

# 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, November 27, 2017 9:30 AM**

Room 161/162  
County Government Center  
San Luis Obispo, CA 93408

## 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.

## ORGANIZATIONAL

None

## CONSENT

2. Minutes of the Regular Meeting of October 23, 2017 (Approve Without Correction).
3. Report of Deposits and Contributions for the month of October 2017 (Receive and File).
4. Report of Service Retirements, Disability Retirements and DROP Participants for the month of October (Receive, Approve and File).
5. Applications & Elections to participate in the Deferred Retirement Option Program (DROP) received through November 10, 2017 (Receive, Approve and File).
6. Resolution Number 2017-06: A Resolution Establishing the 2018 Annual Pensionable Compensation Limit pursuant to the Public Employees Pension Reform Act (Tier 3) (Recommend Approval)

## **APPLICATIONS FOR DISABILITY RETIREMENT**

None

## **OLD BUSINESS**

None

## **NEW BUSINESS**

7. Resolution Number 2017-07: A Resolution Establishing the Rate of Interest to be Paid on the Normal Contributions of Members (Recommend Approval)
8. Resolution Number 2017-08: A Resolution Establishing the Rate of Interest to be Paid on the Additional Contributions of Members (Recommend Approval)

## **INVESTMENTS**

9. Quarterly Investment Report for the 3rd Quarter of 2017 – Presentation by Scott Whalen, Verus (Receive and File).
10. Monthly Investment Report for October 2017 (Receive and File).
11. Asset Allocation - (Review, Discuss, and Direct Staff as necessary).
12. Investment Consultant Discussion – Private Equity Outlook, Real Assets Outlook - Presentation by Scott Whalen, Verus (Receive and File).

## **OPERATIONS**

13. Staff Reports
14. General Counsel Reports
15. Committee Reports:
  - a. Audit Committee No Report
  - b. Personnel Committee No Report
  - c. PAS Replacement Committee No Report

## 16. Upcoming Board Topics (subject to change):

- a. December 18, 2017
  - i. Actuarial Assumptions Peer Comparisons
- b. January 22, 2018
  - i. Election of Officers
  - ii. Committee Appointments
  - iii. Actuarial Audit report and presentation – Bartel Associates
  - iv. Annual Cashflow Analysis
- c. February 26, 2018
  - i. Disability case 2017-03 Hearing Referee recommendation
  - ii. 2018 Retiree COLA
  - iii. 2018 Actuarial Valuation and Experience Study Planning – Gabriel Roeder Smith
  - iv. Quarterly Investment Report
  - v. Capital Market Expectations & Asset Allocation Policy – Verus
  - vi. Investment Policy Peer Comparisons

## 17. Trustee Comments

**REFERRED ITEMS**

None

**ADDED ITEMS**

None

**CLOSED SESSION**

None

**ADJOURNMENT**

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## Board of Trustees

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### **OCTOBER 23, 2017 MINUTES OF THE REGULAR MEETING OF THE PENSION TRUST BOARD OF TRUSTEES**

**BOARD MEMBERS PRESENT:** Matt Janssen, President  
Will Clemens, Vice President  
Guy Savage  
Gere Sibbach  
Jim Hamilton  
Jim Erb  
Jeff Hamm

**STAFF:** Carl Nelson  
Andrea Paley  
Amy Burke

**COUNSEL:** Chris Waddell, Esq.

**OTHERS:** Michael Hobbs, Human Resources  
Dan Andoetoe, Retiree

The meeting was called to order by President Janssen at 9:31 AM, who presided over same.

#### **AGENDA ITEM NO. 1: PUBLIC COMMENT.**

None.

**ORGANIZATIONAL:**

None.

**CONSENT:**

**AGENDA ITEM NO. 2 - 6: CONSENT.**

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

- ITEM 2:** The Minutes of the Regular Meeting of September 25, 2017 were approved without correction.
- ITEM 3:** The Report of Deposits and Contributions for the Month of September 2017, was received and filed.
- ITEM 4:** The Report of Service Retirements, Disability and DROP Retirements for the month of September 2017, was received, approved and filed.
- ITEM 5:** The Report of Applications for participation in the Deferred Retirement Option Program received through October 6, 2017 was received, approved and filed.
- ITEM 6:** Resolution 2017-05: A RESOLUTION MODIFYING AND AFFIRMING INVESTMENT AND BANKING AUTHORITY was received, approved and signed.

**APPLICATIONS FOR DISABILITY RETIREMENT:**

None.

**OLD BUSINESS:**

None.

## **NEW BUSINESS:**

### **AGENDA ITEM NO. 7: Resolution 2017-06: A RESOLUTION HONORING DEBRA P. VILLALON FOR HER SERVICE TO THE PENSION TRUST.**

Upon the motion of Mr. Sibbach, seconded by Mr. Savage, and unanimously passed, RESOLUTION 2017-06 A RESOLUTION HONORING DEBRA P. VILLALON FOR HER SERVICE TO THE PENSION TRUST was received and filed.

Mr. Sibbach acknowledged he has known Debbie for many years, relaying that she is a wonderful woman, he has appreciated her hard work and dedication to her many jobs with the County and the Pension Trust and extends his best wishes to her in her retirement.

Mr. Savage recounted his connections with Debbie through his work with the department of IT expressing his appreciation for her hard work and commitment to the many projects she has participated on over the years.

## **INVESTMENTS:**

### **AGENDA ITEM NO. 8: MONTHLY INVESTMENT REPORT FOR THE PERIOD ENDED SEPTEMBER 30, 2017.**

Upon the motion of Mr. Hamm, seconded by Mr. Erb, and unanimously passed, the Investment Report for the period ended September 30, 2017 was received and filed.

### **AGENDA ITEM NO. 9: ASSET ALLOCATION.**

Staff reported that no action regarding investment asset allocations were necessary at this time.

## **OPERATIONS:**

### **AGENDA ITEM NO. 10: STAFF ORAL REPORTS.**

- A)** Staff reported that the disability process Plan amendment status is moving along but likely not to be completed for several months.
- B)** Staff reported that the first interim disability hearing was held on October 10. He reported that the process went well, was professional and efficient.

The results of the hearing will likely be placed on the February, 2018 agenda.

- C)** Staff reported that the first healthcare transition workshop attracted over 225 retirees with lots of questions. Due to PA malfunctions and 90+ degree heat wave, there was a bit of frustration and/or anger in the air with regard to the new changes coming on January 1, 2018. The county is trying very hard to get as much information out to the retirees so they can make an informed decision about their medical insurance options going forward.
- D)** Staff reported that pension trust staff are receiving training with regard to cybersecurity and the potential for vulnerabilities. It was noted that it still takes a human being to notice peculiarities and oddities.
- E)** The question in general was asked about the 457 plan transition from Empower to Nationwide. Generally speaking, the transition has for the most part occurred without major issues.

#### **AGENDA ITEM NO. 11: GENERAL COUNSEL ORAL REPORTS.**

Counsel had nothing to report.

#### **AGENDA ITEM NO. 12: COMMITTEE REPORTS – AS NEEDED.**

- A)** AUDIT COMMITTEE: No meeting – nothing to report.
- B)** PERSONNEL COMMITTEE: This committee met with the main discussion focused on the upcoming retirement of Ms. Villalon and her role in the PAS replacement project as well as succession planning for future Retirement Program Specialists. Staff was directed to report back in six months with a staffing plan for the Pension Trust as a whole.
- C)** PENSION ADMINISTRATION SYSTEM REPLACEMENT (PASR) COMMITTEE: This committee met via telephone conference to discuss the ramifications of Ms. Villalon's upcoming retirement and her departure on the PAS replacement project. Mr. Sibbach and Mr. Savage brought to the table for discussion quite a few questions. No action was taken.

#### **AGENDA ITEM NO. 13: UPCOMING BOARD TOPICS.**

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

**AGENDA ITEM NO. 14: TRUSTEE COMMENTS.**

Mr. Jim Hamilton reported back to the board his recent SACRS investment training held in July. He thought it was a very good program with the focus on equities and passive versus active management.

**REFERRED ITEMS:** None.

**ADDED ITEMS:** None.

**CLOSED SESSION:** None.

**ADJOURNMENT.**

There being no further business, the meeting was adjourned at 10:26 AM. The next Regular Meeting was set for November 27, 2017, at 9:30 AM, in the Board of Supervisors Chambers, New 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  
OCTOBER 2017**

**PP 21 10/13/2017**

**By Employer and Tier:**

	Pensionable Salary	Employer Contributions	Employer Rate	Employee Contributions	Employee Rate	Combined Rate	Additional Contributions	Buy Backs	TOTAL Contributions
County Tier 1	4,087,761.98	903,063.00	22.09%	765,798.63	18.73%	40.83%	1,762.50	706.22	1,671,330.35
County Tier 2	934,959.48	211,481.43	22.62%	111,634.18	11.94%	34.56%	323.67	760.78	324,200.06
County Tier 3	2,046,771.51	431,136.95	21.06%	215,398.75	10.51%	31.57%	-	585.31	647,121.01
Superior Court Tier 1	295,543.84	71,205.87	24.09%	45,186.23	15.29%	39.38%	-	-	116,392.10
Superior Court Tier 3	51,140.10	9,714.40	19.00%	4,663.18	9.12%	28.11%	-	114.54	14,492.12
APCD Tier 1	76,676.70	16,134.50	21.04%	14,101.07	18.39%	39.43%	-	-	30,235.57
APCD Tier 3	6,692.00	1,398.95	20.90%	767.62	11.47%	32.38%	-	-	2,166.57
Pension Trust Staff Tier 1	8,631.29	1,893.71	21.94%	1,763.38	20.43%	42.37%	-	-	3,657.09
Pension Trust Staff Tier 2	8,956.00	1,964.94	21.94%	976.21	10.90%	32.84%	-	-	2,941.15
Pension Trust Staff Tier 3	8,543.32	1,832.54	21.45%	1,007.77	11.80%	33.25%	-	-	2,840.31
LAFCO Tier 1	12,494.29	3,248.51	26.00%	1,996.22	15.98%	41.98%	-	-	5,244.73
	7,538,170.51	1,653,074.80	21.93%	1,163,293.24	15.43%	37.36%	2,086.17	2,166.85	\$ 2,820,621.06

**PP 22 10/27/2017**

**By Employer and Tier:**

	Pensionable Salary	Employer Contributions	Employer Rate	Employee Contributions	Employee Rate	Combined Rate	Additional Contributions	Buy Backs	TOTAL Contributions
County Tier 1	4,091,987.27	904,266.98	22.10%	767,111.20	18.75%	40.85%	1,662.50	2,743.48	1,675,784.16
County Tier 2	930,802.84	210,434.27	22.61%	113,006.31	12.14%	34.75%	318.06	645.91	324,404.55
County Tier 3	2,082,819.90	437,325.11	21.00%	218,809.70	10.51%	31.50%	-	585.31	656,720.12
Superior Court Tier 1	290,862.34	69,884.80	24.03%	44,378.05	15.26%	39.28%	-	-	114,262.85
Superior Court Tier 3	54,597.36	10,617.39	19.45%	4,907.07	8.99%	28.43%	-	114.54	15,639.00
APCD Tier 1	76,572.19	16,109.60	21.04%	14,085.18	18.39%	39.43%	-	-	30,194.78
APCD Tier 3	6,692.00	1,398.95	20.90%	767.62	11.47%	32.38%	-	-	2,166.57
Pension Trust Staff Tier 1	7,168.55	1,572.78	21.94%	1,464.54	20.43%	42.37%	-	-	3,037.32
Pension Trust Staff Tier 2	7,936.80	1,741.33	21.94%	865.11	10.90%	32.84%	-	-	2,606.44
Pension Trust Staff Tier 3	8,543.32	1,832.54	21.45%	1,007.77	11.80%	33.25%	-	-	2,840.31
LAFCO Tier 1	12,494.29	3,248.51	26.00%	1,996.22	15.98%	41.98%	-	-	5,244.73
	7,570,476.86	1,658,432.26	21.91%	1,168,398.77	15.43%	37.34%	1,980.56	4,089.24	\$ 2,832,900.83

**TOTAL FOR THE MONTH**

<b>15,108,647.37</b>	<b>3,311,507.06</b>	<b>21.92%</b>	<b>2,331,692.01</b>	<b>15.43%</b>	<b>37.35%</b>	<b>4,066.73</b>	<b>6,256.09</b>	<b>\$ 5,653,521.89</b>
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**TOTAL YEAR TO DATE**

<b>162,436,537.33</b>	<b>35,425,259.44</b>	<b>21.81%</b>	<b>25,182,390.82</b>	<b>15.50%</b>	<b>37.31%</b>	<b>53,754.52</b>	<b>295,878.95</b>	<b>60,957,283.73</b>
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<b>REPORT OF SERVICE &amp; DISABILITY RETIREMENTS &amp; DROP PARTICIPANTS FOR THE MONTH OF:</b>	<b>OCTOBER 2017</b>
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<b>RETIREE NAME</b>	<b>DEPARTMENT</b>	<b>DATE</b>	<b>MONTHLY ALLOWANCE</b>
BOISSEREE, DOUGLAS	PROBATION	10-12-2017	Option selection
CRANSTON-TOLIN, LINDA	BEHAVIORAL HEALTH	10-06-2017	3544.56
DIMITRIJEVICH, ROBERT	SUPERIOR COURT	10-07-2017	4511.13
ODOM, STEVEN (DROP)	SHERIFF-CORONER	10-01-2017	Option selection
RADA, PAMELA	SOCIAL SERVICES	10-21-2017	Option selection
TOWNSEND, ROBERT	GENERAL SERVICES / RESERVE	10-30-2017	Option selection
WILLARD, KEITH	ITD	10-21-2017	Option selection
WILLIAMS, RICKI	SOCIAL SERVICES	10-07-2017	2662.11
<b>ADDENDUM:</b>			
TRYON, ROSE	SOCIAL SERVICES / RECIPROCAL	04-01-2017	Awaiting calcs
ENGLISH, KATHRYN	AUDITOR-CONTROLLER / RECIPROCAL	07-15-2017	266.63
FAHEY, SANDRA	MENTAL HEALTH / RECIPROCAL	07-29-2017	Awaiting calcs
CAMERON, SUSAN	LAW ENFORCEMENT MEDICAL CARE	08-01-2017	Option selection
HACKER, JOHN (DROP)	SHERIFF-CORONER	08-01-2017	4995.01
HURLA, BERTA	GENERAL HOSPITAL / RESERVE	08-06-2017	Awaiting calcs
FULEKI, OLGA	SOCIAL SERVICES	09-30-2017	Option selection
GARRETT, MARY	BEHAVIORAL HEALTH	09-22-2017	1268.78
KURTZMAN, KIMBERLY	PROBATION / RECIPROCAL	09-09-2017	Awaiting calcs

\* *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: November 27, 2017  
To: Board of Trustees  
From: Carl Nelson – Executive Secretary

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

#### **Recommendation:**

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:

**DECEMBER 1, 2017**  
**JANUARY 1, 2018**

**Cherie Gibson, Board of Supervisors**  
**Edward Liebscher, Probation**

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## Board of Trustees

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 6: Resolution No. 2017-06 – Resolution Establishing the 2018 Annual Pensionable Compensation Limit pursuant to the Public Employees Pension Reform Act (Tier 3)**

#### **Recommendation:**

It is recommended that the Board approve the attached Resolution 2017-06 setting the 2018 limitation on Tier 3 AB-340 Pensionable Compensation effective January 1, 2018 to be the amount of the PEPRA 2018 compensation limit calculated by the California Actuarial Advisory Panel for those included in the Federal Social Security system. This amount is estimated by Staff to be **\$121,388 (\$58.36/hour)** for 2018.

#### **Discussion:**

The Public Employees Pension Reform Act of 2012 established a pensionable compensation limit that applies to Tier 3 membership. This amount was specified by PEPRA to equal the January 1, 2013 Social Security maximum wage base of \$113,700. PEPRA also specified that this pensionable compensation limit be adjusted annually based on changes in the Consumer Price Index for All Urban Consumers (CPI-U).

The September 2016 CPI-U index was 241.428 and in September 2017 it stood at 246.819 for an annual change of +2.2%. The 2016 PEPRA pensionable compensation limit for those systems whose employees participate in social security was \$118,775. Indexing this value by the change in the CPI-U from September 2016 to September 2017 increases the 2018 PEPRA pensionable compensation limit to \$121,388 (\$58.36/hour) as estimated by Staff. The final amount to apply as the 2018 PEPRA pensionable compensation limit will

be calculated and published by the California Actuarial Advisory Panel (under the State Controllers Office) in late November or December of 2017.

The history of PEPRA compensation limits for employees who participate in Social Security is shown below –

2013	\$113,700	per PEPRA initial amount
2014	\$115,064	+1.2%
2015	\$117,020	+1.7%
2016	\$117,020	0.0%
2017	\$118,775	+1.5%
2018	\$121,388 est.	+2.2%

Respectfully Submitted,

Carl Nelson  
Executive Secretary

Amy Burke  
Deputy Executive Secretary

**SAN LUIS OBISPO COUNTY  
PENSION TRUST**

**RESOLUTION 2017-06**

**A RESOLUTION ESTABLISHING THE 2018 ANNUAL  
PENSIONABLE COMPENSATION LIMIT  
PURSUANT TO THE PUBLIC EMPLOYEES PENSION REFORM ACT  
EFFECTIVE JANUARY 1, 2018**

WHEREAS, Plan Sections 29.03.05, 30.03.05, and 31.03.05 provide for a limitation on Tier 3 AB-340 Pensionable Compensation pursuant to the Public Employees Pension Reform Act of 2012; and

WHEREAS, the limitation on Tier 3 AB-340 Pensionable Compensation was initially set as of January 1, 2013 at one hundred percent of the benefit base specified in Section 403(b) of Title 42 of the United States Code and such amount as of January 1, 2013 was \$113,700; and

WHEREAS, Plan Sections 29.03.05, 30.03.05, and 31.03.05 provide for the limitation on Tier 3 AB-340 Pensionable Compensation to be adjusted annually following each actuarial valuation based on changes in the Consumer Price Index for All Urban Consumers; and

WHEREAS, the Board of Trustees on November 28, 2016 established the 2017 Tier 3 AB-340 Pensionable Compensation limit effective January 1, 2017 to be \$118,775 or \$57.10 per hour; and

WHEREAS, staff reports that the annual increase in the Consumer Price Index for All Urban Consumers from September 2016 to September 2017 equals +2.2%; and

WHEREAS, staff recommends that the Board of Trustees establish the 2018 Tier 3 AB-340 Pensionable Compensation limit effective January 1, 2018 to be the amount for those included in the Federal Social Security system calculated by the California Actuarial Advisory Panel for 2018 and said amount is estimated by staff to increase 2.2% to \$121,388 or \$58.36 per hour.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Trustees of the San Luis Obispo County Pension Trust as follows:

1. That, effective January 1, 2018, the limitation on Tier 3 AB-340 Pensionable Compensation is hereby fixed at the amount for those included in the Federal Social Security system calculated by the California Actuarial Advisory Panel for 2018 with said amount estimated to be \$121,388 annually or \$58.36 per hour.
2. That implementation of this Resolution is hereby assigned to the Executive Secretary of

this Pension Trust.

Aye Votes: - Matt Janssen, Will Clemens, Jim Erb, Jeff Hamm, Jim Hamilton,  
Guy Savage, Gere Sibbach

No Votes: - none

Abstentions: - none

Absent: - none

ADOPTED: November 27, 2017

Approved as to Form and Legal Effect

\_\_\_\_\_  
Chris Waddell  
General Counsel

SIGNED: \_\_\_\_\_  
Matt Janssen, President  
Board of Trustees  
San Luis Obispo County Pension Trust

ATTEST: \_\_\_\_\_  
Carl Nelson  
Executive Secretary

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 7: Resolution No. 2017-07 – Establishing the Rate of Interest to be paid on the Normal Contributions of Members**

#### **Recommendation:**

It is recommended that the Board approve the attached Resolution 2017-07. This resolution establishes the rate of interest to be paid on Normal Contributions of Members for the period beginning December 17, 2017 and ending December 15, 2018 at **6.625%**. This rate can be changed at the discretion of the Board of Trustees at any time.

#### **Discussion:**

With respect to the establishment of the interest crediting rate for Normal Contribution Accounts, action is taken annually by the Board pursuant to Retirement Plan Section 5.06: Accounting for Contributions. Section 5.06 Accounting For Contributions reads as follows:

The Normal Contributions of Members will be accounted for separately and will be credited with interest as of the last day of each pay period at an annual rate to be determined by the Board of Trustees.

The Retirement Plan is silent as to the method the Trustees use to determine the rate of interest to be credited to a Member's Normal Contribution Account. The practices of other retirement systems in setting a crediting rate for normal contributions vary widely. In the normal case where a Member proceeds to receive a service retirement benefit, the crediting rate for Normal contributions has minimal significance. This is because the retirement benefit is funded by a blending of the Member's Normal Contribution Account and the other reserves (i.e., employer contributions and investment earnings) within the Plan.

If a Member separates service and elects to take a Termination Refund of their Normal Contributions, the interest credited to that account is also paid out to the Member. The loss of the interest in the account is substantially offset by the reduction in liability that was being accrued by the former Member. However, when the interest crediting rate exceeds the rate of return generated by the investment portfolio the interest credited to the Normal Contribution Account implicitly comes from the other reserves within the Plan. The amount of impact on the Plan from Termination Refunds is expected to be minimal because actuarial experience shows that once a Member becomes vested at five years of service the probability of a refund is low.

**It has been the practice of the Board over the last several years to set the rate of interest to be credited to the Member Normal Contribution Accounts at 0.50% less than the Actuarial Earnings Assumption (currently 7.125%) which leads to the recommendation to set the 2018 rate at 6.625%. Alternative amounts for setting this rate of interest are also possible and within the discretion of the Board.**

**Also, it is important to note, that this rate can be changed at the discretion of the Board at any point which allows for further adjustments in conjunction with future considerations of actuarial assumptions to be used.**

Note that the attached resolution contains an automatic setting of the rate back to 4.50% starting December 16, 2018. The intent of this provision is to establish that the rate can be reduced at the discretion of the Board. This does not bind whatever decision the Board of Trustees may make in establishing the rate of interest being paid on Member Normal Contribution Accounts for periods after 2018.

**Results:**

Approval of this Resolution will set the rate of interest being paid on Member Normal Contribution Accounts for the period beginning December 17, 2017 and ending December 15, 2018 at 6.625% although this rate can be changed at the discretion of the Board of Trustees.

Respectfully Submitted,

Carl Nelson  
Executive Secretary

Amy Burke  
Deputy Executive Secretary



**SAN LUIS OBISPO COUNTY  
PENSION TRUST**

**RESOLUTION 2017-07**

**A RESOLUTION ESTABLISHING THE RATE  
OF INTEREST TO BE PAID ON THE  
NORMAL CONTRIBUTIONS OF MEMBERS FOR THE PERIOD  
BEGINNING DECEMBER 17, 2017 AND ENDING DECEMBER 15, 2018**

WHEREAS, Plan Section 5.06 provides for the crediting of interest on Member's Normal Contributions at an annual rate to be determined by this Board of Trustees; and

WHEREAS, the duties of this Board of Trustees under Plan Section 16.02 require the Board to interpret, construe and apply all provisions of the Plan, and to approve interest rates; and

WHEREAS, pursuant to the above-mentioned Plan Sections, this Board of Trustees, at the Regular Meeting of November 28, 2016, adopted Resolution 2016-05, fixing the rate of interest to be paid on Normal Contribution Accounts at six and five-eighths percent (6.625%); and

WHEREAS, this Board of Trustees has determined that for the period beginning December 17, 2017, establishing the current rate of interest at six and five-eighths percent (6.625%) would be a reasonable and prudent discharge of the above-mentioned duties and a prudent application of funds; and

WHEREAS, uncertainty as to current economic conditions, and volatility of interest rates constitute sufficient cause for the Board of Trustees to limit an increase in said current rate to the period specified above, by returning said rate to four and one-half percent (4.50%), commencing December 16, 2018.

NOW THEREFORE, BE IT RESOLVED by the Board of Trustees of the San Luis Obispo County Pension Trust as follows:

1. That, for the period beginning December 17, 2017, and ending December 15, 2018, the annual rate of interest to be credited to the normal contributions of Members, under Plan Section 5.06 is hereby fixed at six and five-eighths percent (6.625%);
2. That commencing December 16, 2018, and thereafter, the annual rate of interest to be credited to the normal contributions of Members under Plan Section 5.06 is hereby fixed at four and one-half percent (4.50%);
3. That implementation of this Resolution is hereby assigned to the Executive Secretary of this Pension Trust.

Aye Votes: - Matt Janssen, Will Clemens, Jim Erb, Jeff Hamm, Jim Hamilton,  
Guy Savage, Gere Sibbach

No Votes: - none

Abstentions: - none

Absent: - none

ADOPTED: November 27, 2017

Approved as to Form and Legal Effect

\_\_\_\_\_  
Chris Waddell  
General Counsel

SIGNED: \_\_\_\_\_  
Matt Janssen, President  
Board of Trustees  
San Luis Obispo County Pension Trust

ATTEST: \_\_\_\_\_  
Carl Nelson  
Executive Secretary

## Board of Trustees

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 8: Resolution No. 2017-08 – Establishing the Rate of Interest to be paid on the Additional Contributions of Members**

#### **Recommendation:**

It is recommended that the Board approve the attached Resolution 2017-08. This resolution reaffirms the following policy:

1. Specifies the benchmark for determining the rate of interest to be paid on Additional Contribution Accounts as the rate paid by the yield on Five Year Treasury Bonds as of September 30<sup>th</sup> of each year.
2. Establishes the rate of interest to be paid on Member Additional Contributions for the period beginning December 17, 2017 and ending December 15, 2018 at **1.92%**.

#### **Discussion:**

For the Plan years of 2010 - 2017, the Board has adopted the practice of basing the rate of interest to be credited to the Employee Additional Contributions Accounts on an objective low risk investment benchmark. The assets in the Additional Contribution Accounts are not included in determining the employer appropriation or employee contribution required to fund the plan. While these assets are invested with the SLOCPT corpus, they are not used for purposes of determining the required Employer Appropriation or Employee Contribution rates. Consequently, interest credited to these accounts, particularly during periods in which the investment portfolio does not earn the actuarial earnings assumption

rate comes from other SLOCPT reserves. Therefore, it is prudent to adjust the crediting rate on these accounts to a low-risk market return basis as deemed appropriate by the Board.

Section 5.07 of the Retirement Plan sets forth the provisions governing the Additional Contribution Accounts. The section provides that this account is designed to provide additional benefits.

Historically, there have been three sources of Additional Contributions. These are as follows:

1. Voluntary Contributions made by members.
2. “Spill-over” contributions as a result of Employer Paid for Employee Normal Contributions (also known as the “pick up”) in excess of the Member’s required contribution rate. This source of additional contributions has become substantially less significant due to recent contribution rate increases, as Employers have bargained for the most part with employee groups to split these required increases on a 50/50 basis.
3. Distributions of excess earnings from SLOCPT.

In order to determine an appropriate interest crediting rate for the additional Contribution Account the practice initiated in 2009 for Plan Years 2010-2017 was to use the interest crediting rate being paid by the Great-West Guaranteed Government Fund that was one of the stable value, low-risk options available in the Deferred Compensation program. With the transition of the Deferred Compensation Plan to Nationwide, this benchmark is no longer available. The stable value fund offered by Nationwide is backed by the general account of Nationwide Insurance and is an inherently less objective or transparent benchmark.

As an alternative staff recommends the use of the yield on Three or Five Year Treasury Bonds as of September 30<sup>th</sup> of each year. The recent history of the September 30<sup>th</sup> yields on the Great West Guaranteed Government Fund and the Three or Five Year Treasury Bond is shown below. The September 30<sup>th</sup> yields on Treasury Bonds have as their source the [www.treasury.gov/resource-center](http://www.treasury.gov/resource-center) website.

	<u>GW Guaranteed Govt. Fund</u>	<u>Three Year Treasury Bond</u>	<u>Five Year Treasury Bond</u>
2010 (Sept. 30)	3.45%	0.64%	1.27%
2011 (Sept. 30)	2.80%	0.42%	0.96%
2012 (Sept. 30)	2.30%	0.31%	0.62%
2013 (Sept. 30)	1.95%	0.63%	1.69%
2014 (Sept. 30)	1.60%	1.07%	1.78%
2015 (Sept. 30)	1.50%	0.92%	1.37%
2016 (Sept. 30)	1.35%	0.88%	1.14%
2017 (Sept. 30)	NA	1.62%	1.92%

The use of the Three or Five Year Treasury Bond yield as a benchmark leads to a more changeable rate year to year in comparison to the prior benchmark. However, using a Treasury Bond Yield is preferable in terms of its approximation of low-risk investment alternatives. Treasury Bond yields are also advantageous in terms of availability of data and the transparency of such a rate benchmark.

Staff recommends for 2018 to base the interest to be paid on Additional Contribution Accounts on the September 30<sup>th</sup> yield on Five Year Treasury Bonds which is 1.92%.

This action is taken annually by the Board pursuant to Retirement Plan Section 5.07: Additional Contributions.

**Results:**

Approval of this Resolution will set the rate of interest being paid on Member Additional Contribution Accounts for the period beginning December 17, 2017 and continuing through December 15, 2018 at **1.92%**.

Respectfully Submitted,

Carl Nelson  
Executive Secretary

Amy Burke  
Deputy Executive Secretary



**SAN LUIS OBISPO COUNTY  
PENSION TRUST**

**RESOLUTION NO. 2017-08**

**A RESOLUTION ESTABLISHING THE RATE  
OF INTEREST TO BE PAID ON THE  
ADDITIONAL CONTRIBUTIONS OF MEMBERS FOR THE PERIOD  
BEGINNING DECEMBER 17, 2017 AND ENDING DECEMBER 15, 2018**

WHEREAS, Plan Section 5.07 provides for the crediting of interest to Member Additional Contributions at an annual rate to be determined by this Board of Trustees; and

WHEREAS, the duties of this Board of Trustees under Plan Section 16.02 require the Board to interpret, construe and apply all provisions of the Plan, and to approve interest rates; and

WHEREAS, at the Regular Meeting of the Board of Trustees held November 23, 2009, the Board of Trustees reviewed the matter of crediting Additional Contribution Accounts with appropriate rates of interest, such that participants in said Additional Contribution Accounts receive a rate of return that is not inconsistent with the funding requirements of the Trust; and

WHEREAS, the Board of Trustees finds that portfolio performance on a year-over-year basis is potentially volatile, and that such volatility in the determination of the interest crediting rate is not desirable and, therefore a more stable and objective benchmark to determine the rate of interest credited to the Additional Contribution Accounts is preferable, and

WHEREAS, the Board of Trustees affirms the policy recommendation that the rate of interest to be determined and applied to the Additional Contribution Account be established in a range of not less than 0% and not greater than the established actuarial assumption rate; and

WHEREAS, said policy will ensure the principal amount of a Member's contributions be preserved; and

WHEREAS, the staff recommends and the Board of Trustees finds that the yield on Five Year Treasury Bonds as of September 30<sup>th</sup> of each year provides a reasonable and objective benchmark for the determination of the appropriate interest crediting rate for Additional Contribution Accounts; and

WHEREAS, based on the foregoing, the rate of interest to be credited to the Employee Additional Contribution Accounts be established for 2018 at a rate of 1.92%.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Trustees of the San Luis Obispo County Pension Trust as follows:

1. That, for the period beginning December 17, 2017, and ending December 15, 2018, the annual rate of interest to be credited to the Member Additional Contribution Accounts, under Plan Section 5.07 is hereby fixed at 1.92%.
2. That commencing December 16, 2018, and thereafter, the annual rate of interest to be credited to the Member Additional Contributions Account under Plan Section 5.07 shall be determined annually by action of the Board of Trustees and shall be based on the yield on Five Year Treasury Bonds as of September 30<sup>th</sup> of each year or a comparable investment.
3. That implementation of this Resolution is hereby assigned to the Executive Secretary of this Pension Trust.

Aye Votes: - Matt Janssen, Will Clemens, Jim Erb, Jeff Hamm, Jim Hamilton,  
Guy Savage, Gere Sibbach

No Votes: - none

Abstentions: - none

Absent: - none

ADOPTED: November 27, 2017

Approved as to Form and Legal Effect

\_\_\_\_\_  
Chris Waddell  
General Counsel

SIGNED: \_\_\_\_\_  
Matt Janssen, President  
Board of Trustees  
San Luis Obispo County Pension Trust

ATTEST: \_\_\_\_\_  
Carl Nelson  
Executive Secretary



## Board of Trustees

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



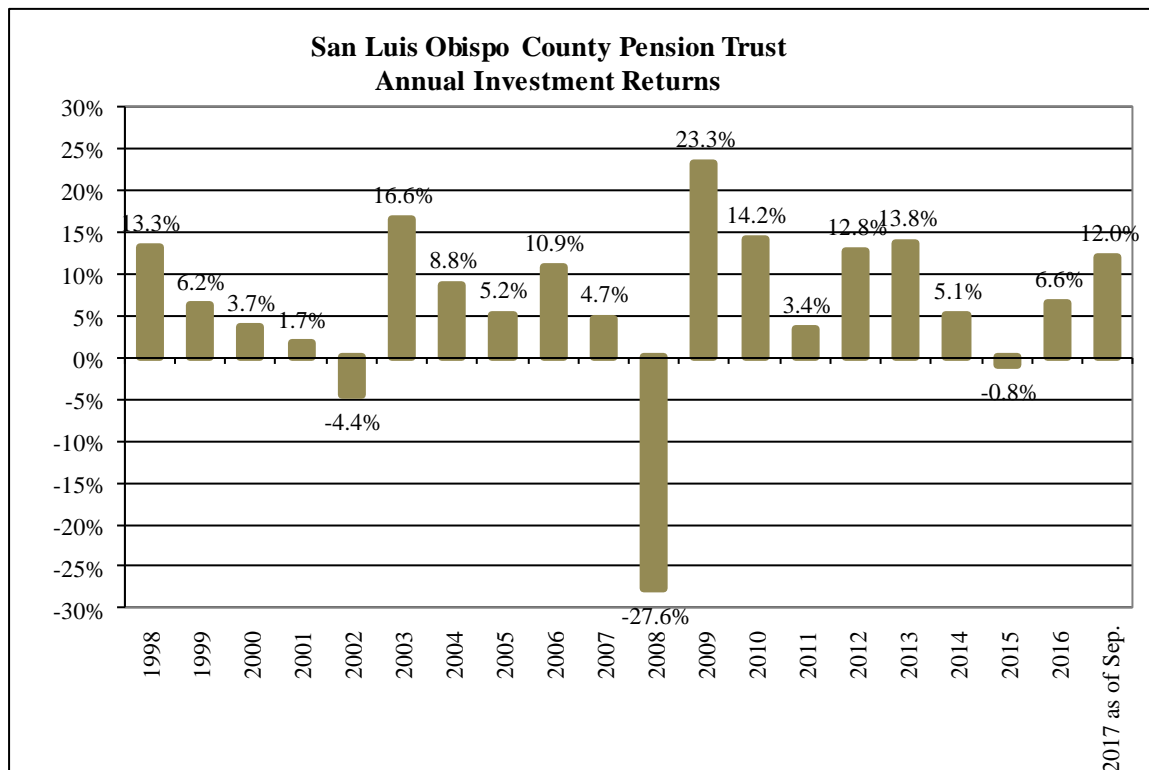
Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 9: Quarterly Investment Report for the 3rd Quarter of 2017**

Attached to this memo is the 3Q17 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.



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# **PERSPECTIVES** THAT DRIVE ENTERPRISE SUCCESS



**PERIOD ENDING: SEPTEMBER 30, 2017**

Investment Performance Review for

**San Luis Obispo County Pension Trust**

# Table of Contents



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

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

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Investment Landscape

TAB I

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Investment Performance  
Review

TAB II





**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

4<sup>TH</sup> QUARTER 2017  
Investment Landscape



# Table of contents



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[VERUSINVESTMENTS.COM](http://VERUSINVESTMENTS.COM)

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SAN FRANCISCO 415-362-3484

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Economic environment	5
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Fixed income rates & credit	19
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Equity	25
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Other assets	37
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Appendix	40
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# 3<sup>rd</sup> quarter summary

## THE ECONOMIC CLIMATE

- Growth strengthened across developed and emerging economies. Business surveys suggest conditions are improving in both manufacturing and service industries. [p. 17](#)
- The U.S. job market tightened as unemployment dropped from 4.4 to 4.2%, despite disappointing job growth data. Unemployment has not been this low since March of 2001. [p. 9](#)
- An independence movement in Catalonia has received little attention from the financial community, and risk premiums may not reflect the negative possible knock-on effects on the EU. [p. 16](#)

## PORTFOLIO IMPACTS

- Improving economic growth, low inflation, low unemployment, and supportive monetary policy across most markets has created a positive environment for global risk assets, justifying a moderate overweight risk position. [p. 16](#)
- Within risk assets, we believe opportunities exist in emerging markets. [p. 33](#)

## THE INVESTMENT CLIMATE

- Global interest rates are still at historic lows, and very little monetary tightening is priced in across developed markets over the next few years. Even in the U.S., the market is only expecting two rate hikes through the end of next year. [p. 20](#)
- Valuations across global equities and credit are elevated, and have been so for the past few years. Further price appreciation through equity multiple expansion or credit spread contraction is unlikely. [p. 23 & 34](#)

## ASSET ALLOCATION ISSUES

- Equity performance remains strong. Year-to-date returns have been fundamentally driven, supported by earnings growth rather than valuation expansion. [p. 29](#)
- Equity volatility is near historic lows. Stable economic growth and inflation have likely contributed to the muted volatility environment. Investors should monitor leverage in strategies with a specific volatility target. [p. 35](#)

We believe a moderate overweight to risk is warranted

# What drove the market in Q3?

## “Traders keep bets on Fed rate hike in December after jobs report”

### DECEMBER RATE HIKE PROBABILITY BASED ON MARKET PRICING

Apr 30 <sup>th</sup>	May 31 <sup>st</sup>	Jun 30 <sup>th</sup>	Jul 31 <sup>st</sup>	Aug 31 <sup>st</sup>	Oct 6 <sup>th</sup>
47%	43%	52%	42%	34%	80%

Article Source: Bloomberg, September 27<sup>th</sup> 2017

## “U.S.-North Korea tensions fuel flight to safety”

### DAILY PRICE REACTION DURING NORTH KOREA EVENTS

Fire & fury comments   8/28 missile launch   9/15 missile launch

S&P 500	Gold	S&P 500	Gold	S&P 500	Gold
-1.5%	1.3%	-0.1%	1.5%	-0.1%	0.6%

Article Source: Financial Times, August 9<sup>th</sup> 2017

## “Strong earnings lift U.S. stocks”

### MSCI U.S. INDEX EARNINGS GROWTH (YOY)

Q3 16	Q4 16	Q1 17	Q2 17
-7.3%	-3.2%	2.2%	9.2%

Article Source: Wall Street Journal, July 25<sup>th</sup> 2017

## “S&P 500 volatility hits 50-year low”

### S&P 500 30-DAY ANNUALIZED TRAILING VOLATILITY

Apr 30 <sup>th</sup>	May 31 <sup>st</sup>	Jun 30 <sup>th</sup>	Jul 31 <sup>st</sup>	Aug 31 <sup>st</sup>	Sep 30 <sup>th</sup>
7.3%	7.8%	6.8%	7.1%	8.1%	5.8%

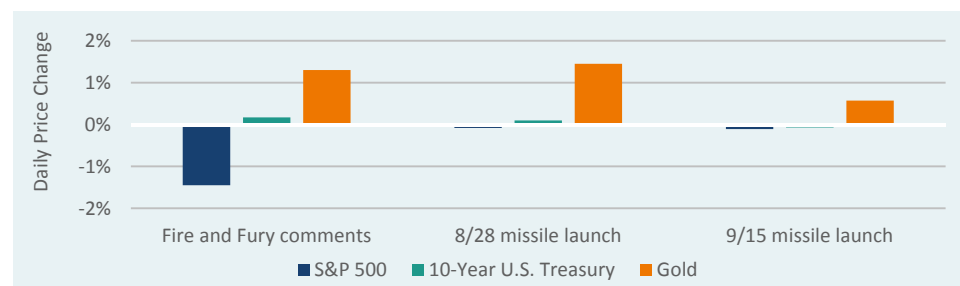
Article Source: Forbes, August 1<sup>st</sup> 2017

### DECEMBER RATE HIKE PROBABILITY



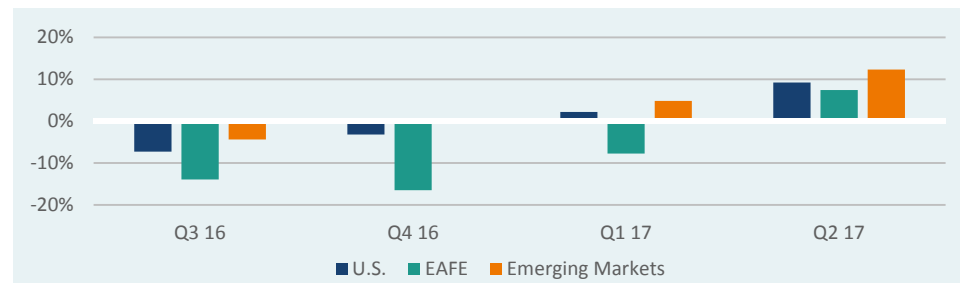
Source: Bloomberg, as of 10/6/17, based on Fed fund futures prices

### MARKET REACTION DURING NORTH KOREA EVENTS



Source: Bloomberg

### EQUITY EARNINGS GROWTH (YOY)



Source: Bloomberg, MSCI, as of 9/30/17



# Economic environment

# U.S. economics summary

- U.S. real GDP grew 2.2% YoY in Q2, consistent with the trend of slow, but steady growth in the current expansion. Consumer spending and business investment were the primary drivers of growth.
- Purchasing manager indexes (PMIs) moved higher to above average levels, indicating a likely acceleration in economic growth over the coming quarters. The ISM Manufacturing and Services PMIs for September were 60.8 and 59.8, respectively.
- The economy added an average of 91,000 jobs per month to payrolls in the third quarter. The September employment data was heavily influenced by hurricanes Harvey and Irma, which resulted in a decline of 33,000 jobs from payrolls, the first drop since 2010. Due to the calculation methodology, a bounce back should be expected in October.
- The U3 unemployment rate (unaffected by the hurricanes) fell 0.2% to a 17-year low of 4.2% over the quarter. The broader U6 unemployment rate also tightened, dropping 0.3% to 8.3%.
- Year-over-year headline CPI accelerated from 1.6% in June to 2.2% in September, while the core inflation rate was unchanged over the quarter at 1.7%. Outside of volatile energy prices inflationary pressures still appear absent, and core inflation remains below the Fed's 2% target.
- The Fed paused from raising interest rates following three consecutive quarters with hikes. Core inflation that has persistently been below the Fed's 2% target was the primary reason given to delay further tightening. The market is expecting the Fed to raise interest rates again in December based on fed fund futures prices.

	Most Recent	12 Months Prior
GDP (YoY)	2.2% 6/30/17	1.2% 6/30/16
Inflation (CPI YoY, Headline)	2.2% 9/30/17	1.5% 9/30/16
Expected Inflation (5yr-5yr forward)	2.0% 9/30/17	1.8% 9/30/16
Fed Funds Rate	1.25% 9/30/17	0.50% 9/30/16
10 Year Rate	2.3% 9/30/17	1.6% 9/30/16
U-3 Unemployment	4.2% 9/30/17	4.9% 9/30/16
U-6 Unemployment	8.3% 9/30/17	9.7% 9/30/16

# U.S. economics – GDP growth

Real GDP grew by 2.2% YoY in Q2 (3.1% quarterly annualized rate), the fastest pace of expansion since Q3 2015. The economic recovery is nearly in its eighth year, but the level of growth remains low relative to history. Despite the length of the expansion, we do not see many of the typical signs that the economy is overheating.

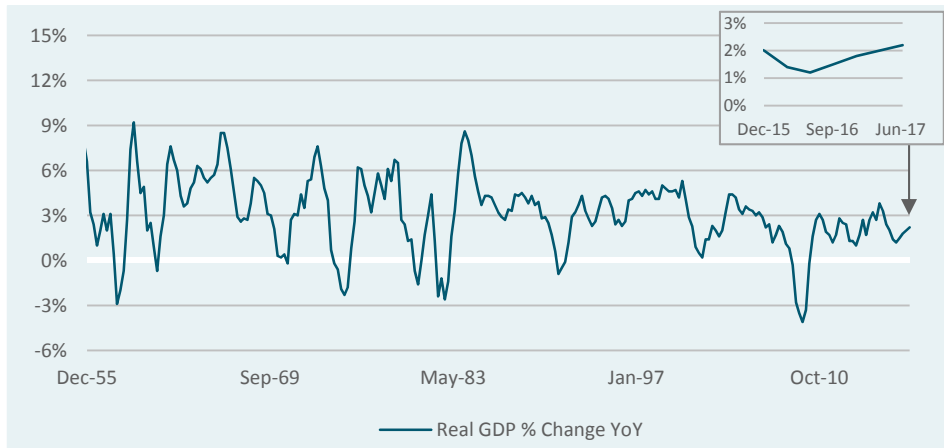
After slowing in the first quarter, consumer spending accelerated to 3.3%, and contributed 2.2% to the overall quarterly growth rate. A tight labor market and moderate wage gains should create a positive environment for consumer spending moving forward.

Business investment has picked up in recent quarters, and was the second largest contributor to GDP in Q2, while residential investment was a slight drag on growth. Trade also had a positive impact on growth, as exports increased at a quicker rate than imports.

Moderate growth is expected throughout the rest of the year – the Atlanta Fed GDP Now forecast for Q3 was 2.5% as of October 6<sup>th</sup>. Hurricanes Harvey and Irma disrupted growth in September, but the economy is likely to see a boost in Q4 once rebuilding begins.

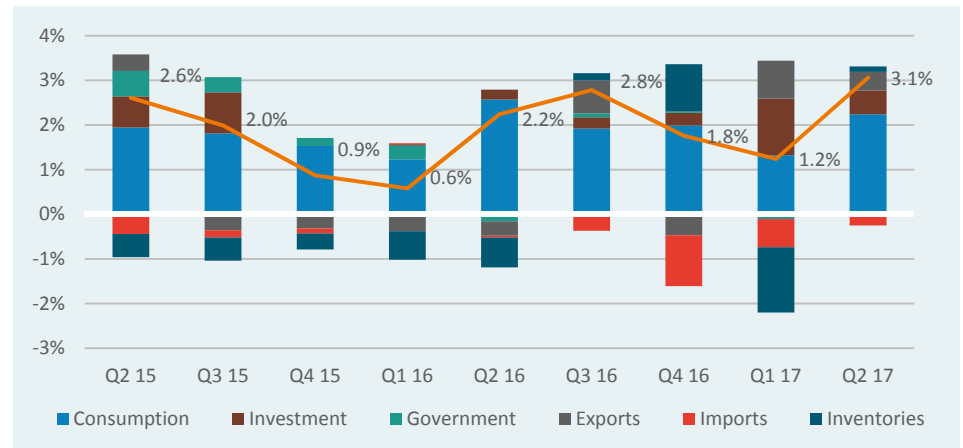
The economy experienced another quarter of moderate growth in Q2 with few signs of overheating

U.S. REAL GDP GROWTH (YOY)



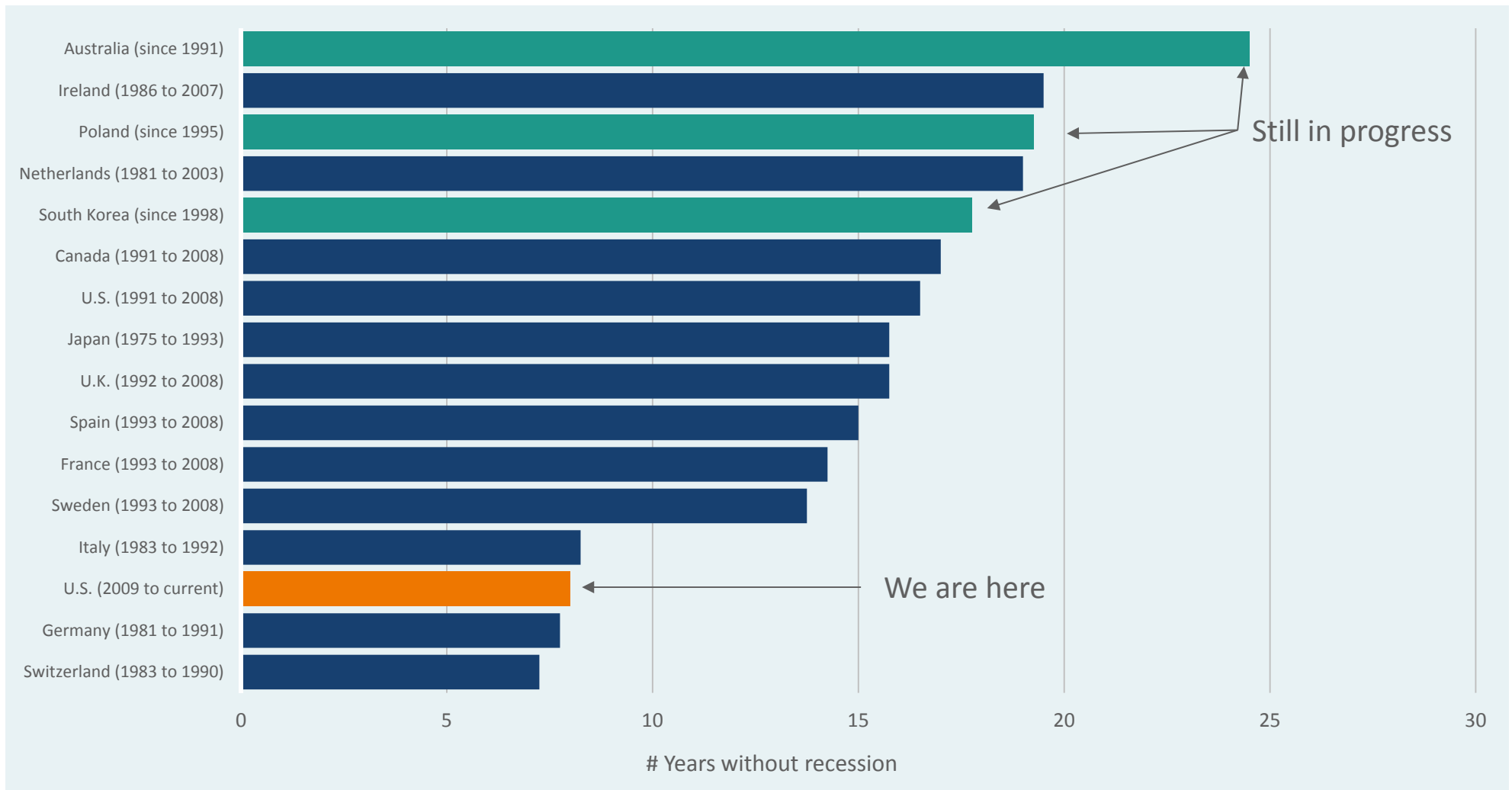
Source: FRED, as of 6/30/17

U.S. GDP COMPONENTS



Source: BEA, annualized quarterly rate, as of 6/30/17

# How long can expansions continue?



Source: Australia Trade and Investment Commission

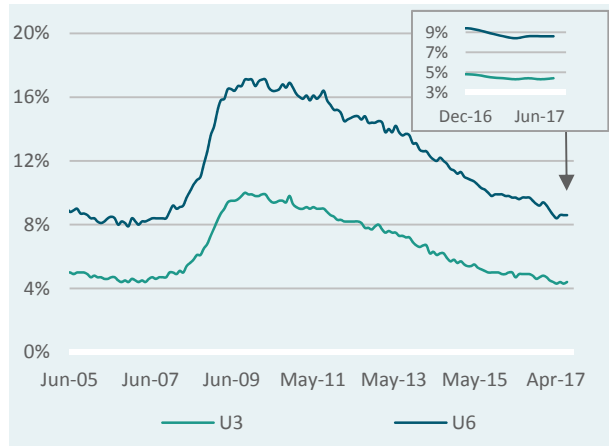
# U.S. economics – Labor market

The U.S. job market tightened as unemployment dropped from 4.4 to 4.2% - the lowest level since March of 2001. Job creation data disappointed in September, though this may largely be attributed to the effects of hurricanes Harvey and Irma.

Labor growth throughout the current U.S. expansion has tended to be tilted towards lower-skill and lower-pay jobs. It is reasonable to ask whether this indicates that the recovery is weak or unbalanced. To arrive at an answer it is

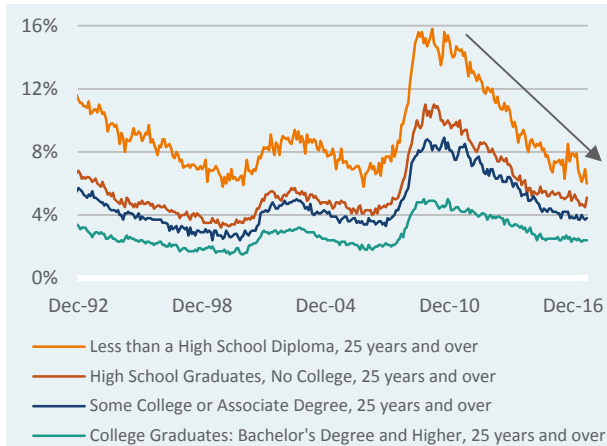
important to note that the types of jobs created during an economic recovery is partly a product of the types of jobs lost during the initial downturn. Examining unemployment by education level and age group suggests that the downturn disproportionately impacted the jobs of younger workers and those with less education. This implies that the job creation seen lately is natural and not necessarily an indication of weakness.

**U.S. UNEMPLOYMENT**



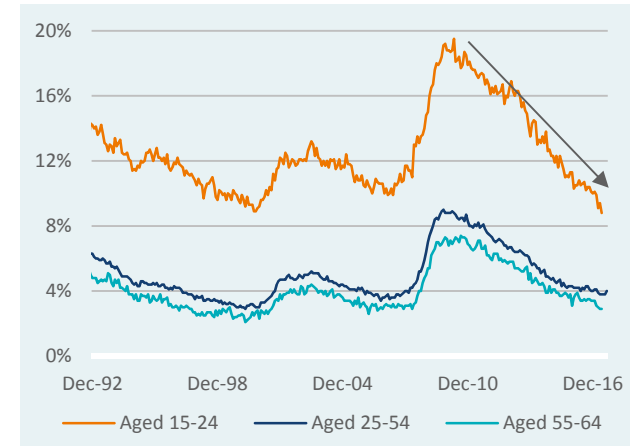
Source: FRED, as of 8/31/17

**UNEMPLOYMENT BY EDUCATION LEVEL**



Source: FRED, as of 8/31/17

**UNEMPLOYMENT BY AGE GROUP**



Source: FRED, as of 8/31/17

# U.S. economics – The consumer

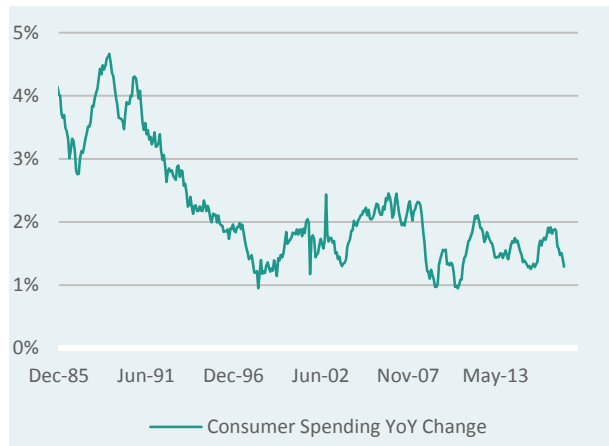
Consumer spending remained within a normal range. Savings rates, in aggregate, have declined over the past year and are now at levels consistent with past economic expansions. The fundamental picture for consumers is still positive. Low inflation, low unemployment, and moderate wage gains should provide a backdrop for further spending growth.

Total consumer debt has surpassed pre-crisis levels, fueled by student loans and auto loans. However, the

burden of debt is lower due to the lower interest rate environment.

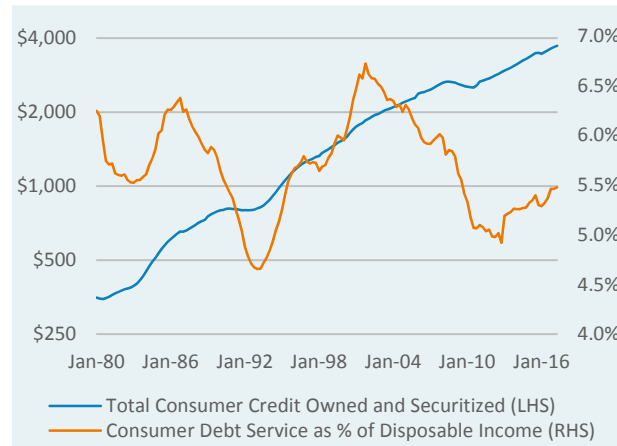
U.S. auto sales spiked in September, reversing a recent trend of weaker purchase activity. Hurricanes Irma and Harvey were estimated to have affected hundreds of thousands of vehicles, which contributed to buying activity throughout the month. However, the spike in sales will likely result in a drag on activity in future years.

**CONSUMER SPENDING (YOY GROWTH)**



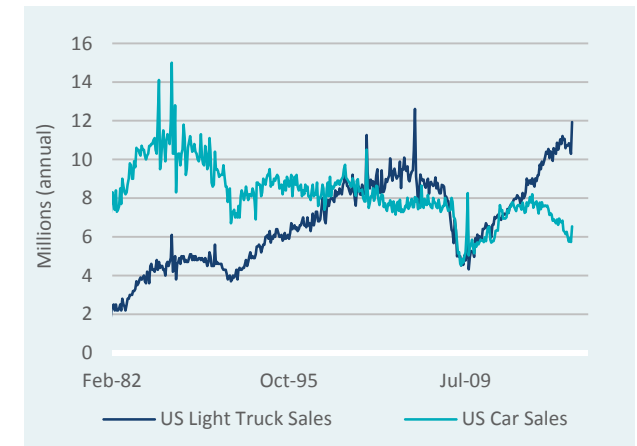
Source: Bloomberg, as of 8/31/17

**CONSUMER DEBT & DEBT BURDEN**



Source: FRED, as of 4/30/17

**U.S. AUTO SALES**



Source: Bloomberg, as of 9/30/17

# U.S. economics – Sentiment

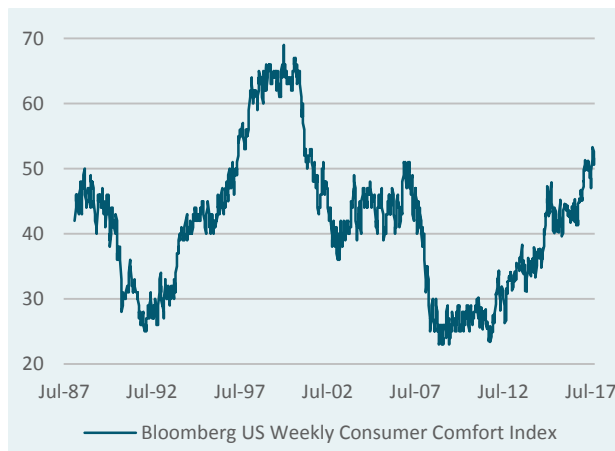
Consumer sentiment measures are above average, reflecting Americans' overall positive view of the economy. In the preliminary reading for October, The University of Michigan Consumer Sentiment Survey unexpectedly increased from 95.1 to 101.1, the highest level since 2004, which placed it in the 91<sup>st</sup> percentile since 1978. According to the survey, the elevated level of confidence is primarily due to consumers anticipating low unemployment, low inflation, small increases in interest rates, and moderate gains in income. Consumer sentiment has been high since the election last

November, but there has yet to be a material increase in consumer spending.

Other measures of sentiment, such as the NFIB Small Business Optimism Index, remain high by historical standards, but have dropped so far this year. Small businesses are still expecting to benefit from tax reform and deregulation, although significant uncertainty remains surrounding the timing and nature of these changes.

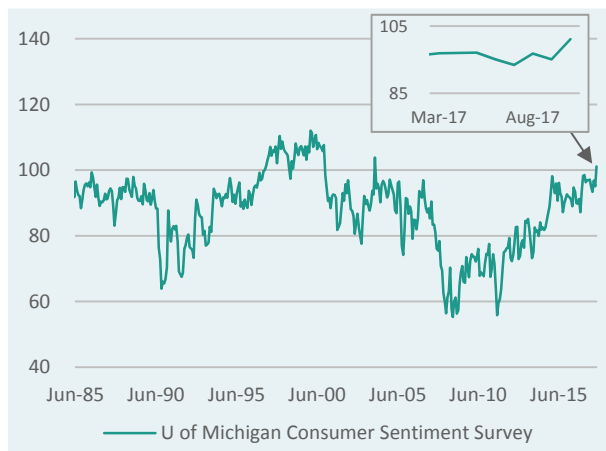
Consumers and small businesses have a positive outlook on the economy

CONSUMER COMFORT INDEX



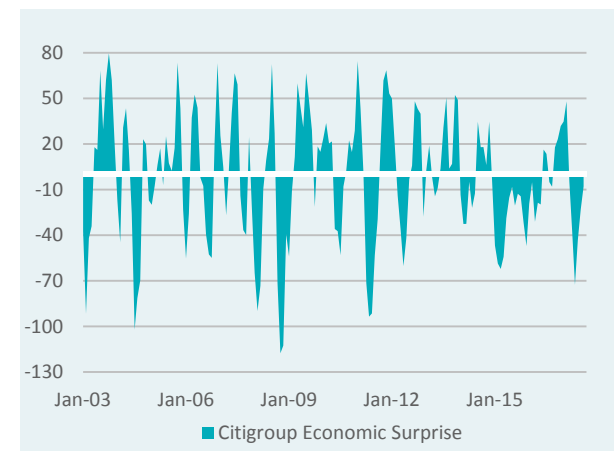
Source: Bloomberg, as of 9/24/17 (see Appendix)

CONSUMER SENTIMENT



Source: University of Michigan, as of 9/30/17 (see Appendix)

U.S. ECONOMIC SURPRISE



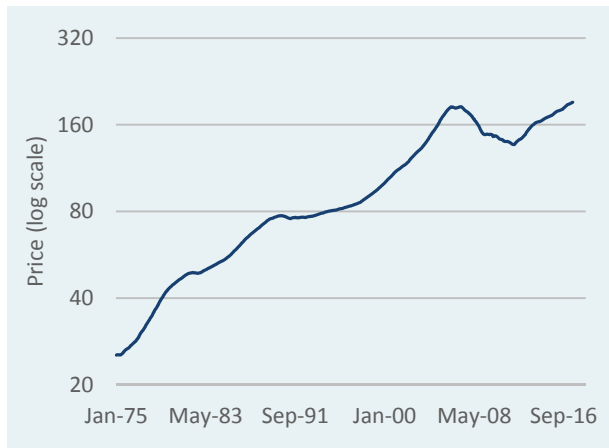
Source: Bloomberg, as of 9/29/17 (see Appendix for details)

# U.S. economics – Housing

U.S. home prices continued to climb higher with 5.9% growth YoY in July according to the S&P/Case-Shiller U.S. National Home Price Index. New and existing home sales have decelerated and are flat year-over-year, though not necessarily worrying given the volatility of sales activity. A surge in housing starts and permit applications is possible as areas of the south and southeast rebuild following hurricane damage.

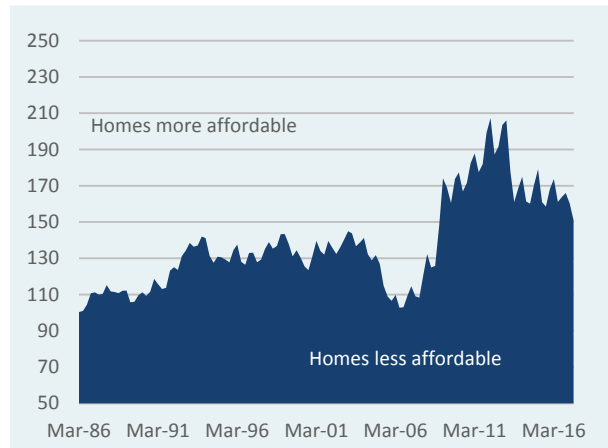
Owning a home remains affordable relative to history. A scenario of higher interest rates and further home price appreciation would result in affordability falling towards the historical average. Materially higher interest rates would make home ownership much more expensive, given the low current level of interest rates. A 1% rise in mortgage interest rates for a \$400,000 loan results in a roughly \$4,000 rise in annual cost for homeowners.

CASE-SHILLER HOME PRICE INDEX



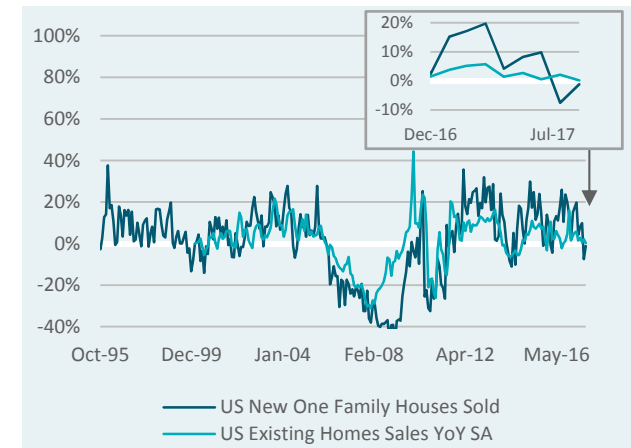
Source: FRED, as of 6/30/17

HOME AFFORDABILITY



Source: National Association of Realtors, as of 6/30/17 (see appendix)

HOUSING SALES



Source: Bloomberg, as of 8/31/17



# U.S. economics – Inflation

Headline CPI inflation was 2.2% from the previous year in September, up from 1.6% in June, driven mainly by increases in gasoline prices following hurricanes Harvey and Irma. Core inflation was unchanged at 1.7%.

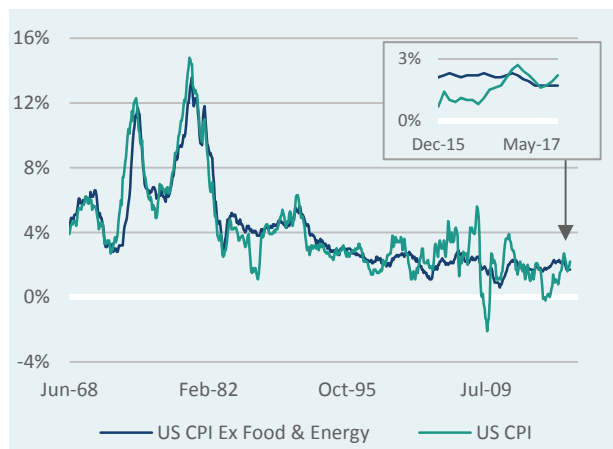
Although the Fed has belabored the “low inflation environment”, inflation measures are not extreme from a historical perspective. The perception of low inflation is likely being impacted by the long duration of the current economic expansion since rising inflation typically occurs in the late cycle. Although several Fed officials have stated they

believe below target inflation is transitory, continued softness in price levels may result in a slower pace of monetary tightening.

Market based inflation expectations increased modestly throughout the quarter with the 10-year TIPS breakeven inflation rate up 10 bps to 1.83%. Expectations are still low, and investors are receiving a low inflation premium on nominal Treasuries.

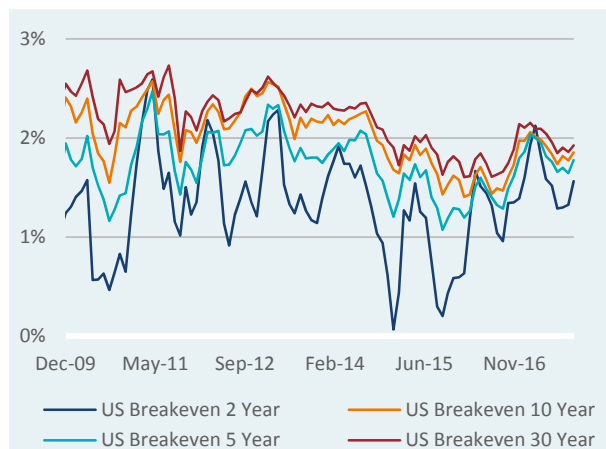
Pressures on core inflation are still low

U.S. CPI (YOY)



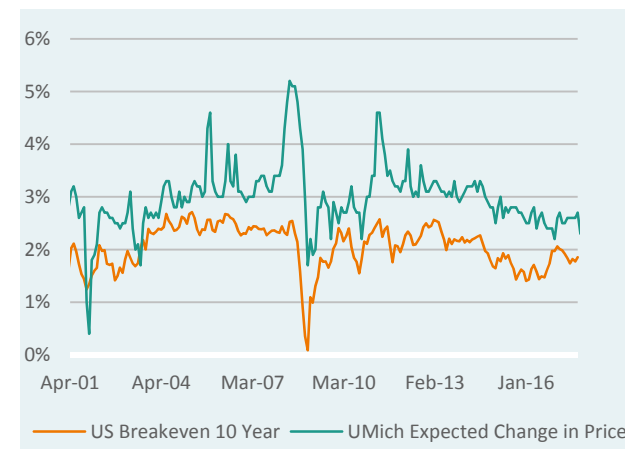
Source: FRED, as of 9/30/17

U.S. TIPS BREAKEVEN RATES



Source: FRED, as of 9/30/17

INFLATION EXPECTATIONS



Source: Bloomberg, as of 9/30/17

# Is geopolitical risk abnormally high?

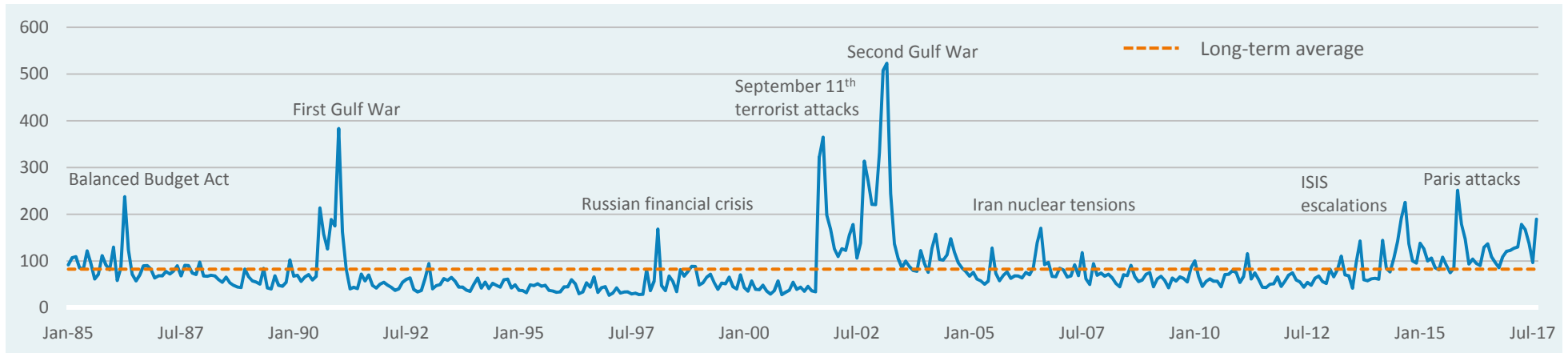
Several events over the quarter, especially increased tensions on the Korean peninsula, have led to heightened concerns over the impact of geopolitical risk on financial markets. The unique nature of each geopolitical event makes it difficult to determine whether the apparent risks are greater than past events.

The Geopolitical Risk Index (GPR) uses automated text-search results of 11 U.S. and international newspapers to give some indication of how the current environment relates to history. While the GPR is above average, it is not abnormally high. Further, given the unpredictability of

geopolitical risk and how it will affect financial markets, we do not recommend making any significant changes to portfolios.

While the concerns over a nuclear attack from North Korea have recently escalated, the threat is not a new one. Many political experts believe the probability of an attack by North Korea against the U.S. or its allies is low because it would jeopardize the existence of the current regime. Additionally, China's support of North Korea has waned in recent months after it agreed to two new rounds of sanctions through the United Nations Security Council.

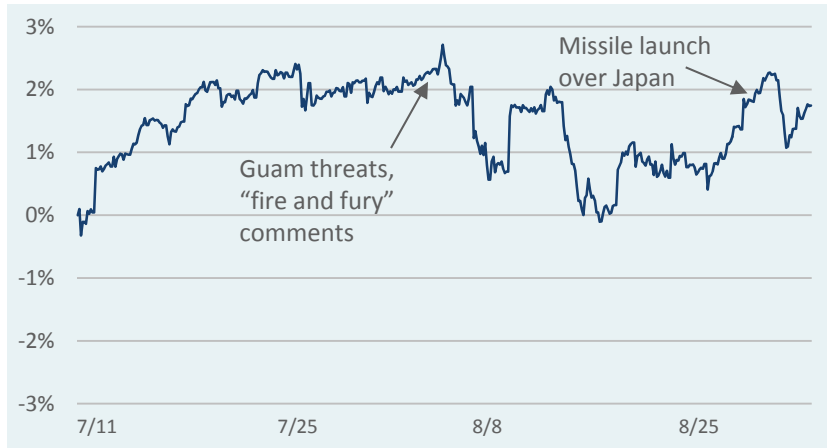
## GEOPOLITICAL RISK INDEX



Source: The Geopolitical Risk Index - Caldarra, Iacoviello, Federal Reserve Board, as of 8/31/17

# North Korea – Market reactions

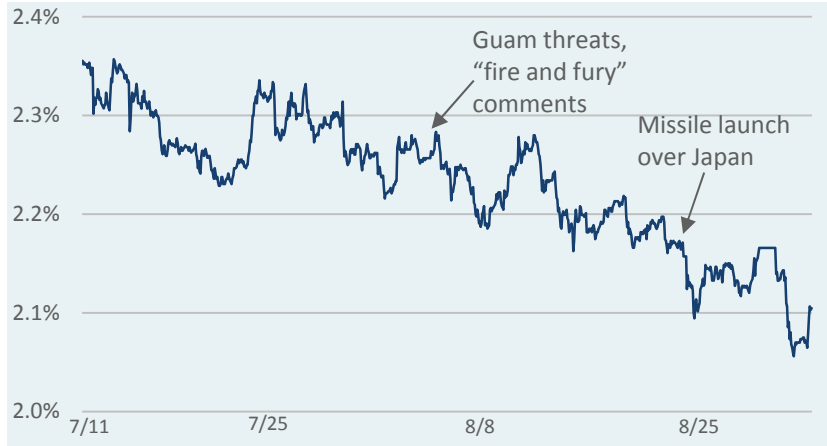
**U.S. EQUITY (CUMULATIVE PRICE MOVEMENT)**



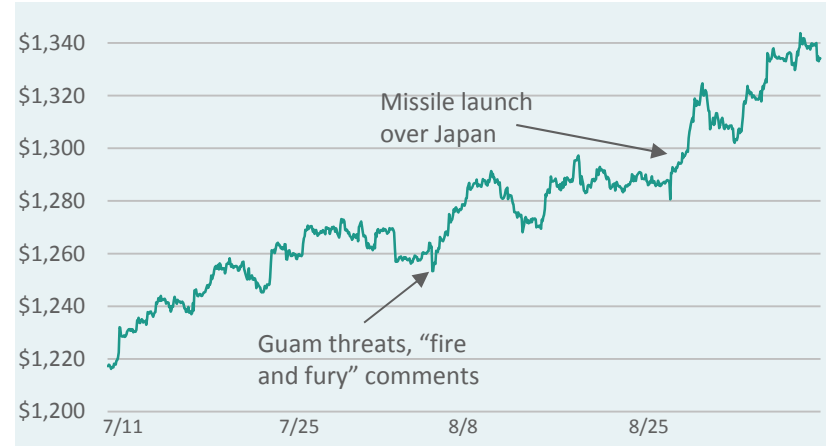
**SOUTH KOREAN EQUITY (CUMULATIVE PRICE MOVEMENT)**



**U.S. 10-YEAR TREASURY YIELD**



**GOLD PRICES**



Source: Bloomberg, S&P 500, KOSPI, 7/11/17-9/6/17

# International economics summary

- International economic growth advanced in the second quarter in both developed and emerging markets. PMIs are above 50 (indicating expansion) in nearly every country across the world, pointing towards a continuation in the recent global growth pickup.
- The IMF raised its projections for global GDP growth 0.1% for both 2017 and 2018 to 3.6% and 3.7%, respectively. For comparison, global GDP growth was 3.2% in 2016.
- Economic conditions in emerging markets have improved. Several countries, such as Brazil and Russia, are still at the beginning stages of a recovery. Lower inflation has allowed emerging central banks to pursue looser monetary policy, which should provide a tailwind to further economic growth.
- Inflation in developed countries has yet to see much pressure outside of the U.K., and remains well below central bank targets.
- Inflation in the U.K. (headline CPI) rose 3.0% YoY in September, driven partly by a weaker pound, while wages only increased by 2.2%. The Bank of England stated that a rate hike may be necessary before the end of the year to slow price increases.
- On October 1<sup>st</sup>, Catalonia passed a referendum to declare independence from Spain, which the Spanish government declared illegal. Although the Catalan prime minister accepted the vote as a mandate to declare independence, he immediately suspended this declaration with the goal of bringing the Spanish government to the negotiating table.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.2% 6/30/17	2.2% 9/30/17	4.2% 9/30/17
Western Europe	2.0% 6/30/17	1.5% 9/30/17	7.9% 6/30/17
Japan	1.4% 6/30/17	0.7% 8/31/17	2.8% 8/31/17
BRICS Nations	5.6% 6/30/17	2.0% 6/30/17	5.8% 6/30/17
Brazil	0.3% 6/30/17	2.5% 9/30/17	12.7% 9/30/17
Russia	2.5% 6/30/17	3.0% 9/30/17	4.9% 8/31/17
India	5.7% 6/30/17	3.3% 9/30/17	8.4% 12/31/16
China	6.9% 6/30/17	1.6% 9/30/17	4.0% 6/30/17

# International economics

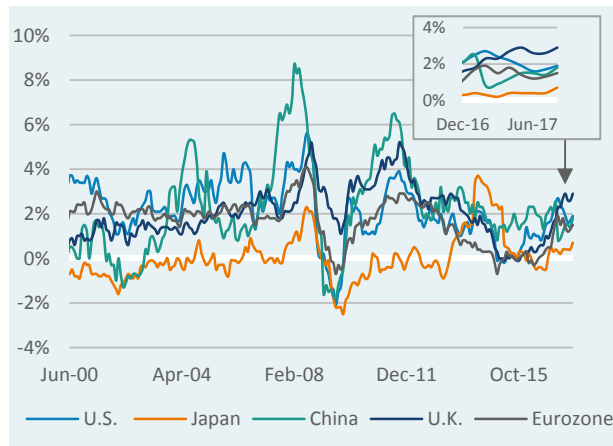
Global surveys indicate a synchronized rise in global growth which may have begun to materialize in Q2. Second quarter GDP growth improved across most countries, especially in Europe and emerging markets.

