



Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 14

MEETING DATE: June 17, 2020

SUBJECT: Quarterly Investment Performance Report
Alternative Assets

SUBMITTED FOR: ___ Consent ___ Deliberation and Action X Receive and File

RECOMMENDATION

Staff recommends the Board receive and file the Cliffwater Quarterly Performance Review presentation for the period ending March 31, 2020 for the Absolute Return portfolio, and the period ending December 31, 2019 for the Private Equity, Private Credit, Real Assets, and Opportunities portfolios.

PURPOSE

This item complies with SCERS' investment policy statement reporting requirements and contributes to the effective management and oversight of investment activities.

SCERS ALTERNATIVE ASSETS PORTFOLIO RETURNS

This memorandum provides a summarized table of SCERS' Alternative Assets period returns, which complements Cliffwater's Quarterly Performance Review, and it highlights notable manager performance, along with any recent alternative investments made by SCERS. The returns for the private market asset classes within the table below and within Cliffwater's report are lagged a quarter, and reflect valuations as of December 31, 2019. Therefore, the private market valuations do not reflect the impact from the market downturn due to the coronavirus pandemic, which will be reflected in subsequent quarters.

SCERS' alternative asset class period returns are as follows:

SCERS ALTERNATIVE ASSETS PERFORMANCE SUMMARY
Quarter Reporting Periods Ending March 31, 2020

SCERS ASSET CLASS	Quarter*	1-Year*	3-Year*	5-Year*	Since Inception*	Since Inception Date*
SCERS Absolute Return	-9.0%	-5.1%	-0.9%	0.0%	3.3%	Sep-04
HFRI FoF Conservative	-7.2%	-4.3%	0.2%	0.4%	2.2%	
HFRI FoF Composite + 1%	-8.5%	-4.5%	1.0%	1.0%	3.5%	
SCERS Private Equity	4.4%	20.3%	21.7%	17.7%	15.4%	Feb-08
Cambridge Private Equity/Venture Capital	5.2%	15.2%	15.5%	13.3%	12.9%	
SCERS Private Credit	2.2%	9.5%	7.6%	7.9%	8.1%	Oct-11
Credit Suisse Leveraged Loan + 2%	2.2%	10.2%	6.5%	6.5%	7.1%	
SCERS Real Assets	0.3%	5.5%	10.2%	11.7%	11.9%	Jan-13
(45%) Cambridge Private Infrastructure; (35%) Cambridge Private Energy; (20%) NCREIF Agriculture/Timber	0.9%	2.7%	6.5%	6.1%	6.3%	
SCERS Opportunities	2.0%	8.0%	5.7%	7.8%	18.4%	Jan-08
SCERS Portfolio Actuarial Rate of Return	1.8%	7.0%	7.0%	7.0%	7.0%	
*Note: Periods ending 12/31/19 for Private Equity, Private Credit, Real Assets, and Opportunities Periods ending 3/31/30 for Absolute Return All returns are net IRR, except Absolute Return which is time-weighted						

SCERS PORTFOLIO RESULTS

For the reporting quarter ended December 31, 2019, SCERS' Private Equity portfolio generated a strong +4.4% return, although underperforming against its benchmark return of +5.2%. Portfolio performance was driven by the impressive returns generated by the buyout (information technology) strategies.

SCERS' Absolute Return portfolio performed poorly during the quarter, down -9.0%, well below its benchmark return of -7.2% and -8.5%. The portfolio was significantly impacted by the market disruption due to COVID-19 in March, in particular the Growth Orientated portfolio was down -15.5% for the quarter.

Below are notable top and bottom performing funds among SCERS' alternative assets managers for the reporting periods identified above:

- Top performing funds:
 - Absolute Return:
 - Laurion Capital (market neutral): +15.4%
 - Elliott International (event driven): +2.3%

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- Private Equity portfolio:
 - Thoma Bravo XI (buyout): +25.6%
 - Marlin Heritage Europe (buyout): +14.9%
 - Thoma Bravo XII (buyout): +12.9%
 - Private Credit portfolio:
 - Athyrium Opportunities Fund II (opportunistic credit): +8.3%
 - Summit Partners Credit Fund III (direct lending): +5.8%
 - Summit Partners Credit Fund (direct lending): +3.7%
 - Real Assets portfolio:
 - EQT Infrastructure Fund IV (infrastructure): +11.2%
 - Wastewater Opportunity Fund (water/wastewater): +6.1%
 - IFM Global Infrastructure Fund (infrastructure): +5.4%
 - Bottom performing funds:
 - Absolute Return portfolio:
 - Lakewood Capital (equity long/short): -31.1%
 - LMR Fund Limited (market neutral): -25.4%
 - AQR Delta Fund II (multi-strategy): -20.3%
 - Private Equity portfolio:
 - Threshold Ventures III (venture capital): -10.9%
 - RCP Fund XIII (fund-of-funds): -6.5%
 - TSG7 B (buyout): -6.1%
 - Private Credit portfolio:
 - OrbiMed Royalty and Credit Opportunities III (opportunistic credit): -5.9%
 - Benefit Street Partners Senior Secured Opportunities Fund (direct lending): +1.7%
 - Real Assets portfolio:
 - Meridiam Infrastructure North America Fund III (infrastructure): -27.1%
 - Quantum Energy Partners VI (energy): -8.7%
 - EnCap Energy Capital Fund IX (energy): -7.6%

NEW INVESTMENTS

During the quarter ended March 31, 2020, SCERS made the following new investments:

- BlackRock Event Driven Equity Fund (absolute return): \$45 million

- Summit Partners Europe Growth Equity Fund III (growth equity): \$20 million

ATTACHMENT

Cliffwater's Quarterly Performance Review for Alternative Assets

Prepared by:

/S/

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Investment Officer

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/S/

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Chief Investment Officer

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Eric Stern
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INVESTMENT ADVISORY SERVICES

Los Angeles • New York

Sacramento County Employees' Retirement System Quarterly Performance Review

June 17, 2020



Executive Summary

Absolute Return Portfolio Performance Summary – as of March 31, 2020

Growth Oriented Strategies

- The Growth Oriented Portfolio returned -15.51% in Q1 and -10.22% for the 1 year period ending March 31, 2020
 - Underperforming the HFRI FoF Index + 1% benchmark by 701 bps in Q1 and 574 bps for the 1 year period
 - Underperforming the T-bills + 5% long term objective by 617 bps (annualized) over the trailing 5 year period
- All funds and strategies produced negative results over the 1 yr period, with Lakewood trailing the most (-23.3%)

Diversifying Strategies

- The Diversifying Portfolio returned -6.37% in Q1 and -3.26% for the 1 year period ending March 31, 2020
 - Outperforming the HFRI Conservative FoF Index benchmark by 80 bps in Q1 and 106 bps for the 1 year period
 - Underperforming the T-bills + 2% long term objective by 362 bps (annualized) over the trailing 5 year period
- Large performance dispersion among funds over the 1 year period, ranging from +17.3 (Laurion) to -26.5% (AQR DELTA)
 - 4 funds produced positive returns while 5 produced negative returns over the 1 year period

Elevated volatility across asset classes during Q1 pushed some portfolio characteristics above their targeted values

