

Investment
Cost Effectiveness Analysis
(for the 5 years ending December 31, 2014)

CalPERS



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Key takeaways

Returns

- CalPERS 5-year net total return was 9.6%. This was below the U.S. median of 10.0% and above the peer median of 7.9%.
- CalPERS 5-year policy return was 9.7%. This was slightly below the U.S. median of 9.9% and above the peer median of 7.5%.

Value added

- CalPERS 5-year net value added was -0.1%. This was slightly below the U.S. median of 0.2% and close to the peer median of 0.0%.

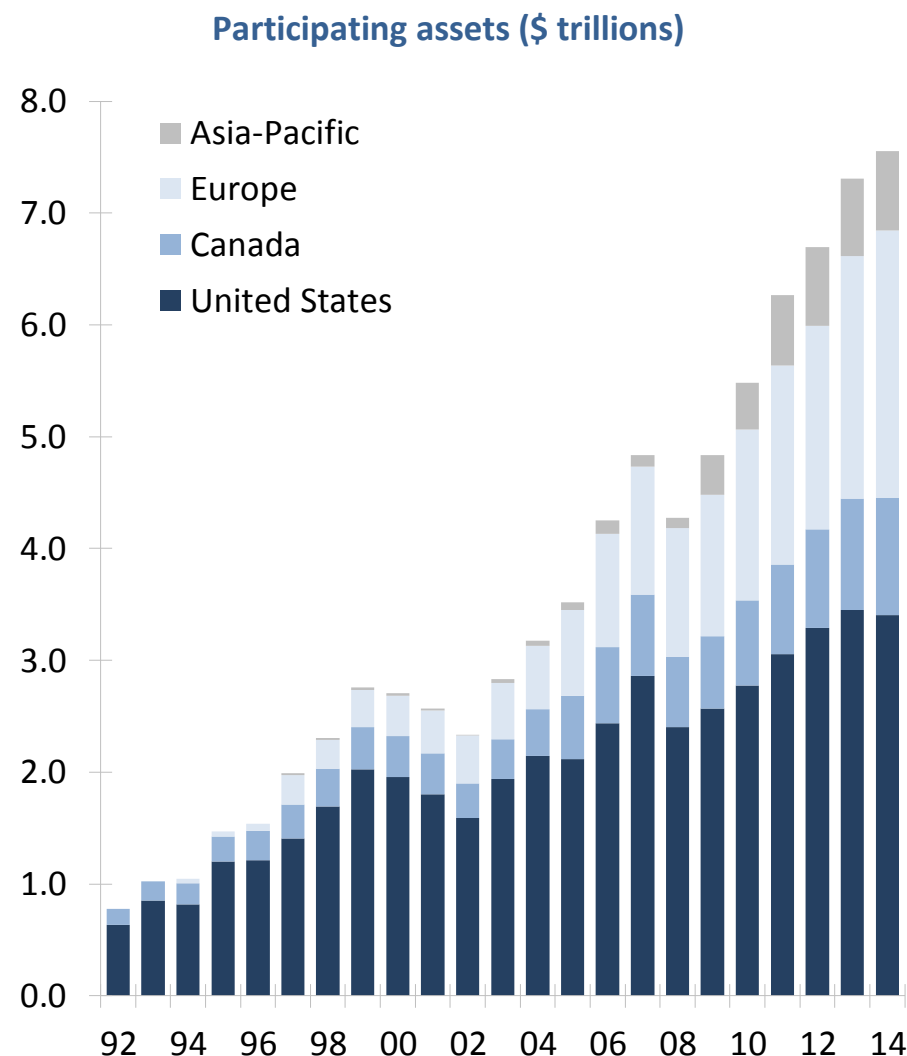
Cost and cost effectiveness

- CalPERS investment cost of 41.1 bps was below its benchmark cost of 42.9 bps. This suggests that CalPERS was slightly low cost compared to its peers.
- CalPERS was slightly low cost because it had a lower cost implementation style and paid less than peers for similar services
- CalPERS 5-year performance placed in the negative value added, low cost quadrant of the cost effectiveness chart.

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

- 155 U.S. pension funds participate. The median U.S. fund had assets of \$8.9 billion and the average U.S. fund had assets of \$22.0 billion. Total participating U.S. assets were \$3.4 trillion.
- 79 Canadian funds participate with assets totaling \$1,048 billion.
- 60 European funds participate with aggregate assets of \$2.4 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 7 Asia-Pacific funds participate with aggregate assets of \$711 billion. Included are funds from Australia, New Zealand, China and South Korea.
- 2 Gulf region funds participate.

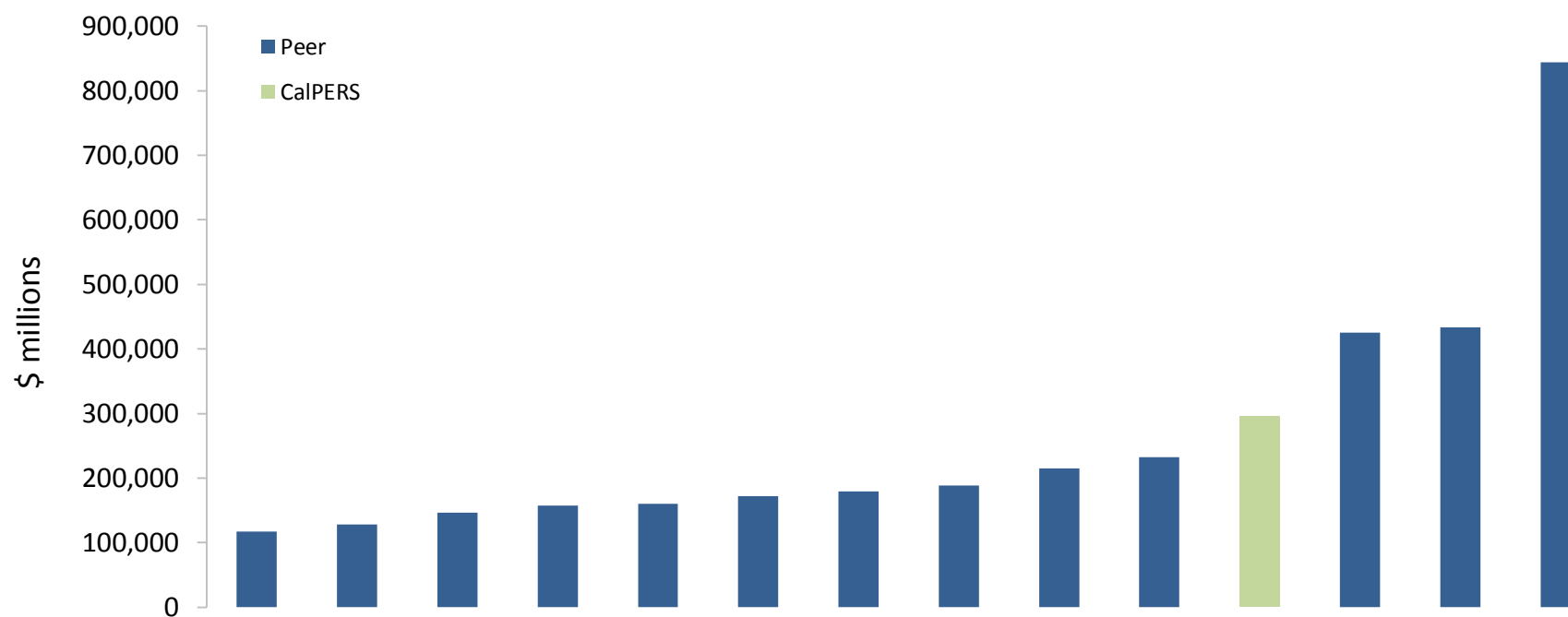
The most meaningful comparisons for CalPERS returns and value added are to the U.S. universe.



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

Peer group for CalPERS

- 14 global sponsors from \$117 billion to \$844 billion
- Median size of \$184 billion versus CalPERS \$295 billion
- 6 U.S. Sponsors, 3 Canadian, 3 European, 2 Asia-Pacific



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 CalPERS policy mix decisions versus implementation decisions?

2. Net value added

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

3. Costs

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

4. Cost effectiveness

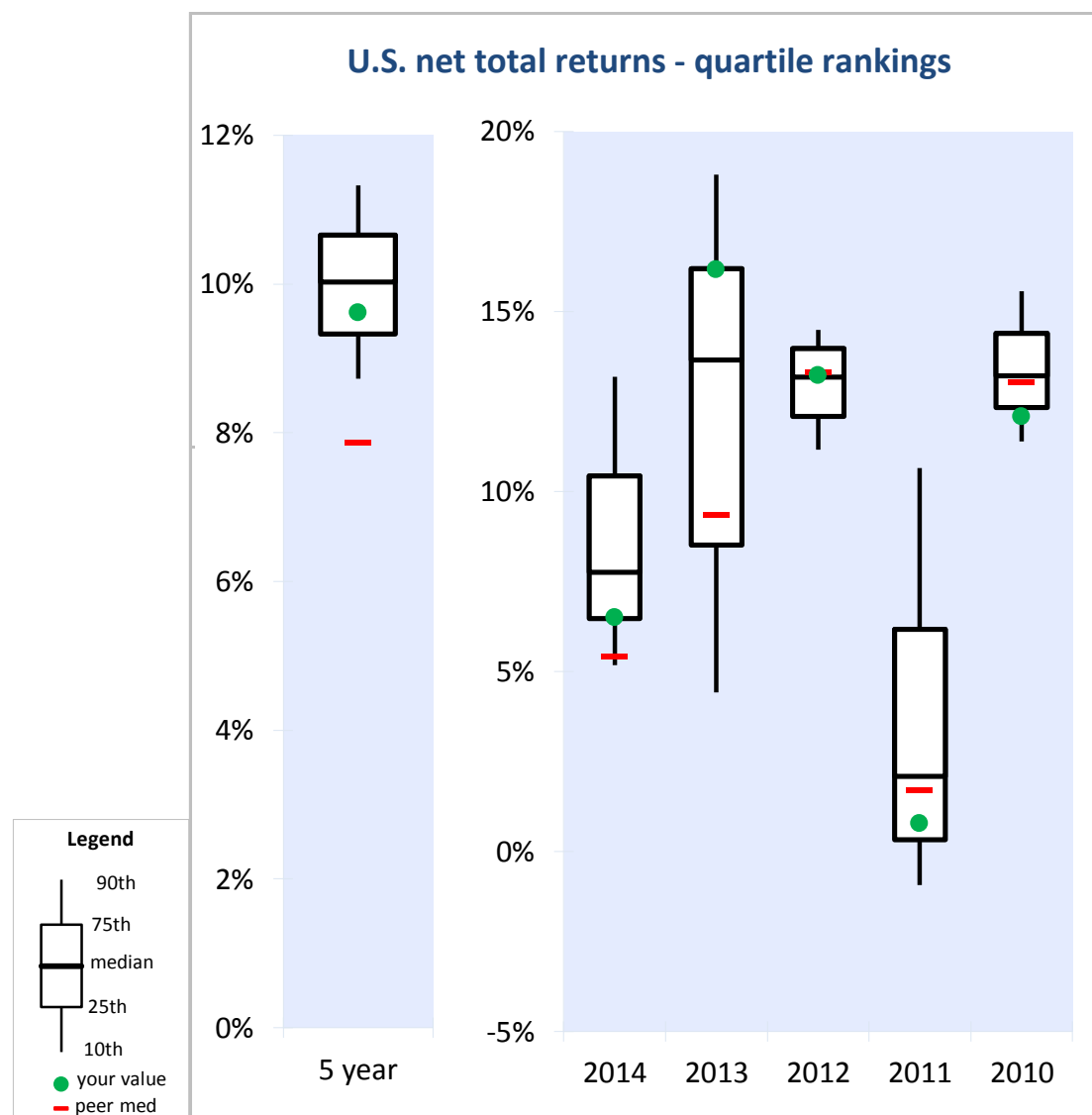
Net implementation value added versus excess cost. Does paying more get you more?

CalPERS 5-year net total return of 9.6% was below the U.S. median of 10.0% and above the peer median of 7.9%

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.

CalPERS 5-year	
Net total fund return	9.6%
- Policy return	9.7%
= Net value added	-0.1%

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).



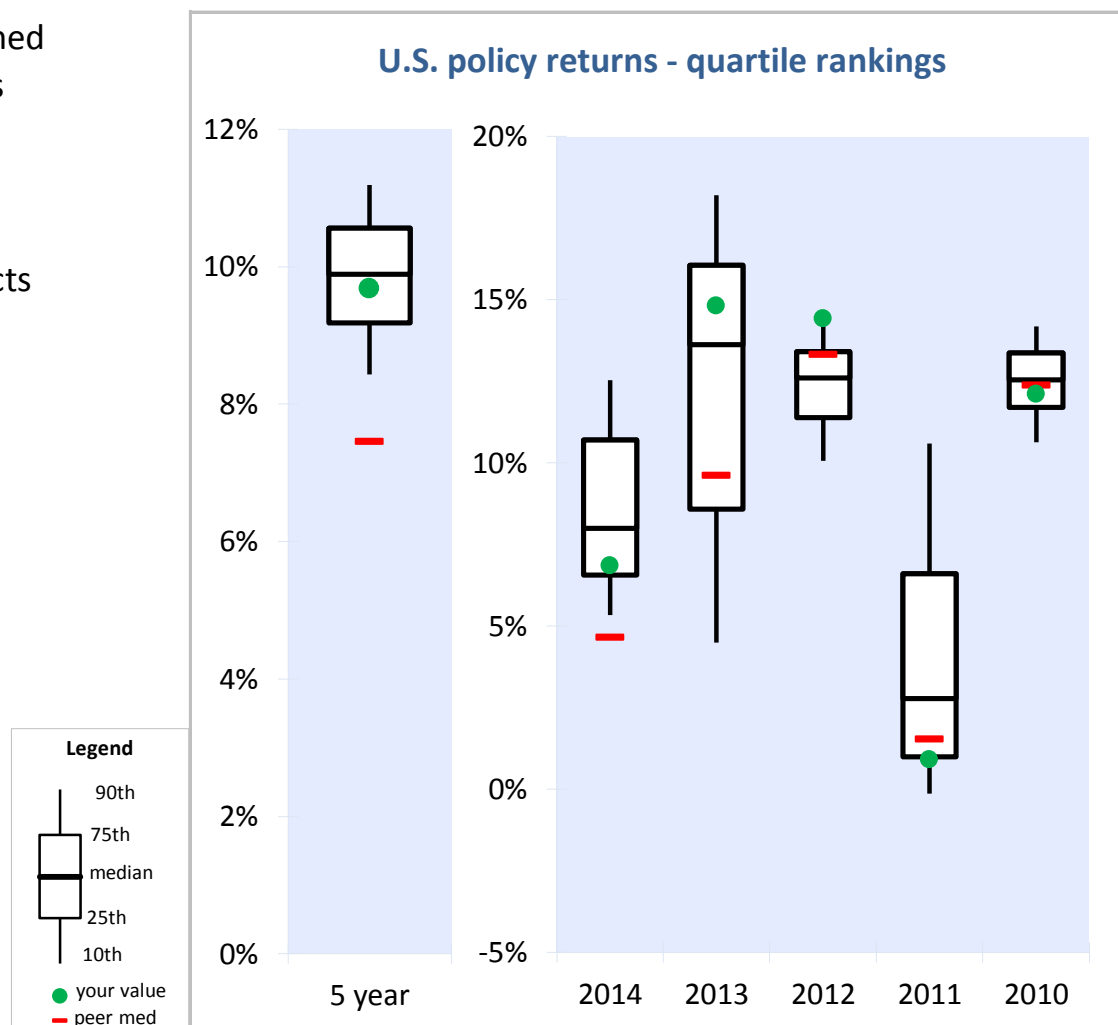
CalPERS 5-year policy return of 9.7% was slightly below the U.S. median of 9.9% and above the peer median of 7.5%.

CalPERS policy return is the return it could have earned passively by indexing its investments according to its policy mix.

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

- 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.



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 9.7%, 0.04% higher than your actual 5-year policy return of 9.7%. Mirroring this, your 5-year total fund net value added would be 0.04% lower. Refer to the Research section pages 6-7 for details.

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

Small differences in CalPERS policy mix relative to the average U.S. fund had a net negative impact over 5 years.

The negative impact of CalPERS higher weights in:

- Inflation Indexed Bonds (CalPERS 3% 5-year average weight versus a U.S. average of 1%).
- EAFE Bonds (CalPERS 1% 5-year average weight versus a U.S. average of 0%).
- Infrastructure (CalPERS 2% 5-year average weight versus a U.S. average of 0%).

Partly offsetting the above was the positive impact of CalPERS lower weight in one of the poorer performing asset classes of the past 5 years: Hedge Funds (CalPERS 0% 5-year average weight versus a U.S. average of 5%).

5-Year average policy mix

	CalPERS	Peer Avg.	U.S. Avg.
Stock	50%	46%	48%
U.S. Bonds	17%	7%	16%
Long Bonds	0%	2%	14%
Inflation Indexed Bonds	3%	4%	1%
Fixed Income - EAFE	1%	2%	0%
Cash	1%	-1%	1%
Other Fixed Income ¹	2%	18%	4%
Total Fixed Income	24%	32%	35%
Hedge Funds	0%	2%	5%
Commodities	1%	2%	1%
Natural Resources	1%	1%	0%
Infrastructure	2%	2%	0%
Real Estate incl. REITS	9%	8%	5%
Private Equity	13%	7%	6%
Total	100%	100%	100%

1. Other fixed income includes mortgages, Canada and high yield bonds.

CalPERS policy asset mix has changed over the past 5 years. At the end of 2014 CalPERS policy mix compared to its peers and the U.S. universe as follows:

Policy asset mix

Asset class	CalPERS		Peer avg.	U.S. avg.
	2010	2014	2014	2014
Stock	49%	51%	45%	46%
U.S. Bonds	19%	19%	7%	13%
Long Bonds	0%	0%	2%	17%
Inflation Indexed Bonds	0%	6%	4%	1%
Cash	2%	2%	-1%	0%
Other Fixed Income ¹	2%	0%	18%	4%
Total Fixed Income	23%	27%	30%	36%
Hedge Funds	0%	0%	3%	5%
Commodities	0%	0%	1%	1%
Natural Resources	0%	1%	1%	0%
Infrastructure	4%	1%	2%	0%
Real Estate incl. REITS	10%	10%	9%	5%
Private Equity	14%	10%	8%	6%
Total	100%	100%	100%	100%

1. Other fixed income includes mortgages, Canada and high yield bonds.

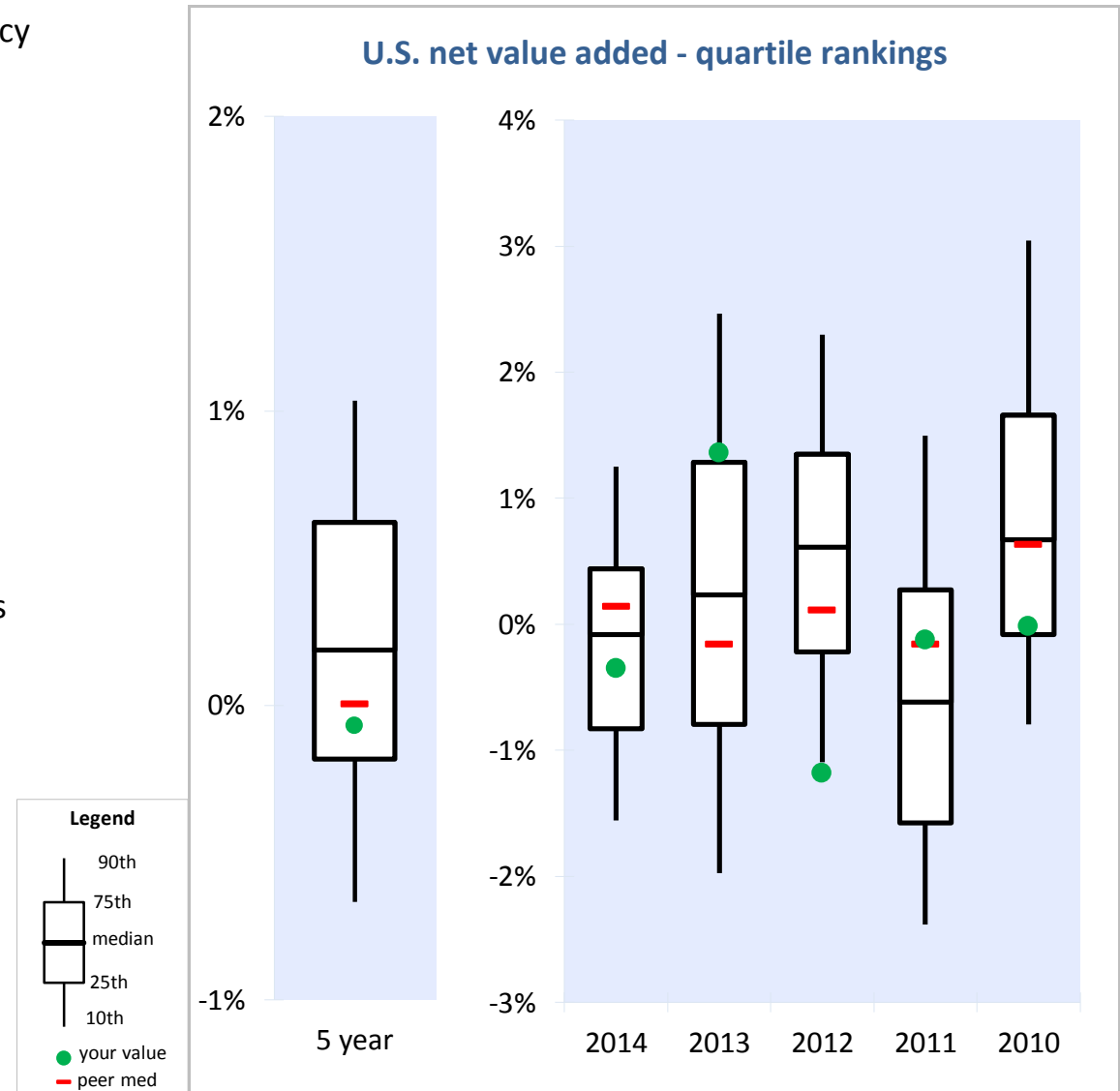
Net value added is the component of total return from active management. CalPERS 5-year net value added was -0.1%.

Net value added equals total net return minus policy return.

Value added for CalPERS

Year	Net Return	Policy Return	Net value Added
2014	6.5%	6.8%	(0.3%)
2013	16.2%	14.8%	1.4%
2012	13.2%	14.4%	(1.2%)
2011	0.8%	0.9%	(0.1%)
2010	12.1%	12.1%	(0.0%)
5-year	9.6%	9.7%	(0.1%)

CalPERS 5-year net value added of -0.1% compares to a median of 0.0% for its peers and 0.2% for the U.S. universe.



CalPERS had positive 5-year net value added in U.S. Stock, EAFE Stock and Fixed Income.

5-year average net value added by major asset class

Asset Category	CalPERS	U.S. Average
U.S. Stock	0.2%	-0.2%
EAFE Stock	0.6%	0.7%
Fixed Income	1.2%	0.7%
Real Estate	-3.3%	-0.7%
Private Equity ¹	-0.8%	-3.7%

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 -1.3%. 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. CalPERS 5-year total return of 15.8% for private equity was above the U.S. average of 13.9%.

CalPERS investment costs were \$1,188.9 million or 41.1 basis points in 2014.

Asset management costs by asset class and style (\$000s)	Internal Management			External Management			Total
	Passive	Active	Overseeing of external	Passive fees	Active base fees	Perform. fees ²	
Public Market Equities	1,724	23,944	3,825		73,355	77,042	179,891
Fixed Income	33	27,618	318		7,312	4,199	39,480
Global TAA			1,835		6,147	8,775	16,757
Hedge Funds - Direct			6,408		53,916	66,190	126,514
Hedge Funds - Fund of Funds			948		19,206 ¹	13,384 ¹	33,537
Commodities		205					205
Real Estate - LPs			26,420		189,559	621,349 ²	215,979
Infrastructure		1,228					1,228
Infrastructure - LPs			3,058		9,572	38,796 ²	12,630
Natural Resources - LPs			666		7,165		7,831
Diversified Private Equity		2,252	14,430	773	427,321		444,776
Diversified Priv.Eq. - Fund of Funds			3,963		81,724		85,687
Overlay Programs		125					125
Total asset management costs excluding private asset performance fees							1,164,640 40.3bp
Oversight, custodial and other costs ³							
Oversight & consulting							13,406
Trustee & custodial							4,722
Audit							1,197
Other							4,895
Total oversight, custodial & other costs							24,220 0.8bp
Total investment cost (excluding transaction and private asset performance fees)							1,188,859 41.1bp

Footnotes

¹ Default underlying costs were added to fund of funds. The defaults added were: Hedge Funds 150 bps base fees 144 bp performance fees;

Refer to Appendix A for full details.

² Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Performance fees are included for the public market asset classes and hedge funds.

³ Excludes non-investment costs, such as PBGC premiums and preparing checks for retirees.

CalPERS costs decreased between 2010 and 2014.

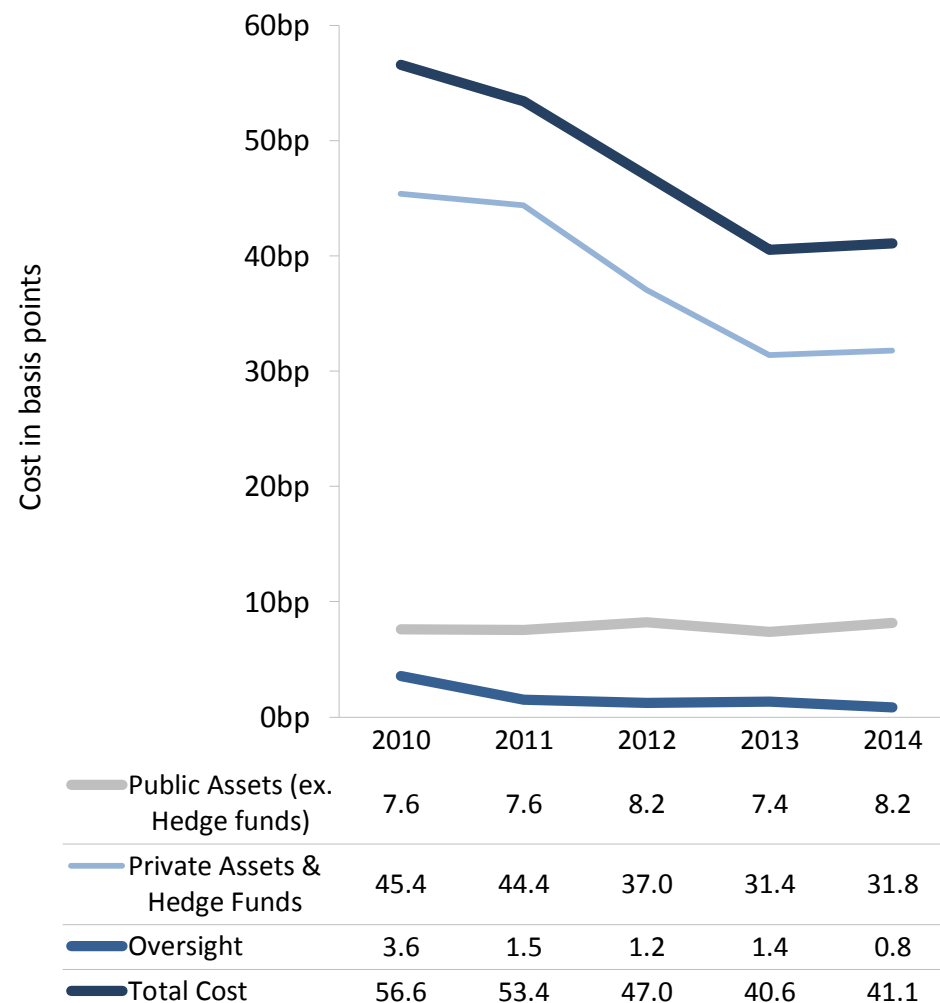
Starting in 2014, CEM began including hedge fund performance fees in total costs. Prior year costs do not include hedge fund performance fees. This is the reason for the slight up-tick in costs in 2014

CalPERS costs decreased primarily because:

- CalPERS decreased its investment in the highest cost asset classes. Its holdings of hedge funds, real estate and private equity decreased from 24% of assets in 2010 to 21% in 2014.
- CalPERS increased its use of lower cost passive and internal management from 64% of assets in 2010 to 69% in 2014.

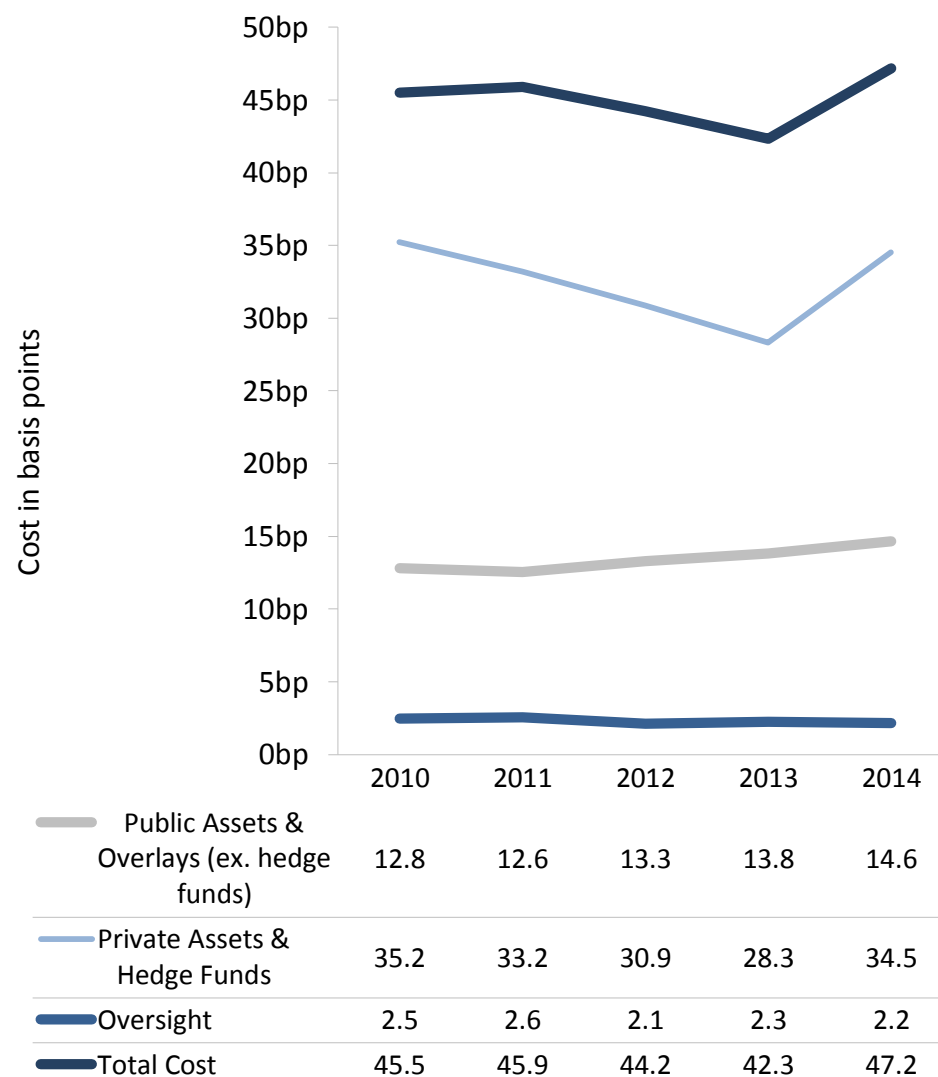
There was also a decrease in oversight costs beginning in 2011 due to a change in CEM methodology. For details, see the appendix pages 8 to 10.

Trend in your investment costs



Peer average annual costs for the past 5 years.

Peer average annual operating costs

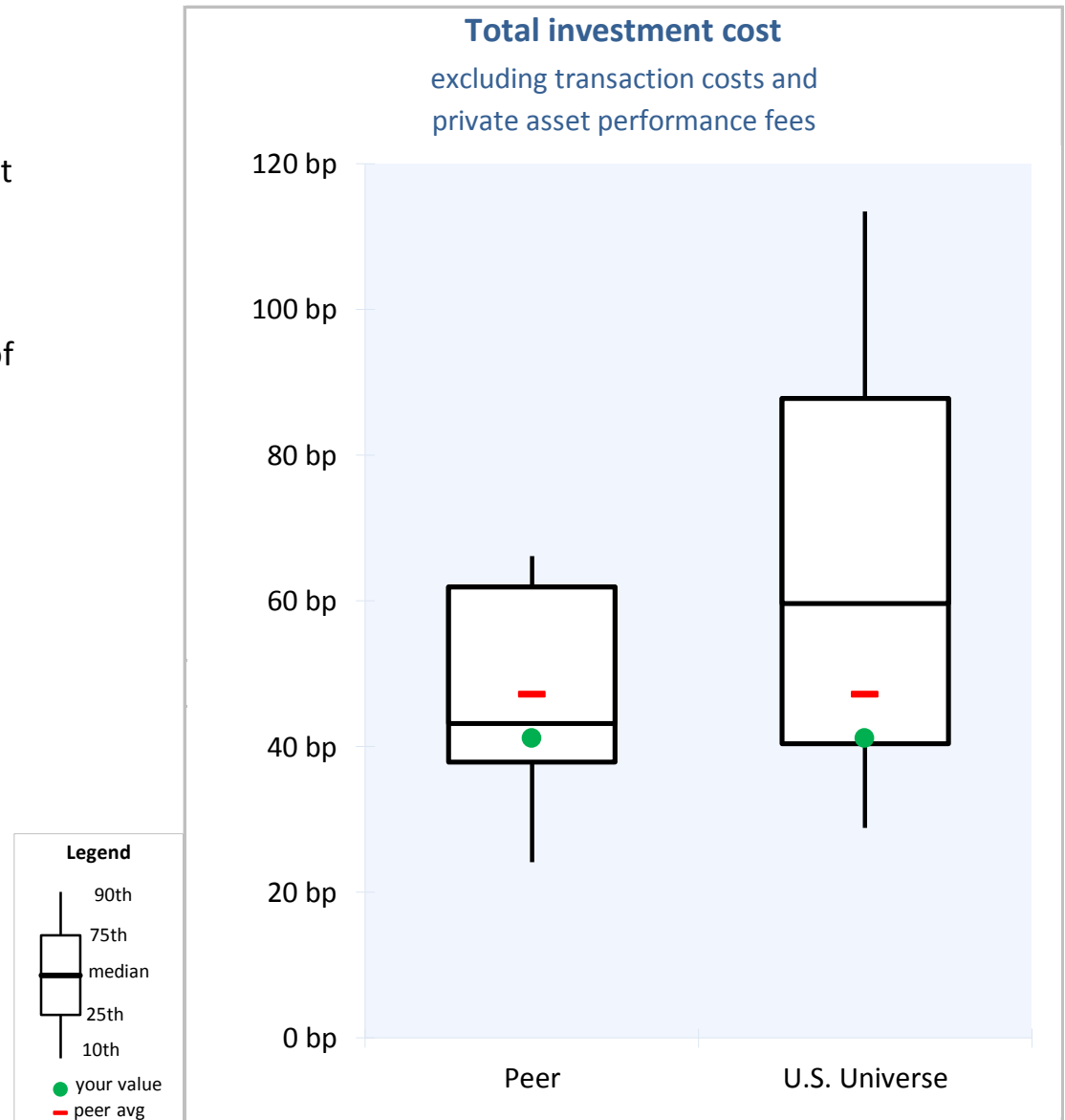


CalPERS total investment cost of 41.1 bps was slightly below the peer median of 43.2 bps.

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 21% of CalPERS assets at the end of 2014 versus a peer average of 21%.
- Fund size. Bigger funds have advantages of scale.

Therefore, to assess whether CalPERS costs are high or low given your unique asset mix and size, CEM calculates a benchmark cost for CalPERS fund. This analysis is shown on the following page.



Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, CalPERS fund was slightly low cost by 1.8 basis points in 2014.

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

CalPERS total cost of 41.1 bp was slightly below its benchmark cost of 42.9 bp. Thus, its cost savings was 1.8 bp.

Your cost versus benchmark

	\$000s	basis points
CalPERS total investment cost	1,188,859	41.1 bp
CalPERS benchmark cost	1,240,360	42.9 bp
CalPERS excess cost	(51,501)	(1.8) bp

CalPERS was slightly low cost because it had a lower cost implementation style and paid less than peers for similar services

Reasons for CalPERS low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less fund of funds	(23,389)	(0.8)
• Use of external active management (vs. lower cost passive and internal)	42,700	1.5
• Less overlays	(42,373)	(1.5)
• Other style differences	(9,726)	(0.3)
	(32,788)	(1.1)
2. Paying less than peers for similar services		
• External investment management costs	(4,452)	(0.2)
• Internal investment management costs	11,509	0.4
• Oversight, custodial & other costs	(25,769)	(0.9)
	(18,712)	(0.6)
Total savings	(51,501)	(1.8)

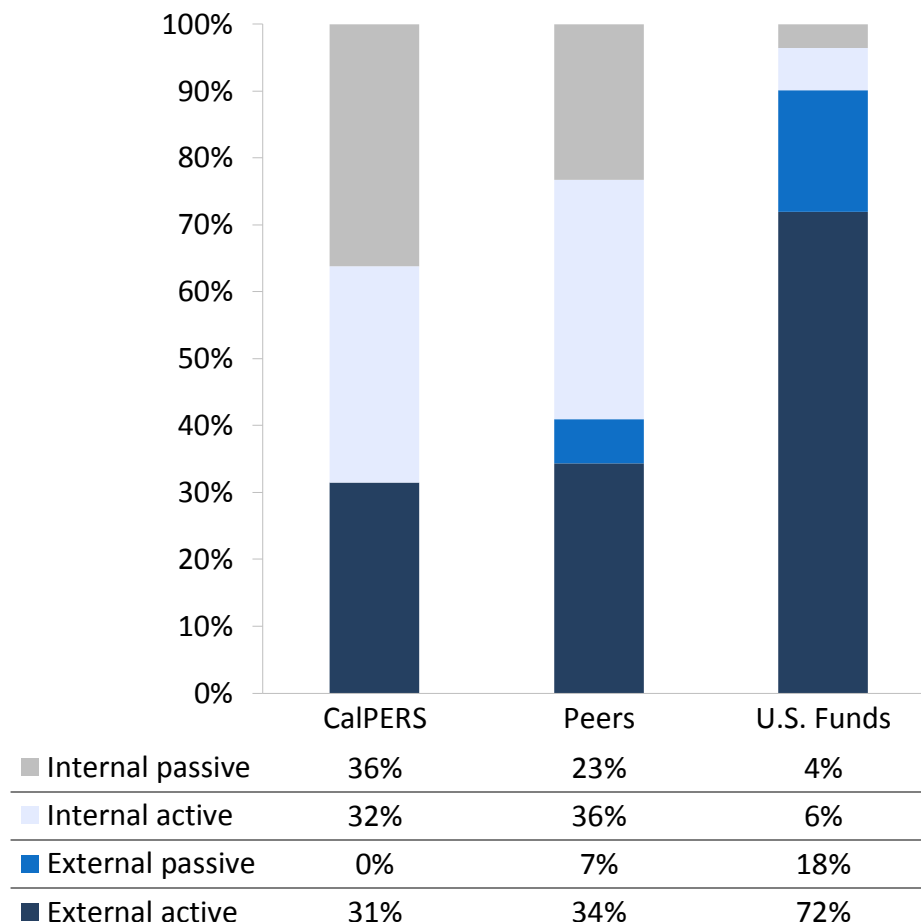
Differences in cost performance are often caused by differences in implementation style.

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. CalPERS used less external active management than its peers (its 31% versus 34% for its peers).
- Within external active holdings, fund of funds usage because it is more expensive than direct fund investment. CalPERS had less in fund of funds. CalPERS 9% of hedge funds, real estate and private equity in fund of funds compared to 15% for your peers.

Implementation style¹



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

Differences in implementation style saved CalPERS 1.1 bp relative to its peers.

Calculation of the cost impact of differences in implementation style

Asset class	CalPERS avg holdings in \$mils	% External active			Premium vs passive & internal ¹	Cost/ (savings) \$000s bps
		You	Peer average	More/ (less)		
	(A)			(B)	(C)	(A X B X C)
Public Market Equities	155,149	15.8%	31.7%	(15.9%)	44.1 bp	(108,832)
Fixed Income	65,692	5.8%	16.4%	(10.6%)	23.7 bp	(16,574)
Global TAA	1,115	100.0%	75.8%	24.2%	Insufficient ²	0
Commodities	2,614	0.0%	1.0%	(1.0%)	207.0 bp	(564)
Infrastructure	1,366	63.5%	23.9%	39.6%	89.3 bp	4,829
of which Ltd Partnerships represent:		100.0%	61.1%	38.9%	54.3 bp	1,835
Real Estate ex-REITs	23,786	100.0%	62.6%	37.4%	53.7 bp	47,784
of which Ltd Partnerships represent:		100.0%	69.0%	31.0%	49.5 bp	36,513
Natural Resources	2,635	100.0%	55.4%	44.6%	77.6 bp	9,113
of which Ltd Partnerships represent:		100.0%	81.9%	18.1%	-33.9 bp	(1,612)
Diversified Private Equity	33,326	100.0%	86.2%	13.8%	152.5 bp	70,208
Impact of less/more external active vs. lower cost styles						42,700 1.5 bp
					Premium vs. direct LP ¹	
		Fund of funds % of LPs				
Hedge Funds	4,061	19.1%	22.5%	(3.4%)	104.0 bp	(1,451)
Infrastructure - LPs	867	0.0%	26.6%	(26.6%)	Insufficient ²	0
Real Estate ex-REITs - LPs	23,786	0.0%	10.8%	(10.8%)	34.3 bp	(8,807)
Natural Resources - LPs	2,635	0.0%	0.0%	0.0%		0
Diversified Private Equity - LPs	33,326	15.2%	20.0%	(4.8%)	82.1 bp	(13,131)
Impact of less/more fund of funds vs. direct LPs						(23,389) (0.8) bp
<u>Overlays and other</u>						
Impact of lower use of portfolio level overlays						(42,373) (1.5) bp
Impact of mix of internal passive, internal active, and external passive ³						(9,726) (0.3) bp
Total impact of differences in implementation style						(32,788) (1.1) 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 0.2 bps.

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

	CalPERS avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less)	
<u>Public Assets</u>					
Public Market Equities - Active	24,492	63.0 ¹	46.9	16.1	39,310
Fixed Income - Active	3,802	31.1 ¹	26.1	5.0	1,913
Global TAA - Active	1,115	150.3 ¹	86.0	64.3	7,169
Hedge Funds - Active	3,285	385.2 ¹	298.1	87.1	28,616
Hedge Funds - Fund of Fund	776	432.2 ¹	402.0	<u>30.2</u>	<u>2,341</u>
Total Public Assets				2.7	79,349
<u>Private Assets</u>					
Infrastructure - Limited Partnership	867	145.6	137.5	8.1	707
Real Estate ex-REITs - Limited Partnership	23,786	90.8	102.2	(11.4)	(27,080)
Natural Resources - Limited Partnership	2,635	29.7	105.2	(75.5)	(19,894)
Diversified Private Equity - Active	27,006	157.3	158.0	(0.7)	(1,865)
Diversified Private Equity - Fund of Fund	5,056	169.5	240.0	<u>(70.6)</u>	<u>(35,669)</u>
Total Private Assets				(2.9)	(83,801)
Total impact of paying more/less for external management					(4,452)
Total in bps					(0.2) bp

¹ You paid performance fees in these asset classes.

The net impact of paying more/less for internal asset management costs added 0.4 bps.

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

	Your avg holdings in \$mils	Cost in bps			Cost/ (savings) in \$000s
		Your Fund	Peer median	More/ (less)	
	(A)			(B)	(A X B)
Public Market Equities - Passive	103,284	0.2	1.0	(0.8)	(8,575)
Public Market Equities - Active	27,373	8.7	4.6	4.2	11,459
Fixed Income - Passive	20	17.2	1.1	16.0	31
Fixed Income - Active	61,870	4.5	3.0	1.5	9,247
Commodities - Active	2,614	0.8	2.8	(2.1)	(537)
Infrastructure - Active	499	24.6	27.0	(2.3)	(116)
Total impact of paying more/less for internal management					11,509
Total in bps					0.4 bp

The net impact of differences in oversight, custodial & other costs saved 0.9 bps.

Cost impact of differences in oversight, custodial & other costs

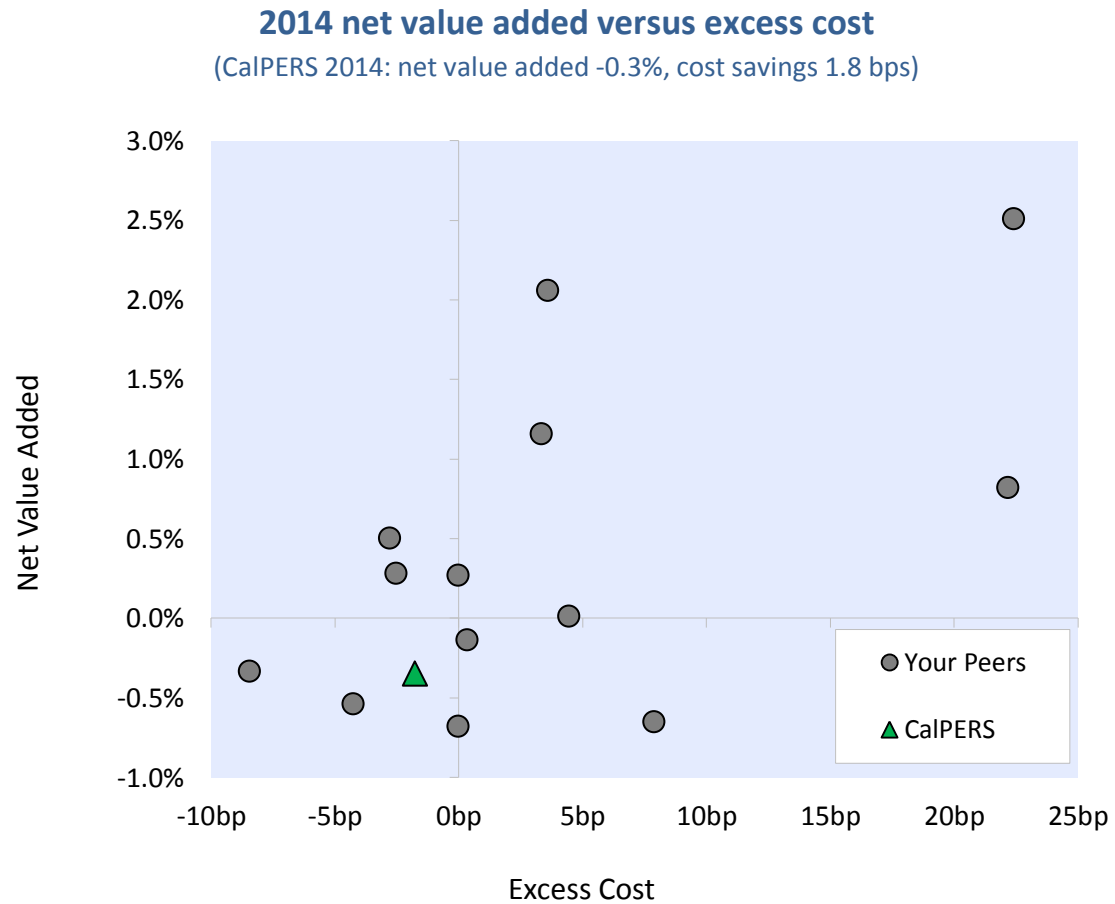
	Your avg holdings in \$mils	Cost in bps			Cost/ (savings) in \$000s
		Your fund	Peer median	More/ (less)	
	(A)			(B)	(A X B)
Oversight & consulting	289,298	0.5	0.8	(0.4)	(10,684)
Custodial	289,298	0.2	0.7	(0.5)	(14,562)
Audit	289,298	0.0	0.0	0.0	136
Other	289,298	0.2	0.2	(0.0)	(658)
Total					(25,769)
Total in bps					(0.9) bp

CalPERS was slightly low cost because it had a lower cost implementation style and paid less than peers for similar services

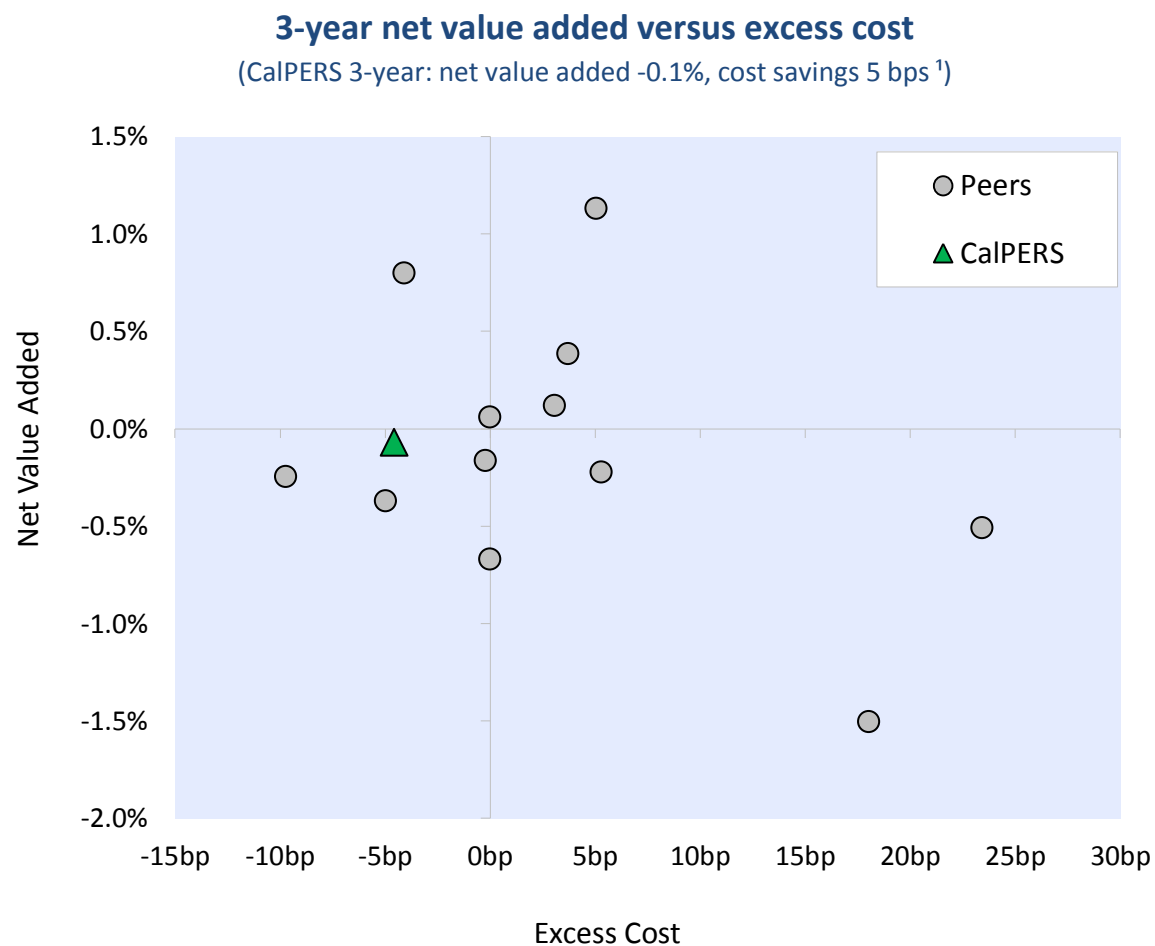
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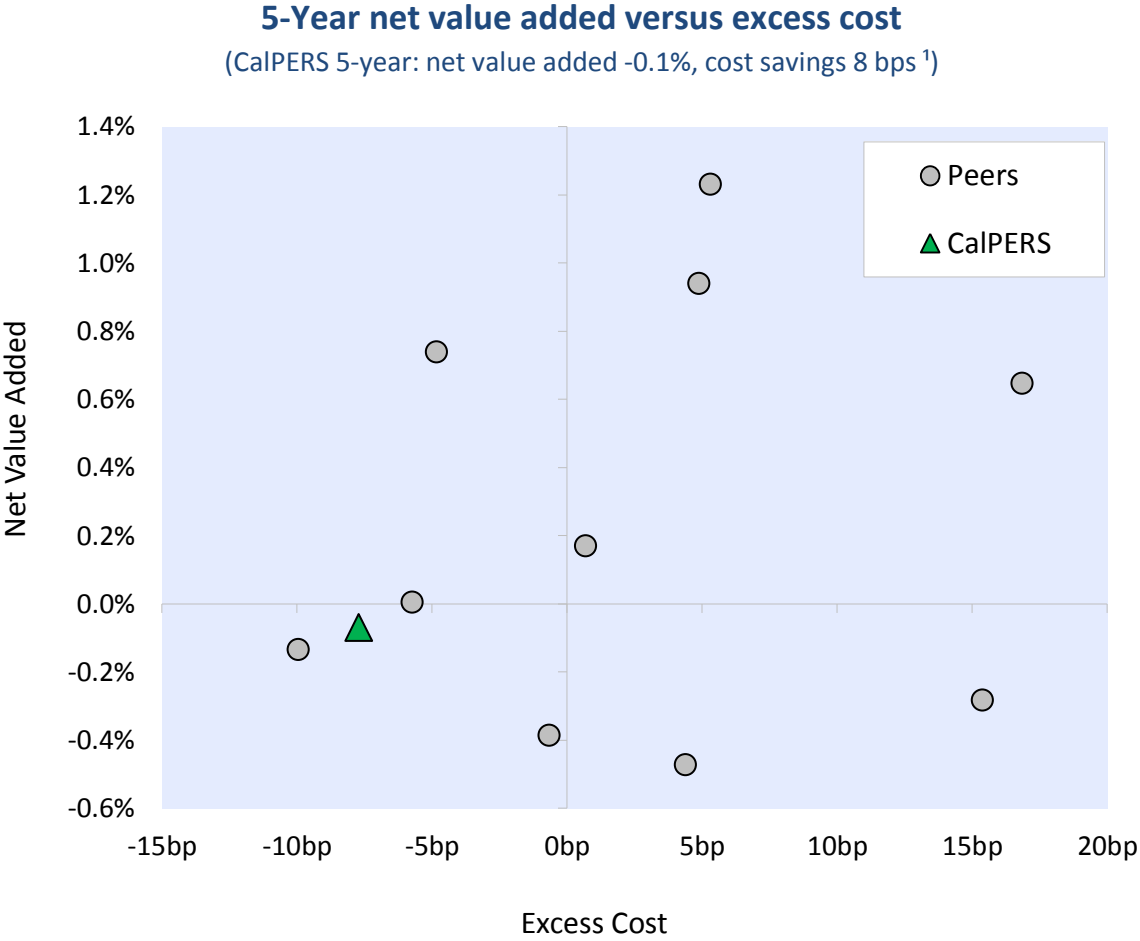
CalPERS 2014 performance placed in the negative value added, low cost quadrant of the cost effectiveness chart.



