

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

**New Zealand Superannuation Fund**



# Key takeaways

## Returns

- Differences in total returns reflect in large part home-market biases and the relative performance of currencies. So they are not the primary focus of this report.
- Your 5-year net total return was 13.0%. This was above the Global median of 7.8% and above the peer median of 8.2%.
- Your 5-year policy return was 9.8%. This was above the Global median of 7.6% and above the peer median of 7.4%.

## Value added

- Your 5-year net value added was 3.2%. This was above the Global median of 0.2% and above the peer median of 0.9%.

## Cost

- Your investment cost of 35.6 bps was below your benchmark cost of 41.8 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was low cost because you had a lower cost implementation style.
- Thank you for endorsing the ILPA reporting template. We're hopeful that widespread adoption of the template will result in better benchmarking of private equity costs.

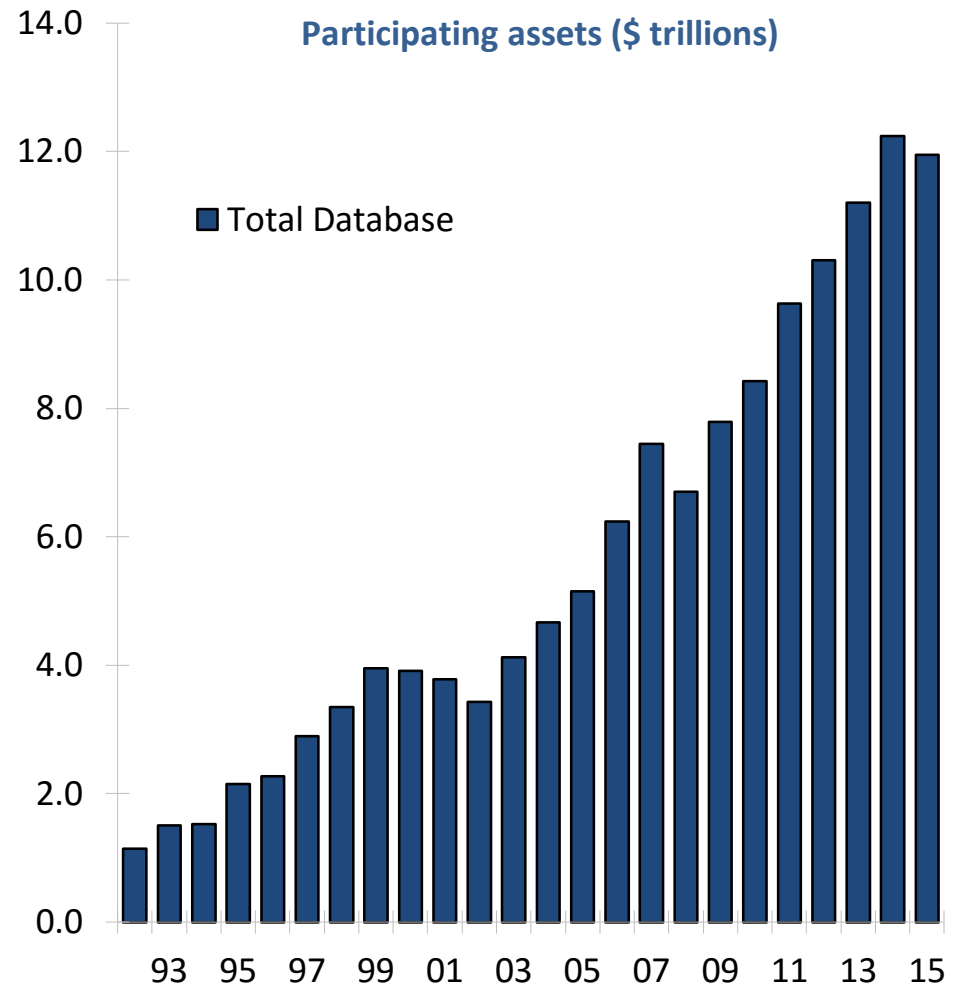
## Risk

- Your asset risk of 12.7% was above the Global median of 8.5%. Your tracking error of 1.4% was above the Global median of 1.2%.

## This benchmarking report compares your cost and return performance to the 245 funds in CEM's extensive pension database.

- 135 U.S. pension funds participate. The median U.S. fund had assets of \$11.0 billion and the average U.S. fund had assets of \$29.6 billion. Total participating U.S. assets were \$4.0 trillion.
- 63 Canadian funds participate with assets totaling \$1,192 billion.
- 41 European funds participate with aggregate assets of \$3.5 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 6 Asia-Pacific funds participate with aggregate assets of \$262 billion. Included are funds from Australia, New Zealand, China and South Korea.
- 2 Gulf region funds participate.

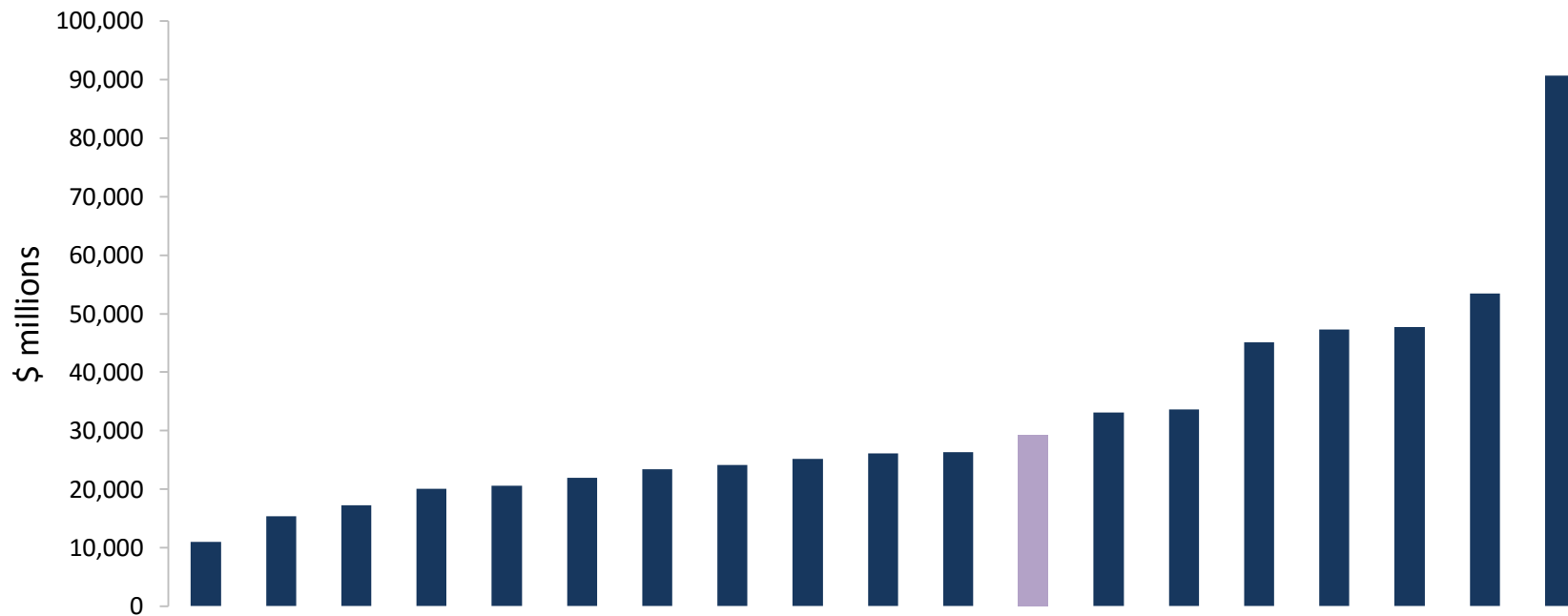
The most meaningful comparisons for your returns and value added are to the Global universe.