- Growth Oriented Portfolio
 - Target standard deviation < 50% of global equities, with an equity beta < 0.5 and equity correlation < 0.8
 - Standard deviation of 7.07% compared to the ACWI standard deviation of 12.56% since December 2011 (56% ratio)
 - Portfolio equity beta of 0.47 with an equity correlation of 0.84
- Diversifying
 - Target standard deviation < 25% of global equities, with an equity beta < 0.1 and equity correlation < 0.1
 - Standard deviation of 3.24% compared to the ACWI standard deviation of 12.56% since December 2011 (26% ratio)
 - Portfolio equity beta of 0.10 with an equity correlation of 0.40

The March drawdown for each portfolio was nearly 3 times larger than the previous worst month since December 2011

- Growth Oriented portfolio returned -13.3% in March while the Diversifying portfolio returned -5.83%
 - Previous worst monthly performance was -4.8% for Growth Oriented and -1.9% for Diversifying

Growth Oriented Absolute Return Portfolio Performance – as of March 31, 2020

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Mar	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
Growth-Oriented Portfolio													
Event Driven													
Third Point Partners Qualified L.P.	43,375,957	4.8%	-11.29%	-16.06%	-16.06%	-12.87%	-9.50%	-0.71%	1.18%	6.42%	9.21%	0.61	May-12
Event Driven - HF Total	43,375,957	4.8%	-11.29%	-16.06%	-16.06%	-13.11%	-10.18%	-2.41%	-0.56%	4.83%	9.22%	0.45	May-12
Equity Long/Short													
Lakewood Capital Partners, LP	33,779,486	3.7%	-22.96%	-31.13%	-31.13%	-24.52%	-23.33%	-7.80%	-1.81%	0.65%	13.34%	0.03	Jul-13
Equity Long/Short - HF Total	33,779,486	3.7%	-22.96%	-31.13%	-31.13%	-24.52%	-23.33%	-7.80%	-1.81%	0.65%	13.34%	0.03	Jul-13
Multi-Strategy													
Sculptor Domestic Partners II, L.P.	49,348,475	5.5%	-9.03%	-6.68%	-6.68%	-3.98%	-0.05%	4.25%	3.15%	6.22%	6.09%	0.86	Jan-12
Multi-Strategy - HF Total	49,348,475	5.5%	-9.03%	-6.68%	-6.68%	-3.98%	-0.05%	4.25%	3.15%	6.22%	6.09%	0.86	Jan-12
Fund of Funds													
Grosvenor SC Absolute Return Fund LLC (Growth)	108,305,745	12.0%	-12.63%	-12.88%	-12.88%	-10.49%	-9.22%	-0.36%	0.34%	3.79%	6.34%	0.46	Dec-11
Fund of Funds - HF Total	108,305,745	12.0%	-12.63%	-12.88%	-12.88%	-10.49%	-9.22%	-0.47%	0.29%	3.52%	6.73%	0.29	Sep-04
Growth-Oriented Portfolio Total	234,809,663	26.0%	-13.34%	-15.51%	-15.51%	-12.19%	-10.22%	-1.40%	0.02%	3.63%	7.16%	0.29	Sep-04
HFRI FoF Composite + 1%			-7.48%	-8.50%	-8.50%	-6.09%	-4.48%	0.96%	1.01%	3.48%	5.29%	0.35	Sep-04
3 Month T-Bills+5%			0.69%	1.79%	1.79%	5.32%	7.25%	6.83%	6.19%	6.42%	0.47%	-	Sep-04
Market Indices													
Libor3Month			0.12%	0.38%	0.38%	1.41%	2.03%	2.02%	1.47%	1.74%	0.48%	-	Sep-04
Bloomberg Barclays US Aggregate Bond Index			-0.59%	3.15%	3.15%	5.68%	8.95%	4.83%	3.37%	4.29%	3.18%	0.79	Sep-04
Bloomberg Barclays US High Yield Bond Index			-11.46%	-12.68%	-12.68%	-9.21%	-6.95%	0.76%	2.78%	6.40%	9.43%	0.52	Sep-04
S&P 500 TR			-12.35%	-19.60%	-19.60%	-10.82%	-6.98%	5.11%	6.73%	7.82%	14.18%	0.48	Sep-04
MSCI AC World Index Free - Net			-13.50%	-21.37%	-21.37%	-14.35%	-11.26%	1.50%	2.85%	5.88%	15.47%	0.34	Sep-04
MSCI EAFE - Net			-13.35%	-22.83%	-22.83%	-17.42%	-14.38%	-1.82%	-0.62%	4.05%	16.78%	0.22	Sep-04
MSCI EMF (Emerging Markets Free) - Net			-15.40%	-23.60%	-23.60%	-18.18%	-17.68%	-1.62%	-0.37%	6.82%	21.65%	0.34	Sep-04

Diversifying Absolute Return Portfolio Performance – as of March 31, 2020

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Mar	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
Diversifying Portfolio													
Market Neutral													
Laurion Capital, Ltd.	55,067,053	6.1%	8.60%	15.36%	15.36%	13.48%	17.28%	10.45%	7.44%	7.73%	6.26%	1.03	Mar-14
LMR Fund Limited	34,252,987	3.8%	-24.40%	-25.37%	-25.37%	-	-	-	-	-23.88%	-	-	Nov-19
KLS Diversified Fund LP	33,468,257	3.7%	-17.34%	-16.82%	-16.82%	-17.87%	-16.88%	-	-	-13.29%	15.86%	-0.95	Jan-19
Two Sigma Risk Premia Enhanced Fund, LP	39,629,069	4.4%	-6.54%	-12.32%	-12.32%	-	-	-	-	-11.94%	10.57%	-	Sep-19
Market Neutral - HF Total	162,417,367	18.0%	-9.21%	-9.30%	-9.30%	-10.22%	-8.10%	1.72%	2.26%	3.45%	6.10%	0.38	Mar-14
Event Driven													
Blackrock Event Driven Equity Fund (BILPX)	42,724,458	4.7%	-5.06%	-	-	-	-	-	-	-5.06%	-	-	Mar-20
Elliott International Limited	59,052,120	6.5%	0.19%	2.30%	2.30%	4.36%	7.39%	5.50%	6.73%	7.17%	3.34%	1.77	Apr-12
Davidson Kempner Institutional Partners LP	42,874,121	4.7%	-6.45%	-6.06%	-6.06%	-3.55%	-	-	-	-3.14%	7.30%	-	May-19
Event Driven - HF Total	144,650,699	16.0%	-3.42%	-1.98%	-1.98%	0.22%	2.44%	3.85%	5.73%	6.54%	3.54%	1.51	Apr-12
Equity Long/Short													
Marshall Wace Funds LP - MW Global Opportunities (US) Fund	42,932,774	4.8%	-0.17%	0.73%	0.73%	4.77%	6.24%	-	-	5.82%	4.69%	0.78	Jan-19
Equity Long/Short - HF Total	42,932,774	4.8%	-0.17%	0.73%	0.73%	4.77%	6.24%	5.82%	5.82%	5.82%	4.69%	0.78	Apr-12
Macro-Systematic													
Graham Global Investment Fund II SPC Ltd. - Tactical Trend Segr	33,259,512	3.7%	-2.11%	-6.99%	-6.99%	-1.33%	5.20%	-0.26%	-	-1.60%	12.91%	-0.21	Feb-17
Winton Diversified Futures Fund L.P.	35,360,568	3.9%	-4.24%	-7.80%	-7.80%	-5.26%	-5.31%	0.03%	-	0.32%	8.15%	-0.16	Jan-17
Macro-Systematic - HF Total	68,620,080	7.6%	-3.22%	-7.41%	-7.41%	-3.40%	-0.49%	-0.11%	-	-0.73%	9.59%	-0.23	Jan-17
Multi-Strategy													
AQR DELTA Fund II, LP	34,434,822	3.8%	-13.61%	-20.30%	-20.30%	-23.30%	-26.47%	-14.38%	-6.93%	-3.43%	8.00%	-0.53	May-13
Multi-Strategy - HF Total	34,434,822	3.8%	-13.61%	-20.30%	-20.30%	-23.30%	-26.47%	-14.38%	-6.93%	-3.43%	8.00%	-0.53	May-13
Fund of Funds													
Grosvenor SC Absolute Return Fund LLC (Diversifying)	147,384,743	16.3%	-5.42%	-4.90%	-4.90%	-2.72%	-0.20%	-1.12%	-1.30%	1.06%	3.52%	0.03	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	67,766,599	7.5%	-4.94%	-4.50%	-4.50%	-2.50%	-0.07%	-1.61%	-2.14%	0.16%	3.21%	-0.27	Feb-13
Fund of Funds - HF Total	215,151,342	23.8%	-5.27%	-4.78%	-4.78%	-2.72%	-0.25%	-1.36%	-1.66%	0.92%	3.32%	-0.01	Dec-11
Diversifying Portfolio Total	668,207,084	74.0%	-5.83%	-6.37%	-6.37%	-4.95%	-3.26%	-1.29%	-0.43%	1.21%	3.24%	0.08	Dec-11
HFRI FOF: Conservative Index			-6.64%	-7.17%	-7.17%	-5.71%	-4.32%	0.21%	0.44%	2.23%	3.29%	0.38	Dec-11
3 Month T-Bills+2%			0.45%	1.06%	1.06%	3.10%	4.25%	3.83%	3.19%	2.74%	0.26%	-	Dec-11

