

**Investment**  
**Cost Effectiveness Analysis**  
(for the 5-year period ending December 31, 2018)

**New Zealand Superannuation Fund**



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# 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 10.0%. This was above the Global median of 6.0% and above the peer median of 6.8%.
- Your 5-year policy return was 7.4%. This was above the Global median of 6.1% and above the peer median of 6.3%.

## Value added

- Your 5-year net value added was 2.6%. This was above the Global median of 0.0% and above the peer median of 0.4%.

## \$ Contribution versus median performance

- Your fund is approximately \$4.7 billion better off than if it had earned the Global median value added of 0.0%

## Cost

- Your investment cost of 38.7 bps was below your benchmark cost of 40.7 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was slightly low cost because you had a lower cost implementation style. These savings were mostly offset because you paid more than peers for some services.

## Risk

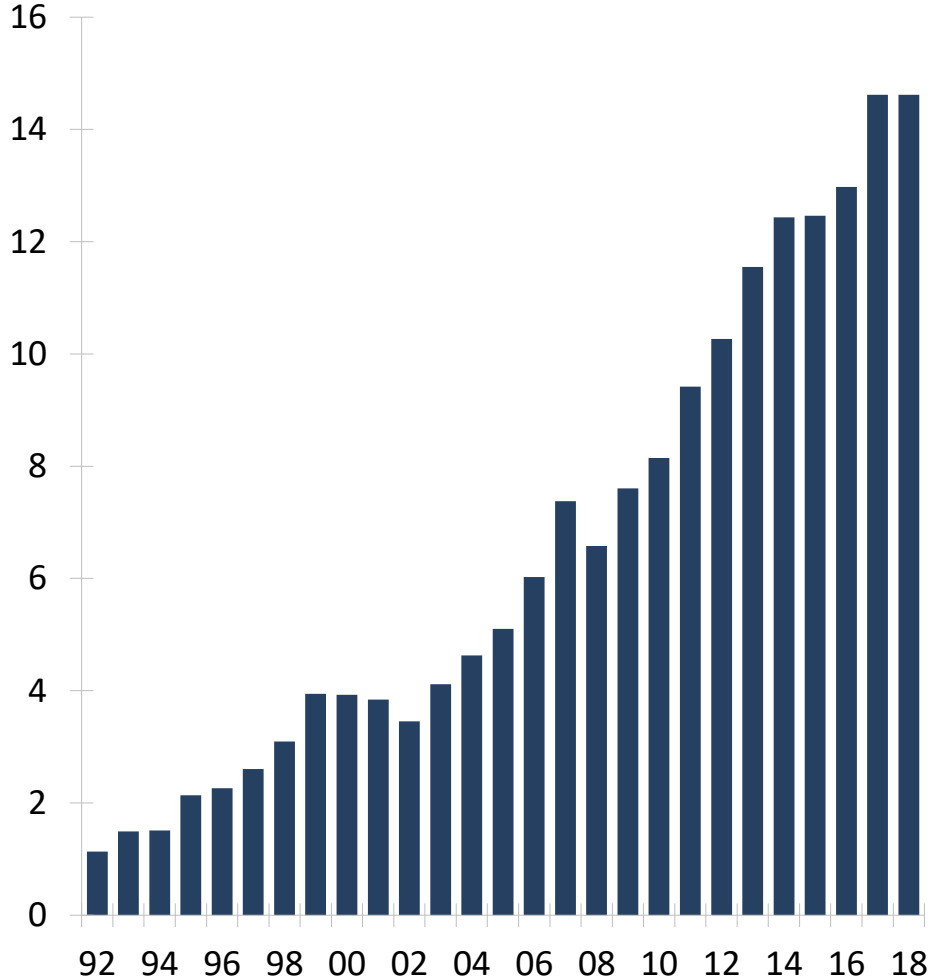
- Your asset risk of 12.7% was above the Global median of 9.0%.

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

- 167 U.S. pension funds participate. The median U.S. fund had assets of \$12.5 billion and the average U.S. fund had assets of \$35.0 billion. Total participating U.S. assets were \$5.9 trillion.
- 78 Canadian funds participate with assets totaling \$2.2 trillion.
- 79 European funds participate with aggregate assets of \$5.1 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 \$1,482.8 trillion. Included are funds from Australia, New Zealand, China and South Korea.

