

Pension Trust

1000 Mill Street
San Luis Obispo, CA 93408
(805) 781-5465 Phone
(805) 781-5697 Fax
www.SLOPensionTrust.org



AGENDA

PENSION TRUST BOARD OF TRUSTEES

Monday, February 25, 2019 9:30 AM

Board of Supervisors Chambers
County Government Center
San Luis Obispo, CA 93408

*Materials for the meeting may be found at
<http://www.slocounty.ca.gov/Departments/Pension-Trust/Board-of-Trustees>*

PUBLIC COMMENT

1. Public Comment: Members of the public wishing to address the Board on matters other than scheduled items may do so when recognized by the Chair. Presentations are limited to three minutes per individual.

CONSENT

2. Minutes of the Regular Meeting of January 28, 2019 (Approve Without Correction).
3. Report of Deposits and Contributions for the month of January 2019 (Receive and File).
4. Report of Service Retirements, Disability Retirements and DROP Participants for the month of January 2019 (Receive, Approve and File).
5. Applications & Elections to participate in the Deferred Retirement Option Program (DROP) received through February 8, 2019 (Receive, Approve and File).
6. Stipulation for the Division of Pension Benefits – Option Four Pension Benefit Election (Recommend Approval)

ORGANIZATIONAL

7. Resolution Number 2019–01: A Resolution Honoring Andrea Paley for her 40 years of Service to the Pension Trust (Recommend Approval)

APPLICATIONS FOR DISABILITY RETIREMENT

None

OLD BUSINESS

None

NEW BUSINESS

8. Approval of the Annual Cost-Of-Living Adjustments provided by the San Luis Obispo County Employees Retirement Plan (Recommend Approval).
9. Member Portal Demonstration – PensionGold V3 - LRS (Review, Discuss, and Direct Staff as necessary).

INVESTMENTS

10. Market Environment Review - Verus (Receive and File).
11. Quarterly Investment Report for the 4th Quarter of 2018 – Verus (Receive and File).
12. Monthly Investment Report for January 2019 (Receive and File).
13. Emerging Market Debt Investment Manager – Verus (Recommend Approval).
14. Capital Market Assumptions – 2019 – Verus (Review, Discuss, Receive and File).
15. Asset Allocation - (Review, Discuss, and Direct Staff as necessary).

OPERATIONS

16. Staff Reports

17. General Counsel Reports

18. Committee Reports:

- | | |
|--|-----------|
| a. Audit Committee | Report |
| b. Personnel Committee | No Report |
| c. PAS Replacement Committee
(meeting to follow Board meeting on 2/25/19) | No Report |

19. Upcoming Board Topics (subject to change):

- a. March 25, 2019
 - i. Disability case(s) - TBD
 - ii. Actuarial Assumption Peer Comparisons
 - iii. 2019 Actuarial Valuation Planning and Assumptions – Gabriel Roeder Smith
 - iv. Employer Contributions Prefunding – initial approval and discount rate
 - v. Fiduciary Refresher Training
- b. April 22, 2019
 - i. Disability case(s) - TBD
 - ii. Business Continuity Planning
 - iii. FY19-20 Pension Trust Budget presentation
 - iv. Member Survey
- c. May 20, 2019
 - i. FY19-20 Pension Trust Budget approval
 - ii. Quarterly Investment Report
 - iii. Investment Benchmark Review
 - iv. Strategic Asset Allocation Policy – IPS amendments
 - v. Investment Policy Peer Comparisons
 - vi. ESG/SRI Investing Update
- d. June 24, 2019
 - i. 2019 Annual Actuarial Valuation approval
 - ii. Employer Contributions Prefunding – final approval
 - iii. 2018 Financial Audit Report
 - iv. 2018 Comprehensive Annual Financial Report approval

20. Trustee Comments

REFERRED ITEMS

None

ADDED ITEMS

None

CLOSED SESSION

None

ADJOURNMENT

Board of Trustees

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JANUARY 28, 2019 MINUTES OF THE REGULAR MEETING OF THE PENSION TRUST BOARD OF TRUSTEES

BOARD MEMBERS PRESENT: Matt Janssen, President
Will Clemens, Vice President
Michelle Shoresman
Gere Sibbach
Jim Hamilton
Guy Savage

BOARD MEMBERS ABSENT: Jeff Hamm

STAFF: Carl Nelson
Amy Burke

COUNSEL: Chris Waddell

OTHERS: Larry Batchelder, SLOCREA
Jennifer Alderete, SLOOPT
Michael Hobbs, County HR

The meeting was called to order by President Janssen at 9:30 AM, who presided over same.

Agenda Item 1: PUBLIC COMMENT.

None

ORGANIZATIONAL:

Agenda Item 2: Election of Officers pursuant to Sections 3.05 and 3.06 of the By-Laws of the SLOCPT.

President: Trustee Janssen nominated Trustee Clemens to serve as Board of Trustees President for 2019. Seconded by Trustee Savage and unanimously passed

Vice President: Trustee Clemens nominated Trustee Savage to serve as Board of Trustees Vice President for 2019. Seconded by Trustee Janssen and unanimously passed

Agenda Item 3: Committee appointments.

Newly elected President Clemens appointed the following Trustees to the two standing committees as follows:

AUDIT COMMITTEE:
Trustees Hamilton, Sibbach, and Clemens.

PERSONNEL COMMITTEE:
Trustees Hamm, Janssen, and Shoresman.

Newly elected President Clemens appointed the following trustees to the one ad hoc committee as follows:

PENSION ADMINISTRATION SYSTEM REPLACEMENT COMMITTEE:
Trustees Savage, Hamilton, Sibbach. Note that Daniel Milei, SLO County Director of Information Technology also serves as an adjunct or advisory member of this committee.

CONSENT:

Agenda Items 4-8: CONSENT.

Public comment: None

Upon the motion of Mr. Savage, seconded by Mr. Janssen, and unanimously passed, the following action was taken:

- Item 4:** The Minutes of the Regular Meeting of December 17, 2018 were approved without correction.
- Item 5:** The Report of Deposits and Contributions for the month of December 2018, was received and filed.
- Item 6:** The Report of Service Retirements, Disability and DROP Retirements for the month of December 2018, was received, approved and filed.
- Item 7:** The Report of Applications for participation in the Deferred Retirement Option Program received through January 11, 2019, was received, approved and filed.
- Item 8:** The monthly investment report for the month of November 2018, was received and filed.

APPLICATIONS FOR DISABILITY RETIREMENT:

Agenda Item 9: APPLICATION FOR INDUSTRIAL DISABILITY RETIREMENT CASE 2017-08 ANDREW RASMUSSEN.

The Executive Secretary summarized the case and presented reports from the medical evaluation providers used by the SLOCPT. The reports included a second opinion Independent Medical Examiner report that addressed the key issue of whether or not the disability was service-connected under the terms of the Retirement Plan. The Trustees questioned the Executive Secretary and General Counsel and discussed that Sections 1.25 (definition of service-connected) and Section 10 (disability) of the Retirement Plan require that a service-connected Industrial Disability Retirement specifies that the source of the disability be “predominantly caused by the performance of the duties of the Member”. Trustees and staff discussed that the Retirement Plan does not contain a “heart presumption” about service connected disability for Public Safety Officers.

Public comment: None

Upon the motion of Mr. Sibbach, seconded by Mr. Janssen, and unanimously passed, the application for Industrial Disability Retirement of the applicant was Set for Hearing and the Executive Secretary was directed to appoint a Referee to conduct such hearing from the previously approved list of disability hearing Referees.

OLD BUSINESS:

None

NEW BUSINESS:

Agenda Item 10: Pension Trust Mission and Objectives

Staff presented an updated version of the SLOCPT Mission Statement and Objectives.

Public comment: None

Upon the motion of Mr. Clemens, seconded by Mr. Savage, and unanimously passed, the SLOCPT Mission Statement and Objectives was approved.

Agenda Item 11: Board of Trustees Policies Review

Staff and General Counsel discussed the previously adopted Board of Trustees policies on: SLOCPT Governance: Conflict of Interest Code; Ethical and Fiduciary Conduct; and Board Member Responsibilities, Core Competencies and Education. Trustees reviewed and discussed the policies in depth and suggested a number of minor corrections.

Public comment: None

Upon the motion of Mr. Clemens, seconded by Mr. Janssen, and unanimously passed, the SLOCPT Board of Trustees Policies with corrections were approved.

10:49 AM - President Clemens called for a short break

10:53 AM – Back in session

INVESTMENTS:

Agenda Item 12: Annual Cashflow Analysis

Staff presented an analysis of the net cashflow for the SLOCPT assets for 2019 as required by the Investment Policy Statement.

Public comment: None

Upon the motion of Mr. Clemens, seconded by Mr. Savage, and unanimously passed, annual cashflow analysis was received and filed.

Agenda Item 13: Monthly Investment Report for December 2018

Staff presented the monthly investment report for December 2018 and discussed current investment market conditions.

Public comment: None

Upon the motion of Mr. Clemens, seconded by Mr. Savage, and unanimously passed, annual cashflow analysis was received and filed.

Agenda Item 14: Asset Allocation

This was a no-action item regarding investment asset allocations except to apprise the Board of rebalancing activity.

OPERATIONS:

Agenda Item 15: Staff Reports

- A)** 2019 Retiree COLA – Staff reported that the preliminary CPI inflation data for 2017 and 2018 for San Francisco and Los Angeles as specified in the Retirement Plan as the basis for retiree cost of living adjustments averaged 3.4%. The 2019 Retiree COLA will be on the Board of Trustees agenda for February 25th for official action.
- B)** Staff reported that staffing the recently announced buyout of SLO based software firm, MindBody, by Vista Equity Partners does not directly involve the SLOCPT investments. However, it is possible that a future Vista

Equity Partners private equity LP holding MindBody could be an investment of the two private equity fund-of-funds, Pathway and Harbourvest, invested in by the SLOCPT.

- C)** Staff reported the SLO County Regional Transportation Authority has its Management staff participating in the statewide CalPERS retirement system. RTA in January adopted a resolution of its intent to withdraw from CalPERS. Any potential interest in a connection between the RTA and the SLOCPT is unknown at this time.
- D)** Pension Administration System replacement - Staff reported on the current status of the PAS replacement project (on-time and on-budget) and noted that the February 25th Board of Trustees meeting would include a demonstration of the new PAS's member portal.
- E)** Andrea Paley retirement - Staff invited the Board and the Members and Participants of the SLOCPT to an Open House in honor of Andrea Paley's retirement to be held on Thursday, February 28th from 11:00 to 2:00 at the SLOCPT office.
- F)** Trustee Training - Staff noted that several opportunities for Trustees to meet their continuing education requirements were taking place in the first half of 2019.

Agenda Item 16: General Counsel Reports

None.

Agenda Item 17: Committee Reports – as needed

- A)** Audit Committee: Nothing to report.
- B)** Personnel Committee: Nothing to report.
- C)** Pension Administration System Replacement Committee: Nothing to report.

Agenda Item 18: Upcoming Board Topics

The planned topics for the next three board meetings were included in the agenda summary. This is an information item, nothing further to report.

Agenda Item 19: TRUSTEE COMMENTS.

None

REFERRED ITEMS:

None.

ADDED ITEMS:

None.

CLOSED SESSION:

None.

ADJOURNMENT.

There being no further business, the meeting was adjourned at 11:25 AM. The next Regular Meeting was set for February 25, 2019, at 9:30 AM, in the Board of Supervisors chambers, County Government Center, San Luis Obispo, California 93408.

Respectfully submitted,

**Carl Nelson
Executive Secretary**

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**REPORT OF DEPOSITS AND CONTRIBUTIONS FOR THE MONTH OF
JANUARY 2019**

PP 1	1/4/2019	Pensionable Salary	Employer Contributions	Employer Rate	Employee Contributions	Employer for	Employee Rate	Combined Rate	Additional Contributions	Buy Backs	TOTAL Contributions
						Employee Contributions					
	By Employer and Tier:										
	County Tier 1	3,669,868.61	859,883.02	23.43%	421,279.29	312,382.55	19.99%	43.42%	1,187.50	648.63	1,595,380.99
	County Tier 2	957,745.40	229,652.98	23.98%	47,479.10	80,852.26	13.40%	37.38%	70.66	709.70	358,764.70
	County Tier 3	2,580,557.19	578,914.59	22.43%	303,038.08	-	11.72%	34.16%	-	1,550.86	883,503.53
	Superior Court Tier 1	264,574.60	65,279.44	24.67%	42,163.73	-	15.94%	40.61%	-	-	107,443.17
	Superior Court Tier 3	76,889.91	18,311.50	23.82%	8,565.77	-	11.14%	34.96%	-	114.54	26,991.81
	APCD Tier 1	62,767.27	13,870.07	22.10%	7,810.68	4,334.51	19.35%	41.45%	-	-	26,015.26
	APCD Tier 3	11,298.40	2,439.12	21.59%	1,450.50	-	12.84%	34.43%	-	-	3,889.62
	Pension Trust Staff Tier 1	7,204.40	1,655.57	22.98%	877.50	669.29	21.47%	44.45%	-	-	3,202.36
	Pension Trust Staff Tier 2	8,374.40	1,924.43	22.98%	221.92	777.98	11.94%	34.92%	-	-	2,924.33
	Pension Trust Staff Tier 3	11,164.22	2,510.84	22.49%	1,393.14	-	12.48%	34.97%	-	-	3,903.98
	LAFCO Tier 1	13,227.91	3,882.79	29.35%	716.94	1,228.88	14.71%	44.06%	-	-	5,828.61
		7,663,672.31	1,778,324.35	23.20%	834,996.65	400,245.47	16.12%	39.32%	1,258.16	3,023.73	\$ 3,017,848.36
PP 2	1/18/2019	Pensionable Salary	Employer Contributions	Employer Rate	Employee Contributions	Employer for Employee Contributions	Employee Rate	Combined Rate	Additional Contributions	Buy Backs	TOTAL Contributions
	By Employer and Tier:										
	County Tier 1	3,558,108.47	832,454.24	23.40%	408,665.48	302,621.84	19.99%	43.39%	1,187.50	1,232.31	1,546,161.37
	County Tier 2	967,337.99	231,808.85	23.96%	47,811.30	81,731.26	13.39%	37.36%	70.66	709.70	362,131.77
	County Tier 3	2,598,528.84	582,005.31	22.40%	304,681.89	-	11.70%	34.10%	-	1,572.32	888,259.52
	Superior Court Tier 1	267,105.47	69,941.57	26.19%	46,090.24	-	17.26%	43.44%	-	-	116,031.81
	Superior Court Tier 3	74,406.01	18,436.82	24.78%	9,053.61	-	12.17%	36.95%	-	114.54	27,604.97
	APCD Tier 1	58,352.94	13,549.56	23.22%	7,880.53	4,080.69	20.50%	43.72%	-	-	25,510.78
	APCD Tier 3	11,298.40	2,562.26	22.68%	1,572.52	-	13.92%	36.60%	-	-	4,134.78
	Pension Trust Staff Tier 1	7,204.40	1,655.57	22.98%	877.50	669.29	21.47%	44.45%	-	-	3,202.36
	Pension Trust Staff Tier 2	8,374.40	1,924.43	22.98%	221.92	777.98	11.94%	34.92%	-	-	2,924.33
	Pension Trust Staff Tier 3	11,000.17	2,473.94	22.49%	1,372.96	-	12.48%	34.97%	-	-	3,846.90
	LAFCO Tier 1	13,227.91	3,882.79	29.35%	716.94	1,228.88	14.71%	44.06%	-	-	5,828.61
		7,574,945.00	1,760,695.34	23.24%	828,944.89	391,109.94	16.11%	39.35%	1,258.16	3,628.87	\$ 2,985,637.20
TOTAL FOR THE MONTH		15,238,617.31	3,539,019.69	23.22%	1,663,941.54	791,355.41	16.11%	39.34%	2,516.32	6,652.60	\$ 6,003,485.56
TOTAL YEAR TO DATE		15,238,617.31	3,539,019.69	23.22%	1,663,941.54	791,355.41	16.11%	39.34%	2,516.32	6,652.60	\$ 6,003,485.56

REPORT OF SERVICE & DISABILITY RETIREMENTS & DROP PARTICIPANTS FOR THE MONTH OF:	JANUARY 2019
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RETIREE NAME	DEPARTMENT	DATE	MONTHLY ALLOWANCE
ADAMS, BRENDAN (DROP)	SHERIFF-CORONER	01-01-2019	4827.54
BLANK, JOHN (DROP)	SHERIFF-CORONER	01-01-2019	6162.51
COLLINS, THOMAS	SOCIAL SERVICES	01-26-2019	1991.62 1.39*
CRONIN, JAMES D. (DROP)	SHERIFF-CORONER	01-01-2019	Option selection
DE WITT, SUZANNE	AUDITOR-CONTRL-TREAS-TAX-COLL	01-01-2019	4684.65
DYE, BRENDA (DROP)	ASSESSOR	01-01-2019	6413.07 1615.00** 73.68*
ELLIOTT, MARK (DROP)	AIR POLLUTION CONTROL DISTRICT	01-01-2019	6299.30 3.91*
GUERERO-GONZALES, GLORIA (DROP)	SHERIFF-CORONER	01-01-2019	6140.62 33.77*
LANE, LISA	SHERIFF-CORONER / ALTERNATE PAYEE	01-18-2019	1845.71
LOGAN, RICHELLE	SOCIAL SERVICES	01-01-2019	1307.62
MARTIN, MARK (DROP)	SHERIFF-CORONER	01-01-2019	4356.70
McCRACKEN, PATRICK (DROP)	PUBLIC WORKS ISF	01-01-2019	Option selection
SCHIRO, TRACY	SOCIAL SERVICES	01-01-2019	8475.82 1868.00**
WARNER, RICHARD	PUBLIC WORKS ISF	01-01-2019	2426.02
WHITE, JEAN	PUBLIC HEALTH	01-01-2019	2619.49
WINTER, ROBERT (DROP)	SHERIFF-CORONER	01-01-2019	2197.56 1002.27**
ADDENDUM:			
KOVAL, ANDREW B.	FACILITIES MANAGEMENT / RECIPROCAL	09-29-2018	Awaiting calcs
LANGO, MICHAEL	GENERAL SERVICES / RECIPROCAL	09-08-2018	3903.15
CLAASSEN, MELODD	SHERIFF-CORONER	12-29-2018	2705.80
DELFINO, JULIE	AUDITOR-CONTRLR-TREAS-TAX-COLL	12-29-2018	3559.60
FORSBERG, JOHN	SOUTH BAY FIRE / RECIPROCAL	12-19-2018	Awaiting calcs
GERMAN, ISABEL	SOCIAL SERVICES	12-29-2018	Option selection
HALL, ANN	ENGINEERING / RECIPROCAL	12-17-2018	763.49
PEREZ, GAIL	AGRICULTURAL COMMISSIONER	12-29-2018	3915.48

* Employee Additional Contribution Allowance (per Sections 5.07, 27.12, 28.12, 29.12, 30.12, and 31.12 of the Plan)

** Social Security Coordinated Temporary Annuity (per Section 13.06 of the Plan)

Board of Trustees

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Date: February 25, 2019
To: Board of Trustees
From: Carl Nelson – Executive Secretary

Agenda Item 5: Applications & Elections to Participate in the Deferred Retirement Option Program (DROP)

Recomendation:

It is recommended that you receive and approve the Application & Election to Participate in DROP for the individuals listed below.

Discussion:

The San Luis Obispo County Pension Trust has received an Application & Election to Participate in DROP from the following members listed below:

MARCH 1, 2019
MARCH 1, 2019

Gerald G. Johnson, Planning & Building
Christopher Prieto, Sheriff Department

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Board of Trustees

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 6: Stipulation for the Division of Pension Benefits – Option Four Pension Benefit Election

Recommendation:

It is recommended that the Board approve an Optional Settlement No. 4 as ordered in the attached Stipulated Domestic Relations Order (DRO) Re: Division of San Luis Obispo County Pension Trust Retirement Plan Benefits and Allowances for Member Jamie A. Contreras. Legal counsel has reviewed and is in agreement with this recommendation.

Discussion:

The San Luis Obispo County Employees Retirement Plan (the “Plan”) provides for four different optional settlements, aside from the Unmodified Allowance. The Unmodified Allowance is the maximum allowance payable to a Member that also provides for a 50% continuance of monthly benefits to be paid to an eligible surviving spouse or registered domestic partner. Article 13: Options Available After Retirement of the Plan allows a Member to elect an actuarially reduced monthly benefit to provide for a larger continuing monthly allowance for their surviving spouse/registered domestic partner, or a continuance or lump sum payment to a named beneficiary that would not qualify as an eligible surviving spouse or registered domestic partner. The four alternative options are summarized as:

Option 1 – provides that any remaining employee contributions are paid to named beneficiary or beneficiaries upon the death of the Member.

Option 2 – provides a 100% continuance of the actuarially reduced monthly benefit be paid to the named beneficiary upon death of the Member.

Option 3 – provides a 50% continuance of the actuarially reduced monthly benefit to be paid to the named beneficiary upon death of the Member after retirement.

Option 4 – provides an **actuarially equivalent** continuance of monthly benefits to be paid to the named beneficiary upon the death of the Member (not greater than that available under Option 2). This option affords a great deal of flexibility to Members in arranging their retirement benefit, as long as it is an actuarial equivalent and does not increase cost to the Plan. The terms of the Retirement Plan for Option 4 **require Board of Trustees approval.**

In this case, Mr. Contreras is an active Member of the SLOCPT who has filed for dissolution of marriage. As part of the settlement of community property he and his former spouse (Alternate Payee) have agreed to a division of their interests with regards to the benefits provided by the SLOCPT that will occur at the time he retires from County service. The Alternate Payee will receive her portion of the monthly retirement allowance for her lifetime and will be permitted to name a beneficiary that will receive her monthly benefit as a continuance if she predeceases Mr. Contreras – provisions not available under one of the other payment options. When parties elect to split their interests at the point of retirement, the Alternate Payee's benefit under the Unmodified Allowance and Options 1, 2, and 3 ceases upon the death of the Member. As a result, Mr. Contreras is required to elect **Option 4** at the time of his retirement to accommodate the continuing monthly benefit to his Alternate Payee at the time of his passing.

Attached, for your review is the draft Stipulated Domestic Relations Order (DRO). This DRO establishes that Mr. Contreras, upon retirement, must select **Option 4**. Mr. Contreras's Unmodified Allowance will be calculated and then divided pursuant to that which is described in the order. At that time, the Alternate Payee's allowance will be further adjusted (reduced) using appropriate actuarial methods to reflect the Alternate Payee's life expectancy thus ensuring an actuarial equivalent benefit is distributed in a manner consistent with the Plan.

Also attached is a letter from Gabriel Roeder Smith, SLOCPT's actuary, who has reviewed the DRO and has certified that it fulfills the definition of actuarial equivalence.

Respectfully submitted,

1 Rosa I. Contreras
152 Valley View Drive
2 Santa Maria, California 93455

3 Respondent, In Pro Per
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8 SUPERIOR COURT OF CALIFORNIA, COUNTY OF SAN LUIS OBISPO
9

10	In re the Marriage of)	NO: 18FL-0589
11	Petitioner: JAIME A. CONTRERAS)	STIPULATED DOMESTIC RELATIONS
12	and)	ORDER RE: DIVISION OF SAN LUIS
13	Respondent: ROSA I. CONTRERAS)	OBISPO COUNTY PENSION TRUST
14	_____)		RETIREMENT PLAN BENEFITS AND
)	ALLOWANCES

15 Petitioner, Jaime A. Contreras, and Respondent, Rosa I. Contreras, hereby stipulate as
16 follows:

17 **RECITALS**

18 1. Petitioner and Respondent were married to each other on January 18, 1990.
19 They separated on July 13, 2018.

20 2. This Court has personal jurisdiction over both Petitioner and Respondent and
21 jurisdiction over the subject matter of this Order and the dissolution of marriage action. The
22 Pension Trust was properly joined as a party claimant to this action pursuant to sections 2060
23 through 2065 of the California Family Code.

24 3. The San Luis Obispo County Pension Trust ("Pension Trust") was formed, exists
25 and is administered under section 53215, et seq., of the Government Code and Chapter 2.56
26 of the San Luis Obispo County Code and the Pension Trust By-Laws and Pension Trust
27 Retirement Plan (Retirement Plan).

Marriage of Contreras
Case No: 18FL-0589

San Luis Obispo County Stipulation for Division of Pension Benefits

DEC 18 2018

Printed: 12/14/18

Pension Trust

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IT IS HEREBY ORDERED BY THE COURT THAT:

1. This Order is entered pursuant to the California Family Code.

2. Jaime A. Contreras ("Member") and Rosa I. Contreras ("Alternate Payee") have acquired a community interest in the Member's rights under the Retirement Plan and attributable to the Member's Pension Trust Service Credit from the date of marriage up to the date of separation of the parties.

3. Surviving Spouse. The Court find*s that, as of the date of separation of the parties, the member had not retired from employment and that, therefore, the Alternate Payee is not qualified as, and will not qualify to become, a "Surviving Spouse" under Section 7.04(b) of the Retirement Plan.

4. Calculation of the Community Property Interest. The parties' Community Property Interest in the Member's rights under the Retirement Plan shall be a fraction:

a. whose numerator is that portion of the Member's Pension Trust Service Credit accrued from:

- 1) the date of marriage of the parties; or
- 2) the date of the Member's entry into the Pension Trust, whichever is later,

and extending to the date of separation of the parties; and

b. whose denominator is the Member's Pension Trust Service Credit from the date of the Member's entry into the Pension Trust until the Member's Effective Date of Retirement.

The resulting fraction shall be converted to a percentage interest, which shall be the Community Property Interest.

5. Calculation of Alternate Payee's Share. The Alternate Payee's Share of the Community Property Interest shall be determined by multiplying the Community Property Interest by one-half.

6. Award of the Alternate Payee's Share. The Court allocates and awards to the

1 Alternate Payee, as the Alternate Payee's sole and separate property, the Alternate Payee's
2 Share of the Community Property Interest in the Member's rights under the Retirement Plan.

3 The Alternate Payee's Share of the Community Property Interest of the Member's rights
4 under the Retirement Plan shall apply to, but not be limited to, the Monthly Retirement Allowance
5 paid to the Member during the Member's lifetime, the Alternate Payee's interest in the
6 Retirement Plan as a beneficiary of the Member and the Alternate Payee's share of any
7 Employee Additional Contribution account in the name of Member. All Retirement Plan
8 allowances and benefits which are not awarded to the Alternate Payee pursuant to this Order
9 shall be the Member's sole and separate property.

10 If the Member retires on a disability retirement, the Alternate Payee's Community
11 Property Interest shall be applied to the Monthly Retirement Allowance which would otherwise
12 be paid to the Member if the Member had retired on a Service Retirement Benefit. In addition,
13 if the Member retires on a disability retirement that commences before the date the Member is
14 eligible for a Service Retirement Benefit, the Alternate Payee shall not be entitled to receive any
15 portion of the amount payable by the Retirement Plan until the date the Member would have
16 been eligible for a Service Retirement Benefit.

17 If Member retires on a Industrial Disability Retirement then, pursuant to *In Re Marriage*
18 *of Higinbotham* (1988) 203 Cal.App. 3d 322, 249 Cal.Rptr. 798, the tax benefit, if any, related
19 to the Members disability retirement shall be the separate property of the member. Therefore,
20 the Alternate Payee is awarded the Alternate Payee's Community Property Interest from the
21 taxable portion of the benefit, if any, to the maximum extent possible. If the Alternate Payee's
22 Community Property Interest is larger than the taxable portion of the benefit, the amount in
23 excess of the taxable portion shall be paid from the non-taxable portion of the benefit.

24 7. Member's Additional Contributions. In the event that the Member has an
25 Employee Additional Contribution account with the Retirement Plan, the Alternate Payee's Share
26 of that account shall be paid to the Alternate Payee in accordance with Section 5.07 of the
27 Retirement Plan.

1 8. Election of Retirement Allowance Method. At such time as the Member applies
2 to the Pension Trust for a Monthly Retirement Allowance, the Member shall elect Optional
3 Settlement No. 4 as provided for under Article 13 of the Retirement Plan. The Alternate Payee's
4 Share of the Community Property Interest of Member's Monthly Retirement Allowance
5 (determined as an unmodified Retirement Allowance under Article 6 of the Retirement Plan) shall
6 be converted from being paid for the lifetime of the Member to being paid for the lifetime of the
7 Alternate Payee. The amount of the monthly benefit to the Alternate Payee (for the Alternate
8 Payee's lifetime) shall be the actuarial equivalent (based on the actuarial assumptions of the
9 Pension Trust) of the Alternate Payee's share of the unmodified allowance.

10 If, on the effective date of the Member's retirement, the Member is married and the
11 Member's spouse is determined to be an Eligible Survivor, then the Member's Retirement
12 Allowance shall be calculated as follows:

13 A. The unmodified allowance shall be determined in accordance with the
14 Retirement Plan formula applicable to the Member on the date of retirement.

15 B. The Alternate Payee's portion of the unmodified allowance shall be
16 determined in accordance with the provisions of this Order, specifically Section 4 and
17 Section 5.

18 C. The Survivor Continuance portion of the Unmodified Allowance (per
19 section 7.02), which is payable to the Member's spouse upon the Member's death after
20 retirement shall be determined based on the unmodified allowance that remains after the
21 award of the Alternate Payee's share of the unmodified allowance has been determined.

22 D. In the case of the Member's death after Retirement, the unmodified
23 allowance payable to the Alternate Payee as adjusted pursuant to this section shall be
24 paid for the remainder of the Alternate Payee's lifetime.

25 9. Payment of Retirement Allowance to the Alternate Payee if the Member Retires.

26 If and when the Member retires, the Alternate Payee shall be paid the Alternate Payee's
27 Share of the Community Property Interest of the Member's Monthly Retirement Allowance, as

San Luis Obispo County

Marriage of Contreras
Case No: 18FL-0589

DEC 18 2018

-4-

Stipulation for Division of Pension Benefits
Printed: 12/14/18

Pension Trust

Agenda Item 6

1 set forth in section 8, above, by separate warrant directly from the Pension Trust. Payments of
2 the Alternate Payee's Share of the Community Property Interest of the Member's Monthly
3 Retirement Allowance shall commence on or after the date on which Member has attained the
4 earliest retirement age as defined in the Retirement Plan, but only on and after such time as
5 Member actually retires or otherwise receives payment of a Monthly Retirement Allowance under
6 the Retirement Plan.

7 10. Payments to the Alternate Payee in the Event of the Death of the Member before
8 Retirement.

9 a. Member is not qualified to retire. If the Member dies before the Member
10 is qualified to retire, then the Alternate Payee shall be paid the Alternate Payee's Share
11 of the death benefit provided for by Section 7.01 of the Retirement Plans (or Section 7.03
12 of the Retirement Plan if the Member was a Safety Member).

13 b. Member is qualified to retire. If the Member dies after the Member is
14 qualified to retire, then the Alternate Payee shall be paid the Alternate Payee's Share of
15 the death benefit provided for by Section 7.02 of the Retirement Plans (or Section 7.03
16 of the Retirement Plan if the Member was a Safety Member). If, at the time the Member
17 dies, the Member has an Eligible Surviving Spouse, the benefit payable to the Eligible
18 Surviving Spouse shall be adjusted to reflect the payment of the Alternate Payee's share
19 of the death benefit.

20 11. Alternate Payee's Death. The Alternate Payee shall be responsible for filing a
21 Designation of Beneficiary form with the Administrator. If the Alternate Payee dies and if a
22 Monthly Retirement Allowance is payable to the Member at the time of the Alternate Payee's
23 death, the Administrator shall pay the Alternate Payee's Share of the Community Property
24 Interest of the Member's Monthly Retirement Allowance, by separate warrant, directly to the
25 beneficiary designated by the Alternate Payee. Such payments shall cease upon the death of
26 the Member. If the Alternate Payee designates the minor child(ren) of the parties as beneficiary,
27 then no monthly survivor benefits shall be payable to said minor child(ren) pursuant to Section

1 7.04(b) of the Pension Trust Retirement Plan during such time as said minor child(ren) are
2 receiving a retirement allowance as the beneficiary of the Alternate Payee.

3 12. Responsibility for Taxes. The Member and the Alternate Payee shall be
4 responsible for, and pay, any taxes due in connection with his or her receipt of distributions from
5 the Pension Trust.

6 13. Member Information. For the purpose of making any retirement allowance or
7 benefit payments provided by the terms of this Order or providing and notice required by the
8 terms of this Order, Member's name and current mailing address are as follows:

9 Name: Jaime A. Contreras

10 Address: 1232 Mentone Avenue, Grover Beach, California, 93433

11 14. Alternate Payee Information. For the purpose of making any retirement
12 allowance or benefit payments provided by the terms of this Order or providing and notice
13 required by the terms of this Order, Alternate Payee's name and current mailing address are as
14 follows:

15 Name: Rosa I. Contreras

16 Address: 152 Valley View Drive, Santa Maria, California, 93455

17 15. Notice of change of address or telephone number shall be made in writing to the
18 Pension Trust, addressed as follows, or as the Executive Secretary may specify in a written
19 notice to Member and Alternate Payee:

20 San Luis Obispo County Pension Trust
21 1000 Mill Street
San Luis Obispo, California 93408

22 16. The Member and the Alternate Payee shall sign all forms, letters and other
23 documents as required to effect the distribution(s) described herein and the intent of the Order.

24 17. The Alternate Payee and the Alternate Payee's agents and attorneys are
25 authorized to receive information from the Pension Trust concerning the Member's allowances
26 and benefits as may be needed to establish the Alternate Payee's account.

27 18. The Member shall act as constructive trustee of any benefits assigned to the

1 Alternate Payee under this Order which may be paid to or received by the Member. The
2 Member, as trustee, shall promptly pay or transmit any such benefits to the Alternate Payee at
3 the Alternate Payee's last known address. The Alternate Payee shall act as constructive trustee
4 of any benefits assigned to the Member under this Order which may be paid to or received by
5 the Alternate Payee. The Alternate Payee, as trustee, shall promptly pay or transmit any such
6 benefits to the Member at the Member's last known address.

7 19. This Order shall be administered and interpreted in conformity with the laws
8 governing the Pension Trust, the By-Laws and the Retirement Plan and other applicable law.
9 If such laws, By-Laws, or Retirement Plan are amended, then the Member and the Alternate
10 Payee shall immediately take the steps necessary to amend this Order to comply with any such
11 amendments, changes and/or modifications, or, if permissible under any such change,
12 amendment, or modification to the Pension Trust Laws, the executive Secretary may treat this
13 Order as acceptable. The Member and the Alternate Payee shall be responsible for any of the
14 costs and/or expenses associated with such amendment to this Order.

15 20. The Member, the Alternate Payee, and the Court intend that this Order meet all
16 requirements of a domestic relations order under the Pension Trust Laws and other laws of the
17 State of California, and the Court shall reserve jurisdiction to modify this Order and to resolve
18 any disputes that may arise among the parties and the Executive Secretary concerning benefit
19 payments or any other aspect of this Order. If any portion of this Order is rendered invalid or
20 otherwise unenforceable, the Court reserves jurisdiction to make an appropriate adjustment to
21 effectuate the intent of the parties. Any future fees, taxes, and/or penalties will be assessed
22 against the parties who then have an interest payable from the Pension Trust.

23 21. This Stipulation and Order shall not expand the contractual or statutory
24 obligations, whether substantive or procedural, of the Pension Trust with respect to paying the
25 above allowances and/or benefits.

26 22. Should either Member or Alternate Payee breach this Order or be called upon to
27 enforce this Order by reason of the acts or omissions of the other, the prevailing party shall be

1 entitled to litigation expenses and costs and reasonable attorneys' fees. This provision shall not
2 be construed as a waiver by any party of any remedy for enforcement by any party hereto as
3 against any other party.

4 23. Each party shall perform any act reasonably necessary to cause into effect or
5 verify the carrying into effect of the terms of this Order.

6 24. This order shall continue to be effective with respect to any successor or
7 transferee plan of Plan, including any plan into which the Plan is merged.

8

9 Date: _____

JAIME A. CONTRERAS
Petitioner, In Pro Per

10

11

12 Date: _____

ROSA I. CONTRERAS
Respondent, In Pro Per

13

14

15

ORDER

16 IT IS SO ORDERED:

17

18 Date: _____

JUDGE OF THE SUPERIOR COURT

19

20

21

22

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24

25

San Luis Obispo County

26

DEC 18 2018

27

Pension Trust



January 22, 2019

Mr. Carl Nelson
Executive Secretary
San Luis Obispo County Pension Trust
1000 Mill Street
San Luis Obispo, CA 93408

Re: Contreras Domestic Relations Order No. 18FL-0589

Dear Carl:

The purpose of this letter is to confirm that the DRO issued by the Superior Court of California in regards to the member (Jamie Contreras) and his Alternate Payee (Rosa Contreras) fulfills the definition of actuarial equivalence. In particular, this DRO includes the Option 4 benefit.

The alternate payee's unmodified allowance will be adjusted for the alternate payee's mortality to create an actuarial equivalent benefit according to Section 13.05 of the By Laws and Retirement Plan of the San Luis Obispo County Pension Trust, including revisions through May 20, 2018.

If you have any questions or need additional information, please don't hesitate to contact us.

Sincerely,

A handwritten signature in black ink that reads "Leslie L. Thompson". The signature is written in a cursive, flowing style.

Leslie L. Thompson, FSA, FCA, MAAA, EA
Senior Consultant

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Board of Trustees

1000 Mill Street
San Luis Obispo, CA 93408
Phone: (805) 781-5465
Fax: (805) 781-5697
www.SLOPensionTrust.org



Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 8: Annual Cost-Of-Living Adjustments provided by the San Luis Obispo County Employees Retirement Plan

Recommendation:

It is recommended that the Board approve Cost-Of-Living Adjustments (COLAs) as recommended by SLOOPT's Actuary (Gabriel Roeder, Smith and Company), and in accordance with the Retirement Plan.

1. **Tier 1 benefit recipients, 2019 COLA of 3.00% (the maximum) with a 0.4% carryover into the COLA -bank.**
2. **Tier 2 and Tier 3 recipients, 2019 COLA of 2.00% (the maximum).**

Discussion:

COLA Adjustments - The Retirement Plan provides for annual cost-of-living adjustments for retirees in: Section 19.01 and Section 19.02 of Article 19: Cost-Of-Living; Section 27.25 of Article 27: Tier Two –Miscellaneous; Section 28.25 of Article 28: Tier Two – Safety; Section 29.25 of Article 29: Tier Three – AB 340: Miscellaneous; Section 30.25 of Article 30: Tier Three – AB 340: Safety; and Section 31.24 of Article 31: Tier Three – AB 340: Probation.

CPI-U Benchmarks - The COLA percentage, as specified by the Plan, is determined by the average of the All Urban Consumers Consumer Price Index – all items (CPI-U) for the Los Angeles - Riverside - Orange County and the San Francisco - Oakland - San Jose areas. The Plan specifies the use of the annual average of these two metropolitan area's CPI-U data.

In January of 2018 the Bureau of Labor Statistics introduced a new geographic area sample for the Consumer Price Index. The Los Angeles – Riverside – Orange County region was split into the

Los Angeles – Long Beach – Anaheim and the Riverside – San Bernardino – Ontario regions. Additionally, the San Francisco – Oakland – San Jose region was changed to the San Francisco – Oakland – Hayward region. Both SLOCPT’s Actuary and Staff agree that using the Los Angeles – Long Beach – Anaheim and San Francisco – Oakland – Hayward regions going forward is the most appropriate way to accommodate for these updates consistent with the intent of the Plan’s specification of which cities to use for CPI-U benchmarks. A future Plan technical amendment will be included to correct for the changed names of the benchmark cities for CPI-U data.

The SLOCPT’s actuary calculates the recommended COLA as a smoothed value using the two most recent annual averages published by the Bureau of Labor Statistics for each specified metropolitan area. While COLAs have historically been calculated as increases to benefits with positive inflation, the Plan also allows for decreases should there be deflation in the CPI-U data.

Financial:

This year’s recommended COLA is expected to cumulatively increase the current monthly retiree payroll distribution by approximately \$245,000.

The 2018 Actuarial Valuation uses a long-term inflation assumption of 2.50% which is also used as the long-term projection for Tier 1 COLA adjustments. As a result, the above assumed COLA for 2019 will contribute to a modest actuarial loss in future actuarial valuations.

Conclusion:

COLA Recommendation - The recommended COLA based on average of the years 2018 and 2017 has been calculated as **3.4%**. As dictated by the Plan, COLAs may not exceed 3% for Tier 1 retirees or 2% for Tier 2 and Tier 3 retirees. Furthermore, for Tier 1 retirees, if the calculated average percentage increase is greater than 3%, the amount in excess of 3% will be “banked” and used in subsequent years where the calculated percentage increase is less than 3% (aka: the “Cumulative Carryover”). Tier Two and Tier Three retirees are not eligible for the Cumulative Carryover as stipulated by the Plan.

Upon Board approval, all eligible retirees will receive a COLA on April 1, 2019 as shown in the following table. The Cumulative Carryover (COLA Bank) for each vintage year of retirees will change as shown on the attached letter from the SLOCPT’s Actuary.

Tier:	Retirement Date:	COLA:
1	On or Before January 1, 2019	3.00%
2 & 3	On or Before January 1, 2019	2.00%

Respectfully Submitted

January 22, 2019

Mr. Carl Nelson
Executive Secretary
San Luis Obispo County Pension Trust
1000 Mill Street
San Luis Obispo, CA 93408

Subject: COST-OF-LIVING ADJUSTMENT, APRIL 1, 2019

Dear Carl,

Sections 19.01 and 19.02 of the by-laws of the San Luis Obispo County Pension Trust provides for cost-of-living adjustments to certain Tier 1 members who retire or die as of, or prior to, the previous January 1st each year. The following is the determination of the cost-of-living adjustment payable as of April 1, 2019.

The percentage changes of the All Urban Consumers C.P.I. annual average for the Los Angeles – Long Beach – Anaheim and the San Francisco - Oakland - San Jose areas are as follows:

2018 San Francisco – Oakland – Hayward	3.9%
2018 Los Angeles – Long Beach – Anaheim	3.8%
2017 San Francisco – Oakland – San Jose	3.2%
2017 Los Angeles – Riverside – Orange County	2.8%

The average of the percentage changes for the years 2018 and 2017 is used to determine the County's cost-of-living adjustment (COLA) factor for April 2019 but the COLA may not exceed 3.0%. However, if the percentage increase is greater than three percent, then the excess may be carried forward and applied in a future year when the increase is less than three percent.

The average percentage increase for the last two years is **3.4%**. The attached schedule details the implementation of this factor to each Tier 1 retiree based on the date they entered the pension roll. All Tier 1 retirees will receive a 3.0% increase and have their Cumulative Carryover account increased by 0.4%.

While the Cumulative Carryover is consistent with last year, we are making no representation as to whether the historical Cumulative Carryover figures are accurate.

Mr. Carl Nelson
January 22, 2019
Page 2

These calculations comply with Sections 19.01 and 19.02 of the by-laws of the San Luis Obispo County Pension Trust. Sections 27.25 and 28.25 specify cost-of-living adjustments for Tier 2 Miscellaneous and Safety retirees respectively. Sections 29.25, 30.25, and 31.25 specify cost-of-living adjustments for Tier 3 AB 340 Miscellaneous, Safety, and Probation retirees respectively.

The initial COLA for Tier 2 and Tier 3 members is also governed by sections 19.01 and 19.02 but the COLA may not exceed 2.0% for these groups and they do not carry forward any accumulation of COLAs beyond the annual 2% maximum. Since the initial COLA this year is 3.4%, any Tier 2 or Tier 3 retirees as of January 1, 2019 would be eligible for a 2.0% COLA.

The actuary submitting this statement is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

If you have any questions about the information requested above or need any additional information, please contact me at 720-274-7271 or leslie.thompson@grsconsulting.com or Thomas Lyle at 720-274-7278 or thomas.lyle@grsconsulting.com.

Sincerely,

Gabriel, Roeder, Smith & Company



Leslie L. Thompson, EA, FSA, FCA, MAAA
Senior Consultant

Enclosure

Circular 230 Notice: Pursuant to regulations issued by the IRS, to the extent this communication (or any attachment) concerns tax matters, it is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding tax-related penalties under the Internal Revenue Code or (ii) marketing or recommending to another party any tax-related matter addressed within. Each taxpayer should seek advice based on the individual's circumstances from an independent tax advisor.

This communication shall not be construed to provide tax advice, legal advice or investment advice.



**San Luis Obispo County
Suggested Cost-of-Living Increase**

<u>Entered Pension Roll</u>	<u>As of April 1, 2018</u>			<u>As of April 1, 2019</u>		
	<u>CPI Change</u>	<u>Used</u>	<u>Cumulative Carryover</u>	<u>CPI Change</u>	<u>Used</u>	<u>Cumulative Carryover</u>
On or Before 1/1/1979	2.8%	3.0%	16.5%	3.4%	3.0%	16.9%
1/2/1979 to 1/1/1980	2.8%	3.0%	12.2%	3.4%	3.0%	12.6%
1/2/1980 to 1/1/1981	2.8%	3.0%	5.5%	3.4%	3.0%	5.9%
1/2/1981 to 1/1/2018	2.8%	2.8%	0.0%	3.4%	3.0%	0.4%
1/2/2018 to 1/1/2019	-	-	0.0%	3.4%	3.0%	0.4%



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Board of Trustees

1000 Mill Street
San Luis Obispo, CA 93408
Phone: (805) 781-5465
Fax: (805) 781-5697
www.SLOPensionTrust.org



Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 9: Member Portal Demonstration – PensionGold Version 3 - LRS

As part of the Pension Administration (PAS) replacement project, the new PensionGold Version 3 PAS incorporates a robust online portal for Members and retired Participants. The PAS replacement project is on-track to go-live in July 2019 after several months of parallel operation with the SLOCPT's current PAS.

LRS, as the vendor for the PensionGold Version 3, will be presenting a demonstration of the feature for the new Member Portal.

No action is required by the Board on this item. Rather it is an opportunity to preview the new Member Portal and provide feedback as appropriate.

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Board of Trustees

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 10: Market Environment Review – Ian Toner, Verus

Ian Toner, Chief Investment Officer of Verus will be presenting an in-depth report on investment markets. This presentation will be a more extensive version of the typical Market Update portion of the quarterly investment report normally presented by Scott Whalen.

The materials for this presentation are incorporated in the 4Q18 Quarterly Investment Report as Agenda Item 11 following this item.

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Board of Trustees

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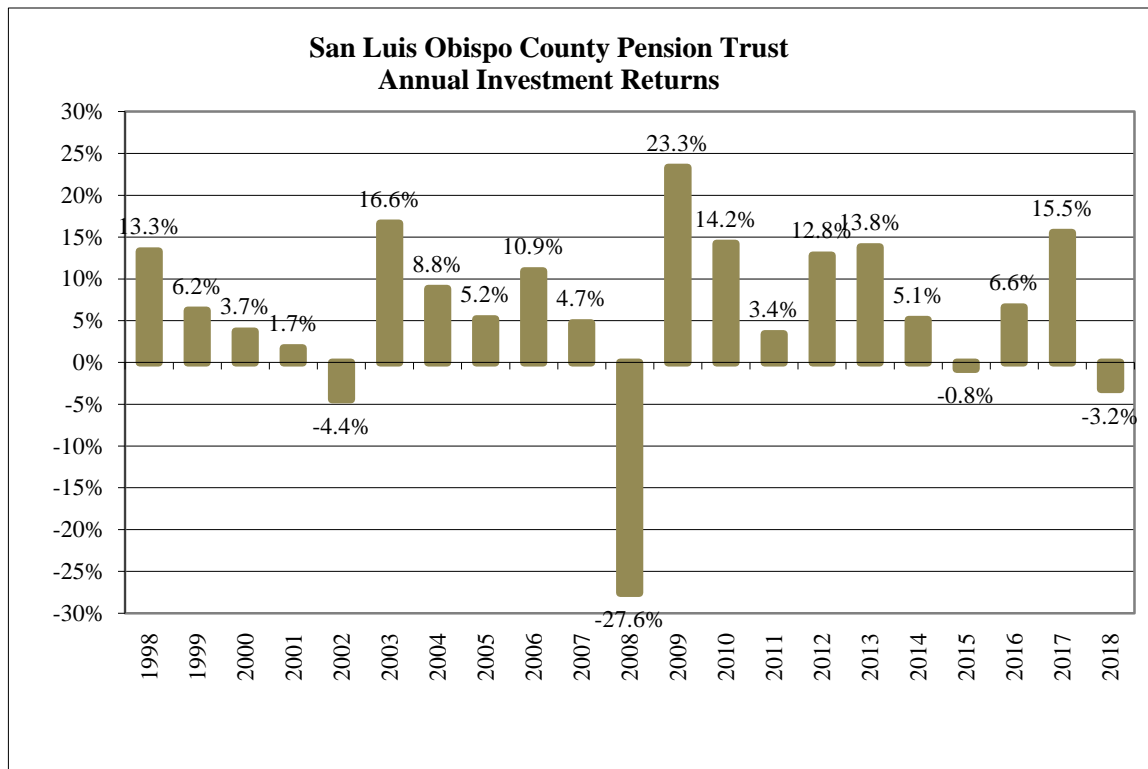
Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 11: Quarterly Investment Report for the 4th Quarter of 2018

Attached to this memo is the 4Q18 quarterly investment report prepared by the Trust’s investment consultant Verus. Scott Whalen of Verus will make a detailed presentation and discuss the quarterly report. The long-term history of the rates of return gross of fees of the Pension Trust are shown below as an extension of the data in the Verus report.

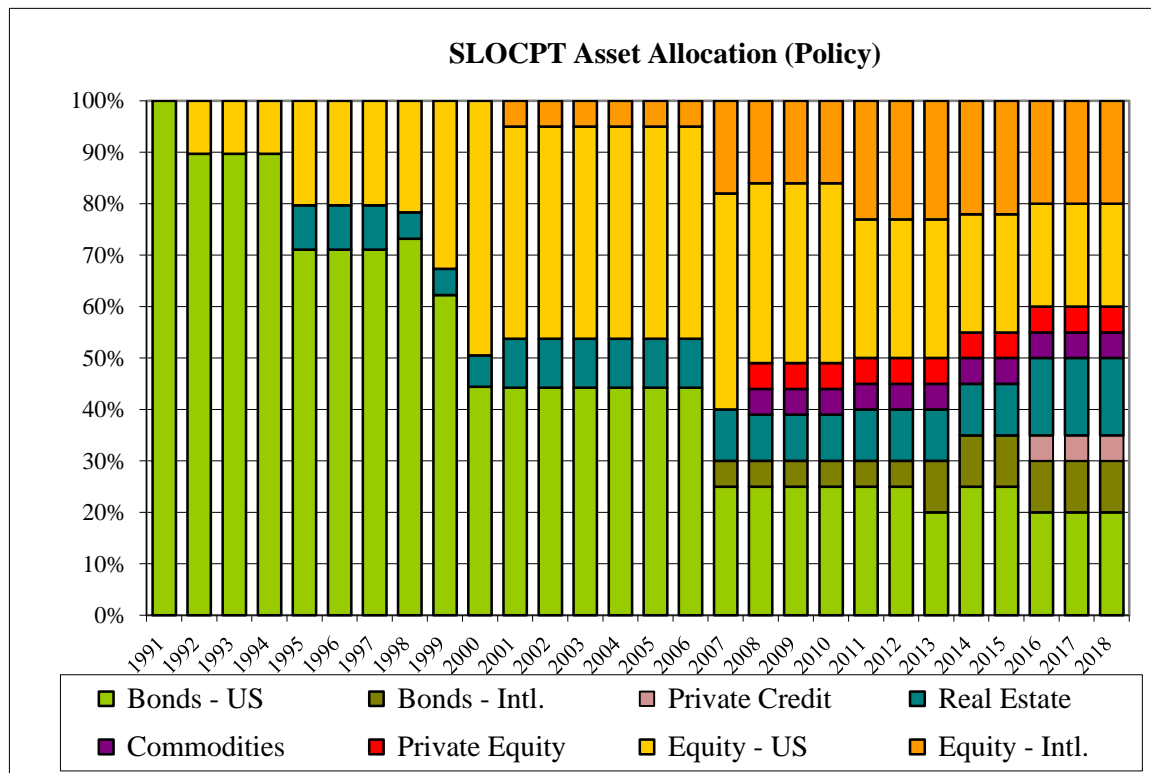


Cumulative rates of return for years ending December 31, 2018 are shown below on an annualized basis (gross of fees).

1 year	3 years	5 years	10 years	15 years	20 years
-3.2%	6.0%	4.4%	8.8%	5.5%	5.3%

The rates of return for the Pension Trust are heavily influenced by the 2008 Global Financial Crisis (GFC) and market crash.

The Asset Allocation policy of the Pension Trust is a key determinant of investment returns and the following graph shows the history of asset allocation mix policy.





**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: DECEMBER 31, 2018

Investment Performance Review for

San Luis Obispo County Pension Trust

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[VERUSINVESTMENTS.COM](https://www.verusinvestments.com)

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LOS ANGELES 300-297-1777

SAN FRANCISCO 415-362-3484

Investment Landscape

TAB I

Investment Performance
Review

TAB II



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

1ST QUARTER 2019
Investment Landscape

Recent Verus research

Visit: <https://www.verusinvestments.com/insights/>

Sound thinking

PRIORITIES FOR 2019

The start of the year is a good time to consider some of the likely key issues that investors may have to deal with over the next 12 months. Our CIO, Ian Toner, identifies eight topics that are likely to be important during 2019. He also outlines ways that investors might approach each of these topics, and identifies some of the ways they might impact portfolios over the year.

Topics of interest

BUILDING EFFECTIVE PRIVATE MARKET PORTFOLIOS

Institutional sponsors often invest in private asset classes to boost the return profile of their overall plan portfolios. Yet, many fall short of achieving the desired returns. We believe that effective portfolio construction is an important component of achieving attractive return targets in private markets. Drawing on our experience over the last 20 years, we highlight the key considerations for any investor seeking to build a private markets portfolio.

PRIVATE MARKETS COMMITMENT PACING AND CASH FLOW MODELING

Private markets investors are faced with the difficulty of estimating future exposures within their portfolios over a longer time horizon. An effective pacing model designed to manage investor target allocations is a key process for managing exposures accurately. We provide an overview to commitment strategies, maintaining allocations over the long-term and monitoring liquidity risk.

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Equity 25

Other assets 39

Appendix 43

4th quarter summary

THE ECONOMIC CLIMATE

- U.S. real GDP growth reached 3.0% in Q3, supported by fiscal stimulus which is more or less expected to fade in 2019. Growth is forecast to moderate in the U.S., in-line with the rest of the developed world. [p. 9](#)
- The U.S. and China ended their most recent round of trade negotiations during the first week of January. China indicated willingness to purchase more American agricultural goods, energy, and other manufactured goods, but little progress is evident overall. [p. 15](#)

PORTFOLIO IMPACTS

- The Federal Reserve raised the fed funds rate by 0.25% to a range of 2.25%-2.50%. Market expectations for future rate hikes changed dramatically in December. As of year-end, the fed funds futures market is pricing in zero hikes for 2019, and a rate cut for 2020. [p. 19](#)
- Emerging markets were the top equity performer in Q4, as these markets (MSCI EM -7.5%) experienced much less pain than developed markets (S&P 500 -13.5%, MSCI EAFE -12.5%) during the equity sell-off. Currencies stabilized in Q4 (JPMorgan EM Currency Index +0.2%) and emerging market crises concerns faded from the news headlines. [p. 34](#)

THE INVESTMENT CLIMATE

- The U.S. equity market experienced a fairly significant peak-to-trough drawdown in Q4 (S&P 500 -19.8%, Russell 1000 -20.1%), along with global equity markets. Equity corrections of this size have historically occurred roughly once per cycle. [p. 29](#)
- After reaching a cyclical high of 3.2% in November, the 10-year U.S. Treasury yield fell sharply to end the year at 2.7%. Much of this drop was due to falling inflation expectations as energy prices trended down. [p. 19](#)
- The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. [p. 17](#)

ASSET ALLOCATION ISSUES

- Diversification has been particularly painful in recent years as most asset classes failed to keep up with a domestic 60/40 portfolio. U.S. performance exceptionalism reversed in Q4 as U.S. equities underperformed. [p. 6](#)
- Economic conditions around the world have weakened. This trend has been broad-based, from industrial production, to business sentiment, to corporate earnings expectations. [p. 16](#)

Economic conditions displayed a weaker trend in Q4

A neutral risk stance may be appropriate in today's environment

What drove the market in Q4?

“Stocks continue to fall on global growth concerns”

GLOBAL MANUFACTURING PMI

Q3 17	Q4 17	Q1 18	Q2 18	Q3 18	Q4 18
53.2	54.5	53.3	53.0	52.2	51.5

Article Source: Yahoo Finance, December 14th, 2018

“Fed seen slowing, or even stopping, rate hikes next year”

YEAR-END 2020 MARKET IMPLIED FED FUNDS RATE

Jul	Aug	Sep	Oct	Nov	Dec
2.72%	2.62%	2.82%	2.86%	2.71%	2.38%

Article Source: Reuters, December 10th, 2018

“The great cheapening of 2018: global stock valuations now at five-year lows”

MSCI ACWI FORWARD P/E RATIO

Jul	Aug	Sep	Oct	Nov	Dec
14.9x	14.9x	14.8x	13.7x	13.9x	13.0x

Article Source: Wall Street Journal, December 10th, 2018

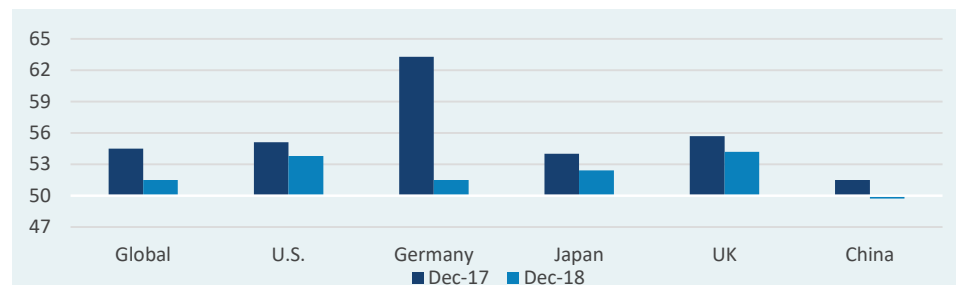
“Market volatility is surging”

DAILY AVERAGE OF S&P 500 INDEX IMPLIED VOLATILITY (VIX)

Jul	Aug	Sep	Oct	Nov	Dec
13.1	12.5	12.9	19.4	19.4	25.0

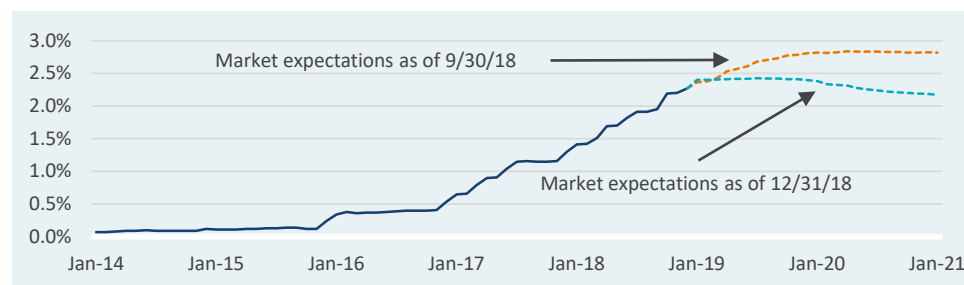
Article Source: Forbes, October 11th, 2018

GLOBAL MANUFACTURING PMIs



Source: Bloomberg, JPMorgan, Market, as of 12/31/18, 50 indicates a neutral level

MARKET PRICING OF FUTURE FED FUNDS RATE



Source: Bloomberg, as of 12/31/18

MSCI ACWI FORWARD P/E RATIO



Source: Bloomberg, as of 12/31/18, blended 12-month forward earnings

Tough years for diversification

Individual asset classes relative to a domestic 60/40

RELATIVE TO DOMESTIC 60/40	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
US Large	8.6	(7.8)	(8.0)	(12.1)	9.5	2.3	0.8	4.4	(0.5)	(14.0)	6.9	2.7	(2.4)	4.1	14.5	3.3	0.2	3.2	7.4	(1.9)
US Small	8.9	(1.7)	6.4	(10.5)	28.1	9.7	0.5	7.0	(7.6)	(10.8)	7.6	14.5	(8.7)	4.4	20.9	(5.5)	(5.6)	12.5	0.2	(8.5)
International Developed	14.6	(12.9)	(17.5)	(5.9)	19.4	11.6	9.4	14.9	5.2	(20.4)	12.2	(4.6)	(16.6)	5.4	4.9	(15.3)	(2.0)	(7.8)	10.6	(11.3)
Emerging Markets	(12.4)	1.3	1.3	3.8	36.6	17.0	29.9	20.7	33.4	(30.3)	58.9	6.5	(22.9)	6.3	(20.5)	(12.6)	(16.1)	2.4	22.9	(12.1)
US TIPS	(10.0)	14.5	11.8	26.6	(10.8)	(0.1)	(1.3)	(11.0)	5.6	20.6	(8.2)	(6.1)	9.1	(4.9)	(26.5)	(6.8)	(2.6)	(4.1)	(11.4)	1.2
US Treasury	(17.7)	16.0	10.7	24.5	(17.3)	(4.2)	(1.7)	(8.7)	4.2	41.0	(25.6)	(3.0)	11.1	(7.7)	(23.9)	(1.4)	0.4	(7.7)	(11.8)	3.4
Global Sovereign ex-US	(18.9)	(1.5)	-	31.9	(1.0)	3.5	(12.9)	(4.1)	4.9	32.4	(15.3)	(6.3)	0.7	(10.1)	(22.8)	(13.2)	(6.0)	(6.9)	(5.1)	1.6
Core Fixed Income	(13.2)	12.9	12.3	20.3	(15.1)	(4.3)	(1.7)	(7.1)	1.0	28.2	(13.7)	(5.9)	3.3	(7.7)	(19.9)	(4.4)	(0.7)	(6.2)	(10.9)	2.5
High Yield Corp. Credit	(10.0)	(4.6)	9.2	8.6	9.8	2.5	(1.4)	0.4	(4.1)	(3.2)	38.6	2.7	0.5	3.9	(10.5)	(7.9)	(5.7)	8.3	(6.9)	0.4
Bank Loans	(12.4)	1.3	3.9	10.0	(19.2)	(3.4)	1.0	(4.7)	(3.9)	(6.1)	32.0	(2.3)	(3.0)	(2.2)	(12.6)	(8.8)	(1.9)	1.4	(10.3)	3.6
Global Credit	(12.4)	1.3	7.1	23.6	(2.8)	1.4	(6.1)	(3.1)	0.6	13.5	1.4	(5.7)	(0.1)	0.2	(16.8)	(8.0)	(4.6)	(3.4)	(5.2)	(0.8)
Emerging Market Debt (Hard)	7.2	14.0	13.6	23.7	3.0	3.0	6.1	(1.5)	0.2	11.0	10.2	(0.2)	2.8	5.5	(23.2)	(3.0)	-	1.4	(4.1)	(1.8)
Emerging Market Debt (Local)	(12.4)	1.3	3.9	10.0	(19.2)	(8.6)	2.2	3.8	12.1	17.8	2.4	3.3	(6.3)	4.9	(26.9)	(16.1)	(16.1)	1.1	0.8	(3.7)
Commodities	11.9	33.1	(15.6)	35.9	4.7	0.5	17.3	(9.3)	10.2	(12.6)	(0.7)	4.4	(17.8)	(13.0)	(27.4)	(27.4)	(25.9)	3.0	(12.7)	(8.8)
Hedge Fund	14.1	5.4	6.7	11.0	(7.6)	(1.7)	3.4	(1.0)	4.3	1.6	(8.1)	(6.7)	(10.2)	(7.1)	(8.9)	(7.0)	(1.5)	(8.3)	(6.6)	(1.0)
REITs	(15.0)	32.3	16.2	13.6	17.0	24.6	9.7	24.6	(23.6)	(16.2)	9.0	16.2	4.7	5.7	(16.0)	21.4	3.0	(1.6)	(10.2)	(2.3)
Risk Parity (HFR Vol 10)	(12.4)	1.3	3.9	10.0	(19.2)	9.1	11.4	(9.1)	4.7	6.6	(3.6)	5.7	4.7	1.1	(18.4)	(2.3)	(6.3)	1.2	(0.9)	6.4
Core Real Estate (NCREIF ODCE)	0.8	15.6	9.5	15.5	(9.9)	4.5	17.3	4.9	10.0	13.0	(49.4)	4.0	11.5	(1.0)	(4.0)	2.1	13.8	-	(6.8)	7.8
Domestic 60/40 (S&P 500, BC Universal)	12.4	(1.3)	(3.9)	(10.0)	19.2	8.6	4.1	11.4	6.0	(23.0)	19.6	12.4	4.5	11.9	17.9	10.4	1.2	8.8	14.4	(2.5)
% of Assets Outperforming Domestic 60/40	39%	72%	78%	83%	44%	67%	67%	44%	72%	56%	56%	50%	50%	56%	17%	17%	22%	50%	28%	44%

Performance as of 12/31/18, NCREIF Property Index performance data as of 9/30/18

Economic environment

U.S. economics summary

- Real GDP growth reached 3.0% YoY (3.4% quarterly annualized rate) in the third quarter, the fastest pace of growth in more than three years. Consumers drove growth after bouncing back from a spending slowdown in Q1.
- The U.S. and China ended the recent round of trade negotiations during the first week of January. The U.S. noted China's willingness to purchase more American agricultural goods, energy, and other manufactured goods, but little progress is evident overall.
- U.S. inflation remained near the Federal Reserve's 2.0% target. Headline U.S. inflation fell from 2.3% to 1.9% over the quarter, driven by lower oil prices. U.S. core CPI remained at 2.2%. Moderate inflation has likely contributed to the willingness of the Fed to keep on course with rate hikes.
- The labor market remained a bright spot in the U.S. economy. On average, nonfarm payrolls increased by 254,000 per month during the quarter, well above the expansion average of 201,000.
- The headline U-3 unemployment rate rose from 3.7% to 3.9%, in part due to an increase in labor force participation.
- Fiscal stimulus continued to support growth, although the impacts will likely subside in the first half of 2019. Stimulus may be masking a slowdown in the economy, which would be directionally in line with the rest of the developed world.
- The Federal Reserve hiked the target range for its benchmark interest rate by 25 basis points to a new range of 2.25% - 2.50%. Consistent with expectations for a "dovish hike", central bank officials re-rated hike expectations in 2019 from three to two.

	Most Recent	12 Months Prior
GDP (YoY)	3.0% <i>9/30/18</i>	2.3% <i>9/30/17</i>
Inflation (CPI YoY, Core)	2.2% <i>12/31/18</i>	1.8% <i>12/31/17</i>
Expected Inflation (5yr-5yr forward)	1.8% <i>12/31/18</i>	2.0% <i>12/31/17</i>
Fed Funds Target Range	2.25 – 2.50% <i>12/31/18</i>	1.25 – 1.50% <i>12/31/17</i>
10 Year Rate	2.7% <i>12/31/18</i>	2.4% <i>12/31/17</i>
U-3 Unemployment	3.9% <i>12/31/18</i>	4.1% <i>12/31/17</i>
U-6 Unemployment	7.6% <i>12/31/18</i>	8.1% <i>12/31/17</i>

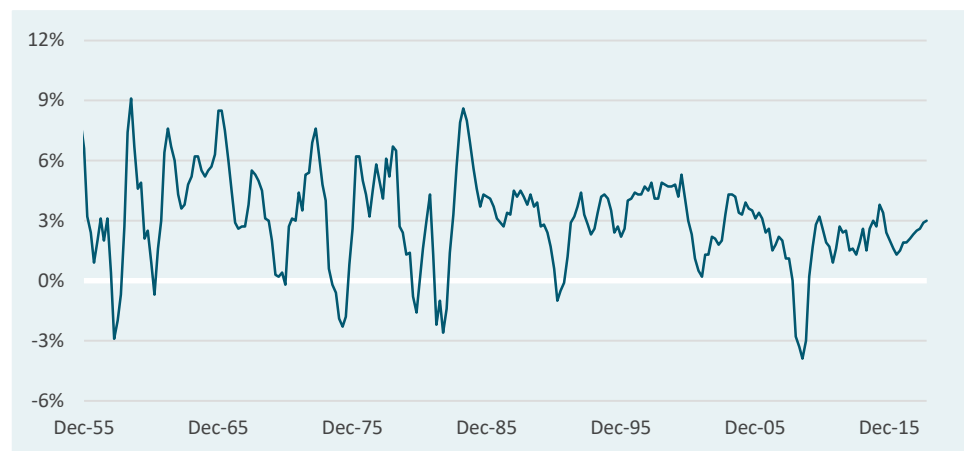
GDP growth

Real GDP growth reached 3.0% YoY (3.4% quarterly annualized rate) in the third quarter, the fastest pace in more than three years. Consumer spending was a core driver for the second straight quarter after bouncing back from a spending slowdown earlier in the year. A tight labor market, firming wage growth, and low inflation created a strong backdrop for spending, which added 2.4% to the quarterly growth rate. A build in inventories was the second biggest contributor to growth, which could be the result of pulling future growth into the current quarter as inventory builds are typically drawn down in subsequent quarters.

Fiscal stimulus continued to support growth, although its impact will likely subside in the first half of 2019. This support may be masking a slowdown in the U.S. economy, which has already started to appear in other parts of the world. More current metrics of the economy, such as PMIs, are indeed indicating that activity is slowing from recent high levels, but growth remains positive. However, fading fiscal stimulus and monetary tightening (that impacts the economy with a lag) present unique challenges to the economic outlook and increase the possibility of a more significant slowdown.

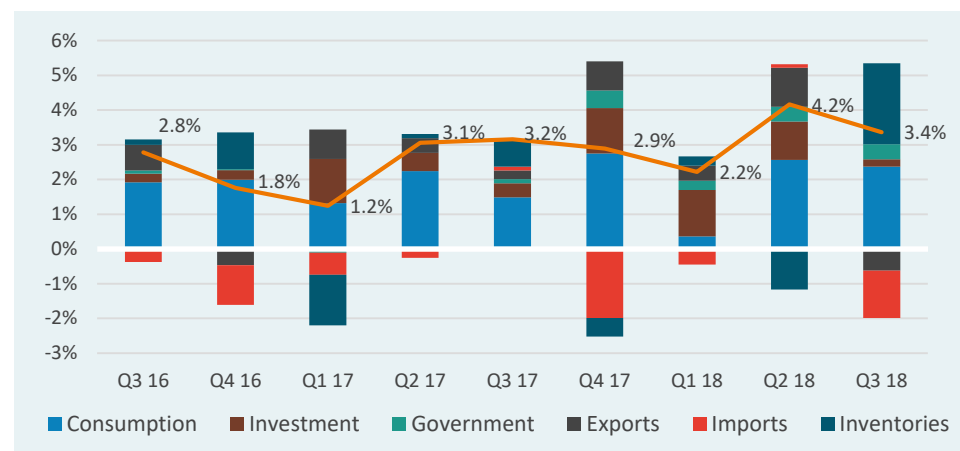
The economy appears to be slowing after a period of strong growth

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 9/30/18

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 9/30/18

Inflation

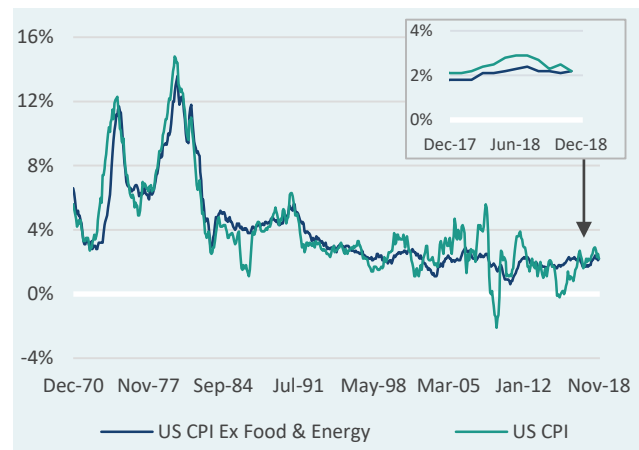
U.S. inflation remained near the Federal Reserve’s 2.0% target. Headline U.S. inflation fell from 2.3% to 1.9% over the quarter, driven by lower oil prices. U.S. core CPI remained at 2.2%. Moderate inflation has likely contributed to the willingness of the Fed to keep on course with rate hikes.

Inflation fears remained muted as indicated by consumer expectations and market pricing. Breakeven inflation rates implied by U.S. 10-year Treasury pricing fell by a net 0.4% to 1.7% in the fourth quarter alongside a significant drop in

energy prices. Consumer inflation expectations moderated by a net 0.3% during that time, according to the University of Michigan consumer survey.

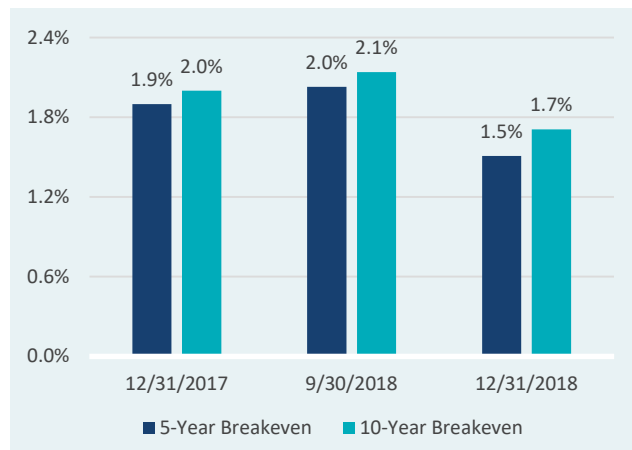
U.S.-China tariffs have recently been cited as a potential source of inflation risk. However, flow-through effects from import prices to consumer prices are complex, and the outcome may be more nuanced. We do not expect a material increase in inflation due to the tariffs that have been implemented.

U.S. CPI (YOY)



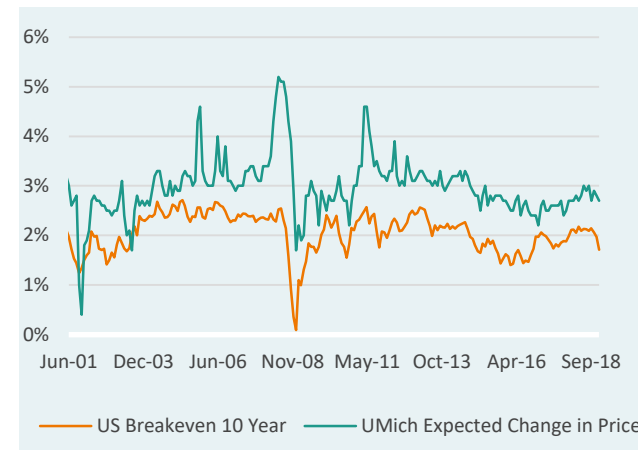
Source: Bloomberg, as of 12/31/18

BREAKEVEN INFLATION RATES



Source: FRED, as of 12/31/18

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/18

Labor market

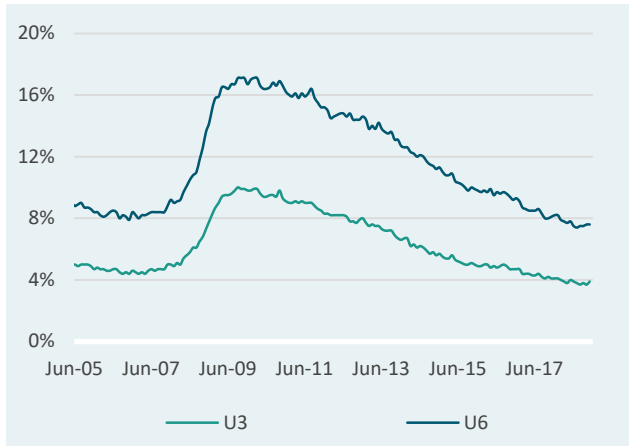
The labor market remained a bright spot in the U.S. economy, although this strength may reflect where the economy has been rather than where it is headed. Labor market conditions tend to lag the broader economy.

On average, nonfarm payrolls increased by 254,000 per month during the quarter, well above the expansion average of 201,000. The headline U-3 unemployment rate ticked up from 3.7% to 3.9%, in part due to an increase in labor force participation. Rising wages and ease of obtaining

employment may have played a role in enticing people to come back to work. Core age participation (ages 25-54) rose from 81.8% to 82.3% in the fourth quarter. This measure is up a net 1.7% (this increase roughly equates to 3.5 million more employed persons, all else equal) since hitting a secular low in late 2015.

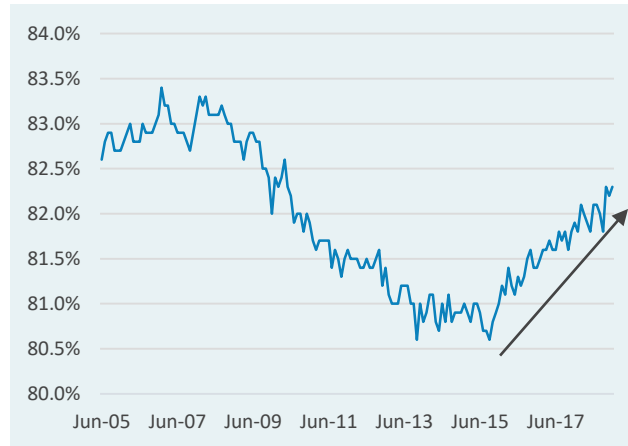
The tightness in the labor market appears to be translating to above average wage gains. In December, wage growth hit a cycle high of 3.3% from the previous year.

UNEMPLOYMENT RATE



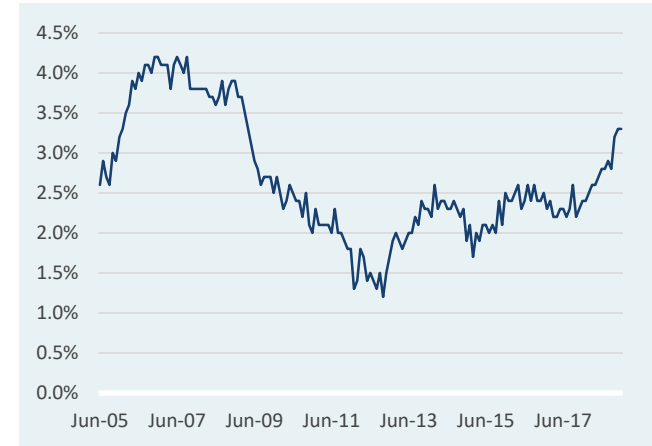
Source: FRED, as of 12/31/18

CORE AGE PARTICIPATION RATE



Source: Bloomberg, as 12/31/18

WAGE GROWTH (YOY)



Source: Bloomberg, as of 12/31/18

The consumer

Real consumer spending rose 2.8% year-over-year, and remains a core driver of recent economic growth.

A strong job market, decent wage gains, and low interest rates have provided continued support to spending. Although conditions and sentiment are strong relative to history, U.S. consumers appear to be behaving conservatively. Overall, spending growth and debt usage has been more moderate than seen in recent expansions, perhaps partly due to memories of the 2008-2009 recession.

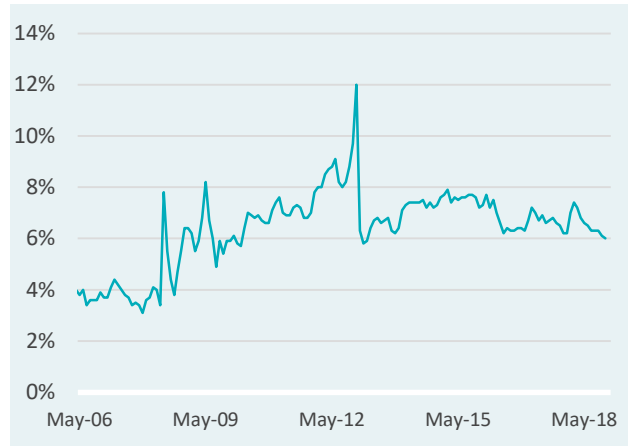
The 30-year fixed mortgage rate approached 5% towards the end of the year but tapered off as interest rates fell in December. Credit card interest rates have also risen materially. We believe further rate increases from this point will most likely be minimal, but that recent rate rises will act as a headwind to the consumer in many areas. For example, higher home values post-2009 were possible because low interest rates helped keep monthly payments within budgets. Now the reversal in interest rates, paired with additional home price appreciation, has squeezed the budget for new homeowners and contributed to a slowdown in the U.S. housing market.

REAL CONSUMER SPENDING (YOY)



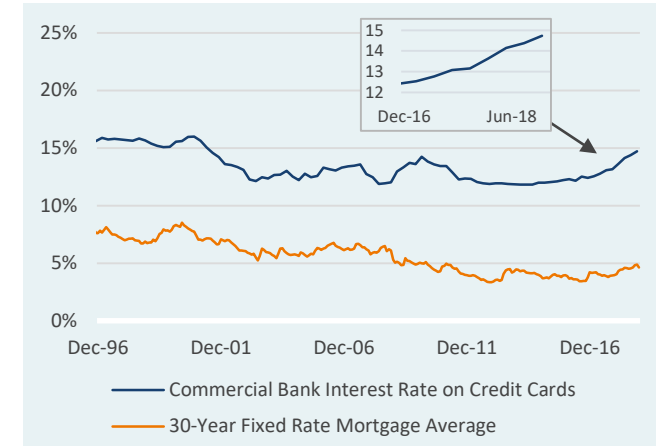
Source: Bloomberg, as of 11/30/18

PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/18

CONSUMER INTEREST RATES



Source: FRED, as of 12/31/18

Sentiment

Both consumer and business sentiment indicators were resilient in the fourth quarter, holding at above average levels.

