

**Investment
Benchmarking Analysis**
(for the 5-year period ending December 31, 2022)

New Zealand Superannuation Fund



Table of contents

1 Executive summary

2 Peer group and universe

Peer group	2 - 2
CEM global universe	2 - 3
Universe subsets	2 - 4
Implementation style, asset mix, policy mix:	
- by universe subset	2 - 5
- trends from 2018 to 2022	2 - 6
Implementation style by asset class	2 - 7
Actual asset mix - trends from 2018 to 2022	2 - 8
Policy asset mix - trends from 2018 to 2022	2 - 9

3 Returns, benchmarks, value added

Interpreting box and whisker graphs	3 - 2
Net total returns	3 - 3
Policy returns	3 - 4
Net value added	3 - 5
Net returns by asset class	3 - 6
Benchmark returns by asset class	3 - 7
Net value added by asset class	3 - 8
Your policy return and value added calculation:	
- 2022	3 - 9
- 2018 to 2021	3 - 10
Profit/Loss on overlay programs	3 - 11
Appendix - CEM's Private equity benchmark	3 - 12

4 Total cost and benchmark cost

Comparisons of total investment cost	4 - 2
- Trend	4 - 3
- Types of costs	4 - 4
- Detailed breakdown	4 - 5
- Material changes	4 - 6

Total cost versus benchmark cost	4 - 7
Benchmark cost calculation	4 - 8
Cost impact of:	
- differences in implementation style	4 - 9
- overlays	4 - 10
- paying more/-less for similar services	4 - 11
Why you are high/low cost by asset class	4 - 12
Your cost effectiveness ranking	4 - 13
Benchmarking methodology	4 - 14
Cost trend methodology and calculation	4 - 16

5 Cost comparisons

Total investment cost	5 - 2
Governance, operations & support	5 - 3
Asset class costs by implementation style	5 - 4

6 Risk

Comparison of your risk levels to peers	6 - 2
Calculation of asset risk	6 - 3
Reduction in asset risk due to diversification	6 - 4
Asset-liability risk	6 - 5
Liability proxy portfolio	6 - 6
Liability risk	6 - 7
Projected worst case scenarios	6 - 8
Worst case scenarios during the past 5 years	6 - 9
Risk Trends - 2018 to 2022	6 - 10
Risk appendices	6 - 11

7 Appendices

Appendix A - Data Summary	7 - 2
Appendix B - Data quality	
Appendix C - Glossary of terms	

Prepared August 21, 2023. Although the information in this report has been based upon and obtained from sources we believe to be reliable, CEM Benchmarking Inc. ("CEM") does not guarantee its accuracy or completeness. The information contained herein is proprietary and confidential and may not be disclosed to third parties without the express written mutual consent of both CEM and New Zealand Superannuation Fund.

Key Takeaways

Returns

- Your 5-year net total return was 6.5%. This was above both the Global median of 4.3% and the peer median of 5.2%.
- Your 5-year policy return was 4.2%. This was above both the Global median of 3.8% and the peer median of 4.0%.
- 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 2.4%. This was above both the Global median of 0.7% and the peer median of 0.8%.

Cost

- Your investment cost of 50.6 bps was below your benchmark cost of 52.9 bps. This suggests that your fund was slightly low cost compared to your peers.
- Your fund was slightly low cost because it paid less than peers for similar services and it had a lower cost implementation style.
- Your costs increased by 11.9 bps, from 38.7 bps in 2018 to 50.6 bps in 2022, because you had a higher cost implementation style and had a higher cost asset mix. This was partly offset by paying less in total for similar investment styles.

Risk

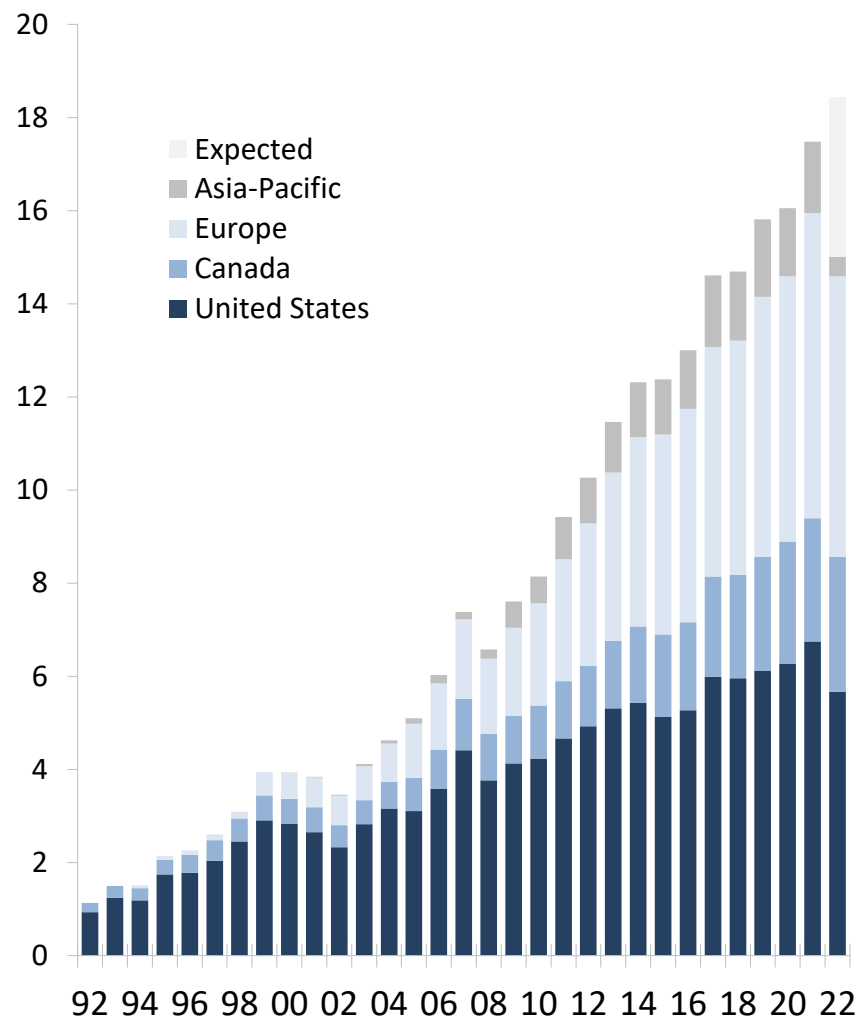
- Your asset risk of 11.4% was above the Global median of 9.1%.

This benchmarking report compares your cost and return performance to the 243 funds in CEM's extensive pension database.

- 131 U.S. pension funds participate. The median U.S. fund had assets of \$15.1 billion and the average U.S. fund had assets of \$43.3 billion. Total participating U.S. assets were \$5.7 trillion.
- 67 Canadian funds participate with assets totaling \$2.9 trillion.
- 39 European funds participate with aggregate assets of \$6.0 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 5 Asia-Pacific funds participate with aggregate assets of \$414.7 billion. Included are funds from Australia, New Zealand, China and South Korea.
- 1 funds from other regions participate.

The most meaningful comparisons for your returns and value added are to the Global universe, which consists of 243 funds.

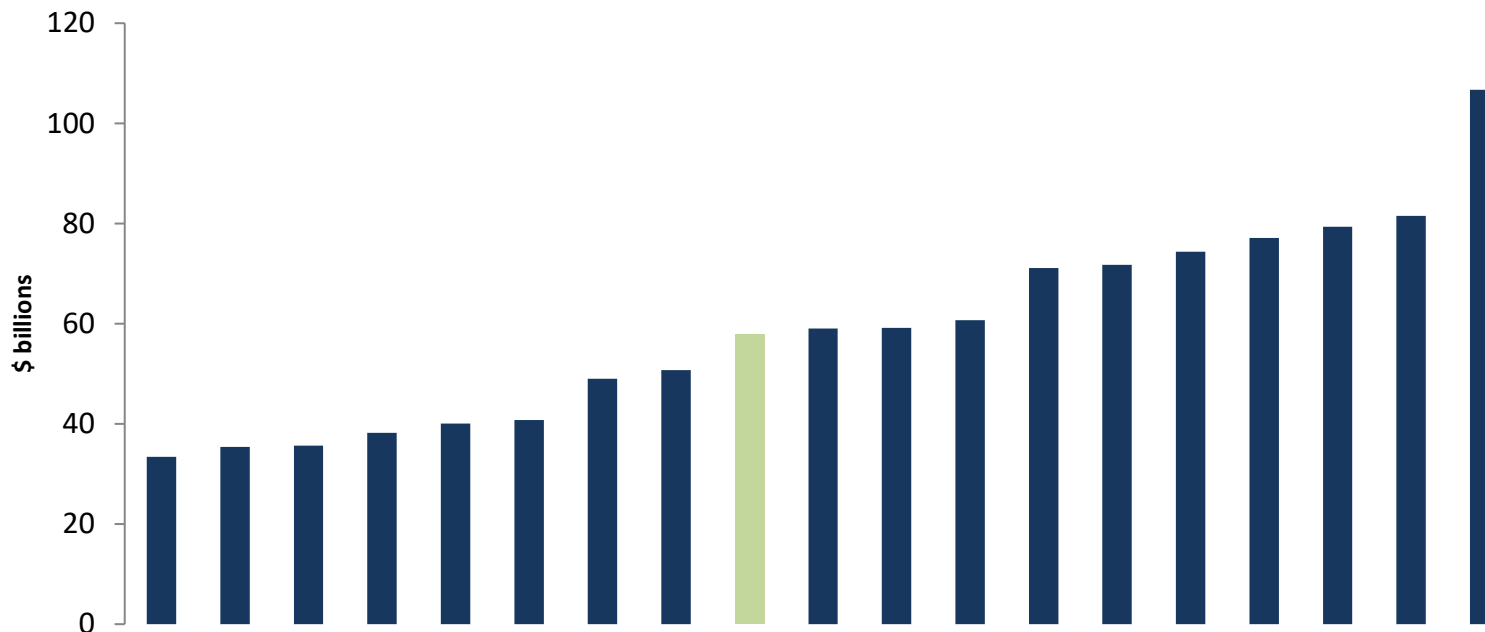
Participating assets (\$ trillions)



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

Peer group for New Zealand Superannuation Fund

- 19 Global sponsors from \$33.4 billion to \$106.7 billion
- Median size of \$59.1 billion versus your \$57.8 billion



Your 5-year net total return of 6.5% was above both the Global median of 4.3% and the peer median of 5.2%.

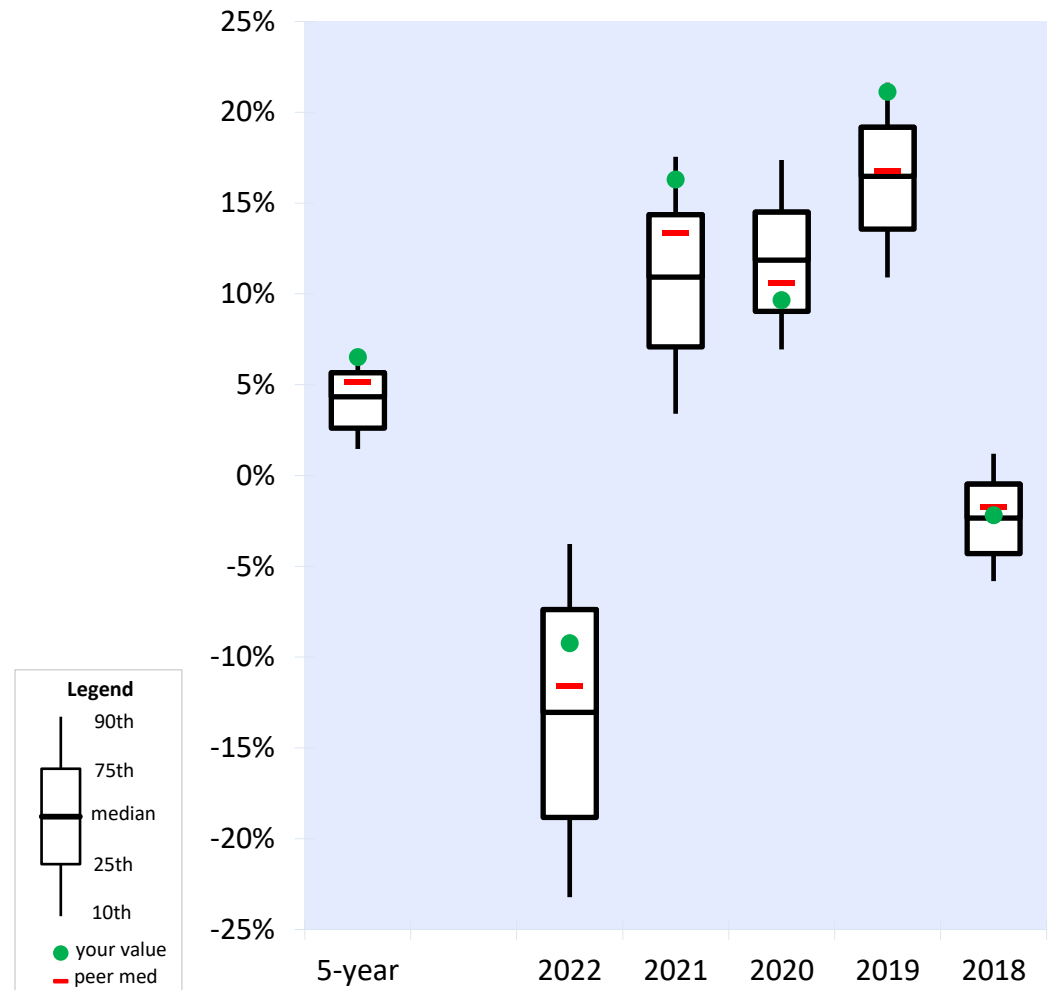
Total returns, by themselves, provide little insight into the reasons behind relative performance. Therefore, we separate total return into its more meaningful components: policy return and value added.

	Your 5-year
Net total fund return	6.5%
- Policy return	4.2%
= Net value added	2.4%

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

Returns are reported in local currency.

Global net total returns - quartile rankings



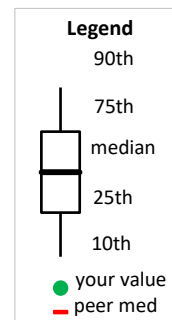
Your 5-year policy return of 4.2% was above both the Global median of 3.8% and the peer median of 4.0%.

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

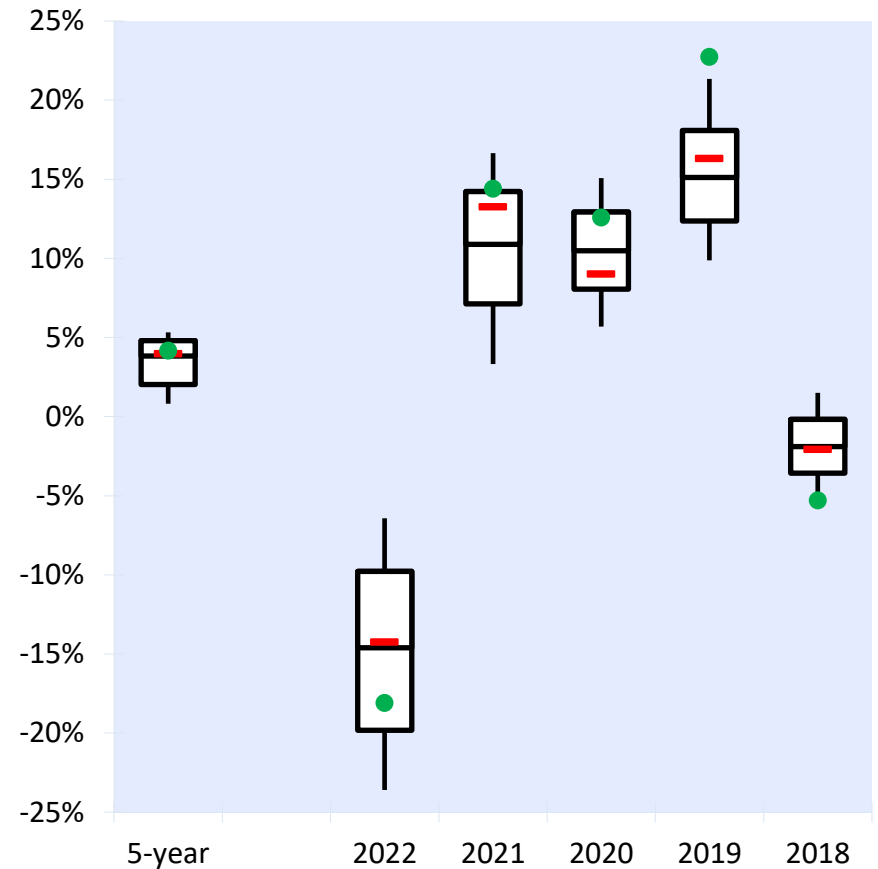
Having a higher or lower relative policy return is not necessarily good or bad. Your policy return reflects your investment policy, which should reflect your:

- 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



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 2022 your policy mix compared to your peers and the Global universe as follows:

2022 Policy asset mix

- 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 36%).

	Your fund	Peer avg.	Global avg.
Stock - U.S.	0%	9%	8%
Stock - Europe & Far East	5%	3%	4%
Stock - Emerging	7%	4%	2%
Stock - Global	68%	18%	15%
Other Stock ¹	0%	8%	6%
Total Stock	80%	42%	36%
Fixed income - U.S.	0%	3%	8%
Fixed income - Long bonds	0%	12%	15%
Fixed income - Global	20%	6%	2%
Cash	0%	2%	0%
Other Fixed Income ¹	0%	12%	16%
Total Fixed Income	20%	34%	42%
Hedge funds	0%	3%	3%
Real estate incl. REITs	0%	8%	7%
Other Real Assets ¹	0%	3%	4%
Private equity	0%	6%	6%
Private credit	0%	2%	3%
Total	100%	100%	100%

1. Other stock includes: Canada and ACWI x U.S. stock. Other fixed income includes: Canada, Inflation indexed, High yield, Europe/Far East, Emerging and Bundled LDI bonds. 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	10%	3%	7%
Stock - Global	65%	47%	55%
Total Stock	80%	54%	66%
Fixed income - U.S.	0%	0%	0%
Fixed income - Global	20%	11%	16%
Cash	0%	10%	-11%
Total Fixed Income	20%	21%	5%
Hedge funds	0%	7%	8%
Natural resources	0%	6%	6%
Infrastructure	0%	2%	2%
Real estate incl. REITs	0%	3%	4%
Private equity - Other	0%	8%	8%
Private equity	0%	1%	1%
Total	100%	100%	100%

Net value added is the component of total return from active management. Your 5-year net value added was 2.4%.

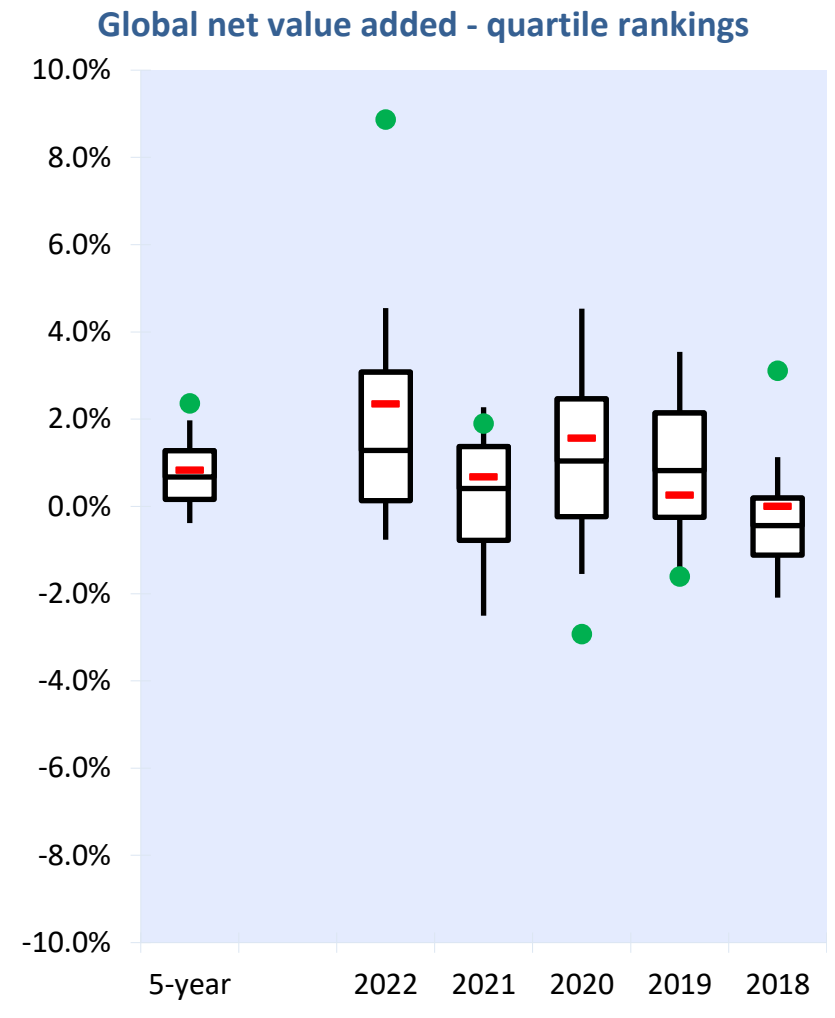
Net value added equals total net return minus policy return.

