

Investment
Cost Effectiveness Analysis
(for the 5 years ending December 31, 2015)

South Carolina Retirement Systems
Investment Commission



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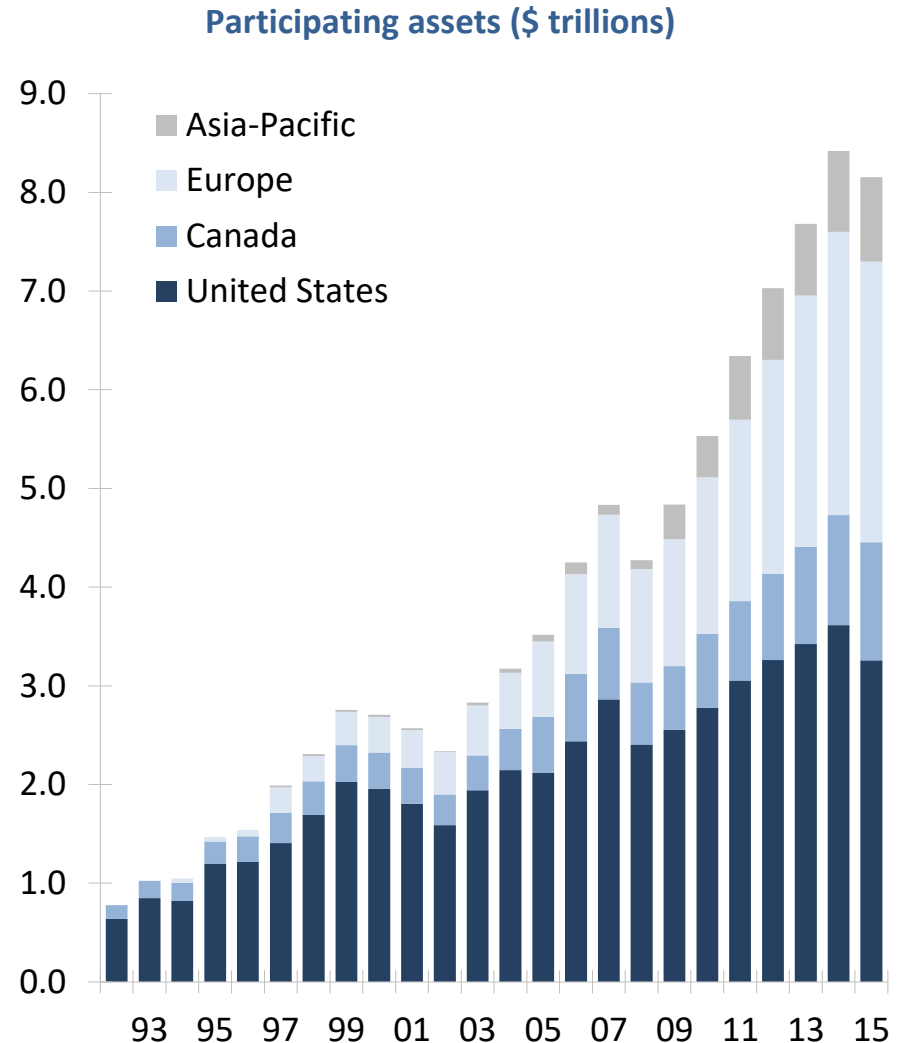
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Prepared December 08, 2016. Although the information in this report has been based upon and obtained from sources we believe to be reliable, Cost Effectiveness Measurement Inc. ("CEM") does not guarantee its accuracy or completeness. The information contained herein is proprietary and confidential and may not be disclosed to third parties without the express written mutual consent of both CEM and South Carolina Retirement Systems Investment Commission.

This benchmarking report compares your cost and return performance to CEM's extensive pension database.

- 165 U.S. pension funds participate. The median U.S. fund had assets of \$7.1 billion and the average U.S. fund had assets of \$19.8 billion. Total participating U.S. assets were \$3.3 trillion.
- 75 Canadian funds participate with assets totaling \$1,194 billion.
- 53 European funds participate with aggregate assets of \$2.8 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, Switzerland and the U.K.
- 9 Asia-Pacific funds participate with aggregate assets of \$857 billion. Included are funds from Australia, New Zealand, China and South Korea.

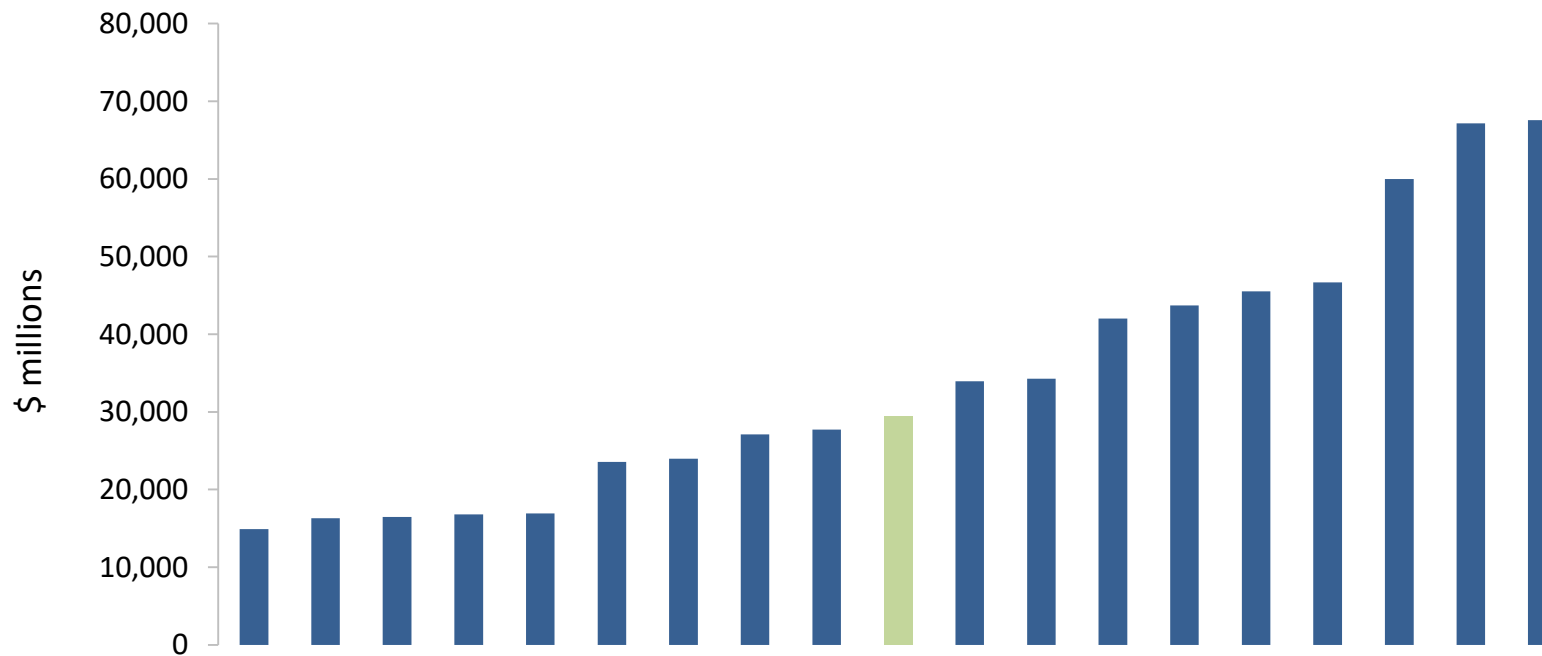
The most meaningful comparisons for your returns and value added are to the U.S. Public universe which consists of 57 funds.



The most valuable comparisons for cost performance are to your custom peer group because size impacts costs.

Peer group for South Carolina Retirement Systems Investment Commission

- 19 U.S. public sponsors from \$15 billion to \$68 billion
- Median size of \$29 billion versus your \$29 billion



To preserve client confidentiality, given potential access to documents as permitted by the Freedom of Information Act, we do not disclose your peers' names in this document.

What gets measured gets managed, so it is critical that you measure and compare the right things:

1. Returns

Why do total returns differ from other funds? What was the impact of your policy mix decisions versus implementation decisions?

2. Net value added

Are your implementation decisions (i.e., the amount of active versus passive management) adding value?

3. Costs

Are your costs reasonable? Costs matter and can be managed.

4. Cost effectiveness

Net implementation value added versus excess cost. Does paying more get you more?

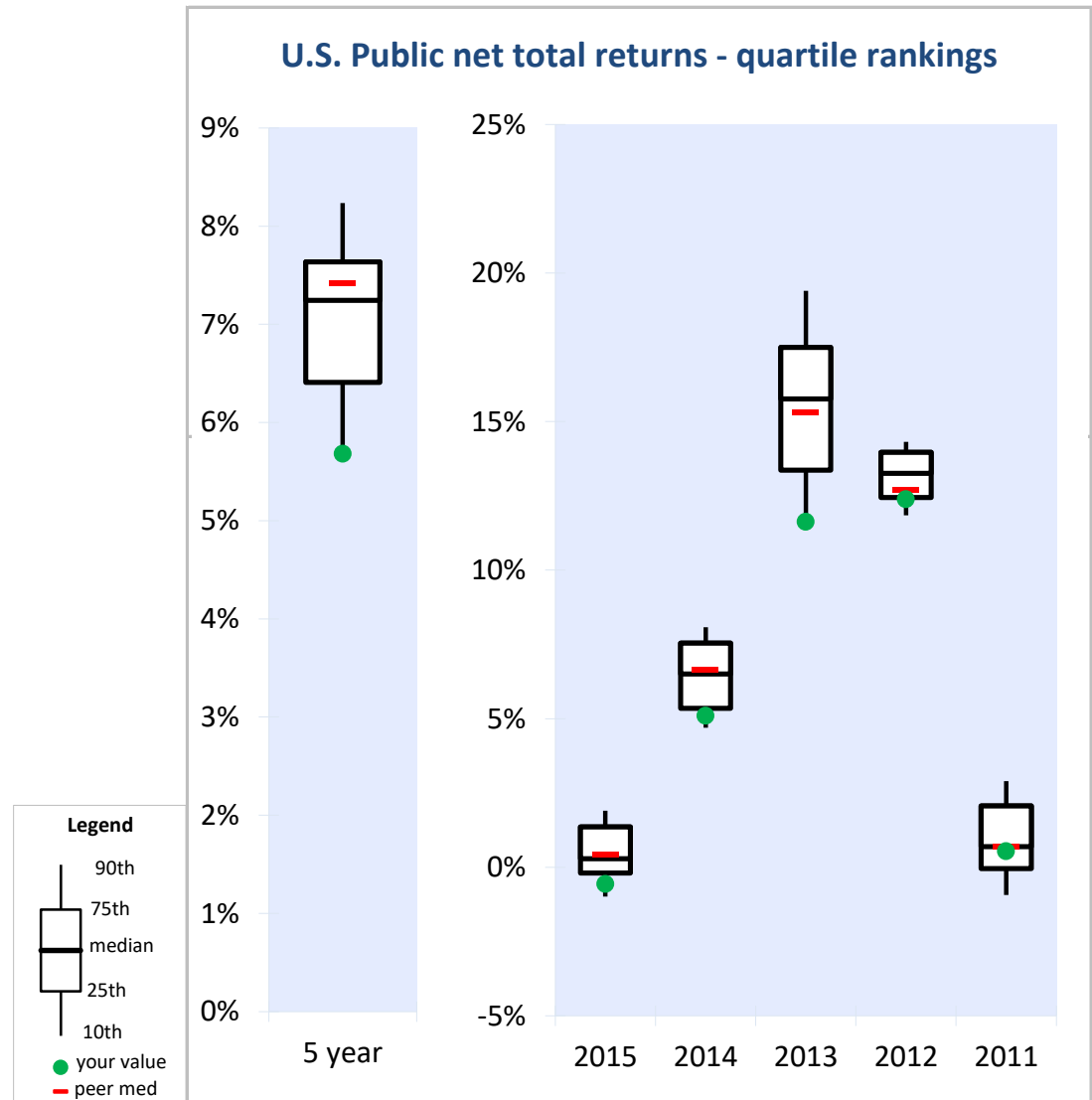
Your 5-year net total return of 5.7% was below the U.S. Public median of 7.2%.

Total returns, by themselves, provide little insight into the reasons behind relative performance. Therefore, we separate total return into its more meaningful components: policy return and value added.

	Your 5-year
Net total fund return	5.7%
- Policy return	4.9%
= Net value added	0.8%

This approach enables you to understand the contribution from both policy mix decisions (which tend to be the board's responsibility) and implementation decisions (which tend to be management's responsibility).

The median 5-year net total return of your peers was 7.4%.



Your 5-year policy return of 4.9% was below the U.S. Public median of 7.2%.

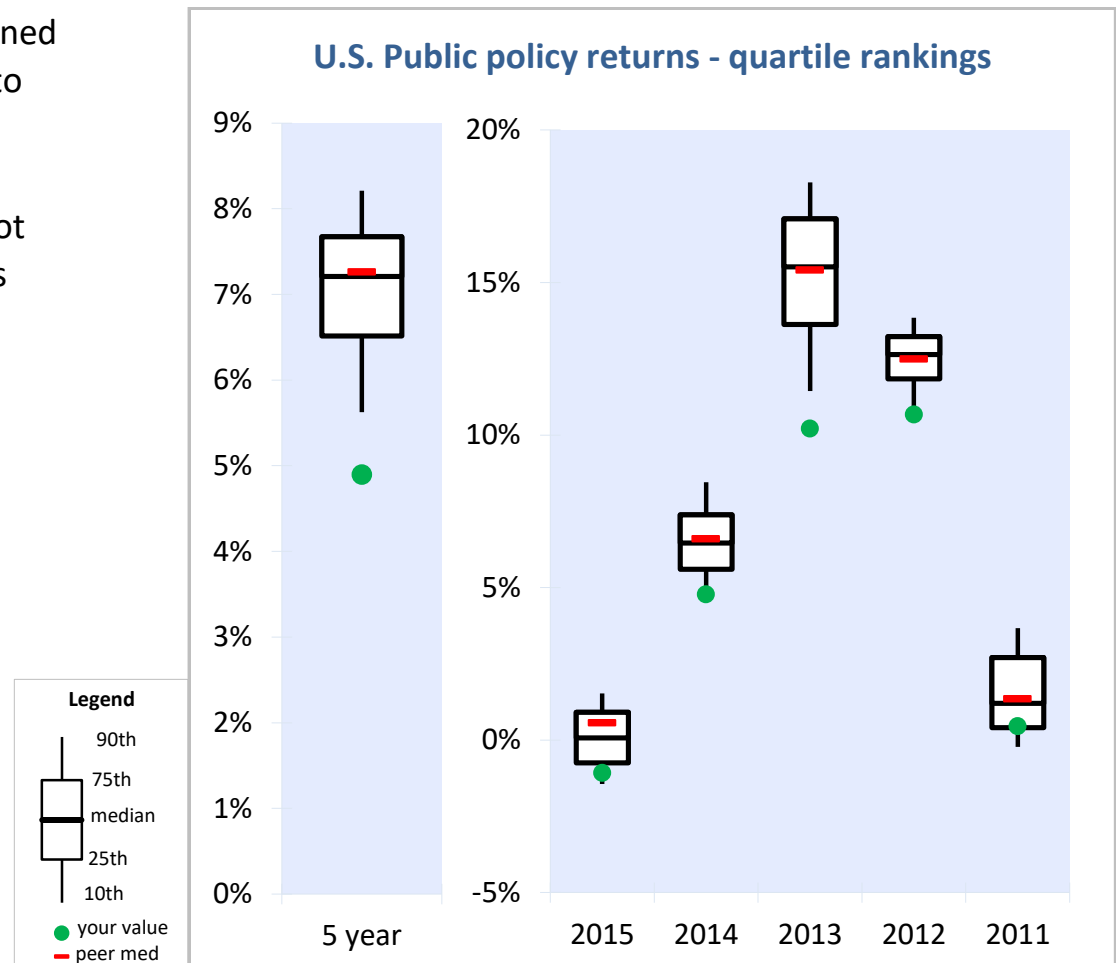
Your policy return is the return you could have earned passively by indexing your investments according to your policy mix.

Having a higher or lower relative policy return is not necessarily good or bad. Your policy return reflects your investment policy, which should reflect your:

- Long term capital market expectations
- Liabilities
- Appetite for risk

Each of these three factors is different across funds. Therefore, it is not surprising that policy returns often vary widely between funds.

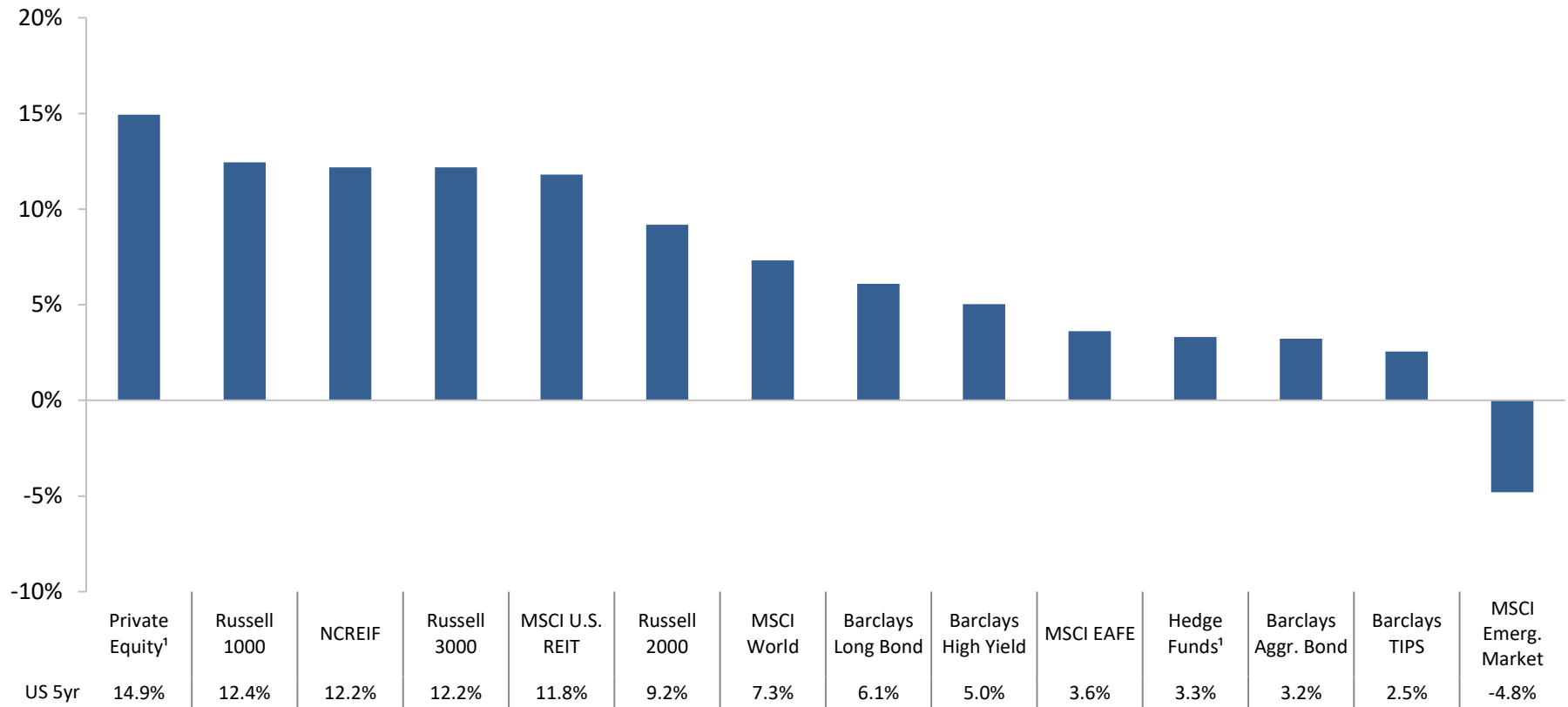
The median 5-year policy return of your peers was 7.3%.



To enable fairer comparisons, the policy returns of all participants except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your 5-year policy return would be 5.4%, 0.5% higher than your actual 5-year policy return of 4.9%. Mirroring this, your 5-year total fund net value added would be 0.5% lower. Refer to the Research section pages 6-7 for details.

Differences in policy returns are caused by differences in benchmarks and policy mix. The two best performing asset classes for the 5 years ending 2015 were private equity¹ and large cap stock (Russell 1000).

5-Year returns for frequently used benchmark indices



1. The private equity benchmark is the average of the default private equity benchmark returns applied to U.S. participants. The hedge fund benchmark is the average benchmark return reported by U.S. participants.

Your 5-year policy return was below the U.S. Public median primarily because of:

- The negative impact of your lower weight in one of the better performing asset classes of the past 5 years: U.S. Stock (your 6% 5-year average weight versus a U.S. average of 24%).
- The negative impact of your higher weight in one of the poorer performing asset classes of the past 5 years: Cash (your 6% 5-year average weight versus a U.S. average of 0%).
- The negative impact of your higher weight in one of the poorer performing asset classes of the past 5 years: Global TAA (your 10% 5-year average weight versus a U.S. average of 1%).
- The negative impact of your higher weight in one of the poorer performing asset classes of the past 5 years: Commodities (your 3% 5-year average weight versus a U.S. average of 1%).

1. Does not include Absolute Return hedge fund investments used in Portable Alpha implementation.

2. Private Equity includes private equity and private debt.

3. Policy benchmark switched to a single Global Equity index for public equities in 2013. Five year averages are understated due to lack of 5 years of consecutive data in each segment of Total Stock.

5-Year average policy mix for calendar years 2011-2015

	Your Fund	Peer Avg.	U.S. Public Avg.
U.S. Stock	6% ³	23%	24%
EAFE Stock	3% ³	5%	6%
Emerging Market Stock	3% ³	1%	2%
ACWIxUS Stock	0%	11%	9%
Global Stock	19% ³	8%	8%
Total Stock	31%	48%	49%
U.S. Bonds	9%	20%	18%
High Yield Bonds	5%	2%	2%
Fixed Income - Emerging	5%	1%	1%
Global Bonds	2%	2%	2%
Cash	6%	1%	0%
Other Fixed Income	0%	3%	4%
Total Fixed Income	27%	29%	27%
Global TAA	10%	1%	1%
Hedge Funds ¹	7%	3%	4%
Commodities	3%	1%	1%
Real Estate incl. REITS	5%	8%	7%
Other Real Assets	0%	1%	2%
Private Equity ²	17%	9%	8%
Total	100%	100%	100%

Your policy asset mix has changed over the past 5 years. At the end of 2015 your policy mix compared to your peers and the U.S. universe as follows:

Policy asset mix

Asset class	Your fund		Peer avg.	U.S. Public avg.
	2011	2015	2015	2015
U.S. Stock	14%	0%	22%	23%
EAFE Stock	8%	0%	4%	5%
Emerging Market Stock	8%	0%	1%	2%
ACWIxUS Stock	0%	0%	10%	9%
Global Stock	0%	34%	10%	9%
Total Stock	30%	34%	48%	49%
U.S. Bonds	10%	10%	20%	17%
High Yield Bonds	3%	5%	1%	2%
Fixed Income - Emerging	3%	5%	1%	1%
Global Bonds	3%	0%	1%	2%
Cash	10%	2%	1%	-1%
Other Fixed Income	0%	0%	3%	5%
Total Fixed Income	29%	22%	27%	26%
Global TAA	10%	10%	1%	1%
Hedge Funds ¹	5%	10%	4%	5%
Commodities	2%	3%	1%	1%
Real Estate incl. REITS	6%	5%	8%	8%
Other Real Assets	0%	0%	2%	2%
Private Equity ²	18%	16%	9%	9%
Total	100%	100%	100%	100%

1. Does not include Absolute Return hedge fund investments used in Portable Alpha implementation.

2. Private Equity includes private equity and private debt.

Net value added is the component of total return from active management. Your 5-year net value added was 0.8%.

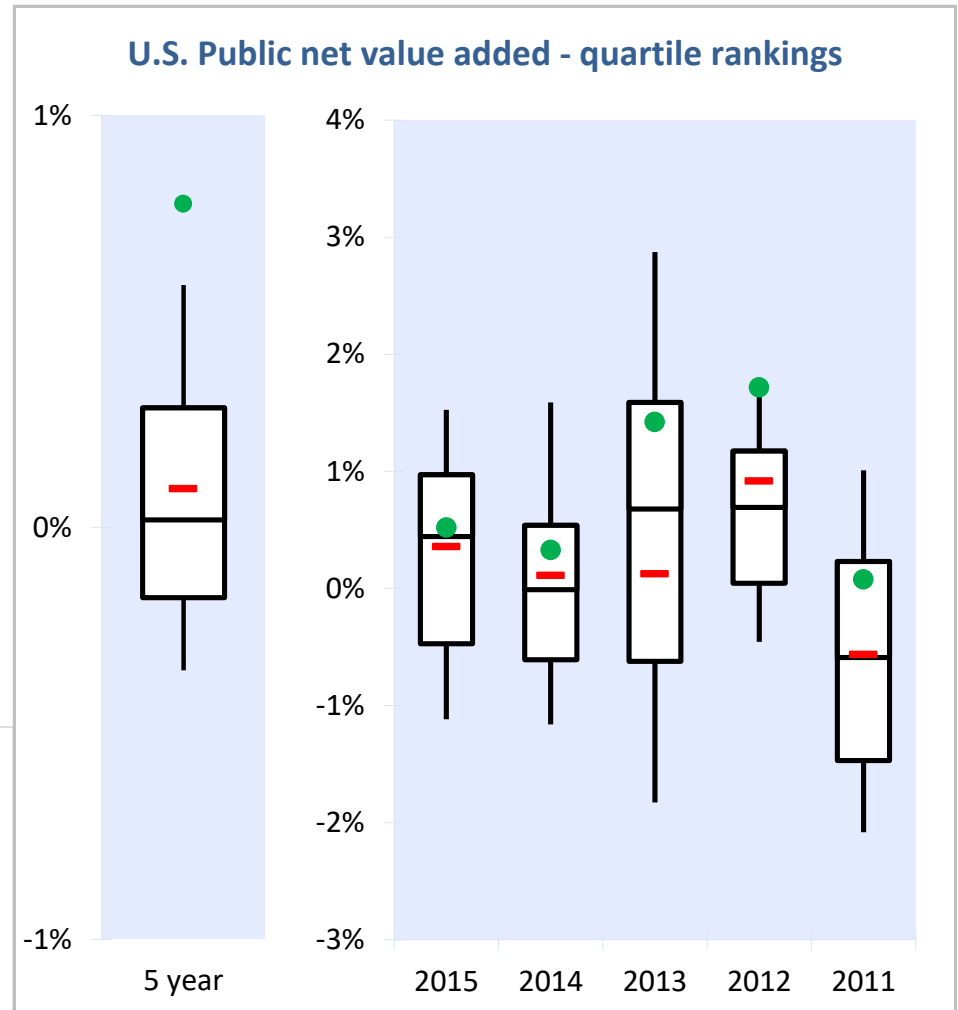
Net value added equals total net return minus policy return.

Value added for South Carolina Retirement Systems Investment Commission

Year	Net Return	Policy Return	Net value Added
2015	(0.6%)	(1.1%)	0.5%
2014	5.1%	4.8%	0.3%
2013	11.6%	10.2%	1.4%
2012	12.4%	10.7%	1.7%
2011	0.5%	0.5%	0.1%
5-year	5.7%	4.9%	0.8%

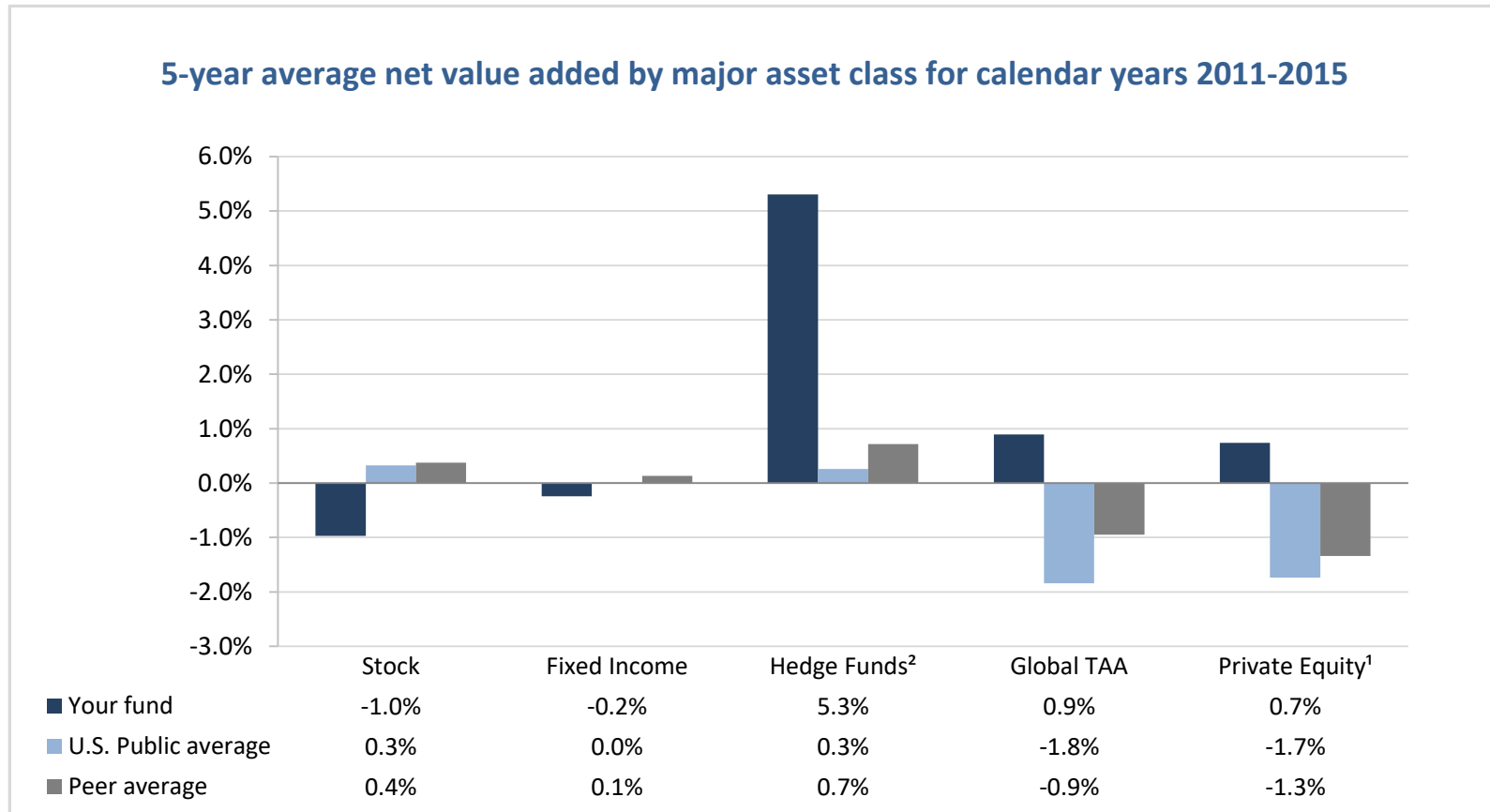
Your 5-year net value added of 0.8% compares to a median of 0.1% for your peers and 0.0% for the U.S. Public universe.

In dollars, your 0.8% 5-year value added translates into approximately \$1.2 billion of cumulative value added over 5 years, or \$1.2 billion more than if you had earned the U.S. Public median of 0.0%.



Your value added was impacted by your choice of benchmarks for private equity. CEM suggests using lagged, investable benchmarks for private equity (see Research section, pages 6-7, for reasons why). If your fund used the private equity benchmark suggested by CEM, your 5-year total fund value added would have been 0.5% lower.

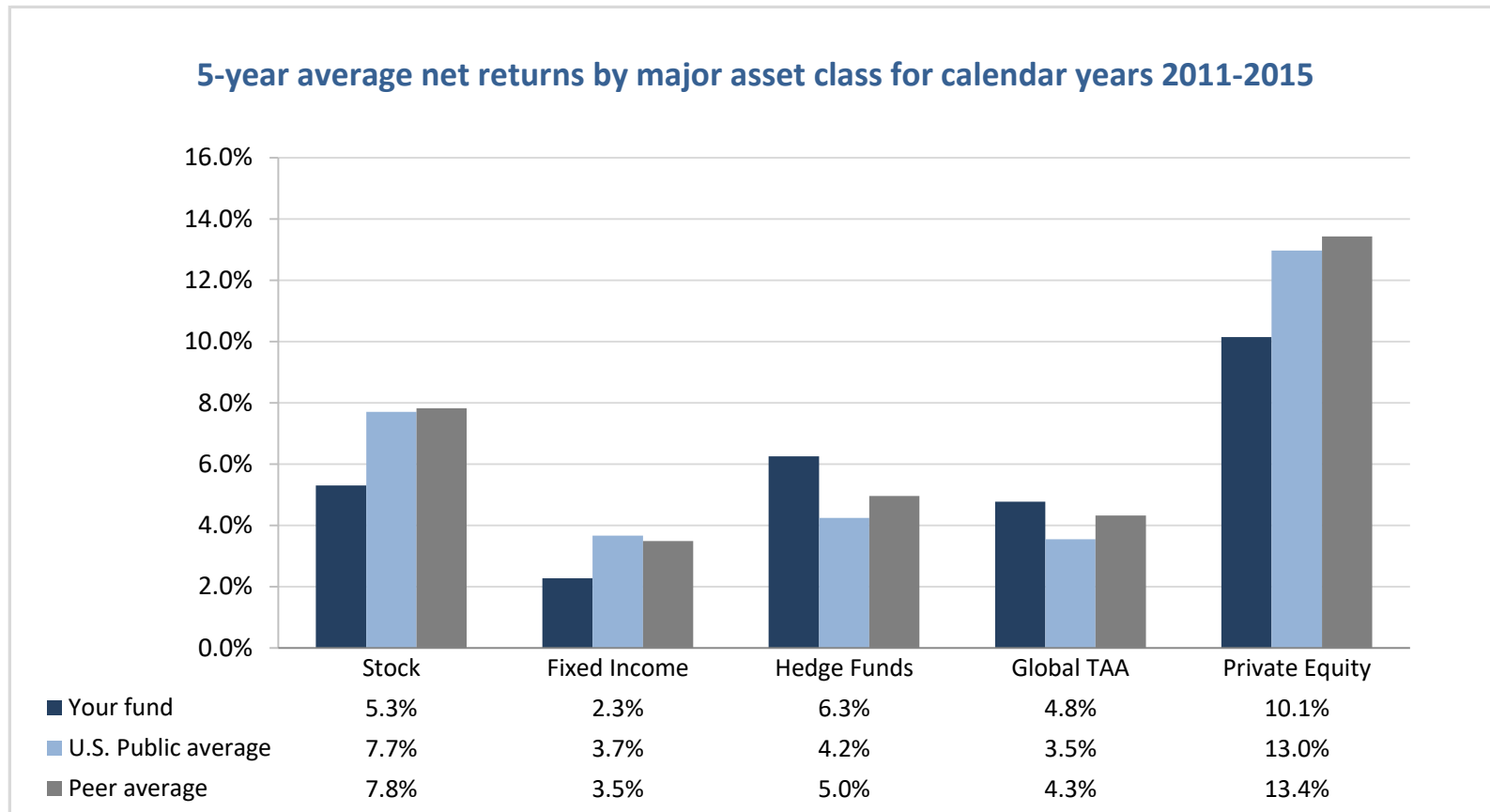
You had positive 5-year net value added in Hedge Funds, Global TAA and Private Equity.



1. To enable fairer comparisons, the private equity benchmarks of all participants, except your fund, were adjusted to reflect lagged, investable, public-market indices. If your fund used the private equity benchmark suggested by CEM, your fund's 5-year private equity net value added would have been -2.0%. Refer to the Research section, pages 6-7, for details as to why this adjustment makes for better comparisons. It is also useful to compare total returns. Your 5-year total return of 10.1% for private equity was below the U.S. average of 13.0%.

2. It is also useful to compare total returns for hedge funds. Your 5-year return of 6.3% for hedge funds was above the U.S. average of 4.2%.

You had higher 5-year net returns in Hedge Funds and Global TAA relative to the U.S. Public average.



Your total investment management of \$240.5 million per this report reconcile to your reconciled to the South Carolina Retirement Systems Financial Statements and Supporting Detail Fee Schedule as follows:

Investment costs	\$000s
Investment cost per South Carolina Retirement Systems Financial Statements - June 2016	275.5
- Costs according to CEM definitions - Dec 2015	<u>240.5</u>
= Difference to be reconciled	35.0
CEM adds costs for:	
Private equity fund of funds: embedded fees ¹	-10.9
Difference between contractual fee and actual fees ²	<u>2.3</u>
Total costs added	-8.6
CEM excludes:	
Private asset performance fees ³	28.5
Partnership operating expenses	30.0
Timing difference between 6 months ending Dec 2015 and June 2016	-15.0
Net difference	35.0

1. To allow costs comparisons between the different styles of hedge funds and private assets, CEM adds the manager fees of the underlying managers in fund of funds arrangements.
2. In order to avoid the inconsistent treatment of rebates by different funds, CEM compares private equity costs based on the management fees implied in each limited partnership contract.
3. CEM excludes private asset performance fees from benchmarking because only a limited number of participants are currently able to provide this data.

Your investment costs benchmarked in this report for calendar year 2015 were \$240.5 million or 81.8 basis points.

Asset management costs by asset class and style (\$000s)	Internal Mgmt		External Management			Total	
	Active	Overseeing of external	Passive fees	Active base fees	Perform. fees ³		
U.S. Stock - Broad/All	1	454	356	7,431		8,242	2.8bp
Stock - Emerging		250		7,658		7,908	2.7bp
Stock - Global		1,295	614	5,589		7,498	2.6bp
Fixed Income - U.S.	88	620		2,972	205	3,886	1.3bp
Fixed Income - Emerging		367	606	2,429		3,402	1.2bp
Fixed Income - Global		235		1,359		1,594	0.5bp
Fixed Income - High Yield		407		7,080		7,488	2.5bp
Cash	400	502		2,411		3,314	1.1bp
Global TAA		583		12,102		12,684	4.3bp
Hedge Funds - Direct		336		27,898	30,946	59,180	20.1bp
Hedge Funds - Fund of Funds		580		33,957	13,864	48,402	16.5bp
Real Estate	7					7	0.0bp
Real Estate - LPs		318		16,329 ¹	34,048 ³	16,646	5.7bp
Diversified Private Equity		332		18,910 ¹	12,063 ³	19,242	6.5bp
Diversified Priv.Eq. - Fund of Funds		188		17,004 ²	2,658 ^{2 3}	17,192	5.9bp
Diversified Priv. Eq. - Co-investments		177		1,366		1,543	0.5bp
Private Debt Limited Partnerships		427		17,178 ¹	-248	17,605	6.0bp
Private Debt Limited Partnerships - Co-investments		5		41		46	0.0bp
Overlay Programs		174		863		1,037	0.4bp
Total excluding private asset performance fees						236,917	80.6bp
Oversight, custodial and other costs ⁴							
Oversight of the fund						1,201	0.4bp
Trustee & custodial						766	0.3bp
Consulting and performance measurement						1,030	0.4bp
Audit						201	0.1bp
Other						345	0.1bp
Total oversight, custodial & other costs						3,543	1.2bp
Total investment costs (excl. transaction costs & private asset performance fees)						240,459	81.8bp

Footnotes

¹ Cost derived from the partnership level detail you provided. Costs are based on partnership contract terms.

² Default underlying costs were added to fund of funds. The defaults added were: Diversified Priv.Eq. 165 bps base fees refer to Appendix A for full details.

³ Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Such cost are excluded cause at this time most of your peer group did not have this data readily available for disclosure. Performance fees are included for the public market asset classes and hedge funds.

⁴ Excludes non-investment costs, such as PBGC premiums and preparing checks for retirees.

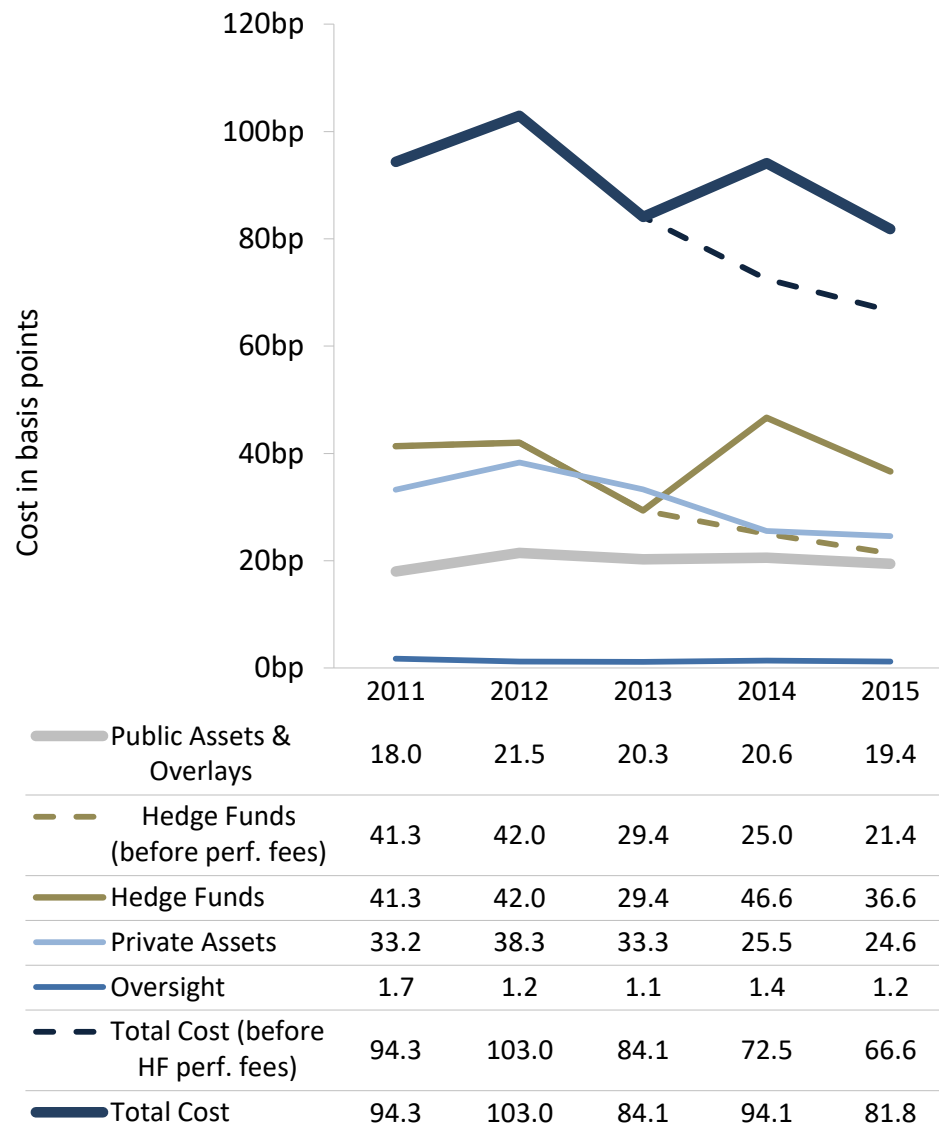
Your costs decreased between 2011 and 2015.

Your costs decreased primarily because:

- You decreased your investment in the highest cost asset classes. Your holdings of hedge funds and private equity decreased from 43% of assets in 2011 to 30% in 2015.
- You increased your use of lower cost passive and internal management from 13% of assets in 2011 to 27% in 2015.
- You decreased your use of funds of funds from 36% of hedge funds and private equity in 2011 to 32% in 2015. Funds of funds are higher cost than direct funds.

Starting in 2014, CEM began including hedge fund performance fees in total costs. Prior year costs do not include hedge fund performance fees. Your cost in 2015 excluding hedge fund performance fees was 66.6 bps.

Trend in your investment costs



Your total investment cost of 81.8 bps was above both the peer average of 62.6 bps and the U.S. public median of 56.3 bps.

Differences in total investment cost are often caused by two factors that are often outside of management's control:

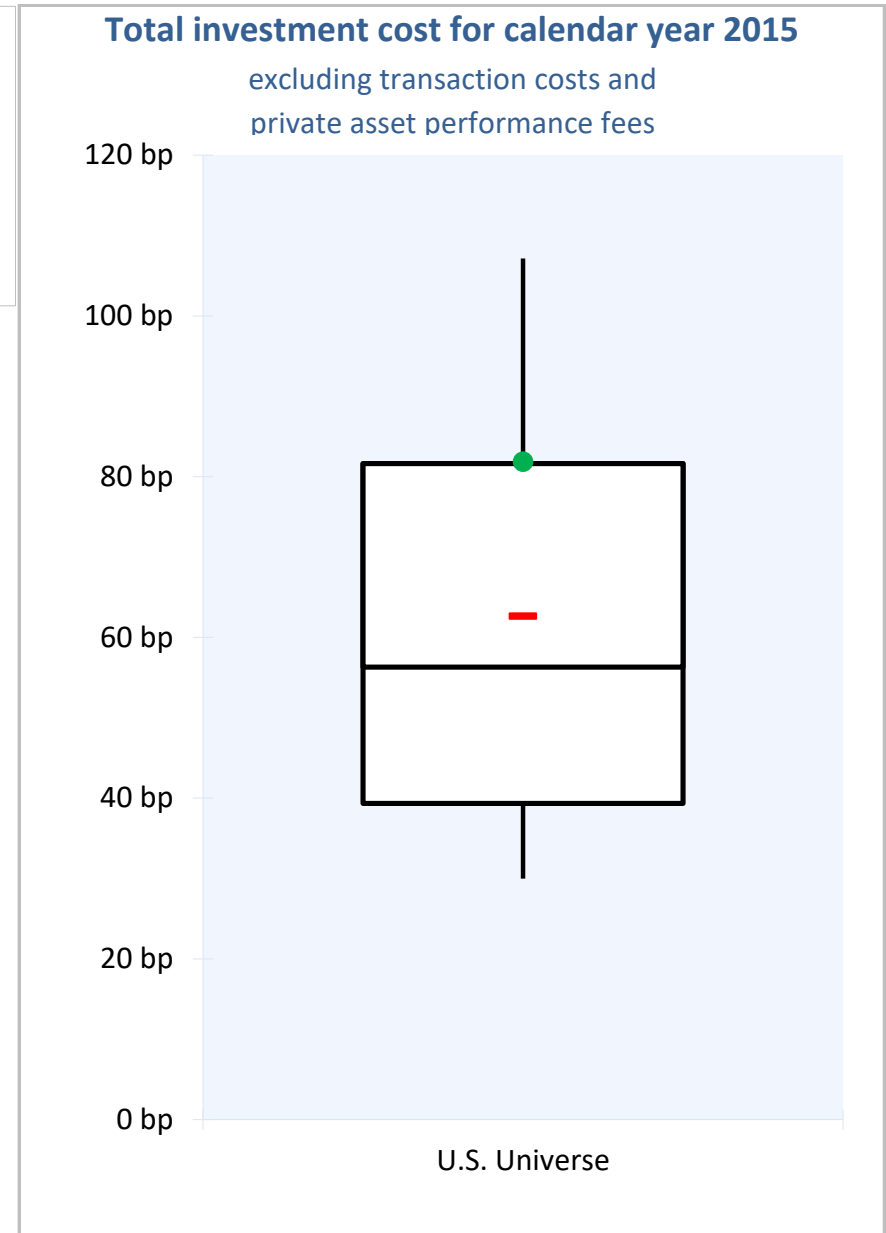
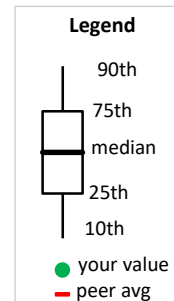
- Asset mix, particularly holdings of the highest cost asset classes: real estate (excl REITS), infrastructure, hedge funds and private equity. These high cost assets equaled 30% of your fund's assets at the end of 2015 versus a peer average of 23%.
- Fund size. Bigger funds have advantages of scale.

Asset mix is set by policy and may include high cost asset classes. Peers who do not have high cost asset classes in their policy mix will have lower total costs. Therefore, policy asset mix is a major driver of total cost.

Fund size is also a major driver of cost because funds with a larger size have scale advantages and are often able to negotiate lower costs.

A total cost comparison to peers which is not adjusted for asset mix and fund size will not be an appropriate measure because of these factors. Used out of context, a total cost comparison could be misleading and lead to the wrong conclusion.

In order to provide plan sponsors with accurate feedback regarding reasonableness of costs, CEM takes asset mix and overall fund size into consideration. CEM calculates a benchmark cost for your fund that considers your unique asset mix and style. This analysis is shown on the following page.



Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was 5.1 bps above your benchmark cost in 2015.

Your benchmark cost is an estimate of what your cost would be given your actual asset mix and the median costs that your peers pay for similar services. It represents the cost your peers would incur if they had your actual asset mix.

Your total cost of 81.8 bps was 5.1 bps above your benchmark cost of 76.8 bps. Thus, your excess cost was 5.1 bps.

Your cost versus benchmark

	\$000s	basis points
Your total investment cost	240,459	81.8 bp
Your benchmark cost	225,583	76.8 bp
Your excess cost	14,877	5.1 bp

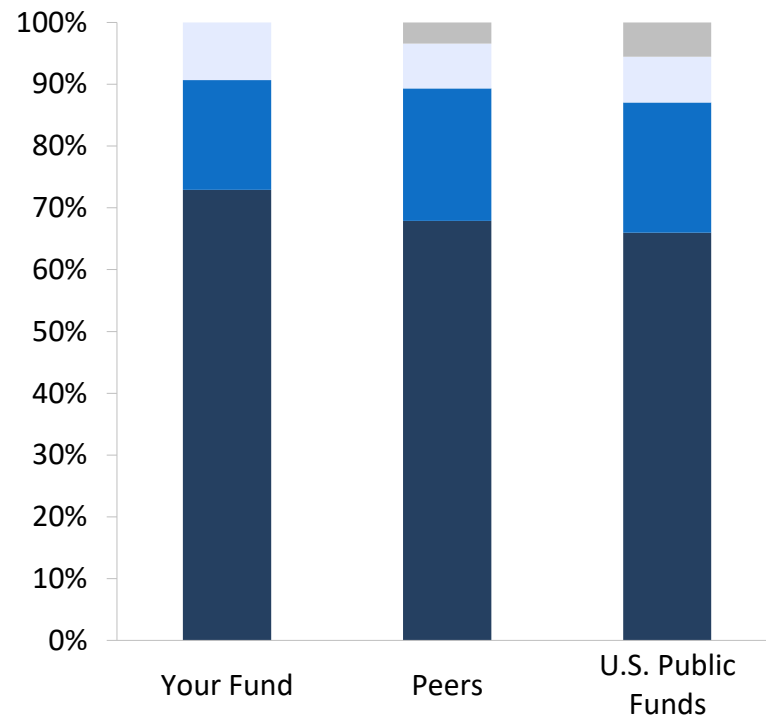
Differences in cost performance are often caused by differences in implementation style.

Implementation style is defined as the way in which your fund implements asset allocation. It includes internal, external, active, passive and fund of funds styles.

The greatest cost impact is usually caused by differences in the use of:

- External active management because it tends to be much more expensive than internal or passive management. You used more external active management than your peers (your 73% versus 68% for your peers).
- Within external active holdings, fund of funds usage because it is more expensive than direct fund investment. You had more in fund of funds. Your 32% of hedge funds, real estate and private equity in fund of funds compared to 16% for your peers.

Implementation style¹



Implementation Style	Your Fund	Peers	U.S. Public Funds
Internal passive	0%	3%	6%
Internal active	9%	7%	7%
External passive	18%	21%	21%
External active	73%	68%	66%

1. The graph above does not take into consideration the impact of derivatives.

Differences in implementation style cost you 3.4 bp relative to your peers.

Calculation of the cost impact of differences in implementation style for calendar year 2015

Asset class	Your avg holdings in \$mils (A)	% External active			Premium vs passive & internal ¹ (C)	Cost/ (savings) \$000s bps (A X B X C)	
		You	Peer average	More/ (less) (B)			
U.S. Stock - Broad/All	1,715	65.9%	34.5%	31.4%	41.0 bp	2,212	
Stock - Emerging	943	100.0%	77.9%	22.1%	49.7 bp	1,037	
Stock - Global	4,882	35.8%	63.6%	(27.8%)	35.1 bp	(4,765)	
Fixed Income - U.S.	2,702	86.5%	75.2%	11.3%	14.1 bp	430	
Fixed Income - Emerging	1,382	38.3%	87.2%	(48.9%)	25.6 bp	(1,732)	
Fixed Income - Global	885	100.0%	100.0%	0.0%		0	
Fixed Income - High Yield	1,536	100.0%	100.0%	0.0%		0	
Global TAA	2,196	100.0%	100.0%	0.0%		0	
Real Estate ex-REITs	1,438	98.1%	99.8%	(1.8%)	84.7 bp	(214)	
Partnerships, as a proportion of external:	1,411	100.0%	49.5%	50.5%	43.2 bp	3,076	
Diversified Private Equity	2,718	100.0%	100.0%	0.0%		0	
Private Debt Limited Partnerships	1,433	100.0%	100.0%	0.0%		0	
Impact of less/more external active vs. lower cost styles						45	0.0 bp
					Premium vs. direct LP ¹		
					Fund of funds % of LPs		
Hedge Funds	3,454	63.3%	33.6%	29.7%	45.0 bp	4,622	
Performance Fee Impact (on NAV):	3,454	63.3%	33.6%	29.7%	2.4 bp	242	
Real Estate ex-REITs - LPs	1,411	0.0%	1.5%	(1.5%)	Insufficient ²	0	
Diversified Private Equity - LPs	2,718	24.3%	11.9%	12.4%	90.0 bp	3,037	
Impact of less/more fund of funds vs. direct LPs						7,901	2.7 bp
					Overlays and other		
Impact of higher use of portfolio level overlays						2,136	0.7 bp
Impact of mix of internal passive, internal active, and external passive ³						6	0.0 bp
Total impact of differences in implementation style						10,087	3.4 bp

Footnotes

1. The cost premium is the additional cost of external active management relative to the average of other lower cost implementation styles - internal passive, internal active and external passive.
2. A cost premium listed as 'Insufficient' indicates that there was not enough peer data to calculate the premium.
3. The 'Impact of mix of internal passive, internal active and external passive' quantifies the net cost impact of differences in cost between, and your relative use of, these 'low-cost' styles.

The net impact of paying more/less for external asset management costs saved 3.5 bps.

Cost impact of paying more/(less) for external asset management for calendar year 2015

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less) (B)	
U.S. Stock - Broad/All - Passive	583	8.8	1.7	7.1	414
U.S. Stock - Broad/All - Active	1,130	68.4	42.8	25.6	2,894
Stock - Emerging - Active	943	83.8	61.1	22.7	2,145
Stock - Global - Passive	3,132	4.6	4.7	(0.1)	(37)
Stock - Global - Active	1,750	34.6	39.8	(5.3)	(919)
Fixed Income - U.S. - Active	2,337	16.3 ¹	16.2	0.0	11
Fixed Income - Emerging - Passive	853	9.8	Insufficient		
Fixed Income - Emerging - Active	529	48.5	35.4	13.2	697
Fixed Income - Global - Active	885	18.0	18.3	(0.3)	(28)
Fixed Income - High Yield - Active	1,536	48.8	41.8	6.9	1,064
Global TAA - Active	2,196	57.8	62.4*	(4.6)	(1,018)
Hedge Funds - Active	1,266	222.9 ¹	142.6	80.4	10,179
Hedge Funds - Fund of Fund	2,188	157.9 ¹	187.6	(29.7)	(6,498)
Real Estate ex-REITs - Limited Partnership	1,411	118.0	118.0	0.0	0
Diversified Private Equity - Active	2,058	101.0 ²	165.0	(64.0)	(13,166)
Diversified Private Equity - Fund of Fund	660	260.5 ²	255.0	5.5	360
Private Debt Limited Partnerships - Active	1,433	123.2	155.8	(32.6)	(4,678)
	<i>Notional</i>				
Derivatives/Overlays - Passive Beta	3,394	3.1	8.2*	(5.2)	(1,754)
Total impact of paying more/less for external management					(10,334)
Total in bps					(3.5) bp

'Insufficient' indicates insufficient peer and universe data to do meaningful comparisons.