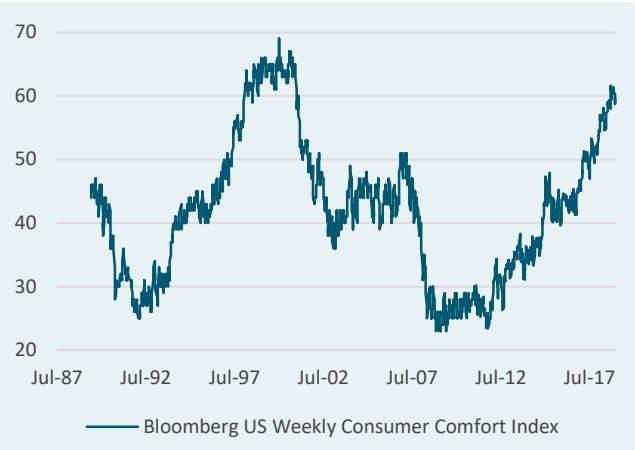
The University of Michigan Index of Consumer Sentiment fell modestly during the quarter from 100.1 to 98.3, but is still elevated relative to its own history (87th percentile since index inception in 1978). The recent plunge in stock prices was only reported by 12% of respondents as a primary economic concern. Consumers were instead

focused on positive perceptions of employment and income prospects, according to the survey administrators.

Small business sentiment drifted lower, but remained near record highs. At 104.4, the December reading for the NFIB Small Business Optimism Index was in the 92nd percentile of its own history going back to 1985.

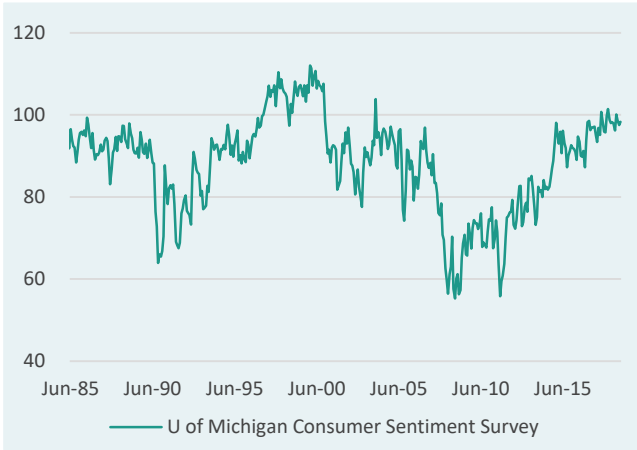
Consumers and business are confident about the future

CONSUMER COMFORT INDEX



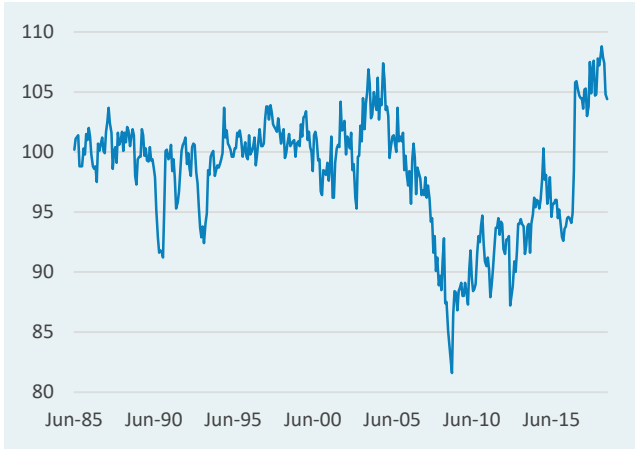
Source: Bloomberg, as of 12/31/18 (see Appendix)

CONSUMER SENTIMENT



Source: University of Michigan, as of 12/31/18 (see Appendix)

NFIB SMALL BUSINESS OPTIMISM INDEX



Source: NFIB, as of 12/31/18 (see Appendix)

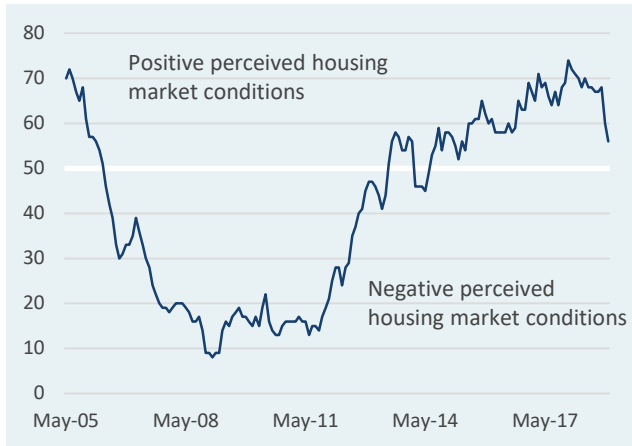
Housing

Housing market data that was released in the fourth quarter consistently came in below expectations. Monetary tightening has led to higher interest rates and likely begun to weigh on sales activity and home price appreciation. The National Association of Homebuilders (NAHB) Housing Market Index, based on a monthly survey of NAHB members designed to take the pulse of the single-family housing market, fell sharply from 67 to 56. However, the survey suggests conditions remain favorable overall, as 50 represents the neutral point for the index.

Less favorable buying conditions have flowed through to a slower pace of home sales despite a slowdown in price increases. Existing home sales, which make up the majority of national sales, fell to an annualized rate of 5.3 million in November, the slowest pace since early 2016. Home prices continue to march upward, but at a more moderate pace. In the most recent October print, the Case-Shiller National Home Price Index rose 5.5% year-over-year.

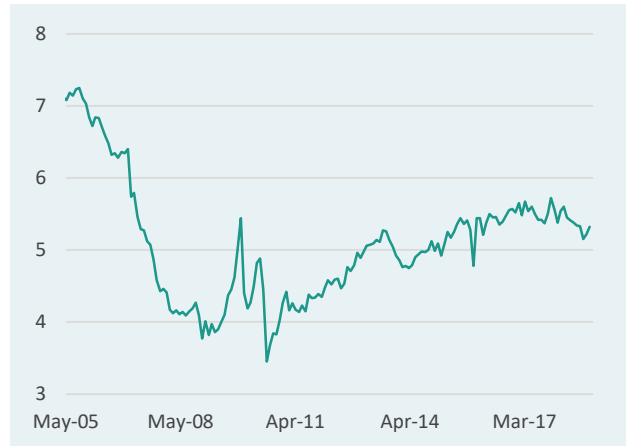
The U.S. housing market appears to be cooling off

NAHB HOUSING MARKET INDEX



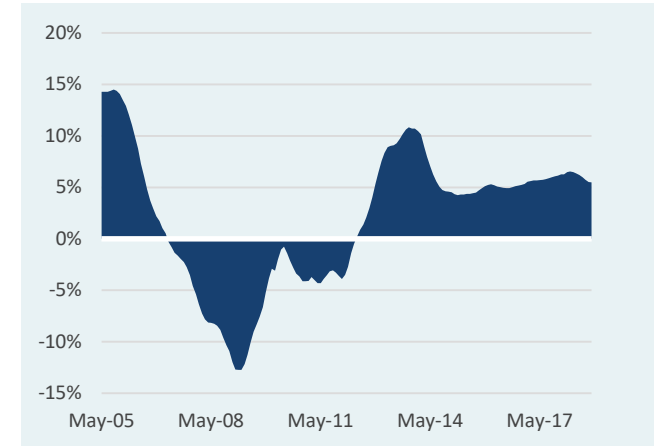
Source: Bloomberg, NAHB, as of 12/31/18 (see appendix)

EXISTING HOME SALES (MILLIONS)



Source: Bloomberg, SAAR, as of 11/30/18

NATIONAL HOME PRICE INDEX (YOY)



Source: Bloomberg, S&P/Case-Shiller, as of 10/31/18

International economics summary

- Outside of the U.S., economic growth has slowed in recent quarters, most notably in Europe and Japan. Developed real GDP growth is expected to slow from 2.2% in 2018 to 2.0% in 2019, according to the World Bank.
- The U.S. and China ended the recent round of trade negotiations during the first week of January. Officials continue to work towards an agreement, though little progress is been demonstrated thus far. On March 2nd, U.S. tariffs are scheduled to increase from 10% to 25% on \$200 billion of Chinese imports.
- China's Purchasing Managers' Index (PMI) fell to 49.7 in December. An index reading of 50 indicates economic expansion while a reading below 50 indicates contraction. This reading is in line with a string of weak economic data coming out of China.
- The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. Potential resolutions include renegotiating a deal with the EU, leaving without a deal, or delaying the exit deadline.
- The U.S. dollar appreciated by 1.9% during the quarter on a trade-weighted basis. A slowing U.S. economy would likely put downside pressure on the dollar, which has been boosted recently by U.S. economic exceptionalism.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	3.0% <i>9/30/18</i>	2.2% <i>11/30/18</i>	3.9% <i>12/31/18</i>
Eurozone	1.6% <i>9/30/18</i>	1.8% <i>11/30/18</i>	8.1% <i>10/31/18</i>
Japan	0.0% <i>9/30/18</i>	0.8% <i>11/30/18</i>	2.5% <i>11/30/18</i>
BRICS Nations	5.6% <i>9/30/18</i>	2.4% <i>12/31/18</i>	5.4% <i>9/30/18</i>
Brazil	1.3% <i>9/30/18</i>	4.1% <i>11/30/18</i>	11.7% <i>12/31/18</i>
Russia	1.5% <i>9/30/18</i>	4.3% <i>12/31/18</i>	4.8% <i>11/30/18</i>
India	7.1% <i>9/30/18</i>	2.3% <i>11/30/18</i>	8.8% <i>12/31/17</i>
China	6.5% <i>9/30/18</i>	2.2% <i>11/30/18</i>	3.8% <i>9/30/18</i>

International economics

Outside of the U.S., economic growth slowed in recent quarters, most notably in Europe and Japan. Inflation turned lower in Q4 alongside falling energy prices. Low inflation provides greater flexibility for central banks to remain accommodative as needed.

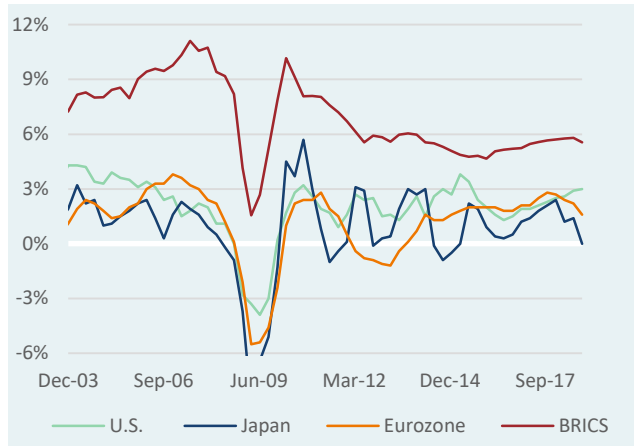
In the Eurozone, real GDP decelerated to 1.6% YoY as many economies struggled with stagnation and social unrest. European Union rules restrict the ability of member nations to fully implement fiscal and monetary stimulus to their economies, which may have contributed to Europe's uneven

economic recovery. It is possible that certain laggards of the Eurozone will eventually push for greater sovereign control of their economies if stagnation continues. This may result in standoffs such as seen recently between Italy and the EU.

The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. Potential resolutions include renegotiating a deal with the EU, leaving without a deal, or delaying the exit deadline.

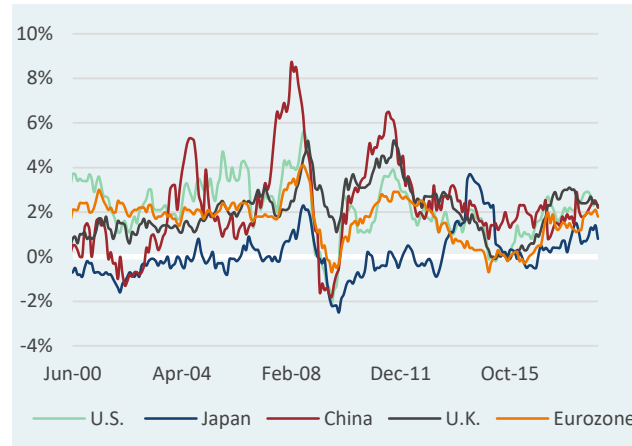
Global economic growth appears to be decelerating

REAL GDP GROWTH (YOY)



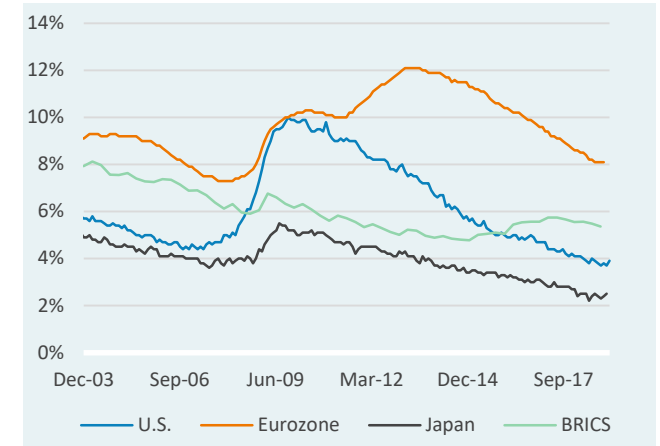
Source: Bloomberg, as of 9/30/18

INFLATION (CPI YOY)



Source: Bloomberg, as of 11/30/18

UNEMPLOYMENT RATE



Source: Bloomberg, as of 11/30/18 or most recent release

Brexit

The chaos surrounding Brexit negotiations has not yet had a large impact on markets (outside of higher volatility in the British pound), but it will likely become an increasing area of focus for global investors the closer we get to the March 2019 deadline. While most political and market commentators remain anti-Brexit, when we take a step back and think more dispassionately about the issue, a different picture emerges. Less immigration from Europe will likely be balanced by easier movement from other countries, including the U.S., India, Australia and others with historically strong links to the UK. Some businesses will likely shift to

accommodate the UK being outside of the protectionist area of the EU, but for most UK firms, much of their business is either done domestically or with non-EU countries.

There will be both gains and losses from Brexit, and yet current market pricing behavior seems to be putting little focus on the good and exaggerating the bad, which may present investment opportunity, particularly for non-consensus active managers. In the short-term, however, investors should brace for higher volatility.

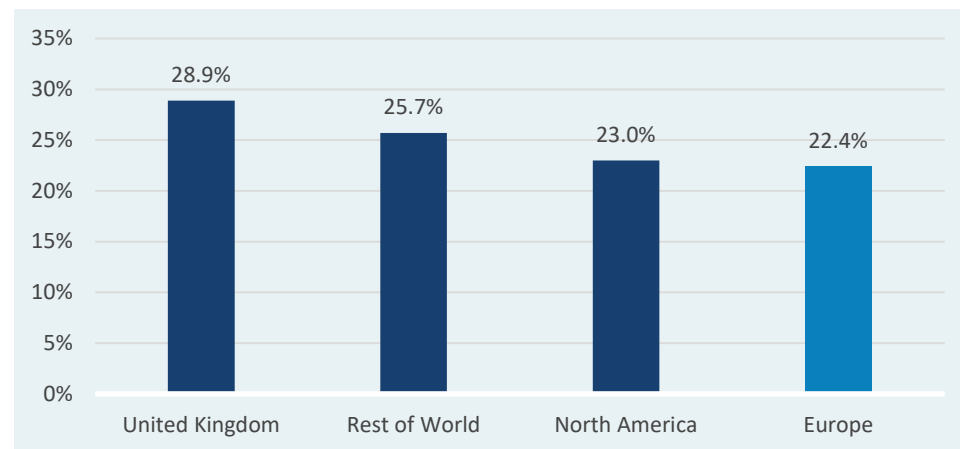
There will be both gains and losses from Brexit

3-MONTH IMPLIED VOLATILITY OF GBP/USD



Source: Bloomberg, as of 12/31/18

FTSE 100 COMPANY REVENUES BY REGION (2017)



Source: FTSE, 2017

Fixed income rates & credit

Interest rate environment

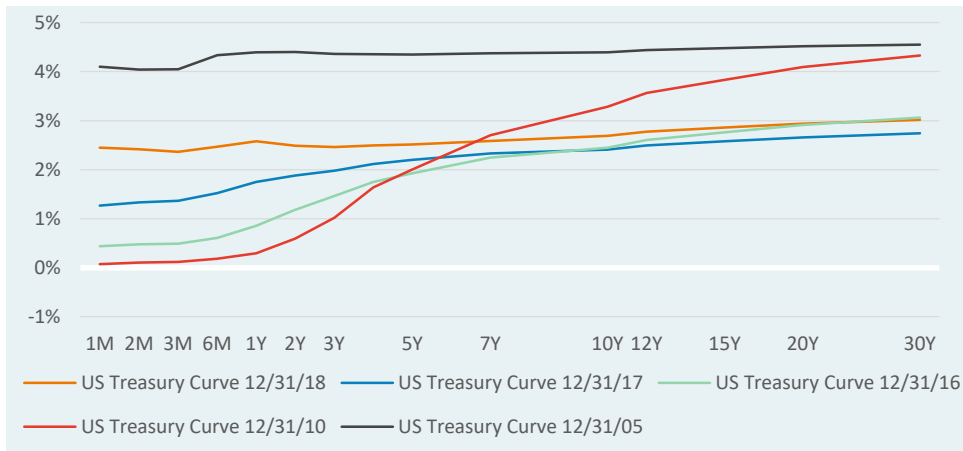
- The Federal Reserve raised the target for the fed funds rate by 0.25% in December, to a range of 2.25%-2.50%. Despite the hike, Fed officials indicated a more patient approach to future tightening, and lowered expectations for hikes in 2019 from three to two.
- The market's expectation for future rate hikes changed dramatically in December. As of year-end, the fed fund futures market is pricing zero hikes in 2019 and a rate cut priced in 2020.
- After reaching a cycle high of 3.2% in November, the 10-year Treasury yield fell sharply to end the year at 2.7%. Much of this drop was due to falling breakeven inflation as oil prices plunged. The 10-year breakeven inflation rate fell from 2.1% to 1.7% over the quarter.
- Although certain parts of the U.S. Treasury yield curve have inverted, there remains a 15 bps gap between the 10- and 2-year yields, which is the most widely cited measure of yield curve shape.
- Developed sovereign yields fell alongside U.S. Treasuries. The 10-year German bund yield was cut in half over the quarter to 0.24%.
- As expected, the European Central Bank officially announced the end of its asset purchase program. Beginning in January of 2019, monthly purchases will fall from €30 billion to €0. Central bank officials have said that they will fully reinvest maturing securities for the foreseeable future and keep interest rates unchanged until at least the second half of 2019.

Area	Short Term (3M)	10-Year
United States	2.36%	2.69%
Germany	(0.77%)	0.24%
France	(0.86%)	0.71%
Spain	(0.42%)	1.42%
Italy	(0.06%)	2.74%
Greece	1.30%	4.40%
U.K.	0.73%	1.28%
Japan	(0.15%)	0.00%
Australia	2.01%	2.32%
China	2.83%	3.31%
Brazil	6.48%	9.24%
Russia	7.12%	8.78%

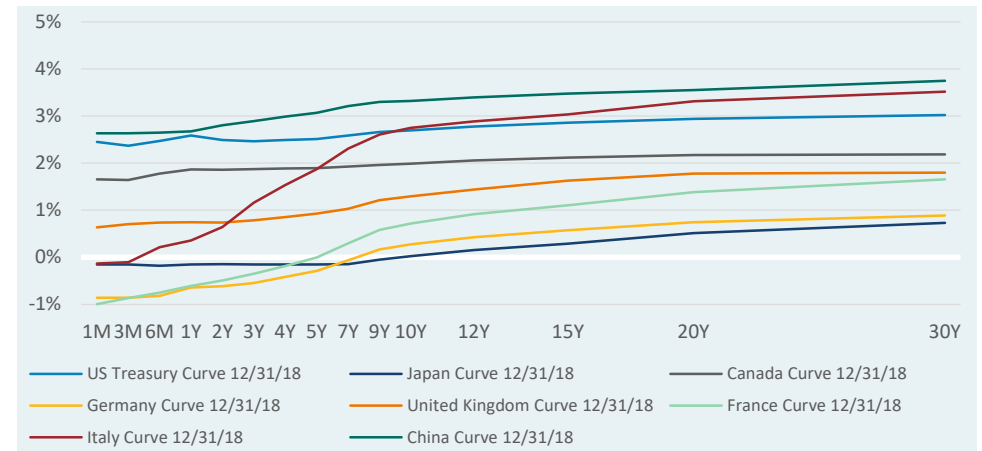
Source: Bloomberg, as of 12/31/18

Yield environment

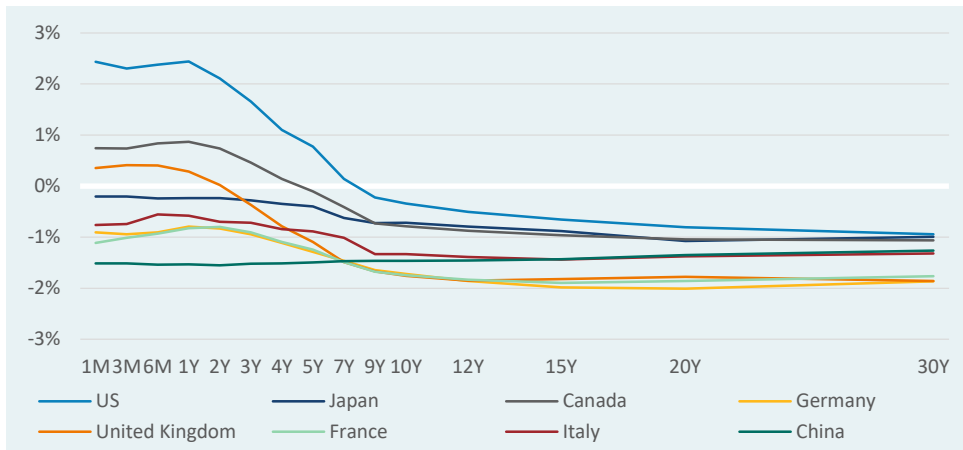
U.S. YIELD CURVE



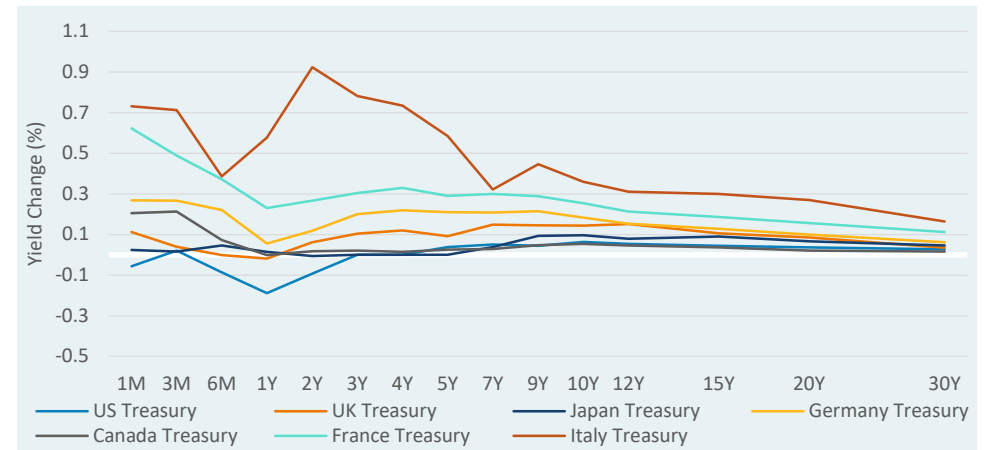
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/18

Fed pricing

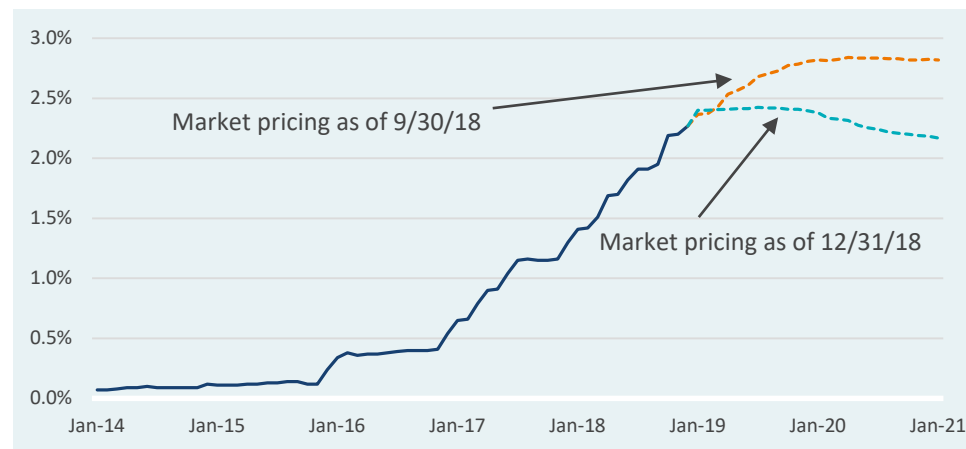
The Fed raised rates by another 25 bps in December to a target range of 2.25% to 2.50% on the fed funds rate, the fourth such hike of 2018. More important than what the Fed did, however, is what Fed officials said, and how the market reacted and adjusted its expectations for future monetary tightening. Leading up to the December meeting, Fed officials began to take a more a dovish tone amid market volatility and economic data misses, and they stressed the importance of future policy being data dependent. The Fed then acknowledged these concerns by lowering expectations for rate hikes in 2019 from three to two. Meanwhile, market expectations for future rate hikes plummeted as equity

markets sold off and volatility spiked. As of the end of the year, not only were markets priced for a Fed pause in 2019, but they were also priced for a rate cut in 2020. With such dovish market pricing, it is important to note that in order for the Fed to provide any stimulus at this point, it will likely need to cut rates or halt the balance sheet unwind.

Market pricing of future Fed policy is extremely dovish

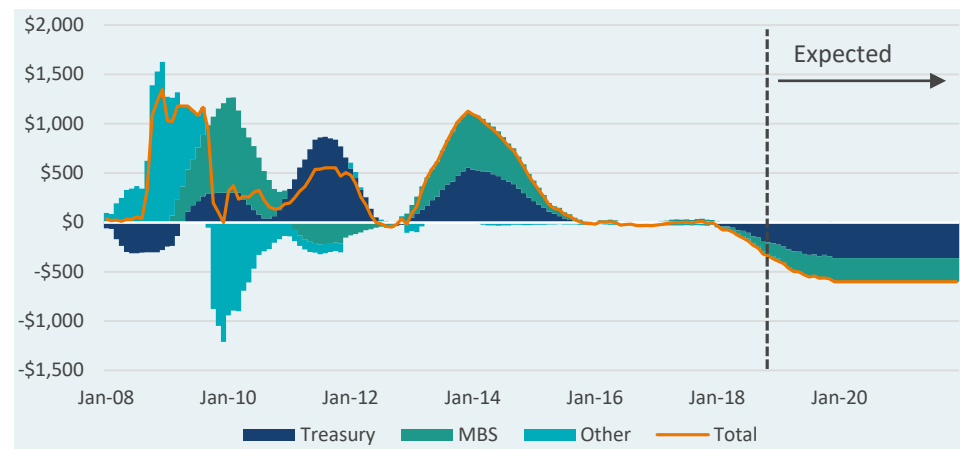
As of December, the Fed balance sheet had been reduced by around \$500 billion without any immediate issues. To this point, officials have been adamant that the balance sheet is not an active tool for tightening monetary policy, and that there are no plans to adjust the current rate of unwind.

MARKET PRICING OF THE FED FUNDS RATE



Source: Bloomberg, as of 12/31/18, dotted lines are based on futures market pricing

NET CHANGE IN FED BALANCE SHEET (YOY, \$BILLIONS)



Source: Bloomberg, Federal Reserve, as of 12/31/18

Credit environment

High yield and bank loans delivered losses during the quarter on slowing growth expectations, energy price volatility, investor outflows, and broad risk-off market sentiment (BbgBarc US Corp High Yield -4.5%, CS Leveraged Loans -3.1%).

High yield bonds returned -2.1% for 2018, which is the second lowest annual return for the asset class in the last ten years after 2015. Yields and spreads in high yield credit are at their highest since 2016, increasing to 8.0% and 526 bps, respectively.

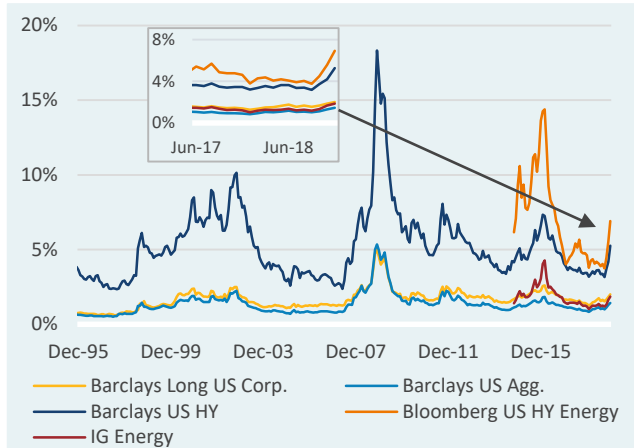
Loans were also under pressure in December as the asset class

dealt with accelerated outflows and negative press – spreads on loans increased to 505 bps from 374 bps the prior quarter. The credit quality of bank loans has deteriorated throughout the cycle as covenant-lite loans dominated new issuance.

Based on the recent behavior and heightened volatility in credit, we do not believe investors are being adequately compensated for credit risk and believe an underweight to U.S. investment grade, high yield credit, and bank loans is warranted. Within credit, we have a bias toward owning higher quality and more liquid assets.

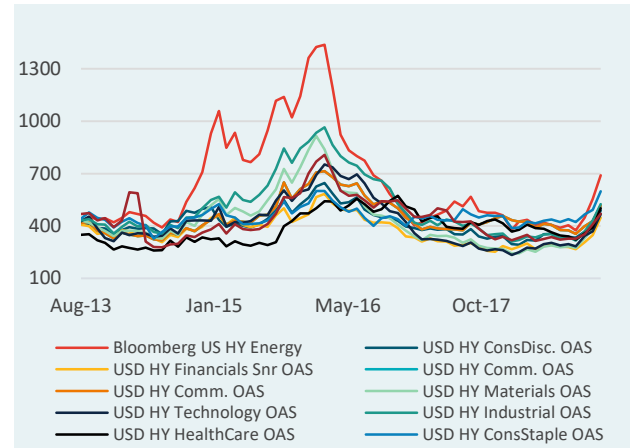
Credit spreads widened due to concerns over slowing global growth and broader risk-off behavior

SPREADS



Source: Barclays, Bloomberg, as of 12/31/18

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 12/31/18

Market	Credit Spread (OAS 12/31/18)	Credit Spread (1 Year Ago)
Long US Corporate	2.0%	1.4%
US Aggregate	1.4%	0.9%
US High Yield	5.3%	3.4%
US Bank Loans*	5.1%	4.0%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/18

*Discount margin 4-year life

Issuance and default

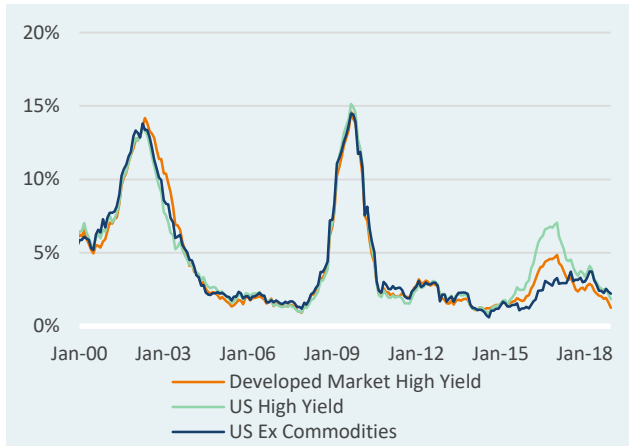
Default activity has been low and stable in the U.S. credit market, despite wider spreads. The par-weighted default rate of 1.9% remains below its long-term average of 3.0-3.5%. There were 29 defaults in 2018, affecting \$40.9 billion in bonds. iHeartRadio accounted for 40% of default volume (\$16 billion). The loan par-weighted default rate finished the year at 1.6%.

Senior loan and high yield markets have essentially recovered from a wave of defaults seen in 2015-2016 that were generated from the energy and metals/mining sectors.

Recovery rates for high yield bonds have vastly improved since that time.

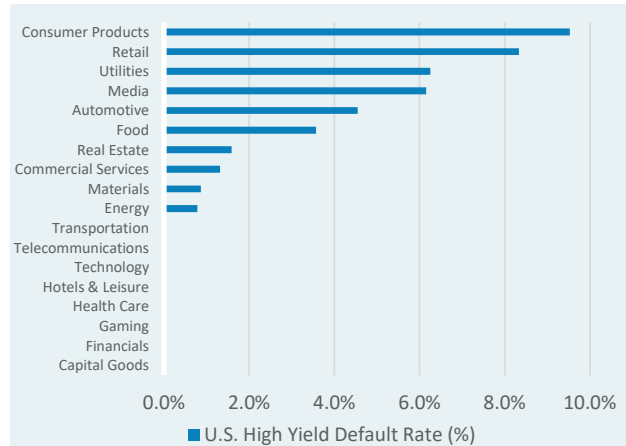
There were no high yield bonds issued in December due to market volatility – the first time this has happened since November 2008. Loan market issuance also slowed, with only \$8 billion in institutional loan volume. Gross new high yield and loan issue activity totaled \$187 billion and \$704 billion for 2018, respectively.

HY DEFAULT RATE (ROLLING 1-YEAR)



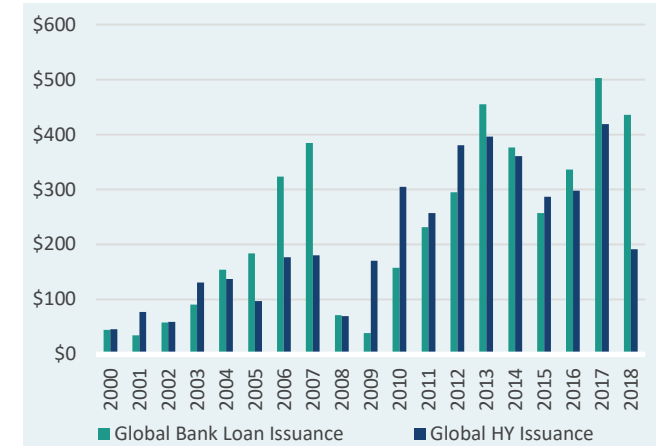
Source: BofA Merrill Lynch, as of 12/31/18

HY SECTOR DEFAULTS (LAST 12 MONTHS)



Source: BofA Merrill Lynch, as of 12/31/18 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



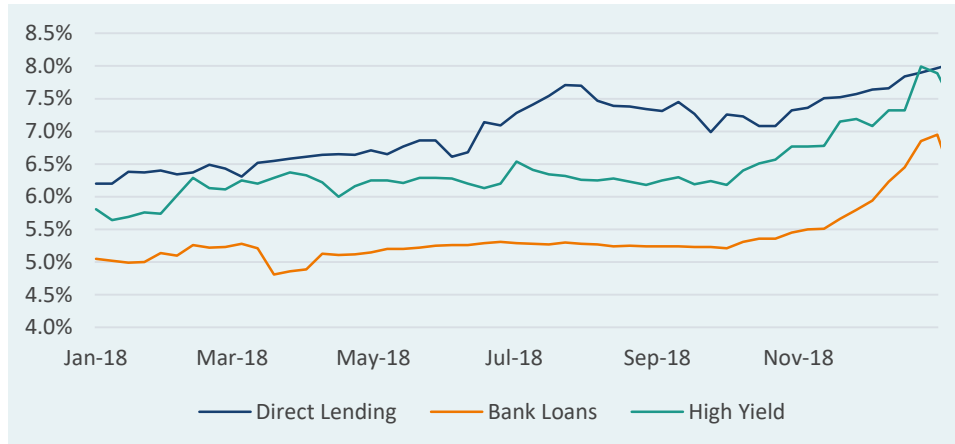
Source: Bloomberg, BofA Merrill Lynch, as of 12/31/18

Private credit

Fundraising in Private Credit slowed in 2018. 163 funds closed on \$110 billion in 2018, which was down from 189 funds and \$129 billion in 2017. Direct lending, mezzanine and distressed debt were the most active strategies raising \$45 billion, \$31 billion, and \$21 billion, respectively. Even with the slower fundraising, dry powder in private credit is at record levels. Private debt dry powder at the end of 2018 was \$280 billion, which eclipsed the 2017 record of \$246 billion.

Yields for loans made by direct lending funds finished the year above 8% (8.04%). While yields have been aided by higher LIBOR rates,

YIELDS FOR DIRECT LENDING, BANK LOANS AND HIGH YIELD

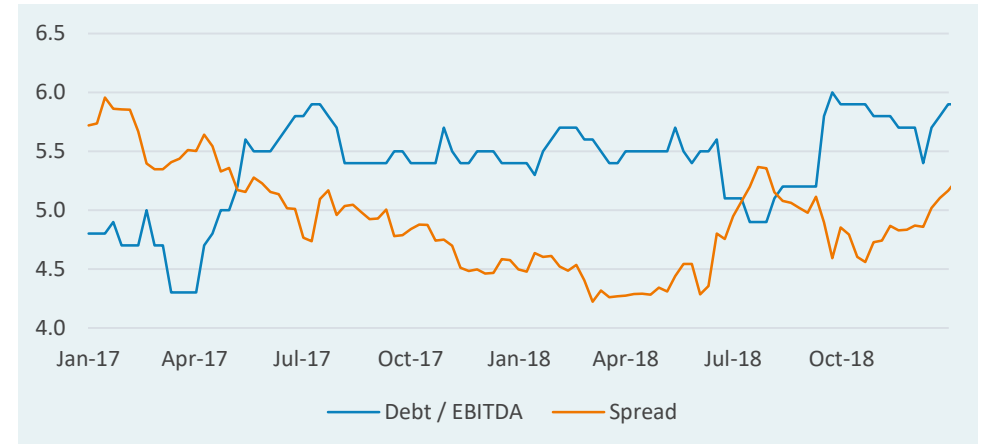


Source: The Lead Left, Middle Market, EBITDA < \$50MM; S&P LSTA US Leveraged Loan Index; ICE BofAML US High Yield Master II, as of 12/31/18

which grew from 1.7% to 2.8% during 2018, spreads increased from 4.5% to 5.35% during the year.

While credit spreads expanded in 2018, so too did the debt multiples for borrowers. Borrowers now average debt totaling 5.9x EBITDA, a 0.5x increase from January 2018-levels.

DIRECT LENDING LEVERAGE MULTIPLES (DEBT / EBITDA) & SPREAD



Source: The Lead Left, Middle Market Credit Stats, as of 12/31/18

Equity

Equity environment

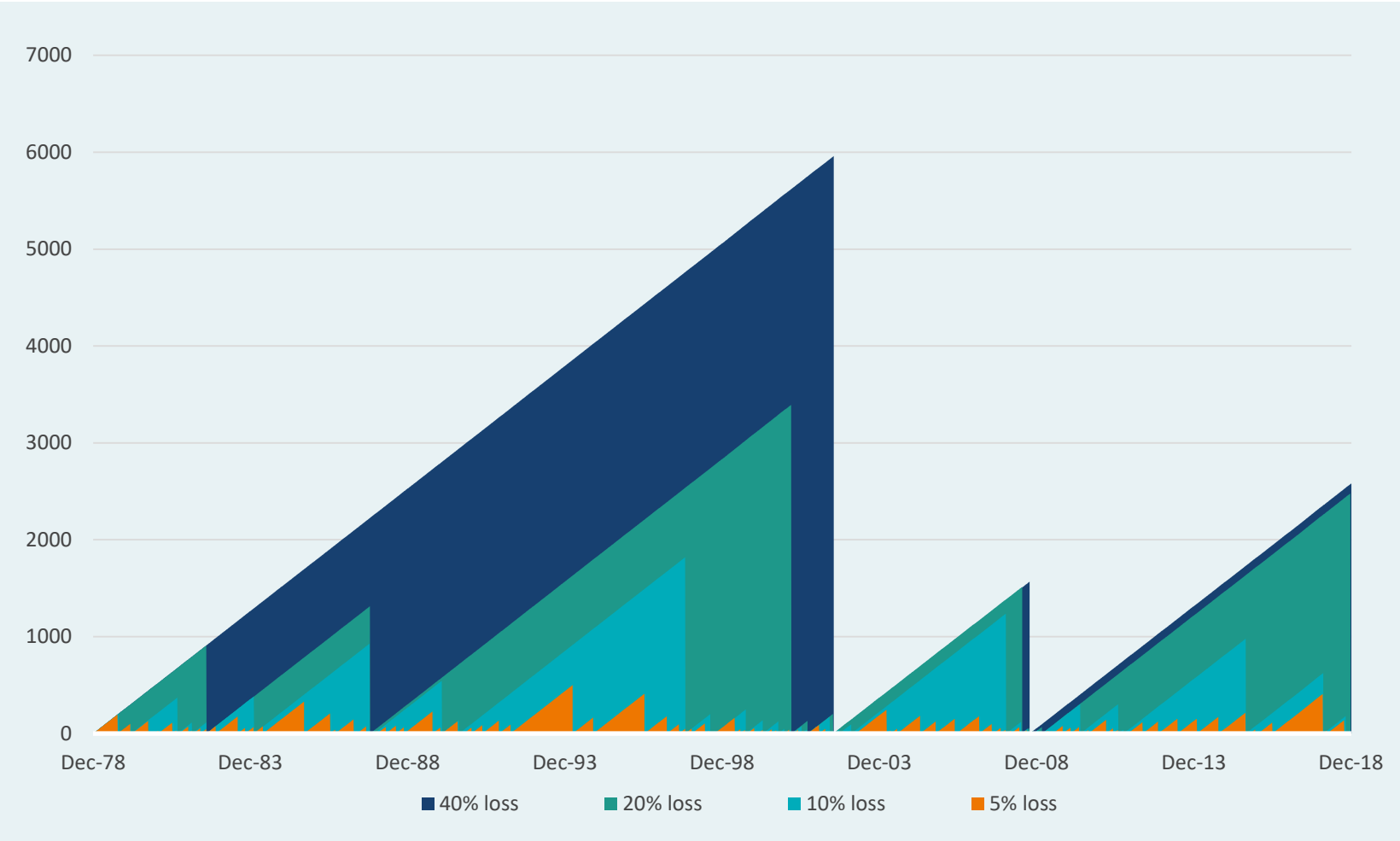
- U.S. equities experienced their worst quarter since 2008 – the S&P 500 Index returned -13.5%. The sell-off was due in part to concerns over a slowdown in global growth, and was exacerbated by low liquidity toward the end of the year.
- The drawdown from peak on the S&P 500 Index stopped just shy of 20% before equities rebounded during the last week of the year. Historically, equity drawdowns of more than 20% have been associated with an economic recession.
- Although absolute performance was also poor, international equities outperformed U.S. equities, particularly in emerging markets.
- Global equities saw a sharp drop in valuations as price declines overwhelmed small downward adjustments to earnings expectations. The 12-month forward P/E multiple for the MSCI ACWI fell by 12.1% during the quarter, falling from 14.8x to 13.0x.
- The risk-off environment hit small cap equities especially hard. The Russell 2000 Index posted a -20.2% return in the fourth quarter, compared to a decline of 13.8% on the Russell 1000 Index.
- Value equities outperformed growth equities over the quarter for the time since Q4 2016. The Russell 1000 Value Index and Russell 1000 Growth Index returned -11.7% and -15.9%, respectively.
- Equity volatility surged in what may be the beginning of a transition to a higher volatility regime. The VIX Index averaged 21 in Q4, and hit a high of 36 on December 24th.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	(13.8%)		(4.8%)	
US Small Cap (Russell 2000)	(20.2%)		(11.0%)	
US Large Value (Russell 1000 Value)	(11.7%)		(8.3%)	
US Large Growth (Russell 1000 Growth)	(15.9%)		(1.5%)	
International Large (MSCI EAFE)	(12.5%)	(11.6%)	(13.8%)	(9.0%)
Eurozone (Euro Stoxx 50)	(14.1%)	(10.7%)	(16.2%)	(9.3%)
U.K. (FTSE 100)	(11.7%)	(9.1%)	(14.0%)	(7.3%)
Japan (NIKKEI 225)	(14.6%)	(16.6%)	(8.6%)	(9.6%)
Emerging Markets (MSCI Emerging Markets)	(7.5%)	(7.4%)	(14.6%)	(10.3%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/18

Corrections are normal

RUSSELL 1000 INDEX – CUMULATIVE TRADING DAYS SINCE LOSS OF GIVEN MAGNITUDE



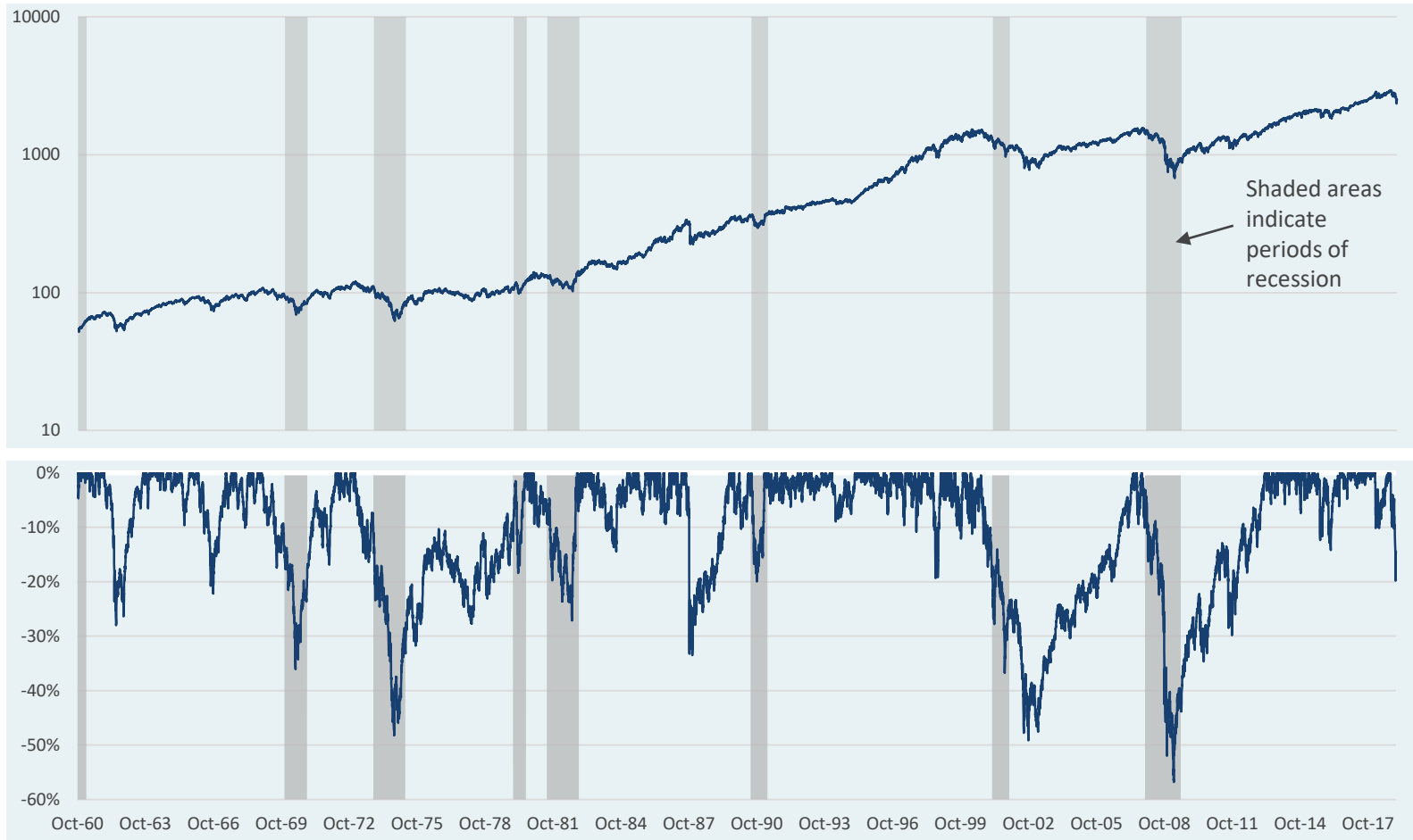
5% and 10% corrections occur regularly

The recent 20% drawdown is more notable, as equity drops of this size have happened once per cycle, on average

Source: Verus, FTSE Russell, as of 12/31/18

Drawdowns of greater than 20% occur less frequently

S&P 500 INDEX (UPPER PANEL) AND DRAWDOWN FROM PEAK (LOWER PANEL)



Drawdowns of greater than 20% have typically been associated with economic recessions

The recent drawdown appears overdone based on economic conditions

Source: Bloomberg, Verus, as of 12/31/18, recession start and end dates are from the NBER

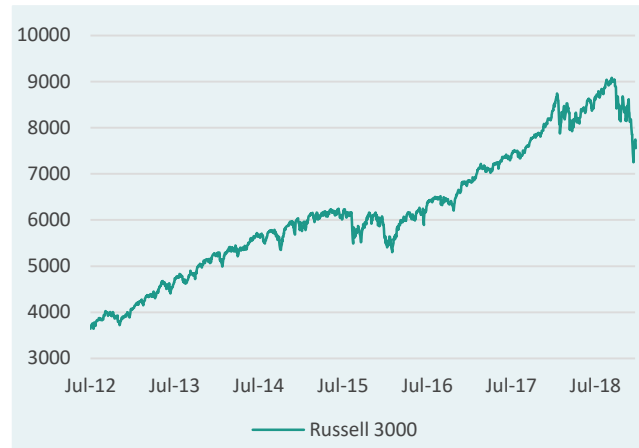
Domestic equity

U.S. equities experienced their worst quarter since 2008 as the S&P 500 Index returned -13.5%. For much of 2018, strong realized and expected earnings growth more than offset rising risk premiums (i.e. February sell-off) and discount rates as shown below in the middle chart. However, when cracks appeared in the growth story, influenced by poor economic data as well as profit warnings from companies, this support quickly vanished. The sharp drawdown, particularly in December, was also influenced by pockets of illiquidity in the market that exacerbated the move lower.

The question for investors now becomes whether the recent drawdown was a healthy reset of the pricing of earnings and risk premia, or whether it was a more urgent warning signal of a deterioration in the growth and profit cycle. We believe it to be more of the former rather than the latter, and that the market priced in an overly pessimistic view of macro conditions. However, we also recognize the growing headwinds to equities, including slowing global growth, further potential monetary tightening, and high debt levels. These conditions will likely result in sustained higher volatility, consistent with previous late cycle experiences.

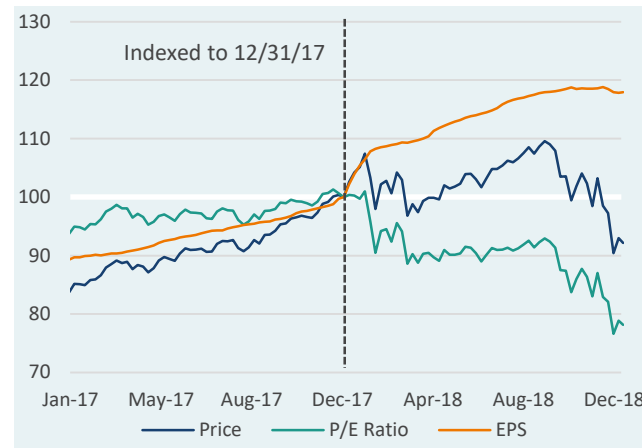
We maintain a neutral view on U.S. equities

U.S. EQUITIES



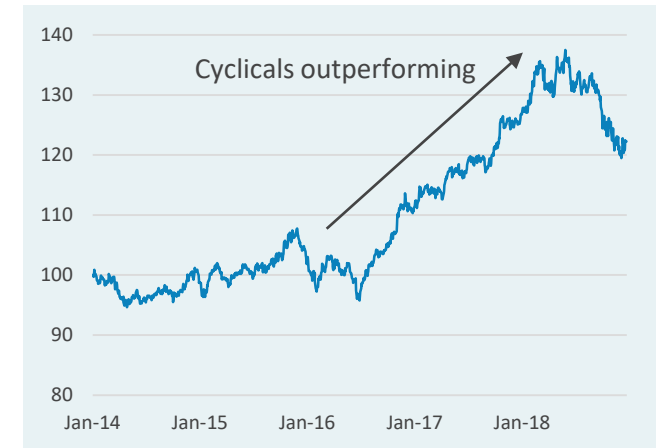
Source: Russell Investments, as of 12/31/18

S&P 500 PRICE MOVEMENT ATTRIBUTION



Source: Bloomberg, as of 12/31/18

CYCLICALS-DEFENSIVES RETURN SPREAD



Source: Bloomberg, MSCI, as of 12/31/18

Domestic equity size & style

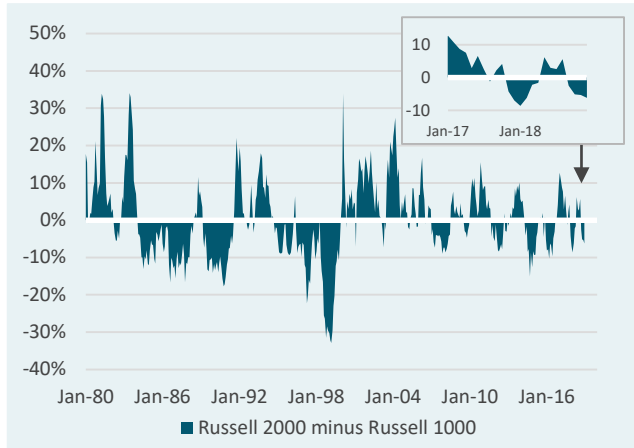
Large cap equities (Russell 1000 -13.8%) significantly outperformed small cap equities (Russell 2000 -20.2%) during the quarter. It may not be surprising that small cap equities underperformed, given the broad risk-off moves during this period. Growth stocks underperformed value stocks during the quarter (Russell 1000 Growth -15.9% vs. Russell 1000 Value -11.7%) for the first time since Q4 2016.

The sector weights in large-cap style benchmarks explain most of the recent value underperformance. Over the past

year, Energy, Materials, and Financials returned -18.1%, -14.7%, and -13.0%, respectively. These sectors are heavily weighted with value stocks, which resulted in a large drag to value. Information technology was an outperforming sector with a return of -0.3% during the period.

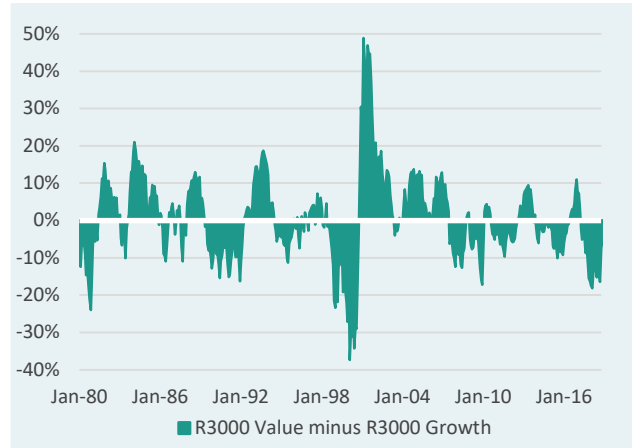
Long spans of style (size, value) underperformance is, and will always be, discouraging for investors. Similar to an investment in the broader equity market, we should expect to see rough patches of performance through time.

SMALL CAP VS LARGE CAP (YOY)



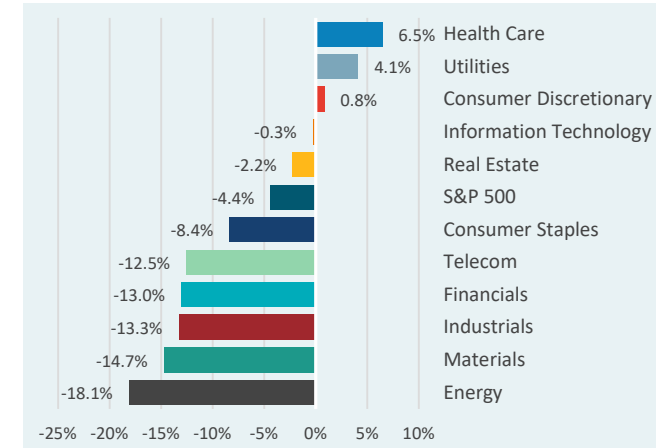
Source: FTSE, as of 12/31/18

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/18

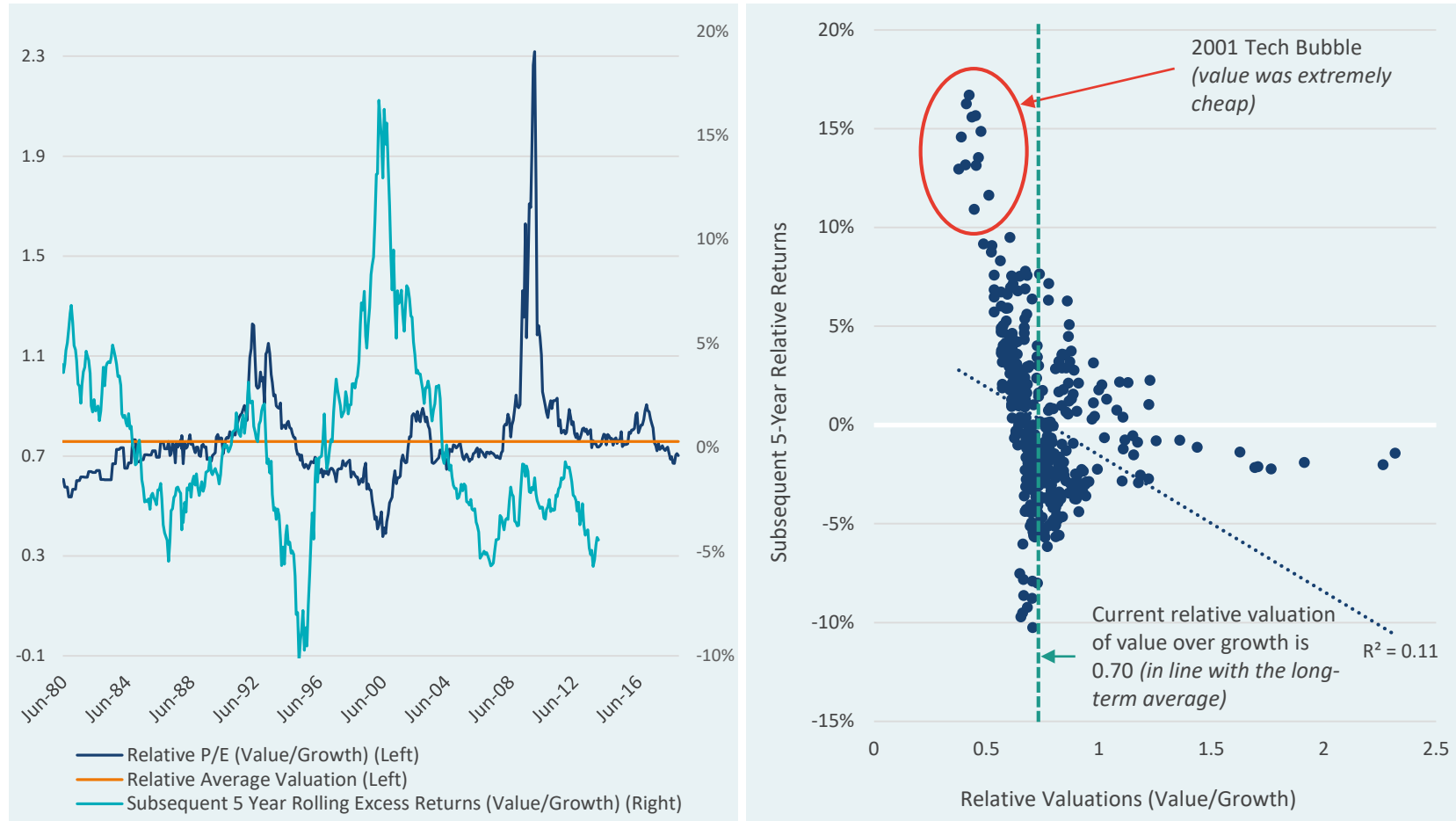
1-YEAR S&P 500 SECTOR RETURNS



Source: Morningstar, as of 12/31/18

Value – extreme prices indicate opportunity

But the price of value stocks is in-line with the long-term average



Although value has delivered an extended period of poor performance, value stocks are not cheap

Source: Verus, FTSE Russell, as of 12/31/18

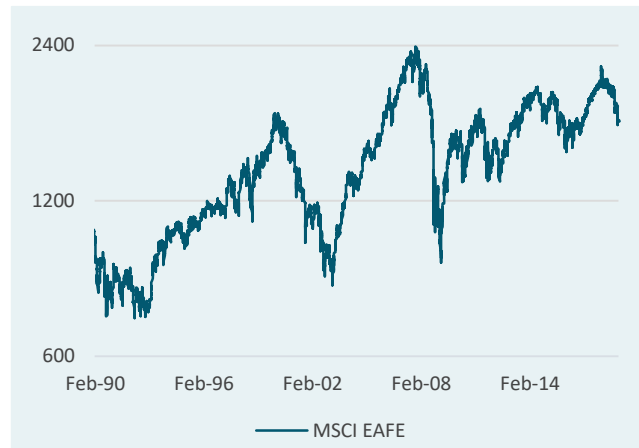
International developed equity

International developed equities sold off alongside U.S. equities. On an unhedged basis, the MSCI EAFE Index returned -12.5% in Q4 (-11.6% on a currency hedged basis). The three major equity markets in the EAFE Index – Japan, the Eurozone, and the UK – were all down more than 10%. The key factors that may have driven U.S. equities lower, most notably concerns over slowing global growth and central bank tightening, likely played an important role in non-U.S. developed markets. These concerns were particularly acute in the Eurozone where economic data routinely missed expectations, while the ECB officially

announced the end to its asset purchase program in December.

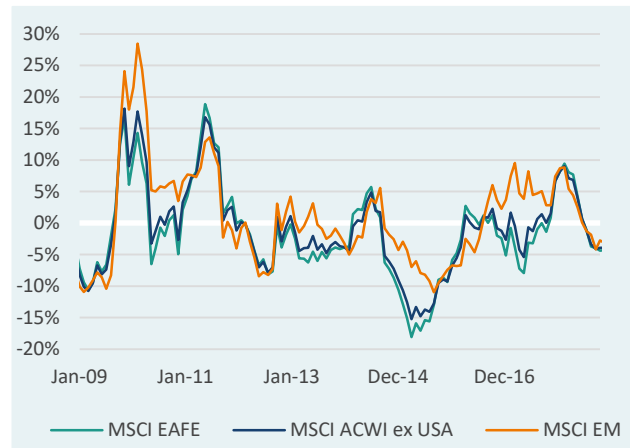
International developed equity markets are still cheap on both an absolute and relative basis at 11.9x forward earnings, but we believe there are good reasons for this pricing in certain markets. Within equity allocations, we are pessimistic on EAFE equities due to a negative view on the Eurozone. We believe slowing economic growth at the same time political risks are increasing and the ECB is unable to meaningfully ease policy present material headwinds to equity performance.

INTERNATIONAL DEVELOPED EQUITIES



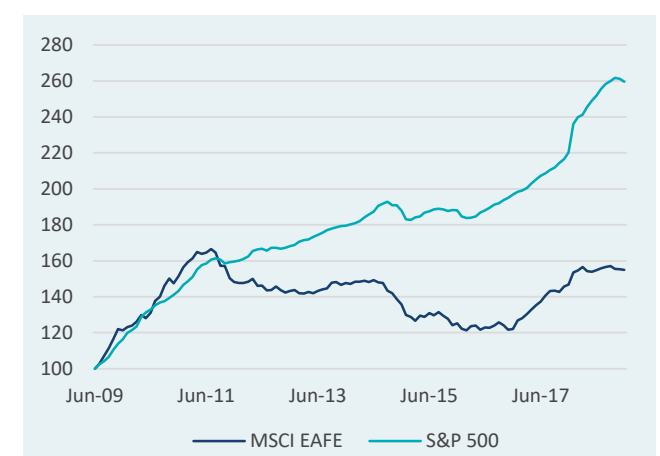
Source: MSCI, as of 12/31/18

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 12/31/18

EARNINGS PER SHARE



Source: Bloomberg, as of 12/31/18, indexed to earnings trough

Equity return behavior

U.S. (INDEXED TO START OF 2018)



EX U.S. (INDEXED TO START OF 2018)



U.S. and international equity prices failed to keep up with earnings growth during 2018

This has resulted in much cheaper equity valuations

Source: Bloomberg, as of 12/31/18, the U.S. and ex-U.S. equity markets are represented by the S&P 500 Index and MSCI ACWI ex U.S. Index, respectively

Emerging market equity

Emerging market equities were the top performer in Q4, as these markets (MSCI EM -7.5%) experienced much less pain than developed (S&P 500 -13.5%, MSCI EAFE -12.5%) during the equity sell-off. Currency depreciation stabilized in Q4 (JP Morgan EM Currency Index +0.2%) and emerging market crises concerns faded from the news headlines.

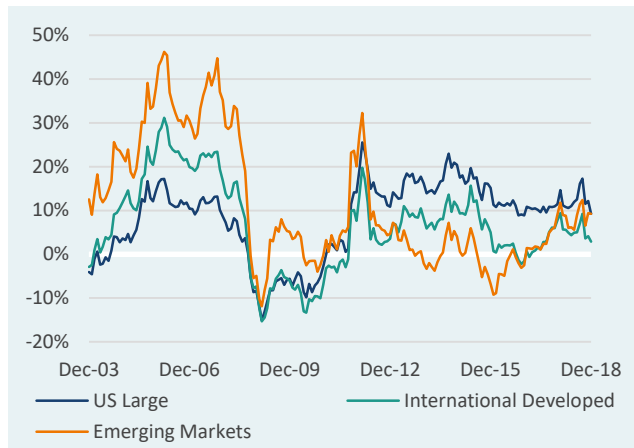
Valuations are near their long-term average, but remain much cheaper than developed market equities. Sentiment around emerging markets seems to be improving as the extreme negativity of 2018 dissipates, which creates possible

upside surprise if investors decide these fears were overblown. Very depressed currencies may also provide a performance tailwind in the event of mean reversion. Overall, we maintain our preference for the asset class.

Decelerating global growth and rising probability of recession do present unique risks to emerging markets, however, as these market typically exhibit a higher beta during market downside and upside moves. We will be watching global developments closely and will update our emerging market views as appropriate.

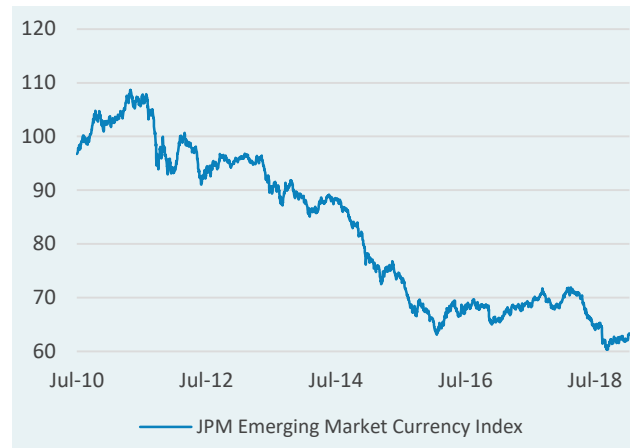
EM equities were the top performer in Q4

EQUITY PERFORMANCE (3-YR ROLLING)



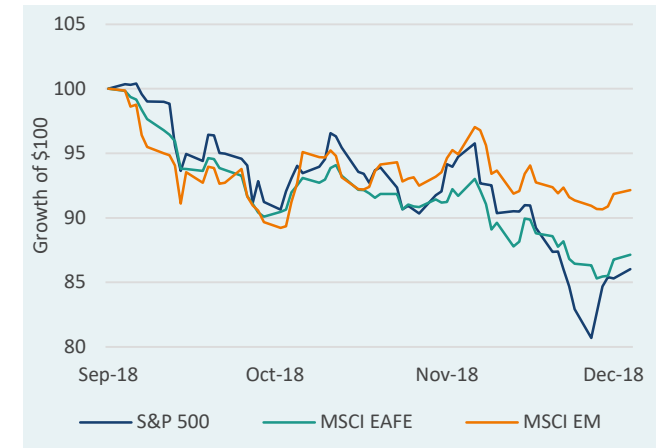
Source: Standard & Poor's, MSCI, as of 12/31/18

EMERGING MARKET CURRENCY MOVEMENT



Source: JP Morgan, as of 12/31/18

Q4 CUMULATIVE PERFORMANCE



Source: Standard & Poor's, MSCI, as of 12/31/18

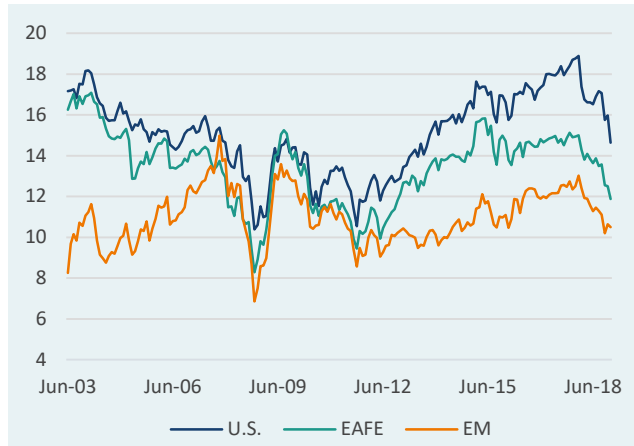
Equity valuations

The sharp drop in global equity prices overwhelmed small downward adjustments to earnings expectations, resulting in materially lower forward P/E multiples. In the U.S., EAFE, and EM regions, forward P/E ratios declined by 13.1%, 12.4%, and 5.5%, respectively in Q4. Depending on the period of analysis, many equity markets could now be considered fairly valued relative to their own history (U.S., EM) and others could be considered outright cheap (EAFE). In the U.S., the 12-month forward P/E ratio was 14.6x at the end of December, placing it below the median value of the past 15 years.

expensive is not a straightforward exercise. For one, as we have noted in the past, the broader macro environment (namely real interest rates and inflation) can strongly influence value. Higher (lower) real interest rates and inflation demand (higher) lower equity valuations, all else equal. Further, conclusions on the cheapness/richness of equities at any point in time depend on this metric. For example, trailing earnings may suffer from being backward-looking, while forward earnings are subject to forecast error and analyst bias. Particularly when looking at the forward P/E ratio, we caution against naively extrapolating recent earnings growth into the future.

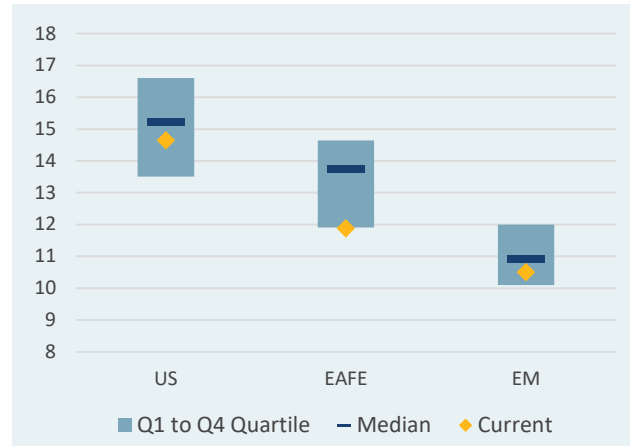
Assessing whether or not an equity market is cheap or

FORWARD P/E RATIOS



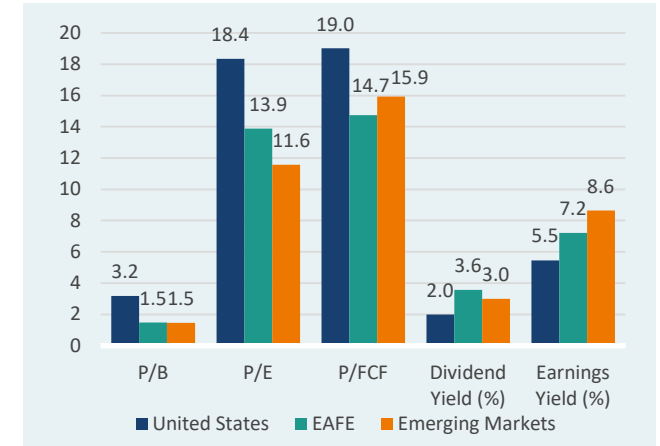
Source: MSCI, as of 12/31/18

FORWARD P/E RATIO DISTRIBUTION (15-YR)



Source: Verus, MSCI, as of 12/31/18

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, as of 12/31/18 - trailing P/E

Equity volatility

Equity volatility jumped in October, and remained elevated throughout the rest of the year. The VIX Index of implied volatility for the S&P 500 Index averaged 21 in the fourth quarter, above its long-term average of around 18, and hit a high of 36 on December 24th. Equities also experienced frequent large intra-day swings, particularly in December, that are not captured by daily volatility measures. Extremely low liquidity during the end of the year likely exacerbated market movements and augmented volatility. The increase in volatility was more acute in the U.S. than other equity markets – the trailing

one-year volatility for the S&P 500 Index was higher than both the MSCI EAFE and EM Indices for the first time since 2008.

Equity volatility rose in Q4

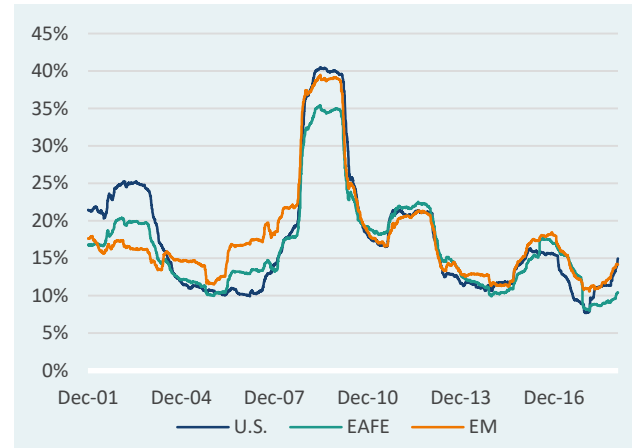
While volatility has certainly been extreme relative to the recent past, it has been much more normal when compared to a longer history. We believe investors should expect higher volatility moving forward as we continue to progress into the later stages of the cycle.

U.S. IMPLIED VOLATILITY (VIX)



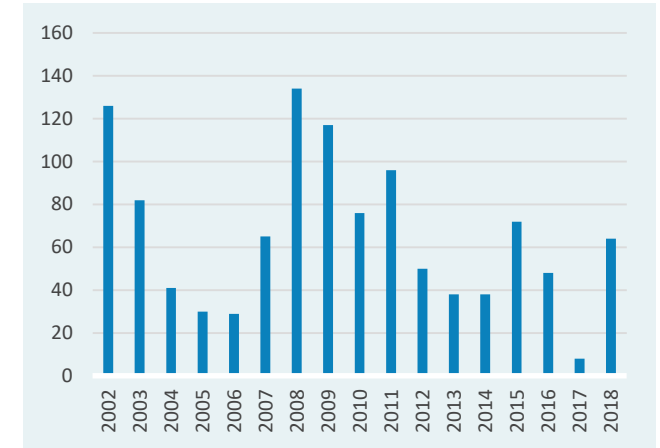
Source: CBOE, as of 12/31/18

REALIZED 1-YEAR ROLLING VOLATILITY



Source: Bloomberg, as of 12/31/18

S&P 500 – NUMBER OF >1% DAILY MOVES



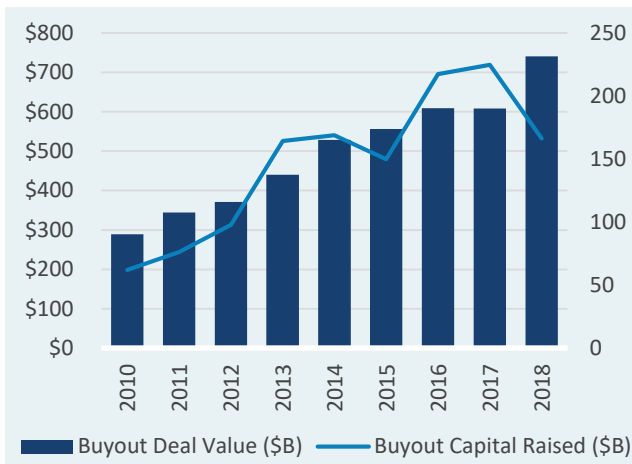
Source: Bloomberg, as of 12/31/18, includes down and up moves

Private equity

Deals increased in buyouts and venture; multiples are steady; buyout fundraising has slowed

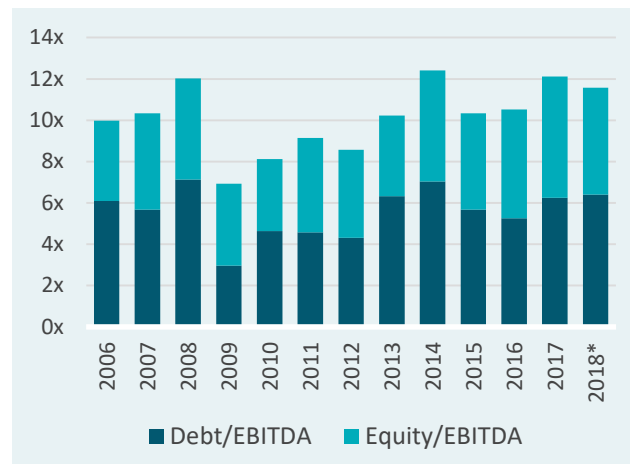
- Buyout activity has continued to increase in 2018. Through the fourth quarter buyouts are up 21.8% and 4.7% when measured by dollar value and number of transactions, respectively. The size of the average buyout, \$155.43, has increased from 2017, \$133.63. Unlike deal flow, fund capital raising has slowed from the peaks of 2017. Only 186 buyout funds representing \$166 billion closed so far this year, down from 235 funds representing a record \$225 billion in 2017.
- Buyout multiples slightly decreased from 2017. Average EV/EBITDA is 11.6x through December 31, 2018 (down from 11.9x in 2017) with debt multiples averaging 6.2x through the third quarter. Debt as a percentage of transaction value hovers around 54%.
- Venture capital fundraising and deal volumes continue to set records. \$55 billion of venture capital has been raised in the U.S. in 2018, an increase of 63% over the same period last year. Similarly, the amount of venture deals are up 57.8%. In fact, 2018 venture deal volume (\$131 billion) exceeds the record of \$82 billion that was set in 2017.
- Balancing high deal multiples and a growing number of deals against a slowdown in fundraising, we advocate selectivity in fund investments.

BUYOUTS DEAL VOLUME & CAPITAL RAISED



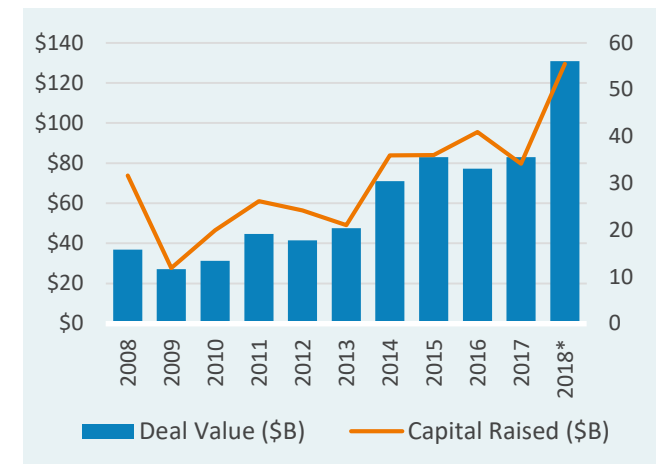
Source: PitchBook

TRANSACTION MULTIPLES



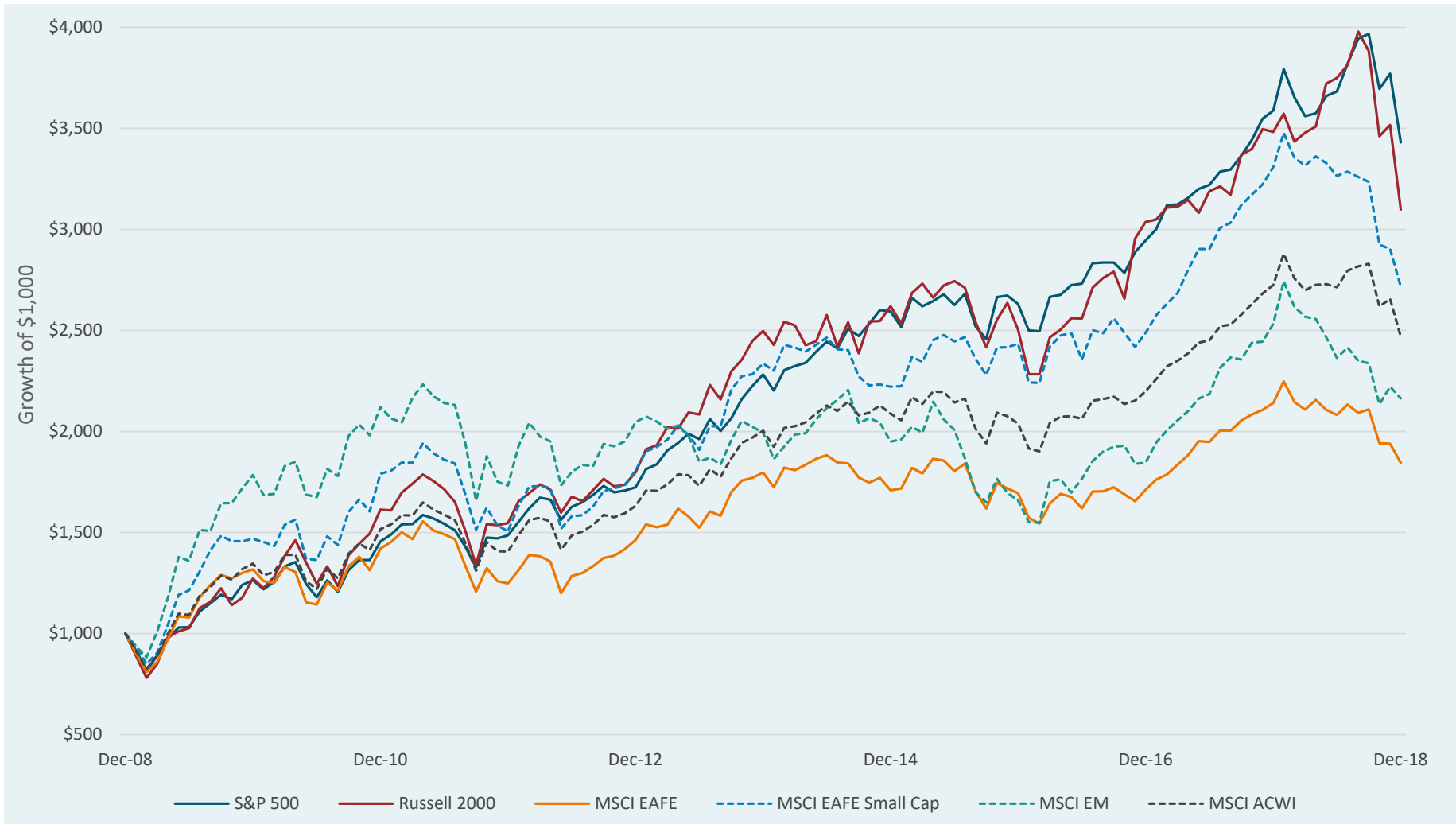
Source: PitchBook

VENTURE DEAL VOLUME & FUNDRAISING



Source: PitchBook

Long-term equity performance



Source: Morningstar, as of 12/31/18

Other assets

Currency

The U.S. dollar appreciated by 1.8% during the quarter, and 7.2% in 2018 based on the Broad Trade Weighted Dollar Index. The strong appreciation of the dollar last year was influenced by a number of factors, including stronger relative U.S. economic growth, higher relative interest rates, and weakness in other currencies such as the euro and British pound. The recent dollar strength in Q4 was due in part to safe haven demand amid equity market turbulence as these moves came despite the market pricing considerably less tightening from the Fed.