Value added for New Zealand Superannuation Fund

Year	Net return	Policy return	Net value added
2022	-9.2%	-18.1%	8.9%
2021	16.3%	14.4%	1.9%
2020	9.7%	12.6%	-2.9%
2019	21.1%	22.7%	-1.6%
2018	-2.2%	-5.3%	3.1%
5-Year	6.5%	4.2%	2.4%

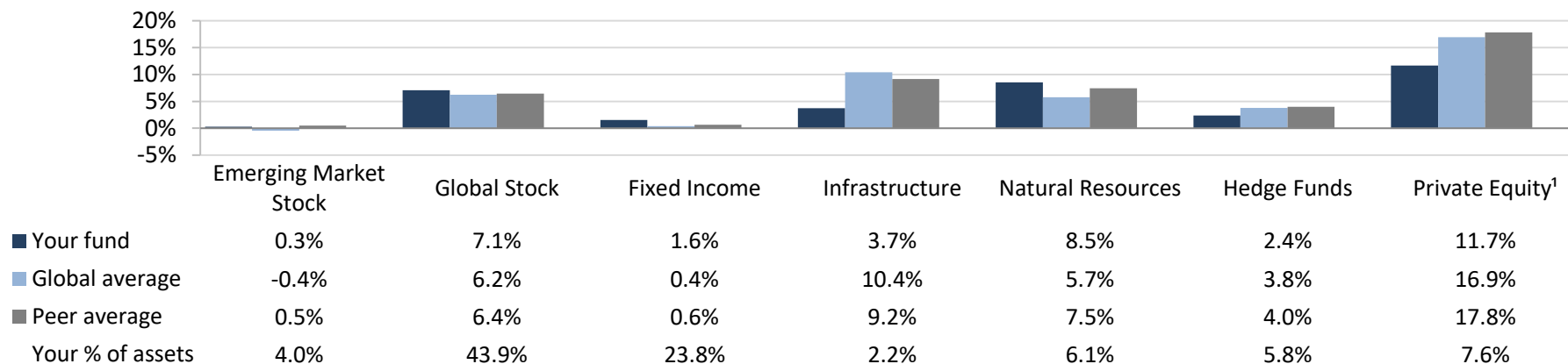
Your 5-year net value added of 2.4% compares to a median of 0.8% for your peers and 0.7% for the Global universe.

Your 2.4% 5-year value added translates into approximately \$6.8 billion of cumulative value added over 5 years.

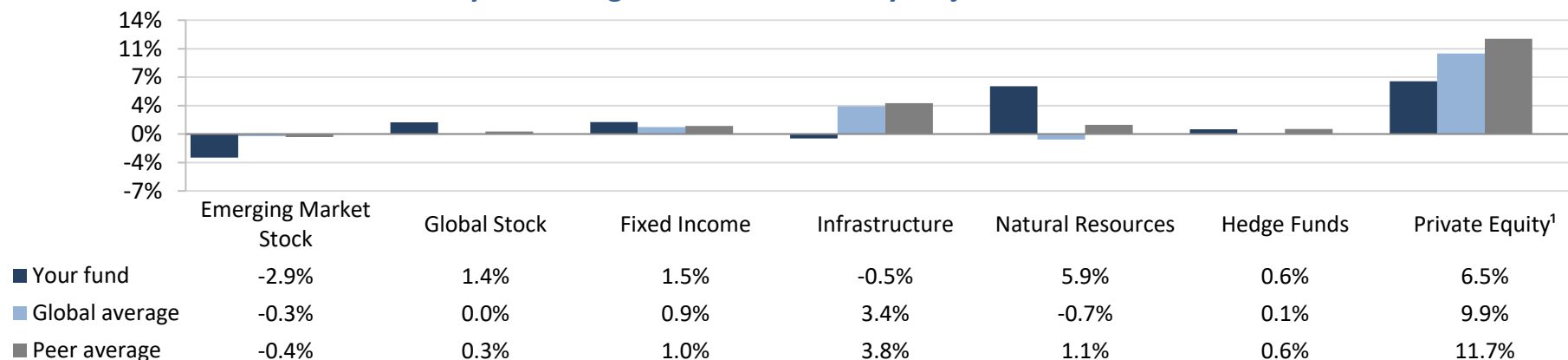


Comparisons of your 5-year net return and net value added by major asset class:

5-year average net return by major asset class



5-year average net value added by major asset class



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

Your investment costs, excluding private asset performance fees, were \$292.5 million or 50.6 basis points in 2022.

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 ¹		
Stock - Europe & Far East	1,281	3,908	854		2,843		8,886	
Stock - Emerging			880	906			1,786	
Stock - Global			5,519	3,187	8,100		16,806	
Fixed income - Global	1,554		825	1,537			3,916	
Cash		4,851					4,851	
Infrastructure ¹		879	404		1,764	119,885	3,047	
Infrastructure - LP ¹			1,926		4,860	5,228	6,785	
Natural resources ¹		1,904	3,326		3,218	3,099	8,449	
Real estate ex-REITs ¹		1,124					1,124	
Real estate ex-REITs - LP ¹			3,477		4,633	31,282	8,111	
Real estate ex-REITs - Co-invest. ¹			2,127		2,230		4,357	
Hedge funds - External active			5,018		25,797	97,735	128,550	
Private equity - Diversified - LP ¹			6,645		6,518	144	13,162	
Private equity - Diversified - Co-invest. ¹			753			284	753	
Private equity - Diversified - FoFs ¹			803		16	107	819	
Venture capital - LP ¹			1,110		2,156	-164	3,265	
Venture capital - Co-invest. ¹			390				390	
Private equity - Other - LP ¹		4,580					4,580	
Private equity - Other - Co-invest. ¹			5,540		21,670	42,677	27,209	
Derivatives/Overlays	4,697	11,438					16,135	
Total excluding private asset performance fees							262,981	45.5bp
Oversight, custodial and other costs ²								
Oversight of the fund							22,494	
Trustee & custodial							6,275	
Consulting and performance measurement							0	
Audit							704	
Total oversight, custodial & other costs							29,473	5.1bp
Total investment costs (excl. transaction costs & private asset performance fees)							292,453	50.6bp

Footnotes

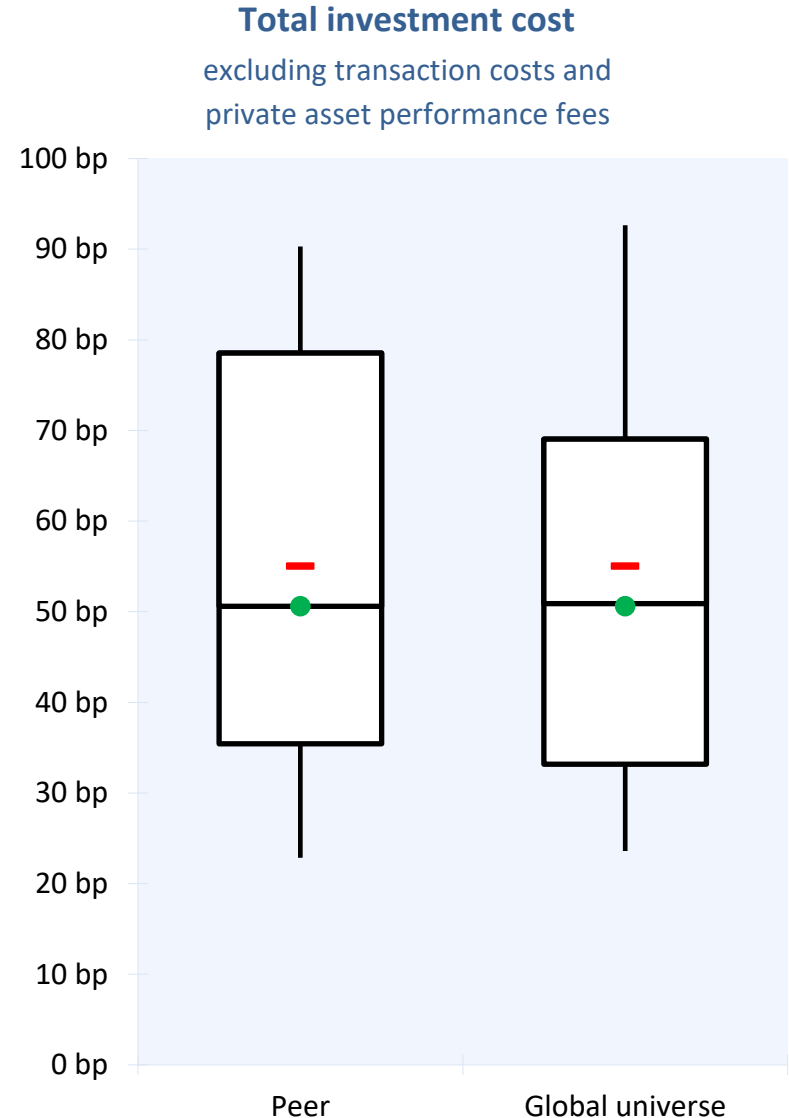
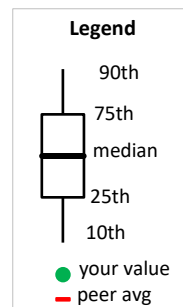
1. Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Performance fees are included for the public market asset classes and hedge funds.
2. Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.

Your total investment cost of 50.6 bps was equal to the peer median of 50.6 bps.

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

- Asset mix, particularly holdings of the highest cost asset classes: real estate (excl. REITs), infrastructure, hedge funds, private equity and private credit. These high cost assets equaled 27% of your assets at the end of 2022 versus a peer average of 27%.
- Fund size. Bigger funds have advantages of scale.

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



Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was slightly low cost by 2.3 basis points in 2022.

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 50.6 bp was slightly below your benchmark cost of 52.9 bp. Thus, your cost savings were 2.3 bp.

Your cost versus benchmark

	\$000s	basis points
Your total investment cost	292,453	50.6 bp
Your benchmark cost	305,497	52.9 bp
Your excess cost	(13,044)	(2.3) bp

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

Reasons for your low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less active management, more lower cost passive	(19,532)	(3.4)
• More external management, less lower cost internal	7,266	1.3
• More LPs as a percentage of external	2,402	0.4
• Less fund of funds	(1,509)	(0.3)
• More co-investment as a percentage of LP/Co	(3,977)	(0.7)
• More overlays	10,985	1.9
	<u>(4,364)</u>	<u>(0.8)</u>
2. Paying less than peers for similar services		
• External investment management costs	(23,303)	(4.0)
• Internal investment management costs	(1,061)	(0.2)
• Oversight, custodial & other costs	15,685	2.7
	<u>(8,680)</u>	<u>(1.5)</u>
Total savings	(13,044)	(2.3)

Your implementation style was 0.8 bps lower cost than the peer average.

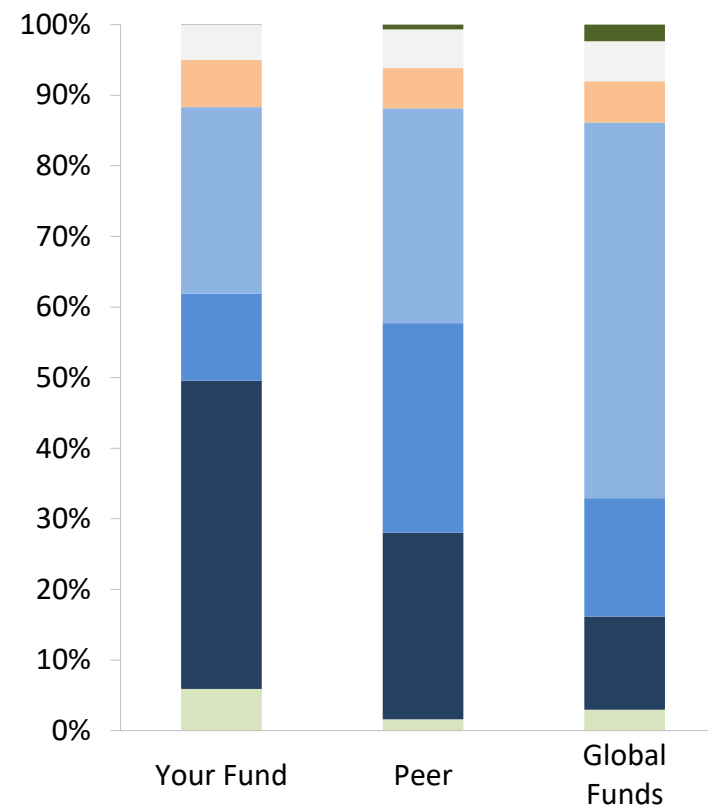
Implementation style is the way in which your fund implements asset allocation. Each implementation choice has a cost. Your first choice is how much to implement passively or actively. The table below summarizes your aggregate choices versus peers and their cost impact.

Implementation choices	Impact
More passive, less active	(3.4) bp
More internal as a % of passive	(0.1) bp
Less internal as a % of active	1.3 bp
Less evergreen % in private assets, excl. PE	0.4 bp
Less fund of funds % of LP/Co/FoF	(0.3) bp
More co-investment % of LP/Co	(0.7) bp
More overlays	1.9 bp
Total impact	(0.8) bp

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.

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.

Implementation style¹



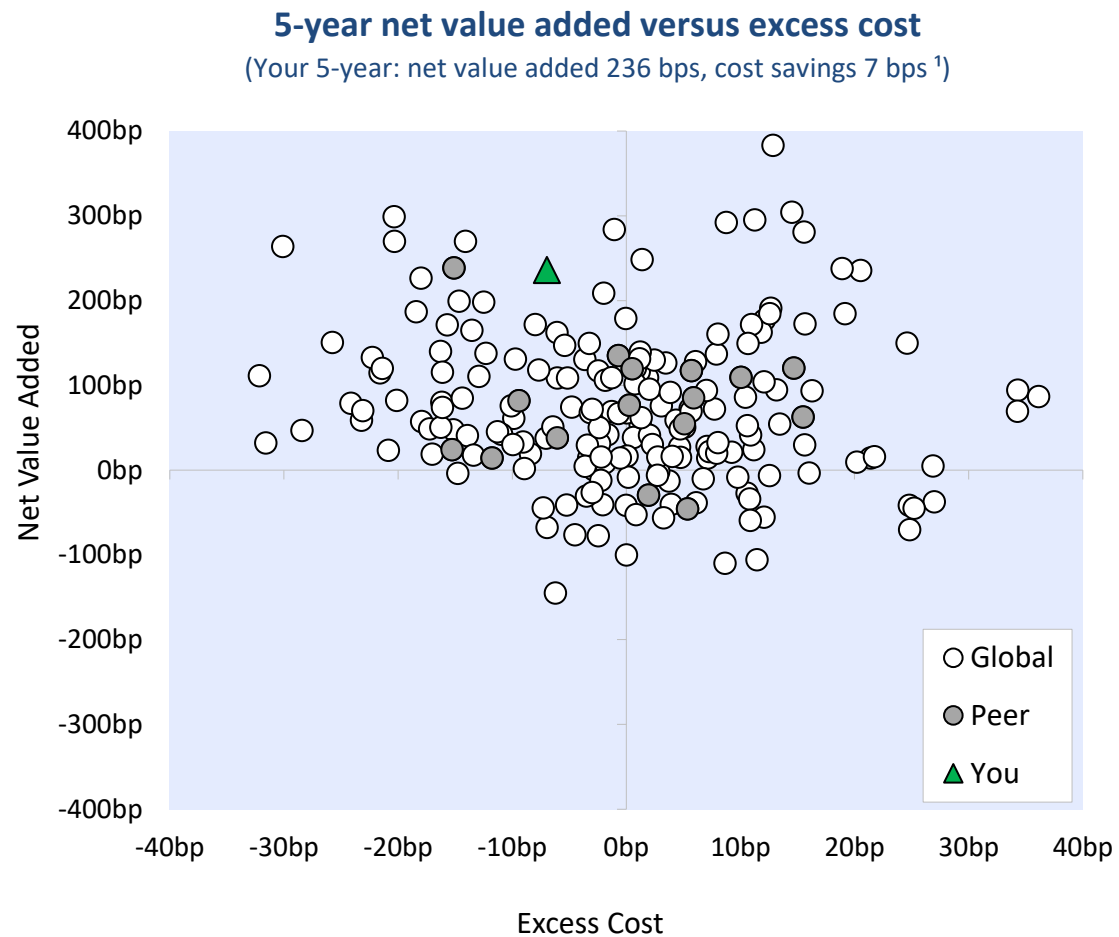
■ Fund of funds	0.0%	0.7%	2.3%
■ LP	5.0%	5.5%	5.7%
■ Co-investment	6.7%	5.7%	5.8%
■ External active	26.4%	30.4%	53.2%
■ Internal active	12.3%	29.7%	16.7%
■ External passive	43.6%	26.4%	13.2%
■ Internal passive	5.9%	1.6%	3.0%

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	433	3,161	3,595	15.1 bp
Stock - Emerging	(4,874)	0	(4,874)	(33.1) bp
Stock - Global	(2,671)	(27,742)	(30,413)	(11.2) bp
Fixed income - Global	(1,212)	280	(933)	(1.5) bp
Real estate ex-REITs	9,426	(13,026)	(3,600)	(15.5) bp
Infrastructure	(1,926)	2,131	205	1.9 bp
Natural resources	(8,167)	(2,360)	(10,526)	(30.6) bp
Hedge funds	(1,513)	4,993	3,480	8.5 bp
Private equity - Diversified	(4,074)	6,296	2,222	28.1 bp
Venture capital	(771)	1,902	1,131	74.5 bp
Private equity - Other	--	--	Excluded	Excluded
Derivatives and overlays	10,985	0	10,985	1.9 bp
Oversight, custodial & other	n/a	15,685	15,685	2.7 bp
Total	(4,364)	(8,680)	(13,044)	(2.3) bp

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



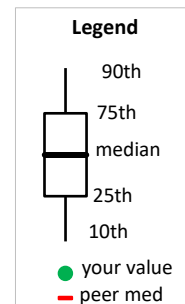
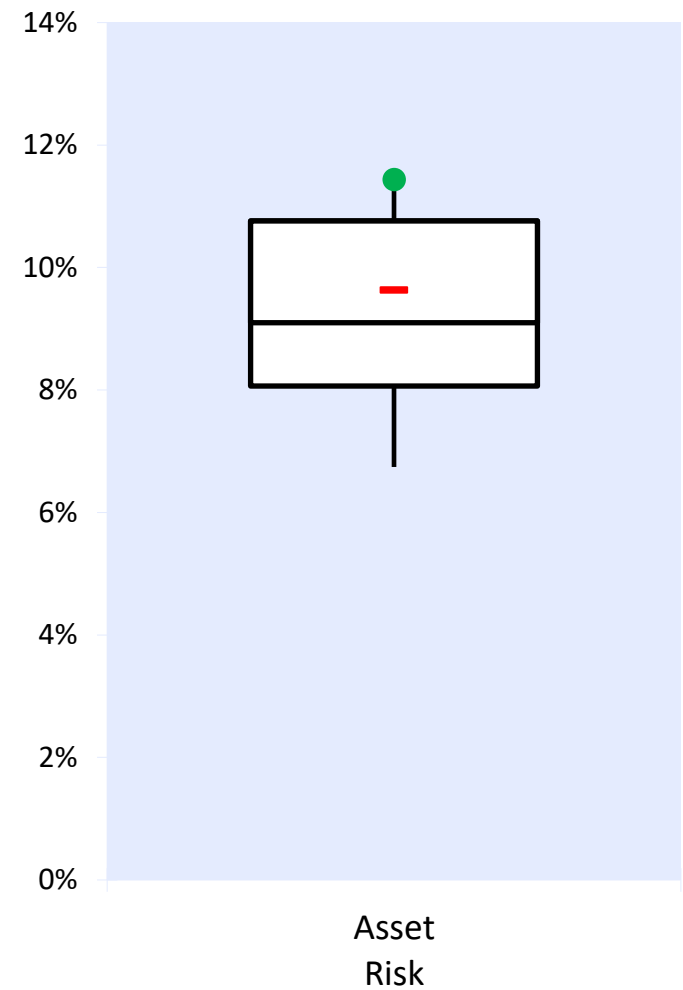
1. Your 5-year savings of 7.0 basis points is the average of your peer-based savings for the past 5 years.

