael J	Normal Retirement	7/10/2020	65.07	31.56	Estimate	4,915.25	Single Life	3,490.36

* Calculation of average final monthly pay and pension amount is estimated based on all available data and becomes a final calculation after the applicant has received payment for all accrued leave balances.

Source Material: GRS/Payroll

Prepared By: Dawn Davis 7/16/2020

Reviewed By: Pete Saxton 7/16/2020

MEMORANDUM

DATE: July 17, 2020

TO: The Board of Trustees
Tucson Supplemental Retirement System

FROM: Art Cuaron
Pension & Benefits Administrator

SUBJECT: Administrative Discussion Items

Board action is sought on item D.4, all other items are informational and do not require Board action.

In an effort to provide a report to the Board of the significant actions taken by the System or Mayor and Council over the last four months, I have included agenda items D.1, D.2, D.3, D.5 and D.6 and will be providing an overview and update of each item and the impact to the plan or its' members.

Item D.4 has been requested by Trustee Urquijo. She has requested the Board approve a split labor distribution of her salary between TSRS, Self-Insurance Trust Fund and the General Fund. At present, she currently oversees all 3 functions and a split of her time is prudent based on her allocation of time spent overseeing each functional area. The financial impact to the plan is approximately $78,000 on an annual basis. This is the same methodology that is followed with my salary as it is split between the retirement trust and the self-insured health benefits trust budgets.

I will be prepared to answer questions on any of the items referenced herein.

Callan

March 31, 2020

Tucson Supplemental Retirement System

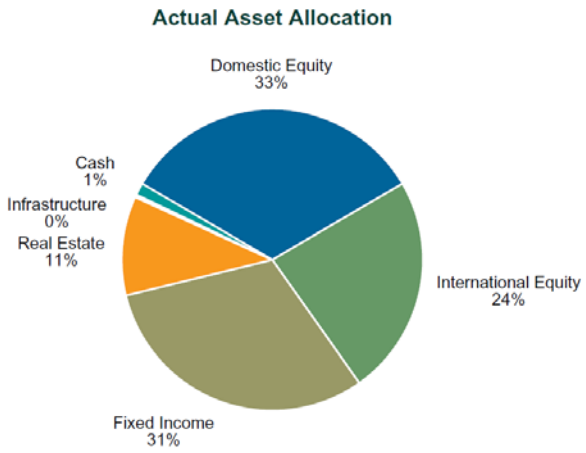
Investment Measurement Service Quarterly Review

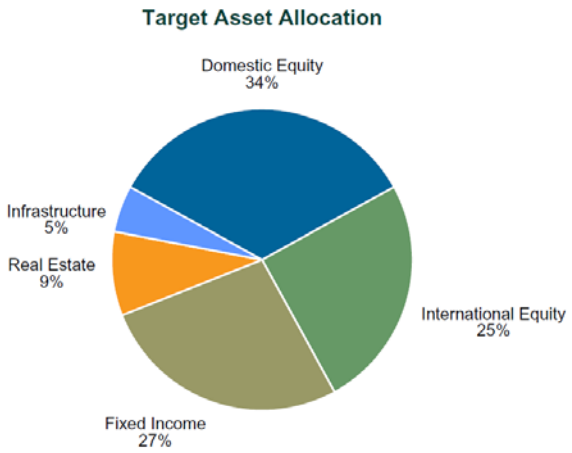
Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission.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

Tucson Supplemental Retirement System

Executive Summary for Period Ending March 31, 2020

Asset Allocation





Total Fund Performance

Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Fund Gross	-14.37%	-5.13%	3.87%	4.92%	7.88%
Total Fund Net	-14.39%	-5.40%	3.32%	4.40%	7.33%
Total Fund Benchmark*	-13.00%	-4.59%	3.03%	3.92%	7.08%

Returns for Fiscal Years Ended June 30th

	2020 YTD	2019	2018	2017	2016
Total Fund Gross	-8.28%	6.69%	9.81%	14.77%	2.33%
Total Fund Net	-8.42%	6.29%	8.77%	14.26%	1.89%
Total Fund Benchmark*	-7.52%	6.28%	7.96%	12.04%	1.82%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Recent Developments

- N/A

Organizational Announcements

- N/A

Active Manager Performance

Fund	Peer Group Ranking Last Year	Last 3 Years	Last 5 Years
PIMCO Stocks Plus	53	51	49
T. Rowe Price Large Cap Growth	72	23	16
Champlain Mid Cap	28	18	3
FIAM Small Cap	43	40	38
Causeway International Opportunities**	90	90	88
Aberdeen EAFE Plus	17	28	45
American Century Int'l Small Cap	9	[10]	[22]
PIMCO Fixed Income	99	88	12
JP Morgan Strategic Property Fund	94	94	94
JP Morgan Income and Growth Fund	92	90	82

** Brackets indicate actual performance linked with manager composite*

*** Transitioned from International Value to International Opportunities in May 2016*

- Aberdeen EAFE Plus declined 17.8% in the first quarter, but outperformed the MSCI ACWI ex US by 5.47 percentage points. The fund ranked in the 11th percentile among peers in the first quarter and now ranks above median over the trailing one-, three-, and five-year periods. In the first quarter, both stock selection and asset allocation decisions benefited the fund's relative performance, but stock selection was the driving contributor. Exposure to Europe outperformed, while Latin America detracted. From a sector perspective, an overweight position in healthcare and underweight to financials supported performance.
- TSRS has been invested in Aberdeen for seven and three-quarters years and the portfolio has returned 2.75% annualized on a gross of fee basis versus 3.05% for the benchmark. However, in more recent periods (one-year, three-year, and five-year) the manager has outperformed the benchmark and the peer median. The EAFE Plus Commingled Fund has experienced a significant decline in assets under management over the past several years and Callan continues to monitor asset flows closely. The decline in assets is largely explained by an extended bout of difficult relative performance and the merger with Standard Life in 2017.

- PIMCO Fixed Income lost 8.3% gross of fees in the first quarter, as compared to -4.8% for the custom index and a gain of 3.2% for the Bloomberg Barclays U.S. Aggregate Index. The performance ranked the fund in the 99th percentile among peers for the quarter and the trailing year. In the prior quarter, the fund had ranked in the top percentile among peers for the trailing one-year period. This performance trend is not entirely surprising given the portfolio's higher risk positioning. The manager tends to benefit from higher yields during periods of market prosperity, but will be more significantly impacted by risk-off environments, versus peers. Credit markets experienced significant dislocations in the first quarter as liquidity dried up and investors rotated out of riskier, higher yielding assets. As a result, credit spreads widened dramatically. In particular, the manager's overweight positions to financials detracted, as did exposure to agency and non-agency RMBS.

Gordon Weightman, CFA
Senior Vice President

Paul Erlendson
Senior Vice President

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March 31, 2020

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Market Overview
Capital Markets Review

Callan Institute

First Quarter 2020

Capital Market Review

Pandemic Impact: What Happened?

ECONOMY

2 PAGE

The speed at which the response to the pandemic shut down the economy and affected the capital markets was unprecedented. We hit bear market territory for the U.S. stock market in 16 days. The sudden drop in economic activity matched the depth and speed of the market drop.

Results Reflect Initial Impact of COVID-19

INSTITUTIONAL INVESTORS

4 PAGE

All four primary types of institutional investors experienced sharp declines in the first quarter and smaller drops for the 12 months ending March 31. Over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%.

Record Plunge Amid Extreme Volatility

EQUITY

6 PAGE

U.S. equities experienced extreme volatility and near-record declines, in terms of speed. Large caps did relatively better; the Russell 2000 experienced its worst quarter ever. Growth continued to perform better vs. value across all market capitalizations.

Market Driven by Search for Safety

FIXED INCOME

8 PAGE

Treasuries rallied as investors sought safety. The yield curve steepened as the Fed cut rates. Investment grade and high yield bonds saw record outflows. Global fixed income fell across the board, with the pain especially intense for emerging market debt.

Private RE Positive; Real Assets Hammered

REAL ESTATE/REAL ASSETS

10 PAGE

Private real estate rose, due to income gains. Returns are expected to fall in 2Q20 and beyond. Global REITs underperformed equities and bonds. Infrastructure saw record fundraising. Almost all real assets saw GFC-level drops, especially energy-related sectors.

Activity Declines as Public Equity Drops

PRIVATE EQUITY

12 PAGE

The public equity market decline slowed every aspect of private equity transaction activity. Valuations are likely to decline when first quarter numbers become available in early July. But historically, private equity has proven resilient in weathering downturns.

Notable Losses Amid Wider Market Plunge

HEDGE FUNDS/MACs

13 PAGE

The Credit Suisse Hedge Fund Index lost 9.0% in the first quarter. The Callan Hedge Fund-of-Funds Peer Group slumped 8.1%, net of all fees and expenses. And representing 50 of the largest, broadly diversified hedge funds, the Callan Institutional Hedge Fund Peer Group fell 6.3%.

Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index gained 21.9% in 2019, while the Age 45 Target Date Fund rose 24.0%. TDFs saw the biggest inflows for the quarter, while U.S. large cap equity saw the largest outflows. The allocation to equity hit 70.2%, the highest since the third quarter of 2018.

Broad Market Quarterly Returns

U.S. Equity Russell 3000	Global ex-U.S. Equity MSCI ACWI ex USA	U.S. Fixed Income Bloomberg Barclays Agg	Global ex-U.S. Fixed Income Bloomberg Barclays Gbl ex US
-20.9%	-23.4%	3.1%	-2.7%

Sources: Bloomberg Barclays, FTSE Russell, MSCI

What Just Happened?

ECONOMY | Jay Kloepfer

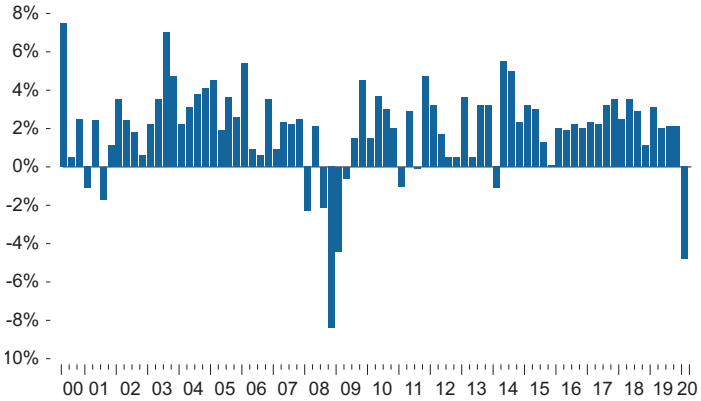
The unprecedented response to the COVID-19 pandemic touched every actor in the global economy: consumers, workers, businesses, shareholders and business owners, renters, property owners, nonprofits, and governments at every level. The worldwide lockdown hit travel, transportation, and retail first, and spending collapsed in March as shelter-in-place orders and steep job losses restricted expenditures. Tax revenues plunged across all levels of government while demand for (and supply of) certain services ballooned. The Federal Reserve and central banks around the globe stepped in at record speed to revive and expand many of the policies developed during the Global Financial Crisis, to provide liquidity and support for financial markets that were seizing up in uncertainty. Governments rushed to offer massive fiscal stimulus to backstop the economy.

All these actions were taken to address the economic impact of the shutdown. However, these policies can only address the symptoms of the economic dislocation. At its core, this event is a global health crisis, and its resolution depends on the containment of the spread of the virus and a vaccine. The full return of the economy depends on the confidence that we are safe to resume jobs, travel, consumption, and daily interaction. Until then, the global economy will be hampered in ways we can only partly anticipate; the unmeasurable risk of the global health crisis will dominate for some time.

The speed with which the response to the pandemic shut down the economy and devastated confidence in the capital markets was remarkable. We hit bear market territory for the U.S. stock market—defined as a decline of 20%—in 16 days, the second-fastest drop in history (dating back to the Great Depression), only missing the record by a day. We hit a bottom on March 23, when the U.S. market was down almost 34%. Equity markets around the globe were down by at least the same amount.

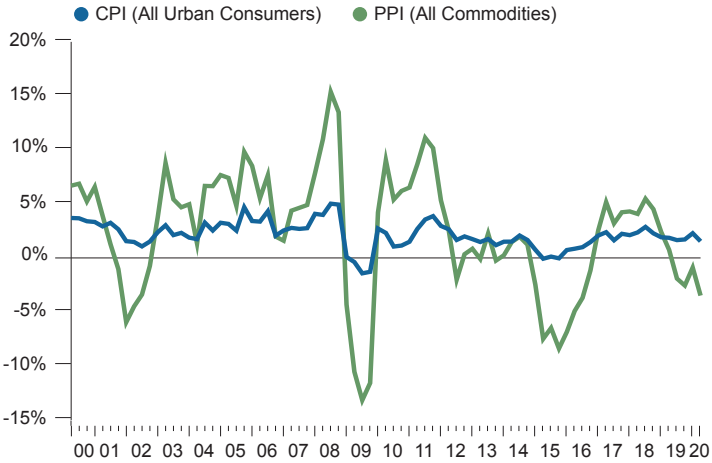
The U.S. economy finished February in pretty good shape, trending to a GDP growth rate for the first quarter of just above 2% annualized, with unemployment at a generational low of 3.5%. In a matter of weeks, as efforts to address the spread of the virus were enacted quickly, the sudden drop in economic activity matched the depth and speed of the stock market drop. The national emergency was declared March 13, most shelter-in-place orders came over the next couple of weeks, and the economic impact was sudden and severe.

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

Initial unemployment claims came in at 211,000 the first week of March, at trend for the year, and moved up to 282,000 in the second week, normally an alarming increase of 34%. However,

claims then shot up to 3.3 million the next week and doubled again to 6.9 million the following week. While my commentary is focused on the first quarter, it is important to note that through the fourth week of April, claims have reached almost 30 million in just six weeks. Economic activity hit a serious bump after March 13, with 2½ weeks left in the quarter. The loss in this short period to GDP pulled growth from 2% as March began to a fall of 4.8% for the first quarter, a swing of almost 7% in less than three weeks. This was the largest quarterly decline since the fourth quarter of 2008.

As large and surprising as the first quarter drop may be, a much steeper plunge is in store for the U.S. and the rest of the global economy in the second quarter. Consensus projections are for second quarter GDP to fall by up to 35% (annual rate), and for consumption to fall by more than 40%. These numbers would be cartoonish, if they weren't so dire.

The pullback in business activity, employment, labor income, and subsequently in consumption is without modern parallel, and the usual measures of gauging economic activity must be viewed through a new lens to gain meaning. Percent changes in GDP around a cataclysmic event like this are difficult to grasp and not very helpful; a more useful approach will be to compare levels now and in the future versus pre-COVID. Percent change is more useful in describing an economy moving smoothly through normal cycles of expansion and recession.

On a hopeful note, in the words of Dr. Anthony Fauci, "this pandemic will be over, I promise." The monetary and fiscal response is massive and is keeping markets liquid. The S&P 500 was down 20% through March, but has retreated to a loss of 12% year-to-date through April, and the index is now at a level comparable to both September 2019 and one year ago. Finally, we will adapt and learn to live and work safely, just as we learned to fly safely after 9/11.

The Long-Term View

Index	2020 1st Qtr	Periods Ended 3/31/20 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-20.9	-9.1	5.8	10.1	8.8
S&P 500	-19.6	-7.0	6.7	10.5	8.9
Russell 2000	-30.6	-24.0	-0.2	6.9	7.6
Global ex-U.S. Equity					
MSCI EAFE	-22.8	-14.4	-0.6	2.7	4.0
MSCI ACWI ex USA	-23.4	-15.6	-0.6	2.1	--
MSCI Emerging Markets	-23.6	-17.7	-0.4	0.7	--
MSCI ACWI ex USA Small Cap	-29.0	-21.2	-0.8	2.8	4.6
Fixed Income					
Bloomberg Barclays Agg	3.1	8.9	3.4	3.9	5.5
90-Day T-Bill	0.6	2.3	1.2	0.6	2.4
Bloomberg Barclays Long G/C	6.2	19.3	6.0	8.1	7.9
Bloomberg Barclays Gl Agg ex US	-2.7	0.7	2.0	1.4	3.8
Real Estate					
NCREIF Property	0.7	5.3	7.6	10.2	9.3
FTSE Nareit Equity	-27.3	-21.3	-0.3	7.4	9.2
Alternatives					
CS Hedge Fund	-9.0	-4.3	0.2	3.0	7.4
Cambridge PE*	5.7	16.6	12.8	13.7	15.3
Bloomberg Commodity	-23.3	-22.3	-7.8	-6.7	0.6
Gold Spot Price	4.8	23.0	6.2	3.7	5.8
Inflation – CPI-U	0.4	1.5	1.8	1.7	2.2

*Data for most recent period lags by a quarter. Data as of Dec. 31, 2019.
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Refinitiv/Cambridge

Recent Quarterly Economic Indicators

	1Q20	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18
Employment Cost–Total Compensation Growth	2.8%	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%
Nonfarm Business–Productivity Growth	-2.5%	1.2%	-0.3%	2.6%	3.8%	0.5%	1.6%	2.0%
GDP Growth	-4.8%	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%
Manufacturing Capacity Utilization	73.5%	75.0%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%
Consumer Sentiment Index (1966=100)	96.4	97.2	93.8	98.4	94.5	98.2	98.1	98.3

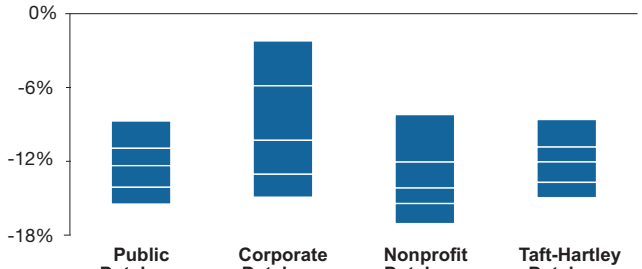
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Results Reflect the Initial Impact of the Pandemic

INSTITUTIONAL INVESTORS

- All four primary types of institutional investors experienced sharp declines in the first quarter and smaller drops for the 12 months ending March 31. A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio declined 10.9% during the quarter and 0.4% over the year. Equities, represented by the S&P 500 Index, experienced a much-sharper decline of 19.6%.
- Over the one-year period, corporate defined benefit (DB) plans showed the smallest decline, nonprofits the sharpest.
- Over longer time periods, corporate DB plans have been the best performers. But over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%, in line with the performance of the blended equities/fixed income benchmark.
- Entering the year, the primary fear for institutional investors was an equity market downturn. Those fears were of course realized.
- In the wake of the pandemic-induced bear market, investors are turning their attention to rebalancing their portfolios and managing liquidity needs.

Quarterly Returns, Callan Database Groups



	Public Database	Corporate Database	Nonprofit Database	Taft-Hartley Database
10th Percentile	-8.7	-2.2	-8.2	-8.6
25th Percentile	-10.9	-5.9	-12.1	-10.8
Median	-12.4	-10.3	-14.2	-12.1
75th Percentile	-14.1	-13.1	-15.4	-13.7
90th Percentile	-15.5	-14.9	-17.1	-15.0

Source: Callan

- Investors are also reevaluating the purpose and implementation of all diversifiers, including real assets, hedge funds and liquid alternatives, fixed income, and private assets.
- At this point, the depth and magnitude of the downturn and the recession remain unknown.

Callan Database Median and Index Returns* for Periods Ended 3/31/20

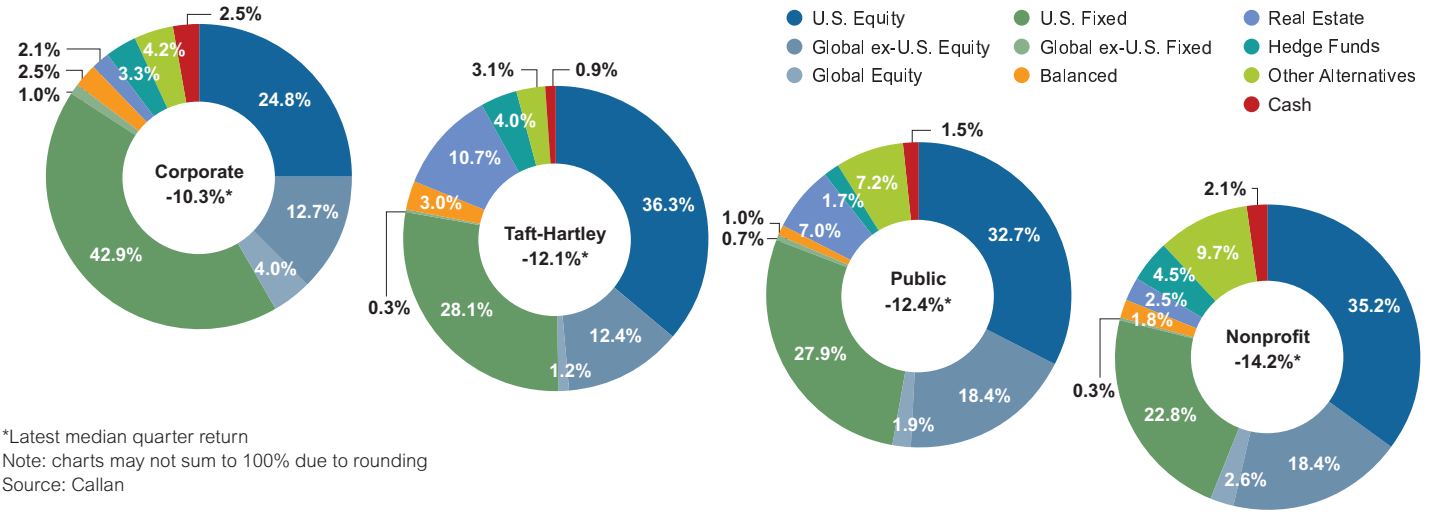
Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	**-12.35**	**-4.10**	**3.19**	**3.88**	**6.41**	**5.77**
Corporate Database	**-10.29**	**-0.77**	**4.24**	**4.29**	**6.88**	**6.08**
Nonprofit Database	**-14.17**	**-5.81**	**2.50**	**3.21**	**6.08**	**5.67**
Taft-Hartley Database	**-12.05**	**-4.07**	**3.36**	**4.23**	**6.83**	**5.68**
All Institutional Investors	**-12.53**	**-4.24**	**3.20**	**3.81**	**6.55**	**5.80**
Large (>$1 billion)	**-10.98**	**-2.61**	**3.88**	**4.25**	**6.89**	**6.06**
Medium ($100mm - $1bn)	**-12.48**	**-4.31**	**3.31**	**3.94**	**6.52**	**5.77**
Small (<$100 million)	**-13.48**	**-5.01**	**2.78**	**3.36**	**6.21**	**5.66**

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, 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.

- Our counsel to investors: stay the course, rebalance, manage liquidity, evaluate portfolio segments and strategies for impairment or unexpected performance, and watch for opportunities, both inside your portfolio and across the markets.
- Not surprisingly, the coronavirus pandemic and related market upheaval dominated the attention of investors:
  - Risk management and volatility were common concerns for all institutional investors.
  - **Public DB plans**: Rebalancing was a recurring theme, as was the related issue of liquidity. Across nearly all asset classes, plans showed limited interest in making changes to their strategic allocations.
  - **Corporate DB plans**: Many were trying to address the challenges caused by changes in their funded status. A large share of plans continued to implement the process of de-risking. The decline in rates since October 2018 demonstrated the benefit to de-risking with respect to matching interest rate risk. The plunge in rates through March 2020 obscures the impact of spread widening; the effect on funded status and LDI match is uncertain and variable.
  - **DC plans**: Sponsors focused on communication to help participants affected by the economic shutdown. They were also trying to determine the effects of the SECURE and CARES Acts. Both make major changes to the regulatory environment for DC plans. While fees continued to be the top issue, concerns about plans' investment structures climbed. The active/passive debate continues, but it is more muted and likely to stay that way as plans focus on the impact of the coronavirus pandemic.
  - **Nonprofits**: A key concern for some of these organizations was the impact of an economic slowdown on the organization: less tuition for colleges and fewer donations for churches. Nonprofits also had little interest in changing their strategic allocations, although there was interest in alternative beta/enhanced index products and unconstrained fixed income.
- Investors are already discussing opportunities in fixed income coming from the market dislocation and the policy response around the globe. The biggest question to answer: If opportunistic fixed income is to be pursued, from where do you fund it? Do you expect it to outperform equity? Do you risk up your fixed income in response to a zero interest rate policy that is back in place?

Average Asset Allocation, Callan Database Groups



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

Equity

U.S. Equities

During the 1st quarter of 2020, the COVID-19 pandemic coupled with an oil price war between Saudi Arabia and Russia spurred extreme global market volatility, which was further exacerbated by the realization that a shelter-in-place mandate was required to overcome the spread of the disease, subsequently inducing an all-but-certain global recession.

Large cap ► *Russell 2000: -30.6% | Russell 1000: -20.2%*

- Cyclicals were punished while Technology, Staples, and Health Care were more resilient.
- Energy (-50.5%) plunged as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials (-31.9%) and Industrials (-27.0%) fell sharply as interest rates were cut by the Fed in an emergency session, combined with expectations of a steep GDP decline because of COVID-19.
- Technology fared the best (-11.9%). The FAAMG stocks had an average return of -7.9% in 1Q, led by Amazon (+5.5%) and Microsoft (+0.3%); Health Care (-12.7%) and Consumer Staples (-12.7%) also held up better than the index average.

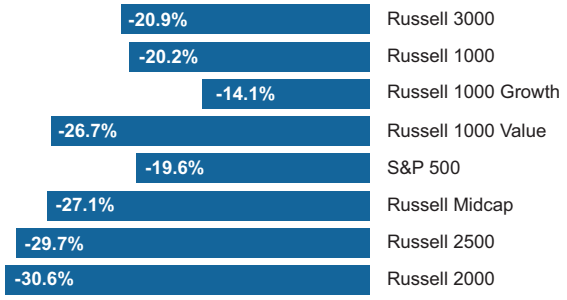
Large cap outpaced small cap for the quarter

- The Russell 2000 (-30.6%) experienced its worst quarter on record.
- The perceived safety of larger companies combined with more acute exposure to COVID-19 impact (e.g., restaurants, hotels, airlines, REITs) drove the sell-off.
- The performance of the Russell 2000 Value (-35.7%) was driven by its exposure to Energy (especially exploration and production companies) and Financials (banks).

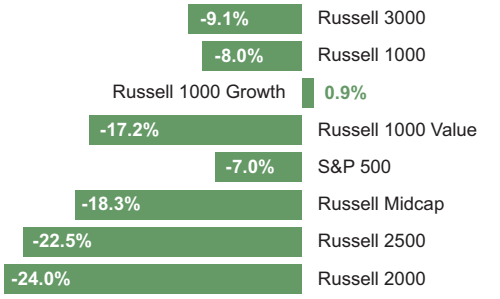
Growth outpaces value across market capitalizations

- The spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) was one of the widest ever.
- Russell MidCap Value (-0.8%) and Russell 2000 Value (-2.4%) now have negative annualized returns over a trailing five-year time period.

U.S. Equity: Quarterly Returns

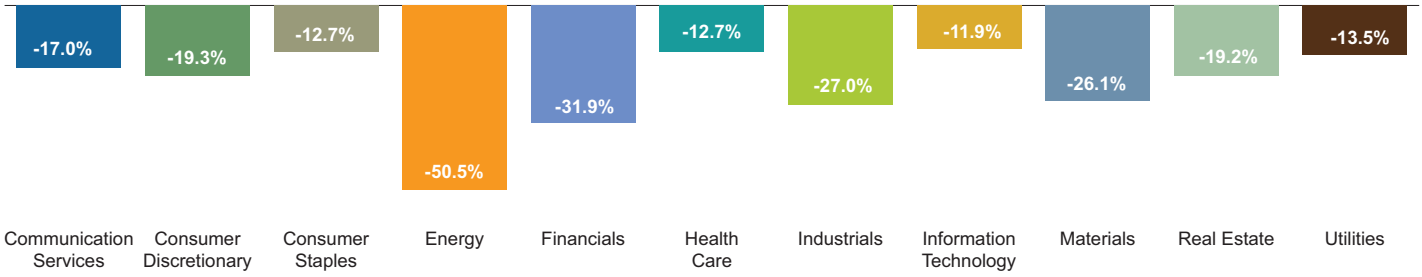


U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices

Global/Global ex-U.S. Equity

The COVID-19 pandemic coupled with the oil price war between Saudi Arabia and Russia injected significant volatility into the global equity markets, with most major indices entering bear market territory.

Global/Developed ex-U.S. ► *MSCI EAFE: -22.8% | MSCI World ex USA: -23.3% | MSCI ACWI ex USA: -23.4% | MSCI Japan: -16.8% | MSCI Pacific ex Japan: -27.6%*

- Fears of the pandemic and a global recession stoked the worst quarterly sell off since 2008 as economic activity halted worldwide.
- The oil price war further exacerbated the market meltdown, bidding up safe-haven assets and currencies.
- The U.S. dollar outperformed the euro, the British pound, and other major currencies, while underperforming the Swiss franc and Japanese yen.
- Every sector posted negative returns, led by cyclicals like travel-related industries, Energy, and Financials given the state of the economy and oil prices.
- Defensive sectors generally were under less pressure as demand for basic necessities to function (i.e., e-commerce and mobility) and combat the pandemic (i.e., diagnostics and treatment) helped stabilize Health Care, Consumer Staples, and Information Technology.
- Factor performance in developed ex-U.S. markets reflected risk aversion, including beta, size, and volatility.

Emerging Markets ► *MSCI Emerging Markets Index: -23.6%*

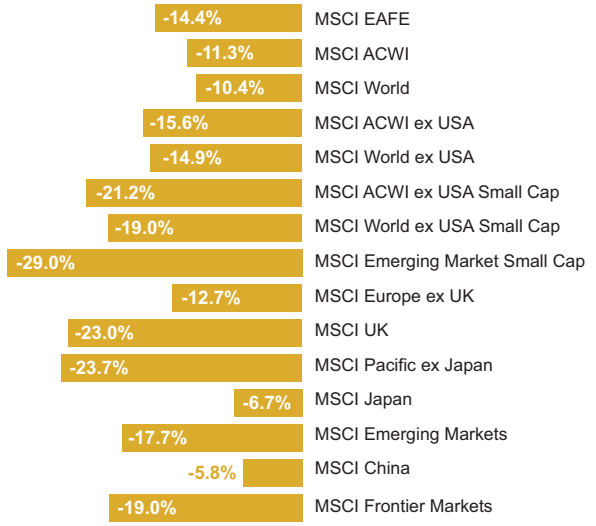
- Decisive actions to contain the pandemic and stimulate the economy allowed China to outperform every developed and developing country.
- A looming global recession and the collapse in oil prices decimated commodities-levered economies like Brazil, South Africa, and Russia.
- Every sector posted negative returns, led by cyclicals such as travel-related industries, Energy, and Financials.
- Defensive sectors generally were under less pressure as demand for basic necessities and for diagnostics and treatment helped stabilize Health Care, Consumer Staples, and Information Technology.

Global ex-U.S. Small Cap ► *MSCI World ex USA Small Cap: -28.4% | MSCI EM Small Cap: -31.4%*

- "Risk-off" market environment challenged small cap relative to large cap in both developed and emerging markets.
- Growth significantly outperformed value both within developed and emerging markets, supported by strong performance in Health Care, Consumer Staples, and Information Technology.

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

U.S. Fixed Income

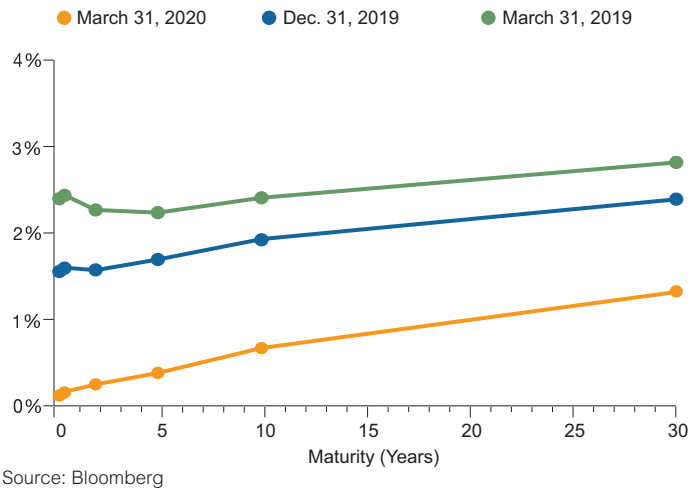
Treasuries rallied as investors sought safety

- The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the 2019 year-end level of 1.92%.
- The Treasury yield curve steepened as the Fed cut rates to 0%-0.25%.
- TIPS underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 basis points, down sharply from 177 bps at year-end.

Investors spurned credit risk

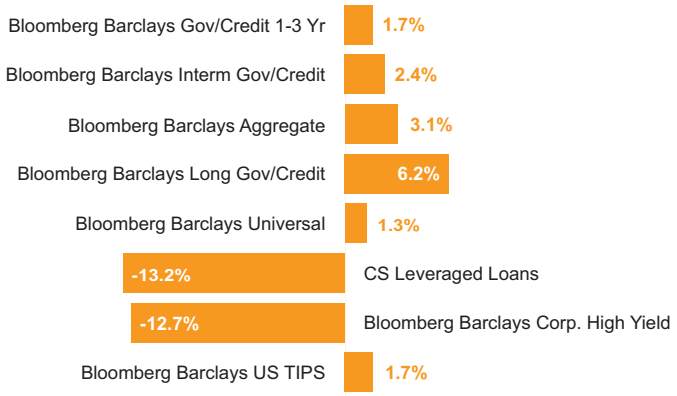
- Investment grade and high yield bond funds experienced record outflows as investors flocked to cash.
- Investment grade corporate spreads widened by 149 bps to 272 bps, representing the hardest hit sector in the Bloomberg Barclays US Aggregate Bond Index, particularly within Industrials, where several well-known issuers were downgraded to below investment grade, including Occidental Petroleum and Ford.
- The quality bias was evident as BBB-rated credit (-7.4%) underperformed single A or higher (+0.5%).
- CCC-rated high yield corporates (-20.6%) lagged BB-rated corporates (-10.2%).
- Energy (-38.9%) was the lowest-performing high yield bond sub-sector as oil prices collapsed.
- Most securitized sectors underperformed U.S. Treasuries.
- Bloomberg Barclays CMBS (+1.2%) and Bloomberg Barclays MBS (+2.8%) gained, while Bloomberg Barclays ABS declined (-0.2%).

U.S. Treasury Yield Curves



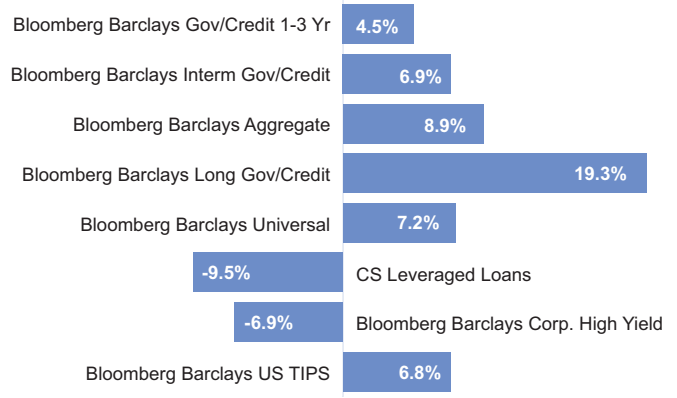
Source: Bloomberg

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

Global Fixed Income

Most indices fell by double digits

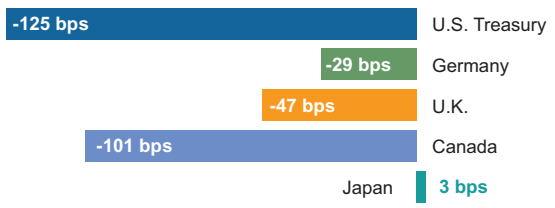
- Developed market sovereign bond yields ended the quarter slightly higher even as central banks stepped in to provide support to their economies; the European Central Bank launched a €750 billion stimulus program and the Bank of England cut interest rates.
- The U.S. dollar rose against the Australian dollar, British pound, and euro as investors sought safety within the greenback.

EM debt plummeted in the risk-off environment

- Within the dollar-denominated benchmark, returns were mixed amongst its 60+ constituents.
- Within the local currency-denominated benchmark, several local market returns in Latin America dropped about 20% (Brazil, Mexico, and Colombia), and South Africa plunged 29% as oil-sensitive economies suffered from the fall in oil prices.

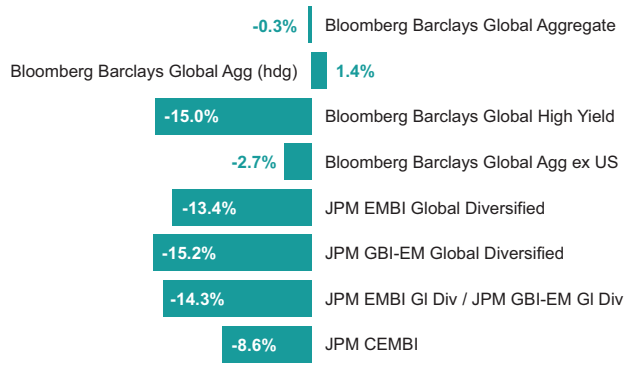
Change in 10-Year Global Government Bond Yields

4Q19 to 1Q20



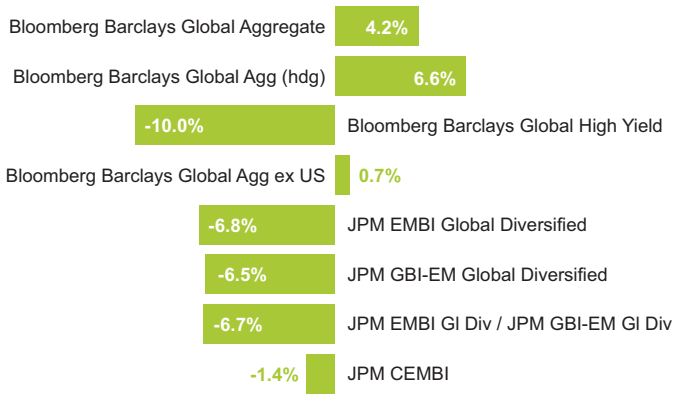
Source: Bloomberg Barclays

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

Private RE Returns Positive, but Likely to Change; Real Assets Hammered

REAL ESTATE/REAL ASSETS | Sally Haskins and David Welsch

Private real estate results positive due to income

- Initial impact of pandemic reflected in 1Q20 results
- Positive return due to income
- Industrial real estate performed well.
- Retail depreciation accelerated this quarter.
- The dispersion of returns by manager within the NCREIF ODCE Index was due to the composition of underlying portfolios but also valuation methodologies and approaches.
- Negative returns expected for the second quarter and beyond.

How the pandemic is affecting fundamentals

- Vacancy rates for all property types in the U.S. are or will be impacted.
- There has been limited change in net operating income, but the second quarter will show declines.
- April rent collections show malls severely impacted followed by other types of retail. Class A/B urban apartments are relatively strong, followed by certain types of industrial and office.
- Supply was in check prior to the pandemic.
- Construction is limited to finishing up existing projects but has been hampered by shelter-in-place orders and material shortages.
- New construction will be basically halted in future quarters except for pre-leased properties.
- Transaction volumes were healthy in the first part of the quarter, but dropped off at quarter end and ground to a halt thereafter, with deals being canceled even when there were material non-refundable deposits.
- Cap rates remained steady during the quarter. The spread between cap rates and 10-year Treasuries is relatively high, leading some market participants to speculate that cap rates will not adjust much. Price discovery is happening and there are limited transactions.
- Callan believes the pandemic may cause a permanent repricing of risk across property types. Property types with more reliable cash flows will experience less of a change in cap rates; however, those with less reliable cash flows will see greater adjustments.

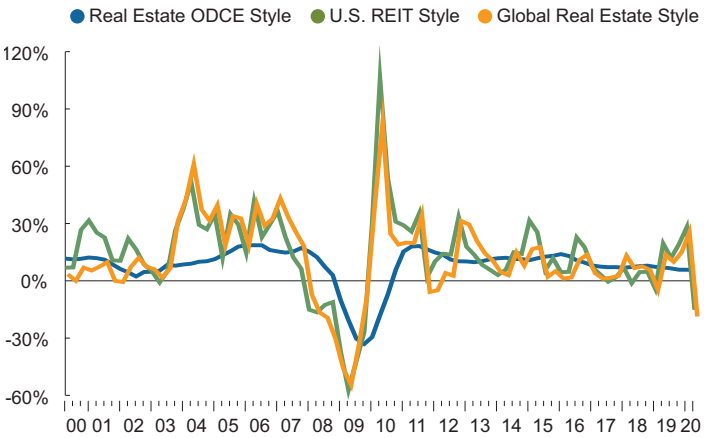
Global REITs underperformed vs. equities and bonds

- Global REITs plunged 28.5% in 1Q20 compared to a 21% drop for global equities (MSCI World).
- U.S. REITs fell 27.3% in 1Q20, lagging the S&P 500 Index, which was off 19.6%.
- Globally REITs are trading at a significant discount to NAV; in most regions the discount is at a five-year low.
- All property types except for data centers, cell towers, and life science are trading at the bottom of their range.