Real GDP in the Eurozone was 2.3% YoY in Q2, the fastest pace of growth in more than six years. While the ECB has discussed tapering monetary stimulus beginning next year, this will likely be a slow and delicate process. Eurozone financial conditions should continue to be supportive over the next few years. Monetary policy is not expected to change in Japan for the

foreseeable future, and will continue to be a tailwind for the Japanese economy.

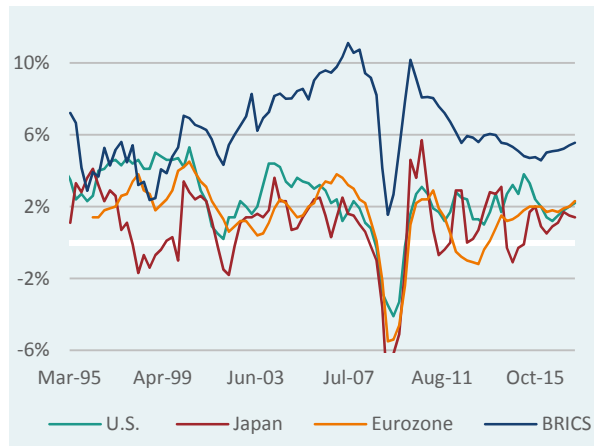
Developed market inflation remains low, with the exception of the U.K. The latest headline CPI reading for the Eurozone and Japan was 1.5% and 0.7%, respectively. Inflation in emerging economies has trended downwards, allowing central banks to cut interest rates to provide monetary stimulus. Many emerging markets are well behind developed markets in the current economic cycle.

## INFLATION (CPI)



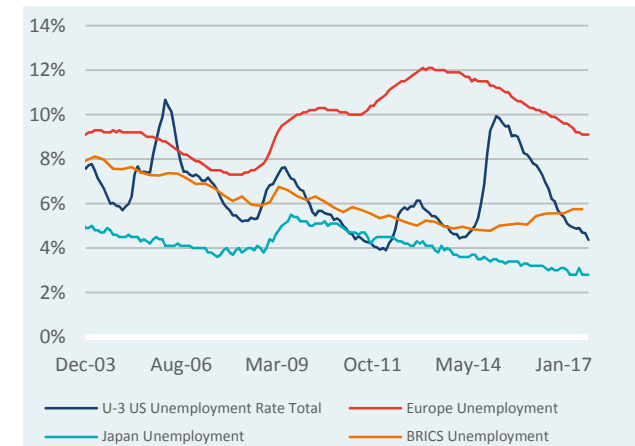
Source: Bloomberg, as of 8/31/17

## REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 6/30/17

## UNEMPLOYMENT



Source: Bloomberg, as of 8/31/17 or most recent release

# Global PMIs

## PMI 1 YEAR (CROSS SECTION) – BLUE HIGH / ORANGE LOW

	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
<b>Manufacturing</b>												
Global	52	52	53	53	53	53	53	53	53	53	53	53
Developed	53	53	54	54	54	54	54	54	54	54	54	55
US	52	54	55	56	58	57	55	55	58	56	59	61
UK	54	53	56	55	55	54	57	56	54	55	57	56
Eurozone	54	54	55	55	55	56	57	57	57	57	57	58
Germany	55	54	56	56	57	58	58	60	60	58	59	61
Japan	51	51	52	53	53	52	53	53	52	52	52	53
EM	51	51	51	51	51	52	51	51	51	51	52	51
<b>Services</b>												
Global	53	53	53	54	53	54	54	54	54	54	54	54
Developed	54	54	54	55	54	54	54	54	55	55	55	55
US	55	56	57	57	58	55	58	57	57	54	55	60
UK	55	55	56	55	53	55	56	54	53	54	53	54
Eurozone	53	54	54	54	56	56	56	56	55	55	55	56
Germany	54	55	54	53	54	56	55	55	54	53	54	56
Japan	51	52	52	52	51	53	52	53	53	52	52	51
EM	53	54	54	54	56	56	56	56	55	55	55	56

Source: Bloomberg, as of 9/30/17 – PMIs are based on survey data compiled from purchasing and supply managers. Survey questions are asked about several different components of each sector, such as new orders, employment, prices, etc. The final PMI reading is based on the percentage of respondents with a positive view on the sector. A reading above 50 indicates expansion in the sector while a reading below 50 indicates contraction. Historically, PMIs have had a relatively strong positive relationship with actual economic activity.

# Fixed income rates & credit

# Interest rate environment

- After bottoming out to a post-election low of 2.04% on September 7<sup>th</sup> following increased tensions with North Korea, the U.S. 10-year rose to finish the quarter slightly higher at 2.33%.
- The Fed kept interest rates unchanged over the quarter, citing concerns over the lack of inflation. However, Fed officials have communicated that they believe recent low inflation is transitory. An additional rate hike in December appears likely based on market implied probabilities.
- The Fed will begin to reduce its balance sheet in October. The central bank's plan is to runoff \$6 billion of Treasuries and \$4 billion of mortgage-backed securities per month. This will be scaled up commensurately every 3 months to \$50 billion per month. At this pace it will take more than seven years to return the balance sheet to pre-crisis levels.
- U.K. sovereign yields experienced the biggest increase among developed countries after the Bank of England acknowledged that a rate hike may be necessary by the end of the year to slow inflation.
- Very little monetary tightening is priced into short-term developed market interest rates over the next few years. Although we expect central banks to be cautious, faster than expected increases in interest rates represents a potential risk.
- Our underweight position to both U.S. and developed sovereign rates (currency hedged) was unchanged over the quarter, primarily due to the low carry. However, Treasuries still play an important role in portfolios by offering equity risk diversification.

Area	Short Term (3M)	10 Year
United States	1.02%	2.33%
Germany	(0.70%)	0.46%
France	(0.59%)	0.74%
Spain	(0.45%)	1.60%
Italy	(0.39%)	2.11%
Greece	2.02%	5.66%
U.K.	0.28%	1.37%
Japan	(0.17%)	0.07%
Australia	1.71%	2.84%
China	3.04%	3.62%
Brazil	7.46%	9.77%
Russia	7.76%	7.66%

Source: Bloomberg, as of 9/30/17



# Fed monetary tightening

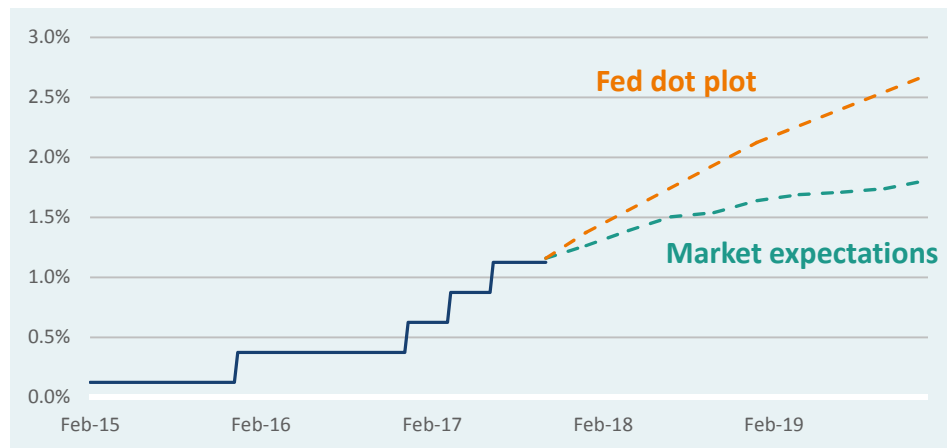
The market's expectation of a rate hike in December increased considerably throughout the quarter to 90%. Although core inflation remained below the official 2% target, several Fed officials have stated they believe the factors dampening inflation are transitory and prices should gradually increase along with wages. According to its own forecast, the Fed is expecting one additional hike this year, three hikes in 2018, and two more in 2019. However, market expectations are much more conservative, pricing in one more hike this year, and only two additional hikes through 2019.

During this tightening cycle the Fed has continually undelivered on projected rate increases. We believe it is reasonable to think this trend will continue since the risk of tightening too quickly outweighs the risk of moving too slowly.

Balance sheet reduction, which began in October also represents a form of gradual tightening. Based on the current plan, the balance sheet will fall by \$1.7 trillion to \$2.8 trillion at the end of 2020. According to the Fed, the runoff will continue as scheduled unless interest rates are brought back down to 0%.

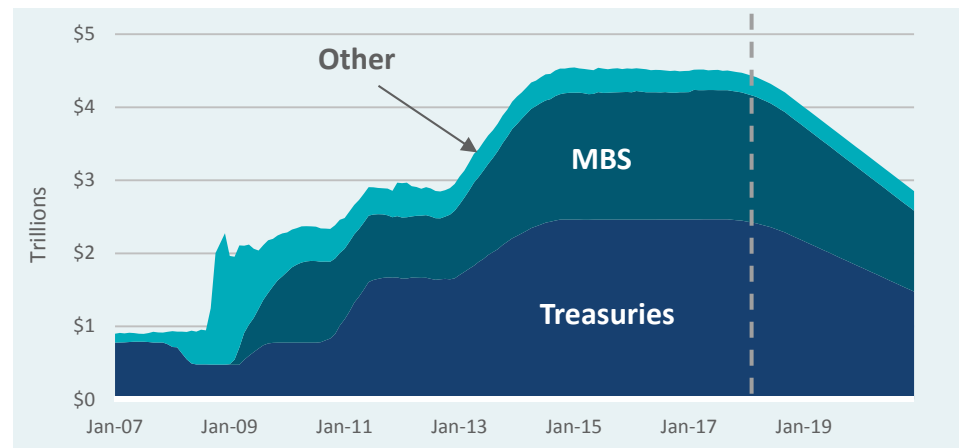
The market is expecting the Fed to move cautiously with further monetary tightening

FED RATE HIKE EXPECTATIONS



Source: Bloomberg, as of 10/6/17

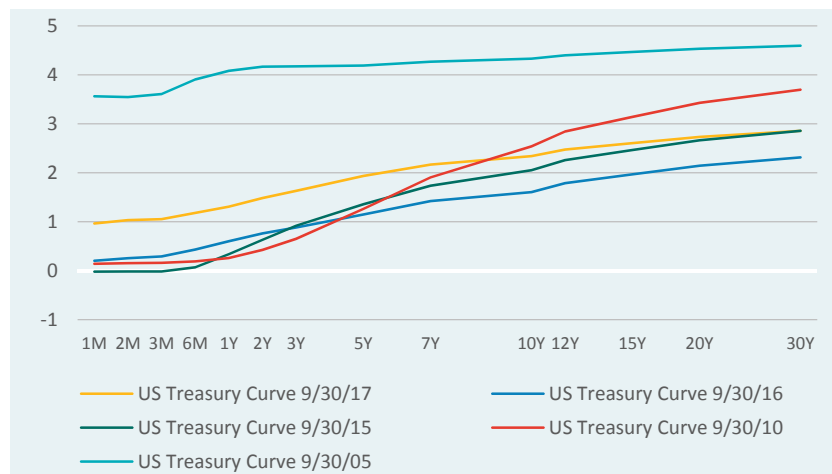
FED BALANCE SHEET REDUCTION EXPECTATIONS



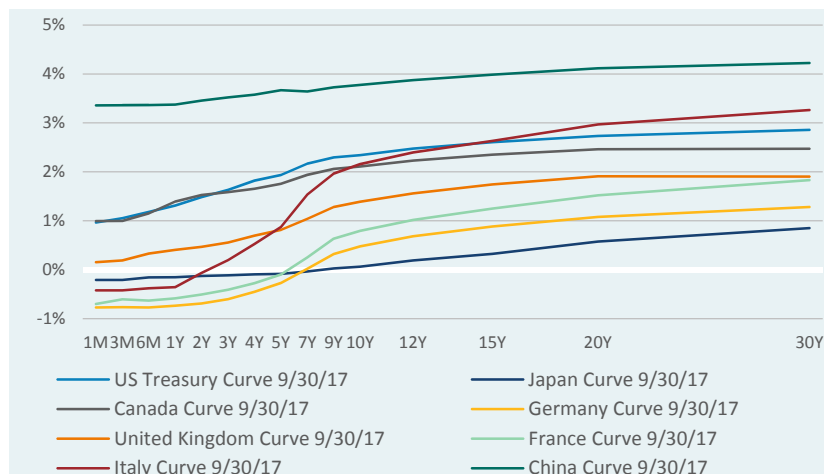
Source: Federal Reserve, as of 9/29/17, projections are based on the Fed's announced reduction plan

# Yield environment

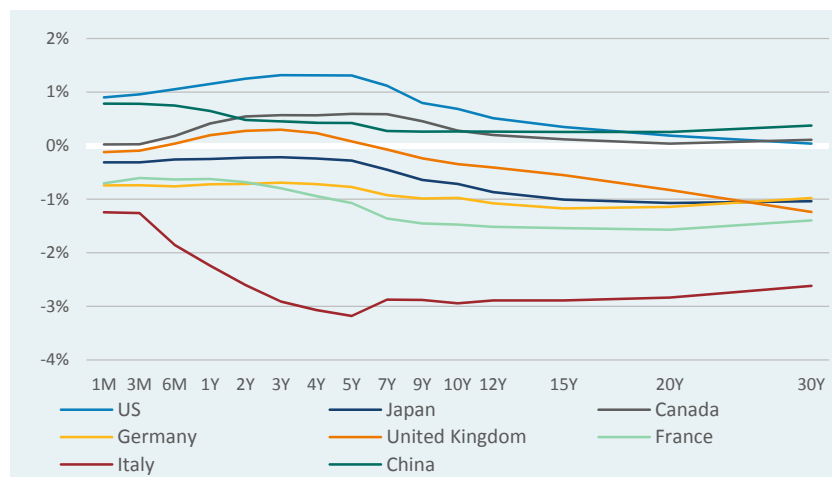
U.S. YIELD CURVE



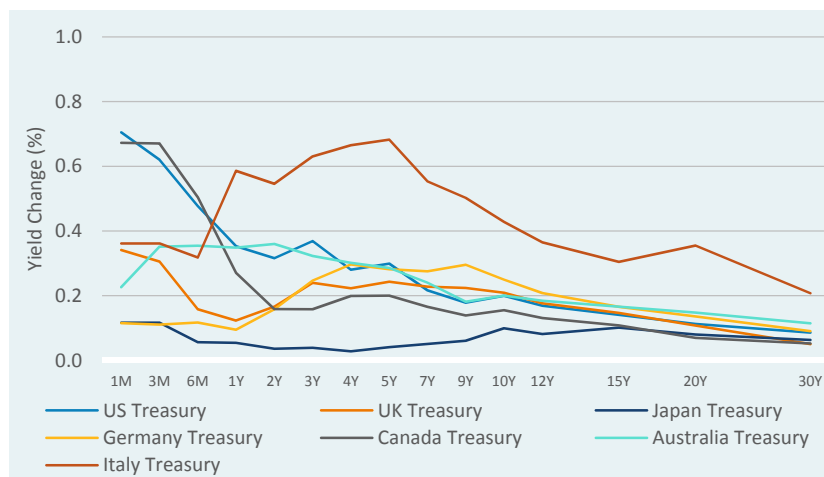
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 9/30/17

# Credit environment

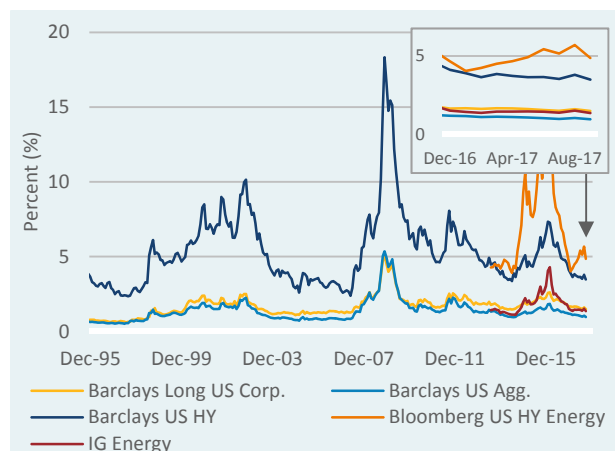
Credit spreads fell slightly over the quarter, remaining at low levels. U.S. high yield option-adjusted spreads compressed in the third quarter to 3.5%, and the asset class generated a 2.0% total return (BBgBarc U.S. Corp. High Yield Index). High yield spreads are tighter than those of bank loans on a duration neutral basis.

Credit spreads have continued to tighten close to multi-year lows, driven by strong corporate fundamentals and general macroeconomic improvement. The combination of tighter credit spreads and additional carry (greater yield) over Treasuries led credit to broadly outperform U.S. Treasuries in

Q3. High yield spreads began the year at 4.0% and have tightened by 51 bps year-to-date. Credit spreads have historically been a good indicator of future performance relative to Treasuries.

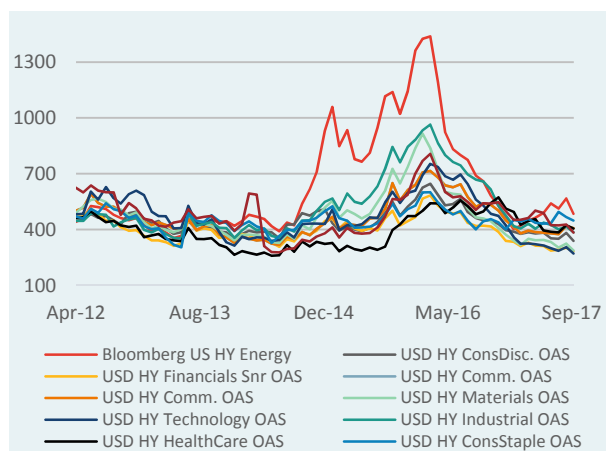
High yield energy spreads compressed over the quarter by 55 bps to 4.8% - a very moderate compression following the 2014 commodity drawdown. Year-to-date, the best performing sectors were financials and utilities. Industrials had weaker performance, most specifically consumer cyclical and the energy sector, which has been recovering from the recent commodity crisis.

## HIGH YIELD SECTOR SPREADS



Source: Barclays, Bloomberg, as of 9/30/17

## SPREADS



Source: Bloomberg, as of 9/30/17

Market	Credit Spread (9/30/17)	Credit Spread (1 Year Ago)
Long US Corporate	1.5%	2.0%
US Aggregate	1.0%	1.4%
US High Yield	3.5%	4.8%
US High Yield Energy	4.4%	6.1%
US Bank Loans	3.6%	3.9%

Source: Barclays, Credit Suisse, Bloomberg, as of 9/30/17

# Issuance and default

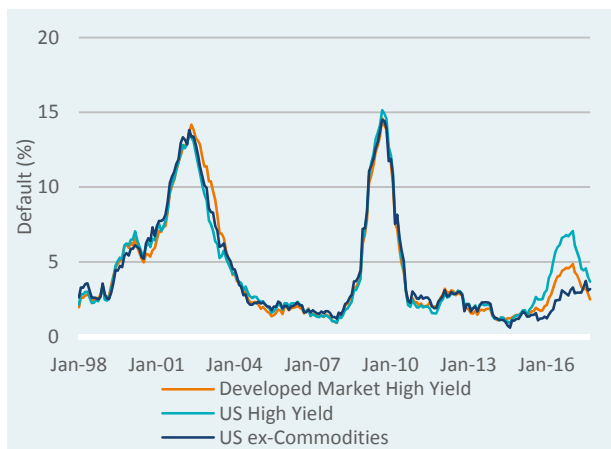
Default activity continued to stabilize in U.S. and international credit markets. Only one U.S. company defaulted in September, the third consecutive month with only one or no defaults, which was the first time this occurred since May 2011. Default volume in the third quarter was the lowest since Q4 2013.

Rolling default rates are currently running below long-term averages. Active management may offer value to investors in the high yield space.

The effects of commodity related defaults are subsiding

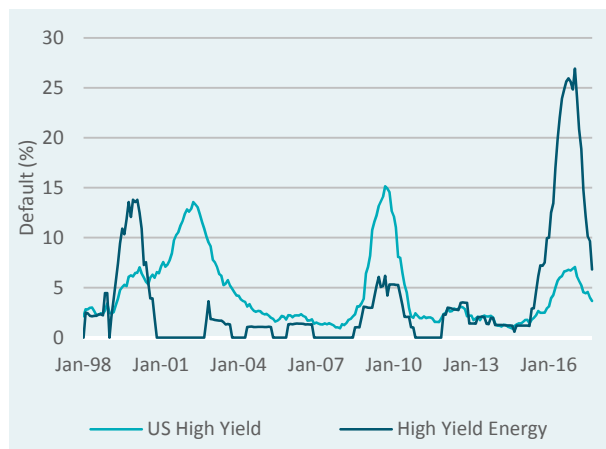
Senior loan and high yield markets stabilized further with the majority of par defaults last year coming from the energy and metals/mining sectors. The retail sector has accounted for the second most defaults.

HY DEFAULT TRENDS (ROLLING 1 YEAR)



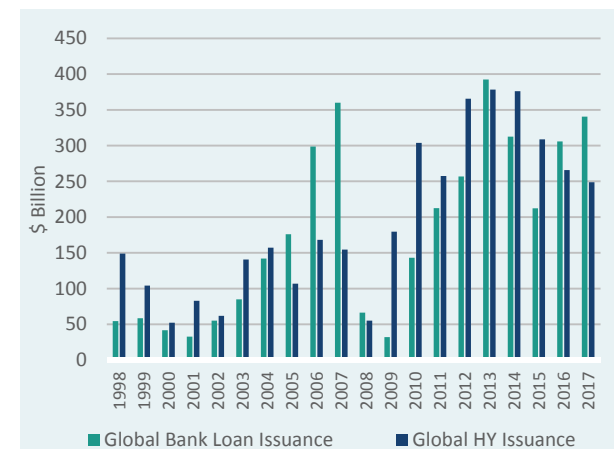
Source: BofA Merrill Lynch, as of 9/30/17

ENERGY DEFAULT TRENDS



Source: BofA Merrill Lynch, as of 9/30/17

GLOBAL ISSUANCE



Source: Bloomberg, BofA Merrill Lynch, as of 9/30/17

# Equity

# Equity environment

- We maintain a moderate overweight to equities with a preference for emerging markets. Emerging markets have historically delivered outsized economic growth and performance during strong global growth environments. These markets remain attractively valued relative to developed markets, though valuations rose over the quarter.
- U.S. equities moved upward in Q3, setting record highs. Performance has been fueled by earnings growth.
- The possibility of U.S. corporate tax reform has led the market to price in greater expectations for future equity earnings growth. Significant uncertainty remains around the timing and nature of the reform, and the outcome will have a material impact on equity prices in the short-term.
- Equity volatility remains unusually low. Lower volatility has historically indicated less downside risk in equity markets.
- According to FactSet as of October 6th, the estimated Q3 earnings growth rate of the S&P 500 was 2.8% YoY, a materially weaker figure than the 7.5% which was expected as of June 30. Much of the weakness was caused by expected insurance industry losses due to hurricane damage. Excluding the insurance sector, earnings are expected to grow by 4.9% YoY.
- U.S. dollar weakness year-to-date has caused significant earnings differences between companies with greater international sales focus and companies that are more domestically-focused. Overall, U.S. dollar movement has acted as a tailwind to earnings growth.

	QTD TOTAL RETURN		YTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	4.5%		14.2%		18.5%	
US Small Cap (Russell 2000)	5.7%		10.9%		20.7%	
US Large Value (Russell 1000 Value)	3.1%		7.9%		15.1%	
US Large Growth (Russell 1000 Growth)	5.9%		20.7%		21.9%	
International Large (MSCI EAFE)	5.4%	3.7%	20.0%	12.3%	19.1%	20.5%
Eurozone (Euro Stoxx 50)	8.5%	5.2%	25.2%	13.2%	29.2%	24.9%
U.K. (FTSE 100)	4.8%	2.1%	15.7%	7.2%	14.9%	11.9%
Japan (NIKKEI 225)	2.0%	2.7%	12.1%	9.4%	13.4%	27.0%
Emerging Markets (MSCI Emerging Markets)	7.9%	7.2%	27.8%	22.1%	22.5%	19.6%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 9/30/17

# Domestic equity

U.S. equities moved upward over the quarter (S&P 500 +4.5%), reaching record highs, but underperformed international markets (MSCI EAFE +5.4%). Earnings growth remained the primary driver of robust equity performance, though Q3 earnings growth expectations have fallen due to hurricane-related insurance industry losses. The possibility of U.S. tax reform has likely contributed to a positive domestic equity outlook.

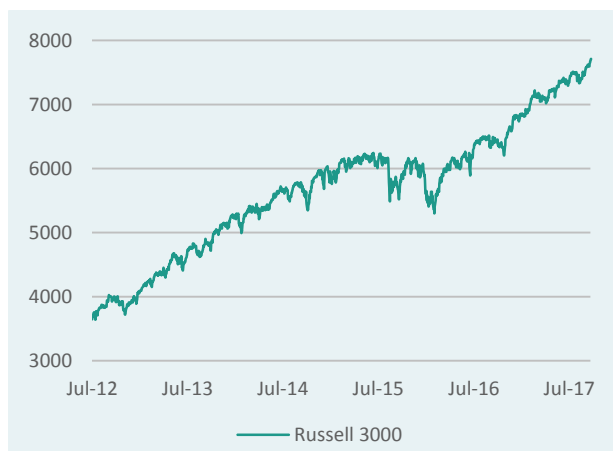
According to FactSet, as of October 6th the estimated Q3 earnings growth rate of the S&P 500 was 2.8% YoY, a

materially weaker figure than the 7.5% which was expected as of June 30. Most of the weakness was caused by insurance industry losses due to hurricane damage. Excluding this sector would result in a current estimate of 4.9% overall growth rather than 2.8%.

U.S. domestically-facing business in aggregate are expected to face flat sales and revenue growth, while externally-facing businesses are expected to produce strong growth. U.S. dollar depreciation and international growth have created a tailwind to the performance of externally-focused U.S. businesses.

We maintain a neutral weight to U.S. equities

## U.S. EQUITIES



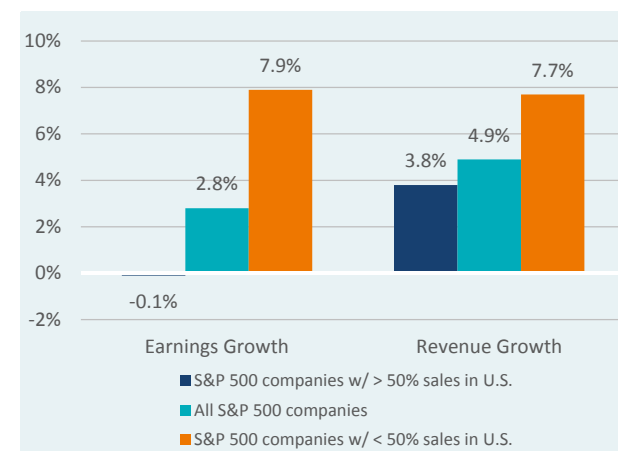
Source: Russell Investments, as of 9/29/17

## S&P 500 EPS GROWTH



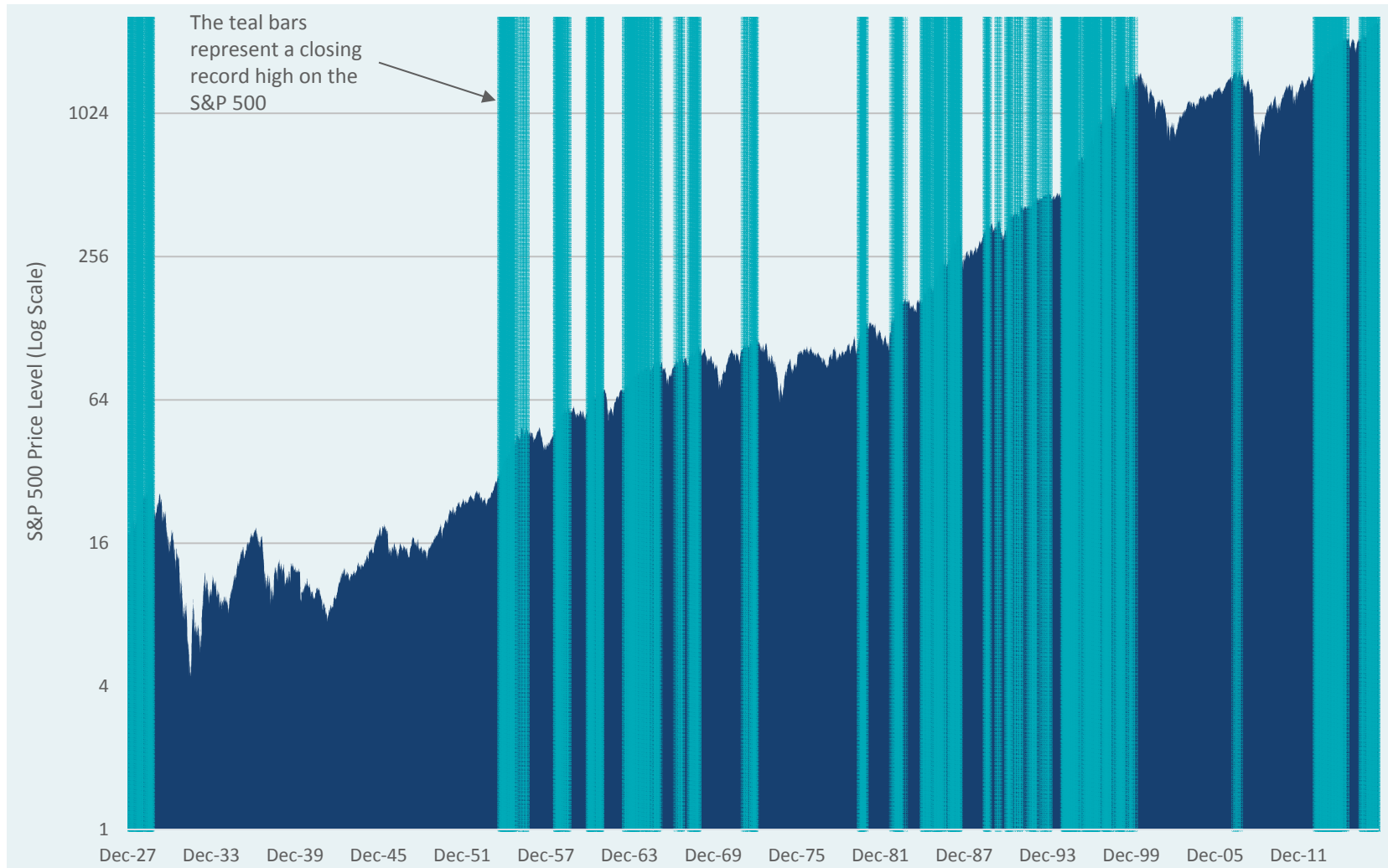
Source: Bloomberg, as of 9/30/17

## Q3 EXPECTATIONS



Source: FactSet, as of 10/6/17

# Record highs

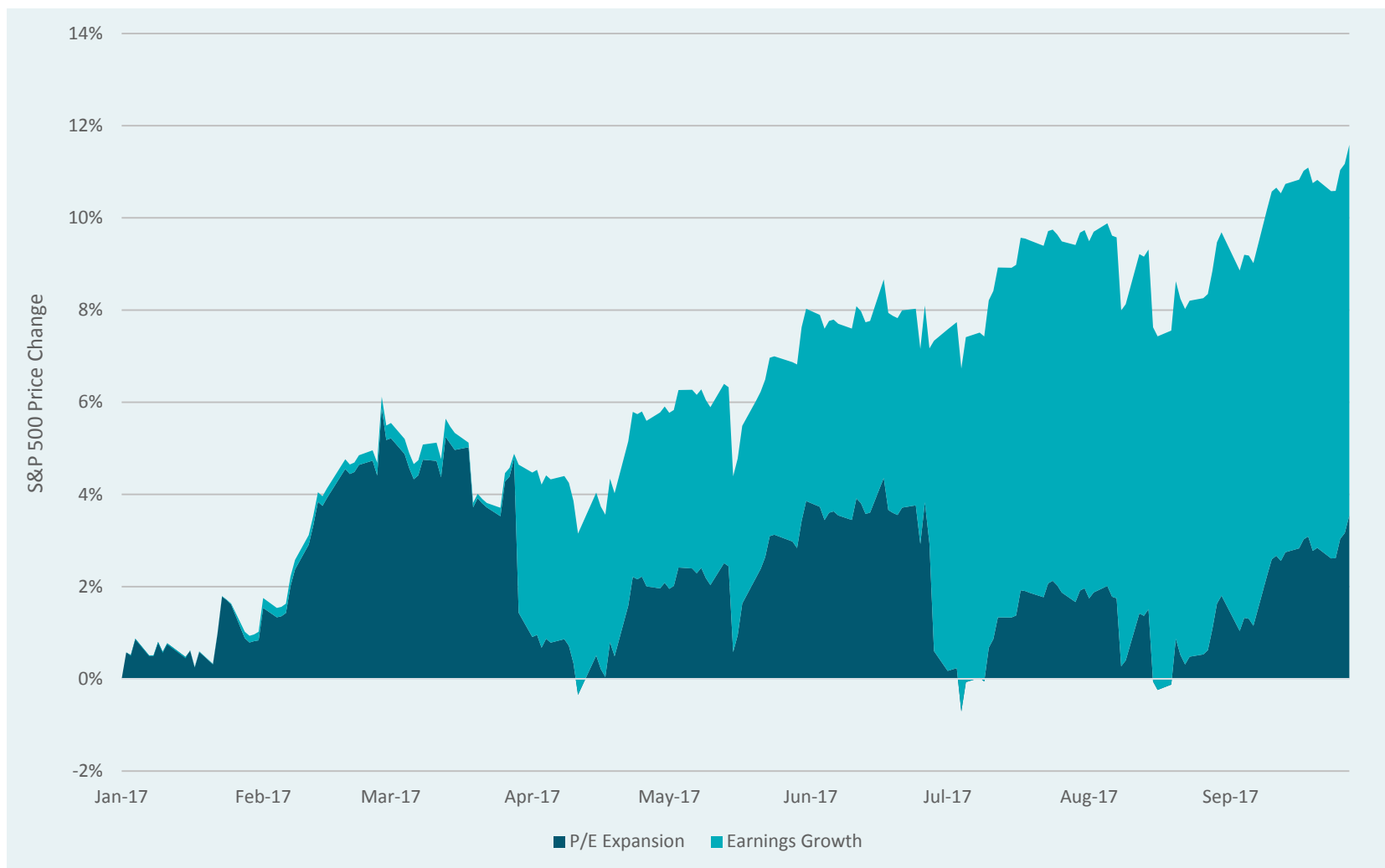


Equity market highs are reached on 5% of market trading days

Source: Verus, Bloomberg, as of 9/29/17, based on the closing price



# What is driving U.S. equities?



S&P 500 price appreciation has been driven by earnings growth so far this year

Source: Verus, Bloomberg, as of 9/29/17

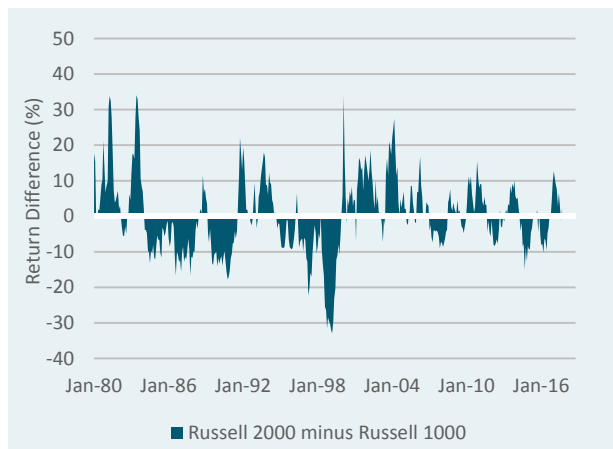
# Domestic equity size and style

Large cap equities led small cap equities through July and August. However, small cap equities rallied in September (+6.2% in the month) and outperformed large cap equities over the quarter. The move in September was partially attributed to an increased focus on U.S. tax reform. If passed, tax cuts will likely provide a greater marginal benefit to smaller companies. Expectations of lower taxes and deregulation have contributed to small cap price appreciation that has outpaced earnings. The relative P/E ratio between large and small companies is at its highest level since the financial crisis.

Large cap equities were led by the technology sector, from which the strongest contributors were semiconductor and internet software companies. The top three individual contributors were Apple, Facebook and Microsoft. Small cap equities were mainly driven by producer durables companies.

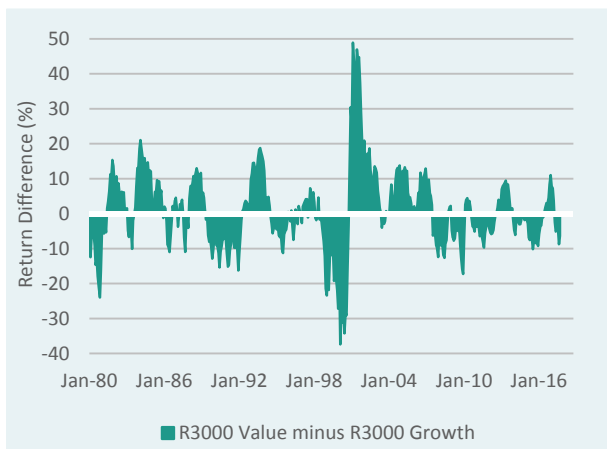
Growth outperformed value in Q3 due to a higher relative weighting to technology companies. Financial services, the most heavily weighted sector in value, returned a positive 5.0%, but still underperformed technology by 3.2%.

**SMALL CAP VS LARGE CAP (YOY)**



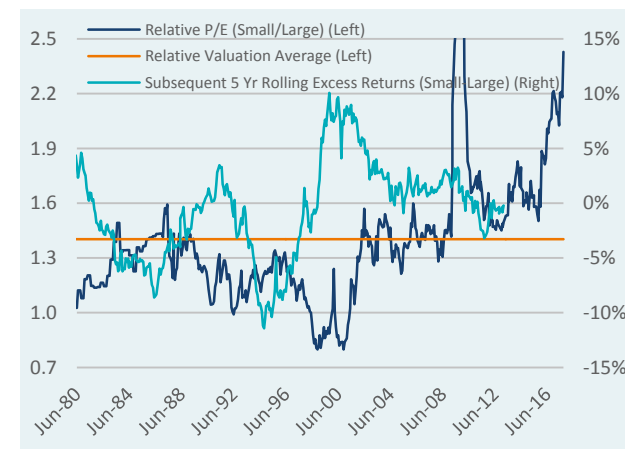
Source: Russell Investments, as of 9/30/17

**VALUE VS GROWTH (YOY)**



Source: Russell Investments, as of 9/30/17

**U.S. LARGE VS. SMALL RELATIVE VALUATIONS**



Source: Russell, Bloomberg, as of 9/30/17

# International equity

International equities outperformed domestic equities during the third quarter. The MSCI ACWI ex U.S. returned 6.2% (+4.6% hedged) while the S&P 500 returned 4.5%. Consistent with the first half of 2017, emerging markets outperformed (MSCI EM +7.9% unhedged) both the EAFE Small Cap Index (+7.5%) and the broad EAFE Index (+5.4%).

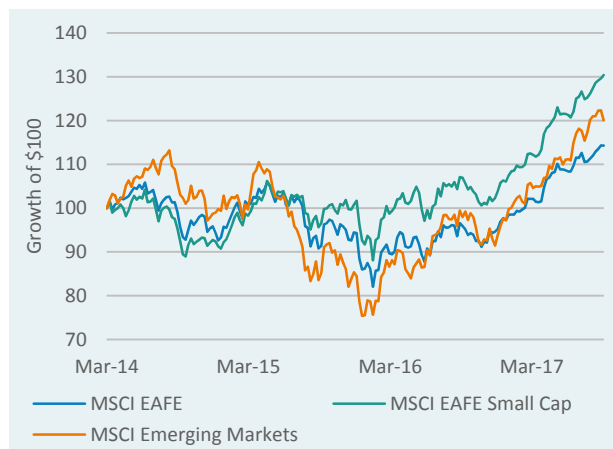
Japanese equities were the largest contributors to the EAFE index in Q3, particularly companies within the industrials and consumer discretionary sectors. Despite the positive moves, Japanese equity valuations based on earnings and

sales remain attractive relative to those in Europe and the United Kingdom.

MSCI EAFE valuations have remained relatively stable in 2017 as earnings and sales growth have kept pace with price appreciation.

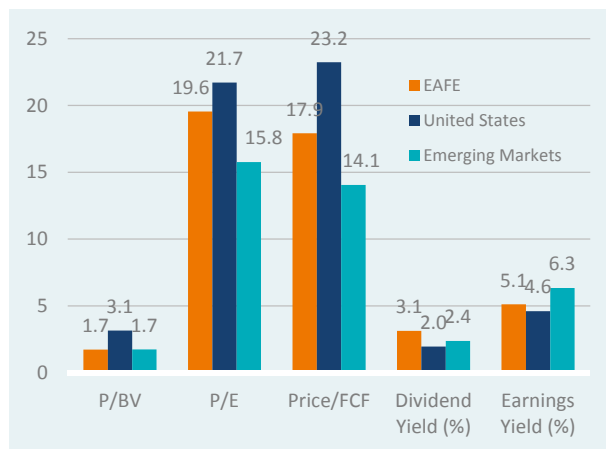
Currency effects added a positive 1.7% to the unhedged MSCI EAFE in Q3 (+7.6% year-to-date), as the U.S. dollar fell for a third consecutive quarter against a trade weighted basket of currencies.

## GLOBAL EQUITY PERFORMANCE



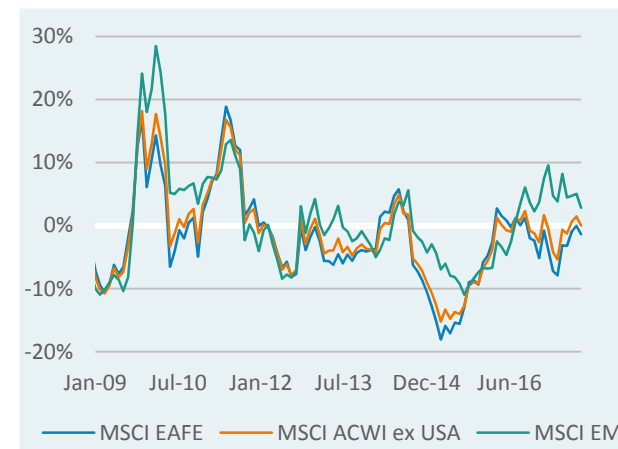
Source: Bloomberg, as of 9/30/17

## VALUATIONS



Source: Bloomberg, as of 9/30/17

## EFFECT OF CURRENCY (1 YEAR ROLLING)



Source: MSCI, as of 9/30/17

# Emerging market equity

We maintain an overweight to emerging market equities, which have historically delivered outsized economic growth and performance during stronger global growth environments.

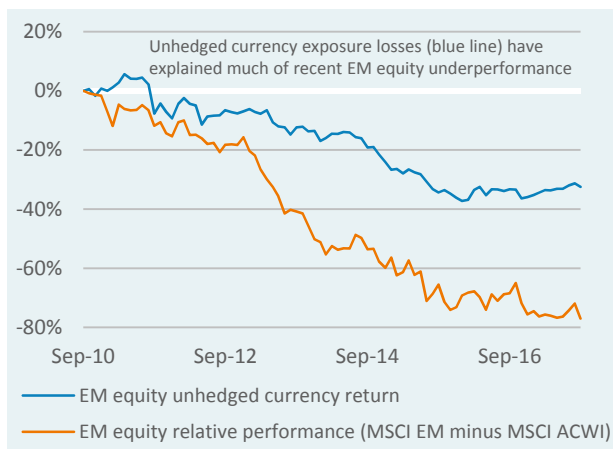
Emerging market equities have outperformed developed markets over the quarter (7.9% vs. 4.8%) and the past year (22.5% vs 18.2%), reversing an extended period of underperformance following the global financial crisis. Currency movement was a significant contributor to

emerging market underperformance during this time, and the recent reversal in currency trends has been additive to the outperformance of these markets.

Valuations have risen off of low levels, bolstering returns. These markets are no longer cheap relative to history though strong earnings growth and mean reversion of currencies could likely fuel further outsized equity gains.

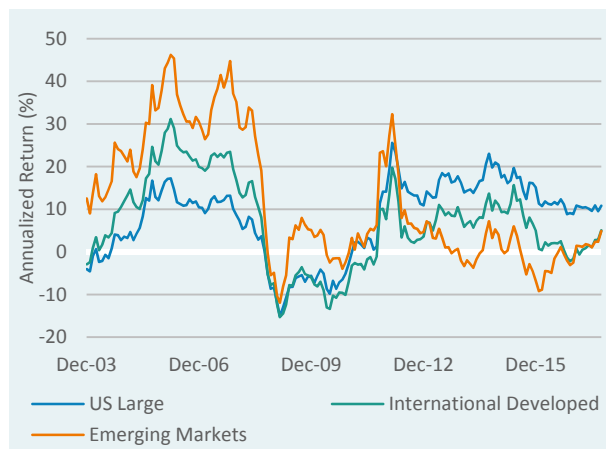
Accelerating global growth should have a positive effect on emerging economies

## EMERGING MARKET FX & RELATIVE PERFORMANCE (7YR CUMULATIVE)



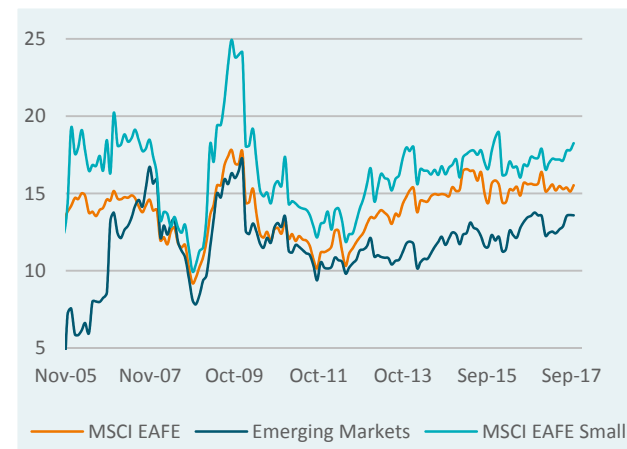
Source: MSCI, JP Morgan EM Currency Index, as of 9/30/17

## EQUITY PERFORMANCE (3YR ROLLING)



Source: Standard & Poor's, MSCI, as of 9/30/17

## FORWARD P/E RATIOS



Source: Bloomberg as of 9/30/17

# Emerging markets – High “growth beta”

During Q3 the trend of coordinated global economic growth continued. Emerging market equities materially outperformed global equities over the quarter (7.9% MSCI EM vs. 5.2% MSCI ACWI) and year-to-date (27.8% vs. 17.3%).

Emerging markets have historically performed well during periods of global growth acceleration, in terms of both equity performance and underlying economic growth.

The relationship between emerging market equities and world economic growth has historically exhibited a beta of 9.6. This suggests that, on average, investors might expect a 1% improvement in global growth to result in emerging market equity outperformance of 9.6%.

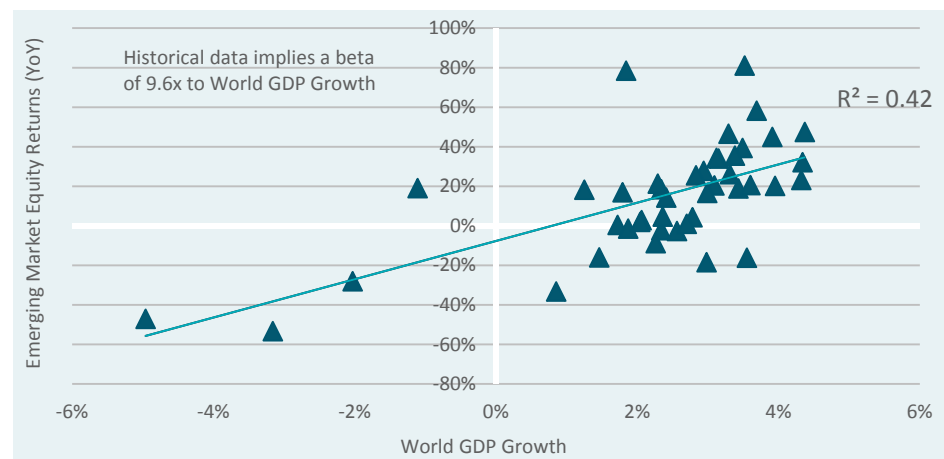
It is important to note that this relationship has also held on the downside, as emerging markets tend to produce poor returns during weak growth environments.

EM GROWTH RELATIONSHIP TO GLOBAL GROWTH



Source: Bloomberg, since 1996 – BRICS used to represent emerging market economic growth

EM EQUITY PERFORMANCE RELATIONSHIP TO GLOBAL GROWTH



Source: Bloomberg, since 1996 - MSCI

# Equity valuations

Equity valuations remain elevated compared to history, although recent price appreciation has been driven by earnings growth as opposed to multiple expansion. In international developed markets (EAFE), earnings growth over the past two quarters has outpaced price appreciation, leading to a slight decline in P/E ratios. The opposite has occurred in emerging markets where strong price gains have resulted in higher valuations. Relative to developed countries, emerging equities still appear attractive from a valuation perspective but are no longer considered cheap. Other valuation measures such as price-to-sales (P/S) ratios

also indicate equity prices are rich, especially in the U.S. The P/S ratio at the end of September was 2.1, the highest level since 2000. During this cycle, sales growth has lagged earnings growth (per share), influenced by expanding profit margins and an increase in equity buybacks.

Historically, higher valuations have led to lower future returns over the medium-term, on average. However, valuations can remain elevated for long periods of time and may be partially justified given the current environment of low interest rates and inflation.

**Valuations are elevated, but relative opportunities exist**

**TRAILING P/E RATIOS**



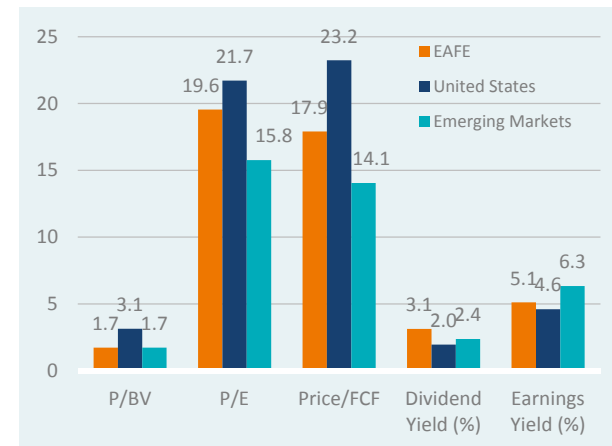
Source: Bloomberg, as of 9/30/17

**TRAILING PRICE-TO-SALES RATIOS**



Source: Bloomberg, as of 9/30/17

**CURRENT VALUATION METRICS**



Source: Bloomberg, as of 9/30/17

# Equity volatility

Despite a rise in geopolitical risks, including tensions on the Korean peninsula, realized volatility in equities over the quarter was extremely low, consistent with recent trends. In September, S&P 500 annualized volatility was 5%, the lowest level for a calendar month on record.

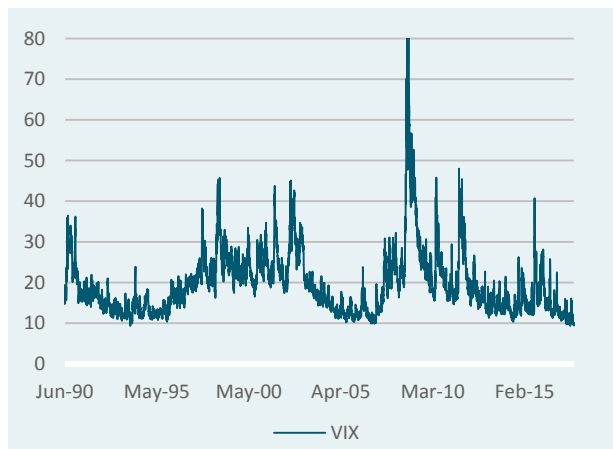
While many market participants have voiced concern over complacency, low volatility generally accompanies bull markets. We continue to watch volatility trends closely, but at this time do not view the current environment as a bearish signal. For investors in strategies with specific

volatility targets, such as risk parity, it is important to be aware of rising equity exposure and leverage. A spike in volatility may lead to forced equity selling during a downturn in order to maintain the risk target.

The CBOE Skew Index, which looks at the steepness of the volatility curve, is above its historical average. This indicates investors are still paying a premium for downside protection.

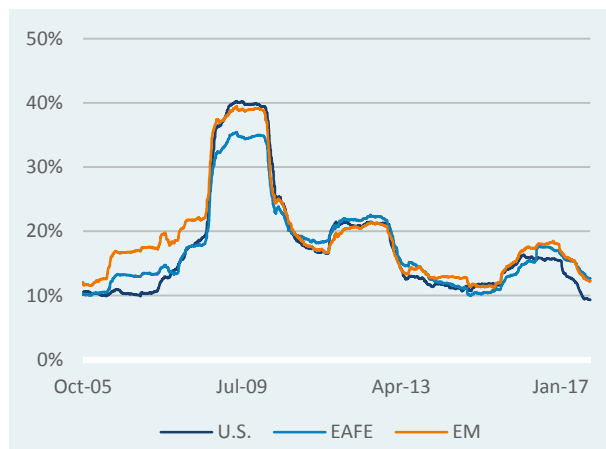
Equity volatility has trended downwards

U.S. IMPLIED VOLATILITY



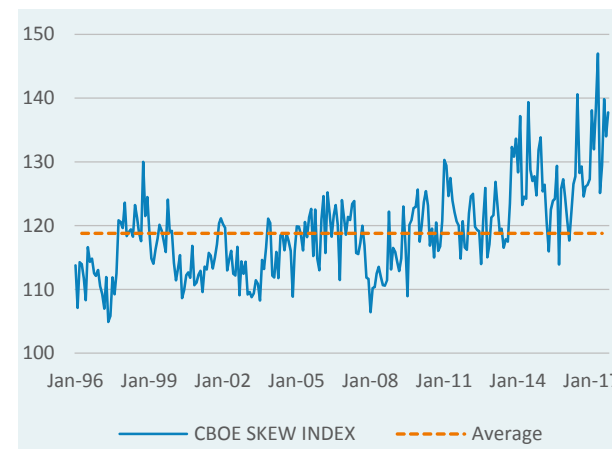
Source: CBOE, as of 9/30/17

REALIZED 1-YEAR ROLLING VOLATILITY



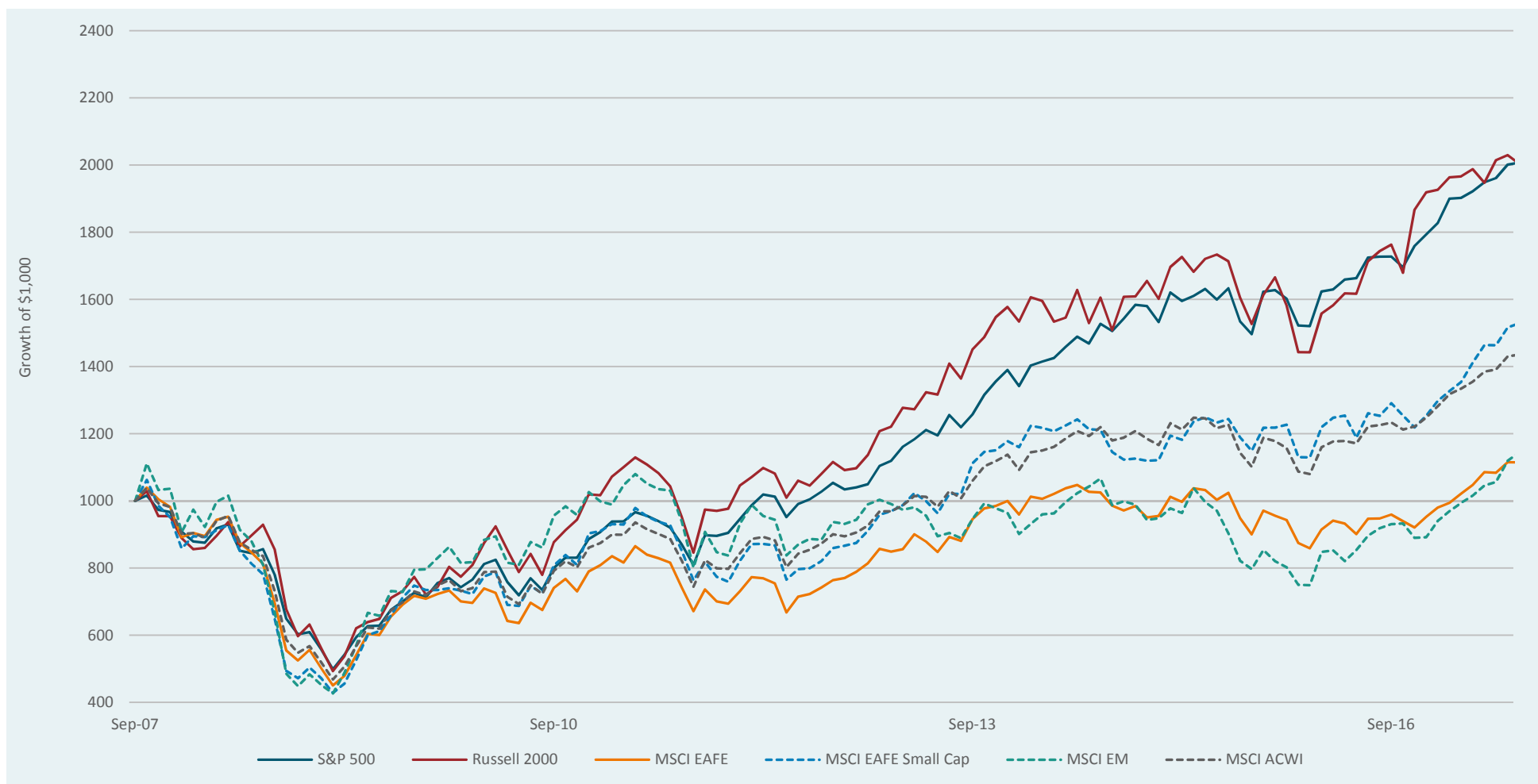
Source: Bloomberg, as of 9/30/17

U.S. VOLATILITY SKEW



Source: CBOE, as of 9/30/17

# Long-term equity performance



Source: MPI, as of 9/30/17



# Other assets

# Hedge funds

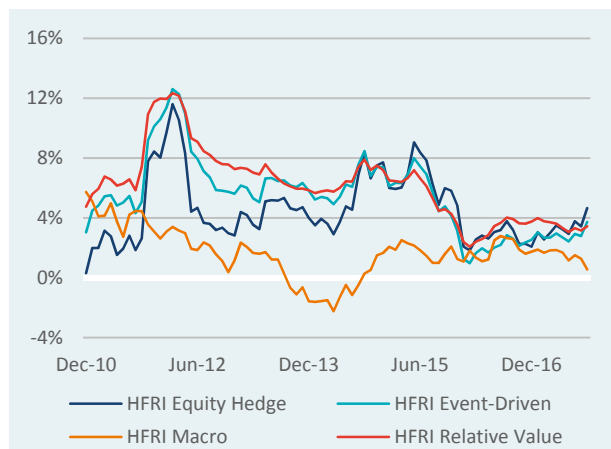
In aggregate, hedge funds returned 2.2% during Q3 and 5.5% year-to-date per HFRI. Equity hedge strategies were the top performer for both periods as they gained 3.5% and 9.6%, respectively. Short biased funds stood out as the only negative sub strategy during Q3, which is typical during equity rallies. Funds with greater net-long market exposure benefited from strong year-to-date equity market returns.

Emerging market hedge funds were notable winners this year as HFRI reported performance of 4.8% for Q3 and 14.7% year-to-date. Funds focused on Latin America (+10.2% for Q3,

16.5% YTD) were particularly strong performers. Those markets rallied due in part to a combination of pro-business politicians retaining power, improving economic growth prospects and stabilizing commodity markets.

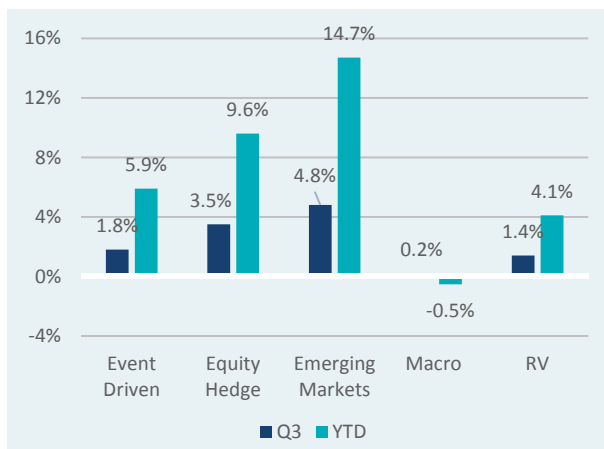
We are closely monitoring volatility levels because we understand that sudden changes in volatility regimes can negatively impact high gross leverage strategies. Our concerns are somewhat balanced due to more normal net leverage levels.

## 3-YEAR ROLLING STYLE PERFORMANCE



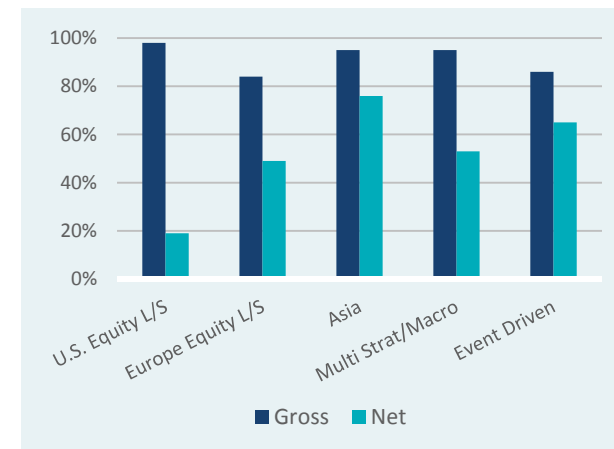
Source: HFRI, as of 9/30/17

## Q3 & YTD STYLE PERFORMANCE



Source: HFRI, as of 9/30/17

## LEVERAGE (PERCENTILE RANK SINCE 2010)



Source: Morgan Stanley, as of 9/30/17

# Currency

The U.S. dollar depreciated an additional 2.7% in Q3 against a trade weighted basket of developed currencies, which brought the year-to-date decline to 8.0%. The downward trend partially reversed in September after prospects of another interest rate hike in December from the Fed helped lead to the first month of dollar appreciation so far this year. The euro appreciated 3.4% against the dollar over the quarter, influenced by improving economic conditions and the possibility of ECB tightening monetary policy.

After several years of depreciation, emerging market

currencies have stabilized. Improved current account balances and economic growth conditions have provided a positive backdrop for these currencies moving forward. However, a quicker than expected rise in U.S. interest rates could represent a headwind to further appreciation.

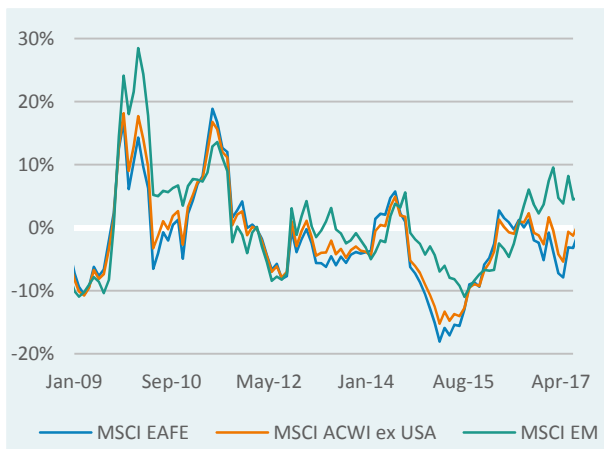
Currency losses from unhedged exposure to developed international equities has begun to reverse due to recent dollar weakness, although currency exposure has still resulted in materially higher volatility.

**U.S. DOLLAR TRADE WEIGHTED INDEX**



Source: Federal Reserve, as of 9/30/17

**EFFECT OF CURRENCY (1-YEAR ROLLING)**



Source: MPI, as of 9/30/17

**JPM EM CURRENCY INDEX**



Source: JPMorgan, as of 9/30/17

# Appendix

# Periodic table of returns

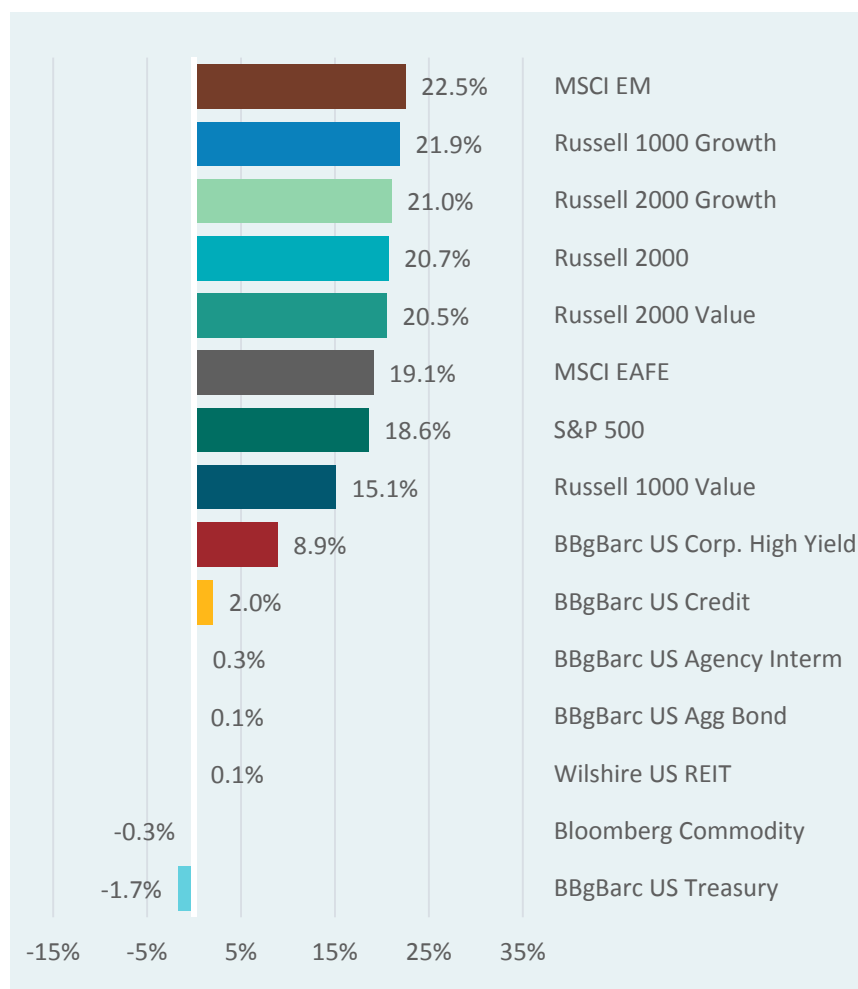
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	YTD	5-Year	10-Year
Emerging Markets Equity	16.6	38.4	23.2	35.2	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	27.8	15.3	9.1
Large Cap Growth	8.1	37.8	23.1	32.9	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	20.7	14.3	8.5
International Equity	6.4	37.2	22.4	31.8	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	20.0	14.3	7.8
Small Cap Growth	4.4	31.0	21.6	30.5	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	16.8	13.8	7.5
Large Cap Equity	3.2	28.5	21.4	22.4	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	14.2	13.3	7.1
60/40 Global Portfolio	2.6	25.7	16.5	16.2	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	12.7	13.2	6.4
Small Cap Equity	0.4	19.6	14.4	13.9	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	10.9	10.5	5.9
Large Cap Value	-1.5	18.5	11.3	12.9	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	7.9	8.4	4.3
Small Cap Value	-1.8	15.2	10.3	10.6	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	5.7	6.3	4.0
Hedge Funds of Funds	-2.0	11.6	9.9	9.7	-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	5.5	4.0	1.3
Real Estate	-2.4	11.1	6.4	5.2	-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	3.3	3.8	1.3
US Bonds	-2.9	7.5	6.0	2.1	-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	3.1	2.1	1.1
Cash	-3.5	5.7	5.1	-3.4	-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	0.6	0.2	0.4
Commodities	-7.3	-5.2	3.6	-11.6	-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	-2.9	-10.5	-6.8

Large Cap Equity	Small Cap Growth	Commodities
Large Cap Value	International Equity	Real Estate
Large Cap Growth	Emerging Markets Equity	Hedge Funds of Funds
Small Cap Equity	US Bonds	60% MSCI ACWI/40% BBgBarc Global Bond
Small Cap Value	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 6/30/17.