	2022	2021	2020	2019	2018	5-year
Net value added	887.0bp	190.0bp	(293.0) bp	(161.0) bp	311.0bp	236.0bp
Excess cost	(2.3) bp	(12.0) bp	(10.1) bp	(8.4) bp	(2.0) bp	(7.0) bp

Comparison of risk levels:

Your asset risk of 11.4% was above the Global median of 9.1%. Asset risk is the standard deviation of your policy return. It is based on the historical variance of, and covariance between, the asset classes in your policy mix.

Global risk levels at December 31, 2022



2

Description of peer group and universe

Peer group	2
CEM global universe	3
Universe subsets	4
Implementation style, actual mix and policy mix:	
- by universe subset	5
- trends from 2018 to 2022	6
Implementation style by asset class	7
Actual mix from 2018 to 2022	8
Policy mix from 2018 to 2022	9

Peer group

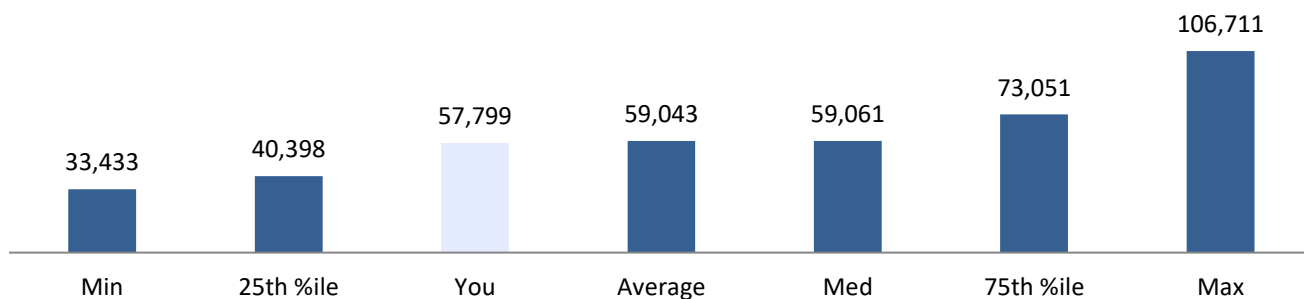
Your peer group is comprised of 19 Global funds, with assets ranging from \$33.4 billion to \$106.7 billion versus your \$57.8 billion. The median size is \$59.1 billion.

Peer Group Characteristics - 2022

	You	Peers	Global average
<u>Plan Assets (\$ billions)</u>			
Range	57.8	33.4 - 106.7	0.1 - 2,583.9
Median		59.1	12.6
<u># of Plans</u>			
Corporate		6	116
Public		6	87
Other	1	7	40
Total		19	243
<u>Implementation style</u>			
% External active	33.4	58.7	69.2
% External passive	40.6	14.4	15.6
% Internal active	22.9	22.2	11.3
% Internal passive	3.0	4.7	3.9
<u>Asset mix</u>			
% Stock	53.6	38.1	33.6
% Fixed Income	20.7	31.5	39.9
% Real Assets	10.5	13.5	11.7
% Private Equity	9.1	8.0	7.0
% Private Credit	0.0	2.3	2.9
% Hedge Funds & Other	6.0	6.5	5.0

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

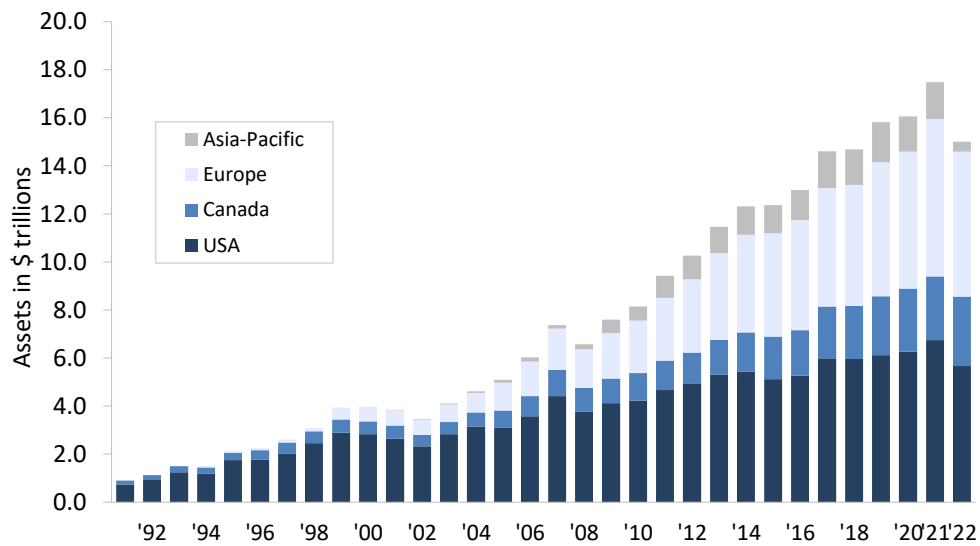


CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2022 survey universe is comprised of 243 funds representing \$15.1 trillion in assets. The breakdown by region is as follows:

- 131 U.S. pension funds with aggregate assets of \$5.7 trillion.
- 67 Canadian pension funds with aggregate assets of \$2.9 trillion.
- 39 European pension funds with aggregate assets of \$6.0 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 5 Asia-Pacific pension funds with aggregate assets of \$0.4 trillion.

CEM global universe



Universe subsets

CEM's global survey universe is comprised of 243 funds with total assets of \$15.1 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 \$33.4 - \$106.7 billion. The peer median of \$59.1 billion compares to your \$57.8 billion.
- Global - The global universe is comprised of 243 funds ranging in size from \$0.1 - \$2,583.9 billion. The median fund is \$12.6 billion.

Universe subsets by number of funds and assets

	Peer group ¹	Global by type				Global by Country				
		Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
# of funds										
2022	19	116	87	40	243	131	67	39	6	243
2021	20	128	122	40	290	145	68	66	11	290
2020	21	136	139	39	314	161	70	72	11	314
2019	21	135	140	43	318	155	72	75	16	318
2018	21	147	149	45	341	170	78	77	16	341
# of funds with uninterrupted data for:										
1 yr	19	116	87	40	243	131	67	39	6	243
2 yrs	18	109	82	35	226	122	61	37	6	226
3 yrs	18	106	80	33	219	118	59	36	6	219
4 yrs	18	98	78	31	207	110	57	34	6	207
5 yrs	18	95	78	30	203	108	56	33	6	203
Total assets (\$ billions)										
2022	1,122	1,906	9,856	3,301	15,063	5,671	2,892	6,027	474	15,063
2021	1,203	2,667	11,669	3,437	17,773	6,743	2,650	6,556	1,824	17,773
2020	1,130	2,513	10,690	3,076	16,279	6,270	2,621	5,697	1,690	16,279
2019	1,064	2,439	10,382	3,244	16,065	6,121	2,447	5,580	1,917	16,065
2018	960	2,246	9,912	2,753	14,911	5,958	2,221	5,025	1,707	14,911
2022 asset distribution (\$ billions)										
Avg	59.0	16.4	113.3	82.5	62.0	43.3	43.2	154.5	79.0	62.0
Max	106.7	120.7	2,583.9	1,085.5	2,583.9	691.7	634.6	2,583.9	240.3	2,583.9
75th %ile	73.1	21.0	113.2	75.0	40.4	35.5	22.1	86.3	94.8	40.4
Median	59.1	8.7	27.1	14.2	12.6	15.1	7.7	42.4	58.4	12.6
25th %ile	40.4	3.3	7.7	3.4	4.2	4.3	3.0	9.4	18.2	4.2
Min	33.4	0.1	0.4	0.1	0.1	0.4	0.1	1.0	5.0	0.1

1. Peer group statistics are for your 2022 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 - 2022 (as a % of year-end assets)

	Your fund ¹	Peer group	Global by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
Implementation style											
External Active	33.4	56.9	75.4	56.2	62.1	66.3	74.1	62.7	48.2	56.3	66.3
Fund of funds	0.0	1.8	3.2	2.6	2.4	2.8	2.9	2.3	3.3	5.5	2.8
External passive	40.6	14.4	15.7	14.3	18.3	15.6	16.1	11.6	20.5	18.2	15.6
Internal Active	22.9	22.2	4.2	20.6	11.7	11.3	4.1	18.2	22.7	16.5	11.3
Internal Passive	<u>3.0</u>	<u>4.7</u>	<u>1.5</u>	<u>6.4</u>	<u>5.5</u>	<u>3.9</u>	<u>2.8</u>	<u>5.2</u>	<u>5.2</u>	<u>3.5</u>	<u>3.9</u>
Total	100	100	100	100	100	100	100	100	100	100	100
Actual asset mix											
Stock	53.6	38.1	24.9	41.9	40.9	33.6	31.0	33.5	40.1	49.8	33.6
Fixed Income ²	19.7	32.5	53.7	25.1	35.1	40.4	45.4	34.3	36.5	25.8	40.4
Global TAA	0.0	0.2	0.5	0.5	0.1	0.4	0.6	0.2	0.3	0.0	0.4
Real Assets	10.5	13.5	8.0	16.0	13.0	11.7	7.5	19.9	11.8	10.3	11.7
Hedge Funds	7.1	4.2	4.1	3.0	2.5	3.4	4.7	2.2	1.4	2.6	3.4
Balanced Funds	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	1.0	0.0	0.2
Risk Parity	0.0	1.1	0.4	0.5	0.0	0.4	0.7	0.0	0.0	0.0	0.4
Private Debt	0.0	2.3	2.3	3.1	3.8	2.9	1.9	4.0	4.3	0.9	2.9
Private Equity	<u>9.1</u>	<u>8.0</u>	<u>6.1</u>	<u>9.4</u>	<u>4.5</u>	<u>7.0</u>	<u>8.1</u>	<u>5.9</u>	<u>4.5</u>	<u>10.5</u>	<u>7.0</u>
Total	100	100	100	100	100	100	100	100	100	100	100
Policy asset mix											
Stock	80.0	41.0	25.9	44.1	40.7	34.8	32.6	34.8	38.6	61.1	34.8
Fixed Income	20.0	34.2	55.6	25.3	36.3	41.6	47.0	35.0	37.5	24.2	41.6
Global TAA	0.0	0.2	0.5	0.5	0.1	0.4	0.6	0.1	0.2	0.0	0.4
Real Assets	0.0	11.3	7.1	15.8	13.2	11.2	7.1	19.0	12.2	9.0	11.2
Hedge funds	0.0	3.3	3.4	2.1	1.8	2.6	3.6	1.6	1.3	1.4	2.6
Balanced Funds	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.6	0.0	0.1
Risk Parity	0.0	1.2	0.4	0.5	0.0	0.4	0.7	0.0	0.0	0.0	0.4
Private Debt	0.0	2.5	2.2	3.7	3.8	3.0	1.5	4.8	5.1	1.1	3.0
Private Equity	<u>0.0</u>	<u>6.4</u>	<u>5.0</u>	<u>7.9</u>	<u>4.1</u>	<u>5.9</u>	<u>6.9</u>	<u>4.8</u>	<u>4.6</u>	<u>3.3</u>	<u>5.9</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. Includes derivatives and overlays.

Implementation style, actual mix and policy mix trends

Implementation style, actual mix and policy mix - 2018 to 2022 (as a % of year-end assets)

	Your fund ¹					Peer average ²					Global average ²				
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
Implementation style															
External active	33.4	12.9	14.0	13.7	14.6	56.1	53.3	54.7	55.1	55.6	65.2	64.2	63.5	63.2	63.0
Fund of funds	0.0	0.0	0.0	0.0	0.1	1.9	1.7	1.7	1.8	2.0	2.9	2.3	1.9	2.0	2.3
External passive	40.6	51.9	43.5	58.6	59.5	15.0	17.4	17.6	18.8	18.0	16.0	17.2	17.7	17.9	18.0
Internal active	22.9	28.1	36.2	26.5	25.6	22.7	22.6	22.7	21.1	20.8	11.6	12.0	12.5	12.4	12.3
Internal passive	<u>3.0</u>	<u>7.1</u>	<u>6.2</u>	<u>1.1</u>	<u>0.3</u>	<u>4.2</u>	<u>4.9</u>	<u>3.3</u>	<u>3.1</u>	<u>3.6</u>	<u>4.2</u>	<u>4.3</u>	<u>4.3</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
Actual asset mix															
Stock	53.6	51.6	43.4	55.7	55.9	37.0	40.7	40.2	40.4	39.6	33.8	37.0	38.1	38.2	38.2
Fixed income ³	19.7	28.5	33.7	22.2	22.2	33.2	33.4	33.9	33.9	35.0	39.2	39.5	39.8	39.7	39.4
Global TAA	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.7	0.8
Real assets	10.5	7.7	9.0	8.9	10.2	13.7	11.2	11.9	12.1	11.8	12.3	10.3	10.2	10.4	10.6
Hedge funds	7.1	5.6	6.0	5.5	5.1	4.5	4.3	4.5	4.7	4.8	3.3	3.1	3.0	3.3	3.6
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Risk Parity	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.7	1.9	2.0	0.4	0.4	0.5	0.5	0.5
Private credit	0.0	0.0	0.0	0.0	0.0	2.3	1.9	1.7	1.3	1.1	3.0	2.5	2.3	2.0	1.8
Private equity	<u>9.1</u>	<u>6.7</u>	<u>7.9</u>	<u>7.6</u>	<u>6.6</u>	<u>8.0</u>	<u>6.9</u>	<u>5.8</u>	<u>5.3</u>	<u>5.2</u>	<u>7.5</u>	<u>6.7</u>	<u>5.5</u>	<u>5.1</u>	<u>5.1</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Policy asset mix															
Stock	80.0	80.0	80.0	80.0	80.0	39.8	42.2	42.0	40.7	41.4	35.3	37.0	38.4	38.8	39.5
Fixed income	20.0	20.0	20.0	20.0	20.0	34.8	33.8	33.7	35.6	34.2	40.4	40.2	39.2	39.6	39.3
Global TAA	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6
Real assets	0.0	0.0	0.0	0.0	0.0	11.4	10.8	11.1	10.9	11.1	11.7	10.9	10.9	10.6	10.3
Hedge funds	0.0	0.0	0.0	0.0	0.0	3.5	3.5	4.3	4.8	4.8	2.5	2.5	2.7	3.0	3.2
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Risk Parity	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.6	2.0	0.4	0.4	0.4	0.4	0.5
Private credit	0.0	0.0	0.0	0.0	0.0	2.6	2.2	2.0	1.0	1.1	3.0	2.7	2.4	1.9	1.7
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>6.3</u>	<u>6.0</u>	<u>5.3</u>	<u>4.9</u>	<u>4.8</u>	<u>6.2</u>	<u>5.8</u>	<u>5.3</u>	<u>5.1</u>	<u>4.9</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 203 Global and 18 peer funds with 5 or more consecutive years of data ending 2022.

3. Includes derivatives and overlays.

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 - 2022 (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.					54.6	30.9	7.4	7.1	33.2	50.7	7.5	8.5			
Stock - Europe & Far East	36.8		0.0	47.9	15.3	34.7	24.4	40.3	0.7	53.8	24.6	18.3	3.3		
Stock - Global	31.3		68.7	0.0	0.0	32.8	44.2	21.5	1.5	64.7	20.5	10.9	3.9		
Stock - other						37.4	7.6	54.8	0.2	70.4	6.9	18.1	4.6		
Stock - Emerging	0.0		100.0	0.0	0.0	62.4	22.1	15.1	0.3	74.2	16.9	4.9	4.0		
Stock - ACWI x U.S.						82.0	18.0	0.0	0.0	70.3	28.2	1.1	0.3		
Stock - Aggregate	30.3		64.9	3.7	1.2	47.7	30.1	19.7	2.5	56.1	28.5	10.5	4.9		
Fixed income - U.S.						62.3	8.1	28.7	1.0	68.8	15.3	12.9	3.1		
Fixed income - EAFE						64.3	0.6	35.1	0.0	33.2	32.8	19.3	14.7		
Fixed income - Global	0.0		54.4	0.0	45.6	3.5	21.3	68.0	7.2	51.0	11.1	30.9	7.1		
Fixed income - other						31.7	0.0	63.4	4.9	64.0	16.6	14.9	4.4		
Fixed income - Long bonds						71.6	0.7	11.5	16.2	82.3	6.5	6.8	4.4		
Fixed income - Emerging						41.2	18.1	39.3	1.4	79.6	8.5	10.6	1.4		
Fixed income - Inflation indexed						5.5	34.7	50.0	9.8	17.5	33.7	27.7	21.1		
Fixed income - High yield						92.6	0.1	7.3	0.0	86.8	1.1	10.0	2.1		
Fixed income - Absolute return bonds						0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0		
Fixed income - Bundled LDI						13.7	5.0	1.5	79.9	60.6	17.9	13.5	8.1		
Fixed income - Convertibles						99.9	0.1	0.0	0.0	68.4	0.0	31.6	0.0		
Fixed income - Public mortgages						0.0	0.0	0.0	0.0	94.3	0.0	5.7	0.0		
Cash	0.0		100.0			37.6		62.4		65.6		34.4			
Fixed income - Aggregate	0.0		28.1	48.3	23.6	48.8	7.3	31.3	12.6	68.3	12.9	13.3	5.5		
Commodities						100.0	0.0	0.0	0.0	22.1	16.4	30.3	31.2		
Infrastructure	59.8	0.0		40.2		76.9	0.4		22.7	79.1	4.2		16.7		
Natural resources	12.9	0.0		87.1		48.5	0.0		51.5	66.7	0.5		32.8		
REITs						36.1	55.4	8.5	0.0	59.9	21.7	15.3	3.0		
Real estate ex-REITs	90.2	0.0		9.8		63.6	0.0		36.3	76.8	6.7		16.5		
Other real assets						100.0	0.0		0.0	94.8	0.0		5.2		
Other listed real assets						100.0	0.0	0.0	0.0	89.0	9.4	0.0	1.6		
Real assets - Aggregate	41.2	0.0	0.0	58.8	0.0	65.3	0.1	1.3	33.3	0.0	75.9	5.2	1.4	16.9	0.7
Hedge funds	100.0	0.0				95.4	4.6			79.2	20.8				
Global TAA						100.0			0.0	73.8			26.2		
Risk parity						100.0			0.0	94.5			5.5		
Private credit						100.0	0.0		0.0	85.5	5.1		9.4		
Private mortgages						100.0			0.0	92.3			7.7		
Private equity - Diversified	98.8	1.2		0.0		75.2	24.8		0.0	74.4	20.6		5.0		
Venture capital	100.0	0.0		0.0		75.3	24.7		0.0	45.0	52.5		2.4		
LBO						94.9	5.1		0.0	92.1	7.7		0.2		
Private equity - Other	58.4	0.0		41.6		75.2	0.0		24.8	79.5	0.0		20.5		
Private equity	63.6	0.1		36.3		78.6	19.7		1.8	74.8	20.3		4.9		
Total Fund - Avg. Holdings	33.4	0.0	40.6	22.9	3.0	56.9	1.8	14.4	22.2	4.7	66.3	2.8	15.6	11.3	3.9

Actual mix

Actual asset mix - 2018 to 2022 (as a % of total average assets)