Emerging market currencies stabilized over the quarter, and recovered slightly from the recent drawdown in Q3. The JPMorgan Emerging Market Currency Index appreciated by 0.2% in Q4.

The U.S. dollar appreciated to a cycle high

From a value perspective (based on purchasing power parity), the U.S. dollar remains expensive, particularly versus the euro, yen, and British pound.

U.S. DOLLAR TRADE WEIGHTED INDEX



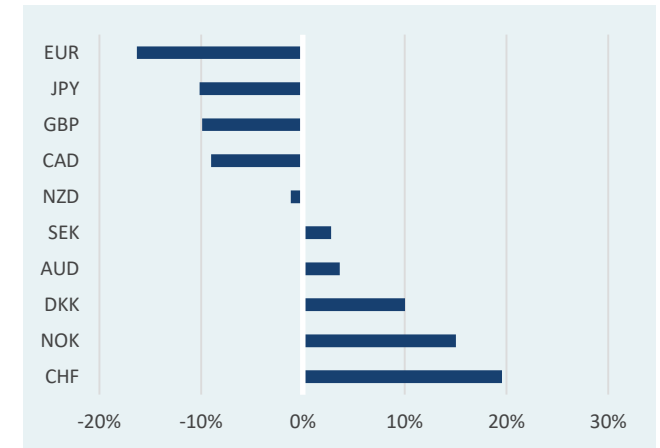
Source: Federal Reserve, as of 12/26/18

JPM EMERGING MARKET CURRENCY INDEX



Source: Bloomberg, JPMorgan, as of 12/31/18

U.S. DOLLAR VALUE (PPP)



Source: Bloomberg, OECD, as of 12/31/18

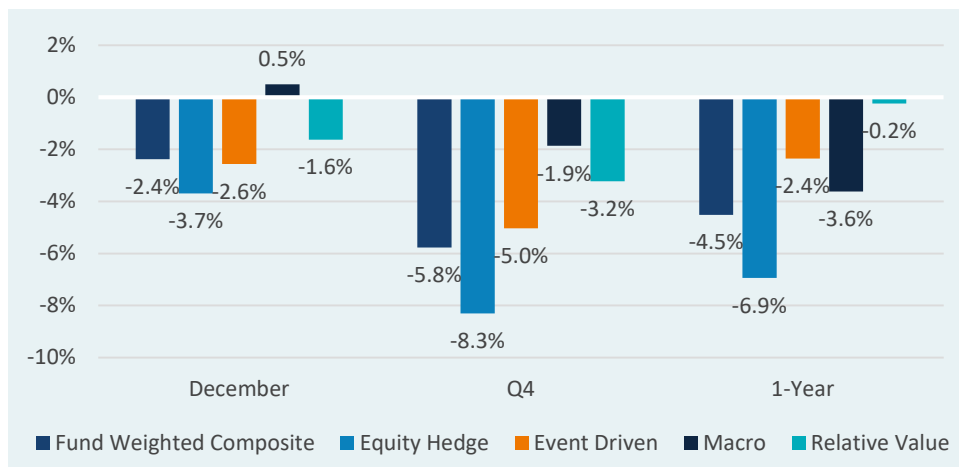
Hedge funds

Hedge funds Q4 losses pushed full-year 2018 results into negative territory (HFRI Fund Weighted Composite -5.8% in Q4; -4.5% in 2018). Most hedge funds stumbled in October as equity markets experienced a painful reversal ranging from -5% to -10%. The industry fared relatively better in December with hedge funds down -2.4% while the S&P 500 Index lost -9.0%. The approximate 6.6% performance differential was the largest observed since February 2009. As a group, macro strategies performed best in December and for the quarter. Defensively oriented discretionary macro strategies and currency strategies stood out with strong

relative performance. Equity hedge strategies lagged the universe, and products with higher beta and value exposures were hit the hardest as equity markets fell.

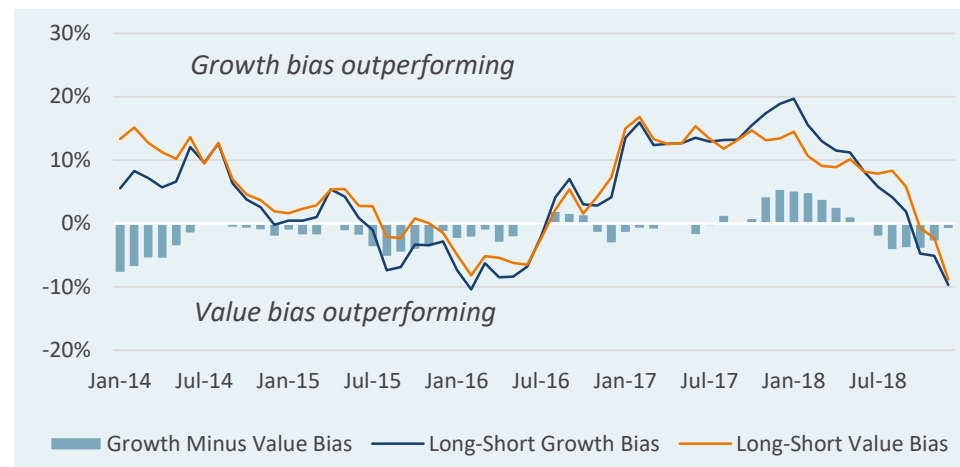
For managers trading fixed income securities, strategies focused on sovereign (-1.2%) and asset backed bonds (-1.7%) preserved capital relatively well during the market turbulence. Convertible arbitrage managers fared worse (-5.1%) due in part to greater relative sensitivity to equity market volatility.

HFRI HEDGE FUND STYLE PERFORMANCE



Source: HFRI, as of 12/31/18

GROWTH VS VALUE BIAS IN LONG-SHORT EQUITY MANAGERS (1-YR ROLLING PERFORMANCE)



Source: HFRI, as of 12/31/2018

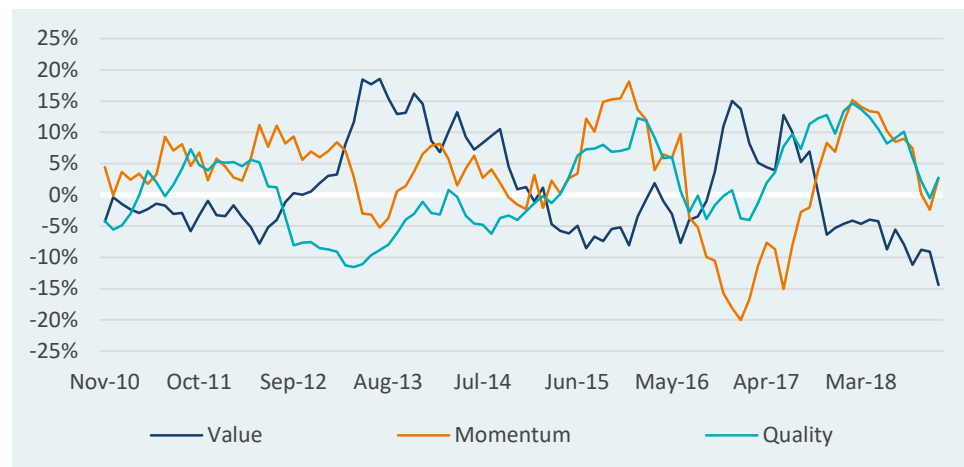
Alternative beta

Alternative beta strategy investors endured a difficult year, with many strategies performing one or two standard deviations below their historical average. While the median strategy we follow delivered negative returns during the fourth quarter, we noted dispersion across the space as a few products posted positive results. Factor exposures, particularly in the equity markets, continue to account for a meaningful portion of poor outcomes. While traditional value factors earned modestly positive results

during the quarter, this performance was offset by losses in momentum and size-related factors.

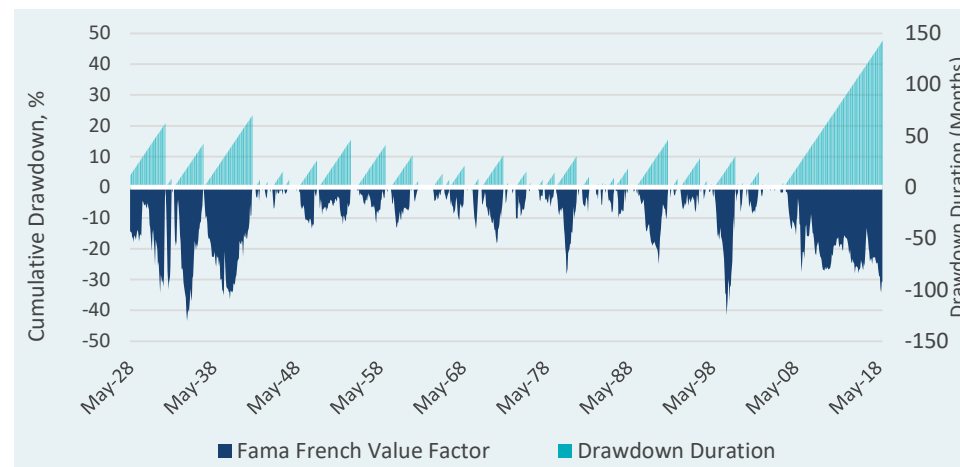
We continue to believe that alternative beta strategies are not “broken” per se, but instead have reflected extreme drawdowns in some factors and muted returns in others. We will continue to closely monitor these strategies and discuss the situation with managers in 2019.

U.S. MARKET NEUTRAL FACTOR PERFORMANCE (12-MONTH ROLLING)



Source: S&P Dow Jones, Thematic Market Neutral Indices, as of 12/31/18

VALUE FACTOR DRAWDOWN MAGNITUDE AND DURATION



Source: Kenneth French Data Library, as of 11/30/18

Appendix

Periodic table of returns

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	5-Year	10-Year
Real Estate	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	5.3	10.4	15.3
Cash	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	9.0	13.5
US Bonds	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	8.2	13.3
Large Cap Growth	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	5.9	12.0
Hedge Funds of Funds	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	5.1	11.2
Large Cap Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	4.4	10.4
60/40 Global Portfolio	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	3.6	8.0
Large Cap Value	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	3.1	7.3
Small Cap Growth	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	2.5	6.8
Small Cap Equity	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	1.6	6.3
Commodities	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	1.5	3.5
Small Cap Value	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	0.6	3.2
International Equity	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	0.5	0.4
Emerging Markets Equity	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	-8.8	-3.8

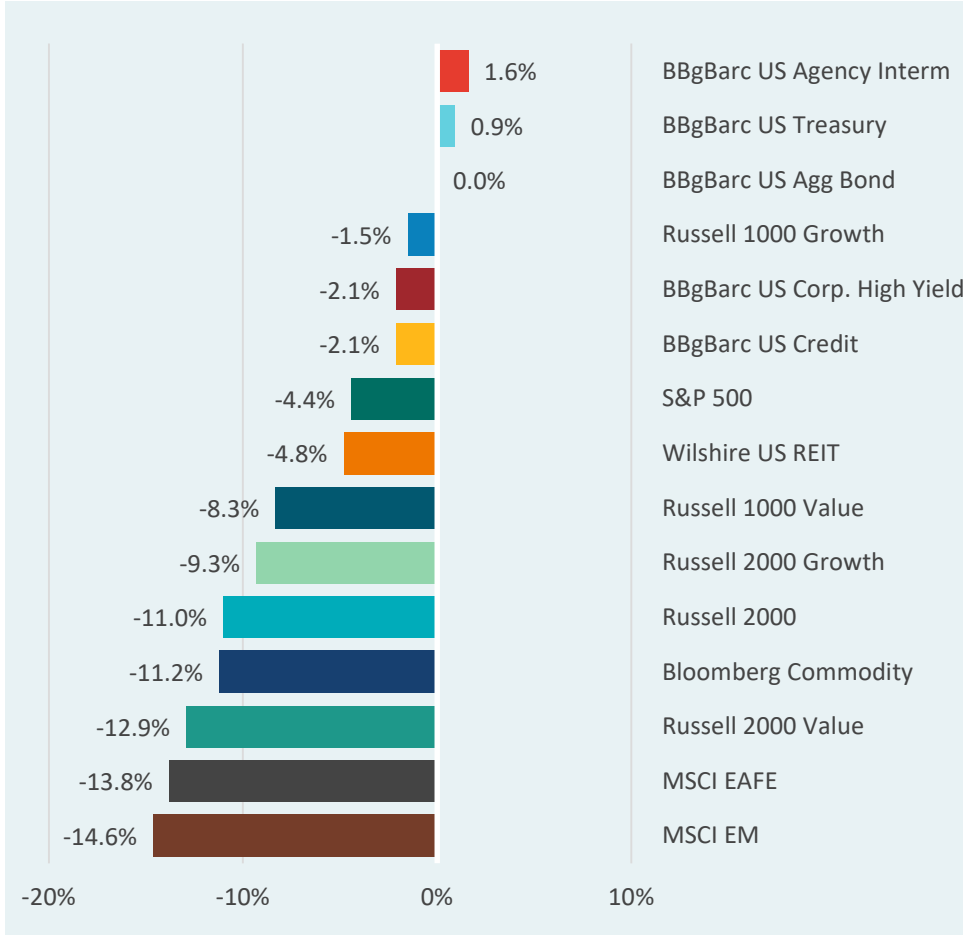
BEST
↑
↓
WORST

- Large Cap Equity
- Small Cap Growth
- Commodities
- Large Cap Value
- International Equity
- Real Estate
- Large Cap Growth
- Emerging Markets Equity
- Hedge Funds of Funds
- US Bonds
- 60% MSCI ACWI/40% BBgBarc Global Bond
- Cash

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 9/30/18.

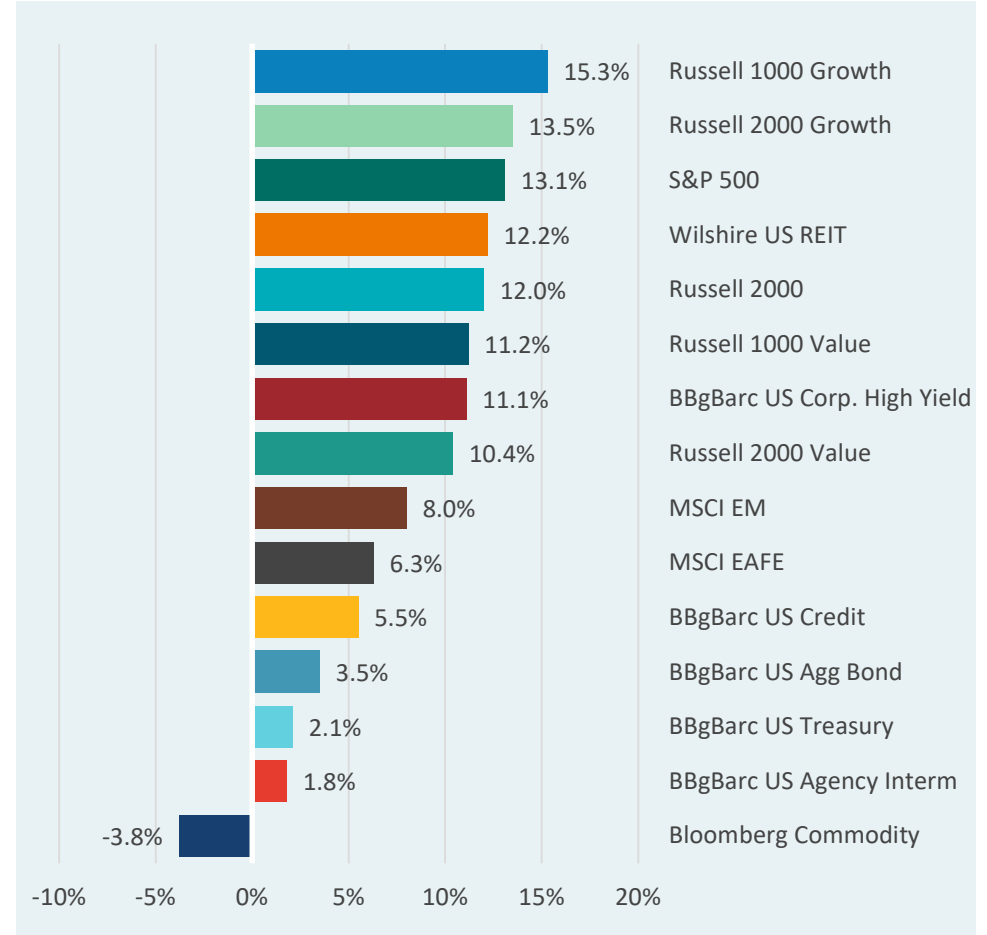
Major asset class returns

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/18

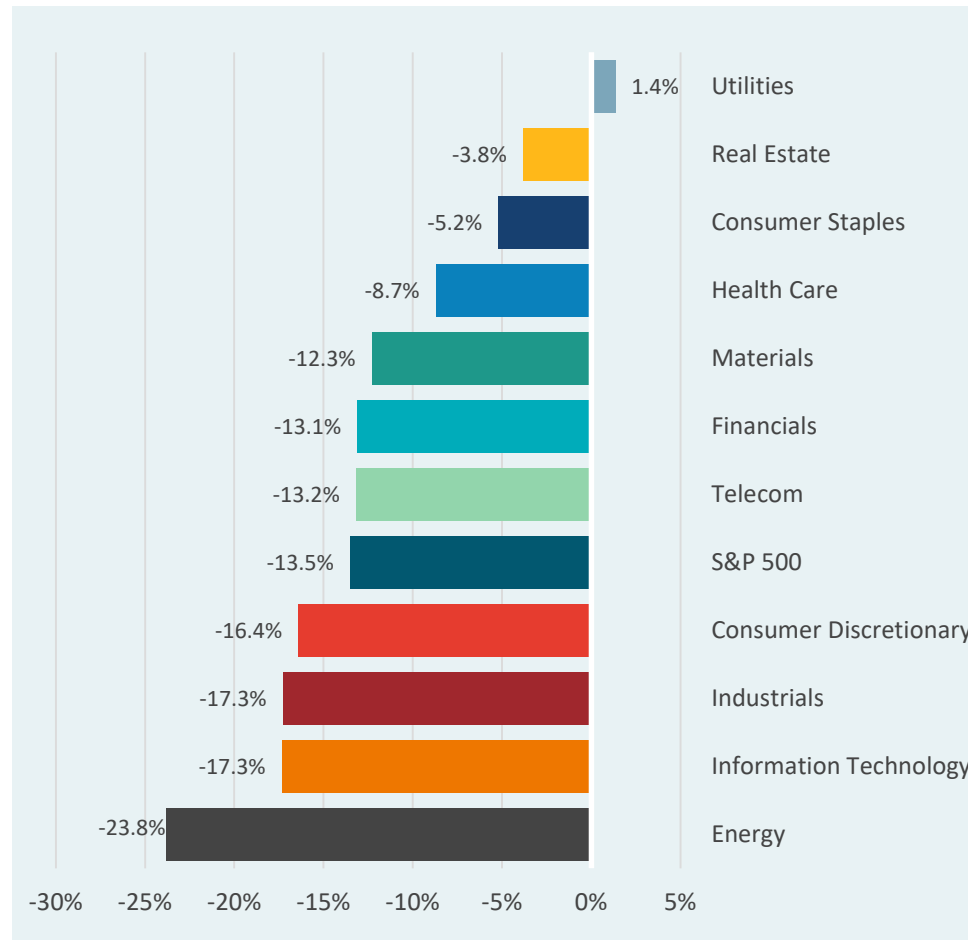
TEN YEARS ENDING DECEMBER



Source: Morningstar, as of 12/31/18

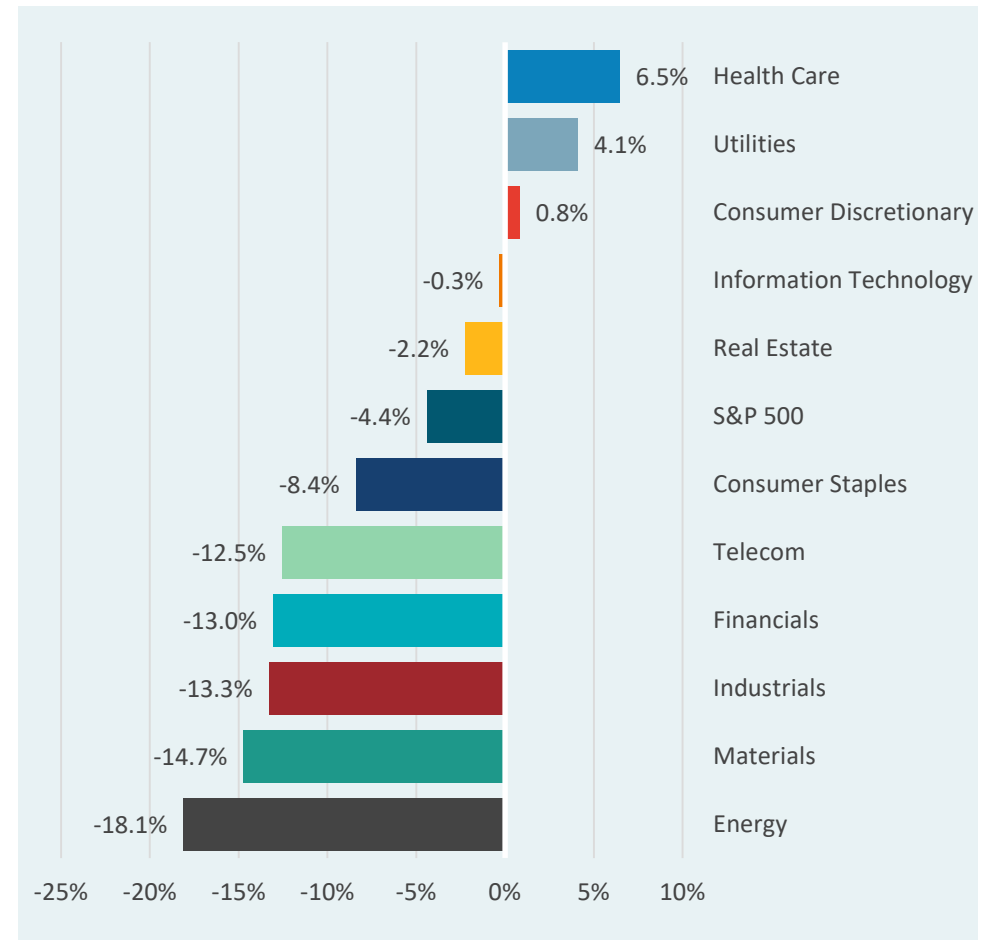
S&P 500 sector returns

Q4



Source: Morningstar, as of 12/31/18

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/18

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	(9.0)	(13.5)	(4.4)	(4.4)	9.3	8.5	13.1
S&P 500 Equal Weighted	(9.7)	(13.9)	(7.6)	(7.6)	8.0	7.1	15.0
DJ Industrial Average	(8.6)	(11.3)	(3.5)	(3.5)	12.9	9.7	13.2
Russell Top 200	(8.8)	(13.2)	(3.1)	(3.1)	9.9	9.0	13.0
Russell 1000	(9.1)	(13.8)	(4.8)	(4.8)	9.1	8.2	13.3
Russell 2000	(11.9)	(20.2)	(11.0)	(11.0)	7.4	4.4	12.0
Russell 3000	(9.3)	(14.3)	(5.2)	(5.2)	9.0	7.9	13.2
Russell Mid Cap	(9.9)	(15.4)	(9.1)	(9.1)	7.0	6.3	14.0
Style Index							
Russell 1000 Growth	(8.6)	(15.9)	(1.5)	(1.5)	11.1	10.4	15.3
Russell 1000 Value	(9.6)	(11.7)	(8.3)	(8.3)	7.0	5.9	11.2
Russell 2000 Growth	(11.7)	(21.7)	(9.3)	(9.3)	7.2	5.1	13.5
Russell 2000 Value	(12.1)	(18.7)	(12.9)	(12.9)	7.4	3.6	10.4

INTERNATIONAL EQUITY

Broad Index							
MSCI ACWI	(7.0)	(12.8)	(9.4)	(9.4)	6.6	4.3	9.5
MSCI ACWI ex US	(4.5)	(11.5)	(14.2)	(14.2)	4.5	0.7	6.6
MSCI EAFE	(4.9)	(12.5)	(13.8)	(13.8)	2.9	0.5	6.3
MSCI EM	(2.7)	(7.5)	(14.6)	(14.6)	9.2	1.6	8.0
MSCI EAFE Small Cap	(6.4)	(16.0)	(17.9)	(17.9)	3.7	3.1	10.5
Style Index							
MSCI EAFE Growth	(4.8)	(13.3)	(12.8)	(12.8)	2.9	1.6	7.1
MSCI EAFE Value	(4.9)	(11.7)	(14.8)	(14.8)	2.8	(0.6)	5.5
Regional Index							
MSCI UK	(3.8)	(11.8)	(14.2)	(14.2)	1.6	(1.7)	6.8
MSCI Japan	(6.7)	(14.2)	(12.9)	(12.9)	3.4	3.1	5.3
MSCI Euro	(4.8)	(13.2)	(16.4)	(16.4)	2.4	(0.9)	4.4
MSCI EM Asia	(3.2)	(9.3)	(15.5)	(15.5)	8.6	3.9	9.8
MSCI EM Latin American	(0.8)	0.4	(6.6)	(6.6)	14.9	(1.7)	5.0

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	0.5	(0.4)	(1.3)	(1.3)	2.1	1.7	3.6
BBgBarc US Treasury Bills	0.2	0.6	1.9	1.9	1.0	0.6	0.4
BBgBarc US Agg Bond	1.8	1.6	0.0	0.0	2.1	2.5	3.5
Duration							
BBgBarc US Treasury 1-3 Yr	0.8	1.3	1.6	1.6	0.9	0.8	1.0
BBgBarc US Treasury Long	5.5	4.2	(1.8)	(1.8)	2.6	5.9	4.1
BBgBarc US Treasury	2.2	2.6	0.9	0.9	1.4	2.0	2.1
Issuer							
BBgBarc US MBS	1.8	2.1	1.0	1.0	1.7	2.5	3.1
BBgBarc US Corp. High Yield	(2.1)	(4.5)	(2.1)	(2.1)	7.2	3.8	11.1
BBgBarc US Agency Interim	1.0	1.6	1.6	1.6	1.3	1.4	1.8
BBgBarc US Credit	1.5	0.0	(2.1)	(2.1)	3.2	3.2	5.5

OTHER

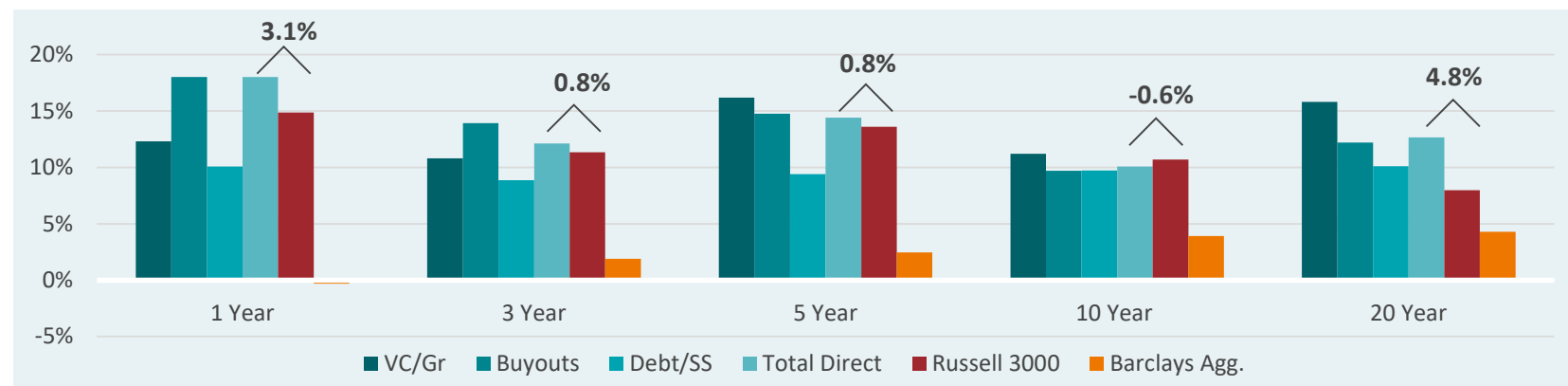
Index							
Bloomberg Commodity	(6.9)	(9.4)	(11.2)	(11.2)	0.3	(8.8)	(3.8)
Wilshire US REIT	(8.4)	(6.9)	(4.8)	(4.8)	2.1	7.9	12.2
CS Leveraged Loans	(2.3)	(3.1)	1.1	1.1	5.0	3.3	8.3
Alerian MLP	(8.3)	(16.3)	(11.9)	(11.9)	(1.6)	(6.9)	10.7
Regional Index							
JPM EMBI Global Div	1.3	(1.3)	(4.3)	(4.3)	5.2	4.8	8.2
JPM GBI-EM Global Div	1.3	2.1	(6.2)	(6.2)	5.9	(1.0)	3.5
Hedge Funds							
HFRI Composite	(2.0)	(5.4)	(4.1)	(4.1)	3.2	2.3	5.0
HFRI FOF Composite	(1.2)	(4.4)	(3.5)	(3.5)	1.5	1.5	3.2
Currency (Spot)							
Euro	1.0	(1.6)	(4.8)	(4.8)	1.7	(3.7)	(1.9)
Pound	(0.2)	(2.3)	(5.9)	(5.9)	(4.8)	(5.1)	(1.2)
Yen	3.5	3.5	2.7	2.7	3.1	(0.9)	(1.9)

Source: Morningstar, HFR, as of 12/31/18

Private vs. public performance

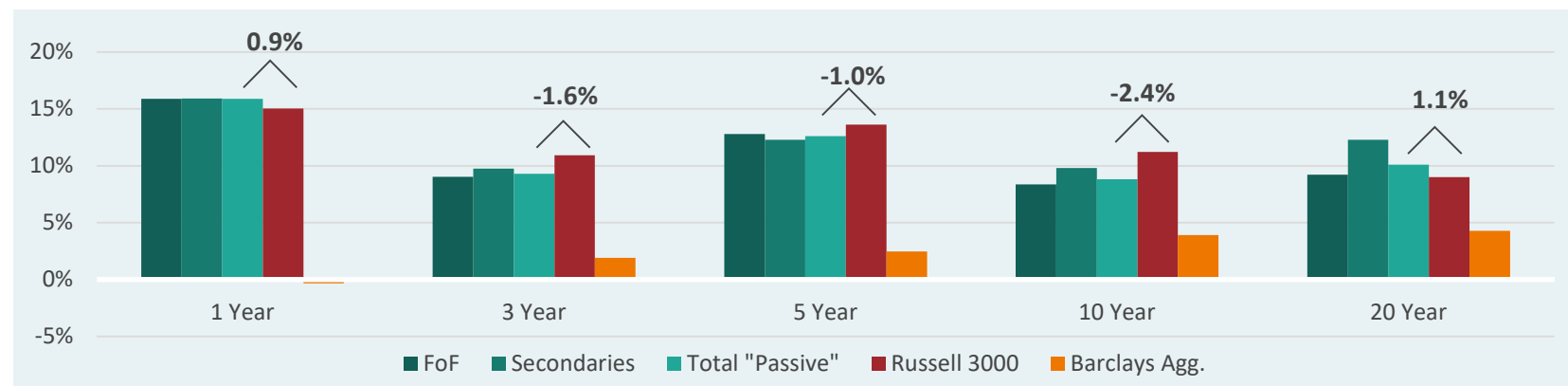
As of 6/30/2018

DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct private equity outperformed public equities across most time periods

"PASSIVE" STRATEGIES



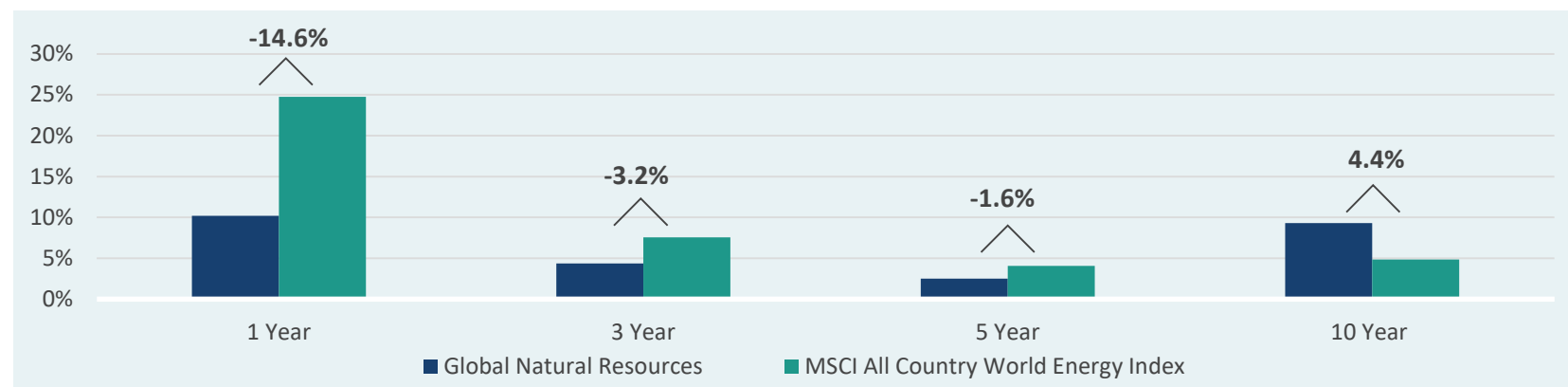
Fund-of-fund strategy performance relative to public equities has been mixed

Sources: Thomson Reuters Cambridge Universe's PME Module: U.S. Private Equity Funds sub asset classes as of June 30, 2018. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

Private vs. liquid real assets performance

As of 6/30/2018

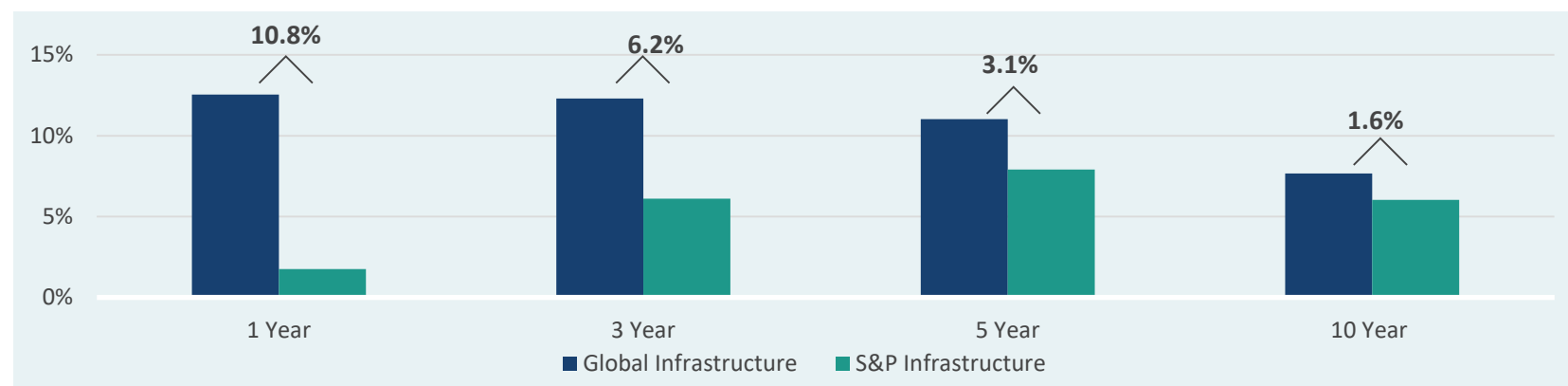
GLOBAL NATURAL RESOURCES FUNDS



Aside from the 10-year period, natural resource funds underperformed the public index

Infrastructure funds outperformed the public index across all periods

GLOBAL INFRASTRUCTURE FUNDS

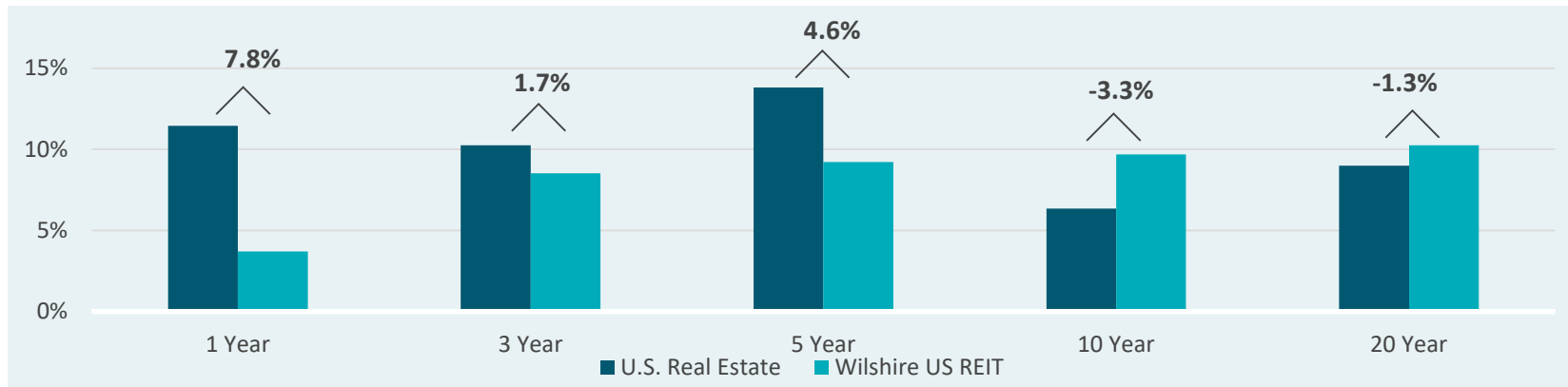


Sources: Thomson Reuters C|A PME: Global Natural Resources (vintage 2003 and later, inception of MSCI ACWI Energy benchmark) and Global Infrastructure (vintage 1996 and later, inception of S&P Infrastructure benchmark) universes as of June 30, 2018. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

Private vs. liquid & core real estate performance

As of 6/30/2018

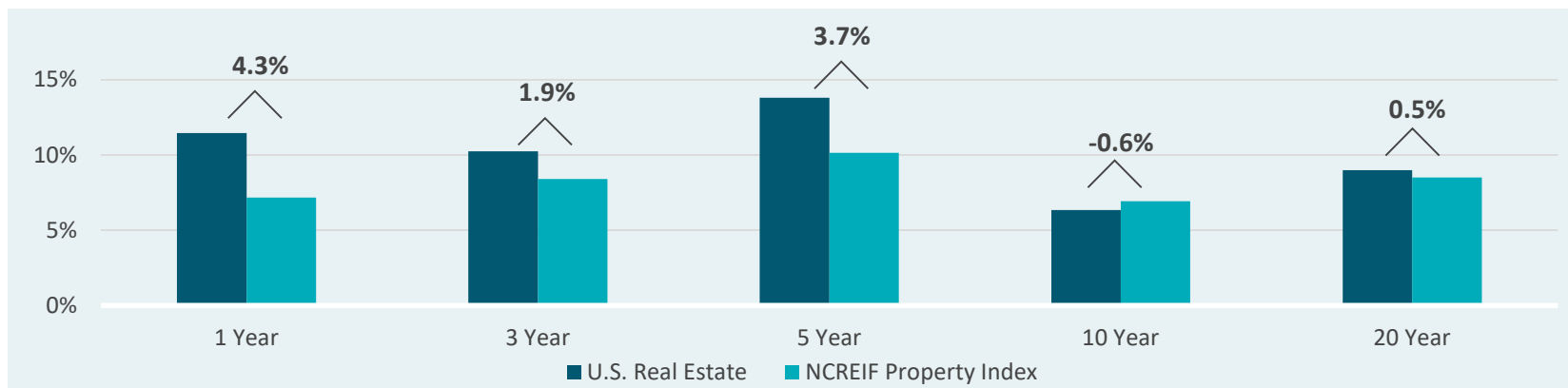
U.S PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



Private real estate performance relative to REITs has been mixed

Private real estate funds outperformed the index during most time periods

U.S. PRIVATE REAL ESTATE FUNDS VS. CORE FUNDS



Sources: Thomson Reuters C/A PME: Global and U.S. Real Estate universes as of June 30, 2018. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

Definitions

Bloomberg US Weekly Consumer Comfort Index - tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. (www.lanqerresearch.com)

University of Michigan Consumer Sentiment Index - A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. (www.Bloomberg.com)

NFIB Small Business Outlook - Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (<http://www.nfib-sbet.org/about/>)

NAHB Housing Market Index - the housing market index is a weighted average of separate diffusion indices for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula $(\text{Good-Poor} + 100)/2$ to the present and future sales series and $(\text{High/Very High-Low/Very Low} + 100)/2$ to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.

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San Luis Obispo County Pension Trust

Investment Performance Review
Period Ending: December 31, 2018



VERUSINVESTMENTS.COM

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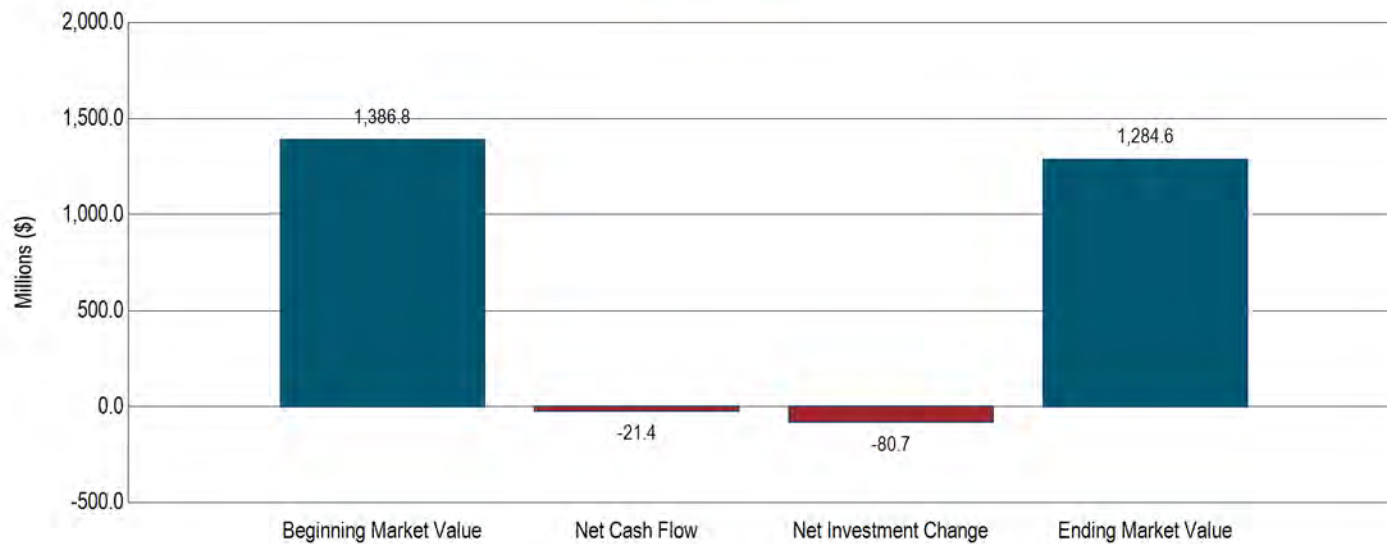
LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

Portfolio Reconciliation

	Last Three Months	One Year
Beginning Market Value	\$1,386,757,059	\$1,350,741,282
Net Cash Flow	-\$21,447,712	-\$21,338,379
Net Investment Change	-\$80,706,817	-\$44,800,373
Ending Market Value	\$1,284,602,531	\$1,284,602,531

Change in Market Value
Last Three Months



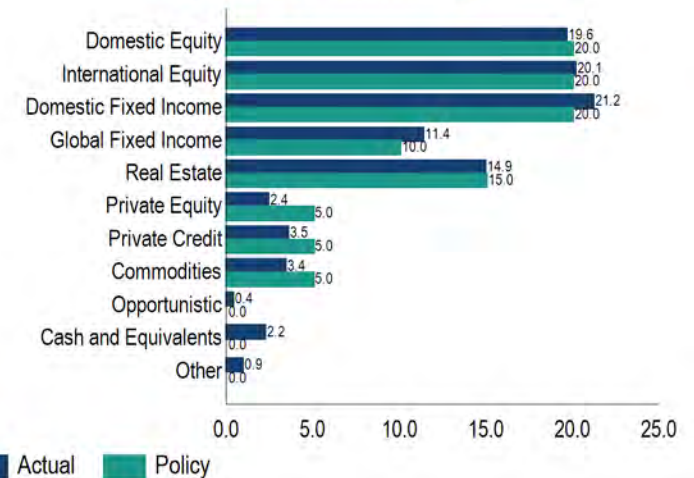
Contributions and withdrawals may include intra-account transfers between managers/funds.

Total Fund Executive Summary (Gross of Fees)

Period Ending: December 31, 2018

	QTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Total Fund	-5.9	13	-3.2	27	6.0	50	4.4	68
<i>Policy Index</i>	-5.6	10	-3.2	26	5.8	62	4.4	71
Total Fund ex Overlay	-5.9	13	-3.2	27	6.0	52	4.4	68
<i>Policy Index</i>	-5.6	10	-3.2	26	5.8	62	4.4	71
Total Domestic Equity	-13.7	18	-5.2	36	10.2	6	8.5	4
<i>Russell 3000</i>	-14.3	39	-5.2	36	9.0	31	7.9	21
Total International Equity	-12.3	50	-12.2	9	4.4	61	2.1	15
<i>MSCI ACWI ex USA Gross</i>	-11.4	30	-13.8	30	5.0	37	1.1	55
Total Domestic Fixed Income	-0.3	91	0.4	55	3.0	35	3.0	37
<i>BBgBarc US Aggregate TR</i>	1.6	23	0.0	69	2.1	66	2.5	60
Total Global Fixed	-0.3	38	-6.6	99	4.2	70	-0.5	96
<i>FTSE World Govt Bond Index</i>	1.8	1	-0.8	25	2.7	98	0.8	86
Total Real Estate	1.6	--	7.5	--	7.7	--	10.2	--
<i>NCREIF Property Index</i>	1.4	--	6.7	--	7.2	--	9.3	--
Total Commodities	-13.2	--	-12.4	--	1.5	--	-8.0	--
<i>Bloomberg Commodity Index TR USD</i>	-9.4	--	-11.2	--	0.3	--	-8.8	--
Total Private Equity	2.4	--	17.1	--	17.4	--	17.9	--
<i>Russell 3000 + 3%</i>	-13.6	--	-2.4	--	12.2	--	11.1	--
Total Private Credit	1.9	--	11.3	--	--	--	--	--
<i>BBgBarc High Yield +2% (Lagged)</i>	2.9	--	5.1	--	--	--	--	--
Total Cash	0.6	--	1.5	--	1.0	--	0.7	--
<i>91 Day T-Bills</i>	0.6	--	1.9	--	1.1	--	0.6	--
Total Opportunistic	7.1	--	25.2	--	14.4	--	10.5	--
<i>Russell 3000 + 3%</i>	-13.6	--	-2.4	--	12.2	--	11.1	--

Actual vs Target Allocation (%)



Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index



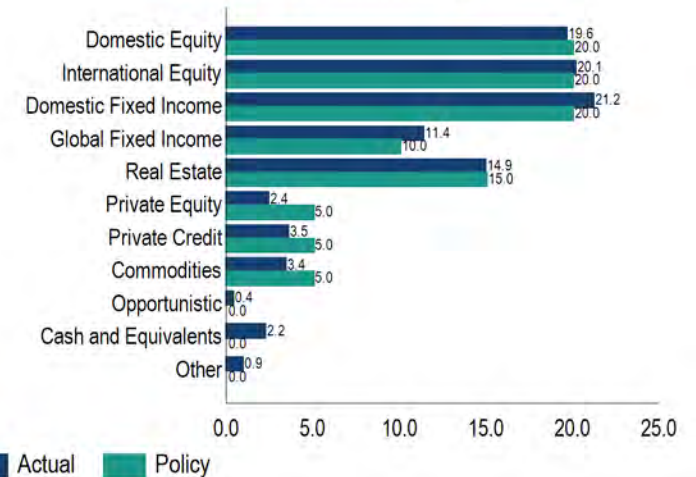
New Policy Index as of 10/1/2016: 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 +3%, 5% BBgBarc High Yield +2% (Lagged). Private Equity, Private Credit and Opportunistic composite returns are lagged by one quarter. Stone Harbor funded 7/9/13. Gresham TAP funded 8/30/13. Pacific Asset Corporate Loan funded 9/1/2014. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Harbourvest 2018 Global Fund L.P. funded 12/14/2018. All returns are (G) Gross of fees. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund Executive Summary (Net of Fees)

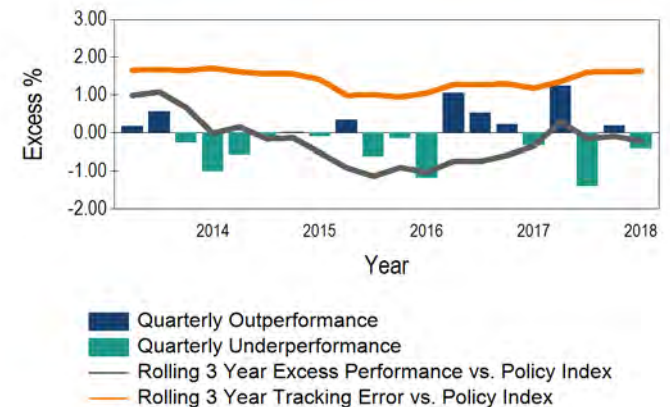
Period Ending: December 31, 2018

	QTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Total Fund	-6.0	14	-3.6	38	5.6	72	4.0	87
<i>Policy Index</i>	-5.6	10	-3.2	26	5.8	62	4.4	71
Total Fund ex Overlay	-6.0	14	-3.6	38	5.5	74	4.0	87
<i>Policy Index</i>	-5.6	10	-3.2	26	5.8	62	4.4	71
Total Domestic Equity	-13.8	23	-5.7	45	9.8	8	8.1	14
<i>Russell 3000</i>	-14.3	39	-5.2	36	9.0	31	7.9	21
Total International Equity	-12.4	53	-12.8	12	3.7	76	1.4	43
<i>MSCI ACWI ex USA Gross</i>	-11.4	30	-13.8	30	5.0	37	1.1	55
Total Domestic Fixed Income	-0.4	92	0.0	68	2.7	47	2.7	57
<i>BBgBarc US Aggregate TR</i>	1.6	23	0.0	69	2.1	66	2.5	60
Total Global Fixed	-0.5	40	-7.2	99	3.5	89	-1.1	99
<i>FTSE World Govt Bond Index</i>	1.8	1	-0.8	25	2.7	98	0.8	86
Total Real Estate	1.6	--	7.5	--	7.4	--	9.7	--
<i>NCREIF Property Index</i>	1.4	--	6.7	--	7.2	--	9.3	--
Total Commodities	-13.2	--	-12.4	--	1.3	--	-8.5	--
<i>Bloomberg Commodity Index TR USD</i>	-9.4	--	-11.2	--	0.3	--	-8.8	--
Total Private Equity	2.4	--	17.1	--	16.7	--	16.3	--
<i>Russell 3000 + 3%</i>	-13.6	--	-2.4	--	12.2	--	11.1	--
Total Private Credit	1.9	--	11.3	--	--	--	--	--
<i>BBgBarc High Yield +2% (Lagged)</i>	2.9	--	5.1	--	--	--	--	--
Total Cash	0.6	--	1.5	--	1.0	--	0.7	--
<i>91 Day T-Bills</i>	0.6	--	1.9	--	1.1	--	0.6	--
Total Opportunistic	7.1	--	25.2	--	14.0	--	10.2	--
<i>Russell 3000 + 3%</i>	-13.6	--	-2.4	--	12.2	--	11.1	--

Actual vs Target Allocation (%)



Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index

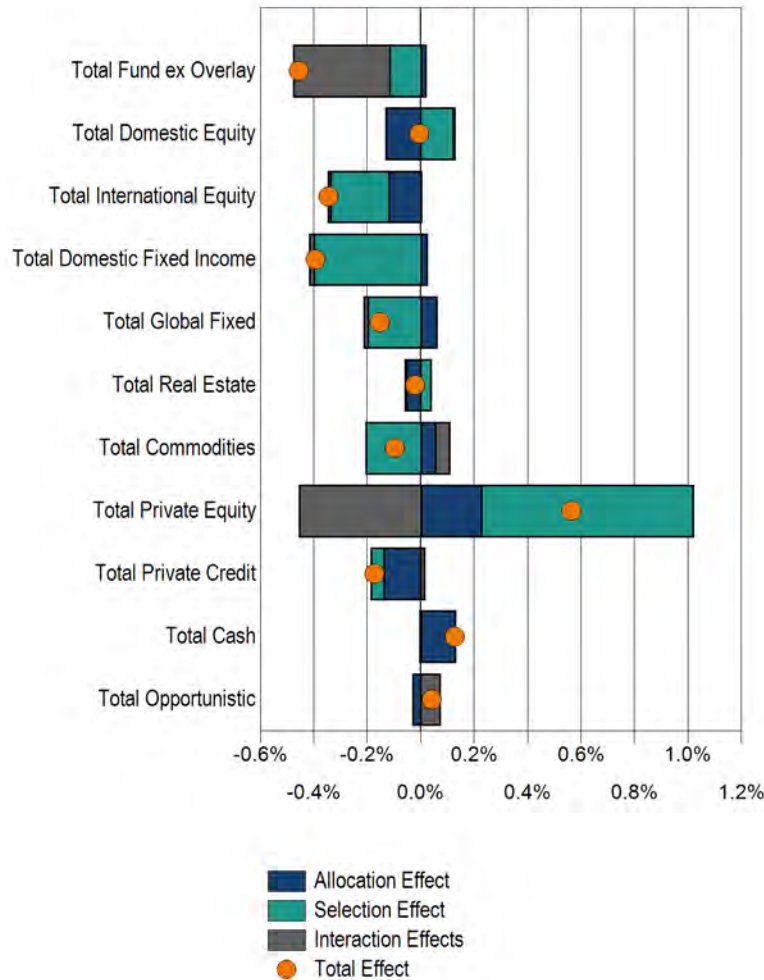


New Policy Index as of 10/1/2016: 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 +3%, 5% BBgBarc High Yield +2% (Lagged). Private Equity, Private Credit and Opportunistic composite returns are lagged by one quarter. Stone Harbor funded 7/9/13. Gresham TAP funded 8/30/13. Pacific Asset Corporate Loan funded 9/1/2014. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Harbourvest 2018 Global Fund L.P. funded 12/14/2018. All returns are (N) Net of fees. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund ex Overlay
Attribution (Net of Fees)

Period Ending: December 31, 2018

Attribution Effects
3 Months Ending December 31, 2018



Performance Attribution

	Last 3 Mo.	YTD
Wtd. Actual Return	-6.01%	-3.58%
Wtd. Index Return *	-5.55%	-3.16%
Excess Return	-0.46%	-0.42%
Selection Effect	-0.12%	0.58%
Allocation Effect	0.02%	-0.34%
Interaction Effect	-0.36%	-0.67%

*Calculated from policy benchmark returns and policy weightings of each component of the policy benchmark.

Attribution Summary
3 Months Ending December 31, 2018

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	-13.80%	-14.30%	0.50%	0.12%	-0.13%	0.00%	-0.01%
Total International Equity	-12.44%	-11.41%	-1.03%	-0.22%	-0.12%	-0.01%	-0.35%
Total Domestic Fixed Income	-0.43%	1.64%	-2.06%	-0.40%	0.02%	-0.01%	-0.39%
Total Global Fixed	-0.47%	1.64%	-2.11%	-0.20%	0.06%	-0.01%	-0.15%
Total Real Estate	1.64%	1.37%	0.27%	0.04%	-0.06%	0.00%	-0.02%
Total Commodities	-13.23%	-9.41%	-3.82%	-0.20%	0.06%	0.05%	-0.10%
Total Private Equity	2.43%	-13.63%	16.06%	0.79%	0.23%	-0.45%	0.56%
Total Private Credit	1.92%	2.91%	-0.99%	-0.05%	-0.14%	0.01%	-0.17%
Total Cash	0.58%	0.57%	0.00%	0.00%	0.13%	0.00%	0.13%
Total Opportunistic	7.10%	-13.63%	20.73%	0.00%	-0.03%	0.07%	0.04%
Total	-6.01%	-5.55%	-0.46%	-0.12%	0.02%	-0.36%	-0.46%

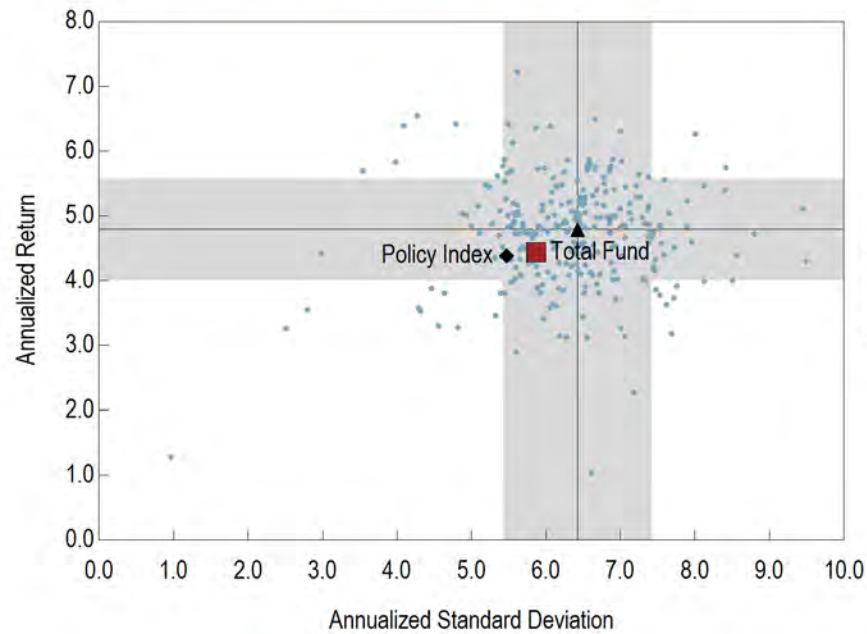
Attribution does not account for effects of overlay program. Weighted returns shown in attribution analysis may differ from actual returns. Wtd. Actual Return is the sum of the products of each group's return and its respective weight at the beginning of the period.

Total Fund
Risk Analysis - 5 Years (Gross of Fees)

Period Ending: December 31, 2018

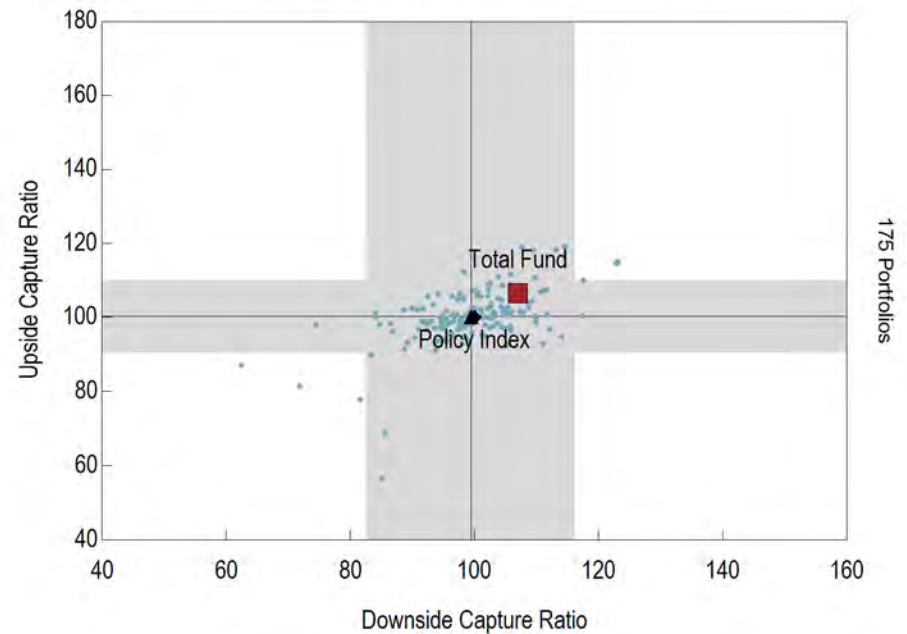
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Total Fund	4.43%	0.05%	5.86%	-0.15%	1.05	1.28%	0.95	0.65	0.04	106.46%	106.98%

Annualized Return vs. Annualized Standard Deviation



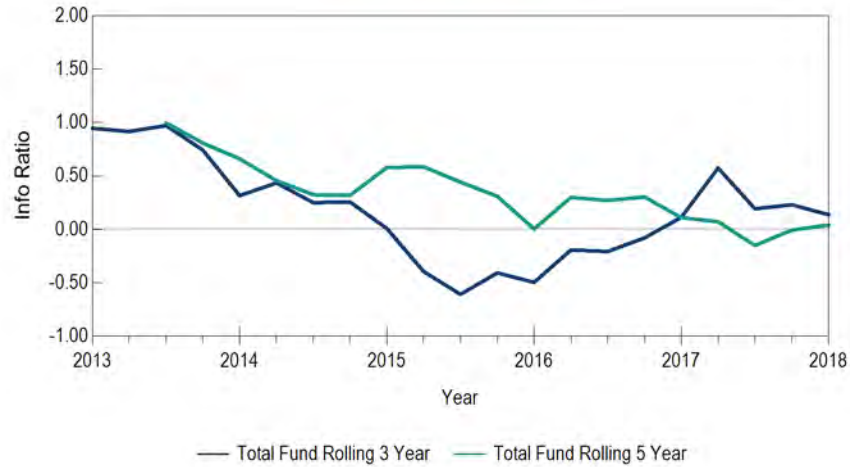
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

Upside Capture Ratio vs. Downside Capture Ratio

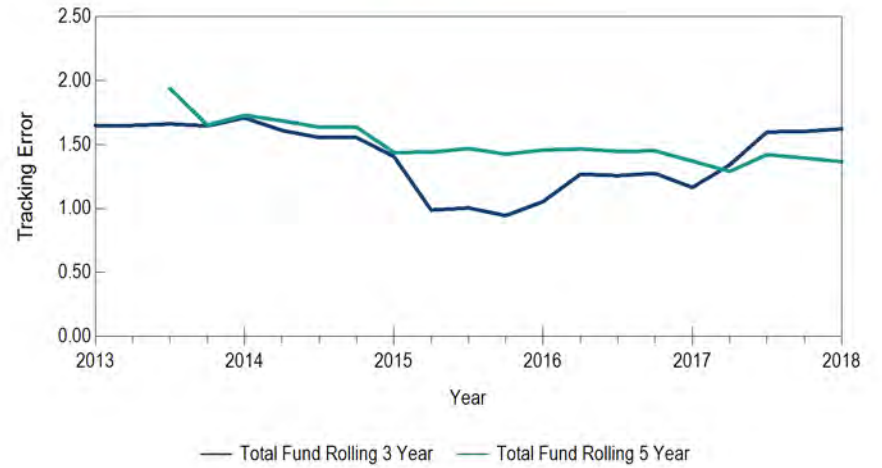


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

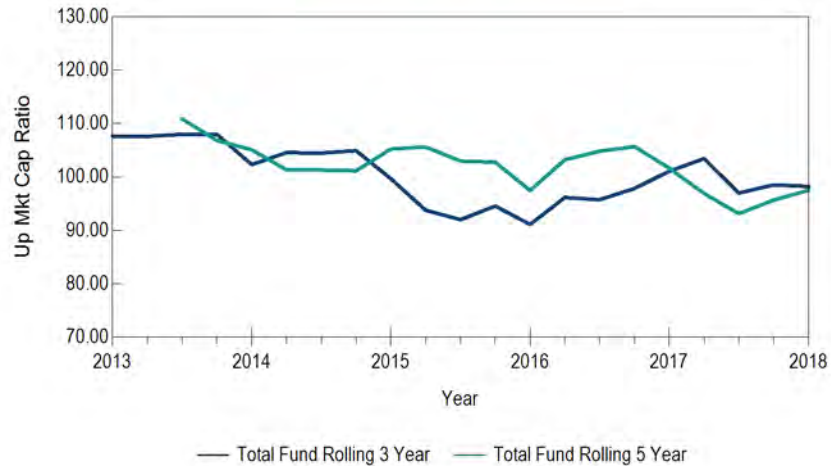
Rolling Information Ratio



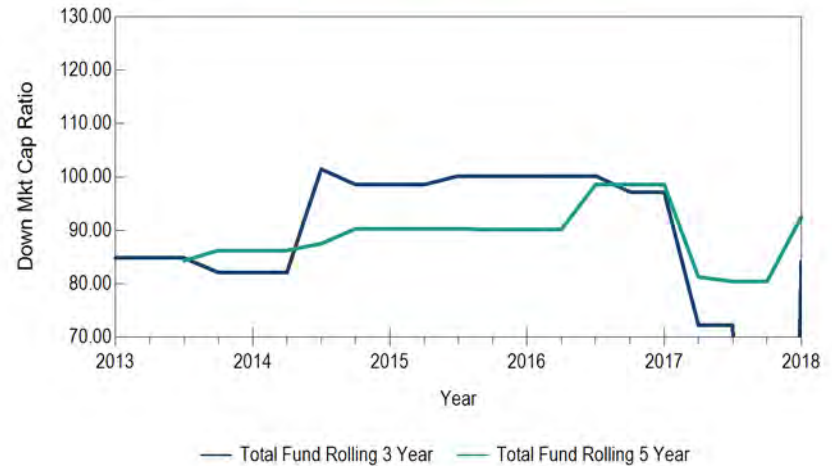
Rolling Tracking Error



Rolling Up Market Capture Ratio (%)



Rolling Down Market Capture Ratio (%)



Total Fund Performance Summary (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Fund	1,284,602,531	100.0	-5.9	-3.2	6.0	4.4	--	-3.2	15.5	6.6	-0.8	5.1		
<i>InvestorForce Public DB Gross Rank</i>			13	27	50	68	--	27	47	84	74	66		
Total Fund ex Overlay	1,272,911,191	99.1	-5.9	-3.2	6.0	4.4	8.7	-3.2	15.3	6.6	-0.8	5.2		
<i>Policy Index</i>			-5.6	-3.2	5.8	4.4	7.8	-3.2	13.4	7.8	-0.5	5.2		
<i>InvestorForce Public DB Gross Rank</i>			13	27	52	68	36	27	51	83	75	64		
Total Domestic Equity	251,941,439	19.6	-13.7	-5.2	10.2	8.5	14.3	-5.2	25.1	13.0	1.2	11.0		
<i>Russell 3000</i>			-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6		
<i>InvestorForce Public DB US Eq Gross Rank</i>			18	36	6	4	2	36	4	48	18	60		
PIMCO RAE Fundamental PLUS Instl	52,494,463	4.1	-14.0	-6.6	8.2	6.8	13.1	-6.6	17.0	15.9	-2.7	12.7	7.0	Nov-07
<i>S&P 500</i>			-13.5	-4.4	9.3	8.5	13.1	-4.4	21.8	12.0	1.4	13.7	7.1	Nov-07
<i>eV US Large Cap Core Equity Gross Rank</i>			60	72	63	82	44	72	89	6	86	58	72	Nov-07
Loomis Sayles Large Cap Growth	74,383,172	5.8	-11.6	-1.7	--	--	--	-1.7	34.1	--	--	--	14.8	Dec-16
<i>Russell 1000 Growth</i>			-15.9	-1.5	--	--	--	-1.5	30.2	--	--	--	13.2	Dec-16
<i>eV US Large Cap Growth Equity Gross Rank</i>			8	58	--	--	--	58	16	--	--	--	30	Dec-16
Boston Partners Large Cap Value	73,113,912	5.7	-13.7	-8.5	--	--	--	-8.5	--	--	--	--	4.5	Jan-17
<i>Russell 1000 Value</i>			-11.7	-8.3	--	--	--	-8.3	--	--	--	--	1.8	Jan-17
<i>eV US Large Cap Value Equity Gross Rank</i>			58	54	--	--	--	54	--	--	--	--	19	Jan-17
Atlanta Capital Mgmt	51,949,891	4.0	-16.2	-4.5	10.8	9.7	--	-4.5	26.6	12.6	10.4	5.8	16.2	Aug-10
<i>Russell 2500</i>			-18.5	-10.0	7.3	5.1	--	-10.0	16.8	17.6	-2.9	7.1	12.1	Aug-10
<i>eV US Small-Mid Cap Equity Gross Rank</i>			21	25	18	4	--	25	15	62	1	56	1	Aug-10
Total International Equity	258,784,679	20.1	-12.3	-12.2	4.4	2.1	8.5	-12.2	26.6	2.2	-4.3	2.1		
<i>MSCI ACWI ex USA Gross</i>			-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4		
<i>InvestorForce Public DB ex-US Eq Gross Rank</i>			50	9	61	15	9	9	81	82	68	1		
Dodge & Cox Intl Stock	128,636,252	10.0	-12.2	-17.5	3.9	0.2	8.4	-17.5	24.7	9.0	-10.8	0.7	1.5	Dec-07
<i>MSCI EAFE Gross</i>			-12.5	-13.4	3.4	1.0	6.8	-13.4	25.6	1.5	-0.4	-4.5	0.7	Dec-07
<i>eV All EAFE Equity Gross Rank</i>			23	73	39	88	45	73	74	3	99	13	64	Dec-07
WCM International Growth	130,148,427	10.1	-12.2	-6.7	--	--	--	-6.7	--	--	--	--	8.2	Feb-17
<i>MSCI ACWI ex USA Gross</i>			-11.4	-13.8	--	--	--	-13.8	--	--	--	--	2.5	Feb-17
<i>eV ACWI ex-US All Cap Growth Eq Gross Rank</i>			8	1	--	--	--	1	--	--	--	--	12	Feb-17

Since Inception ranking is from the beginning of the first complete month of performance. Research Affiliates converted to PIMCO RAE Fundamental Plus Instl on 6/5/15 (performance prior to this date represents previously held Research Affiliates Equity US Large, L.P.). ARA American funded 6/22/2016. Fidelity Real Estate Growth II liquidated 12/31/2015. Loomis Sayles Large Cap Growth funded 12/31/2016. Direct Real Estate is lagged one quarter. Boston Partners funded 1/31/2017. Vontobel liquidated 2/15/2017. WCM International funded 2/15/2017. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core and Dodge & Cox Income funded 1/19/2017. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Fidelity Real Estate Growth III liquidated 12/29/2017. SSGA S&P 500 Flagship liquidated 1/3/2018. SSGA TIPS liquidated 1/17/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018.

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Domestic Fixed Income	271,843,187	21.2	-0.3	0.4	3.0	3.0	6.3	0.4	4.3	4.5	1.1	4.7		
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0		
<i>InvestorForce Public DB US Fix Inc Gross Rank</i>			91	55	35	37	13	55	50	49	17	68		
BlackRock Core Bond	97,785,751	7.6	1.2	0.3	--	--	--	0.3	--	--	--	--	1.7	Jan-17
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	--	--	--	0.0	--	--	--	--	1.7	Jan-17
<i>eV US Core Fixed Inc Gross Rank</i>			68	27	--	--	--	27	--	--	--	--	51	Jan-17
Dodge & Cox Income Fund	99,926,139	7.8	0.4	0.1	--	--	--	0.1	--	--	--	--	2.3	Jan-17
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	--	--	--	0.0	--	--	--	--	1.7	Jan-17
<i>eV US Core Fixed Inc Gross Rank</i>			95	43	--	--	--	43	--	--	--	--	7	Jan-17
Pacific Asset Corporate Loan	74,131,297	5.8	-3.2	1.0	5.0	--	--	1.0	4.9	9.2	2.5	--	3.7	Sep-14
<i>S&P/LSTA Leveraged Loan Index</i>			-3.5	0.4	4.8	--	--	0.4	4.1	10.2	-0.7	--	2.9	Sep-14
<i>eV US Float-Rate Bank Loan Fixed Inc Gross Rank</i>			50	29	42	--	--	29	26	51	9	--	34	Sep-14
Total Global Fixed	145,838,359	11.4	-0.3	-6.6	4.2	-0.5	2.9	-6.6	14.4	5.8	-11.8	-2.2		
<i>FTSE World Govt Bond Index</i>			1.8	-0.8	2.7	0.8	1.5	-0.8	7.5	1.6	-3.6	-0.5		
<i>InvestorForce Public DB Gbl Fix Inc Gross Rank</i>			38	99	70	96	99	99	29	67	95	93		
Brandywine Global Fixed Income	72,941,434	5.7	-2.2	-4.1	3.3	0.6	3.7	-4.1	12.5	2.2	-9.3	2.9	3.6	Nov-07
<i>FTSE WGBI ex US TR</i>			1.3	-1.8	3.3	0.3	1.3	-1.8	10.3	1.8	-5.5	-2.7	2.0	Nov-07
<i>eV Global Fixed Inc Unhedged Gross Rank</i>			78	83	52	85	60	83	9	71	96	43	46	Nov-07
Stone Harbor Local Markets Ins	72,896,925	5.7	1.6	-9.0	5.2	-1.7	--	-9.0	16.4	9.9	-14.4	-7.7	-2.1	Jul-13
<i>JPM GBI-EM Global Diversified TR USD</i>			2.1	-6.2	5.9	-1.0	--	-6.2	15.2	9.9	-14.9	-5.7	-1.1	Jul-13
<i>eV All Emg Mkts Fixed Inc Gross Rank</i>			16	94	77	99	--	94	14	67	79	98	99	Jul-13
Total Real Estate	191,798,413	14.9	1.6	7.5	7.7	10.2	6.1	7.5	7.8	7.8	18.0	10.4		
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8		
JP Morgan Core Real Estate	163,245,272	12.7	1.6	7.0	7.2	9.5	7.1	7.0	6.1	8.4	15.2	11.2	5.7	Mar-08
<i>NCREIF-ODCE</i>			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5	5.4	Mar-08
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8	6.2	Mar-08
ARA American Strategic Value Realty	22,016,296	1.7	1.7	9.1	--	--	--	9.1	7.4	--	--	--	8.9	Jun-16
<i>NCREIF-ODCE</i>			1.8	8.3	--	--	--	8.3	7.6	--	--	--	8.1	Jun-16
<i>NCREIF Property Index</i>			1.4	6.7	--	--	--	6.7	7.0	--	--	--	6.9	Jun-16
Direct Real Estate	6,536,845	0.5	2.4	11.6	12.4	13.1	6.3	11.6	20.6	5.5	22.9	6.1		
<i>NCREIF-ODCE</i>			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5		
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8		

Since Inception ranking is from the beginning of the first complete month of performance. Research Affiliates converted to PIMCO RAE Fundamental Plus Instl on 6/5/15 (performance prior to this date represents previously held Research Affiliates Equity US Large, L.P.). ARA American funded 6/22/2016. Fidelity Real Estate Growth II liquidated 12/31/2015. Loomis Sayles Large Cap Growth funded 12/31/2016. Direct Real Estate is lagged one quarter. Boston Partners funded 1/31/2017. Vontobel liquidated 2/15/2017. WCM International funded 2/15/2017. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core and Dodge & Cox Income funded 1/19/2017. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Fidelity Real Estate Growth III liquidated 12/29/2017. SSGA S&P 500 Flagship liquidated 1/3/2018. SSGA TIPS liquidated 1/17/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018.

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Commodities	43,566,433	3.4	-13.2	-12.4	1.5	-8.0	--	-12.4	6.2	12.6	-25.2	-16.0		
<i>Bloomberg Commodity Index TR USD</i>			-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0		
Gresham MTAP Commodity Builder	43,566,433	3.4	-13.2	-12.4	1.5	-8.0	--	-12.4	6.2	12.6	-25.2	-16.0	-8.1	Aug-13
<i>Bloomberg Commodity Index TR USD</i>			-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0	-8.9	Aug-13
Total Private Equity	30,650,497	2.4												
Harbourvest Partners IX Buyout Fund L.P.	13,067,175	1.0												
Pathway Private Equity Fund Investors 9 L.P.	16,183,322	1.3												
Harbourvest 2018 Global Fund L.P.	1,400,000	0.1												
Total Private Credit	45,299,264	3.5												
TPG Diversified Credit Program	45,299,264	3.5												
Total Cash	28,386,676	2.2	0.6	1.5	1.0	0.7	0.7	1.5	1.0	0.5	0.4	0.3		
<i>91 Day T-Bills</i>			0.6	1.9	1.1	0.6	0.4	1.9	0.9	0.3	0.0	0.0		
Cash Account	28,386,676	2.2	0.6	1.5	1.0	0.7	0.7	1.5	1.0	0.5	0.4	0.3		
<i>91 Day T-Bills</i>			0.6	1.9	1.1	0.6	0.4	1.9	0.9	0.3	0.0	0.0		
Total Opportunistic	4,802,244	0.4												
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	4,691,515	0.4												
PIMCO Distressed Credit Fund	110,729	0.0												
<i>CPI + 5%</i>			0.7	7.0	7.1	6.6	--	7.0	7.2	7.2	5.8	5.8	6.8	Jun-10

Since Inception ranking is from the beginning of the first complete month of performance. Research Affiliates converted to PIMCO RAE Fundamental Plus Instl on 6/5/15 (performance prior to this date represents previously held Research Affiliates Equity US Large, L.P.). ARA American funded 6/22/2016. Fidelity Real Estate Growth II liquidated 12/31/2015. Loomis Sayles Large Cap Growth funded 12/31/2016. Direct Real Estate is lagged one quarter. Boston Partners funded 1/31/2017. Vontobel liquidated 2/15/2017. WCM International funded 2/15/2017. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core and Dodge & Cox Income funded 1/19/2017. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Fidelity Real Estate Growth III liquidated 12/29/2017. SSGA S&P 500 Flagship liquidated 1/3/2018. SSGA TIPS liquidated 1/17/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018.

Total Fund Performance Summary (Net of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	1,284,602,531	100.0	-6.0	-3.6	5.6	4.0	--	-3.6	15.0	6.0	-1.3	4.6
Total Fund ex Overlay	1,272,911,191	99.1	-6.0	-3.6	5.5	4.0	8.2	-3.6	14.9	6.1	-1.3	4.7
<i>Policy Index</i>			-5.6	-3.2	5.8	4.4	7.8	-3.2	13.4	7.8	-0.5	5.2
Total Domestic Equity	251,941,439	19.6	-13.8	-5.7	9.8	8.1	13.9	-5.7	24.5	12.7	0.8	10.5
<i>Russell 3000</i>			-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6
PIMCO RAE Fundamental PLUS Instl	52,494,463	4.1	-14.1	-7.0	7.7	6.3	12.7	-7.0	16.5	15.4	-3.2	12.3
<i>S&P 500</i>			-13.5	-4.4	9.3	8.5	13.1	-4.4	21.8	12.0	1.4	13.7
Loomis Sayles Large Cap Growth	74,383,172	5.8	-11.7	-2.1	--	--	--	-2.1	33.5	--	--	--
<i>Russell 1000 Growth</i>			-15.9	-1.5	--	--	--	-1.5	30.2	--	--	--
Boston Partners Large Cap Value	73,113,912	5.7	-13.8	-8.9	--	--	--	-8.9	--	--	--	--
<i>Russell 1000 Value</i>			-11.7	-8.3	--	--	--	-8.3	--	--	--	--
Atlanta Capital Mgmt	51,949,891	4.0	-16.4	-5.3	9.9	8.9	--	-5.3	25.6	11.7	9.6	5.0
<i>Russell 2500</i>			-18.5	-10.0	7.3	5.1	--	-10.0	16.8	17.6	-2.9	7.1
Total International Equity	258,784,679	20.1	-12.4	-12.8	3.7	1.4	7.9	-12.8	25.8	1.6	-4.9	1.4
<i>MSCI ACWI ex USA Gross</i>			-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4
Dodge & Cox Intl Stock	128,636,252	10.0	-12.4	-18.0	3.2	-0.5	7.7	-18.0	23.9	8.3	-11.4	0.1
<i>MSCI EAFE Gross</i>			-12.5	-13.4	3.4	1.0	6.8	-13.4	25.6	1.5	-0.4	-4.5
WCM International Growth	130,148,427	10.1	-12.3	-7.4	--	--	--	-7.4	--	--	--	--
<i>MSCI ACWI ex USA Gross</i>			-11.4	-13.8	--	--	--	-13.8	--	--	--	--
Total Domestic Fixed Income	271,843,187	21.2	-0.4	0.0	2.7	2.7	6.0	0.0	3.9	4.2	0.9	4.4
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0
BlackRock Core Bond	97,785,751	7.6	1.1	0.1	--	--	--	0.1	--	--	--	--
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	--	--	--	0.0	--	--	--	--
Dodge & Cox Income Fund	99,926,139	7.8	0.3	-0.3	--	--	--	-0.3	--	--	--	--
<i>BBgBarc US Aggregate TR</i>			1.6	0.0	--	--	--	0.0	--	--	--	--
Pacific Asset Corporate Loan	74,131,297	5.8	-3.3	0.7	4.6	--	--	0.7	4.6	8.8	2.1	--
<i>S&P/LSTA Leveraged Loan Index</i>			-3.5	0.4	4.8	--	--	0.4	4.1	10.2	-0.7	--
Total Global Fixed	145,838,359	11.4	-0.5	-7.2	3.5	-1.1	2.3	-7.2	13.7	5.1	-12.4	-2.8
<i>FTSE World Govt Bond Index</i>			1.8	-0.8	2.7	0.8	1.5	-0.8	7.5	1.6	-3.6	-0.5
Brandywine Global Fixed Income	72,941,434	5.7	-2.3	-4.5	2.9	0.1	3.2	-4.5	12.0	1.7	-9.7	2.4
<i>FTSE WGBI ex US TR</i>			1.3	-1.8	3.3	0.3	1.3	-1.8	10.3	1.8	-5.5	-2.7
Stone Harbor Local Markets Ins	72,896,925	5.7	1.4	-9.8	4.3	-2.5	--	-9.8	15.4	9.0	-15.1	-8.6
<i>JPM GBI-EM Global Diversified TR USD</i>			2.1	-6.2	5.9	-1.0	--	-6.2	15.2	9.9	-14.9	-5.7

Research Affiliates converted to PIMCO RAE Fundamental Plus Instl on 6/5/15 (performance prior to this date represents previously held Research Affiliates Equity US Large, L.P.). ARA American funded 6/22/2016. Fidelity Real Estate Growth II liquidated 12/31/2015. Loomis Sayles Large Cap Growth funded 12/31/2016. Direct Real Estate is lagged one quarter. Boston Partners funded 1/31/2017. Vontobel liquidated 2/15/2017. WCM International funded 2/15/2017. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core and Dodge & Cox Income funded 1/19/2017. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Fidelity Real Estate Growth III liquidated 12/29/2017. SSGA S&P 500 Flagship liquidated 1/3/2018. SSGA TIPS liquidated 1/17/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018.