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

## Peer group for New Zealand Superannuation Fund

- 19 global sponsors from \$11 billion to \$91 billion
- Median size of \$26 billion versus your \$29 billion



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

## 1. Returns

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

## 2. Net value added

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

## 3. Costs

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

## 4. Cost effectiveness

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

## 5. Risk

How much risk was taken to obtain your value added?  
What is the risk of your policy mix?

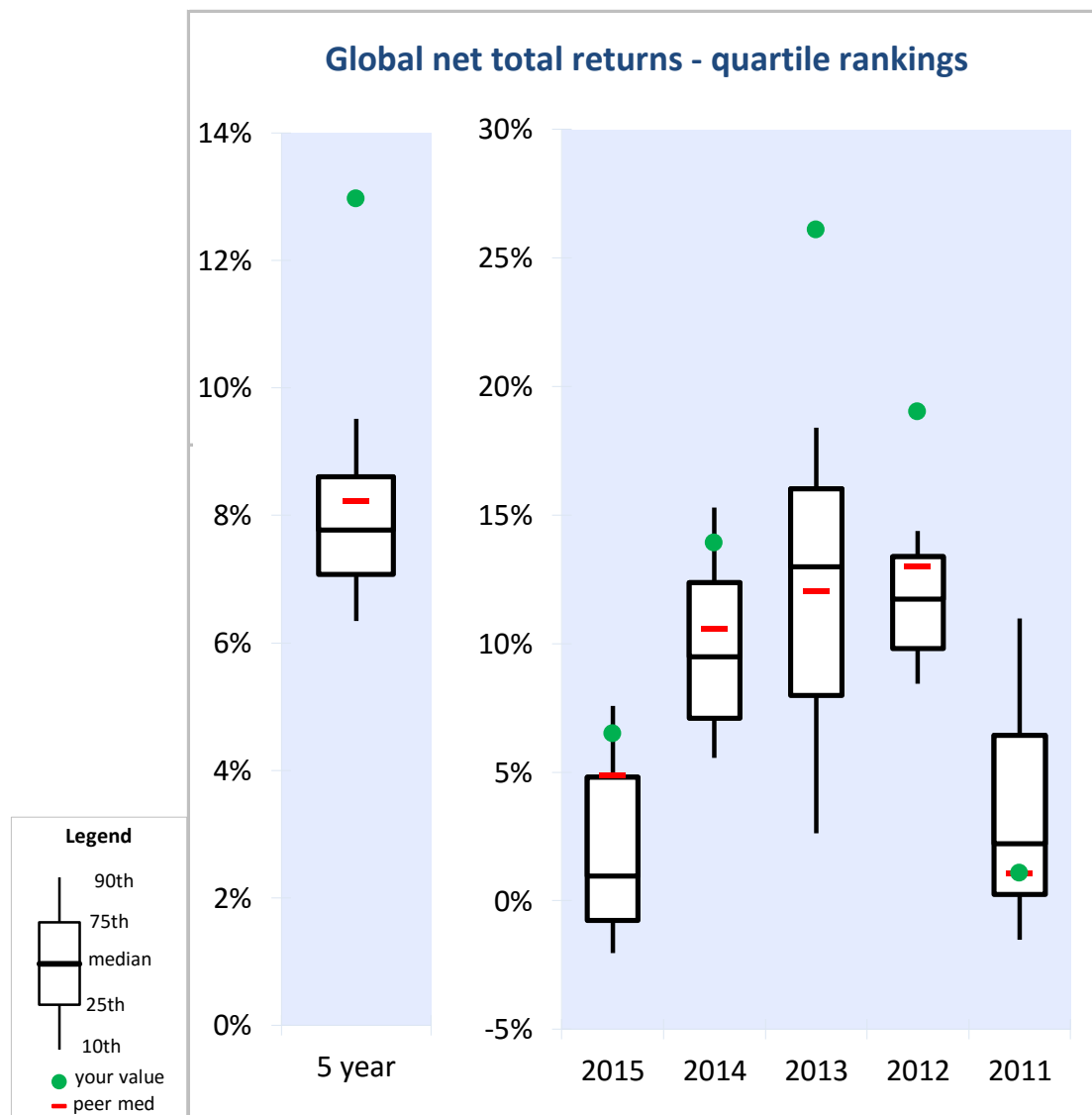
## Your 5-year net total return of 13.0% was above both the Global median of 7.8% and the peer median of 8.2%.

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

	Your 5-year
Net total fund return	13.0%
- Policy return	9.8%
= Net value added	3.2%

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).

*Returns are reported in local currency.*



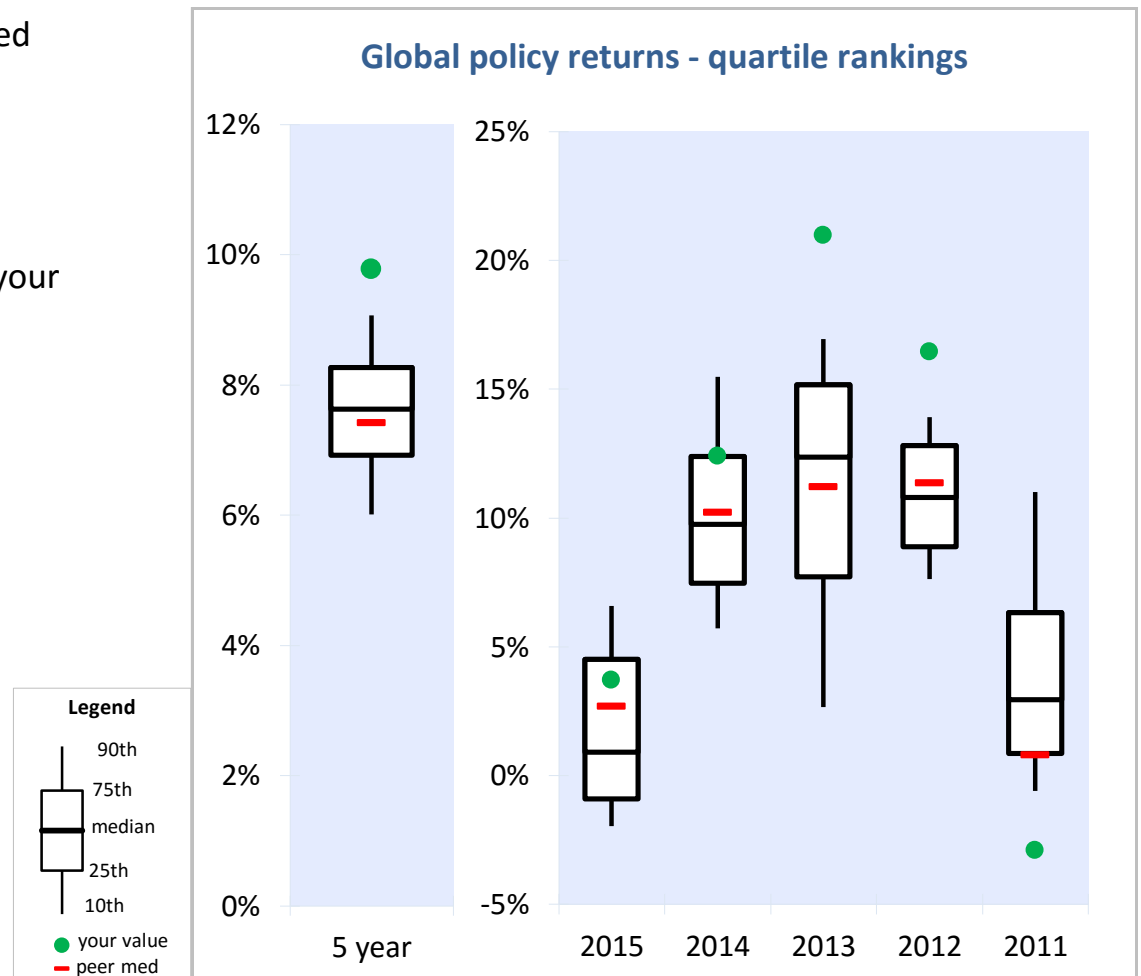
## Your 5-year policy return of 9.8% was above both the Global median of 7.6% and the peer median of 7.4%.

