



## ITEM 15

### Executive Staff

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**For Agenda of:**  
March 15, 2017

March 10, 2017

**TO:** President and Members  
Board of Retirement

**FROM:** JR Pearce  
Investment Officer

**SUBJECT:** SCERS' Alternative Assets Performance Review

### **Recommendation:**

**It is recommended that your Board receive and file the Cliffwater performance presentation reports covering the third quarter 2016 for the Private Equity, Real Assets and Opportunities asset classes, and the fourth quarter 2016 for the Absolute Return asset class, and consider taking action on any recommendations made therein.**

Attached are reports including: (1) An executive summary presentation by Cliffwater summarizing the quarterly performance review for SCERS' alternative assets; (2) The quarterly Absolute Return performance report for the quarter ending December 31, 2016 and the period ending February 28, 2017; (3) The quarterly Private Equity performance report for the period ending September 30, 2016; (4) The quarterly Real Assets performance report for the period ending September 30, 2016; and (5) The quarterly Opportunities portfolio performance report for the period ending September 30, 2016. As you will recall, the time gap between the close of the period covered by the reports and the present is a function of the lag in performance reporting across the alternative assets industry. It should be noted that the format of the Cliffwater performance reports and this memorandum corresponds to SCERS' prior asset allocation. The newly approved asset allocation will be incorporated into future Cliffwater reports and Staff memorandums.

This memorandum will provide a recap of each alternative asset class' quarterly performance as presented within Cliffwater's performance summary report and supplemented by Townsend's quarterly real estate report. This memorandum will also highlight any recent alternative asset class investments made by SCERS and explain how the investment fits within the sub-asset class and market environment. Cliffwater, with commentary from Staff, will be presenting the attached report at the Board meeting.

### **Market Recap:**

Before the U.S. presidential election, it was widely predicted that a Trump victory would be a negative for the equities market. Instead, post-election, investor optimism for increased growth and inflation fueled by the potential fiscal stimulus, tax reform, and infrastructure spending by the new administration lead to a "Trump Bump" across markets. Early in the year, consensus was for muted growth and low rates for the near term, which has now shifted to a more optimistic assessment of the U.S. economy.

With expectations for economic growth, interest rate increases, and higher inflation, bond yields increased and conversely prices decreased. Rising yields reflect shifting expectations among investors of a faster pace of interest-rate increases by the Federal Reserve. With the backdrop of increasing interest rates and positive economic prospects, investors were particularly hungry for yield during the quarter. Since hitting lows in mid-February, the high yield bond market rallied strongly in the third and fourth quarters resulting in a 17.1% return for the year, driven primarily by CCC-rated bonds which posted over 30% returns for the year.

With the fourth quarter interest rate increases and the potential for multiple Fed rate increases in 2017, upward pressure has been placed on real estate cap rates. Real estate indicators would place the market cycle on the downside of the peak and clearly at the late stage of the cycle. Data points over the year such as declining transaction volumes, real estate appreciation flattening, rent growth slowing, and investment risks creeping in, indicate later stage cycle risk.

Energy prices rebounded after OPEC and key non-OPEC countries formalized production cuts to boost pricing. Oil's late rally led to the Bloomberg Commodity index returning +2.7% for the fourth quarter and 11.8% for the year, with the Russell 3000 Energy Index up +2.2% for the quarter and up +14.1% for the year. For the year, zinc (up +57.5%) was the best performer, while wheat (down -25.3%) was the worst performer.

For the fourth quarter, the returns for the Russell 3000 Index, the MSCI EAFE Index, the MSCI Emerging Markets Index, the Barclays Aggregate Index, the Bloomberg Commodity Index, the HFRI Fund-of-Funds Index (absolute return index) and the Cambridge Associates U.S. Private Equity Index were +3.4%, -0.7%, -4.2%, -3.0%, +2.7%, +1.1% and +3.8% (lagged one quarter), respectively.

### **Absolute Return:**

The absolute return sector and SCERS' Absolute Return portfolio generated positive returns for the fourth quarter. The HFRI Fund-of-Funds Composite Index was up +1.1% for the fourth quarter, compared to returns for the S&P 500, MSCI EAFE, MSCI Emerging Market and Barclays Aggregate Indices of +3.8%, -0.7%, -4.2%, and -3.0%, respectively. After a weak first half, SCERS' Absolute Return portfolio produced stronger returns for the second half of the year, with the fourth quarter return of +2.8% compared to SCERS' long-term absolute return benchmark, 90-day T-Bills +5% of +1.3%, and the SCERS' short-term absolute return benchmark, the HFRI Fund-of-Funds Composite Index, of +1.1%.

The SC Absolute Return Fund, LLC ('SCARF') managed by Grosvenor Capital Management, which invests in a portfolio of absolute return funds diversified by strategy and across geographies, was up +2.4% for the quarter, outperforming both the HFRI Fund-of-Funds Composite Index and the 90-day T-Bills +5% benchmark. Also managed by Grosvenor, SCARF B, a multi-strategy absolute return portfolio that serves as an interim absolute return placeholder to close the gap between SCERS' actual allocation and a target allocation of 10%, was up +1.2%, outperforming against the HFRI Fund-of-Funds Composite Index but underperforming the 90-day T-Bills +5% benchmark. Due to SCARF B's 'interim' strategy, it is expected to underperform compared to SCARF. SCARF B is meant as an interim allocation solution and a liquid placeholder for SCERS to make future direct fund investments.

SCERS' Direct Absolute Return portfolio was up +3.6% for the quarter. All direct sub-strategies produced positive returns except Third Point Partners (event driven), which was down -0.9%. The three best performing managers for the quarter included Claren Road Credit Partners, LP (credit/distressed), Lakewood Capital Partners, LP (equity long/short), and Brevan Howard, LP (macro-discretionary), returning +16.9%, +6.2%, and +6.6%, respectively. SCERS made a full redemption from Claren Road but due to the significant redemption requests, SCERS is being paid out over several quarters.

For the twelve months ending December 31, 2016, SCERS' Direct Absolute Return portfolio significantly outperformed the SCARF fund-of-funds (+5.3% versus +1.5%). The same holds true for the since inception period (+6.0% versus +4.0%). SCERS' Direct Absolute Return portfolio tends to have more exposure to less-correlated sub-strategies, while SCARF tends to have greater exposure to more growth-oriented sub-strategies. This compares to the 1-year HFRI Fund of Funds Composite Index of +0.7% and the 90-day T-Bills +5%, benchmarks of +5.3%.

For the fourth quarter and fiscal year-to-date, SCERS' absolute return sub-strategies delivered a wide range of strong performance, with the event driven and equity long/short strategies outperforming, while the multi-strategy uncorrelated strategies delivered muted returns. SCERS' event driven managers drew positive results from the robust corporate

mergers and acquisitions, and a rotation into risk assets, while global macro suffered negative returns.

First quarter 2017 to date, through January 31, 2017, SCERS' total Absolute Return program is up 1.04%, with the direct absolute return program up 0.70%, and the SCARF portfolios up 1.47%. These numbers compare to the HFRI Fund of Funds Composite Index and the 90-day T-Bills +5%, which are up 0.87% and up 0.45%, respectively.

SCERS takes a hybrid approach in constructing its Absolute Return mandate by combining a direct absolute return portfolio with Grosvenor's diversified SCARF and SCARF B fund-of-fund portfolios. The SCERS Absolute Return portfolio is intended to be a diversifier for SCERS' overall investment portfolio, while generating returns closely matching SCERS' total return objective with less volatility and downside risk. To achieve this return objective, a diversified Absolute Return portfolio of both positively and negatively correlated strategies is preferred.

While an analysis of SCERS' Absolute Return sub-strategies is informative, the weightings will vary as SCERS' makes more direct fund investments. The SCARF B portfolio, which is used to fund the direct investments, will decline resulting in the sub-strategy weights to change. However, long-term Staff anticipates SCERS' SCARF exposure will retain some allocation in the Absolute Return portfolio. All of the sub-strategy allocations in SCERS' Absolute Return portfolio are within the ranges set forth in SCERS' Absolute Return investment policy statement.

During the fourth quarter, SCERS made a \$35 million investment to Winton Diversified Futures Fund, a systematic macro manager, and a \$20 million additional investment to AQR Delta Fund, a diversified multi-strategy manager. During Q1'17, SCERS made a \$35 million investment to Graham Tactical Trend Fund, a systematic trend following manager.

### **Private Equity:**

Since inception through September 30, 2016, SCERS' Private Equity portfolio returned +10.5% net IRR, compared to the Cambridge Associates Private Equity Index return of +11.6%. SCERS' multiple of total value to paid in capital ('TVPI') is 1.26x since inception. SCERS' Private Equity returns continue to show improvement and are in line with the Cambridge benchmark, but as you will recall, SCERS' Private Equity portfolio remains earlier in its investment period (j-curve effect) compared to the index, especially for the direct program, which was initiated in 2011. The investment performance metrics are provided in Cliffwater's investment summary page of the quarterly private equity report.

SCERS' legacy fund-of-funds ('FoFs') investments are the most mature private equity allocations within the Private Equity portfolio. HarbourVest's vintage 2006 funds have generated a since inception net IRR of +10.0%, outperforming the Cambridge Fund-of-Fund's benchmark of +7.5%. HarbourVest's performance has been positively influenced by

significant allocations to discounted secondary investments post the 2008 global financial crisis. SCERS' vintage year 2008 funds managed by Abbott Capital, Goldman Sachs and HarbourVest International, which did not invest meaningfully in secondaries, have demonstrated mixed results, with since inception net IRRs of +10.5%, +10.7%, and +9.6%, respectively. This compares to their respective benchmark returns of +12.1%, +12.1%, and +8.1%.