Infrastructure sees near-record fundraising

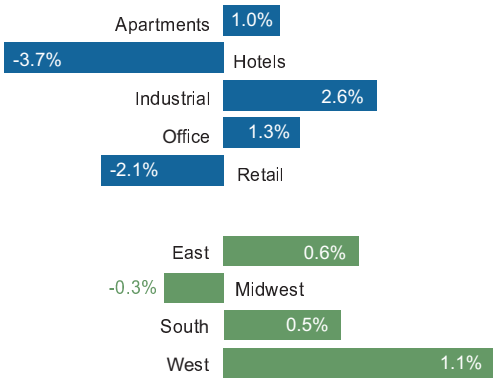
- 1Q20 was the third-largest quarter for closed-end infrastructure fundraising. The closed-end fund market continues to expand, with infrastructure debt, emerging markets, and

Rolling One-Year Returns



Source: Callan

Sector Quarterly Returns by Property Type and Region



Source: NCREIF

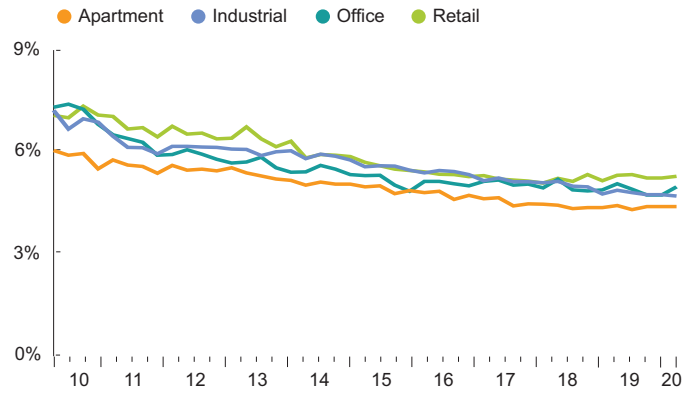
sector-specific strategies (e.g., communications and renewables). Investor interest in mezzanine or debt-focused funds has increased.

- Open-end funds raised significant capital in 2019, and the universe of investable funds continues to increase as the sector matures.
- In 2020 assets with guaranteed/contracted revenue or more inelastic demand patterns (e.g., renewables, telecoms, utilities) fared better than assets with GDP/demand-based revenue (e.g., airports, seaports, midstream-related).

Real assets buffeted by COVID-19

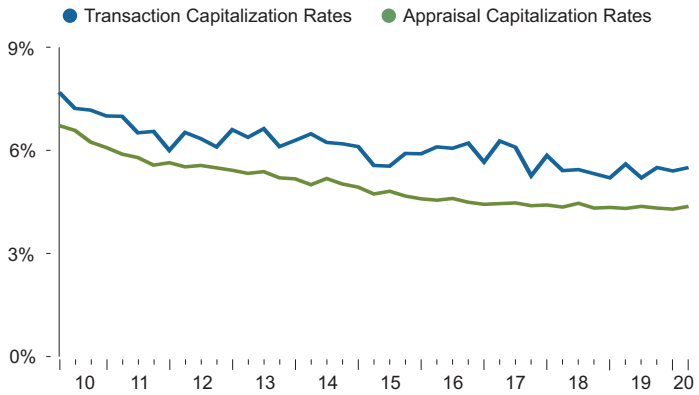
- Real asset returns were significantly challenged during the first quarter of 2020 as almost the entire space (except gold and TIPS) experienced performance not seen since the Global Financial Crisis.
- The MLP space (Alerian MLP Index: -57%) and energy-related stocks (S&P 1200 Energy Index: -44%) were among the worst hit as Russia and Saudi Arabia engaged in an oil price war smack in the middle of a global pandemic that was already poised to cripple near-term energy demand.
- One silver lining, pun intended, was gold, which served its usual safe-haven role during the depths of March and throughout the first quarter; the Bloomberg Gold sub-Index rose 4.5% in the first quarter while equities of most companies tasked with mining the shiny metal were not so fortunate (GDX-Van Eck Gold Miners ETF: -14.5%).

NCREIF Capitalization Rates by Property Type



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

NCREIF Transaction and Appraisal Capitalization Rates



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

Callan Database Median and Index Returns* for Periods Ended 3/31/20

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	**1.5**	**1.5**	**5.6**	**6.7**	**8.2**	**10.6**	**6.5**
NFI-ODCE (value wt net)	0.8	0.8	3.9	5.9	7.5	10.4	6.5
NCREIF Property	0.7	0.7	5.3	6.4	7.6	10.2	8.1
NCREIF Farmland	-0.1	-0.1	2.6	5.2	6.3	10.7	13.1
NCREIF Timberland	0.1	0.1	1.3	2.5	2.8	4.5	6.4
Public Real Estate							
Global Real Estate Style	**-25.2**	**-25.2**	**-18.7**	**-0.4**	**0.5**	**6.4**	**5.7**
FTSE EPRA Nareit Developed	-28.5	-28.5	-24.0	-3.8	-2.1	4.4	--
Global ex-U.S. Real Estate Style	**-24.8**	**-24.8**	**-18.0**	**0.6**	**0.1**	**5.4**	**5.3**
FTSE EPRA Nareit Dev ex US	-27.7	-27.7	-23.0	-2.1	-1.5	3.4	--
U.S. REIT Style	**-23.1**	**-23.1**	**-15.2**	**-0.4**	**1.4**	**8.6**	**7.2**
EPRA Nareit Equity REITs	-27.3	-27.3	-21.3	-3.1	-0.3	7.4	6.2

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

Over the Cliff

PRIVATE EQUITY | Gary Robertson

The impact of the COVID-19 virus on the capital markets in late February has introduced a period of price uncertainty and a pull-back in lending. Transaction activity is expected to slow for the remainder of 2020. New fundraising is also being delayed. General partners are focused more on existing portfolio company health and less on starting new company platforms.

Fundraising ► Based on preliminary data, first quarter private equity partnerships holding final closes totaled $119 billion, down 37% from the fourth quarter. New partnerships formed totaled 223, off 28%. Callan expects fundraising to continue to slow as 2020 progresses. (Unless otherwise noted, all data come from PitchBook.)

Buyouts ► New buyout transactions declined notably, albeit from strong levels. Funds closed 1,677 investments with $103 billion in disclosed deal value, a 27% decline in count and a 41% dip in dollar value from the fourth quarter. The largest investment was the $14.3 billion take-private of Zayo Group, a digital communications infrastructure and services provider, by Digital Colony and EQT, along with a consortium of co-investors.

VC Investments ► New investments in venture capital companies totaled 5,868 rounds of financing, down 16%, with $64 billion of announced value, off just 2%. The largest investment was a $3 billion round in Gojek, a ride-hailing and personal courier company serving Southeast Asia.

Funds Closed 1/1/2020 to 3/31/2020

Strategy	No. of Funds	Amt ($mm)	Share
Venture Capital	119	30,155	25%
Growth Equity	20	14,289	12%
Buyouts	56	52,736	44%
Mezzanine Debt	1	434	0%
Distressed	0	0	0%
Energy	2	4,475	4%
Secondary and Other	14	8,053	7%
Fund-of-Funds	11	8,836	7%
Totals	**223**	**118,978**	**100%**

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

Exits ► There were 422 private M&A exits of private equity-backed companies, a drop of 23%. Disclosed values plunged 69% to $55 billion. There were 11 private equity-backed IPOs in the first quarter, down 67%, which raised an aggregate $6 billion, lower by 14%.

Venture-backed M&A exits totaled 354 with disclosed value of $23 billion. The number of sales declined 12% from the fourth quarter, and announced value was unchanged. There were 50 VC-backed IPOs, lower by 34%, and the combined float totaled $6 billion, a drop of 14%.

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
All Private Equity	**0.92**	**9.59**	**14.41**	**12.33**	**14.03**	**12.72**	**11.72**
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33
Russell 3000	1.16	2.92	12.83	10.44	13.08	9.10	6.72

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.

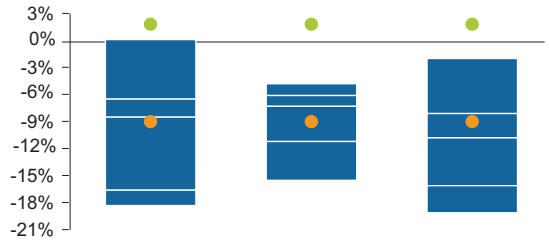
Breaking Bad

HEDGE FUNDS/MACs | Jim McKee

Crushing fragile hopes of continuing economic strength coming into 2020, the COVID-19 pandemic coupled with a sudden oil market collapse forced investors to recalibrate their measures of risk across all capital markets. As investors ran for safe havens, Treasuries soared while equities cratered.

Representing a paper portfolio of hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** lost 9.0% in the first quarter. As a proxy for live hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Peer Group** slumped 8.1%, net of all fees and expenses. Representing 50 of the largest, broadly diversified hedge funds with low-beta exposure to equity markets, the median manager in the **Callan Institutional Hedge Fund Peer Group** fell 6.3%.

Hedge Fund-of-Funds Style Group Returns



	Absolute Return	Core Diversified	Long/Short Equity
10th Percentile	0.1	-4.8	-2.0
25th Percentile	-6.5	-6.1	-8.1
Median	-8.5	-7.3	-10.8
75th Percentile	-16.6	-11.2	-16.1
90th Percentile	-18.3	-15.5	-19.1
CS Hedge Fund	-9.0	-9.0	-9.0
90-Day T-Bill +5%	1.8	1.8	1.8

Sources: Callan, Credit Suisse, and Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 3/31/2020

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Peer Group	**-8.1**	**-4.9**	**0.5**	**0.7**	**3.1**	**3.8**
Callan Absolute Return FOF Style	**-8.5**	**-6.7**	**0.1**	**0.8**	**3.1**	**3.3**
Callan Core Diversified FOF Style	**-7.3**	**-4.3**	**0.4**	**0.4**	**3.0**	**3.5**
Callan Long/Short Equity FOF Style	**-10.8**	**-6.5**	**0.4**	**0.8**	**3.6**	**4.6**
Credit Suisse Hedge Fund	-9.0	-4.3	0.4	0.2	3.0	4.0
CS Convertible Arbitrage	-5.3	-1.3	0.9	2.4	3.2	3.7
CS Distressed	-10.8	-11.5	-2.2	-0.8	2.5	3.9
CS Emerging Markets	-10.5	-6.2	0.7	1.8	3.2	5.1
CS Equity Market Neutral	-5.3	-6.2	-1.0	-0.3	0.9	-1.1
CS Event-Driven Multi	-18.8	-14.9	-4.1	-3.4	0.6	3.1
CS Fixed Income Arb	-5.8	-2.2	1.7	2.5	4.4	3.3
CS Global Macro	-8.1	-1.1	1.1	0.6	3.6	5.4
CS Long/Short Equity	-11.2	-5.4	1.4	1.1	3.6	4.8
CS Managed Futures	0.0	5.7	2.0	-2.0	1.4	3.0
CS Multi-Strategy	-6.5	-2.6	1.0	2.2	5.0	5.2
CS Risk Arbitrage	-6.8	-4.1	0.8	1.8	1.9	3.2
HFRI Asset Wtd Composite	-10.0	-6.1	0.2	0.4	3.1	--
90-Day T-Bill + 5%	1.8	7.3	6.8	6.2	5.6	6.4

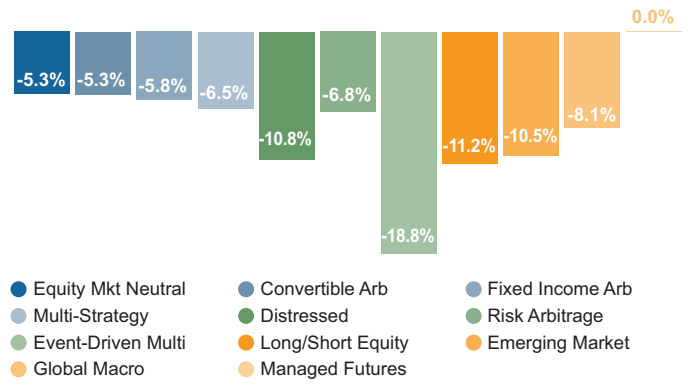
*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

Within CS HFI, the worst-performing index was *Event-Driven Multi-Strategy* (-18.8%), reflecting its material exposure to soft deals particularly vulnerable to shifting market sentiments and crowded trades. The next group of poorly performing strategies included *Long/Short Equity* (-11.2%), *Distressed* (-10.8%), and *Emerging Markets* (-10.5%). Despite low net exposures, risk-on arbitrage strategies like *Equity Market Neutral* (-5.3%), *Convertible Arbitrage* (-5.3%), and *Fixed-Income Arbitrage* (-5.8%) suffered the next level of losses due to widened spreads from derisking or being net long with illiquidity. The best-performing strategy last quarter was *Managed Futures* (+0.0%).

Within the Callan Hedge FOF Group, net exposures to illiquidity and equity-related risks primarily determined performance in the first quarter. The median *Callan Long/Short Equity FOF* dropped 10.8%, with its net equity exposure driving the loss. Similarly, the median *Callan Absolute Return FOF* sank 8.5%. The *Core Diversified FOF* (-7.3%) suffered the least of the FOF style groups.

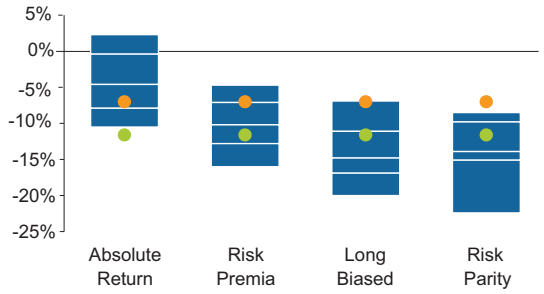
Within Callan's database of liquid alternative solutions, the median managers of Callan Multi-Asset Class (MAC) style groups were all negative, gross of fees. The median *Callan Risk Premia MAC* dropped 10.2% as managers reduced gross exposures to their factors to keep within volatility targets. Targeting equal risk-weighted allocations to major asset classes with leverage, the *Callan Risk Parity MAC* fell 13.9%, trailing its 60% MSCI ACWI/40% Bloomberg Barclays US Aggregate Bond Index (-12.0%). Given a usually long equity bias within its dynamic asset allocation mandate, the *Callan Long-Biased MAC* (-14.8%) also trailed the 60%/40% benchmark. As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, *Callan Absolute Return MAC* slipped 4.6%.

Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

MAC Style Group Returns



	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	2.3	-4.7	-6.9	-8.5
25th Percentile	-0.4	-7.1	-11.1	-9.8
Median	-4.6	-10.2	-14.8	-13.9
75th Percentile	-7.9	-12.8	-16.9	-15.1
90th Percentile	-10.5	-16.0	-20.0	-22.4
Eurekahedge MFRP (5%v)	-7.0	-7.0	-7.0	-7.0
60% MSCI ACWI/ 40% BB Barclays Agg	-11.6	-11.6	-11.6	-11.6

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

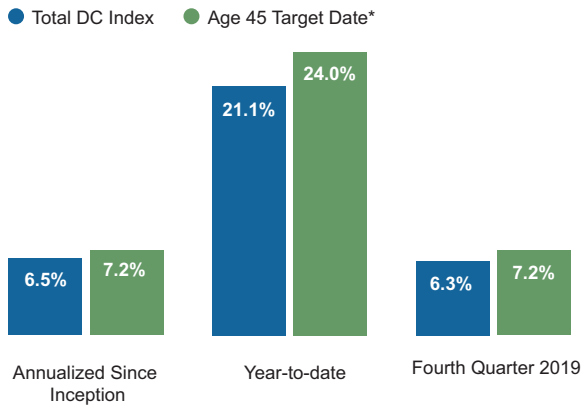
Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION | Patrick Wisdom

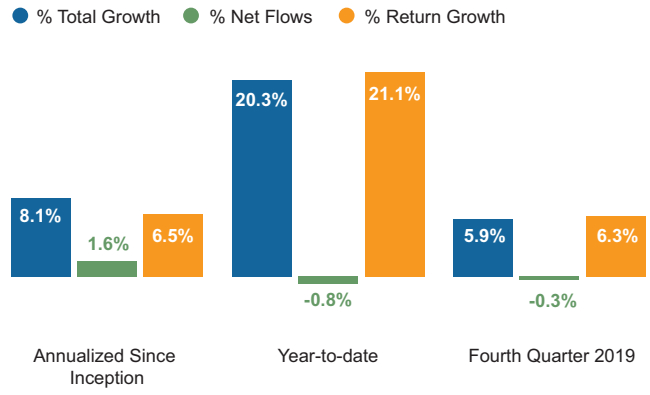
- The **Callan DC Index™** rose 6.3% in the final quarter of 2019, the fourth consecutive quarter of gains, and jumped 21.1% for the year, the highest since 2009. The Age 45 Target Date Fund had a larger fourth-quarter (7.2%) and full-year gain (24.0%).
- The Index's growth in balances in the fourth quarter (5.9%) marked the fourth straight quarter of growth. Investment returns (6.3%) drove the growth, while net flows (-0.3%) detracted.
- Target date funds (TDFs) experienced the largest inflows (53.8%). After garnering the most flows in the previous quarter, U.S. fixed income again saw significant inflows (36.5%). U.S. large cap equity (-38.5%) had the largest outflows.
- Fourth-quarter turnover (i.e., net transfer activity) increased to 0.38% from the previous quarter's 0.35%, well below the historical average (0.60%).
- The allocation to equity within the Index increased to 70.2%, the highest since the third quarter of 2018.
- The share of assets allocated to stable value decreased to 9.8%. The allocation to U.S. fixed income (6.1%) also fell despite positive flows; the asset class's relative underperformance was the primary driver of the decrease.
- TDFs experienced the largest increase in asset allocation (30.4%), due to large inflows and solid performance.
- The prevalence of real return/TIPS within DC plans increased by 3.4 percentage points from the previous quarter to 38.5%.
- The presence of company stock (21.5%) remains near historic lows. Brokerage window prevalence (41.4%) remains near all-time highs.
- For plans with more than $1 billion in assets, the average asset-weighted fee decreased by 4 basis points to 0.29%. Plans with less than $500 million in assets saw a fee decrease of 2 bps, while the fee for plans with assets between $500 million and $1 billion remained steady at 0.36%.

The Callan DC Index is an equally weighted index tracking the cash flows and performance of over 100 plans, representing nearly $300 billion in assets. The Index is updated quarterly and is available on Callan's website.

Investment Performance



Growth Sources



Net Cash Flow Analysis (Fourth Quarter 2019)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	53.80%
U.S. Fixed Income	36.52%
U.S. Smid Cap	-18.02%
U.S. Large Cap	-38.48%
Total Turnover**	**0.38%**

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.

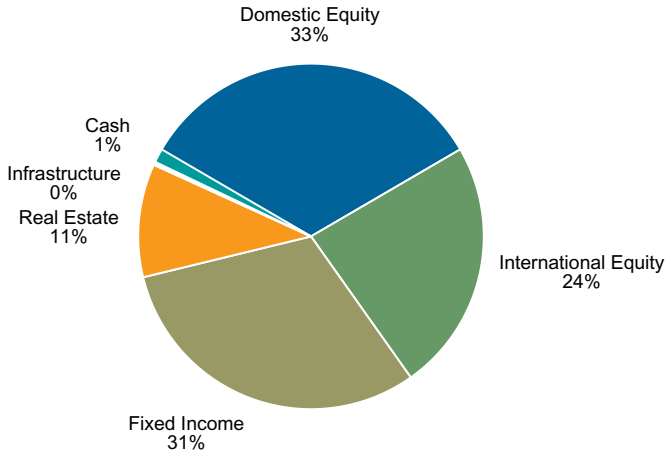
** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

Total Fund

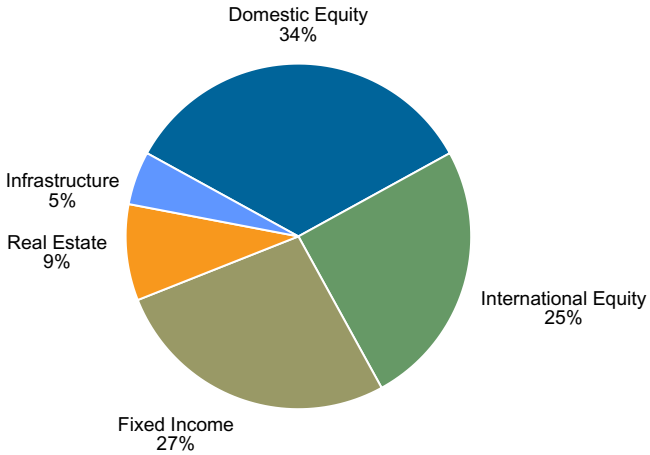
Actual vs Target Asset Allocation
As of March 31, 2020

The top left chart shows the Fund's asset allocation as of March 31, 2020. 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

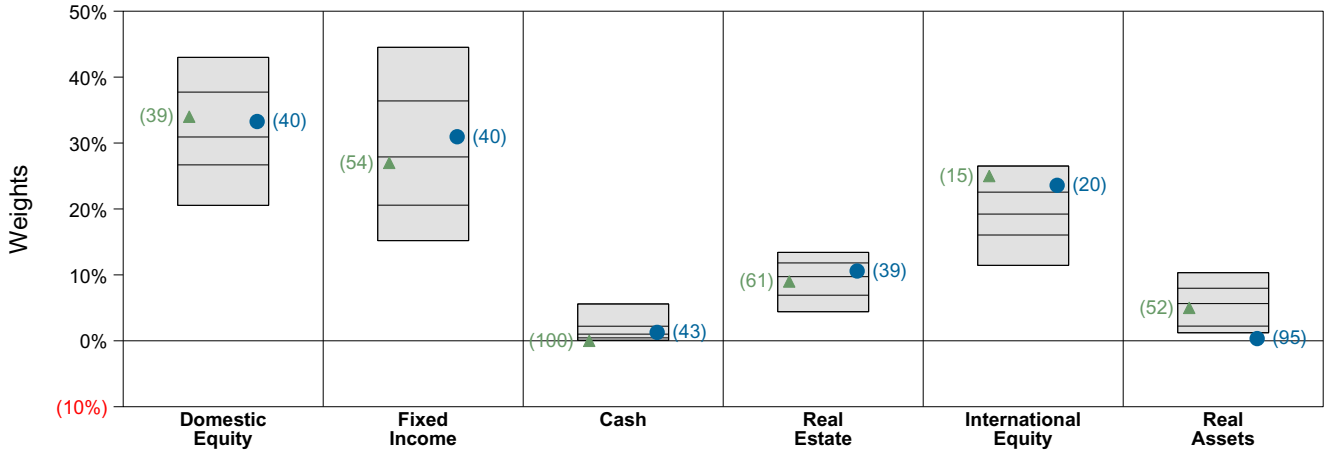


Target Asset Allocation



Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Domestic Equity	245,719	33.3%	34.0%	(0.7%)	(5,432)
International Equity	174,211	23.6%	25.0%	(1.4%)	(10,459)
Fixed Income	228,659	31.0%	27.0%	4.0%	29,216
Real Estate	78,212	10.6%	9.0%	1.6%	11,731
Infrastructure	2,480	0.3%	5.0%	(4.7%)	(34,454)
Cash	9,399	1.3%	0.0%	1.3%	9,399
Total	738,681	100.0%	100.0%		

Asset Class Weights vs Callan Public Fund Sponsor Database



	Domestic Equity	Fixed Income	Cash	Real Estate	International Equity	Real Assets
10th Percentile	43.00	44.52	5.59	13.42	26.51	10.33
25th Percentile	37.73	36.39	2.21	11.81	22.55	7.97
Median	30.92	27.89	1.01	9.73	19.22	5.64
75th Percentile	26.69	20.57	0.45	6.92	16.05	2.23
90th Percentile	20.54	15.19	0.07	4.41	11.44	1.22
Fund ●	33.26	30.96	1.27	10.59	23.58	0.34
Target ▲	34.00	27.00	0.00	9.00	25.00	5.00
% Group Invested	97.90%	98.60%	76.92%	80.42%	96.50%	23.78%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2020, with the distribution as of December 31, 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

	March 31, 2020				December 31, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	**$245,719,204**	**33.26%**	**$(25,171)**	**$(67,551,108)**	**$313,295,483**	**35.82%**
Large Cap Equity	**$191,216,273**	**25.89%**	**$(25,644)**	**$(48,058,496)**	**$239,300,412**	**27.36%**
Alliance S&P Index	58,756,843	7.95%	(6,043)	(14,198,678)	72,961,564	8.34%
PIMCO StocksPLUS	29,963,596	4.06%	0	(7,949,853)	37,913,448	4.33%
BlackRock Russell 1000 Value	47,019,969	6.37%	(6,234)	(17,076,985)	64,103,188	7.33%
T. Rowe Price Large Cap Growth	55,475,865	7.51%	(13,367)	(8,832,980)	64,322,212	7.35%
Small/Mid Cap Equity	**$54,502,931**	**7.38%**	**$472**	**$(19,492,612)**	**$73,995,071**	**8.46%**
Champlain Mid Cap	29,332,806	3.97%	1,684	(7,145,620)	36,476,741	4.17%
FIAM Small Cap	25,170,125	3.41%	(1,212)	(12,346,993)	37,518,330	4.29%
International Equity	**$174,210,976**	**23.58%**	**$(155,930)**	**$(53,894,220)**	**$228,261,126**	**26.09%**
Causeway International Opportunities (3)	64,291,185	8.70%	(19,472)	(26,913,848)	91,224,505	10.43%
Aberdeen EAFE Plus	74,175,395	10.04%	(136,458)	(16,186,890)	90,498,743	10.35%
American Century Non-US SC [1]	35,744,396	4.84%	0	(10,793,481)	46,537,878	5.32%
Fixed Income	**$228,659,391**	**30.96%**	**$(64,144)**	**$(5,921,979)**	**$234,645,514**	**26.82%**
BlackRock U.S. Debt Fund	122,150,656	16.54%	(31,561)	3,743,369	118,438,848	13.54%
PIMCO Fixed Income	106,508,734	14.42%	(32,583)	(9,665,348)	116,206,665	13.28%
Real Estate	**$78,211,835**	**10.59%**	**$(817,859)**	**$1,260,013**	**$77,769,681**	**8.89%**
JP Morgan Strategic Property Fund	52,623,958	7.12%	(512,763)	813,112	52,323,610	5.98%
JP Morgan Income and Growth Fund	25,587,876	3.46%	(305,095)	446,901	25,446,071	2.91%
Infrastructure	**$2,479,683**	**0.34%**	**$(15,942,240)**	**$536,890**	**$17,885,032**	**2.04%**
Macquarie European Infrastructure	908,426	0.12%	910,971	(991)	-1,554	(0.00%)
SteelRiver Infrastructure	1,571,257	0.21%	(16,853,211)	537,881	17,886,587	2.04%
Cash Composite	**$9,399,480**	**1.27%**	**$6,483,735**	**$12,096**	**$2,903,649**	**0.33%**
Cash	9,399,480	1.27%	6,483,735	12,096	2,903,649	0.33%
Total Plan	**$738,680,568**	**100.0%**	**$(10,521,608)**	**$(125,558,309)**	**$874,760,485**	**100.0%**

[1] American Century was funded May 2016.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Gross of Fees					
Domestic Equity	**(21.57%)**	**(10.88%)**	**4.64%**	**6.46%**	**10.87%**
Total Domestic Equity Target (1)	(21.83%)	(10.49%)	3.31%	5.37%	9.95%
Large Cap Equity	**(20.09%)**	**(8.78%)**	**5.35%**	**6.78%**	**10.81%**
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	10.53%
Alliance S&P Index	(19.48%)	(6.88%)	5.13%	6.72%	10.49%
PIMCO StocksPLUS	(20.97%)	(8.26%)	4.55%	6.26%	11.45%
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	10.53%
BlackRock Russell 1000 Value Index	(26.64%)	(17.01%)	(2.03%)	1.99%	7.77%
Russell 1000 Value Index	(26.73%)	(17.17%)	(2.18%)	1.90%	7.67%
T. Rowe Price Large Cap Growth	(13.74%)	(3.02%)	13.45%	11.80%	14.47%
Russell 1000 Growth Index	(14.10%)	0.91%	11.32%	10.36%	12.97%
Small/Mid Cap Equity U.S. Equity	**(26.34%)**	**(17.54%)**	**2.32%**	**5.40%**	**11.05%**
Russell 2500 Index	(29.72%)	(22.47%)	(3.10%)	0.49%	7.73%
Champlain Mid Cap	(19.59%)	(11.69%)	7.45%	9.22%	12.63%
Russell MidCap Index	(27.07%)	(18.31%)	(0.81%)	1.85%	8.77%
FIAM Small Cap	(32.91%)	(23.45%)	(3.04%)	1.34%	9.53%
Russell 2000 Index	(30.61%)	(23.99%)	(4.64%)	(0.25%)	6.90%
International Equity	**(23.57%)**	**(14.26%)**	**(1.61%)**	**(0.52%)**	**2.46%**
MSCI ACWI x US (Net)	(23.36%)	(15.57%)	(1.96%)	(0.64%)	2.05%
Causeway International Opportunities (3)	(29.51%)	(22.04%)	(5.36%)	(2.39%)	3.17%
Causeway Linked Index (3)	(23.36%)	(15.57%)	(1.96%)	(0.44%)	2.80%
Aberdeen EAFE Plus	(17.89%)	(7.82%)	0.73%	0.51%	3.51%
MSCI ACWI x US (Net)	(23.36%)	(15.57%)	(1.96%)	(0.64%)	2.05%
American Century Non-US SC (4)	(23.00%)	(11.28%)	1.67%	-	-
MSCI ACWI ex US Small Cap	(29.01%)	(21.18%)	(4.89%)	(0.81%)	2.79%
Fixed Income	**(2.52%)**	**4.18%**	**4.16%**	**3.88%**	**4.65%**
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.88%
BlackRock U.S. Debt Fund	3.16%	8.99%	4.92%	3.45%	4.00%
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.88%
PIMCO Fixed Income	(8.32%)	(0.90%)	3.21%	3.87%	5.09%
Custom Index (2)	(4.79%)	1.51%	2.79%	3.20%	4.47%

(1) The Total Domestic Equity target is currently composed of 78% S&P 500 and 22% Russell 2500 Index.
(2) The custom index is currently composed of 25% Barclays Mortgage, 25% Barclays Credit, 25% Barclays High Yield, and 25% JP Morgan EMBI Global. Prior to 2/1/2012, the custom index was composed of 70% Barclays Mortgage, 15% Barclays Credit, and 15% Barclays High Yield.
(3) Causeway International Value transitioned to International Opportunities in May 2016; as such, the index has been changed accordingly from EAFE to ACWI ex-US (Net Div).
(4) American Century Non-US SC was funded during second quarter 2016.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Gross of Fees					
Real Estate	**1.63%**	**2.38%**	**4.99%**	**7.32%**	**10.73%**
NFI-ODCE Value Weight Gr	0.98%	4.88%	6.81%	8.46%	11.45%
JP Morgan Strategic Property Fund	1.57%	1.48%	4.79%	7.10%	10.75%
NFI-ODCE Value Weight Gr	0.98%	4.88%	6.81%	8.46%	11.45%
JP Morgan Income and Growth Fund	1.77%	4.24%	5.41%	7.79%	13.68%
NFI-ODCE Value Weight Gr	0.98%	4.88%	6.81%	8.46%	11.45%
Infrastructure	**3.86%**	**35.93%**	**24.54%**	**18.87%**	**12.38%**
CPI + 4%	1.34%	5.46%	5.89%	5.70%	5.65%
SteelRiver Infrastructure	4.69%	15.52%	10.07%	10.50%	8.54%
CPI + 4%	1.34%	5.46%	5.89%	5.70%	5.65%
Cash Composite	**0.29%**	**1.77%**	**1.57%**	**1.06%**	**0.59%**
Total Fund	**(14.37%)**	**(5.13%)**	**3.87%**	**4.92%**	**7.88%**
Total Fund Benchmark*	(13.00%)	(4.59%)	3.03%	3.92%	7.08%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. 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.

	6/2019-3/2020	FY 2019	FY 2018	FY 2017	FY 2016
Gross of Fees					
Domestic Equity	**(14.21%)**	**9.87%**	**16.87%**	**21.35%**	**1.24%**
Total Domestic Equity Target (1)	(13.94%)	8.50%	14.79%	18.34%	2.28%
Large Cap Equity	**(12.19%)**	**9.94%**	**16.40%**	**21.12%**	**1.60%**
S&P 500 Index	(10.82%)	10.42%	14.37%	17.90%	3.99%
Alliance S&P Index	(10.70%)	10.39%	14.33%	17.80%	3.97%
PIMCO StocksPLUS	(12.26%)	10.64%	14.13%	19.11%	2.68%
S&P 500 Index	(10.82%)	10.42%	14.37%	17.90%	3.99%
BlackRock Russell 1000 Value Index	(20.09%)	8.61%	6.88%	15.61%	2.75%
Russell 1000 Value Index	(20.24%)	8.46%	6.77%	15.53%	2.86%
T. Rowe Price Large Cap Growth	(5.93%)	10.46%	29.95%	31.65%	(2.64%)
Russell 1000 Growth Index	(3.56%)	11.56%	22.51%	20.42%	3.02%
Small/Mid Cap Equity U.S. Equity	**(20.62%)**	**9.76%**	**18.33%**	**21.97%**	**0.17%**
Russell 2500 Index	(24.70%)	1.77%	16.24%	19.84%	(3.67%)
Champlain Mid Cap	(14.48%)	16.06%	18.85%	22.50%	4.64%
Russell MidCap Index	(21.54%)	7.83%	12.33%	16.48%	0.56%
FIAM Small Cap	(26.75%)	2.94%	17.78%	21.31%	(4.41%)
Russell 2000 Index	(25.55%)	(3.31%)	17.57%	24.60%	(6.73%)
International Equity	**(16.45%)**	**(1.87%)**	**8.64%**	**20.73%**	**(9.40%)**
MSCI ACWI x US (Net)	(18.02%)	1.29%	7.28%	20.45%	(10.24%)
Causeway International Opportunities (3)	(23.05%)	(2.57%)	7.29%	23.39%	(11.66%)
Causeway Linked Index (3)	(18.02%)	1.29%	7.28%	20.45%	(9.42%)
Aberdeen EAFE Plus	(10.66%)	3.04%	3.38%	18.30%	(7.60%)
MSCI ACWI x US (Net)	(18.02%)	1.29%	7.28%	20.45%	(10.24%)
American Century Non-US SC	(14.79%)	(9.14%)	23.86%	21.46%	-
MSCI ACWI ex US Small Cap	(22.12%)	(5.94%)	10.57%	20.32%	(5.46%)
Fixed Income	**0.77%**	**9.29%**	**0.43%**	**4.58%**	**6.39%**
Blmbg Aggregate Index	5.68%	7.87%	(0.40%)	(0.31%)	6.00%
BlackRock U.S. Debt Fund	5.72%	7.97%	(0.31%)	(0.21%)	6.13%
Blmbg Aggregate Index	5.68%	7.87%	(0.40%)	(0.31%)	6.00%
PIMCO Fixed Income	(4.40%)	10.57%	1.16%	7.99%	6.55%
Custom Index (2)	(1.84%)	9.53%	(1.05%)	3.83%	7.28%

(1) The Total Domestic Equity target is currently composed of 78% S&P 500 and 22% Russell 2500 Index.
(2) The custom index is currently composed of 25% Barclays Mortgage, 25% Barclays Credit, 25% Barclays High Yield, and 25% JP Morgan EMBI Global. Prior to 2/1/2012, the custom index was composed of 70% Barclays Mortgage, 15% Barclays Credit, and 15% Barclays High Yield.
(3) Causeway International Value transitioned to International Opportunities in May 2016; as such, the index has been changed accordingly from EAFE to ACWI ex-US (Net Div).

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. 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.

	6/2019-3/2020	FY 2019	FY 2018	FY 2017	FY 2016
Gross of Fees					
Real Estate	**3.43%**	**2.47%**	**7.72%**	**8.07%**	**10.80%**
NFI-ODCE Value Weight Gr	3.84%	6.41%	8.44%	7.87%	11.82%
JP Morgan Strategic Property Fund	3.39%	1.65%	7.80%	7.94%	11.10%
NFI-ODCE Value Weight Gr	3.84%	6.41%	8.44%	7.87%	11.82%
JP Morgan Income and Growth Fund	3.51%	4.19%	7.54%	8.27%	10.06%
NFI-ODCE Value Weight Gr	3.84%	6.41%	8.44%	7.87%	11.82%
Infrastructure	**18.53%**	**25.97%**	**18.95%**	**12.69%**	**12.61%**
CPI + 4%	3.63%	5.44%	7.09%	5.50%	4.64%
SteelRiver Infrastructure	12.53%	15.27%	(2.94%)	7.09%	17.75%
CPI + 4%	3.63%	5.44%	7.09%	5.50%	4.64%
Cash Composite	**1.20%**	**2.11%**	**1.22%**	**0.68%**	**0.12%**
Total Fund	**(8.28%)**	**6.69%**	**9.81%**	**14.77%**	**2.33%**
Total Fund Benchmark*	(7.52%)	6.28%	7.96%	12.04%	1.82%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Net of Fees					
Domestic Equity	**(21.57%)**	**(10.88%)**	**4.46%**	**6.22%**	**10.54%**
Total Domestic Equity Target (1)	(21.83%)	(10.49%)	3.31%	5.37%	9.95%
Large Cap Equity	**(20.09%)**	**(8.79%)**	**5.26%**	**6.66%**	**10.63%**
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	10.53%
Alliance S&P Index	(19.48%)	(6.88%)	5.11%	6.69%	10.45%
PIMCO StocksPLUS	(20.97%)	(8.26%)	4.55%	6.26%	11.36%
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	10.53%
BlackRock Russell 1000 Value Index	(26.64%)	(17.04%)	(2.06%)	1.96%	7.75%
Russell 1000 Value Index	(26.73%)	(17.17%)	(2.18%)	1.90%	7.67%
T. Rowe Price Large Cap Growth	(13.74%)	(3.02%)	13.16%	11.41%	14.00%
Russell 1000 Growth Index	(14.10%)	0.91%	11.32%	10.36%	12.97%
Small/Mid Cap Equity U.S. Equity	**(26.34%)**	**(17.54%)**	**1.86%**	**4.78%**	**10.29%**
Russell 2500 Index	(29.72%)	(22.47%)	(3.10%)	0.49%	7.73%
Champlain Mid Cap	(19.59%)	(11.69%)	6.90%	8.51%	11.80%
Russell MidCap Index	(27.07%)	(18.31%)	(0.81%)	1.85%	8.77%
FIAM Small Cap	(32.91%)	(23.45%)	(3.43%)	0.80%	8.84%
Russell 2000 Index	(30.61%)	(23.99%)	(4.64%)	(0.25%)	6.90%
International Equity	**(23.61%)**	**(14.54%)**	**(1.99%)**	**(0.98%)**	**1.84%**
MSCI ACWI x US (Net)	(23.36%)	(15.57%)	(1.96%)	(0.64%)	2.05%
Causeway International Opportunities (3)	(29.51%)	(22.04%)	(5.58%)	(2.75%)	2.65%
Causeway Linked Index (3)	(23.36%)	(15.57%)	(1.96%)	(0.44%)	2.80%
Aberdeen EAFE Plus	(17.89%)	(8.13%)	0.19%	(0.09%)	2.79%
MSCI ACWI x US (Net)	(23.36%)	(15.57%)	(1.96%)	(0.64%)	2.05%
American Century Non-US SC	(23.19%)	(12.13%)	0.68%	-	-
MSCI ACWI ex US Small Cap	(29.01%)	(21.18%)	(4.89%)	(0.81%)	2.79%
Fixed Income	**(2.53%)**	**4.15%**	**3.99%**	**3.65%**	**4.38%**
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.88%
BlackRock U.S. Debt Fund	3.15%	8.95%	4.88%	3.41%	3.97%
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.88%
PIMCO Fixed Income	(8.32%)	(0.90%)	2.92%	3.50%	4.68%
Custom Index (2)	(4.79%)	1.51%	2.79%	3.20%	4.47%

(1) The Total Domestic Equity target is currently composed of 78% S&P 500 and 22% Russell 2500 Index.
(2) The custom index is currently composed of 25% Barclays Mortgage, 25% Barclays Credit, 25% Barclays High Yield, and 25% JP Morgan EMBI Global. Prior to 2/1/2012, the custom index was composed of 70% Barclays Mortgage, 15% Barclays Credit, and 15% Barclays High Yield.
(3) Causeway International Value transitioned to International Opportunities in May 2016; as such, the index has been changed accordingly from EAFE to ACWI ex-US (Net Div).

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Net of Fees					
Real Estate	**1.38%**	**1.68%**	**4.09%**	**6.35%**	**9.60%**
NFI-ODCE Equal Weight Net	0.71%	4.38%	6.14%	7.82%	10.55%
JP Morgan Strategic Property Fund	1.32%	0.97%	3.99%	6.19%	9.75%
NFI-ODCE Equal Weight Net	0.71%	4.38%	6.14%	7.82%	10.55%
JP Morgan Income and Growth Fund	1.50%	3.16%	4.32%	6.66%	12.22%
NFI-ODCE Equal Weight Net	0.71%	4.38%	6.14%	7.82%	10.55%
Infrastructure	**3.76%**	**31.23%**	**18.68%**	**15.08%**	**9.76%**
CPI + 4%	1.34%	5.46%	5.89%	5.70%	5.65%
SteelRiver Infrastructure	4.59%	14.99%	9.63%	9.90%	7.30%
CPI + 4%	1.34%	5.46%	5.89%	5.70%	5.65%
Cash Composite	**0.29%**	**1.77%**	**1.57%**	**1.06%**	**0.59%**
Total Fund	**(14.39%)**	**(5.40%)**	**3.32%**	**4.40%**	**7.33%**
Total Fund Benchmark*	(13.00%)	(4.59%)	3.03%	3.92%	7.08%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. 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.