Total Fund
Performance Summary (Net of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	191,798,413	14.9	1.6	7.5	7.4	9.7	5.7	7.5	7.8	6.8	16.9	9.6
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
JP Morgan Core Real Estate	163,245,272	12.7	1.6	7.0	6.8	8.9	6.4	7.0	6.1	7.3	14.1	10.0
<i>NCREIF-ODCE</i>			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
ARA American Strategic Value Realty	22,016,296	1.7	1.7	9.1	--	--	--	9.1	7.4	--	--	--
<i>NCREIF-ODCE</i>			1.8	8.3	--	--	--	8.3	7.6	--	--	--
<i>NCREIF Property Index</i>			1.4	6.7	--	--	--	6.7	7.0	--	--	--
Direct Real Estate	6,536,845	0.5	2.4	11.6	12.2	12.9	6.1	11.6	20.6	4.9	22.2	6.1
<i>NCREIF-ODCE</i>			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
Total Commodities	43,566,433	3.4	-13.2	-12.4	1.3	-8.5	--	-12.4	6.2	11.8	-25.8	-16.6
<i>Bloomberg Commodity Index TR USD</i>			-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0
Gresham MTAP Commodity Builder	43,566,433	3.4	-13.2	-12.4	1.3	-8.5	--	-12.4	6.2	11.8	-25.8	-16.6
<i>Bloomberg Commodity Index TR USD</i>			-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0
Total Private Equity	30,650,497	2.4										
Harbourvest Partners IX Buyout Fund L.P.	13,067,175	1.0										
Pathway Private Equity Fund Investors 9 L.P.	16,183,322	1.3										
Harbourvest 2018 Global Fund L.P.	1,400,000	0.1										
Total Private Credit	45,299,264	3.5										
TPG Diversified Credit Program	45,299,264	3.5										
Total Cash	28,386,676	2.2	0.6	1.5	1.0	0.7	0.7	1.5	1.0	0.5	0.4	0.3
<i>91 Day T-Bills</i>			0.6	1.9	1.1	0.6	0.4	1.9	0.9	0.3	0.0	0.0
Cash Account	28,386,676	2.2	0.6	1.5	1.0	0.7	0.7	1.5	1.0	0.5	0.4	0.3
<i>91 Day T-Bills</i>			0.6	1.9	1.1	0.6	0.4	1.9	0.9	0.3	0.0	0.0
Total Opportunistic	4,802,244	0.4										
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	4,691,515	0.4										
PIMCO Distressed Credit Fund	110,729	0.0										
<i>CPI + 5%</i>			0.7	7.0	7.1	6.6	--	7.0	7.2	7.2	5.8	5.8

Research Affiliates converted to PIMCO RAE Fundamental Plus Instl on 6/5/15 (performance prior to this date represents previously held Research Affiliates Equity US Large, L.P.). ARA American funded 6/22/2016. Fidelity Real Estate Growth II liquidated 12/31/2015. Loomis Sayles Large Cap Growth funded 12/31/2016. Direct Real Estate is lagged one quarter. Boston Partners funded 1/31/2017. Vontobel liquidated 2/15/2017. WCM International funded 2/15/2017. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core and Dodge & Cox Income funded 1/19/2017. Pathway Private Equity Fund Investors 9 L.P. funded 4/7/2017. Fidelity Real Estate Growth III liquidated 12/29/2017. SSGA S&P 500 Flagship liquidated 1/3/2018. SSGA TIPS liquidated 1/17/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018.

Investment Manager
Performance Analysis - 3 & 5 Years (Net of Fees)

Period Ending: December 31, 2018

3 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
PIMCO RAE Fundamental PLUS Instl	7.74%	-1.51%	11.11%	-1.35%	0.98	2.75%	0.94	0.61	-0.55	88.20%	97.01%
Atlanta Capital Mgmt	9.94%	2.62%	13.10%	3.67%	0.86	5.09%	0.87	0.68	0.51	100.30%	86.14%
Dodge & Cox Intl Stock	3.24%	-0.13%	14.10%	-0.62%	1.15	5.50%	0.86	0.16	-0.02	118.36%	113.82%
Pacific Asset Corporate Loan	4.64%	-0.19%	2.41%	0.78%	0.80	0.88%	0.93	1.49	-0.21	91.16%	79.53%
Brandywine Global Fixed Income	2.86%	-0.46%	8.47%	-0.17%	0.91	4.67%	0.70	0.21	-0.10	92.23%	96.50%
Stone Harbor Local Markets Ins	4.26%	-1.65%	12.68%	-2.35%	1.12	2.04%	0.99	0.26	-0.81	103.20%	113.03%
JP Morgan Core Real Estate	6.80%	-1.44%	0.74%	6.17%	0.08	3.15%	0.12	7.80	-0.46	30.30%	--
Direct Real Estate	12.19%	3.95%	6.38%	15.55%	-0.41	7.80%	0.05	1.75	0.51	18.42%	--
Gresham MTAP Commodity Builder	1.29%	1.00%	9.88%	1.01%	0.95	3.54%	0.87	0.03	0.28	111.87%	101.59%

5 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
PIMCO RAE Fundamental PLUS Instl	6.34%	-2.16%	10.85%	-1.86%	0.97	2.51%	0.95	0.53	-0.86	85.80%	101.39%
Atlanta Capital Mgmt	8.86%	3.72%	12.58%	4.44%	0.86	5.00%	0.87	0.66	0.74	96.86%	81.68%
Dodge & Cox Intl Stock	-0.48%	-1.48%	13.90%	-1.58%	1.10	5.20%	0.87	-0.08	-0.28	104.57%	107.91%
Brandywine Global Fixed Income	0.13%	-0.15%	7.39%	-0.10%	0.83	4.63%	0.63	-0.07	-0.03	73.10%	82.08%
Direct Real Estate	12.87%	2.46%	8.32%	7.62%	0.50	8.31%	0.07	1.47	0.30	51.84%	--
JP Morgan Core Real Estate	8.87%	-1.54%	1.21%	7.65%	0.12	4.00%	0.18	6.82	-0.39	29.14%	--

Private Markets
Non Marketable Securities Overview

Period Ending: December 31, 2018

Vintage	Manager & Fund Name	Estimated 12/31 Market Value ³	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI) ¹	Tot. Value/ Paid-In (TVPI) ²	Net IRR Since Inception ⁵	IRR Date
2011	HarbourVest Partners IX-Buyout Fund L.P.	\$13,067,175	\$20,000,000	\$14,147,399	71%	\$5,852,601	\$9,847,329	\$13,851,426	69.6%	162.0%	18.0%	9/30/18
2018	HarbourVest Partners 2018 Global Fund L.P.	\$1,400,000	\$20,000,000	\$1,400,000	7%	\$18,600,000	-	-	-	-	-	-
2010	KKR Mezzanine Partners I L.P. ⁶	\$4,691,515	\$20,000,000	\$20,000,000	100%	\$0	\$29,566,840	\$4,691,514	147.8%	171.3%	8.8%	9/30/18
2010	PIMCO Distressed Credit Fund ⁴	\$110,729	\$20,000,000	\$20,000,000	100%	\$0	\$27,899,650	\$161,172	139.5%	140.1%	12.4%	9/30/18
2016	TPG Diversified Credit Program	\$45,299,264	\$75,000,000	\$40,917,331	55%	\$34,082,669	\$486,501	\$45,293,737	1.2%	111.9%	10.3%	9/30/18
2017	Pathway Private Equity Fund Investors 9 L.P.	\$16,183,322	\$65,000,000	\$15,978,967	25%	\$49,021,033	-	-	-	-	-	-
Total Alternative Illiquids		\$80,752,005	\$220,000,000	\$112,443,697	51%	\$107,556,303	\$67,800,319	\$63,997,849	56.9%	117.2%		
% of Portfolio (Market Value)		6.3%										

	Management Fee	Admin Fee	Interest Expense	Other Expense	Total Expense ⁷
HarbourVest Partners IX-Buyout Fund L.P.	\$49,848	\$0	\$0	\$0	\$49,848
HarbourVest Partners 2018 Global Fund L.P.	\$70,500	\$0	\$0	\$32,149	\$102,649
KKR Mezzanine Partners I L.P.	\$15,688	\$0	\$0	\$2,267	\$17,955
PIMCO Distressed Credit Fund ⁴	\$0	\$0	\$0	\$61	\$61
TPG Diversified Credit Program	\$107,886	\$0	\$0	\$0	\$107,886
Pathway Private Equity Fund Investors 9 L.P.	-	-	-	-	-
	\$243,922	\$0	\$0	\$34,477	\$278,399

¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions

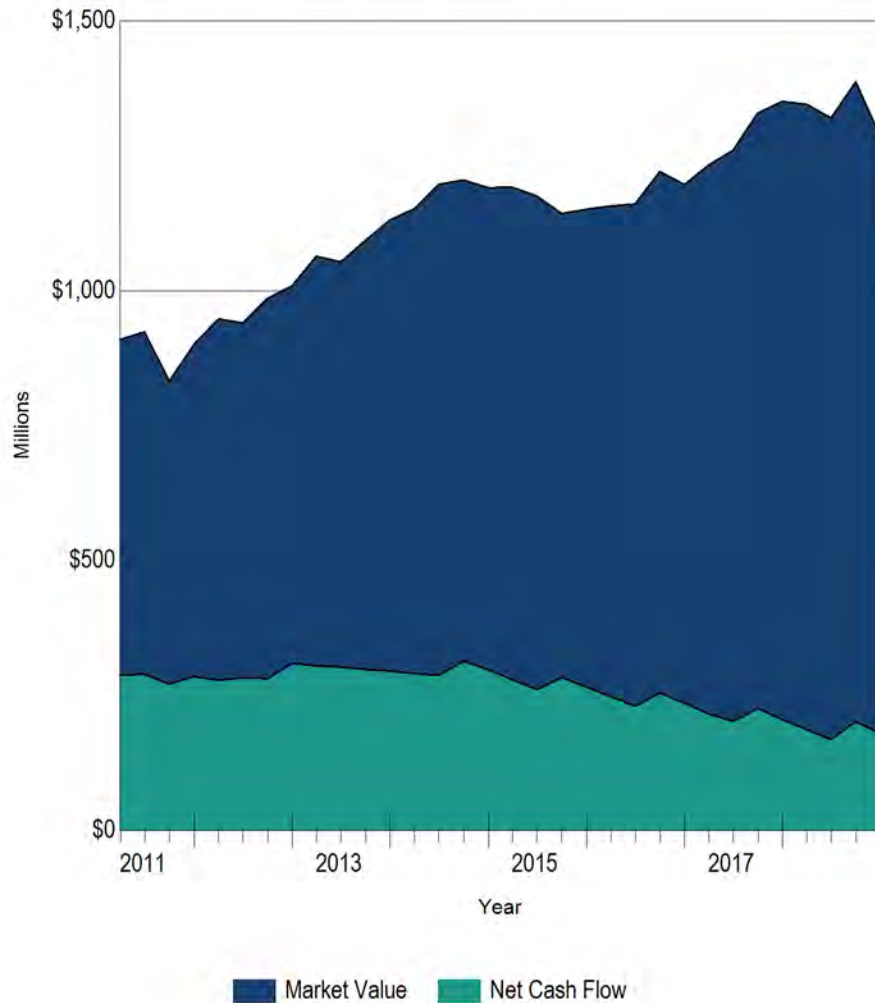
⁴Investment period ended, no further capital to be called.

⁵Net IRR is calculated on the cash flows of the underlying investments of the fund and is net of the underlying fund fees and carried interest

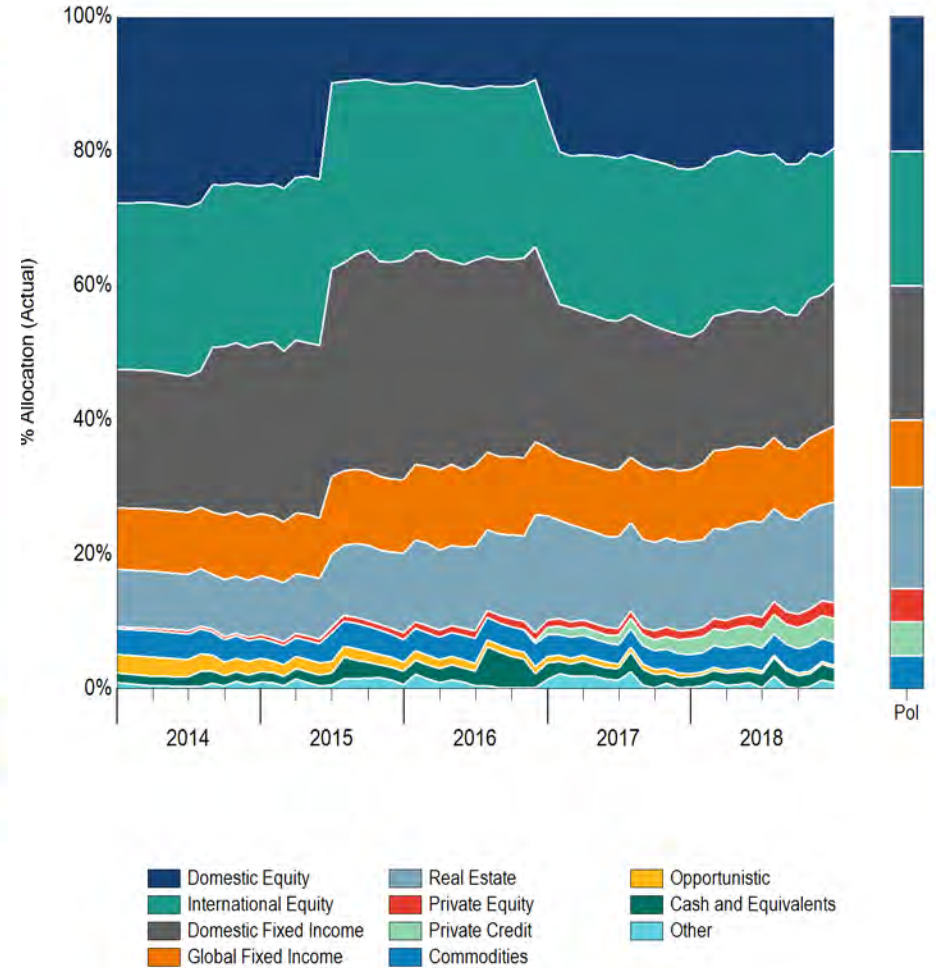
⁶KKR: As of 4Q2018, total capital called is \$23,593,570, which includes recycled distributions. Unused capital commitment is \$2,109,437 after including distribution proceeds available for reinvestment

⁷All fees and expenses are for 3Q 2018

Market Value History



Asset Allocation History



*Other balance represents Clifton Group

Total Fund
Asset Allocation vs. Policy

Period Ending: December 31, 2018



Total Fund Investment Fund Fee Analysis

Period Ending: December 31, 2018

Account	Fee Schedule	Market Value As of 12/31/2018	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
ARA American Strategic Value Realty	1.25% of First 10.0 Mil, 1.20% of Next 15.0 Mil, 1.10% of Next 25.0 Mil, 1.00% Thereafter	\$22,016,296	1.7%	\$269,196	1.22%
Atlanta Capital Mgmt	0.80% of First 50.0 Mil, 0.70% of Next 100.0 Mil, 0.60% Thereafter	\$51,949,891	4.0%	\$413,649	0.80%
BlackRock Core Bond	0.28% of First 100.0 Mil, 0.26% Thereafter	\$97,785,751	7.6%	\$273,800	0.28%
Boston Partners Large Cap Value	0.40% of Assets	\$73,113,912	5.7%	\$292,456	0.40%
Brandywine Global Fixed Income	0.45% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$72,941,434	5.7%	\$316,766	0.43%
Cash Account	No Fee	\$28,386,676	2.2%	--	--
Direct Real Estate	No Fee	\$6,536,845	0.5%	--	--
Dodge & Cox Income Fund	0.43% of Assets	\$99,926,139	7.8%	\$429,682	0.43%
Dodge & Cox Intl Stock	0.64% of Assets	\$128,636,252	10.0%	\$823,272	0.64%
Gresham MTAP Commodity Builder	0.75% of First 50.0 Mil, 0.50% Thereafter	\$43,566,433	3.4%	\$326,748	0.75%
Harbourvest 2018 Global Fund L.P.	282,000 Annually	\$1,400,000	0.1%	\$282,000	20.14%
Harbourvest Partners IX Buyout Fund L.P.	200,000 Annually	\$13,067,175	1.0%	\$200,000	1.53%
JP Morgan Core Real Estate	1.00% of Assets	\$163,245,272	12.7%	\$1,632,453	1.00%
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	300,000 Annually	\$4,691,515	0.4%	\$300,000	6.39%
Loomis Sayles Large Cap Growth	0.45% of First 100.0 Mil, 0.40% Thereafter	\$74,383,172	5.8%	\$334,724	0.45%
Pacific Asset Corporate Loan	0.37% of Assets	\$74,131,297	5.8%	\$274,286	0.37%
Pathway Private Equity Fund Investors 9 L.P.	Please see footnote	\$16,183,322	1.3%	--	--
PIMCO Distressed Credit Fund	150,000 Annually	\$110,729	0.0%	\$150,000	135.47%
PIMCO RAE Fundamental PLUS Instl	0.40% of Assets	\$52,494,463	4.1%	\$209,978	0.40%
Stone Harbor Local Markets Ins	0.89% of Assets	\$72,896,925	5.7%	\$648,783	0.89%
The Clifton Group	50,000 Annually	\$11,691,340	0.9%	\$50,000	0.43%
TPG Diversified Credit Program	Please see footnote	\$45,299,264	3.5%	--	--
WCM International Growth	0.70% of Assets	\$130,148,427	10.1%	\$911,039	0.70%
Investment Management Fee		\$1,284,602,531	100.0%	\$8,138,831	0.63%

*HarbourVest, KKR and PIMCO Distressed Credit fees are estimated gross management fees only and do not include incentive allocations or offsetting cash flows received by the fund. Pathway fee steps up and down over time, with an effective average of 0.71% up to \$25m, 0.67% up to \$50m, 0.63% up to \$75m, and 0.40% above \$75m.

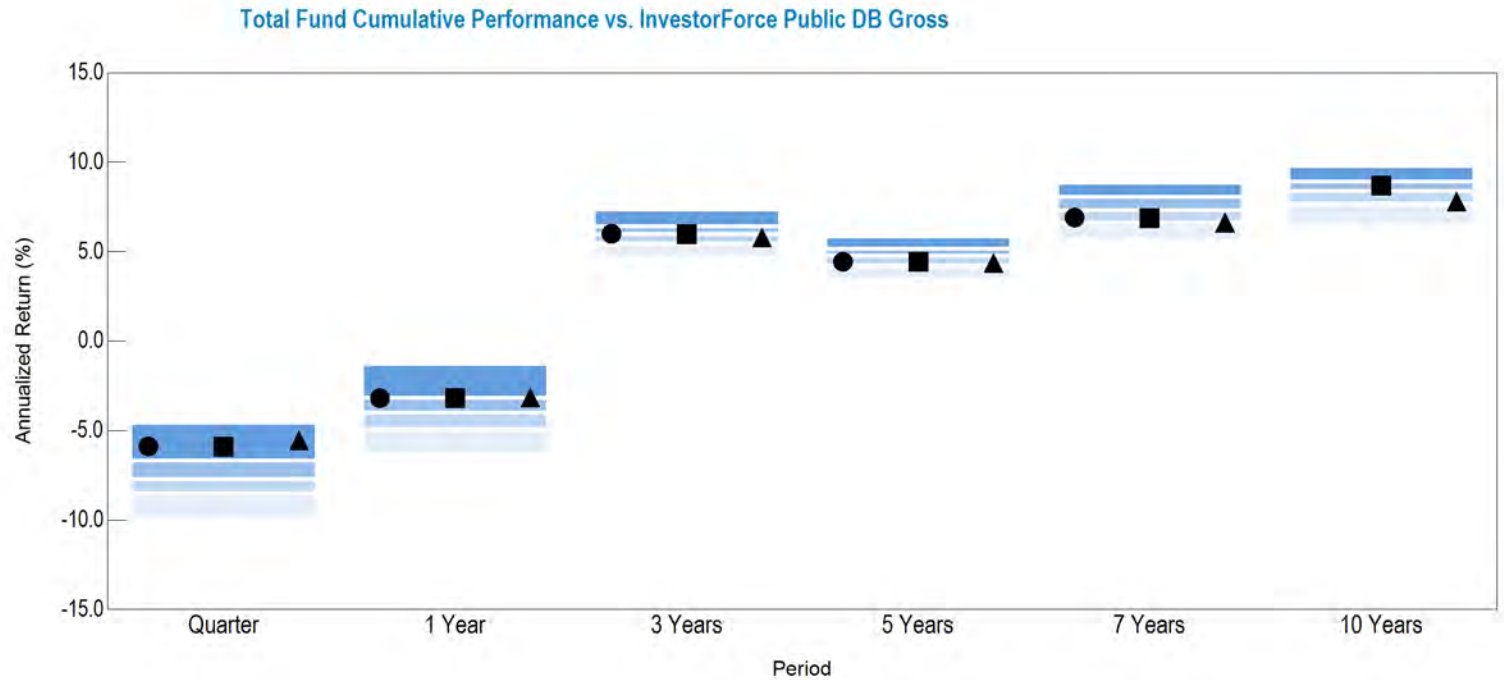
*Clifton Group fee schedule represents contractual minimum fee. Actual fee charged is \$1,500 per month through at least 6/30/2015.

*TPG: No management fee at SMA level. Subject to the annual fees of each of the underlying TSSP funds. (1) TAO 65bps on unfunded commitments and 1.35% on remaining capital contributions (long-term designation) (2) TSLE 1.5% on commitments, 1.25% on remaining capital contributions post commitment period (3) TICP 30bps on remaining capital contributions.

Total Fund

Peer Universe Comparison: Cumulative Performance (Gross of Fees)

Period Ending: December 31, 2018

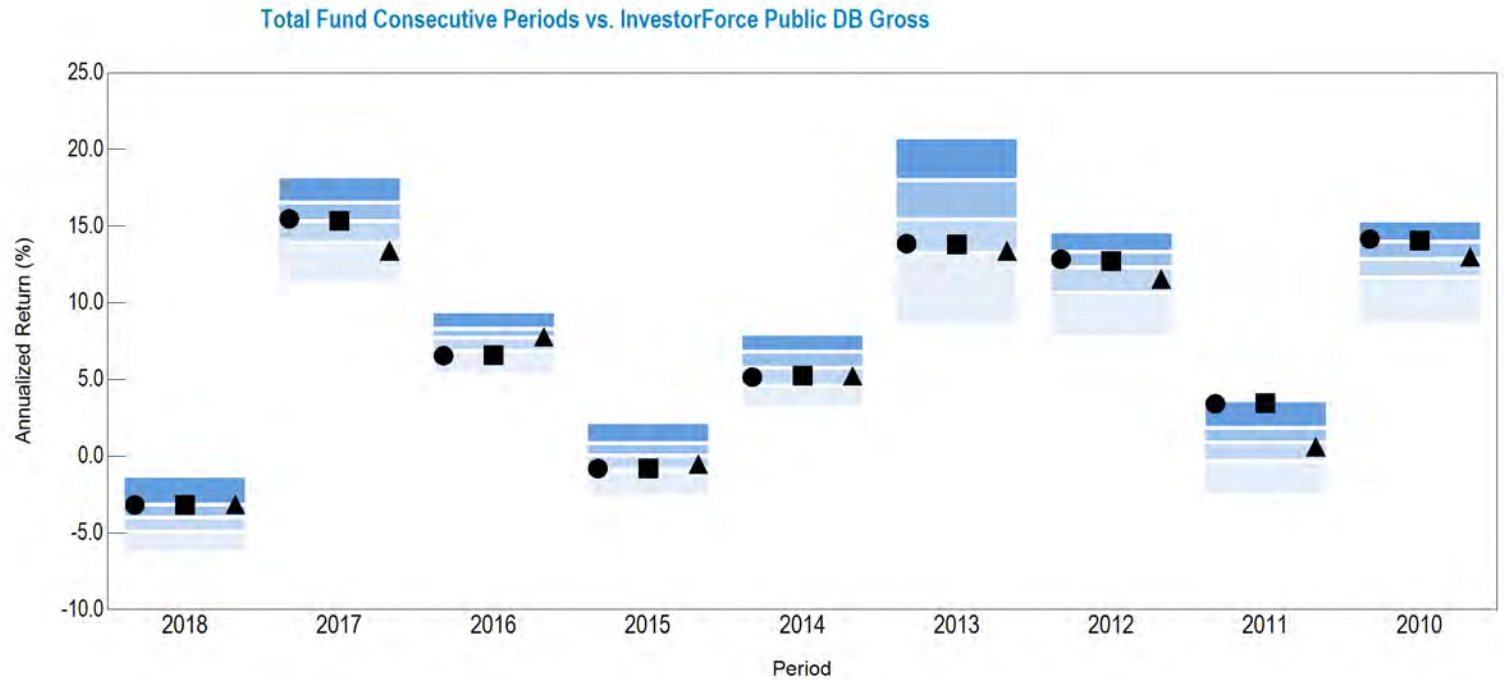


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-4.6	-1.3	7.3	5.8	8.8	9.7						
25th Percentile	-6.7	-3.1	6.4	5.2	8.1	8.9						
Median	-7.7	-4.0	6.0	4.8	7.3	8.4						
75th Percentile	-8.5	-4.9	5.5	4.3	6.7	7.7						
95th Percentile	-10.0	-6.3	4.7	3.4	5.6	6.5						
# of Portfolios	321	319	306	293	282	256						
● Total Fund	-5.9 (13)	-3.2 (27)	6.0 (50)	4.4 (68)	6.9 (68)	-- (-)						
■ Total Fund ex Overlay	-5.9 (13)	-3.2 (27)	6.0 (52)	4.4 (68)	6.9 (70)	8.7 (36)						
▲ Policy Index	-5.6 (10)	-3.2 (26)	5.8 (62)	4.4 (71)	6.6 (77)	7.8 (70)						

Total Fund

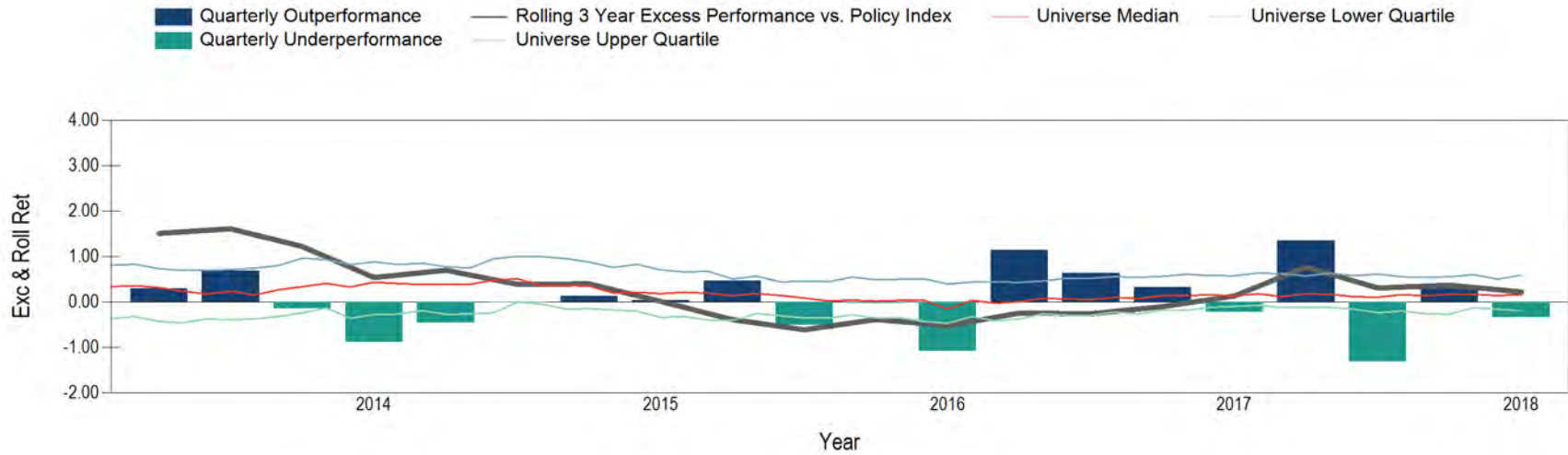
Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: December 31, 2018

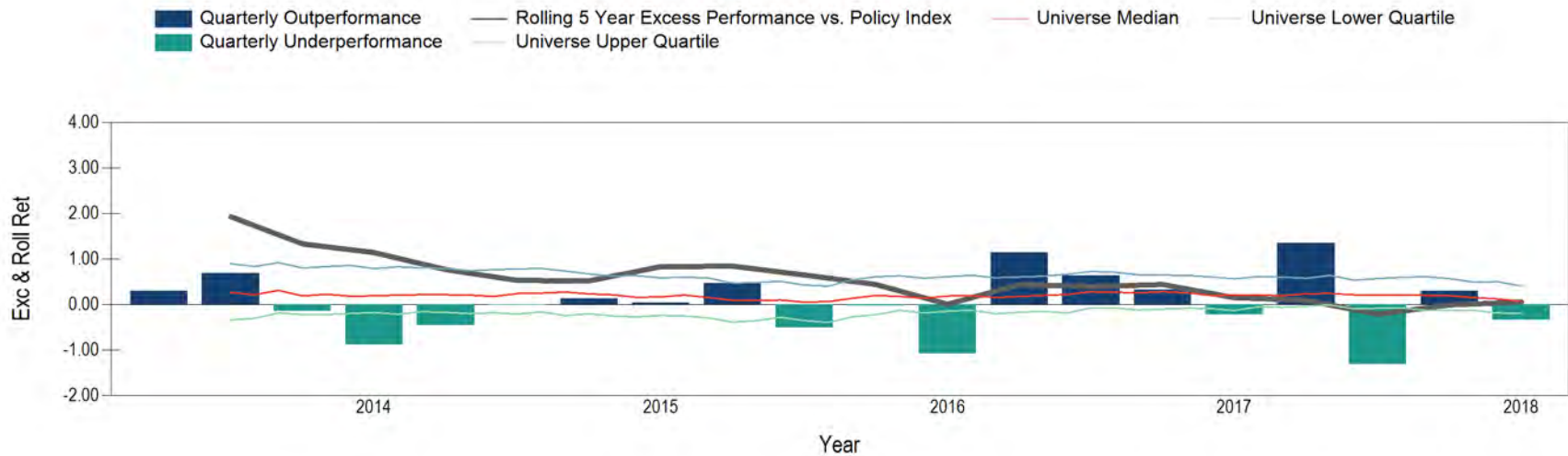


	2018	2017	2016	2015	2014	2013	2012	2011	2010
5th Percentile	-1.3	18.2	9.4	2.2	8.0	20.8	14.6	3.6	15.4
25th Percentile	-3.1	16.5	8.4	0.9	6.8	18.0	13.4	1.9	14.0
Median	-4.0	15.3	7.7	0.1	5.8	15.5	12.4	0.9	12.9
75th Percentile	-4.9	14.0	6.9	-0.9	4.6	13.3	10.7	-0.3	11.7
95th Percentile	-6.3	11.3	5.3	-2.6	3.2	8.5	7.8	-2.5	8.6
# of Portfolios	319	304	305	316	248	231	236	206	188
● Total Fund	-3.2 (27)	15.5 (47)	6.6 (84)	-0.8 (74)	5.1 (66)	13.8 (71)	12.8 (40)	3.4 (6)	14.2 (21)
■ Total Fund ex Overlay	-3.2 (27)	15.3 (51)	6.6 (83)	-0.8 (75)	5.2 (64)	13.8 (72)	12.7 (43)	3.5 (6)	14.1 (24)
▲ Policy Index	-3.2 (26)	13.4 (86)	7.8 (49)	-0.5 (67)	5.2 (64)	13.4 (74)	11.6 (69)	0.6 (60)	13.0 (48)

Rolling 3 Year Annualized Excess Performance



Rolling 5 Year Annualized Excess Performance



Total Domestic Equity
Asset Class Overview (Gross of Fees)

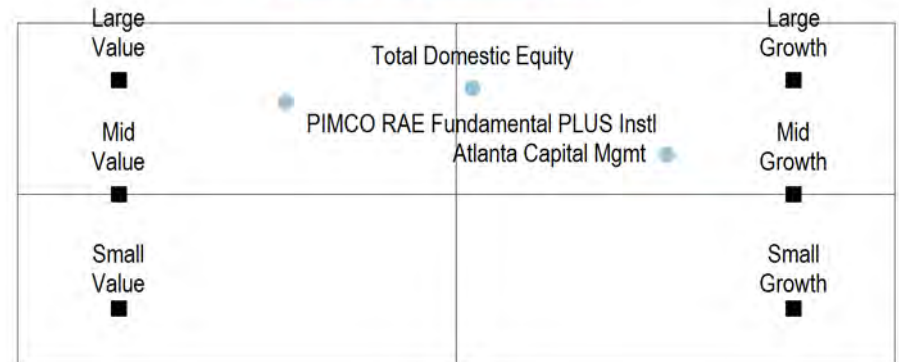
Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Equity	251,941,439	-13.7	-5.2	10.2	8.5	14.3	-5.2	25.1	13.0	1.2	11.0
<i>Russell 3000</i>		-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6
<i>InvestorForce Public DB US Eq Gross Rank</i>		18	36	6	4	2	36	4	48	18	60
PIMCO RAE Fundamental PLUS Instl	52,494,463	-14.0	-6.6	8.2	6.8	13.1	-6.6	17.0	15.9	-2.7	12.7
<i>S&P 500</i>		-13.5	-4.4	9.3	8.5	13.1	-4.4	21.8	12.0	1.4	13.7
<i>eV US Large Cap Core Equity Gross Rank</i>		60	72	63	82	44	72	89	6	86	58
Loomis Sayles Large Cap Growth	74,383,172	-11.6	-1.7	--	--	--	-1.7	34.1	--	--	--
<i>Russell 1000 Growth</i>		-15.9	-1.5	--	--	--	-1.5	30.2	--	--	--
<i>eV US Large Cap Growth Equity Gross Rank</i>		8	58	--	--	--	58	16	--	--	--
Boston Partners Large Cap Value	73,113,912	-13.7	-8.5	--	--	--	-8.5	--	--	--	--
<i>Russell 1000 Value</i>		-11.7	-8.3	--	--	--	-8.3	--	--	--	--
<i>eV US Large Cap Value Equity Gross Rank</i>		58	54	--	--	--	54	--	--	--	--
Atlanta Capital Mgmt	51,949,891	-16.2	-4.5	10.8	9.7	--	-4.5	26.6	12.6	10.4	5.8
<i>Russell 2500</i>		-18.5	-10.0	7.3	5.1	--	-10.0	16.8	17.6	-2.9	7.1
<i>eV US Small-Mid Cap Equity Gross Rank</i>		21	25	18	4	--	25	15	62	1	56

U.S. Effective Style Map
3 Years Ending December 31, 2018



U.S. Effective Style Map
5 Years Ending December 31, 2018



Total Domestic Equity
Asset Class Overview (Net of Fees)

Period Ending: December 31, 2018

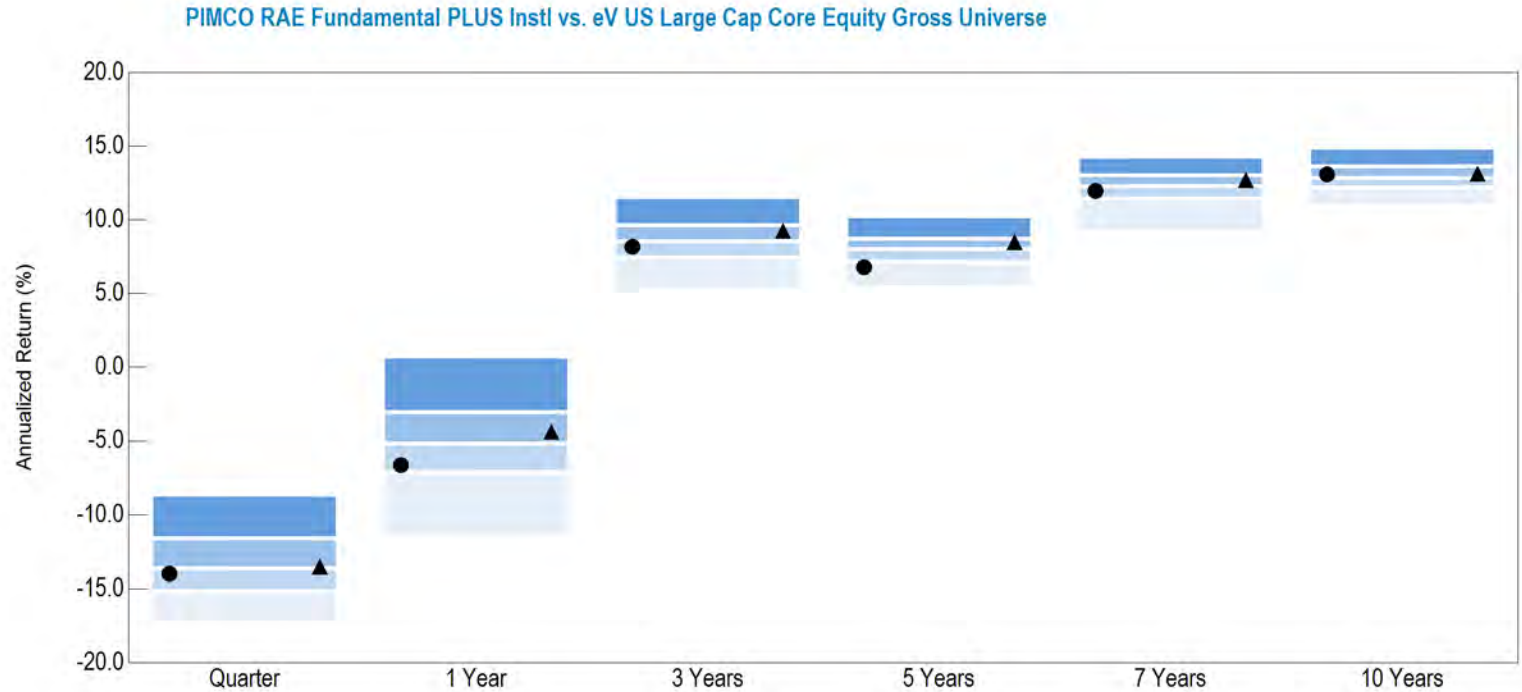
	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Equity	251,941,439	-13.8	-5.7	9.8	8.1	13.9	-5.7	24.5	12.7	0.8	10.5
<i>Russell 3000</i>		-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6
PIMCO RAE Fundamental PLUS Instl	52,494,463	-14.1	-7.0	7.7	6.3	12.7	-7.0	16.5	15.4	-3.2	12.3
<i>S&P 500</i>		-13.5	-4.4	9.3	8.5	13.1	-4.4	21.8	12.0	1.4	13.7
Loomis Sayles Large Cap Growth	74,383,172	-11.7	-2.1	--	--	--	-2.1	33.5	--	--	--
<i>Russell 1000 Growth</i>		-15.9	-1.5	--	--	--	-1.5	30.2	--	--	--
Boston Partners Large Cap Value	73,113,912	-13.8	-8.9	--	--	--	-8.9	--	--	--	--
<i>Russell 1000 Value</i>		-11.7	-8.3	--	--	--	-8.3	--	--	--	--
Atlanta Capital Mgmt	51,949,891	-16.4	-5.3	9.9	8.9	--	-5.3	25.6	11.7	9.6	5.0
<i>Russell 2500</i>		-18.5	-10.0	7.3	5.1	--	-10.0	16.8	17.6	-2.9	7.1

Correlation Matrix
 Last 5 Years

	Total Domestic Equity	PIMCO RAE Fundamental PLUS Instl	Loomis Sayles Large Cap Growth	Boston Partners Large Cap Value	Russell 3000
Total Domestic Equity	1.00	--	--	--	--
PIMCO RAE Fundamental PLUS Instl	0.96	1.00	--	--	--
Loomis Sayles Large Cap Growth	--	--	--	--	--
Boston Partners Large Cap Value	--	--	--	--	--
Russell 3000	0.98	0.97	--	--	1.00

PIMCO RAE Fundamental PLUS Instl
 Cumulative Performance Comparison (Gross of Fees)

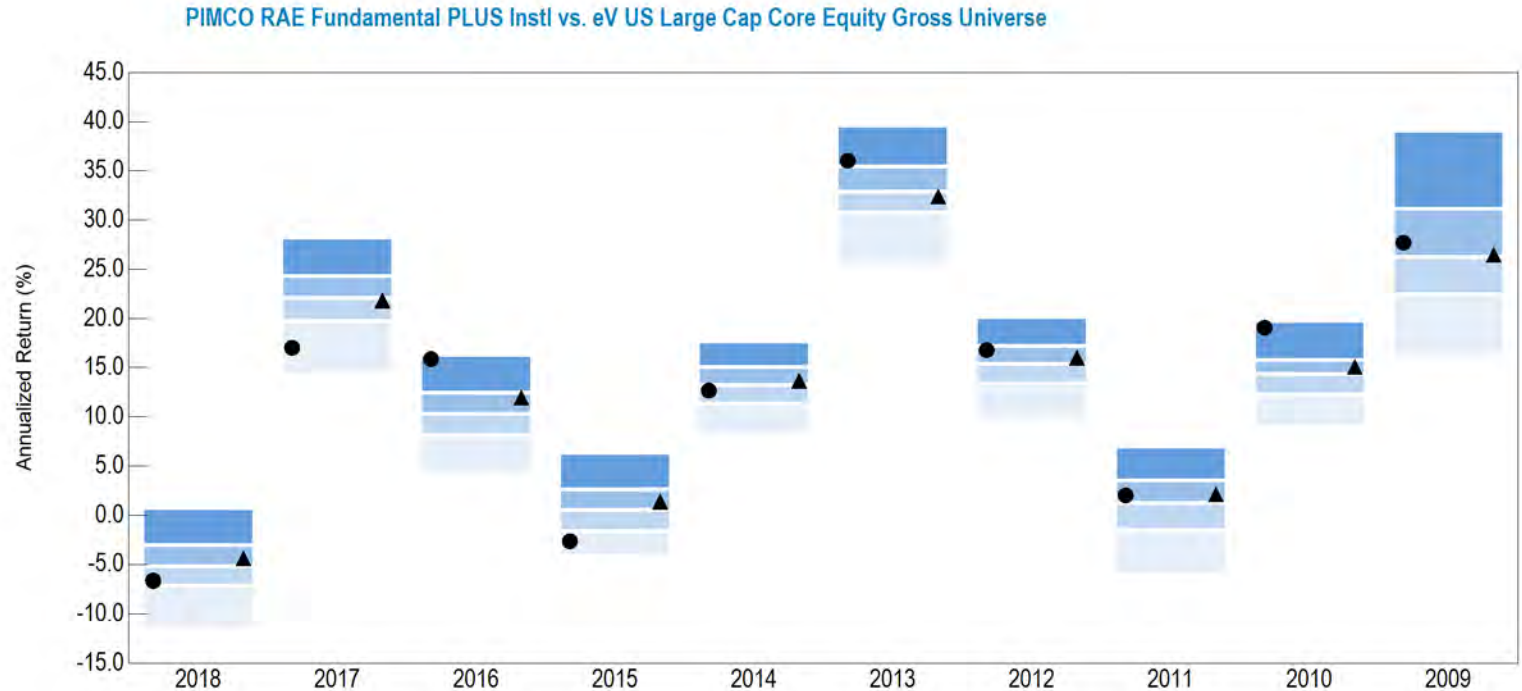
Period Ending: December 31, 2018



	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-8.6		0.7		11.5		10.2		14.3		14.9	
25th Percentile	-11.6		-3.0		9.7		8.8		13.1		13.6	
Median	-13.6		-5.1		8.6		8.0		12.3		12.9	
75th Percentile	-15.1		-7.1		7.5		7.2		11.5		12.2	
95th Percentile	-17.3		-11.4		5.2		5.4		9.2		11.0	
# of Portfolios	316		316		306		289		260		221	
● PIMCO RAE Fundamental PLUS Instl	-14.0	(60)	-6.6	(72)	8.2	(63)	6.8	(82)	12.0	(62)	13.1	(44)
▲ S&P 500	-13.5	(49)	-4.4	(40)	9.3	(37)	8.5	(33)	12.7	(39)	13.1	(41)

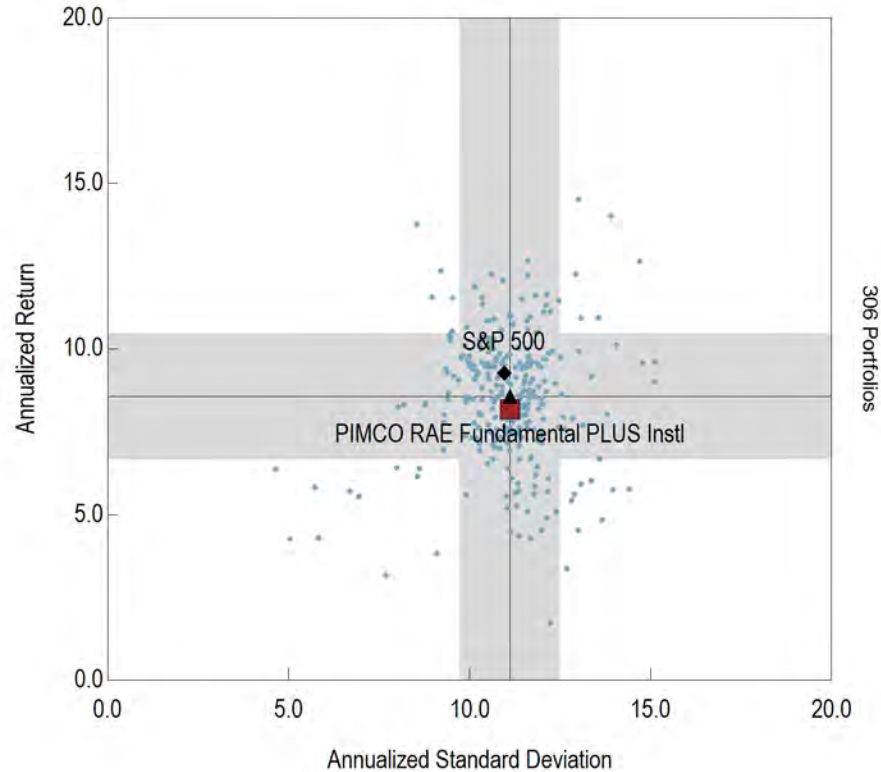
PIMCO RAE Fundamental PLUS Instl
 Consecutive Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018



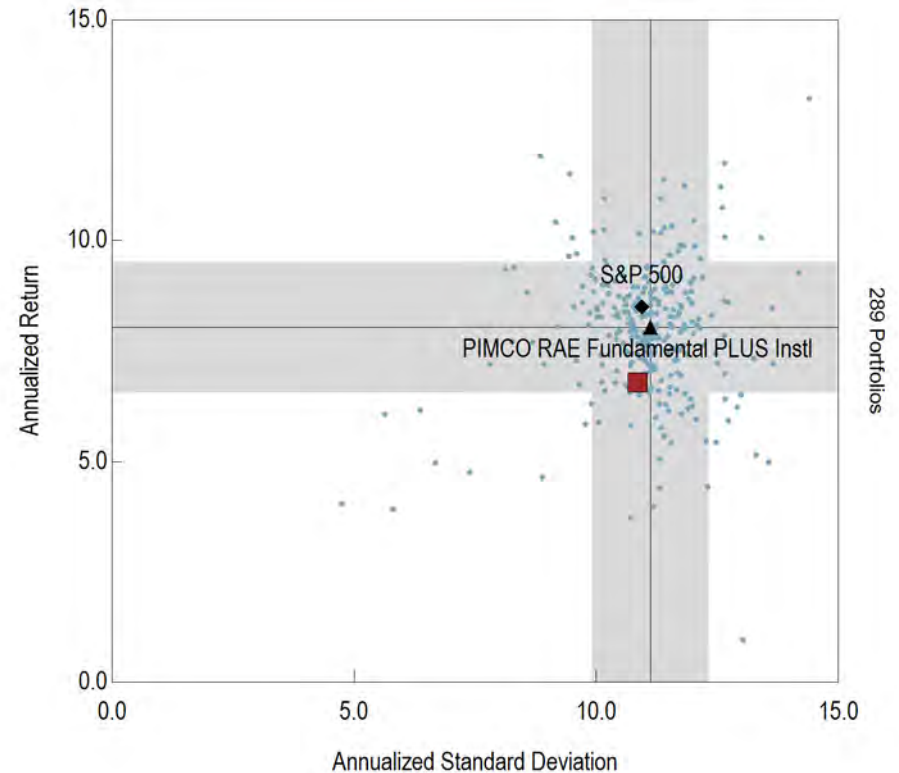
	Return (Rank)									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
5th Percentile	0.7	28.2	16.3	6.3	17.7	39.6	20.1	7.0	19.7	39.1
25th Percentile	-3.0	24.3	12.5	2.7	15.1	35.5	17.2	3.6	15.8	31.2
Median	-5.1	22.1	10.4	0.6	13.3	32.9	15.4	1.3	14.4	26.3
75th Percentile	-7.1	19.8	8.2	-1.6	11.4	30.8	13.4	-1.5	12.3	22.6
95th Percentile	-11.4	14.4	4.3	-4.1	8.2	25.4	9.8	-5.9	9.1	16.1
# of Portfolios	316	318	308	267	267	261	254	259	254	280
● PIMCO RAE Fundamental PLUS Instl	-6.6 (72)	17.0 (89)	15.9 (6)	-2.7 (86)	12.7 (58)	36.0 (22)	16.8 (29)	2.0 (41)	19.0 (7)	27.7 (42)
▲ S&P 500	-4.4 (40)	21.8 (53)	12.0 (31)	1.4 (42)	13.7 (42)	32.4 (58)	16.0 (41)	2.1 (40)	15.1 (37)	26.5 (48)

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018

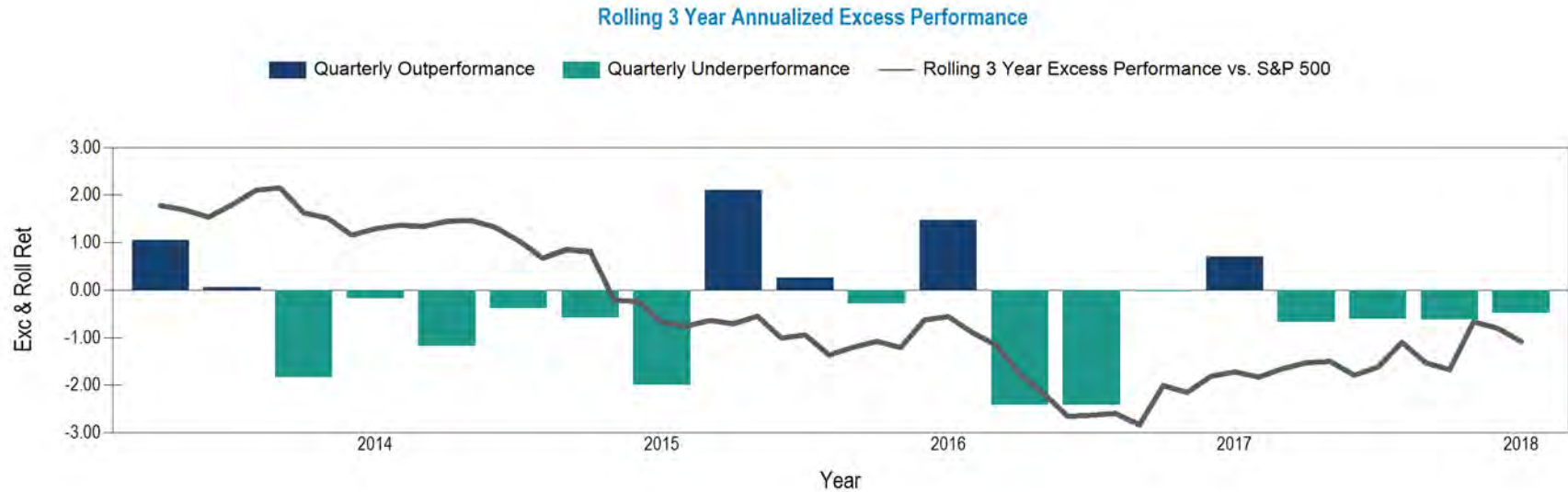


- PIMCO RAE Fundamental PLUS Instl
- ◆ S&P 500
- ▲ Universe Median
- 68% Confidence Interval
- eV US Large Cap Core Equity Gross

Annualized Return vs. Annualized Standard Deviation
 5 Years Ending December 31, 2018



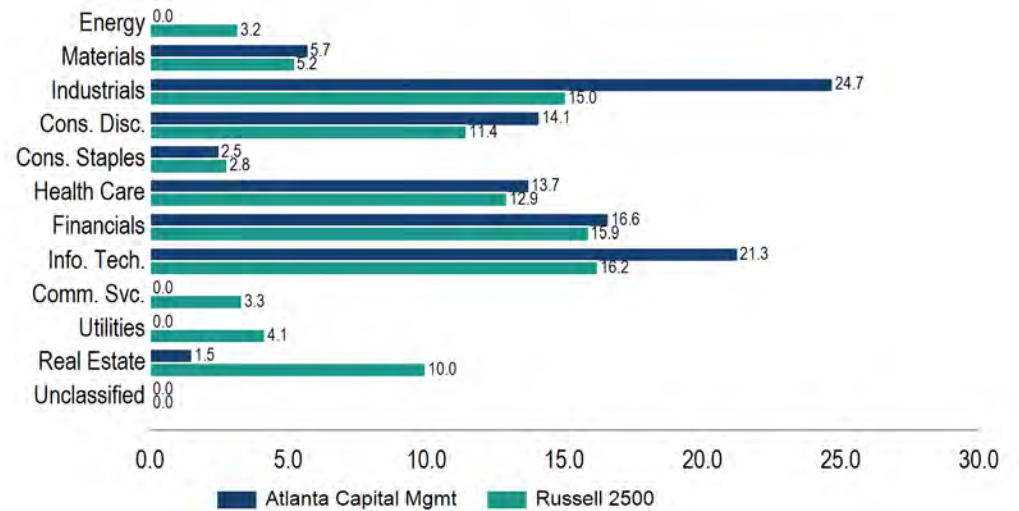
- PIMCO RAE Fundamental PLUS Instl
- ◆ S&P 500
- ▲ Universe Median
- 68% Confidence Interval
- eV US Large Cap Core Equity Gross



Characteristics

	Portfolio	Russell 2500
Number of Holdings	51	2,513
Weighted Avg. Market Cap. (\$B)	7.86	4.43
Median Market Cap. (\$B)	6.04	0.99
Price To Earnings	28.22	17.42
Price To Book	5.20	2.95
Price To Sales	3.44	3.39
Return on Equity (%)	23.02	12.11
Yield (%)	0.92	1.61
Beta	0.86	1.00

Sector Allocation (%) vs Russell 2500



*Unclassified includes Cash

Top Holdings
 Ending Period Weight

TELEFLEX	5.06%
W R BERKLEY	4.93%
TRANSUNION	4.15%
HENRY SCHEIN	3.70%
CDW	3.61%
SERVICEMASTER GLB.HDG.	3.56%
ARAMARK	3.33%
LENNOX INTL.	3.01%
APTARGROUP	2.80%
CARLISLE COS.	2.72%
Total	36.87%

Top Contributors

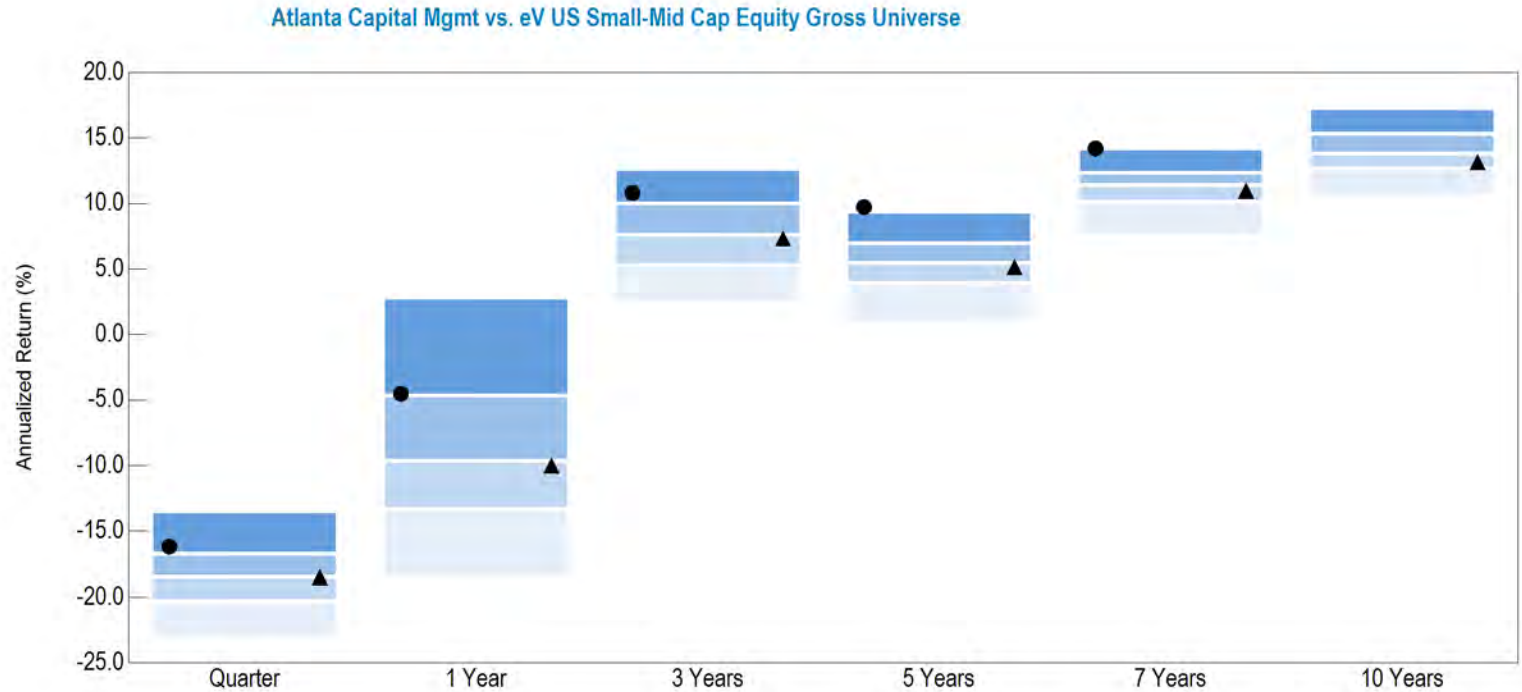
	Avg Wgt	Return	Contribution
CHURCH & DWIGHT CO.	1.75	11.13	0.20
LENNOX INTL.	2.17	0.50	0.01
VARIAN MEDICAL SYSTEMS	0.83	1.23	0.01
DENTSPLY SIRONA	1.18	-1.17	-0.01
PROSPERITY BCSH.	0.51	-9.59	-0.05
SERVICE CORP.INTL.	0.58	-8.56	-0.05
POOL	0.53	-10.66	-0.06
WESTAMERICA BANCORP.	0.88	-6.83	-0.06
CHOICE HOTELS INTL.	0.53	-13.58	-0.07
HENRY SCHEIN	1.26	-7.66	-0.10

Bottom Contributors

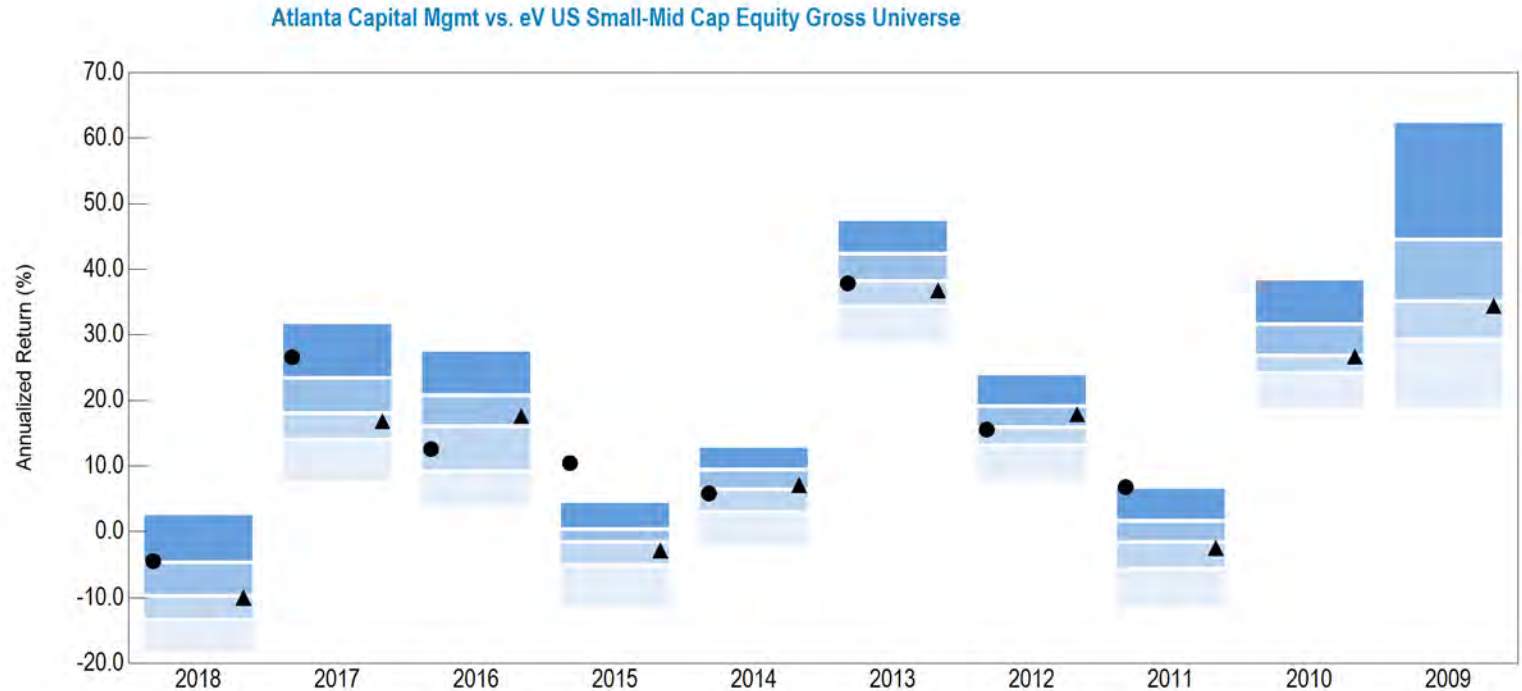
	Avg Wgt	Return	Contribution
ARAMARK	3.68	-32.46	-1.19
BLACKBAUD	2.78	-37.91	-1.06
TRANSUNION	4.08	-22.71	-0.93
WEX	2.91	-30.24	-0.88
ANSYS	3.32	-23.43	-0.78
BIO-RAD LABORATORIES 'A'	2.89	-25.81	-0.75
SEI INVESTMENTS	2.48	-23.83	-0.59
MANHATTAN ASSOCS.	2.62	-22.40	-0.59
BIO-TECHNE	1.88	-28.97	-0.54
FAIR ISAAC	2.95	-18.18	-0.54

Atlanta Capital Mgmt
 Cumulative Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018

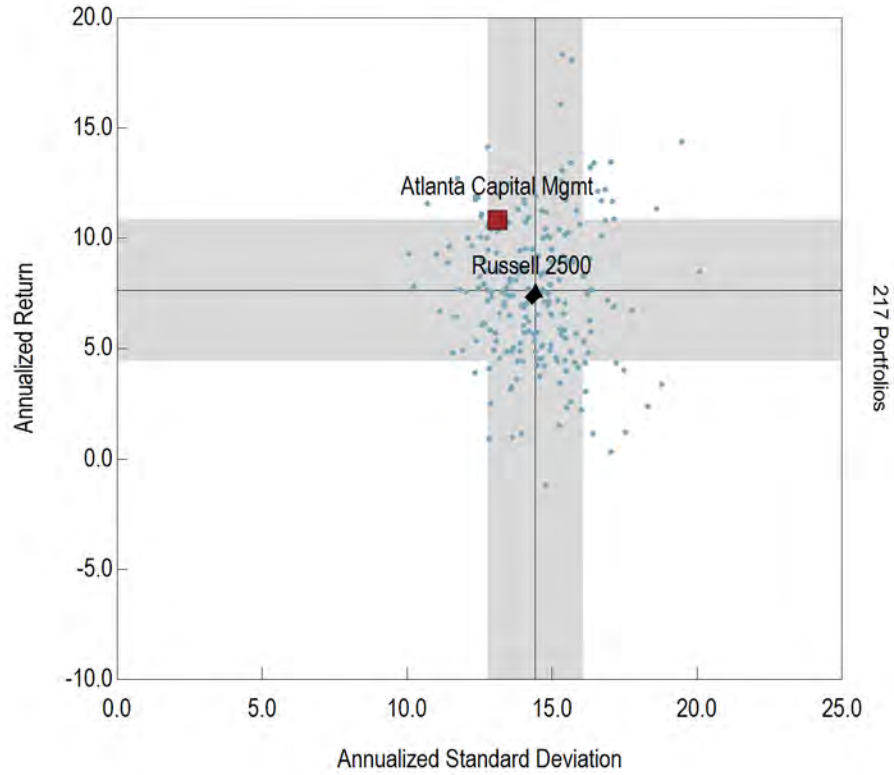


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-13.5		2.8		12.6		9.3		14.2		17.3	
25th Percentile	-16.7		-4.6		10.0		7.0		12.4		15.4	
Median	-18.4		-9.6		7.6		5.5		11.4		13.9	
75th Percentile	-20.2		-13.3		5.3		4.0		10.2		12.7	
95th Percentile	-23.1		-18.5		2.5		1.0		7.6		10.6	
# of Portfolios	236		236		217		198		179		150	
● Atlanta Capital Mgmt	-16.2	(21)	-4.5	(25)	10.8	(18)	9.7	(4)	14.2	(5)	--	(--)
▲ Russell 2500	-18.5	(51)	-10.0	(53)	7.3	(55)	5.1	(58)	11.0	(59)	13.2	(67)



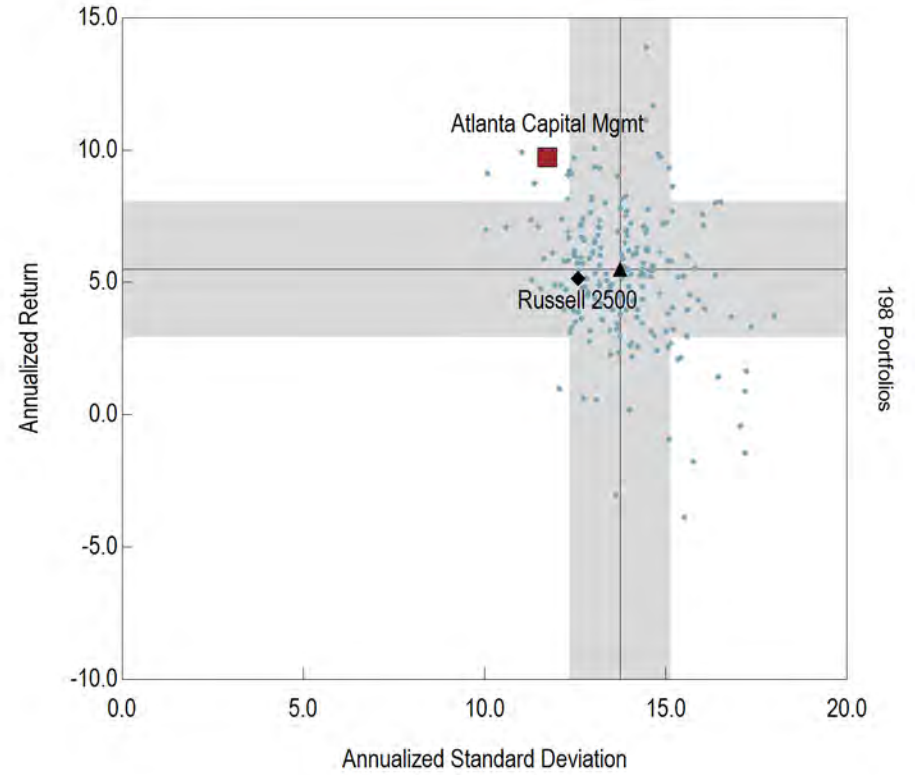
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Return (Rank)										
5th Percentile	2.8	31.9	27.6	4.6	13.0	47.6	24.1	6.8	38.5	62.6
25th Percentile	-4.6	23.5	20.8	0.4	9.6	42.5	19.2	1.7	31.7	44.6
Median	-9.6	18.1	16.1	-1.5	6.5	38.2	16.0	-1.5	26.9	35.2
75th Percentile	-13.3	14.1	9.2	-5.0	3.1	34.4	13.3	-5.6	24.3	29.4
95th Percentile	-18.5	7.5	3.8	-11.6	-2.3	28.7	7.8	-11.6	18.7	18.7
# of Portfolios	236	233	238	215	210	210	216	211	210	226
● Atlanta Capital Mgmt	-4.5 (25)	26.6 (15)	12.6 (62)	10.4 (1)	5.8 (56)	37.8 (52)	15.5 (55)	6.8 (5)	-- (--)	-- (--)
▲ Russell 2500	-10.0 (53)	16.8 (61)	17.6 (38)	-2.9 (64)	7.1 (46)	36.8 (58)	17.9 (36)	-2.5 (56)	26.7 (52)	34.4 (55)

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018

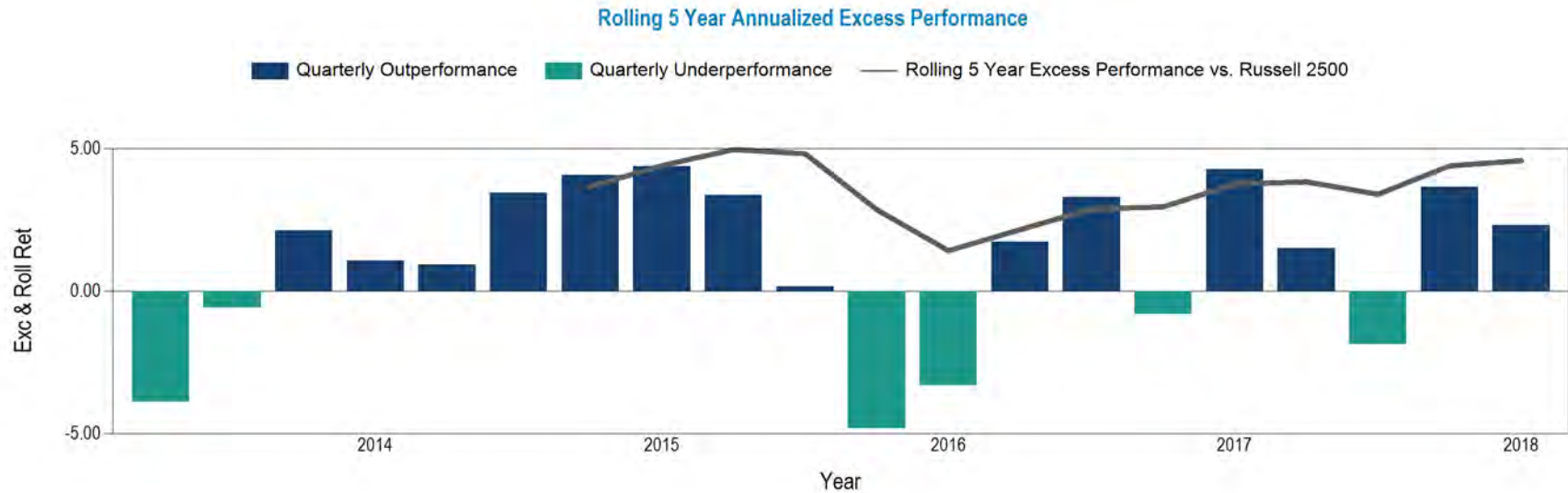
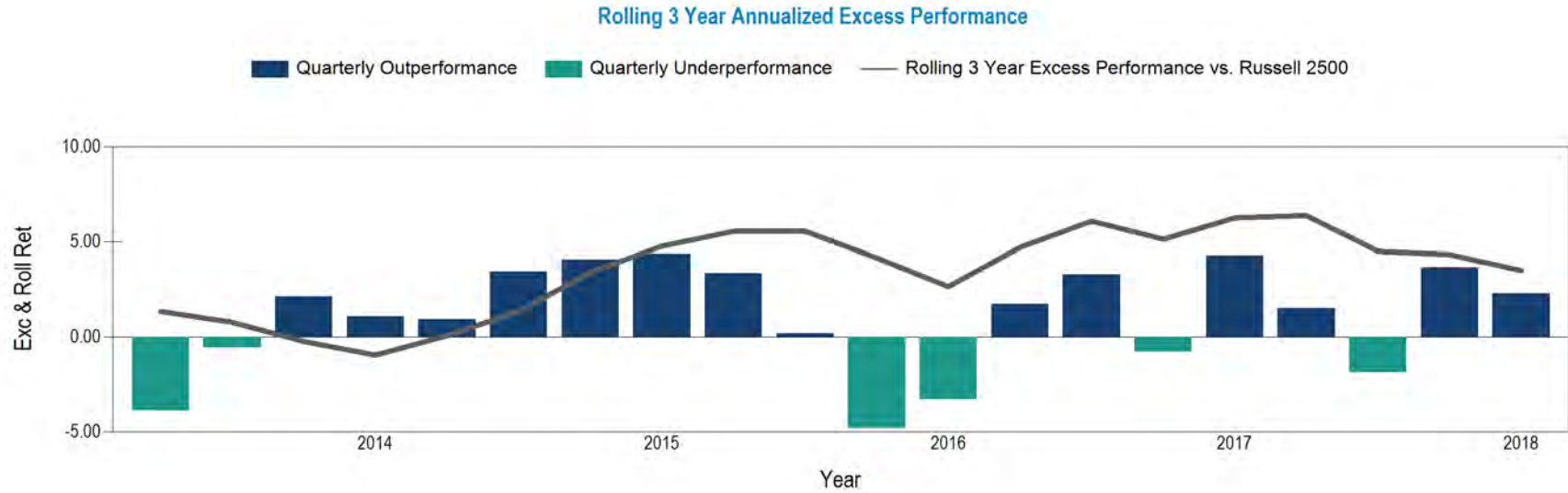


- Atlanta Capital Mgmt
- ◆ Russell 2500
- ▲ Universe Median
- 68% Confidence Interval
- eV US Small-Mid Cap Equity Gross

Annualized Return vs. Annualized Standard Deviation
 5 Years Ending December 31, 2018



- Atlanta Capital Mgmt
- ◆ Russell 2500
- ▲ Universe Median
- 68% Confidence Interval
- eV US Small-Mid Cap Equity Gross

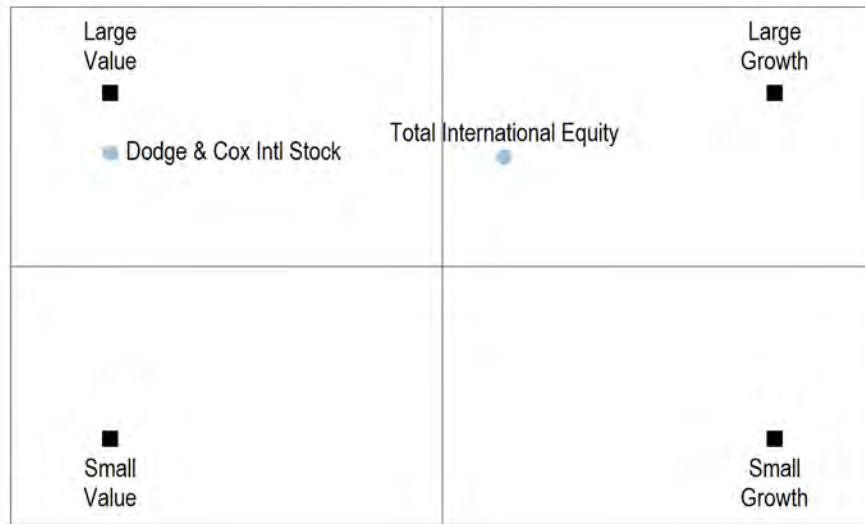


Total International Equity
Asset Class Overview (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	258,784,679	-12.3	-12.2	4.4	2.1	8.5	-12.2	26.6	2.2	-4.3	2.1
MSCI ACWI ex USA Gross		-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4
InvestorForce Public DB ex-US Eq Gross Rank		50	9	61	15	9	9	81	82	68	1
Dodge & Cox Intl Stock	128,636,252	-12.2	-17.5	3.9	0.2	8.4	-17.5	24.7	9.0	-10.8	0.7
MSCI EAFE Gross		-12.5	-13.4	3.4	1.0	6.8	-13.4	25.6	1.5	-0.4	-4.5
eV All EAFE Equity Gross Rank		23	73	39	88	45	73	74	3	99	13
WCM International Growth	130,148,427	-12.2	-6.7	--	--	--	-6.7	--	--	--	--
MSCI ACWI ex USA Gross		-11.4	-13.8	--	--	--	-13.8	--	--	--	--
eV ACWI ex-US All Cap Growth Eq Gross Rank		8	1	--	--	--	1	--	--	--	--

EAFE Effective Style Map
3 Years Ending December 31, 2018



EAFE Effective Style Map
5 Years Ending December 31, 2018



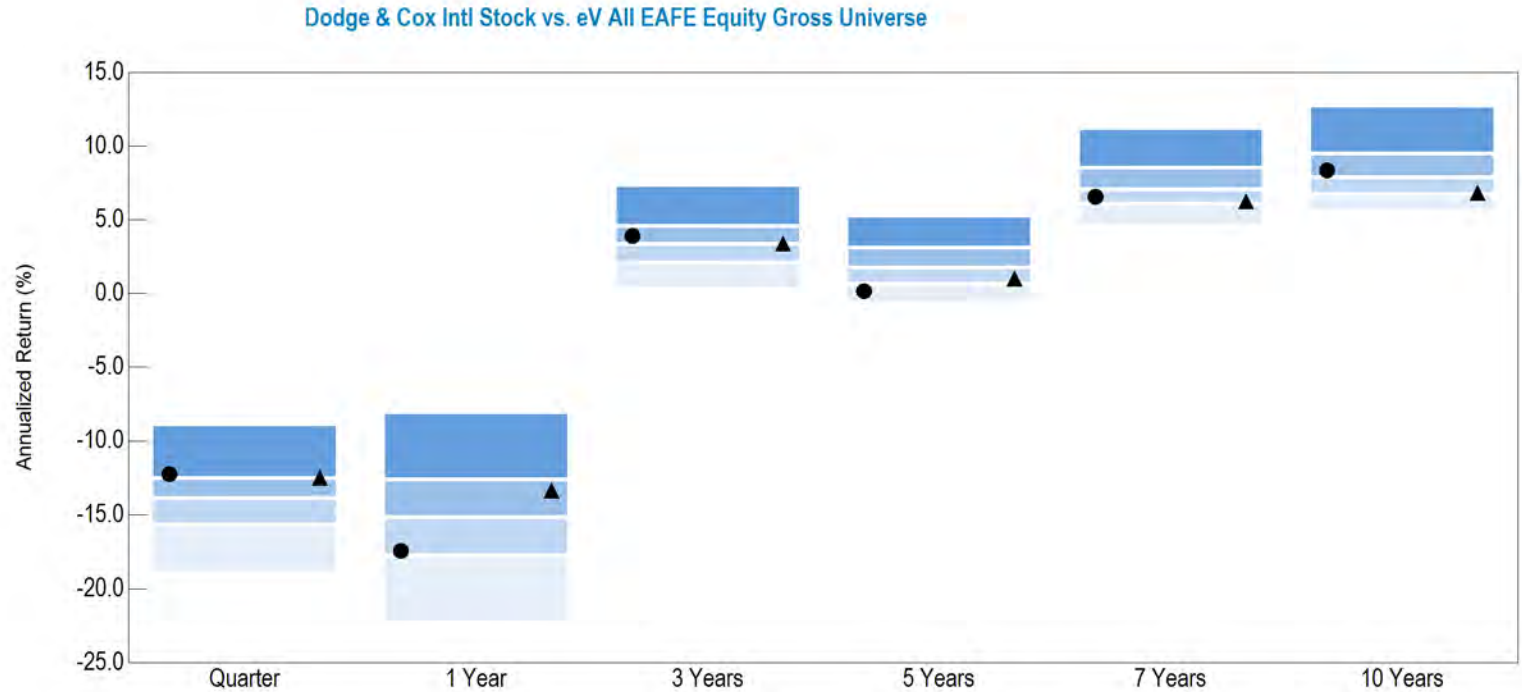
Total International Equity
 Asset Class Overview (Net of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	258,784,679	-12.4	-12.8	3.7	1.4	7.9	-12.8	25.8	1.6	-4.9	1.4
<i>MSCI ACWI ex USA Gross</i>		-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4
Dodge & Cox Intl Stock	128,636,252	-12.4	-18.0	3.2	-0.5	7.7	-18.0	23.9	8.3	-11.4	0.1
<i>MSCI EAFE Gross</i>		-12.5	-13.4	3.4	1.0	6.8	-13.4	25.6	1.5	-0.4	-4.5
WCM International Growth	130,148,427	-12.3	-7.4	--	--	--	-7.4	--	--	--	--
<i>MSCI ACWI ex USA Gross</i>		-11.4	-13.8	--	--	--	-13.8	--	--	--	--