HarbourVest's 2006 vintage year funds have drawn down 94% of committed capital, Abbott has drawn down 89%, Goldman Sachs has drawn down 83%, and HarbourVest International has drawn 88%.

The SCERS' Direct Private Equity portfolio, which includes the vintage year funds 2011, 2012 and 2013, are generating solid early performance. The vintage year funds' since inception returns are +21.9%, +12.1% and +6.9%, respectively, compared to their respective benchmark returns of +11.0%, +11.5%, and +8.5%. Notable outperforming funds include Waterland Private Equity Fund V (+40.2% net IRR); Khosla Ventures IV (+19.5% net IRR); New Enterprise Associates 14 (+17.3% net IRR); and Summit Partners Venture Capital III (+19.8% net IRR).

As of September 30, 2016, SCERS' private equity FoF's have called and invested \$213.3 million in capital compared to the \$236 million committed by SCERS. SCERS' direct private equity funds have called and invested \$406.2 million compared to the \$859.2 million committed by SCERS. The fair value of SCERS' Private Equity portfolio is \$569.4 million or 7.4% allocated, compared to SCERS' 10% target allocation amount of \$799.4 million. As a reminder, the target private equity allocation was reduced to 9% within the newly approved asset allocation, so a revised commitment pacing schedule will be brought to your Board over the next few months.

While SCERS is making progress towards filling out the private equity portfolio, given the deep J-curve effect predominate in the private equity sector, SCERS will need to continue making annual commitments over the next few years to close the allocation gap. The graphs in Section A-2 of Cliffwater's private equity report, provides greater detail on the actual to target allocation gap, including: (1) Commitments in only 2 vintage years prior to 2011; (2) 54% of capital drawn down to date; and, (3) The start of distributions that offset future contributions as well as lowering the portfolio market value. Despite the significant allocation gap, SCERS has made progress. SCERS' direct private equity commitments have increased considerably, and along with future investments and drawdowns, should bring the allocation gap closer to SCERS' prior 10% target.

Page A-1 in Cliffwater's private equity report provides the fair market values of SCERS' Private Equity investments across strategies and regions. While it is informative to assess the private equity portfolio by strategy type, sub-sector, and region, the reality is the sector weights will change as capital is called and additional commitments are made. Accordingly,

Staff and Cliffwater remain focused on new direct investment commitments based on future relative value considerations and access to the best private equity managers that are raising new funds.

While building out SCERS' Private Equity portfolio, Staff and Cliffwater prefer private equity managers with a hands-on value-add investment strategy, either through majority control or through minority control of the underlying businesses. In the private equity sector, Staff and Cliffwater believe the most successful private equity managers are those that increase the underlying portfolio company's value by bringing meaningful positive change to the business plan and operations. As we get later in the market cycle, Staff and Cliffwater remain vigilant of the inherent market risks, including increasing business valuations (particularly purchase multiples); significant amounts of investment capital pursuing the same highly rated fund managers; ever larger manager fund sizes to accommodate the high investor demand; and the tighter correlations of cyclical sectors to the economic cycle. These factors are translating to a deliberately measured and selective approach to new commitments by Staff and Cliffwater.

For the twelve months ending September 30, 2016, the overall US private equity sector generated a return of +8.5%, while the European Private Equity sector returned +13.2%. The US private equity sub-sectors returns have been mixed. The outperformer for the twelve month period was the Buyout sub-sector, returning +10.0%, while the weak performing sub-sector was Venture Capital returning +2.2%. Compared to the Russell 3000 Index, US private equity has underperformed over the 1- and 5-year reporting periods, but outperformed over the 10-year period. The 1-, 5-, and 10-year reporting period returns for US private equity are +8.5%, +13.8%, and +10.7%, while the Russell 3000 return over the same periods are +15.0%, +16.4%, and +7.4%.

During the fourth quarter, SCERS made a commitment to Dyal Capital Partners III, LP, a private equity manager that will acquire minority, non-control stakes in established and institutional private markets management firms (including private equity buyout; venture capital; infrastructure/energy; real estate and private debt), and is sponsored by the Neuberger Berman alternatives group.

### **Real Assets:**

Since inception through September 30, 2016, SCERS' Real Assets portfolio returned +7.0% net IRR with a TVPI of 1.2x, slightly underperforming against SCERS' real assets' benchmark of CPI +5% return of 7.2%. The Real Assets asset class includes allocations to several sub-asset classes including: (1) Core real estate (7% target); (2) Private real assets (6% target – this target increased to 7% as part of the recently approved asset allocation); and (3) Commodities (2% target). The Real Assets asset class has been structured with significant flexibility to allow sub-asset class allocations to move within ranges, which permits SCERS to take exposures down in one segment in favor of attractive risk-adjusted returns in another segment. Within SCERS' Real Assets portfolio, there are two investment structures,

commingled funds (open-end and closed-end) and customized separate accounts. The separate account allows SCERS to establish investment guidelines, underwrite a manager's investment recommendations, provide veto/preferred rights, and achieve better manager terms than investing in a commingled fund structure.

The performance of SCERS' Real Assets portfolio is significantly influenced by SCERS' core real estate portfolio. On page C-1 of Cliffwater's real assets report, each real asset investment fund is listed by vintage year or inception date and the performance of the investments are compared to its peer benchmark. For example, BlackRock Realty's total real estate portfolio has generated a since inception +12.0% net IRR compared to the NPI-ODCE Index net IRR of +8.9%. A more comprehensive review of SCERS' real estate investments can be found within the Townsend quarterly performance report and summarized in Staff's quarterly real estate performance memo. In addition, Cliffwater's quarterly report provides a performance summary for the entire real estate portfolio. In total, the SCERS real estate portfolio generated a third-quarter net IRR of +0.4%, a 1-year +7.7% net IRR, and a since inception net IRR of 8.3%.

Since its inception in 2008, SCERS' commodities portfolio has generated a -7.0% net IRR. Despite the negative return, SCERS' portfolio outperformed against the Bloomberg Commodity Index -8.4% IRR. The Blackstone Resources Select fund has produced relative outperformance since inception at -4.6% net IRR, while the Gresham Strategic Commodities Fund has underperformed at -10.0% net IRR. Gresham's underperformance is attributed to its vintage year of 2008 when the oil market peaked and just before the global financial crisis. Unfortunately, SCERS' investment in Gresham was deployed all at once in 2008 rather than incrementally, compounding the underperformance.

As mentioned in previous reports, SCERS' commodities portfolio has been particularly impacted by the dramatic sell-off in global commodity prices, primarily oil, in late 2014 and into the early parts of 2016. The catalyst for the sell-off was mostly oil supply driven, but softening energy demand contributed as well. However, oil and energy prices rebounded in early 2016; yet prices are still 50% below their peak. Oil prices will remain an outsized influence on commodity returns and ongoing volatility should be expected. As you will recall, SCERS' portfolio also has commodity exposure through the SSGA Real Assets Strategy (a proxy for the Real Assets asset class), which has commodity and natural resource stock exposure. SCERS also has indirect energy exposure through its other asset classes.

Within private real assets, Staff and Cliffwater continue to seek unique investment opportunities that display attractive risk-adjusted returns, lower correlations to the broader economy, provide greater current cash flow, and can hedge against an increase in inflation. Private real asset investments can be made either within a customized separate account (with larger commitment sizes) or through a commingled fund (closed-end and open-end). Examples of a separate account structure include SCERS' \$100 million commitment made in the first quarter of 2015 to a debt backed by real assets strategy managed by Atalaya Capital

Management and a \$100 million commitment made in the second quarter of 2015 to an infrastructure secondary investment and co-investment strategy managed by Pantheon Investments.

Within the Real Assets asset class, the State Street Global Advisors ('SSGA') Real Assets Strategy is used as a proxy in the overlay program to replicate real asset exposures. Due to the large gap between the private real assets' actual and target allocation within SCERS' Real Assets portfolio, the proxy is rather large (\$314.7 million as of December 31, 2016); however, as additional commitments are made over time the gap will begin to decrease. The SSGA proxy is comprised primarily of liquid publicly traded securities, including a blend of commodities, global infrastructure stocks, global natural resource stocks, Treasury Inflation Protected Securities ('TIPS'), global REITs, and midstream energy-focused master limited partnerships ('MLPs'). Since the SSGA Real Assets Strategy is a proxy and not meant as a permanent component of SCERS' Real Assets portfolio, Cliffwater includes two quarterly performance summaries (section C-1) for the real assets section, one that includes the SSGA Real Assets proxy and one that excludes the proxy. Including the SSGA proxy, the Real Assets' since inception return is 7.0% net IRR and excluding the proxy, the since inception return is 7.8% net IRR.

The target allocation for private real assets is 6.0%, which approximately 5.8% has been committed (as of September 30, 2016) and only 2.0% has been invested to date. The target allocation for SCERS' private real assets portfolio is expected by 2019, with a good chunk of the gap to be closed over the next 18 to 24 months, in part due to capital commitments being drawn down. In the meantime, the SSGA proxy exposes SCERS to public market basis risk compared to the risk-return profile of private real assets.

The twelve-month returns for the Real Assets market sub-sectors were widely dispersed. The strong performing sub-sectors were public listed Infrastructure at +15.3%, public listed Energy at +14.1%, and private Infrastructure at +12.5%, while the weak performers were private Energy at -0.5%, private Timber at 3.3%, and public listed MLPs at 5.9%.

During the fourth quarter, SCERS made an additional commitment to Townsend Real Estate Fund, LP, a core real estate open-end fund.