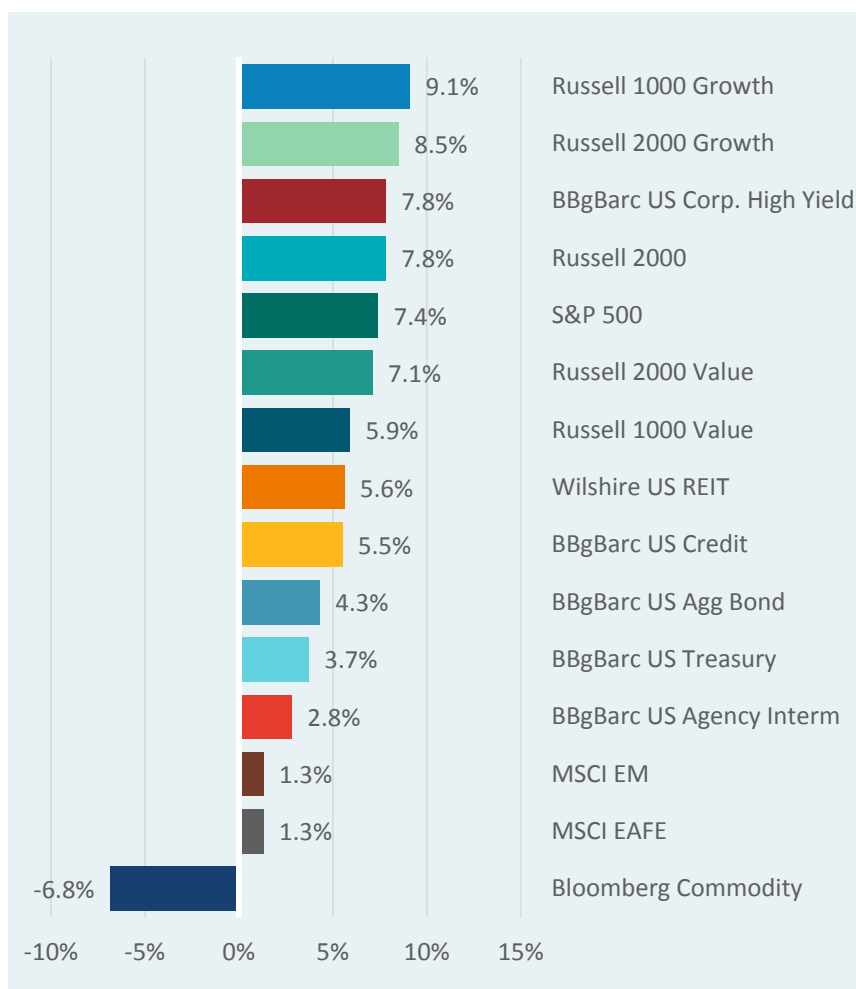
# Major asset class returns

ONE YEAR ENDING SEPTEMBER



Source: Morningstar, as of 9/30/17

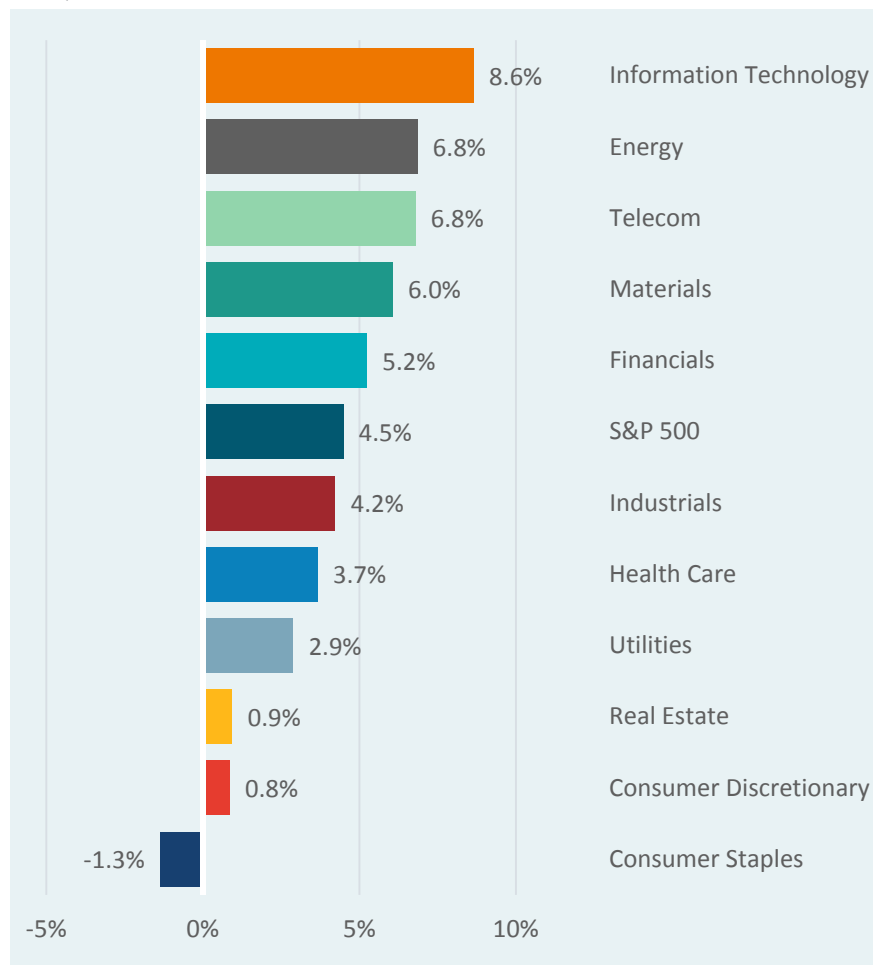
TEN YEARS ENDING SEPTEMBER



Source: Morningstar, as of 9/30/17

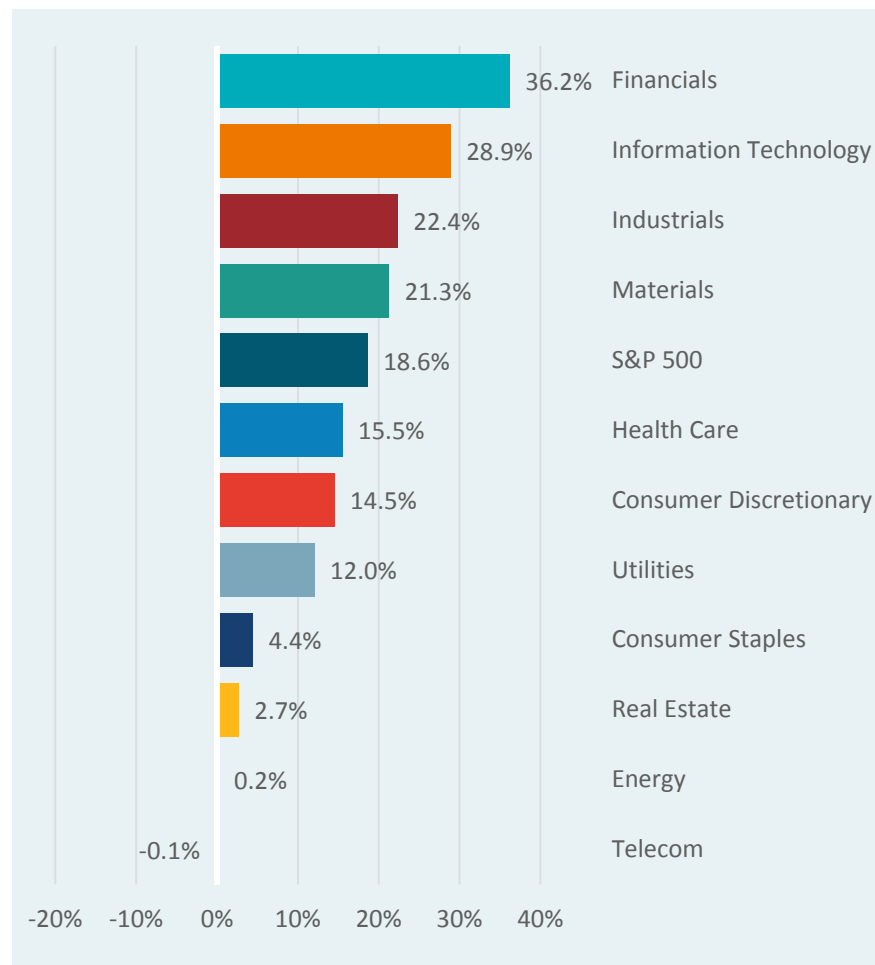
# S&P 500 sector returns

## 3<sup>RD</sup> QUARTER



Source: Morningstar, as of 9/30/17

## ONE YEAR ENDING SEPTEMBER



Source: Morningstar, as of 9/30/17

# Detailed index returns

## DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Core Index</b>							
S&P 500	2.1	4.5	14.2	18.6	10.8	14.2	7.4
S&P 500 Equal Weighted	2.9	3.6	11.9	16.2	10.1	15.0	8.9
DJ Industrial Average	2.2	5.6	15.5	25.5	12.3	13.6	7.7
Russell Top 200	1.9	4.9	15.1	19.8	11.1	14.3	7.3
Russell 1000	2.1	4.5	14.2	18.5	10.6	14.3	7.5
Russell 2000	6.2	5.7	10.9	20.7	12.2	13.8	7.8
Russell 3000	2.4	4.6	13.9	18.7	10.7	14.2	7.6
Russell Mid Cap	2.8	3.5	11.7	15.3	9.5	14.3	8.1
<b>Style Index</b>							
Russell 1000 Growth	1.3	5.9	20.7	21.9	12.7	15.3	9.1
Russell 1000 Value	3.0	3.1	7.9	15.1	8.5	13.2	5.9
Russell 2000 Growth	5.4	6.2	16.8	21.0	12.2	14.3	8.5
Russell 2000 Value	7.1	5.1	5.7	20.5	12.1	13.3	7.1

## INTERNATIONAL EQUITY

<b>Broad Index</b>							
MSCI ACWI	1.9	5.2	17.3	18.6	7.4	10.2	3.9
MSCI ACWI ex US	1.9	6.2	21.1	19.6	4.7	7.0	1.3
MSCI EAFE	2.5	5.4	20.0	19.1	5.0	8.4	1.3
MSCI EM	(0.4)	7.9	27.8	22.5	4.9	4.0	1.3
MSCI EAFE Small Cap	2.9	7.5	25.4	21.8	11.1	12.8	4.6
<b>Style Index</b>							
MSCI EAFE Growth	1.9	4.9	22.4	15.7	6.5	8.9	2.1
MSCI EAFE Value	3.1	5.9	17.6	22.5	3.5	7.8	0.5
<b>Regional Index</b>							
MSCI UK	3.3	5.2	15.7	14.6	0.8	4.9	0.7
MSCI Japan	2.0	4.0	14.3	14.1	7.7	10.6	1.7
MSCI Euro	3.9	8.0	25.9	28.4	5.6	9.9	(0.0)
MSCI EM Asia	(0.0)	7.0	31.8	23.8	8.0	7.4	2.7
MSCI EM Latin American	1.6	15.1	26.7	25.6	(0.3)	(1.9)	(0.8)

Source: Morningstar, as of 9/30/17

## FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
BBgBarc US Treasury US TIPS	(0.6)	0.9	1.7	(0.7)	1.6	0.0	3.9
BBgBarc US Treasury Bills	0.1	0.3	0.6	0.6	0.3	0.2	0.5
BBgBarc US Agg Bond	(0.5)	0.8	3.1	0.1	2.7	2.1	4.3
<b>Duration</b>							
BBgBarc US Treasury 1-3 Yr	(0.2)	0.2	0.7	0.2	0.8	0.6	1.7
BBgBarc US Treasury Long	(2.2)	0.6	6.0	(6.4)	4.9	2.8	6.9
BBgBarc US Treasury	(0.9)	0.4	2.3	(1.7)	2.0	1.2	3.7
<b>Issuer</b>							
BBgBarc US MBS	(0.2)	1.0	2.3	0.3	2.4	2.0	4.1
BBgBarc US Corp. High Yield	0.9	2.0	7.0	8.9	5.8	6.4	7.8
BBgBarc US Agency Interm	(0.3)	0.3	1.4	0.3	1.5	1.1	2.8
BBgBarc US Credit	(0.2)	1.3	5.1	2.0	3.9	3.2	5.5

## OTHER

<b>Index</b>							
Bloomberg Commodity	(0.1)	2.5	(2.9)	(0.3)	(10.4)	(10.5)	(6.8)
Wilshire US REIT	(0.1)	0.6	2.4	0.1	9.7	9.5	5.6
CS Leveraged Loans	0.4	1.1	3.0	5.4	4.0	4.4	4.4
<b>Regional Index</b>							
JPM EMBI Global Div	0.0	2.6	9.0	4.6	6.5	4.9	7.5
JPM GBI-EM Global Div	(0.3)	3.6	14.3	7.3	0.3	(0.9)	3.8
<b>Hedge Funds</b>							
HFRI Composite	0.5	2.1	5.7	6.9	3.3	4.7	3.1
HFRI FOF Composite	0.4	2.2	5.5	6.4	2.2	3.8	1.1
<b>Currency (Spot)</b>							
Euro	(0.6)	3.7	12.1	5.2	(2.2)	(1.7)	(1.8)
Pound	4.1	3.3	8.6	3.3	(6.1)	(3.6)	(4.1)
Yen	(2.2)	(0.2)	3.6	(10.0)	(0.9)	(7.1)	0.2



# 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](http://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](http://www.Bloomberg.com))

**Citi Economic Surprise Index** - objective and quantitative measures of economic news. Defined as weighted historical standard deviations of data surprises (actual releases vs Bloomberg survey median). A positive reading of the Economic Surprise Index suggests that economic releases have on balance been beating consensus. The indices are calculated daily in a rolling three-month window. The weights of economic indicators are derived from relative high-frequency spot FX impacts of 1 standard deviation data surprises. The indices also employ a time decay function to replicate the limited memory of markets. ([www.Bloomberg.com](http://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/>)

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# San Luis Obispo County Pension Trust

Investment Performance Review

Period Ending: September 30, 2017



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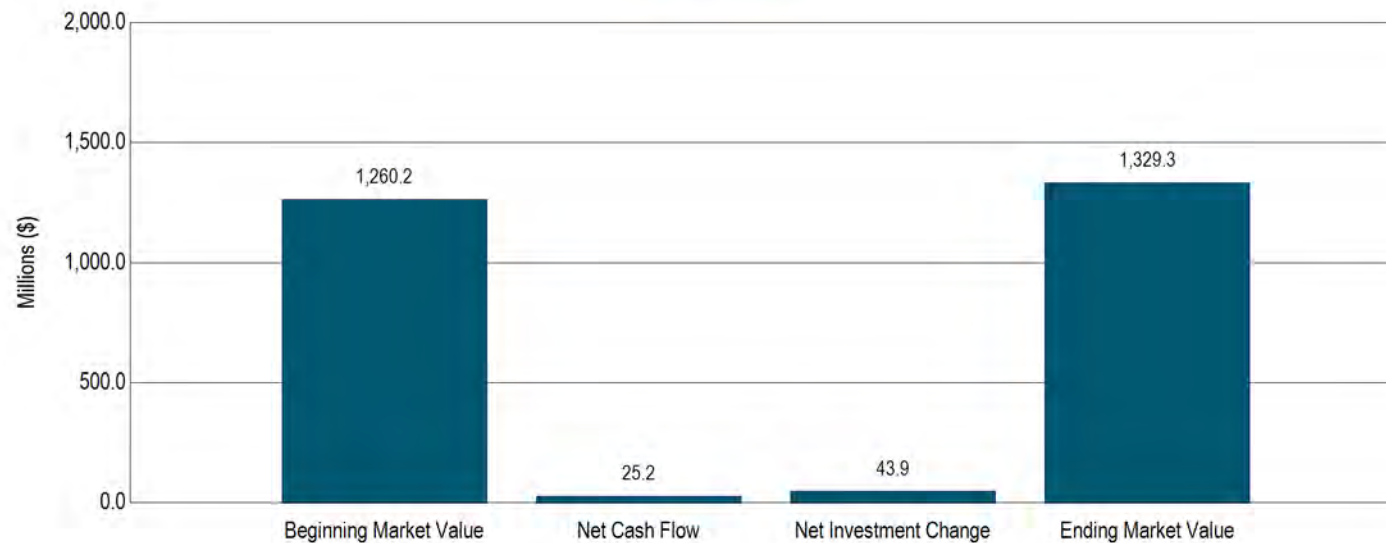
Total Fund  
Portfolio Reconciliation

Period Ending: September 30, 2017

Portfolio Reconciliation

	Last Three Months	Year-To-Date	One Year
Beginning Market Value	\$1,260,215,590	\$1,196,774,651	\$1,220,807,534
Net Cash Flow	\$25,181,522	-\$6,068,449	-\$24,032,925
Net Investment Change	\$43,936,300	\$138,627,210	\$132,558,804
Ending Market Value	\$1,329,333,412	\$1,329,333,412	\$1,329,333,412

Change in Market Value  
Last Three Months



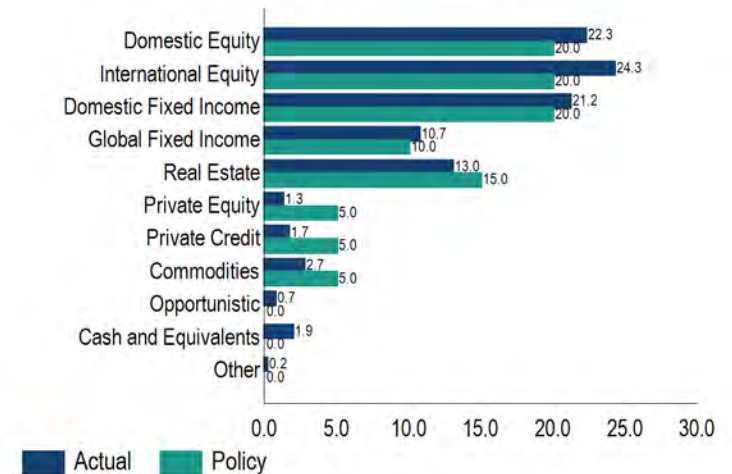
Contributions and withdrawals may include intra-account transfers between managers/funds.

# Total Fund Executive Summary (Gross of Fees)

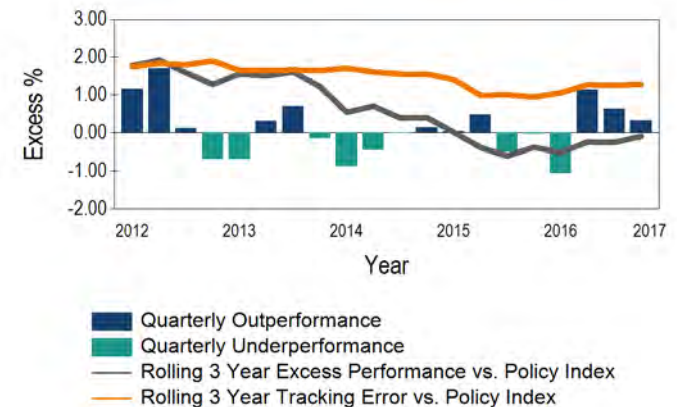
Period Ending: September 30, 2017

	QTD	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Total Fund	3.5	40	12.0	31	11.5	63	5.8	86	7.7	74
Policy Index	3.2	64	9.7	84	10.4	84	5.9	83	7.3	83
Total Fund ex Clifton	3.6	37	11.8	34	11.3	67	5.8	87	7.7	74
Policy Index	3.2	64	9.7	84	10.4	84	5.9	83	7.3	83
Total Domestic Equity	5.0	17	16.5	5	21.2	6	11.4	12	14.7	12
Russell 3000	4.6	47	13.9	37	18.7	48	10.7	50	14.2	47
Total International Equity	5.9	67	22.5	56	19.7	60	5.3	72	8.9	30
MSCI ACWI ex USA Gross	6.3	52	21.6	73	20.2	49	5.2	77	7.5	74
Total Domestic Fixed Income	1.2	32	3.5	54	1.6	42	3.3	42	2.3	57
BBgBarc US Aggregate TR	0.8	66	3.1	62	0.1	89	2.7	64	2.1	63
Total Global Fixed	3.5	30	14.3	1	6.7	57	0.7	86	0.6	86
Citi World Govt Bond Index	1.8	81	6.4	73	-2.7	99	0.9	84	-0.4	98
Total Real Estate	1.6	--	5.8	--	7.6	--	11.3	--	11.6	--
NCREIF Property Index	1.7	--	5.1	--	6.9	--	9.8	--	10.3	--
Total Commodities	3.7	--	-0.3	--	3.7	--	-9.8	--	-9.7	--
Bloomberg Commodity Index TR USD	2.5	--	-2.9	--	-0.3	--	-10.4	--	-10.5	--
Total Private Equity	4.7	--	16.7	--	21.9	--	17.4	--	18.1	--
Russell 3000 + 3%	5.3	--	16.4	--	22.2	--	14.0	--	17.6	--
Total Private Credit	1.6	--	-1.2	--	--	--	--	--	--	--
BBgBarc High Yield +2% (Lagged)	2.7	--	8.4	--	--	--	--	--	--	--
Total Cash	0.0	--	0.6	--	0.8	--	0.6	--	0.4	--
91 Day T-Bills	0.3	--	0.6	--	0.7	--	0.3	--	0.2	--
Total Opportunistic	4.9	--	7.2	--	14.1	--	5.7	--	10.8	--
Russell 3000 + 3%	5.3	--	16.4	--	22.2	--	14.0	--	17.6	--

Actual vs Target Allocation (%)



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



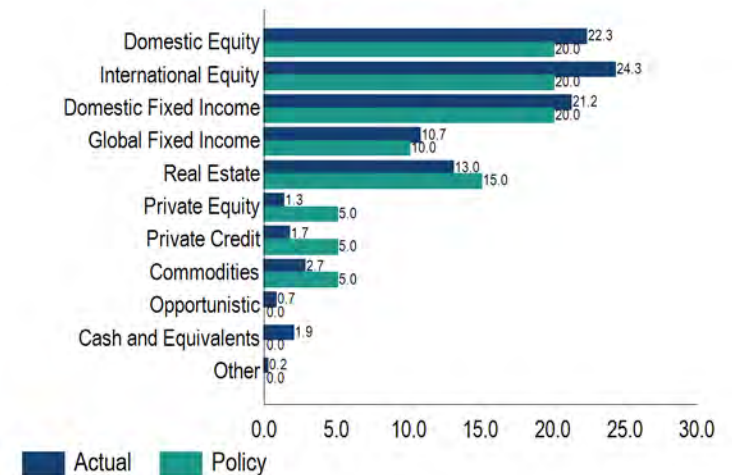
New Policy Index as of 10/1/2016: 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 +3%, 5% BBgBarc High Yield +2% (Lagged). Private Equity, Private Credit and Opportunistic composite returns are lagged by one quarter. Stone 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. 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)

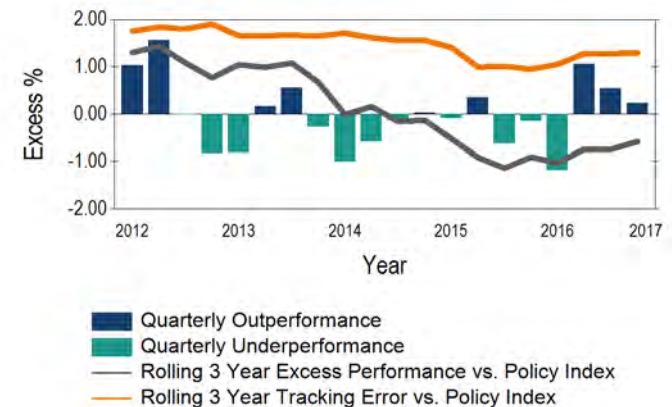
Period Ending: September 30, 2017

	QTD	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
<b>Total Fund</b>	<b>3.4</b>	<b>50</b>	<b>11.6</b>	<b>38</b>	<b>11.0</b>	<b>70</b>	<b>5.3</b>	<b>94</b>	<b>7.2</b>	<b>84</b>
Policy Index	3.2	64	9.7	84	10.4	84	5.9	83	7.3	83
<b>Total Fund ex Clifton</b>	<b>3.5</b>	<b>46</b>	<b>11.5</b>	<b>40</b>	<b>10.9</b>	<b>73</b>	<b>5.3</b>	<b>94</b>	<b>7.2</b>	<b>84</b>
Policy Index	3.2	64	9.7	84	10.4	84	5.9	83	7.3	83
<b>Total Domestic Equity</b>	<b>4.9</b>	<b>23</b>	<b>16.1</b>	<b>8</b>	<b>20.7</b>	<b>11</b>	<b>11.0</b>	<b>32</b>	<b>14.2</b>	<b>46</b>
Russell 3000	4.6	47	13.9	37	18.7	48	10.7	50	14.2	47
<b>Total International Equity</b>	<b>5.8</b>	<b>75</b>	<b>22.0</b>	<b>68</b>	<b>18.9</b>	<b>71</b>	<b>4.6</b>	<b>86</b>	<b>8.2</b>	<b>57</b>
MSCI ACWI ex USA Gross	6.3	52	21.6	73	20.2	49	5.2	77	7.5	74
<b>Total Domestic Fixed Income</b>	<b>1.1</b>	<b>40</b>	<b>3.2</b>	<b>59</b>	<b>1.4</b>	<b>45</b>	<b>3.0</b>	<b>55</b>	<b>2.1</b>	<b>63</b>
BBgBarc US Aggregate TR	0.8	66	3.1	62	0.1	89	2.7	64	2.1	63
<b>Total Global Fixed</b>	<b>3.3</b>	<b>36</b>	<b>13.7</b>	<b>15</b>	<b>6.0</b>	<b>77</b>	<b>0.0</b>	<b>99</b>	<b>0.0</b>	<b>94</b>
Citi World Govt Bond Index	1.8	81	6.4	73	-2.7	99	0.9	84	-0.4	98
<b>Total Real Estate</b>	<b>1.6</b>	<b>--</b>	<b>5.8</b>	<b>--</b>	<b>7.4</b>	<b>--</b>	<b>10.5</b>	<b>--</b>	<b>10.8</b>	<b>--</b>
NCREIF Property Index	1.7	--	5.1	--	6.9	--	9.8	--	10.3	--
<b>Total Commodities</b>	<b>3.7</b>	<b>--</b>	<b>-0.3</b>	<b>--</b>	<b>3.5</b>	<b>--</b>	<b>-10.3</b>	<b>--</b>	<b>-10.2</b>	<b>--</b>
Bloomberg Commodity Index TR USD	2.5	--	-2.9	--	-0.3	--	-10.4	--	-10.5	--
<b>Total Private Equity</b>	<b>4.7</b>	<b>--</b>	<b>16.7</b>	<b>--</b>	<b>21.4</b>	<b>--</b>	<b>15.8</b>	<b>--</b>	<b>14.7</b>	<b>--</b>
Russell 3000 + 3%	5.3	--	16.4	--	22.2	--	14.0	--	17.6	--
<b>Total Private Credit</b>	<b>1.6</b>	<b>--</b>	<b>-1.2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
BBgBarc High Yield +2% (Lagged)	2.7	--	8.4	--	--	--	--	--	--	--
<b>Total Cash</b>	<b>0.0</b>	<b>--</b>	<b>0.6</b>	<b>--</b>	<b>0.8</b>	<b>--</b>	<b>0.6</b>	<b>--</b>	<b>0.4</b>	<b>--</b>
91 Day T-Bills	0.3	--	0.6	--	0.7	--	0.3	--	0.2	--
<b>Total Opportunistic</b>	<b>4.9</b>	<b>--</b>	<b>7.2</b>	<b>--</b>	<b>13.7</b>	<b>--</b>	<b>5.1</b>	<b>--</b>	<b>10.5</b>	<b>--</b>
Russell 3000 + 3%	5.3	--	16.4	--	22.2	--	14.0	--	17.6	--

Actual vs Target Allocation (%)



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



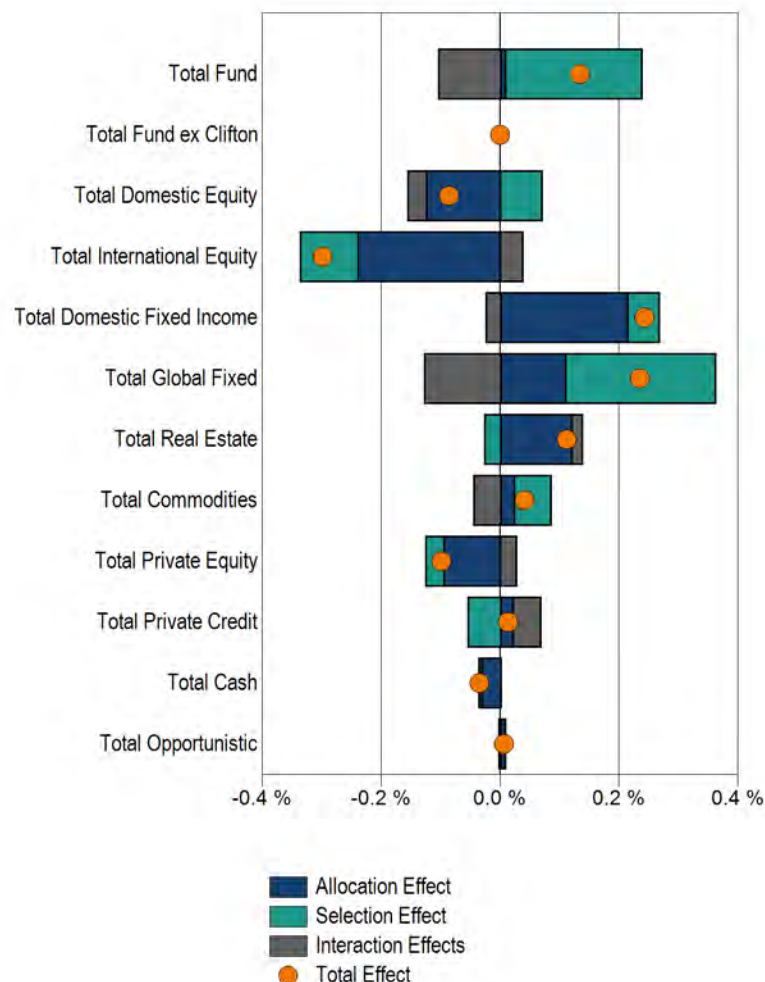
New Policy Index as of 10/1/2016: 20% Russell 3000, 20% MSCI ACWI ex. US, 30% BBgBarc Aggregate, 15% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 +3%, 5% BBgBarc High Yield +2% (Lagged). Private Equity, Private Credit and Opportunistic composite returns are lagged by one quarter. Stone 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. 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 Attribution

Period Ending: September 30, 2017

## Performance Attribution

Attribution Effects  
3 Months Ending September 30, 2017



	Last 3 Mo.	YTD
Wtd. Actual Return	3.46%	11.51%
Wtd. Index Return *	3.20%	9.71%
<b>Excess Return</b>	<b>0.26%</b>	<b>1.80%</b>
Selection Effect	0.23%	1.36%
Allocation Effect	0.01%	0.11%
Interaction Effect	-0.10%	-0.56%

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

Attribution Summary  
3 Months Ending September 30, 2017

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Fund ex Clifton	3.45%	3.20%	0.25%	--	--	--	--
Total Domestic Equity	4.92%	4.57%	0.35%	0.07%	-0.12%	-0.03%	-0.09%
Total International Equity	5.76%	6.25%	-0.49%	-0.10%	-0.24%	0.04%	-0.30%
Total Domestic Fixed Income	1.11%	0.85%	0.26%	0.05%	0.21%	-0.02%	0.24%
Total Global Fixed	3.33%	0.85%	2.49%	0.25%	0.11%	-0.13%	0.24%
Total Real Estate	1.55%	1.70%	-0.15%	-0.03%	0.12%	0.02%	0.11%
Total Commodities	3.73%	2.52%	1.21%	0.06%	0.02%	-0.04%	0.04%
Total Private Equity	4.71%	5.34%	-0.63%	-0.03%	-0.10%	0.03%	-0.10%
Total Private Credit	1.61%	2.68%	-1.07%	-0.05%	0.02%	0.05%	0.01%
Total Cash	0.00%	0.26%	-0.26%	0.00%	-0.03%	0.00%	-0.03%
Total Opportunistic	4.90%	5.34%	-0.44%	0.00%	0.01%	0.00%	0.01%
<b>Total</b>	<b>3.46%</b>	<b>3.20%</b>	<b>0.26%</b>	<b>0.23%</b>	<b>0.01%</b>	<b>-0.10%</b>	<b>0.13%</b>

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.

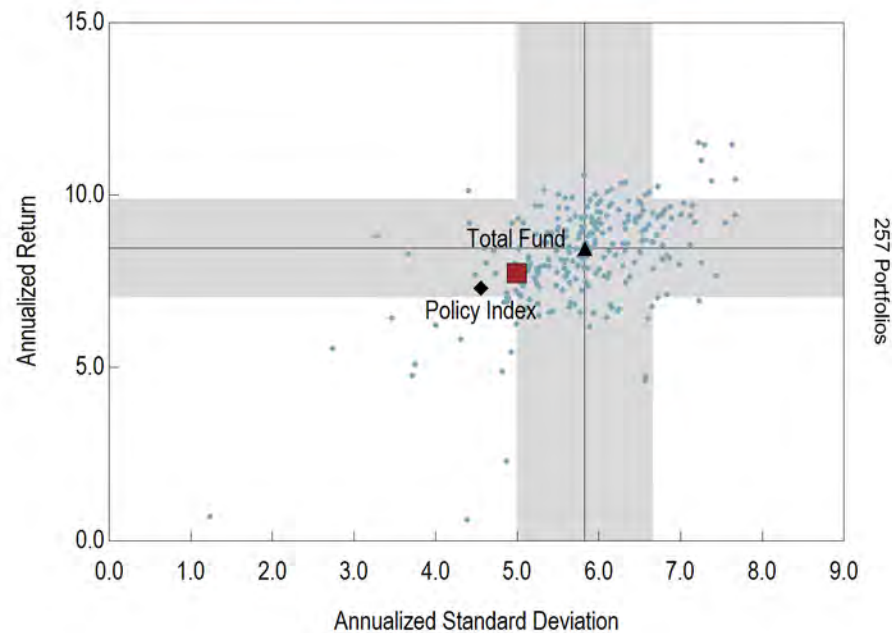


Total Fund  
Risk Analysis - 5 Years (Gross of Fees)

Period Ending: September 30, 2017

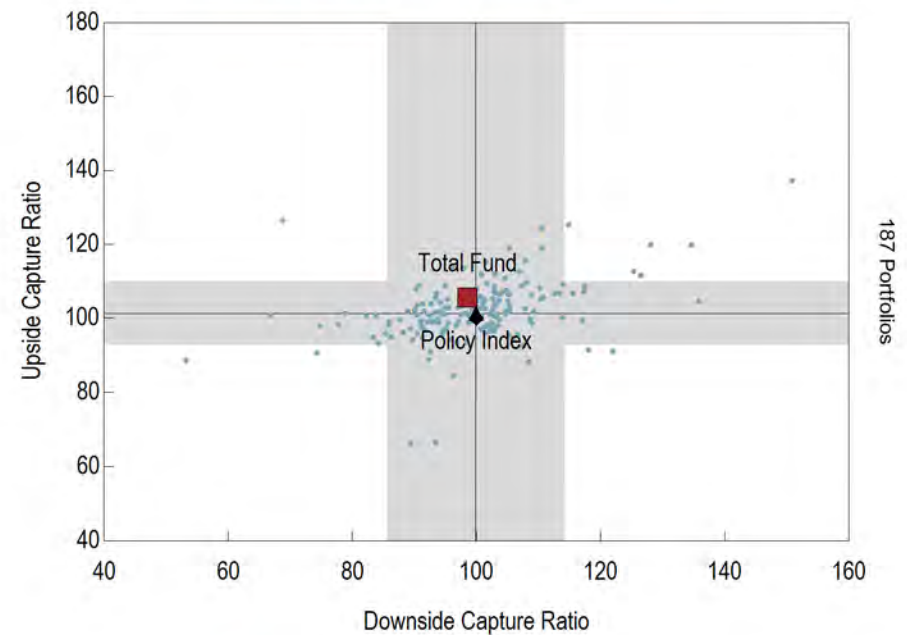
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Total Fund	7.74%	0.44%	4.99%	0.08%	1.05	1.45%	0.92	1.51	0.30	105.69%	98.56%

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

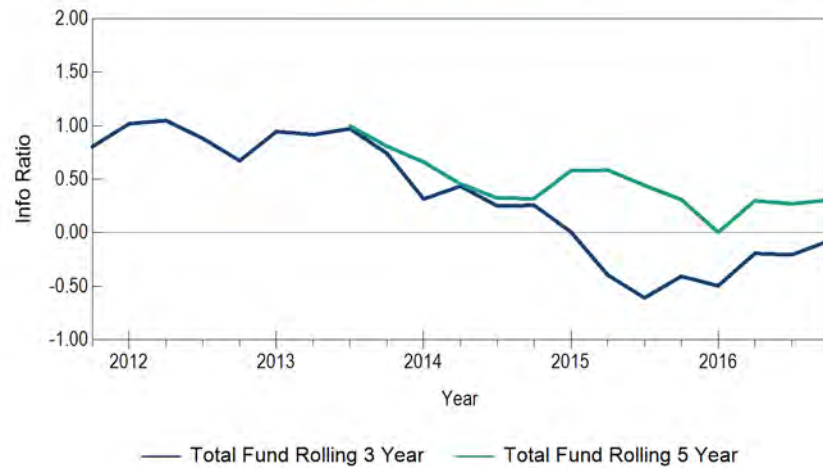


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

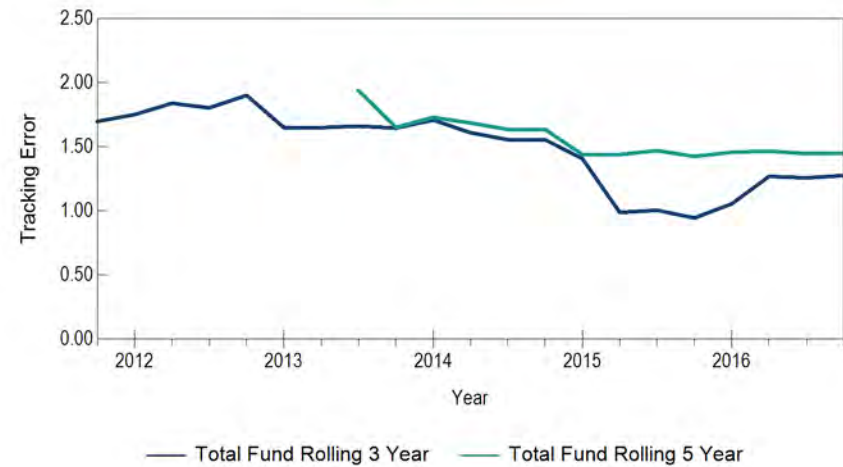
Total Fund  
Rolling Risk Statistics (Gross of Fees)

Period Ending: September 30, 2017

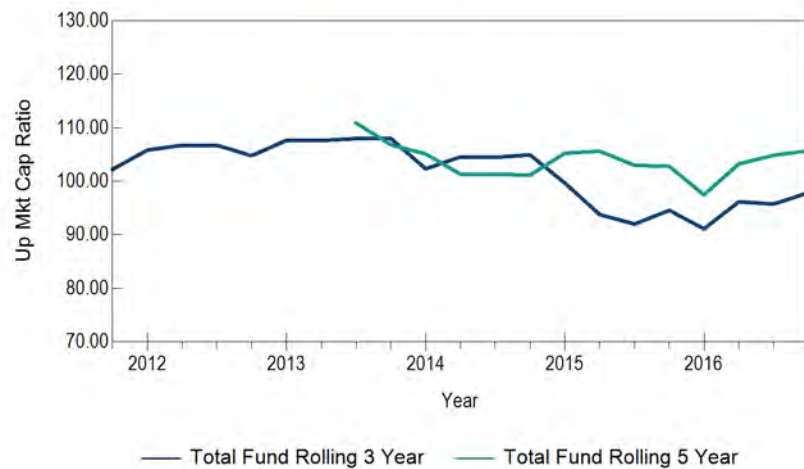
Rolling Information Ratio



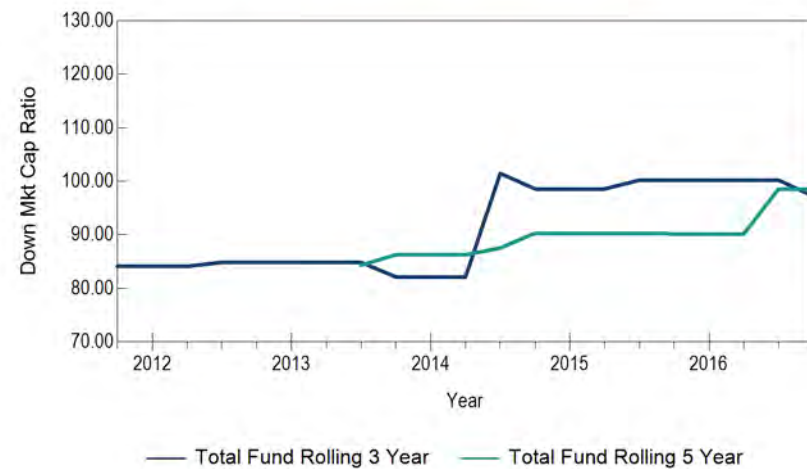
Rolling Tracking Error



Rolling Up Market Capture Ratio (%)



Rolling Down Market Capture Ratio (%)





# Total Fund Performance Summary (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012	Return	Since
<b>Total Fund</b>	<b>1,329,333,412</b>	<b>100.0</b>	<b>3.5</b>	<b>12.0</b>	<b>11.5</b>	<b>5.8</b>	<b>7.7</b>	<b>--</b>	<b>6.6</b>	<b>-0.8</b>	<b>5.1</b>	<b>13.8</b>	<b>12.8</b>	<b>--</b>	
<i>InvestorForce Public DB Gross Rank</i>			40	31	63	86	74	--	84	74	66	71	40	--	
Total Fund ex Clifton	1,327,335,978	99.8	3.6	11.8	11.3	5.8	7.7	5.1	6.6	-0.8	5.2	13.8	12.7	--	
<i>Policy Index</i>			3.2	9.7	10.4	5.9	7.3	4.9	7.8	-0.5	5.2	13.4	11.6	--	
<i>InvestorForce Public DB Gross Rank</i>			37	34	67	87	74	69	83	75	64	72	43	--	
<b>Total Domestic Equity</b>	<b>295,825,593</b>	<b>22.3</b>	<b>5.0</b>	<b>16.5</b>	<b>21.2</b>	<b>11.4</b>	<b>14.7</b>	<b>8.8</b>	<b>13.0</b>	<b>1.2</b>	<b>11.0</b>	<b>32.2</b>	<b>12.8</b>	<b>--</b>	
<i>Russell 3000</i>			4.6	13.9	18.7	10.7	14.2	7.6	12.7	0.5	12.6	33.6	16.4	--	
<i>InvestorForce Public DB US Eq Gross Rank</i>			17	5	6	12	12	3	48	18	60	91	98	--	
SSGA S&P 500 Flag.	11,705,968	0.9	4.5	14.3	18.7	10.9	14.3	--	12.0	1.5	13.7	32.4	16.1	12.7	Feb-11
<i>S&amp;P 500</i>			4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	16.0	12.7	Feb-11
<i>eA US Large Cap Core Equity Gross Rank</i>			54	48	50	34	39	--	31	40	42	58	39	44	Feb-11
PIMCO RAE Fundamental PLUS Instl	55,400,081	4.2	4.5	9.0	14.8	8.8	13.9	7.5	15.9	-2.7	12.7	36.0	16.8	7.9	Nov-07
<i>S&amp;P 500</i>			4.5	14.2	18.6	10.8	14.2	7.4	12.0	1.4	13.7	32.4	16.0	7.9	Nov-07
<i>eA US Large Cap Core Equity Gross Rank</i>			55	95	88	81	54	67	6	86	58	22	29	66	Nov-07
Loomis Sayles Large Cap Growth	91,001,101	6.8	6.4	25.9	--	--	--	--	--	--	--	--	--	25.9	Dec-16
<i>Russell 1000 Growth</i>			5.9	20.7	--	--	--	--	--	--	--	--	--	20.7	Dec-16
<i>eA US Large Cap Growth Equity Gross Rank</i>			25	13	--	--	--	--	--	--	--	--	--	13	Dec-16
Boston Partners Large Cap Value	80,756,611	6.1	4.8	--	--	--	--	--	--	--	--	--	--	11.2	Jan-17
<i>Russell 1000 Value</i>			3.1	--	--	--	--	--	--	--	--	--	--	7.2	Jan-17
<i>eA US Large Cap Value Equity Gross Rank</i>			27	--	--	--	--	--	--	--	--	--	--	2	Jan-17
Atlanta Capital Mgmt	56,961,832	4.3	3.9	15.6	18.8	15.7	16.8	--	12.6	10.4	5.8	37.8	15.5	18.6	Aug-10
<i>Russell 2500</i>			4.7	11.0	17.8	10.6	13.9	--	17.6	-2.9	7.1	36.8	17.9	15.2	Aug-10
<i>eA US Small-Mid Cap Equity Gross Rank</i>			63	27	55	5	9	--	62	1	56	52	55	1	Aug-10
<b>Total International Equity</b>	<b>322,703,258</b>	<b>24.3</b>	<b>5.9</b>	<b>22.5</b>	<b>19.7</b>	<b>5.3</b>	<b>8.9</b>	<b>3.2</b>	<b>2.2</b>	<b>-4.3</b>	<b>2.1</b>	<b>17.9</b>	<b>21.5</b>	<b>--</b>	
<i>MSCI ACWI ex USA Gross</i>			6.3	21.6	20.2	5.2	7.5	1.7	5.0	-5.3	-3.4	15.8	17.4	--	
<i>InvestorForce Public DB ex-US Eq Gross Rank</i>			67	56	60	72	30	22	82	68	1	50	11	--	
Dodge & Cox Intl Stock	169,909,075	12.8	7.1	23.1	27.4	4.5	10.8	--	9.0	-10.8	0.7	27.1	21.8	3.5	Dec-07
<i>MSCI EAFE Gross</i>			5.5	20.5	19.7	5.5	8.9	--	1.5	-0.4	-4.5	23.3	17.9	1.8	Dec-07
<i>eA All EAFE Equity Gross Rank</i>			33	42	8	90	36	--	3	99	13	32	37	47	Dec-07
WCM International Growth	152,794,183	11.5	4.6	--	--	--	--	--	--	--	--	--	--	17.4	Feb-17
<i>MSCI ACWI ex USA Gross</i>			6.3	--	--	--	--	--	--	--	--	--	--	15.6	Feb-17
<i>eA ACWI ex-US All Cap Growth Eq Gross Rank</i>			93	--	--	--	--	--	--	--	--	--	--	36	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.

# Total Fund Performance Summary (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012	Return	Since
<b>Total Domestic Fixed Income</b>	<b>281,974,922</b>	<b>21.2</b>	<b>1.2</b>	<b>3.5</b>	<b>1.6</b>	<b>3.3</b>	<b>2.3</b>	<b>3.8</b>	<b>4.5</b>	<b>1.1</b>	<b>4.7</b>	<b>-2.7</b>	<b>7.9</b>	<b>--</b>	
BBgBarc US Aggregate TR			0.8	3.1	0.1	2.7	2.1	4.3	2.6	0.6	6.0	-2.0	4.2	--	
InvestorForce Public DB US Fix Inc Gross Rank			32	54	42	42	57	77	49	17	68	95	38	--	
BlackRock Core Bond	95,233,462	7.2	1.1	--	--	--	--	--	--	--	--	--	--	2.4	Jan-17
BBgBarc US Aggregate TR			0.8	--	--	--	--	--	--	--	--	--	--	2.9	Jan-17
eA US Core Fixed Inc Gross Rank			9	--	--	--	--	--	--	--	--	--	--	63	Jan-17
Dodge & Cox Income Fund	99,817,619	7.5	1.2	--	--	--	--	--	--	--	--	--	--	3.8	Jan-17
BBgBarc US Aggregate TR			0.8	--	--	--	--	--	--	--	--	--	--	2.9	Jan-17
eA US Core Fixed Inc Gross Rank			4	--	--	--	--	--	--	--	--	--	--	1	Jan-17
Pacific Asset Corporate Loan	67,866,605	5.1	1.3	3.4	6.3	4.8	--	--	9.2	2.5	--	--	--	4.5	Sep-14
S&P/LSTA Leveraged Loan Index			1.0	3.0	5.3	3.9	--	--	10.2	-0.7	--	--	--	3.6	Sep-14
eA Float-Rate Bank Loan Gross Rank			29	28	13	24	--	--	51	9	--	--	--	23	Sep-14
SSGA TIPS	19,057,234	1.4	0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.5	3.6	-8.6	6.9	1.9	Jul-11
BBgBarc US TIPS TR			0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.4	3.6	-8.6	7.0	1.9	Jul-11
eA TIPS / Infl Indexed Fixed Inc Gross Rank			67	70	84	62	88	--	51	64	44	77	67	21	Jul-11
<b>Total Global Fixed</b>	<b>142,423,018</b>	<b>10.7</b>	<b>3.5</b>	<b>14.3</b>	<b>6.7</b>	<b>0.7</b>	<b>0.6</b>	<b>--</b>	<b>5.8</b>	<b>-11.8</b>	<b>-2.2</b>	<b>-3.8</b>	<b>13.8</b>	<b>--</b>	
Citi World Govt Bond Index			1.8	6.4	-2.7	0.9	-0.4	--	1.6	-3.6	-0.5	-4.0	1.6	--	
InvestorForce Public DB Gbl Fix Inc Gross Rank			30	1	57	86	86	--	67	95	93	59	26	--	
Brandywine Global Fixed Income	71,883,585	5.4	3.1	12.8	4.9	1.1	1.7	--	2.2	-9.3	2.9	-1.6	13.8	4.5	Nov-07
Citi WGBI ex US			2.6	8.6	-3.1	0.5	-1.1	--	1.8	-5.5	-2.7	-4.6	1.5	2.2	Nov-07
eA Global Fixed Inc Unhedged Gross Rank			11	5	39	81	58	--	71	96	43	59	30	37	Nov-07
Stone Harbor Local Markets Ins	70,539,432	5.3	3.9	15.8	8.7	0.2	--	--	9.9	-14.4	-7.7	--	--	-0.7	Jul-13
JPM GBI-EM Global Diversified TR USD			3.6	14.3	7.3	0.3	--	--	9.9	-14.9	-5.7	--	--	-0.1	Jul-13
eA All Emg Mkts Fixed Inc Gross Rank			22	11	34	94	--	--	67	79	98	--	--	98	Jul-13
<b>Total Real Estate</b>	<b>173,172,944</b>	<b>13.0</b>	<b>1.6</b>	<b>5.8</b>	<b>7.6</b>	<b>11.3</b>	<b>11.6</b>	<b>4.9</b>	<b>7.8</b>	<b>18.0</b>	<b>10.4</b>	<b>12.9</b>	<b>9.8</b>	<b>--</b>	
NCREIF Property Index			1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5	--	
JP Morgan Core Real Estate	148,431,989	11.2	1.5	4.5	6.8	10.3	11.6	--	8.4	15.2	11.2	15.9	12.1	5.5	Mar-08
NCREIF-ODCE			1.9	5.4	7.7	10.8	11.6	--	8.8	15.0	12.5	13.9	10.9	5.0	Mar-08
NCREIF Property Index			1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5	6.2	Mar-08
ARA American Strategic Value Realty	11,414,694	0.9	2.4	5.2	8.6	--	--	--	--	--	--	--	--	8.7	Jun-16
NCREIF-ODCE			1.9	5.4	7.7	--	--	--	--	--	--	--	--	7.8	Jun-16
NCREIF Property Index			1.7	5.1	6.9	--	--	--	--	--	--	--	--	7.0	Jun-16

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.

# Total Fund Performance Summary (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012	Return	Since
Direct Real Estate	13,103,242	1.0	1.7	14.4	14.4	14.5	11.5	6.2	5.5	22.9	6.1	5.2	9.2	--	
NCREIF-ODCE			1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9	--	
NCREIF Property Index			1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5	--	
Fidelity Real Estate Growth III	223,019	0.0	2.2	-32.6	-34.8	-0.4	8.3	-4.5	1.3	35.8	28.2	20.9	12.1	-6.7	Jul-07
NCREIF-ODCE			1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9	5.4	Jul-07
NCREIF Property Index			1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5	6.5	Jul-07
<b>Total Commodities</b>	<b>36,387,022</b>	<b>2.7</b>	<b>3.7</b>	<b>-0.3</b>	<b>3.7</b>	<b>-9.8</b>	<b>-9.7</b>	<b>--</b>	<b>12.6</b>	<b>-25.2</b>	<b>-16.0</b>	<b>-9.1</b>	<b>-0.9</b>	<b>--</b>	
Bloomberg Commodity Index TR USD			2.5	-2.9	-0.3	-10.4	-10.5	--	11.8	-24.7	-17.0	-9.5	-1.1	--	
Gresham MTAP Commodity Builder	36,387,022	2.7	3.7	-0.3	3.7	-9.8	--	--	12.6	-25.2	-16.0	--	--	-8.9	Aug-13
Bloomberg Commodity Index TR USD			2.5	-2.9	-0.3	-10.4	--	--	11.8	-24.7	-17.0	--	--	-9.9	Aug-13
<b>Total Cash</b>	<b>25,801,335</b>	<b>1.9</b>	<b>0.0</b>	<b>0.6</b>	<b>0.8</b>	<b>0.6</b>	<b>0.4</b>	<b>0.9</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>--</b>	
91 Day T-Bills			0.3	0.6	0.7	0.3	0.2	0.4	0.3	0.0	0.0	0.0	0.1	--	
Cash Account	25,801,335	1.9	0.0	0.6	0.8	0.6	0.4	0.9	0.5	0.4	0.3	0.3	0.4	--	
91 Day T-Bills			0.3	0.6	0.7	0.3	0.2	0.4	0.3	0.0	0.0	0.0	0.1	--	

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.

# Total Fund Performance Summary (Net of Fees)

Period Ending: September 30, 2017

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Fund</b>	<b>1,329,333,412</b>	<b>100.0</b>	<b>3.4</b>	<b>11.6</b>	<b>11.0</b>	<b>5.3</b>	<b>7.2</b>	<b>--</b>	<b>6.0</b>	<b>-1.3</b>	<b>4.6</b>	<b>13.3</b>	<b>12.3</b>
Total Fund ex Clifton	1,327,335,978	99.8	3.5	11.5	10.9	5.3	7.2	--	6.1	-1.3	4.7	13.2	12.2
Policy Index			3.2	9.7	10.4	5.9	7.3	--	7.8	-0.5	5.2	13.4	11.6
<b>Total Domestic Equity</b>	<b>295,825,593</b>	<b>22.3</b>	<b>4.9</b>	<b>16.1</b>	<b>20.7</b>	<b>11.0</b>	<b>14.2</b>	<b>--</b>	<b>12.7</b>	<b>0.8</b>	<b>10.5</b>	<b>31.6</b>	<b>12.3</b>
Russell 3000			4.6	13.9	18.7	10.7	14.2	--	12.7	0.5	12.6	33.6	16.4
SSGA S&P 500 Flag.	11,705,968	0.9	4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	15.9
S&P 500			4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	16.0
PIMCO RAE Fundamental PLUS Instl	55,400,081	4.2	4.4	8.7	14.3	8.3	13.4	7.1	15.4	-3.2	12.3	35.6	16.7
S&P 500			4.5	14.2	18.6	10.8	14.2	7.4	12.0	1.4	13.7	32.4	16.0
Loomis Sayles Large Cap Growth	91,001,101	6.8	6.3	25.5	--	--	--	--	--	--	--	--	--
Russell 1000 Growth			5.9	20.7	--	--	--	--	--	--	--	--	--
Boston Partners Large Cap Value	80,756,611	6.1	4.7	--	--	--	--	--	--	--	--	--	--
Russell 1000 Value			3.1	--	--	--	--	--	--	--	--	--	--
Atlanta Capital Mgmt	56,961,832	4.3	3.7	14.9	17.9	14.8	15.9	--	11.7	9.6	5.0	37.0	14.7
Russell 2500			4.7	11.0	17.8	10.6	13.9	--	17.6	-2.9	7.1	36.8	17.9
<b>Total International Equity</b>	<b>322,703,258</b>	<b>24.3</b>	<b>5.8</b>	<b>22.0</b>	<b>18.9</b>	<b>4.6</b>	<b>8.2</b>	<b>--</b>	<b>1.6</b>	<b>-4.9</b>	<b>1.4</b>	<b>17.0</b>	<b>20.6</b>
MSCI ACWI ex USA Gross			6.3	21.6	20.2	5.2	7.5	--	5.0	-5.3	-3.4	15.8	17.4
Dodge & Cox Intl Stock	169,909,075	12.8	6.9	22.5	26.6	3.9	10.1	--	8.3	-11.4	0.1	26.3	21.0
MSCI EAFE Gross			5.5	20.5	19.7	5.5	8.9	--	1.5	-0.4	-4.5	23.3	17.9
WCM International Growth	152,794,183	11.5	4.5	--	--	--	--	--	--	--	--	--	--
MSCI ACWI ex USA Gross			6.3	--	--	--	--	--	--	--	--	--	--
<b>Total Domestic Fixed Income</b>	<b>281,974,922</b>	<b>21.2</b>	<b>1.1</b>	<b>3.2</b>	<b>1.4</b>	<b>3.0</b>	<b>2.1</b>	<b>--</b>	<b>4.2</b>	<b>0.9</b>	<b>4.4</b>	<b>-3.0</b>	<b>7.6</b>
BBgBarc US Aggregate TR			0.8	3.1	0.1	2.7	2.1	--	2.6	0.6	6.0	-2.0	4.2
BlackRock Core Bond	95,233,462	7.2	1.1	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR			0.8	--	--	--	--	--	--	--	--	--	--
Dodge & Cox Income Fund	99,817,619	7.5	1.1	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR			0.8	--	--	--	--	--	--	--	--	--	--
Pacific Asset Corporate Loan	67,866,605	5.1	1.2	3.2	5.9	4.4	--	--	8.8	2.1	--	--	--
S&P/LSTA Leveraged Loan Index			1.0	3.0	5.3	3.9	--	--	10.2	-0.7	--	--	--
SSGA TIPS	19,057,234	1.4	0.9	1.7	-0.8	1.6	0.0	--	4.6	-1.5	3.6	-8.7	6.9
BBgBarc US TIPS TR			0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.4	3.6	-8.6	7.0

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.

# Total Fund Performance Summary (Net of Fees)

Period Ending: September 30, 2017

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Global Fixed</b>	<b>142,423,018</b>	<b>10.7</b>	<b>3.3</b>	<b>13.7</b>	<b>6.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>5.1</b>	<b>-12.4</b>	<b>-2.8</b>	<b>-4.4</b>	<b>13.1</b>
<i>Citi World Govt Bond Index</i>			1.8	6.4	-2.7	0.9	-0.4	--	1.6	-3.6	-0.5	-4.0	1.6
Brandywine Global Fixed Income	71,883,585	5.4	3.0	12.5	4.4	0.6	1.2	--	1.7	-9.7	2.4	-2.3	13.1
<i>Citi WGBI ex US</i>			2.6	8.6	-3.1	0.5	-1.1	--	1.8	-5.5	-2.7	-4.6	1.5
Stone Harbor Local Markets Ins	70,539,432	5.3	3.6	15.0	7.7	-0.7	--	--	9.0	-15.1	-8.6	--	--
<i>JPM GBI-EM Global Diversified TR USD</i>			3.6	14.3	7.3	0.3	--	--	9.9	-14.9	-5.7	--	--
<b>Total Real Estate</b>	<b>173,172,944</b>	<b>13.0</b>	<b>1.6</b>	<b>5.8</b>	<b>7.4</b>	<b>10.5</b>	<b>10.8</b>	<b>--</b>	<b>6.8</b>	<b>16.9</b>	<b>9.6</b>	<b>12.1</b>	<b>9.2</b>
<i>NCREIF Property Index</i>			1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5
JP Morgan Core Real Estate	148,431,989	11.2	1.5	4.5	6.5	9.5	10.6	--	7.3	14.1	10.0	14.8	11.0
<i>NCREIF-ODCE</i>			1.9	5.4	7.7	10.8	11.6	--	8.8	15.0	12.5	13.9	10.9
<i>NCREIF Property Index</i>			1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5
ARA American Strategic Value Realty	11,414,694	0.9	2.4	5.2	8.2	--	--	--	--	--	--	--	--
<i>NCREIF-ODCE</i>			1.9	5.4	7.7	--	--	--	--	--	--	--	--
<i>NCREIF Property Index</i>			1.7	5.1	6.9	--	--	--	--	--	--	--	--
Direct Real Estate	13,103,242	1.0	1.7	14.4	14.4	14.1	11.3	6.0	4.9	22.2	6.1	5.2	9.2
<i>NCREIF-ODCE</i>			1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
<i>NCREIF Property Index</i>			1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5
Fidelity Real Estate Growth III	223,019	0.0	2.2	-32.6	-35.1	-1.4	7.1	-9.4	-0.1	34.0	26.7	19.3	10.6
<i>NCREIF-ODCE</i>			1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
<i>NCREIF Property Index</i>			1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5
<b>Total Commodities</b>	<b>36,387,022</b>	<b>2.7</b>	<b>3.7</b>	<b>-0.3</b>	<b>3.5</b>	<b>-10.3</b>	<b>-10.2</b>	<b>--</b>	<b>11.8</b>	<b>-25.8</b>	<b>-16.6</b>	<b>-9.5</b>	<b>-1.2</b>
<i>Bloomberg Commodity Index TR USD</i>			2.5	-2.9	-0.3	-10.4	-10.5	--	11.8	-24.7	-17.0	-9.5	-1.1
Gresham MTAP Commodity Builder	36,387,022	2.7	3.7	-0.3	3.5	-10.3	--	--	11.8	-25.8	-16.6	--	--
<i>Bloomberg Commodity Index TR USD</i>			2.5	-2.9	-0.3	-10.4	--	--	11.8	-24.7	-17.0	--	--
<b>Total Cash</b>	<b>25,801,335</b>	<b>1.9</b>	<b>0.0</b>	<b>0.6</b>	<b>0.8</b>	<b>0.6</b>	<b>0.4</b>	<b>0.9</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>
<i>91 Day T-Bills</i>			0.3	0.6	0.7	0.3	0.2	0.4	0.3	0.0	0.0	0.0	0.1
Cash Account	25,801,335	1.9	0.0	0.6	0.8	0.6	0.4	0.9	0.5	0.4	0.3	0.3	0.4
<i>91 Day T-Bills</i>			0.3	0.6	0.7	0.3	0.2	0.4	0.3	0.0	0.0	0.0	0.1

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.

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

Period Ending: September 30, 2017

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
SSGA S&P 500 Flag.	10.84%	0.02%	7.00%	0.05%	1.00	0.04%	1.00	1.51	0.58	100.03%	99.22%
PIMCO RAE Fundamental PLUS Instl	8.31%	-2.51%	7.00%	-1.60%	0.92	2.83%	0.84	1.15	-0.89	81.24%	111.96%
Atlanta Capital Mgmt	14.82%	4.21%	7.33%	8.34%	0.61	5.86%	0.61	1.98	0.72	111.31%	34.80%
Dodge & Cox Intl Stock	3.87%	-1.66%	14.11%	-2.96%	1.24	5.50%	0.88	0.25	-0.30	97.69%	118.90%
SSGA TIPS	1.55%	-0.06%	3.56%	-0.06%	1.00	0.02%	1.00	0.36	-2.59	99.18%	101.76%
Brandywine Global Fixed Income	0.62%	0.15%	8.64%	0.28%	0.72	5.51%	0.70	0.03	0.03	69.87%	70.77%
Stone Harbor Local Markets Ins	-0.66%	-0.93%	12.89%	-0.94%	1.06	1.81%	0.98	-0.07	-0.51	100.32%	108.62%
Direct Real Estate	14.10%	3.26%	8.40%	2.32%	1.09	8.22%	0.04	1.64	0.40	134.17%	--
JP Morgan Core Real Estate	9.46%	-1.38%	1.69%	-1.30%	0.99	0.54%	0.90	5.41	-2.58	86.09%	--
Fidelity Real Estate Growth III	-1.36%	-12.21%	23.70%	-98.22%	8.93	22.74%	0.37	-0.07	-0.54	-11.16%	--
Gresham MTAP Commodity Builder	-10.27%	0.14%	15.53%	0.11%	1.00	1.84%	0.99	-0.68	0.08	100.54%	99.49%

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
SSGA S&P 500 Flag.	14.23%	0.01%	7.58%	0.02%	1.00	0.04%	1.00	1.85	0.26	100.00%	99.44%
PIMCO RAE Fundamental PLUS Instl	13.44%	-0.78%	8.19%	-0.95%	1.01	2.86%	0.88	1.62	-0.27	91.41%	84.28%
Atlanta Capital Mgmt	15.94%	2.08%	8.90%	5.33%	0.77	5.11%	0.74	1.77	0.41	99.26%	45.31%
Dodge & Cox Intl Stock	10.13%	1.27%	12.56%	0.40%	1.10	4.92%	0.85	0.79	0.26	108.62%	94.51%
SSGA TIPS	-0.04%	-0.06%	4.90%	-0.06%	1.00	0.02%	1.00	-0.05	-2.85	98.90%	100.75%
Brandywine Global Fixed Income	1.17%	2.25%	7.27%	1.89%	0.66	5.23%	0.65	0.13	0.43	71.66%	53.90%
Direct Real Estate	11.31%	-0.28%	6.74%	8.02%	0.28	6.81%	0.00	1.65	-0.04	97.09%	--
JP Morgan Core Real Estate	10.63%	-0.96%	1.67%	-1.11%	1.01	0.79%	0.77	6.25	-1.21	89.97%	--
Fidelity Real Estate Growth III	7.08%	-4.51%	18.88%	-82.79%	7.75	18.06%	0.35	0.36	-0.25	55.81%	--



# Private Markets Non Marketable Securities Overview

Period Ending: September 30, 2017

Vintage	Manager & Fund Name	Estimated 9/30 Market Value <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value/ Paid-In (TVPI) <sup>2</sup>	Net IRR Since Inception <sup>5</sup>	IRR Date
2011	HarbourVest Partners IX-Buyout Fund L.P.	\$12,342,827	\$20,000,000	\$12,650,000	63%	\$7,350,000	\$5,569,600	\$13,027,263	44.0%	141.6%	16.6%	6/30/17
2010	KKR Mezzanine Partners I L.P. <sup>6</sup>	\$8,283,044	\$20,000,000	\$20,000,000	100%	\$0	\$21,358,377	\$8,267,444	106.8%	148.2%	8.0%	6/30/17
2010	PIMCO Distressed Credit Fund <sup>4</sup>	\$1,490,294	\$20,000,000	\$20,000,000	100%	\$0	\$26,747,593	\$2,240,492	133.7%	141.2%	12.6%	6/30/17
2016	TPG Diversified Credit Program	\$22,224,329	\$75,000,000	\$22,236,777	21%	\$59,317,905	\$309,273	\$18,095,980	1.4%	101.3%	5.3%	6/30/17
2017	Pathway Private Equity Fund Investors 9 L.P.	\$4,707,393	\$65,000,000	\$4,707,393	7%	\$60,292,607	-	-	-	-	-	-
<b>Total Alternative Illiquids</b>		<b>\$49,047,887</b>	\$200,000,000	\$79,594,170	40%	\$126,960,512	\$53,984,843	\$41,631,179	52.3%	120.1%		
<b>% of Portfolio (Market Value)</b>		<b>3.7%</b>										

	Management Fee	Admin Fee	Interest Expense	Other Expense	Total Expense <sup>7</sup>
HarbourVest Partners IX-Buyout Fund L.P.	\$49,794	\$0	\$0	\$9,291	\$59,085
KKR Mezzanine Partners I L.P.	\$30,313	\$0	\$0	\$0	\$30,313
PIMCO Distressed Credit Fund <sup>4</sup>	\$8,245	\$1,649	\$0	\$92	\$9,986
TPG Diversified Credit Program	\$54,507	\$0	\$0	\$0	\$54,507
Pathway Private Equity Fund Investors 9 L.P.	-	-	-	-	-
	<b>\$142,859</b>	<b>\$1,649</b>	<b>\$0</b>	<b>\$9,383</b>	<b>\$153,891</b>

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

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

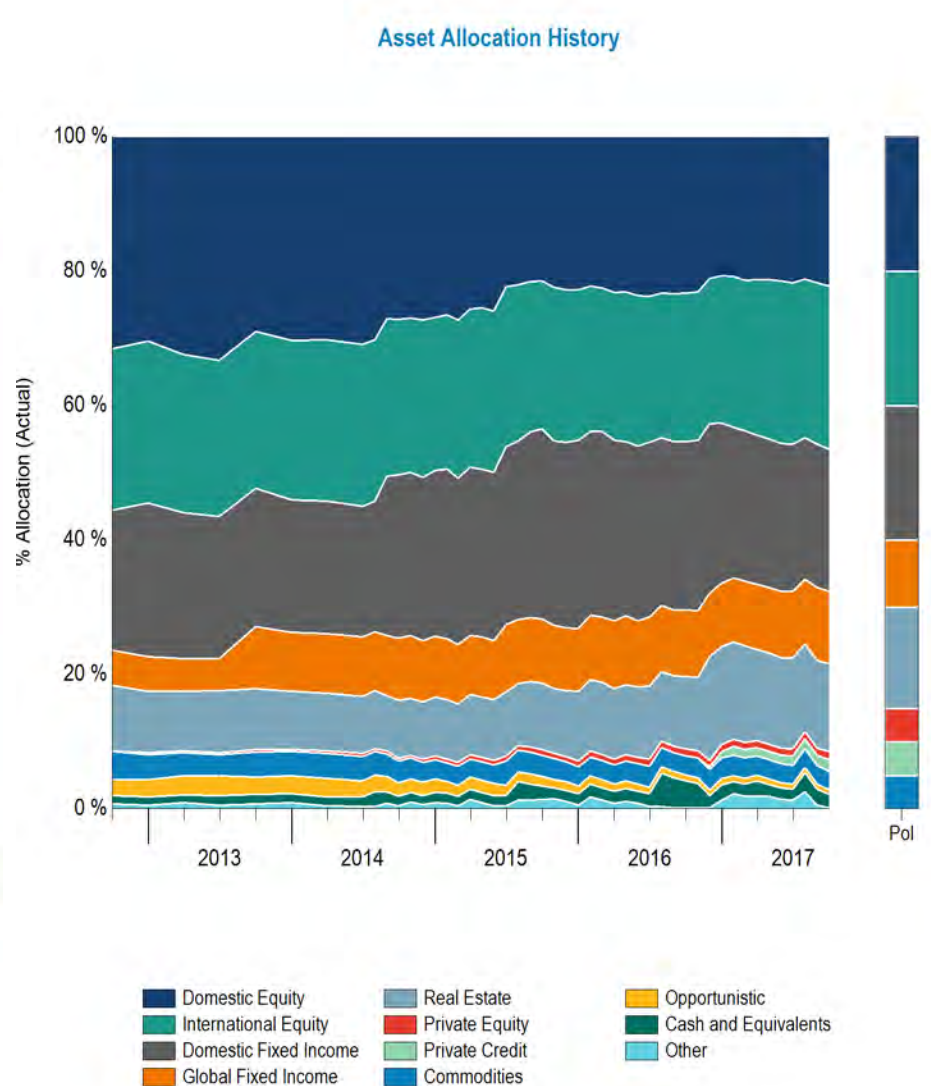
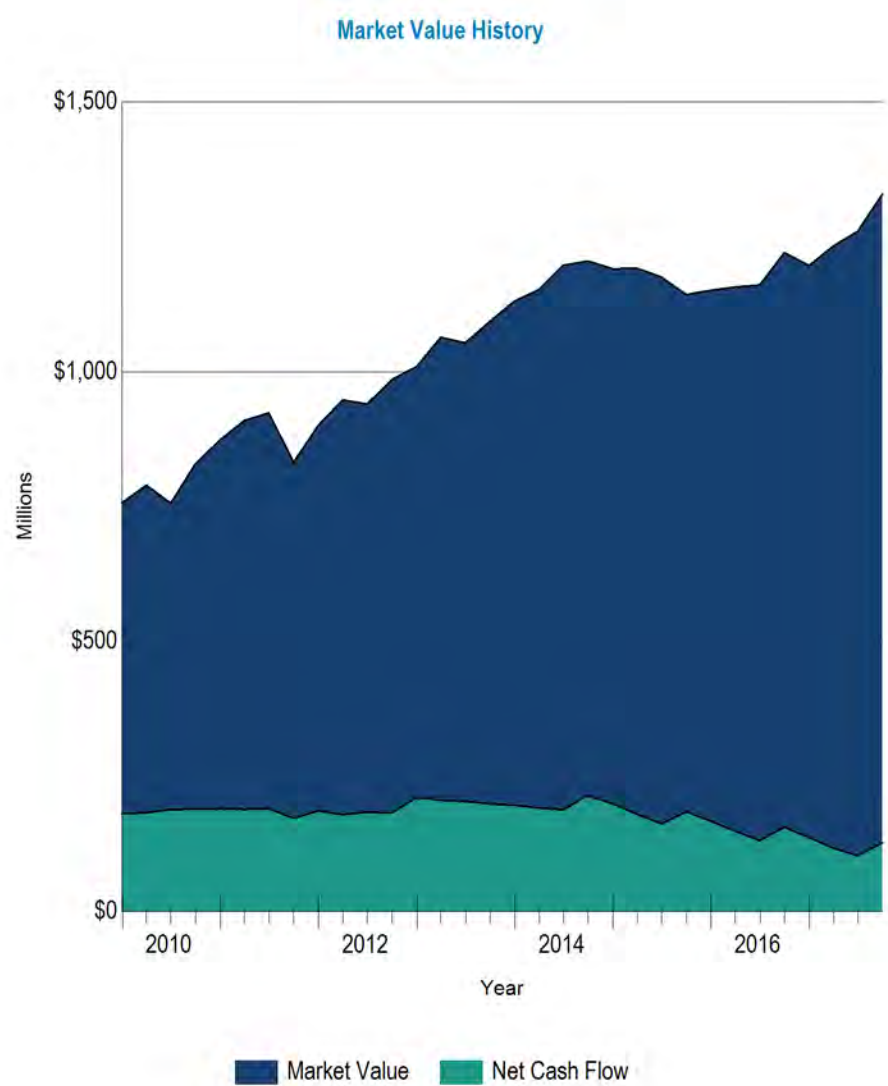
<sup>3</sup>Last known market value + capital calls - distributions (market values as of 6/30/2017)

<sup>4</sup>Investment period ended, no further capital to be called.

<sup>5</sup>Net 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

<sup>6</sup>KKR: As of 3Q2017, total capital called is \$23,593,570, which includes recycled distributions. Unused capital commitment is \$1,953,570 after including distribution proceeds available for reinvestment

<sup>7</sup>All fees and expenses are for 2Q 2017



\*Other balance represents Clifton Group



# Total Fund Asset Allocation vs. Policy

Period Ending: September 30, 2017



# Total Fund Investment Fund Fee Analysis

Period Ending: September 30, 2017

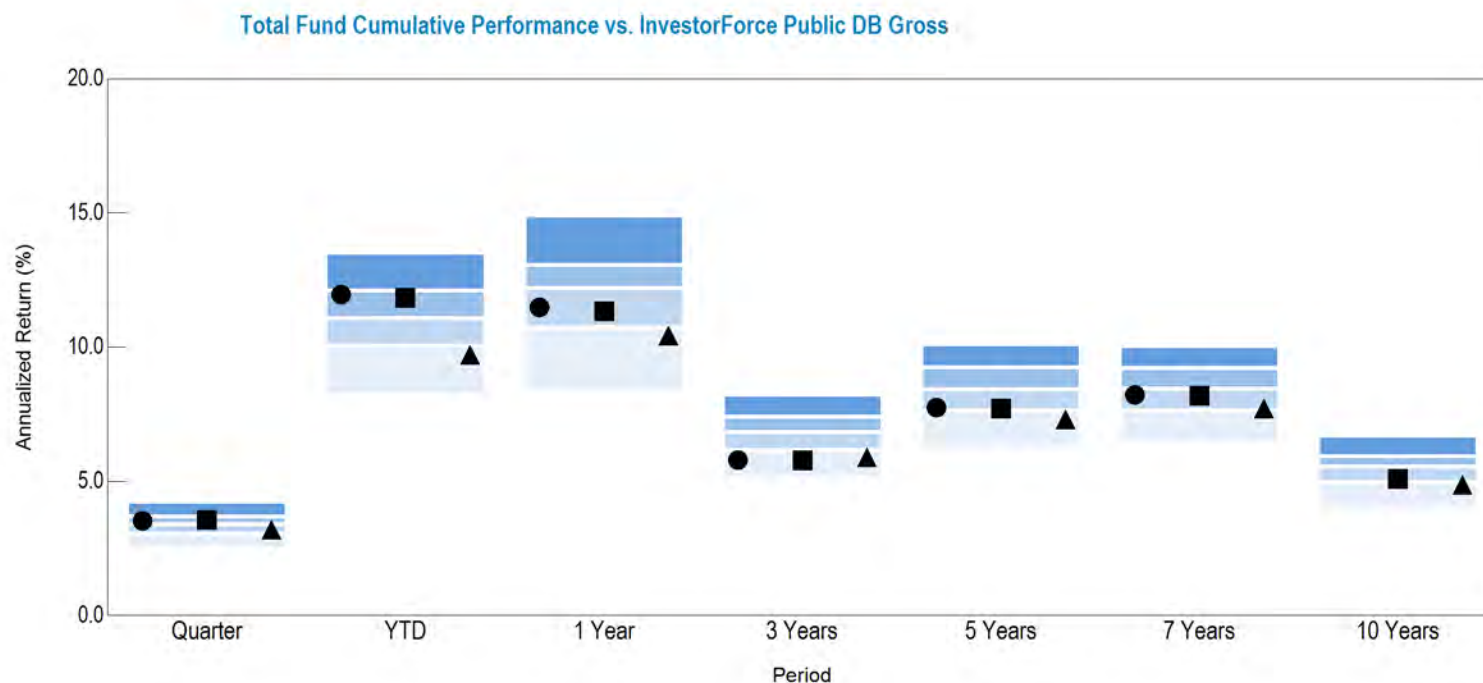
Account	Fee Schedule	Market Value As of 9/30/2017	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
ARA American Strategic Value Realty	1.25% of First \$10.0 Mil, 1.20% of Next \$15.0 Mil, 1.10% of Next \$25.0 Mil, 1.00% Thereafter	\$11,414,694	0.9%	\$141,976	1.24%
Atlanta Capital Mgmt	0.80% of First \$50.0 Mil, 0.70% of Next \$100.0 Mil, 0.60% Thereafter	\$56,961,832	4.3%	\$448,733	0.79%
BlackRock Core Bond	0.28% of First \$100.0 Mil, 0.26% Thereafter	\$95,233,462	7.2%	\$266,654	0.28%
Boston Partners Large Cap Value	0.40% of Assets	\$80,756,611	6.1%	\$323,026	0.40%
Brandywine Global Fixed Income	0.45% of First \$50.0 Mil, 0.40% of Next \$50.0 Mil, 0.35% Thereafter	\$71,883,585	5.4%	\$312,534	0.43%
Cash Account	No Fee	\$25,801,335	1.9%	--	--
Direct Real Estate	No Fee	\$13,103,242	1.0%	--	--
Dodge & Cox Income Fund	0.43% of Assets	\$99,817,619	7.5%	\$429,216	0.43%
Dodge & Cox Intl Stock	0.64% of Assets	\$169,909,075	12.8%	\$1,087,418	0.64%
Fidelity Real Estate Growth III	1.40% of Assets	\$223,019	0.0%	\$3,122	1.40%
Gresham MTAP Commodity Builder	0.75% of First \$50.0 Mil, 0.50% Thereafter	\$36,387,022	2.7%	\$272,903	0.75%
Harbourvest Partners IX Buyout Fund L.P.	\$200,000 Annually	\$12,342,827	0.9%	\$200,000	1.62%
JP Morgan Core Real Estate	1.00% of Assets	\$148,431,989	11.2%	\$1,484,320	1.00%
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	\$300,000 Annually	\$8,283,044	0.6%	\$300,000	3.62%
Loomis Sayles Large Cap Growth	0.45% of First \$100.0 Mil, 0.40% Thereafter	\$91,001,101	6.8%	\$409,505	0.45%
Pacific Asset Corporate Loan	0.37% of Assets	\$67,866,605	5.1%	\$251,106	0.37%
Pathway Private Equity Fund Investors 9 L.P.	Please see footnote	\$4,707,393	0.4%	--	--
PIMCO Distressed Credit Fund	\$150,000 Annually	\$1,490,294	0.1%	\$150,000	10.07%
PIMCO RAE Fundamental PLUS Instl	0.40% of Assets	\$55,400,081	4.2%	\$221,600	0.40%
SSGA S&P 500 Flag.	0.04% of First \$100.0 Mil, 0.03% Thereafter	\$11,705,968	0.9%	\$4,682	0.04%
SSGA TIPS	0.05% of First \$100.0 Mil, 0.04% Thereafter	\$19,057,234	1.4%	\$10,291	0.05%
Stone Harbor Local Markets Ins	0.88% of Assets	\$70,539,432	5.3%	\$620,747	0.88%
The Clifton Group	\$50,000 Annually	\$1,997,434	0.2%	\$50,000	2.50%
TPG Diversified Credit Program	Please see footnote	\$22,224,329	1.7%	--	--
WCM International Growth	0.70% of Assets	\$152,794,183	11.5%	\$1,069,559	0.70%
<b>Investment Management Fee</b>		<b>\$1,329,333,410</b>	<b>100.0%</b>	<b>\$8,057,394</b>	<b>0.61%</b>

\*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) TICIP 30bps on remaining capital contributions.