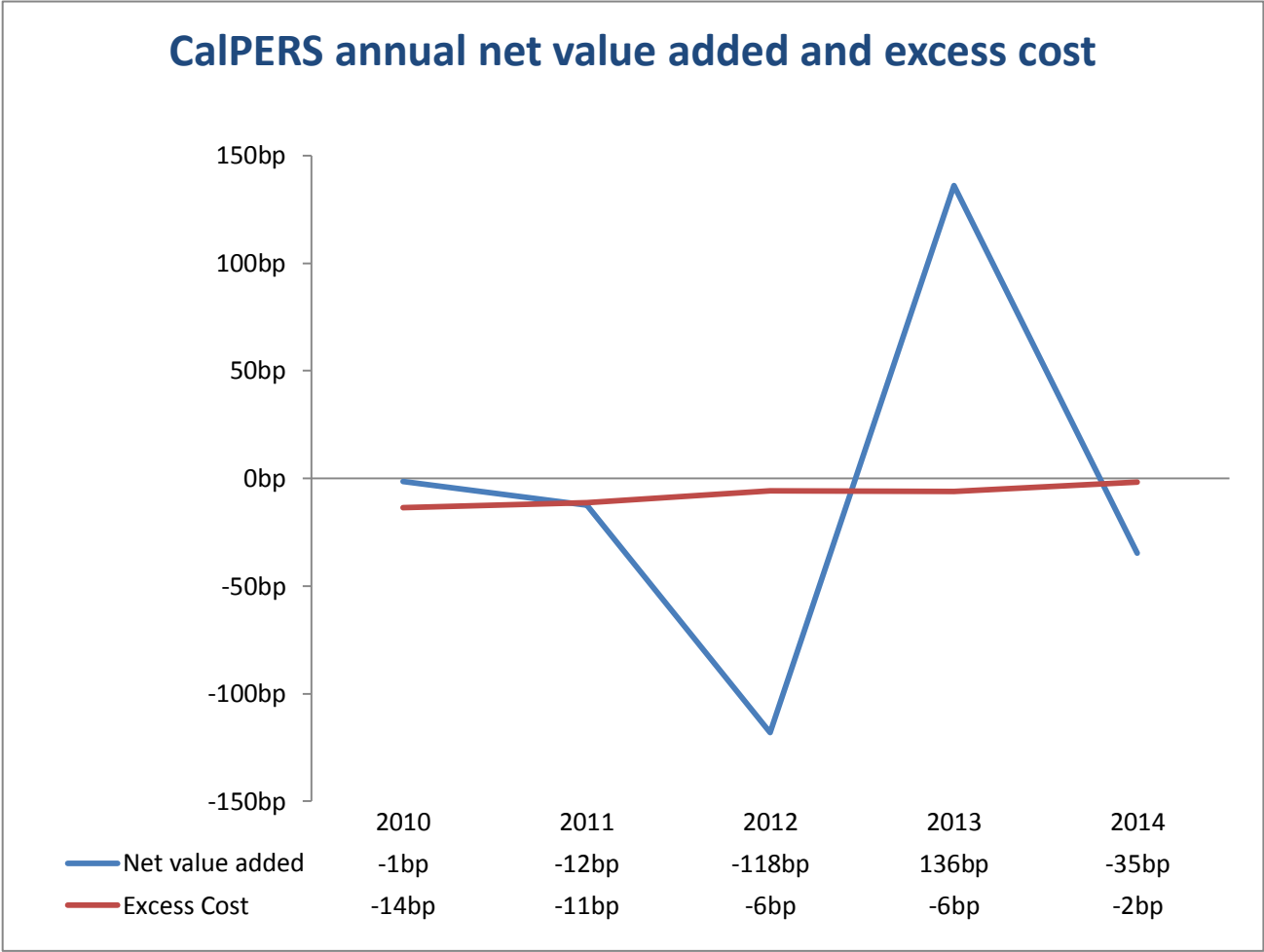
CalPERS 3-year performance placed in the negative value added, low cost quadrant of the cost effectiveness chart.



CalPERS 5-year performance placed in the negative value added, low cost quadrant of the cost effectiveness chart.



CalPERS net value added and excess cost for the past 5 years.



2

Research and Trends

Net value added	
- By region	2
- Trends	3
- By asset class	4
- By style	5
Private equity benchmarks	6
Implementation style	
- U.S. trends	8
- Global	9
Policy asset mix	
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The region with the highest net value added was Europe.

Value added by region¹ (period ending December 31, 2014)

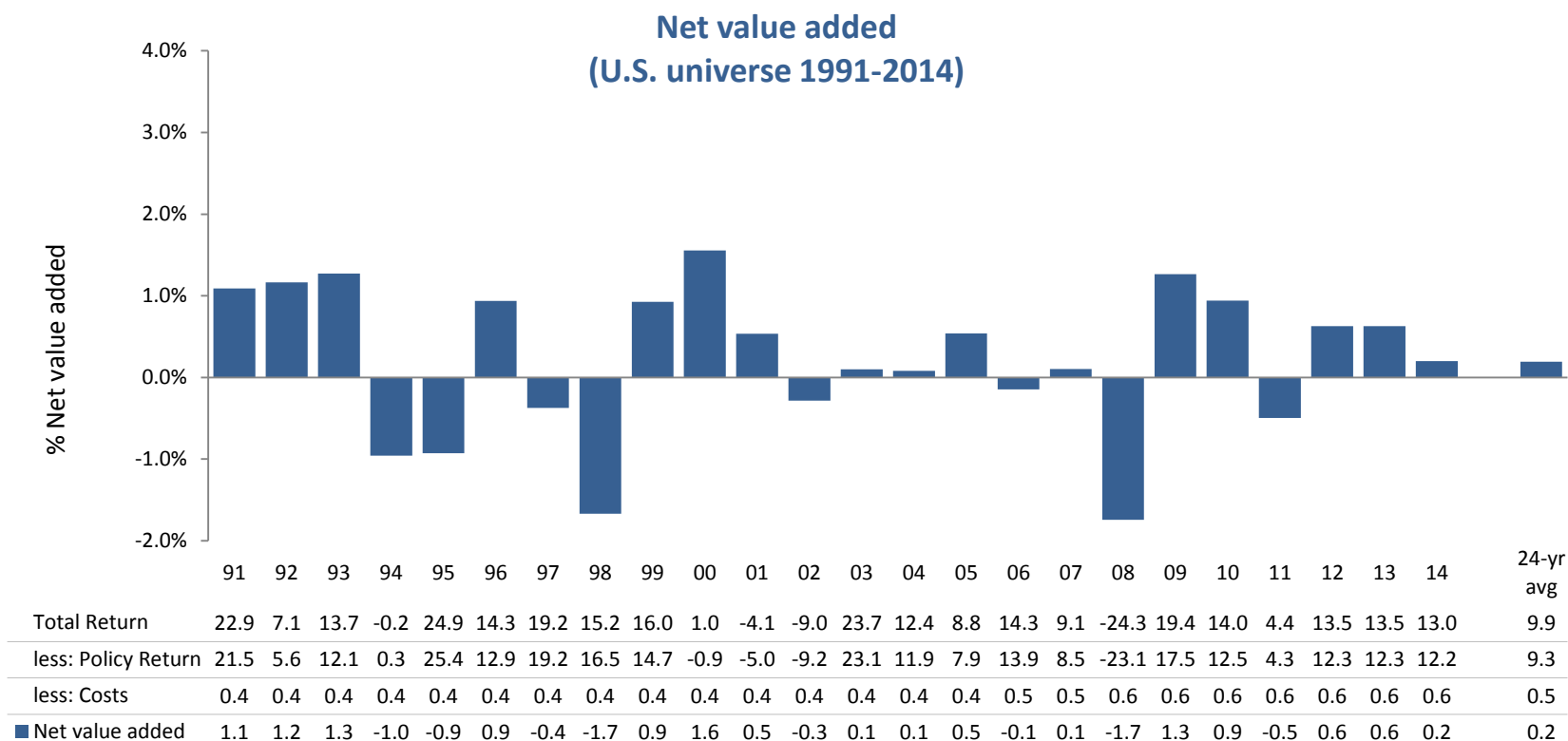
	All funds	U.S. funds	Canadian funds	European funds	Asia-Pacific funds
	24-year average ³	24-year average ³	24-year average ³	21-year ² average ³	15-year ² average ³
Total return	9.70%	9.94%	9.50%	7.78%	7.98%
- Policy return	9.11%	9.28%	8.99%	7.06%	7.80%
- <u>Costs</u>	<u>0.42%</u>	<u>0.47%</u>	<u>0.37%</u>	<u>0.30%</u>	<u>0.49%</u>
= Net value added	0.17%	0.19%	0.14%	0.43%	-0.31%
 # of annual observations	 7,100	 4,042	 2,267	 666	 109
Median fund size (\$ billion)	6.3	9.6	1.9	8.8	18.0

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.

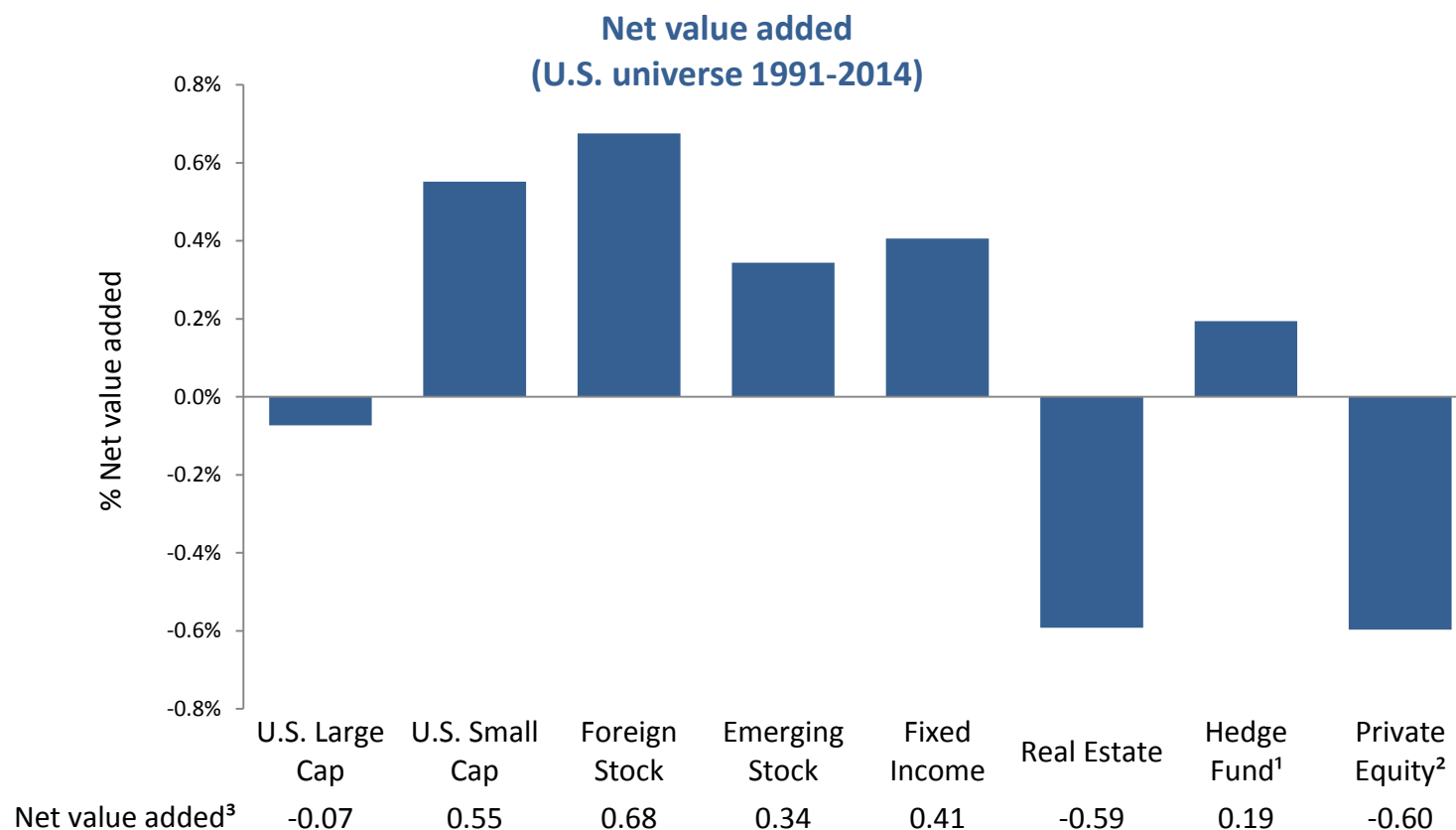
3. Averages are the arithmetic average of annual averages.

In the U.S., net value added averaged 0.2% over the past 24 years ending 2014.



Value added analysis is based on 4,042 annual fund total performance observations from the CEM U.S. universe for the 24-year period ending 2014. The 24-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 24 years was Foreign Stock.



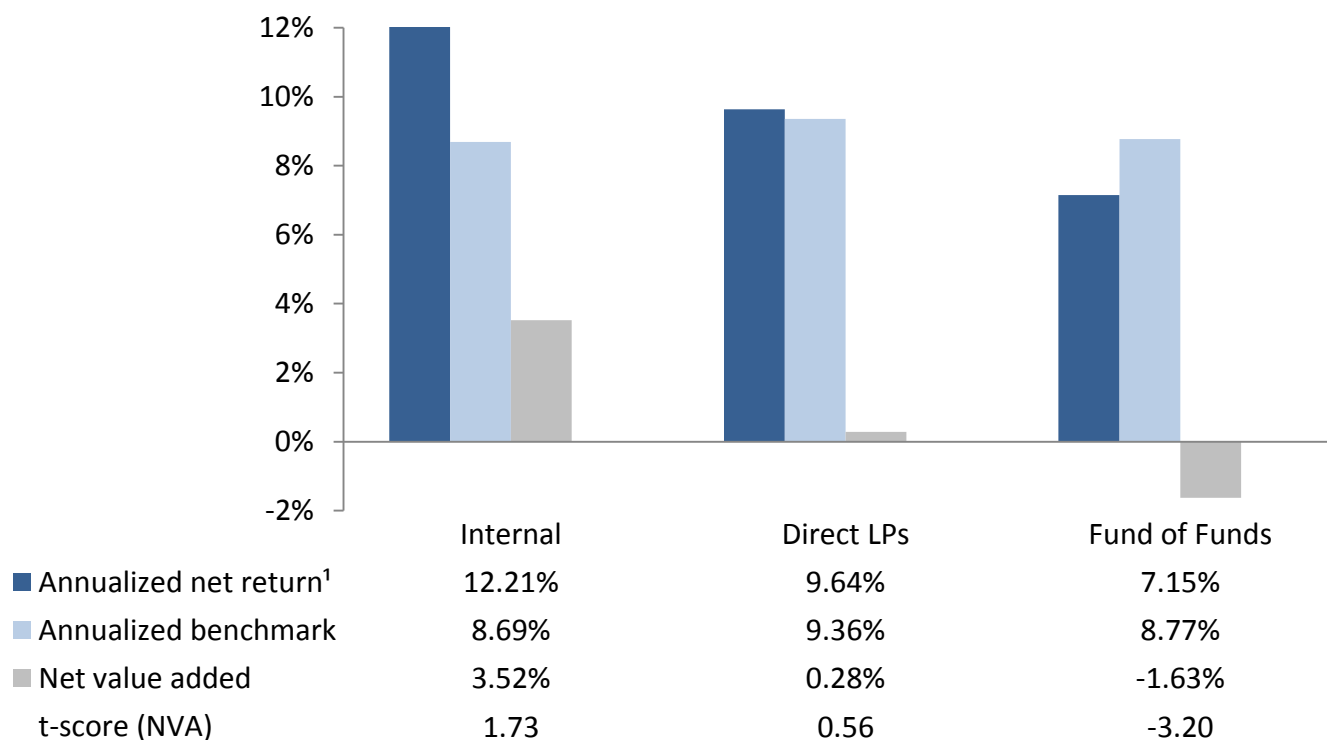
1. Hedge Fund gross value added performance reflect data for the 15 year period from 2000 to 2014.

2. The net value added calculation for private equity uses the average benchmark of all U.S. participants.

3. Value added analysis is from 4,042 annual fund performance observations from the CEM U.S. universe for the 24-year period ending 2014. 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 added (1996-2012)

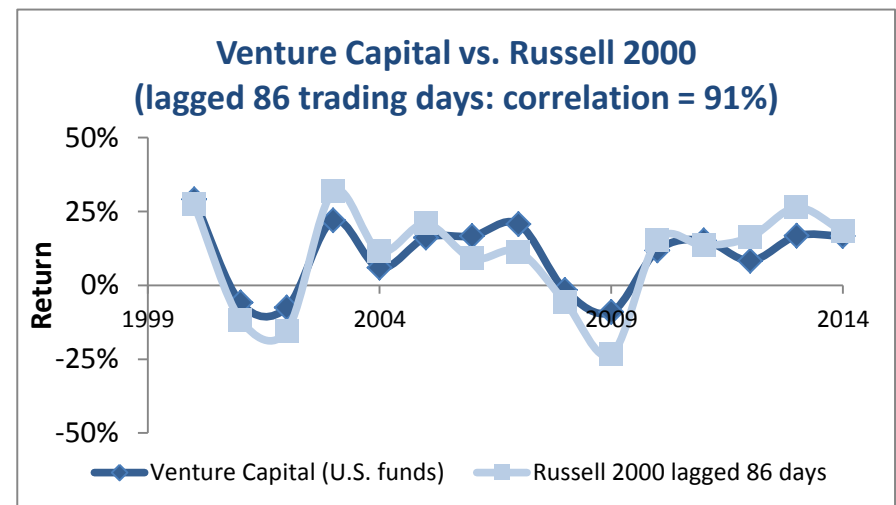
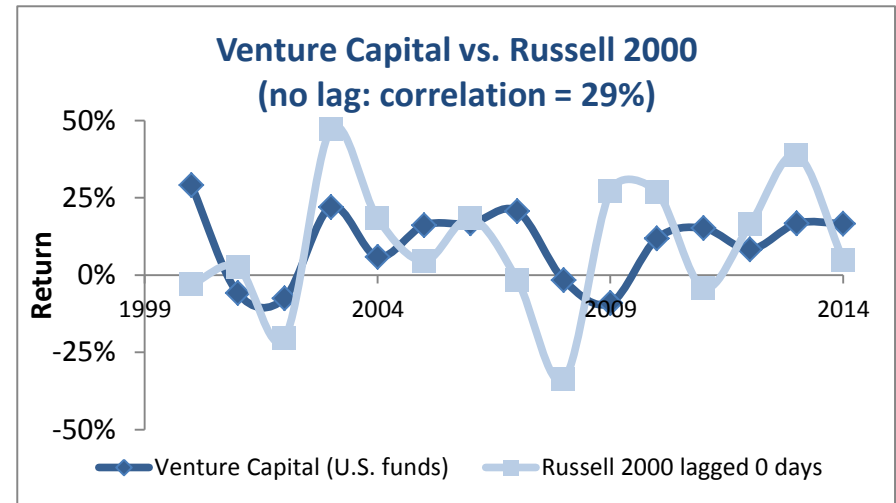


1. To compare the performance of private equity implementation styles over long periods, Monte Carlo simulations were used to capture differences in risk between styles. For details, see "How Implementation Style and Costs Affect Private Equity Performance", Alex Beath, Chris Flynn, and Jody MacIntosh, 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 2008 the Russell 2000 index return was -33.8% versus -5.6% 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 32.2% using the un-lagged benchmarks versus 4.0% 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.



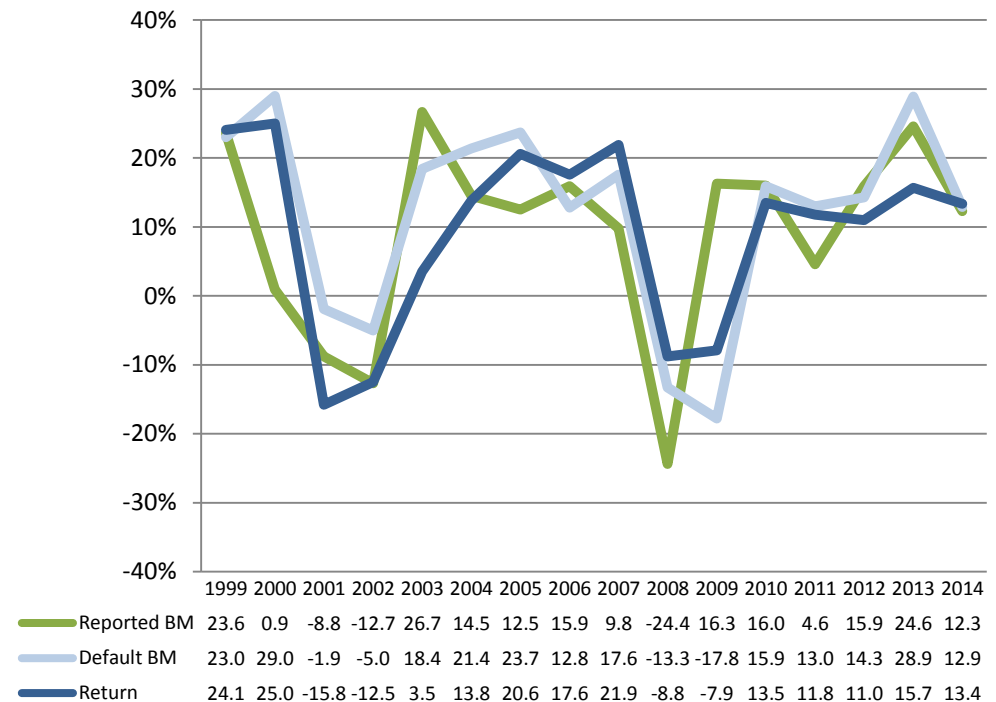
To enable fairer comparisons, CEM uses default private equity benchmarks.

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:

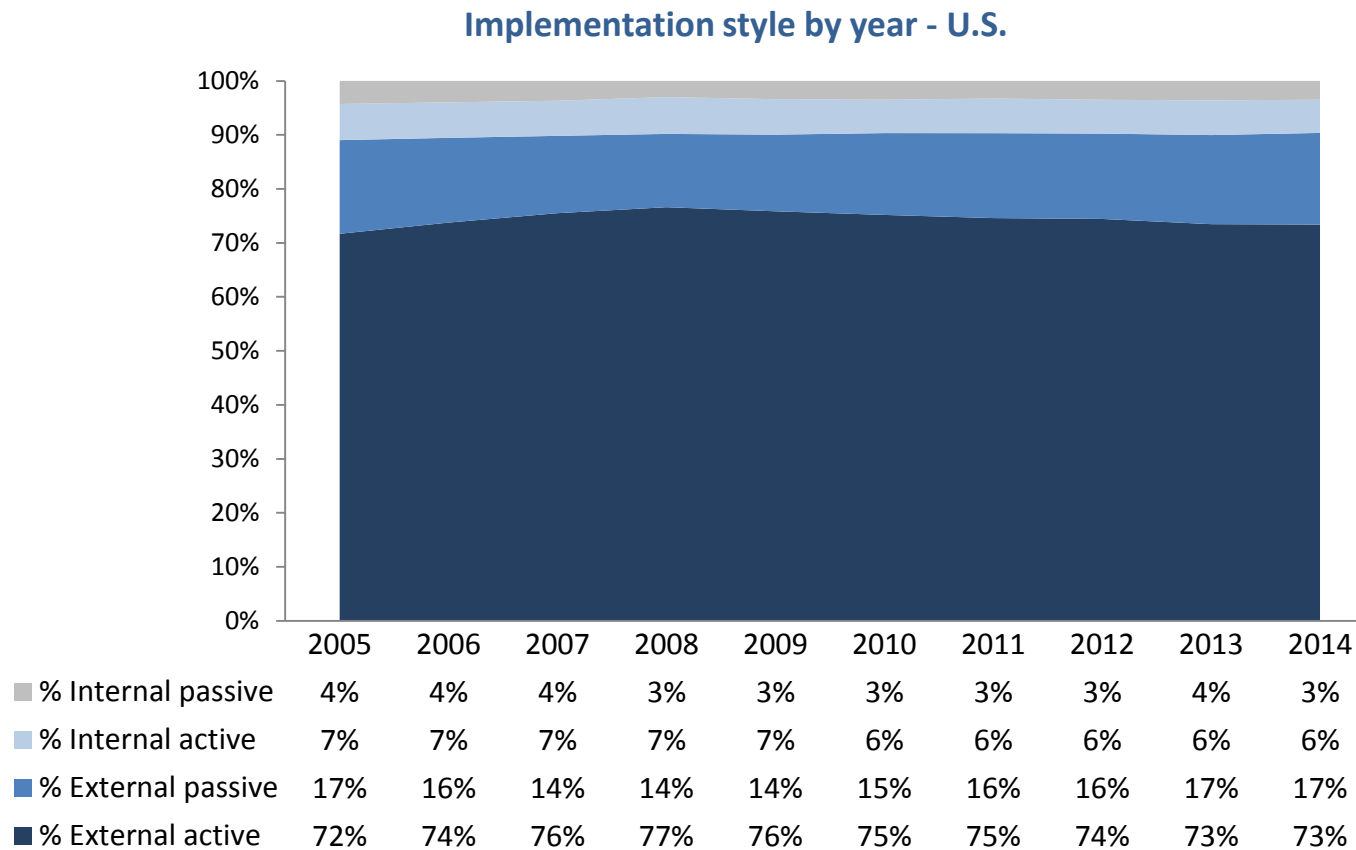
- Investable. They are comprised of lagged small cap benchmarks.
- Custom lagged for each participant. Your default benchmark had a lag of 84 trading days. Different portfolios had different lags. CEM estimated the lag on private equity portfolios with multi-year histories by comparing annual private 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 94 trading days (i.e., approximately 132 calendar days or 4.3 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 83% for the default benchmarks versus 43% for self-reported benchmarks. Other statistics such as volatility were also much better.

Private equity returns versus reported and default benchmark returns - Global median



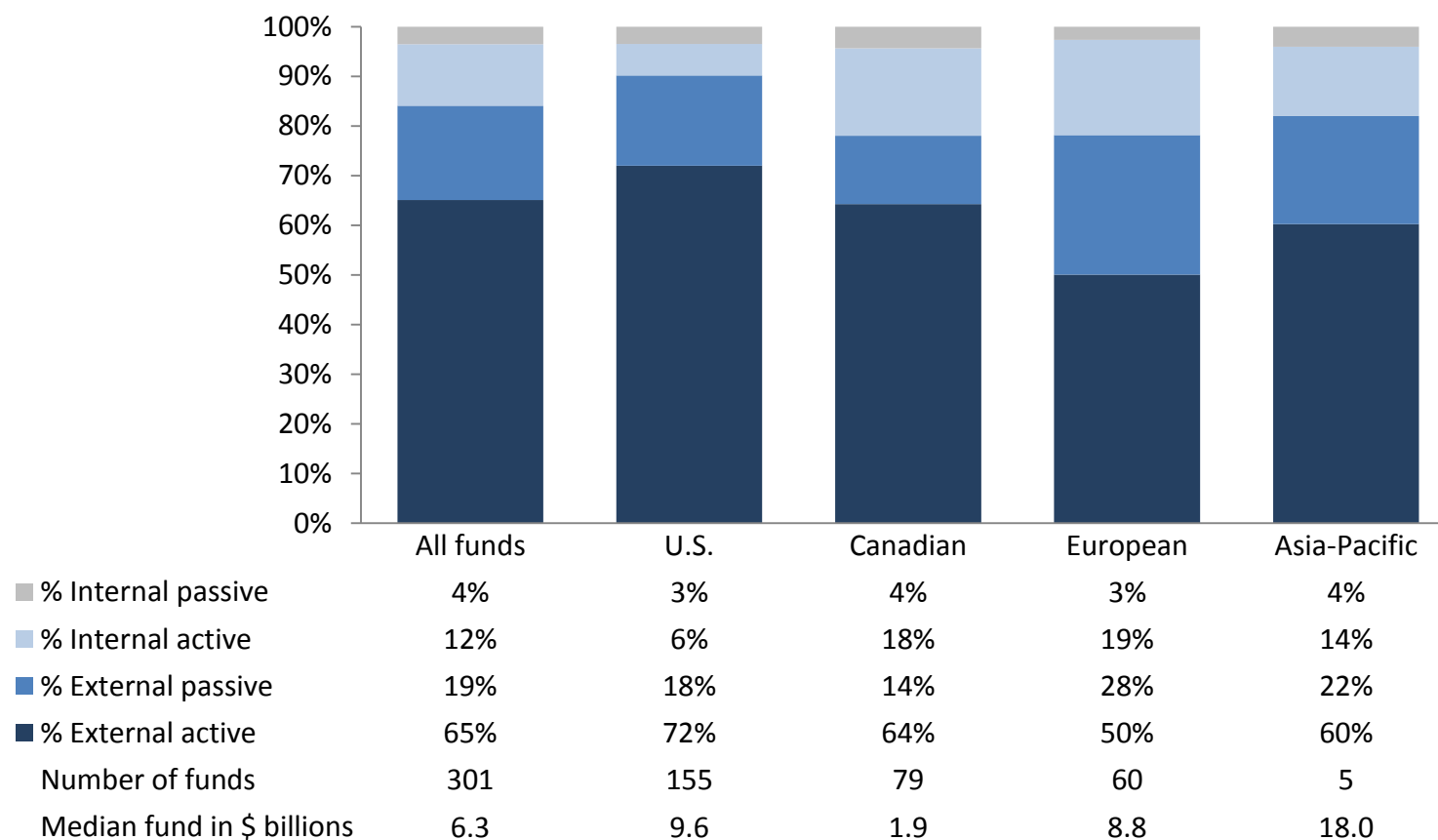
For U.S. plans, external active management increased from 72% to 73% over the past 10 years.



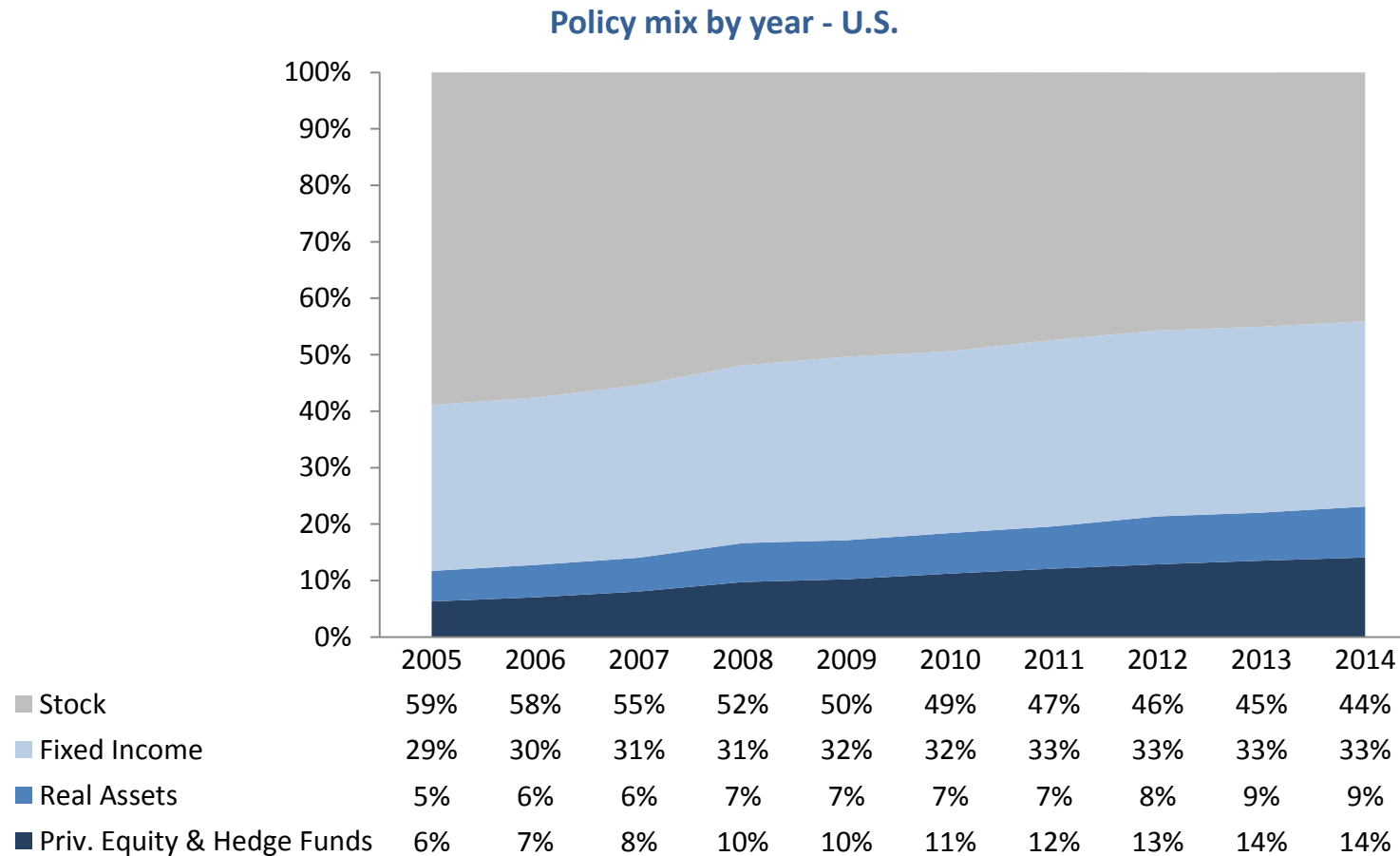
• This analysis is based on 68 U.S. funds with 10 consecutive years of data.

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

Implementation style by region - 2014 average

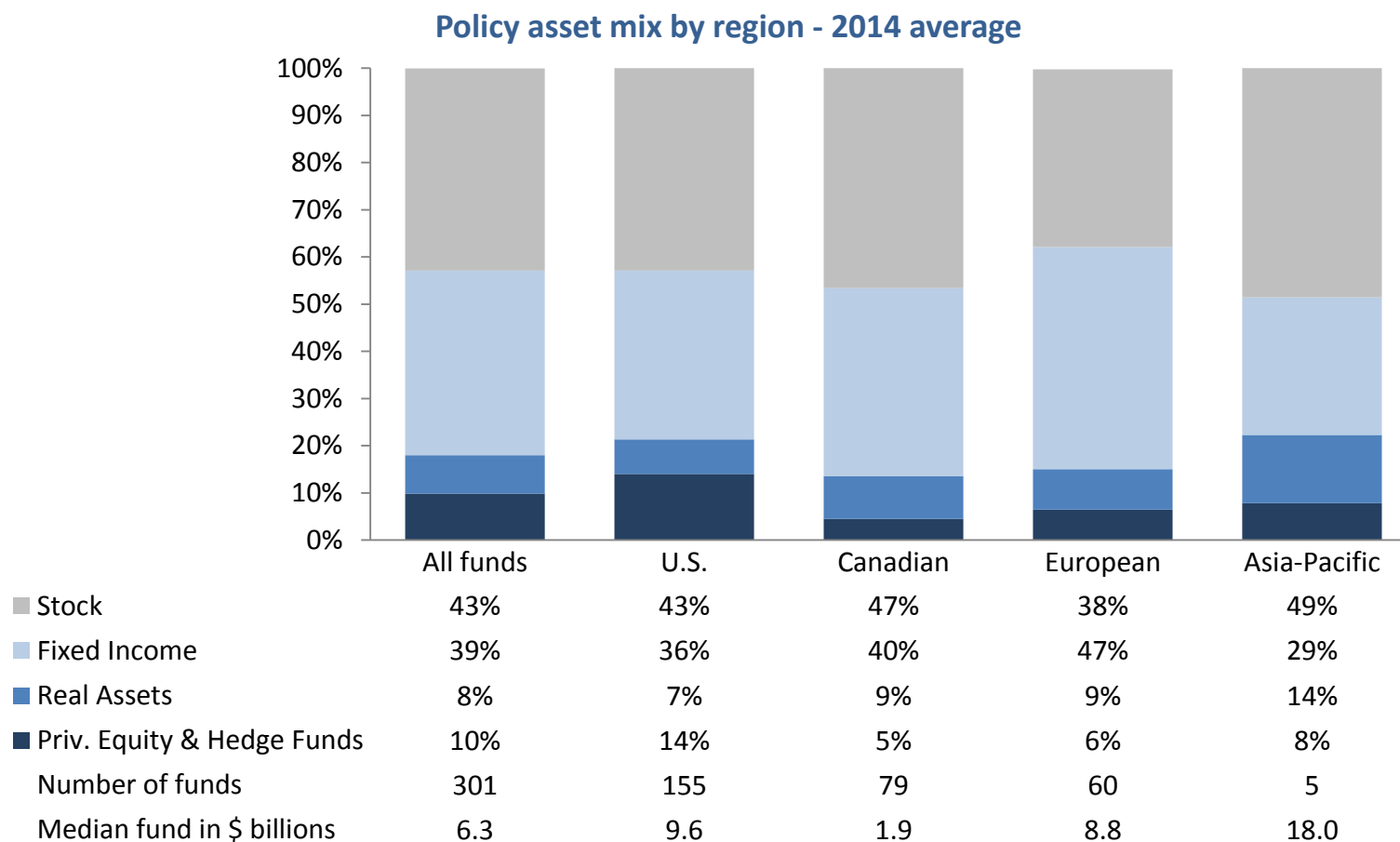


For U.S. plans, combined policy weights for real assets, private equity and hedge funds increased from 11.7% in 2005 to 23.1% in 2014.



- This analysis is based on 68 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.



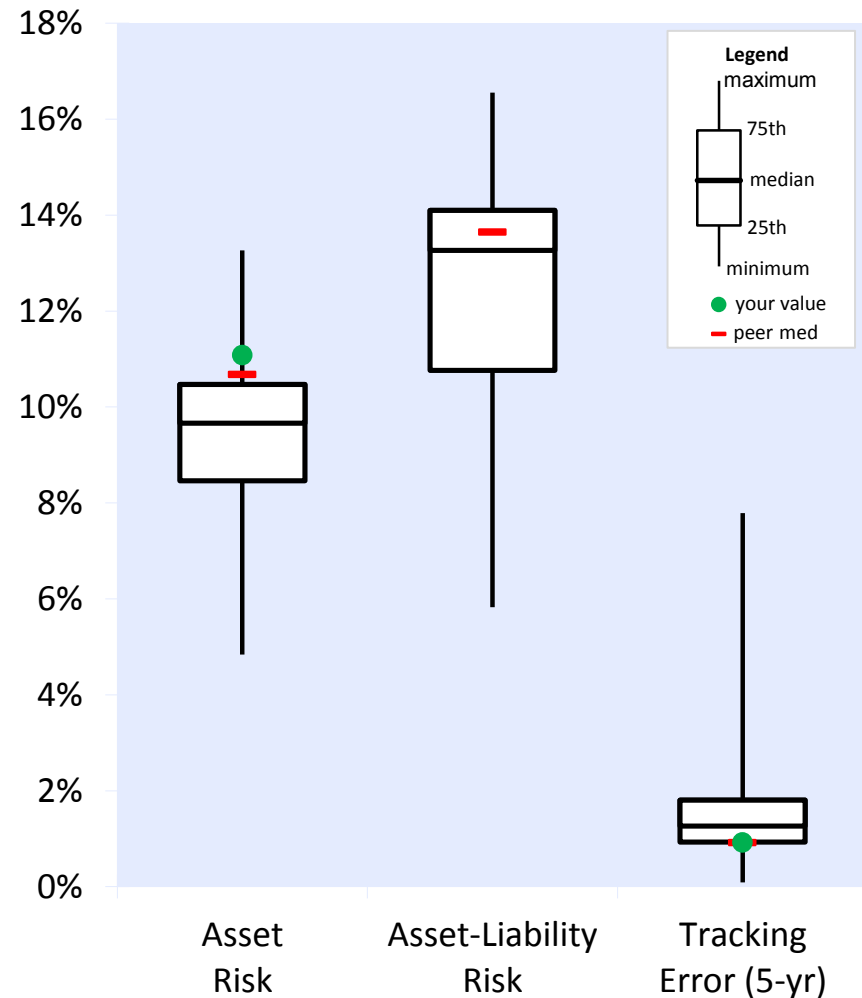
Risk by type

Your asset risk of 11.1% was above the U.S. median of 9.7%. 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.

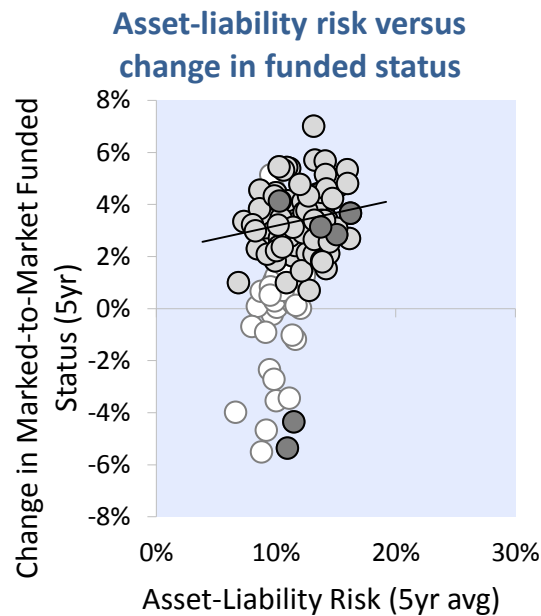
Your tracking error of 0.9% was below the U.S. median of 1.3%. Tracking error is the risk of active management. It equals the standard deviation of your annual net value added.

U.S. risk levels at December 31, 2014

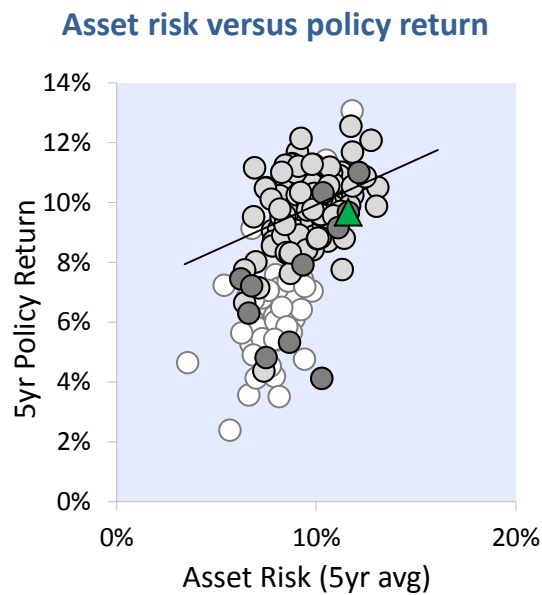


Risk versus return

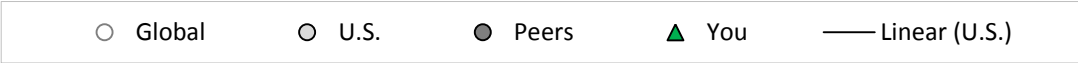
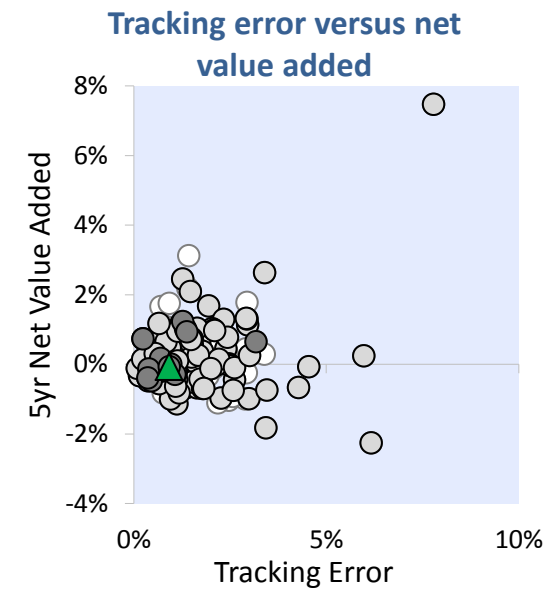
Higher asset-liability risk was associated with positive changes in marked-to-market funded status.



Higher asset risk was associated with higher policy returns.

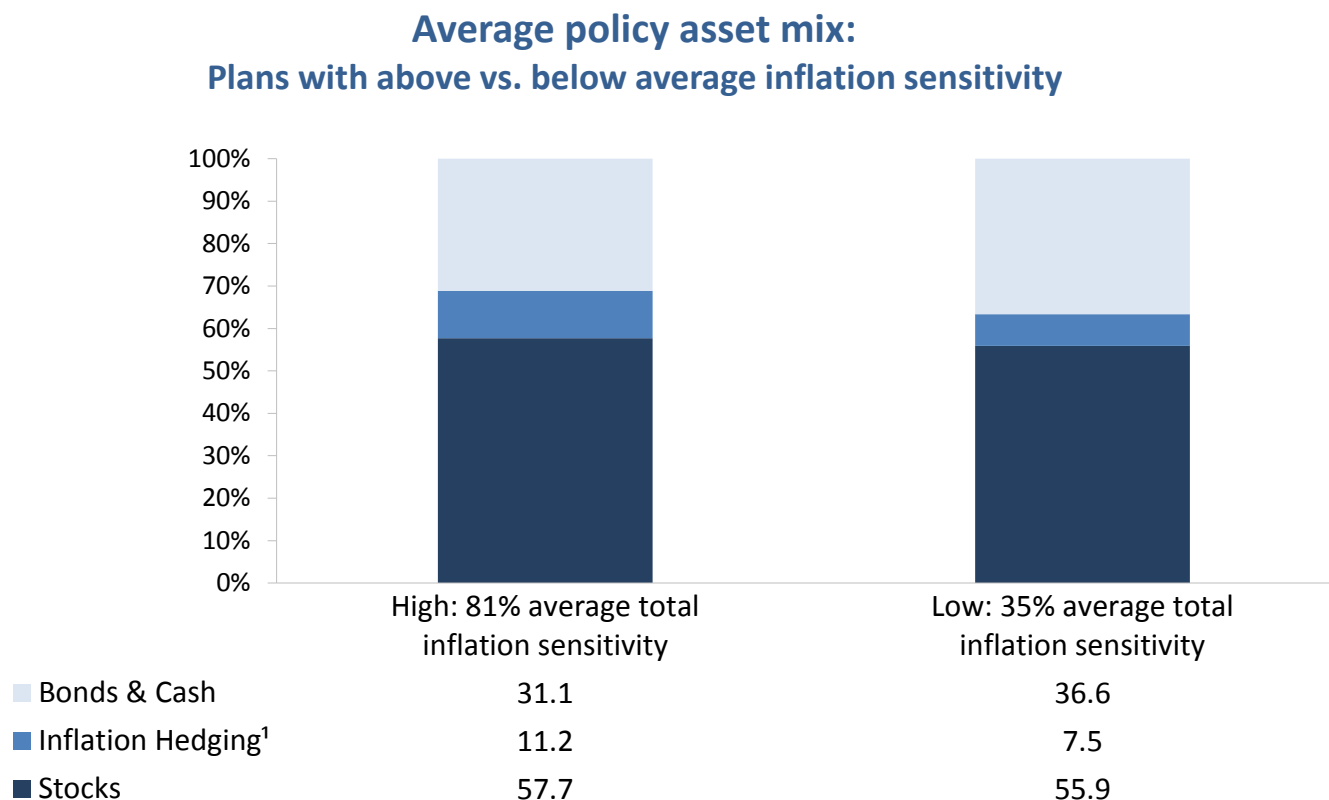


There was no meaningful relationship between tracking error and net value added.



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 11.2% of assets at plans with high inflation sensitivity versus 7.5% at plans with lower inflation sensitivity.

