

**Investment  
Benchmarking Analysis**  
(for the 5-year period ending June 30, 2024)

**New Zealand Superannuation Fund**



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# Key Takeaways

## Returns

- Your 5-year net total return was 9.8%. This was above both the Global median of 6.0% and the peer median of 6.9%.
- Your 5-year policy return was 8.5%. This was above both the Global median of 5.7% and the peer median of 5.8%.
- 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.

## Value added

- Your 5-year net value added was 1.3%. This was above both the Global median of 0.5% and the peer median of 0.6%.

## Cost

- Your investment cost of 44.6 bps was close to your benchmark cost of 45.3 bps. This suggests that your fund was normal cost compared to your peers.
- Your fund was normal cost because of several off-setting factors.

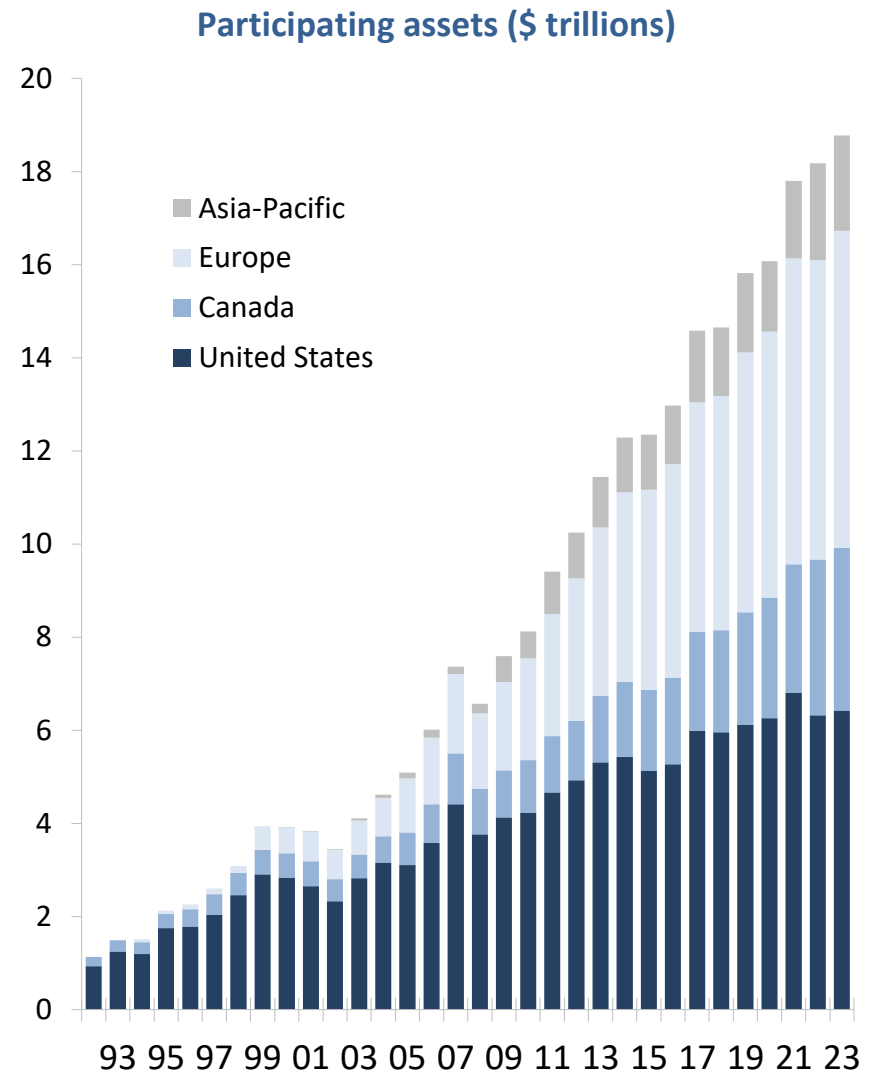
## Risk

- Your asset risk of 11.3% was above the Global median of 9.4%.

## This benchmarking report compares your cost and performance to the 293 funds in CEM's extensive pension database.

- 149 U.S. pension funds participate. The median U.S. fund had assets of \$15.4 billion and the average U.S. fund had assets of \$43.1 billion. Total participating U.S. assets were \$6.4 trillion.
- 66 Canadian funds participate with assets totaling \$3.5 trillion.
- 64 European funds participate with aggregate assets of \$6.8 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the UK.
- 10 Asia-Pacific funds participate with aggregate assets of \$2.1 trillion. Included are funds from Australia, New Zealand and South Korea.
- 4 funds from other regions participate.

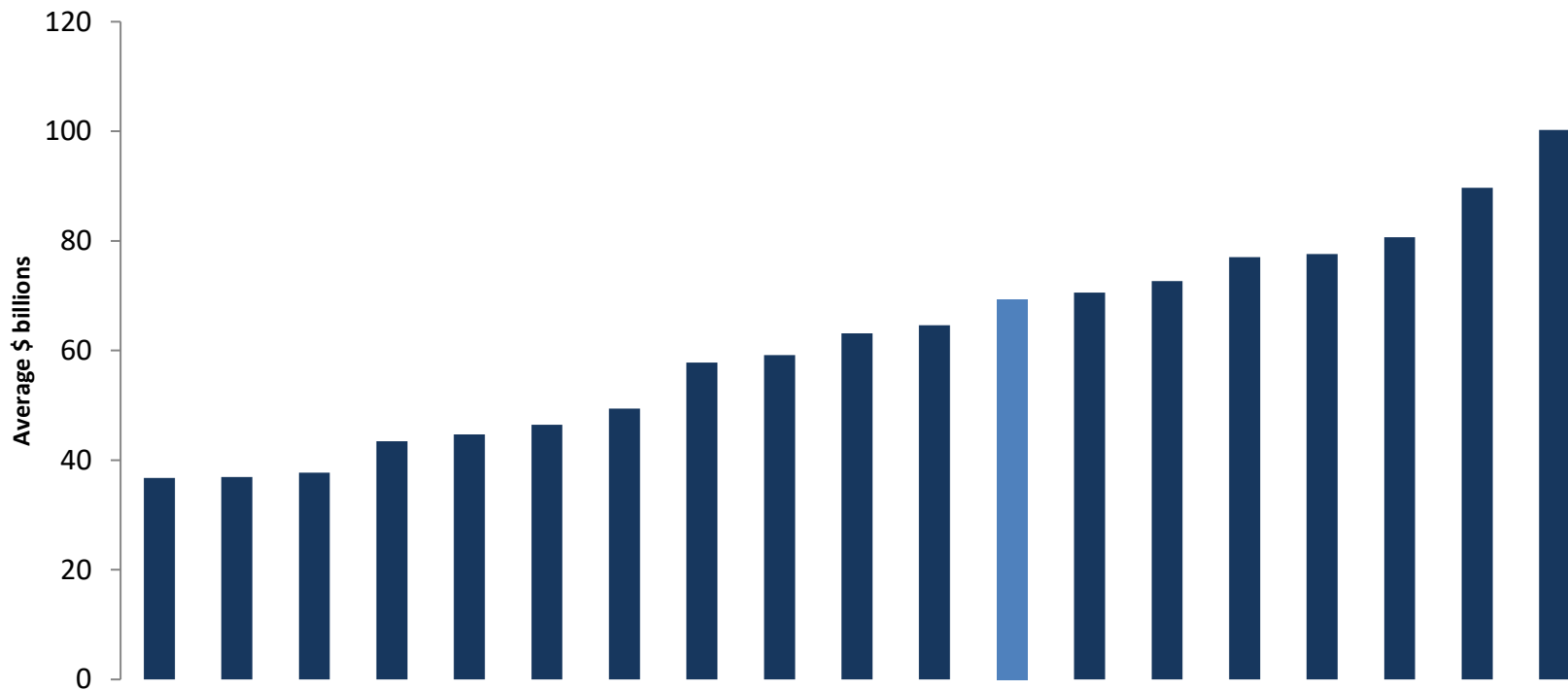
The most meaningful comparisons for your returns and value added are to the Global universe, which consists of 293 funds. The Global universe assets totaled \$19.0 trillion and the median fund had assets of \$15.4 billion.



# 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 \$36.8 billion to \$100.3 billion
- Median size of \$63.2 billion versus your \$69.3 billion



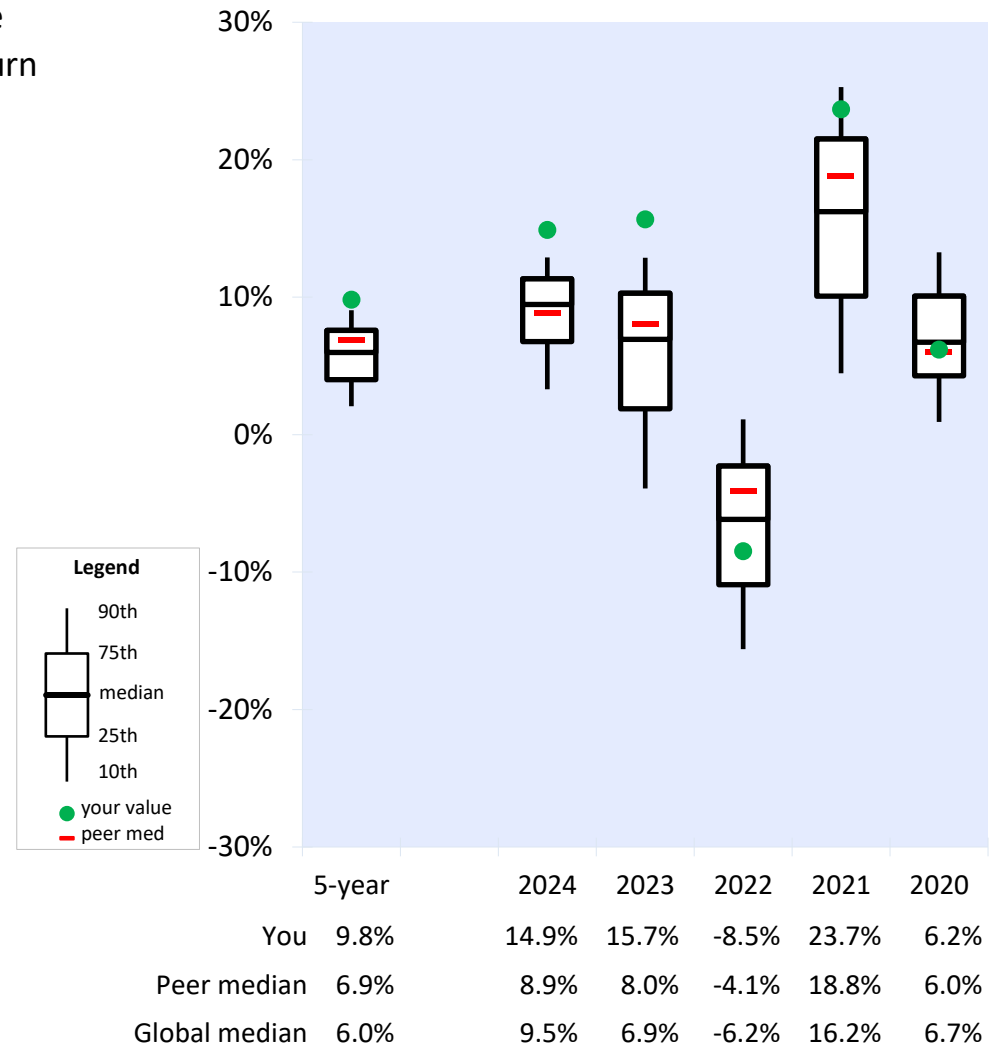
# Your 5-year net total return of 9.8% was above both the Global median of 6.0% and the peer median of 6.9%.

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.

	Your 5-year
Net total fund return	9.8%
- Policy return	8.5%
= Net value added	1.3%

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).

Global net total returns - quartile rankings



Returns are reported in local currency.

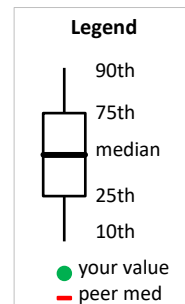
# Your 5-year policy return of 8.5% was above both the Global median of 5.7% and the peer median of 5.8%.

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

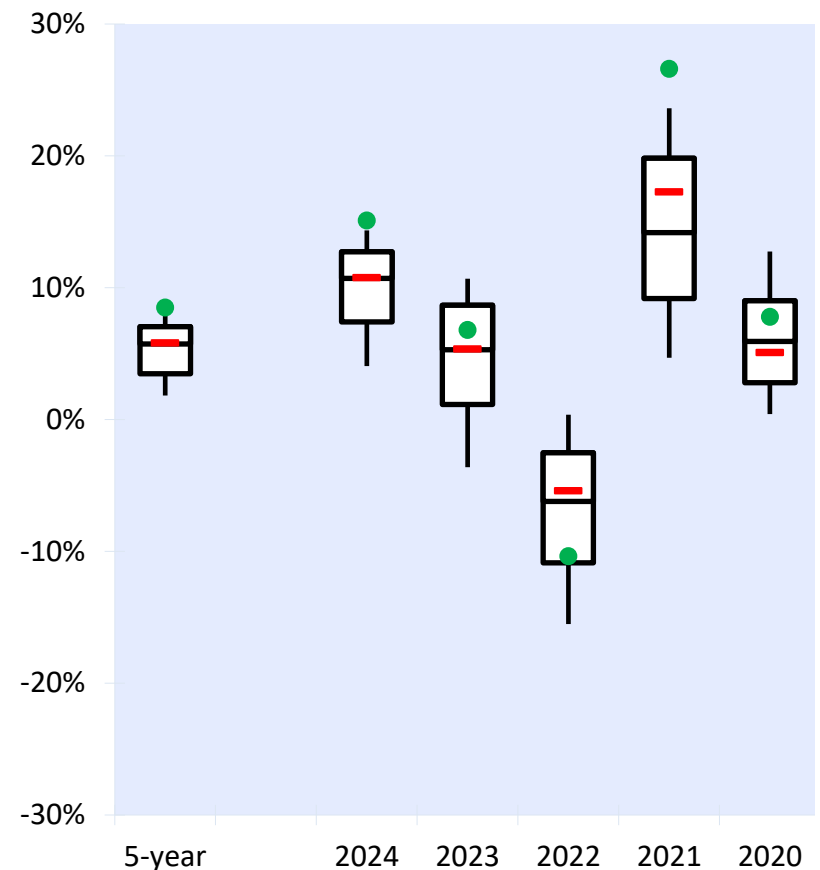
Having a higher or lower relative policy return is not necessarily good or bad. Your policy return reflects your investment policy, which should reflect your:

- 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.



Global policy returns - quartile rankings



	5-year	2024	2023	2022	2021	2020
You	8.5%	15.1%	6.8%	-10.4%	26.6%	7.8%
Peer median	5.8%	10.8%	5.4%	-5.4%	17.3%	5.1%
Global median	5.7%	10.7%	5.3%	-6.2%	14.2%	5.9%

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 FY24 your policy mix compared to your peers and the Global universe as follows:**

- Your fund had substantially more stock than the peer and Global averages (your 80% versus a peer average of 42% and a Global average of 35%).
- Your fund also has no policy allocation to alternatives, while peers average 26% and the global average is 25%.

**Policy asset mix**

Asset class	Your fund	Peer avg.	Global avg.
Stock - U.S.	0%	13%	8%
Stock - Europe & Far East	5%	4%	4%
Stock - Emerging	6%	3%	2%
Stock - Global	69%	13%	15%
Other Stock <sup>1</sup>	0%	9%	6%
<b>Total Stock</b>	<b>80%</b>	<b>42%</b>	<b>35%</b>
Fixed income - U.S.	0%	6%	8%
Fixed income - Long bonds	0%	7%	13%
Fixed income - Global	20%	6%	3%
Cash	0%	0%	0%
Other Fixed Income <sup>1</sup>	0%	12%	16%
<b>Total Fixed Income</b>	<b>20%</b>	<b>32%</b>	<b>40%</b>
Hedge funds	0%	2%	2%
Real estate incl. REITs	0%	9%	8%
Other Real Assets <sup>1</sup>	0%	3%	5%
Private equity	0%	8%	7%
Private credit	0%	4%	4%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

1. Other stock includes: Stock - ACWI x U.S.. Other fixed income includes: Fixed income - Canada, Fixed income - Inflation indexed, Fixed income - EAFE, Fixed income - Emerging and Fixed income - Bundled LDI. Other real assets include: Commodities, Natural resources and Infrastructure.



## Your fund uses derivatives to adjust exposure to several asset classes.

Asset class	Policy mix	Actual asset mix	
		excluding derivatives	including derivatives
Stock - U.S.	0%	0%	0%
Stock - Europe & Far East	5%	4%	4%
Stock - Emerging	6%	3%	5%
Stock - Global	69%	46%	58%
<b>Total Stock</b>	<b>80%</b>	<b>52%</b>	<b>67%</b>
Fixed income - U.S.	0%	0%	0%
Fixed income - Global	20%	17%	18%
Cash	0%	0%	-11%
<b>Total Fixed Income</b>	<b>20%</b>	<b>17%</b>	<b>6%</b>
Hedge funds	0%	7%	6%
Natural resources	0%	6%	6%
Infrastructure	0%	1%	1%
Real estate incl. REITs	0%	5%	5%
Private equity - Other	0%	9%	8%
Private equity	0%	1%	1%
<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 1.3%.

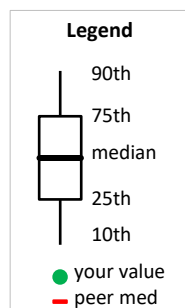
Net value added equals total net return minus policy return.

### Value added for New Zealand Superannuation Fund

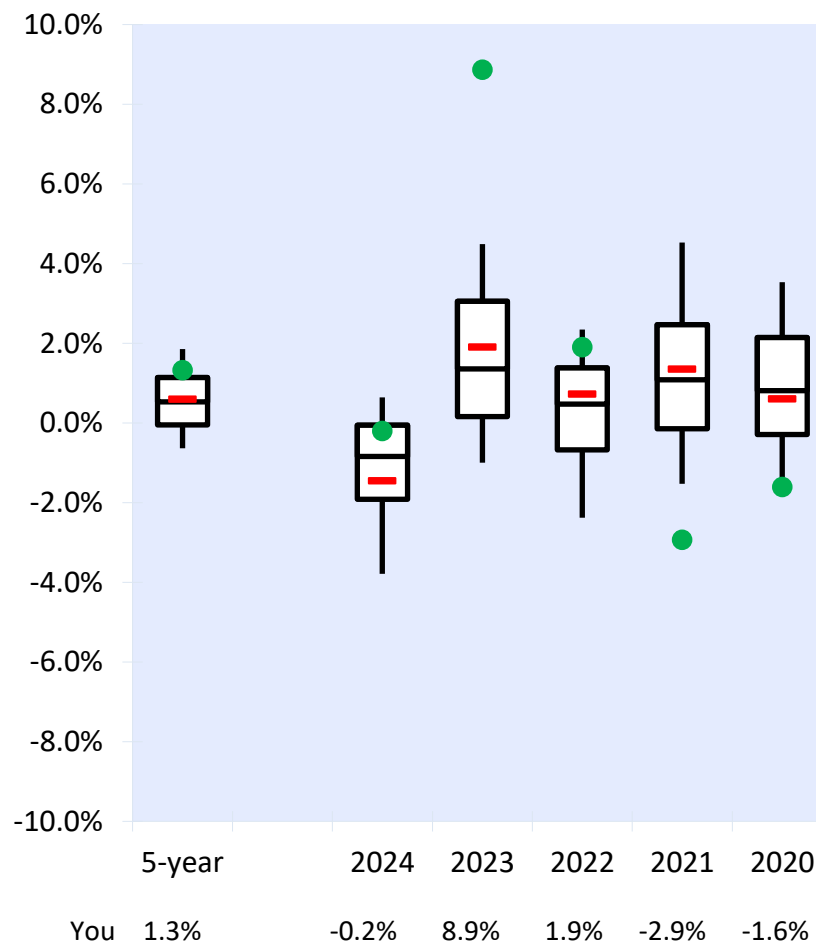
Year	Net return	Policy return	Net value added
2024	14.9%	15.1%	-0.2%
2023	15.7%	6.8%	8.9%
2022	-8.5%	-10.4%	1.9%
2021	23.7%	26.6%	-2.9%
2020	6.2%	7.8%	-1.6%
5-Year	9.8%	8.5%	1.3%

Your 5-year net value added of 1.3% compares to a median of 0.6% for your peers and 0.5% for the Global universe.

Your 1.3% 5-year value added translates into approximately \$4.0 billion of cumulative value added over 5 years.

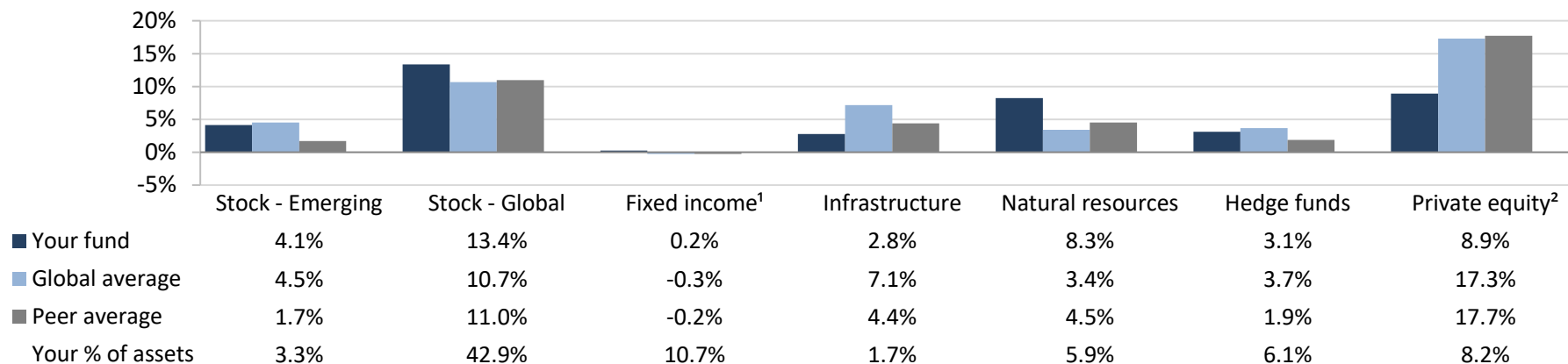


### Global net value added - quartile rankings

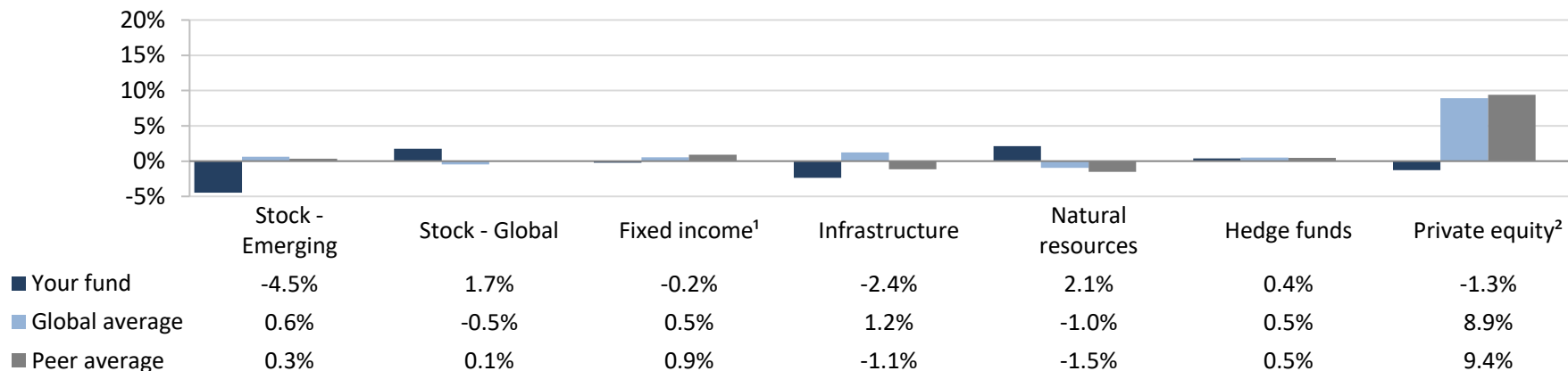


# Comparisons of your 5-year net return and net value added by major asset class:

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



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



1. Excludes cash and leverage.

2. 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, excluding private asset performance fees, were \$309.6 million or 44.6 basis points in fiscal 2024.

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>1</sup>	
Stock - Europe & Far East	381	5,827	156		3,577	152	10,093
Stock - Emerging			560	994			1,554
Stock - Global	520		9,377	3,038	8,071		21,006
Fixed income - Global	4,427		2,643	2,218			9,288
Infrastructure <sup>1</sup>		3,558	213		1,483	-61,066	5,253
Infrastructure - LP/Value add <sup>1</sup>			143		943	1,219	1,086
Natural resources <sup>1</sup>		34,834	993		7,686		43,513
Real estate ex-REITs <sup>1</sup>		2,022					2,022
Real estate ex-REITs - LP/Value add <sup>1</sup>			2,979		19,394	1,781	22,373
Real estate ex-REITs - Co-invest. <sup>1</sup>			1,476		4,016		5,493
Hedge funds - External active			4,145		24,830	41,469	70,443
Private equity - Diversified - LP/Value add <sup>1</sup>			500		8,414	-49	8,915
Private equity - Diversified - Co-invest. <sup>1</sup>			483		248	1,012	731
Private equity - Diversified - FoFs <sup>1</sup>			3		4	0	7
Venture capital - LP/Value add <sup>1</sup>			897		6,618	1,344	7,516
Venture capital - Co-invest. <sup>1</sup>			336				336
Private equity - Other - LP/Value add <sup>1</sup>		13,153					13,153
Private equity - Other - Co-invest. <sup>1</sup>			2,878		20,418	62,343	23,296
Derivatives/Overlays	1,962	23,880					25,842
<b>Total excluding private asset performance fees</b>							<b>271,917</b>
							<b>39.2bp</b>
<b>Oversight, custodial and other costs <sup>2</sup></b>							
Oversight & consulting							26,429
Trustee & custodial							6,521
Consulting and performance measurement							0
Audit							1,327
Other							3,396
<b>Total oversight, custodial &amp; other costs</b>							<b>37,673</b>
							<b>5.4bp</b>
<b>Total investment costs (excl. transaction costs &amp; private asset performance fees)</b>							<b>309,590</b>
							<b>44.6bp</b>

### Footnotes

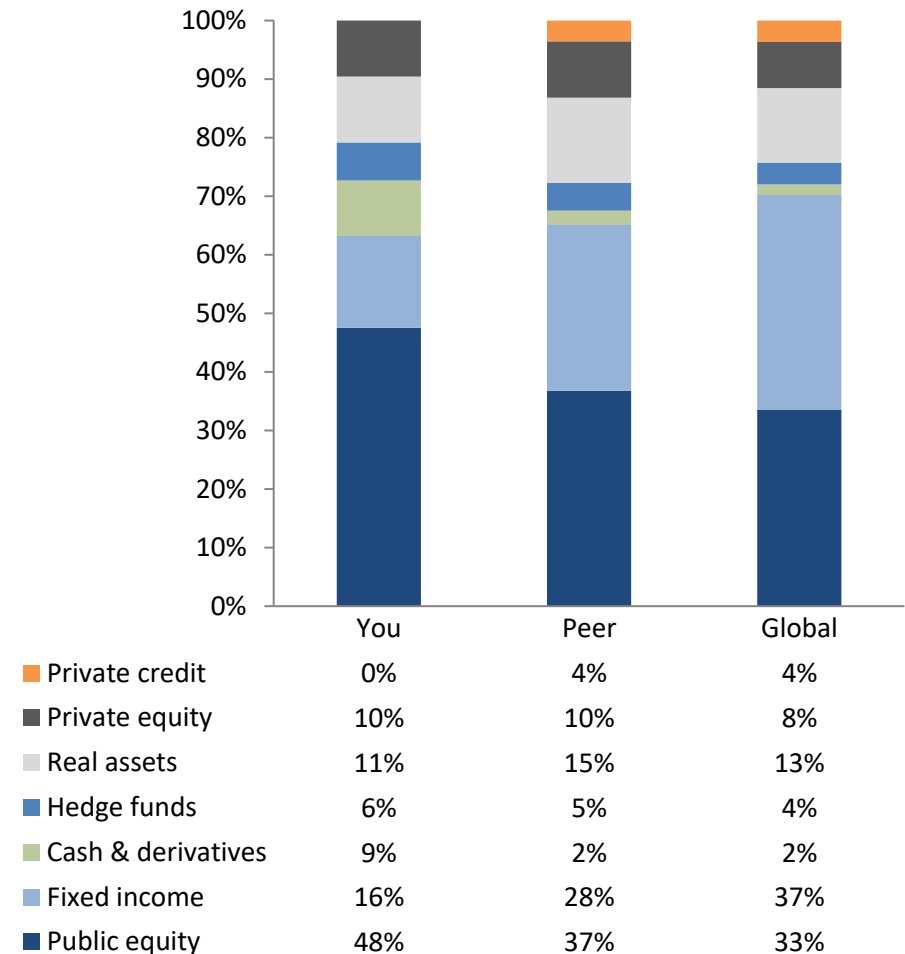
1. Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Performance fees are included for the public market asset classes and hedge funds.
  2. Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.
- \* Internal FTE and support costs have been allocated to asset classes based on CEM methodology. Refer to Appendix A2 for details.

## High-cost assets equaled 27% of your assets at the end of June 2024 versus a peer average of 32%.

Alternative asset classes, such as, real estate (excl. REITs), infrastructure, hedge funds, private equity and private credit are typically higher cost asset classes than public asset classes such as public equity and fixed income. You had a combined public market allocation of 73% at the end of 2023 versus a peer average of 66%.

Your alternative asset classes represent 27% of your assets, but 66% of your total costs.

June 2024 Actual asset allocation

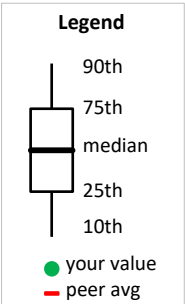


# Before adjusting for asset mix differences, your total investment cost of 44.6 bps was slightly below the peer median of 46.4 bps.

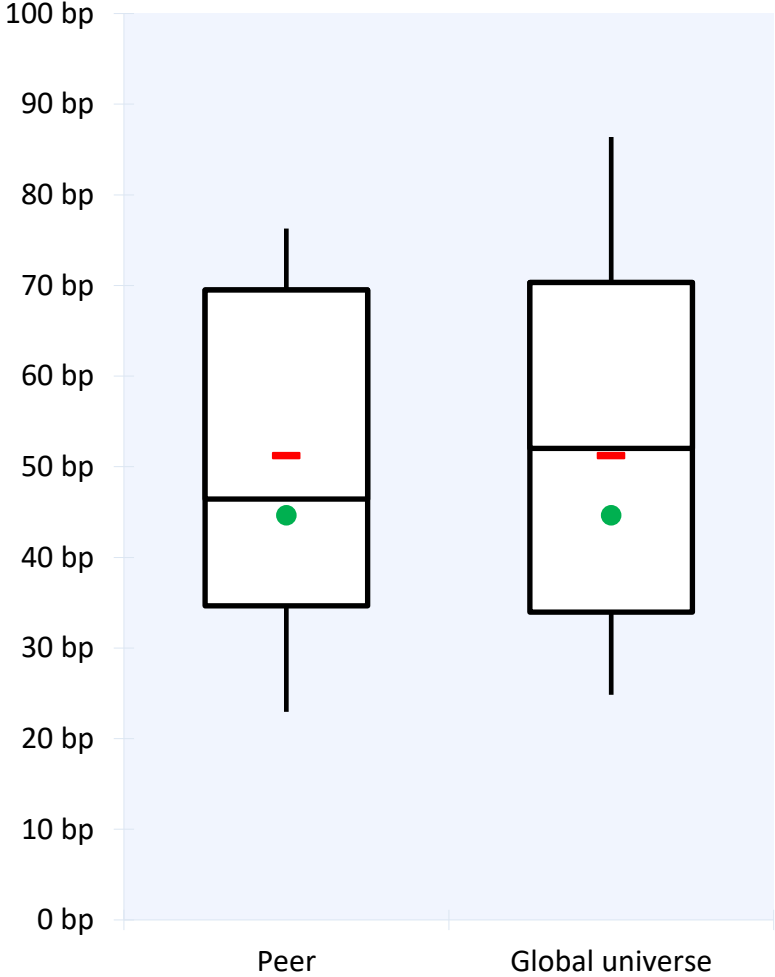
Differences in total investment cost are often caused by two factors that are often outside of management's control:

- Asset mix - private asset classes are generally more expensive than public asset classes.
- 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 investment cost**  
excluding transaction costs and private asset performance fees



## Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was normal cost in 2024.

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 44.6 bp was close to your benchmark cost of 45.3 bp. Thus, your cost savings were 0.7 bp.

### Your cost versus benchmark

	\$000s	basis points
Your total investment cost	309,590	44.6 bp
Your benchmark cost	314,243	45.3 bp
Your excess cost	(4,654)	(0.7) bp

## Your fund was normal cost because of several off-setting factors.

### Explanation of your cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less active management, more lower cost passive	(33,567)	(4.8)
• More external management, less lower cost internal	5,179	0.7
• More LPs as a percentage of external	6,328	0.9
• Less fund of funds	(1,474)	(0.2)
• More co-investment as a percentage of LP/Co	(5,379)	(0.8)
• More overlays	20,834	3.0
	<u>(8,079)</u>	<u>(1.2)</u>
2. Paying more than peers for some services		
• External investment management costs	(54,228)	(7.8)
• Internal investment management costs	34,272	4.9
• Oversight, custodial & other costs	23,382	3.4
	<u>3,425</u>	<u>0.5</u>
<b>Total savings</b>	<b>(4,654)</b>	<b>(0.7)</b>



## Your implementation style was 1.2 bps lower cost than the peer average.

Implementation style is the way in which your fund implements asset allocation. Each implementation choice has a cost. Your first choice is how much to implement passively or actively. The table below summarizes your aggregate choices versus peers and their cost impact.

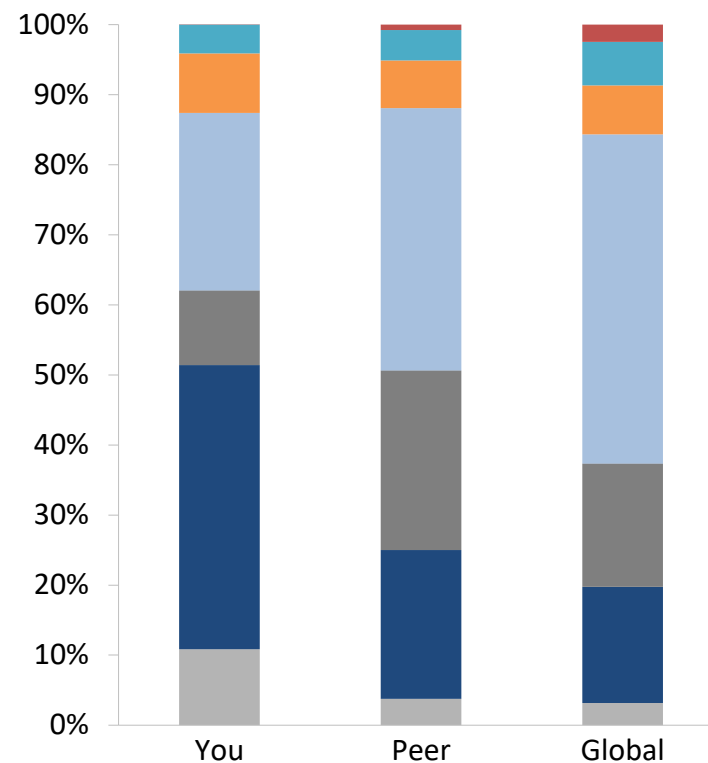
Implementation choices	Impact
Less active, more passive	(4.8) bp
More internal as a % of passive	0.1 bp <sup>2</sup>
Less internal as a % of active	0.7 bp
More LPs as a % of external	0.9 bp
Less fund of funds	(0.2) bp
More co-investment as a percentage of LP/Co	(0.8) bp
More overlays	3.0 bp
<b>Total impact</b>	<b>(1.2) bp</b>

The peer and universe style was adjusted to match your asset mix. It equals their average style for each asset class weighted by your fee basis for the asset class. It shows how the average peer would implement your asset mix.

1. Implementation style is shown as a % of total fund fee basis because the fee basis is the primary driver of cost for private assets (e.g., new private equity LP commitments increase costs before LP NAV increases). Style weights are based on average holdings. Cash and derivatives are excluded.

2. Typically, more internal as a % of active is lower cost. But your mix of internal increased your cost.

Implementation style<sup>1</sup>



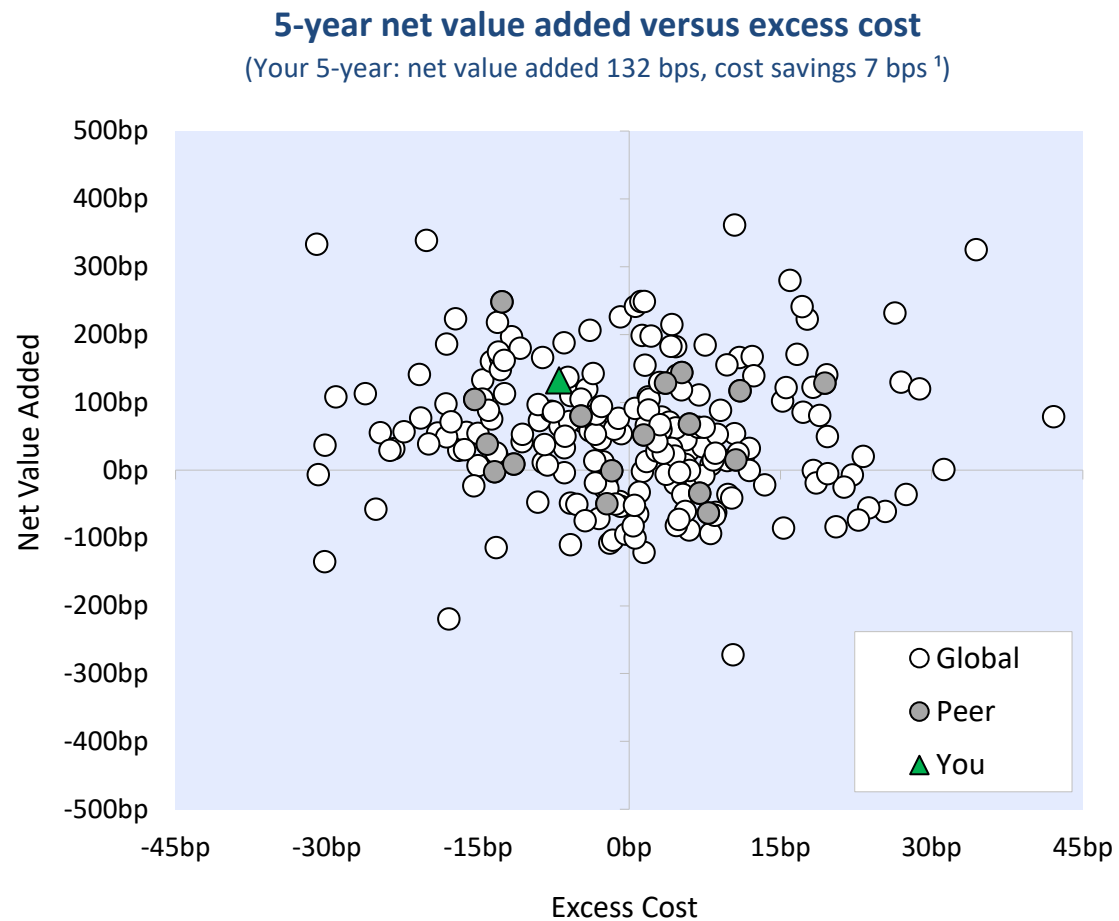
Fund of funds	0.0%	0.8%	2.5%
LP/Value add	4.1%	4.4%	6.2%
Co-investment	8.5%	6.8%	7.0%
External active	25.3%	37.5%	47.0%
Internal active	10.7%	25.6%	17.5%
External passive	40.6%	21.2%	16.6%
Internal passive	10.8%	3.8%	3.2%

The table below summarizes why your fund is 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 - Europe & Far East	(55)	5,310	5,256	19.4 bp
Stock - Emerging	(5,449)	0	(5,449)	(33.6) bp
Stock - Global	(18,155)	(30,602)	(48,757)	(17.0) bp
Fixed income - Global	(3,021)	1,363	(1,658)	(1.5) bp
Real estate ex-REITs	9,883	(80)	9,804	32.1 bp
Infrastructure	(587)	736	149	2.0 bp
Natural resources	(8,360)	29,643	21,283	53.4 bp
Hedge funds	364	(33,590)	(33,226)	(73.8) bp
Private equity - Diversified	(2,905)	2,673	(232)	(3.7) bp
Venture capital	(628)	4,590	3,961	165.0 bp
Private equity - Other	--	--	Excluded	Excluded
Derivatives and overlays	20,834	0	20,834	3.0 bp
Oversight, custodial & other	n/a	23,382	23,382	3.4 bp
<b>Total</b>	<b>(8,079)</b>	<b>3,425</b>	<b>(4,654)</b>	<b>(0.7) bp</b>

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



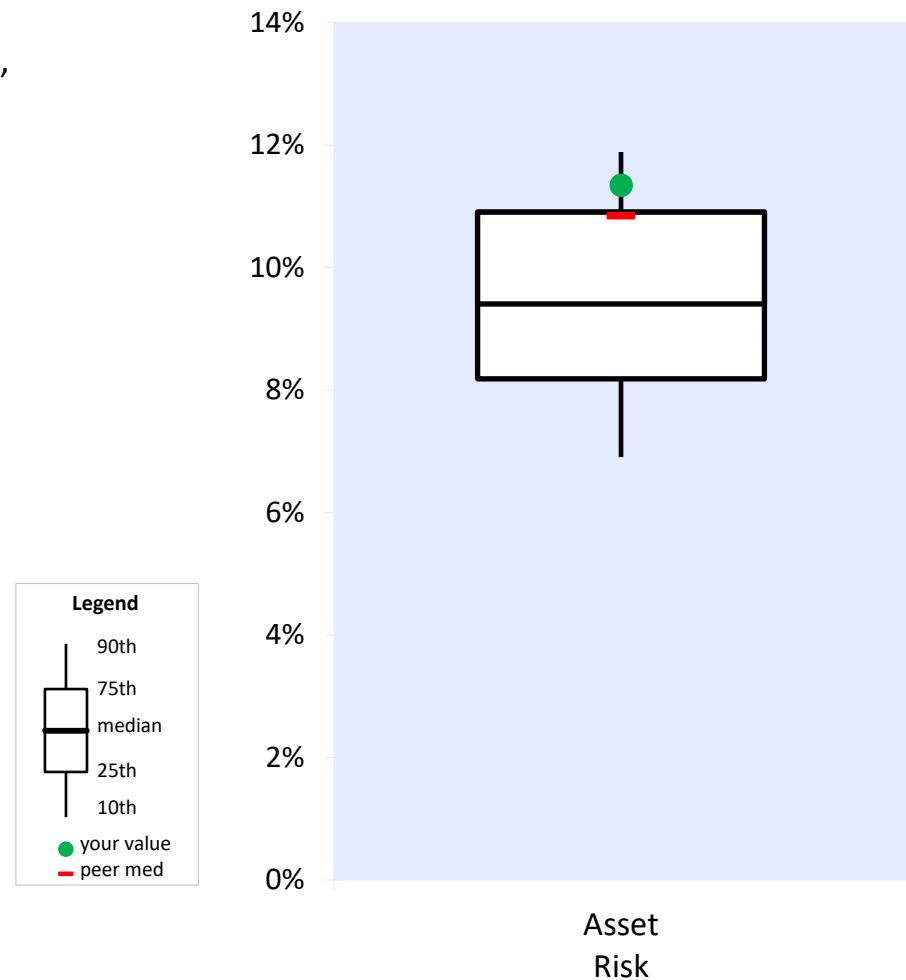
1. Your 5-year savings of 7.0 basis points is the average of your peer-based savings for the past 5 years.

	5-year	2023	2022	2021	2020	2019
Net value added	132.2bp	(20.0) bp	887.0bp	190.0bp	(293.0) bp	(161.0) bp
Excess cost	(7.0) bp	(0.7) bp	(3.6) bp	(12.0) bp	(10.1) bp	(8.4) bp

## Your asset risk of 11.3% was above the Global median of 9.4%.

The asset risk is the standard deviation of your policy mix at the end of the year. Your asset risk is calculated using standard asset class-specific policy benchmarks across all participants. The model uses the historical variance of, and covariance between, the asset classes in your policy mix.

Global risk levels at June 30, 2024



# 2

## Description of peer group and universe

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## Peer group

Your peer group is comprised of 19 Global funds, with assets ranging from \$36.8 billion to \$100.3 billion versus your \$69.3 billion. The median size is \$63.2 billion.

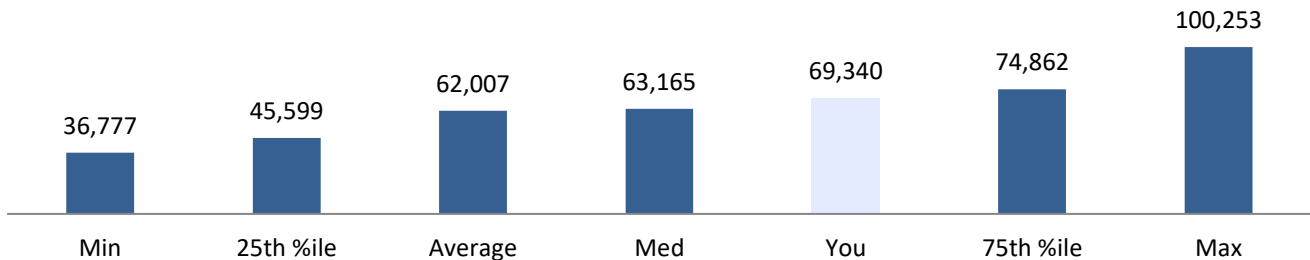
### Peer group for New Zealand Superannuation Fund

Andra AP-fonden	New Zealand Superannuation Fund
Anonymous Middle East Pension Fund	PERS of Nevada
AT&T Investment Management	RTX Corporation
BT Pension Scheme Management	State of Tennessee
Canada Post Corporation	State Pension Fund of Finland
Första AP-fonden	Stichting BPL Pensioen
Illinois Municipal Retirement Fund	Strathclyde Pension Fund
Indiana Public Ret. Sys.	Tredje AP-fonden
Kentucky Teachers' Ret. Sys.	Workplace Safety and Insurance Board of Ontario
National Railroad Retirement Investment Trust	

The names of the above fund sponsors in your peer group are confidential and may not be disclosed to third parties. All other information in this report is confidential and may not be disclosed to third parties without the express written mutual consent of both CEM Benchmarking Inc. and New Zealand Superannuation Fund.

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

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

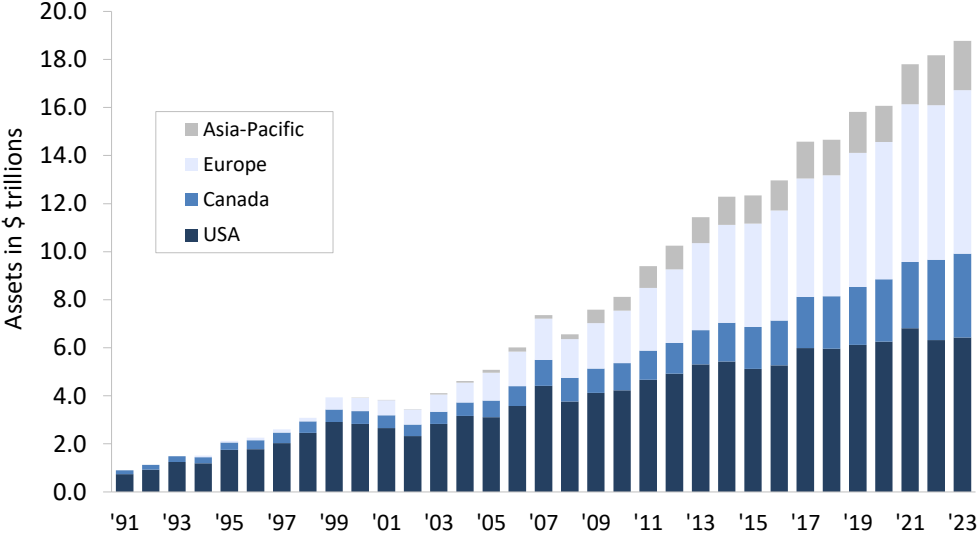


# CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2023/24 survey universe is comprised of 293 funds representing \$19.0 trillion in assets. The breakdown by region is as follows:

- 149 U.S. pension funds with aggregate assets of \$6.4 trillion.
- 66 Canadian pension funds with aggregate assets of \$3.5 trillion.
- 64 European pension funds with aggregate assets of \$6.8 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 10 Asia-Pacific pension funds with aggregate assets of \$2.1 trillion.
- 4 funds from other regions participate.

CEM global universe



## Universe subsets

CEM's global survey universe is comprised of 293 funds with total assets of \$19.0 trillion. Your fund's returns and costs are compared to the following two subsets of the global universe:

- Peers - Your peer group is comprised of 19 Global funds ranging in size from \$36.8 - \$100.3 billion. The peer median of \$63.2 billion compares to your \$69.3 billion.
- Global - The global universe is comprised of 293 funds ranging in size from \$0.2 - \$2,885.2 billion. The median fund is \$15.4 billion.