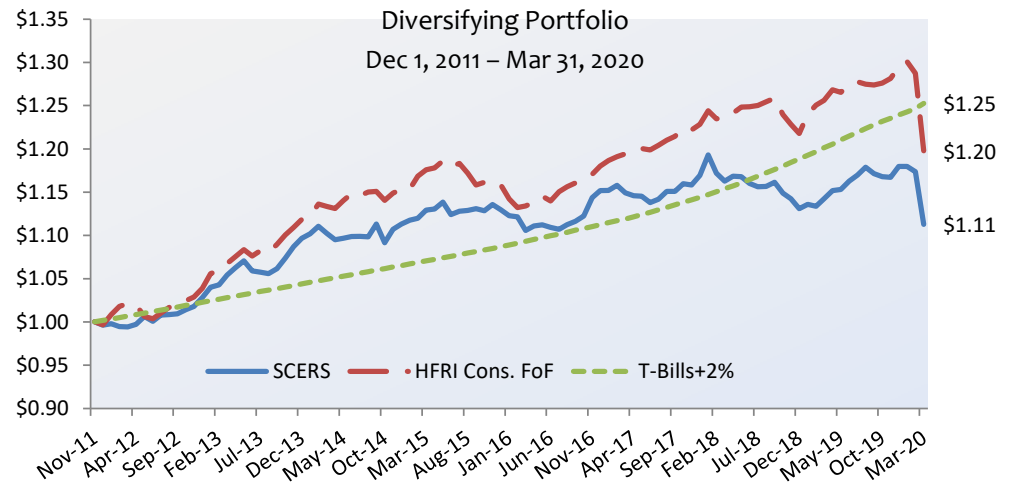
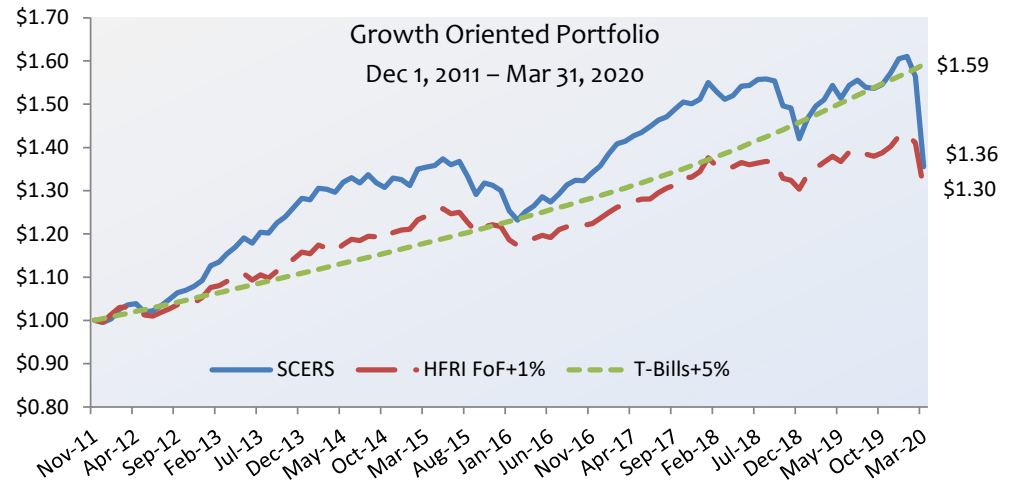
Absolute Return Portfolios Cumulative Performance – December 2011 to March 2020

The sharp downturn in Q1 pushed the Growth Oriented portfolio below the T-bills + 5% long term objective; the portfolio still remains slightly ahead of the Fund of Funds Index + 1% benchmark

The Diversifying portfolio is trailing both the T-bills + 2% long term objective and the HFRI Fund of Funds Conservative Index over this period

Showing cumulative performance (growth of \$1) for each portfolio since the initial restructuring of the Absolute Return portfolio in December 2011

- The prior exposure of the Absolute Return portfolio was only Equity Long/Short fund of funds investments



Private Equity Portfolio – as of December 31, 2019

The Private Equity portfolio's net IRR since inception is 15.36%, versus the Cambridge Associates benchmark IRR of 12.88%

- The long-term Policy objective (Russell 3000 + 3%) has a 15.93% IRR over this period

The private equity portfolio saw another quarter of solid gains as global equity markets rallied in Q4

- Gains were again broad-based with most of the funds producing single-digit gains in Q4
 - Thoma Bravo XI & XII, Marlin Heritage & Heritage Europe, Dyal III, and NEA 14 reported the largest gains
- Distributions slowed from the high volume seen in Q3, but still totaled \$49.1 million in Q4
 - Summit Europe Growth II, Thoma Bravo XI, RRJ III, Marlin Heritage, and Atalaya SOF VI led distributions during the quarter

Longer-term performance remains quite strong across most of the private equity funds

- Double-digit net IRRs for all vintage years prior to 2018, with several years >20%
- Spectrum VII (41.7%), Summit VC IV (39.2%), Accel-KKR IV (36.8%), and Marlin Heritage (36.5%) are leading performance