	Your fund ¹					Peer average %					Global average %				
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
Stock - U.S.						10.4	10.3	11.7	11.3	11.3	9.3	9.8	10.4	10.6	11.0
Stock - Europe & Far East	4.1	4.3	4.3	4.2	4.2	4.8	6.2	6.3	6.4	7.0	4.6	5.8	6.5	6.2	6.8
Stock - Global	47.0	44.5	35.7	46.0	46.1	11.9	13.1	11.6	11.6	11.5	12.5	14.2	14.3	13.6	12.9
Stock - other						3.1	3.3	3.2	3.3	2.9	2.7	3.0	3.1	3.3	3.5
Stock - Emerging	2.5	2.7	3.5	5.5	5.7	3.7	4.9	4.6	4.7	4.6	2.6	3.0	3.2	3.0	3.1
Stock - ACWI x U.S.						4.2	3.6	4.6	4.6	4.1	2.1	2.0	2.4	2.4	2.3
Stock - Aggregate	53.6	51.6	43.4	55.7	55.9	38.1	41.3	41.9	41.8	41.3	33.6	37.8	39.9	39.0	39.6
Fixed income - U.S.		0.0	0.1	0.1	0.1	3.7	2.3	3.1	3.7	4.1	7.0	6.5	6.5	6.7	6.8
Fixed income - EAFE						2.6	2.6	2.4	2.7	2.9	2.3	2.7	2.5	3.0	3.1
Fixed income - Global	10.7	9.4	8.2	9.1	9.8	3.6	3.8	3.6	4.5	5.0	1.9	2.3	2.3	2.6	2.5
Fixed income - other						0.9	1.3	2.2	2.1	2.8	6.0	5.0	4.8	4.9	5.1
Fixed income - Long bonds						11.0	10.8	9.7	9.3	8.4	13.7	12.3	12.7	12.5	12.7
Fixed income - Emerging						2.1	2.3	2.2	2.1	2.1	1.1	1.2	1.2	1.3	1.1
Fixed income - Inflation indexed						1.9	2.2	1.7	1.7	1.5	1.3	1.5	1.3	1.7	1.6
Fixed income - High yield						0.9	0.7	0.9	0.8	0.8	1.1	1.2	1.1	1.2	1.2
Fixed income - Absolute return bonds							0.2	0.2			0.0	0.1	0.3	0.2	0.1
Fixed income - Bundled LDI						2.1	1.9	2.1	2.1	2.2	3.8	3.5	3.2	2.3	2.3
Fixed income - Convertibles						0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Fixed income - Public mortgages							0.0				0.1	0.1	0.1	0.1	0.0
Cash	10.0	16.2	21.6	11.9	11.9	2.8	3.4	3.9	2.8	2.7	1.2	1.3	1.5	1.4	1.6
Fixed income - Aggregate	20.7	25.7	29.9	21.1	21.8	31.5	31.7	32.1	31.9	32.5	39.9	38.0	37.8	37.9	38.2
Commodities						0.1		0.6	0.7	0.7	0.2	0.2	0.2	0.3	0.3
Infrastructure	1.9	1.6	2.0	2.1	3.4	2.6	2.1	2.1	2.2	2.1	3.2	2.6	2.4	2.3	2.1
Natural resources	5.9	5.2	6.4	6.5	6.6	1.1	0.8	0.9	0.9	0.9	0.4	0.4	0.3	0.3	0.4
REITs						0.3	0.5	0.4	0.4	0.2	0.5	0.6	0.5	0.5	0.6
Real estate ex-REITs	2.7	0.9	0.7	0.3	0.1	9.1	7.4	7.2	7.2	7.2	6.8	5.4	5.4	5.5	5.7
Other real assets						0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Other listed real assets						0.2					0.2	0.1	0.1	0.1	0.0
Real assets - Aggregate	10.5	7.7	9.0	8.9	10.2	13.5	11.4	11.7	12.0	11.7	11.7	10.0	9.8	10.0	9.9
Hedge funds	7.1	5.6	6.0	5.5	5.1	4.2	4.3	4.3	4.8	4.8	3.4	3.2	3.1	3.3	3.4
Global TAA						0.2	0.2	0.3	0.4	0.4	0.4	0.6	0.9	1.0	0.9
Risk parity						1.1	1.1	1.4	1.6	1.8	0.4	0.4	0.5	0.6	0.5
Private mortgages						0.3	0.3	0.3	0.2	0.2	0.7	0.5	0.5	0.6	0.6
Private credit						2.0	1.7	1.5	1.3	1.1	2.2	2.2	1.6	1.6	1.3
Private equity - Diversified	0.9	0.6	0.7	0.6	0.6	5.4	4.6	3.3	3.1	3.0	5.7	5.1	4.2	4.2	3.9
Venture capital	0.3	0.0				0.7	0.7	0.5	0.5	0.4	0.4	0.4	0.3	0.2	0.3
LBO						1.4	1.2	1.5	1.3	1.3	0.7	0.7	0.6	0.6	0.5
Private equity - Other	8.0	6.1	7.2	7.1	6.0	0.6	0.7	0.6	0.6	0.6	0.2	0.2	0.2	0.2	0.2
Private equity	9.1	6.7	7.9	7.6	6.6	8.0	7.1	5.9	5.6	5.4	7.0	6.4	5.3	5.2	4.8
Derivatives/Overlays Mkt Value	-1.0	2.8	3.8	1.1	0.4	1.0	0.7	0.6	0.4	0.8	0.6	0.7	0.7	0.6	0.3
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	20	21	21	21	243	290	314	318	341
Median Assets (\$ billions)	57.8	57.9	46.1	43.1	39.3	59.1	57.5	50.1	46.4	41.9	12.6	15.5	12.4	13.2	10.9

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

Policy mix

Policy asset mix - 2018 to 2022 (as a % of total assets)

	Your fund %					Peer average %					Global average %				
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
Stock - U.S.						9.4	8.1	10.0	10.2	10.1	8.5	8.3	9.5	9.8	10.5
Stock - Europe & Far East	5.0	5.0	5.0	5.0	5.0	3.4	4.5	4.5	4.8	5.6	3.9	5.1	5.7	5.6	6.4
Stock - Global	67.8	75.0	65.0	65.0	65.0	17.7	19.4	17.5	16.0	16.8	15.5	16.8	16.4	15.5	14.9
Stock - other						2.4	2.8	2.5	2.5	2.0	2.7	3.0	3.1	3.4	3.4
Stock - Emerging	7.3		10.0	10.0	10.0	3.5	4.3	4.6	4.5	4.4	2.3	2.6	2.7	2.7	2.8
Stock - ACWI x U.S.						4.5	3.4	4.1	4.0	3.9	2.0	1.9	2.2	2.4	2.5
Stock - Aggregate	80.0	80.0	80.0	80.0	80.0	41.0	42.5	43.2	42.1	42.8	34.8	37.8	39.8	39.4	40.5
Fixed income - U.S.						3.4	2.1	3.0	3.0	3.1	7.9	7.0	6.8	6.8	7.0
Fixed income - EAFE						2.8	2.6	2.6	2.9	3.1	2.3	2.7	2.6	3.3	3.2
Fixed income - Global	20.0	20.0	20.0	20.0	20.0	5.7	5.9	5.7	6.7	6.5	2.1	2.6	2.6	2.8	2.8
Fixed income - other						1.6	1.4	2.1	2.7	2.7	5.9	5.2	4.8	5.2	5.1
Fixed income - Long bonds						11.6	11.5	9.5	9.5	9.2	15.4	13.6	13.1	12.9	13.1
Fixed income - Emerging						2.1	2.5	2.3	2.0	1.9	1.1	1.1	1.1	1.3	1.1
Fixed income - Inflation indexed						2.2	2.8	2.0	1.8	1.8	1.8	1.8	1.6	2.0	1.9
Fixed income - High yield						0.7	0.7	1.0	1.0	0.6	1.1	1.1	1.1	1.2	1.1
Fixed income - Absolute return bonds							0.2	0.2			0.0	0.1	0.3	0.2	0.1
Fixed income - Bundled LDI						2.2	2.1	2.1	2.2	2.1	3.6	3.1	3.2	2.4	2.2
Fixed income - Convertibles						0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Fixed income - Public mortgages											0.1	0.1	0.1	0.1	0.0
Cash						1.7	0.9	1.9	2.2	1.9	-0.1	0.2	0.4	0.5	0.5
Fixed income - Aggregate	20.0	20.0	20.0	20.0	20.0	34.2	32.6	32.5	34.1	32.9	41.6	39.3	37.9	38.6	38.2
Commodities						0.1	0.1	0.6	0.6	0.9	0.1	0.2	0.3	0.3	0.3
Infrastructure						2.5	2.4	2.1	1.9	2.0	3.3	3.1	2.8	2.5	2.2
Natural resources						0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
REITs						0.1	0.2	0.2	0.2	0.2	0.4	0.5	0.5	0.5	0.6
Real estate ex-REITs						7.8	7.5	7.3	7.2	7.1	6.5	6.1	5.9	5.8	5.7
Other real assets						0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
Other listed real assets						0.1					0.1	0.1	0.0	0.0	
Real assets - Aggregate						11.3	11.1	11.2	10.9	11.0	11.2	11.0	10.8	10.4	10.0
Hedge funds						3.3	3.5	3.7	4.4	4.5	2.6	2.4	2.7	2.9	3.1
Global TAA						0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.9	0.9	0.9
Risk parity						1.2	1.2	1.1	1.4	1.8	0.4	0.4	0.4	0.5	0.5
Private mortgages						0.4	0.4	0.3	0.3	0.2	0.7	0.6	0.6	0.6	0.6
Private credit						2.1	2.0	1.7	1.0	1.4	2.3	2.4	1.8	1.5	1.3
Private equity - Diversified						5.8	5.8	4.6	4.6	3.8	5.1	4.8	4.5	4.5	4.1
Venture capital						0.1	0.1	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.2
LBO						0.3	0.3	0.8	0.5	0.9	0.5	0.5	0.5	0.4	0.4
Private equity - Other						0.2	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Private equity						6.4	6.4	5.8	5.5	5.0	5.9	5.6	5.3	5.2	4.8
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	19	20	21	21	21	243	287	313	318	341

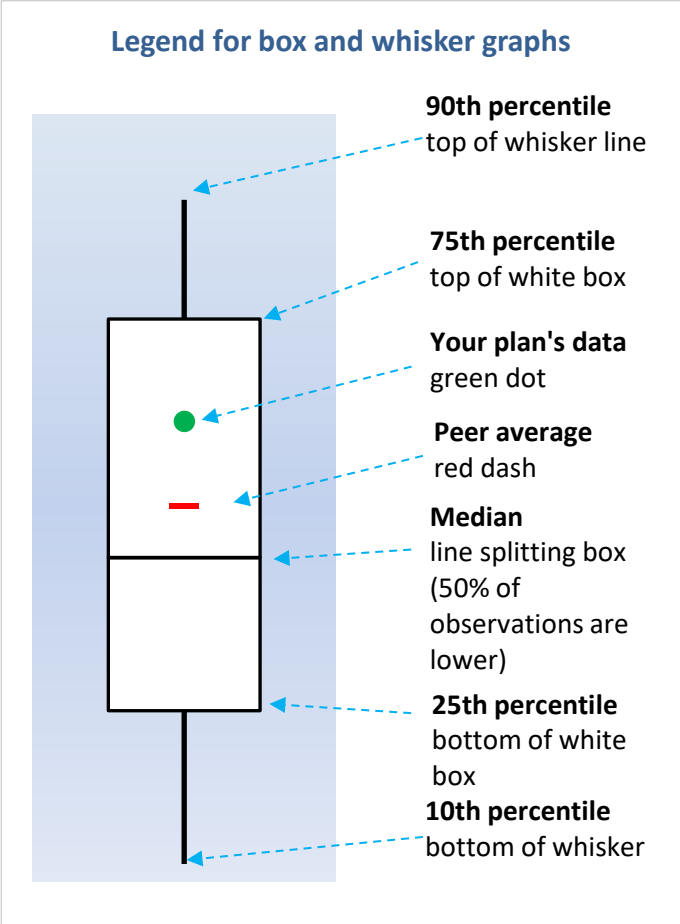
3

Returns, Benchmarks and Value Added

Interpreting box and whisker graphs	2
Net total returns	3
Policy returns	4
Net value added	5
Net returns by asset class	6
Benchmark returns by asset class	7
Net value added by asset class	8
Your policy return and value added calculation:	
- 2022	9
- 2018 to 2022	10
Profit/Loss on overlay programs	11
Appendix - CEM's Private equity benchmark	12

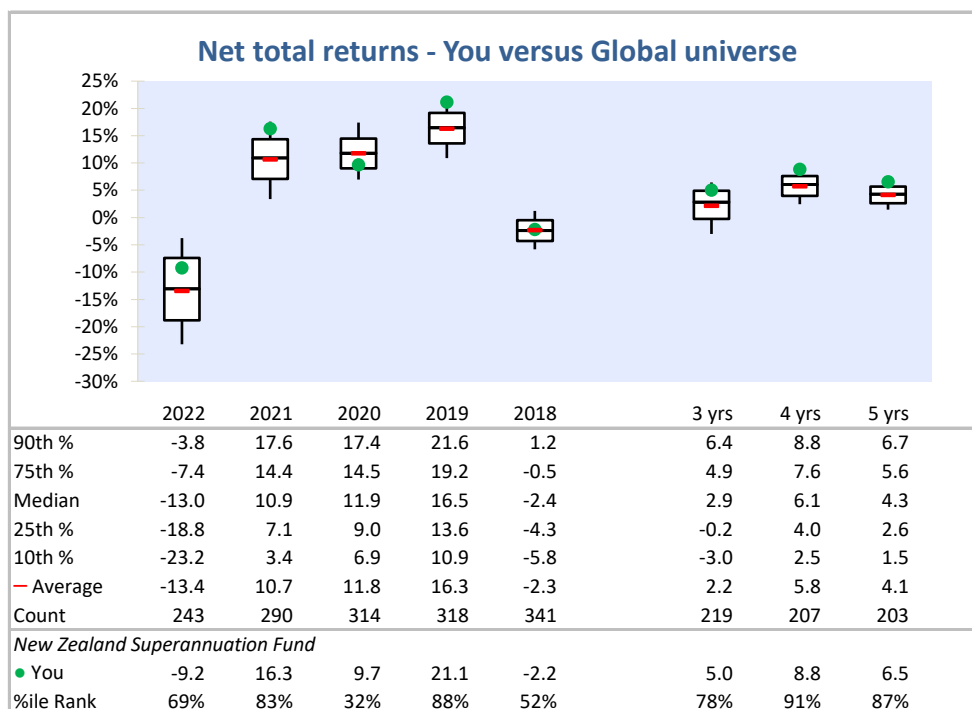
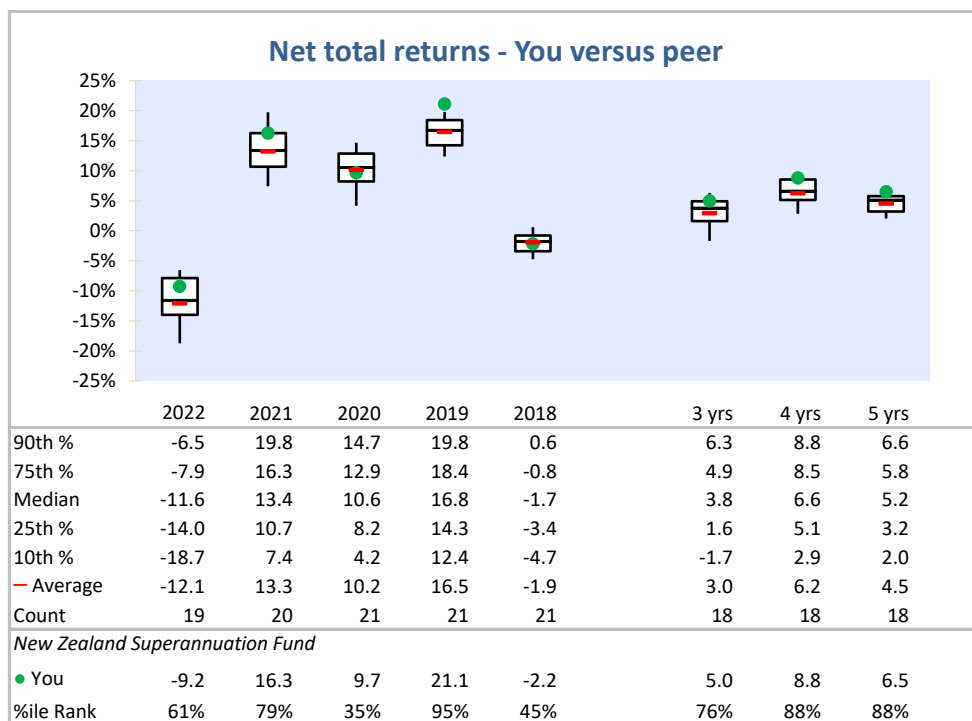
Interpreting box and whisker graphs

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.



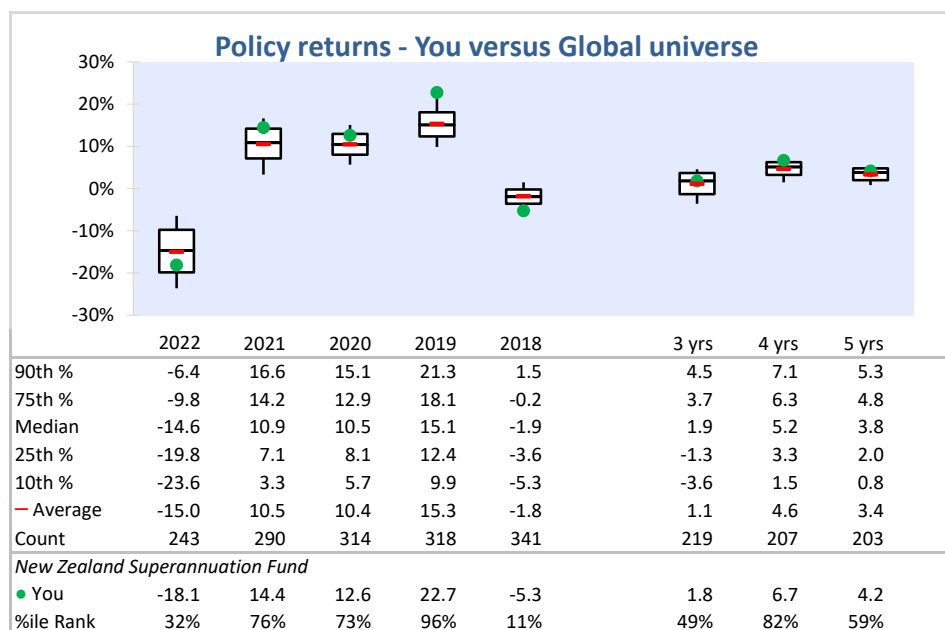
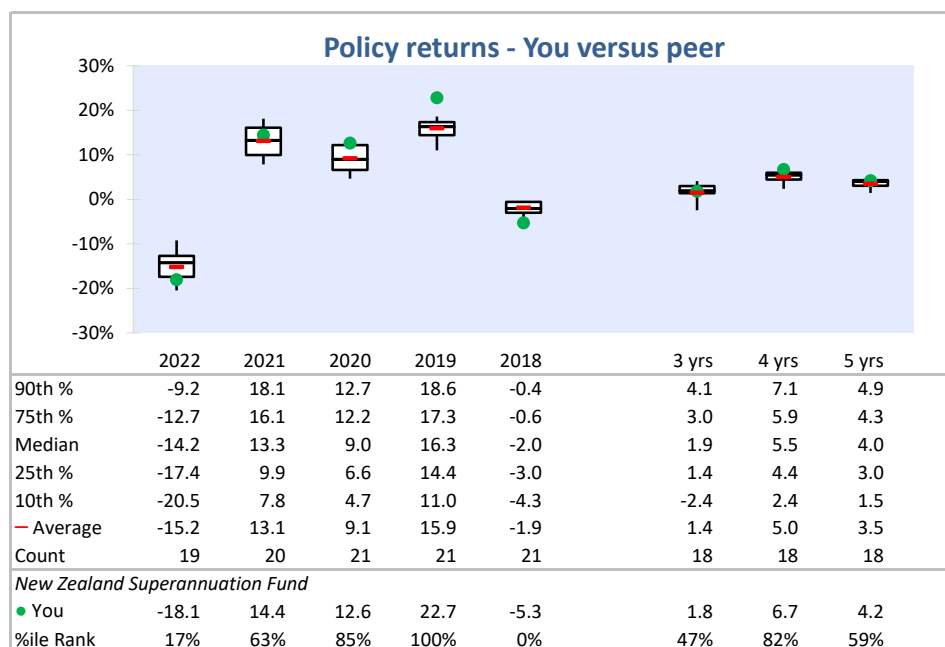
Net total returns

Your 5-year net total return of 6.5% 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