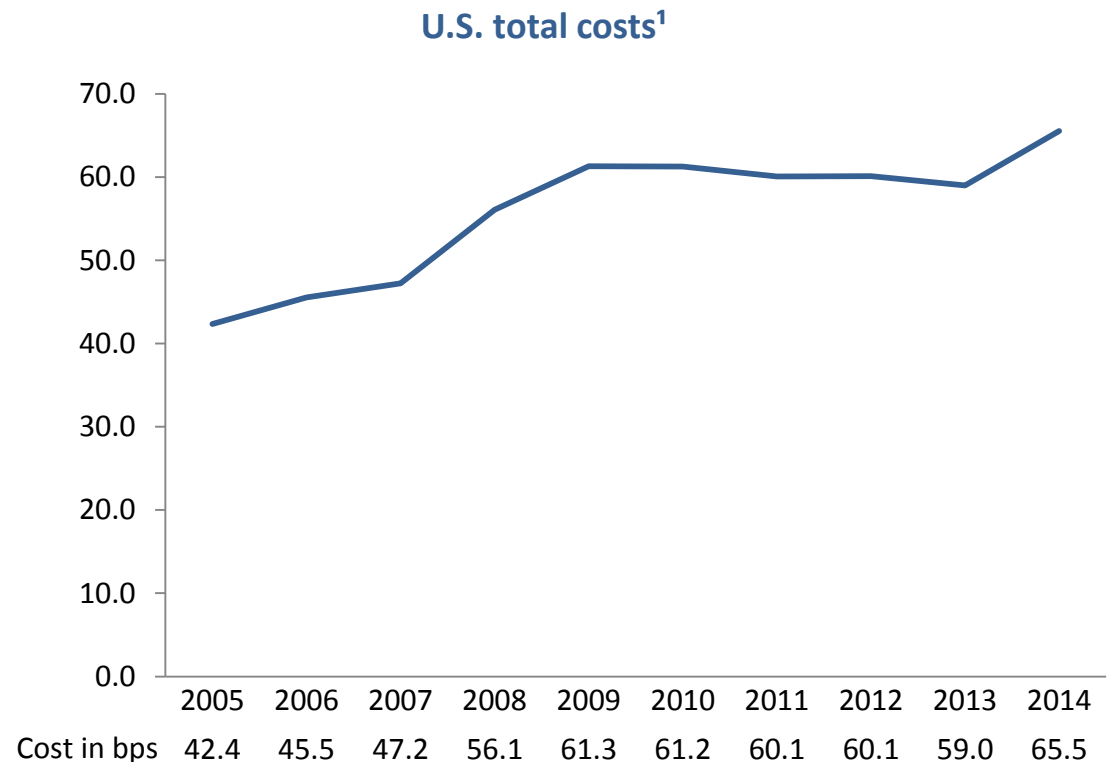


1. Inflation hedge assets include inflation-indexed bonds, commodities, real estate & REITs, infrastructure and natural resources.

U.S. fund costs have grown by 23 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 6% to 12% on average.
- Use of the most expensive implementation style, external active management, increased from 72% to 73% on average.



1. This analysis is based on 68 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.

	18-yr average ending 2014 ²		
	DB	DC	Difference
Total return	7.99%	6.88%	1.11%
- Policy return ¹	7.43%	6.46%	0.97%
- Costs	0.49%	0.40%	0.09%
= Net value added	0.08%	0.01%	0.07%
Number of observations	3,217	2,143	

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	11.0%	n/a
Real Assets	5%	n/a	9.5%	n/a
Small Cap Stock	6%	8%	8.8%	9.8%
Employer Stock	0%	20%	n/a	8.6%
Fixed Income	31%	10%	7.6%	6.1%
Hedge Funds	2%	n/a	7.6%	n/a
Stock U.S. Large Cap or Broad	26%	30%	6.4%	7.9%
Stock Non U.S. or Global	23%	8%	4.5%	6.6%
Stable Value/GICs	n/a	17%	n/a	4.6%
Cash	2%	8%	2.6%	2.9%
Total	100%	100%	8.0%	6.9%
Number of observations	3,217	2,143		

1. DC policy return = weights of holdings X benchmarks

2. Returns are the geometric average of annual averages.

3. 18 years ending 2014. Equals arithmetic average of annual asset mix weights.

4. 18 years from 1997 to 2014. 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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CEM global universe	3
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Implementation style, actual mix and policy mix:	
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- trends from 2010 to 2014	6
Implementation style by asset class	7
Actual mix from 2010 to 2014	8
Policy mix from 2010 to 2014	9

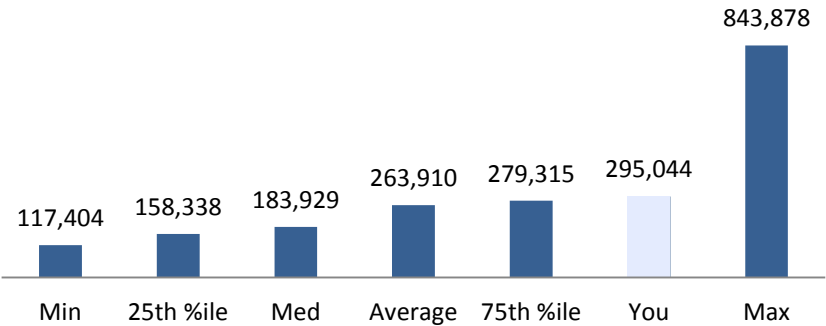
Peer group

Your peer group is comprised of 14 global funds, with assets ranging from \$117.4 billion to \$843.9 billion versus your \$295.0 billion. The median size is \$183.9 billion.

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.

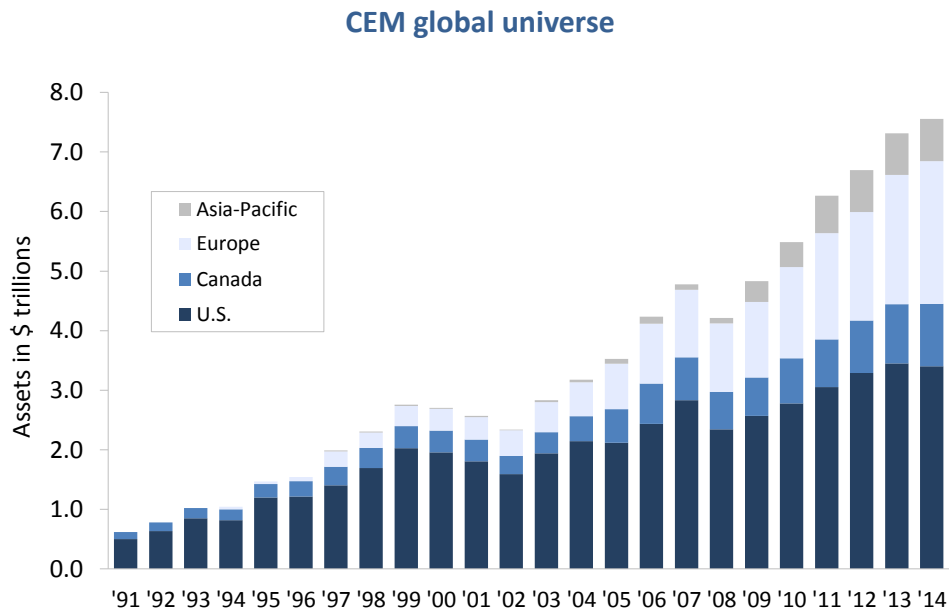
Total fund assets (\$ millions) - you versus peers



CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2014 survey universe is comprised of 301 funds representing \$7.6 trillion in assets. The breakdown by region is as follows:

- 155 U.S. pension funds with aggregate assets of \$3.4 trillion.
- 79 Canadian pension funds with aggregate assets of \$1,048 billion.
- 60 European pension funds with aggregate assets of \$2.4 trillion. Included are funds from The Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 7 Asia-Pacific pension funds with aggregate assets of \$711 billion.



Universe subsets

CEM's global survey universe is comprised of 301 funds with total assets of \$7.6 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 14 U.S. funds ranging in size from \$117.4 - \$843.9 billion. The peer median of \$183.9 billion compares to your \$295.0 billion.
- U.S. - The U.S. universe is comprised of 155 funds ranging in size from \$0.4 - \$295.0 billion. The median fund is \$8.9 billion.

Universe subsets by number of funds and assets

		U.S. by type				Global by Country				
		Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
Peer group ¹										
# of funds										
2014	14	88	57	9	155	155	79	60	7	301
2013	13	115	62	12	191	191	91	85	7	374
2012	14	122	67	13	202	202	90	78	12	382
2011	14	125	67	12	204	204	89	76	12	381
2010	12	123	72	12	207	207	97	55	9	368
# of funds with uninterrupted data for:										
1 yr	14	88	57	9	154	155	79	60	7	301
2 yrs	13	84	50	8	142	142	74	52	5	273
3 yrs	13	79	49	8	136	136	69	37	5	247
4 yrs	13	78	47	7	132	132	61	22	5	220
5 yrs	11	74	43	6	123	123	60	19	3	205
6 yrs	11	72	39	5	116	116	56	15	3	190
Total assets (\$ billions)										
2014	3,695	964	2,334	103	3,403	3,403	1,048	2,391	711	7,554
2013	3,223	1,054	2,236	104	3,450	3,450	995	2,168	697	7,311
2012	2,923	1,010	2,236	95	3,288	3,288	883	1,822	700	6,694
2011	2,565	965	2,025	63	3,053	3,053	802	1,784	625	6,264
2010	2,150	910	1,804	63	2,777	2,777	758	1,530	419	5,484
2014 asset distribution (\$ billions)										
Avg	263.9	11.0	40.9	11.4	22.0	22.0	13.3	39.9	101.6	25.1
Max	843.9				295.0	295.0				
75th %ile	279.3				21.7	21.7				
Median	183.9				8.9	8.9				
25th %ile	158.3				2.9	2.9				
Min	117.4				0.4	0.4				

1. Peer group statistics are for your 2014 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 - 2014 (as a % of year-end assets)

	Your fund	Peer group	U.S. by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
Implementation style											
External active	28.6	32.1	71.3	62.6	71.9	68.2	68.2	62.9	45.7	49.4	61.9
Fund of funds	1.4	2.1	4.5	2.6	4.0	3.8	3.8	1.3	4.3	2.2	3.2
External passive	0.0	6.5	17.4	18.8	21.7	18.2	18.2	13.7	28.1	15.9	18.9
Internal active	34.6	35.9	4.7	10.0	0.3	6.4	6.4	17.6	19.2	28.8	12.4
Internal passive	<u>35.3</u>	<u>23.3</u>	<u>2.1</u>	<u>5.9</u>	<u>2.1</u>	<u>3.5</u>	<u>3.5</u>	<u>4.4</u>	<u>2.6</u>	<u>3.7</u>	<u>3.5</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	53.1	45.0	38.2	50.0	42.8	42.9	42.9	47.8	38.7	39.8	43.3
Fixed income	24.2	31.3	43.8	25.9	31.0	36.4	36.4	38.9	47.3	41.4	39.3
Global TAA	0.4	0.6	2.9	2.2	4.9	2.7	2.7	0.9	1.4	2.1	2.0
Real assets	11.0	12.2	4.8	9.3	10.5	6.8	6.8	8.3	7.9	9.8	7.5
Hedge funds	0.9	2.7	6.0	5.0	6.1	5.6	5.6	1.8	2.6	3.5	4.0
Private equity	<u>10.3</u>	<u>8.2</u>	<u>4.3</u>	<u>7.6</u>	<u>4.6</u>	<u>5.5</u>	<u>5.5</u>	<u>2.4</u>	<u>2.1</u>	<u>3.4</u>	<u>4.0</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Policy asset mix											
Stock	51.2	44.0	38.9	48.7	42.4	42.9	42.9	46.6	37.7	44.1	42.8
Fixed income	27.0	30.3	43.2	25.4	30.4	35.8	35.8	39.9	47.1	35.8	39.1
Global TAA	0.0	0.7	2.6	2.5	4.9	2.7	2.7	1.0	1.5	2.0	2.0
Real assets	12.0	14.2	4.7	10.6	12.7	7.3	7.3	9.0	8.6	11.8	8.1
Hedge funds	0.0	2.6	5.9	4.2	4.8	5.2	5.2	1.2	2.7	2.3	3.6
Private equity	<u>9.8</u>	<u>8.2</u>	<u>4.7</u>	<u>8.6</u>	<u>4.8</u>	<u>6.1</u>	<u>6.1</u>	<u>2.3</u>	<u>2.2</u>	<u>4.1</u>	<u>4.3</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	100.0	100.0

Implementation style, actual mix and policy mix trends

Implementation style, actual mix and policy mix - 2010 to 2014 (as a % of year-end assets)

	Your fund					Peer average ¹					U.S. average ¹				
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Implementation style															
External active	30.1	32.9	35.0	36.1	36.2	30.9	43.8	43.6	42.9	37.3	72.1	71.9	72.5	72.5	72.8
External passive	0.0	0.0	0.0	0.0	0.0	5.4	5.2	5.1	5.6	5.5	18.8	18.3	17.8	17.8	18.0
Internal active	34.6	30.0	30.1	29.3	27.8	41.4	29.6	29.9	30.4	38.0	6.0	6.0	6.0	6.2	6.1
Internal passive	<u>35.3</u>	<u>37.1</u>	<u>34.9</u>	<u>34.6</u>	<u>36.1</u>	<u>22.2</u>	<u>21.4</u>	<u>21.4</u>	<u>21.1</u>	<u>19.2</u>	<u>3.1</u>	<u>3.7</u>	<u>3.6</u>	<u>3.5</u>	<u>3.1</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	53.1	55.1	50.3	48.3	50.1	43.6	44.5	42.5	42.8	44.2	42.8	45.5	44.1	44.7	49.3
Fixed income	24.2	21.2	24.0	23.8	23.8	33.9	32.1	34.4	34.7	34.3	36.4	34.2	35.6	35.4	33.5
Global TAA	0.4	0.4	0.2	0.0	0.0	0.2	0.2	0.1	0.1	0.2	2.3	2.2	2.2	2.1	1.1
Real assets	11.0	10.7	10.5	11.2	9.6	12.7	12.9	12.6	12.1	11.4	6.9	6.7	6.8	6.3	5.4
Hedge funds	0.9	1.9	2.1	2.3	2.4	1.7	2.2	2.0	1.7	1.7	5.9	5.6	5.1	5.2	4.6
Private equity	<u>10.3</u>	<u>10.8</u>	<u>12.9</u>	<u>14.3</u>	<u>14.0</u>	<u>8.0</u>	<u>8.1</u>	<u>8.4</u>	<u>8.6</u>	<u>8.1</u>	<u>5.7</u>	<u>5.8</u>	<u>6.1</u>	<u>6.3</u>	<u>6.0</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	51.2	49.1	50.0	50.0	49.0	45.4	45.0	44.9	47.7	49.4	42.4	44.2	45.2	46.4	48.8
Fixed income	27.0	23.0	23.0	25.0	23.0	33.7	33.5	34.4	34.6	34.4	36.0	35.1	34.7	34.6	33.9
Global TAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.3	2.1	1.9	0.9
Real assets	12.0	14.0	13.0	11.0	14.0	12.2	12.4	11.9	9.9	9.4	7.3	7.0	6.9	6.3	6.1
Hedge funds	0.0	0.0	0.0	0.0	0.0	1.6	2.1	2.0	1.5	0.8	5.5	5.0	4.7	4.7	4.2
Private equity	<u>9.8</u>	<u>13.9</u>	<u>14.0</u>	<u>14.0</u>	<u>14.0</u>	<u>7.0</u>	<u>7.0</u>	<u>6.9</u>	<u>6.3</u>	<u>6.0</u>	<u>6.5</u>	<u>6.4</u>	<u>6.3</u>	<u>6.1</u>	<u>6.1</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. Trends are based on the 123 U.S. and 11 peer funds with 5 consecutive years of data ending 2014.

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 - 2014 (as a % of average assets)

	Your fund %					Peer average %					U.S. average %				
	External			Internal		External			Internal		External			Internal	
	Active	FOFs	Index	Active	Index	Active	FOFs	Index	Active	Index	Active	FOFs	Index	Active	Index
U.S. Stock - Broad/All	100.0		0.0	0.0	0.0	25.6		11.8	10.1	52.5	40.6		46.0	6.1	7.2
U.S. Stock - Large Cap	5.9		0.0	12.4	81.7	17.6		24.5	3.4	54.5	47.0		38.1	5.2	9.7
U.S. Stock - Mid Cap						38.0		0.0	0.0	62.0	60.5		17.6	7.2	14.7
U.S. Stock - Small Cap	51.6		0.0	48.4	0.0	55.0		39.6	0.7	4.8	76.2		16.8	4.7	2.4
Stock - EAFE	13.1		0.0	9.7	77.2	49.1		18.6	10.1	22.2	70.1		22.3	3.7	3.9
Stock - ACWIxU.S.						20.5		79.5	0.0	0.0	64.2		35.4	0.4	0.0
Stock - Emerging	35.6		0.0	31.4	32.9	59.0		8.1	9.5	23.4	78.8		13.6	4.3	3.3
Stock - Global	72.4		0.0	27.6	0.0	25.4		9.5	54.3	10.8	53.2		31.3	14.1	1.4
Stock - Other	29.7		0.0	70.3	0.0	33.4		0.0	56.4	10.2	66.6		18.8	5.7	8.9
Total Stock	15.8		0.0	17.6	66.6	31.7		13.6	27.0	27.7	57.2		32.0	5.4	5.4
Fixed Income - US	0.0		0.0	100.0	0.0	33.3		0.7	32.5	33.5	65.7		15.4	16.6	2.3
Fixed Income - EAFE	59.5		0.0	40.5	0.0	2.8		0.0	97.2	0.0	92.5		0.0	7.5	0.0
Fixed Income - Emerging						80.6		0.0	19.4	0.0	97.3		0.5	2.3	0.0
Fixed Income - Global						13.9		1.3	84.8	0.0	77.7		5.2	17.1	0.0
Fixed Income - Inflation Indexed	0.0		0.0	100.0	0.0	4.8		1.4	31.2	62.6	39.2		26.1	10.3	24.4
Fixed Income - High Yield	56.2		0.0	43.0	0.8	92.6		0.0	7.3	0.1	87.2		1.1	11.7	0.0
Fixed Income - Mortgages	0.0		0.0	100.0	0.0	19.3		0.0	76.9	3.8	79.4		0.6	18.4	1.6
Fixed Income - Private Debt						53.6		0.0	46.4	0.0	85.8		0.0	14.2	0.0
Fixed Income - Other	0.0		0.0	100.0	0.0	5.2		0.0	53.3	41.5	82.8		12.7	1.4	3.0
Cash	0.0		0.0	100.0	0.0	-53.4		0.0	153.4	0.0	63.7		0.0	36.3	0.0
Total Fixed Income	5.8		0.0	94.2	0.0	16.4		0.5	53.5	29.6	74.8		12.5	9.8	2.9
Commodities	0.0		0.0	100.0	0.0	1.0		0.6	52.9	45.4	92.3		2.7	3.6	1.4
Infrastructure	71.4	0.0	n/a	28.6	n/a	17.8	3.9	n/a	78.3	n/a	97.3	2.0	n/a	0.7	n/a
Natural Resources	100.0	0.0	n/a	0.0	n/a	44.9	0.0	n/a	55.1	n/a	94.9	5.0	n/a	0.1	n/a
REITs						18.6	0.0	0.0	81.4	0.0	84.1	0.0	7.1	5.6	3.2
Real Estate ex-REITs	100.0	0.0	n/a	0.0	n/a	56.9	3.8	n/a	39.4	0.0	94.2	3.1	n/a	2.6	0.0
Other Real Assets			n/a		n/a	83.5	0.0	n/a	16.5	n/a	97.7	0.0	n/a	2.3	n/a
Total Real Assets	90.1	0.0	0.0	9.9	0.0	44.8	0.0	0.1	50.6	4.5	96.0	0.0	0.9	2.8	0.4
Hedge Funds	80.9	19.1	n/a	0.0	n/a	77.5	22.5	n/a	0.0	n/a	56.8	43.2	n/a	0.0	n/a
Global TAA	100.0	0.0	n/a	0.0	n/a	75.8	0.0	n/a	24.2	n/a	98.6	0.0	n/a	1.4	n/a
Diversified Private Equity	86.9	13.1	n/a	0.0	n/a	64.7	18.3	n/a	17.0	n/a	75.1	24.2	n/a	0.7	n/a
Venture Capital			n/a		n/a	41.8	56.7	n/a	1.5	n/a	66.2	33.7	n/a	0.1	n/a
LBO			n/a		n/a	79.4	0.8	n/a	19.8	n/a	95.0	5.0	n/a	0.0	n/a
Other Private Equity			n/a		n/a	98.9	0.0	n/a	1.1	n/a	95.3	0.0	n/a	4.7	n/a
Total Private Equity	88.9	11.1	n/a	0.0	n/a	73.3	12.5	n/a	14.2	n/a	81.6	17.8	n/a	0.6	n/a
Total Fund - Avg. Holdings	29.9	1.6	0.0	32.3	36.2	32.2	2.2	6.6	35.8	23.3	68.2	3.7	18.2	6.2	3.6
Total Fund - Yr.-End Holdings	28.6	1.4	0.0	34.6	35.3	32.1	2.1	6.5	35.9	23.3	68.2	3.8	18.2	6.4	3.5

Actual mix

Actual asset mix - 2010 to 2014
(as a % of year-end assets)

	Your fund %					Peer average %					U.S. average %				
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Employer Stock											0.3	0.3	0.2	0.2	0.2
U.S. Stock - Broad/All	1.1	0.9	0.8	0.6	0.7	7.1	6.7	5.2	4.8	6.2	6.3	7.8	6.9	7.1	9.1
U.S. Stock - Large Cap	23.1	22.7	19.2	19.3	18.4	6.0	6.2	7.4	7.2	6.7	12.2	13.0	14.1	14.8	15.9
U.S. Stock - Mid Cap						0.3					0.7	0.1	0.1	0.0	0.0
U.S. Stock - Small Cap	0.2	0.3	2.1	0.2	0.2	1.2	1.6	1.5	1.6	1.1	3.2	4.1	4.3	4.6	5.5
Stock - EAFE	18.7	21.7	18.5	19.2	21.0	6.5	6.2	6.4	7.2	7.3	6.0	7.0	6.8	7.3	8.8
Stock - ACWIxU.S.						0.4	0.5	0.4	0.4		5.8	6.1	5.4	4.6	5.3
Stock - Emerging	4.2	4.1	4.7	4.2	5.0	4.8	4.3	4.8	3.8	3.7	2.7	2.9	2.9	2.5	2.6
Stock - Global	0.9	0.7	0.6	0.6		14.8	15.1	13.2	13.8	15.3	5.2	4.3	3.7	3.5	3.1
Stock - Other	4.9	4.7	4.4	4.1	4.9	2.3	2.6	2.3	1.6	1.8	0.4	0.5	0.3	0.3	0.2
Total Stock	53.1	55.1	50.3	48.3	50.1	45.0	45.2	43.4	42.7	45.0	42.9	46.0	44.8	44.8	50.6
Fixed Income - US	10.3	8.3	10.0	10.7	12.3	5.6	6.1	6.5	6.4	6.0	12.3	13.2	15.0	15.4	16.7
Fixed Income - EAFE	1.4	1.4	1.4	1.6	1.5	2.1	2.5	1.3	1.0	1.1	0.0	0.1	0.1	0.1	0.2
Fixed Income - Emerging						0.6	0.9	0.5	0.5	0.3	0.7	0.6	0.6	0.5	0.5
Fixed Income - Global						4.4	4.9	5.8	6.3	6.9	1.1	1.0	1.1	1.1	1.0
Fixed Income - Inflation Indexed	4.1	2.4	2.4	1.7	0.7	3.6	3.7	4.3	4.4	3.9	0.9	0.9	1.2	1.4	1.3
Fixed Income - High Yield	1.0	0.7	0.8	0.8	1.3	0.7	0.7	0.9	0.9	1.4	1.8	1.6	1.7	1.8	1.7
Fixed Income - Mortgages	4.5	3.5	5.1	4.8	5.4	0.9	1.0	1.0	1.0	1.2	0.2	0.1	0.1	0.2	0.2
Fixed Income - Private Debt						0.4	0.4	0.4	0.2	0.1	0.4	0.3	0.1	0.0	
Fixed Income - Other	1.6	2.6	2.3	2.4	0.6	10.7	10.6	11.0	11.1	12.8	16.8	14.4	14.3	14.0	10.1
Cash	1.3	2.2	2.0	1.8	2.0	2.2	0.2	0.6	0.4	-0.5	2.1	2.3	2.2	1.9	1.9
Total Fixed Income	24.2	21.2	24.0	23.8	23.8	31.3	31.0	32.3	32.2	33.3	36.4	34.4	36.5	36.3	33.4
Commodities	1.0	0.8	0.6	1.5	1.1	1.2	1.6	1.5	1.6	1.6	0.5	0.5	0.6	0.6	0.6
Infrastructure	0.7	0.5	0.4	0.3	0.2	2.0	2.1	1.8	1.8	1.8	0.3	0.3	0.3	0.3	0.3
Natural Resources	0.8	0.8	0.9	1.0	1.1	0.7	0.6	0.6	1.1	0.1	0.4	0.3	0.3	0.3	0.3
REITs			0.3	0.6	0.5	0.9	1.1	1.1	1.3	1.5	0.6	0.6	0.6	0.6	0.5
Real Estate ex-REITs	8.6	8.5	8.3	7.8	6.8	7.3	6.9	7.1	6.8	6.4	4.7	4.2	4.1	4.1	3.5
Other Real Assets						0.2	0.2	0.2	0.5	0.1	0.3	0.3	0.4	0.3	0.2
Total Real Assets	11.0	10.7	10.5	11.2	9.6	12.2	12.5	12.3	13.2	11.5	6.8	6.3	6.3	6.3	5.3
Hedge Funds	0.9	1.9	2.1	2.3	2.4	2.7	2.6	2.8	2.6	1.9	5.6	5.6	4.7	4.9	4.3
Global TAA	0.4	0.4	0.2			0.6	0.6	0.5	0.4	0.2	2.7	2.2	2.1	2.0	1.3
Div. Private Equity	10.3	10.8	12.9	14.3	14.0	5.6	5.2	5.9	6.1	5.4	4.3	4.3	4.6	4.6	4.1
Venture Capital						0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3
LBO						2.0	2.3	2.2	2.2	2.3	0.6	0.5	0.5	0.5	0.5
Other Private Equity			0.0			0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Total Private Equity	10.3	10.8	12.9	14.3	14.0	8.2	8.0	8.7	8.8	8.2	5.5	5.5	5.6	5.7	5.1
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	14	13	14	14	12	155	191	202	204	207
Median Assets (\$ billions)	295.0	283.6	248.8	224.5	225.6	194.9	186.7	162.2	144.3	138.7	8.9	6.5	5.6	4.9	4.3

Policy mix

Policy asset mix - 2010 to 2014 (as a % of average assets)

	Your fund %					Peer average %					U.S. average %				
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Employer Stock											0.1	0.1	0.1	0.1	0.1
U.S. Stock - Broad/All						10.0	7.9	6.0	7.1	6.4	8.1	9.3	9.9	9.9	11.9
U.S. Stock - Large Cap							1.0	2.9	2.7	3.6	10.4	11.2	12.5	12.8	14.1
U.S. Stock - Mid Cap											0.5	0.2	0.1	0.0	0.0
U.S. Stock - Small Cap							0.3	1.1	1.3	1.5	1.9	2.4	3.0	3.3	3.7
Stock - EAFE						4.2	3.5	3.5	4.8	6.1	5.7	6.5	6.8	7.2	8.2
Stock - ACWIxU.S.								1.1	1.1		6.5	5.8	5.8	5.7	5.5
Stock - Emerging						3.0	2.7	3.3	3.5	3.3	2.2	2.3	2.1	2.2	2.0
Stock - Global	51.2	49.1	50.0	50.0	49.0	23.6	24.6	22.4	22.4	24.3	6.9	6.3	5.0	4.7	3.8
Stock - Other						1.3	1.5	1.4	1.3	1.4	0.7	0.7	0.6	0.4	0.2
Total Stock	51.2	49.1	50.0	50.0	49.0	44.0	43.8	43.8	46.5	49.5	42.9	44.7	45.9	46.4	49.5
Fixed Income - US	19.0	14.4	15.0	17.0	19.0	7.0	7.4	7.0	7.6	7.1	13.3	14.8	16.1	16.1	18.5
Fixed Income - EAFE		1.6	2.0	1.0	2.0	2.8	2.9	1.3	1.0	1.1	0.0	0.1	0.1	0.1	0.2
Fixed Income - Emerging						0.7	1.0	0.8	0.3		0.7	0.7	0.6	0.5	0.4
Fixed Income - Global						4.9	5.5	6.6	5.5	5.4	0.9	0.9	0.9	0.7	1.0
Fixed Income - Inflation Indexed	6.0	3.0	2.0	3.0		3.7	4.0	4.4	4.5	4.2	1.2	1.2	1.1	1.3	1.2
Fixed Income - High Yield						0.5	0.4	0.5	0.4	0.5	1.8	1.6	1.4	1.4	1.5
Fixed Income - Mortgages						0.4	0.6	0.6	0.6	0.8	0.1	0.0	0.0	0.0	0.0
Fixed Income - Private Debt						0.0	0.2	0.0			0.3	0.2	0.1		
Fixed Income - Other		3.0	3.0	3.0		10.9	11.1	11.5	13.3	15.5	17.4	15.6	14.6	14.6	10.5
Cash	2.0	1.0	1.0	1.0	2.0	-0.6	-0.9	-1.0	-1.0	-1.1	0.1	0.4	0.7	0.9	0.9
Total Fixed Income	27.0	23.0	23.0	25.0	23.0	30.3	32.2	31.8	32.0	33.5	35.8	35.5	35.6	35.6	34.0
Commodities		1.0	2.0	1.0		1.3	1.8	1.6	1.6	1.4	0.7	0.7	0.7	0.7	0.6
Infrastructure	1.0	2.0	1.0	1.0	4.0	2.1	2.3	2.0	1.5	1.7	0.3	0.3	0.4	0.3	0.3
Natural Resources	1.0	1.0	1.0	1.0		1.5	1.3	1.2	1.1	0.0	0.3	0.4	0.3	0.3	0.2
REITs			0.5	0.5	1.0	1.0	1.1	1.1	0.4	0.6	0.5	0.5	0.5	0.5	0.3
Real Estate ex-REITs	10.0	10.0	8.5	7.5	9.0	7.7	6.8	7.1	6.4	5.8	4.9	4.4	4.2	4.3	4.3
Other Real Assets						0.7	0.5	0.5	0.5	0.0	0.5	0.4	0.5	0.3	0.3
Total Real Assets	12.0	14.0	13.0	11.0	14.0	14.2	13.8	13.4	11.5	9.6	7.3	6.7	6.5	6.4	6.0
Hedge Funds						2.6	2.5	3.0	2.1	1.1	5.2	5.0	4.4	4.3	4.0
Global TAA						0.7	0.4	0.3	1.0		2.7	2.2	2.0	1.8	1.1
Div. Private Equity	9.8	13.9	14.0	14.0	14.0	7.6	6.9	7.3	6.6	5.9	5.3	5.1	4.9	4.8	4.7
Venture Capital						0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.3
LBO						0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Other Private Equity						0.2	0.0	0.0			0.2	0.2	0.2	0.2	0.2
Total Private Equity	9.8	13.9	14.0	14.0	14.0	8.2	7.3	7.7	7.0	6.3	6.1	5.9	5.6	5.5	5.4
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	14	13	14	14	12	155	191	202	204	207

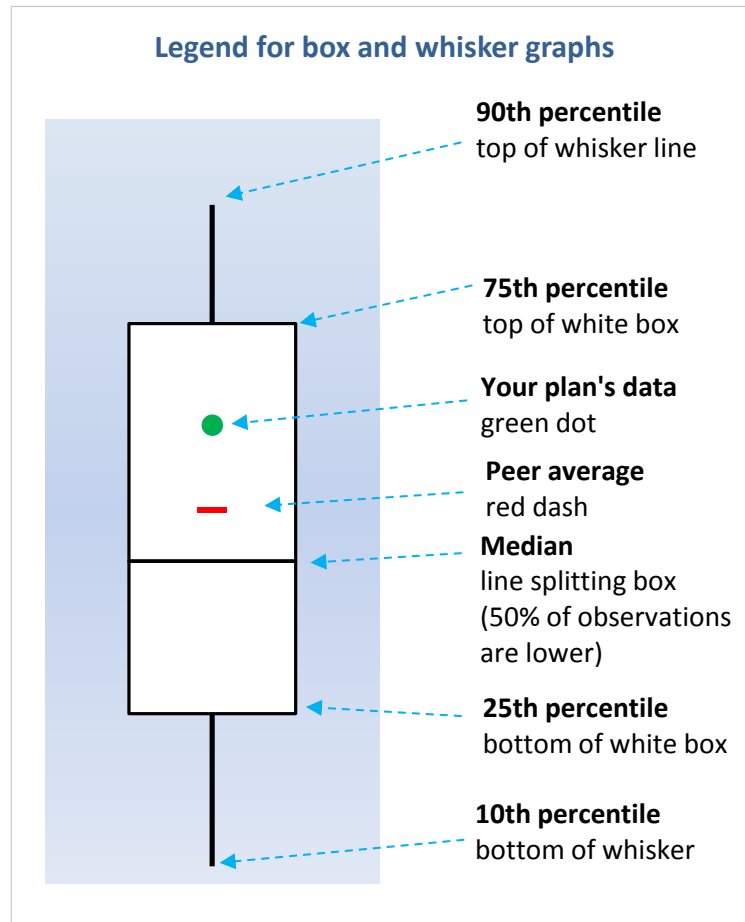
4

Returns, Benchmarks and Value Added

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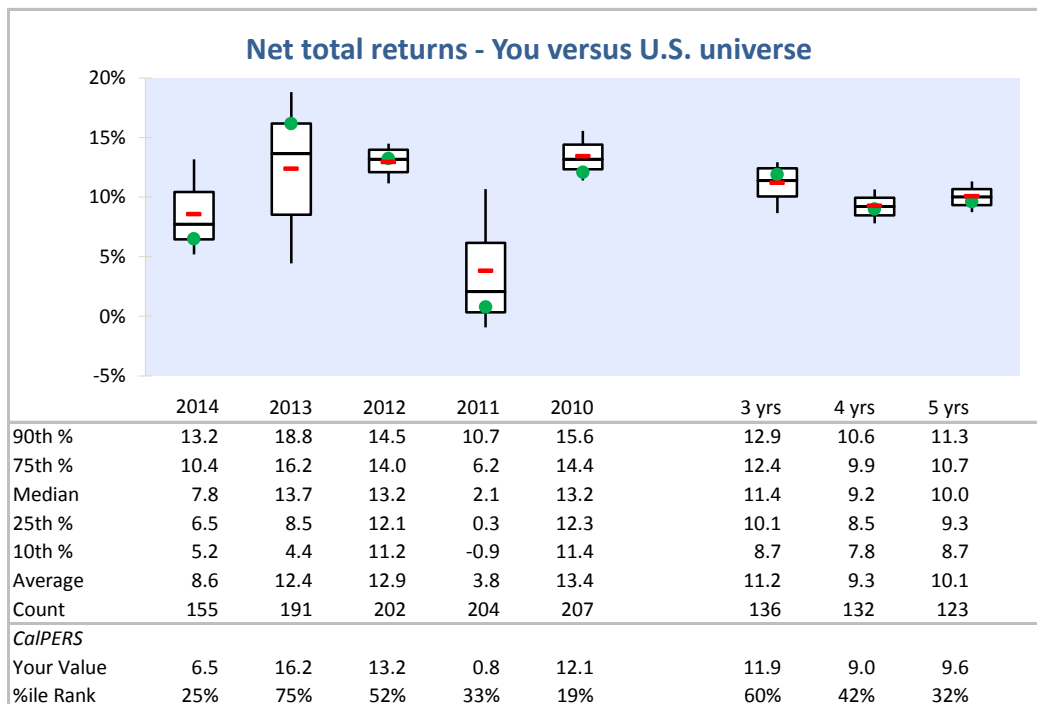
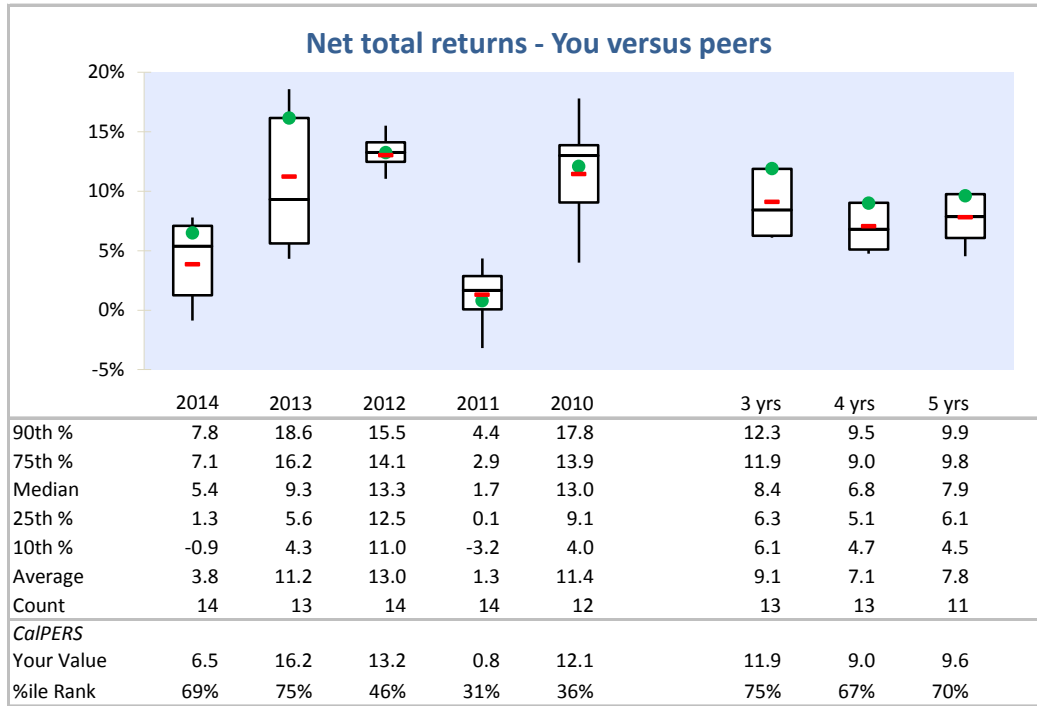
Interpreting box and whisker graphs

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.



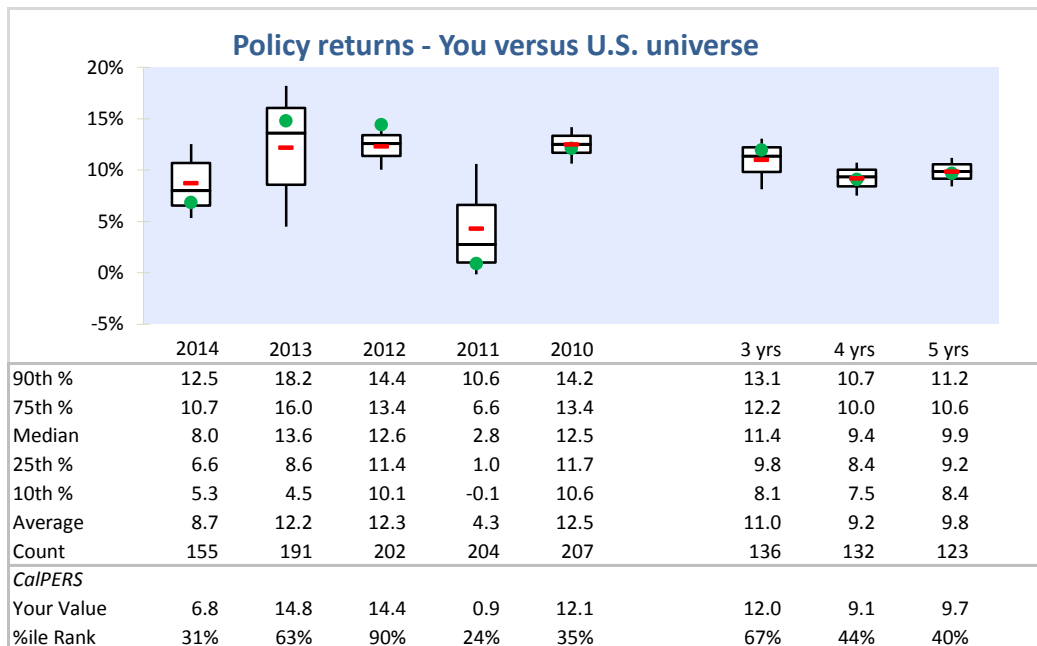
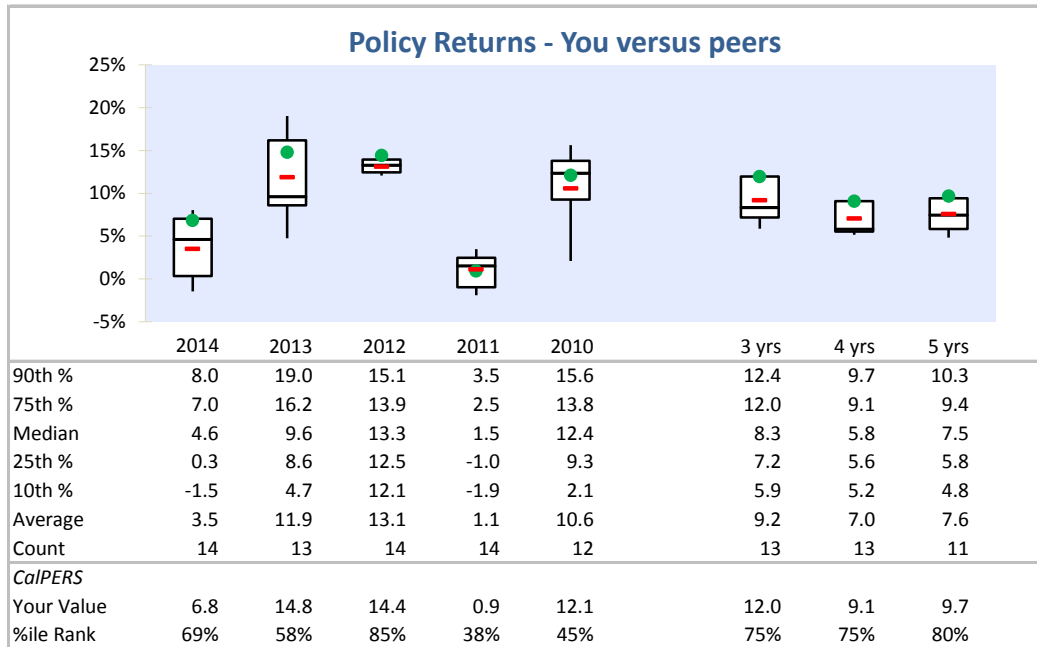
Net total returns

Your 5-year net total return of 9.6% was above the peer median and below the median of the U.S. 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

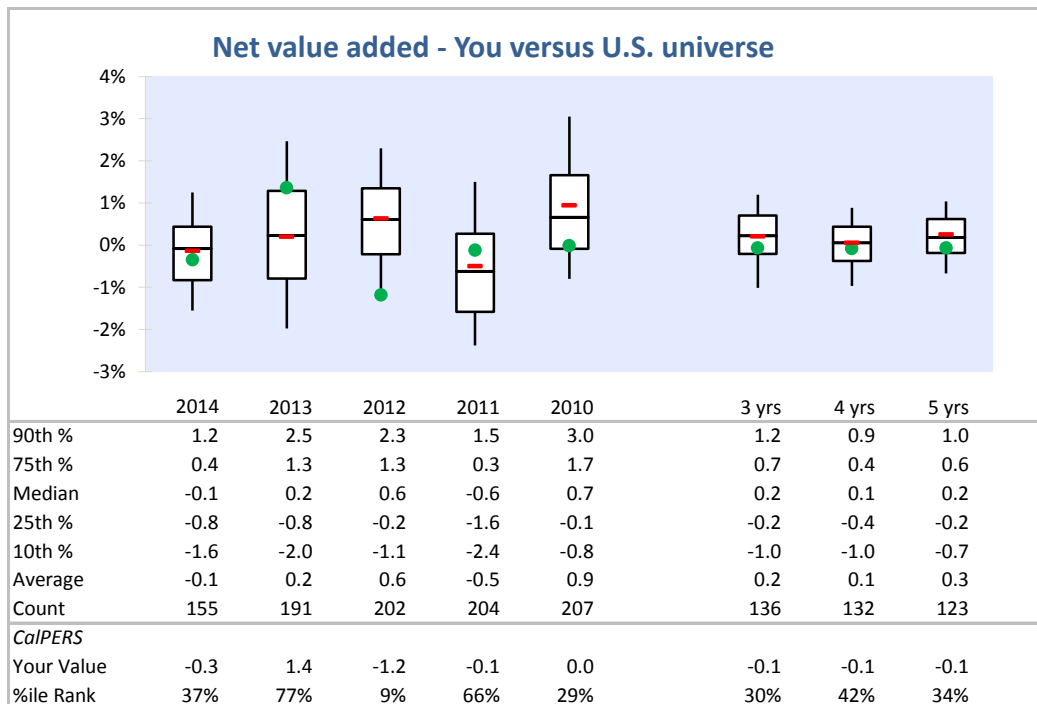
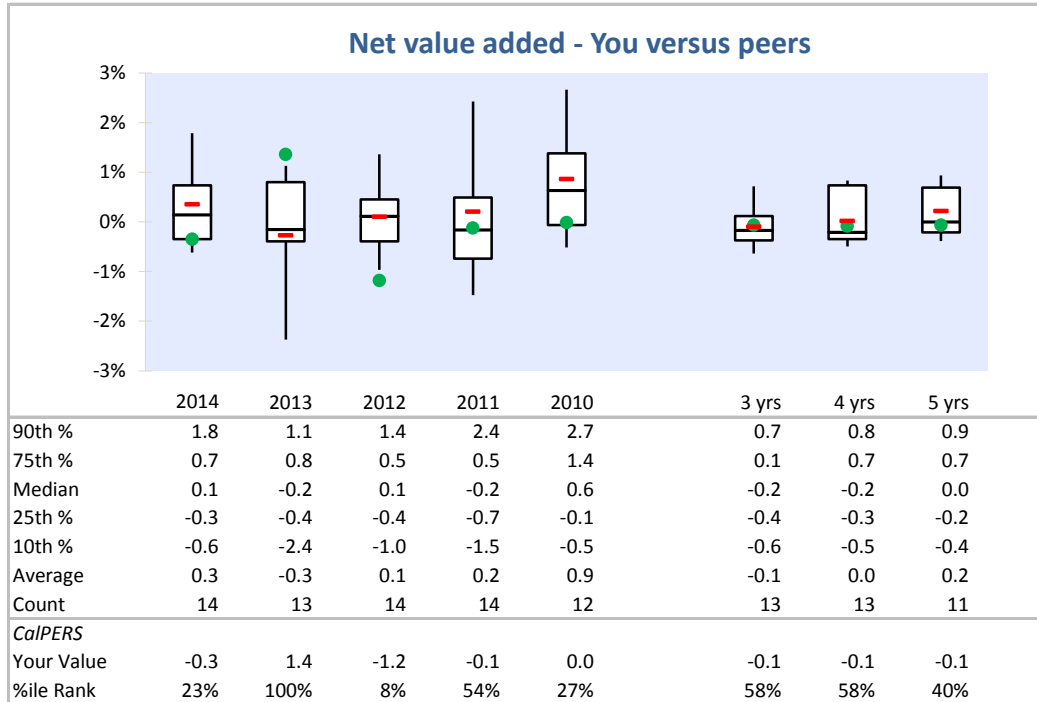
Your 5-year policy return of 9.7% was among the highest in your peer group and below the median of the U.S. universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.



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 9.7%, 0.04% higher than your actual 5-year policy return of 9.7%. Mirroring this, your 5-year total fund net value added would be 0.04% lower. Refer to the Research section pages 6-7 for details.