	6/2019-3/2020	FY 2019	FY 2018	FY 2017	FY 2016
Net of Fees					
Domestic Equity	**(14.21%)**	**9.69%**	**16.55%**	**20.96%**	**0.94%**
Total Domestic Equity Target (1)	(13.94%)	8.50%	14.79%	18.34%	2.28%
Large Cap Equity	**(12.20%)**	**9.84%**	**16.25%**	**20.92%**	**1.44%**
S&P 500 Index	(10.82%)	10.42%	14.37%	17.90%	3.99%
Alliance S&P Index	(10.70%)	10.37%	14.29%	17.76%	3.93%
PIMCO StocksPLUS	(12.26%)	10.64%	14.13%	19.11%	2.68%
S&P 500 Index	(10.82%)	10.42%	14.37%	17.90%	3.99%
BlackRock Russell 1000 Value Index	(20.09%)	8.57%	6.82%	15.59%	2.71%
Russell 1000 Value Index	(20.24%)	8.46%	6.77%	15.53%	2.86%
T. Rowe Price Large Cap Growth	(5.93%)	10.16%	29.47%	30.96%	(3.13%)
Russell 1000 Growth Index	(3.56%)	11.56%	22.51%	20.42%	3.02%
Small/Mid Cap Equity U.S. Equity	**(20.62%)**	**9.31%**	**17.44%**	**20.95%**	**(0.61%)**
Russell 2500 Index	(24.70%)	1.77%	16.24%	19.84%	(3.67%)
Champlain Mid Cap	(14.48%)	15.57%	17.80%	21.43%	3.76%
Russell MidCap Index	(21.54%)	7.83%	12.33%	16.48%	0.56%
FIAM Small Cap	(26.75%)	2.54%	17.06%	20.34%	(5.10%)
Russell 2000 Index	(25.55%)	(3.31%)	17.57%	24.60%	(6.73%)
International Equity	**(16.69%)**	**(2.15%)**	**8.12%**	**20.24%**	**(10.04%)**
MSCI ACWI x US (Net)	(18.02%)	1.29%	7.28%	20.45%	(10.24%)
Causeway International Opportunities (3)	(23.05%)	(2.75%)	6.84%	22.89%	(12.24%)
Causeway Linked Index (3)	(18.02%)	1.29%	7.28%	20.45%	(9.42%)
Aberdeen EAFE Plus	(10.95%)	2.70%	2.61%	17.60%	(8.32%)
MSCI ACWI x US (Net)	(18.02%)	1.29%	7.28%	20.45%	(10.24%)
American Century Non-US SC	(15.40%)	(10.00%)	22.61%	20.31%	-
MSCI ACWI ex US Small Cap	(22.12%)	(5.94%)	10.57%	20.32%	(5.46%)
Fixed Income	**0.75%**	**9.14%**	**0.14%**	**4.27%**	**6.05%**
Blmbg Aggregate Index	5.68%	7.87%	(0.40%)	(0.31%)	6.00%
BlackRock U.S. Debt Fund	5.70%	7.96%	(0.38%)	(0.25%)	6.07%
Blmbg Aggregate Index	5.68%	7.87%	(0.40%)	(0.31%)	6.00%
PIMCO Fixed Income	(4.40%)	10.30%	0.65%	7.49%	6.04%
Custom Index (2)	(1.84%)	9.53%	(1.05%)	3.83%	7.28%

(1) The Total Domestic Equity target is currently composed of 78% S&P 500 and 22% Russell 2500 Index.
(2) The custom index is currently composed of 25% Barclays Mortgage, 25% Barclays Credit, 25% Barclays High Yield, and 25% JP Morgan EMBI Global. Prior to 2/1/2012, the custom index was composed of 70% Barclays Mortgage, 15% Barclays Credit, and 15% Barclays High Yield.
(3) Causeway International Value transitioned to International Opportunities in May 2016; as such, the index has been changed accordingly from EAFE to ACWI ex-US (Net Div).

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. 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.

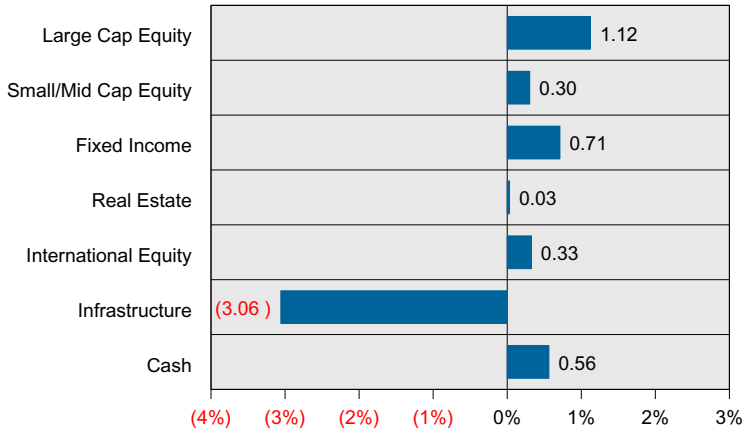
	6/2019-3/2020	FY 2019	FY 2018	FY 2017	FY 2016
Net of Fees					
Real Estate	**2.82%**	**1.78%**	**6.59%**	**7.07%**	**9.64%**
NFI-ODCE Equal Weight Net	3.22%	5.99%	7.68%	7.23%	11.24%
JP Morgan Strategic Property Fund	2.87%	1.15%	6.68%	6.88%	10.02%
NFI-ODCE Equal Weight Net	3.22%	5.99%	7.68%	7.23%	11.24%
JP Morgan Income and Growth Fund	2.70%	3.11%	6.43%	7.37%	8.69%
NFI-ODCE Equal Weight Net	3.22%	5.99%	7.68%	7.23%	11.24%
Infrastructure	**17.35%**	**21.76%**	**8.04%**	**11.42%**	**12.30%**
CPI + 4%	3.63%	5.44%	7.09%	5.50%	4.64%
SteelRiver Infrastructure	12.19%	14.56%	(3.21%)	6.64%	17.13%
CPI + 4%	3.63%	5.44%	7.09%	5.50%	4.64%
Cash Composite	**1.20%**	**2.11%**	**1.22%**	**0.68%**	**0.12%**
Total Fund	**(8.42%)**	**6.29%**	**8.77%**	**14.26%**	**1.89%**
Total Fund Benchmark*	(7.52%)	6.28%	7.96%	12.04%	1.82%

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

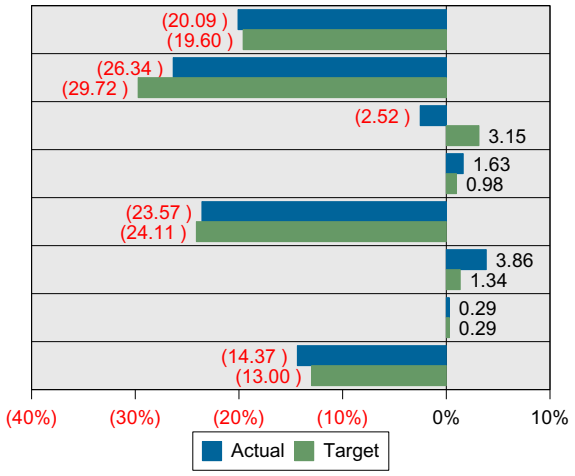
Quarterly Style Attribution - March 31, 2020

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: Style Allocation Effect and Manager Selection Effect. The Style Allocation Effect represents the excess return due to the actual total fund style allocation differing from the target style allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

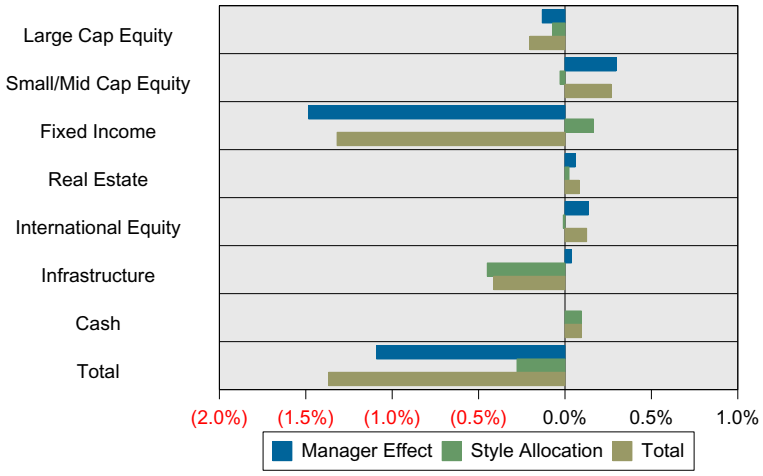
Style Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Style Class



Relative Attribution Effects for Quarter ended March 31, 2020

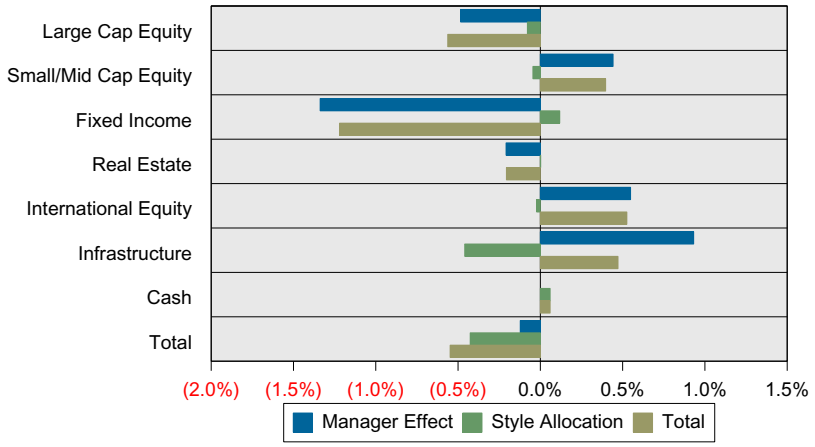
Style Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Style Allocation	Total Relative Return
Large Cap Equity	27%	26%	(20.09%)	(19.60%)	(0.13%)	(0.07%)	(0.20%)
Small/Mid Cap Equity	8%	8%	(26.34%)	(29.72%)	0.30%	(0.03%)	0.27%
Fixed Income	28%	27%	(2.52%)	3.15%	(1.48%)	0.16%	(1.32%)
Real Estate	9%	9%	1.63%	0.98%	0.06%	0.02%	0.08%
International Equity	25%	25%	(23.57%)	(24.11%)	0.13%	(0.01%)	0.13%
Infrastructure	2%	5%	3.86%	1.34%	0.04%	(0.45%)	(0.41%)
Cash	1%	0%	0.29%	0.29%	0.00%	0.09%	0.09%
Total			**(14.37%)**	**=(13.00%)**	**+ (1.09%)**	**+ (0.28%)**	**(1.37%)**

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

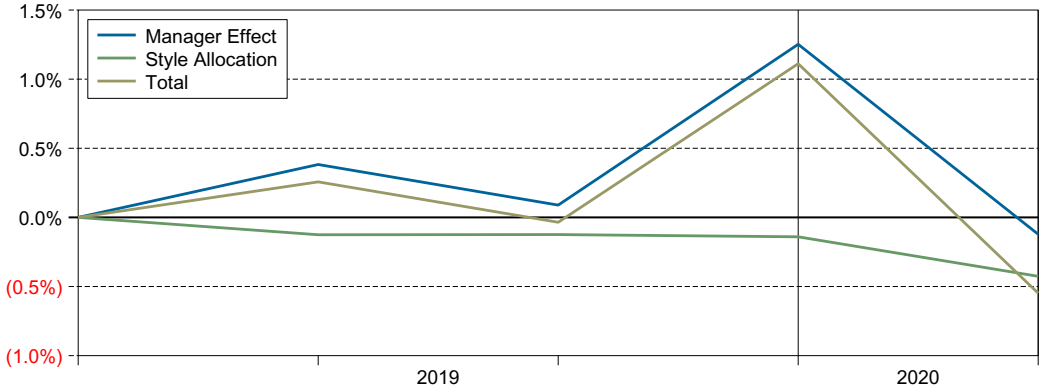
Cumulative Style Relative Attribution - March 31, 2020

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 style class. These relative attribution effects separate the cumulative sources of total fund excess return into Style Allocation Effect and Manager Selection Effect.

One Year Relative Attribution Effects



Cumulative Relative Attribution Effects



One Year Relative Attribution Effects

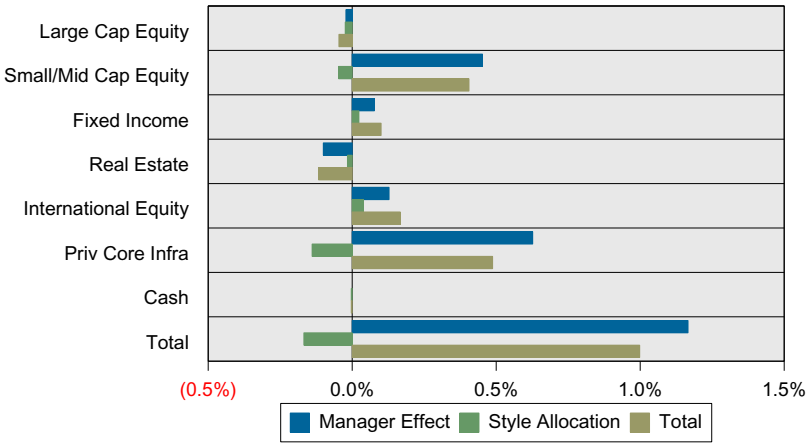
Style Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Style Allocation	Total Relative Return
Large Cap Equity	27%	26%	(8.78%)	(6.98%)	(0.48%)	(0.08%)	(0.56%)
Small/Mid Cap Equity	8%	8%	(17.54%)	(22.47%)	0.44%	(0.05%)	0.40%
Fixed Income	27%	27%	4.18%	8.93%	(1.34%)	0.12%	(1.22%)
Real Estate	9%	9%	2.38%	4.88%	(0.21%)	0.00%	(0.21%)
International Equity	24%	25%	(14.26%)	(16.32%)	0.55%	(0.02%)	0.53%
Infrastructure	4%	5%	35.93%	5.46%	0.93%	(0.46%)	0.47%
Cash	0%	0%	1.77%	1.77%	0.00%	0.06%	0.06%
Total			**(5.13%) =**	**(4.59%) +**	**(0.12%) +**	**(0.43%)**	**(0.55%)**

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

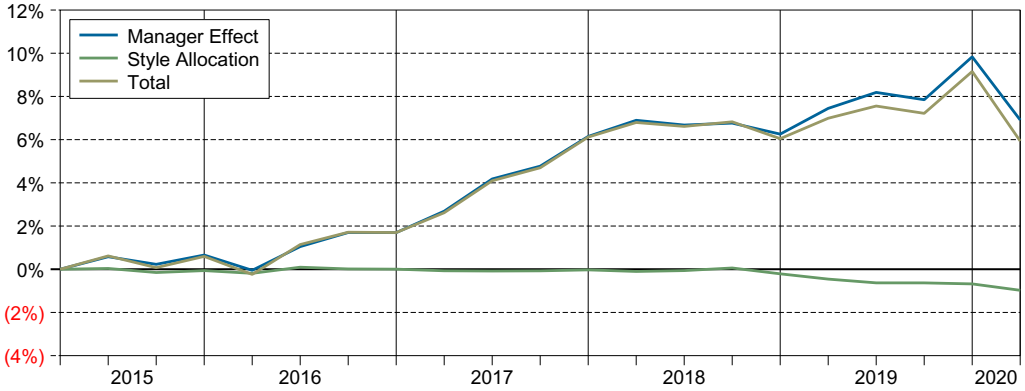
Cumulative Style Relative Attribution - March 31, 2020

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 style class. These relative attribution effects separate the cumulative sources of total fund excess return into Style Allocation Effect and Manager Selection Effect.

Five Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Five Year Annualized Relative Attribution Effects

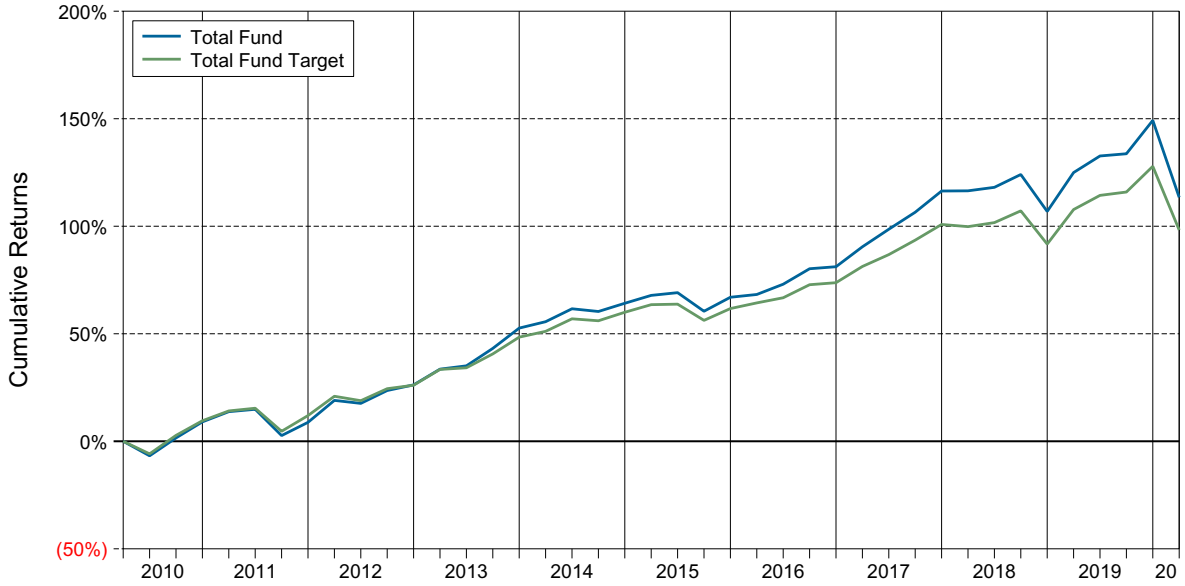
Style Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Style Allocation	Total Relative Return
Large Cap Equity	29%	28%	6.78%	6.73%	(0.02%)	(0.02%)	(0.05%)
Small/Mid Cap Equity	9%	8%	5.40%	0.49%	0.45%	(0.05%)	0.41%
Fixed Income	25%	27%	3.88%	3.36%	0.08%	0.02%	0.10%
Real Estate	9%	9%	7.32%	8.46%	(0.10%)	(0.02%)	(0.12%)
International Equity	22%	23%	(0.52%)	(0.90%)	0.13%	0.04%	0.17%
Priv Core Infra	5%	5%	18.87%	5.70%	0.63%	(0.14%)	0.49%
Cash	0%	0%	1.06%	1.06%	0.00%	(0.00%)	(0.00%)
Total			**4.92% =**	**3.92% +**	**1.17% +**	**(0.17%)**	**1.00%**

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

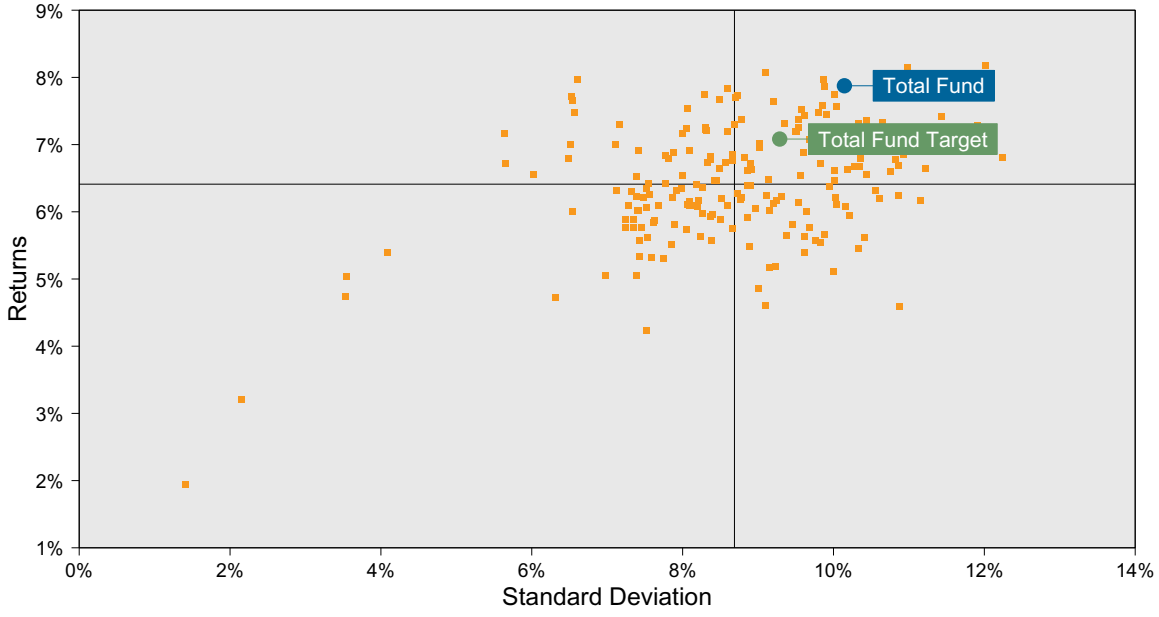
Cumulative Performance Relative to Target

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



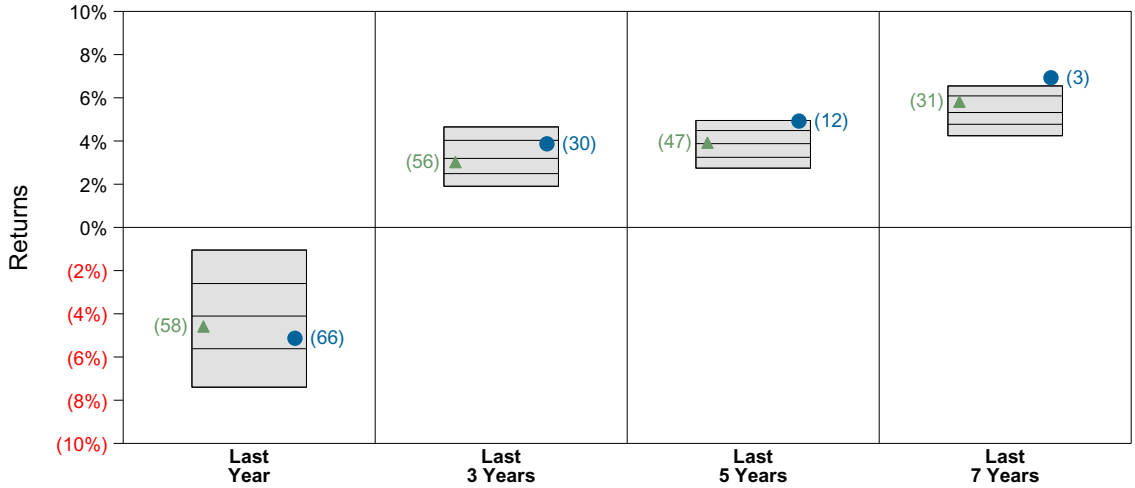
Squares represent membership of the Callan Public Fund Sponsor Database

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Total Fund Ranking

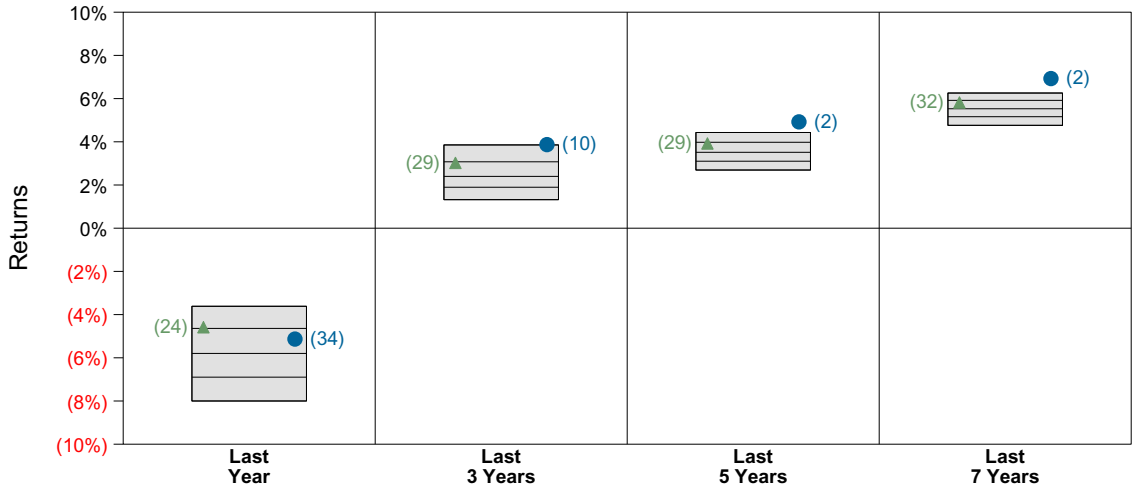
The first two charts show the ranking of the Total Fund's performance relative to that of the Callan Public Fund Sponsor Database for periods ended March 31, 2020. The first chart is a standard unadjusted ranking. In the second chart each fund in the database is adjusted to have the same historical asset allocation as that of the Total Fund.

Callan Public Fund Sponsor Database



	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	(1.05)	4.65	4.95	6.55
25th Percentile	(2.60)	4.03	4.48	6.09
Median	(4.10)	3.19	3.88	5.32
75th Percentile	(5.62)	2.49	3.24	4.77
90th Percentile	(7.40)	1.90	2.74	4.24
Total Fund ●	(5.13)	3.87	4.92	6.93
Policy Target ▲	(4.59)	3.03	3.92	5.82

Asset Allocation Adjusted Ranking



	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	(3.61)	3.86	4.43	6.26
25th Percentile	(4.64)	3.07	3.98	5.92
Median	(5.80)	2.40	3.51	5.53
75th Percentile	(6.90)	1.90	3.10	5.16
90th Percentile	(8.00)	1.32	2.69	4.76
Total Fund ●	(5.13)	3.87	4.92	6.93
Policy Target ▲	(4.59)	3.03	3.92	5.82

* Current Quarter Target = 27.0% Blmbg Aggregate, 26.0% S&P 500 Index, 25.0% MSCI ACWI ex US IMI, 9.0% NCREIF NFI-ODCE Val Wt Gr, 8.0% Russell 2500 Index and 5.0% CPI-W+4.0%.

Total Fund
Period Ended March 31, 2020

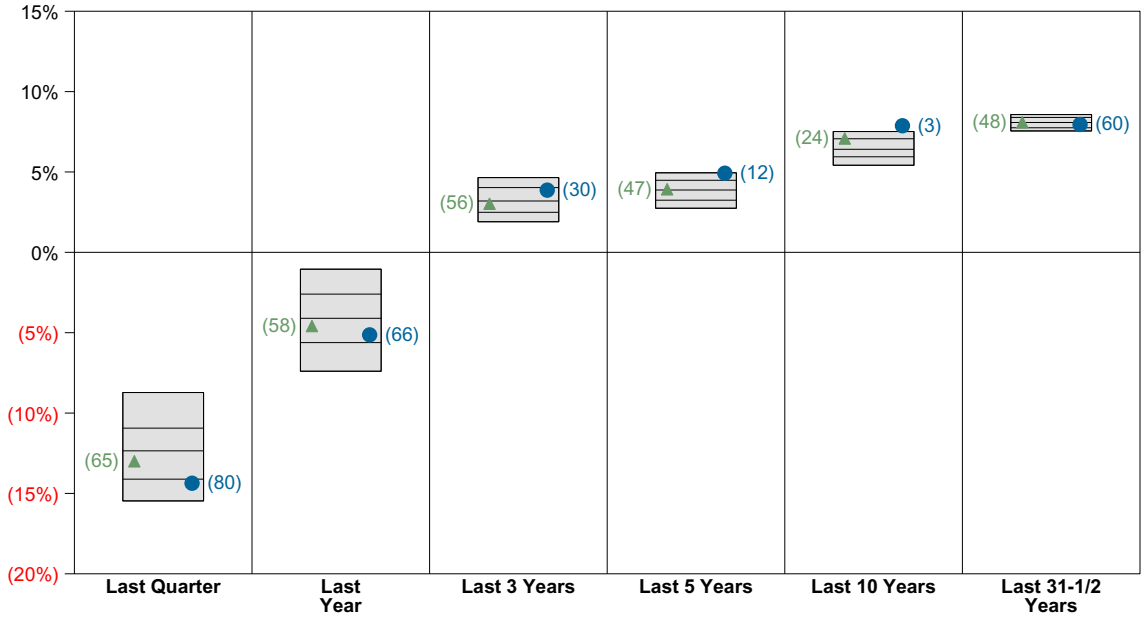
Investment Philosophy

The total fund return stream starts the third quarter of 1988.

Quarterly Summary and Highlights

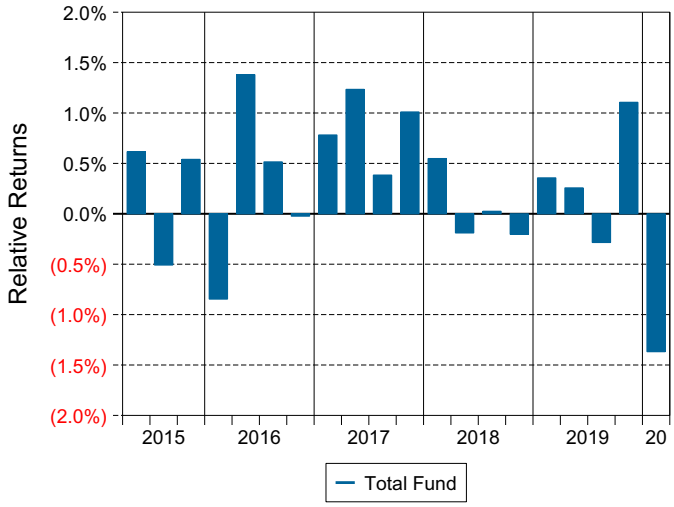
- Total Fund's portfolio posted a (14.37)% return for the quarter placing it in the 80 percentile of the Callan Public Fund Sponsor Database group for the quarter and in the 66 percentile for the last year.
- Total Fund's portfolio underperformed the Total Fund Benchmark by 1.37% for the quarter and underperformed the Total Fund Benchmark for the year by 0.55%.

Performance vs Callan Public Fund Sponsor Database (Gross)

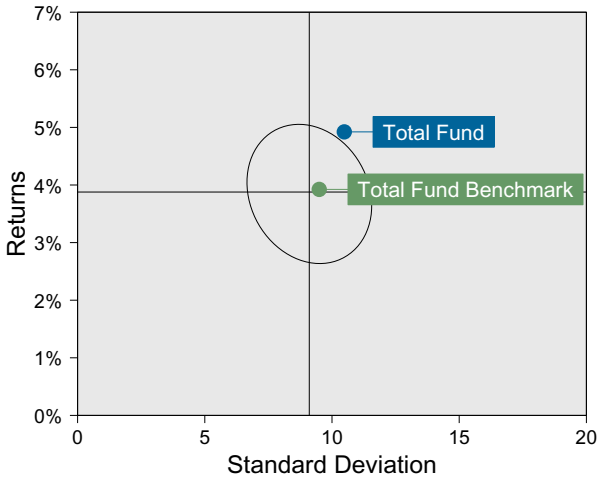


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 31-1/2 Years
10th Percentile	(8.72)	(1.05)	4.65	4.95	7.52	8.57
25th Percentile	(10.94)	(2.60)	4.03	4.48	7.07	8.39
Median	(12.35)	(4.10)	3.19	3.88	6.41	8.08
75th Percentile	(14.11)	(5.62)	2.49	3.24	5.94	7.75
90th Percentile	(15.47)	(7.40)	1.90	2.74	5.42	7.55
Total Fund ●	(14.37)	(5.13)	3.87	4.92	7.88	7.95
Total Fund Benchmark ▲	(13.00)	(4.59)	3.03	3.92	7.08	8.09

Relative Return vs Total Fund Benchmark



Callan Public Fund Sponsor Database (Gross) Annualized Five Year Risk vs Return



Domestic Equity

Domestic Equity
Period Ended March 31, 2020

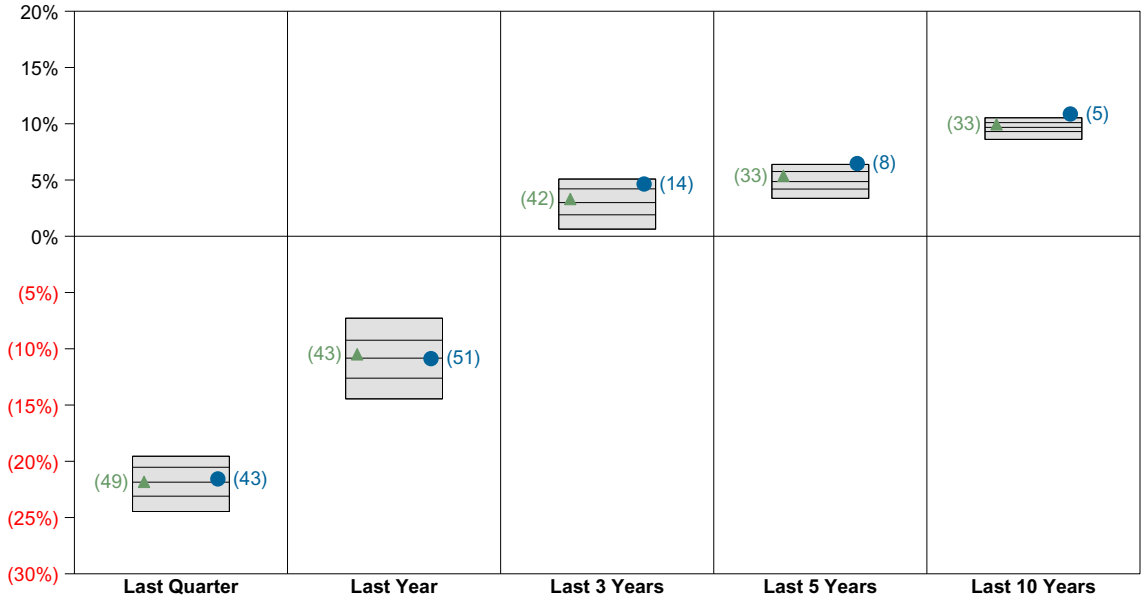
Investment Philosophy

The Total Domestic Equity target is currently composed of 78% S&P 500 Index and 22% Russell 2500 Index.

Quarterly Summary and Highlights

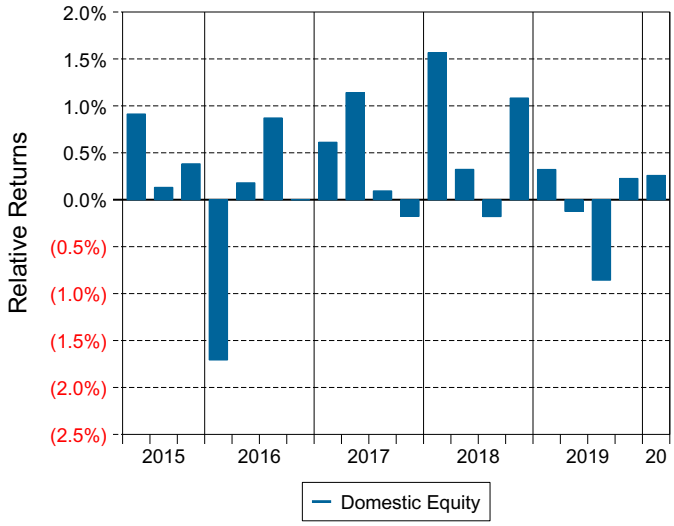
- Domestic Equity's portfolio posted a (21.57)% return for the quarter placing it in the 43 percentile of the Public Fund - Domestic Equity group for the quarter and in the 51 percentile for the last year.
- Domestic Equity's portfolio outperformed the Total Domestic Equity Target by 0.26% for the quarter and underperformed the Total Domestic Equity Target for the year by 0.39%.

Performance vs Public Fund - Domestic Equity (Gross)

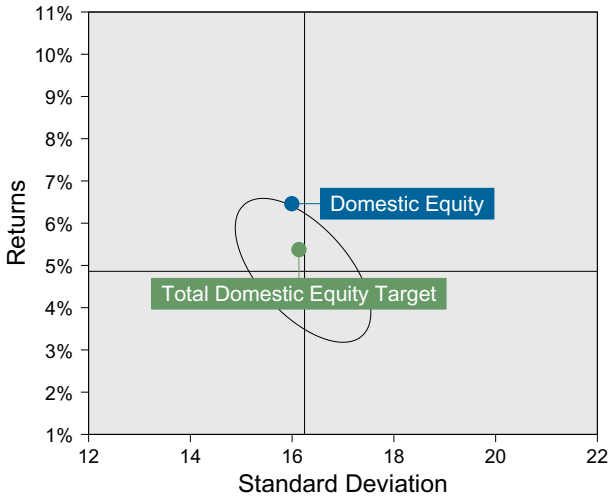


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(19.55)	(7.28)	5.08	6.39	10.53
25th Percentile	(20.53)	(9.24)	4.21	5.75	10.10
Median	(21.86)	(10.83)	2.99	4.86	9.68
75th Percentile	(23.10)	(12.61)	1.91	4.20	9.31
90th Percentile	(24.46)	(14.45)	0.63	3.37	8.61
Domestic Equity ●	(21.57)	(10.88)	4.64	6.46	10.87
Total Domestic Equity Target ▲	(21.83)	(10.49)	3.31	5.37	9.95

Relative Returns vs Total Domestic Equity Target



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

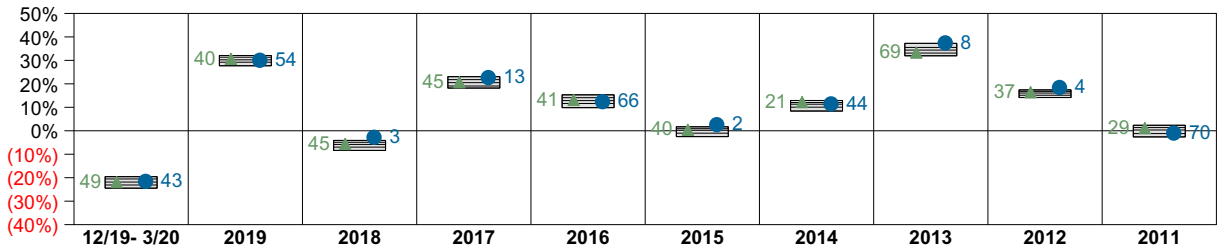


Domestic Equity
Return Analysis Summary

Return Analysis

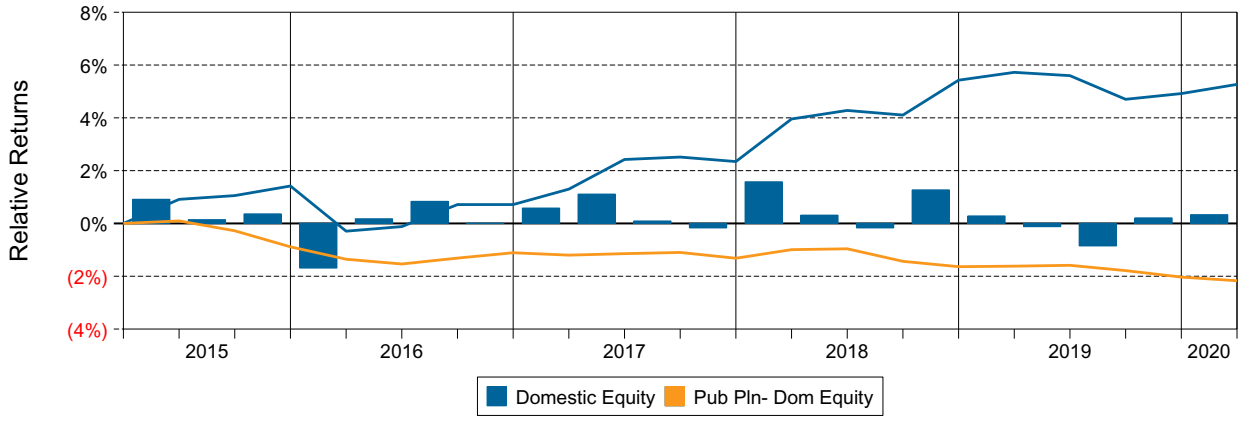
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Public Fund - Domestic Equity (Gross)

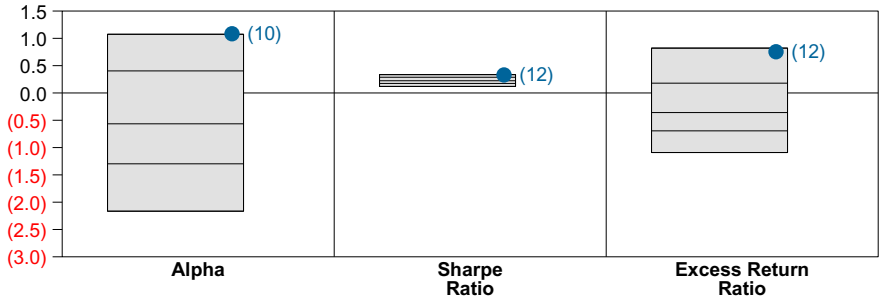


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(19.55)	32.08	(4.12)	23.06	15.31	1.70	12.91	37.25	17.42	2.34
25th Percentile	(20.53)	31.35	(4.91)	21.80	14.10	0.89	12.05	35.51	16.79	1.36
Median	(21.86)	30.24	(5.81)	20.51	12.86	0.19	11.32	34.39	16.08	0.33
75th Percentile	(23.10)	29.22	(6.96)	19.08	11.63	(1.03)	10.05	33.11	15.15	(1.19)
90th Percentile	(24.46)	27.70	(8.37)	18.20	9.85	(2.49)	8.41	31.95	14.16	(2.61)
Domestic Equity ●	(21.57)	30.05	(2.77)	22.67	12.40	2.59	11.46	37.46	18.44	(0.99)
Total Domestic Equity Target ▲	(21.83)	30.67	(5.61)	20.72	13.19	0.47	12.25	33.37	16.43	1.16

Cumulative and Quarterly Relative Return vs Total Domestic Equity Target



Risk Adjusted Return Measures vs Total Domestic Equity Target
Rankings Against Public Fund - Domestic Equity (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.07	0.34	0.82
25th Percentile	0.40	0.29	0.18
Median	(0.57)	0.22	(0.36)
75th Percentile	(1.30)	0.17	(0.69)
90th Percentile	(2.17)	0.12	(1.09)
Domestic Equity ●	1.08	0.33	0.75

Alliance S&P Index
Period Ended March 31, 2020

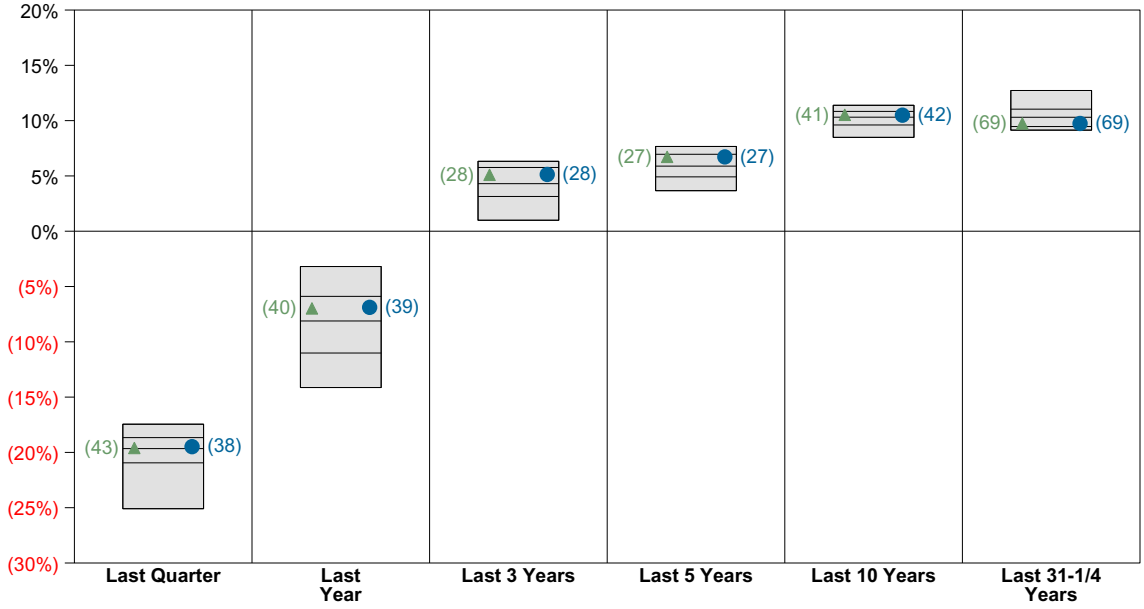
Investment Philosophy

Alliance uses a stratified sampling methodology and purchases a majority of the index stocks to replicate the Standard and Poor's 500. The product was funded during the third quarter of 1988.