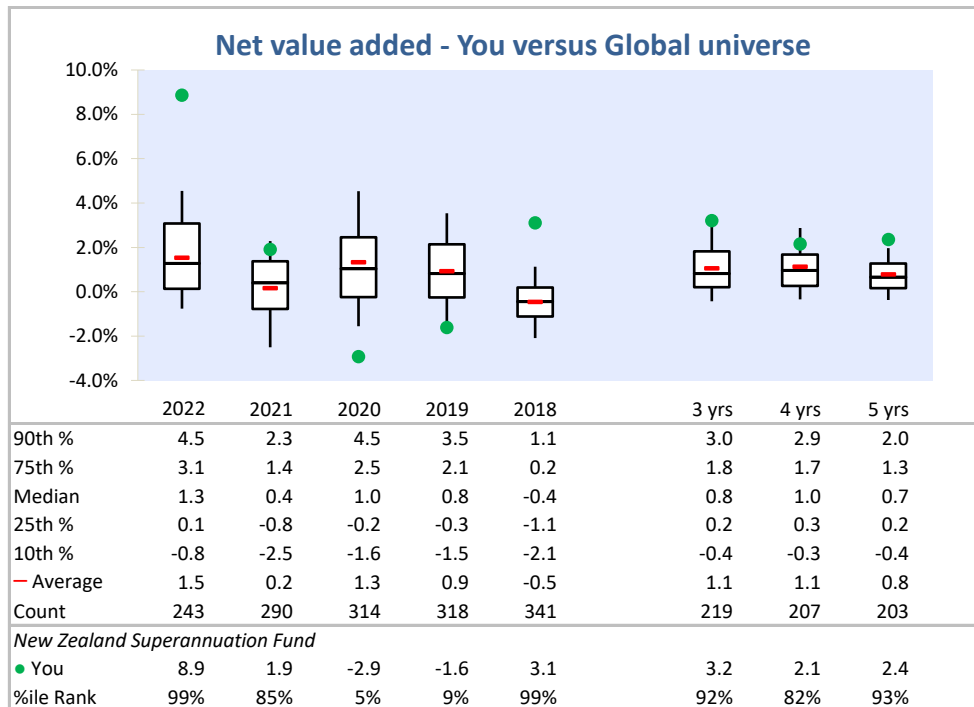
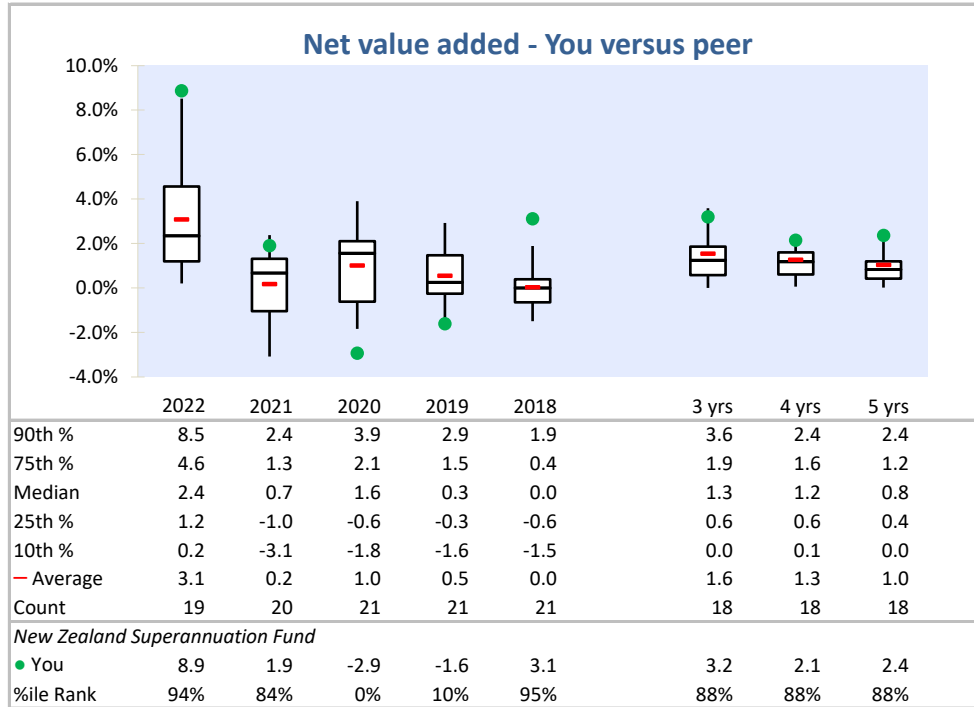
Your 5-year policy return of 4.2% was above the peer median and above the median of the Global universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.



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. Refer to the appendix of this section for details.

Net value added

Your 5-year net value added of 2.4% 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 %					
	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹
Stock - U.S.							-16.7	27.5	18.4	30.3	-3.0	9.8	-16.2	25.9	17.7	28.8	-4.1	9.2
Stock - Europe & Far East	-12.2	-0.6	16.6	<i>32.5</i>	5.5	<i>7.3</i>	-13.9	15.2	8.6	24.1	-9.9	4.7	-13.4	12.7	9.1	20.8	-11.8	2.9
Stock - Global	-17.1	24.7	12.1	28.5	-5.4	7.1	-15.1	20.1	9.9	24.9	-5.8	6.4	-14.2	18.5	14.4	23.4	-5.0	6.2
Stock - other							-8.0	13.7	77.7	12.2	-0.7	11.5	-6.8	17.1	9.0	17.8	-8.7	6.6
Stock - Emerging	-17.6	-3.2	22.4	17.1	-11.2	0.3	-17.8	0.4	13.0	20.4	-10.7	0.5	-18.2	0.2	16.7	19.3	-12.5	-0.4
Stock - ACWI x U.S.							-16.8	10.9	15.4	24.1	-13.9	2.5	-17.8	9.3	14.1	23.0	-15.0	1.9
Stock - Aggregate	-16.7	21.1	13.4	<i>27.7</i>	-5.2	<i>6.7</i>	-15.1	20.0	11.3	25.1	-7.3	6.1	-22.3	18.2	13.6	24.0	-7.4	5.8
Fixed income - U.S.		6.0	11.2	10.0	4.1		-8.9	2.4	7.4	10.3	1.7	2.0	-16.9	-0.9	9.9	10.4	-0.1	0.5
Fixed income - EAFE							-10.2	-2.0	4.1	5.3	-0.1	-1.0	-14.9	-2.0	8.6	6.5	0.3	-1.6
Fixed income - Global	-12.1	-1.0	5.2	6.9	1.4	-0.1	-10.9	-2.0	7.2	6.3	1.9	0.4	-11.1	-1.2	8.4	4.2	-0.3	0.6
Fixed income - other							-1.0	3.4	2.6	7.5	5.1	4.4	-9.3	1.1	7.2	6.7	1.5	1.2
Fixed income - Long bonds							-27.3	-3.4	17.4	17.3	-2.6	-1.0	-25.3	-2.9	15.6	18.0	-3.5	-0.9
Fixed income - Emerging							0.0	-1.6	3.7	13.9	-2.3	2.2	-10.0	-2.9	3.3	12.6	-4.4	-0.8
Fixed income - Inflation indexed							-9.9	5.3	10.1	9.4	-0.3	2.4	-10.6	4.4	9.6	8.7	-1.2	2.1
Fixed income - High yield							-9.7	4.7	4.8	12.9	-1.5	2.3	-7.2	6.4	5.1	11.1	-1.2	2.7
Fixed income - Absolute return bonds								1.0	17.0					2.2	10.9	-2.7	-1.1	
Fixed income - Bundled LDI							-10.1	-10.1	13.5	9.3	2.6	1.1	-31.6	-2.8	22.0	16.8	-0.7	-1.8
Fixed income - Public mortgages								0.4					-6.7	1.1	3.5	8.4	3.5	1.8
Fixed income - Convertibles							-4.4	4.5	9.6	4.4	-0.1	0.6	-12.5	3.4	20.4	15.2	-2.0	4.2
Cash	5.5	1.9	2.5	3.0	3.8	3.3	0.9	-0.3	0.5	1.4	0.9	1.3	1.2	-0.4	0.4	1.4	1.3	1.3
Fixed income - Aggregate	-3.6	0.8	3.3	4.7	2.7	1.6	-13.1	-0.8	9.5	10.3	0.2	0.6	-17.1	-1.2	11.6	11.7	-1.1	0.4
Commodities							31.0		-5.9	9.6	-13.2		17.7	23.3	-2.7	7.6	-10.6	7.7
Infrastructure	-1.9	14.0	-2.0	9.9	-0.4	3.7	11.4	12.9	2.8	10.6	9.7	9.2	12.3	11.9	6.5	8.7	9.5	10.4
Natural resources	13.8	8.6	3.3	2.0	15.6	8.5	12.6	12.3	2.4	5.0	4.2	7.5	17.3	13.7	-4.3	2.7	5.0	5.7
REITs							-22.8	32.7	-3.2	28.5	-3.8	-1.0	-21.5	30.0	-7.3	22.9	-3.0	1.6
Real estate ex-REITs	16.3	32.6	-5.4	-5.9	53.8	16.1	10.9	19.9	1.6	9.1	13.2	11.5	10.0	17.1	0.7	6.5	12.0	7.8
Other real assets							10.1	10.7	6.4	15.4	-1.8	3.4	-3.8	20.0	-0.9	3.3	-3.5	3.6
Real assets - Aggregate	11.6	12.6	1.4	3.5	10.8	7.9	11.1	19.5	1.8	10.0	8.9	10.1	0.9	17.3	1.2	7.2	7.0	7.9
Hedge funds	-0.3	6.7	-2.1	3.5	4.4	2.4	1.7	8.1	1.3	7.6	0.4	4.0	4.5	8.6	3.3	5.3	-1.1	3.8
Global TAA							-17.5	18.4	-5.3	12.3	-3.5	-0.6	-5.8	7.1	3.7	10.8	-4.1	1.5
Risk parity							-22.6	5.2	6.7	22.6	-7.1	1.3	-25.0	8.6	8.8	18.0	-6.5	0.9
Private mortgages								7.0	1.1	4.8	1.6		-3.1	3.8	4.5	6.0	3.0	2.9
Private credit							-0.8	12.6	13.1	6.2	7.8	6.5	3.8	12.5	3.4	8.2	6.2	7.5
Private equity - Diversified	-0.6	<i>13.5</i>	24.3	16.8	15.0	<i>13.5</i>	6.7	38.8	9.0	10.6	16.8	17.5	3.7	43.1	13.9	8.4	16.3	17.0
Venture capital	8.6	<i>-11.2</i>					-2.9	54.4	29.7	10.1	21.1	21.5	-5.5	55.2	23.7	8.4	19.4	16.6
LBO							9.1	45.9	12.3	11.6	18.1	21.8	3.4	43.8	14.0	11.6	15.0	17.4
Private equity - Other	19.9	13.7	-1.6	11.1	15.7	11.5	14.8	23.9	-2.1	3.3	10.4	11.5	5.6	26.6	11.8	7.7	11.8	14.0
Private equity	17.6	<i>13.7</i>	0.7	11.6	15.7	<i>11.7</i>	7.3	41.2	10.2	10.5	16.9	17.8	3.9	44.1	14.5	8.2	16.3	16.9
Total Fund Return	-9.2	16.3	9.7	21.1	-2.2	6.5	-12.1	13.3	10.2	16.5	-1.9	4.5	-13.4	10.7	11.8	16.3	-2.3	4.1

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 %					
	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹
Stock - U.S.							-17.3	27.0	19.0	28.9	-3.3	9.5	-16.9	25.5	18.5	28.9	-3.8	9.0
Stock - Europe & Far East	-12.1	-0.2	13.7	30.5	4.8	6.4	-13.2	15.1	6.2	23.8	-9.8	4.3	-12.5	13.0	5.7	20.8	-11.0	2.7
Stock - Global	-20.3	20.3	13.7	28.4	-6.0	5.7	-15.3	21.8	10.4	25.5	-5.7	6.5	-14.3	19.7	13.5	23.9	-5.6	6.3
Stock - other							-9.9	23.0	3.5	18.6	-5.4	6.0	-9.2	18.5	6.7	21.1	-8.2	6.3
Stock - Emerging	-19.0	20.3	17.9	16.4	-12.4	3.2	-15.1	3.4	12.5	18.4	-10.3	1.0	-17.1	0.2	15.8	17.3	-11.5	-0.1
Stock - ACWI x U.S.							-16.1	10.5	11.6	22.2	-13.0	2.1	-15.8	8.9	11.0	21.9	-14.3	1.4
Stock - Aggregate	-19.6	19.0	14.2	27.0	-6.1	5.4	-15.5	20.8	11.9	24.7	-7.1	6.1	-22.7	18.8	13.1	24.0	-7.2	5.8
Fixed income - U.S.		-1.2	5.4	7.5	1.6		-8.7	0.4	6.1	8.3	1.7	2.3	-16.5	-1.4	9.0	9.5	-0.1	0.2
Fixed income - EAFE							-12.0	-2.3	4.1	4.3	0.5	-1.6	-17.9	-2.3	8.3	6.0	0.4	-2.3
Fixed income - Global	-11.8	-1.2	5.4	7.5	1.6	0.1	-10.6	-1.5	4.8	6.5	2.9	0.5	-10.6	-1.4	6.9	6.0	0.4	0.5
Fixed income - other							-10.8	1.8	2.8	7.7	3.2	2.0	-10.5	0.3	6.6	7.0	1.4	0.4
Fixed income - Long bonds							-26.0	-3.8	15.3	16.9	-2.5	-1.4	-24.6	-3.0	14.2	18.1	-3.4	-1.2
Fixed income - Emerging							-8.1	-0.7	2.3	14.2	-0.7	0.1	-11.6	-2.7	2.9	13.0	-3.2	-0.5
Fixed income - Inflation indexed							-18.3	4.1	11.6	7.9	-0.4	-0.4	-12.7	3.9	10.1	7.9	-1.1	1.7
Fixed income - High yield							-11.4	4.3	5.6	10.9	-0.7	2.1	-8.4	5.3	4.7	12.4	-1.4	2.5
Fixed income - Absolute return bonds								4.3	4.8					2.8	3.0	1.3	1.2	
Fixed income - Bundled LDI								-8.8	9.3	11.2	1.2		-31.1	-3.7	21.7	17.4	-0.9	-2.8
Fixed income - Public mortgages													-6.9	-0.3	3.1	5.9	2.8	0.9
Fixed income - Convertibles							5.3	5.3	5.3	28.1	-3.1	6.8	-11.6	7.6	23.3	17.3	-1.7	8.1
Cash	1.9	1.9	0.7	1.7	2.0	1.6	1.3	0.2	0.5	1.5	1.2	0.9	1.4	0.1	0.6	1.5	1.3	1.0
Fixed income - Aggregate	-11.8	-1.2	5.4	7.5	1.6	0.1	-15.3	-1.3	8.2	10.1	0.1	-0.4	-18.4	-1.6	10.9	11.5	-1.0	-0.5
Commodities							-7.7	14.4	-6.0	10.2	-10.0	-0.1	14.0	24.4	-5.5	10.5	-10.1	6.0
Infrastructure	-15.9	12.0	12.8	20.6	-3.9	4.2	-7.9	12.5	4.8	12.0	2.5	5.5	4.9	9.3	6.5	9.0	4.5	7.0
Natural resources	-10.9	4.8	9.0	12.7	-0.6	2.6	0.5	12.9	4.8	9.3	5.8	6.2	9.4	16.9	-0.7	7.7	2.4	6.2
REITs							-27.9	30.4	-6.3	28.4	-4.9	-4.0	-20.4	29.3	-8.5	21.6	-2.9	2.2
Real estate ex-REITs	-16.8	12.7	14.8	20.6	-3.1	4.7	5.0	15.7	3.8	11.0	7.0	7.2	9.0	15.0	1.5	6.9	7.4	7.5
Other real assets							5.4	7.1	7.1	27.4	-0.4	6.8	1.2	18.1	3.9	10.7	-0.1	6.6
Real assets - Aggregate	-13.3	7.2	10.3	14.9	-1.7	2.9	3.4	15.4	2.5	10.7	4.7	6.0	-1.7	14.8	1.9	8.0	5.2	7.0
Hedge funds	-6.9	1.8	6.1	7.8	0.8	1.8	-0.6	6.4	4.6	10.0	-1.1	3.5	-0.4	5.8	4.6	7.9	0.0	3.8
Global TAA							-19.5	12.7	7.3	15.5	-0.7	2.2	-9.5	8.1	4.3	13.4	-2.1	3.0
Risk parity							-11.0	7.4	6.6	17.5	-4.2	3.3	-17.3	10.1	8.4	15.7	-2.5	1.9
Private mortgages								0.5	1.5	3.4	1.9		-7.6	-0.8	5.4	5.5	1.7	1.3
Private credit							-6.9	6.4	3.3	9.7	1.1	3.2	-2.2	7.0	2.3	11.4	2.1	4.2
Private equity - Diversified	-19.9	21.0	16.9	28.5	-7.2	6.2	-14.6	45.9	-1.5	-8.8	21.0	6.1	-14.6	49.2	-1.9	-13.0	23.9	6.9
Venture capital	-20.5	21.0					-15.2	43.9	-2.1	-10.1	23.3	5.9	-14.6	48.3	-2.0	-12.9	24.5	6.7
LBO							-13.6	46.9	-2.5	-10.9	23.1	5.7	-14.6	49.2	-1.3	-12.6	24.2	6.5
Private equity - Other	-16.5	15.7	13.2	24.4	-5.6	5.1	-15.0	41.2	-1.4	-5.6	17.1	5.2	-14.3	47.2	-2.5	-12.3	21.9	6.2
Private equity	-16.9	16.2	13.5	24.7	-5.7	5.2	-14.4	45.7	-1.6	-9.3	21.3	6.1	-14.5	49.2	-1.9	-13.1	23.9	6.9
Total Policy Return	-18.1	14.4	12.6	22.7	-5.3	4.2	-15.2	13.1	9.1	15.9	-1.9	3.5	-15.0	10.5	10.4	15.3	-1.8	3.4

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. Refer to the appendix of this section for details.