Net value added

Your 5-year net value added of -0.1% was below the peer median and below the median of the U.S. 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. average %					
	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr
Employer Stock													4.7	30.4	14.6	-2.4	31.1	14.9
U.S. Stock - Broad/All	15.2	38.6	17.3	-0.5	14.6	16.4	9.7	33.1	18.7	0.8	12.1	14.4	11.5	33.0	15.7	0.7	17.0	15.1
U.S. Stock - Large Cap	12.2	34.5	16.6	0.9	17.7	15.9	13.0	33.9	16.1	0.9	15.8	15.5	12.8	33.2	16.3	1.1	15.6	15.3
U.S. Stock - Mid Cap							8.6						9.4	34.1	17.5	1.3	18.0	15.6
U.S. Stock - Small Cap	-0.4	46.8	17.4	-7.9	29.5	15.4	3.7	42.0	17.3	-4.2	27.7	16.1	5.1	38.4	16.1	-3.1	26.4	15.6
Stock - EAFE	-4.2	21.6	18.0	-12.8	11.8	6.0	-5.1	21.0	19.9	-11.4	14.0	6.8	-4.2	23.2	17.9	-11.7	9.9	6.2
Stock - Emerging	0.9	-3.5	19.7	-20.6	20.0	2.1	-1.7	-2.6	18.8	-17.6	18.9	2.2	-1.9	-1.4	18.6	-19.1	20.0	2.2
Stock - ACWIxU.S.							-3.5	16.2	17.6	-13.9			-3.5	18.0	17.7	-13.0	12.0	5.5
Stock - Global	0.6	23.8	14.5	-13.6			2.2	24.7	16.3	-7.0	9.1	8.5	4.4	25.1	16.1	-7.5	12.5	9.6
Stock - Other	9.8	30.5	15.0	-3.6	14.2	12.6	4.9	14.9	11.6	-6.9	19.3	8.4	6.5	21.0	12.9	-5.7	19.9	10.5
Stock - Total	4.8	25.9	17.3	-7.3	15.1	10.6	2.4	22.9	16.4	-7.1	13.5	9.1	5.2	26.7	16.8	-5.0	15.8	11.4
Fixed Income - US	13.2	-6.8	8.8	16.5	10.4	8.1	9.8	-2.9	6.0	7.7	9.0	5.8	6.6	-2.1	7.1	8.4	8.6	5.6
Fixed Income - EAFE	-3.0	-5.2	2.3	7.1	8.7	1.8	-2.9	0.9	8.8	5.7	0.1	2.4	0.2	-2.5	2.3	6.2	7.1	2.6
Fixed Income - Emerging							-7.3	-8.0	15.4	-2.2	8.0	0.8	-0.1	-6.6	16.9	2.1	14.0	4.9
Fixed Income - Global							2.2	2.0	9.9	3.7	4.7	4.5	3.7	-1.1	8.3	6.5	7.1	4.8
Fixed Income - Inflation Indexed	4.8	-5.7	8.1	12.8	4.6	4.7	1.6	-9.4	8.6	10.1	6.2	3.2	4.5	-7.3	7.7	13.2	6.7	4.7
Fixed Income - High Yield	6.8	9.4	16.1	2.2	15.8	9.9	2.5	6.5	17.1	2.1	14.3	8.3	2.9	7.1	15.1	3.9	14.1	8.5
Fixed Income - Mortgages	8.2	-0.9	4.8	7.2	12.8	6.3	2.6	0.9	6.1	7.5	8.2	5.0	7.4	3.2	14.2	4.0	15.6	8.8
Fixed Income - Private Debt							-2.0	5.1	9.4	2.8	14.5	5.8	2.7	7.3	9.0	3.5		
Fixed Income - Other	4.6	-2.0	2.9	10.5	11.4	5.3	5.3	0.9	9.5	8.9	10.1	6.9	16.7	-4.3	10.6	17.3	11.5	10.1
Cash	0.2	0.1	0.1	0.2	0.3	0.2	-3.0	-0.5	2.0	3.3	-2.8	-0.2	0.2	0.4	0.5	0.7	0.8	0.5
Fixed Income - Total	8.8	-4.2	7.0	12.4	11.1	6.8	3.3	-4.2	8.7	9.6	7.8	4.9	10.8	-3.4	9.3	12.1	9.7	7.5
Commodities	-32.3	-1.0	-0.3	-0.7	10.3	-6.1	-23.6	-3.7	2.1	-1.2	9.0	-4.2	-14.9	-6.7	0.7	-8.0	15.8	-3.2
Infrastructure	36.8	9.8	6.4	59.6	6.1	22.0	13.9	10.9	7.8	-1.1	9.0	8.0	12.1	9.8	7.3	3.4	9.0	8.3
REITs			28.5	-5.5	18.1		14.8	7.8	26.7	-0.7	20.9	13.5	20.1	3.9	20.4	2.7	23.6	13.8
Natural Resources	3.3	4.4	-7.7	-7.1	3.4	-0.9	5.7	5.5	3.0	-3.2	1.3	2.4	9.9	6.8	4.4	4.1	6.7	6.4
Real Estate ex-REITs	12.3	10.8	13.8	13.7	-6.8	8.4	6.9	10.3	12.1	9.1	5.2	8.7	12.5	12.1	9.7	13.2	8.8	11.2
Other Real Assets							6.1	8.4	8.5	-3.3	0.1	3.9	6.4	5.0	4.0	0.7	8.3	4.9
Real Assets - Total	10.1	9.9	12.7	10.0	-2.5	7.9	6.0	9.5	15.7	11.8	18.9	12.3	10.7	8.9	9.7	9.0	11.7	10.0
Hedge Funds	2.8	7.8	1.7	-3.6	7.7	3.2	0.2	7.5	6.4	-3.2	9.7	4.0	5.0	9.7	7.0	-0.2	8.4	5.9
Global TAA	9.2	8.1	6.5				6.1	0.2	9.2	-2.6	6.1	3.7	5.6	4.1	10.7	6.9	17.5	8.9
Diversified Private Equity	15.0	18.5	12.8	12.3	20.9	15.9	10.7	16.1	14.7	7.9	20.4	13.9	14.9	16.4	11.5	12.0	13.7	13.7
LBO							15.4	19.6	14.3	13.0	14.8	15.4	15.5	17.6	13.0	11.9	14.8	14.5
Venture Capital							17.2	18.2	9.4	17.3	12.6	14.9	17.3	17.3	9.3	16.2	12.0	14.4
Other Private Equity			-52.7				13.7	13.1	-2.3	-9.3	20.2	6.5	15.5	17.1	7.6	19.7	14.2	14.7
Private Equity - Total	15.0	18.5	12.7	12.3	20.9	15.8	11.5	17.4	14.2	9.1	19.1	14.2	15.5	16.3	11.5	12.3	13.8	13.9
Total Fund Return	6.5	16.2	13.2	0.8	12.1	9.6	3.8	11.2	13.0	1.3	11.4	8.1	8.6	12.4	12.9	3.8	13.4	10.2

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. average %					
	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr
Employer Stock													9.6	40.3	15.2	0.1	18.7	16.0
U.S. Stock - Broad/All	13.3	33.5	16.2	1.3	15.4	15.5	11.1	32.0	16.4	0.6	13.8	14.4	12.7	32.9	16.4	1.2	16.7	15.5
U.S. Stock - Large Cap	12.9	34.2	16.3	0.4	17.1	15.7	13.3	33.3	16.3	1.4	15.8	15.6	13.3	32.7	16.2	1.6	15.7	15.5
U.S. Stock - Mid Cap							9.8						10.7	34.2	18.0	-1.7	26.6	16.9
U.S. Stock - Small Cap	2.6	42.1	17.3	-6.6	23.2	14.5	4.3	39.6	16.9	-4.4	26.2	15.5	5.9	37.4	16.8	-3.5	26.3	15.7
Stock - EAFE	-4.3	20.6	17.7	-12.6	9.6	5.4	-4.7	23.5	17.8	-11.2	7.8	5.8	-4.1	22.2	17.2	-12.2	8.5	5.5
Stock - Emerging	2.5	-3.2	17.8	-20.3	18.8	2.0	-1.5	-2.9	18.4	-17.3	18.3	2.1	-1.8	-1.7	18.2	-18.3	19.0	2.1
Stock - ACWIxU.S.							-3.9	15.3	16.8	-13.7			-3.6	16.1	17.1	-13.9	11.4	4.7
Stock - Global	-3.2	24.7	17.1	-8.1	13.9	8.1	1.1	22.9	16.1	-6.9	9.9	8.1	4.3	23.6	15.7	-7.2	11.9	9.2
Stock - Other	4.6	24.7	17.1	-8.1	13.9	9.8	0.3	17.8	13.9	-9.0	18.7	7.8	4.7	20.1	12.4	-6.5	15.7	8.8
Stock - Total	-3.2	24.7	17.1	-8.1	13.9	8.1	2.0	22.2	16.4	-7.4	13.0	8.7	5.6	25.7	16.6	-4.9	14.9	11.1
Fixed Income - US	11.3	-5.8	6.7	14.7	9.2	7.0	9.5	-4.5	4.8	7.5	7.5	4.9	6.6	-2.8	5.2	9.1	7.0	5.0
Fixed Income - EAFE	-5.4	-4.8	1.5	5.3	6.1	0.4	-4.6	-1.9	9.5	1.4	-2.0	0.4	0.0	-3.3	2.8	5.3	5.2	1.9
Fixed Income - Emerging							-7.1	-6.2	17.0	-0.7	6.0	1.4	1.3	-6.3	16.6	4.5	12.0	5.3
Fixed Income - Global							1.2	0.5	7.9	3.8	3.6	3.4	2.8	-1.7	4.5	7.2	5.8	3.7
Fixed Income - Inflation Indexed	3.4	-5.9	8.2	11.7	4.7	4.3	1.7	-10.3	8.4	9.6	6.4	2.9	4.3	-6.5	7.4	13.0	6.3	4.7
Fixed Income - High Yield	1.8	7.5	14.6	5.5	14.3	8.6	0.1	5.6	13.9	4.0	11.0	6.8	2.6	6.6	14.6	5.1	14.4	8.5
Fixed Income - Mortgages	5.9	-1.3	3.0	6.2	6.5	4.0	0.7	-2.3	5.3	6.4	4.7	2.9	5.0	0.2	5.9	5.6	7.0	4.7
Fixed Income - Private Debt							-1.9	5.9	12.3	0.3	13.1	5.8	4.4	4.4	7.3	3.9		
Fixed Income - Other	6.7	-2.0	2.2	0.0	10.3	3.3	5.3	2.9	8.6	12.3	10.7	7.9	16.5	-5.1	9.2	18.5	9.8	9.5
Cash	0.0	0.0	0.1	0.1	0.2	0.1	-3.9	-0.5	1.5	-0.4	0.6	-0.6	0.3	0.4	0.3	0.2	0.2	0.3
Fixed Income - Total	8.7	-5.0	5.5	11.6	8.1	5.6	4.0	-3.4	7.4	11.3	7.4	5.2	11.2	-4.4	7.4	13.2	7.9	6.9
Commodities	-33.1	-1.2	0.1	-1.2	9.0	-6.6	-24.7	-2.5	2.2	-2.4	6.3	-4.9	-19.1	-6.0	0.5	-8.7	14.8	-4.3
Infrastructure	4.8	5.2	6.1	9.6	5.2	6.2	3.9	6.8	9.0	5.3	6.4	6.3	6.7	8.6	7.8	6.8	8.8	7.7
REITs			28.7	-5.8	20.4		15.2	9.8	24.8	-1.1	22.2	13.8	21.2	4.0	20.9	4.8	23.5	14.6
Natural Resources	10.5	9.7	2.3	0.3	6.2	5.7	2.6	8.5	5.8	1.7	4.4	4.6	6.7	8.9	7.4	4.7	6.5	6.8
Real Estate ex-REITs	11.4	12.1	10.5	17.2	7.9	11.8	5.1	9.5	10.8	10.5	8.0	8.8	11.5	11.8	11.2	14.6	10.8	12.0
Other Real Assets							5.0	15.6	7.9	-1.9	-4.5	4.2	5.9	6.0	8.3	6.2	10.3	7.3
Real Assets - Total	10.8	10.0	8.6	12.3	8.0	9.9	3.9	8.9	11.2	8.3	9.8	8.4	8.5	8.5	10.4	10.2	12.4	10.0
Hedge Funds	5.2	5.3	5.3	5.6	5.9	5.4	1.2	5.2	6.7	-1.3	4.7	3.3	3.6	7.9	5.3	-0.5	5.5	4.3
Global TAA	7.5	7.5	7.5				4.7	6.4	7.8	-2.3	6.0	4.4	5.0	9.2	9.9	2.7	9.4	7.2
Diversified Private Equity ¹	17.1	24.1	28.5	1.4	14.3	16.7	9.2	28.8	17.6	5.2	18.4	15.6	16.4	29.9	12.2	13.4	16.9	17.6
LBO ¹							14.5	30.9	17.6	8.0	15.8	17.1	13.7	30.8	13.7	10.0	13.5	16.1
Venture Capital ¹							12.6	29.7	17.5	8.3	17.2	16.9	14.4	30.0	12.9	12.1	16.0	16.9
Other Private Equity ¹			-52.7				11.1	29.3	6.3	6.8	12.6	12.9	14.0	30.1	8.9	14.1	16.8	16.6
Private Equity ¹ - Total	17.1	24.1	28.5	1.4	14.3	16.7	10.2	28.5	17.7	6.1	18.4	15.9	16.3	29.8	12.0	13.6	16.7	17.5
Total Policy Return	6.8	14.8	14.4	0.9	12.1	9.7	3.5	11.9	13.1	1.1	10.6	7.9	8.7	12.2	12.3	4.3	12.5	9.9

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 9.7%, 0.04% higher than your actual 5-year policy return of 9.7%. Mirroring this, your 5-year total fund net value added would be 0.04% 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. average %					
	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr	2014	2013	2012	2011	2010	5-yr
Employer Stock													-4.8	-3.8	-1.8	-2.5	12.6	-1.1
U.S. Stock - Broad/All	1.9	5.1	1.2	-1.8	-0.8	0.9	-1.4	1.1	2.2	0.2	-1.7	0.0	-1.2	0.2	-0.4	-0.7	0.2	-0.4
U.S. Stock - Large Cap	-0.7	0.3	0.3	0.5	0.6	0.2	-0.3	0.6	-0.1	-0.5	0.0	-0.1	-0.4	0.4	0.1	-0.5	0.0	-0.2
U.S. Stock - Mid Cap							-1.1						-1.4	-0.1	-0.6	3.0	-8.6	-1.3
U.S. Stock - Small Cap	-3.0	4.7	0.1	-1.3	6.3	0.9	-0.7	2.3	0.3	0.2	1.4	0.6	-0.8	1.0	-0.7	0.4	0.1	-0.1
Stock - EAFE	0.1	1.0	0.3	-0.2	2.2	0.6	-0.5	-2.5	2.1	-0.2	6.2	1.0	-0.1	0.9	0.8	0.4	1.5	0.7
Stock - Emerging	-1.6	-0.3	1.9	-0.3	1.2	0.1	-0.1	0.2	0.4	-0.4	0.5	0.1	-0.1	0.4	0.4	-0.8	0.9	0.1
Stock - ACWIxU.S.							0.4	0.9	0.8	-0.2			0.1	2.1	0.6	0.9	0.8	0.8
Stock - Global	3.8	-0.9	-2.6	-5.5			1.0	1.8	0.3	0.0	-0.3	0.4	0.1	1.4	0.5	-0.4	0.5	0.4
Stock - Other	5.2	5.8	-2.1	4.5	0.3	2.8	4.5	-2.9	-1.3	2.1	0.6	0.6	1.8	0.6	0.1	0.7	3.0	1.6
Stock - Total	8.0	1.2	0.2	0.8	1.2	2.4	0.4	0.6	0.0	0.3	0.4	0.3	-0.4	0.9	0.1	-0.1	0.8	0.3
Fixed Income - US	1.9	-1.0	2.1	1.8	1.2	1.1	0.3	-0.1	1.2	0.1	1.6	1.0	0.0	0.7	1.9	-0.7	1.6	0.7
Fixed Income - EAFE	2.4	-0.4	0.8	1.8	2.6	1.4	1.8	2.8	-0.7	4.2	2.1	2.1	0.2	0.8	-0.5	0.6	1.9	0.6
Fixed Income - Emerging							-0.2	-1.8	-1.5	-0.1	2.0	-0.6	-1.5	-0.4	0.6	-2.4	2.0	-0.4
Fixed Income - Global							0.1	0.1	0.8	-0.1	1.2	1.1	1.2	0.7	4.5	-0.4	1.5	1.2
Fixed Income - Inflation Indexed	1.4	0.2	-0.1	1.1	-0.1	0.5	-0.1	0.9	0.2	0.5	-0.2	0.3	0.0	-0.8	0.2	0.5	0.4	0.0
Fixed Income - High Yield	5.0	1.9	1.5	-3.3	1.5	1.3	2.4	1.0	3.2	-1.9	3.3	1.5	0.3	0.5	0.4	-1.2	-0.3	-0.1
Fixed Income - Mortgages	2.3	0.4	1.8	1.0	6.3	2.3	1.9	3.2	0.8	1.1	3.5	2.1	3.1	3.0	8.3	-1.8	8.2	4.1
Fixed Income - Private Debt							-0.1	-0.8	-2.9	2.6	1.4	0.1	-1.4	2.9	2.6	-0.4		
Fixed Income - Other	-2.2	0.0	0.7	10.5	1.1	2.0	0.0	-2.0	0.9	-2.3	-0.7	-1.0	0.3	0.8	1.5	-1.2	1.8	0.6
Cash	0.1	0.1	0.1	0.1	0.1	0.1	0.9	0.0	0.4	3.7	-3.4	0.3	-0.1	0.1	0.3	0.5	0.6	0.3
Fixed Income - Total	0.0	0.8	1.5	0.8	2.9	1.2	-0.7	-0.8	1.3	-1.7	0.4	-0.3	-0.4	0.9	1.9	-1.1	1.8	0.7
Commodities	0.8	0.2	-0.4	0.5	1.3	0.5	1.0	-1.2	-0.1	1.2	2.7	0.7	4.2	-0.6	0.2	0.7	0.9	1.2
Infrastructure	32.0	4.6	0.3	50.0	0.9	15.9	10.0	4.0	-1.2	-6.4	2.5	1.7	5.4	1.1	-0.6	-3.4	0.2	0.5
REITs			-0.1	0.3	-2.3		-0.4	-2.0	1.9	0.4	-1.3	-0.3	-0.7	-0.1	-0.2	-2.1	-0.1	-0.8
Natural Resources	-7.2	-5.3	-9.9	-7.4	-2.8	-6.6	3.1	-3.0	-2.8	-4.9	-3.0	-2.1	3.3	-2.3	-3.0	-0.6	0.2	-0.5
Real Estate ex-REITs	0.9	-1.3	3.3	-3.5	-14.7	-3.3	1.9	0.8	1.4	-1.4	-2.8	0.0	1.2	0.3	-1.5	-1.4	-1.9	-0.7
Other Real Assets							1.1	-7.2	0.6	-1.4	4.6	-0.3	0.5	-1.6	-4.6	-3.9	-0.8	-2.5
Real Assets - Total	-0.7	-0.1	4.1	-2.3	-10.5	-2.0	2.0	0.6	4.5	3.5	9.1	3.9	2.3	0.3	-0.8	-1.2	-0.7	0.0
Hedge Funds	-2.4	2.5	-3.6	-9.2	1.8	-2.3	-1.1	2.3	-0.3	-2.0	5.1	0.8	1.4	2.0	1.6	0.3	2.9	1.6
Global TAA	1.7	0.6	-1.0				1.4	-6.2	1.4	-0.3	0.1	-0.7	0.6	-5.1	0.8	4.4	8.1	1.7
Diversified Private Equity ¹	-2.1	-5.6	-15.7	10.9	6.6	-0.8	1.4	-12.7	-2.8	2.7	1.6	-1.7	-1.3	-13.6	-0.6	-1.3	-3.0	-3.9
LBO ¹							1.0	-11.4	-3.2	4.9	-1.0	-1.7	2.0	-13.3	-0.7	1.9	1.6	-1.6
Venture Capital ¹							4.5	-11.5	-8.1	9.0	-4.6	-2.0	3.2	-12.8	-3.6	4.1	-3.8	-2.5
Other Private Equity ¹			0.0				2.6	-16.2	-8.5	-16.1	7.6	-6.4	2.2	-12.9	-0.8	5.6	-2.6	-1.8
Private Equity ¹ - Total	-2.1	-5.6	-15.8	10.9	6.6	-0.8	1.3	-11.1	-3.4	2.9	0.8	-1.7	-0.6	-13.5	-0.5	-1.2	-2.8	-3.7
Total fund	-0.3	1.4	-1.2	-0.1	0.0	-0.1	0.3	-0.3	0.1	0.2	0.9	0.2	-0.1	0.2	0.6	-0.5	0.9	0.2

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 9.7%, 0.04% higher than your actual 5-year policy return of 9.7%. Mirroring this, your 5-year total fund net value added would be 0.04% lower. Refer to the Research section pages 6-7 for details.

Most frequently used benchmarks by asset class - 2014 - Stock

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

		# Using	
Benchmark Description	Return ¹	Peers	U.S.
<u>U.S. Stock - Broad/All</u>			
Russell 3000	12.6	3	43
S&P 500	13.7		4
Wilshire 5000	12.7		4
DJ US Total Stock Market	12.5		2
Other	13.1	4	15
Total	12.7	7	68
<u>U.S. Stock - Large Cap</u>			
S&P 500	13.7	1	38
Russell 1000	13.2	1	28
Russell 3000	12.6		9
Custom	13.2		5
Other	12.8	2	23
Total	13.2	4	103
<u>U.S. Stock - Small Cap</u>			
Russell 2000	4.9	2	55
RUSSELL 2500	6.9		12
Custom	7.3		6
Russell 3000	12.6		3
Other	6.6	2	26
Total	5.9	4	102
<u>Stock - EAFE</u>			
MSCI EAFE Net	-4.9	1	36
Custom	-3.8	1	10
MSCI EAFE	-4.3		6
MSCI EAFE gross	-4.5	1	5
Other	-3.4	3	37
Total	-4.1	6	94
<u>Stock - Europe</u>			
MSCI ACWI	4.8		1
Total	4.8		1

		# Using	
Benchmark Description	Return ¹	Peers	U.S.
<u>Stock - Emerging</u>			
MSCI Emerging Market net	-2.1	2	45
MSCI Emerging Market gross	-1.8	1	11
Custom	-0.6	1	8
MSCI Emerging Markets	-2.0		8
Other		3	37
Total	-1.3	7	109
<u>Stock - ACWIxU.S.</u>			
MSCI ACWI xUS net	-3.9	1	27
MSCI ACWI xUS gross	-3.5		7
MSCI ACWI xUS IMI net	-3.9		3
MSCI ACWI ex US IMI	-3.6		2
Other	-3.5		37
Total	-3.6	1	76
<u>Stock - Global</u>			
MSCI ACWI net	4.2		14
MSCI World Net	4.8		13
Custom	2.6	1	8
MSCI ACWI IMI	3.8		4
Other	4.7	5	32
Total	4.3	6	71
<u>Stock - Asia-Pacific</u>			
MSCI ACWI	4.8		1
Total	4.8		1

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 - 2014 - Fixed Income

		# Using	
Benchmark Description	Return ¹	Peers	U.S.
<u>Fixed Income - U.S.</u>			
Barclays US Aggregate	6.0		53
Custom	9.7	1	9
Barclays US Universal	6.2		5
Barclays aggregate	6.0		3
Other	6.9	5	35
Total	6.6	6	105
<u>Fixed Income - EAFE</u>			
Barclays Global Aggregate ex US	-3.4		1
CalPERS Barclays International Fixe	-5.4	1	1
Citigroup Non-U.S. World Governrr	-0.3		1
Custom	9.1		1
Total	0.0	1	4
<u>Fixed Income - Global</u>			
Barclays US Aggregate	6.0		7
Barclays Global Aggregate	3.4		5
77% Barclays Aggregate/23% Citigr	4.5		1
Barcap Global Corp TR Hedged / GI	7.8	1	1
Other	1.9	1	18
Total	3.3	2	32
<u>Fixed Income - Emerging</u>			
JP Morgan EMBI Global Diversified	7.4		4
Custom	0.1		3
JPM EMBI Global Diversified	6.0		3
JPMorgan GBI-EM Global Diversifie	-5.7		3
Other	0.7	1	30
Total	1.2	1	43

	# Using		
Benchmark Description	Return ¹	Peers	U.S.
<u>Fixed Income - High Yield</u>			
Barclays US Corp High Yield			9
Custom		1	7
Barclays US Corp High Yield 2% Cap			4
Citigroup High Yield Bond			3
Other		4	46
Total		5	69
<u>Fixed Income - Inflation Indexed</u>			
Barclays US TIPS		2	20
Barclays Global Inflation Linked			2
Custom			2
50% BC Global Inflat Linked:US TIP			1
Other		3	14
Total		5	39
<u>Fixed Income - Mortgages</u>			
Custom		1	3
95% BC US Agg x-Tobacco x-firearn		1	1
Barclays Mortgage Index			1
Barclays Mortgage Index Lagged			1
Other		2	8
Total		4	14
<u>Fixed Income - Long Bonds</u>			
Custom			20
Barclays US Long G/C			12
Barclays Long Corporate			3
Barclays US Long Credit			3
Other		2	38
Total		2	76

Most frequently used benchmarks by asset class - 2014 - Hedge Funds and Real Assets²

		# Using	
Benchmark Description	Return ¹	Peers	U.S.
<u>Global TAA</u>			
Custom	4.5		14
3 Month LIBOR + 200 bps	2.2		2
20% S&P 500; 40% Barclays Treasu	4.7		1
35.72% Russell 3000, 28.56% Barcl	4.6		1
Other	5.6	4	24
Total	5.1	4	42
<u>Hedge Funds</u>			
Custom	4.7	1	30
HFRI Fund of Funds Composite Ind	3.5		5
3 Month LIBOR + 200 bps	2.2		2
HFRI Equity Hedge Index	0.3		2
Other	3.2	6	60
Total	3.6	7	99
<u>Commodities</u>			
Dow Jones UBS Commodity Index	-17.0		14
Custom	-11.9	1	5
Bloomberg Commodity Index	-17.0		2
Goldman Sachs Commodities Inde	-33.1	1	2
Other	-20.1	2	20
Total	-18.6	4	43
<u>REITs</u>			
Your REIT benchmark	18.3	1	24
Custom	17.0		6
Wilshire REIT	31.8		4
DJ Select Real Estate Securities	31.8	1	1
Other	23.9	1	15
Total	21.2	3	50

		# Using	
Benchmark Description	Return ¹	Peers	U.S.
<u>Infrastructure</u>			
Custom	7.6	1	7
CPI + 5%	6.0		5
[Domestic CPI+4%]×w3 + Actual Re	8.0	1	1
Actual return	0.0		1
Other	6.8	3	19
Total	6.7	5	33
<u>Natural Resources</u>			
Custom	7.9	2	9
CPI + 5%	5.7		4
NCREIF TIMBERLAND	10.5	1	3
18% NCREIF Timberland + 27% NCf	4.8		1
Other	5.4	1	24
Total	6.3	4	41
<u>Real Estate ex-REITs</u>			
Custom	10.6		21
NCREIF	11.8		17
NCREIF qtr lag	11.3	1	11
NCREIF ODCE	11.1		8
Other	11.5	7	69
Total	11.4	8	126

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 - 2014

2014 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock - Broad/All		Your Stock: U.S. Broad/All benchmark	13.3%	15.2%	1.9%
U.S. Stock - Large Cap		Your Stock: U.S. Large Cap benchmark	12.9%	12.2%	-0.7%
U.S. Stock - Small Cap		Your Stock: U.S. Small Cap benchmark	2.6%	-0.4%	-3.0%
Stock - EAFE		Your Stock: EAFE benchmark	-4.3%	-4.2%	0.1%
Stock - Emerging		Your Stock: Emerging benchmark	2.5%	0.9%	-1.6%
Stock - Global	51.2%	Your Stock: Global benchmark	-3.2%	0.6%	3.8%
Stock - Other		Your Stock: Other benchmark	4.6%	9.8%	5.2%
Fixed Income - US	19.0%	CalPERS Custom Barclays Long Liabilities	11.3%	13.2%	1.9%
Fixed Income - EAFE		CalPERS Barclays International Fixed Income Index G	-5.4%	-3.0%	2.4%
Fixed Income - Inflation Indexed	6.0%	67% Barclays Global Inflation-Linked U.S. and 33% B	3.4%	4.8%	1.4%
Fixed Income - High Yield		CALPERS HIGH YIELD CASH PAY (DAILY) EX TOBACCO	1.8%	6.8%	5.0%
Fixed Income - Mortgages		CAL CUSTOM BC LPF MTG (DAILY)	5.9%	8.2%	2.3%
Fixed Income - Other		PERS Barclays Govt Liquidity Index 2-10 Yr CALPERS E	6.7%	4.6%	-2.2%
Cash	2.0%	PERS 1 Month T-Bill	0.0%	0.2%	0.1%
Commodities		Standard & Poor's GSCI Total Return Index	-33.1%	-32.3%	0.8%
Infrastructure	1.0%	CPI +400 BPS Lagged one quarter	4.8%	36.8%	32.0%
Natural Resources	1.0%	NCREIF TIMBERLAND	10.5%	3.3%	-7.2%
Real Estate ex-REITs	10.0%	Exceed (net of fees) NCREIF ODCE	11.4%	12.3%	0.9%
Hedge Funds		ML 1 YR Treasury Note + 5%	5.2%	2.8%	-2.4%
Global TAA		Absolute Benchmark	7.5%	9.2%	1.7%
Diversified Private Equity	9.8%	Your Diversified or All benchmark	17.1%	15.0%	-2.1%
Total	100.0%				
Net Actual Return (reported by you)					6.5%
Calculated Policy Return = sum of (policy weights X benchmark returns)				3.7%	
Adjustment to reflect rebalancing and overlay impacts				<u>3.2%</u>	
Policy Return					<u>6.8%</u>
Net Value Added (Net Return - Policy Return)					-0.3%

Your policy return and value added calculations - 2010 to 2013

2013 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock		Your Stock: U.S. E	33.5%	38.6%	5.1%
U.S. Stock - Large Cap		Your Stock: U.S. L	34.2%	34.5%	0.3%
U.S. Stock - Mid Cap		Your Stock: U.S. S	42.1%	46.8%	4.7%
U.S. Stock - Small Cap		Your Stock: U.S. S	42.1%	46.8%	4.7%
Stock - EAFE		Your Stock: EAFE	20.6%	21.6%	1.0%
Stock - Emerging		Your Stock: Emer	-3.2%	-3.5%	-0.3%
Stock - Global	49.1%	Your Stock: Globa	24.7%	23.8%	-0.9%
Stock - Other		Global Equity Ber	24.7%	30.5%	5.8%
Fixed Income - EAFE	1.6%	CalPERS Barclays	-4.8%	-5.2%	-0.4%
Fixed Income - Inflation Indexed	3.0%	67% Barclays Glo	-5.9%	-5.7%	0.2%
Fixed Income - High Yield		CALPERS HIGH YI	7.5%	9.4%	1.9%
Fixed Income - Mortgages		CAL CUSTOM BC	-1.3%	-0.9%	0.4%
Fixed Income - Other	3.0%	PERS Barclays Go	-2.0%	-2.0%	0.0%
Cash	1.0%	PERS 1 Month T-f	0.0%	0.1%	0.1%
Commodities	1.0%	Standard & Poor'	-1.2%	-1.0%	0.2%
Infrastructure	2.0%	CPI +400 BPS Lag	5.2%	9.8%	4.6%
Natural Resources	1.0%	NCREIF TIMBERL	9.7%	4.4%	-5.3%
Real Estate ex-REITs	10.0%	Exceed (net of fee	12.1%	10.8%	-1.3%
Hedge Funds		ML 1 YR Treasury	5.3%	7.8%	2.5%
Global TAA		Absolute Benchm	7.5%	8.1%	0.6%
Diversified Private Equity	13.9%	Your Diversified c	24.1%	18.5%	-5.6%
Total	100.0%				
Net Return (reported by you)					16.2%
Calculated policy return (sum: Policy weights x benchmarks)				16.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>-1.8%</u>	
Policy Return					<u>14.8%</u>
Net Value Added (Net Return - Policy Return)					1.4%

2011 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock		Long / Short Asse	1.3%	-0.5%	-1.8%
U.S. Stock - Large Cap		Your Stock: U.S. L	0.4%	0.9%	0.5%
U.S. Stock - Mid Cap		Your Stock: U.S. S	-6.6%	-7.9%	-1.3%
U.S. Stock - Small Cap		Your Stock: U.S. S	-6.6%	-7.9%	-1.3%
Stock - EAFE		Your Stock: EAFE	-12.6%	-12.8%	-0.2%
Stock - Emerging		Your Stock: Emer	-20.3%	-20.6%	-0.3%
Stock - Global	50.0%	Your Stock: Globa	-8.1%	-13.6%	-5.5%
Stock - Other		Global Equity Ber	-8.1%	-3.6%	4.5%
Fixed Income - EAFE	1.0%	PERS World Govt	5.3%	7.1%	1.8%
Fixed Income - Inflation Indexed	3.0%	Barclays Global Ir	11.7%	12.8%	1.1%
Fixed Income - High Yield		CalPERS High Yiel	5.5%	2.2%	-3.3%
Fixed Income - Mortgages		CAL Custom BC LI	6.2%	7.2%	1.0%
Fixed Income - Other	3.0%	PERS Barclays Go	0.0%	10.5%	10.5%
Cash	1.0%	PERS 1 Month T-f	0.1%	0.2%	0.1%
Commodities	1.0%	Goldman Sachs C	-1.2%	-0.7%	0.5%
Infrastructure	1.0%	CPI +400 BPS 1 M	9.6%	59.6%	50.0%
REITs	0.5%	Your REIT benchn	-5.8%	-5.5%	0.3%
Natural Resources	1.0%	NCREIF TIMBERL	0.3%	-7.1%	-7.4%
Real Estate ex-REITs	7.5%	NCREIF ODCE 1 Q	17.2%	13.7%	-3.5%
Hedge Funds		ML 1 YR Treas No	5.6%	-3.6%	-9.2%
Diversified Private Equity	14.0%	Your Diversified c	1.4%	12.3%	10.9%
Total	100.0%				
Net Return (reported by you)					0.8%
Calculated policy return (sum: Policy weights x benchmarks)				-2.1%	
Adjustment to reflect rebalancing and overlay impacts				<u>3.0%</u>	
Policy Return					<u>0.9%</u>
Net Value Added (Net Return - Policy Return)					-0.1%

2012 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock		Long / Short Asse	16.2%	17.3%	1.2%
U.S. Stock - Large Cap		Your Stock: U.S. L	16.3%	16.6%	0.3%
U.S. Stock - Mid Cap		Your Stock: U.S. S	17.3%	17.4%	0.1%
U.S. Stock - Small Cap		Your Stock: U.S. S	17.3%	17.4%	0.1%
Stock - EAFE		Your Stock: EAFE	17.7%	18.0%	0.3%
Stock - Emerging		Your Stock: Emer	17.8%	19.7%	1.9%
Stock - Global	50.0%	Your Stock: Globa	17.1%	14.5%	-2.6%
Stock - Other		Global Equity Ber	17.1%	15.0%	-2.1%
Fixed Income - EAFE	2.0%	PERS World Govt	1.5%	2.3%	0.8%
Fixed Income - Inflation Indexed	2.0%	Barclays Global Ir	8.2%	8.1%	-0.1%
Fixed Income - High Yield		CalPERS High Yiel	14.6%	16.1%	1.5%
Fixed Income - Mortgages		CAL Custom BC LI	3.0%	4.8%	1.8%
Fixed Income - Other	3.0%	PERS Barclays Go	2.2%	2.9%	0.7%
Cash	1.0%	PERS 1 Month T-f	0.1%	0.1%	0.1%
Commodities	2.0%	Goldman Sachs C	0.1%	-0.3%	-0.4%
Infrastructure	1.0%	CPI +400 BPS 1 M	6.1%	6.4%	0.3%
Natural Resources	1.0%	NCREIF TIMBERL	2.3%	-7.7%	-9.9%
Real Estate ex-REITs	8.5%	NCREIF ODCE 1 Q	10.5%	13.8%	3.3%
Hedge Funds		ML 1 YR Treas No	5.3%	1.7%	-3.6%
Global TAA		Absolute Benchm	7.5%	6.5%	-1.0%
Diversified Private Equity	14.0%	Your Diversified c	28.5%	12.8%	-15.7%
Total	100.0%				
Net Return (reported by you)					13.2%
Calculated policy return (sum: Policy weights x benchmarks)				13.8%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.7%</u>	
Policy Return					<u>14.4%</u>
Net Value Added (Net Return - Policy Return)					-1.2%

2010 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
U.S. Stock		Long / Short Com	15.4%	14.6%	-0.8%
U.S. Stock - Large Cap		Your Stock: U.S. L	17.1%	17.7%	0.6%
U.S. Stock - Mid Cap		Your Stock: U.S. S	23.2%	29.5%	6.3%
U.S. Stock - Small Cap		Your Stock: U.S. S	23.2%	29.5%	6.3%
Stock - EAFE		Your Stock: EAFE	9.6%	11.8%	2.2%
Stock - Emerging		Your Stock: Emer	18.8%	20.0%	1.2%
Stock - Global	49.0%	Global Equity Ber	13.9%		
Stock - Other		Global Equity Ber	13.9%	14.2%	0.3%
Fixed Income - EAFE	2.0%	PERS World Govt	6.1%	8.7%	2.6%
Fixed Income - Inflation Indexed		Barclays Global Ir	4.7%	4.6%	-0.1%
Fixed Income - High Yield		CalPERS High Yiel	14.3%	15.8%	1.5%
Fixed Income - Mortgages		CAL Custom BC LI	6.5%	12.8%	6.3%
Fixed Income - Other		PERS Custom Bar	10.3%	11.4%	1.1%
Cash	2.0%	PERS Custom STIf	0.2%	0.3%	0.1%
Commodities		Goldman Sachs C	9.0%	10.3%	1.3%
Infrastructure	4.0%	CPI +400 BPS 1 M	5.2%	6.1%	0.9%
REITs	1.0%	Your REIT benchn	20.4%	18.1%	-2.3%
Natural Resources		CPI +500 BPS 1 M	6.2%	3.4%	-2.8%
Real Estate ex-REITs	9.0%	NPI+200 bps (on	7.9%	-6.8%	-14.7%
Hedge Funds		ML 1 YR Treas No	5.9%	7.7%	1.8%
Diversified Private Equity	14.0%	Wilshire 2500 Plu	14.3%	20.9%	6.6%
Total	100.0%				
Net Return (reported by you)					12.1%
Calculated policy return (sum: Policy weights x benchmarks)				10.1%	
Adjustment to reflect rebalancing and overlay impacts				<u>2.0%</u>	
Policy Return					<u>12.1%</u>
Net Value Added (Net Return - Policy Return)					0.0%

Profit/Loss on overlay programs

Overlay type	Your fund		Peer median				U.S. median			
	2014	2013	2014		2013		2014		2013	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			0	1	-1	1	3	2	0	2
Ext. Discretionary Currency			2	2	1	1	4	4	0	4
Internal Global TAA			0	1			0	1		
External Global TAA									44	1
Internal PolicyTilt TAA									-34	1
External PolicyTilt TAA										
Internal Commodities										
External Commodities			0	1			0	2	-54	1
Internal Long/Short			11	2	23	1	4	1		
External Long/Short			27	1	27	1				
Internal Other			0	1			64	2	0	5
External Other					-1	1	10	5	0	10
Total Profit/Loss			0	6	1	3	4	14	0	20

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

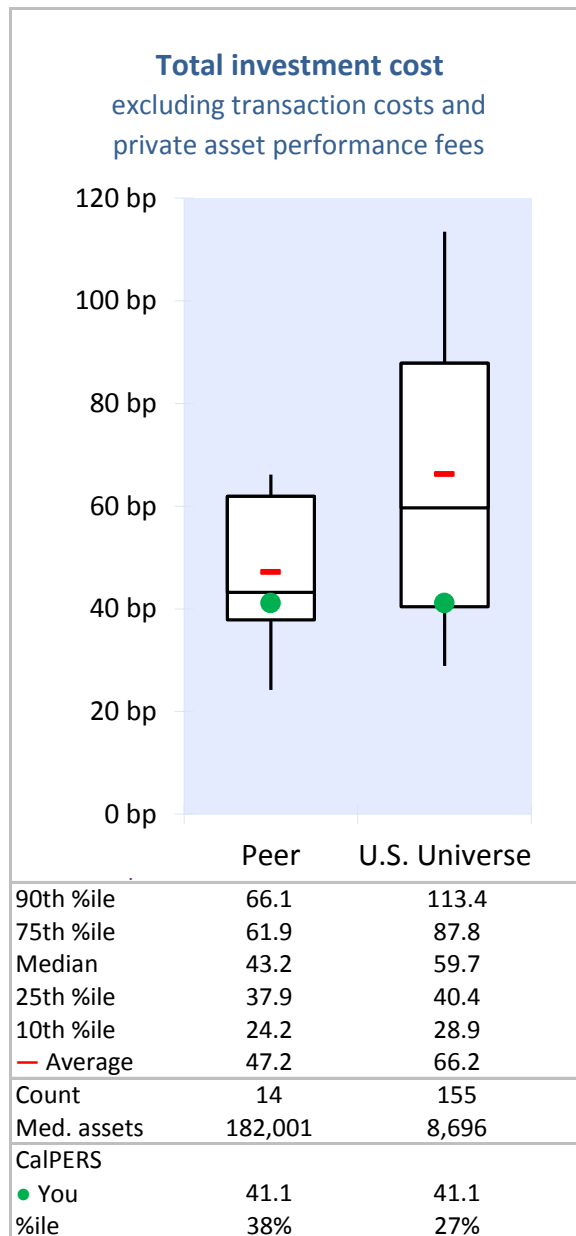
Total cost and benchmark cost

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Comparisons of total investment cost

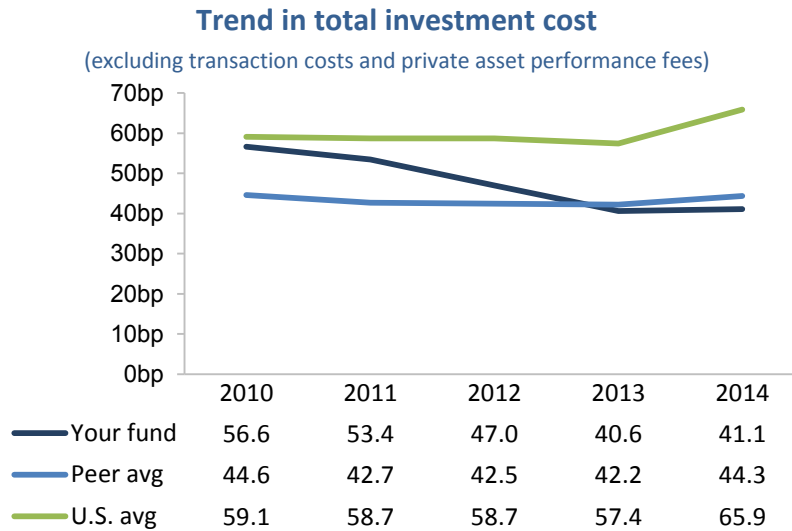
Your total investment cost, excluding transaction costs and private asset performance fees, of 41.1 bps was below the peer median of 43.2 bps.

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 56.6 bps in 2010 to 41.1 bps in 2014.



Trend analysis is based on the 123 U.S. funds and the 11 peer funds with 5 or more consecutive years of data.

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	<u>Internal</u>		<u>External</u>			
	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>						
<i>Hedge Funds</i>	--	--	✓	✓	✓	✗
<i>Global TAA</i>	✓	✗	✓	✓	✓	✗
<u>Private real assets</u>						
(Infrastructure, natural resources, real estate ex-REITs, other real assets)	✓	✗	✓	✓	✗	✗
<u>Private equity</u>						
(Diversified private equity, venture capital, LBO, other private equity)	✓	✗	✓*	✓	✗	✗

*External manager base fees represent gross contractual management fees.

- "--" indicates that the cost type is not applicable.
- 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 2014 total investment cost, excluding transaction costs and private asset performance fees, was 41.1 bp or \$1.2 billion.

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										
Public Market Equities	1,724	23,944			73,355	77,042	3,825	179,891		15%
Fixed Income	33	27,618			7,312	4,199	318	39,480		3%
Commodities		205						205		0%
Real Estate ex-REITs - LPs					189,559	621,349 ¹	26,420	837,328		70%
Infrastructure		1,228						1,228		0%
Infrastructure - LPs					9,572	38,796 ¹	3,058	51,426		4%
Natural Resources - LPs					7,165		666	7,831		1%
Hedge Funds					53,916	66,190	6,408	126,514		11%
Hedge Funds - Fund of Funds					7,584	2,230	948	10,762		1%
Underlying Fund of Fund Fees ²					11,622	11,154		22,775		2%
Global TAA					6,147	8,775	1,835	16,757		1%
Diversified Private Equity		3,025			427,321		14,430	444,776		37%
Diversified Private Equity - Fund of Funds					12,488		3,963	16,451		1%
Underlying Fund of Fund Fees					69,236			69,236		6%
Overlay Programs		125			0	0	0	125		0%
Total asset management costs excluding private asset performance fees								1,164,640	40.3bp	98%
Oversight, custodial & other asset related costs										
Oversight of the Fund								13,406		1%
Trustee & Custodial								4,722		0%
Audit								1,197		0%
Other								4,895		0%
Total oversight, custodial & other costs								24,220	0.8bp	2%
Total investment costs excluding transaction costs and private asset performance fees								1,188,859	41.1bp	100%

¹ For cost benchmarking purposes, all transaction costs and performance fees on real estate, infrastructure, natural resources and private equity have been excluded.

² Default costs added. Refer to Appendix A.

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 (2014 - 2010)

	Investment costs (\$000s)					Change (\$000s)				Change (%)			
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2014	2013	2012	2011
Asset management													
Public Market Equities	179,891	158,347	149,683	138,639	142,905	21,544	8,664	11,045	-4,266	14%	6%	8%	-3%
Fixed Income	39,480	31,709	36,541	25,063	14,731	7,770	-4,832	11,478	10,332	25%	-13%	46%	70%
Commodities	205	1,082	244	3,463	398	-876	838	-3,219	3,065	-81%	344%	-93%	770%
Real Estate ex-REITs - LPs	215,979	204,844	200,158	0	0	11,135	4,686	200,158		5%	2%		
Infrastructure	1,228	2,016	1,003	0	0	-788	1,013	1,003		-39%	101%		
Infrastructure - LPs	12,630	14,116	9,513	9,533	10,819	-1,486	4,603	-19	-1,286	-11%	48%	0%	-12%
Natural Resources - LPs	7,831	11,686	11,764	0	0	-3,855	-78	11,764		-33%	-1%		
Hedge Funds	126,514	55,495	66,818	62,054	52,163	71,019	-11,323	4,764	9,891	128%	-17%	8%	19%
Hedge Funds - Fund of Funds	10,762	16,522	14,991	18,819	11,402	-5,761	1,531	-3,828	7,417	-35%	10%	-20%	65%
Underlying Fund of Fund Fees ²	22,775	24,068	27,176	25,252	22,502	-1,293	-3,108	1,924	2,750	-5%	-11%	8%	12%
Global TAA	14,922	4,350	2,465	0	0	10,572	1,885	2,465		243%	76%		
Diversified Private Equity	444,776	430,706	456,325	506,075	522,077	14,070	-25,619	-49,750	-16,002	3%	-6%	-10%	-3%
Diversified Private Equity - Fund of Funds	16,451	18,808	26,772	35,602	47,899	-2,357	-7,963	-8,830	-12,297	-13%	-30%	-25%	-26%
Underlying Fund of Fund Fees	69,236	69,236	73,653	90,500	88,301	0	-4,417	-16,847	2,199	0%	-6%	-19%	2%
Overlay Programs	125	186	3,517	2,658	3,710	-62	-3,330	859	-1,052	-33%	-95%	32%	-28%
Total excl. private asset perf. fees	1,164,640	1,043,817	1,082,868	1,169,541	1,136,464	120,822	-39,051	-86,672	33,077	12%	-4%	-7%	3%
Oversight, custodial & other asset related costs													
Oversight of the Fund	13,406	10,165	10,548	11,334	40,938	3,241	-383	-786	-29,604	32%	-4%	-7%	-72%
Trustee & Custodial	4,722	7,528	7,712	4,541	4,874	-2,806	-184	3,171	-333	-37%	-2%	70%	-7%
Audit	1,197	1,481	417	262	878	-284	1,064	155	-616	-19%	255%	59%	-70%
Other	4,895	16,885	9,786	17,038	1,112	-11,990	7,099	-7,252	15,926	-71%	73%	-43%	1432%
Total oversight, custodial & other	24,220	36,060	28,464	33,176	76,544	-11,841	7,596	-4,712	-43,367	-33%	27%	-14%	-57%
Total investment costs ¹	1,188,859	1,079,917	1,111,378	1,202,769	1,213,060	108,942	-31,461	-91,391	-10,291	10%	-3%	-8%	-1%
Total in basis points	41.1bp	40.6bp	47.0bp	53.4bp	56.6bp								

¹ For cost benchmarking purposes, all transaction costs and performance fees on real estate, infrastructure, natural resources and private equity have been excluded.

² Default costs added. Refer to Appendix A.

Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 1.8 bps below your benchmark cost of 42.9 bps. This implies that your fund was low cost by 1.8 bps compared to the peer median, after adjusting for your fund's asset mix.

Your cost versus benchmark

	\$000s	bps
Your fund's total cost	1,188,859	41.1 bp
- Your fund's benchmark	1,240,360	42.9 bp
= Your fund's cost savings	-51,501	-1.8 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 below 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 low cost

	Cost/-Savings impact	
	\$000s	bps
<u>Differences in implementation style:</u>		
External active vs. low cost styles	42,700	1.5 bp
Fund of funds vs. external direct	-23,389	-0.8 bp
Mix of internal and passive styles	-9,726	-0.3 bp
Style impact of overlays	-42,373	-1.5 bp
Total style impact	-32,788	-1.1 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-4,452	-0.2 bp
Internal investment management	11,509	0.4 bp
Oversight, custodial and other	-25,769	-0.9 bp
Total impact of paying more /-less	-18,712	-0.6 bp
Total savings	-51,501	-1.8 bp

Benchmark cost calculation

Your 2014 benchmark cost was 42.9 basis points or \$1.2 billion. 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 2014 benchmark cost

Asset class	Your average assets	Weighted peer median cost ¹	Benchmark \$000s
	(A)	(B)	(A X B)
Asset management costs			
Public Market Equities	155,149	16.8 bp	260,183
Fixed Income	65,692	6.2 bp	40,936
Commodities	2,614	5.0 bp	1,306
Infrastructure	1,366	48.3 bp	6,603
Real Estate ex-REITs	23,786	70.4 bp	167,568
Natural Resources	2,635	76.8 bp	20,224
Hedge Funds (External)	4,061	321.5 bp	130,546
Global TAA	1,115	86.0 bp	9,587
Diversified Private Equity	33,326	153.3 bp	510,920
Overlay Programs ²	289,298	1.5 bp	42,498
Benchmark for asset management	289,298	41.1 bp	1,190,372
Oversight, custody and other costs			
Oversight of the Fund	289,298	0.7 bp	20,465
Trustee & Custodial	289,298	0.7 bp	19,284
Consulting	289,298	0.1 bp	3,624
Audit	289,298	0.0 bp	1,061
Other	289,298	0.2 bp	5,553
Benchmark for oversight, custody & other		1.7 bp	49,988
Total benchmark cost		42.9 bp	1,240,360

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 saved you 1.1 bps.

Calculation of the cost impact of differences in implementation style

	Your avg holdings (mils)	% External active Peer More/ You average -Less			Premium vs. internal and passive ^{1 2}	Cost/ -Savings ³ \$000s bps
	(A)	(B)			(C)	(A X B X C)
Public Market Equities	155,149	16%	32%	-16%	44 bp	-108,832
Fixed Income	65,692	6%	16%	-11%	24 bp	-16,574
Commodities	2,614	0%	1%	-1%	207 bp	-564
Infrastructure	1,366	64%	24%	40%	89 bp	4,829
of which Partnerships represent:		100%	61%	39%	54 bp	1,835
Real Estate ex-REITs	23,786	100%	63%	37%	54 bp	47,784
of which Partnerships represent:		100%	69%	31%	50 bp	36,513
Natural Resources	2,635	100%	55%	45%	78 bp	9,113
of which Partnerships represent:		100%	82%	18%	-34 bp	-1,612
Hedge Funds	4,061	100%	100%	0%		0
Global TAA	1,115	100%	76%	24%	Insufficient	0
Diversified Private Equity	33,326	100%	86%	14%	153 bp	70,208
Total impact of differences in external active management usage						42,700 1.5 bp
		<i>Fund of fund % of external LPs</i>			<i>Premium vs. direct LPs^{1 2}</i>	
Real Estate ex-REITs LPs	23,786	0%	11%	-11%	34 bp	-8,807
Hedge Funds LPs	4,061	19%	23%	-3%	104 bp	-1,451
Diversified Private Equity LPs	33,326	15%	20%	-5%	82 bp	-13,131
Total impact of differences in fund of fund usage						-23,389 -0.8 bp
<i>Overlay usage</i>						
Impact of lower use of portfolio level overlays (see page 10)						-42,373 -1.5 bp
<i>Mix of low cost styles</i>						
Impact of mix of internal indexed, internal active, external indexed (see page 11)						-9,726 -0.3 bp
Total						-32,788 -1.1 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 saved you 1.5 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								
Currency - Hedge	289,298	n/a	n/a			0.0 bp	0.1 bp	-2,826
Currency - Discretionary	289,298	0.0%	n/a			N/A	0.1 bp	-1,533
Passive Beta - Hedge	289,298	0.0%	n/a			N/A	0.1 bp	-2,411
Duration - Hedge	289,298	0.0%	n/a			N/A	0.1 bp	-2,472
Global TAA - Discretionary	289,298	0.0%	n/a			N/A	0.1 bp	-2,797
Long/Short - Discretionary	289,298	0.0%	n/a			N/A	0.9 bp	-26,263
Other - Discretionary	289,298	0.0%	0.0%	0.0%	8.4 bp			-18
External Overlays								
Currency - Hedge	289,298	0.0%	2.3%	-2.3%	1.7 bp			-1,127
Currency - Discretionary	289,298	0.0%	0.2%	-0.2%	14.0 bp			-1,009
Passive Beta - Hedge	289,298	0.0%	0.0%	0.0%	5.9 bp			-70
Duration - Hedge	289,298	0.0%	0.4%	-0.4%	5.8 bp			-731
Dur. Mgmt Swaption - Hedge	289,298	0.0%	0.0%	0.0%	3.4 bp			0
Global TAA - Discretionary	289,298	0.0%	0.0%	0.0%	N/A			0
Policy Tilt TAA - Discretionary	289,298	0.0%	0.0%	0.0%	21.7 bp			0
Commodity Futures - Discretionary	289,298	0.0%	n/a			N/A	0.0 bp	-38
Long/Short - Discretionary	289,298	0.0%	0.4%	-0.4%	9.3 bp			-1,078
Other - Discretionary	289,298	0.0%	0.0%	0.0%	7.0 bp			0
Total impact in 000s								-42,373
Total impact in basis points								-1.5 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 saved you 0.3 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	
Public Market Equities	130,657	79%	41%	21%	40%	0%	20%	-13,653
Fixed Income	61,890	0%	35%	100%	64%	0%	1%	3,927
Commodities	2,614	0%	46%	100%	53%	0%	1%	0
Infrastructure	499	0%	0%	100%	100%	0%	0%	0
Total impact in 000s								-9,726
Total impact in basis points								-0.3 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 0.6 bps.