Quarterly Summary and Highlights

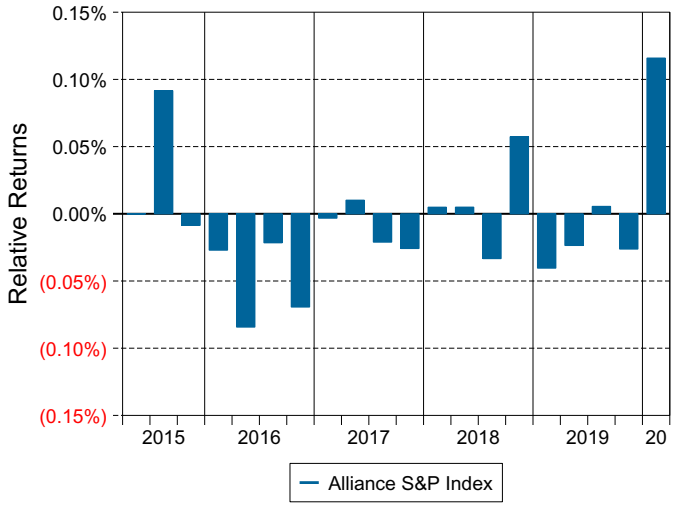
- Alliance S&P Index's portfolio posted a (19.48)% return for the quarter placing it in the 38 percentile of the Callan Large Cap Core group for the quarter and in the 39 percentile for the last year.
- Alliance S&P Index's portfolio outperformed the S&P 500 Index by 0.12% for the quarter and outperformed the S&P 500 Index for the year by 0.10%.

Performance vs Callan Large Cap Core (Gross)

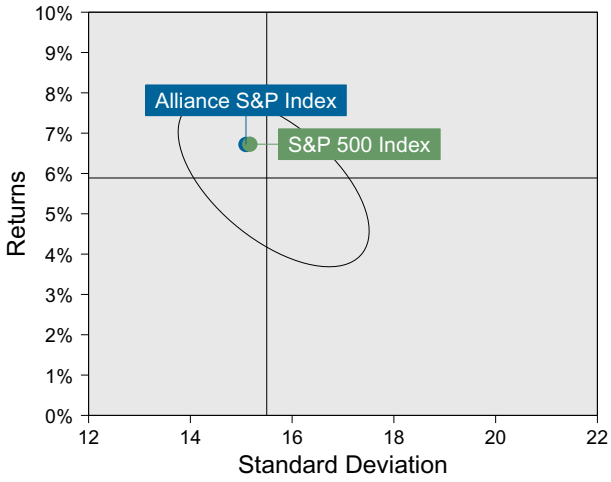


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 31-1/4 Years
10th Percentile	(17.45)	(3.19)	6.32	7.66	11.39	12.73
25th Percentile	(18.66)	(5.89)	5.76	6.96	10.83	11.04
Median	(19.66)	(8.11)	4.30	5.89	10.31	10.30
75th Percentile	(20.94)	(11.01)	3.14	4.92	9.61	9.47
90th Percentile	(25.09)	(14.13)	0.99	3.67	8.49	9.14
Alliance S&P Index ●	(19.48)	(6.88)	5.13	6.72	10.49	9.74
S&P 500 Index ▲	(19.60)	(6.98)	5.10	6.73	10.53	9.75

Relative Return vs S&P 500 Index



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

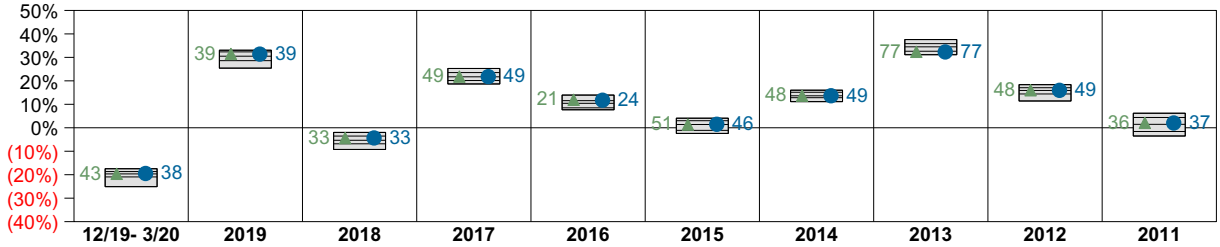


Alliance S&P Index
Return Analysis Summary

Return Analysis

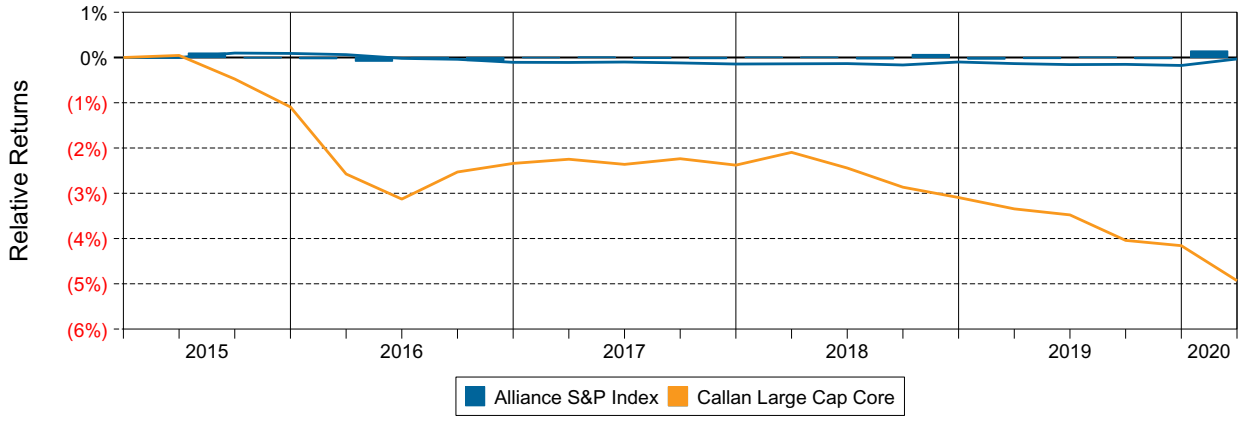
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Large Cap Core (Gross)

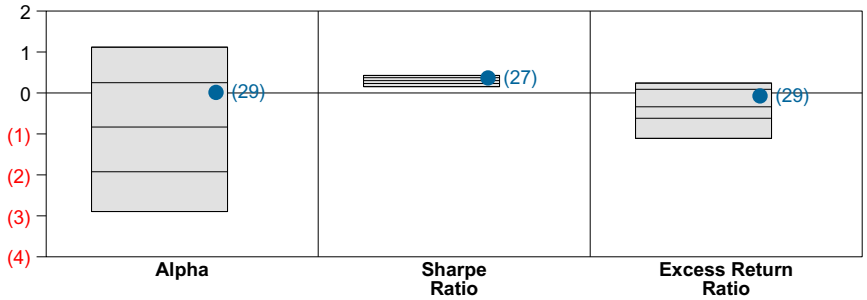


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(17.45)	33.04	(1.97)	25.27	13.93	4.08	16.01	37.59	18.38	6.19
25th Percentile	(18.66)	32.34	(3.53)	23.53	11.55	3.01	15.12	35.85	17.07	4.38
Median	(19.66)	30.50	(5.33)	21.72	10.42	1.40	13.63	34.49	15.89	1.46
75th Percentile	(20.94)	28.60	(6.83)	20.14	8.50	(1.10)	12.82	32.61	14.41	(1.59)
90th Percentile	(25.09)	25.41	(9.24)	18.67	7.68	(2.41)	11.14	31.14	11.41	(3.51)
Alliance S&P Index ●	(19.48)	31.39	(4.34)	21.79	11.74	1.48	13.65	32.31	15.95	2.03
S&P 500 Index ▲	(19.60)	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39	16.00	2.11

Cumulative and Quarterly Relative Return vs S&P 500 Index



Risk Adjusted Return Measures vs S&P 500 Index
Rankings Against Callan Large Cap Core (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.12	0.43	0.24
25th Percentile	0.25	0.37	0.09
Median	(0.83)	0.30	(0.34)
75th Percentile	(1.92)	0.23	(0.62)
90th Percentile	(2.90)	0.15	(1.11)
Alliance S&P Index ●	0.01	0.37	(0.07)

PIMCO StocksPLUS
Period Ended March 31, 2020

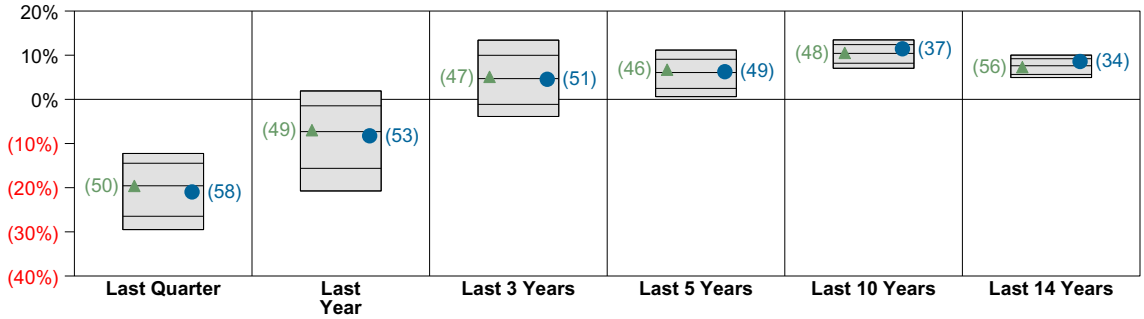
Investment Philosophy

PIMCO's StocksPLUS investment philosophy is based on the principal that stock index futures and swaps, when used as a non-leveraged vehicle for obtaining long-term equity exposure, offer an attractive means for enhancing equity market returns. The strategy seeks a longer time horizon of their investors relative to that of typical money market investors. This long time horizon allows PIMCO to use their fixed income and associated risk management skill set to seek out attractive yields relative to money market financing rates on a portion of the high quality fixed-income securities they use to back the futures contracts. Since they only require sufficient liquidity to meet a worst case margin outflow caused by a stock market decline, a portion of their fixed-income portfolio can be invested in somewhat less liquid, higher yielding securities. In addition, they generally take advantage of the typical upward slope of the short end of the yield curve by extending their duration to six months in most market environments and sometimes up to one year. PIMCO also feels that it is appropriate in most market environments to capture both the credit yield premium provided by holding a portion of the fixed-income portfolio in low duration corporate securities and the volatility yield premium provided by holding high quality mortgage securities. The product was funded during the first quarter of 2006.

Quarterly Summary and Highlights

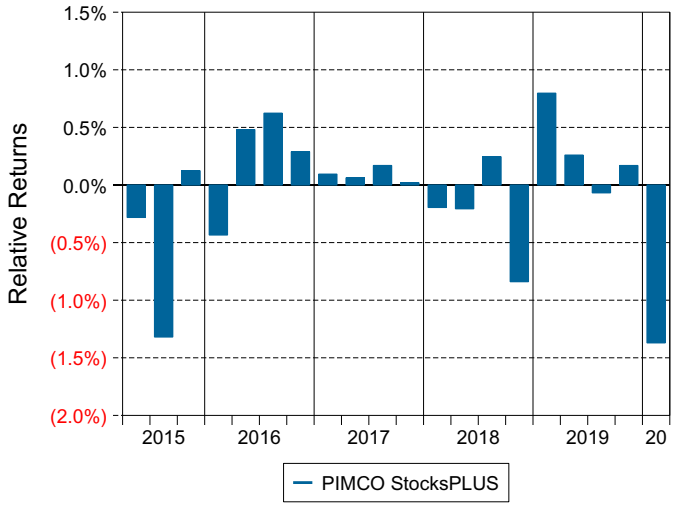
- PIMCO StocksPLUS's portfolio posted a (20.97)% return for the quarter placing it in the 58 percentile of the Callan Large Capitalization group for the quarter and in the 53 percentile for the last year.
- PIMCO StocksPLUS's portfolio underperformed the S&P 500 Index by 1.37% for the quarter and underperformed the S&P 500 Index for the year by 1.28%.

Performance vs Callan Large Capitalization (Gross)

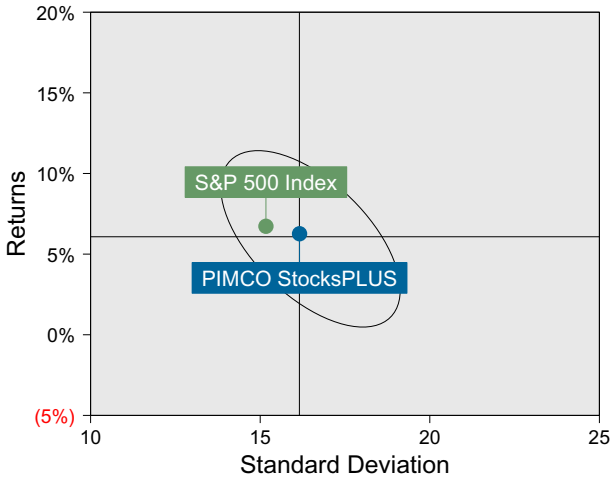


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 14 Years
10th Percentile	(12.25)	1.90	13.41	11.16	13.47	10.02
25th Percentile	(14.47)	(1.46)	9.97	9.08	12.40	9.20
Median	(19.57)	(7.30)	4.70	6.08	10.41	7.61
75th Percentile	(26.47)	(15.62)	(1.14)	2.48	8.18	5.65
90th Percentile	(29.49)	(20.74)	(3.88)	0.62	7.03	4.94
PIMCO StocksPLUS ●	(20.97)	(8.26)	4.55	6.26	11.45	8.58
S&P 500 Index ▲	(19.60)	(6.98)	5.10	6.73	10.53	7.29

Relative Return vs S&P 500 Index



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

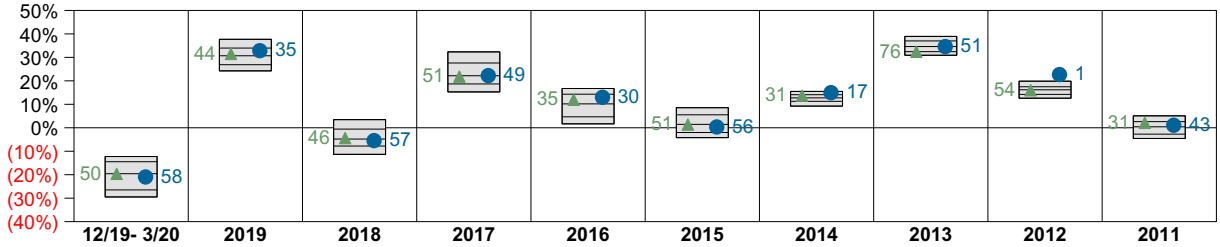


PIMCO StocksPLUS
Return Analysis Summary

Return Analysis

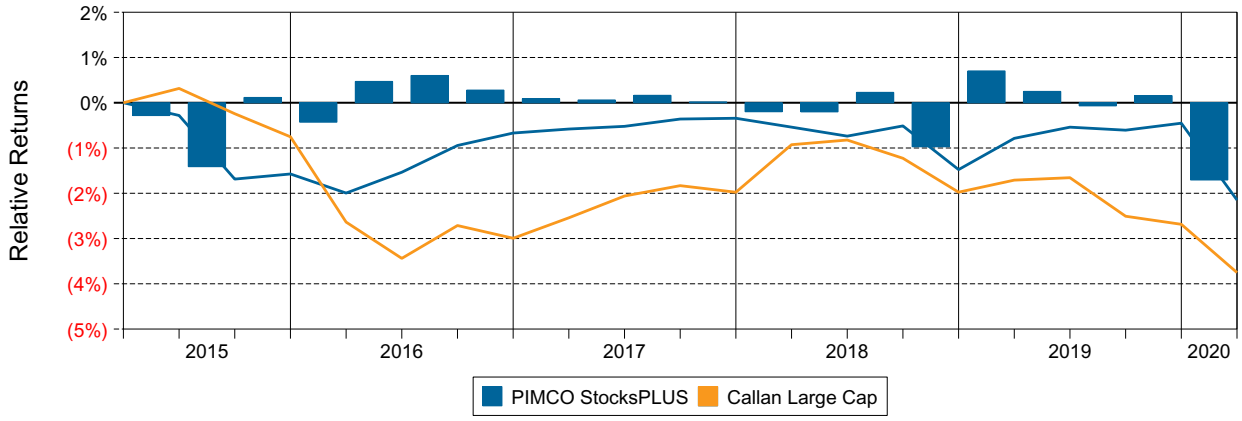
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Large Capitalization (Gross)

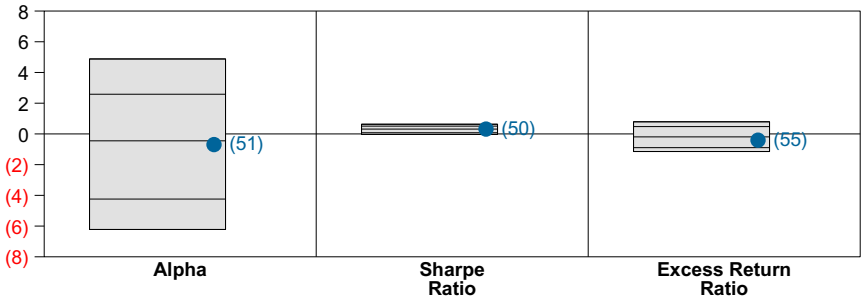


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(12.25)	37.69	3.46	32.34	16.73	8.56	15.49	38.93	19.85	5.09
25th Percentile	(14.47)	33.97	(0.57)	27.61	14.30	5.52	14.09	37.01	17.48	2.61
Median	(19.57)	30.68	(4.80)	22.17	10.18	1.45	12.73	34.61	16.18	0.40
75th Percentile	(26.47)	26.88	(7.78)	18.68	4.67	(2.01)	11.27	32.43	14.23	(2.71)
90th Percentile	(29.49)	24.24	(11.33)	15.28	1.67	(4.21)	9.23	30.89	12.61	(4.56)
PIMCO StocksPLUS ●	(20.97)	32.85	(5.47)	22.23	12.99	0.34	14.97	34.59	22.68	1.07
S&P 500 Index ▲	(19.60)	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39	16.00	2.11

Cumulative and Quarterly Relative Return vs S&P 500 Index



Risk Adjusted Return Measures vs S&P 500 Index
Rankings Against Callan Large Capitalization (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.88	0.63	0.79
25th Percentile	2.58	0.51	0.48
Median	(0.45)	0.31	(0.19)
75th Percentile	(4.24)	0.08	(0.89)
90th Percentile	(6.22)	(0.03)	(1.15)
PIMCO StocksPLUS ●	(0.69)	0.31	(0.41)

BlackRock Russell 1000 Value
Period Ended March 31, 2020

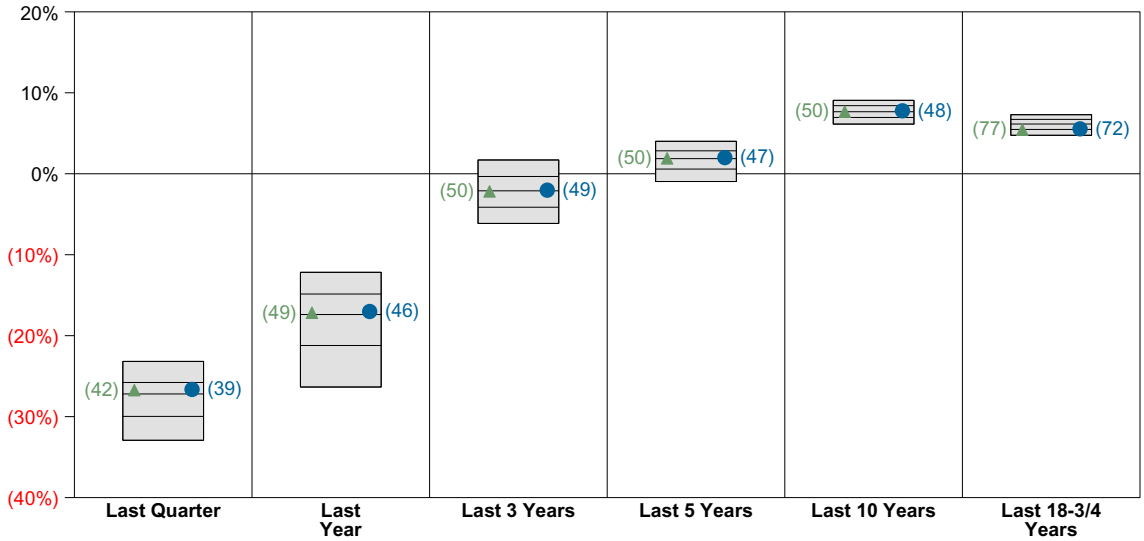
Investment Philosophy

The objective of the Russell 1000 Value Index Fund is to track the performance of its benchmark, the Russell 1000 Value Index. They seek to deliver a high quality and cost-effective index-based solution to institutional investors. The product was funded during the second quarter of 2001.

Quarterly Summary and Highlights

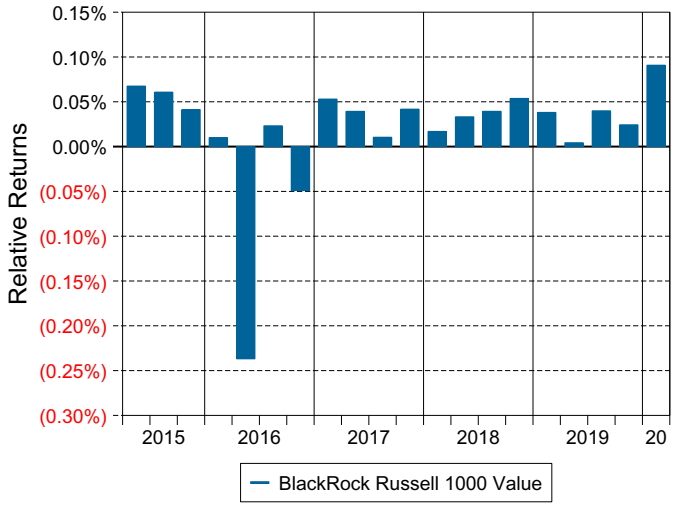
- BlackRock Russell 1000 Value's portfolio posted a (26.64)% return for the quarter placing it in the 39 percentile of the Callan Large Cap Value group for the quarter and in the 46 percentile for the last year.
- BlackRock Russell 1000 Value's portfolio outperformed the Russell 1000 Value Index by 0.09% for the quarter and outperformed the Russell 1000 Value Index for the year by 0.16%.

Performance vs Callan Large Cap Value (Gross)

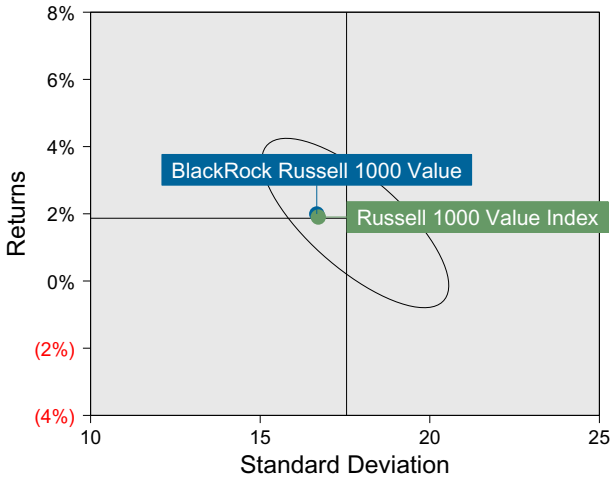


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 18-3/4 Years
10th Percentile	(23.18)	(12.17)	1.70	4.01	9.07	7.30
25th Percentile	(25.78)	(14.85)	(0.34)	2.83	8.41	6.72
Median	(27.20)	(17.39)	(2.11)	1.87	7.66	6.14
75th Percentile	(29.97)	(21.21)	(4.13)	0.58	6.95	5.47
90th Percentile	(32.92)	(26.34)	(6.14)	(0.96)	6.13	4.75
BlackRock Russell 1000 Value ●	(26.64)	(17.01)	(2.03)	1.99	7.77	5.54
Russell 1000 Value Index ▲	(26.73)	(17.17)	(2.18)	1.90	7.67	5.44

Relative Return vs Russell 1000 Value Index



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

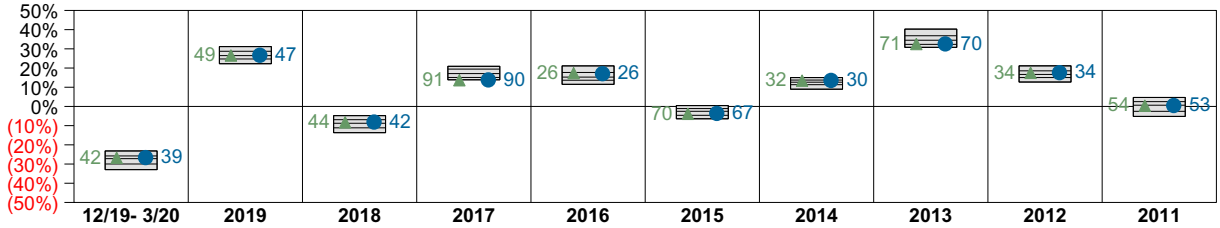


BlackRock Russell 1000 Value
Return Analysis Summary

Return Analysis

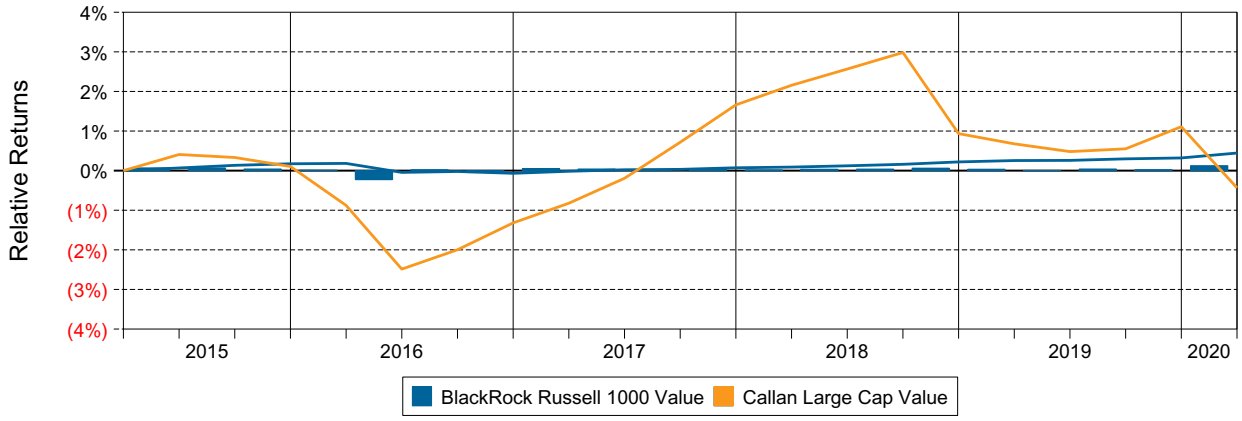
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Large Cap Value (Gross)

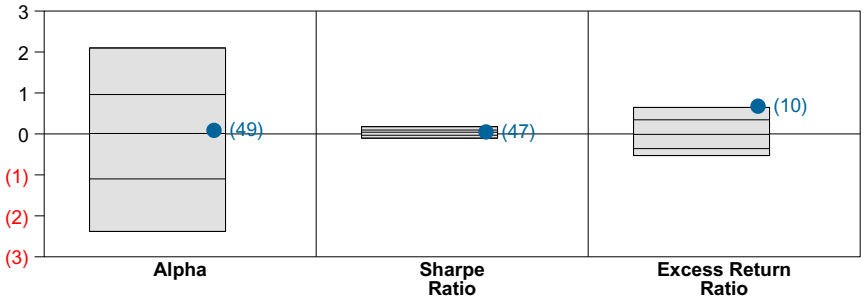


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(23.18)	31.16	(4.79)	20.91	21.12	0.44	15.04	40.28	21.14	4.68
25th Percentile	(25.78)	28.73	(6.90)	19.44	17.69	(1.11)	13.74	36.82	18.54	2.50
Median	(27.20)	26.47	(8.76)	17.10	15.27	(2.53)	12.63	34.48	16.66	0.64
75th Percentile	(29.97)	24.72	(11.14)	15.09	13.66	(4.62)	11.33	32.34	15.04	(2.54)
90th Percentile	(32.92)	22.25	(13.67)	13.87	11.52	(6.43)	8.98	30.78	12.70	(5.19)
BlackRock Russell 1000 Value ●	(26.64)	26.67	(8.13)	13.82	17.06	(3.62)	13.56	32.57	17.60	0.49
Russell 1000 Value Index ▲	(26.73)	26.54	(8.27)	13.66	17.34	(3.83)	13.45	32.53	17.51	0.39

Cumulative and Quarterly Relative Return vs Russell 1000 Value Index



Risk Adjusted Return Measures vs Russell 1000 Value Index
Rankings Against Callan Large Cap Value (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	2.10	0.18	0.65
25th Percentile	0.96	0.10	0.34
Median	0.01	0.04	(0.01)
75th Percentile	(1.10)	(0.03)	(0.36)
90th Percentile	(2.38)	(0.10)	(0.53)
BlackRock Russell 1000 Value ●	0.09	0.05	0.68

T. Rowe Price Large Cap Growth
Period Ended March 31, 2020

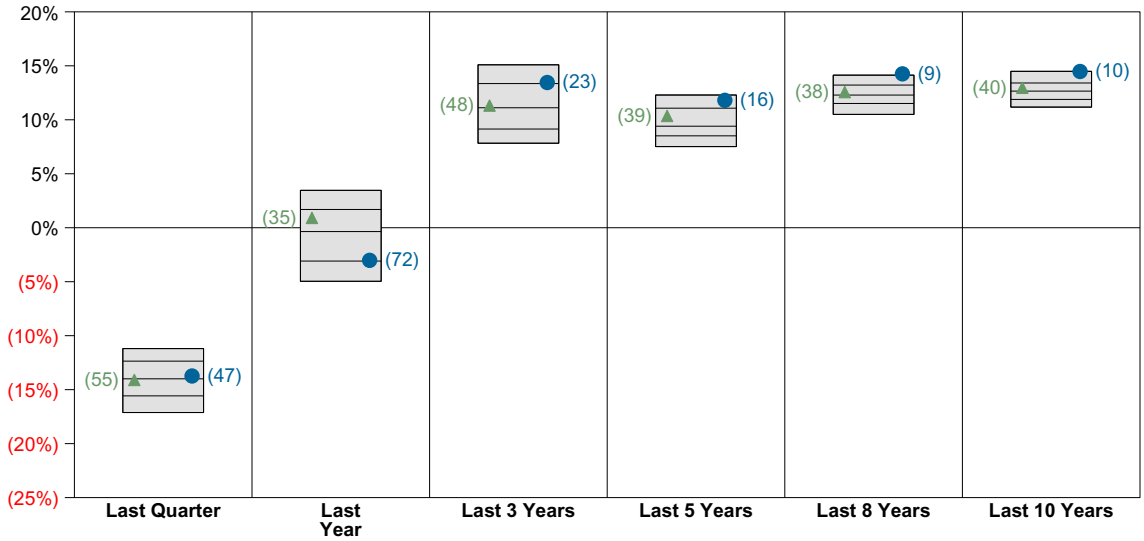
Investment Philosophy

The Large-Cap Growth Strategy is a fundamentally driven, active approach to large company growth investing. The investment philosophy is centered around the manager's belief that long-term growth in earnings and cash flow drive stockholder returns. The product was funded during the first quarter of 2012. Performance prior is that of the composite.

Quarterly Summary and Highlights

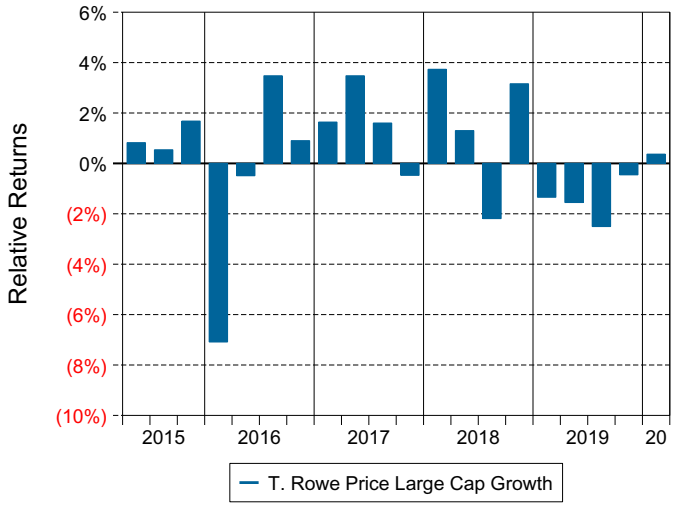
- T. Rowe Price Large Cap Growth's portfolio posted a (13.74)% return for the quarter placing it in the 47 percentile of the Callan Large Cap Growth group for the quarter and in the 72 percentile for the last year.
- T. Rowe Price Large Cap Growth's portfolio outperformed the Russell 1000 Growth Index by 0.36% for the quarter and underperformed the Russell 1000 Growth Index for the year by 3.93%.

Performance vs Callan Large Cap Growth (Gross)

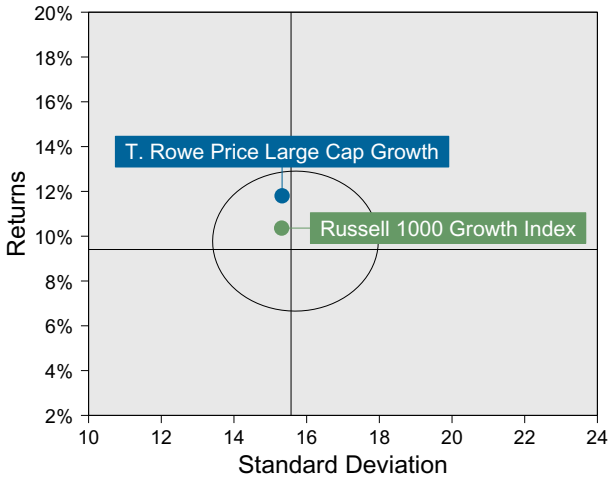


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8 Years	Last 10 Years
10th Percentile	(11.20)	3.46	15.09	12.30	14.14	14.49
25th Percentile	(12.36)	1.69	13.35	11.07	13.22	13.41
Median	(14.00)	(0.36)	11.11	9.41	12.29	12.65
75th Percentile	(15.57)	(3.09)	9.14	8.51	11.51	11.89
90th Percentile	(17.12)	(4.96)	7.83	7.52	10.50	11.17
T. Rowe Price Large Cap Growth ●	(13.74)	(3.02)	13.45	11.80	14.25	14.47
Russell 1000 Growth Index ▲	(14.10)	0.91	11.32	10.36	12.57	12.97

Relative Return vs Russell 1000 Growth Index



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

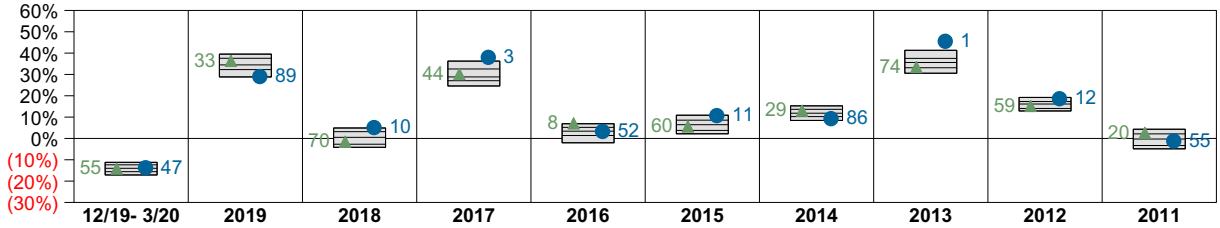


T. Rowe Price Large Cap Growth
Return Analysis Summary

Return Analysis

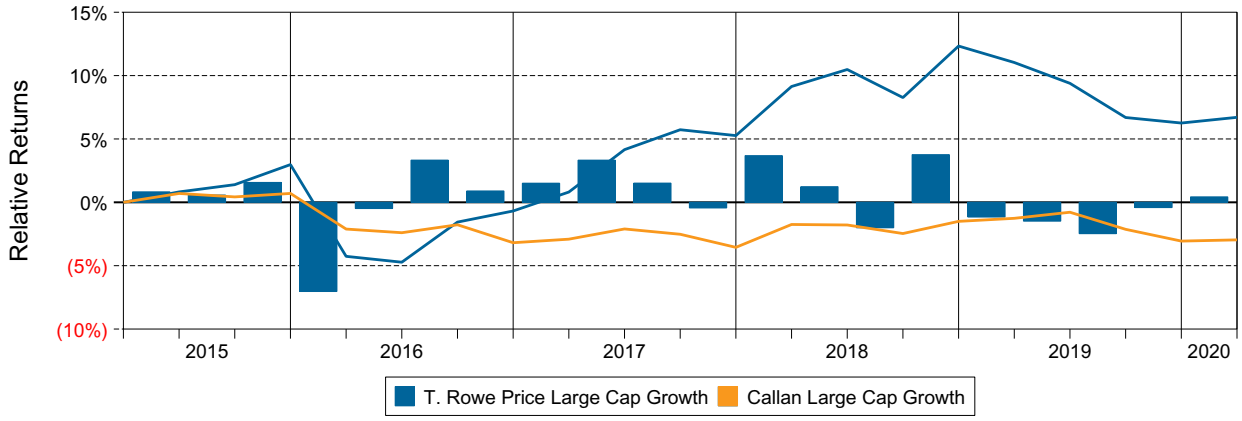
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Large Cap Growth (Gross)

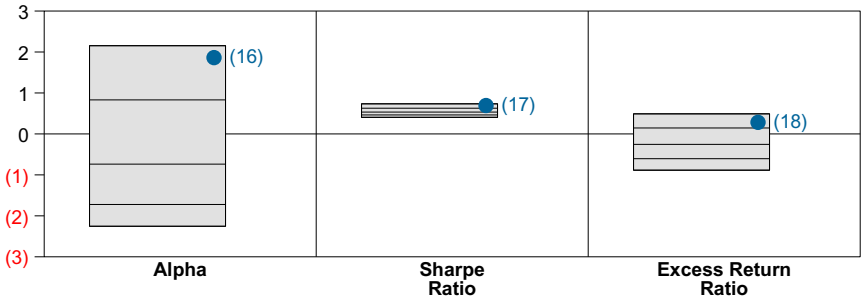


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(11.20)	39.53	4.90	36.25	6.89	10.89	15.27	41.32	19.23	4.31
25th Percentile	(12.36)	37.57	3.18	32.56	5.19	8.56	13.65	37.53	17.30	2.13
Median	(14.00)	34.47	0.51	28.84	3.39	6.43	11.82	35.60	16.14	(0.28)
75th Percentile	(15.57)	32.27	(2.72)	27.06	1.37	3.77	10.23	33.14	14.05	(3.31)
90th Percentile	(17.12)	28.82	(4.16)	24.59	(2.03)	2.18	8.44	30.56	12.87	(4.87)
T. Rowe Price Large Cap Growth ●	(13.74)	29.01	5.10	38.01	3.27	10.69	9.27	45.54	18.63	(1.19)
Russell 1000 Growth Index ▲	(14.10)	36.39	(1.51)	30.21	7.08	5.67	13.05	33.48	15.26	2.64

Cumulative and Quarterly Relative Return vs Russell 1000 Growth Index



Risk Adjusted Return Measures vs Russell 1000 Growth Index
Rankings Against Callan Large Cap Growth (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	2.15	0.74	0.49
25th Percentile	0.83	0.63	0.15
Median	(0.74)	0.53	(0.26)
75th Percentile	(1.72)	0.46	(0.60)
90th Percentile	(2.25)	0.40	(0.89)
T. Rowe Price Large Cap Growth ●	1.86	0.69	0.28

Champlain Mid Cap
Period Ended March 31, 2020

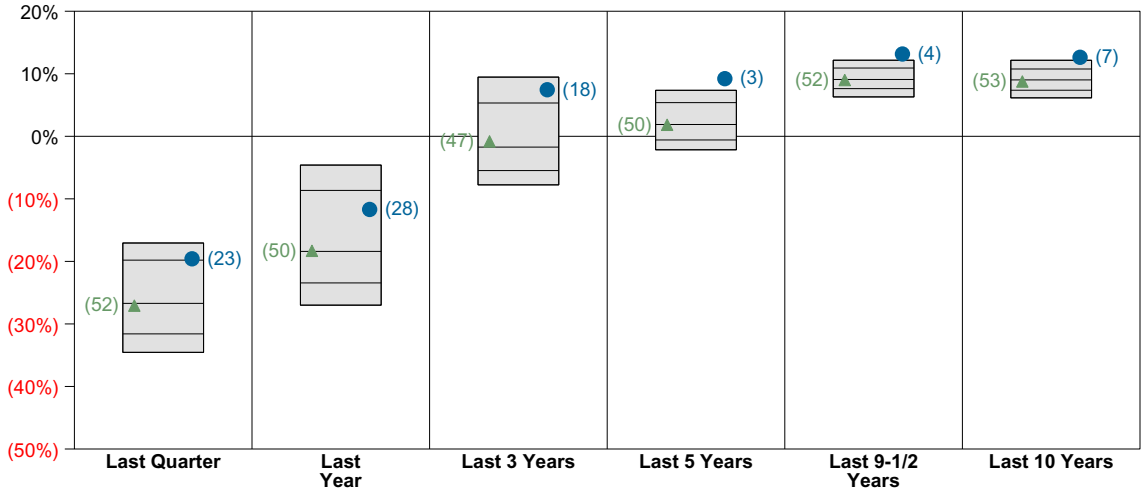
Investment Philosophy

Champlain Investment Partners believes buying the shares of superior businesses with credible and sincere managements at a discount to fair or intrinsic value gives investors several potential paths to wealth creation. First, the market may bid the shares to a premium over fair value. Second, management may grow the fair value over time at a faster rate than market appreciation. Third, the company may be bought by a larger company or private market investor. They are willing to sell over-priced stocks and harvest gains, reducing valuation risk. The product was funded during the third quarter of 2010. Performance prior is that of the composite.