Dodge & Cox Intl Stock
 Cumulative Performance Comparison (Gross of Fees)

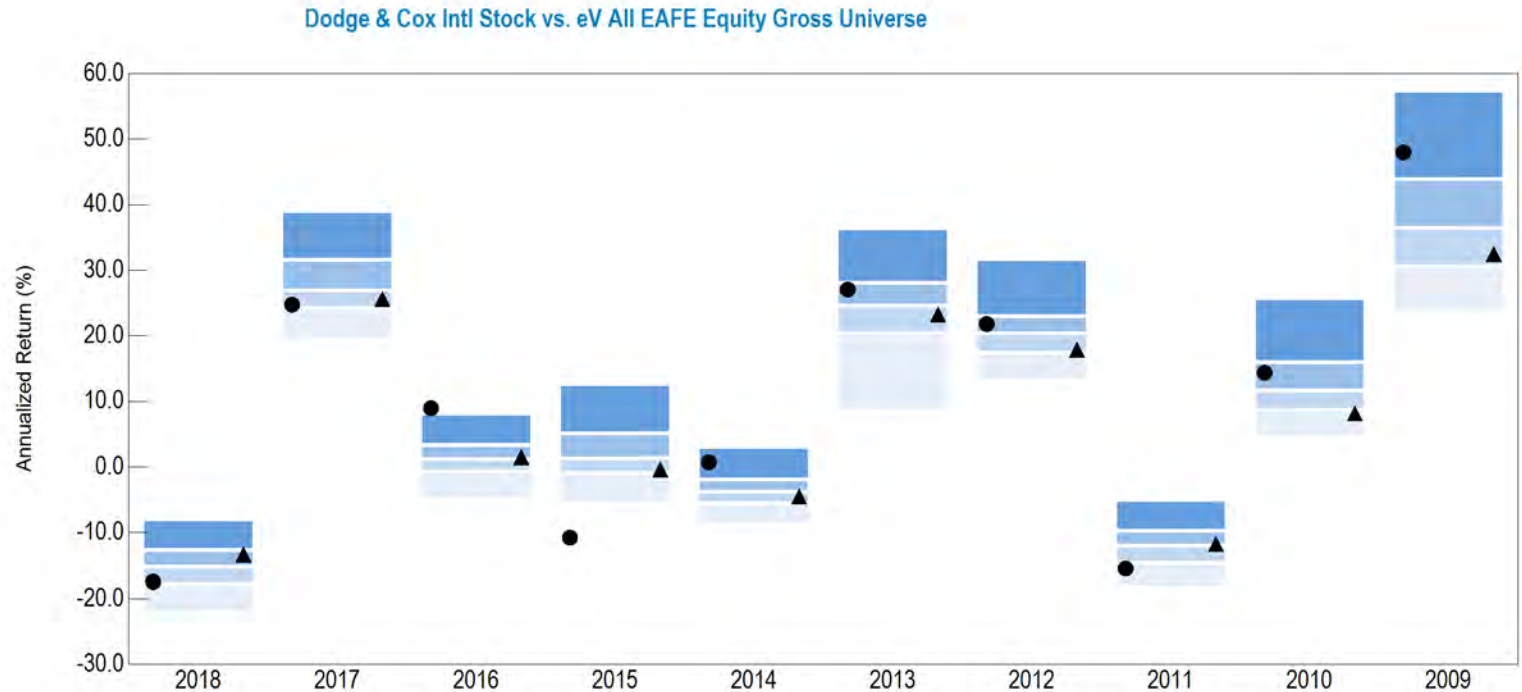
Period Ending: December 31, 2018



	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-8.9	-8.0	7.4	5.3	11.2	12.7						
25th Percentile	-12.5	-12.6	4.6	3.1	8.6	9.5						
Median	-13.8	-15.1	3.4	1.8	7.1	7.9						
75th Percentile	-15.7	-17.8	2.1	0.7	6.1	6.8						
95th Percentile	-18.9	-22.2	0.3	-0.7	4.6	5.6						
# of Portfolios	393	391	376	337	303	269						
● Dodge & Cox Intl Stock	-12.2	(23)	-17.5	(73)	3.9	(39)	0.2	(88)	6.6	(65)	8.4	(45)
▲ MSCI EAFE Gross	-12.5	(25)	-13.4	(35)	3.4	(51)	1.0	(68)	6.2	(72)	6.8	(75)

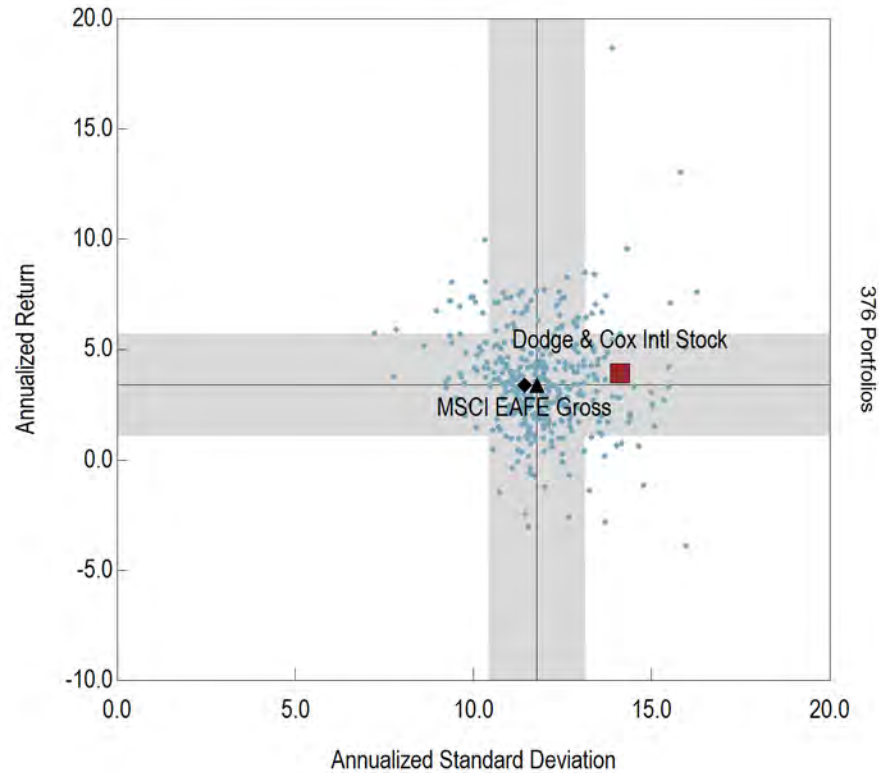
Dodge & Cox Intl Stock
 Consecutive Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018



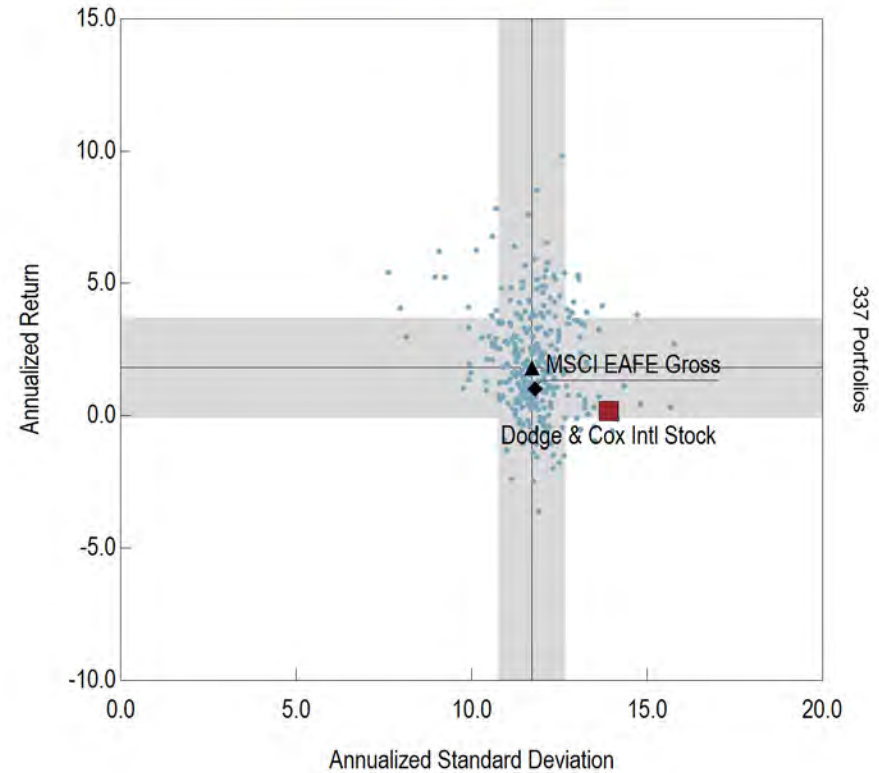
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Return (Rank)										
5th Percentile	-8.0	39.0	8.1	12.6	3.0	36.3	31.7	-5.1	25.7	57.3
25th Percentile	-12.6	31.6	3.4	5.2	-1.9	28.1	23.1	-9.7	16.1	44.0
Median	-15.1	27.0	1.3	1.4	-3.7	24.6	20.4	-12.0	11.7	36.5
75th Percentile	-17.8	24.3	-0.6	-0.9	-5.4	20.5	17.5	-14.5	8.7	30.7
95th Percentile	-22.2	19.7	-4.9	-5.4	-8.6	8.6	13.3	-18.2	4.6	23.7
# of Portfolios	391	370	350	325	314	284	263	278	352	455
● Dodge & Cox Intl Stock	-17.5 (73)	24.7 (74)	9.0 (3)	-10.8 (99)	0.7 (13)	27.1 (32)	21.8 (37)	-15.5 (82)	14.4 (36)	48.0 (17)
▲ MSCI EAFE Gross	-13.4 (35)	25.6 (63)	1.5 (47)	-0.4 (66)	-4.5 (60)	23.3 (60)	17.9 (72)	-11.7 (47)	8.2 (78)	32.5 (67)

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018



- Dodge & Cox Intl Stock
- ◆ MSCI EAFE Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV All EAFE Equity Gross

Annualized Return vs. Annualized Standard Deviation
 5 Years Ending December 31, 2018



- Dodge & Cox Intl Stock
- ◆ MSCI EAFE Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV All EAFE Equity Gross



Total Domestic Fixed Income Asset Class Overview (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Fixed Income	271,843,187	-0.3	0.4	3.0	3.0	6.3	0.4	4.3	4.5	1.1	4.7
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0
<i>InvestorForce Public DB US Fix Inc Gross Rank</i>		91	55	35	37	13	55	50	49	17	68
BlackRock Core Bond	97,785,751	1.2	0.3	--	--	--	0.3	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	--	--	--	0.0	--	--	--	--
<i>eV US Core Fixed Inc Gross Rank</i>		68	27	--	--	--	27	--	--	--	--
Dodge & Cox Income Fund	99,926,139	0.4	0.1	--	--	--	0.1	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	--	--	--	0.0	--	--	--	--
<i>eV US Core Fixed Inc Gross Rank</i>		95	43	--	--	--	43	--	--	--	--
Pacific Asset Corporate Loan	74,131,297	-3.2	1.0	5.0	--	--	1.0	4.9	9.2	2.5	--
<i>S&P/LSTA Leveraged Loan Index</i>		-3.5	0.4	4.8	--	--	0.4	4.1	10.2	-0.7	--
<i>eV US Float-Rate Bank Loan Fixed Inc Gross Rank</i>		50	29	42	--	--	29	26	51	9	--

Fixed Income Effective Style Map
3 Years Ending December 31, 2018



Fixed Income Effective Style Map
5 Years Ending December 31, 2018



Total Domestic Fixed Income
Asset Class Overview (Net of Fees)

Period Ending: December 31, 2018

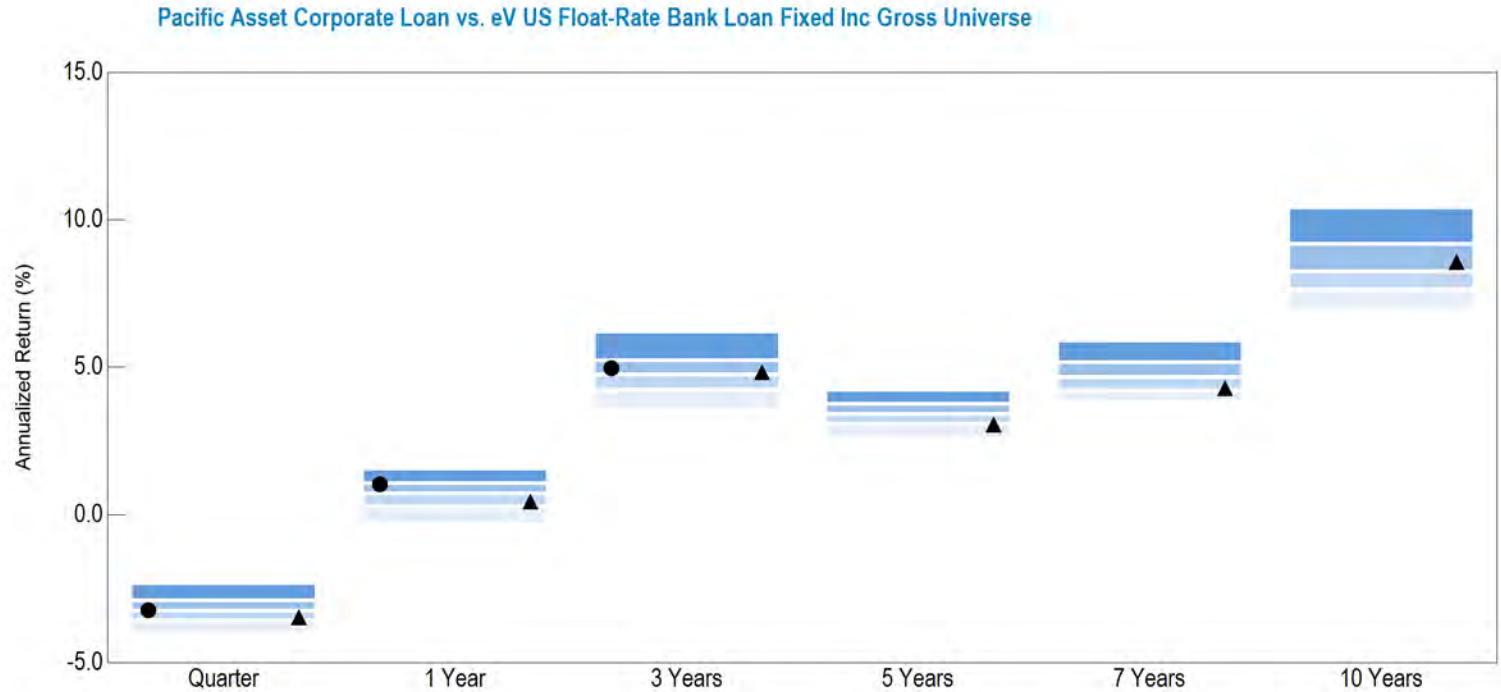
	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Fixed Income	271,843,187	-0.4	0.0	2.7	2.7	6.0	0.0	3.9	4.2	0.9	4.4
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0
BlackRock Core Bond	97,785,751	1.1	0.1	--	--	--	0.1	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	--	--	--	0.0	--	--	--	--
Dodge & Cox Income Fund	99,926,139	0.3	-0.3	--	--	--	-0.3	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		1.6	0.0	--	--	--	0.0	--	--	--	--
Pacific Asset Corporate Loan	74,131,297	-3.3	0.7	4.6	--	--	0.7	4.6	8.8	2.1	--
<i>S&P/LSTA Leveraged Loan Index</i>		-3.5	0.4	4.8	--	--	0.4	4.1	10.2	-0.7	--

Correlation Matrix
5 Years Ending December 31, 2018

	Total Domestic Fixed Income	BlackRock Core Bond	Dodge & Cox Income Fund	Pacific Asset Corporate Loan	BBgBarc US Aggregate TR
Total Domestic Fixed Income	1.00	--	--	--	--
BlackRock Core Bond	--	--	--	--	--
Dodge & Cox Income Fund	--	--	--	--	--
Pacific Asset Corporate Loan	--	--	--	--	--
BBgBarc US Aggregate TR	0.86	--	--	--	1.00

Pacific Asset Corporate Loan
 Cumulative Performance Comparison (Gross of Fees)

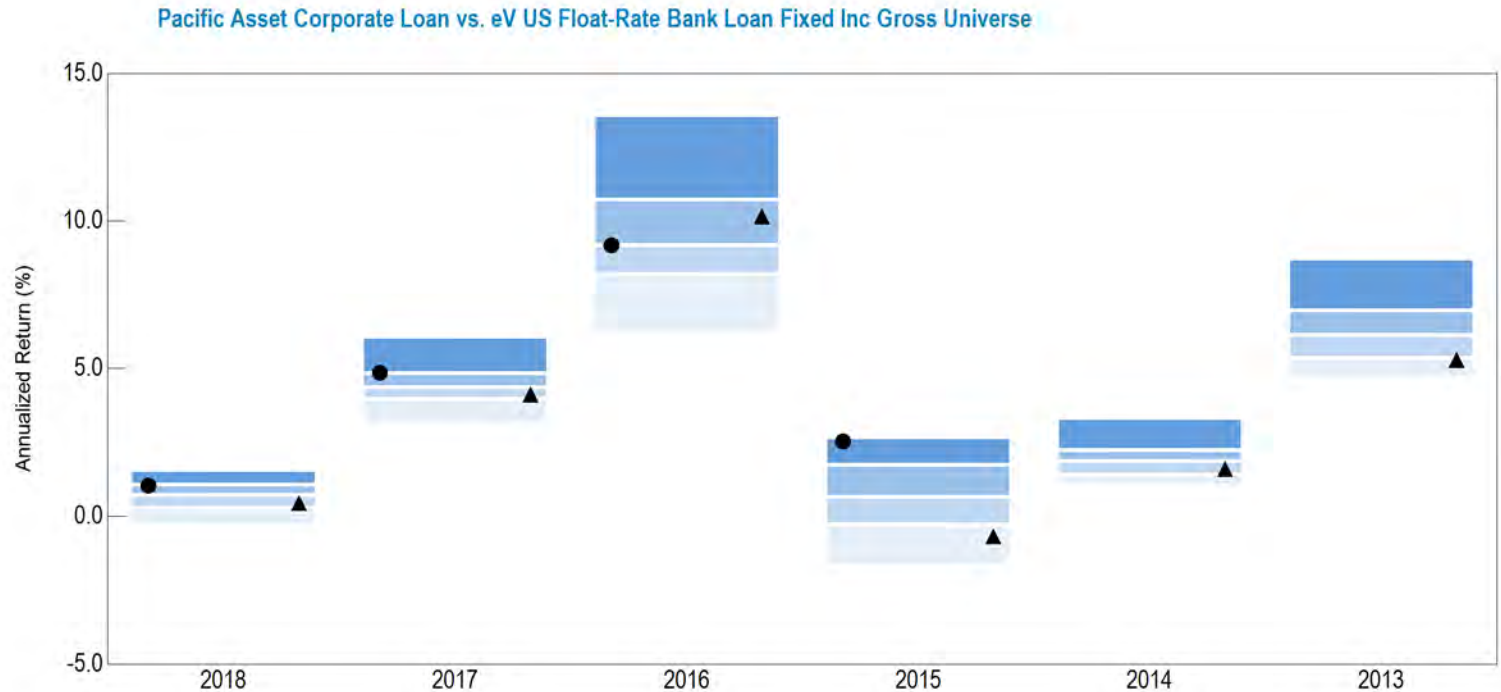
Period Ending: December 31, 2018



	Return (Rank)											
	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-2.3		1.6		6.2		4.2		5.9		10.4	
25th Percentile	-2.9		1.1		5.3		3.8		5.2		9.2	
Median	-3.2		0.7		4.8		3.4		4.7		8.3	
75th Percentile	-3.5		0.3		4.2		3.1		4.2		7.7	
95th Percentile	-4.0		-0.3		3.6		2.6		3.8		7.0	
# of Portfolios	77		76		75		75		63		48	
● Pacific Asset Corporate Loan	-3.2	(50)	1.0	(29)	5.0	(42)	--	(--)	--	(--)	--	(--)
▲ S&P/LSTA Leveraged Loan Index	-3.5	(71)	0.4	(68)	4.8	(44)	3.1	(78)	4.3	(71)	8.6	(46)

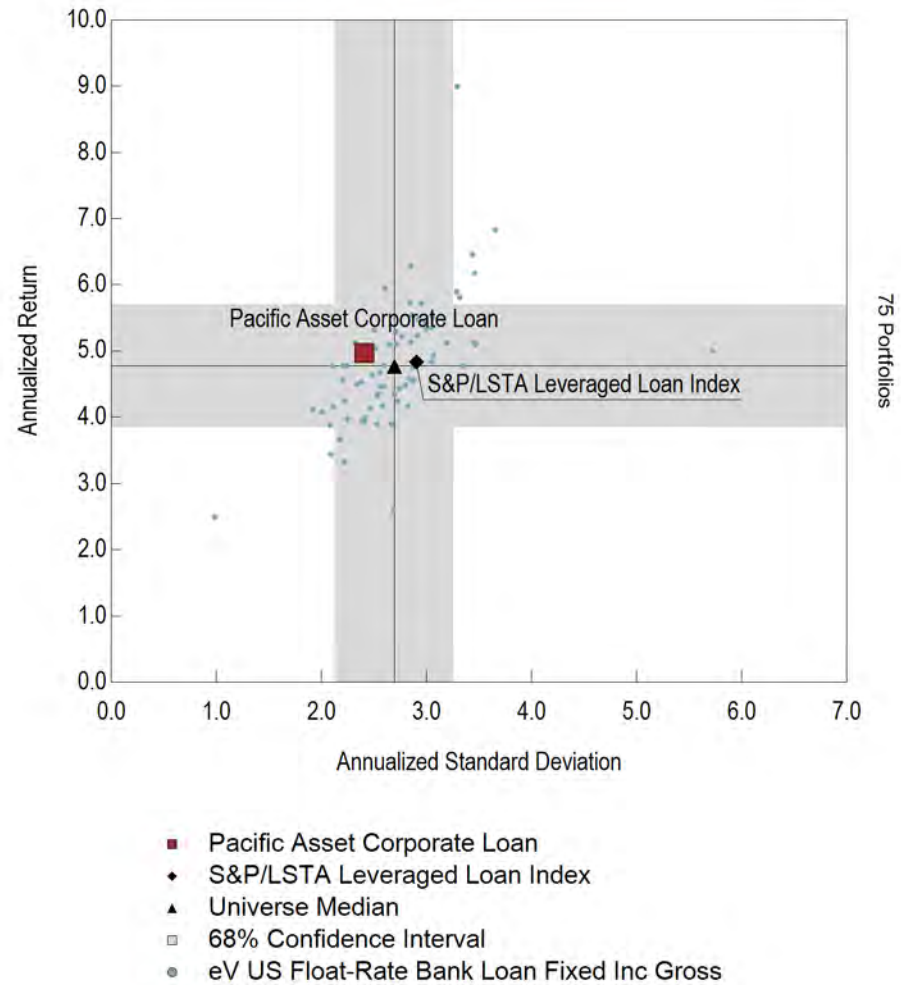
Pacific Asset Corporate Loan
 Consecutive Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018



	2018		2017		2016		2015		2014		2013	
5th Percentile	1.6		6.1		13.6		2.7		3.3		8.7	
25th Percentile	1.1		4.9		10.7		1.8		2.3		7.0	
Median	0.7		4.4		9.2		0.7		1.9		6.2	
75th Percentile	0.3		4.0		8.2		-0.3		1.4		5.4	
95th Percentile	-0.3		3.1		6.2		-1.7		1.1		4.7	
# of Portfolios	76		75		69		54		48		53	
● Pacific Asset Corporate Loan	1.0	(29)	4.9	(26)	9.2	(51)	2.5	(9)	--	(--)	--	(--)
▲ S&P/LSTA Leveraged Loan Index	0.4	(68)	4.1	(71)	10.2	(35)	-0.7	(82)	1.6	(68)	5.3	(79)

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018





Total Global Fixed
Asset Class Overview (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Global Fixed	145,838,359	-0.3	-6.6	4.2	-0.5	2.9	-6.6	14.4	5.8	-11.8	-2.2
<i>FTSE World Govt Bond Index</i>		1.8	-0.8	2.7	0.8	1.5	-0.8	7.5	1.6	-3.6	-0.5
<i>InvestorForce Public DB Gbl Fix Inc Gross Rank</i>		38	99	70	96	99	99	29	67	95	93
Brandywine Global Fixed Income	72,941,434	-2.2	-4.1	3.3	0.6	3.7	-4.1	12.5	2.2	-9.3	2.9
<i>FTSE WGBI ex US TR</i>		1.3	-1.8	3.3	0.3	1.3	-1.8	10.3	1.8	-5.5	-2.7
<i>eV Global Fixed Inc Unhedged Gross Rank</i>		78	83	52	85	60	83	9	71	96	43
Stone Harbor Local Markets Ins	72,896,925	1.6	-9.0	5.2	-1.7	--	-9.0	16.4	9.9	-14.4	-7.7
<i>JPM GBI-EM Global Diversified TR USD</i>		2.1	-6.2	5.9	-1.0	--	-6.2	15.2	9.9	-14.9	-5.7
<i>eV All Emg Mkts Fixed Inc Gross Rank</i>		16	94	77	99	--	94	14	67	79	98

Total Global Fixed
Asset Class Overview (Net of Fees)

Period Ending: December 31, 2018

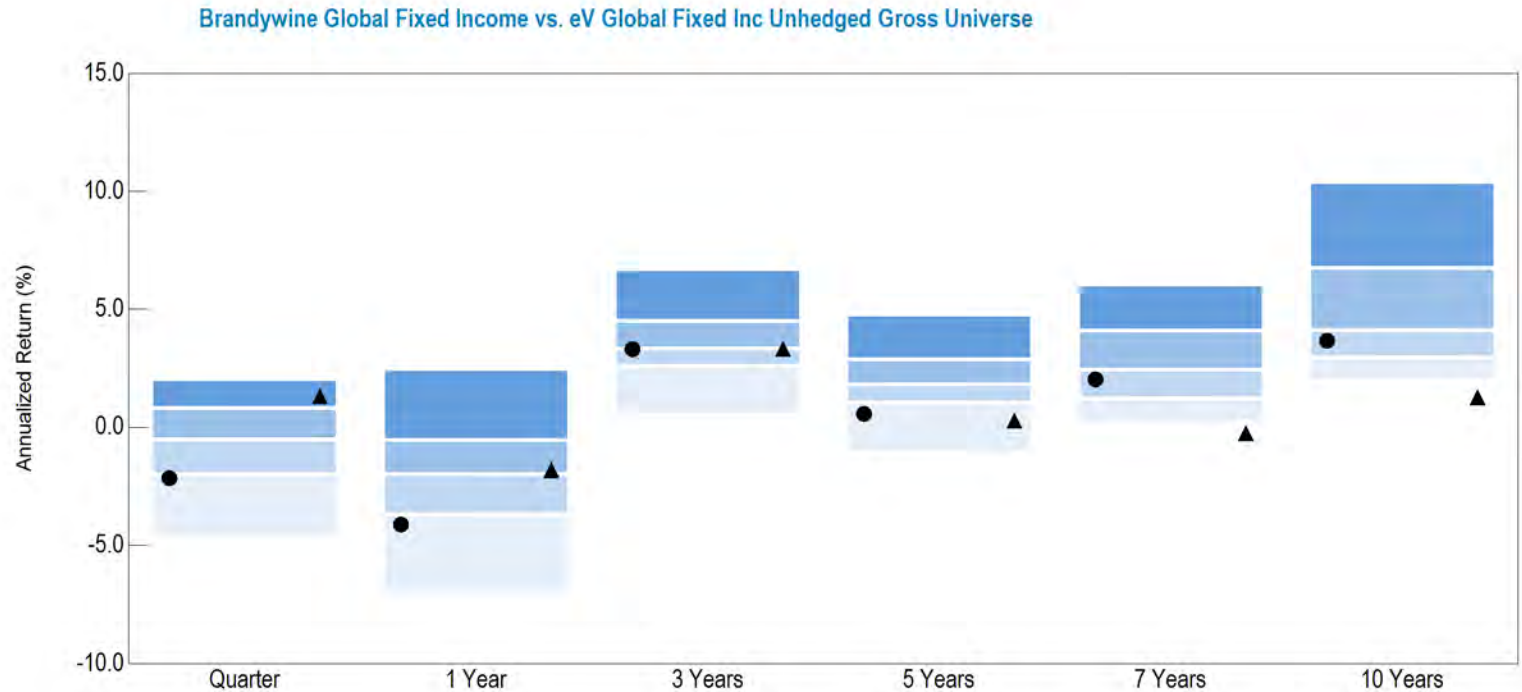
	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Global Fixed	145,838,359	-0.5	-7.2	3.5	-1.1	2.3	-7.2	13.7	5.1	-12.4	-2.8
<i>FTSE World Govt Bond Index</i>		1.8	-0.8	2.7	0.8	1.5	-0.8	7.5	1.6	-3.6	-0.5
Brandywine Global Fixed Income	72,941,434	-2.3	-4.5	2.9	0.1	3.2	-4.5	12.0	1.7	-9.7	2.4
<i>FTSE WGBI ex US TR</i>		1.3	-1.8	3.3	0.3	1.3	-1.8	10.3	1.8	-5.5	-2.7
Stone Harbor Local Markets Ins	72,896,925	1.4	-9.8	4.3	-2.5	--	-9.8	15.4	9.0	-15.1	-8.6
<i>JPM GBI-EM Global Diversified TR USD</i>		2.1	-6.2	5.9	-1.0	--	-6.2	15.2	9.9	-14.9	-5.7

Correlation Matrix
Last 5 Years

	Total Global Fixed	Brandywine Global Fixed Income	Stone Harbor Local Markets Ins	FTSE World Govt Bond Index
Total Global Fixed	1.00	--	--	--
Brandywine Global Fixed Income	0.96	1.00	--	--
Stone Harbor Local Markets Ins	0.98	0.87	1.00	--
FTSE World Govt Bond Index	0.77	0.81	0.69	1.00

Brandywine Global Fixed Income
 Cumulative Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018

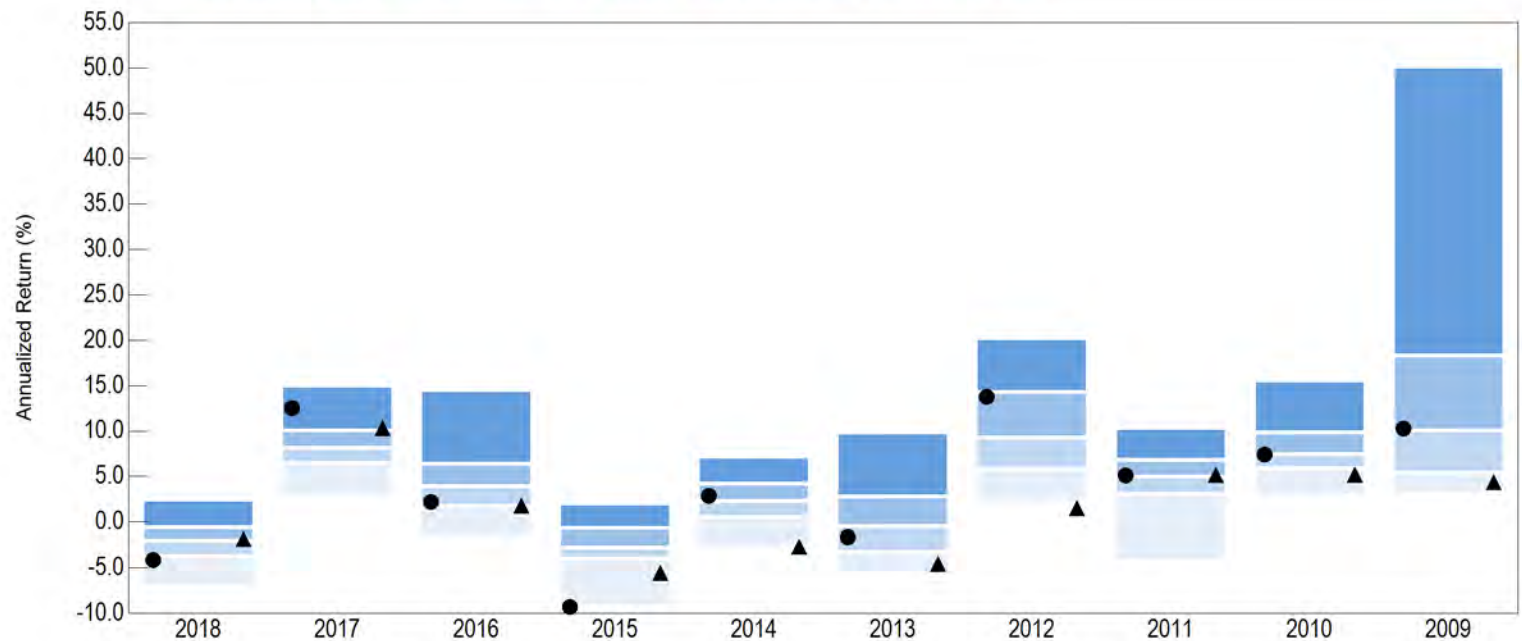


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	2.0	2.5	6.7	4.8	6.0	10.4						
25th Percentile	0.8	-0.5	4.5	2.9	4.1	6.8						
Median	-0.5	-2.0	3.4	1.8	2.5	4.1						
75th Percentile	-2.0	-3.7	2.6	1.1	1.2	3.0						
95th Percentile	-4.7	-7.0	0.5	-1.1	0.2	2.0						
# of Portfolios	231	231	222	204	166	122						
● Brandywine Global Fixed Income	-2.2 (78)	-4.1 (83)	3.3 (52)	0.6 (85)	2.0 (56)	3.7 (60)						
▲ FTSE WGBI ex US TR	1.3 (17)	-1.8 (48)	3.3 (52)	0.3 (87)	-0.3 (99)	1.3 (99)						

Brandywine Global Fixed Income
 Consecutive Performance Comparison (Gross of Fees)

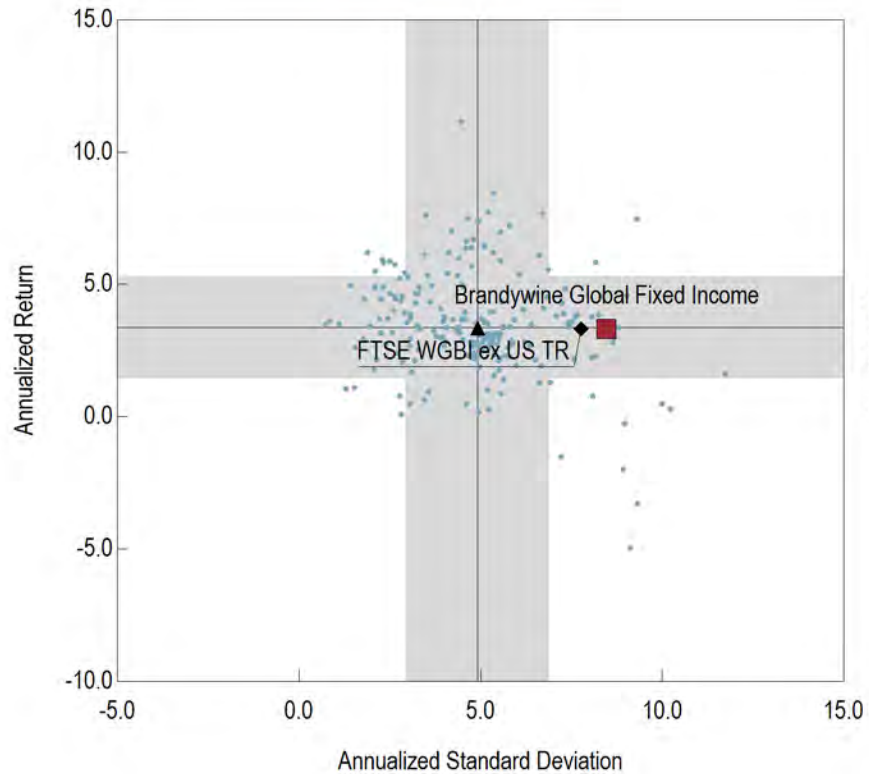
Period Ending: December 31, 2018

Brandywine Global Fixed Income vs. eV Global Fixed Inc Unhedged Gross Universe

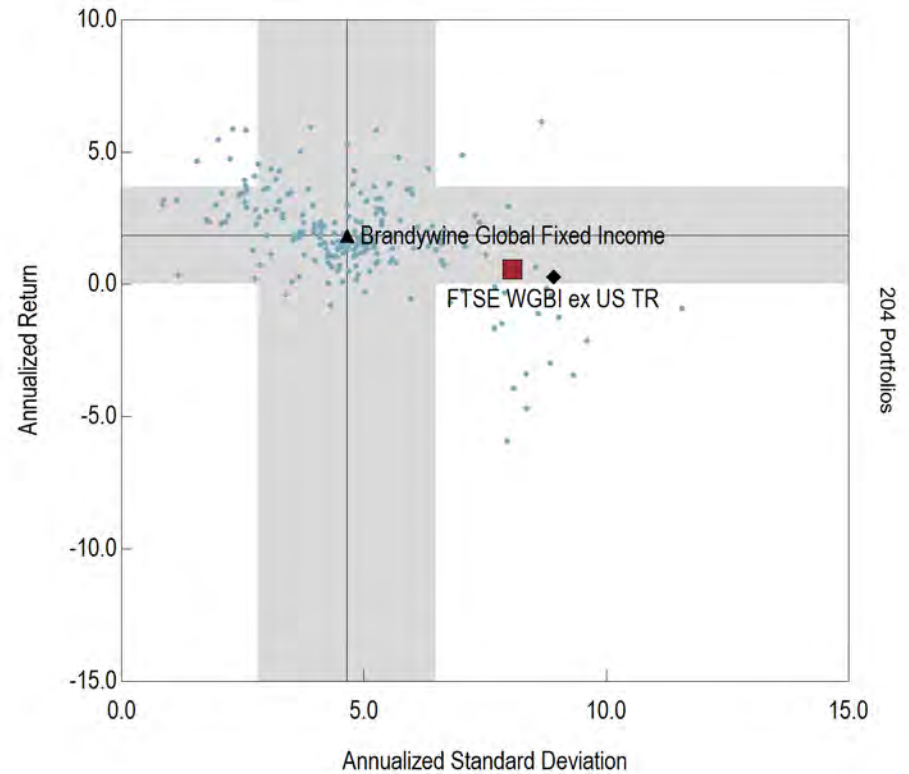


	Return (Rank)									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
5th Percentile	2.5	15.0	14.5	2.0	7.1	9.8	20.2	10.4	15.5	50.1
25th Percentile	-0.5	10.1	6.5	-0.6	4.2	2.8	14.3	6.9	9.9	18.4
Median	-2.0	8.2	4.0	-2.7	2.3	-0.4	9.4	5.0	7.5	10.1
75th Percentile	-3.7	6.5	1.8	-4.0	0.6	-3.2	5.9	3.2	6.0	5.4
95th Percentile	-7.0	3.0	-1.5	-9.2	-2.7	-5.6	2.2	-4.2	3.0	3.2
# of Portfolios	231	231	221	189	159	142	118	108	76	72
● Brandywine Global Fixed Income	-4.1 (83)	12.5 (9)	2.2 (71)	-9.3 (96)	2.9 (43)	-1.6 (59)	13.8 (30)	5.1 (49)	7.4 (52)	10.3 (49)
▲ FTSE WGBI ex US TR	-1.8 (48)	10.3 (21)	1.8 (75)	-5.5 (89)	-2.7 (95)	-4.6 (89)	1.5 (98)	5.2 (48)	5.2 (87)	4.4 (84)

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018



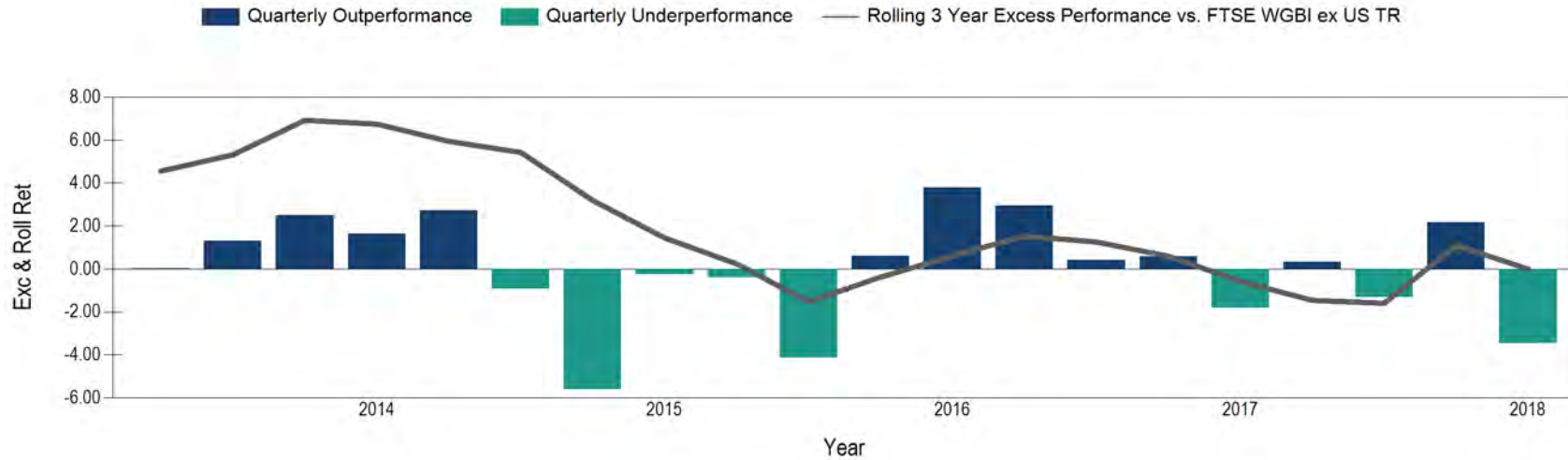
Annualized Return vs. Annualized Standard Deviation
 5 Years Ending December 31, 2018



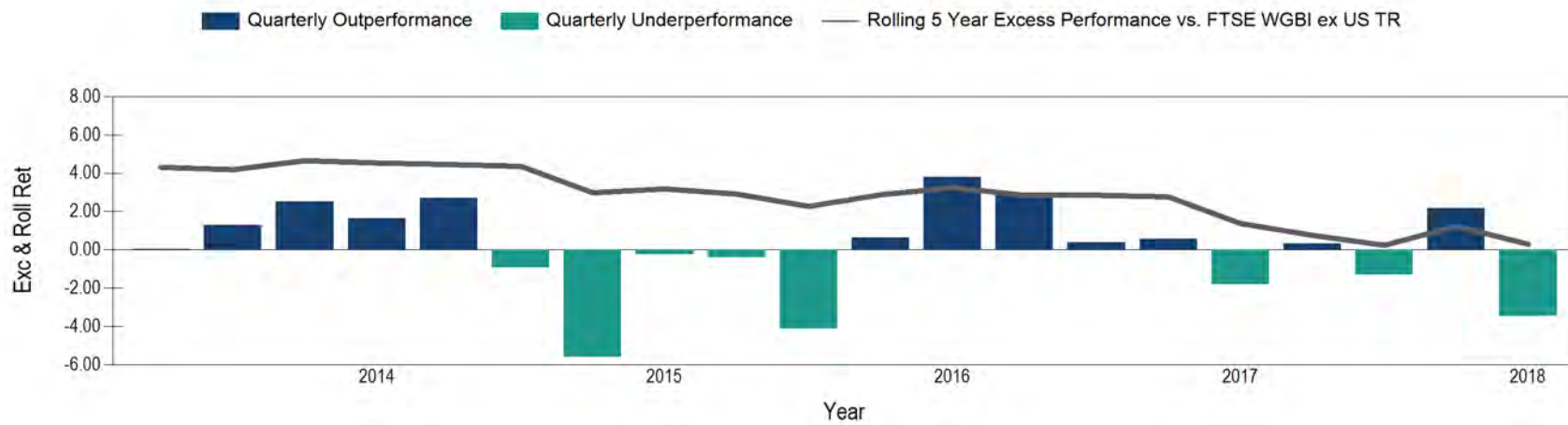
- Brandywine Global Fixed Income
- ◆ FTSE WGBI ex US TR
- ▲ Universe Median
- 68% Confidence Interval
- eV Global Fixed Inc Unhedged Gross

- Brandywine Global Fixed Income
- ◆ FTSE WGBI ex US TR
- ▲ Universe Median
- 68% Confidence Interval
- eV Global Fixed Inc Unhedged Gross

Rolling 3 Year Annualized Excess Performance

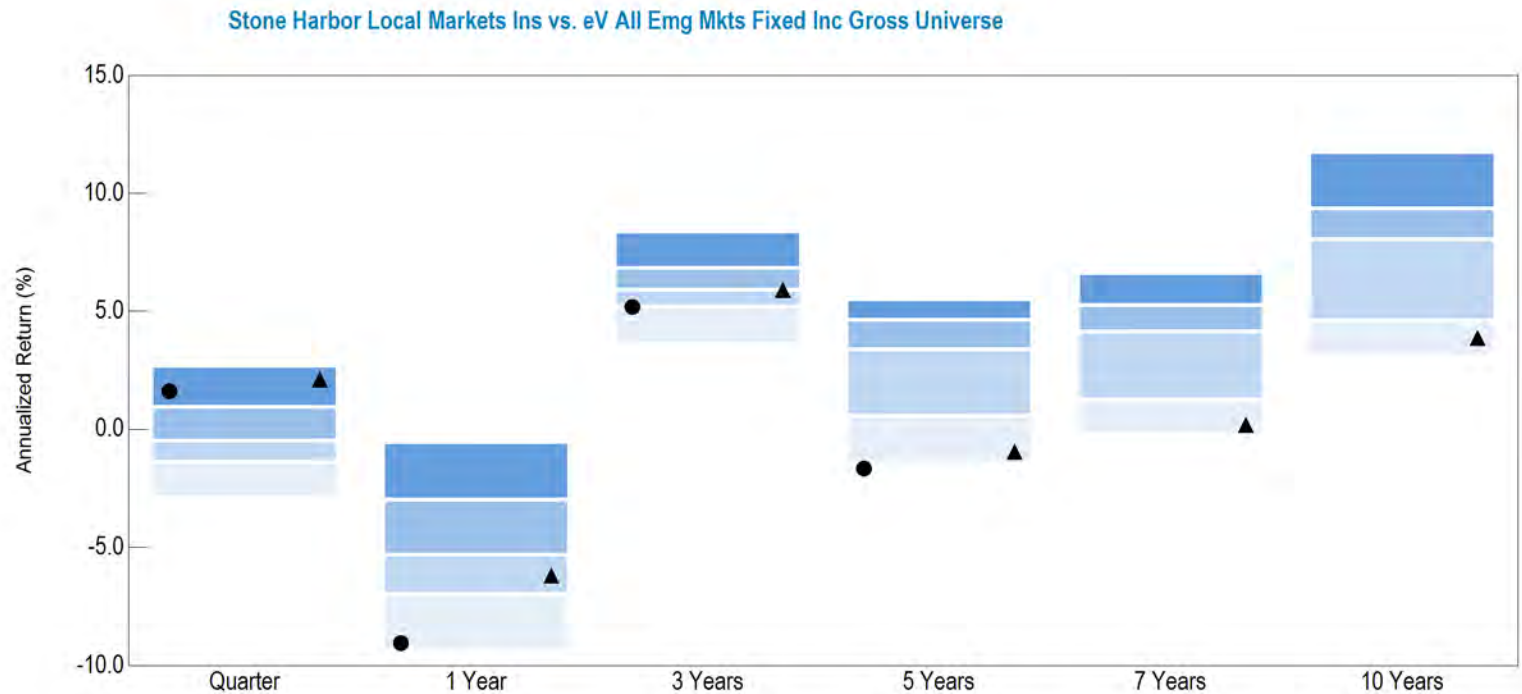


Rolling 5 Year Annualized Excess Performance



Stone Harbor Local Markets Ins
 Cumulative Performance Comparison (Gross of Fees)

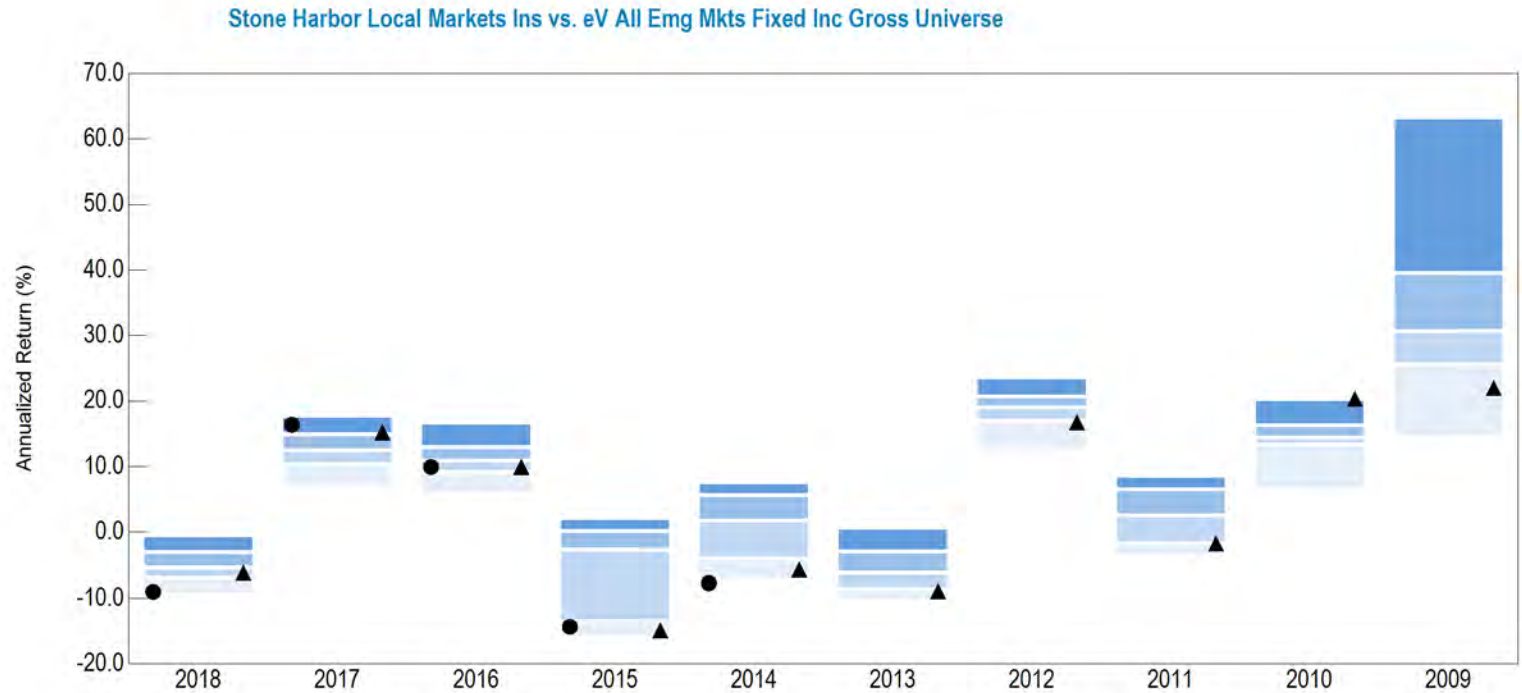
Period Ending: December 31, 2018



	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	2.7		-0.5		8.4		5.5		6.6		11.7	
25th Percentile	1.0		-3.0		6.9		4.7		5.3		9.4	
Median	-0.5		-5.3		5.9		3.4		4.2		8.1	
75th Percentile	-1.4		-6.9		5.2		0.6		1.3		4.6	
95th Percentile	-2.8		-9.4		3.7		-1.4		-0.2		3.1	
# of Portfolios	274		274		263		229		174		101	
● Stone Harbor Local Markets Ins	1.6	(16)	-9.0	(94)	5.2	(77)	-1.7	(99)	--	(--)	--	(--)
▲ JPM GBI-EM Global Diversified TR USD	2.1	(10)	-6.2	(65)	5.9	(51)	-1.0	(89)	0.2	(89)	3.9	(87)

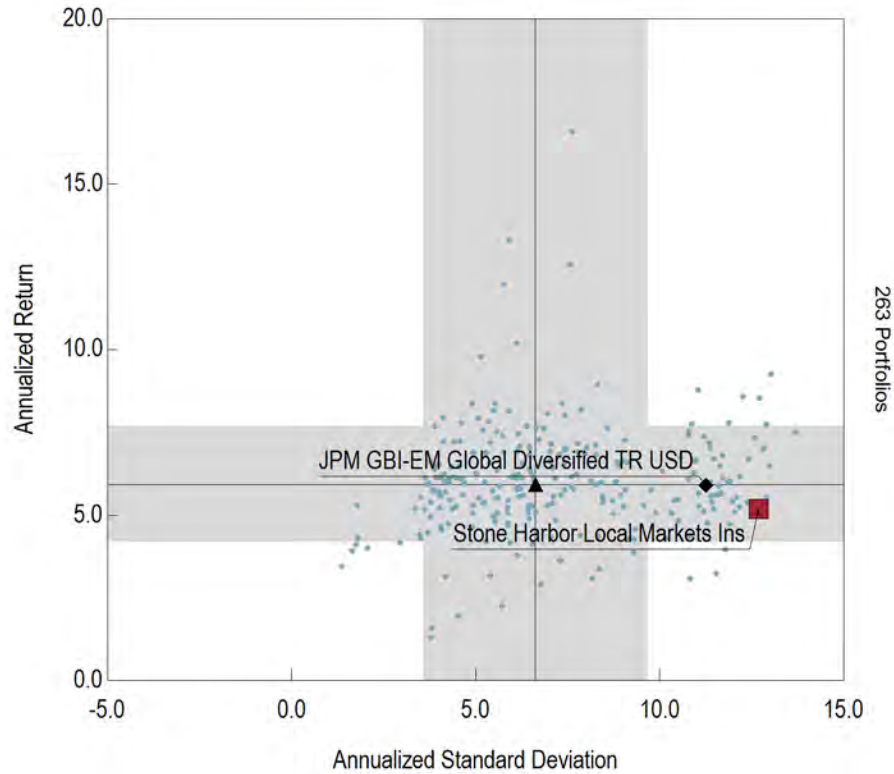
Stone Harbor Local Markets Ins
 Consecutive Performance Comparison (Gross of Fees)

Period Ending: December 31, 2018



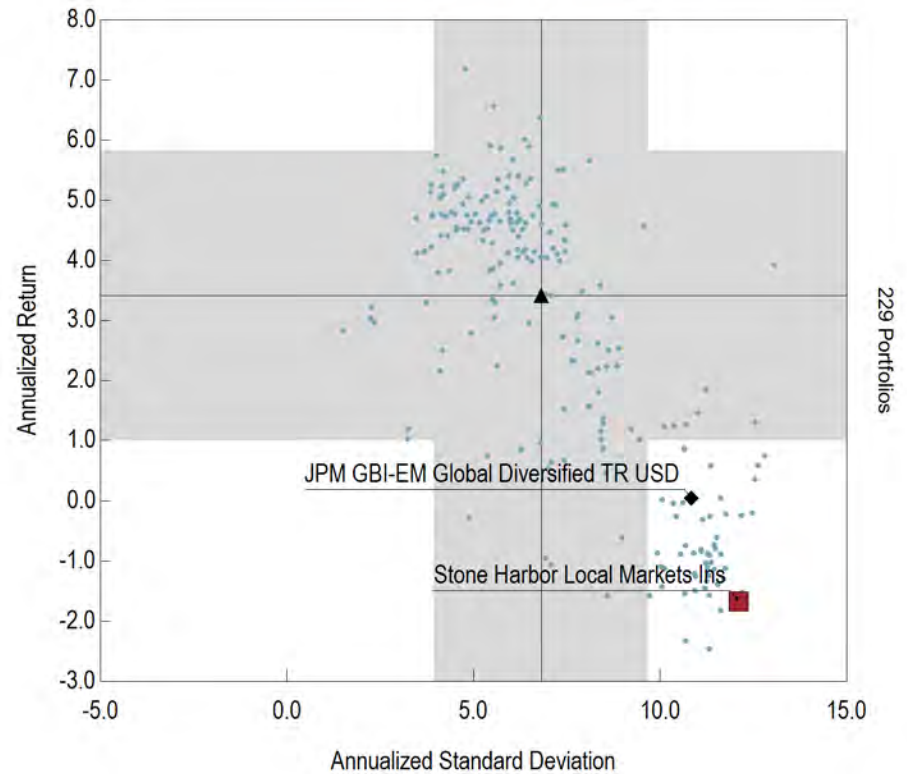
	Return (Rank)															
5th Percentile	-0.5	17.7	16.6	2.1	7.6	0.7	23.6	8.6	20.3	63.2						
25th Percentile	-3.0	15.0	13.1	0.3	5.7	-2.9	20.7	6.6	16.3	39.6						
Median	-5.3	12.6	10.9	-2.6	1.8	-6.1	19.1	2.6	14.5	30.7						
75th Percentile	-6.9	10.4	9.2	-13.4	-4.0	-8.6	17.0	-1.6	13.4	25.6						
95th Percentile	-9.4	6.9	5.9	-15.9	-7.2	-10.2	12.5	-3.6	6.6	14.4						
# of Portfolios	274	257	247	159	148	129	108	75	55	27						
● Stone Harbor Local Markets Ins	-9.0 (94)	16.4 (14)	9.9 (67)	-14.4 (79)	-7.7 (98)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)					
▲ JPM GBI-EM Global Diversified TR USD	-6.2 (65)	15.2 (24)	9.9 (67)	-14.9 (84)	-5.7 (91)	-9.0 (82)	16.8 (80)	-1.8 (77)	20.4 (5)	22.0 (85)						

Annualized Return vs. Annualized Standard Deviation
 3 Years Ending December 31, 2018



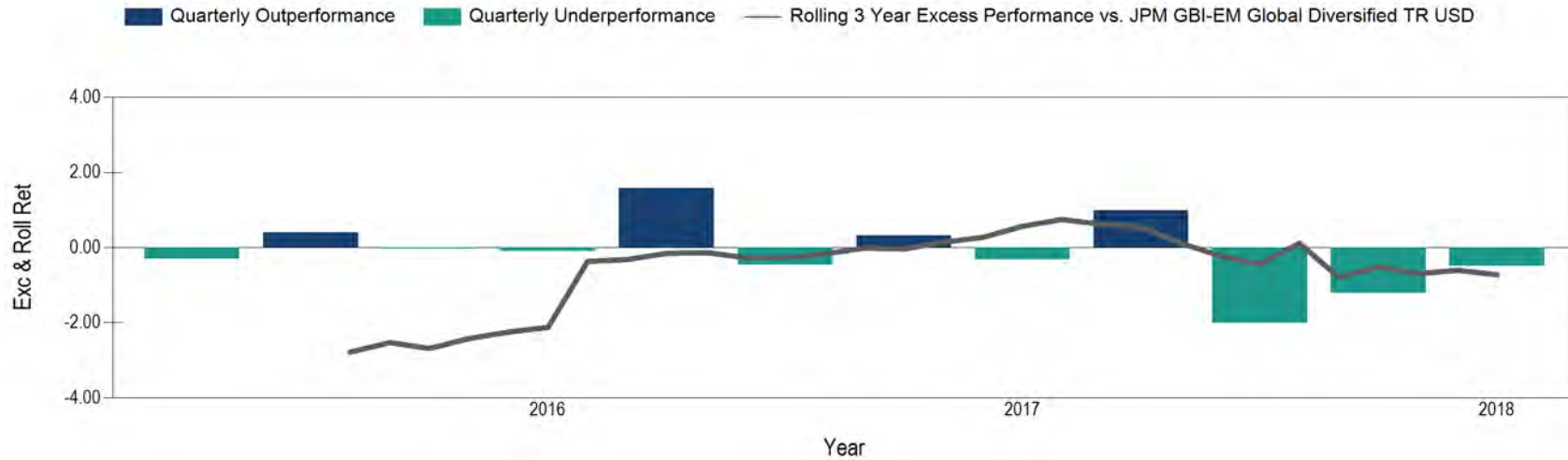
- Stone Harbor Local Markets Ins
- ◆ JPM GBI-EM Global Diversified TR USD
- ▲ Universe Median
- 68% Confidence Interval
- eV All Emg Mkts Fixed Inc Gross

Annualized Return vs. Annualized Standard Deviation
 5 Years Ending December 31, 2018

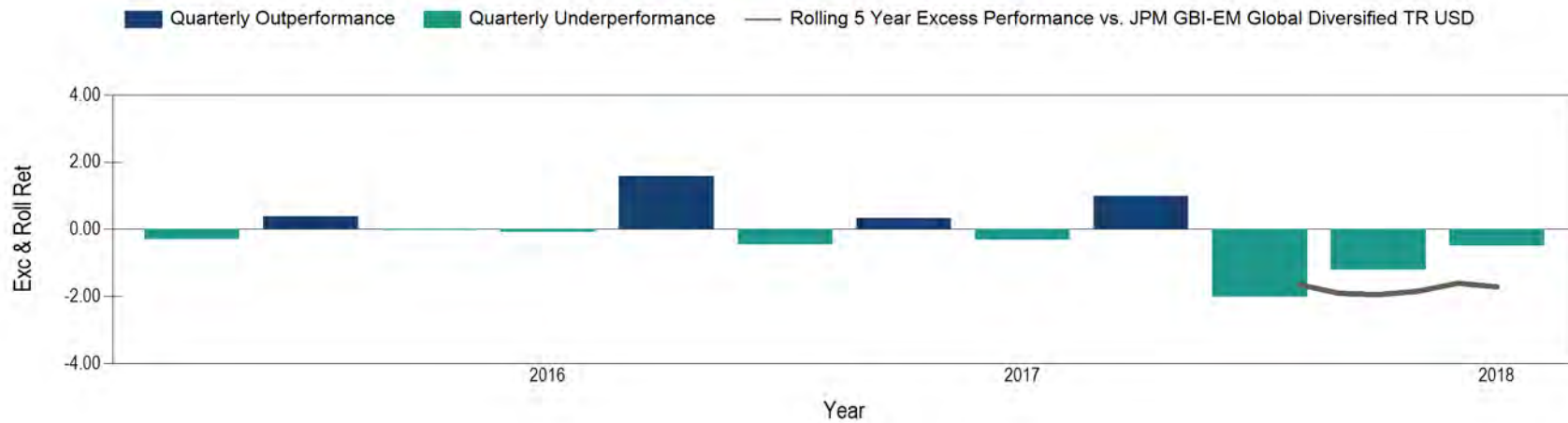


- Stone Harbor Local Markets Ins
- ◆ JPM GBI-EM Global Diversified TR USD
- ▲ Universe Median
- 68% Confidence Interval
- eV All Emg Mkts Fixed Inc Gross

Rolling 3 Year Annualized Excess Performance



Rolling 5 Year Annualized Excess Performance

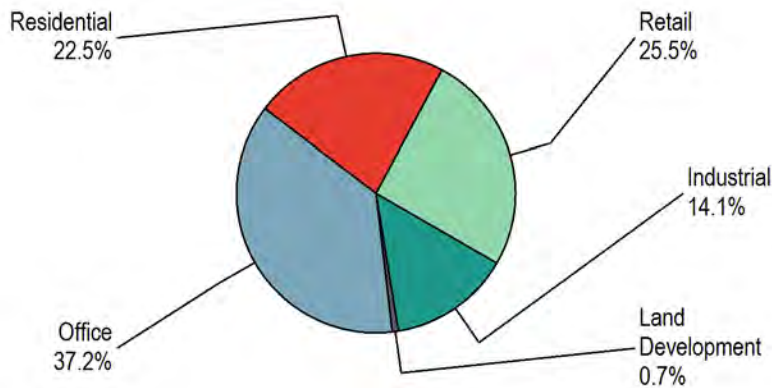


Total Real Estate
Asset Class Overview (Gross of Fees)

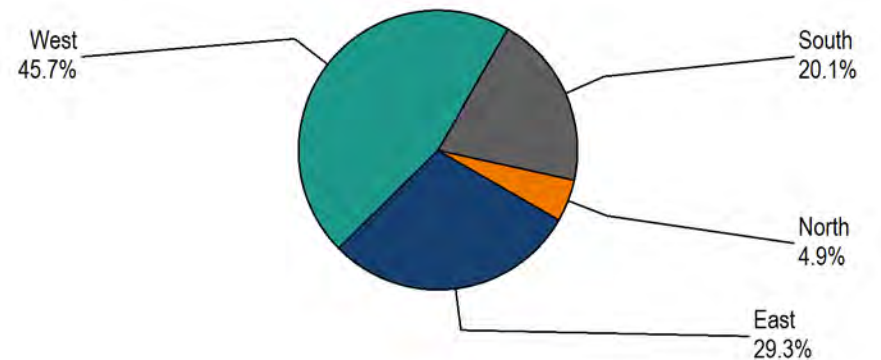
Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	191,798,413	1.6	7.5	7.7	10.2	6.1	7.5	7.8	7.8	18.0	10.4
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
JP Morgan Core Real Estate	163,245,272	1.6	7.0	7.2	9.5	7.1	7.0	6.1	8.4	15.2	11.2
<i>NCREIF-ODCE</i>		1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
ARA American Strategic Value Realty	22,016,296	1.7	9.1	--	--	--	9.1	7.4	--	--	--
<i>NCREIF-ODCE</i>		1.8	8.3	--	--	--	8.3	7.6	--	--	--
<i>NCREIF Property Index</i>		1.4	6.7	--	--	--	6.7	7.0	--	--	--
Direct Real Estate	6,536,845	2.4	11.6	12.4	13.1	6.3	11.6	20.6	5.5	22.9	6.1
<i>NCREIF-ODCE</i>		1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8

Property Type Allocation
Allocation as of December 31, 2018



Geographic Diversification
Allocation as of December 31, 2018



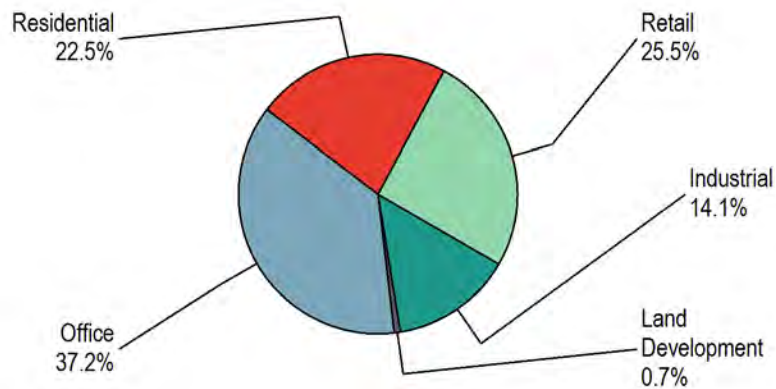
Property Allocation and Geographic Diversification analytics exclude Direct Real Estate. ARA American Strategic Value Realty and Direct Real Estate are lagged one quarter.

Total Real Estate
Asset Class Overview (Net of Fees)

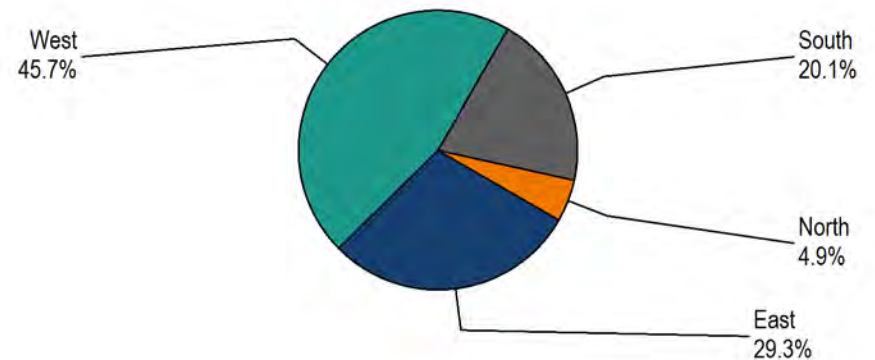
Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	191,798,413	1.6	7.5	7.4	9.7	5.7	7.5	7.8	6.8	16.9	9.6
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
JP Morgan Core Real Estate	163,245,272	1.6	7.0	6.8	8.9	6.4	7.0	6.1	7.3	14.1	10.0
<i>NCREIF-ODCE</i>		1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
ARA American Strategic Value Realty	22,016,296	1.7	9.1	--	--	--	9.1	7.4	--	--	--
<i>NCREIF-ODCE</i>		1.8	8.3	--	--	--	8.3	7.6	--	--	--
<i>NCREIF Property Index</i>		1.4	6.7	--	--	--	6.7	7.0	--	--	--
Direct Real Estate	6,536,845	2.4	11.6	12.2	12.9	6.1	11.6	20.6	4.9	22.2	6.1
<i>NCREIF-ODCE</i>		1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
<i>NCREIF Property Index</i>		1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8

Property Type Allocation
Allocation as of December 31, 2018



Geographic Diversification
Allocation as of December 31, 2018



Property Allocation and Geographic Diversification analytics exclude Direct Real Estate. ARA American Strategic Value Realty and Direct Real Estate are lagged one quarter.

Total Commodities
 Asset Class Summary (Gross of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Commodities	43,566,433	-13.2	-12.4	1.5	-8.0	--	-12.4	6.2	12.6	-25.2	-16.0
<i>Bloomberg Commodity Index TR USD</i>		-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0
Gresham MTAP Commodity Builder	43,566,433	-13.2	-12.4	1.5	-8.0	--	-12.4	6.2	12.6	-25.2	-16.0
<i>Bloomberg Commodity Index TR USD</i>		-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0

Total Commodities
 Asset Class Summary (Net of Fees)

Period Ending: December 31, 2018

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Commodities	43,566,433	-13.2	-12.4	1.3	-8.5	--	-12.4	6.2	11.8	-25.8	-16.6
<i>Bloomberg Commodity Index TR USD</i>		-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0
Gresham MTAP Commodity Builder	43,566,433	-13.2	-12.4	1.3	-8.5	--	-12.4	6.2	11.8	-25.8	-16.6
<i>Bloomberg Commodity Index TR USD</i>		-9.4	-11.2	0.3	-8.8	--	-11.2	1.7	11.8	-24.7	-17.0

Performance Return Calculations

Performance is calculated using Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

Illiquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

Manager Line Up

Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
PIMCO RAE Fundamental PLUS	11/30/2007	J.P. Morgan	Direct Real Estate	-	American Realty Adv.
Loomis Sayles Large Cap Growth	12/31/2016	J.P. Morgan	JP Morgan Core Real Estate	3/6/2008	J.P. Morgan
Boston Partners Large Cap Value	1/31/2017	Boston Partners	Gresham MTAP Commodity	8/31/2013	BNY Mellon
Atlanta Capital Management	8/31/2010	J.P. Morgan	Cash Account	-	SLOCPT
Dodge & Cox Intl Stock	12/6/2007	J.P. Morgan	HarbourVest Partners IX-Buyout	2011 ¹	HarbourVest
WCM International Growth	2/15/2017	WCM	HarbourVest 2018 Global Fund L.P.	-	HarbourVest
BlackRock Core Bond	1/19/2017	J.P. Morgan	KKR Mezzanine Partners	2010 ¹	KKR
Dodge & Cox Income	1/19/2017	Deutsche Bank	PIMCO Distressed Credit Fund	2010 ¹	Brown Brothers Harriman
Pacific Asset Corporate Loan	9/1/2014	Deutsche Bank	ARA American Strategic Value	6/22/2016	American Realty Adv.
Brandywine Global Fixed	11/30/2007	J.P. Morgan	TPG Diversified Credit Program	2016 ¹	TPG
Stone Harbor Local Markets Ins	7/9/2013	Stone Harbor	Pathway Private Equity Fund 9	2017 ¹	Pathway

¹Represents fund vintage year.

Policy & Custom Index Composition

Policy Index (10/1/2016-Current)	20% Russell 3000, 20% MSCI ACWI ex-US (Gross), 30% BBgBarc U.S. Aggregate, 15% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000+ 300 bps, 5% BBgBarc High Yield +2% (lagged).
Policy Index (7/1/2014-9/30/2016)	23% Russell 3000, 22% MSCI ACWI ex-US (Gross), 35% BBgBarc U.S. Aggregate, 10% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000+ 300 bps.
Policy Index (7/1/2013-6/30/2014)	27% Russell 3000, 23% MSCI ACWI ex-US (Gross), 30% BBgBarc U.S. Aggregate, 10% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000+ 300 bps.
Policy Index (4/1/2011-6/30/2013)	27% Russell 3000, 23% MSCI ACWI ex-US (Gross), 20% BBgBarc U.S. Aggregate, 5% Citi World Gov't Bond, 5% Barclays US TIPS, 10% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000+ 300 bps.

Other Disclosures

Glossary

Allocation Effect: An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

Alpha: The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: Portfolio Return - [Risk-free Rate + Portfolio Beta x (Market Return - Risk-free Rate)].

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta: A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Book-to-Market: The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

Correlation: A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Excess Return: A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

Interaction Effect: An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Price-to-Earnings Ratio (P/E): Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

R-Squared: Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

Selection Effect: An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Sortino Ratio: Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

Standard Deviation: A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

Style Map: A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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The information presented may be deemed to contain forward-looking information. Examples of forward looking information include, but are not limited to, (a) projections of or statements regarding return on investment, future earnings, interest income, other income, growth prospects, capital structure and other financial terms, (b) statements of plans or objectives of management, (c) statements of future economic performance, and (d) statements of assumptions, such as economic conditions underlying other statements. Such forward-looking information can be identified by the use of forward looking terminology such as believes, expects, may, will, should, anticipates, or the negative of any of the foregoing or other variations thereon comparable terminology, or by discussion of strategy. No assurance can be given that the future results described by the forward-looking information will be achieved. Such statements are subject to risks, uncertainties, and other factors which could cause the actual results to differ materially from future results expressed or implied by such forward looking information. The findings, rankings, and opinions expressed herein are the intellectual property of Verus and are subject to change without notice. The information presented does not claim to be all-inclusive, nor does it contain all information that clients may desire for their purposes. The information presented should be read in conjunction with any other material provided by Verus, investment managers, and custodians.

Verus will make every reasonable effort to obtain and include accurate market values. However, if managers or custodians are unable to provide the reporting period's market values prior to the report issuance, Verus may use the last reported market value or make estimates based on the manager's stated or estimated returns and other information available at the time. These estimates may differ materially from the actual value. Hedge fund market values presented in this report are provided by the fund manager or custodian. Market values presented for private equity investments reflect the last reported NAV by the custodian or manager net of capital calls and distributions as of the end of the reporting period. These values are estimates and may differ materially from the investments actual value. Private equity managers report performance using an internal rate of return (IRR), which differs from the time-weighted rate of return (TWRR) calculation done by Verus. It is inappropriate to compare IRR and TWRR to each other. IRR figures reported in the illiquid alternative pages are provided by the respective managers, and Verus has not made any attempts to verify these returns. Until a partnership is liquidated (typically over 10-12 years), the IRR is only an interim estimated return. The actual IRR performance of any LP is not known until the final liquidation.

Verus receives universe data from InvestorForce, eVestment Alliance, and Morningstar. We believe this data to be robust and appropriate for peer comparison. Nevertheless, these universes may not be comprehensive of all peer investors/managers but rather of the investors/managers that comprise that database. The resulting universe composition is not static and will change over time. Returns are annualized when they cover more than one year. Investment managers may revise their data after report distribution. Verus will make the appropriate correction to the client account but may or may not disclose the change to the client based on the materiality of the change.

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Board of Trustees

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 12: Investment Report for January 2019

	January	Year to Date 2019	2018	2017	2016	2015	2014
Total Trust Investments (\$ millions)	\$1,330		\$1,285 year end	\$1,351 year end	\$1,196 year end	\$1,148 year end	\$1,190 year end
Total Fund Return	4.1% Gross	4.1% Gross	-3.2 % Gross	15.5 % Gross	6.6 % Gross	-0.8% Gross	5.1 % Gross
Policy Index Return (r)	4.2%	4.2%	-3.2 %	13.4 %	7.7 %	-0.5 %	5.2 %

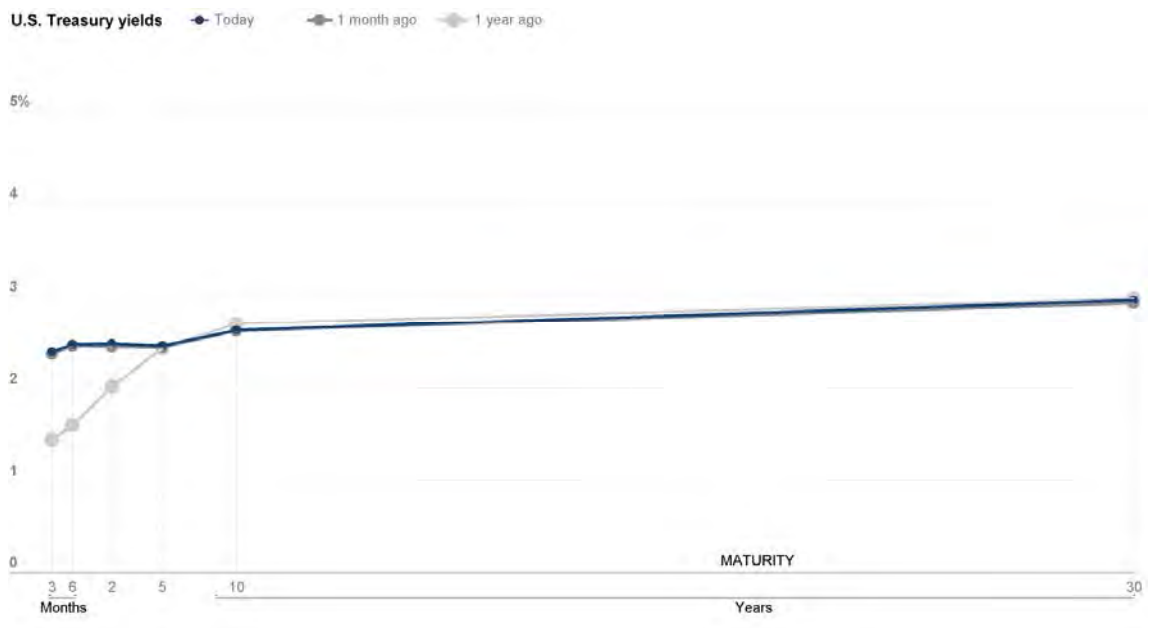
(r) Policy index as of Aug. 2016 revision to Strategic Asset Allocation Policy: 20% domestic equity, 20% international equity, 15% core bonds, 5% bank loans, 5% global bonds, 5% emerging market debt, 15% real estate, 5% commodities, 5% private equity, 5% private credit.

The Economy and Capital Markets:

- **Fed Policy and Interest Rates –**

- The Fed, as expected, did not increase interest rates at its January 30th announcement.
 - Significantly, the Fed stated that the economy is growing at a solid rate and inflation is hovering near the Fed target. In a reversal from the Fed's December meeting announcement, Powell noted that the Fed will be patient as it decides when to increase interest rates. Additionally, the Fed indicated its willingness to continue to hold significant amounts on its balance sheet signaling a slowing in the pace of liquidation to unwind the cumulative holdings of a decade of QE policies.

- The Fed’s comments included positive outlooks on continued (but not excessive) economic growth, household spending, tame inflation as support for taking a patient approach to interest rate increases.
 - The Fed’s comments also included concerns over trade tensions, Brexit, the just-ended government shutdown, and declining measures of consumer sentiment and purchasing manager sentiment as further support for a more patient approach to rate normalization.
 - This was greeted enthusiastically by the capital markets which have reflected, among many sources of risk, the possibility of the Fed tightening monetary policy too much or too soon and triggering a recession.
- The yield curve has remained flat as expectation for 2019-2020 economic growth slow. The yield curve has not yet crossed over into the predictive pattern of an inverted state with longer term Treasury bonds yielding less than 90 day T-Bills. The yield curve as of February 15th is shown below.



• **GDP Growth, Recession Fears and Corporate Profits –**

- **Global Growth** - The International Monetary Fund (IMF) downgraded its global growth forecast by 0.2% from its October forecast to a current estimate of 3.5% in 2019 and 3.6% in 2020. The IMF’s lower global growth forecast reflected slowing European growth and a contraction in Turkey expected to be deeper than anticipated. The IMF report included –
- “Risks to global growth tilt to the downside.”... “An escalation of trade tensions beyond those already incorporated in the forecast remains a key source of risk to the outlook. Financial conditions have already tightened since the fall. A range of triggers beyond escalating trade tensions could spark a further deterioration in risk sentiment with adverse growth implications, especially given the high levels of public and private debt. These potential triggers include a "no-deal" withdrawal of the United Kingdom from the European Union and a greater-than-envisaged slowdown in China.”

- “Monetary policy in advanced economies should continue to normalize carefully. The major central banks are keenly aware of the slowing momentum—and we expect they will calibrate their next steps in line with these developments.”
 - Advanced economies are projected to grow at 2% in 2019 and 1.7% in 2020.
 - U.S. economic growth is forecast at 2.5% in 2019 and 1.8% in 2020.
 - Eurozone growth is forecast at 1.6% in 2019 and 1.7% in 2020.
 - Emerging market growth is forecast at 4.5% in 2019 and 4.9% in 2020.
 - China growth is forecast at 6.2% in 2019 and 6.2% in 2020.