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

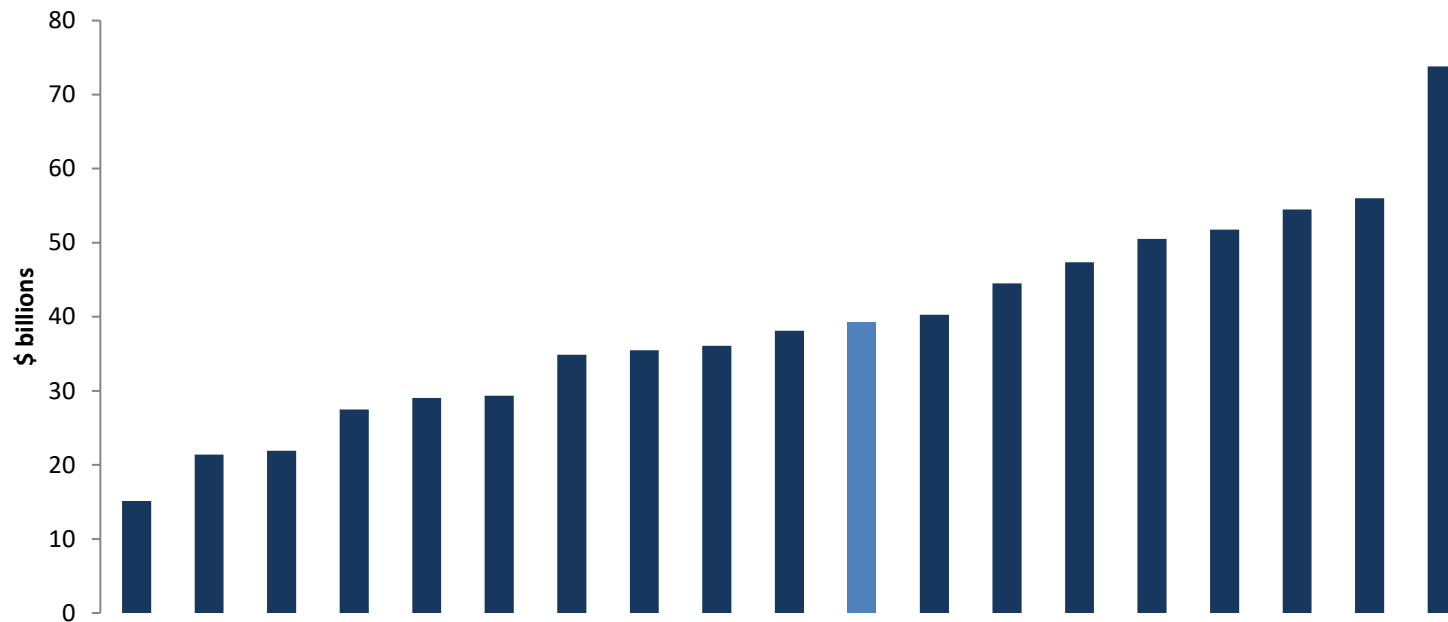
Participating assets (\$ trillions)



# 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 \$15.1 billion to \$73.8 billion
- Median size of \$38.1 billion versus your \$39.3 billion



## Your 5-year net total return of 10.0% was the second highest in our global universe.

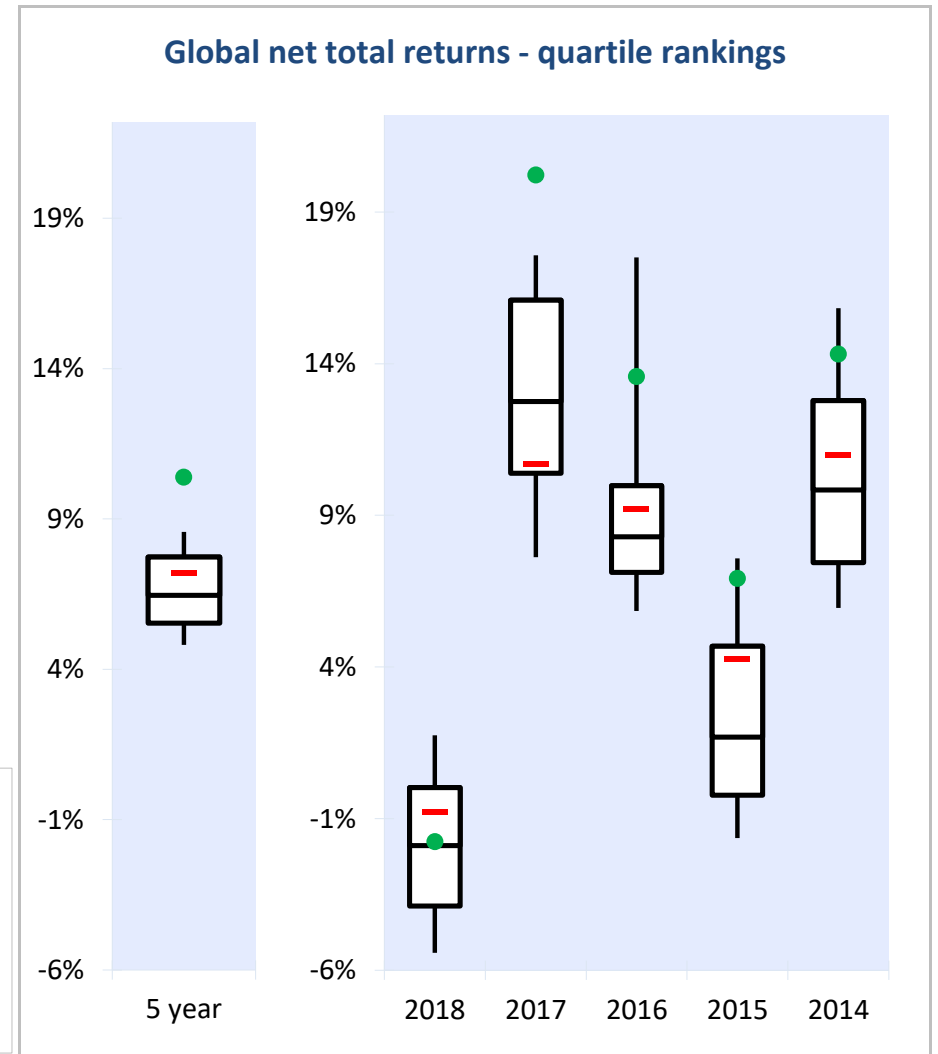
Total returns, by themselves, provide little insight into the reasons behind relative performance. Therefore, we separate total return into its more meaningful components: policy return and value added.

	Your 5-year
Net total fund return	10.0%
- Policy return	7.4%
= Net value added	2.6%

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

The 5-year global median was 6.0% and the 5-year peer median was 6.8%.