Net value added by asset class

Asset class	Your fund %						Peer average %						Global average %					
	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹	2022	2021	2020	2019	2018	5-yr ¹
Stock - U.S.							-0.3	0.5	-0.6	1.4	0.2	0.0	0.7	0.3	-0.7	-0.1	-0.3	0.2
Stock - Europe & Far East	-0.2	-0.4	2.9	<i>2.0</i>	0.7	<i>0.9</i>	-0.7	0.1	2.4	0.3	-0.1	0.3	-1.6	-0.4	3.6	0.0	-0.8	0.3
Stock - Global	3.2	4.4	-1.6	0.1	0.6	1.4	0.2	-1.7	-0.4	-0.8	0.2	0.3	0.2	-1.1	0.8	-0.5	0.6	0.0
Stock - other							4.5	-9.8	74.2	-6.4	4.6	6.9	1.8	-0.1	5.3	-3.7	-0.6	0.3
Stock - Emerging	1.4	-23.5	4.5	0.7	1.2	-2.9	-2.3	-3.0	0.4	2.0	-0.4	-0.4	-0.8	0.0	0.9	1.9	-0.9	-0.3
Stock - ACWI x U.S.							-0.7	0.4	3.8	1.9	-0.9	0.4	-1.6	0.4	3.0	1.1	-0.7	0.6
Stock - Aggregate	2.9	2.1	-0.8	<i>0.6</i>	0.9	<i>1.3</i>	0.3	-0.8	-0.6	0.4	-0.1	0.0	0.5	-0.5	0.5	0.0	-0.1	0.0
Fixed income - U.S.		7.2	5.8	2.5	2.5		0.5	2.0	1.3	2.0	0.1	0.2	-0.4	0.5	0.8	0.8	0.0	0.4
Fixed income - EAFE							1.8	0.3	0.0	1.0	-0.6	0.6	1.1	0.1	0.3	1.0	-0.1	0.6
Fixed income - Global	-0.3	0.2	-0.2	-0.6	-0.2	-0.2	0.6	-0.8	2.2	-0.3	-1.0	-0.1	-0.3	0.3	0.9	-1.8	-0.7	0.1
Fixed income - other							6.9	2.3	0.2	-0.3	1.8	1.3	0.5	1.0	0.2	-0.2	0.3	0.5
Fixed income - Long bonds							-1.3	0.4	2.1	0.7	0.0	0.2	-0.6	0.0	1.2	0.0	0.0	0.3
Fixed income - Emerging							1.3	-0.9	1.4	-0.3	-1.6	0.3	0.8	-0.2	0.6	-0.5	-1.2	-0.3
Fixed income - Inflation indexed							8.5	1.3	-1.5	1.5	0.1	2.8	0.7	0.6	-0.5	0.7	-0.1	0.3
Fixed income - High yield							1.1	0.3	-0.8	-0.3	-0.8	-0.1	1.5	1.0	0.4	-1.4	0.2	0.3
Fixed income - Absolute return bonds								-3.3	12.2					-1.8	8.2	-3.9	-2.2	
Fixed income - Bundled LDI								-1.3	4.2	-1.9	1.5		-1.0	0.2	0.6	0.2	0.0	0.6
Fixed income - Public mortgages													0.2	0.8	1.8	0.5	0.0	0.9
Fixed income - Convertibles							-18.7	-0.8	4.4	-23.7	3.0	-6.2	-5.2	-2.5	-2.8	-5.0	-0.4	-3.8
Cash	3.6	0.0	1.8	1.3	1.8	1.7	-0.4	-0.5	0.0	-0.1	-0.5	0.2	0.0	-0.5	-0.2	-0.3	0.0	0.2
Fixed income - Aggregate	8.2	2.1	-2.1	-2.8	1.1	1.5	2.0	0.5	1.3	0.2	0.1	1.0	1.3	0.4	0.7	0.1	0.0	0.9
Commodities							52.2		0.2	-1.7	-0.7		3.5	-3.6	2.2	-3.3	-0.9	1.3
Infrastructure	14.0	2.0	-14.8	-10.7	3.5	-0.5	18.4	0.5	-2.0	-1.4	7.2	3.8	7.3	2.2	0.2	-0.3	4.9	3.4
Natural resources	24.7	3.9	-5.7	-10.7	16.2	5.9	10.0	-0.6	-0.9	-4.3	-1.7	1.1	6.5	-2.3	-3.8	-4.9	2.5	-0.7
REITs							4.1	2.3	3.0	0.1	1.1	4.4	-2.8	0.7	1.7	1.2	-0.3	-0.7
Real estate ex-REITs	33.1	19.9	-20.2	-26.5	56.9	11.4	5.9	4.2	-2.1	-2.0	6.5	3.9	1.1	2.2	-0.8	-0.4	4.7	0.2
Other real assets							-9.5	-5.0	-0.7	-12.0	-1.4		1.4	0.3	-4.7	-8.0	-3.2	-3.3
Real assets - Aggregate	25.0	5.4	-8.8	-11.3	12.5	5.0	7.8	4.1	-0.7	-0.7	4.2	3.6	2.5	2.6	-0.7	-0.8	1.8	0.8
Hedge funds	6.6	4.9	-8.2	-4.3	3.6	0.6	1.3	2.0	-3.2	-1.9	1.5	0.6	2.9	2.9	-1.7	-2.7	-1.1	0.1
Global TAA							1.9	5.7	-12.6	-3.2	-2.7	-2.7	1.6	-1.2	-1.4	-2.9	-2.2	-1.5
Risk parity							-5.2	-2.2	0.0	5.1	-3.0	-1.5	-5.5	-1.0	-1.0	2.0	-4.0	-0.5
Private mortgages								6.6	-0.4	1.5	-0.3		4.8	4.6	-1.0	0.6	1.2	1.7
Private credit							6.9	6.2	9.9	-3.4	6.6	3.8	5.7	5.1	0.7	-2.9	4.0	3.5
Private equity - Diversified	19.3	<i>-7.4</i>	7.4	-11.7	22.2	<i>7.3</i>	21.3	-7.2	10.4	19.4	-4.2	11.3	17.9	-6.2	15.5	21.4	-7.6	10.0
Venture capital	29.1	<i>-32.2</i>					12.0	10.1	30.6	20.7	-2.4	15.4	9.0	7.9	24.7	21.3	-4.9	9.8
LBO							21.7	-2.4	13.4	23.4	-5.3	15.9	17.9	-5.4	14.6	24.3	-9.1	10.8
Private equity - Other	36.4	-2.0	-14.8	-13.3	21.3	6.4	28.5	-17.2	-2.3	8.7	-6.0	6.4	19.8	-21.0	13.2	19.7	-10.4	7.7
Private equity	34.5	<i>-2.5</i>	-12.8	-13.2	21.4	<i>6.5</i>	21.8	-4.7	11.4	19.9	-4.4	11.7	18.1	-5.0	16.2	21.2	-7.6	9.9
Total Fund Return	8.9	1.9	-2.9	-1.6	3.1	2.4	3.1	0.2	1.0	0.5	0.0	1.0	1.5	0.2	1.3	0.9	-0.5	0.8

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. Refer to the appendix of this section for details.

Your policy return and value added calculation - 2022

2022 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		-12.1%	-12.2%	-0.2%
Stock - Global	67.8%	MSCI All Countries World Index Custom/MSCI W		-20.3%	-17.1%	3.2%
Stock - Emerging	7.3%	MSCI All Countries World Index Custom/MSCI En		-19.0%	-17.6%	1.4%
Fixed income - Global	20.0%	Barclays Global Aggregate		-11.8%	-12.1%	-0.3%
Cash		Cash BM		1.9%	5.5%	3.6%
Infrastructure		Infrastructure BM		-15.9%	-1.9%	14.0%
Natural resources		Natural Resources BM		-10.9%	13.8%	24.7%
Real estate ex-REITs		Real Estate BM		-16.8%	16.3%	33.1%
Hedge funds		Hedge Fund BM		-6.9%	-0.3%	6.6%
Private equity - Diversified		Diversified or All BM		-19.9%	-0.6%	19.3%
Venture capital		Venture Capital BM		-20.5%	8.6%	29.1%
Private equity - Other		Other Non-Listed Assets BM		-16.5%	19.9%	36.4%
Total	100.0%					
Net Actual Return (reported by you)						-9.2%
Calculated Policy Return = sum of (policy weights X benchmark returns)					-18.1%	
Adjustment to reflect rebalancing and overlay impacts					<u>0.0%</u>	
Policy Return (reported by you)						<u>-18.1%</u>
Net Value Added (Net Return - Policy Return)						8.9%

Your policy return and value added calculations - 2018 to 2021

2021 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - Europe & Far East	5.0%	NZX 50 Custom	-0.2%	-0.6%	-0.4%
Stock - Global	75.0%	MSCI All Countri	20.3%	24.7%	4.4%
Stock - Emerging		MSCI All Countri	20.3%	-3.2%	-23.5%
Fixed income - U.S.		Barclays Global	-1.2%	6.0%	7.2%
Fixed income - Global	20.0%	Barclays Global	-1.2%	-1.0%	0.2%
Cash		NZD Cash Bench	1.9%	1.9%	0.0%
Infrastructure		Infrastructure B	12.0%	14.0%	2.0%
Natural resources		Natural Resourc	4.8%	8.6%	3.9%
Real estate ex-REITs		Property BM	12.7%	32.6%	19.9%
Hedge funds		Hedge Fund BM	1.8%	6.7%	4.9%
Private equity - Diversified		Private Equity B	21.0%	13.5%	-7.4%
Venture capital		Private Equity B	21.0%	-11.2%	-32.2%
Private equity - Other		Other Private Ec	15.7%	13.7%	-2.0%
Total	100.0%				
Net Return (reported by you)					16.3%
Calculated policy return (sum: Policy weights x benchmarks)				15.0%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.6%</u>	
Policy return (reported by you)					<u>14.4%</u>
Net Value Added (Net Return - Policy Return)					1.9%

2019 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - Europe & Far East	5.0%	NZX 50	30.5%	32.5%	2.0%
Stock - Global	65.0%	MSCI Developec	28.4%	28.5%	0.1%
Stock - Emerging	10.0%	MSCI Emerging	16.4%	17.1%	0.7%
Fixed income - U.S.		BC Custom (NZS	7.5%	10.0%	2.5%
Fixed income - Global	20.0%	Barclays Global	7.5%	6.9%	-0.6%
Cash		NZD Cash Bench	1.7%	3.0%	1.3%
Infrastructure		Infrastructure B	20.6%	9.9%	-10.7%
Natural resources		Timber Benchm	12.7%	2.0%	-10.7%
Real estate ex-REITs		NZ Property Ber	20.6%	-5.9%	-26.5%
Hedge funds		Custom	7.8%	3.5%	-4.3%
Private equity - Diversified		Private Equity B	28.5%	16.8%	-11.7%
Private equity - Other		Private Equity B	24.4%	11.1%	-13.3%
Total	100.0%				
Net Return (reported by you)					21.1%
Calculated policy return (sum: Policy weights x benchmarks)				23.1%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.4%</u>	
Policy return (reported by you)					<u>22.7%</u>
Net Value Added (Net Return - Policy Return)					-1.6%

2020 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - Europe & Far East	5.0%	NZX 50	13.7%	16.6%	2.9%
Stock - Global	65.0%	MSCI Developec	13.7%	12.1%	-1.6%
Stock - Emerging	10.0%	MSCI Emerging	17.9%	22.4%	4.5%
Fixed income - U.S.		Barclays Global	5.4%	11.2%	5.8%
Fixed income - Global	20.0%	Barclays Global	5.4%	5.2%	-0.2%
Cash		NZD Cash Bench	0.7%	2.5%	1.8%
Infrastructure		Infrastructure B	12.8%	-2.0%	-14.8%
Natural resources		Timber Benchm	9.0%	3.3%	-5.7%
Real estate ex-REITs		NZ Property Ber	14.8%	-5.4%	-20.2%
Hedge funds		Custom	6.1%	-2.1%	-8.2%
Private equity - Diversified		Private Equity B	16.9%	24.3%	7.4%
Venture capital					
Private equity - Other		Private Equity B	13.2%	-1.6%	-14.8%
Total	100.0%				
Net Return (reported by you)					9.7%
Calculated policy return (sum: Policy weights x benchmarks)				12.5%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.1%</u>	
Policy return (reported by you)					<u>12.6%</u>
Net Value Added (Net Return - Policy Return)					-2.9%

2018 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - Europe & Far East	5.0%	NZX 50	4.8%	5.5%	0.7%
Stock - Global	65.0%	MSCI Developec	-6.0%	-5.4%	0.6%
Stock - Emerging	10.0%	MSCI Emerging	-12.4%	-11.2%	1.2%
Fixed income - U.S.		BC Custom (NZS	1.6%	4.1%	2.5%
Fixed income - Global	20.0%	Barclays Global	1.6%	1.4%	-0.2%
Cash		NZD Cash Bench	2.0%	3.8%	1.8%
Infrastructure		Infrastructure B	-3.9%	-0.4%	3.5%
Natural resources		Timber Benchm	-0.6%	15.6%	16.2%
Real estate ex-REITs		NZ Property Ber	-3.1%	53.8%	56.9%
Hedge funds		Custom	0.8%	4.4%	3.6%
Private equity - Diversified		Private Equity B	-7.2%	15.0%	22.2%
Private equity - Other		Private Equity B	-5.6%	15.7%	21.3%
Total	100.0%				
Net Return (reported by you)					-2.2%
Calculated policy return (sum: Policy weights x benchmarks)				-4.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.7%</u>	
Policy return (reported by you)					<u>-5.3%</u>
Net Value Added (Net Return - Policy Return)					3.1%

Profit/Loss on overlay programs

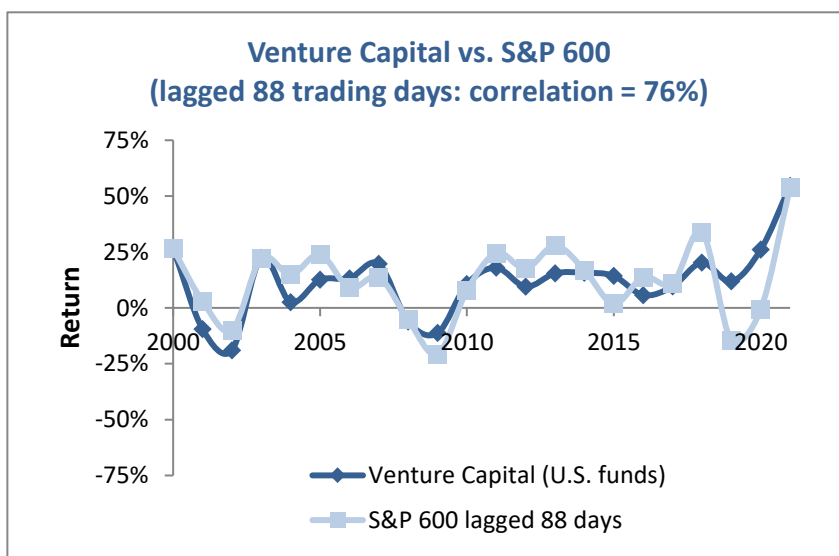
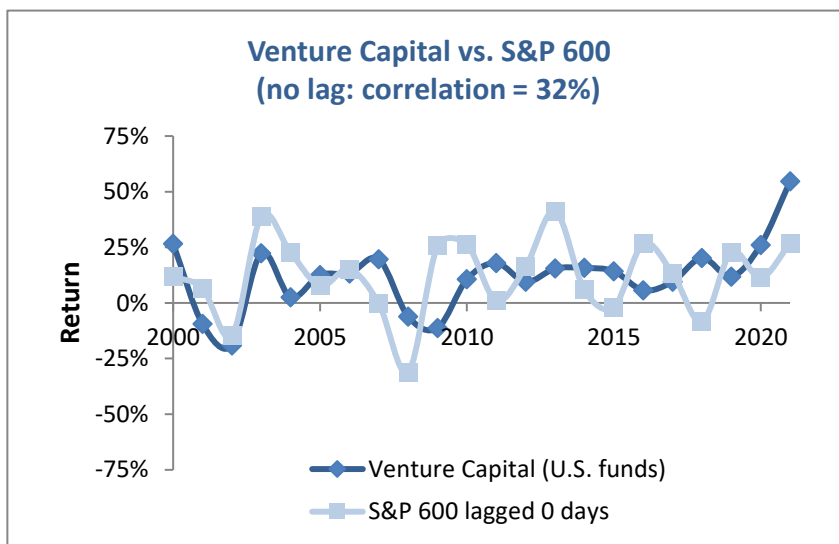
Overlay type	Your fund		Peer median				Global median			
	2022	2021	2022		2021		2022		2021	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			-7.0	4	7.3	4	-10.9	7	2.6	9
Ext. Discretionary Currency							0.1	9	0.1	9
Internal Global TAA			49.6	2	34.3	2	18.1	4	13.0	4
External Global TAA							10.5	2	-10.6	2
Internal PolicyTilt TAA	224.8	6.5	37.8	3	5.4	4	5.2	7	3.4	7
External PolicyTilt TAA					11.3	1			11.3	1
Internal Commodities							0.0	1	0.0	1
External Commodities			72.4	1	72.4	1	40.4	2	38.0	2
Internal Long/Short	3.0	6.0	3.0	3	6.5	4	3.0	5	6.5	6
External Long/Short			0.4	1	-2.2	1	0.4	1	-2.2	1
Internal Other	-57.3	5.7	9.8	3	5.7	3	12.4	6	15.0	7
External Other			8.4	2	-3.9	3	-24.0	5	0.0	7

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

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 -5.4% if lagged 88 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 -0.7% using the same benchmark lagged to match the average 88 day reporting lag of venture capital funds.



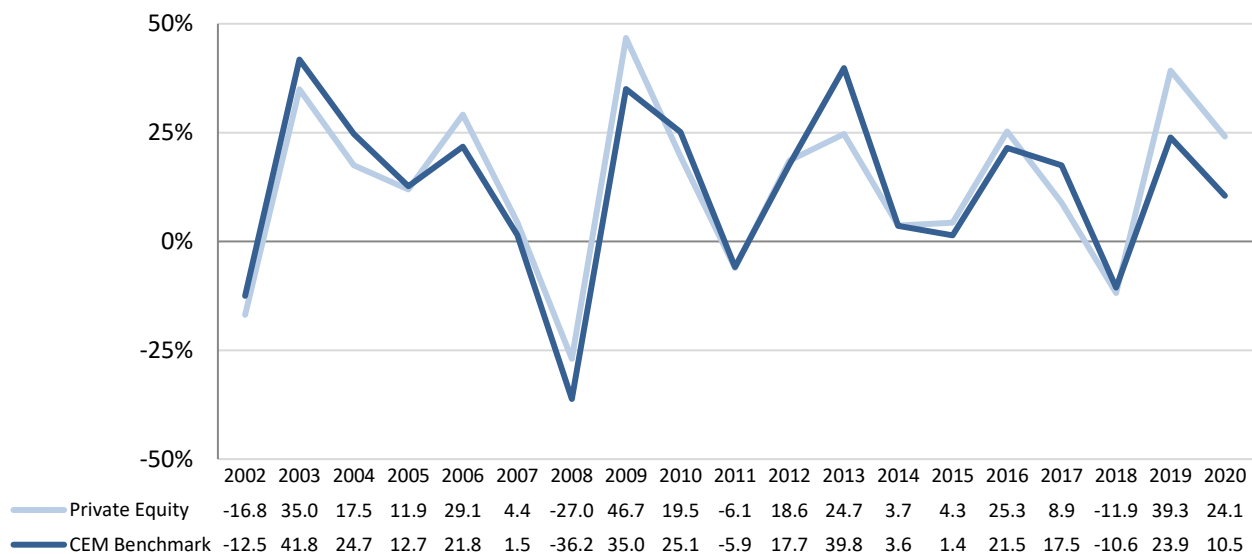
- Un-investable peer-based benchmarks. Peer based benchmarks reflect the reporting lags in peer portfolios so they have much better correlations than un-lagged investable benchmarks. But their relationship statistics are not as good as for lagged investable benchmarks.
- Aspirational premiums (i.e., benchmark + 2%). Premiums cannot be achieved passively, and evidence suggests that a fund has to be substantially better than average to attain them. More importantly, when comparing performance to other funds, they need to be excluded to ensure a level playing field.

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

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

- Investable. They are comprised of a blend of small cap indices that are investable.
- Lagged. Your default 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 default benchmarks are superior to most self-reported benchmarks. Correlations improve to a median of 82% for the default benchmarks versus 44% for self-reported benchmarks. Other statistics such as volatility were also much better.

Private equity returns versus default benchmark returns - Global median



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

4

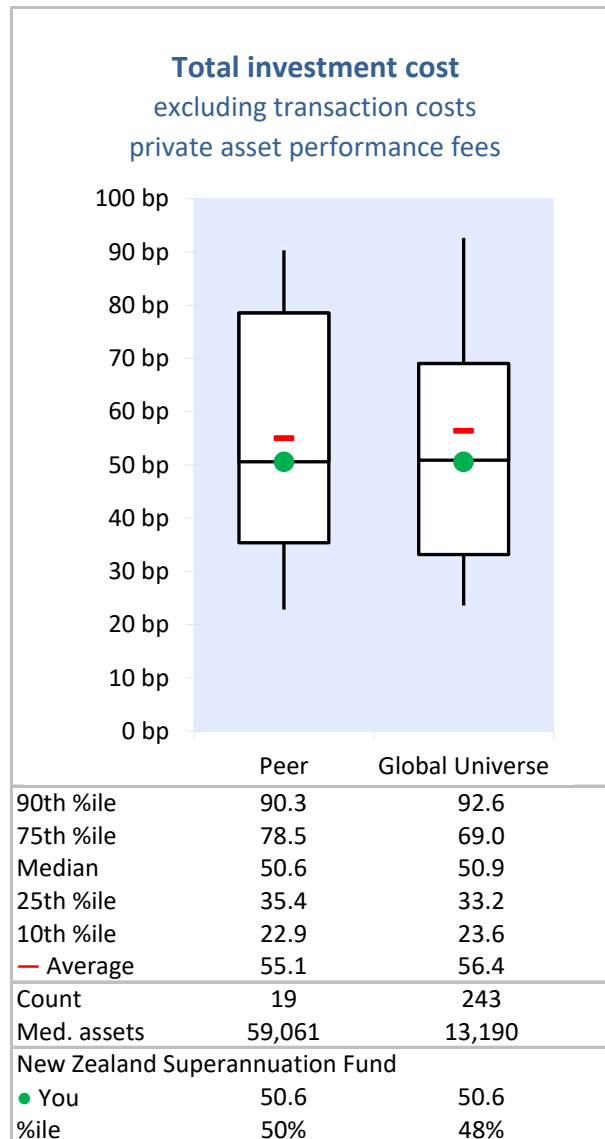
Cost: total, benchmark, trend

Comparisons of total investment cost	2
Trend in total investment cost, you versus peers and universe	3
Types of costs included in your total investment cost	4
Detailed breakdown of your total investment cost	5
Changes in your investment costs	6
Benchmark cost model	
Total cost versus benchmark cost	7
Benchmark cost calculation	8
Cost impact of:	
- differences in implementation style	9
- overlays	10
- paying more/-less for similar services	11
Summary of why you are high or low cost by asset class	12
Your cost impact ranking	13
Benchmarking methodology formulas and data	14
Cost trend model, 2018 - 2022	
Methodology of the cost trend model	17
Cost trend charts	18
Summary of cost differences, 2022 versus 2018	19
Summary of cost differences, year over year	20
Reasons by asset class and cost type, \$000	21
Reasons by asset class and cost type, basis points	22
Impact of changes in asset mix	23
Impact of changes in implementation style	24
Impact of paying more/-less for similar services	25

Comparisons of total investment cost

Your total investment cost, excluding transaction costs and private asset performance fees, of 50.6 bps was equal to the peer median of 50.6 bps.