- **U.S. Growth –**
 - In January the Congressional Budget Office (CBO) forecast U.S. real GDP growth of 2.3% in 2019 and 1.7% in 2020 as fiscal stimulus winds down its bolstering of consumer spending and the economy returns to its long-term growth trend. The CBO estimated that 2018 U.S. GDP growth was 3.1%, although Commerce Department has not yet released its 2018 estimate due to delays from the Federal government shutdown.
 - The Federal Reserve economists in December forecast 2019 U.S. GDP growth to be 2.3%.
 - In the long-term, GDP growth is the result of two factors – the size of the labor force and productivity growth.

- **Trade Policy –**
 - A significant risk of a “tipping point” for triggering a recession remains trade policy tensions. The U.S. Administrations threat to increase tariffs on over \$200 billion of Chinese exports from 10% to 25% continues to overhang the capital markets. The U.S and Chinese officials negotiating trade policy have reported optimism about the result of the conflict. In addition the U.S. Administration has expressed flexibility on the March 2nd deadline for reaching a trade dispute resolution with China, calming capital markets somewhat.

- **European Union Status –**
 - Brexit turmoil – the continued lack of agreement on the U.K. leaving the European Union as the clock ticks down to the March 29th deadline for Brexit continues to disturb the British economy. A non-structured “Hard Brexit” withdrawal is expected to have significant negative impacts on Britain. The issue of keeping an open border with Northern Ireland – to remain an EU member – is particularly problematic for Brexit negotiations.

- **Employment and Wages –**
 - The January DOL report on nonfarm employment showed -
 - New jobs up 304k in January, well above expectations of +165k new jobs. However, the December new jobs estimate was revised downward significantly from the initially

reported read of +312k to +222k. The 12 month trailing average of new jobs is still at +223k reflecting strong labor market conditions.

- Unemployment increased to 4.0% - due in part to the effects of the Federal Government shutdown where workers on temporary furlough count as in layoff status by BLS criteria and added +175k to the unemployed due to layoff category.
 - Wage growth – a significant predictor of possible inflation increases – has increased over the last year, but remains relatively tame. For January average hourly earnings brought the year-over-year increase 3.2%. This was consistent with market expectations and consistent with the Fed’s outlook for below-target inflation.
- **Economy and the markets**
 - “The Great Cheapening” - following 4Q18 market correction – as equity valuations dropped in comparison to a continued positive corporate earnings outlook brought Price/Earnings (P/E) ratios just below historical averages. This is in comparison to the last several years of above trend P/E ratios and overhanging concerns of future P/E contraction and market losses – just what happened in 4Q18.
 - Positives for capital markets going into 2019 include –
 - Tame inflation
 - Improved valuation levels post-correction
 - Global backdrop of positive, albeit slowing, growth
 - Concerns for capital markets going into 2019 include –
 - Trade policy disruption should “tariff wars” not calm down
 - China growth rate slowing – due to trade policy disputes and slowing global growth.
 - U.S. Federal budget shutdown and possible impact on U.S. growth rate. Overall policy and political paralysis in the U.S. ranges in outlook from a neutral to potentially a negative.
 - Commodity prices (apart from oil that is rallying) could weaken further if global growth slows more than anticipated – particularly the Chinese economy slowing as a major market for commodities.

SLOCPT Investment Returns:

The attached report from Verus covers the investment returns of the SLOCPT portfolio and general market conditions through the end of January. The strong equity market returns in January (a +8.0% return on the S&P 500 in January alone) has brought the total gross return on the SLOCPT assets in January to +4.1%. Compared to the -3.2% return for all of 2018.

Respectfully submitted

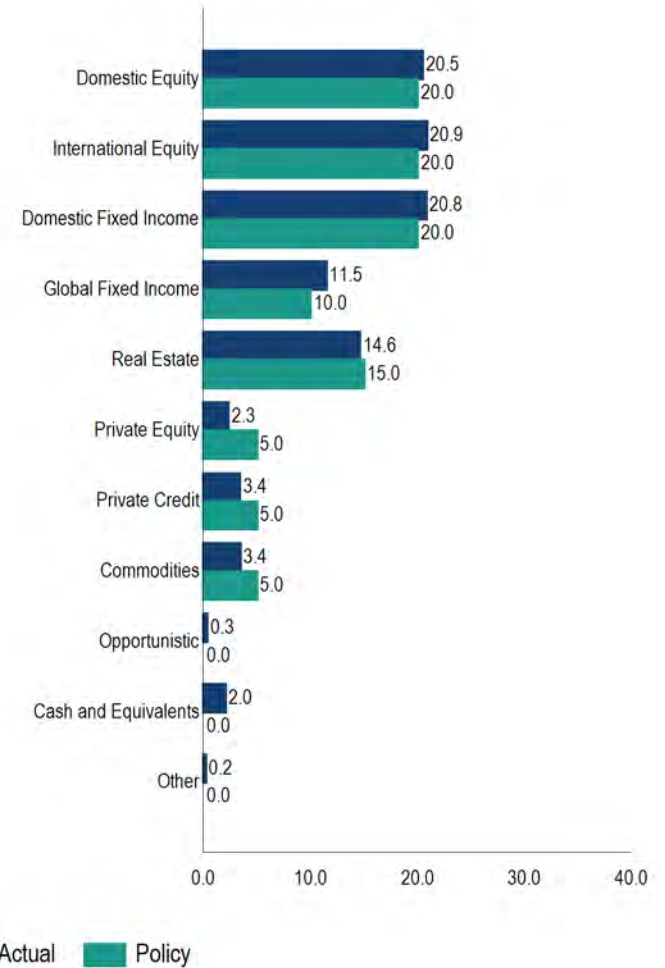
San Luis Obispo County Pension Trust

Executive Summary - Preliminary (Gross of Fees)

Period Ending: January 31, 2019

	Market Value	% of Portfolio	1 Mo	YTD
Total Fund	1,329,948,342	100.0	4.1	4.1
Total Fund ex Overlay	1,327,104,262	99.8	4.2	4.2
Policy Index			4.2	4.2
Total Domestic Equity	272,272,181	20.5	8.1	8.1
Russell 3000			8.6	8.6
PIMCO RAE Fundamental PLUS Instl	56,698,332	4.3	8.0	8.0
S&P 500			8.0	8.0
Loomis Sayles Large Cap Growth	80,721,009	6.1	8.5	8.5
Russell 1000 Growth			9.0	9.0
Boston Partners Large Cap Value	78,901,554	5.9	8.0	8.0
Russell 1000 Value			7.8	7.8
Atlanta Capital Mgmt	55,951,286	4.2	7.7	7.7
Russell 2500			11.5	11.5
Total International Equity	277,364,343	20.9	7.2	7.2
MSCI ACWI ex USA Gross			7.6	7.6
Dodge & Cox Intl Stock	139,579,569	10.5	8.6	8.6
MSCI EAFE Gross			6.6	6.6
WCM International Growth	137,784,774	10.4	5.9	5.9
MSCI ACWI ex USA Gross			7.6	7.6
Total Domestic Fixed Income	276,758,096	20.8	1.8	1.8
BBgBarc US Aggregate TR			1.1	1.1
BlackRock Core Bond	99,430,324	7.5	1.7	1.7
BBgBarc US Aggregate TR			1.1	1.1
Dodge & Cox Income Fund	101,433,320	7.6	1.5	1.5
BBgBarc US Aggregate TR			1.1	1.1
Pacific Asset Corporate Loan	75,894,452	5.7	2.4	2.4
S&P/LSTA Leveraged Loan Index			2.5	2.5
Total Global Fixed	152,614,568	11.5	4.7	4.7
FTSE World Govt Bond Index			1.4	1.4
Brandywine Global Fixed Income	75,269,388	5.7	3.2	3.2
FTSE WGBI ex US TR			2.0	2.0
Stone Harbor Local Markets Ins	77,345,181	5.8	6.2	6.2
JPM GBI-EM Global Diversified TR USD			5.5	5.5

Actual vs Target Allocation (%)



*Other balance represents Clifton Group.

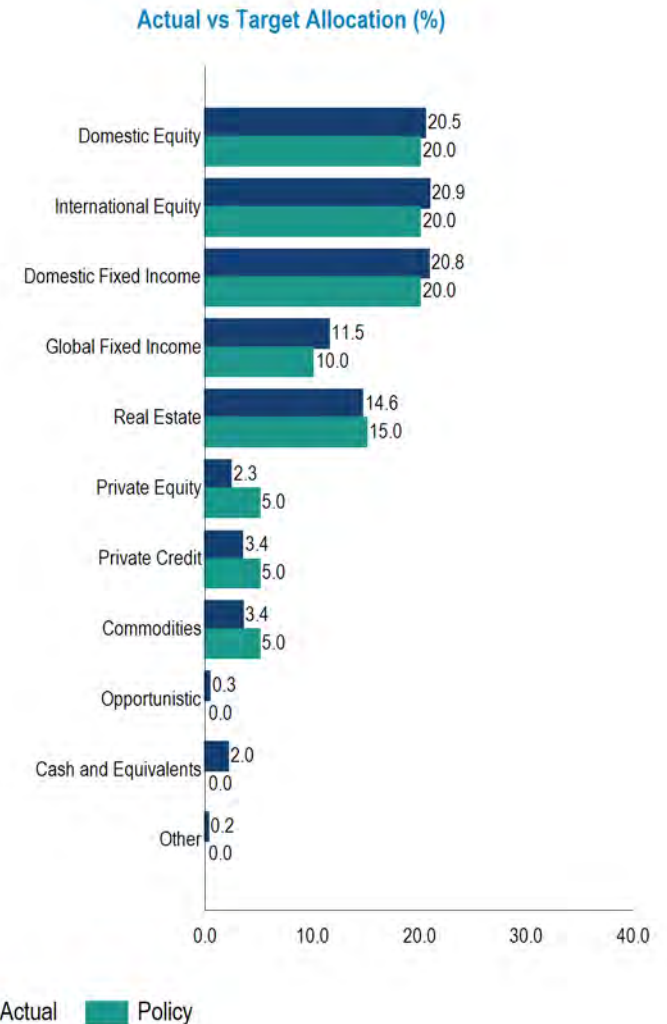
Policy Index (10/1/2016): 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity, 5% Russell 3000 + 300 bp, 5% BBgBarc High Yield + 200 bp lagged. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Boston Partners funded 2/1/2017. WCM Intl Growth replaced Vontobel on 2/15/2017. Pathway 9 funded 4/7/2017. SSGA TIPS liquidated on 12/7/2017. Fidelity Real Estate Growth III liquidated on 12/29/2017. SSGA Flagship S&P 500 liquidated 2/1/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018. Most recently reported market values for private equity/credit, opportunistic, and illiquid real estate funds adjusted for calls and distributions through 01/31/2019. All data is preliminary.

San Luis Obispo County Pension Trust

Executive Summary - Preliminary (Gross of Fees)

Period Ending: January 31, 2019

	Market Value	% of Portfolio	1 Mo	YTD
Total Real Estate	194,165,800	14.6	0.5	0.5
NCREIF Property Index			0.0	0.0
JP Morgan Core Real Estate	163,673,978	12.3	0.2	0.2
NCREIF-ODCE			0.0	0.0
NCREIF Property Index			0.0	0.0
ARA American Strategic Value Realty	23,550,741	1.8	1.4	1.4
NCREIF-ODCE			0.0	0.0
NCREIF Property Index			0.0	0.0
Direct Real Estate	6,941,081	0.5	6.2	6.2
NCREIF-ODCE			0.0	0.0
NCREIF Property Index			0.0	0.0
Total Commodities	45,733,782	3.4	5.0	5.0
Bloomberg Commodity Index TR USD			5.4	5.4
Gresham MTAP Commodity Builder	45,733,782	3.4	5.0	5.0
Bloomberg Commodity Index TR USD			5.4	5.4
Total Private Equity	31,042,436	2.3		
Harbourvest Partners IX Buyout Fund L.P.	11,869,715	0.9		
Pathway Private Equity Fund Investors 9 L.P.	17,813,729	1.3		
Harbourvest 2018 Global Fund L.P.	1,358,992	0.1		
Total Private Credit	45,341,455	3.4		
TPG Diversified Credit Program	45,341,455	3.4		
Total Cash	27,203,543	2.0	0.4	0.4
91 Day T-Bills			0.2	0.2
Cash Account	27,203,543	2.0	0.4	0.4
91 Day T-Bills			0.2	0.2
Total Opportunistic	4,608,058	0.3		
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	4,497,329	0.3		
PIMCO Distressed Credit Fund	110,729	0.0		
CPI + 5%			0.0	0.0



*Other balance represents Clifton Group.

Policy Index (10/1/2016): 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity, 5% Russell 3000 + 300 bp, 5% BBgBarc High Yield + 200 bp lagged. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Boston Partners funded 2/1/2017. WCM Intl Growth replaced Vontobel on 2/15/2017. Pathway 9 funded 4/7/2017. SSGA TIPS liquidated on 12/7/2017. Fidelity Real Estate Growth III liquidated on 12/29/2017. SSGA Flagship S&P 500 liquidated 2/1/2018. Harbourvest 2018 Global Fund L.P. funded 12/14/2018. Most recently reported market values for private equity/credit, opportunistic, and illiquid real estate funds adjusted for calls and distributions through 01/31/2019. All data is preliminary.



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

JANUARY 2019
Capital Markets Update

Market commentary

U.S. ECONOMICS

- Nonfarm payrolls rose by 304,000 in January, nearly doubling expectations of 165,000, although job gains over the last two months were revised 70,000 lower in total. Leisure and hospitality (+74,000), construction (+52,000), and healthcare (+42,000) accounted for more than half of total job creation.
- The unemployment rate edged up from 3.9% to 4.0%, partly due to an increase in the labor force participation rate from 63.1% to 63.2%. Furloughed government workers during the partial government shutdown were counted as employed – federal government payrolls (+1,000) were little changed.
- The University of Michigan consumer sentiment survey sunk from 98.3 to 91.2 in January, missing expectations of 96.8. Survey administrators noted that concerns over the government shutdown, tariffs, and Q4 equity performance contributed to consumer uncertainty.

U.S. EQUITIES

- The S&P 500 Index gained 8.0% in January, its largest monthly advance since October 2015. At month-end, the price index was at 2704, 7.7% below the September high near 2930.
- Per Factset, with 66% of companies reporting, the year-over-year Q4 2018 blended earnings and sales growth rates for the S&P 500 are 13.3% and 7.0% respectively.
- With 14/30 companies reporting, energy sector earnings are standing out. The sector's blended YoY earnings growth rate for Q4 has topped analyst estimates by 20.2%, growing 98.9%.

U.S. FIXED INCOME

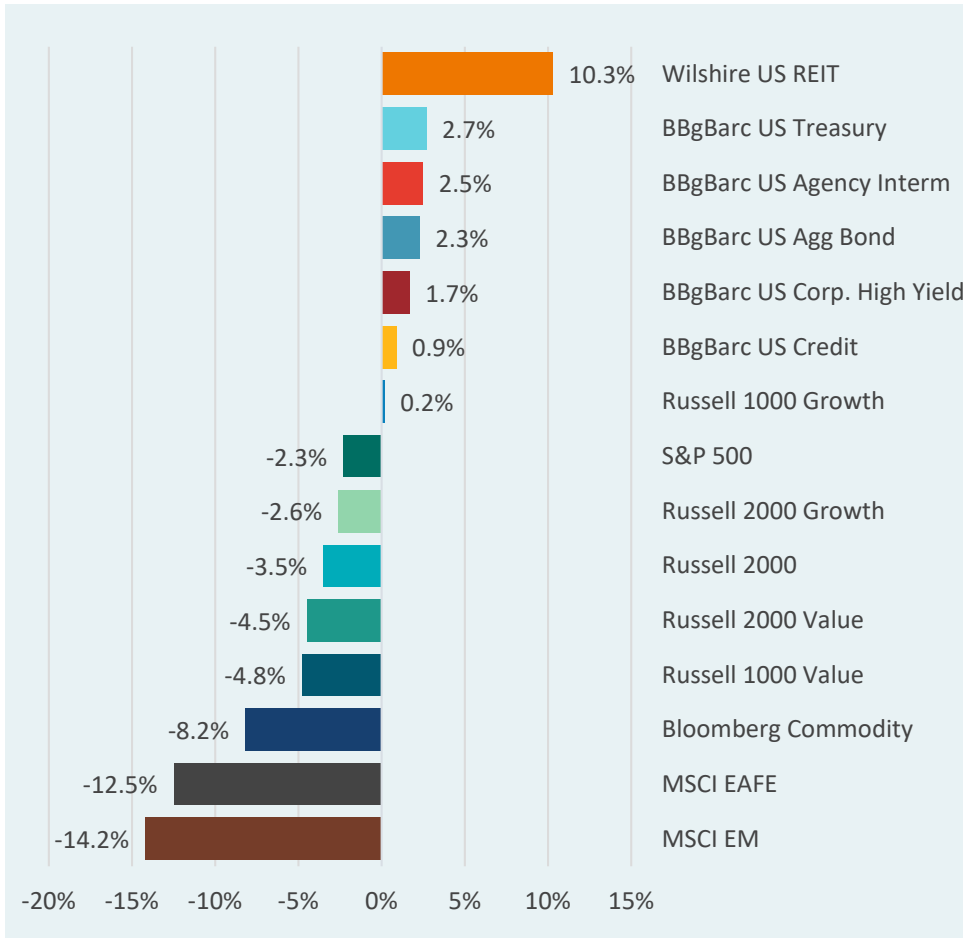
- At the January FOMC meeting, the range for the fed funds rate was left unchanged at 2.25-2.50%. Officials removed the words “further gradual increases” from their statement regarding interest rates, signaling a more patient outlook. A separate statement was released addressing the balance sheet, voicing an expectation to hold “an ample supply” of bank reserves. Analysts viewed both statements as unexpectedly dovish.
- Fed Chair Powell also walked back his December comment that the balance sheet unwind was “on autopilot”, affirming the Fed's intent to be flexible with all of its tools. The release of a separate FOMC statement addressing the balance sheet supported this shift in tone, reassuring markets.
- Credit spreads narrowed – high yield spreads fell from 5.3% to 4.2% and investment grade spreads fell from 1.5% to 1.3%.

INTERNATIONAL MARKETS

- In a strong month for global equities, emerging markets continued to outperform. The MSCI EM Index (+8.8%) outpaced the S&P 500 (+8.0%) and the MSCI EAFE Index (+6.6%).
- Industrial production prints missed across Europe. December output came in at -0.4% MoM (exp. 0.8%) in Germany, -0.8% (exp. 0.4%) in Italy, and -0.5% (exp. 0.1%) in the United Kingdom.
- Despite gloomy economic data, implied volatility in European stocks remained muted. The V2X, which normally trades at a premium to the VIX Index, spent most of January below the VIX, and ended the month at 15.1.

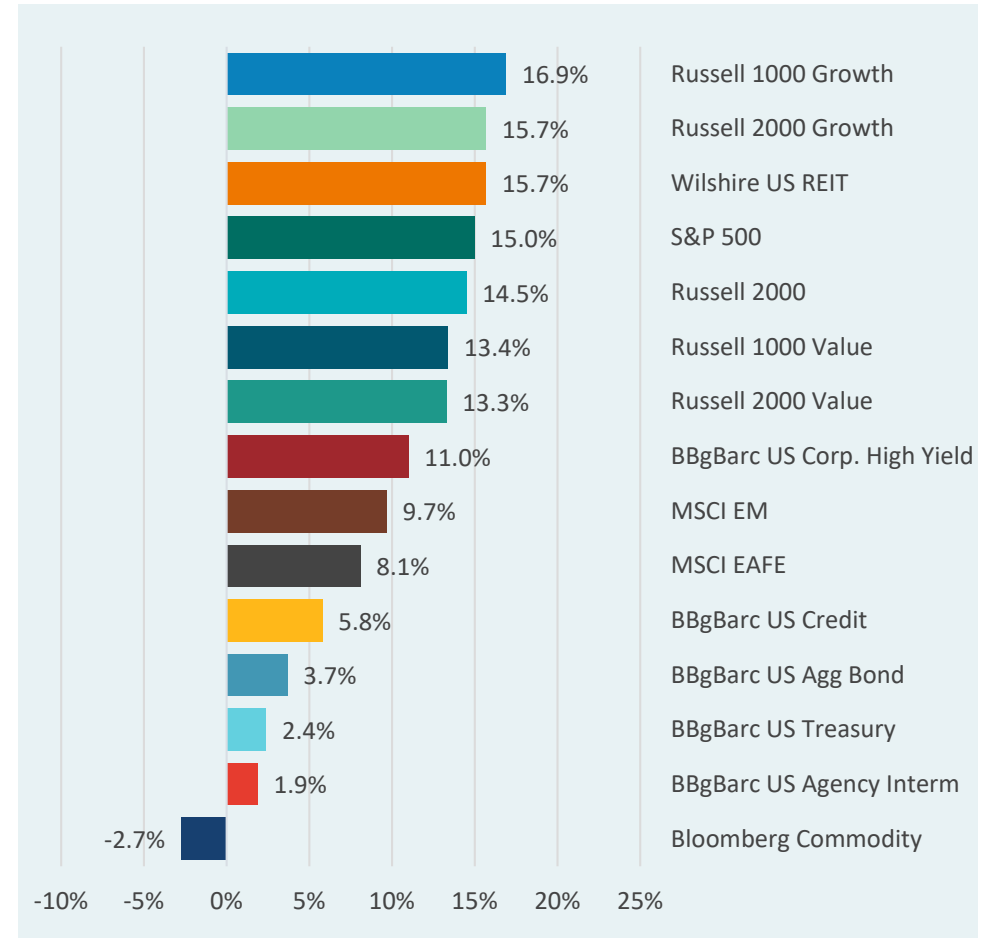
Major asset class returns

ONE YEAR ENDING JANUARY



Source: Morningstar, as of 1/31/19

TEN YEARS ENDING JANUARY

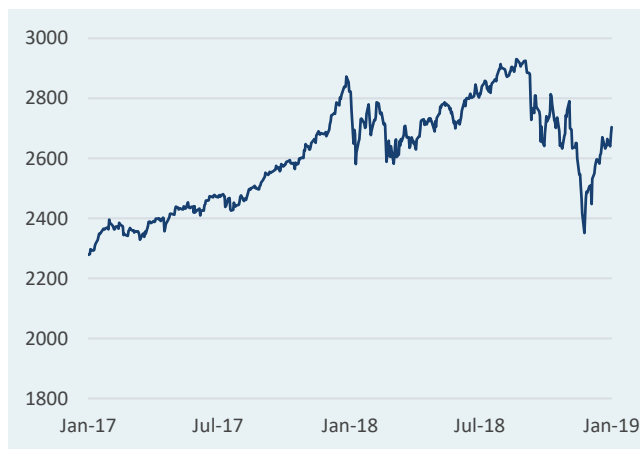


Source: Morningstar, as of 1/31/19

U.S. large cap equities

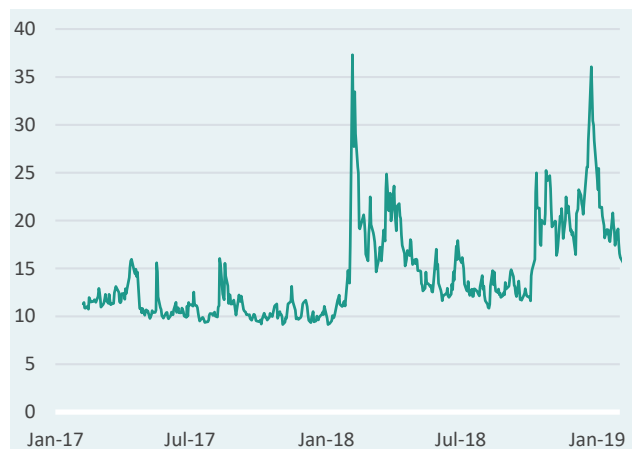
- The S&P 500 Index returned 8.0% in January. The advance was broad-based with all sectors posting positive returns. The consumer discretionary (+10.3%) and communication services (+10.4%) sectors led the overall index higher, while utilities (+3.4%) underperformed.
- The VIX Index retreated from 25.4 to 16.6, in line with its 200-day moving average. Investors' perceptions of a more flexible monetary policy from the Fed likely contributed to the more muted volatility.
- According to FactSet, estimates for S&P 500 earnings and revenue growth for the calendar year 2019 are 5.0% and 5.1%, respectively. For companies generating more than 50% of their sales domestically, same-period earnings and revenue growth estimates are 6.7% and 5.9% – for companies generating less than 50% of sales domestically, estimates are 1.9% and 3.1%.
- Over the month, the 1-year blended forward P/E ratio of the S&P 500 expanded from 14.5 to 15.8, indicating that large cap stocks are relatively more expensive.

S&P 500 PRICE INDEX



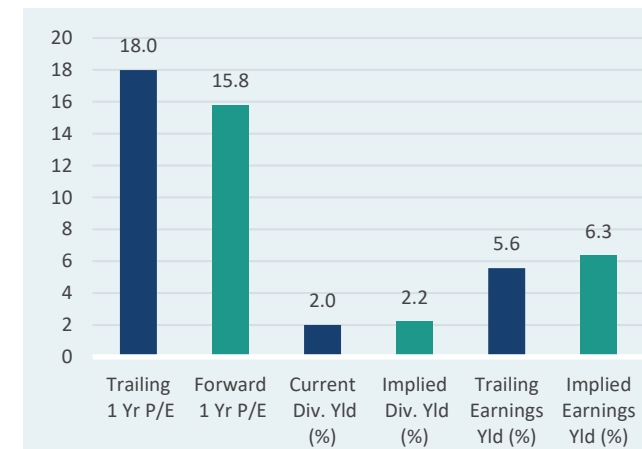
Source: Bloomberg, as of 1/31/19

IMPLIED VOLATILITY (VIX INDEX)



Source: CBOE, as of 1/31/19

S&P 500 VALUATION SNAPSHOT

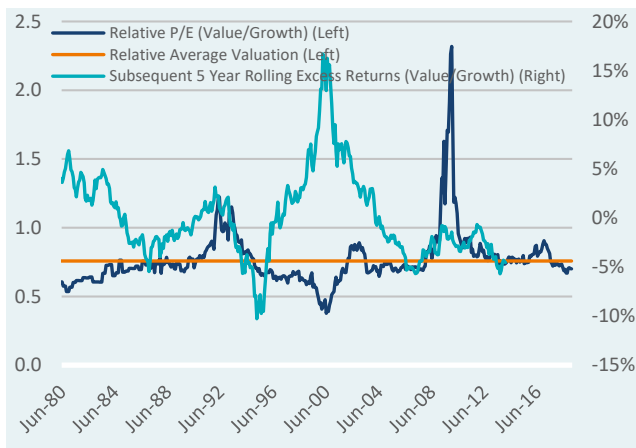


Source: Bloomberg, as of 1/31/19

Domestic equity size and style

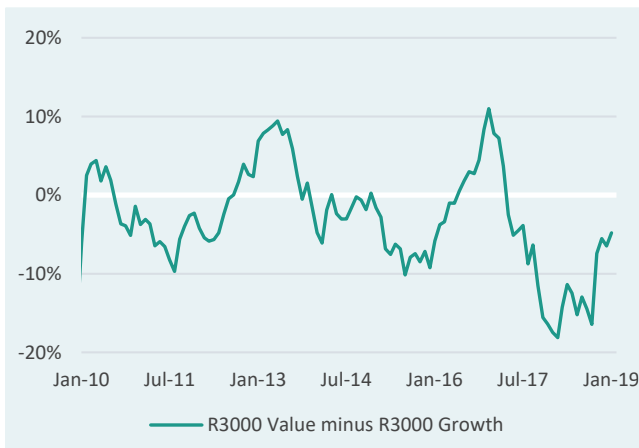
- Small cap equities outperformed large cap equities for the first month since August of last year. The Russell 2000 Index returned 11.2% while the Russell 1000 Index achieved an 8.4% return.
- Value stocks became cheaper relative to growth stocks for the second straight month. The trailing 1-year P/E ratio of the Russell 1000 Value Index moved from 14.6 to 15.7, while the Russell 1000 Growth Index saw P/E expansion from 20.6 to 22.4. The relative P/E ratio of value to growth stocks moved from 0.71 to 0.70.
- Growth outperformed value in both small cap and large cap stocks. The Russell 2000 Growth Index (+11.5%) outperformed the Russell 2000 Value Index (+10.9%), and the Russell 1000 Growth Index (+9.0%) outperformed the Russell 1000 Value Index (+7.8%).
- Utilities underperformance provided headwinds for value indexes. The Russell 3000 Value Index (+8.0%), underperformed the Russell 3000 Growth Index (+9.2%), and held a net 6.3% higher allocation to utilities.

VALUE VS. GROWTH RELATIVE VALUATIONS



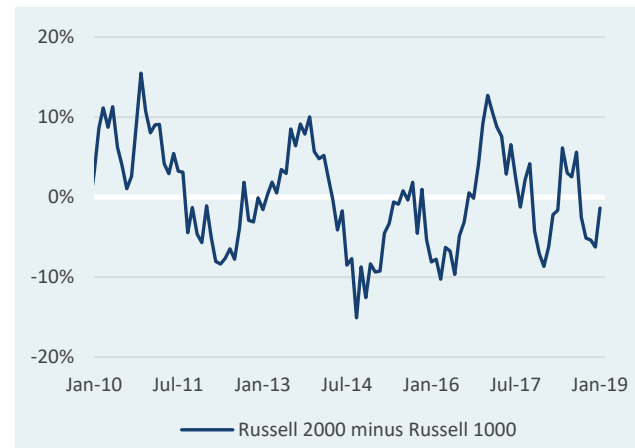
Source: Russell, Bloomberg, as of 1/31/19

VALUE VS. GROWTH 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE, as of 1/31/19

SMALL VS. LARGE 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE, as of 1/31/19

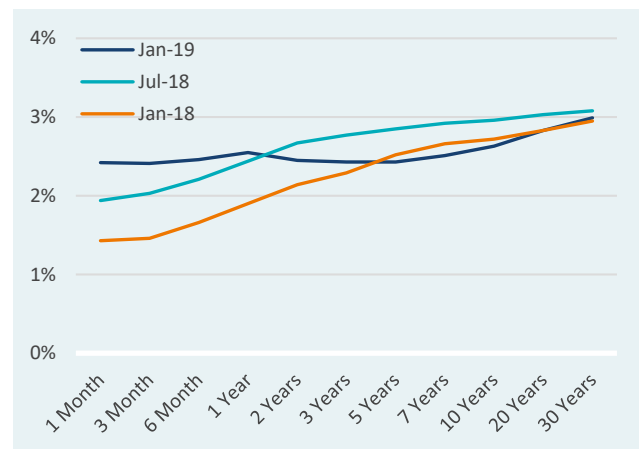
Fixed income

- Sovereign yields fell across Europe. French 10-year bond yields fell from 0.70% to 0.55%, and equivalent-maturity German yields fell from 0.24% to 0.15%.
- The European Central Bank left its deposit and refinancing rates unchanged at -0.4% and 0.0%, meeting expectations. ECB President Draghi noted a shift in economic risks towards the downside due to the “persistence of uncertainties related to geopolitical factors”.

- Emerging market debt continued to bounce back following a difficult second half of last year. Hard and local currency debt experienced gains of 4.4% and 5.5% in January, respectively.
- Treasury yields moved lower across the curve, likely impacted by a mild inflation outlook and dovish language from the Federal Reserve. The 10-year yield fell from 2.68% to 2.63% and the 2-year yield declined from 2.49% to 2.46%.

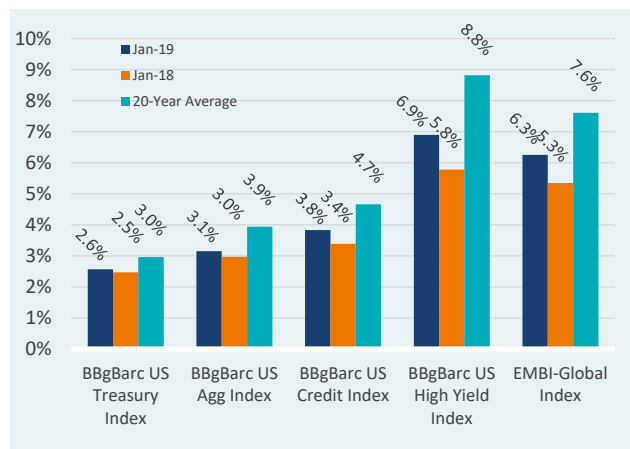
European sovereign yields fell to multi-year lows

U.S. TREASURY YIELD CURVE



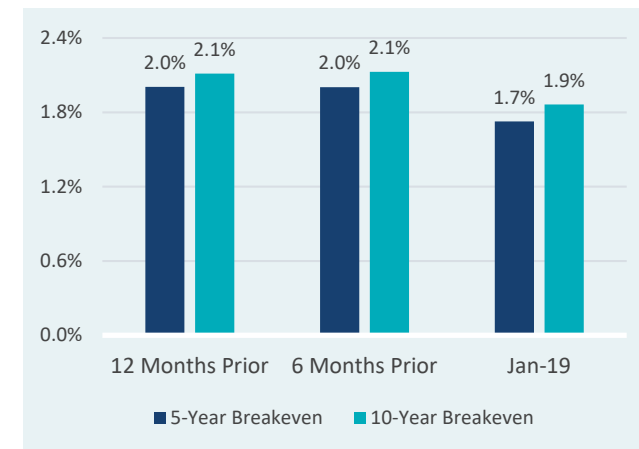
Source: Bloomberg, as of 1/31/19

NOMINAL YIELDS



Source: Morningstar, as of 1/31/19

BREAKEVEN INFLATION RATES

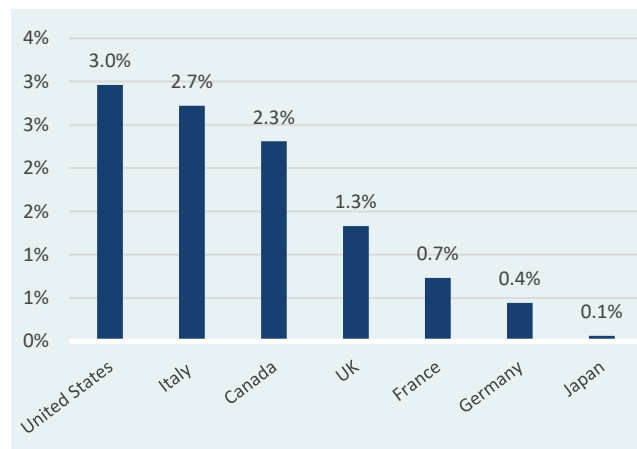


Source: Bloomberg, as of 1/31/19

Global markets

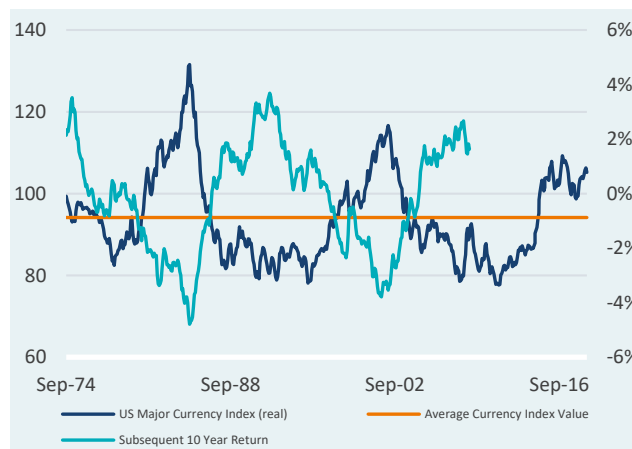
- U.S. and Chinese officials met to discuss trade relations, and both sides expressed optimism about the progress that was made. Issues such as the trade balance and technology transfers dominated the negotiations.
- The British Parliament rejected Theresa May's Withdrawal Agreement by a vote of 432-202, triggering another confidence vote, which the embattled prime minister survived. The handling of the U.K.-Irish border remained the most contentious issue.
- The Markit Eurozone Composite PMI rose from 50.7 to 51.0. Major economies underperformed; France (48.2) and Italy (48.8) exhibited contraction, while Germany (52.1) demonstrated slight expansion.
- The blended forward P/E ratio of the MSCI Emerging Markets Index increased from 10.6 to 11.7, it's highest level since last June. Earnings per share estimates for the index fell from \$91.2 to \$90.0 over the month, contributing to the forward multiple expansion.

GLOBAL SOVEREIGN 10-YEAR YIELDS



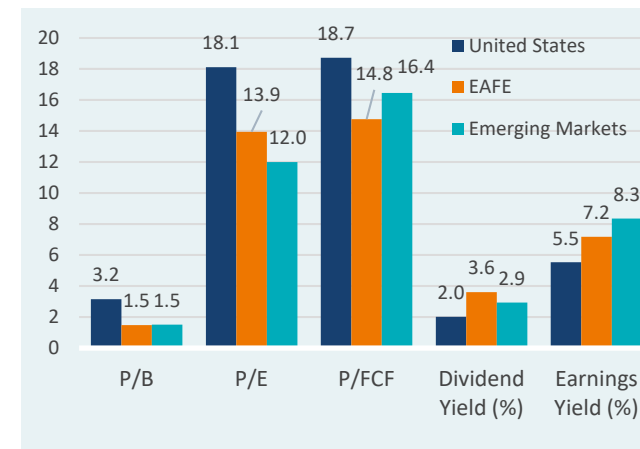
Source: Bloomberg, as of 1/31/19

U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Federal Reserve, as of 1/31/19

MSCI VALUATION METRICS (3-MONTH AVG)



Source: Bloomberg, as of 1/31/19

Commodities

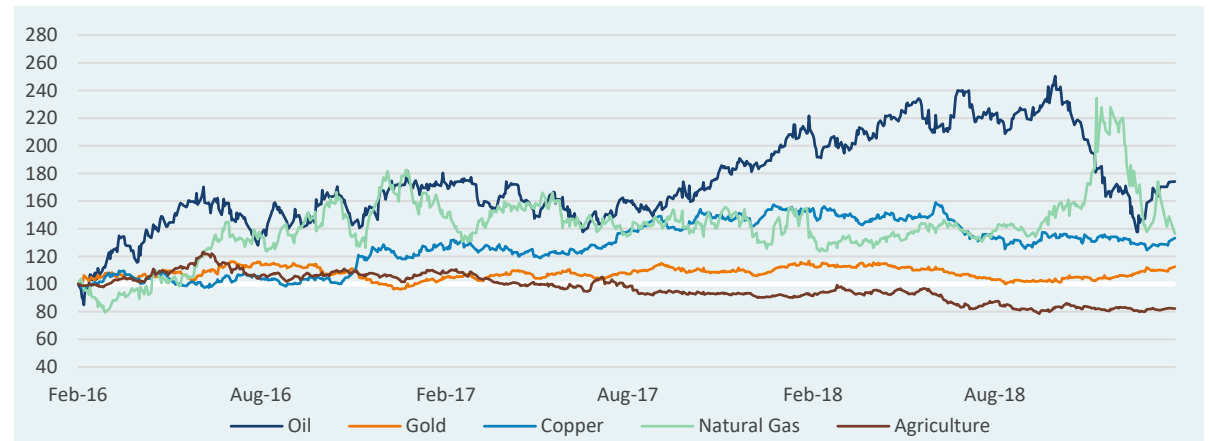
- The Bloomberg Commodity Index rose 5.4%, as all sectors except livestock advanced. Energy, the most heavily weighted sector, gained 9.2% and continued to drive overall index returns.
- The Bloomberg Petroleum sub-index gained 13.8%, its best monthly return since April 2016. Returns were bolstered by OPEC's December report, which cited crude oil supplies from OPEC+ nations fell by 751,000 barrels per day to 31.6 million. At month-end, the Petroleum sector held a 68.6% exposure to crude oil futures contracts.
- Industrial metals outperformed, gaining 8.0%. Within the sub-index, nickel (+16.8%) was the top performer. Analysts cited strong demand from alloy-makers, speculation on U.S.-China trade relations, and a benign outlook for the U.S. dollar as contributing factors.
- Gold gained 3.1% in January, its fourth consecutive monthly advance. Central bank bullion purchases swelled 74% in 2018, reaching 47-year highs. Emerging market central banks led purchases, as purported geopolitical uncertainty likely provided motivation to diversify foreign reserve assets.

INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	5.4	5.4	5.4	(8.2)	2.7	(7.9)	(2.7)
Bloomberg Agriculture	3.0	3.0	3.0	(9.3)	(5.6)	(8.5)	(2.5)
Bloomberg Energy	9.2	9.2	9.2	(8.8)	4.6	(17.6)	(11.2)
Bloomberg Grains	1.9	1.9	1.9	(7.7)	(7.8)	(9.9)	(4.1)
Bloomberg Industrial Metals	8.0	8.0	8.0	(13.2)	11.0	(0.7)	3.0
Bloomberg Livestock	(1.5)	(1.5)	(1.5)	(1.9)	(1.4)	(3.3)	(2.4)
Bloomberg Petroleum	13.8	13.8	13.8	(12.2)	9.3	(16.0)	(5.1)
Bloomberg Precious Metals	3.2	3.2	3.2	(3.3)	4.5	(0.6)	2.8
Bloomberg Softs	4.9	4.9	4.9	(12.3)	(4.6)	(8.8)	(2.5)

Source: Morningstar, as of 1/31/19

COMMODITY PERFORMANCE



Source: Bloomberg, as of 1/31/19

Appendix

Periodic table of returns

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	5-Year	10-Year
Small Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	11.5	13.0	16.9
Small Cap Equity	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	11.2	10.7	15.7
Small Cap Value	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	10.9	9.3	15.2
Large Cap Growth	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	9.0	8.3	14.5
Emerging Markets Equity	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	8.8	7.8	13.4
Large Cap Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	8.4	7.3	13.3
Large Cap Value	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	7.8	6.6	9.7
International Equity	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	6.6	4.8	8.1
Commodities	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	5.4	4.6	8.1
60/40 Global Portfolio	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	5.4	2.7	7.5
Hedge Funds of Funds	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	2.6	2.4	3.7
US Bonds	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	1.1	2.0	3.3
Cash	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	0.2	0.7	0.4
Real Estate	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	0.0	-7.9	-2.7

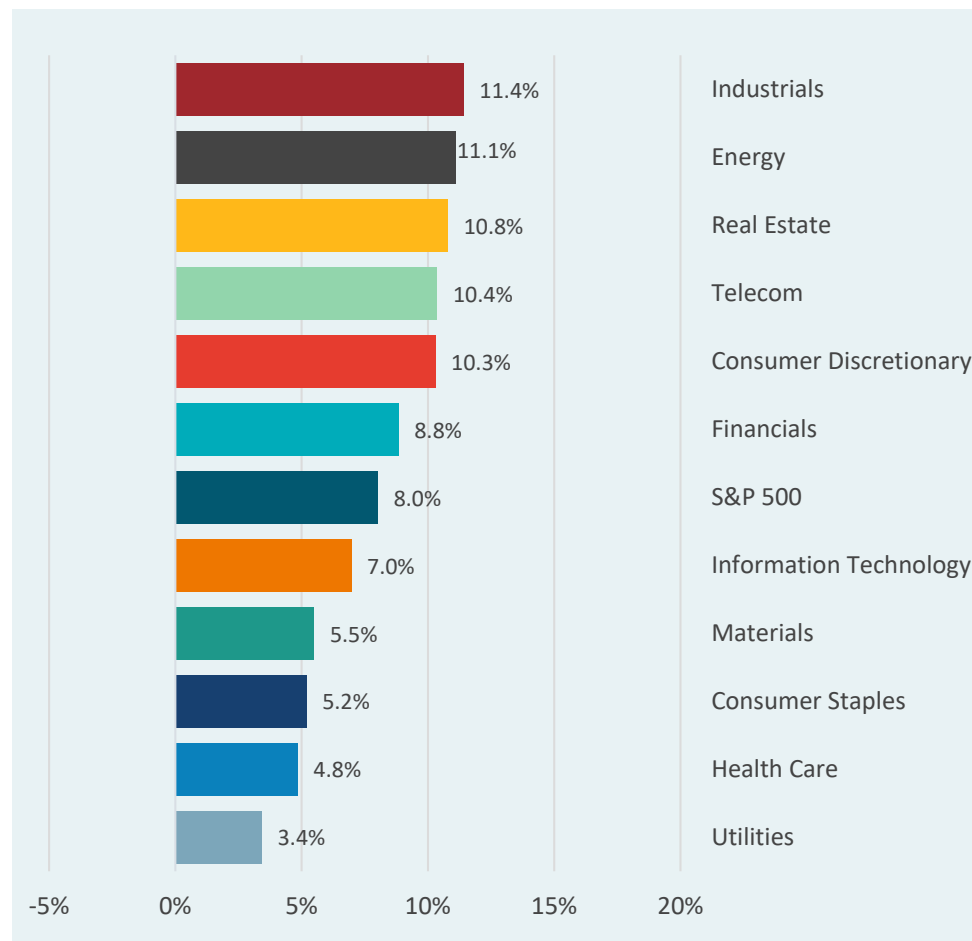
BEST
↑
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WORST

- Large Cap Equity
- Small Cap Growth
- Commodities
- Large Cap Value
- International Equity
- Real Estate
- Large Cap Growth
- Emerging Markets Equity
- Hedge Funds of Funds
- US Bonds
- 60% MSCI ACWI/40% BBgBarc Global Bond
- Cash

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 12/31/18.

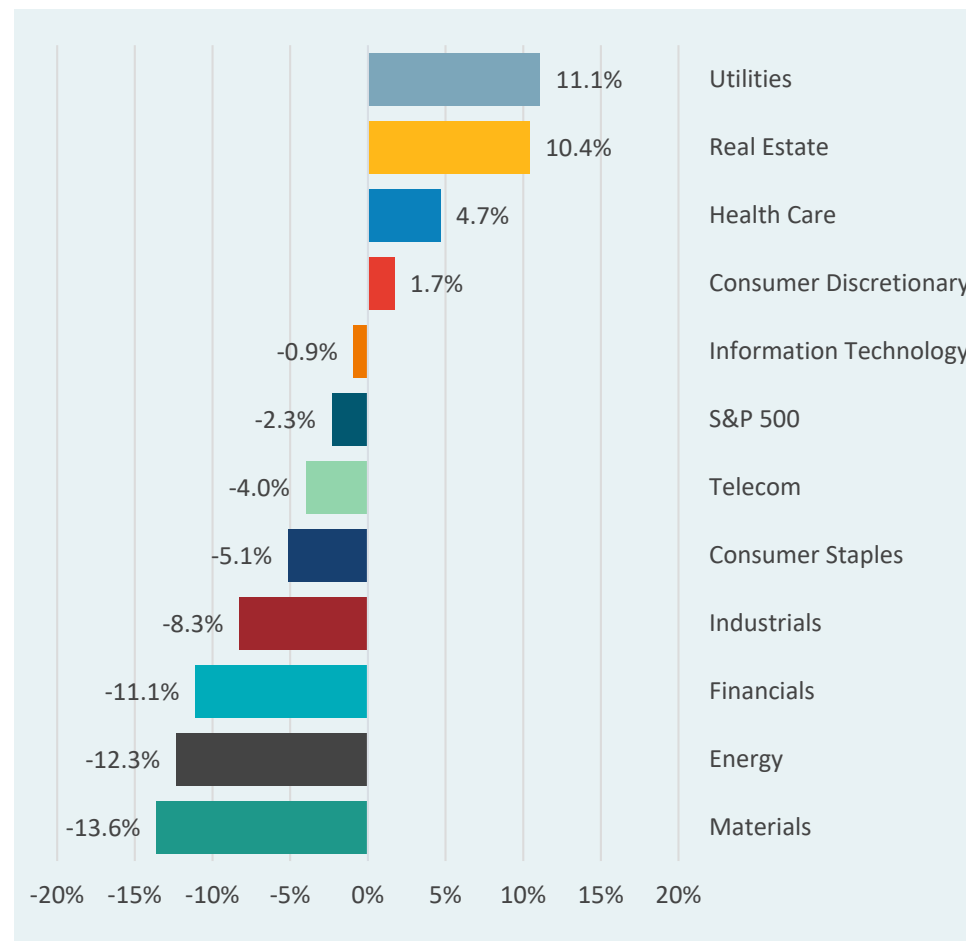
S&P 500 sector returns

QTD



Source: Morningstar, as of 1/31/19

ONE YEAR ENDING JANUARY



Source: Morningstar, as of 1/31/19

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	8.0	8.0	8.0	(2.3)	14.0	11.0	15.0
S&P 500 Equal Weighted	9.9	9.9	9.9	(2.9)	13.6	9.8	17.0
DJ Industrial Average	7.3	7.3	7.3	(2.2)	17.8	12.4	15.0
Russell Top 200	7.5	7.5	7.5	(1.9)	14.5	11.4	14.8
Russell 1000	8.4	8.4	8.4	(2.2)	14.1	10.7	15.2
Russell 2000	11.2	11.2	11.2	(3.5)	14.7	7.3	14.5
Russell 3000	8.6	8.6	8.6	(2.3)	14.2	10.4	15.1
Russell Mid Cap	10.8	10.8	10.8	(2.9)	13.3	8.9	16.1
Style Index							
Russell 1000 Growth	9.0	9.0	9.0	0.2	16.6	13.0	16.9
Russell 1000 Value	7.8	7.8	7.8	(4.8)	11.6	8.3	13.4
Russell 2000 Growth	11.5	11.5	11.5	(2.6)	15.6	7.8	15.7
Russell 2000 Value	10.9	10.9	10.9	(4.5)	13.8	6.6	13.3

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	7.9	7.9	7.9	(7.5)	11.6	6.7	11.3
MSCI ACWI ex US	7.6	7.6	7.6	(12.6)	9.6	3.1	8.3
MSCI EAFE	6.6	6.6	6.6	(12.5)	7.7	2.7	8.1
MSCI EM	8.8	8.8	8.8	(14.2)	14.9	4.8	9.7
MSCI EAFE Small Cap	8.1	8.1	8.1	(15.6)	9.4	5.0	12.1
Style Index							
MSCI EAFE Growth	6.4	6.4	6.4	(11.3)	7.4	3.8	8.7
MSCI EAFE Value	6.7	6.7	6.7	(13.7)	8.1	1.4	7.4
Regional Index							
MSCI UK	7.1	7.1	7.1	(10.8)	6.1	0.5	8.3
MSCI Japan	6.1	6.1	6.1	(11.6)	8.5	5.1	6.7
MSCI Euro	6.4	6.4	6.4	(17.0)	6.9	1.3	6.7
MSCI EM Asia	7.3	7.3	7.3	(16.0)	14.1	6.5	11.3
MSCI EM Latin American	14.9	14.9	14.9	(5.1)	22.2	3.1	6.5

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	1.3	1.3	1.3	0.9	2.1	1.6	3.6
BBgBarc US Treasury Bills	0.2	0.2	0.2	2.0	1.1	0.7	0.4
BBgBarc US Agg Bond	1.1	1.1	1.1	2.3	2.0	2.4	3.7
Duration							
BBgBarc US Treasury 1-3 Yr	0.3	0.3	0.3	2.1	0.8	0.8	1.0
BBgBarc US Treasury Long	0.7	0.7	0.7	2.1	1.1	4.9	5.1
BBgBarc US Treasury	0.5	0.5	0.5	2.7	0.8	1.8	2.4
Issuer							
BBgBarc US MBS	0.8	0.8	0.8	3.0	1.5	2.4	3.2
BBgBarc US Corp. High Yield	4.5	4.5	4.5	1.7	9.4	4.6	11.0
BBgBarc US Agency Interm	0.4	0.4	0.4	2.5	1.1	1.4	1.9
BBgBarc US Credit	2.2	2.2	2.2	0.9	3.7	3.3	5.8

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	5.4	5.4	5.4	(8.2)	2.7	(7.9)	(2.7)
Wilshire US REIT	11.5	11.5	11.5	10.3	7.3	9.4	15.7
CS Leveraged Loans	2.3	2.3	2.3	2.4	6.1	3.7	7.9
Alerian MLP	13.0	13.0	13.0	(6.1)	7.4	(4.6)	10.2
Regional Index							
JPM EMBI Global Div	4.4	4.4	4.4	0.0	6.7	5.8	8.5
JPM GBI-EM Global Div	5.5	5.5	5.5	(5.3)	7.7	1.1	4.6
Hedge Funds							
HFRI Composite	3.5	3.5	3.5	(3.5)	5.1	3.0	5.3
HFRI FOF Composite	2.6	2.6	2.6	(3.9)	3.1	2.0	3.3
Currency (Spot)							
Euro	0.4	0.4	0.4	(7.9)	2.0	(3.2)	(1.1)
Pound	3.3	3.3	3.3	(7.5)	(2.5)	(4.4)	(0.9)
Yen	0.8	0.8	0.8	0.3	3.6	(1.3)	(1.9)

Source: Morningstar, HFR, as of 1/31/19

Notices & disclosures

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Board of Trustees

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary
Scott Whalen - Verus

Agenda Item 13: Emerging Market Debt Investment Manager - Verus

Recommendation:

Staff and Verus as the Pension Trust's investment consultant recommend that the Board of Trustees approve -

1. Emerging Markets Debt (EMD) Strategy – Investment Manager
 - a. Implement the previously approved expansion of the EMD strategy from local currency denominated bonds only to a blend of hard currency (US Dollar denominated) bonds as well as local currency.
 - b. Review the investment manager candidates included in the attached materials from Verus.
 - c. Approve the hiring of Ashmore Group plc. in the Ashmore EM Blended Debt total Return Strategy.
 - d. Terminate the use of Stone Harbor as the SLOOPT's EMD investment manager.

Discussion:

At the November 26, 2018 Board of Trustees meeting the Board approved the recommendation of Verus to broaden the Emerging Market Debt strategy from a local currency only strategy to a blended currency strategy. In EMD terms, a blended investment strategy invests in both hard currency (U.S. Dollar denominated debt) and local currency debt.

Verus has completed their recommendation on implementing this change either through an alternative strategy with the incumbent EMD manager, Stone Harbor, or with an alternative investment manager. The attached materials cover three EMD investment managers on Verus “focus list” of managers as well as an additional alternative and Stone Harbor’s blended currency alternative.

Verus recommends, and Staff concurs, that the selection of Ashmore Group in their Ashmore EM Blended Debt total Return Strategy be approved to replace Stone Harbor’s strategy in its entirety.

See the attached recommendation memo from Scott Whalen of Verus, the Pension Trust’s general investment consultant.

Respectfully submitted



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



February 2019
Emerging Market Debt - Blended Currency
San Luis Obispo County Pension Trust

I. Manager overview

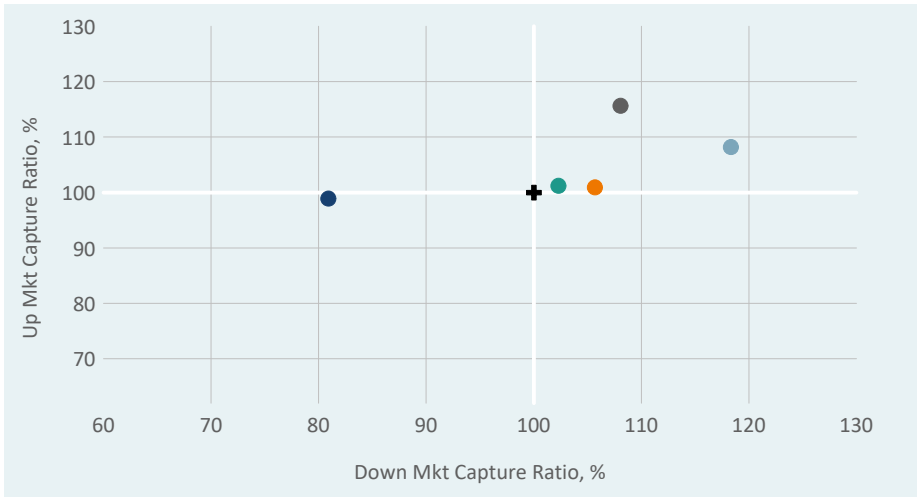
Manager comparison

	Ashmore	GSAM	PGIM	PIMCO	Stone Harbor
FIRM OWNERSHIP	Public Company LSE:ASHM	Wholly owned subsidiary of Goldman Sachs Group, Inc	Publicly traded (NYSE: PRU)	Wholly owned subsidiary of Allianz Global	100% Employee Owned
FIRM NAME	Ashmore Group plc	Goldman Sachs Asset Management	PGIM Fixed Income	PIMCO	Stone Harbor Investment Partners LP
PRODUCT NAME	Ashmore EMD Blended Debt (Broad) Strategy	Global Emerging Market External Local and Corporate Blended Debt	PGIM Fixed Income Emerging Markets Debt - Hard/Local Currency Blend	Emerging Markets Full Spectrum	EMD Global Allocation 50-50 Core
FIRM TOTAL AUM (\$MM)	\$73,900	\$1,334,373	\$729,130	\$1,719,523	\$29,348
STRATEGY AUM (\$MM)	\$13,983	\$13,378	\$11,429	\$391	\$6,421
INCEPTION DATE	Jun-03	Apr-13	Dec-07	Feb-13	May-07
PREFERRED BENCHMARK	50% JPM GBI EM Global Div/25% JPM EMBI Global Div/25% JPM CEMBI	50% JPM GBI EM Global Div/25% JPM EMBI Global Div/25% JPM CEMBI	50% JPM GBI EM Global Div/50% JPM EMBI Global Div	50% JPM GBI EM Global Div/25% JPM EMBI Global Div/25% JPM CEMBI	50% JPM GBI EM Global Div/50% JPM EMBI Global Div
INVESTMENT APPROACH	Fundamental	Fundamental	Fundamental	Fundamental	Fundamental
SCREENING APPROACH	Bottom-Up	Combination	Combination	Combination	Bottom-up
STYLE EMPHASIS	Blended Currency	Blended Currency	Blended Currency	Blended Currency	Blended Currency

Style and portfolio comparison

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor + JPM GBI-EMBI Blend

UP/DOWN MARKET CAPTURE, APR-13 TO DEC-18



EMD REGION, MAR-14 TO DEC-18

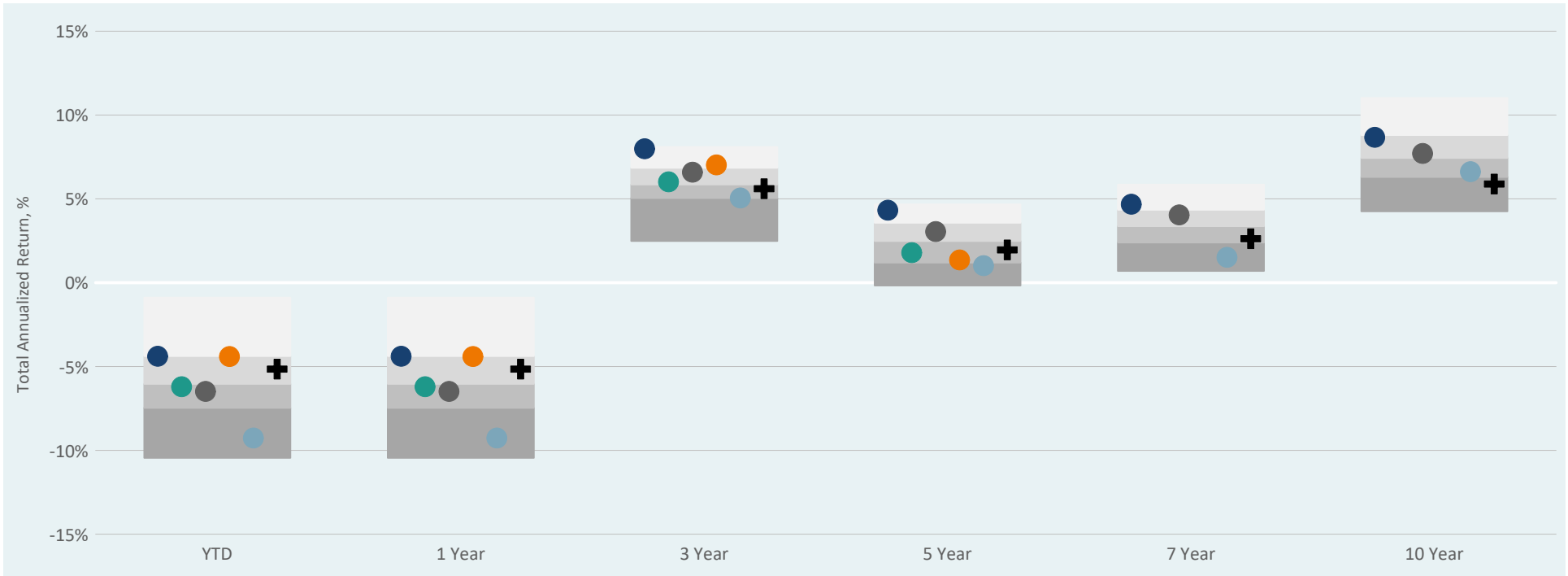


	Ashmore	GSAM	PGIM	PIMCO	Stone Harbor
ANNUAL TURNOVER	37.0%	N/A	30.6%	4.0%	78.0%
YIELD TO MATURITY	7.2%	7.1%	7.3%	7.1%	8.4%
EFFECTIVE DURATION	5.5	5.9	6.3	5.2	5.8
AVERAGE QUALITY ISSUE	BB	BBB	BB	BBB	BB
MINIMUM QUALITY ISSUE	N/A	N/A	N/A	CCC	N/A
PRODUCT NO. OF ISSUES	423	505	342	533	260
NO. OF COUNTRIES	62	54	65	49	54

Performance comparison - as of December 2018

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor + JPM GBI-EMBI Blend

PERFORMANCE TO DATE

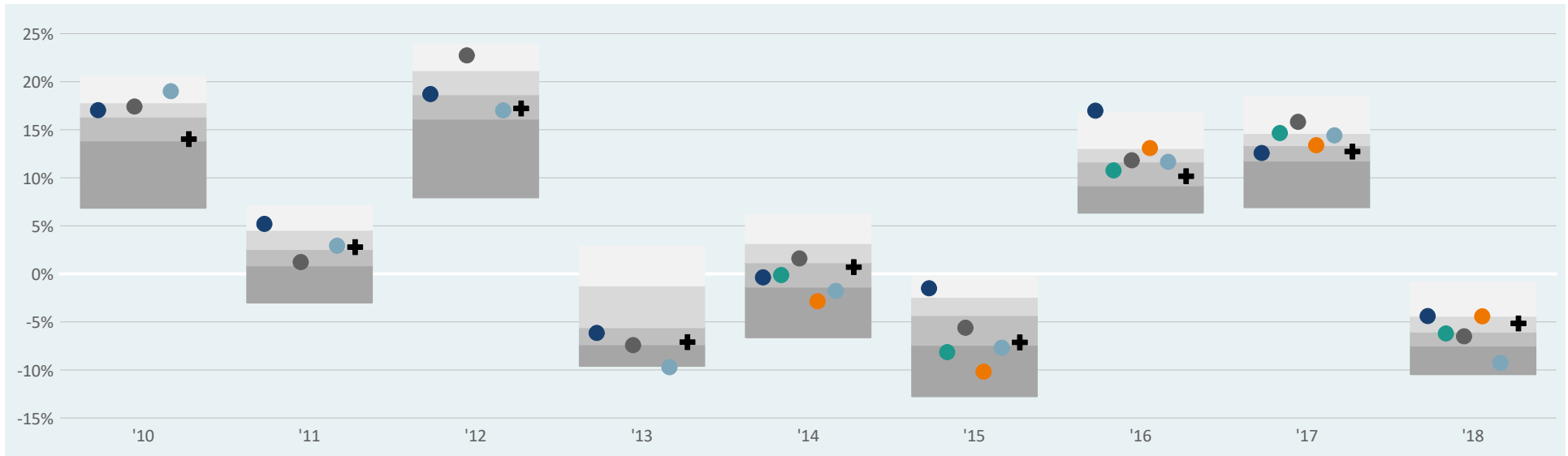


EXCESS ANNUALIZED RETURN TO DATE, %	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Ashmore	0.8	0.8	2.4	2.4	2.1	2.8
GSAM	-1.1	-1.1	0.4	-0.2	---	---
PGIM	-1.3	-1.3	1.0	1.1	1.4	1.8
PIMCO	0.8	0.8	1.4	-0.6	---	---
Stone Harbor	-4.1	-4.1	-0.5	-0.9	-1.1	0.7

Calendar year performance

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor + JPM GBI-EMBI Blend

ANNUAL PERFORMANCE



ANNUAL PERFORMANCE AND RANKING	2010	2011	2012	2013	2014	2015	2016	2017	2018
Ashmore	17.0	5.2	18.7	-6.1	-0.4	-1.5	17.0	12.6	-4.4
Rank	44	20	48	59	67	18	4	62	26
GSAM					-0.1	-8.1	10.8	14.7	-6.2
Rank					64	86	60	22	55
PGIM	17.4	1.3	22.8	-7.4	1.6	-5.6	11.8	15.8	-6.5
Rank	35	68	11	78	42	59	45	14	59
PIMCO					-2.8	-10.2	13.1	13.4	-4.4
Rank					85	93	23	48	28
Stone Harbor	19.0	2.9	17.0	-9.7	-1.7	-7.7	11.7	14.4	-9.3
Rank	9	42	70	95	79	80	50	31	91
JPM GBI-EMBI Blend	14.0	2.8	17.2	-7.1	0.7	-7.1	10.2	12.7	-5.2
Rank	75	45	69	71	56	71	66	61	37

Performance summary - as of December 2018

	Ashmore	GSAM	PGIM	PIMCO	Stone Harbor	JPM GBI-EMBI Blend
PERFORMANCE ANALYSIS - (3 Years)						
Alpha %	2.6	0.0	0.4	1.3	-1.5	0.0
Beta	0.9	1.1	1.1	1.0	1.2	1.0
R-squared %	92.1	97.2	98.7	97.5	96.1	100.0
Sharpe Ratio	0.9	0.6	0.6	0.7	0.4	0.6
Treynor Ratio	0.1	0.0	0.0	0.1	0.0	0.0
Tracking Error %	2.2	1.7	1.4	1.3	2.7	0.0
Annualized Std Dev %	7.5	8.9	9.0	8.1	10.0	7.9
Information Ratio	1.0	0.2	0.7	1.0	-0.2	---
Max Drawdown %	-8.1	-11.7	-11.4	-9.4	-13.8	-9.5
Calmar Ratio	1.0	0.5	0.6	0.7	0.4	0.6
Excess Ann. Return %	2.4	0.4	1.0	1.4	-0.5	0.0
PERFORMANCE TO DATE						
1 Year	-4.4	-6.2	-6.5	-4.4	-9.3	-5.2
3 Year	8.0	6.0	6.6	7.0	5.1	5.6
5 Year	4.3	1.8	3.1	1.4	1.0	2.0
7 Year	4.7	---	4.1	---	1.5	2.6
10 Year	8.7	---	7.7	---	6.6	5.9
Common Inception (Apr-13)	2.9	0.5	1.4	0.0	-0.7	0.6
CALENDAR YEAR RETURNS						
2018	-4.4	-6.2	-6.5	-4.4	-9.3	-5.2
2017	12.6	14.7	15.8	13.4	14.4	12.7
2016	17.0	10.8	11.8	13.1	11.7	10.2
2015	-1.5	-8.1	-5.6	-10.2	-7.7	-7.1
2014	-0.4	-0.1	1.6	-2.8	-1.7	0.7
2013	-6.1	---	-7.4	---	-9.7	-7.1
2012	18.7	---	22.8	---	17.0	17.2
2011	5.2	---	1.3	---	2.9	2.8
2010	17.0	---	17.4	---	19.0	14.0
2009	35.5	---	34.0	---	39.5	26.0

Investment vehicle information

	INVESTMENT VEHICLES	MINIMUM INVESTMENT	EXPENSE RATIO	FEE SCHEDULE	Liquidity
Ashmore	Commingled Fund*	\$50,000,000	0.75%	All Assets	Daily
	Mutual Fund (EMKIX)	\$1,000,000	1.00%	All Assets	Daily
GSAM	Separate Account	\$70,000,000	0.55% 0.50% 0.45%	First \$200,000,000 Next \$200,000,000 Balance Remaining	Daily
	Commingled Fund	\$5,000,000	0.55% 0.50% 0.45	First \$200,000,000 Next \$200,000,000 Balance Remaining	Daily
PGIM	Separate Account	\$100,000,000	0.55% 0.47% 0.40%	First \$100,000,000 Next \$100,000,000 Balance Remaining	Daily
	Commingled Fund	\$5,000,000	0.55% 0.45% 0.40%	First \$75,000,000 Next \$100,000,000 Balance Remaining	Daily
PIMCO	Mutual Fund (PFSIX)	\$200,000**	0.96%	All Assets	Daily
Stone Harbor	Separate Account	\$250,000,000	0.75%	All Assets	Daily
	Commingled Fund	\$5,000,000	0.75%	All Assets	Daily
	Mutual Fund (SHADX)	\$1,000,000	0.70%	All Assets	Daily

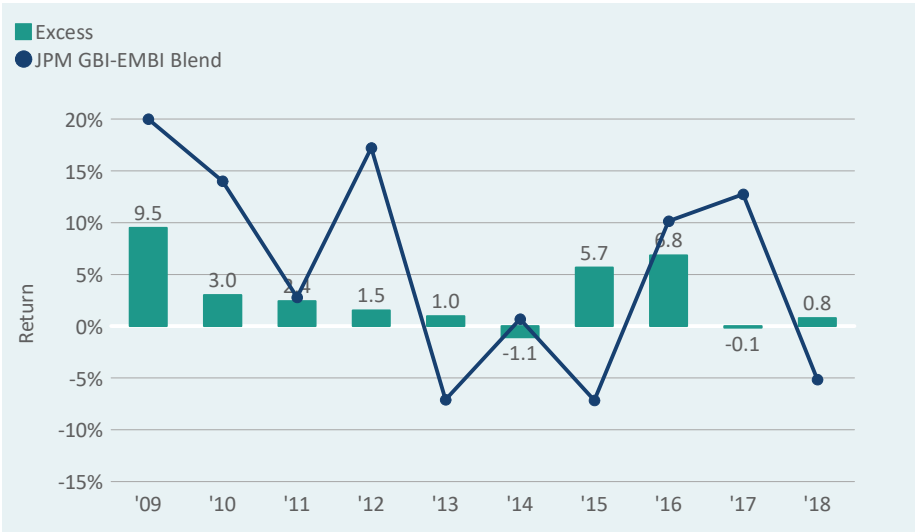
*75 bps fee negotiated for a \$50m account for Verus clients.

**Lower minimum for Verus clients.

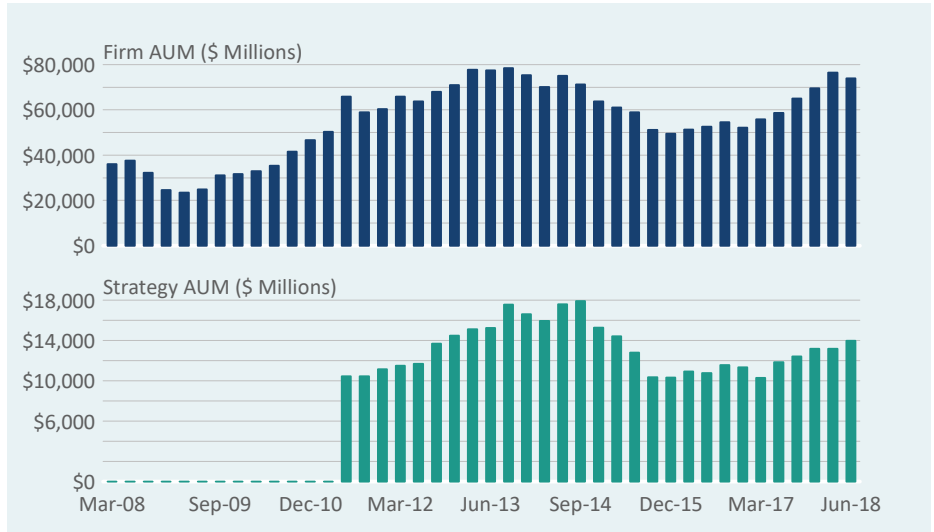
II. Strategy detail

Strategy overview - Ashmore

ANNUAL PERFORMANCE



AUM GROWTH



INVESTMENT PHILOSOPHY

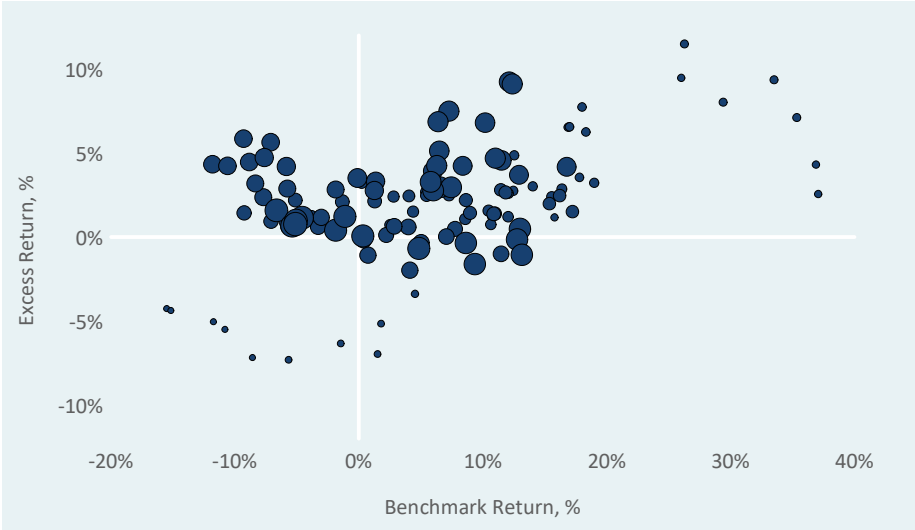
- Primarily macro top-down with focus on liquidity management.
- Focused on fundamentals and relative value analysis.
- Believe the liquidity premium generally does not offer high enough risk-adjusted returns; the team prefers highly liquid (i.e., large issuance size) securities.
- Volatile market conditions may offer opportunities to increase alpha at the short-term expense of market losses by buying into weakness (e.g., 2008).
- Value-oriented process; team manages cycles and buys into market dips.

TEAM DESCRIPTION

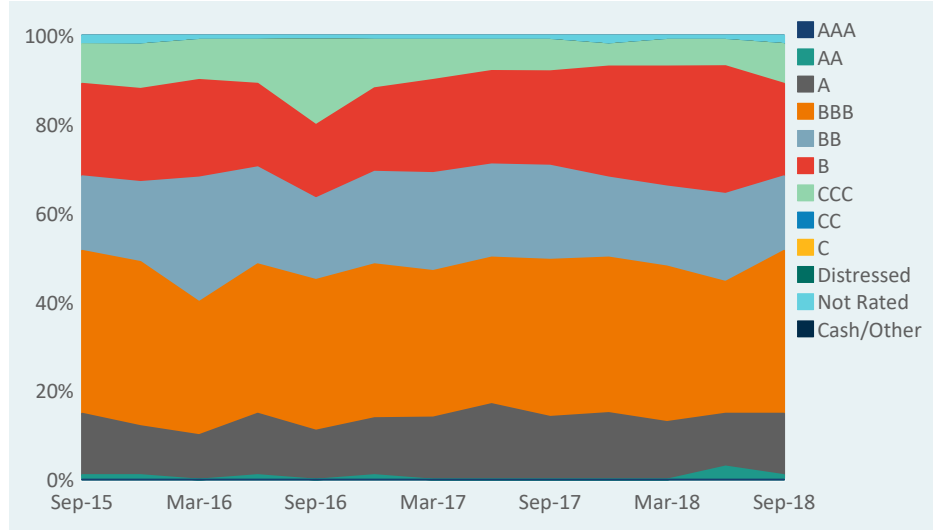
- Collective, team-based approach to investment management.
- Fixed Income Investment Committee has ultimate authority and responsibility for EMD portfolios.

Strategy overview - Ashmore

12 MONTH ROLLING EXCESS PERFORMANCE VS. BENCHMARK, NOV-08 TO DEC-18



HISTORICAL QUALITY ALLOCATIONS



PORTFOLIO CONSTRUCTION

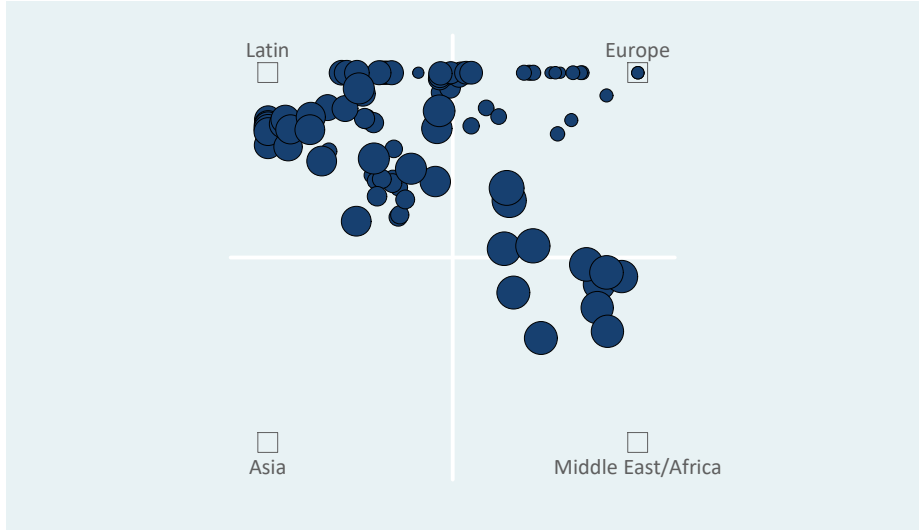
- ~300-500 securities
- Theme allocation accounts for 40% of alpha; country/credit selection 40% and currency allocation 20%.
- The three themes are compared for relative value opportunities and in turn, drive the asset allocation.

PERFORMANCE SENSITIVITY

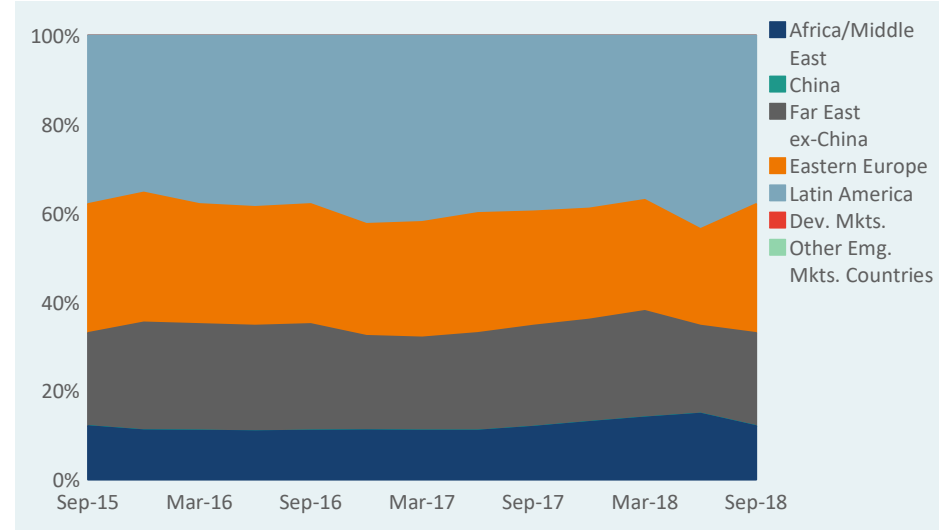
- Style tends to buy into cheapness at times of market dislocation when value is at its greatest.
- Tends to perform best in periods of heightened volatility.

Strategy overview - Ashmore

EMD REGION, JUL-10 TO DEC-18



HISTORICAL REGIONAL ALLOCATIONS



DIFFERENTIATING CHARACTERISTICS

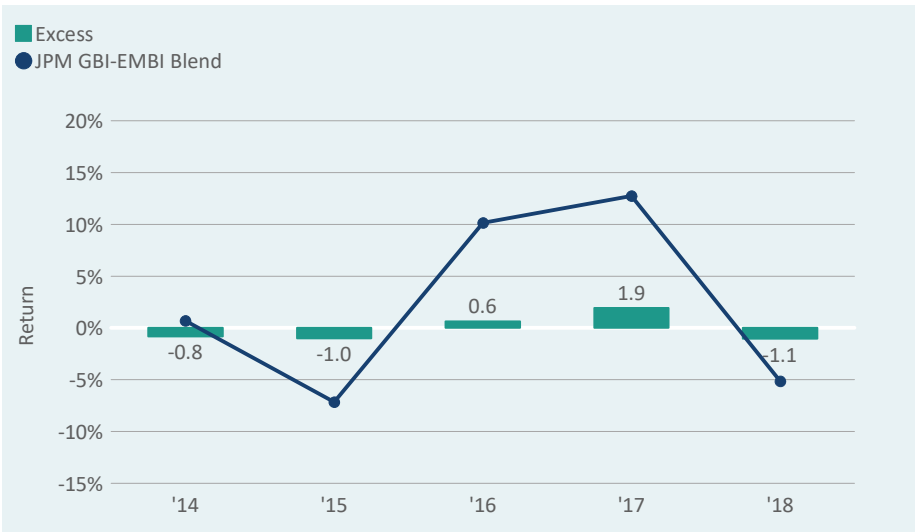
- Ashmore invests heavily in extensive travel which supports the firm's macro, top-down view.
- Excess returns are lowly correlated with other strategies which suggests philosophy/approach is distinct.
- Duration/yield curve analysis plays less important role compared to country/region decision.
- Firm's products are exclusively focused on emerging market strategies, both debt and equity.

POTENTIAL CONCERNS

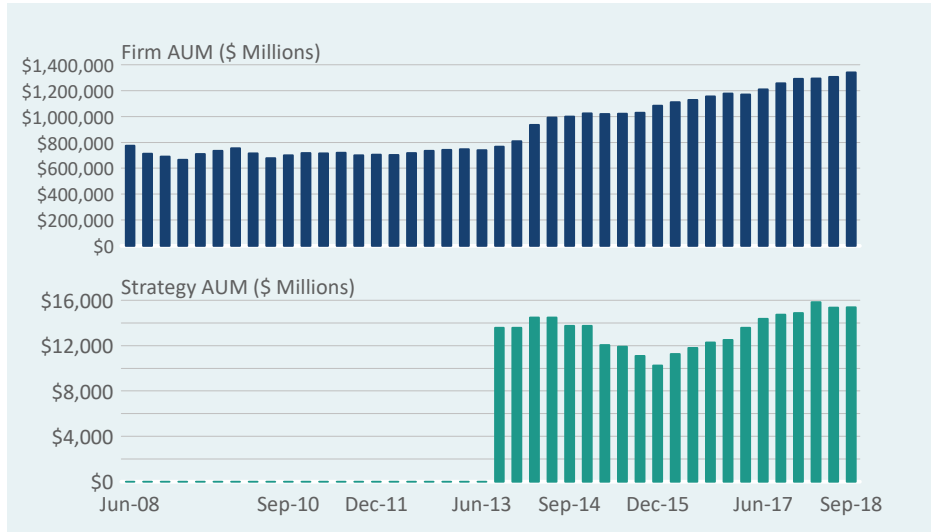
- Higher beta, total return style may cause underperformance in down markets.
- Investment in weak local markets may cause short-term bouts of negative performance.
- Higher than average fees.