*Returns are reported in local currency.*



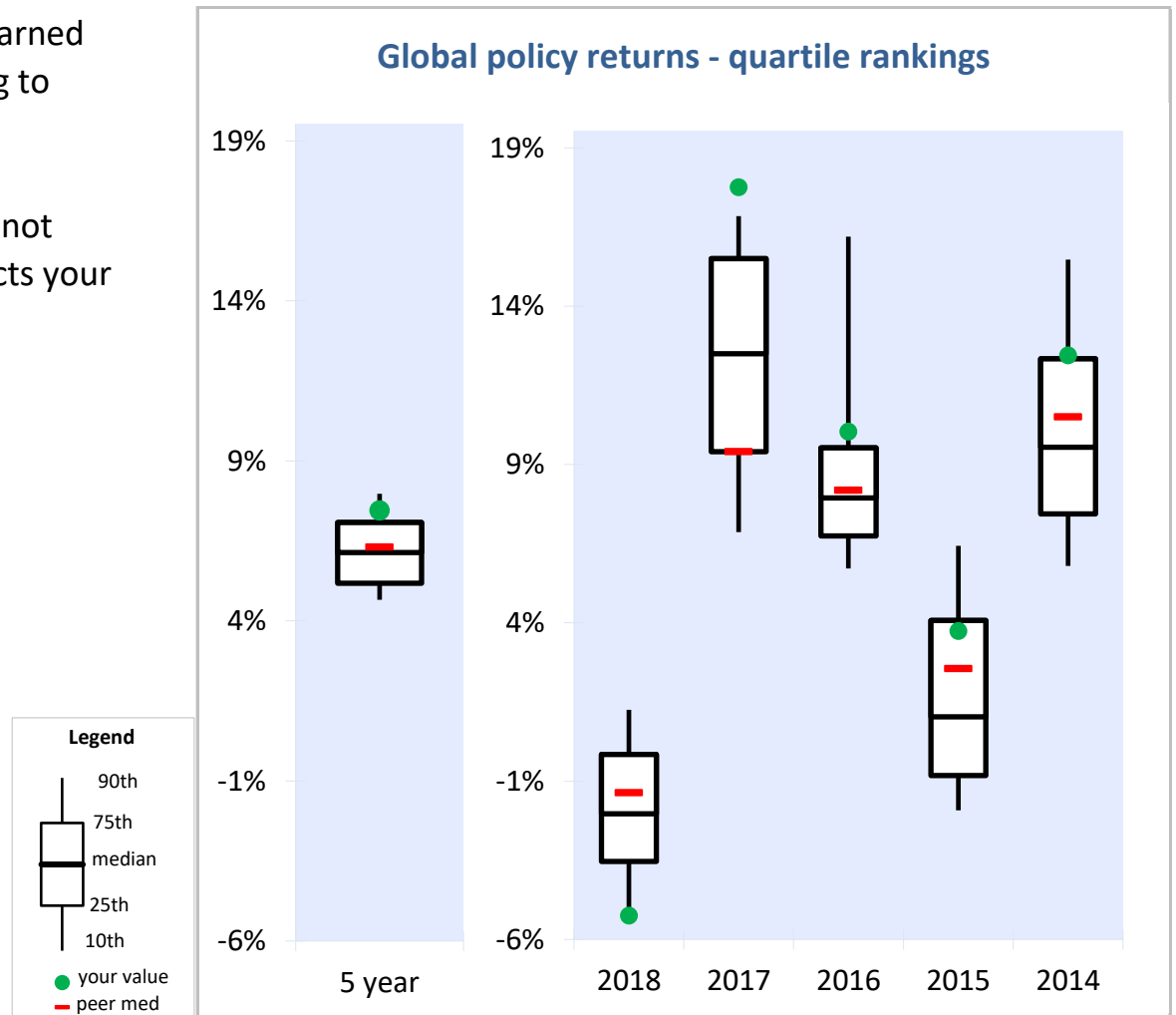
## Your 5-year policy return of 7.4% was above both the Global median of 6.1% and the peer median of 6.3%.

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.

**Differences in policy return are caused by differences in policy mix and benchmarks. At the end of 2018 your policy mix compared to your peers and the global universe as follows:**

- You had significantly more stock compared to the global average during a period of time where stock has performed well. You had a 5-year average allocation of 79% in stock compared to 46% for your peers and 46% for the global universe over the same period.

	5-year average policy mix <sup>1</sup>			5-year bmk. return	
	Your Fund	Peer Avg.	Global Avg.	Your Fund	Global Avg.
Europe & Far East Stock	5%	2%	4%	13.2%	2.4%
U.S. Stock	0%	9%	12%	n/a <sup>3</sup>	9.3%
Emerging Market Stock	8%	4%	3%	4.2%	4.0%
Global Stock	66%	17%	14%	8.1%	7.4%
Other Stock <sup>2</sup>	0%	13%	13%	n/a <sup>3</sup>	n/a <sup>3</sup>
<b>Total Stock</b>	<b>79%</b>	<b>46%</b>	<b>46%</b>	<b>8.2%</b>	<b>6.2%</b>
Long Bonds	0%	10%	12%	n/a <sup>3</sup>	5.7%
Global Bonds	20%	7%	3%	5.4%	3.5%
Cash	0%	2%	1%	2.6%	0.6%
Other Fixed Income <sup>2</sup>	0%	17%	22%	n/a <sup>3</sup>	n/a <sup>3</sup>
<b>Total Fixed Income</b>	<b>20%</b>	<b>36%</b>	<b>37%</b>	<b>5.4%</b>	<b>4.5%</b>
Hedge Funds	0%	4%	3%	3.8%	3.2%
Real Assets <sup>2</sup>	1%	9%	9%	n/a <sup>3</sup>	n/a <sup>3</sup>
Private Equity	0%	5%	5%	7.4%	14.1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>		

1. 5-year weights are based only on plans with 5 years of continuous data.

2. Other stock includes Canadian and ACWIXUS stock. Other fixed income includes Canada, U.S., Capital Indexed and EAFE bonds. Real assets includes commodities, natural resources, infrastructure, REITS and real estate.