### Universe subsets by number of funds and assets

	Peer group <sup>1</sup>	Global by type				Global by Country				
		Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b># of funds</b>										
2024	19	120	123	50	293	149	66	64	14	293
2023	19	130	117	55	302	148	72	65	17	302
2022	19	131	120	45	296	146	71	67	12	296
2021	20	136	135	43	314	160	70	73	11	314
2020	20	136	136	45	317	155	71	75	16	317
<b># of funds with uninterrupted data for:</b>										
1 yr	19	120	123	50	293	149	66	64	14	293
2 yrs	19	116	111	47	274	138	64	60	12	274
3 yrs	18	106	103	38	247	126	60	52	9	247
4 yrs	18	102	102	36	240	121	59	52	8	240
5 yrs	18	96	98	34	228	115	57	48	8	228
<b>Total assets (\$ billions)</b>										
2024	1,178	1,791	12,825	4,403	19,018	6,426	3,486	6,811	2,295	19,018
2023	1,180	2,048	11,611	4,695	18,354	6,323	3,341	6,433	2,257	18,354
2022	1,251	2,718	11,571	3,801	18,090	6,809	2,759	6,566	1,956	18,090
2021	1,167	2,524	10,467	3,307	16,298	6,256	2,596	5,711	1,736	16,298
2020	1,102	2,464	10,327	3,281	16,072	6,121	2,414	5,579	1,958	16,072
<b>2024 asset distribution (\$ billions)</b>										
Avg	62.0	14.9	104.3	88.1	64.9	43.1	52.8	106.4	163.9	64.9
Max	100.3	88.7	2,885.2	1,051.4	2,885.2	663.4	740.6	2,885.2	1,041.2	2,885.2
75th %ile	74.9	19.8	81.8	118.2	44.7	36.9	25.1	67.2	143.4	44.7
Median	63.2	7.9	23.5	38.2	15.4	15.4	9.2	21.0	81.3	15.4
25th %ile	45.6	2.9	9.2	5.9	5.3	4.4	3.7	8.3	42.7	5.3
Min	36.8	0.4	0.4	0.2	0.2	0.4	0.2	1.2	5.0	0.2

1. Peer group statistics are for your 2024 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 - 2024 (as a % of year-end assets)

	Your fund <sup>1</sup>	Peer group	Global by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b>Implementation style</b>											
External active	34.3	54.6	74.0	56.3	59.4	64.1	73.2	59.2	50.0	54.4	64.1
Fund of funds	0.0	2.4	3.3	3.2	1.9	3.0	2.8	2.3	4.4	1.8	3.0
External passive	36.7	14.7	15.1	15.5	18.9	15.9	16.8	12.0	18.6	13.0	15.9
Internal active	17.5	22.7	5.4	18.8	15.7	12.8	4.1	21.3	21.8	24.2	12.8
Internal passive	<u>11.4</u>	<u>5.7</u>	<u>2.1</u>	<u>6.1</u>	<u>4.2</u>	<u>4.2</u>	<u>3.1</u>	<u>5.1</u>	<u>5.1</u>	<u>6.6</u>	<u>4.2</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>											
Stock	47.5	36.8	22.1	42.3	39.1	33.5	29.7	31.5	42.1	44.2	33.5
Fixed income	15.7	28.4	53.0	22.8	31.7	36.7	42.5	33.9	29.2	22.4	36.7
Cash & derivatives <sup>2</sup>	9.5	2.4	2.8	0.7	2.2	1.8	2.7	-0.4	1.0	6.9	1.8
Global TAA	0.0	0.2	0.3	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.4
Real assets	11.2	14.5	7.9	16.7	14.4	12.7	8.2	20.3	15.5	13.2	12.7
Hedge funds	6.5	3.5	4.0	2.6	2.0	3.1	4.5	1.9	1.2	2.2	3.1
Balanced funds	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Risk parity	0.0	1.1	0.3	0.3	0.0	0.3	0.5	0.0	0.0	0.0	0.3
Private debt	0.0	3.6	2.8	4.1	4.9	3.7	2.6	5.3	4.9	2.0	3.7
Private equity	<u>9.6</u>	<u>9.6</u>	<u>6.7</u>	<u>10.0</u>	<u>5.2</u>	<u>7.8</u>	<u>8.9</u>	<u>7.1</u>	<u>5.8</u>	<u>8.9</u>	<u>7.8</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>											
Stock	80.0	40.1	23.5	42.9	39.6	34.4	31.2	32.9	39.9	50.3	34.4
Fixed income	20.0	31.6	56.9	25.0	32.6	39.4	45.9	36.1	30.7	24.4	39.4
Cash <sup>2</sup>	0.0	0.1	0.2	-0.5	2.1	0.2	0.2	-1.9	1.5	4.3	0.2
Global TAA	0.0	0.4	0.3	0.3	0.5	0.4	0.4	0.4	0.2	0.3	0.4
Real assets	0.0	12.6	7.3	16.9	14.1	12.5	8.2	19.3	15.7	11.4	12.5
Hedge funds	0.0	2.4	3.2	1.7	1.5	2.3	3.4	1.2	1.1	1.5	2.3
Balanced funds	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Risk parity	0.0	1.1	0.3	0.3	0.0	0.3	0.5	0.0	0.0	0.1	0.3
Private debt	0.0	3.8	2.4	4.5	4.7	3.7	2.0	6.2	5.4	2.2	3.7
Private equity	<u>0.0</u>	<u>7.6</u>	<u>5.8</u>	<u>8.7</u>	<u>4.8</u>	<u>6.9</u>	<u>8.1</u>	<u>5.8</u>	<u>5.3</u>	<u>5.5</u>	<u>6.9</u>
Total	100	100	100	100	100	100	100	100	100	100	100

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

2. Negative allocations indicate use of leverage.

## Implementation style, actual mix and policy mix trends

### Implementation style, actual mix and policy mix - 2019/20 to 2023/24 (as a % of year-end assets)

	Your fund <sup>1</sup>					Peer average <sup>2</sup>					Global average <sup>2</sup>				
	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020
<b>Implementation style</b>															
External active	34.3	33.4	12.9	14.0	13.7	53.7	55.0	51.5	51.3	51.4	63.9	64.1	62.8	62.6	62.1
Fund of funds	0.0	0.0	0.0	0.0	0.0	2.5	2.4	2.1	2.2	2.9	3.2	3.1	2.5	2.1	2.2
External passive	36.7	40.6	51.9	43.5	58.6	15.4	15.6	18.4	19.9	20.7	15.0	15.1	16.4	17.0	17.0
Internal active	17.5	22.9	28.1	36.2	26.5	23.3	22.9	23.2	23.5	22.2	13.5	13.4	13.8	14.0	14.1
Internal passive	<u>11.4</u>	<u>3.0</u>	<u>7.1</u>	<u>6.2</u>	<u>1.1</u>	<u>5.1</u>	<u>4.2</u>	<u>4.9</u>	<u>3.1</u>	<u>2.8</u>	<u>4.5</u>	<u>4.3</u>	<u>4.4</u>	<u>4.4</u>	<u>4.5</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>															
Stock	47.5	53.6	51.6	43.4	55.7	35.5	37.8	42.2	42.7	41.7	32.8	34.2	38.1	39.2	38.9
Fixed income	15.7	10.7	9.5	8.3	9.2	29.0	28.5	28.3	28.3	29.9	36.5	35.6	35.6	35.6	35.6
Cash & derivatives	9.5	9.0	19.0	25.4	13.1	2.4	2.1	3.3	3.5	2.7	1.3	1.4	2.0	2.3	2.3
Global TAA	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.6	0.8	0.9
Real assets	11.2	10.5	7.7	9.0	8.9	14.8	14.6	11.4	11.8	12.1	13.4	13.2	10.7	10.4	10.7
Hedge funds	6.5	7.1	5.6	6.0	5.5	3.7	3.6	3.4	3.6	4.4	3.2	3.4	3.1	3.1	3.3
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Risk Parity	0.0	0.0	0.0	0.0	0.0	1.1	1.2	1.2	1.7	1.8	0.3	0.3	0.4	0.5	0.5
Private credit	0.0	0.0	0.0	0.0	0.0	3.6	3.0	2.4	2.1	1.5	3.7	3.3	2.6	2.5	2.2
Private equity	<u>9.6</u>	<u>9.1</u>	<u>6.7</u>	<u>7.9</u>	<u>7.6</u>	<u>9.7</u>	<u>8.8</u>	<u>7.4</u>	<u>6.0</u>	<u>5.7</u>	<u>8.5</u>	<u>8.2</u>	<u>6.9</u>	<u>5.7</u>	<u>5.4</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>															
Stock	80.0	80.0	80.0	80.0	80.0	39.0	41.2	43.8	42.7	41.9	34.0	35.8	37.8	39.0	39.3
Fixed income	20.0	20.0	20.0	20.0	20.0	32.1	31.3	31.5	31.9	32.4	39.3	38.7	38.3	37.3	37.4
Cash <sup>3</sup>	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.7	1.1	1.3	-0.1	-0.3	-0.1	0.1	0.4
Global TAA	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.7	0.7
Real assets	0.0	0.0	0.0	0.0	0.0	12.8	11.8	10.8	11.4	11.0	12.8	12.5	11.5	11.5	11.2
Hedge funds	0.0	0.0	0.0	0.0	0.0	2.5	2.7	2.7	3.4	4.3	2.5	2.6	2.4	2.6	2.9
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Risk Parity	0.0	0.0	0.0	0.0	0.0	1.1	1.3	1.3	1.3	1.6	0.3	0.4	0.4	0.4	0.4
Private credit	0.0	0.0	0.0	0.0	0.0	4.0	3.4	2.7	2.1	1.5	3.6	3.3	3.0	2.6	2.1
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>7.6</u>	<u>6.8</u>	<u>6.1</u>	<u>5.7</u>	<u>5.5</u>	<u>7.2</u>	<u>6.6</u>	<u>6.1</u>	<u>5.6</u>	<u>5.4</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

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

2. Trends are based on the 228 Global and 18 peer funds with 5 or more consecutive years of data ending 2024.

3. Negative allocations indicate use of leverage.

## 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 - 2024 (as a % of average assets)

	Your fund %				Peer average %				Global average %						
	External		Internal		External		Internal		External		Internal				
	Active	FOFs	Index	Active	Index	Active	FOFs	Index	Active	FOFs	Index	Active	Index		
Stock - U.S.					28.1	37.2	23.8	10.9	30.9	49.6	10.0	9.5			
Stock - Europe & Far East	33.5		0.0	44.9	21.6	35.0	13.8	50.4	0.9	51.9	22.9	22.7	2.5		
Stock - Global	33.1		65.5	0.0	1.5	46.9	37.4	13.1	2.6	56.6	26.4	13.2	3.8		
Stock - other						12.4	0.0	83.6	4.0	65.0	8.1	21.4	5.6		
Stock - Emerging	0.0		100.0	0.0	0.0	53.8	16.0	24.1	6.1	68.0	19.7	7.6	4.7		
Stock - ACWI x U.S.						67.8	32.2	0.0	0.0	63.4	34.4	0.9	1.3		
Stock - Aggregate	31.5		61.8	3.7	3.0	39.4	29.4	25.8	5.4	51.3	30.4	13.2	5.1		
Fixed income - U.S.						35.6	30.8	32.9	0.6	68.8	16.2	11.9	3.1		
Fixed income - EAFE						71.2	0.5	28.3	0.0	34.5	30.2	17.6	17.8		
Fixed income - Global	0.0		46.8	0.0	53.2	16.5	18.2	51.5	13.7	43.5	18.5	30.9	7.0		
Fixed income - other						45.2	-35.2	88.6	1.4	62.5	12.2	19.6	5.6		
Fixed income - Long bonds						72.7	1.4	14.4	11.5	82.5	7.7	5.1	4.7		
Fixed income - Emerging						46.3	13.3	40.4	0.0	80.9	5.0	12.9	1.3		
Fixed income - Inflation indexed						8.8	41.8	46.4	3.0	11.1	39.6	22.4	26.9		
Fixed income - High yield						91.3	0.0	8.7	0.0	85.4	1.5	11.2	1.9		
Fixed income - Absolute return bonds						100.0	0.0	0.0	0.0	99.0	1.0	0.0	0.0		
Fixed income - Bundled LDI						0.0	0.0	0.0	100.0	65.5	7.0	20.8	6.7		
Fixed income - Convertibles						100.0	0.0	0.0	0.0	57.5	0.0	42.5	0.0		
Public mortgages						0.0	0.0	0.0	0.0	55.4	0.0	44.6	0.0		
Cash						66.0		34.0		71.7		28.3			
Fixed income - Aggregate	0.0		46.8	0.0	53.2	45.7	12.0	30.5	11.8	66.3	13.1	14.2	6.4		
Commodities						0.0	0.0	0.0	0.0	23.7	11.2	28.7	36.5		
Infrastructure	58.9	0.0		41.1		75.3	0.2	24.5		77.5	4.7		17.8		
Natural resources	17.9	0.0		82.1		47.0	0.0	53.0		76.7	3.3		20.0		
REITs						88.8	11.2	0.0	0.0	65.7	19.0	14.5	0.7		
Real estate ex-REITs	93.3	0.0		6.7		67.3	1.0	31.7		76.1	7.2		16.7		
Other real assets						100.0	0.0	0.0		63.7	0.0		36.3		
Other listed real assets						100.0	0.0	0.0	0.0	58.8	21.7	7.7	11.8		
Real assets - Aggregate	51.5	0.0	0.0	48.5	0.0	69.4	0.7	0.1	29.8	0.0	74.9	6.2	1.1	17.2	0.6
Hedge funds	100.0	0.0				94.4	5.6			77.8	22.2				
Global TAA						100.0		0.0		76.4		23.6			
Risk parity						100.0		0.0		93.3		6.7			
Private credit						100.0	0.0	0.0		87.7	3.1	9.2			
Private mortgages						100.0		0.0		92.1		7.9			
Private equity - Diversified	99.6	0.4		0.0		71.1	28.9	0.0		73.5	19.5	7.0			
Venture capital	100.0	0.0		0.0		79.7	20.3	0.0		56.1	42.0	1.9			
LBO						96.0	4.0	0.0		93.7	6.1	0.2			
Private equity - Other	70.4	0.0		29.6		86.6	0.0	13.4		84.7	6.5	8.7			
Private equity	74.2	0.0		25.8		76.8	21.8	1.4		75.5	18.5	6.0			
Total Fund - Avg. Holdings	34.3	0.0	36.7	17.5	11.4	54.6	2.4	14.7	22.7	5.7	64.1	3.0	15.9	12.8	4.2

## Actual mix

### Actual asset mix - 2019/20 to 2023/24 (as a % of total average assets)

	Your fund <sup>1</sup>					Peer average %					Global average %				
	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020
Stock - U.S.						13.1	11.7	12.5	14.1	13.7	8.5	8.4	9.8	10.4	10.7
Stock - Europe & Far East	3.9	4.1	4.3	4.3	4.2	5.0	4.5	6.1	6.3	6.4	4.6	4.7	5.8	6.4	6.1
Stock - Global	41.3	47.0	44.5	35.7	46.0	9.1	11.9	12.4	11.2	11.1	13.5	14.1	14.2	14.1	13.4
Stock - other						2.3	2.9	2.7	2.8	2.7	2.7	3.1	3.2	3.2	3.3
Stock - Emerging	2.3	2.5	2.7	3.5	5.5	3.1	3.4	4.9	4.6	4.7	2.3	2.4	3.0	3.2	3.0
Stock - ACWI x U.S.						4.2	4.5	3.8	4.8	4.5	2.0	1.9	2.0	2.4	2.4
Stock - Aggregate	47.5	53.6	51.6	43.4	55.7	36.8	38.9	42.5	43.7	43.1	33.5	34.7	38.0	39.8	38.9
Fixed income - U.S.			0.0	0.1	0.1	5.6	5.7	5.0	5.7	6.5	7.8	6.8	6.4	6.4	6.7
Fixed income - EAFE						3.1	3.2	3.2	3.0	3.3	2.4	2.3	2.6	2.6	3.0
Fixed income - Global	15.7	10.7	9.4	8.2	9.1	4.8	4.6	4.3	4.0	5.0	2.3	2.4	2.4	2.3	2.5
Fixed income - other						0.6	0.9	0.9	1.7	1.6	5.2	5.3	5.0	4.9	4.9
Fixed income - Long bonds						7.3	6.8	6.9	5.9	5.7	11.1	11.3	12.1	12.8	12.6
Fixed income - Emerging						2.1	2.1	2.3	2.2	2.2	0.9	1.0	1.2	1.2	1.3
Fixed income - Inflation indexed						2.0	2.0	2.0	1.5	2.8	2.0	1.6	1.5	1.4	1.8
Fixed income - High yield						0.7	0.7	0.6	0.8	0.8	1.1	1.1	1.2	1.1	1.2
Fixed income - Absolute return bonds						0.3	0.4	0.4	0.5		0.1	0.2	0.1	0.3	0.2
Fixed income - Bundled LDI						2.0	1.7	3.5	3.5	2.2	3.1	3.4	3.4	3.2	2.3
Fixed income - Convertibles						0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Public mortgages											0.1	0.1	0.1	0.1	0.1
Cash		10.0	16.2	21.6	11.9	1.8	1.9	2.1	2.5	1.9	1.1	1.5	1.3	1.5	1.4
Fixed income - Aggregate	15.7	20.7	25.7	29.9	21.1	30.2	29.9	31.3	31.4	32.1	37.9	37.6	37.8	37.9	38.1
Commodities									0.5	0.6	0.1	0.2	0.2	0.2	0.3
Infrastructure	1.1	1.9	1.6	2.0	2.1	2.5	2.3	1.9	1.8	1.8	4.0	3.7	2.7	2.3	2.3
Natural resources	5.7	5.9	5.2	6.4	6.5	1.1	1.1	0.8	0.9	0.9	0.5	0.4	0.4	0.3	0.3
REITs						0.1	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.5	0.5
Real estate ex-REITs	4.4	2.7	0.9	0.7	0.3	9.9	9.9	7.5	7.2	7.2	6.6	6.9	5.5	5.4	5.5
Other real assets						0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2
Other listed real assets						0.2	0.2	0.1			0.2	0.2	0.1	0.1	0.1
Real assets - Aggregate	11.2	10.5	7.7	9.0	8.9	14.5	14.4	11.0	11.2	11.5	12.7	12.8	10.1	9.7	9.9
Hedge funds	6.5	7.1	5.6	6.0	5.5	3.5	3.4	3.2	3.2	3.9	3.1	3.2	3.1	3.0	3.2
Global TAA						0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.6	0.9	1.0
Risk parity						1.1	1.2	1.2	1.5	1.6	0.3	0.3	0.4	0.5	0.6
Private mortgages						0.3	0.3	0.3	0.3	0.2	0.7	0.8	0.6	0.6	0.7
Private credit						3.3	2.7	2.2	1.9	1.3	3.0	2.5	2.2	1.6	1.6
Private equity - Diversified	0.9	0.9	0.6	0.7	0.6	6.5	6.0	4.6	3.8	3.6	6.3	6.1	5.2	4.2	4.2
Venture capital	0.3	0.3	0.0			0.7	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.3	0.2
LBO						1.4	1.2	1.0	0.8	0.7	1.0	0.8	0.7	0.6	0.6
Private equity - Other	8.3	8.0	6.1	7.2	7.1	1.0	0.8	0.7	0.6	0.7	0.2	0.2	0.2	0.2	0.2
Private equity	9.6	9.1	6.7	7.9	7.6	9.6	8.8	7.0	5.7	5.4	7.8	7.4	6.4	5.3	5.2
Derivatives/Overlays Mkt Value	9.5	-1.0	2.8	3.8	1.1	0.5	0.1	1.0	0.8	0.5	0.7	0.3	0.7	0.7	0.6
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	19	19	20	20	293	302	296	314	317
Median Assets (\$ billions)	69.3	57.8	57.9	46.1	43.1	63.2	59.2	59.1	51.7	46.9	15.4	13.2	15.5	12.1	12.9

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

## Policy mix

### Policy asset mix - 2019/20 to 2023/24 (as a % of total assets)

	Your fund %					Peer average %					Global average %				
	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020	2024	2023	2022	2021	2020
Stock - U.S.						13.3	12.5	11.4	12.6	12.7	7.9	8.2	8.5	9.7	9.9
Stock - Europe & Far East	5.0	5.0	5.0	5.0	5.0	3.8	3.2	4.4	4.2	4.5	4.2	4.3	5.2	5.8	5.6
Stock - Global	69.0	67.8	75.0	65.0	65.0	13.2	15.5	17.1	14.9	14.1	15.4	16.0	16.3	15.9	15.1
Stock - other						2.4	2.5	2.5	2.3	2.2	2.9	3.2	3.2	3.2	3.5
Stock - Emerging	6.0	7.3		10.0	10.0	2.8	3.3	4.2	4.3	4.3	1.9	2.1	2.6	2.8	2.7
Stock - ACWI x U.S.						4.5	5.2	4.3	5.2	5.1	2.0	2.1	1.9	2.3	2.5
Stock - Aggregate	80.0	80.0	80.0	80.0	80.0	40.1	42.2	43.8	43.5	42.9	34.4	35.9	37.8	39.6	39.3
Fixed income - U.S.						5.9	5.7	4.9	5.9	5.9	8.1	7.1	7.0	6.7	6.8
Fixed income - EAFE						3.4	3.3	3.3	2.8	3.8	2.6	2.6	2.7	2.7	3.3
Fixed income - Global	20.0	20.0	20.0	20.0	20.0	6.3	6.0	6.1	7.0	7.1	2.6	2.5	2.8	2.6	2.8
Fixed income - other						0.9	0.8	0.7	1.4	1.5	5.4	5.7	5.2	4.8	5.2
Fixed income - Long bonds						7.4	8.0	8.0	6.7	6.6	12.8	13.2	13.6	13.2	13.0
Fixed income - Emerging						2.1	2.2	2.4	2.2	2.0	0.9	1.0	1.1	1.1	1.3
Fixed income - Inflation indexed						2.7	2.4	2.4	2.9	2.7	2.3	1.9	1.8	1.6	2.1
Fixed income - High yield						0.6	0.5	0.6	0.9	1.0	0.9	0.9	1.1	1.1	1.2
Fixed income - Absolute return bonds						0.3	0.4	0.4	0.3		0.1	0.2	0.1	0.3	0.2
Fixed income - Bundled LDI						2.2	1.4	3.6	2.2	2.3	3.0	3.1	3.1	3.2	2.4
Fixed income - Convertibles							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public mortgages											0.2	0.1	0.1	0.1	0.1
Cash						0.1	1.0	0.6	1.1	1.3	0.2	0.1	0.1	0.3	0.4
Fixed income - Aggregate	20.0	20.0	20.0	20.0	20.0	31.8	31.8	32.9	33.4	34.2	39.6	38.9	39.0	38.0	38.7
Commodities						0.1	0.1	0.1	0.6	0.6	0.1	0.1	0.2	0.3	0.3
Infrastructure						2.4	2.1	2.0	1.7	1.5	3.8	3.9	3.2	2.8	2.5
Natural resources						0.6	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3
REITs						0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.5	0.5	0.5
Real estate ex-REITs						8.6	8.1	7.2	7.3	7.2	6.6	6.5	6.1	5.9	5.8
Other real assets						0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Other listed real assets						0.1	0.1				0.1	0.1	0.1	0.1	0.0
Real assets - Aggregate						12.6	11.6	10.4	10.9	10.5	12.5	12.3	11.1	10.8	10.3
Hedge funds						2.4	2.5	2.6	3.1	3.9	2.3	2.5	2.4	2.7	2.9
Global TAA						0.4	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.9	0.9
Risk parity						1.1	1.2	1.3	1.2	1.4	0.3	0.3	0.4	0.4	0.5
Private mortgages						0.3	0.4	0.4	0.4	0.3	0.8	0.8	0.7	0.7	0.7
Private credit						3.5	2.9	2.4	1.8	1.1	2.9	2.6	2.5	1.7	1.5
Private equity - Diversified						6.5	5.9	5.1	4.7	4.9	6.0	5.5	4.8	4.5	4.5
Venture capital						0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.2	0.2
LBO						0.3	0.3	0.3	0.3	0.1	0.5	0.4	0.5	0.5	0.4
Private equity - Other						0.6	0.5	0.3	0.4	0.1	0.2	0.1	0.1	0.1	0.1
Private equity						7.6	6.8	5.8	5.4	5.3	6.9	6.2	5.6	5.3	5.2
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	19	19	20	20	290	298	293	313	317

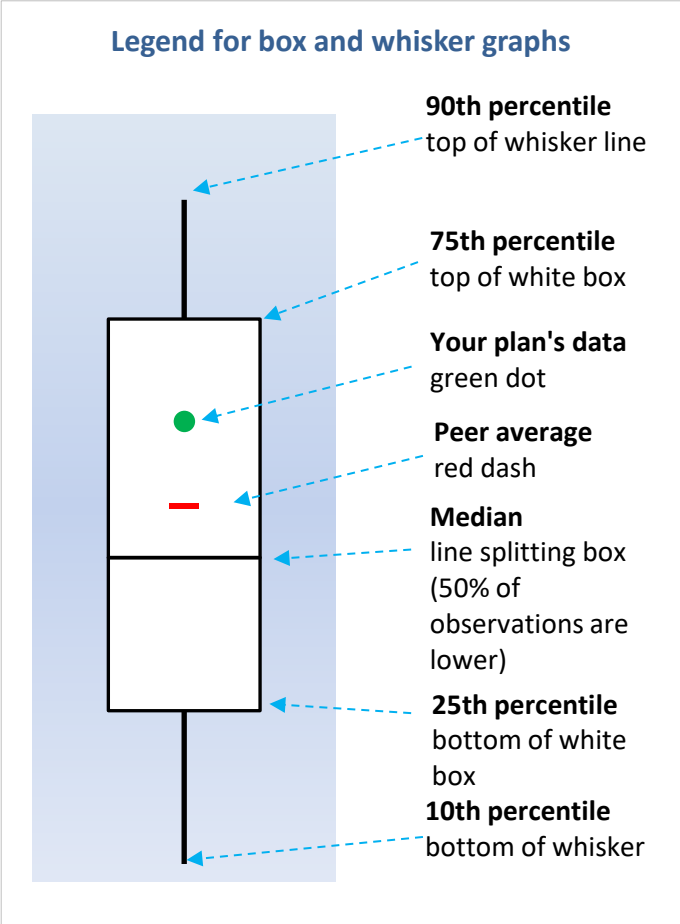
# 3

## Returns, Benchmarks and Value Added

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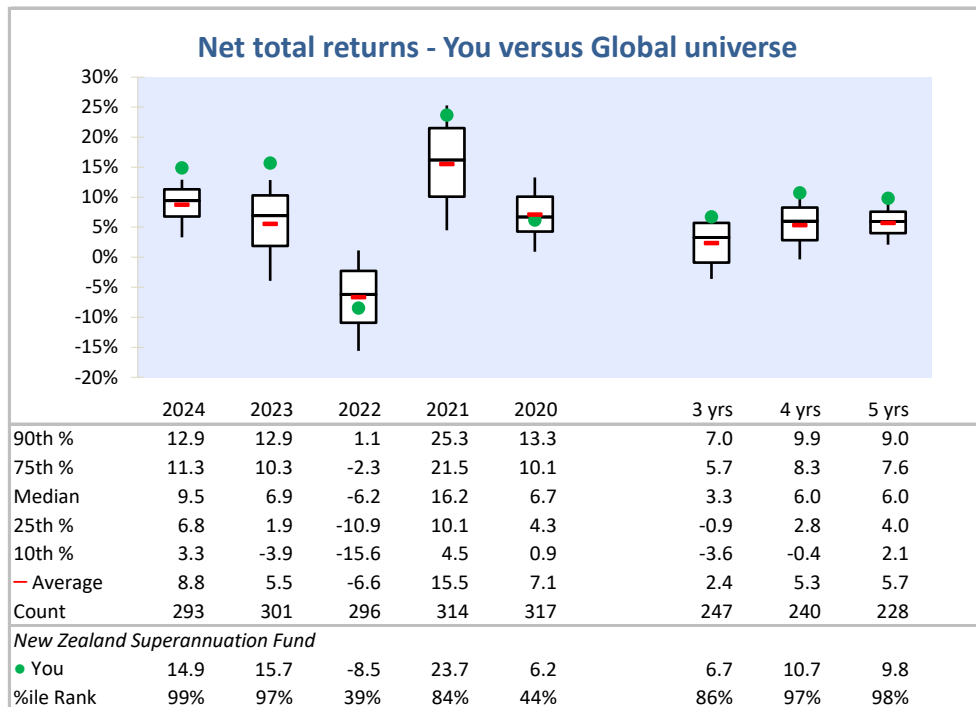
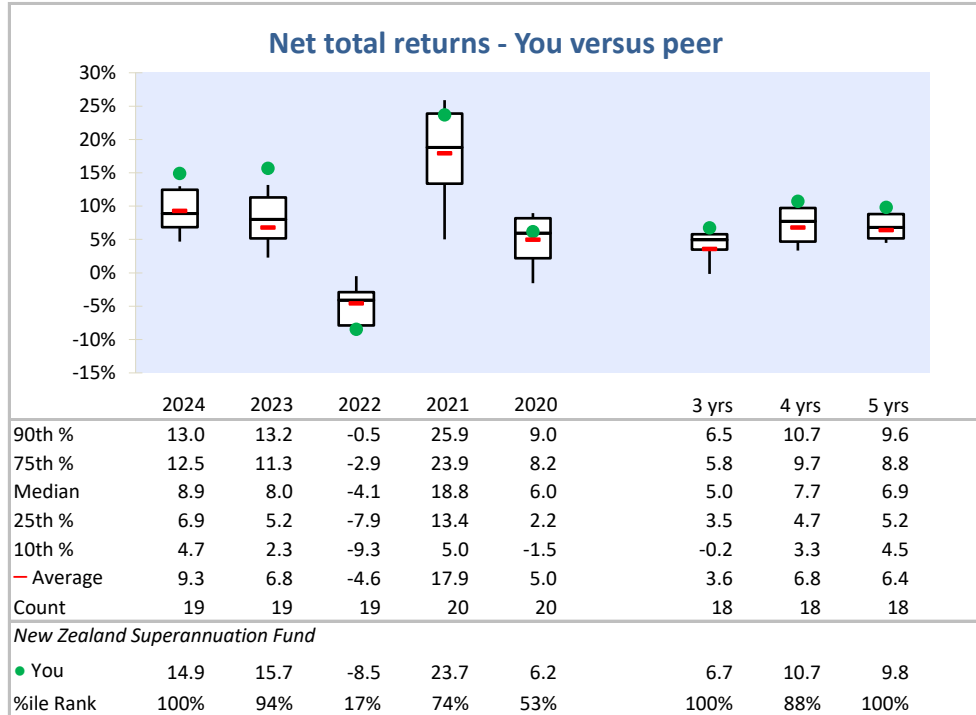
# Interpreting box and whisker graphs

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

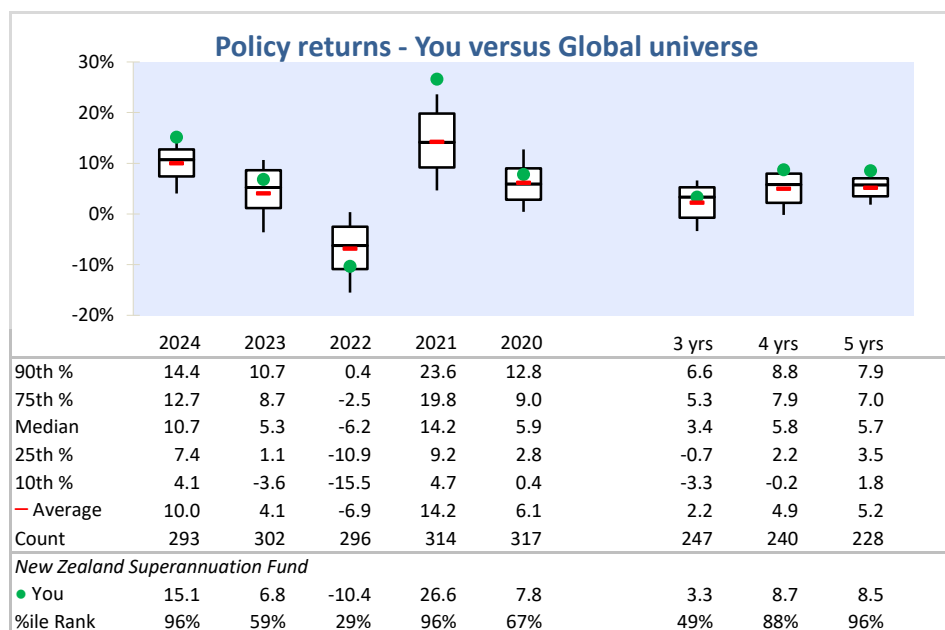
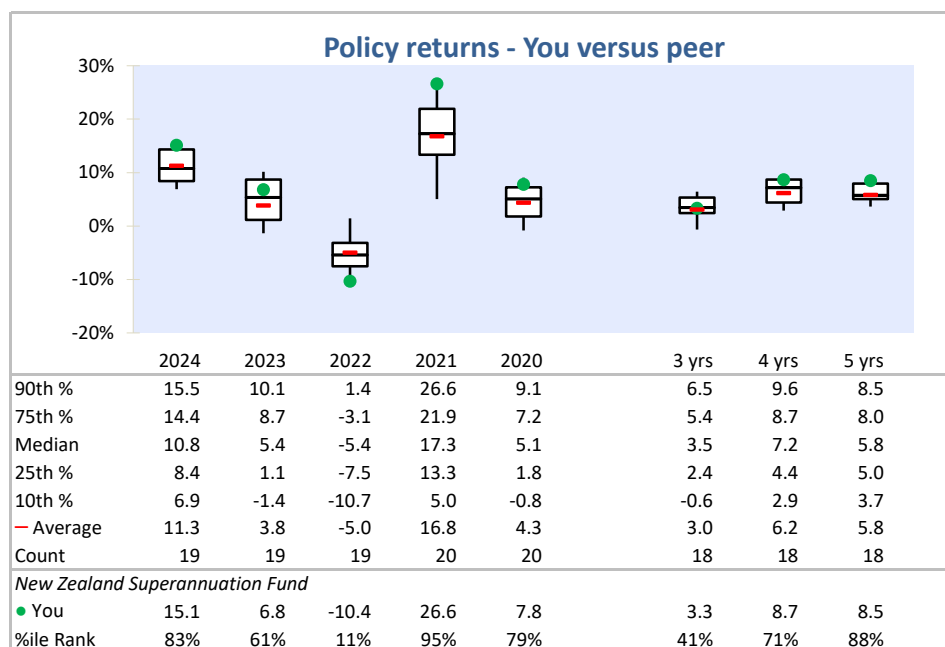
Your 5-year net total return of 9.8% was among the highest in your peer group and among the highest in the Global universe. Comparisons of total return do not help you understand the reasons behind relative performance. To understand the relative contributions from policy asset mix decisions and implementation decisions we separate total return into its more meaningful components - policy return and implementation value added.





## Policy returns

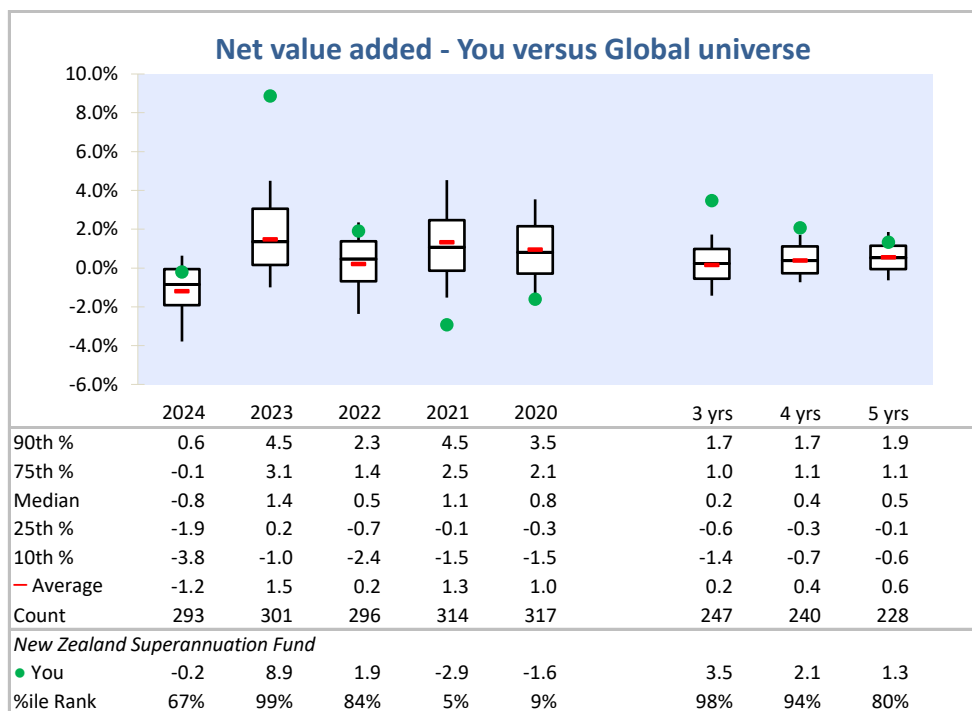
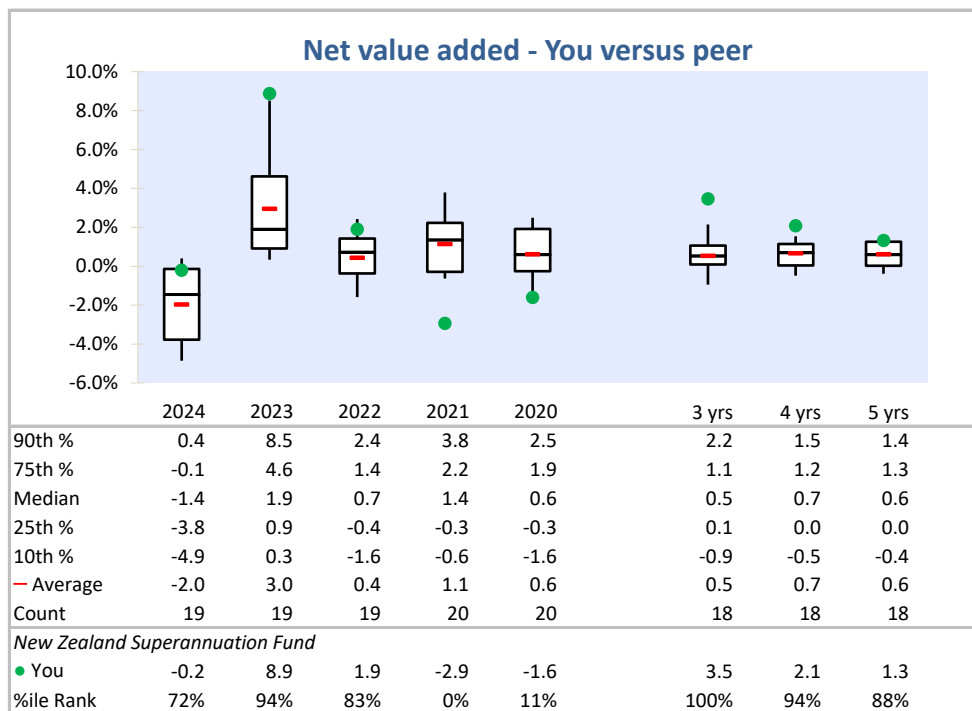
Your 5-year policy return of 8.5% was among the highest in your peer group and among the highest in the Global universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.



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. The correlation between your private equity returns and the benchmark based on investable, public market indices lagged by 85 business days is 0.85 versus a correlation of -0.35 using your reported benchmarks. Refer to the appendix of this section for details.

## Net value added

Your 5-year net value added of 1.3% was among the highest in your peer group and among the highest in the Global 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 %						Global average %					
	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>
Stock - U.S.							26.0	19.5	-10.9	41.4	5.1	15.0	21.8	18.3	-11.2	40.2	6.0	13.6
Stock - Europe & Far East	-2.6	15.9	-25.2	37.6	10.0	5.0	7.8	17.3	-11.3	34.2	-4.1	7.7	11.3	16.1	-13.1	32.2	-4.8	7.2
Stock - Global	22.1	13.0	-5.4	31.5	9.1	13.4	15.2	17.7	-10.7	28.9	3.6	11.0	18.8	17.4	-12.5	32.3	3.5	10.7
Stock - other							7.6	26.0	-29.1	113.7	-12.2	5.5	11.3	17.2	-14.9	35.0	-6.8	7.7
Stock - Emerging	11.4	-0.8	-21.7	41.4	0.1	4.1	6.8	2.3	-18.4	32.6	-0.9	1.7	14.7	1.1	-19.7	35.5	0.2	4.5
Stock - ACWI x U.S.							14.3	13.5	-16.6	40.9	-2.0	7.5	13.1	11.1	-18.0	39.2	-3.5	7.3
Stock - Aggregate	19.6	12.5	-7.9	32.9	8.2	12.3	19.2	16.7	-10.6	34.8	1.2	11.1	17.8	15.5	-12.1	34.6	2.0	10.3
Fixed income - U.S.			3.3	2.3	15.4		3.0	-0.8	-4.4	0.5	10.7	1.1	4.4	-5.6	-8.0	1.9	11.2	0.7
Fixed income - EAFE							2.1	0.2	-11.9	2.8	0.5	-1.5	5.0	-8.3	-11.6	2.2	4.2	-1.6
Fixed income - Global	3.4	-2.6	-6.0	-2.5	9.5	0.2	5.0	-3.6	-5.5	-0.6	2.8	-0.4	6.9	-1.3	-6.6	-2.0	5.1	0.5
Fixed income - other							8.3	11.8	-2.3	-6.7	7.8	3.8	10.1	3.3	-7.6	-2.1	7.2	2.1
Fixed income - Long bonds							-2.1	3.7	-19.4	-4.8	20.0	-0.2	-0.7	0.9	-19.4	-5.7	19.3	-1.9
Fixed income - Emerging							10.5	10.0	-13.4	3.6	3.1	2.2	11.4	6.1	-16.2	2.3	4.0	0.5
Fixed income - Inflation indexed							3.7	0.9	-7.0	1.1	9.1	1.5	2.2	-2.5	-9.8	0.6	8.7	0.0
Fixed income - High yield							7.5	10.5	-12.9	13.4	-1.5	2.6	8.4	11.9	-10.7	14.0	-3.5	3.5
Fixed income - Absolute return bonds							3.6	-2.6	-0.9	7.7			9.2	-1.5	-1.3	9.4	-2.0	3.1
Fixed income - Bundled LDI							1.9	-59.7	-10.4	13.5	9.3		-4.1	-16.1	-15.9	5.1	18.6	-4.0
Public mortgages													3.4	2.9	-7.1	-1.0	7.7	1.2
Fixed income - Convertibles							1.6	5.9	-12.9	16.2	-7.1		1.8	13.0	-22.6	22.1	7.1	5.5
Cash		7.4	2.3	2.2	2.5		3.8	3.1	-0.4	-0.1	0.6	1.0	4.4	3.0	-0.4	-0.2	1.0	1.1
Fixed income - Aggregate	3.4	2.2	-0.7	0.9	5.6	2.3	3.4	-0.1	-9.5	1.6	7.8	0.1	4.2	-1.6	-11.9	0.8	11.3	0.0
Commodities										31.1	-39.3		18.9	-26.9	30.5	73.2	-42.9	4.7
Infrastructure	8.0	-7.0	18.3	-14.8	13.3	2.8	6.1	3.3	6.0	0.4	13.7	4.4	11.6	9.2	6.0	2.9	8.6	7.1
Natural resources	10.6	9.2	64.8	-10.3	-16.7	8.3	-12.6	8.5	79.5	-23.1	-9.3	4.5	-15.3	12.4	101.4	-29.7	-9.0	3.4
REITs							4.9	4.3	-9.2	40.9	-13.8	2.4	5.7	0.7	-15.0	39.6	-18.4	0.7
Real estate ex-REITs	19.9	12.8	47.9	-32.1	1.3	6.6	-4.6	1.4	50.2	-20.3	13.9	5.5	-5.8	1.1	47.1	-24.3	13.7	3.3
Other real assets							10.4	18.1	-7.1	6.2	11.1	4.5	5.6	24.8	6.1	-7.0	3.2	-1.8
Real assets - Aggregate	14.2	7.2	53.4	-13.0	-9.0	8.3	-3.0	2.8	44.0	-13.3	9.0	6.1	-0.8	3.2	34.1	-10.8	6.8	4.8
Hedge funds	10.4	15.6	-8.6	6.4	-6.0	3.1	0.4	21.6	-6.3	10.1	-8.5	1.9	5.5	23.2	-9.6	12.4	-6.8	3.7
Global TAA							10.3	4.5	-9.0	2.0	-5.9	3.4	6.8	13.8	-11.0	11.8	-1.3	3.7
Risk parity							36.4	8.4	-13.3	8.0	12.0	9.0	14.3	2.5	-10.6	11.3	8.9	5.0
Private mortgages							2.7	-8.8	-0.3	-1.5	3.0	-1.3	3.3	6.3	-3.9	-2.4	5.4	0.9
Private credit							6.8	19.0	-4.7	21.0	-7.3	5.4	7.9	19.0	-3.1	10.6	-4.2	5.7
Private equity - Diversified	-3.7	4.8	-9.7	33.9	30.4	9.7	19.2	11.0	4.6	29.5	17.8	16.2	19.2	11.0	8.2	33.4	15.9	17.2
Venture capital	-26.3	14.0	-34.5				4.4	2.9	24.6	53.6	26.8	24.1	8.5	2.3	20.9	43.8	16.0	18.2
LBO							22.4	11.2	14.1	32.8	23.4	20.5	23.1	12.1	8.1	33.5	19.0	18.3
Private equity - Other	1.3	25.2	-9.5	8.0	24.7	9.1	19.5	16.3	-14.7	13.2	10.6	7.9	20.4	13.1	-7.5	29.7	14.6	15.6
Private equity	-0.2	22.9	-9.6	10.3	25.2	8.9	20.2	11.6	6.8	30.7	18.2	17.7	18.7	11.0	9.6	33.6	15.4	17.3
Total Fund Return	14.9	15.7	-8.5	23.7	6.2	9.8	9.3	6.8	-4.6	17.9	5.0	6.4	8.8	5.5	-6.6	15.5	7.1	5.7

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 composite calculation only uses those components with a full year return.

1. The 5-year return number only includes funds with continuous data over the last 5 years.

## Benchmark returns by asset class

Asset class	Your fund %						Peer average %						Global average %					
	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>
Stock - U.S.							22.2	17.0	-10.8	41.5	3.8	14.0	22.3	18.1	-11.8	41.2	6.1	13.7
Stock - Europe & Far East	-1.5	16.0	-24.8	34.7	8.0	4.6	9.4	16.6	-11.6	32.4	-4.2	7.4	11.6	17.1	-12.7	29.6	-5.0	6.9
Stock - Global	20.6	9.8	-9.8	33.1	9.0	11.6	18.1	15.4	-7.4	29.4	2.8	11.1	20.1	17.4	-11.7	31.3	4.0	11.2
Stock - other							8.0	21.7	-15.5	30.6	-4.0	7.4	11.6	16.5	-14.0	32.4	-3.5	8.6
Stock - Emerging	11.5	-2.2	1.8	36.9	-0.6	8.6	6.9	3.3	-15.6	33.6	-2.9	2.3	13.6	2.1	-20.2	35.3	-1.8	3.9
Stock - ACWI x U.S.							13.3	13.4	-17.3	35.7	-4.8	6.2	12.2	12.5	-18.3	36.2	-4.6	6.0
Stock - Aggregate	18.5	9.1	-10.7	33.7	7.7	10.7	18.4	13.9	-10.2	35.0	0.7	10.5	18.4	15.5	-12.0	33.9	2.0	10.4
Fixed income - U.S.			-4.0	-3.5	12.9		2.8	-0.2	-6.0	-0.4	8.8	1.3	3.7	-5.3	-8.4	1.0	10.3	0.1
Fixed income - EAFE							2.6	-1.0	-12.3	2.7	-0.4	-1.9	4.3	-7.6	-12.0	1.8	3.7	-2.1
Fixed income - Global	3.8	-2.3	-6.2	-2.4	10.0	0.4	3.6	-3.9	-5.2	-1.0	5.9	-0.2	6.2	-0.6	-7.5	-3.0	7.1	0.5
Fixed income - other							8.4	6.5	-5.0	-6.7	7.7	2.4	9.8	2.0	-8.5	-2.7	7.3	1.3
Fixed income - Long bonds							-1.5	1.2	-19.8	-5.9	19.5	-2.4	-1.4	1.0	-19.5	-7.0	19.4	-2.6
Fixed income - Emerging							9.9	7.5	-12.4	2.5	3.5	1.9	10.8	5.7	-16.8	1.9	4.3	1.0
Fixed income - Inflation indexed							2.7	-9.5	-9.8	2.9	6.5	-1.9	1.6	-4.3	-9.9	1.3	7.8	-0.5
Fixed income - High yield							8.3	13.3	-12.5	14.2	-2.3	2.7	9.2	10.5	-11.9	13.6	-2.1	3.6
Fixed income - Absolute return bonds							3.8	1.8	1.1	3.3			9.5	2.9	1.2	1.6	1.9	4.3
Fixed income - Bundled LDI							2.3	-59.6	-14.7	5.6	7.0		-7.0	-15.9	-18.2	5.3	18.8	-3.9
Public mortgages													2.7	3.9	-8.4	-1.4	5.2	-1.1
Fixed income - Convertibles							2.1	24.6	-12.2	11.8	16.6		4.6	11.8	-17.5	24.9	9.5	9.5
Cash	5.7	3.8	2.3	0.4	1.2	2.7	4.7	3.1	-0.1	-0.1	1.0	1.7	5.1	3.4	0.1	0.1	1.1	1.9
Fixed income - Aggregate	3.8	-2.3	-6.2	-2.4	10.0	0.4	2.7	-2.6	-11.1	0.0	7.7	-1.2	2.6	-1.8	-13.3	-0.5	11.1	-0.8
Commodities							16.4	-34.4	16.1	72.0	-40.4	-1.5	17.5	-27.0	31.1	73.1	-40.2	4.0
Infrastructure	12.8	-21.0	16.3	0.0	24.0	5.1	14.4	-4.8	6.2	1.8	15.4	5.6	12.3	3.5	3.4	2.9	9.1	5.9
Natural resources	10.4	-15.5	60.9	-4.6	-6.0	6.1	-3.9	2.8	85.7	-19.4	-3.6	6.6	-15.4	8.3	103.7	-26.5	-4.0	4.1
REITs							4.3	-6.0	-18.1	35.3	-15.1	-0.4	4.5	-0.1	-16.0	38.6	-19.7	0.4
Real estate ex-REITs	16.6	-20.3	28.0	-11.9	27.8	6.0	-3.5	-1.9	46.6	-20.5	16.2	4.4	-2.9	0.0	45.5	-23.7	14.6	3.9
Other real assets							1.9	12.2	-0.3	7.0	23.2	10.6	11.8	13.7	5.4	-1.9	10.9	5.7
Real assets - Aggregate	13.1	-17.7	48.0	-4.2	2.3	6.2	-1.2	-2.1	40.0	-12.0	11.0	5.5	0.5	1.4	32.4	-10.1	8.0	4.8
Hedge funds	7.8	9.0	-13.5	14.6	-1.7	2.7	6.5	18.3	-11.8	14.6	-4.7	3.2	6.2	18.4	-12.7	13.9	-4.3	3.6
Global TAA								2.0	-3.2	14.7	0.2		7.4	12.4	-9.8	12.0	0.8	5.0
Risk parity							5.4	12.1	-10.7	8.3	13.6	4.6	6.3	7.8	-9.6	11.5	6.7	3.8
Private mortgages							6.3	-7.7	-6.9	-1.0	1.5	-2.1	4.6	2.2	-8.6	-1.7	4.9	0.0
Private credit							8.3	13.8	-10.1	10.6	-3.5	3.5	9.4	14.1	-8.9	9.4	-1.0	4.2
Private equity - Diversified	22.1	-14.5	-2.3	26.5	42.1	12.9	27.0	-8.2	12.9	16.6	-1.9	8.4	25.0	-5.9	14.0	17.1	-5.7	8.3
Venture capital	22.2	-15.1	-2.3				26.3	-10.1	11.4	16.1	-3.5	8.1	25.0	-6.3	13.5	17.3	-5.0	8.5
LBO							26.8	-9.5	14.5	14.8	-3.0	7.9	25.9	-6.3	13.4	18.0	-5.1	8.5
Private equity - Other	15.0	-11.1	-7.6	22.8	38.0	9.9	25.5	-9.4	9.9	14.9	3.6	7.8	24.3	-6.5	13.1	15.8	-5.3	7.8
Private equity	15.9	-11.6	-7.1	23.1	38.3	10.2	26.6	-8.0	12.6	16.5	-2.1	8.2	25.1	-5.8	14.0	17.1	-5.7	8.3
Total Policy Return	15.1	6.8	-10.4	26.6	7.8	8.5	11.3	3.8	-5.0	16.8	4.3	5.8	10.0	4.1	-6.9	14.2	6.1	5.2

1. The 5-year return number only includes funds with continuous data over the last 5 years.

2. 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. The correlation between your private equity returns and the benchmark based on investable, public market indices lagged by 85 business days is 0.85 versus a correlation of -0.35 using your reported benchmarks. Refer to the appendix of this section for details.