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

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

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

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



To enable fairer comparisons, the policy returns of all participants with policy weight in private equity were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. Refer to the Research section pages 6-7 for details.

**Differences in policy return are caused by differences in policy mix and benchmarks. At the end of 2015 your policy mix compared to your peers and the Global universe as follows:**

- Your fund had more stock than the peer and Global averages (your 80% versus a peer average of 44% and a Global average of 44%).

**Policy asset mix**

Asset class	Your fund	Peer avg.	Global avg.
Europe & Far East Stock	5%	3%	4%
U.S. Stock	0%	7%	13%
Emerging Market Stock	10%	4%	3%
Global Stock	65%	18%	12%
Other Stock <sup>1</sup>	0%	12%	11%
<b>Total Stock</b>	<b>80%</b>	<b>44%</b>	<b>44%</b>
Long Bonds	0%	9%	12%
Capital Indexed Bonds	0%	5%	2%
Global Bonds	20%	7%	3%
Cash	0%	-3%	0%
Other Fixed Income <sup>1</sup>	0%	19%	22%
<b>Total Fixed Income</b>	<b>20%</b>	<b>36%</b>	<b>40%</b>
Hedge Funds	0%	6%	3%
Real Assets <sup>1</sup>	0%	10%	9%
Private Equity	0%	5%	5%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

1. Other stock includes Canadian and ACWIxUS stock. Other fixed income includes Canada, Euro and U.S., Europe & Far East bonds. Real assets includes commodities, natural resources, infrastructure, REITS and real estate.



## Your fund uses derivatives, to gain exposure to some asset classes.

For the purposes of comparing your costs and value added to other participants, CEM looks at investments before the impact of derivatives. This allows us to compare, for example, the cost of the global stock assets in your plan to similar assets in your peers' plans. Our report will reflect your assets as they appear in the middle column - before derivatives.

### Asset mix

Asset class	Policy mix	Actual weights	
		excluding derivatives	including derivatives
Europe & Far East Stock	5%	5%	5%
Emerging Market Stock	10%	6%	9%
Global Stock	65%	31%	54%
<b>Total Stock</b>	<b>80%</b>	<b>42%</b>	<b>68%</b>
U.S. Bonds	0%	0%	0%
Fixed Income - Emerging	0%	0%	0%
Global Bonds	20%	12%	12%
Cash	0%	24%	-5%
<b>Total Fixed Income</b>	<b>20%</b>	<b>36%</b>	<b>8%</b>
Hedge Funds	0%	4%	6%
Natural Resources	0%	6%	6%
Infrastructure	0%	4%	4%
REITs	0%	2%	2%
Real Estate ex-REITs	0%	1%	1%
Private Equity	0%	5%	6%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

## Net value added is the component of total return from active management. Your 5-year net value added was 3.2%.

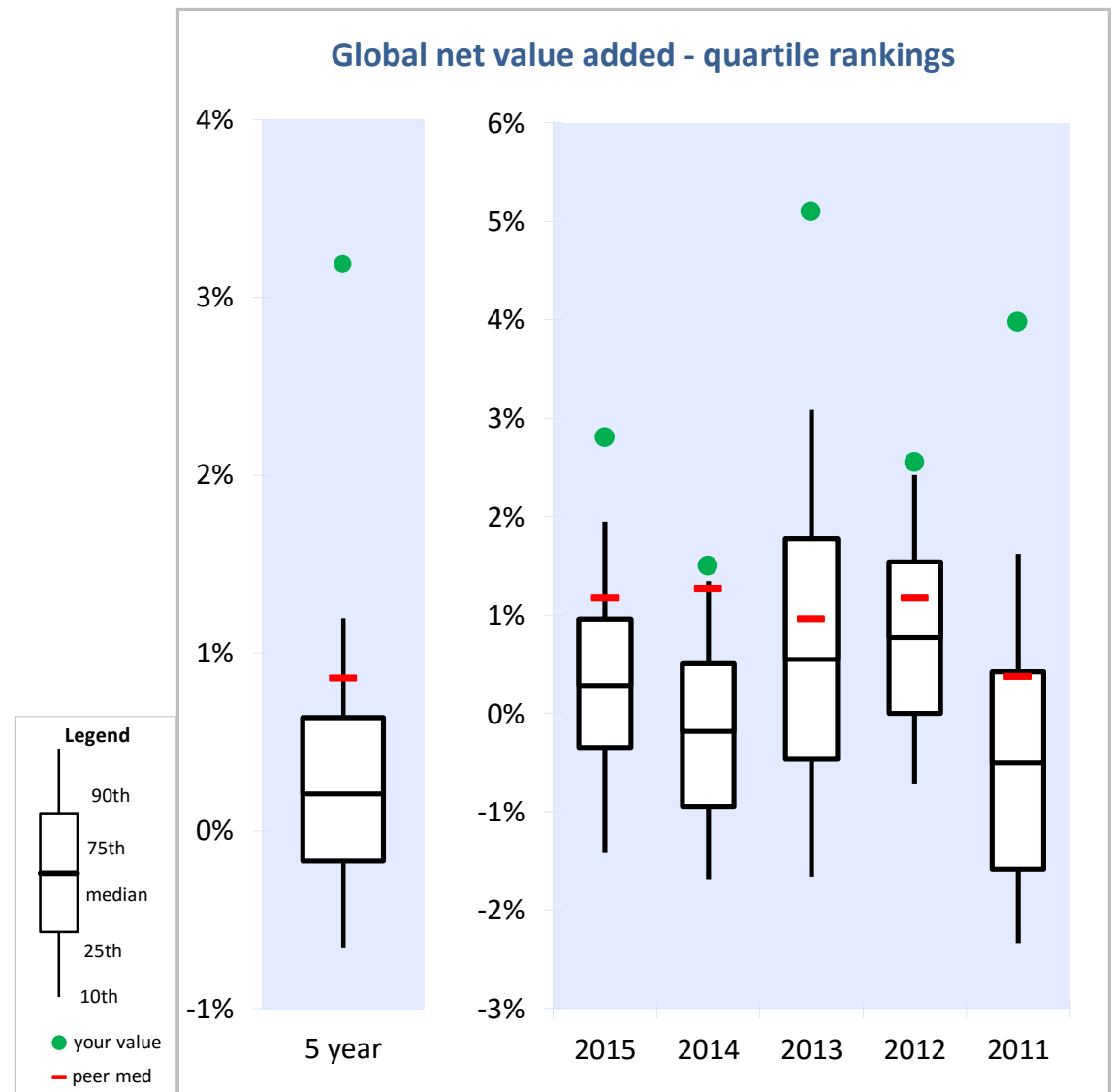
Net value added equals total net return minus policy return.