*Universe median used as peer data was insufficient.

¹ You paid performance fees in these asset classes.

² You paid performance fees in these asset classes but they are not included in this analysis because most of your peer group did not have this data readily available for disclosure.

Your stronger hedge fund performance added 5.3 bps due to higher hedge fund performance fees.

Cost impact of paying more/(less) for private asset performance fees for calendar year 2015

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Univ. median	More/ (less) (B)	
Hedge Funds - Active	1,266	244.4	83.2*	161.2	20,411
Hedge Funds - Fund of Fund	2,188	63.4	85.5*	(22.2)	(4,850)
Total for hedge fund performance fees					15,561
Total in bps					5.3 bp

Your hedge funds outperformed their benchmark by 6.0% over 5-years compared to 0.3% for the U.S. public average. Your 5-year return of 6.9% for hedge funds was also above the U.S. average of 4.3%.

The net impact of paying more/less for internal asset management costs rounds to 0.0 bps.

Cost impact of paying more/(less) for internal asset management for calendar year 2015

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less) (B)	
U.S. Stock - Broad/All - Active	2	2.6	2.9*	(0.3)	(0)
Fixed Income - U.S. - Active	365	2.4	2.4	0.0	0
Real Estate ex-REITs - Active	28	2.7	11.5	(8.9)	(25)
Total impact of paying more/less for internal management					(25)
Total in bps					(0.0) bp

*Universe median used as peer data was insufficient.

The net impact of differences in oversight, custodial & other costs saved 0.1 bps.

Cost impact of differences in oversight, custodial & other costs for calendar year 2015

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your fund	Peer median	More/ (less) (B)	
Oversight	29,380	0.4	0.6	(0.2)	(550)
Consulting	29,380	0.4	0.3	0.0	56
Custodial	29,380	0.3	0.2	0.0	49
Audit	29,380	0.1	0.1	0.0	36
Other	29,380	0.1	0.1	(0.0)	(3)
Total					(412)
Total in bps					(0.1) bp

¹ Oversight of the fund includes staff salaries, direct expenses (travel, fees paid to directors, director's insurance, etc.) and related unallocated overhead pertaining to overseeing the fund assets. Include the costs of executives and their staff responsible for the total fund or responsible for overseeing multiple asset categories (for example, CEO, CIO office, Board of Director/Investment Committee etc.). Staff responsible for overseeing a single asset class category (i.e. private assets, stock, etc.) have their costs included with that asset category.

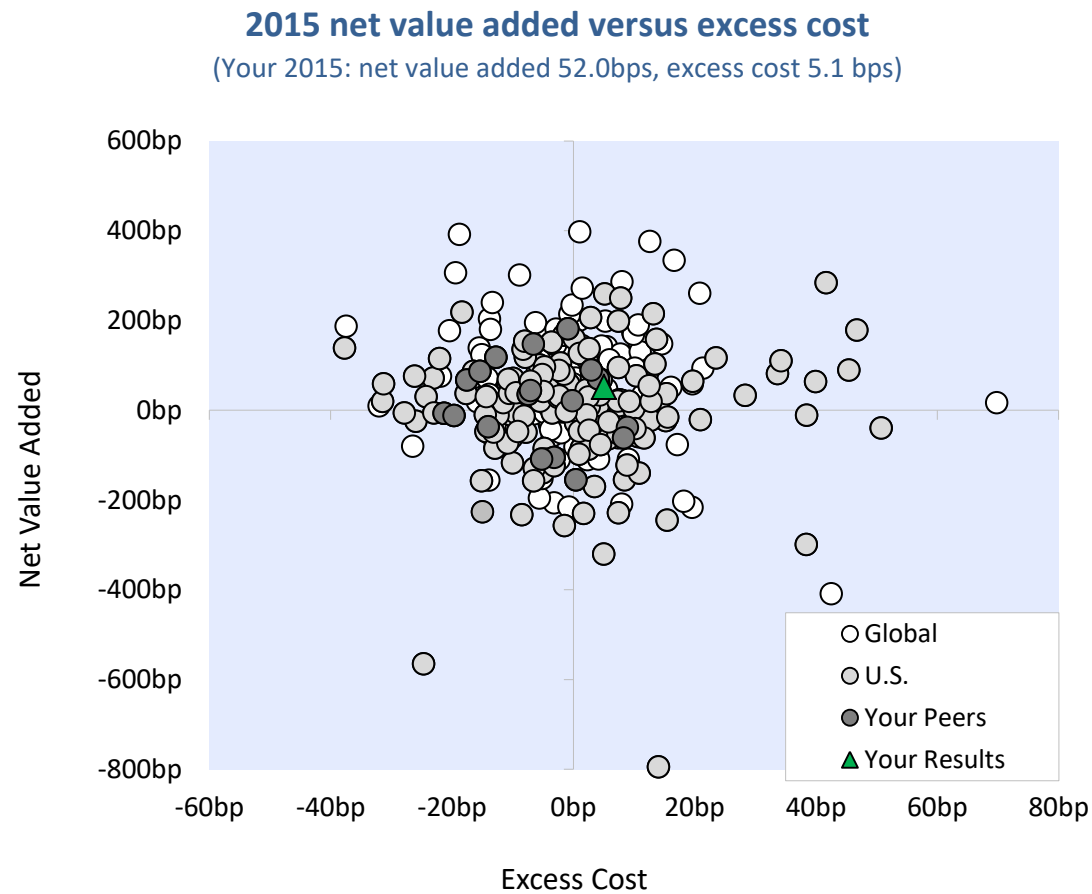
In summary, your fund was 5.1 bps above your benchmark cost because you had a higher cost implementation style and your strong hedge fund performance generated high performance fees.

Explanation of your cost status for calendar year 2015

	Excess Cost/ (Savings)	
	\$000s	bps
1. Higher cost implementation style		
• More fund of funds	7,901	2.7
• More external active management (less lower cost passive and internal)	45	0.0
• More overlays	2,136	0.7
• Other style differences	6	0.0
	<u>10,087</u>	<u>3.4</u>
2. Paying more than peers for similar services		
• External investment management costs	(10,334)	(3.5)
• Hedge fund performance fees	15,561	5.3
• Internal investment management costs	(25)	(0.0)
• Oversight, custodial & other costs	(412)	(0.1)
	<u>4,790</u>	<u>1.6</u>
Total excess cost	14,877	5.1

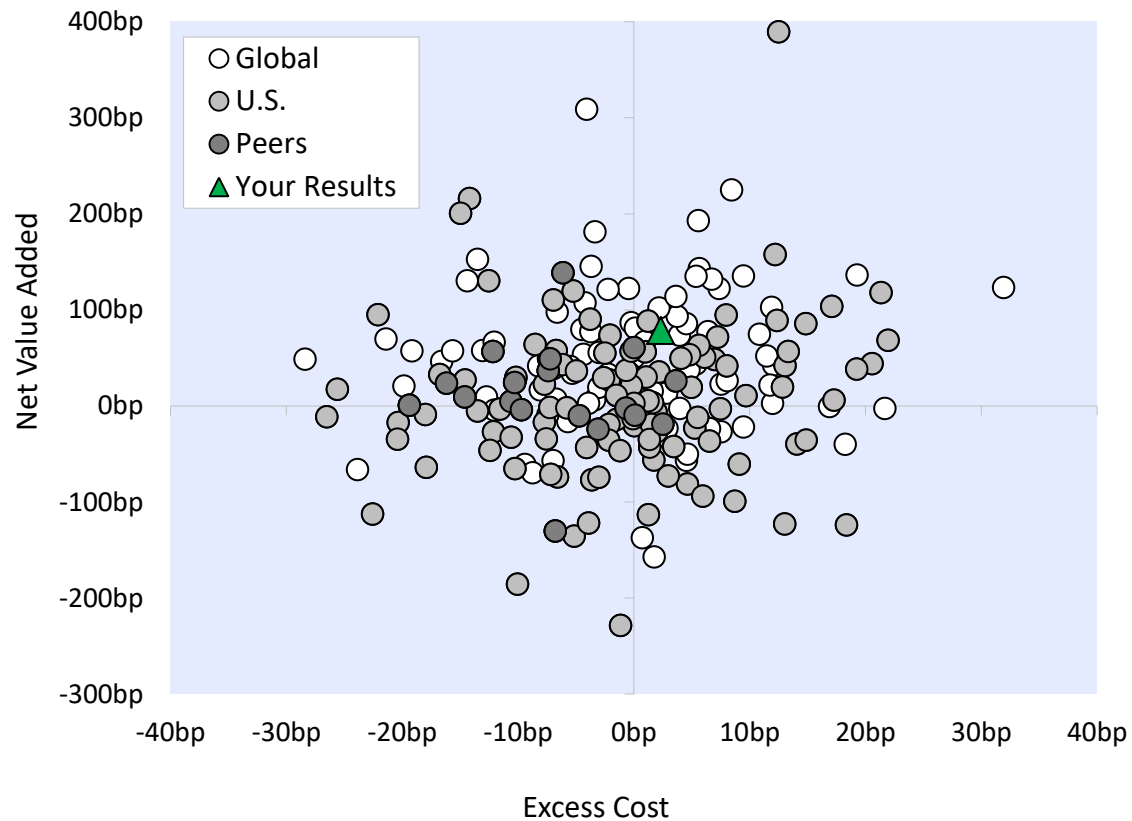
Your hedge funds outperformed their benchmark by 6.0% over 5-years compared to 0.3% for the U.S. public average. Your 5-year return of 6.9% for hedge funds was also above the U.S. average of 4.3%.

Your 2015 performance placed in the positive value added, high cost quadrant of the cost effectiveness chart.



Your fund achieved 5-year net value added of 79 bps and excess cost of 2 bps on the cost effectiveness chart.

5-year net value added versus excess cost
 (Your 5-year: net value added 79 bps, excess cost 2 bps ¹)



1. Your 5-year excess cost of 2 basis points is the average of your excess cost for the past 5 years. 2011 excess costs was calculated using regression analysis.

	2015	2014	2013	2012	2011	5-year
Net value added	52 bp	33 bp	142 bp	172 bp	7 bp	79 bp
Excess Cost	5 bp	14 bp	2 bp	0 bp	-9 bp	2 bp

Summary of key takeaways

Returns

- Your 5-year net total return was 5.7%. This was below the U.S. Public median of 7.2% and below the peer median of 7.4%.
- Your 5-year policy return was 4.9%. This was below the U.S. Public median of 7.2% and below the peer median of 7.3%.
- Your 5-year policy return was lower primarily because your policy mix had less allocation to better performing U.S. stock and greater allocation to less risky, lower performing cash than the U.S. Public and peer averages.

Value added

- Your 5-year net value added was 0.8%. This was above the U.S. Public median of 0.0% and above the peer median of 0.1%.
- In dollar terms, your 0.8% value added equals approximately \$1.2 billion over 5 years.

Cost and cost effectiveness

- Your investment cost of 81.8 bps was above your benchmark cost of 76.8 bps. This suggests that your fund was slightly high cost compared to your peers.
- Your fund was 5.1 bps above your benchmark cost because you had a higher cost implementation style and your strong hedge fund performance generated high performance fees.
- Your fund achieved 5-year net value added of 79 bps and excess cost of 2 bps on the cost effectiveness chart.

2

Research and Trends

Net value added	
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The region with the highest net value added was Europe.

Value added by region¹ (period ending December 31, 2015)

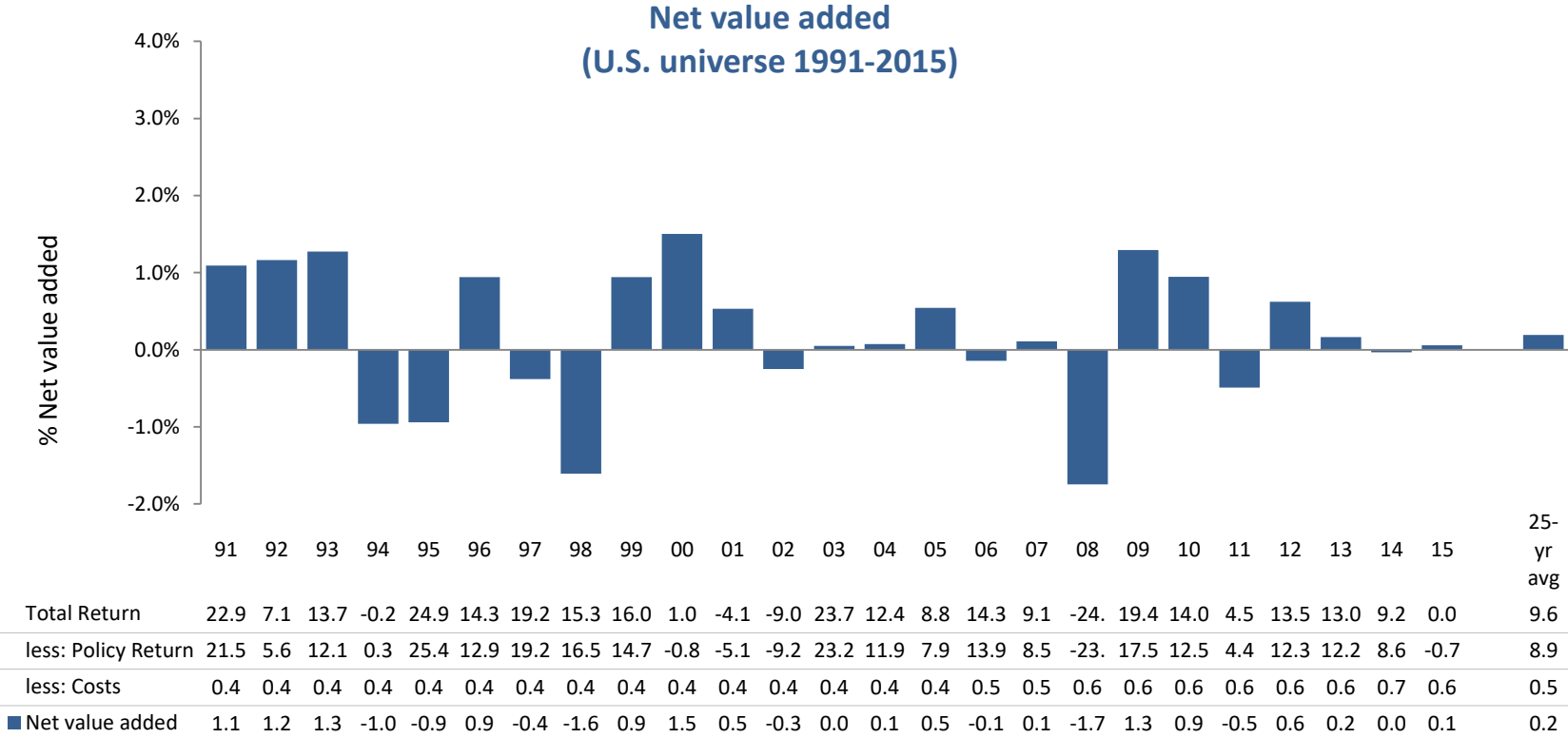
	All funds	U.S. funds	Canadian funds	European funds	Asia-Pacific funds
	25-year average ³	25-year average ³	25-year average ³	22-year ² average ³	16-year ² average ³
Total return	8.93%	9.55%	7.93%	7.02%	7.94%
- Policy return	8.33%	8.89%	7.39%	6.28%	7.61%
<u>- Costs</u>	<u>0.43%</u>	<u>0.47%</u>	<u>0.37%</u>	<u>0.31%</u>	<u>0.48%</u>
= Net value added	0.17%	0.19%	0.17%	0.44%	-0.15%
# of annual observations	7,693	4,258	2,364	930	118
Median fund size (\$ billion)	6.7	8.0	2.9	16.6	29.2

1. Only regions with more than four participating funds are separately disclosed. Funds from regions with fewer than four participating funds are included in Global/ All Funds.

2. The shorter time periods for European and Asia-Pacific funds reflect the dates that CEM started collecting data in those regions.

3. Averages are the arithmetic average of annual averages.

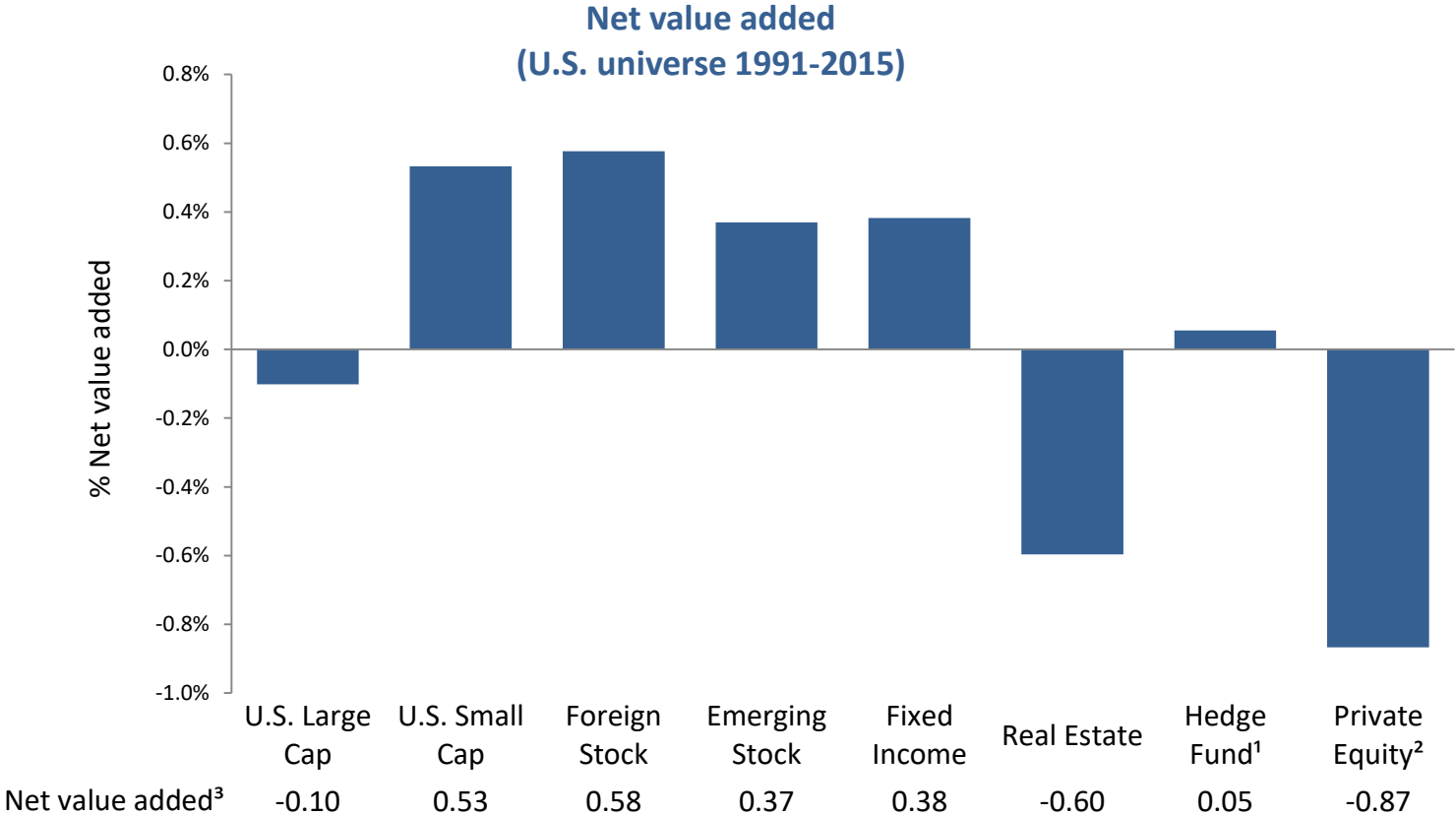
In the U.S., net value added averaged 0.2% over the past 25 years ending 2015.



Total Return	22.9	7.1	13.7	-0.2	24.9	14.3	19.2	15.3	16.0	1.0	-4.1	-9.0	23.7	12.4	8.8	14.3	9.1	-24.	19.4	14.0	4.5	13.5	13.0	9.2	0.0	9.6
less: Policy Return	21.5	5.6	12.1	0.3	25.4	12.9	19.2	16.5	14.7	-0.8	-5.1	-9.2	23.2	11.9	7.9	13.9	8.5	-23.	17.5	12.5	4.4	12.3	12.2	8.6	-0.7	8.9
less: Costs	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.5
■ Net value added	1.1	1.2	1.3	-1.0	-0.9	0.9	-0.4	-1.6	0.9	1.5	0.5	-0.3	0.0	0.1	0.5	-0.1	0.1	-1.7	1.3	0.9	-0.5	0.6	0.2	0.0	0.1	0.2

Value added analysis is based on 4,258 annual fund total performance observations from the CEM U.S. universe for the 25-year period ending 2015. The 25-year average is an arithmetic average of the annual averages.

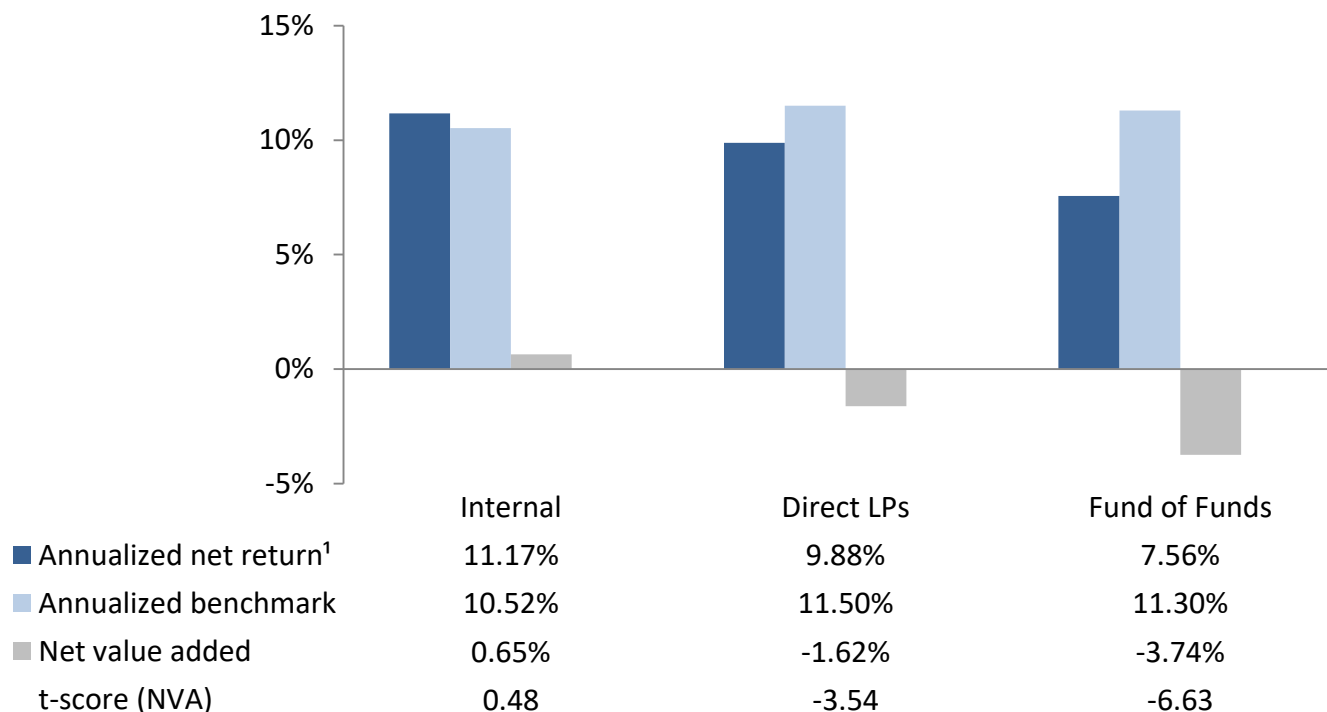
The asset class that had the highest net value added in the U.S. universe over the past 25 years was Foreign Stock.



1. Hedge Fund gross value added performance reflect data for the 16 year period from 2000 to 2015.
 2. The net value added calculation for private equity uses the average benchmark of all U.S. participants.
 3. Value added analysis is from 4,258 annual fund performance observations from the CEM U.S. universe for the 25-year period ending 2015. Value added reflects the asset weighted value added of all mandates in each asset category including indexed holdings. Averages shown above are the arithmetic average of the annual averages of all observations of funds with holdings in the asset category for each year.

Costs matter - Lower cost internal investment in private equity outperformed direct LPs. Direct LPs outperformed fund of funds.

Private equity net returns and value added¹ (1996-2015)

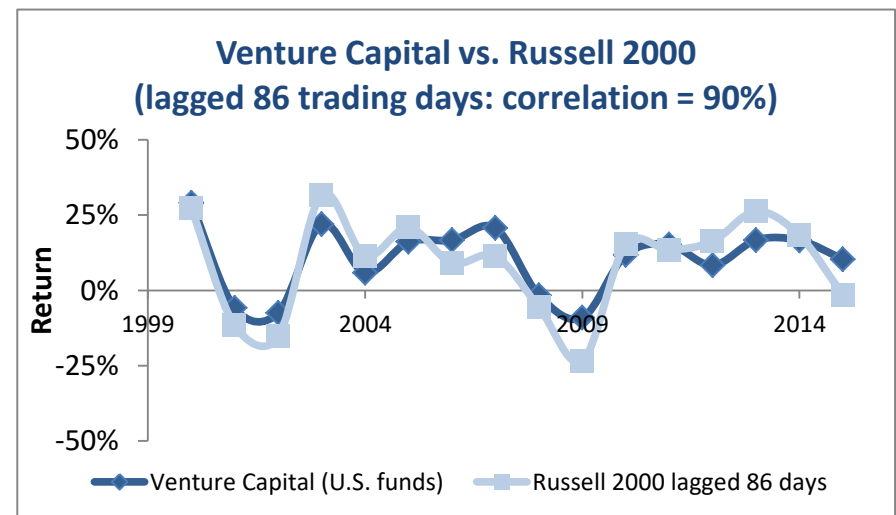
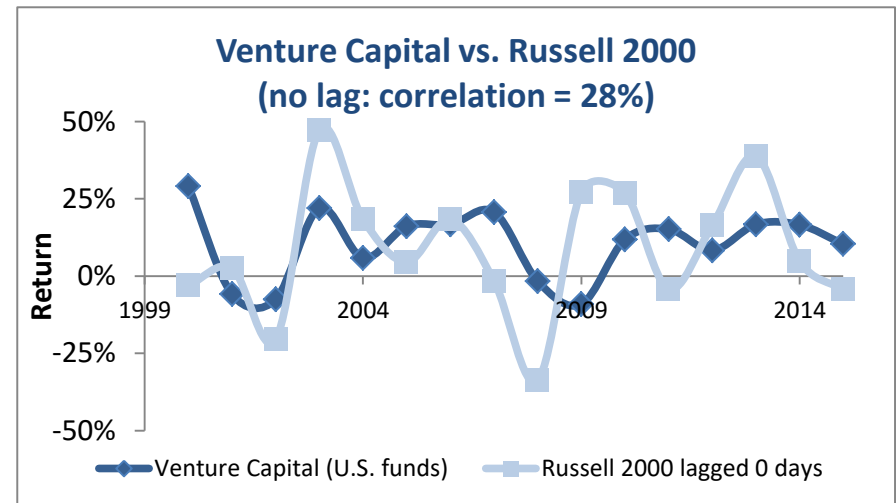


1. Private equity performance by investment style research was updated on July 1 2016. Net value added has dropped by a significant margin since the original research which covered 1996-2012 due to the 2013 bull market in small cap equities which is the basis of the benchmark.
2. To compare the performance of private equity implementation styles over long periods, Monte Carlo simulations were used to capture differences in risk between styles. For details, see "How Implementation Style and Costs Affect Private Equity Performance", Alex Beath, Chris Flynn, and Jody MacIntosh, International Journal of Pension Management pp. 50, vol. 7, issue 1, Spring 2014.

Private equity benchmarks used by most funds are flawed.

A high proportion of the benchmarks used for illiquid assets by participants in the CEM universe are flawed. Flaws include:

- Timing mismatches due to lagged reporting. For example, as the graphs on the right demonstrate, reported venture capital returns clearly lag the returns of stock indices. Yet most funds that use stock indices to benchmark their private equity do not use lagged benchmarks. The result is substantial noise when interpreting performance. For example, for 2009 the Russell 2000 index return was 27.2% versus -23.4% if lagged 86 trading days. Thus if a fund earned the average reported venture capital return for 2008 of -1.6%, they would have mistakenly believed that their value added from venture capital was -28.8% using the un-lagged benchmarks versus 21.8% using the same benchmark lagged to match the average 86 day reporting lag of venture capital funds.
- Un-investable peer-based benchmarks. Peer based benchmarks reflect the reporting lags in peer portfolios so they have much better correlations than un-lagged investable benchmarks. But their relationship statistics are not as good as for lagged investable benchmarks.
- Aspirational premiums (i.e., benchmark + 2%). Premiums cannot be achieved passively, and evidence suggests that a fund has to be substantially better than average to attain them. More importantly, when comparing performance to other funds, they need to be excluded to ensure a level playing field.



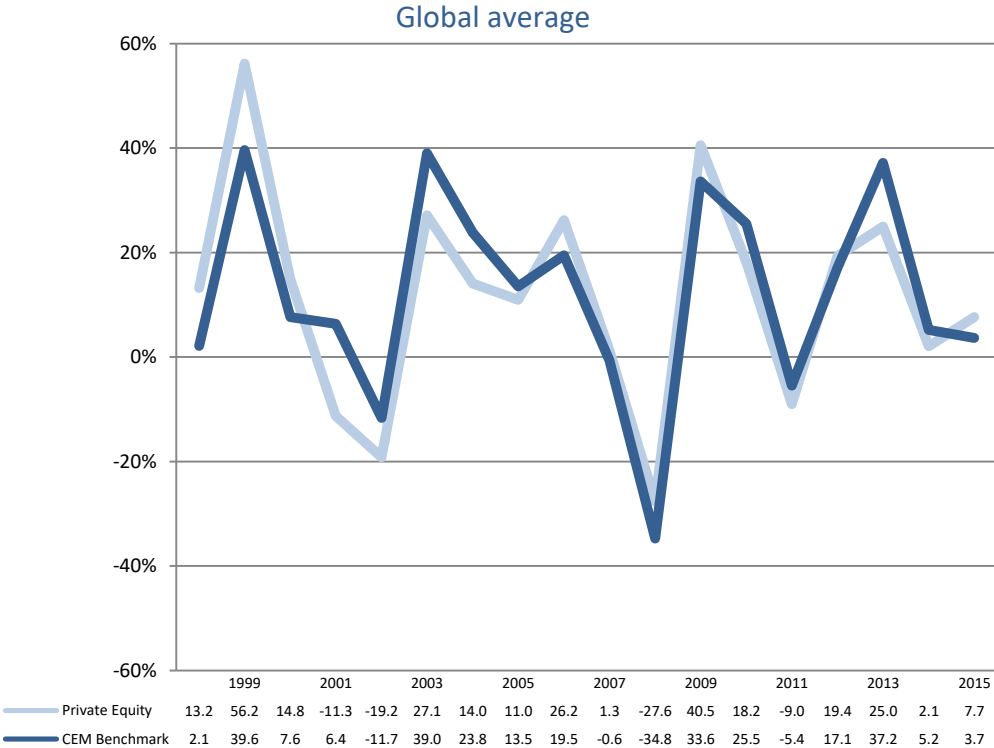
To enable fairer comparisons, CEM uses default private equity benchmarks.

Benchmarks used for private equity by most participants in the CEM universe are flawed (see previous page). So to enable fairer comparisons, CEM replaced the reported private equity benchmarks of all funds except yours with defaults. The defaults are:

- Investable. They are comprised of lagged small cap benchmarks.
- Custom lagged for each participant. Your default benchmark had a lag of 44 trading days. Different portfolios had different lags. CEM estimated the lag on private equity portfolios with multi-year histories by comparing annual private equity returns to public market proxies with 1 day of lag, 2 days of lag, 3 days of lag, etc. At some number of days lag, correlation between the two series is maximized. The median lag was 101 trading days (i.e., approximately 142 calendar days or 4.7 calendar months)
- Regional mix adjusted based on the average estimated mix of regions in private equity portfolios for a given country.

The result is the default benchmarks are superior to most self-reported benchmarks. Correlations improve to a median of 84% for the default benchmarks versus 48% for self-reported benchmarks. Other statistics such as volatility were also much better.

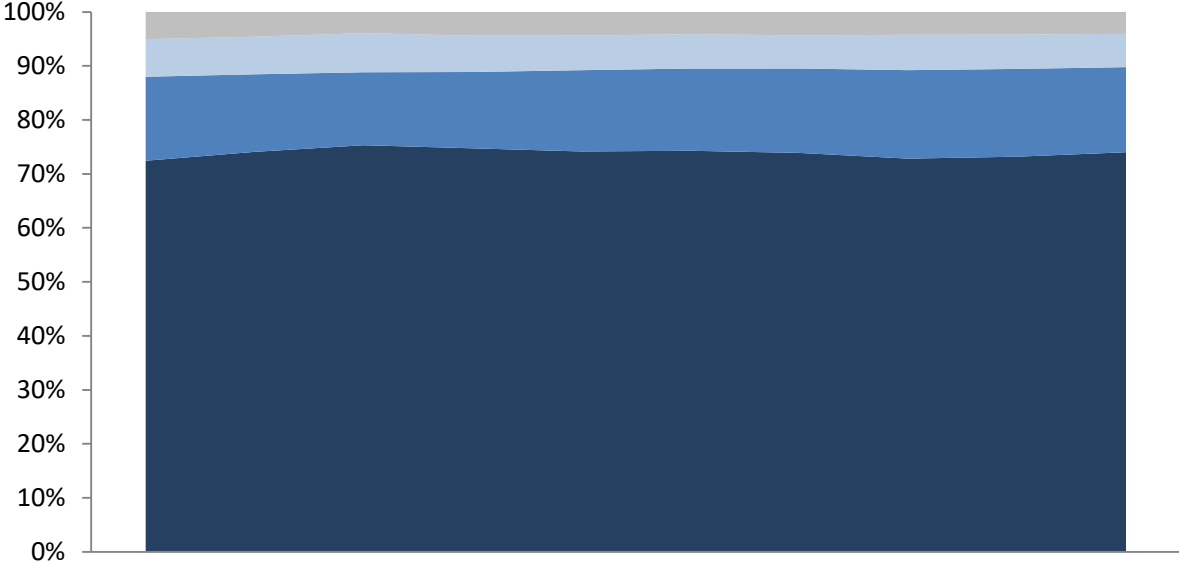
Private equity returns versus default benchmark returns¹



1. To enable better comparison between lagged returns and lagged benchmarks, lags have been removed from both. See "Asset allocation and fund performance of defined benefit pension funds in the United States, 1998-2014" by Alexander D. Beath and Chris Flynn for details.

For U.S. plans, external active management increased from 72% to 74% over the past 10 years.

Implementation style by year - U.S.

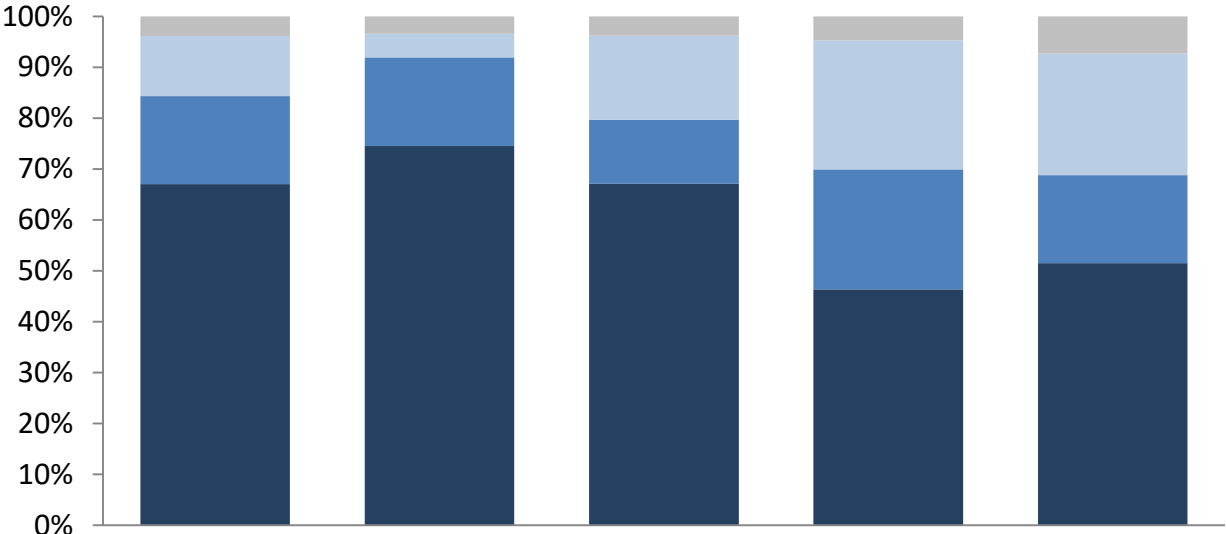


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
■ % Internal passive	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%
■ % Internal active	7%	7%	7%	7%	6%	6%	6%	7%	6%	6%
■ % External passive	16%	14%	14%	14%	15%	15%	16%	16%	16%	16%
■ % External active	72%	74%	75%	75%	74%	74%	74%	73%	73%	74%

• This analysis is based on 67 U.S. funds with 10 consecutive years of data.

U.S. funds have more externally managed active assets than funds in most other regions.

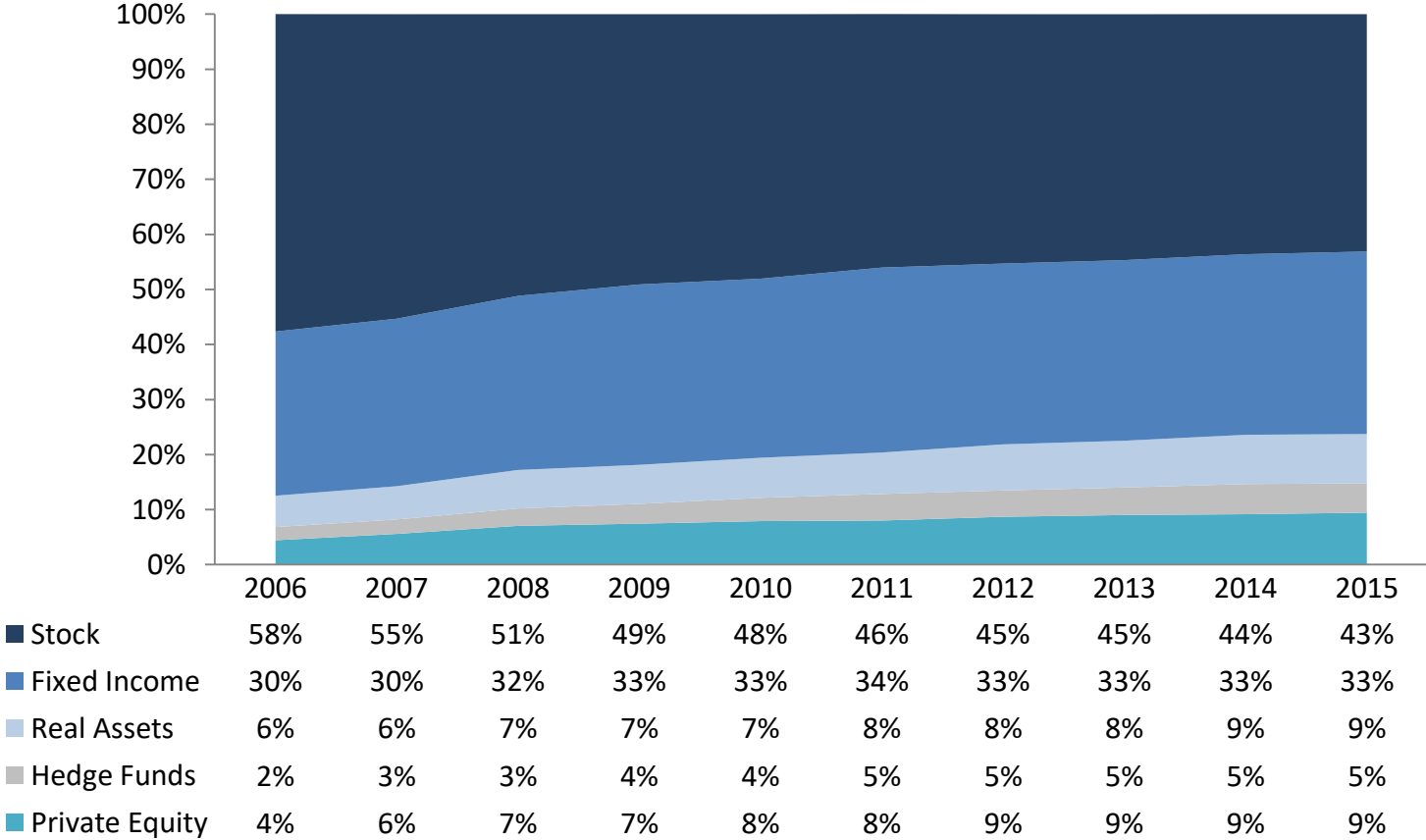
Implementation style by region - 2015 average



■ % Internal passive	4%	3%	4%	5%	7%
■ % Internal active	12%	5%	17%	25%	24%
■ % External passive	17%	17%	13%	24%	17%
■ % External active	67%	75%	67%	46%	51%
Number of funds	302	165	75	53	6
Median fund in \$ billions	6.7	8.0	2.9	16.6	29.2

For U.S. plans, combined policy weights for real assets, private equity and hedge funds increased from 12.5% in 2006 to 23.7% in 2015.

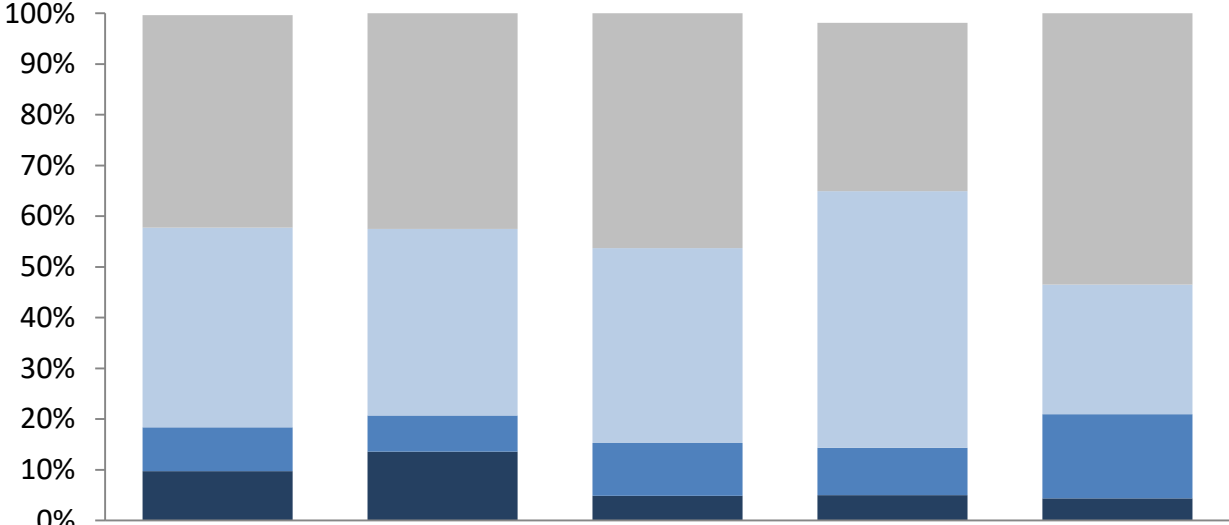
Policy mix by year - U.S.



• This analysis is based on 67 U.S. funds with 10 consecutive years of data.

U.S. funds have less fixed income but more private equity than funds in other regions.

Policy asset mix by region - 2015 average



■ Stock	42%	43%	46%	33%	53%
■ Fixed Income	39%	37%	38%	51%	26%
■ Real Assets	9%	7%	10%	9%	17%
■ Priv. Equity & Hedge Funds	10%	14%	5%	5%	4%
Number of funds	302	165	75	53	6
Median fund in \$ billions	6.7	8.0	2.9	16.6	29.2

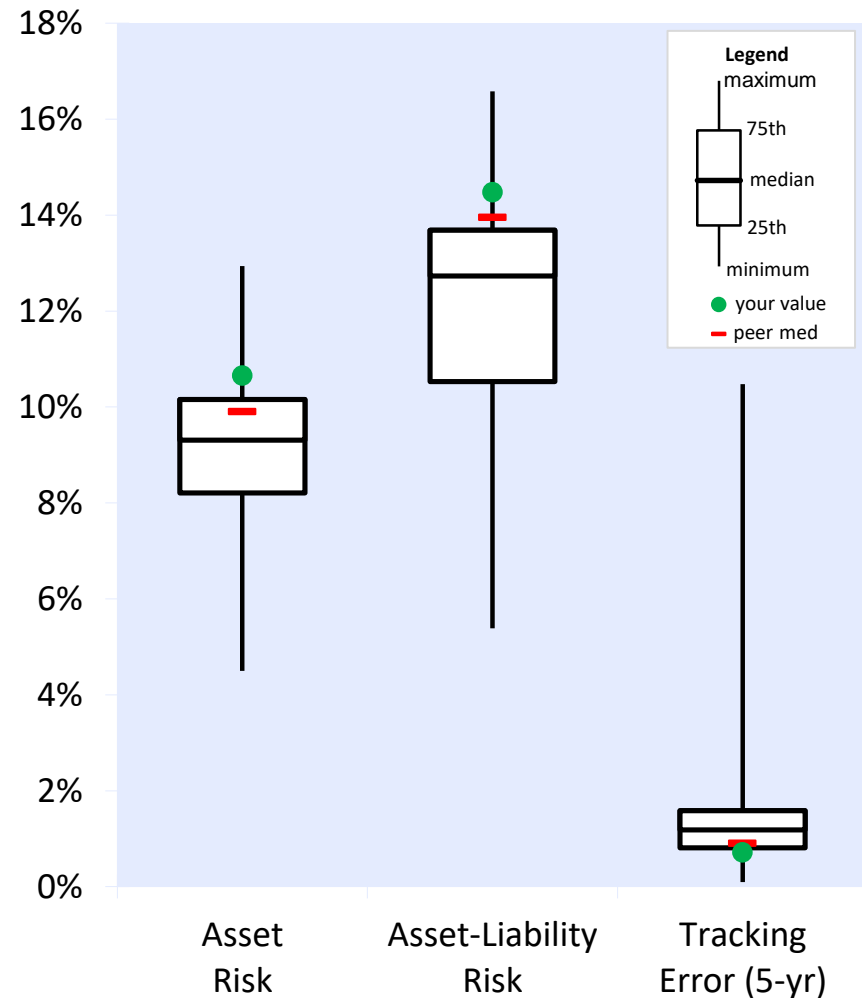
Risk by type

Your asset risk of 10.7% was above the U.S. median of 9.3%. Asset risk is the standard deviation of your policy return. It is based on the historical variance of, and covariance between, the asset classes in your policy mix.

Asset-liability risk is the standard deviation of funded status caused by market factors. It is a function of the standard deviations of your asset risk, your marked-to-market liabilities and the correlation between the two.

Your tracking error of 0.7% was below the U.S. median of 1.2%. Tracking error is the risk of active management. It equals the standard deviation of your annual net value added.

U.S. risk levels at December 31, 2015

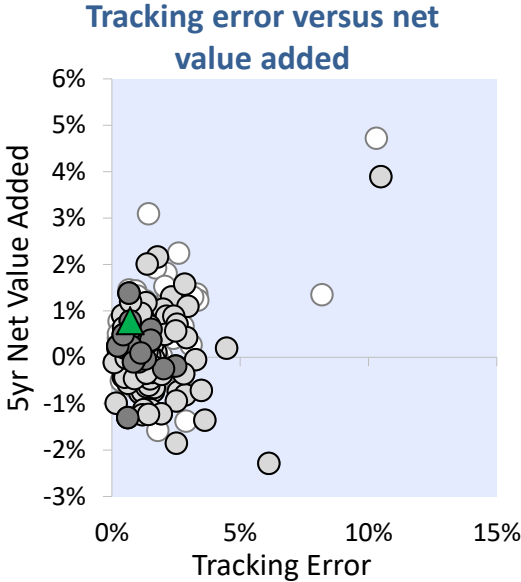
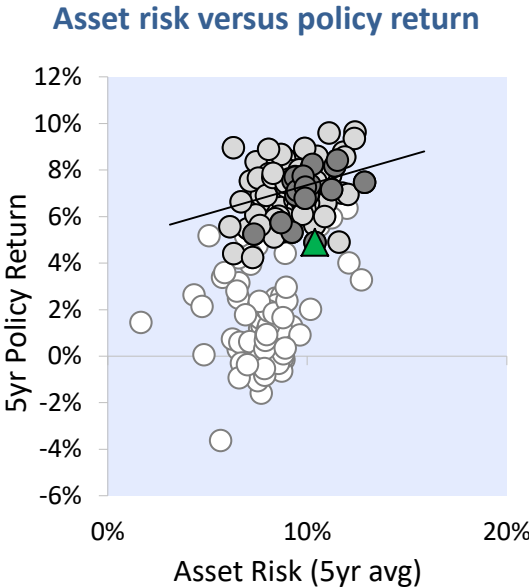
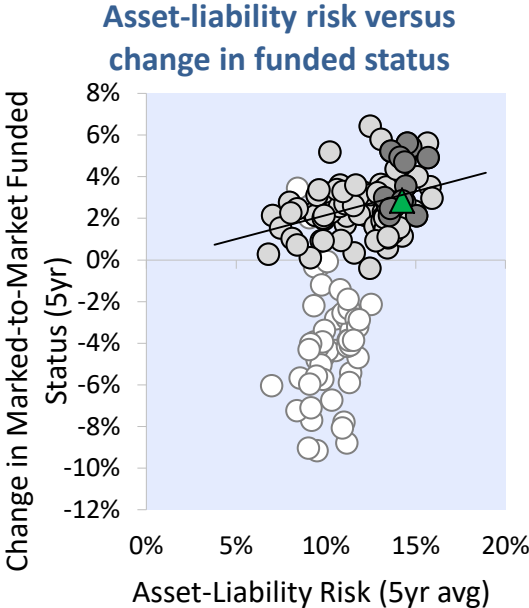


Risk versus return

Higher asset-liability risk was associated with positive changes in marked-to-market funded status.

Higher asset risk was associated with higher policy returns.

There was no meaningful relationship between tracking error and net value added.

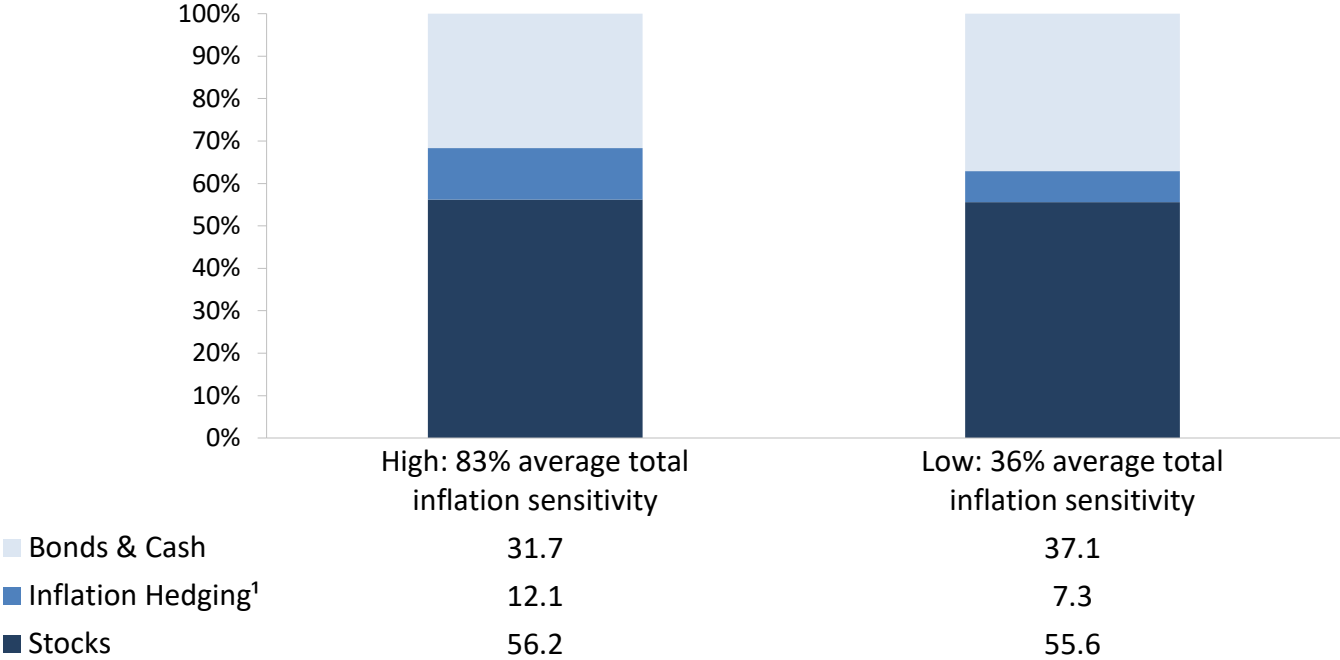


- Global
- U.S.
- Peers
- ▲ You
- Linear (U.S.)

Impact of inflation sensitivity on policy asset mix decisions

One would expect plans with more inflation sensitivity to have more inflation hedging assets and fewer nominal bonds than plans with less inflation sensitivity. Although this is true, the difference is small: inflation hedging assets represent 12.1% of assets at plans with high inflation sensitivity versus 7.3% at plans with lower inflation sensitivity.

**Average policy asset mix:
Plans with above vs. below average inflation sensitivity**

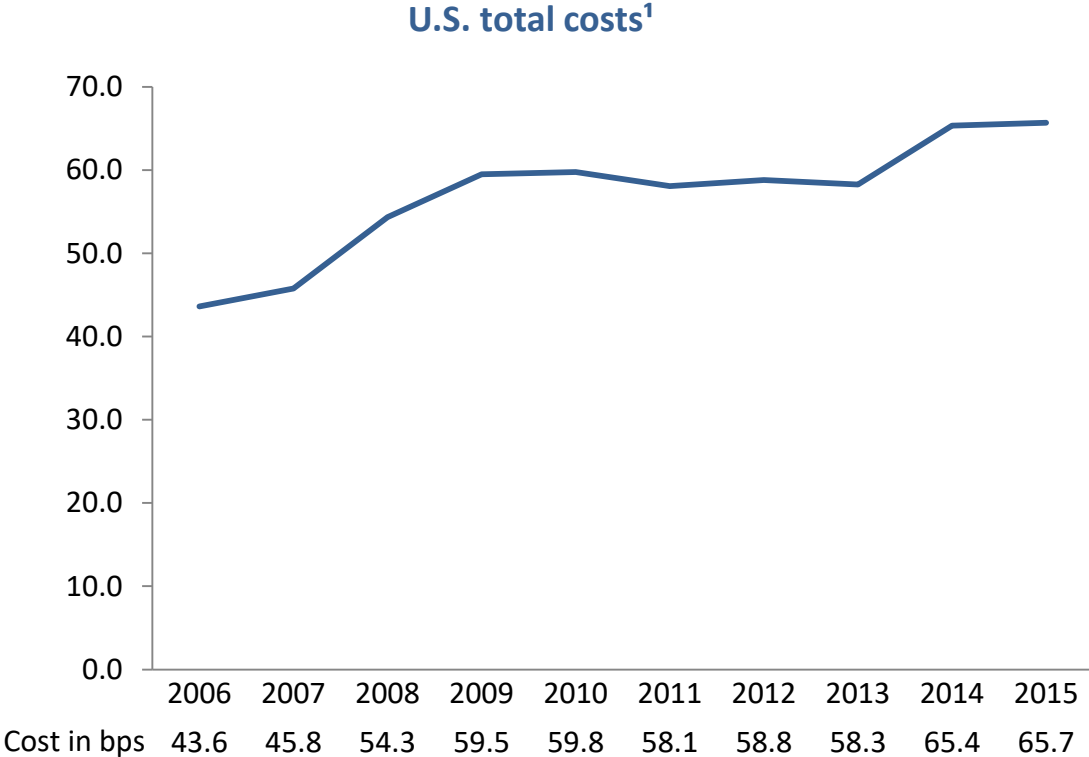


1. Inflation hedge assets include inflation-indexed bonds, commodities, real estate & REITs, infrastructure and natural resources.