3. A value of 'n/a' is shown if asset class return are not available for the full 5 years or if they are broad and incomparable.



## Your fund uses derivatives to adjust exposure to several 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 asset mix	
		excluding derivatives	including derivatives
Europe & Far East Stock	5%	4%	4%
Emerging Market Stock	10%	6%	11%
Global Stock	65%	46%	55%
<b>Total Stock</b>	<b>80%</b>	<b>56%</b>	<b>70%</b>
U.S. Bonds	0%	0%	0%
Global Bonds	20%	10%	10%
Cash	0%	12%	-2%
<b>Total Fixed Income</b>	<b>20%</b>	<b>22%</b>	<b>8%</b>
Hedge Funds	0%	5%	5%
Natural Resources	0%	7%	7%
Infrastructure	0%	3%	2%
Real Estate ex-REITs	0%	0%	0%
Diversified Private Equity	0%	1%	1%
Other Private Equity	0%	6%	7%
<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 of 2.6% was second highest in our Global universe.

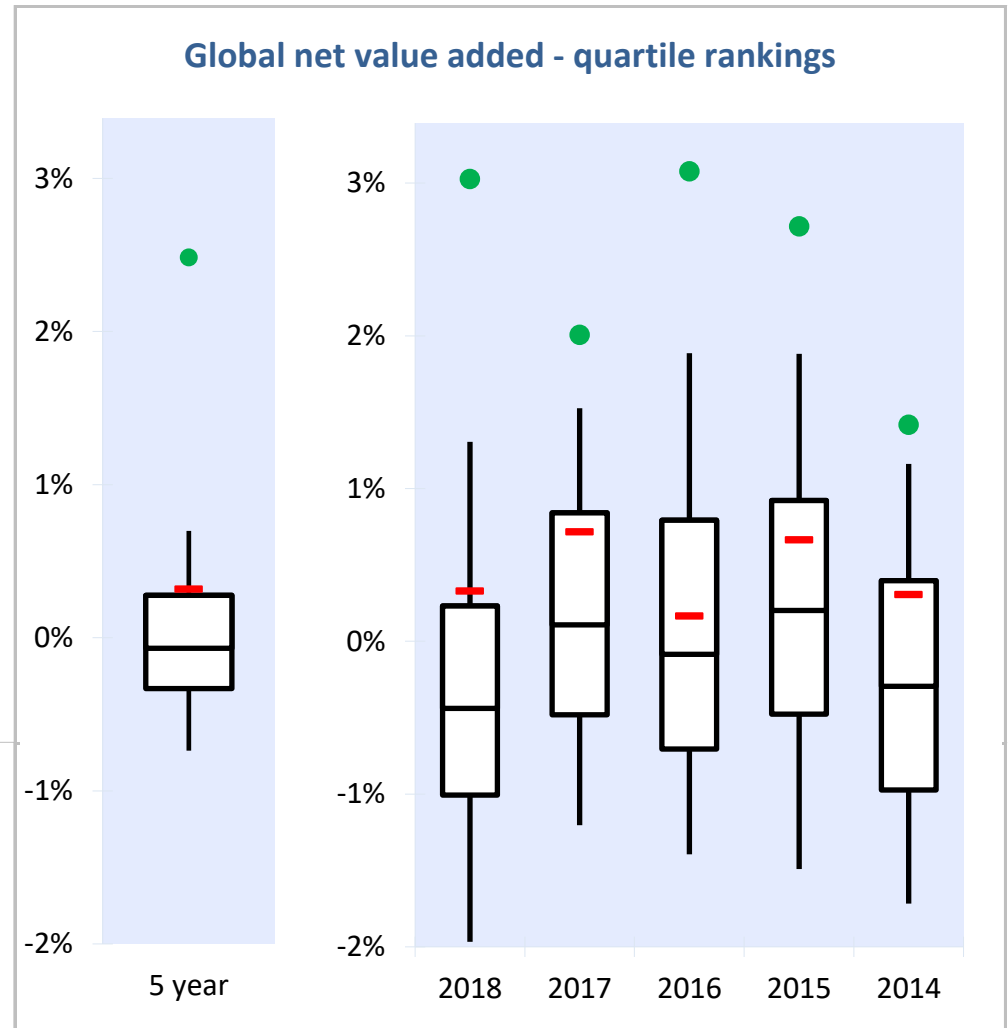
Net value added equals total net return minus policy return.

## Value added for New Zealand Superannuation Fund

Year	Net Return	Policy Return	Net value Added
2018	-2.2%	-5.3%	3.1%
2017	19.8%	17.7%	2.1%
2016	13.2%	10.0%	3.2%
2015	6.5%	3.7%	2.8%
2014	13.9%	12.4%	1.5%
5-Year	10.0%	7.4%	2.6%