### Value added for New Zealand Superannuation Fund

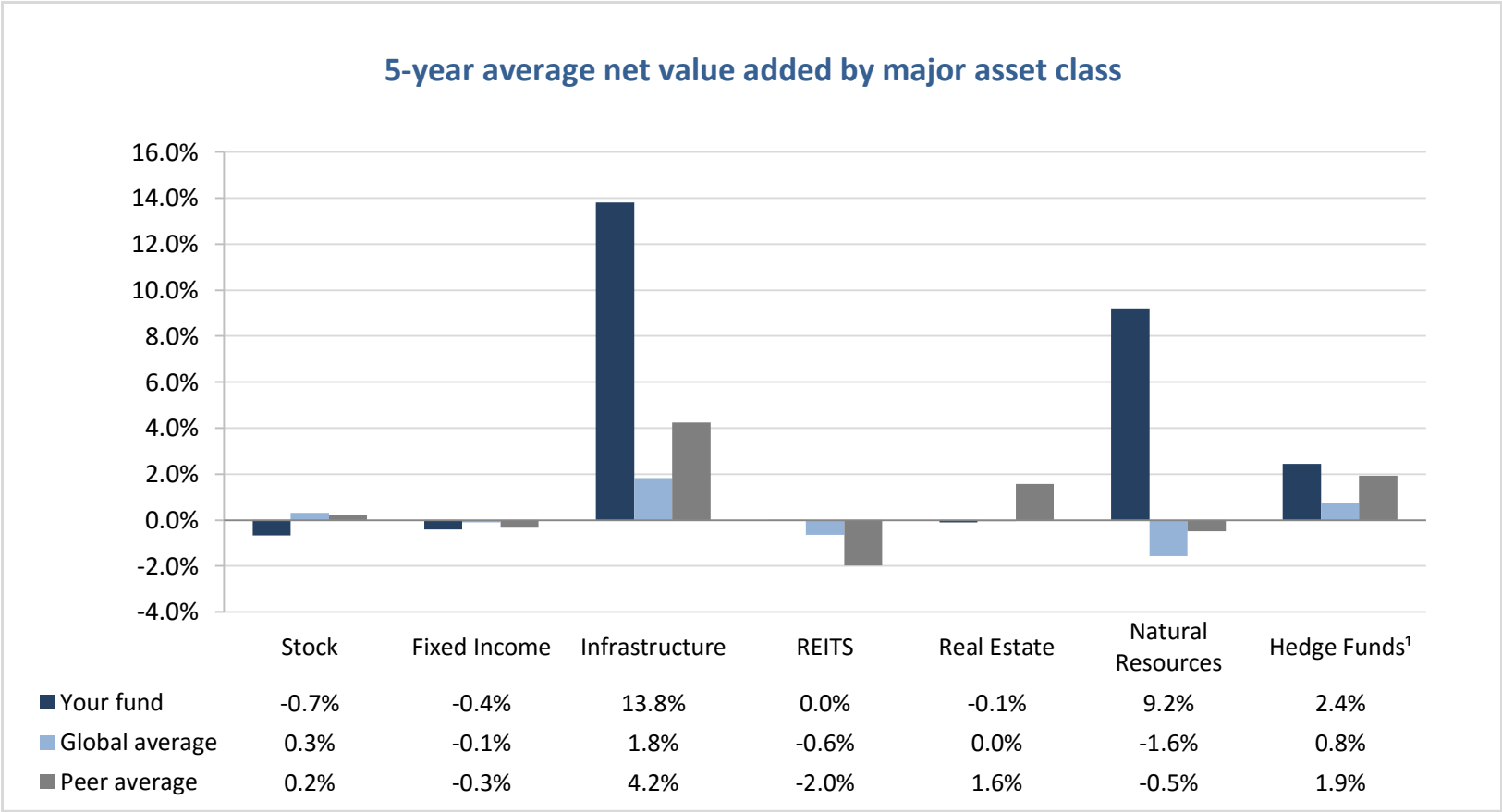
Year	Net Return	Policy Return	Net value Added
2015	6.5%	3.7%	2.8%
2014	13.9%	12.4%	1.5%
2013	26.1%	21.0%	5.1%
2012	19.0%	16.5%	2.5%
2011	1.1%	(2.9%)	4.0%
5-year	13.0%	9.8%	3.2%

Your 5-year net value added of 3.2% compares to a median of 0.9% for your peers and 0.2% for the Global universe.

Your 3.2% 5-year value added translates into approximately \$4.8 billion of cumulative value added over 5 years, or \$4.5 billion more than if you had earned the Global median of 0.2%.

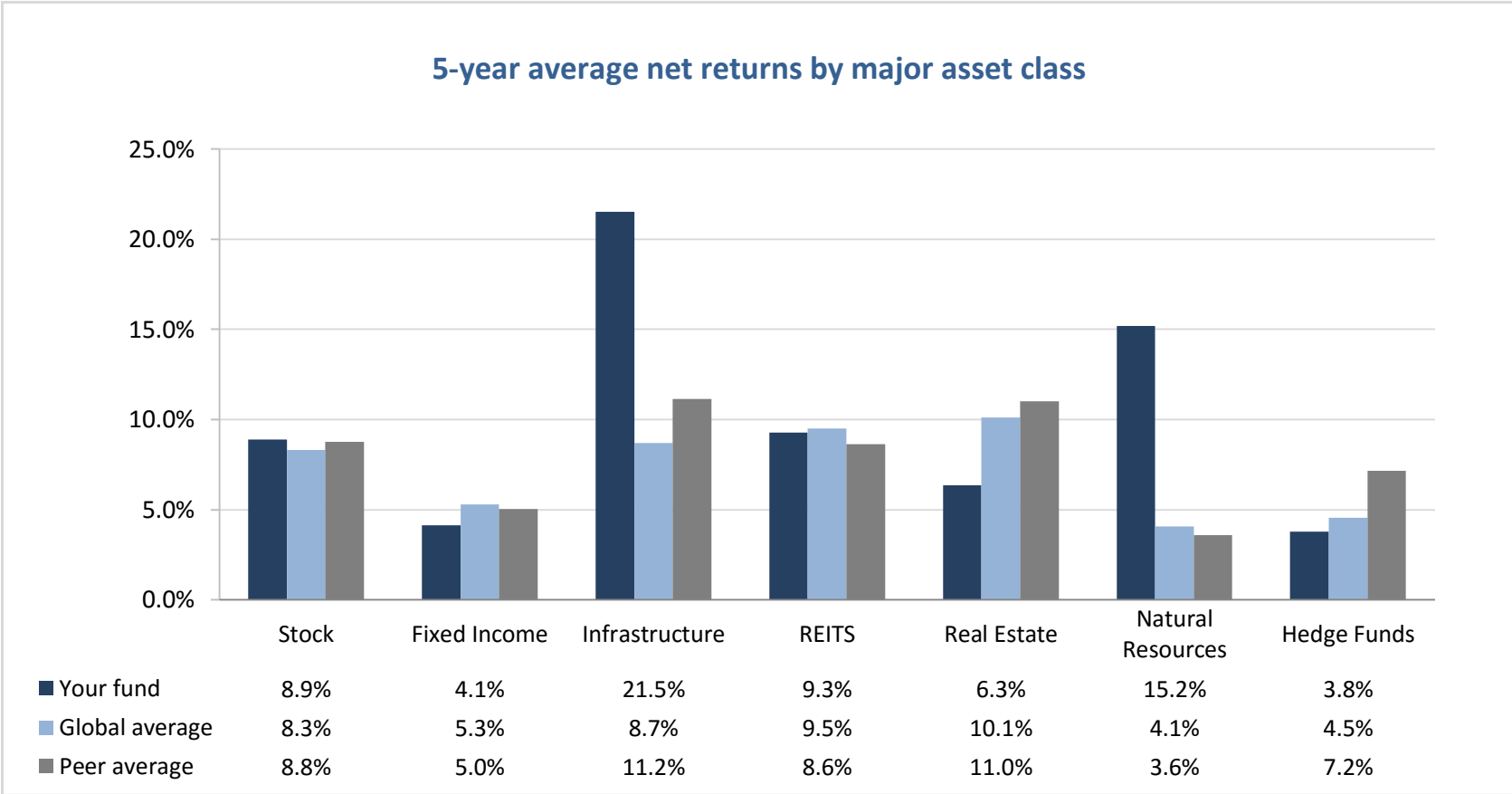


# You had positive 5-year net value added in Infrastructure, Natural Resources and Hedge Funds.



1. It is also useful to compare total returns for hedge funds. Your 5-year return of 3.8% for hedge funds was below the Global average of 4.5%.