U.S. fund costs have grown by 22 basis points on average over the last 10 years.

Reasons for the increase in costs include:

- Allocation to the more expensive asset classes - hedge funds, real assets and private equity- increased from 7% to 13% on average.
- Use of the most expensive implementation style, external active management, increased from 72% to 74% on average.



1. This analysis is based on 67 U.S. funds with 10 consecutive years of data.

U.S. defined benefit plans have outperformed defined contribution plans.

U.S. defined benefit plans have outperformed defined contribution plans.

DB versus DC return and value added - U.S.

	19-yr average ending 2015 ²		
	DB	DC	Difference
Total return	7.57%	6.44%	1.13%
- Policy return ¹	6.99%	6.06%	0.93%
- Costs	0.49%	0.40%	0.09%
= Net value added	0.08%	-0.02%	0.10%
Number of observations	3,433	2,289	

Differences in asset mix have been the primary reason for the outperformance of U.S. defined benefit plans.

DB versus DC asset mix - U.S.

Asset class (Ranked by returns)	Asset mix ³		Returns ⁴	
	DB	DC	DB	DC
Private Equity	4%	n/a	12.1%	n/a
Real Assets	5%	n/a	9.6%	n/a
Small Cap Stock	6%	8%	8.9%	9.1%
Employer Stock	0%	20%	n/a	9.5%
Fixed Income	32%	10%	6.5%	5.7%
Hedge Funds	3%	n/a	6.9%	n/a
Stock U.S. Large Cap or Broad	25%	30%	7.7%	7.5%
Stock Non U.S. or Global	24%	8%	6.1%	6.0%
Stable Value/GICs	n/a	17%	n/a	4.5%
Cash	2%	7%	2.8%	2.7%
Total	100%	100%	7.6%	6.4%
Number of observations	3,433	2,143		

1. DC policy return = weights of holdings X benchmarks

2. Returns are the geometric average of annual averages.

3. 19 years ending 2015. Equals arithmetic average of annual asset mix weights.

4. 19 years from 1997 to 2015. Returns are the geometric average of the annual averages for each asset class. Hedge funds were not treated as a separate asset class until 2000, so 60% stock, 40% bond returns were used as a proxy for 1997-1999.

n/a= insufficient data.

3

Description of peer group and universe

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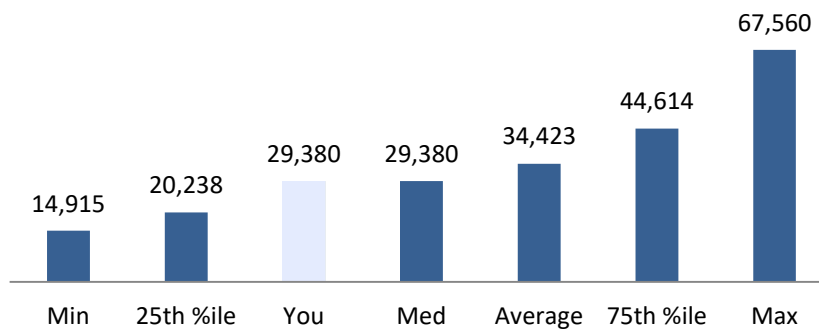
Peer group

Your peer group is comprised of 19 U.S. public funds, with assets ranging from \$14.9 billion to \$67.6 billion versus your \$29.4 billion. The median size is \$29.4 billion.

Your peer group is selected such that your fund size is usually close to the median of your peer group. Size is the primary criteria for choosing your peer group, because size greatly impacts how much you pay for services. Generally, the larger your fund, the smaller your unit operating costs (i.e., the economies of scale impact).

In order to preserve client confidentiality, we do not disclose your peers' names in this document due to the Freedom of Information Act.

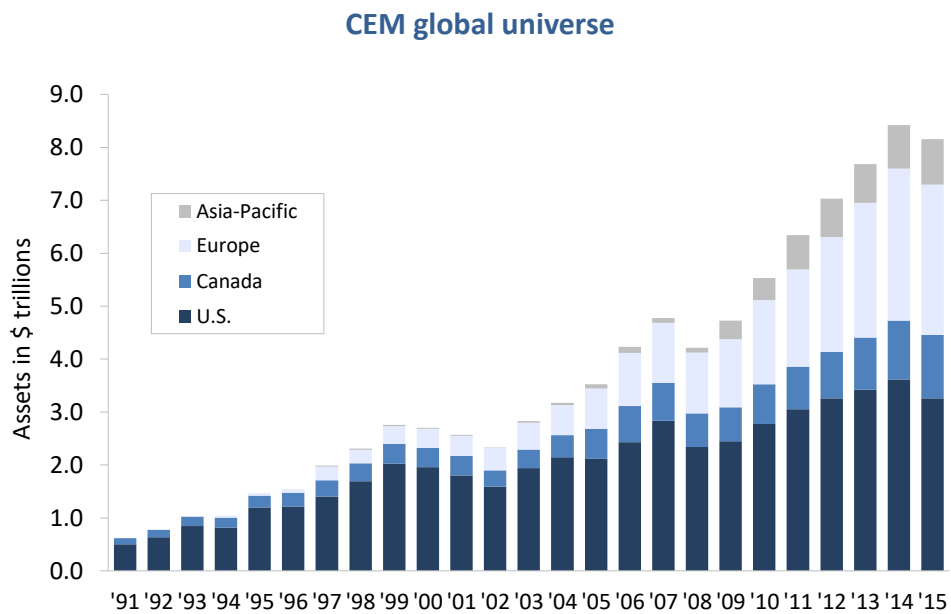
Total fund assets (\$ millions) - you versus peers



CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2015 survey universe is comprised of 302 funds representing \$8.2 trillion in assets. The breakdown by region is as follows:

- 165 U.S. pension funds with aggregate assets of \$3.3 trillion.
- 75 Canadian pension funds with aggregate assets of \$1,194 billion.
- 53 European pension funds with aggregate assets of \$2.8 trillion. Included are funds from The Netherlands, Norway, Sweden, Finland, Denmark, Switzerland and the UK.
- 9 Asia-Pacific pension funds with aggregate assets of \$857 billion.



Universe subsets

CEM's global survey universe is comprised of 302 funds with total assets of \$8.2 trillion. Your fund's returns and costs are compared to the following two subsets of the global universe:

- Peers - Your peer group is comprised of 19 U.S. public funds ranging in size from \$14.9 - \$67.6 billion. The peer median of \$29.4 billion compares to your \$29.4 billion.
- U.S. Public - The U.S. Public universe is comprised of 57 funds ranging in size from \$1.2 - \$287.9 billion. The median fund is \$16.3 billion.

Universe subsets by number of funds and assets

	Peer group ¹	U.S. by type				Global by Country				
		Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<u># of funds</u>										
2015	19	99	57	9	165	165	75	53	9	302
2014	19	98	63	13	174	174	88	145	10	417
2013	19	113	62	15	190	190	89	152	8	439
2012	19	121	66	14	201	201	88	144	13	446
2011	19	125	67	13	205	205	89	77	13	384
<u># of funds with uninterrupted data for:</u>										
1 yr	19	99	57	9	165	165	75	53	9	302
2 yrs	19	91	52	9	152	152	70	44	8	274
3 yrs	19	84	48	8	140	140	66	43	7	256
4 yrs	19	79	48	8	135	135	62	33	7	237
5 yrs	19	77	46	8	131	131	57	28	7	223
6 yrs	18	70	43	8	121	121	56	25	4	206
<u>Total assets (\$ billions)</u>										
2015	654	961	2,217	81	3,259	3,259	1,194	2,845	857	8,155
2014	655	1,036	2,415	163	3,615	3,615	1,115	2,871	818	8,420
2013	619	1,050	2,415	163	3,424	3,424	985	2,545	728	7,681
2012	557	1,008	2,155	97	3,261	3,261	873	2,169	725	7,028
2011	516	964	2,025	65	3,054	3,054	805	1,838	644	6,341
<u>2015 asset distribution (\$ billions)</u>										
Avg	34.4	9.7	38.9	8.9	19.8	19.8	15.9	53.7	95.2	27.0
Max	67.6		287.9		287.9	287.9				
75th %ile	44.6		45.5		16.9	16.9				
Median	29.4		16.3		7.1	7.1				
25th %ile	20.2		6.1		2.9	2.9				
Min	14.9		1.2		0.5	0.5				

1. Peer group statistics are for your 2015 peer group only as your peer group may have included different funds in prior years.

Implementation style, actual mix and policy mix by universe subset

Implementation style, actual mix and policy mix - 2015 (as a % of year-end assets)

	Your fund ¹	Peer group	U.S. by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
Implementation style											
External active	63.0	65.0	75.5	62.9	66.3	70.7	70.7	65.8	43.4	49.5	64.0
Fund of funds	9.9	2.9	4.2	3.2	4.3	3.9	3.9	1.3	2.9	1.6	3.0
External passive	17.8	21.6	14.7	21.1	23.1	17.4	17.4	12.6	23.6	16.7	17.3
Internal active	9.3	7.1	3.5	7.4	0.0	4.6	4.6	16.5	25.3	25.7	11.8
Internal passive	<u>0.0</u>	<u>3.3</u>	<u>2.0</u>	<u>5.5</u>	<u>6.3</u>	<u>3.4</u>	<u>3.4</u>	<u>3.8</u>	<u>4.8</u>	<u>6.5</u>	<u>3.9</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Actual asset mix											
Stock	25.7	46.1	37.9	48.6	40.8	41.7	41.7	47.0	33.1	43.4	41.6
Fixed income	36.5	28.1	43.8	26.8	33.3	37.3	37.3	36.9	52.9	31.6	39.8
Global TAA	7.5	0.7	3.0	1.5	3.7	2.5	2.5	1.1	0.3	2.1	1.8
Real assets	4.2	10.6	5.2	10.1	10.5	7.1	7.1	10.1	8.6	15.9	8.4
Hedge funds	11.8	5.3	5.9	5.3	5.6	5.7	5.7	2.0	2.1	2.9	4.0
Private equity	<u>14.5</u>	<u>9.1</u>	<u>4.3</u>	<u>7.8</u>	<u>6.1</u>	<u>5.6</u>	<u>5.6</u>	<u>3.0</u>	<u>2.9</u>	<u>4.2</u>	<u>4.4</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0
Policy asset mix											
Stock	34.0	47.7	38.8	48.9	42.1	42.5	42.5	46.3	33.2	46.5	41.9
Fixed income	22.0	27.4	43.6	25.5	33.1	36.8	36.8	38.4	50.6	28.9	39.4
Global TAA	10.0	0.9	2.8	1.5	4.0	2.4	2.4	1.0	0.3	1.8	1.7
Real assets	8.0	11.0	4.7	10.7	11.0	7.1	7.1	10.4	9.3	16.6	8.6
Hedge funds	10.0	3.7	5.3	4.5	3.9	5.0	5.0	1.1	1.9	1.6	3.4
Private equity	<u>16.0</u>	<u>9.4</u>	<u>4.7</u>	<u>8.9</u>	<u>6.1</u>	<u>6.2</u>	<u>6.2</u>	<u>2.7</u>	<u>2.9</u>	<u>4.6</u>	<u>4.7</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.1	100.0	99.7

1. Due to the fact that your fund provided average assets, the above tables show your implementation style and asset mix using average assets rather than year-end.

Implementation style, actual mix and policy mix trends

Implementation style, actual mix and policy mix - 2011 to 2015 (as a % of year-end assets)

	Your fund ¹					Peer average ²					U.S. Public average ²				
	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011
Implementation style															
External active	72.9	71.7	73.8	88.3	90.8	67.9	67.6	68.1	69.0	70.6	63.7	63.5	63.5	64.9	65.8
External passive	17.8	14.2	9.7	5.4	4.7	21.6	21.3	20.5	20.4	19.2	21.1	20.8	20.6	19.8	18.8
Internal active	9.3	14.1	16.5	6.4	4.5	7.1	7.6	7.7	7.2	7.1	8.9	9.3	9.4	8.9	9.1
Internal passive	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>3.3</u>	<u>3.5</u>	<u>3.7</u>	<u>3.5</u>	<u>3.2</u>	<u>6.4</u>	<u>6.4</u>	<u>6.4</u>	<u>6.5</u>	<u>6.3</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Actual asset mix															
Stock	25.7	18.5	13.5	16.2	12.8	46.1	47.6	48.9	46.8	46.4	47.3	48.8	50.5	48.9	49.1
Fixed income	36.5	42.4	44.4	34.9	34.0	28.1	28.3	28.5	30.4	31.6	26.5	26.8	26.7	28.4	29.2
Global TAA	7.5	7.5	6.5	10.2	10.0	0.7	0.7	0.7	0.9	0.9	1.5	1.6	1.4	1.5	1.3
Real assets	4.2	3.8	3.9	4.5	2.3	10.6	9.4	8.4	8.1	7.3	10.3	9.2	8.3	8.1	7.4
Hedge funds	11.8	12.8	16.2	17.9	22.2	5.3	5.1	4.9	4.8	4.8	6.1	5.8	5.5	5.1	4.9
Private equity	<u>14.5</u>	<u>15.0</u>	<u>15.5</u>	<u>16.2</u>	<u>18.7</u>	<u>9.1</u>	<u>8.7</u>	<u>8.6</u>	<u>9.1</u>	<u>9.1</u>	<u>8.2</u>	<u>7.8</u>	<u>7.6</u>	<u>8.1</u>	<u>8.0</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Policy asset mix															
Stock	34.0	31.0	31.0	30.0	30.0	47.7	48.0	48.9	48.2	48.9	48.0	48.1	48.8	49.4	50.0
Fixed income	22.0	27.0	27.0	32.0	29.0	27.4	27.6	28.7	29.8	30.5	25.3	25.6	27.0	27.9	28.5
Global TAA	10.0	10.0	10.0	10.0	10.0	0.9	0.9	0.9	0.9	0.9	1.3	1.4	1.5	1.4	1.4
Real assets	8.0	8.0	8.0	6.0	8.0	11.0	10.4	9.3	9.1	8.4	10.9	10.6	9.6	9.2	8.4
Hedge funds	10.0	8.0	8.0	5.0	5.0	3.7	3.8	3.3	3.1	2.9	5.2	5.2	4.3	3.7	3.7
Private equity	<u>16.0</u>	<u>16.0</u>	<u>16.0</u>	<u>17.0</u>	<u>18.0</u>	<u>9.4</u>	<u>9.4</u>	<u>8.9</u>	<u>8.9</u>	<u>8.4</u>	<u>9.3</u>	<u>9.2</u>	<u>8.8</u>	<u>8.4</u>	<u>7.9</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Due to the fact that your fund provided average assets, the above tables show your trend in implementation style and asset mix using average assets rather than year-end.

2. Trends are based on the 46 U.S. Public and 19 peer funds with 5 consecutive years of data ending 2015.

Implementation style by asset class

Implementation style impacts your costs, because external active management tends to be more expensive than internal or passive (or indexed) management and fund-of-funds usage is more expensive than direct fund investment.

Implementation style by asset class - 2015 (as a % of average assets)

	Your fund %				Peer average %				U.S. Public average %						
	External		Internal		External		Internal		External		Internal				
	Active	FOFs	Index	Active	Index	Active	FOFs	Index	Active	FOFs	Index	Active	Index		
U.S. Stock - Broad/All	65.9		34.0	0.1	0.0	34.5	54.9	4.8	5.9	23.1	59.0	2.7	15.1		
U.S. Stock - Large Cap						27.8	45.0	15.7	11.4	35.5	42.4	5.9	16.2		
U.S. Stock - Mid Cap						65.2	0.0	19.1	15.6	65.8	13.8	7.4	13.0		
U.S. Stock - Small Cap						85.9	5.0	3.8	5.3	83.6	10.2	3.3	3.0		
Stock - EAFE						44.9	45.1	6.1	4.0	58.6	28.3	4.4	8.7		
Stock - ACWIxU.S.						66.5	33.5	0.0	0.0	60.8	38.4	0.8	0.0		
Stock - Emerging	100.0		0.0	0.0	0.0	77.9	12.4	1.3	8.4	79.6	14.2	2.6	3.7		
Stock - Global	35.8		64.2	0.0	0.0	63.6	24.8	0.0	11.5	65.5	24.8	5.0	4.7		
Stock - Other						49.1	0.0	0.0	50.9	80.1	7.6	5.9	6.4		
Total Stock	50.7		49.3	0.0	0.0	48.8	38.3	6.0	7.0	51.1	35.6	4.0	9.4		
Fixed Income - U.S.	86.5		0.0	13.5	0.0	75.2	6.7	18.1	0.0	63.0	14.0	19.7	3.3		
Fixed Income - U.S. Gov't						20.7	79.3	0.0	0.0	20.1	77.1	0.0	2.8		
Fixed Income - U.S. Credit						100.0	0.0	0.0	0.0	57.3	42.7	0.0	0.0		
Fixed Income - Long Bonds						0.0	0.0	0.0	0.0	98.8	0.0	1.2	0.0		
Fixed Income - EAFE						0.0	0.0	0.0	0.0	85.7	0.0	14.3	0.0		
Fixed Income - Emerging	38.3		61.7	0.0	0.0	87.2	12.8	0.0	0.0	94.6	5.4	0.0	0.0		
Fixed Income - Global	100.0		0.0	0.0	0.0	100.0	0.0	0.0	0.0	74.2	0.0	25.8	0.0		
Fixed Income - Inflation Indexed						53.3	30.8	12.0	3.9	44.3	30.9	11.0	13.8		
Fixed Income - High Yield	100.0		0.0	0.0	0.0	100.0	0.0	0.0	0.0	96.2	3.0	0.8	0.0		
Fixed Income - Mortgages						0.0	100.0	0.0	0.0	41.5	1.3	52.7	4.5		
Fixed Income - Private Debt						52.8	0.0	47.2	0.0	90.5	0.0	9.5	0.0		
Fixed Income - Other						99.3	0.7	0.0	0.0	90.8	0.4	5.1	3.8		
Cash	53.3		0.0	46.7	0.0	57.4	0.0	42.6	0.0	43.4	0.0	56.6	0.0		
Total Fixed Income	71.4		8.5	20.1	0.0	72.4	12.4	14.9	0.3	65.5	12.5	19.0	3.0		
Commodities						100.0	0.0	0.0	0.0	89.1	1.5	4.4	5.0		
Infrastructure			n/a	n/a	n/a	93.3	4.1	n/a	2.6	n/a	93.6	4.2	n/a	2.2	n/a
Natural Resources			n/a	n/a	n/a	99.3	0.0	n/a	0.7	n/a	98.8	0.0	n/a	1.2	n/a
REITs						77.8	0.0	18.5	3.7	0.0	81.2	0.0	10.6	1.3	6.9
Real Estate ex-REITs	97.7	0.0	n/a	2.3	n/a	99.3	0.5	n/a	0.2	0.0	93.6	2.6	n/a	3.8	0.0
Other Real Assets			n/a	n/a	n/a	100.0	0.0	n/a	0.0	n/a	100.0	0.0	n/a	0.0	n/a
Total Real Assets	97.7	0.0	0.0	2.3	0.0	97.7	0.0	1.7	0.6	0.0	95.0	0.0	1.0	3.1	0.8
Hedge Funds	36.7	63.3	n/a	0.0	n/a	66.4	33.6	n/a	0.0	n/a	68.8	31.2	n/a	0.0	n/a
Global TAA	100.0	0.0	n/a	0.0	n/a	100.0	0.0	n/a	0.0	n/a	98.8	0.0	n/a	1.2	n/a
Diversified Private Equity	63.8	36.2	n/a	0.0	n/a	85.4	14.6	n/a	0.0	n/a	78.3	21.7	n/a	0.1	n/a
Venture Capital			n/a	n/a	n/a	83.6	16.4	n/a	0.0	n/a	82.1	17.9	n/a	0.0	n/a
LBO			n/a	n/a	n/a	99.8	0.2	n/a	0.0	n/a	98.0	2.0	n/a	0.0	n/a
Private Debt Limited Partnerships	100.0	0.0	n/a	0.0	n/a	100.0	0.0	n/a	0.0	n/a	97.7	0.0	n/a	2.3	n/a
Total Private Equity	85.7	14.3	n/a	0.0	n/a	90.1	9.9	n/a	0.0	n/a	85.8	14.0	n/a	0.1	n/a
Total Fund - Avg. Holdings	63.0	9.9	17.8	9.3	0.0	65.3	2.6	21.4	7.2	3.4	63.0	3.0	21.1	7.4	5.5

Actual mix

Actual asset mix - 2011 to 2015 (as a % of year-end assets)

	Your fund % ¹					Peer average %					U.S. Public average %				
	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011
Employer Stock															
U.S. Stock - Broad/All	5.8	8.1	7.6	7.8	7.1	10.9	11.2	12.3	11.9	12.5	6.5	6.9	9.7	7.3	7.1
U.S. Stock - Large Cap						10.5	11.0	9.7	8.8	10.0	14.8	15.4	13.8	15.0	14.7
U.S. Stock - Mid Cap						0.7	0.7				1.0	0.8	0.1	0.1	0.1
U.S. Stock - Small Cap						2.2	2.6	3.5	3.1	3.7	2.9	3.1	4.2	4.4	4.6
Stock - EAFE		2.5	2.5	1.1		5.6	5.6	6.1	5.9	6.3	6.4	6.6	7.7	7.1	7.7
Stock - ACWixU.S.						8.7	9.1	9.8	9.4	9.0	8.5	8.6	9.0	8.2	6.4
Stock - Emerging	3.2	3.4	3.4	7.4	5.7	2.4	2.6	2.6	3.0	2.2	3.0	3.2	3.1	3.4	2.9
Stock - Global	16.6	4.5				4.9	4.6	4.5	4.3	2.4	4.5	4.1	3.9	3.8	4.3
Stock - Other						0.3	0.3	0.3	0.3	0.3	0.9	1.1	0.7	0.5	0.5
Total Stock	25.7	18.5	13.5	16.2	12.8	46.1	47.6	48.9	46.8	46.4	48.6	49.7	52.2	49.9	48.2
Fixed Income - U.S.	9.2	8.8	8.2	10.7	9.0	15.3	17.1	17.5	19.3	20.4	15.0	14.4	15.7	17.6	18.4
Fixed Income - U.S. Gov't						1.9	0.4				0.6	0.1			
Fixed Income - U.S. Credit						0.1	0.1				0.1	0.1			
Fixed Income - Long Bonds											0.8	1.0	0.5	0.2	0.3
Fixed Income - EAFE									0.3	0.3	0.1	0.1	0.2	0.2	0.2
Fixed Income - Emerging	4.7	4.0	3.1	2.9	1.5	1.2	1.0	0.8	0.7	0.4	1.0	0.9	0.8	0.8	0.6
Fixed Income - Global	3.0	3.7	3.6	4.0	6.8	1.5	1.8	2.2	2.1	1.8	1.8	1.9	1.9	2.2	2.0
Fixed Income - Inflation Indexed						2.5	2.5	2.5	2.9	3.5	1.7	1.8	1.7	2.0	2.2
Fixed Income - High Yield	5.2	4.0	4.3	5.4	3.0	1.5	1.3	1.2	1.7	1.9	1.5	1.6	1.6	2.0	2.2
Fixed Income - Mortgages						0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.2	0.2	0.3
Fixed Income - Private Debt						0.3	0.3	0.1	0.1		0.6	0.5	0.1	0.2	0.0
Fixed Income - Other						1.4	1.1	0.9	0.7	0.8	1.0	1.0	0.7	0.6	0.7
Cash	14.3	21.9	25.2	11.9	13.6	2.4	2.8	3.2	2.5	2.3	2.4	2.4	2.6	1.9	1.9
Total Fixed Income	36.5	42.4	44.4	34.9	34.0	28.1	28.3	28.5	30.4	31.6	26.8	26.2	26.1	27.9	28.8
Commodities				1.0		0.2	0.3	0.3	0.4	0.2	0.4	0.6	0.5	0.5	0.6
Infrastructure						0.2	0.3	0.2	0.2	0.1	0.3	0.3	0.2	0.4	0.5
Natural Resources						0.5	0.5	0.3	0.3	0.1	0.6	0.6	0.4	0.4	0.3
REITs						0.9	1.0	1.0	0.9	0.8	0.9	0.9	0.7	0.7	0.8
Real Estate ex-REITs	4.2	3.8	3.9	3.5	2.3	7.8	6.8	6.1	6.2	5.9	7.3	6.3	6.1	6.3	6.2
Other Real Assets						1.0	0.5	0.4	0.2	0.1	0.6	0.6	0.4	0.3	0.3
Total Real Assets	4.2	3.8	3.9	4.5	2.3	10.6	9.4	8.4	8.1	7.3	10.1	9.2	8.3	8.5	8.6
Hedge Funds	11.8	12.8	16.2	17.9	22.2	5.3	5.1	4.9	4.8	4.8	5.3	5.3	5.1	4.7	5.2
Global TAA	7.5	7.5	6.5	10.2	10.0	0.7	0.7	0.7	0.9	0.9	1.5	2.2	1.2	1.4	1.4
Div. Private Equity	8.9	9.3	9.6	8.8	9.1	6.6	6.4	6.8	7.0	7.1	5.5	5.2	5.3	5.8	5.9
Venture Capital						0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2
LBO						1.4	1.4	0.9	1.0	1.0	1.5	1.4	1.1	1.1	1.2
Private Debt Limited Partnerships	5.5	5.7	5.9	7.4	9.6	0.7	0.7	0.7	0.8	0.8	0.4	0.4	0.4	0.4	0.5
Total Private Equity	14.5	15.0	15.5	16.2	18.7	9.1	8.7	8.6	9.1	9.1	7.8	7.3	7.1	7.6	7.8
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	19	19	19	19	57	63	62	66	67
Median Assets (\$ billions)	29.4	29.2	28.6	26.6	24.6	29.4	29.2	28.6	26.6	24.4	16.3	16.2	15.4	14.0	12.8

1. Your asset mix is based on average assets rather than year-end.

Policy mix

Policy asset mix - 2011 to 2015 (as a % of average assets)

	Your fund %					Peer average %					U.S. Public average %				
	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011	2015	2014	2013	2012	2011
Employer Stock															
U.S. Stock - Broad/All				14.0	14.0	18.5	17.5	18.1	18.8	19.4	10.2	9.6	11.6	11.2	12.0
U.S. Stock - Large Cap						3.2	4.4	4.1	3.5	4.1	10.4	11.5	9.7	11.2	10.1
U.S. Stock - Mid Cap											0.4	0.3	0.1	0.0	0.0
U.S. Stock - Small Cap						0.2	0.3	1.2	1.0	1.4	1.6	1.6	2.2	2.7	3.0
Stock - EAFE				8.0	8.0	4.2	4.2	5.4	6.2	5.8	5.0	5.2	6.9	6.7	6.4
Stock - ACWixU.S.						10.3	10.7	10.8	10.8	12.2	9.5	9.7	8.1	9.1	9.2
Stock - Emerging				8.0	8.0	1.1	0.9	1.5	1.5	1.2	2.0	2.0	2.0	2.0	2.2
Stock - Global	34.0	31.0	31.0			10.1	9.8	7.5	6.0	4.4	9.2	7.8	8.5	6.4	6.3
Stock - Other						0.2	0.2	0.3	0.3	0.3	0.8	0.7	0.5	0.2	0.1
Total Stock	34.0	31.0	31.0	30.0	30.0	47.7	48.0	48.9	48.2	48.9	48.9	48.4	49.6	49.5	49.2
Fixed Income - U.S.	10.0	7.0	7.0	12.0	10.0	20.0	19.0	20.0	20.4	21.4	17.2	16.1	18.5	19.3	20.5
Fixed Income - U.S. Gov't											0.0				
Fixed Income - U.S. Credit											0.1				
Fixed Income - Long Bonds											1.4	1.6	0.9	0.2	0.3
Fixed Income - EAFE									0.3	0.3	0.0	0.1	0.2	0.2	0.2
Fixed Income - Emerging	5.0	6.0	6.0	6.0	3.0	1.0	0.8	0.8	1.4	0.7	0.9	0.8	0.7	0.8	0.7
Fixed Income - Global		3.0	3.0	1.0	3.0	1.4	2.4	1.4	1.3	1.5	1.6	2.0	1.4	2.1	1.4
Fixed Income - Inflation Indexed						1.8	2.2	2.6	2.5	3.3	2.7	2.7	2.6	1.8	2.2
Fixed Income - High Yield	5.0	6.0	6.0	6.0	3.0	1.2	1.4	1.9	2.0	1.5	1.8	1.8	2.1	1.9	1.9
Fixed Income - Mortgages									0.0	0.0	0.1	0.0	0.0	0.0	0.0
Fixed Income - Private Debt						0.3	0.3	0.0			0.5	0.5	0.1	0.0	
Fixed Income - Other						0.8	0.5	0.9	0.8	0.6	0.5	0.7	0.7	0.7	0.4
Cash	2.0	5.0	5.0	7.0	10.0	0.9	1.1	1.2	1.1	1.3	-1.2	-0.9	-0.2	0.7	0.9
Total Fixed Income	22.0	27.0	27.0	32.0	29.0	27.4	27.6	28.7	29.8	30.5	25.5	25.4	27.0	27.6	28.5
Commodities	3.0	3.0	3.0	3.0	2.0	0.6	0.7	0.6	0.6	0.5	1.0	1.1	0.9	0.7	0.7
Infrastructure						0.2	0.2	0.1	0.2	0.0	0.4	0.4	0.4	0.6	0.5
Natural Resources						0.4	0.4	0.3	0.3	0.3	0.6	0.5	0.7	0.5	0.5
REITs						0.5	0.8	0.8	1.2	0.5	0.7	0.7	0.7	0.7	0.5
Real Estate ex-REITs	5.0	5.0	5.0	3.0	6.0	7.8	7.2	6.7	6.4	7.1	7.0	7.1	6.6	6.6	6.8
Other Real Assets						1.5	1.1	0.8	0.4		1.0	0.9	0.5	0.6	0.3
Total Real Assets	8.0	8.0	8.0	6.0	8.0	11.0	10.4	9.3	9.1	8.4	10.7	10.7	9.8	9.6	9.3
Hedge Funds	10.0	8.0	8.0	5.0	5.0	3.7	3.8	3.3	3.1	2.9	4.5	5.0	4.1	3.9	4.1
Global TAA	10.0	10.0	10.0	10.0	10.0	0.9	0.9	0.9	0.9	0.9	1.5	2.1	1.3	1.4	1.2
Div. Private Equity	9.0	9.0	9.0	8.5	10.0	7.6	8.0	7.2	7.1	6.6	7.2	7.1	6.8	6.7	6.4
Venture Capital						0.2	0.1	0.3	0.3	0.1	0.2	0.3	0.2	0.2	0.1
LBO						1.0	0.6	0.8	0.8	0.6	1.1	0.7	0.8	0.8	0.7
Private Debt Limited Partnerships	7.0	7.0	7.0	8.5	8.0	0.7	0.7	0.7	0.8	1.1	0.4	0.4	0.3	0.3	0.4
Total Private Equity	16.0	16.0	16.0	17.0	18.0	9.4	9.4	8.9	8.9	8.4	8.9	8.5	8.2	8.0	7.6
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	19	19	19	19	57	63	62	66	67

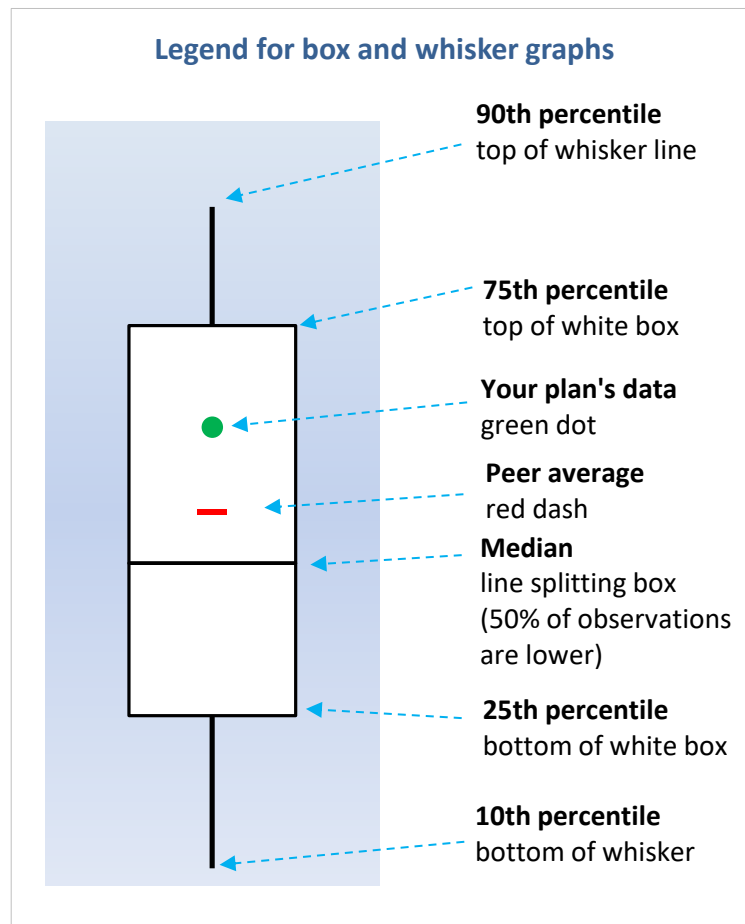
4

Returns, Benchmarks and Value Added

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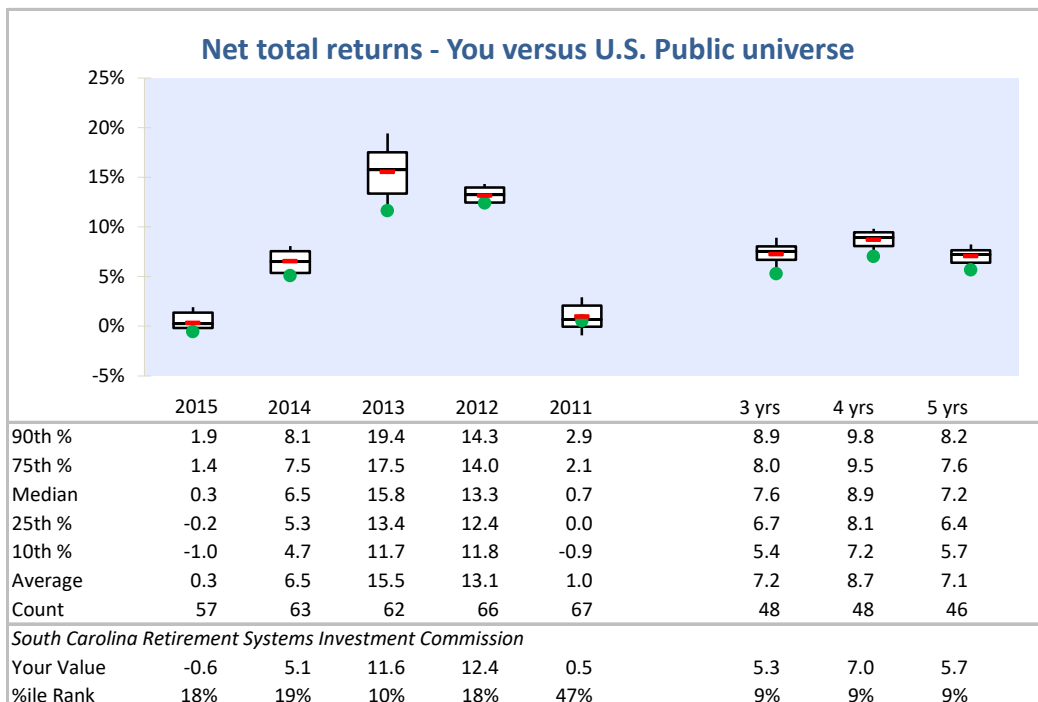
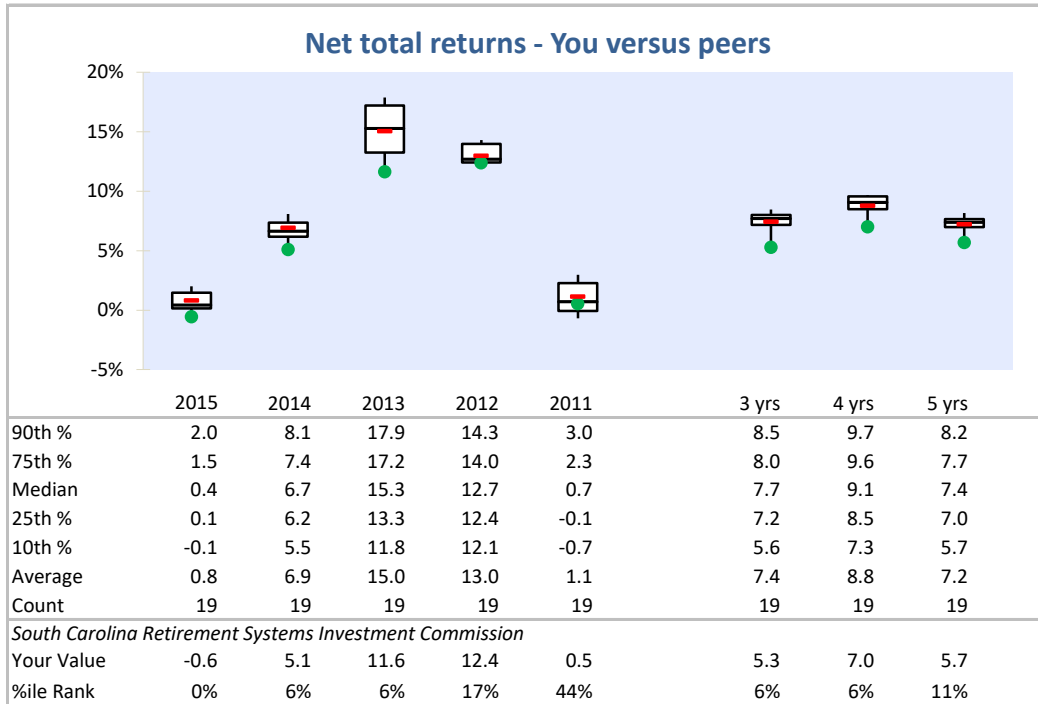
Interpreting box and whisker graphs

Box and whisker graphs are used extensively in this report because they show visually where you rank relative to all observations. At a glance you can see which quartile your data falls in.



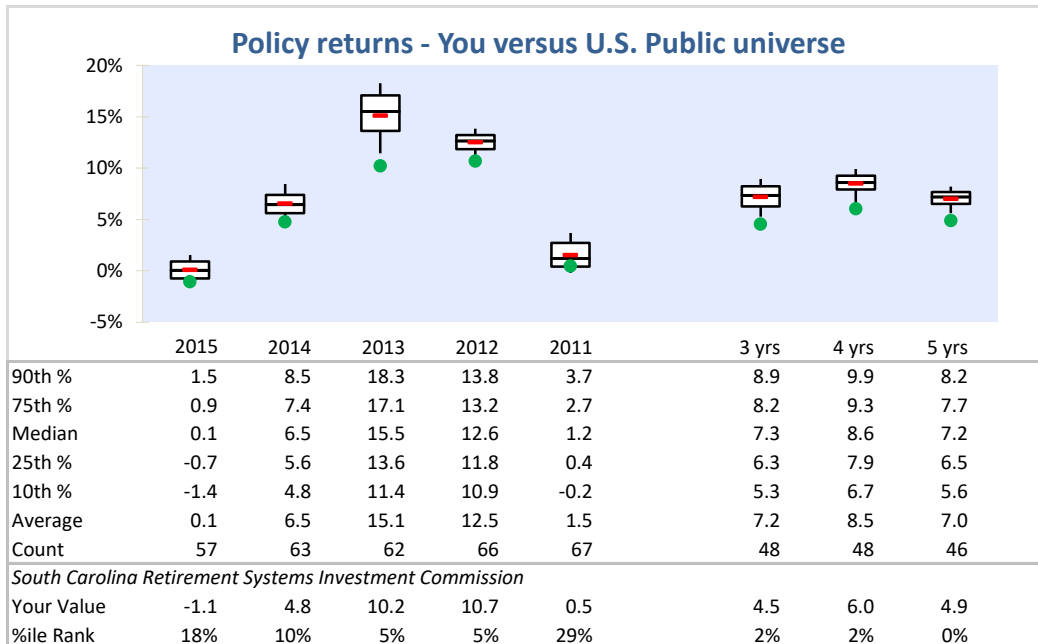
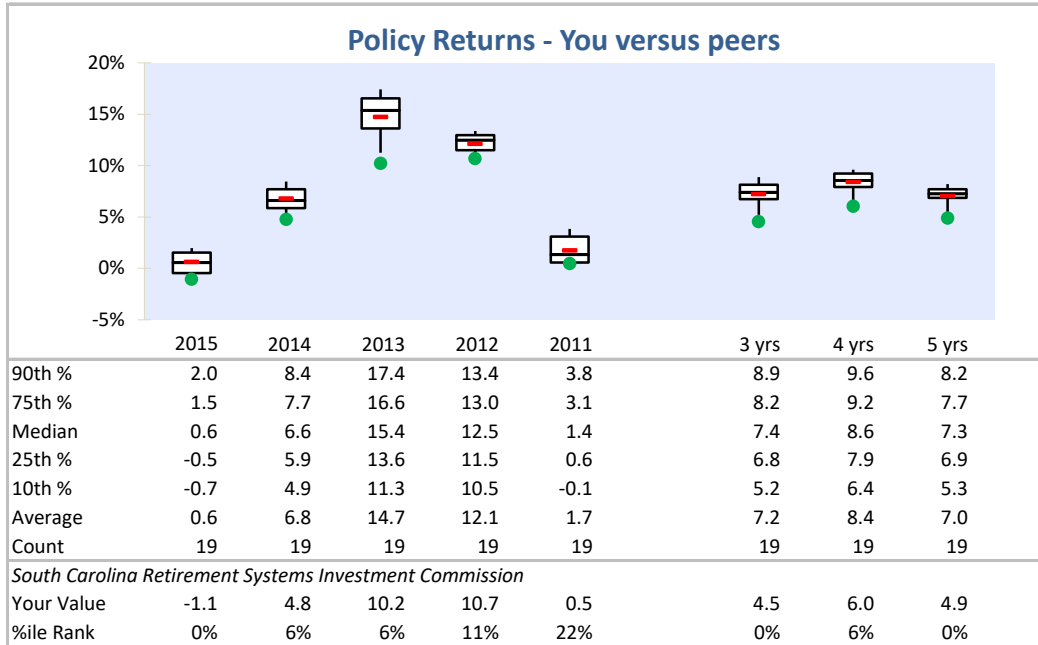
Net total returns

Your 5-year net total return of 5.7% was below the peer median and below the median of the U.S. Public universe. Comparisons of total return do not help you understand the reasons behind relative performance. To understand the relative contributions from policy asset mix decisions and implementation decisions we separate total return into its more meaningful components - policy return and implementation value added.



Policy returns

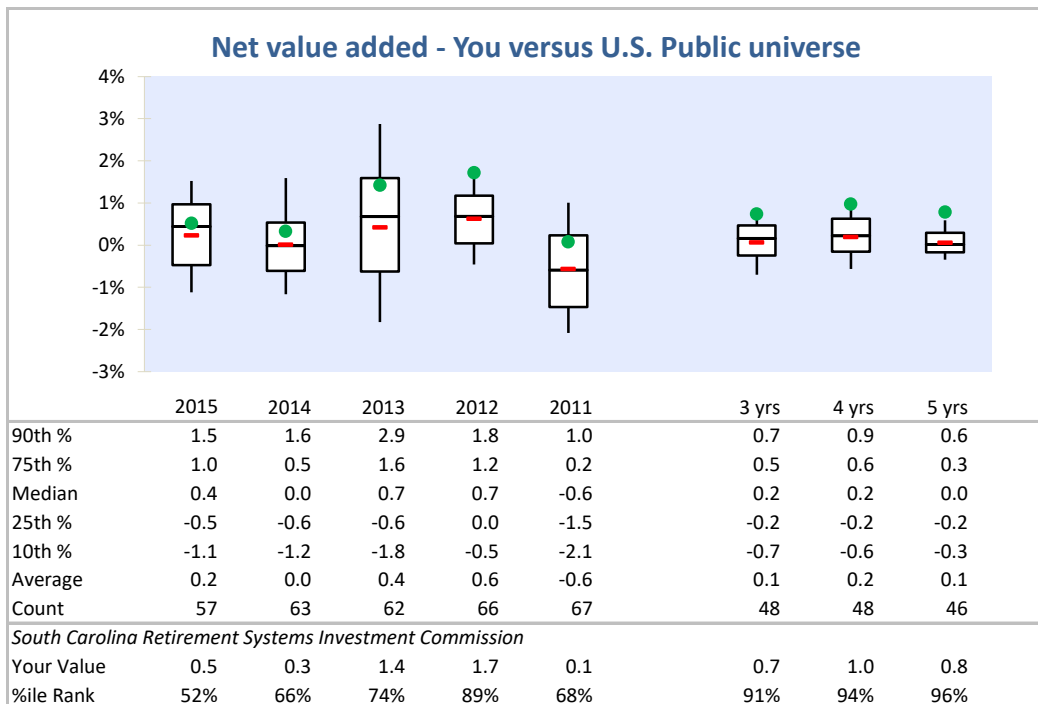
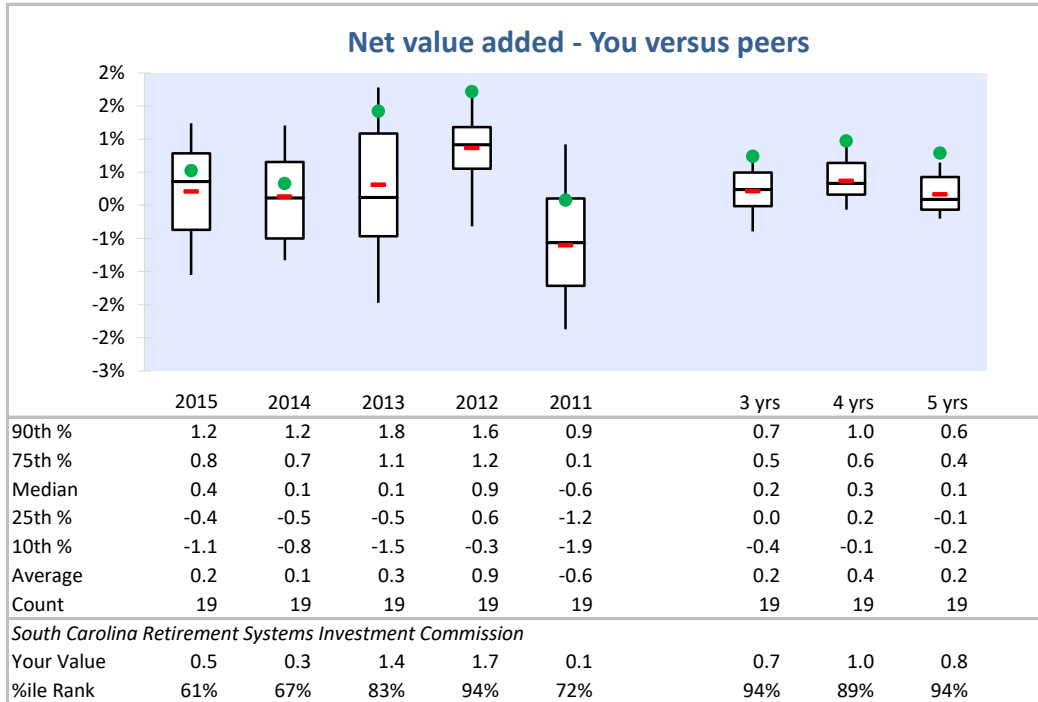
Your 5-year policy return of 4.9% was below the peer median and below the median of the U.S. Public universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.



To enable fairer comparisons, the policy returns of all participants except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your 5-year policy return would be 5.4%, 0.5% higher than your actual 5-year policy return of 4.9%. Mirroring this, your 5-year total fund net value added would be 0.5% lower. Refer to the Research section pages 6-7 for details.

Net value added

Your 5-year net value added of 0.8% was among the highest in your peer group and among the highest in the U.S. Public universe. Net value added is the difference between your net total return and your policy return.



Net returns by asset class

Asset class	Your fund %							Peer average %						U.S. Public average %					
	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr	
U.S. Stock - Broad/All	-14.0	8.6	35.6	18.0	0.1	8.4	-1.3	10.4	34.5	16.4	0.8	11.4	-0.3	11.1	33.4	16.2	0.7	11.6	
U.S. Stock - Large Cap							1.2	13.1	32.8	16.1	2.4	12.6	1.1	12.6	33.6	16.2	1.3	12.3	
U.S. Stock - Mid Cap							-3.0	9.1					-2.4	8.1	37.2	16.3	1.3	11.3	
U.S. Stock - Small Cap							-3.4	6.1	38.2	16.7	-3.0	9.9	-3.2	5.2	38.9	16.0	-3.4	9.7	
Stock - EAFE		-5.1	14.7	16.6			0.5	-3.5	22.7	18.5	-11.2	4.6	0.4	-3.8	23.3	17.3	-12.0	4.2	
Stock - Emerging	-15.9	-0.3	-3.2	19.5	-20.7	-5.1	-14.8	-1.9	-1.7	20.1	-18.4	-4.2	-14.3	-1.5	-1.5	18.8	-19.4	-4.5	
Stock - ACWIxU.S.							-2.3	-3.4	18.9	18.1	-11.4	3.3	-2.4	-3.5	18.8	17.8	-12.3	2.9	
Stock - Global	-0.4	4.1					-0.6	5.2	26.8	16.1	-6.7	7.5	-1.5	3.8	24.1	15.1	-7.2	6.3	
Stock - Other							-4.4	-2.1	15.9	16.6	-12.0	2.2	-5.5	5.1	18.7	12.3	-6.7	4.3	
Stock - Total	-5.4	4.0	18.9	18.6	-6.6	5.3	-1.4	5.3	26.2	17.2	-5.0	7.8	-1.6	5.0	26.6	16.9	-5.2	7.7	
Fixed Income - U.S.	0.5	5.1	-1.7	5.9	9.8	3.8	0.4	6.0	-1.5	6.6	7.2	3.7	0.3	5.8	-1.6	6.9	8.4	3.9	
Fixed Income - U.S. Gov't							0.9	1.0					0.7	1.0					
Fixed Income - U.S. Credit							-1.9	4.4					-2.2	6.3					
Fixed Income - EAFE										-0.2	6.2		-4.9	-2.6	-3.1	0.9	6.4	-0.8	
Fixed Income - Emerging	-6.4	0.1	-8.7	19.3	-0.2	0.4	-3.5	0.2	-7.9	17.5	1.3	1.2	-5.0	-0.5	-7.4	16.7	1.0	0.6	
Fixed Income - Global	-0.6	2.7	-1.5	10.9	2.8	2.8	0.0	5.7	-0.7	7.4	4.3	3.3	-2.0	3.0	-0.4	8.2	5.2	2.7	
Fixed Income - Long Bonds													-3.8	22.3	-5.0	10.2	28.3	9.6	
Fixed Income - Inflation Indexed							-1.5	4.7	-7.4	7.8	11.4	2.8	-1.5	4.8	-7.3	7.7	13.2	3.1	
Fixed Income - High Yield	-1.3	1.2	6.5	11.9	0.4	3.6	-2.4	2.4	6.8	13.7	3.5	4.7	-3.3	3.2	7.1	15.7	3.7	5.1	
Fixed Income - Mortgages							2.2	5.5	0.7	25.4	3.5	7.1	3.5	6.4	5.0	11.9	3.6	6.0	
Fixed Income - Private Debt							1.6	6.1	8.4	8.3			1.3	1.6	6.8	9.0	3.5	4.4	
Fixed Income - Other							-0.7	5.9	14.9	15.2	-1.2	6.6	-0.8	4.9	7.8	13.1	1.9	5.3	
Cash	0.1	0.2	1.1	1.0	1.0	0.7	0.4	0.2	0.3	0.6	0.6	0.4	0.3	0.3	0.1	0.6	1.3	0.5	
Fixed Income - Total	-1.0	1.6	0.0	7.0	3.9	2.3	-0.2	5.0	-1.0	7.5	6.4	3.5	-0.5	5.4	-1.1	7.8	7.1	3.7	
Commodities				-3.0			-24.9	-15.2	-9.3	-1.3	-9.5	-12.4	-22.4	-16.9	-5.4	0.2	-7.8	-10.8	
Infrastructure							-2.7	14.4	7.4	7.1	9.6	7.0	3.4	12.7	9.8	6.4	1.9	6.8	
REITs							1.9	19.3	5.0	19.9	0.4	9.0	2.1	19.6	4.2	21.1	2.0	9.5	
Natural Resources							-4.4	10.2	9.5	5.2	3.1	4.6	-3.7	11.0	6.6	1.8	3.1	3.6	
Real Estate ex-REITs	15.5	19.5	21.1	9.9	4.4	13.9	13.5	13.2	11.6	8.8	13.3	12.1	13.2	12.5	12.4	10.4	13.5	12.4	
Other Real Assets							-15.2	5.9	12.3	2.5	1.7	1.0	-12.4	6.9	11.6	4.1	2.7	2.2	
Real Assets - Total	15.5	19.5	21.1	8.3	4.4	13.6	9.2	13.2	10.1	9.7	10.7	10.6	8.4	11.3	10.5	10.1	10.1	10.1	
Hedge Funds	2.2	5.7	11.5	10.8	1.5	6.3	0.8	5.0	10.6	7.6	1.1	5.0	0.0	4.7	9.9	6.3	0.6	4.2	
Global TAA	-5.2	4.8	3.4	12.9	8.8	4.8	-4.2	5.9	1.2	12.6	6.9	4.3	-3.5	5.7	0.6	10.5	4.9	3.5	
Diversified Private Equity	4.0	17.0	21.4	9.7	8.5	12.0	8.1	16.7	18.3	13.1	11.2	13.4	8.0	15.4	17.6	13.1	11.2	13.0	
LBO							6.8	14.7	25.1	16.3	14.6	15.4	7.9	14.4	18.4	13.8	11.6	13.2	
Venture Capital							12.1	11.4	17.3	3.3	18.3	12.3	10.6	17.3	16.3	8.8	18.9	14.3	
Private Debt Limited Partnerships	0.6	10.5	15.5	13.9	0.2	7.9	3.4	10.5	14.6	16.3	4.5	9.8	6.1	14.3	16.7	8.2	2.5	9.4	
Private Equity - Total	2.7	14.5	19.0	11.6	3.8	10.1	8.4	16.5	18.1	13.0	11.4	13.4	8.3	15.3	17.3	12.8	11.2	13.0	
Total Fund Return	-0.6	5.1	11.6	12.4	0.5	5.7	0.8	6.9	15.0	13.0	1.1	7.2	0.3	6.5	15.5	13.1	1.0	7.1	

You were not able to provide full year returns for all of the components of returns shown in italics. The default is to set the unavailable return equal to the benchmark return.