Quarterly Summary and Highlights

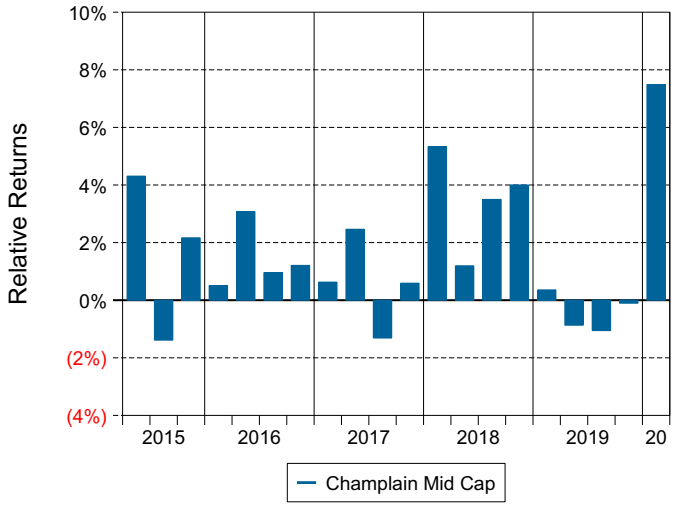
- Champlain Mid Cap's portfolio posted a (19.59)% return for the quarter placing it in the 23 percentile of the Callan Mid Capitalization group for the quarter and in the 28 percentile for the last year.
- Champlain Mid Cap's portfolio outperformed the Russell MidCap Index by 7.48% for the quarter and outperformed the Russell MidCap Index for the year by 6.61%.

Performance vs Callan Mid Capitalization (Gross)

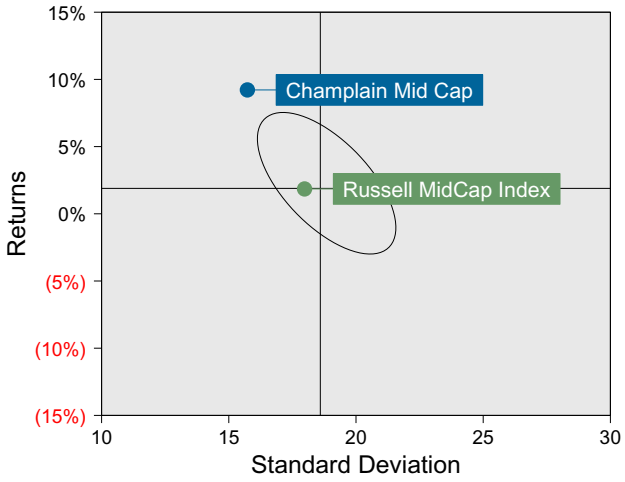


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 9-1/2 Years	Last 10 Years
10th Percentile	(17.06)	(4.60)	9.47	7.36	12.17	12.16
25th Percentile	(19.80)	(8.65)	5.33	5.39	10.92	10.76
Median	(26.71)	(18.40)	(1.73)	1.89	9.09	9.02
75th Percentile	(31.59)	(23.44)	(5.48)	(0.58)	7.63	7.37
90th Percentile	(34.55)	(27.00)	(7.77)	(2.15)	6.30	6.15
Champlain Mid Cap ●	(19.59)	(11.69)	7.45	9.22	13.16	12.63
Russell MidCap Index ▲	(27.07)	(18.31)	(0.81)	1.85	9.01	8.77

Relative Return vs Russell MidCap Index



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

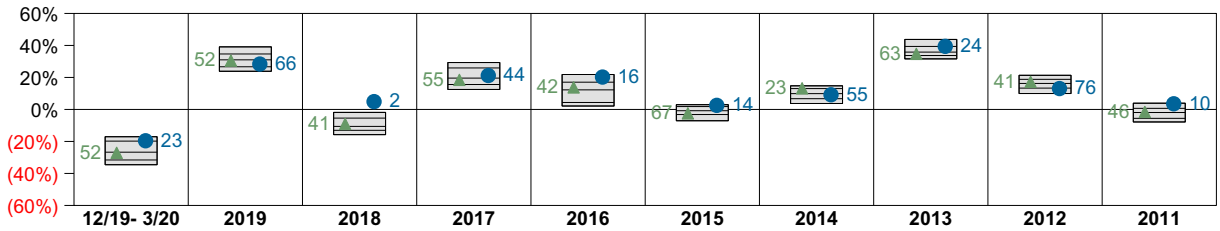


Champlain Mid Cap
Return Analysis Summary

Return Analysis

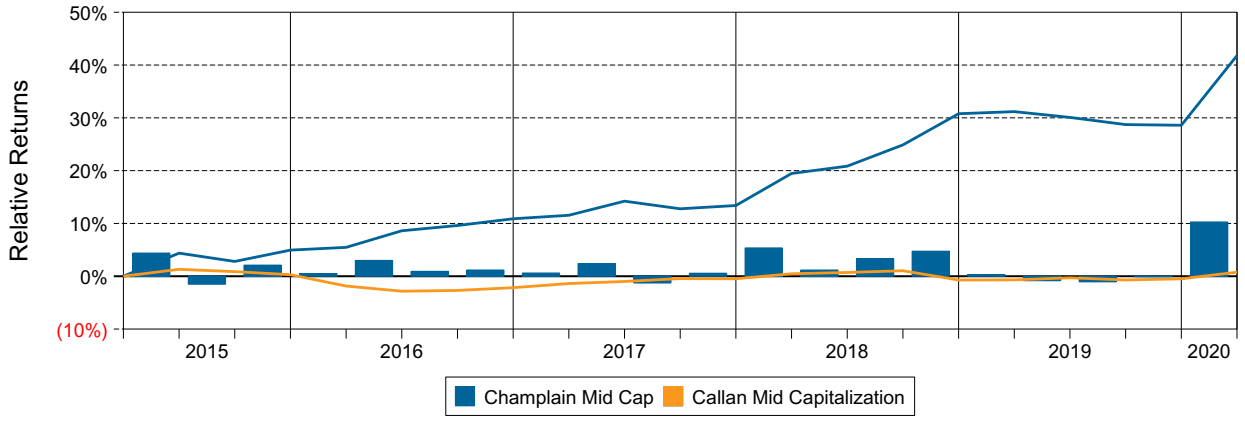
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Mid Capitalization (Gross)

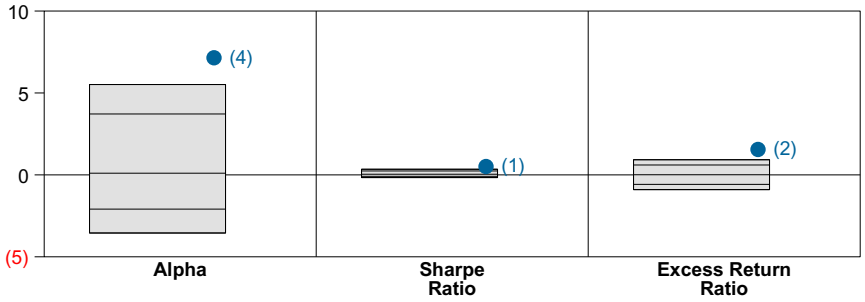


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(17.06)	39.12	(1.85)	29.31	21.83	2.97	14.76	43.76	21.34	3.90
25th Percentile	(19.80)	34.67	(5.41)	25.93	17.03	1.80	13.03	39.39	18.82	0.68
Median	(26.71)	31.00	(10.60)	19.58	12.23	(0.80)	9.88	35.84	16.26	(1.92)
75th Percentile	(31.59)	26.67	(13.05)	15.59	4.35	(3.18)	6.72	33.70	13.33	(5.57)
90th Percentile	(34.55)	23.85	(15.75)	12.48	2.13	(7.07)	3.72	31.60	9.94	(7.83)
Champlain Mid Cap ●	(19.59)	28.37	4.88	21.20	20.24	2.55	9.17	39.44	13.05	3.53
Russell MidCap Index ▲	(27.07)	30.54	(9.06)	18.52	13.80	(2.44)	13.22	34.76	17.28	(1.55)

Cumulative and Quarterly Relative Return vs Russell MidCap Index



Risk Adjusted Return Measures vs Russell MidCap Index
Rankings Against Callan Mid Capitalization (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	5.51	0.34	0.92
25th Percentile	3.72	0.24	0.60
Median	0.10	0.04	0.01
75th Percentile	(2.09)	(0.09)	(0.58)
90th Percentile	(3.55)	(0.16)	(0.90)
Champlain Mid Cap ●	7.15	0.51	1.55

FIAM Small Cap
Period Ended March 31, 2020

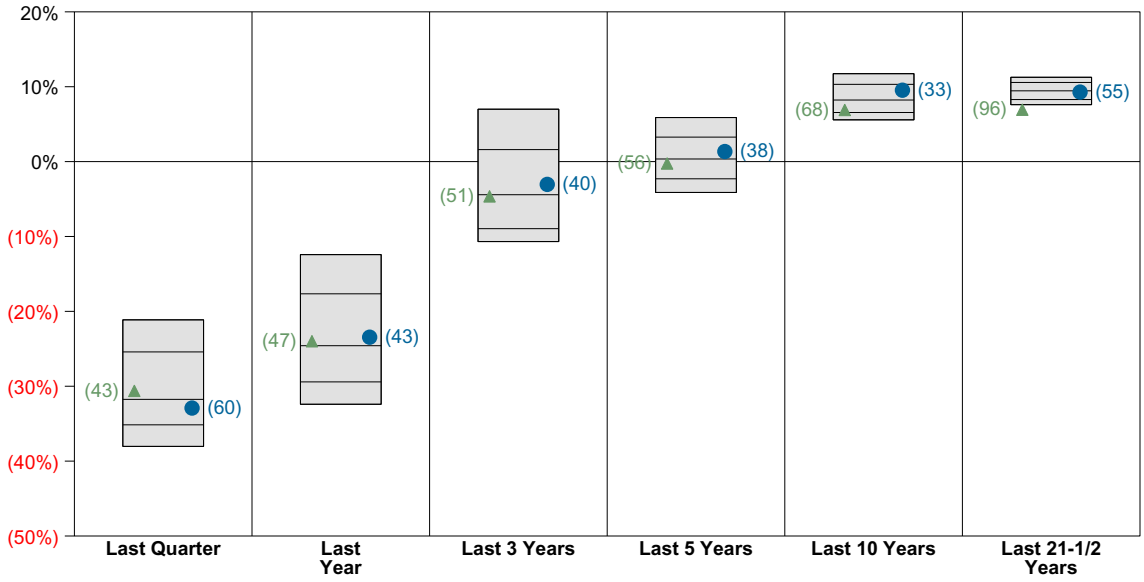
Investment Philosophy

FIAM believes that equity markets are semi-efficient and that pricing anomalies exist within the marketplace. The Small Cap Core strategy seeks to build a balanced portfolio where returns will be driven by stock selections and not by systemic biases or exposures to market factors. The product was funded during the third quarter of 1998.

Quarterly Summary and Highlights

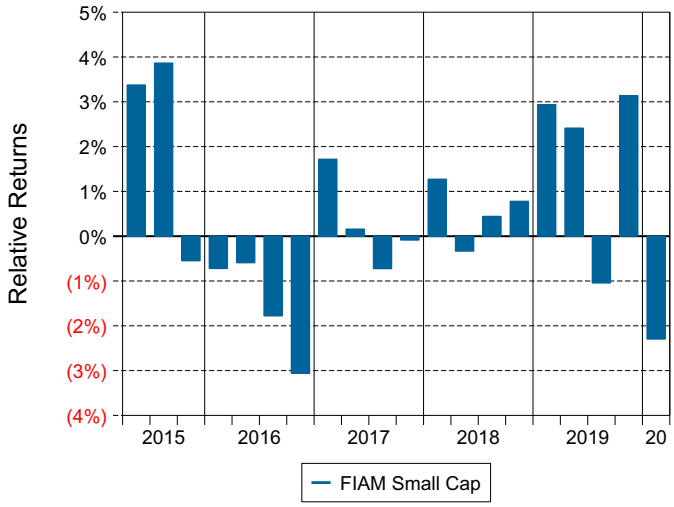
- FIAM Small Cap's portfolio posted a (32.91)% return for the quarter placing it in the 60 percentile of the Callan Small Capitalization group for the quarter and in the 43 percentile for the last year.
- FIAM Small Cap's portfolio underperformed the Russell 2000 Index by 2.30% for the quarter and outperformed the Russell 2000 Index for the year by 0.54%.

Performance vs Callan Small Capitalization (Gross)

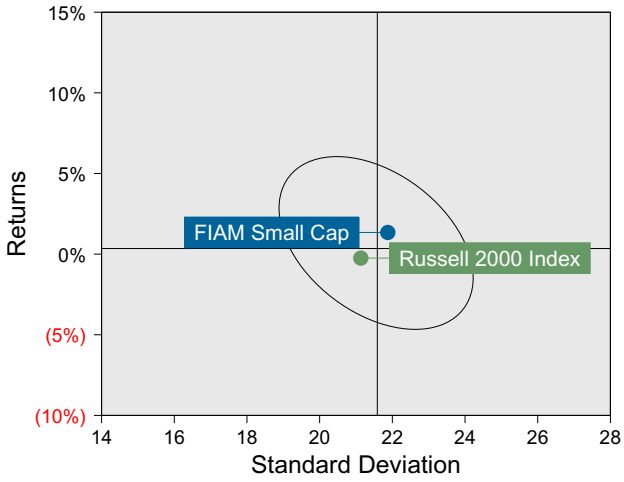


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 21-1/2 Years
10th Percentile	(21.13)	(12.42)	7.00	5.88	11.74	11.26
25th Percentile	(25.42)	(17.66)	1.60	3.27	10.32	10.57
Median	(31.75)	(24.59)	(4.42)	0.35	8.22	9.45
75th Percentile	(35.15)	(29.42)	(8.96)	(2.30)	6.55	8.29
90th Percentile	(38.03)	(32.41)	(10.68)	(4.12)	5.58	7.60
FIAM Small Cap ●	(32.91)	(23.45)	(3.04)	1.34	9.53	9.28
Russell 2000 Index ▲	(30.61)	(23.99)	(4.64)	(0.25)	6.90	6.93

Relative Return vs Russell 2000 Index



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

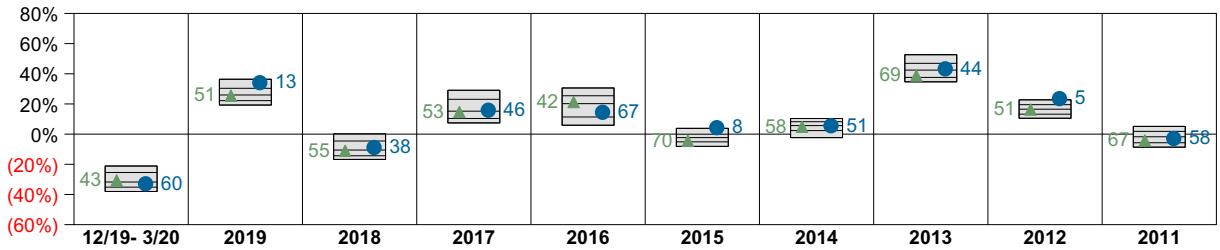


FIAM Small Cap
Return Analysis Summary

Return Analysis

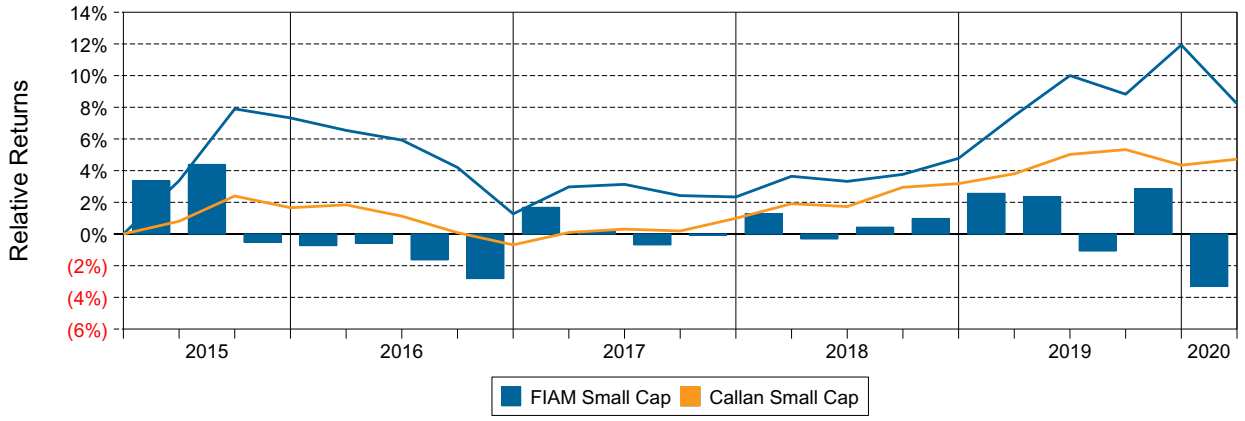
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Small Capitalization (Gross)

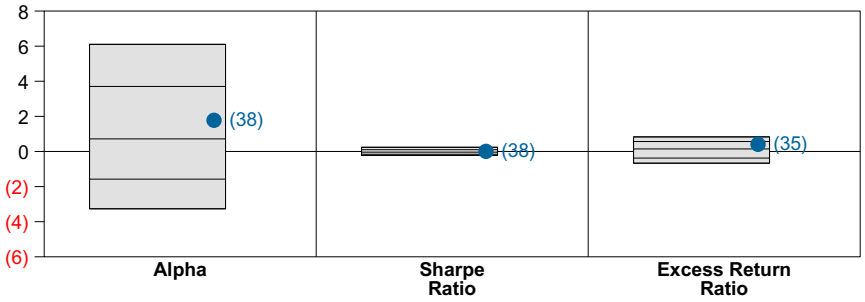


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(21.13)	36.37	0.12	29.07	30.60	3.84	10.36	52.64	22.74	5.11
25th Percentile	(25.42)	30.38	(4.56)	23.09	25.44	(0.06)	8.23	46.93	19.53	1.84
Median	(31.75)	25.94	(10.56)	15.21	20.21	(2.30)	5.66	42.44	16.51	(1.75)
75th Percentile	(35.15)	22.19	(14.34)	10.37	11.37	(5.11)	2.35	37.59	13.22	(5.72)
90th Percentile	(38.03)	19.26	(16.78)	7.42	5.87	(8.14)	(2.32)	34.65	10.51	(8.64)
FIAM Small Cap ●	(32.91)	34.09	(8.89)	15.85	14.47	4.27	5.54	43.26	23.54	(2.91)
Russell 2000 Index ▲	(30.61)	25.52	(11.01)	14.65	21.31	(4.41)	4.89	38.82	16.35	(4.18)

Cumulative and Quarterly Relative Return vs Russell 2000 Index



Risk Adjusted Return Measures vs Russell 2000 Index
Rankings Against Callan Small Capitalization (Gross)
Five Years Ended March 31, 2020



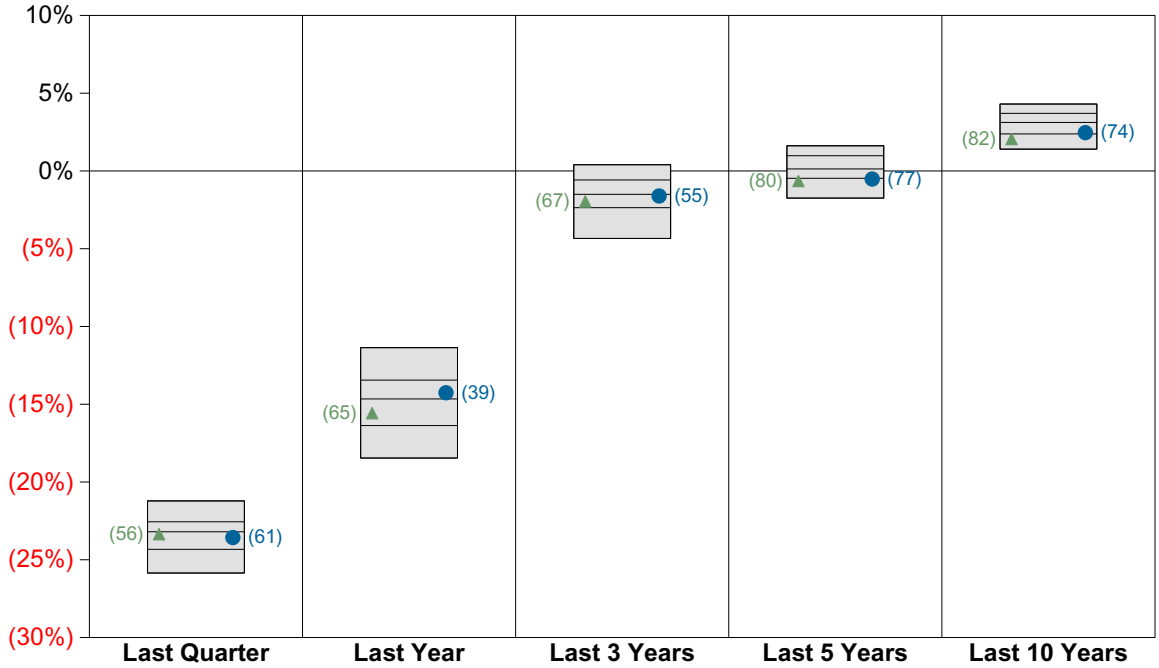
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	6.10	0.24	0.83
25th Percentile	3.70	0.10	0.57
Median	0.72	(0.04)	0.14
75th Percentile	(1.58)	(0.16)	(0.38)
90th Percentile	(3.27)	(0.22)	(0.67)
FIAM Small Cap ●	1.78	0.01	0.41

International Equity
Period Ended March 31, 2020

Quarterly Summary and Highlights

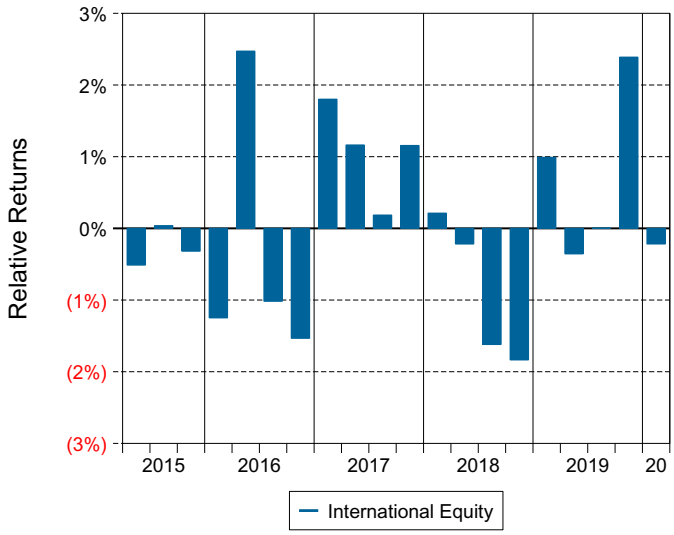
- International Equity's portfolio posted a (23.57)% return for the quarter placing it in the 61 percentile of the Public Fund - International Equity group for the quarter and in the 39 percentile for the last year.
- International Equity's portfolio underperformed the MSCI ACWI ex US by 0.22% for the quarter and outperformed the MSCI ACWI ex US for the year by 1.31%.

Performance vs Public Fund - International Equity (Gross)

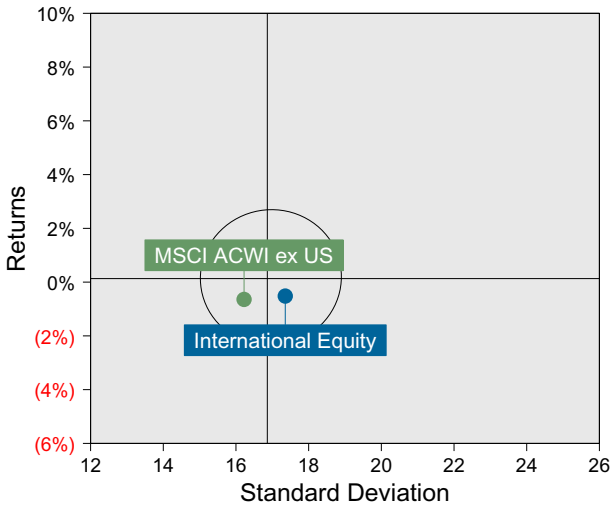


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(21.22)	(11.36)	0.40	1.62	4.30
25th Percentile	(22.56)	(13.45)	(0.58)	0.98	3.70
Median	(23.20)	(14.66)	(1.50)	0.13	3.12
75th Percentile	(24.33)	(16.37)	(2.36)	(0.47)	2.38
90th Percentile	(25.85)	(18.46)	(4.34)	(1.74)	1.40
International Equity ●	(23.57)	(14.26)	(1.61)	(0.52)	2.46
MSCI ACWI ex US ▲	(23.36)	(15.57)	(1.96)	(0.64)	2.05

Relative Return vs MSCI ACWI ex US



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

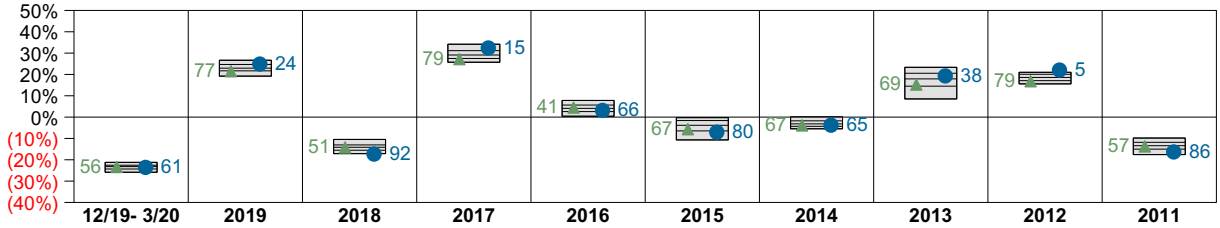


International Equity
Return Analysis Summary

Return Analysis

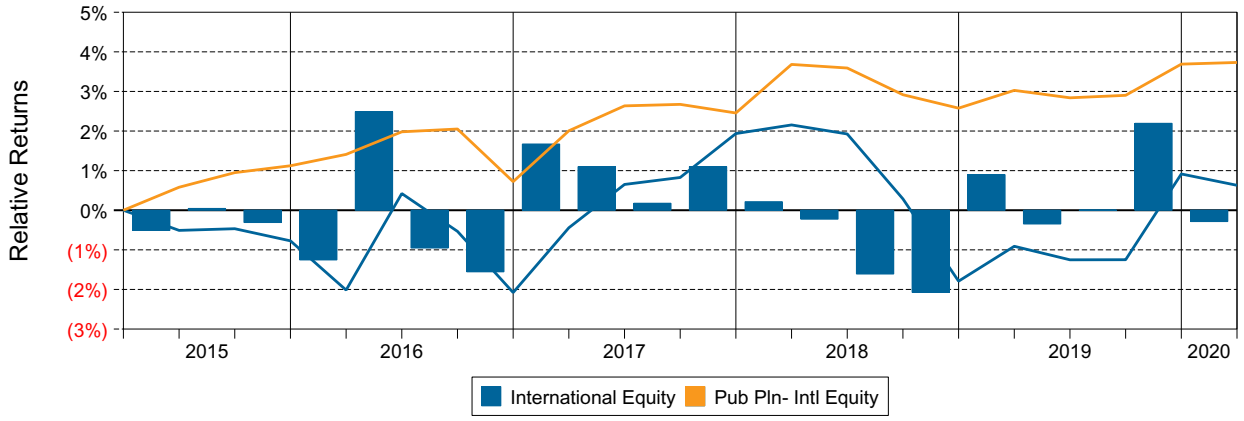
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Public Fund - International Equity (Gross)

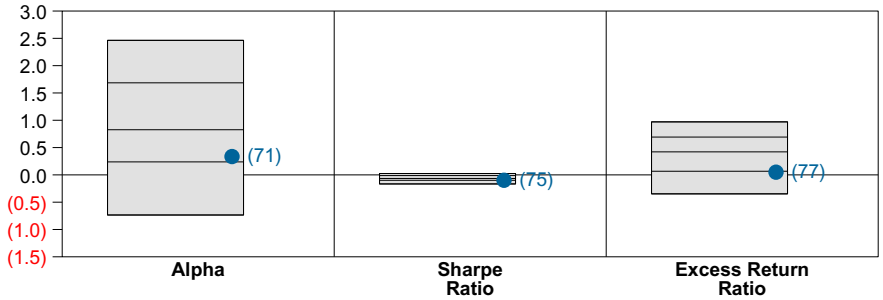


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(21.22)	26.65	(10.46)	34.17	7.81	(0.26)	0.08	23.34	21.00	(9.81)
25th Percentile	(22.56)	24.67	(13.04)	31.15	5.65	(1.61)	(1.75)	20.55	20.07	(11.83)
Median	(23.20)	22.94	(14.13)	29.11	4.10	(3.83)	(3.17)	17.91	18.60	(13.40)
75th Percentile	(24.33)	21.69	(15.52)	27.49	2.58	(6.46)	(4.32)	14.50	17.09	(15.01)
90th Percentile	(25.85)	19.20	(17.13)	25.71	0.41	(10.70)	(5.48)	8.51	15.58	(17.58)
International Equity ●	(23.57)	24.86	(17.33)	32.41	3.12	(7.06)	(3.78)	19.30	22.05	(16.34)
MSCI ACWI ex US ▲	(23.36)	21.51	(14.20)	27.19	4.50	(5.66)	(3.87)	15.29	16.83	(13.71)

Cumulative and Quarterly Relative Return vs MSCI ACWI ex US



Risk Adjusted Return Measures vs MSCI ACWI ex US
Rankings Against Public Fund - International Equity (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	2.46	0.02	0.97
25th Percentile	1.69	(0.01)	0.69
Median	0.83	(0.07)	0.42
75th Percentile	0.24	(0.10)	0.07
90th Percentile	(0.73)	(0.17)	(0.35)
International Equity ●	0.34	(0.10)	0.05

Causeway International Opportunities
Period Ended March 31, 2020

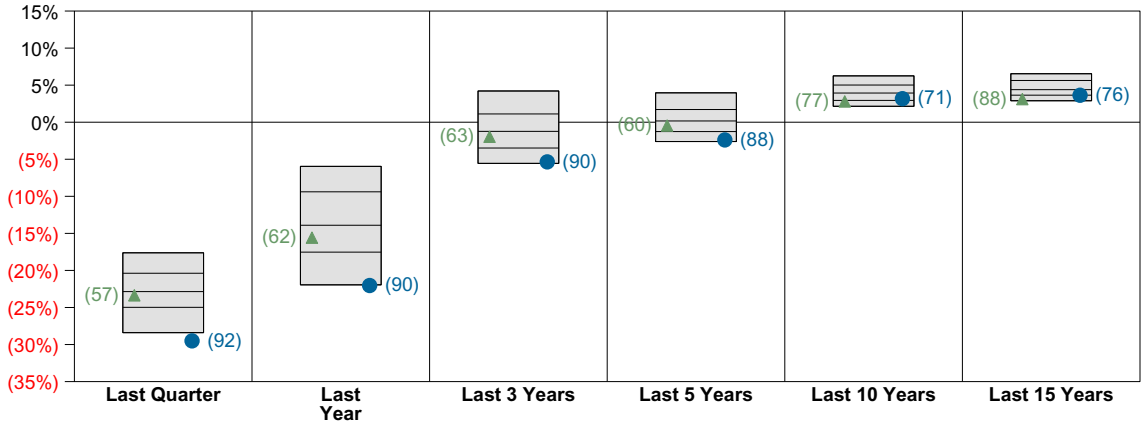
Investment Philosophy

Causeway employs a three-step process: 1) The International Value piece (developed markets only) utilizes bottom-up selection of undervalued stocks as well as the compounding of dividend returns; 2) The Emerging Markets portion implements through the use of proprietary quantitative models that are a combination of bottom-up and top-down factors; 3) The team also utilizes quantitative allocation models to tactically allocate (within specified ranges) between developed and emerging markets based on their relative attractiveness. The product was funded during the first quarter of 2005. In May 2016 the strategy transitioned from International Value to International Opportunities. As such, the index has been updated accordingly from EAFE to ACWI ex-US (Net Div).

Quarterly Summary and Highlights

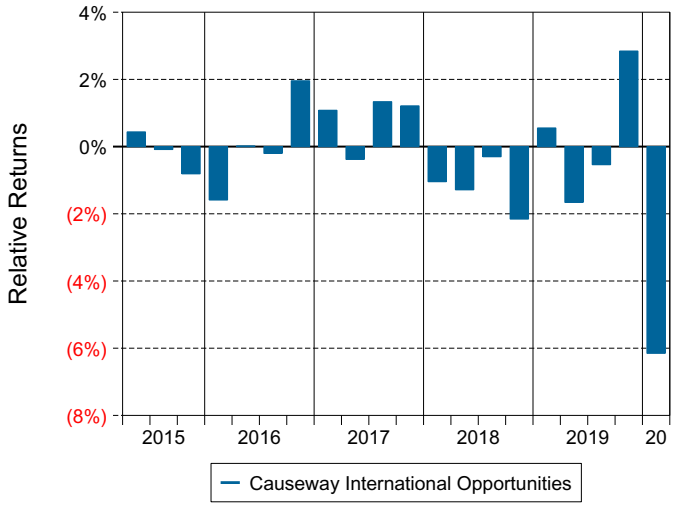
- Causeway International Opportunities's portfolio posted a (29.51)% return for the quarter placing it in the 92 percentile of the Callan Non-US Equity group for the quarter and in the 90 percentile for the last year.
- Causeway International Opportunities's portfolio underperformed the Causeway Linked Index by 6.15% for the quarter and underperformed the Causeway Linked Index for the year by 6.46%.

Performance vs Callan Non-US Equity (Gross)

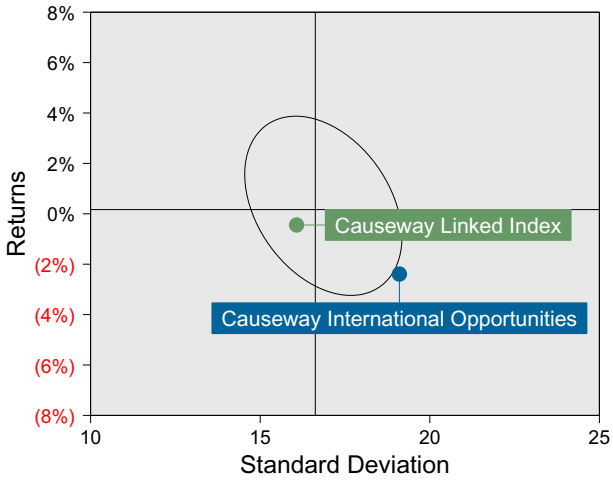


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
10th Percentile	(17.62)	(5.96)	4.21	3.96	6.25	6.54
25th Percentile	(20.38)	(9.39)	1.12	1.71	5.01	5.63
Median	(22.85)	(13.90)	(1.23)	0.17	3.94	4.39
75th Percentile	(24.98)	(17.53)	(3.48)	(1.27)	2.94	3.65
90th Percentile	(28.40)	(21.95)	(5.56)	(2.61)	2.15	2.89
Causeway International Opportunities ●	(29.51)	(22.04)	(5.36)	(2.39)	3.17	3.64
Causeway Linked Index ▲	(23.36)	(15.57)	(1.96)	(0.44)	2.80	3.12

Relative Return vs Causeway Linked Index



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

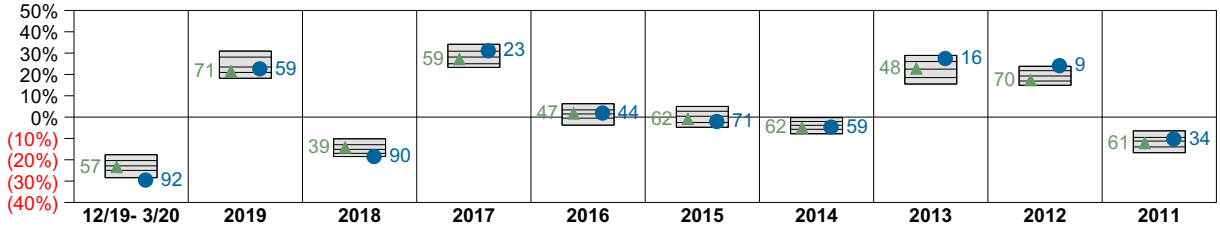


Causeway International Opportunities
Return Analysis Summary

Return Analysis

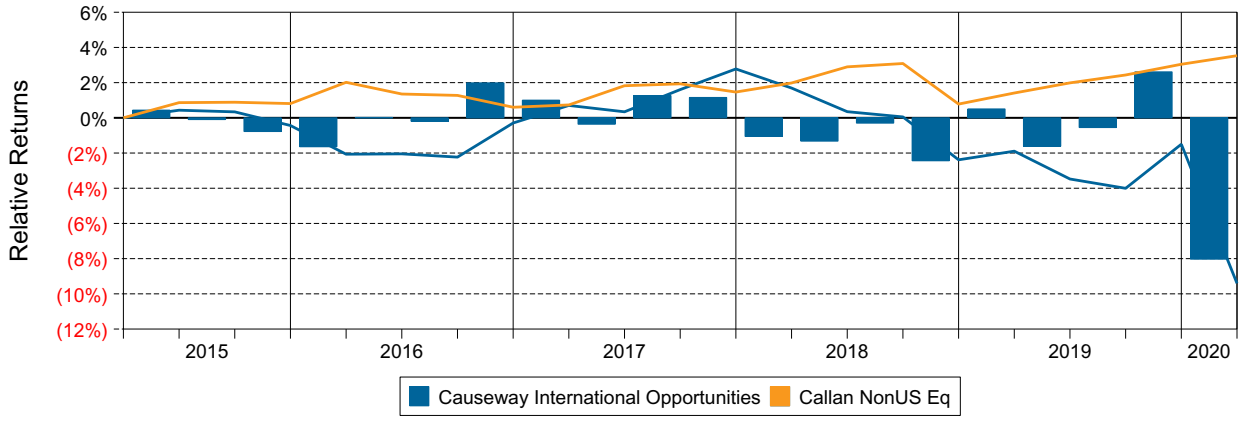
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Non-US Equity (Gross)

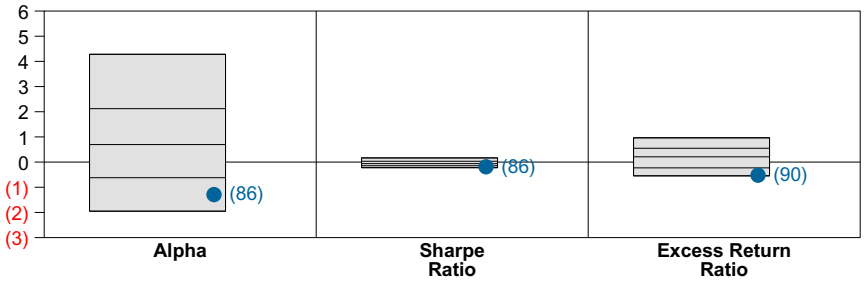


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(17.62)	30.95	(10.17)	34.14	6.28	5.00	(0.22)	28.92	23.83	(6.44)
25th Percentile	(20.38)	28.12	(12.94)	30.88	3.39	2.74	(2.04)	26.05	21.76	(9.53)
Median	(22.85)	23.49	(15.13)	28.15	1.48	0.40	(3.85)	22.49	19.28	(11.24)
75th Percentile	(24.98)	20.94	(16.99)	25.01	(0.49)	(2.53)	(5.73)	18.53	16.91	(13.97)
90th Percentile	(28.40)	18.19	(18.49)	23.28	(3.79)	(4.77)	(7.82)	15.49	14.91	(16.68)
Causeway International Opportunities ●	(29.51)	22.62	(18.50)	31.11	1.88	(2.09)	(4.70)	27.47	24.10	(10.24)
Causeway Linked Index ▲	(23.36)	21.51	(14.20)	27.19	1.74	(0.81)	(4.90)	22.78	17.32	(12.14)

Cumulative and Quarterly Relative Return vs Causeway Linked Index



Risk Adjusted Return Measures vs Causeway Linked Index
Rankings Against Callan Non-US Equity (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.28	0.17	0.96
25th Percentile	2.12	0.03	0.55
Median	0.70	(0.06)	0.21
75th Percentile	(0.62)	(0.15)	(0.23)
90th Percentile	(1.95)	(0.22)	(0.55)
Causeway International Opportunities ●	(1.29)	(0.19)	(0.52)

Aberdeen EAFE Plus
Period Ended March 31, 2020

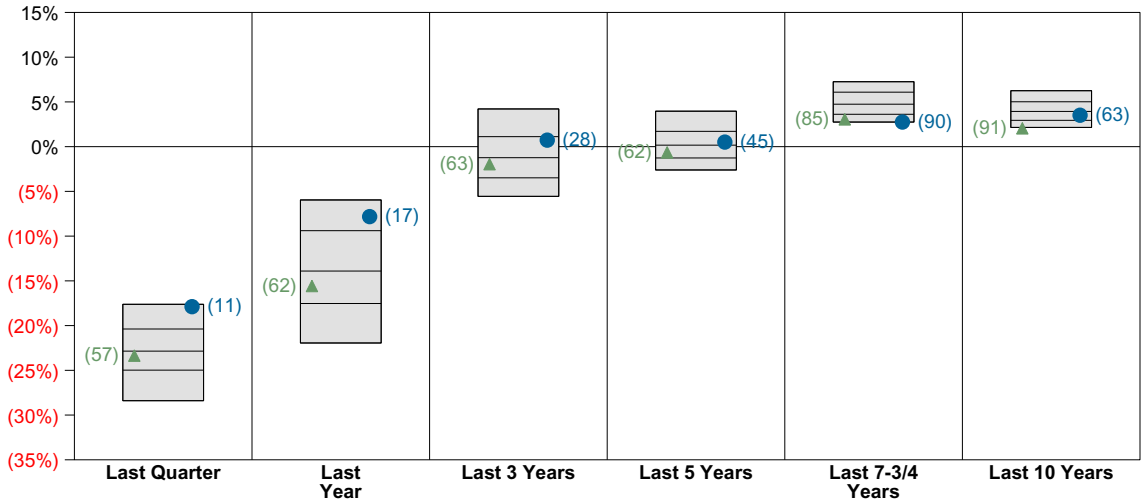
Investment Philosophy

Aberdeen believes that given the inefficiency of markets, superior long-term returns are achieved by identifying high quality stocks, buying them at reasonable/cheap prices, and ultimately investing in those securities for the long term. Absolute return is held to be of the utmost importance. The strategy is benchmark aware, but not benchmark driven. This benchmark stance is born from their belief that indices do not provide meaningful guidance to the prospects of a company or its inherent worth.