# You had higher 5-year net returns in Stock, Infrastructure and Natural Resources relative to the Global average.



## Your investment costs were \$104.6 million or 35.6 basis points in 2015.

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 <sup>2</sup>		
Europe & Far East Stock	19	1,061	415		2,179		3,673	
Stock - Emerging			765	774	3,628		5,168	
Stock - Global			1,400	1,980			3,380	
Fixed Income - US	25						25	
Fixed Income - Emerging			74	149			223	
Fixed Income - Global			848	1,659			2,507	
Cash		4,416					4,416	
Hedge Funds - Direct			1,650		15,657	785	18,092	
REITs			85	171			256	
Real Estate - LPs			890		2,856		3,746	
Infrastructure		273	1,753		5,984	12,695 <sup>2</sup>	8,010	
Infrastructure - LPs			168		4,117		4,285	
Natural Resources			1,835		4,373		6,209	
Diversified Private Equity			937		6,815		7,752	
Diversified Priv.Eq. - Fund of Funds			230		1,559 <sup>1</sup>		1,789	
Other Private Equity		2,350	1,046		4,370		7,766	
Overlay Programs		6,654					6,654	
Total excluding private asset performance fees							83,948	28.6bp
<b>Oversight, custodial and other costs <sup>3</sup></b>								
Oversight of the fund							14,665	
Trustee & custodial							5,595	
Audit							374	
Total oversight, custodial & other costs							20,635	7.0bp
Total investment costs (excl. transaction costs & private asset performance fees)							104,583	35.6bp

### Footnotes

<sup>1</sup> Default underlying costs were added to fund of funds.

The defaults added were: Diversified Priv.Eq. 165 bps base fees refer to Appendix A for full details.

<sup>2</sup> 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.

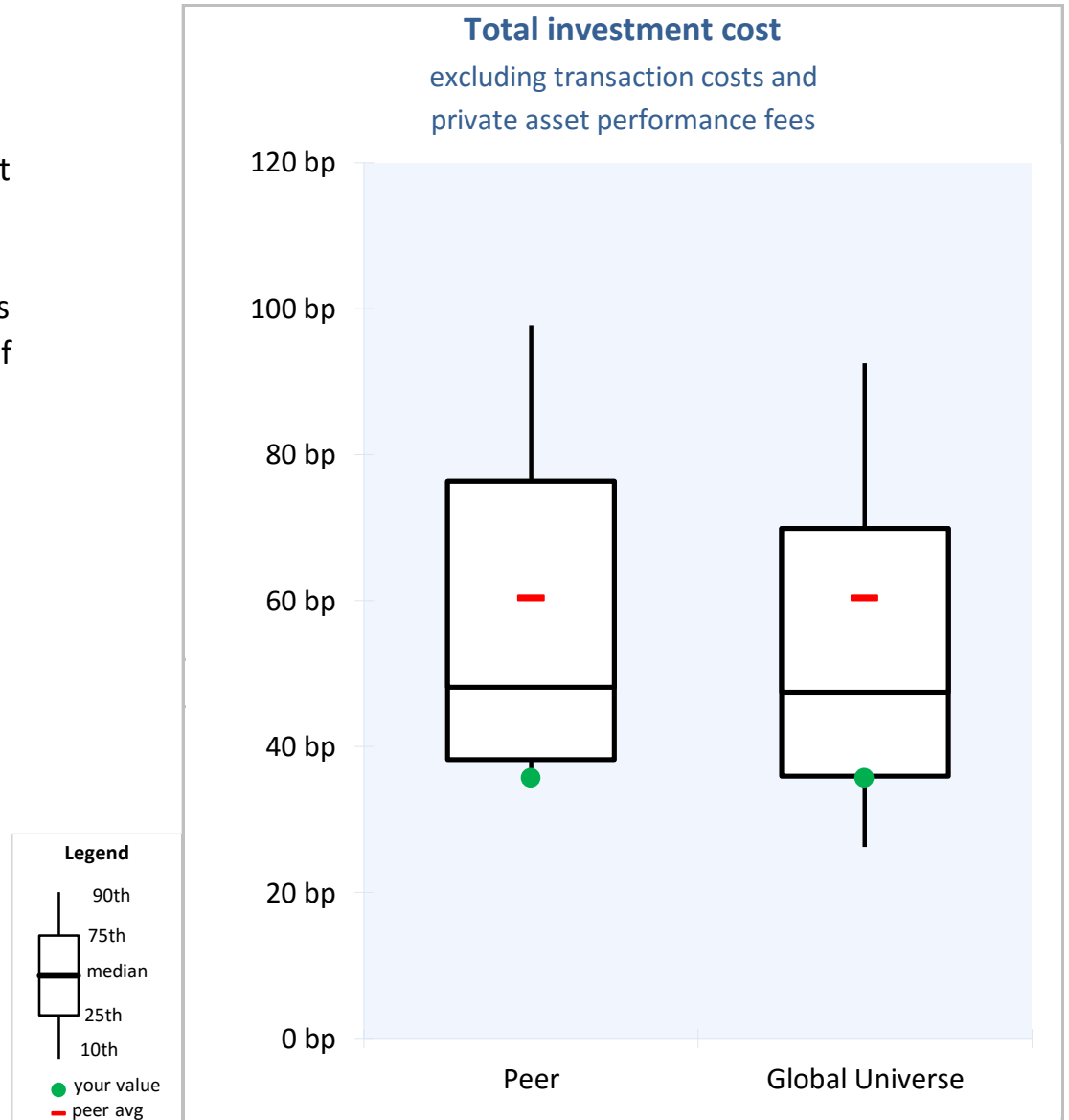
<sup>3</sup> Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.

## Your total investment cost of 35.6 bps was below the peer median of 48.2 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 your fund's assets at the end of 2015 versus a peer average of 23%.
- Fund size. Bigger funds have advantages of scale.

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



## Total spending can be broken down into the expected cost to passively achieve asset class exposures (using proxies for private assets) and incremental spending on active management.

### Breakdown of cost (in bps, relative to total fund size) by strategy type:

	Your Fund	Peer			
		Average	25%	Median	75%
Cost to achieve actual asset mix passively	11.3	8.9	7.8	8.3	9.6
<u>Incremental costs:</u>					
Public Market active strategies:					
Internal	0.2*	0.1	0.0	0.0	0.2
External	2.0	13.3	8.7	12.8	17.0
Unfunded active strategies: Internal	1.1	0.2	0.0	0.0	0.2
Unfunded active strategies: External	0.0	0.2	0.0	0.0	0.0
Hedge Funds	6.0	18.0	2.0	15.6	31.8
Private Market active strategies:					
Internal	0.7	0.6	0.0	0.0	0.7
External	10.1	18.3	12.2	16.2	24.2
Differences in cash & passive management costs	0.3	0.1	-0.2	-0.1	0.2
Differences in oversight custodial & other costs	3.9	0.8	-0.6	0.1	1.8
<b>Total Cost</b>	<b>35.6</b>	<b>60.4</b>		<b>48.2</b>	

\*All costs shown are relative to total assets, not the assets of the strategy. In this case, 0.2 bp does not reflect the cost of internal public markets mandates relative to the assets in those mandates. It reflects that of your entire 35.6 bp cost, 0.2 of those 35.6 bp were spent on public market internal active strategies.

## Overall you spent less than your peers. In particular, you spent less on external active strategies and hedge funds.

### Breakdown of cost (in bps, relative to total fund size) by strategy type:

	Your Fund	Peer Average	Notes
Cost to achieve actual asset mix passively	11.3	8.9	Reflects asset mix differences
Public Market active strategies:			
Internal	0.2	0.1	
External	2.0	13.3	External active public market investing represents 4% of your portfolio versus 43% of the average peer's portfolio.
Unfunded active strategies: Internal	1.1	0.2	
Unfunded active strategies: External	0.0	0.2	
Hedge Funds	6.0	18.0	Hedge Funds represent 4% of your portfolio and 7% of the average peer's portfolio. 29% of the average peer's portfolio was in fund of funds. Benchmark cost analysis suggests your costs were lower at the line-item level.
Private Market active strategies:			
Internal	0.7	0.6	
External	10.1	18.3	External active private markets investments represent 13% of your portfolio (under a quarter of which is private equity) and 11% of the average peer's portfolio (over half of which is private equity). Benchmark cost analysis suggests your costs were slightly higher at the line-item level.
Differences in cash & passive management costs	0.3	0.1	
Differences in oversight custodial & other costs	3.9	0.8	
<b>Total Cost</b>	<b>35.6</b>	<b>60.4</b>	



## Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was low cost by 6.2 basis points in 2015.