Benchmark returns by asset class

Asset class	Your fund %						Peer average %						U.S. Public average %					
	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr
U.S. Stock - Broad/All	0.5	12.6	33.6	16.0	2.1	12.3	0.6	12.8	33.2	16.3	1.3	12.2	0.6	12.7	33.2	16.3	1.2	12.2
U.S. Stock - Large Cap							1.2	13.3	32.8	16.3	1.5	12.4	1.2	13.1	32.9	16.2	1.6	12.4
U.S. Stock - Mid Cap							-2.3	10.4					-2.1	10.8	33.5	17.9	-1.7	10.9
U.S. Stock - Small Cap							-3.7	6.8	38.1	16.9	-2.9	10.0	-3.5	6.0	37.8	16.9	-3.2	9.8
Stock - EAFE		-4.9	22.8	17.3	-12.1		-0.6	-3.9	23.2	17.4	-12.2	4.0	-0.7	-4.1	22.0	17.2	-12.3	3.6
Stock - Emerging	-14.9	-2.2	-2.6	18.2	-18.4	-4.8	-15.0	-2.0	-2.6	18.4	-18.5	-4.8	-14.4	-2.0	-1.7	18.2	-18.5	-4.5
Stock - ACWIxU.S.							-4.9	-3.8	16.3	17.0	-13.8	1.4	-4.8	-3.7	16.6	17.1	-13.8	1.5
Stock - Global	-2.4	4.2	22.8				-1.9	4.6	23.9	16.3	-6.7	6.6	-1.6	3.3	22.0	15.0	-7.3	5.7
Stock - Other							-6.0	-2.0	12.9	15.0	-14.9	0.4	-6.0	2.6	17.7	12.4	-8.2	3.2
Stock - Total	-2.4	4.2	22.8	16.9	-7.2	6.3	-1.7	5.5	25.6	16.6	-5.6	7.5	-1.9	5.2	25.6	16.6	-5.5	7.4
Fixed Income - U.S.	0.6	6.0	-2.0	4.2	7.8	3.2	0.5	6.0	-2.0	4.9	8.0	3.4	0.4	6.1	-2.1	4.9	8.1	3.4
Fixed Income - U.S. Gov't							0.7	0.8					0.8	0.8				
Fixed Income - U.S. Credit							0.2	5.8					-0.7	5.9				
Fixed Income - EAFE										1.5	6.4		-5.1	-3.1	-3.8	2.0	5.7	-0.9
Fixed Income - Emerging	-7.1	0.7	-7.1	17.2	7.4	1.8	-3.9	0.7	-6.9	17.2	5.6	2.2	-5.2	0.0	-6.4	16.8	3.8	1.5
Fixed Income - Global	1.0	7.6	-0.1	4.3	5.6	3.7	0.3	5.7	-1.3	4.9	6.7	3.2	-1.0	3.9	-1.4	4.1	6.5	2.4
Fixed Income - Long Bonds													-2.6	20.1	-9.1	4.6	25.4	6.9
Fixed Income - Inflation Indexed							-1.9	4.8	-5.9	6.9	11.6	2.9	-1.8	4.7	-6.4	7.2	12.7	3.1
Fixed Income - High Yield	-1.2	3.4	3.7	14.2	5.0	4.9	-3.7	2.6	6.7	14.3	5.4	4.9	-4.1	2.3	6.7	13.8	5.2	4.6
Fixed Income - Mortgages							2.2	6.1	0.7	9.3	7.6	5.1	2.1	4.4	0.2	7.3	4.6	3.7
Fixed Income - Private Debt							1.8	8.3	9.5	12.9			0.1	4.5	7.2	6.9	3.9	4.5
Fixed Income - Other							-1.5	6.2	10.2	10.6	-0.4	4.9	-0.7	5.7	5.2	9.2	3.4	4.5
Cash	0.1	0.5	0.1	0.4	0.6	0.3	0.0	0.1	0.2	0.1	0.3	0.1	0.0	0.2	0.1	0.2	0.3	0.1
Fixed Income - Total	-1.6	3.4	-1.3	7.7	4.8	2.5	-0.2	5.3	-1.7	6.1	7.6	3.4	-0.2	7.4	-2.4	6.0	8.0	3.7
Commodities	-24.7	-17.0	-9.5	-1.1	-13.3	-13.5	-18.5	-13.6	-9.5	-1.0	-13.3	-11.4	-21.0	-16.5	-5.0	0.5	-7.2	-10.2
Infrastructure							3.4	5.6	3.6	5.9	10.4	5.7	4.7	6.5	6.8	7.1	8.1	6.6
REITs							3.7	23.4	3.4	21.1	5.0	11.0	3.3	20.9	3.2	22.7	3.9	10.4
Natural Resources							-0.3	4.4	6.4	6.9	9.0	5.2	0.8	7.1	7.9	7.2	4.9	5.5
Real Estate ex-REITs	15.7	13.2	13.8	10.5	14.3	13.5	13.5	11.4	11.9	10.7	15.4	12.6	13.5	11.6	11.6	11.0	15.1	12.6
Other Real Assets							-9.1	6.2	11.0	4.9	8.8	4.1	-10.2	6.7	11.2	5.5	9.2	4.2
Real Assets - Total	0.6	1.8	5.1	4.7	7.4	3.9	8.8	9.5	9.4	10.8	12.9	10.3	7.0	8.9	9.3	10.2	11.7	9.4
Hedge Funds	-1.1	3.0	9.1	3.5	-8.9	0.9	2.6	4.3	8.6	5.3	0.6	4.2	1.6	4.0	8.9	5.9	-0.2	4.0
Global TAA	-2.0	2.3	10.4	8.7	0.6	3.9	1.9	4.0	8.5	7.8	4.3	5.3	0.9	5.2	9.3	9.3	2.5	5.4
Diversified Private Equity ¹	0.9	18.0	25.1	10.7	8.6	12.3	4.4	18.4	29.0	10.0	14.5	15.0	4.7	14.8	30.7	13.3	11.8	14.8
LBO ¹							5.0	12.7	35.5	11.2	10.9	14.6	4.3	12.5	31.2	14.4	9.8	14.1
Venture Capital ¹							6.4	12.7	35.5	11.2	10.9	14.9	5.3	12.6	31.6	15.6	9.3	14.5
Private Debt Limited Partnerships ¹	2.4	5.4	6.5	9.3	4.3	5.5	4.0	12.4	25.8	12.4	8.4	12.4	4.1	12.2	29.8	16.1	9.7	14.1
Private Equity ¹ - Total	1.5	12.4	17.0	10.0	6.7	9.4	4.5	17.8	28.8	10.2	14.0	14.8	4.7	14.6	30.6	13.2	11.8	14.7
Total Policy Return	-1.1	4.8	10.2	10.7	0.5	4.9	0.6	6.8	14.7	12.1	1.7	7.0	0.1	6.5	15.1	12.5	1.5	7.0

1. To enable fairer comparisons, the policy returns of all participants except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your 5-year policy return would be 5.4%, 0.5% higher than your actual 5-year policy return of 4.9%. Mirroring this, your 5-year total fund net value added would be 0.5% lower. Refer to the Research section pages 6-7 for details.

Net value added by asset class

Asset class	Your fund %						Peer average %						U.S. Public average %					
	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr	2015	2014	2013	2012	2011	5-yr
U.S. Stock - Broad/All	-14.5	-3.9	2.1	2.0	-2.0	-3.9	-1.9	-2.3	1.2	0.1	-0.5	-0.8	-0.9	-1.6	0.2	-0.1	-0.5	-0.6
U.S. Stock - Large Cap							0.0	-0.2	0.0	-0.2	0.9	0.1	-0.1	-0.5	0.7	-0.1	-0.3	-0.1
U.S. Stock - Mid Cap							-0.7	-1.3					-0.2	-2.7	3.7	-1.6	3.0	0.4
U.S. Stock - Small Cap							0.3	-0.6	0.1	-0.1	-0.1	-0.1	0.3	-0.8	1.1	-0.8	-0.2	-0.1
Stock - EAFE		-0.2	-8.1	-0.7			1.1	0.4	-0.5	1.0	0.9	0.6	1.1	0.3	1.3	0.1	0.3	0.6
Stock - Emerging	-1.0	1.9	-0.7	1.3	-2.3	-0.3	0.2	0.1	0.9	1.7	0.1	0.6	0.1	0.5	0.2	0.6	-0.9	0.0
Stock - ACWIxU.S.							2.9	0.4	3.3	1.1	2.4	1.9	2.4	0.2	2.4	0.7	1.5	1.4
Stock - Global	1.9	0.0					1.3	0.7	2.8	-0.1	0.0	0.9	0.0	0.5	2.3	0.1	0.1	0.5
Stock - Other							1.6	-0.1	3.0	1.6	2.9	1.8	0.6	2.6	0.4	-0.7	1.6	1.1
Stock - Total	-3.1	-0.1	-3.9	1.6	0.5	-1.0	0.3	-0.2	0.6	0.6	0.6	0.4	0.4	-0.1	0.9	0.2	0.3	0.3
Fixed Income - U.S.	0.0	-0.9	0.3	1.7	1.9	0.6	-0.1	0.0	0.5	1.7	-0.8	0.3	-0.2	-0.3	0.5	2.0	0.3	0.5
Fixed Income - U.S. Gov't							0.1	0.2					-0.1	0.2				
Fixed Income - U.S. Credit							-2.1	-1.4					-1.5	0.4				
Fixed Income - EAFE										-1.7	-0.2		0.2	0.4	0.7	-1.1	0.7	0.2
Fixed Income - Emerging	0.7	-0.6	-1.6	2.1	-7.6	-1.4	0.4	-0.4	-1.0	0.3	-4.3	-1.0	0.2	-0.8	-1.0	-0.2	-3.0	-0.9
Fixed Income - Global	-1.7	-4.9	-1.4	6.6	-2.8	-0.9	-0.3	0.0	0.6	2.5	-2.4	0.1	-1.0	-0.7	1.0	4.1	-1.3	0.4
Fixed Income - Long Bonds													-0.6	3.3	2.2	5.6	0.2	2.7
Fixed Income - Inflation Indexed							0.5	-0.2	-1.5	0.9	-0.2	-0.1	0.2	-0.2	-1.0	0.5	0.5	0.1
Fixed Income - High Yield	-0.1	-2.2	2.8	-2.3	-4.6	-1.3	1.2	-0.2	0.1	-0.6	-1.9	-0.3	0.9	0.6	0.5	1.6	-1.6	0.5
Fixed Income - Mortgages							0.0	-0.6	0.0	16.1	-4.0	2.0	1.4	2.8	4.8	4.5	-1.3	2.3
Fixed Income - Private Debt							-0.2	-2.2	-1.0	-4.6			1.8	-2.7	-0.4	2.1	-0.4	-0.1
Fixed Income - Other							0.8	-0.3	2.1	1.0	-0.7	1.7	-0.1	-0.3	2.2	3.2	-1.6	0.8
Cash	0.0	-0.3	1.0	0.7	0.4	0.4	0.3	0.1	0.2	0.4	0.3	0.3	0.2	0.2	0.1	0.4	1.1	0.4
Fixed Income - Total	0.7	-1.8	1.2	-0.7	-0.8	-0.2	0.0	-0.3	0.7	1.4	-1.2	0.1	-0.3	-2.0	1.2	1.9	-0.9	0.0
Commodities				-1.9			-0.2	1.9	0.2	-0.3	3.8	-1.0	-1.6	1.1	-0.5	-0.3	-0.9	-0.6
Infrastructure							-6.1	8.9	3.8	1.3	-0.7	1.3	-1.3	6.2	3.0	-0.7	-6.3	0.1
REITs							-1.8	-4.1	1.6	-1.2	-4.5	-2.0	-1.2	-1.2	1.0	-0.8	-1.8	-0.9
Natural Resources							-4.0	5.8	3.2	-1.7	-5.9	-0.6	-4.1	3.9	-1.6	-5.4	-1.7	-1.9
Real Estate ex-REITs	-0.2	6.4	7.3	-0.6	-9.8	0.4	0.1	1.7	-0.3	-1.9	-2.2	-0.5	-0.3	0.8	0.8	-0.6	-1.6	-0.2
Other Real Assets							-6.1	-0.3	1.3	-2.4	-5.3	-3.1	-2.8	0.1	-1.0	-1.9	-4.2	-2.0
Real Assets - Total	14.9	17.7	16.0	3.6	-3.0	9.7	0.4	3.7	0.7	-1.0	-2.2	0.3	1.4	2.4	1.3	-0.2	-1.5	0.7
Hedge Funds	3.3	2.7	2.4	7.3	10.4	5.3	-1.8	0.7	2.0	2.4	-0.2	0.7	-1.6	0.5	0.9	0.5	0.8	0.3
Global TAA	-3.2	2.6	-7.0	4.2	8.3	0.9	-6.1	1.8	-7.3	4.8	2.6	-0.9	-4.5	0.6	-8.7	1.2	2.4	-1.8
Diversified Private Equity ¹	3.2	-1.0	-3.7	-0.9	-0.1	-0.4	3.8	-1.8	-10.7	3.1	-3.2	-1.5	3.3	0.6	-13.2	-0.2	-0.6	-1.8
LBO ¹							1.8	2.0	-10.4	5.1	3.7	0.8	3.6	1.9	-12.9	-0.6	1.8	-0.9
Venture Capital ¹							5.7	-1.4	-18.2	-7.9	7.4	-2.6	5.2	4.7	-15.3	-6.8	9.7	-0.2
Private Debt Limited Partnerships ¹	-1.8	5.1	9.0	4.6	-4.2	2.4	-0.6	-1.9	-11.2	3.9	-1.8	-2.6	2.0	2.1	-13.2	-7.9	-6.8	-4.6
Private Equity ¹ - Total	1.2	2.0	2.0	1.7	-2.9	0.7	3.9	-1.3	-10.8	2.8	-2.5	-1.3	3.6	0.7	-13.3	-0.5	-0.6	-1.7
Total fund	0.5	0.3	1.4	1.7	0.1	0.8	0.2	0.1	0.3	0.9	-0.6	0.2	0.2	0.0	0.4	0.6	-0.6	0.1

Total net value add is determined by both actual and policy allocation. It is the outcome of total net return (page 6) minus total benchmark return (page 7). Aggregate net returns are an asset weighted average of all categories that the fund has an actual allocation to. Aggregate benchmark returns are a policy weighted average and includes only those categories that are part of your policy fund's mix.

You were not able to provide full year returns for all of the components of returns of asset classes with values shown in italics. The default is to set the unavailable return equal to the benchmark return.

1. To enable fairer comparisons, the policy returns of all participants except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your 5-year policy return would be 5.4%, 0.5% higher than your actual 5-year policy return of 4.9%. Mirroring this, your 5-year total fund net value added would be 0.5% lower. Refer to the Research section pages 6-7 for details.

Most frequently used benchmarks by asset class - 2015 - Stock

How many of your peers use the most frequently used benchmarks by universe

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>U.S. Stock - Broad/All</u>			
Russell 3000	0.5	10	44
S&P 500	1.4	1	5
Wilshire 5000	0.7	1	5
Custom	2.0		3
Other	0.8	3	15
Total	0.7	15	72
<u>U.S. Stock - Large Cap</u>			
S&P 500	1.4	5	43
Russell 1000	0.9	3	30
Russell 3000	0.5		10
Custom	0.9	2	8
Other	0.8		20
Total	1.0	10	111
<u>U.S. Stock - Small Cap</u>			
Russell 2000	-4.2	5	61
Russell 2500	-2.9	3	12
Custom	-4.3		9
Russell 2000 Growth	-1.4		2
Other	-2.8	3	27
Total	-3.7	11	111
<u>Stock - EAFE</u>			
MSCI EAFE net	-0.8	4	33
Custom	-0.9	1	9
MSCI EAFE	-0.4		7
MSCI EAFE gross	-0.5	1	7
Other	-1.2	3	40
Total	-0.9	9	96
<u>Stock - Europe</u>			
Custom	-1.3		1
Total	-1.3		1

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>Stock - Emerging</u>			
MSCI Emerging Market net	-14.9	6	42
MSCI Emerging Markets	-14.1	2	14
Custom	-14.8	1	8
MSCI Emerging Market gross	-14.5	2	6
Other		3	41
Total	-9.3	14	111
<u>Stock - ACWIxU.S.</u>			
MSCI ACWI xUS net	-5.5	4	23
MSCI ACWI xUS gross	-5.3	1	6
Custom	-4.8		3
MSCI ACWI ex-US	-5.6		3
Other	-3.4	7	48
Total	-4.3	12	83
<u>Stock - Global</u>			
MSCI ACWI net	-2.4	2	14
MSCI World Net	-0.4	1	13
Custom	-1.5		5
MSCI ACWI	-2.4		4
Other	-1.2	4	44
Total	-1.4	7	80

1. Return reflects the average return provided to CEM for the described benchmark. Often, different returns for the same described benchmark are provided due to revisions (particularly for real estate benchmarks), rounding and differences in calculation methodology (particularly for hedged returns).

Most frequently used benchmarks by asset class - 2015 - Fixed Income

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>Fixed Income - U.S.</u>			
Barclays US Aggregate	0.5	9	45
Custom	0.4	1	10
Barclays Aggregate	0.3		6
Barclays US Universal	0.5	3	5
Other	-0.1	6	42
Total	0.2	19	108
<u>Fixed Income - EAFE</u>			
Barclays Global Aggregate ex US	-6.0		1
CalPERS Barclays International Fixe	-4.1		1
Total	-5.1		2
<u>Fixed Income - Global</u>			
Barclays Global Aggregate	-3.2	1	5
Barclays US Aggregate	0.5		4
Barclays Capital Global Aggregate F	-1.1	1	2
3 Mo LiBOR + 3%	3.3		1
Other	-1.4	5	23
Total	-1.2	7	35
<u>Fixed Income - Emerging</u>			
JP Morgan EMBI Global Diversified	1.5	1	5
Custom	-5.8	1	4
JPMorgan GBI-EM Global Diversifie	-14.9	1	3
EMBI Global Diversified	1.2	1	2
Other	-4.3	7	36
Total	-4.3	11	50

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>Fixed Income - High Yield</u>			
Barclays US Corp High Yield		1	11
Custom		1	6
Barclays US Corp High Yield 2% Cap			3
Merrill Lynch High Yield		1	3
Other		5	52
Total		8	75
<u>Fixed Income - Inflation Indexed</u>			
Barclays US TIPS		6	17
Custom		2	4
67% Barclays Global Inflation-Link			1
BarCap Gbl Infl Linked TR Hdg USD			1
Other		3	14
Total		11	37
<u>Fixed Income - Mortgages</u>			
Custom			3
Barclay's Mortgage			1
Barclays Mortgage Index Lagged			1
Barclays U.S. MBS			1
Other		1	7
Total		1	13
<u>Fixed Income - Long Bonds</u>			
Custom			20
Barclays US Long G/C			13
Barclays US Long Credit			3
Barclays US Long Corporate			2
Other			45
Total			83

Most frequently used benchmarks by asset class - 2015 - Hedge Funds and Real Assets²

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>Global TAA</u>			
Custom	-0.5		20
11% US 3M Libor + 500bps, 89% U!	6.2		1
3 month/91 Day T-Bill + 900 bps	9.1		1
32% MSCI ACWI ex-US Index / 24%	-0.4		1
Other	0.3	2	24
Total	0.3	2	47
<u>Hedge Funds</u>			
Custom	2.0	3	26
HFRI Fund of Funds Composite Ind	0.0		6
HFRX Global Hedge Fund	-3.6		3
HFRI Fund of Funds	-0.2		2
Other	0.9	8	62
Total	0.9	11	99
<u>Commodities</u>			
Dow Jones UBS Commodity Index	-24.7		6
Bloomberg Commodity Index	-23.0	1	5
Custom	-13.7		4
Bloomberg Commodity Index Total	-24.7	2	3
Other	-23.4	1	21
Total	-22.6	4	39
<u>REITs</u>			
Your REIT benchmark	1.1	4	28
Custom	1.4		5
Wilshire REIT	4.2	2	5
MSCI US REIT Index	2.5	1	2
Other	5.4	2	14
Total	2.6	9	54

Benchmark Description	Return ¹	# Using	
		Peers	US
<u>Infrastructure</u>			
Custom	4.0	2	7
CPI + 5%	5.5	1	4
[Domestic CPI+4%]xw3 + Actual Re	5.1		1
50% DJ Brookfield + 50% Barclays C	-8.8		1
Other	2.8	2	17
Total	3.1	5	30
<u>Natural Resources</u>			
Custom	2.1	1	6
NCREIF TIMBERLAND	4.8		3
NCREIF Timberland Index	8.1	1	3
CPI + 5%	5.6	1	2
Other	-2.1	5	24
Total	0.3	8	38
<u>Real Estate ex-REITs</u>			
Custom	12.2	4	22
NCREIF	13.1	2	14
NCREIF Qtr lag	13.4	2	11
NCREIF ODCE	14.6	1	9
Other	12.9	10	77
Total	13.0	19	133

2. In order to eliminate the substantial noise caused by inconsistent and often inappropriate private equity benchmarks (see Research section page 6), the private equity benchmarks of all participants were adjusted to reflect investable private equity benchmarks based on lagged, small-cap stock. As a result of this adjustment, the most commonly used private equity benchmarks are not shown.

Your policy return and value added calculation - 2015

2015 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock - Broad/All		Russell 3000	0.5%	-14.0%	-14.5%
Stock - Emerging		MSCI Emerging Market Net	-14.9%	-15.9%	-1.0%
Stock - Global	34.0%	MSCI All Country World Net Index	-2.4%	-0.4%	1.9%
Fixed Income - U.S.	10.0%	Barclays US Aggregate	0.6%	0.5%	0.0%
Fixed Income - Emerging	5.0%	50% JPM EMBI Global Diversified/50% JPM-GBI-EM C	-7.1%	-6.4%	0.7%
Fixed Income - Global		Barclays Global Aggregate (USDH)	1.0%	-0.6%	-1.7%
Fixed Income - High Yield	5.0%	33%Bar U.S. High Yield 2% / 33%S&P LSTA Leveraged	-1.2%	-1.3%	-0.1%
Cash	2.0%	BofA Merrill Lynch 3 Month US Treasury Bill G001	0.1%	0.1%	0.0%
Commodities	3.0%	Bloomberg Commodity Index Total Return	-24.7%		
Real Estate ex-REITs	5.0%	NCREIF ODCE Index + 75 bps	15.7%	15.5%	-0.2%
Hedge Funds	10.0%	HFRI Fund Weighted Composite Index	-1.1%	2.2%	3.3%
Global TAA	10.0%	50% MSCI World Net / 50% Citi WGBI	-2.0%	-5.2%	-3.2%
Diversified Private Equity	9.0%	80% Russell 3000 / 20% MSCI EAFE Lagged + 300 Bps	0.9%	4.0%	3.2%
Private Debt Limited Partnerships	7.0%	S&P/LSTA + 150 Bps 3 Month Lag	2.4%	0.6%	-1.8%
Total	100.0%				
Net Actual Return (reported by you)					-0.6%
Calculated Policy Return = sum of (policy weights X benchmark returns)				-1.2%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.1%</u>	
Policy Return					<u>-1.1%</u>
Net Value Added (Net Return - Policy Return)					0.5%

Your policy return and value added calculations - 2011 to 2014

2014 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
U.S. Stock		Russell 3000 (def.	12.6%	8.6%	-3.9%
Stock - EAFE		MSCI EAFE net (d	-4.9%	-5.1%	-0.2%
Stock - Emerging		MSCI Emerging IV	-2.2%	-0.3%	1.9%
Stock - Global	31.0%	MSCI ACWI Net	4.2%	4.1%	0.0%
Fixed Income - U.S.	7.0%	Barclays US Aggr	6.0%	5.1%	-0.9%
Fixed Income - Emerging	6.0%	50% JPM EMBI GI	0.7%	0.1%	-0.6%
Fixed Income - Global	3.0%	Barclays Global A	7.6%	2.7%	-4.9%
Fixed Income - High Yield	6.0%	33%BarCapUS Co	3.4%	1.2%	-2.2%
Cash	5.0%	90 D T-Bill / BarC	0.5%	0.2%	-0.3%
Commodities	3.0%	Bloomberg Comn	-17.0%		
Real Estate ex-REITs	5.0%	NCREIF ODCE Ind	13.2%	19.5%	6.4%
Hedge Funds	8.0%	HFRI Fund Weigh	3.0%	5.7%	2.7%
Global TAA	10.0%	50% MSCI World	2.3%	4.8%	2.6%
Diversified Private Equity	9.0%	80% Russell 3000	18.0%	17.0%	-1.0%
Other Private Equity	7.0%	S&P/LSTA + 150 E	5.4%	10.5%	5.1%
Total	100.0%				
Net Return (reported by you)					5.1%
Calculated policy return (sum: Policy weights x benchmarks)				4.8%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.0%</u>	
Policy Return					<u>4.8%</u>
Net Value Added (Net Return - Policy Return)					0.3%

2012 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
U.S. Stock	14.0%	S&P 500	16.0%	18.0%	2.0%
Stock - EAFE	8.0%	MSCI EAFE net	17.3%	16.6%	-0.7%
Stock - Emerging	8.0%	MSCI Emerging IV	18.2%	19.5%	1.3%
Fixed Income - U.S.	12.0%	Barclays US Aggr	4.2%	5.9%	1.7%
Fixed Income - Emerging	6.0%	JPM EMBI Global	17.2%	19.3%	2.1%
Fixed Income - Global	1.0%	Barclays Global A	4.3%	10.9%	6.6%
Fixed Income - High Yield	6.0%	Barclays US Corp	14.2%	11.9%	-2.3%
Cash	7.0%	90 D T-Bill/Merril	0.4%	1.0%	0.7%
Commodities	3.0%	Dow Jones UBS C	-1.1%	-3.0%	-1.9%
Real Estate ex-REITs	3.0%	NCREIF	10.5%	9.9%	-0.6%
Hedge Funds	5.0%	HFRI Global Hedj	3.5%	10.8%	7.3%
Global TAA	10.0%	50% MSCI World;	8.7%	12.9%	4.2%
Diversified Private Equity	8.5%	80% Russell 3000	10.7%	9.7%	-0.9%
Other Private Equity	8.5%	1/3 Barcap High Y	9.3%	13.9%	4.6%
Total	100.0%				
Net Return (reported by you)					12.4%
Calculated policy return (sum: Policy weights x benchmarks)				10.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.1%</u>	
Policy Return					<u>10.7%</u>
Net Value Added (Net Return - Policy Return)					1.7%

2013 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
U.S. Stock		Russell 3000 (def.	33.6%	35.6%	2.1%
Stock - EAFE		MSCI EAFE net (d	22.8%	14.7%	-8.1%
Stock - Emerging		MSCI Emerging IV	-2.6%	-3.2%	-0.7%
Stock - Global	31.0%	MSCI ACWI	22.8%		
Fixed Income - U.S.	7.0%	Barclays US Aggr	-2.0%	-1.7%	0.3%
Fixed Income - Emerging	6.0%	JPM EMBI Global	-7.1%	-8.7%	-1.6%
Fixed Income - Global	3.0%	Barclays Global A	-0.1%	-1.5%	-1.4%
Fixed Income - High Yield	6.0%	Barclays US Corp	3.7%	6.5%	2.8%
Cash	5.0%	90 D T-Bill / Merr	0.1%	1.1%	1.0%
Commodities	3.0%	Dow Jones UBS C	-9.5%		
Real Estate ex-REITs	5.0%	NCREIF ODCE Ind	13.8%	21.1%	7.3%
Hedge Funds	8.0%	HFRI Fund Weigh	9.1%	11.5%	2.4%
Global TAA	10.0%	50% MSCI World	10.4%	3.4%	-7.0%
Diversified Private Equity	9.0%	80% Russell 3000	25.1%	21.4%	-3.7%
Other Private Equity	7.0%	S&P/LSTA + 150 E	6.5%	15.5%	9.0%
Total	100.0%				
Net Return (reported by you)					11.6%
Calculated policy return (sum: Policy weights x benchmarks)				11.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>-1.4%</u>	
Policy Return					<u>10.2%</u>
Net Value Added (Net Return - Policy Return)					1.4%

2011 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
U.S. Stock	14.0%	S&P 500	2.1%	0.1%	-2.0%
Stock - EAFE	8.0%	MSCI EAFE net	-12.1%		
Stock - Emerging	8.0%	MSCI Emerging IV	-18.4%	-20.7%	-2.3%
Fixed Income - U.S.	10.0%	Barclays US Aggr	7.8%	9.8%	1.9%
Fixed Income - Emerging	3.0%	JP Morgan EMBI I	7.4%	-0.2%	-7.6%
Fixed Income - Global	3.0%	Barclays Global A	5.6%	2.8%	-2.8%
Fixed Income - High Yield	3.0%	Barclays US Corp	5.0%	0.4%	-4.6%
Cash	10.0%	90 D T-Bill/Merril	0.6%	1.0%	0.4%
Commodities	2.0%	Dow Jones UBS C	-13.3%		
Real Estate ex-REITs	6.0%	NCREIF	14.3%	4.4%	-9.8%
Hedge Funds	5.0%	HFRI Global Hedj	-8.9%	1.5%	10.4%
Global TAA	10.0%	50% MSCI World;	0.6%	8.8%	8.3%
Diversified Private Equity	10.0%	Venture Economi	8.6%	8.5%	-0.1%
Other Private Equity	8.0%	1/3 Barcap High Y	4.3%	0.2%	-4.2%
Total	100.0%				
Net Return (reported by you)					0.5%
Calculated policy return (sum: Policy weights x benchmarks)				0.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.2%</u>	
Policy Return					<u>0.5%</u>
Net Value Added (Net Return - Policy Return)					0.1%

Profit/Loss on overlay programs

Overlay type	Your fund		Peer median				U.S. Public median				
	2015	2014	2015		2014		2015		2014		
	bps	bps	bps	#	bps	#	bps	#	bps	#	
Int. Discretionary Currency								3	2	3	2
Ext. Discretionary Currency								3	2	2	2
Internal Global TAA										0	1
External Global TAA											
Internal PolicyTilt TAA											
External PolicyTilt TAA											
Internal Commodities											
External Commodities								-455	1	0	2
Internal Long/Short											
External Long/Short											
Internal Other								1	2	0	1
External Other								0	3	5	2
Total Profit/Loss								0	8	1	7

Profit/loss in basis points was calculated using total fund average holdings. This was done to measure the impact of the program at the total fund level.

5

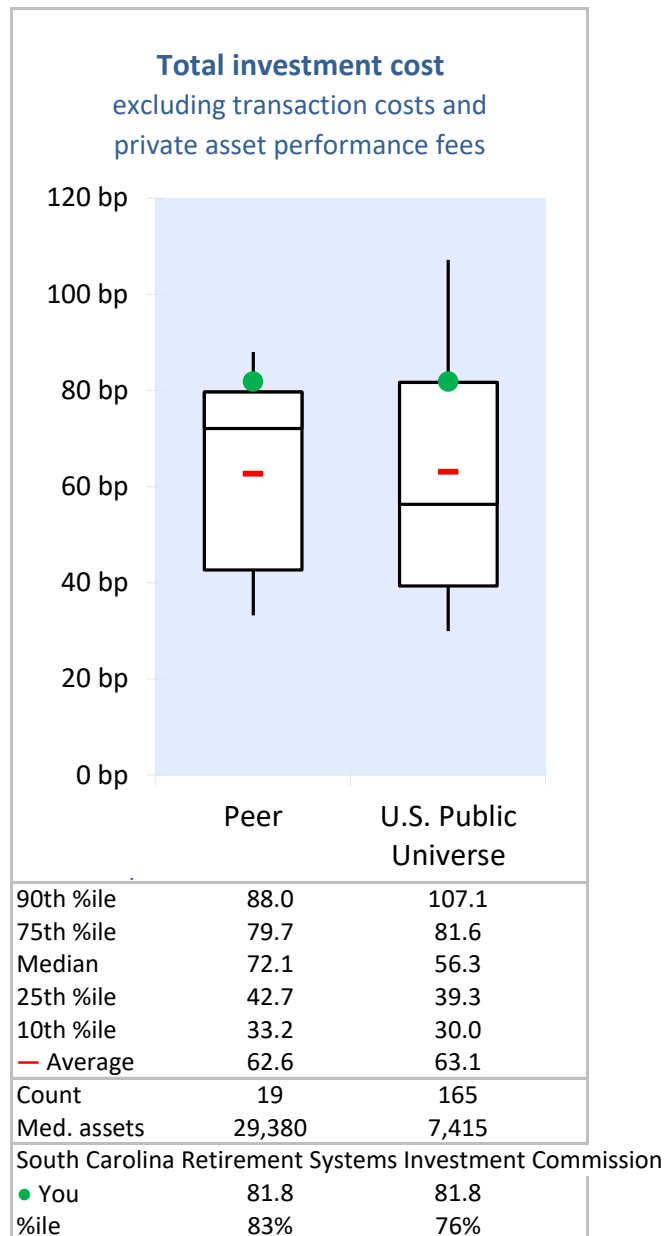
Total cost and benchmark cost

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Comparisons of total investment cost

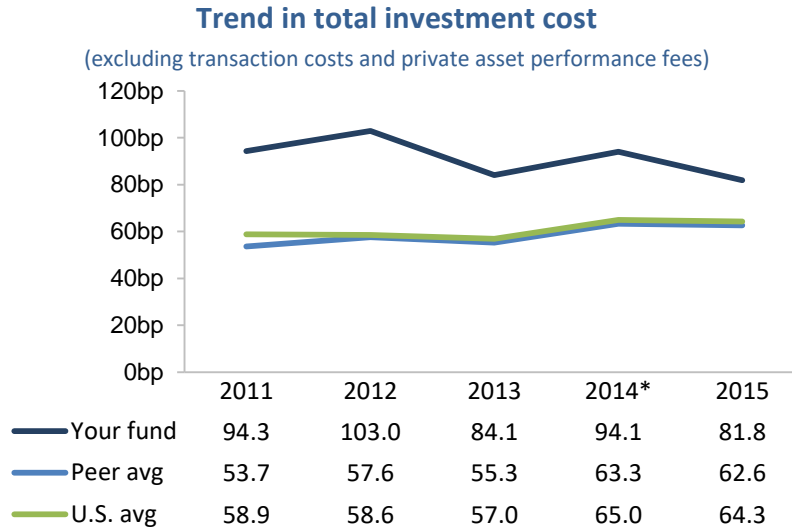
Your total investment cost, excluding transaction costs and private asset performance fees, of 81.8 bps was above the peer median of 72.1 bps.

Differences in total investment cost are often caused by two factors that are usually outside of management's control: asset mix and fund size. Therefore, to assess whether your fund's total investment cost is high or low given your unique asset mix and size, CEM calculates a benchmark cost for your fund. Benchmark cost analysis begins on page 7 of this section.



Trend in total investment cost

Your total investment cost, excluding transaction costs and private asset performance fees, decreased from 94.3 bps in 2011 to 81.8 bps in 2015.



Trend analysis is based on the 131 U.S. funds and the 19 peer funds with 5 or more consecutive years of data.

* Starting in 2014 hedge fund performance fees are being included for all participants. This is one reason for the uptick in costs relative to 2013.

Types of costs included in your total investment cost

The table below outlines the types of costs included in your total investment cost.

Asset class	Internal		External			
	In-house total cost	Transaction costs	Manager base fees	Monitoring & other costs	Perform. fees (active only)	Transaction costs
<u>Public</u> (Stock, Fixed income, commodities, REITs)	✓	✗	✓	✓	✓	✗
Derivatives/Overlays	✓	✗	✓	✓	✓	✗
<u>Hedge funds & Global TAA</u>						
Hedge Funds	n/a	n/a	✓	✓	✓	✗
Global TAA	✓	✗	✓	✓	✓	✗
<u>Private equity</u> (Diversified private equity, venture capital, LBO, other private equity)	✓	✗	✓*	✓	✗	✗
<u>Private real assets</u> (Infrastructure, natural resources, real estate ex-REITs, other real assets)	✓	✗	✓*	✓	✗	✗

*For limited partnerships, external manager base fees represent gross contractual management fees.

- ✓ indicates cost is included.
- ✗ indicates cost is excluded.
- Green shading indicates that the cost type has been newly added for the 2014 data year.
- CEM currently excludes external private asset performance fees and all transaction costs from your total cost because only a limited number of participants are currently able to provide complete data.

Detailed breakdown of your total investment cost

Your 2015 total investment cost, excluding transaction costs and private asset performance fees, was 81.8 bp or \$240.5 million.

Your investment costs

	Internal		External Passive		External Active			Total		
	Passive	Active	Fees	Monitoring & Other	Base Fees	Perform. Fees ¹	Monitoring & Other	\$000s	bps	% of Total
Asset management										
U.S. Stock - Broad/All		1	356	155	7,431	0	300	8,242		3%
Stock - EAFE					7,658	0	250	7,908		3%
Stock - Emerging					5,589	0	464	7,498		3%
Stock - Global			614	831	2,972	205	620	3,886		2%
Fixed Income - U.S.		88			2,429	0	140	3,402		1%
Fixed Income - Emerging			606	226	1,359	0	235	1,594		1%
Fixed Income - Global					7,080	0	407	7,488		3%
Fixed Income - High Yield					2,411	0	502	3,314		1%
Cash		400						7		0%
Real Estate ex-REITs		7			16,329	34,048 ¹	318	16,646		7%
Real Estate ex-REITs - LPs ³					27,898	30,946	336	59,180		25%
Hedge Funds					3,742	0	580	4,322		2%
Hedge Funds - Fund of Funds					30,215	13,864		44,079		18%
Underlying Fund of Fund Fees					12,102	0	583	12,684		5%
Global TAA					18,910	12,063 ¹	332	19,242		8%
Diversified Private Equity ³					6,113	2,658 ¹	188	6,301		3%
Diversified Private Equity - Fund of Funds					10,891			10,891		5%
Underlying Fund of Fund Fees ²					1,366		177	1,543		1%
Diversified Private Equity - Co-investments					17,178	-248 ¹	427	17,605		7%
Private Debt Limited Partnerships ³					41		5	46		0%
Private Debt Limited Partnerships - Co-investments					863	0	174	1,037		0%
Overlay Programs		0								0%
Total asset management costs excluding private asset performance fees								236,917	80.6bp	99%
Oversight, custodial & other asset related costs										
Oversight of the Fund								1,201		0%
Trustee & Custodial								766		0%
Consulting and Performance Measurement								1,030		0%
Audit								201		0%
Other								345		0%
Total oversight, custodial & other costs								3,543	1.2bp	1%
Total investment costs excluding transaction costs and private asset performance fees								240,459	81.8bp	100%

¹ Starting in 2014, CEM changed its methodology to include performance fees on hedge funds in total cost used for comparison and benchmarking. Performance fees for real estate, infrastructure, natural resources and private equity are excluded.

² Default costs added. Refer to Appendix A.

³ Base fees derived from the partnership level detail you provided.

Changes in your investment costs

The table below shows how your investment costs have changed from year to year by asset class.

Change in your investment costs (2015 - 2011)

	Investment costs (\$000s)					Change (\$000s)				Change (%)			
	2015	2014	2013	2012	2011	2015	2014	2013	2012	2015	2014	2013	2012
Asset management													
U.S. Stock - Broad/All	8,242	10,355	10,152	10,514	10,070	-2,113	203	-362	444	-20%	2%	-3%	4%
Stock - EAFE	0	5,308	1,941	945	0	-5,308	3,367	996	945	-100%	173%	105%	
Stock - Emerging	7,908	8,342	9,806	7,786	4,290	-433	-1,464	2,020	3,496	-5%	-15%	26%	81%
Stock - Global	7,498	589	0	0	0	6,909	589			1174%			
Fixed Income - U.S.	3,886	4,675	4,693	4,565	4,018	-790	-18	127	548	-17%	0%	3%	14%
Fixed Income - Emerging	3,402	3,240	1,707	2,087	1,865	162	1,533	-380	222	5%	90%	-18%	12%
Fixed Income - Global	1,594	3,452	3,193	3,745	5,359	-1,858	260	-552	-1,614	-54%	8%	-15%	-30%
Fixed Income - High Yield	7,488	6,894	8,468	6,865	4,695	593	-1,573	1,602	2,170	9%	-19%	23%	46%
Cash	3,314	2,779	2,875	2,836		535	-97	39	2,836	19%	-3%	1%	
Real Estate ex-REITs	7	8	17	23	0	-1	-8	-6	23	-11%	-50%	-27%	
Real Estate ex-REITs - LPS ³	16,646	15,007	17,443	16,780	5,407	1,640	-2,436	663	11,373	11%	-14%	4%	210%
Hedge Funds	59,180	56,964	48,108	35,785	37,348	2,215	8,856	12,323	-1,563	4%	18%	34%	-4%
Hedge Funds - Fund of Funds	4,322	10,167	33,458	23,186	22,818	-5,845	-23,290	10,272	368	-57%	-70%	44%	2%
Underlying Fund of Fund Fees	44,079	36,966	37,822	48,478	43,136	7,114	-857	-10,656	5,343	19%	-2%	-22%	12%
Global TAA	12,684	13,017	11,676	11,577	10,387	-332	1,340	99	1,190	-3%	11%	1%	11%
Diversified Private Equity ³	19,242	24,296	29,580	30,181	28,769	-5,054	-5,284	-601	1,412	-21%	-18%	-2%	5%
Diversified Private Equity - Fund of Funds	6,301	3,187	3,077	5,116	2,881	3,114	110	-2,039	2,235	98%	4%	-40%	78%
Underlying Fund of Fund Fees ²	10,891	5,919	7,629	9,339	5,282	4,973	-1,711	-1,710	4,057	84%	-22%	-18%	77%
Diversified Private Equity - Co-investments	1,543	1,827	714	88	0	-284	1,113	626	88	-16%	156%	708%	
Private Debt Limited Partnerships ³	17,605	24,376	33,568	36,499	40,701	-6,770	-9,192	-2,931	-4,203	-28%	-27%	-8%	-10%
Private Debt Limited Partnerships - Co-investments	46	4	4	2	0	42	0	2	2	1018%	-2%	132%	
Overlay Programs	1,037	1,414	1,490	1,437	1,680	-376	-76	53	-243	-27%	-5%	4%	-14%
Total excl. private asset perf. fees	236,917	270,971	229,229	260,397	231,386	-34,054	41,742	-31,168	29,011	-13%	18%	-12%	13%
Oversight, custodial & other asset related costs													
Oversight of the Fund	1,201	1,478	1,319	1,039	3,221	-277	159	279	-2,182	-19%	12%	27%	-68%
Trustee & Custodial	766	426	317	254	230	340	108	63	24	80%	34%	25%	10%
Consulting and Performance Mea	1,030	998	865	452	460	32	133	413	-8	3%	15%	91%	-2%
Audit	201	816	315	397	460	-615	502	-82	-63	-75%	160%	-21%	-14%
Other	345	287	293	951	0	59	-7	-657	951	20%	-2%	-69%	
Total oversight, custodial & other	3,543	4,006	3,110	3,094	4,373	-463	896	16	-1,279	-12%	29%	1%	-29%
Total investment costs ¹	240,459	275,070	232,422	263,593	235,851	-34,611	42,648	-31,171	27,741	-13%	18%	-12%	12%
Total in basis points	81.8bp	94.1bp	84.1bp	103.0bp	94.3bp								

¹ Starting in 2014, CEM changed its methodology to include performance fees on hedge funds in total cost used for comparison and benchmarking. Performance fees for real estate, infrastructure, natural resources and private equity are excluded.

² Default costs added. Refer to Appendix A.

³ Base fees derived from the partnership level detail you provided.

Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 5.1 bps above your benchmark cost of 76.8 bps. This implies that your fund was high cost by 5.1 bps compared to the peer median, after adjusting for your fund's asset mix.

Your cost versus benchmark

	\$000s	bps
Your fund's total investment cost excluding transaction costs and illiquid asset performance fees	240,459	81.8 bp
- Your fund's benchmark	225,583	76.8 bp
= Your fund's excess cost	14,877	5.1 bp

Your benchmark cost is an estimate of your total costs assuming that you paid the peer median cost for each of your investment mandates and fund oversight. The calculation of your benchmark cost is shown on the following page.

The reasons why your fund's total cost was above your benchmark are summarized in the table below. Details of each of the impacts below are provided on pages 9 to 12.

Reasons why your fund was high cost

	Cost/-Savings impact	
	\$000s	bps
<u>Differences in implementation style:</u>		
External active vs. low cost styles	45	0.0 bp
Fund of funds vs. external direct	7,901	2.7 bp
Mix of internal and passive styles	6	0.0 bp
Style impact of overlays	2,136	0.7 bp
Total style impact	10,087	3.4 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-10,334	-3.5 bp
Private asset performance fees	0	0.0 bp
Internal investment management	-25	0.0 bp
Oversight, custodial and other	-412	-0.1 bp
Total impact of paying more /-less	-10,771	-3.7 bp
Total excess cost	14,877	5.1 bp

Benchmark cost calculation

Your 2015 benchmark cost was 76.8 basis points or \$225.6 million. It equals your holdings for each asset class multiplied by the peer median cost for the asset class. The peer median cost is the style weighted average for all implementation styles (i.e., internal passive, internal active, external passive, external active).

Calculation of your 2015 benchmark cost

Asset class	Your average assets (A)	Weighted peer median cost ¹ (B)	Benchmark \$000s (A X B)
Asset management costs			
U.S. Stock - Broad/All	1,715	15.9 bp	2,728
Stock - Emerging	943	50.1 bp	4,725
Stock - Global	4,882	27.1 bp	13,219
Fixed Income - U.S.	2,702	12.7 bp	3,433
Fixed Income - Emerging	1,382	32.1 bp	4,437
Fixed Income - Global	885	18.3 bp	1,621
Fixed Income - High Yield	1,536	41.8 bp	6,423
Cash	3,549	9.3 bp	3,314
Real Estate ex-REITs	1,438	96.1 bp	13,816
Hedge Funds (External)	3,454	157.7 bp	54,469
Global TAA	2,196	62.4 bp	13,702
Diversified Private Equity	2,718	175.7 bp	47,747
Private Debt Limited Partnerships	1,433	155.8 bp	22,329
Overlay Programs ²	29,380	0.2 bp	655
Benchmark for asset management	29,380	65.6 bp	192,620
Oversight, custody and other costs			
Oversight of the Fund	29,380	0.6 bp	1,751
Trustee & Custodial	29,380	0.2 bp	716
Consulting	29,380	0.3 bp	974
Audit	29,380	0.1 bp	165
Other	29,380	0.1 bp	348
Benchmark for oversight, custody & other		1.3 bp	3,955
Total benchmark cost		66.9 bp	196,575

1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). It excludes performance fees on private assets. The style weights by asset class for your fund and the peers are shown on page 17 of this section.

2. Total fund average holdings is used as the base when calculating the relative cost impact of the overlay programs.

Cost impact of differences in implementation style

Differences in implementation style (i.e., external active management versus lower cost indexed and internal management, fund of funds versus lower cost direct LPs, and overlay usage) relative to your peers cost you 3.4 bps.

Calculation of the cost impact of differences in implementation style

	Your avg holdings (mils)	% External active			Premium vs. internal and passive ^{1 2}	Cost/ -Savings ³ \$000s	bps
	(A)	You	Peer average	More/ -Less	(C)	(A X B X C)	
U.S. Stock - Broad/All	1,715	66%	34%	31%	41 bp	2,212	
Stock - Emerging	943	100%	78%	22%	50 bp	1,037	
Stock - Global	4,882	36%	64%	-28%	35 bp	-4,765	
Fixed Income - U.S.	2,702	86%	75%	11%	14 bp	430	
Fixed Income - Emerging	1,382	38%	87%	-49%	26 bp	-1,732	
Fixed Income - Global	885	100%	100%	0%		0	
Fixed Income - High Yield	1,536	100%	100%	0%		0	
Real Estate ex-REITs	1,438	98%	100%	-2%	85 bp	-214	
partnerships as % of external:	1,411	100%	50%	50%	43 bp	3,076	
Hedge Funds	3,454	100%	100%	0%		0	
Global TAA	2,196	100%	100%	0%		0	
Diversified Private Equity	2,718	100%	100%	0%		0	
Private Debt Limited Partnerships	1,433	100%	100%	0%		0	
Total impact of differences in external active management usage						45	0.0 bp
		<i>Fund of fund % of external LPs</i>			<i>Premium vs. direct LPs^{1 2}</i>		
Hedge Funds LPs	3,454	63%	34%	30%	45 bp	4,622	
Performance Fee Impact (on NAV):	0					242	
Diversified Private Equity LPs	2,718	24%	12%	12%	90 bp	3,037	
Total impact of differences in fund of fund usage						7,901	2.7 bp
		<i>Overlay usage</i>					
Impact of lower use of portfolio level overlays (see page 10)						2,136	0.7 bp
		<i>Mix of low cost styles</i>					
Impact of mix of internal indexed, internal active, external indexed (see page 11)						6	0.0 bp
Total						10,087	3.4 bp

1. The external active cost 'premium vs internal and passive' is the additional cost of external active management and fund of funds relative to the average of the other lower cost implementation styles: internal passive, internal active and external passive. These calculations are specific to your peer group. The fund-of-funds 'premium vs. direct LPs' is the peer-median cost of fund-of-funds minus the peer median cost for direct external active management.

2. 'Insufficient' indicates there is insufficient peer data to determine the cost premium.

Cost impact of overlays

As summarized on the previous page, the style impact of overlays cost you 0.7 bps. If you use more overlays than your peers, or more expensive types of overlays, then it increases your relative cost.

Calculation of the cost impact of differences in the use of portfolio level overlays

	Your avg total holdings (mils)	Overlay notional amounts as a % of avg total holdings			Median cost as a % of notional	Your cost as a % of total holdings ¹	Average cost as a % of total holdings	Cost/-Savings Impact (000s)
		You	Peer Average	More/-Less				
	(A)			(B)	(C)			(A X B X C)
Internal Overlays								
Passive Beta - Hedge	29,380	0.0%	0.1%	-0.1%	1.2 bp			-2
Duration - Hedge	29,380	0.0%	0.2%	-0.2%	0.3 bp			-2
External Overlays								
Currency - Hedge	29,380	0.0%	1.1%	-1.1%	3.2 bp			-102
Currency - Discretionary	29,380	0.0%	0.6%	-0.6%	17.6 bp			-333
Passive Beta - Hedge	29,380	11.6%	0.8%	10.8%	8.2 bp			2,600
Duration - Hedge	29,380	0.0%	0.0%	0.0%	3.8 bp			0
Dur. Mgmt Swaption - Hedge	29,380	0.0%	0.0%	0.0%	3.7 bp			0
Global TAA - Discretionary	29,380	0.0%	0.0%	0.0%	50.5 bp			0
Policy Tilt TAA - Discretionary	29,380	0.0%	0.0%	0.0%	N/A			0
Commodity Futures - Discretionary	29,380	0.0%	0.0%	0.0%	5.7 bp			0
Long/Short - Discretionary	29,380	0.0%	0.2%	-0.2%	5.5 bp			-26
Other - Discretionary	29,380	0.0%	0.0%	0.0%	6.6 bp			0
Total impact in 000s								2,136
Total impact in basis points								0.7 bp

1. For overlay programs (primarily certain internal, profit seeking programs) where no clear notional value is defined or provided, these types of overlays are compared in terms of cost relative to total holdings.

Cost impact of lower cost styles

As summarized on page 9, your mix of 'lower-cost' internal and passive styles cost you 0.0 bps. Details are shown below.

Cost impact of differences in your mix of 'lower-cost' implementation styles

	Your non-external active holdings (mils)	Percent holdings (of non-external-active)						Cost/-Savings ¹ (000s)
		Internal passive		Internal active		External passive		
		You	Peers	You	Peers	You	Peers	
U.S. Stock - Broad/All	585	0%	9%	0%	7%	100%	84%	-6
Stock - Global	3,132	0%	32%	0%	0%	100%	68%	0
Fixed Income - U.S.	365	0%	0%	100%	73%	0%	27%	12
Fixed Income - Emerging	853	0%	0%	0%	0%	100%	100%	0
Cash	1,656	0%	Excluded	100%	Excluded	0%	Excluded	0
Real Estate ex-REITs	28	0%	0%	100%	100%	0%	0%	0
Total impact in 000s								6
Total impact in basis points								0.0 bp

1. Cost/-savings for each asset class equals non-external active holdings within each asset class X cumulative impact from the three lower cost styles. By formula: [(peer median cost for the style - peer weighted average cost of lower cost styles) X (your weight for the style - peer weight for the style)]. Peer median costs for each style are shown on page 18.

Cost impact of paying more/-less for similar services

Differences in what you paid relative to your peers for similar asset management and related oversight and support services saved you 3.7 bps.

Calculation of the cost impact of paying more/-less

	Style	Your avg holdings (mils) (A)	Cost in bps			Cost/-Savings	
			Your	Peer median	More/-less (B)	\$000s (A X B)	bps
External asset management							
U.S. Stock - Broad/All	passive	583	8.8	1.7	7.1	414	
U.S. Stock - Broad/All	active	1,130	68.4	42.8	25.6	2,894	
Stock - Emerging	active	943	83.8	61.1	22.7	2,145	
Stock - Global	passive	3,132	4.6	4.7	-0.1	-37	
Stock - Global	active	1,750	34.6	39.8	-5.3	-919	
Fixed Income - U.S.	active	2,337	16.3	16.2	0.0	11	
Fixed Income - Emerging	passive	853	9.8	Insufficient			
Fixed Income - Emerging	active	529	48.5	35.4	13.2	697	
Fixed Income - Global	active	885	18.0	18.3	-0.3	-28	
Fixed Income - High Yield	active	1,536	48.8	41.8	6.9	1,064	
Real Estate ex-REITs	LP	1,411	118.0	118.0	0.0	0	
Hedge Funds	active	1,266	222.9	142.6	80.4	10,179	
Hedge Funds - Fund of Funds	F. of F.	2,188	157.9	187.6	-29.7	-6,498	
Global TAA	active	2,196	57.8	62.4*	-4.6	-1,018	
Diversified Private Equity	active	2,058	101.0	165.0	-64.0	-13,166	
Diversified Private Equity	F. of F.	660	260.5	255.0	5.5	360	
Private Debt Limited Partnerships	active	1,433	123.2	155.8	-32.6	-4,678	
		<i>Notional</i>					
Derivatives/Overlays - Passive Beta		3,394	3.1	8.2*	-5.2	-1,754	
Total for external management						-10,334	-3.5 bp
Internal asset management							
U.S. Stock - Broad/All	active	2	2.6	2.9*	-0.3	0	
Fixed Income - U.S.	active	365	2.4	2.4	0.0	0	
Real Estate ex-REITs	active	28	2.7	11.5	-8.9	-25	
Total for internal asset management						-25	0.0 bp
Oversight, custodial, other							
Oversight of the Fund		29,380	0.4	0.6	-0.2	-550	
Consulting and Performance Measurement		29,380	0.4	0.3	0.0	56	
Trustee & Custodial		29,380	0.3	0.2	0.0	49	
Audit		29,380	0.1	0.1	0.0	36	
Other		29,380	0.1	0.1	0.0	-3	
Total for oversight, custodial, other						-412	-0.1 bp
Total						-10,771	-3.7 bp

*Universe median used as peer data was insufficient.

Summary of why you are high or low cost by asset class

The table below summarizes where you are high and low cost by asset class. It also quantifies how much is due to differences in implementation style (i.e., differences in the mix of external active, external passive, internal active, internal passive and fund of fund usage) and how much is due to paying more or less for similar services (i.e., same asset class and style).