Calculation of the cost impact of paying more/-less

		Your avg holdings (mils) (A)	Cost in bps			Cost/ -Savings bps
	Style		Your	Peer median	More/ -less (B)	\$000s (A X B)
External asset management						
Public Market Equities	active	24,492	63.0	46.9	16.1	39,310
Fixed Income	active	3,802	31.1	26.1	5.0	1,913
Infrastructure	LP	867	145.6	137.5	8.1	707
Real Estate ex-REITs	LP	23,786	90.8	102.2	-11.4	-27,080
Natural Resources	LP	2,635	29.7	105.2	-75.5	-19,894
Hedge Funds	active	3,285	385.2	298.1	87.1	28,616
Hedge Funds - Fund of Funds	F. of F.	776	432.2	402.0	30.2	2,341
Global TAA	active	1,115	150.3	86.0	64.3	7,169
Diversified Private Equity	active	28,270	157.3	158.0	-0.7	-1,865
Diversified Private Equity	F. of F.	5,056	169.5	240.0	-70.6	-35,669
Total for external management						-4,452 -0.2 bp
Internal asset management						
Public Market Equities	passive	103,284	0.2	1.0	-0.8	-8,575
Public Market Equities	active	27,373	8.7	4.6	4.2	11,459
Fixed Income	passive	20	17.2	1.1	16.0	31
Fixed Income	active	61,870	4.5	3.0	1.5	9,247
Commodities	active	2,614	0.8	2.8	-2.1	-537
Infrastructure	active	499	24.6	27.0	-2.3	-116
Total for internal asset management						11,509 0.4 bp
Oversight, custodial, other						
Oversight of the Fund		289,298	0.5	0.7	-0.2	-7,059
Consulting and Performance Measurement		289,298	0.0	0.1	-0.1	-3,624
Trustee & Custodial		289,298	0.2	0.7	-0.5	-14,562
Audit		289,298	0.0	0.0	0.0	136
Other		289,298	0.2	0.2	0.0	-658
Total for oversight, custodial, other						-25,769 -0.9 bp
Total						-18,712 -0.6 bp

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							
Public Market Equities	11.6 bp	16.8 bp	-5.2 bp	155,149	-80,292	-122,485	42,194
Fixed Income	6.0 bp	6.2 bp	-0.2 bp	65,692	-1,456	-12,647	11,191
Commodities	0.8 bp	5.0 bp	-4.2 bp	2,614	-1,101	-564	-537
Infrastructure	101.5 bp	48.3 bp	53.1 bp	1,366	7,255	6,664	591
Real Estate ex-REITs	90.8 bp	70.4 bp	20.4 bp	23,786	48,411	75,490	-27,080
Natural Resources	29.7 bp	76.8 bp	-47.0 bp	2,635	-12,393	7,501	-19,894
Hedge Funds (External)	394.2 bp	321.5 bp	72.7 bp	4,061	29,505	-1,451	30,957
Global TAA	150.3 bp	86.0 bp	64.3 bp	1,115	7,169	0	7,169
Diversified Private Equity	159.2 bp	153.3 bp	5.9 bp	33,326	19,543	57,077	-37,534
Overlay Programs ²	0.0 bp	1.5 bp	-1.5 bp	289,298	-42,373	-42,373	0
Total asset management	40.3 bp	41.1 bp	-0.9 bp	289,298	-25,732	-32,788	7,056
Oversight, custody and other costs							
Oversight of the Fund	0.5 bp	0.7 bp	-0.2 bp	289,298	-7,059	n/a	-7,059
Trustee & Custodial	0.2 bp	0.7 bp	-0.5 bp	289,298	-14,562	n/a	-14,562
Consulting	0.0 bp	0.1 bp	-0.1 bp	289,298	-3,624	n/a	-3,624
Audit	0.0 bp	0.0 bp	0.0 bp	289,298	136	n/a	136
Other	0.2 bp	0.2 bp	0.0 bp	289,298	-658	n/a	-658
Total oversight, custody & other	0.8 bp	1.7 bp	-0.9 bp	289,298	-25,769	n/a	-25,769
Total	41.1 bp	42.9 bp	-1.8 bp	289,298	-51,501	-32,788	-18,712

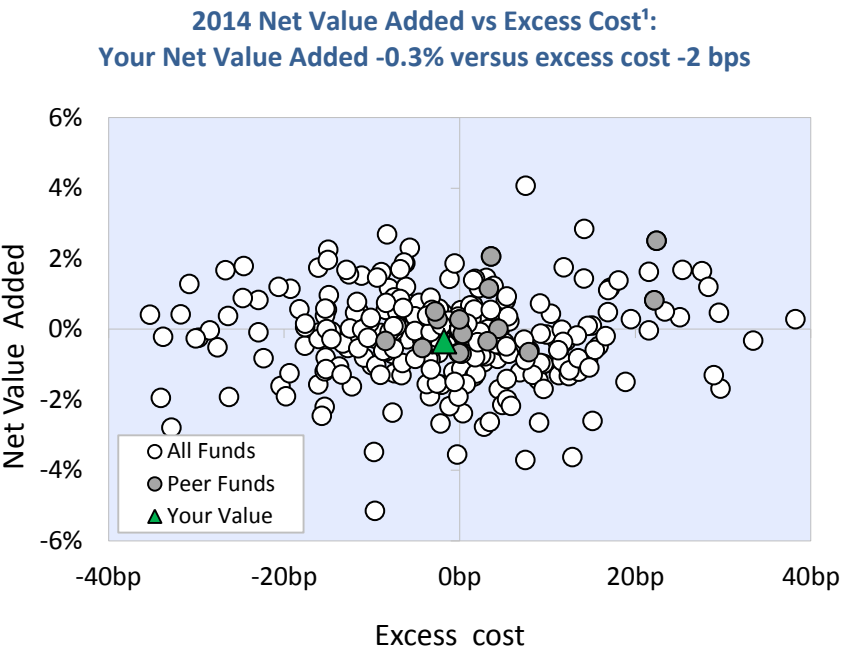
1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). It excludes performance fees on private assets. The style weights by asset 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

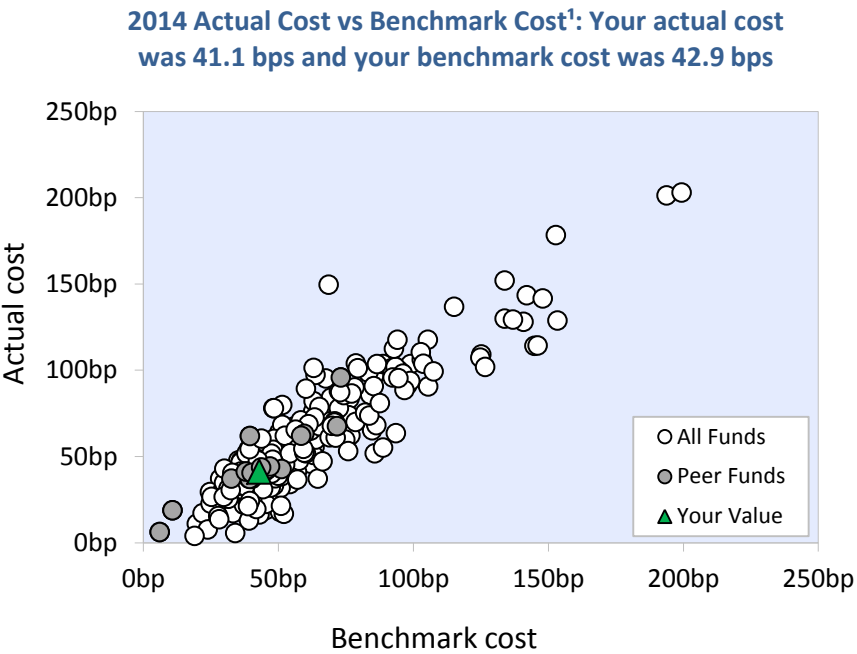
Being high or low cost is neither good nor bad. The more important question is, are you receiving sufficient value for your excess cost? At the total fund level, we provide insight into this question by combining your value added and your excess cost to create a snapshot your cost effectiveness performance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

For the 2014 year, your fund ranked in the negative value added, low 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



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 Public Market Equities unless otherwise indicated.

Asset class peer cost

$$= \text{Weighted average by peer average style of peer median costs for asset class}$$

$$= [(0.28 \times 1.0\text{bp}) + (0.27 \times 4.6\text{bp}) + (0.14 \times 2.9\text{bp}) + (0.32 \times 46.9\text{bp})] / (0.28 + 0.27 + 0.14 + 0.32) = 16.8\text{bp}$$

Peer average low cost (by asset class)

$$= \text{Weighted average by peer average style of peer median costs for internal passive, internal active and external passive management for asset class}$$

$$= [(0.28 \times 1.0\text{bp}) + (0.27 \times 4.6\text{bp}) + (0.14 \times 2.9\text{bp})] / (0.28 + 0.27 + 0.14) = 2.8\text{bp}$$

External active cost premium (by asset class)

$$= \text{Peer median external active cost} - \text{peer average low cost}$$

$$= 46.9\text{bp} - 2.8\text{bp} = 44.1\text{bp}$$

Fund of funds premium (by asset class)

$$= \text{Peer median fund-of-funds cost} - \text{peer median external active cost}$$

$$= (\text{For private equity}) 240.0\text{bp} - 158.0\text{bp} = 82.1\text{bp}$$

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

$$= [(\text{Your int. pass. \%} - \text{average peer int. pass. \%}) \times (\text{peer median int. pass. cost} - \text{peer average low cost})$$

$$+ (\text{your int. act. \%} - \text{peer average int. act. \%}) \times (\text{peer median int. act. cost} - \text{peer average low cost})$$

$$+ (\text{your ext. pass. \%} - \text{average peer ext. pass. \%}) \times (\text{median peer ext. pass. cost} - \text{peer average low cost})]$$

$$\times \text{your average holdings}$$

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) 2014 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
Stock - Other													
Public Market Equities	0.2	8.7		63.0			1.0	4.6	2.9	46.9			16.8
Fixed Income	17.2	4.5		31.1			1.1	3.0	5.6	26.1			6.2
Commodities		0.8					2.8	2.8	2.8	209.9			5.0
Infrastructure		24.6			145.6			27.0		83.1	137.5	137.5	48.3
Real Estate ex-REITs					90.8			36.9		56.4	102.2	136.5	70.4
Natural Resources					29.7			33.7		139.1	105.2		76.8
Hedge Funds				385.2		432.2				298.1		402.0	321.5
Global TAA				150.3				86.0		86.0			86.0
Diversified Private Equity				157.3		169.5		21.8		158.0		240.0	153.3

d) 2014 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
Public Market Equities	66.6%	17.6%	0.0%	15.8%			27.7%	27.0%	13.6%	31.7%		
Fixed Income	0.0%	94.2%	0.0%	5.8%			29.6%	53.5%	0.5%	16.4%		
Commodities	0.0%	100.0%	0.0%	0.0%			45.4%	52.9%	0.6%	1.0%		
Infrastructure		36.5%		0.0%	63.5%	0.0%		76.1%		9.3%	10.7%	3.9%
Real Estate ex-REITs		0.0%		0.0%	100.0%	0.0%		37.4%		19.4%	38.5%	4.7%
Natural Resources		0.0%		0.0%	100.0%	0.0%		44.6%		10.0%	45.4%	0.0%
Hedge Funds				80.9%		19.1%				77.5%		22.5%
Global TAA		0.0%		100.0%				24.2%		75.8%		
Diversified Private Equity		0.0%		84.8%		15.2%		13.8%		69.0%		17.2%

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

	2014		2013		2012		2011		2010	
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"
Constant	80.1	18.8	76.8	18.2	73.2	18.9	72.5	18.8	65.1	14.4
Size in millions (Log 10)	-14.8	-14.0	-14.2	-13.3	-13.7	-13.8	-13.3	-13.8	-13.1	-11.6
<u>Percentage of assets in:</u>										
Stocks	15.7	3.7	19.6	4.5	19.0	4.6	14.8	3.6	n/a	
Domestic stocks	n/a		n/a		n/a		n/a		27.0	4.7
Foreign stocks	n/a		n/a		n/a		n/a		25.8	3.1
Real estate	62.8	4.2	56.9	3.8	55.1	4.2	50.8	3.9	46.5	3.1
Private equity & hedge funds	203.7	27.6	203.3	26.9	208.1	30.5	210.4	31.5	225.8	29.0
Country variable (1 if Cdn)	-6.4	-3.8	-8.1	-4.7	-6.4	-4.1	-4.9	-3.3	-5.2	-2.6
	All		All		All		All		All	
Standard error	14.1		14.6		13.1		13.2		15.5	
R-squared	68%		65%		71%		70%		67%	
F statistic	190.2		175.1		219.0		231.8		154.1	
Sample size	466		466		454		487		457	

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 2014, the R-squared was 68% which means that fund size, asset mix and nationality explain more than 68% 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

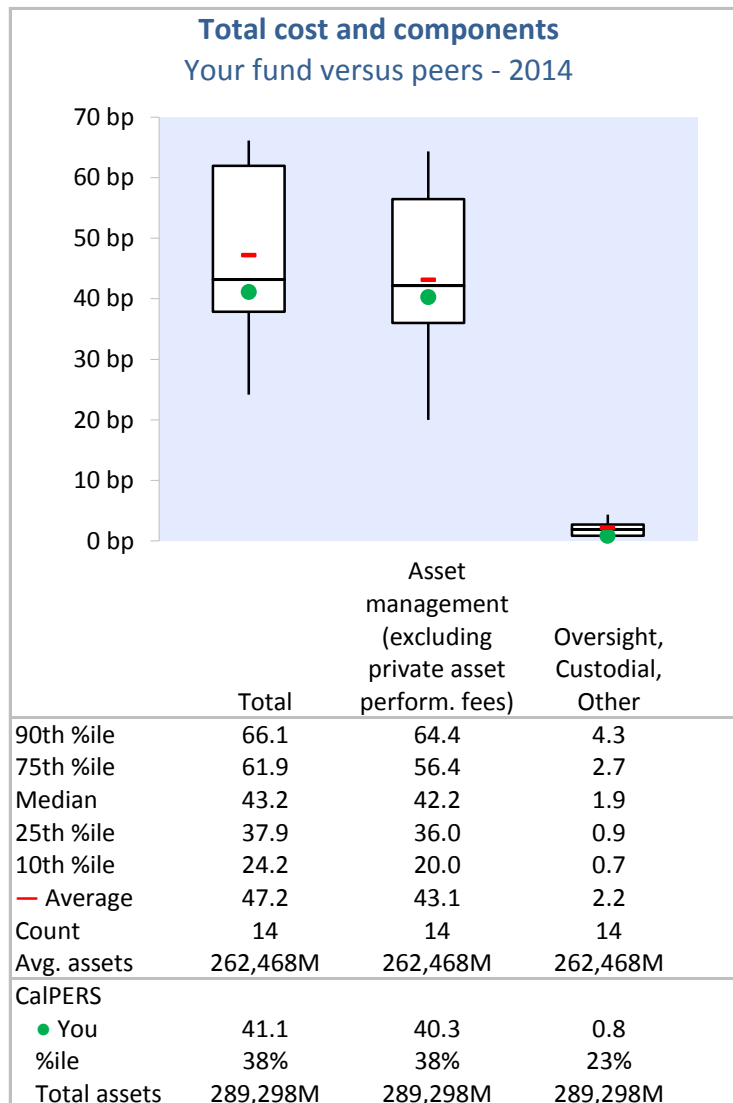
Cost comparisons

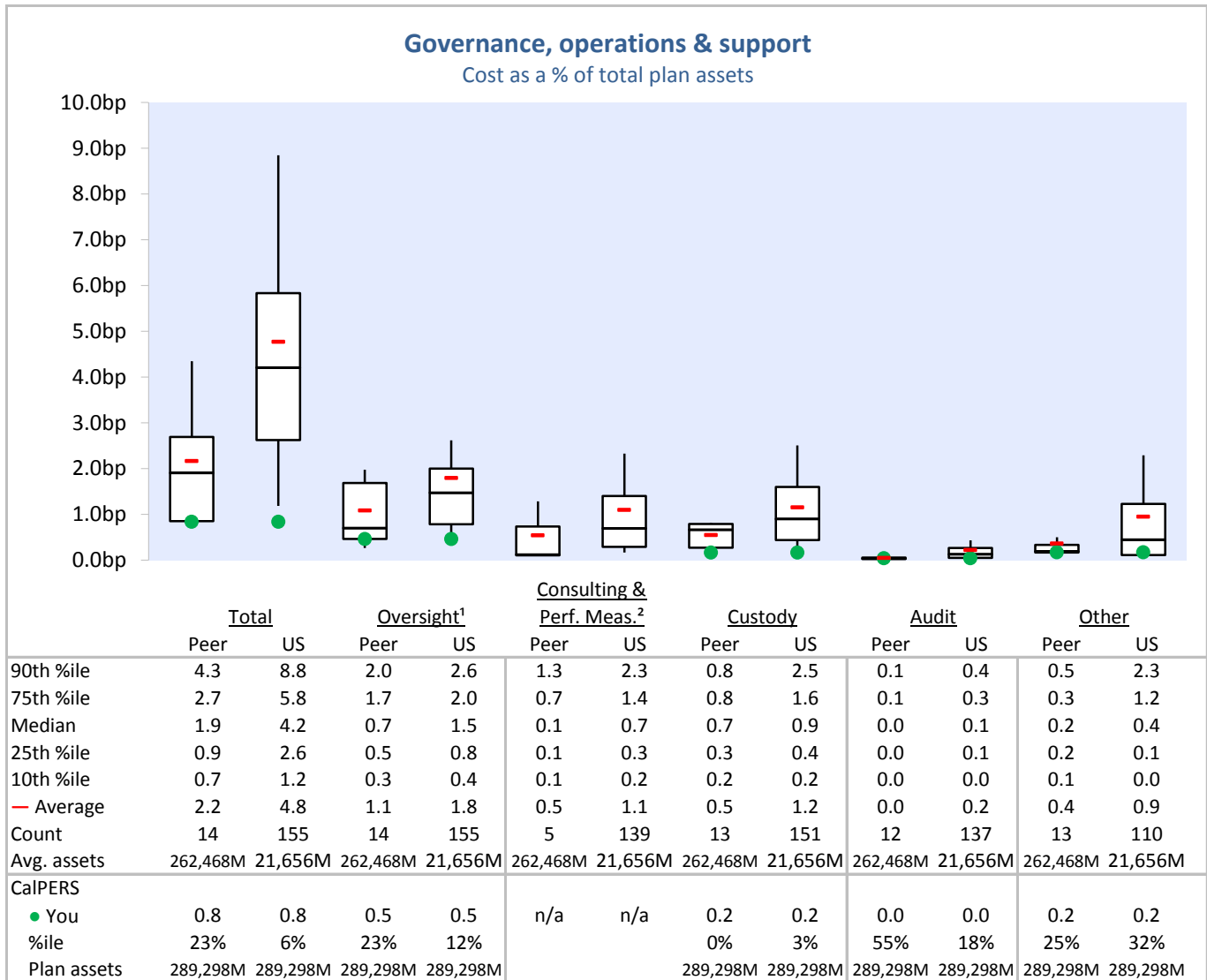
Total fund cost	2
Governance, operations & support	3
Public asset classes	
- Stock	4
- Fixed Income	13
- Commodities	22
- REITs	23
Real asset classes	
- Real estate ex-REITs	24
- Infrastructure	25
- Natural resources	26
- Other real assets	27
Private equity	
- Diversified private equity	28
- LBO	29
- Venture capital	30
- Other private equity	31
Global TAA	32
Hedge Funds	33
Overlays	34

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.

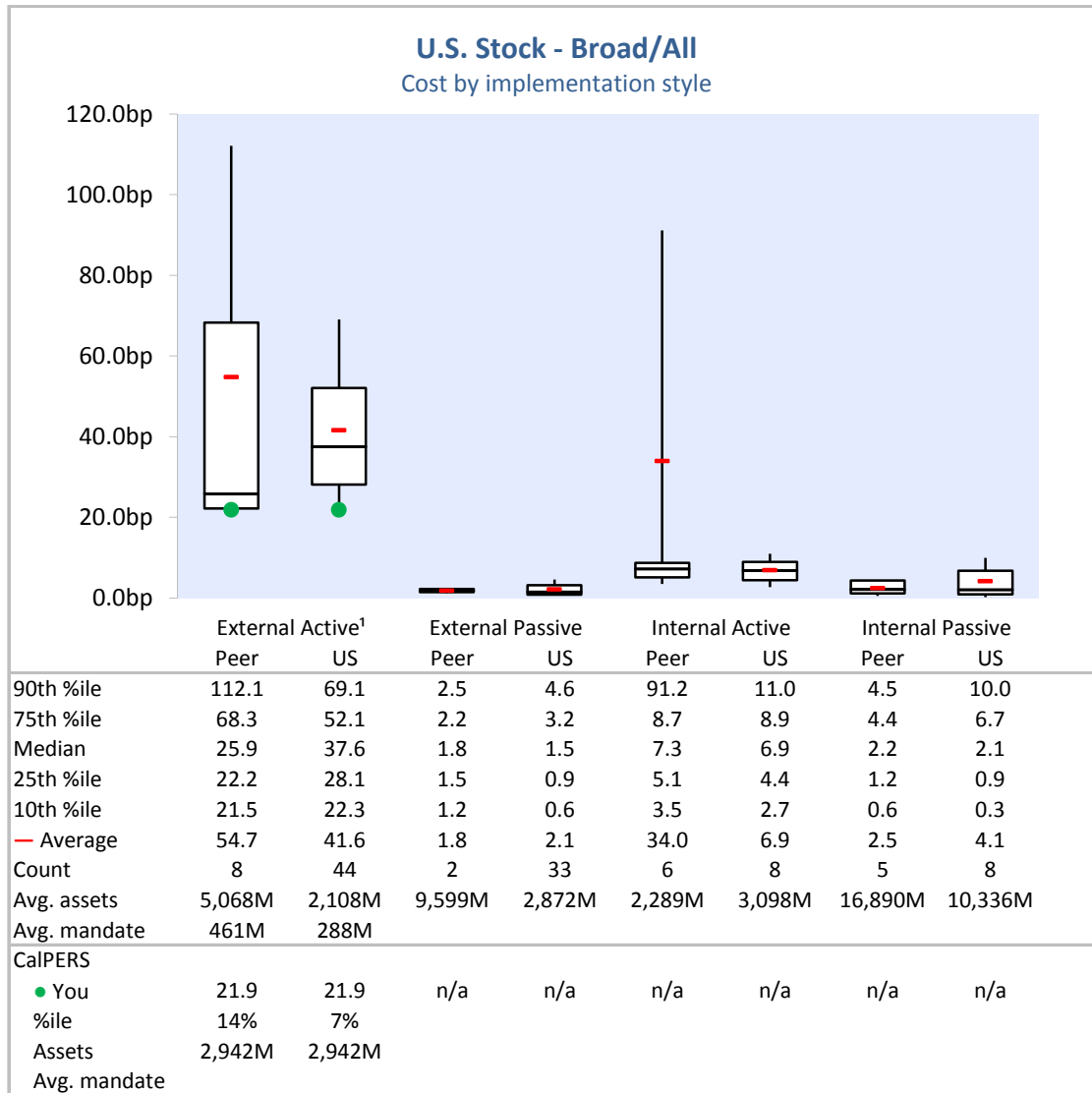
The 25th to 75th percentile range is the most relevant since higher and lower values may include outliers caused by unusual circumstances, such as performance-based fees. Count refers to the number of funds in your peer group that have costs in this category. It enables you to gauge the statistical significance.





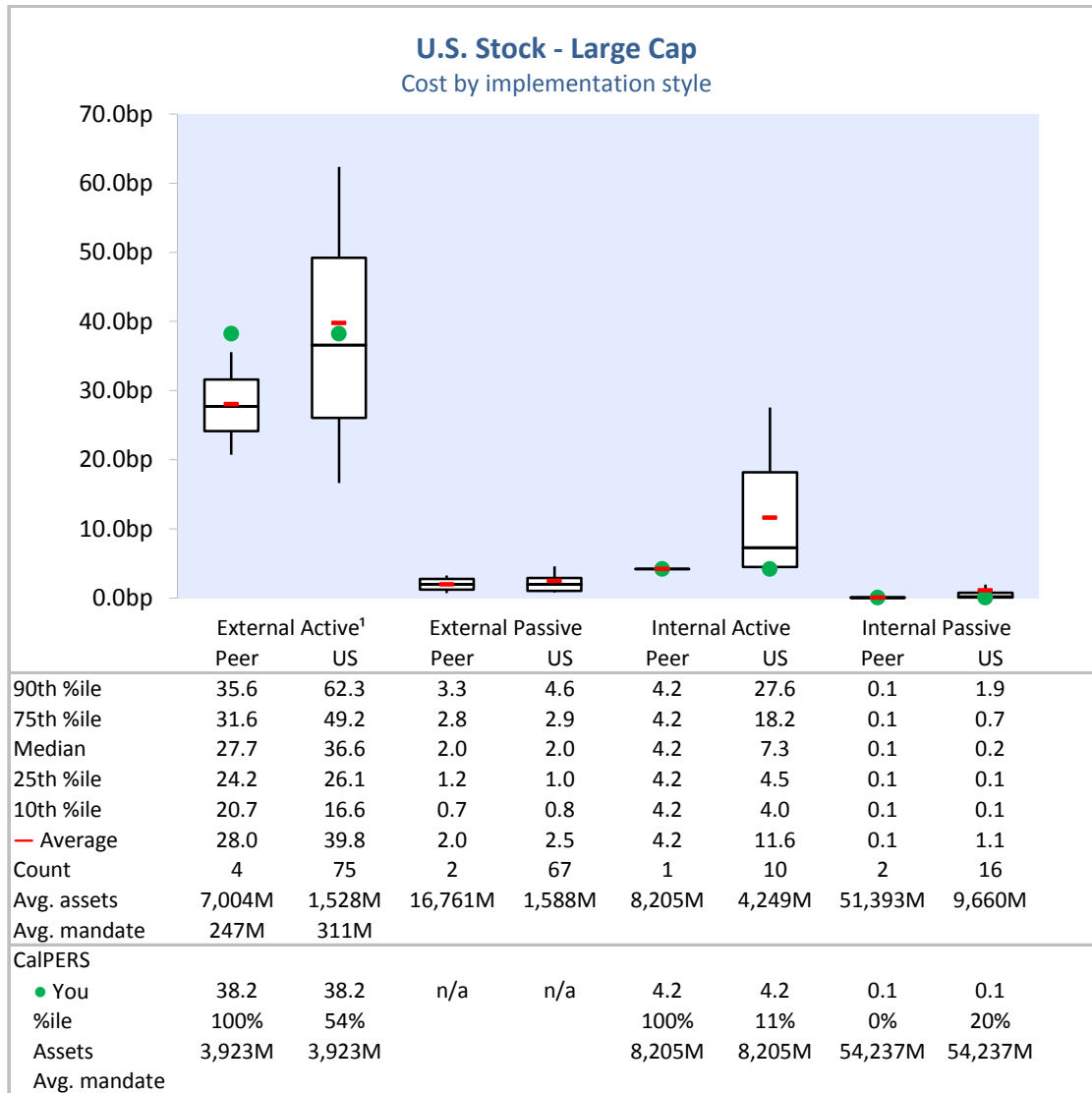
1. Oversight costs include the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees/salaries of the Board or Investment Committee. All costs associated with the above including fees/salaries, travel, director's insurance 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.

2. Consulting & performance measurement costs have been included in oversight costs. As part of the enhanced survey, consulting costs were included in costs for each governance, operations & support activity which were then allocated to oversight costs.



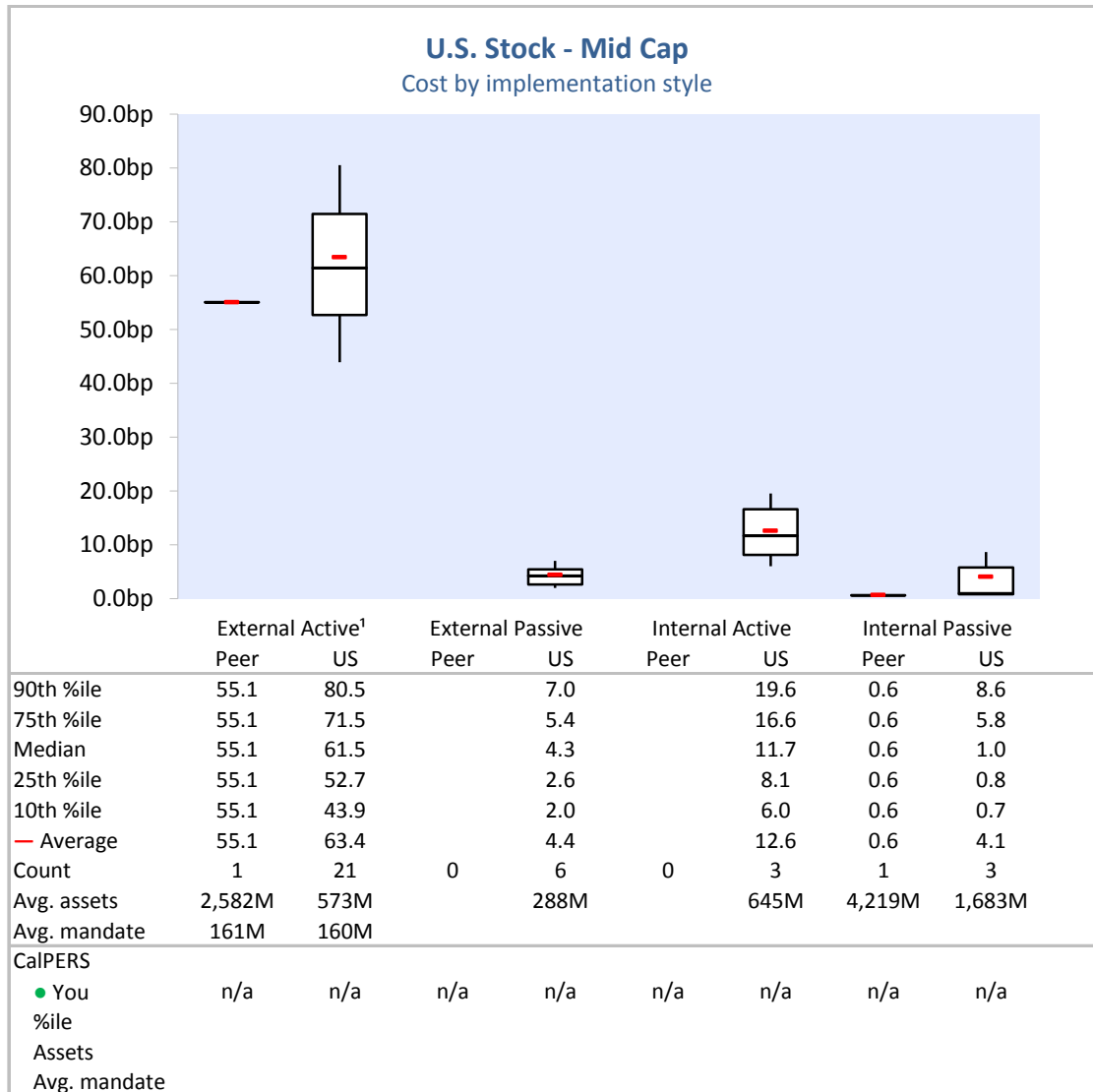
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	3.6	41.7	36.1
Performance fees	16.9	12.0	5.2
Internal and other	<u>1.3</u>	<u>1.1</u>	<u>0.3</u>
Total	21.9	54.7	41.6



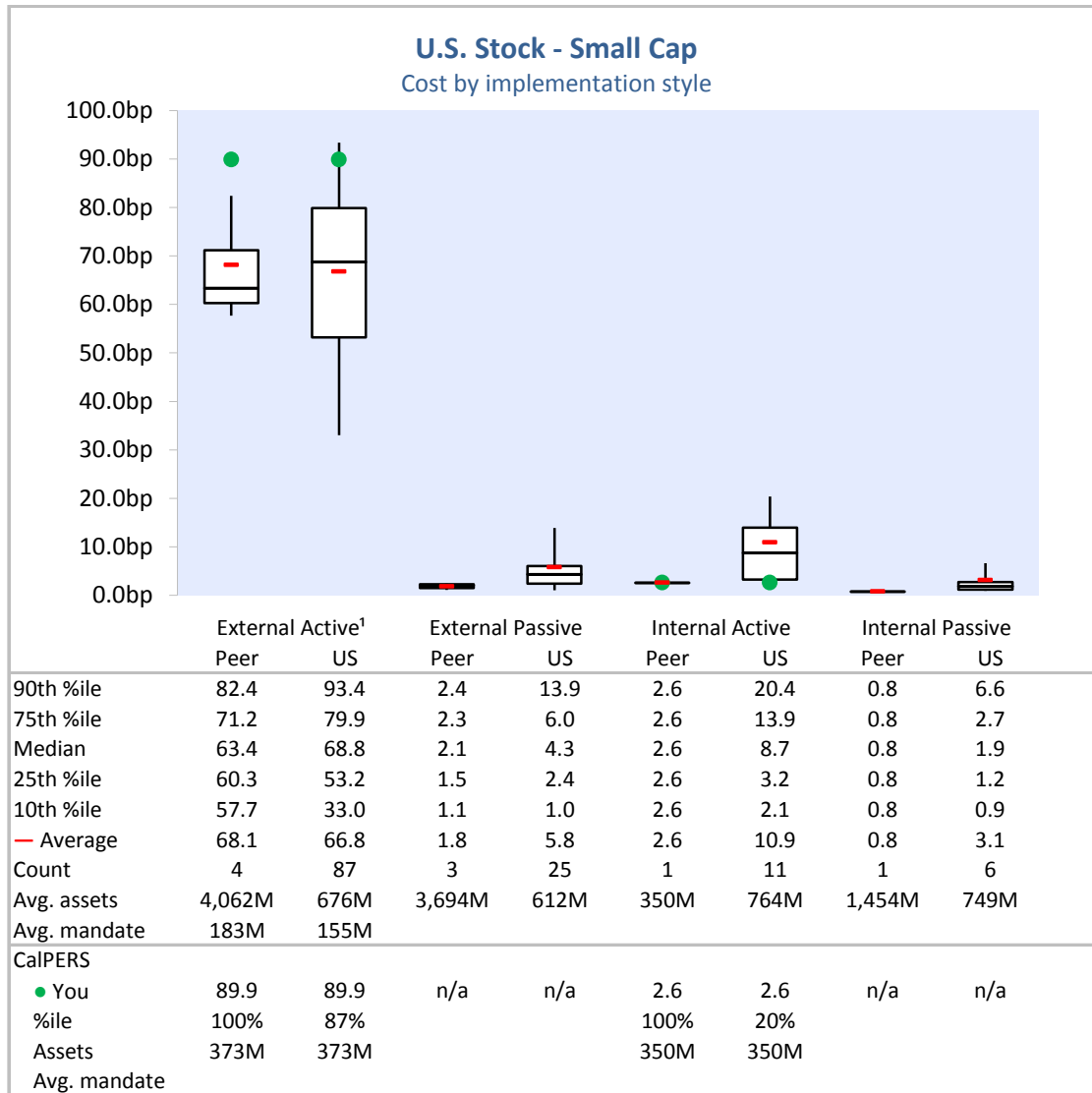
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	34.3	25.2	35.0
Performance fees	3.1	2.1	4.5
Internal and other	<u>0.8</u>	<u>0.7</u>	<u>0.3</u>
Total	38.2	28.0	39.8



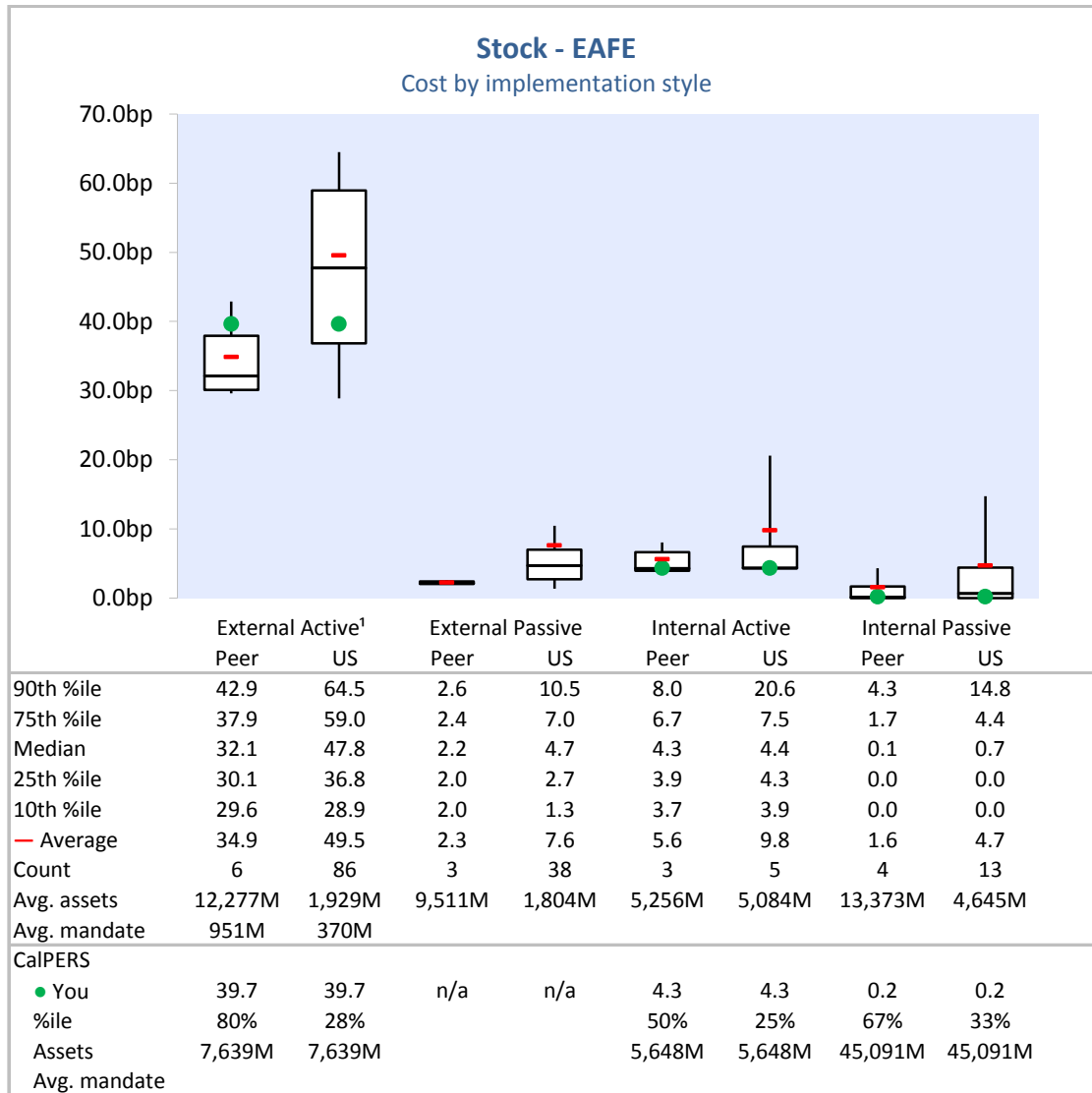
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	54.3	59.5
Performance fees	n/a	0.0	3.5
Internal and other	<u>n/a</u>	<u>0.8</u>	<u>0.4</u>
Total	n/a	55.1	63.4



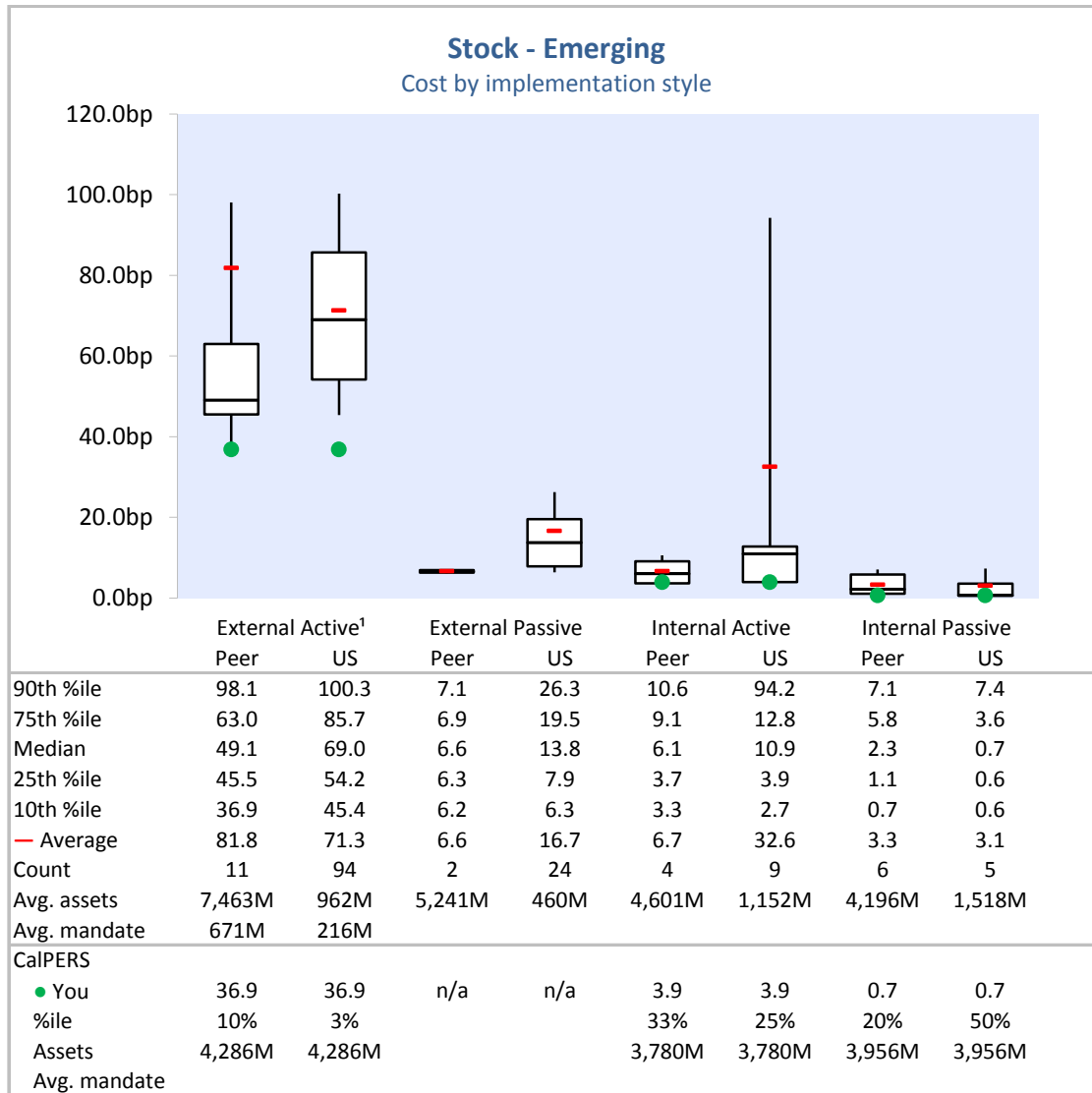
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	77.9	56.3	64.9
Performance fees	11.3	11.3	1.7
Internal and other	<u>0.7</u>	<u>0.6</u>	<u>0.1</u>
Total	89.9	68.1	66.8



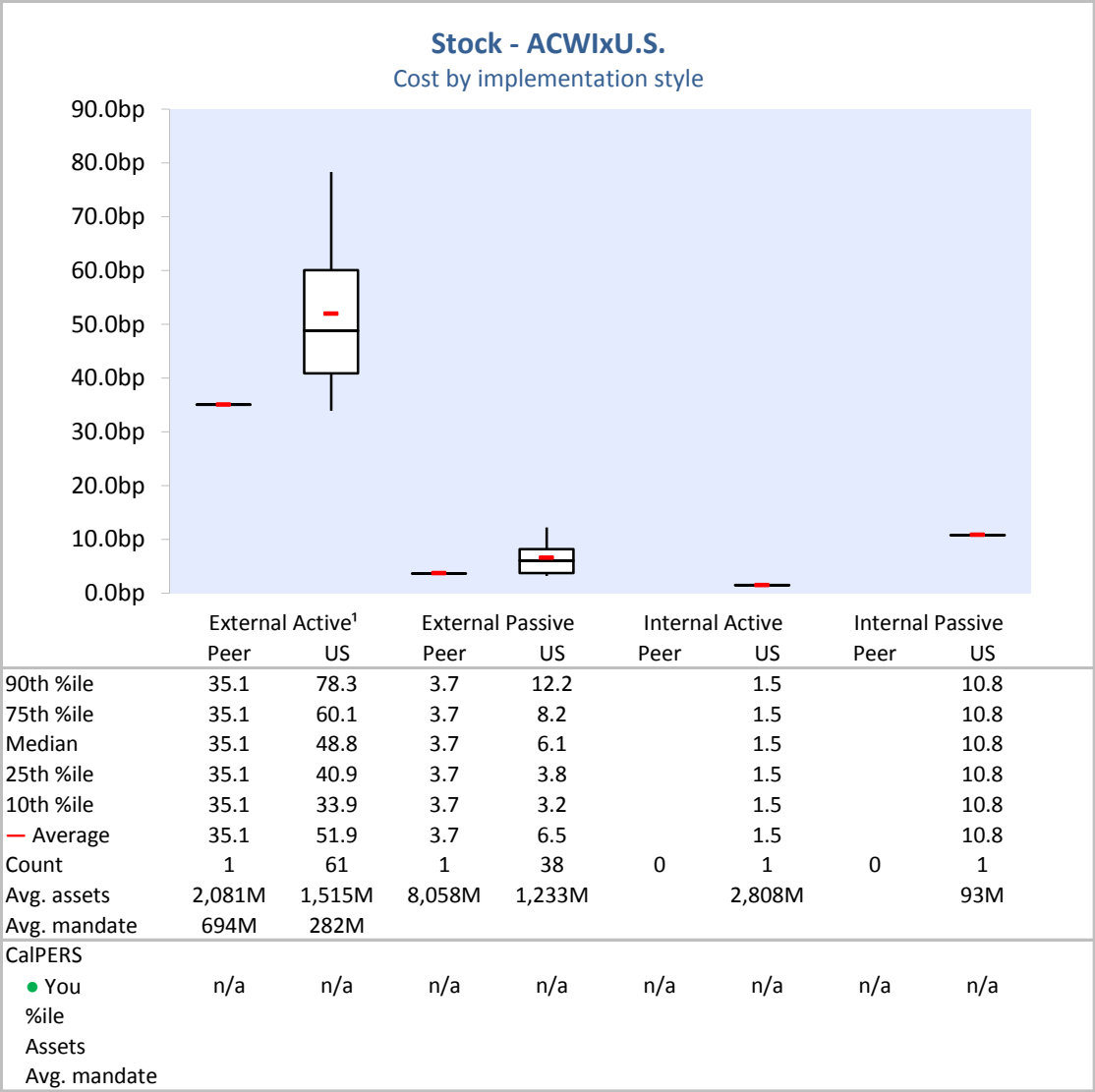
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	13.5	26.5	46.9
Performance fees	25.6	8.0	2.5
Internal and other	<u>0.5</u>	<u>0.3</u>	<u>0.1</u>
Total	39.7	34.9	49.5



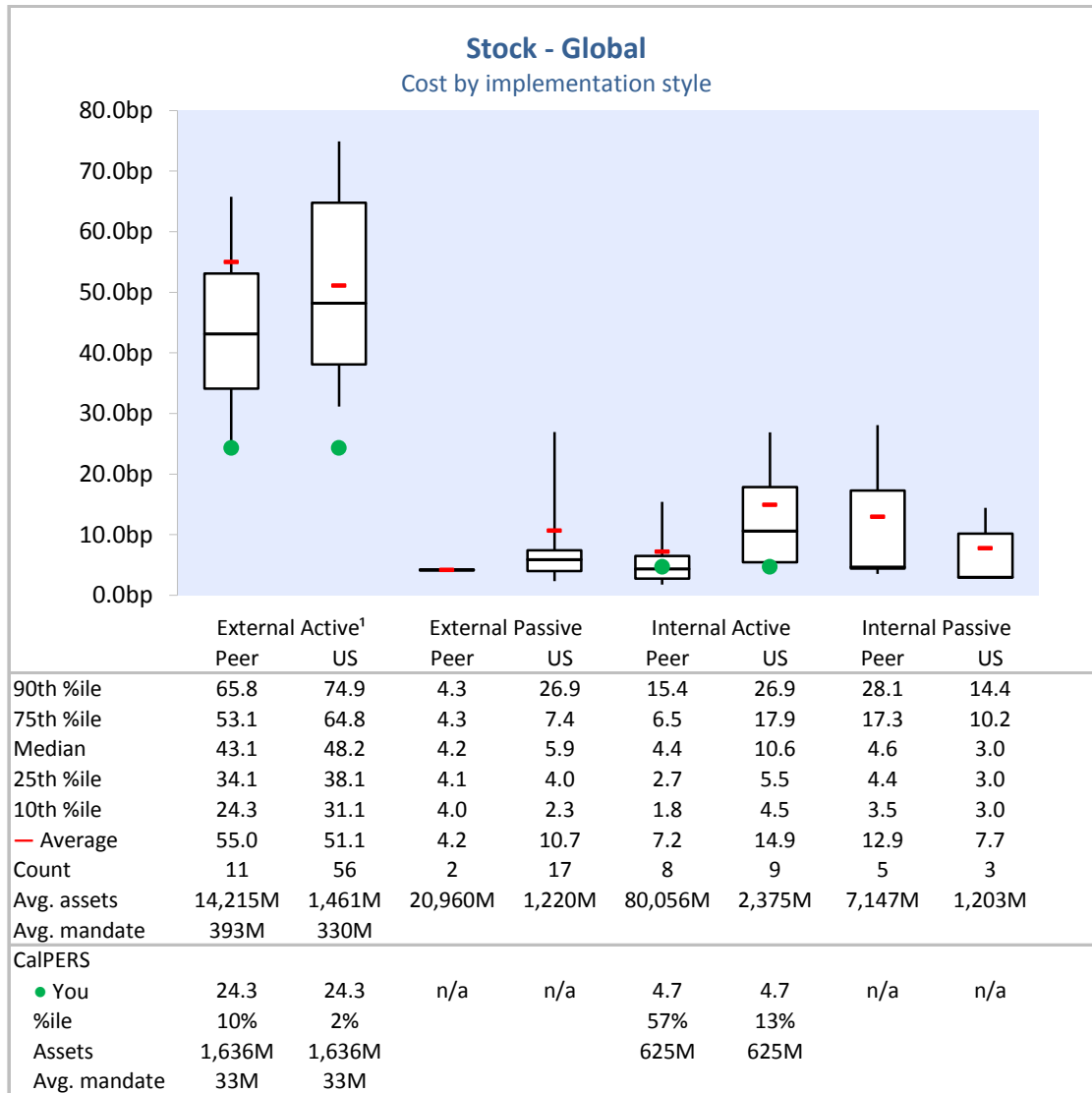
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	23.9	51.7	70.1
Performance fees	12.3	25.4	0.8
Internal and other	<u>0.7</u>	<u>4.7</u>	<u>0.3</u>
Total	36.9	81.8	71.3