## Period Ending: September 30, 2017

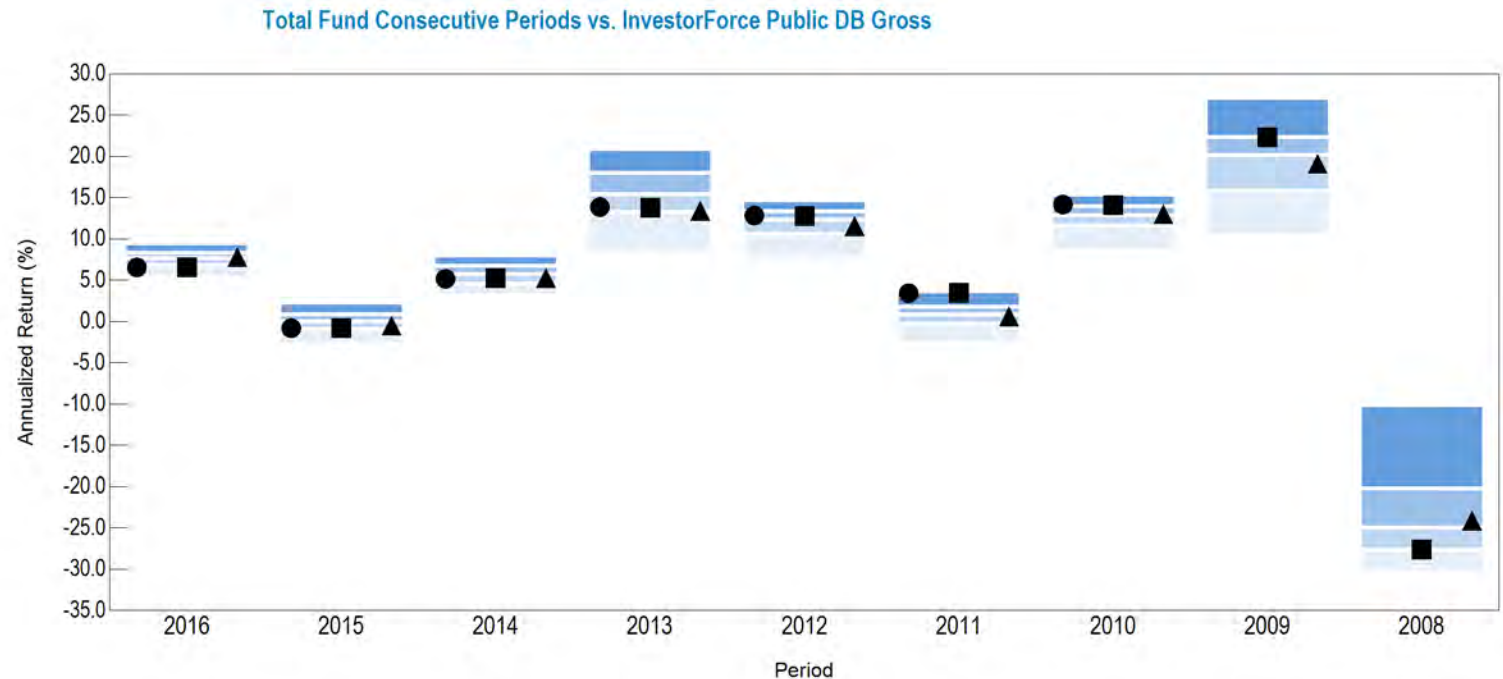


	Return (Rank)													
5th Percentile	4.2		13.5		14.9		8.2		10.1		10.0		6.7	
25th Percentile	3.7		12.1		13.1		7.4		9.3		9.2		5.9	
Median	3.4		11.1		12.2		6.9		8.5		8.5		5.6	
75th Percentile	3.1		10.1		10.8		6.2		7.7		7.7		5.0	
95th Percentile	2.5		8.2		8.4		5.1		6.3		6.5		4.0	
# of Portfolios	311		311		309		283		257		228		208	
● Total Fund	3.5	(40)	12.0	(31)	11.5	(63)	5.8	(86)	7.7	(74)	8.2	(57)	--	(--)
■ Total Fund ex Clifton	3.6	(37)	11.8	(34)	11.3	(67)	5.8	(87)	7.7	(74)	8.2	(57)	5.1	(69)
▲ Policy Index	3.2	(64)	9.7	(84)	10.4	(84)	5.9	(83)	7.3	(83)	7.7	(72)	4.9	(78)

# Total Fund

## Peer Universe Comparison: Consecutive Periods (Gross of Fees)

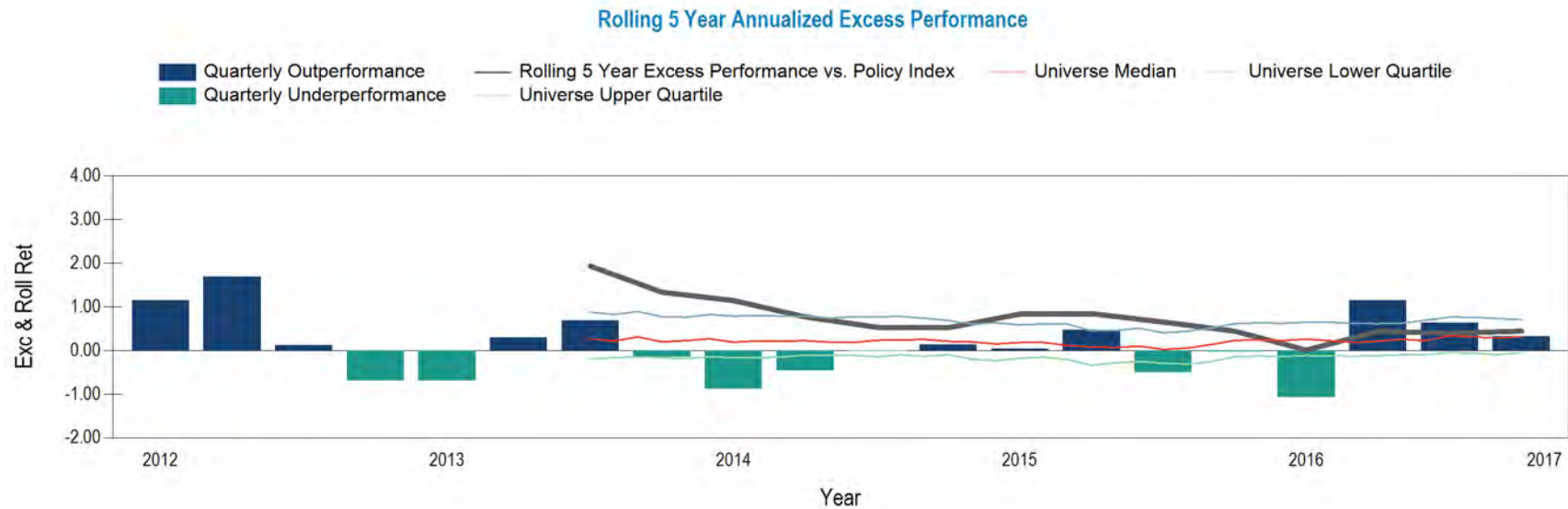
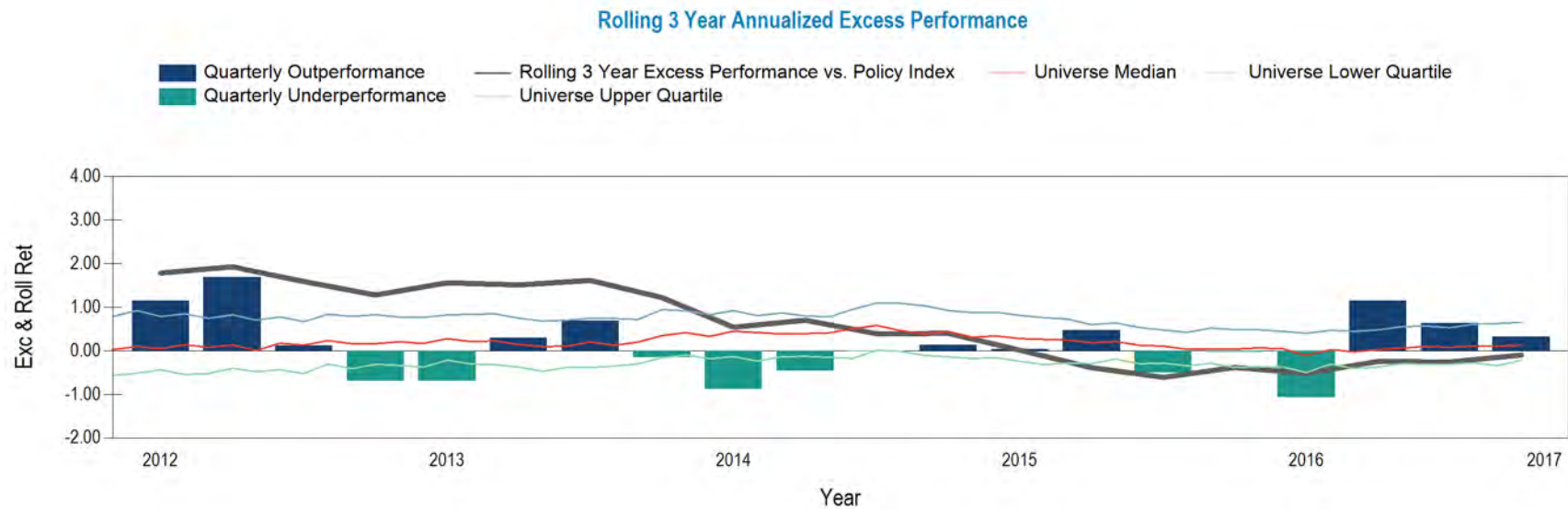
Period Ending: September 30, 2017



	Return (Rank)													
5th Percentile	9.4	2.2	8.0	20.8	14.6	3.6	15.4	27.0	-10.1					
25th Percentile	8.4	0.9	6.8	18.0	13.4	1.9	14.0	22.4	-20.1					
Median	7.7	0.1	5.8	15.5	12.4	0.9	12.9	20.2	-24.9					
75th Percentile	6.9	-0.9	4.6	13.3	10.7	-0.3	11.7	15.9	-27.6					
95th Percentile	5.3	-2.6	3.2	8.5	7.8	-2.5	8.6	10.5	-30.3					
# of Portfolios	305	316	248	231	236	206	188	184	181					
● Total Fund	6.6 (84)	-0.8 (74)	5.1 (66)	13.8 (71)	12.8 (40)	3.4 (6)	14.2 (21)	-- (--)	-- (--)					
■ Total Fund ex Clifton	6.6 (83)	-0.8 (75)	5.2 (64)	13.8 (72)	12.7 (43)	3.5 (6)	14.1 (24)	22.3 (27)	-27.6 (76)					
▲ Policy Index	7.8 (49)	-0.5 (67)	5.2 (64)	13.4 (74)	11.6 (69)	0.6 (60)	13.0 (48)	19.1 (57)	-24.1 (44)					

Total Fund  
Rolling Return Analysis (Gross of Fees)

Period Ending: September 30, 2017





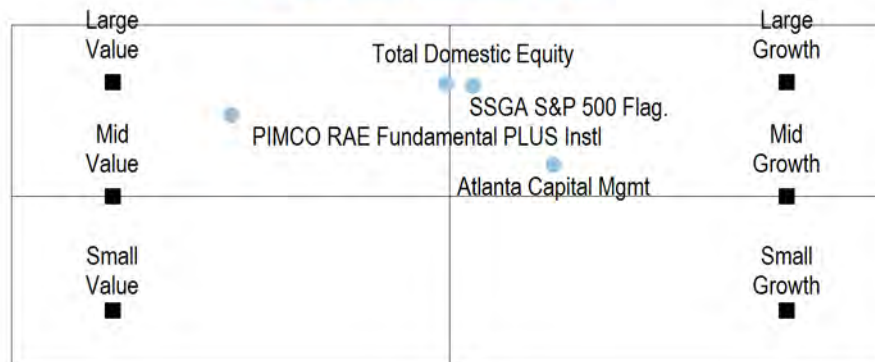
# Total Domestic Equity

## Asset Class Overview (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Domestic Equity</b>	<b>295,825,593</b>	<b>5.0</b>	<b>16.5</b>	<b>21.2</b>	<b>11.4</b>	<b>14.7</b>	<b>8.8</b>	<b>13.0</b>	<b>1.2</b>	<b>11.0</b>	<b>32.2</b>	<b>12.8</b>
<i>Russell 3000</i>		4.6	13.9	18.7	10.7	14.2	7.6	12.7	0.5	12.6	33.6	16.4
<i>InvestorForce Public DB US Eq Gross Rank</i>		17	5	6	12	12	3	48	18	60	91	98
SSGA S&P 500 Flag.	11,705,968	4.5	14.3	18.7	10.9	14.3	--	12.0	1.5	13.7	32.4	16.1
<i>S&amp;P 500</i>		4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	16.0
<i>eA US Large Cap Core Equity Gross Rank</i>		54	48	50	34	39	--	31	40	42	58	39
PIMCO RAE Fundamental PLUS Instl	55,400,081	4.5	9.0	14.8	8.8	13.9	7.5	15.9	-2.7	12.7	36.0	16.8
<i>S&amp;P 500</i>		4.5	14.2	18.6	10.8	14.2	7.4	12.0	1.4	13.7	32.4	16.0
<i>eA US Large Cap Core Equity Gross Rank</i>		55	95	88	81	54	67	6	86	58	22	29
Loomis Sayles Large Cap Growth	91,001,101	6.4	25.9	--	--	--	--	--	--	--	--	--
<i>Russell 1000 Growth</i>		5.9	20.7	--	--	--	--	--	--	--	--	--
<i>eA US Large Cap Growth Equity Gross Rank</i>		25	13	--	--	--	--	--	--	--	--	--
Boston Partners Large Cap Value	80,756,611	4.8	--	--	--	--	--	--	--	--	--	--
<i>Russell 1000 Value</i>		3.1	--	--	--	--	--	--	--	--	--	--
<i>eA US Large Cap Value Equity Gross Rank</i>		27	--	--	--	--	--	--	--	--	--	--
Atlanta Capital Mgmt	56,961,832	3.9	15.6	18.8	15.7	16.8	--	12.6	10.4	5.8	37.8	15.5
<i>Russell 2500</i>		4.7	11.0	17.8	10.6	13.9	--	17.6	-2.9	7.1	36.8	17.9
<i>eA US Small-Mid Cap Equity Gross Rank</i>		63	27	55	5	9	--	62	1	56	52	55

U.S. Effective Style Map  
3 Years Ending September 30, 2017



U.S. Effective Style Map  
5 Years Ending September 30, 2017



Total Domestic Equity  
Asset Class Overview (Net of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Domestic Equity</b>	<b>295,825,593</b>	<b>4.9</b>	<b>16.1</b>	<b>20.7</b>	<b>11.0</b>	<b>14.2</b>	<b>--</b>	<b>12.7</b>	<b>0.8</b>	<b>10.5</b>	<b>31.6</b>	<b>12.3</b>
<i>Russell 3000</i>		4.6	13.9	18.7	10.7	14.2	--	12.7	0.5	12.6	33.6	16.4
SSGA S&P 500 Flag.	11,705,968	4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	15.9
<i>S&amp;P 500</i>		4.5	14.2	18.6	10.8	14.2	--	12.0	1.4	13.7	32.4	16.0
PIMCO RAE Fundamental PLUS Instl	55,400,081	4.4	8.7	14.3	8.3	13.4	7.1	15.4	-3.2	12.3	35.6	16.7
<i>S&amp;P 500</i>		4.5	14.2	18.6	10.8	14.2	7.4	12.0	1.4	13.7	32.4	16.0
Loomis Sayles Large Cap Growth	91,001,101	6.3	25.5	--	--	--	--	--	--	--	--	--
<i>Russell 1000 Growth</i>		5.9	20.7	--	--	--	--	--	--	--	--	--
Boston Partners Large Cap Value	80,756,611	4.7	--	--	--	--	--	--	--	--	--	--
<i>Russell 1000 Value</i>		3.1	--	--	--	--	--	--	--	--	--	--
Atlanta Capital Mgmt	56,961,832	3.7	14.9	17.9	14.8	15.9	--	11.7	9.6	5.0	37.0	14.7
<i>Russell 2500</i>		4.7	11.0	17.8	10.6	13.9	--	17.6	-2.9	7.1	36.8	17.9

Total Domestic Equity  
Asset Class Overview (Net of Fees)

Period Ending: September 30, 2017

Common Holdings Matrix  
As of September 30, 2017

	SSGA S&P 500 Flag.		Atlanta Capital Mgmt		
	#	%	#	%	
SSGA S&P 500 Flag.	--	--	10	21.59	
Atlanta Capital Mgmt	10	0.48	--	--	

Correlation Matrix  
Last 5 Years

	Total Domestic Equity	SSGA S&P 500 Flag.	PIMCO RAE Fundamental PLUS Instl	Loomis Sayles Large Cap Growth	Boston Partners Large Cap Value	Atlanta Capital Mgmt	Russell 3000
Total Domestic Equity	1.00	--	--	--	--	--	--
SSGA S&P 500 Flag.	0.95	1.00	--	--	--	--	--
PIMCO RAE Fundamental PLUS Instl	0.93	0.94	1.00	--	--	--	--
Loomis Sayles Large Cap Growth	--	--	--	--	--	--	--
Boston Partners Large Cap Value	--	--	--	--	--	--	--
Atlanta Capital Mgmt	0.87	0.82	0.80	--	--	1.00	--
Russell 3000	0.96	0.99	0.95	--	--	0.85	1.00



# SSGA S&P 500 Flag. Manager Portfolio Overview

Period Ending: September 30, 2017

## Characteristics

	Portfolio	S&P 500
Number of Holdings	505	505
Weighted Avg. Market Cap. (\$B)	163.58	163.13
Median Market Cap. (\$B)	20.66	20.66
Price To Earnings	25.15	24.57
Price To Book	5.33	4.78
Price To Sales	3.65	3.38
Return on Equity (%)	21.08	19.95
Yield (%)	1.96	1.95
Beta	1.00	1.00

## Sector Allocation (%) vs S&P 500



\*Unclassified includes Cash

## Top Holdings Ending Period Weight

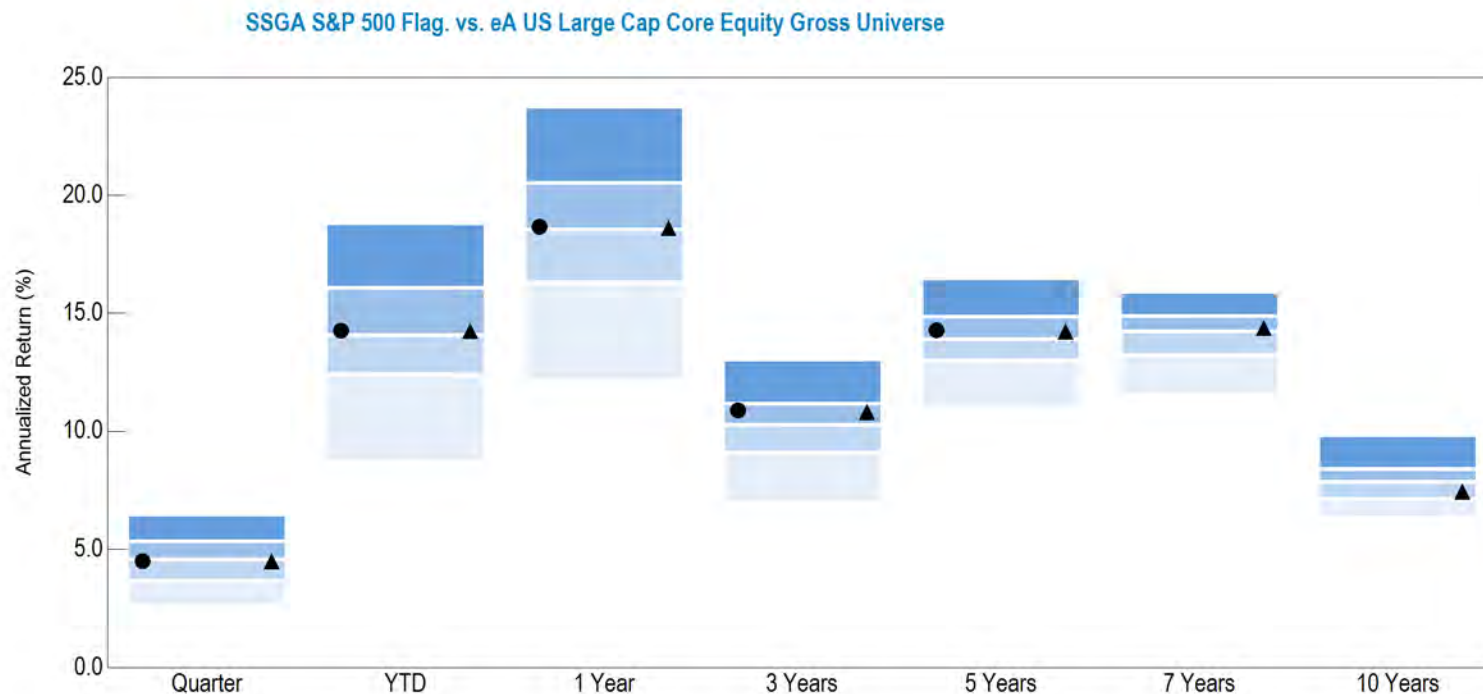
APPLE	3.70%
MICROSOFT	2.67%
FACEBOOK CLASS A	1.88%
AMAZON.COM	1.78%
BERKSHIRE HATHAWAY 'B'	1.64%
JOHNSON & JOHNSON	1.62%
EXXON MOBIL	1.61%
JP MORGAN CHASE & CO.	1.56%
ALPHABET 'A'	1.35%
ALPHABET 'C'	1.34%
<b>Total</b>	<b>19.17%</b>

## Top Contributors

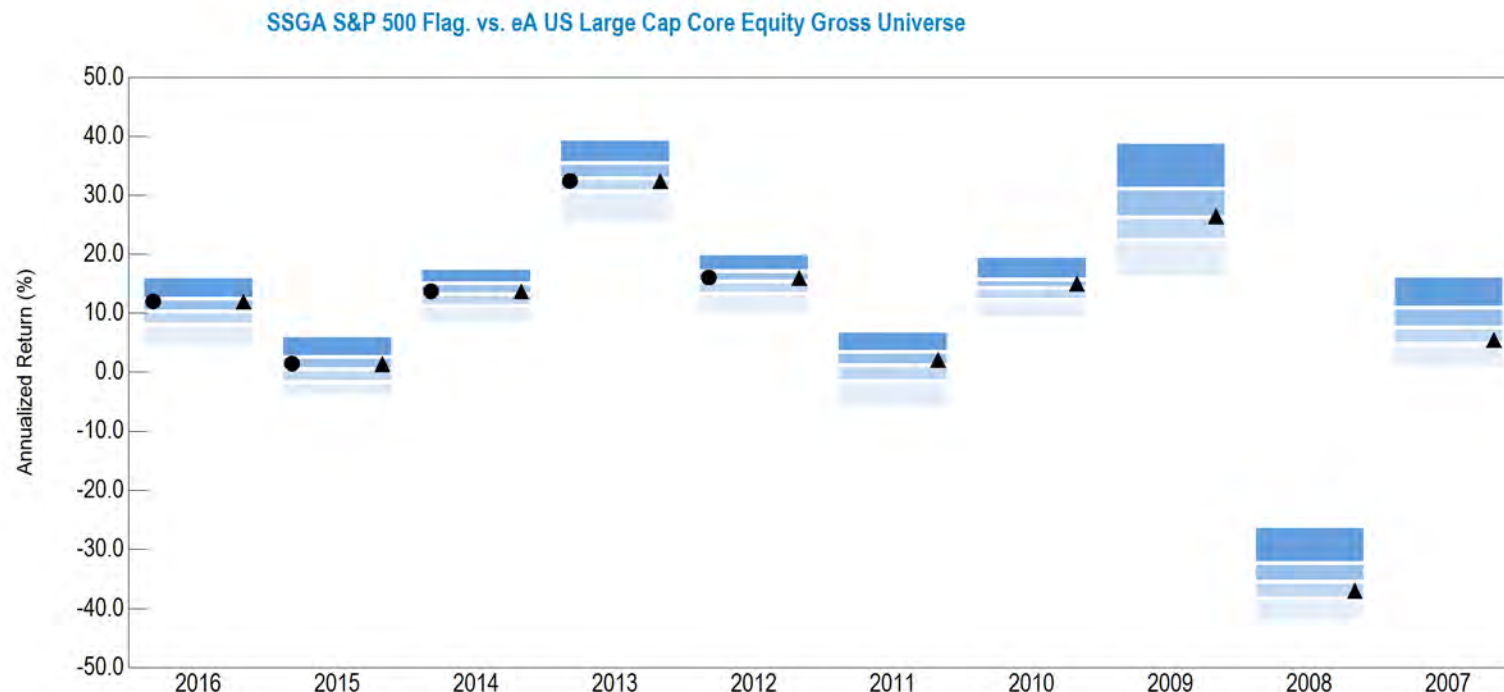
	Avg Wgt	Return	Contribution
APPLE	3.62	7.45	0.27
FACEBOOK CLASS A	1.71	13.17	0.23
MICROSOFT	2.56	8.64	0.22
BOEING	0.53	29.33	0.16
ABBVIE	0.56	23.64	0.13
CHEVRON	0.95	13.76	0.13
BERKSHIRE HATHAWAY 'B'	1.55	8.24	0.13
VERIZON COMMUNICATIONS	0.88	12.29	0.11
INTEL	0.77	13.71	0.11
VISA 'A'	0.83	12.40	0.10

## Bottom Contributors

	Avg Wgt	Return	Contribution
GENERAL ELECTRIC	1.13	-9.58	-0.11
ALTRIA GROUP	0.70	-13.94	-0.10
MEDTRONIC	0.58	-11.40	-0.07
ALLERGAN	0.40	-15.43	-0.06
WALT DISNEY	0.74	-6.53	-0.05
NIKE 'B'	0.38	-11.82	-0.04
PHILIP MORRIS INTL.	0.88	-4.58	-0.04
STARBUCKS	0.41	-7.47	-0.03
INTERNATIONAL BUS.MCHS.	0.64	-4.69	-0.03
NEWELL BRANDS	0.12	-20.04	-0.02



	Return (Rank)													
5th Percentile	6.4		18.8		23.7		13.0		16.5		15.9		9.8	
25th Percentile	5.4		16.1		20.6		11.2		14.9		14.9		8.4	
Median	4.6		14.1		18.6		10.3		13.9		14.3		7.9	
75th Percentile	3.7		12.4		16.3		9.1		13.0		13.3		7.1	
95th Percentile	2.6		8.7		12.1		7.0		11.0		11.6		6.3	
# of Portfolios	320		320		320		311		285		259		231	
● SSGA S&P 500 Flag.	4.5	(54)	14.3	(48)	18.7	(50)	10.9	(34)	14.3	(39)	--	(--)	--	(--)
▲ S&P 500	4.5	(54)	14.2	(48)	18.6	(50)	10.8	(36)	14.2	(41)	14.4	(46)	7.4	(68)

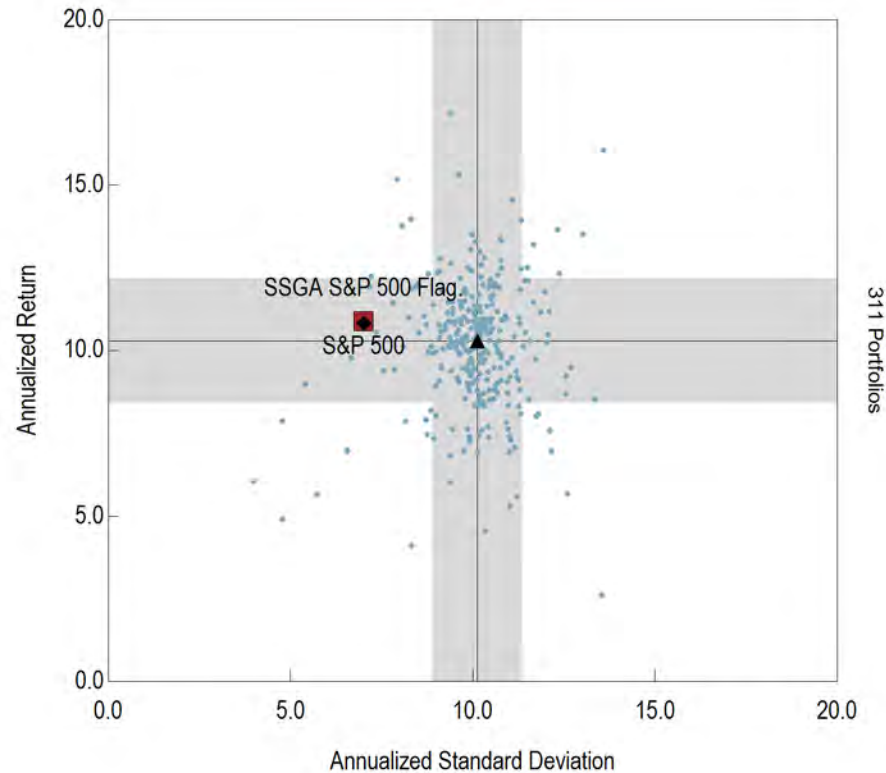


	Return (Rank)									
5th Percentile	16.3	6.3	17.7	39.6	20.1	7.0	19.7	39.1	-26.1	16.3
25th Percentile	12.5	2.7	15.1	35.5	17.2	3.6	15.8	31.2	-32.3	11.1
Median	10.4	0.6	13.3	32.9	15.4	1.3	14.4	26.3	-35.4	7.7
75th Percentile	8.2	-1.6	11.4	30.8	13.4	-1.5	12.3	22.6	-38.1	4.9
95th Percentile	4.3	-4.1	8.2	25.4	9.8	-5.9	9.1	16.1	-42.3	0.7
# of Portfolios	308	267	267	261	254	259	254	280	312	320
● SSGA S&P 500 Flag.	12.0 (31)	1.5 (40)	13.7 (42)	32.4 (58)	16.1 (39)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
▲ S&P 500	12.0 (31)	1.4 (42)	13.7 (42)	32.4 (58)	16.0 (41)	2.1 (40)	15.1 (37)	26.5 (48)	-37.0 (62)	5.5 (71)

SSGA S&P 500 Flag.  
Risk vs Return Three & Five Year (Gross of Fees)

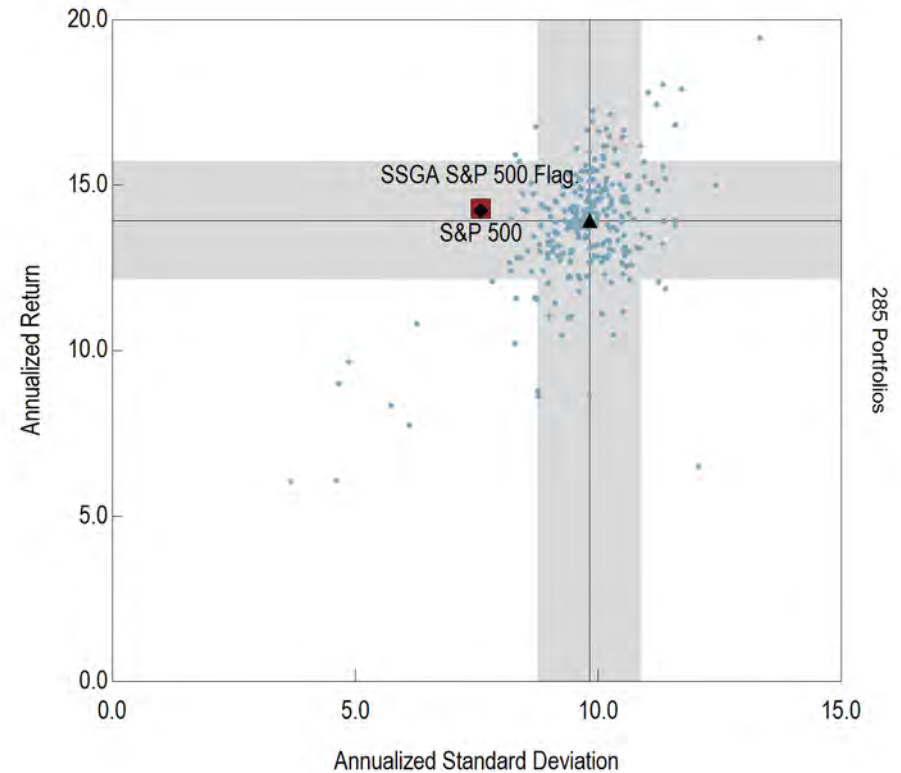
Period Ending: September 30, 2017

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017



- SSGA S&P 500 Flag.
- ◆ S&P 500
- ▲ Universe Median
- 68% Confidence Interval
- eA US Large Cap Core Equity Gross

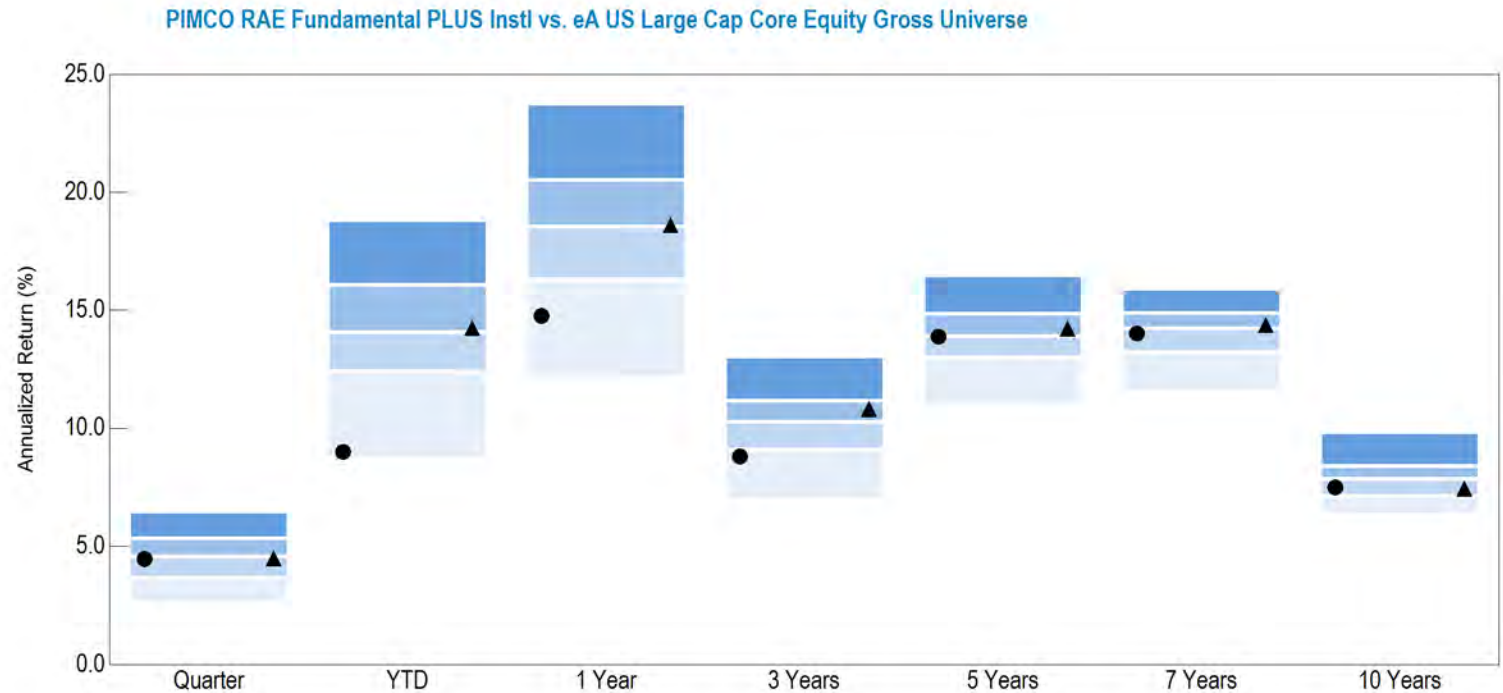
Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017



- SSGA S&P 500 Flag.
- ◆ S&P 500
- ▲ Universe Median
- 68% Confidence Interval
- eA US Large Cap Core Equity Gross

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

Period Ending: September 30, 2017

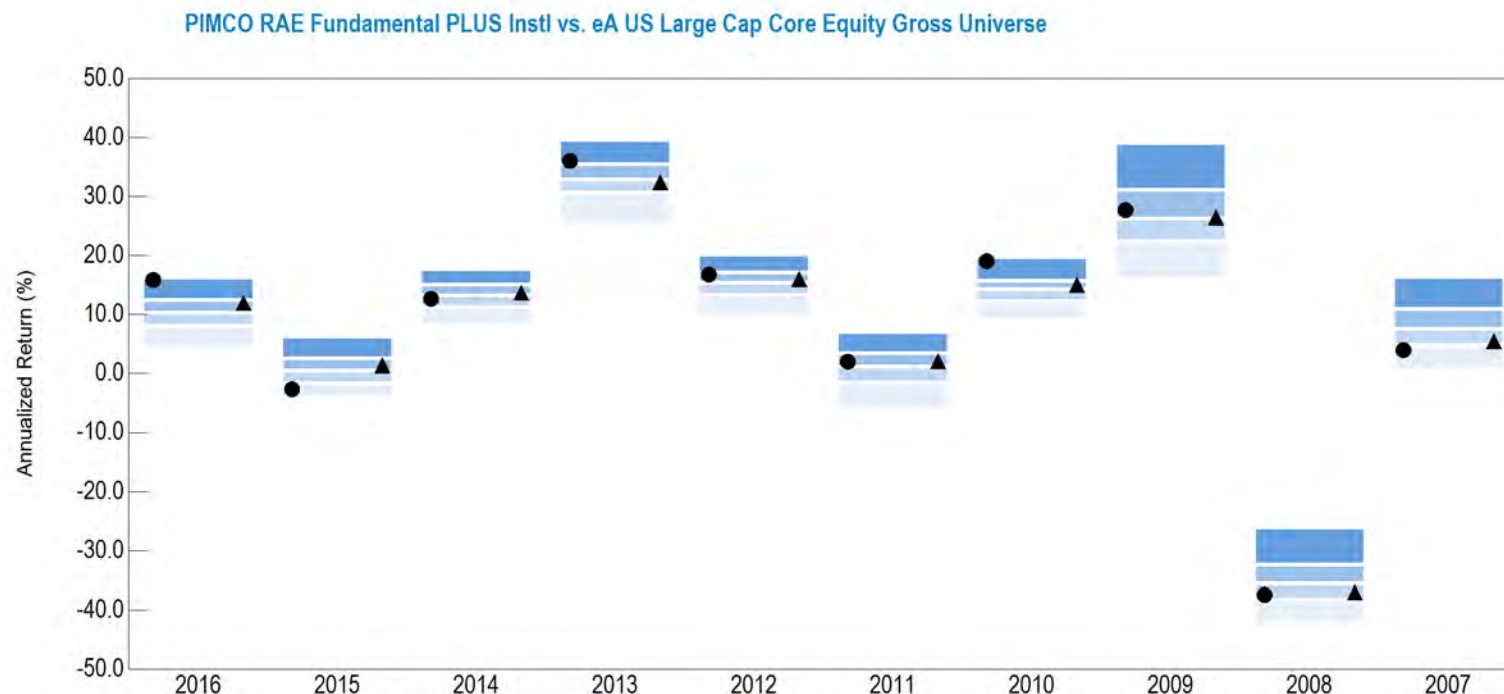


	Return (Rank)											
5th Percentile	6.4		18.8		23.7		13.0		16.5		15.9	
25th Percentile	5.4		16.1		20.6		11.2		14.9		14.9	
Median	4.6		14.1		18.6		10.3		13.9		14.3	
75th Percentile	3.7		12.4		16.3		9.1		13.0		13.3	
95th Percentile	2.6		8.7		12.1		7.0		11.0		11.6	
# of Portfolios	320		320		320		311		285		259	
● PIMCO RAE Fundamental PLUS Instl	4.5	(55)	9.0	(95)	14.8	(88)	8.8	(81)	13.9	(54)	14.0	(55)
▲ S&P 500	4.5	(54)	14.2	(48)	18.6	(50)	10.8	(36)	14.2	(41)	14.4	(46)
											7.5	(67)
											7.4	(68)



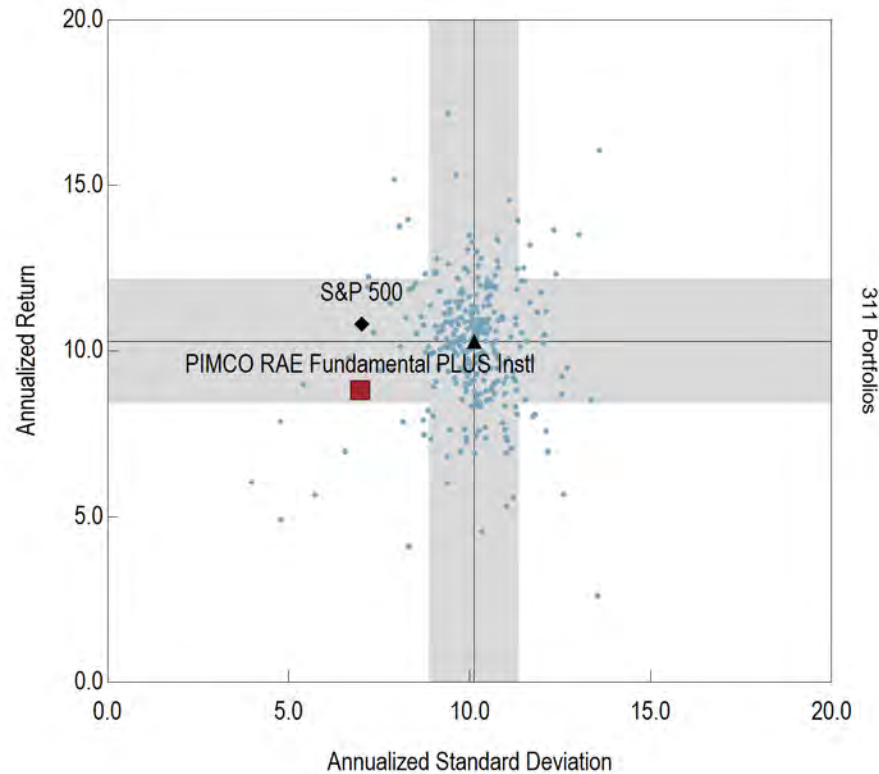
PIMCO RAE Fundamental PLUS Instl  
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2017



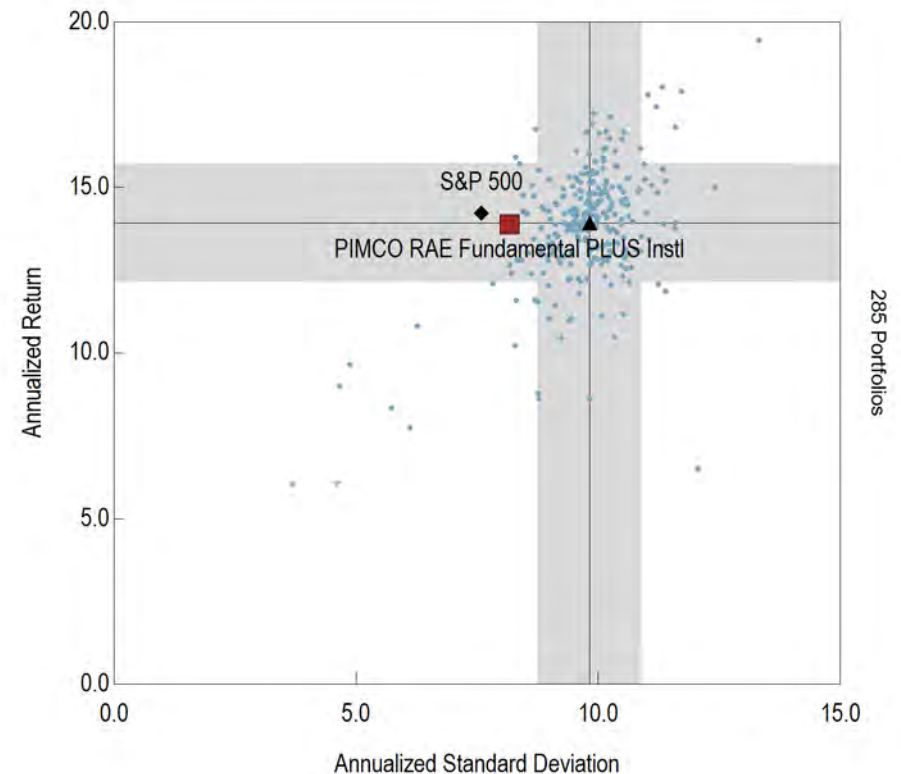
	Return (Rank)									
5th Percentile	16.3	6.3	17.7	39.6	20.1	7.0	19.7	39.1	-26.1	16.3
25th Percentile	12.5	2.7	15.1	35.5	17.2	3.6	15.8	31.2	-32.3	11.1
Median	10.4	0.6	13.3	32.9	15.4	1.3	14.4	26.3	-35.4	7.7
75th Percentile	8.2	-1.6	11.4	30.8	13.4	-1.5	12.3	22.6	-38.1	4.9
95th Percentile	4.3	-4.1	8.2	25.4	9.8	-5.9	9.1	16.1	-42.3	0.7
# of Portfolios	308	267	267	261	254	259	254	280	312	320
● PIMCO RAE Fundamental PLUS Instl	15.9 (6)	-2.7 (86)	12.7 (58)	36.0 (22)	16.8 (29)	2.0 (41)	19.0 (7)	27.7 (42)	-37.4 (68)	4.0 (80)
▲ S&P 500	12.0 (31)	1.4 (42)	13.7 (42)	32.4 (58)	16.0 (41)	2.1 (40)	15.1 (37)	26.5 (48)	-37.0 (62)	5.5 (71)

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017

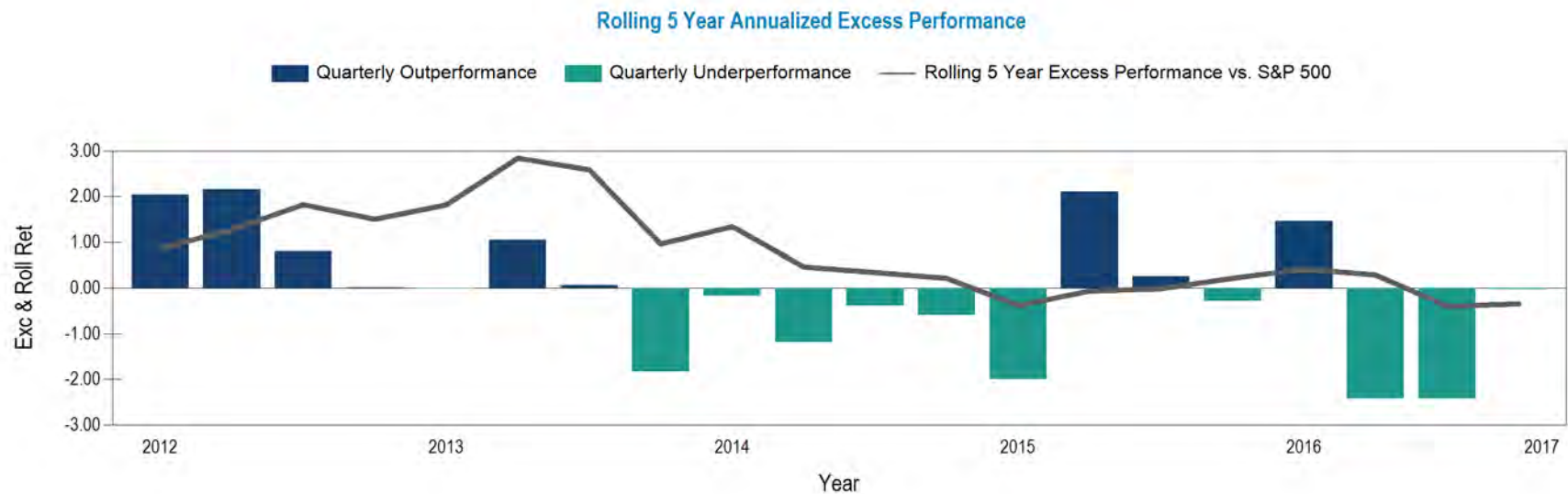
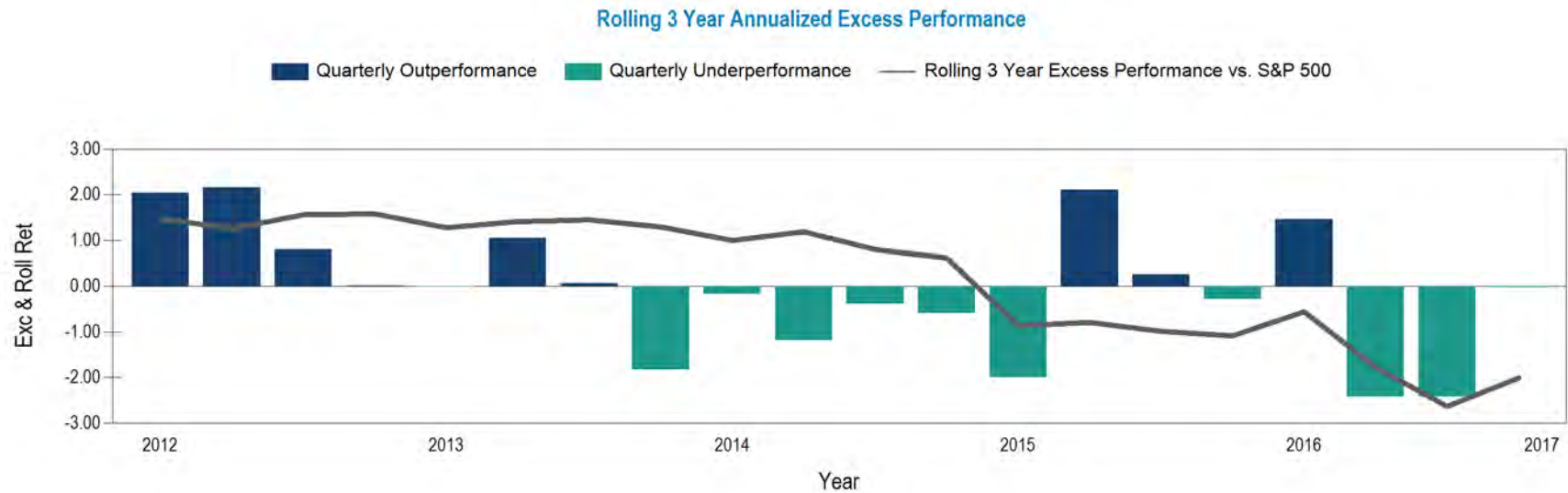


- PIMCO RAE Fundamental PLUS Instl
- ◆ S&P 500
- ▲ Universe Median
- 68% Confidence Interval
- eA US Large Cap Core Equity Gross

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017



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





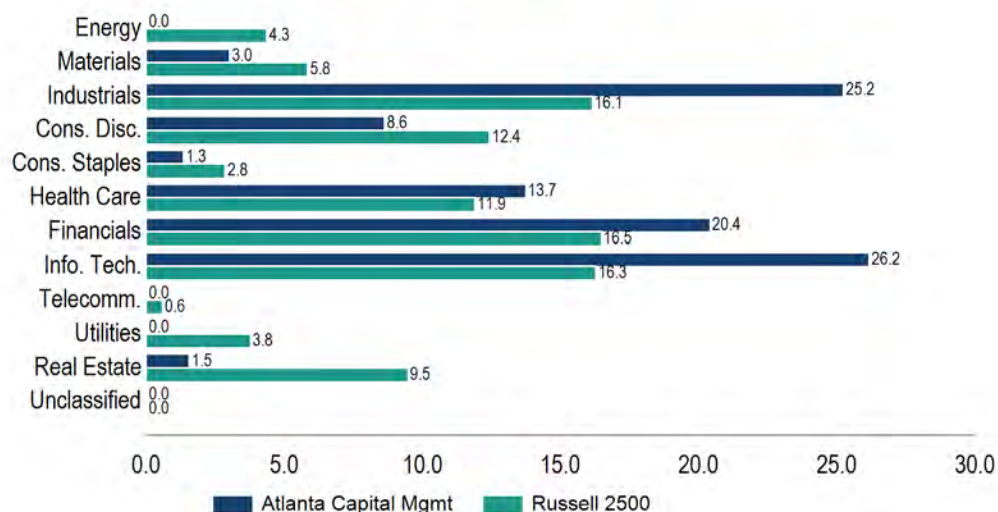
# Atlanta Capital Mgmt Manager Portfolio Overview

Period Ending: September 30, 2017

## Characteristics

	Portfolio	Russell 2500
Number of Holdings	46	2,491
Weighted Avg. Market Cap. (\$B)	7.97	4.67
Median Market Cap. (\$B)	7.00	1.20
Price To Earnings	33.54	25.93
Price To Book	5.77	3.54
Price To Sales	3.38	3.14
Return on Equity (%)	20.52	12.37
Yield (%)	0.74	1.28
Beta	0.61	1.00

## Sector Allocation (%) vs Russell 2500



\*Unclassified includes Cash

## Top Holdings Ending Period Weight

TELEFLEX	4.81%
ANSYS	4.21%
MARKEL	4.20%
SEI INVESTMENTS	3.70%
HUNT JB TRANSPORT SVS.	3.32%
TRANSUNION	3.31%
ARAMARK	2.99%
BIO-RAD LABORATORIES 'A'	2.92%
CDW	2.90%
BLACKBAUD	2.86%
<b>Total</b>	<b>35.20%</b>

## Top Contributors

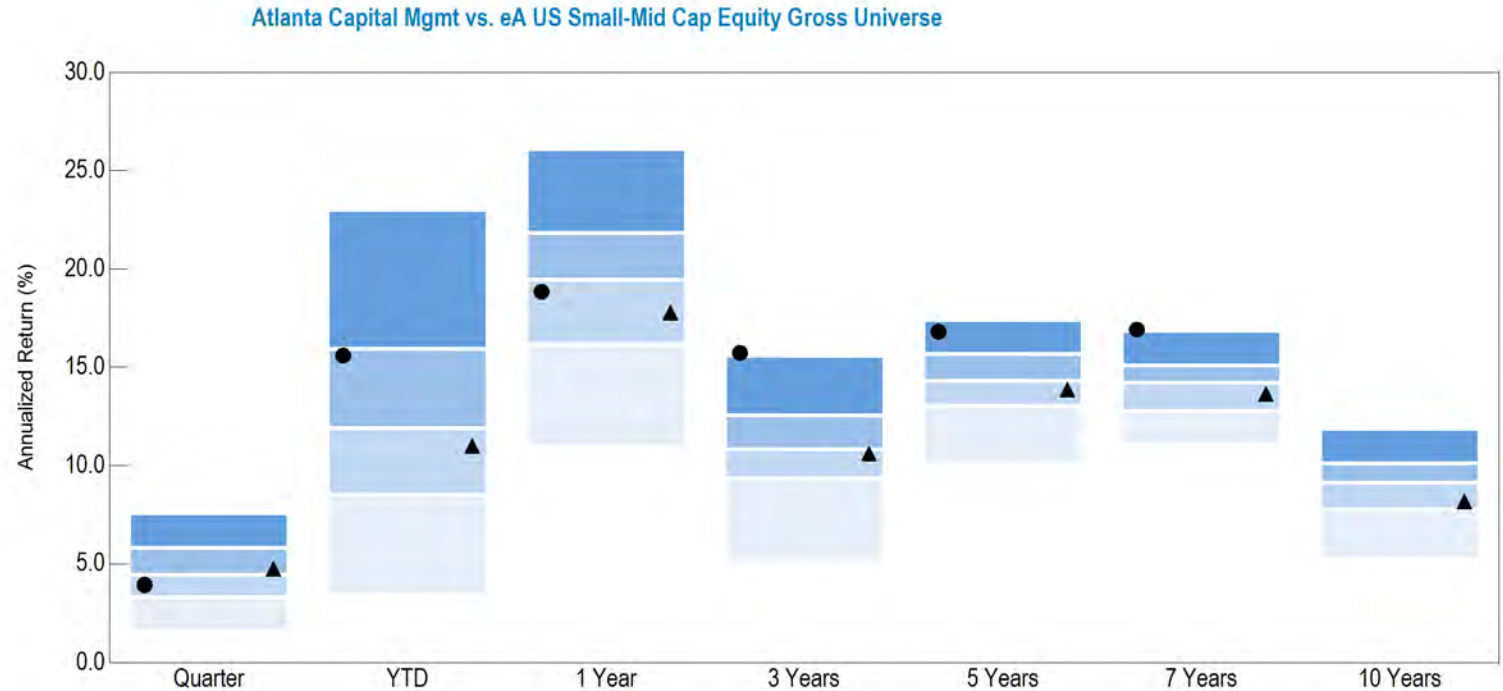
	Avg Wgt	Return	Contribution
TELEFLEX	4.31	16.66	0.72
HUNT JB TRANSPORT SVS.	2.85	21.87	0.62
SEI INVESTMENTS	3.40	13.54	0.46
MARKEL	4.01	9.44	0.38
AFFILIATED MANAGERS	2.57	14.58	0.37
SERVICEMASTER GLB.HDG.	1.77	19.24	0.34
TRANSUNION	3.17	9.12	0.29
LANDSTAR SYSTEM	1.42	16.55	0.24
IDEX	2.60	7.83	0.20
MORNINGSTAR	2.18	8.81	0.19

## Bottom Contributors

	Avg Wgt	Return	Contribution
ACUITY BRANDS	2.55	-15.69	-0.40
MANHATTAN ASSOCS.	2.36	-13.50	-0.32
DENTSPLY SIRONA	2.63	-7.62	-0.20
HENRY SCHEIN	1.27	-10.40	-0.13
CHURCH & DWIGHT CO.	1.50	-6.25	-0.09
SALLY BEAUTY HOLDINGS	2.22	-3.31	-0.07
W R BERKLEY	2.15	-3.31	-0.07
RPM INTERNATIONAL	1.26	-5.37	-0.07
BIO-RAD LABORATORIES 'A'	3.10	-1.81	-0.06
LENNOX INTL.	2.34	-2.26	-0.05

Atlanta Capital Mgmt  
Cumulative Performance Comparison (Gross of Fees)

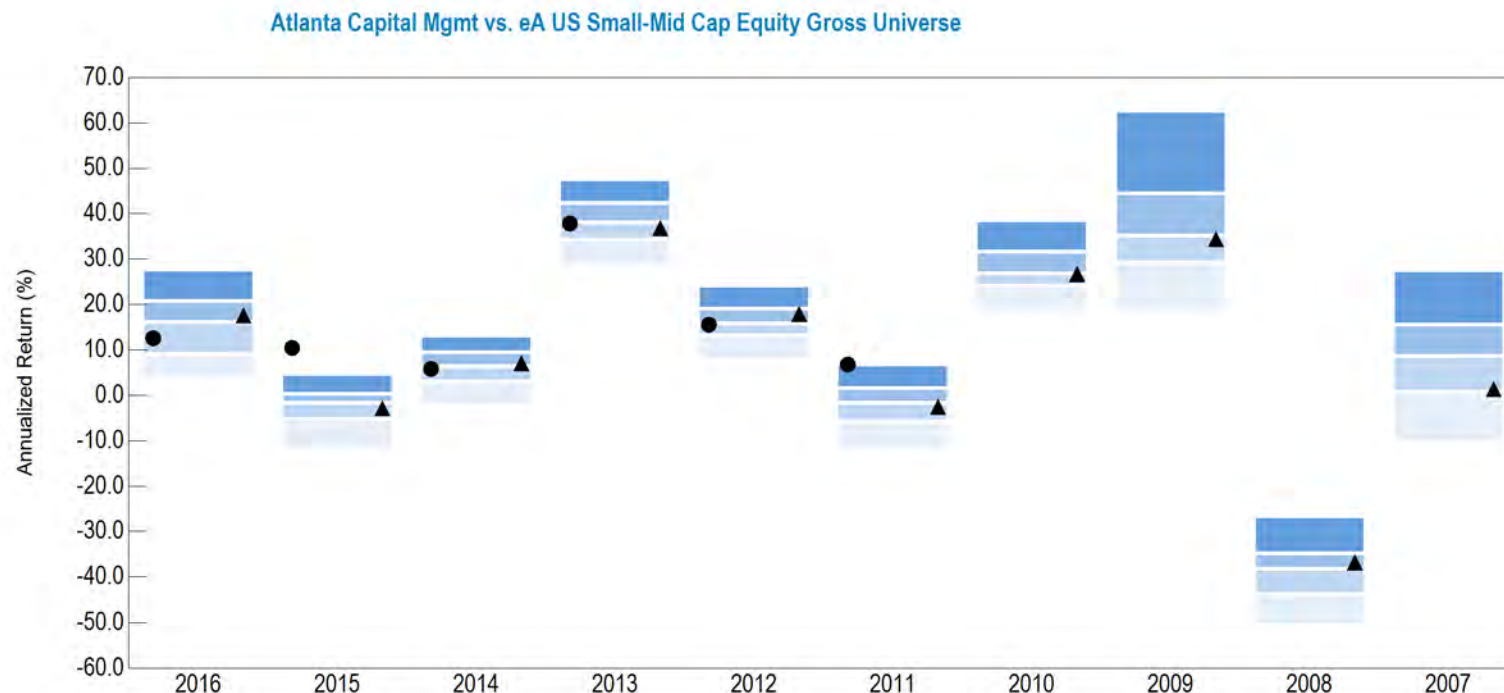
Period Ending: September 30, 2017



	Return (Rank)											
5th Percentile	7.6		23.0		26.1		15.6		17.4		16.8	
25th Percentile	5.8		15.9		21.9		12.6		15.7		15.1	
Median	4.5		11.9		19.5		10.8		14.3		14.2	
75th Percentile	3.4		8.5		16.2		9.4		13.1		12.8	
95th Percentile	1.6		3.4		10.9		5.1		10.1		11.1	
# of Portfolios	226		225		225		213		196		178	
● Atlanta Capital Mgmt	3.9	(63)	15.6	(27)	18.8	(55)	15.7	(5)	16.8	(9)	16.9	(5)
▲ Russell 2500	4.7	(44)	11.0	(56)	17.8	(65)	10.6	(53)	13.9	(61)	13.7	(63)
											--	(--)
											8.2	(70)

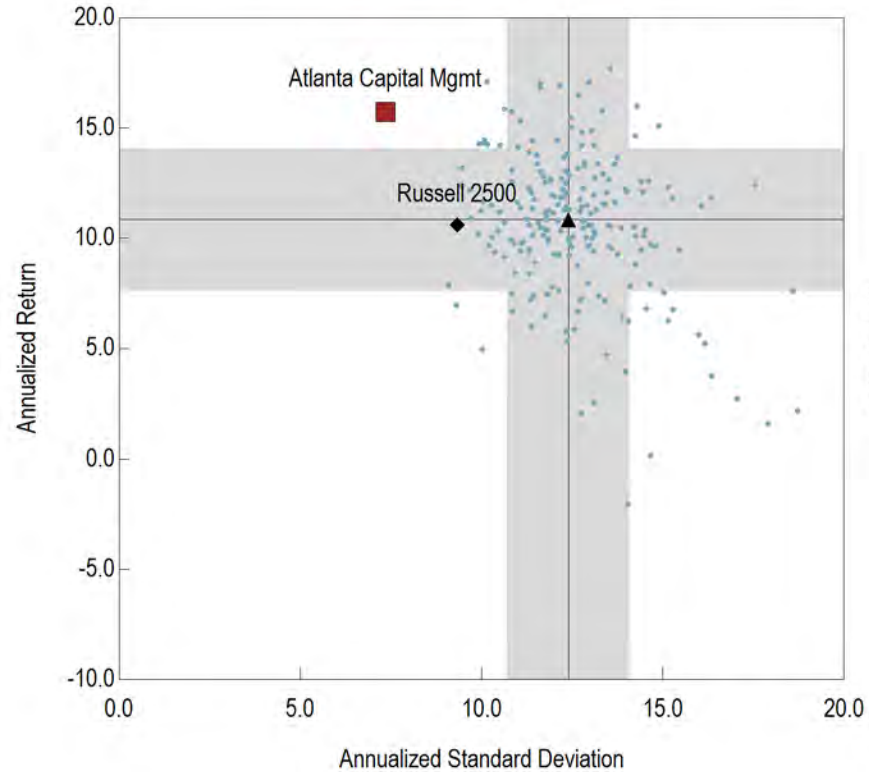
Atlanta Capital Mgmt  
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2017

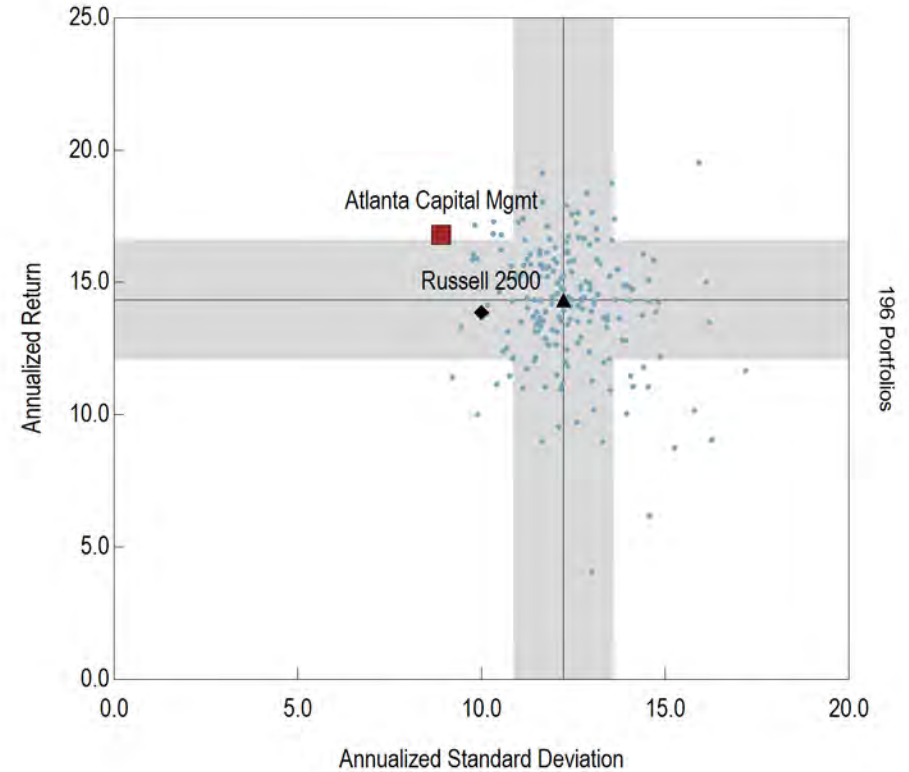


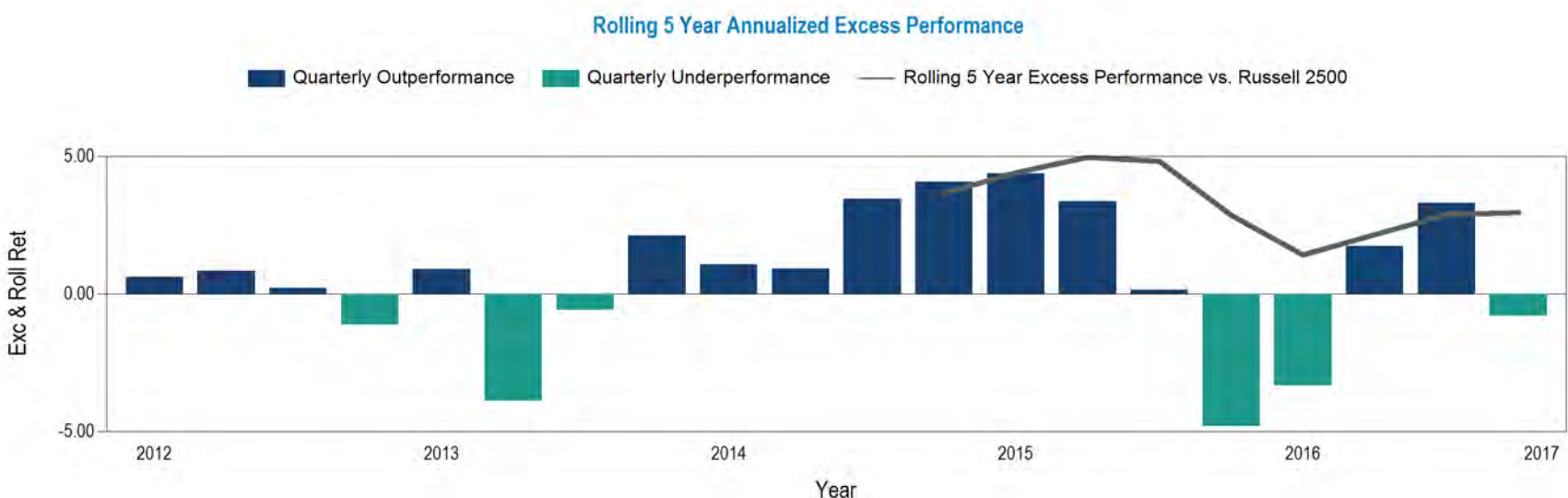
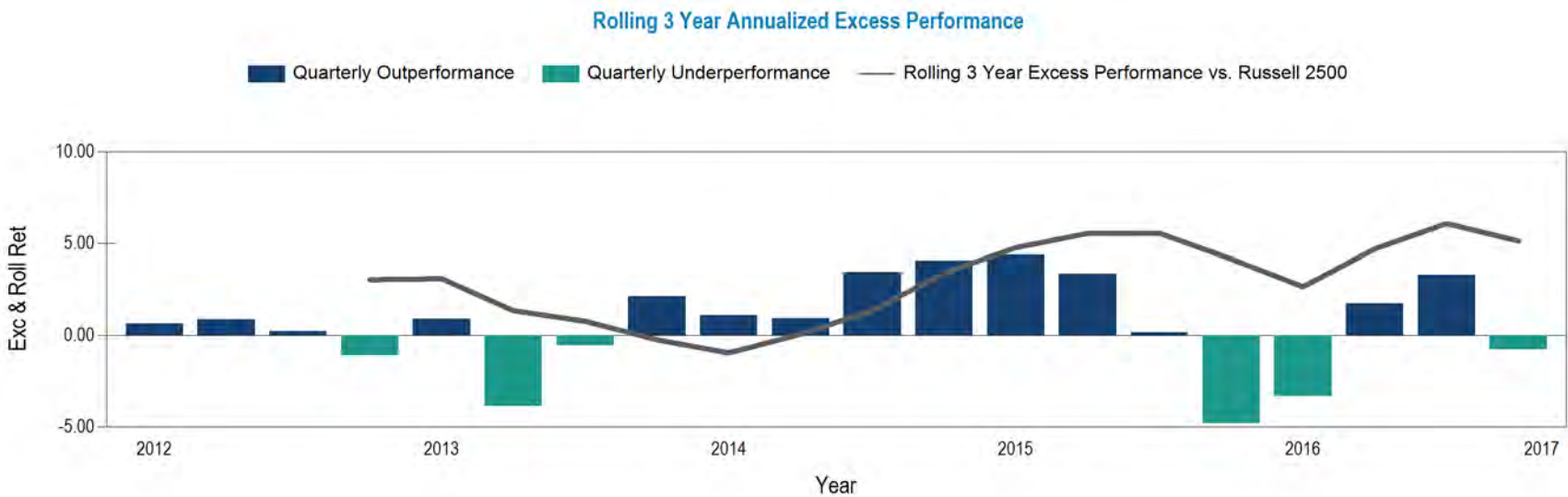
	Return (Rank)													
5th Percentile	27.6		4.6		13.0		47.6		24.1		6.8		38.5	
25th Percentile	20.8		0.4		9.6		42.5		19.2		1.7		31.7	
Median	16.1		-1.5		6.5		38.2		16.0		-1.5		26.9	
75th Percentile	9.2		-5.0		3.1		34.4		13.3		-5.6		24.3	
95th Percentile	3.8		-11.6		-2.3		28.7		7.8		-11.6		18.7	
# of Portfolios	238		215		210		210		216		211		210	
● Atlanta Capital Mgmt	12.6	(62)	10.4	(1)	5.8	(56)	37.8	(52)	15.5	(55)	6.8	(5)	--	(--)
▲ Russell 2500	17.6	(38)	-2.9	(64)	7.1	(46)	36.8	(58)	17.9	(36)	-2.5	(56)	26.7	(52)
													34.4	(55)
													-36.8	(37)
													--	(--)
													1.4	(74)

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017



Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017







# Total International Equity Asset Class Overview (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total International Equity</b>	<b>322,703,258</b>	<b>5.9</b>	<b>22.5</b>	<b>19.7</b>	<b>5.3</b>	<b>8.9</b>	<b>3.2</b>	<b>2.2</b>	<b>-4.3</b>	<b>2.1</b>	<b>17.9</b>	<b>21.5</b>
MSCI ACWI ex USA Gross		6.3	21.6	20.2	5.2	7.5	1.7	5.0	-5.3	-3.4	15.8	17.4
InvestorForce Public DB ex-US Eq Gross Rank		67	56	60	72	30	22	82	68	1	50	11
Dodge & Cox Intl Stock	169,909,075	7.1	23.1	27.4	4.5	10.8	--	9.0	-10.8	0.7	27.1	21.8
MSCI EAFE Gross		5.5	20.5	19.7	5.5	8.9	--	1.5	-0.4	-4.5	23.3	17.9
eA All EAFE Equity Gross Rank		33	42	8	90	36	--	3	99	13	32	37
WCM International Growth	152,794,183	4.6	--	--	--	--	--	--	--	--	--	--
MSCI ACWI ex USA Gross		6.3	--	--	--	--	--	--	--	--	--	--
eA ACWI ex-US All Cap Growth Eq Gross Rank		93	--	--	--	--	--	--	--	--	--	--

EAFE Effective Style Map  
3 Years Ending September 30, 2017



EAFE Effective Style Map  
5 Years Ending September 30, 2017



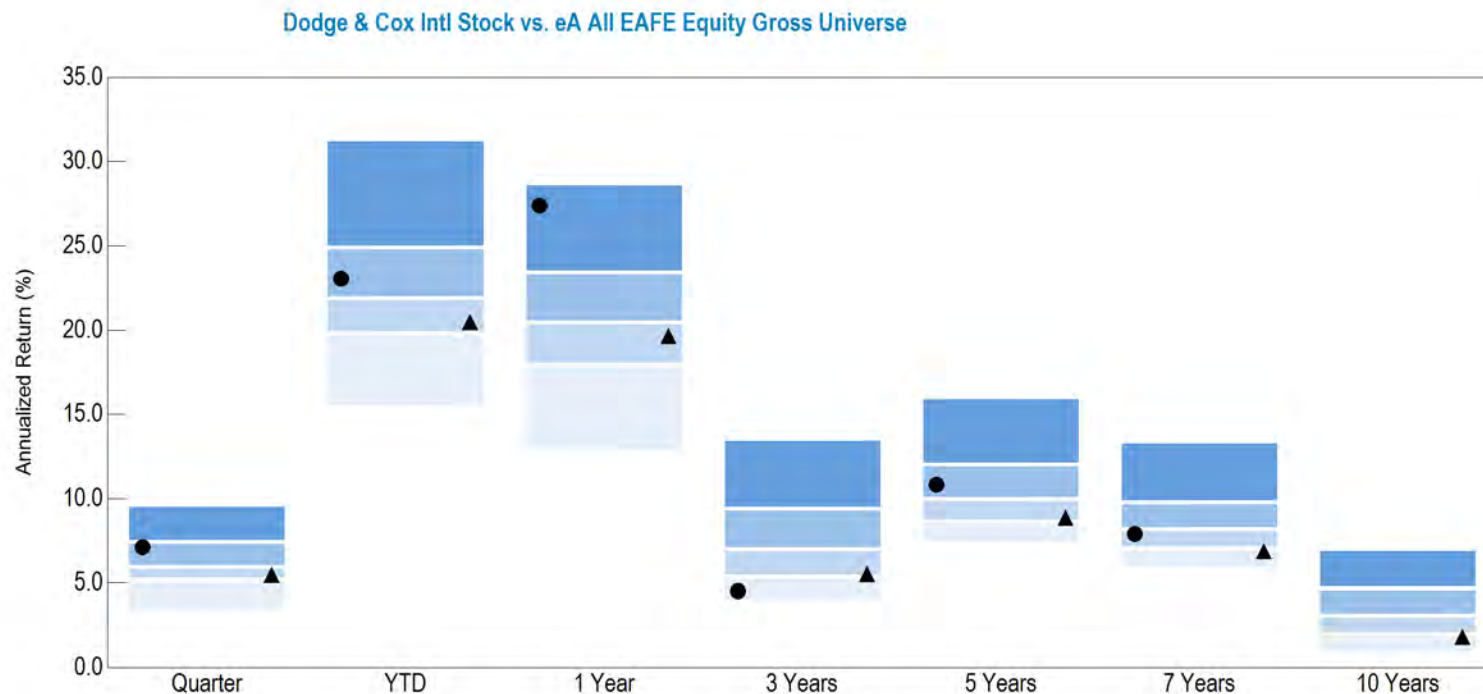
Total International Equity  
Asset Class Overview (Net of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total International Equity</b>	<b>322,703,258</b>	<b>5.8</b>	<b>22.0</b>	<b>18.9</b>	<b>4.6</b>	<b>8.2</b>	<b>--</b>	<b>1.6</b>	<b>-4.9</b>	<b>1.4</b>	<b>17.0</b>	<b>20.6</b>
MSCI ACWI ex USA Gross		6.3	21.6	20.2	5.2	7.5	--	5.0	-5.3	-3.4	15.8	17.4
Dodge & Cox Intl Stock	169,909,075	6.9	22.5	26.6	3.9	10.1	--	8.3	-11.4	0.1	26.3	21.0
MSCI EAFE Gross		5.5	20.5	19.7	5.5	8.9	--	1.5	-0.4	-4.5	23.3	17.9
WCM International Growth	152,794,183	4.5	--	--	--	--	--	--	--	--	--	--
MSCI ACWI ex USA Gross		6.3	--	--	--	--	--	--	--	--	--	--

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

Period Ending: September 30, 2017

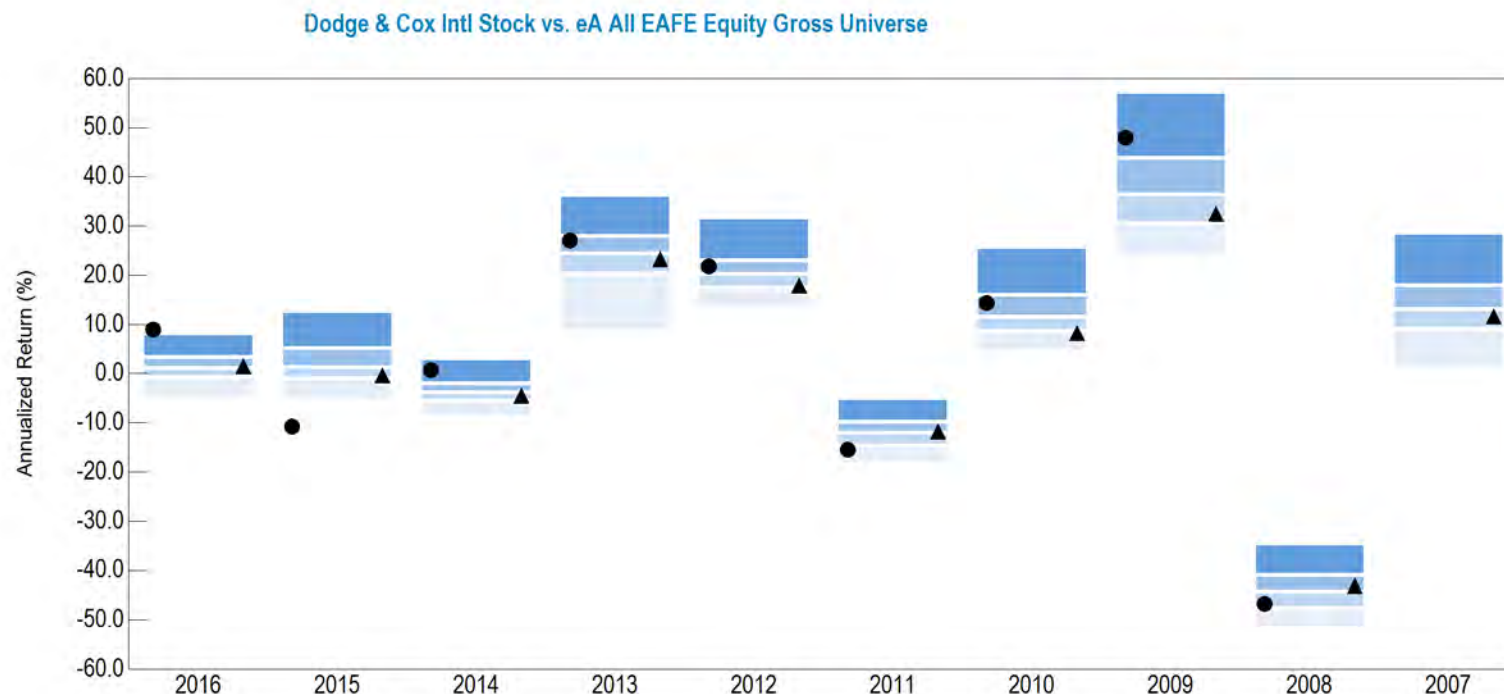


	Return (Rank)													
	Quarter	YTD	1 Year	3 Years	5 Years	7 Years	10 Years							
5th Percentile	9.6	31.3	28.7	13.5	16.0	13.4	7.0							
25th Percentile	7.4	24.9	23.4	9.4	12.0	9.8	4.7							
Median	6.0	21.9	20.5	7.0	10.0	8.2	3.1							
75th Percentile	5.2	19.8	18.0	5.4	8.6	7.1	2.0							
95th Percentile	3.4	15.5	12.8	3.9	7.4	5.9	0.9							
# of Portfolios	375	375	375	346	315	291	246							
● Dodge & Cox Intl Stock	7.1 (33)	23.1 (42)	27.4 (8)	4.5 (90)	10.8 (36)	7.9 (56)	-- (--)							
▲ MSCI EAFE Gross	5.5 (67)	20.5 (68)	19.7 (59)	5.5 (74)	8.9 (70)	6.9 (78)	1.8 (80)							