### **Opportunities:**

Since inception through September 30, 2016, SCERS' Opportunities portfolio returned a +8.6% net IRR, exceeding SCERS' long-term benchmark (SCERS' actuarial rate of return) of +7.5%. SCERS' investments in several distressed debt funds coming out of the global financial crisis outperformed SCERS' opportunities benchmark and as a group returned a +18.8% net IRR. Investment in the distressed debt funds was made during the vintage years 2007, 2008 and 2009, which have since distributed all capital and all gains back to SCERS.



SCERS' other legacy Opportunities investments include several value-add real estate funds made during the 2006/2007 period, which have significantly underperformed against SCERS' benchmark, and as a group have generated a +0.7% net IRR. Since their inceptions, UBS Allegis Value Trust, AEW Value Investors II, L.P., and Hines US Office Value Added Fund II, L.P. have generated net IRRs of +3.1%, +5.8%, and -6.2%, respectively. The poor performance of these funds is in large part due to the global financial crisis, in which most investments were made during this period when investment values were at their peak and the use of leverage was high. With a focus on office properties, which suffered the most during the downturn, Hines' returns are predictably the worst. While the since inception returns of UBS, AEW, and Hines trail the benchmark, over the last three years they have recovered somewhat and are generating positive returns.

Over the past few years, SCERS has made commitments to several value-add and opportunistic real estate funds, which draw capital from the Real Assets asset class, and are still in their investment phase and have yet to make a meaningful positive contribution to SCERS' Real Assets returns to date. Staff and Townsend believe the recent value-add and opportunistic real estate commitments made are better positioned over this cycle, particularly as compared to those committed in 2006 and 2007. The recent commitments represent a better relative value compared to US core real estate returns. There are a number of examples of recent fund investments generating significant returns, but two notable examples are ECE European Prime Retail Fund II (31.3% since inception net IRR) and NREP Nordic Strategies Fund I (35.2% since inception net IRR) as reported by Townsend in their fourth quarter real estate report.

During the fourth quarter, SCERS did not make any Opportunities commitments.

We will be happy to answer any questions you might have.

Respectfully submitted,

Concur:

JR Pearce  
Investment Officer

Richard Stensrud  
Chief Executive Officer

Steve Davis  
Chief Investment Officer

Attachment



INVESTMENT ADVISORY SERVICES

Los Angeles • New York

## Sacramento County Employees' Retirement System Quarterly Performance Review

March 15, 2017



## *Executive Summary*

## Absolute Return Portfolio Performance Summary – as of January 31, 2017

The Absolute Return portfolio returned 6.41% FYTD and 6.83% for the 1 year period ending January 31, 2017

- Seeing a continued resurgence of alpha generation over these periods
  - Outperforming the HFRI Fund of Funds Index by 233 bps (FYTD) and 267 bps (1 year)
  - Also outperforming the long-term benchmark of T-bills + 5%, which equaled 3.12% (FYTD) and 5.37% (1 year)

The direct portfolio outperformed the Grosvenor accounts over the last year

- +7.96% return for the direct portfolio
  - Lakewood (+17.2%), Elliott (+16.4%) and Third Point (+12.9%) led performance over the last year
    - All of the SCERS' direct hedge funds produced positive returns over the last year
  - Laggards included Brevan Howard (+0.9%), Laurion (+1.9%), and AQR DELTA (+1.9%)
- +5.99% return for the Grosvenor separate accounts
  - SCARF A returned +7.4% while SCARF B returned +3.2%
  - The third Grosvenor portfolio is residual holdings from SCERS' previous fund of fund investment (results not meaningful)

Longer-term performance results remain positive, though lag the long-term T-bill + 5% benchmark

- 3 year annualized return of 2.12% for the Absolute Return portfolio
  - The HFRI Fund of Funds Index returned 1.62% over this period
  - 5.15% return for SCERS' long-term benchmark of T-bills + 5%

SCERS' staff and Cliffwater also track the portfolio's risk characteristics against the MSCI ACWI

- Expect AR portfolio to have half the volatility of the ACWI, with a correlation of 0.5 or less, over the long term
  - The AR portfolio is meeting its volatility objective; correlation is slightly higher than target
    - Portfolio standard deviation of 3.50% compared to the ACWI standard deviation of 11.24% since December 2011
    - Portfolio correlation with the ACWI has been 0.69, with a beta of only 0.21

# Absolute Return Portfolio Performance – as of January 31, 2017

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Jan	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
<b>Market Neutral</b>													
Laurion Capital, Ltd.	41,679,950	5.8%	-0.52%	-0.52%	-0.52%	2.81%	1.90%	-	-	6.17%	5.58%	1.02	Mar-14
<b>Credit/Distressed</b>													
Claren Road Credit Partners, LP	2,550,981	0.4%	0.00%	0.00%	0.00%	10.24%	11.23%	-5.83%	-1.60%	-1.60%	10.22%	-0.15	Feb-12
<b>Event Driven</b>													
Elliott International Limited	49,829,224	6.9%	2.13%	2.13%	2.13%	9.67%	16.38%	6.99%	-	8.27%	3.69%	2.08	Apr-12
JANA Partners Qualified, L.P.	38,704,920	5.3%	0.63%	0.63%	0.63%	9.64%	7.46%	0.35%	-	2.85%	8.29%	0.33	Jul-13
Third Point Partners Qualified L.P.	42,951,501	5.9%	2.60%	2.60%	2.60%	6.72%	12.93%	5.47%	-	10.70%	7.54%	1.34	May-12
<b>Equity Long/Short</b>													
Lakewood Capital Partners, LP	42,445,961	5.9%	1.09%	1.09%	1.09%	12.03%	17.22%	7.84%	-	7.89%	7.55%	0.99	Jul-13
<b>Global Macro</b>													
Brevan Howard LP	35,323,124	4.9%	-1.47%	-1.47%	-1.47%	2.61%	0.91%	-	-	0.32%	5.73%	0.00	Mar-14
Winton Diversified Futures Fund L.P.	34,607,241	4.8%	-1.12%	-1.12%	-1.12%	-	-	-	-	-1.12%	-	-	Jan-17
<b>Multi-Strategy</b>													
AQR DELTA Fund II, LP	69,589,233	9.6%	0.25%	0.25%	0.25%	5.13%	1.85%	7.50%	-	5.87%	5.27%	1.03	May-13
OZ Domestic Partners II, L.P.	42,647,013	5.9%	2.18%	2.18%	2.18%	8.54%	8.15%	3.46%	6.96%	7.16%	4.69%	1.42	Jan-12
Direct Hedge Funds Portfolio	400,329,147	55.3%	0.70%	0.70%	0.70%	6.93%	7.96%	3.62%	5.82%	6.04%	3.33%	1.66	Jan-12
<b>Fund of Funds</b>													
Grosvenor Institutional US Hedged Fund	245,736	0.0%	-0.29%	-0.29%	-0.29%	-5.49%	-3.30%	-2.31%	0.36%	1.76%	7.36%	0.05	Sep-04
Grosvenor SC Absolute Return Fund LLC	254,245,425	35.1%	1.67%	1.67%	1.67%	7.06%	7.44%	1.01%	5.17%	5.24%	4.31%	1.11	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	69,025,797	9.5%	0.74%	0.74%	0.74%	3.92%	3.19%	0.62%	-	3.25%	3.54%	0.80	Feb-13
Fund of Funds Portfolio	323,516,958	44.7%	1.47%	1.47%	1.47%	6.06%	5.99%	0.92%	4.92%	4.06%	6.10%	0.41	Sep-04
<b>SCERS Absolute Return Portfolio</b>	<b>723,846,105</b>	<b>100.0%</b>	<b>1.04%</b>	<b>1.04%</b>	<b>1.04%</b>	<b>6.41%</b>	<b>6.83%</b>	<b>2.12%</b>	<b>5.44%</b>	<b>4.27%</b>	<b>6.00%</b>	<b>0.45</b>	<b>Sep-04</b>
<b>Benchmarks</b>													
3 Month T-Bills+5%			0.45%	0.45%	0.45%	3.12%	5.37%	5.15%	5.13%	6.33%	0.52%	-	Sep-04
HFRI Fund of Funds Composite Index			0.87%	0.87%	0.87%	4.08%	4.16%	1.62%	3.23%	3.00%	5.23%	0.27	Sep-04
<b>Market Indices</b>													
Libor3Month			0.09%	0.09%	0.09%	0.53%	0.80%	0.46%	0.41%	1.68%	0.54%	-	Sep-04
Barclays Aggregate Bond Index			0.20%	0.20%	0.20%	-2.34%	1.46%	2.60%	2.10%	4.16%	3.21%	0.76	Sep-04
Barclays High Yield Credit Bond Index			1.45%	1.45%	1.45%	8.97%	20.78%	4.93%	7.04%	7.79%	9.78%	0.64	Sep-04
S&P 500 TR			1.90%	1.90%	1.90%	9.87%	20.04%	10.85%	14.09%	8.24%	14.03%	0.52	Sep-04
MSCI AC World Index Free - Net			2.73%	2.73%	2.73%	9.47%	17.93%	5.49%	8.72%	6.70%	15.73%	0.39	Sep-04
MSCI EAFE - Net			2.90%	2.90%	2.90%	8.74%	12.03%	0.71%	6.04%	5.23%	17.38%	0.29	Sep-04
MSCI EMF (Emerging Markets Free) - Net			5.47%	5.47%	5.47%	10.20%	25.41%	1.44%	0.19%	8.58%	22.69%	0.41	Sep-04