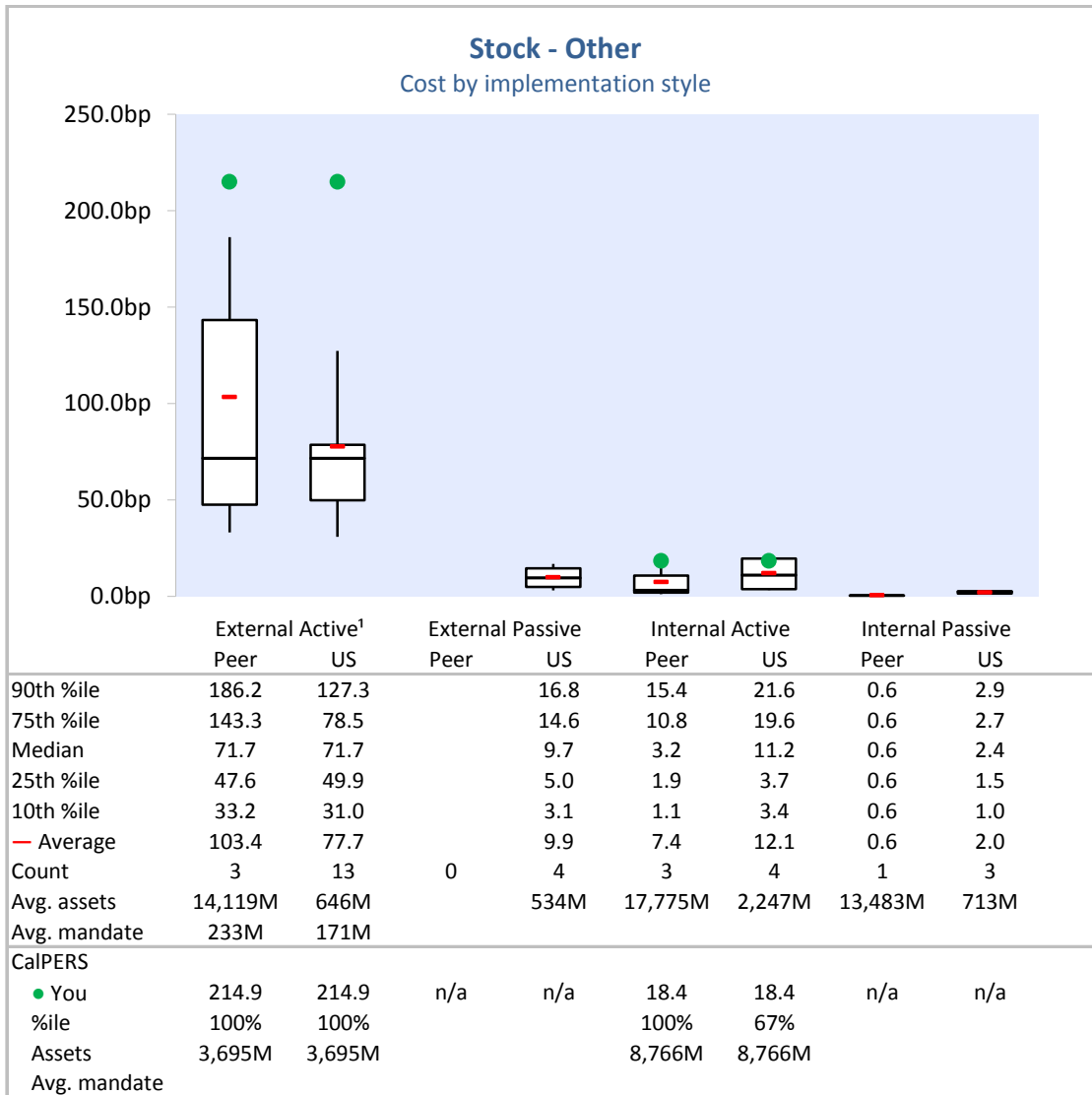
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	33.9	50.4
Performance fees	n/a	0.0	1.3
Internal and other	<u>n/a</u>	<u>1.1</u>	<u>0.3</u>
Total	n/a	35.1	51.9



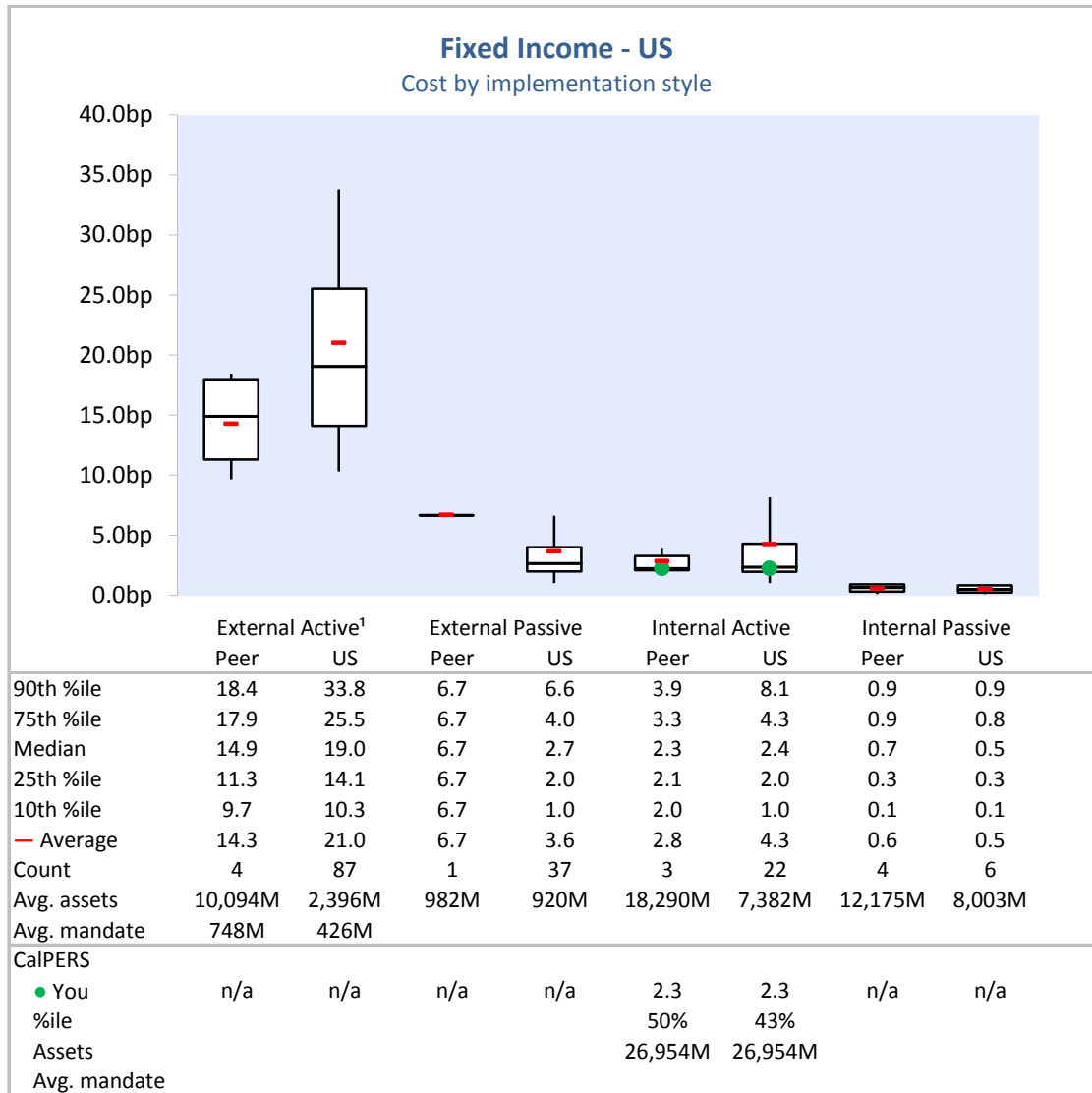
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	19.6	37.5	47.8
Performance fees	4.2	15.6	3.1
Internal and other	<u>0.5</u>	<u>2.0</u>	<u>0.1</u>
Total	24.3	55.0	51.1



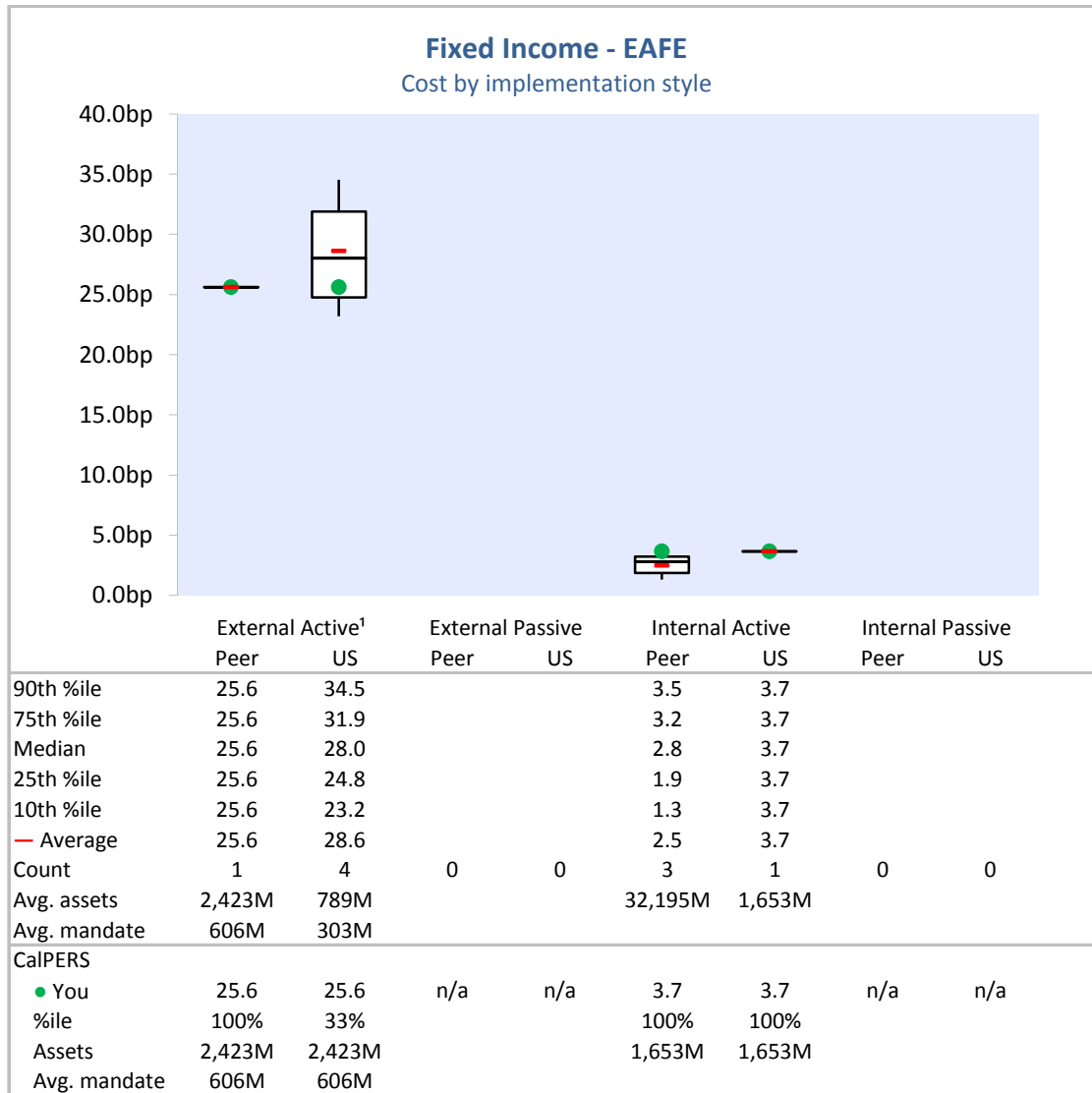
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	86.9	52.2	62.6
Performance fees	121.7	41.7	12.9
Internal and other	<u>6.3</u>	<u>9.4</u>	<u>2.2</u>
Total	214.9	103.4	77.7



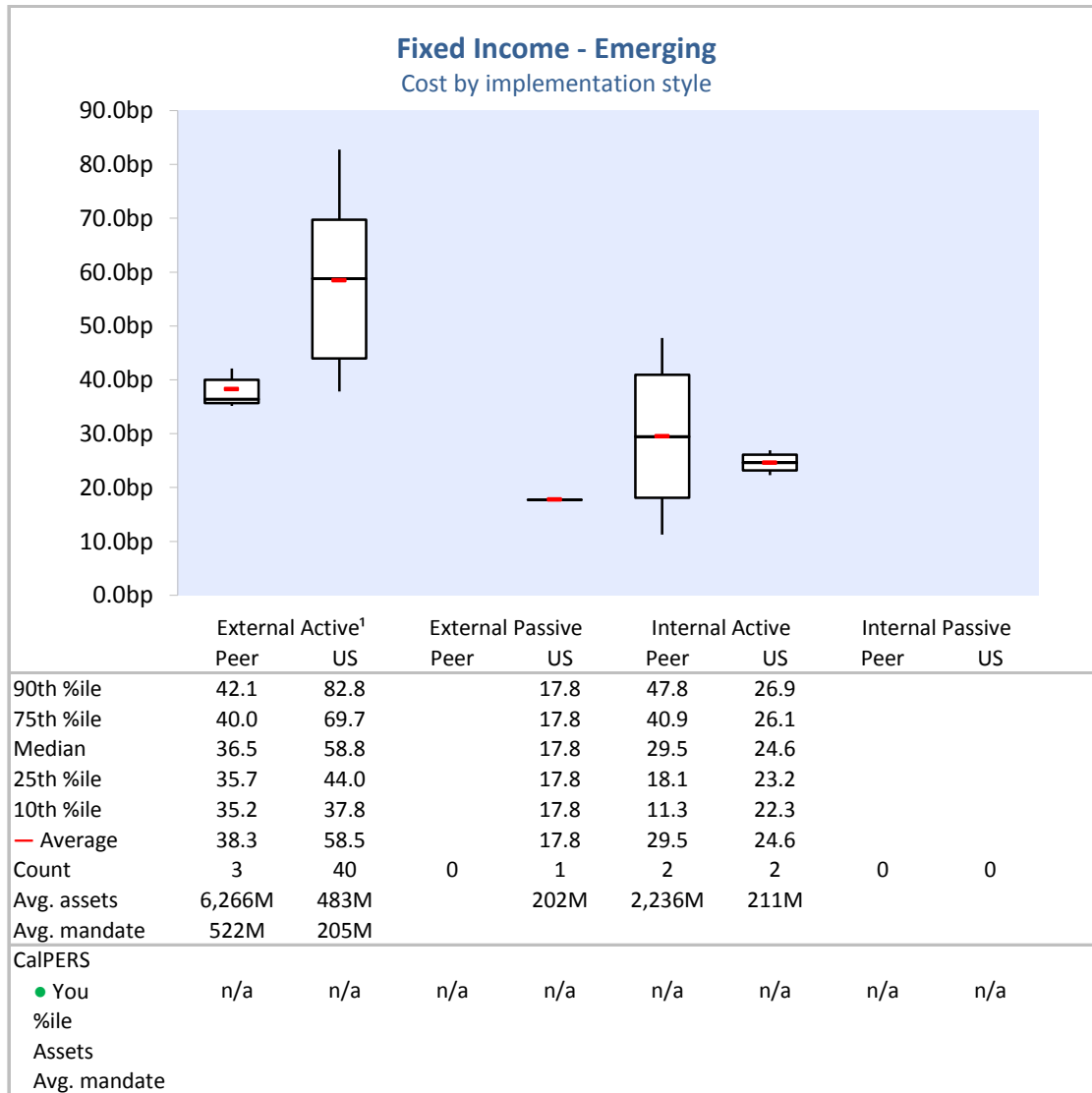
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a		
Performance fees	n/a		
Internal and other	<u>n/a</u>	<u>1.8</u>	<u>0.2</u>
Total	n/a	14.3	21.0



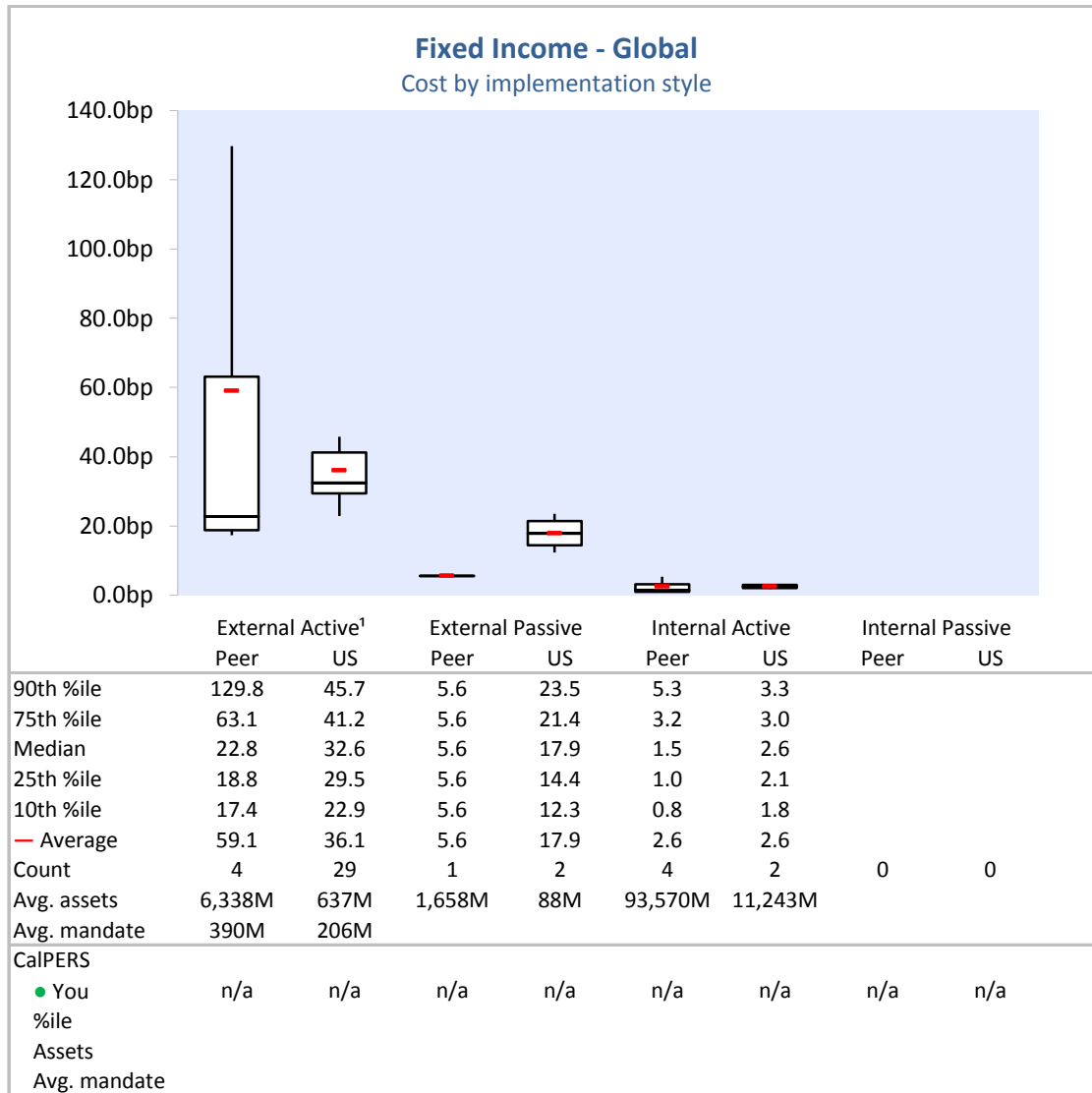
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	7.5	7.5	23.8
Performance fees	17.3	17.3	4.6
Internal and other	<u>0.7</u>	<u>0.7</u>	<u>0.2</u>
Total	25.6	25.6	28.6



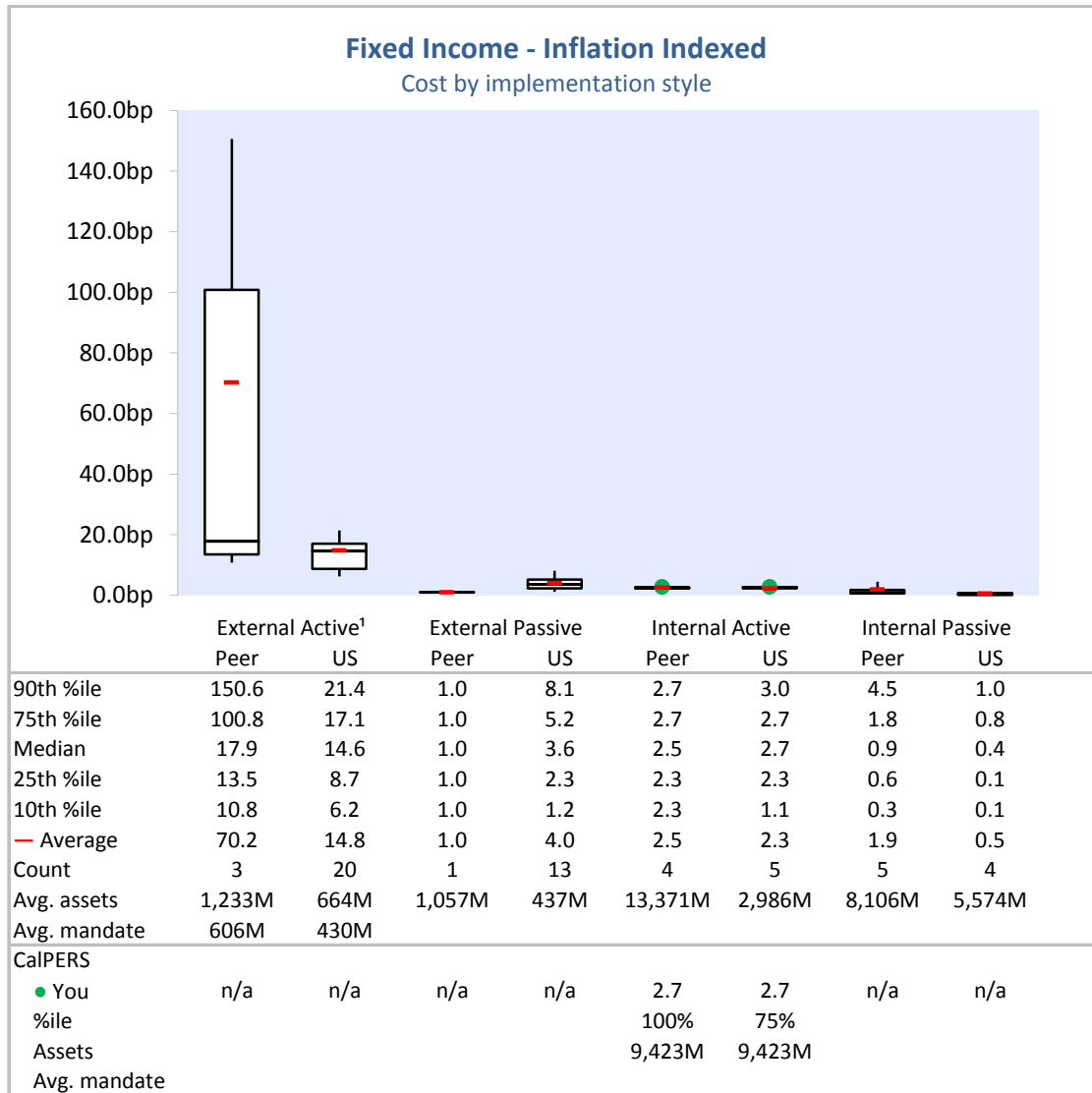
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	33.9	55.9
Performance fees	n/a	2.8	2.5
Internal and other	<u>n/a</u>	<u>1.6</u>	<u>0.1</u>
Total	n/a	38.3	58.5



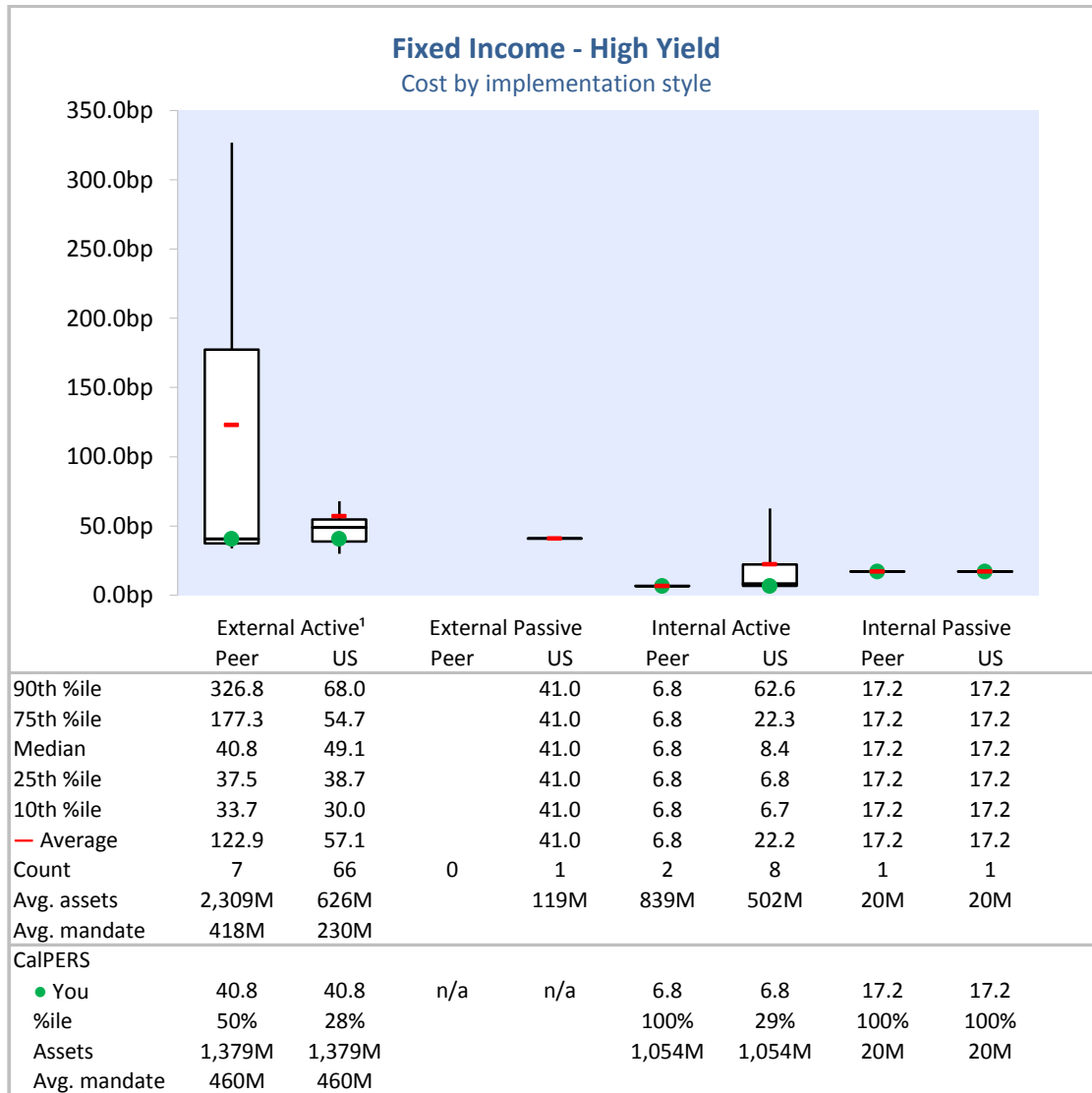
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	28.4	35.1
Performance fees	n/a	23.6	1.0
Internal and other	<u>n/a</u>	<u>7.1</u>	<u>0.0</u>
Total	n/a	59.1	36.1



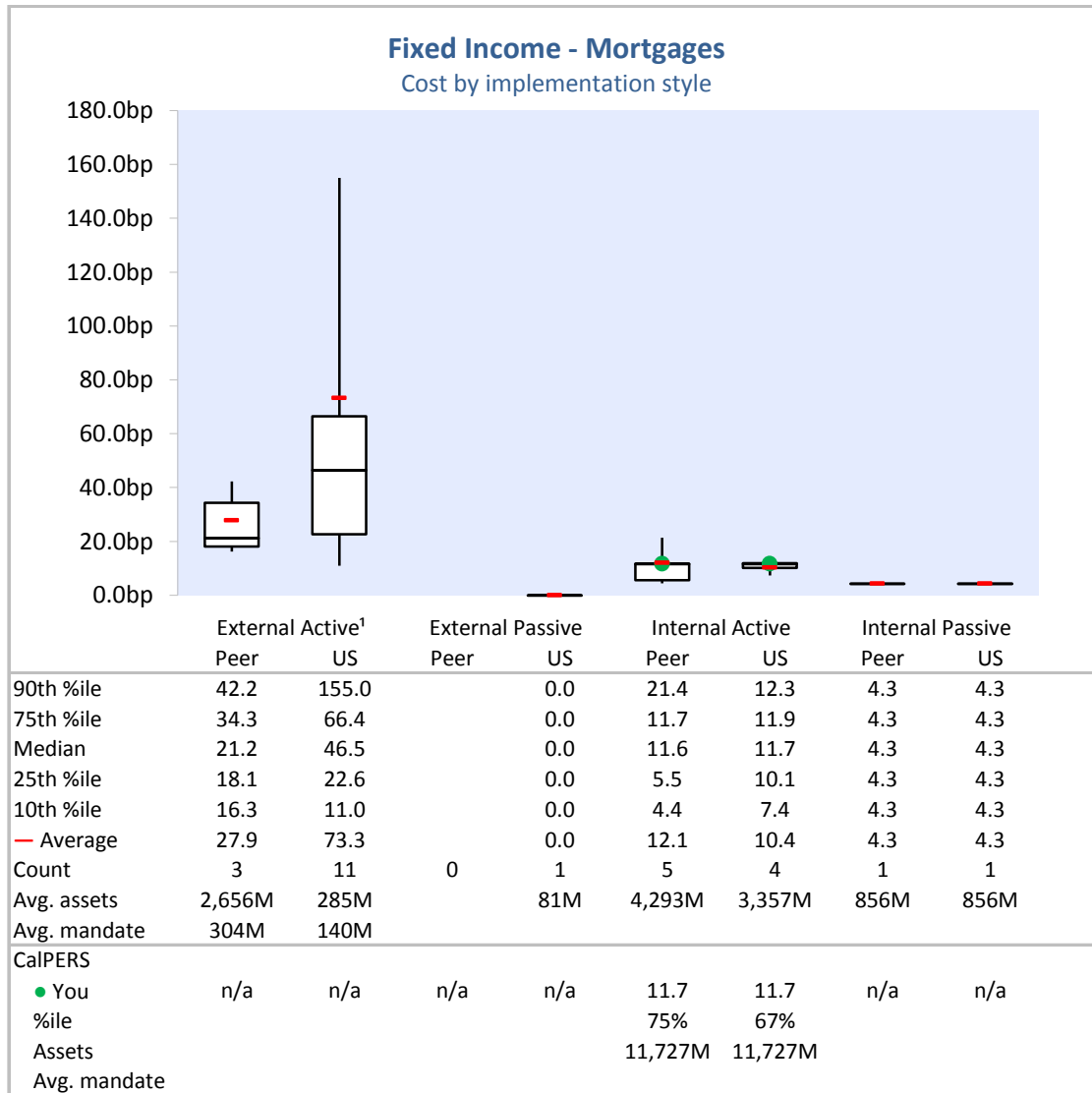
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	49.2	14.4
Performance fees	n/a	2.3	0.3
Internal and other	<u>n/a</u>	<u>18.8</u>	<u>0.0</u>
Total	n/a	70.2	14.8



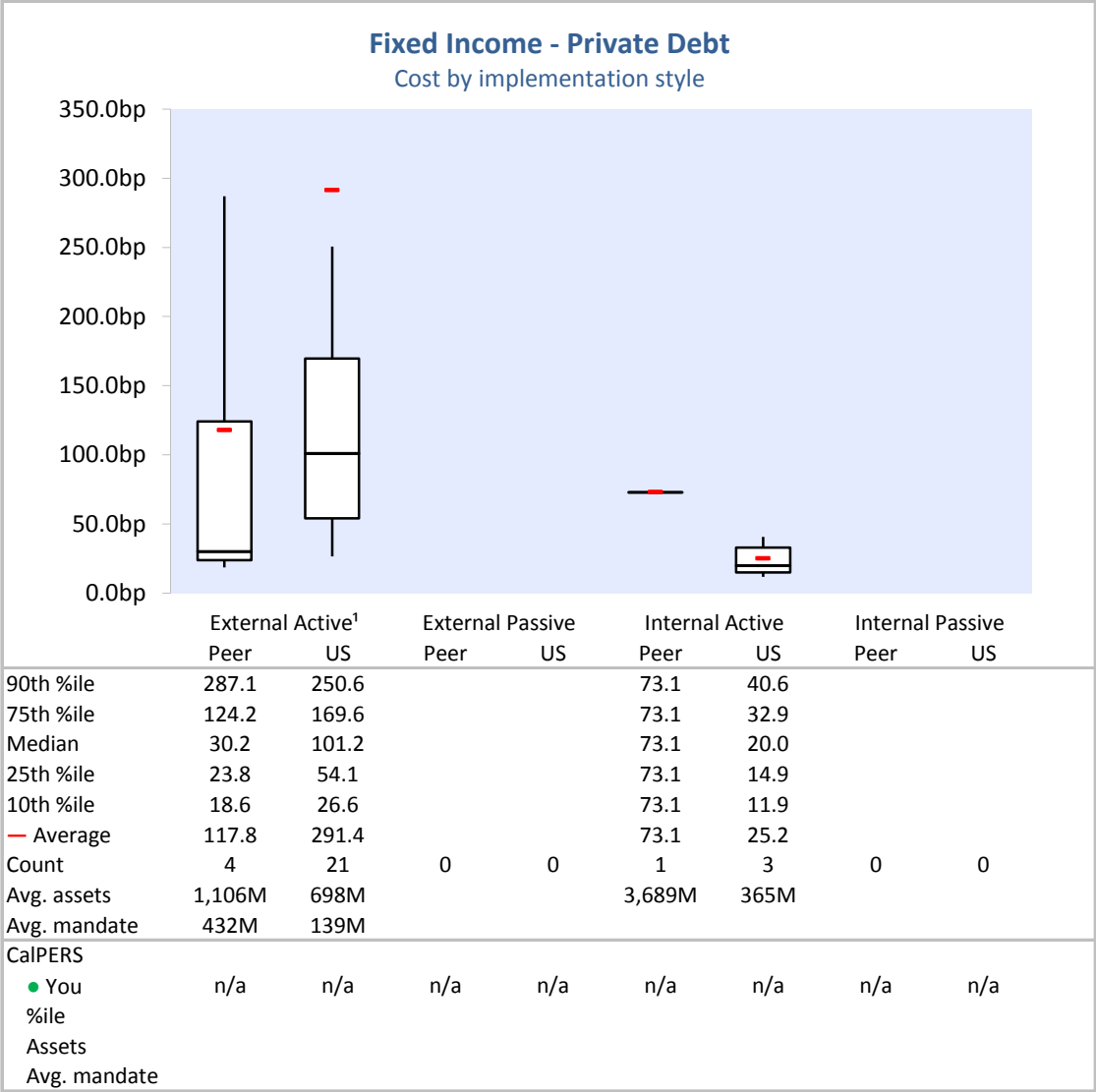
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	39.8	44.7	46.3
Performance fees	0.0	75.3	10.5
Internal and other	<u>1.0</u>	<u>2.9</u>	<u>0.3</u>
Total	40.8	122.9	57.1



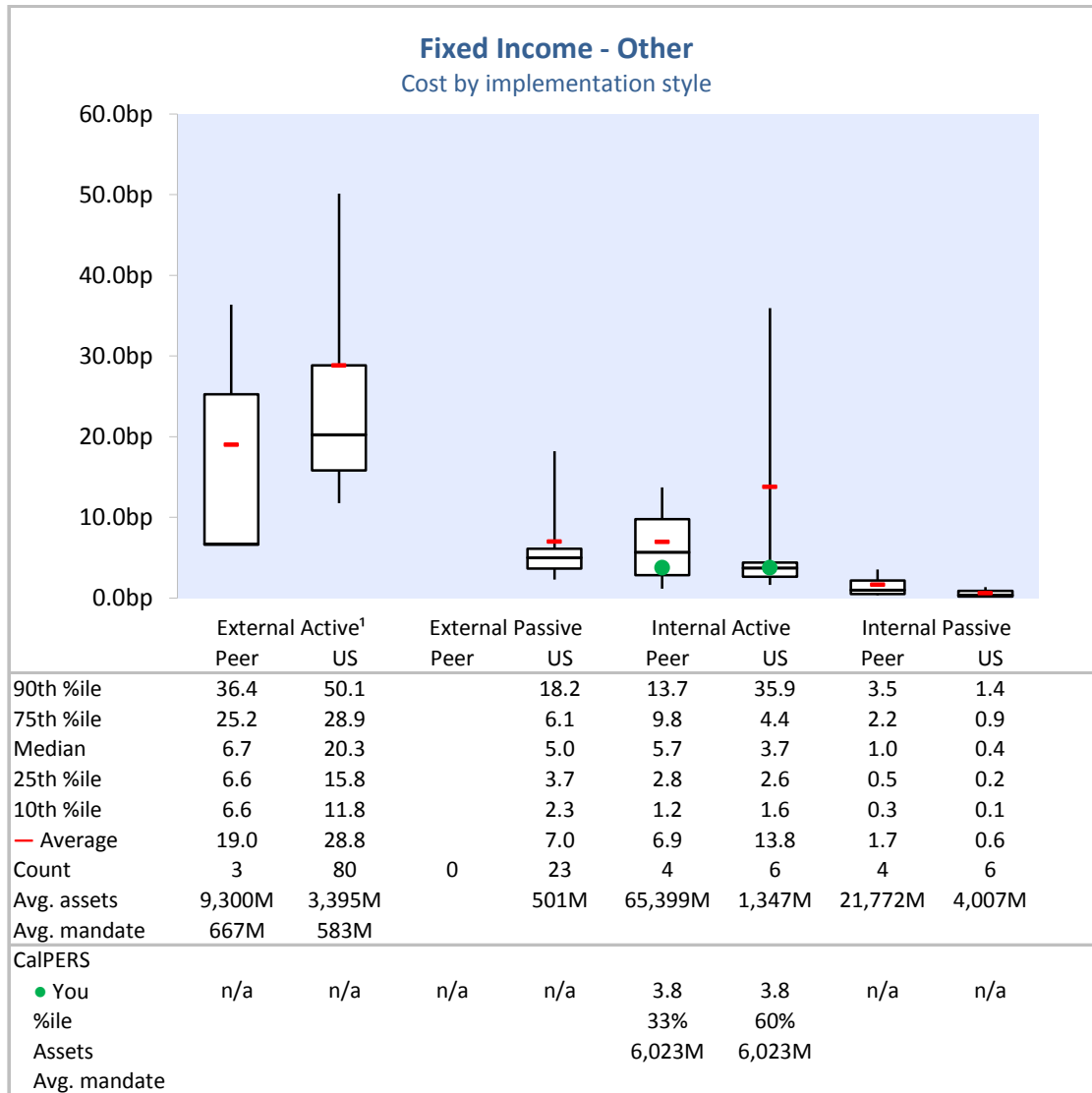
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	25.8	54.0
Performance fees	n/a	0.0	18.6
Internal and other	<u>n/a</u>	<u>2.1</u>	<u>0.7</u>
Total	n/a	27.9	73.3



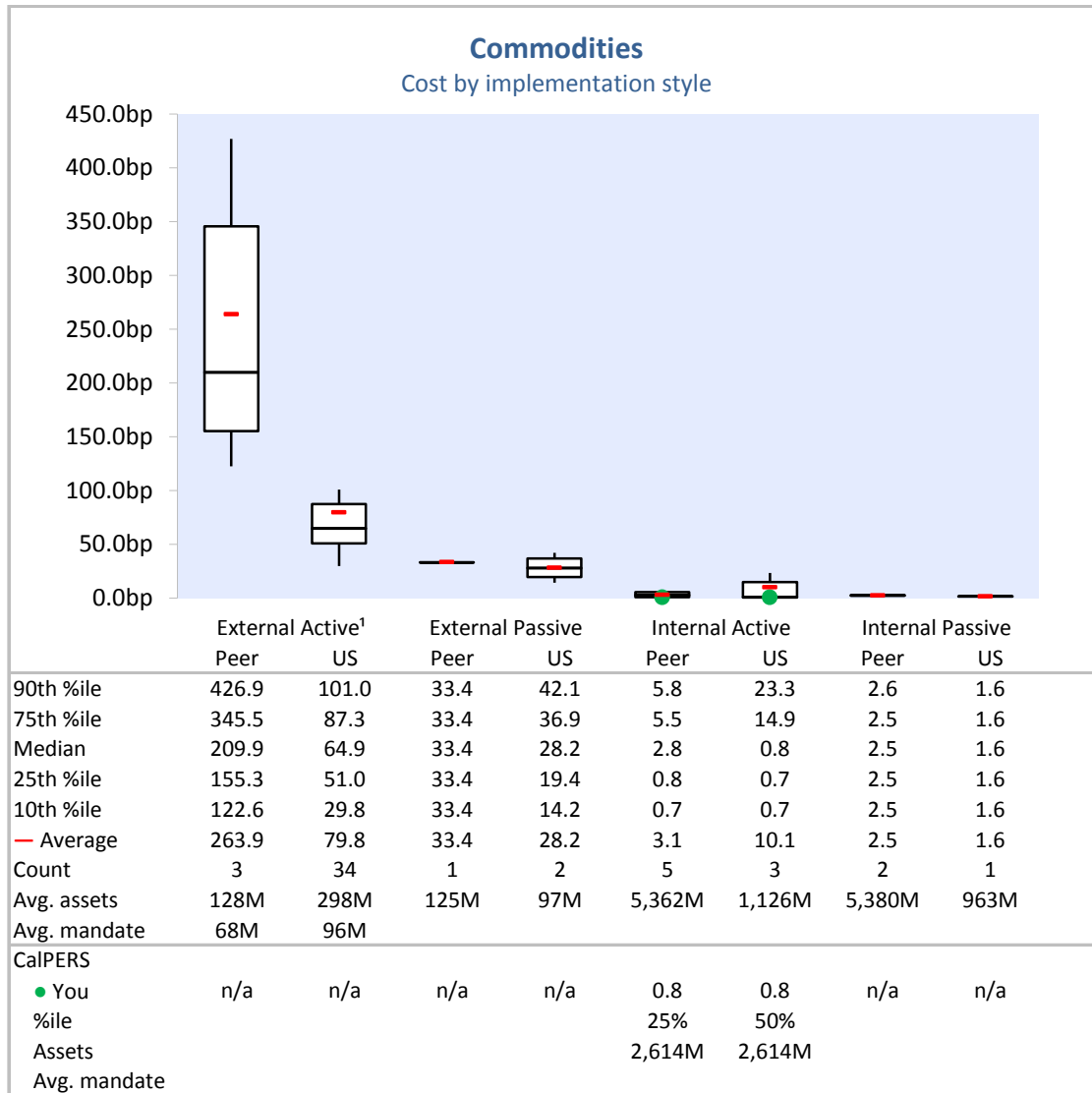
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	52.5	282.5
Performance fees	n/a	62.4	8.5
Internal and other	<u>n/a</u>	<u>2.9</u>	<u>0.4</u>
Total	n/a	117.8	291.4



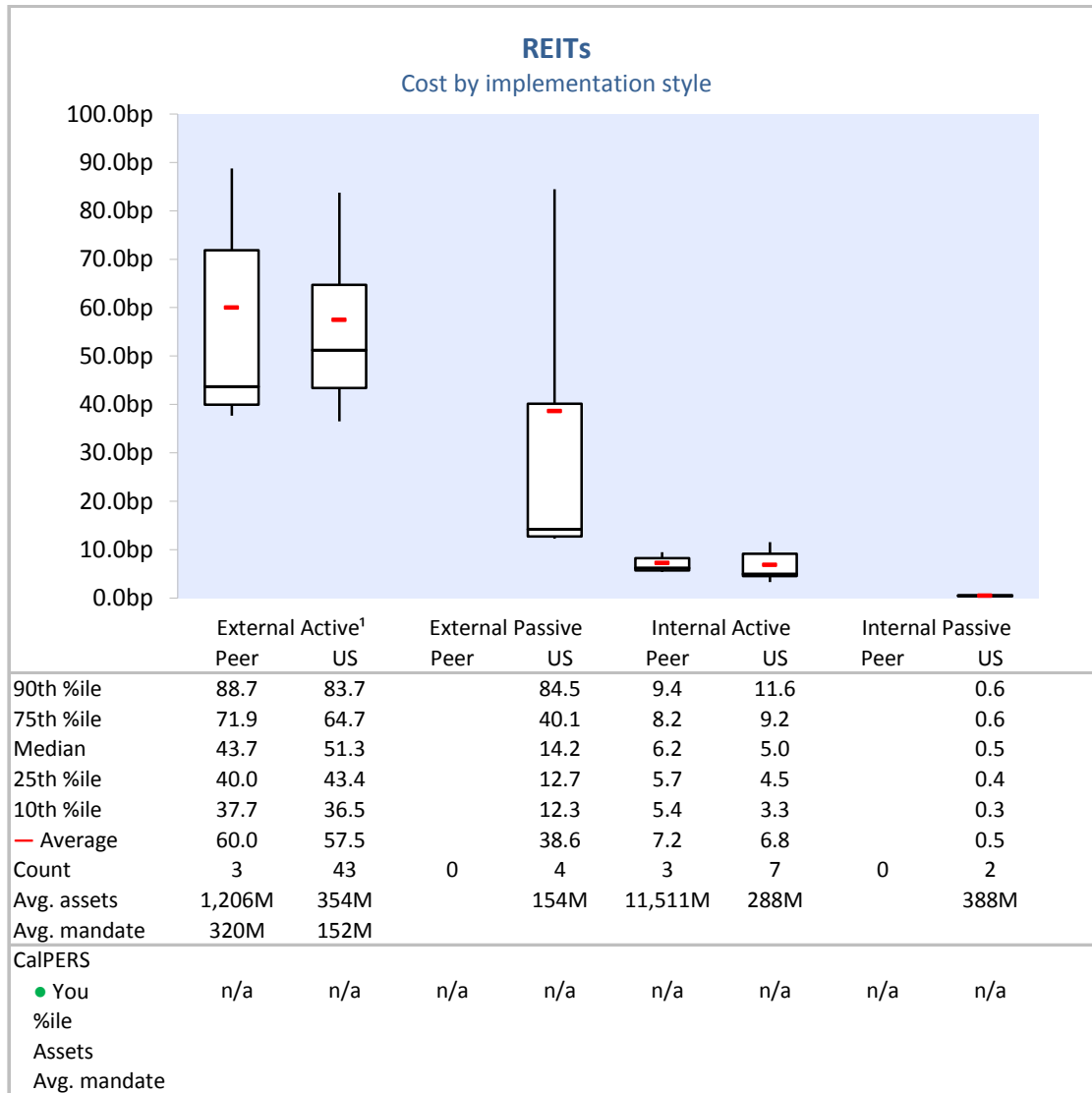
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	18.1	24.8
Performance fees	n/a	0.9	4.0
Internal and other	<u>n/a</u>	<u>0.1</u>	<u>0.1</u>
Total	n/a	19.0	28.8



1. Breakdown of external active fees

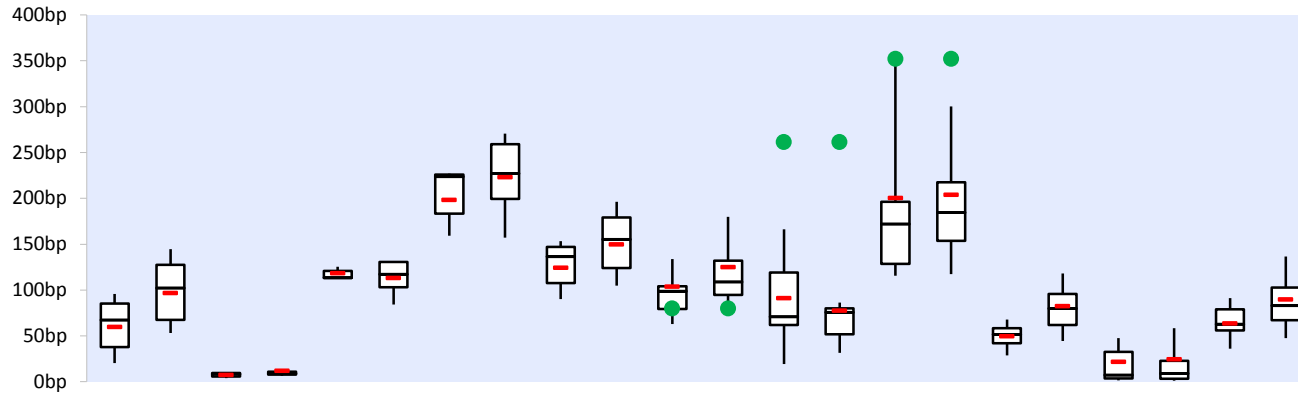
	You	Peer Average	US Average
Base fees	n/a	233.2	77.7
Performance fees	n/a	8.4	1.8
Internal and other	<u>n/a</u>	<u>22.3</u>	<u>0.3</u>
Total	n/a	263.9	79.8



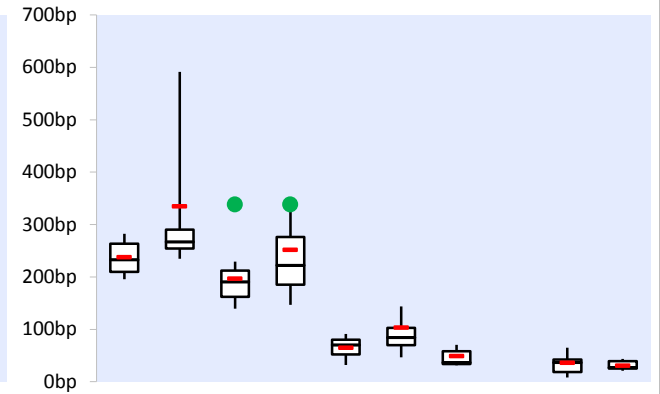
1. Breakdown of external active fees

	You	Peer Average	US Average
Base fees	n/a	59.9	56.5
Performance fees	n/a	0.0	0.9
Internal and other	<u>n/a</u>	<u>0.1</u>	<u>0.1</u>
Total	n/a	60.0	57.5

Real Estate ex-REITs

Cost as a % of the amount fees are based on¹

Cost as a % of NAV



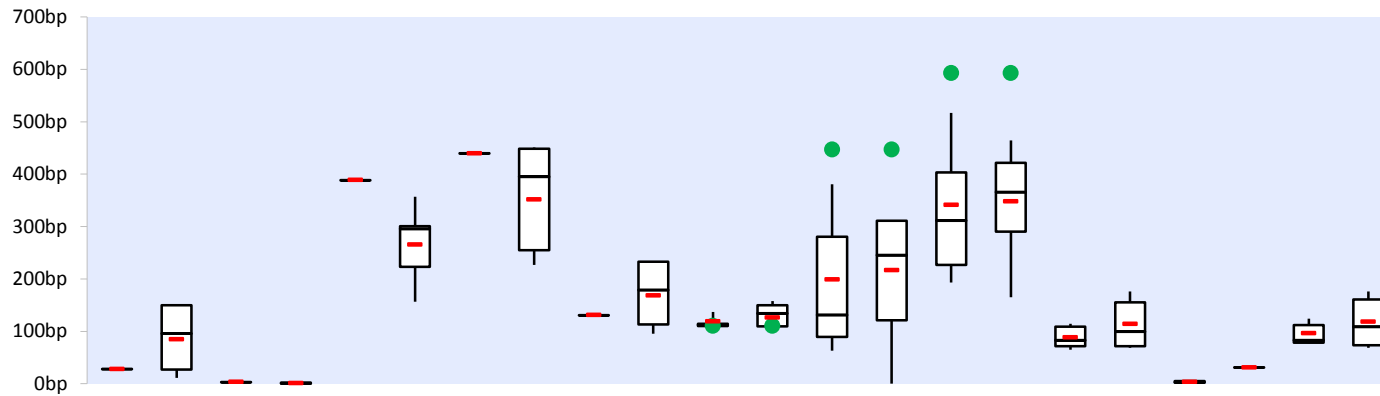
	Fund of Funds										Direct LP						External (not LP)										Fund of Funds		Direct LP		External (not LP)		Oper. Sub.		Internal		
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		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	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	95.9	144.4	10.1	10.9	125.5	131.5	227.0	270.7	153.3	196.1	133.8	179.9	166.1	86.4	357.4	300.1	68.0	118.0	47.6	58.3	91.3	136.6	282.1	591.4	229.0	341.0	91.3	144.0	70.7		65.0	43.8					
75th %ile	85.2	127.4	9.5	10.9	121.0	130.8	225.8	259.1	147.0	179.0	104.2	132.1	118.9	79.9	196.1	217.5	58.5	95.8	32.5	22.8	78.8	102.6	263.5	290.4	212.3	276.2	80.1	102.6	58.0		42.5	39.1					
Median	67.3	102.3	8.4	9.3	113.4	117.5	223.9	227.2	136.5	155.4	99.0	108.9	70.8	75.9	172.0	184.8	51.6	80.0	7.3	9.2	63.1	83.2	232.6	266.9	190.5	222.6	70.4	84.2	36.9		36.9	26.9					
25th %ile	37.9	67.5	5.7	7.9	113.2	103.2	183.5	199.5	107.6	123.9	79.4	94.7	61.7	51.6	128.6	153.8	42.0	61.9	3.8	3.4	55.8	67.1	209.4	254.2	162.2	185.5	51.9	69.6	33.6		18.5	25.0					
10th %ile	20.3	53.3	4.1	6.3	113.1	84.1	159.2	157.3	90.2	104.9	63.0	73.6	19.2	31.4	115.7	117.4	28.6	44.4	1.6	1.0	36.1	47.7	195.5	235.0	139.5	146.8	31.8	46.7	31.6		8.3	21.3					
— Average	59.6	96.5	7.3	11.9	118.3	113.0	198.2	222.9	124.2	149.6	103.7	125.0	91.1	77.3	200.4	203.7	49.4	82.2	21.7	24.5	63.5	89.5	237.8	334.4	196.3	251.8	64.5	103.4	48.8		35.9	30.7					
Count	3	14	3	14	3	14	3	14	3	14	10	71	10	71	10	71	6	81	3	20	6	81	3	14	10	71	6	81	3	0	5	6					
Avg. assets	3,832M	151M	3,832M	151M	3,832M	151M	3,832M	151M	3,832M	151M	8,766M	1,772M	8,766M	1,772M	8,766M	1,772M	7,797M	1,245M	7,797M	1,245M	7,797M	1,245M	2,957M	86M	8,097M	1,629M	1,224M	29M	15,446M		4,939M	2,237M					
CalPERS																																					
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	79.7	79.7	261.2	261.2	352.0	352.0	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											33%	19%	100%	99%	89%	96%																					
Assets											23,786M	23,786M	23,786M	23,786M	23,786M	23,786M																					

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

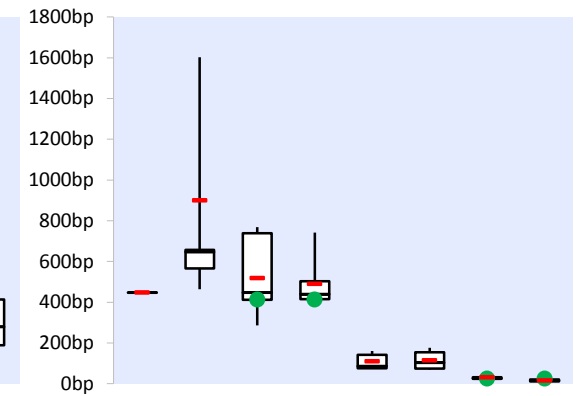
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 52 bps (on amount fees are based on) for underlying management fees and 80 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 11.1 bps for LPs. The peer average cost of monitoring and selecting was 13.0 bps for fund of funds, 5.5 bps for LPs and 3.2 bps for external (not LPs).