## Net value added by asset class

Asset class	Your fund %						Peer average %						Global average %					
	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>	2024	2023	2022	2021	2020	5-yr <sup>1</sup>
Stock - U.S.							3.8	1.2	-0.1	-0.1	1.3	0.6	-0.5	0.4	0.5	-0.7	-0.1	0.0
Stock - Europe & Far East	-1.1	-0.2	-0.4	2.9	2.0	0.5	-1.7	0.7	0.2	1.9	0.1	0.3	-0.5	-1.1	-0.4	2.7	0.3	0.4
Stock - Global	1.5	3.2	4.4	-1.6	0.1	1.7	-2.9	2.3	-3.3	0.3	-0.2	0.1	-1.2	0.1	-1.1	1.0	-0.5	-0.5
Stock - other							-1.1	4.7	-13.6	83.1	-8.2	-2.6	0.1	0.5	-0.5	5.2	-3.7	-1.0
Stock - Emerging	-0.1	1.4	-23.5	4.5	0.7	-4.5	0.2	-0.7	-2.8	-1.0	2.1	0.3	1.1	-0.9	0.2	0.3	2.1	0.6
Stock - ACWI x U.S.							1.0	0.1	0.7	5.2	2.8	1.3	0.8	-1.2	0.4	3.0	1.1	1.4
Stock - Aggregate	1.0	3.4	2.8	-0.8	0.5	1.6	0.8	2.8	-0.4	-0.2	0.5	0.6	-0.7	0.0	-0.2	0.7	0.0	-0.1
Fixed income - U.S.			7.2	5.8	2.5		0.2	-0.8	1.6	0.9	1.9	-0.1	0.7	-0.3	0.6	0.8	0.8	0.6
Fixed income - EAFE							-0.5	1.2	0.4	0.1	0.9	0.4	0.9	-1.3	0.1	0.3	1.0	0.2
Fixed income - Global	-0.4	-0.3	0.2	-0.2	-0.6	-0.2	0.8	0.6	-0.3	0.7	-3.1	-0.5	0.8	-0.4	0.2	0.7	-1.9	-0.1
Fixed income - other							-0.2	5.2	2.7	0.0	0.2	1.5	0.4	1.0	1.1	0.2	-0.1	0.7
Fixed income - Long bonds							-0.6	2.5	0.4	1.1	0.1	1.8	0.5	-0.5	0.1	1.2	0.0	0.5
Fixed income - Emerging							0.2	0.6	-1.0	1.1	-0.4	0.3	0.2	0.6	-0.1	0.6	-0.5	-0.5
Fixed income - Inflation indexed							1.0	10.3	1.6	-1.8	2.6	3.4	0.4	1.2	0.6	-0.4	0.7	0.5
Fixed income - High yield							-2.0	0.6	0.5	-0.8	-0.3	-0.8	0.2	1.0	1.0	0.3	-1.4	0.2
Fixed income - Absolute return bonds							-0.2	-4.4	-2.0	12.2			0.5	-3.5	-1.8	8.2	-3.9	1.4
Fixed income - Bundled LDI							-0.4	0.0	4.3	7.8	2.3		0.7	-1.3	0.6	0.8	0.4	0.9
Public mortgages													1.5	-1.6	0.8	1.8	0.5	2.4
Fixed income - Convertibles							-0.5	-18.7	-0.8	4.4	-23.7		-2.8	-1.6	-2.5	-2.8	-5.0	-3.9
Cash		3.6	0.0	1.8	1.3		-0.5	0.3	-0.3	0.0	-0.4	-0.3	-0.6	-0.2	-0.5	-0.2	-0.3	-0.8
Fixed income - Aggregate	-0.4	4.5	5.5	3.2	-4.5	1.8	0.7	2.5	1.6	1.6	0.1	1.3	1.6	0.2	1.4	1.3	0.2	0.9
Commodities										-41.0	1.1		1.4	-0.1	-3.5	-1.0	-3.3	0.3
Infrastructure	-4.8	14.0	2.0	-14.8	-10.7	-2.4	-8.3	8.1	-0.4	-1.3	-1.7	-1.1	-0.8	5.7	2.4	-0.1	-0.5	1.2
Natural resources	0.2	24.7	3.9	-5.7	-10.7	2.1	-8.6	4.2	-6.3	-3.7	-5.8	-1.5	0.2	3.7	-2.2	-3.6	-4.9	-1.0
REITs							0.7	10.5	8.9	5.5	1.3	2.8	1.1	-0.4	0.7	1.8	1.3	0.2
Real estate ex-REITs	3.3	33.1	19.9	-20.2	-26.5	0.6	-1.1	3.2	3.9	0.2	-2.2	1.0	-2.5	1.0	2.0	-0.7	-1.0	-0.6
Other real assets							1.7	-9.5	-5.0	-0.8	-12.1		-8.4	16.8	-0.7	-5.0	-8.3	-9.6
Real assets - Aggregate	1.2	25.0	5.4	-8.8	-11.3	2.1	-1.8	4.7	3.9	-1.3	-2.0	0.6	-1.1	1.6	2.3	-1.1	-1.2	0.1
Hedge funds	2.6	6.6	4.9	-8.2	-4.3	0.4	-0.3	3.3	6.4	-4.5	-3.4	0.5	-0.4	3.7	3.0	-1.8	-2.5	0.5
Global TAA								2.5	-5.8	-17.2	-6.1		0.4	1.4	-1.4	-1.4	-2.9	-0.8
Risk parity							0.0	-0.4	-2.7	-0.2	-1.6	0.0	3.6	-3.4	-0.8	-1.1	1.9	0.2
Private mortgages							-3.6	-1.2	6.6	-0.4	1.5	0.8	-1.3	3.8	4.5	-1.0	0.5	0.9
Private credit							-0.4	5.3	5.4	10.3	-3.8	1.8	-1.3	4.6	5.3	0.6	-2.9	1.7
Private equity - Diversified	-25.8	19.3	-7.4	7.4	-11.7	-3.2	-7.8	19.2	-8.2	12.6	19.6	7.7	-5.8	17.0	-5.7	16.2	21.4	8.7
Venture capital	-48.5	29.1	-32.2				-22.0	13.0	14.4	35.3	30.9	15.7	-17.0	8.7	8.8	25.5	21.0	9.6
LBO							-4.8	20.7	0.7	15.5	27.1	12.4	-3.0	18.5	-4.7	14.9	24.2	9.7
Private equity - Other	-13.7	36.4	-2.0	-14.8	-13.3	-0.8	-4.5	26.3	-21.9	-3.7	5.9	-0.3	-4.0	19.4	-20.2	13.0	19.5	7.8
Private equity	-16.1	34.5	-2.5	-12.8	-13.2	-1.3	-6.5	19.6	-5.6	13.6	20.4	9.4	-6.4	16.9	-4.3	16.5	21.1	8.9
Total Net Value Added	-0.2	8.9	1.9	-2.9	-1.6	1.3	-2.0	3.0	0.4	1.1	0.6	0.6	-1.2	1.5	0.2	1.3	1.0	0.6

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 composite calculation only uses those components with a full year return.

1. The 5-year return number only includes funds with continuous data over the last 5 years.

2. 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. The correlation between your private equity returns and the benchmark based on investable, public market indices lagged by 85 business days is 0.85 versus a correlation of -0.35 using your reported benchmarks. Refer to the appendix of this section for details.

## Your policy return and value added calculation - 2023/24

### 2023/24 Policy Return and Value Added

Asset class	Policy weight	Description	Benchmark	Return	Net return	Value added
Stock - Europe & Far East	5.0%	NZX 50 Custom		-1.5%	-2.6%	-1.1%
Stock - Global	69.0%	MSCI All Countries World Index Custom/MSCI W		20.6%	22.1%	1.5%
Stock - Emerging	6.0%	MSCI All Countries World Index Custom/MSCI En		11.5%	11.4%	-0.1%
Fixed income - Global	20.0%	Barclays Global Aggregate		3.8%	3.4%	-0.4%
Cash		Cash BM		5.7%		
Infrastructure		Infrastructure BM		12.8%	8.0%	-4.8%
Natural resources		Natural Resources BM		10.4%	10.6%	0.2%
Real estate ex-REITs		Real Estate BM		16.6%	19.9%	3.3%
Hedge funds		Hedge Fund BM		7.8%	10.4%	2.6%
Private equity - Diversified		Diversified or All BM		22.1%	-3.7%	-25.8%
Venture capital		Venture Capital BM		22.2%	-26.3%	-48.5%
Private equity - Other		Other Non-Listed Assets BM		15.0%	1.3%	-13.7%
<b>Total</b>	<b>100.0%</b>					
Net Actual Return (reported by you)						14.9%
Calculated Policy Return = sum of (policy weights X benchmark returns)					15.6%	
Adjustment to reflect rebalancing and overlay impacts					<u>-0.5%</u>	
Policy Return (reported by you)						<u>15.1%</u>
Net Value Added (Net Return - Policy Return)						-0.2%

## Your policy return and value added calculations - 2019/20 to 2022/23

### 2022/23 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Benchmark Return	Net return	Value added
Stock - Europe & Far East	5.0%	NZX 50 Custom	16.0%	15.9%	-0.2%
Stock - Global	67.8%	MSCI All Countri	9.8%	13.0%	3.2%
Stock - Emerging	7.3%	MSCI All Countri	-2.2%	-0.8%	1.4%
Fixed income - U.S.					
Fixed income - Global	20.0%	Barclays Global	-2.3%	-2.6%	-0.3%
Cash		Cash BM	3.8%	7.4%	3.6%
Infrastructure		Infrastructure B	-21.0%	-7.0%	14.0%
Natural resources		Natural Resourc	-15.5%	9.2%	24.7%
Real estate ex-REITs		Real Estate BM	-20.3%	12.8%	33.1%
Hedge funds		Hedge Fund BM	9.0%	15.6%	6.6%
Private equity - Diversified		Diversified or AI	-14.5%	4.8%	19.3%
Venture capital		Venture Capital	-15.1%	14.0%	29.1%
Private equity - Other		Other Non-Liste	-11.1%	25.2%	36.4%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					15.7%
Calculated policy return (sum: Policy weights x benchmarks)				6.8%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.0%</u>	
Policy return (reported by you)					<u>6.8%</u>
Net Value Added (Net Return - Policy Return)					8.9%

### 2020/21 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Benchmark Return	Net return	Value added
Stock - Europe & Far East	5.0%	NZX 50	34.7%	37.6%	2.9%
Stock - Global	65.0%	MSCI Developpec	33.1%	31.5%	-1.6%
Stock - Emerging	10.0%	MSCI Emerging I	36.9%	41.4%	4.5%
Fixed income - U.S.		Barclays Global	-3.5%	2.3%	5.8%
Fixed income - Global	20.0%	Barclays Global	-2.4%	-2.5%	-0.2%
Cash		NZD Cash Bench	0.4%	2.2%	1.8%
Infrastructure		Infrastructure B	0.0%	-14.8%	-14.8%
Natural resources		Timber Benchm	-4.6%	-10.3%	-5.7%
Real estate ex-REITs		NZ Property Ber	-11.9%	-32.1%	-20.2%
Hedge funds		Custom	14.6%	6.4%	-8.2%
Private equity - Diversified		Private Equity B	26.5%	33.9%	7.4%
Private equity - Other		Private Equity B	22.8%	8.0%	-14.8%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					23.7%
Calculated policy return (sum: Policy weights x benchmarks)				26.5%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.1%</u>	
Policy return (reported by you)					<u>26.6%</u>
Net Value Added (Net Return - Policy Return)					-2.9%

### 2021/22 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Benchmark Return	Net return	Value added
Stock - Europe & Far East	5.0%	NZX 50 Custom	-24.8%	-25.2%	-0.4%
Stock - Global	75.0%	MSCI All Countri	-9.8%	-5.4%	4.4%
Stock - Emerging		MSCI All Countri	1.8%	-21.7%	-23.5%
Fixed income - U.S.		Barclays Global	-4.0%	3.3%	7.2%
Fixed income - Global	20.0%	Barclays Global	-6.2%	-6.0%	0.2%
Cash		NZD Cash Bench	2.3%	2.3%	0.0%
Infrastructure		Infrastructure B	16.3%	18.3%	2.0%
Natural resources		Natural Resourc	60.9%	64.8%	3.9%
Real estate ex-REITs		Property BM	28.0%	47.9%	19.9%
Hedge funds		Hedge Fund BM	-13.5%	-8.6%	4.9%
Private equity - Diversified		Private Equity B	-2.3%	-9.7%	-7.4%
Venture capital		Private Equity B	-2.3%	-34.5%	-32.2%
Private equity - Other		Other Private Ec	-7.6%	-9.5%	-2.0%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					-8.5%
Calculated policy return (sum: Policy weights x benchmarks)				-9.8%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.6%</u>	
Policy return (reported by you)					<u>-10.4%</u>
Net Value Added (Net Return - Policy Return)					1.9%

### 2019/20 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Benchmark Return	Net return	Value added
Stock - Europe & Far East	5.0%	NZX 50	8.0%	10.0%	2.0%
Stock - Global	65.0%	MSCI Developpec	9.0%	9.1%	0.1%
Stock - Emerging	10.0%	MSCI Emerging I	-0.6%	0.1%	0.7%
Fixed income - U.S.		BC Custom (NZS)	12.9%	15.4%	2.5%
Fixed income - Global	20.0%	Barclays Global	10.0%	9.5%	-0.6%
Cash		NZD Cash Bench	1.2%	2.5%	1.3%
Infrastructure		Infrastructure B	24.0%	13.3%	-10.7%
Natural resources		Timber Benchm	-6.0%	-16.7%	-10.7%
Real estate ex-REITs		NZ Property Ber	27.8%	1.3%	-26.5%
Hedge funds		Custom	-1.7%	-6.0%	-4.3%
Private equity - Diversified		Private Equity B	42.1%	30.4%	-11.7%
Private equity - Other		Private Equity B	38.0%	24.7%	-13.3%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					6.2%
Calculated policy return (sum: Policy weights x benchmarks)				8.2%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.4%</u>	
Policy return (reported by you)					<u>7.8%</u>
Net Value Added (Net Return - Policy Return)					-1.6%

## Profit/Loss on overlay programs

Overlay type	Your fund		Peer median				Global median			
	2024	2023	2024		2023		2024		2023	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			0.0	3	-7.0	4	2.4	7	-10.9	7
Ext. Discretionary Currency							6.3	8	0.0	9
Internal Global TAA			7.2	2	49.7	2	2.4	8	18.1	4
External Global TAA							-3.9	3	11.2	2
Internal PolicyTilt TAA	-21.2	224.8	-12.6	2	108.9	2	0.1	6	2.7	6
External PolicyTilt TAA										
Internal Commodities							0.1	1	0.0	1
External Commodities							3.0	1	15.5	4
Internal Long/Short	2.4	3.0	2.4	3	3.0	3	0.0	5	3.0	5
External Long/Short			-1.2	1	0.4	1	-1.2	1	0.4	1
Internal Other	148.2	-57.3	67.5	2	-23.8	2	1.9	6	7.5	6
External Other							8.1	7	-33.3	6

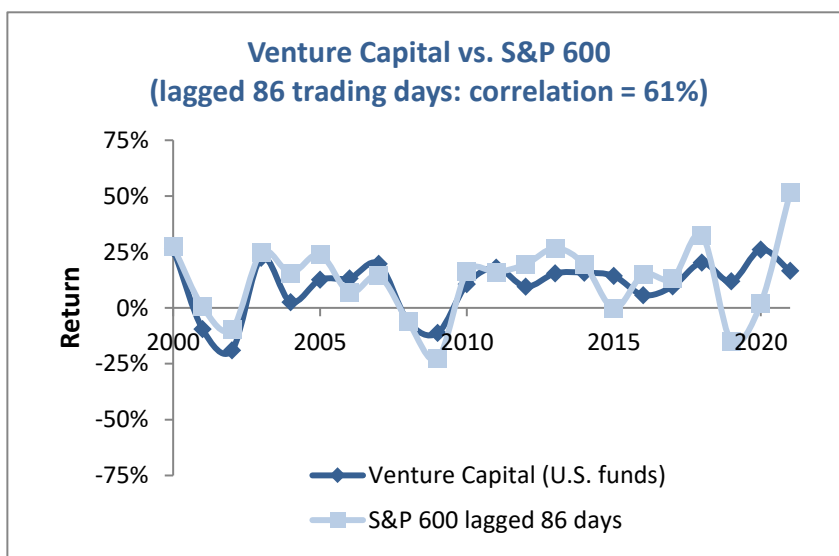
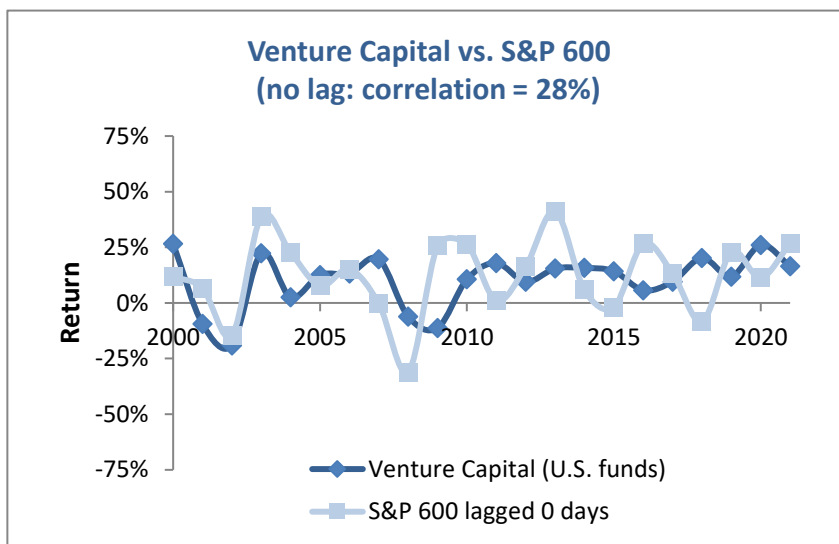
Profit/loss in basis points was calculated using total fund average holdings. This was done to measure the impact of the program at the total fund level.



## Appendix - 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 S&P 600 index return was -31.1% versus -6.2% if lagged 86 trading days. Thus if a fund earned the average reported venture capital return for 2008 of -6.1%, they would have mistakenly believed that their value added from venture capital was 25.0% using the un-lagged benchmarks versus 0.1% 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 standardized 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 a standardized benchmark. The standard benchmark is:

- Investable. They are comprised of a blend of small cap indices that are investable.
- Lagged. Your standardized benchmark had a lag of 85 trading days. 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 85 days (i.e., approximately 119 calendar days or 3.9 calendar months), the correlation between the two series is maximized for most plans.
- Regional mix adjusted based on the average estimated mix of regions in private equity portfolios for a given country.
- The result is the standardized benchmarks are superior to most self-reported benchmarks. Correlations improve to a median of 82% for the standardized benchmarks versus 44% for self-reported benchmarks. Other statistics such as volatility were also much better.

# 4

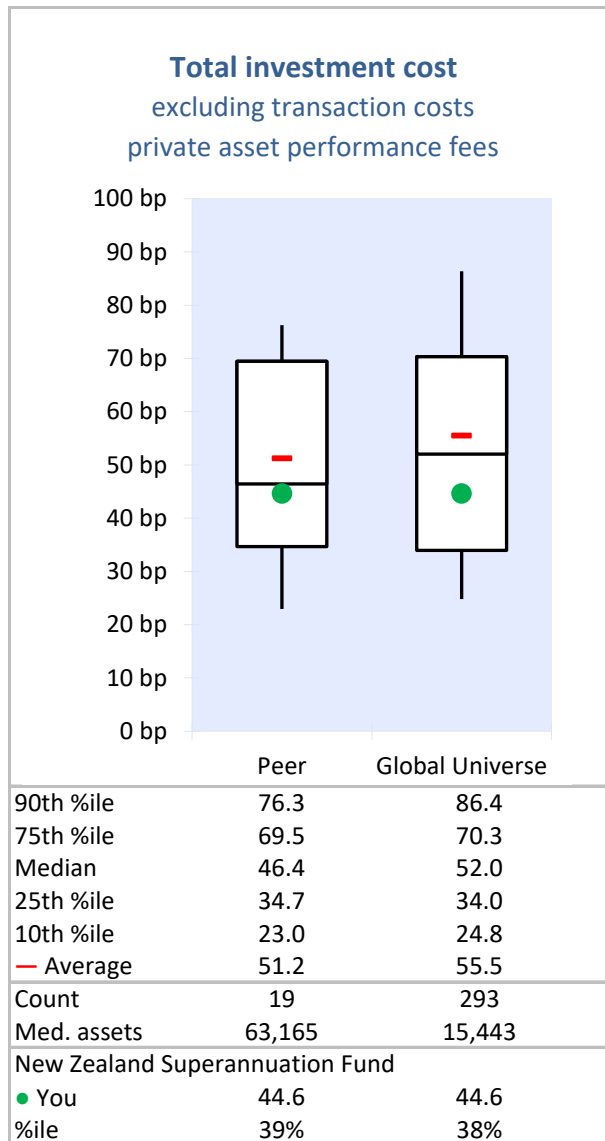
## Cost: total, benchmark, trend

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## Comparisons of total investment cost

Your total investment cost, excluding transaction costs and private asset performance fees, of 44.6 bps was below the peer median of 46.4 bps.

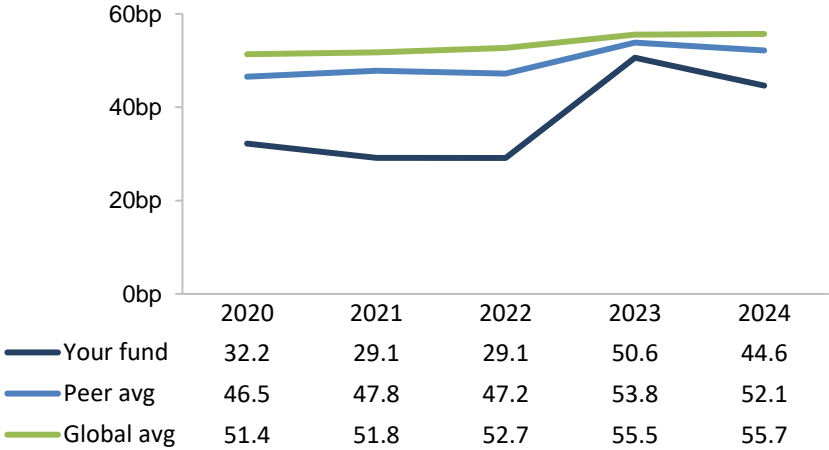
Differences in total investment cost are often caused by two factors that are usually outside of management's control: asset mix and fund size. Therefore, to assess whether your fund's total investment cost is high or low given your unique asset mix and size, CEM calculates a benchmark cost for your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



# Trend in total investment cost, you versus peers and universe

Your total investment cost, excluding transaction costs and private asset performance fees, increased from 29.1 bps in 2020 to 44.6 bps in 2024.

**Trend in total investment cost**  
(excluding transaction costs and private asset performance fees)



Trend analysis is based on 228 Global funds and 18 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	Internal		External			
	In-house total cost	Transaction costs	Manager base fees	Monitoring & other costs	Perform. fees (active only)	Transaction costs
<u>Public</u> (Stock, Fixed income, commodities, REITs)	✓	✗	✓	✓	✓	✗
Derivatives/Overlays	✓	✗	✓	✓	✓	✗
<u>Hedge funds &amp; Global TAA</u>						
Hedge Funds	n/a	n/a	✓	✓	✓	✗
Global TAA	✓	✗	✓	✓	✓	✗
<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 cost is included.
- ✗ indicates cost is excluded.
- CEM currently excludes performance fees for certain external assets 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 2024 total investment cost, excluding transaction costs and private asset performance fees, was 44.6 bp or \$309.6 million.

	Internal		External passive		External active			Total <sup>1</sup>		
	Passive	Active	Monitoring Fees	& Other	Base Fees	Perform. Fees	Monitor. & Other	\$000s	bps	% of Total
<b>Asset management</b>										
Stock - Europe & Far East	381	5,827			3,577	152	156	10,093		3%
Stock - Emerging			994	560				1,554		1%
Stock - Global	520		3,038	5,746	8,071		3,631	21,006		7%
Fixed income - U.S.										
Fixed income - Global	4,427		2,218	2,643				9,288		3%
Cash										
Real estate ex-REITs <sup>1</sup>		2,022						2,022		1%
Real estate ex-REITs - LP/Value add <sup>1</sup>					19,394	1,781	2,979	22,373		7%
Real estate ex-REITs - Co-invest. <sup>1</sup>					4,016		1,476	5,493		2%
Infrastructure <sup>12</sup>		3,558			1,483	-61,066	213	5,253		2%
Infrastructure - LP/Value add <sup>12</sup>					943	1,219	143	1,086		0%
Natural resources <sup>1</sup>		34,834			7,686	0	993	43,513		14%
Hedge funds					24,830	41,469	4,145	70,443		23%
Private equity - Diversified - LP/Value add <sup>1</sup>					8,414	-49	500	8,915		3%
Private equity - Diversified - FoFs <sup>1</sup>					4	0	3	7		0%
Underlying FoF fees <sup>1</sup>					0	0				
Private equity - Diversified - Co-invest. <sup>1</sup>					248	1,012	483	731		0%
Venture capital - LP/Value add <sup>12</sup>					6,618	1,344	897	7,516		2%
Venture capital - Co-invest. <sup>1</sup>							336	336		0%
Private equity - Other - LP/Value add <sup>1</sup>		13,153						13,153		4%
Private equity - Other - Co-invest. <sup>1</sup>					20,418	62,343	2,878	23,296		8%
Derivatives/Overlays	1,962	23,880						25,842		8%
Total asset management costs excluding private asset performance fees								271,917	39.2bp	88%
<b>Oversight, custodial &amp; other asset related costs</b>										
Oversight of the fund								26,429		9%
Trustee & custodial								6,521		2%
Audit								1,327		0%
Other								3,396		1%
Total oversight, custodial & other costs								37,673	5.4bp	12%
Total investment costs excluding transaction costs and private asset performance fees								309,590	44.6bp	100%

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

2. CEM-imputed costs are applied. 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 (2024 - 2020)

	Investment costs (\$000s)					Change (\$000s)				Change (%)			
	2024	2023	2022	2021	2020	2024	2023	2022	2021	2024	2023	2022	2021
<b>Asset management</b>													
Stock - Europe & Far East	10,093	8,886	8,329	7,036	7,736	1,207	557	1,293	-700	14%	7%	18%	-9%
Stock - Emerging	1,554	1,786	1,665	2,181	6,589	-232	121	-516	-4,408	-13%	7%	-24%	-67%
Stock - Global	21,006	16,806	13,753	11,734	13,421	4,200	3,053	2,019	-1,687	25%	22%	17%	-13%
Fixed income - U.S.			314	262	91			52	171			20%	188%
Fixed income - Global	9,288	3,916	2,598	2,473	2,532	5,372	1,318	125	-59	137%	51%	5%	-2%
Cash		4,851	3,454	3,296	3,009		1,397	158	287		40%	5%	10%
Real estate ex-REITs <sup>1</sup>	2,022	1,124	1,023	459	783	898	101	564	-324	80%	10%	123%	-41%
Real estate ex-REITs - LP/Value add <sup>1</sup>	22,373	8,111	4,061	736	102	14,262	4,050	3,325	634	176%	100%	452%	621%
Real estate ex-REITs - Co-invest. <sup>1</sup>	5,493	4,357	3,556	2,436		1,136	801	1,120		26%	23%	46%	
Infrastructure <sup>12</sup>	5,253	3,047	2,575	2,018	2,014	2,205	472	557	4	72%	18%	28%	0%
Infrastructure - LP/Value add <sup>12</sup>	1,086	6,785	2,531	2,519	3,045	-5,700	4,254	12	-526	-84%	168%	0%	-17%
Natural resources <sup>1</sup>	43,513	8,449	5,873	5,843	6,544	35,064	2,576	30	-701	415%	44%	1%	-11%
Hedge funds	70,443	128,550	47,124	28,515	28,121	-58,107	81,426	18,609	394	-45%	173%	65%	1%
Private equity - Diversified - LP/Value add <sup>1</sup>	8,915	13,162	12,761	11,019	7,927	-4,248	401	1,743	3,092	-32%	3%	16%	39%
Private equity - Diversified - FoFs <sup>1</sup>	7	819	988	1,066	667	-813	-169	-78	399	-99%	-17%	-7%	60%
Underlying FoF fees <sup>1</sup>	0	0	169	217	0		-169	-47	217		-100%	-22%	
Private equity - Diversified - Co-invest. <sup>1</sup>	731	753	620			-22	133			-3%	21%		
Venture capital - LP/Value add <sup>12</sup>	7,516	3,265	315			4,250	2,951			130%	938%		
Venture capital - Co-invest. <sup>1</sup>	336	390	317			-54	73			-14%	23%		
Private equity - Other - LP/Value add <sup>1</sup>	13,153	4,580	5,022	6,219	4,422	8,573	-442	-1,197	1,797	187%	-9%	-19%	41%
Private equity - Other - Co-invest. <sup>1</sup>	23,296	27,209	18,644	14,977	16,046	-3,913	8,565	3,667	-1,069	-14%	46%	24%	-7%
Derivatives/Overlays	25,842	16,135	12,669	11,365	10,584	9,707	3,466	1,304	781	60%	27%	11%	7%
Total excl. private asset perf. fees	271,917	262,981	148,361	114,370	113,633	8,936	114,620	33,991	737	3%	77%	30%	1%
<b>Oversight, custodial &amp; other asset related costs</b>													
Oversight of the fund	26,429	22,494	14,014	12,307	18,511	3,935	8,480	1,707	-6,204	17%	61%	14%	-34%
Trustee & custodial	6,521	6,275	5,510	6,980	6,234	246	765	-1,470	746	4%	14%	-21%	12%
Audit	1,327	704	612	596	487	623	92	16	109	88%	15%	3%	22%
Other	3,396												
Total oversight, custodial & other	37,673	29,473	20,136	19,883	25,232	8,200	9,337	253	-5,349	28%	46%	1%	-21%
Total investment costs <sup>1</sup>	309,590	292,453	168,497	134,253	138,865	17,136	123,957	34,244	-4,612	6%	74%	26%	-3%
Total in basis points	44.6bp	50.6bp	29.1bp	29.1bp	32.2bp								

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

2. CEM-imputed costs are applied. Refer to Appendix A.



## Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 0.7 bps below your benchmark cost of 45.3 bps. This implies that your fund was low cost by 0.7 bps compared to the peer median, after adjusting for your fund's asset mix.

### Your cost versus benchmark

	\$000s	bps
Your fund's total investment costs excluding transaction costs and private asset performance fees	309,590	44.6 bp
- Your fund's benchmark	314,243	45.3 bp
= Your fund's cost savings	-4,654	-0.7 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 11.

### Reasons why your fund was low cost

	Cost/-Savings impact	
	\$000s	bps
<u>Differences in implementation style:</u>		
More passive	-33,567	-4.8 bp
Mix of int. pass. % of total passive	458	0.1 bp
Less int. active % of total active	4,721	0.7 bp
Less evergreen % of external	6,328	0.9 bp
Less fund of funds	-1,474	-0.2 bp
More co-investment	-5,379	-0.8 bp
More overlays and unfunded strategies	20,834	3.0 bp
Total style impact	-8,079	-1.2 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-54,228	-7.8 bp
Internal investment management	34,272	4.9 bp
Oversight, custodial and other	23,382	3.4 bp
Total impact of paying more /-less	3,425	0.5 bp
Total savings	-4,654	-0.7 bp

## Benchmark cost calculation

Your 2024 benchmark cost was 45.3 basis points or 314.2 million. It equals your holdings for each asset class multiplied by the peer median cost for the asset class. The peer median cost is the style weighted average for all implementation styles (i.e., internal passive, internal active, external passive, external active).

Asset class	Your average assets (A)	Weighted peer median cost <sup>1</sup> (B)	Benchmark \$000s (A X B)
<b>Asset management costs</b>			
Stock - Europe & Far East	2,703	17.9 bp	4,837
Stock - Emerging	1,623	43.2 bp	7,003
Stock - Global	28,622	24.4 bp	69,762
Fixed income - Global	10,902	10.0 bp	10,946
Real estate ex-REITs	3,058	65.7 bp	20,084
Infrastructure	753	82.2 bp	6,189
Natural resources	3,985	55.8 bp	22,230
Hedge funds	4,504	130.1 bp	58,594
Perf. fees	4,504	100.1 bp	45,075
Private equity - Diversified	624	158.3 bp	9,884
Venture capital	240	162.1 bp	3,890
Private equity - Other	5,765	63.2 bp	36,449
Overlay Programs <sup>2</sup>	69,340	0.7 bp	5,008
Benchmark for asset management	69,340	43.3 bp	299,952
<b>Oversight, custody and other costs<sup>3</sup></b>			
Oversight	69,340	1.2 bp	
Trustee & custodial	69,340	0.3 bp	
Consulting	69,340	0.1 bp	
Audit	69,340	0.0 bp	
Other	69,340	0.1 bp	
Benchmark for oversight, custody, other	69,340	2.1 bp	14,291
<b>Total benchmark cost</b>		<b>45.3 bp</b>	<b>314,243</b>

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 16 of this section.

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

3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.

## Cost impact of differences in implementation style

Differences in implementation style (passive vs. active, internal vs. external, etc.) relative to your peers saved you 1.2 bps.

Implementation choices	Assets by style	Peer benchmark cost			Style 1 %			Cost/ -Savings \$000s	bps
		Style 1	Style 2	Style 1 -Savings	Your	Peer average	More/ -Less		
	a	b	c	d = b - c	e			a x d x e	
<u>Passive vs active</u>	Total assets	Passive	Active		Passive % of total assets				
Stock - Europe & Far East	2,703	4 bp	20 bp	-16 bp	22%	15%	7%	-300	
Stock - Emerging	1,623	9 bp	53 bp	-44 bp	100%	22%	78%	-5,585	
Stock - Global	28,622	5 bp	37 bp	-32 bp	67%	40%	27%	-24,574	
Fixed income - Global	10,902	7 bp	11 bp	-4 bp	100%	32%	68%	-3,108	
More passive								-33,567	-4.8 bp
<u>Internal passive vs external passive</u>	Passive assets	Internal passive	External passive		Internal passive % of passive				
Stock - Europe & Far East	585	5 bp	4 bp	1 bp	100%	6%	94%	49	
Stock - Emerging	1,623	7 bp	10 bp	-3 bp	0%	28%	-28%	136	
Stock - Global	19,152	3 bp	5 bp	-2 bp	2%	7%	-4%	186	
Fixed income - Global	10,902	8 bp	7 bp	1 bp	53%	43%	10%	87	
Mix of int. pass. % of total passive								458	0.1 bp
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active				
Stock - Europe & Far East	2,118	4 bp	45 bp	-41 bp	57%	60%	-2%	197	
Stock - Global	9,470	14 bp	44 bp	-30 bp	0%	22%	-22%	6,233	
Real estate ex-REITs	3,058	19 bp	86 bp	-68 bp	7%	31%	-24%	4,988	
Infrastructure	753	53 bp	91 bp	-38 bp	41%	22%	19%	-538	
Natural resources	3,985	31 bp	85 bp	-54 bp	82%	54%	28%	-6,159	
Private equity - Other	5,765	77 bp	57 bp	20 bp	30%	30%	0%	0	
Less int. active % of total active								4,721	0.7 bp
<u>Evergreen vs LP/Co &amp; fund of funds</u>	External assets	Ever-green	LP/Co & FoF		Evergreen fund % of external				
Real estate ex-REITs	2,855	65 bp	116 bp	-51 bp	0%	58%	-58%	8,342	
Infrastructure	443	84 bp	92 bp	-8 bp	69%	20%	50%	-176	
Natural resources	715	54 bp	115 bp	-61 bp	100%	50%	50%	-2,202	
Hedge funds	4,504	129 bp	154 bp	-26 bp	100%	94%	6%	-651	
Perf. fees	4,504	102 bp	63 bp	40 bp	100%	94%	6%	1,015	
Less evergreen % of external								6,328	0.9 bp
<u>LP/Co vs fund of funds</u>	LP/Co & Fund of F.	LP/Co	Fund of funds		LP/Co % of LP/Co & Fund of F.				
Real estate ex-REITs	2,855	115 bp	131 bp	-16 bp	100%	97%	3%	-155	
Infrastructure	135	92 bp	159 bp	-67 bp	100%	100%	0%	-3	
Private equity - Diversified	624	140 bp	223 bp	-83 bp	100%	78%	21%	-1,110	
Venture capital	240	153 bp	193 bp	-39 bp	100%	78%	22%	-206	
Less fund of funds								-1,474	-0.2 bp
<u>Co-investment vs LP</u>	LP/Co	Co-invest	LP		Co-invest % of LP/Co				
Real estate ex-REITs	2,855	75 bp	120 bp	-45 bp	36%	11%	25%	-3,292	
Infrastructure	135	24 bp	102 bp	-77 bp	0%	12%	-12%	130	
Private equity - Diversified	622	23 bp	151 bp	-128 bp	31%	9%	23%	-1,795	
Venture capital	240	12 bp	167 bp	-154 bp	20%	9%	11%	-422	
More co-investment								-5,379	-0.8 bp
More overlays and unfunded strategies								20,834	3.0 bp
Total impact of differences in implementation style								-8,079	-1.2 bp

## Cost impact of overlays

As summarized on the previous page, the style impact of overlays cost you 3.0 bps. If you use more overlays than your peers, or more expensive types of overlays, then it increases your relative cost.

	Your average total holdings (mils)	Cost as % of total holdings		Cost/-Savings Impact (000s)
	(A)	You (B)	Peer avg. (C)	A X (B - C)
<b>Internal Overlays</b>				
Currency - Hedge	69,340	0.14 bp	0.02 bp	850
Currency - Discretionary	69,340	NA	0.07 bp	-488
Rebalancing / Passive beta - Hedge	69,340	0.14 bp	0.01 bp	879
Duration management - Hedge	69,340	NA	0.00 bp	-3
Global TAA - Discretionary	69,340	NA	0.07 bp	-464
Policy tilt TAA - Discretionary	69,340	1.60 bp	0.09 bp	10,480
Long/Short - Discretionary	69,340	1.41 bp	0.12 bp	9,011
Other overlay - Discretionary	69,340	0.42 bp	0.07 bp	2,480
<b>External Overlays</b>				
Currency - Hedge	69,340	NA	0.05 bp	-336
Currency - Discretionary	69,340	NA	0.03 bp	-225
Rebalancing / Passive beta - Hedge	69,340	NA	0.04 bp	-268
Duration management - Hedge	69,340	NA	0.03 bp	-198
Global TAA - Discretionary	69,340	NA	0.00 bp	-10
Commodity futures - Discretionary	69,340	NA	0.05 bp	-325
Long/Short - Discretionary	69,340	NA	0.03 bp	-177
Other overlay - Discretionary	69,340	NA	0.05 bp	-373
Total impact in 000s				20,834
Total impact in basis points				3.0 bp

## 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 cost you 0.5 bps.

Style	Your avg holdings (mils)	Cost in bps			Cost/-Savings		
		Your	Peer median	More/-less	\$000s	bps	
<b>External asset management</b>		(A)		(B)	(A X B)		
Stock - Europe & Far East	active	905	43.0	44.9	-1.9	-173	
Stock - Emerging	passive	1,623	9.6	9.6	0.0	0	
Stock - Global	passive	18,735	4.7	5.4	-0.7	-1,312	
Stock - Global	active	9,470	12.4	43.7	-31.3	-29,678	
Fixed income - Global	passive	5,107	9.5	6.8	2.7	1,363	
Real estate ex-REITs	CO	1,027	53.5	74.6	-21.1	-2,169	
Real estate ex-REITs	LP	1,828	122.4	120.0	2.4	445	
Infrastructure	active	308	55.0	84.3	-29.3	-901	
Infrastructure	LP	135	80.2	101.7	-21.5	-291	
Natural resources	active	715	121.4	54.1	67.4	4,814	
Hedge funds	active	4,504	64.3	128.6	-64.3	-28,969	
Top layer perf. fees	active	4,504	92.1	102.3	-10.3	-4,621	
Private equity - Diversified <sup>1</sup>	CO	194	37.7	23.2	14.5	281	
Private equity - Diversified	LP	428	208.4	151.2	57.2	2,446	
Private equity - Diversified	FoF	3	24.6	73.3	-48.7	-13	
Underlying base fees	FoF	3	0.0	150.0	-150.0	-41	
Venture capital <sup>1</sup>	CO	48	69.9	12.4	57.5	276	
Venture capital	LP	192	391.5	166.8	224.7	4,314	
Private equity - Other <sup>2</sup>	CO	4,058	57.4	57.4	0.0	0	
Total for external management						-54,228	-7.8 bp
<b>Internal asset management</b>		(A)		(B)	(A X B)		
Stock - Europe & Far East <sup>1</sup>	passive	585	6.5	4.9	1.6	95	
Stock - Europe & Far East	active	1,214	48.0	3.6	44.4	5,389	
Stock - Global <sup>1</sup>	passive	417	12.5	3.2	9.3	388	
Fixed income - Global <sup>1</sup>	passive	5,795	7.6	7.6	0.0	0	
Real estate	active	203	99.4	18.6	80.8	1,644	
Infrastructure	active	310	114.9	52.7	62.3	1,928	
Natural resources <sup>1</sup>	active	3,270	106.5	30.6	75.9	24,828	
Private equity - Other <sup>2</sup>	active	1,707	77.1	77.1	0.0	0	
Total for internal management						34,272	4.9 bp
<b>Oversight, custody and other costs<sup>3</sup></b>							
Oversight			3.8	1.2	2.6		
Trustee & custodial			0.9	0.3	0.6		
Consulting			0.0	0.1	-0.1		
Audit			0.2	0.0	0.2		
Other			0.5	0.1	0.4		
Benchmark for oversight, custody, other		69,340	5.4	2.1	3.4	23,382	3.4 bp
<b>Total</b>						<b>3,425</b>	<b>0.5 bp</b>

1. Universe median is used because peer data was insufficient.

2. The impact of this line is neutralized by setting the benchmark cost to You.

3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.

## 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).

	Your cost	Benchmark = peer weighted median cost <sup>1</sup>	More/-less	Your average assets (or fee basis)	More/-less in \$000s		
					Total More/-less	Due to Impl. style	Due to paying more/less
	(A)	(B)	(C = A - B)	(D)	(C X D)		
<b>Asset management costs</b>							
Stock - Europe & Far East	37.3 bp	17.9 bp	19.4 bp	2,703	5,256	-55	5,310
Stock - Emerging	9.6 bp	43.2 bp	-33.6 bp	1,623	-5,449	-5,449	0
Stock - Global	7.3 bp	24.4 bp	-17.0 bp	28,622	-48,757	-18,155	-30,602
Fixed income - Global	8.5 bp	10.0 bp	-1.5 bp	10,902	-1,658	-3,021	1,363
Real estate ex-REITs	97.7 bp	65.7 bp	32.1 bp	3,058	9,804	9,883	-80
Infrastructure	84.2 bp	82.2 bp	2.0 bp	753	149	-587	736
Natural resources	109.2 bp	55.8 bp	53.4 bp	3,985	21,283	-8,360	29,643
Hedge funds	64.3 bp	130.1 bp	-65.8 bp	4,504	-29,620	-651	-28,969
Perf. fees	92.1 bp	100.1 bp	-8.0 bp	4,504	-3,606	1,015	-4,621
Private equity - Diversified	154.6 bp	158.3 bp	-3.7 bp	624	-232	-2,905	2,673
Venture capital	327.1 bp	162.1 bp	165.0 bp	240	3,961	-628	4,590
Private equity - Other	63.2 bp	63.2 bp	0.0 bp	5,765	0	0	0
Overlay Programs <sup>2</sup>	3.7 bp	0.7 bp	3.0 bp	69,340	20,834	20,834	0
Total asset management	39.2 bp	43.3 bp	-4.0 bp	69,340	-28,035	-8,079	-19,956
<b>Oversight, custody and other costs<sup>3</sup></b>							
Oversight of the fund	3.8 bp	1.2 bp	2.6 bp				
Trustee & custodial	0.9 bp	0.3 bp	0.6 bp				
Consulting	0.0 bp	0.1 bp	-0.1 bp				
Audit	0.2 bp	0.0 bp	0.2 bp				
Other	0.5 bp	0.1 bp	0.4 bp				
Total oversight, custody & other	5.4 bp	2.1 bp	3.4 bp	69,340	23,382	n/a	23,382
<b>Total</b>	<b>44.6 bp</b>	<b>45.3 bp</b>	<b>-0.7 bp</b>	<b>69,340</b>	<b>-4,654</b>	<b>-8,079</b>	<b>3,425</b>

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 16 of this section.

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

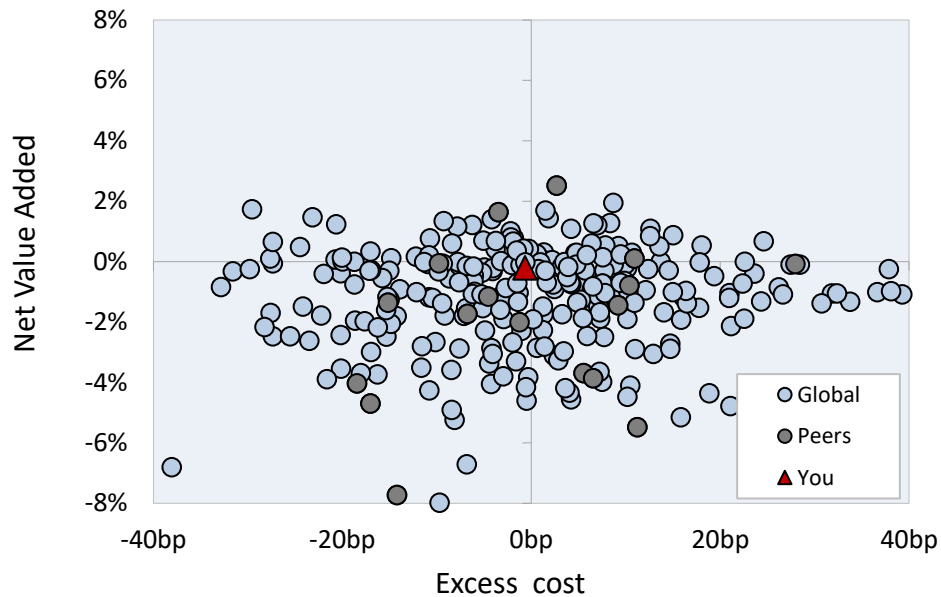
3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.

## Your cost impact ranking

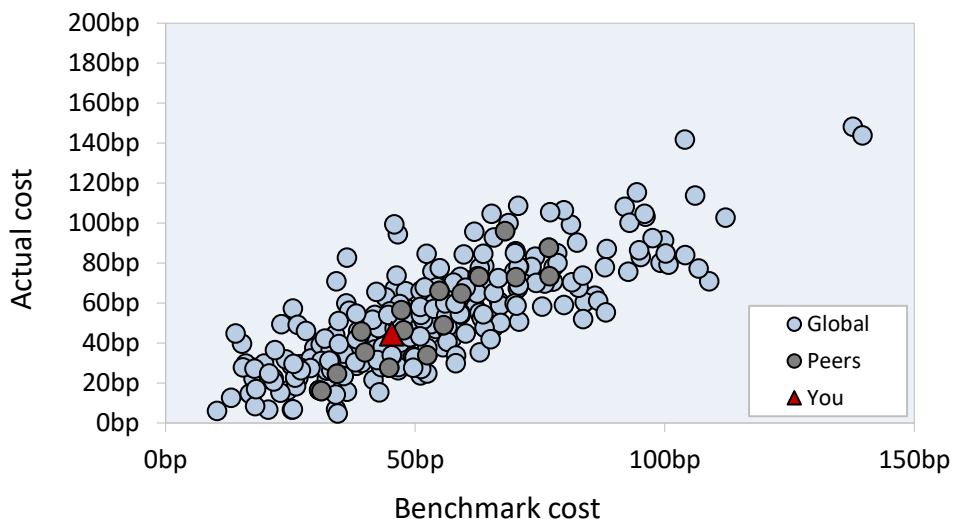
Being high or low cost is neither good nor bad. More important is whether you are receiving sufficient value for your excess cost. At the total fund level, we provide insight into this question by combining your excess return above benchmark and excess cost to create a snapshot of your cost impact performance relative to that of the global universe.

In 2024, your fund ranked in the negative net value added, low cost quadrant.

### Your 2024 Net value added -0.2%, Excess cost -1 bps



### Your 2024 Actual cost 44.6 bps, Benchmark cost 45.3 bps



For all funds except your fund, benchmark cost equals the sum of group median costs times the fund's average holdings by asset class plus group median cost of derivatives/overlays plus group median cost of oversight/support. Group is peer if the fund is in the peer group, universe - if the fund is part of the universe, and global/database otherwise. Your fund's benchmark cost is calculated using peer-based methodology per page 14 of this section.