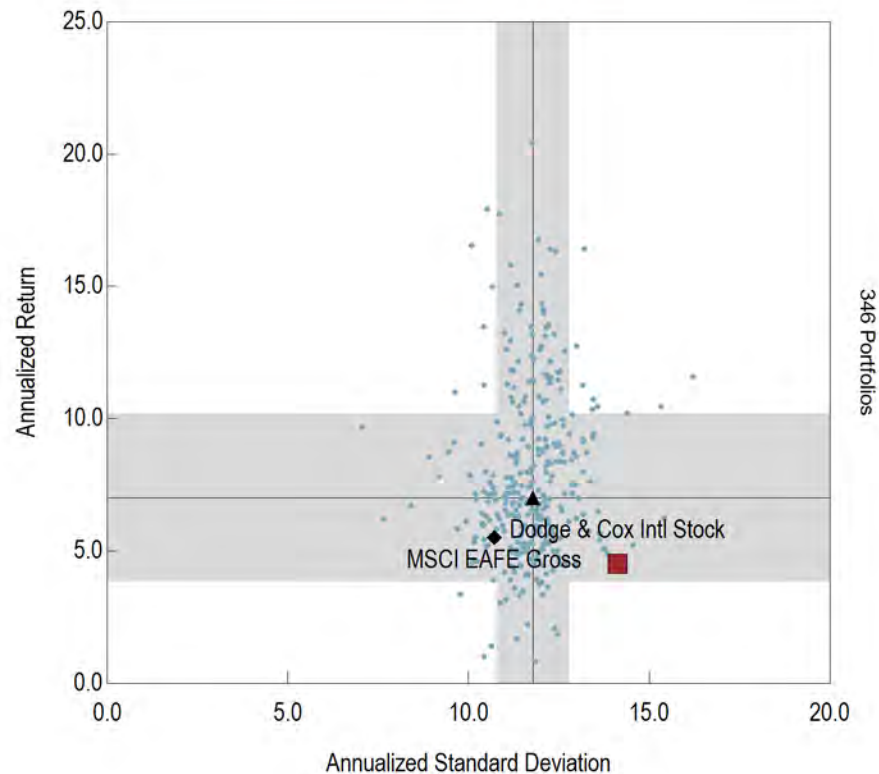
Dodge & Cox Intl Stock  
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2017



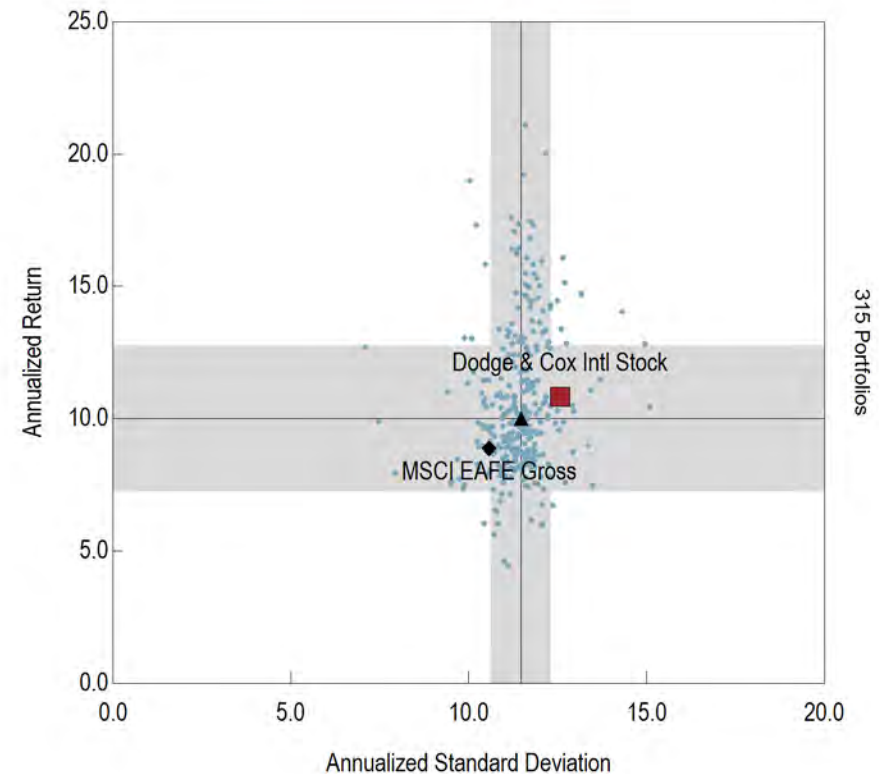
	Return (Rank)									
5th Percentile	8.1	12.6	3.0	36.3	31.7	-5.1	25.7	57.3	-34.5	28.5
25th Percentile	3.4	5.2	-1.9	28.1	23.1	-9.7	16.1	44.0	-40.8	18.0
Median	1.3	1.4	-3.7	24.6	20.4	-12.0	11.7	36.5	-44.1	13.2
75th Percentile	-0.6	-0.9	-5.4	20.5	17.5	-14.5	8.7	30.7	-47.5	9.1
95th Percentile	-4.9	-5.4	-8.6	8.6	13.3	-18.2	4.6	23.7	-51.5	1.2
# of Portfolios	350	325	314	284	263	278	352	455	477	466
● Dodge & Cox Intl Stock	9.0 (3)	-10.8 (99)	0.7 (13)	27.1 (32)	21.8 (37)	-15.5 (82)	14.4 (36)	48.0 (17)	-46.7 (69)	-- (--)
▲ MSCI EAFE Gross	1.5 (47)	-0.4 (66)	-4.5 (60)	23.3 (60)	17.9 (72)	-11.7 (47)	8.2 (78)	32.5 (67)	-43.1 (41)	11.6 (59)

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017

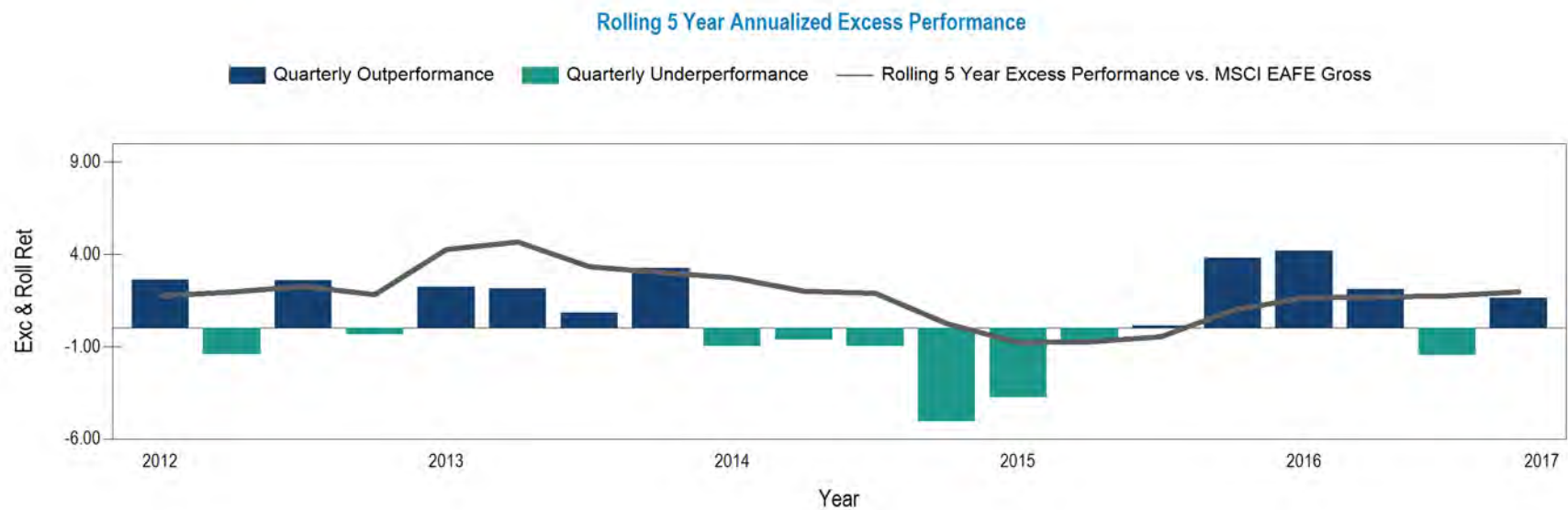
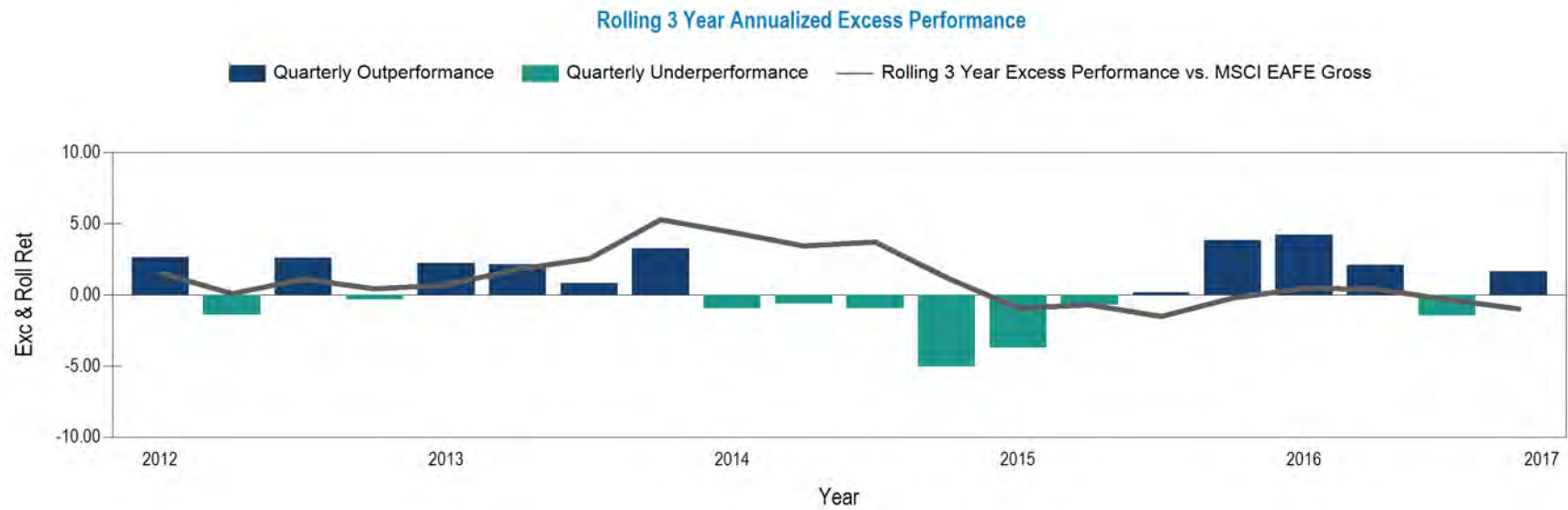


- Dodge & Cox Intl Stock
- ◆ MSCI EAFE Gross
- ▲ Universe Median
- 68% Confidence Interval
- eA All EAFE Equity Gross

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017



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

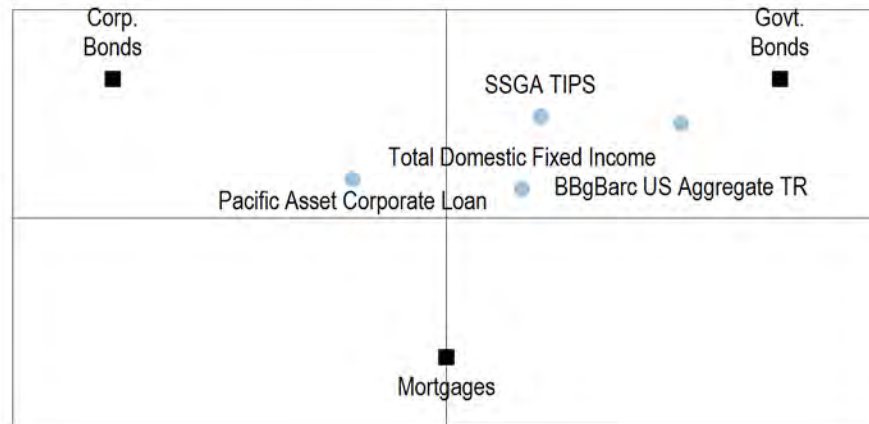


# Total Domestic Fixed Income Asset Class Overview (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Domestic Fixed Income</b>	<b>281,974,922</b>	<b>1.2</b>	<b>3.5</b>	<b>1.6</b>	<b>3.3</b>	<b>2.3</b>	<b>3.8</b>	<b>4.5</b>	<b>1.1</b>	<b>4.7</b>	<b>-2.7</b>	<b>7.9</b>
BBgBarc US Aggregate TR		0.8	3.1	0.1	2.7	2.1	4.3	2.6	0.6	6.0	-2.0	4.2
InvestorForce Public DB US Fix Inc Gross Rank		32	54	42	42	57	77	49	17	68	95	38
BlackRock Core Bond	95,233,462	1.1	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR		0.8	--	--	--	--	--	--	--	--	--	--
eA US Core Fixed Inc Gross Rank		9	--	--	--	--	--	--	--	--	--	--
Dodge & Cox Income Fund	99,817,619	1.2	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR		0.8	--	--	--	--	--	--	--	--	--	--
eA US Core Fixed Inc Gross Rank		4	--	--	--	--	--	--	--	--	--	--
Pacific Asset Corporate Loan	67,866,605	1.3	3.4	6.3	4.8	--	--	9.2	2.5	--	--	--
S&P/LSTA Leveraged Loan Index		1.0	3.0	5.3	3.9	--	--	10.2	-0.7	--	--	--
eA Float-Rate Bank Loan Gross Rank		29	28	13	24	--	--	51	9	--	--	--
SSGA TIPS	19,057,234	0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.5	3.6	-8.6	6.9
BBgBarc US TIPS TR		0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.4	3.6	-8.6	7.0
eA TIPS / Infl Indexed Fixed Inc Gross Rank		67	70	84	62	88	--	51	64	44	77	67

Fixed Income Effective Style Map  
3 Years Ending September 30, 2017



Fixed Income Effective Style Map  
5 Years Ending September 30, 2017



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

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Domestic Fixed Income</b>	<b>281,974,922</b>	<b>1.1</b>	<b>3.2</b>	<b>1.4</b>	<b>3.0</b>	<b>2.1</b>	<b>--</b>	<b>4.2</b>	<b>0.9</b>	<b>4.4</b>	<b>-3.0</b>	<b>7.6</b>
<i>BBgBarc US Aggregate TR</i>		0.8	3.1	0.1	2.7	2.1	--	2.6	0.6	6.0	-2.0	4.2
BlackRock Core Bond	95,233,462	1.1	--	--	--	--	--	--	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		0.8	--	--	--	--	--	--	--	--	--	--
Dodge & Cox Income Fund	99,817,619	1.1	--	--	--	--	--	--	--	--	--	--
<i>BBgBarc US Aggregate TR</i>		0.8	--	--	--	--	--	--	--	--	--	--
Pacific Asset Corporate Loan	67,866,605	1.2	3.2	5.9	4.4	--	--	8.8	2.1	--	--	--
<i>S&amp;P/LSTA Leveraged Loan Index</i>		1.0	3.0	5.3	3.9	--	--	10.2	-0.7	--	--	--
SSGA TIPS	19,057,234	0.9	1.7	-0.8	1.6	0.0	--	4.6	-1.5	3.6	-8.7	6.9
<i>BBgBarc US TIPS TR</i>		0.9	1.7	-0.7	1.6	0.0	--	4.7	-1.4	3.6	-8.6	7.0

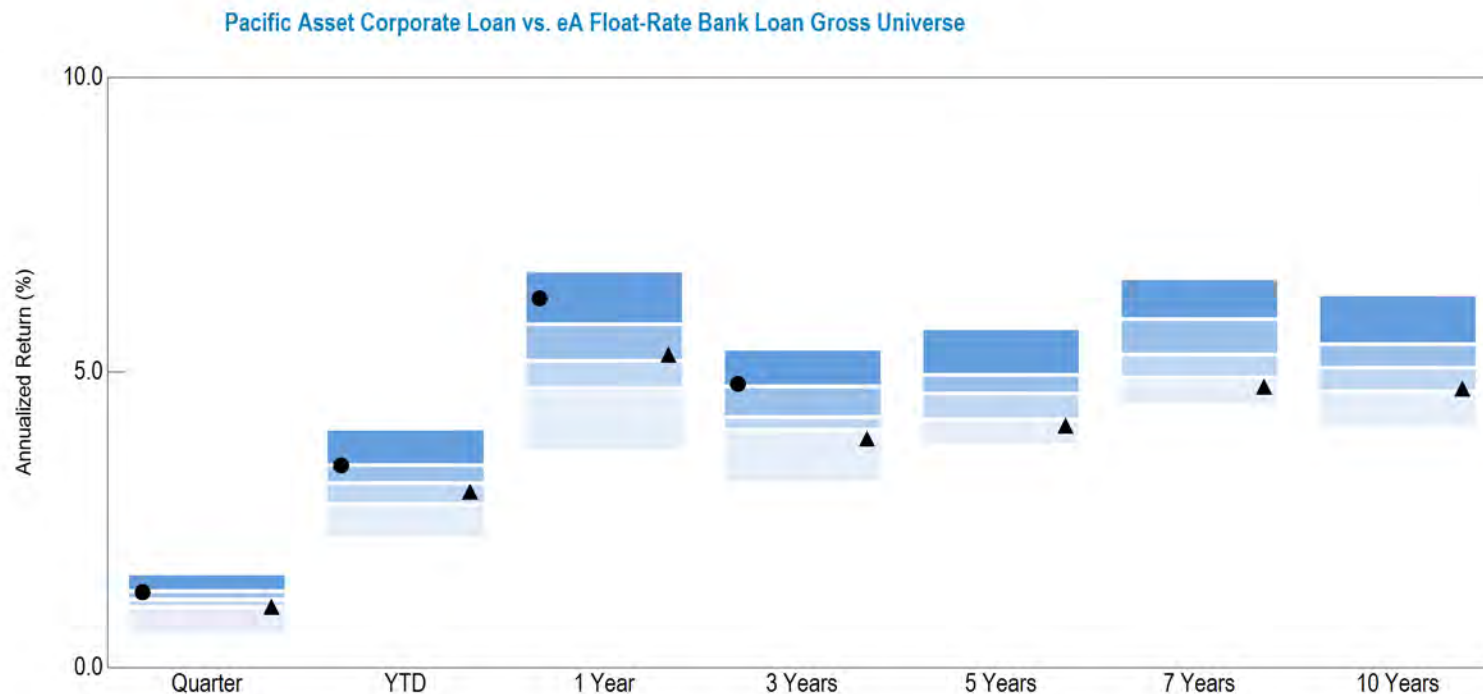
## Correlation Matrix Last 5 Years

	Total Domestic Fixed Income	BlackRock Core Bond	Dodge & Cox Income Fund	Pacific Asset Corporate Loan	SSGA TIPS	BBgBarc US Aggregate TR
Total Domestic Fixed Income	1.00	--	--	--	--	--
BlackRock Core Bond	--	--	--	--	--	--
Dodge & Cox Income Fund	--	--	--	--	--	--
Pacific Asset Corporate Loan	--	--	--	--	--	--
SSGA TIPS	0.95	--	--	--	1.00	--
BBgBarc US Aggregate TR	0.92	--	--	--	0.80	1.00

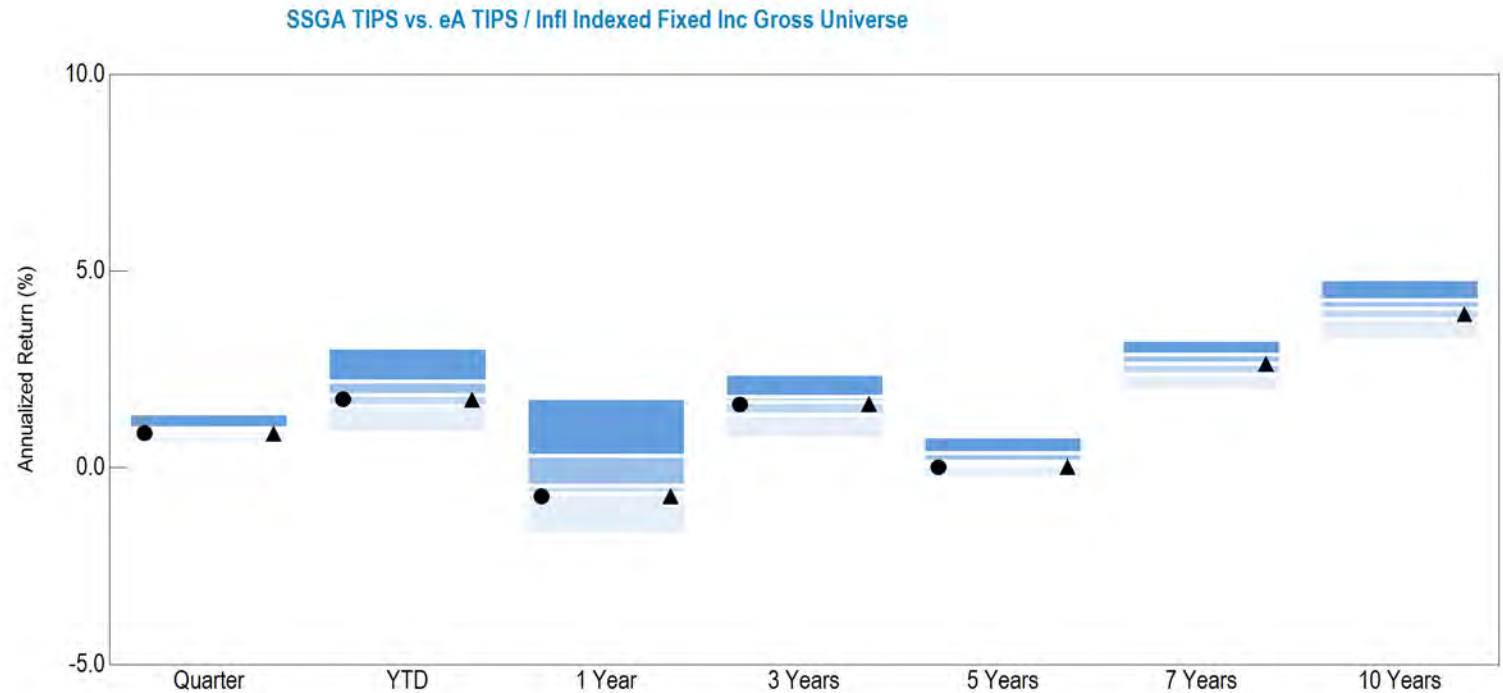


Pacific Asset Corporate Loan  
Cumulative Performance Comparison (Gross of Fees)

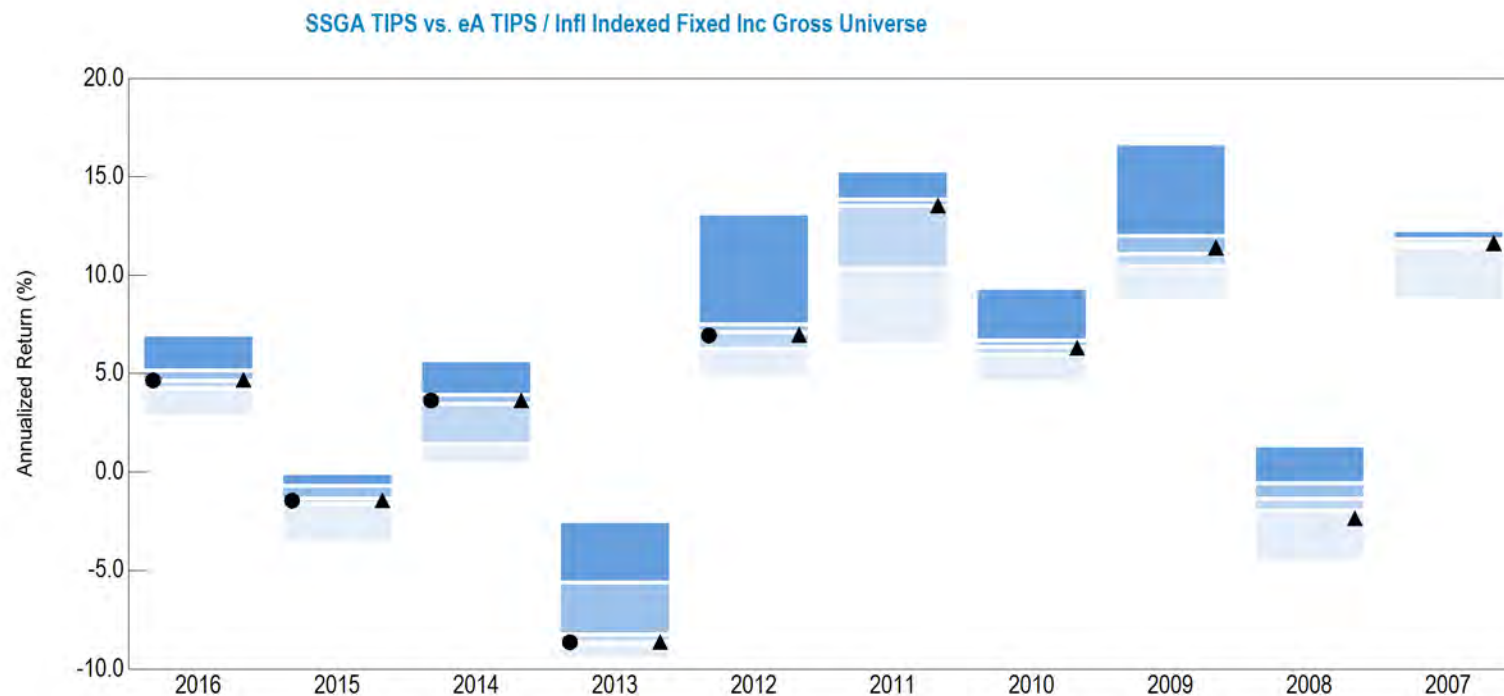
Period Ending: September 30, 2017



	Return (Rank)											
5th Percentile	1.6		4.0		6.7		5.4		5.7		6.6	
25th Percentile	1.3		3.4		5.8		4.8		5.0		5.9	
Median	1.2		3.1		5.2		4.2		4.6		5.3	
75th Percentile	1.0		2.8		4.7		4.0		4.2		4.9	
95th Percentile	0.6		2.2		3.7		3.1		3.8		4.5	
# of Portfolios	70		70		70		70		61		51	
● Pacific Asset Corporate Loan	1.3	(29)	3.4	(28)	6.3	(13)	4.8	(24)	--	(--)	--	(--)
▲ S&P/LSTA Leveraged Loan Index	1.0	(75)	3.0	(68)	5.3	(44)	3.9	(85)	4.1	(80)	4.8	(83)
											4.7	(75)



	Return (Rank)													
5th Percentile	1.4		3.0		1.8		2.4		0.8		3.2	4.8		
25th Percentile	1.0		2.2		0.3		1.8		0.4		2.9	4.3		
Median	0.9		1.9		-0.5		1.7		0.2		2.6	4.0		
75th Percentile	0.8		1.6		-0.6		1.4		0.1		2.4	3.8		
95th Percentile	0.6		0.9		-1.7		0.7		-0.3		2.0	3.3		
# of Portfolios	39		39		39		39		39		36	32		
● SSGA TIPS	0.9	(67)	1.7	(70)	-0.7	(84)	1.6	(62)	0.0	(88)	--	(--)	--	(--)
▲ BBgBarc US TIPS TR	0.9	(68)	1.7	(71)	-0.7	(84)	1.6	(61)	0.0	(88)	2.6	(51)	3.9	(67)



	Return (Rank)									
5th Percentile	7.0	-0.1	5.7	-2.5	13.1	15.3	9.4	16.7	1.3	12.3
25th Percentile	5.2	-0.7	4.0	-5.6	7.5	13.9	6.7	12.0	-0.5	11.8
Median	4.7	-1.3	3.5	-8.2	7.1	13.5	6.4	11.1	-1.4	11.6
75th Percentile	4.3	-1.6	1.4	-8.6	6.3	10.4	6.0	10.5	-1.9	11.5
95th Percentile	2.8	-3.6	0.4	-9.4	4.9	6.6	4.6	8.7	-4.6	8.8
# of Portfolios	42	44	50	43	43	47	39	37	40	37
● SSGA TIPS	4.7 (51)	-1.5 (64)	3.6 (44)	-8.6 (77)	6.9 (67)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
▲ BBgBarc US TIPS TR	4.7 (47)	-1.4 (59)	3.6 (44)	-8.6 (76)	7.0 (66)	13.6 (49)	6.3 (57)	11.4 (35)	-2.4 (85)	11.6 (49)

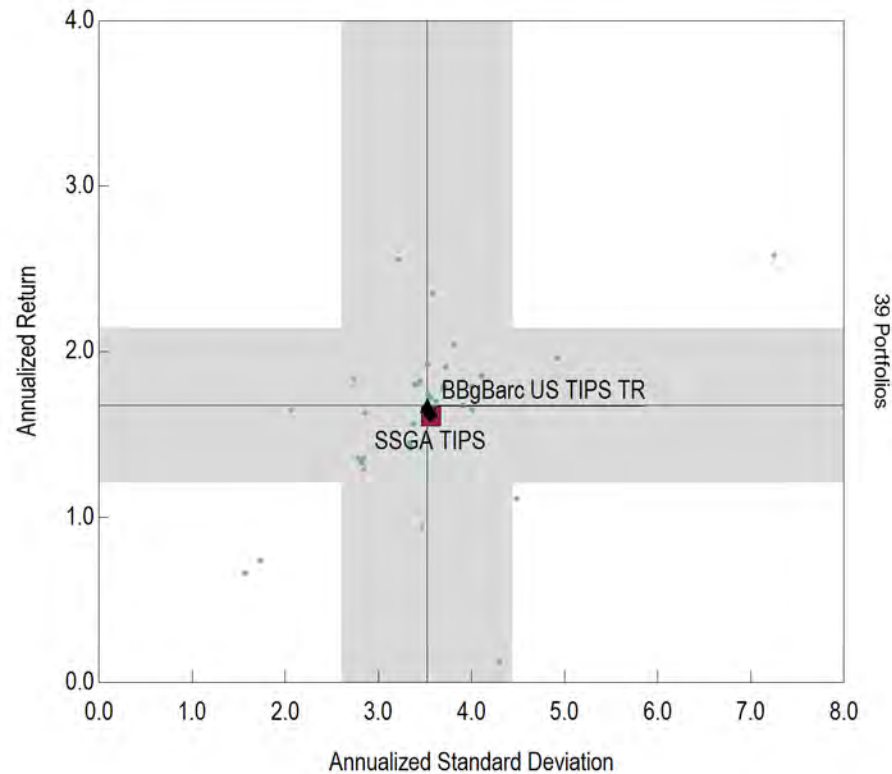


# SSGA TIPS

Risk vs Return Three & Five Year (Gross of Fees)

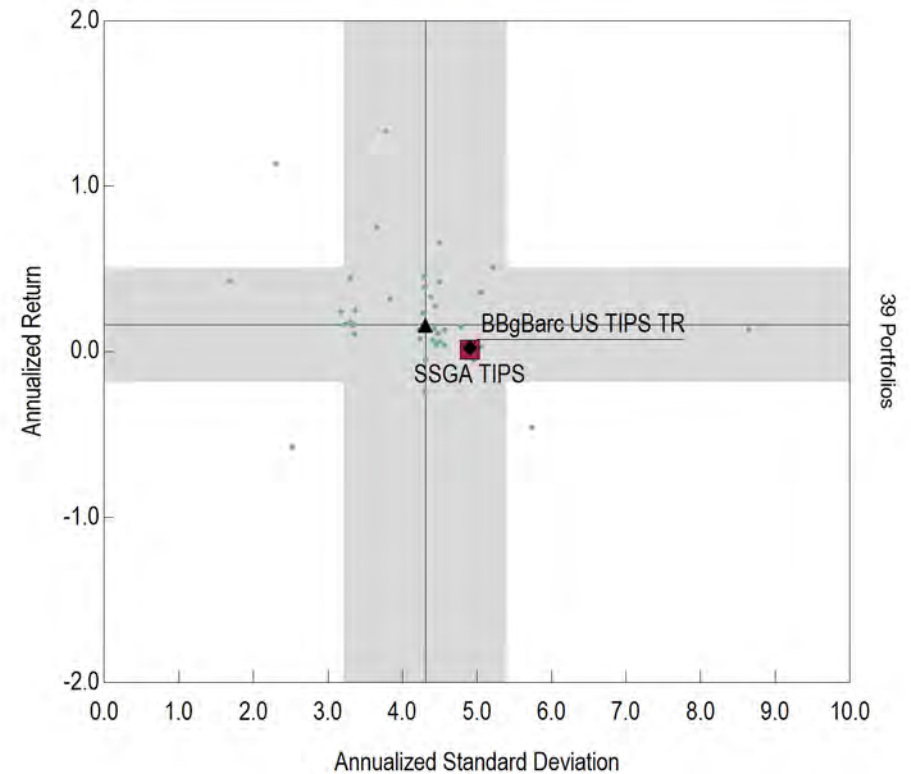
Period Ending: September 30, 2017

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017



- SSGA TIPS
- ◆ BBgBarc US TIPS TR
- ▲ Universe Median
- 68% Confidence Interval
- eA TIPS / Infl Indexed Fixed Inc Gross

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017



- SSGA TIPS
- ◆ BBgBarc US TIPS TR
- ▲ Universe Median
- 68% Confidence Interval
- eA TIPS / Infl Indexed Fixed Inc Gross

Total Global Fixed  
Asset Class Overview (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Global Fixed</b>	<b>142,423,018</b>	<b>3.5</b>	<b>14.3</b>	<b>6.7</b>	<b>0.7</b>	<b>0.6</b>	<b>--</b>	<b>5.8</b>	<b>-11.8</b>	<b>-2.2</b>	<b>-3.8</b>	<b>13.8</b>
<i>Citi World Govt Bond Index</i>		1.8	6.4	-2.7	0.9	-0.4	--	1.6	-3.6	-0.5	-4.0	1.6
<i>InvestorForce Public DB Gbl Fix Inc Gross Rank</i>		30	1	57	86	86	--	67	95	93	59	26
<b>Brandywine Global Fixed Income</b>	<b>71,883,585</b>	<b>3.1</b>	<b>12.8</b>	<b>4.9</b>	<b>1.1</b>	<b>1.7</b>	<b>--</b>	<b>2.2</b>	<b>-9.3</b>	<b>2.9</b>	<b>-1.6</b>	<b>13.8</b>
<i>Citi WGBI ex US</i>		2.6	8.6	-3.1	0.5	-1.1	--	1.8	-5.5	-2.7	-4.6	1.5
<i>eA Global Fixed Inc Unhedged Gross Rank</i>		11	5	39	81	58	--	71	96	43	59	30
<b>Stone Harbor Local Markets Ins</b>	<b>70,539,432</b>	<b>3.9</b>	<b>15.8</b>	<b>8.7</b>	<b>0.2</b>	<b>--</b>	<b>--</b>	<b>9.9</b>	<b>-14.4</b>	<b>-7.7</b>	<b>--</b>	<b>--</b>
<i>JPM GBI-EM Global Diversified TR USD</i>		3.6	14.3	7.3	0.3	--	--	9.9	-14.9	-5.7	--	--
<i>eA All Emg Mkts Fixed Inc Gross Rank</i>		22	11	34	94	--	--	67	79	98	--	--

# Total Global Fixed Asset Class Overview (Net of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Global Fixed</b>	<b>142,423,018</b>	<b>3.3</b>	<b>13.7</b>	<b>6.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>5.1</b>	<b>-12.4</b>	<b>-2.8</b>	<b>-4.4</b>	<b>13.1</b>
<i>Citi World Govt Bond Index</i>		1.8	6.4	-2.7	0.9	-0.4	--	1.6	-3.6	-0.5	-4.0	1.6
Brandywine Global Fixed Income	71,883,585	3.0	12.5	4.4	0.6	1.2	--	1.7	-9.7	2.4	-2.3	13.1
<i>Citi WGBI ex US</i>		2.6	8.6	-3.1	0.5	-1.1	--	1.8	-5.5	-2.7	-4.6	1.5
Stone Harbor Local Markets Ins	70,539,432	3.6	15.0	7.7	-0.7	--	--	9.0	-15.1	-8.6	--	--
<i>JPM GBI-EM Global Diversified TR USD</i>		3.6	14.3	7.3	0.3	--	--	9.9	-14.9	-5.7	--	--

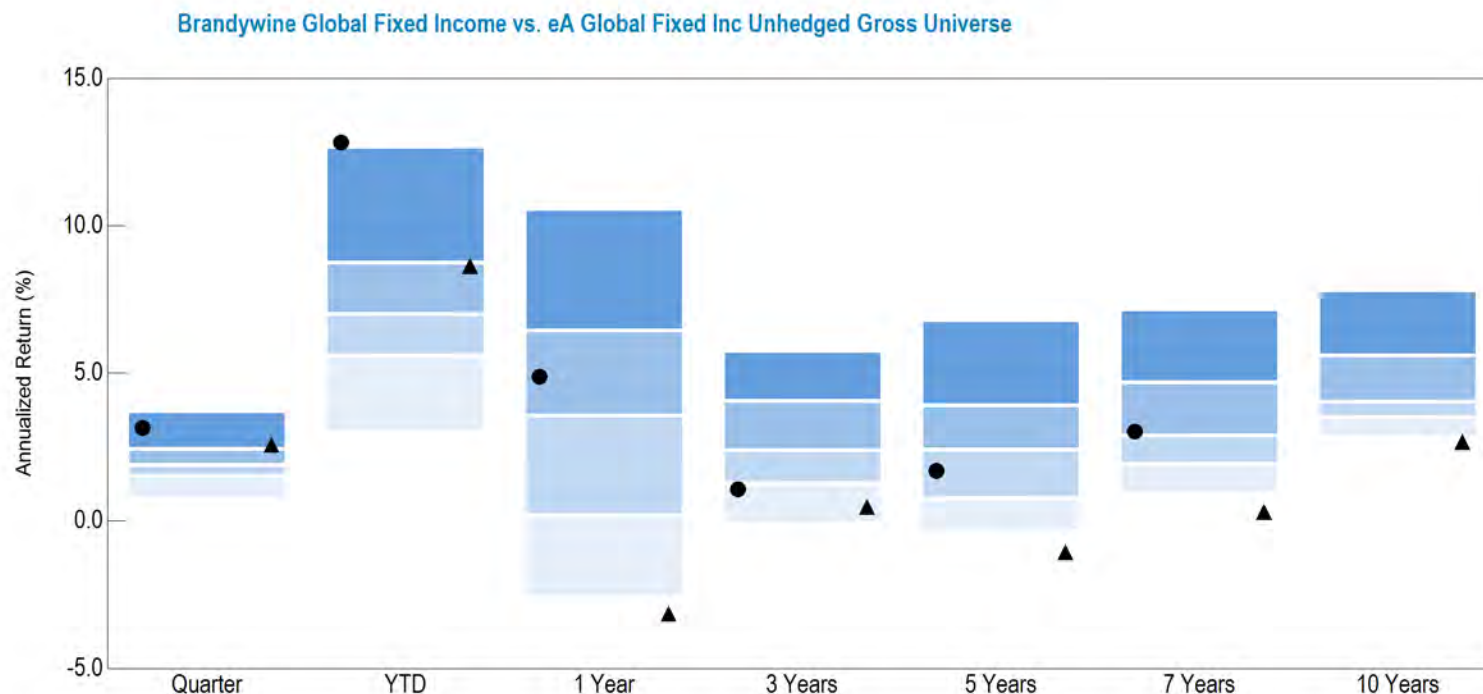
## Correlation Matrix Last 5 Years

	Total Global Fixed	Brandywine Global Fixed Income	Stone Harbor Local Markets Ins	Citi World Govt Bond Index
Total Global Fixed	1.00	--	--	--
Brandywine Global Fixed Income	0.95	1.00	--	--
Stone Harbor Local Markets Ins	--	--	--	--
Citi World Govt Bond Index	0.72	0.80	--	1.00

# Brandywine Global Fixed Income

## Cumulative Performance Comparison (Gross of Fees)

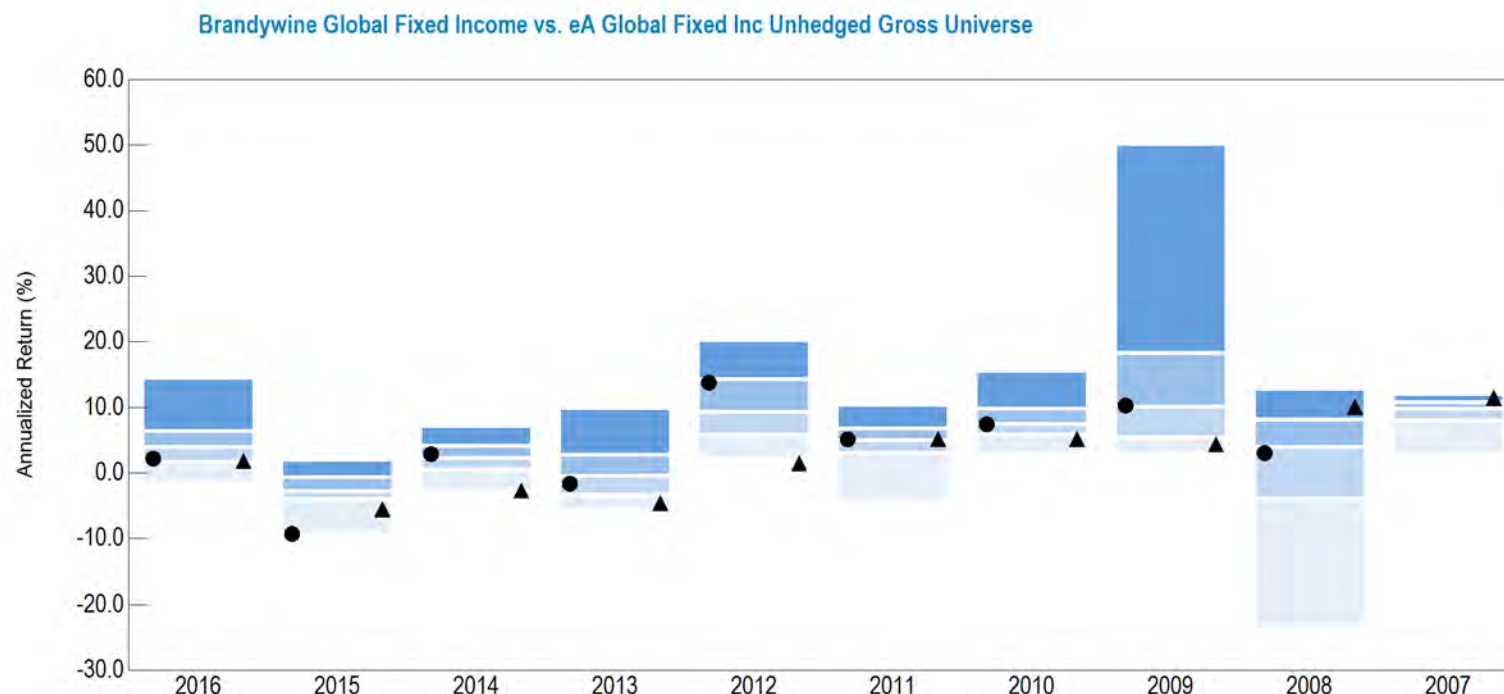
Period Ending: September 30, 2017



	Return (Rank)													
5th Percentile	3.7		12.7		10.6		5.8		6.8		7.2		7.8	
25th Percentile	2.5		8.8		6.5		4.1		3.9		4.7		5.6	
Median	1.9		7.0		3.6		2.4		2.4		2.9		4.1	
75th Percentile	1.5		5.6		0.2		1.3		0.8		1.9		3.5	
95th Percentile	0.8		3.0		-2.6		-0.1		-0.4		0.9		2.9	
# of Portfolios	227		227		227		213		185		148		107	
● Brandywine Global Fixed Income	3.1	(11)	12.8	(5)	4.9	(39)	1.1	(81)	1.7	(58)	3.0	(49)	--	(--)
▲ Citi WGBI ex US	2.6	(23)	8.6	(28)	-3.1	(98)	0.5	(91)	-1.1	(99)	0.3	(99)	2.7	(97)

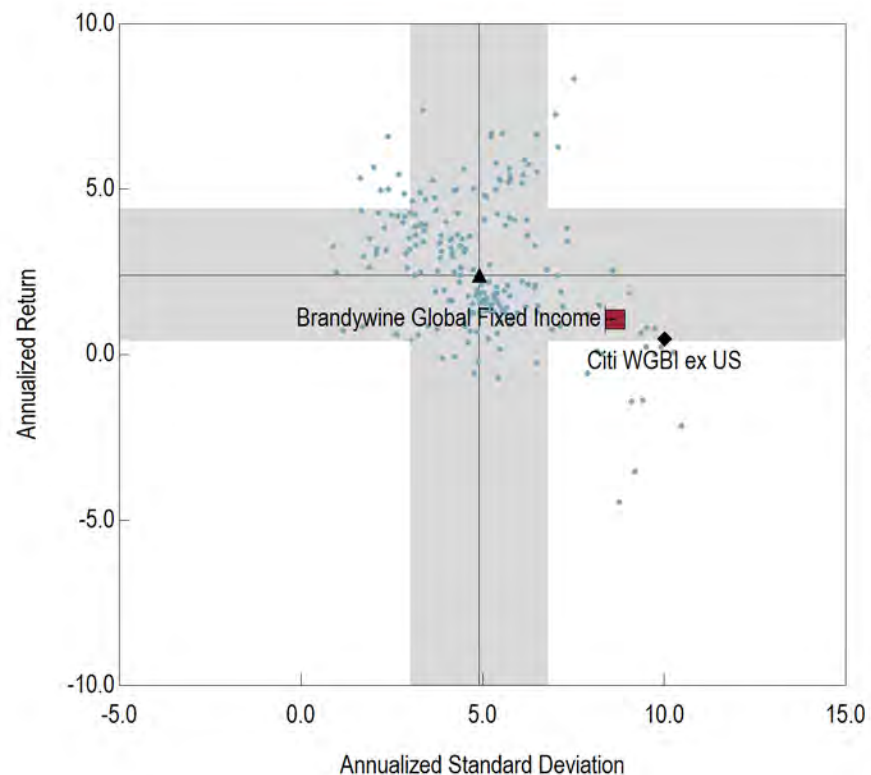
Brandywine Global Fixed Income  
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2017



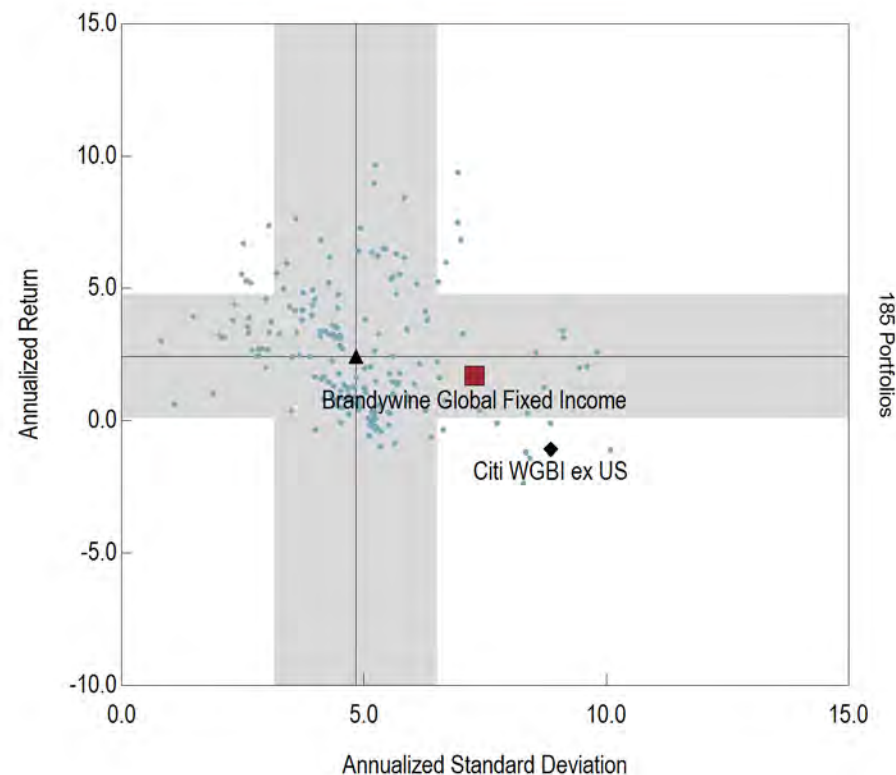
	Return (Rank)									
5th Percentile	14.5	2.0	7.1	9.8	20.2	10.4	15.5	50.1	12.8	12.0
25th Percentile	6.5	-0.6	4.2	2.8	14.3	6.9	9.9	18.4	8.2	10.9
Median	4.0	-2.7	2.3	-0.4	9.4	5.0	7.5	10.1	4.0	9.9
75th Percentile	1.8	-4.0	0.6	-3.2	5.9	3.2	6.0	5.4	-3.8	8.1
95th Percentile	-1.5	-9.2	-2.7	-5.6	2.2	-4.2	3.0	3.2	-23.0	3.0
# of Portfolios	221	189	159	142	118	108	76	72	73	73
● Brandywine Global Fixed Income	2.2 (71)	-9.3 (96)	2.9 (43)	-1.6 (59)	13.8 (30)	5.1 (49)	7.4 (52)	10.3 (49)	3.0 (53)	-- (--)
▲ Citi WGBI ex US	1.8 (75)	-5.5 (89)	-2.7 (95)	-4.6 (89)	1.5 (98)	5.2 (48)	5.2 (87)	4.4 (84)	10.1 (14)	11.5 (17)

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2017



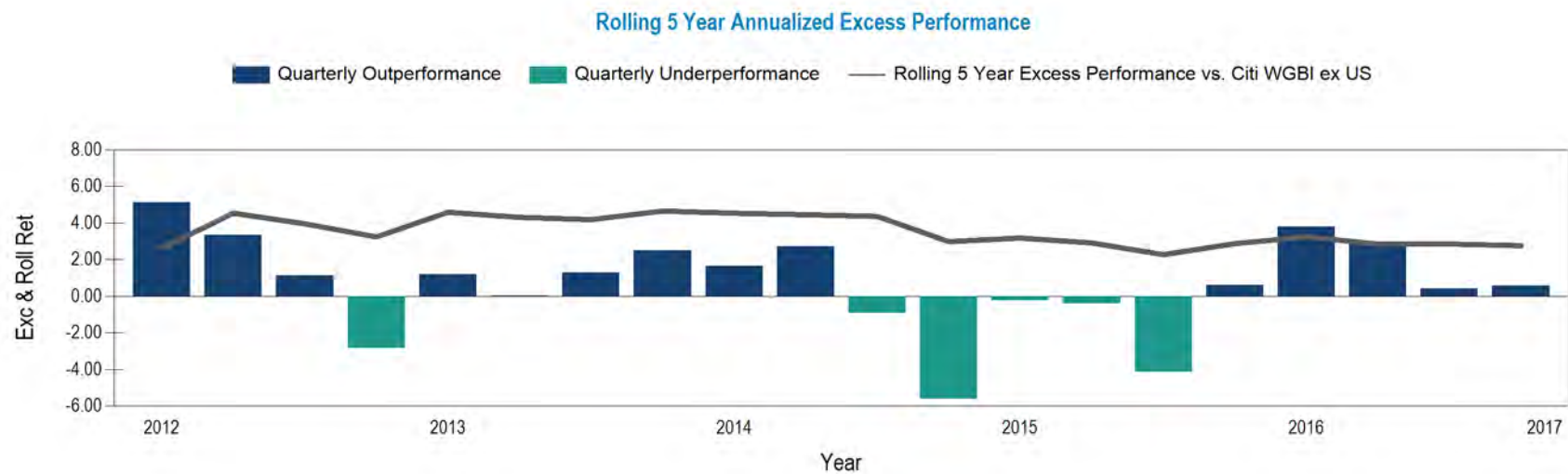
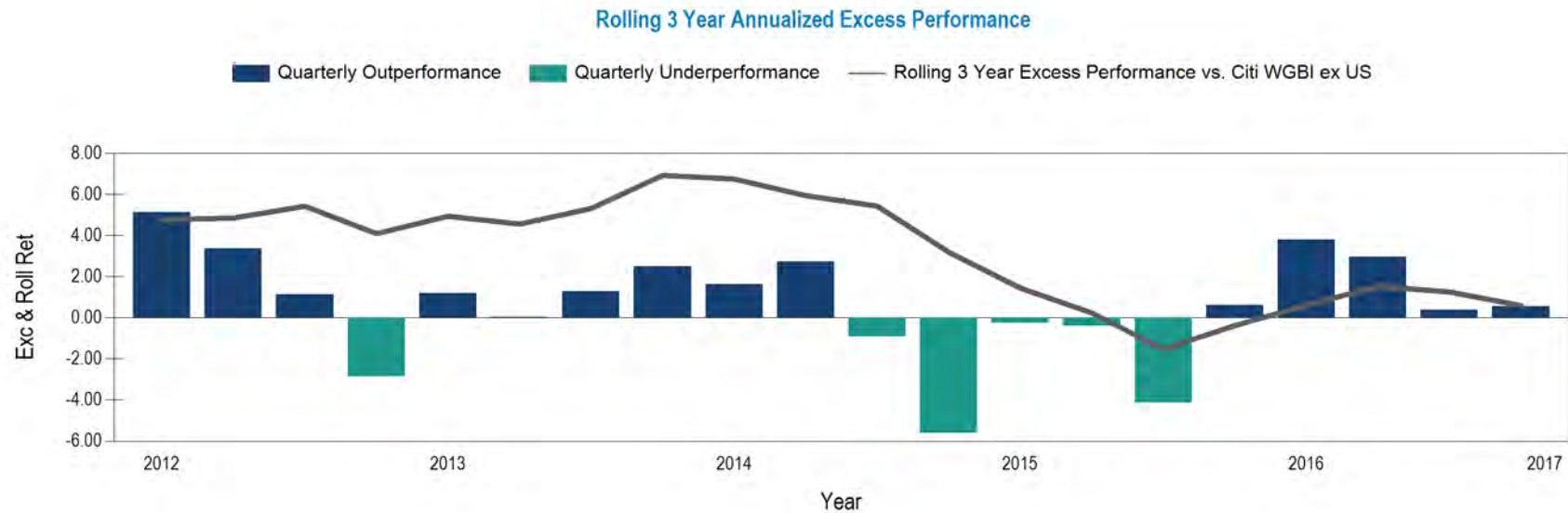
- Brandywine Global Fixed Income
- ◆ Citi WGBI ex US
- ▲ Universe Median
- 68% Confidence Interval
- eA Global Fixed Inc Unhedged Gross

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending September 30, 2017



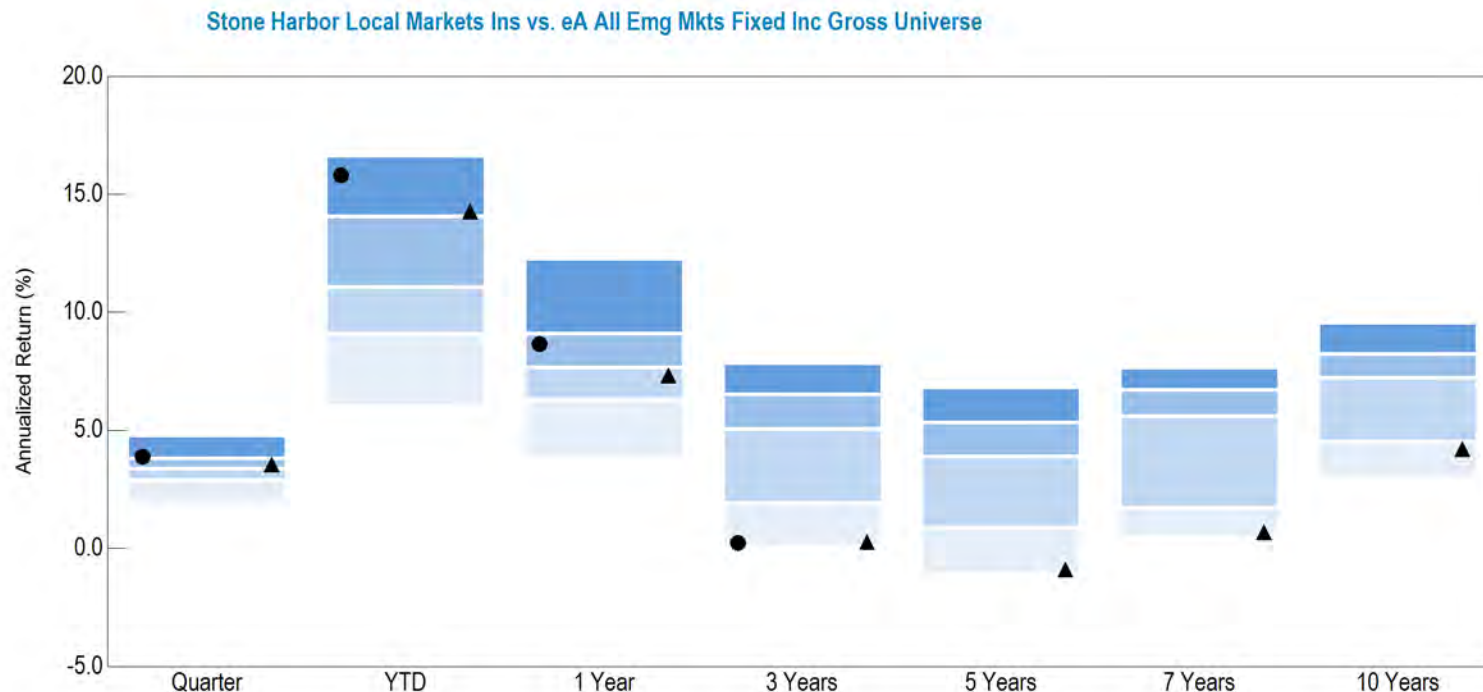
- Brandywine Global Fixed Income
- ◆ Citi WGBI ex US
- ▲ Universe Median
- 68% Confidence Interval
- eA Global Fixed Inc Unhedged Gross





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

Period Ending: September 30, 2017

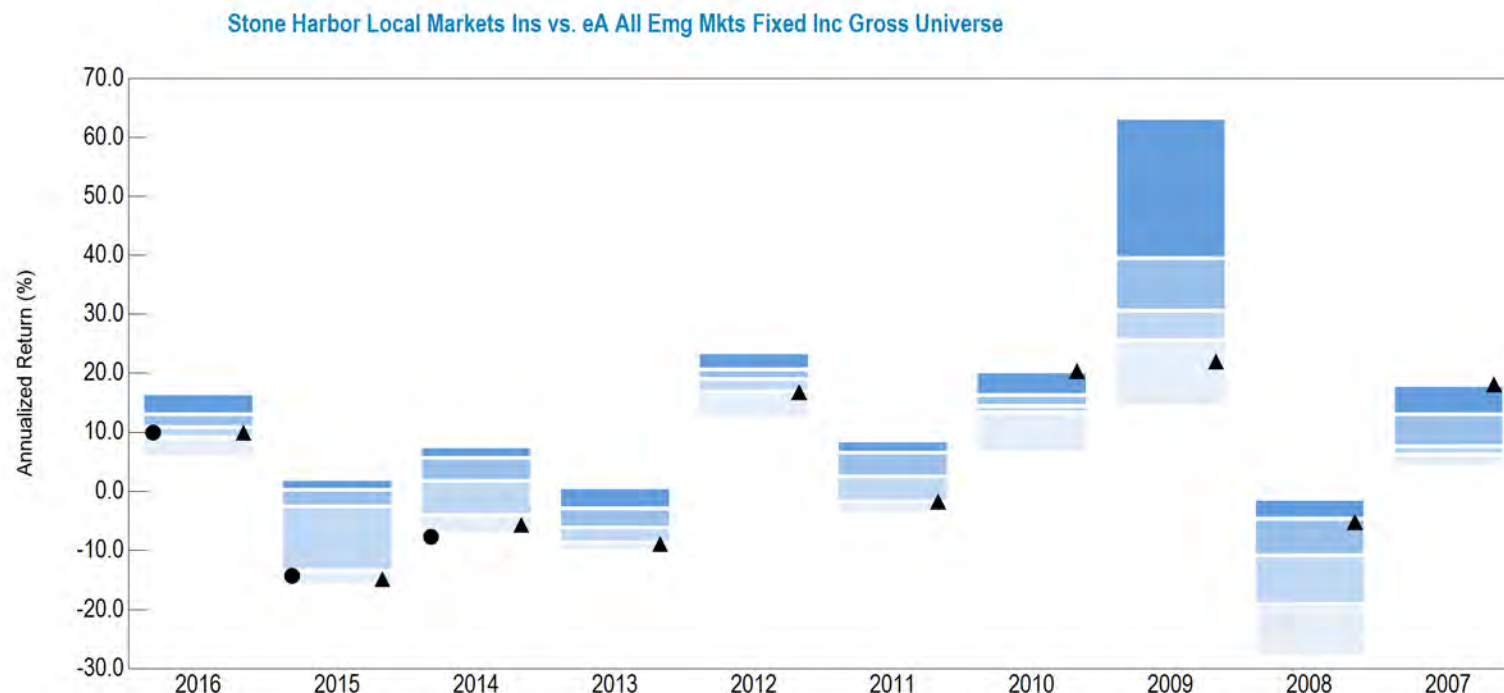


	Return (Rank)													
5th Percentile	4.8	16.6	12.3	7.8	6.8	7.6	9.6							
25th Percentile	3.8	14.1	9.1	6.5	5.3	6.7	8.2							
Median	3.4	11.1	7.7	5.1	3.9	5.6	7.2							
75th Percentile	2.9	9.1	6.3	1.9	0.9	1.7	4.5							
95th Percentile	1.9	6.1	3.9	0.1	-1.1	0.5	3.0							
# of Portfolios	254	254	254	233	194	129	91							
● Stone Harbor Local Markets Ins	3.9	(22)	15.8	(11)	8.7	(34)	0.2	(94)	--	(--)	--	(--)	--	(--)
▲ JPM GBI-EM Global Diversified TR USD	3.6	(38)	14.3	(24)	7.3	(59)	0.3	(93)	-0.9	(92)	0.7	(92)	4.2	(80)

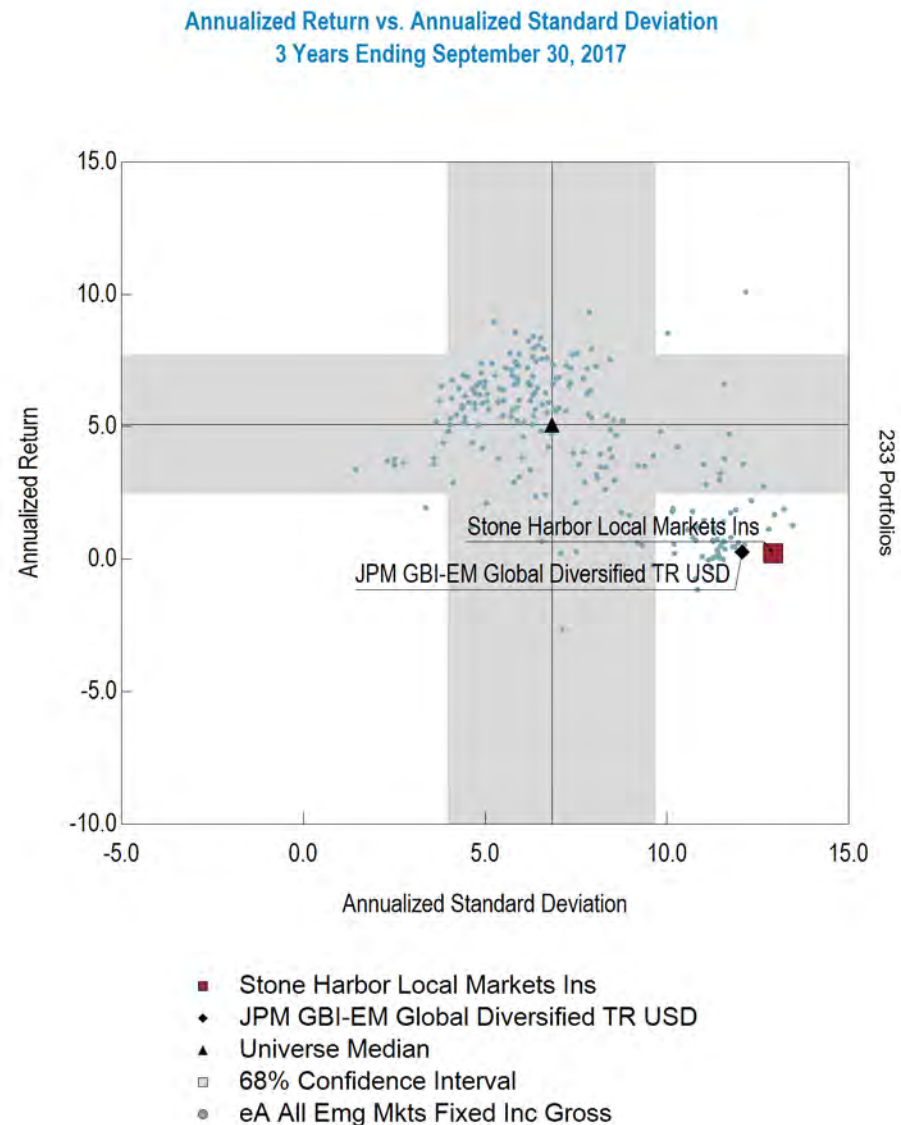


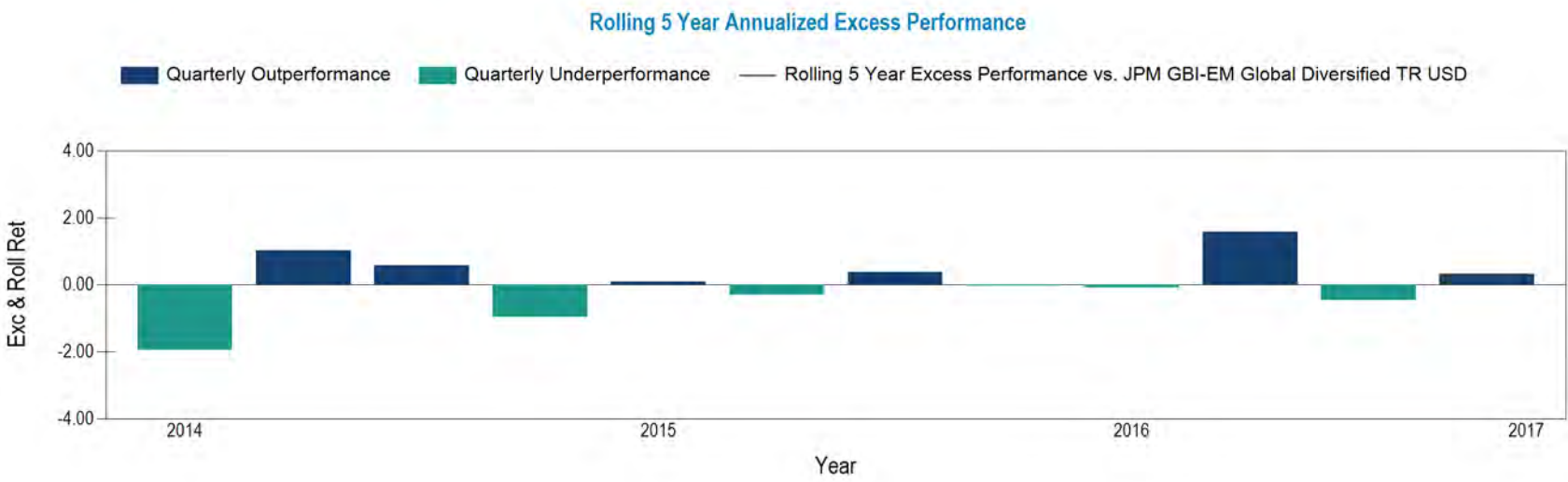
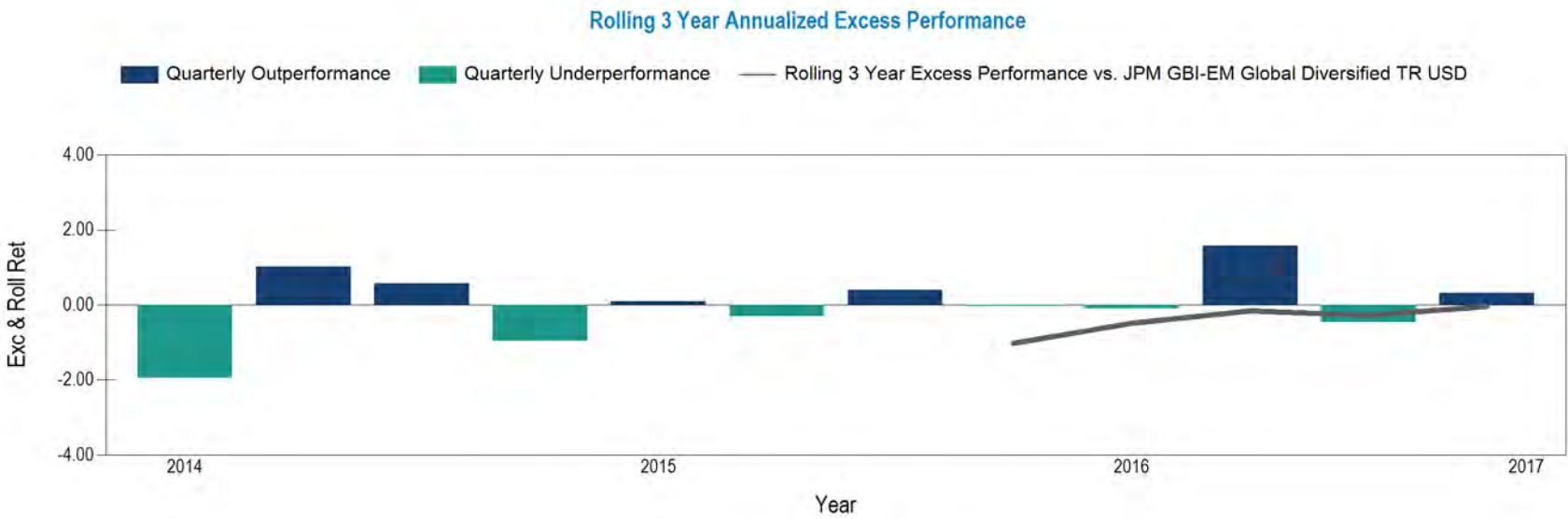
Stone Harbor Local Markets Ins  
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2017



	Return (Rank)															
5th Percentile	16.6	2.1	7.6	0.7	23.6	8.6	20.3	63.2	-1.3	18.0						
25th Percentile	13.1	0.3	5.7	-2.9	20.7	6.6	16.3	39.6	-4.6	13.1						
Median	10.9	-2.6	1.8	-6.1	19.1	2.6	14.5	30.7	-10.8	7.7						
75th Percentile	9.2	-13.4	-4.0	-8.6	17.0	-1.6	13.4	25.6	-18.9	6.2						
95th Percentile	5.9	-15.9	-7.2	-10.2	12.5	-3.6	6.6	14.4	-27.7	4.2						
# of Portfolios	247	159	148	129	108	75	55	27	30	25						
● Stone Harbor Local Markets Ins	9.9 (67)	-14.4 (79)	-7.7 (98)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)						
▲ JPM GBI-EM Global Diversified TR USD	9.9 (67)	-14.9 (84)	-5.7 (91)	-9.0 (82)	16.8 (80)	-1.8 (77)	20.4 (5)	22.0 (85)	-5.2 (28)	18.1 (5)						



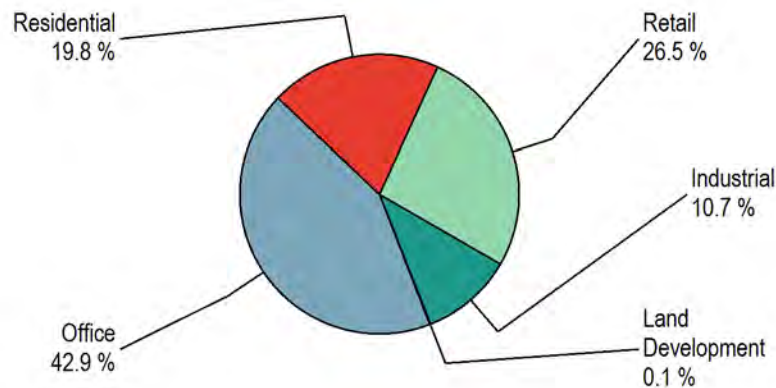


# Total Real Estate Asset Class Overview (Gross of Fees)

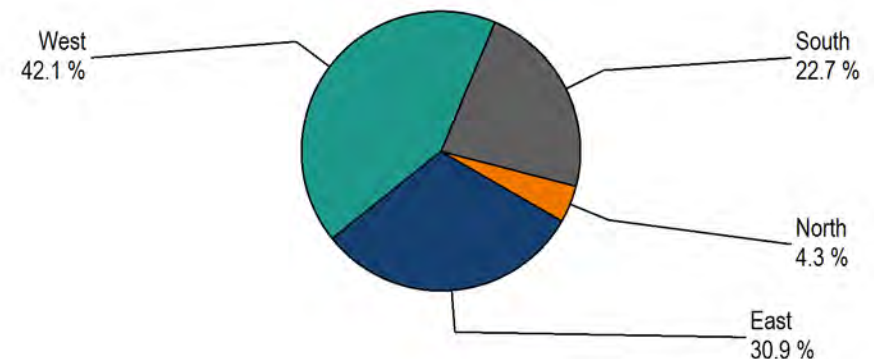
Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Real Estate</b>	<b>173,172,944</b>	<b>1.6</b>	<b>5.8</b>	<b>7.6</b>	<b>11.3</b>	<b>11.6</b>	<b>4.9</b>	<b>7.8</b>	<b>18.0</b>	<b>10.4</b>	<b>12.9</b>	<b>9.8</b>
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5
JP Morgan Core Real Estate	148,431,989	1.5	4.5	6.8	10.3	11.6	--	8.4	15.2	11.2	15.9	12.1
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	--	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5
ARA American Strategic Value Realty	11,414,694	2.4	5.2	8.6	--	--	--	--	--	--	--	--
NCREIF-ODCE		1.9	5.4	7.7	--	--	--	--	--	--	--	--
NCREIF Property Index		1.7	5.1	6.9	--	--	--	--	--	--	--	--
Direct Real Estate	13,103,242	1.7	14.4	14.4	14.5	11.5	6.2	5.5	22.9	6.1	5.2	9.2
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5
Fidelity Real Estate Growth III	223,019	2.2	-32.6	-34.8	-0.4	8.3	-4.5	1.3	35.8	28.2	20.9	12.1
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5

Property Type Allocation  
Allocation as of September 30, 2017



Geographic Diversification  
Allocation as of September 30, 2017



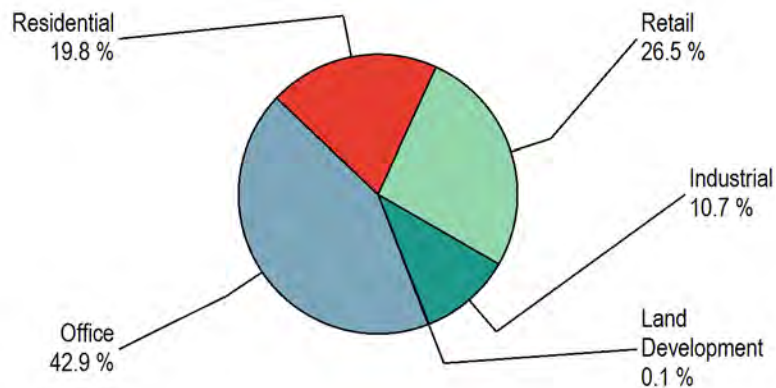
ARA American Strategic Value Realty funded 6/22/2016. Property Allocation and Geographic Diversification analytics exclude Direct Real Estate and ARA American. Direct Real Estate is lagged one quarter.

# Total Real Estate Asset Class Overview (Net of Fees)

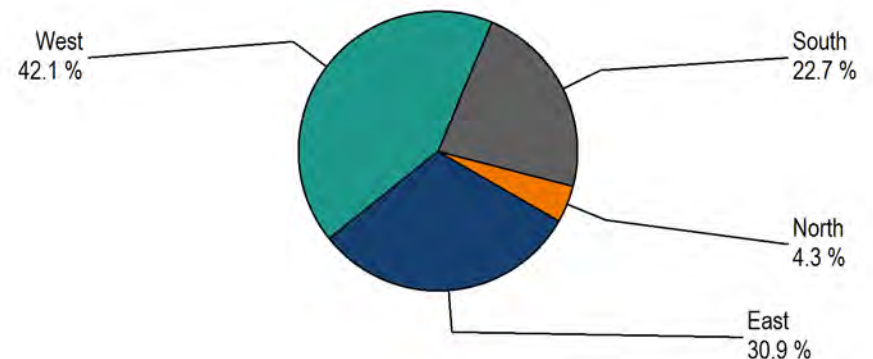
Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Real Estate</b>	<b>173,172,944</b>	<b>1.6</b>	<b>5.8</b>	<b>7.4</b>	<b>10.5</b>	<b>10.8</b>	<b>--</b>	<b>6.8</b>	<b>16.9</b>	<b>9.6</b>	<b>12.1</b>	<b>9.2</b>
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5
JP Morgan Core Real Estate	148,431,989	1.5	4.5	6.5	9.5	10.6	--	7.3	14.1	10.0	14.8	11.0
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	--	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	--	8.0	13.3	11.8	11.0	10.5
ARA American Strategic Value Realty	11,414,694	2.4	5.2	8.2	--	--	--	--	--	--	--	--
NCREIF-ODCE		1.9	5.4	7.7	--	--	--	--	--	--	--	--
NCREIF Property Index		1.7	5.1	6.9	--	--	--	--	--	--	--	--
Direct Real Estate	13,103,242	1.7	14.4	14.4	14.1	11.3	6.0	4.9	22.2	6.1	5.2	9.2
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5
Fidelity Real Estate Growth III	223,019	2.2	-32.6	-35.1	-1.4	7.1	-9.4	-0.1	34.0	26.7	19.3	10.6
NCREIF-ODCE		1.9	5.4	7.7	10.8	11.6	5.0	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index		1.7	5.1	6.9	9.8	10.3	6.2	8.0	13.3	11.8	11.0	10.5

Property Type Allocation  
Allocation as of September 30, 2017



Geographic Diversification  
Allocation as of September 30, 2017



ARA American Strategic Value Realty funded 6/22/2016. Property Allocation and Geographic Diversification analytics exclude Direct Real Estate and ARA American. Direct Real Estate is lagged one quarter.