Infrastructure

Cost as a % of the amount fees are based on¹

Cost as a % of NAV



	Fund of Funds										Direct LP						External (not LP)						Fund of Funds	Direct LP		External (not LP)		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.		Mgmt fees		Perf. fees		Total ³ incl. 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	Peer	US	Peer	US			
90th %ile	28.2	150.1	3.3	2.3	388.7	356.9	439.8	450.9	130.9	233.2	136.8	157.9	380.5	312.2	517.0	464.5	114.5	175.8	6.3	31.1	124.3	175.8	448.0	1602.9	769.1	742.5	161.3	175.8	49.3	22.9		
75th %ile	28.2	149.6	3.3	2.3	388.7	300.4	439.8	448.7	130.9	232.7	114.6	150.0	280.4	311.4	403.2	421.5	109.1	155.5	5.2	31.1	111.9	160.8	448.0	656.3	738.2	503.4	142.4	153.8	32.1	20.3		
Median	28.2	96.0	3.3	1.5	388.7	296.0	439.8	395.2	130.9	179.1	112.5	134.8	131.5	245.6	311.7	366.2	83.1	99.7	3.5	31.1	83.1	109.1	448.0	648.1	447.8	440.6	87.6	104.4	27.0	15.9		
25th %ile	28.2	27.4	3.3	0.3	388.7	223.2	439.8	254.6	130.9	113.0	110.3	109.3	89.5	121.0	226.9	290.3	71.4	71.8	1.7	31.1	78.6	73.7	448.0	565.8	412.7	415.4	76.0	73.7	24.1	11.6		
10th %ile	28.2	10.9	3.3	0.1	388.7	156.6	439.8	226.9	130.9	95.5	107.5	101.9	63.3	0.0	193.2	165.0	64.7	68.9	0.7	31.1	77.0	68.9	448.0	463.5	286.7	392.5	72.1	68.9	16.1	8.9		
— Average	28.2	84.7	3.3	1.3	388.7	265.3	439.8	351.9	130.9	168.4	118.9	126.2	198.9	216.8	341.1	347.9	88.4	113.8	3.5	31.1	96.4	118.3	448.0	899.9	518.2	488.9	109.9	115.0	30.7	15.9		
Count	1	5	1	5	1	5	1	5	1	5	5	20	5	20	5	20	5	10	2	1	5	10	1	5	5	20	5	10	8	2		
Avg. assets	2,525M	90M	2,525M	90M	2,525M	90M	2,525M	90M	2,525M	90M	1,962M	369M	1,962M	369M	1,962M	369M	1,623M	226M	1,623M	226M	1,623M	226M	2,478M	53M	1,699M	289M	1,468M	236M	4,628M	260M		
CalPERS																																
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	110.3	110.3	447.2	447.2	592.8	592.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	412.7	412.7	n/a	n/a	24.6	24.6
%ile											25%	26%	100%	100%	100%	100%										25%	16%			29%	100%	
Assets											867M	867M	867M	867M	867M	867M										1,246M	1,246M			499M	499M	

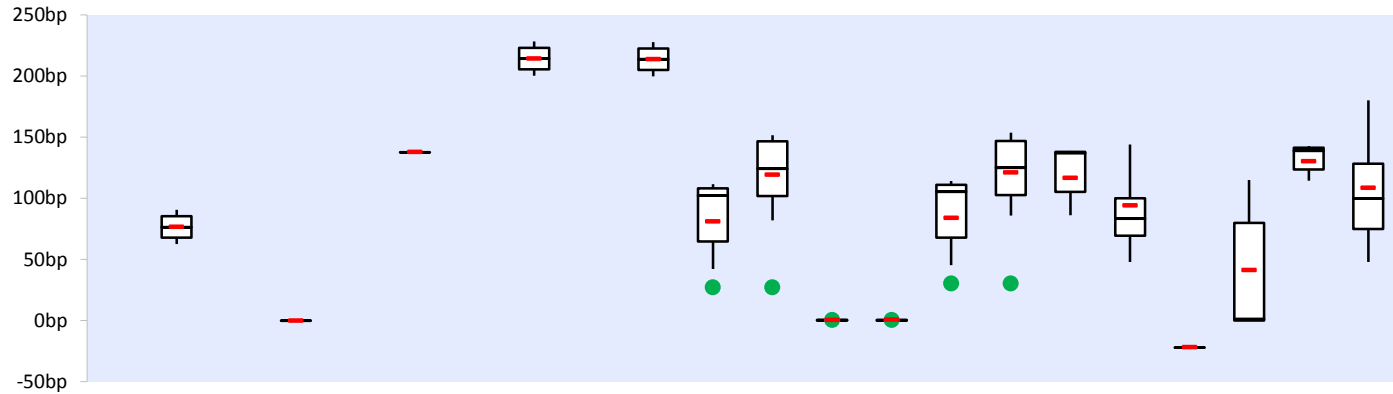
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

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 83 bps (on amount fees are based on) for underlying management fees and 311 bps (on NAV) for underlying performance fees were used.

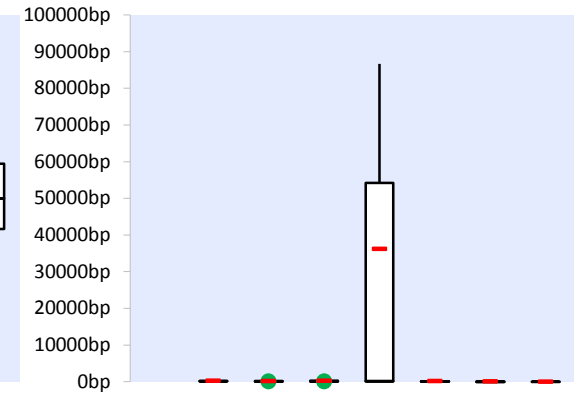
3. The total cost also includes the internal cost of monitoring and selecting infrastructure investments. Your cost of monitoring and selecting was 35.3 bps for LPs. The peer average cost of monitoring and selecting was 19.6 bps for fund of funds, 23.3 bps for LPs and 6.7 bps for external (not LPs).

Natural Resources

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



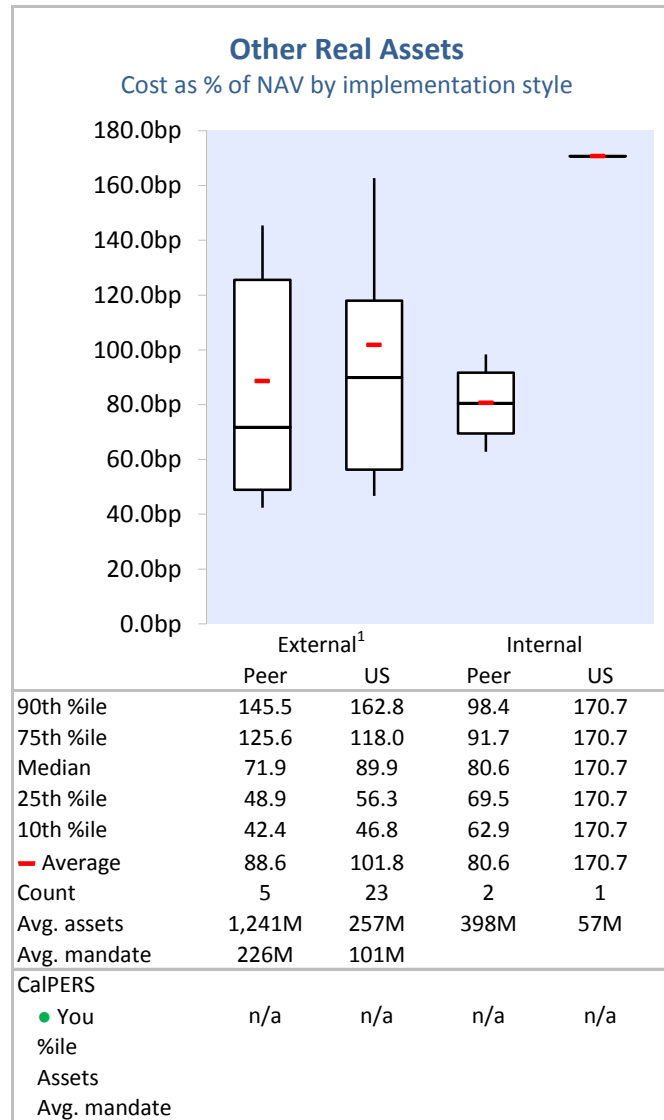
	Fund of Funds										Direct LP						External (not LP)							Fund of Funds	Direct LP		External (not LP)		Internal		
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees		Perf. fees		Total ³ incl. perf.		Mgmt fees		Perf. fees		Total ³ incl. 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		90.6		0.0		137.8		228.4		227.8	111.5	151.7	0.5	0.6	114.1	153.6	138.7	144.1	-21.8	114.9	142.6	180.1		228.4	173.6	549.2	#####	197.8	79.4	13.7	
75th %ile		85.4		0.0		137.8		223.2		222.5	108.1	146.6	0.5	0.6	111.0	146.9	138.1	100.0	-21.8	79.8	141.3	128.4		223.2	162.5	252.3	#####	131.6	62.3	13.7	
Median		76.6		0.0		137.8		214.4		213.8	102.5	124.5	0.4	0.5	105.7	125.1	137.2	83.4	-21.8	1.4	139.1	100.0		214.4	144.1	152.2	177.9	99.9	33.7	13.7	
25th %ile		67.9		0.0		137.8		205.7		205.0	64.8	102.0	0.4	0.2	68.0	102.6	105.3	69.3	-21.8	0.0	123.7	74.8		205.7	89.9	125.6	145.3	79.4	31.6	13.7	
10th %ile		62.6		0.0		137.8		200.4		199.8	42.3	82.0	0.4	0.1	45.3	85.9	86.2	48.0	-21.8	0.0	114.4	48.0		200.4	57.4	116.3	125.7	48.0	30.3	13.7	
— Average		76.6		0.0		137.8		214.4		213.8	81.1	119.3	0.5	0.8	84.0	121.0	116.6	94.1	-21.8	41.4	130.3	108.5		214.4	120.3	234.7	#####	133.3	51.3	13.7	
Count	0	2	0	2	0	2	0	2	0	2	3	17	3	17	3	17	3	25	1	7	3	25		0	2	3	17	3	25	3	1
Avg. assets		216M		216M		216M		216M		216M	3,174M	791M	3,174M	791M	3,174M	791M	870M	255M	870M	255M	870M	255M			216M	2,313M	502M	534M	221M	3,195M	12M
CalPERS																															
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	27.2	27.2	0.5	0.5	30.2	30.2	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	35.8	35.8	n/a	n/a	n/a	n/a
%ile											0%	0%	100%	56%	0%	0%										0%	0%				
Assets											2,635M	2,635M	2,635M	2,635M	2,635M	2,635M										2,227M	2,227M				

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 137 bps (on amount fees are based on) for underlying management fees and 1 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. Your cost of monitoring and selecting was 2.5 bps for LPs. The peer average cost of monitoring and selecting was 2.5 bps for LPs and 21.0 bps for external (not LPs).

Natural Resources Limited Partnerships: A default for performance fees of 1 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.



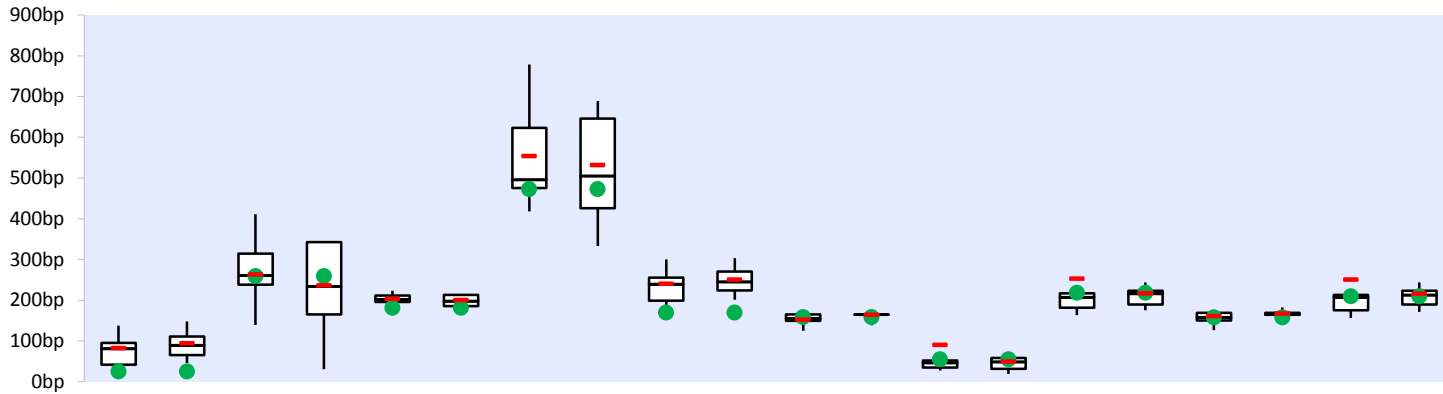
1. Breakdown of external fees

	Your Plan	Peer Average	US Average
Base fees	n/a	77.5	100.0
Internal and other	<u>n/a</u>	<u>11.1</u>	<u>1.8</u>
Total*	n/a	88.6	101.8
Performance fees		4.7	2.3

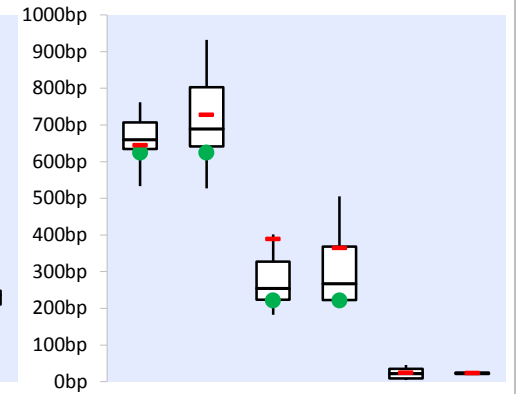
* Total cost excludes performance fees because most participants did not provide performance fees for other real assets.

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		Perf. fees		Underlying		Total ³		Total ³		Mgmt fees		Perf. fees		Total ³		Total		Total ³		Total		Total ³		Total ³		Total ³		Total	
	(Top layer)		(Top layer)		mgmt. & perf. ²		incl. perf.		excl. perf.		Peer		Peer		Peer		excl. perf		incl. perf.		excl. perf		incl. perf.		incl. perf.		incl. perf.		Peer	
	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	137.9	148.0	411.2	342.6	222.9	213.3	778.8	689.2	299.9	303.2	165.0	172.6	58.4	58.2	226.8	243.6	172.7	182.6	226.8	243.6	172.7	182.6	226.8	243.6	761.8	932.1	401.6	505.3	45.4	25.3
75th %ile	95.6	111.1	314.2	342.4	211.6	213.2	622.8	645.6	255.3	270.6	165.0	165.0	52.3	58.1	217.2	223.1	169.0	169.1	212.8	223.1	169.0	169.1	212.8	223.1	707.1	803.0	327.4	368.3	35.1	25.1
Median	80.7	90.0	260.6	234.6	201.7	197.9	495.5	505.0	240.0	245.2	155.2	165.0	46.3	48.7	207.6	216.0	158.0	165.0	207.6	212.9	158.0	165.0	207.6	212.9	660.2	689.6	254.9	267.6	21.8	23.4
25th %ile	41.9	65.2	238.5	165.5	195.6	185.5	475.2	425.7	198.6	224.1	149.7	165.0	35.0	31.4	181.4	189.3	150.4	165.0	175.5	189.3	150.4	165.0	175.5	189.3	634.2	641.6	223.6	223.1	9.1	21.5
10th %ile	29.3	45.4	139.5	30.9	186.4	182.2	418.0	333.0	182.0	200.9	125.3	138.5	27.9	18.8	163.8	175.5	126.5	145.1	156.8	171.0	126.5	145.1	156.8	171.0	533.1	526.9	223.6	224.4	4.6	20.8
— Average	82.4	93.8	262.9	235.9	203.2	200.1	553.4	531.6	240.3	250.6	152.1	163.8	90.4	49.2	252.8	216.3	160.6	166.9	250.3	215.7	160.6	166.9	250.3	215.7	644.8	727.8	389.1	364.3	24.0	23.1
Count	8	63	8	63	8	63	8	63	8	63	11	87	11	87	11	87	11	88	11	87	11	88	11	87	8	63	11	87	5	4
Avg. assets	5,501M	594M	5,501M	594M	5,501M	594M	5,501M	594M	5,501M	594M	10,965M	2,817M	10,965M	2,817M	10,965M	2,817M	11,257M	2,830M	11,257M	2,830M	11,257M	2,830M	11,257M	2,830M	5,083M	431M	9,155M	2,168M	3,822M	173M
CalPERS																														
● You	24.7	24.7	259.0	259.0	180.9	180.9	472.4	472.4	169.5	169.5	158.2	158.2	54.7	54.7	218.3	218.3	157.3	157.3	209.6	209.6	157.3	157.3	209.6	209.6	624.5	624.5	221.7	221.7	n/a	n/a
%ile	0%	2%	43%	56%	0%	5%	14%	39%	0%	2%	60%	20%	80%	55%	80%	55%	40%	16%	70%	49%	40%	16%	70%	49%	14%	19%	20%	9%		
Assets	5,056M	5,056M	5,056M	5,056M	5,056M	5,056M	5,056M	5,056M	5,056M	5,056M	27,006M	27,006M	27,006M	27,006M	27,006M	27,006M	28,270M	28,270M	28,270M	28,270M	28,270M	28,270M	28,270M	28,270M	3,825M	3,825M	26,723M	26,723M		

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 155 bps (on amount fees are based on) for underlying management fees and 58 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. Your cost of monitoring and selecting was 7.8 bps for fund of funds and 5.3 bps for LPs. The peer average cost of monitoring and selecting was 4.9 bps for fund of funds and 10.2 bps for LPs.

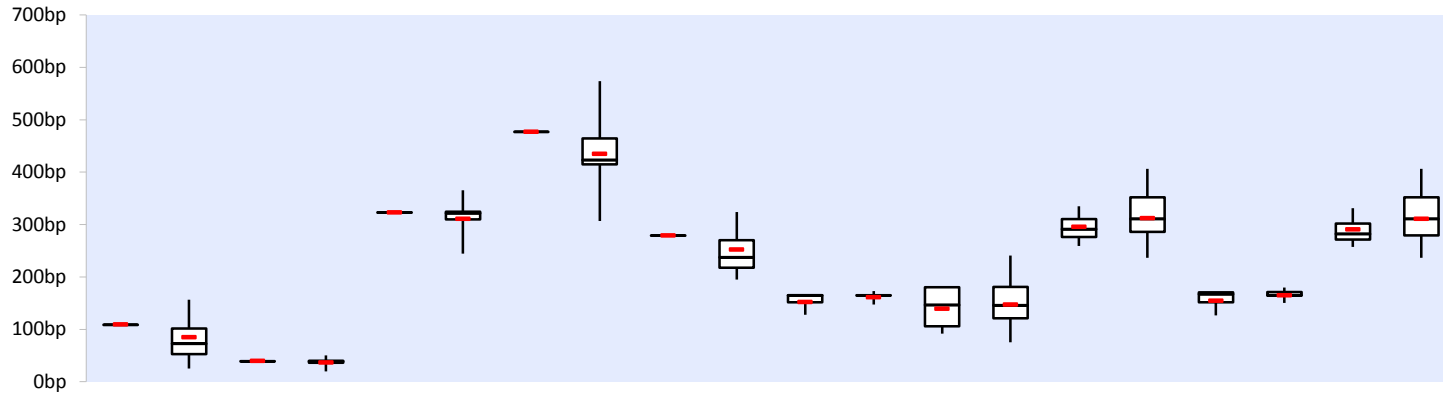
4. Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by 1 of your peers and 4 of the U.S.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

Diversified Private Equity Direct LPs: A default for performance fees of 58 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.

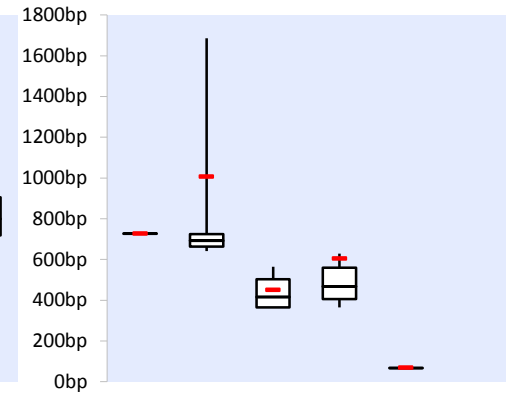
Diversified Private Equity - Fund of Funds ('top layer'): A default for performance fees paid to the 'top layer' fund of fund managers of 342 bps (on NAV) was used to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.

Diversified Private Equity - Fund of Funds ('bottom layer'): A default for performance fees paid to the 'bottom layer' underlying managers of 58 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		Perf. fees		Underlying		Total ³		Total ³		Mgmt fees		Perf. fees		Total ³		Total		Total ³			Total ³		Total			
	(Top layer)		(Top layer)		mgmt. & perf. ²		incl. perf.		excl. perf.						incl. perf.		excl. perf		incl. perf.			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		
90th %ile	109.1	156.3	39.5	50.2	323.1	365.7	477.0	573.4	279.3	323.9	165.0	173.3	180.5	241.1	334.8	406.1	171.4	179.6	331.2	406.1	727.2	1685.6	564.7	628.5	68.8		
75th %ile	109.1	101.4	39.5	40.0	323.1	324.8	477.0	464.6	279.3	270.3	165.0	165.0	180.3	180.7	310.7	352.0	170.6	171.4	301.8	352.0	727.2	724.6	502.6	559.5	68.8		
Median	109.1	72.9	39.5	39.3	323.1	322.0	477.0	423.7	279.3	237.9	165.0	165.0	146.8	146.2	291.4	311.2	167.6	165.0	282.3	311.2	727.2	693.3	416.8	468.0	68.8		
25th %ile	109.1	52.5	39.5	36.2	323.1	309.9	477.0	414.7	279.3	217.5	151.8	165.0	105.8	120.9	276.0	285.9	151.4	165.0	271.3	279.1	727.2	663.2	365.4	406.1	68.8		
10th %ile	109.1	25.2	39.5	20.0	323.1	244.8	477.0	306.9	279.3	195.2	128.1	147.6	92.0	75.1	259.0	236.6	126.8	150.3	257.1	236.6	727.2	640.8	365.0	365.6	68.8		
— Average	109.1	84.8	39.5	36.5	323.1	310.8	477.0	434.7	279.3	252.4	151.8	161.3	139.3	147.0	295.3	311.9	154.4	164.6	290.8	311.0	727.2	1006.6	451.1	604.0	68.8		
Count	1	6	1	6	1	6	1	6	1	6	4	21	4	21	4	21	4	21	4	21	1	6	4	21	1	0	
Avg. assets	485M	178M	485M	178M	485M	178M	485M	178M	485M	178M	15,061M	2,772M	15,061M	2,772M	15,061M	2,772M	15,373M	2,839M	15,373M	2,839M	318M	111M	9,683M	2,014M	9,038M		
CalPERS																											
● You %ile Assets	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	

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

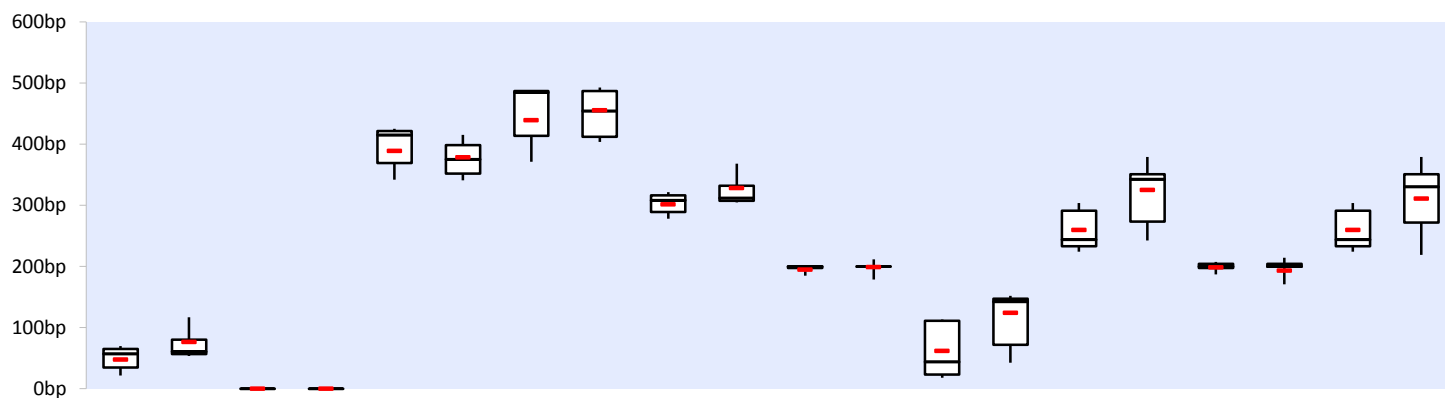
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 165 bps (on amount fees are based on) for underlying management fees and 241 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 5.2 bps for fund of funds and 4.2 bps for LPs.

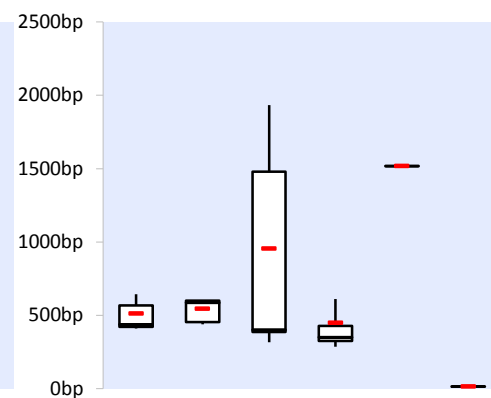
4. Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by none of your peers and none of the 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		Perf. fees		Underlying		Total ³		Total ³		Mgmt fees		Perf. fees		Total ³		Total		Total ³			Total ³		Total ³		Total ³	
	(Top layer)		(Top layer)		mgmt. & perf. ²		incl. perf.		excl. perf.						incl. perf.		excl. perf		incl. perf.					incl. perf.		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
90th %ile	69.7	117.1	0.0	0.0	425.0	415.2	488.1	492.6	321.6	368.2	200.0	211.7	113.2	152.2	303.7	379.3	207.5	214.4	303.7	379.3	644.4	603.1	1932.7	611.6	1518.0	15.0	
75th %ile	65.0	80.5	0.0	0.0	421.3	398.4	486.8	486.8	316.6	332.1	200.0	200.0	111.1	147.3	291.4	351.0	204.1	204.2	291.4	351.0	567.4	600.7	1478.9	428.1	1518.0	15.0	
Median	57.1	61.0	0.0	0.0	415.2	375.5	484.7	454.4	308.3	312.1	200.0	200.0	44.1	142.4	244.1	343.2	200.0	200.0	244.1	330.6	439.1	588.0	401.0	351.2	1518.0	15.0	
25th %ile	34.9	56.6	0.0	0.0	369.4	352.2	413.8	412.0	289.3	307.7	197.4	200.0	23.2	72.1	233.0	273.7	197.4	199.8	233.0	272.0	421.9	455.4	386.3	325.1	1518.0	15.0	
10th %ile	21.5	53.5	0.0	0.0	342.0	341.2	371.4	403.7	278.0	305.1	184.7	178.6	17.9	42.7	224.3	242.7	187.1	170.7	224.3	218.9	411.5	439.1	316.4	285.7	1518.0	15.0	
— Average	47.5	76.3	0.0	0.0	388.8	378.2	438.9	455.4	301.2	328.3	194.7	198.9	61.5	123.9	259.8	324.8	198.3	193.0	259.8	311.1	513.1	544.5	954.2	449.1	1518.0	15.0	
Count	3	11	3	11	3	11	3	11	3	11	5	28	5	28	5	28	5	28	5	28	3	11	5	28	1	1	
Avg. assets	1,846M	415M	1,846M	415M	1,846M	415M	1,846M	415M	1,846M	415M	736M	337M	736M	337M	736M	337M	736M	338M	736M	338M	1,184M	371M	534M	261M	72M	11M	
CalPERS																											
● 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	
%ile																											
Assets																											

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

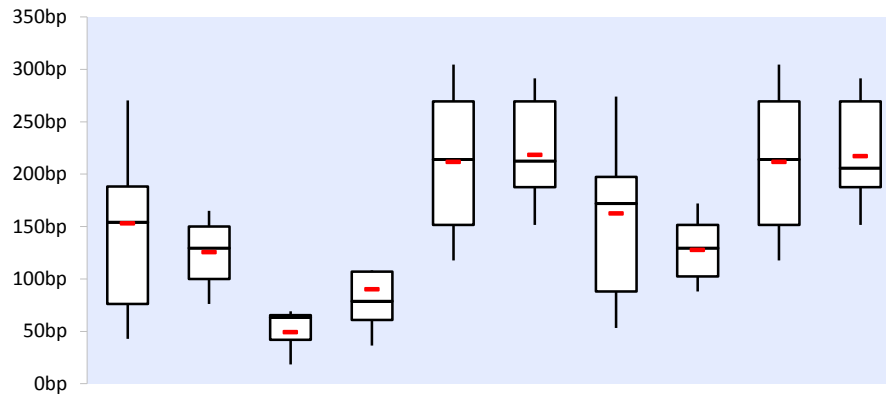
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 251 bps (on amount fees are based on) for underlying management fees and 147 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 2.6 bps for fund of funds and 3.6 bps for LPs.

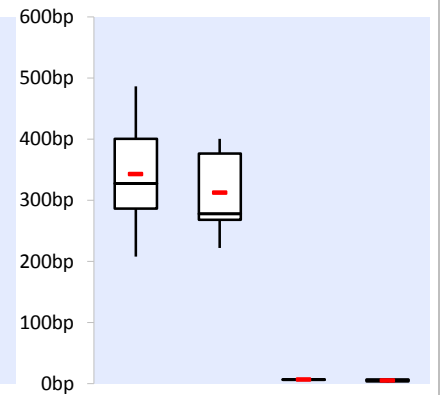
4. Co-investment is included with direct LPs because it can only be done alongside direct LPs. CEM uses this combined style in its benchmark cost analysis to ensure funds that reduce their costs by using co-investment receive benchmark credit. Co-investment is done by none of your peers and 2 of the U.S. funds.

Other Private Equity

Cost as a % of the amount fees are based on¹



Cost as a % of NAV

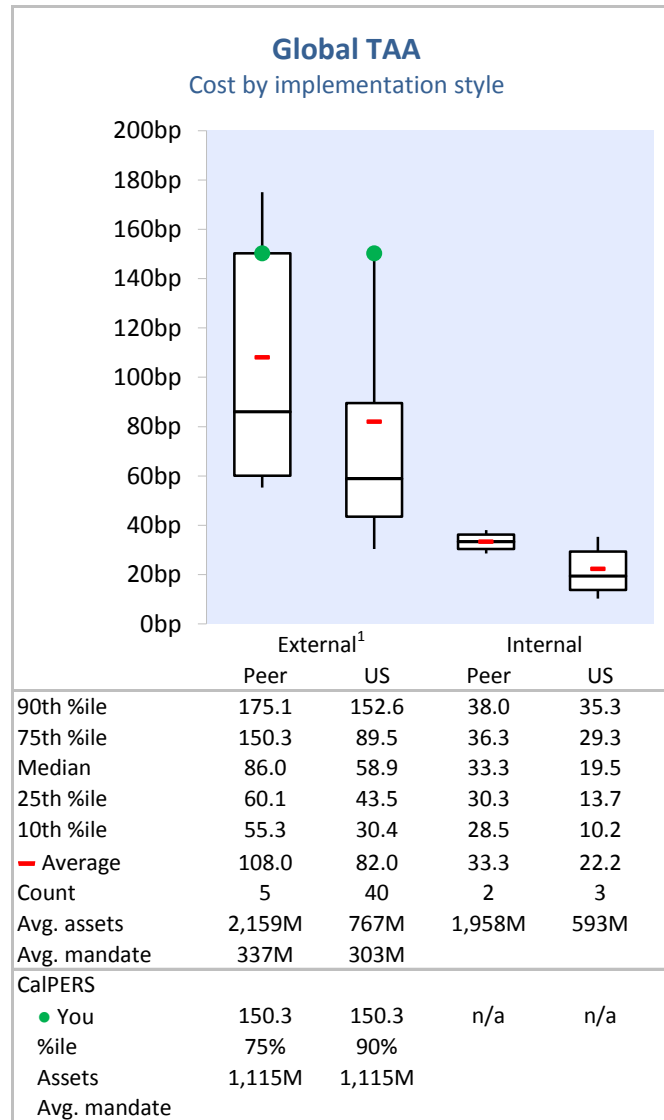


	Direct LP						Direct LP & Co-Inv. ³				Direct LP & Co-Inv. ³		Internal	
	Mgmt fees		Perf. fees		Total ² incl. perf.		Total excl. perf.		Total ² incl. perf.		Total ² incl. perf.		Total	
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US	Peer	US
90th %ile	270.3	165.0	69.3	108.3	304.5	291.5	274.1	172.1	304.5	291.5	486.6	400.7	7.3	7.1
75th %ile	188.1	150.0	65.4	106.9	269.3	269.3	197.5	151.5	269.3	269.3	400.7	376.3	7.1	6.8
Median	154.2	129.7	63.3	78.8	214.2	212.7	172.1	129.7	214.2	206.0	328.0	278.1	6.8	6.1
25th %ile	76.1	99.8	42.1	60.8	151.5	187.6	88.2	102.4	151.5	187.6	286.5	268.4	6.4	3.7
10th %ile	42.8	76.1	18.5	36.5	117.7	151.5	53.2	88.2	117.7	151.5	207.9	222.0	6.3	2.3
— Average	152.8	125.5	49.1	90.0	211.6	218.2	162.5	127.5	211.6	217.1	342.9	312.5	6.8	4.9
Count	5	21	5	21	5	21	5	21	5	21	5	21	2	3
Avg. assets	2,103M	652M	2,103M	652M	2,103M	652M							38M	393M
CalPERS														
● 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
%ile														
Assets														

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

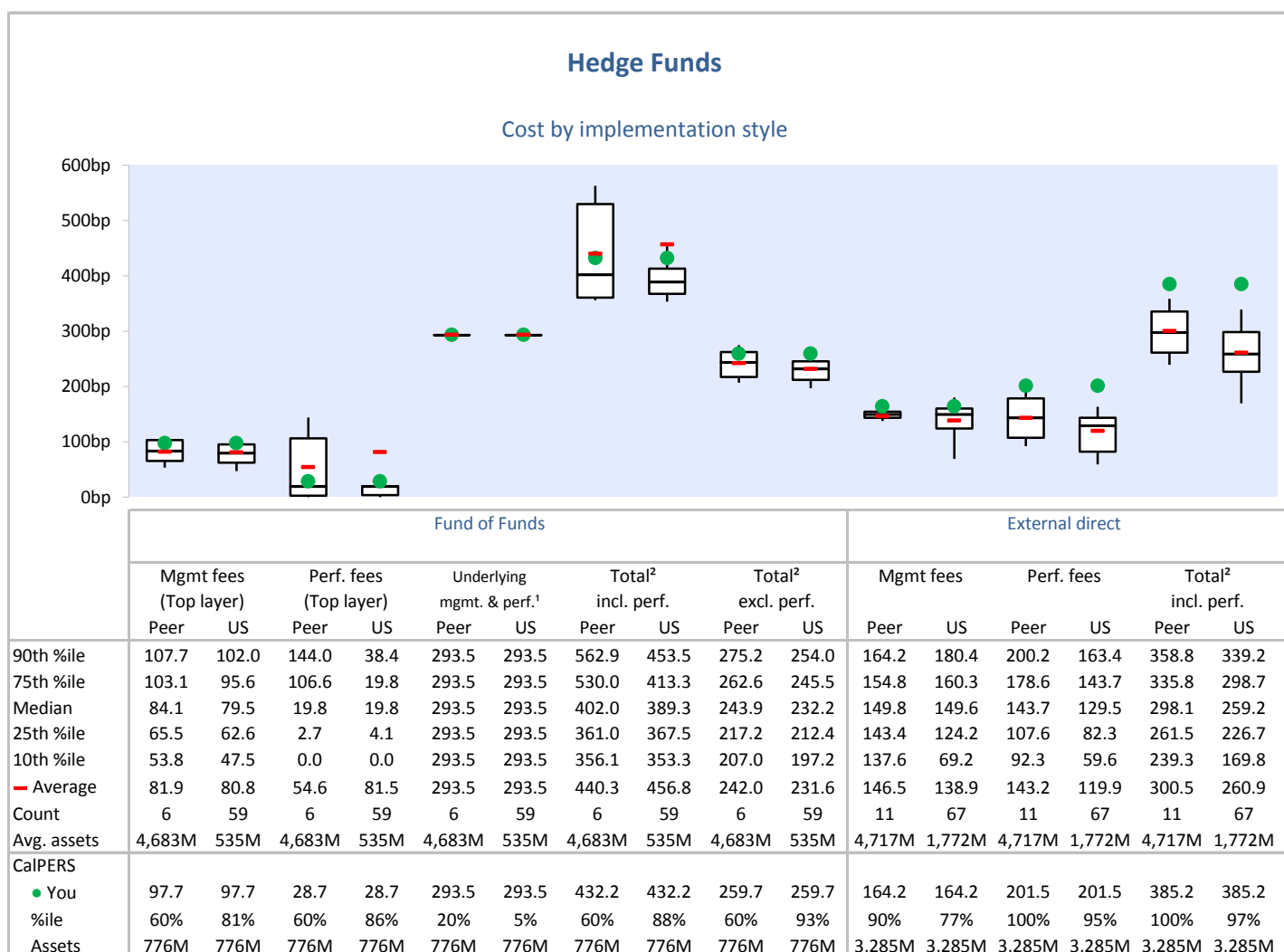
2. The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 9.7 bps for

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 none of your peers and 1 of the U.S. funds.



1. Breakdown of External fees

	Your Plan	Peer Average	US Average
Base fees	55.1	65.8	66.1
Performance fees	78.7	32.4	14.7
Internal and other	<u>16.5</u>	<u>9.8</u>	<u>1.2</u>
Total	150.3	108.0	82.0

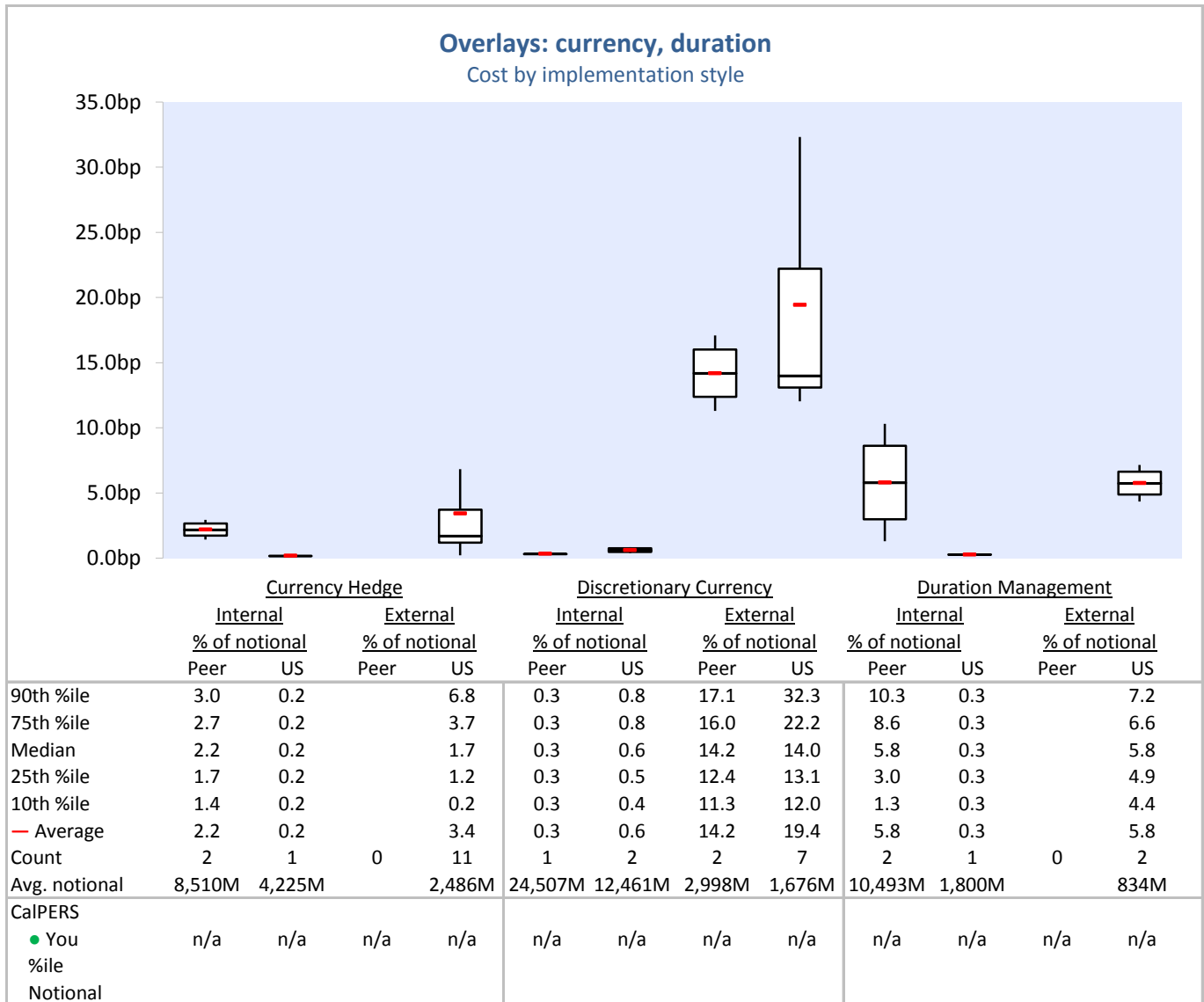


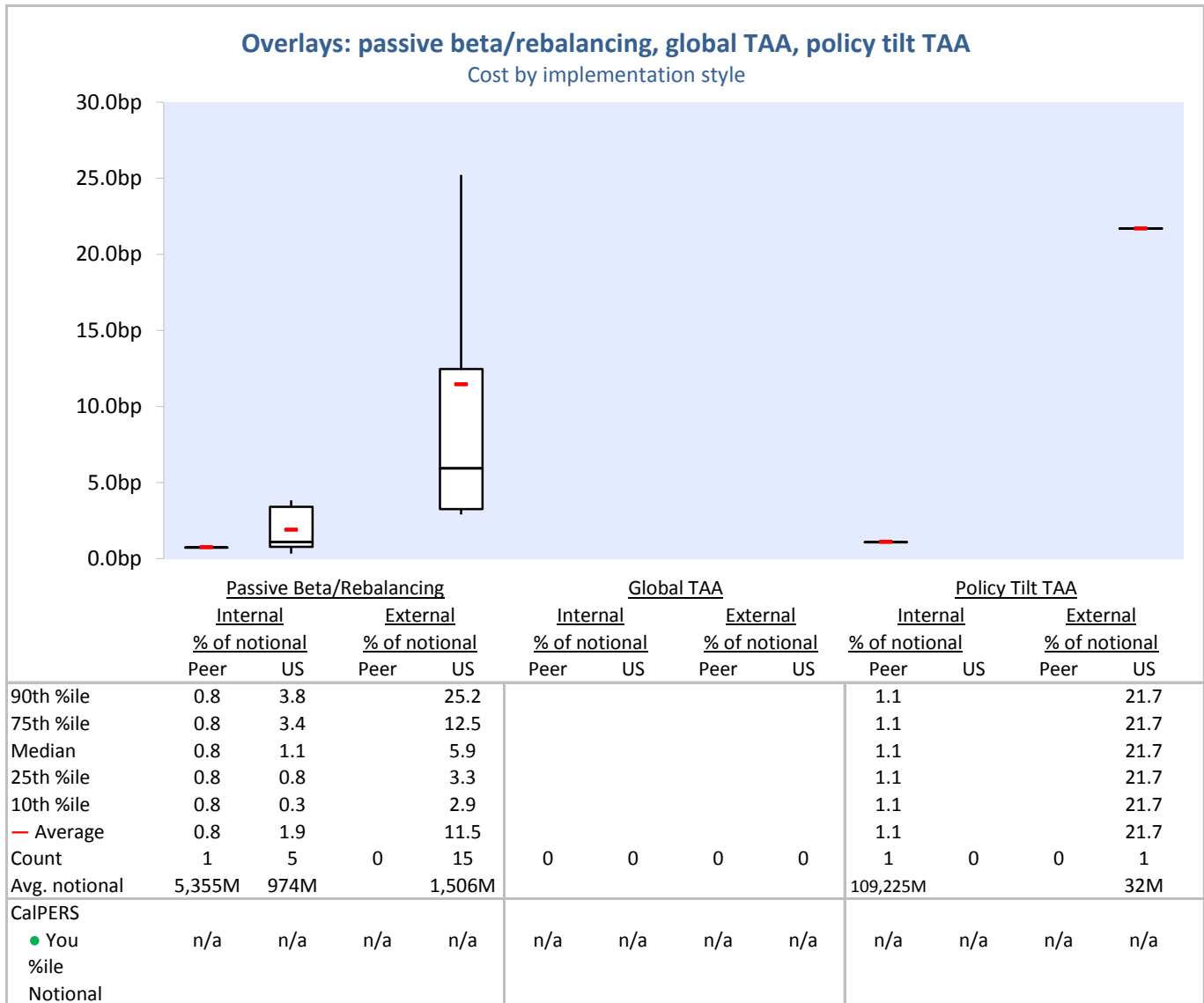
1. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 150 bps (on NAV) for underlying management fees and 144 bps (on NAV) for underlying performance fees were used.