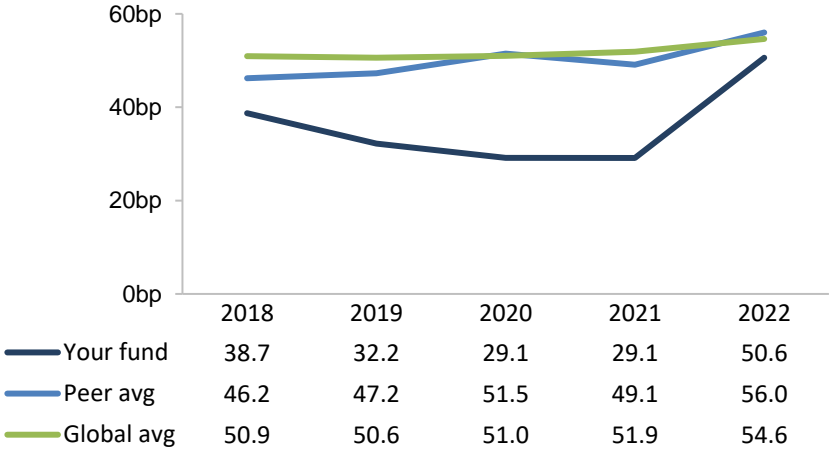
Differences in total investment cost are often caused by two factors that are usually outside of management's control: asset mix and fund size. Therefore, to assess whether your fund's total investment cost is high or low given your unique asset mix and size, CEM calculates a benchmark cost for your 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 38.7 bps in 2018 to 50.6 bps in 2022.

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



Trend analysis is based on 203 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 & 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 2022 total investment cost, excluding transaction costs and private asset performance fees, was 50.6 bp or \$292.5 million.

	Internal		External passive		External active			Total ¹		
	Passive	Active	Fees	Monitoring & Other	Base Fees	Perform. Fees	Monitor. & Other	\$000s	bps	% of Total
Asset management										
Stock - Europe & Far East	1,281	3,908			2,843		854	8,886		3%
Stock - Emerging			906	880				1,786		1%
Stock - Global			3,187	3,417	8,100		2,101	16,806		6%
Fixed income - U.S.										
Fixed income - Global	1,554		1,537	825				3,916		1%
Cash		4,851						4,851		2%
Real estate ex-REITs ¹		1,124						1,124		0%
Real estate ex-REITs - LP ¹					4,633	31,282	3,477	8,111		3%
Real estate ex-REITs - Co-invest. ¹					2,230		2,127	4,357		1%
Infrastructure ¹²		879			1,764	119,885	404	3,047		1%
Infrastructure - LP ¹²					4,860	5,228	1,926	6,785		2%
Natural resources ¹²		1,904			3,218	3,099	3,326	8,449		3%
Hedge funds					25,797	97,735	5,018	128,550		44%
Private equity - Diversified - LP ¹					6,518	144	6,645	13,162		5%
Private equity - Diversified - FoFs ¹					16	107	803	819		0%
Underlying FoF fees ¹					0	0				
Private equity - Diversified - Co-invest. ¹					0	284	753	753		0%
Venture capital - LP ¹					2,156	-164	1,110	3,265		1%
Venture capital - Co-invest. ¹							390	390		0%
Private equity - Other - LP ¹		4,580						4,580		2%
Private equity - Other - Co-invest. ¹					21,670	42,677	5,540	27,209		9%
Derivatives/Overlays	4,697	11,438						16,135		6%
Total asset management costs excluding private asset performance fees								262,981	45.5bp	90%
Oversight, custodial & other asset related costs										
Oversight of the fund								22,494		8%
Trustee & custodial								6,275		2%
Audit								704		0%
Other										
Total oversight, custodial & other costs								29,473	5.1bp	10%
Total investment costs excluding transaction costs and private asset performance fees								292,453	50.6bp	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. Default costs added. Refer to Appendix A.

Changes in your investment costs

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

Change in your investment costs (2022 - 2018)

	Investment costs (\$000s)					Change (\$000s)				Change (%)			
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2022	2021	2020	2019
Asset management													
Stock - Europe & Far East	8,886	8,329	7,036	7,736	6,279	557	1,293	-700	1,457	7%	18%	-9%	23%
Stock - Emerging	1,786	1,665	2,181	6,589	6,019	121	-516	-4,408	570	7%	-24%	-67%	9%
Stock - Global	16,806	13,753	11,734	13,421	10,549	3,053	2,019	-1,687	2,872	22%	17%	-13%	27%
Fixed income - U.S.		314	262	91	72		52	171	19		20%	188%	26%
Fixed income - Global	3,916	2,598	2,473	2,532	2,646	1,318	125	-59	-114	51%	5%	-2%	-4%
Cash	4,851	3,454	3,296	3,009	3,193	1,397	158	287	-184	40%	5%	10%	-6%
Real estate ex-REITs ¹	1,124	1,023	459	783	397	101	564	-324	386	10%	123%	-41%	97%
Real estate ex-REITs - LP ¹	8,111	4,061	736	102	336	4,050	3,325	634	-234	100%	452%	621%	-70%
Real estate ex-REITs - Co-invest. ¹	4,357	3,556	2,436			801	1,120			23%	46%		
Infrastructure ¹²	3,047	2,575	2,018	2,014	9,114	472	557	4	-7,100	18%	28%	0%	-78%
Infrastructure - LP ¹²	6,785	2,531	2,519	3,045	3,299	4,254	12	-526	-254	168%	0%	-17%	-8%
Natural resources ¹²	8,449	5,873	5,843	6,544	9,889	2,576	30	-701	-3,345	44%	1%	-11%	-34%
Hedge funds	128,550	47,124	28,515	28,121	46,133	81,426	18,609	394	-18,012	173%	65%	1%	-39%
Private equity - Diversified - LP ¹	13,162	12,761	11,019	7,927	7,445	401	1,743	3,092	482	3%	16%	39%	6%
Private equity - Diversified - FoFs ¹	819	988	1,066	667	750	-169	-78	399	-83	-17%	-7%	60%	-11%
Underlying FoF fees ¹	0	169	217	0	374	-169	-47	217	-374	-100%	-22%		-100%
Private equity - Diversified - Co-invest. ¹	753	620				133				21%			
Venture capital - LP ¹	3,265	315				2,951				938%			
Venture capital - Co-invest. ¹	390	317				73				23%			
Private equity - Other - LP ¹	4,580	5,022	6,219	4,422	12,469	-442	-1,197	1,797	-8,047	-9%	-19%	41%	-65%
Private equity - Other - Co-invest. ¹	27,209	18,644	14,977	16,046		8,565	3,667	-1,069		46%	24%	-7%	
Derivatives/Overlays	16,135	12,669	11,365	10,584	9,503	3,466	1,304	781	1,081	27%	11%	7%	11%
Total excl. private asset perf. fees	262,981	148,361	114,370	113,633	128,467	114,620	33,991	737	-14,834	77%	30%	1%	-12%
Oversight, custodial & other asset related costs													
Oversight of the fund	22,494	14,014	12,307	18,511	16,626	8,480	1,707	-6,204	1,885	61%	14%	-34%	11%
Trustee & custodial	6,275	5,510	6,980	6,234	6,465	765	-1,470	746	-231	14%	-21%	12%	-4%
Audit	704	612	596	487	488	92	16	109	-1	15%	3%	22%	0%
Other													
Total oversight, custodial & other	29,473	20,136	19,883	25,232	23,579	9,337	253	-5,349	1,653	46%	1%	-21%	7%
Total investment costs ¹	292,453	168,497	134,253	138,865	152,046	123,957	34,244	-4,612	-13,181	74%	26%	-3%	-9%
Total in basis points	50.6bp	29.1bp	29.1bp	32.2bp	38.7bp								

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. Default costs added. Refer to Appendix A.

Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 2.3 bps below your benchmark cost of 52.9 bps. This implies that your fund was low cost by 2.3 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	292,453	50.6 bp
- Your fund's benchmark	305,497	52.9 bp
= Your fund's cost savings	-13,044	-2.3 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	-19,532	-3.4 bp
More int. pass. % of total passive	-396	-0.1 bp
Less int. active % of total active	7,662	1.3 bp
Less evergreen % of external	2,402	0.4 bp
Less fund of funds	-1,509	-0.3 bp
More co-investment	-3,977	-0.7 bp
More overlays and unfunded strategies	10,985	1.9 bp
Total style impact	-4,364	-0.8 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-23,303	-4.0 bp
Internal investment management	-1,061	-0.2 bp
Oversight, custodial and other	15,685	2.7 bp
Total impact of paying more /-less	-8,680	-1.5 bp
Total savings	-13,044	-2.3 bp

Benchmark cost calculation

Your 2022 benchmark cost was 52.9 basis points or 305.5 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 ¹ (B)	Benchmark \$000s (A X B)
Asset management costs			
Stock - Europe & Far East	2,384	22.2 bp	5,292
Stock - Emerging	1,471	45.3 bp	6,660
Stock - Global	27,154	17.4 bp	47,219
Fixed income - Global	6,192	7.8 bp	4,849
Cash	5,790	8.4 bp	4,851
Real estate ex-REITs	2,326	73.9 bp	17,191
Infrastructure	1,081	89.1 bp	9,627
Natural resources	3,436	55.2 bp	18,975
Hedge funds	4,085	135.3 bp	55,273
Perf. fees	4,085	170.9 bp	69,797
Private equity - Diversified	791	158.2 bp	12,512
Venture capital	152	166.2 bp	2,523
Private equity - Other	4,730	67.2 bp	31,789
Overlay Programs ²	57,799	0.9 bp	5,150
Benchmark for asset management	57,799	50.5 bp	291,709
Oversight, custody and other costs³			
Oversight	57,799	1.1 bp	
Trustee & custodial	57,799	0.3 bp	
Consulting	57,799	0.0 bp	
Audit	57,799	0.0 bp	
Other	57,799	0.1 bp	
Benchmark for oversight, custody, other	57,799	2.4 bp	13,788
Total benchmark cost		52.9 bp	305,497

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 15 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 0.8 bps.

Implementation choices	Assets by style	Peer benchmark cost			Style 1 %			Cost/	
		Style 1	Style 2	Style 1 -Savings	Your	Peer average	More/ -Less	-Savings \$000s	bps
	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	2,384	5 bp	28 bp	-23 bp	15%	25%	-10%	526	
Stock - Emerging	1,471	12 bp	55 bp	-43 bp	100%	22%	78%	-4,890	
Stock - Global	27,154	5 bp	28 bp	-23 bp	69%	46%	23%	-14,237	
Fixed income - Global	6,192	6 bp	8 bp	-2 bp	100%	28%	72%	-931	
More passive								-19,532	-3.4 bp
<u>Internal passive vs external passive</u>	Passive assets	Internal passive	External passive		Internal passive % of passive				
Stock - Europe & Far East	365	12 bp	5 bp	7 bp	100%	3%	97%	260	
Stock - Emerging	1,471	4 bp	12 bp	-8 bp	0%	1%	-1%	15	
Stock - Global	18,642	11 bp	5 bp	6 bp	0%	3%	-3%	-390	
Fixed income - Global	6,192	5 bp	7 bp	-2 bp	46%	25%	20%	-281	
More int. pass. % of total passive								-396	-0.1 bp
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active				
Stock - Europe & Far East	2,019	3 bp	56 bp	-52 bp	57%	53%	3%	-353	
Stock - Global	8,512	6 bp	42 bp	-35 bp	0%	40%	-40%	11,956	
Real estate ex-REITs	2,326	28 bp	99 bp	-70 bp	7%	35%	-29%	4,735	
Infrastructure	1,081	21 bp	107 bp	-86 bp	40%	20%	20%	-1,822	
Natural resources	3,436	28 bp	85 bp	-57 bp	87%	52%	35%	-6,855	
Private equity - Diversified	791	48 bp	158 bp	-111 bp	0%	0%	0%	0	
Less int. active % of total active								7,662	1.3 bp
<u>Evergreen vs LP/Co & fund of funds</u>	External assets	Ever-green	LP/Co & FoF		Evergreen fund % of external				
Real estate ex-REITs	2,173	70 bp	126 bp	-55 bp	0%	48%	-48%	5,817	
Infrastructure	648	74 bp	116 bp	-42 bp	45%	23%	22%	-590	
Natural resources	458	56 bp	103 bp	-47 bp	100%	40%	60%	-1,312	
Hedge funds	4,085	132 bp	194 bp	-61 bp	100%	95%	5%	-1,154	
Perf. fees	4,085	170 bp	189 bp	-19 bp	100%	95%	5%	-359	
Less evergreen % of external								2,402	0.4 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	2,173	126 bp	178 bp	-53 bp	100%	100%	0%	-17	
Infrastructure	356	116 bp	197 bp	-81 bp	100%	99%	1%	-19	
Private equity - Diversified	791	141 bp	237 bp	-96 bp	100%	82%	18%	-1,347	
Venture capital	152	158 bp	204 bp	-46 bp	100%	82%	18%	-126	
Less fund of funds								-1,509	-0.3 bp
<u>Co-investment vs LP</u>	LP/Co	Co-invest	LP		Co-invest % of LP/Co				
Real estate ex-REITs	2,173	80 bp	132 bp	-52 bp	22%	12%	10%	-1,110	
Infrastructure	356	24 bp	130 bp	-106 bp	0%	13%	-13%	504	
Private equity - Diversified	787	12 bp	155 bp	-143 bp	34%	10%	24%	-2,727	
Venture capital	152	6 bp	175 bp	-169 bp	35%	10%	25%	-644	
More co-investment								-3,977	-0.7 bp
More overlays and unfunded strategies								10,985	1.9 bp
Total impact of differences in implementation style								-4,364	-0.8 bp

Cost impact of overlays

As summarized on the previous page, the style impact of overlays cost you 1.9 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) (A)	Cost as % of total holdings		Cost/-Savings Impact (000s) A X (B - C)
		You (B)	Peer avg. (C)	
Internal Overlays				
Currency - Hedge	57,799	0.10 bp	0.02 bp	461
Currency - Discretionary	57,799	NA	0.08 bp	-449
Rebalancing / Passive beta - Hedge	57,799	0.71 bp	0.04 bp	3,832
Duration management - Hedge	57,799	NA	0.01 bp	-61
Global TAA - Discretionary	57,799	NA	0.08 bp	-442
Policy tilt TAA - Discretionary	57,799	1.46 bp	0.09 bp	7,901
Long/Short - Discretionary	57,799	0.24 bp	0.05 bp	1,101
Other overlay - Discretionary	57,799	0.28 bp	0.03 bp	1,469
External Overlays				
Currency - Hedge	57,799	NA	0.06 bp	-344
Currency - Discretionary	57,799	NA	0.01 bp	-41
Rebalancing / Passive beta - Hedge	57,799	NA	0.04 bp	-211
Duration management - Hedge	57,799	NA	0.03 bp	-150
Global TAA - Discretionary	57,799	NA	0.01 bp	-50
Commodity futures - Discretionary	57,799	NA	0.10 bp	-575
Long/Short - Discretionary	57,799	NA	0.03 bp	-192
Other overlay - Discretionary	57,799	NA	0.22 bp	-1,265
Total impact in 000s				10,985
Total impact in basis points				1.9 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 saved you 1.5 bps.

Style	Your avg holdings (mils) (A)	Cost in bps			Cost/-Savings		
		Your	Peer median	More/-less (B)	\$000s (A X B)	bps	
External asset management							
Stock - Europe & Far East	active	878	42.1	55.9	-13.7	-1,206	
Stock - Emerging	passive	1,471	12.1	12.1	0.0	0	
Stock - Global	passive	18,642	3.5	4.8	-1.2	-2,314	
Stock - Global	active	8,512	12.0	41.9	-29.9	-25,428	
Fixed income - Global	passive	3,367	7.0	6.9	0.1	44	
Real estate ex-REITs	CO	468	93.0	79.9	13.1	615	
Real estate ex-REITs	LP	1,704	47.6	131.7	-84.1	-14,328	
Infrastructure	active	292	74.3	74.3	0.0	0	
Infrastructure	LP	356	190.4	130.1	60.3	2,148	
Natural resources	active	458	142.8	56.1	86.7	3,975	
Hedge funds	active	4,085	75.4	132.5	-57.1	-23,304	
Top layer perf. fees	active	4,085	239.3	170.0	69.3	28,297	
Private equity - Diversified	CO	270	27.9	12.1	15.7	425	
Private equity - Diversified	LP	517	254.8	155.2	99.6	5,144	
Private equity - Diversified	FoF	4	2100.8	83.0	2017.8	787	
Underlying base fees	FoF	4	0.0	154.0	-154.0	-60	
Venture capital ¹	CO	54	72.7	6.4	66.3	356	
Venture capital	LP	98	332.5	175.0	157.5	1,547	
Private equity - Other ³	CO	2,816	96.6	96.6	0.0	0	
Total for external management						-23,303	-4.0 bp
Internal asset management							
		(A)			(B)	(A X B)	
Stock - Europe & Far East ²	passive	365	35.1	12.0	23.1	843	
Stock - Europe & Far East	active	1,141	34.3	3.4	30.9	3,524	
Fixed income - Global ¹	passive	2,825	5.5	4.7	0.8	236	
Cash ³	active	5,790	8.4	8.4	0.0	0	
Real estate	active	153	73.3	28.4	44.8	688	
Infrastructure	active	433	20.3	20.7	-0.4	-17	
Natural resources ¹	active	2,978	6.4	27.7	-21.3	-6,335	
Private equity - Other ³	active	1,914	23.9	23.9	0.0	0	
Total for internal management						-1,061	-0.2 bp
Oversight, custody and other costs⁴							
Oversight			3.9	1.1	2.8		
Trustee & custodial			1.1	0.3	0.8		
Consulting			0.0	0.0	0.0		
Audit			0.1	0.0	0.1		
Other			0.0	0.1	-0.1		
Benchmark for oversight, custody, other		57,799	5.1	2.4	2.7	15,685	2.7 bp
Total						-8,680	-1.5 bp

1. Universe median used because peer data was insufficient.

2. Database median are used because peer and universe data were insufficient.

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

4. 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 ¹	More/-less	Your average assets (or fee basis)	More/-less in \$000s		
					Total More/-less	Due to Impl. style	Due to paying more/less
Asset management costs	(A)	(B)	(C = A - B)	(D)	(C X D)		
Stock - Europe & Far East	37.3 bp	22.2 bp	15.1 bp	2,384	3,595	433	3,161
Stock - Emerging	12.1 bp	45.3 bp	-33.1 bp	1,471	-4,874	-4,874	0
Stock - Global	6.2 bp	17.4 bp	-11.2 bp	27,154	-30,413	-2,671	-27,742
Fixed income - Global	6.3 bp	7.8 bp	-1.5 bp	6,192	-933	-1,212	280
Cash	8.4 bp	8.4 bp	0.0 bp	5,790	0	0	0
Real estate ex-REITs	58.4 bp	73.9 bp	-15.5 bp	2,326	-3,600	9,426	-13,026
Infrastructure	91.0 bp	89.1 bp	1.9 bp	1,081	205	-1,926	2,131
Natural resources	24.6 bp	55.2 bp	-30.6 bp	3,436	-10,526	-8,167	-2,360
Hedge funds	75.4 bp	135.3 bp	-59.9 bp	4,085	-24,458	-1,154	-23,304
Perf. fees	239.3 bp	170.9 bp	68.4 bp	4,085	27,938	-359	28,297
Private equity - Diversified	186.3 bp	158.2 bp	28.1 bp	791	2,222	-4,074	6,296
Venture capital	240.8 bp	166.2 bp	74.5 bp	152	1,131	-771	1,902
Private equity - Other	67.2 bp	67.2 bp	0.0 bp	4,730	0	0	0
Overlay Programs ²	2.8 bp	0.9 bp	1.9 bp	57,799	10,985	10,985	0
Total asset management	45.5 bp	50.5 bp	-5.0 bp	57,799	-28,728	-4,364	-24,365
Oversight, custody and other costs³							
Oversight of the fund	3.9 bp	1.1 bp	2.8 bp				
Trustee & custodial	1.1 bp	0.3 bp	0.8 bp				
Consulting	0.0 bp	0.0 bp	0.0 bp				
Audit	0.1 bp	0.0 bp	0.1 bp				
Other	0.0 bp	0.1 bp	-0.1 bp				
Total oversight, custody & other	5.1 bp	2.4 bp	2.7 bp	57,799	15,685	n/a	15,685
Total	50.6 bp	52.9 bp	-2.3 bp	57,799	-13,044	-4,364	-8,680

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 15 of this section.