Total Commodities  
 Asset Class Summary (Gross of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Commodities</b>	<b>36,387,022</b>	<b>3.7</b>	<b>-0.3</b>	<b>3.7</b>	<b>-9.8</b>	<b>-9.7</b>	<b>--</b>	<b>12.6</b>	<b>-25.2</b>	<b>-16.0</b>	<b>-9.1</b>	<b>-0.9</b>
<i>Bloomberg Commodity Index TR USD</i>		2.5	-2.9	-0.3	-10.4	-10.5	--	11.8	-24.7	-17.0	-9.5	-1.1
Gresham MTAP Commodity Builder	36,387,022	3.7	-0.3	3.7	-9.8	--	--	12.6	-25.2	-16.0	--	--
<i>Bloomberg Commodity Index TR USD</i>		2.5	-2.9	-0.3	-10.4	--	--	11.8	-24.7	-17.0	--	--

# Total Commodities

## Asset Class Summary (Net of Fees)

Period Ending: September 30, 2017

	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Commodities</b>	<b>36,387,022</b>	<b>3.7</b>	<b>-0.3</b>	<b>3.5</b>	<b>-10.3</b>	<b>-10.2</b>	<b>--</b>	<b>11.8</b>	<b>-25.8</b>	<b>-16.6</b>	<b>-9.5</b>	<b>-1.2</b>
<i>Bloomberg Commodity Index TR USD</i>		2.5	-2.9	-0.3	-10.4	-10.5	--	11.8	-24.7	-17.0	-9.5	-1.1
Gresham MTAP Commodity Builder	36,387,022	3.7	-0.3	3.5	-10.3	--	--	11.8	-25.8	-16.6	--	--
<i>Bloomberg Commodity Index TR USD</i>		2.5	-2.9	-0.3	-10.4	--	--	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
SSGA S&P 500 Flagship	2/25/2011	State Street	Stone Harbor Local Markets Ins	7/9/2013	Stone Harbor
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	Fidelity Real Estate Growth III	7/31/2007	J.P. Morgan
Atlanta Capital Management	8/31/2010	J.P. Morgan	Gresham MTAP Commodity	8/31/2013	BNY Mellon
Dodge & Cox Intl Stock	12/6/2007	J.P. Morgan	Cash Account	-	SLOCPT
WCM International Growth	2/15/2017	WCM	HarbourVest Partners IX-Buyout	2011 <sup>1</sup>	HarbourVest
BlackRock Core Bond	1/19/2017	J.P. Morgan	KKR Mezzanine Partners	2010 <sup>1</sup>	KKR
Dodge & Cox Income	1/19/2017	Deutsche Bank	PIMCO Distressed Credit Fund	2010 <sup>1</sup>	Brown Brothers Harriman
Pacific Asset Corporate Loan	9/1/2014	Deutsche Bank	ARA American Strategic Value	6/22/2016	American Realty Adv.
SSGA TIPS	7/12/2011	State Street	TPG Diversified Credit Program	2016 <sup>1</sup>	TPG
Brandywine Global Fixed	11/30/2007	J.P. Morgan	Pathway Private Equity Fund 9	2017 <sup>1</sup>	Pathway

<sup>1</sup>Represents 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%



# Glossary

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**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:  $\text{Portfolio Return} - [\text{Risk-free Rate} + \text{Portfolio Beta} \times (\text{Market Return} - \text{Risk-free Rate})]$ .

**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:  $\text{Portfolio Excess Return} / \text{Portfolio Standard Deviation}$ .

**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.

## Board of Trustees

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 10: Investment Report for October 2017**

	October	Year to Date 2017	2016	2015	2014	2013
Total Trust Investments (\$ 000s)	\$1,334,912		\$1,196,775 year end	\$1,148,315 year end	\$1,190,316 year end	\$1,131,022 year end
<b>Total Fund Return</b>	0.9% Gross	<b>12.9%</b> Gross	6.6 % Gross	-0.8 % Gross	5.1 % Gross	13.8% Gross
Policy Index Return (r)	1.1%	10.9%	7.7 %	-0.5 %	5.2 %	13.4%

(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:**

Some of the significant factors in the global economy for October and into mid-November have been –

- **Fed Policy** – The Fed policy of stable and predictable rate normalization supports the expectation of possibly an additional interest rate hike in December 2017 and three rate increases in 2018. At its November meeting the Fed left rates unchanged as it awaited the nomination of a new Fed Chair. The gradual unwinding of the Fed balance sheet through bond maturities is expected to place upward pressure on interest rates, but without sudden disruption. A point of question in Fed policy is the unexpectedly low rate of core inflation – stuck below

2%. Rising economic activity would be expected to be accompanied by increases in inflation making Fed rate increases to contain inflation while fostering full employment more straightforward. However, the Fed sees the current suppression of the inflation rate as temporary and views gradual rate normalization as consistent with its dual mandates on inflation and employment.

- **Fed Leadership** - Breaking with the tradition of multiple Fed Chair terms (e.g., Greenspan, Bernanke) President Trump nominated Jerome Powell as Fed Chair to succeed Janet Yellen when her term ends in February. Powell is a veteran Fed Governor and is seen as the “safe” choice to carry on monetary policies similar to that of the Yellen Fed. Powell’s positions on monetary policy and rate normalization mirror those of Yellen and support a continued gradual increase in rates. Powell’s positions on financial regulation are similar to Yellen’s and support adjustments to bank regulation, but the retention of most of the reforms enacted since the Global Financial Crisis. Market reaction reflected expectations of a non-disruptive change of Fed leadership. Subsequently, Janet Yellen announced that she would resign from her position as a Fed Governor following the change in Chair, even though her term runs through 2024. Yellen’s resignation will leave a fourth vacancy to be filled on the seven member Fed Board of Governors.
- **GDP Growth** – Capital market optimism in 2017 has been partly a reflection of the synchronized global growth taking place – an unusual circumstance by historical standards. Domestic GDP growth was reported at a 3.0% annualized rate in 3Q17 following a 2.6% GDP growth in 2Q17. The Atlanta Fed GDP forecast for 4Q17 currently stands at a +3.3% rate. The recent strong U.S. GDP growth, while encouraging, does not necessarily portend a structural turnaround in growth. A recent article on Yahoo Finance by Nicole Sinclair included the following excerpts that are of interest -

*““Politicians are going to declare a victory on this. That’s fine and that’s what politicians do,” said Credit Suisse’s Jonathan Golub. “But has this changed long-term trajectory for GDP? No. This is a period of nice, healthy-feeling cyclical growth not yet accompanied by inflation. That’s very different than having a structural change in output.”*

*The Congressional Budget Office (CBO) and the Federal Reserve both project long-term GDP growth of just under 2%.*

*Deutsche Bank’s Torsten Sløk explained that while a significant tax package out of DC in the coming weeks could move growth to stay close to 3% in 2018, many questions remain about the sustainability of that growth, especially given that we’re in year eight of a recovery.*

*“Expansions begin to slow down when they get older. And the historical pattern is also that the longer the expansion lasts the higher is the probability that we will soon get a recession,” he explained.*

*Meanwhile, Sløk explained that the response from the Federal Reserve to moderate growth amid rising inflation could also put a damper on long-term projections.*

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*“Higher growth is always associated with higher inflation, and if inflation moves faster up toward 2%—as we, the Fed, and the consensus expects—then the Fed will have to raise rates faster to cool down the economy,” Sløk said. “The Fed would like to see 3% GDP growth for the next decade but they just don’t believe it would be possible because such a high level would lead to overheating the economy.”*

*Golub added that recent GDP strength in the U.S. emanates not from U.S. policy changes but instead from a turnaround in the Chinese economy, which has in turn fueled a synchronized global recovery. He expects this to continue being the case through the first half of next year, particularly as the effects of the recent hurricanes roll off.”*

- **Tax Policy** – The accelerated push in the House and the Senate to pass comprehensive tax reform including substantial reductions in corporate tax rates. On the heels of better than expected corporate profit reports for 3Q17, capital markets appear to reflect a good deal of optimism about corporate tax reform and profitability. As the attached economic report from Verus notes on page 4 when discussing tax reform and U.S. equities – “The outcome remains uncertain and will likely have a material impact on U.S. equity prices.”
- **Employment** – The October new jobs report from the Bureau of Labor Statistics showed a gain of 261k jobs. This was a rebound from the hurricane induced September slump in new jobs that was revised to a gain of 18k new jobs. The economy has now added jobs for 85 consecutive months which is a record. The September data for unemployment
  - U.S. = 4.1% (down from 4.8% one year ago)
  - California = 4.7% (down from 5.2% one year ago)
  - SLO County = 3.6% (down from 4.1% one year ago)
- **Wage Growth** – October saw a slight decline in average hourly earnings, due in part to the impact on low wage earners of hurricanes. The report was discouraging to economists who had expected slow wage growth. The year over year increase in wages was +2.4%.

### **SLOCPT Investment Returns:**

The attached report from Verus covers the investment returns of the SLOCPT portfolio and general market conditions through the end of October. The robust capital market returns year to date have been aided by generally above-benchmark returns from SLOCPT’s investment managers.

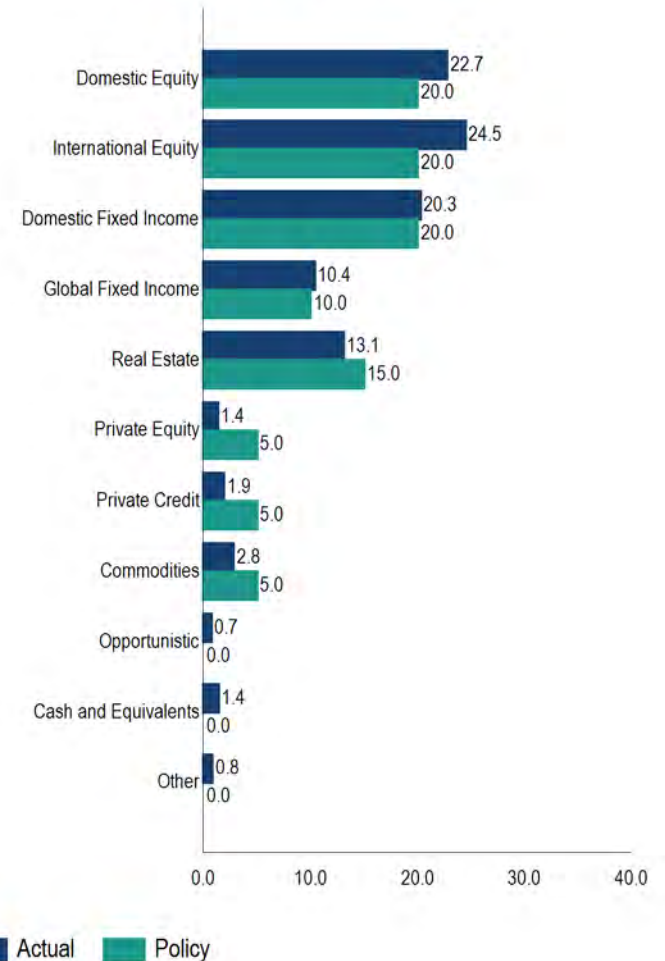
# San Luis Obispo County Pension Trust

## Executive Summary - Preliminary (Gross of Fees)

Period Ending: October 31, 2017

	Market Value	% of Portfolio	1 Mo	QTD	YTD
<b>Total Fund</b>	<b>1,334,912,495</b>	<b>100.0</b>	<b>0.9</b>	<b>0.9</b>	<b>12.9</b>
Total Fund ex Clifton	1,323,875,926	99.2	0.9	0.9	12.8
Policy Index			1.1	1.1	10.9
<b>Total Domestic Equity</b>	<b>303,633,625</b>	<b>22.7</b>	<b>2.7</b>	<b>2.7</b>	<b>19.6</b>
Russell 3000			2.2	2.2	16.4
SSGA S&P 500 Flag.	11,979,630	0.9	2.3	2.3	16.9
S&P 500			2.3	2.3	16.9
PIMCO RAE Fundamental PLUS Instl	56,253,935	4.2	1.6	1.6	10.7
S&P 500			2.3	2.3	16.9
Loomis Sayles Large Cap Growth	93,978,865	7.0	3.4	3.4	30.1
Russell 1000 Growth			3.9	3.9	25.4
Boston Partners Large Cap Value	82,320,892	6.2	2.0	2.0	--
Russell 1000 Value			0.7	0.7	--
Atlanta Capital Mgmt	59,100,303	4.4	3.8	3.8	19.9
Russell 2500			1.5	1.5	12.7
<b>Total International Equity</b>	<b>326,646,608</b>	<b>24.5</b>	<b>1.3</b>	<b>1.3</b>	<b>24.1</b>
MSCI ACWI ex USA Gross			1.9	1.9	23.9
Dodge & Cox Intl Stock	169,435,689	12.7	-0.2	-0.2	22.8
MSCI EAFE Gross			1.5	1.5	22.3
WCM International Growth	157,210,919	11.8	3.0	3.0	--
MSCI ACWI ex USA Gross			1.9	1.9	--
<b>Total Domestic Fixed Income</b>	<b>270,731,297</b>	<b>20.3</b>	<b>0.3</b>	<b>0.3</b>	<b>3.7</b>
BBgBarc US Aggregate TR			0.1	0.1	3.2
BlackRock Core Bond	95,301,628	7.1	0.1	0.1	--
BBgBarc US Aggregate TR			0.1	0.1	--
Dodge & Cox Income Fund	99,966,601	7.5	0.2	0.2	--
BBgBarc US Aggregate TR			0.1	0.1	--
Pacific Asset Corporate Loan	68,332,919	5.1	0.7	0.7	4.1
S&P/LSTA Leveraged Loan Index			0.6	0.6	3.6
SSGA TIPS	7,130,150	0.5	0.2	0.2	1.9
BBgBarc US TIPS TR			0.2	0.2	1.9

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. ARA American funded 6/22/2016. ARA American and Direct Real Estate MVs as of 6/30/2017 +/- calls and distributions. Fidelity Real Estate Growth II liquidated 12/31/2015. TPG funded 11/21/16. Loomis Sayles LC Growth funded 12/31/16. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core Bond funded 1/19/2017. Dodge & Cox Income Fund funded 1/19/2017. Boston Partners funded 2/1/2017. WCM Intl Growth replaced Vontobel on 2/15/2017. Pathway 9 funded 4/7/2017. All data is preliminary.

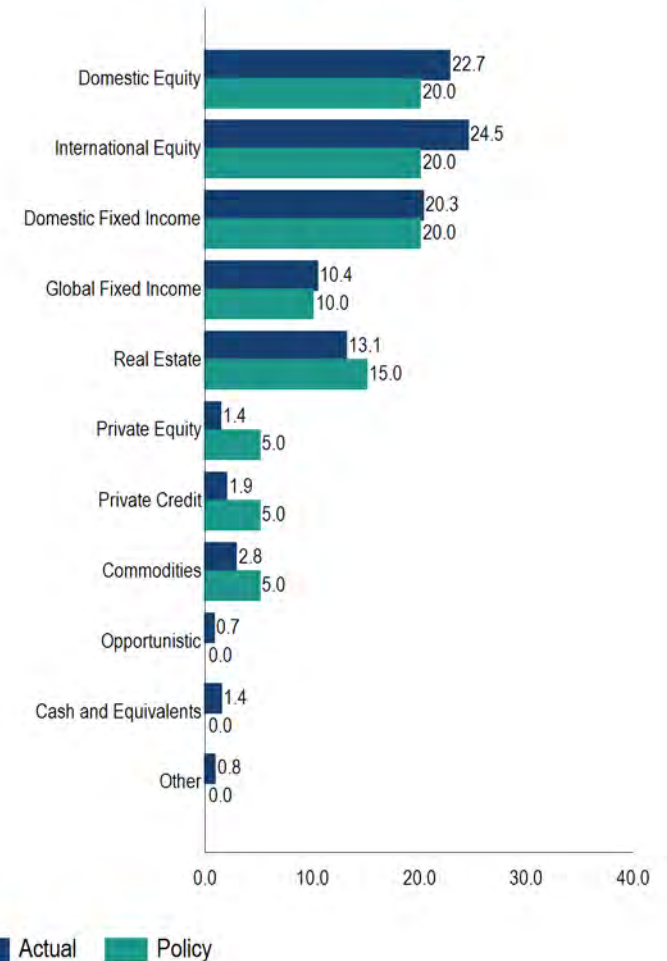
# San Luis Obispo County Pension Trust

## Executive Summary - Preliminary (Gross of Fees)

Period Ending: October 31, 2017

	Market Value	% of Portfolio	1 Mo	QTD	YTD
<b>Total Global Fixed</b>	<b>138,431,786</b>	<b>10.4</b>	<b>-2.8</b>	<b>-2.8</b>	<b>11.1</b>
<i>Citi World Govt Bond Index</i>			-0.5	-0.5	5.8
Brandywine Global Fixed Income	70,062,797	5.2	-2.5	-2.5	10.0
<i>Citi WGBI ex US</i>			-0.8	-0.8	7.8
Stone Harbor Local Markets Ins	68,368,988	5.1	-3.0	-3.0	12.3
<i>JPM GBI-EM Global Diversified TR USD</i>			-2.8	-2.8	11.1
<b>Total Real Estate</b>	<b>174,694,305</b>	<b>13.1</b>	<b>0.8</b>	<b>0.8</b>	<b>6.7</b>
<i>NCREIF Property Index</i>					
JP Morgan Core Real Estate	149,074,371	11.2	0.3	0.3	4.9
<i>NCREIF-ODCE</i>					
<i>NCREIF Property Index</i>					
ARA American Strategic Value Realty	11,657,191	0.9	2.1	2.1	7.4
<i>NCREIF-ODCE</i>					
<i>NCREIF Property Index</i>					
Direct Real Estate	13,740,274	1.0	5.4	5.4	20.6
<i>NCREIF-ODCE</i>					
<i>NCREIF Property Index</i>					
Fidelity Real Estate Growth III	222,469	0.0	-0.2	-0.2	-32.8
<i>NCREIF-ODCE</i>					
<i>NCREIF Property Index</i>					
<b>Total Commodities</b>	<b>37,382,369</b>	<b>2.8</b>	<b>2.7</b>	<b>2.7</b>	<b>2.4</b>
<i>Bloomberg Commodity Index TR USD</i>			2.1	2.1	-0.8
Gresham MTAP Commodity Builder	37,382,369	2.8	2.7	2.7	2.4
<i>Bloomberg Commodity Index TR USD</i>			2.1	2.1	-0.8
<b>Total Private Equity</b>	<b>18,161,919</b>	<b>1.4</b>			
Harbourvest Partners IX Buyout Fund L.P.	13,142,827	1.0			
Pathway Private Equity Fund Investors 9 L.P.	5,019,092	0.4			
<i>Russell 3000 +3%</i>					

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. ARA American funded 6/22/2016. ARA American and Direct Real Estate MVs as of 6/30/2017 +/- calls and distributions. Fidelity Real Estate Growth II liquidated 12/31/2015. TPG funded 11/21/16. Loomis Sayles LC Growth funded 12/31/16. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core Bond funded 1/19/2017. Dodge & Cox Income Fund funded 1/19/2017. Boston Partners funded 2/1/2017. WCM Intl Growth replaced Vontobel on 2/15/2017. Pathway 9 funded 4/7/2017. All data is preliminary.

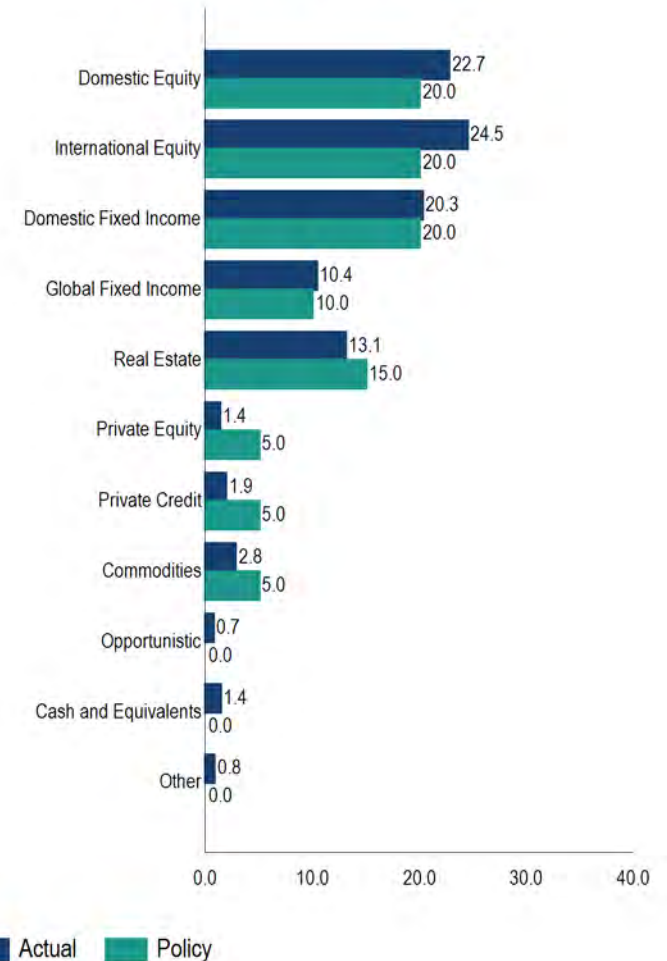
# San Luis Obispo County Pension Trust

## Executive Summary - Preliminary (Gross of Fees)

Period Ending: October 31, 2017

	Market Value	% of Portfolio	1 Mo	QTD	YTD
<b>Total Private Credit</b>	<b>25,604,800</b>	<b>1.9</b>			
TPG Diversified Credit Program	25,604,800	1.9			
BBgBarc High Yield +2% (Lagged)					
<b>Total Cash</b>	<b>18,638,241</b>	<b>1.4</b>	<b>0.4</b>	<b>0.4</b>	<b>1.0</b>
91 Day T-Bills			0.1	0.1	0.7
Cash Account	18,638,241	1.4	0.4	0.4	1.0
91 Day T-Bills			0.1	0.1	0.7
<b>Total Opportunistic</b>	<b>9,950,976</b>	<b>0.7</b>			
Kohlberg Kravis Roberts & Co. Mezzanine Partners I	8,460,682	0.6			
PIMCO Distressed Credit Fund	1,490,294	0.1			
CPI + 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. ARA American funded 6/22/2016. ARA American and Direct Real Estate MVs as of 6/30/2017 +/- calls and distributions. Fidelity Real Estate Growth II liquidated 12/31/2015. TPG funded 11/21/16. Loomis Sayles LC Growth funded 12/31/16. PIMCO Core Plus liquidated 1/6/2017. BlackRock Core Bond funded 1/19/2017. Dodge & Cox Income Fund funded 1/19/2017. Boston Partners funded 2/1/2017. WCM Intl Growth replaced Vontobel on 2/15/2017. Pathway 9 funded 4/7/2017. All data is preliminary.



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**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

OCTOBER 2017  
Capital Markets Update



# Market commentary

## ECONOMIC CLIMATE

- Real U.S. GDP grew 2.3% YoY in the third quarter (3.0% QoQ annualized), above the second quarter growth rate of 2.1% YoY (2.6% QoQ annualized). Consumer spending, government spending and exports provided a positive boost to Q3 growth.
- As of November 3<sup>rd</sup>, the Q4 Atlanta Fed GDPNow forecast for real U.S. GDP growth was 3.3% (QoQ annualized).
- The U.S. dollar potentially reversed its downward trend in October and appreciated by 1.6% against a basket of major currencies. The Bloomberg Dollar Spot index was down -7.5% year-to-date.
- The ISM Manufacturing index decreased in October from 60.8 to 58.7, below the consensus estimate of 59.5. Readings above 50 indicate general expansion in manufacturing. The inventories sub-index was a detractor – falling from 52.5 to 48.0 in the month.
- The Conference Board's Consumer Confidence Index, a survey of consumers' perception of economic conditions, increased in October from 120.6 to 125.9, above the consensus estimate of 121.0 and well above the 20-year average of 92.8.

## DOMESTIC EQUITIES

- Domestic equities experienced positive returns in October (S&P 500 +2.3%). Realized volatility of the index remained low at 4.4% (annualized) during the month, well below the 5-year trailing volatility of 12.0%.
- As of November 10<sup>th</sup>, 91% of S&P 500 companies had reported third quarter earnings. According to FactSet, the blended Q3 earnings growth rate was 6.1% YoY, well above the September 30<sup>th</sup> estimate of 3.0%.

## DOMESTIC FIXED INCOME

- Domestic fixed income returns were flat in October as the Bloomberg Barclays U.S. Aggregate Index returned 0.1%.
- The U.S. Treasury yield curve flattened slightly as the 10-year minus 2-year spread contracted 8 bps to 0.78%. The 2-year Treasury yield experienced the largest change among tenors in the month, increasing 13 bps to 1.6%.
- Credit spreads remained compressed – the U.S. high yield and investment-grade option-adjusted spreads ended the month near cycle lows of 3.5% and 0.9%, respectively.

## INTERNATIONAL MARKETS

- International equities (MSCI ACWI ex U.S. +1.9%) underperformed domestic equities in October (S&P 500 +2.3%). The hedged MSCI ACWI ex U.S. returned 3.2% in the month.
- Eurozone unemployment fell to 8.9% in September, the lowest level since 2011. However, unemployment rates varied greatly among the member states, with Germany at 3.6% and Spain 16.7%.
- Eurozone real GDP grew 2.5% YoY (2.4% QoQ annualized) in the third quarter, above the prior quarter's growth rate of 2.3% YoY (2.6% QoQ annualized) and the fastest YoY rate since 2011.
- The BOE raised interest rates for the first time in nearly ten years, increasing the benchmark rate from 0.25% to 0.50%. The move eliminated the rate cut that was applied shortly after Brexit. October inflation in the U.K. increased by 3.0% YoY, a full percentage point above the BOE's target rate of 2.0%.

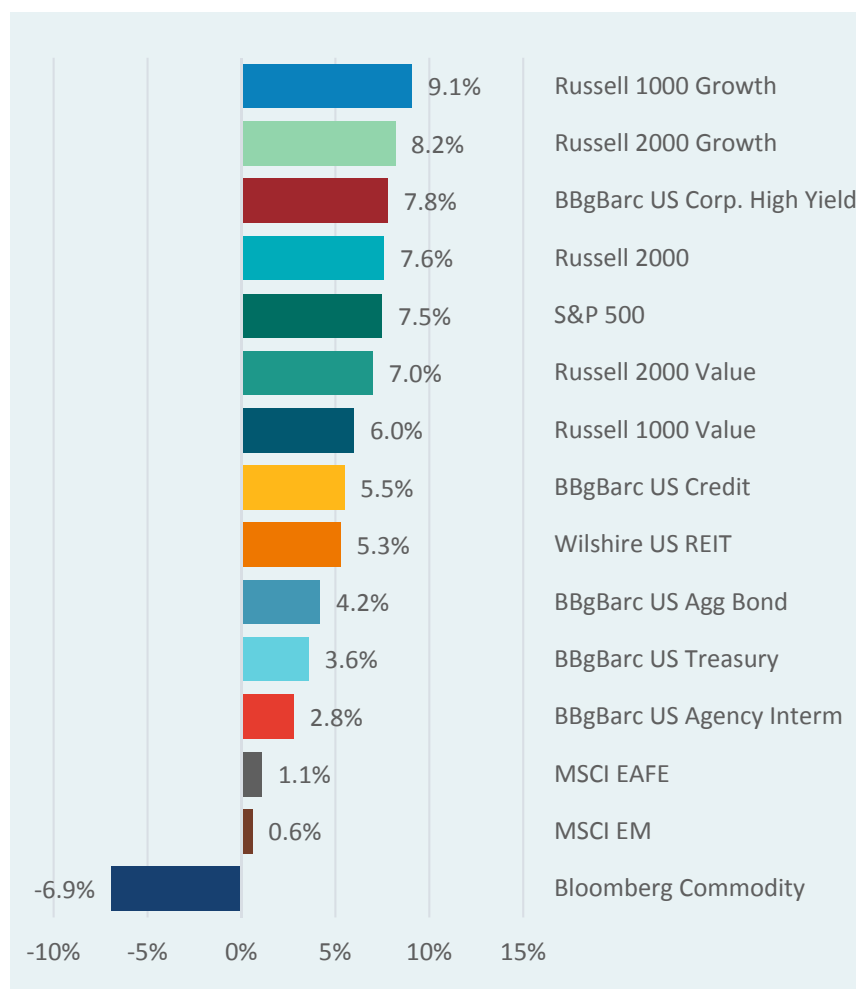
# Major asset class returns

ONE YEAR ENDING OCTOBER



Source: Morningstar, as of 10/31/17

TEN YEARS ENDING OCTOBER

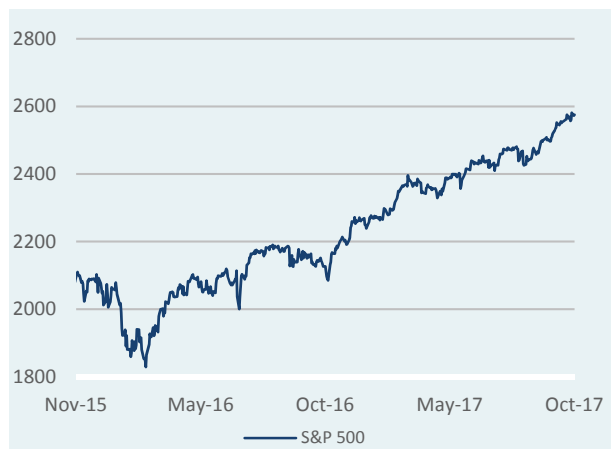


Source: Morningstar, as of 10/31/17

# U.S. large cap equities

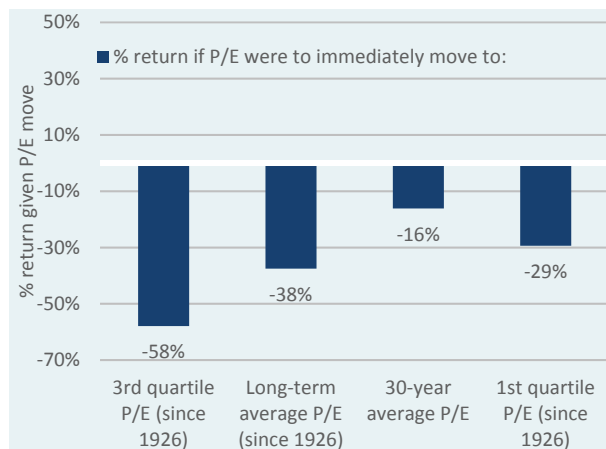
- Large cap equities posted a positive return for a 12<sup>th</sup> consecutive month (S&P 500 +2.3%). The index was up 16.9% year-to-date.
- The House and Senate have released initial versions of proposed tax reform legislation that could potentially lower the corporate tax rate to 20%. The outcome remains uncertain and will likely have a material impact on U.S. equity prices.
- According to FactSet, as of November 10<sup>th</sup>, the estimated Q3 earnings growth rate of the S&P 500 was 6.1% YoY, led by Energy and Information Technology. Revenue growth was 5.8% YoY, above the September 30<sup>th</sup> estimate of 4.9% led by Materials and Energy.
- U.S. companies with higher global revenue exposure (greater than 50%) experienced materially stronger earnings growth (13.4% versus 2.3%) and revenue growth (10.0% versus 4.2%) in the third quarter.

**U.S. LARGE CAP EQUITIES**



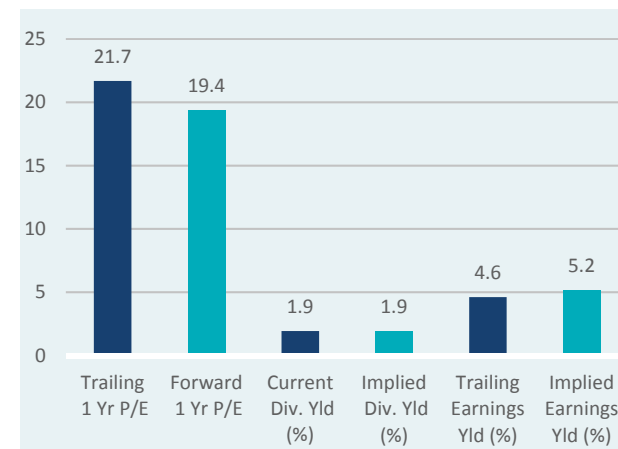
Source: Bloomberg, as of 10/31/17

**RETURNS IF TRAILING P/E MOVED TO HISTORIC AVERAGE**



Source: Yale/Shiller, Verus, as of 10/31/17

**S&P 500 VALUATION SNAPSHOT**

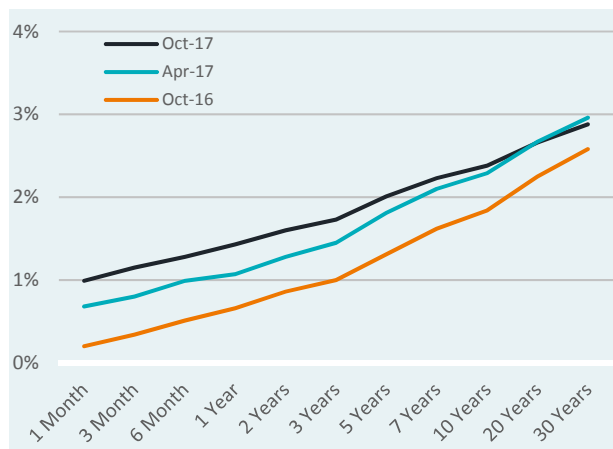


Source: Bloomberg, as of 10/31/17

# Fixed income

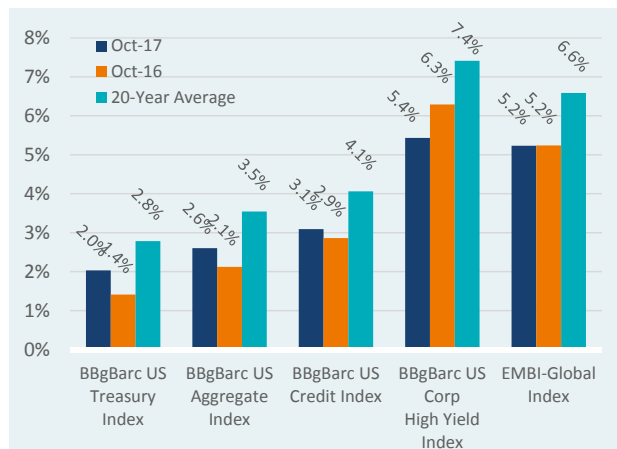
- The U.S. Treasury yield curve flattened slightly in October, as the 10-year minus 2-year spread fell 8 bps to 0.78%. The yield curve also rose across all maturities during the month and the Bloomberg Barclays U.S. Treasury Index experienced a negative return of -0.1%.
- The Bloomberg U.S. Aggregate Bond Index yield ended the month at 2.6%, above the yield 1-year prior of 2.1% but well below the 20-year average of 3.5%.
- On November 1<sup>st</sup>, the FOMC held the fed funds target rate unchanged at 1.00% - 1.25%. The market is expecting the next hike to occur in December, based on fed fund futures pricing.
- The fed balance sheet unwind began in October with a \$5.6 billion net decrease in Treasuries (-\$6 billion expected). Markets await evidence of an unwind in mortgage-backed securities (-\$4 billion expected), with a net increase of \$2.5 billion during the month.

**U.S. TREASURY YIELD CURVE**



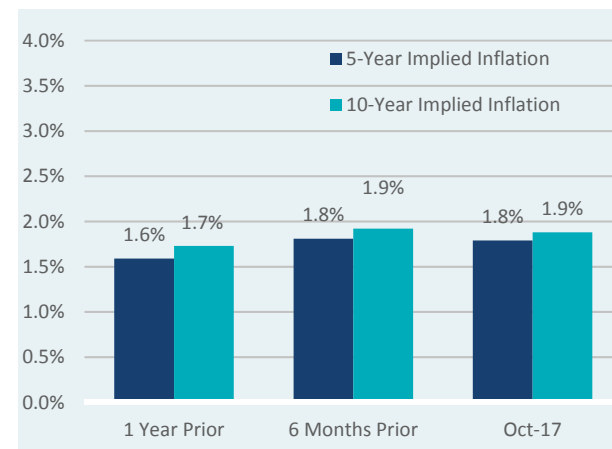
Source: Federal Reserve, as of 10/31/17

**NOMINAL FIXED INCOME YIELDS**



Source: Morningstar, as of 10/31/17

**IMPLIED INFLATION (TIPS BREAK-EVEN)**

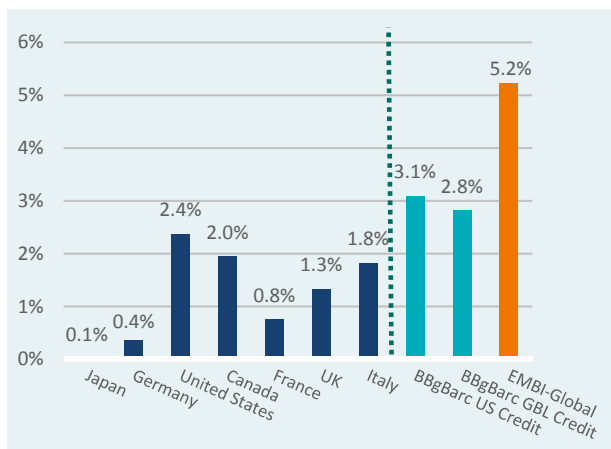


Source: Federal Reserve, as of 10/31/17

# Global markets

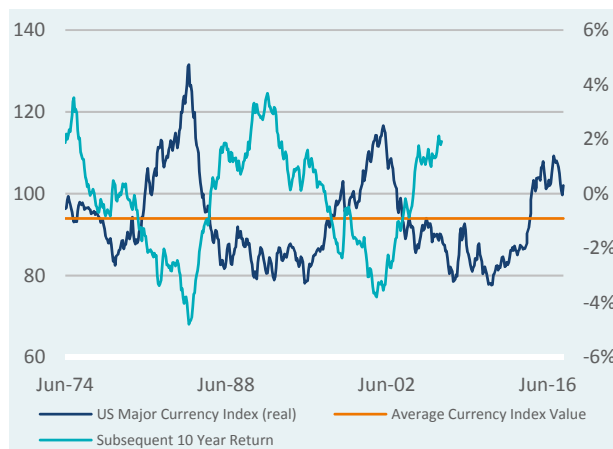
- The ECB announced it will continue its asset purchase program but at a reduced rate starting in 2018. The monthly purchases will be reduced from €60 billion to €30 billion and will remain in place through at least September of next year.
- Italian sovereign bonds rallied in October following a credit rating upgrade from Standard and Poor (BBB), the first upgrade in three decades. The Italian 10-year bond yield fell 28 bps to 1.83% while the price of a 10-year credit default swap decreased by -9.9%.
- Japanese equities (Nikkei 225 index +8.2%) outperformed international equities (MSCI ACWI ex U.S. index +1.9%) on an unhedged basis in October. As of November 13<sup>th</sup>, 91% of Nikkei 225 companies had reported third quarter financials. According to Bloomberg, Q3 earnings and revenue grew by 17.9% and 9.8% annualized, respectively.

**GLOBAL SOVEREIGN 10 YEAR INDEX YIELDS**



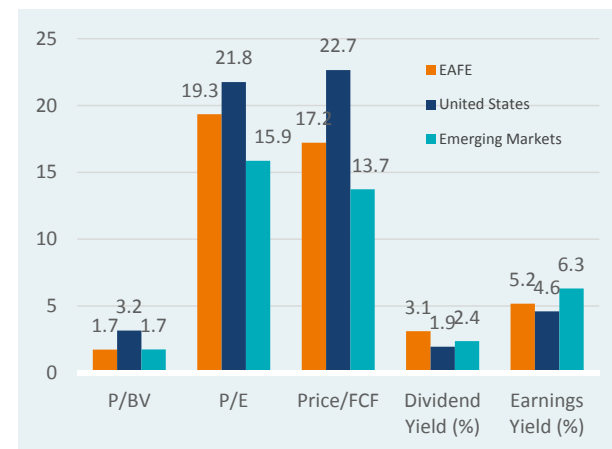
Source: Morningstar, as of 10/31/17

**U.S. DOLLAR MAJOR CURRENCY INDEX**



Source: Federal Reserve, as of 10/31/17

**MSCI VALUATION METRICS (3 MONTH AVERAGE)**



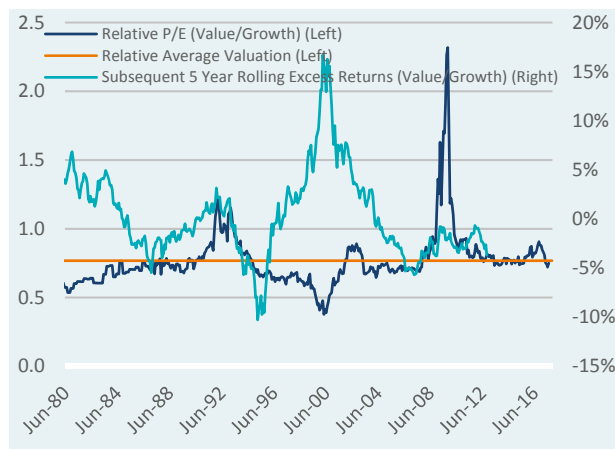
Source: Bloomberg, as of 10/31/17



# Style tilts: U.S. large value vs. growth

- Growth equities outperformed value equities in October, as the Russell 1000 Growth and Russell 1000 Value returned 3.9% and 0.7%, respectively. Growth equities extended their outperformance YTD to 16.7%.
- Growth equities benefitted from a higher relative concentration to Technology companies. The Tech sub-index (approximately 40% of the Russell 1000 Growth) outperformed all other sectors and returned 7.9% over the month.
- The underperformance of value equities in October was partially attributable to heavy sector allocations in Health Care and Energy, which returned -0.8% and -0.7%, respectively.
- Both value and growth equities experienced low realized volatility during the month (4.8% and 6.3%, respectively) relative to their 5-year annualized averages (approximately 12.4%).

**RELATIVE TRAILING PE RATIO OF U.S. VALUE VS. GROWTH**



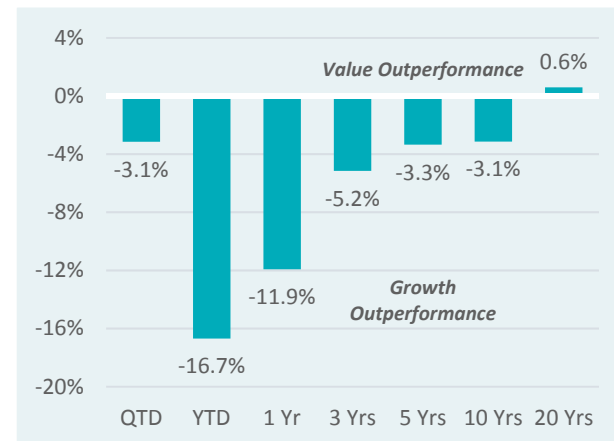
Source: Russell, Bloomberg, as of 10/31/17

**U.S. VALUE VS. GROWTH ABSOLUTE PERFORMANCE**

	RUSSELL 1000 VALUE	RUSSELL 1000 GROWTH
	ANNUALIZED RETURN TO DATE %	ANNUALIZED RETURN TO DATE %
QTD	0.7	3.9
YTD	8.7	25.4
1 YEAR	17.8	29.7
3 YEARS	8.0	13.1
5 YEARS	13.5	16.8
10 YEARS	6.0	9.1
20 YEARS	7.5	6.9
	SHARPE RATIO	SHARPE RATIO
3 YEARS	0.76	1.17
5 YEARS	1.31	1.60
10 YEARS	0.42	0.62
20 YEARS	0.43	0.36

Source: Morningstar, as of 10/31/17

**U.S. VALUE VS. GROWTH RELATIVE PERFORMANCE**

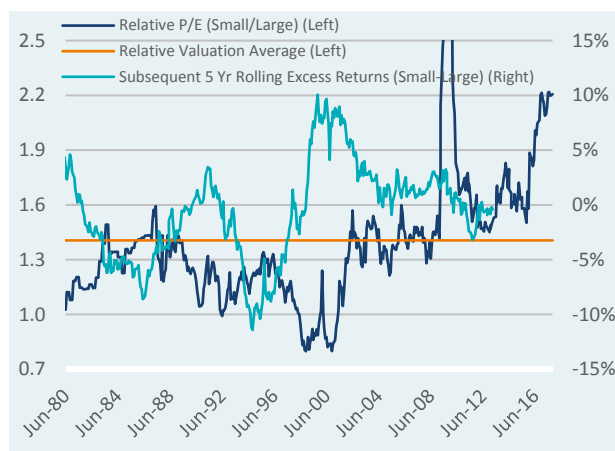


Source: Morningstar, as of 10/31/17

# Style tilts: U.S. large vs. small

- U.S. large cap equities outperformed small cap equities, as the Russell 1000 index and Russell 2000 index returned 2.3% and 0.9%, respectively.
- Over all the time periods examined below, large cap equities have provided superior risk-adjusted returns (Sharpe Ratio) relative to small cap equities. Over the previous 5-year period, large cap equities have outperformed on an absolute basis by 0.7% per year with 3.4% less annualized standard deviation.
- The Technology sector experienced the largest performance differential between large and small cap companies. Large cap technology companies outperformed their small cap counterparts by over 4.0%. However, Tech companies within the Russell 1000 were far more concentrated, with the five largest companies (Apple, Microsoft, Intel, Facebook and Alphabet) contributing 56% to the sub-index total return, compared to 25% within the Russell 2000.

**RELATIVE TRAILING PE RATIO OF U.S. SMALL VS. LARGE**



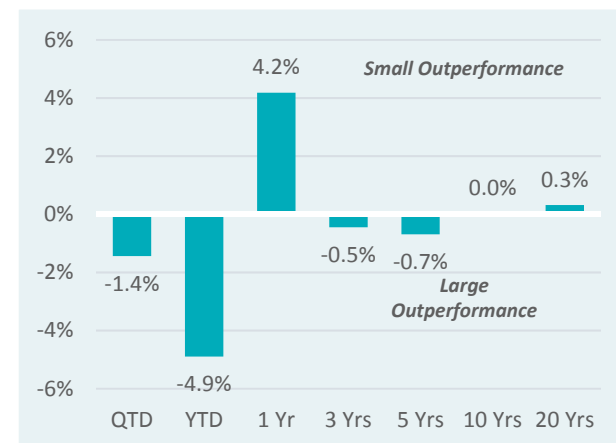
Source: Russell, Bloomberg, as of 10/31/17

**U.S. LARGE VS. SMALL ABSOLUTE PERFORMANCE**

	RUSSELL 1000 INDEX	RUSSELL 2000 INDEX
	ANNUALIZED RETURN TO DATE %	ANNUALIZED RETURN TO DATE %
QTD	2.3	0.9
YTD	16.8	11.9
1 YEAR	23.7	27.8
3 YEARS	10.6	10.1
5 YEARS	15.2	14.5
10 YEARS	7.6	7.6
20 YEARS	7.5	7.8
	SHARPE RATIO	SHARPE RATIO
3 YEARS	1.01	0.73
5 YEARS	1.51	1.03
10 YEARS	0.53	0.45
20 YEARS	0.42	0.38

Source: Morningstar, as of 10/31/17

**U.S. LARGE VS. SMALL RELATIVE PERFORMANCE**



Source: Morningstar, as of 10/31/17

# Commodities

- The broad Bloomberg Commodity Index increased in October by 2.1%. Industrial Metals (+5.8%), Energy (+2.5%), and Livestock (+10.6%) were the largest contributors during the month.
- The middle of the WTI crude oil futures curve was in backwardation in October — possibly influenced by expectations of demand exceeding supply – reducing the effect of negative roll yields seen in recent years. Backwardation is a state where spot prices are higher than prices for futures contracts. WTI crude oil spot

prices increased 4.8% and ended the month at \$54.11 per barrel.

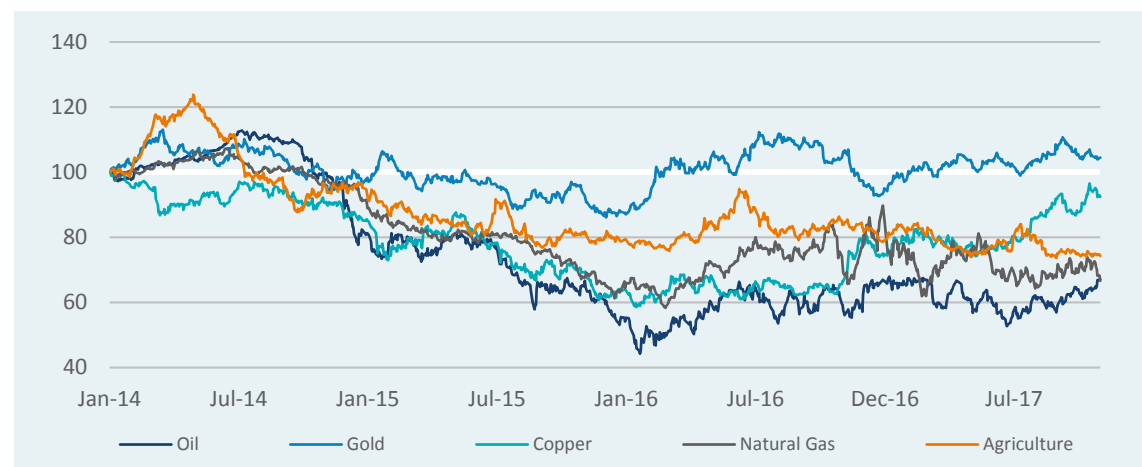
- The Industrial Metals sub-index increased by 5.8%, possibly due to favorable supply and demand fundamentals, led by the price appreciation of Copper (+5.0%) and Nickel (+16.7%).
- The Bloomberg Livestock sub-index returned 10.6% in October, led by Lean Hog futures, which increased 13.4% in the month.

## INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	2.1	2.1	(0.8)	2.3	(9.5)	(9.4)	(6.9)
Bloomberg Agriculture	(0.9)	(0.9)	(10.1)	(14.6)	(9.1)	(11.0)	(3.7)
Bloomberg Energy	2.5	2.5	(10.0)	2.3	(23.6)	(16.9)	(18.1)
Bloomberg Grains	(2.5)	(2.5)	(9.2)	(12.0)	(11.1)	(14.0)	(5.6)
Bloomberg Industrial Metals	5.8	5.8	23.6	29.5	0.1	(1.5)	(4.4)
Bloomberg Livestock	10.6	10.6	13.8	30.6	(5.8)	(0.9)	(5.4)
Bloomberg Petroleum	6.4	6.4	0.2	12.7	(21.5)	(15.2)	(12.5)
Bloomberg Precious Metals	(0.7)	(0.7)	7.9	(2.8)	1.5	(8.2)	3.3
Bloomberg Softs	1.0	1.0	(18.1)	(26.6)	(9.2)	(9.2)	(3.2)

Source: Morningstar, as of 10/31/17

## COMMODITY PERFORMANCE



Source: Bloomberg, as of 10/31/17

# Appendix

# Periodic table of returns

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	YTD	5-Year	10-Year
Emerging Markets Equity	16.6	38.4	23.2	35.2	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	32.3	16.8	9.1
Large Cap Growth	8.1	37.8	23.1	32.9	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	25.4	15.4	8.2
International Equity	6.4	37.2	22.4	31.8	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	21.8	15.2	7.6
Small Cap Growth	4.4	31.0	21.6	30.5	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	18.6	14.5	7.6
Large Cap Equity	3.2	28.5	21.4	22.4	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	16.8	13.6	7.0
60/40 Global Portfolio	2.6	25.7	16.5	16.2	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	14.0	13.5	6.2
Small Cap Equity	0.4	19.6	14.4	13.9	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	11.9	10.3	6.0
Large Cap Value	-1.5	18.5	11.3	12.9	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	8.7	8.5	4.2
Hedge Funds of Funds	-1.8	15.2	10.3	10.6	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	6.8	6.7	3.8
Small Cap Value	-2.0	11.6	9.9	9.7	-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	5.8	4.8	1.1
Real Estate	-2.4	11.1	6.4	5.2	-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	5.1	4.1	0.9
US Bonds	-2.9	7.5	6.0	2.1	-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	3.2	2.0	0.6
Cash	-3.5	5.7	5.1	-3.4	-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	0.7	0.2	0.3
Commodities	-7.3	-5.2	3.6	-11.6	-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	-0.8	-9.4	-6.9

Large Cap Equity

Large Cap Value

Large Cap Growth

Small Cap Equity

Small Cap Value

Small Cap Growth

International Equity

Emerging Markets Equity

US Bonds

Cash

Commodities

Real Estate

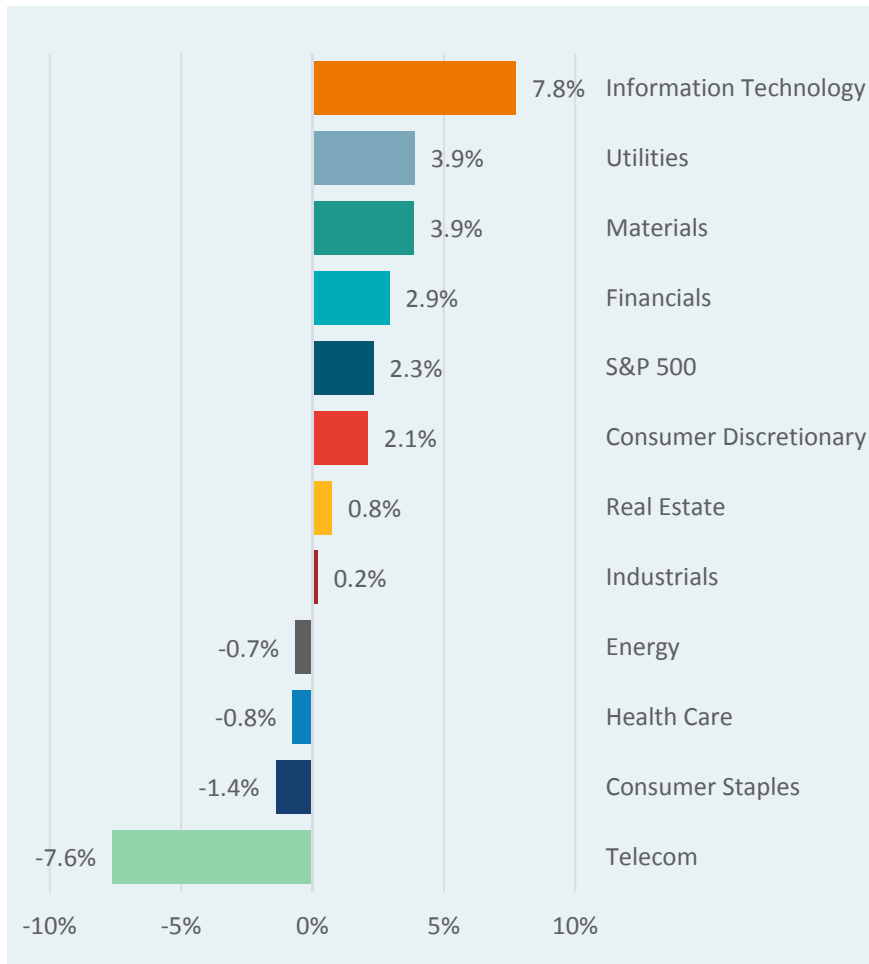
Hedge Funds of Funds

60% MSCI ACWI/40% BBgBarc Global Bond

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 9/30/17.

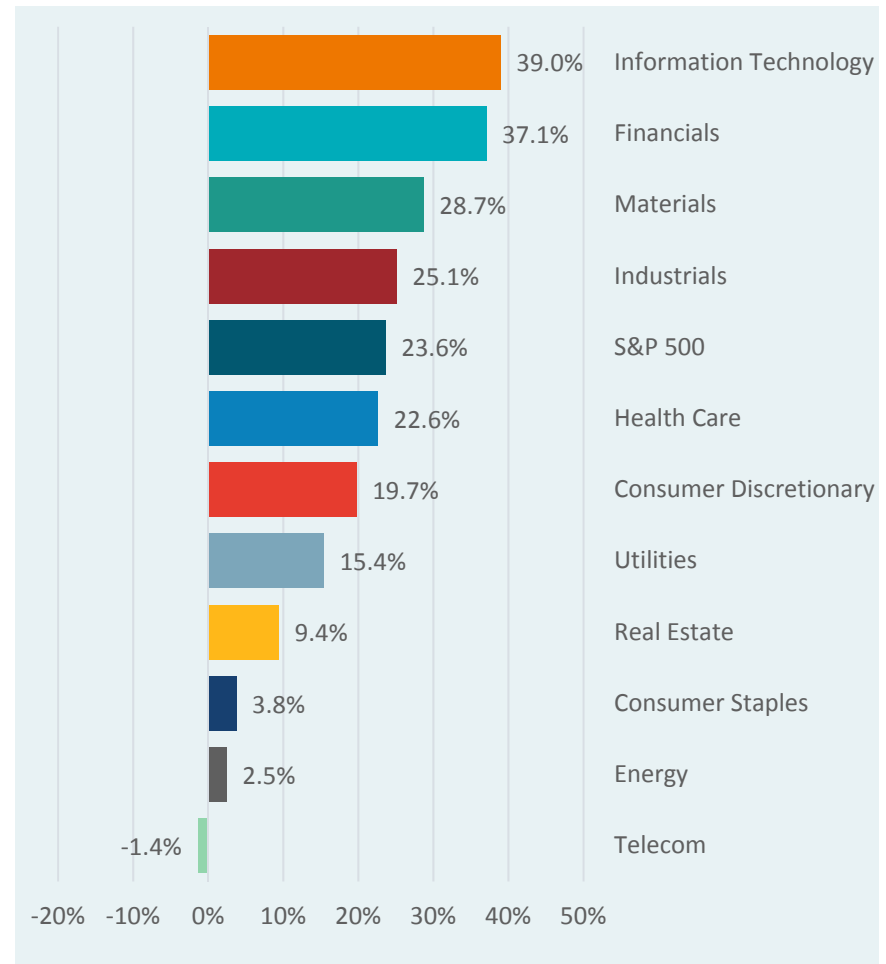
# S&P 500 sector returns

QTD



Source: Morningstar, as of 10/31/17

ONE YEAR ENDING OCTOBER



Source: Morningstar, as of 10/31/17

# Detailed index returns

## DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Core Index</b>							
S&P 500	2.3	2.3	16.9	23.6	10.8	15.2	7.5
S&P 500 Equal Weighted	1.1	1.1	13.2	20.4	9.4	15.5	8.9
DJ Industrial Average	4.4	4.4	20.6	32.1	13.2	15.1	8.1
Russell Top 200	2.5	2.5	18.1	24.7	11.2	15.3	7.4
Russell 1000	2.3	2.3	16.8	23.7	10.6	15.2	7.6
Russell 2000	0.9	0.9	11.9	27.8	10.1	14.5	7.6
Russell 3000	2.2	2.2	16.4	24.0	10.5	15.1	7.6
Russell Mid Cap	1.7	1.7	13.6	21.1	9.0	14.9	8.1
<b>Style Index</b>							
Russell 1000 Growth	3.9	3.9	25.4	29.7	13.1	16.8	9.1
Russell 1000 Value	0.7	0.7	8.7	17.8	8.0	13.5	6.0
Russell 2000 Growth	1.5	1.5	18.6	31.0	10.5	15.4	8.2
Russell 2000 Value	0.1	0.1	5.8	24.8	9.7	13.6	7.0

## INTERNATIONAL EQUITY

<b>Broad Index</b>							
MSCI ACWI	2.1	2.1	19.7	23.2	7.9	10.8	3.7
MSCI ACWI ex US	1.9	1.9	23.4	23.6	5.7	7.3	0.9
MSCI EAFE	1.5	1.5	21.8	23.4	6.1	8.5	1.1
MSCI EM	3.5	3.5	32.3	26.5	5.7	4.8	0.6
MSCI EAFE Small Cap	1.7	1.7	27.5	27.5	12.5	13.0	4.2
<b>Style Index</b>							
MSCI EAFE Growth	2.3	2.3	25.2	23.6	7.6	9.3	1.9
MSCI EAFE Value	0.8	0.8	18.5	23.2	4.5	7.7	0.2
<b>Regional Index</b>							
MSCI UK	0.6	0.6	16.4	21.6	1.8	4.9	0.2
MSCI Japan	4.6	4.6	19.6	17.8	9.9	12.0	2.2
MSCI Euro	0.8	0.8	27.0	30.6	7.2	9.5	(0.4)
MSCI EM Asia	5.3	5.3	38.8	32.3	9.3	8.6	2.2
MSCI EM Latin American	(3.6)	(3.6)	22.2	10.1	(1.5)	(2.6)	(2.2)

Source: Morningstar, as of 10/31/17

## FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
BBgBarc US Treasury US TIPS	0.2	0.2	1.9	(0.1)	1.4	(0.1)	3.8
BBgBarc US Treasury Bills	0.1	0.1	0.7	0.7	0.4	0.3	0.5
BBgBarc US Agg Bond	0.1	0.1	3.2	0.9	2.4	2.0	4.2
<b>Duration</b>							
BBgBarc US Treasury 1-3 Yr	(0.1)	(0.1)	0.6	0.2	0.7	0.6	1.7
BBgBarc US Treasury Long	(0.1)	(0.1)	5.9	(2.4)	3.9	2.8	6.7
BBgBarc US Treasury	(0.1)	(0.1)	2.1	(0.7)	1.7	1.3	3.6
<b>Issuer</b>							
BBgBarc US MBS	(0.0)	(0.0)	2.3	0.5	2.1	2.0	4.0
BBgBarc US Corp. High Yield	0.4	0.4	7.5	8.9	5.6	6.3	7.8
BBgBarc US Agency Interm	(0.0)	(0.0)	1.4	0.4	1.3	1.1	2.8
BBgBarc US Credit	0.3	0.3	5.4	3.2	3.6	3.1	5.5

## OTHER

<b>Index</b>							
Bloomberg Commodity	2.1	2.1	(0.8)	2.3	(9.5)	(9.4)	(6.9)
Wilshire US REIT	(0.9)	(0.9)	1.5	5.1	5.7	9.5	5.3
CS Leveraged Loans	0.7	0.7	3.7	5.2	4.1	4.5	4.4
<b>Regional Index</b>							
JPM EMBI Global Div	0.4	0.4	9.4	6.3	6.0	4.8	7.2
JPM GBI-EM Global Div	(2.8)	(2.8)	11.1	5.2	(1.2)	(1.6)	3.1
<b>Hedge Funds</b>							
HFRI Composite	1.3	1.3	7.2	9.1	4.0	5.1	2.9
HFRI FOF Composite	1.2	1.2	6.8	8.0	2.8	4.1	0.9
<b>Currency (Spot)</b>							
Euro	(1.5)	(1.5)	10.4	6.3	(2.4)	(2.1)	(2.1)
Pound	(1.0)	(1.0)	7.5	8.8	(6.0)	(3.8)	(4.4)
Yen	(0.9)	(0.9)	2.6	(7.5)	(0.4)	(6.8)	0.1



# Definitions

**Conference Board Consumer Confidence Index** – a barometer of the health of the U.S. economy from the perspective of the consumer. The index is based on consumers' perceptions of current business and employment conditions, as well as their expectations for six months hence regarding business conditions, employment, and income. ([www.conference-board.org](http://www.conference-board.org))

**ISM Manufacturing Index** – based on data compiled from purchasing and supply executives nationwide. Survey responses reflect the change, if any, in the current month compared to the previous month. For each of the indicators measured (New Orders, Backlog of Orders, New Export Orders, Imports, Production, Supplier Deliveries, Inventories, Customers' Inventories, Employment and Prices), this report shows the percentage reporting each response, the net difference between the number of responses in the positive economic direction and the negative economic direction, and the diffusion index. ([www.instituteforsupplymanagement.org](http://www.instituteforsupplymanagement.org))

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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.

## Board of Trustees

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 11: Asset Allocation November 2017**

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.

In addition, as part of the investment rebalancing responsibility of the Executive Secretary / Chief Investment Officer under the Pension Trust's Investment Policy the following domestic equity asset allocation shifts are planned for December. The actual amounts transferred will depend on actual November month-end balances so these are estimates. These asset rebalancing changes have been discussed with Scott Whalen of Verus as the Pension Trust's investment consultant and he is in agreement.

#### Style Rebalancing – Domestic Equity – Growth / Value:

	<u>Est. Mkt. Value</u>	<u>Transfer</u>
Loomis Sayles (growth)	\$91M	- \$5M
Boston Partners (value)	\$81M	+\$5M
Atlanta Capital (small/mid cap)	\$57M	no change

#### Equity Account Consolidation – Domestic Equity:

	<u>Est. Mkt. Value</u>	<u>Transfer</u>
SSGA S&P 500 (index fund)	\$12M	- \$12M (close acct.)
Research Affiliates (enhance index - value)	\$55M	+\$12M

These changes do not change the overall asset mix of the fund at this point. Rather, the Loomis Sayles to Boston Partners transfer is to rebalance by investment style within domestic equity due to the strong returns year to date in growth equity.

The Equity account consolidation from the S&P 500 index fund to the PIMCO / Research Affiliates enhanced index fund serves several purposes. It consolidates the remainder of the S&P 500 index fund that had been held as an interim equity position following 2015-2016 investment manager changes into the PIMCO / Research Affiliates fund which also has daily liquidity for flexibility. Also, the PIMCO / Research Affiliates fund has a tilt toward value stocks which at current market valuation levels introduces a small defensive component to the rebalancing.

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Date: November 27, 2017

To: Board of Trustees

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

### **Agenda Item 12: Investment Education – Private Equity Outlook and Real Assets Outlook**

Staff and Verus as the Pension Trust's investment consultant periodically provide investment education presentations for the Board of Trustees. Scott Whalen of Verus will deliver the attached presentations on Verus' Private Equity Outlook and their Real Assets Outlook.



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**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

**SEPTEMBER 2017**  
**Private Equity Outlook**



# Table of contents



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Executive summary 3

---

Market update: Other 19

---

Fund finance: Subscription  
credit lines 7

---

Historical returns by  
geography & approach 25

---

Market update: United  
States 11

---

Market update: Europe 15

# Executive summary

# Manger selection continues to drive performance in private equity

## Verus private equity philosophy

### **SIGNIFICANT TACTICAL SHIFTS IN PRIVATE EQUITY PORTFOLIOS ARE NOT EASILY DEPLOYED**

Private Equity is an asset class that demands long-term commitments from its investors, and discourages short-term, tactical shifts. Funds deploy capital into new investments over a three- to five-year period. After investment, portfolio companies are held for a period of four to seven years on average prior to exit. The life of a discrete fund often lasts beyond 10 years in a normal investment course, during which time significant changes may occur. To address this phenomenon, investors “average in” to the market by building portfolios of discrete private equity funds over multiple vintage years.

### **RETURNS CAN BE OPTIMIZED BY REDUCING COSTS**

We advise institutional investors with adequate size to allocate the bulk of their commitments to direct investments instead of fund-of-funds. Larger and more experienced investors can also reduce fees by negotiating preferential terms with investment managers or co-investing into portfolio companies at a no-fee or reduced-fee and carry basis. For smaller sized investors, dedicated secondary funds represent potentially lower cost alternatives to fund-of-funds when market conditions permit.

## Outlook

### **PRIVATE EQUITY OUTPERFORMANCE VS. U.S. MARKETS IS DECLINING**

Private equity investment has historically generated higher returns compared to public markets. Over the last 10-year period, U.S. private equity outperformed the Russell 3000 by 3.1% per year. While significant, this outperformance has declined from 5.8% per year over the last 20-year period, a sign that the market is becoming more efficient.

Notwithstanding the trajectory towards lower outperformance, we continue to see significant dispersion in manager returns in venture capital / growth and buyout. We believe that careful manager selection is key. Regardless of market behavior, the best managers will continue to drive portfolio performance in private equity.

### **INTERNATIONAL EXPOSURE IN PRIVATE EQUITY CAN CREATE MORE RESILIENT PORTFOLIOS**

Private equity investments in Europe and Asia, like the U.S., have produced higher returns relative to their respective public equity markets, displaying robustness, wider margins, and stability of outperformance over the last 10- and 20-year periods (9.5% and 8.0% in Asia, 6.8% and 8.5% in Europe). We note, however, that international exposure has not resulted in consistent outperformance relative to U.S. private equity.

# Observations driving Verus outlook

## **BUYOUT TRENDS EXHIBIT MIXED RESULTS**

Current market trends are putting downward pressure on the future of U.S. buyout returns, including record levels of dry powder, high purchase price multiples, and high equity contribution to deals. The outlook for European buyout returns is better, albeit marginally. Record-setting capital raised by European managers has pushed pricing to 9.9x EBITDA (close to 10.0x in the U.S.), an increase of approximately 3x EBITDA from 2006-07 pricing levels. But exits in the European markets continue to be robust, compared to the more sluggish investment pace and capital overhang in the U.S.

## **LATE-STAGE VENTURE CAPITAL REMAINS NEGATIVE**

Muted exit activity brought a welcome correction in pricing of late-stage investments. As unicorns (privately-held companies valued above \$1 billion) continued to dominate the NAV in most venture portfolios, this correction resulted in declining valuation of late-stage funds, while those with early exposure to unicorns experienced significant positive gains. While we are positive on the prospects of proven and disciplined early-stage venture managers, we note that gains in value remain at risk until fully realized and distributed back to LPs.

## **DEMAND FOR ASIA PE OVERTAKES EUROPE**

Over the last 10-year period, Asian private equity has outperformed returns in the U.S. and Europe, and investors have rushed in quickly. In 2016, \$179 billion in capital targeted Asia PE, ahead of the \$169 billion for Europe. Asian investments jumped by some 30% in the first half of 2017.

## **SECONDARY MARKET DYNAMICS FAVOR SELLERS**














The current record of \$55 billion in secondary dry powder is expected to grow, as nine of the 20 most active managers were in various stages of fundraising during the first half of 2017. Secondary managers are increasingly using various forms of leverage and deal structures to attain their target returns. Given these dynamics, pricing has remained elevated in the low-90s, approaching levels not seen since the Global Financial Crisis (GFC).

## **LINES OF CREDIT ARE USED INCREASINGLY TO BOOST FUND IRR**

Managers have long used fund-level lines of credit to minimize interim quarterly capital calls from LPs. In the current cycle where credit is both plentiful and cheap, fund-level lines of credit are being used more widely, at larger magnitudes, and for longer durations to further optimize LP cash flows. They are being used to serve explicit goals like mitigating the “J-curve” or boosting fund-level IRRs (and not being disadvantaged by the competition), and for not-so-explicit goals like enabling the GP to benefit from earlier carry distributions.

Like all forms of financial leverage, lines of credit can magnify returns in both directions, upwards if the underlying returns are favorable, and downwards if returns fall below expectations.

# Summary of findings

			Outlook		
			Unattractive	Neutral	Attractive
					
Region	Strategy / Geo		Commentary		
U.S.	Buyout		Downward pressure exists on Buyout returns as managers continue to pay up for new deals and as equity contributions increase to support elevated pricing. Record levels of dry powder increase pressure to invest.		
	Venture Capital		Muted exit activity cooled off demand for late-stage companies and valuations. Significant risk remains in late-stage VC, but proven early-stage managers that have remained disciplined should continue to deliver returns.		
Europe	Buyout		Mixed prospects for returns: healthy exit activity, but pricing and equity contributions to deals are higher now relative to the pre-GFC cycle. The developing High Yield market has helped fill the gap in financing left by banks.		
	Venture Capital		Long-term historical returns are significantly below expectations, but there are early signs of entrepreneurial activity after some attractive ventures from Europe. Improvement in returns are contingent on a sustained global expansion of European ventures and an increase in levels of exit activity.		
Other Regions	Asia		On the heels of healthy long-term returns and recent exits, Asia has attracted record levels of new commitments. A faster investment pace and continued scaling of exits may prove to be a challenge.		
	ROW		Significant capital overhang exists as robustness and efficiency of private equity markets varies in the Rest of the World (ROW).		
Global	Distressed Debt		Potential for attractive returns in the case of rising rates and/or a macro reversal, giving rise to defaults and financial stress beyond energy. In slow times, fee structure is a crucial determinant of fund performance.		
	Secondaries		Supply and demand continue to trend in opposite directions, supporting elevated pricing. While dry powder increased four years in a row to record levels, transaction volume continued to decline.		
Implementation Approach	Direct Funds		Generally has the highest prospects for returns for larger investors, significantly above other approaches to implementing a private equity program.		
	Fund of Funds		Traditionally an option for smaller investors. Historical returns of broad, market-exposure driven funds have lagged expectations. Niche mandates have demonstrated varying degrees of outperformance relative to public investments.		



# Fund finance: Subscription credit lines

# Subscription credit lines

Over the last couple of years, the private equity world has seen an increase in the use of fund finance, buoyed by low interest rates and the access to cheap debt.

## How do they Work?

- Revolving credit facilities act as short-term loans leveraged on the LP commitments
- Limited as a percentage of the LP's capital commitments (90% of the most creditworthy LPs)
- Secured by the funds of uncalled capital commitments
- Loans are repaid with capital contributions received from investors
- Generally must be repaid in the early or middle part of the fund's life (although terms are beginning to lengthen)

The use of financing arrangements has become more widespread as the current low interest rate environment permits banks and debt funds to agree to larger loans to private equity fund managers.

# What are the effects?

The use of subscription credit lines boost IRR, with a mixed bag of results.

## Benefits

- Enable GPs to make investments and pay fund fees without making frequent capital calls (better cash management).
- Prevent funds from missing out on attractive investments requiring quick funding.
- Dampen “J-Curve.”
- Reduce gross-to-net IRR return spread.

## Drawbacks

- GPs can artificially vault the GP past the hurdle rate sooner.
- It can cause delayed cash distributions to LPs because the credit line needs to be repaid.
- It reduces the return multiple LPs receive by the amount of credit line interest expense and fees.
- Varying use across the industry makes it more difficult for investors to compare performance across funds.
- Added due diligence item: LPs should ensure the loan facilities are not subject to margin calls or being called on demand.

# LPs need to be aware

The SEC has yet to express detailed views on Subscription Credit Lines, but will likely focus on the adequacy of disclosure to investors regarding the risks, costs, and impact.

- Managers should explicitly state the terms under which the fund can borrow.
- LPs should understand when the preferred return begins to accrue if subscription line facilities are used, and whether the sponsor plans to use them for reasons other than bridging capital in portfolio investments.
- Preferred terms for LPs typically focus on:
  - Subscription line shouldn't be more than 20% of committed capital
  - Maximum term of borrowing should be about 12 months
  - Potential impact of a facility on fund performance
- Because of the idiosyncratic nature of the IRR calculation – and the reality that IRRs can be manipulated – investors should place special focus on the Total Value to Paid-In Capital (“TVPI”) and Distributions to Paid-In Capital (“DPI”) when judging the quality of private equity investments.
- In the absence of regulatory intervention, LPs should make sure that the expenses associated with subscription line financing are included in the calculation of a private equity manager's performance fees, as well as the timing of its distribution.

# Market update: United States

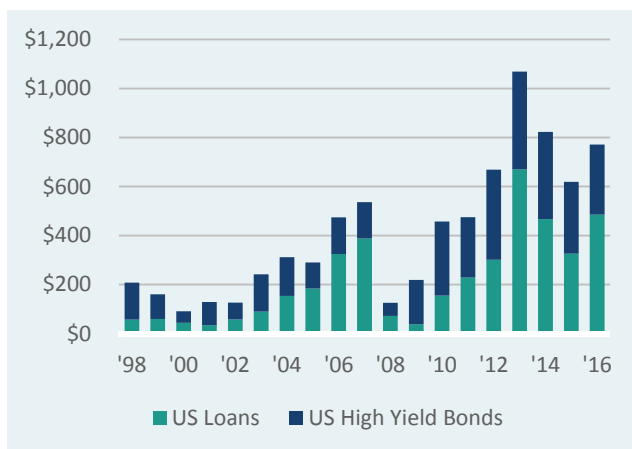
# Cheap and readily available debt

## U.S. credit

The issuance of new debt has remained robust, at low prices not seen since 2007, prior to the GFC. While leverage ratios have crept up and stayed at elevated levels comparable to 2007 ratios, company cash flows have remained healthy and significantly above pre-crisis levels, suggesting that companies have ample ability to make interest payments. Default volume has remained low in the U.S.

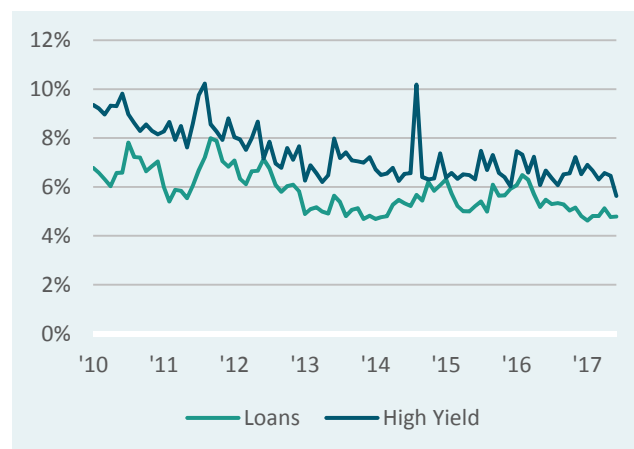
- **New issuance volume:** New issuance of U.S. loans has increased significantly to \$485 billion in 2016, an increase of 49% from the prior year. While below its all time peak from 2013, total new issuance approached \$800 billion, the third highest since the GFC.
- **Spreads:** High yield spreads are at 374bps, as of the end of May, and have approached all-time lows since the GFC. The U.S. loan discount margin has also declined to below 440bps recently, a level last seen in 2007.
- **LBO terms:** At the end of June, total leverage (Debt/EBITDA) averaged 5.1x, in line with pre-GFC highs, supported by a healthy current interest coverage (EBITDA/Cash Interest) level of 4.0x.