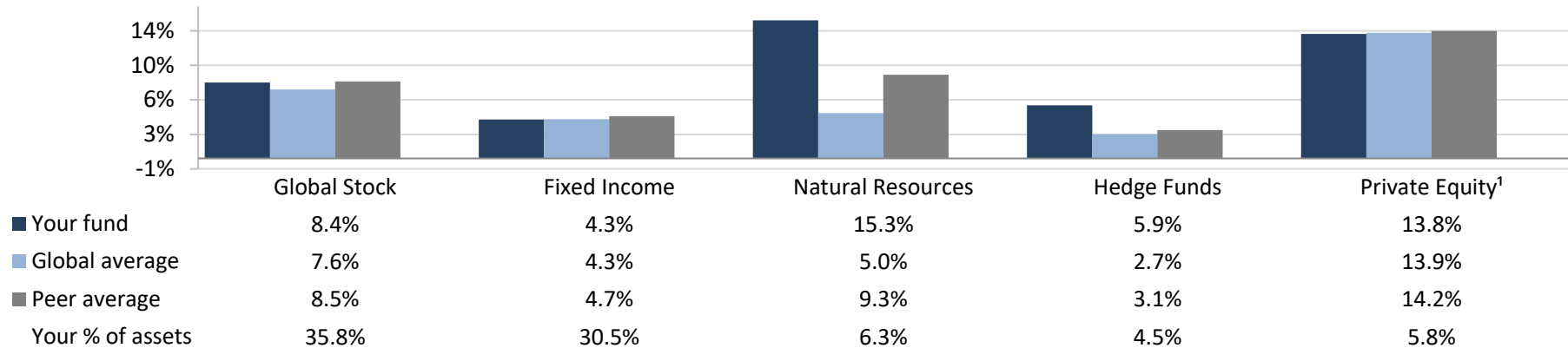
Your 5-year net value added of 2.6% compares to a median of 0.4% for your peers and 0.0% for the Global universe.

Your 2.6% 5-year value added translates into approximately \$4.7 billion of cumulative value added over 5 years, or \$4.7 billion more than if you had earned the Global median of 0.0%.

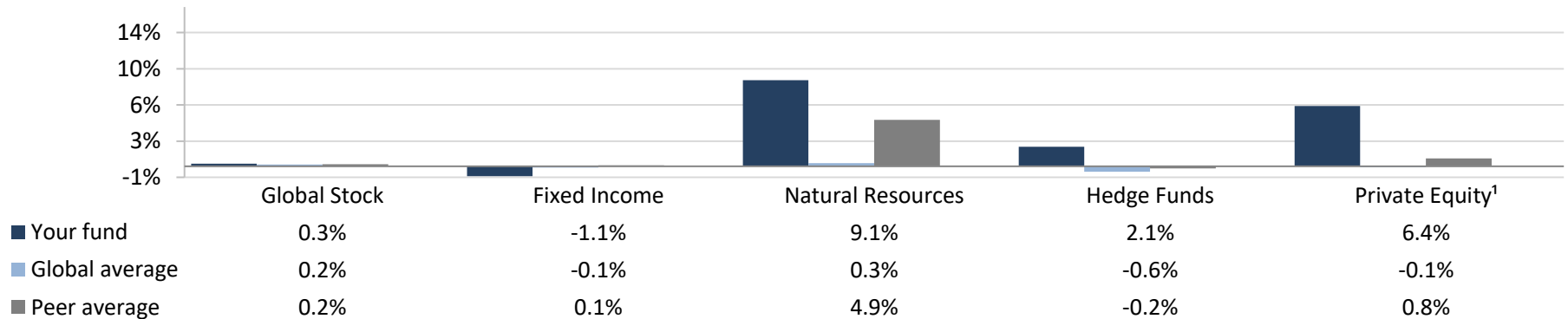


# Comparisons of your 5-year net return and net value added by major asset class.

## 5-year average net return by major asset class



## 5-year average net value added by major asset class



1. To enable fairer comparisons, the private equity benchmarks of all participants, including your fund were adjusted to reflect lagged, investable, public-market indices.

## Your investment costs were \$152.0 million or 38.7 basis points in 2018.

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>	
Stock - EAFE	94	2,852	436		2,897		6,279
Stock - Emerging			987	1,058	3,974		6,019
Stock - Global	152		4,479	5,918			10,549
Fixed Income - U.S.	72						72
Fixed Income - Global	87		845	1,714			2,646
Cash		3,193					3,193
Hedge Fund - External Active			1,590		13,986	30,557	46,133
Real Estate ex-REITs <sup>2</sup>		397					397
Real Estate ex-REITs - LP <sup>2</sup>			234		102	754	336
Infrastructure <sup>2</sup>		856	1,688		6,570	11,012	9,114
Infrastructure - LP <sup>2</sup>			806		2,493	1,256	3,299
Natural Resources <sup>2</sup>		1,820	2,293		5,776	1,548	9,889
Diversified Private Equity - LP <sup>2</sup>			1,292		6,153	3,868	7,445
Diversified Private Equity - FoFs <sup>1 2</sup>			203		921	447	1,124
Other Private Equity - LP <sup>2</sup>		4,699	784		6,986	1,652	12,469
Derivatives/Overlays	2,083	7,420					9,503
<b>Total excluding private asset performance fees</b>							<b>128,467 32.7bp</b>
<b>Oversight, custodial and other costs <sup>3</sup></b>							
Oversight of the fund							16,626
Trustee & custodial							6,465
Consulting and performance measurement							0
Audit							488
Other							0
<b>Total oversight, custodial &amp; other costs</b>							<b>23,579 6.0bp</b>
<b>Total investment costs (excl. transaction costs &amp; private asset performance fees)</b>							<b>152,046 38.7bp</b>