## Benchmarking methodology formulas and data

### a) Formulas

Example calculations for 'Stock - Europe & Far East'

Asset class peer cost = weighted average by peer average style of peer median costs

$$= (1\% \times 4.9 \text{ bp}) + (51\% \times 3.6 \text{ bp}) + (14\% \times 4.0 \text{ bp}) + (34\% \times 44.9 \text{ bp}) = 17.9 \text{ bp}$$

Your cost versus benchmark (-savings/+excess) = asset class your cost - asset class peer cost

$$= 37.3 \text{ bp} - 17.9 \text{ bp} = 19.4 \text{ bp}$$

Attribution of 'your cost versus benchmark' to impact of style mix and impact of cost/paying more

Cost impact of differences in implementation style (-savings/+excess)

= cost impacts of passive vs active (A), internal passive vs external passive (B), internal active vs external active (C)

$$= -1.1 \text{ bp} + 0.2 \text{ bp} + 0.7 \text{ bp} = -0.2 \text{ bp}$$

A) Impact of Passive vs Active management (-savings/+excess)

$$\begin{aligned} &= (\text{peer average passive cost} - \text{peer average active cost}) \times \\ &\quad (\text{passive \% of asset, you} - \text{passive \% of asset, peer average}) \\ &= (4.1 \text{ bp} - 20.3 \text{ bp}) \times (22\% - 15\%) = -1.1 \text{ bp} \end{aligned}$$

Peer average passive cost = weighted average by peer average style of peer median costs for internal passive and external passive management

$$= [(1\% \times 4.9 \text{ bp}) + (14\% \times 4.0 \text{ bp})] / (1\% + 14\%) = 4.1 \text{ bp}$$

Peer average active cost = weighted average by peer average style of peer median costs for internal active and external active management

$$= [(51\% \times 3.6 \text{ bp}) + (34\% \times 44.9 \text{ bp})] / (51\% + 34\%) = 20.3 \text{ bp}$$

B) Impact of Internal Passive vs External Passive management (-savings/+excess)

$$\begin{aligned} &= (\text{peer average internal passive cost} - \text{peer average external passive cost}) \times \\ &\quad (\text{internal passive \% of passive, you} - \text{internal passive \% of passive, peer average}) \times \text{passive \% of asset, you} \\ &= (4.9 \text{ bp} - 4.0 \text{ bp}) \times (100\% - 6\%) \times 22\% = 0.2 \text{ bp} \end{aligned}$$

C) Impact of Internal Active vs External Active management (-savings/+excess)

$$\begin{aligned} &= (\text{peer average internal active cost} - \text{peer average external active cost}) \times \\ &\quad (\text{internal active \% of active, you} - \text{internal active \% of active, peer avg}) \times \text{active \% of asset, you} \\ &= (3.6 \text{ bp} - 44.9 \text{ bp}) \times (57\% - 60\%) \times 78\% = 0.7 \text{ bp} \end{aligned}$$

Cost impact of paying more/-less

$$\begin{aligned} &= (\text{cost internal passive, you} - \text{cost internal passive, peer}) \times \text{internal passive \% of asset, you} + \\ &\quad (\text{cost internal active, you} - \text{cost internal active, peer}) \times \text{internal active \% of asset, you} + \\ &\quad (\text{cost external passive, you} - \text{cost external passive, peer}) \times \text{external passive \% of asset, you} + \\ &\quad (\text{cost external active, you} - \text{cost external active, peer}) \times \text{external active \% of asset, you} \\ &= (6.5 \text{ bp} - 4.9 \text{ bp}) \times 22\% + (48.0 \text{ bp} - 3.6 \text{ bp}) \times 45\% + (0.0 \text{ bp} - 4.0 \text{ bp}) \times 0\% + (43.0 \text{ bp} - 44.9 \text{ bp}) \times 33\% = 19.6 \text{ bp} \end{aligned}$$

Your cost versus benchmark (-savings/+excess)

$$\begin{aligned} &= \text{cost impact of differences in implementation style} + \text{cost impact of paying more/-less} \\ &= -0.2 \text{ bp} + 19.6 \text{ bp} = 19.4 \text{ bp} \end{aligned}$$



## Benchmarking methodology formulas and data

### b) 2024 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	Co-invest	Limited Partner.	Fund of Funds	Internal Passive	Internal Active	External Passive	External Active	Co-invest	Limited Partner.	Fund of Funds	Weighted Median
Stock - Europe & Far East	6.5	48.0		43.0				4.9	3.6	4.0	44.9				17.9
Stock - Emerging			9.6					6.5	7.3	9.6	73.4				43.2
Stock - Global	12.5		4.7	12.4				3.2	13.6	5.4	43.7				24.4
Fixed income - Global	7.6		9.5					7.6	7.5	6.8	23.4				10.0
Real estate ex-REITs		99.4			53.5	122.4			18.6		65.2	74.6	120.0	47.9	64.8
Underlying base fees														83.0	0.8
Infrastructure		114.9		55.0		80.2			52.7		84.3	24.3	101.7	100.0	82.1
Underlying base fees														58.9	0.1
Natural resources		106.5		121.4					30.6		54.1		115.1		55.8
Underlying base fees															0.0
Hedge funds				64.3							128.6			40.3	123.6
Top layer perf. fees				92.1							102.3			10.0	97.1
Underlying base fees														113.8	6.4
Underlying perf. fees														52.5	3.0
Private equity - Diversified					37.7	208.4	24.6					23.2	151.2	73.3	125.6
Underlying base fees							0.0							150.0	32.7
Venture capital					69.9	391.5						12.4	166.8	32.8	127.1
Underlying base fees														160.0	34.9
Private equity - Other		77.1			57.4				77.1			57.4			63.2
Underlying base fees															0.0

## Benchmarking methodology formulas and data

### c) 2024 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	Co-invest	Limited Partner.	Fund of Funds	Internal Passive	Internal Active	External Passive	External Active	Co-invest	Limited Partner.	Fund of Funds
Stock - Europe & Far East	21.6%	44.9%	0.0%	33.5%				0.9%	50.7%	13.9%	34.5%			
Stock - Emerging	0.0%	0.0%	100.0%	0.0%				6.1%	24.2%	16.0%	53.8%			
Stock - Global	1.5%	0.0%	65.5%	33.1%				2.6%	13.1%	37.4%	46.9%			
Fixed income - Global	53.2%	0.0%	46.8%	0.0%				13.7%	51.5%	18.2%	16.5%			
Real estate ex-REITs		6.7%		0.0%	33.6%	59.8%	0.0%		30.7%		40.1%	3.0%	25.2%	1.0%
Underlying base fees		6.7%		0.0%	33.6%	59.8%	0.0%		30.7%		40.1%	3.0%	25.2%	1.0%
Infrastructure		41.1%		40.9%	0.0%	18.0%	0.0%		22.3%		15.2%	7.7%	54.6%	0.2%
Underlying base fees		41.1%		40.9%	0.0%	18.0%	0.0%		22.3%		15.2%	7.7%	54.6%	0.2%
Natural resources		82.1%		17.9%		0.0%			53.6%		23.0%		23.4%	
Underlying base fees		82.1%		17.9%		0.0%			53.6%		23.0%		23.4%	
Hedge funds				100.0%			0.0%				94.3%			5.7%
Top layer perf. fees				100.0%			0.0%				94.3%			5.7%
Underlying base fees				100.0%			0.0%				94.3%			5.7%
Underlying perf. fees				100.0%			0.0%				94.3%			5.7%
Private equity - Diversified					31.0%	68.5%	0.4%					6.7%	71.4%	21.8%
Underlying base fees					31.0%	68.5%	0.4%					6.7%	71.4%	21.8%
Venture capital					20.0%	80.0%	0.0%					6.7%	71.4%	21.8%
Underlying base fees					20.0%	80.0%	0.0%					6.7%	71.4%	21.8%
Private equity - Other		29.6%			70.4%	0.0%			29.6%			70.4%	0.0%	
Underlying base fees		29.6%			70.4%	0.0%			29.6%			70.4%	0.0%	

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

## Methodology of the cost trend model

CEM cost trend model relies on four factors or reasons to explain the cost differences over time: asset value, asset mix, implementation style, and paying more/less for similar services.

### Factors affecting the cost differences

Asset value. If we keep the last three factors constant, costs will normally follow changes in the asset holdings. For external implementations, among the reasons is the common practice of charging management fees based on the value of assets under management. For internal, more assets requires additional internal staff (front and back office) and other operating expenditures. In the current model, for simplicity, we assume that costs change proportionately to the plan average assets.

Change in asset value only affects the cost amounts and does not affect costs in basis points. These are determined by the changes in the last three factors.

Asset mix. These are the cost differences associated with increasing / decreasing allocations to one or more of the asset classes, while keeping other factors constant. Higher allocations to more expensive assets will increase the cost both in amounts and in basis points.

Implementation style. These are changes in costs associated with increasing / decreasing allocations to one or more of the management styles within the same asset class.

Paying more/less for similar services. These cost differences reflect changes in the fees / internal costs in basis points for the same implementation style within the same asset class or same oversight service.

### Attribution of the cost differences and other assumptions

Change in the cost amount for one asset =

Sum of impacts of asset value, asset mix, implementation style, and paying more/less for similar services.

Change in the basis point costs for one asset =

Sum of basis point impacts of asset mix, implementation style, and paying more/less for similar services.

For overlays, we do not differentiate between implementation styles and use entire asset category.

Oversight costs are only affected by changes in asset value and paying more/less for similar services.

The base model attributes cost differences between any two years. Trends and cumulative results are built upon combinations of multiple two-year attributions. When an entire asset class is missing in one of the two years, the cost difference for that asset is attributed to the asset value and mix impacts only. Impacts of other factors is 0. When an implementation style within the same asset class is missing in one of the two years, the cost difference for that style is attributed to the effects of the implementation style, while impact of paying more/less for similar services is 0. Impacts of changes in the asset value and asset mix are still accounted for.

### General simplified formula for attributing basis point cost differences for one asset class

Cost difference in bps = impact of asset mix + impacts of style & paying =

$$[ \text{CostBpsL} \times (\text{HavgHpct} - \text{HavgLpct}) ] + [ \text{HavgHpct} \times (\text{CostBpsH} - \text{CostBpsL}) ]$$

where L/H are lower and higher years; HavgPct is % of asset's average holdings in total nav holdings;

CostBps is the asset total cost in basis points for a particular year.

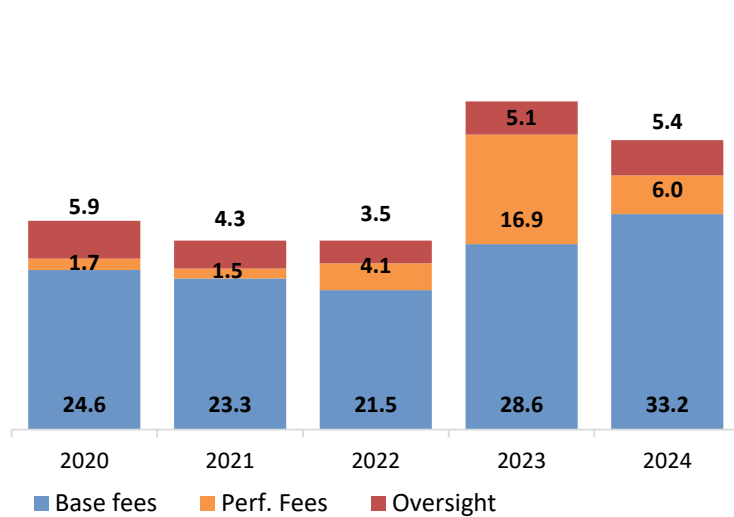
Further, cost difference for style & paying impacts (CostBpsH - CostBpsL) for one style =

$$\text{style impact} [ \text{CostStyleBpsL} \times (\text{WgH} - \text{WgL}) ] + \text{paying impact} [ \text{WgH} \times (\text{CostStyleBpsH} - \text{CostStyleBpsL}) ]$$

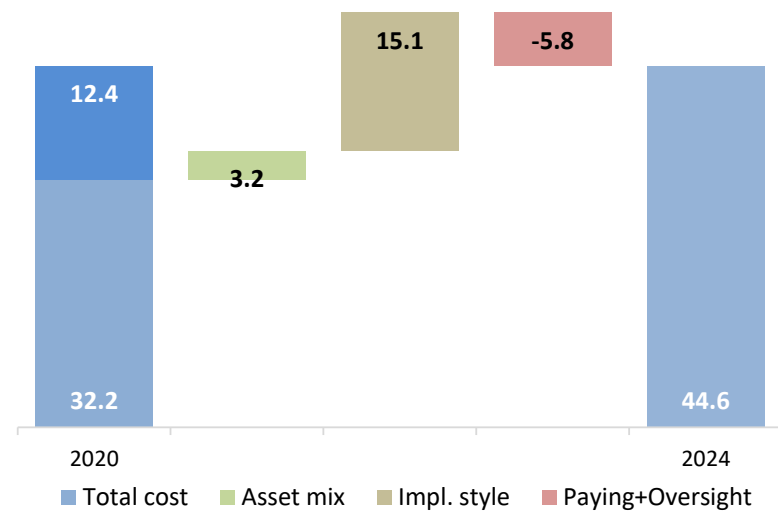
where CostStyleBps is the style cost in basis points; Wg is the weight for that style within the asset class.

## Total plan cost and cost changes

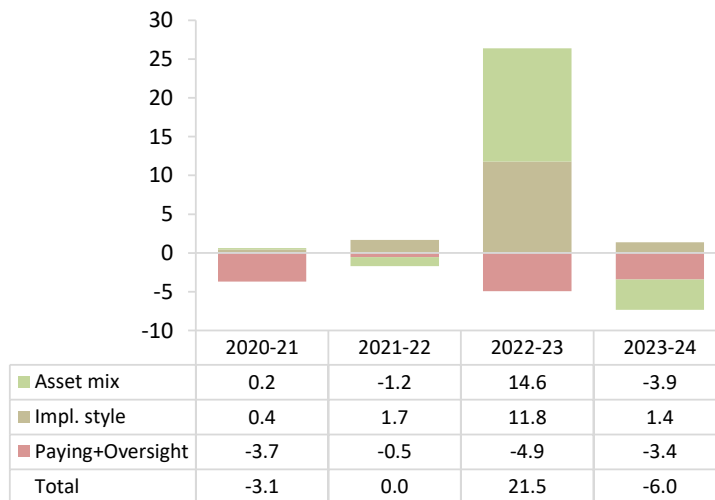
### Total plan cost over time, bps



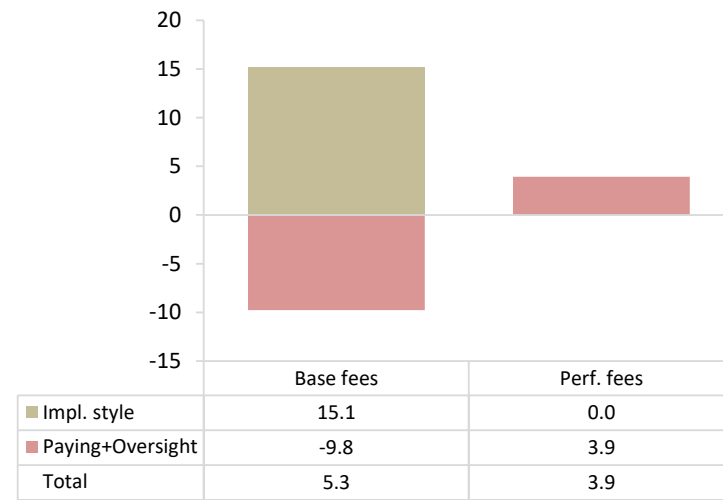
### Cost differences, 2024 versus 2020, bps



### Reasons for cost differences over time, bps



### Impact of base and performance fees, 2024 vs. 2020, bps



## Summary of cost differences, 2024 versus 2020

Your total cost increased by 12.4 bps between 2020 and 2024 because of changes in: asset mix (3.2 bps), implementation style (15.1 bps), and paying more/less for similar services (-5.8 bps).

	bps	\$000s
Starting total cost, 2020	32.2	138,865
Growth in asset value		84,414
Asset mix	<u>3.2</u>	<u>21,895</u>
Stock	-1.3	-9,249
Fixed income	-0.3	-2,035
Real estate ex-REITs	2.4	16,545
Real assets ex real estate	-0.7	-5,029
Hedge funds & multi-asset	1.1	7,948
Private equity	2.0	13,717
Implementation style (less expensive vs. more )	<u>15.1</u>	<u>104,753</u>
Less passive, more active	0.1	822
More int. pass. % of total passive	-0.2	-1,374
Less int. active % of total active	23.0	159,294
More evergreen % of external	-0.1	-546
More LP, less fund of funds	-0.1	-392
More co-investment	-7.7	-53,051
Paying more/-less for	<u>-5.4</u>	<u>-37,440</u>
Stock	-0.5	-3,687
Fixed income	0.6	3,880
Real estate ex-REITs	-10.8	-74,813
Real assets ex real estate	4.7	32,571
Hedge funds & multi-asset	-1.5	-10,071
Performance fees	3.9	27,351
Private equity	-3.1	-21,496
Overlays and unfunded strategies	1.3	8,824
Oversight, custodial, other (pay more/-less)	<u>-0.4</u>	<u>-2,897</u>
Total difference	12.4	170,725
Ending total cost, 2024	44.6	309,590

## Summary of cost differences, year over year

	bps	\$000s	bps	\$000s	bps	\$000s	bps	\$000s	bps	\$000s
	2020		2021		2022		2023		2020	
Starting total cost	32.2	138,865	29.1	134,253	29.1	168,497	50.6	292,453	32.2	138,865
Growth in asset value		9,504		34,310		-153		58,394		84,414
Asset mix	0.2	933	-1.2	-6,672	14.6	84,519	-3.9	-27,040	3.2	21,895
Stock	-1.2	-5,642	0.5	3,153	0.0	233	-0.5	-3,202	-1.3	-9,249
Fixed income	0.5	2,323	-0.1	-658	-0.2	-1,279	-0.5	-3,622	-0.3	-2,035
Real estate ex-REITs	0.2	1,099	0.2	1,379	4.6	26,679	0.2	1,566	2.4	16,545
Real assets ex real estate	-0.1	-402	-0.4	-2,512	0.3	1,874	-0.8	-5,285	-0.7	-5,029
Hedge funds & multi-asset	0.5	2,341	-0.4	-2,367	2.2	12,744	-1.8	-12,458	1.1	7,948
Private equity	0.3	1,214	-1.0	-5,666	7.7	44,268	-0.6	-4,039	2.0	13,717
Implementation style (less expensive vs. more )	0.4	1,941	1.7	9,699	11.8	68,067	1.4	9,511	15.1	104,753
Passive vs. active	-0.6	-2,735	1.6	9,002	1.0	5,660	0.1	377	0.1	822
Internal passive vs. external passive	-0.1	-474	0.0	-53	0.0	96	0.0	248	-0.2	-1,374
Internal active vs. external active	3.2	14,947	0.1	742	1.5	8,704	1.0	6,939	23.0	159,294
Evergreen vs. LP/Co & fund of funds	0.0	8	0.0	-128	0.1	342	-0.2	-1,258	-0.1	-546
LP/Co vs. fund of funds	0.0	-114	0.0	-232	-0.2	-1,103	0.0	-65	-0.1	-392
Co-investment vs. LP	-2.1	-9,691	0.1	368	9.4	54,368	0.5	3,271	-7.7	-53,051
Paying more/-less for	-2.2	-9,914	0.3	1,736	-6.5	-37,832	-3.8	-26,045	-5.4	-37,440
Stock	-0.1	-307	-2.5	-14,661	-0.4	-2,059	0.3	2,154	-0.5	-3,687
Fixed income	-0.4	-1,836	-0.1	-495	0.6	3,590	0.4	2,518	0.6	3,880
Real estate ex-REITs	-0.5	-2,111	0.5	2,626	-8.3	-47,773	1.5	10,144	-10.8	-74,813
Real assets ex real estate	-0.3	-1,483	0.2	984	0.4	2,230	4.6	32,060	4.7	32,571
Hedge funds & multi-asset	-0.8	-3,872	2.4	13,689	11.9	68,725	-10.3	-71,317	2.5	17,280
Private equity	-0.1	-362	0.2	1,192	-11.4	-66,022	-1.2	-8,089	-3.1	-21,496
Overlays and unfunded strategies	0.0	57	-0.3	-1,600	0.6	3,477	0.9	6,485	1.3	8,824
Oversight, custodial, other (pay more/-less)	-1.5	-7,076	-0.8	-4,829	1.6	9,355	0.3	2,315	-0.4	-2,897
Total difference	-3.1	-4,612	0.0	34,244	21.5	123,957	-6.0	17,136	12.4	170,725
Ending total cost	29.1	134,253	29.1	168,497	50.6	292,453	44.6	309,590	44.6	309,590
	2021		2022		2023		2024		2024	

Sum of all changes (except for the total) between adjacent years will differ from the changes between starting and ending years in the last two columns.

## Reasons by asset class and cost type, \$000

Your total cost has increased by \$171 million in 2024 compared to 2020. An increase of \$84 million was due to the \$26 billion rise in plan total average nav holdings. The remaining increase of \$86 million is explained by the changes in the asset mix (\$22 million), implementation style (\$105 million), and paying more/less for similar services (-\$40 million).

Asset class <sup>1</sup>	2020 cost \$000s	Asset mix \$000s	Implement. style \$000s	Paying more/-less \$000s	Total ex asset gr. \$000s	Total difference \$000s	Growth in asset value \$000s	2024 cost \$000s
	A	B	C	D	E=B+C+D	F=G-A	F-E	G
Stock - Europe & Far East	7,736	-941	-1,785	380	-2,346	2,357	4,703	10,093
Stock - Emerging	6,589	-6,087	-2,773	-180	-9,040	-5,035	4,005	1,554
Stock - Global	13,421	-2,221	5,534	-3,886	-574	7,585	8,158	21,006
Fixed income - U.S.	91	-146	0	0	-146	-91	55	n/a
Fixed income - Global	2,532	2,949	-1,612	3,880	5,217	6,756	1,539	9,288
Cash	3,009	-4,838	0	0	-4,838	-3,009	1,829	n/a
Real estate ex-REITs	885	16,545	86,732	-74,813	28,464	29,002	538	29,887
Infrastructure	5,059	-3,866	-277	2,347	-1,796	1,279	3,075	6,338
Natural resources	6,544	-1,163	3,930	30,224	32,991	36,969	3,978	43,513
Hedge funds	20,653	5,837	0	-10,071	-4,233	8,321	12,555	28,974
Top layer perf. fees	7,468	2,111	0	27,351	29,462	34,001	4,540	41,469
Private equity - Diversified	8,594	-11	-3,813	-342	-4,166	1,058	5,224	9,652
Venture capital	n/a	7,851	0	0	7,851	7,851	0	7,851
Private equity - Other	20,468	5,877	18,817	-21,154	3,539	15,981	12,442	36,449
<b>Total for asset management</b>	<b>103,049</b>	<b>21,895</b>	<b>104,753</b>	<b>-46,264</b>	<b>80,384</b>	<b>143,026</b>	<b>62,642</b>	<b>246,075</b>
Overlays and unfunded strategies <sup>2</sup>	10,584	0		8,824	8,824	15,258	6,434	25,842
Oversight	18,511			-3,335	-3,335	7,918	11,253	26,429
Trustee & custodial	0			0	0	0	0	0
Consulting	6,234			-3,502	-3,502	287	3,790	6,521
Audit	487			544	544	840	296	1,327
Other	0			3,396	3,396	3,396	0	3,396
<b>Total for fund oversight<sup>3</sup></b>	<b>25,232</b>			<b>-2,897</b>	<b>-2,897</b>	<b>12,441</b>	<b>15,338</b>	<b>37,673</b>
<b>Total</b>	<b>138,865</b>	<b>21,895</b>	<b>104,753</b>	<b>-40,337</b>	<b>86,311</b>	<b>170,725</b>	<b>84,414</b>	<b>309,590</b>

1. Cost differences for asset classes are attributed to the effects of:

- Asset growth, asset mix, implementation style, and paying for similar services, when the asset class exists in both years.
- Asset growth and asset mix, when the asset class exists only in one of the years.

2. Cost differences for overlays are attributed to the effects of:

- Asset growth and paying more/less for similar services, when the fund has overlays in both years.
- Asset growth and asset mix, when the fund has overlays only in one of the years.

3. Cost differences for oversight are attributed to the effects of asset growth and paying more/less for similar services.

## Reasons by asset class and cost type, basis points

Your total cost has increased by 12.4 bps in 2024 vs. 2020. It was driven by the changes in the asset mix (3.2 bps), implementation style (15.1 bps), and paying more/less for similar services (-5.8 bps).

Asset class	Asset mix bps	Implement. style bps	Paying more/-less bps	Total difference bps	Total <sup>1</sup> ex asset gr. \$000s
	B	C	D	B+C+D	
Stock - Europe & Far East	-0.1	-0.3	0.1	-0.3	-2,346
Stock - Emerging	-0.9	-0.4	0.0	-1.3	-9,040
Stock - Global	-0.3	0.8	-0.6	-0.1	-574
Fixed income - U.S.	0.0	0.0	0.0	0.0	-146
Fixed income - Global	0.4	-0.2	0.6	0.8	5,217
Cash	-0.7	0.0	0.0	-0.7	-4,838
Real estate ex-REITs	2.4	12.5	-10.8	4.1	28,464
Infrastructure	-0.6	0.0	0.3	-0.3	-1,796
Natural resources	-0.2	0.6	4.4	4.8	32,991
Hedge funds	0.8	0.0	-1.5	-0.6	-4,233
Top layer perf. fees	0.3	0.0	3.9	4.2	29,462
Private equity - Diversified	0.0	-0.5	0.0	-0.6	-4,166
Venture capital	1.1	0.0	0.0	1.1	7,851
Private equity - Other	0.8	2.7	-3.1	0.5	3,539
<b>Total for asset management</b>	<b>3.2</b>	<b>15.1</b>	<b>-6.7</b>	<b>11.6</b>	<b>80,384</b>
Overlays and unfunded strategies	0.00		1.27	1.27	8,824
Oversight			-0.5	-0.5	-3,335
Trustee & custodial			0.0	0.0	0
Consulting			-0.5	-0.5	-3,502
Audit			0.1	0.1	544
Other			0.5	0.5	3,396
<b>Total for fund oversight</b>			<b>-0.4</b>	<b>-0.4</b>	<b>-2,897</b>
<b>Total</b>	<b>3.2</b>	<b>15.1</b>	<b>-5.8</b>	<b>12.4</b>	<b>86,311</b>
<b>Total basis point costs in years 2024 and 2020</b>		<b>44.6</b>	<b>32.2</b>	<b>12.4</b>	

1. Calculated by multiplying total difference in bps by plan total nav average holdings for year 2024, \$69 billion. Similarly, basis point costs on this page are converted from the amounts on the previous page using the same total nav holdings as the fee basis.



## Impact of changes in asset mix

Changes in the asset mix increased your total cost by \$22 million or 3.2 bps.

Asset class	2020 Cost bps	2024 Cost bps	2020 asset <sup>1</sup> weight %	2024 asset <sup>1</sup> weight %	Change in asset weight	Asset mix changes <sup>2</sup> bps	Asset mix changes <sup>3</sup> \$000s
	A	B	C	D	E=D-C	A (or B) x E	
Stock - Europe & Far East	42.5	37.3	4%	4%	0%	-0.1	-941
Stock - Emerging	27.8	9.6	6%	2%	-3%	-0.9	-6,087
Stock - Global	6.8	7.3	46%	41%	-5%	-0.3	-2,221
Fixed income - U.S.	33.7	n/a	0%	0%	0%	0.0	-146
Fixed income - Global	6.4	8.5	9%	16%	7%	0.4	2,949
Cash	5.8	n/a	12%	0%	-12%	-0.7	-4,838
Real estate ex-REITs	58.8	97.7	0%	4%	4%	2.4	16,545
Infrastructure	56.7	84.2	2%	1%	-1%	-0.6	-3,866
Natural resources	23.5	109.2	6%	6%	-1%	-0.2	-1,163
Hedge funds	86.7	64.3	6%	6%	1%	0.8	5,837
Top layer perf. fees	31.3	92.1	6%	6%	1%	0.3	2,111
Private equity - Diversified	221.1	154.6	1%	1%	0%	0.0	-11
Venture capital	n/a	327.1	0%	0%	0%	1.1	7,851
Private equity - Other	67.3	63.2	7%	8%	1%	0.8	5,877
<b>Total for asset management</b>						<b>3.2</b>	<b>21,895</b>

1. Weight % = asset's average (NAV for performance lines) holdings / plan total nav average holdings.
2. If asset is not available in one of the years, the entire weighted cost difference in bps is attributed to the asset mix.
3. Calculated by multiplying asset mix changes in bps by plan total nav average holdings for year 2024, \$69 billion.

## Impact of changes in implementation style

Changes in implementation style (passive vs. active, internal vs. external, etc.) in 2024 vs. 2020 cost you \$105 million.

Implementation choices	2024	Cost, 2020			Style 1 %			Cost/ \$000s
	avg. assets \$mils	Style 1	Style 2	Style 1 -Savings	2024	2020	More/ -Less	
	A	B	C	D = B - C	E			A x D x E
<u>Passive vs active</u>	Total assets	Passive	Active		Passive % of total assets			
Stock - Europe & Far East	2,703	12 bp	43 bp	-32 bp	22%	2%	20%	-1,702
Stock - Emerging	1,623	11 bp	95 bp	-84 bp	100%	80%	20%	-2,773
Stock - Global	28,622	7 bp	12 bp	-6 bp	67%	100%	-33%	5,296
Less passive, more active								822
<u>Internal passive vs external passive</u>	Passive assets	Internal passive	External passive		Internal passive % of passive			
Stock - Global	19,152	12 bp	7 bp	6 bp	2%	0%	2%	238
Fixed income - Global	10,902	3 bp	7 bp	-3 bp	53%	11%	42%	-1,612
More int. pass. % of total passive								-1,374
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active			
Stock - Europe & Far East	2,118	38 bp	49 bp	-11 bp	57%	54%	4%	-84
Real estate ex-REITs	3,058	53 bp	537 bp	-484 bp	7%	99%	-92%	136,362
Infrastructure	753	13 bp	93 bp	-79 bp	41%	46%	-5%	269
Natural resources	3,985	11 bp	137 bp	-127 bp	82%	90%	-8%	3,930
Private equity - Other	5,765	24 bp	132 bp	-108 bp	30%	60%	-30%	18,817
Less int. active % of total active								159,294
<u>Evergreen vs LP/Co &amp; fund of funds</u>	External assets	Ever- green	LP/Co & FoF		Evergreen fund % of external			
Infrastructure	443	63 bp	120 bp	-56 bp	69%	48%	22%	-546
More evergreen % of external								-546
<u>LP/Co-investment vs fund of funds</u>	LP/Co & FoFs	LP/Co	Fund of funds		LP/Co % of LP/Co + FoFs			
Private equity - Diversified	624	214 bp	359 bp	-144 bp	100%	95%	4%	-392
More LP, less fund of funds								-392
<u>Co-investment vs LP</u>	LP/Co	Co-invest	LP		Co-invest % of LP/Co			
Real estate ex-REITs	2,855	53 bp	537 bp	-483 bp	36%	0%	36%	-49,630
Private equity - Diversified	622	38 bp	214 bp	-177 bp	31%	0%	31%	-3,421
More co-investment								-53,051
<b>Total</b>								<b>104,753</b>

Cost differences are attributed exclusively to the effects of implementation style when the style existed in one of the years only.

## Impact of paying more/-less for similar services

In 2024, you paid \$40 million less for similar asset management and oversight / support services vs. 2020.

Asset class styles where you had assets in both 2024 and 2020 <sup>1</sup>	Style	2024	Cost in bps		More/ -less	Cost/ -Savings \$000s
		avg. assets \$mils	2024	2020		
<u>External asset management</u>		A			B	A x B
Stock - Europe & Far East	active	905	43.0	49.0	-6.1	-551
Stock - Emerging	passive	1,623	9.6	10.7	-1.1	-180
Stock - Global	passive	18,735	4.7	6.8	-2.1	-3,886
Fixed income - Global	passive	5,107	9.5	6.8	2.7	1,378
Real estate ex-REITs	LP	1,828	122.4	536.8	-414.5	-75,764
Infrastructure	active	308	55.0	63.4	-8.3	-256
Infrastructure	LP	135	80.2	119.8	-39.7	-537
Natural resources	active	715	121.4	137.2	-15.8	-1,127
Hedge funds	active	4,504	64.3	86.7	-22.4	-10,071
Top layer perf. fees	active	4,504	92.1	31.3	60.7	27,351
Private equity - Diversified	LP	428	208.4	214.2	-5.9	-250
Private equity - Diversified	FoF	3	24.6	358.6	-334.0	-92
Private equity - Other	CO	4,058	57.4	131.8	-74.3	-30,169
Total for external management						-94,153
<u>Internal asset management</u>		A			B	A x B
Stock - Europe & Far East	passive	585	6.5	11.5	-5.0	-294
Stock - Europe & Far East	active	1,214	48.0	37.9	10.1	1,225
Fixed income - Global	passive	5,795	7.6	3.3	4.3	2,502
Real estate	active	203	99.4	52.6	46.7	951
Infrastructure	active	310	114.9	13.5	101.5	3,140
Natural resources	active	3,270	106.5	10.7	95.9	31,351
Private equity - Other	active	1,707	77.1	24.2	52.8	9,015
Total for internal management						47,889
Overlays and unfunded strategies		69,340	3.7	2.5	1.3	8,824
Oversight		69,340	3.8	4.3	-0.5	-3,334.6
Trustee & custodial		69,340	0.0	0.0	0.0	0
Consulting		69,340	0.9	1.4	-0.5	-3,502
Audit		69,340	0.2	0.1	0.1	544
Other		69,340	0.5	0.0	0.5	3,396
Total for fund oversight						-2,897
Total						-40,337

1. Cost differences are attributed to paying more/less for similar services only if the asset-class style existed in both years.

# 5

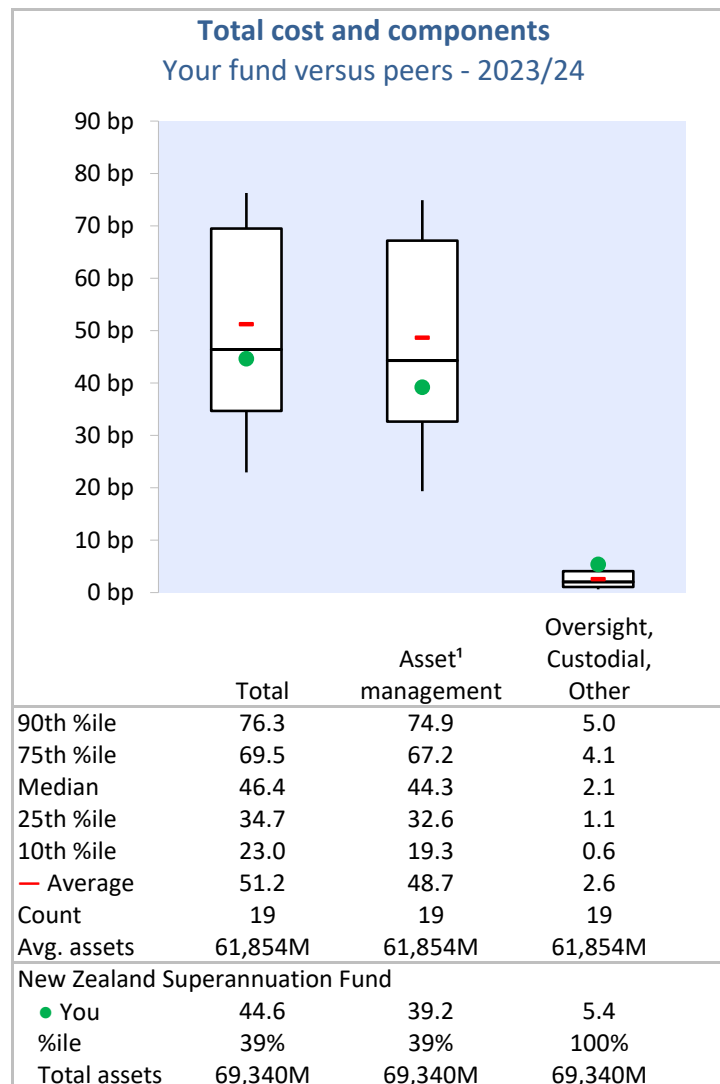
## Cost comparisons

Total fund cost	2
Governance, operations & support	3
Public asset classes	
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## 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.

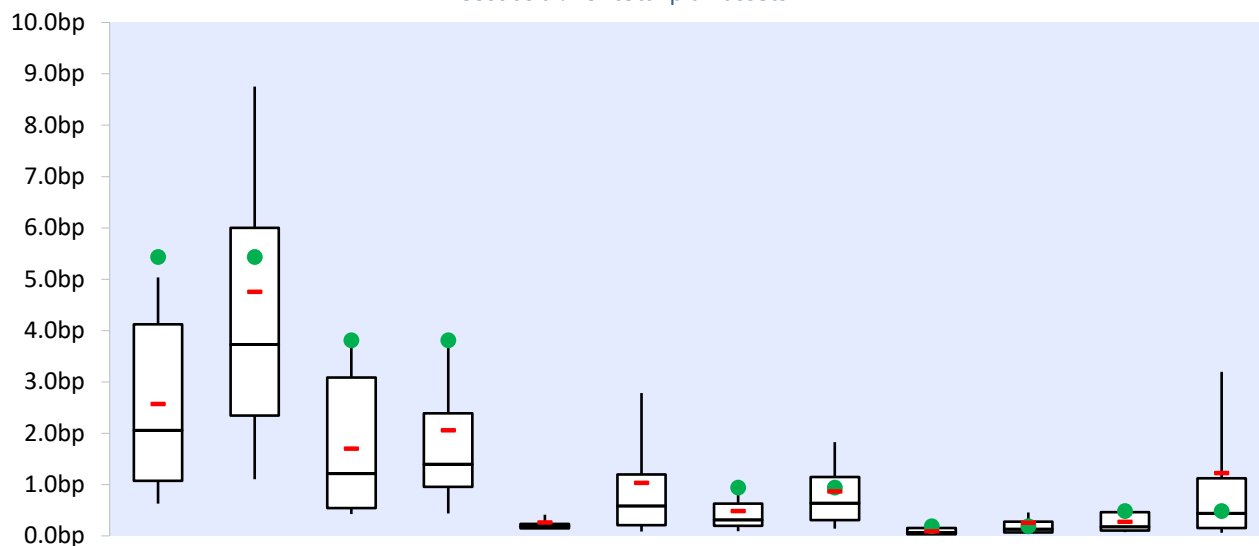
The 25th to 75th percentile range is the most relevant since higher and lower values may include outliers caused by unusual circumstances, such as performance-based fees. Count refers to the number of funds in your peer group that have costs in this category. It enables you to gauge the statistical significance.



1. Excluding private asset performance fees.

## Governance, operations & support

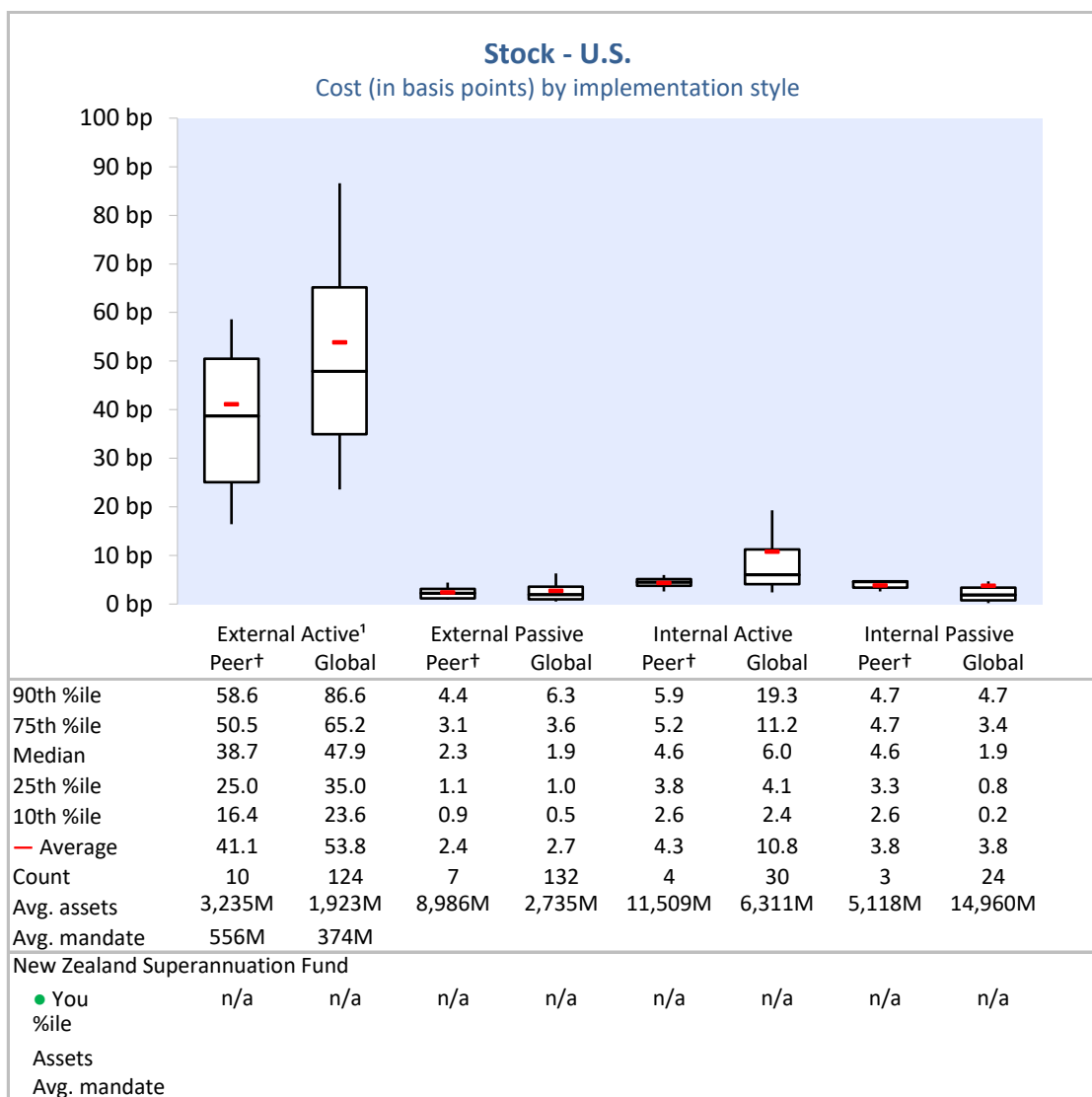
Cost as a % of total plan assets



	Total		Oversight <sup>1</sup>		Consulting & Perf. Meas. <sup>2</sup>		Custody		Audit		Other	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	5.0	8.8	3.7	3.8	0.4	2.8	1.0	1.8	0.2	0.5	0.6	3.2
75th %ile	4.1	6.0	3.1	2.4	0.2	1.2	0.6	1.1	0.2	0.3	0.5	1.1
Median	2.1	3.7	1.2	1.4	0.2	0.6	0.3	0.6	0.1	0.1	0.2	0.4
25th %ile	1.1	2.3	0.5	1.0	0.1	0.2	0.2	0.3	0.0	0.1	0.1	0.2
10th %ile	0.6	1.1	0.4	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
— Average	2.6	4.8	1.7	2.1	0.3	1.0	0.5	0.9	0.1	0.3	0.3	1.2
Count	19	293	19	293	11	231	17	279	15	250	14	200
Avg. assets	61,854M	64,650M	61,854M	64,650M	61,854M	64,650M	61,854M	64,650M	61,854M	64,650M	61,854M	64,650M
New Zealand Superannuation Fund												
● You	5.4	5.4	3.8	3.8	n/a	n/a	0.9	0.9	0.2	0.2	0.5	0.5
%ile	100%	71%	94%	90%			81%	67%	86%	64%	77%	53%
Plan assets	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M	69,340M

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.



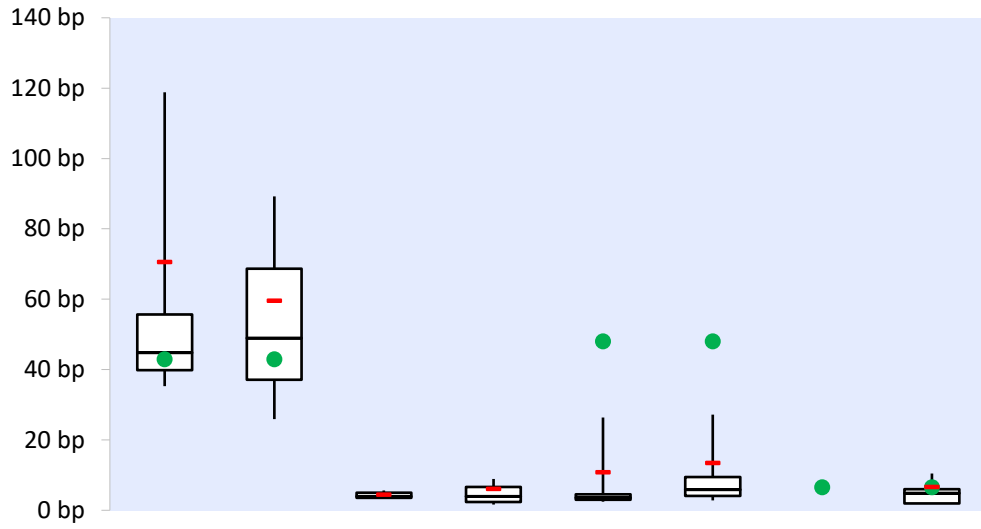
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	28.0	45.2
Performance fees*	n/a	12.0	7.6
Internal and other	<u>n/a</u>	<u>1.1</u>	<u>1.1</u>
Total	n/a	41.1	53.8

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 20.1 bps for peers (6 funds) and 24.1 bps for Global participants (39 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

### Stock - Europe & Far East Cost by implementation style



	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	118.8	89.2	5.7	8.9	26.4	27.2		10.4
75th %ile	55.6	68.7	5.0	6.6	4.5	9.4		6.0
Median	44.9	49.0	4.0	4.0	3.6	5.9		4.9
25th %ile	39.8	37.1	3.6	2.3	3.0	4.0		1.9
10th %ile	35.3	25.9	3.3	1.6	2.5	2.8		1.8
— Average	70.5	59.6	4.4	6.1	10.8	13.4		6.7
Count	8	123	3	71	6	27	1	13
Avg. assets	2,854M	2,311M	2,401M	1,256M	5,684M	7,329M		4,924M
Avg. mandate	679M	366M						
<b>New Zealand Superannuation Fund</b>								
● You	43.0	43.0	n/a	n/a	48.0	48.0	6.5	6.5
%ile	43%	37%			100%	96%	0%	83%
Assets	905M	905M			1,214M	1,214M	585M	585M
Avg. mandate	452M	452M						

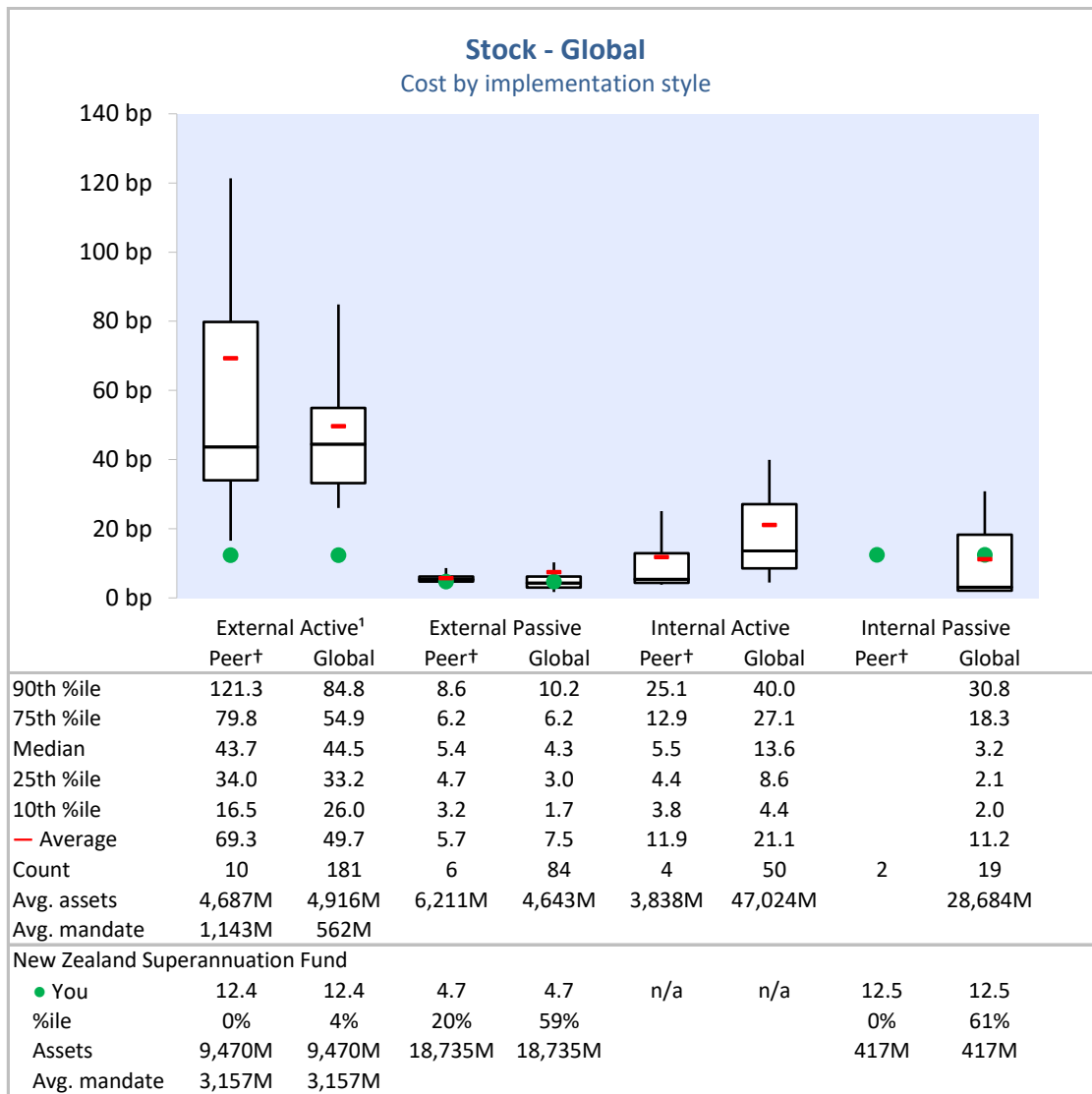
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	39.5	55.0	52.6
Performance fees*	1.7	13.6	6.1
Internal and other	<u>1.7</u>	<u>1.9</u>	<u>0.9</u>
Total	43.0	70.5	59.6

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 27.2 bps for peers (4 funds) and 16.6 bps for Global participants (45 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