The fund of funds reported modest increases during the quarter

- Aggregate since inception net IRR decreased slightly to 11.36% from 11.44%, during the quarter
 - The aggregate total value (TVPI) remained at 1.65x
- The legacy fund of funds comprise only 11.9% of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed \$30 million to Cortec VII (mid-market buyouts) and \$20 million to Threshold Ventures III (early stage venture capital) during Q4, and added \$5 million to an existing commitment with NEA 17 (diversified venture capital)
 - SCERS committed \$20 million to a mid-market buyout fund in Q1 2020
 - SCERS also committed €20 million to a European growth equity and buyout fund (reup with existing GP) in Q1 2020
- \$46.5 million in new contributions, \$49.1 million in distributions
- Total portfolio gain increased by \$41.3 million while the total portfolio IRR increased by 0.12%

Private Equity Portfolio Characteristics as of December 31, 2019

The SCERS Private Equity portfolio is diversified by strategy and geography

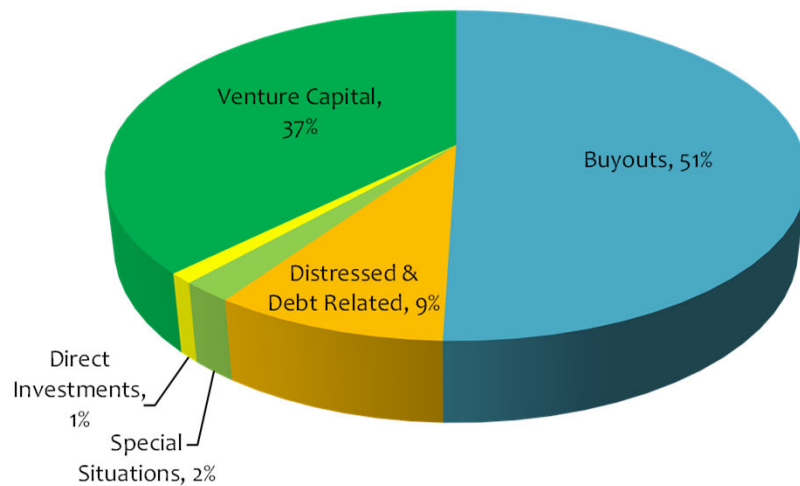
- Investments remain focused in North America, with meaningful exposure to Europe

The legacy fund of funds exposure remains relatively small as a percentage of the total portfolio's value

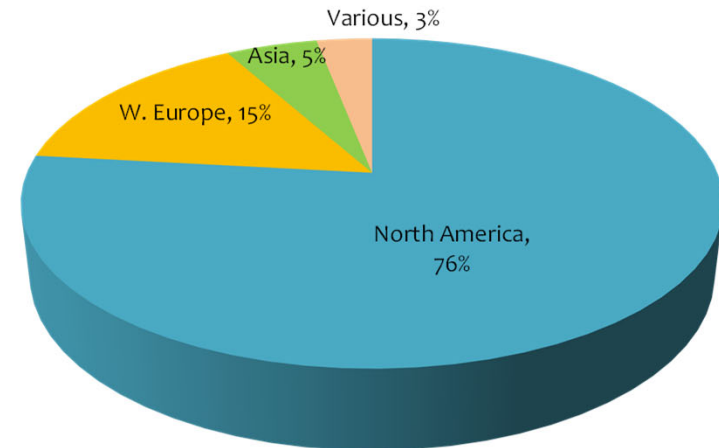
- Represents 12% of the total portfolio's value as of December 31, 2019

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 12/31/19.

Private Equity Portfolio Performance Details – as of December 31, 2019

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2006												
HarbourVest Partners VIII - Buyout Fund L.P.	Fund of Funds	37,500	1,688	35,813	96%	53,332	9,336	62,668	26,855	10.79%	8.35%	1.75x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	200	4,800	96%	6,023	592	6,615	1,815	7.30%	8.35%	1.38x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	150	7,350	98%	10,404	3,760	14,164	6,814	10.78%	8.35%	1.93x
Vintage Year 2006 Total		50,000	2,038	47,963	96%	69,759	13,687	83,446	35,484	10.52%	7.25%	1.74x
Vintage Year 2008												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	938	74,063	99%	78,859	45,263	124,122	50,059	12.19%	14.12%	1.68x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	13,231	68,958	82%	92,998	23,211	116,209	47,251	11.43%	14.12%	1.69x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	36,130	1,807	37,980	95%	27,730	34,718	62,448	24,468	11.74%	8.03%	1.64x
Vintage Year 2008 Total		186,130	15,975	181,000	91%	199,587	103,192	302,779	121,779	11.78%	8.26%	1.67x
Vintage Year 2011												
Waterland Private Equity Fund V C.V.	Buyout	17,953	3,489	15,729	81%	28,975	11,918	40,893	25,164	35.65%	12.11%	2.60x
Khosla Ventures IV, L.P.	Venture Capital	10,000	190	9,810	98%	13,292	15,624	28,915	19,105	22.18%	16.21%	2.95x
Vintage Year 2011 Total		27,953	3,679	25,539	87%	42,267	27,541	69,808	44,270	28.95%	12.74%	2.73x
Vintage Year 2012												
Garrison Opportunity Fund III A LLC	Distressed Debt	20,000	0	20,000	100%	7,660	13,650	21,311	1,311	1.25%	12.16%	1.07x
New Enterprise Associates 14, L.P.	Venture Capital	25,000	1,125	23,875	96%	22,637	31,249	53,886	30,011	17.74%	15.69%	2.26x
Summit Partners Venture Capital III-A, LP	Venture Capital	16,350	1,796	19,363	89%	20,806	16,041	36,847	17,484	17.31%	15.69%	1.90x
Vintage Year 2012 Total		61,350	2,921	63,238	95%	51,104	60,941	112,045	48,806	12.75%	13.31%	1.77x
Vintage Year 2013												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	710	14,290	95%	23,026	13,710	36,736	22,446	36.82%	14.73%	2.57x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	2,761	11,239	80%	3,685	15,461	19,146	7,907	24.61%	14.73%	1.70x
Marlin Equity IV, L.P.	Buyout	20,000	108	19,892	99%	9,877	15,309	25,187	5,295	8.00%	14.73%	1.27x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	4,683	35,067	87%	30,592	16,243	46,835	11,768	9.53%	15.18%	1.34x
H.I.G. Bayside Loan Opportunity Fund III (Europe-US\$), L.P.	Distressed Debt	30,000	5,769	24,231	81%	21,952	11,343	33,296	9,065	9.34%	7.69%	1.37x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	22,835	14,718	24%	8,556	5,248	13,804	-914	-2.06%	8.41%	0.94x

¹Benchmarks:

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 December 31, 2019 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Trinity Ventures XI, L.P.	Venture Capital	25,000	2,438	22,563	90%	4,835	38,505	43,341	20,778	16.05%	14.51%	1.92x
Vintage Year 2013 Total		169,000	39,305	141,999	77%	102,524	115,820	218,345	76,346	13.48%	12.58%	1.54x
Vintage Year 2014												
Dyal Capital Partners II	Buyout	35,000	9,633	28,150	72%	5,063	17,544	22,608	-5,543	-10.65%	16.70%	0.80x
H.I.G. Europe Capital Partners II, L.P.	Buyout	15,709	5,335	10,899	66%	2,624	9,371	11,995	1,096	4.81%	15.50%	1.10x
Marlin Heritage Fund	Buyout	10,000	0	10,418	100%	13,439	9,794	23,233	12,815	36.52%	16.70%	2.23x
Thoma Bravo XI	Buyout	30,000	3,088	32,647	90%	36,579	53,005	89,584	56,937	30.21%	16.70%	2.74x
TPG Opportunities Partners III	Distressed Debt	40,000	16,726	45,976	58%	32,576	22,366	54,942	8,966	10.30%	7.30%	1.20x
Khosla Ventures V	Venture Capital	20,000	1,100	18,900	95%	1,013	25,525	26,538	7,638	11.75%	17.15%	1.40x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	2,375	22,625	91%	29,634	35,218	64,852	42,227	41.71%	17.15%	2.87x
Vintage Year 2014 Total		175,709	38,257	169,616	78%	120,929	172,824	293,753	124,137	22.55%	14.78%	1.73x
Vintage Year 2015												
* WPEF VI Overflow Fund C.V.	Buyout	6,732	6,722	10	0%	0	0	0	-10	0.00%	14.71%	0.00x
RRJ Capital Master Fund III, LP	Buyout	40,000	12,583	30,256	69%	25,458	14,929	40,387	10,131	15.47%	14.71%	1.33x
WPEF VI Feeder, L.P.	Buyout	26,929	11,148	18,957	59%	6,092	20,325	26,417	7,460	16.82%	14.71%	1.39x
Accel-KKR Growth Capital Partners II	Mezzanine	15,000	1,879	13,121	87%	9,537	9,278	18,814	5,694	20.87%	9.40%	1.43x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	3,325	31,679	91%	7,456	49,735	57,191	25,512	21.29%	15.77%	1.81x
Summit Partners Venture Capital Fund IV-A, L.P.	Venture Capital	35,000	32,778	22,272	6%	20,050	16,978	37,028	14,756	39.22%	15.77%	1.66x
Vintage Year 2015 Total		158,661	68,435	116,295	57%	68,594	111,244	179,838	63,543	21.64%	15.39%	1.55x
Vintage Year 2016												
Accel-KKR Capital Partners V, L.P.	Buyout	25,000	12,152	12,848	51%	7,343	11,108	18,451	5,604	27.25%	12.07%	1.44x
Dyal III Pension Investors LP	Buyout	35,000	21,143	19,079	40%	5,401	21,909	27,310	8,231	19.70%	12.07%	1.43x
Linden Capital Partners III	Buyout	35,000	4,613	32,853	87%	25,982	41,389	67,371	34,518	33.30%	12.07%	2.05x
Marlin Heritage Europe, L.P.	Buyout	14,587	4,539	10,263	69%	0	13,936	13,936	3,673	26.10%	8.66%	1.36x
Thoma Bravo Fund XII, L.P.	Buyout	30,000	2,231	35,800	93%	8,033	41,983	50,017	14,216	19.29%	12.07%	1.40x
TSG7 A L.P.	Buyout	16,000	4,075	11,925	75%	165	14,747	14,911	2,986	11.21%	12.07%	1.25x
TSG7 B L.P.	Buyout	4,000	1,611	2,389	60%	6	1,993	1,999	-391	-13.25%	12.07%	0.84x

¹Benchmarks:

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 December 31, 2019 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Atalaya Special Opportunities Fund VI, L.P.	Distressed Debt	25,000	2,454	28,940	90%	19,437	16,801	36,238	7,298	10.95%	8.65%	1.25x
Trinity Ventures XII, L.P.	Venture Capital	30,000	6,825	23,175	77%	0	40,017	40,017	16,842	32.03%	17.43%	1.73x
Vintage Year 2016 Total		214,587	59,643	177,272	72%	66,367	203,883	270,250	92,978	22.92%	13.86%	1.52x
Vintage Year 2017												
Marlin Heritage II	Buyout	10,000	4,375	5,625	56%	0	5,922	5,922	297	3.99%	13.50%	1.05x
Summit Partners Europe Growth Equity Fund II, SCSP	Buyout	33,661	30,439	20,078	10%	16,601	13,804	30,406	10,327	N/M	N/M	1.51x
New Enterprise Associates 16, L.P.	Venture Capital	35,000	13,913	21,088	60%	627	23,993	24,620	3,532	12.61%	11.47%	1.17x
Vintage Year 2017 Total		78,661	48,726	46,791	38%	17,228	43,719	60,947	14,156	30.64%	12.25%	1.30x
Vintage Year 2018												
Linden Capital Partners IV LP	Buyout	44,330	34,388	11,563	22%	1,907	9,838	11,744	181	N/M	N/M	1.02x
Marlin Equity V	Buyout	25,000	16,317	8,830	35%	521	10,479	11,001	2,171	N/M	N/M	1.25x
TSG8 L.P.	Buyout	45,000	43,821	1,179	3%	0	-111	-111	-1,291	N/M	N/M	-0.09x
Davidson Kempner Long-Term Distressed Opportunities Fund IV LP	Distressed Debt	35,000	10,850	24,150	69%	0	27,261	27,261	3,111	N/M	N/M	1.13x
TSSP Opportunities Partners IV (A), L.P.	Distressed Debt	35,000	29,302	7,511	16%	1,856	5,963	7,818	307	N/M	N/M	1.04x
RCP Fund XIII	Fund of Funds	50,000	44,500	5,500	11%	0	4,258	4,258	-1,242	N/M	N/M	0.77x
RCPDirect III	Fund of Funds	25,000	17,364	7,636	31%	386	8,125	8,511	875	N/M	N/M	1.11x
Accel-KKR Growth Capital Partners III	Mezzanine	33,320	29,133	4,187	13%	0	3,642	3,642	-545	N/M	N/M	0.87x
Khosla Ventures VI, L.P.	Venture Capital	35,000	21,770	13,230	38%	0	13,067	13,067	-163	N/M	N/M	0.99x
Spectrum Equity VIII, L.P.	Venture Capital	25,000	8,188	16,813	67%	0	15,638	15,638	-1,175	N/M	N/M	0.93x
Vintage Year 2018 Total		352,650	255,632	100,599	28%	4,670	98,158	102,828	2,230	N/M	N/M	1.02x
Vintage Year 2019												
Cortec Group Fund VII, L.P.	Buyout	30,000	21,328	8,672	29%	0	8,591	8,591	-80	N/M	N/M	0.99x
Gridiron Capital Fund IV, L.P.	Buyout	30,000	30,000	0	0%	0	-528	-528	-528	N/M	N/M	N/A
Thoma Bravo Fund XIII, LP	Buyout	45,000	28,753	16,246	36%	0	17,510	17,510	1,263	N/M	N/M	1.08x
New Enterprise Associates 17, L.P.	Venture Capital	25,000	22,700	2,300	9%	0	2,308	2,308	8	N/M	N/M	1.00x
Threshold Ventures III, L.P.	Venture Capital	20,000	17,800	2,200	11%	0	2,013	2,013	-187	N/M	N/M	0.92x
Vintage Year 2019 Total		150,000	120,582	29,418	20%	0	29,894	29,894	476	N/M	N/M	1.02x