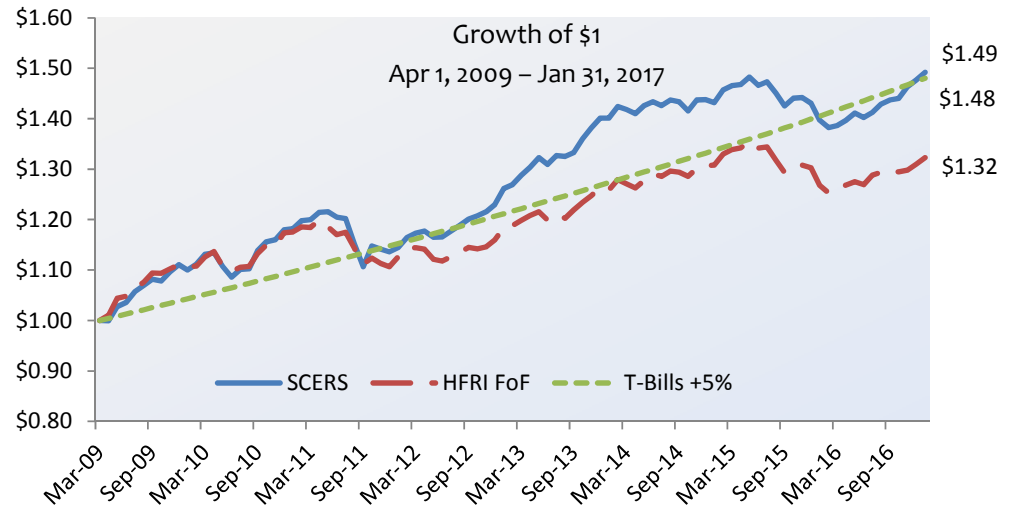
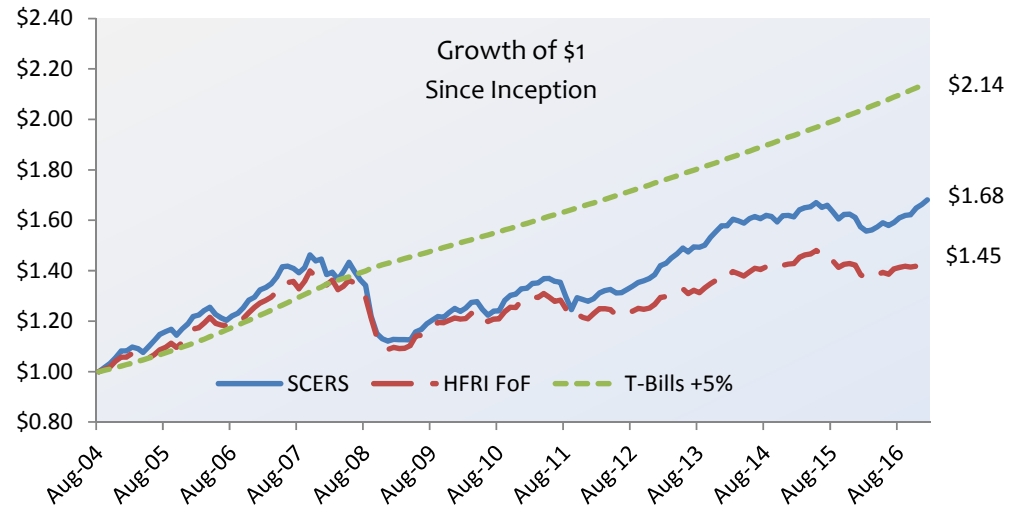
# Absolute Return Portfolio Performance – as of January 31, 2017

The Absolute Return portfolio has outperformed the Fund of Funds Index, with slightly higher volatility, since the program's inception in 2004

- Outperformance has increased since redesigning the portfolio at the end of 2011

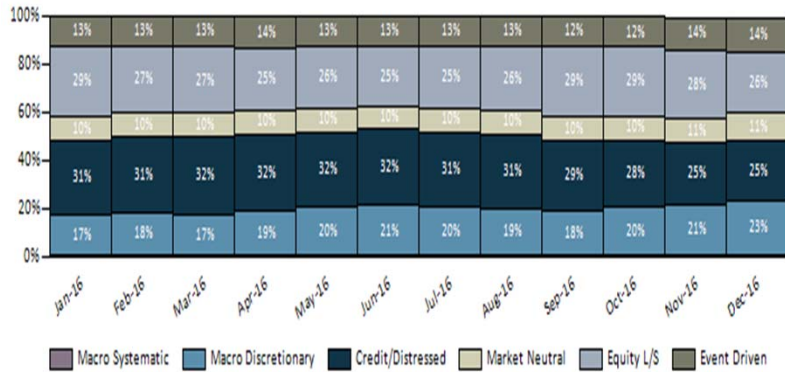
The Absolute Return portfolio has also outperformed its long-term T-bills + 5% benchmark since the '08 Financial Crisis

- The portfolio continued to outperform the Fund of Funds Index as well

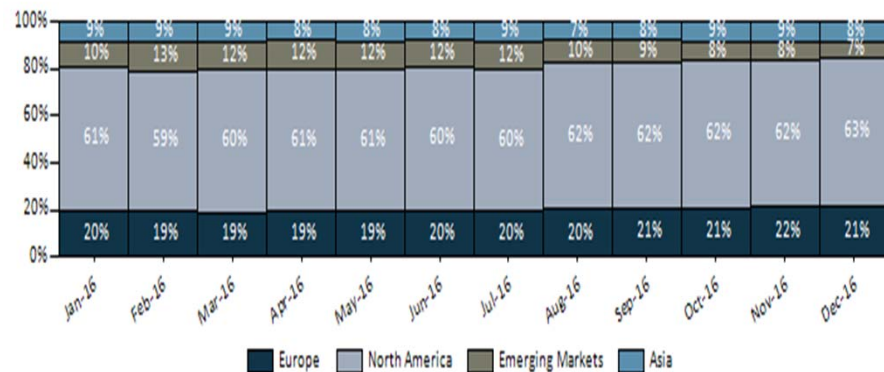


# Absolute Return Portfolio Characteristics – as of December 31, 2016

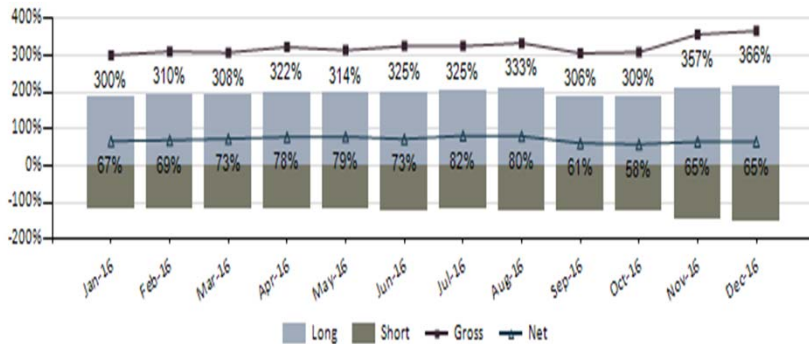
Portfolio “Look Through” Strategy Allocations



Portfolio Geographical Breakdown



Portfolio Leverage



The SCERS Absolute Return portfolio is adequately diversified among strategies and geographies

- However, SCERS has recently added more market neutral and systematic macro exposure in the direct portfolio

Portfolio leverage remains appropriate and in-line with leverage for other large institutional investors

- 366% gross exposure, 65% net exposure
- Recent increase in gross exposure is driven primarily by increases in the Grosvenor portfolios and Brevan Howard

## Private Equity Portfolio – as of September 30, 2016

The Private Equity portfolio's net IRR since inception is 10.48%, versus the Cambridge Associates benchmark IRR of 11.60%

- The long-term benchmark (Russell 1000 + 3%) has a 14.38% IRR over this period

The private equity portfolio reported gains over a quarter that saw solidly rising global equity markets

- Strongest gains came among buyout and venture capital funds
  - Waterland V, Summit VC III, Khosla Ventures IV, and NEA 14 reported the largest gains during the quarter
- Continued meaningful distributions from a number of the direct fund investments as well as the fund of funds
  - Athyrium II, Wayzata III, RRJ II, and Waterland V led distributions within directs; GS X distributed nearly \$9 million in Q3

Continued strong performance of the initial direct fund investments

- Double-digit net IRRs for the first vintage years of directs: 21.9% (2011) and 12.1% (2012)
  - Waterland V (40.3%), Marlin Heritage (25.7%), Summit VC III (19.8%), Khosla IV (19.5%), & NEA 14 (17.3%) are leading performance

The fund of funds reported solid gains overall during the quarter

- Aggregate net IRR and total value (TVPI) increased moderately during the quarter
  - The aggregate fund of funds' net IRR is 10.39% with a 1.44x TVPI
- All of the fund of funds reported gains for the quarter
  - HarbourVest VIII has generated the best relative performance, HarbourVest International also leads its benchmark
- Abbott Capital and Goldman Sachs continue to lag peer vintage year fund of funds
- The fund of funds comprise less than one third of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed €13 million to Marlin Heritage Europe (small European buyouts) during Q3 2016
  - SCERS also committed \$35 million to Dyal III (minority investments in private equity firms) in Q4 2016
- \$35.6 million in new contributions, \$31.1 million in distributions
- Portfolio IRR increased 0.73% while the total portfolio gain increased by \$26.0 million