Quarterly Summary and Highlights

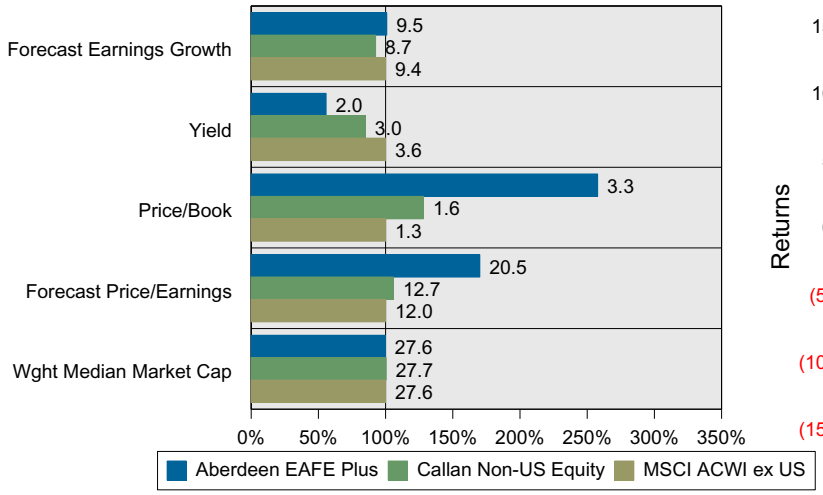
- Aberdeen EAFE Plus's portfolio posted a (17.89)% return for the quarter placing it in the 11 percentile of the Callan Non-US Equity group for the quarter and in the 17 percentile for the last year.
- Aberdeen EAFE Plus's portfolio outperformed the MSCI ACWI ex US by 5.47% for the quarter and outperformed the MSCI ACWI ex US for the year by 7.75%.

Performance vs Callan Non-US Equity (Gross)

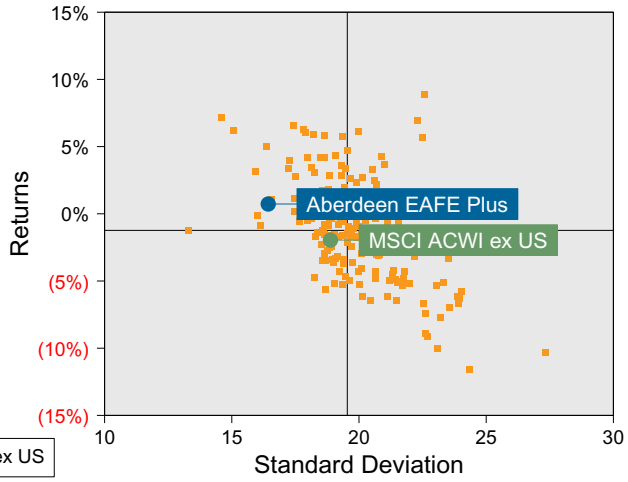


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years	Last 10 Years
10th Percentile	(17.62)	(5.96)	4.21	3.96	7.26	6.25
25th Percentile	(20.38)	(9.39)	1.12	1.71	6.09	5.01
Median	(22.85)	(13.90)	(1.23)	0.17	4.75	3.94
75th Percentile	(24.98)	(17.53)	(3.48)	(1.27)	3.62	2.94
90th Percentile	(28.40)	(21.95)	(5.56)	(2.61)	2.75	2.15
Aberdeen EAFE Plus ●	(17.89)	(7.82)	0.73	0.51	2.75	3.51
MSCI ACWI ex US ▲	(23.36)	(15.57)	(1.96)	(0.64)	3.05	2.05

Portfolio Characteristics as a Percentage of the MSCI ACWI ex US



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

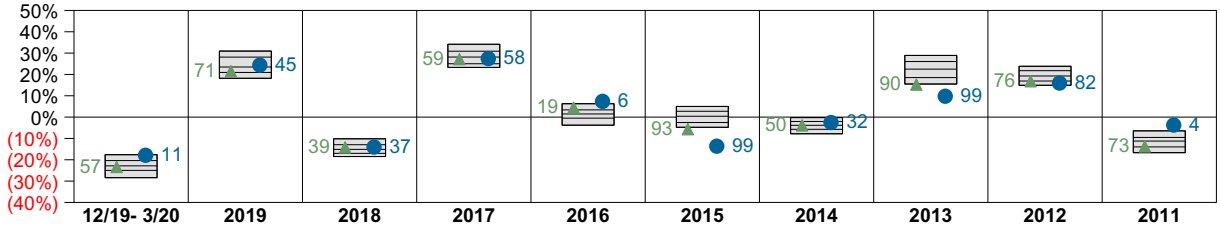


Aberdeen EAFE Plus
Return Analysis Summary

Return Analysis

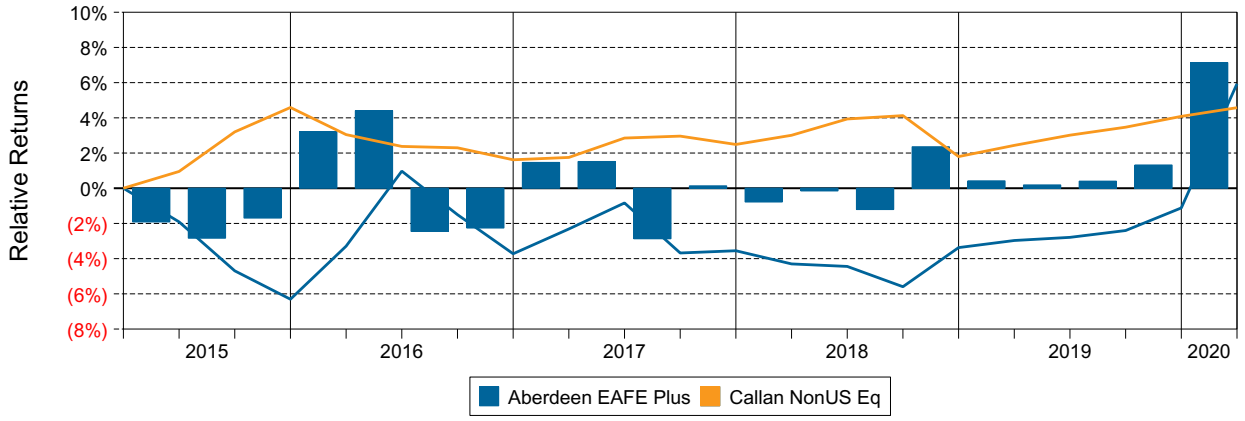
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Non-US Equity (Gross)

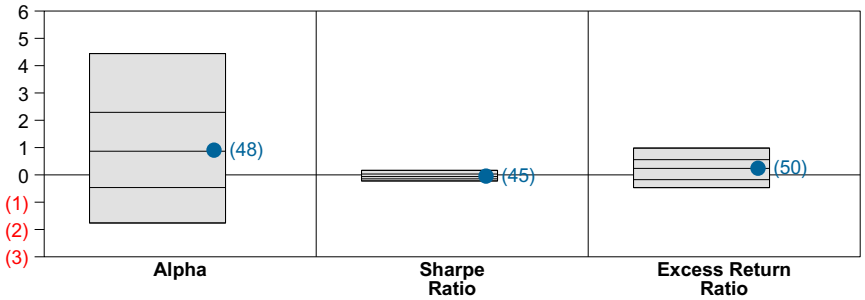


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(17.62)	30.95	(10.17)	34.14	6.28	5.00	(0.22)	28.92	23.83	(6.44)
25th Percentile	(20.38)	28.12	(12.94)	30.88	3.39	2.74	(2.04)	26.05	21.76	(9.53)
Median	(22.85)	23.49	(15.13)	28.15	1.48	0.40	(3.85)	22.49	19.28	(11.24)
75th Percentile	(24.98)	20.94	(16.99)	25.01	(0.49)	(2.53)	(5.73)	18.53	16.91	(13.97)
90th Percentile	(28.40)	18.19	(18.49)	23.28	(3.79)	(4.77)	(7.82)	15.49	14.91	(16.68)
Aberdeen EAFE Plus ●	(17.89)	24.35	(14.04)	27.42	7.37	(13.63)	(2.53)	9.79	15.94	(3.72)
MSCI ACWI ex US ▲	(23.36)	21.51	(14.20)	27.19	4.50	(5.66)	(3.87)	15.29	16.83	(13.71)

Cumulative and Quarterly Relative Return vs MSCI ACWI ex US



Risk Adjusted Return Measures vs MSCI ACWI ex US
Rankings Against Callan Non-US Equity (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.44	0.17	0.98
25th Percentile	2.29	0.03	0.56
Median	0.87	(0.06)	0.24
75th Percentile	(0.46)	(0.15)	(0.17)
90th Percentile	(1.76)	(0.22)	(0.47)
Aberdeen EAFE Plus ●	0.91	(0.04)	0.24

American Century Non-US SC
Period Ended March 31, 2020

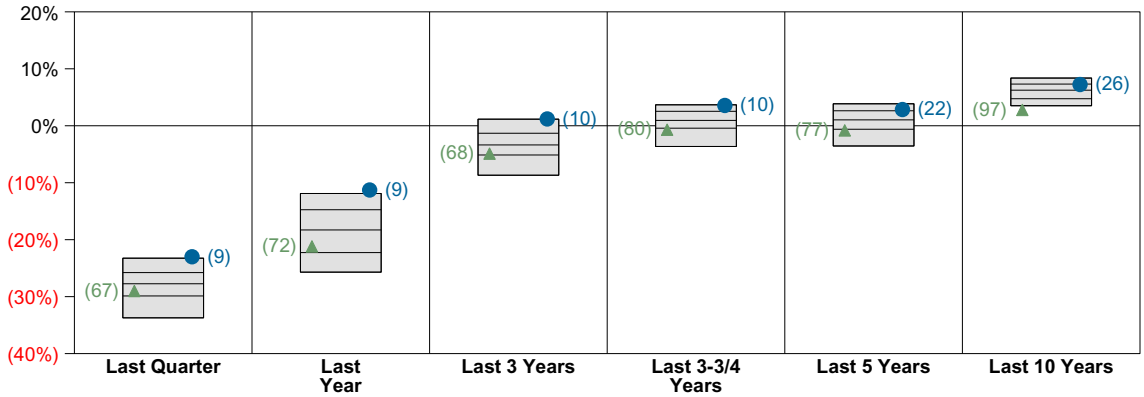
Investment Philosophy

American Century's philosophy of growth investing is centered on the belief that accelerating growth in earnings and revenues, rather than the absolute level of growth, is more highly correlated to stock price performance. This philosophy often directs analysts to research different companies than other growth managers, as they do not require an absolute threshold of earnings or revenue growth. This philosophy allows American Century to take advantage of both the normal price appreciation that results from a company's earnings growth, and the markets re-rating of a company's price-to-earnings multiple. The goal is to construct a portfolio of international stocks that are experiencing accelerating growth that are believed to be sustainable over time. The product was funded during the second quarter of 2016. Prior performance represents that of the composite for supplementary purposes.

Quarterly Summary and Highlights

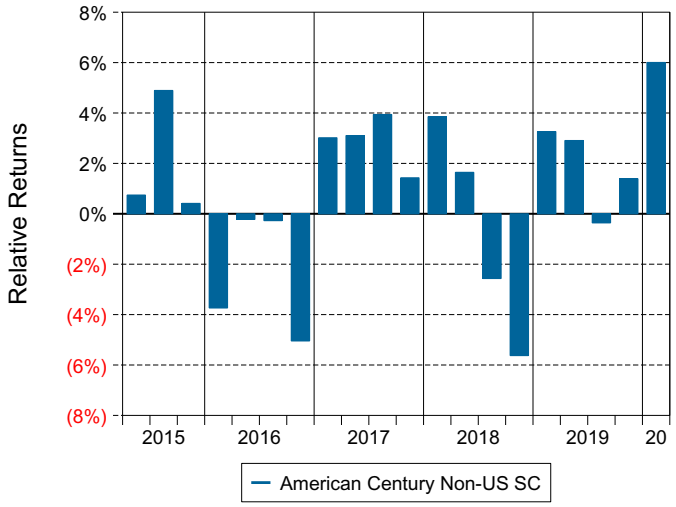
- American Century Non-US SC's portfolio posted a (23.00)% return for the quarter placing it in the 9 percentile of the Callan International Small Cap group for the quarter and in the 9 percentile for the last year.
- American Century Non-US SC's portfolio outperformed the MSCI ACWI ex US Small Cap by 6.00% for the quarter and outperformed the MSCI ACWI ex US Small Cap for the year by 9.90%.

Performance vs Callan International Small Cap (Gross)

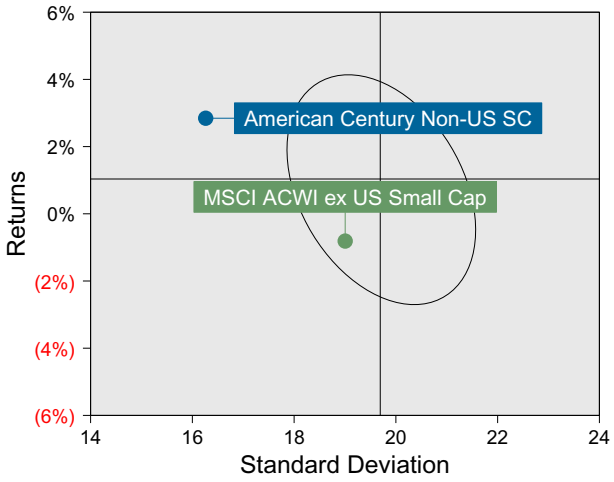


	Last Quarter	Last Year	Last 3 Years	Last 3-3/4 Years	Last 5 Years	Last 10 Years
10th Percentile	(23.25)	(11.89)	1.16	3.68	3.86	8.38
25th Percentile	(25.78)	(14.74)	(1.32)	2.54	2.63	7.32
Median	(27.74)	(18.29)	(3.37)	0.94	1.04	6.25
75th Percentile	(29.88)	(22.27)	(5.13)	(0.42)	(0.61)	4.75
90th Percentile	(33.72)	(25.70)	(8.68)	(3.64)	(3.55)	3.52
American Century Non-US SC ●	(23.00)	(11.28)	1.19	3.56	2.84	7.24
MSCI ACWI ex US Small Cap ▲	(29.01)	(21.18)	(4.89)	(0.69)	(0.81)	2.79

Relative Returns vs MSCI ACWI ex US Small Cap



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

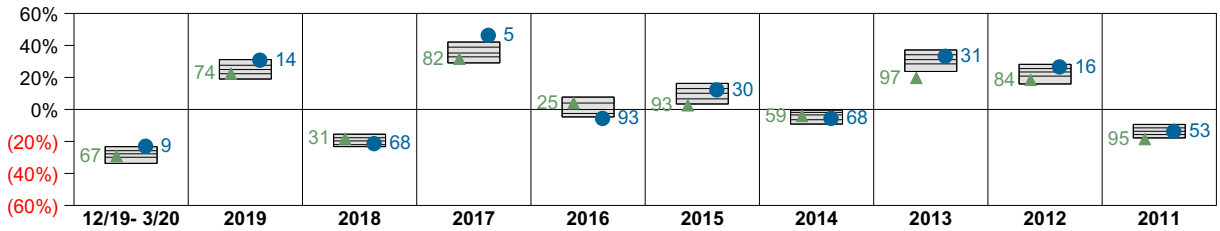


American Century Non-US SC
Return Analysis Summary

Return Analysis

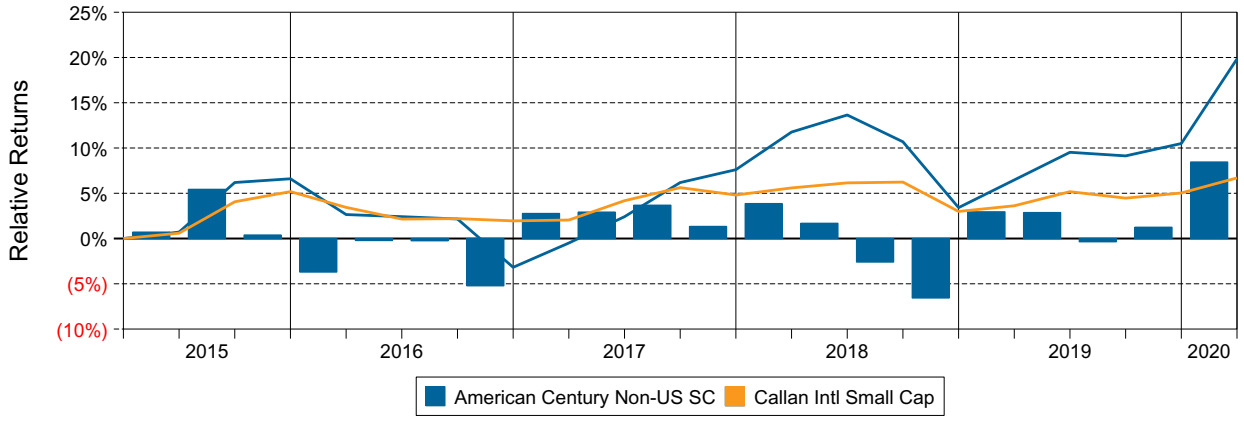
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan International Small Cap (Gross)

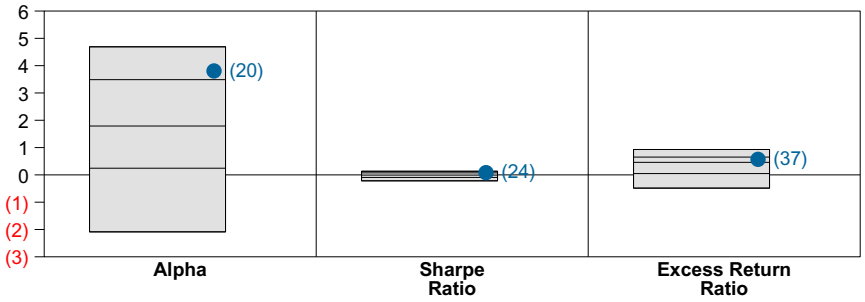


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(23.25)	31.15	(15.49)	42.12	7.72	16.29	(0.42)	37.19	28.18	(9.37)
25th Percentile	(25.78)	27.62	(17.68)	38.93	4.00	13.03	(1.85)	34.19	25.54	(11.52)
Median	(27.74)	24.94	(19.66)	35.27	(0.03)	10.09	(3.42)	31.13	23.41	(13.65)
75th Percentile	(29.88)	22.31	(22.02)	32.87	(2.51)	6.62	(6.43)	28.47	20.84	(15.71)
90th Percentile	(33.72)	19.00	(23.23)	29.08	(4.66)	3.40	(9.15)	23.74	15.92	(17.80)
American Century Non-US SC ●	(23.00)	30.81	(21.39)	46.31	(5.63)	12.24	(5.61)	33.23	26.58	(13.72)
MSCI ACWI ex US Small Cap ▲	(29.01)	22.42	(18.20)	31.65	3.91	2.60	(4.03)	19.73	18.52	(18.50)

Cumulative and Quarterly Relative Return vs MSCI ACWI ex US Small Cap



Risk Adjusted Return Measures vs MSCI ACWI ex US Small Cap
Rankings Against Callan International Small Cap (Gross)
Five Years Ended March 31, 2020



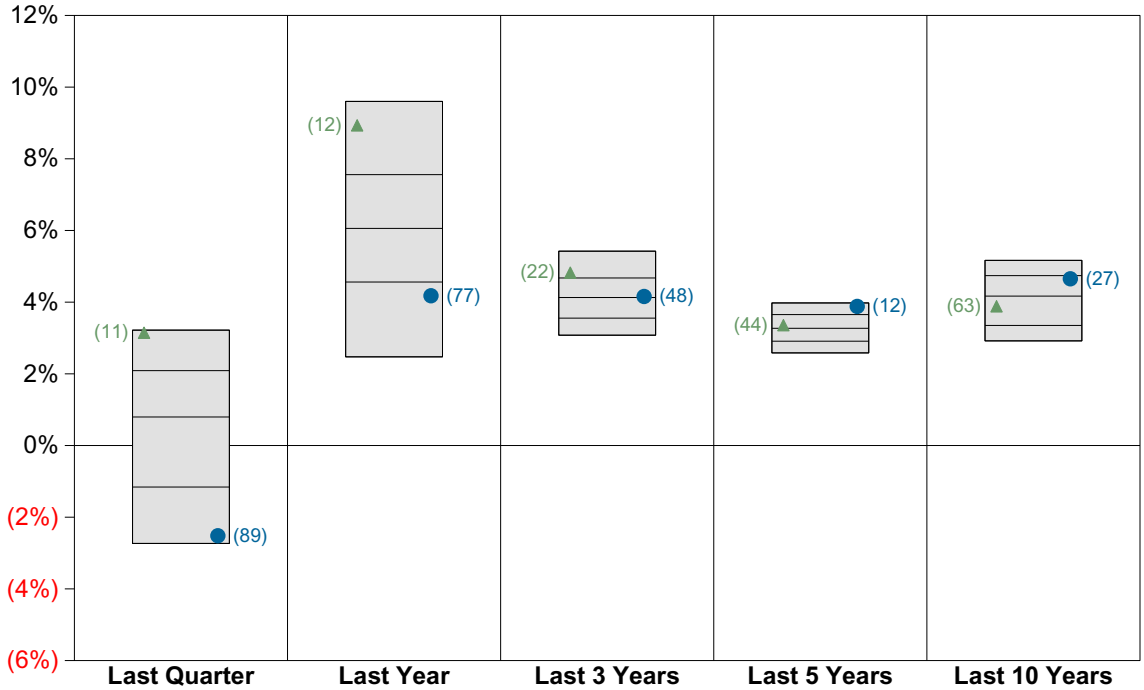
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.69	0.13	0.93
25th Percentile	3.49	0.07	0.65
Median	1.79	(0.01)	0.46
75th Percentile	0.24	(0.09)	0.05
90th Percentile	(2.09)	(0.22)	(0.49)
American Century Non-US SC ●	3.81	0.08	0.57

Fixed Income
Period Ended March 31, 2020

Quarterly Summary and Highlights

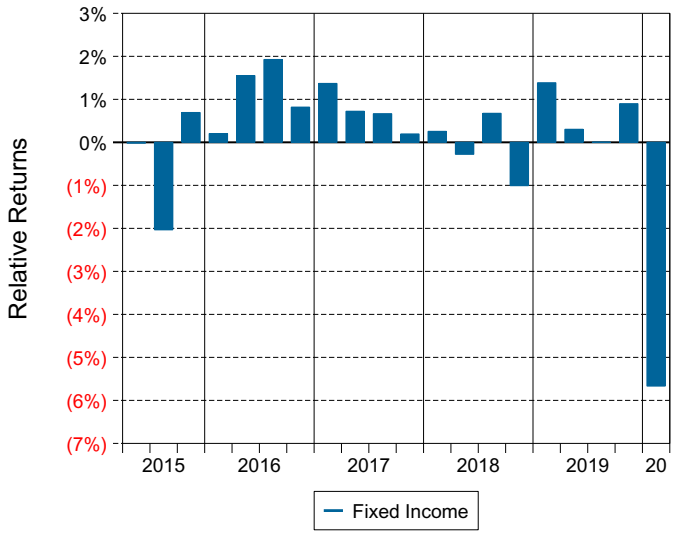
- Fixed Income's portfolio posted a (2.52)% return for the quarter placing it in the 89 percentile of the Public Fund - Domestic Fixed group for the quarter and in the 77 percentile for the last year.
- Fixed Income's portfolio underperformed the Blmbg Aggregate Index by 5.67% for the quarter and underperformed the Blmbg Aggregate Index for the year by 4.75%.

Performance vs Public Fund - Domestic Fixed (Gross)

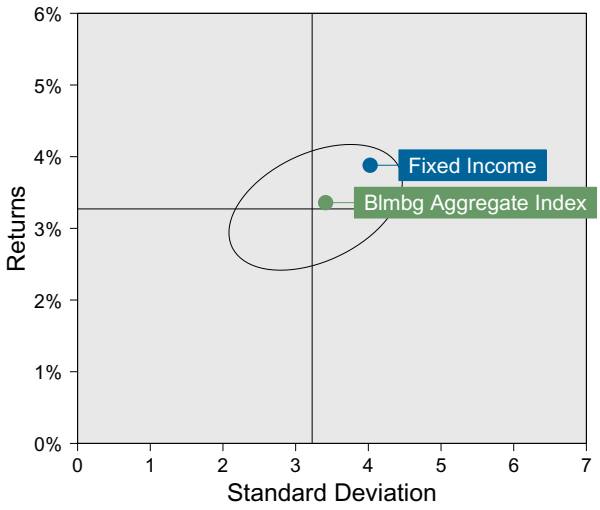


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	3.22	9.60	5.42	3.98	5.17
25th Percentile	2.09	7.56	4.68	3.65	4.74
Median	0.80	6.06	4.13	3.27	4.17
75th Percentile	(1.16)	4.56	3.55	2.91	3.35
90th Percentile	(2.73)	2.47	3.08	2.58	2.92
Fixed Income ●	(2.52)	4.18	4.16	3.88	4.65
Blmbg Aggregate Index ▲	3.15	8.93	4.82	3.36	3.88

Relative Return vs Blmbg Aggregate Index



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

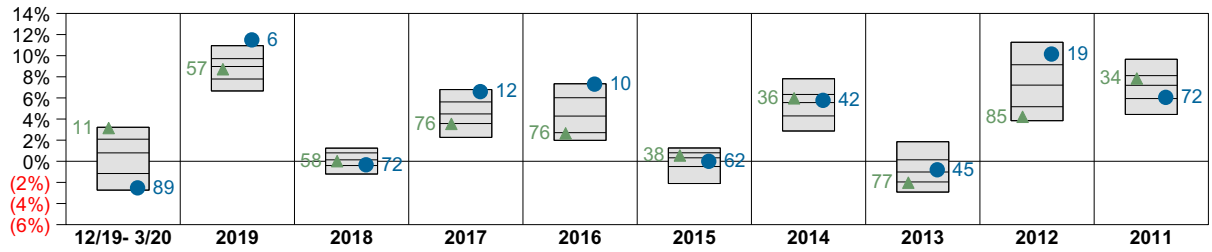


Fixed Income
Return Analysis Summary

Return Analysis

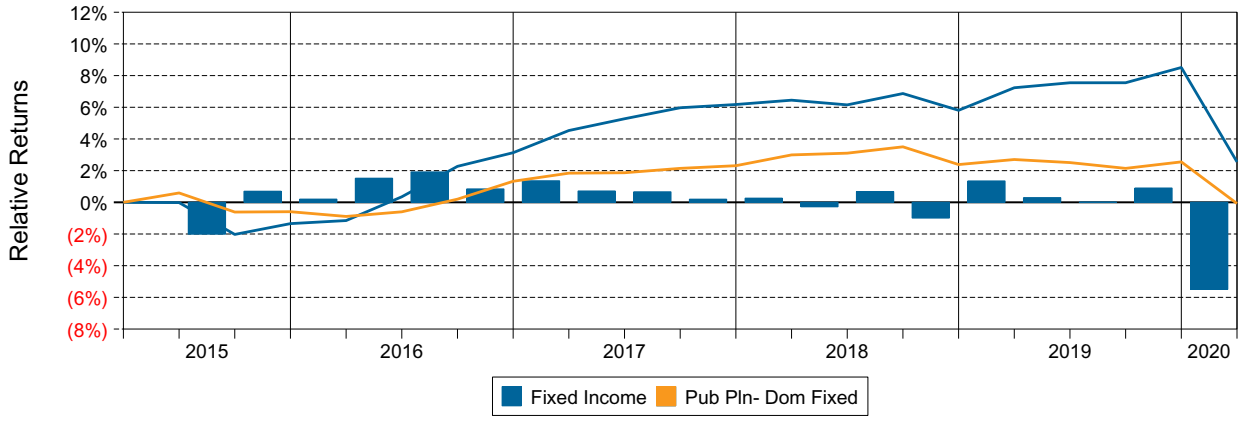
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Public Fund - Domestic Fixed (Gross)

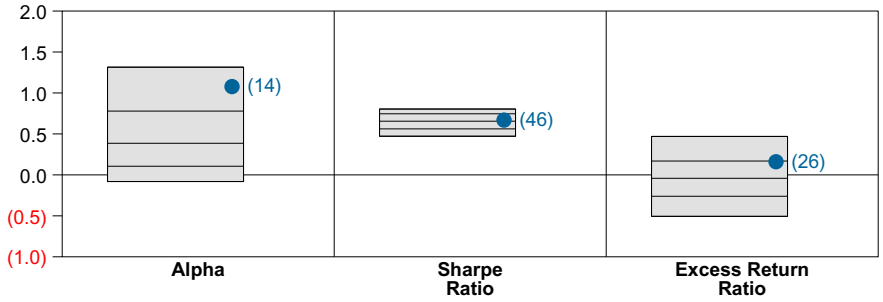


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	3.22	10.95	1.24	6.79	7.34	1.26	7.82	1.85	11.27	9.66
25th Percentile	2.09	9.72	0.79	5.62	6.02	0.80	6.33	0.14	9.14	8.11
Median	0.80	8.98	0.14	4.49	4.28	0.33	5.56	(1.02)	7.21	7.19
75th Percentile	(1.16)	7.79	(0.40)	3.57	2.71	(0.50)	4.30	(1.96)	5.17	5.94
90th Percentile	(2.73)	6.66	(1.21)	2.26	1.98	(2.11)	2.87	(2.92)	3.84	4.44
Fixed Income ●	(2.52)	11.49	(0.33)	6.60	7.31	(0.00)	5.77	(0.81)	10.15	6.05
Blmbg Aggregate Index ▲	3.15	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21	7.84

Cumulative and Quarterly Relative Return vs Blmbg Aggregate Index



Risk Adjusted Return Measures vs Blmbg Aggregate Index
Rankings Against Public Fund - Domestic Fixed (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.31	0.80	0.47
25th Percentile	0.78	0.75	0.17
Median	0.39	0.66	(0.04)
75th Percentile	0.11	0.56	(0.26)
90th Percentile	(0.08)	0.47	(0.51)
Fixed Income ●	1.08	0.67	0.16

BlackRock U.S. Debt Fund
Period Ended March 31, 2020

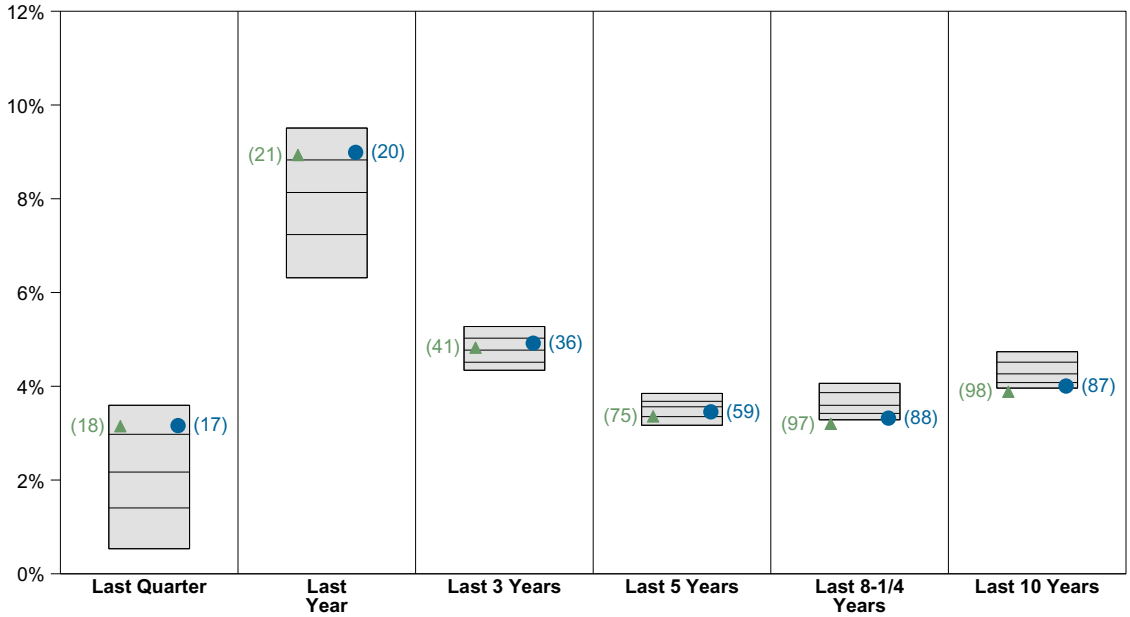
Investment Philosophy

The product was funded during the fourth quarter of 2011. Performance prior is that of the composite.

Quarterly Summary and Highlights

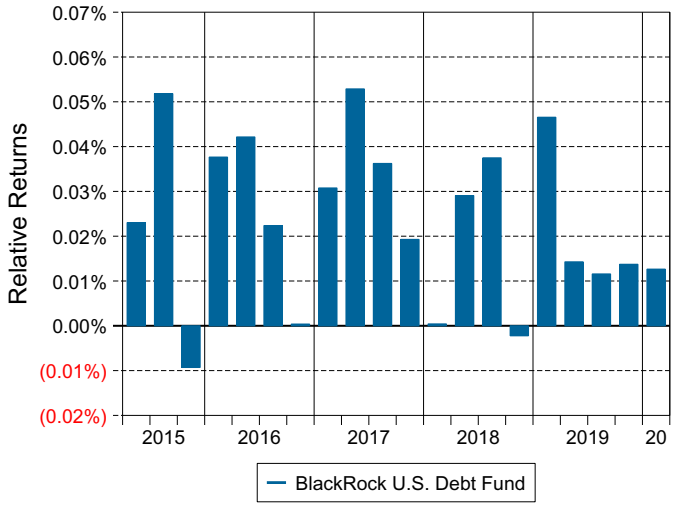
- BlackRock U.S. Debt Fund's portfolio posted a 3.16% return for the quarter placing it in the 17 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 20 percentile for the last year.
- BlackRock U.S. Debt Fund's portfolio outperformed the Blmbg Aggregate by 0.01% for the quarter and outperformed the Blmbg Aggregate for the year by 0.06%.

Performance vs Callan Core Bond Fixed Income (Gross)

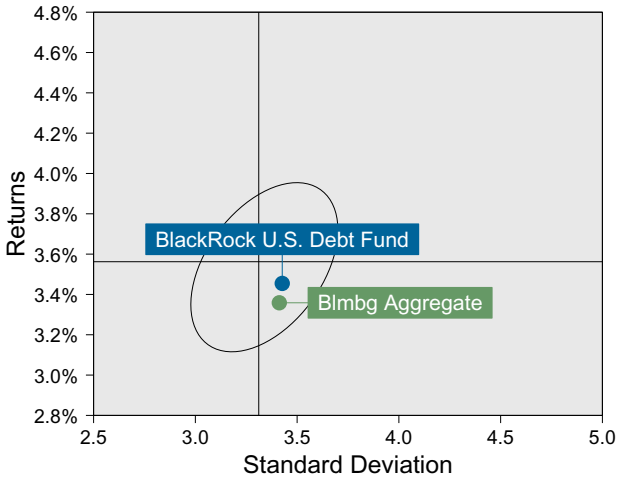


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 8-1/4 Years	Last 10 Years
10th Percentile	3.59	9.51	5.27	3.85	4.06	4.74
25th Percentile	2.98	8.83	5.03	3.68	3.86	4.51
Median	2.17	8.13	4.77	3.56	3.59	4.26
75th Percentile	1.41	7.24	4.51	3.35	3.42	4.08
90th Percentile	0.53	6.31	4.34	3.17	3.29	3.96
BlackRock U.S. Debt Fund ●	3.16	8.99	4.92	3.45	3.32	4.00
Blmbg Aggregate ▲	3.15	8.93	4.82	3.36	3.20	3.88

Relative Return vs Blmbg Aggregate



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

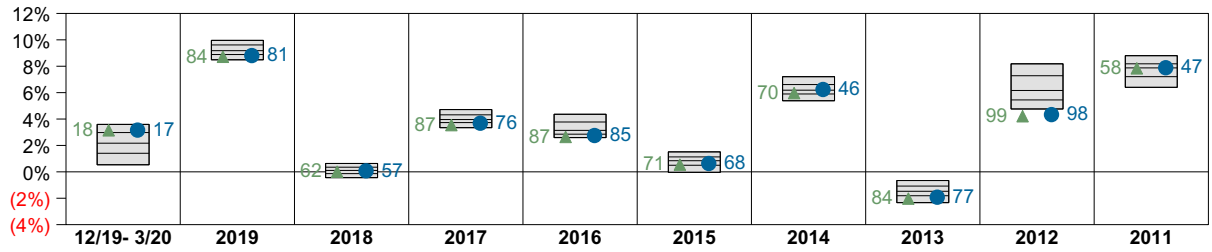


BlackRock U.S. Debt Fund
Return Analysis Summary

Return Analysis

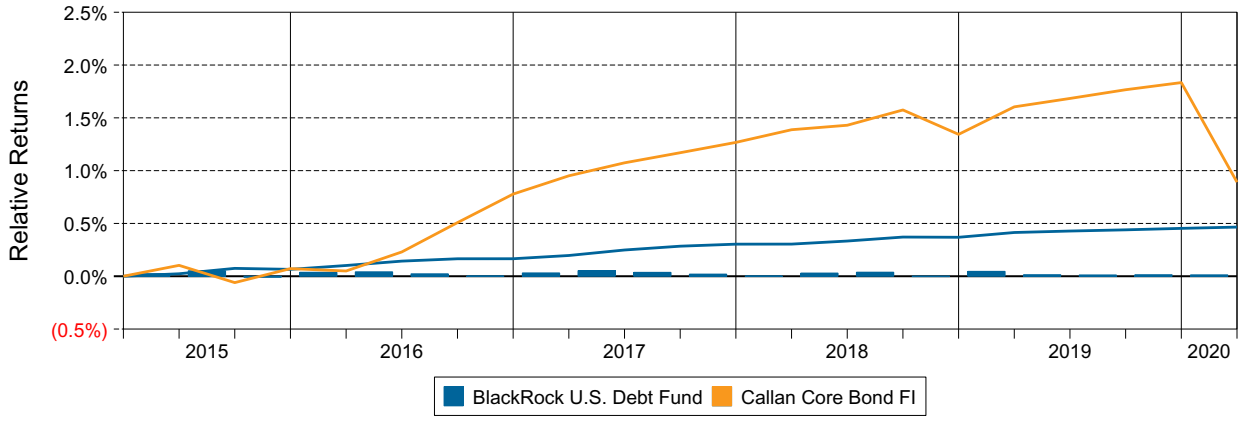
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Core Bond Fixed Income (Gross)

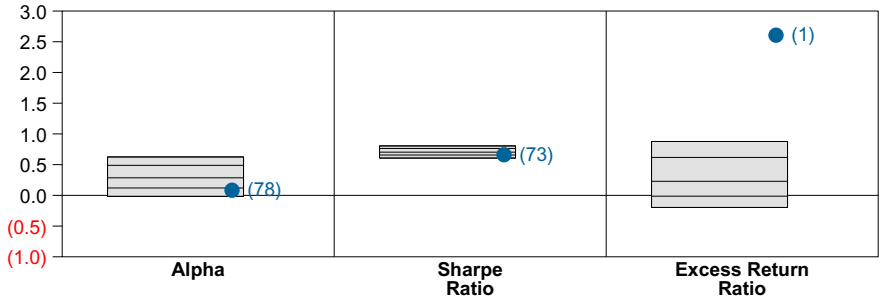


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	3.59	9.96	0.64	4.72	4.36	1.51	7.21	(0.66)	8.18	8.80
25th Percentile	2.98	9.61	0.35	4.32	3.78	1.13	6.61	(1.08)	7.28	8.18
Median	2.17	9.18	0.11	3.96	3.14	0.84	6.19	(1.47)	6.16	7.87
75th Percentile	1.41	8.89	(0.14)	3.73	2.85	0.50	5.90	(1.81)	5.45	7.21
90th Percentile	0.53	8.49	(0.44)	3.34	2.59	(0.04)	5.39	(2.33)	4.76	6.40
BlackRock U.S. Debt Fund ●	3.16	8.81	0.08	3.68	2.75	0.63	6.24	(1.92)	4.34	7.89
Blmbg Aggregate ▲	3.15	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21	7.84

Cumulative and Quarterly Relative Return vs Blmbg Aggregate



Risk Adjusted Return Measures vs Blmbg Aggregate
Rankings Against Callan Core Bond Fixed Income (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.63	0.80	0.88
25th Percentile	0.49	0.76	0.62
Median	0.29	0.70	0.23
75th Percentile	0.12	0.66	(0.01)
90th Percentile	(0.02)	0.61	(0.20)
BlackRock U.S. Debt Fund ●	0.08	0.66	2.61

PIMCO Fixed Income
Period Ended March 31, 2020

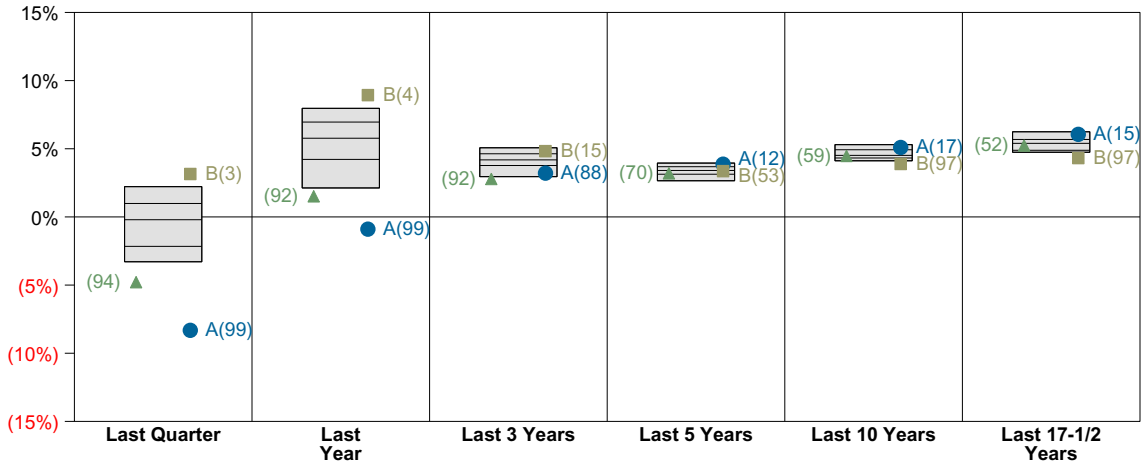
Investment Philosophy

PIMCO emphasizes adding value by rotating through the major sectors of the domestic and international bond markets. They also seek to enhance returns through duration management. The product was funded during the third quarter of 2002. The custom index is currently composed of 25% Barclays Mortgage, 25% Barclays Credit, 25% Barclays High Yield, and 25% JP Morgan EMBI Global. Prior to 2/1/2012, the custom index was composed of 70% Barclays Mortgage, 15% Barclays Credit, and 15% Barclays High Yield.