¹Benchmarks:

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 December 31, 2019 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2020												
Accel-KKR Capital Partners VI, LP	Buyout	30,000	30,000	0	0%	0	0	0	0	N/M	N/M	N/A
Davidson Kempner Long-Term Distressed Opportunities Fund V LP	Distressed Debt	30,000	30,000	0	0%	0	0	0	0	N/M	N/M	N/A
Vintage Year 2020 Total		60,000	60,000	0	0%	0	0	0	0	N/M	N/M	N/A
Portfolio Total :		1,684,701	715,193	1,099,730	58%	743,029	980,905	1,723,934	624,204	15.36%	12.88%	1.57x
Portfolio Strategy Totals												
Buyout		718,901	350,045	424,905	51%	251,372	410,180	661,552	236,647	21.82%		1.56x
Distressed Debt		245,000	117,937	165,526	52%	92,038	102,632	194,670	29,143	6.59%		1.18x
Fund of Funds		311,130	79,877	242,099	74%	269,733	129,261	398,994	156,895	11.36%		1.65x
Mezzanine		48,320	31,013	17,307	36%	9,537	12,920	22,457	5,149	18.49%		1.30x
Venture Capital		361,350	136,322	249,892	62%	120,351	325,911	446,262	196,370	21.27%		1.79x
Portfolio Total :		1,684,701	715,193	1,099,730	58%	743,029	980,905	1,723,934	624,204	15.36%	12.88%	1.57x
Portfolio Geography Totals												
US		1,428,000	628,679	896,259	56%	583,003	834,318	1,417,320	521,062	15.33%		1.58x
Non-US		256,701	86,514	203,471	66%	160,026	146,587	306,613	103,143	15.49%		1.51x
Portfolio Total		1,684,701	715,193	1,099,730	58%	743,029	980,905	1,723,934	624,204	15.36%	12.88%	1.57x

¹Benchmarks:

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 Credit Portfolio – as of December 31, 2019

The Private Credit portfolio's net IRR since inception is 8.14%, versus the benchmark return of 7.14%

- The benchmark is the Credit Suisse Leveraged Loan Index + 2%

The Private Credit funds reported another quarter of steady gains in Q4

- The portfolio returned 2.2% in Q4 and 9.5% for the trailing 1 year period ending December 31, 2019
 - OrbiMed Royalty III reported a negative return in Q4 (recently started investing), all other funds were up 2% - 8%
- Longer term performance remains steady, with annualized returns of 7% - 8% over multi-year periods
 - 7.6% net IRR for the 3 year period and 7.9% net IRR for the 5 year period

Changes during the quarter

- SCERS committed €31.6 million to MCP Private Capital IV (European opportunistic credit) and \$50 million to BSP Senior Secured II (direct lending, reup with existing GP) during Q4
- \$22.0 million in new contributions, \$10.5 million in distributions
- Portfolio IRR increased 0.08% while the total portfolio gain increased by \$4.3 million

Private Credit Portfolio Details – as of December 31, 2019

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2011												
Summit Partners Credit Fund, LP	Direct Lending	20,000	2,125	20,697	89%	26,198	620	26,818	6,122	8.96%	N/A	1.30x
Vintage Year 2011 Total		20,000	2,125	20,697	89%	26,198	620	26,818	6,122	8.96%	12.74%	1.30x
Vintage Year 2014												
Summit Partners Credit Fund II, L.P.	Direct Lending	35,000	4,888	47,209	86%	26,392	29,320	55,712	8,503	8.87%	3.97%	1.18x
Vintage Year 2014 Total		35,000	4,888	47,209	86%	26,392	29,320	55,712	8,503	8.87%	14.78%	1.18x
Vintage Year 2015												
Athyrium Opportunities Fund II	Opportunistic Credit	32,000	4,627	40,149	86%	32,057	15,299	47,355	7,206	9.44%	9.40%	1.18x
Vintage Year 2015 Total		32,000	4,627	40,149	86%	32,057	15,299	47,355	7,206	9.44%	15.39%	1.18x
Vintage Year 2017												
Athyrium Opportunities Fund III	Opportunistic Credit	25,000	9,872	20,516	61%	5,352	16,011	21,363	847	3.70%	8.56%	1.04x
Vintage Year 2017 Total		25,000	9,872	20,516	61%	5,352	16,011	21,363	847	3.70%	12.25%	1.04x
Vintage Year 2018												
Benefit Street Partners Senior Secured Opportunities Fund L.P.	Direct Lending	50,000	5,587	50,953	89%	7,264	48,289	55,553	4,600	6.01%	4.47%	1.09x
Summit Partners Credit Fund III, L.P.	Direct Lending	50,000	30,895	23,440	38%	4,335	22,419	26,753	3,313	N/M	N/M	1.14x
TCP Direct Lending Fund VIII-S, LLC	Direct Lending	100,000	33,366	66,634	67%	5,599	66,374	71,973	5,339	N/M	N/M	1.08x
Vintage Year 2018 Total		200,000	69,848	141,026	65%	17,198	137,082	154,279	13,253	8.11%	3.42%	1.09x
Vintage Year 2019												
BSP Levered US SOF II (Senior Secured Opportunities) Fund L.P.	Direct Lending	50,000	47,532	2,468	5%	0	1,114	1,114	-1,354	N/M	N/M	0.45x
OrbiMed Royalty & Credit Opportunities III, LP	Opportunistic Credit	35,000	33,250	1,750	5%	0	1,563	1,563	-187	N/M	N/M	0.89x
Vintage Year 2019 Total		85,000	80,782	4,218	5%	0	2,677	2,677	-1,541	N/M	N/M	0.63x
Vintage Year 2020												
MCP Private Capital Fund IV (Feeder) SCSp	Opp. Credit	35,457	35,457	0	0%	0	0	0	0	N/M	N/M	N/A
Vintage Year 2020 Total		35,457	35,457	0	0%	0	0	0	0	N/M	N/M	N/A
Portfolio Total :		432,457	207,598	273,815	52%	107,197	201,008	308,205	34,391	8.14%	7.14%	1.13x

¹Benchmarks:

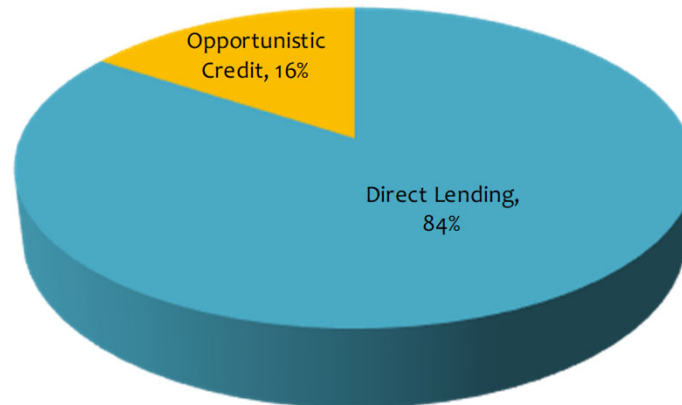
Private Credit Investments: Cambridge Associates median return for the respective debt strategies and vintage years

Private Credit Portfolio: Credit Suisse Leveraged Loan Index + 2%

Private Credit Portfolio Details – as of December 31, 2019 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Portfolio Strategy Totals												
Direct Lending		305,000	124,393	211,400	59%	69,788	168,136	237,924	26,524	8.18%		1.13x
Opportunistic Credit		127,457	83,205	62,415	35%	37,409	32,873	70,281	7,867	8.01%		1.13x
Portfolio Total :		432,457	207,598	273,815	52%	107,197	201,008	308,205	34,391	8.14%	7.14%	1.13x
Portfolio Geography Totals												
US		397,000	172,141	273,815	57%	107,197	201,008	308,205	34,391	8.14%		1.13x
Non-US		35,457	35,457	0	0%	0	0	0	0	N/M		0.00x
Portfolio Total		432,457	207,598	273,815	52%	107,197	201,008	308,205	34,391	8.14%	7.14%	1.13x

Market Value Strategy Exposure*



* Exposures are based on the market values of investments as of 12/31/19.