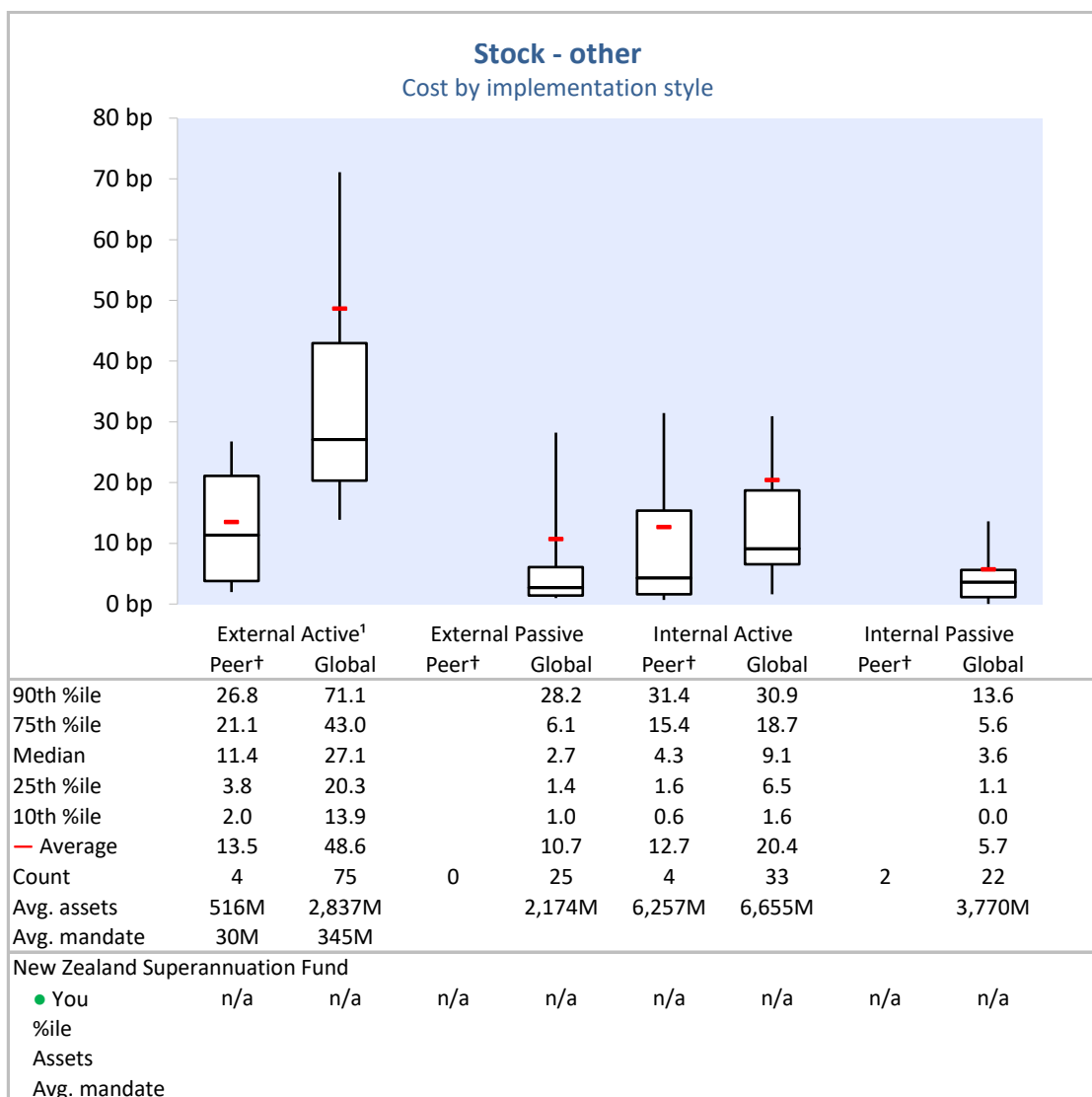


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	8.5	40.8	40.4
Performance fees*	n/a	26.2	7.3
Internal and other	<u>3.8</u>	<u>2.2</u>	<u>1.9</u>
Total	12.4	69.3	49.7

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 52.5 bps for peers (5 funds) and 17.3 bps for Global participants (77 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

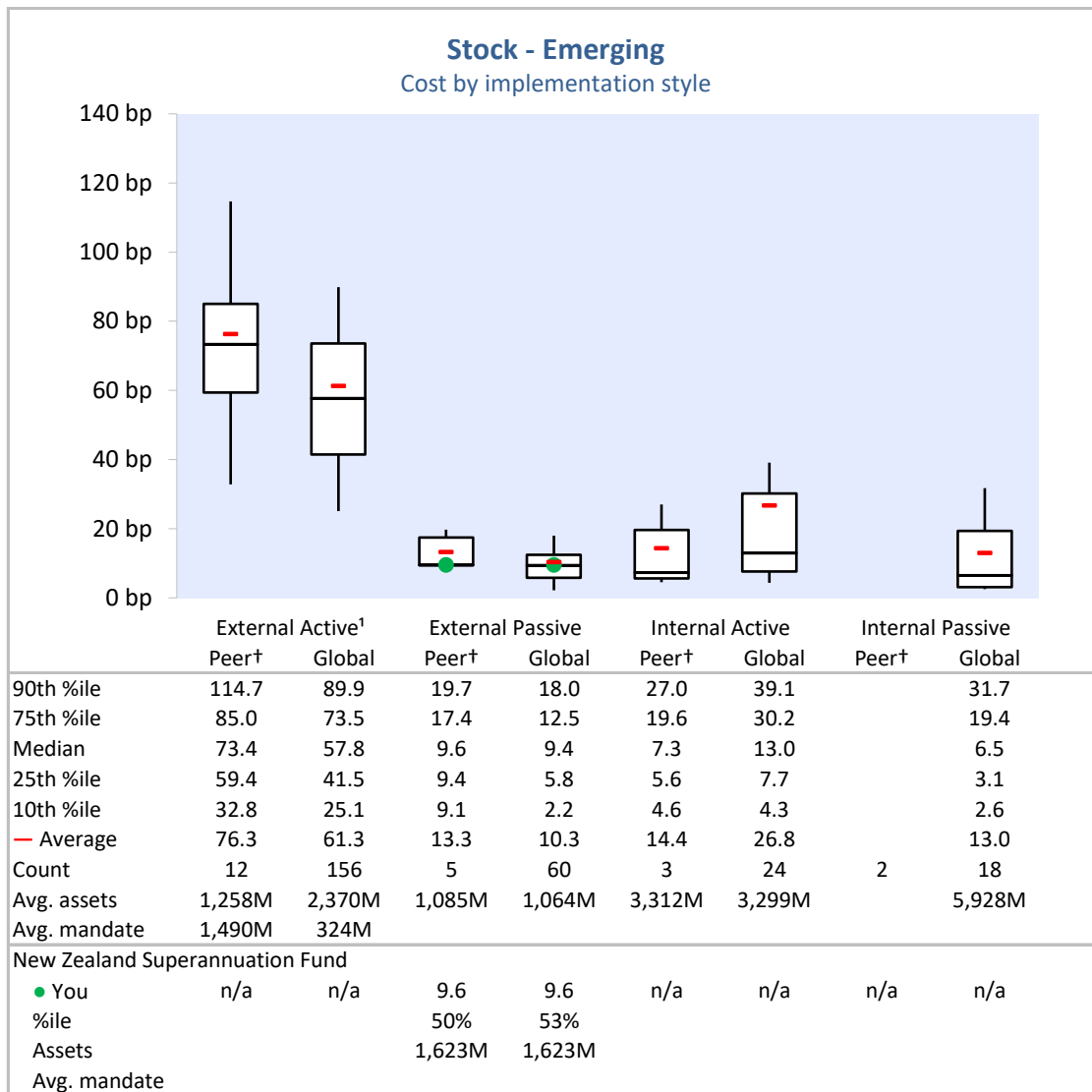


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	8.3	44.5
Performance fees*	n/a	0.0	2.6
Internal and other	<u>n/a</u>	<u>5.2</u>	<u>1.5</u>
Total	n/a	13.5	48.6

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (2 funds) and 8.5 bps for Global participants (23 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

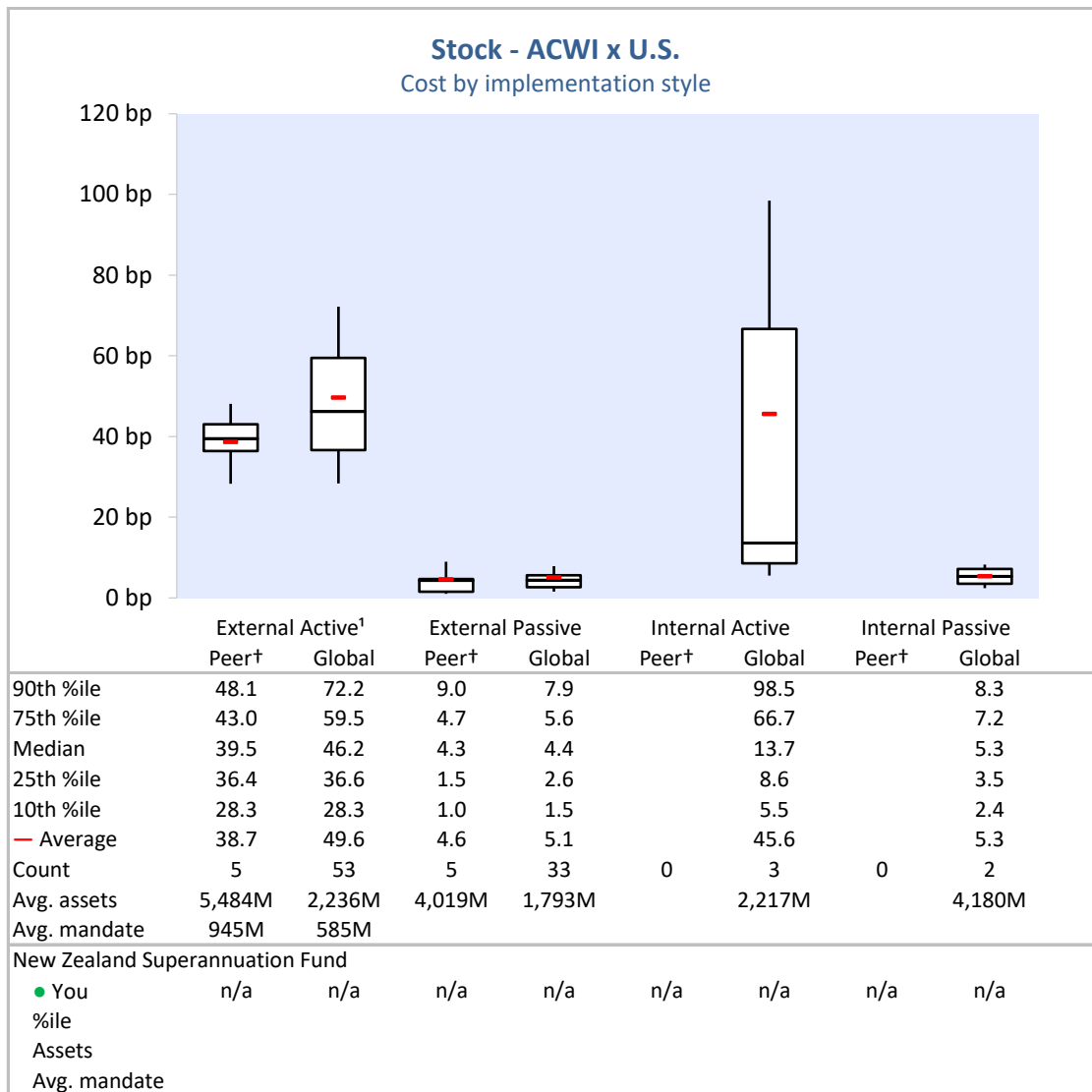


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	58.3	52.9
Performance fees*	n/a	15.5	6.7
Internal and other	<u>n/a</u>	<u>2.5</u>	<u>1.7</u>
Total	n/a	76.3	61.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 31.0 bps for peers (6 funds) and 18.6 bps for Global participants (56 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

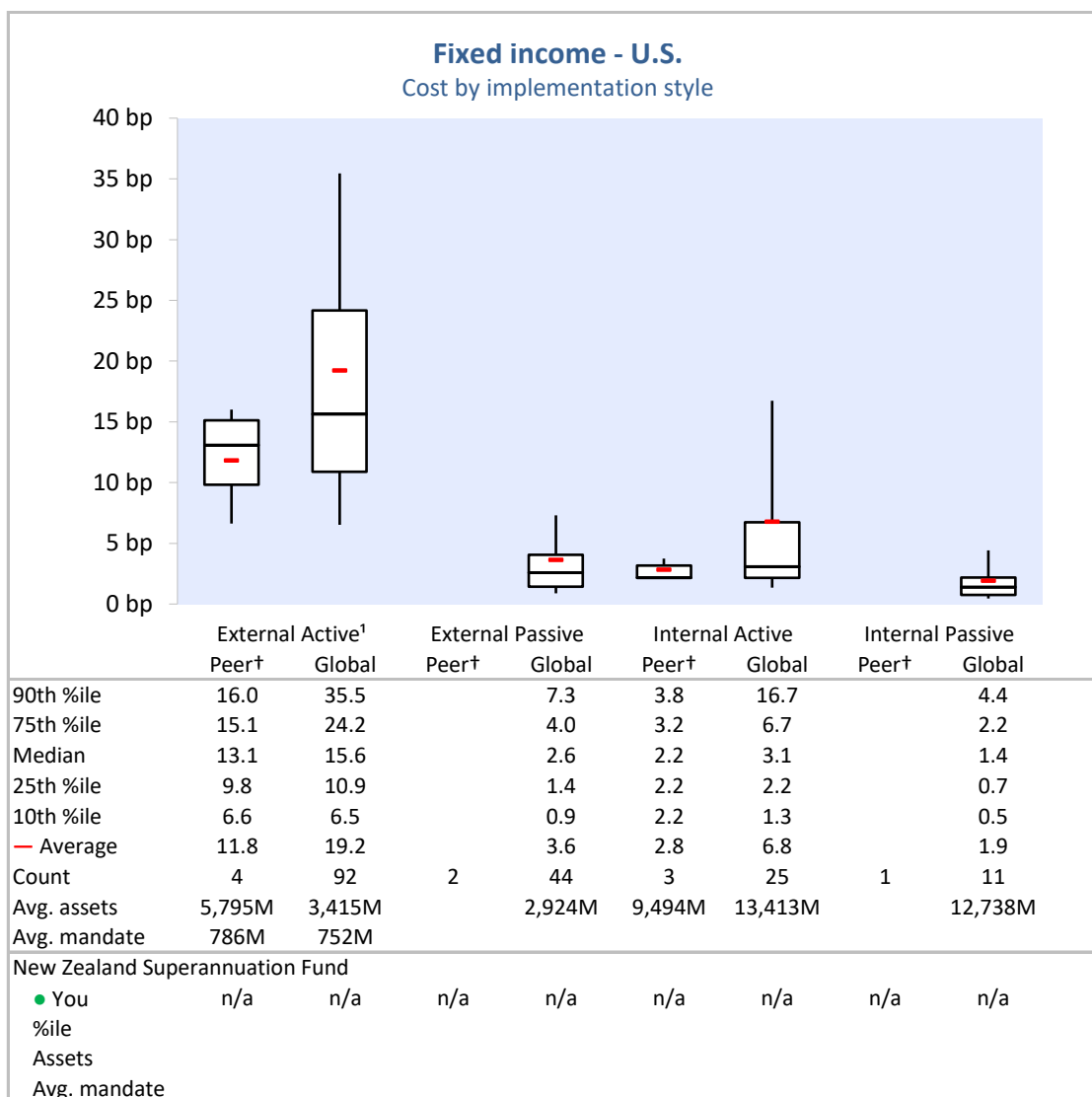


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	32.3	46.4
Performance fees*	n/a	6.2	2.6
Internal and other	<u>n/a</u>	<u>0.2</u>	<u>0.6</u>
Total	n/a	38.7	49.6

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 10.3 bps for peers (3 funds) and 9.8 bps for Global participants (14 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

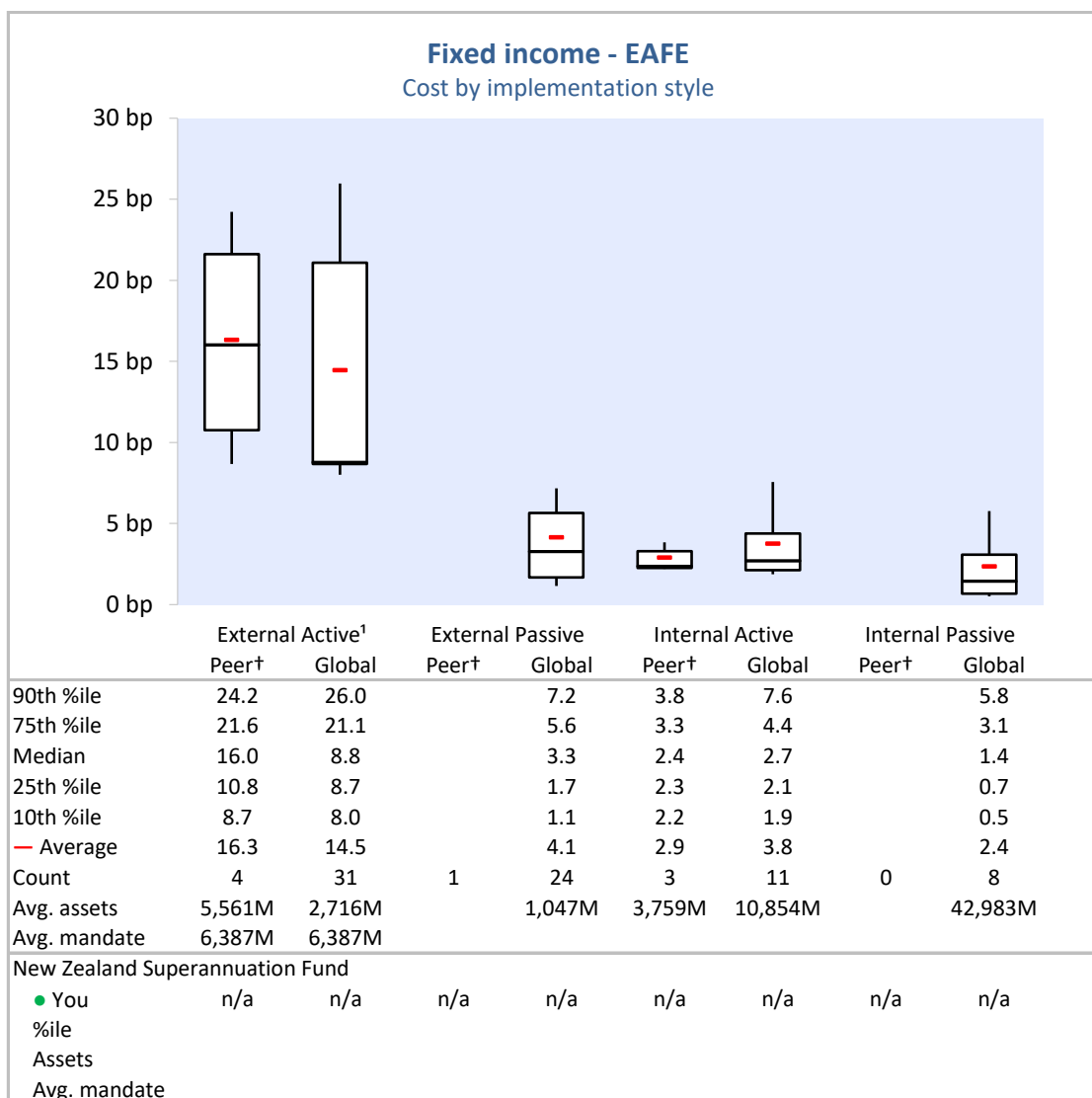


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	11.8	18.3
Performance fees*	n/a	0.0	0.4
Internal and other	<u>n/a</u>	<u>0.0</u>	<u>0.5</u>
Total	n/a	11.8	19.2

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (2 funds) and 1.4 bps for Global participants (25 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

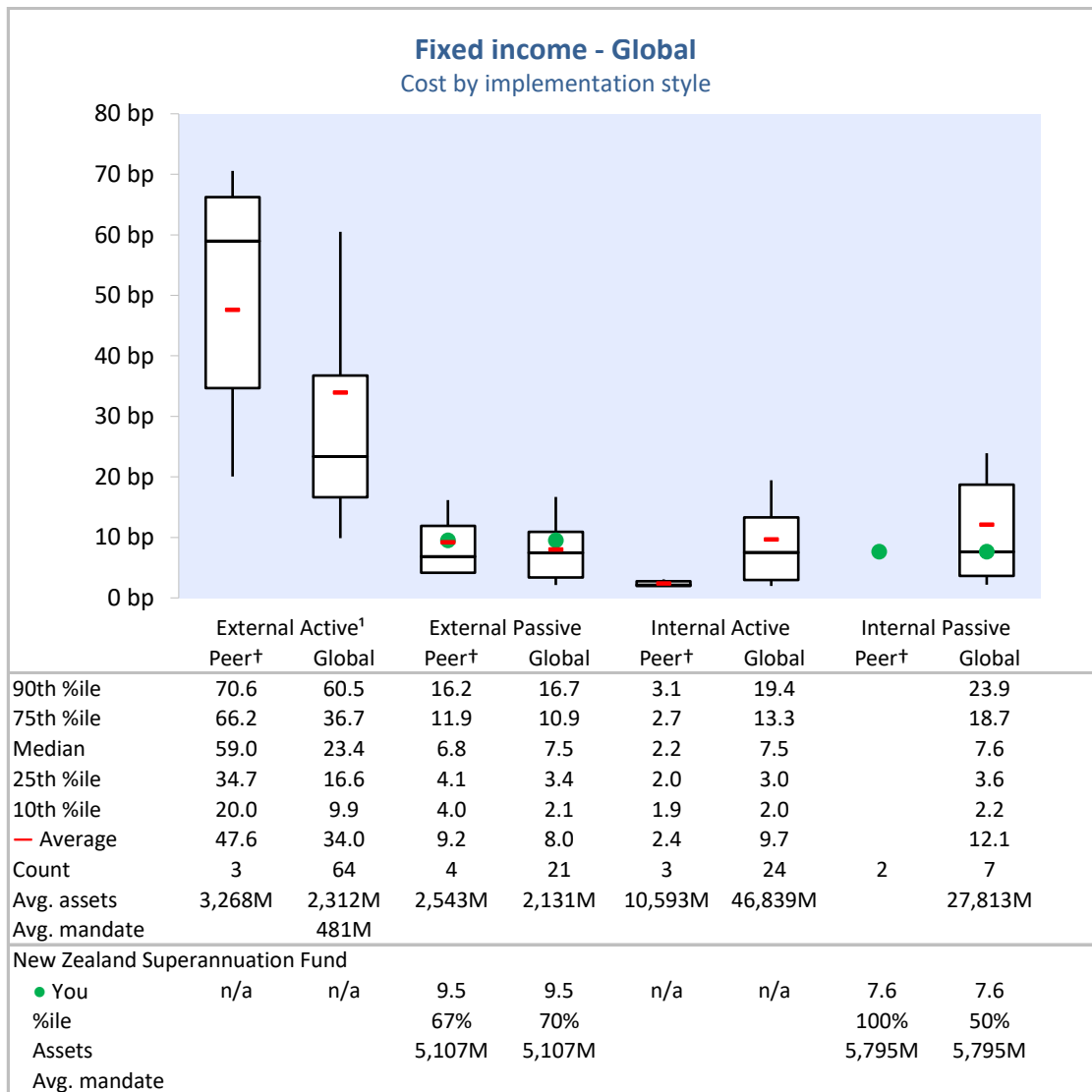


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	15.6	12.9
Performance fees*	n/a	0.3	0.7
Internal and other	<u>n/a</u>	<u>0.4</u>	<u>0.9</u>
Total	n/a	16.3	14.5

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 1.4 bps for peers (1 fund) and 1.2 bps for Global participants (18 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

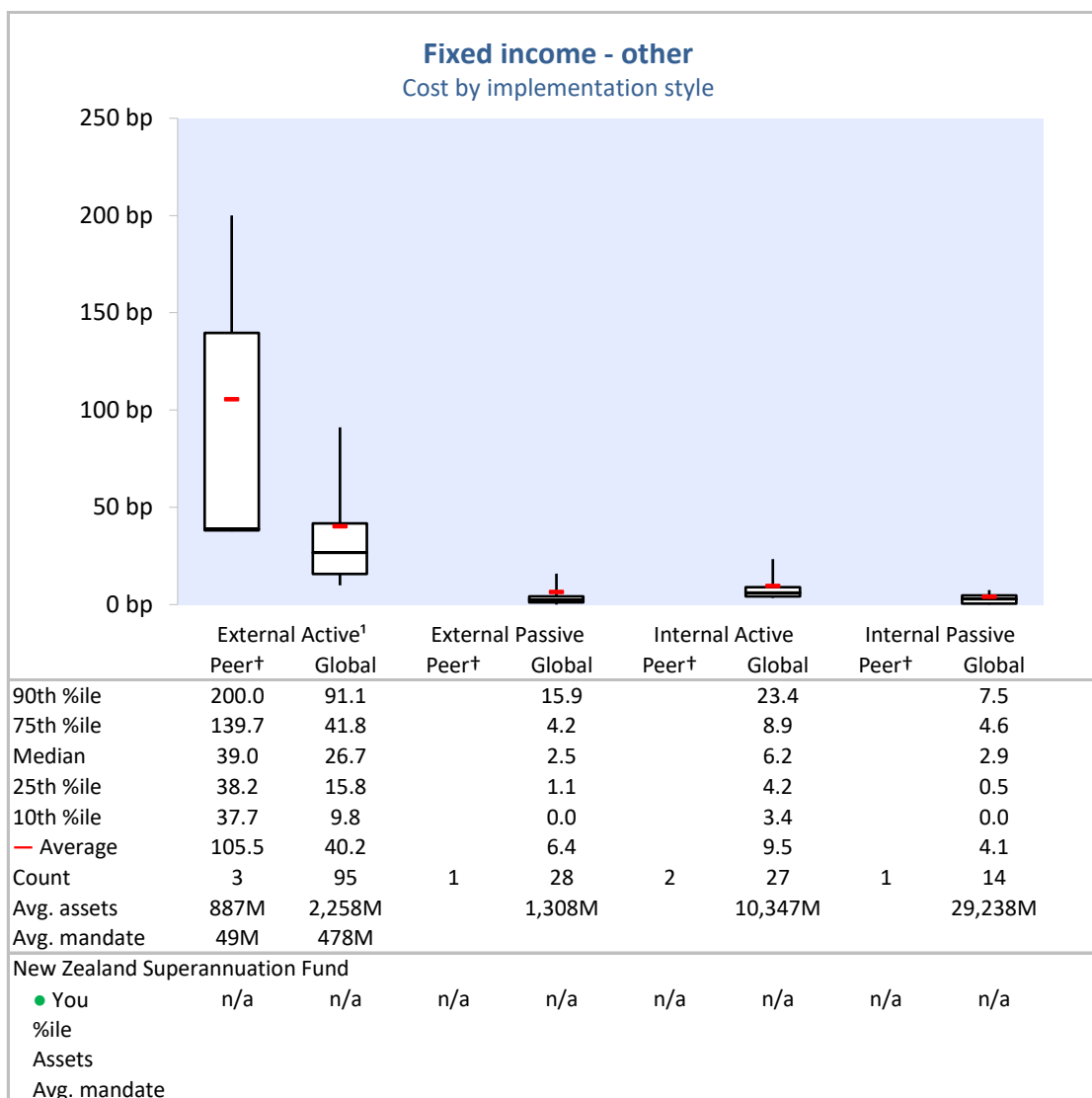


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	36.7	26.7
Performance fees*	n/a	0.3	4.0
Internal and other	<u>n/a</u>	<u>10.6</u>	<u>3.2</u>
Total	n/a	47.6	34.0

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.4 bps for peers (2 funds) and 8.6 bps for Global participants (30 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



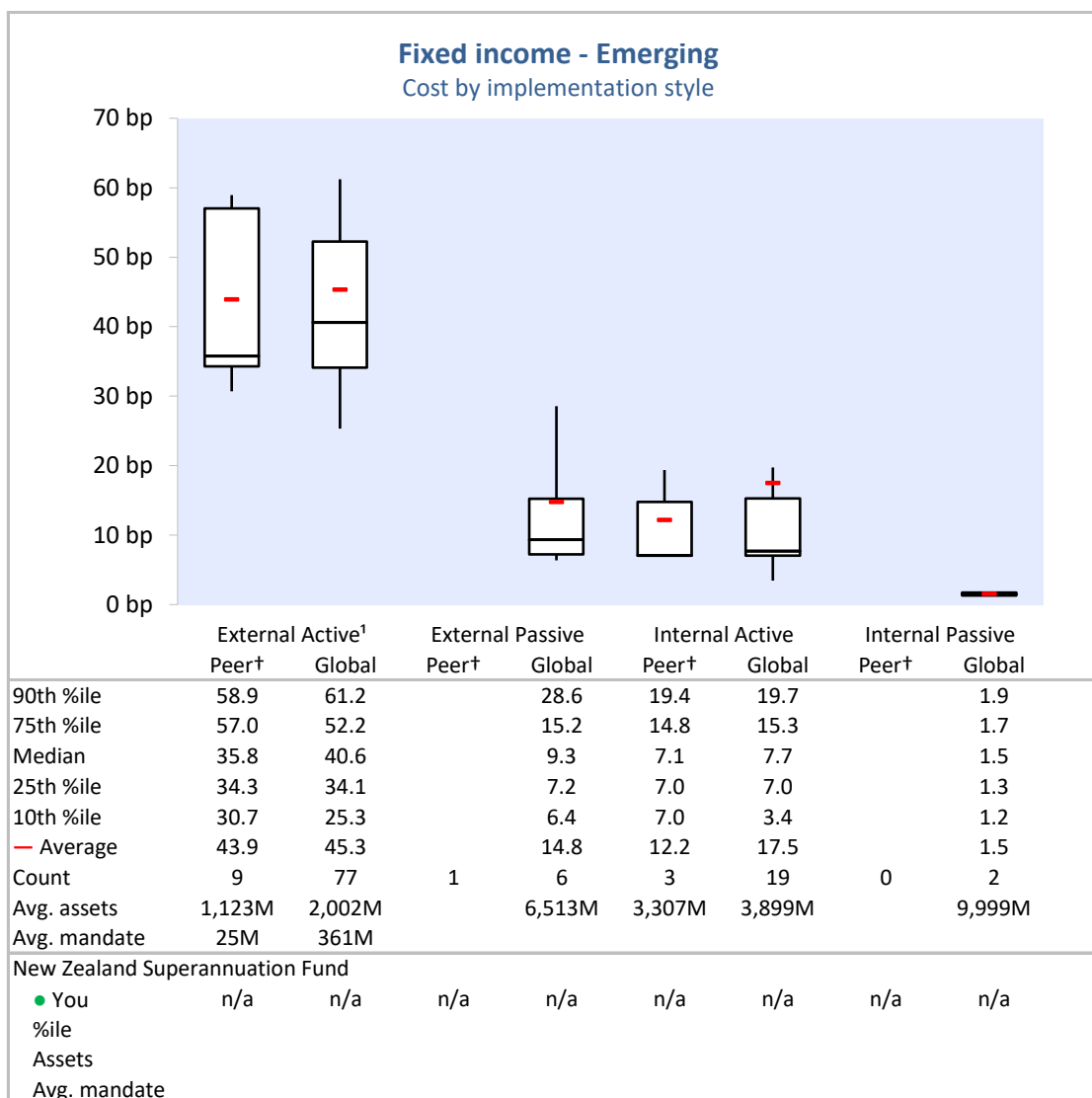
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	51.2	34.9
Performance fees*	n/a	54.2	4.5
Internal and other	<u>n/a</u>	<u>0.2</u>	<u>0.8</u>
Total	n/a	105.5	40.2

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 162.5 bps for peers (1 fund) and 21.5 bps for Global participants (20 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



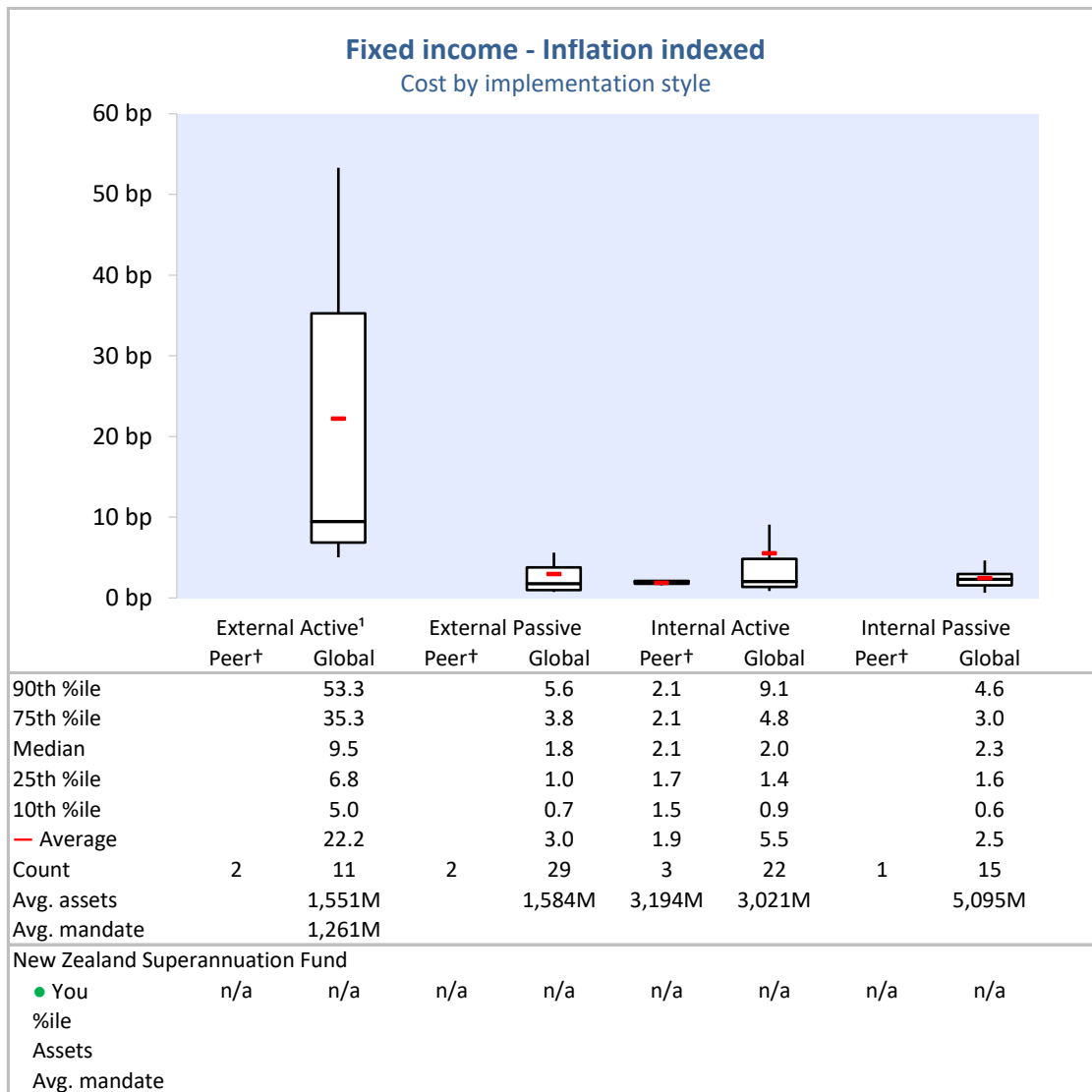


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	38.0	39.8
Performance fees*	n/a	2.4	2.3
Internal and other	<u>n/a</u>	<u>3.5</u>	<u>3.3</u>
Total	n/a	43.9	45.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 4.3 bps for peers (5 funds) and 6.0 bps for Global participants (30 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

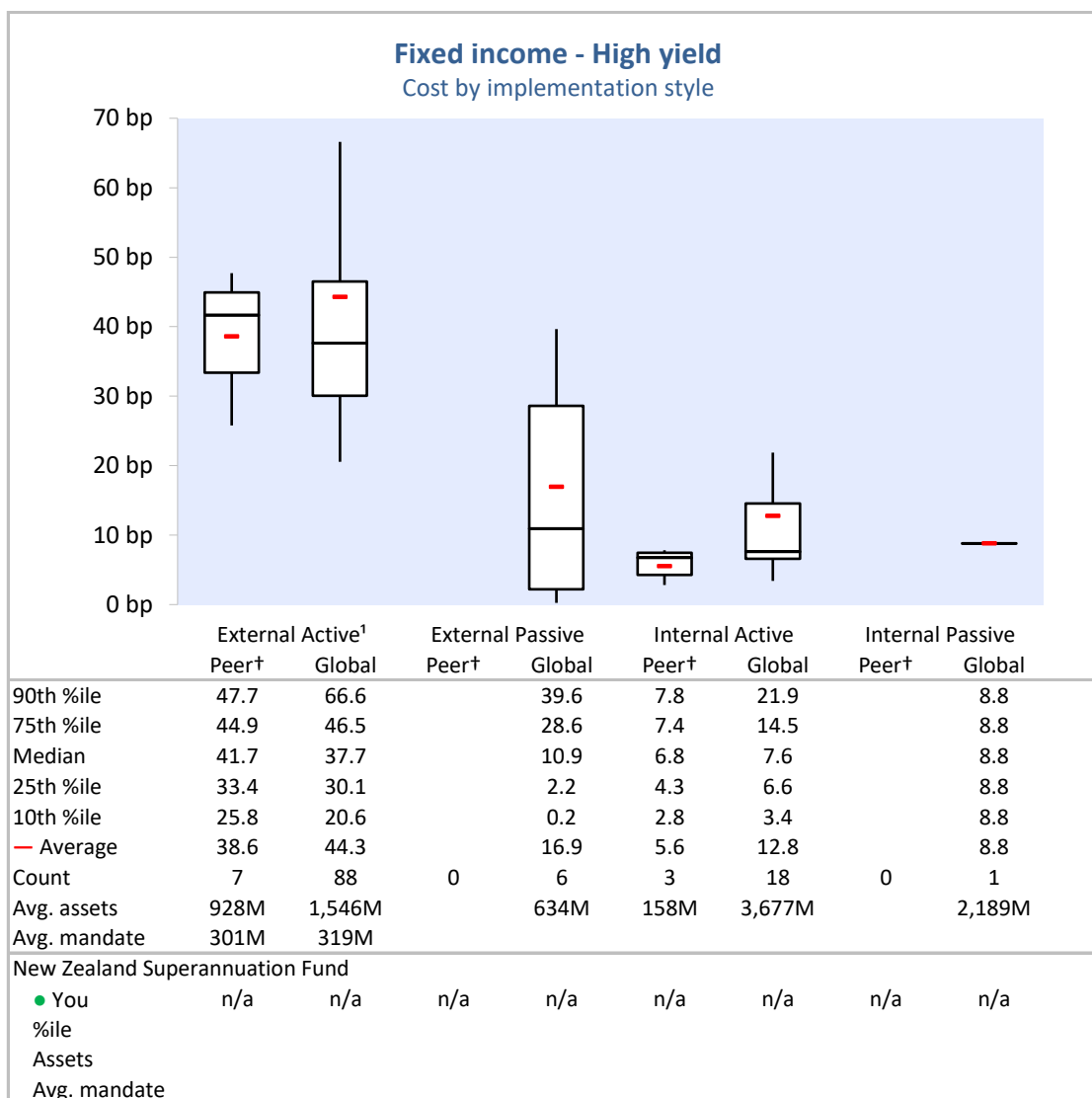


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	22.0
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.2</u>
Total	n/a	n/a	22.2

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 0.0 bps for Global participants (2 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



#### 1. Breakdown of external active fees

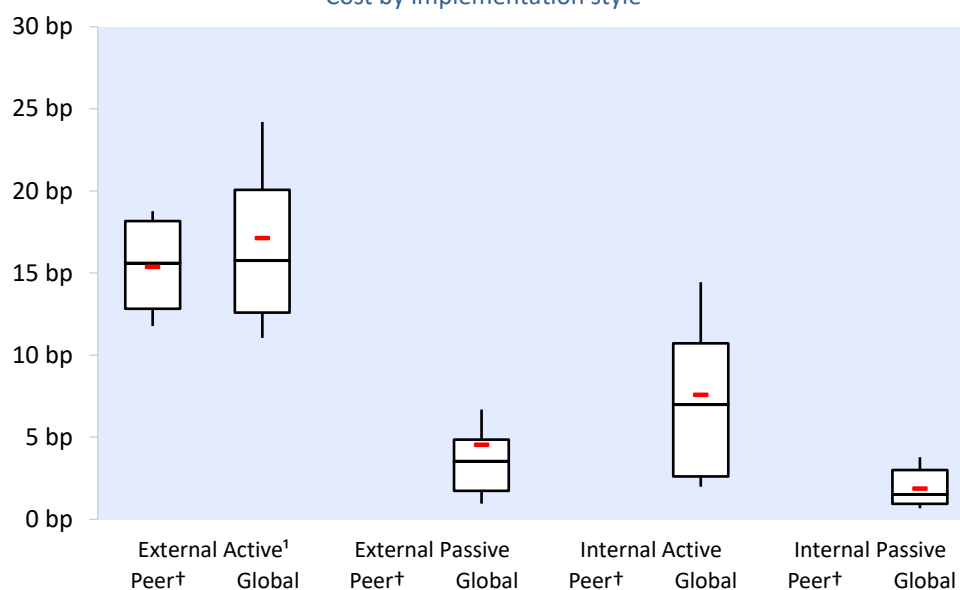
	You	Peer Average	Global Average
Base fees	n/a	37.6	38.1
Performance fees*	n/a	0.0	4.0
Internal and other	<u>n/a</u>	<u>1.0</u>	<u>2.2</u>
Total	n/a	38.6	44.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (2 funds) and 10.9 bps for Global participants (32 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Fixed income - Long bonds

Cost by implementation style



	External Active <sup>1</sup> Peer†	Global	External Passive Peer†	Global	Internal Active Peer†	Global	Internal Passive Peer†	Global
90th %ile	18.8	24.2		6.7		14.4		3.8
75th %ile	18.2	20.1		4.8		10.7		3.0
Median	15.6	15.8		3.6		7.0		1.5
25th %ile	12.8	12.6		1.7		2.6		0.9
10th %ile	11.8	11.1		1.0		2.0		0.7
— Average	15.4	17.1		4.5		7.6		1.9
Count	4	85	2	32	1	11	1	10
Avg. assets	14,140M	5,340M		571M		6,596M		10,710M
Avg. mandate	1,518M	792M						
New Zealand Superannuation Fund								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

### 1. Breakdown of external active fees

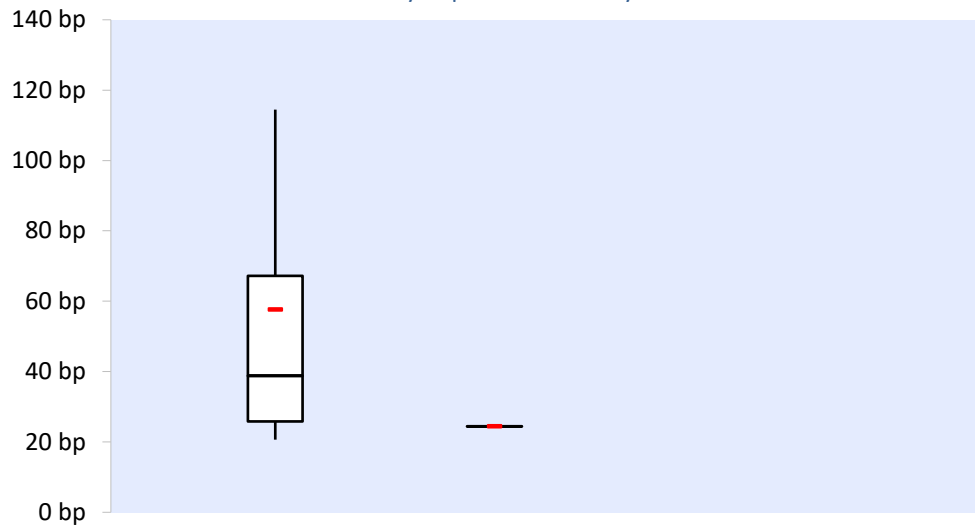
	You	Peer Average	Global Average
Base fees	n/a	14.1	16.4
Performance fees*	n/a	0.6	0.3
Internal and other	<u>n/a</u>	<u>0.7</u>	<u>0.4</u>
Total	n/a	15.4	17.1

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 1.2 bps for peers (2 funds) and 1.4 bps for Global participants (19 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Fixed income - Absolute return bonds

Cost by implementation style



	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		114.5		24.5				
75th %ile		67.2		24.5				
Median		38.8		24.5				
25th %ile		25.8		24.5				
10th %ile		20.7		24.5				
— Average		57.7		24.5				
Count	2	7	0	1	0	0	0	0
Avg. assets		1,127M		273M				
Avg. mandate								
New Zealand Superannuation Fund								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

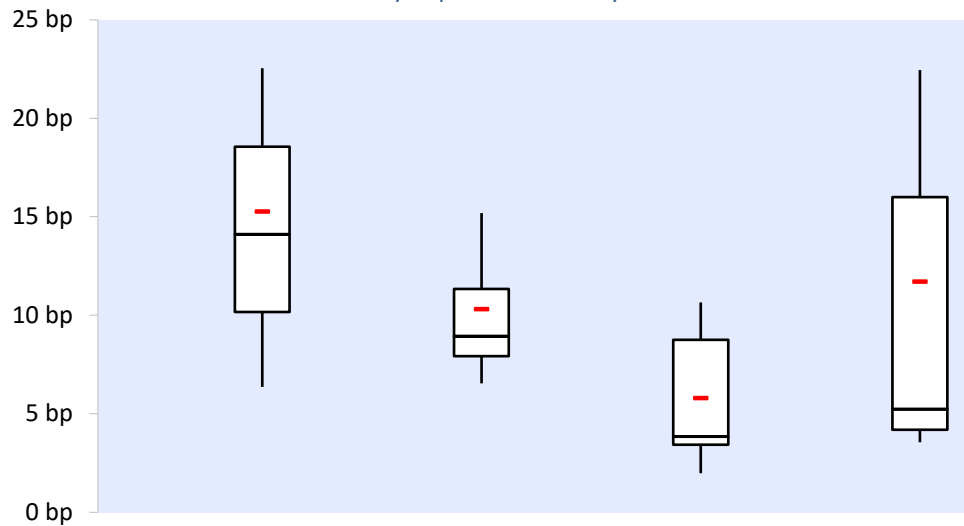
### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	53.6
Performance fees*	n/a	n/a	3.9
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.2</u>
Total	n/a	n/a	57.7

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 13.8 bps for peers (2 funds) and 9.2 bps for Global participants (3 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

### Fixed income - Bundled LDI Cost by implementation style



	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		22.5		15.2		10.7		22.4
75th %ile		18.6		11.3		8.8		16.0
Median		14.1		9.0		3.9		5.2
25th %ile		10.2		7.9		3.4		4.2
10th %ile		6.4		6.5		2.0		3.6
— Average		15.3		10.3		5.8		11.7
Count	0	19	0	4	0	5	1	3
Avg. assets		6,856M		1,502M		40,521M		12,117M
Avg. mandate		731M						
New Zealand Superannuation Fund								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

#### 1. Breakdown of external active fees

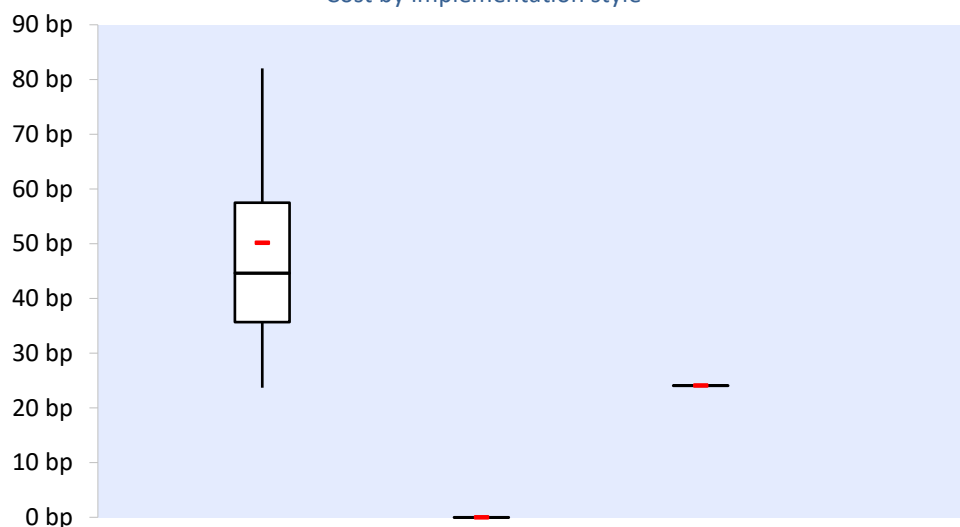
	You	Peer Average	Global Average
Base fees	n/a	n/a	14.8
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.4</u>
Total	n/a	n/a	15.3

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

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Fixed income - Convertibles

Cost by implementation style



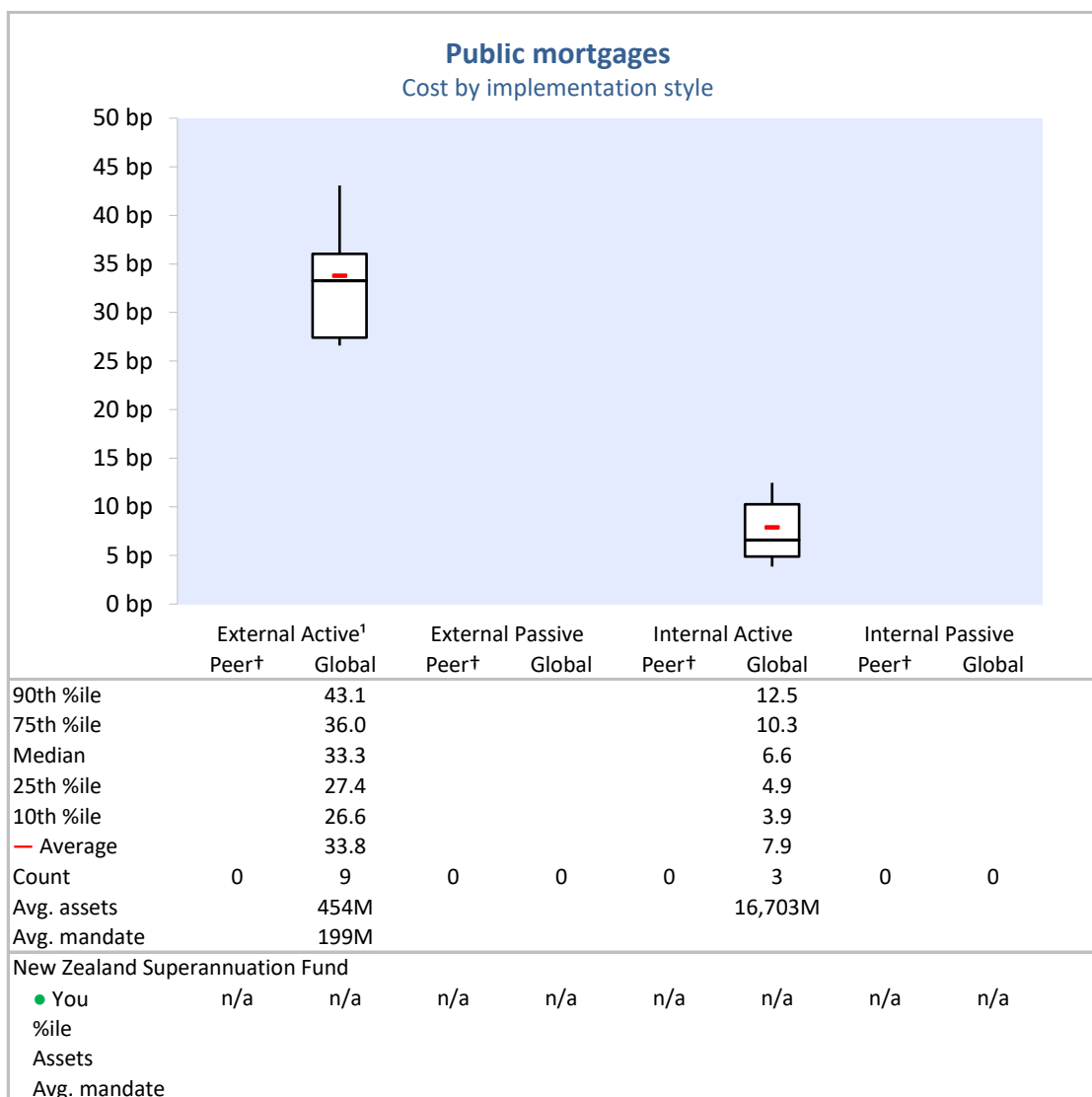
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		82.0		0.0		24.1		
75th %ile		57.5		0.0		24.1		
Median		44.6		0.0		24.1		
25th %ile		35.7		0.0		24.1		
10th %ile		23.7		0.0		24.1		
— Average		50.2		0.0		24.1		
Count	1	8	0	1	0	1	0	0
Avg. assets		560M		0M		1,371M		
Avg. mandate								
New Zealand Superannuation Fund								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	49.4
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.8</u>
Total	n/a	n/a	50.2