## Private Equity Portfolio Characteristics as of September 30, 2016

The SCERS Private Equity portfolio is diversified by strategy and geography

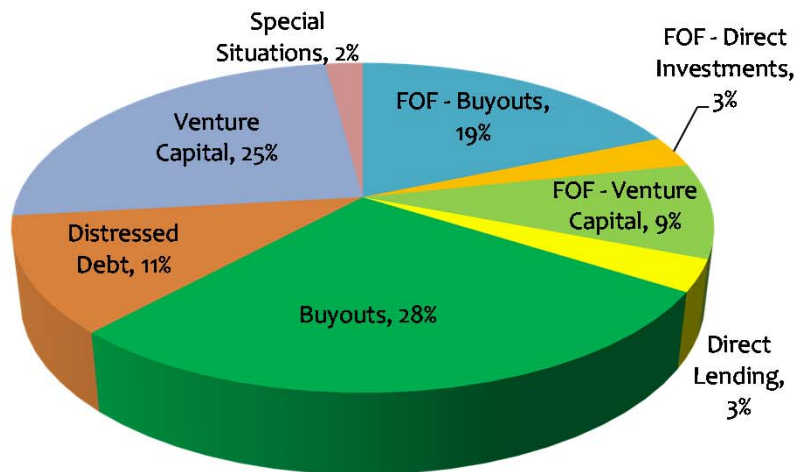
- Investments remain focused in North America, with meaningful exposure to Europe

Exposure to direct fund investments (as opposed to fund of funds) continues to increase

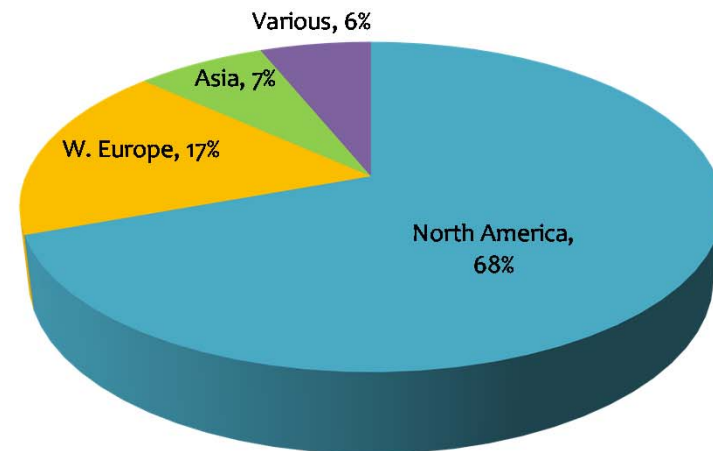
- Investments from direct private equity funds represent 69% of the total portfolio's value as of September 30, 2016

Portfolio strategy and geographic allocations, based on fair market value of invested capital, shown below

Market Value Strategy Exposure\*



Market Value Geographic Exposure\*



\* Exposures are based on the market values of investments as of 9/30/16

# Private Equity Portfolio Performance Details – as of September 30, 2016

Partnership (\$ in thousands)	Strategy	(A) Commitment Amount	Unfunded Amount	(B) Cumulative Contributions	% Drawn	(C) Cumulative Distributions	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Benchmark <sup>1</sup>	TVPI
<b>Vintage Year 2006</b>												
HarbourVest Partners VIII - Buyout Fund L.P.	Fund of Funds	37,500	2,625	34,875	93%	33,744	20,992	54,736	19,861	10.18%	7.48%	1.57x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	275	4,725	95%	4,250	2,252	6,501	1,776	8.09%	7.48%	1.38x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	188	7,313	98%	6,357	5,842	12,199	4,887	10.42%	7.48%	1.67x
<b>Vintage Year 2006 Total</b>		<b>50,000</b>	<b>3,088</b>	<b>46,913</b>	<b>94%</b>	<b>44,351</b>	<b>29,085</b>	<b>73,436</b>	<b>26,524</b>	<b>10.05%</b>	<b>7.50%</b>	<b>1.57x</b>
<b>Vintage Year 2008</b>												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	8,625	66,375	89%	24,751	64,548	89,299	22,924	10.47%	12.13%	1.35x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	12,642	68,340	83%	46,902	52,771	99,673	31,334	10.69%	12.13%	1.46x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	36,100	8,123	31,698	88%	9,043	31,718	40,760	9,062	9.65%	8.05%	1.29x
<b>Vintage Year 2008 Total</b>		<b>186,100</b>	<b>29,389</b>	<b>166,413</b>	<b>86%</b>	<b>80,696</b>	<b>149,037</b>	<b>229,733</b>	<b>63,320</b>	<b>10.46%</b>	<b>8.69%</b>	<b>1.38x</b>
<b>Vintage Year 2011</b>												
Waterland Private Equity Fund V, L.P.	Buyout	17,938	4,899	14,309	80%	17,040	13,734	30,774	16,465	40.25%	10.04%	2.15x
Summit Partners Credit Fund, LP	Opportunistic Credit	20,000	0	20,697	102%	15,387	10,566	25,954	5,257	9.65%	8.93%	1.25x
Khosla Ventures IV	Venture Capital	10,000	600	9,400	94%	956	14,683	15,638	6,238	19.54%	14.90%	1.66x
<b>Vintage Year 2011 Total</b>		<b>47,938</b>	<b>5,499</b>	<b>44,405</b>	<b>92%</b>	<b>33,383</b>	<b>38,983</b>	<b>72,366</b>	<b>27,961</b>	<b>21.87%</b>	<b>11.02%</b>	<b>1.63x</b>
<b>Vintage Year 2012</b>												
Garrison Opportunity Fund III, LLC	Distressed Debt	20,000	0	20,000	100%	5,447	14,914	20,361	361	0.62%	9.92%	1.02x
New Enterprise Associates 14	Venture Capital	25,000	1,500	23,500	94%	1,987	32,693	34,679	11,179	17.27%	12.79%	1.48x
Summit Partners Venture Capital III, LP	Venture Capital	16,350	0	16,350	100%	0	25,860	25,860	9,510	19.79%	12.79%	1.58x
<b>Vintage Year 2012 Total</b>		<b>61,350</b>	<b>1,500</b>	<b>59,850</b>	<b>98%</b>	<b>7,434</b>	<b>73,467</b>	<b>80,901</b>	<b>21,051</b>	<b>12.11%</b>	<b>11.53%</b>	<b>1.35x</b>
<b>Vintage Year 2013</b>												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	4,761	10,239	68%	1,843	9,844	11,688	1,449	10.86%	10.37%	1.14x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	11,032	2,968	21%	0	2,596	2,596	-373	-8.31%	10.37%	0.87x
Marlin Equity IV, L.P.	Buyout	20,000	9,431	10,569	53%	60	12,007	12,067	1,498	8.88%	10.37%	1.14x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	5,447	34,304	84%	13,719	26,314	40,034	5,730	9.69%	8.81%	1.17x
H.I.G. Bayside Loan Opportunity Fund III (Europe), L.P.	Distressed Debt	30,000	13,840	16,160	54%	3,733	15,637	19,370	3,210	8.32%	4.99%	1.20x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	20,085	14,490	33%	4,602	9,461	14,063	-427	-1.97%	7.31%	0.97x
Trinity Ventures XI	Venture Capital	25,000	9,063	15,938	64%	0	17,738	17,738	1,801	5.25%	10.39%	1.11x
<b>Vintage Year 2013 Total</b>		<b>169,000</b>	<b>73,658</b>	<b>104,668</b>	<b>56%</b>	<b>23,958</b>	<b>93,597</b>	<b>117,555</b>	<b>12,887</b>	<b>6.85%</b>	<b>8.51%</b>	<b>1.12x</b>
<b>Vintage Year 2014</b>												
Dyal Capital II, L.P.	Buyout	35,000	24,990	10,574	29%	621	8,467	9,088	-1,485	-12.06%	11.10%	0.86x
H.I.G. Europe Capital Partners II, L.P.	Buyout	15,696	15,506	232	1%	0	-437	-437	-669	-100.00%	1.73%	-1.89x
Marlin Heritage, L.P.	Buyout	10,000	3,588	6,412	64%	1,411	6,921	8,332	1,920	25.66%	11.10%	1.30x
Thoma Bravo Fund XI, L.P.	Buyout	30,000	578	29,422	98%	0	32,620	32,620	3,198	8.55%	11.10%	1.11x
TPG Opportunities Partners III	Distressed Debt	40,000	23,512	20,909	41%	4,923	17,728	22,651	1,742	8.88%	6.41%	1.08x
Summit Partners Credit Fund II, L.P.	Opportunistic Credit	35,000	12,148	22,852	65%	1,761	23,075	24,836	1,984	8.79%	7.35%	1.09x
Khosla Ventures V, L.P.	Venture Capital	20,000	12,180	7,820	39%	0	7,854	7,854	34	N/M	N/M	1.00x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	13,125	11,875	48%	0	11,914	11,914	39	0.29%	4.56%	1.00x
<b>Vintage Year 2014 Total</b>		<b>210,696</b>	<b>105,627</b>	<b>110,095</b>	<b>50%</b>	<b>8,716</b>	<b>108,142</b>	<b>116,858</b>	<b>6,763</b>	<b>5.45%</b>	<b>7.69%</b>	<b>1.06x</b>

<sup>1</sup>Benchmarks:

Private Equity Investments: Cambridge Associates median return for the respective strategies and vintage years

Vintage Year Comparison: Cambridge Associates Global Private Equity & Venture Capital median return for the respective vintage years

Private Equity Portfolio: Cambridge Associates Global Private Equity & Venture Capital pooled internal rate of return