Summary of why you are high or low cost by asset class

	Your cost ¹	Benchmark = peer weighted median cost ¹	More/-less	Your average assets	More/-less (\$000s)	Due to Impl. style (\$000s)	Due to paying more/less (\$000s)
	(A)	(B)	(C = A - B)	(D)	(C X D)		
Asset management costs							
U.S. Stock - Broad/All	48.1 bp	15.9 bp	32.2 bp	1,715	5,514	2,206	3,307
Stock - Emerging	83.8 bp	50.1 bp	33.7 bp	943	3,183	1,037	2,145
Stock - Global	15.4 bp	27.1 bp	-11.7 bp	4,882	-5,721	-4,765	-956
Fixed Income - U.S.	14.4 bp	12.7 bp	1.7 bp	2,702	452	442	11
Fixed Income - Emerging	24.6 bp	32.1 bp	-7.5 bp	1,382	-1,035	-1,732	697
Fixed Income - Global	18.0 bp	18.3 bp	-0.3 bp	885	-28	0	-28
Fixed Income - High Yield	48.8 bp	41.8 bp	6.9 bp	1,536	1,064	0	1,064
Cash	9.3 bp	9.3 bp	0.0 bp	3,549	0	0	0
Real Estate ex-REITs	115.8 bp	96.1 bp	19.7 bp	1,438	2,838	2,862	-25
Hedge Funds (External)	181.7 bp	157.7 bp	24.0 bp	3,454	8,303	4,622	3,681
Global TAA	57.8 bp	62.4 bp	-4.6 bp	2,196	-1,018	0	-1,018
Diversified Private Equity	139.7 bp	175.7 bp	-35.9 bp	2,718	-9,769	3,037	-12,806
Private Debt Limited Partnerships	123.2 bp	155.8 bp	-32.6 bp	1,433	-4,678	0	-4,678
Overlay Programs ²	0.4 bp	0.2 bp	0.1 bp	29,380	382	2,136	-1,754
Total asset management	80.6 bp	65.6 bp	15.1 bp	29,380	-514	9,845	-10,359
Oversight, custody and other costs							
Oversight of the Fund	0.4 bp	0.6 bp	-0.2 bp	29,380	-550	n/a	-550
Trustee & Custodial	0.3 bp	0.2 bp	0.0 bp	29,380	49	n/a	49
Consulting	0.4 bp	0.3 bp	0.0 bp	29,380	56	n/a	56
Audit	0.1 bp	0.1 bp	0.0 bp	29,380	36	n/a	36
Other	0.1 bp	0.1 bp	0.0 bp	29,380	-3	n/a	-3
Total oversight, custody & other	1.2 bp	1.3 bp	-0.1 bp	29,380	-412	n/a	-412
Total	81.8 bp	66.9 bp	14.9 bp	29,380	-926	9,845	-10,771

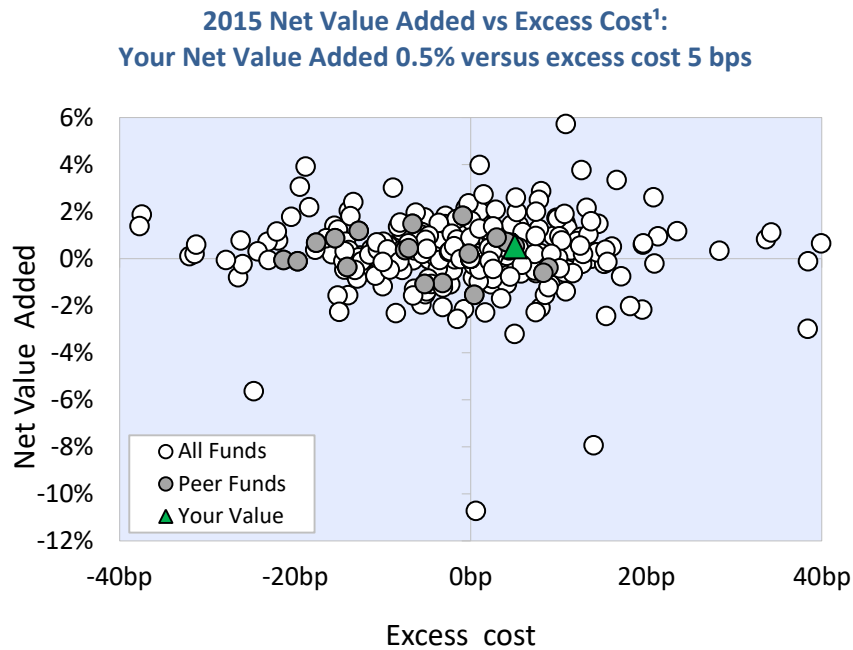
1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). It excludes performance fees on private assets. The style weights by asset class for your fund and the peers are shown on page 17 of this section.

2. Total fund average holdings is used as the base when calculating the relative cost impact of the overlay programs.

Your cost effectiveness ranking

Being high or low cost is neither good nor bad. The more important question is, are you receiving sufficient value for your excess cost? At the total fund level, we provide insight into this question by combining your value added and your excess cost to create a snapshot your cost effectiveness performance relative to that of the survey universe.

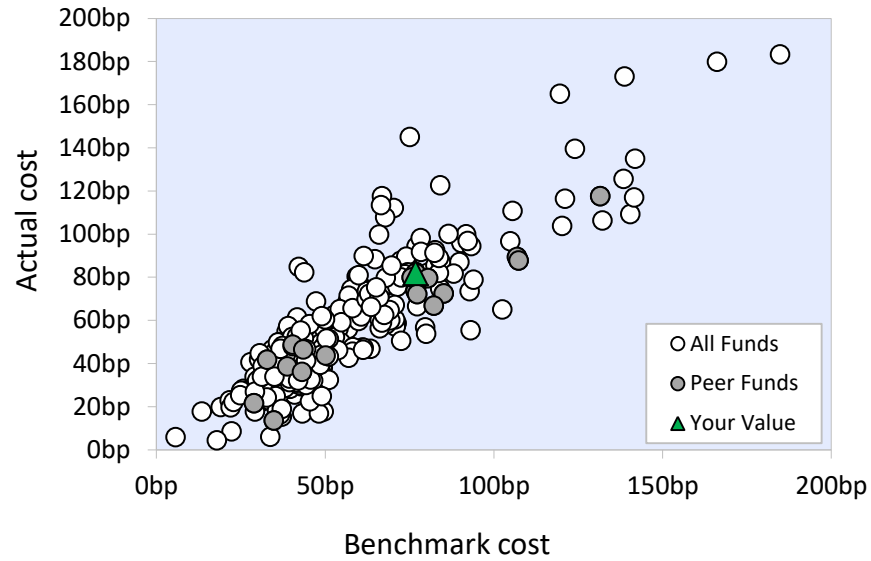
For the 2015 year, your fund ranked in the positive value added, high cost quadrant.



¹ Benchmark cost and excess cost calculations are based on regression analysis (see Appendix B in this section) for all funds except your fund. Your fund's benchmark cost is based on peer-median costs (per page 7 of this section).

Actual cost versus benchmark cost

2015 Actual Cost vs Benchmark Cost¹: Your actual cost was 81.8 bps and your benchmark cost was 76.8 bps



1 Benchmark cost calculations are based on regression analysis (see Appendix B in this section) for all funds except your fund. Your fund's benchmark cost is based on peer-median costs (per page 7 of this section).

Appendix A: Benchmarking methodology formulas and data

a) Formulas

Example calculations are for U.S. Stock - Broad/All unless otherwise indicated.

Asset class peer cost

$$\begin{aligned} &= \text{Weighted average by peer average style of peer median costs for asset class} \\ &= [(0.06 \times 1.8\text{bp}) + (0.05 \times 2.9\text{bp}) + (0.55 \times 1.7\text{bp}) + (0.34 \times 42.8\text{bp})] / (0.06 + 0.05 + 0.55 + 0.34) = 15.9\text{bp} \end{aligned}$$

Peer average low cost (by asset class)

$$\begin{aligned} &= \text{Weighted average by peer average style of peer median costs for internal passive, internal active and} \\ &\quad \text{external passive management for asset class} \\ &= [(0.06 \times 1.8\text{bp}) + (0.05 \times 2.9\text{bp}) + (0.55 \times 1.7\text{bp})] / (0.06 + 0.05 + 0.55) = 1.8\text{bp} \end{aligned}$$

External active cost premium (by asset class)

$$\begin{aligned} &= \text{Peer median external active cost - peer average low cost} \\ &= 42.8\text{bp} - 1.8\text{bp} = 41.0\text{bp} \end{aligned}$$

Fund of funds premium (by asset class)

$$\begin{aligned} &= \text{Peer median fund-of-funds cost - peer median external active cost} \\ &= (\text{For private equity}) 255.0\text{bp} - 165.0\text{bp} = 90.0\text{bp} \end{aligned}$$

Impact from other differences in implementation style (by Asset Class)=

$$\begin{aligned} &= [(\text{Your int. pass. \% - average peer int. pass. \%}) \times (\text{peer median int. pass. cost - peer average low cost}) \\ &\quad + (\text{your int. act. \% - peer average int. act. \%}) \times (\text{peer median int. act. cost - peer average low cost}) \\ &\quad + (\text{your ext. pass. \% - average peer ext. pass. \%}) \times (\text{median peer ext. pass. cost - peer average low cost})] \\ &\quad \times \text{your average holdings} \end{aligned}$$

b) Insufficient peer data

All peer data is adjusted to ensure comparisons are made only when sufficient data is available. When too few peers have the asset class or style in question, peer costs are replaced with your fund's cost, neutralizing the effect of your cost. Major implementation styles (external active, fund of funds and combined "low cost") that you do not hold are ignored if they have insufficient data to draw major style impact conclusions. Throughout this section, 'peer median' and 'average peer style' always refer to these adjusted values. The following page shows the adjusted data used in this section.

Appendix A: Benchmarking methodology formulas and data (page 2 of 2)

c) 2015 cost data used to calculate weighted peer median costs and impact of mix differences.

Asset Class	Your costs (basis points)						Peer median costs (basis points)						
	Internal Passive	Internal Active	External Passive	External Active	Limited Partner.	Fund of Funds	Internal Passive	Internal Active	External Passive	External Active	Limited Partner.	Fund of Funds	Weighted Median
U.S. Stock - Broad/All		2.6	8.8	68.4			1.8	2.9 bp ¹	1.7	42.8			15.9
Stock - Emerging				83.8			11.4	11.4	11.4	61.1			50.1
Stock - Global			4.6	34.6			4.7		4.7	39.8			27.1
Fixed Income - U.S.		2.4		16.3				2.4	1.2	16.2			12.7
Fixed Income - Emerging			9.8	48.5				Insufficient	35.4				32.1
Fixed Income - Global				18.0					18.3				18.3
Fixed Income - High Yield				48.8					41.8				41.8
Real Estate ex-REITs		2.7			118.0			11.5	74.8	118.0	118.0	118.0	96.1
Hedge Funds				222.9		157.9			142.6			187.6	157.7
Global TAA				57.8					62.4 bp ¹				62.4
Diversified Private Equity				101.0		260.5			165.0			255.0	175.7
Private Debt Limited Partnerships				123.2					155.8				155.8

¹Universe median used as peer data was insufficient.

d) 2015 Style weights used to calculate the weighted peer median costs and impact of mix differences.

Style Weights	You (%)						Peer average (%)					
	Internal Passive	Internal Active	External Passive	External Active	Limited Partner.	Fund of Funds	Internal Passive	Internal Active	External Passive	External Active	Limited Partner.	Fund of Funds
U.S. Stock - Broad/All	0.0%	0.1%	34.0%	65.9%			5.9%	4.8%	54.9%	34.5%		
Stock - Emerging	0.0%	0.0%	0.0%	100.0%			8.4%	1.3%	12.4%	77.9%		
Stock - Global	0.0%	0.0%	64.2%	35.8%			11.5%	0.0%	24.8%	63.6%		
Fixed Income - U.S.	0.0%	13.5%	0.0%	86.5%			0.0%	18.1%	6.7%	75.2%		
Fixed Income - Emerging	0.0%	0.0%	61.7%	38.3%			0.0%	0.0%	12.8%	87.2%		
Fixed Income - Global	0.0%	0.0%	0.0%	100.0%			0.0%	0.0%	0.0%	100.0%		
Fixed Income - High Yield	0.0%	0.0%	0.0%	100.0%			0.0%	0.0%	0.0%	100.0%		
Cash		46.7%		53.3%			Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Real Estate ex-REITs		1.9%		0.0%	98.1%	0.0%		0.2%	50.4%	48.7%	0.7%	
Hedge Funds				36.7%		63.3%			66.4%			33.6%
Global TAA		0.0%		100.0%				0.0%	100.0%			
Diversified Private Equity		0.0%		75.7%		24.3%		0.0%	88.1%			11.9%
Private Debt Limited Partnerships		0.0%		100.0%				0.0%	100.0%			

The above data was adjusted as noted when there were insufficient peers, or for other reasons where direct comparisons were inappropriate.

Appendix B: Regression based benchmarks

Regression Benchmark Cost Equations

	2015		2014		2013		2012		2011	
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"
Constant	76.5	17.4	84.4	19.2	76.8	18.2	73.2	18.9	72.5	18.8
Size in millions (Log 10)	-13.7	-12.8	-15.7	-14.6	-14.2	-13.3	-13.7	-13.8	-13.3	-13.8
<u>Percentage of assets in:</u>										
Stocks	11.1	2.8	14.3	3.3	19.6	4.5	19.0	4.6	14.8	3.6
Real estate	47.1	3.5	56.7	3.7	56.9	3.8	55.1	4.2	50.8	3.9
Private equity & hedge funds	208.1	28.2	205.2	27.4	203.3	26.9	208.1	30.5	210.4	31.5
Country variable (1 if Cdn)	-2.9	-1.7	-6.9	-4.0	-8.1	-4.7	-6.4	-4.1	-4.9	-3.3
	All		All		All		All		All	
Standard error	14.5		14.5		14.6		13.1		0.7	
R-squared	65%		67%		65%		71%		0%	
F statistic	184.1		185.9		175.1		219.0		0.0	
Sample size	486		449		466		454		487	

In order to compare your fund's cost effectiveness to the survey universe, a benchmark cost for all participants is required.

The benchmark operating cost for all other funds is determined using regression analysis. The regression equation coefficients and "t statistics" are shown in the table above. An absolute "t" of greater than 2 indicates that the coefficient is statistically significant in predicting the dependent variable, in this case, the benchmark cost.

The benchmark equations have been remarkably robust. Although the coefficients change every year, primarily because of changes in the composition of the survey universe, they remain similar in relative magnitude and direction.

Most importantly, the R-squareds have been high. In 2015, the R-squared was 65% which means that fund size, asset mix and nationality explain more than 65% of the differences in costs between funds. This is good explanatory power.

Below is a description of the coefficients:

- Size = Log10 (fund size in millions)
- % Stocks = proportion in stocks (coefficient changed in 2011)
- % Domestic stocks = proportion in domestic stocks
- % Foreign stocks = proportion in foreign stocks.
- % Real estate = proportion directly invested in real estate and infrastructure.
- % Private equity = proportion in direct and fund-of-funds venture capital, other private equity and hedge funds.
- Country variable = 1 if your country of origin is Canada, otherwise 0.

6

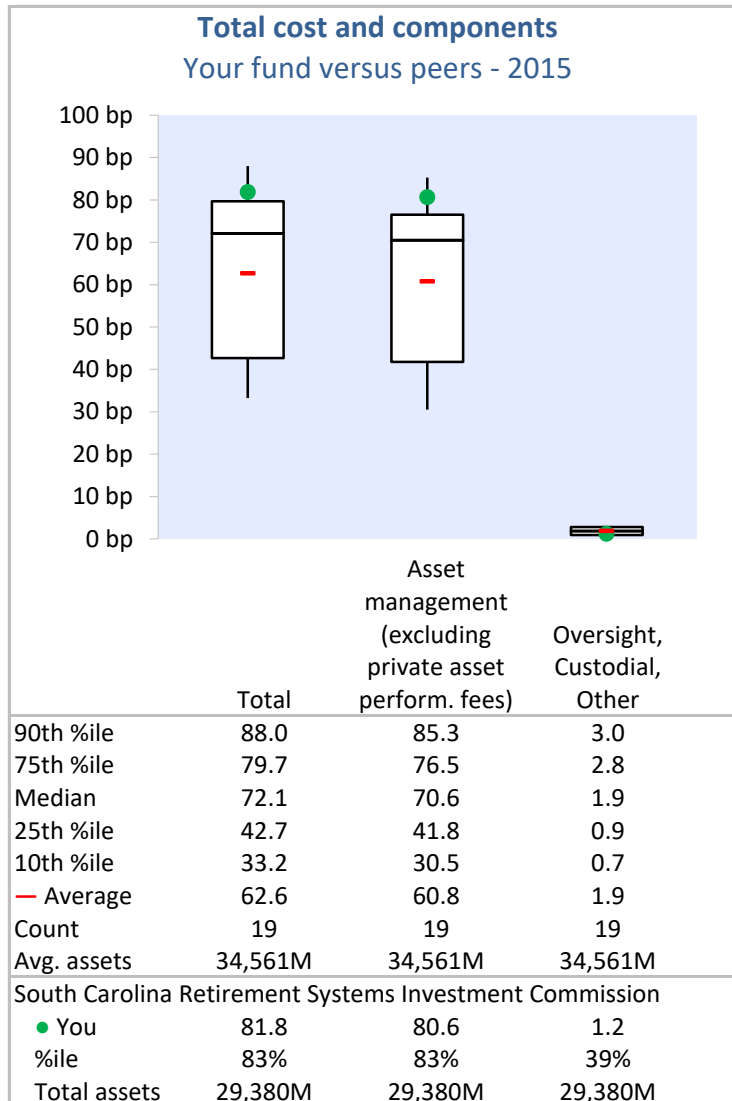
Cost comparisons

Total fund cost	2
Governance, operations & support	3
Public asset classes	
- Stock	4
- Fixed Income	13
- Commodities	25
- REITs	26
Real asset classes	
- Real estate ex-REITs	27
- Infrastructure	28
- Natural resources	29
- Other real assets	30
Private equity	
- Diversified private equity	31
- LBO	32
- Venture capital	33
- Other private equity	34
Global TAA	35
Hedge Funds	36
Overlays	37

Total fund cost

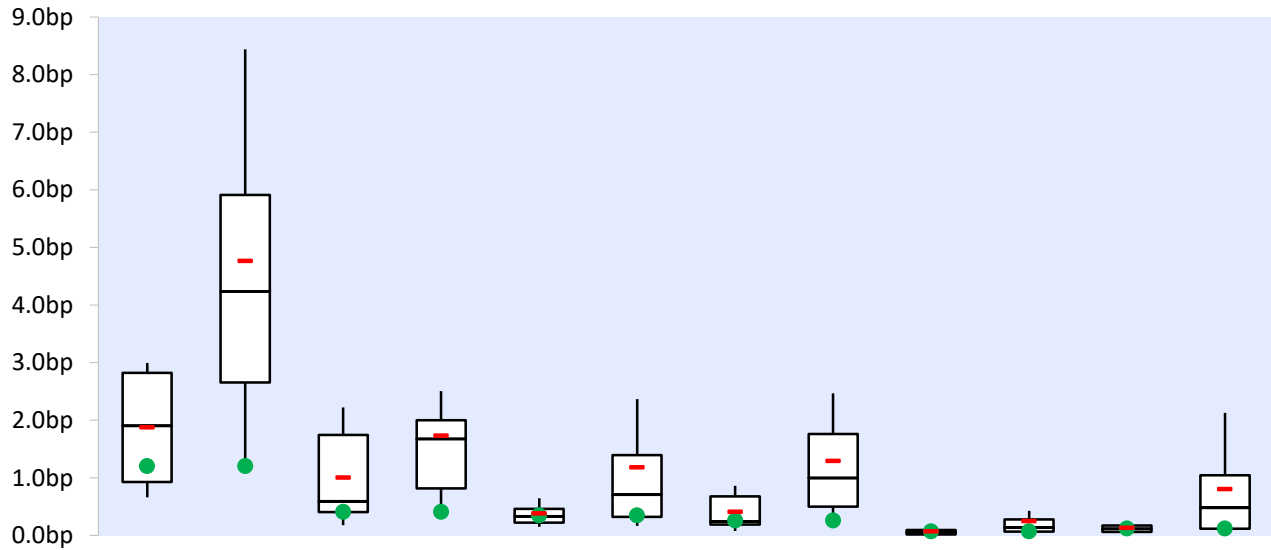
Total costs are benchmarked in the previous section. In this section, your fund's costs are compared on a line-item basis to your peers. This enables you to understand better why you may be a high or low cost fund and it also identifies and quantifies major cost differences that may warrant further investigation.

The 25th to 75th percentile range is the most relevant since higher and lower values may include outliers caused by unusual circumstances, such as performance-based fees. Count refers to the number of funds in your peer group that have costs in this category. It enables you to gauge the statistical significance.



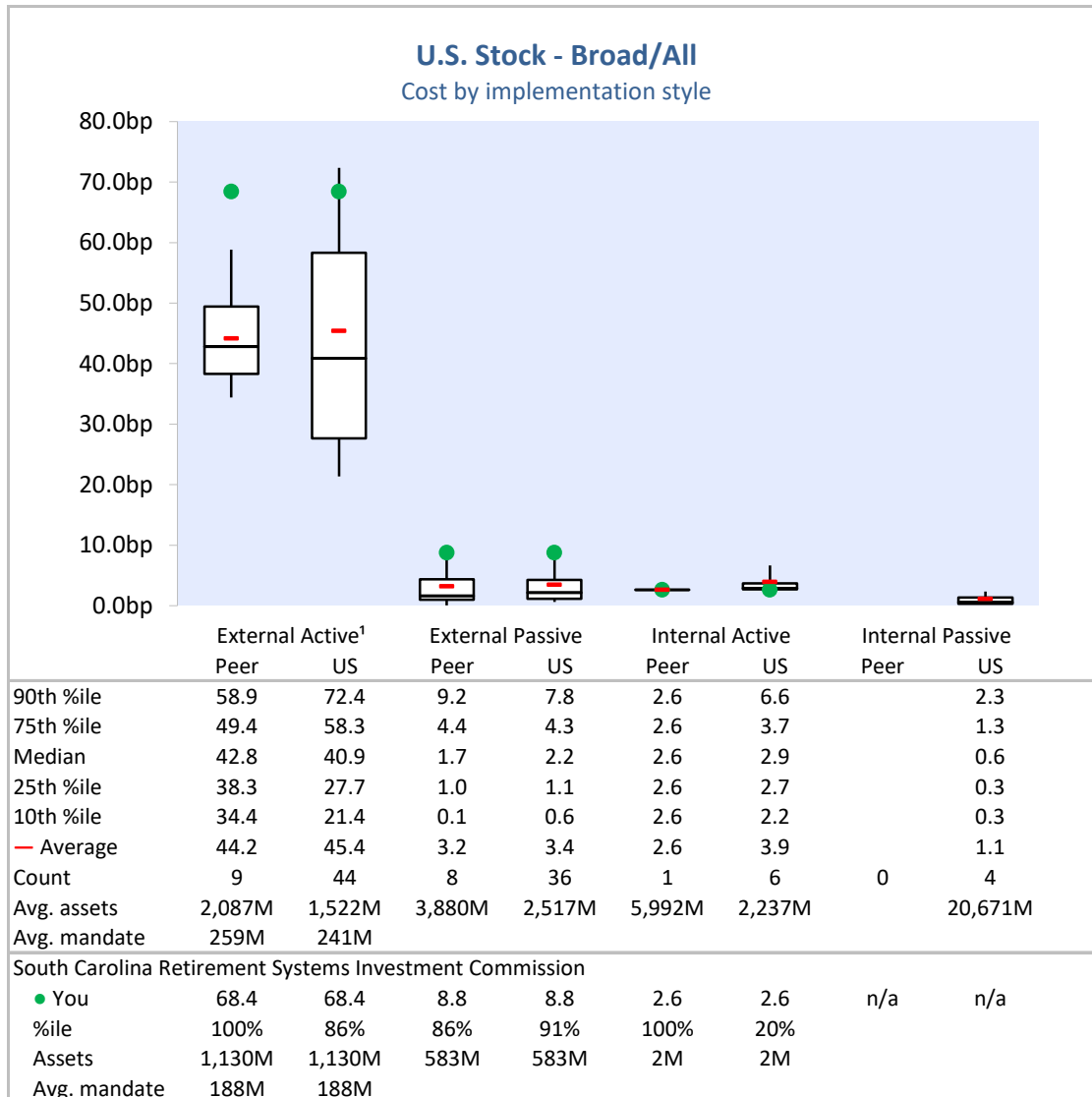
Governance, operations & support

Cost as a % of total plan assets



	<u>Total</u>		<u>Oversight¹</u>		<u>Consulting & Perf. Meas.</u>		<u>Custody</u>		<u>Audit</u>		<u>Other</u>	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	3.0	8.4	2.2	2.5	0.6	2.4	0.9	2.5	0.2	0.4	0.2	2.1
75th %ile	2.8	5.9	1.7	2.0	0.5	1.4	0.7	1.8	0.1	0.3	0.2	1.0
Median	1.9	4.2	0.6	1.7	0.3	0.7	0.2	1.0	0.1	0.1	0.1	0.5
25th %ile	0.9	2.7	0.4	0.8	0.2	0.3	0.2	0.5	0.0	0.1	0.1	0.1
10th %ile	0.7	1.2	0.2	0.4	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0
— Average	1.9	4.8	1.0	1.7	0.4	1.2	0.4	1.3	0.1	0.2	0.1	0.8
Count	19	165	19	165	16	143	18	159	17	148	14	111
Avg. assets	34,561M	19,950M	34,561M	19,950M	34,561M	19,950M	34,561M	19,950M	34,561M	19,950M	34,561M	19,950M
South Carolina Retirement Systems Investment Commission												
● You	1.2	1.2	0.4	0.4	0.4	0.4	0.3	0.3	0.1	0.1	0.1	0.1
%ile	39%	9%	28%	11%	60%	30%	53%	13%	63%	24%	38%	24%
Plan assets	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M	29,380M

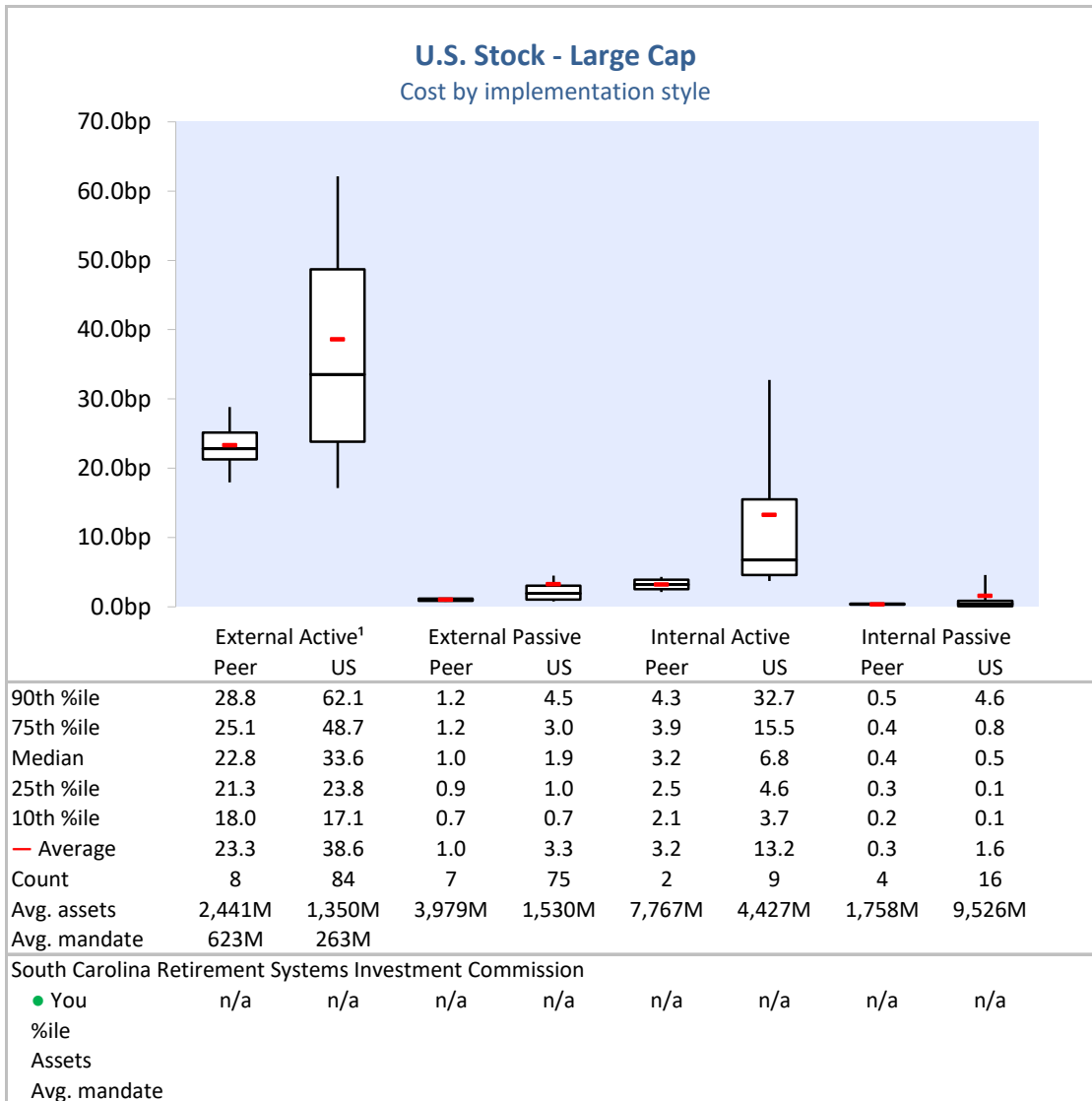
1. Oversight costs include the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees/salaries of the Board or Investment Committee. All costs associated with the above including fees/salaries, travel, director's insurance and attributed overhead are included. Given fiduciary obligations, having the lowest oversight costs is not necessarily optimal. Some sponsors with lower-than-average executive and administration costs compensate by having-higher-than average consulting costs.



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	65.8	37.9	37.5
Performance fees*	0.0	4.7	7.3
Internal and other	<u>2.7</u>	<u>1.6</u>	<u>0.6</u>
Total	68.4	44.2	45.4

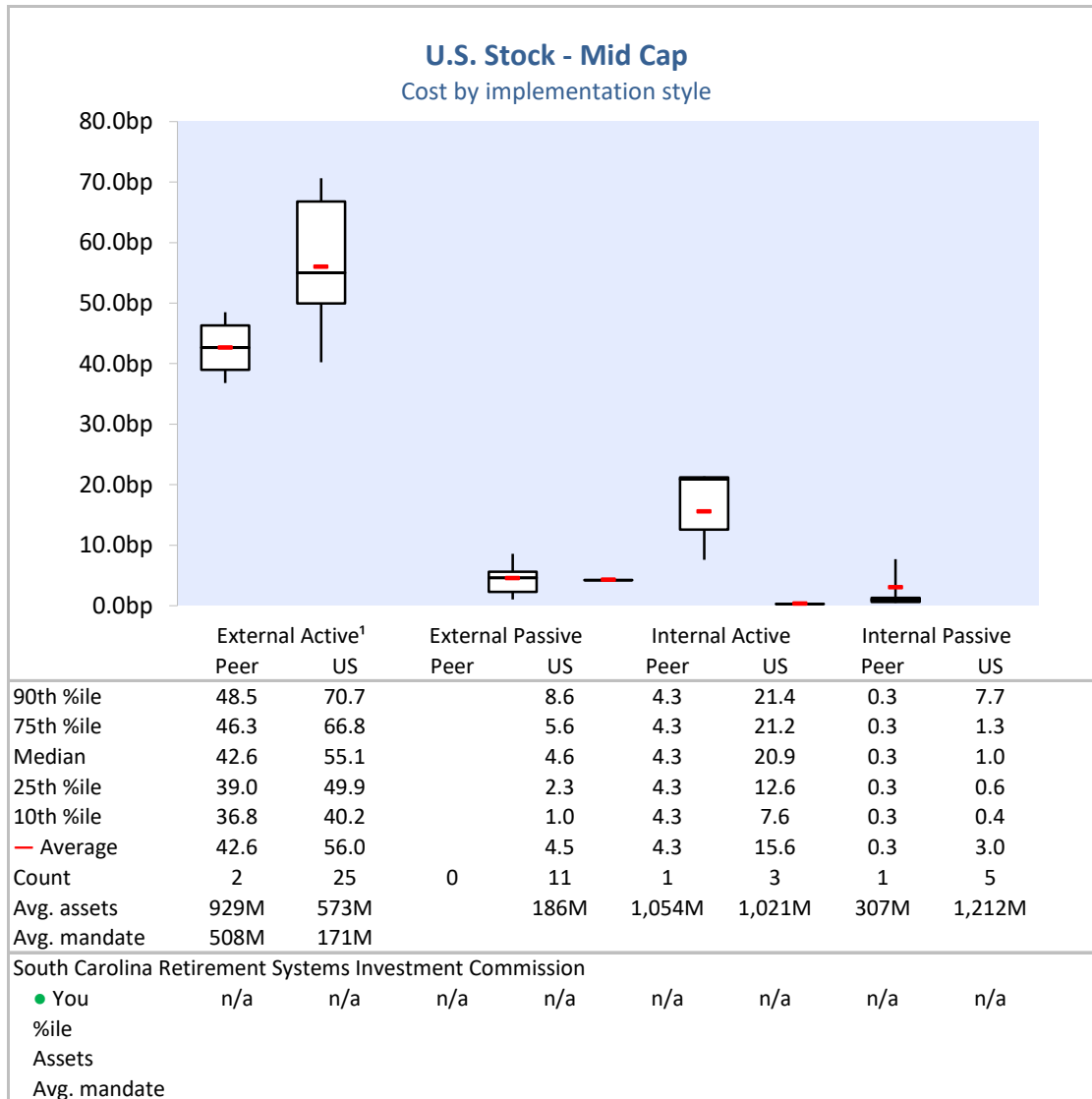
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 10.5 bps for peers (4 funds) and 21.3 bps for US participants (15 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	20.9	35.0
Performance fees*	n/a	2.1	3.3
Internal and other	<u>n/a</u>	<u>0.3</u>	<u>0.3</u>
Total	n/a	23.3	38.6

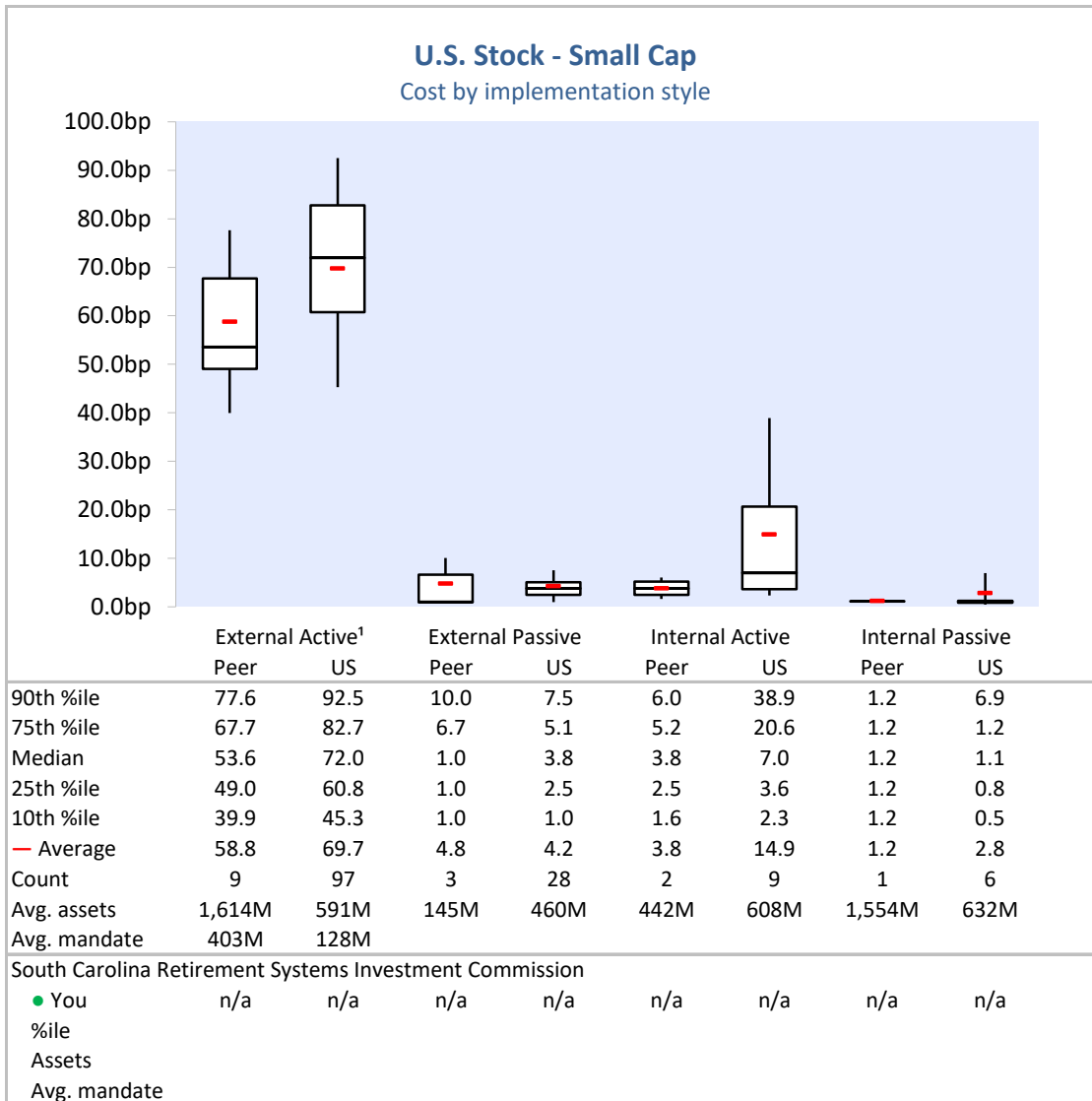
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 16.6 bps for peers (1 fund) and 13.8 bps for US participants (20 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	42.6	51.0
Performance fees*	n/a	0.0	4.7
Internal and other	<u>n/a</u>	<u>0.0</u>	<u>0.3</u>
Total	n/a	42.6	56.0

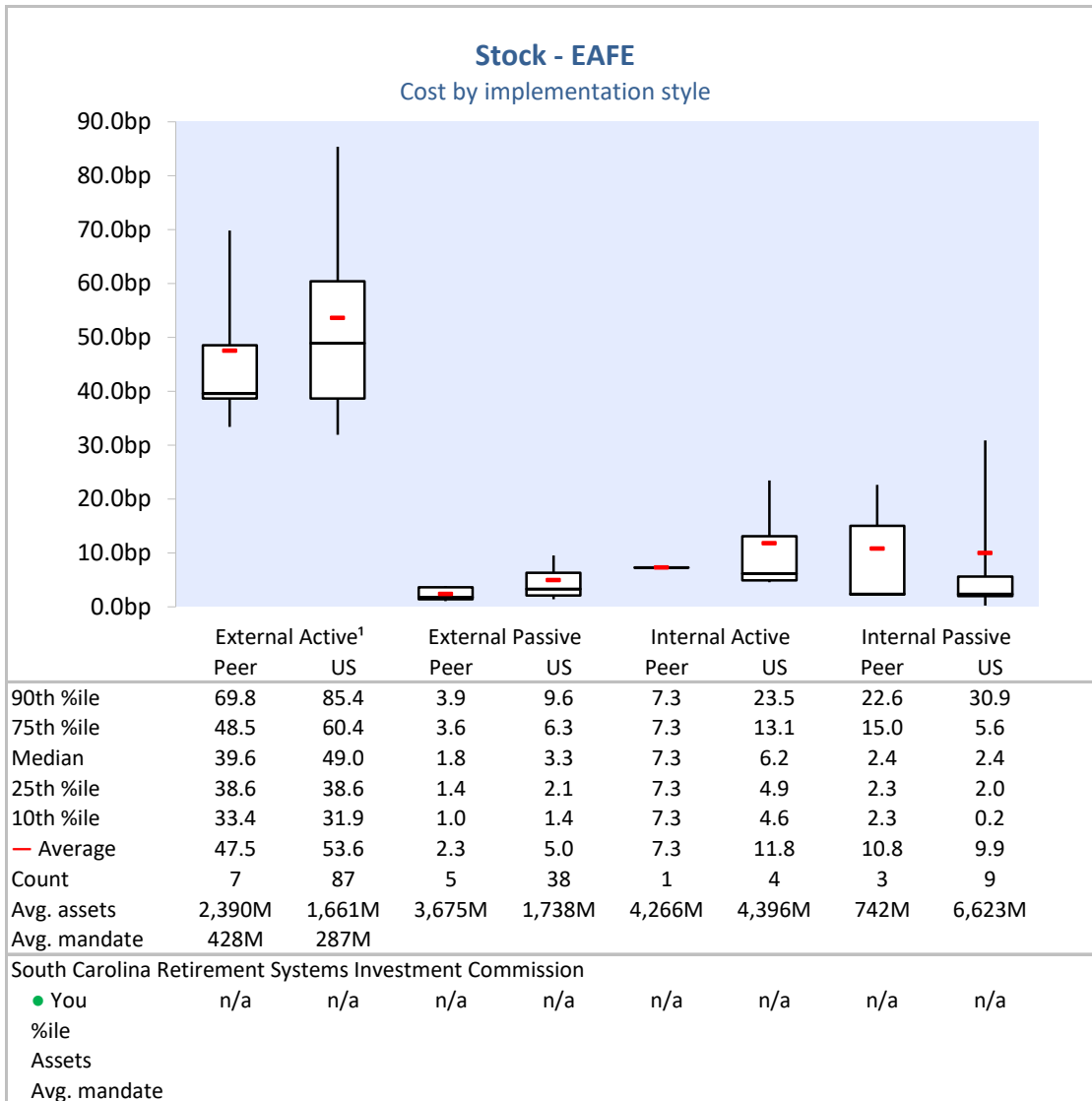
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 29.3 bps for US participants (4 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	52.3	67.3
Performance fees*	n/a	6.2	2.3
Internal and other	<u>n/a</u>	<u>0.2</u>	<u>0.2</u>
Total	n/a	58.8	69.7

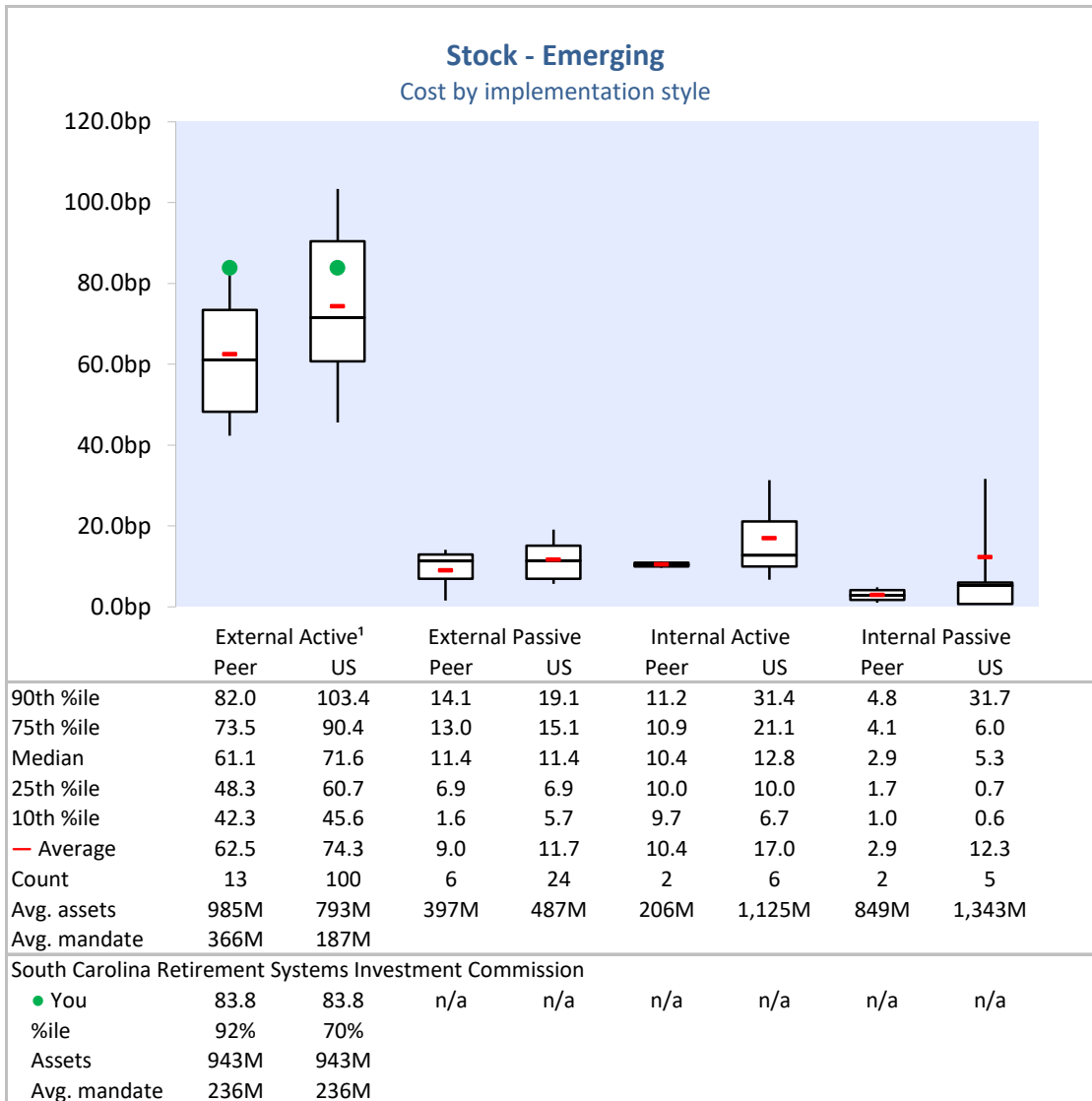
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 18.7 bps for peers (3 funds) and 13.6 bps for US participants (16 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	47.2	49.9
Performance fees*	n/a	0.0	3.6
Internal and other	<u>n/a</u>	<u>0.3</u>	<u>0.1</u>
Total	n/a	47.5	53.6

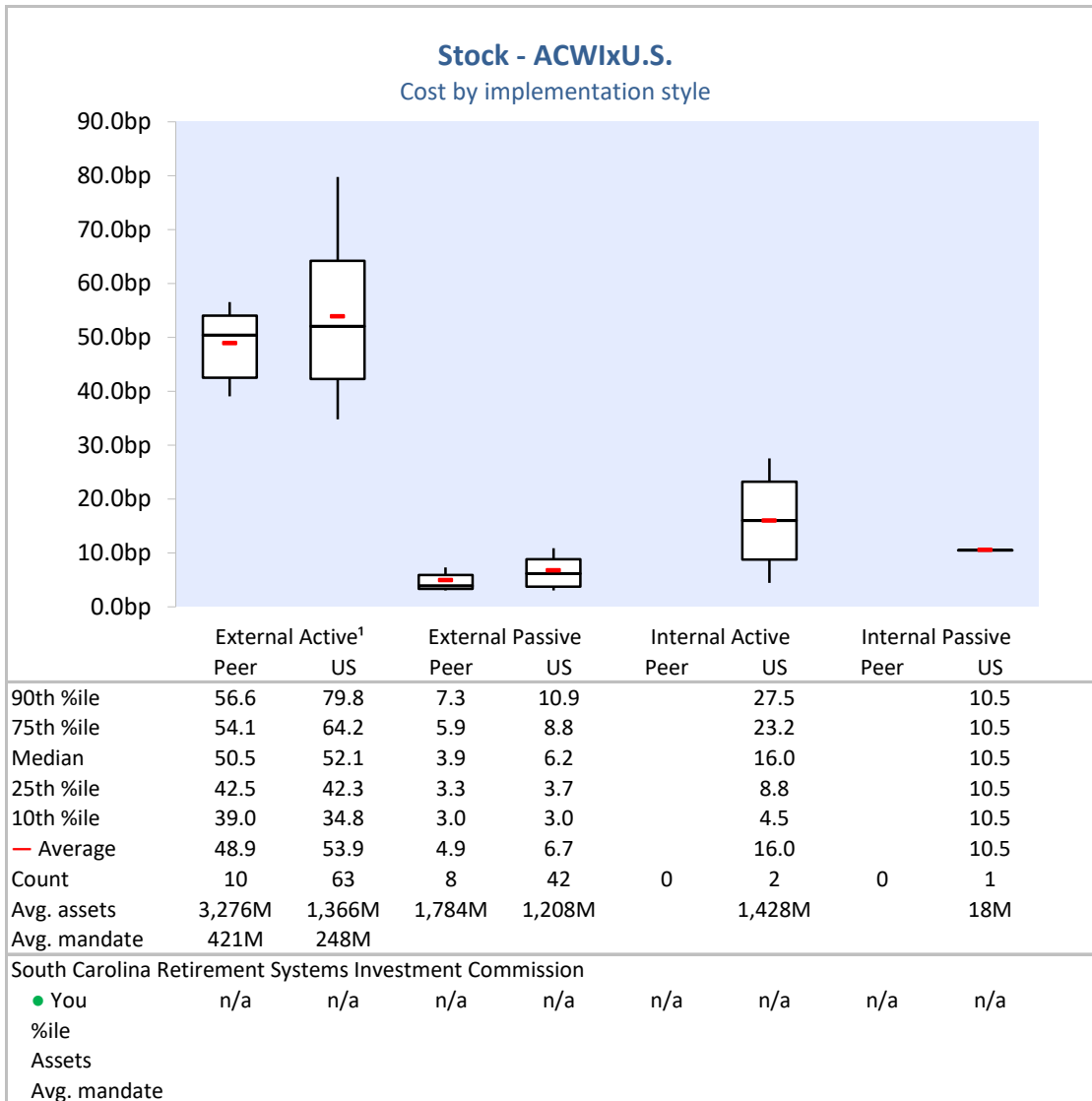
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 17.2 bps for US participants (18 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	81.2	61.8	72.8
Performance fees*	0.0	0.0	1.1
Internal and other	<u>2.7</u>	<u>0.7</u>	<u>0.4</u>
Total	83.8	62.5	74.3

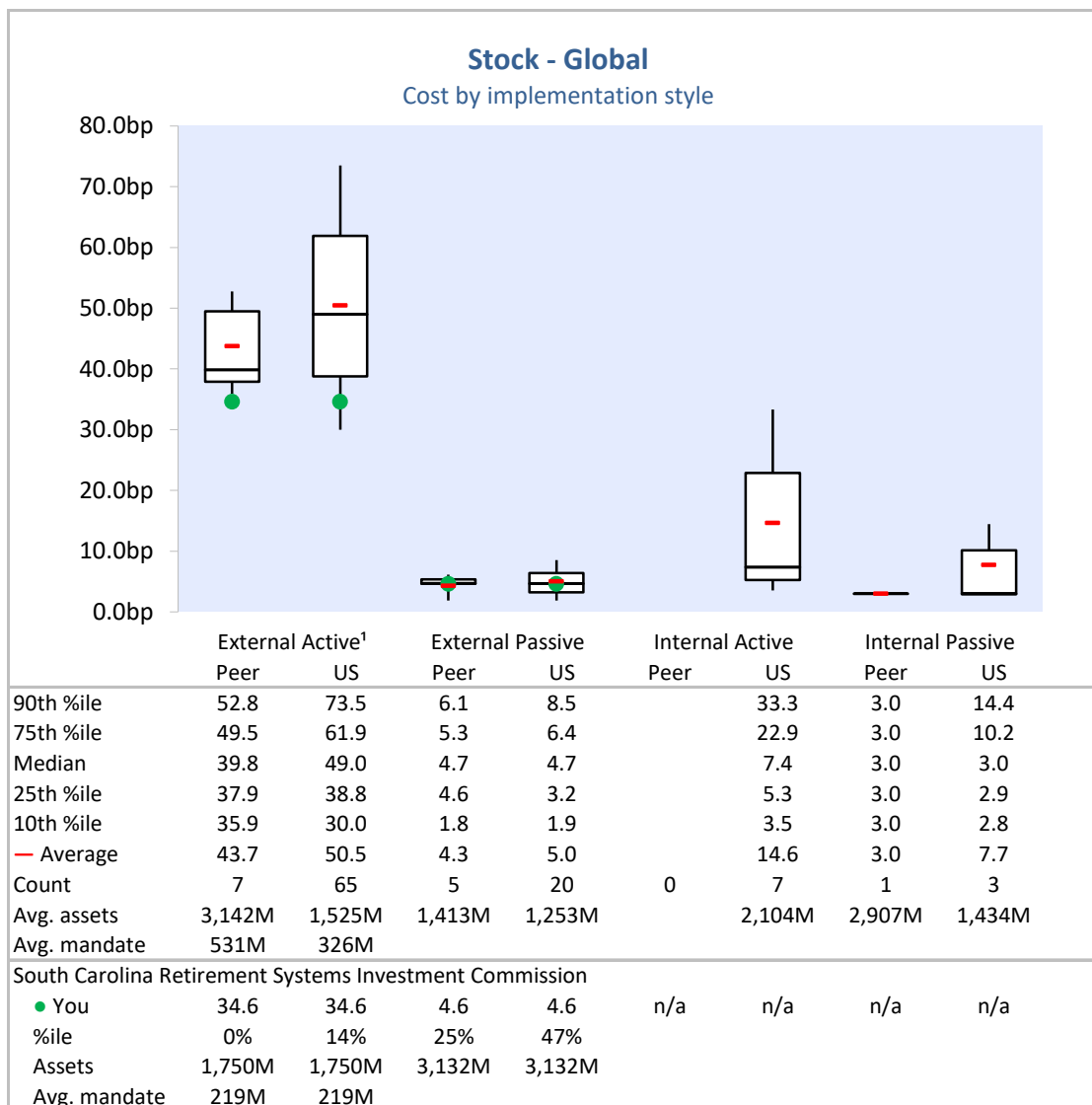
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 8.3 bps for US participants (13 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	39.9	51.0
Performance fees*	n/a	8.9	2.3
Internal and other	<u>n/a</u>	<u>0.1</u>	<u>0.5</u>
Total	n/a	48.9	53.9

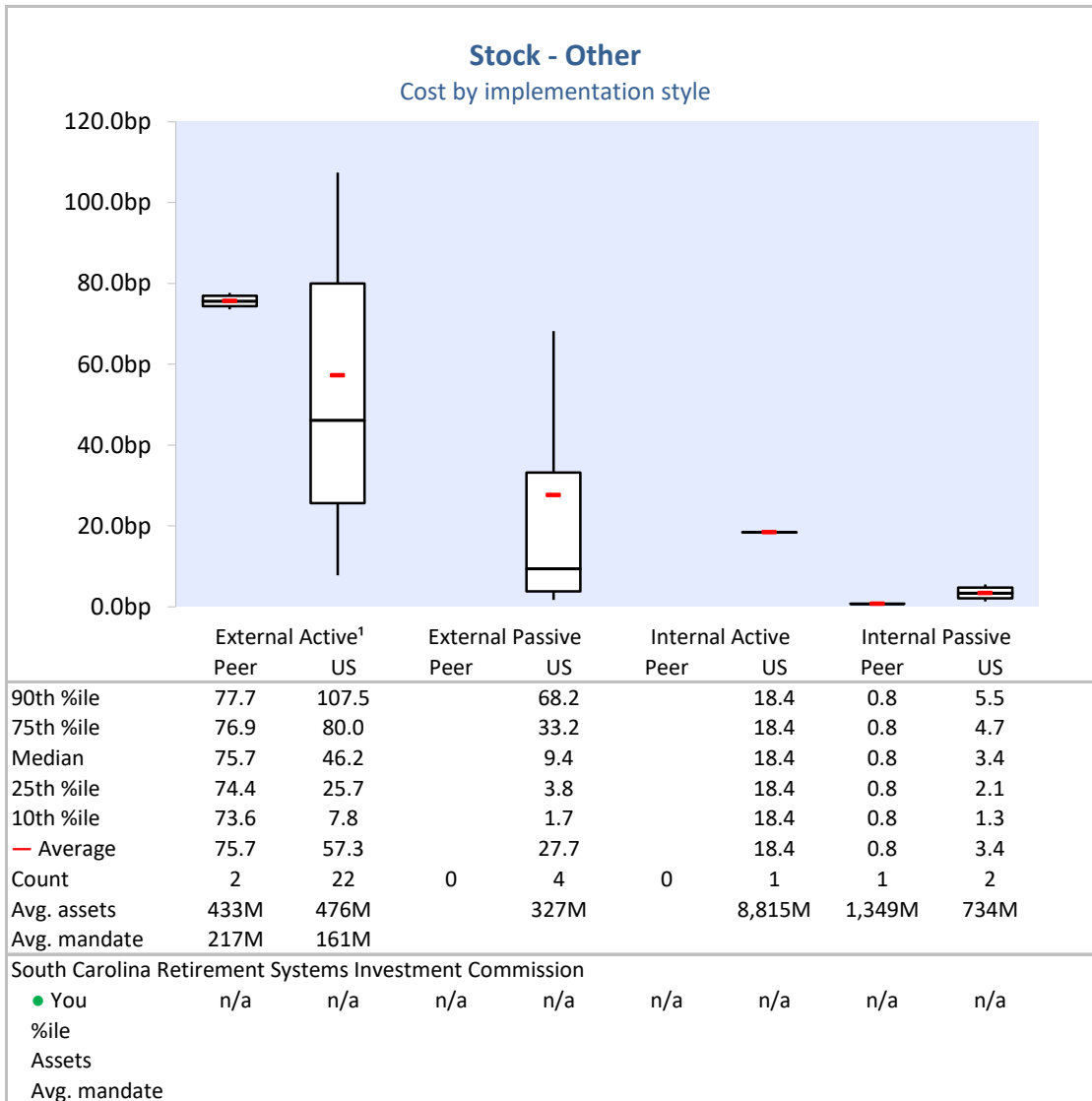
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 22.1 bps for peers (4 funds) and 10.5 bps for US participants (14 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	31.9	41.6	46.5
Performance fees*	0.0	1.4	3.6
Internal and other	<u>2.7</u>	<u>0.8</u>	<u>0.3</u>
Total	34.6	43.7	50.5

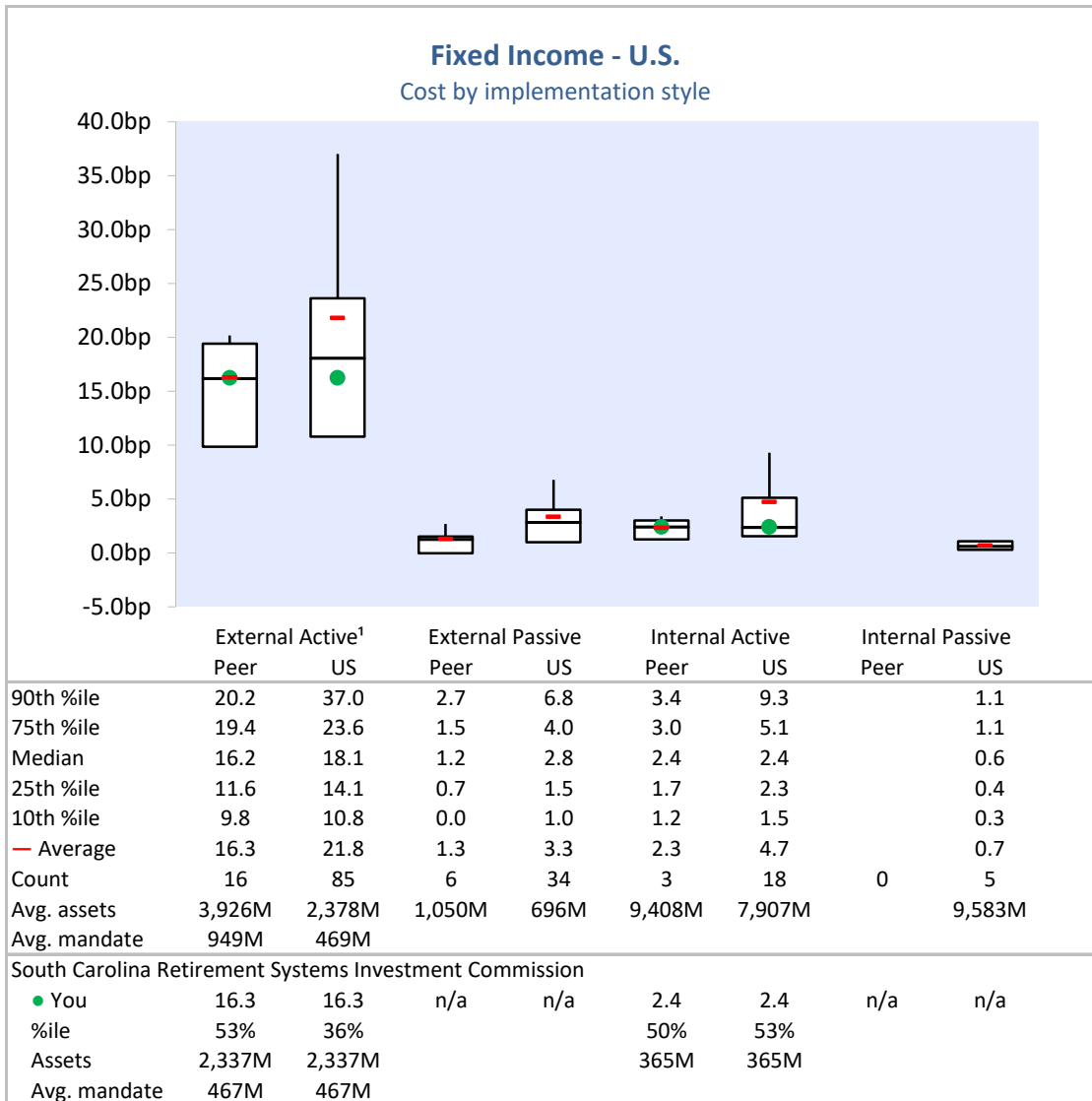
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 4.8 bps for peers (2 funds) and 14.8 bps for US participants (16 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	75.7	50.7
Performance fees*	n/a	0.0	6.0
Internal and other	<u>n/a</u>	<u>0.0</u>	<u>0.6</u>
Total	n/a	75.7	57.3

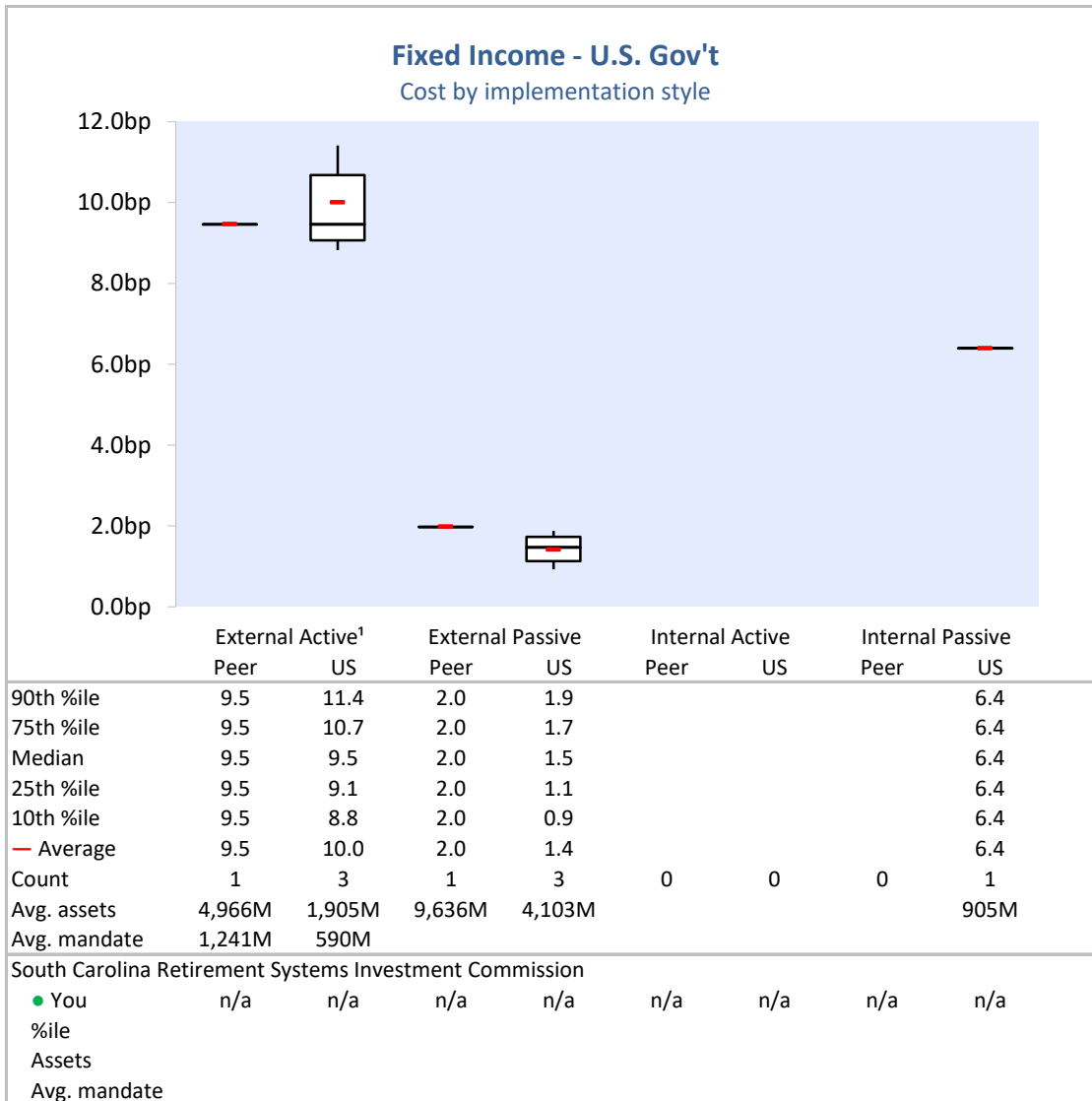
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 18.9 bps for US participants (7 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	12.7	15.4	21.2
Performance fees*	0.9	0.4	0.3
Internal and other	<u>2.7</u>	<u>0.5</u>	<u>0.3</u>
Total	16.3	16.3	21.8

* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 1.7 bps for peers (4 funds) and 2.0 bps for US participants (14 funds).