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

Your total cost of 35.6 bp was below your benchmark cost of 41.8 bp. Thus, your cost savings was 6.2 bp.

### Your cost versus benchmark

	\$000s	basis points
Your total investment cost	104,583	35.6 bp
Your benchmark cost	122,636	41.8 bp
Your excess cost	(18,054)	(6.2) bp

## Your fund was low cost because you had a lower cost implementation style.

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less fund of funds	(2,523)	(0.9)
• Less external active management (more lower cost passive and internal)	(22,518)	(7.7)
• More overlays	3,843	1.3
• Other style differences	1,845	0.6
	<u>(19,352)</u>	<u>(6.6)</u>
2. Paying more than peers for some services		
• External investment management costs	(11,129)	(3.8)
• Internal investment management costs	1,028	0.4
• Oversight, custodial & other costs	11,400	3.9
	<u>1,299</u>	<u>0.4</u>
<b>Total savings</b>	<b>(18,054)</b>	<b>(6.2)</b>

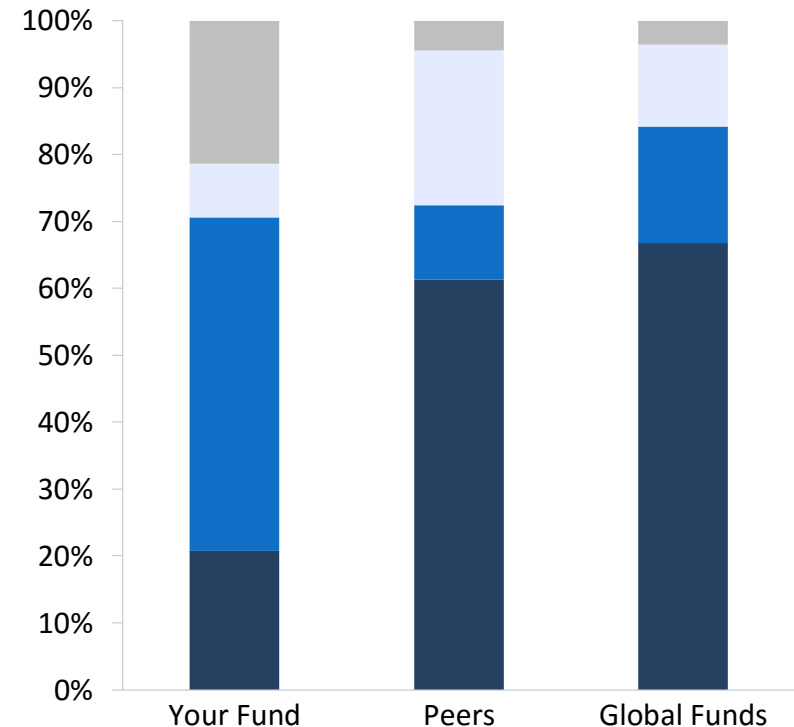
## Differences in cost performance are often caused by differences in implementation style.

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

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

- External active management because it tends to be much more expensive than internal or passive management. You used less external active management than your peers (your 21% versus 61% for your peers).
- Within external active holdings, fund of funds usage because it is more expensive than direct fund investment. You had less in fund of funds. Your 1% of hedge funds, real estate and private equity in fund of funds compared to 14% for your peers.

Implementation style<sup>1</sup>



■ Internal passive	21%	4%	4%
■ Internal active	8%	23%	12%
■ External passive	50%	11%	17%
■ External active	21%	61%	67%

1. The graph above estimates the impact of derivatives only for your fund.

# Differences in implementation style saved you 6.6 bp relative to your peers.

## Calculation of the cost impact of differences in implementation style

Asset class	Your avg holdings in \$mils (A)	% External active			Premium vs passive & internal <sup>1</sup> (C)	Cost/ (savings) \$000s bps (A X B X C)		
		You	Peer average	More/ (less) (B)				
Europe & Far East Stock	1,357	47.3%	51.2%	(3.9%)	45.4 bp	(242)		
Stock - Emerging	1,658	21.8%	65.0%	(43.2%)	57.6 bp	(4,123)		
Stock - Global	9,231	0.0%	58.2%	(58.2%)	31.2 bp	(16,773)		
Fixed Income - US	35	0.0%	58.8%	(58.8%)	Insufficient <sup>2</sup>	0		
Fixed Income - Emerging	51	0.0%	65.2%	(65.2%)	48.7 bp	(160)		
Fixed Income - Global	3,467	0.0%	30.9%	(30.9%)	26.6 bp	(2,855)		
REITs	588	0.0%	33.5%	(33.5%)	Insufficient <sup>2</sup>	0		
Infrastructure	1,442	86.6%	87.3%	(0.7%)	83.4 bp	(82)		
Partnerships, as a proportion of external:	1,249	19.8%	36.6%	(16.8%)	64.8 bp	(1,359)		
Real Estate ex-REITs	189	100.0%	70.1%	29.9%	71.4 bp	403		
Partnerships, as a proportion of external:	189	100.0%	27.8%	72.2%	46.0 bp	626		
Natural Resources	1,856	100.0%	58.1%	41.9%	26.3 bp	2,047		
Diversified Private Equity	487	100.0%	99.4%	0.6%	Insufficient <sup>2</sup>	0		
Other private equity	1,342	42.1%	Excluded		65.6 bp	0		
Impact of less/more external active vs. lower cost styles						(22,518)	(7.7) bp	
		<u>Fund of funds % of LPs</u>			<u>vs. direct LP<sup>1</sup></u>			
Hedge Funds	1,142	0.0%	28.8%	(28.8%)	62.5 bp	(2,054)		
Infrastructure - LPs	247	0.0%	7.9%	(7.9%)	Insufficient <sup>2</sup>	0		
Real Estate ex-REITs - LPs	189	0.0%	2.7%	(2.7%)	Insufficient <sup>2</sup>	0		
Diversified Private Equity - LPs	487	10.7%	19.4%	(8.7%)	110.7 bp	(469)		
Impact of less/more fund of funds vs. direct LPs						(2,523)	(0.9) bp	
		<u>Overlays and other</u>						
Impact of higher use of portfolio level overlays						3,843	1.3 bp	
Impact of mix of internal passive, internal active, and external passive <sup>3</sup>						1,845	0.6 bp	
Total impact of differences in implementation style						(19,352)	(6.6) bp	

### Footnotes

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

# The net impact of paying more/less for external asset management costs saved 3.8 bps.

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

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A x B)
		Your Fund	Peer median	More/ (less) (B)	
Europe & Far East Stock - Active	641	40.5	51.6	(11.1)	(715)
Stock - Emerging - Passive	1,296	8.7	13.0	(4.3)	(558)
Stock - Emerging - Active	362	111.6	70.6	41.0	1,485
Stock - Global - Passive	9,231	3.7	5.8	(2.1)	(1,960)
Fixed Income - Emerging - Passive	51	44.1	Insufficient		
Fixed Income - Global - Passive	3,467	7.2	9.8	(2.6)	(885)
Hedge Funds - Active	1,142	158.5 <sup>1</sup>	255.1	(96.6)	(11,030)
Infrastructure - Active	1,002	77.2 <sup>1</sup>	77.2	0.0	0
Infrastructure - Limited Partnership	247	173.5 <sup>1</sup>	142.0	31.5	778
REITs - Passive	588	4.4	11.9*	(7.5)	(441)
Real Estate ex-REITs - Limited Partnership	189	198.6	125.6	73.0	1,377
Natural Resources - Active	1,856	33.4	33.4	0.0	0
Diversified Private Equity - Active	435	178.2	167.3	10.9	476
Diversified Private Equity - Fund of Fund	52	344.0	277.9	66.1	344
Other Private Equity - Active	565	95.9	Excluded		
<b>Total impact of paying more/less for external management</b>					<b>(11,129)</b>
<b>Total in bps</b>					<b>(3.8) bp</b>

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

'Excluded' indicates that the asset class was excluded from this analysis due to comparability concerns with peers.