### Footnotes

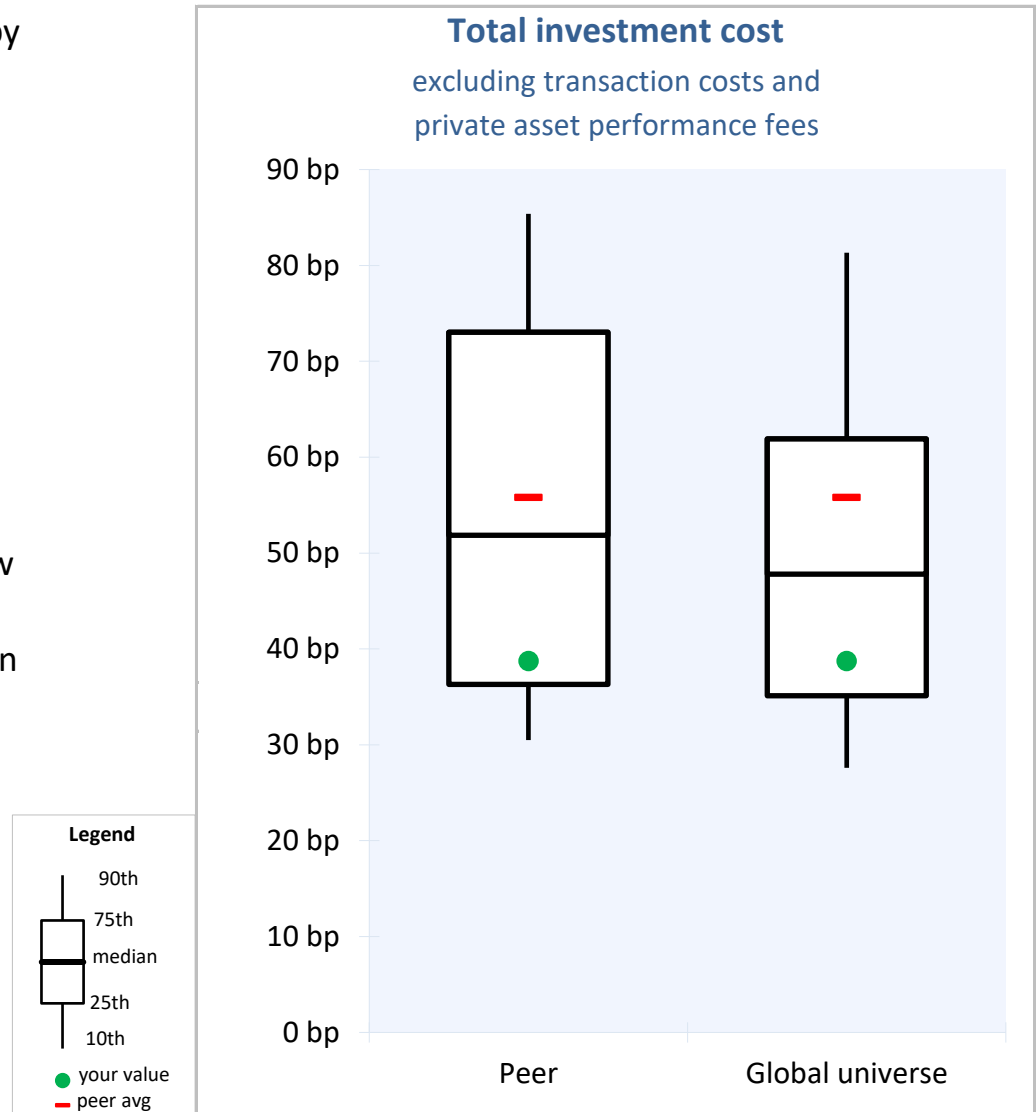
1. Default underlying costs were added: Diversified Private Equity - FoFs 156 bp. Refer to Appendix A for full details regarding defaults.
2. Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Performance fees are included for the public market asset classes and hedge funds.
3. Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.

## Your total investment cost of 38.7 bps was below the peer median of 51.9 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 22% of your funds assets at the end of 2018 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.



## Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was slightly low cost by 2.0 basis points in 2018.

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 38.7 bp was slightly below your benchmark cost of 40.7 bp. Thus, your cost savings were 2.0 bp.

### Your cost versus benchmark

	\$000s	basis points
Your total investment cost	152,046	38.7 bp
Your benchmark cost	159,753	40.7 bp
Your excess cost	(7,707)	(2.0) bp

**Your fund was slightly low cost because you had a lower cost implementation style. These savings were mostly offset because you paid more than peers for some services.**

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less active management, more lower cost passive	(36,252)	(9.2)
• Less external management, more lower cost internal	(8,066)	(2.1)
• Less partnerships as a percentage of external	(3,680)	(0.9)
• Less fund of funds	(5,013)	(1.3)
• Less co-investment as a percentage of LP/Co	584	0.1
• More overlays	6,679	1.7
	<u>(45,748)</u>	<u>(11.7)</u>
2. Paying more than peers for some services		
• External investment management costs	22,845	5.8
• Internal investment management costs	944	0.2
• Oversight, custodial & other costs	14,252	3.6
	<u>38,040</u>	<u>9.7</u>
<b>Total savings</b>	<b>(7,707)</b>	<b>(2.0)</b>