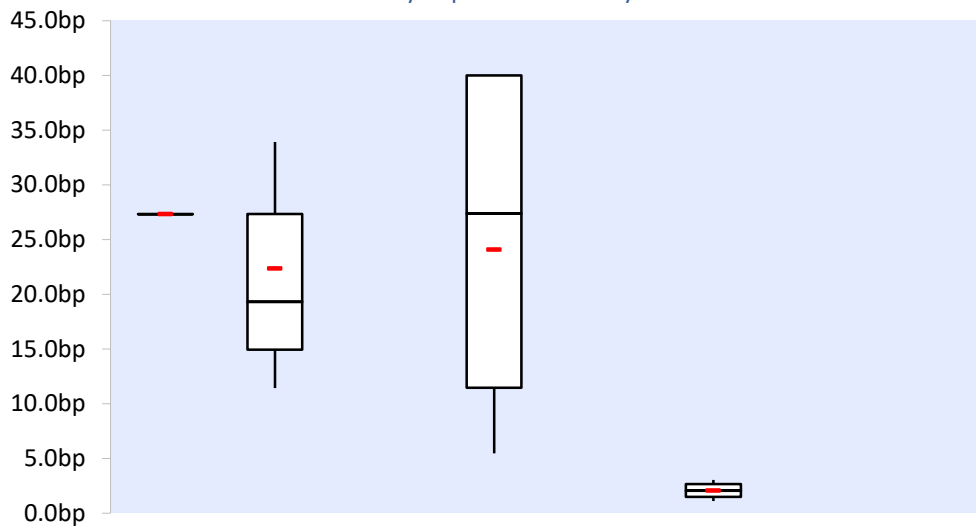


1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	9.1	9.9
Performance fees*	n/a	0.0	0.0
Internal and other	<u>n/a</u>	<u>0.4</u>	<u>0.1</u>
Total	n/a	9.5	10.0

* For funds that did not report a performance fee, a value of 'zero' was used. No funds reported a performance fee.

Fixed Income - U.S. Credit Cost by implementation style

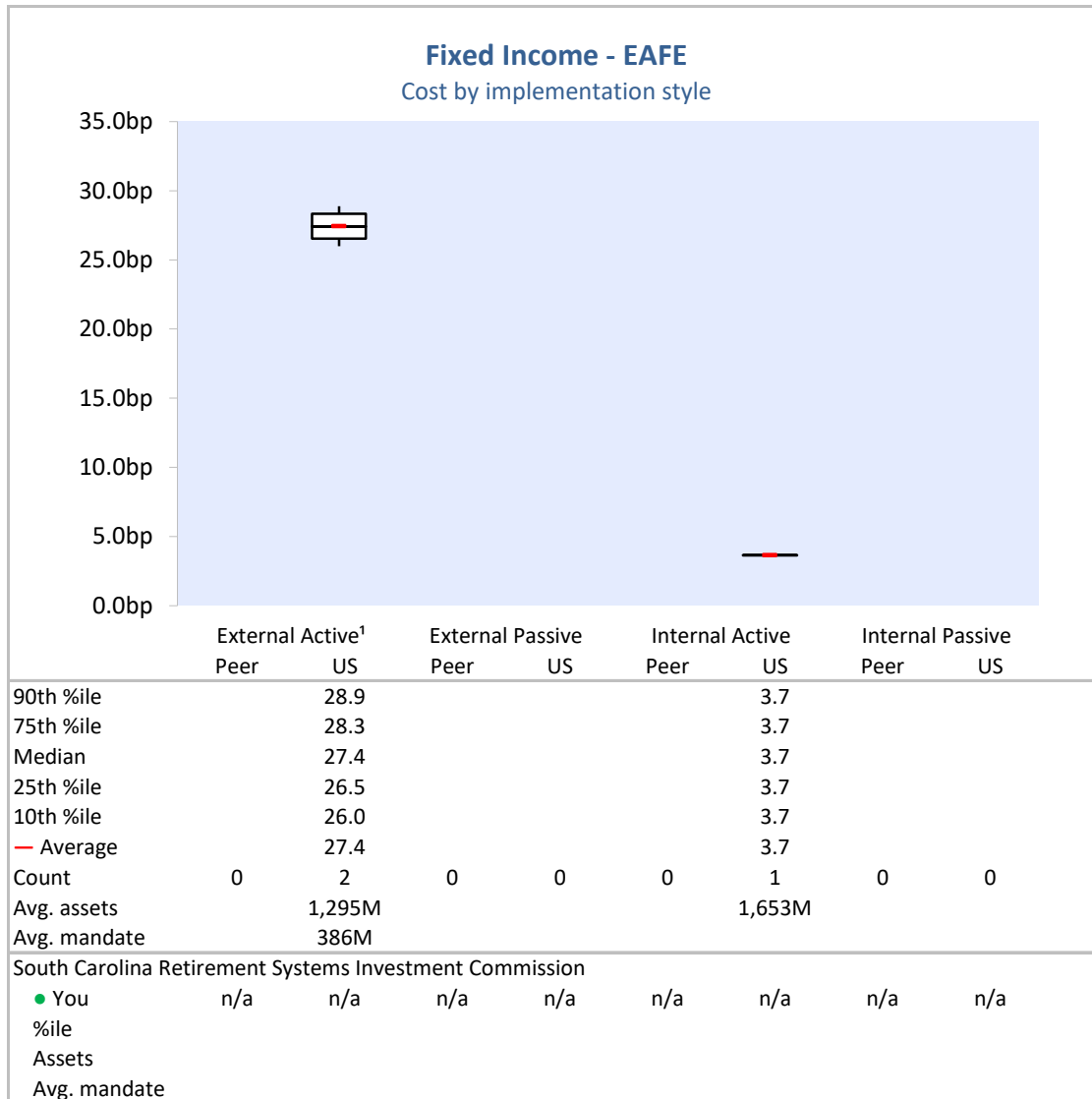


	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	27.3	33.9		40.0		3.0		
75th %ile	27.3	27.3		40.0		2.7		
Median	27.3	19.3		27.4		2.1		
25th %ile	27.3	14.9		11.5		1.5		
10th %ile	27.3	11.4		5.5		1.1		
— Average	27.3	22.4		24.1		2.1		
Count	1	9	0	4	0	2	0	0
Avg. assets	914M	1,926M		104M		761M		
Avg. mandate	457M	356M						
South Carolina Retirement Systems Investment Commission								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	27.2	22.3
Performance fees*	n/a	0.0	0.0
Internal and other	<u>n/a</u>	<u>0.2</u>	<u>0.0</u>
Total	n/a	27.3	22.4

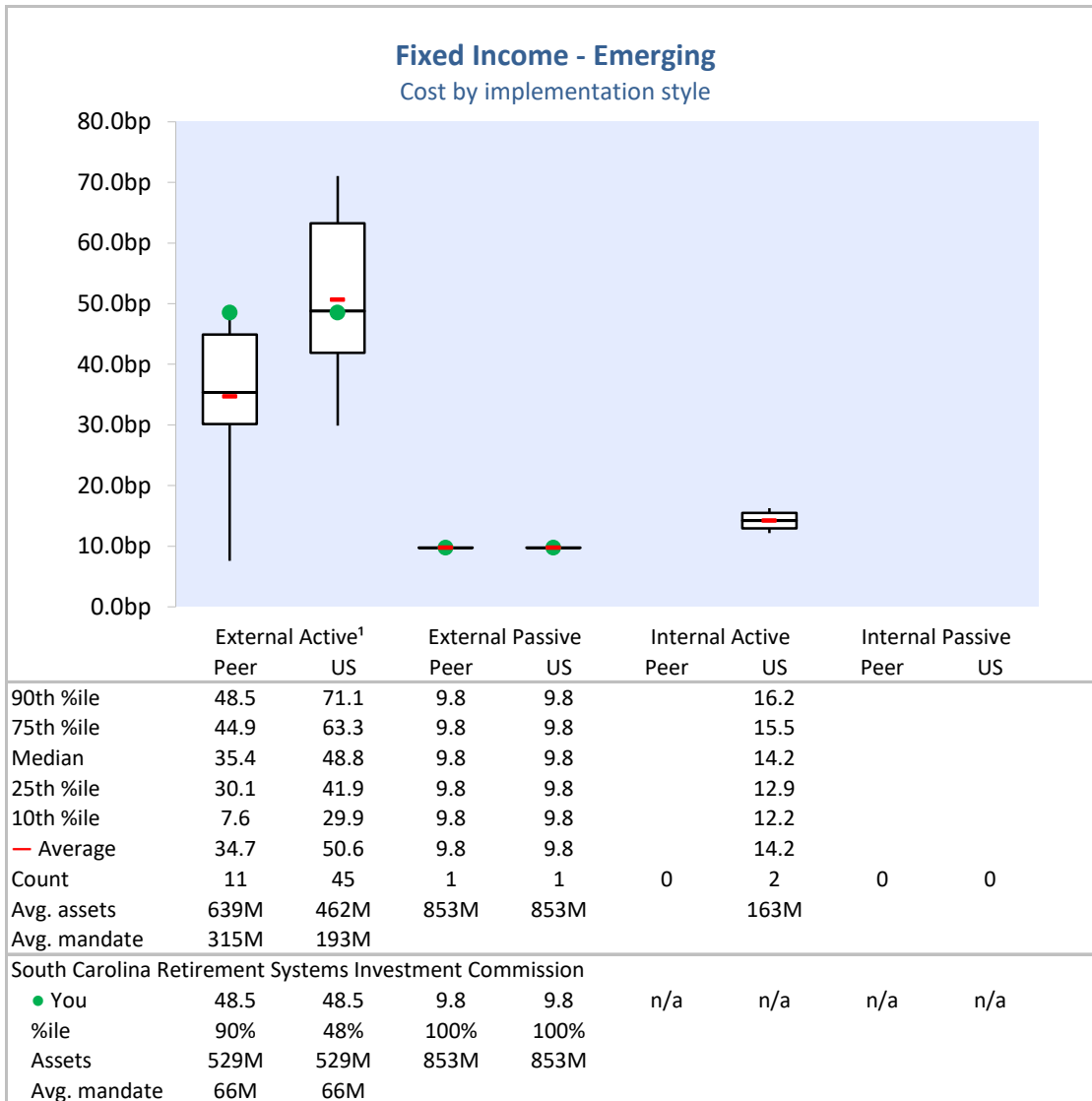
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 0.1 bps for US participants (3 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	n/a	18.1
Performance fees*	n/a	n/a	8.7
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.6</u>
Total	n/a	n/a	27.4

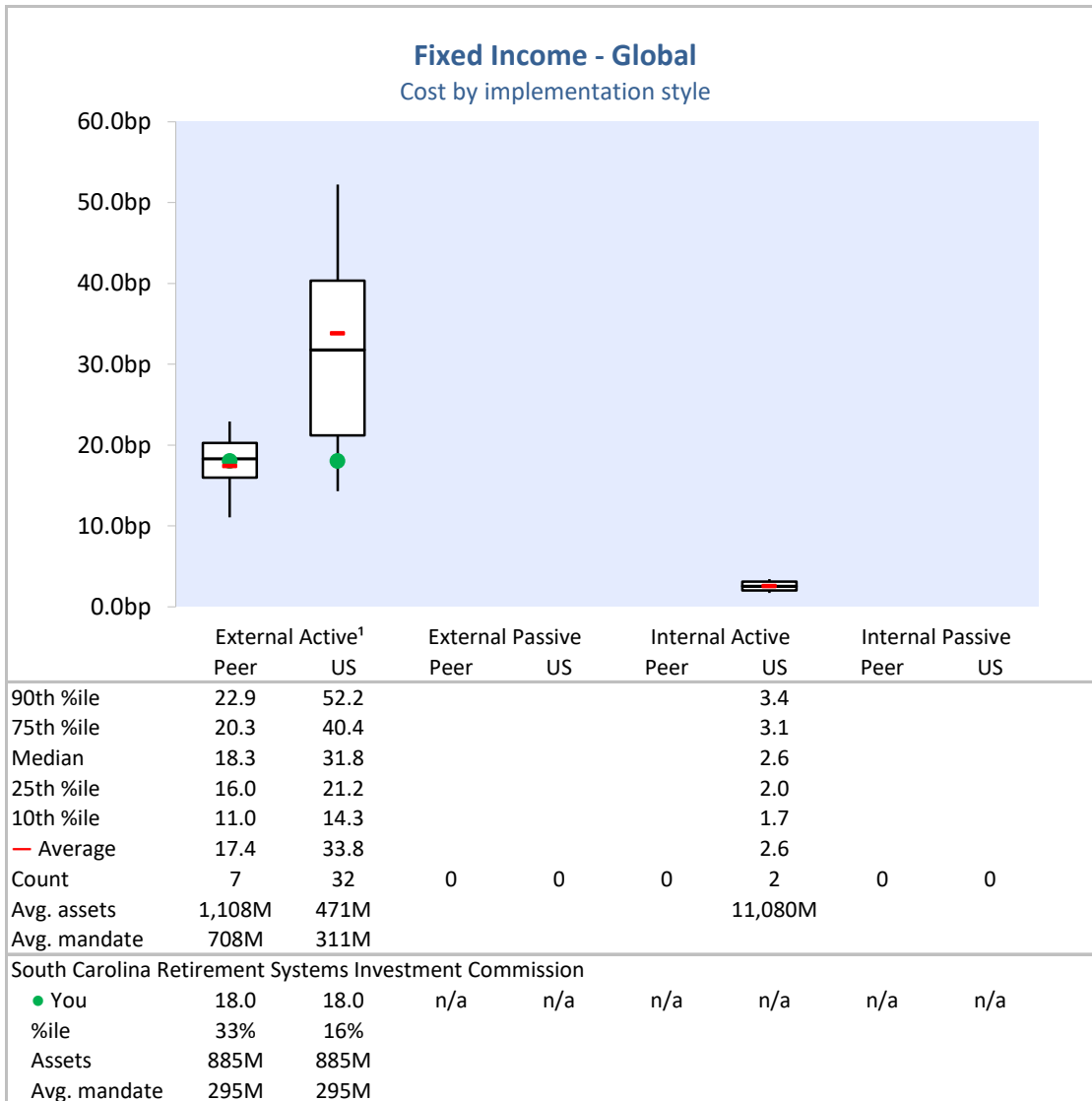
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 17.3 bps for US participants (1 fund).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	45.9	34.3	50.4
Performance fees*	0.0	0.0	0.0
Internal and other	<u>2.7</u>	<u>0.4</u>	<u>0.2</u>
Total	48.5	34.7	50.6

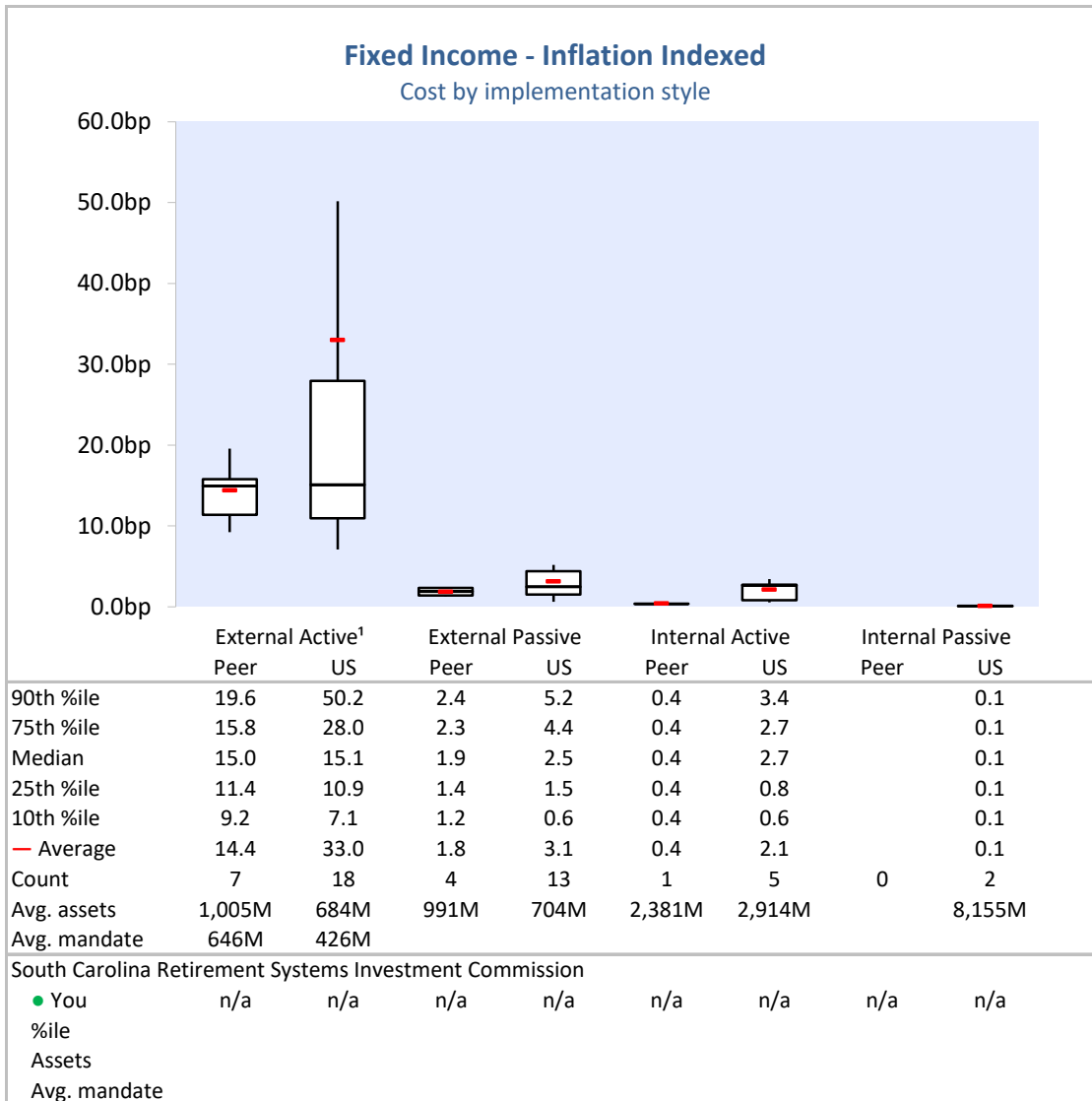
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 0.0 bps for US participants (4 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	15.4	16.8	33.4
Performance fees*	0.0	0.0	0.2
Internal and other	<u>2.7</u>	<u>0.5</u>	<u>0.2</u>
Total	18.0	17.4	33.8

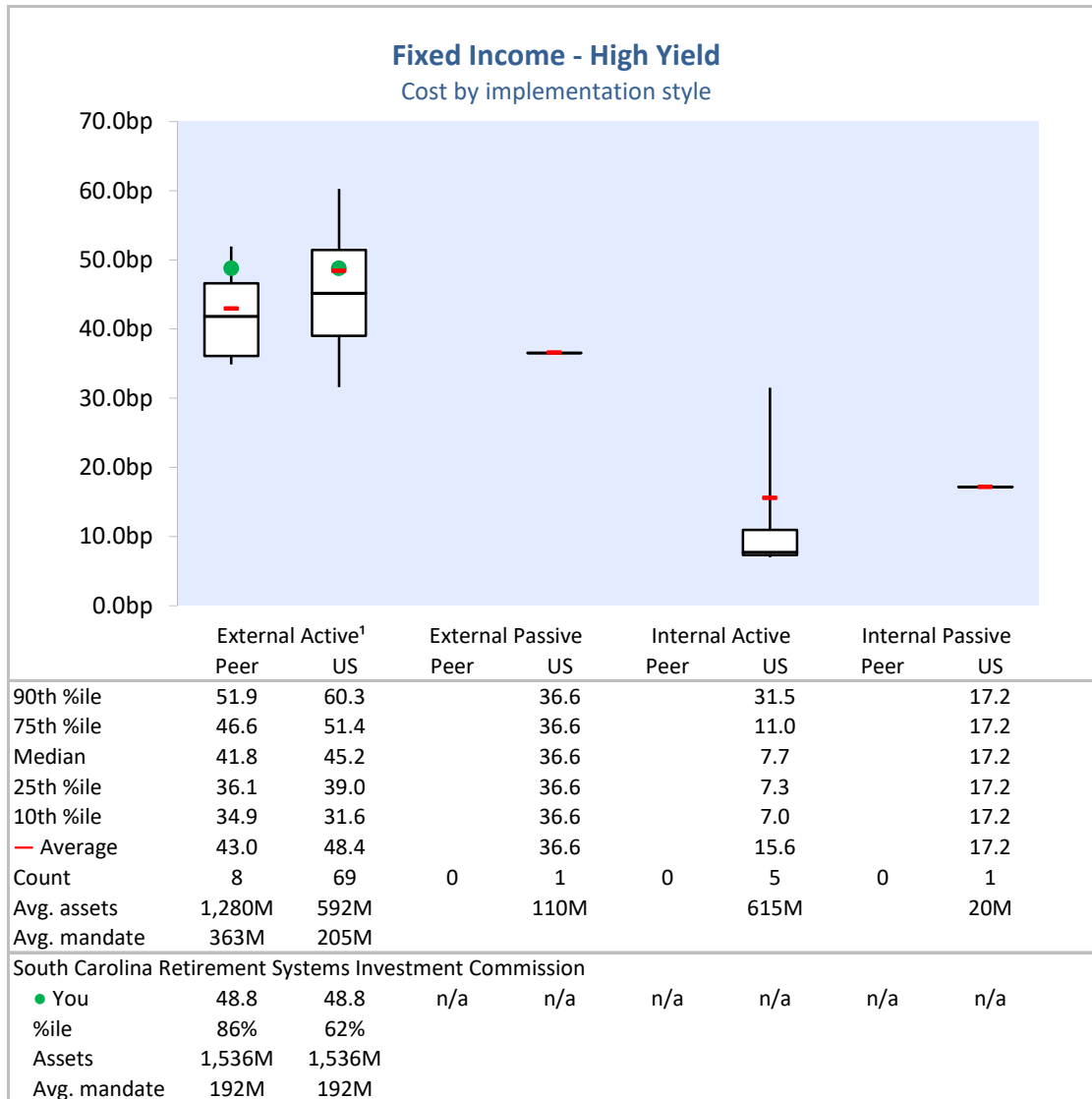
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 0.9 bps for US participants (7 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	14.4	24.7
Performance fees*	n/a	0.0	7.9
Internal and other	<u>n/a</u>	<u>0.1</u>	<u>0.4</u>
Total	n/a	14.4	33.0

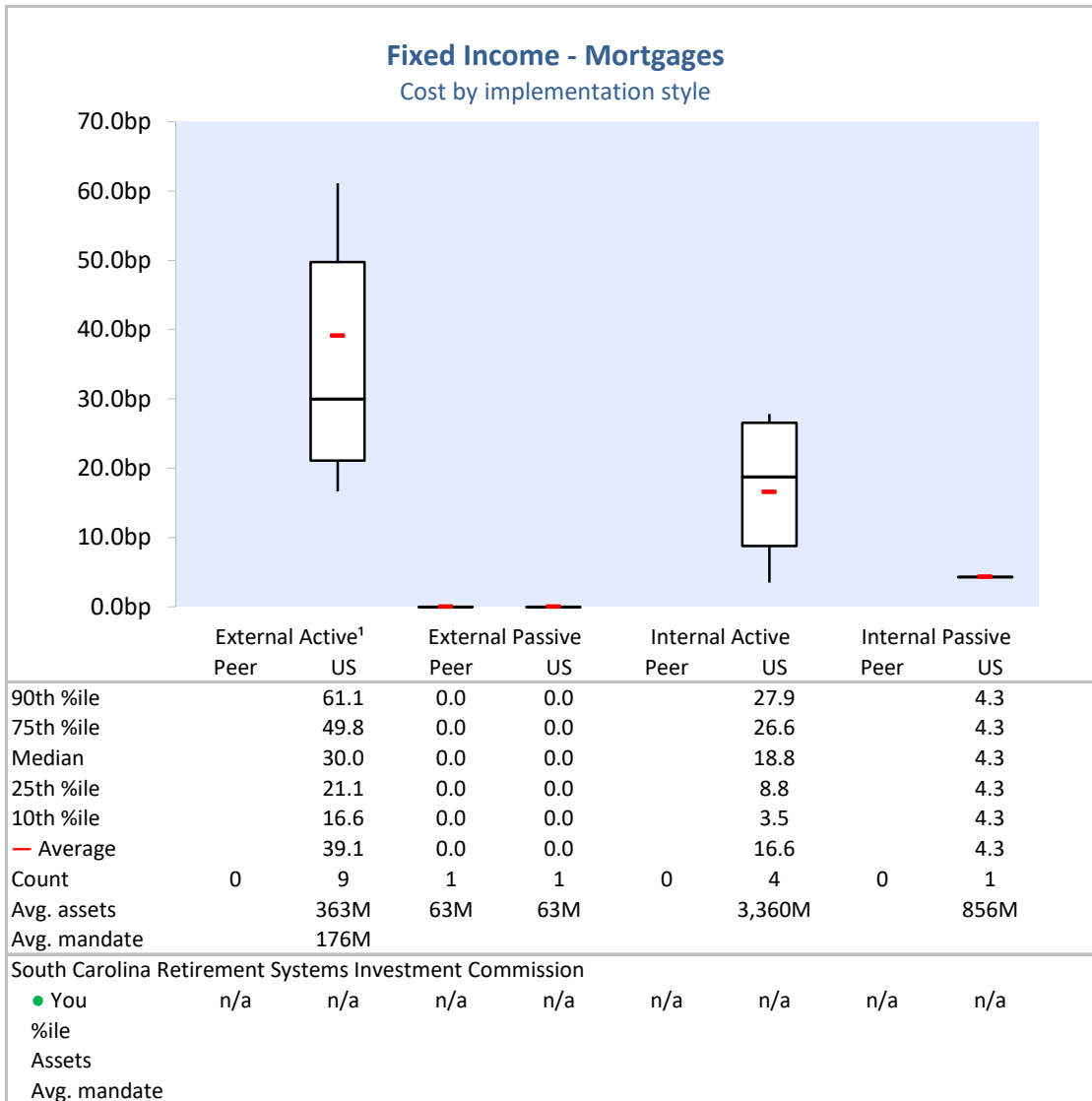
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 142.1 bps for US participants (1 fund).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	46.1	40.9	46.9
Performance fees*	0.0	1.6	1.2
Internal and other	<u>2.7</u>	<u>0.5</u>	<u>0.3</u>
Total	48.8	43.0	48.4

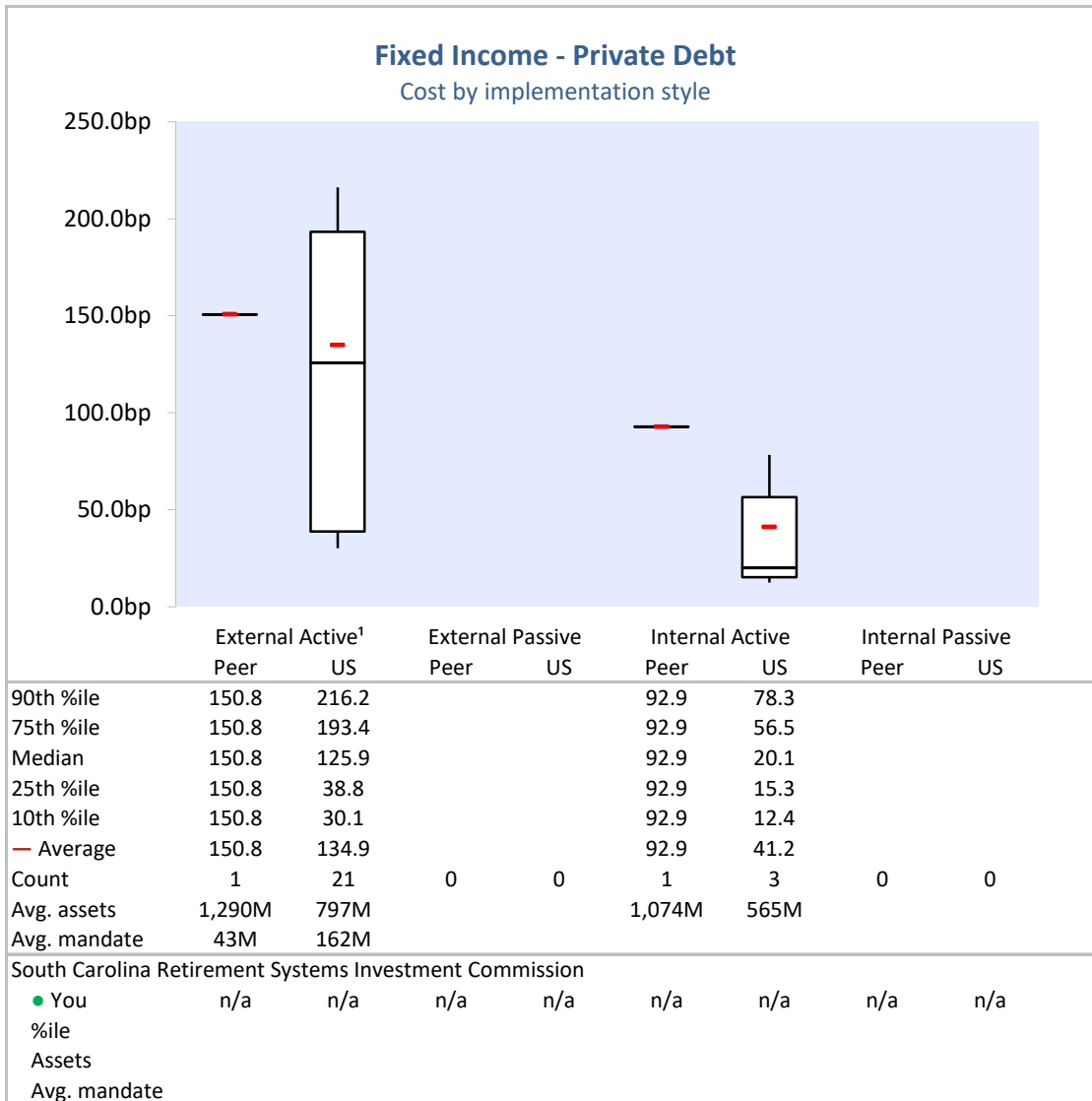
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 6.4 bps for peers (2 funds) and 8.5 bps for US participants (10 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	n/a	37.6
Performance fees*	n/a	n/a	1.2
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.3</u>
Total	n/a	n/a	39.1

* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 10.8 bps for US participants (1 fund).



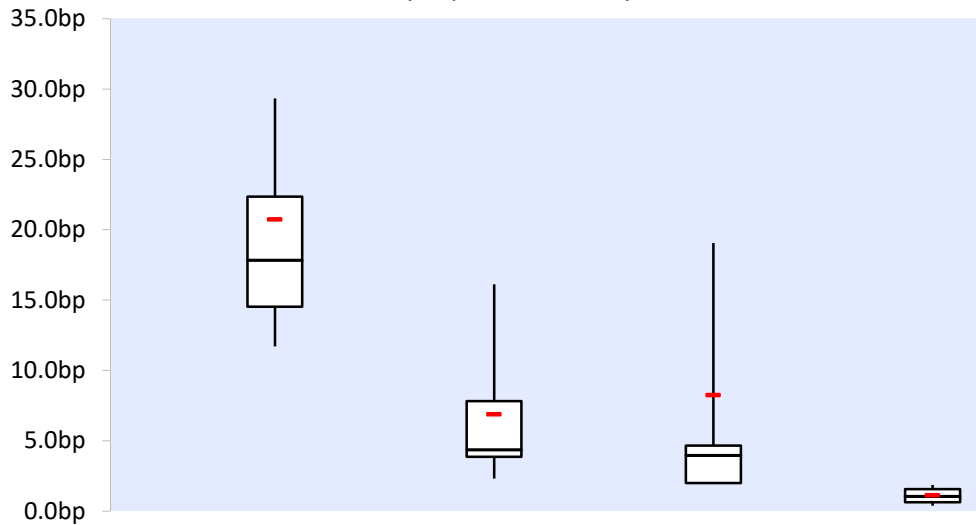
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	150.8	123.7
Performance fees*	n/a	0.0	10.7
Internal and other	<u>n/a</u>	<u>0.0</u>	<u>0.5</u>
Total	n/a	150.8	134.9

* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 45.1 bps for US participants (5 funds).

Fixed Income - Long Bonds

Cost by implementation style

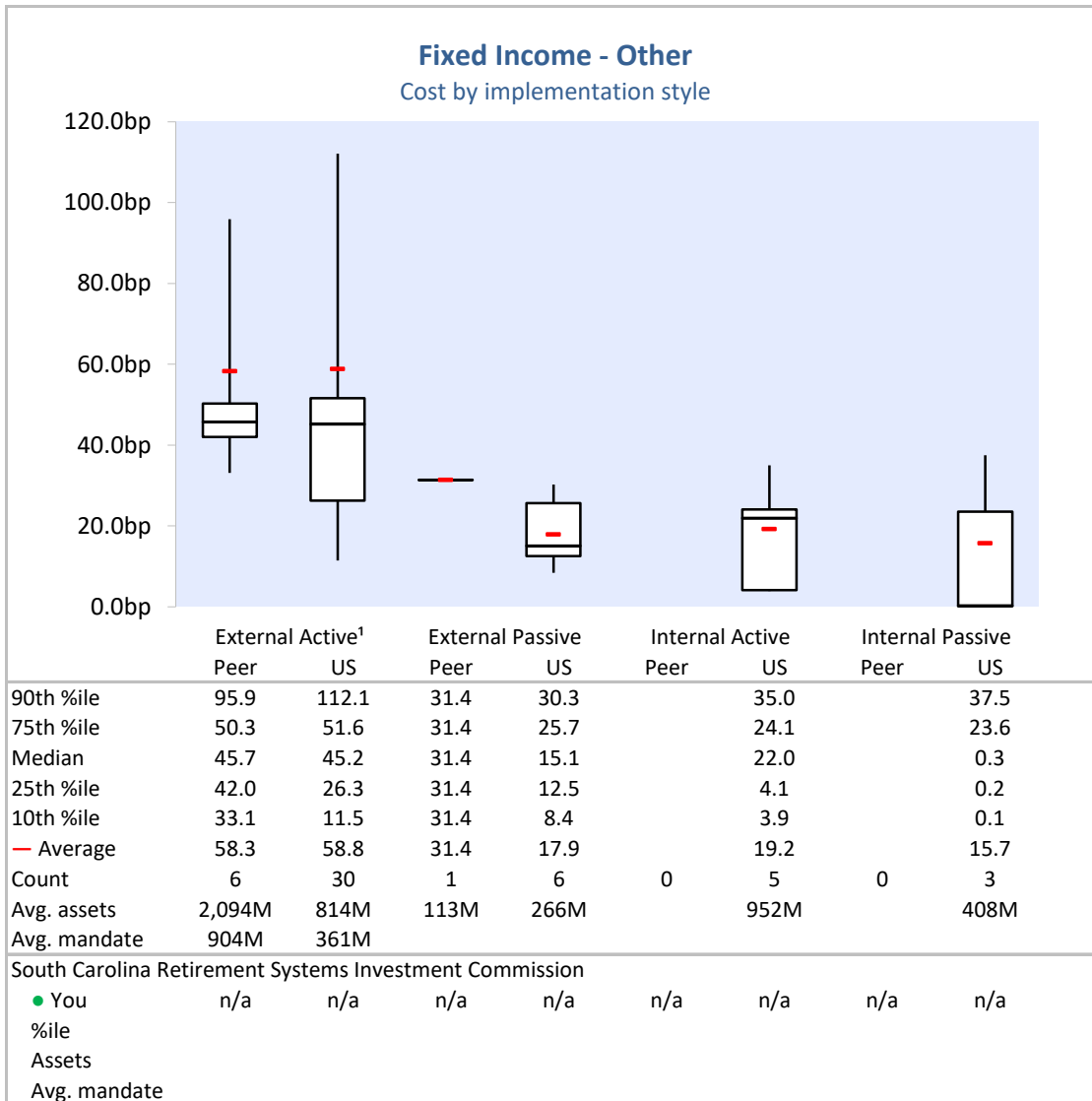


	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile		29.3		16.1		19.0		1.9
75th %ile		22.4		7.8		4.7		1.6
Median		17.9		4.4		4.0		1.1
25th %ile		14.5		3.9		2.0		0.6
10th %ile		11.7		2.3		2.0		0.4
— Average		20.7		6.9		8.2		1.1
Count	0	76	0	17	0	5	0	3
Avg. assets		3,520M		304M		797M		2,679M
Avg. mandate		603M						
South Carolina Retirement Systems Investment Commission								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	n/a	18.8
Performance fees*	n/a	n/a	1.9
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.0</u>
Total	n/a	n/a	20.7

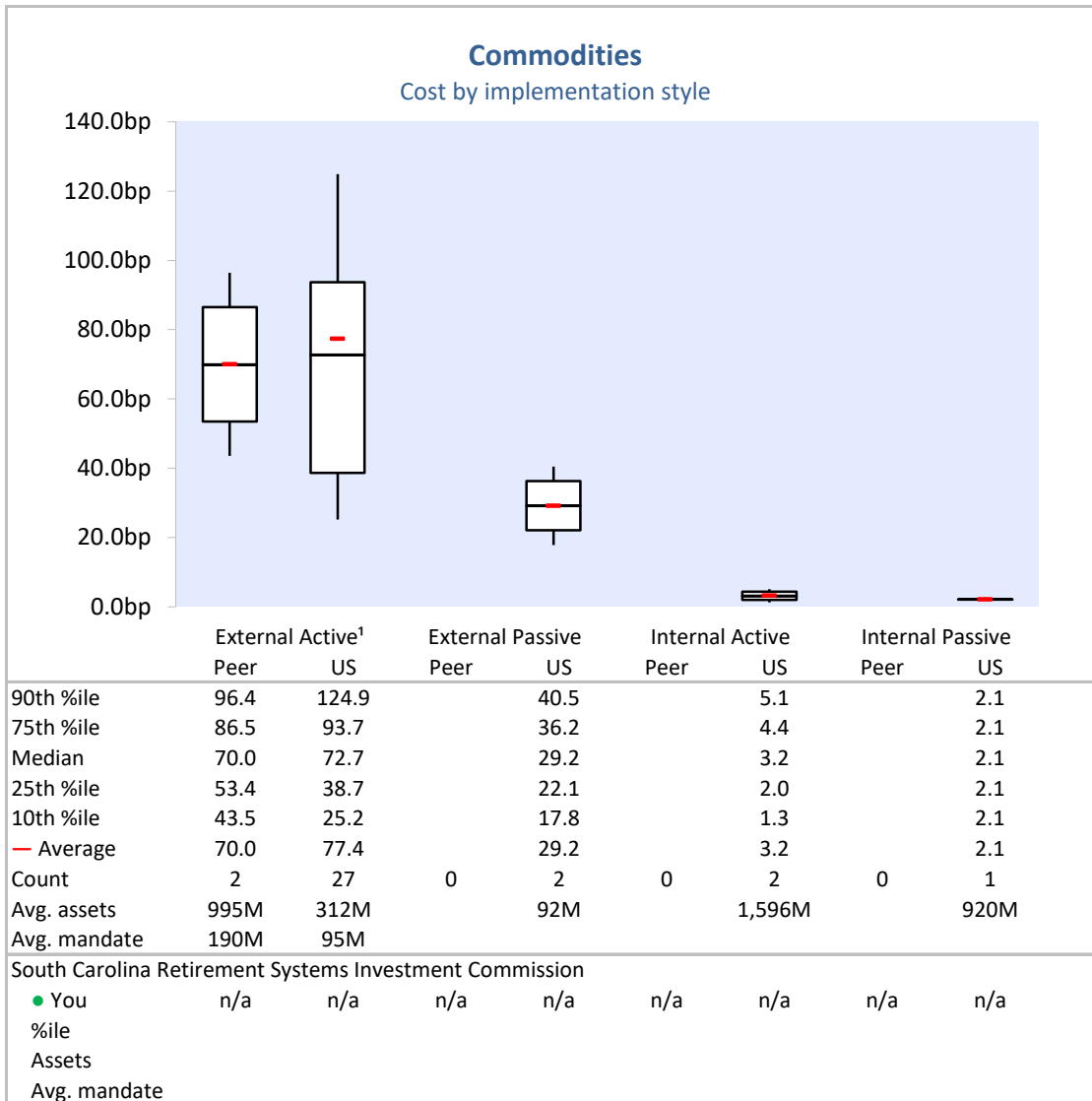
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 10.4 bps for US participants (14 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	51.9	44.5
Performance fees*	n/a	5.8	13.2
Internal and other	<u>n/a</u>	<u>0.5</u>	<u>1.1</u>
Total	n/a	58.3	58.8

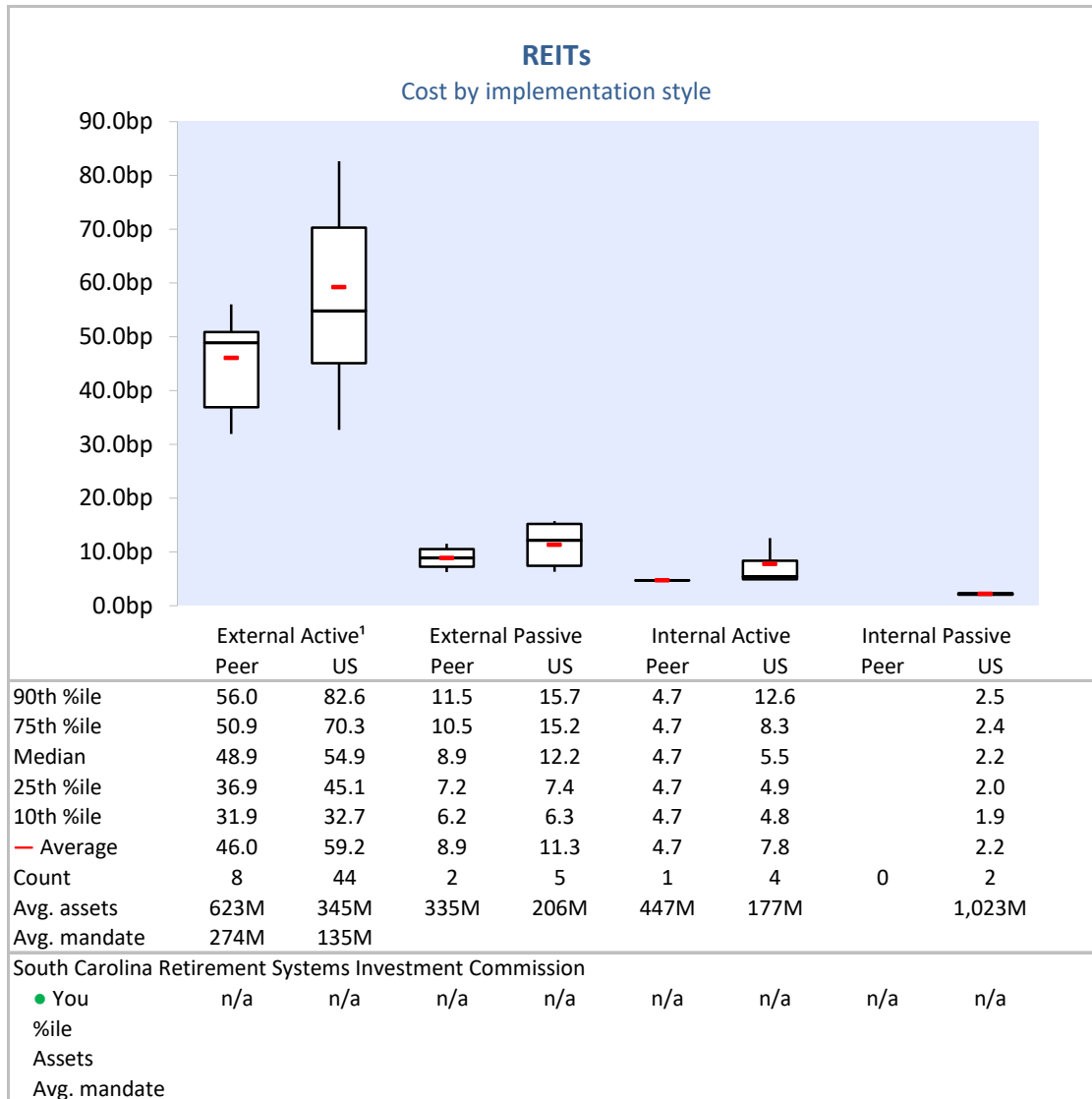
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 34.9 bps for peers (1 fund) and 99.3 bps for US participants (4 funds).



1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	41.9	72.1
Performance fees*	n/a	28.1	3.7
Internal and other	<u>n/a</u>	<u>0.0</u>	<u>1.6</u>
Total	n/a	70.0	77.4

* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 56.1 bps for peers (1 fund) and 11.0 bps for US participants (9 funds).



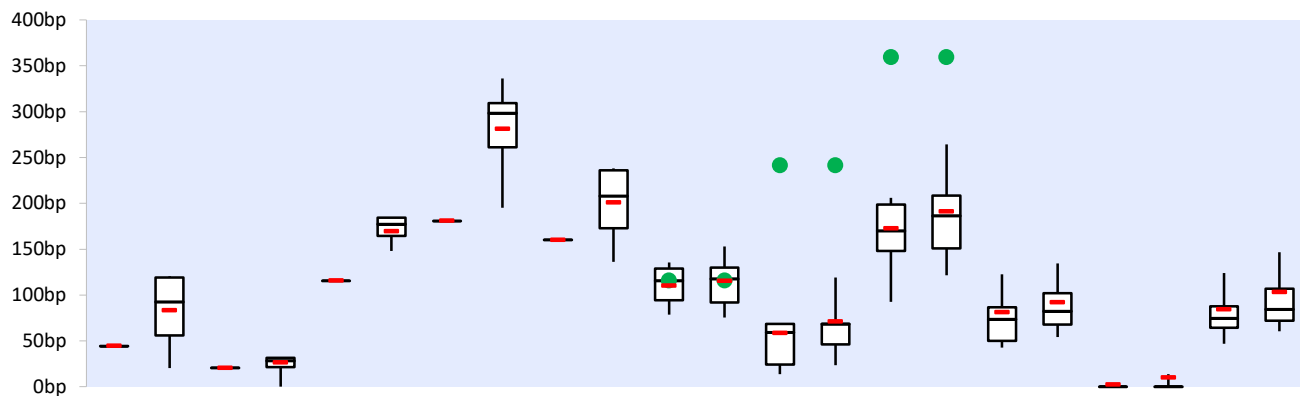
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	43.8	57.1
Performance fees*	n/a	2.0	1.9
Internal and other	<u>n/a</u>	<u>0.2</u>	<u>0.2</u>
Total	n/a	46.0	59.2

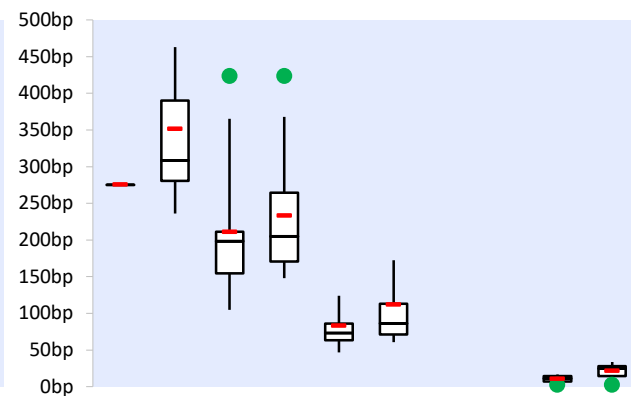
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 16.3 bps for peers (1 fund) and 14.1 bps for US participants (6 funds).