\*Universe median used as peer data was insufficient.

<sup>1</sup> 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 (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less) (B)	
Europe & Far East Stock - Passive	111	1.7	1.7	0.0	0
Europe & Far East Stock - Active	605	17.5	6.5	11.1	669
Fixed Income - US - Passive	35	7.1	0.5*	6.5	23
Infrastructure - Active	193	14.1	17.5	(3.4)	(66)
Other Private Equity - Active	777	30.2	Excluded		
	<i>Notional</i>				
Derivatives/Overlays - Currency - Hedge	18,242	0.3	0.3	(0.0)	(1)
Derivatives/Overlays - Passive Beta	7,673	3.6	3.5	0.1	88
Derivatives/Overlays - Other	362	9.3	0.6	8.7	315
Total impact of paying more/less for internal management					1,028
Total in bps					0.4 bp

'Excluded' indicates that the asset class was excluded from this analysis due to comparability concerns with peers.

\*Universe median used as peer data was insufficient.

## The net impact of differences in oversight, custodial & other costs added 3.9 bps.

### Cost impact of differences in oversight, custodial & other costs

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your fund	Peer median	More/ (less) (B)	
Oversight	29,347	5.0	1.6	3.4	10,034
Consulting	29,347	0.0	0.3	(0.3)	(940)
Custodial	29,347	1.9	0.9	1.0	2,939
Audit	29,347	0.1	0.1	0.0	142
Other	29,347	0.0	0.3	(0.3)	(775)
<b>Total</b>					<b>11,400</b>
<b>Total in bps</b>					<b>3.9 bp</b>

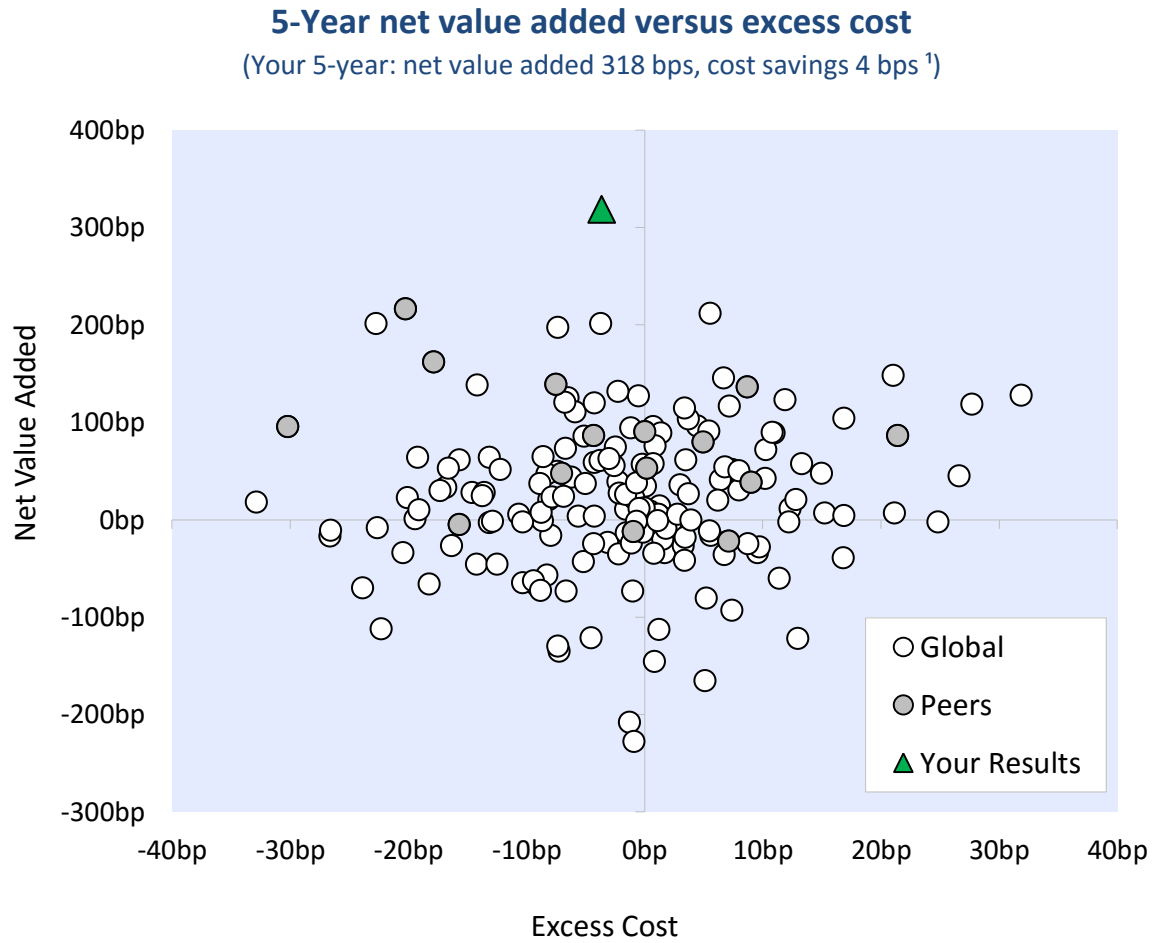
## In summary, your fund was low cost because you had a lower cost implementation style.

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less fund of funds	(2,523)	(0.9)
• Less external active management (more lower cost passive and internal)	(22,518)	(7.7)
• More overlays	3,843	1.3
• Other style differences	1,845	0.6
	<u>(19,352)</u>	<u>(6.6)</u>
2. Paying more than peers for similar services		
• External investment management costs	(11,129)	(3.8)
• Internal investment management costs	1,028	0.4
• Oversight, custodial & other costs	11,400	3.9
	<u>1,299</u>	<u>0.4</u>
<b>Total savings</b>	<b>(18,054)</b>	<b>(6.2)</b>