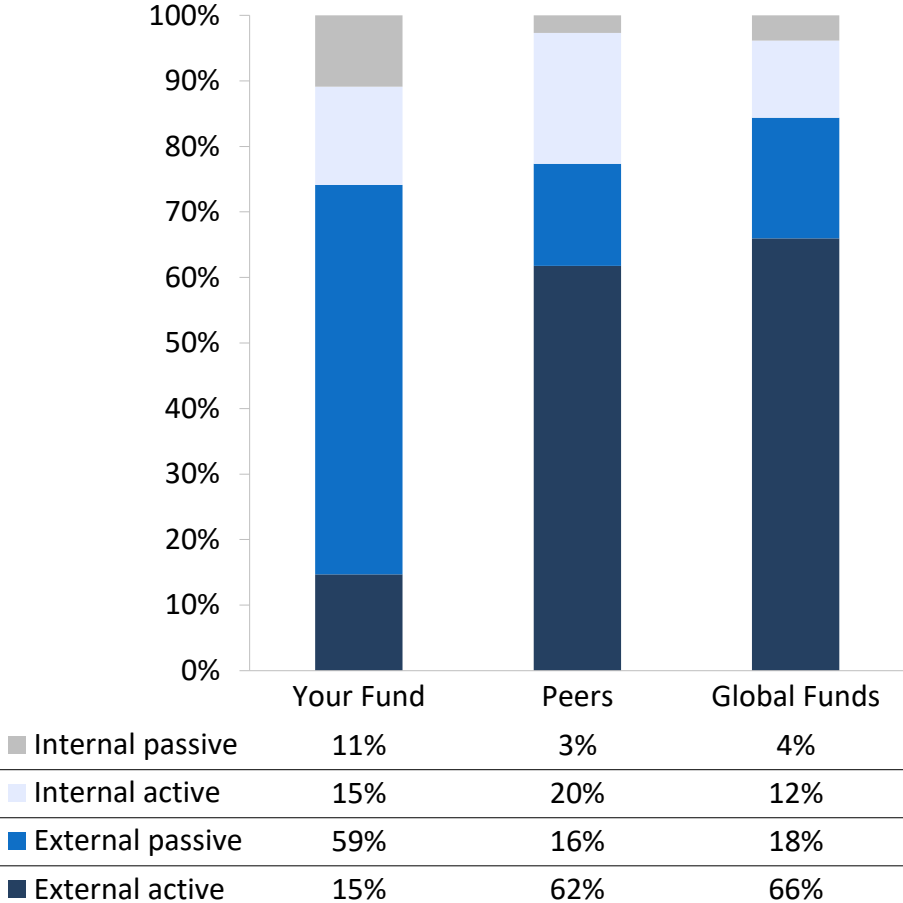
# Differences in cost performance are often caused by differences in implementation style.

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 15% versus 62% 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 0% of hedge funds, real estate and private equity in fund of funds compared to 13% for your peers.

Implementation style<sup>1</sup>



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

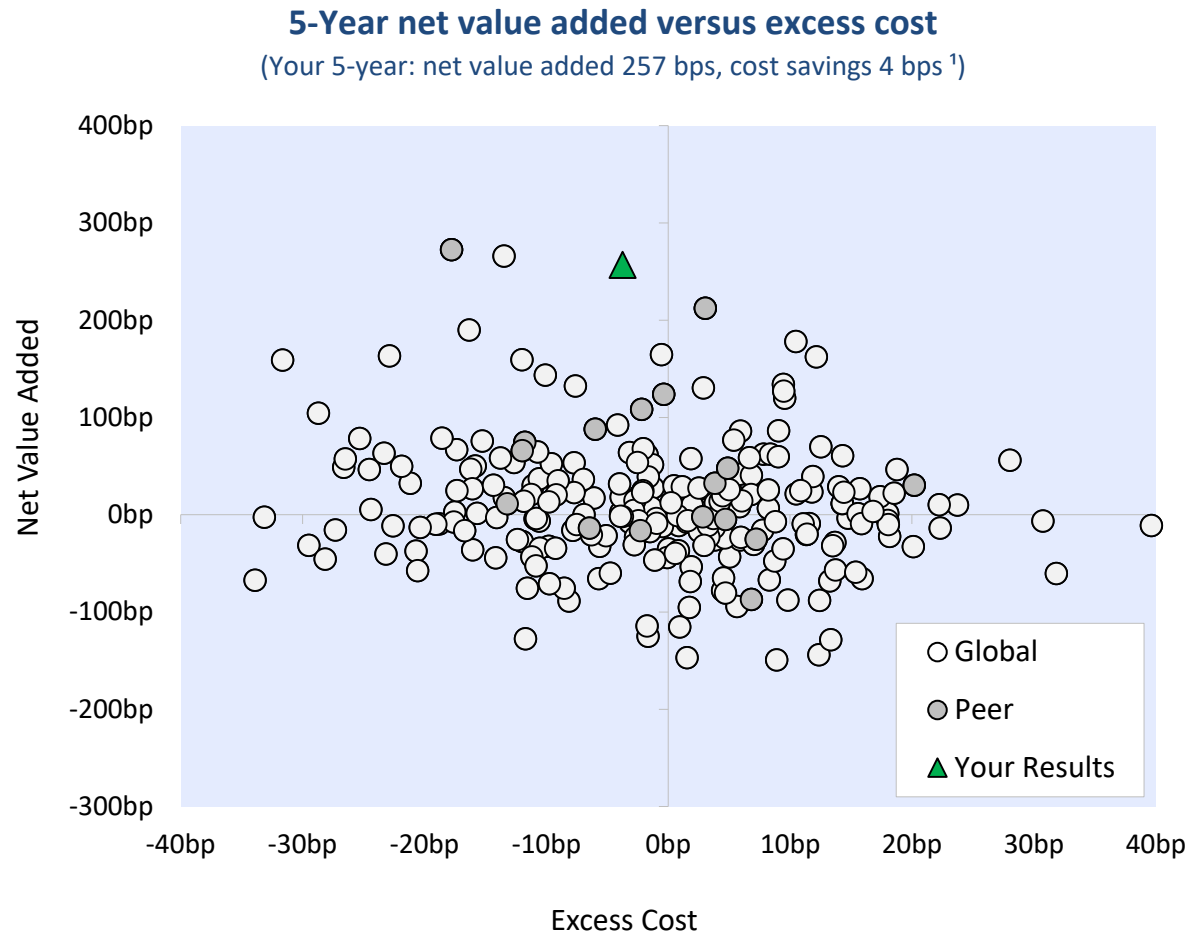


The table below provides a summary of why you are high/low cost relative to the peer-median by asset class.