Strategy overview - GSAM

ANNUAL PERFORMANCE



AUM GROWTH



Prudential had a large client move \$5 billion from Hard to Blend in 2010

INVESTMENT PHILOSOPHY

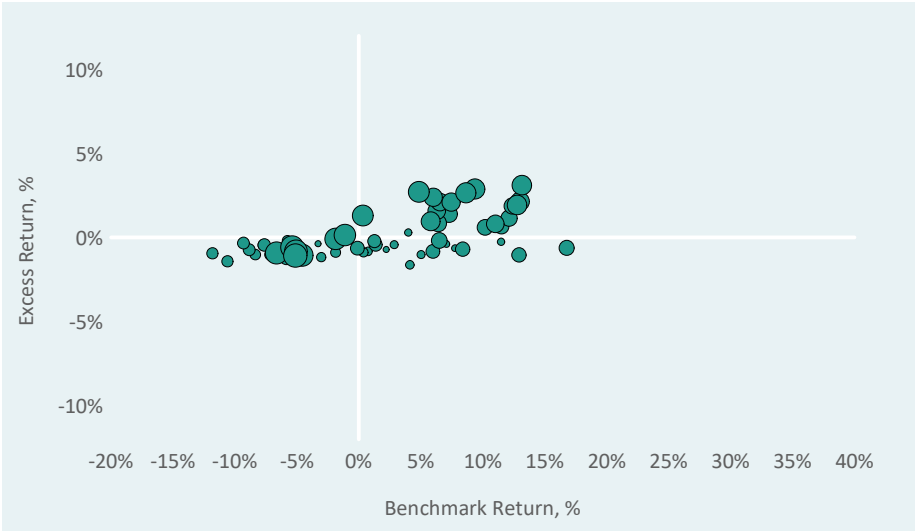
- Active investment management adds value.
- The investment process must be disciplined, team-driven and research intensive.
- A long-term investment horizon is critical.
- Combining fundamental and analytical tools in the investment process with an aim to improve risk-adjusted returns.
- Portfolio risk must be monitored and managed systematically.

TEAM DESCRIPTION

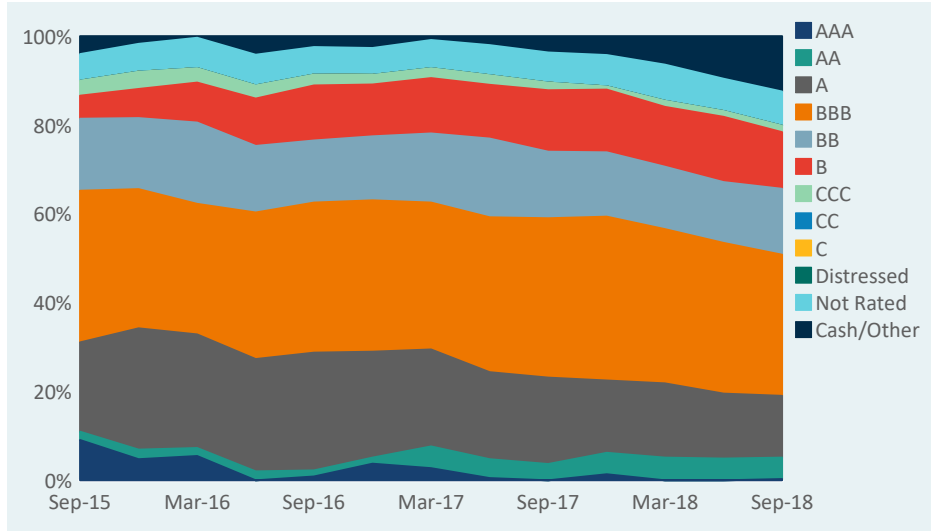
- GSAM EMD team has more than 20 investment professionals made up of economists, portfolio managers, analysts and traders who average more than 10+ years of experience.
- Sam Finkelstein is the Head of Emerging Market Debt, who joined in 1997 with nearly 20 years of experience.
- The firm's Fixed Income Strategy Group is responsible for portfolio strategy, investment process and outlooks. The team is made up of ten investors who average more than 25-years of experience.
- GSAM's EMD team benefits from synergies with other fixed income, equity and commodities teams.

Strategy overview - GSAM

12 MONTH ROLLING EXCESS PERFORMANCE VS. BENCHMARK, MAR-14 TO DEC-18



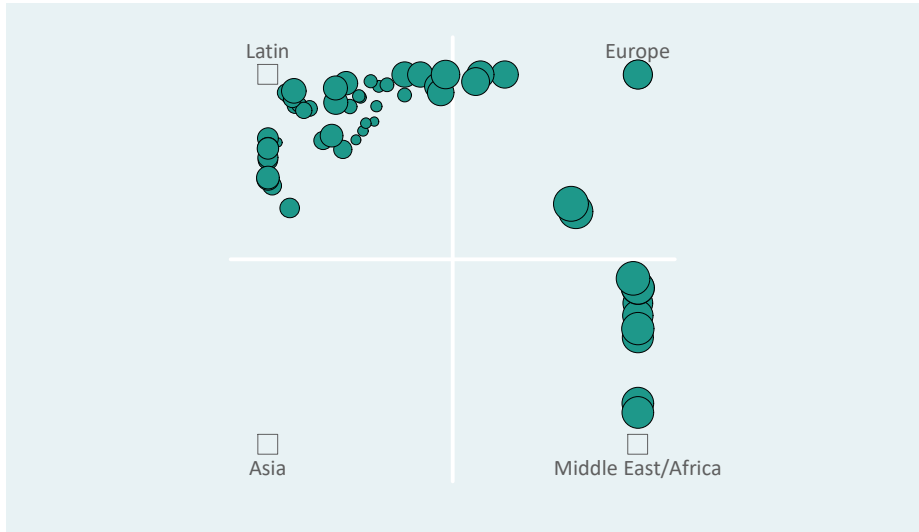
HISTORICAL QUALITY ALLOCATIONS



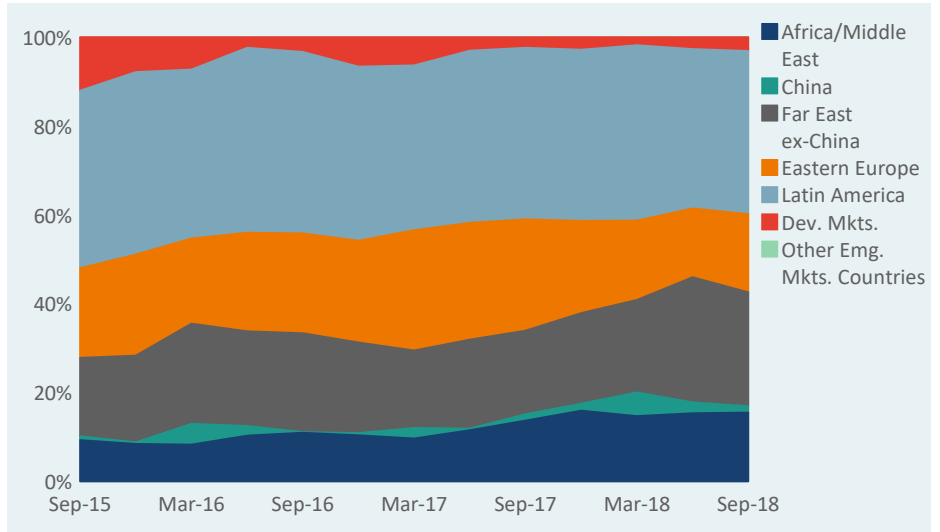
<p>PORTFOLIO CONSTRUCTION</p>	<ul style="list-style-type: none"> — Incorporates GSAM's overall macro-economic thematic viewpoints based on the economic assessment of each country's financial condition. — Seek to capture relative value by identifying mispriced securities. — Portfolio managers are responsible for security selection and allocating risk.
<p>PERFORMANCE SENSITIVITY</p>	<ul style="list-style-type: none"> — Significant issuer over/underweights to the benchmark allows the fund to benefit during periods of credit expansion and strong markets. — Will generally overweight high relative yield issuers to benefit from carry and roll. — Over the long-term, portfolio excess returns are derived primarily from currency, issuer and security selection.

Strategy overview - GSAM

EMD REGION, MAR-14 TO DEC-18



HISTORICAL REGIONAL ALLOCATIONS



DIFFERENTIATING CHARACTERISTICS

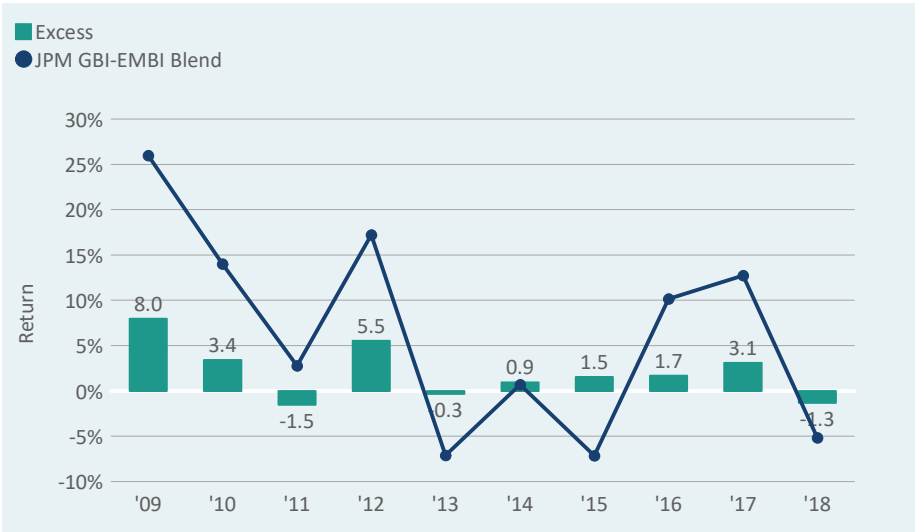
- Primary differentiation is the team's approach to sizing of exposures and risk management.
- Utilizes the firm's proprietary Risk Budget Optimizer which allocates to micro-risks first, with the residual budget allocated towards macro factors such as duration and sector allocation.
- Opportunistic approach to currency hedging.

POTENTIAL CONCERNS

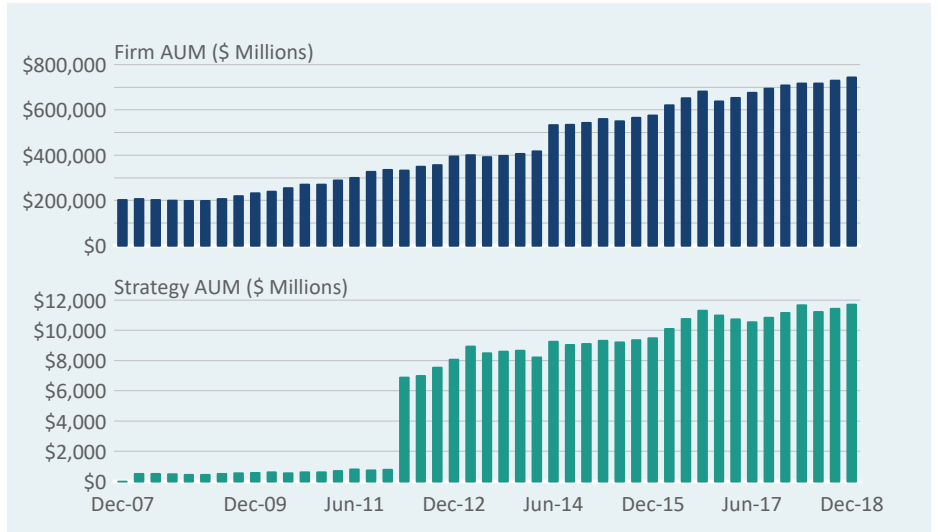
- Off-benchmark exposures may lead to higher tracking error relative to the benchmark.
- Style better explains performance than benchmark.
- Style benchmarked to 50/25/25.

Strategy overview - PGIM

ANNUAL PERFORMANCE



AUM GROWTH



INVESTMENT PHILOSOPHY

- Investment philosophy is predicated on four core pillars: an ever-changing risk appetite, country allocations are the primary driver of returns, security selection is a primary source of alpha and dynamic risk budgeting provides a framework for decision making.
- Employs a combination of active top-down and bottom-up approaches designed to identify relative value.
- Country investment process incorporates a multi-step approach designed to analyze fundamental, technical and relative value.
- Duration is managed in a neutral approach.
- Can include allocations non-US dollar and corporate debt.

TEAM DESCRIPTION

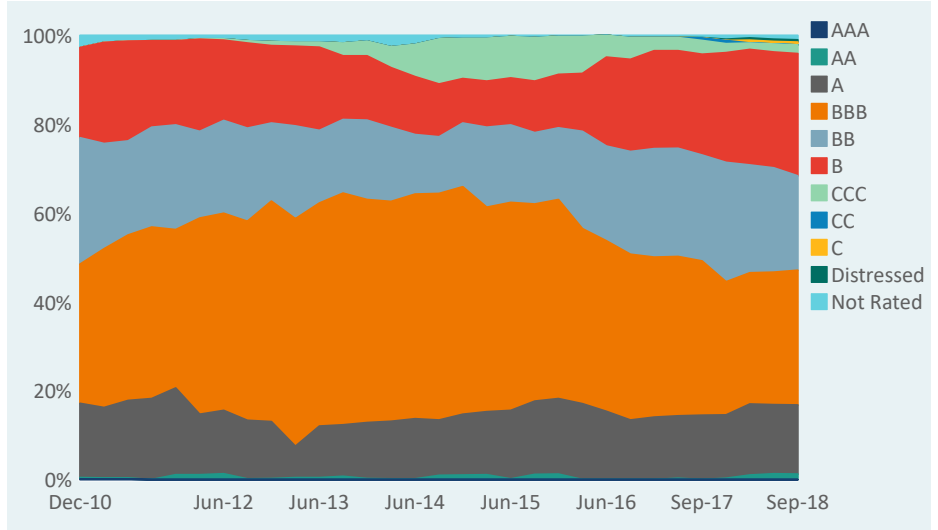
- Team based approach, led by Dave Bessey head of emerging market sectors.
- Supported by large group of research analysts.

Strategy overview - PGIM

12 MONTH EXCESS PERFORMANCE VS. BENCHMARK, NOV-08 TO DEC-18



HISTORICAL QUALITY ALLOCATIONS



PORTFOLIO CONSTRUCTION

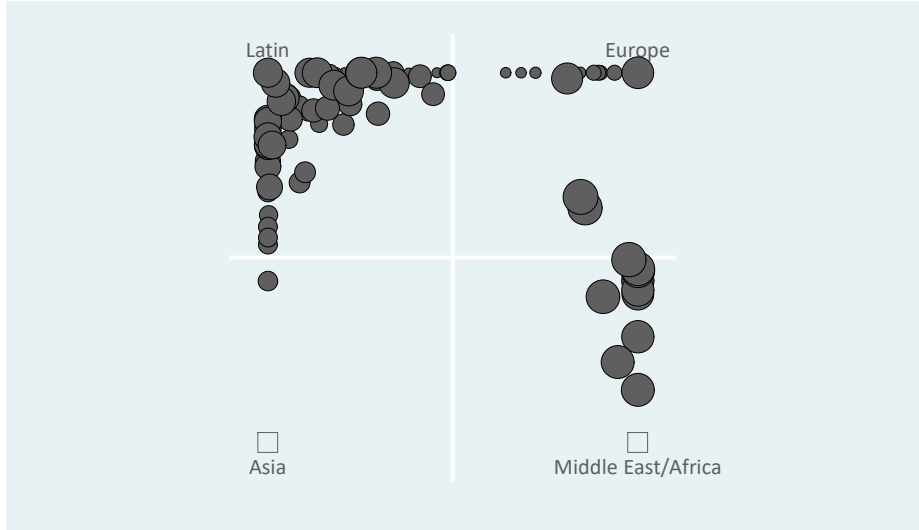
- Incorporates the firm's overall macro-economic viewpoints designed to assess global risk appetite and refine portfolio positioning.
- Country analysis designed to evaluate and identify relative value.
- Portfolio managers seek to determine the best risk/reward opportunities.

PERFORMANCE SENSITIVITY

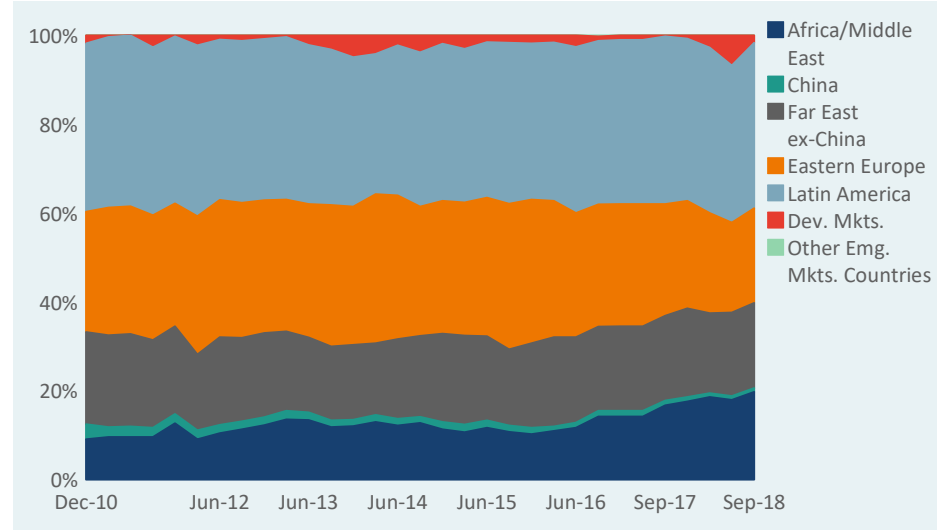
- Significant issuer over/underweights to the benchmark allows the fund to benefit during periods of credit expansion and strong markets.
- Will seek to tactically allocate to higher yielding corporate credits to enhance returns.
- Over the long-term, portfolio excess returns are derived primarily from country (40%), security selection (40%) and opportunistic currency positioning (20%).

Strategy overview - PGIM

EMD REGION, JUL-10 TO DEC-18



HISTORICAL REGIONAL ALLOCATIONS



DIFFERENTIATING CHARACTERISTICS

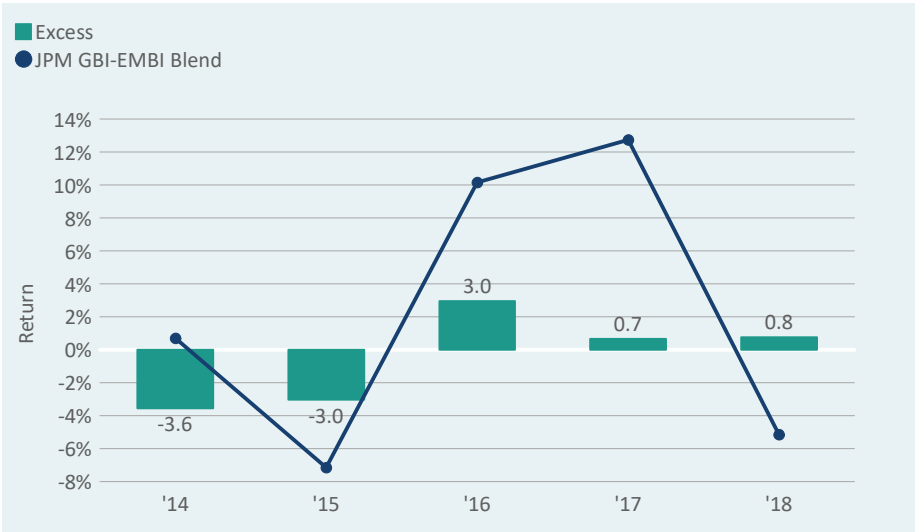
- Primary differentiation is the depth and experience of the EMD team.
- Leverages the firm's research capabilities across sectors and asset classes.
- Emphasis placed on assessing the global appetite for risk which is used to define tracking error target and return expectations.

POTENTIAL CONCERNS

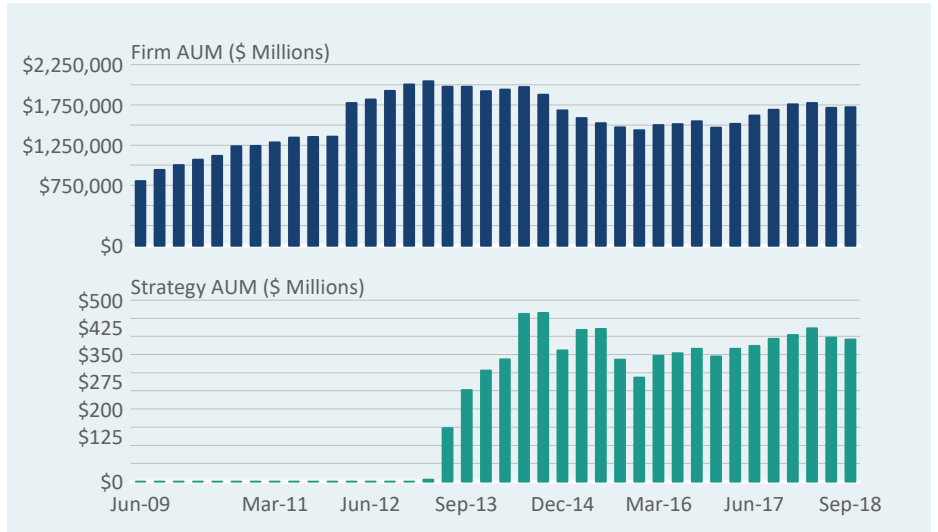
- Off-benchmark exposures may lead to higher tracking error relative to the benchmark.
- Typically a 50/50 portfolio but prohibition against corporate exposure (historically <15% of portfolio).

Strategy overview - PIMCO

ANNUAL PERFORMANCE



AUM GROWTH



INVESTMENT PHILOSOPHY

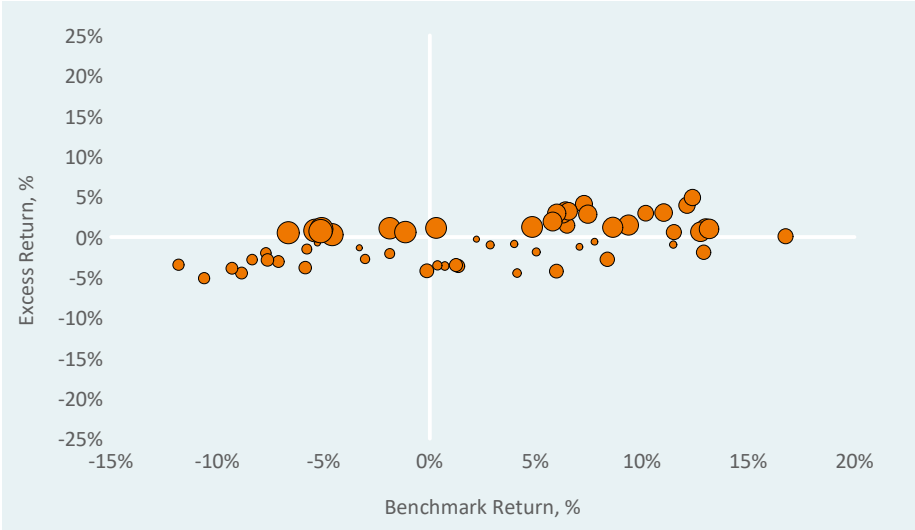
- Combined top-down and bottom-up approach.
- Relative value decisions on credit and rates are made independently.
- Incorporates a 3-year perspective, consistent with the secular tendencies in the asset class.
- If justified by the team, opportunistic exposures can be entered into with a shorter time horizon.

TEAM DESCRIPTION

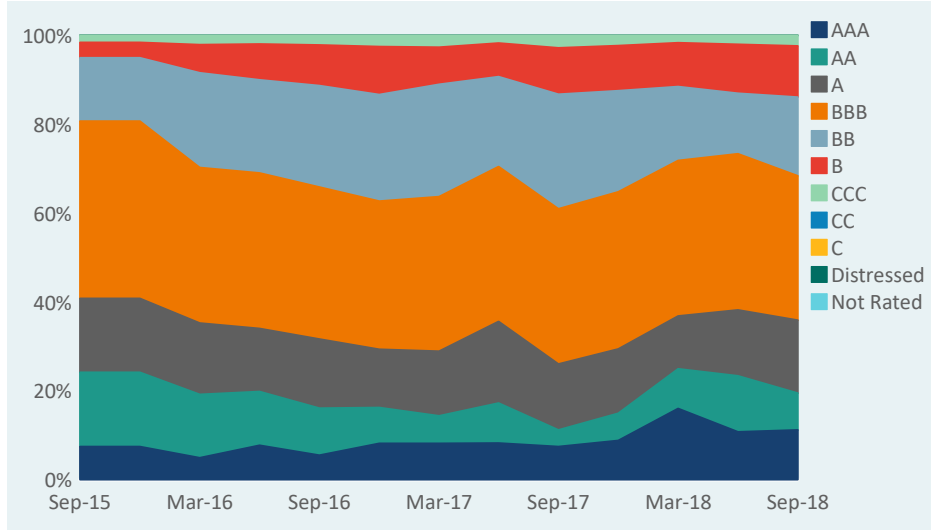
- Team approach.
- Supported by large group of analysts.

Strategy overview - PIMCO

12 MONTH EXCESS PERFORMANCE VS. BENCHMARK, MAR-14 TO DEC-18



HISTORICAL QUALITY ALLOCATIONS



PORTFOLIO CONSTRUCTION

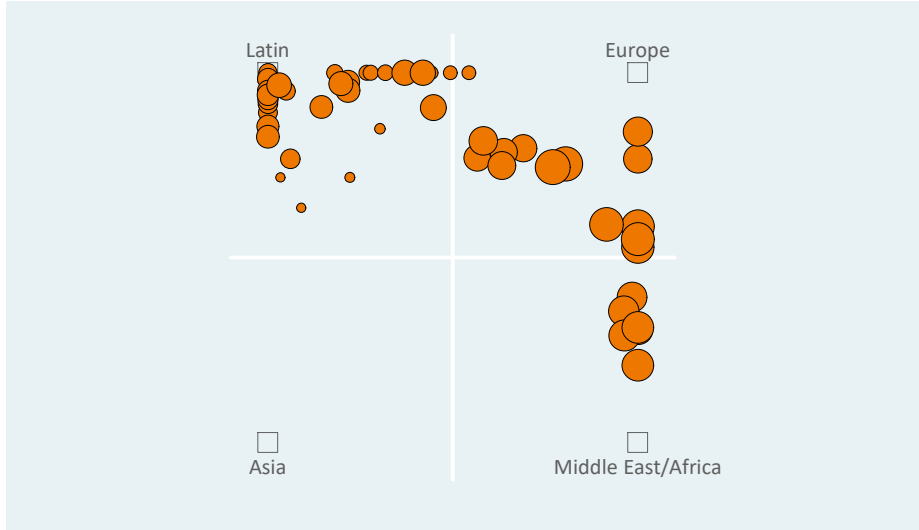
- Implemented through investments in PIMCO’s existing EM fixed income strategies.
- Layer in additional positions designed to amplify or mitigate risk factors or individual country exposures that result from allocating to the underlying EM debt strategies.

PERFORMANCE SENSITIVITY

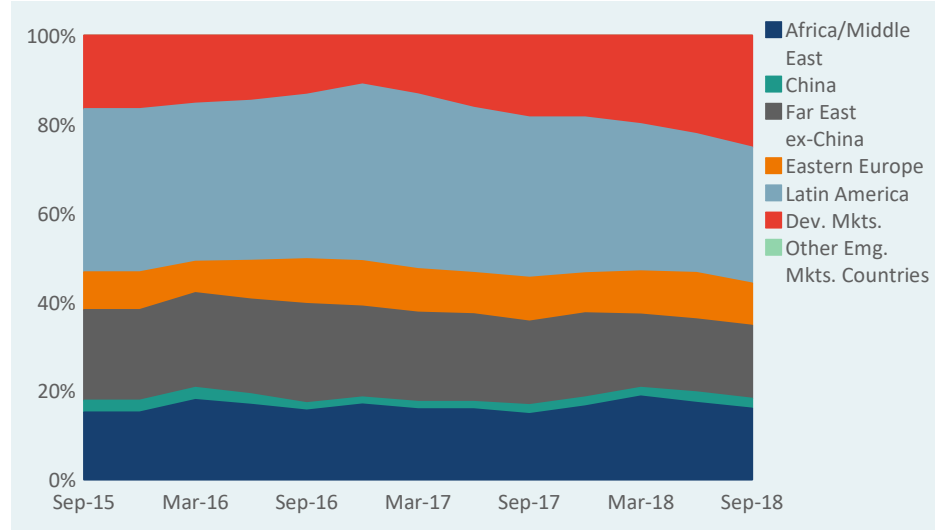
- PIMCO's EMD strategies have tended to perform well in up markets; stable market performance tends to be mixed; limited downside protection historically.
- Historically, country allocation has driven excess returns in PIMCO's emerging market debt strategies.
- PIMCO's top-down macro-thematic viewpoints drive the currency allocation.

Strategy overview - PIMCO

EMD REGION, MAR-14 TO DEC-18



HISTORICAL REGIONAL ALLOCATIONS



DIFFERENTIATING CHARACTERISTICS

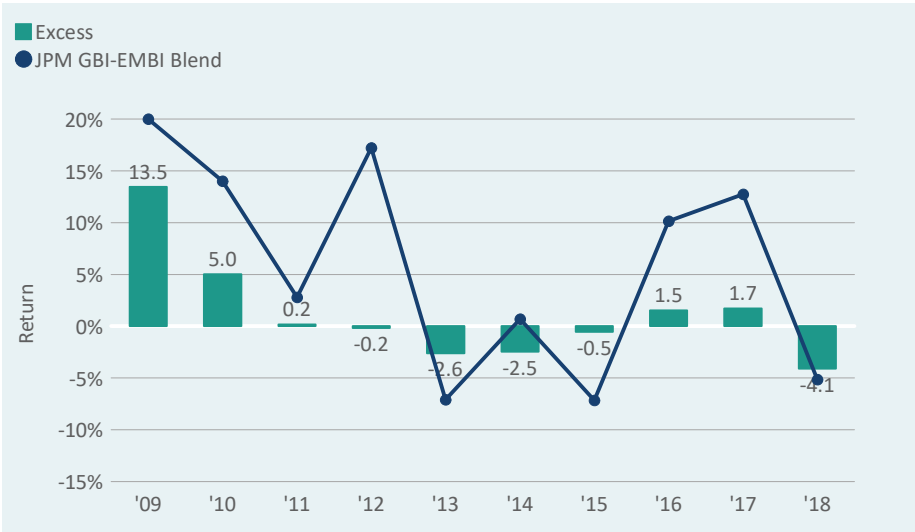
- Combines unique top-down approach incorporating secular and cyclical themes with breadth and depth of analytic resources for bottom-up country and credit analysis.
- Minimum quality CCC.
- Provider of liquidity to the market given large size.
- PIMCO's large size facilitates access to sovereign issuers enabling them to express views on preferred terms and conditions, as well as deal directly with issuers.

POTENTIAL CONCERNS

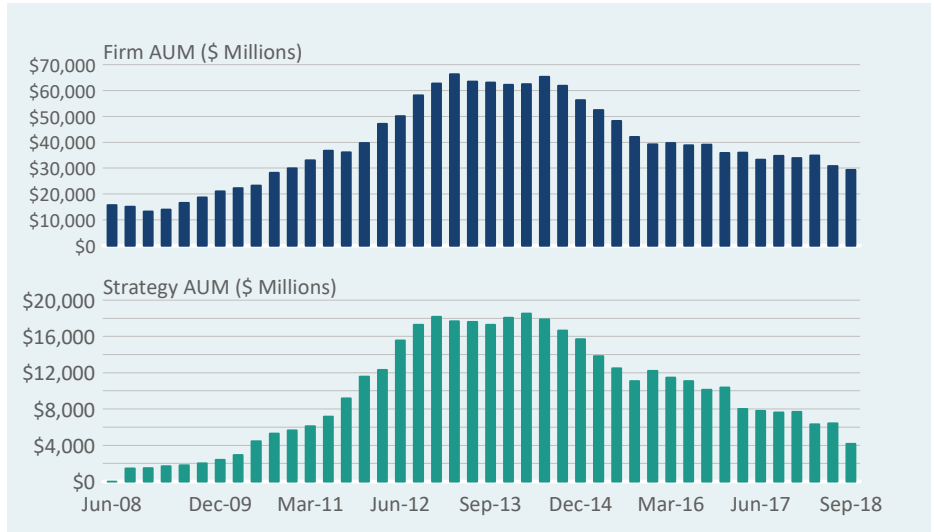
- Performance history of the product is limited and has not been through a full market cycle.
- Significant investment organizational turnover.
- Strategy uses sleeves of existing strategies in a fund-of-fund structure instead of allocating from the bottom-up.

Strategy overview - Stone Harbor

ANNUAL PERFORMANCE



AUM GROWTH



INVESTMENT PHILOSOPHY

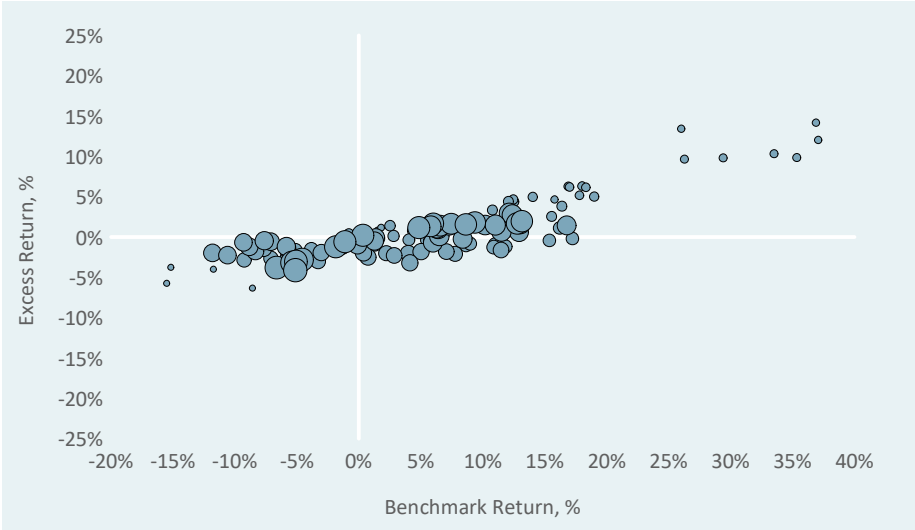
- Actively allocates among distinct portfolios of hard and local currency sovereign and corporate debt based on the team's views of the relative value of each sector.
- Country and currency decisions are based on the team's research and opinions, which includes an assessment of macroeconomic fundamentals, policies and politics, as well as the spreads, currencies and interest rates.
- Customized allocations for separately managed accounts may be tailored to differing weights according to clients' investment guidelines, alpha targets and risk parameters.

TEAM DESCRIPTION

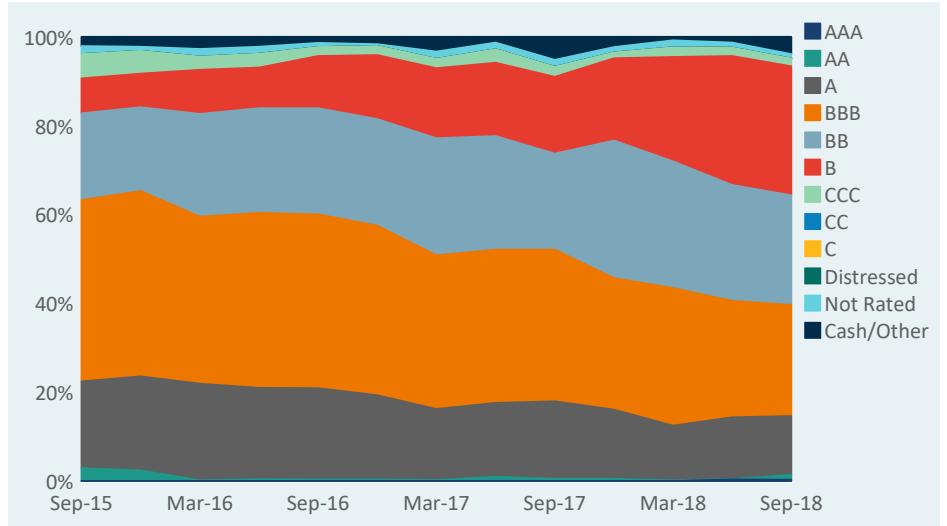
- Team approach.
- Supported by large group of analysts.

Strategy overview - Stone Harbor

12 MONTH EXCESS PERFORMANCE VS. BENCHMARK, NOV-08 TO DEC-18



HISTORICAL QUALITY ALLOCATIONS



PORTFOLIO CONSTRUCTION

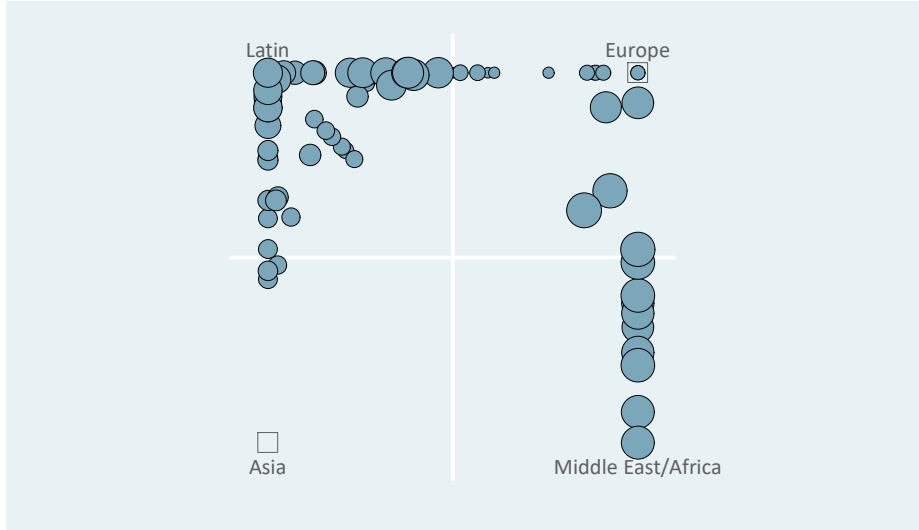
- 150+ securities, typical range is 100%-150%.
- Global investment outlook developed by Investment Policy Committee and serves as investment framework.
- Buy/sells are evaluated relative to fundamentals and other opportunities.
- Tactical duration and currency management.
- 25% max country exposure; 5% max cash exposure.
- Generally BB+ to AA credit quality range.
- Sources of value-add: country/region 30%; duration 10%; security selection 30%; currency 20%.

PERFORMANCE SENSITIVITY

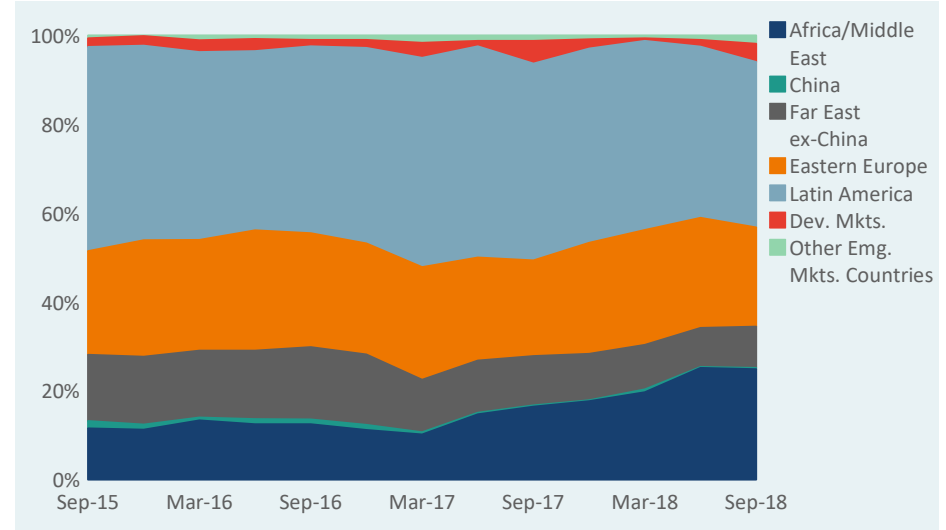
- Significant issuer over/underweights to the benchmark allows the fund to benefit during periods of credit expansion and strong markets.
- Will tactically allocate to off-benchmark, lower quality issuers in addition to local currencies.
- Over the long-term, portfolio excess returns are derived primarily from country, security selection and currency.

Strategy overview - Stone Harbor

EMD REGION, JUL-10 TO DEC-18



HISTORICAL REGIONAL ALLOCATIONS



DIFFERENTIATING CHARACTERISTICS

- Blended top-down and bottom-up approach.
- Currency and rate decision typically match credit selection decision.
- Typically higher turnover.
- 75% of firm's business is in emerging market debt strategies; long-term experience in local debt.
- Currency exposures managed independently relative to rates exposures.

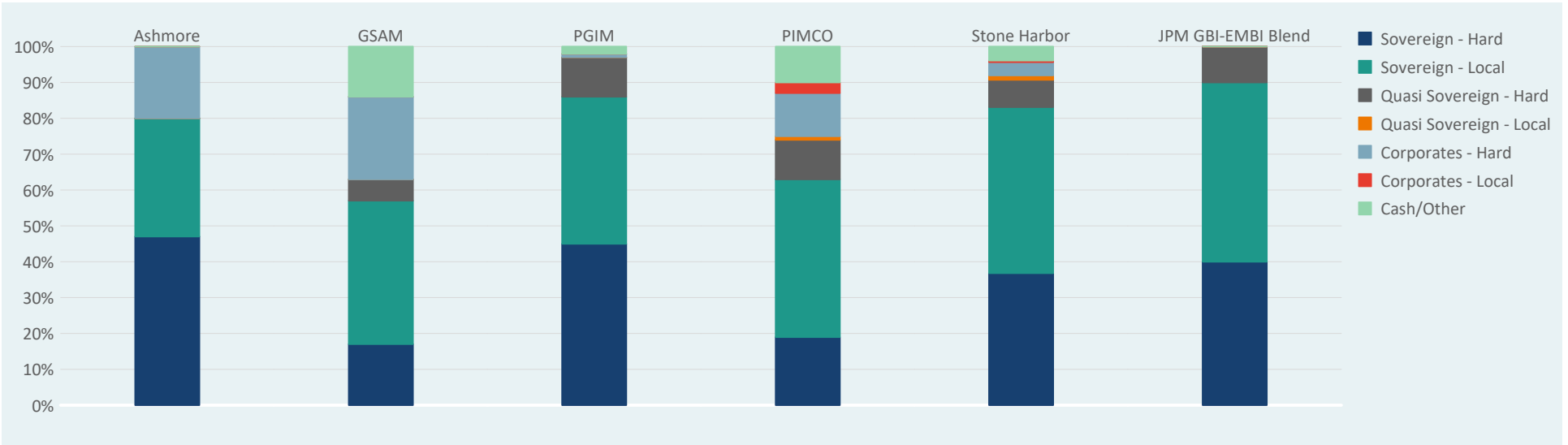
POTENTIAL CONCERNS

- Recent decline in assets in combination with poor relative performance.
- Ability to tactically allocate to local corporate bonds.

III. Appendix

Sector exposure

CURRENT SECTOR EXPOSURE, AS OF SEP-18

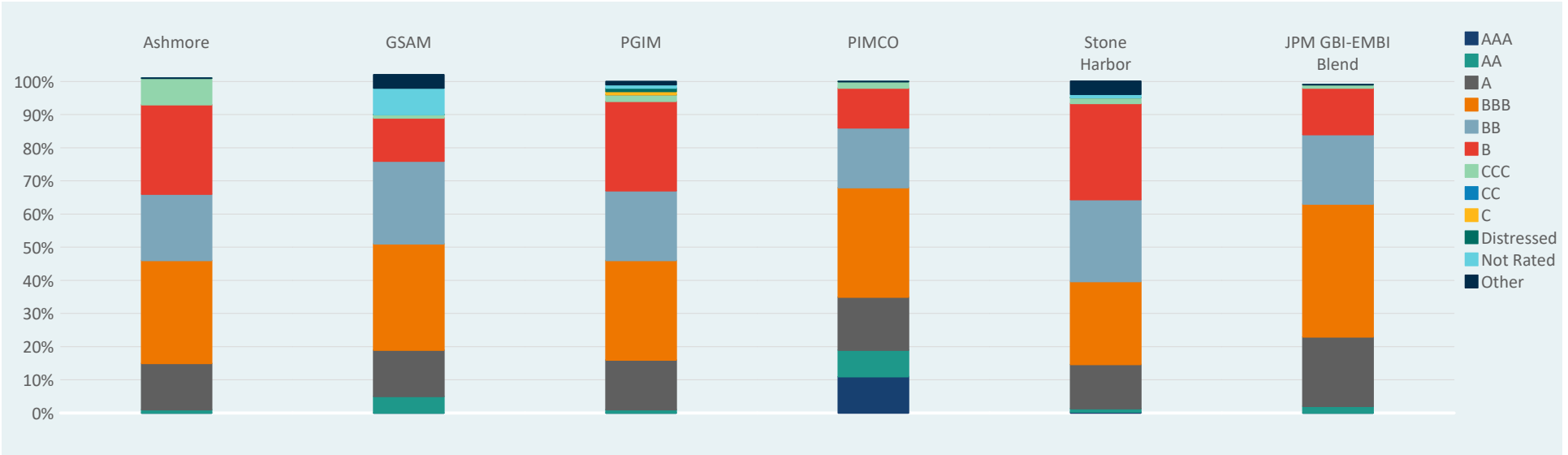


CURRENT EXCESS SECTOR EXPOSURE, AS OF SEP-18

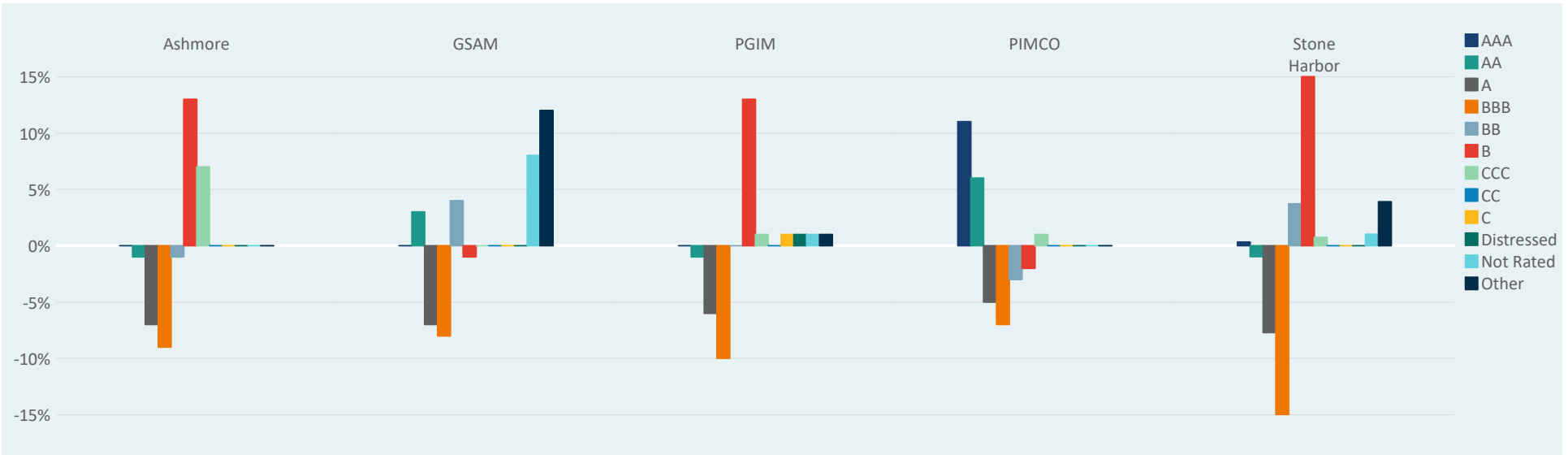


Quality comparison

CURRENT QUALITY POSITION, AS OF SEP-18

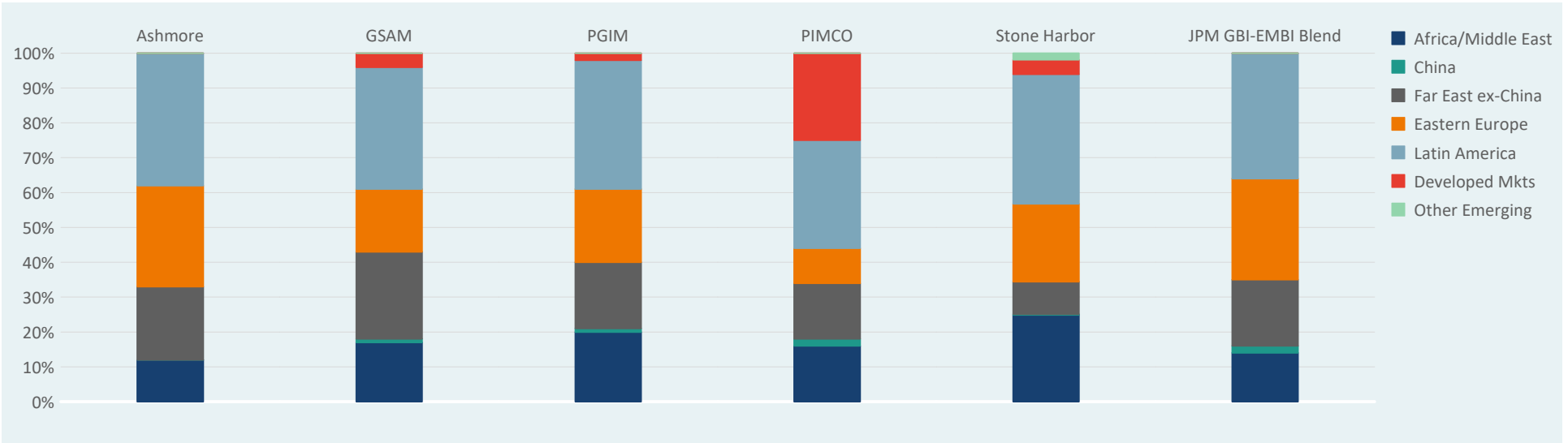


RELATIVE TO JPM GBI-EMBI BLEND, AS OF SEP-18

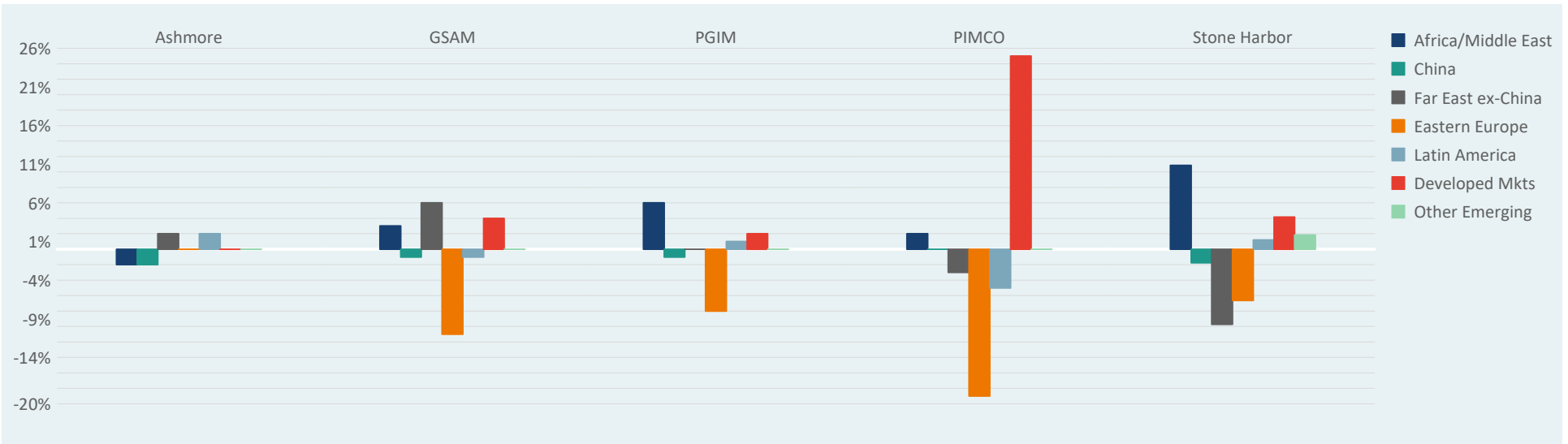


Regional exposure

CURRENT REGIONAL EXPOSURE, AS OF SEP-18



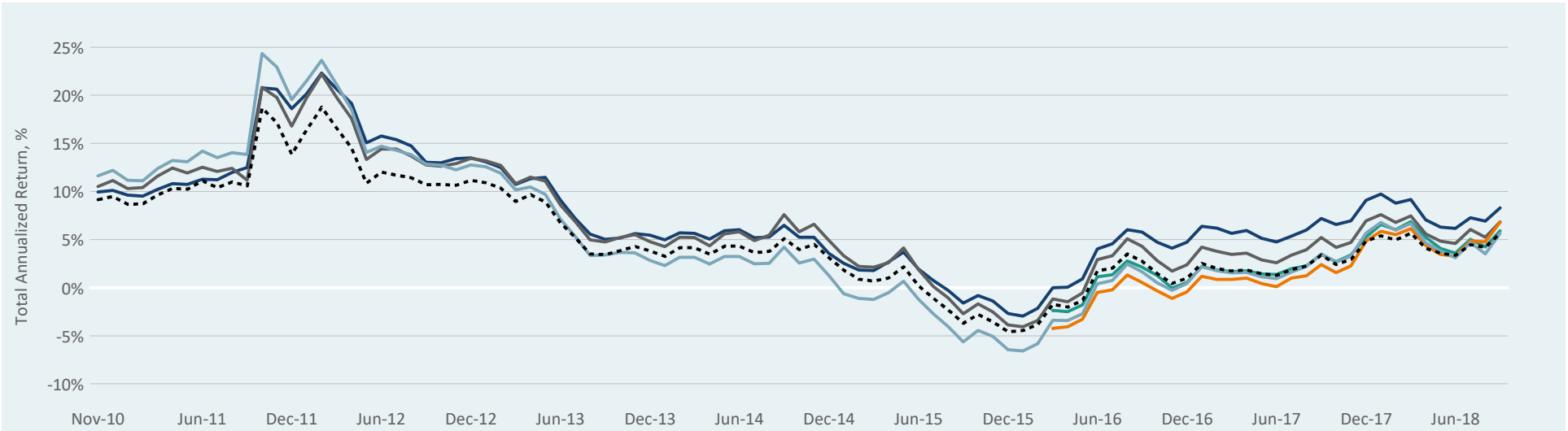
CURRENT EXCESS REGIONAL EXPOSURE, AS OF SEP-18



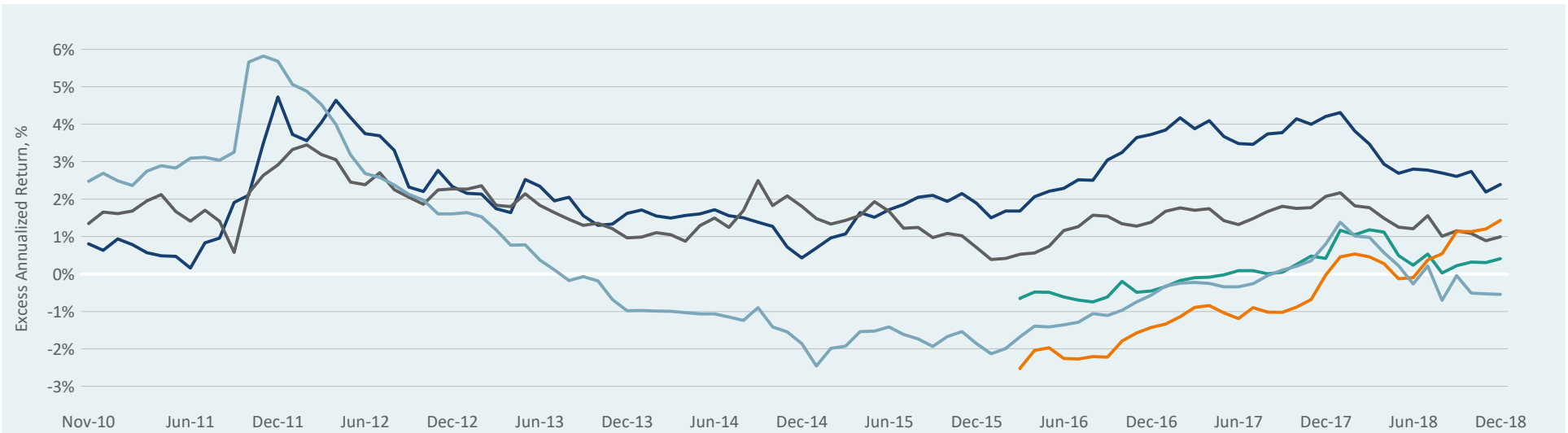
Rolling performance

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor ● + JPM GBI-EMBI Blend

TOTAL 36 MONTH ROLLING PERFORMANCE



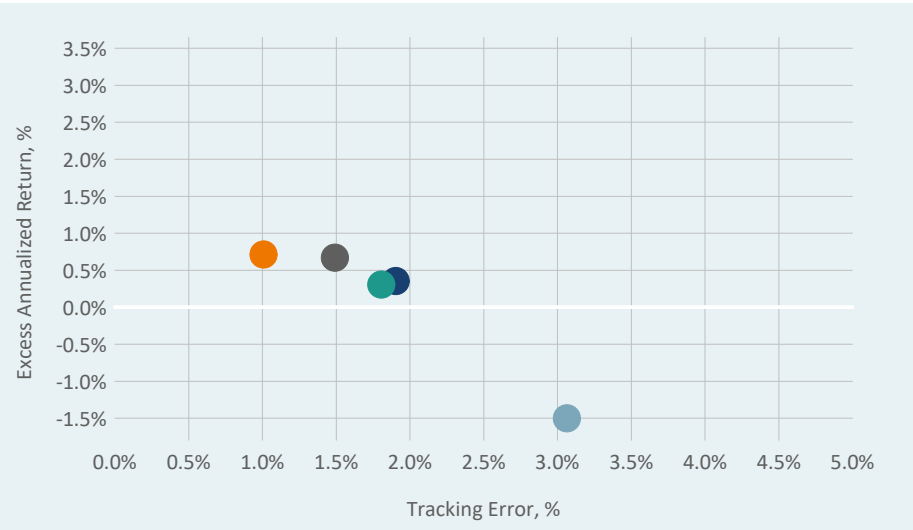
EXCESS 36 MONTH ROLLING PERFORMANCE



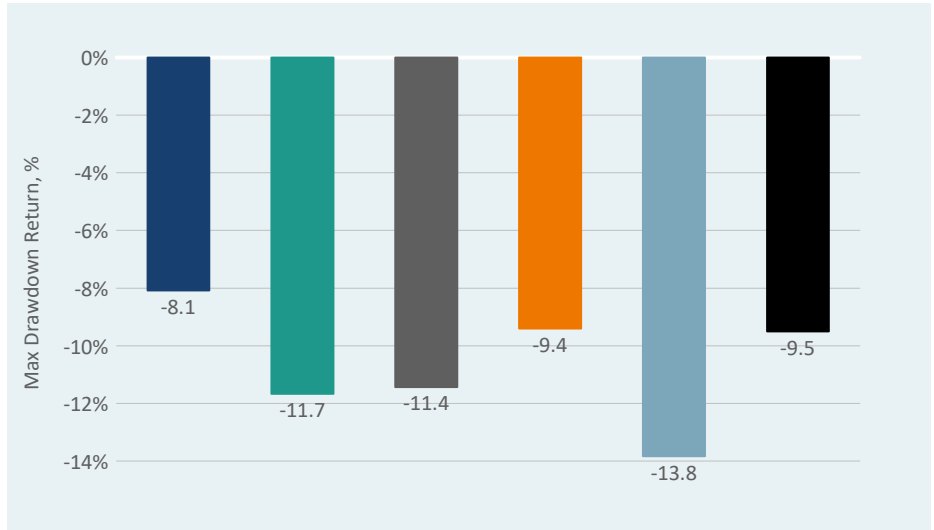
Performance statistics

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor + JPM GBI-EMBI Blend

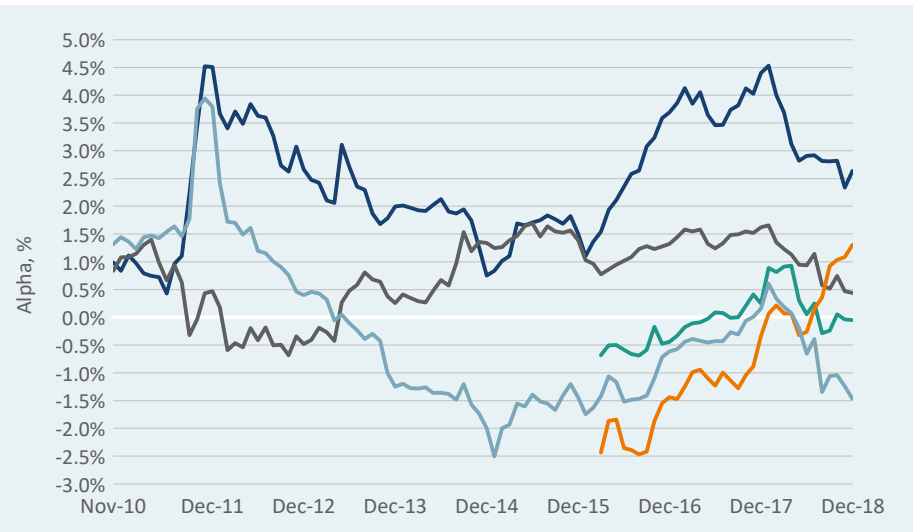
EXCESS PERFORMANCE VS. RISK, JAN-17 TO DEC-18



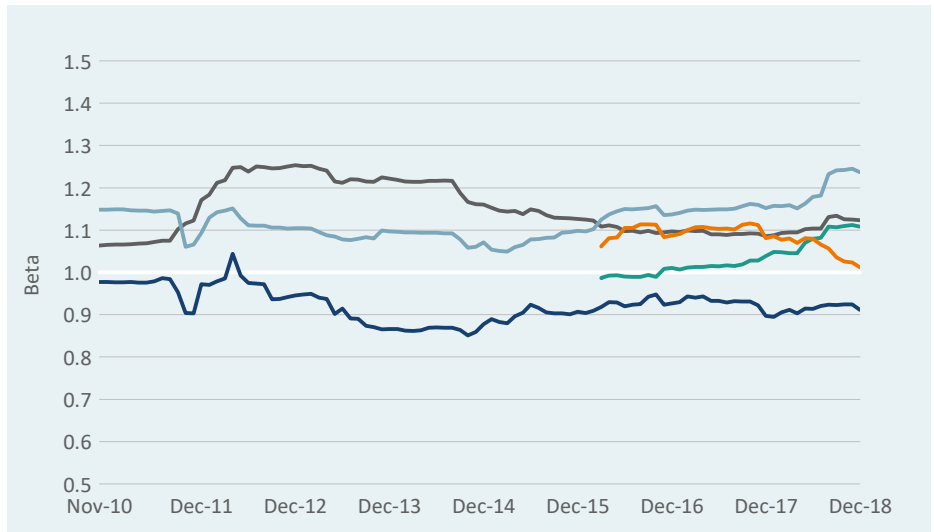
MAX DRAWDOWN RETURN, JAN-17 TO DEC-18



36 MONTH ROLLING ALPHA



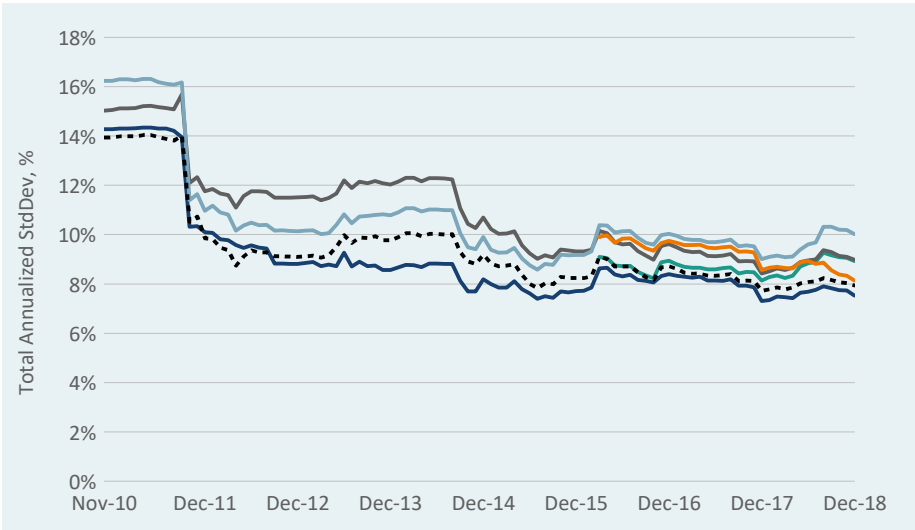
36 MONTH ROLLING BETA



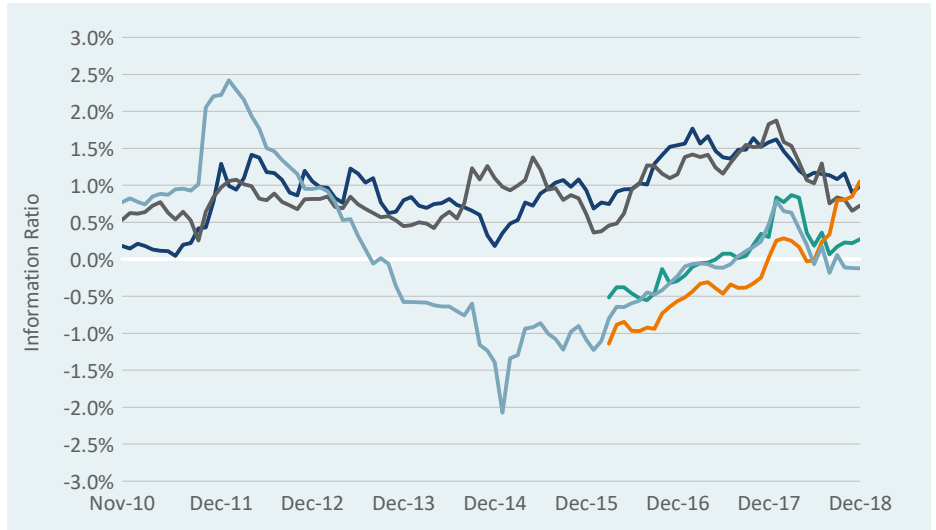
Performance statistics

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor ● JPM GBI-EMBI Blend

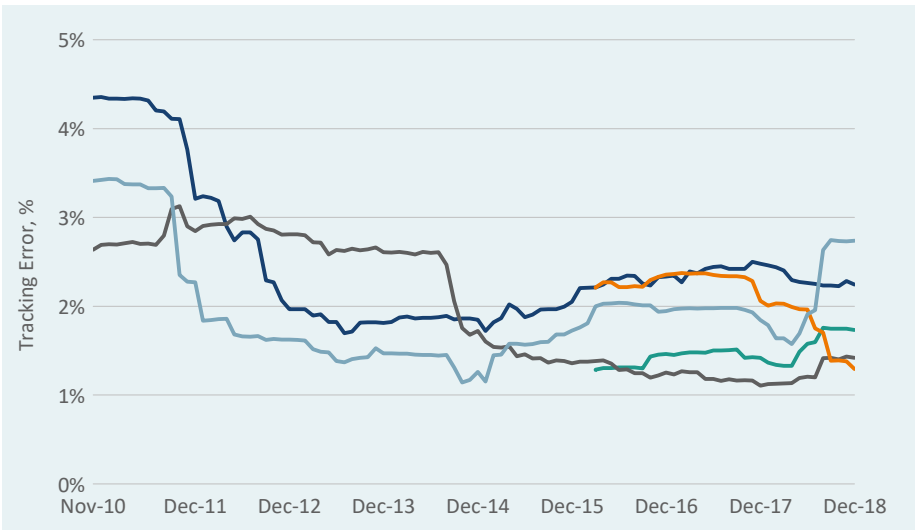
36 MONTH ROLLING RISK



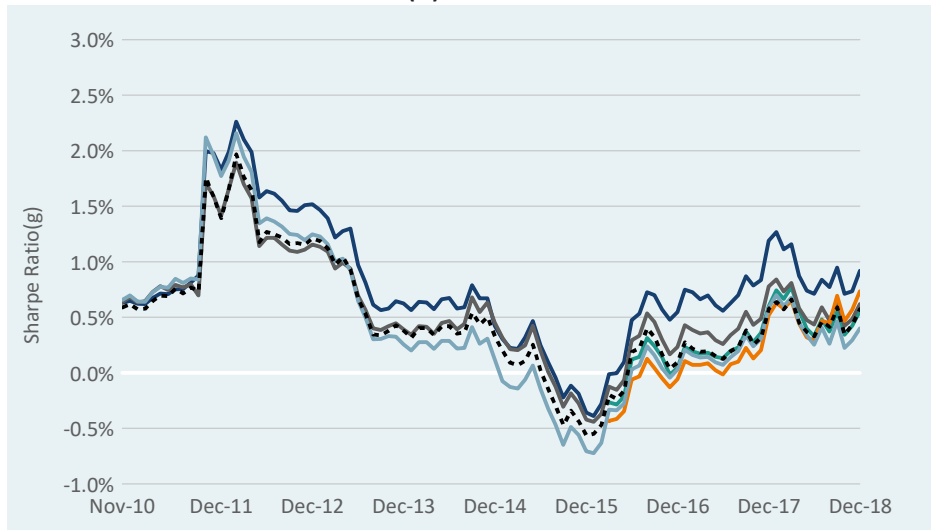
36 MONTH ROLLING INFORMATION RATIO



36 MONTH ROLLING TRACKING ERROR



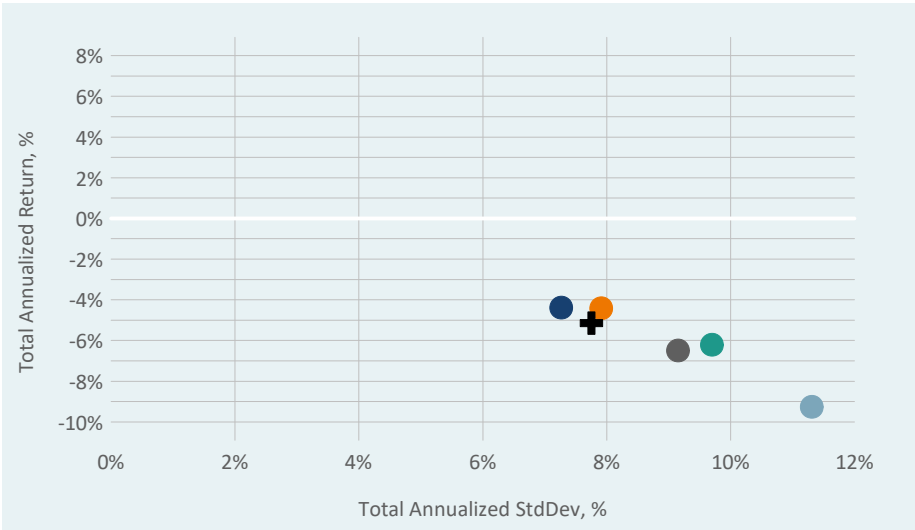
36 MONTH ROLLING SHARPE RATIO(G)



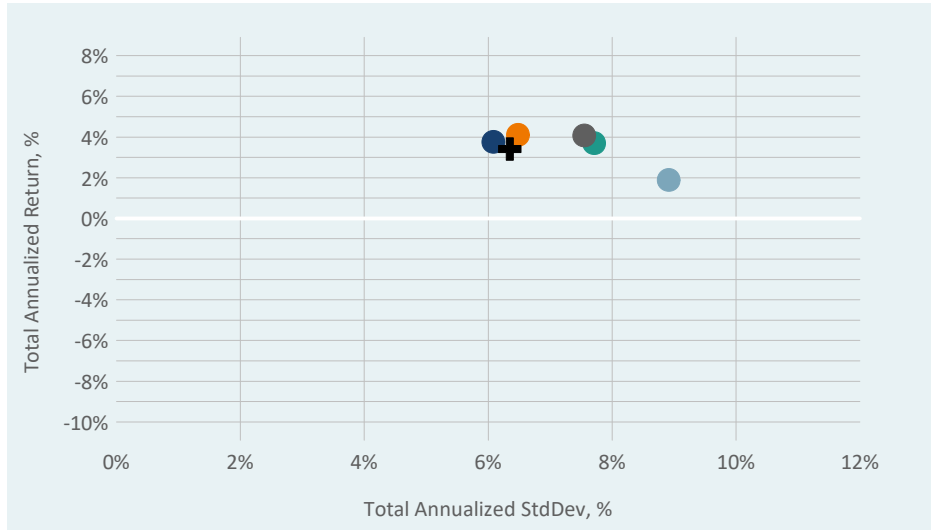
Risk vs. return

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor + JPM GBI-EMBI Blend

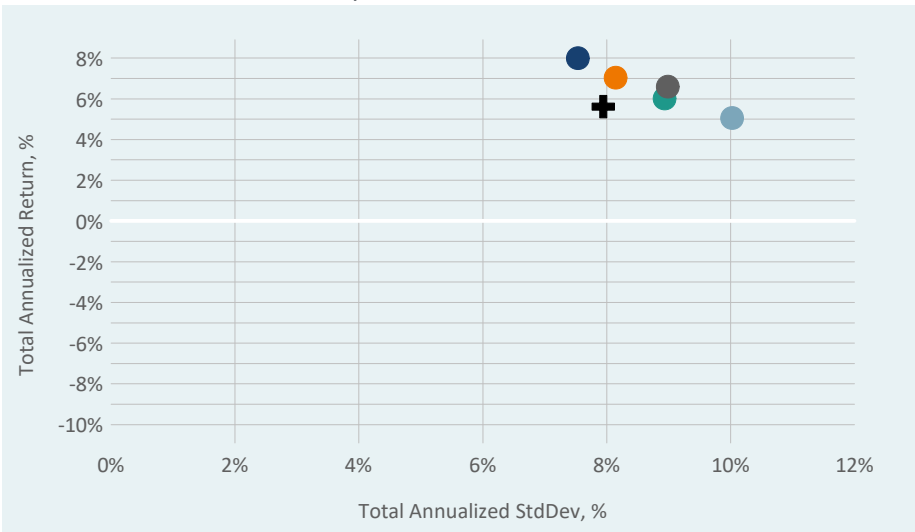
TOTAL PERFORMANCE VS. RISK, JAN-18 TO DEC-18



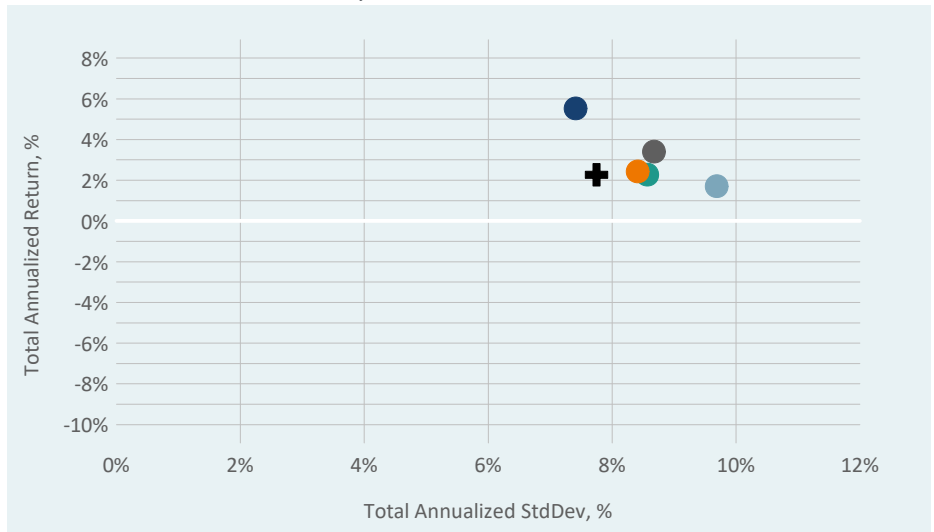
TOTAL PERFORMANCE VS. RISK, JAN-17 TO DEC-18



TOTAL PERFORMANCE VS. RISK, JAN-16 TO DEC-18



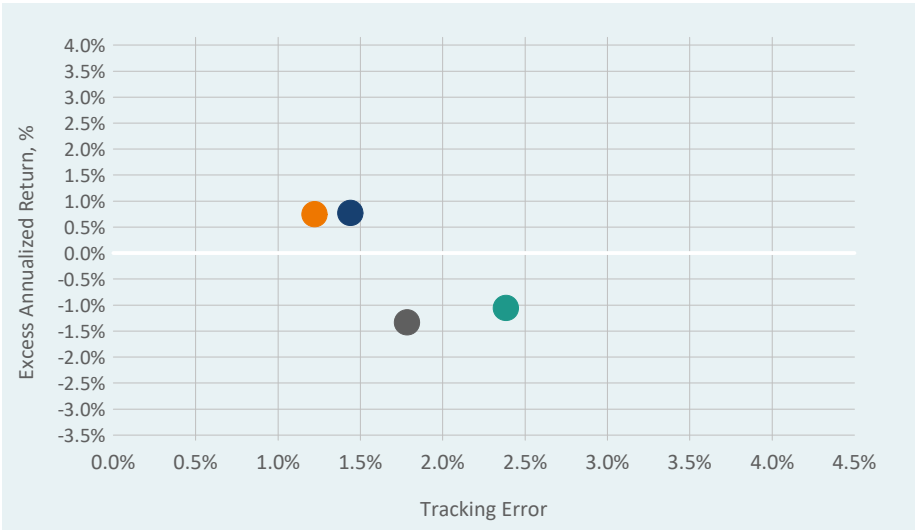
TOTAL PERFORMANCE VS. RISK, JAN-15 TO DEC-18



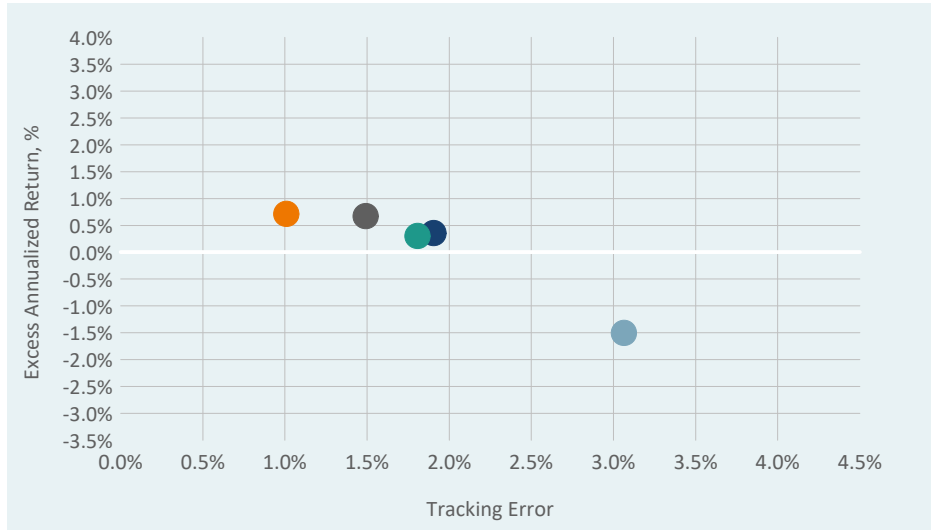
Performance efficiency

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor ● JPM GBI-EMBI Blend

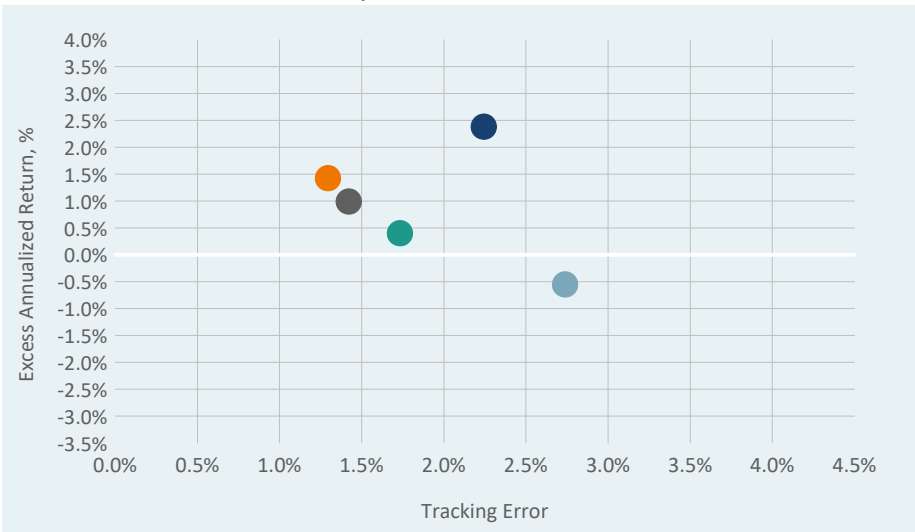
EXCESS PERFORMANCE VS. RISK, JAN-18 TO DEC-18



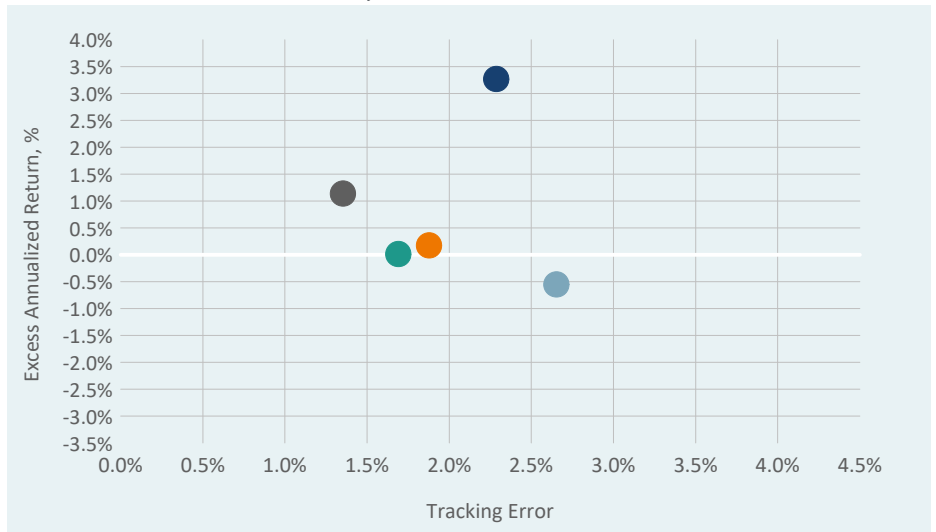
EXCESS PERFORMANCE VS. RISK, JAN-17 TO DEC-18



EXCESS PERFORMANCE VS. RISK, JAN-16 TO DEC-18



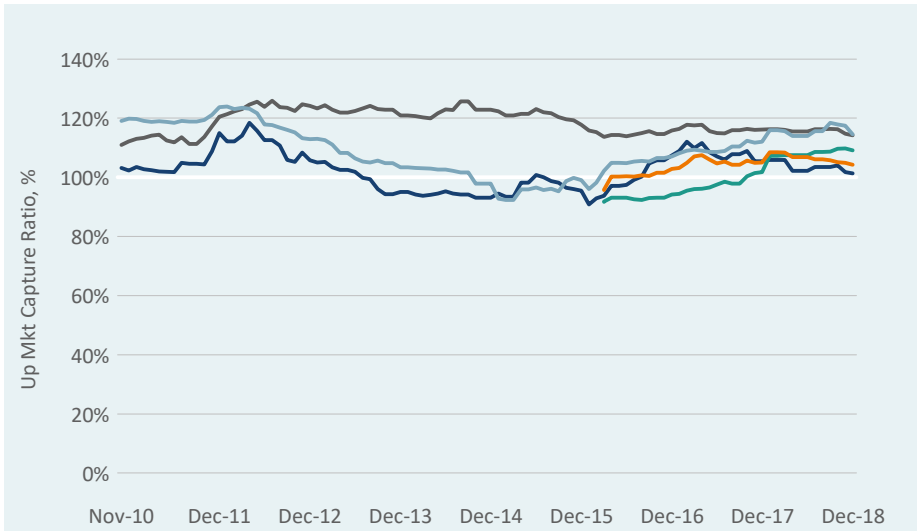
EXCESS PERFORMANCE VS. RISK, JAN-15 TO DEC-18



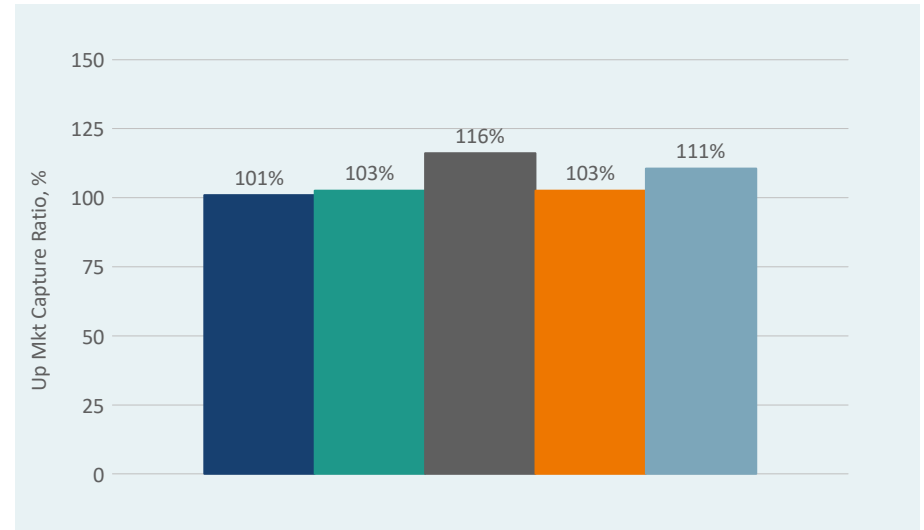
Up & down market analysis

● Ashmore ● GSAM ● PGIM ● PIMCO ● Stone Harbor ● + JPM GBI-EMBI Blend

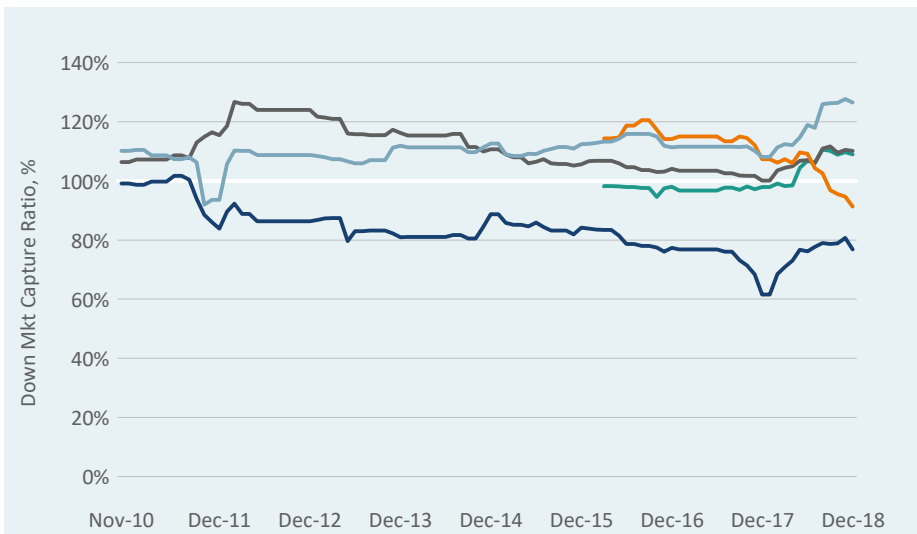
36 MONTH ROLLING UP MKT CAPTURE RATIO



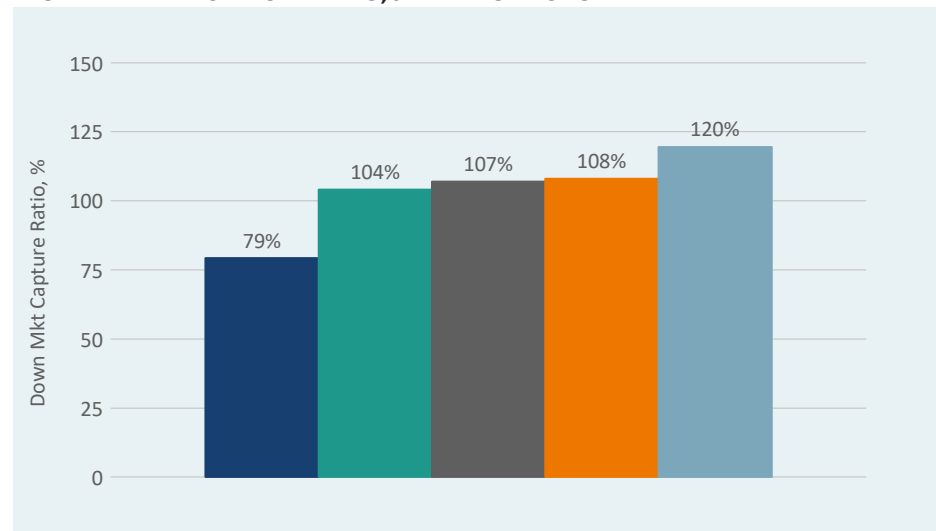
UP MARKET CAPTURE RATIO, JAN-14 TO DEC-18



36 MONTH ROLLING DOWN MKT CAPTURE RATIO



DOWN MARKET CAPTURE RATIO, JAN-14 TO DEC-18



IV. Glossary of terms

Glossary

Alpha (a): The excess return of a portfolio after adjusting for market risk, usually attributable to the selection skill of the portfolio manager. $\text{Alpha} = \text{Excess Return} - (\text{Beta} \times \text{Excess Market Return})$.