¹Benchmarks:

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

Private Credit Portfolio: Credit Suisse Leveraged Loan Index + 2%

Real Assets Portfolio – as of December 31, 2019

The Real Assets portfolio's net IRR since inception is 11.87%, versus the blended benchmark return of 6.32%

- The Real Assets portfolio includes private Infrastructure, Energy, and Agriculture, Timber and Other
- Real Assets is part of the broader Real Return asset category

The Real Assets portfolio is primarily Infrastructure and Energy partnerships

- Both Infrastructure and Energy partnerships have performed well since inception, although recent downturns in Energy continue to erode performance
 - Since inception net IRRs of 13.4% for Infrastructure and 11.7% for Energy
- The Real Asset Debt separate account has also performed well with a 10.6% since inception net IRR
 - That separate account market value remains small at \$17.7 million, with very few new investments

The portfolio generated a modest 0.3% net return in Q4

- The portfolio's largest Q4 gains came primarily from the Infrastructure funds
 - EQT IV, Wastewater, IFM, Tailwater Energy III, ISQ II, and Brookfield III led performance
- Most of the energy funds declined, with Quantum VI, EnCap IX, and Flatrock III declining 6 – 9% in Q4

Changes during the quarter

- SCERS committed \$35 million to Tailwater Energy Fund IV (small midstream energy, reup with existing GP) during Q4
- \$56.9 million in new contributions, \$15.1 million in distributions
- Portfolio IRR declined by 1.11% while the total portfolio gain increased by \$1.8 million

Real Assets Portfolio Performance Details – as of December 31, 2019

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2013												
EnCap Energy Capital Fund IX, L.P.	Energy	33,000	2,030	37,245	94%	28,174	16,960	45,134	7,889	8.06%	4.03%	1.21x
Vintage Year 2013 Total		33,000	2,030	37,245	94%	28,174	16,960	45,134	7,889	8.06%		1.21x
Vintage Year 2014												
Carlyle Power Partners II, L.P.	Energy	40,000	14,139	33,565	65%	7,547	29,743	37,290	3,725	5.71%	7.92%	1.11x
EnCap Flatrock Midstream III	Energy	20,000	2,142	22,097	89%	9,210	16,787	25,997	3,900	11.71%	7.92%	1.18x
Global Energy & Power Infrastructure Fund II	Energy	35,000	2,896	35,532	92%	26,357	23,079	49,436	13,904	27.83%	7.92%	1.39x
Quantum Energy Partners VI, LP	Energy	35,000	9,572	31,268	73%	18,740	32,475	51,216	19,948	28.90%	7.92%	1.64x
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	33,968	70,332	66%	15,100	85,918	101,018	30,687	13.58%	13.82%	1.44x
Wastewater Opportunity Fund	Infrastructure	25,000	2,733	22,274	89%	1,998	20,705	22,703	429	1.25%	13.82%	1.02x
Vintage Year 2014 Total		255,000	65,451	215,068	74%	78,953	208,708	287,661	72,593	15.19%		1.34x
Vintage Year 2015												
ArcLight Energy Partners Fund VI	Energy	40,000	5,563	42,665	86%	15,767	35,263	51,030	8,365	8.00%	8.22%	1.20x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	6,644	35,999	83%	7,450	35,493	42,943	6,945	8.40%	8.22%	1.19x
Atalaya Real Assets SMA	Real Asset Debt	100,000	84,789	36,169	15%	25,769	17,729	43,498	7,329	10.55%	N/A	1.20x
Vintage Year 2015 Total		180,000	96,996	114,833	46%	48,986	88,485	137,471	22,639	8.83%		1.20x
Vintage Year 2016												
ACM Fund II, LLC	Agriculture	25,000	5,586	23,561	78%	4,581	16,406	20,987	-2,573	-8.09%	6.21%	0.89x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	9,702	30,288	76%	6,410	31,442	37,851	7,564	12.90%	N/A	1.25x
IFM Global Infrastructure Fund	Infrastructure	125,053	0	125,053	100%	33,389	130,268	163,657	38,604	15.95%	N/A	1.31x
Vintage Year 2016 Total		190,053	15,287	178,901	92%	44,380	178,116	222,496	43,595	13.12%		1.24x
Vintage Year 2017												
Quantum Energy Partners VII, LP	Energy	40,000	20,560	21,797	49%	2,415	19,060	21,475	-322	-1.16%	7.15%	0.99x
Meridiam Infrastructure North America Fund III	Infrastructure	50,000	47,749	2,251	5%	1	521	522	-1,729	-79.45%	N/A	0.23x
Vintage Year 2017 Total		90,000	68,309	24,049	24%	2,416	19,581	21,997	-2,052	-6.83%		0.91x
Vintage Year 2018												
Paine Schwartz Food Chain Fund V, LP	Agriculture	40,000	40,000	0	0%	0	-874	-874	-874	N/M	N/M	N/A

¹Benchmarks:

Real Assets Portfolio: 45% Cambridge Infrastructure, 35% Cambridge Energy, 10% NCREIF Timberland, 10% NCREIF Farland
 Energy Investments: Cambridge Associates median return for the respective vintage years.
 Infrastructure Investments: Cambridge Associates median return for the respective vintage years.