NEW ISSUANCES OF U.S. LOANS & HIGH YIELD BONDS (BY PAR AMOUNT \$BILLION)



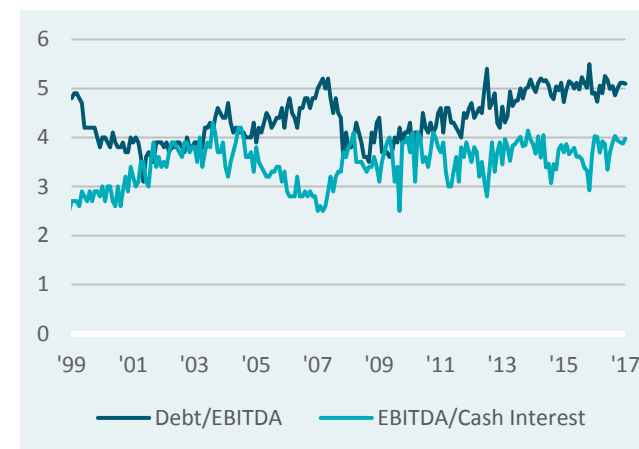
Source: JP Morgan, Credit Suisse

U.S. HIGH YIELD & LOAN MARKET YIELD



Source: FRED

CREDIT RATIOS



Source: S&P LCD

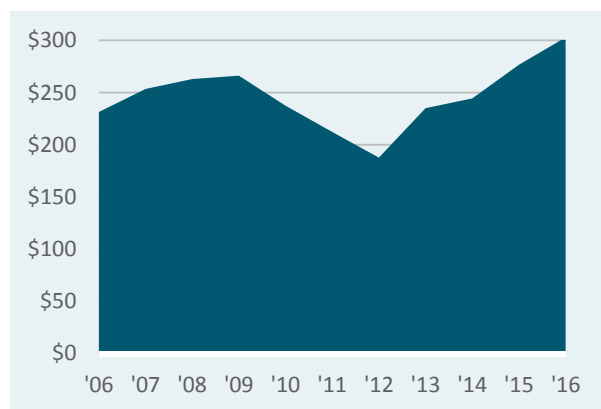
# Market dynamics pressure future returns

## U.S. buyout

Exits and investment activity in 2016, while healthy, has decreased by 14% and 7%, respectively, compared to post-GFC record levels set in 2014 and 2015. However, record levels of dry powder, elevated pricing, and increased levels of equity contribution are all expected to exert pressure on future returns.

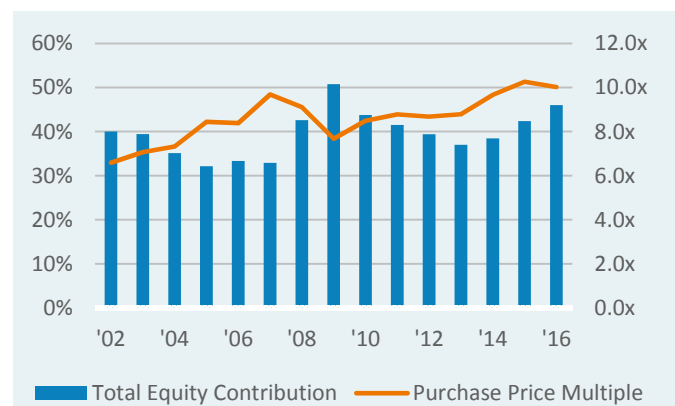
- **Capital overhang:** U.S. Buyout dry powder achieved a record high in 2016 at \$303 billion, exceeding the latest high of \$268 billion in 2009.
- **Pricing multiples:** Average purchase multiples at 10.0x versus 2015 remained above the prior cycle's record high of 9.7x in 2007. A continued increase in equity contribution, now at 46.0% per transaction, has put further pressure on returns.
- **Exits versus new investments:** New investments at \$190 billion have been generally in line with the healthy aggregate exit value of \$188 billion in 2016. Investment pace has been running substantially below pre-GFC levels, boosting dry powder levels.

U.S. BUYOUT DRY POWDER (\$BILLION)



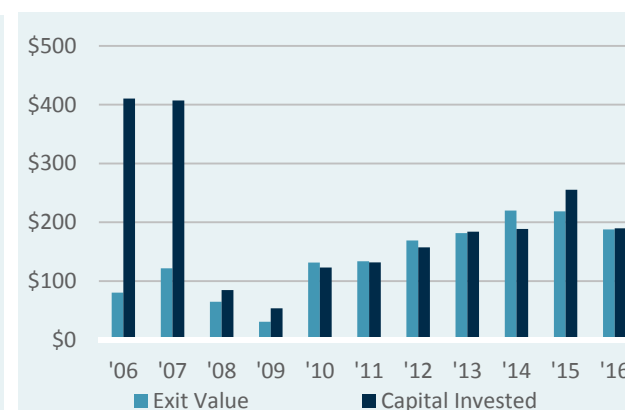
Source: Preqin

U.S. BUYOUT PRICING MULTIPLES AND EQUITY CONTRIBUTION



Source: S&P/LCD

AGGREGATE U.S. BUYOUT EXIT VALUE VS. CAPITAL INVESTED (\$BILLION)



Source: Preqin



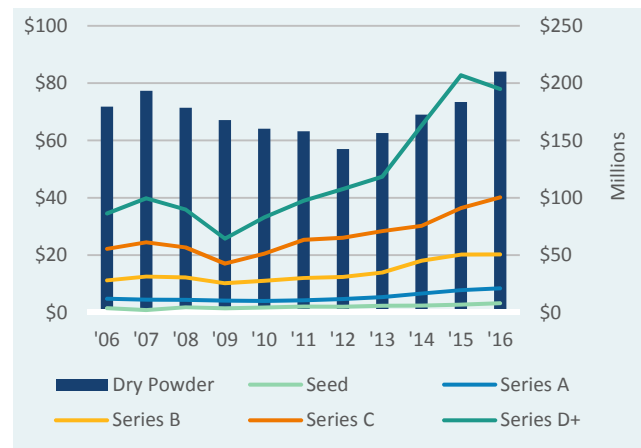
# Late stage cooling as exit activity slows

## U.S. venture & growth

Muted exit activity has restricted the continued surge in late-stage entry valuations. While valuations have crept up across all stages, seed- and early-stage have remained more attractive.

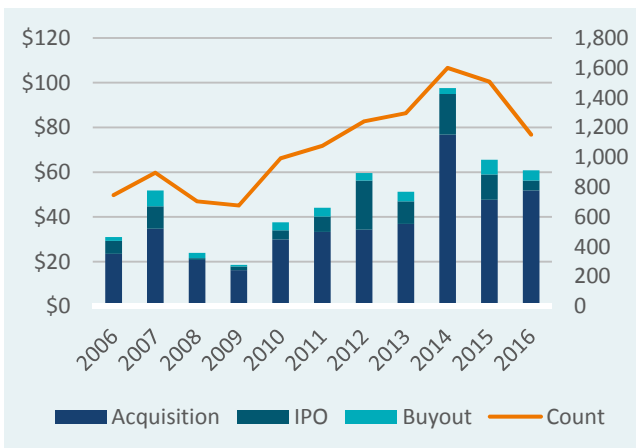
- **Capital overhang & entry valuations:** After another strong year of fundraising, VC dry powder reached \$84 billion by year-end 2016. Pre-Money valuations have crept up across all stages, except for late-stage, which has tapered somewhat from drastic increases since 2009. Venture Capital managers have raised an aggregate \$108 billion since 2012, and have invested \$202 billion over the same period.
- **Exit activity:** 2016 VC exits have totaled \$60.8 billion, well shy of the \$97.6 billion recorded in 2014. Corporate acquisitions have remained the favored exit route, accounting for 85% of the total.
- **Unicorn effect:** The total number of unicorns (VC-backed companies valued greater than \$1 billion) has recorded its first decline since 2009. Exits have remained challenged with increasing separation between the number of unicorns funded versus those exited. Of the 51 unicorns held by mutual funds, 31% have been marked below the initial value of the mutual fund's first investment<sup>3</sup>.

**CAPITAL OVERHANG & ENTRY VALUATIONS<sup>1</sup>**



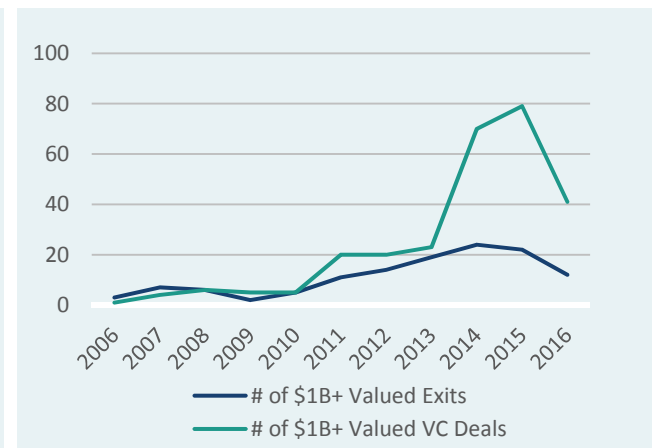
Source: Capital Overhang: Prequin, Entry Valuations Pitchbook

**EXIT ACTIVITY (\$B)<sup>2</sup>**



Source: Verus

**UNICORN ACTIVITY<sup>2</sup>**



Source: The Wall Street Journal. The Startup Stock Tracker, as of 5/27/17

# Market update: Europe

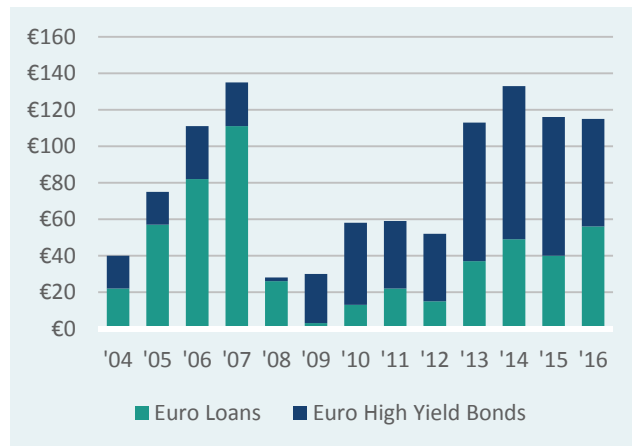
# Rates lower than historic lows in the U.S.

## European credit

Yields for both European loans and high yield bonds are significantly lower than comparable credit in the U.S. market. European leverage ratios have crept up to around 5x, like in the U.S., but short of Europe's high of approximately 6x pre-crisis. Debt levels appear to be supported by company cash flows significantly above pre-crisis levels, suggesting that companies have ample ability to make interest payments.

- **New issuance volume:** Total new issuance has remained healthy, though less relative to the U.S.
- **Spreads:** European high yield spreads narrowed to 303bps at the end of May, their lowest level since mid-2007. Loan discount margin has also declined to 420bps, tighter than the U.S. With loan yields averaging around 4% and high yield below 4%, credit in Europe is significantly cheaper than in the U.S.
- **LBO terms:** Total leverage (Debt/EBITDA) and interest coverage ratio (EBITDA/Cash Interest) are both in line with 2014 and 2015 results, and at healthier levels than immediately prior to the GFC.

NEW ISSUANCE OF EUROPEAN LOANS AND HIGH YIELD BONDS (BY PAR AMOUNT, €BILLION)



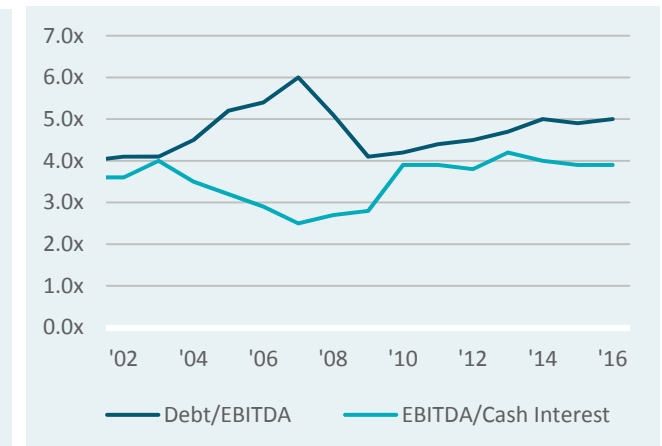
Source: S&P/LCD, Credit Suisse, JP Morgan

EUROPEAN LOAN MARKET YIELD



Source: FRED

CREDIT RATIOS



Source: S&P LCD

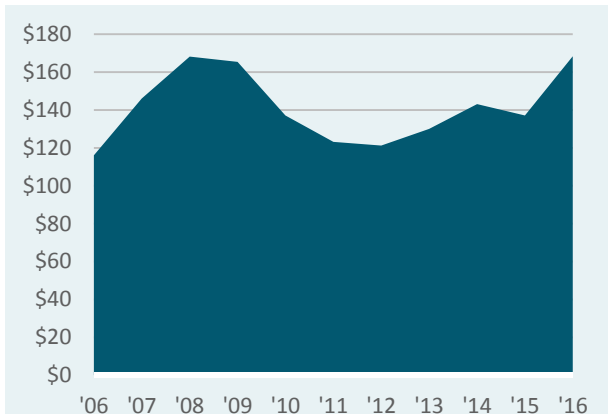
# Price, equity contribution pressure returns

## European buyout

Dry powder for European buyout firms have increased like in the U.S. While purchase price multiples in Europe are slightly lower than in the U.S., they are offset by higher equity contributions. This suggests that returns will be challenged in the near-term barring an increase in credit availability.

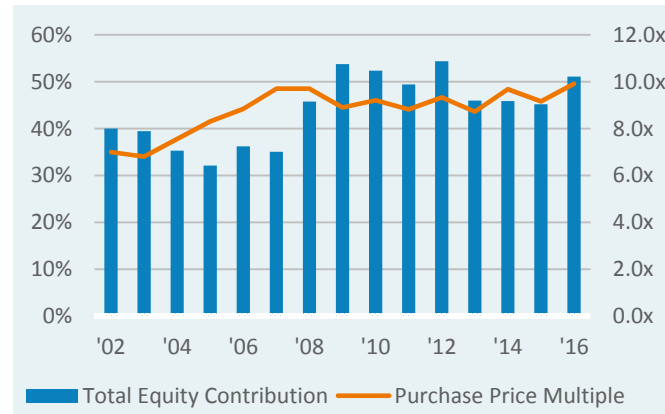
- **Capital overhang:** Europe buyout dry powder has increased to \$168.4 billion, an all-time high and in line with \$168.2 billion dry powder in 2008. Relative to investment pace, the capital overhang is approximately 20% larger in Europe than in the U.S.
- **Pricing multiples:** Average purchase multiples have increased to 9.9x in 2016 from 9.2x in 2015. Equity contributions have inched up to 51.1% from 45.2% in 2015. The slightly lower purchase price multiples observed in Europe are offset by more limited credit availability, when compared to the U.S., resulting in significantly higher equity contributions to deals.
- **Exit versus investment activity:** Aggregate exit value has continued to decline in 2016 to \$113 billion, but still surpassing the \$88 billion in aggregate new investments. Exits have surpassed investments for the sixth straight year in Europe.

EUROPEAN BUYOUT DRY POWDER (\$BILLIONS)



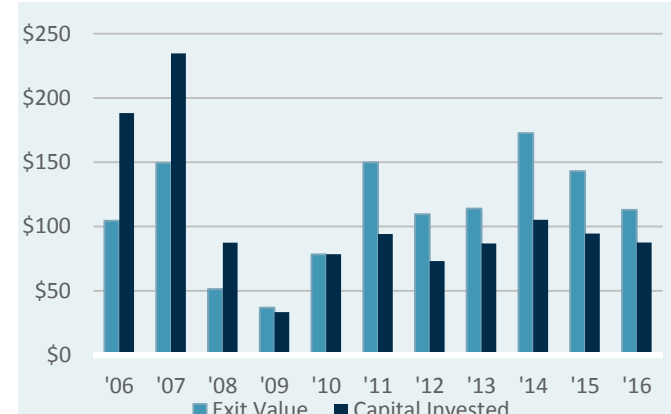
Source: Preqin

EUROPEAN BUYOUT PRICING MULTIPLES AND EQUITY CONTRIBUTION



Source: S&P/LCD

AGGREGATE EUROPEAN BUYOUT EXIT VALUE VS. CAPITAL INVESTED (\$BILLIONS)



Source: Preqin

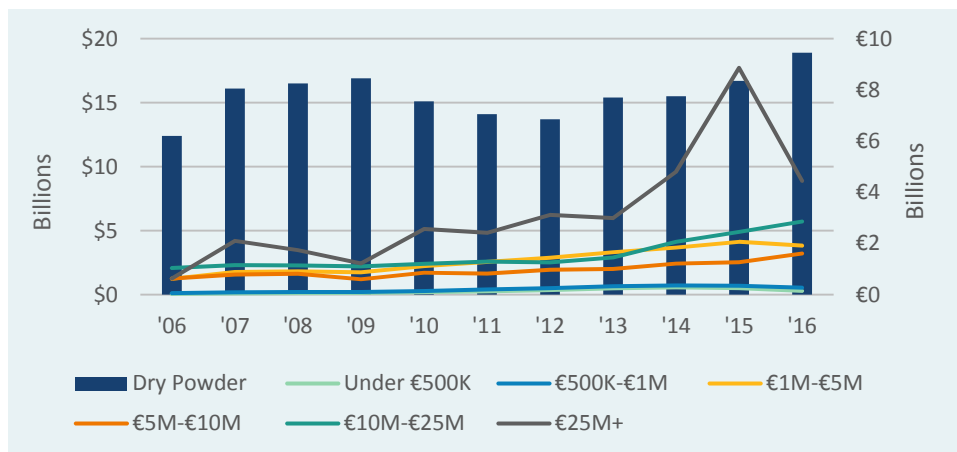
# Returns dependent on growth in exits

## European venture & growth

Capital invested in larger deals (€25+ million) has declined measurably, while investment in smaller deals has continued to increase. While exit activity has remained healthy, posting a slight increase from 2015. The overall level of exits in Europe is substantially below levels in the U.S. and general venture investment activity.

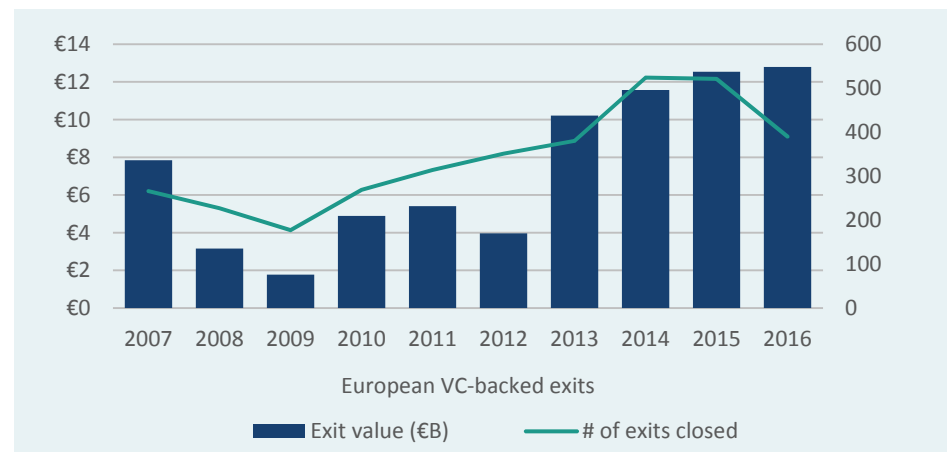
- **Capital overhang & deal size:** European venture capital ended 2016 with \$18.9 billion in dry powder, \$2.2 billion more than year-end 2015. Like the U.S., capital invested in late-stage investments has declined, while capital invested in other stages has remained relatively stable. Since 2012, Venture Capital managers have raised an aggregate \$26 billion and invested \$56 billion over the same period.
- **Exit activity:** European venture capital exit activity in 2016 has reached €12.8 billion, compared to the 2009 post-crisis low of €1.8 billion and €12.5 billion recorded in 2015. The total number of exits has decreased to 390 from 521 in 2015. The average exited deal size has increased from €24 million in 2015 to €33 million in 2016.

**CAPITAL OVERHANG (\$BILLION) & CAPITAL INVESTED BY DEAL SIZE (€BILLION)**



Source: Capital Overhang: Preqin, Entry Valuations Pitchbook, as of 12/31/16

**EXIT ACTIVITY (€BILLION)**



Source: Verus, as of 12/31/16

# Market update: Other

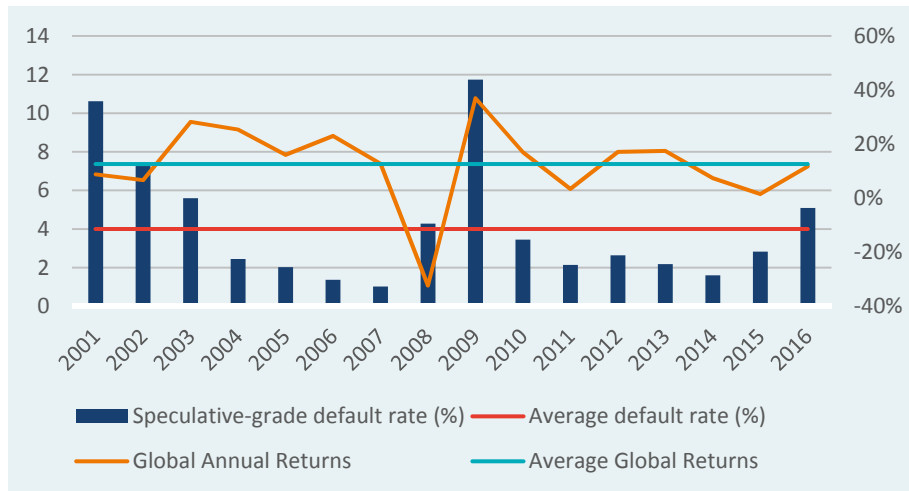
# Returns limited by low defaults & rates

## Global distressed private equity

Global defaults have increased to \$240 billion in 2016 from \$110 billion in 2015 to levels not seen since 2009 (\$628 billion). Energy & natural resources comprised 51% of all defaults in 2016. The V-shaped chart for crude from \$64 per barrel in 2Q15 through the trough of \$37 per barrel in 1Q16 to \$57 per barrel at year-end highlights the opportunity and volatility afforded by distressed last year.

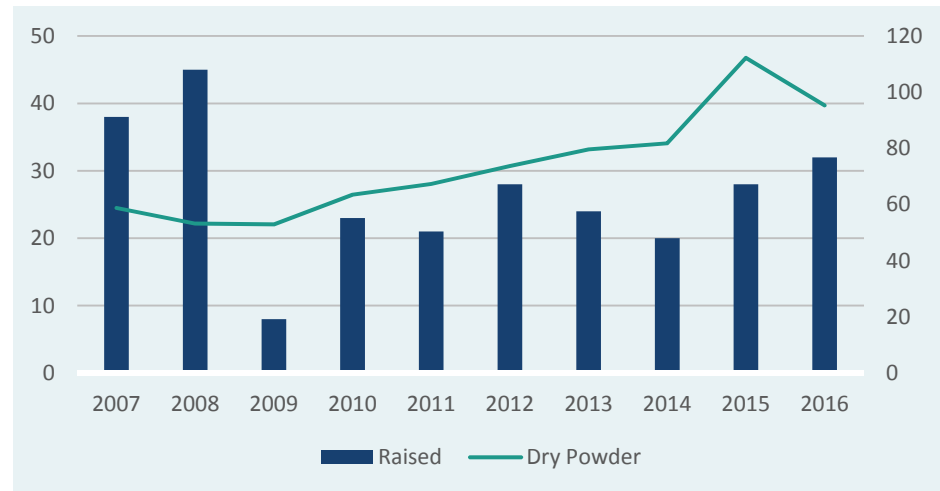
- **“Average” defaults & “average” returns:** Since 2000, distressed funds have averaged 11.9% returns and global speculative grade defaults have averaged 4.0%. 2016’s 11.7% return and 4.2% default rate straddled historical averages. A lower expected default rate in 2017 points to lower returns.
- **Dry powder down slightly but fundraising marches on:** The default-driven increase in distressed opportunities led to the first reduction in Global Distressed dry powder since 2009. While down from 2015’s \$112 billion, the \$95 billion overhang is at the second highest year-end level. The \$32 billion of distressed funds raised in 2016 is the most since \$45 billion was raised in 2009.

GLOBAL DISTRESSED PE RETURNS VS. DEFAULT RATES



Source: S&P 2016 Annual Global Corporate Default Study and Thomson CA

GLOBAL DISTRESSED CAPITAL RAISED VS. DRY POWDER



Source: Preqin Private Debt



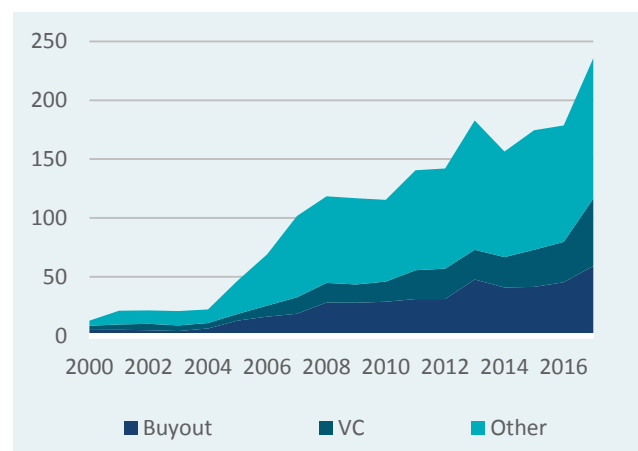
# Private equity attracting new commitments

## Asia

With increasing levels of exit activity, investors have embraced PE funds targeting Asia. In 2016, Asian PE funds raised \$39 billion capital in aggregate, pushing dry powder at \$236 billion to a historical high.

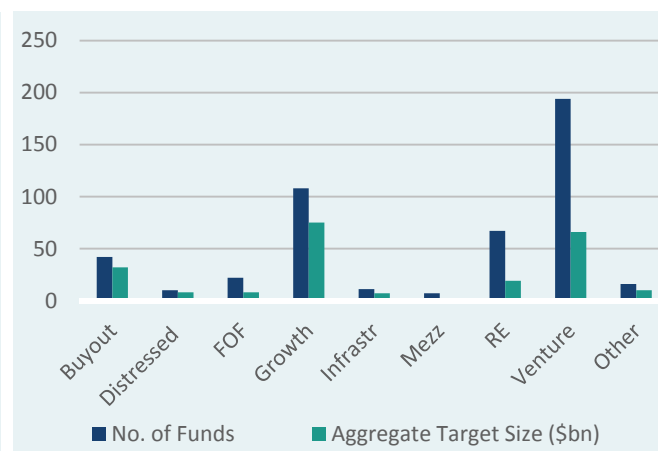
- **Capital overhang:** At year-end 2016, Asian private equity dry powder stood at \$179 billion, which was little changed over the year-end 2015 level (65% increase since 2009). However, dry-powder level has increased by 30% over the first half of 2017, to \$236 billion as of June 2017.
- **Fundraising:** The latest data show there are 481 funds in the market that are raising capital focusing on Asian markets, with an aggregate target size of \$227 billion. Growth equity and venture are the most active in terms of fundraising activities in the region.
- **Exit activity:** Private equity managers exited investments totaling \$67 billion in 2016, surpassing the 2015 level of \$58 billion. New deal activity fell marginally from 4,212 deals in 2015 to 4,103 deals in 2016.

CAPITAL OVERHANG (\$BILLION)



Source: Preqin

FUNDRAISING (\$BILLION)



Source: Preqin

INVESTMENT & EXIT ACTIVITY (\$BILLION)



Source: Preqin

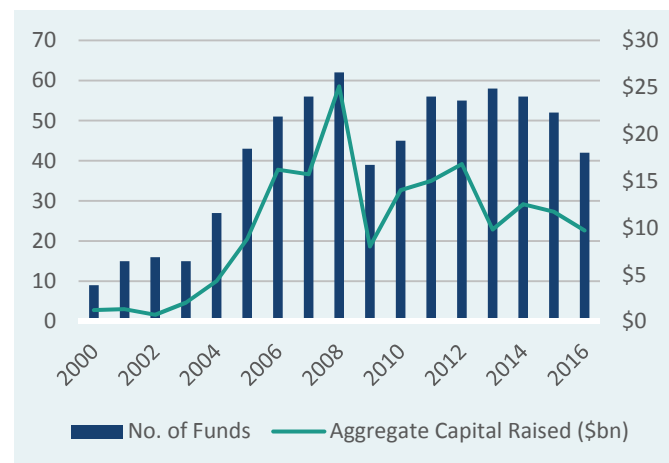
# Tough to raise, invest or realize money

## Rest of world (ROW)

ROW Private Equity saw a slowdown in 2016. Fundraising, new investment activity, and exits were all lower by \$2-\$3 billion, but the slowdown was nowhere near as pronounced as 2009 or 2013 when fundraising dropped by \$17 billion and \$7 billion, respectively.

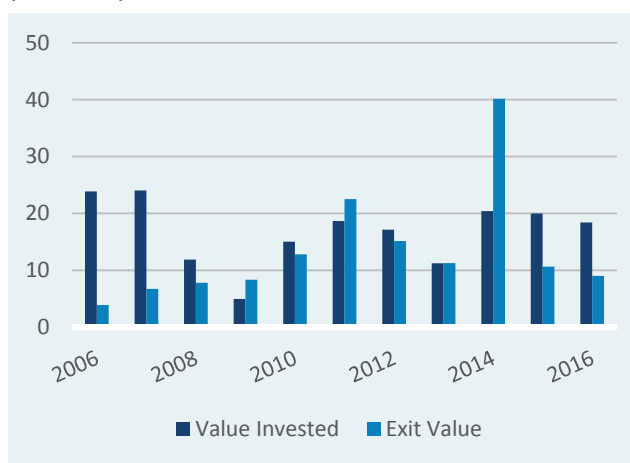
- **Constant capital overhang:** ROW ex-Asia dry powder stood at \$67.6 billion in 2016, lower than \$70.4 billion in 2015, which also marked the third consecutive year of declines from the peak of \$71.6 billion at the end of 2013. While ROW dry powder has increased from \$56 billion in 2007, its 24% gain trails the 50% increases found in the North American and European markets.
- **Fundraising:** 2016 saw a slowdown both in the number of funds and amount of capital raised. 2015 saw 52 ROW ex-Asia PE deals raise \$11.7 billion, while 2016 saw only 42 deals for \$9.7 billion.
- **Investments continue to exceed distributions:** Aggregate investments at \$18 billion surpassed exits at \$7 billion by a factor of 2.6-to-1. The gap between PE investments and distributions was the same as in 2015 at \$11 billion (\$21 billion invested, \$10 billion exits).

ROW EX-ASA PRIVATE EQUITY FUNDRAISING



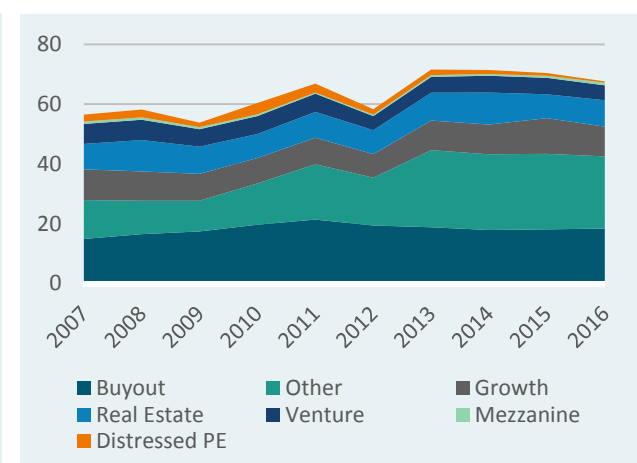
Source: Preqin

ROW EX-ASIA EXIT VALUE VS VALUE INVESTED (\$BILLION)



Source: Preqin

ROW EX-ASIA DRY POWDER BY STRATEGY (\$BILLION)



Source: Preqin

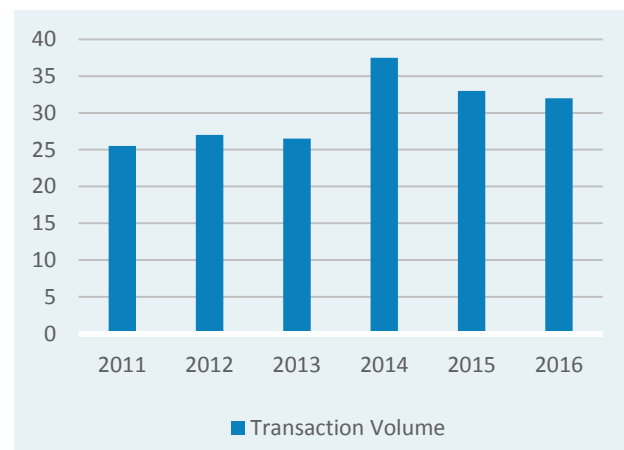
# Supply/demand imbalance widened

## Global secondaries

Dry powder has increased for the fourth year in a row to a record \$55 billion, a trend which is expected to continue. Current dry powder masks the level of actual demand, as managers are increasingly using leverage to boost returns. Yet for a second year in a row transaction volume has continued its decline. For these reasons, pricing has remained elevated at 91.5%.

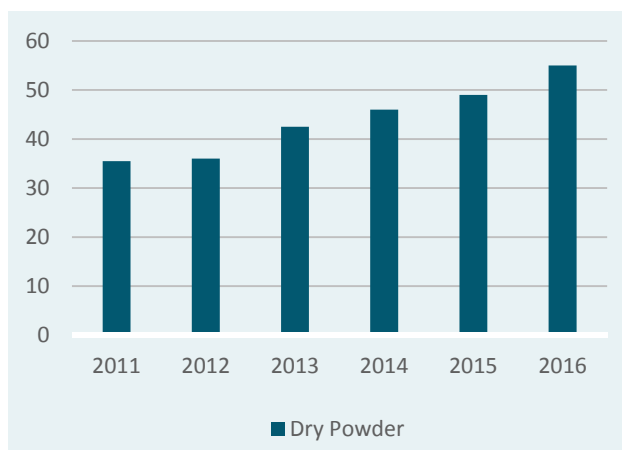
- **Secondary fund transaction volume & capital raised:** Transaction volume has declined slightly from \$33 billion in 2015 to \$32 billion in 2016. However, dry powder has increased from \$49 billion in 2015 to \$55 billion in 2016. Dry powder is expected to grow as approximately half of the 20 dedicated secondary buyers were in some stage of fundraising in 2017.
- **Pricing:** Secondary pricing has remained elevated, with all PE ending 2016 at an average 91.5% of NAV (compared to an 83% historical average since 2007).

TRANSACTION VOLUME (\$BILLION)



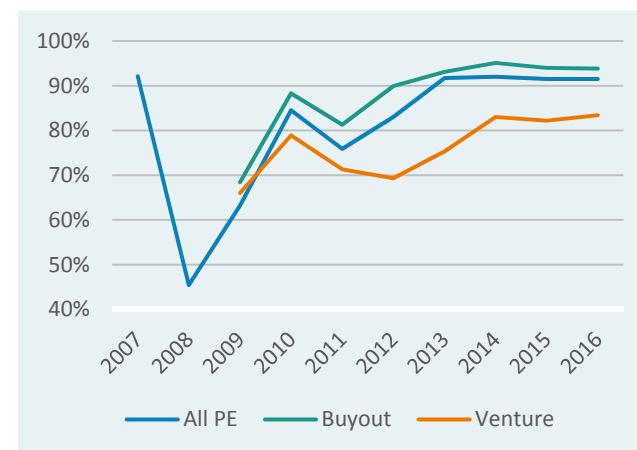
Source: UBS

DRY POWDER (\$BILLION)



Source: UBS

PRICING (% OF NAV)



Source: UBS

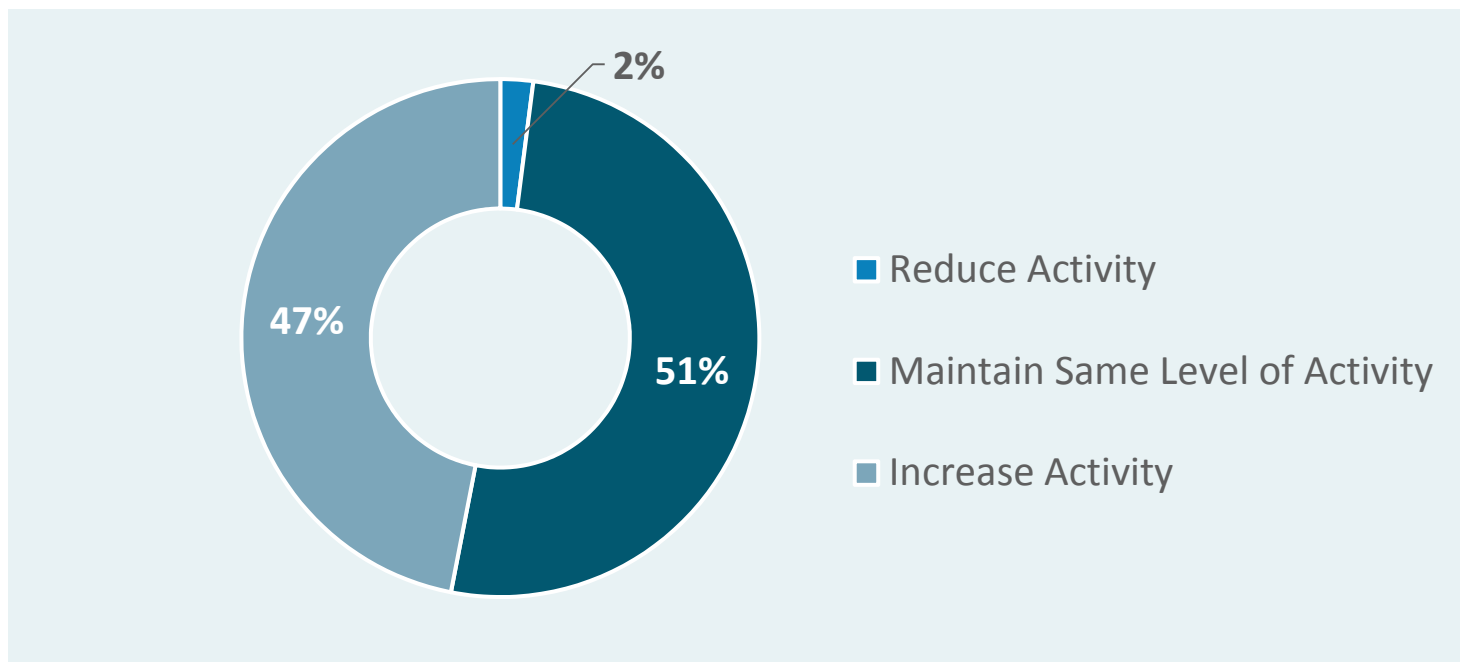
# Co-Investment interest appears robust

## Global co-investments

LP interest in co-investments appears to be strong with nearly half of the 490 LPs surveyed planning to increase their co-investment activity in 2017.

— **LP interest:** Half of LPs surveyed plan to increase their co-investment activity. Furthermore, 98% of LPs surveyed are looking to either increase or maintain their exposure to co-investments in the future.

### LP INTEREST IN CO-INVESTMENTS



Source: Preqin survey of 490 LPs completed on September 2016

# Historical returns by geography & approach

# Commentary on historical returns

## PRIVATE EQUITY RETURNS ACROSS REGIONS

Private Equity has outperformed public benchmarks measurably over the long-term in regions with significant Private Equity activity, namely the U.S., Europe, and Asia.

Outperformance in the U.S. relative to public benchmarks, while sizeable over the last 10-year period at 3.9%, has declined considerably from 6.5% over the last 20-year period. This decline provides evidence backing our opinion that the U.S. Private Equity market has become more efficient over time.

In contrast to the U.S., Europe and Asia have produced more robust outperformance relative to their local public benchmarks over the last 10- and 20-year periods. However, European and Asian returns have been generally in line with returns generated by the U.S. Private Equity universe.

Given these findings, we will continue to monitor the added value of international Private Equity commitments beyond diversification for U.S. investors.

Secondary Funds may be a good alternative to direct fund investments outside the U.S., as evidenced by solid returns and outperformance of European Secondary Funds. Universe capitalizations suggest a much shallower penetration of secondary funds in Europe compared to the U.S., suggesting a less efficient secondary market. The Asian secondary market is still nascent – we have seen less than a handful of secondary funds targeting Asia specifically.

## PRIVATE EQUITY RETURNS BY SUB-ASSET CLASS

In the U.S., the best performing sub-asset classes over the long-term have been Venture Capital/Growth, followed by Buyouts. We caution that returns, specifically in Venture Capital, are primarily driven by the very best performing managers.

In Europe, Buyouts was the only sub-asset class that generated consistent double-digit returns over the last 10- and 20-year periods.

In Asia, sub-asset class concentrations vary by country, with Venture Capital and Growth more popular in developing markets, and Buyouts more prominent in developed countries such as Japan, Australia, and South Korea. Sub-asset class breakdown is not available across Asia, but we highlight double-digit returns by Asia All Private Equity universe over the last 10- and 20-year periods.

# Detailed returns by geography

	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Pooled Returns by Geography</b>							
U.S. All Private Equity *	9.2	11.3	14.4	10.2	13.7	3095	1863.7
Europe All Private Equity *	11.9	6.5	11.3	7.2	13.8	618	550.3
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4
<b>Public Index</b>							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI EM Latin America	31.0	(7.5)	(5.7)	0.3	--		
MSCI FM Africa	(6.9)	(13.0)	5.7	(0.1)	--		
70% MSCI Arabian/ 30% MSCI Israel	(2.0)	(0.3)	5.0	2.4	--		
<b>Outperformance vs. Public Index</b>							
U.S. All Private Equity *	(3.5)	2.9	(0.3)	3.1	5.8		
Europe All Private Equity *	12.3	9.7	5.0	6.8	8.5		
Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0		
LatAM All Private Equity *	(25.5)	3.7	4.2	3.0	-		
Africa All Private Equity *	10.3	12.7	(1.3)	4.6	-		
Middle East All Private Equity *	4.5	7.2	3.2	3.9	-		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

Source: Thomson Reuters C/A, as of 12/31/16



# Pooled returns by implementation approach

Pooled Returns by Implementation Approach	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>U.S. Pooled Returns</b>							
U.S. All Private Equity Direct*	9.2	11.3	14.4	10.2	13.7	3095	1863.7
U.S. Fund of Funds	4.2	10.0	11.7	8.8	9.1	423	137.3
U.S. Secondary Funds	3.6	6.8	10.0	9.3	11.3	159	106.5
<b>Europe Pooled Returns</b>							
Europe All Private Equity Direct*	11.9	6.5	11.3	7.2	13.8	618	550.3
Europe Fund of Funds	4.6	4.5	8.2	5.6	-	88	35.9
Europe Secondary Funds	3.7	7.4	11.2	8.8	12.2	42	26.9
<b>Asia Pooled Returns</b>							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
Asia Fund of Funds	2.9	12.6	11.2	8.8	-	60	17.1
<b>Global Pooled Returns</b>							
Global All Private Equity Direct**	10.2	6.7	11.3	8.4	10.0	185	236.6
Global Fund of Funds **	6.6	8.1	9.7	8.2	8.5	77	25.7
Global Secondary Funds **	9.0	15.4	13.0	11.7	-	19	40.8
<b>All Region Pooled Returns</b>							
All Regions Private Equity Direct*	9.1	10.0	13.2	9.5	13.0	4626	2946.1
All Regions Fund of Funds	4.4	9.2	10.8	8.2	8.8	650	216.3
All Regions Secondary Funds	4.7	8.1	10.5	9.4	12.0	221	174.4
<b>Public Index</b>							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI ACWI	7.9	3.1	9.4	3.6	5.7		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

\*\* Global Funds invest across the globe, without any targeted regions for investment.

Source: Thomson Reuters C/A, as of 12/31/16

# Pooled returns outperformance

Outperformance vs. Public Index	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>U.S. Outperformance</b>							
U.S. All Private Equity Direct*	(3.5)	2.9	(0.3)	3.1	5.8		
U.S. Fund of Funds	(8.5)	1.6	(3.0)	1.7	1.2		
U.S. Secondary Funds	(9.1)	(1.6)	(4.7)	2.2	3.4		
<b>Europe Outperformance</b>							
Europe All Private Equity Direct*	12.3	9.7	5.0	6.8	8.5		
Europe Fund of Funds	5.0	7.7	1.9	5.2	-		
Europe Secondary Funds	4.1	10.6	4.9	8.4	6.9		
<b>Asia Outperformance</b>							
Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0		
Asia Fund of Funds	(2.0)	11.7	5.1	6.8	-		
<b>Global Outperformance</b>							
Global All Private Equity Direct**	2.3	3.6	1.9	4.8	4.3		
Global Fund of Funds **	(1.3)	5.0	0.3	4.6	2.8		
Global Secondary Funds **	1.1	12.3	3.6	8.1	-		
<b>All Region Outperformance</b>							
All Regions Private Equity Direct*	1.2	6.9	3.8	5.9	7.3		
All Regions Fund of Funds	(3.5)	6.1	1.4	4.6	3.1		
All Regions Secondary Funds	(3.2)	5.0	1.1	5.8	6.3		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

\*\* Global Funds invest across the globe, without any targeted regions for investment.

Source: Thomson Reuters C/A, as of 12/31/16

# U.S. returns

U.S. Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
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## Private Equity Pooled Returns

U.S. Venture Capital	0.3	11.8	14.0	9.4	26.1	1708.0	347.0
U.S. Growth Equity	11.0	10.6	14.1	11.5	17.6	210.0	196.9
U.S. Buyouts	12.2	12.2	15.2	10.3	12.2	829.0	1037.0
U.S. Debt-Related	11.8	7.4	11.4	9.5	10.3	348.0	282.7
<b>U.S. All Private Equity *</b>	<b>9.2</b>	<b>11.3</b>	<b>14.4</b>	<b>10.2</b>	<b>13.7</b>	<b>3095</b>	<b>1863.7</b>

## Public Index

S&P 500	12.0	8.9	14.7	6.9	7.7		
Russell 3000	12.7	8.4	14.7	7.1	7.9		
Bloomberg Barclays Aggregate	2.6	3.0	2.2	4.3	5.3		

## Outperformance vs. Public Index

All PE Outperformance*	(3.5)	2.9	(0.3)	3.1	5.8		
Debt-Related Outperformance	9.2	4.4	9.2	5.2	5.0		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

Source: Thomson Reuters C/A, as of 12/31/16

# Europe returns

Europe Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
Europe Venture	(0.0)	7.6	11.8	5.4	5.9	138	26.3
Europe Growth Equity	8.7	6.4	11.9	7.5	10.3	35	9.3
Europe Buyouts	13.2	6.5	11.6	7.3	14.8	403	467.2
Europe Debt-Related	10.0	5.0	6.7	6.2	7.6	42	47.6
<b>Europe All Private Equity *</b>	<b>11.9</b>	<b>6.5</b>	<b>11.3</b>	<b>7.2</b>	<b>13.8</b>	<b>618</b>	<b>550.3</b>
<b>Public Index</b>							
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
Bloomberg Barclays Pan European Aggregate	(1.1)	(3.6)	1.2	2.3	--		
<b>Outperformance vs. Public Index</b>							
All PE Outperformance*	12.3	9.7	5.0	6.8	8.5		
Debt-Related Outperformance	11.1	8.6	5.5	3.9	-		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

Source: Thomson Reuters C/A, as of 12/31/16

# Asia, Latin America, Africa, Middle East returns

Asia, Latin America, Africa, Middle East	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4
<b>Public Index</b>							
MSCI Emerging Markets	11.2	(2.6)	1.3	1.8	5.5		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI EM Latin America	31.0	(7.5)	(5.7)	0.3	--		
MSCI FM Africa	(6.9)	(13.0)	5.7	(0.1)	--		
70% MSCI Arabian/ 30% MSCI Israel	(2.0)	(0.3)	5.0	2.4	--		
<b>Outperformance vs. Public Index</b>							
Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0		
LatAM All Private Equity *	(25.5)	3.7	4.2	3.0	-		
Africa All Private Equity *	10.3	12.7	(1.3)	4.6	-		
Middle East All Private Equity *	4.5	7.2	3.2	3.9	-		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

Source: Thomson Reuters C/A, as of 12/31/16

# Sub-asset class returns

U.S. Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
U.S. Venture Capital	0.3	11.8	14.0	9.4	26.1	1708.0	347.0
U.S. Growth Equity	11.0	10.6	14.1	11.5	17.6	210.0	196.9
U.S. Buyouts	12.2	12.2	15.2	10.3	12.2	829.0	1037.0
U.S. Debt-Related	11.8	7.4	11.4	9.5	10.3	348.0	282.7
<b>U.S. All Private Equity *</b>	<b>9.2</b>	<b>11.3</b>	<b>14.4</b>	<b>10.2</b>	<b>13.7</b>	<b>3095</b>	<b>1863.7</b>

Asia, Latin America, Africa, Middle East	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4

Europe Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
Europe Venture	(0.0)	7.6	11.8	5.4	5.9	138	26.3
Europe Growth Equity	8.7	6.4	11.9	7.5	10.3	35	9.3
Europe Buyouts	13.2	6.5	11.6	7.3	14.8	403	467.2
Europe Debt-Related	10.0	5.0	6.7	6.2	7.6	42	47.6
<b>Europe All Private Equity *</b>	<b>11.9</b>	<b>6.5</b>	<b>11.3</b>	<b>7.2</b>	<b>13.8</b>	<b>618</b>	<b>550.3</b>

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

Source: Thomson Reuters C/A, as of 12/31/16

# Sub-asset class returns – Fund of Funds

Fund of Funds by Geography	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
U.S. Fund of Funds	4.2	10.0	11.7	8.8	9.1	423	137.3
Europe Fund of Funds	4.6	4.5	8.2	5.6	-	88	35.9
Asia Fund of Funds	2.9	12.6	11.2	8.8	-	60	17.1
Global Fund of Funds **	6.6	8.1	9.7	8.2	8.5	77	25.7
<b>All Fund of Funds</b>	<b>4.4</b>	<b>9.2</b>	<b>10.8</b>	<b>8.2</b>	<b>8.8</b>	<b>650</b>	<b>216.3</b>
<b>Public Index</b>							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI ACWI	7.9	3.1	9.4	3.6	5.7		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
<b>Outperformance vs. Public Index</b>							
U.S. Fund of Funds	(8.5)	1.6	(3.0)	1.7	1.2		
Europe Fund of Funds	(3.3)	1.4	(1.2)	2.0	-		
Asia Fund of Funds	(2.0)	11.7	5.1	6.8	-		

\*\* Global Funds invest across the globe, without any targeted regions for investment.  
Source: Thomson Reuters C/A, as of 12/31/16



# Sub-asset class returns – Fund of Funds

Fund of Funds by Sub Asset Class <sup>(1)</sup>	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
U.S. Buyout Fund of Funds	7.2	9.6	11.6	8.8	9.6	169	59.3
U.S. Venture Capital Fund of Funds	0.9	11.1	12.3	9.3	9.0	153	44.9
U.S. Venture Capital & Buyout Fund of Funds	5.2	8.7	10.3	8.1	8.0	101	33.2
<b>U.S. Fund of Funds</b>	<b>4.2</b>	<b>10.0</b>	<b>11.7</b>	<b>8.8</b>	<b>9.1</b>	<b>423</b>	<b>137.3</b>
Europe Buyout Fund of Funds	4.9	4.4	8.2	5.6	-	78	33.7
Europe VC & Buyout Fund of Funds	(0.6)	7.5	7.7	5.4	-	8	2.1
<b>Europe Fund of Funds</b>	<b>4.6</b>	<b>4.5</b>	<b>8.2</b>	<b>5.6</b>	-	<b>88</b>	<b>35.9</b>
Asia Buyout Fund of Funds	2.7	12.9	11.8	10.1	-	44	13.6
Asia VC & Buyout Fund of Funds	4.8	9.8	5.7	0.6	-	14	3.4
<b>Asia Fund of Funds</b>	<b>2.9</b>	<b>12.6</b>	<b>11.2</b>	<b>8.8</b>	-	<b>60</b>	<b>17.1</b>
Global Buyout Fund of Funds **	7.6	6.7	9.0	8.0	8.7	52	19.0
Global Venture Capital Fund of Funds **	6.0	19.1	16.8	12.3	-	8	3.2
Global VC & Buyout Fund of Funds **	2.5	7.4	9.1	7.6	-	17	3.5
<b>Global Fund of Funds **</b>	<b>6.6</b>	<b>8.1</b>	<b>9.7</b>	<b>8.2</b>	<b>8.5</b>	<b>77</b>	<b>25.7</b>

Public Index	1 Year	3 Year	5 Year	10 Year	20 Year
Russell 3000	12.7	8.4	14.7	7.1	7.9
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9
MSCI ACWI	7.9	3.1	9.4	3.6	5.7

## Outperformance vs. Public Index

U.S. Buyout Fund of Funds	(5.5)	1.2	(3.1)	1.7	1.7
U.S. Venture Capital Fund of Funds	(11.8)	2.7	(2.4)	2.2	1.1
U.S. Venture Capital & Buyout Fund of Funds	(7.5)	0.3	(4.4)	1.0	0.1
<b>U.S. Fund of Funds</b>	<b>(8.5)</b>	<b>1.6</b>	<b>(3.0)</b>	<b>1.7</b>	<b>1.2</b>
Europe Buyout Fund of Funds	5.3	7.6	1.9	5.2	-
Europe VC & Buyout Fund of Funds	(0.2)	10.7	1.4	5.0	-
<b>Europe Fund of Funds</b>	<b>5.0</b>	<b>7.7</b>	<b>1.9</b>	<b>5.2</b>	-
Asia Buyout Fund of Funds	(2.2)	12.0	5.7	8.1	-
Asia VC & Buyout Fund of Funds	(0.1)	8.9	(0.4)	(1.4)	-
<b>Asia Fund of Funds</b>	<b>(2.0)</b>	<b>11.7</b>	<b>5.1</b>	<b>6.8</b>	-
Global Buyout Fund of Funds **	(0.3)	3.6	(0.4)	4.4	3.0
Global Venture Capital Fund of Funds **	(1.9)	16.0	7.4	8.7	-
Global VC & Buyout Fund of Funds **	(5.4)	4.3	(0.3)	4.0	-
<b>Global Fund of Funds **</b>	<b>(1.3)</b>	<b>5.0</b>	<b>0.3</b>	<b>4.6</b>	<b>2.8</b>

\*\* Global Funds invest across the globe, without any targeted regions for investment.

(1) All Fund of Funds may occasionally co-invest in private companies and/or invest in secondary transactions.

Europe and Asia Venture Capital Fund of Funds have less than 3 funds and therefore included in the All Europe and Asia FoF pooled returns.

Source: Thomson Reuters C/A, as of 12/31/16

# Sub-asset class returns – Secondaries

Secondary Funds	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
U.S. Secondary Funds	3.6	6.8	10.0	9.3	11.3	159	106.5
Europe Secondary Funds	3.7	7.4	11.2	8.8	12.2	42	26.9
Global Secondary Funds **	9.0	15.4	13.0	11.7	-	19	40.8
<b>All Secondary Funds <sup>(2)</sup></b>	<b>4.7</b>	<b>8.1</b>	<b>10.5</b>	<b>9.4</b>	<b>12.0</b>	<b>221</b>	<b>174.4</b>
<b>Public Index</b>							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI ACWI	7.9	3.1	9.4	3.6	5.7		
MSCI ACWI	7.9	3.1	9.4	3.6	5.7		
<b>Outperformance vs. Public Index</b>							
U.S. Secondary Funds	(9.1)	(1.6)	(4.7)	2.2	3.4		
Europe Secondary Funds	(4.2)	4.3	1.8	5.2	6.5		
Global Secondary Funds **	1.1	12.3	3.6	8.1	-		

\*\* Global Funds invest across the globe, without any targeted regions for investment.

(2) Regions that have less than 3 funds are only included in the All Secondary Funds pooled returns.

Source: Thomson Reuters C/A, as of 12/31/16

# Geography and approach

Pooled Returns by Geography	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Pooled Returns by Geography							
U.S. All Private Equity *	9.2	11.3	14.4	10.2	13.7	3095	1863.7
Europe All Private Equity *	11.9	6.5	11.3	7.2	13.8	618	550.3
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4

Public Index							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI EM Latin America	31.0	(7.5)	(5.7)	0.3	--		
MSCI FM Africa	(6.9)	(13.0)	5.7	(0.1)	--		
70% MSCI Arabian/ 30% MSCI Israel	(2.0)	(0.3)	5.0	2.4	--		

## Outperformance vs. Public Index

U.S. All Private Equity *	(3.5)	2.9	(0.3)	3.1	5.8		
Europe All Private Equity *	12.3	9.7	5.0	6.8	8.5		
Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0		
LatAM All Private Equity *	(25.5)	3.7	4.2	3.0	-		
Africa All Private Equity *	10.3	12.7	(1.3)	4.6	-		
Middle East All Private Equity *	4.5	7.2	3.2	3.9	-		

Pooled Returns by Implementation Approach	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
U.S. Pooled Returns							
U.S. All Private Equity Direct*	9.2	11.3	14.4	10.2	13.7	3095	1863.7
U.S. Fund of Funds	4.2	10.0	11.7	8.8	9.1	423	137.3
U.S. Secondary Funds	3.6	6.8	10.0	9.3	11.3	159	106.5

Europe Pooled Returns							
Europe All Private Equity Direct*	11.9	6.5	11.3	7.2	13.8	618	550.3
Europe Fund of Funds	4.6	4.5	8.2	5.6	-	88	35.9
Europe Secondary Funds	3.7	7.4	11.2	8.8	12.2	42	26.9

Asia Pooled Returns							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
Asia Fund of Funds	2.9	12.6	11.2	8.8	-	60	17.1

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.  
Source: Thomson Reuters C/A, as of 12/31/16

# Geography and approach (continued)

	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Global Pooled Returns</b>							
Global All Private Equity Direct**	10.2	6.7	11.3	8.4	10.0	185	236.6
Global Fund of Funds **	6.6	8.1	9.7	8.2	8.5	77	25.7
Global Secondary Funds **	9.0	15.4	13.0	11.7	-	19	40.8
<b>All Region Pooled Returns</b>							
All Regions Private Equity Direct*	9.1	10.0	13.2	9.5	13.0	4626	2946.1
All Regions Fund of Funds	4.4	9.2	10.8	8.2	8.8	650	216.3
All Regions Secondary Funds	4.7	8.1	10.5	9.4	12.0	221	174.4
<b>Public Index</b>							
Russell 3000	12.7	8.4	14.7	7.1	7.9		
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI ACWI	7.9	3.1	9.4	3.6	5.7		

Outperformance vs. Public Index	1 Year	3 Year	5 Year	10 Year	20 Year
<b>U.S. Outperformance</b>					
U.S. All Private Equity Direct*	(3.5)	2.9	(0.3)	3.1	5.8
U.S. Fund of Funds	(8.5)	1.6	(3.0)	1.7	1.2
U.S. Secondary Funds	(9.1)	(1.6)	(4.7)	2.2	3.4
<b>Europe Outperformance</b>					
Europe All Private Equity Direct*	12.3	9.7	5.0	6.8	8.5
Europe Fund of Funds	5.0	7.7	1.9	5.2	-
Europe Secondary Funds	4.1	10.6	4.9	8.4	6.9
<b>Asia Outperformance</b>					
Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0
Asia Fund of Funds	(2.0)	11.7	5.1	6.8	-
<b>Global Outperformance</b>					
Global All Private Equity Direct**	2.3	3.6	1.9	4.8	4.3
Global Fund of Funds **	(1.3)	5.0	0.3	4.6	2.8
Global Secondary Funds **	1.1	12.3	3.6	8.1	-
<b>All Region Outperformance</b>					
All Regions Private Equity Direct*	1.2	6.9	3.8	5.9	7.3
All Regions Fund of Funds	(3.5)	6.1	1.4	4.6	3.1
All Regions Secondary Funds	(3.2)	5.0	1.1	5.8	6.3

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.

\*\* Global Funds invest across the globe, without any targeted regions for investment.

Source: Thomson Reuters C/A, as of 12/31/16

# Geographies with outperformance

U.S. Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
U.S. Venture Capital	0.3	11.8	14.0	9.4	26.1	1708.0	347.0
U.S. Growth Equity	11.0	10.6	14.1	11.5	17.6	210.0	196.9
U.S. Buyouts	12.2	12.2	15.2	10.3	12.2	829.0	1037.0
U.S. Debt-Related	11.8	7.4	11.4	9.5	10.3	348.0	282.7
<b>U.S. All Private Equity *</b>	<b>9.2</b>	<b>11.3</b>	<b>14.4</b>	<b>10.2</b>	<b>13.7</b>	<b>3095</b>	<b>1863.7</b>

<b>Public Index</b>							
S&P 500	12.0	8.9	14.7	6.9	7.7		
Russell 3000	12.7	8.4	14.7	7.1	7.9		
Bloomberg Barclays Aggregate	2.6	3.0	2.2	4.3	5.3		

## Outperformance vs. Public Index

All PE Outperformance*	(3.5)	2.9	(0.3)	3.1	5.8		
Debt-Related Outperformance	9.2	4.4	9.2	5.2	5.0		

Europe Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
Europe Venture	(0.0)	7.6	11.8	5.4	5.9	138	26.3
Europe Growth Equity	8.7	6.4	11.9	7.5	10.3	35	9.3
Europe Buyouts	13.2	6.5	11.6	7.3	14.8	403	467.2
Europe Debt-Related	10.0	5.0	6.7	6.2	7.6	42	47.6
<b>Europe All Private Equity *</b>	<b>11.9</b>	<b>6.5</b>	<b>11.3</b>	<b>7.2</b>	<b>13.8</b>	<b>618</b>	<b>550.3</b>

<b>Public Index</b>							
MSCI Europe	(0.4)	(3.2)	6.3	0.4	5.3		
Bloomberg Barclays Pan European Aggregate	(1.1)	(3.6)	1.2	2.3	--		

## Outperformance vs. Public Index

All PE Outperformance*	12.3	9.7	5.0	6.8	8.5		
Debt-Related Outperformance	11.1	8.6	5.5	3.9	-		

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.  
Source: Thomson Reuters C/A, as of 12/31/16

Asia, Latin America, Africa, Middle East	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
<b>Private Equity Pooled Returns</b>							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4

## Public Index

MSCI Emerging Markets	11.2	(2.6)	1.3	1.8	5.5		
MSCI AC Asia Pacific	4.9	0.9	6.1	2.0	2.9		
MSCI EM Latin America	31.0	(7.5)	(5.7)	0.3	--		
MSCI FM Africa	(6.9)	(13.0)	5.7	(0.1)	--		
70% MSCI Arabian/ 30% MSCI Israel	(2.0)	(0.3)	5.0	2.4	--		

## Outperformance vs. Public Index

Asia All Private Equity *	(0.1)	12.0	6.5	9.5	8.0		
LatAM All Private Equity *	(25.5)	3.7	4.2	3.0	-		
Africa All Private Equity *	10.3	12.7	(1.3)	4.6	-		
Middle East All Private Equity *	4.5	7.2	3.2	3.9	-		

# Geographies with sub-asset classes excluding outperformance

Pooled Returns by Geography	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
U.S. All Private Equity *	9.2	11.3	14.4	10.2	13.7	3095	1863.7
Europe All Private Equity *	11.9	6.5	11.3	7.2	13.8	618	550.3
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4

U.S. Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
U.S. Venture Capital	0.3	11.8	14.0	9.4	26.1	1708.0	347.0
U.S. Growth Equity	11.0	10.6	14.1	11.5	17.6	210.0	196.9
U.S. Buyouts	12.2	12.2	15.2	10.3	12.2	829.0	1037.0
U.S. Debt-Related	11.8	7.4	11.4	9.5	10.3	348.0	282.7
<b>U.S. All Private Equity *</b>	<b>9.2</b>	<b>11.3</b>	<b>14.4</b>	<b>10.2</b>	<b>13.7</b>	<b>3095</b>	<b>1863.7</b>

Europe Pooled Returns	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
Europe Venture	(0.0)	7.6	11.8	5.4	5.9	138	26.3
Europe Growth Equity	8.7	6.4	11.9	7.5	10.3	35	9.3
Europe Buyouts	13.2	6.5	11.6	7.3	14.8	403	467.2
Europe Debt-Related	10.0	5.0	6.7	6.2	7.6	42	47.6
<b>Europe All Private Equity *</b>	<b>11.9</b>	<b>6.5</b>	<b>11.3</b>	<b>7.2</b>	<b>13.8</b>	<b>618</b>	<b>550.3</b>

Asia, Latin America, Africa, Middle East	1 Year	3 Year	5 Year	10 Year	20 Year	Fund Count	Total Capitalization (\$B)
Private Equity Pooled Returns							
Asia All Private Equity *	4.8	12.9	12.6	11.5	10.9	507	238.8
LatAM All Private Equity *	5.5	(3.8)	(1.5)	3.3	1.9	63	24.3
Africa All Private Equity *	3.4	(0.3)	4.4	4.5	7.0	51	12.6
Middle East All Private Equity *	2.5	6.9	8.2	6.3	3.6	67	11.4

\* All Private Equity excludes Natural Resource, Infrastructure, Real Estate, Fund of Funds and Secondary Funds.  
Source: Thomson Reuters C/A, as of 12/31/16

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**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

JULY 2017  
Real Assets Outlook



# Table of contents



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Executive summary	3
-------------------	---

---

U.S. economics - Inflation	6
----------------------------	---

---

Outlook summary	7
-----------------	---

---

Current conditions and outlooks	10
------------------------------------	----

---

Appendix	29
----------	----

# Executive summary

# The three balanced tenets of our investment philosophy

## Verus real assets philosophy

### **The three tenets of our investment philosophy:**

1. Create a real asset portfolio with a high degree of inflation beta
2. Provide attractive diversification benefits to the overall portfolio
3. Focus on attractive risk-adjusted returns

### **We do not maximize one tenet to the detriment of the other two**

Client needs will dictate how much we may overweight or underweight specific characteristics. For example, commodities offer a high degree of inflation beta, but a low expected return. We will allocate more or less to commodities depending on the inflation protection the client seeks.

# Maintain real asset exposure with return drivers outside of pure inflation

## Observations driving our outlook

### **Risk of unexpected inflation shock**

Inflation levels remain moderate in developed markets, though we have seen a recent upward shift in inflation, mostly due to rising energy prices off of last year's lows. The risk of unexpected inflation shock suggests it is prudent to maintain real asset allocations with risk exposures outside of inflation.

### **Within real estate, we recommend a conservative approach to leverage, liquidity, quality and pace of capital deployment**

Private real estate continues to appear favorable compared to other inflation protecting asset classes, although returns may be moderating to normal levels. Fundamentals have remained strong alongside slow and steady economic growth without the overbuilding that is typically seen at this stage of the cycle. Real estate debt appears to be offering a favorable risk-return tradeoff.

### **Our outlook for energy and metal commodity prices look favorable beyond 2-3 years**

Supply cuts, driven by lower prices, are filtering through to the market. For clients comfortable assuming equity risk, investing in natural resource companies that can generate positive cash flow at current spot prices should be even more attractive if prices increase in the next 3-5 years. Commodity futures still face return headwinds in the near-term, but could play a role within a portfolio as a hedge against inflation shocks.

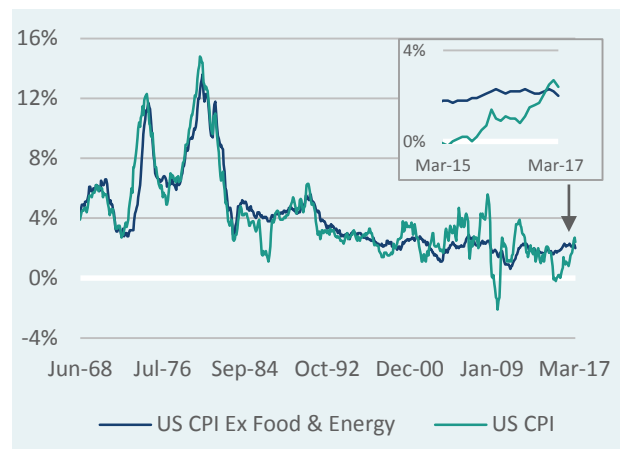
### **It is important to distinguish between strategic allocations and intermediate-term valuation differentials**

This report is written primarily with an intermediate-term view (3-5 years), and is intended to help guide potential tilts within strategic target allocations and new capital deployment. It is not intended to override long-term portfolio planning.

# U.S. economics – Inflation

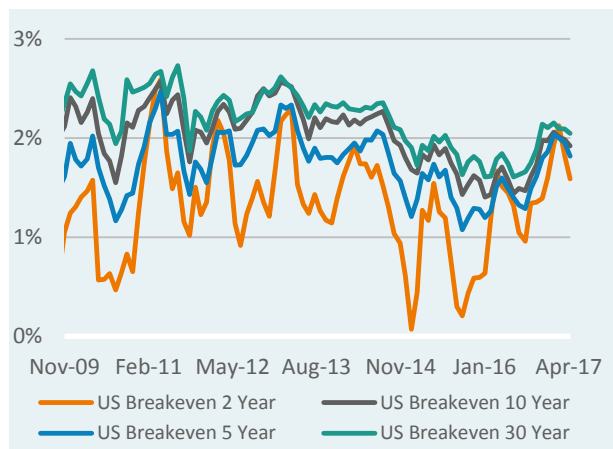
- Headline CPI was 2.2% in March, down from 2.8% in February, but the general trend has been moving steadily upwards over the last two years and is now above the Fed's target of 2%.
- Much of this jump in inflation can be attributed to the base effect of low oil prices one year ago. The energy component of the CPI basket increased 9.4%. Core inflation remained unchanged at 1.9%.
- After rising considerably following the presidential election, market inflation expectations were mostly unchanged during the first quarter and slightly down in March. The 10-year TIPS breakeven inflation rate finished March at 1.9%. The market continues to discount low levels of future inflation relative to history. In comparison, consumers are expecting 2.5% annualized inflation over the next 5-10 years, according to the University of Michigan survey. The Wall Street Journal survey of 60 economists is projecting 2.4% inflation over the next few years.
- Our view remains that although the market seems less worried about a rise in inflation, the potential for upside remains.

**U.S. CPI (YOY)**



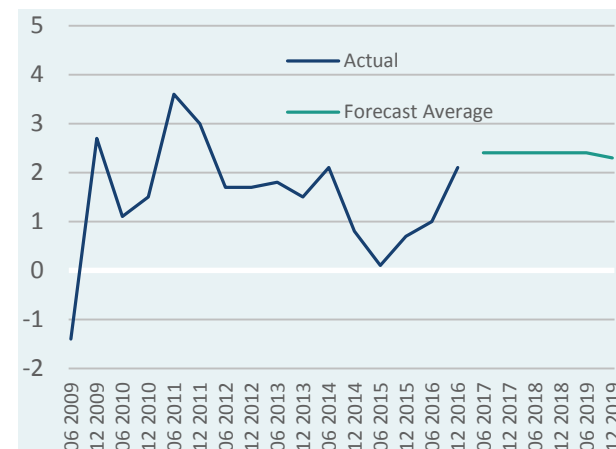
Source: FRED, as of 3/31/17

**U.S. TIPS BREAKEVEN RATES**



Source: FRED, as of 3/31/17

**INFLATION EXPECTATIONS**



Source: Wall Street Journal

# Outlook summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
<b>Private Real Estate</b>	Fundamentals remain strong, however valuations are getting expensive, especially for high quality core assets in gateway markets.	<ul style="list-style-type: none"> <li>— New supply could increase ahead of current projections and outpace demand.</li> <li>— A sharp rise in interest rates could lead to increased cap rates, hurting values.</li> <li>— A general economic slowdown would drastically impact demand for real estate.</li> </ul>	We remain broadly favorable on real estate given continued strong fundamentals, low new supply and favorable interest rate environment. Given we are potentially late in the cycle, we would recommend remaining cautious with the use of leverage, excess illiquidity, lower quality assets or strategies that will take a long time horizon to execute such as complex distress or construction.	<b>Positive</b>
<b>REITs</b>	REITs have benefitted from the overall strength of the real estate markets, however REITs have underperformed broader equities in 2016 and early 2017. In Q1 U.S. REITs were hurt by a spike in interest rates and increased economic growth expectations led to a rotation away from yield-oriented assets.	<ul style="list-style-type: none"> <li>— Rising interest rates can have a negative effect on REITs and all yield-sensitive assets over short time periods.</li> <li>— REITs will be sensitive to economic decline and general equity market volatility.</li> </ul>	While we are broadly favorable on real estate, we remain neutral on REITs given current valuations appear fair. REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors such as hotels, self storage, for-rent residential, etc.	<b>Neutral</b>
<b>Commodities</b>	Commodities futures have had lackluster performance over the last decade. An upward sloping futures curve for most of the last decade has created a headwind for the asset class. Contributing factors also include slowing global GDP growth, low global inflation and pockets of oversupply across most commodity complexes.	<ul style="list-style-type: none"> <li>— Key risks would be decreasing inflation expectations, general economic weakness (especially in emerging markets) or a further overhang in supply.</li> </ul>	Overall, commodities futures curves have been flattening, creating a more positive environment. Global inflation expectations have been rising moderately. Expected returns over the long run for this asset class remain low and are typically used as an inflation hedge rather than a portfolio return enhancer.	<b>Neutral</b>
<b>TIPS</b>	Low nominal interest rates combined with low to moderate inflation has led to a depressed return environment for TIPS.	<ul style="list-style-type: none"> <li>— Decreasing inflation expectations or rising nominal interest rates would be a headwind to TIPS. Continued low rates create a high cost of carry.</li> </ul>	While inflation expectations have been trending modestly upward, low current yields and modest inflation expectations has led to other real assets offering higher total return potential than TIPS.	<b>Negative</b>

# Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
<b>Infrastructure</b>	Infrastructure markets are trading at elevated levels as global interest rates remain low. With U.S. central bank policy diverging from European and Asian counterparts, it will be interesting to follow how yield-oriented investments manage the shift. European infrastructure appears to still have an accommodative central bank to buoy valuations. The U.S. core infrastructure market may face headwinds as rising Treasury yields push discount rates higher.	<ul style="list-style-type: none"> <li>— Rising interest rates in the U.S. market could present a headwind to infrastructure returns.</li> <li>— Valuations and a highly competitive market in core infrastructure remains a risk.</li> </ul>	We remain negative on core infrastructure given valuation concerns. We do think opportunities exist within pockets of the value-add universe. We generally like teams with a particular sector expertise and with a strong development track record and pipeline.	<b>Neutral</b>
<b>Private Natural Resources</b>	Oil prices remain range-bound in the \$45-55 area. Assuming demand remains stable and growth expectations are met, we would expect higher prices in the next few years as higher cost producers are pulled back into the market to meet global demand. There is more uncertainty around gas prices given the abundance of low cost gas in the Appalachian region and as more associated gas is produced from oilier drilling operations. We are more selective within the metals and minerals space as oversupply continues to present headwinds to a number of commodities.	<ul style="list-style-type: none"> <li>— Too much capital chasing deals results in undisciplined capital deployment.</li> <li>— Demand growth below expectations resulting in lower prices for longer.</li> <li>— Speculative drilling programs driven by an abundance of capital offsets supply cuts by OPEC.</li> </ul>	Interesting opportunities in upstream energy, primarily onshore North America. Current supply/demand dynamics favor a higher oil price longer-term. Mining opportunities exist for similar reasons as oil but more difficult to find attractive GPs. We have favored structured equity/debt vehicles within the mining sector.	<b>Positive</b>
<b>MLPs</b>	A stabilization in the price of oil led to a rebound in MLP performance since early 2016. Oil trading in the \$45-\$55 range is sufficient to support growth in midstream energy projects. Total rig counts have doubled over the last twelve months.	<ul style="list-style-type: none"> <li>— A further pullback in energy prices would limit potential growth opportunities in the sector and hurt valuations.</li> </ul>	MLPs are currently providing a healthy 7% dividend yield and distribution growth has declined, but still positive at around 3%. A pro-growth policy administration should provide a tailwind.	<b>Neutral</b>



# Outlook summary (continued)

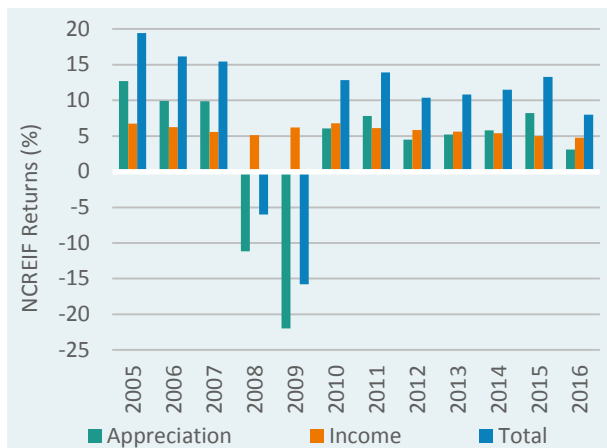
Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Timberland	Timber markets in North America remain challenged. Southeastern U.S. timber markets faced supply/demand headwinds in saw timber and pulp markets. Northeastern hardwood has been a relatively attractive timber market, though prices have fallen recently on lower demand from China, but finding scalable transactions has been difficult. The few transactions that take place in the U.S. timber market happen primarily in the Southeast which is the market with the least attractive fundamentals.	<ul style="list-style-type: none"> <li>— Despite several years of disappointing returns within timber, we see the risks within the asset class as outweighing any potential return.</li> <li>— Markets outside the U.S. tend to face currency and political risk which has resulted in disappointing returns for many investors.</li> </ul>	Currently viewed as expensive. Not a good near term entry point.	Negative
Farmland	Farmland prices in the Midwest leveled off after 2014 but remain too expensive for the income and return potential. We are selectively looking at permanent crop deals but broadly they trade well above historical valuations.	<ul style="list-style-type: none"> <li>— Similar to timber markets, we have concerns around valuations.</li> <li>— The income potential within farmland is more attractive than timber and the global growth in food is a more compelling macro trend than pulp and paper but we remain bearish on the sector, in general.</li> </ul>	Currently viewed as expensive. Selectively looking at agriculture business investments where crop and land are a component of the return.	Negative

# Current conditions and outlooks

# Real estate performance – Recent history

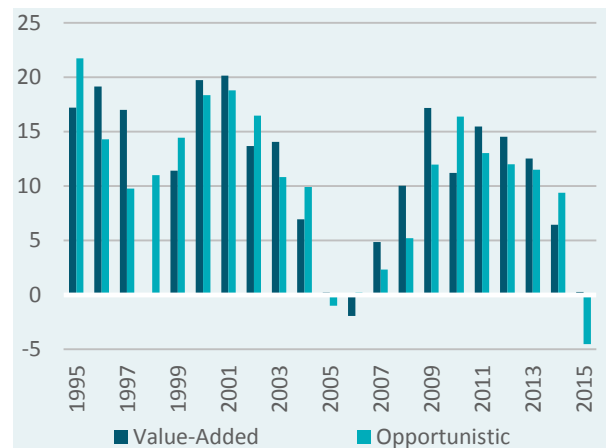
- Core real estate has seen an extended period of outsized returns. From 2010 to 2015, core real estate generated six consecutive years of 10-14% annual returns following the global financial crisis. In 2016, returns moderated to a more normal level as the NCREIF Property Index returned 8%. The recent trend in performance has been slowing, but remains positive.
- Correlation between GDP growth and core real estate returns has historically been very high. A slow but steady recovery has created a positive environment for real estate fundamentals without leading to excessive new supply overheating the market.
- Some of the best non-core real estate vintage years occur during recessionary years (2001-2003 and 2008-2009) as market dislocations create attractive entry valuations.
- Late stage vintage years for non-core have historically been the most challenged (1998-1999) and (2005-2007).