# Private Equity Portfolio Performance Details – as of September 30, 2016 (continued)

Partnership (\$ in thousands)	Strategy	(A)		(B)		(C)		(D) Fair	(C+D) Total	(C+D-B)	IRR	TVPI
		Commitment Amount	Unfunded Amount	Cumulative Contributions	% Drawn	Cumulative Distributions	Value	Value	Gain/Loss	Net IRR		
<b>Vintage Year 2015</b>												
RRJ Capital Master Fund III, L.P.	Buyout	40,000	37,049	2,951	7%	0	2,855	2,855	-96	N/M	N/M	0.97x
WPEF VI Feeder, L.P.	Buyout	26,907	24,322	2,529	9%	0	2,511	2,511	-17	N/M	N/M	0.99x
WPEF VI Overflow Fund C.V.	Buyout	6,727	6,718	9	0%	0	1	1	-7	N/M	N/M	0.14x
Athyrium Opportunities Fund II	Distressed Debt	32,000	8,095	26,200	75%	7,599	20,359	27,959	1,759	N/M	N/M	1.07x
Accel-KKR Growth Capital Partners II, L.P.	Mezzanine	15,000	12,198	2,802	19%	0	2,377	2,377	-426	-15.91%	10.16%	0.85x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	20,300	14,704	42%	0	15,392	15,392	688	N/M	N/M	1.05x
Summit Partners Venture Capital IV, L.P.	Venture Capital	35,000	31,243	3,757	11%	0	3,880	3,880	123	N/M	N/M	1.03x
<b>Vintage Year 2015 Total</b>		<b>190,634</b>	<b>139,924</b>	<b>52,952</b>	<b>27%</b>	<b>7,599</b>	<b>47,376</b>	<b>54,976</b>	<b>2,024</b>	<b>5.17%</b>	<b>-2.64%</b>	<b>1.04x</b>
<b>Vintage Year 2016</b>												
Accel-KKR Capital Partners V, LP	Buyout	25,000	25,000	0	0%	0	-247	-247	-247	N/M	N/M	N/A
Linden Capital Partners III L.P.	Buyout	35,000	25,123	9,877	28%	0	8,953	8,953	-923	N/M	N/M	0.91x
Marlin Heritage Europe, L.P.	Buyout	14,575	14,575	0	0%	0	N/A	0	0	N/M	N/M	N/A
Thoma Bravo Fund XII, L.P.	Buyout	30,000	24,977	5,021	17%	2,781	1,915	4,697	-325	N/M	N/M	0.94x
TSG7 A L.P.	Buyout	16,000	13,573	2,427	15%	0	2,219	2,219	-209	N/M	N/M	0.91x
TSG7 B L.P.	Buyout	4,000	3,713	287	7%	0	233	233	-54	N/M	N/M	0.81x
Atalaya Special Opportunities Fund VI, L.P.	Distressed Debt	25,000	11,500	13,753	54%	0	14,170	14,170	417	N/M	N/M	1.03x
Trinity Ventures XII, L.P.	Venture Capital	30,000	27,150	2,850	10%	0	2,461	2,461	-389	N/M	N/M	0.86x
<b>Vintage Year 2016 Total</b>		<b>179,575</b>	<b>145,610</b>	<b>34,215</b>	<b>19%</b>	<b>2,781</b>	<b>29,705</b>	<b>32,486</b>	<b>-1,729</b>	<b>N/M</b>	<b>N/M</b>	<b>0.95x</b>
<b>Portfolio Total:</b>		<b>1,095,292</b>	<b>504,295</b>	<b>619,510</b>	<b>54%</b>	<b>208,918</b>	<b>569,392</b>	<b>778,310</b>	<b>158,800</b>	<b>10.48%</b>	<b>11.60%</b>	<b>1.26x</b>
<b>Portfolio Strategy Totals</b>												
Buyout		248,575	161,340	87,797	35%	6,718	85,528	92,246	4,449	4.77%		1.05x
Distressed Debt		147,000	63,191	95,351	57%	22,572	76,632	99,204	3,852	3.06%		1.04x
Fund of Funds		200,000	24,354	181,627	88%	116,004	146,404	262,408	80,781	10.39%		1.44x
Mezzanine		15,000	12,198	2,802	19%	0	2,377	2,377	-426	-15.91%		0.85x
Opportunistic Credit		55,000	12,148	43,548	79%	17,148	33,641	50,789	7,241	9.42%		1.17x
Venture Capital		221,350	115,161	106,194	48%	2,943	132,476	135,418	29,224	13.67%		1.28x
Non-US		208,367	115,903	102,191	47%	43,535	92,334	135,868	33,678	14.59%		1.33x
<b>Portfolio Total:</b>		<b>1,095,292</b>	<b>504,295</b>	<b>619,510</b>	<b>54%</b>	<b>208,918</b>	<b>569,392</b>	<b>778,310</b>	<b>158,800</b>	<b>10.48%</b>	<b>11.60%</b>	<b>1.26x</b>

<sup>1</sup>Benchmarks:

Private Equity Investments: Cambridge Associates median return for the respective strategies and vintage years

Vintage Year Comparison: Cambridge Associates Global Private Equity & Venture Capital median return for the respective vintage years

Private Equity Portfolio: Cambridge Associates Global Private Equity & Venture Capital pooled internal rate of return

# Real Assets Portfolio – as of September 30, 2016

The Real Assets portfolio’s net IRR since inception is 7.02% including the overlay performance, and 7.77% without the overlay

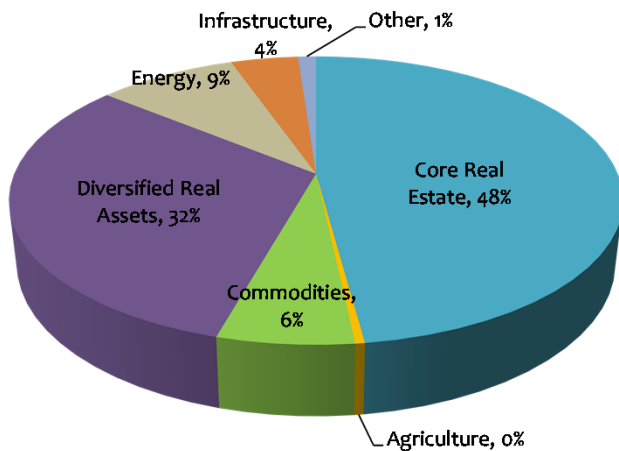
- The benchmark returned 7.17% during this period (benchmark equals CPI+5%)

Commodity prices fell in Q3, particularly among non-energy commodities; crude oil prices (WTI) dropped 3.8% during the quarter

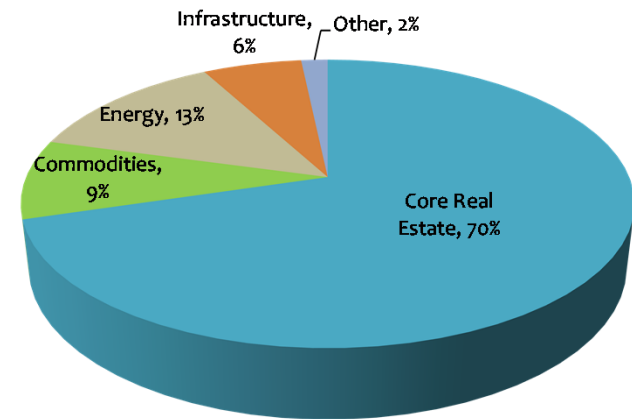
- Commodities declined by 4%, MLPs gained 1%, and natural resource equities increased nearly 6% in Q3
- SSgA Real Assets returned 1.07% during the quarter, just below the benchmark’s 1.15% return
  - Performance benefitted primarily from natural resource equities, MLPs, and listed infrastructure exposure
- Blackstone Commodities returned -4.7% and Gresham returned -4.1%; the benchmark returned -3.9%
- Quantum VI and First Reserve Infrastructure II reported solid gains during the quarter
- SCERS core real estate again posted positive performance, returning roughly 2% during the quarter

## Changes during the quarter

- SCERS committed \$25 million to ACM Fund II (agriculture) during Q3 2016
- \$161.1 million in new contributions, \$79.4 million in distributions (largely real estate and SSgA overlay rebalancings)
- Portfolio IRR increased 0.02%, total portfolio gain increased by \$20.0 million



Portfolio Strategy Exposures\*  
With overlay (left graph)  
Without overlay (right graph)