Annualized Return: Converts the Total Return to an annual basis for comparison purposes. Periods shorter than one year are not annualized.

Benchmark: Investment index used as a standard by which to measure the relative performance of an overall portfolio or an individual money manager. Appropriate benchmarks are selected based on their similarity to a portfolio or to the style of the individual money manager being measured.

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta (b): A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Book-to-Market: The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

Calmar Ratio - The Calmar Ratio is a risk/return ratio that calculates return on a downside risk adjusted basis. Similar to other efficiency ratios it balances return in the numerator per unit risk in the denominator. In this case risk is characterized by the Maximum Drawdown.

Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen/fallen. The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

Correlation Coefficient (r): A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Hurst Exponent: quantifies the relative tendency of a time series either to regress the mean. A value H in the range $0.5 < H < 1$ indicates a time series with long-term positive autocorrelation, meaning a high value in the series will probably be followed by another high value. A value in the range $0 < H < 0.5$ indicates a time series with long-term switching between high and low values in adjacent pairs, meaning that a single high value will probably be followed by a low value. A value of $H=0.5$ can indicate a completely uncorrelated series.

Excess Correlation: Correlation of the excess returns (above the benchmark).

GARP: Growth-At-A-Reasonable-Price. Equity strategy that combines tenets of both growth and value investing, looking for companies with above average earnings growth but excluding those with high valuations.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: $\text{alpha} / \text{tracking error}$.

Glossary

Kurtosis (excess returns)- Kurtosis describes whether the series distribution is peaked or flat and how thick the tails are as compared to a normal distribution. Positive kurtosis indicates a relatively peaked distribution near the mean and tends to decline rapidly and have fat tails. Negative kurtosis indicates a relatively flat distribution near the mean.

Long Term Reversal Factor: Risk premium associated with buying past losers and selling past winners (five year time horizon).

Low Volatility: Risk premium generated by picking low volatility stocks, measured by the MSCI USA Minimum Volatility Index.

Momentum Factor: Risk premium associated with buying past winners and selling past losers.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Predicted Style R-squared: Measures how well the manager's predicted style fits the manager's return series. Adding many unnecessary indices will not improve the Predicted Style R-Squared. The methodology essentially predicts the manager's style at each point in time without the data at that point with the rationale being that if the style estimates obtained so far are good, then they can be used to predict the style at the estimation point.

Price-to-Earnings Ratio: Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

Quality: The quality factors measured the manager's exposure to high quality stocks versus low quality stocks as defined by S&P. The factor is constructed by combining a long position in the S&P 500 High Quality index and short position S&P 500 Low Quality index.

Regression Based Asset Loadings: Represents the exposure period of an investment product (called a Manager, Fund, or Index in Stylus) to various explanatory variables. It is also referred to as Style Indices or Asset Classes. These Indices can be interpreted as the Manager Betas or risk factors at a given point in time.

Risk Premium: An expected return in excess of the risk-free rate. The premium provides compensation for the assumption of risk.

Risk-Free Rate: The rate of interest that one can earn on an investment with no default risk. It is generally assumed to be the interest rate on a 91 day T-Bill.

R-Squared: Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

Selection return: The difference between the Manager and the Manager's Style Return.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Short Term Reversal Factor: Risk premium associated with buying past losers and selling past winners (two month time horizon).

Significance Level (Excess Returns) - The Significance Level of a test is the probability that the test statistic will reject the null hypothesis when the hypothesis is true. Significance is a property of the distribution of a test statistic, not of any particular draw of the statistic.

Glossary

Size Factor: Risk premium associated with buying small companies.

Skewness (Excess Returns)- Skewness describes the degree of asymmetry of a distribution around its mean. A distribution is said to be symmetric if it has the same shape to both the left and right of the mean. A perfectly symmetrical distribution has a Skewness of 0. A positively skewed distribution has larger gains than losses, while a negatively skewed distribution has a longer tail of losses.

Standard Deviation (s): A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds.

Style Map: A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

Style Returns: The sum of the Return of each Style Asset multiplied by its weight for the time period.

Style R-squared: Measures how well the estimated Manager's style return series fits the manager's return series. The higher the Style R-squared, the better the fit between the manager's style and return series.

Total Return: Total Return geometrically compounds the Returns in the series from one period to the next.

Tracking Error/Excess Standard Deviation: The standard deviation of the difference between the rate of return of a portfolio and its benchmark.

Treynor Ratio - The Treynor Ratio is defined as the ratio of the manager's excess geometrically annualized return over the portfolio Beta. Excess returns are computed versus the cash index.

Universe: Also called a peer group, a universe is a large number of portfolios of a similar style. These portfolios can be divided into deciles or quartiles and then used for performance measurement and comparative purposes. Portfolios are ranked within the universe, which tells the investor how well a manager has done relative to his or her peers.

Value: Refers to the style of an equity manager. A value manager seeks to create returns by purchasing stocks selling at a discount to their true or intrinsic value. Typical portfolio characteristics of this strategy include a low price-to-earnings ratio, high book-to-market ratio, and high dividend yield.

Valuation Factor: Risk premium associated with buying companies trading at a low price/book multiple.

VIX : VIX is a trademark ticker symbol for the Chicago Board Options Exchange Market Volatility Index, a popular measure of the implied volatility of S&P 500 index options. Often referred to as the fear index or the fear gauge, it represents one measure of the market's expectation of stock market volatility over the next 30 day period.

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 14: Capital Market Assumptions 2019 - Verus

Recommendation:

Staff recommends that the Board of Trustees review and discuss the presentation to be given by Scott Whalen of Verus, the Pension Trust's investment consultant.

Capital Market Assumptions:

It is the practice of the Pension Trust to include in the February Board of Trustees meeting an annual review of asset allocation and Capital Market Assumptions (CMA). With this presentation, Verus is providing an updated look at their 2019 CMAs. Further consideration of Asset Allocation policy will be presented at the May 2019 Board of Trustees meeting.

Verus' CMAs are for primarily for a 10-year period – with a new addition of a 30 year CMA as well. CMAs are inherently heavily influenced by current market valuation levels and interest rates. The late 2018 negative investment markets improved the outlook for future returns in almost all asset classes.

The Overall portfolio CMA for the SLOCPT Strategic Asset Allocation Policy (SAA) is shown below.

2017 Verus CMAs	10 year ~ 6.2%	
2018 Verus CMAs	10 year ~ 6.0%	
2019 Verus CMAs	10 year ~ 6.7%	30 year ~ 6.6%
Historical average	long-term ~ 7.7%	

Long Term Rate of Return Implications:

An appropriate earnings assumption to use for funding the Plan is based on 30+ year time frame so will differ from the 10-year CMAs that investment consultants typically provide. Pension Trust practice has been to consider changes to the long-term actuarial discount rate, or earnings assumption on a biennial basis in conjunction with actuarial experience studies. This allows for an integrated consideration of not just the discount rate, but the other key actuarial assumptions (e.g., inflation, mortality, etc.) that go into determining the necessary funding for the Plan.

Forecasts of investment returns are obviously imprecise. Investment consultant forecasts of CMAs for 10 or 30 years have some basis in market valuations, interest rates and market theory. However, investment forecasts beyond 10 years are necessarily speculative. Often, pension funds rely on historical rates of returns as a rough estimate of long-term rates of return. Such estimates rely on the presumption that the global economy will survive and function somewhat as it has in the past and that investment returns will revert to historical means. Such reversion-to-the-mean logic is reasonable in forecasting inherently complex data in the absence of more specific forecasts.

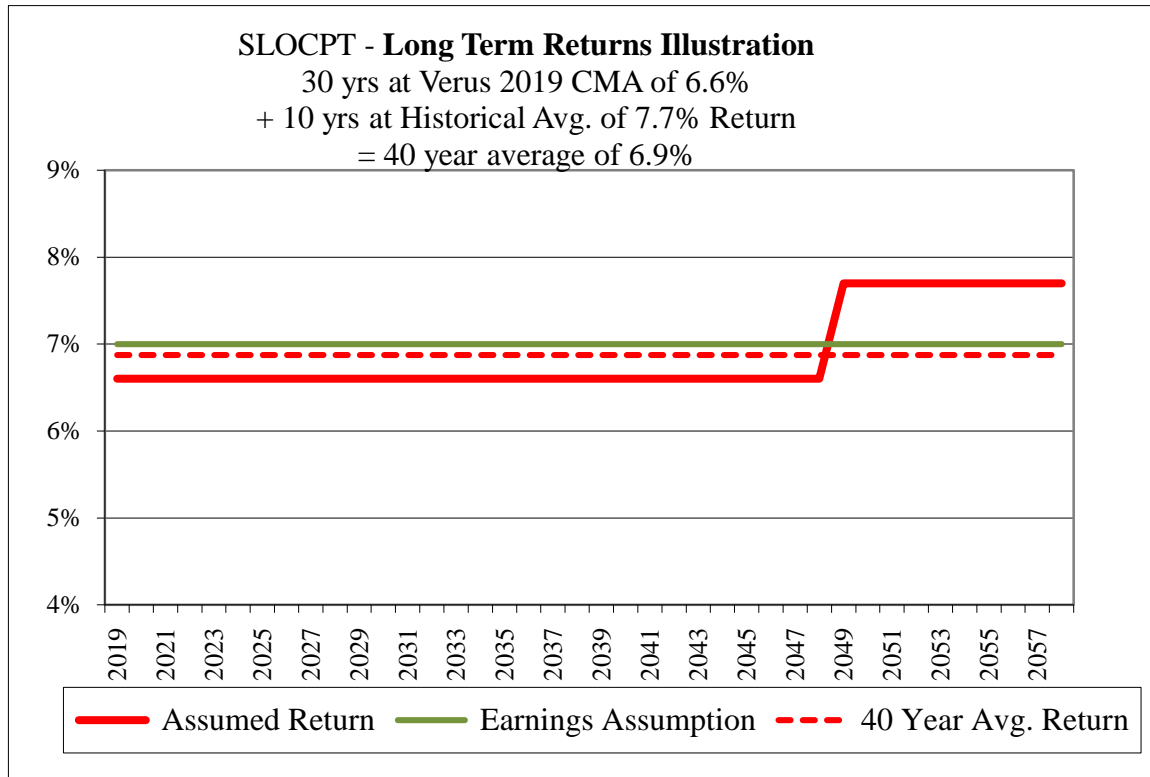
To this end Verus has estimated the long-term rates of return of various asset classes using the best available data. Their history is necessarily of varying periods. For example, domestic equity markets have long histories and are well studied. In contrast, asset classes such as emerging market equity and debt, private equity, and private credit have come of age as institutionally investable asset classes in only the last 20 years or so. Based on Verus' analysis of historical returns and using the Pension Trust's current asset allocation policy, Verus estimates that a historically based illustration of a long-term rate of return would be approximately 7.7% as shown in the table below. It is compared to Verus' 2019 CMAs.

	2019 CMAs <u>10 years</u>	Historically based <u>long-term returns</u>
Avg. Annual Return	6.7%	7.7%
Standard Deviation of Return	11.4%	7.8%

As an illustration of 40+ year rates of return we have linked the following assumed rates of return as shown below –

30 year CMA based rate of return – 2019-2048	6.6%
10 years Historically based returns – 2049-2058	<u>7.7%</u>
Combined 40 year return illustration	6.9%

The following graph presents this illustrated series of expected returns.



This illustration is not intended as a predictor of an appropriate long-term discount rate/earnings assumption for the Annual Actuarial Valuation. That key assumption will be addressed at the March 2019 Board of Trustees meeting in consultation with the Actuary. Rather, this illustration is intended to provide a longer-term context for such a discussion. The level of confidence in 30 year CMA projections is much lower than that for 10 years so such assumptions should be viewed with a wide band of probability around the central average of the CMAs. With that caution in mind, the difference between a long term CMA of 6.9% and a long term discount rate of 7.0% is well within a reasonable band of uncertainty and should not be viewed as holding any particular precision.

In any case, the Pension Trust practice of considering changes to the long-term actuarial discount rate, or earnings assumption on a biennial basis in conjunction with actuarial experience studies would put a decision point on the appropriate discount rate in 2Q 2020.

Respectfully Submitted

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**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

FEBRUARY 2019
Capital Market Assumptions Review

Key takeaways

- Lower equity valuations, higher credit spreads, and higher interest rates indicate a moderate improvement in 10-year capital market return forecasts
- However, an environment of continued low inflation and low interest rates would suggest more muted asset class performance relative to the historical average
- It is important to note the different nature of shorter and longer-term expectations

Verus Capital Market Assumptions

High-Level Methodology

- How does Verus forecast asset class and portfolio behavior?

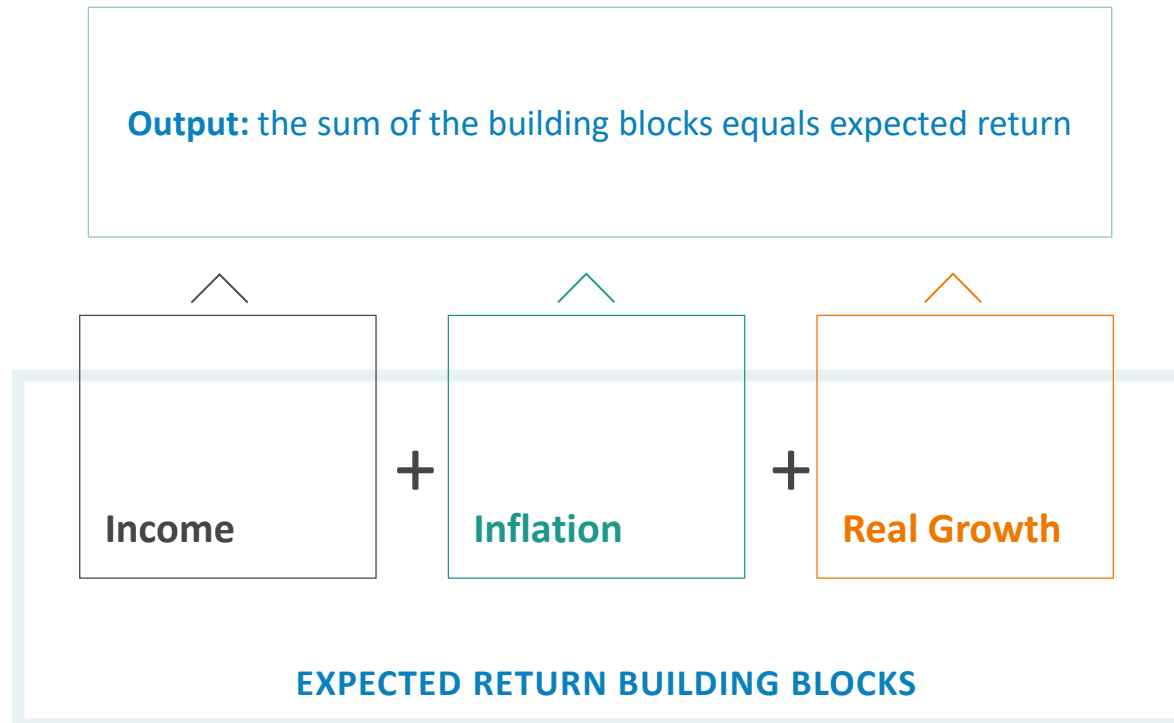
2019 Capital Market Assumptions

- What do our forecasts look like for the next 10 years?
- How do these forecasts compare to last year?
- How do they compare to history?

Investor Takeaways

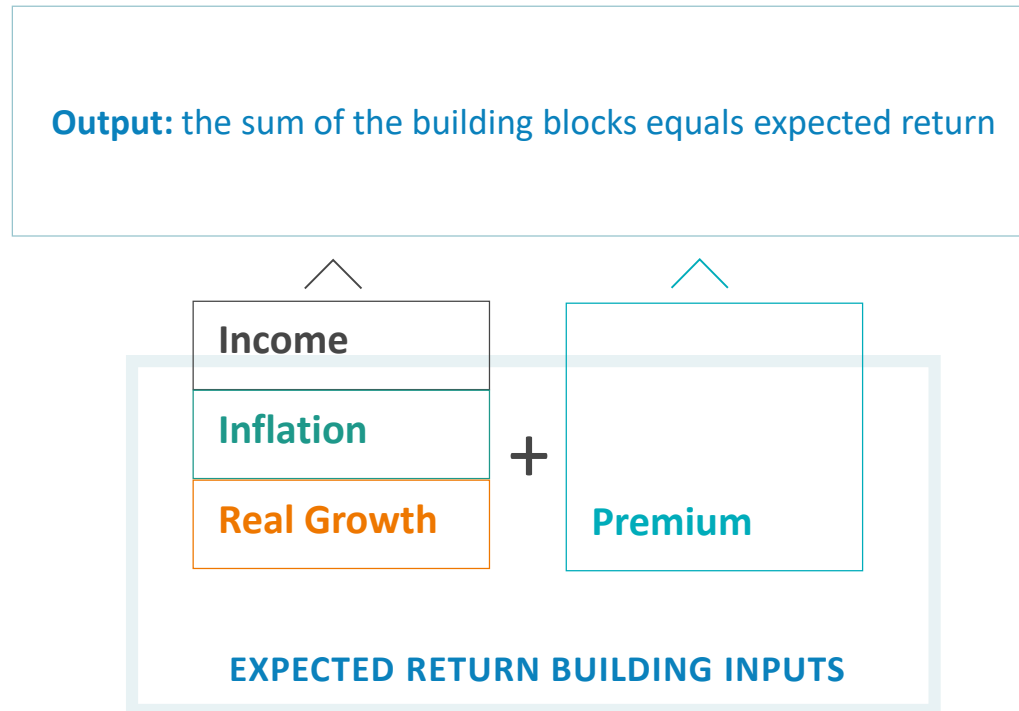
- What do capital market assumptions mean for building portfolios?

Building block methodology



For illustrative purposes only

Build-up/spread



For illustrative purposes only

Expected return methodology

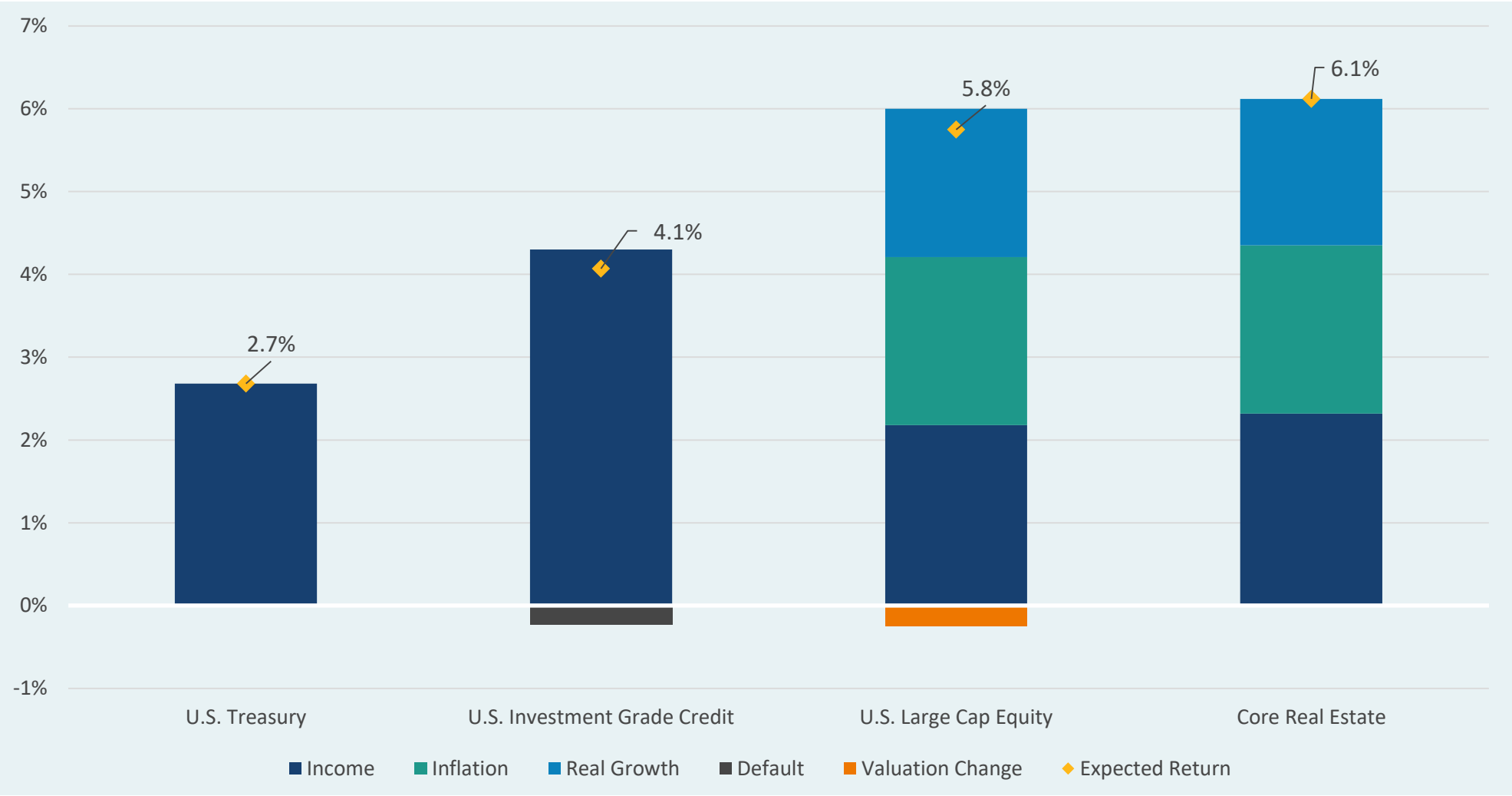
BUILDING BLOCK METHODOLOGY

Cash	Real yield estimate + inflation forecast
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)
Core Real Estate	Cap rate + real income growth – capex + inflation forecast
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)

BUILD-UP/SPREAD METHODOLOGY

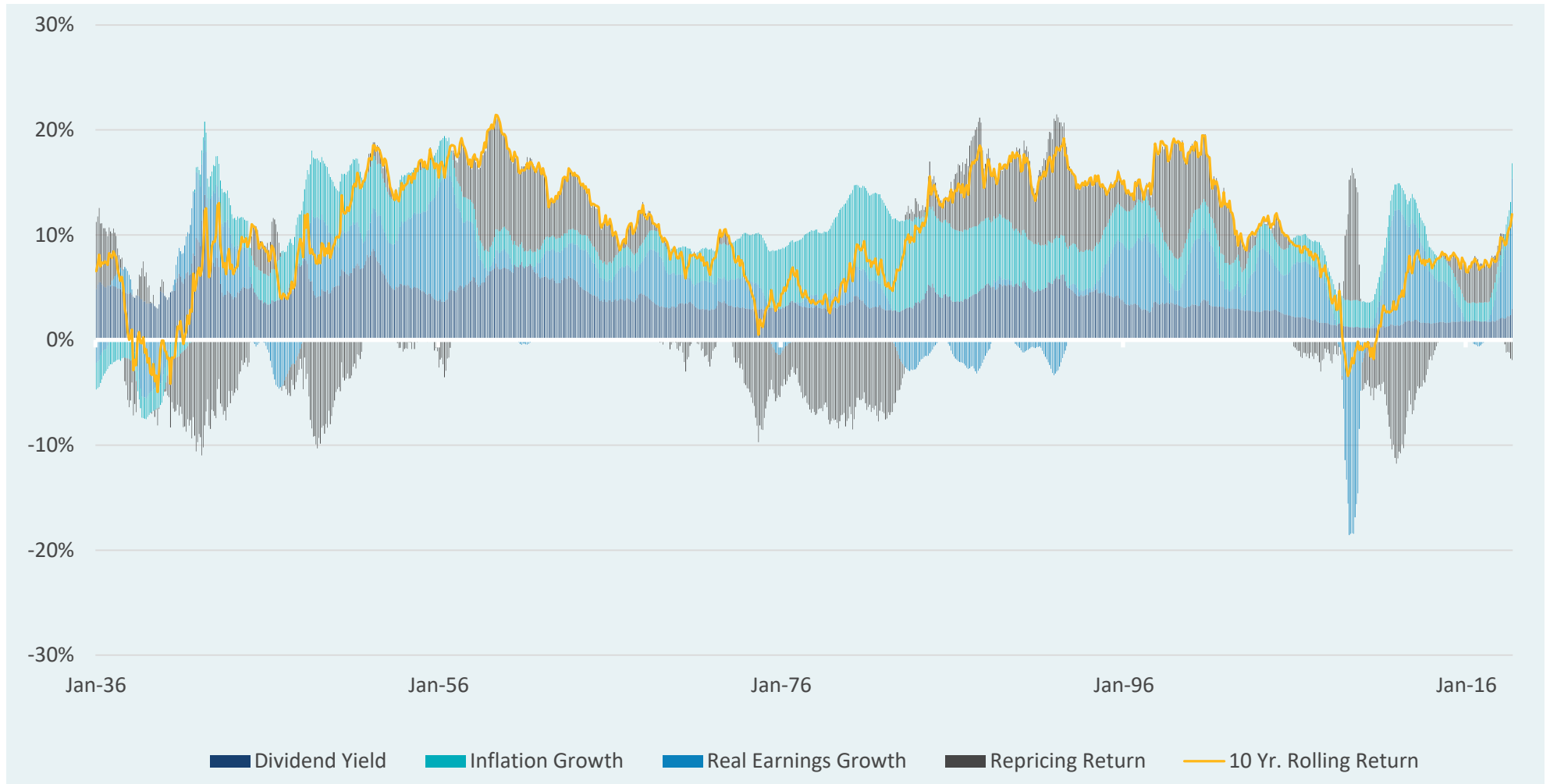
Private Equity	U.S. large cap domestic equity forecast * 1.85 beta adjustment
Private Credit	Bank loan forecast + 1.75% private credit premium

Expected return methodology



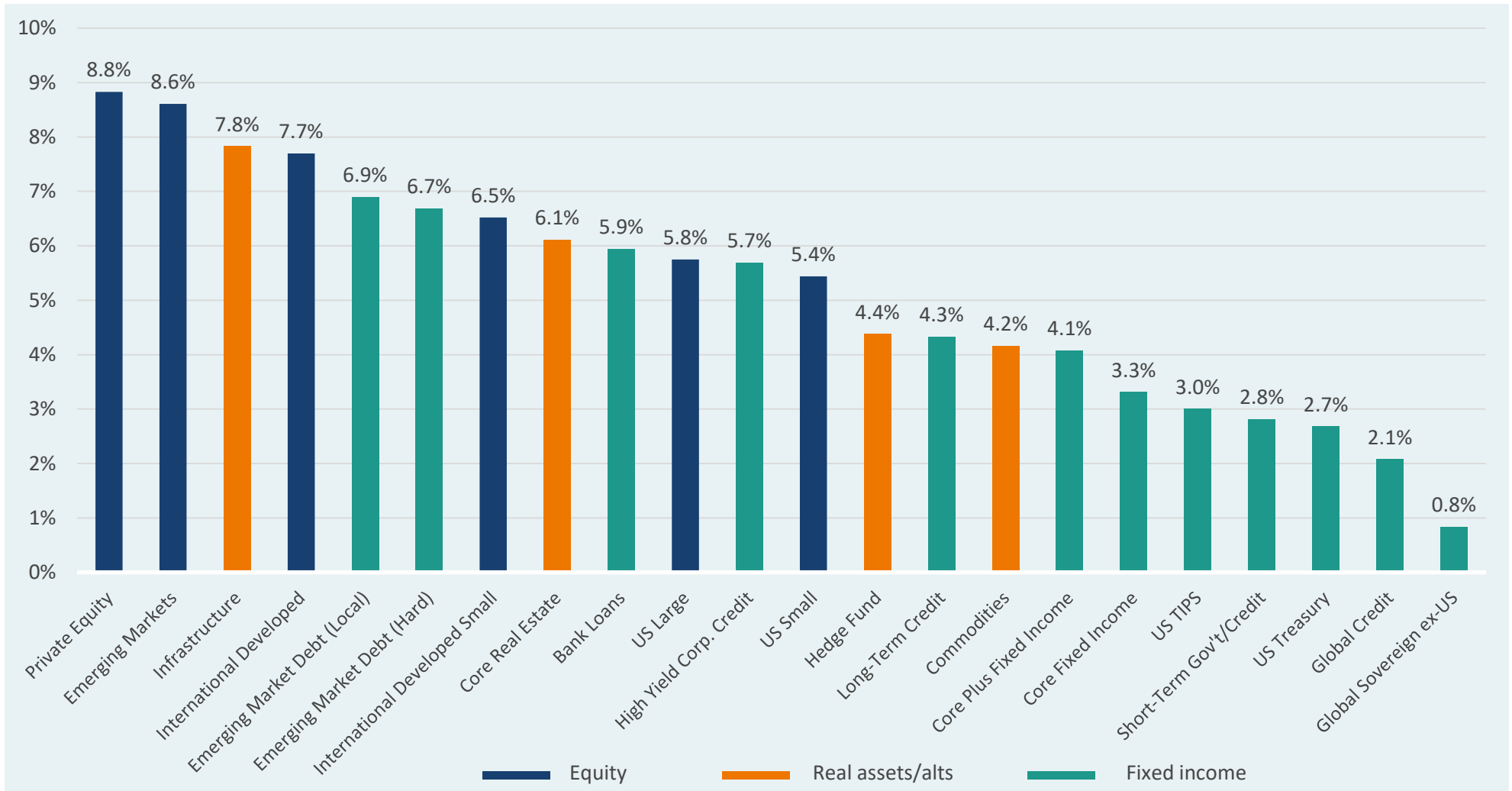
Source: Verus

U.S. equity – historical return building blocks



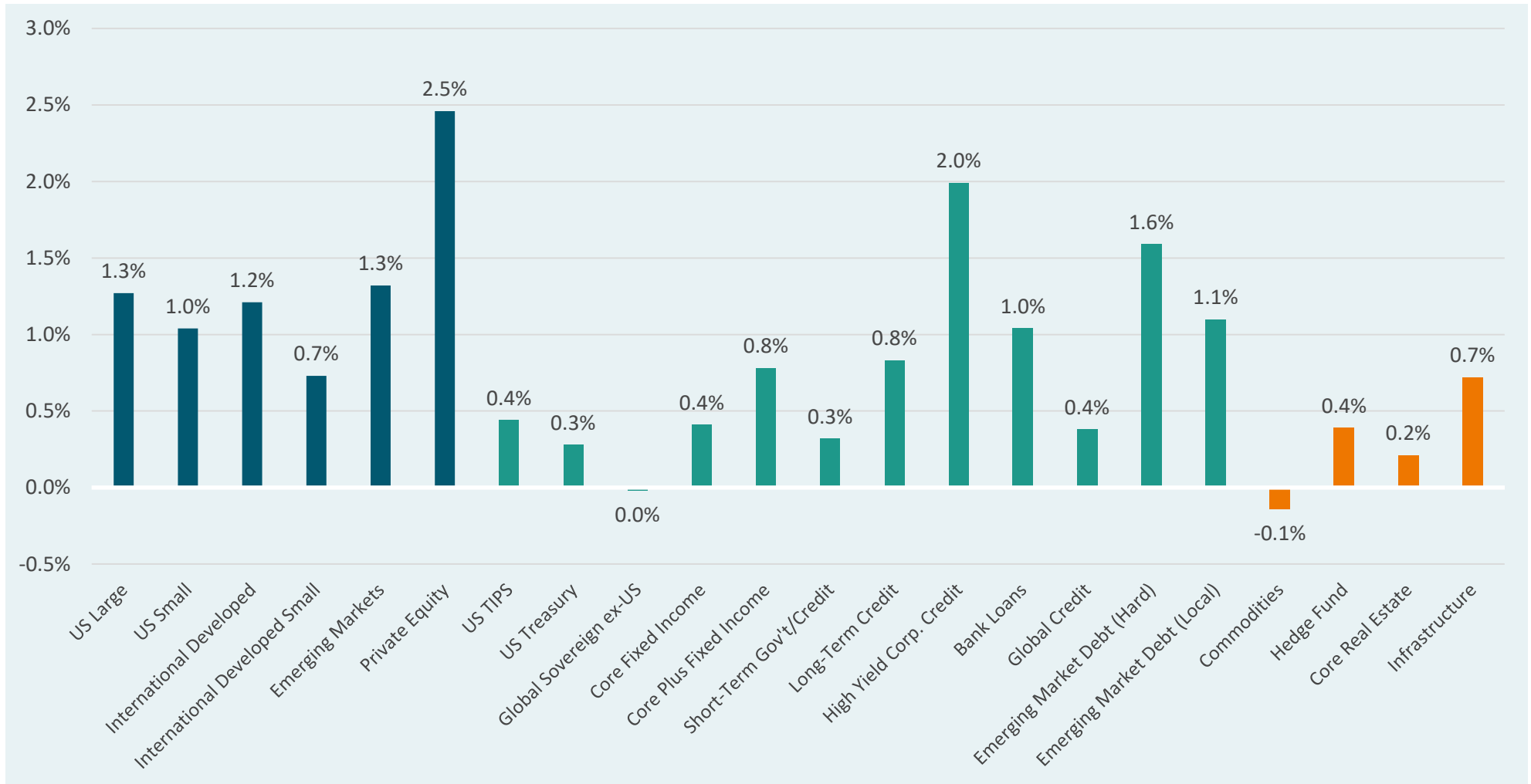
Source: S&P, Shiller, as of 9/30/18

10-year expected returns



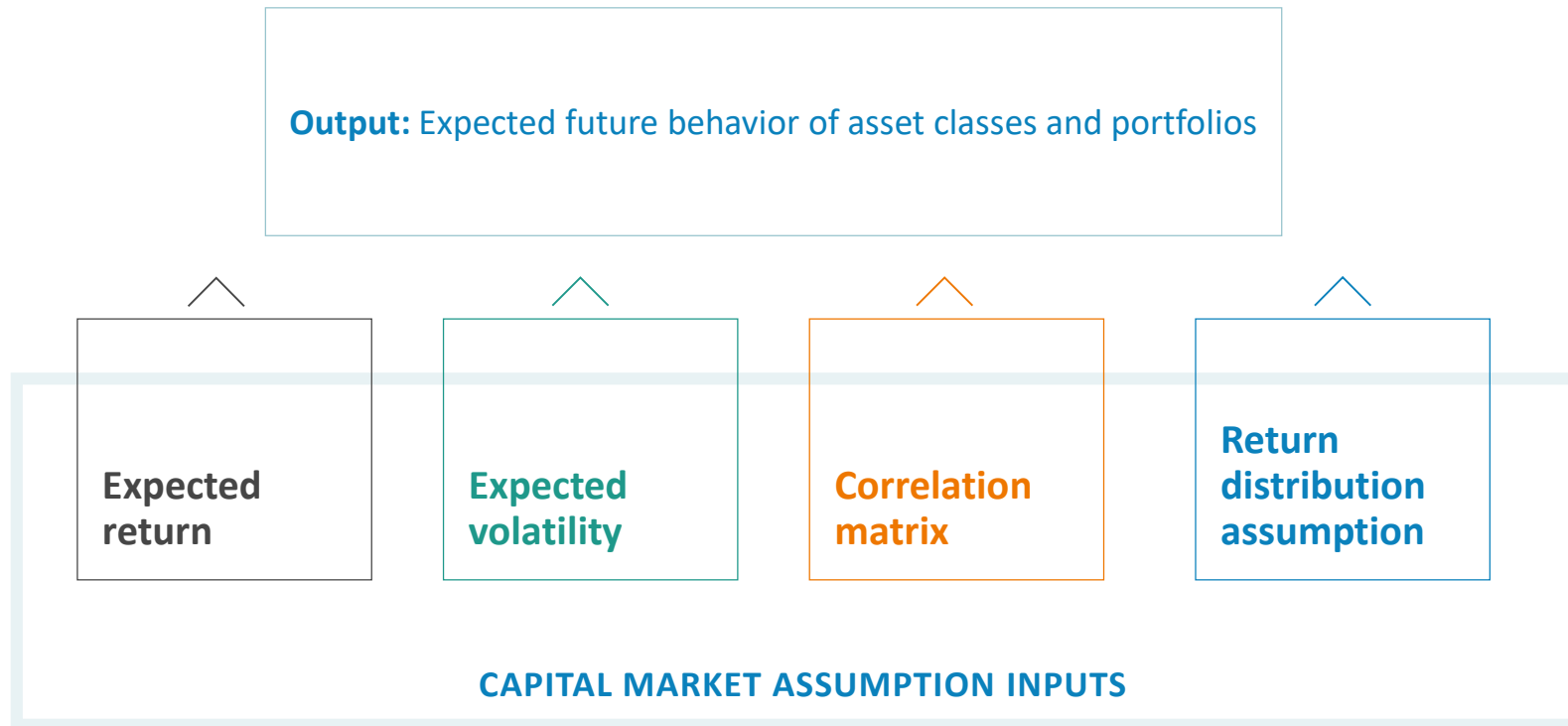
Source: Verus

2019 vs. 2018 return forecast



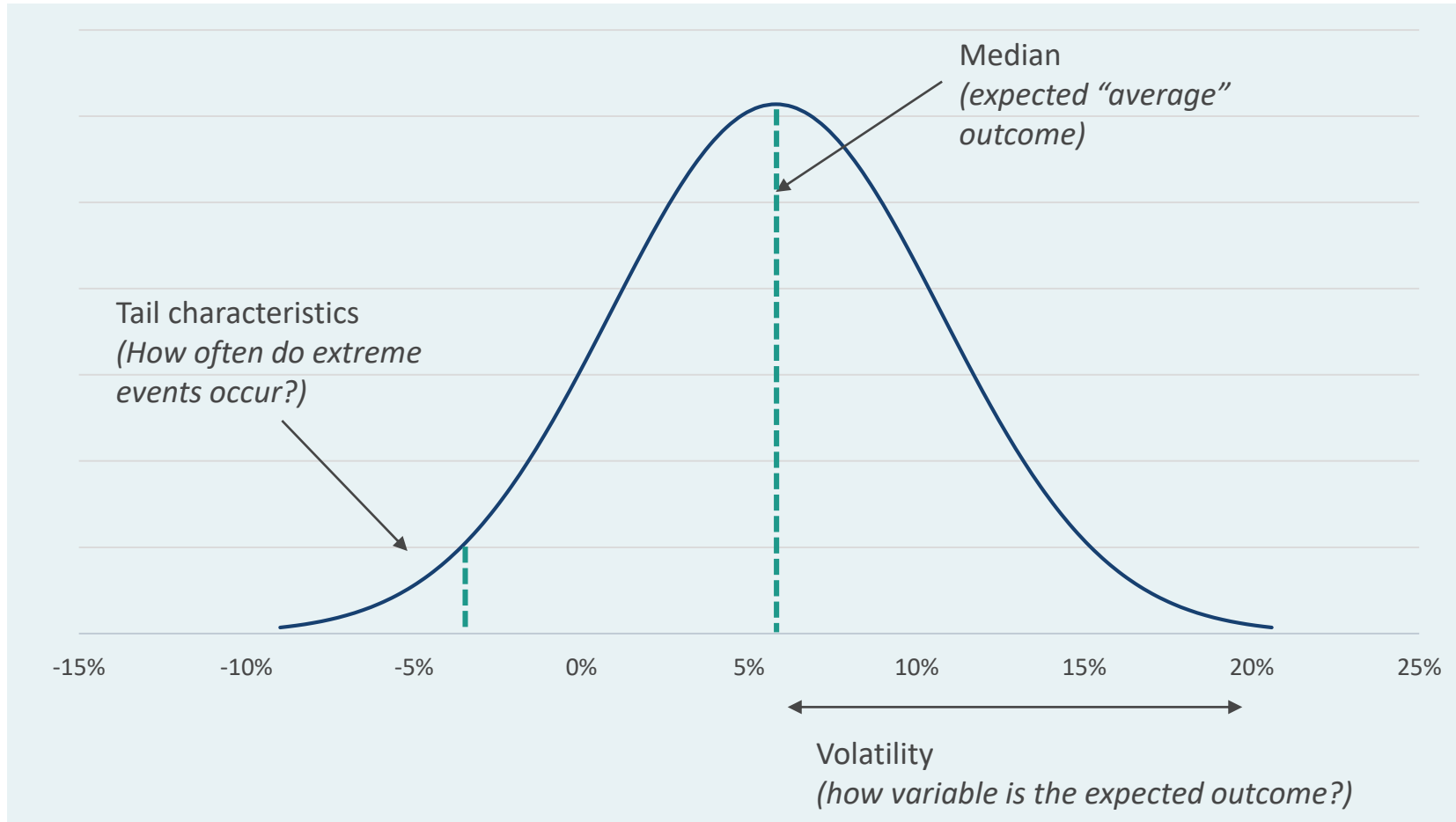
Note: the year-over-year change is based on the 2019 methodology

Required forecasting inputs



What is in a forecast?

Expected return: 5.8%, standard deviation: 15.6%



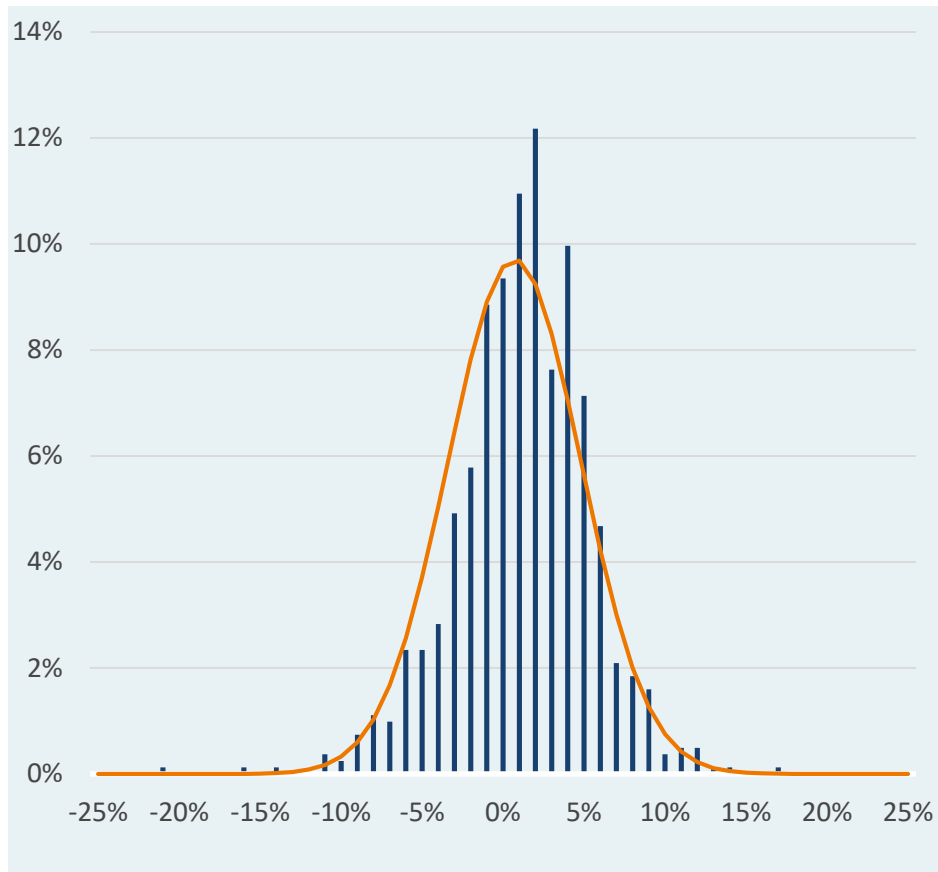
A return forecast is simply the "average" expected return

A volatility forecast tells us how different the return might actually be

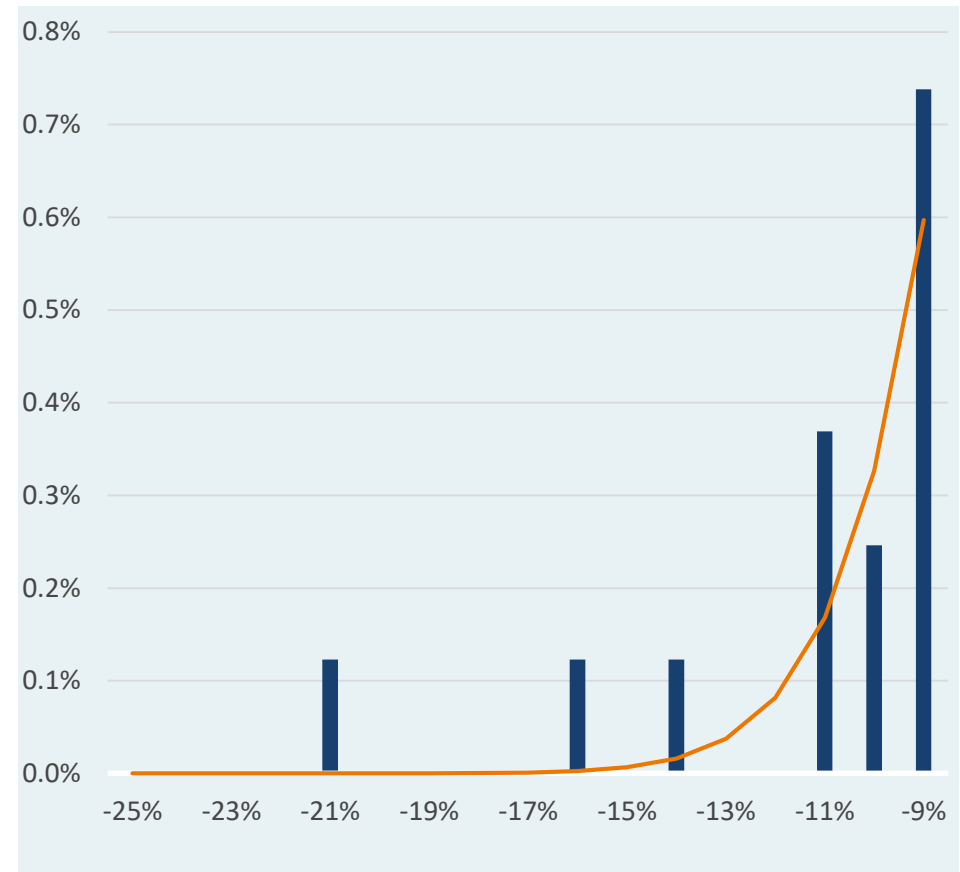
Returns are not normally distributed

Empirical analysis: U.S. equity monthly returns since 1950

FULL DISTRIBUTION OF RETURNS VS. NORMAL

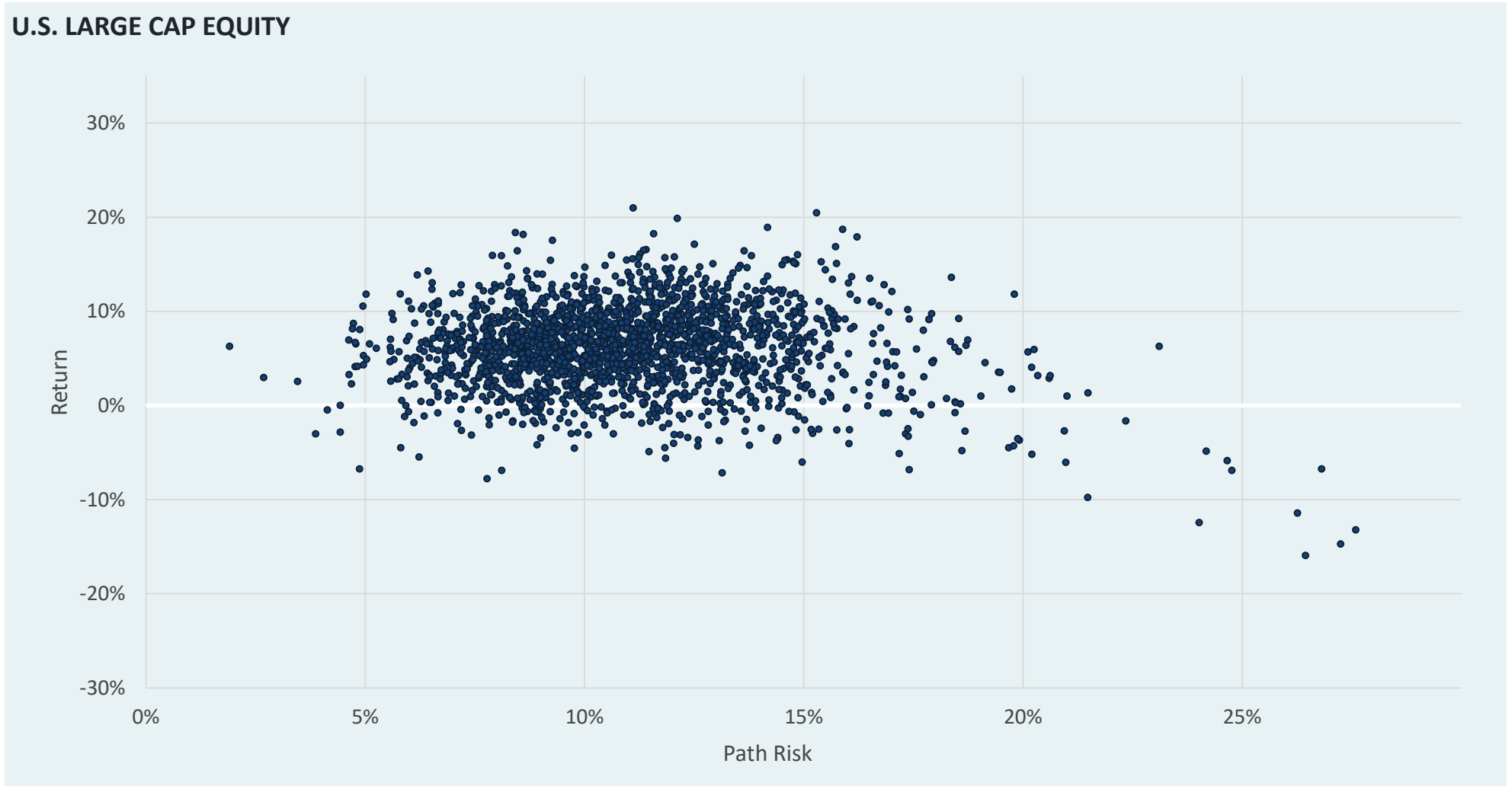


LEFT-TAIL RETURNS VS. NORMAL



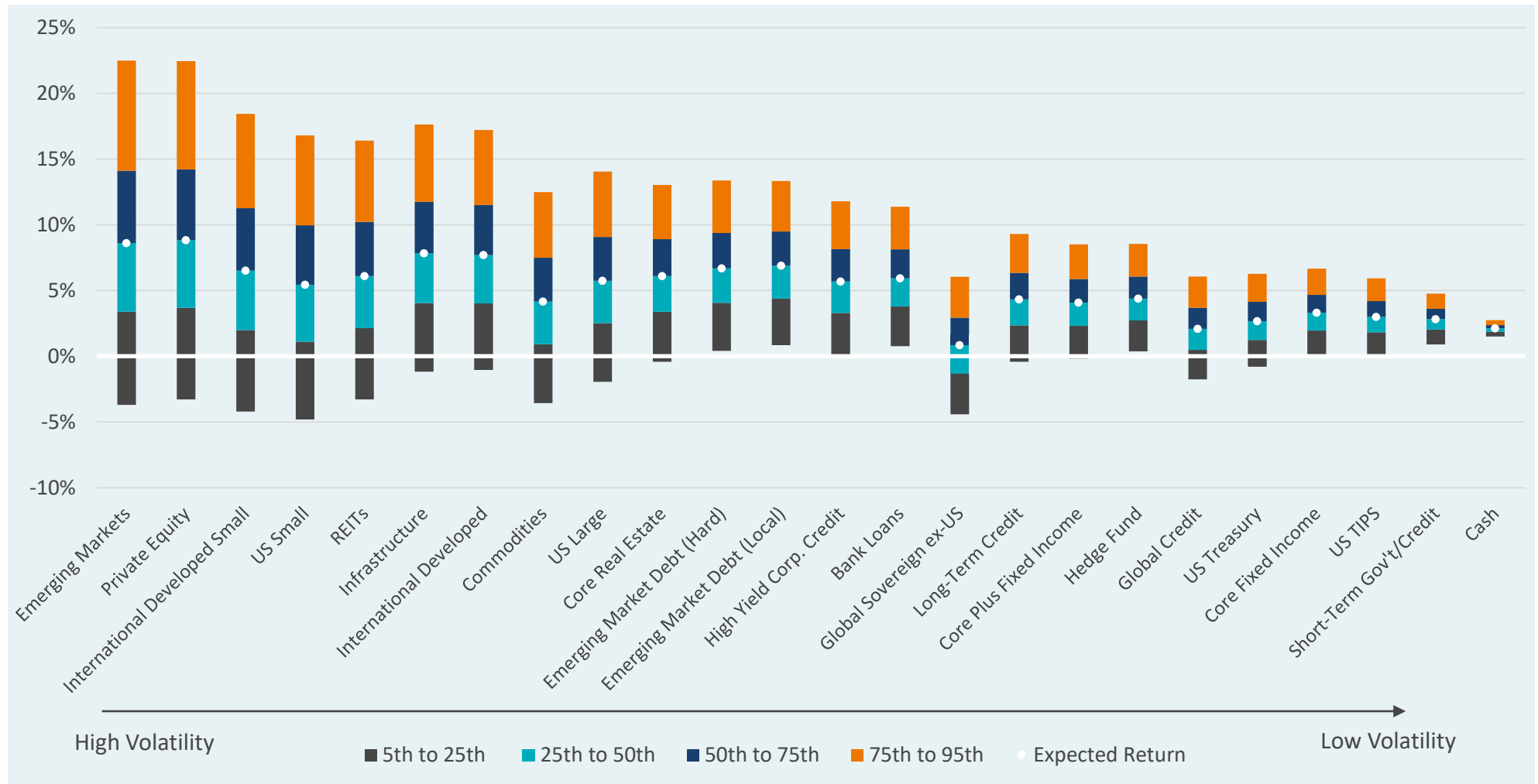
Source: Verus, Standard & Poor's

Range of likely 10 year outcomes



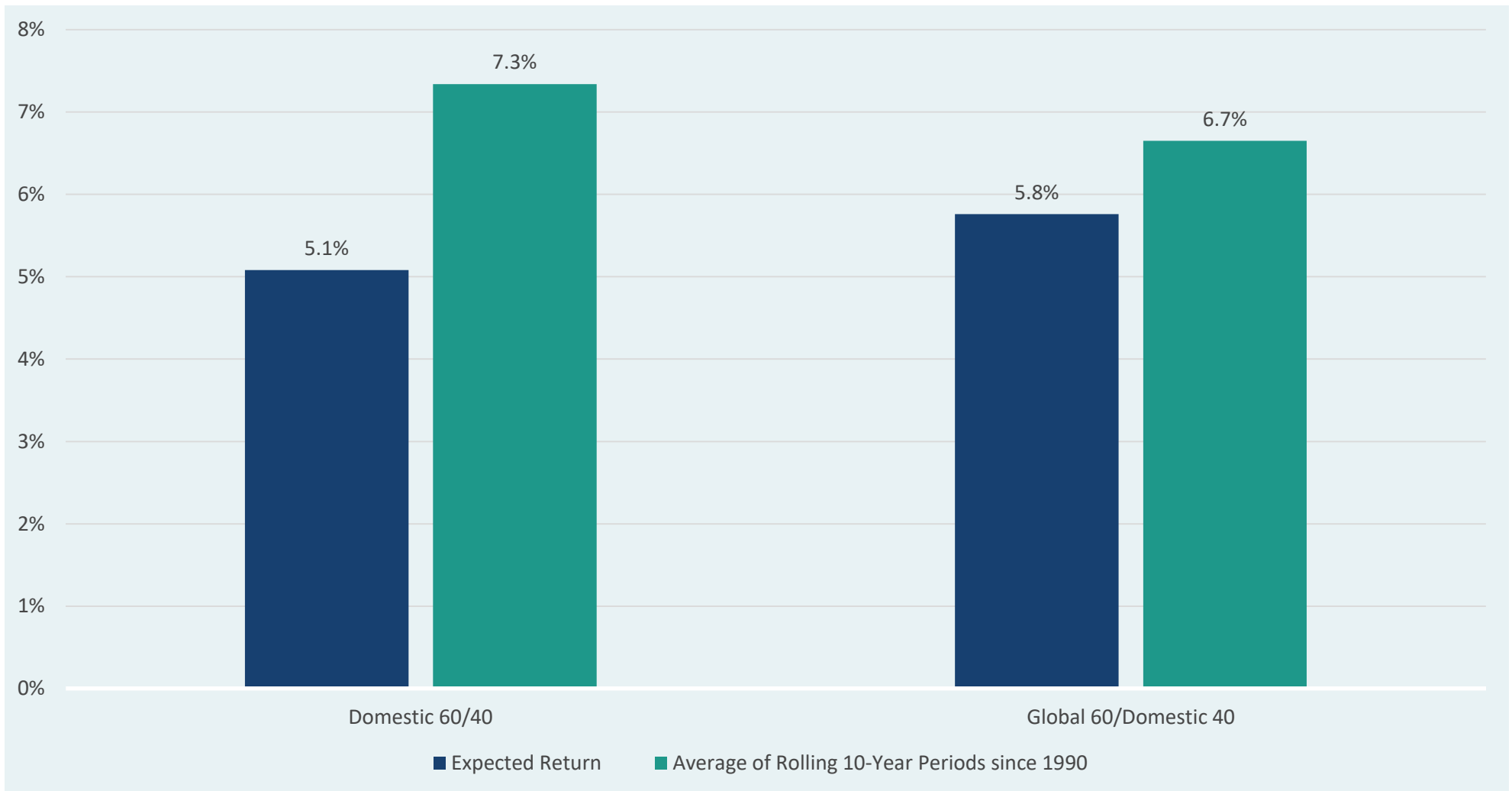
Range of likely 10 year outcomes

10-YEAR RETURN 90% CONFIDENCE INTERVAL



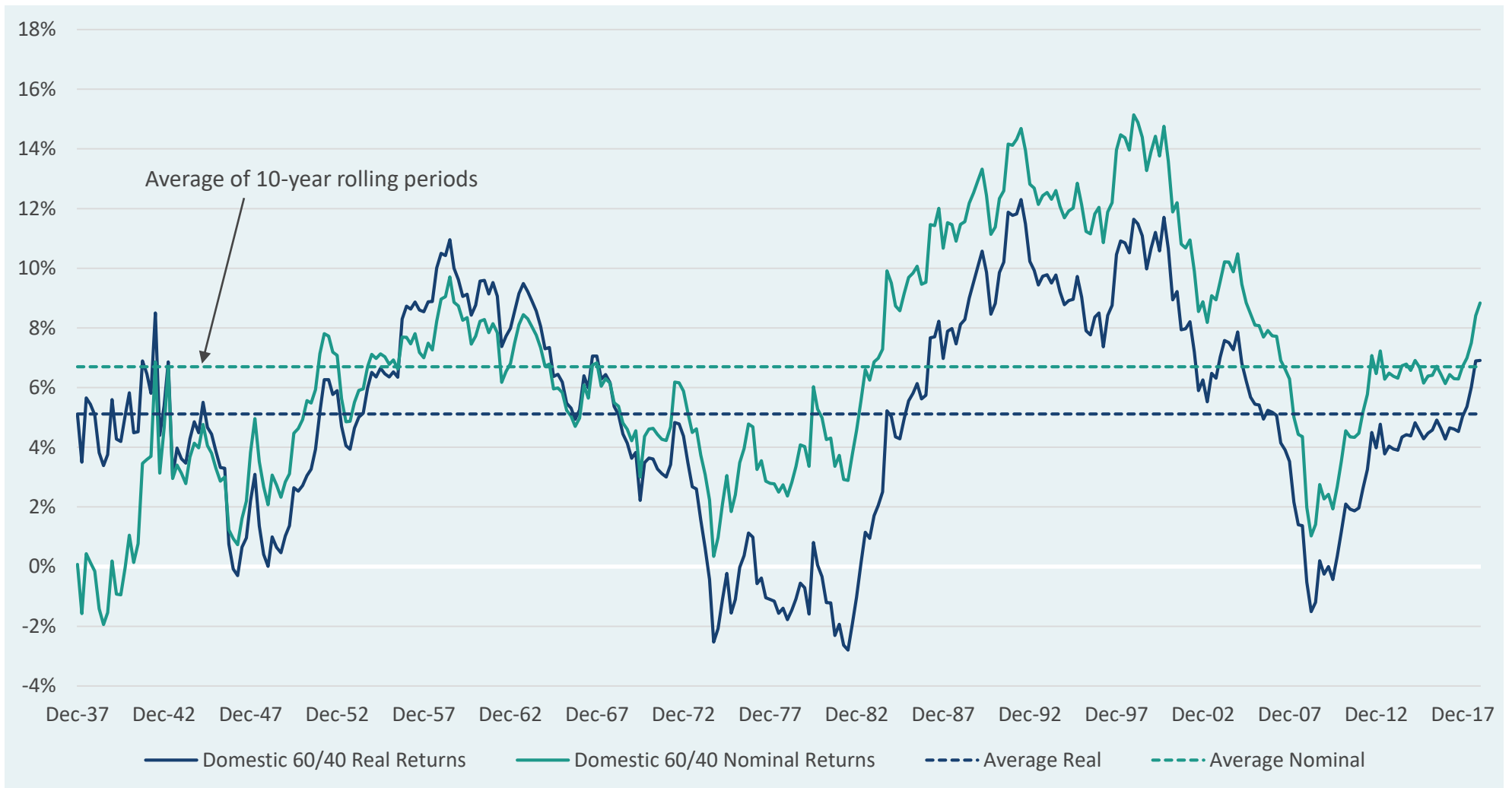
Portfolio expectations

Portfolio expected returns



Source: Verus, Morningstar, as of 12/31/18, indices used include the S&P 500 Index, MSCI ACWI Index, and BBgBarc U.S. Aggregate Index

10-year rolling returns



Source: IA SBBI, as of 12/31/18

Longer vs. shorter-term expectations

10-year forecasts should typically not be used for shorter-term positioning

Longer-term return drivers

- Level of inflation
- Level of interest rates
- Level of growth
- Level of asset prices

Shorter-term return drivers

- Changes in inflation level & expectations
- Changes in interest rate level & expectations
- Changes in growth level & expectations
- Changes in asset prices

Shorter-term investment strategy should be focused on identifying *changes* in the environment

An investor's longer-term & shorter-term expectations will often be different

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**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



FEBRUARY 2019

Long term market expectations

San Luis Obispo County Pension Trust

Alternative return assumptions

	Policy Allocation	10-Year Forecast	30-Year Forecast	Historical*
US Large	16.0	5.8	5.7	9.1
US Small	4.0	5.4	5.9	9.5
Total Domestic Equity	20.0			
International Developed	13.0	7.7	7.2	5.6
Emerging Markets	7.0	8.6	7.5	6.6
Total Int'l Equity	20.0			
Total Equity	40.0			
Core Fixed Income	15.0	4.1	3.9	7.1
Bank Loans	5.0	5.9	5.4	4.6
Global Credit	5.0	2.1	1.7	5.2
Emerging Market Debt (Local)	5.0	6.9	6.9	4.1
US TIPS				
Total Fixed Income	30.0			
Commodities	5.0	4.2	3.8	0.7
Core Real Estate	10.0	6.1	6.9	9.1
Value Add Real Estate	5.0	8.1	8.9	11.1
Total Real Assets	20.0			
Private Equity	5.0	8.8	8.9	13.1
Private Credit	5.0	7.7	7.1	6.7
Total Non-Public Investments	10.0			
Cash	0.0	2.1	2.0	1.2
Total Allocation	100.0			

Using historical data as modeling inputs, the Plan's forecasted rate of return is significantly higher than when using Verus' 10-year and 30-year forecasted Capital Market Assumptions

Mean Variance Analysis	10-Year	30-Year	Historical
Forecast 10 Year Return	6.7	6.6	7.7
Standard Deviation	11.4	11.0	7.8
Return/Std. Deviation	0.6	0.6	1.0

*Historical time periods differ by asset class

Verus 10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
U.S. Large	S&P 500	5.8%	6.9%	15.6%	0.24	0.31	0.94	0.95
U.S. Small	Russell 2000	5.4%	7.5%	21.3%	0.15	0.25	0.63	0.69
International Developed	MSCI EAFE	7.7%	9.1%	17.8%	0.31	0.39	0.37	0.43
International Small	MSCI EAFE Small Cap	6.5%	8.8%	22.4%	0.20	0.30	0.61	0.66
Emerging Markets	MSCI EM	8.6%	11.6%	26.1%	0.25	0.36	0.40	0.48
Global Equity	MSCI ACWI	6.8%	8.2%	17.1%	0.27	0.36	0.62	0.67
Private Equity*	Cambridge Private Equity	8.8%	11.7%	25.6%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	2.1%	2.1%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	3.0%	3.1%	5.5%	0.16	0.18	0.67	0.68
U.S. Treasury	BBgBarc Treasury 7-10 Year	2.7%	2.9%	6.7%	0.09	0.12	0.46	0.48
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.8%	1.3%	9.8%	-0.13	-0.08	0.14	0.18
Core Fixed Income	BBgBarc U.S. Aggregate Bond	3.3%	3.5%	6.4%	0.19	0.22	1.09	1.08
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	4.1%	4.4%	8.4%	0.24	0.27	1.23	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	2.8%	2.9%	3.6%	0.19	0.22	1.38	1.37
Short-Term Credit	BBgBarc Credit 1-3 Year	3.2%	3.2%	3.7%	0.30	0.30	1.66	1.64
Long-Term Credit	BBgBarc Long U.S. Corporate	4.3%	4.7%	9.4%	0.23	0.28	0.88	0.89
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.7%	6.3%	11.5%	0.31	0.37	1.39	1.36
Bank Loans	S&P/LSTA Leveraged Loan	5.9%	6.4%	10.2%	0.37	0.42	1.50	1.47
Global Credit	BBgBarc Global Credit	2.1%	2.4%	7.5%	0.00	0.04	0.88	0.89
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.7%	7.4%	12.6%	0.37	0.42	1.19	1.18
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	6.9%	7.6%	12.1%	0.40	0.45	0.26	0.31
Private Credit	Bank Loans + 175bps	7.7%	8.2%	10.2%	0.55	0.60	-	-
Other								
Commodities	Bloomberg Commodity	4.2%	5.3%	15.7%	0.13	0.20	-0.29	-0.22
Hedge Funds*	HFRI Fund Weighted Composite	4.4%	4.7%	7.8%	0.29	0.33	0.76	0.76
Core Real Estate	NCREIF Property	6.1%	6.9%	12.9%	0.31	0.37	1.28	1.26
Value-Add Real Estate	NCREIF Property + 200bps	8.1%	9.8%	19.4%	0.31	0.40	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.1%	13.0%	25.9%	0.31	0.42	-	-
REITs	Wilshire REIT	6.1%	7.8%	19.3%	0.21	0.30	0.55	0.63
Global Infrastructure	S&P Global Infrastructure	7.9%	9.3%	18.2%	0.32	0.40	0.52	0.57
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.50	0.55	-	-
Currency Beta	Russell Conscious Currency	2.1%	2.2%	4.1%	0.02	0.02	0.25	0.26
Inflation		2.0%	-	-	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Return expectations differ depending on method of implementation

Verus 30-year return & risk assumptions

- The return forecasts below have been constructed using our existing building block approach, but with longer-term inputs. Risks and correlations are estimated using the same approach as our 10-year forecasts, using full-history autocorrelation-adjusted realized risk and past 10 year realized correlations.
- These return figures must be thought of separately from our 10-year forecasts, and are not meant to imply performance for the 20 years *beyond* our 10 year forecasts.

Asset Class	Index Proxy	Thirty Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)
		Geometric	Arithmetic			
Equities						
U.S. Large	S&P 500	5.7%	6.8%	15.6%	0.24	0.31
U.S. Small	Russell 2000	5.9%	7.9%	21.3%	0.18	0.28
International Developed	MSCI EAFE	7.2%	8.7%	17.8%	0.29	0.37
International Small	MSCI EAFE Small Cap	6.2%	8.4%	22.4%	0.19	0.29
Emerging Markets	MSCI EM	7.5%	10.4%	26.1%	0.21	0.32
Global Equity	MSCI ACWI	6.5%	7.8%	17.1%	0.26	0.34
Private Equity*	Cambridge Private Equity	8.9%	11.7%	25.6%	0.27	0.38
Fixed Income						
Cash	30 Day T-Bills	2.0%	2.0%	1.2%	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5 - 10	3.0%	3.2%	5.5%	0.19	0.21
U.S. Treasury	BBgBarc Treasury 7-10 Year	3.0%	3.2%	6.7%	0.15	0.18
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	1.5%	1.9%	9.8%	-0.05	0.00
Core Fixed Income	BBgBarc U.S. Aggregate Bond	3.9%	4.1%	6.4%	0.30	0.33
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	4.6%	4.9%	8.4%	0.31	0.35
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1 - 3 year	3.2%	3.2%	3.6%	0.33	0.34
Short-Term Credit	BBgBarc Credit 1-3 Year	3.8%	3.9%	3.7%	0.49	0.51
Long-Term Credit	BBgBarc Long U.S. Corporate	4.6%	5.0%	9.4%	0.27	0.32
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	6.3%	6.9%	11.5%	0.38	0.43
Bank Loans	S&P/LSTA Leveraged Loan	5.4%	5.9%	10.2%	0.33	0.38
Global Credit	BBgBarc Global Credit	1.7%	2.0%	7.5%	-0.03	0.00
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	7.2%	7.9%	12.6%	0.41	0.47
Emerging Markets Debt (Local)	JPM GBI EM Global Diversified	6.9%	7.6%	12.1%	0.41	0.46
Private Credit	Bank Loans + 175bps	7.1%	7.6%	10.2%	0.50	0.55
Other						
Commodities	Bloomberg Commodity	3.8%	4.9%	15.7%	0.12	0.19
Hedge Funds*	HFRI Fund Weighted Composite	4.7%	5.0%	7.8%	0.34	0.38
Core Real Estate	NCREIF Property	6.9%	7.7%	12.9%	0.38	0.44
Value-Add Real Estate	NCREIF Property + 200bps	8.9%	10.6%	19.4%	0.36	0.44
Opportunistic Real Estate	NCREIF Property + 400bps	10.9%	13.8%	25.9%	0.35	0.46
REITs	Wilshire REIT	6.9%	8.6%	19.3%	0.26	0.34
Global Infrastructure	S&P Global Infrastructure	8.3%	9.7%	18.2%	0.34	0.43
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.51	0.56
Currency Beta	Russell Conscious Currency	2.2%	2.2%	4.1%	0.04	0.06
Inflation		1.8%	-	-	-	-

*Private Equity and Hedge Fund return expectations differ if implemented through a direct program versus a fund of funds vehicle

Historical risk & return

Asset Class	Proxy	History	Time Frame	Historic Return (Annualized)	Historic Standard Deviation	Geometric Return Forecast (Based on Historical Data)
Equities		Begin	End			
US Large	S&P 500	1/31/1973	12/31/2018	10.0	14.3	9.1
US Small	Russell 2000	1/31/1979	12/31/2018	11.1	19.3	9.5
International Developed	MSCI EAFE	1/31/1986	12/31/2018	7.0	17.5	5.6
Emerging Markets	MSCI EM	1/31/2001	12/31/2018	8.7	21.7	6.6
Private Equity	Cambridge Private Equity	6/30/1986	6/30/2018	13.6	10.6	13.1
Fixed Income						
Cash	30 Day T-Bills	1/31/1978	12/31/2018	4.9	1.3	4.9
Core Fixed Income	BbgBarc US Aggregate Bond	1/30/1976	12/30/2017	7.3	5.6	7.1
US TIPS	BbgBarc US TIPS 5-10	1/30/1998	12/31/2018	5.1	5.6	5.0
Bank Loans	S&P/LSTA Leveraged Loan	1/31/1997	12/31/2018	4.8	5.7	4.6
High Yield Corp. Credit	BbgBarc HigY Yield	1/31/1986	12/31/2018	8.2	8.4	7.9
Global Credit	BbgBarc Global Credit	1/31/2001	12/31/2018	5.4	6.2	5.2
Emerging Market Debt (Local)	JPM GBI-EM	1/29/2005	12/31/2018	4.8	12.2	4.1
Private Credit	S&P/LSTA Leveraged Loan +200 bps	1/31/1997	12/31/2018	6.9	5.7	6.7
Real Assets						
Commodities	Bloomberg Commodity	1/30/1991	12/31/2018	1.7	14.5	0.7
Core Real Estate	NCREIF Property	3/31/1978	9/30/2018	9.2	5.5	9.1
Value Add Real Estate	NCREIF Property +200bps	3/31/1978	9/30/2018	11.4	8.2	11.1

Notes

- The long term return expectations used in this study are based on the return histories of each respective asset class. Since this study is based on history and past performance does not guarantee future results, this study should not be interpreted as a predictor of future performance.
- Private credit does not have an industry standard proxy. As a result, a 200 basis point illiquidity premium is assigned to the S&P LSTA Leveraged Loan index (bank loans). The volatility estimate for private credit is based on the historic volatility of the high yield index.
- Like private credit, Value-add Real Estate does not have an industry standard proxy. As a result, a 200 bps return premium is assigned to the NCREIF Property index. The volatility estimate for Value-add Real Estate is based on the historic Sharpe ratio of the NCREIF index, scaled for the 200 bps return premium.

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Board of Trustees

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Date: February 25, 2019

To: Board of Trustees

From: Carl Nelson – Executive Secretary
Amy Burke – Deputy Executive Secretary

Agenda Item 15: Asset Allocation February 2019

This item on the agenda provides a properly noticed opportunity for the Board of Trustees to discuss and take action if necessary regarding asset allocation and related investment matters.

Staff as part of its administrative function of providing liquidity in the fund for benefit payments and private equity/private credit capital calls plans on total investment portfolio drawdowns of \$19 million in February and March. Based on the January month-end asset values and the routine rebalancing of the total asset mix towards policy targets the investment drawdowns planned are –

Dodge & Cox Income Fund	-\$ 3 million
BlackRock Core Fixed Income	-\$ 3 million
Pacific Asset Management Bank Loans	-\$ 3 million
Stone Harbor Emerging Market Debt	-\$10 million

Verus is in agreement with these rebalancing plans.

No Board action is planned at this point.

Respectfully submitted

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