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

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



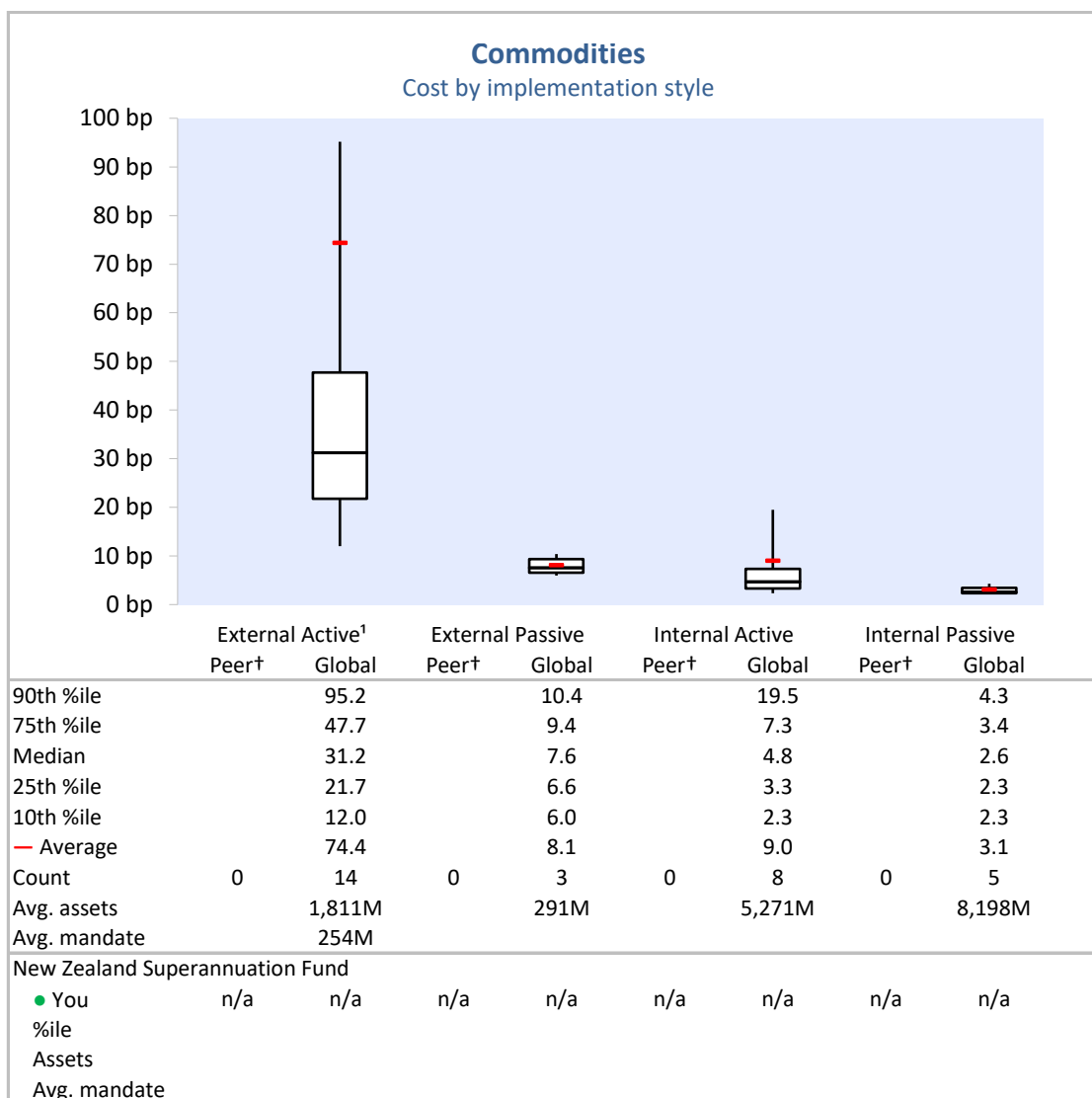
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	33.6
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.2</u>
Total	n/a	n/a	33.8

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

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



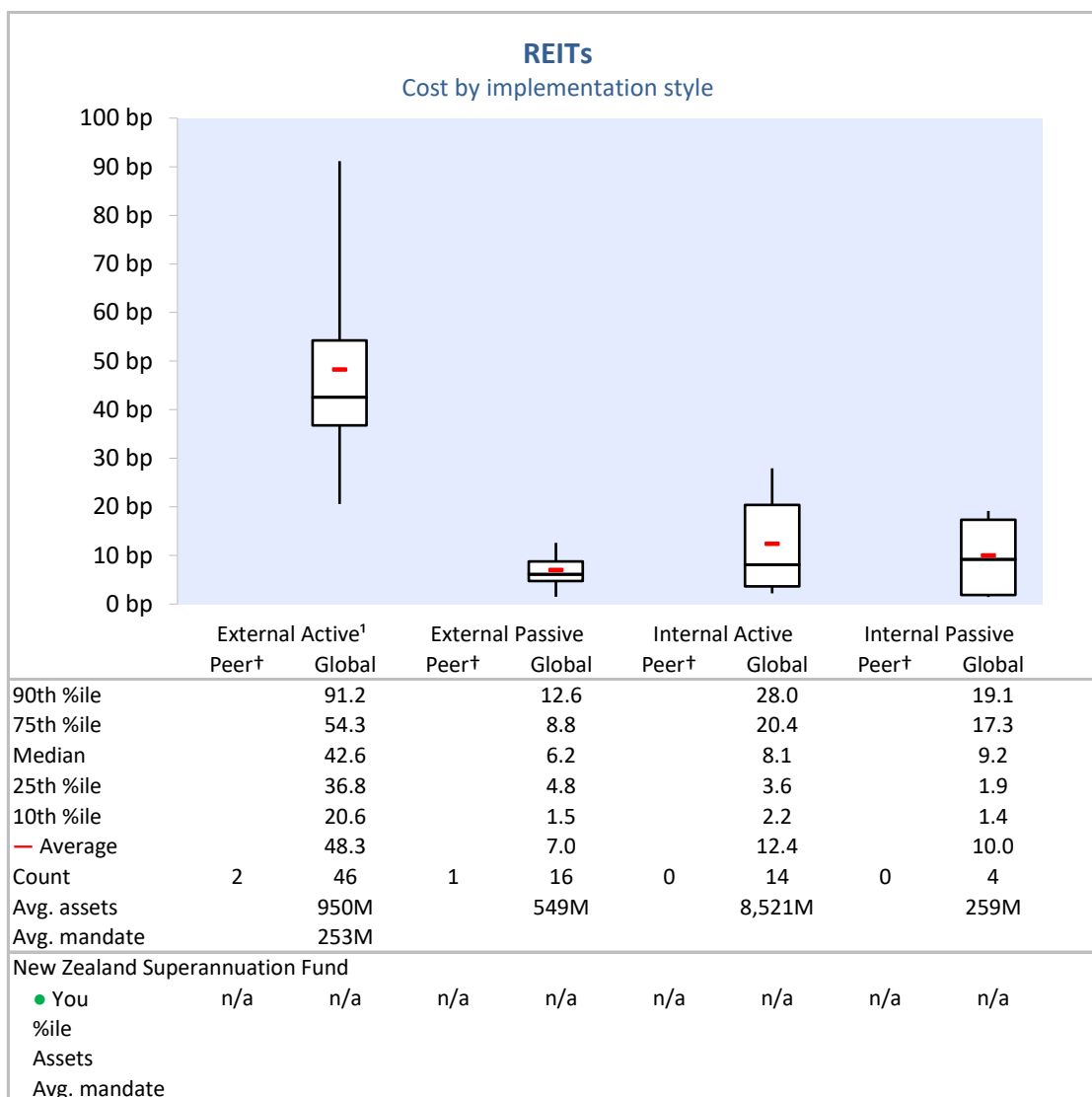


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	48.0
Performance fees*	n/a	n/a	24.9
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>1.5</u>
Total	n/a	n/a	74.4

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 43.5 bps for Global participants (8 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

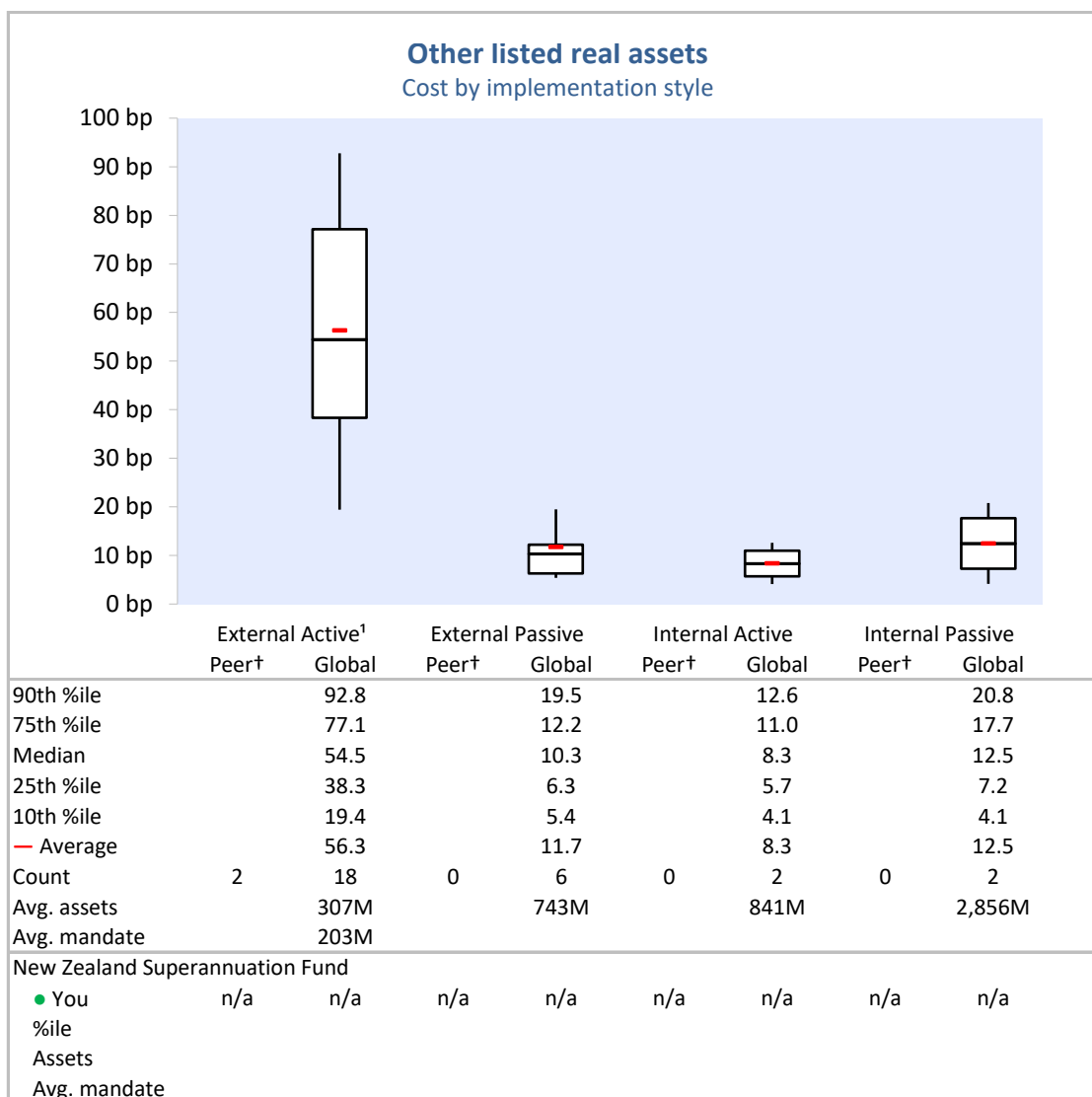


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	45.1
Performance fees*	n/a	n/a	1.6
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>1.6</u>
Total	n/a	n/a	48.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 15.6 bps for peers (2 funds) and 3.4 bps for Global participants (22 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



#### 1. Breakdown of external active fees

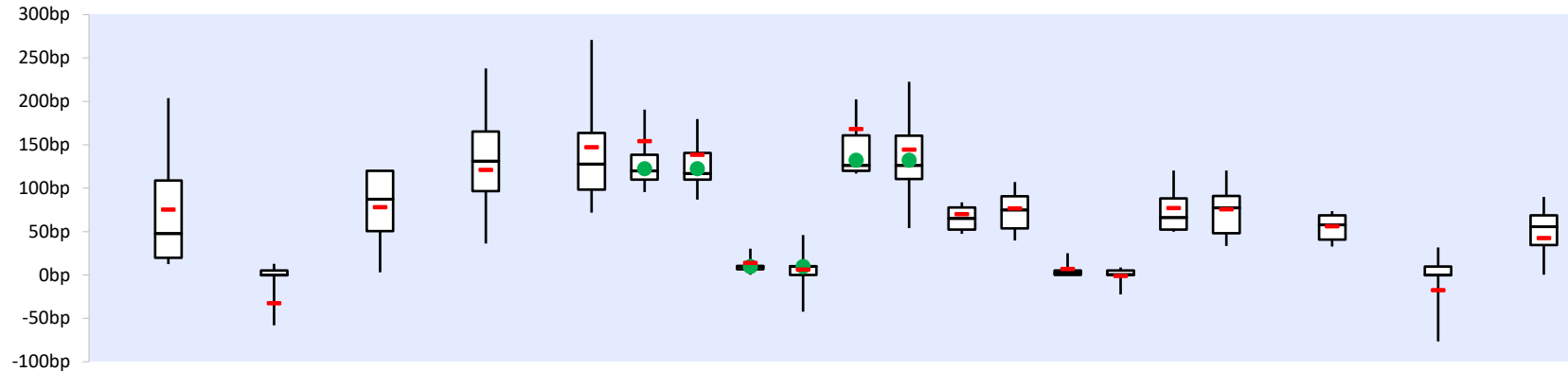
	You	Peer Average	Global Average
Base fees	n/a	n/a	55.4
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>1.0</u>
Total	n/a	n/a	56.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (2 funds) and 0.0 bps for Global participants (6 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Real estate ex-REITs

Cost as a % of the amount fees are based on<sup>1</sup>



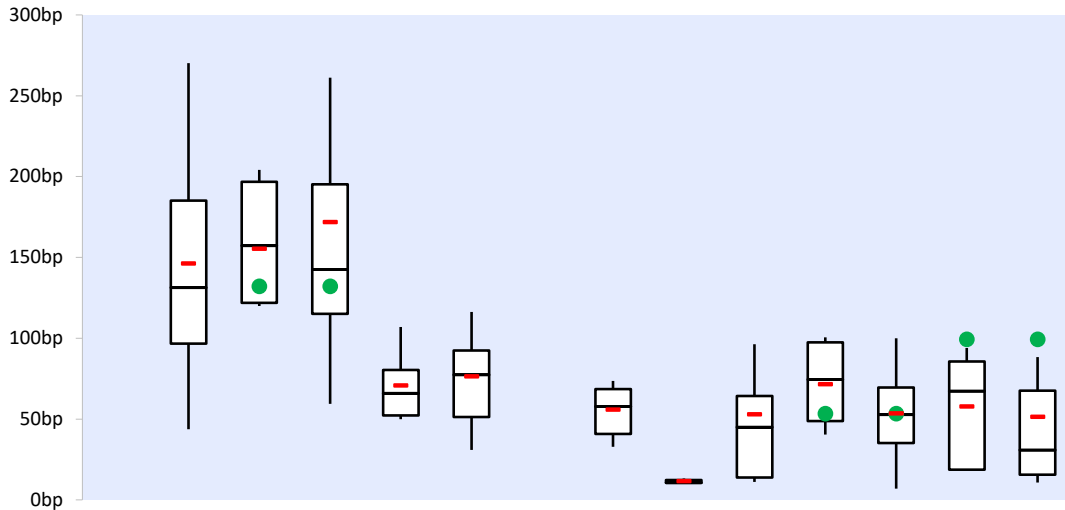
	Fund of Funds						Fund (Direct LP)						Fund (Evergreen)						Joint venture									
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	203.8	12.8	120.0	237.8	270.8	190.6	179.8	30.1	46.0	202.4	222.4	83.7	106.9	25.0	8.5	120.3	120.2	73.6	31.8	89.8								
75th %ile	108.6	5.0	120.0	165.3	163.5	138.5	140.5	10.2	10.0	160.9	160.6	77.7	90.5	5.0	5.0	88.2	91.2	68.6	9.8	68.6								
Median	47.9	0.0	87.5	131.4	128.1	120.0	117.0	10.0	10.0	126.4	126.4	65.2	75.0	2.5	0.6	66.1	77.5	57.9	0.0	55.6								
25th %ile	19.9	0.0	50.5	96.7	98.2	110.0	109.9	6.4	0.0	120.0	110.5	52.3	53.7	0.0	0.0	52.3	48.1	40.7	0.0	34.5								
10th %ile	12.5	-58.0	2.9	36.1	71.7	95.4	86.9	0.4	-42.2	116.9	53.9	47.4	39.6	0.0	-22.6	50.0	33.5	32.9	-76.6	0.2								
— Average	75.4	-32.7	78.2	120.9	147.1	154.3	138.5	13.7	6.0	168.0	144.6	69.9	76.8	7.1	-1.2	77.0	75.6	56.0	-17.4	42.4								
Count	2	40	2	40	2	40	2	40	2	40	13	136	13	136	13	136	12	153	12	153	12	153	1	9	1	7	1	9
Avg. assets		1,034M		1,034M		1,034M		1,034M		1,034M	1,822M	2,178M	1,822M	2,178M	1,822M	2,178M	4,363M	4,180M	4,363M	4,180M	4,363M	4,180M	12,388M	15,927M	12,388M			
New Zealand Superannuation Fund																												
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	122.4	122.4	9.7	9.7	132.1	132.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Assets											1,828M	1,828M	1,828M	1,828M	1,828M	1,828M												

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 imputed costs of 71 bps (on amount fees are based on) for underlying management fees and 11 bps (on NAV) for underlying performance fees were used.
3. The management fees and total cost also include the internal cost of monitoring and selecting real estate investments. Your cost of monitoring and selecting was 16.3 bps for LPs. The peer average cost of monitoring and selecting was 1.7 bps for fund of funds, 57.5 bps for LPs and 3.2 bps for external (not LPs).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Real estate ex-REITs - contd.

### Cost as a % of NAV



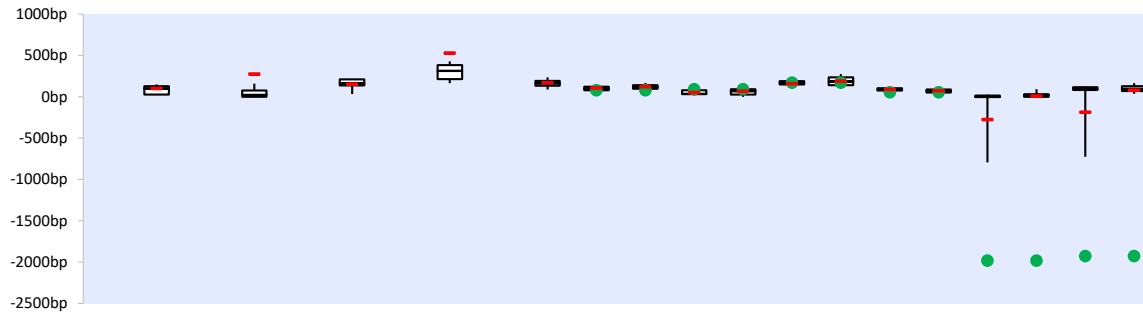
	Fund of Funds		Fund (Direct LP)		Fund (Evergreen)		Joint venture		Oper. Sub.		Co-Inv.		Internal	
	Total <sup>1</sup> incl. perf. Peer†	Global	Total <sup>1</sup> incl. perf. Peer†	Global	Total <sup>1</sup> incl. perf. Peer†	Global	Total <sup>1</sup> incl. perf. Peer†	Global	Total <sup>1</sup> incl. perf. Peer†	Global	Total <sup>1</sup> incl. perf. Peer†	Global	Total Peer†	Global
90th %ile		270.2	204.1	261.2	107.0	116.3		73.6	13.2	96.4	100.6	99.9	93.9	88.4
75th %ile		185.2	196.8	195.3	80.3	92.4		68.6	12.3	64.2	97.5	69.5	85.7	67.6
Median		131.4	157.3	142.6	66.1	77.5		57.9	10.7	45.0	74.6	52.9	67.3	31.0
25th %ile		96.7	121.8	115.0	52.3	51.2		40.7	10.5	13.8	48.8	35.1	18.7	15.5
10th %ile		43.7	120.0	59.4	50.0	30.8		32.9	10.4	11.1	40.4	6.9	18.5	10.6
— Average		146.3	155.4	171.9	70.8	76.4		56.0	11.6	53.1	71.7	53.6	57.9	51.4
Count	2	40	13	136	12	153	1	9	3	13	4	35	5	36
Avg. assets		959M	1,588M	1,839M	4,472M	3,900M		12,388M	10,920M	20,401M	768M	1,453M	1,274M	6,597M
New Zealand Superannuation Fund														
● You	n/a	n/a	132.1	132.1	n/a	n/a	n/a	n/a	n/a	n/a	53.5	53.5	99.4	99.4
%ile			33%	43%							33%	53%	100%	94%
Assets			1,828M	1,828M							1,027M	1,027M	203M	203M

1. The total cost also includes the internal cost of monitoring and selecting real estate investments.
2. Co-investment is included with direct LPs because it can only be done alongside direct LPs. Co-investment is done by 4 of your peers and 29 of the Global funds.
3. The total cost also includes the internal cost of monitoring and selecting real estate investments. Internal and other - FoFs The peer average cost of monitoring and selecting was 1.7 bps for fund of funds, 57.5 bps for LPs and 3.2 bps for external (not LPs).

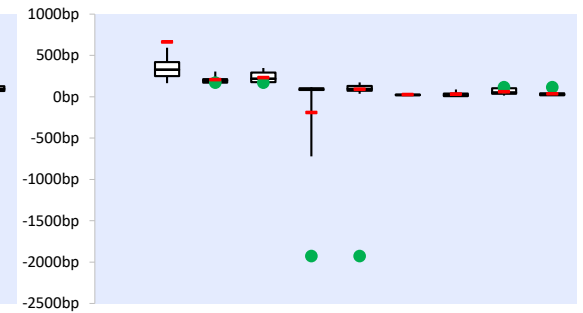
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Infrastructure

Cost as a % of the amount fees are based on<sup>1</sup>



Cost as a % of NAV



	Fund of Funds									Fund (Direct LP)						Fund (Evergreen)						Fund of Funds		Fund (Direct LP)		Fund (Evergreen)		Co-Inv.		Internal					
	Mgmt fees <sup>3</sup> (Top layer)			Perf. fees (Top layer)			Underlying mgmt. & perf. <sup>2</sup>			Total <sup>3</sup> incl. perf.			Total <sup>3</sup> excl. perf.			Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total			
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†
90th %ile	148.1	160.2	210.0	428.1	234.4	138.7	166.6	93.7	130.9	193.3	275.8	114.5	109.0	28.3	91.1	126.0	164.0	593.6	306.6	347.4	115.1	175.3	43.3	88.8	110.6	82.0									
75th %ile	129.5	76.4	210.0	383.3	193.2	123.4	141.6	78.6	90.0	188.5	236.5	103.2	87.7	14.4	30.2	117.4	128.7	419.8	213.6	294.5	102.5	130.9	28.5	40.5	104.1	43.3									
Median	100.0	24.7	162.8	314.9	163.5	101.7	120.0	37.5	69.2	170.2	187.7	84.3	73.0	0.0	25.0	99.1	98.0	329.2	199.0	220.8	85.6	96.8	24.3	21.1	52.7	29.4									
25th %ile	28.6	0.0	137.2	215.1	133.8	80.2	98.3	33.7	27.4	150.8	140.1	76.8	52.3	0.0	0.2	81.9	70.8	250.3	171.0	178.1	84.8	72.0	19.5	7.8	35.2	18.0									
10th %ile	25.1	0.0	33.9	165.6	86.9	75.4	74.4	17.6	0.0	96.5	95.3	66.5	33.2	-793.2	0.0	-723.5	37.6	165.6	147.2	104.2	-720.6	36.4	16.3	1.3	15.6	10.8									
Average	100.9	275.7	151.5	528.1	172.2	105.6	123.5	52.3	67.0	157.8	190.4	88.5	72.0	-274.4	7.7	-185.9	79.8	662.3	209.1	233.5	-191.3	90.4	27.9	33.4	61.9	37.0									
Count	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26	1	26					
Avg. assets	314M		314M		314M		314M		314M		1,643M	1,831M	1,643M	1,831M	1,643M	1,831M	724M	1,445M	724M	1,445M	724M	1,445M	274M	1,379M	1,433M	744M	1,370M	377M	960M	1,409M	13,127M				
New Zealand Superannuation Fund																																			
• You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	80.2	80.2	90.0	90.0	170.2	170.2	55.0	55.0	#####	#####	#####	#####	n/a	n/a	170.2	170.2	#####	#####	n/a	n/a	114.9	114.9				
%ile										25%	15%	88%	63%	50%	42%	27%						13%	22%	0%	0%			100%	97%						
Assets	135M		135M		135M		135M		135M		308M	308M	308M	308M	308M	308M	308M	308M	308M	308M	308M	308M	0M	0M	135M	135M	308M	308M	0M	0M	310M	310M			

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 imputed costs of 0 bps (on amount fees are based on) for underlying management fees and 0 bps (on NAV) for underlying performance fees were used.

3. The management fees and total cost also include the internal cost of monitoring and selecting infrastructure investments. Your cost of monitoring and selecting was 10.5 bps for LPs and 6.9 bps for external (not LPs). The peer average cost of monitoring and selectine was 6.0 bos for LPs and 3.9 bos for external (not LPs).

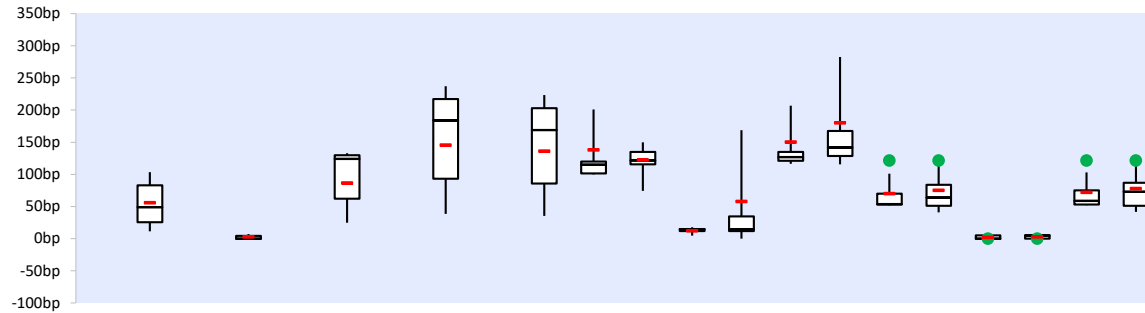
Some averages on the right chart may be off the chart where there is outlier data resulting from large base or performance fees divided by small NAV.

A CEM-imputed cost of 90 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.

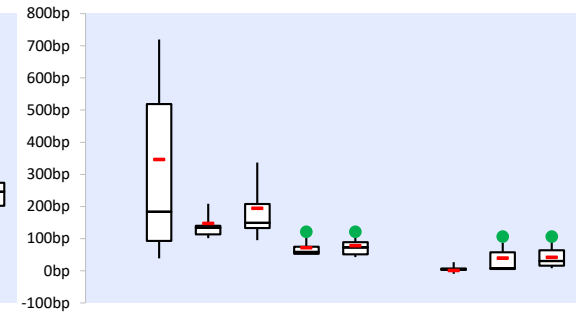
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Natural resources

Cost as a % of the amount fees are based on<sup>1</sup>



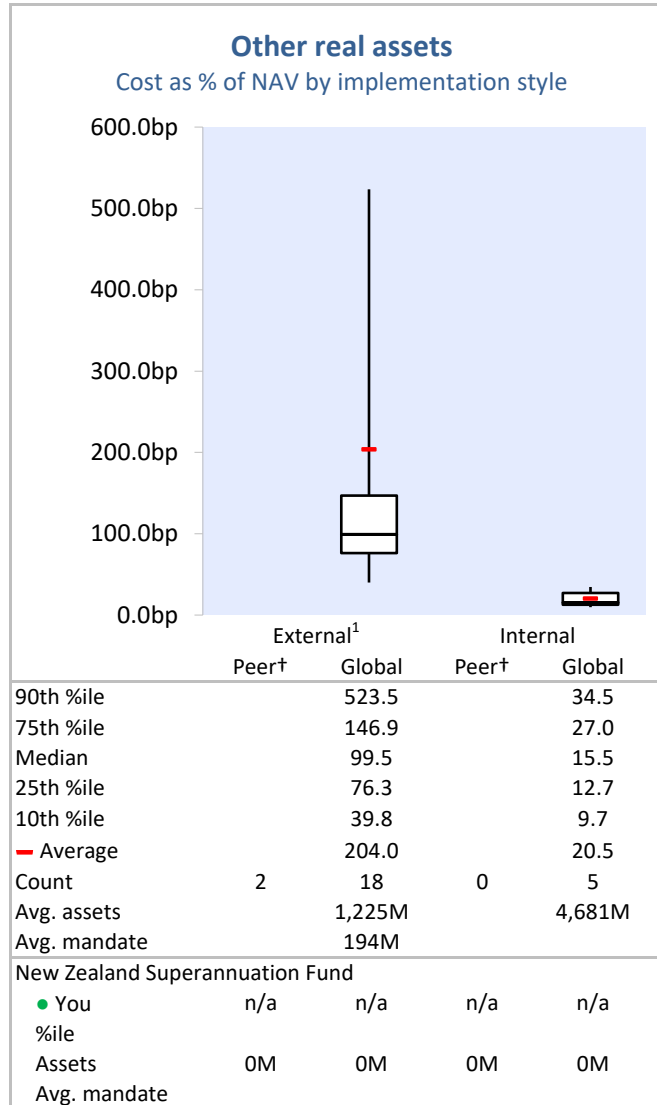
Cost as a % of NAV



	Fund of Funds										Fund (Direct LP)						Fund (Evergreen)						Fund of Funds		Fund (Direct LP)		Fund (Evergreen)		Co-Inv.		Internal					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.					
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global				
90th %ile	103.4	7.0	132.9	237.0	223.4	200.8	149.7	17.7	168.7	206.8	282.5	100.9	118.1	5.0	5.0	102.9	121.1	719.4	208.8	336.4	102.9	121.1	26.5	86.8	97.7											
75th %ile	83.0	4.4	129.7	217.1	203.0	120.0	135.1	15.0	34.7	135.0	167.4	70.0	83.8	5.0	5.0	75.0	86.7	518.6	139.9	207.5	75.0	88.8	7.4	57.2	63.7											
Median	49.1	0.0	124.4	184.1	169.1	115.1	121.8	15.0	15.0	126.9	141.8	54.1	64.0	0.0	5.0	59.1	73.2	184.1	135.0	149.2	59.1	73.2	4.9	8.0	30.6											
25th %ile	25.5	0.0	62.2	93.0	85.5	101.4	115.6	11.8	11.7	121.0	128.8	53.2	51.1	0.0	0.0	53.2	51.1	93.0	113.7	133.1	53.2	51.1	2.7	6.0	15.5											
10th %ile	11.4	0.0	24.9	38.4	35.4	99.8	74.3	4.7	0.0	116.6	115.5	52.0	40.8	0.0	0.0	52.0	41.7	38.4	101.3	95.3	52.0	42.5	-9.5	4.8	8.0											
— Average	56.0	2.9	86.5	145.4	136.0	138.0	122.1	12.3	57.9	150.2	180.0	70.0	75.3	2.0	2.6	72.0	77.9	346.4	147.3	194.0	72.0	78.3	1.3	39.5	42.0											
Count	0	3	0	3	0	3	0	3	0	3	0	3	5	47	5	47	5	47	0	3	0	3	0	10	3	11										
Avg. assets	299M		299M		299M		299M		299M		610M		1,162M		610M		1,162M		497M		453M		497M		453M		290M		610M		1,078M		497M		449M	
New Zealand Superannuation Fund																																				
● 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	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 imputed costs of n/a bps (on amount fees are based on) for underlying management fees and n/a bps (on NAV) for underlying performance fees were used.
3. The management fees and total cost also include the internal cost of monitoring and selecting natural resource investments. Your cost of monitoring and selecting was 13.9 bps for external (not LPs). The peer average cost of monitoring and selecting was 7.3 bps for LPs and 6.9 bps for external (not LPs).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	n/a	143.1
Internal and other	<u>n/a</u>	<u>2.2</u>	<u>60.8</u>
Total*	n/a	n/a	204.0
Performance fees**	n/a	20.7	-0.4

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

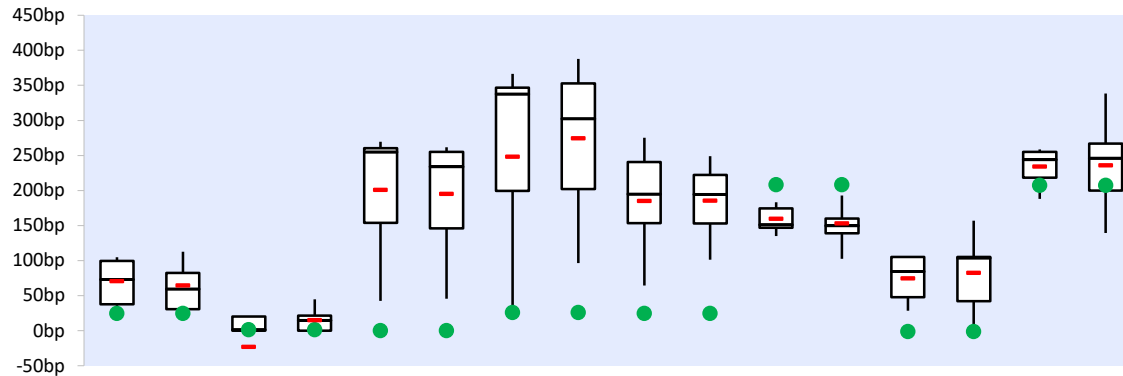
+Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

\*\* For funds that did not report a performance fee, an imputed cost of 5 bps was applied. The average performance fee for only those funds that reported a performance fee is 20.7 bps for peers (2 funds) and -3.9 bps for Global participants (11 funds).



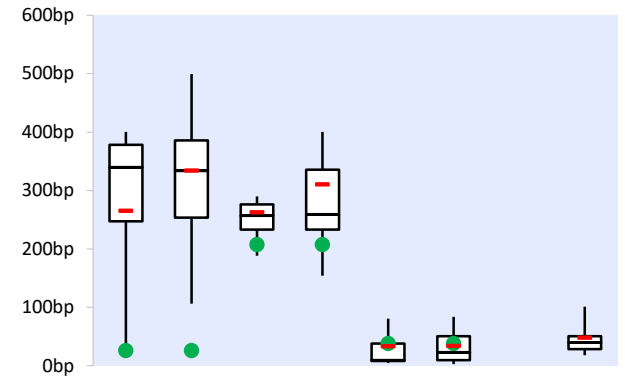
## Private equity - Diversified

### Cost as a % of the amount fees are based on<sup>1</sup>



	Fund of Funds										Direct LP					
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	104.8	112.6	20.1	44.7	269.6	261.7	366.5	387.8	275.5	249.0	183.0	192.8	105.0	156.9	258.8	338.2
75th %ile	99.6	82.6	20.0	21.7	260.4	255.0	346.6	352.8	240.8	222.4	174.6	160.1	105.0	105.0	255.0	266.9
Median	73.3	59.5	1.5	15.0	255.0	234.2	337.8	302.6	194.9	194.8	151.2	150.0	84.6	104.0	244.1	246.3
25th %ile	37.9	30.6	0.0	0.0	154.0	146.1	199.2	202.2	153.3	153.1	146.6	138.8	47.6	42.1	218.3	199.9
10th %ile	24.6	15.4	-7.9	-1.3	42.6	45.7	26.0	96.5	64.5	101.1	134.9	102.5	28.4	0.0	188.1	139.3
— Average	70.5	64.5	-23.1	14.7	200.6	195.0	247.9	274.2	185.2	185.3	159.6	153.2	74.5	82.5	234.1	235.7
Count	11	107	11	107	11	107	11	107	11	107	12	174	12	174	12	174
Avg. assets	2,161M	1,354M	2,161M	1,354M	2,161M	1,354M	2,161M	1,354M	2,161M	1,354M	4,181M	5,492M	4,181M	5,492M	4,181M	5,492M
New Zealand Superannuation Fund																
● You	24.6	24.6	1.5	1.5	0.0	0.0	26.0	26.0	24.6	24.6	208.4	208.4	-1.2	-1.2	207.2	207.2
%ile	10%	18%	50%	31%	0%	5%	10%	7%	0%	4%	100%	92%	0%	7%	18%	29%
Assets	3M	3M	3M	3M	3M	3M	3M	3M	3M	3M	428M	428M	428M	428M	428M	428M

### Cost as a % of NAV



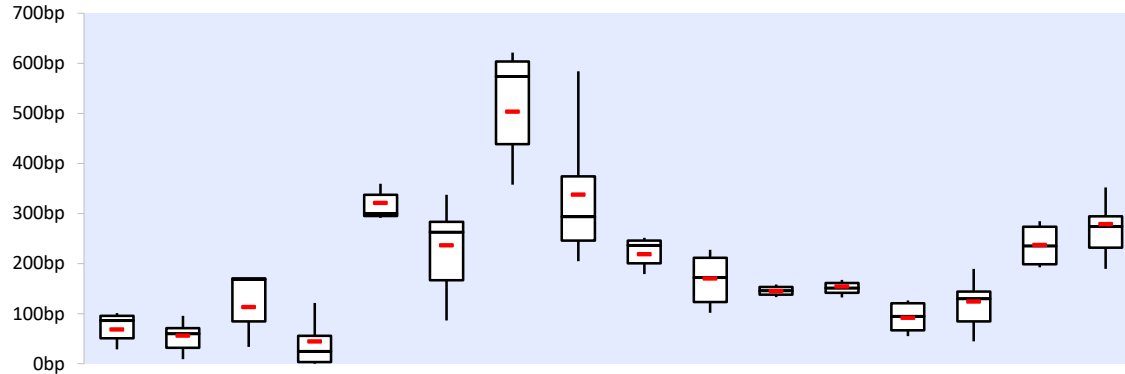
	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	400.5	499.4	289.8	400.6	80.4	83.5		100.9
75th %ile	378.0	385.7	276.4	335.8	37.7	50.4		50.6
Median	340.0	334.3	257.1	259.1	9.6	23.2		40.0
25th %ile	247.4	253.8	233.0	233.1	8.1	9.4		28.4
10th %ile	26.0	106.3	188.1	154.3	4.7	2.8		17.8
— Average	265.4	334.1	262.6	310.1	33.3	33.9		48.1
Count	11	107	12	174	5	56	0	24
Avg. assets	2,178M	1,332M	4,004M	5,054M	425M	3,143M		10,873M
● You	26.0	26.0	207.2	207.2	37.7	37.7	n/a	n/a
%ile	10%	7%	18%	20%	75%	60%		
Assets	3M	3M	428M	428M	194M	194M	0M	0M

- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so imputed costs of 150 bps (on amount fees are based on) for underlying management fees and 105 bps (on NAV) for underlying performance fees were used.
- The management fees and total cost also includes the internal cost of monitoring and selecting private equity investments. Your cost of monitoring and selecting was 10.0 bps for fund of funds and 11.7 bps for LPs. The peer average cost of monitoring and selecting was 4.4 bps for fund of funds, 9.4 bps for LPs and 5.0 bps for co-investments.

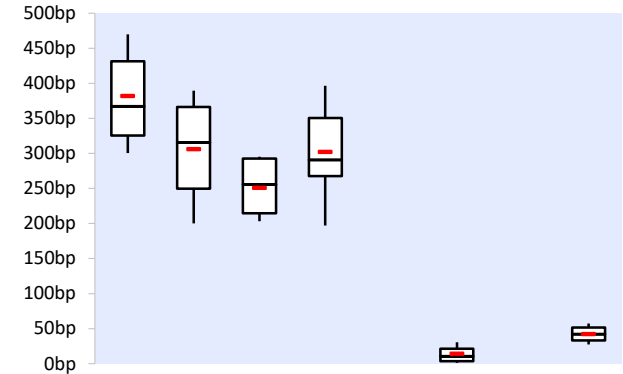
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## LBO

Cost as a % of the amount fees are based on<sup>1</sup>



Cost as a % of NAV



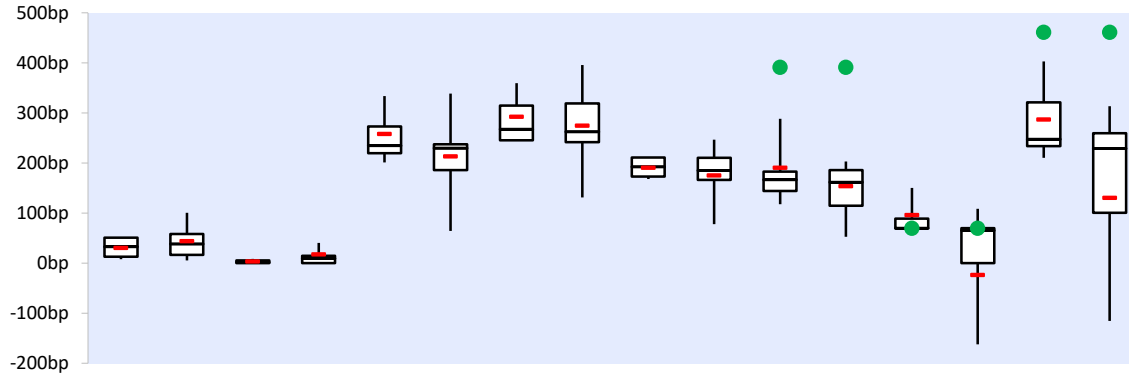
	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal	
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total			
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	101.3	95.8	171.7	121.2	359.4	337.3	621.4	584.0	251.3	227.6	158.1	167.1	126.2	189.2	284.3	352.2	469.9	389.7	295.1	396.6			30.6	57.3
75th %ile	95.8	70.8	170.5	55.9	337.3	283.5	603.6	373.9	245.8	211.2	153.2	161.2	120.5	144.1	273.8	294.6	431.4	366.1	292.7	350.6			21.3	51.7
Median	86.6	60.0	168.4	25.0	300.6	262.9	573.9	293.9	236.6	172.6	145.6	151.7	95.2	129.7	235.2	274.3	367.4	316.0	256.0	291.1			10.8	42.4
25th %ile	50.5	31.6	84.2	3.2	294.9	166.7	438.8	245.7	200.5	123.1	137.8	141.8	66.6	84.3	198.8	231.8	325.5	249.6	214.4	267.9			3.6	33.1
10th %ile	28.9	9.3	33.7	0.0	291.5	86.3	357.7	205.0	178.9	101.6	132.8	132.5	55.0	44.3	192.3	189.3	300.3	200.1	203.3	197.0			1.2	27.6
— Average	68.7	56.6	113.6	44.6	321.3	236.7	503.6	337.9	218.7	170.1	145.5	154.4	91.9	124.3	237.4	278.7	382.1	306.4	251.1	302.1			14.5	42.4
Count	3	16	3	16	3	16	3	16	3	16	4	42	4	42	4	42	3	16	4	42	2	16	0	2
Avg. assets	200M	809M	200M	809M	200M	809M	200M	809M	200M	809M	4,143M	6,893M	4,143M	6,893M	4,143M	6,893M	233M	792M	3,926M	6,453M			2,507M	905M
New Zealand Superannuation Fund																								
● 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
%ile																								
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

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 imputed costs of 150 bps (on amount fees are based on) for underlying management fees and 130 bps (on NAV) for underlying performance fees were used.
3. The management fees and total cost also include the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 4.7 bps for fund of funds, 4.3 bps for LPs and 2.0

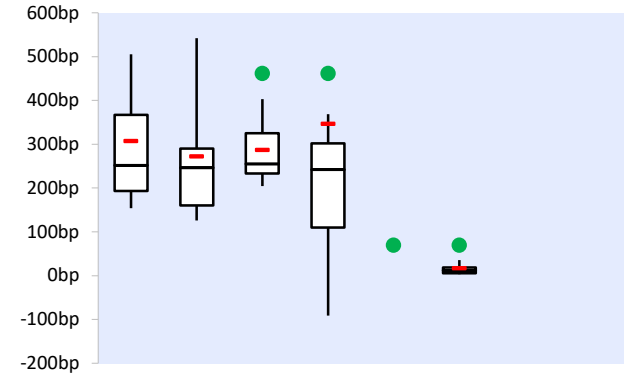
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Venture capital

Cost as a % of the amount fees are based on<sup>1</sup>



Cost as a % of NAV



	Fund of Funds										Direct LP					
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	51.8	100.5	8.2	40.2	333.7	338.7	359.7	395.5	211.8	246.7	288.5	202.9	150.3	108.7	402.9	313.4
75th %ile	50.7	58.4	5.6	14.8	273.2	237.2	314.9	318.8	210.7	210.3	182.6	185.9	88.9	70.0	321.1	259.3
Median	32.8	38.8	2.1	9.5	234.8	230.0	267.7	262.7	192.8	185.0	166.8	162.1	70.0	65.5	247.6	229.6
25th %ile	12.9	16.2	0.0	0.0	219.7	185.6	245.3	241.4	172.9	166.0	144.1	114.3	70.0	0.0	233.4	100.5
10th %ile	8.1	5.6	0.0	-0.9	201.1	64.1	244.8	131.2	168.1	77.7	117.4	52.9	68.0	-162.2	210.6	-115.7
— Average	30.8	43.8	3.5	17.7	258.1	213.2	292.4	274.7	190.8	175.1	190.9	153.6	96.1	-23.1	287.0	130.5
Count	4	26	4	26	4	26	4	26	4	26	6	40	6	40	6	40
Avg. assets	423M	515M	423M	515M	423M	515M	423M	515M	423M	515M	1,159M	1,573M	1,159M	1,573M	1,159M	1,573M
New Zealand Superannuation Fund																
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	391.5	391.5	70.0	70.0	461.5	461.5
%ile											100%	100%	20%	56%	100%	100%
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	192M	192M	192M	192M	192M	192M

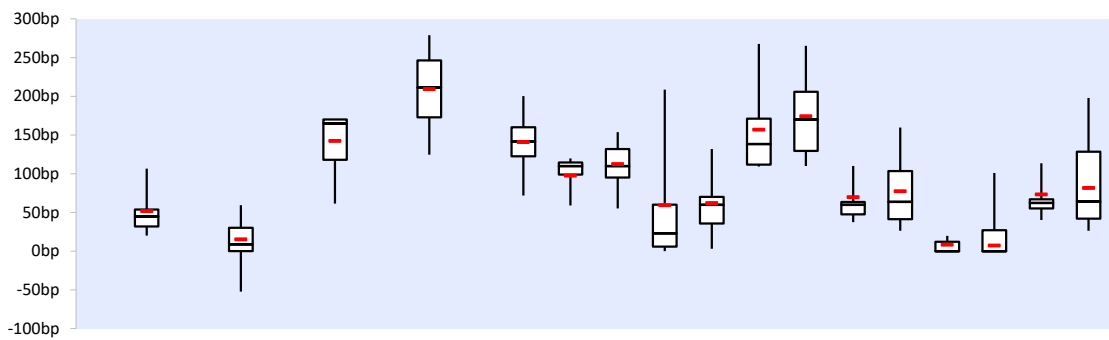
	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	505.6	542.0	402.9	368.6			35.7	
75th %ile	367.0	290.0	324.9	302.2			18.5	
Median	252.5	246.3	255.3	242.5			12.4	
25th %ile	193.1	160.0	233.4	110.1			5.4	
10th %ile	153.7	125.6	204.2	-91.2			3.3	
— Average	307.6	272.4	287.5	347.0			17.4	
Count	4	26	6	40	2	11	0	2
Avg. assets	393M	721M	1,173M	1,504M		206M		3,247M
New Zealand Superannuation Fund								
● You	n/a	n/a	461.5	461.5	69.9	69.9	n/a	n/a
%ile			100%	95%	100%	100%		
Assets	0M	0M	192M	192M	48M	48M	0M	0M

- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
  - The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so imputed costs of 160 bps (on amount fees are based on) for underlying management fees and 70 bps (on NAV) for underlying performance fees were used.
  - The management fees and total cost also include the internal cost of monitoring and selecting private equity investments. Your cost of monitoring and selecting was 46.7 bps for LPs. The peer average cost of monitoring and selecting was 7.1 bps for fund of funds, 13.4 bps for LPs and 2.0 bps for co-investments.
- A CEM-imputed cost of 70 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark

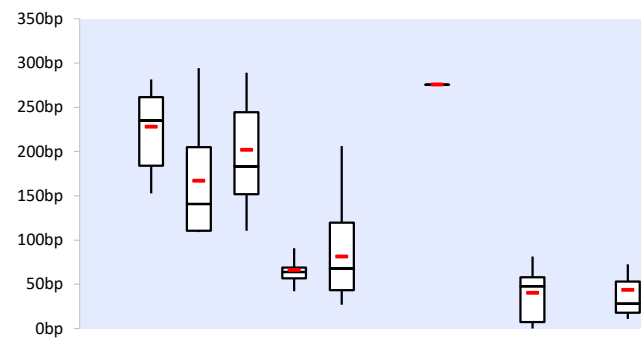
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Private credit

Cost as a % of the amount fees are based on<sup>1</sup>



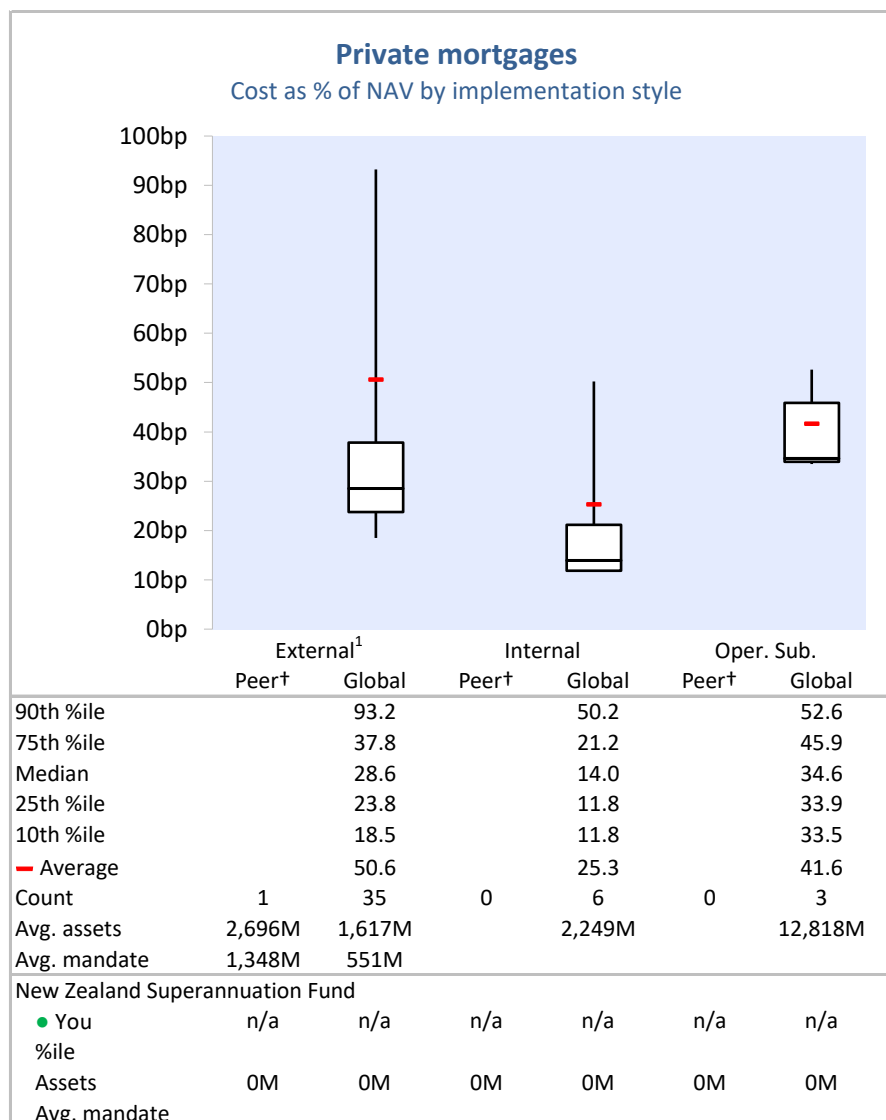
Cost as a % of NAV



	Fund of Funds										Direct LP						Evergreen						Fund of Funds		Direct LP		Evergreen		Oper. Sub.		Co-Inv.		Internal			
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total incl. perf.		Total							
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global				
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global				
90th %ile	106.5	59.2	170.0	278.8	200.2	119.7	153.8	208.7	132.0	267.5	265.0	110.1	159.7	19.5	100.9	113.5	197.8	281.5	294.3	289.0	90.7	206.3	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
75th %ile	53.8	30.0	170.0	246.3	160.0	114.5	131.9	60.0	69.9	171.2	205.7	63.3	103.4	12.2	27.0	66.9	128.2	261.4	205.1	244.5	69.0	119.5	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
Median	45.0	9.1	165.2	211.3	142.0	110.0	110.0	23.1	60.0	138.6	170.0	60.0	63.6	0.0	0.0	62.5	64.0	235.3	140.9	183.3	64.0	67.8	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
25th %ile	31.8	0.0	118.1	172.8	122.6	98.7	95.1	5.8	35.8	111.8	129.3	47.6	41.2	0.0	0.0	54.9	41.9	183.9	110.4	151.9	56.6	43.5	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
10th %ile	20.1	-52.3	61.2	124.4	71.9	58.8	54.9	0.0	3.2	109.1	109.8	37.5	26.2	0.0	0.0	40.2	26.2	152.9	109.1	110.5	42.3	26.9	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
Average	51.8	15.2	142.3	209.2	140.9	97.6	112.2	59.1	61.9	156.7	174.1	69.5	77.4	8.1	7.0	73.0	81.5	228.0	167.0	202.0	66.2	81.2	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7	275.7			
Count	0	14	0	14	0	14	0	14	0	14	0	14	11	139	11	139	11	139	7	73	3	42	7	73	0	14	11	139	7	73	0	1	1	21	1	26
Avg. assets	410M		410M		410M		410M		410M		1,462M	1,724M	1,462M	1,724M	1,462M	1,724M	3,584M	1,675M	8,362M	2,912M	3,584M	1,675M	368M	1,395M	1,548M	3,611M	1,654M	854M	183M	641M	13M	6,887M				
New Zealand Superannuation Fund																																				
• You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			
%ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			
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	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 imputed values of n/a bps (on amount fees are based on) for underlying management fees and n/a bps (on NAV) for underlying performance fees were used.
3. The management fees and total cost also include the internal cost of monitoring and selecting real estate investments. The peer average cost of monitoring and selecting was 6.7 bps for LPs and 15.6 bps for external (not LPs).