\* Exposures are based on the market values of investments as of 9/30/16

## Real Assets Portfolio Performance Details – as of September 30, 2016

Partnership (\$ in thousands)	Strategy	(A)		(B)		(C)		(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	Benchmark <sup>1</sup>	TVPI
		Commitment Amount	Unfunded Amount	Cumulative Contributions	% Drawn	Cumulative Distributions							
<b>Vintage Year 1998</b>													
BlackRock Realty Portfolio I	Core RE	826,937	0	826,942	100.00%	1,033,446	146,032	1,179,478	352,536	12.01%	8.92%	1.43x	
Vintage Year 1998 Total		826,937	0	826,942	100.00%	1,033,446	146,032	1,179,478	352,536	12.01%		1.43x	
<b>Vintage Year 2002</b>													
BlackRock Realty Portfolio II	Core RE	150,488	7	150,482	100.00%	172,819	44,282	217,101	66,619	8.35%	8.25%	1.44x	
Vintage Year 2002 Total		150,488	7	150,482	100.00%	172,819	44,282	217,101	66,619	8.35%		1.44x	
<b>Vintage Year 2004</b>													
Barings Real Estate	Core RE	255,242	0	255,242	100.00%	267,862	61,495	329,357	74,115	5.09%	8.24%	1.29x	
*Cornerstone Patriot Fund	Core RE	50,000	0	50,000	100.00%	94,447	0	94,447	44,447	6.51%	12.64%	1.89x	
Vintage Year 2004 Total		305,242	0	305,242	100.00%	362,309	61,495	423,804	118,562	5.55%		1.39x	
<b>Vintage Year 2005</b>													
*BlackRock Granite Property Fund	Core RE	70,434	0	70,434	100.00%	62,599	0	62,599	-7,835	-2.05%	5.04%	0.89x	
Vintage Year 2005 Total		70,434	0	70,434	100.00%	62,599	0	62,599	-7,835	-2.05%		0.89x	
<b>Vintage Year 2008</b>													
Blackstone Resources Select Fund	Commodities	60,000	0	60,000	100.00%	0	40,960	40,960	-19,040	-4.58%	-8.43%	0.68x	
Gresham Strategic Commodities Fund Ltd.	Commodities	60,000	0	60,000	100.00%	0	24,896	24,896	-35,104	-10.00%	-8.43%	0.41x	
State Street Real Assets Strategy	Diversified RA	1,198,738	0	1,198,738	100.00%	876,588	341,789	1,218,377	19,639	1.43%	0.71%	1.02x	
Vintage Year 2008 Total		1,318,738	0	1,318,738	100.00%	876,588	407,645	1,284,233	-34,505	-1.52%		0.97x	
<b>Vintage Year 2013</b>													
Jamestown Premier Property Fund	Core RE	15,000	0	17,518	100.00%	4,052	19,276	23,329	5,811	12.70%	12.45%	1.33x	
MetLife Core Property Fund	Core RE	35,000	0	39,535	100.00%	4,535	50,169	54,704	15,169	13.99%	12.45%	1.38x	
MS Prime Property Fund	Core RE	35,000	0	39,875	100.00%	4,875	50,128	55,003	15,128	13.02%	12.64%	1.38x	
EnCap Energy Capital Fund IX, L.P.	Energy	33,000	6,322	29,236	80.84%	7,571	27,617	35,188	5,951	13.91%	-1.74%	1.20x	
Vintage Year 2013 Total		118,000	6,322	126,164	94.64%	21,033	147,190	168,224	42,060	13.43%		1.33x	
<b>Vintage Year 2014</b>													
Carlyle Power Partners II, L.P.	Energy	40,000	25,153	14,986	37.12%	2	13,363	13,364	-1,622	N/M	N/M	0.89x	
EnCap Flatrock Midstream Fund III, L.P.	Energy	20,000	13,402	7,168	32.99%	1,236	6,535	7,772	603	19.75%	7.78%	1.08x	
First Reserve Energy Infrastructure Fund II, L.P.	Energy	35,000	27,146	8,139	22.44%	284	8,306	8,590	451	7.43%	7.78%	1.06x	
Quantum Energy Partners VI, LP	Energy	35,000	26,425	9,299	24.50%	1,771	11,653	13,424	4,125	N/M	N/M	1.44x	
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	75,300	24,700	24.70%	0	36,453	36,453	11,753	27.29%	N/A	1.48x	
Wastewater Opportunity Fund	Infrastructure	25,000	21,300	3,708	14.80%	0	2,864	2,864	-844	N/M	N/M	0.77x	
Vintage Year 2014 Total		255,000	188,725	68,000	25.99%	3,293	79,173	82,466	14,466	21.40%		1.21x	

<sup>1</sup> Benchmarks:

Commodities Investments: Dow Jones UBS Commodity Index + 1%

Core RE Investments: NFI-ODCE

Diversified RA Investments: Manager's stated custom blended index

<sup>1</sup> Benchmarks:

Energy Investments: Cambridge Associates median return for the respective vintage years.

Real Assets Portfolio: CPI + 5%

## Real Assets Portfolio Performance Details – as of September 30, 2016 (continued)

Partnership (\$ in thousands)	Strategy	(A)		(B)		(C)		(D) Fair	(C+D) Total	(C+D-B)	Net IRR	Benchmark <sup>1</sup>	TVPI
		Commitment Amount	Unfunded Amount	Cumulative Contributions	% Drawn	Cumulative Distributions	Value	Value	Gain/Loss				
<b>Vintage Year 2015</b>													
Principal U.S. Property Fund	Core RE	35,000	0	35,000	100.00%	0	38,252	38,252	3,252	N/M	N/M	N/M	1.09x
Prologis Targeted Europe Logistics Fund	Core RE	30,926	0	31,324	101.29%	1,469	31,190	32,659	1,335	4.53%	12.56%	N/M	1.04x
Prologis Targeted US Logistics Fund	Core RE	35,000	5,200	29,800	85.14%	1,030	32,042	33,071	3,271	13.54%	12.56%	N/M	1.11x
Townsend Real Estate Fund, L.P.	Core RE	70,000	25,109	45,555	64.13%	664	46,638	47,302	1,747	N/M	N/M	N/M	1.04x
ArcLight Energy Partners VI, L.P.	Energy	40,000	23,064	17,333	42.34%	573	17,303	17,876	543	N/M	N/M	N/M	1.03x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	29,383	10,617	26.54%	0	10,038	10,038	-579	N/M	N/M	N/M	0.95x
Atalaya Real Assets SMA	Other	100,000	88,617	13,700	11.38%	2,714	12,325	15,039	1,339	N/M	N/M	N/M	1.10x
<b>Vintage Year 2015 Total</b>		<b>350,926</b>	<b>171,373</b>	<b>183,330</b>	<b>51.28%</b>	<b>6,450</b>	<b>187,787</b>	<b>194,236</b>	<b>10,906</b>	<b>8.43%</b>			<b>1.06x</b>
<b>Vintage Year 2016</b>													
ACM Fund II, LLC	Agriculture	25,000	20,316	4,721	18.74%	0	4,558	4,558	-163	N/M	N/M	N/M	0.97x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	33,841	6,148	15.40%	91	6,681	6,772	624	N/M	N/M	N/M	1.10x
IFM Global Infrastructure Fund	Infrastructure	100,000	75,000	0	0.00%	0	N/A	0	0	N/M	N/M	N/M	N/A
<b>Vintage Year 2016 Total</b>		<b>165,000</b>	<b>129,157</b>	<b>10,869</b>	<b>7.74%</b>	<b>91</b>	<b>11,239</b>	<b>11,330</b>	<b>461</b>	<b>N/M</b>			<b>1.04x</b>
<b>Portfolio Total:</b>		<b>3,560,764</b>	<b>495,584</b>	<b>3,060,200</b>	<b>86.00%</b>	<b>2,538,627</b>	<b>1,084,845</b>	<b>3,623,471</b>	<b>563,272</b>	<b>7.02%</b>	<b>7.17%</b>		<b>1.18x</b>
<b>Portfolio Strategy Totals</b>													
Agriculture		25,000	20,316	4,721	18.74%	0	4,558	4,558	-163	N/M	N/M	N/M	0.97x
Commodities		120,000	0	120,000	100.00%	0	65,857	65,857	-54,143	-7.02%	N/M	N/M	0.55x
Core RE		1,578,101	30,316	1,560,382	98.08%	1,646,328	488,315	2,134,643	574,261	9.10%	N/M	N/M	1.37x
Diversified RA		1,198,738	0	1,198,738	100.00%	876,588	341,789	1,218,377	19,639	1.43%	N/M	N/M	1.02x
Energy		243,000	150,894	96,779	37.90%	11,437	94,814	106,251	9,472	11.05%	N/M	N/M	1.10x
Infrastructure		125,000	96,600	28,408	22.72%	0	39,316	39,316	10,909	24.94%	N/M	N/M	1.38x
Other		100,000	88,617	13,700	11.38%	2,714	12,325	15,039	1,339	N/M	N/M	N/M	1.10x
Non-US		170,926	108,841	37,472	25.69%	1,560	37,871	39,431	1,958	6.29%	N/M	N/M	1.05x
<b>Portfolio Total:</b>		<b>3,560,764</b>	<b>495,584</b>	<b>3,060,200</b>	<b>86.00%</b>	<b>2,538,627</b>	<b>1,084,845</b>	<b>3,623,471</b>	<b>563,272</b>	<b>7.02%</b>	<b>7.17%</b>		<b>1.18x</b>
<b>Active / Liquidated Partnership Totals</b>													
Active Partnerships		3,440,331	495,584	2,939,766	85.50%	2,381,581	1,084,845	3,466,426	526,660	7.56%	N/M	N/M	1.18x
Liquidated Partnerships		120,434	0	120,434	100.00%	157,046	0	157,046	36,612	3.42%	N/M	N/M	1.30x
<b>Portfolio Total:</b>		<b>3,560,764</b>	<b>495,584</b>	<b>3,060,200</b>	<b>86.00%</b>	<b>2,538,627</b>	<b>1,084,845</b>	<b>3,623,471</b>	<b>563,272</b>	<b>7.02%</b>	<b>7.17%</b>		<b>1.18x</b>

\*Liquidated funds

<sup>1</sup> Benchmarks:

Commodities Investments: Dow Jones UBS Commodity Index + 1%

Core RE Investments: NFI-ODCE

Diversified RA Investments: Manager's stated custom blended index

<sup>1</sup> Benchmarks:

Energy Investments: Cambridge Associates median return for the respective vintage years.