Real Assets Portfolio Performance Details – as of December 31, 2019 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
EnCap Flatrock Midstream IV, L.P.	Energy	22,500	15,205	7,880	32%	588	8,492	9,080	1,200	N/M	N/M	1.15x
Tailwater Energy Fund III, LP	Energy	32,000	9,772	24,283	69%	1,662	24,091	25,753	1,470	N/M	N/M	1.06x
ISQ Global Infrastructure Fund II	Infrastructure	50,000	29,826	23,872	40%	3,697	22,857	26,554	2,682	N/M	N/M	1.11x
Vintage Year 2018 Total		144,500	94,803	56,035	34%	5,947	54,566	60,513	4,478	N/M		1.08x
Vintage Year 2019												
Tailwater Energy Fund IV, LP	Energy	35,000	29,074	5,926	17%	0	5,656	5,656	-271	N/M	N/M	0.95x
Brookfield Infrastructure Fund IV	Infrastructure	40,000	28,135	11,865	30%	0	11,638	11,638	-227	N/M	N/M	0.98x
EQT Infrastructure IV (No.2) USD SCSp	Infrastructure	35,000	28,673	6,977	18%	48	6,821	6,869	-108	N/M	N/M	0.98x
Vintage Year 2019 Total		110,000	85,882	24,768	22%	48	24,114	24,162	-606	N/M		0.98x
Portfolio Total :		1,002,553	428,758	650,898	57%	208,904	590,531	799,435	148,536	11.87%	6.32%	1.23x
Portfolio Strategy Totals												
Agriculture		65,000	45,586	23,561	30%	4,581	15,532	20,113	-3,447	-11.07%		0.85x
Energy		372,500	117,597	298,257	68%	117,910	247,100	365,010	66,753	11.73%		1.22x
Infrastructure		465,053	180,786	292,911	61%	60,643	310,170	370,813	77,901	13.38%		1.27x
Real Asset Debt		100,000	84,789	36,169	15%	25,769	17,729	43,498	7,329	10.55%		1.20x
Portfolio Total :		1,002,553	428,758	650,898	57%	208,904	590,531	799,435	148,536	11.87%	6.32%	1.23x
Portfolio Geography Totals												
US		712,500	332,422	452,844	53%	165,360	387,506	552,865	100,021	10.82%		1.22x
Non-US		290,053	96,336	198,054	67%	43,544	203,025	246,569	48,515	15.14%		1.24x
Portfolio Total		1,002,553	428,758	650,898	57%	208,904	590,531	799,435	148,536	11.87%	6.32%	1.23x

¹Benchmarks:

Real Assets Portfolio: 45% Cambridge Infrastructure, 35% Cambridge Energy, 10% NCREIF Timberland, 10% NCREIF Farmland

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

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

Real Assets Portfolio Characteristics as of December 31, 2019

The SCERS Real Assets portfolio is primarily Infrastructure and Energy

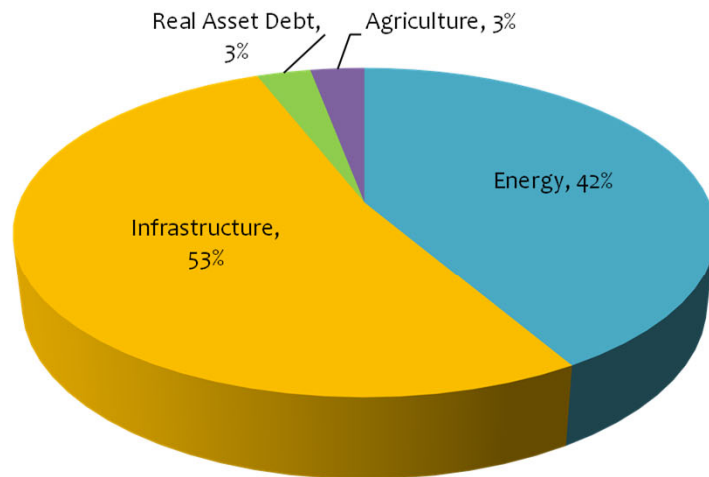
- Other strategies such as Agriculture represent much smaller allocations in the portfolio

The portfolio is focused on North America, though is diversified globally

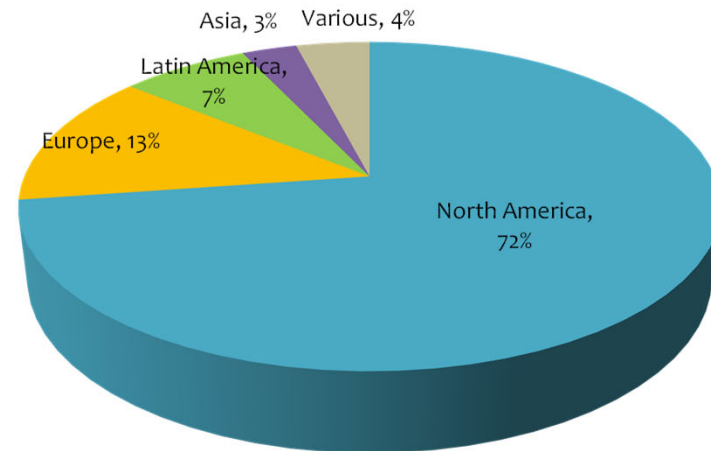
- The portfolio has exposure to Europe, Latin America, and Asia

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 12/31/19.

Opportunities Portfolio – as of December 31, 2019

The Opportunities portfolio's net IRR since inception is 18.36%

- The long-term benchmark is SCERS' 7.00% total portfolio actuarial return objective
- Also tracking the portfolio's 3 year IRR versus an intermediate-term benchmark
 - 5.73% portfolio IRR v 9.56% IRR for the SCERS' total portfolio policy weighted benchmark over the last 3 years
- The portfolio only includes legacy distressed debt funds (fully liquidated) and one post-2009 distressed fund (Atalaya V)
 - The 3 year comparison, for example, reflects only the performance of Atalaya V

The legacy distressed funds performed very well, the current fund is performing at expectations

- 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
- Atalaya SOF V, a vintage 2013 fund, has produced a 7.99% net IRR since inception

Changes during the quarter

- SCERS made no new commitments categorized as Opportunities funds during Q4 2019
- No new contributions, \$0.3 million in distributions
- Portfolio IRR decreased 0.01%, total portfolio gain increased slightly

As mentioned, the Opportunities portfolio only includes certain distressed debt fund(s)

- SCERS has additional distressed debt investments within its Private Equity portfolio
- Categorizations were made at the time of each investment

Opportunities Portfolio Performance Details – as of December 31, 2019

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2007												
* PIMCO Distressed Mortgage Fund, LP	Distressed Debt	18,000	0	18,000	100%	25,384	0	25,384	7,384	8.96%	9.84%	1.41x
Vintage Year 2007 Total		18,000	0	18,000	100%	25,384	0	25,384	7,384	8.96%		1.41x
Vintage Year 2008												
* PIMCO Distressed Mortgage Fund II, L.P.	Distressed Debt	12,000	0	12,000	100%	35,277	0	35,277	23,277	34.39%	12.22%	2.94x
Vintage Year 2008 Total		12,000	0	12,000	100%	35,277	0	35,277	23,277	34.39%		2.94x
Vintage Year 2009												
* MetWest Enhanced TALF Strategy Fund LP	Distressed Debt	20,000	0	20,000	100%	25,304	0	25,304	5,304	11.21%	14.45%	1.27x
* Stone Tower Structured Credit Recovery Fund LP	Distressed Debt	25,000	0	25,248	100%	43,383	0	43,383	18,135	25.30%	14.45%	1.72x
Vintage Year 2009 Total		45,000	0	45,248	100%	68,687	0	68,687	23,439	19.71%		1.52x
Vintage Year 2013												
Atalaya Special Opportunities Fund V, L.P.	Distressed Debt	25,000	1,117	24,875	96%	24,140	7,061	31,201	6,326	7.99%	8.41%	1.25x
Vintage Year 2013 Total		25,000	1,117	24,875	96%	24,140	7,061	31,201	6,326	7.99%		1.25x
Portfolio Total :		100,000	1,117	100,123	99%	153,488	7,061	160,549	60,426	18.36%	7.00%	1.60x

* Liquidated partnership

¹ Benchmarks:

Opportunities Investments: Cambridge Associates median return for the respective strategies and vintage years
Opportunities Portfolio: 7.00% actuarial return objective

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