Quarterly Summary and Highlights

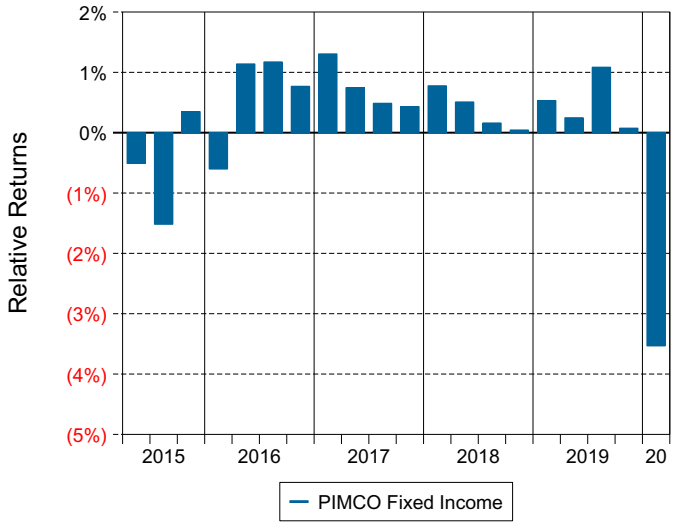
- PIMCO Fixed Income's portfolio posted a (8.32)% return for the quarter placing it in the 99 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 99 percentile for the last year.
- PIMCO Fixed Income's portfolio underperformed the Custom Index by 3.53% for the quarter and underperformed the Custom Index for the year by 2.41%.

Performance vs Callan Core Plus Fixed Income (Gross)

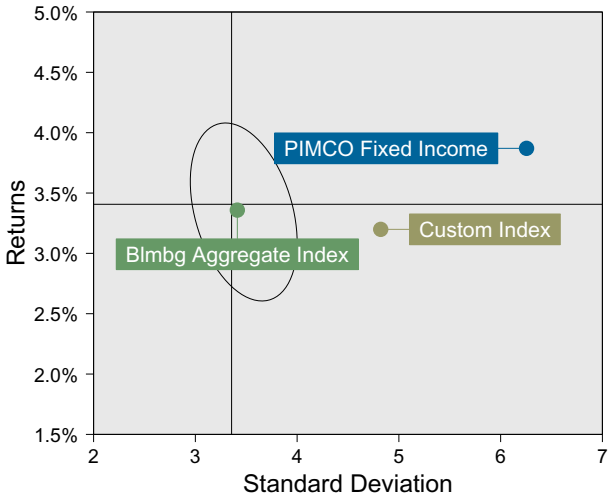


		Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 17-1/2 Years
10th Percentile		2.22	7.97	5.07	3.95	5.30	6.25
25th Percentile		0.99	6.96	4.63	3.68	4.93	5.68
Median		(0.21)	5.77	4.18	3.41	4.51	5.40
75th Percentile		(2.16)	4.22	3.77	3.13	4.32	4.89
90th Percentile		(3.29)	2.12	2.95	2.65	4.12	4.74
PIMCO Fixed Income	● A	(8.32)	(0.90)	3.21	3.87	5.09	6.06
Blmbg Aggregate Index	■ B	3.15	8.93	4.82	3.36	3.88	4.32
Custom Index	▲	(4.79)	1.51	2.79	3.20	4.47	5.24

Relative Return vs Custom Index



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

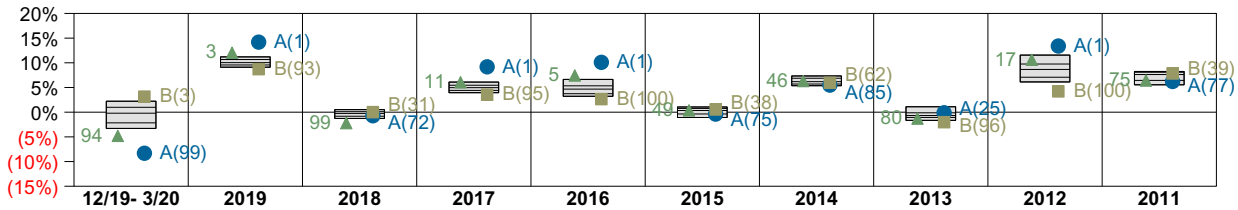


PIMCO Fixed Income
Return Analysis Summary

Return Analysis

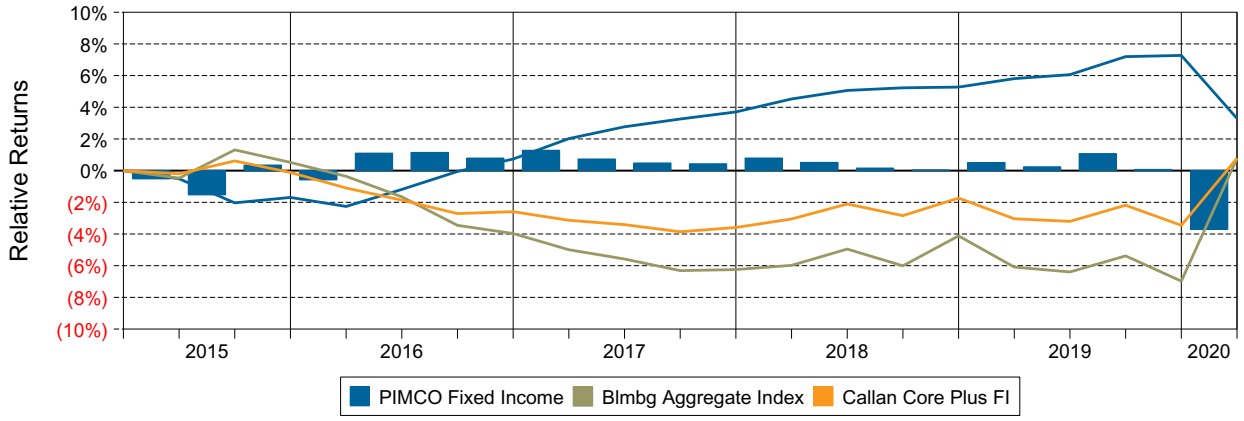
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Core Plus Fixed Income (Gross)

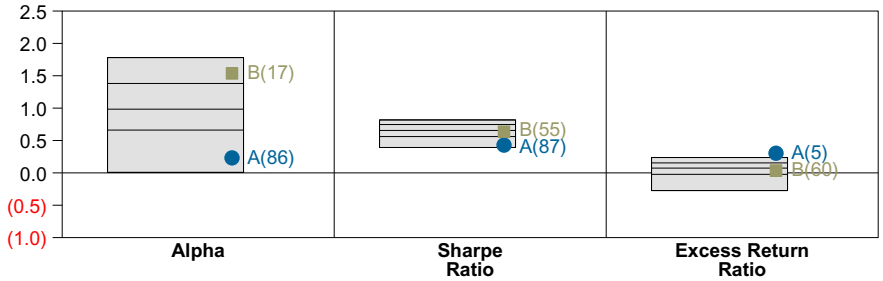


		12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile		2.22	11.20	0.52	6.10	6.64	1.05	7.34	1.10	11.56	8.25
25th Percentile		0.99	10.66	0.10	5.45	5.34	0.76	6.88	(0.13)	9.75	8.08
Median		(0.21)	10.03	(0.25)	4.97	4.67	0.34	6.18	(0.67)	8.66	7.62
75th Percentile		(2.16)	9.57	(0.82)	4.41	3.74	(0.36)	5.70	(1.07)	7.08	6.44
90th Percentile		(3.29)	9.11	(1.27)	3.94	3.22	(1.08)	5.36	(1.66)	6.13	5.54
PIMCO Fixed Income	● A	(8.32)	14.19	(0.73)	9.19	10.09	(0.39)	5.48	(0.12)	13.40	6.22
Blmbg Aggregate Index	■ B	3.15	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21	7.84
Custom Index	▲	(4.79)	12.06	(2.21)	6.06	7.44	0.37	6.31	(1.28)	10.62	6.42

Cumulative and Quarterly Relative Return vs Custom Index



Risk Adjusted Return Measures vs Custom Index
Rankings Against Callan Core Plus Fixed Income (Gross)
Five Years Ended March 31, 2020



		Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile		1.78	0.82	0.24
25th Percentile		1.38	0.75	0.15
Median		0.98	0.66	0.07
75th Percentile		0.66	0.56	(0.02)
90th Percentile		0.01	0.39	(0.27)
PIMCO Fixed Income	● A	0.23	0.43	0.30
Blmbg Aggregate Index	■ B	1.54	0.64	0.04

Real Estate

Real Estate
Period Ended March 31, 2020

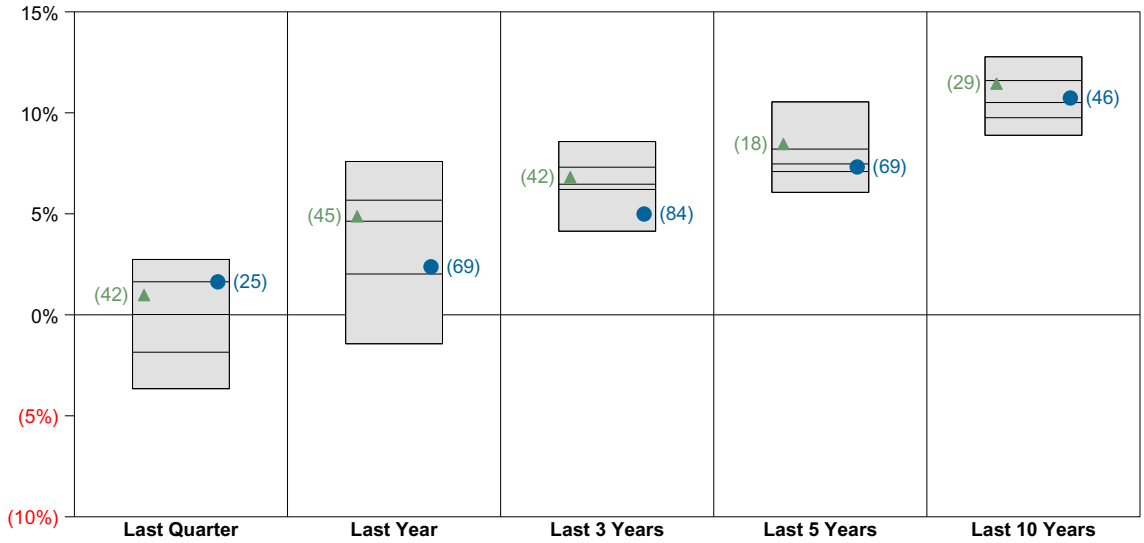
Investment Philosophy

The Total Real Estate Funds Database consists of both open and closed-end commingled funds as well as separate accounts managed by real estate firms. The returns represent the overall performance of institutional capital invested in real estate properties.

Quarterly Summary and Highlights

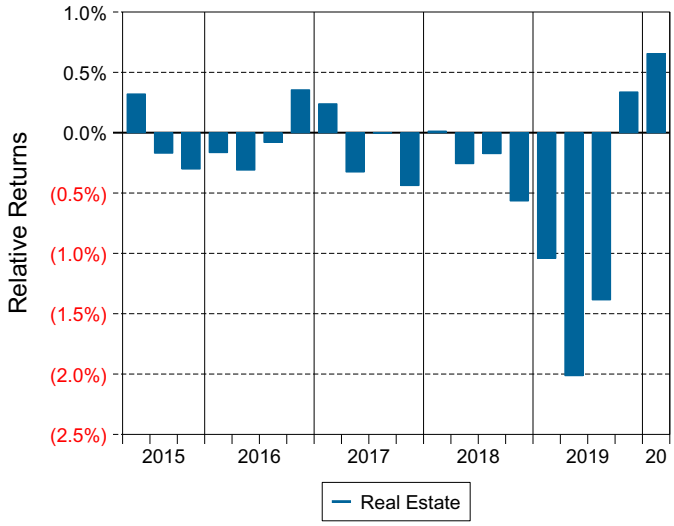
- Real Estate's portfolio posted a 1.63% return for the quarter placing it in the 25 percentile of the Public Fund - Real Estate group for the quarter and in the 69 percentile for the last year.
- Real Estate's portfolio outperformed the NFI-ODCE Value Weight Gr by 0.66% for the quarter and underperformed the NFI-ODCE Value Weight Gr for the year by 2.50%.

Performance vs Public Fund - Real Estate (Gross)

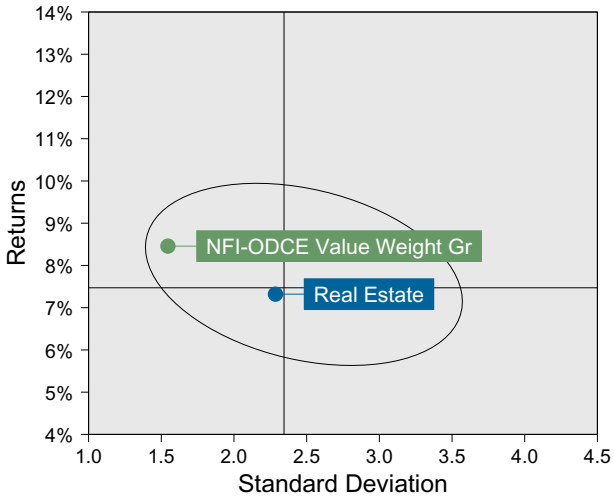


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	2.74	7.59	8.58	10.54	12.78
25th Percentile	1.64	5.68	7.31	8.21	11.60
Median	0.01	4.63	6.47	7.47	10.51
75th Percentile	(1.85)	2.02	6.21	7.09	9.76
90th Percentile	(3.66)	(1.43)	4.14	6.06	8.89
Real Estate ●	1.63	2.38	4.99	7.32	10.73
NFI-ODCE Value Weight Gr ▲	0.98	4.88	6.81	8.46	11.45

Relative Return vs NFI-ODCE Value Weight Gr



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

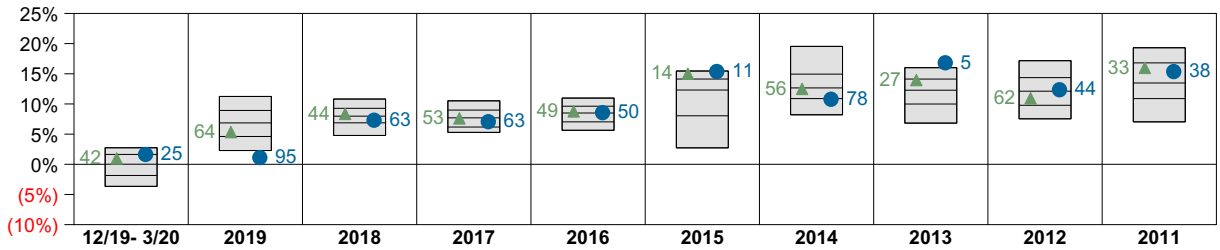


Real Estate
Return Analysis Summary

Return Analysis

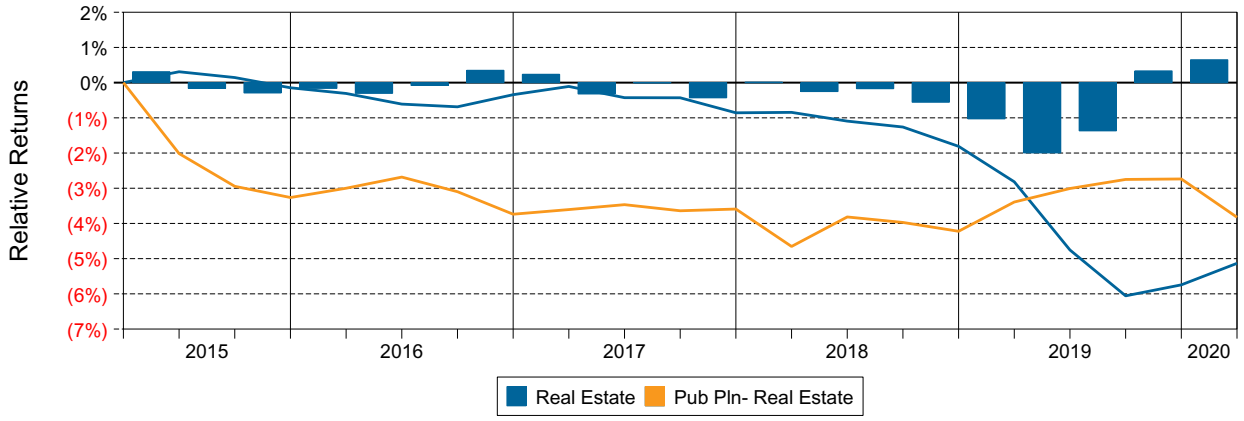
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Public Fund - Real Estate (Gross)

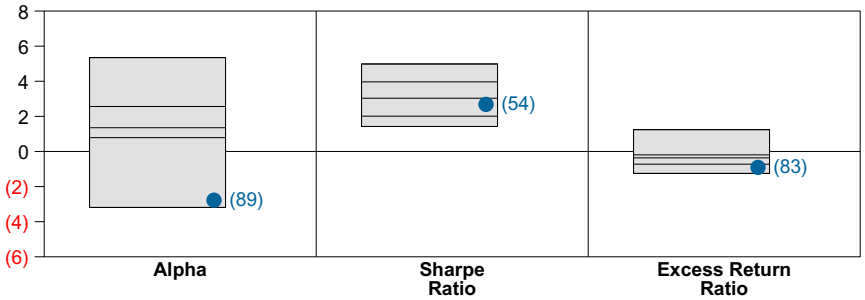


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	2.74	11.24	10.81	10.52	10.97	15.46	19.54	16.01	17.17	19.31
25th Percentile	1.64	8.92	9.28	8.99	9.63	14.13	14.94	14.12	14.36	16.81
Median	0.01	6.86	7.98	7.70	8.50	12.31	12.66	12.28	12.11	13.48
75th Percentile	(1.85)	4.61	6.87	6.17	7.03	8.04	10.89	9.99	9.78	10.89
90th Percentile	(3.66)	2.28	4.78	5.29	5.64	2.72	8.20	6.82	7.54	7.03
Real Estate ●	1.63	1.12	7.31	7.06	8.56	15.38	10.78	16.82	12.36	15.36
NCREIF NFI-ODCE Val Wt Gr ▲	0.98	5.34	8.35	7.62	8.77	15.02	12.50	13.96	10.94	15.99

Cumulative and Quarterly Relative Return vs NCREIF NFI-ODCE Val Wt Gr



Risk Adjusted Return Measures vs NCREIF NFI-ODCE Val Wt Gr
Rankings Against Public Fund - Real Estate (Gross)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	5.35	4.98	1.24
25th Percentile	2.56	3.97	(0.19)
Median	1.35	3.03	(0.36)
75th Percentile	0.79	2.01	(0.72)
90th Percentile	(3.19)	1.42	(1.25)
Real Estate ●	(2.78)	2.68	(0.91)

JP Morgan Strategic Property Fund
Period Ended March 31, 2020

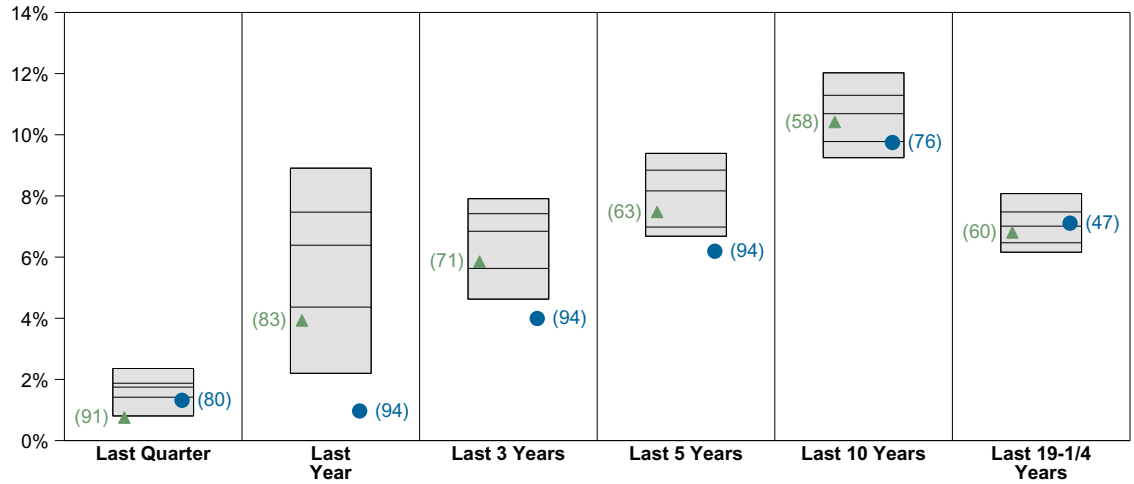
Investment Philosophy

J.P. Morgan's Strategic Property Fund is an actively managed diversified, core, open-end commingled pension trust fund. It seeks an income-driven rate of return of 100 basis points over the NFI-ODCE Equal Weight Net Index over a full market cycle (three to five year horizon) through asset, geographic and sector selection and active asset management. The Fund invests in high quality stabilized assets with dominant competitive characteristics in markets with attractive demographics throughout the United States. The product was funded in the fourth quarter of 2008.

Quarterly Summary and Highlights

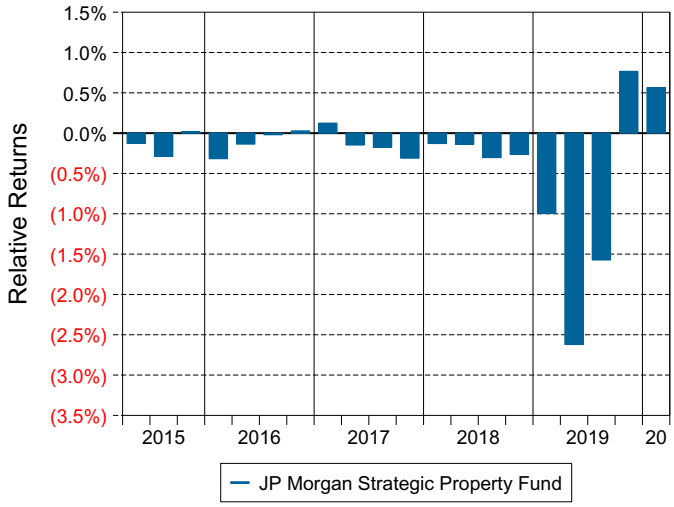
- JP Morgan Strategic Property Fund's portfolio posted a 1.32% return for the quarter placing it in the 80 percentile of the Callan Open End Core Cmmingled Real Est group for the quarter and in the 94 percentile for the last year.
- JP Morgan Strategic Property Fund's portfolio outperformed the NCREIF NFI-ODCE Val Wt Nt by 0.56% for the quarter and underperformed the NCREIF NFI-ODCE Val Wt Nt for the year by 2.96%.

Performance vs Callan Open End Core Cmmingled Real Est (Net)

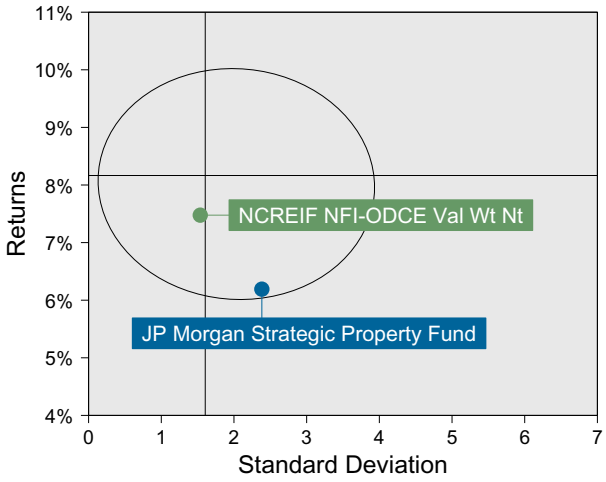


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 19-1/4 Years
10th Percentile	2.36	8.91	7.91	9.39	12.03	8.08
25th Percentile	1.88	7.47	7.42	8.84	11.29	7.48
Median	1.75	6.39	6.84	8.16	10.69	7.01
75th Percentile	1.42	4.37	5.63	6.98	9.78	6.47
90th Percentile	0.81	2.20	4.63	6.68	9.25	6.16
JP Morgan Strategic Property Fund ●	1.32	0.97	3.99	6.19	9.75	7.11
NCREIF NFI-ODCE Val Wt Nt ▲	0.75	3.93	5.85	7.48	10.42	6.81

Relative Returns vs NCREIF NFI-ODCE Val Wt Nt



Callan Open End Core Cmmingled Real Est (Net) Annualized Five Year Risk vs Return

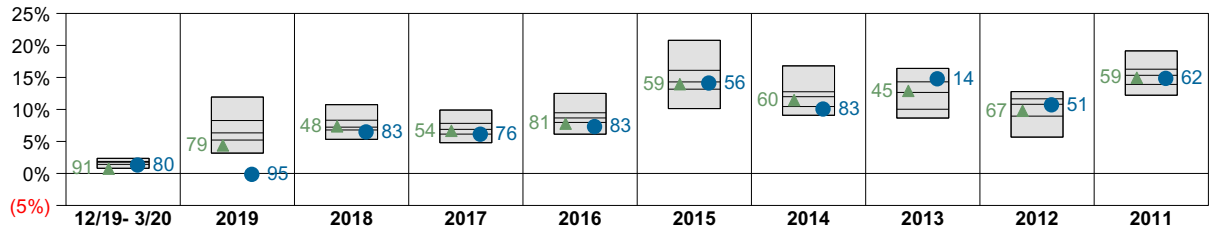


JP Morgan Strategic Property Fund
Return Analysis Summary

Return Analysis

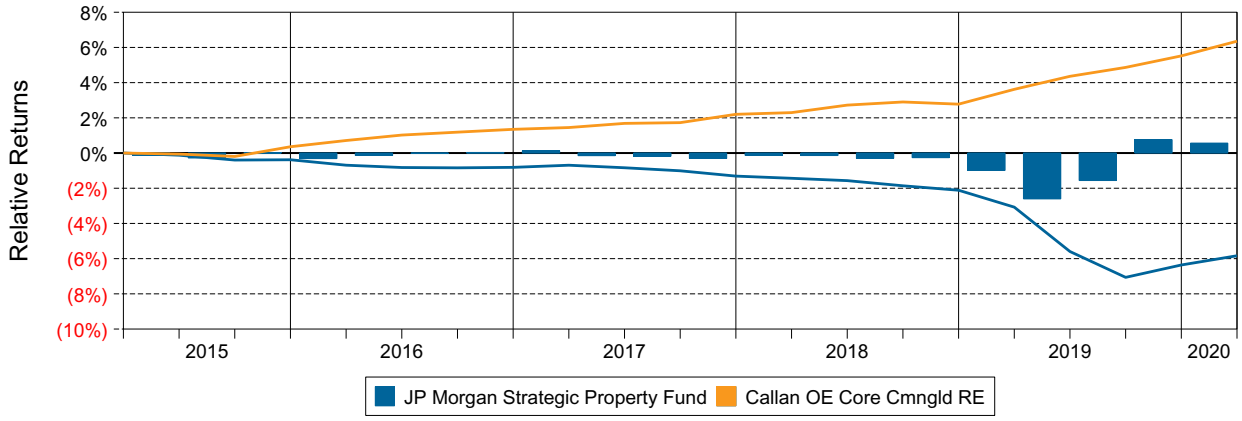
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Open End Core Cmmingled Real Est (Net)

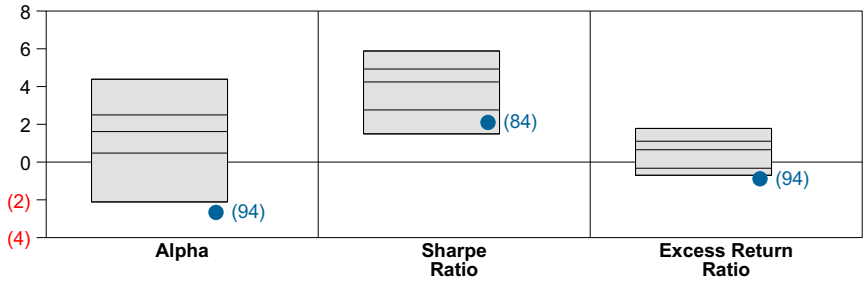


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	2.36	11.94	10.74	9.90	12.50	20.80	16.81	16.41	12.79	19.15
25th Percentile	1.88	8.27	8.32	7.83	9.48	16.11	12.76	14.31	11.66	16.29
Median	1.75	6.34	7.23	6.89	8.67	14.30	11.99	12.66	10.80	15.33
75th Percentile	1.42	5.22	6.79	6.15	7.97	13.17	10.45	10.03	8.95	13.91
90th Percentile	0.81	3.18	5.33	4.80	6.14	10.13	9.09	8.65	5.67	12.22
JP Morgan Strategic Property Fund ●	1.32	(0.14)	6.49	6.13	7.32	14.12	10.06	14.79	10.72	14.86
NCREIF NFI-ODCE Val Wt Nt ▲	0.75	4.39	7.36	6.66	7.79	13.95	11.46	12.90	9.79	14.96

Cumulative and Quarterly Relative Return vs NCREIF NFI-ODCE Val Wt Nt



Risk Adjusted Return Measures vs NCREIF NFI-ODCE Val Wt Nt
Rankings Against Callan Open End Core Cmmingled Real Est (Net)
Five Years Ended March 31, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.39	5.88	1.78
25th Percentile	2.50	4.93	1.11
Median	1.62	4.24	0.65
75th Percentile	0.48	2.76	(0.33)
90th Percentile	(2.11)	1.49	(0.70)
JP Morgan Strategic Property Fund ●	(2.67)	2.10	(0.89)

JP Morgan Income and Growth Fund
Period Ended March 31, 2020

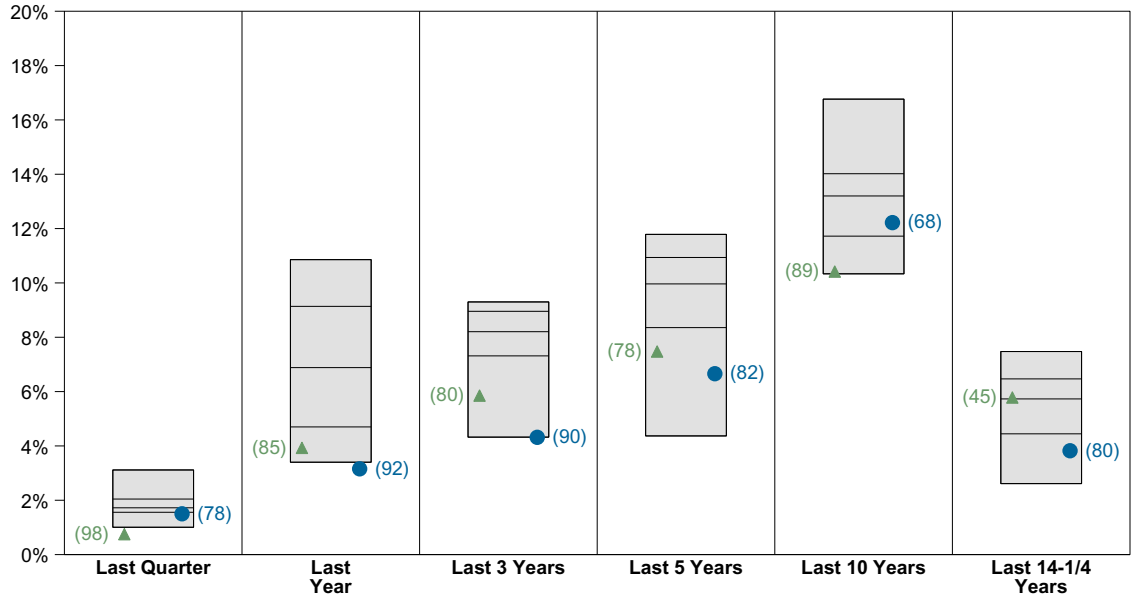
Investment Philosophy

The product was funded in the fourth quarter of 2005.

Quarterly Summary and Highlights

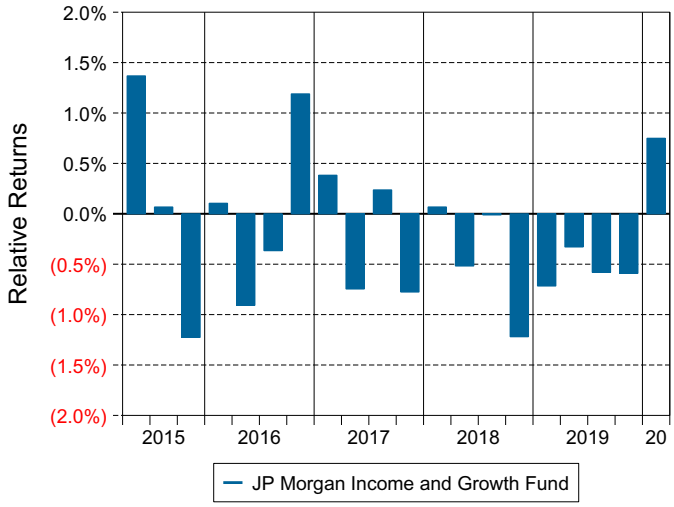
- JP Morgan Income and Growth Fund's portfolio posted a 1.50% return for the quarter placing it in the 78 percentile of the Callan Real Estate Val Add Open End Fds group for the quarter and in the 92 percentile for the last year.
- JP Morgan Income and Growth Fund's portfolio outperformed the NCREIF NFI-ODCE Val Wt Nt by 0.75% for the quarter and underperformed the NCREIF NFI-ODCE Val Wt Nt for the year by 0.77%.