### Why are you high/(low) cost by asset class?

Asset class/category	Impl. style \$000s	Paying more/(less) \$000s	Total \$000s	Total bps
Stock - EAFE	392	2,348	2,740	16.7 bp
Stock - Emerging	(7,409)	1,160	(6,249)	(27.9) bp
Stock - Global	(28,259)	2,187	(26,072)	(14.4) bp
Fixed Income - U.S.	(25)	66	41	14.4 bp
Fixed Income - Global	(1,063)	769	(294)	(0.8) bp
Real Estate ex-REITs	--	--	Excluded	Excluded
Infrastructure	(4,121)	4,773	652	4.9 bp
Natural Resources	(7,295)	(1,507)	(8,802)	(33.7) bp
Hedge Funds	(4,040)	12,423	8,383	42.0 bp
Diversified Private Equity	(608)	1,571	963	22.9 bp
Other Private Equity	--	--	Excluded	Excluded
Derivatives and overlays	6,679	0	6,679	1.7 bp
Oversight, custodial & other	n/a	14,252	14,252	3.6 bp
<b>Total</b>	<b>(45,748)</b>	<b>38,040</b>	<b>(7,707)</b>	<b>(2.0) bp</b>

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

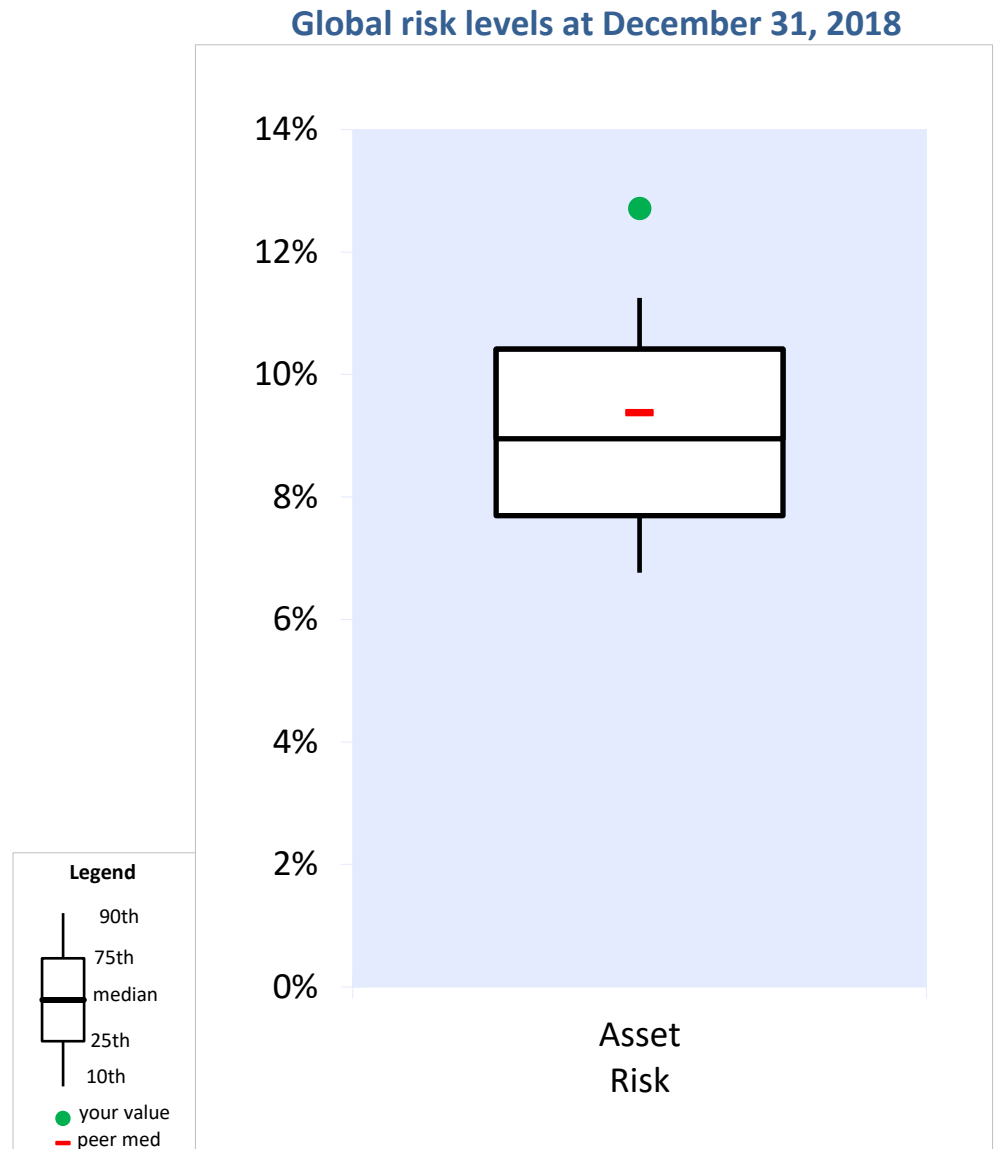


1. Your 5-year cost savings of 4 basis points is the average of your cost savings for the past 5 years. Prior years' cost savings are calculated using regression analysis.

	2018	2017	2016	2015	2014	5-year
Net value added	311.0bp	209.0bp	316.0bp	280.0bp	150.0bp	256.8bp
Excess Cost	-2.0bp	-1.4bp	-3.8bp	-6.2bp	-5.4bp	-3.8bp

## Comparison of risk levels

Your asset risk of 12.7% was above the Global median of 9.0%. 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.



# 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 10.0%. This was above the Global median of 6.0% and above the peer median of 6.8%.
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- Your 5-year net value added was 2.6%. This was above the Global median of 0.0% and above the peer median of 0.4%.

## \$ Contribution versus median performance

- Your fund is approximately \$4.7 billion better off than if it had earned the Global median value added of 0.0%

## Cost and cost effectiveness

- Your investment cost of 38.7 bps was below your benchmark cost of 40.7 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was slightly low cost because you had a lower cost implementation style. These savings were mostly offset because you paid more than peers for some services.

## Risk

- Your asset risk of 12.7% was above the Global median of 9.0%.