**NCREIF RETURNS**



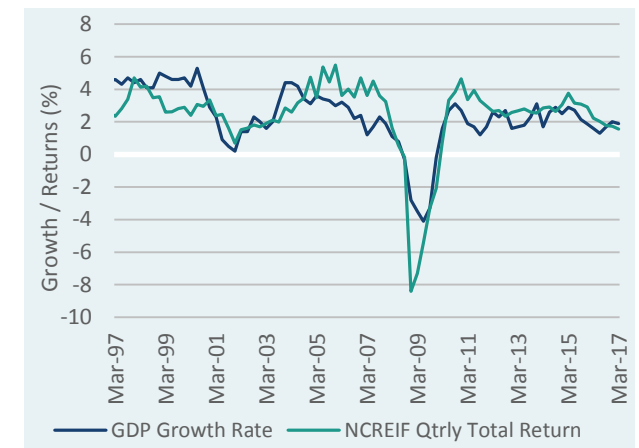
Source: NCREIF, as of 12/31/16

**VINTAGE YEAR RETURN (%) – NON CORE REAL ESTATE**



Source: Cambridge Associates, as of 9/30/16

**REAL ESTATE AND THE BUSINESS CYCLE**

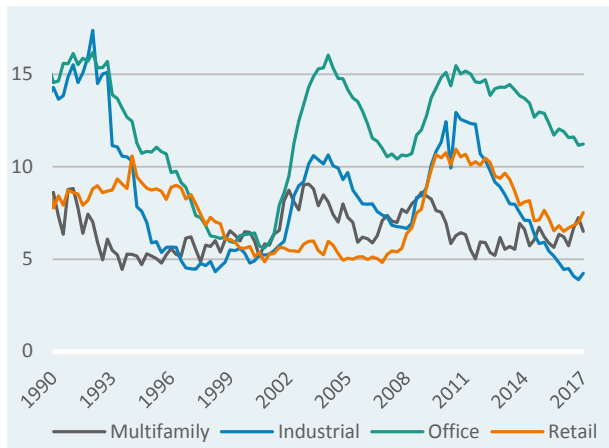


Source: NCREIF, Bloomberg, as of 3/31/17

# Real estate fundamentals

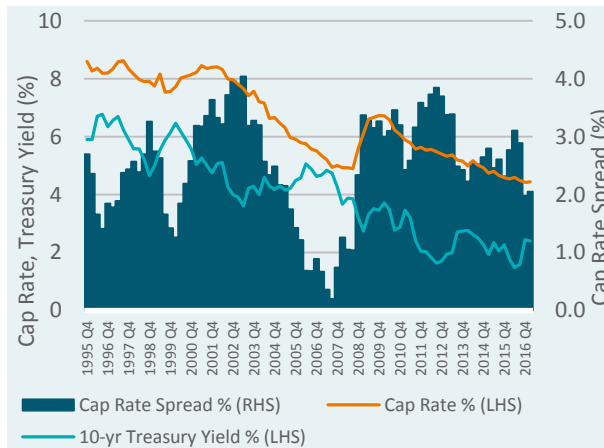
- Real estate fundamentals remain generally healthy across the board. Vacancy rates continue to decline in most property types. Multifamily is the only exception, which has seen a slight uptick in vacancy after being the earliest sector to recover. This move has been influenced by an increase in prices and some pockets of strong new supply.
- Cap rates continue to move in a steady downward trend and now sit at historic lows. The spread versus the 10-year Treasury yield remains moderate however, providing a slight cushion against rising interest rates. This was recently tested when the 10-year yield rose from 1.5% to 2.4% after the presidential election, yet cap rates remained flat. Capital continues to flow into the asset class as investors seek sources of high quality income and U.S. dollar-denominated assets.
- Net operating income (NOI) growth has remained strong - above 5% in the first quarter for all property types. Multifamily NOI has come down from above 10% growth, while industrial properties have seen the strongest improvement.

**VACANCY BY PROPERTY TYPE**



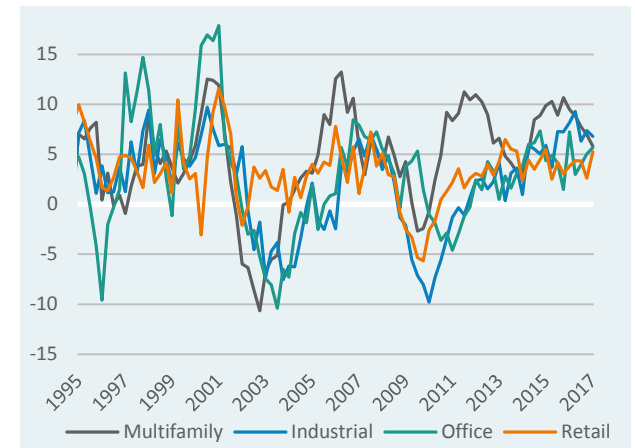
Source: NCREIF, as of 3/31/17

**CAP RATE SPREADS**



Source: FRED, NCREIF, as of 3/31/17

**4-QTR ROLLING NOI GROWTH (%) BY PROPERTY TYPE**

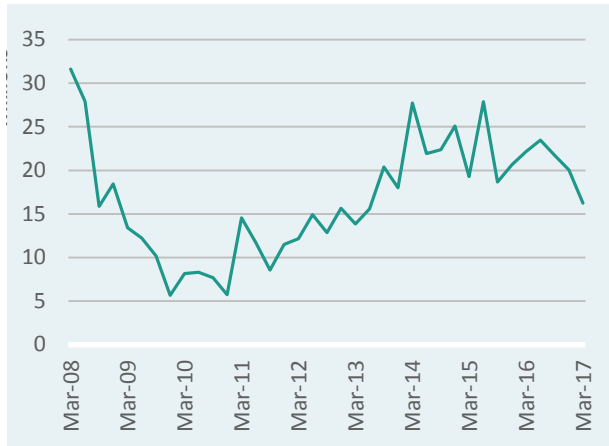


Source: NCREIF, as of 3/31/17

# Real estate fundamentals – Commercial

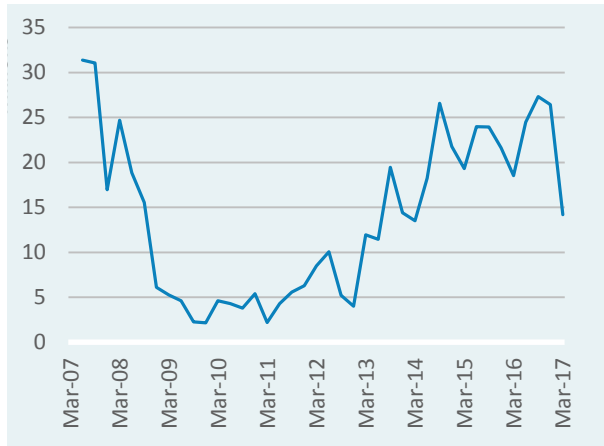
- New supply has remained moderate throughout this cycle and has even started to come down over the last several years for office, industrial and retail. Current levels are well below peak and remain below historical averages.
- Tighter lending standards have continued post-financial crisis. More stringent regulations on tier-one capital requirements for banks and insurance companies have kept new supply in check.
- Much of the new supply has occurred in primary and gateway markets and been heavily concentrated in urban markets that have experienced the most job growth.

**NEW DEVELOPMENT – OFFICE (MM SQ. FT)**



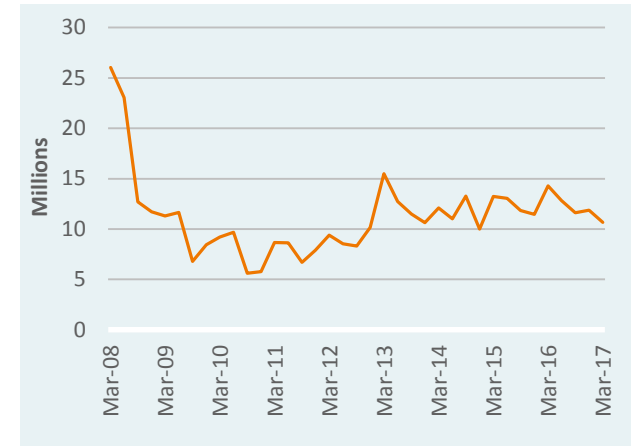
Source: JPMorgan, CoStar

**NEW DEVELOPMENT – INDUSTRIAL (MM SQ. FT)**



Source: JPMorgan, Dodge Construction

**NEW DEVELOPMENT – RETAIL (MM SQ. FT)**

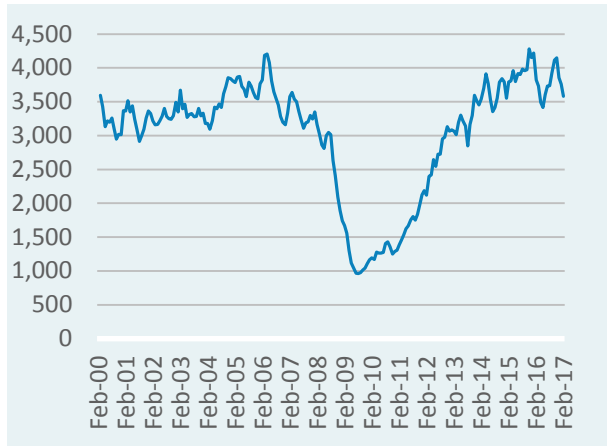


Source: JPMorgan, CoStar

# Real estate fundamentals – Multifamily

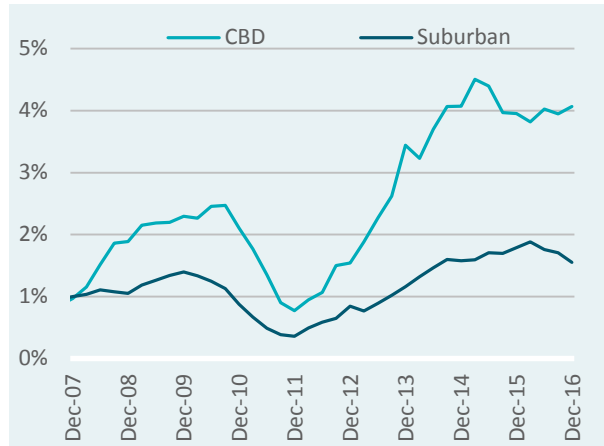
- Multifamily is one area of the real estate market where there has been significant new supply. New apartment supply has reached prior peak levels. Multifamily was the first sector to recover after the financial crisis as homeownership rates declined and job growth increased.
- The majority of new supply has been in high-end apartments and Central Business Districts (CBD). New developments in suburban markets remain between 1-2% of total stock.
- Because of the new supply coming on-line in downtown and luxury markets, rental growth rates have declined. Due to the spread in growth rates between downtown and suburban markets, opportunities may still exist in higher growth, transit-oriented suburban markets. However, we continue to be cautious with lower quality secondary markets.

**ANNUAL APARTMENT PERMITS (EX NY)**



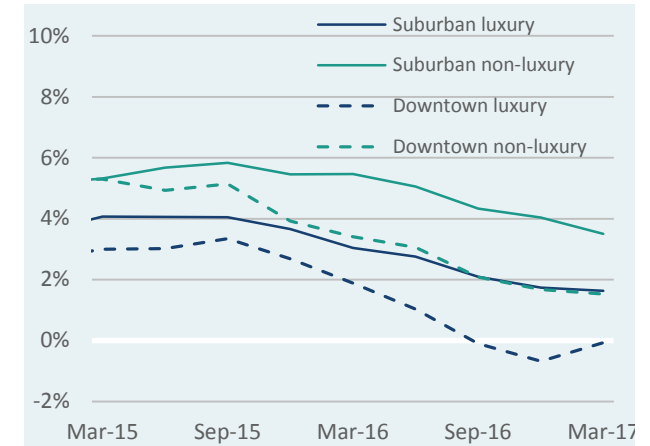
Source: Bureau of Census, JPMorgan, as of 2/28/17

**APARTMENT SUPPLY AS A SHARE OF STOCK**



Source: JPMorgan, Axiometrics, as of 12/31/17

**APARTMENT RENT GROWTH (YOY)**

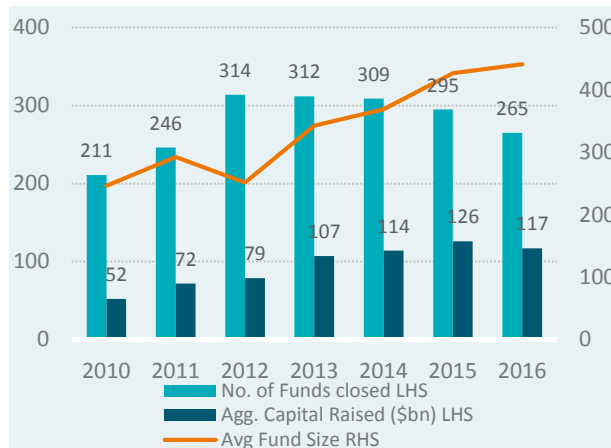


Source: JPMorgan, Axiometrics, as of 3/31/17

# Real estate fundraising

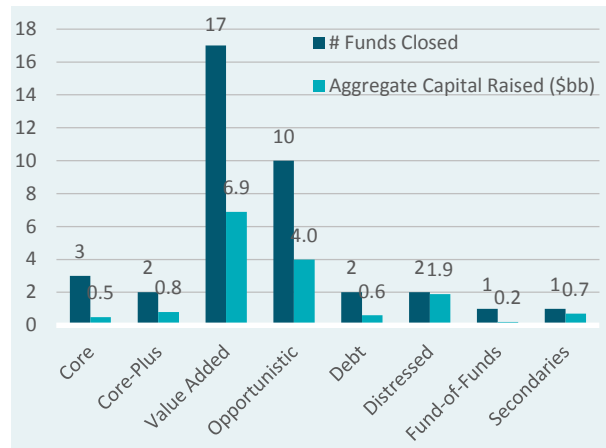
- Aggregate capital raised by closed-end funds has increased over the last several years, although it flattened a bit in 2016. The number of funds that have been raised declined slightly, which has led to larger average fund sizes.
- Core real estate queues have come down dramatically over the last 12 months. Competition from foreign capital remains strong, however, as many sovereign funds view U.S. core real estate as a high quality income proxy for fixed income.
- Dry powder in the closed-end fund space (heavily weighted towards non-core real estate) has risen to all time highs. The bulk of this capital continues to favor North American real estate strategies.
- Fundraising in Q1 (a combined \$15bb) was down from the first quarter of 2016 (\$26bb) and well below Q4 2016 (\$32bb). The majority of fund raising was through value-add strategies.

**HISTORICAL PRIVATE REAL ESTATE CLOSED-END FUNDRAISING**



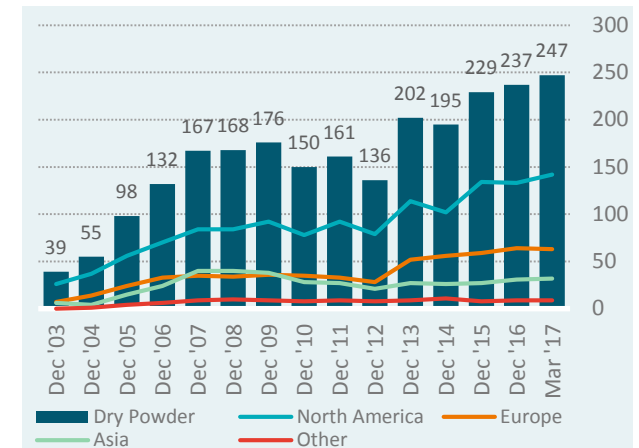
Source: Preqin, as of 4/30/17

**2016 PRIVATE REAL ESTATE CLOSED-END FUNDRAISING BY STRATEGY**



Source: Preqin, as of 4/30/17

**DRY POWDER BY REGION – CLOSED-END FUNDS**

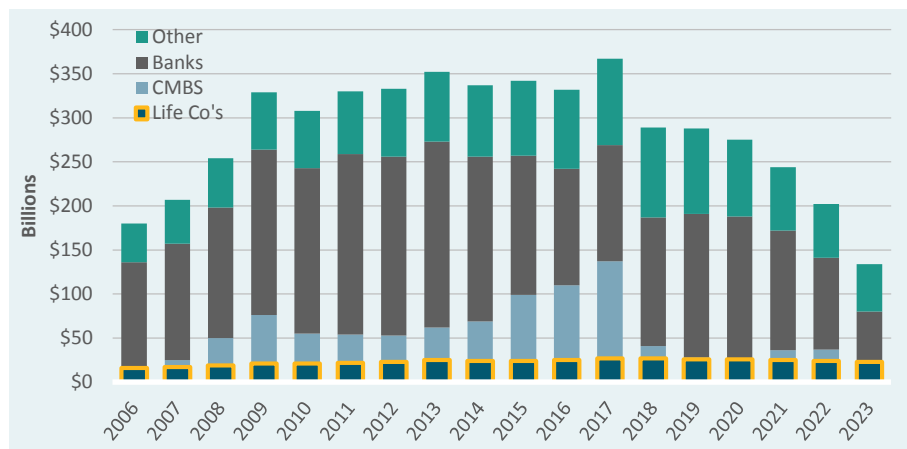


Source: Preqin, as of 4/30/17

# Real estate debt

- Over the last several years, due to regulatory pressures for risk retention (Dodd-Frank) and increased capital requirements for “High Volatility Commercial Real Estate Loans” or HVCRE loans, traditional sources of lending from banks and insurance companies has declined, allowing private capital sources to step in and garner a premium for providing capital.
- Real estate transaction volumes have remained healthy and there will be a continued need for debt refinancing over the next several years.
- The potential returns for providing mezzanine loans on core-plus and light transitional assets or leveraged returns on senior whole loans on stable assets appear to offer a favorable risk versus return tradeoff in comparison to real estate equity.
- These loans are typically floating rate and tied to a premium over LIBOR, which provides some protection against rising interest rates.

## WALL OF DEBT MATURITIES



Source: Seeking Alpha

## LENDING PREMIUMS

	Stable Asset Whole Loans	Transitional Asset Whole Loans	Lower Risk Mezzanine	Transitional Asset Mezzanine & Preferred Equity	Developmental Asset Mezzanine & Preferred Equity
Capital Stack	0 - 70% LTV	0 - 85% LTV	50-85% LTV	65-90% LTC	65 - 90% LTC
Duration	2-5 Years	2-5 Years	2-7 Years	2-4 Years	2-4 Years
Typical Lending Spreads	LIBOR + 2.75 - 4.0%	LIBOR + 3.0 - 5.5%	LIBOR + 6 - 7%	LIBOR + 7 - 8.5%	LIBOR + 10 - 15%

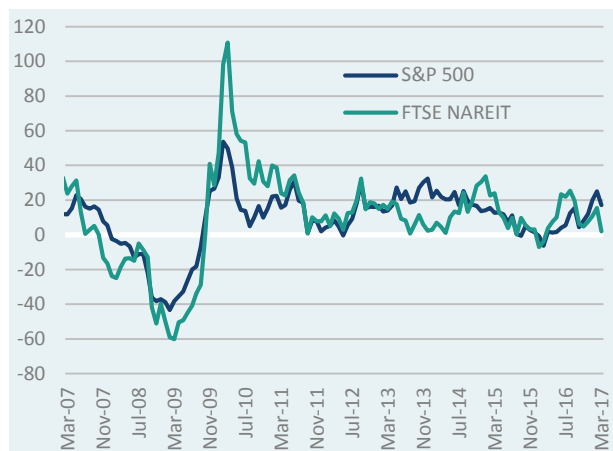
Source: Invesco, CIM Group, Brookfield



# REITs

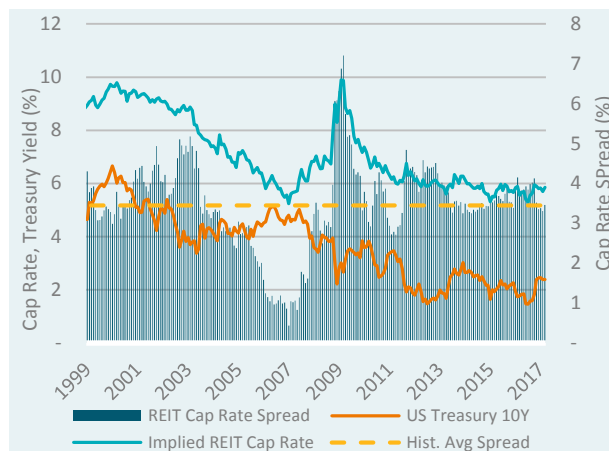
- REITs have broadly benefitted from the overall strength of the real estate market, however REITs have underperformed broader equities over the last year. A rise in interest rates and increased economic growth expectations led to a rotation away from yield-oriented assets.
- Valuations currently appear fair on a number of metrics. Implied cap rate spreads relative to Treasuries look fairly valued compared to history.
- REITs also appear fairly valued relative to equities as measured by the adjusted funds from operations (AFFO) multiple in comparison to the S&P 500 forward P/E.
- REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors such as hotels, self storage, for-rent residential, etc.
- Verus recommends utilizing active management in REITs with managers that have significant private real estate expertise.

**PERFORMANCE VS. S&P 500  
(1-YEAR ROLLING)**



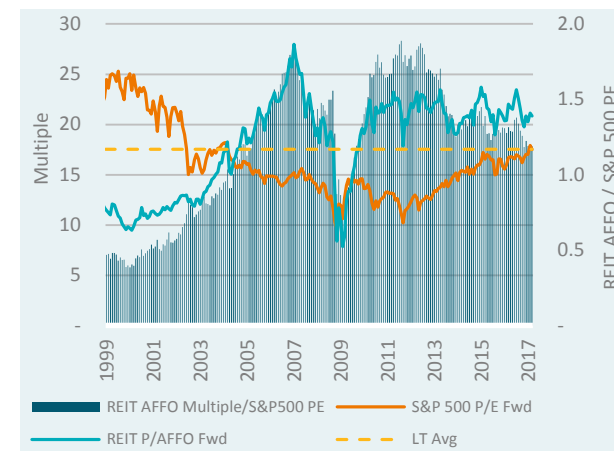
Source: MPI

**YIELDS (VS. TREASURIES)**



Source: JPMorgan, as of 3/31/17

**VALUATION (VS. EQUITIES)**



Source: JPMorgan, as of 3/31/17

# Real estate summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Core	Fundamentals remain strong, however valuations are getting expensive, especially for high quality assets in gateway markets.	<ul style="list-style-type: none"> <li>— New supply could increase ahead of current projections and outpace demand.</li> <li>— A sharp rise in interest rates could lead to increased cap rates, hurting values.</li> <li>— A general economic slowdown would drastically impact demand for real estate.</li> </ul>	Steady, but slow growth could lead to a longer than normal cycle, as we have not seen the level of overheating and new construction that typically occurs near the end of a cycle.	Neutral/ Positive
Value-Add	Heavy demand for high quality core real estate assets has been a tailwind for value-add strategies, as the completed project are often core real estate buyers.	<ul style="list-style-type: none"> <li>— Slowing demand for core real estate could lead to fewer buyers of value-add assets.</li> <li>— Any decline in demand due to an economic slowdown would likely impact renovation and lease-up strategies.</li> <li>— Increased capital moving up the risk spectrum could lead to increased competition.</li> </ul>	A flat to positive environment for core real estate should be a good environment for value-add. Increased capital raising in the space will lead to additional competition however, squeezing returns.	Neutral
Opportunistic	The strong recovery in the commercial real estate market has led to fewer distressed opportunities available for opportunistic funds, especially in the U.S. Lending standards remain tight for new construction opportunities, pressuring returns.	<ul style="list-style-type: none"> <li>— A turn in the market might dramatically affect the performance of investments with a long time horizon, such as construction or complex distressed situations.</li> <li>— Increased capital moving up the risk spectrum could lead to increased competition.</li> </ul>	Fewer distressed opportunities should continue to put downward pressure on returns. We would caution against broad development strategies at this point in the cycle.	Negative
Debt	Traditional lenders, such as banks and insurance companies have reduced lending to commercial real estate, creating a need for capital.	<ul style="list-style-type: none"> <li>— Changes in regulations, such as the elimination or loosening of Dodd-Frank, could possibly lead to a re-emergence of banks and insurance companies in lending, increasing competition and reducing potential returns.</li> </ul>	The risk-return profile for commercial real estate loan origination, both senior loans and mezzanine loans, appears to be favorable compared to core real estate. These strategies can be implemented in both open end and closed end fund structures.	Positive

# Commodities

- Commodity performance has been lackluster over the past decade, delivering negative returns through the global financial crisis and the recent oil crisis. Much of this performance has been caused not by price movement, but by the shape of commodity futures curves. An upward sloping curve creates a drag for investors as a higher price is paid to enter each futures contract, and a downward sloping curve creates positive carry for investors as prices paid for futures contracts are lower. This premium/discount is a major determinant of commodity performance, and is known as “roll yield”. Roll yield can be negatively affected by commodity crises as current contract prices drop further than distant prices and the curve becomes steeper.
- As commodity prices moderate, futures curves have flattened and negative roll yield has begun to dissipate. Oil in particular significantly impacts overall roll yield due to its large weight in commodities indices. Oil has exhibited a flatter curve shape recently. We are continuing to monitor these effects since a neutral or positive roll return would improve commodity returns.

## SECTOR PERFORMANCE



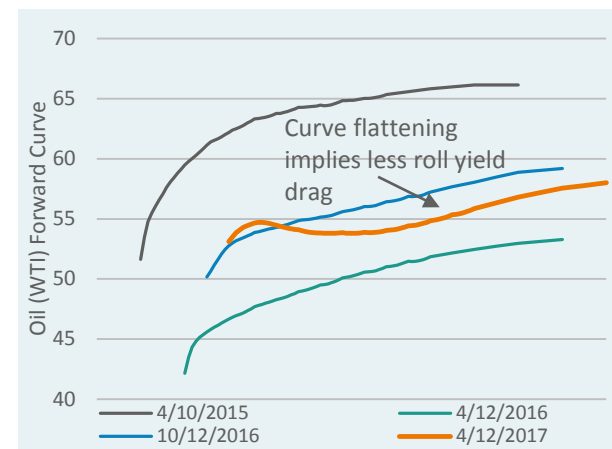
Source: Bloomberg, as of 3/15/16

## ROLL RETURN



Source: Standard & Poors, Goldman Sachs, as of 3/31/17

## CURVE SHAPE



Source: Bloomberg

# Commodities – Role within a portfolio

- Based on historical inflation sensitivity measures, commodities provide the best inflation protection.
- The performance of the asset class has been disappointing both on an absolute and relative basis. Many investors expected an equity-like return stream from the asset class but the benign inflation environment and supply/demand headwinds within commodities have resulted in mostly negative returns for several years.
- Investors should not expect commodities to deliver returns at or near equity levels. The low interest rate environment, upward slopping futures curve and uncertain path around commodity spot prices does not make a strong case for high returns. They do however, have a role to play in some client portfolios. The low correlation to equities and high inflation beta characteristics can be attractive for investors seeking a strong hedge to inflation shocks.

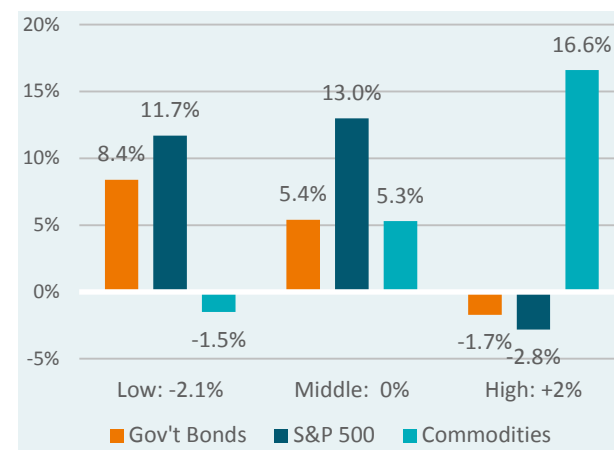
## COMMODITY VS. NATURAL RESOURCE EQUITIES ROLE WITHIN A PORTFOLIO

	Futures-Based Commodities	Resource Equities (Mining & Energy)	Private Resource Equities (Mining & Energy)
Broad commodity exposure	Yes	No	Yes
Diversifier (low equity correlation)	Yes	No	No
Inflation shock protection	Yes	Yes	Yes
Adds equity risk to portfolio	No	Yes	Yes
Equity-like expected return	No	Yes	Yes
Roll yield drag (most recent)	Yes	No	No
Illiquid	No	No	Yes

## COMMODITY FUTURES AND SPOT RETURNS FOR SELECTED PERIODS

Period	Nominal		Inflation Adjusted	
	Futures	Spot	Futures	Spot
1/2005 to 12/2014	5.1%	9.4%	2.9%	7.3%
1/1995 to 12/2004	8.6%	8.2%	6.1%	5.8%
1/1985 to 12/1994	9.7%	6.7%	6.2%	3.1%
1/1975 to 12/1984	9.0%	7.1%	1.9%	0.0%
1/1965 to 12/1974	19.2%	13.2%	14.1%	8.1%
1/1959 to 12/1964	3.9%	3.0%	2.6%	1.7%

## ASSET CLASS RETURNS DURING INFLATION SHOCK REGIMES: 1960-2015 (1-YEAR PERIODS)

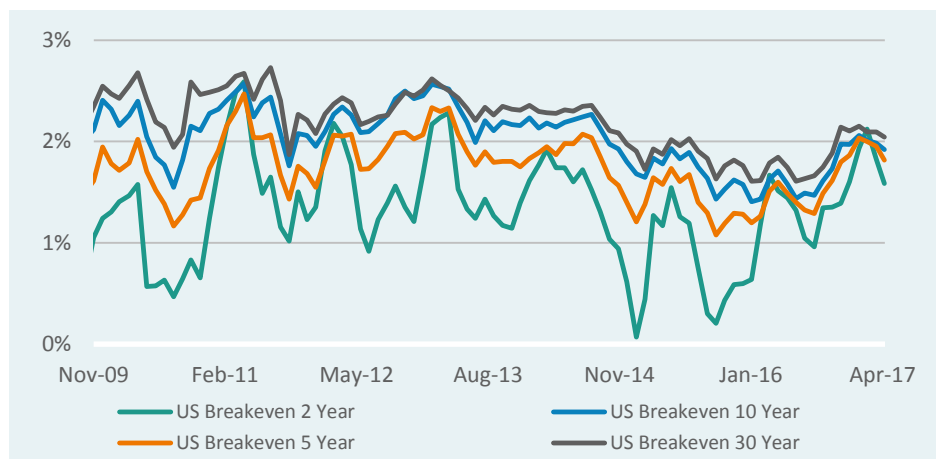


Source: Summerhaven

# TIPS

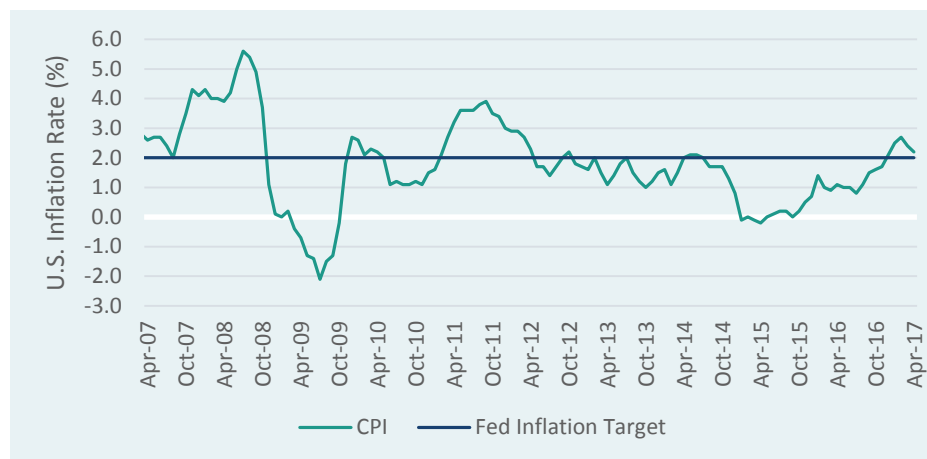
- Inflation has been trending upward over the last two years from a base of zero and is now hovering around the Fed inflation target of 2%, but still remains below historical averages.
- TIPS 10-year breakevens came down slightly in April to 1.9%, while the 30 year breakevens are just slightly above 2%.
- Due to low inflation and nominal rates, TIPS returns have been very lackluster. The Barclays U.S. TIPS Index has returned 1.5%, 2.0% and 1.0% over the last 1, 3 and 5-years respectively. Over the past 10 years the return for the index was 4.2%.
- Over the intermediate-term, we believe TIPS appear less attractive relative to other real assets from a total return perspective because of low carry. Other real assets will likely do better in a stable growth environment, such as private real estate and natural resources.
- TIPS may retain a place in long-term strategic allocations to inflation protecting assets within fixed income, and should help hedge against unexpected inflation shocks.

**U.S. TREASURY BOND RATES**



Source: FRED, as of 4/30/17

**CURRENT INFLATION VS. FED TARGET**

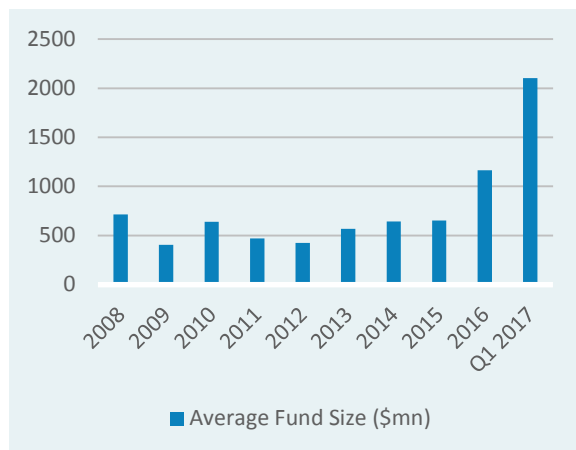


Source: BLS, as of 4/30/17

# Infrastructure

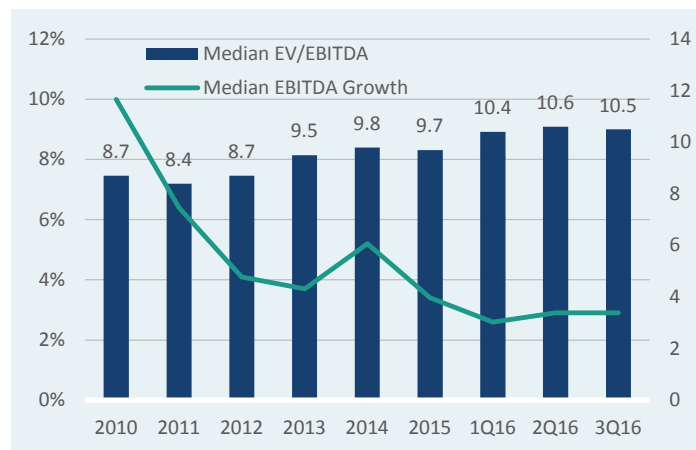
- Infrastructure encompasses a suite of investment strategies across a subset of particular industries. While there is not one definition for what can be included within infrastructure, we focus on the power generation, transportation, midstream energy, telecom and utility sectors. Listed and unlisted infrastructure funds will invest across these sectors, or in some cases specialize in one or two particular industries.
- Unlisted infrastructure has grown dramatically in the last 5-7 years as investors sought assets that could provide a more attractive yield relative to fixed income, and the potential for inflation protection.
- Low interest rates and a competitive market drove deal valuations to historically high levels. Listed infrastructure is trading around 10.5x EBITDA with a 2.5% growth rate. It appears that the market is leveling off, reflecting an awareness that valuations are rich.
- There is a lot of speculation in the marketplace around the Trump administration's impact on the infrastructure market. Given the political realities of passing legislation with a deeply divided Congress, we are not putting a lot of stock into large infrastructure projects being developed by the government. The one area where there has been notable changes is within the make-up of the FERC (Federal Energy Regulatory Commission) board. FERC regulates midstream pipeline development and power transmission and generation. The new board headed by Trump nominees is viewed to be friendlier to the midstream and power companies and should spur new developments in those markets.

**INFRASTRUCTURE AVERAGE FUND SIZE**



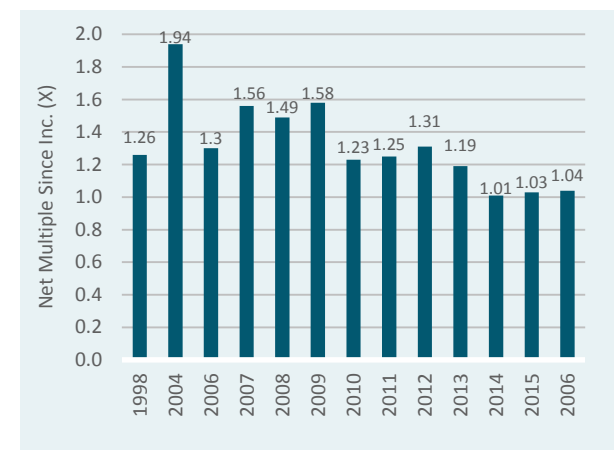
Source: Preqin

**LISTED INFRASTRUCTURE VALUATIONS/GROWTH**



Source: Capital IQ

**MEDIAN NET MULTIPLE RETURNS FOR INFRASTRUCTURE BY VINTAGE YEAR**



Source: Cambridge Associates

# Infrastructure (continued)

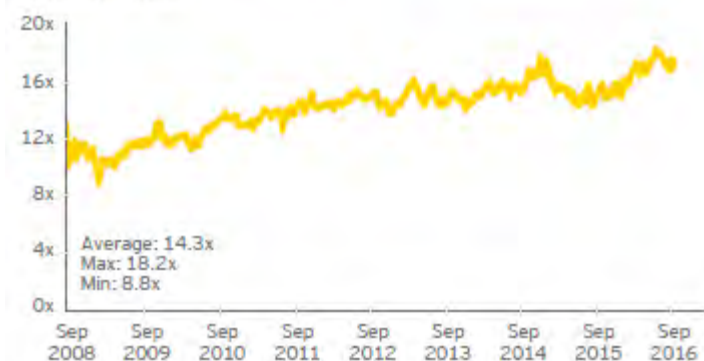
- We remain favorable towards value-add relative to core infrastructure as the risk/reward looks more attractive today. Interest rate sensitivity is generally lower in value-add infrastructure and pricing levels, though elevated, are below comparable core valuations. Within value-add we focus on sector specialists or teams with a track record of successful project development.
- Relative to regulated power, which is trading at a premium to historical valuations, merchant power generation is trading at a discount given the pricing dynamics in that market. Low natural gas prices, along with the disruption of renewables has driven commodity power prices lower, significantly reducing cash flow and impairing balance sheets across the industry. Though we are cautious given the number of unknowns, there could be some

attractive deals in the merchant market with financial stress and lack of IPP competition for deals.

- Midstream energy has been the best performing and most attractive industry within infrastructure for years. There continues to be a need in unconventional basins (Appalachian and Permian, in particular) for additional processing and transportation infrastructure. That said, the MLP market is healthier today than it was a year ago and large amounts of private capital raised over the last 2-3 years has contributed to a competitive market. Midstream deals increasingly favor the E&P drillers as MLPs and PE-backed teams compete for volume and acreage dedication. We continue to look for opportunities in midstream energy with a focus on nimble management teams.

## VALUATIONS ON REGULATED UTILITY POWER

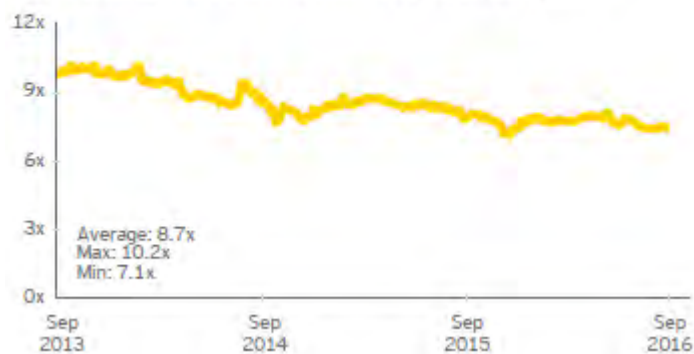
Average price/earnings (P/E) trading multiples for select US regulated utilities  
(on FY2 consensus earnings-per-share (EPS) estimates, 2008-Q3 2016)



Source: E&Y

## VALUATIONS ON MERCHANT POWER

Average enterprise value/earnings before interest, taxes, depreciation and amortization (EV/EBITDA) trading multiples for select IPPs  
(on FY2 consensus EBITDA estimates, 2013-Q3 2016)



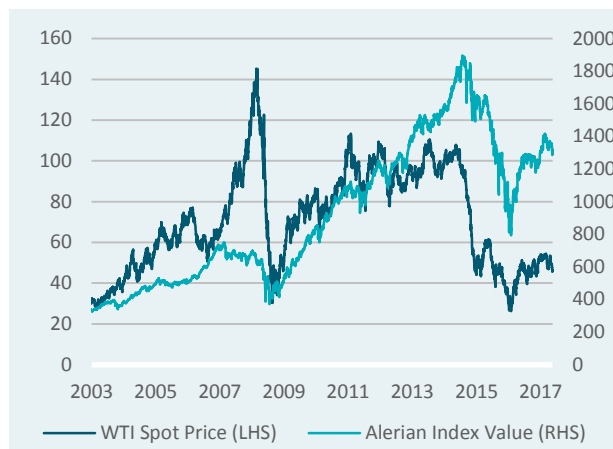
Source: E&Y



# Master limited partnerships (MLPs)

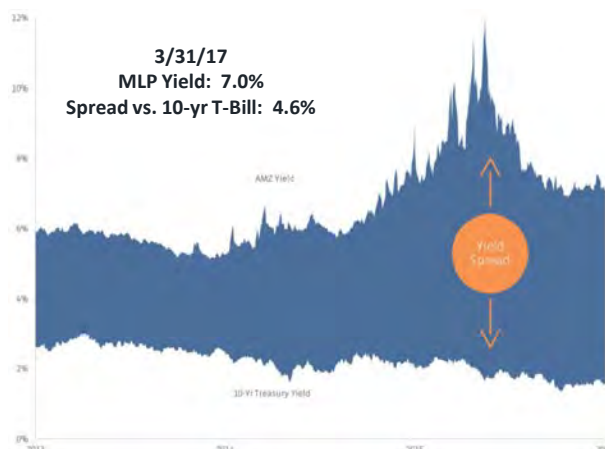
- MLPs have had a strong recovery following a sharp decline in valuations during the period when oil dropped from late 2014 through early 2016. A combination of the movement in the price of oil and MLPs topping out at high valuations (~20x EBITDA), led to the decline. Since oil bottomed out at sub \$30/barrel, MLPs have performed well and are now trading at a more reasonable multiple of 13-14x EBITDA.
- MLPs finished 2016 with a strong +18% return vs. 9.5% for the S&P 500. MLPs have underperformed broader equities year-to-date as interest rates rising in the first quarter negatively affected all yield sensitive assets and more recently, as energy prices declined.
- There was broad concern that MLPs would not be able to sustain positive distribution growth after the decline in oil prices, however distribution growth came down in 2015-2016 but remained positive, ending 2016 at 3.1%. Capital markets have been very supportive in 2017, raising \$38 billion through Q1, the majority through equity offerings.
- MLPs currently exhibit an attractive 7.0% yield along with a 3% distribution growth rate. However, any further downward pressure on oil prices could impact potential growth opportunities in the space. The potential for increased LNG exports could also be a tailwind for energy infrastructure assets.

## PERFORMANCE VS. OIL



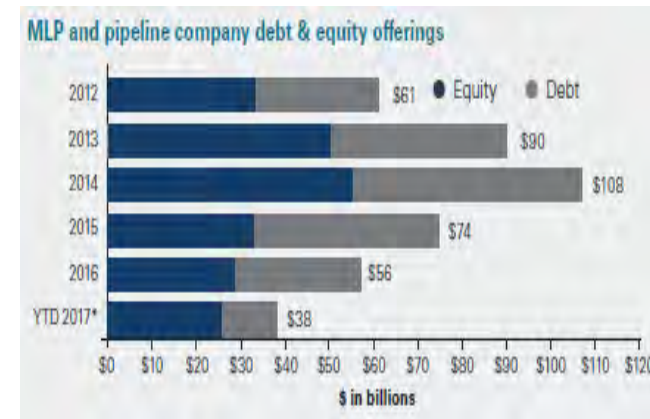
Source: EIA, Alerian

## MLP YIELDS



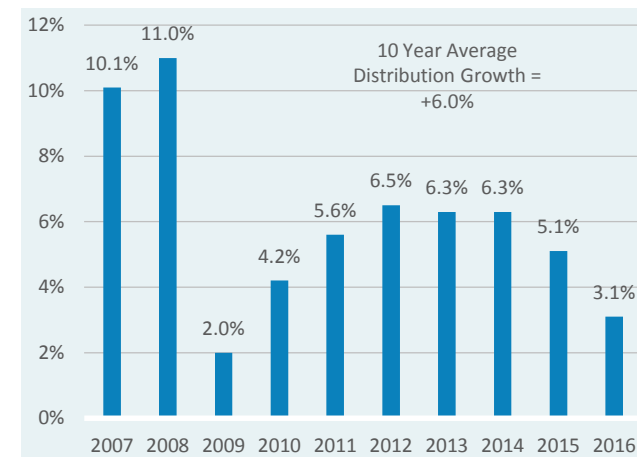
Source: Alerian

## CAPITAL MARKETS



Source: Tortoise

## MLP ANNUAL DISTRIBUTION GROWTH



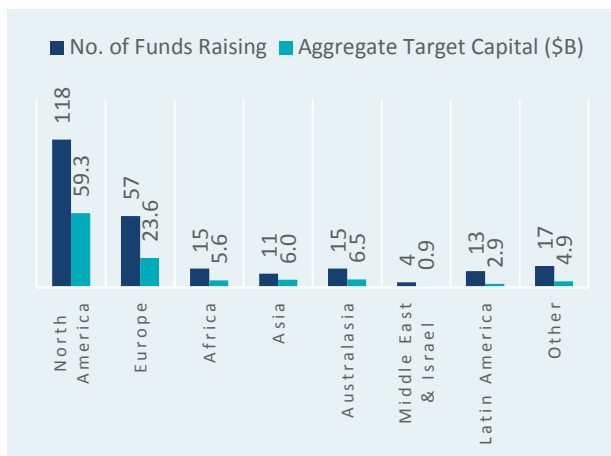
Source: Tortoise



# Private natural resources

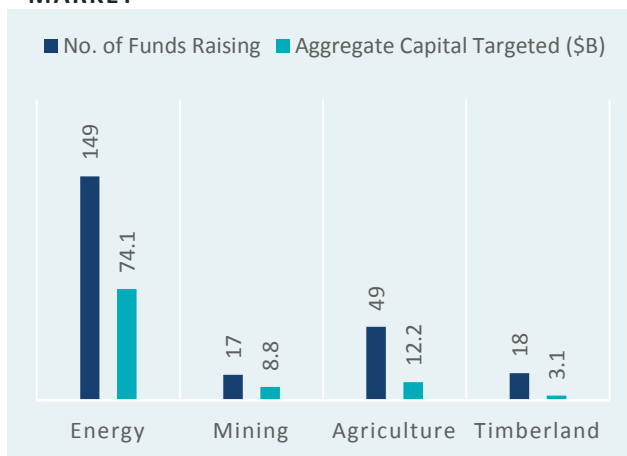
- Private natural resources includes private energy, mining, agriculture and timber funds. Each of these resource sectors carries unique risk and return characteristics, making them difficult to generalize as a single asset class.
- Energy is the largest investable sector within natural resources. The number of funds and capital raised within energy is 2-3x that of the other three sectors combined. The depth of the energy market allows for investors to scale into the sector and creates a more liquid market for transactions. Energy is also the sector with the most capital chasing deals - currently \$150bb in dry powder.
- Mining, agriculture and timber tend to be sectors that we allocate to opportunistically. The liquidity within these markets is quite low, leading to fund terms extending well beyond 10 years.
- Within agriculture we have largely focused on agriculture business strategies utilizing permanent crops.
- Fundraising in timberland has been trending lower for several years as disappointing returns within that industry continue to create a headwind for TIMOs.

**FUNDS BY GEOGRAPHIC FOCUS**



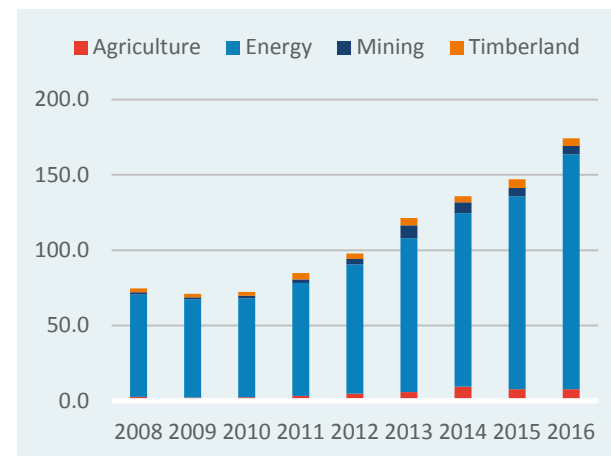
Source: Preqin

**CURRENT NATURAL RESOURCE FUNDS IN MARKET**



Source: Preqin

**FUND DRY POWDER BY STRATEGY**

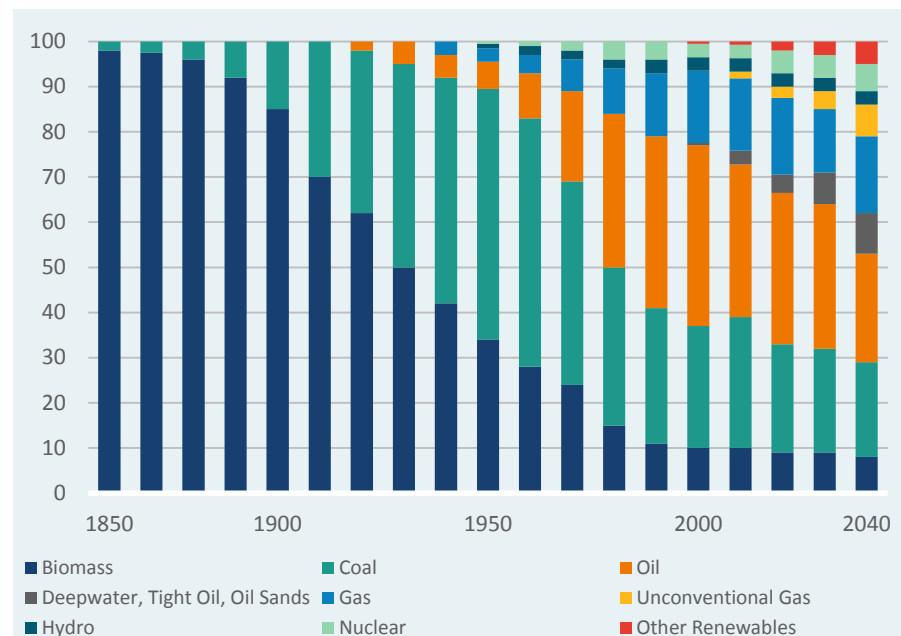


Source: Preqin

# Private energy

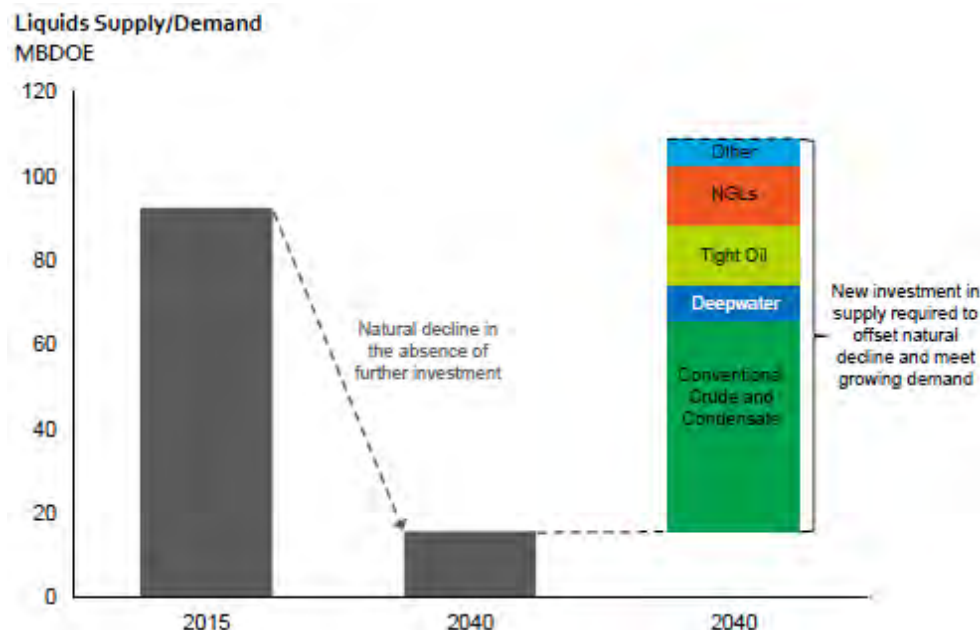
- Global energy generation is still dominated by carbon-based fuels. Energy efficiency through technology allows us to use less fuel to drive energy needs. CO<sub>2</sub> emissions are expected to fall in OECD nations and China through 2040, while non-OECD nations still face challenges in reducing carbon emissions.
- China, India and Indonesia are expected to more than triple their car penetration per thousand people over the next 25 years.
- Given expectations around global demand growth, ongoing capex in all upstream market segments will be needed to meet future demand. Significant parts of the energy market require higher prices to encourage investment spending.
- Near-term supply/demand challenges could continue absent additional supply cuts by OPEC and related parties.

## TECHNOLOGY CONTINUES TO CHANGE THE GLOBAL FUEL MIX



Source: ExxonMobil

## ONGOING CAPEX WILL BE NEEDED TO MEET FUTURE DEMAND

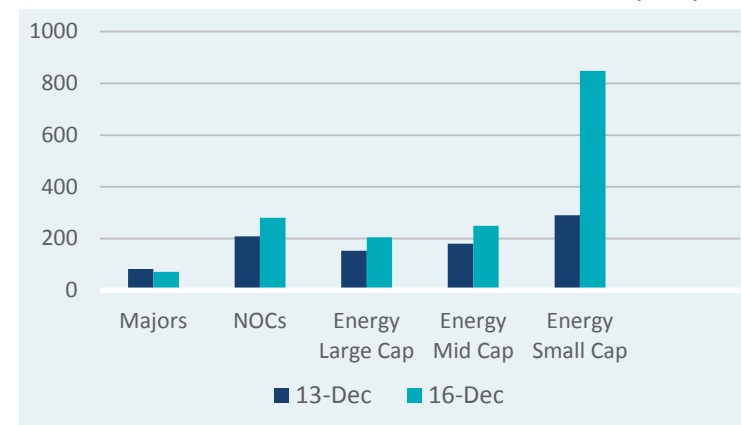


Source: ExxonMobil

# Private energy (continued)

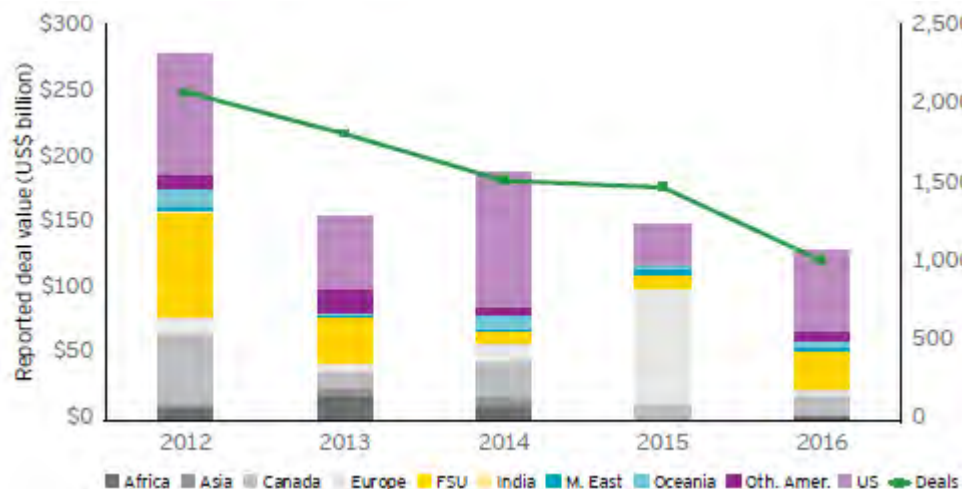
- Collapsing energy prices drove credit spreads higher, valuations lower and sent over 120 companies into bankruptcy.
- Credit spreads for small cap energy companies remain well above historical averages. Cost of capital is significantly higher for smaller E&P and oil field service (OFS) companies.
- Transactions in the oil & gas market are below trend globally, though North America is a noticeable outlier given the availability of capital and attractive drilling economics.
- Though we have some concerns with the amount of capital chasing energy deals, with independent energy companies repairing balance sheets, opportunities should continue to remain attractive in E&P and OFS.

**CREDIT SPREADS IN ENERGY BY COMPANY SIZE (BPS)**



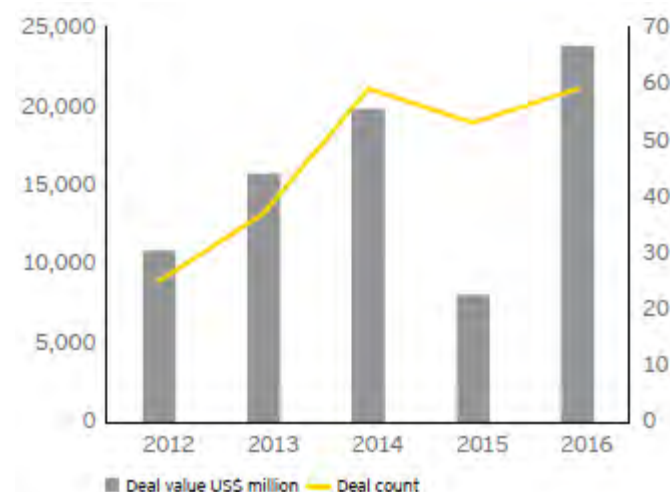
Source: E&Y

**UPSTREAM ENERGY TRANSACTIONS GLOBALLY (2012-2016)**



Source: E&Y

**PE ACQUISITION ACTIVITY IN ENERGY**

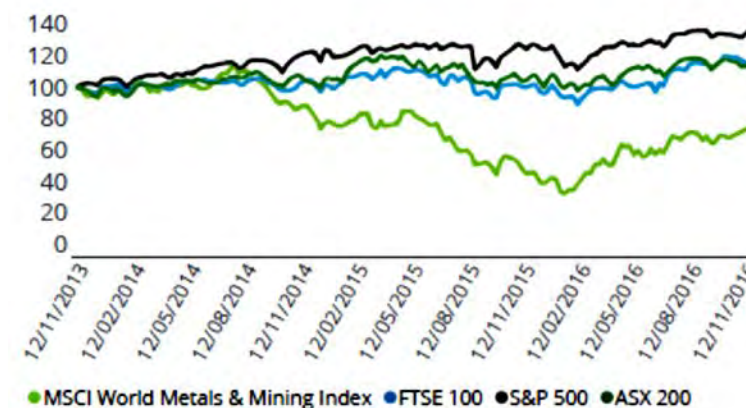


Source: E&Y

# Private mining

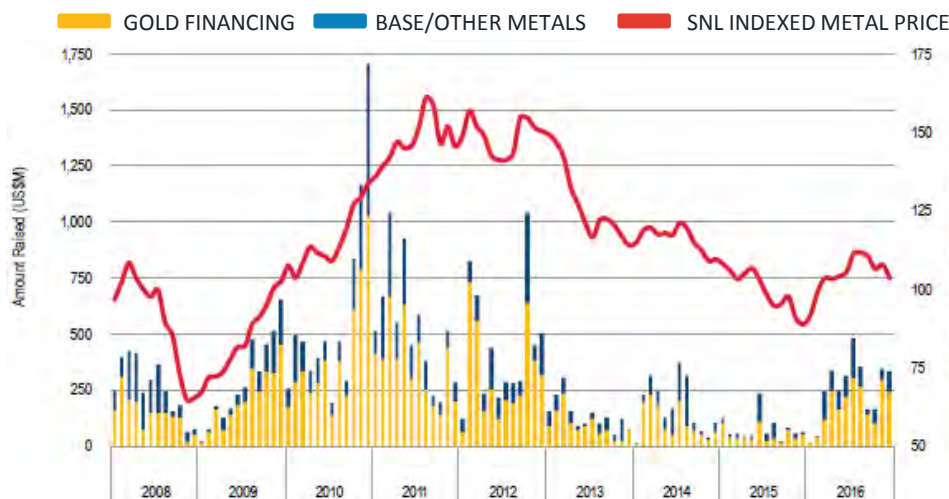
- Stress in the energy sector is well documented among institutional investors. Somewhat overlooked is the longer suffering mining sector. Though 2016 saw a bit of a rebound for mining, pockets of opportunities continue to exist for investors.
- Junior mining companies have had a difficult time financing exploration activity. IPOs within the mining sector have collapsed with just 15 listings in 2016 compared to over 80 in 2012. M&A volumes are down as well, notwithstanding a few large transactions.
- With industry players repairing impaired balance sheets and European banks reducing their loan volumes, we believe private capital has an opportunity to step in and acquire attractive assets and advance projects.

## MINING EQUITIES HAVE UNDER PERFORMED



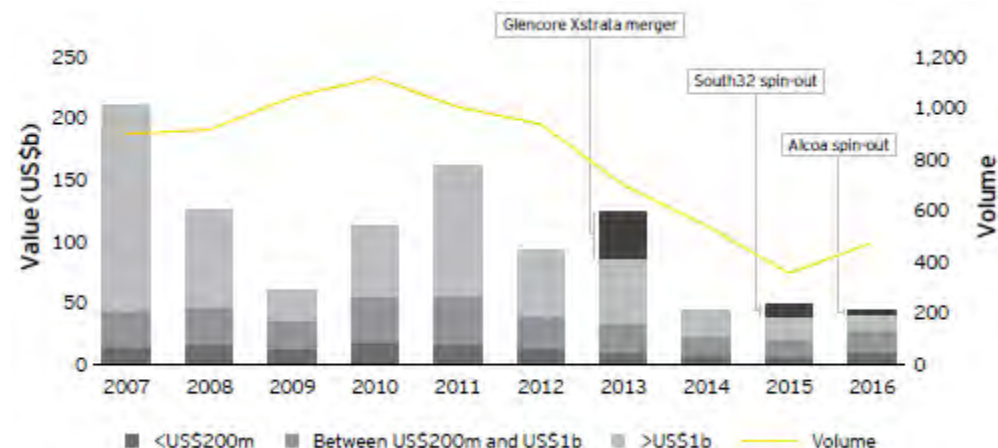
Source: Deloitte

## EXPLORATION-RELATED FINANCING BY JUNIORS (2008-2016)



Source: S&P Global Intelligence











































## MINING M&A – VOLUME AND VALUE (2007-2016)

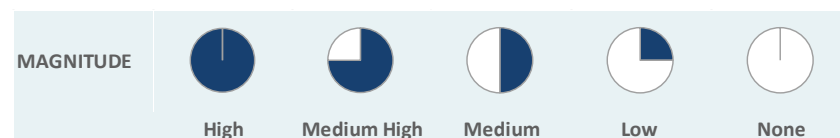


Source: E&Y

# Appendix

























































# Interest rate sensitivity – Public markets

ASSET CLASSES	ROLE OF ASSET CLASS			PRICING FREQUENCY AND USE OF DEBT/LEVERAGE		FLOW THRU OF INFLATION		COMMENTS
	Income Orientation	Return Enhancing	Inflation Sensitivity	Pricing Frequency	Use of Debt/Leverage	Growth of Income	Replacement Cost/Price	Impact from Rising Interest Rates
TIPS								TIPS are sensitive to rising real rates. If interest rates are going up but inflation is flat or rising by less than nominal rates, TIPS will suffer. However, TIPS will outperform nominal bonds if real yields are falling.
Commodity futures								Overall, rising interest rates will have a neutral-to-positive impact on commodity returns through the impact on collateral yield.
REITs								Rising rates would likely cause an increase in cap rates. Although historically these do not move 1:1, they generally follow the same long term trends. An increase in cap rates would have a direct negative impact on real estate valuations.
MLPs								As a yield-oriented security, MLPs would likely face a head-wind in a rising rate environment. Absent meaningful distribution growth from energy production volumes, MLPs would reprice lower to reflect a higher yield environment.
Listed infrastructure								Infrastructure asset valuations would generally be negatively affected due to the discount rate effect. Once that impact occurs infrastructure assets would generate a higher portion of total return from income. Investment level leverage would become more expensive as well.
Natural resources equity								Higher interest rates, especially if associated with economic growth, will generally have less of an impact on natural resource companies than yield-oriented investments.



Note: the summary above was determined using historical averages and correlations on a relative basis within each category. It is important to note that investments within these asset classes are often heterogeneous and may possess different qualities and sensitivities (see Appendix for further details).

# Interest rate sensitivity – Private markets

ASSET CLASSES	ROLE OF ASSET CLASS			PRICING FREQUENCY AND USE OF DEBT/LEVERAGE		FLOW THRU OF INFLATION		COMMENTS
	Income Orientation	Return Enhancing	Inflation Sensitivity	Pricing Frequency	Use of Debt/Leverage	Growth of Income	Replacement Cost/Price	Expected Impact from Rising Interest Rates
Private real estate - core								Rising rates would likely cause an increase in cap rates. Although historically these do not move 1:1, they generally follow the same long term trends. An increase in cap rates would have a direct negative impact on real estate valuations. Investment level leverage would become more expensive as well.
Private real estate value added								Higher interest rates would generally impact value-add and opportunistic real estate less than core real estate. Similar to high-yield bonds and investment grade bonds, higher risk real estate exhibits less duration risk than higher grade core real estate.
Private real estate opportunistic								Higher interest rates would generally impact value-add and opportunistic real estate less than core real estate. Similar to high-yield bonds vs investment grade bonds, higher risk real estate exhibits less duration risk than higher grade core real estate.
Private infrastructure								Infrastructure asset valuations would generally be negatively affected due to the discount rate effect. Once that impact occurs infrastructure assets would pass through infrastructure assets would generate a higher portion of total return from income. Investment level leverage would become more expensive as well.
Timber								Timber valuations would be negatively impacted by higher discount rates which are tied to 10-year treasury rates.
Farmland / agriculture								Farmland valuations would be negatively impacted by higher discount rates which are tied to 10-year treasury rates.
Real estate debt								Most of the real estate debt that we recommend is floating rate so higher interest rates would increase our expected return. Default rates could go up if borrowers are unable to service the higher coupons and unable to refinance into fixed rate debt.
Private Natural Resources								Higher interest rates, especially if associated with economic growth, will generally have less of an impact on natural resource companies than yield-oriented investments.

Note: the summary above was determined using historical averages and correlations on a relative basis within each category. It is important to note that investments within these asset classes are often heterogeneous and may possess different qualities and sensitivities (see Appendix for further details).



# Inflation sensitivity

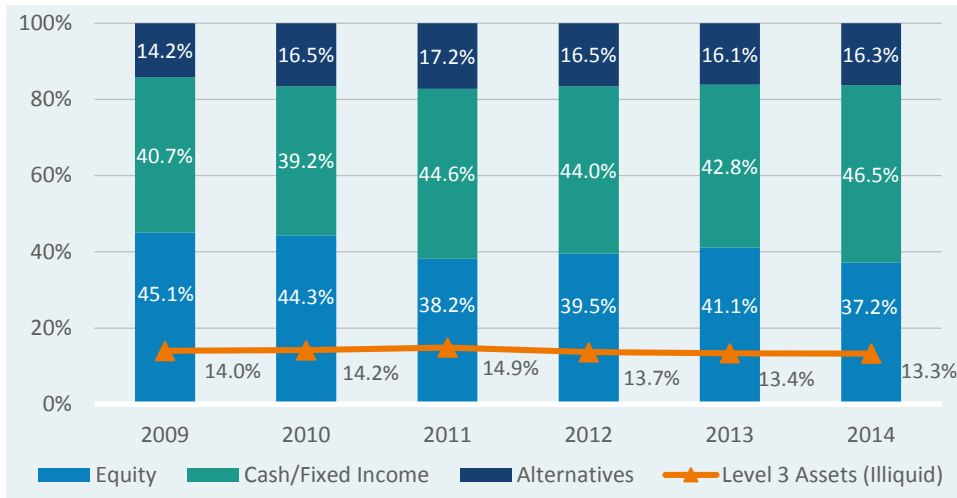
Real Assets	Deflation	Rising Inflation	High Inflation
<b>Real Estate</b>	Real estate would face headwinds in a deflationary environment as the ability to raise leases/rents would become challenging.	As inflation rises, input prices for commercial real estate go up, increasing the replacement cost for real estate, thereby allowing easier rent/lease increases.	Price appreciation would be higher, thus good protection against inflation as a store of capital. But higher interest rates would decrease the attractiveness of using leverage.
<b>Infrastructure</b>	The stable, steady contracted or regulated income streams of core infrastructure should hold up well even with declining inflation.	Automatic inflation adjustments to many of the regulated assets and contracted assets increase income during times of rising inflation.	Nominal returns should be higher during a high inflationary period as many regulated and contracted utility rates have inflation kickers in their contracts.
<b>TIPS</b>	The principal of TIPS cannot be reduced below par value when held to maturity. This implied put characteristic can make TIPS broadly attractive during a deflationary period.	TIPS offer protection during inflationary environments as the instrument's principal is adjusted every 6 months based on CPI levels. This helps protect real returns. If the inflation prints higher than the TIPS breakeven, investors are being over-compensated relative to Treasuries.	During high inflation, the protection offered by TIPS may be less than adequate as the adjustment to principal is only made every six months and has a lag on the payout. However, the payout of the investment is still guaranteed by the government so there should be marginal protection.
<b>Commodity Futures</b>	Commodity futures typically have dropped during deflationary or disinflationary environments. Gold and other precious metals may be a good store of wealth during deflationary times.	Periods of rising inflation are the best environment for commodity futures as they tend to provide very direct exposure to price movements.	High inflation does not necessarily mean high returns for commodity futures. The rate of change of inflation is a larger determinant in the returns than the absolute level of inflation.
<b>Natural Resources Equities</b>	Real assets have typically seen declining demand during these periods, affecting both spot prices and companies with exposure to the natural resources, whether it be oil & gas, metals, timber or agriculture.	Increasing prices have a direct impact on profit margins for companies with commodity exposures. However, overall equities tend to underperform in periods of rising inflation.	High inflation may improve profit margins of natural resource companies in the near term, but longer periods of high inflation have had a negative impact on overall equity valuations as debt costs are typically higher in such periods as well.



# Implementation – Liquid vs. illiquid?

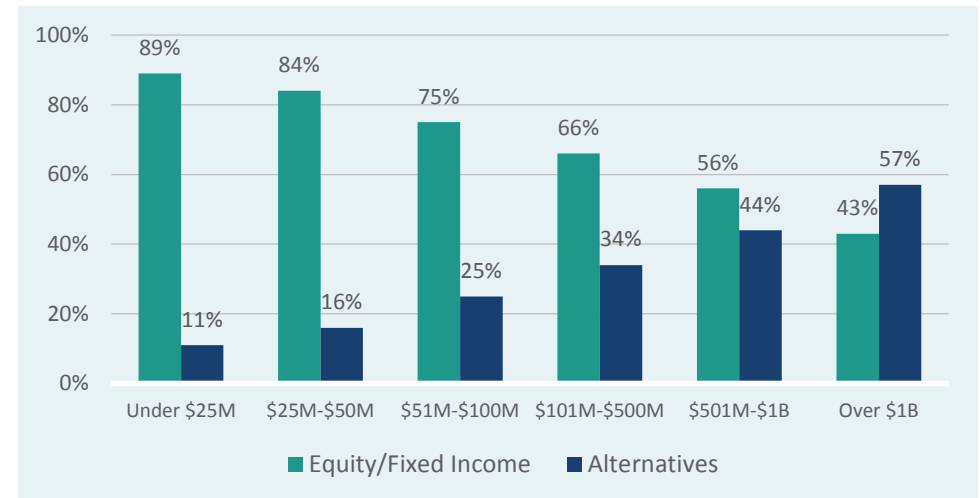
- Investors can gain exposure to most real assets through both liquid (publicly-traded securities) and illiquid (private vehicles).
- The approximate mix of liquidity in a portfolio varies dramatically by client depending on a number of variables, including risk tolerance, income needs, and investment time horizons.
- The trade-off for gaining exposure through illiquid vehicles is typically greater diversification, lower equity risk, and possibly an illiquidity return premium.
- Many liquid real assets (REITs, natural resource equities, listed infrastructure, MLPs) also come with embedded equity risk in addition to exposure to the underlying real assets. Because these assets trade on the equity markets, they are subject to market sentiment.
- Private, illiquid investments tend to have higher costs and higher minimums.

**ALLOCATION TO ALTERNATIVES AND LEVEL 3 ILLIQUID ASSETS (PENSIONS)**



Source: Towers Watson

**ALTERNATIVE ALLOCATIONS BY PLAN SIZE (ENDOWMENTS)**



Source: NACUBO

# Implementation – Liquid vs. illiquid? (cont)

- Based on universe data provided by Cambridge Associates, private natural resource funds have outperformed their public market equivalents by 200-300bps depending on the index and time series.
- Majority of the funds within the Cambridge Natural Resources Universe are energy funds, reflecting the size of the opportunity set in that market segment.
- Noteworthy is the spread between both private and public natural resource companies and investing in the commodity index directly.

## PUBLIC VS. PRIVATE NATURAL RESOURCES – AS OF 12/31/16

Index	1-Yr	3-Yr	5-Yr	10-Yr	15-Yr	20-Yr
Cambridge Natural Resources Universe (net)	17.00%	-2.08%	1.56%	5.25%	9.38%	9.35%
S&P Global Natural Resources Index	31.46%	-3.76%	-0.82%	0.55%	N/A	N/A
S&P North American Natural Resources Index	30.87%	-3.66%	1.26%	2.64%	7.64%	6.86%
S&P GSCI Index	11.37%	-20.60%	-13.13%	-8.10%	-1.03%	-1.92%
Bloomberg Commodity Index	11.77%	-11.26%	-8.95%	-5.58%	1.16%	N/A

Source: Cambridge Associates

# Glossary of terms

**Adjusted Funds From Operations (AFFO):** A measurement which is helpful in analyzing real estate investment trusts (REITs). The AFFO typically equals the trust's funds from operations (FFO) but is adjusted for ongoing capital expenditures which are necessary for upkeep of the REIT's assets.

**Capitalization Rates:** The rate of return of a real estate investment, which is calculated by dividing the property's net operating income by the property's purchase price.

**Core Real Estate:** This category of real estate will include a preponderance of stabilized properties. Core real estate should achieve relatively high income returns and exhibit relatively low volatility. Core real estate funds tend to use less leverage.

**Consumer Price Index (CPI):** A measure of purchasing power and inflation that takes the average prices of a basket of consumer goods and services, such as food, medical care, and transportation, and compares the same basket of goods in terms of prices to the same period in a previous year. Changes in CPI are used to assess price changes associated with the cost of living.

**Dry Powder:** Investment reserves raised by investment funds to cover future obligations or to purchase assets in the future.

**GDP:** The total value of all services and goods produced within a country's borders, for a given time period. This calculation includes both private and public consumption, government expenditures, investments, along with total exports net of total imports.

**Internal Rate of Return (IRR):** the IRR is the discount rate that equates the present value of cash outflows (investment) with the present value of cash inflows (return of capital). IRR is often referred to as a dollar-weighted rate of return that accounts for the timing of cash inflows and outflows.

**Master Limited Partnerships (MLPs):** A limited partnership structure which is publicly traded on an exchange. MLPs combine the tax benefits of a limited partnership with the liquidity of publicly traded securities. To qualify as an MLP, the entity must generate 90% of its income from the production, processing and transportation of oil, natural gas and coal.

**Net Operating Income (NOI):** A calculation which is used to analyze real estate investments that generate income. NOI is the property's annual income generated by operations after deducting all expenses incurred from those operations. The growth rate in NOI is a common metric used in determining the health of a property.

**Opportunistic Real Estate:** An opportunistic fund is one that includes preponderantly non-core assets. The fund as a whole is expected to derive most of its return from property appreciation which may result in significantly volatile returns. These funds may employ a variety of tools such as development, significant leasing risk and potentially high leverage.

**Real Estate Investment Trusts (REITs):** A REIT is a company that owns and operates commercial real estate properties. REITs can be publicly traded or privately held. There are two main type of REITs: Equity REITs which generate income from the operation of properties, and Mortgage REITs, which invest in mortgages or mortgage securities.

**Timber Investment Management Organizations (TIMOs):** A management group that invests in timberland assets for institutional investors. TIMOs will purchase, manage and sell various timberland properties on behalf of investors.

**Treasury Inflation Protected Securities (TIPS):** A treasury bond that is adjusted to eliminate the effects of inflation on interest and principal payments, as measured by the Consumer Price Index (CPI). TIPS are issued in terms of five, ten and twenty years and are auctioned twice per year.

**Value-Added Real Estate:** A value-added real estate fund often holds a combination of core assets and other assets characterized by less dependable cash flows. These strategies are likely to have moderate lease exposure and employ moderate leverage. Consequentially, these strategies seek significant returns from property appreciation and typically exhibit moderate volatility.

**Vacancy Rates:** The vacancy rate is calculated as the total number of unoccupied units of a property divided by the total units of the property, at a particular point in time.

**Vintage Year:** Represents the year the first capital call or portfolio company investment was made.

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