Performance vs Callan Real Estate Val Add Open End Fds (Net)

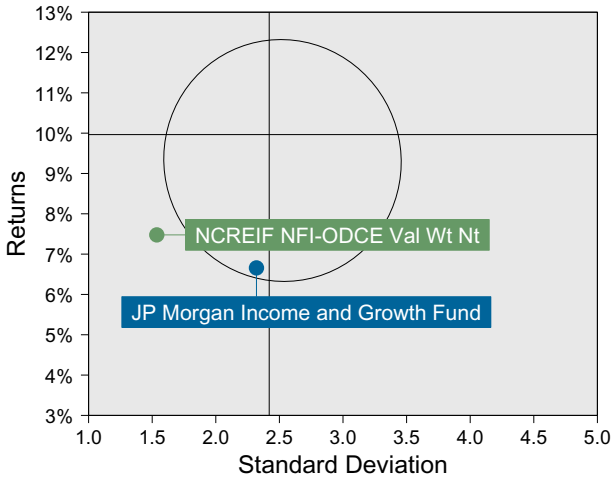


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 14-1/4 Years
10th Percentile	3.12	10.86	9.30	11.79	16.77	7.47
25th Percentile	2.04	9.14	8.95	10.94	14.02	6.47
Median	1.72	6.88	8.20	9.96	13.20	5.73
75th Percentile	1.56	4.70	7.31	8.36	11.72	4.45
90th Percentile	1.01	3.40	4.32	4.37	10.33	2.61
JP Morgan Income and Growth Fund ●	1.50	3.16	4.32	6.66	12.22	3.82
NCREIF NFI-ODCE Val Wt Nt ▲	0.75	3.93	5.85	7.48	10.42	5.78

Relative Returns vs NCREIF NFI-ODCE Val Wt Nt



Callan Real Estate Val Add Open End Fds (Net) Annualized Five Year Risk vs Return

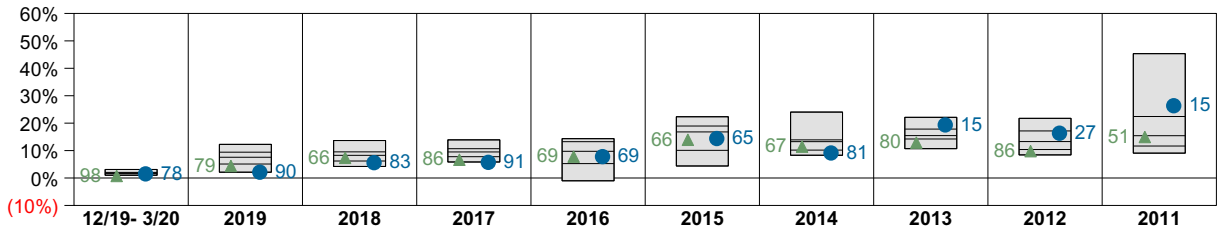


JPM Income and Growth Fund
Return Analysis Summary

Return Analysis

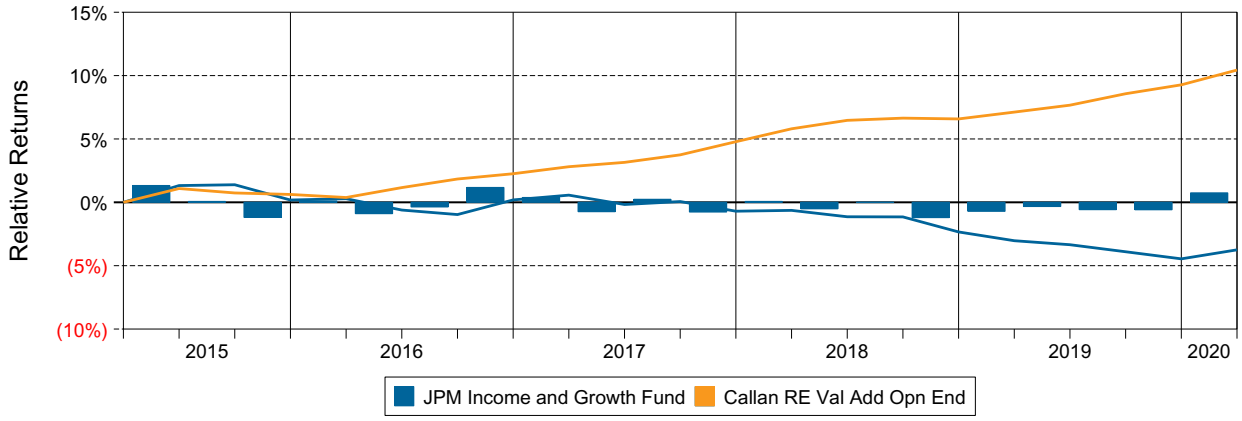
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Real Estate Val Add Open End Fds (Net)

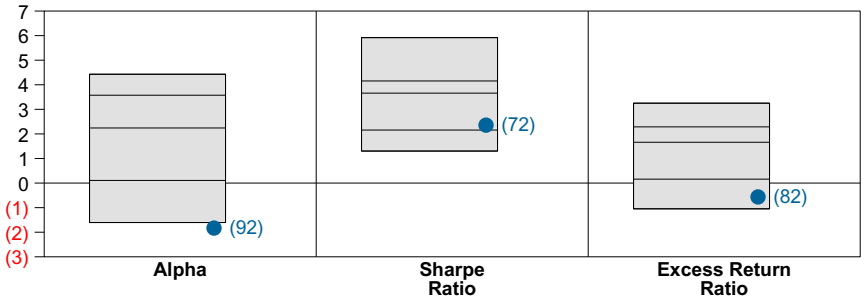


	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	3.12	12.26	13.67	13.90	14.34	22.33	24.03	22.12	21.75	45.34
25th Percentile	2.04	9.42	9.54	10.69	13.24	18.95	13.91	17.84	17.17	22.42
Median	1.72	7.57	8.26	9.50	9.74	16.80	13.25	15.46	13.28	15.42
75th Percentile	1.56	5.10	6.19	7.78	5.25	10.09	10.18	14.23	10.39	11.66
90th Percentile	1.01	2.11	4.21	5.84	(1.02)	4.38	8.30	10.70	8.43	9.06
JPM Income and Growth Fund ●	1.50	2.12	5.59	5.71	7.80	14.39	9.13	19.35	16.33	26.36
NCREIF NFI-ODCE Val Wt Nt ▲	0.75	4.39	7.36	6.66	7.79	13.95	11.46	12.90	9.79	14.96

Cumulative and Quarterly Relative Return vs NCREIF NFI-ODCE Val Wt Nt



Risk Adjusted Return Measures vs NCREIF NFI-ODCE Val Wt Nt
Rankings Against Callan Real Estate Val Add Open End Fds (Net)
Five Years Ended March 31, 2020



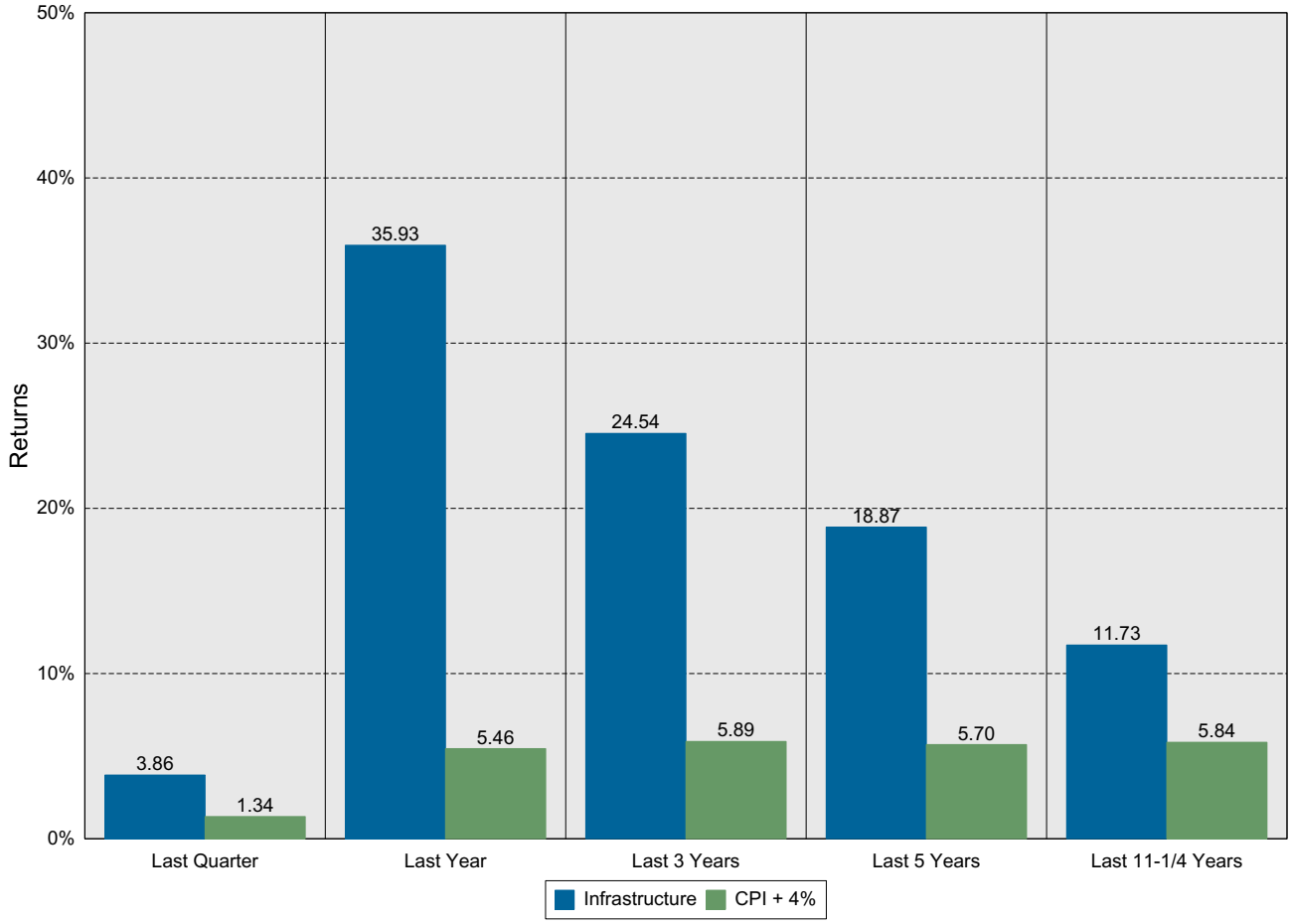
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.43	5.92	3.25
25th Percentile	3.57	4.15	2.29
Median	2.24	3.66	1.66
75th Percentile	0.11	2.16	0.16
90th Percentile	(1.61)	1.30	(1.05)
JPM Income and Growth Fund ●	(1.83)	2.36	(0.56)

Infrastructure

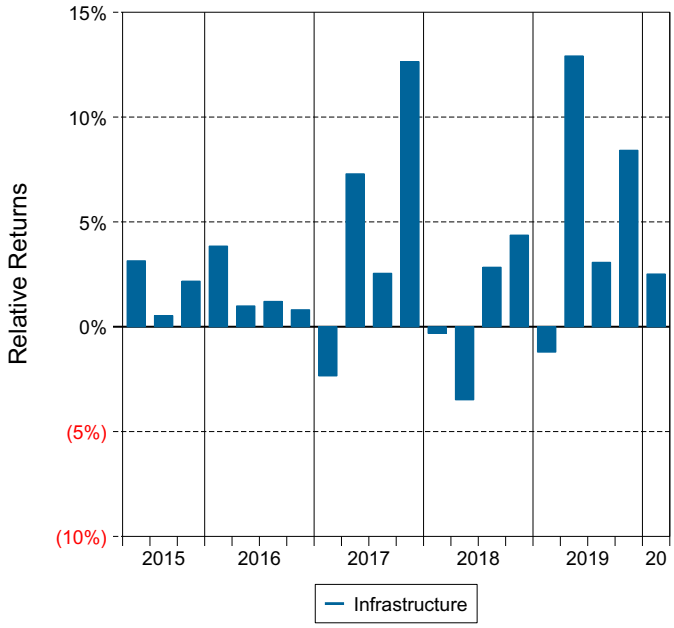
Infrastructure
Period Ended March 31, 2020

Quarterly Summary and Highlights

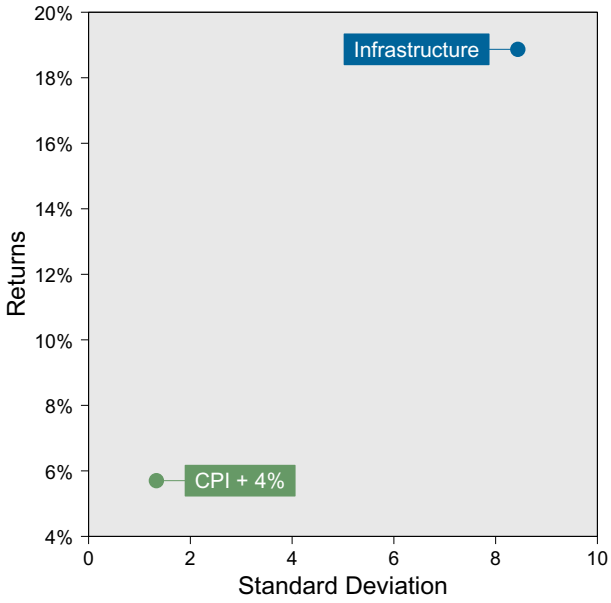
- Infrastructure's portfolio outperformed the CPI + 4% by 2.51% for the quarter and outperformed the CPI + 4% for the year by 30.47%.



Relative Return vs CPI + 4%



Annualized Five Year Risk vs Return



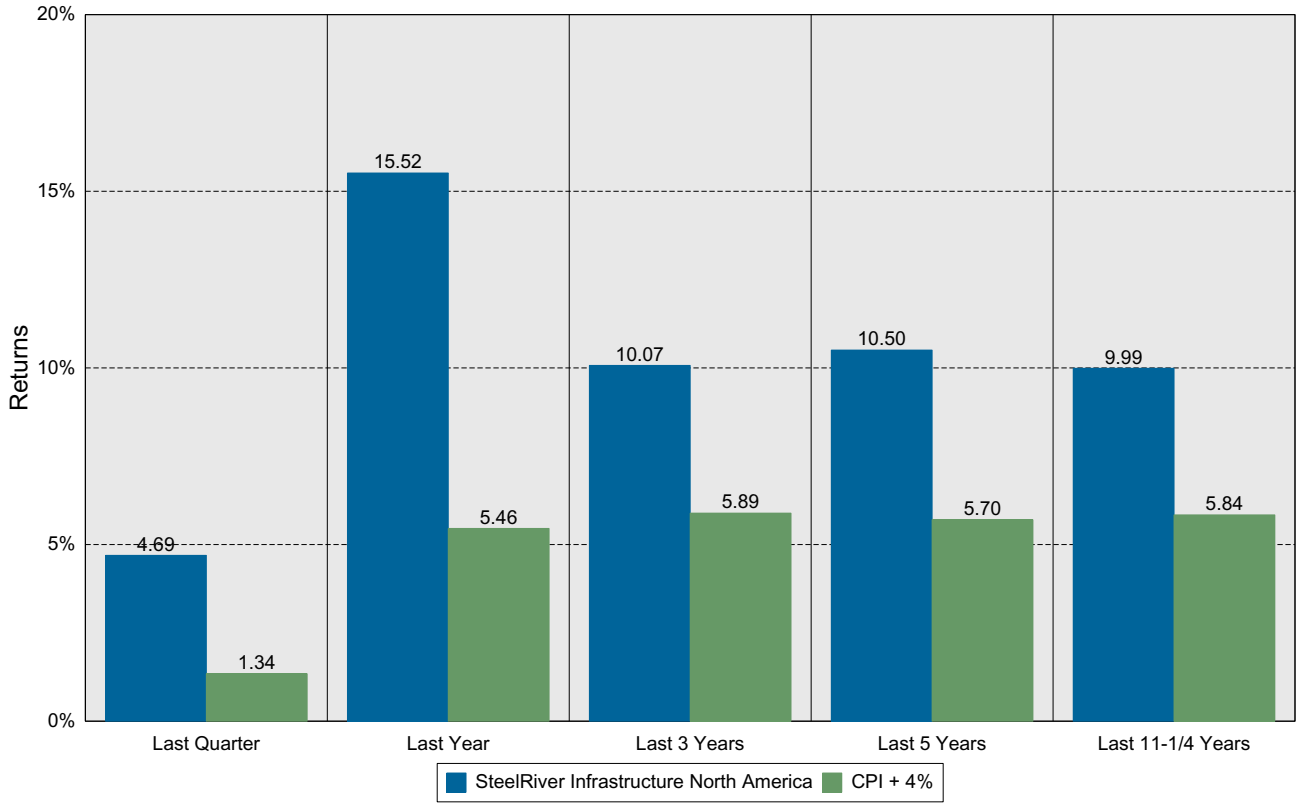
SteelRiver Infrastructure North America
Period Ended March 31, 2020

Investment Philosophy

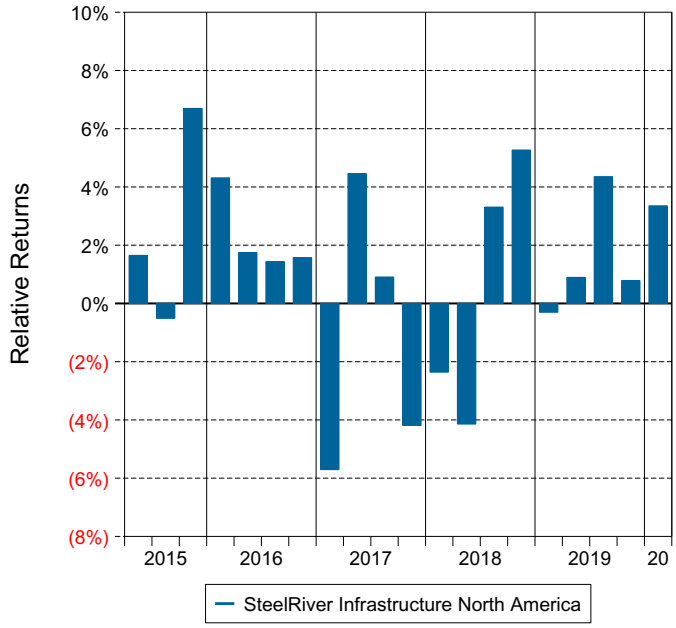
The product was funded in the fourth quarter of 2008.

Quarterly Summary and Highlights

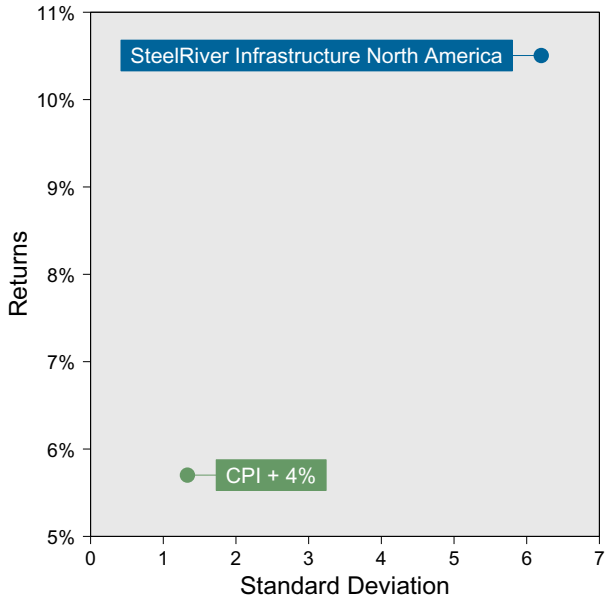
- SteelRiver Infrastructure North America's portfolio outperformed the CPI + 4% by 3.35% for the quarter and outperformed the CPI + 4% for the year by 10.06%.



Relative Return vs CPI + 4%



Annualized Five Year Risk vs Return



Callan Research/Education

Research and Educational Programs

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

New Research from Callan's Experts

2020 National Workshop Summary: Turbocharging DC Plans In this workshop, Connie Lee, Jana Steele, and James Veneruso described ways in which defined contribution plan sponsors can improve participant outcomes, including plan design strategies and investment implementation steps.

2019 Nuclear Decommissioning Funding Study | Callan's annual study offers insights into the status of nuclear decommissioning funding to make peer comparisons more accurate and relevant.

2020 National Workshop Summary: Diversifying Alternatives In this workshop, presenters Pete Keliuotis, Catherine Beard, and Ashley DeLuce discussed three lesser-known alternatives strategies: specialty lending, emerging market private equity, and insurance-linked strategies.

2020 DC Trends Survey | Callan's *2020 Defined Contribution Trends Survey* is designed to provide a benchmark for sponsors to evaluate their plans compared to peers, and to offer insights to help sponsors improve their plans and the outcomes for their participants.

How Sponsors Can Harness DC Plan Data for Better Outcomes Defined contribution (DC) plans are designed to help participants achieve the most beneficial outcomes. But participants' choices may not necessarily reflect asset allocation best practices. Sponsors can help participants by analyzing how investment options are used and make adjustments based on those observations.

The Callan Periodic Table of Investment Returns | We offer our Periodic Table Collection and the Callan Periodic Table of Investment Returns (Key Indices: 2000-2019).

Callan's 2020-2029 Capital Market Assumptions | Callan develops capital market assumptions to help clients with their long-term strategic planning. This year, we reduced our fixed income assumptions to reflect lower starting yields following the Fed pivot in policy, but we held constant our real equity return over inflation.

2020 National Workshop Summary: Fee Study | In this 2020 workshop, presenters Butch Cliff, Mark Stahl, and Brady O'Connell discussed the major themes of our *2019 Investment Management Fee Study* and their impact on the institutional investor community.

An Introduction to Our New Hedge Fund Peer Group | The Callan Institutional Hedge Fund Peer Group is designed to help institutional investors better understand alpha-oriented solutions that can diversify their existing stock and bond exposures, and it represents the available pool of hedge fund talent that investors will want to consider, or at least compare with their existing hedge fund portfolios.

Quarterly Periodicals

Private Equity Trends, 4Q19 | A high-level summary of private equity activity in the quarter through all the investment stages

Active vs. Passive Charts, 4Q19 | A comparison of active managers alongside relevant benchmarks over the long term

Market Pulse Flipbook, 4Q19 | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

Capital Market Review, 4Q19 | 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, 4Q19 | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

Real Assets Reporter, 4Q19 | Data and insights on real estate and other real assets 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/

Please mark your calendar and look forward to upcoming invitations:

Upcoming Webinars

May 21 – Hedge Fund Overview
July 8 – China Update

For more information about events, please contact Barb Gerraty: 415-274-3093 / 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

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

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.

Additional information including dates and registration can be found at: www.callan.com/callan-college-intro-2/

Alternative Investments for Institutional Investors

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 Pete Keliuotis, the head of Alternatives Consulting. 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.

Additional information including dates and registration can be found at: https://www.callan.com/callan-college-alternatives-2/

"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

Disclosures

Callan

Quarterly List as of March 31, 2020

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.
AllianceBernstein
Allianz
American Century Investments
Amundi Pioneer Asset Management
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Aristotle Capital Management, LLC
Atlanta Capital Management Co., LLC
Aviva Investors Americas
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City Manager Concerned About CalPERS Investment Strategy

Governance restructure and risky investments cause for alarm for city's Finance Committee

BY ANDRÉ COLEMAN, MANAGING EDITOR
Published on Tuesday, July 14, 2020 | 2:50 pm

CalPERS Sacramento headquarters

City Manager Steve Mermell is currently drafting a letter to the California Employees Retirement System (CalPERS) regarding recent actions that could provide greater risk to its investment strategy.

CalPERS manages pension funds for in Southern California, including nearly $1.3 billion for the city.

“I am concerned that in its efforts to achieve greater returns, CalPERS is taking on additional risk, by shifting more investments to private equity and more alarmingly, borrowing money to invest,” Mermell told Pasadena Now. “While the strategy may get results, just like gambling, the downside risks are too great and it’s the taxpayer that will end up footing the bill.”

In a recent Finance Committee members expressed concerns about changes made to the CalPERS governance model that reduced transparency and allowed the group to take on additional investment and plan risk without involving member agencies,” according to a city staff report.

City officials want to take actions that would require CalPERS to inform, collaborate and educate member agencies prior to changes in the Investment Strategic Plan.

“CalPERS is planning to invest 20 percent of their portfolio into risky illiquid private investments that are not in accordance with their fiduciary responsibilities to responsibly invest employees funds,” said Councilmember Margaret McAustin who sits on the committee along with Mayor Terry Tornek, John Kennedy and Victor Gordo. “I and all members of the finance committee object to this investment strategy.”

In August, the CaIPERS’ Board of Directors voted to restructure the governance model and reduced the number of annual board meetings from nine to six.

The board also restructured its investment committee, changing it to a subcommittee with no decision making powers and decreased its annual meetings from nine to four.

The meeting came two months after the CaIPERS Investment Committee met in closed session in June to discuss a new investment strategy involving increased investments in private assets and emerged with a new strategy of “better assets” and “more assets.”

According to a city staff report, these investments carry more risk.

State laws allow CaIPERS to meet in closed session to discuss investment decisions.

“I hope Governor Newsom and our locally elected state leaders are concerned by the recent actions of CalPERS in their decision to borrow billions of dollars on the open market with the hope of reinvesting

those same dollars to spike, artificially, returns," Kennedy said. "We have an affirmative duty to question the policy, hold CalPERS leaders accountable and demand that monies are invested according to conservative monetary and investment strategies polices."

"At a time when local governments and other public agencies are becoming more transparent, CaIPERS moved in the opposite direction," according to a city staff report signed by Mermell and Director of Finance Matthew Hawkesworth.

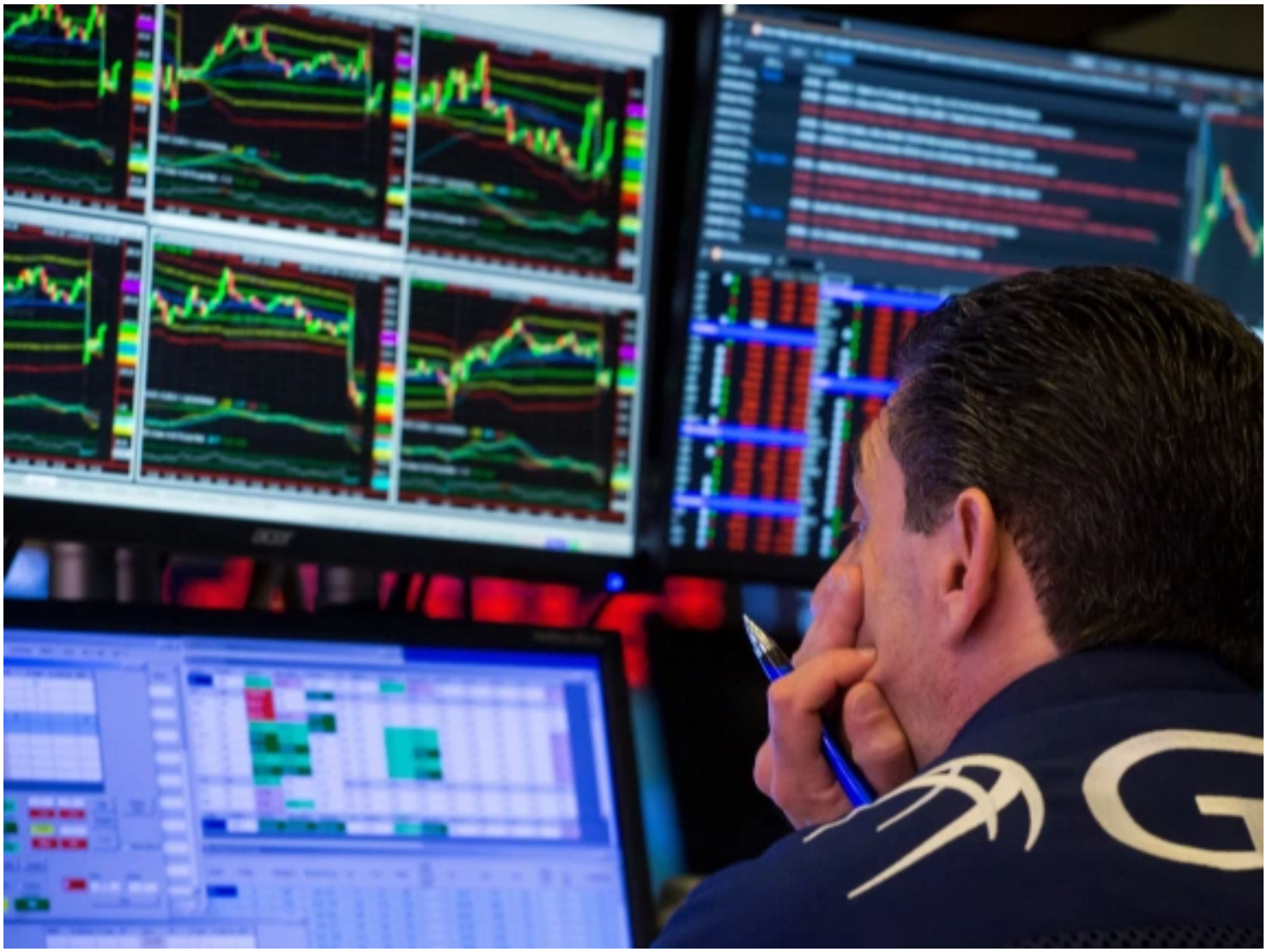
For nearly 35 years CalPERS has followed three guiding principles in investing — safety, liquidity and yield and sought a modest investment return or discount rate of four percent, and invested in low to no-risk fixed income strategies like treasury bills.

The rate eventually went to seven percent, and despite new benefits designed to outweigh additional costs, member agencies, including Pasadena, continued to have concerns about rising pension costs, balancing budgets and mitigating costs.

"If Pasadena and other member agencies want to hold CaIPERS more accountable and have a greater voice, changes need to be made to their governance structure, the State's Government Code, and the Public Employees' Retirement Law," the staff report reads. "The State Government Code provides CaIPERS and their Board with autonomy and that autonomy means that member agencies have virtually no voice beyond a public comment at a meeting."

How The Experts Are Measuring The Economic Recovery

By Neil Paine
Graphics by Ryan Best
Filed under Coronavirus
Published Jul. 15, 2020



MICHAEL NAGLE / XINHUA VIA GETTY

In early June, the National Bureau of Economic Research made it official: The United States was in a full-blown recession. Joblessness had risen to historic levels, total production was down, and industrial activity slowed to a crawl. Just like that, the COVID-19 pandemic had extinguished the longest period of expansion in U.S. history.

Ever since, the signs of recovery have been confusingly mixed — unemployment has improved more quickly than expected and the stock market has shown surprising resilience, but other indicators have looked much worse. So how can we know when the economy is truly recovering?

As part of our ongoing survey of economists, conducted in partnership with the Initiative on Global Markets at the University of Chicago Booth School of Business, we asked experts which metrics they have their eye on to judge the strength of the recovery now — and what they're looking at to predict where the economy might be headed *next*.

[Related: Where The Latest COVID-19 Models Think We're Headed — And Why They Disagree]

In terms of measuring the recovery, economists are looking most closely at **gross domestic product**. Given three options to describe the level of attention they paid to GDP, 81 percent of our respondents said they were watching it "very closely," with another 16 percent saying they were looking at GDP "somewhat closely" and only 3 percent saying they weren't following it closely at all.

How economists are evaluating the recovery

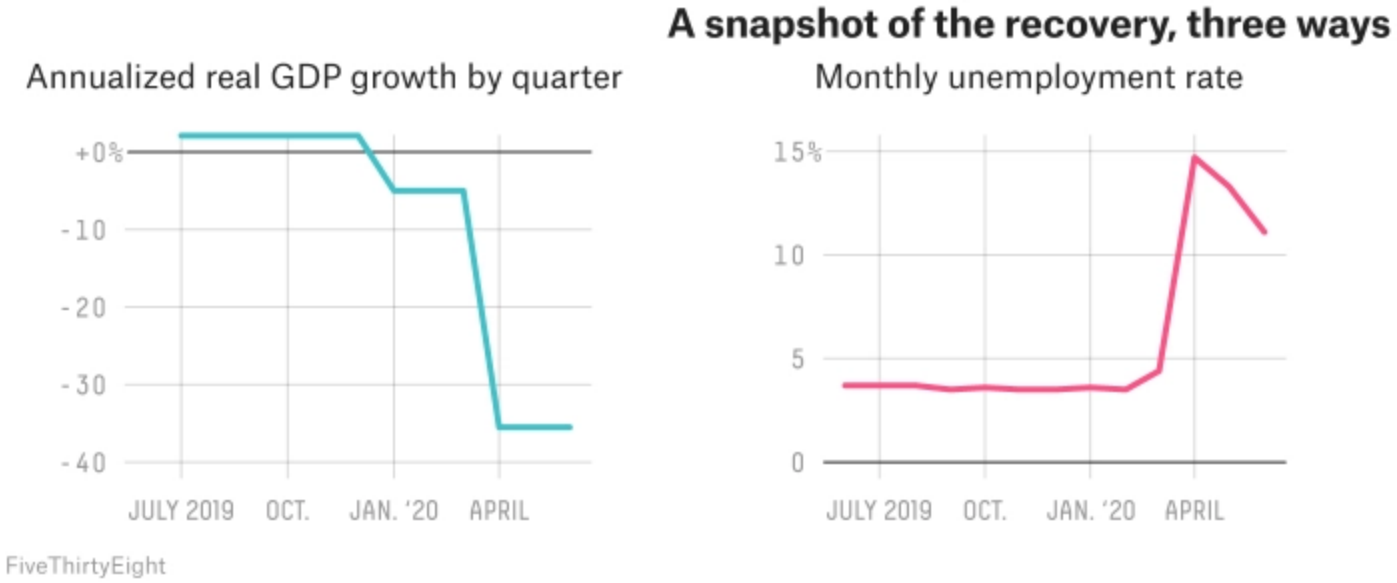
Share of surveyed economists who said they were closely watching certain metrics to evaluate the speed and strength of the economic recovery

	SHARE WHO SAID THEY WATCH...		
METRIC	NOT AT ALL	SOMEWHAT	VERY CLOSELY
GDP	3%	16%	81%
Unemployment rate	3	26	71
Retail and food sales	10	29	61
Consumer confidence	23	48	29
Saving rate	23	55	23

The survey of 31 economists was conducted July 2-6.

SOURCE: FIVETHIRTYEIGHT/IGM COVID-19 ECONOMIC SURVEY

The next-most watched statistic was the **unemployment rate**, which also shouldn't be surprising; both GDP and unemployment are key lagging indicators, or important metrics that show how the economy has been doing. According to the survey, **retail and food sales** also belong in that category — particularly in this pandemic, since the hospitality and retail sectors are among the industries harmed most when virus-related shutdowns force businesses to close.



Based on the three main indicators economists said they're using to judge the recovery, America has a long way to go before things are back to their pre-pandemic baseline.

After mostly cruising along at between 2 and 3.5 percent annualized quarter-over-quarter growth for years, real GDP dropped by an annualized rate of 5 percent from the fourth quarter of 2019 to the first quarter of 2020, which contained only about one month of coronavirus-related effects (although the National Bureau of Economic Research says the recession technically began in February 2020). The Federal Reserve Bank of Atlanta's GDPNow model estimates that second-quarter real GDP will end up being down by an annualized rate of 35.5 percent — seven times worse than the first quarter — when the Bureau of Economic Analysis releases its official number later this month.

[Related: The Economy Is A Mess. So Why Isn't The Stock Market?]

Similarly, the unemployment rate is currently 11.1 percent, an increase of 7.6 percentage points from February — and still higher than any level it had reached from 1948 through March 2020.[1] When the Congressional Budget Office released an update to its long-term forecast for the decade earlier this month, it projected that the unemployment rate would remain above its pre-pandemic level for the rest of the decade.

Retail and food sales fell from just over $200 billion (in CPI-adjusted 1982-84 dollars) in February to $161 billion in April — a massive drop. But thanks to reopening stores, it rallied to just shy of $190 billion in May, and will likely be even higher in June if consumer spending data is any indication. Those gains are tenuous, though, endangered by rising case counts across the country that have already forced some types of businesses to close again. There figures to be a tight inverse relationship between the virus's spread and retail/food businesses' ability to stay open, which is a big reason to watch this indicator going forward.[2]

That's why we also asked our survey panel which of the faster-moving data sources might tell us where the major indicators above are headed. Of the options we presented, the only one economists were clearly watching was **consumer spending**, which was considered "very useful" by 65 percent of respondents, and at least "somewhat useful" by the remaining 35 percent of those surveyed.

What are economists using to predict recovery?

Share of surveyed economists who said certain high-frequency metrics were useful for predicting the economic recovery

	SHARE WHO SAID METRIC WAS...		
METRIC	NOT AT ALL	SOMEWHAT	VERY USEFUL
Consumer spending	0%	35%	65%
Initial unemployment claims	0	52	48
Job postings	0	55	45
Traffic	6	77	16
Mobility (from cellphones)	3	84	13

The survey of 31 economists was conducted July 2-6.

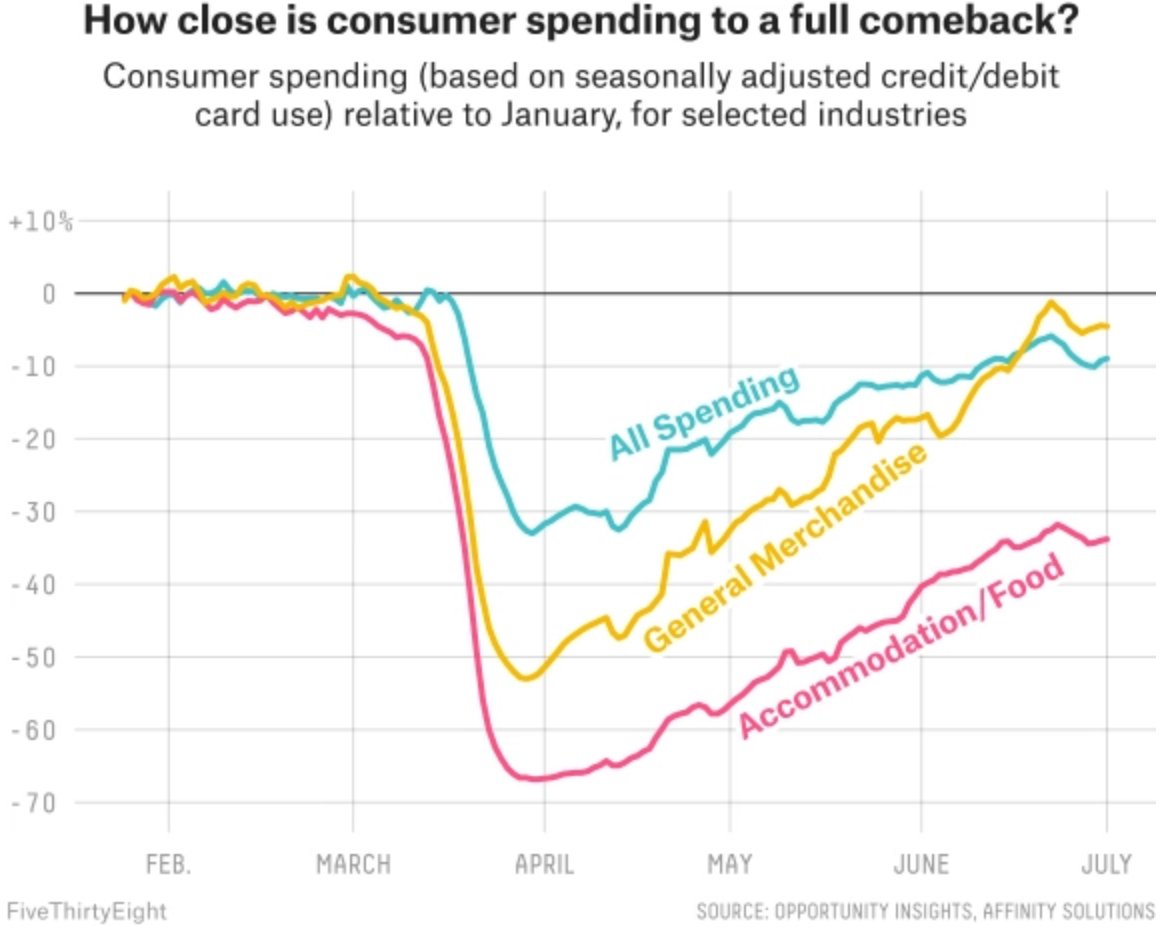
SOURCE: FIVETHIRTYEIGHT/IGM COVID-19 ECONOMIC SURVEY

A clear second tier of usefulness formed around **initial unemployment claims** and **job postings** from various recruiting sites. The panel was split roughly 50-50 over whether each was "very" or "somewhat" useful, but no respondents thought they offered zero value.

(The economists were less impressed with mobility data such as traffic — i.e., miles driven — or trends in cellphone tracking data, though the majority acknowledged them as at least somewhat useful data points.)

[Related: The Industries Hit Hardest By The Unemployment Crisis]

It's still early, but consumer spending seems to be on the rise. According to the extremely useful Opportunity Insights COVID data dashboard, overall consumer spending — based on credit and debit card usage data collected by Affinity Solutions — in early April was down about 33 percent (compared with January), but made consistent strides between then and mid-to-late June. By June 22, spending was down only around 6 percent relative to January levels. But the wave of June coronavirus cases across the country has clearly slowed spending: as of July 1, it was back to down 9 percent compared with January.



High-frequency employment data tells a similar story. According to Indeed, job postings have steadily improved from their low point on May 1 (down 39 percent relative to 2019), but they remain 23 percent below their level from a year ago. Initial claims have dropped every single week since March 28 — that's 14 consecutive weeks — but only by an average of 4.3 percent per week over the past four weeks, compared with an average weekly decline of 13.6 percent over the 10 weeks before that.

Such real-time data is a welcome addition to the slower, monthly or quarterly pace of most official releases that make up the canon of important lagging indicators. In fact, the lack of reliable, quickly updating data has been a hallmark of this crisis, whether it be public health or economic data. So how will we know when things are better? According to our survey, we'll get there when real GDP returns to form and unemployment is reduced. And the early clues might be hidden in people's willingness to spend. But no matter what you look at, most economists agree: It might be a very long time before we reach a full recovery.

Subscribe to our coronavirus podcast, PODCAST-19

Footnotes

1. It reached a peak of 10 percent during the Great Recession, and 10.8 percent in the recession of the early 1980s.
2. It's no coincidence that, in a free-response box for "other" responses, nearly a third of our economists also said they were looking at COVID-19 related data either "very closely" or "somewhat closely" to judge the recovery process, in addition to purely economic data.

FiveThirtyEight Politics Podcast: COVID [illegible] deaths are rising. What will the U.S. do?

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That's not to say these are the only metrics that might prove to be insightful. "Interestingly, consumer confidence and the savings rate are being followed less closely," said Allan Timmermann, a professor of finance and economics at the University of California, San Diego, after he reviewed the survey's findings. "I found the latter a bit surprising because we have seen from earlier crises that consumers can be scarred by large macroeconomic shocks, particularly when they occur in peoples' formative years, and if precautionary savings go up by a lot – as we have seen in April and May already – then consumer spending will be lower and the recovery more sluggish."

The big headline numbers are the ones economists seem to be focusing on most, meaning they are the metrics that should tell us where we are in the process of recovering from the recession. But as we mentioned above, they are fundamentally lagging indicators — and that is exacerbated by the fast-moving nature of the virus, a crisis for which our traditional economic indicators are almost uniquely ill-suited. Real GDP is only released quarterly; retail and food sales come out monthly, but give a snapshot of the month prior to when they are released. Even the unemployment rate only captures a glimpse of how things were in the middle of the preceding month. These days, things might have changed significantly by the time the numbers come out.

[Related: The Unemployment Rate Is Falling, But More People Are Losing Their Jobs Permanently]

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July 13, 2020 04:21 PM

Moody's: Public pension plans likely to see flat returns for fiscal year

JAMES COMTOIS

Getty Images

Most U.S. public pension plans are likely to post flat returns for the fiscal year ended June 30 despite markets rallying in Q2.

Most U.S. public pension plans are likely to post flat returns for the fiscal year ended June 30 despite markets rallying in the second quarter, a report from Moody's Investors Service said.

Moody's estimates that the effects of the COVID-19 pandemic will lead to the returns for most public plans being between zero and 1%, well below the average return target of 7%.

Although individual results will vary, Moody's projects that returns of zero for FY 2020 will result in the cost to maintain pension obligations rising by about 15% for the fiscal year ending June 30,

2021, and that reported unfunded liabilities and adjusted net pension liabilities will both rise by more than 20%.

"The pandemic-related economic shock has caused widespread declines in state and local governments' tax revenues, producing large budget gaps that will be especially challenging for those with high fixed costs for pensions and other debt," said Tom Aaron, vice president at Moody's, in a news release announcing the report. "Investment returns for FY 2020 fell short of targets, which will create higher unfunded pension liabilities and necessitate higher contributions to keep pension system assets from declining."

While many sponsors of public plans do not contribute enough to maintain their pension obligations, the actuarially determined contributions that their pension systems calculate will still rise next year due to investments underperforming in fiscal year 2020, the report said.

Moody's reports that an increasing number of underfunded public plans are reducing their annual investment return targets and making other actuarial changes that increase governments' actuarially determined contributions. Florida, Illinois, Michigan and Utah are states that have joined Indiana and South Dakota in cutting their return targets below 7%.

Still, with interest rates low and return targets high, plans like the $396.9 billion California Public Employees' Retirement System, Sacramento, are relying on riskier investments to keep state contribution obligations from rising.

But Moody's notes that this strategy increases exposure to market losses, which could drive up contribution obligations. And while significant asset derisking could reduce the chances of sharp investment losses for poorly funded retirement systems, asset derisking is unlikely to materially improve a long-term funding trajectory of an underfunded pension system alone.

Unless state sponsors increase taxes, which is challenging and politically risky in an environment of increased unemployment, state revenues are unlikely to return to fiscal year 2019 levels even by fiscal year 2024. States that are dependent on sales, income and capital gains taxes will likely suffer more severe revenue challenges.

"For many U.S. public pension systems, particularly those with very negative non-investment cash flow, higher future contributions are key to improving pension funding trajectories," Mr. Aaron added.

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