Real Estate ex-REITs

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



	Fund of Funds										Direct LP						External (not LP)					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	44.5	120.6	20.7	31.5	115.8	184.4	180.9	336.2	160.3	238.0	135.4	152.9	68.6	119.2	206.1	264.3	122.7	134.4	3.2	13.6	124.0	146.7
75th %ile	44.5	119.1	20.7	31.5	115.8	184.4	180.9	309.3	160.3	236.2	128.9	130.0	68.6	68.6	198.6	208.3	86.7	102.1	0.0	0.0	87.6	106.8
Median	44.5	92.4	20.7	28.4	115.8	177.5	180.9	298.4	160.3	208.2	115.8	117.7	59.5	68.6	170.0	186.4	73.6	82.4	0.0	0.0	74.8	84.7
25th %ile	44.5	55.9	20.7	21.2	115.8	164.7	180.9	261.1	160.3	173.0	94.2	91.9	24.1	46.2	147.9	150.9	49.9	67.9	0.0	0.0	64.2	71.9
10th %ile	44.5	20.3	20.7	0.0	115.8	148.1	180.9	195.2	160.3	136.1	78.6	75.6	13.8	23.6	92.4	121.4	42.8	54.3	0.0	0.0	46.9	60.6
— Average	44.5	83.2	20.7	26.3	115.8	169.7	180.9	281.2	160.3	200.9	110.2	115.5	58.5	71.3	172.6	191.3	81.1	92.0	2.3	10.2	84.3	103.3
Count	1	11	1	11	1	11	1	11	1	11	15	74	15	74	15	74	14	84	14	84	14	84
Avg. assets	185M	155M	185M	155M	185M	155M	185M	155M	185M	155M	1,812M	1,667M	1,812M	1,667M	1,812M	1,667M	1,920M	1,283M	1,920M	1,283M	1,920M	1,283M
South Carolina Retirement Systems Investment Commission																						
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	115.8	115.8	241.4	241.4	359.4	359.4	n/a	n/a	n/a	n/a	n/a	n/a
%ile											50%	47%	100%	97%	100%	97%						
Assets											1,411M	1,411M	1,411M	1,411M	1,411M	1,411M						

	Fund of Funds		Direct LP		External (not LP)		Oper. Sub.		Internal	
	Total ³ incl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total		Total	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
275.5	463.1	365.2	367.7	124.0	172.4			16.5	33.6	
275.5	390.3	211.2	264.4	86.3	113.0			14.6	27.9	
275.5	308.6	198.6	205.2	73.3	86.3			11.5	25.0	
275.5	280.7	154.5	170.8	63.3	71.1			7.1	14.6	
275.5	236.3	104.9	148.2	46.9	60.7			4.4	8.0	
275.5	351.7	211.2	233.4	83.2	112.0			10.7	21.5	
1	11	15	74	14	85	0	0	3	7	
122M	120M	1,636M	1,496M	1,964M	1,248M			30M	1,875M	
n/a	n/a	423.5	423.5	n/a	n/a	n/a	n/a	2.7	2.7	
		93%	95%					0%	0%	
		1,197M	1,197M					28M	28M	

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

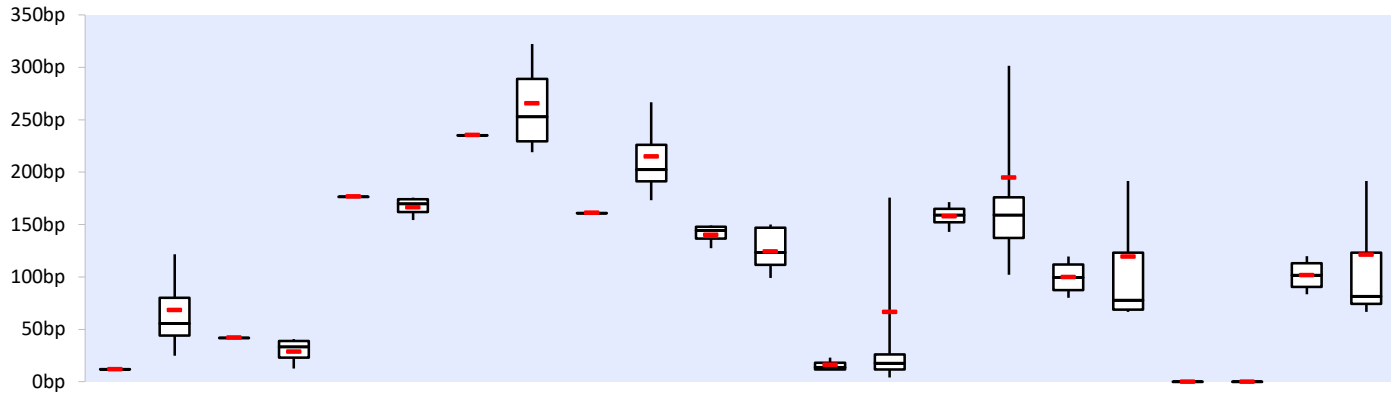
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 116 bps (on amount fees are based on) for underlying management fees and 69 bps (on NAV) for underlying performance fees were used.

3. The total cost also includes the internal cost of monitoring and selecting real estate investments. Your cost of monitoring and selecting was 2.3 bps for LPs. The peer average cost of monitoring and selecting was 0.0 bps for fund of funds, 3.9 bps for LPs and 0.9 bps for external (not LPs).

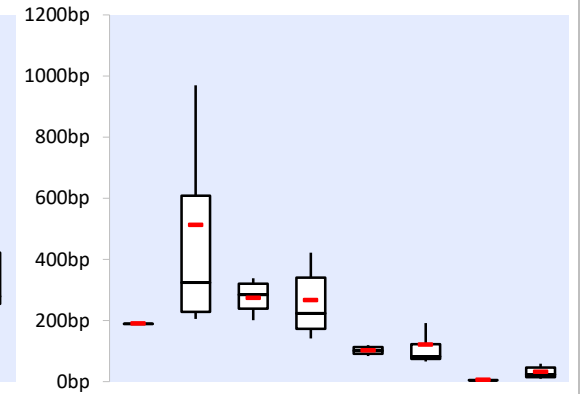
Real Estate Limited Partnerships: Fees are the weighted average management fee of 116 bps per the partnership level detail provided by you. This replaces the cost you provided on the main survey of 109 bps (15 million).

Infrastructure

Cost as a % of the amount fees are based on¹



Cost as a % of NAV

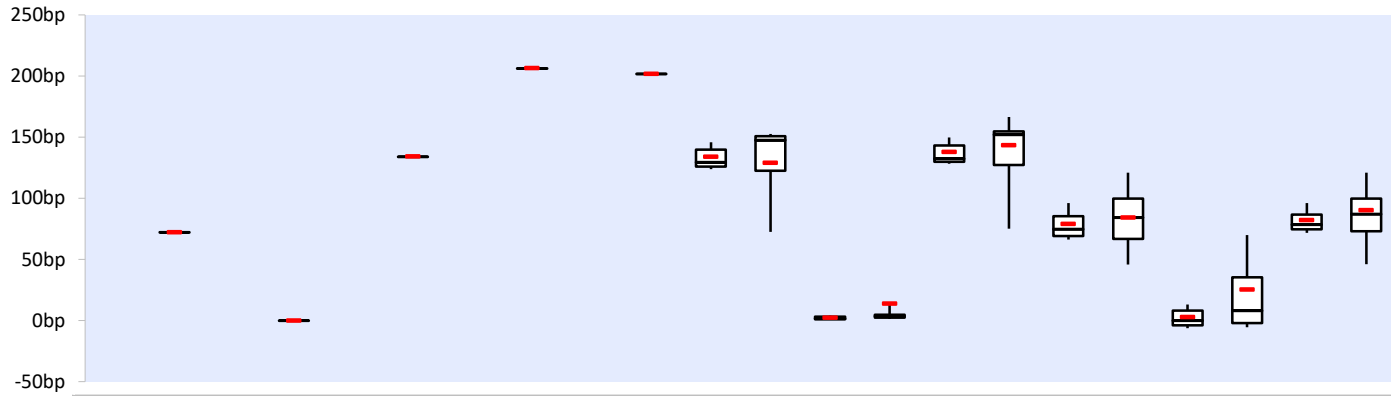


	Fund of Funds										Direct LP						External (not LP)					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	12.0	121.6	42.0	40.8	176.6	175.7	235.3	322.2	161.1	266.7	149.2	150.0	22.9	175.5	171.5	301.5	119.4	191.5	0.0	0.0	119.8	191.5
75th %ile	12.0	80.1	42.0	39.0	176.6	174.3	235.3	289.0	161.1	226.0	148.0	147.1	18.3	26.0	164.9	176.0	112.0	123.0	0.0	0.0	113.0	123.0
Median	12.0	55.8	42.0	33.3	176.6	170.0	235.3	252.9	161.1	202.5	144.5	123.4	13.8	17.8	159.3	159.3	99.7	77.9	0.0	0.0	101.7	81.6
25th %ile	12.0	44.0	42.0	23.0	176.6	162.0	235.3	229.4	161.1	191.4	136.6	111.7	11.8	11.6	152.2	137.3	87.4	68.9	0.0	0.0	90.4	74.2
10th %ile	12.0	24.8	42.0	12.8	176.6	154.2	235.3	219.0	161.1	173.2	127.6	99.1	11.6	4.1	143.0	102.1	80.0	66.8	0.0	0.0	83.6	66.8
— Average	12.0	68.2	42.0	28.7	176.6	166.4	235.3	265.5	161.1	215.0	140.1	124.2	16.2	66.5	157.8	194.8	99.7	119.3	0.0	0.0	101.7	121.1
Count	1	4	1	4	1	4	1	4	1	4	4	18	4	18	4	18	2	10	2	10	2	10
Avg. assets	111M	81M	111M	81M	111M	81M	111M	81M	111M	81M	472M	506M	472M	506M	472M	506M	268M	247M	268M	247M	268M	247M
South Carolina Retirement Systems Investment Commission																						
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																						
Assets																						

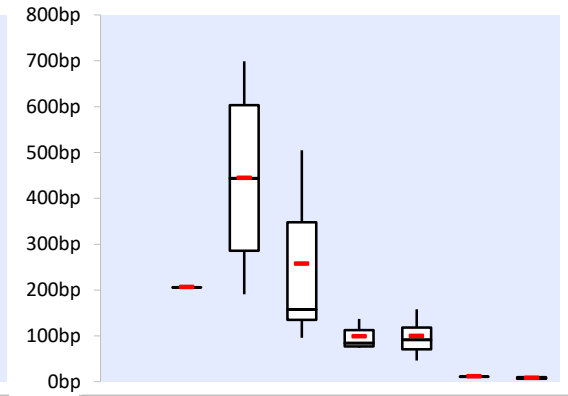
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 144 bps (on amount fees are based on) for underlying management fees and 26 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting infrastructure investments. The peer average cost of monitoring and selecting was 4.7 bps for fund of funds, 1.5 bps for LPs and 2.0 bps for external (not LPs).

Natural Resources

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



	Fund of Funds						Direct LP						External (not LP)									
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	72.2	0.0	134.2	206.5	201.8	145.9	152.7	4.1	14.1	149.9	166.5	96.0	121.0	13.1	70.1	96.0	121.0					
75th %ile	72.2	0.0	134.2	206.5	201.8	139.8	150.9	3.1	4.7	143.3	154.8	85.3	99.8	8.2	35.5	86.8	99.8					
Median	72.2	0.0	134.2	206.5	201.8	129.6	147.8	1.6	3.7	132.5	152.3	74.9	84.4	0.0	8.2	78.6	87.4					
25th %ile	72.2	0.0	134.2	206.5	201.8	126.1	122.6	1.2	2.3	129.9	127.3	69.1	66.8	-3.9	-2.0	74.6	73.1					
10th %ile	72.2	0.0	134.2	206.5	201.8	124.0	72.5	1.0	1.3	128.3	75.3	66.3	45.9	-6.3	-5.5	71.9	46.3					
— Average	72.2	0.0	134.2	206.5	201.8	134.1	128.9	2.4	13.7	138.0	143.4	79.1	84.3	2.8	25.4	82.2	90.3					
Count	0	1	0	1	0	1	0	1	0	1	3	17	3	17	3	17	6	24	3	4	6	24
Avg. assets		381M		381M		381M		381M		381M	345M	737M	345M	737M	345M	737M	676M	283M	676M	283M	676M	283M
South Carolina Retirement Systems Investment Commission																						
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																						
Assets																						

	Fund of Funds		Direct LP		External (not LP)		Internal				
	Total ³		Total ³		Total ³		Total				
	incl. perf.		incl. perf.		incl. perf.						
	Peer	US	Peer	US	Peer	US	Peer	US			
	206.5	698.6	504.9	137.0	158.2	11.6	10.9				
	206.5	603.2	347.9	112.6	118.0	11.6	9.9				
	206.5	444.2	158.1	85.0	91.8	11.6	8.2				
	206.5	285.7	134.7	77.0	70.7	11.6	6.5				
	206.5	190.7	95.9	74.1	46.3	11.6	5.5				
	206.5	444.5	257.4	98.7	100.0	11.6	8.2				
0	1	3	17	6	24	1	2				
	381M	110M	487M	491M	231M	11M	119M				
	n/a	n/a	n/a	n/a	n/a	n/a	n/a				

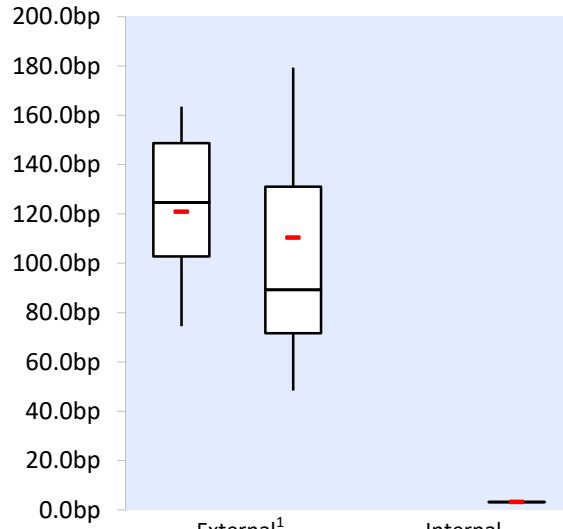
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 130 bps (on amount fees are based on) for underlying management fees and 5 bps (on NAV) for underlying performance fees were used.

3. The total cost also includes the internal cost of monitoring and selecting natural resources investments. The peer average cost of monitoring and selecting was 1.6 bps for LPs and 1.7 bps for external (not LPs).

Other Real Assets

Cost as % of NAV by implementation style



	External ¹		Internal	
	Peer	US	Peer	US
90th %ile	163.5	179.3		3.2
75th %ile	148.8	131.1		3.2
Median	124.7	89.3		3.2
25th %ile	102.8	71.7		3.2
10th %ile	74.5	48.4		3.2
— Average	120.9	110.4		3.2
Count	6	26	0	1
Avg. assets	1,185M	406M		87M
Avg. mandate	130M	83M		
South Carolina Retirement Systems Investment Commission				
● You	n/a	n/a	n/a	n/a
%ile				
Assets				
Avg. mandate				

1. Breakdown of external fees

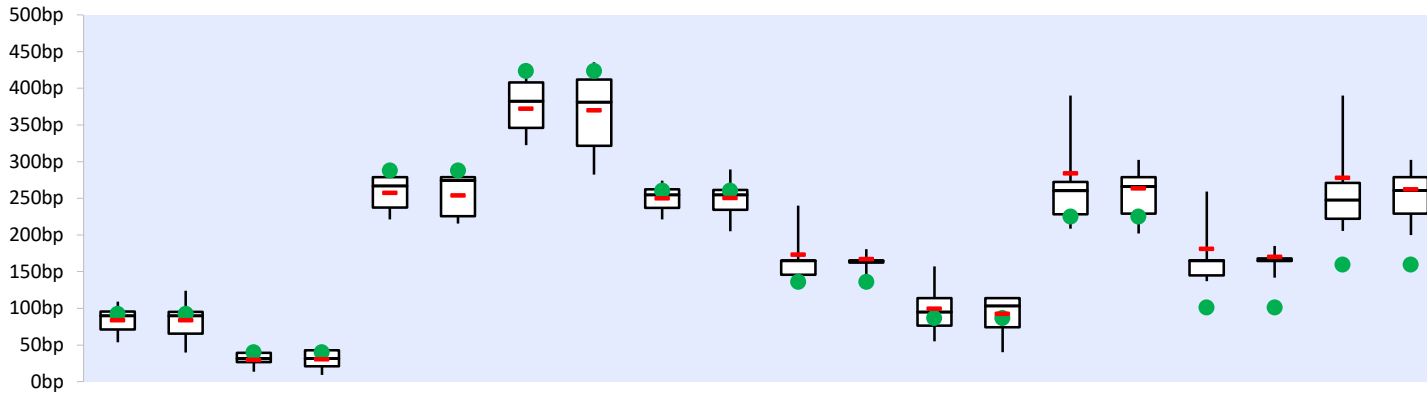
	Your Plan	Peer Average	US Average
Base fees	n/a	116.0	107.8
Internal and other	<u>n/a</u>	<u>4.9</u>	<u>2.5</u>
Total†	n/a	120.9	110.4
Performance fees*	n/a	3.6	1.6

† Total cost excludes performance fees because most participants did not provide performance fees for other real assets.

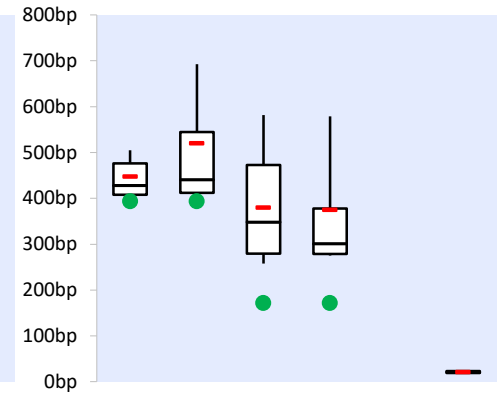
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 3.6 bps for peers (6 funds) and 1.6 bps for US participants (26 funds).

Diversified Private Equity

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



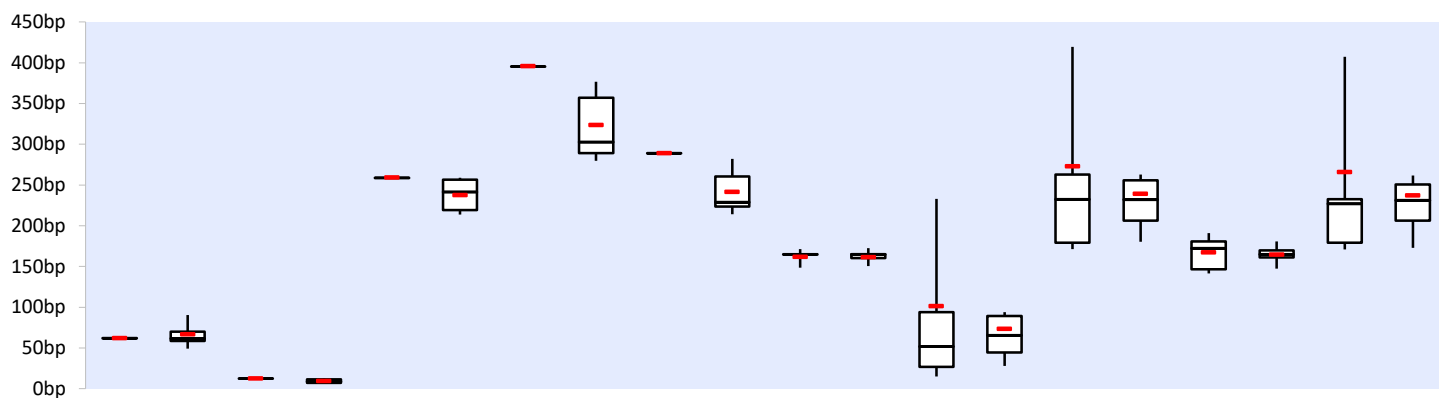
	Fund of Funds										Direct LP				Direct LP & Co-Inv. ⁴				Fund of Funds		Direct LP & Co-Inv. ⁴		Internal			
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Total ³ excl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total			
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	109.2	124.2	41.3	42.9	282.5	279.0	416.6	435.6	274.2	289.2	240.0	180.9	157.2	114.0	390.2	302.4	259.2	185.0	390.2	302.4	505.1	692.4	582.0	579.2		23.8
75th %ile	95.8	95.3	39.3	42.9	279.0	279.0	407.9	412.1	262.2	261.5	165.0	165.0	114.0	114.0	272.5	279.0	165.6	168.2	270.9	279.0	476.1	544.8	472.6	377.6		22.9
Median	90.0	90.0	31.6	32.0	267.0	274.5	382.6	381.5	255.0	255.0	165.0	165.0	95.4	103.4	260.4	266.0	165.0	165.0	247.9	261.0	427.9	440.5	348.9	301.3		21.5
25th %ile	71.4	65.4	26.9	20.9	237.3	225.6	346.1	321.8	237.0	234.2	145.8	162.5	76.5	74.1	228.4	229.0	144.9	165.0	222.2	229.0	407.9	412.0	279.3	279.0		18.9
10th %ile	53.8	39.7	13.7	9.2	221.5	215.6	322.6	282.3	221.2	205.1	136.2	142.7	55.0	40.5	208.6	202.1	137.2	142.0	205.6	199.9	399.7	392.6	257.8	275.1		17.3
— Average	83.6	83.9	29.6	30.5	257.5	253.7	371.9	369.7	249.8	250.5	173.3	166.9	99.4	92.4	283.9	263.5	180.9	170.2	277.7	262.0	447.4	520.1	379.8	374.5		20.7
Count	7	64	7	64	7	64	7	64	7	64	15	91	15	91	15	91	15	91	15	91	7	64	15	91	0	3
Avg. assets	1,049M	584M	1,049M	584M	1,049M	584M	1,049M	584M	1,049M	584M	4,619M	2,370M	4,619M	2,370M	4,619M	2,370M	4,673M	2,401M	4,673M	2,401M	847M	445M	3,180M	1,901M		252M
South Carolina Retirement Systems Investment Commission																										
● You	92.6	92.6	40.3	40.3	287.7	287.7	423.5	423.5	260.5	260.5	136.0	136.0	86.7	86.7	225.1	225.1	101.0	101.0	159.6	159.6	393.5	393.5	171.3	171.3	n/a	n/a
%ile	67%	71%	83%	57%	100%	98%	100%	84%	67%	73%	7%	6%	43%	38%	21%	22%	0%	0%	0%	0%	0%	11%	0%	0%		
Assets	660M	660M	660M	660M	660M	660M	660M	660M	660M	660M	1,391M	1,391M	1,391M	1,391M	1,391M	1,391M	2,058M	2,058M	2,058M	2,058M	710M	710M	1,918M	1,918M		

- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 165 bps (on amount fees are based on) for underlying management fees and 114 bps (on NAV) for underlying performance fees were used.
- The total cost also includes the internal cost of monitoring and selecting private equity investments. Your cost of monitoring and selecting was 2.9 bps for fund of funds and 2.4 bps for LPs. The peer average cost of monitoring and selecting was 1.2 bps for fund of funds and 11.1 bps for LPs.
- Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by 3 of your peers and 6 of the U.S. funds.

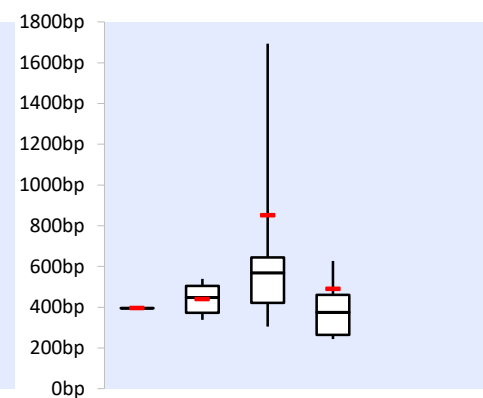
Diversified Private Equity Direct LPs: Fees are the weighted average management fee of 136 bps per the partnership level detail provided by you. This replaces the cost you provided on the main survey of 156 bps (22 million).
 Diversified Private Equity - Fund of Funds ('bottom layer'): For comparability with other styles, a default for management fees paid to the 'bottom layer' underlying managers of 165 bps (on amount fees are based on) was used.
 Diversified Private Equity - Fund of Funds ('bottom layer'): A default for performance fees paid to the 'bottom layer' underlying managers of 114 bps (on NAV) was used to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.

LBO

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



	Fund of Funds										Direct LP				Direct LP & Co-Inv. ⁴				Fund of Funds		Direct LP & Co-Inv. ⁴		Internal				
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Total excl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total				
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US			
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US			
90th %ile	62.0	90.4	12.5	12.5	259.0	259.0	395.6	376.8	289.1	282.1	171.5	172.6	232.9	94.0	419.3	262.8	191.1	180.6	407.2	261.6	395.6	538.4	1692.7	627.7			
75th %ile	62.0	70.0	12.5	11.3	259.0	256.5	395.6	356.9	289.1	260.3	165.0	165.0	94.0	89.4	262.8	255.8	180.7	169.9	232.6	250.6	395.6	504.7	644.8	461.3			
Median	62.0	61.9	12.5	9.3	259.0	241.5	395.6	303.0	289.1	229.0	165.0	165.0	51.9	65.9	232.6	232.3	172.3	165.0	227.1	231.5	395.6	447.6	569.3	376.3			
25th %ile	62.0	58.5	12.5	7.2	259.0	219.1	395.6	289.3	289.1	223.6	165.0	160.2	26.8	44.4	179.4	206.1	146.4	161.0	179.4	206.1	395.6	372.6	421.6	264.7			
10th %ile	62.0	49.0	12.5	6.5	259.0	213.9	395.6	279.6	289.1	214.0	148.7	150.5	14.9	28.2	171.5	180.2	141.6	147.3	170.8	172.9	395.6	337.7	304.9	244.7			
— Average	62.0	66.8	12.5	9.3	259.0	237.6	395.6	323.4	289.1	241.5	161.7	161.2	101.1	73.3	272.9	239.0	167.2	164.4	265.5	236.9	395.6	438.9	850.8	489.3			
Count	1	7	1	7	1	7	1	7	1	7	5	24	5	24	5	24	5	24	5	24			0	0			
Avg. assets	8M	294M	8M	294M	8M	294M	8M	294M	8M	294M	2,298M	2,753M	2,298M	2,753M	2,298M	2,753M	2,417M	2,833M	2,417M	2,833M			1,381M	1,975M			
South Carolina Retirement Systems Investment Commission																											
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																											
Assets																											

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

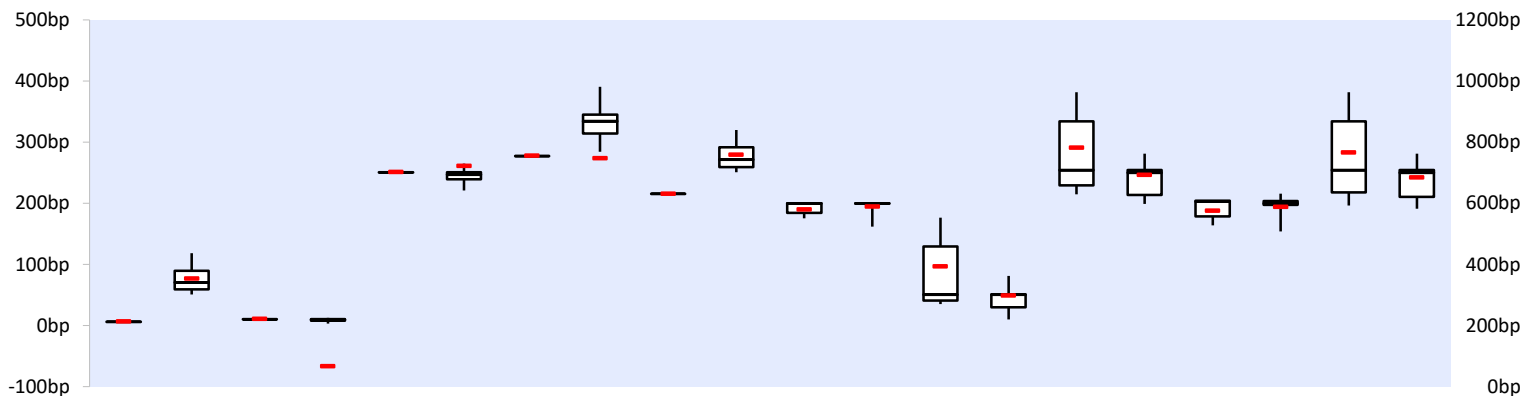
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 165 bps (on amount fees are based on) for underlying management fees and 94 bps (on NAV) for underlying performance fees were used.

3. The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 62.0 bps for fund of funds and 10.1 bps for LPs.

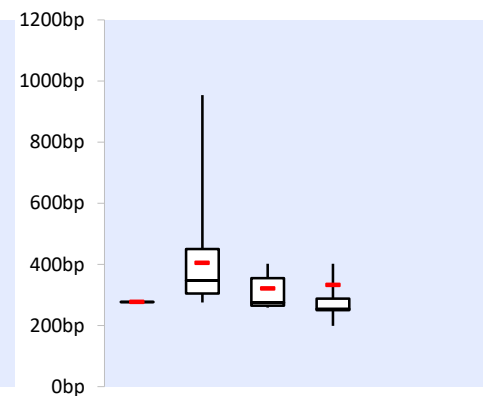
4. Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by 1 of your peers and 1 of the U.S. funds.

Venture Capital

Cost as a % of the amount fees are based on¹



Cost as a % of NAV

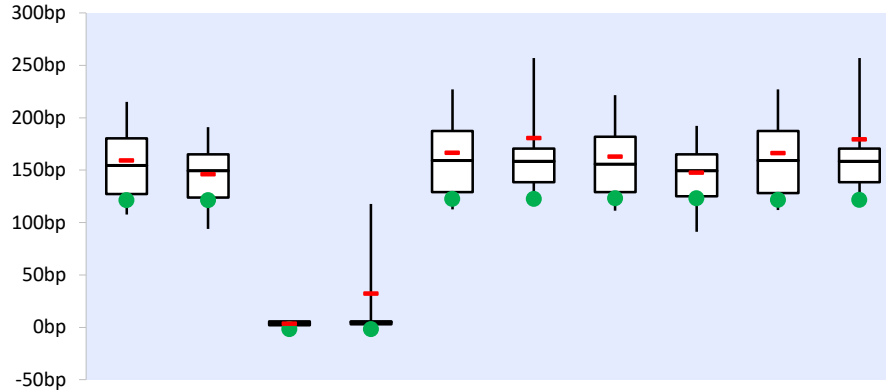


	Fund of Funds										Direct LP				Direct LP & Co-Inv. ⁴				Fund of Funds		Direct LP & Co-Inv. ⁴		Internal				
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Total ³ excl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total				
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	
90th %ile	6.7	118.4	10.8	12.7	251.1	265.2	277.7	390.7	215.8	319.9	200.0	200.0	176.5	81.1	381.7	281.1	205.1	215.6	381.7	281.1	277.7	953.8	402.0	402.7			
75th %ile	6.7	89.8	10.8	10.8	251.1	251.1	277.7	345.2	215.8	291.8	200.0	200.0	129.5	51.1	334.0	254.4	204.5	203.6	334.0	254.4	277.7	450.1	354.8	288.8			
Median	6.7	71.0	10.8	10.0	251.1	247.2	277.7	334.6	215.8	271.9	200.0	200.0	51.1	51.1	254.5	250.5	203.4	200.0	254.5	250.5	277.7	347.6	276.0	255.0			
25th %ile	6.7	59.1	10.8	8.1	251.1	239.2	277.7	314.1	215.8	259.2	184.6	199.5	41.2	30.2	229.7	213.8	178.8	197.4	218.1	210.7	277.7	304.6	265.3	251.1			
10th %ile	6.7	50.9	10.8	3.2	251.1	221.0	277.7	284.3	215.8	251.1	175.4	162.0	35.3	10.2	214.8	199.3	164.0	154.1	196.3	191.0	277.7	275.2	258.8	199.4			
— Average	6.7	77.0	10.8	-66.6	251.1	260.9	277.7	273.7	215.8	279.4	189.7	194.5	96.8	48.9	291.0	246.3	187.7	193.9	283.2	242.4	277.7	404.9	321.3	332.7			
Count	1	13	1	13	1	13	1	13	1	13	3	30	3	30	3	30	3	30	3	30	1	13	3	30	0	0	
Avg. assets	144M	378M	144M	378M	144M	378M	144M	378M	144M	378M	387M	371M	387M	371M	387M	371M	398M	373M	398M	373M	144M	384M	360M	295M			
South Carolina Retirement Systems Investment Commission																											
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																											
Assets																											

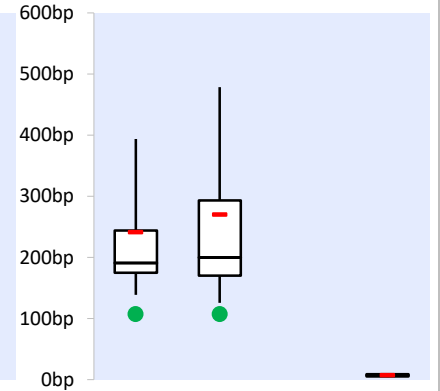
- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 200 bps (on amount fees are based on) for underlying management fees and 51 bps (on NAV) for underlying performance fees were used.
- The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 9.1 bps for fund of funds and 4.5 bps for LPs.
- Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by none of your peers and none of the U.S. funds.

Private Debt Limited Partnerships

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



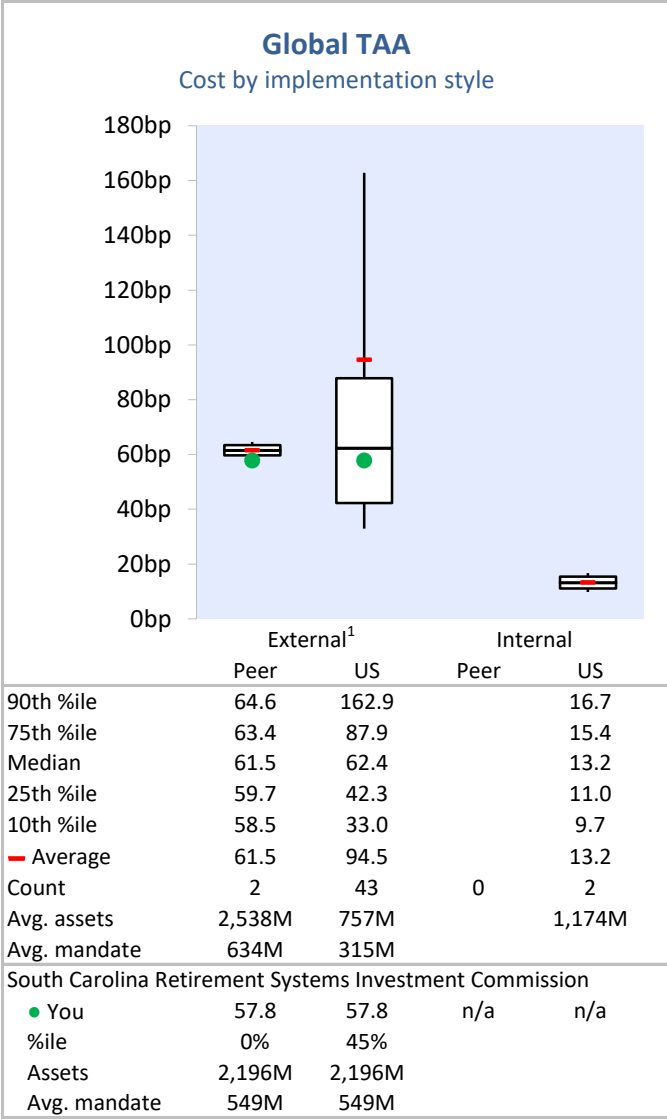
	Direct LP						Direct LP & Co-Inv. ³				Direct LP & Co-Inv. ³		Internal	
	Mgmt fees		Perf. fees		Total ² incl. perf.		Total excl. perf.		Total ² incl. perf.		Total ² incl. perf.		Total	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	215.3	191.1	5.5	117.7	227.1	257.1	221.6	192.2	227.1	257.1	393.6	478.7		10.0
75th %ile	180.4	165.0	5.5	5.5	187.3	170.5	181.8	165.0	187.3	170.5	244.2	293.6		9.0
Median	154.7	149.6	4.3	5.0	159.4	158.6	155.8	149.6	159.4	158.6	191.0	200.2		7.4
25th %ile	127.1	124.0	1.9	2.9	129.0	138.4	129.0	124.9	128.1	138.4	175.2	170.5		5.4
10th %ile	107.7	93.8	-0.1	1.5	112.6	119.3	111.4	91.2	112.0	118.6	138.8	125.7		4.1
— Average	159.2	145.9	3.2	32.0	166.4	180.4	162.9	147.4	166.2	179.4	241.1	269.9		7.1
Count	6	27	6	27	6	27	6	27	6	27	6	27	0	3
Avg. assets	1,061M	537M	1,061M	537M	1,061M	537M								145M
South Carolina Retirement Systems Investment Commission														
● You	121.3	121.3	-1.7	-1.7	122.6	122.6	123.2	123.2	121.5	121.5	107.0	107.0	n/a	n/a
%ile	20%	23%	0%	4%	20%	12%	20%	23%	20%	12%	0%	0%		
Assets	1,416M	1,416M	1,416M	1,416M	1,416M	1,416M								

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

2. The total cost also includes the internal cost of monitoring and selecting private equity investments. Your cost of monitoring and selecting was 3.0 bps for LPs. The peer average cost of monitoring and selecting was 3.9 bps for LPs.

3. Co-investment is included with direct LPs in CEM's benchmark cost analysis because it reduces the cost of investing in direct LPs. Co-investment is done by 1 of your peers and 2 of the U.S. funds.

Private Debt Limited Partnerships: Fees are the weighted average management fee of 121 bps per the partnership level detail provided by you. This replaces the cost you



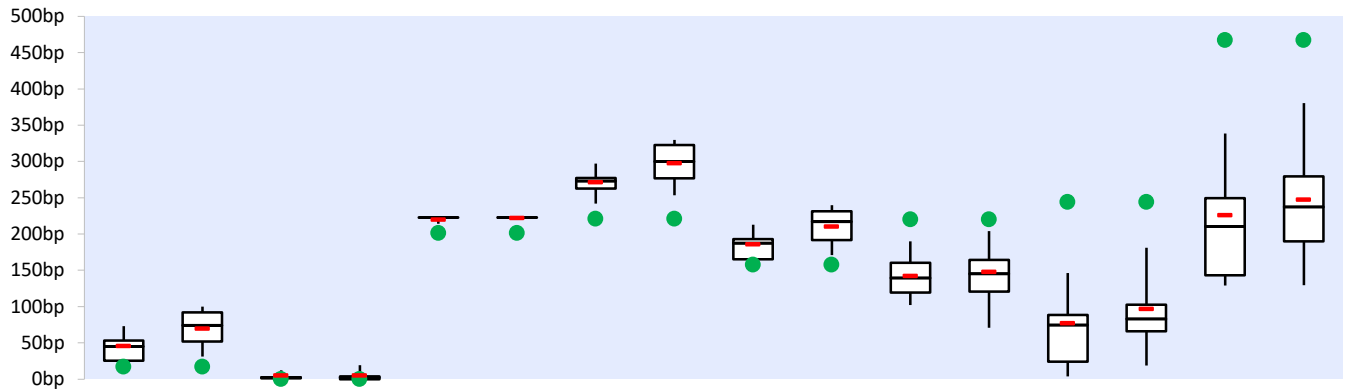
1. Breakdown of External fees

	Your Plan	Peer Average	US Average
Base fees	55.1	53.2	72.1
Performance fees*	0.0	6.6	21.5
Internal and other	<u>2.7</u>	<u>1.8</u>	<u>1.0</u>
Total	57.8	61.5	94.5

* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 6.6 bps for peers (2 funds) and 30.8 bps for US participants (30 funds).

Hedge Funds

Cost by implementation style

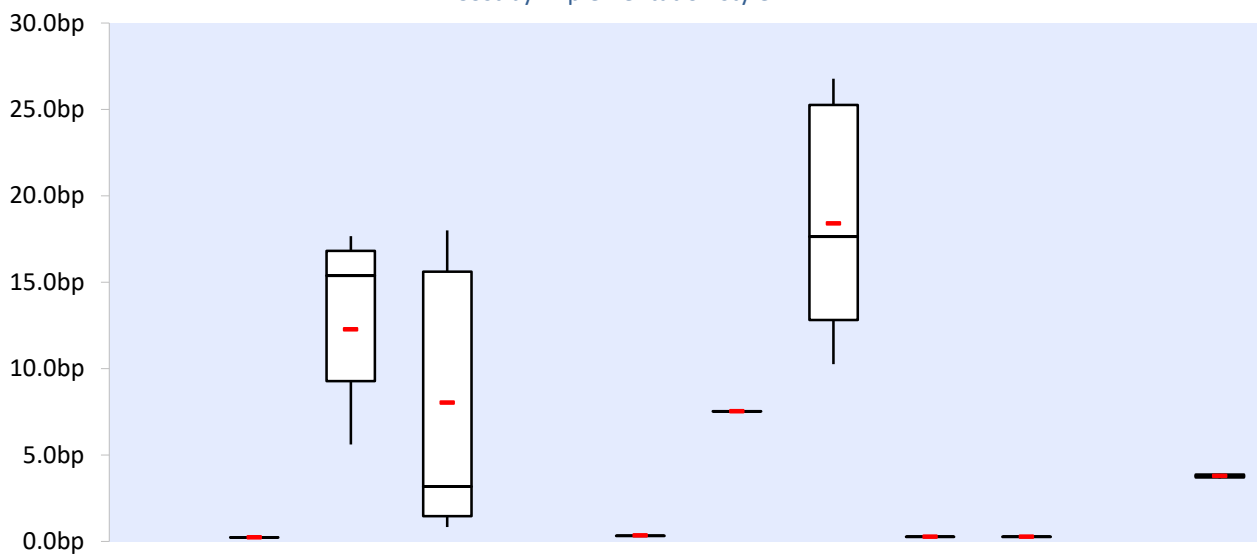


	Fund of Funds										External direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ¹		Total ² incl. perf.		Total ² excl. perf.		Mgmt fees		Perf. fees		Total ² incl. perf.	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	73.1	100.0	12.1	19.2	222.9	222.9	296.9	329.7	212.8	239.7	189.9	204.2	146.1	181.1	338.5	380.4
75th %ile	53.3	91.8	2.4	3.6	222.9	222.9	277.3	322.6	193.0	231.5	160.5	164.5	88.4	102.6	249.4	279.6
Median	45.4	74.3	2.4	2.4	222.9	222.9	273.1	300.1	187.6	217.1	139.7	145.4	74.8	83.2	210.7	237.4
25th %ile	25.4	51.9	1.2	0.0	222.9	222.9	262.9	277.0	165.1	191.6	119.2	120.7	24.2	66.0	143.2	190.0
10th %ile	18.9	31.3	0.0	0.0	214.3	222.9	242.1	253.6	159.0	171.0	101.9	70.7	4.0	18.7	129.2	129.3
— Average	45.7	69.8	5.2	5.2	219.8	221.8	271.4	297.7	185.9	210.4	142.2	148.0	77.1	96.7	226.1	247.4
Count	7	62	7	62	7	62	7	62	7	62	8	66	8	66	8	66
Avg. assets	1,510M	614M	1,510M	614M	1,510M	614M	1,510M	614M	1,510M	614M	3,127M	1,727M	3,127M	1,727M	3,127M	1,727M
South Carolina Retirement Systems Investment Commission																
● You	17.1	17.1	0.0	0.0	201.5	201.5	221.2	221.2	157.9	157.9	220.3	220.3	244.4	244.4	467.3	467.3
%ile	0%	3%	0%	0%	0%	3%	0%	0%	0%	3%	100%	94%	100%	95%	100%	95%
Assets	2,188M	2,188M	2,188M	2,188M	2,188M	2,188M	2,188M	2,188M	2,188M	2,188M	1,266M	1,266M	1,266M	1,266M	1,266M	1,266M

1. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 140 bps (on NAV) for underlying management fees and 83 bps (on NAV) for underlying performance fees were used.

2. The total cost also includes the internal cost of monitoring and selecting hedge fund investments. Your cost of monitoring and selecting was 2.7 bps for fund of funds and 2.7 bps for external direct. The peer average cost of monitoring and selecting was 0.7 bps for fund of funds and 6.7 bps for external direct.

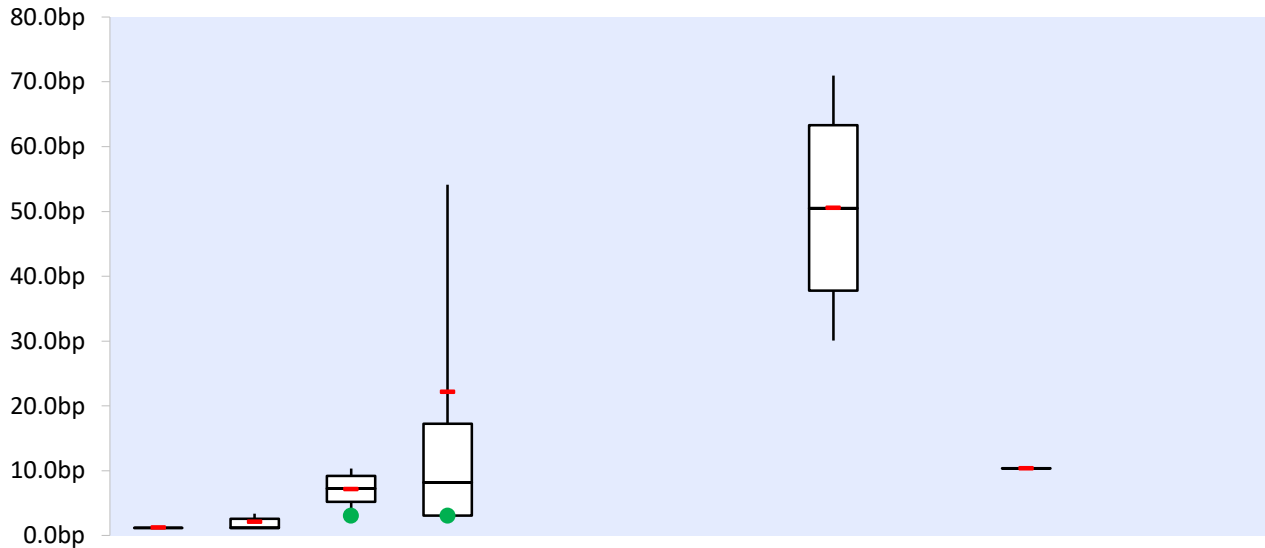
Overlays: currency, duration Cost by implementation style



	<u>Currency Hedge</u>				<u>Discretionary Currency</u>				<u>Duration Management</u>			
	<u>Internal</u>		<u>External</u>		<u>Internal</u>		<u>External</u>		<u>Internal</u>		<u>External</u>	
	<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile		0.2	17.7	18.0		0.3	7.5	26.8	0.3	0.3		3.9
75th %ile		0.2	16.8	15.6		0.3	7.5	25.3	0.3	0.3		3.9
Median		0.2	15.4	3.2		0.3	7.5	17.6	0.3	0.3		3.8
25th %ile		0.2	9.3	1.5		0.3	7.5	12.8	0.3	0.3		3.7
10th %ile		0.2	5.6	0.8		0.3	7.5	10.3	0.3	0.3		3.7
— Average		0.2	12.3	8.0		0.3	7.5	18.4	0.3	0.3		3.8
Count	0	1	3	13	0	1	1	7	1	1	0	3
Avg. notional		5,122M	3,337M	1,650M		23,643M	2,015M	2,154M	1,825M	1,825M		1,151M
South Carolina Retirement Systems Investment Commission												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile												
Notional												

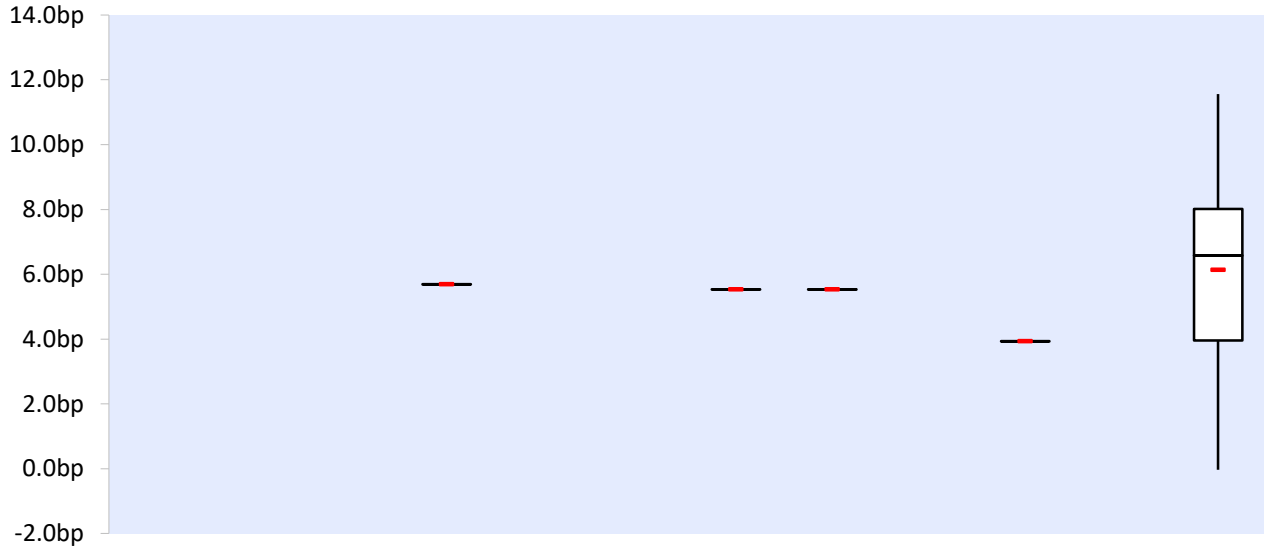
Overlays: passive beta/rebalancing, global TAA, policy tilt TAA

Cost by implementation style



	Passive Beta/Rebalancing				Global TAA				Policy Tilt TAA			
	Internal		External		Internal		External		Internal		External	
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	1.2	3.4	10.3	54.1				71.0		10.4		
75th %ile	1.2	2.6	9.2	17.2				63.3		10.4		
Median	1.2	1.2	7.3	8.2				50.5		10.4		
25th %ile	1.2	1.2	5.2	3.0				37.8		10.4		
10th %ile	1.2	1.2	3.9	2.3				30.1		10.4		
— Average	1.2	2.1	7.2	22.1				50.5		10.4		
Count	1	3	3	24	0	0	0	2	0	1	0	0
Avg. notional	759M	2,150M	1,718M	1,372M				425M		212M		
South Carolina Retirement Systems Investment Commission												
● You	n/a	n/a	3.1	3.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile			0%	26%								
Notional			3,394M	3,394M								

Overlays: commodity, long/short, other
Cost by implementation style



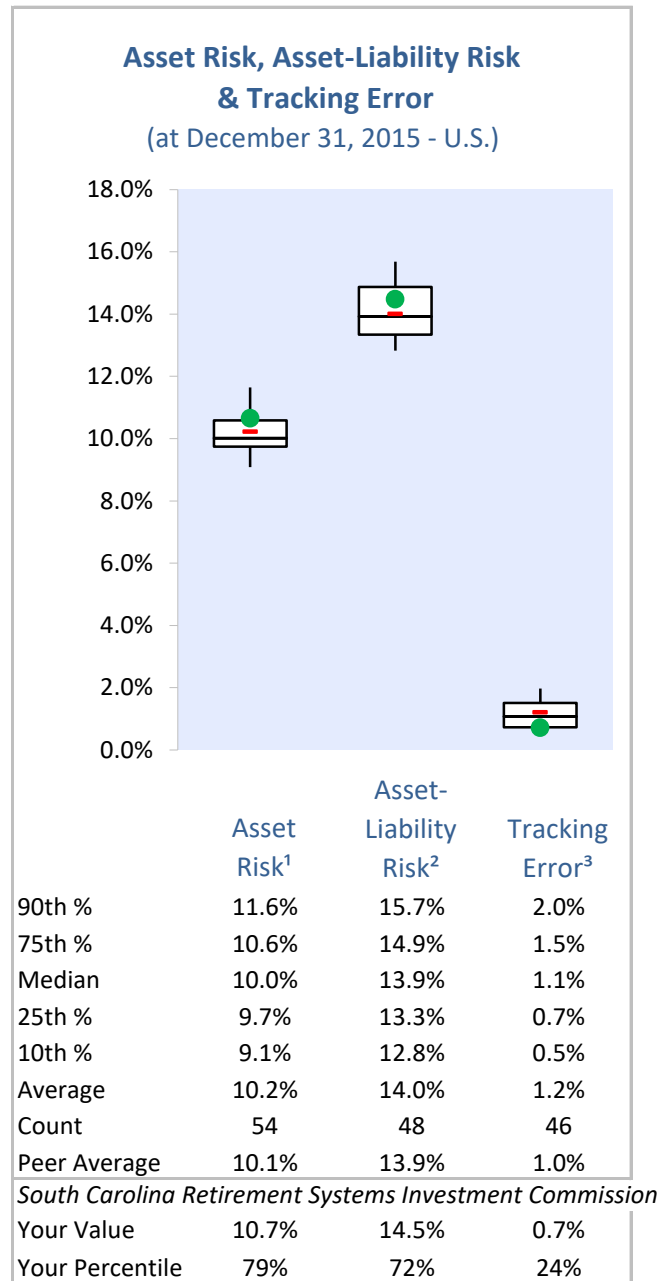
	<u>Commodity</u>				<u>Long/ Short</u>				<u>Other</u>			
	<u>Internal</u>		<u>External</u>		<u>Internal</u>		<u>External</u>		<u>Internal</u>		<u>External</u>	
	<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>		<u>% of notional</u>	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile				5.7			5.5	5.5		3.9		11.6
75th %ile				5.7			5.5	5.5		3.9		8.0
Median				5.7			5.5	5.5		3.9		6.6
25th %ile				5.7			5.5	5.5		3.9		4.0
10th %ile				5.7			5.5	5.5		3.9		0.0
— Average				5.7			5.5	5.5		3.9		6.1
Count	0	0	0	1	0	0	1	1	0	1	0	10
Avg. notional				1,076M			500M	500M		1,234M		671M
South Carolina Retirement Systems Investment Commission												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile												
Notional												

7

Risk

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Comparison of your risk levels to the U.S. Public universe



1 Asset risk is the expected volatility of your policy return. It is based on the historical variance of, and covariance between, the asset classes in your asset mix policy. It is expressed as an annual standard deviation.

2 Asset-liability risk is the expected volatility of surplus returns. Surplus returns are the changes in a plan's marked-to-market funded status caused by market factors. Asset liability risk is a function of the volatility of policy returns (asset risk), the volatility of surplus returns (surplus risk) and the correlation between policy returns and surplus returns.

3 Tracking error is the risk of active management. It equals the standard deviation of your annual net value added over 5-years.

Calculation of asset risk

Before considering the benefit of diversification, the weighted average risk of the asset classes in your asset mix policy was 12.7%.

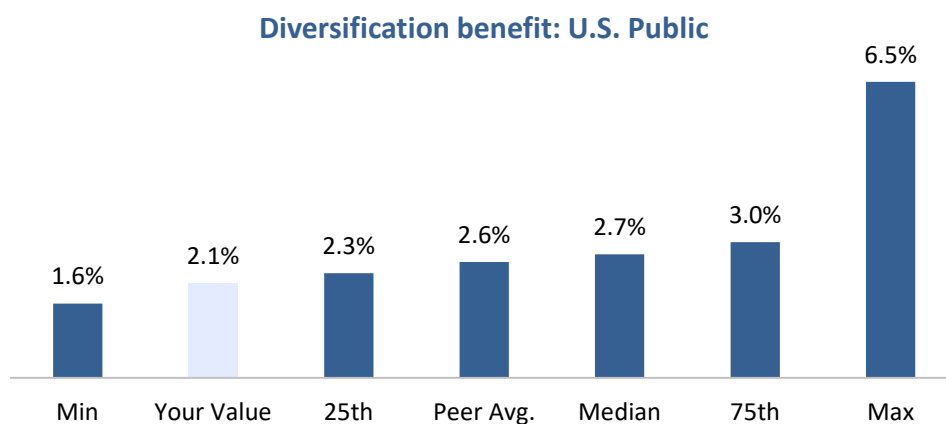
Calculation of your weighted asset class risk

Asset Class	Policy weight (A)	Risk ¹ (B)	Weighted risk (A X B)
Stock: Global	34.0%	14%	4.9%
Bonds: U.S.	10.0%	6%	0.6%
Bonds: Emerging	5.0%	13%	0.7%
Bonds: High Yield	5.0%	9%	0.4%
Bonds: Cash	2.0%	1%	0.0%
Commodities	3.0%	19%	0.6%
Real Estate	5.0%	12%	0.6%
Hedge Fund	10.0%	6%	0.6%
Funded Global TAA	10.0%	6%	0.6%
Private Equity: Diversified or All	9.0%	23%	2.1%
Private Equity: Other Non-Listed	7.0%	23%	1.6%
Weighted Total			12.7%

¹ Risk is the standard deviation of returns for the asset class based on standard benchmarks used by CEM. See page 15 of this section for benchmark details.