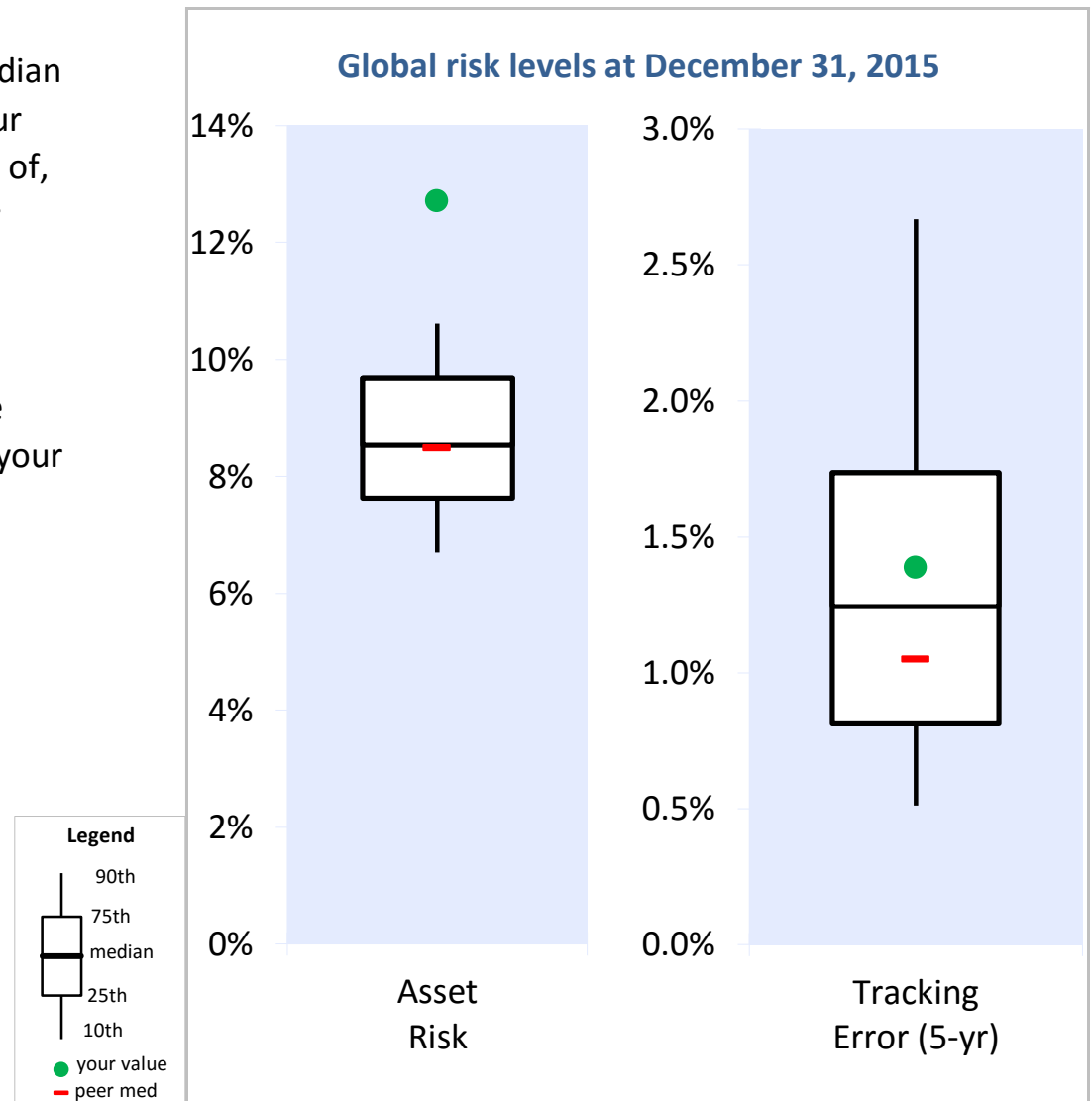
# Your 5-year performance placed in the positive value added, low cost quadrant of the cost effectiveness chart.



## Comparison of risk levels

Your asset risk of 12.7% was above the Global median of 8.5%. 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.

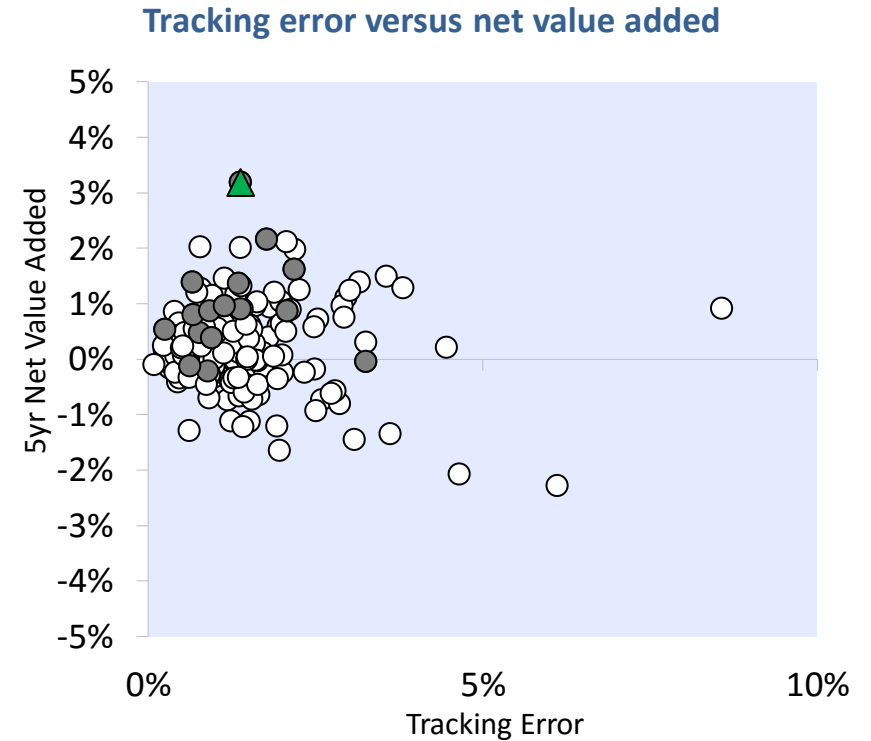
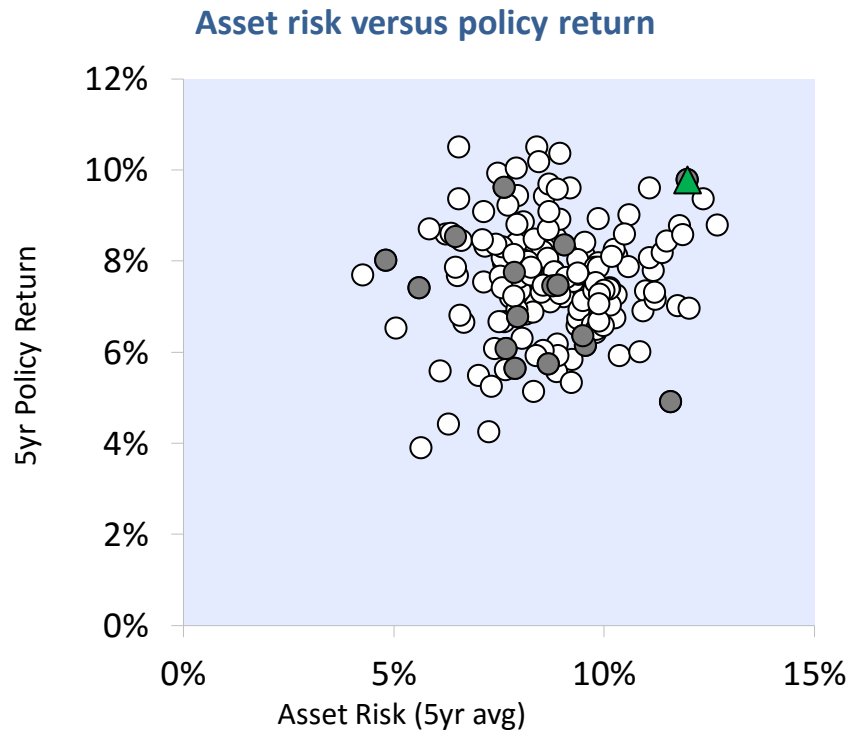
Your tracking error of 1.4% was above the Global median of 1.2%. Tracking error is the risk of active management. It equals the standard deviation of your annual net value added.



# During the 5-year period ending 2015, Global funds were rewarded for taking asset risk. More risk resulted in better performance.

Higher asset risk was associated with higher policy returns.

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



○ Global      ● Peers      ▲ You

# Summary of key takeaways

## Returns

- Differences in total returns reflect in large part home-market biases and the relative performance of currencies. So they are not the primary focus of this report.
- Your 5-year net total return was 13.0%. This was above the Global median of 7.8% and above the peer median of 8.2%.
- Your 5-year policy return was 9.8%. This was above the Global median of 7.6% and above the peer median of 7.4%.

## Value added

- Your 5-year net value added was 3.2%. This was above the Global median of 0.2% and above the peer median of 0.9%.

## Cost and cost effectiveness

- Your investment cost of 35.6 bps was below your benchmark cost of 41.8 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was low cost because you had a lower cost implementation style.

## Risk

- Your asset risk of 12.7% was above the Global median of 8.5%. Your tracking error of 1.4% was above the Global median of 1.2%.