\*Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



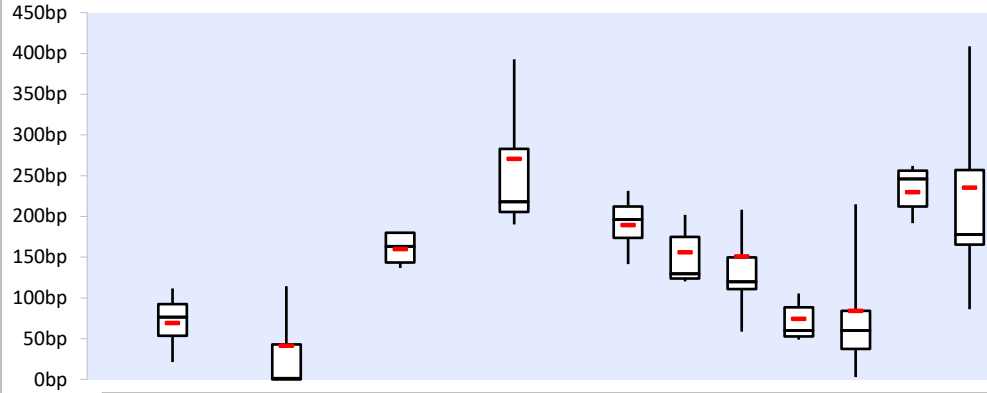
#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	28.2	48.1
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>2.6</u>
Total	n/a	n/a	50.6
Performance fees	n/a	n/a	15.0

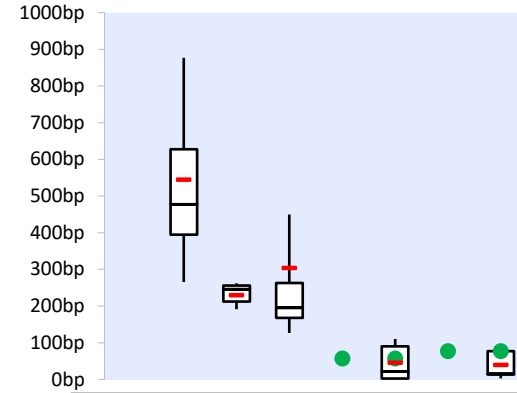
†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

## Private equity - Other

### Cost as a % of the amount fees are based on<sup>1</sup>

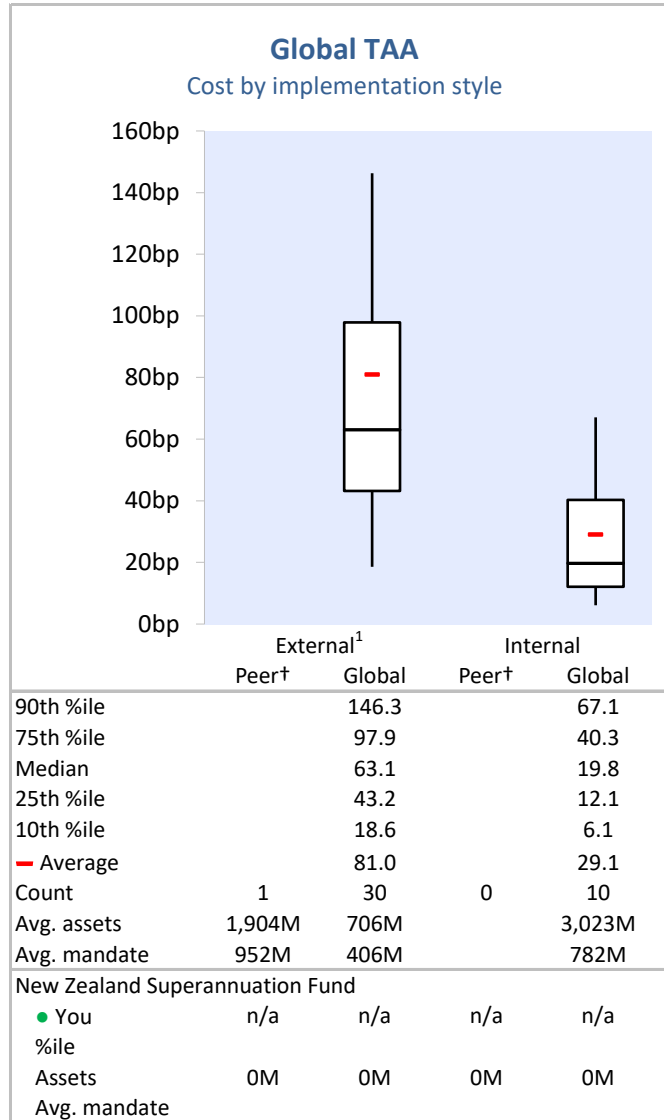


### Cost as a % of NAV



	Fund of Funds										Direct LP						Fund of Funds				Direct LP		Co-Investment		Internal	
	Mgmt fees <sup>3</sup> (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees <sup>3</sup>		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total			
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global		
	Count		Count		Count		Count		Count		Count		Count		Count		Count		Count		Count		Count			
90th %ile	111.5	114.2	180.0	392.8	231.5	201.9	208.0	105.3	214.8	261.9	408.7	876.9	261.9	449.8	110.2	92.1										
75th %ile	92.3	42.7	180.0	282.9	212.3	174.8	149.7	88.3	84.1	256.0	256.9	627.6	256.0	262.6	89.8	77.1										
Median	76.6	1.5	163.6	217.9	196.6	129.5	120.0	60.0	60.0	246.1	178.0	477.6	246.1	195.8	22.0	15.5										
25th %ile	53.7	0.0	143.5	205.5	173.7	123.7	110.8	52.9	37.3	212.1	165.6	394.6	212.1	167.9	2.4	13.5										
10th %ile	21.5	0.0	136.8	190.2	141.5	120.3	58.8	48.6	2.8	191.6	86.2	265.8	191.6	126.5	0.0	3.2										
— Average	69.4	41.2	159.9	270.5	189.4	155.8	150.8	74.1	84.3	230.0	235.1	544.6	230.0	304.0	45.6	39.8										
Count	0	4	0	4	0	4	0	4	0	4	3	27	3	27	3	27	0	4	3	27	2	10	1	9		
Avg. assets	696M	696M	696M	696M	696M	2,009M	2,498M	2,009M	2,498M	2,009M	2,498M	696M	2,009M	2,096M	2,153M	1,524M	1,707M	1,372M								
New Zealand Superannuation Fund																										
● You %ile	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	57.4	57.4	77.1	77.1				
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	4,058M	4,058M	1,707M	1,707M				

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 imputed values of n/a bps (on amount fees are based on) for underlying management fees and n/a bps (on NAV) for underlying  
 †Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

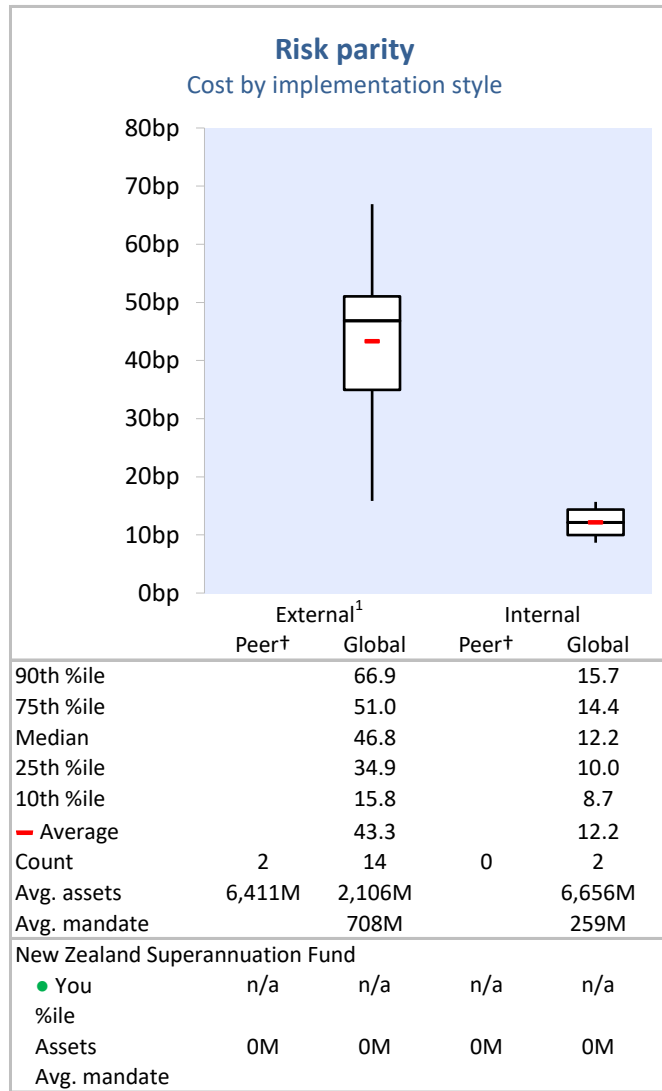


#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	40.5	64.3
Internal and other	n/a	n/a	7.3
Performance fees	<u>n/a</u>	<u>3.5</u>	<u>20.0</u>
Total*	n/a	n/a	81.0

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 3.5 bps for peers (1 fund) and 20.0 bps for Global participants (20 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	43.5	43.0
Internal and other	n/a	0.2	0.9
Performance fees	<u>n/a</u>	<u>0.0</u>	<u>0.0</u>
Total*	n/a	n/a	43.3

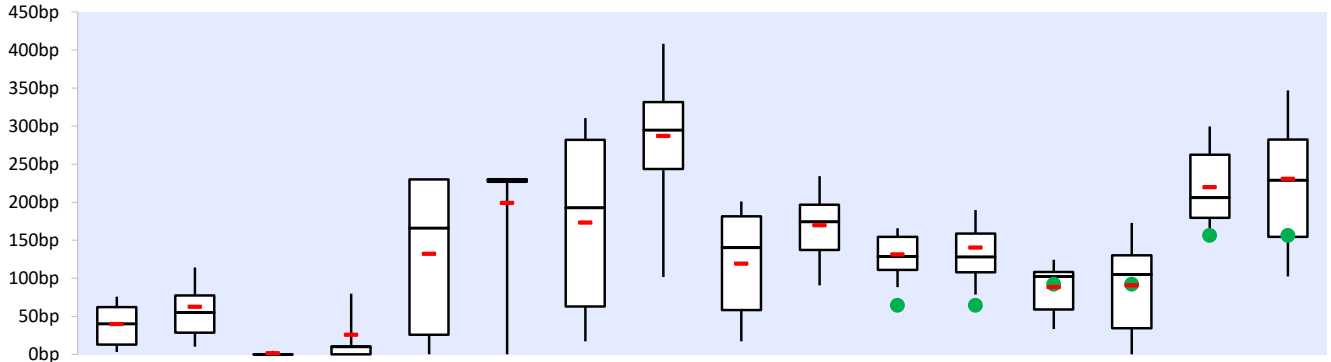
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 0.0 bps for Global participants (6 funds).

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.



## Hedge funds

### Cost by implementation style



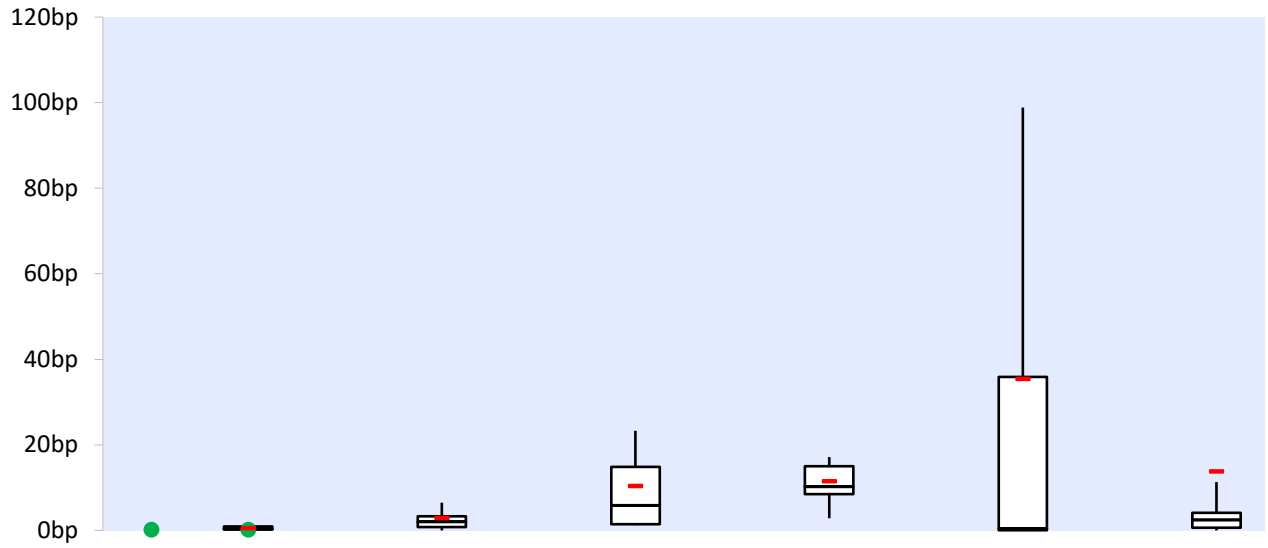
	Fund of Funds										External Direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. and perf. <sup>1</sup>		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>2</sup> incl. perf.	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile	76.0	114.2	4.5	79.6	230.0	230.0	310.4	408.3	201.0	234.4	165.6	189.6	124.2	172.8	299.5	346.8
75th %ile	62.1	77.3	0.0	10.0	230.0	230.0	281.9	331.6	181.5	196.7	154.4	158.8	108.3	130.2	262.2	282.4
Median	40.3	55.0	0.0	10.0	166.3	230.0	192.8	295.0	140.3	174.3	128.6	128.1	102.3	105.0	205.9	229.2
25th %ile	13.0	28.6	0.0	0.0	25.7	226.8	62.8	243.7	58.2	137.3	111.2	107.8	58.8	34.4	179.3	154.6
10th %ile	3.0	10.2	0.0	0.0	0.0	0.0	16.9	101.5	16.9	90.6	88.1	78.6	33.0	0.0	161.3	102.3
— Average	39.8	62.4	1.5	25.7	132.1	199.0	173.4	287.2	119.4	169.8	131.4	140.3	88.5	90.6	219.9	230.9
Count	6	55	6	55	6	55	6	55	6	55	10	104	10	104	10	104
Avg. assets	404M	805M	404M	805M	404M	805M	404M	805M	404M	805M	3,604M	4,285M	3,604M	4,285M	3,604M	4,285M
New Zealand Superannuation Fund																
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	64.3	64.3	92.1	92.1	156.4	156.4
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	4,504M	4,504M	4,504M	4,504M	4,504M	4,504M

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 imputed costs of 114 bps (on NAV) for underlying management fees and 53 bps (on NAV) for underlying performance fees were used.

2. The total cost also includes the internal cost of monitoring and selecting real estate investments. The peer average cost of monitoring and selecting was 4.1 bps for fund of funds and 7.8 bps for LPs.

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

### Overlays: currency, duration Cost by implementation style

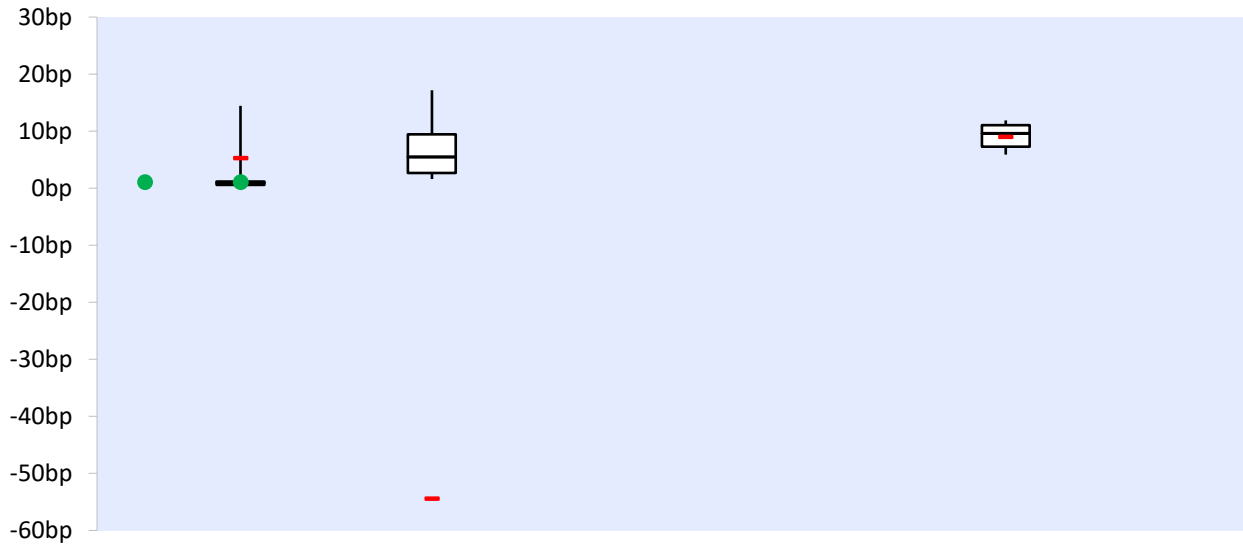


	Currency Hedge				Discretionary Currency				Duration Management			
	Internal % of notional		External % of notional		Internal % of notional		External % of notional		Internal % of notional		External % of notional	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		1.0		6.5		23.3		17.2		98.8		11.3
75th %ile		0.9		3.3		14.9		15.0		35.9		4.1
Median		0.5		2.1		5.9		10.3		0.5		2.5
25th %ile		0.2		0.8		1.5		8.5		0.0		0.6
10th %ile		0.2		0.0		1.2		2.9		0.0		0.0
— Average		0.6		3.0		10.4		11.5		35.4		13.9
Count	2	11	2	27	0	4	2	17	1	4	2	29
Avg. notional	30,179M	43,736M	9,329M	10,622M		27,520M	1,295M	1,791M	6M	24,397M	11,178M	15,743M
New Zealand Superannuation Fund												
● You	0.2	0.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile	0%	0%										
Avg. notional	55,769M	55,769M										

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

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

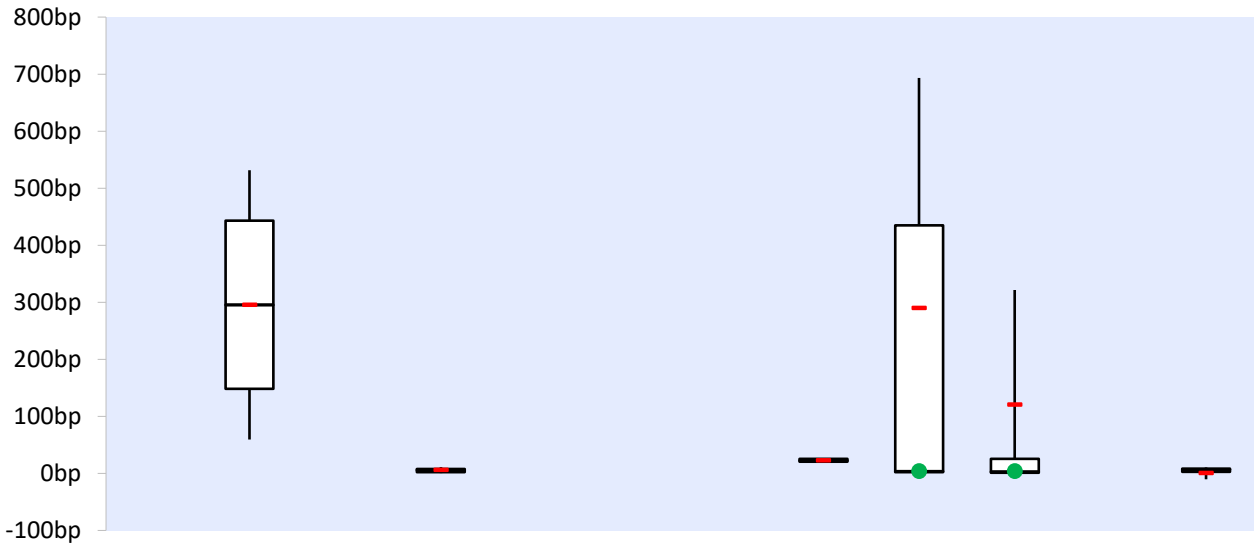
Cost by implementation style



	Passive Beta/Rebalancing				Global TAA				Policy Tilt TAA			
	Internal		External		Internal		External		Internal		External	
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		14.4		17.2						11.9		
75th %ile		1.2		9.5						11.1		
Median		1.0		5.5						9.6		
25th %ile		0.6		2.7						7.3		
10th %ile		0.3		1.6						5.9		
— Average		5.3		-54.4						9.0		
Count	1	6	1	22	0	0	0	0	0	3	0	0
Avg. notional	9,291M	16,589M	10,282M	10,584M						2,370M		
New Zealand Superannuation Fund												
● You	1.1	1.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile	100%	60%										
Avg. notional	9,291M	9,291M										

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

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



	Commodity				Long/ Short				Other			
	Internal % of notional		External % of notional		Internal % of notional		External % of notional		Internal % of notional		External % of notional	
	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global	Peer†	Global
90th %ile		531.6		11.1				26.9	693.3	321.6		10.5
75th %ile		443.1		8.0				25.4	434.8	25.6		8.5
Median		295.6		6.0				22.9	3.8	2.9		7.1
25th %ile		148.1		2.0				20.4	2.1	1.2		3.0
10th %ile		59.7		0.8				18.9	1.0	0.1		-10.3
— Average		295.6		5.8				22.9	290.0	120.7		0.8
Count	0	2	1	5	0	0	1	2	3	8	1	9
Avg. notional		3,641M	5,430M	1,989M			1,282M	737M	3,741M	9,564M	7,362M	17,284M
New Zealand Superannuation Fund												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.8	3.8	n/a	n/a
%ile									50%	57%		
Avg. notional									7,786M	7,786M		

†Peer cost distributions, and in certain cases the Universe cost distributions, are not shown where count is less than 3 to protect anonymity.

# 6

## Risk

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\*Asset-liability risk is only calculated for DB or DB-like pension funds/pools and if the liability information was available on the CEM survey.

## Modeled risk as a measure of expected volatility

Risk can be measured in various ways. A common measure of risk is volatility, i.e., the standard deviation of realized returns.

Calculating the standard deviation of historic returns (i.e., realized risk) poses several challenges. Firstly, it requires a significant number of data points to have validity. Since CEM universe participants only provide annual performance data, a fairly long time period is required before a reasonable risk value can be calculated. Secondly, even when such a time series is available, it is possible that the strategy or approach being used by the fund may have changed over the time series and may not be captured in the estimated volatility.

In addition, private asset class returns, which tend to be smoothed and lagged relative to public markets, can show lower observed volatility simply due to differences in valuation approaches relative to public markets.

CEM calculates a modeled (expected) volatility based on the asset allocation of each peer, using a common covariance table based on historical data.

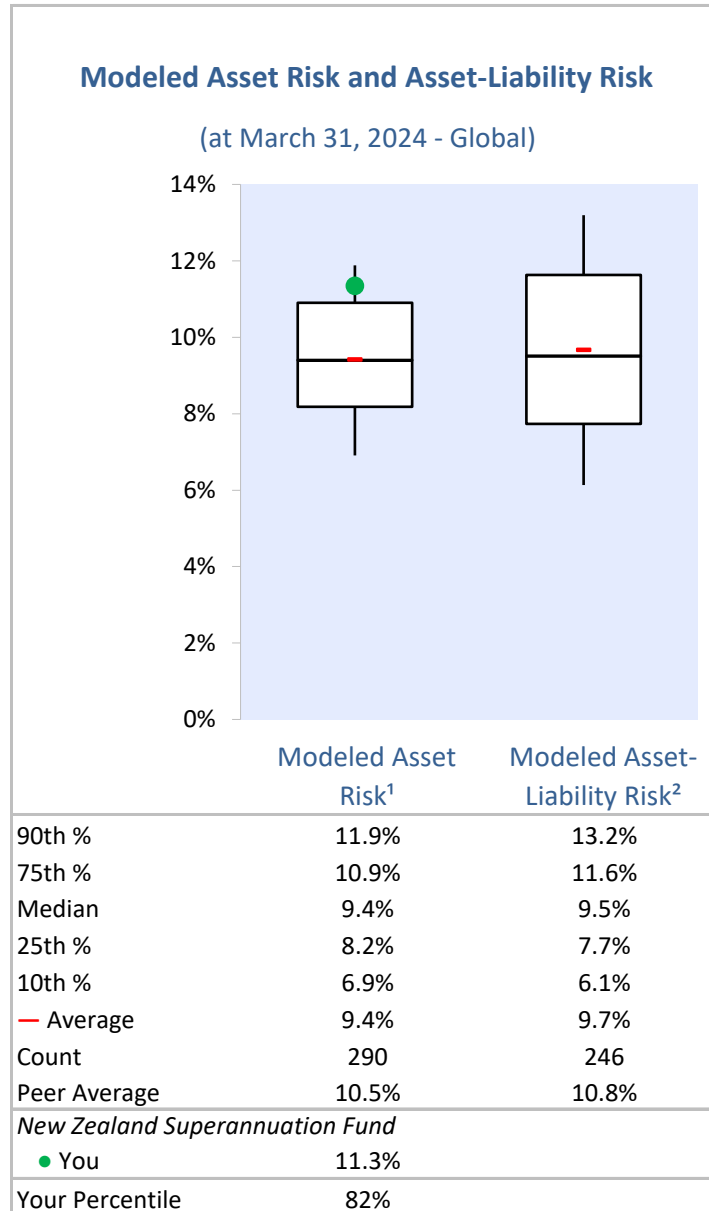
The covariance table is calculated based on a long term series of monthly return data. It does not require a large volume of data from peers to produce useful results. It is also able to calculate an expected volatility at a single point in time, and hence reasonably captures the expected impact of changes in allocation or strategy.

Proxies based on public markets, which share the risk factors of similar private market investments, are used to represent private assets without artificially smoothing expected volatility.

The following pages show how CEM calculates modeled risk, and comparisons of risk based on this standard risk measure.

CEM currently only models asset allocation risk (including currency and interest rate hedges), and does not specifically model active risk. The addition of an active risk model calculation is under consideration.

## Comparison of your modeled risk levels to the Global universe



1. Modeled 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. Modeled 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.

## Calculation of modeled asset risk

Before considering the benefit of diversification, the weighted average risk of the asset classes in your asset mix policy was 13.2%.

### Calculation of your weighted asset class risk

Asset Class	Policy weight (A)	Risk <sup>1</sup> (B)	Weighted risk (A X B)
Stock: EAFE	5.0%	15%	0.8%
Stock: Emerging	6.0%	19%	1.1%
Stock: Global	69.0%	13%	9.2%
Bonds: Global	20.0%	10%	2.0%
Weighted Total			13.2%

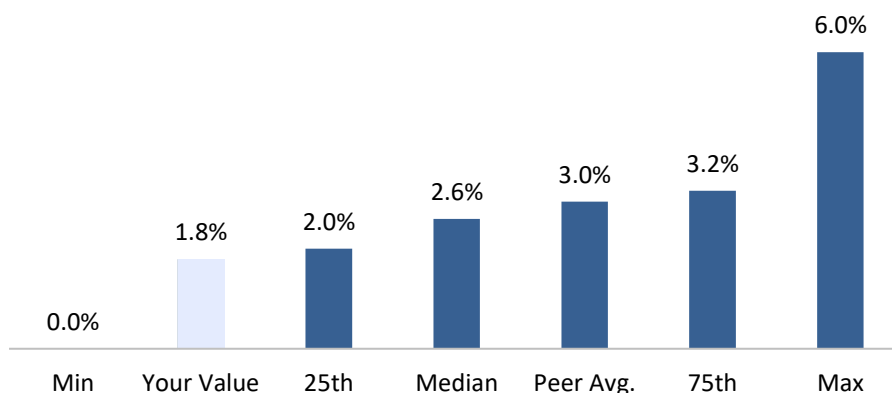
1. Risk is the standard deviation of returns for the asset class based on standard benchmarks used by CEM.



## Reduction in modeled 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 15 of this section.

### Diversification benefit: Global universe



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

### Components of modeled asset risk

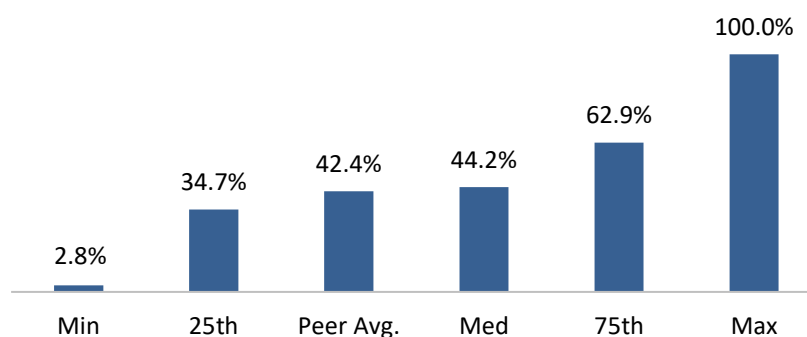
	You	Peer median*	Peer average	Global median*	Global average
Weighted asset risk	13.2%	13.3%	13.5%	12.4%	12.1%
Benefit of diversification	1.8%	3.2%	3.0%	2.6%	2.7%
Asset risk	11.3%	10.9%	10.5%	9.4%	9.4%

\* 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.

## Modeled 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.

### Correlation between policy returns and liability returns: Global universe



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 returns<sup>1</sup> (liability risk =  $\sqrt{R_A^2 + R_L^2 - 2\rho_{AL}R_AR_L}$  ).

### Components of modeled asset-liability risk

	You	Peer median	Peer average	Global median	Global average
Asset risk ( $R_A$ )	11.3%	10.9%	10.5%	9.4%	9.4%
Liability risk ( $R_L$ )		9.8%	9.5%	9.3%	9.3%
Correlation between policy returns and liability returns ( $\rho_{AL}$ )		39.9%	42.4%	44.2%	47.8%
Asset-liability risk		11.7%	10.8%	9.5%	9.7%

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		Global average	
	Duration	% of Assets	Duration	% of Assets	Duration	% of Assets
Inflation Indexed Bonds	n/a	n/a	11.9	63%	11.8	56%
Nominal Bonds	n/a	n/a	14.4	37%	14.2	44%
Total		n/a		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 17-19 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 n/a.

Plan type	# of plans	% of Total
Flat Benefit	20	7%
Career Average	59	19%
Final/Highest/Best Avg	185	60%
Other	42	14%
<b>Total</b>	<b>306</b>	<b>100%</b>

## b) Contractual inflation protection for retired members

Your retired members get n/a contractual inflation protection. Your retiree inflation protection is subject to a cap of n/a.

Retiree inflation protection	# of plans		
	Corporate	Public	Other
0%	97	38	21
>0% and <50%	3	3	1
50%	1	0	1
>50% and <100%	4	13	1
100%	14	52	9
<b>Total</b>	<b>119</b>	<b>106</b>	<b>33</b>

## 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 18 of this section). Your percentage of liabilities that relate to retired members was estimated to be n/a.

	Your fund	Peer Average	Global Average
Active Members	n/a	42%	43%
Retired Members	n/a	58%	57%
<b>Total</b>		<b>100%</b>	<b>100%</b>

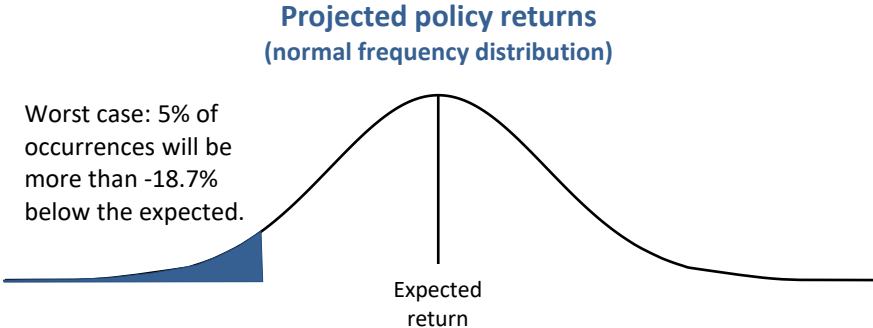
# Projected worst case scenarios

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.

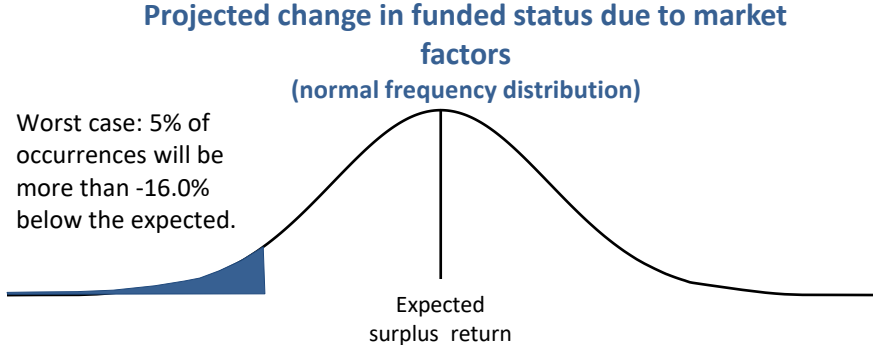
## a) Worst case policy returns

Every year there is a 5% probability that your policy return will be worse than your expected policy return by more than -18.7% (-18.7% equals -1.65 X your asset risk of 11.3%). -18.7% is the starting point of worst case outcomes. They could be much worse.



## b) Worst case impact on funded status

For the average Global 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 -16.0%. (-16.0% equals -1.65 X the Global average asset-liability risk of 9.7%).



## 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 -10.4% in 2022.

#### Historic policy returns - Global universe

	2024	2023	2022	2021	2020
90th %	14.4%	10.7%	0.4%	23.6%	12.8%
75th %	12.7%	8.7%	-2.5%	19.8%	9.0%
Median	10.7%	5.3%	-6.2%	14.2%	5.9%
25th %	7.4%	1.1%	-10.9%	9.2%	2.8%
10th %	4.1%	-3.6%	-15.5%	4.7%	0.4%
Average	10.0%	4.1%	-6.9%	14.2%	6.1%
Count	293	302	296	314	317
Peer Avg	11.3%	3.8%	-5.0%	16.8%	4.3%
Your Value	15.1%	6.8%	-10.4%	26.6%	7.8%

### 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 2022, when the median fund experienced a -5.3% decline.

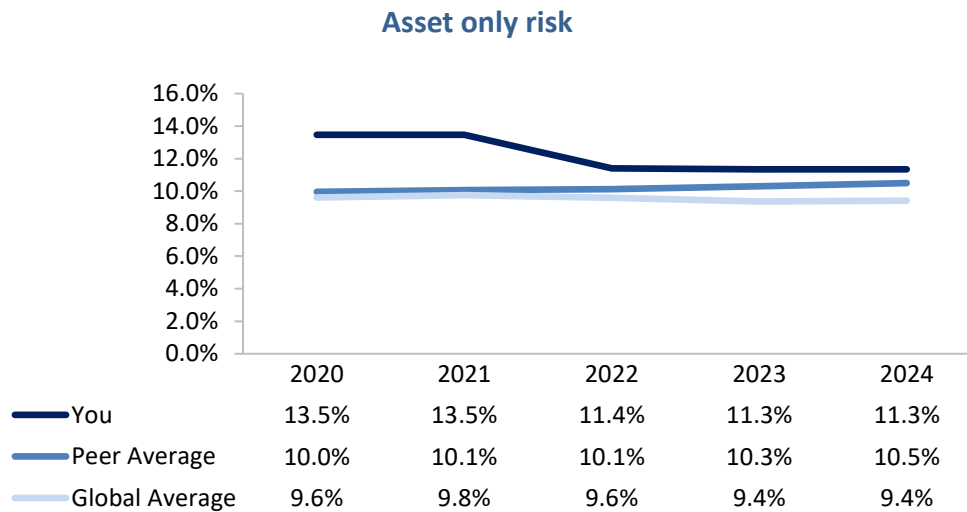
#### Historic changes in funded status caused by market factors - Global universe

	2024	2023	2022	2021	2020
90th %	9.2%	40.7%	2.2%	12.8%	4.1%
75th %	7.6%	35.8%	-1.3%	9.5%	1.4%
Median	5.2%	30.8%	-5.3%	3.6%	-2.0%
25th %	1.8%	25.0%	-11.0%	-3.2%	-5.3%
10th %	-1.0%	18.9%	-14.7%	-8.3%	-8.0%
Average	4.7%	30.3%	-5.7%	2.8%	-1.9%
Count	246	251	255	276	277
Peer Avg	5.6%	32.0%	-5.7%	6.2%	-3.7%
Your Value	n/a	n/a	n/a	n/a	n/a

## Risk Trends - 2020 to 2024

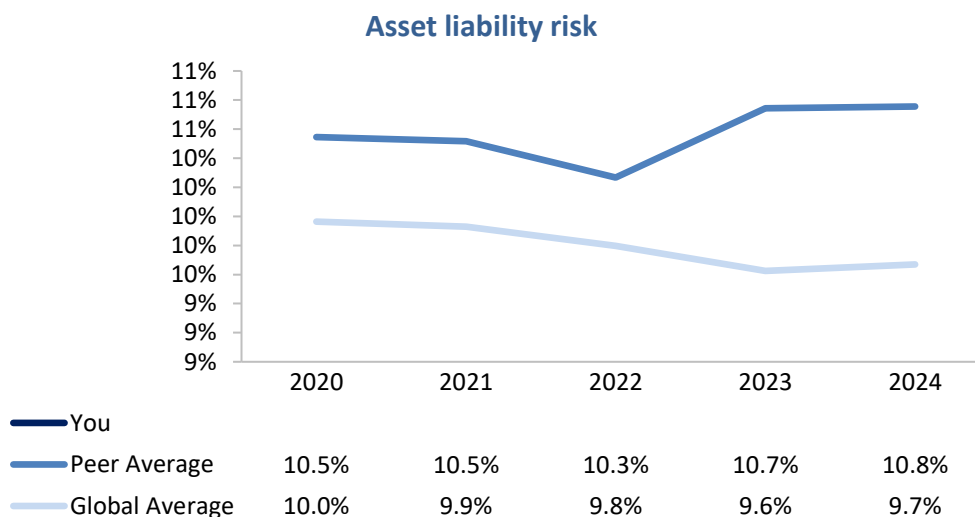
### a) Asset risk trends

Asset risk will only change if policy asset mix changes. Between 2020 and 2024 the asset risk for your fund decreased from 13.5% to 11.3%.

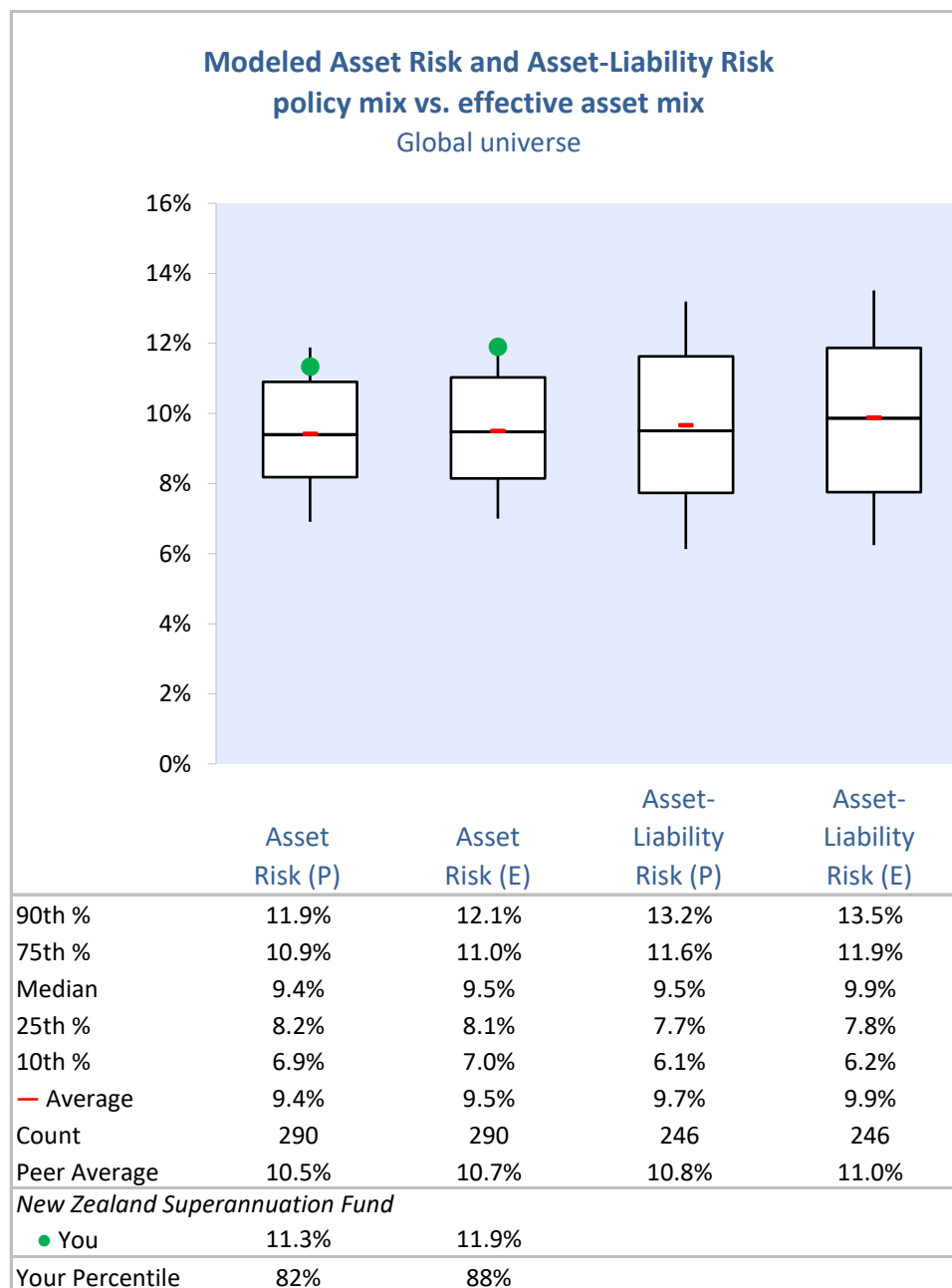


### b) Asset-liability risk trends

Asset-liability risk will change if policy asset mix changes, or if the nature of your liabilities changes. Between 2020 and 2024 the asset-liability risk for Global funds that have provided 5 consecutive years of data decreased from 10.0% to 9.7%.



## Risk levels based on the policy mix and the effective asset mix



P - calculated using your policy mix, same as the risk figures shown on page 3.

E - based on the effective asset mix (if a valid effective mix was provided, or the actual asset mix otherwise).



## Measures of risk-adjusted performance

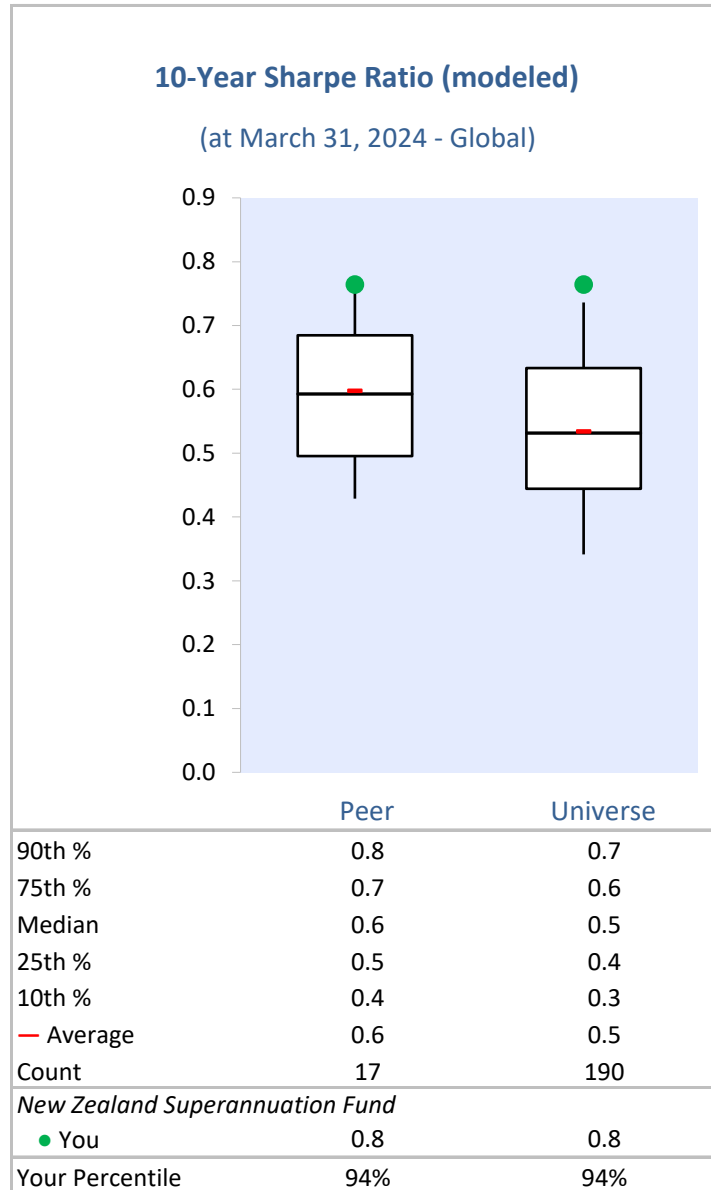
Risk-adjusted returns are used to assess performance relative to the amount of risk taken. Two of the popular industry measures of risk-adjusted returns are: (i) the Sharpe ratio (return less risk-free return per unit of risk), and (ii) the Information ratio (return less benchmark return per unit of risk).