Reduction in asset risk due to diversification

Your asset risk is less than your weighted asset risk because of the benefit of diversification. Diversification reduces risk because when one asset class has a negative return, it might be offset by another asset class with a positive return. The lower the correlation between your policy asset classes, the greater the diversification benefit. The correlation between your policy asset classes is shown on page 17 of this section.



The benefit of diversification equals weighted asset risk minus asset risk.

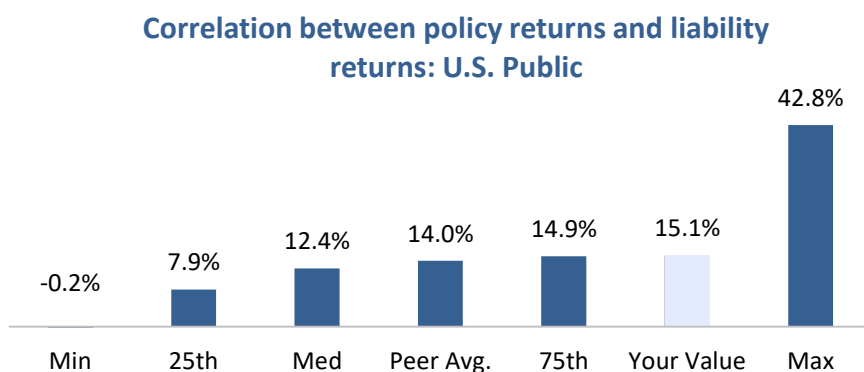
Components of asset risk

	You	Peer median*	Peer average	U.S. Public median*	U.S. Public average
Weighted asset risk	12.7%	12.7%	12.6%	12.9%	12.9%
Benefit of diversification	2.1%	2.4%	2.6%	2.7%	2.7%
Asset risk	10.7%	9.9%	10.1%	10.0%	10.2%

* Comparisons of components of asset risk should be interpreted with caution because it is not always possible to separate the diversification benefit from the weighted asset risk. For example, global stock as an asset class includes the diversification benefit of its geographic components within its asset risk.

Asset-liability risk

Your plan would not have any asset-liability risk if your assets perfectly matched your liabilities. If they matched, then the correlation between asset returns and liability returns would be 100%. If liabilities increased, assets would increase by a like amount (and vice versa). Thus higher correlation between your asset returns and liability returns reduces your asset-liability risk.



In addition to the correlation between asset returns and liability returns, asset-liability risk is also a function of the volatility of asset returns (asset risk) and the volatility of liability returns¹ (liability risk = $\sqrt{R_A^2 + R_L^2 - 2\rho_{AL}R_AR_L}$).

Components of asset-liability risk

	You	Peer median	Peer average	U.S. Public median	U.S. Public average
Asset risk (R_A)	10.7%	9.9%	10.1%	10.0%	10.2%
Liability risk (R_L)	11.5%	11.1%	10.8%	11.1%	10.9%
Correlation between policy returns and liability returns (ρ_{AL})	15.1%	13.9%	14.0%	12.4%	12.8%
Asset-liability risk	14.5%	14.0%	13.9%	13.9%	14.0%

1. Liability returns equal the changes in your marked-to-market liabilities caused by market factors. These are assumed to equal the return on your liability proxy portfolio (see next page).

Liability proxy portfolio

Your liability proxy portfolio is the portfolio of nominal and inflation-indexed bonds that best matches the sensitivity of your liabilities to changes in real and nominal interest rates.

Comparisons of liability proxy portfolio

	Your fund		Peer average		U.S. Public	
	Duration	% of Assets	Duration	% of Assets	Duration	% of Assets
Inflation Indexed Bonds	13.2	95%	12.1	70%	12.5	64%
Nominal Bonds	10.0	5%	12.7	30%	13.3	36%
Total		100%		100%		100%

Your liability proxy portfolio is a tool that:

- a) Helps you understand how the unsmoothed market value of your liabilities responds to changes in real and nominal interest rates.
- b) Helps you make better asset mix policy decisions by providing an understanding of which assets will decrease your asset-liability risk (i.e., assets that behave similarly to the neutral asset mix) and which assets will increase your risk.
- c) Helps you understand how your liabilities are different from your peers. Differences in liabilities mean that the same asset will have different risk / reward characteristics for different funds. For example, the risk of a nominal bond for a fund with 100% inflation sensitivity is much higher than it is for a fund with less than 100% inflation sensitivity.

Asset-liability risk could theoretically be eliminated if your actual asset mix matched the liability proxy portfolio. However, we recognize that this is neither an option nor a goal for most funds because:

- The supply of inflation-indexed assets is limited. These assets are required to match the obligations of pension liabilities.
- This low-risk strategy also has a lower expected return, implying either higher future funding costs or lower future benefits.

The methodology and formula used to determine your liability proxy portfolio are provided on pages 11-13 of this section.

Liability risk

Differences in liability risk are due to differences in inflation sensitivity and member demographics.

A plan's inflation sensitivity depends on:

a) The type of plan

Final and highest average plans have more inflation sensitivity than career average plans. Conversely, career average plans have more inflation sensitivity than flat benefit plans. Your plan type is final average.

Plan type	# of plans	% of Total
Flat Benefit	1	2%
Career Average	-	0%
Final/Highest/Best Avg	51	93%
Other	3	5%
Total	55	100%

b) Contractual inflation protection for retired members

Your retired members get 100% contractual inflation protection. Your retiree inflation protection is subject to a cap of For SCRS and PORS, eligible retirees and surviving annuitants will receive an annual increase in their pension benefit equal to the lesser of 1% of their retirement allowance or \$500 per

Retiree inflation protection	# of plans		
	Corporate	Public	Other
0%	119	23	6
>0% and <50%	3	2	0
50%	0	2	0
>50% and <100%	2	7	0
100%	99	55	2
Total	223	89	8

c) Member demographics

Member demographics impacts both inflation sensitivity and the duration of plan liabilities. The survey asks for your plan's percentage of liabilities that relate to retired members from your actuarial reports. If you did not provide this number, then it is estimated (see page 12 of this section). Your percentage of liabilities that relate to retired members was 65%.

Membership Breakdown	Your fund	Peer Average	U.S. Average
	Active Members	62%	58%
Retired Members	38%	42%	43%
Total	100%	100%	100%

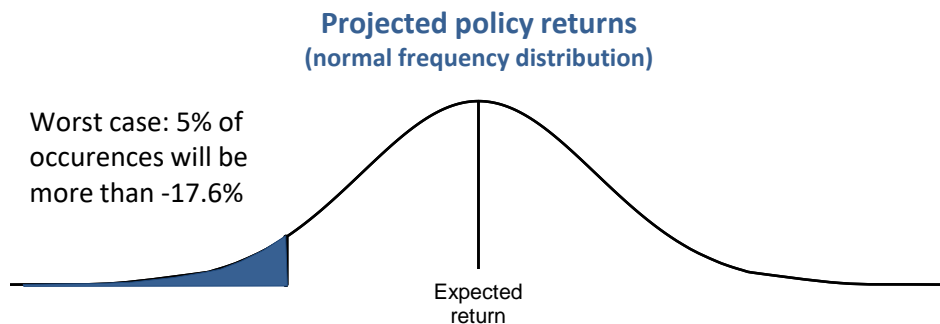
Projected worst case scenarios

We can convert your asset risk and asset-liability risk into worst case outcomes for policy returns and funded status if we make the following simplifying assumptions:

- Returns are normally distributed.
- Historic return volatility and correlations will continue in the future.
- No change in your policy asset mix or liabilities.

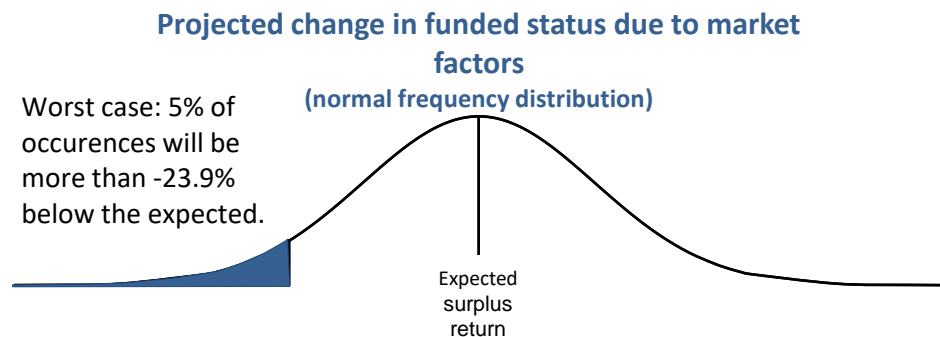
a) Worst case policy returns

Every year there is a 5% probability that your policy return will be worse than your expected policy return by more than -17.6% (-17.6% equals $-1.65 \times$ your asset risk of 10.7%). -17.6% is the starting point of worst case outcomes. They could be much worse.



b) Worst case impact on funded status

Every year, there is a 5% probability that changes in your mark-to-market funded status caused by market factors ("Surplus Returns") will be worse than expected by more than -23.9%. (-23.9% equals $-1.65 \times$ your asset-liability risk of 14.5%). -23.9% is the starting point of worst case outcomes. They could be much worse.



Historic worst case scenarios during the past 5 years

a) Historic worst case policy returns

During the past 5 years, your lowest policy return was -1.1% in 2015.

Historic policy returns - U.S.

	2015	2014	2013	2012	2011
90th %	1.5%	8.5%	18.3%	13.8%	3.7%
75th %	0.9%	7.4%	17.1%	13.2%	2.7%
Median	0.1%	6.5%	15.5%	12.6%	1.2%
25th %	-0.7%	5.6%	13.6%	11.8%	0.4%
10th %	-1.4%	4.8%	11.4%	10.9%	-0.2%
Average	0.1%	6.5%	15.1%	12.5%	1.5%
Count	57	63	62	66	67
Peer Avg	0.6%	6.8%	14.7%	12.1%	1.7%
Your Value	-1.1%	4.8%	10.2%	10.7%	0.5%

b) Historic worst case changes in funded status

During the past 5 years, your worst change in marked-to-market funded status caused by market factors ("Surplus Returns") was -18.5% in 2011.

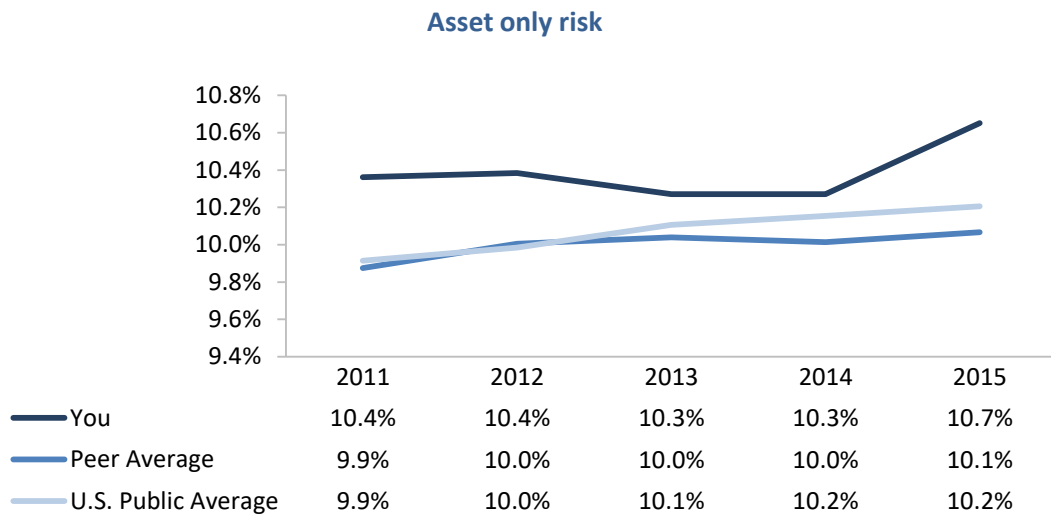
Historic changes in funded status caused by market factors - U.S.

	2015	2014	2013	2012	2011
90th %	4.7%	-4.9%	36.8%	10.5%	-17.2%
75th %	3.6%	-6.1%	33.5%	9.7%	-18.7%
Median	2.5%	-7.6%	31.1%	7.7%	-20.1%
25th %	1.0%	-9.5%	27.4%	5.8%	-21.3%
10th %	-0.2%	-11.2%	25.7%	5.0%	-23.2%
Average	2.2%	-7.9%	30.8%	7.8%	-20.1%
Count	50	53	52	58	55
Peer Avg	2.8%	-7.2%	31.3%	7.4%	-19.7%
Your Value	2.6%	-6.7%	28.2%	5.5%	-18.5%

Risk Trends - 2011 to 2015

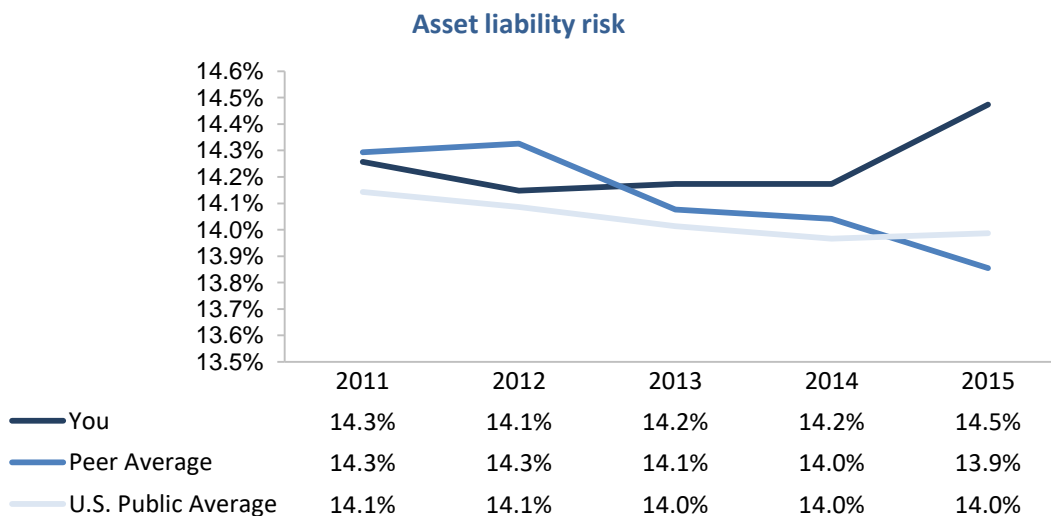
a) Asset risk trends

Asset risk will only change if policy asset mix changes. Between 2011 and 2015 the asset risk for your fund increased from 10.4% to 10.7%.



b) Asset-liability risk trends

Asset-liability risk will change if policy asset mix changes, or if the nature of your liabilities changes. Between 2011 and 2015 the asset-liability risk for your fund increased from 14.3% to 14.5%.



Appendix A - Methodology and formula used to calculate liability return and liability proxy portfolio

Risk calculation descriptions

CEM would like to recognize and thank Malcolm Hamilton previously of Mercer for providing the key formulas used to calculate liability returns. We would also like to thank Stijn Oude Brunink previously of ORTEC Consultants in the Netherlands who provided the proofs and made adjustments to Mr. Hamilton's formulas. These formulas and this section use several simplifying assumptions that could cause your fund's individual results to differ from actual. We encourage you to pursue more precise calculations of your liability returns.

Step 1 - Inflation sensitivity

The first step in estimating your liability return is to determine your liabilities' inflation sensitivity. The degree of total inflation sensitivity determines the proportion of inflation-indexed bonds versus nominal bonds that belong in your liability proxy portfolio.

Total inflation sensitivity

- = Inflation protection retirees X % liabilities relating to retirees
- + Inflation protection for active members X (1 - % liabilities relating to retirees)

Inflation protection for retirees

On the survey we asked for the amount of contractual inflation protection provided to retirees.

Your response was 100% which compares to an average of 56% for your peers and 22% for U.S. funds.

Ad hoc inflation protection is not considered because it is not a contractual liability. However, many funds are managed to maintain historic levels of ad hoc increases. If this is the case with your fund, then your inflation protection may have been understated. Please ask for CEM to make that adjustment for you.

Inflation protection for active members

We inferred inflation protection for your active members to be 86% based on your plan type of Final Average.

Final and highest average plans have less than 100% inflation protection because during the averaging period, inflation protection is only 50%, not 100%. This is a natural function of taking an average of more than one year's earnings. Thus the weighted average inflation protection for active members in a 5-year final average plan is around 86% and in a 3-year average plan, 93%. These weighted averages are lower than intuition might suggest because the active members associated with the largest liabilities (i.e., the highest weights) are the ones closest to retirement.

Flat Benefit and Career Average plans are assumed to have 77% inflation protection. Contractually, flat benefit plans have zero inflation protection but negotiated increases tend to closely track inflation. However, just as with Final Average plans, inflation protection between negotiated increases is less than full inflation.

Step 2 - Proportion of liabilities relating to retirees

The second step is to determine how much of your liabilities relate to your retirees versus your active members. This number is used to weight the liability proxy portfolio's obligations to retirees and active members.

This ratio depends on several factors including the ratio of retired and active members, member demographics and the inflation sensitivity of the promise made to these two member groups. Deferred (also known as inactive) members are ignored because even if they are large in number they tend to represent only a very small fraction of the future liability.

Equivalency Table

Retirees as a % of Active + Retirees	% Liabilities Relating to Retirees
0%	0%
10%	22%
20%	35%
30%	45%
40%	55%
50%	63%
60%	71%
70%	79%
80%	86%
90%	93%
100%	100%

Most funds have provided the actual ratio from their actuarial reports (as requested on the survey). If the ratio is not provided, it is estimated based on the "Equivalency" table above.

Your percentage of liabilities that relates to retirees was 65%. The percentage of liability that relates to retirees is higher than the retirees as a percentage of active and retired members because retirees have accrued a higher benefit.

Step 3 - Determining your duration relative to real and nominal yields

Duration enables you to determine the change in value of a cash flow, such as your pension liabilities, caused by a change in interest rates. The relationship between duration and cost of your pension liability is as follows.

Percentage change in pension liability cost

$$= (- \text{Modified duration relative to change in real yields} \times \text{change in real yields}) \\ + (- \text{Modified duration relative to change in nominal yields} \times \text{change in nominal yields})$$

The modified duration of your liabilities with respect to changes in real and nominal yields is determined by the following two formulas.

Modified duration relative to changes in real yields

$$= 10 \times [\text{Inflation protection for active members} \times (1 - \% \text{ of liabilities relating to retirees}) \\ + \text{Inflation protection for retirees} \times (1 - \% \text{ of liabilities relating to retirees}/4) \\ + (\text{Inflation protection for retirees}/10) \times (1.5 - 0.5 \times \% \text{ liabilities relating to retirees})]$$

Modified duration relative to changes in nominal yields

$$= 10 \times [(2 - 5 \times \% \text{ Liabilities relating to retirees}/4 - \text{inflation protection for actives} \times \\ (1 - \% \text{ liabilities relating to retirees}) \\ - (\text{Inflation protection for retirees}/10) \times (8.5 - 2 \times \% \text{ liabilities relating to retirees}) \\ - (\text{Inflation protection for retirees}/10) \times (1.5 - 0.5 \times \% \text{ liabilities relating to retirees})]$$

Step 4 - Determining the liability proxy portfolio

Knowing the sensitivity of your pension liabilities to real and nominal interest rates enables you to construct a liability proxy portfolio using a combination of nominal bonds and inflation-indexed bonds.

Duration of inflation-indexed bonds in your liability proxy portfolio =
 Modified Duration Relative to Change in Real yields ÷ Proportion of inflation-indexed bonds in your liability proxy portfolio (this is the total inflation sensitivity)

Duration of nominal bonds in your liability proxy portfolio =
 Modified Duration Relative to Change in Nominal Yields ÷ Proportion of nominal bonds in your liability proxy portfolio (this is 1 minus the total inflation sensitivity)

Proportion of inflation-indexed bonds in your liability proxy portfolio = total inflation sensitivity

Proportion of nominal bonds in your liability proxy portfolio = 1 - total inflation sensitivity

Step 5 - Liability returns

The return earned on your liability proxy portfolio is the liability return and matches the change in your plan's liabilities in response to changes in market factors. It uses a true market valuation rather than a smoothed actuarial valuation. See page 17 for benchmark details.

Liability Return

- = Proportion indexed bonds in liability proxy portfolio X (CPI + average real yield)
- + Proportion nominal bonds in liability proxy portfolio X average long bond yield
- Modified duration relative to change in real yields X change in real yields
- Modified duration relative to change in nominal yields X change long yields

	Long Nominal Bonds		Inflation Indexed Bonds		CPI
	Year end yield	Change in yield	Year end yield	Change in yield	
2015	2.98	0.15	1.28	0.39	0.70
2014	2.83	-1.06	0.89	-0.72	0.80
2013	3.89	0.94	1.61	1.46	1.50
2012	2.95	0.06	0.15	-0.38	1.70
2011	2.89	-1.45	0.53	-1.06	3.00
2010	4.34	-0.29	1.59	-0.44	1.50

Appendix B - Methodology used to calculate asset and asset-liability risk

Asset mix

Your asset only mix is a function of your policy asset mix, your currency hedging policy and the presence of any duration overlays.

CEM does not use your specific policy benchmarks. Standard asset class proxies (shown on the next page) are used for each given asset class. Monthly, historical data is used to construct an asset class variance/covariance table. Your specific policy weights are then used to calculate an expected monthly volatility for your policy mix using the following formula, which takes current asset class variances and covariances as expected future variances and covariances.

$$\begin{aligned}\text{Expected monthly variance of policy mix} &= \sum \sum w_x w_y \text{Cov}(X, Y) \\ &= \sum \sum w_x w_y \sigma_x \sigma_y \rho_{x,y}\end{aligned}$$

where

w_x = policy weight of asset class X

σ_x = standard deviation of monthly returns for asset class X

w_y = policy weight of asset class Y

σ_y = standard deviation of monthly returns for asset class Y

$\text{Cov}(X, Y)$ = covariance of X and Y

$\rho_{x,y}$ = Pearson's correlation of the returns for X and Y

Each sum is over all asset classes. Assuming normal distribution of returns, we then solve for expected annual standard deviation as:

$$\begin{aligned}\text{Expected annual standard deviation of policy mix} &= \\ &(\text{Expected monthly variance of policy mix})^{1/2} \times (12)^{1/2}\end{aligned}$$

Hedged and unhedged asset classes are treated as separate asset classes in the model. Funds with hedging policies between 0% and 100% have their policy weight allocated between the hedged and unhedged asset classes according to the proportion hedged.

Duration overlays are also treated as a separate asset class. Their weight is taken as notional value divided by total plan assets. For funds with duration overlays, the sum of weights will be greater than 100%. Rather than calculating a return for every possible duration, CEM's total variance/covariance matrix includes bonds with a continual duration of each whole number. A given fund's duration overlay is then represented by the two constant duration bonds closest to the duration of the overlay, with the total weight divided proportionately between them.

Asset-liability risk

Asset-liability risk is calculated in exactly the same way as asset risk with the addition of a short position in the liability proxy portfolio. This portfolio will typically be represented by up to four bonds with continual duration whose summed weights will equal -100%, and whose real and nominal duration match the liability proxy portfolio.

Appendix C - Asset class benchmarks used

CEM uses the same asset class proxy benchmarks for all participants in calculating risk. The benchmarks used for asset classes in your policy mix and liability proxy portfolio are shown below, along with the annualized standard deviation of monthly returns. Different asset classes have different histories - the start date after which monthly data was used for the given asset class is also shown.

Asset Class	Proxy Benchmark	Start Date	Standard deviation of monthly return - annualized (σ)
Stock: Global	MSCI ACWI	Jan 1988	14.4%
Bonds: U.S.	Barclays US Aggregate	Feb 1976	5.6%
Bonds: Emerging	J.P. Morgan Emerging Markets Bond Index Global	Jan 1994	13.0%
Bonds: High Yield	Barclays High Yield	Apr 1990	8.6%
Bonds: Cash	BofA ML U.S. T-BILL 3M	Feb 1978	0.5%
Commodities	Goldman Sachs Commodity	Jan 1970	19.3%
Real Estate	CEM U.S. Real Estate Index Deleveraged	Jan 1983	12.4%
Hedge Fund	HFRI Fund Weighted Hedge Fund	Jan 1990	6.3%
Funded Global TAA	HFRI Fund Weighted Hedge Fund	Jan 1990	6.3%
Private Equity: Diversified or All	S&P Listed Private Equity	Dec 2003	23.2%
Private Equity: Other Non-Listed	S&P Listed Private Equity	Dec 2003	23.2%
Liability: Real Return Bond Duration 13	Real Bond Duration 13	Dec 1985	12.0%
Liability: Real Return Bond Duration 14	Real Bond Duration 14	Jan 1989	12.1%
Liability: Nominal Bond Duration 9	Nominal Bond Duration 9	Aug 1985	8.1%
Liability: Nominal Bond Duration 10	Nominal Bond Duration 10	Dec 1985	9.2%

See page 17 of this section for benchmark details.

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Real Estate is proxied by the MSCI US REIT deleveraged by adding back in a return to debtholders of the Barclays CMBS Inv. Grade Commercial index. Average debt/total assets of REIT index before deleveraging is estimated to be 40%.

Common asset class benchmarks used in United States

CEM uses the same asset class proxy benchmarks for all participants in calculating risk. Common benchmarks used for asset classes in your universe are shown below, along with the annualized standard deviation of monthly returns. Different asset classes have different histories - the start date after which monthly data was used for the given asset class is also shown.

Asset Class	Proxy Benchmark	Start Date	Standard deviation of monthly return - annualized (σ)
Stock: U.S. Broad/All	Russell 3000	Jan 1979	15.0%
Stock: U.S. Large Cap	S&P 500	Feb 1988	13.9%
Stock: U.S. Small Cap	Russell 2000	Jan 1979	19.0%
Stock: EAFE (Currency Hedged)	MSCI EAFE Hedged Exposure to Euro + Japan in (\$US)	Jan 1971	11.9%
Stock: EAFE	MSCI EAFE	Jan 1970	16.5%
Stock: Emerging	MSCI Emerging	Jan 1988	22.1%
Stock: Global	MSCI ACWI	Jan 1988	14.4%
Stock: ACWI x U.S.	MSCI ACWI ex US	Jan 1988	14.1%
Bonds: U.S.	Barclays US Aggregate	Feb 1976	5.6%
Bonds: High Yield	Barclays High Yield	Apr 1990	8.6%
Bonds: Long Bonds	Barclays U.S. Aggregate Long Government/Credit	Feb 1973	9.3%
Bonds: Cash	BofA ML U.S. T-BILL 3M	Feb 1978	0.5%
REITs	MSCI US REIT	Feb 1997	20.7%
Real Estate	CEM U.S. Real Estate Index Deleveraged	Jan 1983	12.4%
Hedge Fund	HFRI Fund Weighted Hedge Fund	Jan 1990	6.3%
Private Equity: Diversified or All	S&P Listed Private Equity	Dec 2003	23.2%
Liability: Real Return Bond Duration 10	Real Bond Duration 10	Aug 1984	9.4%
Liability: Real Return Bond Duration 11	Real Bond Duration 11	May 1985	10.3%
Liability: Nominal Bond Duration 10	Nominal Bond Duration 10	Dec 1985	9.2%
Liability: Nominal Bond Duration 14	Nominal US Bond Duration 14	Feb 1988	12.3%

Source: Datastream

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Real Estate is proxied by the MSCI US REIT deleveraged by adding back in a return to debtholders of the Barclays CMBS Inv. Grade Commercial index. Average debt/total assets of REIT index before deleveraging is estimated to be 40%.

Appendix D - Correlation Matrix

	Stock: Global	Bonds: U.S.	Bonds: Emerging	Bonds: High Yield	Bonds: Cash	Real Assets: Commodities	Real Assets: Real Estate	Hedge Fund	Funded Global TAA	Private Equity: Diversified or All	Private Equity: Other Non-Listed	Nominal Bond: Duration 9	Nominal Bond: Duration 10	Real Return Bond: Duration 13	Real Return Bond: Duration 14
Stock: Global	1.00	0.14	0.61	0.61	0.00	0.21	0.53	0.77	0.77	0.81	0.81	-0.06	-0.05	0.09	0.08
Bonds: U.S.	0.14	1.00	0.30	0.19	0.38	-0.03	0.25	0.07	0.07	0.14	0.14	0.85	0.88	0.58	0.58
Bonds: Emerging	0.61	0.30	1.00	0.52	0.00	0.24	0.42	0.61	0.61	0.56	0.56	0.13	0.12	0.25	0.25
Bonds: High Yield	0.61	0.19	0.52	1.00	-0.06	0.14	0.57	0.64	0.64	0.68	0.68	-0.08	-0.06	0.18	0.18
Bonds: Cash	0.00	0.38	0.00	-0.06	1.00	0.00	-0.06	-0.03	-0.03	-0.03	-0.03	0.17	0.17	0.08	0.01
Real Assets: Commodities	0.21	-0.03	0.24	0.14	0.00	1.00	0.12	0.30	0.30	0.40	0.40	-0.05	-0.06	0.06	0.07
Real Assets: Real Estate	0.53	0.25	0.42	0.57	-0.06	0.12	1.00	0.46	0.46	0.71	0.71	0.07	0.06	0.21	0.20
Hedge Fund	0.77	0.07	0.61	0.64	-0.03	0.30	0.46	1.00	1.00	0.72	0.72	-0.08	-0.07	0.09	0.09
Funded Global TAA	0.77	0.07	0.61	0.64	-0.03	0.30	0.46	1.00	1.00	0.72	0.72	-0.08	-0.07	0.09	0.09
Private Equity: Diversified or All	0.81	0.14	0.56	0.68	-0.03	0.40	0.71	0.72	0.72	1.00	1.00	-0.11	-0.11	0.12	0.13
Private Equity: Other Non-Listed	0.81	0.14	0.56	0.68	-0.03	0.40	0.71	0.72	0.72	1.00	1.00	-0.11	-0.11	0.12	0.13
Nominal Bond: Duration 9	-0.06	0.85	0.13	-0.08	0.17	-0.05	0.07	-0.08	-0.08	-0.11	-0.11	1.00	0.98	0.50	0.50
Nominal Bond: Duration 10	-0.05	0.88	0.12	-0.06	0.17	-0.06	0.06	-0.07	-0.07	-0.11	-0.11	0.98	1.00	0.51	0.51
Real Return Bond: Duration 13	0.09	0.58	0.25	0.18	0.08	0.06	0.21	0.09	0.09	0.12	0.12	0.50	0.51	1.00	0.99
Real Return Bond: Duration 14	0.08	0.58	0.25	0.18	0.01	0.07	0.20	0.09	0.09	0.13	0.13	0.50	0.51	0.99	1.00

Correlation Matrix of Common Asset Classes in United States

	Stock: U.S. Broad/All	Stock: U.S. Large Cap	Stock: U.S. Small Cap	Stock: EAFE (Currency Hedged)	Stock: EAFE	Stock: Emerging	Stock: Global	Bonds: U.S.	Bonds: High Yield	Bonds: Cash	Real Assets: Commodities	Real Assets: REITs	Real Assets: Real Estate	Hedge Fund	Private Equity: Diversified or All	Stock: ACWI x U.S.	Bonds: Long Bonds	Real Return Bond: Duration 10	Real Return Bond: Duration 11	Nominal Bond: Duration 10	Nominal Bond: Duration 14
Stock: U.S. Broad/All	1.00	0.92	0.88	0.20	0.65	0.70	0.88	0.21	0.61	-0.03	0.18	0.04	0.58	0.78	0.81	0.79	0.21	0.10	0.09	-0.03	0.02
Stock: U.S. Large Cap	0.92	1.00	0.74	0.13	0.71	0.63	0.83	0.18	0.56	0.06	0.08	0.11	0.51	0.70	0.76	0.74	0.17	0.07	0.07	0.02	0.07
Stock: U.S. Small Cap	0.88	0.74	1.00	0.13	0.59	0.67	0.73	0.13	0.61	-0.08	0.19	0.03	0.63	0.82	0.79	0.70	0.13	0.06	0.04	-0.09	-0.06
Stock: EAFE (Currency Hedged)	0.20	0.13	0.13	1.00	0.16	0.15	0.26	0.09	0.10	0.05	0.13	-0.12	0.11	0.13	0.37	0.20	0.03	-0.02	0.01	-0.09	-0.07
Stock: EAFE	0.65	0.71	0.59	0.16	1.00	0.68	0.94	0.16	0.54	-0.07	0.12	0.08	0.45	0.67	0.82	0.88	0.19	0.13	0.12	-0.01	0.00
Stock: Emerging	0.70	0.63	0.67	0.15	0.68	1.00	0.77	0.01	0.62	-0.08	0.25	0.04	0.44	0.81	0.74	0.76	0.01	0.09	0.09	-0.12	-0.11
Stock: Global	0.88	0.83	0.73	0.26	0.94	0.77	1.00	0.14	0.61	0.00	0.21	0.05	0.53	0.77	0.81	0.92	0.12	0.09	0.09	-0.05	-0.02
Bonds: U.S.	0.21	0.18	0.13	0.09	0.16	0.01	0.14	1.00	0.19	0.38	-0.03	-0.16	0.25	0.07	0.14	0.04	0.95	0.59	0.60	0.88	0.88
Bonds: High Yield	0.61	0.56	0.61	0.10	0.54	0.62	0.61	0.19	1.00	-0.06	0.14	0.17	0.57	0.64	0.68	0.59	0.18	0.18	0.18	-0.06	-0.05
Bonds: Cash	-0.03	0.06	-0.08	0.05	-0.07	-0.08	0.00	0.38	-0.06	1.00	0.00	0.03	-0.06	-0.03	-0.03	-0.03	0.26	0.07	0.09	0.17	0.09
Real Assets: Commodities	0.18	0.08	0.19	0.13	0.12	0.25	0.21	-0.03	0.14	0.00	1.00	0.14	0.12	0.30	0.40	0.15	-0.08	0.04	0.05	-0.06	-0.07
Real Assets: REITs	0.04	0.11	0.03	-0.12	0.08	0.04	0.05	-0.16	0.17	0.03	0.14	1.00	0.07	0.15	0.16	0.08	-0.14	-0.08	-0.08	-0.25	-0.24
Real Assets: Real Estate	0.58	0.51	0.63	0.11	0.45	0.44	0.53	0.25	0.57	-0.06	0.12	0.07	1.00	0.46	0.71	0.46	0.26	0.22	0.21	0.06	0.05
Hedge Fund	0.78	0.70	0.82	0.13	0.67	0.81	0.77	0.07	0.64	-0.03	0.30	0.15	0.46	1.00	0.72	0.77	0.08	0.08	0.08	-0.07	-0.05
Private Equity: Diversified or All	0.81	0.76	0.79	0.37	0.82	0.74	0.81	0.14	0.68	-0.03	0.40	0.16	0.71	0.72	1.00	0.75	0.08	0.12	0.11	-0.11	-0.13
Stock: ACWI x U.S.	0.79	0.74	0.70	0.20	0.88	0.76	0.92	0.04	0.59	-0.03	0.15	0.08	0.46	0.77	0.75	1.00	0.06	0.03	0.03	-0.11	-0.07
Bonds: Long Bonds	0.21	0.17	0.13	0.03	0.19	0.01	0.12	0.95	0.18	0.26	-0.08	-0.14	0.26	0.08	0.08	0.06	1.00	0.54	0.55	0.87	0.88
Real Return Bond: Duration 10	0.10	0.07	0.06	-0.02	0.13	0.09	0.09	0.59	0.18	0.07	0.04	-0.08	0.22	0.08	0.12	0.03	0.54	1.00	1.00	0.53	0.53
Real Return Bond: Duration 11	0.09	0.07	0.04	0.01	0.12	0.09	0.09	0.60	0.18	0.09	0.05	-0.08	0.21	0.08	0.11	0.03	0.55	1.00	1.00	0.52	0.52
Nominal Bond: Duration 10	-0.03	0.02	-0.09	-0.09	-0.01	-0.12	-0.05	0.88	-0.06	0.17	-0.06	-0.25	0.06	-0.07	-0.11	-0.11	0.87	0.53	0.52	1.00	0.96
Nominal Bond: Duration 14	0.02	0.07	-0.06	-0.07	0.00	-0.11	-0.02	0.88	-0.05	0.09	-0.07	-0.24	0.05	-0.05	-0.13	-0.07	0.88	0.53	0.52	0.96	1.00

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Appendices

Appendix A - Data Summary

Appendix B - Data quality

Appendix C - Glossary of terms

Appendix A - Data Summary

South Carolina Retirement Systems Investment Commission

Plan Info	2015	2014	2013
Contact	Jon Rychener	Jon Rychener	Jon Rychener
Type of fund (corporate, public, other)	Public	Public	Public
Total fund size (mils) as at December 31	27,797.3	29,053.6	28,645.8
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Year End
Total return for year ended	-0.56%	5.10%	11.63%
Is the return net or gross?	Net of all investment costs	Net of all investment costs	Net of all investment costs
Total fund policy or benchmark return	-1.08%	4.77%	10.21%

Ancillary Data	2015	2014	2013
What is your hedging policy for: Foreign Holdings	75%	75%	75%
What were your actuarial fees in 000s?	277	229	175
How many plan members/beneficiaries do you have:			
Active?	248,446	226,378	224,534
Active (no-accrual)?			
Retired?	154,639	156,660	152,978
Other?	178,086	175,089	170,974
What type of plan(s) do you have?	Final Average	Final Average	Final Average
To what extent are your retired members' benefits indexed to inflation?			
Contractual %	100	100	100
Ad hoc %			
If the indexation is subject to a cap, describe the cap	For SCRS and PO	For SCRS and PO	For SCRS and PO
What % of the plan's liabilities pertain to retired members?	65	64	64
Actuarial valuation assumptions for funding purposes:			
Liability discount rate	7.5	7.5	7.5
Salary progression rate	3.5	3.5	3.5
What was your actuarial assumption for expected rate of return?	7.5	7.5	7.5

Appendix A - Data Summary: Policy Weights and Benchmarks

South Carolina Retirement Systems Investment Commission

Asset Class	Policy Weight	Benchmark		
		Description	Return	
U.S. Stock - Broad/All	2015		Russell 3000	0.5
	2014		Russell 3000 (default)	12.6
	2013		Russell 3000 (default)	33.6
Stock - EAFE	2015			
	2014		MSCI EAFE net (default)	-4.9
	2013		MSCI EAFE net (default)	22.8
Stock - Emerging	2015		MSCI Emerging Market Net	-14.9
	2014		MSCI Emerging Market net (default)	-2.2
	2013		MSCI Emerging Market net (default)	-2.6
Stock - Global	2015	34.0	MSCI All Country World Net Index	-2.4
	2014	31.0	MSCI ACWI Net	4.2
	2013	31.0	MSCI ACWI	22.8
Fixed Income - U.S.	2015	10.0	Barclays US Aggregate	0.6
	2014	7.0	Barclays US Aggregate	6.0
	2013	7.0	Barclays US Aggregate	-2.0
Fixed Income - Emerging	2015	5.0	50% JPM EMBI Global Diversified/50% JPM-GBI-EM Global	-7.1
	2014	6.0	50% JPM EMBI Global Diversified/50% JPM-GBI-EM Global	0.7
	2013	6.0	JPM EMBI Global Diversified/JPM-GBI-EM Global	-7.1
Fixed Income - Global	2015		Barclays Global Aggregate (USDH)	1.0
	2014	3.0	Barclays Global Aggregate Hedged	7.6
	2013	3.0	Barclays Global Aggregate (USDH)	-0.1
Fixed Income - High Yield	2015	5.0	33%Bar U.S. High Yield 2% / 33%S&P LSTA Leveraged Loan / 33%Bar Mortgage-Backed Securities	-1.2
	2014	6.0	33%BarCapUS Corp High Yield 2% / 33%S&P LSTA Leveraged Loan Index/33% BarCap MBS	3.4
	2013	6.0	Barclays US Corp High Yield / S&P LSTA Leveraged Loan Index	3.7
Cash	2015	2.0	BofA Merrill Lynch 3 Month US Treasury Bill GOO1	0.1
	2014	5.0	90 D T-Bill / BarCap 1-3 Gov Credit	0.5
	2013	5.0	90 D T-Bill / Merrill Lynch US Treasury 0-3Y	0.1
Global TAA	2015	10.0	50% MSCI World Net / 50% Citi WGBI	-2.0
	2014	10.0	50% MSCI World / 50% Citi WGBI	2.3
	2013	10.0	50% MSCI World / 50% Citi WGBI	10.4
Hedge Funds	2015	10.0	HFRI Fund Weighted Composite Index	-1.1
	2014	8.0	HFRI Fund Weighted Composite Index	3.0
	2013	8.0	HFRI Fund Weighted Composite Index	9.1
Commodities	2015	3.0	Bloomberg Commodity Index Total Return	-24.7
	2014	3.0	Bloomberg Commodity Index	-17.0
	2013	3.0	Dow Jones UBS Commodity Index	-9.5
Real Estate ex-REITs	2015	5.0	NCREIF ODCE Index + 75 bps	15.7
	2014	5.0	NCREIF ODCE Index + 75 bps	13.2
	2013	5.0	NCREIF ODCE Index + 75 bps	13.8
Diversified Private Equity	2015	9.0	80% Russell 3000 / 20% MSCI EAFE Lagged + 300 Bps	0.9
	2014	9.0	80% Russell 3000 / 20% MSCI EAFE + 300 Bps Quarter Lag	18.0
	2013	9.0	80% Russell 3000 / 20% MSCI EAFE + 300 Bps Quarter Lag	25.1
Private Debt Limited	2015	7.0	S&P/LSTA + 150 Bps 3 Month Lag	2.4
	2014	7.0	S&P/LSTA + 150 Bps 3 Month Lagged	5.4
	2013	7.0	S&P/LSTA + 150 Bps 3 Month Lagged	6.5

Appendix A - Data Summary: Public Market Assets, Returns and Costs

South Carolina Retirement Systems Investment Commission

Asset Class		Assets (millions) and Annual Gross Returns							Investment Fees / Costs in 000s												
		Internally			Externally Managed				Internally		Externally Managed						Active				
		Active		Indexed		Active		# of mgrs	Active		Indexed			Active							
		Assets	Return	Assets	Return	Assets	Return		000s	bps ¹	Fees ³	Over-sight ³	Total 000s	bps ¹	Base Fees ³	Perform Fees	Internal & Other ³	Total 000s	bps ¹		
U.S. Stock - Broad/All	2015	2.1	29.7	582.8	-34.7	1,129.8	-2.7	6	0.6	2.6	356.0	154.6	510.7	8.8	7,430.9		299.8	7,730.6	68.4		
	2014	2.4	-29.0	983.9	14.4	1,368.6	5.3	8	0.6	2.5	887.6	255.0	1,142.6	11.6	8,857.4		354.7	9,212.1	67.3		
	2013	2.1	9.9	725.5	22.8	1,448.7	40.6		0.2	1.0	302.7	91.1	393.8	6.1	9,576.0		181.9	9,757.9	52.3		
Stock - EAFE	2015					721.3	-4.3	2							5,120.9		186.9	5,307.8	73.6		
	2014					724.3	15.1								1,849.8		91.0	1,940.7	34.2		
	2013					943.2	-15.1	4							7,658.0		250.3	7,908.3	83.8		
Stock - Emerging	2015					1,007.2	0.5	4							8,080.4		261.1	8,341.5	82.8		
	2014					978.8	-2.7								9,683.0		122.9	9,805.9	54.7		
	2013					1,749.9	-0.1	8			613.5	830.9	1,444.4	4.6	5,589.1		464.3	6,053.4	34.6		
Stock - Global	2015			3,131.6	-0.4			8													
	2014			1,316.5	n/a			3			247.5	341.2	588.7	4.5							
	2013							19													
Fixed Income - U.S.	2015	365.5	1.6			2,336.9	0.5	5	88.2	2.4					2,972.3	205.0	620.0	3,797.4	16.3		
	2014	239.0	4.1			2,317.8	5.4	4	44.0	1.8					4,030.6		600.7	4,631.3	20.0		
	2013	106.2	2.0			2,240.7	-1.7	4	12.6	1.0					4,398.8		281.4	4,680.2	18.9		
Fixed Income - Global	2015					884.5	-0.5	3							1,359.2		234.7	1,593.9	18.0		
	2014					1,080.1	3.0	3							3,172.4		279.9	3,452.3	32.0		
	2013					1,040.6	-1.2	3							3,062.1		130.7	3,192.7	30.5		
Fixed Income - Emerging	2015			852.8	-3.2	529.4	-10.9	8			606.0	226.3	832.3	9.8	2,429.1		140.5	2,569.6	48.5		
	2014			671.5	2.4	508.1	-2.4	4			305.5	174.0	479.5	7.1	2,628.8		131.7	2,760.5	54.3		
	2013			404.1	-7.4	491.0	-9.3	3				50.8	50.8	1.4	1,594.4		61.7	1,656.1	34.2		
Fixed Income - High Yield	2015					1,535.8	-0.8	8							7,080.1		407.5	7,487.6	48.8		
	2014					1,179.0	1.8	7							6,588.8		305.6	6,894.4	58.5		
	2013					1,228.4	7.1	9							8,313.4		154.3	8,467.6	63.5		
Cash	2015	1,656.3	0.6			1,893.1	-0.2		399.9	2.4					2,411.4		502.3	2,913.7	15.4		
	2014	3,082.0	0.5			2,136.1	-0.2		567.9	1.8					1,657.1		553.6	2,210.7	10.3		
	2013	3,681.7	0.4			1,879.6	2.2		437.0	2.0					2,202.0		236.1	2,438.1	14.6		
Global TAA	2015					2,196.2	-4.6	4							12,101.6		582.7	12,684.3	57.8		
	2014					2,186.4	5.4	4							12,449.9		566.7	13,016.6	59.5		
	2013					1,875.0	3.9	3							11,440.7		235.5	11,676.2	54.4		
Commodities	2015																				
	2014																				
	2013							1													
Hedge Funds	2015					1,266.4	5.7	40							27,898.1	30,945.7	336.0	59,179.8	467.3		
	2014					1,354.9	8.6	41							26,097.8	30,515.4	351.2	56,964.4	420.4		
	2013					1,691.9	9.0	60							22,892.7	25,003.3	212.5	23,105.2	130.8		
										Underlying ²											
										Base Fees		Perf. Fees		Base Fees ³		Perform Fees		Internal & Other ³		Total 000s*	
Hedge Funds - Fund of Funds	2015					2,187.8	1.6				30,215.2	13,864.2			3,741.7		580.5	48,401.6	221.2		
	2014					2,380.7	5.6				36,965.6	32,185.9			9,071.3	479.0	617.1	79,318.8	333.2		
	2013					2,936.2	14.5				37,822.2				19,901.6	13,187.5	368.7	58,092.5	198.0		

1. Cost in basis points = total cost / average of beginning and end of year holdings

2. Default for fees paid to underlying partnerships have been applied.

* Total cost for hedge funds includes performance fees in 2014 only.

Appendix A - Data Summary: Private Market Assets, Returns and Costs

South Carolina Retirement Systems Investment Commission

Asset Class		Assets (millions) and Annual Returns								Investment Fees / Costs in 000s ¹															
		Internal & Co-Inv		External		Fund of Funds				# Ext Mgrs	Internal & Co-Inv		External				Fund of Funds								
		Assets	Return	Amt fees based on	Assets	Return	Amt fees based on	Assets	Return		Assets	Return	Total 000s	bps	Base Fees	Perform Fees	Internal & Other	Total ¹ 000s	bps (% of fee basis)	Underlying ² Fees	Base Fees	Perform Fees	Internal & Other	Total ¹ 000s	bps (% of fee basis)
										000s															
Real Estate ex-REITs	2015	27.7	18.9							27	7.4	2.7													
	2014	31.9	23.9							17	8.3	2.6													
	2013	66.1	21.1							23	16.6	1.5													
											Under Oversight														
					LPs																				
		2015			1,410.6	1,197.0	16.8							16,328.9	34,048.0	317.6	16,646.5	118.0							
	2014			1,168.7	1,078.1	20.8							14,727.5	44,655.6	279.4	15,006.9	128.4								
	2013			1,455.8	1,041.6	23.0							17,312.1	34,841.7	130.8	17,442.9	124.6								
Diversified Private Equity	2015	667.0		1,390.7	1,251.1	5.0	660.1	710.4	11.6	62	1,543.3		18,910.1	12,062.7	331.9	19,242.0	138.4	10,891.5	6,112.5	2,657.9	188.5	17,192.5	260.5		
	2014	749.2		1,887.0	1,610.4	16.5	358.7	344.7	26.2	56	1,827.0		23,878.2	39,584.3	417.4	24,295.6	128.8	5,918.6	3,097.9	2,564.5	89.3	9,105.8	253.9		
	2013	848.3		2,218.6	1,586.6	22.4	358.7	313.4	15.9	57	714.1		29,380.4	45,323.2	199.2	29,579.7	137.6	7,629.1	3,037.6	2,282.8	39.4	10,706.1	231.5		
Private Debt Limited Partnerships	2015	17.0		1,416.0	1,609.4	0.6				33	45.8		17,178.4	(247.6)	427.0	17,605.4	124.3								
	2014	12.6		1,966.0	1,665.2	10.6				31	4.1		23,944.3	30,833.1	431.6	24,375.9	124.0								
	2013	21.6		2,395.5	1,658.9	15.5				30	4.2		33,359.6	47,226.9	208.3	33,567.9	128.5								

1. Cost in basis points = total cost / average of beginning and end of year holdings. Total cost excludes private asset performance fees because of comparability issues.

2. Default for fees paid to underlying partnerships have been applied.

Appendix A - Data Summary: Oversight, Custodial and Other Costs

South Carolina Retirement Systems Investment Commission

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets ¹	2015	1,201.0	0.4bp
	2014	1,478.1	0.5bp
	2013	1,318.6	0.5bp
Custodial total	2015	765.8	0.3bp
	2014	425.6	0.1bp
	2013	317.2	0.1bp
Custodial foreign (if available)	2015	460.1	0.6bp
	2014		
	2013	0.1	0.0bp
Custodial domestic (if available)	2015	305.6	0.1bp
	2014		
	2013	317.2	0.1bp
Consulting / performance measurement	2015	1,029.9	0.4bp
	2014	998.3	0.3bp
	2013	865.0	0.3bp
Audit	2015	201.0	0.1bp
	2014	816.4	0.3bp
	2013	314.5	0.1bp
Other (legal etc)	2015	345.2	0.1bp
	2014	286.6	0.1bp
	2013	293.4	0.1bp
Total	2015	3,542.9	1.2bp
	2014	4,004.9	1.4bp
	2013	3,108.7	1.1bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2015	235,879.2	80.3bp
	2014	269,557.2	92.3bp
	2013	227,739.1	82.4bp
Overlay Costs	2015	1,037.4	0.4bp
	2014	1,413.8	0.5bp
	2013	1,490.0	0.5bp
Oversight, Custodial & Other Costs	2015	3,542.9	1.2bp
	2014	4,004.9	1.4bp
	2013	3,108.7	1.1bp
Total	2015	240,459.5	81.8bp
	2014	274,976.0	94.1bp
	2013	232,337.8	84.1bp

1. Oversight includes the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees / salaries of the board or investment committee. All costs associated with the above including fees / salaries, travel, director's insurance and attributed overhead should be included.

Appendix A - Data Summary: Overlays

South Carolina Retirement Systems Investment Commission

Overlays		Internal					External								
		Notional amount (mils)	Market value (mils)	Profit/Loss (000s)	Cost (000s)	% of Notion. (bps)	Duration (years)	Notional amount (mils)	Market value (mils)	Profit/Loss (000s)	Base fees (000s)	Perf. fees (000s)	Over-sight (000s)	Total (000s)	% of Notion. (bps)
Rebalancing/	2015						3,394.5	656.7		863.2		174.2	1,037.4		3.1
Passive Beta	2014						3,687.0	1,188.5		1,105.8		308.0	1,413.8		3.8
	2013						6,553.0	1,654.7		1,282.2		207.8	1,490.0		2.3

Appendix A - Data Summary: Comments and defaults

As discussed with you during the data confirmation process, the following defaults and footnotes are applicable to your data:

- Real Estate Limited Partnerships : Fees are the weighted average management fee of 116 bps per the partnership level detail provided by you. This replaces the cost you provided on the main survey of 109 bps (15 million).
- Diversified Private Equity : Fees are the weighted average management fee of 136 bps per the partnership level detail provided by you. This replaces the cost you provided on the main survey of 156 bps (22 million).
- Diversified Private Equity - Fund of Funds : For comparability with other styles, a default for management fees paid to the 'bottom layer' underlying managers of 165 bps (on amount fees are based on) was used.
- Private Debt Limited Partnerships : Fees are the weighted average management fee of 121 bps per the partnership level detail provided by you. This replaces the cost you provided on the main survey of 125 bps (18 million).

Appendix B - Data quality

The value of the information contained in these reports is only as good as the quality of the data received. CEM's procedures for checking and improving the data include the following.

Improved survey clarity

Twenty years of feedback from survey participants has led to improved definitions and survey clarity. In addition to immediate feedback from participants, CEM has hosted user workshops to solicit additional feedback and to resolve issues, such as trade-offs between more information and effort on the part of participants.

Computer and desktop verification

Survey responses are compared to norms for the survey universe and to each sponsor's prior year data when available. This typically results in questions generated by our online survey engine as well as additional follow-up to clarify responses or with additional questions.

In addition to these procedures, data quality continues to improve for the following reasons:

Learning curve -

This is CEM's 25th year of gathering this data and experience is teaching the firm and the participants how to do a better job.

Growing universe -

As our universe of respondents continues to increase in size, so does our confidence in the results as unbiased errors tend to average themselves out.

Any suggestions on how to further improve data quality are welcome.

Currency Conversions

For reports where either the peer group or report universe includes funds from multiple countries, we have converted the returns back to the base currency of the fund we prepared the report for. For example, for a Euro zone fund with peers from the U.S. we converted U.S. returns to Euro based on the currency return for the year using December 31 spot rates.

Appendix C - Glossary of terms

Average cost

- Calculated by dividing actual annual costs by the average of beginning and end-of-year holdings. If beginning-of-year holdings are not available, they are estimated using end-of-year holdings before the effect of this year's return on investment.

Benchmark return

- Rate of return on a portfolio of investable assets (such as the S&P500) designated as the benchmark portfolio against which the fund measures its own performance for that asset class.

F statistics

- Measure of the statistical significance of the regression coefficients taken as a group. Generally, regression equations with 5 coefficients and sample sizes greater than 20 are statistically significant if its F statistic is greater than 3.

Global TAA

- Fully funded segregated asset pool dedicated to active asset allocation.

Impact coefficient

- Estimate of the impact on the dependent variable in a regression of a change in the value of a given explanatory variable

Level of significance

- Degree to which sample data explains the universe from which they are extracted.

N-year peers

- Subset of peer group that have participated in our study for at least the consecutive n years.

Oversight of the fund

- Resources devoted to the oversight of the fund.

Overlay

- Derivative based program (unfunded other than margin requirements), designed to enhance total portfolio return (such as a tactical asset allocation program) or to achieve some specific mandate such as currency hedging.

Passive proportion

- Proportion of assets managed passively, i.e., indexed to broad capital market benchmarks or dedicated to replicate market benchmarks.

Policy mix

- Reflects long-term policy or target asset weights. Policy asset mix is often established by a fund's investment committee or board and is determined by such long term considerations as liability structure, risk tolerance and long term capital markets prospects.

Policy return

- The return you would have earned if you had passively implemented your policy mix decision through your benchmark portfolios. Your policy return equals the sum of your policy weights multiplied by your asset class benchmarks for each asset class.

R squared (coefficient of determination)

- The percentage of the differences in the dependent variable explained by the regression equation. For example, an R squared of 1 means 100% of the differences are explained and an R squared of 0 means that none of the differences are explained.

Value added

- the difference between your total actual return and your policy return. It is a measure of actual value produced over what could have been earned passively.