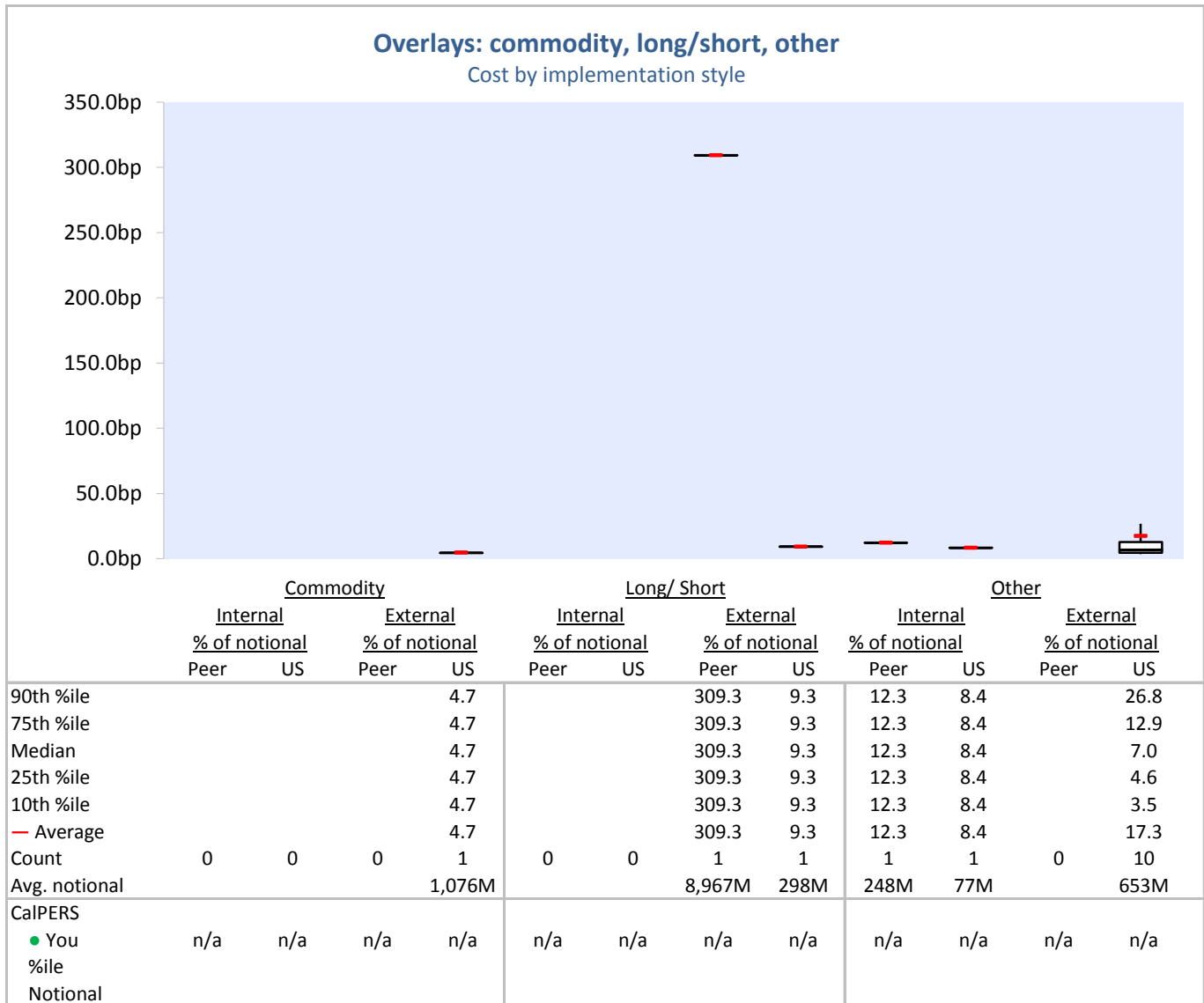
2. The total cost also includes the internal cost of monitoring and selecting hedge fund investments. Your cost of monitoring and selecting was 12.2 bps for fund of funds and 19.5 bps for external direct. The peer average cost of monitoring and selecting was 10.4 bps for fund of funds and 10.8 bps for external direct.

Hedge Funds - Fund of Funds ('bottom layer'): For comparability with other styles, a default for management fees paid to the 'bottom layer' underlying managers of 150 bps (on amount fees are based on) was used.

Hedge Funds - Fund of Funds ('bottom layer'): For comparability, a default for performance fees paid to the 'bottom layer' underlying managers of 144 bps (on NAV) was used.





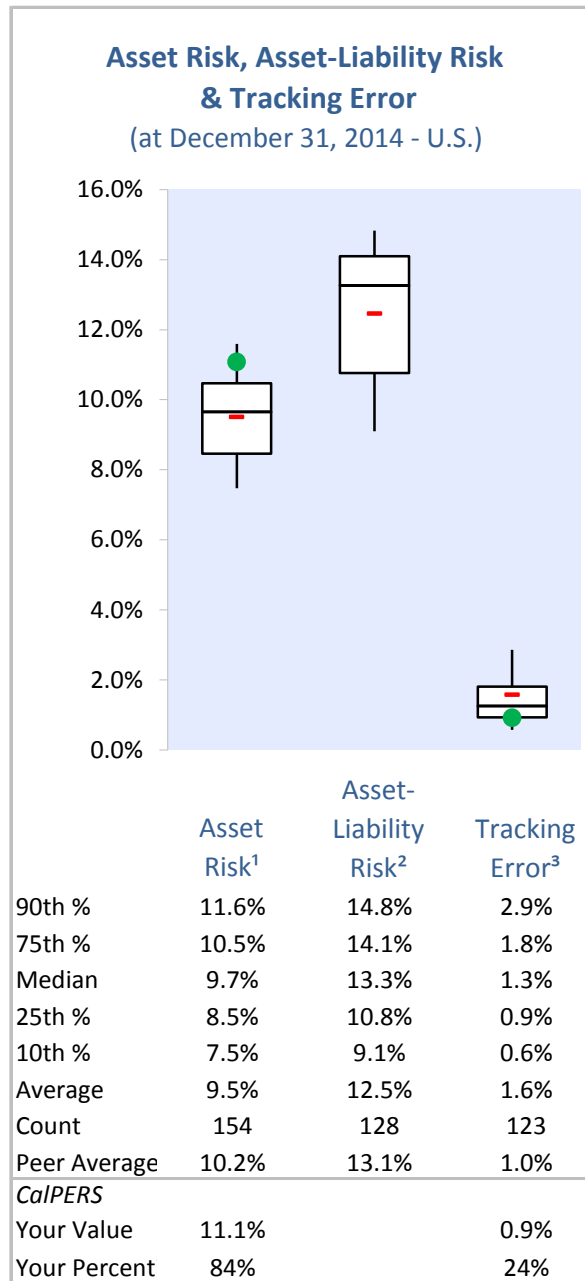


7

Risk

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Comparison of your risk levels to the U.S. 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 13.1%.

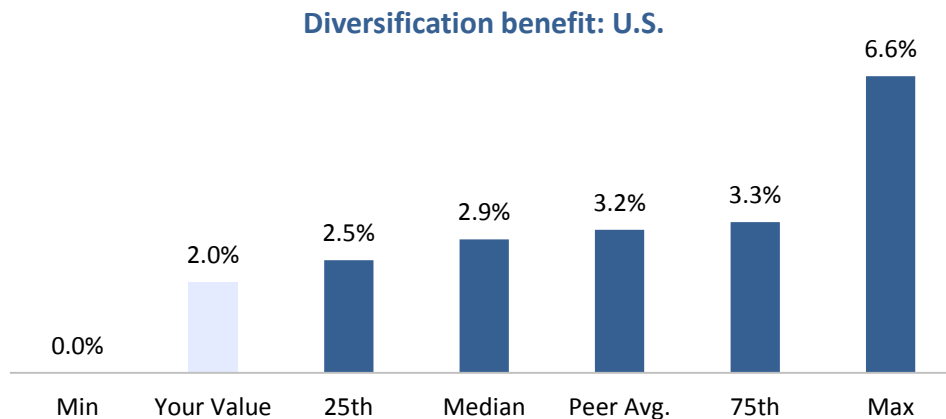
Calculation of your weighted asset class risk

Asset Class	Policy weight	Risk ¹	Weighted risk
	(A)	(B)	(A X B)
Stock: Global	51.2%	15%	7.4%
Bonds: U.S.	19.0%	6%	1.1%
Bonds: Inflation Indexed	6.0%	5%	0.3%
Bonds: Cash	2.0%	1%	0.0%
Infrastructure	1.0%	17%	0.2%
Natural Resources	1.0%	21%	0.2%
Real Estate	10.0%	15%	1.5%
Private Equity: Diversified or All	9.8%	24%	2.4%
Weighted Total			13.1%

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.

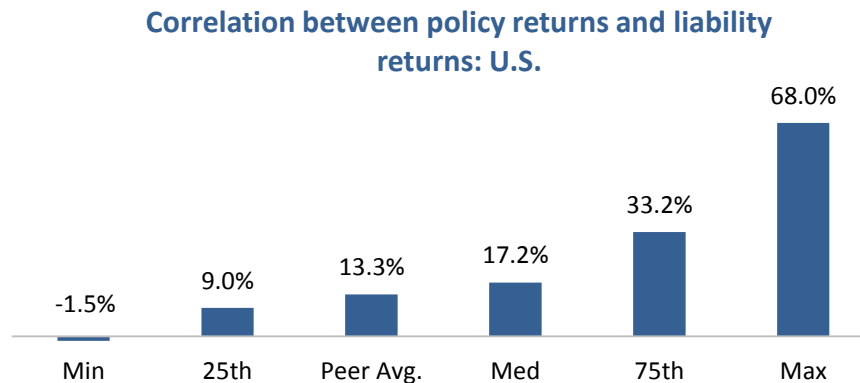
Components of asset risk

	You	Peer median*	Peer average	U.S. median*	U.S. average
Weighted asset risk	13.1%	13.2%	13.4%	12.6%	12.4%
Benefit of diversification	2.0%	2.9%	3.2%	2.9%	2.9%
Asset risk	11.1%	10.7%	10.2%	9.7%	9.5%

* 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

$$\text{risk} = \sqrt{R_A^2 + R_L^2 - 2\rho_{AL}R_AR_L}.$$

Components of asset-liability risk

	You	Peer median	Peer average	U.S. median	U.S. average
Asset risk (R_A)	11.1%	10.7%	10.2%	9.7%	9.5%
Liability risk (R_L)		10.0%	10.0%	10.6%	10.4%
Correlation between policy returns and liability returns (ρ_{AL})		9.1%	13.3%	17.2%	22.8%
Asset-liability risk		13.6%	13.1%	13.3%	12.5%

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. average	
	Duration	% of Assets	Duration	% of Assets	Duration	% of Assets
Inflation Indexed Bonds	n/a	n/a	11.7	61%	11.2	52%
Nominal Bonds	n/a	n/a	17.6	39%	15.3	48%
Total		100%		100%		100%

Your liability proxy portfolio is a tool that:

- Helps you understand how the unsmoothed market value of your liabilities responds to changes in real and nominal interest rates.
- 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.
- 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 other(one year final compensation or three year final average compensation).

Plan type	# of plans	% of Total
Flat Benefit	9	6%
Career Average	6	4%
Final/Highest/Best Avg	118	79%
Other	16	11%
Total	149	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 Capped by CPI; Varies by contract - 2% is the standard. 3%, 4%, and 5% are optional benefits to contracting agencies.

Retiree inflation protection	# of plans		
	Corporate	Public	Other
0%	109	25	6
>0% and <50%	3	1	0
50%	0	2	0
>50% and <100%	2	5	0
100%	86	55	2
Total	200	88	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 54%.

	Your fund	Peer Average	U.S. Average
Active Members	60%	60%	43%
Retired Members	40%	40%	57%
Total	100%	100%	100%

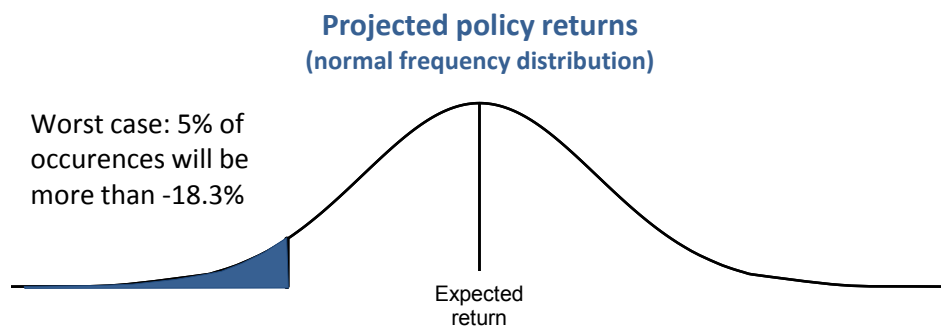
Projected worst case scenarios

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:

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

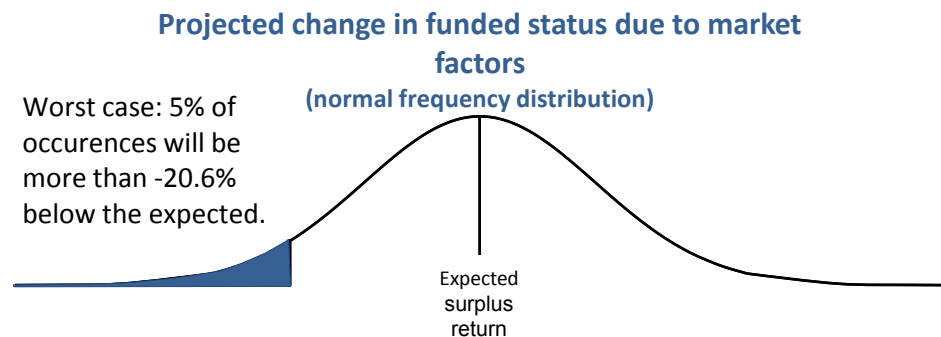
a) Worst case policy returns

Every year there is a 5% probability that your policy return will be worse than your expected policy return by more than -18.3% (-18.3% equals $-1.65 \times$ your asset risk of 11.1%). -18.3% is the starting point of worst case outcomes. They could be much worse.



b) Worst case impact on funded status

For the average U.S. fund, there is a 5% probability every year that changes in mark-to-market funded status caused by market factors ("Surplus Returns") will be worse than expected by more than -20.6%. (-20.6% equals $-1.65 \times$ the U.S. average asset-liability risk of 12.5%).



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 0.9% in 2011.

Historic policy returns - U.S.

	2014	2013	2012	2011	2010
90th %	12.5%	18.2%	14.4%	10.6%	14.2%
75th %	10.7%	16.0%	13.4%	6.6%	13.4%
Median	8.0%	13.6%	12.6%	2.8%	12.5%
25th %	6.6%	8.6%	11.4%	1.0%	11.7%
10th %	5.3%	4.5%	10.1%	-0.1%	10.6%
Average	8.7%	12.2%	12.3%	4.3%	12.5%
Count	155	191	202	204	207
Peer Avg	3.5%	11.9%	13.1%	1.1%	10.6%
Your Value	6.8%	14.8%	14.4%	0.9%	12.1%

b) Historic worst case changes in funded status

During the past 5 years, funds experienced the worst change in marked-to-market funded status caused by market factors ("Surplus Returns") in 2011, when the median fund experienced a -18.7% decline.

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

	2014	2013	2012	2011	2010
90th %	-1.0%	34.2%	11.1%	-11.4%	6.9%
75th %	-4.5%	31.0%	10.4%	-14.7%	5.7%
Median	-6.5%	26.4%	9.0%	-18.7%	4.6%
25th %	-9.0%	19.6%	7.3%	-20.8%	3.1%
10th %	-10.4%	13.7%	5.4%	-23.3%	2.1%
Average	-6.2%	25.3%	8.7%	-17.6%	4.5%
Count	128	153	163	159	170
Peer Avg	-9.8%	17.6%	8.9%	-16.3%	5.4%
Your Value	n/a	27.3%	9.6%	n/a	3.4%

Risk Trends - 2010 to 2014

a) Asset risk trends

Asset risk will only change if policy asset mix changes. Between 2010 and 2014 the asset risk for your fund decreased from 11.8% to 11.1%.



b) Asset-liability risk trends

Asset-liability risk will change if policy asset mix changes, or if the nature of your liabilities changes. Between 2010 and 2014 the asset-liability risk for U.S. funds that have provided 5 consecutive years of data decreased from 12.8% to 12.4%.



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 22% for your peers and 23% 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 n/a% based on your plan type of Other(One Year Final Compensation or Three Year Final Average Compensation).

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 54%. 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	
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
2009	4.63	1.94	2.03	-0.13	2.70

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	14.5%
Bonds: U.S.	Barclays US Aggregate	Feb 1976	5.6%
Bonds: Inflation Indexed	Barclay's TIPS* Modeled prior to 4/97	Apr 1997	5.5%
Bonds: Cash	BofA ML U.S. T-BILL 3M	Feb 1978	0.5%
Infrastructure	UBS Global Infrastructure (\$US)	Feb 1990	17.1%
Natural Resources	S&P GSSI North American Natural Resource Sector	Sep 1996	21.2%
Real Estate	MSCI US REIT Deleveraged	Jan 1997	14.7%
Private Equity: Diversified or All	S&P Listed Private Equity	Dec 2003	24.1%

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	15.1%
Stock: U.S. Large Cap	S&P 500	Feb 1988	14.0%
Stock: U.S. Small Cap	Russell 2000	Jan 1979	19.2%
Stock: EAFE (Currency Hedged)	MSCI EAFE Hedged Exposure to Euro + Japan in (\$US)	Jan 1971	11.9%
Stock: EAFE	MSCI EAFE	Jan 1970	16.6%
Stock: Emerging	MSCI Emerging	Jan 1988	22.4%
Stock: Global	MSCI ACWI	Jan 1988	14.5%
Stock: ACWI x U.S.	MSCI ACWI ex US	Jan 1988	14.3%
Bonds: U.S.	Barclays US Aggregate	Feb 1976	5.6%
Bonds: High Yield	Barclays High Yield	Apr 1990	8.7%
Bonds: Long Bonds	Barclays U.S. Aggregate Long Government/Credit	Feb 1973	9.4%
Bonds: Cash	BofA ML U.S. T-BILL 3M	Feb 1978	0.5%
REITs	MSCI US REIT	Feb 1997	21.2%
Real Estate	MSCI US REIT Deleveraged	Jan 1997	14.7%
Hedge Fund	HFRI Fund Weighted Hedge Fund	Jan 1990	6.4%
Private Equity: Diversified or All	S&P Listed Private Equity	Dec 2003	24.1%
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: Inflation Indexed	Bonds: Cash	Real Assets: Infrastructure	Real Assets: Natural Resources	Real Assets: Real Estate	Private Equity: Diversified or All
Stock: Global	1.00	0.14	0.12	0.00	0.68	0.70	0.58	0.82
Bonds: U.S.	0.14	1.00	0.73	0.38	0.23	0.05	0.22	0.14
Bonds: Inflation Indexed	0.12	0.73	1.00	0.06	0.24	0.22	0.30	0.30
Bonds: Cash	0.00	0.38	0.06	1.00	-0.01	-0.03	0.03	-0.03
Real Assets: Infrastructure	0.68	0.23	0.24	-0.01	1.00	0.52	0.54	0.71
Real Assets: Natural Resources	0.70	0.05	0.22	-0.03	0.52	1.00	0.42	0.59
Real Assets: Real Estate	0.58	0.22	0.30	0.03	0.54	0.42	1.00	0.73
Private Equity: Diversified or All	0.82	0.14	0.30	-0.03	0.71	0.59	0.73	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	0.89	0.19	0.65	0.70	0.88	0.21	0.61	-0.03	0.18	0.03	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	0.09	0.70	0.63	0.83	0.18	0.56	0.06	0.08	0.10	0.51	0.70	0.76	0.73	0.17	0.07	0.07	0.02	0.07
Stock: U.S. Small Cap	0.89	0.74	1.00	0.13	0.59	0.67	0.74	0.13	0.61	-0.08	0.19	0.03	0.61	0.82	0.79	0.70	0.13	0.06	0.04	-0.09	-0.06
Stock: EAFE (Currency Hedged)	0.19	0.09	0.13	1.00	0.15	0.13	0.23	0.09	0.07	0.05	0.13	-0.17	0.26	0.12	0.35	0.18	0.03	-0.02	0.01	-0.09	-0.07
Stock: EAFE	0.65	0.70	0.59	0.15	1.00	0.67	0.94	0.16	0.53	-0.07	0.12	0.07	0.56	0.66	0.82	0.87	0.19	0.13	0.12	-0.01	0.00
Stock: Emerging	0.70	0.63	0.67	0.13	0.67	1.00	0.77	0.01	0.62	-0.08	0.24	0.03	0.48	0.81	0.74	0.77	0.02	0.09	0.09	-0.12	-0.11
Stock: Global	0.88	0.83	0.74	0.23	0.94	0.77	1.00	0.14	0.61	0.00	0.21	0.03	0.58	0.77	0.82	0.91	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	0.22	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	0.07	0.53	0.62	0.61	0.19	1.00	-0.06	0.13	0.17	0.60	0.64	0.67	0.58	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	0.03	-0.03	-0.03	-0.03	0.27	0.07	0.09	0.17	0.09
Real Assets: Commodities	0.18	0.08	0.19	0.13	0.12	0.24	0.21	-0.03	0.13	0.00	1.00	0.15	0.21	0.30	0.41	0.16	-0.07	0.04	0.05	-0.06	-0.07
Real Assets: REITs	0.03	0.10	0.03	-0.17	0.07	0.03	0.03	-0.16	0.17	0.03	0.15	1.00	0.06	0.15	0.15	0.07	-0.14	-0.08	-0.08	-0.25	-0.24
Real Assets: Real Estate	0.58	0.51	0.61	0.26	0.56	0.48	0.58	0.22	0.60	0.03	0.21	0.06	1.00	0.43	0.73	0.49	0.22	0.13	0.13	0.00	-0.01
Hedge Fund	0.78	0.70	0.82	0.12	0.66	0.81	0.77	0.07	0.64	-0.03	0.30	0.15	0.43	1.00	0.72	0.76	0.08	0.08	0.08	-0.07	-0.05
Private Equity: Diversified or All	0.81	0.76	0.79	0.35	0.82	0.74	0.82	0.14	0.67	-0.03	0.41	0.15	0.73	0.72	1.00	0.75	0.08	0.12	0.11	-0.11	-0.13
Stock: ACWI x U.S.	0.79	0.73	0.70	0.18	0.87	0.77	0.91	0.04	0.58	-0.03	0.16	0.07	0.49	0.76	0.75	1.00	0.05	0.03	0.03	-0.11	-0.07
Bonds: Long Bonds	0.21	0.17	0.13	0.03	0.19	0.02	0.12	0.95	0.18	0.27	-0.07	-0.14	0.22	0.08	0.08	0.05	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	0.13	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	0.13	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	0.00	-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	-0.01	-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 A2 - Enhanced survey data & mapping to regular survey

Appendix B - Data quality

Appendix C - Glossary of terms

Appendix A - Data Summary

CalPERS

Plan Info	2014	2013	2012
Contact	David McHenry	David McHenry	Kami Niebank
Type of fund (corporate, public, other)	Public	Public	Public
Total fund size (mils) as at December 31	295,821.0	283,552.0	248,773.0
Asset-class level holdings provided on survey are: year end or average?	Year End	Year End	Year End
Total return for year ended	6.52%	16.19%	13.26%
Is the return net or gross?	Net of manager fees	Net of manager fees	Net of manager fees
Total fund policy or benchmark return	6.84%	14.80%	14.41%

Ancillary Data	2014	2013	2012
Do you lend securities?	Yes	Yes	Yes
If yes:			
% of income your custodian keeps for domestic lending?	10	10	10
% of income your custodian keeps for foreign lending?			
Domestic net income in 000s			
Foreign net income in 000s			
Total net income (if breakdown not available) in 000s	86,394	184,187	152
Do you use any enhanced passive or tilt strategies?	n/a	Yes	Yes
What is your hedging policy for:			
Foreign Holdings		5%	5%
Do you participate in directed brokerage programs (i.e., commission recapture and/or soft dollar?)	n/a	No	No
If yes:			
Gross amount of directed commissions in 000s?	n/a		
Amount recaptured by the fund in 000s?	n/a		
Hard' cash value of invoices/services paid using soft dollars 000s?	n/a		
What were your actuarial fees in 000s?	7,591	6,192	5,539
How many plan members/beneficiaries do you have:			
Active?	776,429	759,509	786,586
Active (no-accrual)?			
Retired?	511,670	566,975	551,627
Other?	352,585	344,728	315,854
What type of plan(s) do you have?	Other(One Year Final Compensation or Three Year Final Average	Final Average	Final Average
To what extent are your retired members' benefits indexed to inflation?			
Contractual %	100	2	2
Ad hoc %			
If the indexation is subject to a cap, describe the cap	Capped by CPI; V	Capped by CPI; V	Capped by CPI; V
What % of the plan's liabilities pertain to retired members?	54	57	53
Actuarial valuation assumptions for funding purposes:			
Liability discount rate	7.5	7.5	7.5
Salary progression rate	2.8	2.8	
What was your actuarial assumption for expected rate of return?	7.5	7.5	7.5

Appendix A - Data Summary: Policy Weights and Benchmarks

CalPERS

Asset Class		Policy Weight	Benchmark	
			Description	Return
U.S. Stock - Broad/All	2014		Your Stock: U.S. Broad/All benchmark	13.3
	2013		Your Stock: U.S. Broad/All benchmark	33.5
	2012		Long / Short Asset Weighted Composite Index	16.2
U.S. Stock - Large Cap	2014		Your Stock: U.S. Large Cap benchmark	12.9
	2013		Your Stock: U.S. Large Cap benchmark	34.2
	2012		Your Stock: U.S. Large Cap benchmark	16.3
U.S. Stock - Small Cap	2014		Your Stock: U.S. Small Cap benchmark	2.6
	2013		Your Stock: U.S. Small Cap benchmark	42.1
	2012		Your Stock: U.S. Small Cap benchmark	17.3
Stock - EAFE	2014		Your Stock: EAFE benchmark	-4.3
	2013		Your Stock: EAFE benchmark	20.6
	2012		Your Stock: EAFE benchmark	17.7
Stock - Emerging	2014		Your Stock: Emerging benchmark	2.5
	2013		Your Stock: Emerging benchmark	-3.2
	2012		Your Stock: Emerging benchmark	17.8
Stock - Global	2014	51.2	Your Stock: Global benchmark	-3.2
	2013	49.1	Your Stock: Global benchmark	24.7
	2012	50.0	Your Stock: Global benchmark	17.1
Stock - Other	2014		Your Stock: Other benchmark	4.6
	2013		Global Equity Benchmark	24.7
	2012		Global Equity Benchmark	17.1
Fixed Income - EAFE	2014		CalPERS Barclays International Fixed Income Index GDP weighted ex-US	-5.4
	2013	1.6	CalPERS Barclays International Fixed Income Index GDP weighted ex-US	-4.8
	2012	2.0	PERS World Govt ex US	1.5
Fixed Income - U.S.	2014	19.0	CalPERS Custom Barclays Long Liabilities	11.3
	2013	14.4	CalPERS Custom Barclays Long Liabilities	-5.8
	2012	15.0	PERS Custom Barclays LPF	6.7
Fixed Income - Long Bonds	2014		CALPERS BC LPF/DIVERSIFIED CO EX TOBACCO	11.3
	2013		CALPERS BC LPF/DIVERSIFIED CO EX TOBACCO	-0.1
	2012		CalPERS Diversified Corp Index	6.7
Fixed Income - Inflation Indexed	2014	6.0	67% Barclays Global Inflation-Linked U.S. and 33% Barclays Universal Government Inflation Linked Bond Index ex-US.	3.4
	2013	3.0	67% Barclays Global Inflation-Linked U.S. and 33% Barclays Universal Government Inflation Linked Bond Index ex-US.	-5.9
	2012	2.0	Barclays Global Inflation Linked Cust Country	8.2
Fixed Income - High Yield	2014		CALPERS HIGH YIELD CASH PAY (DAILY) EX TOBACCO	1.8
	2013		CALPERS HIGH YIELD CASH PAY (DAILY) EX TOBACCO	7.5
	2012		CalPERS High Yield Cash Pay	14.6
Fixed Income - Mortgages	2014		CAL CUSTOM BC LPF MTG (DAILY)	5.9
	2013		CAL CUSTOM BC LPF MTG (DAILY)	-1.3
	2012		CAL Custom BC LPF Mtg	3.0
Fixed Income - Other	2014		PERS Barclays Govt Liquidity Index 2-10 Yr	3.4
	2013	3.0	PERS Barclays Govt Liquidity Index 2-10 Yr	-2.0
	2012	3.0	PERS Barclays Govt Liquidity Index 2-10 Yr	2.2
Cash	2014	2.0	PERS 1 Month T-Bill	0.0
	2013	1.0	PERS 1 Month T-Bill	0.0
	2012	1.0	PERS 1 Month T-Bill	0.1
Global TAA	2014		Absolute Benchmark	7.5
	2013		Absolute Benchmark	7.5
	2012		Absolute Benchmark	7.5
Hedge Funds	2014		ML 1 YR Treasury Note + 5%	5.2
	2013		ML 1 YR Treasury Note + 5%	5.3
	2012		ML 1 YR Treas Note+5% (Daily)	5.3
Commodities	2014		Standard & Poor's GSCI Total Return Index	-33.1
	2013	1.0	Standard & Poor's GSCI Total Return Index	-1.2
	2012	2.0	Goldman Sachs Commodity Index	0.1
REITs	2014			
	2013			
	2012	0.5	Your REIT benchmark	28.7
Infrastructure	2014	1.0	CPI +400 BPS Lagged one quarter	4.8
	2013	2.0	CPI +400 BPS Lagged one quarter	5.2
	2012	1.0	CPI +400 BPS 1 Month Lagged	6.1
Real Estate ex-REITs	2014	10.0	Exceed (net of fees) NCREIF ODCE	11.4
	2013	10.0	Exceed (net of fees) NCREIF ODCE	12.1
	2012	8.5	NCREIF ODCE 1 QTR LAG	10.5
Natural Resources	2014	1.0	NCREIF TIMBERLAND	10.5
	2013	1.0	NCREIF TIMBERLAND	9.7
	2012	1.0	NCREIF TIMBERLAND INDEX 1 QTR LAG	2.3
Diversified Private Equity	2014	9.8	Your Diversified or All benchmark	17.1
	2013	13.9	Your Diversified or All benchmark	24.1
	2012	14.0	Your Diversified or All benchmark	28.5
Other Private Equity	2014			
	2013			
	2012		Custom	-52.7

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

CalPERS

Asset Class		Assets (millions) and Annual Gross Returns							Investment Fees / Costs in 000s										
		Internally Managed				Externally Managed			Internally Managed				Externally Managed						
		Indexed		Active		Active			Indexed		Active		Active						
		Assets	Return	Assets	Return	Assets	Return	# of mgrs	000s	bps¹	000s	bps¹	Base Fees³	Perform Fees	Internal & Other³	Total 000s	bps¹		
U.S. Stock - Broad/All	2014					3,283.0	15.4							1,062.0	4,984.0	389.0	6,435.0	21.9	
	2013					2,601.0	38.8							1,072.0	2,436.0	230.5	3,738.5	16.7	
	2012					1,874.0	17.4	2						650.0	267.0	112.4	1,029.4	6.4	
U.S. Stock - Large Cap	2014	56,702.0	12.4	8,757.0	11.4	2,775.0	12.1		458.3	0.1	3,460.4	4.2	13,472.0	1,211.0	310.6	14,993.6	38.2		
	2013	51,771.0	34.0	7,653.0	37.5	5,071.0	36.5		492.4	0.1	3,118.3	5.1	10,909.0	5,264.0	155.8	16,328.8	37.1		
	2012	39,379.0	16.6	4,657.0	16.9	3,730.0	16.8	17	683.5	0.2	782.7	1.7	9,496.0	1,468.0	284.5	11,248.5	33.5		
U.S. Stock - Small Cap	2014			371.0	2.4	267.0	-2.0				91.8	2.6	2,900.0	421.0	27.3	3,348.3	89.9		
	2013			329.0	51.8	478.0	44.0				136.4	4.7	2,546.0	542.0	29.4	3,117.4	76.1		
	2012	4,670.0	17.8	256.0	18.8	341.0	15.1	11	244.6	1.0	31.9	2.5	2,538.0	628.0	19.4	3,185.4	95.2		
Stock - EAFE	2014	43,404.0	-4.2	4,562.0	-5.9	7,225.0	-2.2		994.8	0.2	2,447.6	4.3	10,350.0	19,536.0	405.2	30,291.2	39.7		
	2013	46,778.0	21.0	6,734.0	27.8	8,052.0	20.5		3,606.1	0.9	4,615.7	8.3	8,029.0	21,035.0	335.9	29,399.9	39.8		
	2012	34,808.0	17.9	4,429.0	16.9	6,733.0	19.9	15	1,754.5	0.5	3,373.3	8.8	7,976.0	21,117.0	241.1	29,334.1	48.0		
Stock - Emerging	2014	3,900.0	2.4	4,231.0	0.5	4,316.0	0.4		270.9	0.7	1,489.8	3.9	10,251.0	5,262.0	282.6	15,795.6	36.9		
	2013	4,012.0	-2.6	3,329.0	-5.0	4,255.0	-2.7		3,249.6	7.0	2,834.0	9.6	8,451.0	16,165.0	387.5	25,003.5	60.7		
	2012	5,240.0	19.3	2,595.0	19.8	3,978.0	21.0	4	3,650.3	7.7	3,230.1	14.4	9,454.0	18,820.0	84.2	28,358.2	77.0		
Stock - Global	2014			637.0	4.0	2,020.0	-0.5	50			293.6	4.7	3,205.0	683.0	87.6	3,975.6	24.3		
	2013			612.0	27.2	1,252.0	22.6	51			451.2	8.3	2,851.0	766.0	52.2	3,669.2	32.3		
	2012			481.0	6.5	1,023.0	18.9	2			336.7	7.2	2,942.0	238.0	81.6	3,261.6	34.6		
Stock - Other	2014			11,418.0	13.7	2,917.0	3.3				16,161.3	18.4	32,115.0	44,945.0	2,323.0	79,383.0	214.9		
	2013	2,702.0	23.2	6,113.0	34.8	4,472.0	30.5		153.3	0.6	1,090.3	2.0	39,019.0	18,103.0	220.8	57,342.8	131.2		
	2012	2,030.0	18.2	4,761.0	17.7	4,271.0	12.3	16	55.6	0.3	292.2	0.7	49,901.0	6,373.0	2,556.6	58,830.6	142.0		
Fixed Income - EAFE	2014			1,906.0	-2.5	2,241.0	-3.1	4			604.6	3.7	1,827.0	4,199.0	181.6	6,207.6	25.6		
	2013			1,399.0	-3.8	2,605.0	-5.5	4			170.3	1.8	2,006.0	5,698.0	68.9	7,772.9	27.8		
	2012			516.0		2,991.0	2.7	4			6.8	0.3	2,532.0	5,094.0	121.8	7,747.8	23.4		
Fixed Income - U.S.	2014			30,448.0	13.2						6,084.3	2.3							
	2013			23,460.0	-6.8						4,548.1	1.9							
	2012			24,761.0	8.8						2,071.3	0.8							
Fixed Income - Long Bonds	2014			1,989.0	7.7						586.4	4.0							
	2013			956.0	4.7						199.3	3.0							
	2012			391.0	22.0						26.4	1.1							
Fixed Income - Inflation Indexed	2014			11,962.0	4.8						2,563.9	2.7							
	2013			6,884.0	-5.7						815.1	1.3							
	2012			5,979.0	8.1						682.5	1.4							
Fixed Income - High Yield	2014	10.0	8.2	1,276.0	12.1	1,585.0	3.2	3	33.5	17.2	713.3	6.8	5,485.0		135.9	5,620.9	40.8		
	2013	29.0	n/a	832.0	8.0	1,173.0	10.9		15.1	10.4	344.8	4.1	3,765.0		69.5	3,834.5	34.5		
	2012			839.0	17.5	1,047.0	15.3	3			82.9	1.0	3,586.0		37.6	3,623.6	35.7		
Fixed Income - Mortgages	2014			13,393.0	8.3						13,712.6	11.7							
	2013			10,061.0	-0.8						11,653.5	10.2							
	2012			12,789.0	5.0						18,338.6	15.6							
Fixed Income - Other	2014			2,750.0	3.6						1,675.7	3.7							
	2013			6,351.0	-2.8						1,600.0	2.8							
	2012			5,277.0	2.0						3,335.1	6.3							
Cash	2014			3,789.0	0.2						1,676.7	3.3							
	2013			6,284.0	0.1						755.7	1.3							
	2012			5,126.0	0.1						626.3	1.4							
Global TAA	2014					1,167.0	9.8						6,147.0	8,775.0	1,834.8	16,756.8	150.3		
	2013					1,063.0	8.7						4,350.0		644.5	4,994.5	64.2		
	2012					493.0	n/a						2,465.0		1,892.5	4,357.5	176.8		
Commodities	2014			2,830.0	-32.3						205.4	0.8							
	2013			2,398.0	-0.9						1,081.5	5.4							
	2012			1,577.0	-0.3						243.7	1.0							
REITs	2014																		
	2013																		
	2012	749.0	28.5						71.0	0.7									
Hedge Funds	2014					2,441.0	5.0						53,916.0	66,190.0	6,408.2	126,514.2	385.2		
	2013					4,128.0	9.1						48,767.0	54,362.0	6,728.2	55,495.2	143.5		
	2012					3,605.0	3.4						50,140.0	22,731.0	16,678.2	66,818.2	180.9		
															Base Fees³	Perform Fees	Internal & Other³	Total 000s	bps¹
Hedge Funds - Fund of Funds	2014					311.0	2.5						7,584.0	2,230.0	947.9	33,537.2	432.2		
	2013					1,241.0	9.5						11,942.0	22,464.0	4,580.4	40,590.4	291.3		
	2012					1,546.0	2.9						11,861.0		3,130.0	42,167.0	280.7		

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

CalPERS

Asset Class		Assets (millions) and Annual Returns						# Ext Mgrs	Investment Fees / Costs in 000s ¹																
		Internal & Co-Inv		External		Fund of Funds			Internal & Co-Inv		External					Fund of Funds									
				Amt fees based on	Assets	Return	Amt fees based on				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)
Infrastructure	2014	571.0	18.1					7	1,227.9	24.6															
	2013	426.0	15.4					6	2,016.0	49.4															
	2012	391.0	23.6					4	1,002.8	51.3															
	2014																								
	2013																								
	2012																								
Real Estate ex-REITs	2014							119																	
	2013							142																	
	2012							117																	
	2014																								
	2013																								
	2012																								
Natural Resources	2014							2																	
	2013							2																	
	2012							2																	
	2014																								
	2013																								
	2012																								
Diversified Private Equity	2014	1,308.0		23,127.0	25,200.0	14.6	4,277.0	3,961.0	n/a	3,025.4	427,321.0		14,429.6	441,750.6	163.6	69,236.0	12,488.0		3,963.2	85,687.2	169.5				
	2013	1,220.0		30,885.0	25,717.0	19.4	5,834.0	3,688.0	7.8	809.2	417,208.0		12,688.8	429,896.8	138.6	69,236.4	17,078.0		1,730.2	88,044.6	131.3				
	2012			31,140.6	27,269.0	13.7	7,576.6	4,714.0	7.5		437,492.0		18,833.1	456,325.1	139.0	73,653.4	24,946.0		1,825.6	100,425.0	142.6				
Other Private Equity	2014																								
	2013																								
	2012			87.0	87.0	-52.7					273.0		9.1	282.1	64.9										

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

CalPERS

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets ¹	2014	13,405.8	0.5bp
	2013	10,165.1	0.4bp
	2012	10,547.9	0.4bp
Custodial total	2014	4,722.0	0.2bp
	2013	7,528.0	0.3bp
	2012	7,712.0	0.3bp
Custodial foreign (if available)	2014		
	2013		
	2012		
Custodial domestic (if available)	2014		
	2013		
	2012		
Consulting / performance measurement	2014		
	2013		
	2012		
Audit	2014	1,197.0	0.0bp
	2013	1,481.0	0.1bp
	2012	417.0	0.0bp
Other (legal etc)	2014	4,895.0	0.2bp
	2013	16,885.0	0.6bp
	2012	9,786.0	0.4bp
Total	2014	24,219.8	0.8bp
	2013	36,059.1	1.4bp
	2012	28,462.9	1.2bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2014	1,164,514.7	40.3bp
	2013	1,043,630.8	39.2bp
	2012	1,079,351.9	45.6bp
Overlay Costs	2014	124.8	0.0bp
	2013	186.5	0.0bp
	2012	3,516.6	0.1bp
Oversight, Custodial & Other Costs	2014	24,219.8	0.8bp
	2013	36,059.1	1.4bp
	2012	28,462.9	1.2bp
Total	2014	1,188,859.3	41.1bp
	2013	1,079,876.4	40.6bp
	2012	1,111,331.4	47.0bp

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

CalPERS

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)	Duration (years)
Currency Hedge	2014		110.0		124.8											
	2013	14,630.0			186.5	0.1										
	2012	9,912.0	-39.0		132.2	0.1		3,300.0	9.0		3,261.0		123.4	3,384.4	10.3	

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:

- Hedge Funds - Fund of Funds : For comparability with other styles, a default for management fees paid to the 'bottom layer' underlying managers of 150 bps (on amount fees are based on) was used.
- Hedge Funds - Fund of Funds : For comparability, a default for performance fees paid to the 'bottom layer' underlying managers of 144 bps (on NAV) was used.

Appendix A - Data Summary - Enhanced Survey Data and Mapping to Regular Survey - Mapped Data

Data after the mapping process from enhanced survey to regular is shown below. The below data is used through the rest of this report.

Investment Costs by Asset Class and Style (\$000s)									
	Internal		External Passive		External Active			Total	
	Passive	Active	Fees	Monitoring & Other	Base Fees	Perform. Fees	Monitoring & Other	000s	% of Total
U.S. Stock - Broad/All					1,062	4,984	389	6,435	1%
U.S. Stock - Large Cap	458	3,460			13,472	1,211	311	18,912	2%
U.S. Stock - Small Cap		92			2,900	421	27	3,440	0%
Stock - EAFE	995	2,448			10,350	19,536	405	33,734	3%
Stock - Emerging	271	1,490			10,251	5,262	283	17,556	1%
Stock - Global		294			3,205	683	88	4,269	0%
Stock - Other		16,161			32,115	44,945	2,323	95,544	8%
Fixed Income - U.S.		6,084						6,084	1%
Fixed Income - EAFE		605			1,827	4,199	182	6,812	1%
Fixed Income - EAFE		605			1,827	4,199	182	6,812	1%
Fixed Income - Long Bonds		586						586	0%
Fixed Income - Inflation Indexed		2,564						2,564	0%
Fixed Income - High Yield	33	713			5,485	0	136	6,368	1%
Fixed Income - Mortgages		13,713						13,713	1%
Fixed Income - Other		1,676						1,676	0%
Cash		1,677						1,677	0%
Commodities		205						205	0%
Infrastructure		1,228						1,228	0%
Infrastructure - LPs					9,572	38,796	3,058	12,630	1%
Real Estate ex-REITs - LPs					189,559	621,349	26,420	215,979	18%
Natural Resources - LPs					7,165		666	7,831	1%
Hedge Funds					53,916	66,190	6,408	60,324	5%
Hedge Funds - Fund of Funds					7,584	2,230	948	8,532	1%
Hedge Funds - Fund of Funds					11,622			11,622	1%
Global TAA					6,147	8,775	1,835	16,757	1%
Diversified Private Equity		2,252			427,321		14,430	444,003	37%
Diversified Private Equity - Fund of Funds					12,488		3,963	16,451	1%
Diversified Private Equity - Fund of Funds					69,236			69,236	6%
Overlay Programs		125			0		0	125	0%
Total investment management costs - Internal & Monitoring								119,786	10%
Total investment management fees (excluding performance in private assets)								962,544	81%
Total investment management costs								40.3bp 1,164,640	98%

Oversight, Custodial & Other Asset Related Costs (\$000s)									
Oversight of the Fund								13,406	1%
Trustee & Custodial								4,722	0%
Audit								1,197	0%
Other								4,895	0%
Total oversight, custodial & other costs								0.8bp 24,220	2%

Total cost for CalPERS								41.1bp 1,188,859	100%
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*Default cost used. Refer to Appendix A.

Costs in blue come from the following page.

Costs in purple are from a two-step process shown over the next two pages.

Appendix A - Data Summary - Enhanced Survey Mapping to Regular Survey

Activity	Cost per Enhanced Survey	# of FTE	Step 1: Attribution of Oper. & Support	Cost with Attribution
Front Office				
Public Market Equities	23,472	46.0	6,022	29,494
Fixed Income	20,837	57.0	7,462	28,299
Real Estate excluding REITs	20,660	44.0	5,760	26,420
Private Equity	13,838	52.0	6,807	20,645
Infrastructure	3,119	14.0	1,833	4,952
Hedge Funds	7,620	12.0	1,571	9,191
Total front office	89,546	225.0	29,454	119,000
Governance, Operations and Support				
Board, CEO & assistants re: investments (A)	3,500	2.0	262	3,762
CIO, Investment strategy, asset allocation (B)	6,044	27.5	3,600	9,644
Oversight of the fund per regular CEM survey (A + B)				13,406
Custodial fees	4,722	n/a	n/a	4,722
Internal Audit	1,197	4.2	n/a	1,197
Legal services	4,895	6.4	n/a	4,895
Risk management	2,318	10.5	-2,318	0
Responsible investing, corporate governance	6,303	28.0	-6,303	0
Valuation & performance analytics	3,326	18.0	-3,326	0
Investment operations	3,880	21.0	-3,880	0
Compliance	2,555	17.3	-2,555	0
Information Technology	4,693	34.1	-4,693	0
Public relations and internal communication	1,731	14.6	-1,731	0
Finance, external reporting & tax	3,476	44.0	-3,476	0
Human resources	2,063	22.1	-2,063	0
Building, utilities and office services	2,173	21.0	-2,173	0
Non-specific allocated overhead	798	7.0	-798	0
Total cost excluding external manager fees	143,220	492.1	0	143,220

How CEM mapped the above costs to the regular survey

CEM attributed both front office and back office costs to the CEM asset classes by style using the following methodology:

Step 1 - CEM attributed operations and support costs to front office & oversight pro rata based on FTE.

Step 2 - CEM attributes the fully loaded cost (shown in green) to all of the CEM asset classes that the team manages (see next page). The attribution preserves the relative cost ratios versus the CEM universe for each of the asset classes that the team manages.

Appendix A - Data Summary - Enhanced Survey Mapping of Internal Teams

Front Office	Cost with Attribution from Step 1	Responsibilities by CEM asset class	Step 2 Attribution to Asset Classes
Public Market Equities	29,494	Monitoring U.S. Stock - Broad/All	389
		Passive U.S. Stock - Large Cap	458
		U.S. Stock - Large Cap	3,460
		Monitoring U.S. Stock - Large Cap	311
		U.S. Stock - Small Cap	92
		Monitoring U.S. Stock - Small Cap	27
		Passive Stock - EAFE	995
		Stock - EAFE	2,448
		Monitoring Stock - EAFE	405
		Passive Stock - Emerging	271
		Stock - Emerging	1,490
		Monitoring Stock - Emerging	283
		Stock - Global	294
		Monitoring Stock - Global	88
		Stock - Other	16,161
		Monitoring Stock - Other	2,323
Fixed Income	28,299	Fixed Income - U.S.	6,084
		Fixed Income - EAFE	605
		Monitoring Fixed Income - EAFE	182
		Fixed Income - Inflation Indexed	2,564
		Passive Fixed Income - High Yield	33
		Fixed Income - High Yield	713
		Monitoring Fixed Income - High Yield	136
		Fixed Income - Mortgages	13,713
		Fixed Income - Other	1,676
		Cash	1,677
		Commodities	205
		Passive Derivatives/Overlays - Currency	125
		Fixed Income - Long Bonds	586
Real Estate excluding REITs	26,420	Monitoring LP Real Estate ex-REITs	26,420
Private Equity	20,645	Monitoring Diversified Private Equity - Fund of Funds	3,963
		Diversified Private Equity	2,252
		Monitoring Diversified Private Equity	14,430
Infrastructure	4,952	Infrastructure	1,228
		Monitoring LP Infrastructure	3,058
		Monitoring LP Natural Resources	666
Hedge Funds	9,191	Monitoring Hedge Funds - Fund of Funds	948
		Monitoring Hedge Funds	6,408
		Monitoring Global TAA	1,835
Total Front Office	119,000		119,000

Front Office team **costs**, including allocated operations and support costs (see prior page), are attributed to the asset classes managed or overseen by the team. These attributions, shown in **purple**, are then inserted back into the regular survey.

Appendix A - Data Summary - Enhanced Survey Definitions

Costs - Attribute 100% of costs excluding manager fees and transaction costs including:

- (i) **Salaries and benefits** of FTE
- (ii) **General & administrative**: travel, supplies, staff education, publications and reference materials, etc.
- (iii) **Consulting** and other third party fees

FTE - Includes full time permanent salaried employees, include the FTE of long and short term contract individuals dedicated to your organization that are working onsite or working full-time for your fund on a project or in a role supervised by your staff. Do not include FTE at external consultants or service providers if they are not being supervised by your staff, even if they are dedicated to serving your organization.

Activity Definitions

1. Front Office consists of investment-decision making staff, including traders, analysts, portfolio managers and staff selecting and monitoring external managers, their immediate assistants and their management below the CIO level . Include third party fees for advice at the asset-class or security level such as manager search consultants, private equity consultants, and investment specific legal and due diligence fees that are not treated as transaction costs.

Do NOT include:

- (i) External manager fees. These are collected separately on the holdings tabs.
- (ii) Costs that relate to activities defined as Governance, Operations and Support in the table such as: board consultants, CIO, asset allocation and risk policy consultants, or other services (such as building, utilities and office services, information technology and human resources).

a. Board, CEO & assistants re: investments: Include only the proportion of the costs (fees paid to Board directors, travel, director insurance, CEO and CEO's direct assistants) equal to their proportion of time spent on investments and investment governance support. Exclude time spent on non-investment activities such as benefit administration, sales, marketing, new product development.

b. CIO, Investment strategy, asset allocation: Include 100% of CIO FTE and costs including his/her direct assistants, total fund asset allocation strategy, tactical deviations from the mix, economic political or other research, etc.

c. Risk management: Developing and implementing risk controls for operational and investment risk including surplus risk, factor exposures, credit, counterparty, etc. Excludes the cost of IT/IS risk systems. These belong in IT/IS.

d. Internal Audit: Independent review of business processes. Excludes external auditor fees. These belong in Finance, external reporting & tax

e. Responsible investing, corporate governance: Policy setting and coordination across asset classes for sustainable, socially and/or environmentally responsible investing, and for corporate governance.

f. Client account management: Client service & reporting related to investing client assets, including client Board meetings, strategic client advice (ALM, risk, client portfolio construction).

g. Custodial fees: should be reported gross before any reductions relating to securities lending or other revenues credited against fees.

h. Data, valuation & performance analytics: Valuation and performance measurement of securities, funds, portfolios, risk, compliance, client reporting and other analysis and reporting. Include costs of data, dealing with data vendors and cleaning data.

Appendix A - Data Summary - Enhanced Survey Definitions (page 2)

i. Investment operations: Listed security operations including trade settlement, custodial bank monitoring and reconciliation, cash management and corporate actions, private asset class, derivatives and swap administration, COO. If the COO or CFO is responsible for multiple activities (i.e., Valuations and performance analytics, investment operation and finance) then split their FTE between the activities based on time spent.

j. Compliance: Monitoring, training on and dealing with regulatory infractions. Includes securities and pension regulation. Excludes compliance related to benefit administration.

k. IT/IS systems: IT management and strategy, architecture, data center, database and application management and maintenance, development, user services, network, telecommunications, etc. Also include the costs of purchasing and maintaining the following systems/software applications: portfolio management, risk management, trade processing/order execution management, compliance monitoring, performance analytics, fund accounting system. Exclude the pro rata

l. Public relations and internal communication: External communication with entities such as regulators and media. Internal communication to staff. Excludes member and employer communication, marketing and sales.

m. Finance, external reporting & tax: Financial statements, external auditor fees, general accounting, budgeting, tax reporting, procurement and accounts payable. CFO. If the CFO or COO is responsible for multiple activities (i.e., finance and IT) then split their FTE between the activities based on time spent.

n. Legal services: General counsel, corporate secretary, legal counsel of any kind, even those specializing in real estate or private equity, paralegals, legal assistants and all FTE involved in legal analysis and advice. Investment related legal fees and costs, such as the legal fees to close private equity transactions, should be included under 'Front Office' if not treated as a transaction cost. Exclude amounts that pertain to non-investment activities such as benefit administration.

o. Human resources: Human resources staff and consulting, including recruitment, training, career development, induction, disciplinary action, developing HR policies and procedures, etc.
Exclude: Amounts that relate to non investment activities such as benefit administration and both severance and recruitment fees and activity specific training (these should be included in the Front Office Cost Centers table).

p. Building, utilities and office services: Building occupancy costs including rent, lease, amortization of leaseholds and depreciation of buildings, office services such as reception, mailroom, cleaning and maintenance, building insurance, utilities. Include satellite offices. Exclude the pro rata portion that relates to non-investment activities such as benefit administration, sales, marketing, new product development.

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 23rd 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.