The unit of risk used in both Sharpe ratios and information ratios is volatility, i.e., the standard deviation of excess returns.

As discussed on page 2, of this section calculating the volatility from the standard deviation of historic returns (i.e., realized risk) has challenges. Likewise, modeled (expected) risk also suffers from limitations around estimation of active risk and is not perfect.

Therefore, CEM suggests looking at comparisons of risk-adjusted returns with both modeled (expected) and realized (historic) returns.

## Comparison of your risk-return levels to the Global universe - modeled Sharpe ratio

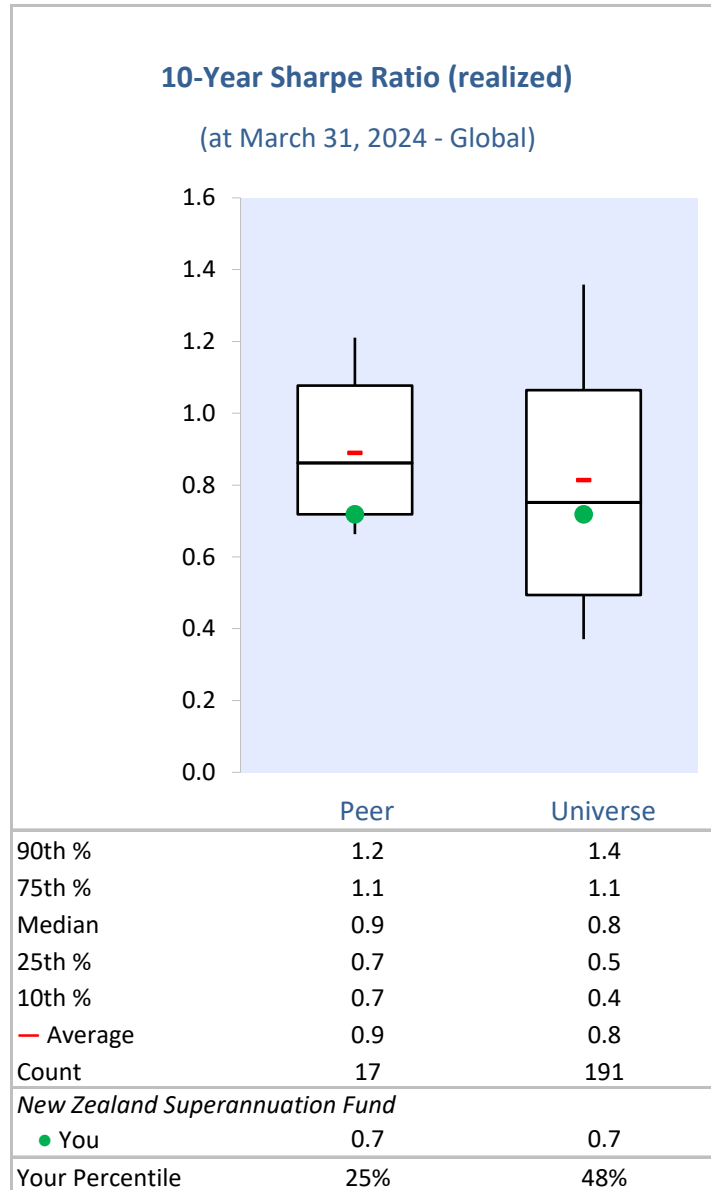


The Sharpe ratio is a measure of your portfolio's excess return compared to the expected volatility of your portfolio. It is calculated using your 10-year net return, less the 10-year risk-free rate of 1.28%, divided by your 10-year asset risk<sup>1</sup>.

Your Sharpe ratio for the past 10-year period of 0.76 is above the universe median of 0.53.

1. The volatility used to calculate the Sharpe ratio 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.

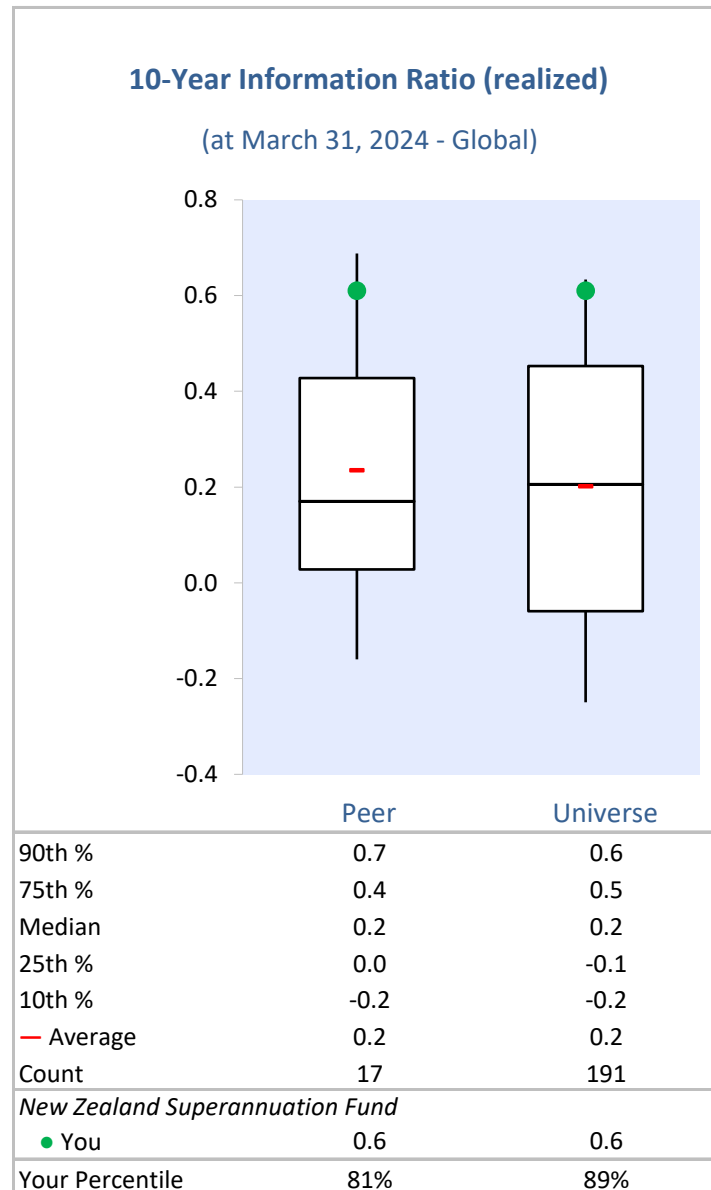
## Comparison of your risk-return levels to the Global universe - realized Sharpe ratio



The Sharpe ratio (realized) is a measure of your portfolio's excess return compared to its realized volatility. It is calculated using your 10-year excess return, which is the 10-year net return less the 10-year risk-free rate of 1.28%, divided by the 10-year standard deviation of excess return.

Your Sharpe ratio for the past 10-year period of 0.72 is similar to the universe median of 0.86.

## Comparison of your risk-return levels to the Global universe - realized Information ratio



The Information ratio is a measure of your active return<sup>1</sup> compared to its tracking error<sup>2</sup>.

Your information ratio for the past 10-year period of 0.61 is above the universe median of 0.21.

1. Active return is the difference between your net return and policy return, also known as your net value added.
2. Tracking error is the volatility or standard deviation of your net value added.

## 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.

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 0% based on your plan type of n/a.

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.

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 n/a. 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 20 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	
2024	3.87	0.03	1.99	0.22	4.12
2023	3.83	2.33	1.76	2.25	8.00
2022	1.50	0.59	-0.49	-0.05	4.70
2021	0.91	-1.00	-0.44	-1.01	1.23
2020	1.91	-0.78	0.57	-0.64	1.81

## 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

$\sigma_X$  = standard deviation of monthly returns for asset class X

$w_Y$  = policy weight of asset class Y

$\sigma_Y$  = 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 - Correlation Matrix

	Stock: EAFE	Stock: Emerging	Stock: Global	Bonds: Global
Stock: EAFE	1.00	0.60	0.93	0.22
Stock: Emerging	0.60	1.00	0.66	0.00
Stock: Global	0.93	0.66	1.00	0.27
Bonds: Global	0.22	0.00	0.27	1.00

# 7

## Appendices

Appendix A - Data Summary

Appendix A2 - Enhanced survey data & mapping to regular survey

Appendix B - Currency conversion

Appendix C - Data Integrity

Appendix D - Glossary of terms

## Appendix A - Data Summary

### New Zealand Superannuation Fund

Plan Info	2023/24	2022/23	2021/22	2020/21	2019/20
Survey Preparer	Christi Naude	Christi Naude	Ben Nott	Ben Nott	Ben Nott
Additional Contact	Gareth Ballantyne	Gareth Ballantyne	Gareth Ballantyne	Seyoung Chung	Seyoung Chung
Type of fund (corporate, public, other)	Other	Other	Other	Other	Other
Total fund size (\$mils) as at December 31	74,210.0	58,257.3	61,304.0	52,675.2	46,684.0
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Average	Average	Average
Total return for year ended	14.90%	15.66%	-8.47%	23.67%	6.18%
Is the return net or gross?	Net of all investment costs	Net of all investment costs	Net of all investment costs	Net of all investment costs	Net of all investment costs
Total fund policy or benchmark return	15.10%	-18.10%	14.40%	12.59%	22.74%

Ancillary Data	2023/24	2022/23	2021/22	2020/21	2019/20
What is your hedging policy for: Foreign non-U.S. Holdings?				100%	100%
What were your actuarial fees in 000s?		0	0		
How many plan members/beneficiaries do you have: Active? Active (no-accrual)? Retired? Other?					
What % of the plan's liabilities pertain to retired members?					
Actuarial valuation assumptions for funding purposes: Liability discount rate Salary progression rate					
What was your actuarial assumption for expected rate of return?					

## Appendix A - Data Summary: Policy Weights and Benchmarks

New Zealand Superannuation Fund

Asset Class	Year	Policy Weight	Benchmark	
			Description	Return
Stock - EAFE	2023/24	5.0	NZX 50 Custom	-1.5
	2022/23	5.0	NZX 50 Custom	-12.1
	2021/22	5.0	NZX 50 Custom	-0.2
	2020/21	5.0	NZX 50	13.7
	2019/20	5.0	NZX 50	30.5
Stock - Emerging	2023/24	6.0	MSCI All Countries World Index Custom/MSCI Emerging Markets Climate Paris Aligned Index	11.5
	2022/23	7.3	MSCI All Countries World Index Custom/MSCI Emerging Markets Climate Paris Aligned Index	-19.0
	2021/22		MSCI All Countries World Index Custom	20.3
	2020/21	10.0	MSCI Emerging Markets	17.9
	2019/20	10.0	MSCI Emerging Markets	16.4
Stock - Global	2023/24	69.0	MSCI All Countries World Index Custom/MSCI World Climate Paris Aligned Index	20.6
	2022/23	67.8	MSCI All Countries World Index Custom/MSCI World Climate Paris Aligned Index	-20.3
	2021/22	75.0	MSCI All Countries World Index Custom	20.3
	2020/21	65.0	MSCI Developed Markets	13.7
	2019/20	65.0	MSCI Developed Markets	28.4
Fixed income - U.S.	2023/24			
	2021/22		Barclays Global Aggregate	-1.2
	2020/21		Barclays Global Aggregate	5.4
	2019/20		BC Custom (NZSF) Index	7.5
Fixed income - Global	2023/24	20.0	Barclays Global Aggregate	3.8
	2022/23	20.0	Barclays Global Aggregate	-11.8
	2021/22	20.0	Barclays Global Aggregate	-1.2
	2020/21	20.0	Barclays Global Aggregate	5.4
	2019/20	20.0	Barclays Global Aggregate	7.5
Cash	2023/24		Cash BM	5.7
	2022/23		Cash BM	1.9
	2021/22		NZD Cash Benchmark	1.9
	2020/21		NZD Cash Benchmark	0.7
	2019/20		NZD Cash Benchmark	1.7
Real estate ex-REITs	2023/24		Real Estate BM	16.6
	2022/23		Real Estate BM	-16.8
	2021/22		Property BM	12.7
	2020/21		NZ Property Benchmark	14.8
	2019/20		NZ Property Benchmark	20.6
Infrastructure	2023/24		Infrastructure BM	12.8
	2022/23		Infrastructure BM	-15.9
	2021/22		Infrastructure BM	12.0
	2020/21		Infrastructure BM	12.8
	2019/20		Infrastructure BM	20.6
Natural resources	2023/24		Natural Resources BM	10.4
	2022/23		Natural Resources BM	-10.9
	2021/22		Natural Resources Benchmark	4.8
	2020/21		Timber Benchmark	9.0
	2019/20		Timber Benchmark	12.7
Hedge funds	2023/24		Hedge Fund BM	7.8
	2022/23		Hedge Fund BM	-6.9
	2021/22		Hedge Fund BM	1.8
	2020/21		Custom	6.1
	2019/20		Custom	7.8
Private equity - Diversified	2023/24		Diversified or All BM	22.1
	2022/23		Diversified or All BM	-19.9
	2021/22		Private Equity BM	21.0
	2020/21		Private Equity Benchmark	16.9
	2019/20		Private Equity Benchmark	28.5
Venture capital	2023/24		Venture Capital BM	22.2
	2022/23		Venture Capital BM	-20.5
	2021/22		Private Equity BM	21.0
Private equity - Other	2023/24		Other Non-Listed Assets BM	15.0
	2022/23		Other Non-Listed Assets BM	-16.5
	2021/22		Other Private Equity BM	15.7
	2020/21		Private Equity Benchmark	13.2
	2019/20		Private Equity Benchmark	24.4

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

New Zealand Superannuation Fund

Imputed cost for missing fees	Fee estimate from LP details
Forward fill from last year's fees	Override for offsets netted from LP fees

Asset Class/Style	Year	Asset (\$millions)	Net Return %	Cost (\$000)				Cost (bps)			
				Internal & Other	Base Fees	Perf Fees	Total	Internal & Other	Base Fees	Perf Fees	Total
<b>Stock - EAFE</b>											
Internal passive	2023/24	584.9	-0.40	380.7			380.7	6.5			6.5
	2022/23	364.7	-9.40	1,281.0			1,281.0	35.1			35.1
	2021/22	388.1	-2.60	967.0			967.0	24.9			24.9
	2020/21	26.8	10.70	767.6			767.6	286.4			286.4
	2019/20			35.0			35.0	11.5			11.5
Internal active	2023/24	1,213.9	-5.30	5,826.7			5,826.7	48.0			48.0
	2022/23	1,141.0	-14.00	3,908.0			3,908.0	34.3			34.3
	2021/22	1,170.0	-0.50	2,649.0			2,649.0	22.6			22.6
	2020/21	1,057.0	17.00	1,957.3			1,957.3	18.5			18.5
	2019/20	961.5	34.20	3,645.0			3,645.0	37.9			37.9
External active	2023/24	904.5	-0.30	156.1	3,577.3	152.3	3,885.7	1.7	39.5	1.7	43.0
	2022/23	877.9	-11.10	854.4	2,842.8		3,697.2	9.7	32.4		42.1
	2021/22	956.6	0.20	707.0	4,006.0		4,713.0	7.4	41.9		49.3
	2020/21	894.1	16.40	547.8	3,763.6		4,311.4	6.1	42.1		48.2
	2019/20	827.0	30.50	605.0	3,451.0	-	4,056.0	7.3	41.7	-	49.0
<b>Stock - Emerging</b>											
External passive	2023/24	1,622.6	11.40	559.9	994.1		1,554.0	3.5	6.1		9.6
	2022/23	1,470.6	-17.60	880.2	905.9		1,786.1	6.0	6.2		12.1
	2021/22	1,565.3	-3.20	707.0	958.0		1,665.0	4.5	6.1		10.6
	2020/21	1,612.3	22.40	905.5	1,275.6		2,181.1	5.6	7.9		13.5
	2019/20	1,888.9	18.40	816.0	1,203.0		2,019.0	4.3	6.4		10.7
External active	2023/24										
	2022/23										
	2021/22										
	2020/21										
	2019/20	483.3	11.90	252.0	4,318.0	-	4,570.0	5.2	89.3	-	94.6
<b>Stock - Global</b>											
Internal passive	2023/24	417.1		519.7			519.7	12.5			12.5
	2022/23										
External passive	2023/24	18,734.6	21.00	5,746.2	3,038.4		8,784.6	3.1	1.6		4.7
	2022/23	18,641.9	-19.50	3,417.2	3,187.1		6,604.3	1.8	1.7		3.5
	2021/22	25,755.6	24.70	4,418.0	9,335.0		13,753.0	1.7	3.6		5.3
	2020/21	16,429.2	12.10	3,721.4	8,012.6		11,734.0	2.3	4.9		7.1
	2019/20	19,843.4	28.50	5,036.0	8,385.0		13,421.0	2.5	4.2		6.8
External active	2023/24	9,469.8	24.40	3,630.7	8,070.5		11,701.2	3.8	8.5		12.4
	2022/23	8,512.0	-11.80	2,101.4	8,100.3		10,201.7	2.5	9.5		12.0
<b>Fixed income - U.S.</b>											
Internal passive	2023/24										
	2022/23										
	2021/22	23.4	6.00	314.0			314.0	134.2			134.2
	2020/21	25.7	11.20	261.7			261.7	101.8			101.8
	2019/20	27.0	10.00	91.0			91.0	33.7			33.7
<b>Fixed income - Global</b>											
Internal passive	2023/24	5,794.9	2.40	4,427.2			4,427.2	7.6			7.6
	2022/23	2,824.7	-11.90	1,554.0			1,554.0	5.5			5.5
	2021/22	2,722.0	-1.20	808.0			808.0	3.0			3.0
	2020/21	1,765.1	5.30	871.7			871.7	4.9			4.9
	2019/20	427.4	6.40	142.0			142.0	3.3			3.3

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

New Zealand Superannuation Fund

Imputed cost for missing fees	Fee estimate from LP details
Forward fill from last year's fees	Override for offsets netted from LP fees

Asset Class/Style	Year	Asset (\$millions)	Net Return %	Cost (\$000)				Cost (bps)			
				Internal & Other	Base Fees	Perf Fees	Total	Internal & Other	Base Fees	Perf Fees	Total
External passive	2023/24	5,107.3	4.60	2,643.5	2,217.7		4,861.2	5.2	4.3		9.5
	2022/23	3,367.3	-12.20	825.0	1,537.1		2,362.1	2.5	4.6		7.0
	2021/22	2,728.2	-0.90	515.0	1,275.0		1,790.0	1.9	4.7		6.6
	2020/21	2,013.5	5.20	674.6	926.8		1,601.4	3.4	4.6		8.0
	2019/20	3,504.7	7.00	688.0	1,702.0		2,390.0	2.0	4.9		6.8
Cash											
Internal active	2023/24										
	2022/23	5,789.6	5.50	4,850.8			4,850.8	8.4			8.4
	2021/22	9,390.8	1.90	3,454.0			3,454.0	3.7			3.7
	2020/21	9,957.4	2.50	3,295.9			3,295.9	3.3			3.3
	2019/20	5,147.2	3.00	3,009.0			3,009.0	5.8			5.8

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

New Zealand Superannuation Fund

	Imputed cost for missing fees		Fee estimate from LP details
	Forward fill from last year's fees		Override for offsets netted from LP fees

See page 9 for more details.

Asset Class/Style	Year	Asset (\$millions)	Fee basis (\$millions)	Net Return %	Cost (\$000)						
					Internal & Other	Base Fees	Perf Fees	Underlying fees		Total	
							Base	Perf	excl. perf	incl. perf	
<b>Hedge funds</b>											
External active	2023/24	4,504.3		10.40	4,144.7	24,829.6	41,469.2			28,974.3	70,443.5
	2022/23	4,084.6		-0.30	5,017.5	25,797.3	97,735.2			30,814.8	128,550.0
	2021/22	3,217.4		6.70	3,130.0	20,099.0	23,895.0			23,229.0	47,124.0
	2020/21	2,744.0		-2.10	2,678.6	18,816.4	7,019.7			21,495.0	28,514.7
	2019/20	2,382.6		3.50	2,136.0	18,517.0	7,468.0			20,653.0	28,121.0
<b>Real estate ex-REITs</b>											
Internal active	2023/24	203.5		34.80	2,022.0					2,022.0	2,022.0
	2022/23	153.4		8.50	1,123.9					1,123.9	1,123.9
	2021/22	114.1		32.60	1,023.0					1,023.0	1,023.0
	2020/21	67.1		-3.67	459.2					459.2	459.2
	2019/20	148.7		-6.00	783.0					783.0	783.0
Co-investment	2023/24	1,026.8	1,026.8	49.30	1,476.3	4,016.3				5,492.6	5,492.6
	2022/23	460.0	468.3	12.50	2,127.0	2,229.6				4,356.6	4,356.6
	2021/22	306.0	329.0	25.40	1,977.0	1,579.0				3,556.0	3,556.0
	2020/21	225.9	225.9	-7.20	1,731.5	704.3				2,435.8	2,435.8
LP/Value add	2023/24	1,828.0	1,828.0	1.70	2,978.7	19,394.1	1,780.5			22,372.8	24,153.3
	2022/23	947.4	1,704.2	19.40	3,477.4	4,633.1	31,282.2			8,110.5	39,392.7
	2021/22	107.2	126.0	53.20	2,960.0	1,101.0	6,209.0			4,061.0	10,270.0
	2020/21	36.5	55.0	2.60	543.5	192.4	678.0			735.9	1,413.9
	2019/20	1.9	1.9	0.00	95.0	7.0	15.0			102.0	117.0
<b>Infrastructure</b>											
Internal active	2023/24	309.5			3,557.6					3,557.6	3,557.6
	2022/23	432.7		7.60	879.1					879.1	879.1
	2021/22	408.8		13.70	683.0					683.0	683.0
	2020/21	404.6		-1.60	454.3					454.3	454.3
	2019/20	407.0		10.60	549.0					549.0	549.0
External active	2023/24	307.9	307.9	11.10	212.5	1,482.6	(61,065.5)			1,695.1	(59,370.4)
	2022/23	294.6	291.9	-14.50	403.9	1,764.3	-			2,168.2	2,168.2
	2021/22	276.7	276.7	22.90	328.0	1,564.0	1,660.0			1,892.0	3,552.0
	2020/21	235.2	235.2	-12.80	318.4	1,245.5	1,905.1			1,563.9	3,469.0
	2019/20	231.2	231.2	12.90	462.0	1,003.0	1,895.8			1,465.0	3,360.8
LP/Value add	2023/24	135.4	135.4	1.00	142.7	942.8	1,218.5			1,085.5	2,304.1
	2022/23	348.5	356.4	-3.00	1,925.5	4,859.7	5,227.5			6,785.2	12,012.7
	2021/22	217.3	217.3	3.30	662.0	1,869.0	256.0			2,531.0	2,787.0
	2020/21	261.5	261.5	7.00	506.6	2,012.6	2,536.6			2,519.2	5,055.8
	2019/20	254.1	254.1	6.20	691.0	2,354.0	1,608.0			3,045.0	4,653.0
<b>Natural resources</b>											

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

New Zealand Superannuation Fund

	Imputed cost for missing fees		Fee estimate from LP details
	Forward fill from last year's fees		Override for offsets netted from LP fees

See page 9 for more details.

Asset Class/Style	Year	Asset (\$millions)	Fee basis (\$millions)	Net Return %	Cost (\$000)							
					Internal & Other	Base Fees	Perf Fees	Underlying fees		Total		
								Base	Perf	excl. perf	incl. perf	
Internal active (cont'd)	2023/24	3,270.1		11.70	34,833.9						34,833.9	34,833.9
	2022/23	2,977.6		11.30	1,904.2						1,904.2	1,904.2
	2021/22	2,735.6		6.70	1,608.0						1,608.0	1,608.0
	2020/21	2,649.6		2.70	1,558.6						1,558.6	1,558.6
	2019/20	2,503.8		-0.01	2,667.0						2,667.0	2,667.0
External active	2023/24	714.7	714.7	5.60	993.1	7,685.6	-				8,678.7	8,678.7
	2022/23	442.7	458.3	30.50	3,326.3	3,218.2	3,098.9				6,544.5	9,643.4
	2021/22	297.1	263.0	26.40	1,824.0	2,441.0	2,079.7				4,265.0	6,344.7
	2020/21	282.2	282.2	8.80	1,759.7	2,525.0	1,975.4				4,284.7	6,260.1
	2019/20	282.6	282.6	19.90	1,312.0	2,565.0	1,978.2				3,877.0	5,855.2
Private equity - Diversified												
Co-investment	2023/24	193.8	193.8	-6.00	483.0	247.8	1,012.3				730.8	1,743.1
	2022/23	133.2	270.3	-4.30	753.1	-	284.4				753.1	1,037.5
	2021/22	13.9	13.9		620.0						620.0	620.0
LP/Value add	2023/24	427.8	427.8	-2.30	500.3	8,414.3	(49.3)				8,914.6	8,865.3
	2022/23	376.3	516.5	1.00	6,644.5	6,517.7	143.5				13,162.2	13,305.7
	2021/22	334.0	449.0	14.60	4,999.0	7,762.0	3,913.0				12,761.0	16,674.0
	2020/21	304.8	439.7	26.20	4,614.5	6,404.0	1,302.8				11,018.5	12,321.3
Fund of funds	2019/20	234.2	370.0	19.00	2,038.0	5,889.0	729.0				7,927.0	8,656.0
	2023/24	2.7	2.7	-62.00	2.7	4.0	0.4	-	-		6.7	7.1
	2022/23	6.3	3.9	-16.60	802.9	16.4	106.5	-	-		819.3	925.8
	2021/22	11.0	11.0	34.10	881.0	107.0	107.9	169.4	275.3		1,157.4	1,540.5
2020/21	13.8	13.8	21.10	840.7	225.0	91.1	216.7	265.0		1,282.4	1,638.4	
	2019/20	18.9	18.6	2.30	300.0	367.0	-	-	-		667.0	667.0
Venture capital												
Co-investment	2023/24	48.1	48.1	-5.20	335.8						335.8	335.8
	2022/23	53.6	53.6	22.90	389.6						389.6	389.6
	2021/22	2.9	2.9	-0.10	317.0						317.0	317.0
LP/Value add	2023/24	192.0	192.0	-31.60	897.2	6,618.3	1,343.9				7,515.5	8,859.4
	2022/23	98.2	98.2	0.80	1,109.6	2,155.6	(163.7)				3,265.2	3,101.5
	2021/22	0.6	0.6		304.0	10.6	16.0				314.6	330.6
Private equity - Other												
Internal active	2023/24	1,707.0		-11.60	13,152.8						13,152.8	13,152.8
	2022/23	1,913.7		-12.90	4,579.9						4,579.9	4,579.9
	2021/22	1,789.0		14.70	5,022.0						5,022.0	5,022.0
	2020/21	1,823.1		-4.30	6,218.9						6,218.9	6,218.9
	2019/20	1,824.3		14.70	4,422.0						4,422.0	4,422.0
Co-investment	2023/24	4,057.7	4,057.7	6.70	2,878.1	20,418.4	62,343.1				23,296.5	85,639.6



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

New Zealand Superannuation Fund

	Imputed cost for missing fees		Fee estimate from LP details
	Forward fill from last year's fees		Override for offsets netted from LP fees

See page 9 for more details.

Asset Class/Style	Year	Asset (\$millions)	Fee basis (\$millions)	Net Return %	Cost (\$000)						
					Internal & Other	Base Fees	Perf Fees	Underlying fees		Total	
								Base	Perf	excl. perf	incl. perf
Co-investment (cont'd)	2022/23	2,692.0	2,816.1	43.20	5,539.7	21,669.7	162,561.5			27,209.4	189,770.9
	2021/22	1,718.7	1,782.5	13.20	3,631.0	15,013.0				18,644.0	18,644.0
	2020/21	1,481.8	1,481.8	2.40	3,435.1	11,541.6				14,976.7	14,976.7
	2019/20	1,217.8	1,217.8	6.30	2,002.0	14,044.0				16,046.0	16,046.0

1. External Active' style is alternatively named 'Fund (Evergreen, Core)' on the survey. This category typically includes core funds having perpetual or undefined lifetimes and operated by an external manager who invests in opportunities where a large part of expected return is income or yield. They are often described as core or core+ investments. Include funds-of-one and separately managed accounts (SMAs) if they are operated by an external manager.

2. LP' style is alternatively named 'Fund (LP, Value Add)' on the survey. This category typically includes value-add or opportunistic funds having a pre-defined term and a GP/LP structure. Typically, the investment period is less than 12 years. They are operated by an external manager who invests in opportunities where a large part of the expected return is capital gains due to repositioning or redevelopment.

## Appendix A Data Summary - Costs in bps: Hedge Funds and Private Market

New Zealand Superannuation Fund

Imputed cost for missing fees	Fee estimate from LP details
Forward fill from last year's fees	Override for offsets netted from LP fees

(See page 9 for more details)

Asset Class/Style	Year	Cost on NAV (bps)						Cost on fee basis (bps)							
		Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf		
<b>Hedge funds</b>															
External active	2023/24	9.2	55.1	92.1			64.3	156.4	9.2	55.1	92.1			64.3	156.4
	2022/23	12.3	63.2	239.3			75.4	314.7	12.3	63.2	239.3			75.4	314.7
	2021/22	9.7	62.5	74.3			72.2	146.5	9.7	62.5	74.3			72.2	146.5
	2020/21	9.8	68.6	25.6			78.3	103.9	9.8	68.6	25.6			78.3	103.9
	2019/20	9.0	77.7	31.3			86.7	118.0	9.0	77.7	31.3			86.7	118.0
<b>Real estate ex-REITs</b>															
Internal active	2023/24	99.4					99.4	99.4	99.4					99.4	99.4
	2022/23	73.3					73.3	73.3	73.3					73.3	73.3
	2021/22	89.7					89.7	89.7	89.7					89.7	89.7
	2020/21	68.4					68.4	68.4	68.4					68.4	68.4
	2019/20	52.6					52.6	52.6	52.6					52.6	52.6
Co-investment	2023/24	14.4	39.1				53.5	53.5	14.4	39.1				53.5	53.5
	2022/23	46.2	48.5				94.7	94.7	45.4	47.6				93.0	93.0
	2021/22	64.6	51.6				116.2	116.2	60.1	48.0				108.1	108.1
	2020/21	76.6	31.2				107.8	107.8	76.6	31.2				107.8	107.8
LP/Value add	2023/24	16.3	106.1	9.7			122.4	132.1	16.3	106.1	9.7			122.4	132.1
	2022/23	36.7	48.9	330.2			85.6	415.8	20.4	27.2	183.6			47.6	231.2
	2021/22	276.1	102.7	579.2			378.8	958.0	234.9	87.4	492.8			322.3	815.1
	2020/21	148.9	52.7	185.8			201.6	387.4	98.8	35.0	123.3			133.8	257.1
	2019/20	500.0	36.8	79.0			536.8	615.8	500.0	36.8	79.0			536.8	615.8
<b>Infrastructure</b>															
Internal active	2023/24	114.9					114.9	114.9	114.9					114.9	114.9
	2022/23	20.3					20.3	20.3	20.3					20.3	20.3
	2021/22	16.7					16.7	16.7	16.7					16.7	16.7
	2020/21	11.2					11.2	11.2	11.2					11.2	11.2
	2019/20	13.5					13.5	13.5	13.5					13.5	13.5
External active	2023/24	6.9	48.1	(1,983.0)			55.0	(1,928.0)	6.9	48.1	(1,983.0)			55.0	(1,928.0)
	2022/23	13.7	59.9	-			73.6	73.6	13.8	60.4	-			74.3	74.3
	2021/22	11.9	56.5	60.0			68.4	128.4	11.9	56.5	60.0			68.4	128.4
	2020/21	13.5	53.0	81.0			66.5	147.5	13.5	53.0	81.0			66.5	147.5
	2019/20	20.0	43.4	82.0			63.4	145.4	20.0	43.4	82.0			63.4	145.4
LP/Value add	2023/24	10.5	69.6	90.0			80.2	170.2	10.5	69.6	90.0			80.2	170.2
	2022/23	55.3	139.4	150.0			194.7	344.7	54.0	136.4	146.7			190.4	337.1
	2021/22	30.5	86.0	11.8			116.5	128.2	30.5	86.0	11.8			116.5	128.2
	2020/21	19.4	77.0	97.0			96.3	193.3	19.4	77.0	97.0			96.3	193.3
	2019/20	27.2	92.6	63.3			119.8	183.1	27.2	92.6	63.3			119.8	183.1
<b>Natural resources</b>															

## Appendix A Data Summary - Costs in bps: Hedge Funds and Private Market

New Zealand Superannuation Fund

Imputed cost for missing fees	Fee estimate from LP details
Forward fill from last year's fees	Override for offsets netted from LP fees

(See page 9 for more details)

Asset Class/Style	Year	Cost on NAV (bps)							Cost on fee basis (bps)							
		Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	excl. perf	incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	excl. perf	incl. perf	
Internal active (cont'd)	2023/24	106.5					106.5	106.5	106.5						106.5	106.5
	2022/23	6.4					6.4	6.4	6.4						6.4	6.4
	2021/22	5.9					5.9	5.9	5.9						5.9	5.9
	2020/21	5.9					5.9	5.9	5.9						5.9	5.9
	2019/20	10.7					10.7	10.7	10.7						10.7	10.7
External active	2023/24	13.9	107.5	-			121.4	121.4	13.9	107.5	-			121.4	121.4	
	2022/23	75.1	72.7	70.0			147.8	217.8	72.6	70.2	67.6			142.8	210.4	
	2021/22	61.4	82.2	70.0			143.6	213.6	69.4	92.8	79.1			162.2	241.2	
	2020/21	62.4	89.5	70.0			151.8	221.8	62.4	89.5	70.0			151.8	221.8	
	2019/20	46.4	90.8	70.0			137.2	207.2	46.4	90.8	70.0			137.2	207.2	
Private equity - Diversified																
Co-investment	2023/24	24.9	12.8	52.2			37.7	89.9	24.9	12.8	52.2			37.7	89.9	
	2022/23	56.5	-	21.4			56.5	77.9	27.9	-	10.5			27.9	38.4	
	2021/22	446.0					446.0	446.0	446.0					446.0	446.0	
LP/Value add	2023/24	11.7	196.7	(1.2)			208.4	207.2	11.7	196.7	(1.2)			208.4	207.2	
	2022/23	176.6	173.2	3.8			349.8	353.6	128.6	126.2	2.8			254.8	257.6	
	2021/22	149.7	232.4	117.2			382.1	499.2	111.3	172.9	87.1			284.2	371.4	
	2020/21	151.4	210.1	42.7			361.5	404.2	104.9	145.6	29.6			250.6	280.2	
	2019/20	87.0	251.5	31.1			338.5	369.6	55.1	159.2	19.7			214.2	233.9	
Fund of funds	2023/24	10.0	14.6	1.5	-	-	24.6	26.0	10.0	14.6	1.5	-	-	24.6	26.0	
	2022/23	1,274.4	26.0	169.0	-	-	1,300.5	1,469.5	2,058.7	42.1	273.1	-	-	2,100.8	2,373.8	
	2021/22	800.2	97.2	98.0	153.9	250.0	1,051.2	1,399.2	800.9	97.3	98.1	154.0	250.2	1,052.2	1,400.5	
	2020/21	609.2	163.0	66.0	157.0	192.0	929.2	1,187.2	609.2	163.0	66.0	157.0	192.0	929.2	1,187.2	
	2019/20	158.7	194.2	-	-	-	352.9	352.9	161.3	197.3	-	-	-	358.6	358.6	
Venture capital																
Co-investment	2023/24	69.9					69.9	69.9	69.9					69.9	69.9	
	2022/23	72.7					72.7	72.7	72.7					72.7	72.7	
	2021/22	1,112.3					1,112.3	1,112.3	1,112.3					1,112.3	1,112.3	
LP/Value add	2023/24	46.7	344.7	70.0			391.5	461.5	46.7	344.7	70.0			391.5	461.5	
	2022/23	113.0	219.5	(16.7)			332.5	315.8	113.0	219.5	(16.7)			332.5	315.8	
	2021/22	4,750.0	165.0	250.0			4,915.0	5,165.0	4,750.0	165.0	250.0			4,915.0	5,165.0	
Private equity - Other																
Internal active	2023/24	77.1					77.1	77.1	77.1					77.1	77.1	
	2022/23	23.9					23.9	23.9	23.9					23.9	23.9	
	2021/22	28.1					28.1	28.1	28.1					28.1	28.1	
	2020/21	34.1					34.1	34.1	34.1					34.1	34.1	
	2019/20	24.2					24.2	24.2	24.2					24.2	24.2	
Co-investment	2023/24	7.1	50.3	153.6			57.4	211.1	7.1	50.3	153.6			57.4	211.1	

## Appendix A Data Summary - Costs in bps: Hedge Funds and Private Market

New Zealand Superannuation Fund

	Imputed cost for missing fees		Fee estimate from LP details
	Forward fill from last year's fees		Override for offsets netted from LP fees

(See page 9 for more details)

Asset Class/Style	Year	Cost on NAV (bps)						Cost on fee basis (bps)							
		Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf		
Co-investment (cont'd)	2022/23	20.6	80.5	603.9			101.1	704.9	19.7	76.9	577.3			96.6	673.9
	2021/22	21.1	87.4				108.5	108.5	20.4	84.2				104.6	104.6
	2020/21	23.2	77.9				101.1	101.1	23.2	77.9				101.1	101.1
	2019/20	16.4	115.3				131.8	131.8	16.4	115.3				131.8	131.8

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

### New Zealand Superannuation Fund

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets <sup>1</sup>	2023/24	26,428.9	3.8bp
	2022/23	22,493.6	3.9bp
	2021/22	14,014.0	2.4bp
	2020/21	12,307.4	2.7bp
	2019/20	18,511.0	4.3bp
Custodial total	2023/24	6,521.1	0.9bp
	2022/23	6,274.9	1.1bp
	2021/22	5,510.0	1.0bp
	2020/21	6,979.8	1.5bp
	2019/20	6,234.0	1.4bp
Custodial foreign (if available)	2019/20	6,234.0	1.4bp
Audit	2023/24	1,327.0	0.2bp
	2022/23	704.0	0.1bp
	2021/22	612.0	0.1bp
	2020/21	596.0	0.1bp
	2019/20	487.0	0.1bp
Other (legal etc)	2023/24	3,395.7	0.5bp
	2022/23		
	2021/22		
Total	2023/24	37,672.7	5.4bp
	2022/23	29,472.5	5.1bp
	2021/22	20,136.0	3.5bp
	2020/21	19,883.2	4.3bp
	2019/20	25,232.0	5.9bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2023/24	271,917.0	39.2bp
	2022/23	262,981.0	45.5bp
	2021/22	148,361.0	25.6bp
	2020/21	114,369.8	24.8bp
	2019/20	113,633.0	26.3bp
Oversight, Custodial & Other Costs	2023/24	37,672.7	5.4bp
	2022/23	29,472.5	5.1bp
	2021/22	20,136.0	3.5bp
	2020/21	19,883.2	4.3bp
	2019/20	25,232.0	5.9bp
Total	2023/24	309,589.7	44.6bp
	2022/23	292,453.5	50.6bp
	2021/22	168,497.0	29.1bp
	2020/21	134,252.9	29.1bp
	2019/20	138,865.0	32.2bp

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

### New Zealand Superannuation Fund

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 Notion. (000s)	% of Notion. (bps)	Duration (years)
Currency Hedge	2023/24	55,769.3	94.6		981.0	0.2										
	2022/23	46,500.0	-1,477.3		605.1	0.1										
Rebalancing/Passive Beta	2023/24	9,290.7	1,018.1		981.0	1.1										
	2022/23	7,700.0	42.2		4,091.5	5.3										
Policy tilt TAA	2023/24		699.1	-147,151.7	11,126.4											
	2022/23		650.2	1,299,296.2	8,440.9											
Long/Short	2023/24		148.6	16,804.1	9,810.2											
	2022/23		175.1	17,604.1	1,364.7											
Other Overlay	2023/24	7,785.5	4,600.4	1,027,731.0	2,943.1	3.8										
	2022/23	2,800.0	4.4	-331,231.1	1,632.7	5.8										

## Appendix A - Data Summary: Comments and data enrichments

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

- 2023/24 - Infrastructure - LP/Value add: A CEM-imputed cost of 90 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2023/24 - Venture capital - LP/Value add: A CEM-imputed cost of 70 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2022/23 - Infrastructure - LP/Value add: A CEM-imputed cost of 150 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2022/23 - Natural resources - Core/Evergreen: A CEM-imputed cost of 70 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2021/22 - Infrastructure - Core/Evergreen: A CEM-imputed cost of 60 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2021/22 - Natural resources - Core/Evergreen: A CEM-imputed cost of 70 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2021/22 - Private equity - Diversified - FoFs: A CEM-imputed cost of 98 bps (on NAV) was applied to the fund of funds performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2021/22 - Private equity - Diversified - FoFs: A CEM-imputed cost of 154 bps (on amount fees are based on) was applied to the fund of funds underlying base fee to enable comparisons of the total cost of different implementation styles.
- 2021/22 - Private equity - Diversified - FoFs: A CEM-imputed cost of 250 bps (on NAV) was applied to the fund of funds underlying performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2021/22 - Venture capital - LP/Value add: A CEM-imputed cost of 165 bps was applied to the lp/value add base fee because it was not provided.
- 2021/22 - Venture capital - LP/Value add: A CEM-imputed cost of 250 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2020/21 - Infrastructure - Core/Evergreen: A CEM-imputed cost of 81 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2020/21 - Infrastructure - LP/Value add: A CEM-imputed cost of 97 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2020/21 - Natural resources - Core/Evergreen: A CEM-imputed cost of 70 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2020/21 - Private equity - Diversified - FoFs: A CEM-imputed cost of 66 bps (on NAV) was applied to the fund of funds performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2020/21 - Private equity - Diversified - FoFs: A CEM-imputed cost of 157 bps (on amount fees are based on) was applied to the fund of funds underlying base fee to enable comparisons of the total cost of different implementation styles.

- 2020/21 - Private equity - Diversified - FoFs: A CEM-imputed cost of 192 bps (on NAV) was applied to the fund of funds underlying performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2019/20 - Real estate ex-REITs - LP/Value add: A CEM-imputed cost of 79 bps (on NAV) was applied to the lp/value add performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2019/20 - Infrastructure - Core/Evergreen: A CEM-imputed cost of 82 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.
- 2019/20 - Natural resources - Core/Evergreen: A CEM-imputed cost of 70 bps (on NAV) was applied to the core/evergreen performance fee to enable comparisons of the total cost of different implementation styles. This cost is not included in your total fund cost or in benchmark analysis.

## 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		Base Fees	External Active		Monitoring & Other	Total	
	Passive	Active	Fees	Monitoring & Other		Perform. Fees			000s	% of Total
Stock - EAFE	381	5,827			3,577		152	156	10,093	3%
Stock - Emerging			994	560					1,554	1%
Stock - Global	520		3,038	5,746	8,071			3,631	21,006	7%
Fixed income - Global	4,427		2,218	2,643					9,288	3%
Infrastructure		3,558			1,483		-61,066	213	5,253	2%
Infrastructure - LP/Value add					943		1,219	143	1,086	0%
Real estate ex-REITs		2,022							2,022	1%
Real estate ex-REITs - Co-invest.					4,016			1,476	5,493	2%
Real estate ex-REITs - LP/Value add					19,394		1,781	2,979	22,373	7%
Natural resources		34,834			7,686		0	993	43,513	14%
Hedge funds					24,830		41,469	4,145	28,974	9%
Private equity - Diversified					8,414		-49	500	8,915	3%
Private equity - Diversified - Co-in					248		1,012	483	731	0%
Private equity - Diversified - FoFs					4		0	3	7	0%
Venture capital					6,618		1,344	897	7,516	2%
Venture capital - Co-invest.								336	336	0%
Private equity - Other		13,153							13,153	4%
Overlay Programs	1,962	23,880							25,842	8%
Total investment management costs - Internal & Monitoring									115,466	37%
Total investment management fees (excluding performance in private assets)									91,686	30%
Total investment management costs (including performance in hedge funds)									39.2bp	271,917 88%
Oversight, Custodial & Other Asset Related Costs (\$000s)										
Oversight of the Fund									26,429	9%
Trustee & Custodial									6,521	2%
Consulting / performance measurement										
Audit									1,327	0%
Other									3,396	1%
Total oversight, custodial & other costs									5.4bp	37,673 12%
<b>Total cost for New Zealand Superannuation Fund</b>									44.6bp	309,590 100%

\* Enrichments applied. 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
<b>Front Office</b>				
Direct Investments	40,436	21.0	21,183	<b>61,619</b>
External Investment Partnership	7,918	18.0	18,157	<b>26,075</b>
Portfolio completion	8,427	11.0	11,096	<b>19,523</b>
Strategic tilting	3,057	8.0	8,070	<b>11,126</b>
<b>Total front office</b>	<b>59,838</b>	<b>58.0</b>	<b>58,505</b>	<b>118,344</b>
<b>Governance, Operations and Support</b>				
Board, CEO & assistants re: investments (A)	1,364	2.0	2,017	3,382
CIO, Investment strategy, asset allocation (B)	5,899	17.0	17,148	<u>23,047</u>
Oversight of the fund per regular CEM survey (A + B)				<b>26,429</b>
Custodial fees	6,521		n/a	<b>6,521</b>
Internal audit	1,327	4.0	n/a	<b>1,327</b>
Legal services	3,396	9.0	n/a	<b>3,396</b>
Risk management	4,643	14.0	-4,643	0
Investment operations, exc. private markets	4,232	19.0	-4,232	0
Compliance	1,327	4.0	-1,327	0
Information technology	29,809	90.0	-29,809	0
Public relations & internal communication	2,447	6.0	-2,447	0
Finance, external reporting & tax	4,662	14.0	-4,662	0
Responsible investing, corporate governance	2,798	8.0	-2,798	0
Human resources	9,352	14.0	-9,352	0
Other investment and support	18,401		-18,401	0
<b>Total cost excluding external manager fees</b>	<b>156,016</b>	<b>272.0</b>	<b>0</b>	<b>156,016</b>

### 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
Direct Investments	61,619	Stock - EAFE	5,827
		Real estate ex-REITs	2,022
		Infrastructure	3,558
		Natural resources	34,834
		Monitoring Natural resources	993
		Venture capital	336
		Monitoring LP Venture capital	897
		Private equity - Other	13,153
External Investment Partnership	26,075	Monitoring Stock - EAFE	156
		Monitoring Passive Stock - Emerging	560
		Passive Stock - Global	520
		Monitoring Passive Stock - Global	5,746
		Monitoring Stock - Global	3,631
		Monitoring Passive Fixed income - Global	2,643
		Real estate ex-REITs	1,476
		Monitoring LP Real estate ex-REITs	2,979
		Monitoring Infrastructure	213
		Monitoring LP Infrastructure	143
		Monitoring Hedge funds	4,145
		Private equity - Diversified	483
		Monitoring LP Private equity - Diversified	500
		Private equity - Diversified	3
Private equity - Other	2,878		
Portfolio completion	19,523	Passive Stock - EAFE	381
		Passive Fixed income - Global	4,427
		Passive Derivatives/Overlays - Currency	981
		Passive Derivatives/Overlays - Rebalancing / Passive beta	981
		Derivatives/Overlays - Long/Short	9,810
		Derivatives/Overlays - Other overlay	2,943
Strategic tilting	11,126	Derivatives/Overlays - Policy tilt TAA	11,126
<b>Total Front Office</b>	<b>118,344</b>		<b>118,344</b>

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.

Does 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. Strategic consulting**: Include all investment consulting that pertain to the total fund (i.e., asset mix consulting). Consulting costs that can be attributed to a single asset category (i.e., private equity consultant) should be included with the appropriate front office team.

**d. 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.

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

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

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

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

**i. 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 (cont'd)

**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 portion that relates to non-investment activities such as benefit administration, sales, marketing, new product development.

**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 - Currency conversion

### New Zealand Superannuation Fund

All currency amounts have been converted to New Zealand dollar using Purchasing Power Parity figures per the OECD<sup>1</sup>. The table below shows the foreign exchange rates for the past 5 years.

Currency conversion table					
	2023	2022	2021	2020	2019
United States Dollars - USD*	1.486	1.485	1.430	1.459	1.489
Canada Dollars - CAD	1.260	1.180	1.147	1.218	1.193
Euro - EUR*	2.248	2.171	2.072	2.052	2.084
Sweden Kronor - SEK	0.166	0.172	0.164	0.164	0.165
United Kingdom Pounds - GBP	2.132	2.150	2.104	2.037	2.115
Australia Dollars - AUD	1.047	1.026	0.956	0.998	1.026
New Zealand Dollars - NZD	1.000	1.000	1.000	1.000	1.000

1. Source OECD website.

\* USD - Some participating Asia-Pacific funds report holdings and performance in USD.

EUR - Participating funds from Denmark and Norway report holdings and performance in Euros.

## Appendix C - Data Integrity

The value of the information contained in these reports is only as good as the quality of the data received. As a data and insights company, our reputation is built on high standards of data quality. CEM upholds the following

**Data Principles** for quality:

- Completeness
- Comparability
- Accuracy
- Confidentiality
- Providence
- Timeliness
- Transparency
- Security

CEM's **Data Governance Committee**, with input from our clients, sets the data principles and ensures the compliance of the principles.

To ensure the completeness and comparability of the cost data, we:

- **Forward fill costs** for mandates from last year's reporting where missing for this year, or
- **Estimate costs** from your contractual deal terms (e.g., LP details) where missing, or
- **Impute costs** based on the experiences of the peers where an estimation or forward fill is not possible.

**Return conversion:** For comparability of performance data, the reports where either the peer group or universe include funds from multiple countries, we typically convert 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 convert U.S. returns to Euro based on the currency return for the year using December 31 spot rates.

**Data cleaning for accuracy:** CEM's procedures for checking the accuracy of data include the following:

- Data with material errors or omissions cannot be submitted to CEM.
- Once a survey is submitted, our rules engine identifies potential areas of discrepancies.
- Our internal experts then review the discrepancies and engage the survey respondent to iron out issues. In specific circumstances, our team is permitted to enrich the data for completeness and comparability using the approaches described above.
- Where we do not have clarity and confidence in the data, it is rejected.
- Finally, our Relationship Managers perform a final check before the material is shipped.

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.

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

## Appendix D - 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.