Real Assets Portfolio: CPI + 5%

## Opportunities Portfolio – as of September 30, 2016

The Opportunities portfolio's net IRR since inception is 8.56%

- The long-term benchmark is SCERS' 7.50% total portfolio actuarial return objective
- Also tracking the portfolio's 3 year IRR versus an intermediate-term benchmark
  - 9.83% portfolio IRR v 5.56% IRR for the SCERS' total portfolio policy weighted benchmark over the last 3 years

Distressed debt has outperformed, while value-add real estate has struggled; opportunistic real estate is performing well

- SCERS' earlier vintage distressed debt funds are liquidated and have distributed significant capital back to SCERS
  - Stone Tower, MetWest TALF, and PIMCO have distributed \$129.3 million
- Older vintage value-add real estate funds continue to show some improvement although performance remains poor
- Recent vintage value-add real estate funds are off to a strong start

Changes during the quarter

- SCERS made no new commitments during Q3 2016
- \$15.3 million in new contributions, \$11.2 million in distributions
- Portfolio IRR declined 0.07%, total portfolio gain increased by \$2.7 million

Almost all of SCERS' more recent Opportunities commitments have been to Real Estate funds (Value Add and Opportunistic)

Market Value Strategy Exposure  
(Fair Market Value as of 9/30/16)



# Opportunities Portfolio Performance Details – as of September 30, 2016

Partnership (\$ in thousands)	Strategy	(A)		(B)		(C)		(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	Benchmark <sup>1</sup>	TVPI
		Commitment Amount	Unfunded Amount	Cumulative Contributions	% Drawn	Cumulative Distributions							
<b>Vintage Year 2006</b>													
UBS Allegis Value Trust	Value-Add RE	25,550	0	25,550	100.00%	10,109	22,104	32,213	6,663	3.13%	9.23%	1.26x	
<b>Vintage Year 2006 Total</b>		<b>25,550</b>	<b>0</b>	<b>25,550</b>	<b>100.00%</b>	<b>10,109</b>	<b>22,104</b>	<b>32,213</b>	<b>6,663</b>	<b>3.13%</b>		<b>1.26x</b>	
<b>Vintage Year 2007</b>													
*PIMCO Distressed Mortgage Fund, LP	Distressed Debt	18,000	0	18,000	100.00%	25,384	0	25,384	7,384	8.96%	8.04%	1.41x	
AEW Value Investors II, L.P.	Value-Add RE	25,000	0	21,813	100.00%	26,114	1,808	27,922	6,109	5.80%	8.73%	1.28x	
Hines US Office Value Added Fund II, L.P.	Value-Add RE	25,000	3,273	24,229	86.91%	11,173	4,840	16,013	-8,216	-6.22%	8.94%	0.66x	
<b>Vintage Year 2007 Total</b>		<b>68,000</b>	<b>3,273</b>	<b>64,041</b>	<b>94.95%</b>	<b>62,671</b>	<b>6,649</b>	<b>69,319</b>	<b>5,278</b>	<b>1.70%</b>		<b>1.08x</b>	
<b>Vintage Year 2008</b>													
*PIMCO Distressed Mortgage Fund II, L.P.	Distressed Debt	12,000	0	12,000	100.00%	35,277	0	35,277	23,277	34.39%	12.18%	2.94x	
<b>Vintage Year 2008 Total</b>		<b>12,000</b>	<b>0</b>	<b>12,000</b>	<b>100.00%</b>	<b>35,277</b>	<b>0</b>	<b>35,277</b>	<b>23,277</b>	<b>34.39%</b>		<b>2.94x</b>	
<b>Vintage Year 2009</b>													
*MetWest Enhanced TALF Strategy Fund LP	Distressed Debt	20,000	0	20,000	100.00%	25,304	0	25,304	5,304	11.21%	17.15%	1.27x	
*Stone Tower Structured Credit Recovery Fund LP	Distressed Debt	25,000	0	25,248	100.00%	43,383	0	43,383	18,135	25.30%	17.15%	1.72x	
<b>Vintage Year 2009 Total</b>		<b>45,000</b>	<b>0</b>	<b>45,248</b>	<b>100.00%</b>	<b>68,687</b>	<b>0</b>	<b>68,687</b>	<b>23,439</b>	<b>19.71%</b>		<b>1.52x</b>	
<b>Vintage Year 2013</b>													
Atalaya Special Opportunities Fund V, L.P.	Distressed Debt	25,000	1,117	24,875	95.53%	10,990	18,253	29,243	4,368	9.29%	7.31%	1.18x	
DRC European Real Estate Debt Fund II, L.P.	Opportunistic RE	40,726	12,756	32,887	81.64%	6,078	26,558	32,636	-251	-0.38%	13.30%	0.99x	
KKR Real Estate Partners Americas	Opportunistic RE	35,000	17,215	25,621	50.81%	13,518	18,443	31,961	6,340	17.50%	13.30%	1.25x	
<b>Vintage Year 2013 Total</b>		<b>100,726</b>	<b>31,088</b>	<b>83,383</b>	<b>74.38%</b>	<b>30,587</b>	<b>63,254</b>	<b>93,841</b>	<b>10,457</b>	<b>6.97%</b>		<b>1.13x</b>	
<b>Vintage Year 2014</b>													
CIM Fund VIII, LP	Opportunistic RE	35,000	15,464	22,006	55.82%	437	23,113	23,550	1,544	N/M	N/M	1.07x	
Och-Ziff Real Estate Fund III	Opportunistic RE	35,000	25,385	11,088	27.47%	517	10,704	11,221	134	1.31%	13.39%	1.01x	
NREP Nordic Strategies Fund, FIS-FCP	Value-Add RE	22,086	1,104	21,639	96.84%	5,053	22,516	27,570	5,931	N/M	N/M	1.27x	
<b>Vintage Year 2014 Total</b>		<b>92,086</b>	<b>41,954</b>	<b>54,732</b>	<b>54.88%</b>	<b>6,007</b>	<b>56,333</b>	<b>62,340</b>	<b>7,608</b>	<b>13.24%</b>		<b>1.14x</b>	

<sup>1</sup> Benchmarks:

Opportunistic RE Investments: NCREIF + 2%

Value-Add RE Investments: NCREIF + 2%

Distressed Debt: U.S. Cambridge Associates LLC

Total Opportunities Portfolio (long-term benchmark): 7.50% actuarial return objective

<sup>2</sup> Internal rate of return based upon the policy weighted benchmark for SCERS' total portfolio using the Opportunities portfolio cash flows.



## Opportunities Portfolio Performance Details – as of September 30, 2016 (continued)

Partnership (\$ in thousands)	Strategy	(A)		(B)		(C)		(D) Fair	(C+D) Total	(C+D-B)		TVPI
		Commitment Amount	Unfunded Amount	Cumulative Contributions	% Drawn	Cumulative Distributions	Value	Value	Gain/Loss	Net IRR	Benchmark <sup>1</sup>	
<b>Vintage Year 2015</b>												
ECE European Prime Shopping Centre Fund II, SCS SIF	Value-Add RE	34,755	26,796	7,918	22.78%	1,025	8,724	9,750	1,832	N/M	N/M	1.23x
Hammes Partners II, LP	Value-Add RE	25,000	13,086	11,914	47.66%	1,169	11,301	12,470	556	N/M	N/M	1.05x
NREP Nordic Strategies Fund II SCSp	Value-Add RE	35,876	30,851	4,958	13.82%	0	4,086	4,086	-872	N/M	N/M	0.82x
<b>Vintage Year 2015 Total</b>		<b>95,631</b>	<b>70,732</b>	<b>24,790</b>	<b>25.92%</b>	<b>2,194</b>	<b>24,112</b>	<b>26,306</b>	<b>1,516</b>	<b>N/M</b>		<b>1.06x</b>
<b>Portfolio Total:</b>		<b>438,993</b>	<b>147,047</b>	<b>309,745</b>	<b>67.54%</b>	<b>215,533</b>	<b>172,451</b>	<b>387,983</b>	<b>78,238</b>	<b>8.56%</b>	<b>7.50%</b>	<b>1.25x</b>
<b>Portfolio Strategy Totals</b>												
Distressed Debt		100,000	1,117	100,123	98.88%	140,338	18,253	158,591	58,469	18.79%		1.58x
Opportunistic RE		105,000	58,064	58,715	44.70%	14,473	52,259	66,732	8,017	11.50%		1.14x
Value-Add RE		100,550	16,359	83,506	83.20%	48,565	40,054	88,618	5,113	1.11%		1.06x
Non-US		133,443	71,506	67,402	50.59%	12,157	61,885	74,042	6,640	6.69%		1.10x
<b>Portfolio Total:</b>		<b>438,993</b>	<b>147,047</b>	<b>309,745</b>	<b>67.54%</b>	<b>215,533</b>	<b>172,451</b>	<b>387,983</b>	<b>78,238</b>	<b>8.56%</b>	<b>7.50%</b>	<b>1.25x</b>
<b>Active / Liquidated Partnership Totals</b>												
Active Partnerships		363,993	147,047	234,498	60.79%	86,185	172,451	258,636	24,138	3.38%		1.10x
Liquidated Partnerships		75,000	0	75,248	100.00%	129,348	0	129,348	54,100	19.50%		1.72x
<b>Portfolio Total:</b>		<b>438,993</b>	<b>147,047</b>	<b>309,745</b>	<b>67.54%</b>	<b>215,533</b>	<b>172,451</b>	<b>387,983</b>	<b>78,238</b>	<b>8.56%</b>	<b>7.50%</b>	<b>1.25x</b>

\*Liquidated funds

<b>3-Year IRR</b>	
SCERS Opportunities portfolio	9.83%
SCERS policy benchmark <sup>2</sup>	5.56%

<sup>1</sup> Benchmarks:

Opportunistic RE Investments: NCREIF + 2%

Value-Add RE Investments: NCREIF + 2%

Distressed Debt: U.S. Cambridge Associates LLC

Total Opportunities Portfolio (long-term benchmark): 7.50% actuarial return objective

<sup>2</sup> Internal rate of return based upon the policy weighted benchmark for SCERS' total portfolio using the Opportunities portfolio cash flows.

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