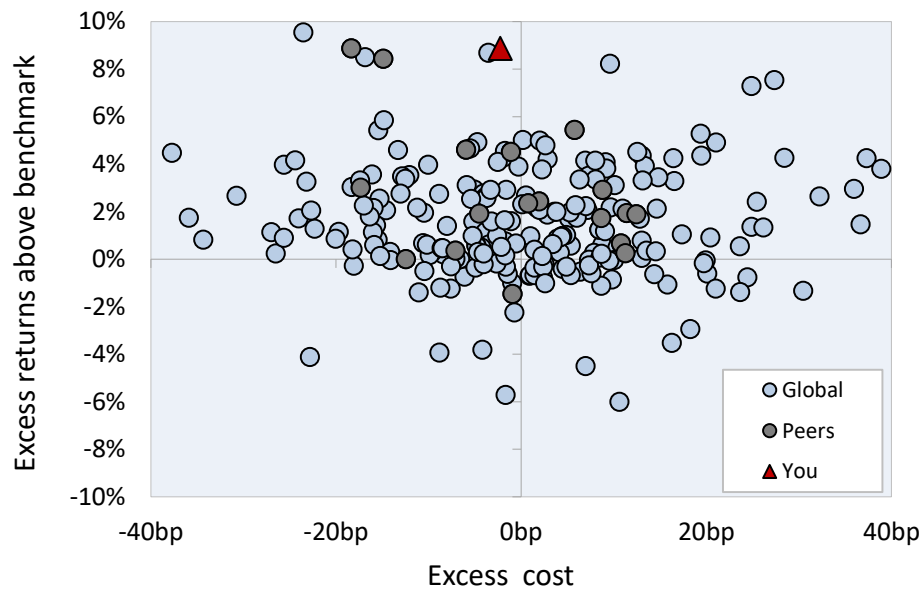
2. Total fund average holdings is used as the base when calculating the relative cost impact of the overlay programs.

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

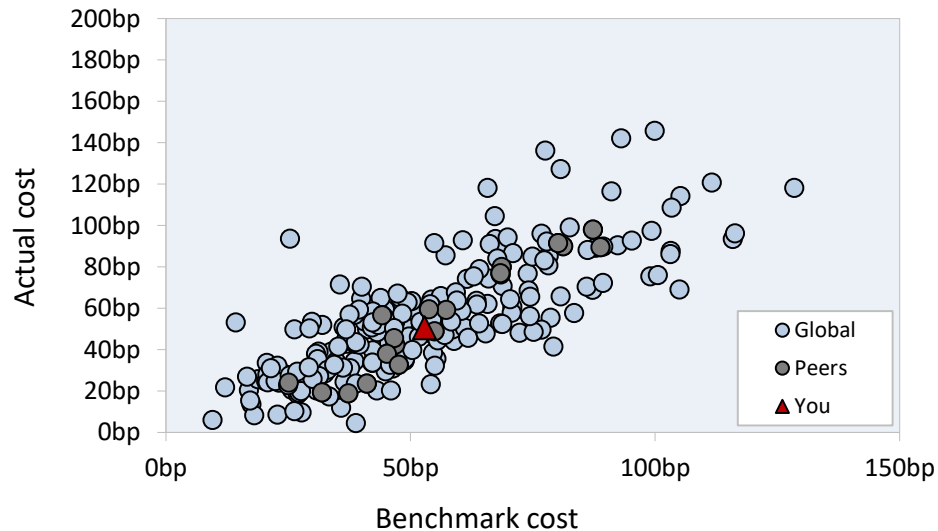
Your cost impact ranking

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. In 2022, your fund ranked in the positive excess return above benchmarked, low cost quadrant.

Your 2022 Excess returns 8.9%, Excess cost -2 bps



Your 2022 Actual cost 50.6 bps, Benchmark cost 52.9 bps



For all funds except your fund, benchmark cost equals the sum of group median costs x fund's average holdings by asset class plus group median cost of derivatives/overlays plus group median cost of oversight/support. Group 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

$$= (1\% \times 12.0 \text{ bp}) + (40\% \times 3.4 \text{ bp}) + (24\% \times 4.7 \text{ bp}) + (35\% \times 55.9 \text{ bp}) = 22.2 \text{ bp}$$

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

$$= 37.3 \text{ bp} - 22.2 \text{ bp} = 15.1 \text{ bp}$$

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)

$$= 2.2 \text{ bp} + 1.1 \text{ bp} + -1.5 \text{ bp} = 1.8 \text{ bp}$$

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

$$= (\text{peer average passive cost} - \text{peer average active cost}) \times (\text{passive \% of asset, you} - \text{passive \% of asset, peer average}) \\ = (4.9 \text{ bp} - 27.9 \text{ bp}) \times (15\% - 25\%) = 2.2 \text{ bp}$$

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

$$= [(1\% \times 12.0 \text{ bp}) + (24\% \times 4.7 \text{ bp})] / (1\% + 24\%) = 4.9 \text{ bp}$$

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

$$= [(40\% \times 3.4 \text{ bp}) + (35\% \times 55.9 \text{ bp})] / (40\% + 35\%) = 27.9 \text{ bp}$$

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

$$= (\text{peer average internal passive cost} - \text{peer average external passive cost}) \times (\text{internal passive \% of passive, you} - \text{internal passive \% of passive, peer average}) \times \text{passive \% of asset, you} \\ = (12.0 \text{ bp} - 4.7 \text{ bp}) \times (100\% - 3\%) \times 15\% = 1.1 \text{ bp}$$

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

$$= (\text{peer average internal active cost} - \text{peer average external active cost}) \times (\text{internal active \% of active, you} - \text{internal active \% of active, peer avg}) \times \text{active \% of asset, you} \\ = (3.4 \text{ bp} - 55.9 \text{ bp}) \times (57\% - 53\%) \times 85\% = -1.5 \text{ bp}$$

Cost impact of paying more/-less

$$= (\text{cost internal passive, you} - \text{cost internal passive, peer}) \times \text{internal passive \% of asset, you} + (\text{cost internal active, you} - \text{cost internal active, peer}) \times \text{internal active \% of asset, you} + (\text{cost external passive, you} - \text{cost external passive, peer}) \times \text{external passive \% of asset, you} + (\text{cost external active, you} - \text{cost external active, peer}) \times \text{external active \% of asset, you} \\ = (35.1 \text{ bp} - 12.0 \text{ bp}) \times 15\% + (34.3 \text{ bp} - 3.4 \text{ bp}) \times 48\% + (0.0 \text{ bp} - 4.7 \text{ bp}) \times 0\% + (42.1 \text{ bp} - 55.9 \text{ bp}) \times 37\% = 13.3 \text{ bp}$$

Your cost versus benchmark (-savings/+excess)

$$= \text{cost impact of differences in implementation style} + \text{cost impact of paying more/-less} \\ = 1.8 \text{ bp} + 13.3 \text{ bp} = 15.1 \text{ bp}$$

Benchmarking methodology formulas and data

b) 2022 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	35.1	34.3		42.1				12.0	3.4	4.7	55.9				22.2
Stock - Emerging			12.1					4.5	18.5	12.1	63.4				45.3
Stock - Global			3.5	12.0				11.1	6.4	4.8	41.9				17.4
Fixed income - Global	5.5		7.0					4.7	7.5	6.9	27.2				7.8
Cash		8.4							8.4						8.4
Real estate ex-REITs		73.3			93.0	47.6			28.4		70.4	79.9	131.7	49.2	73.8
Underlying base fees														129.0	0.1
Infrastructure		20.3		74.3		190.4			20.7		74.3	24.4	130.1	68.5	88.6
Underlying base fees														128.0	0.5
Natural resources		6.4		142.8					27.7		56.1	6.5	104.2		55.2
Underlying base fees															0.0
Hedge funds				75.4							132.5			64.6	129.4
Top layer perf. fees				239.3							170.0			19.0	163.0
Underlying base fees														129.0	6.0
Underlying perf. fees														170.0	7.9
Private equity - Diversified					27.9	254.8	2100.8		47.5			12.1	155.2	83.0	130.2
Underlying base fees							0.0							154.0	28.0
Venture capital					72.7	332.5						6.4	175.0	32.7	135.1
Underlying base fees														171.0	31.1
Private equity - Other		23.9			96.6				23.9			96.6			67.2
Underlying base fees															0.0

Benchmarking methodology formulas and data

c) 2022 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	15.3%	47.9%	0.0%	36.8%				0.7%	40.0%	24.2%	35.2%			
Stock - Emerging	0.0%	0.0%	100.0%	0.0%				0.3%	15.0%	21.9%	62.9%			
Stock - Global	0.0%	0.0%	68.7%	31.3%				1.5%	21.5%	44.2%	32.8%			
Fixed income - Global	45.6%	0.0%	54.4%	0.0%				7.2%	68.0%	21.3%	3.5%			
Cash		100.0%		0.0%					100.0%		0.0%			
Real estate ex-REITs		6.6%		0.0%	20.1%	73.3%	0.0%		35.5%		31.2%	3.9%	29.4%	0.0%
Underlying base fees		6.6%		0.0%	20.1%	73.3%	0.0%		35.5%		31.2%	3.9%	29.4%	0.0%
Infrastructure		40.0%		27.0%	0.0%	33.0%	0.0%		20.4%		18.7%	8.1%	52.4%	0.4%
Underlying base fees		40.0%		27.0%	0.0%	33.0%	0.0%		20.4%		18.7%	8.1%	52.4%	0.4%
Natural resources		86.7%		13.3%	0.0%	0.0%			51.7%		19.1%	0.2%	29.0%	
Underlying base fees		86.7%		13.3%	0.0%	0.0%			51.7%		19.1%	0.2%	29.0%	
Hedge funds				100.0%			0.0%				95.4%			4.6%
Top layer perf. fees				100.0%			0.0%				95.4%			4.6%
Underlying base fees				100.0%			0.0%				95.4%			4.6%
Underlying perf. fees				100.0%			0.0%				95.4%			4.6%
Private equity - Diversified		0.0%			34.2%	65.3%	0.5%		0.0%			8.3%	73.5%	18.2%
Underlying base fees		0.0%			34.2%	65.3%	0.5%		0.0%			8.3%	73.5%	18.2%
Venture capital					35.3%	64.7%	0.0%					8.3%	73.5%	18.2%
Underlying base fees					35.3%	64.7%	0.0%					8.3%	73.5%	18.2%
Private equity - Other		40.5%			59.5%	0.0%			40.5%			59.5%	0.0%	
Underlying base fees		40.5%			59.5%	0.0%			40.5%			59.5%	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.

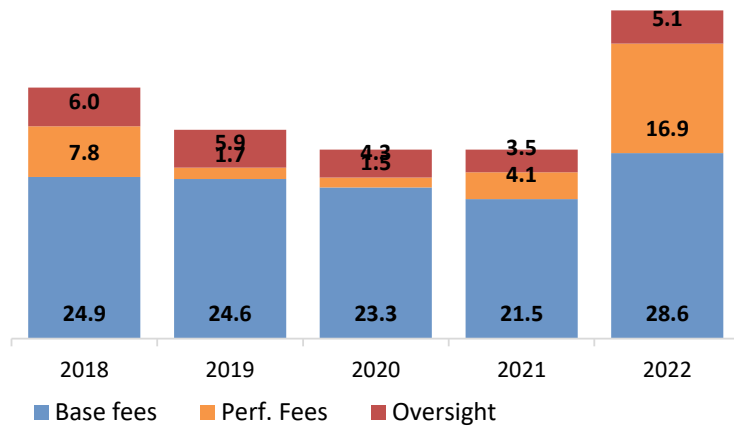
Further, cost difference for style & paying impacts (CostBpsH - CostBpsL) for one style =

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

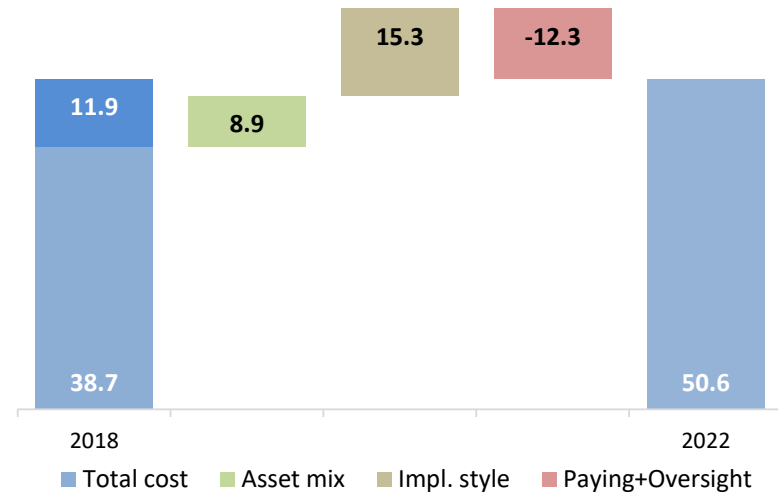
where CostStyleBps is the style cost in basis points; Wg is the weight for that style within the asset class.

Total plan cost and cost changes

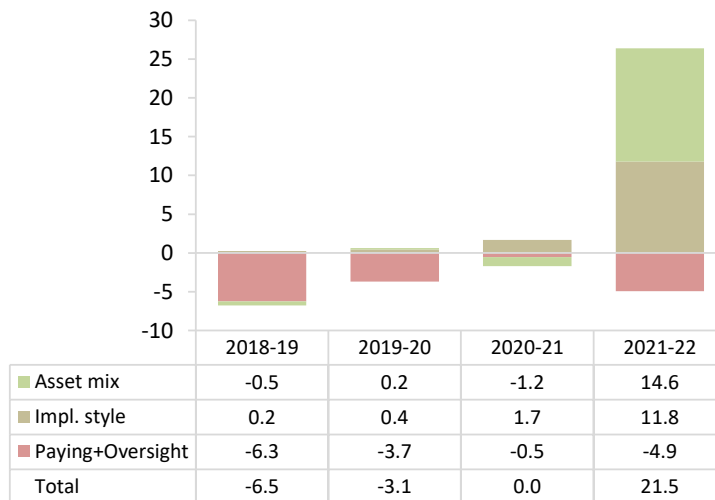
Total plan cost over time, bps



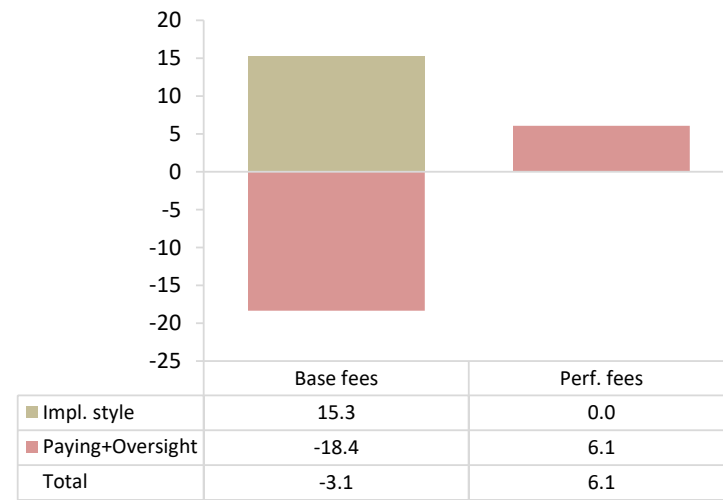
Cost differences, 2022 versus 2018, bps



Reasons for cost differences over time, bps



Impact of base and performance fees, 2022 vs. 2018, bps



Summary of cost differences, 2022 versus 2018

Your total cost increased by 11.9 bps between 2018 and 2022 because of changes in: asset mix (8.9 bps), implementation style (15.3 bps), and paying more/less for similar services (-12.3 bps).

	bps	\$000s
Starting total cost, 2018	38.7	152,046
Growth in asset value		71,766
Asset mix	<u>8.9</u>	<u>51,407</u>
Stock	-0.8	-4,701
Fixed income	-0.1	-493
Real estate ex-REITs	5.2	30,319
Real assets ex real estate	-1.7	-9,795
Hedge funds & multi-asset	4.6	26,569
Private equity	1.6	9,509
Implementation style (less expensive vs. more)	<u>15.3</u>	<u>88,164</u>
Less passive, more active	0.4	2,092
Mix of int. pass. % of total passive	0.2	1,263
Less int. active % of total active	18.5	107,190
Less evergreen % of external	0.0	274
More LP, less fund of funds	-0.2	-1,156
More co-investment	-3.7	-21,499
Paying more/-less for	<u>-11.4</u>	<u>-65,694</u>
Stock	-0.6	-3,570
Fixed income	-0.1	-681
Real estate ex-REITs	-17.7	-102,123
Real assets ex real estate	0.2	1,176
Hedge funds & multi-asset	-0.2	-1,084
Performance fees	6.1	35,157
Private equity	0.6	3,285
Overlays and unfunded strategies	0.4	2,146
Oversight, custodial, other (pay more/-less)	<u>-0.9</u>	<u>-5,236</u>
Total difference	11.9	140,407
Ending total cost, 2022	50.6	292,453

Summary of cost differences, year over year

	bps	\$000s	bps	\$000s	bps	\$000s	bps	\$000s	bps	\$000s
	2018		2019		2020		2021		2018	
Starting total cost	38.7	152,046	32.2	138,865	29.1	134,253	29.1	168,497	38.7	152,046
Growth in asset value		14,944		9,504		34,310		-153		71,766
Asset mix	-0.5	-2,240	0.2	933	-1.2	-6,672	14.6	84,519	8.9	51,407
Stock	0.0	-174	-1.2	-5,642	0.5	3,153	0.0	233	-0.8	-4,701
Fixed income	0.0	-205	0.5	2,323	-0.1	-658	-0.2	-1,279	-0.1	-493
Real estate ex-REITs	0.3	1,228	0.2	1,099	0.2	1,379	4.6	26,679	5.2	30,319
Real assets ex real estate	-1.3	-5,670	-0.1	-402	-0.4	-2,512	0.3	1,874	-1.7	-9,795
Hedge funds & multi-asset	1.0	4,443	0.5	2,341	-0.4	-2,367	2.2	12,744	4.6	26,569
Private equity	-0.4	-1,862	0.3	1,214	-1.0	-5,666	7.7	44,268	1.6	9,509
Implementation style (less expensive vs. more)	0.2	1,075	0.4	1,941	1.7	9,699	11.8	68,067	15.3	88,164
Passive vs. active	0.0	0	-0.6	-2,735	1.6	9,002	1.0	5,660	0.4	2,092
Internal passive vs. external passive	0.0	185	-0.1	-474	0.0	-53	0.0	96	0.2	1,263
Internal active vs. external active	-1.7	-7,245	3.2	14,947	0.1	742	1.5	8,704	18.5	107,190
Evergreen vs. LP/Co & fund of funds	0.0	186	0.0	8	0.0	-128	0.1	342	0.0	274
LP/Co vs. fund of funds	0.0	-99	0.0	-114	0.0	-232	-0.2	-1,103	-0.2	-1,156
Co-investment vs. LP	1.9	8,048	-2.1	-9,691	0.1	368	9.4	54,368	-3.7	-21,499
Paying more/-less for	-6.1	-26,295	-2.2	-9,914	0.3	1,736	-6.5	-37,832	-11.4	-65,694
Stock	0.6	2,718	-0.1	-307	-2.5	-14,661	-0.4	-2,059	-0.6	-3,570
Fixed income	-0.2	-815	-0.4	-1,836	-0.1	-495	0.6	3,590	-0.1	-681
Real estate ex-REITs	-0.1	-440	-0.5	-2,111	0.5	2,626	-8.3	-47,773	-17.7	-102,123
Real assets ex real estate	-0.2	-964	-0.3	-1,483	0.2	984	0.4	2,230	0.2	1,176
Hedge funds & multi-asset	-6.3	-26,989	-0.8	-3,872	2.4	13,689	11.9	68,725	5.9	34,073
Private equity	0.0	49	-0.1	-362	0.2	1,192	-11.4	-66,022	0.6	3,285
Overlays and unfunded strategies	0.0	147	0.0	57	-0.3	-1,600	0.6	3,477	0.4	2,146
Oversight, custodial, other (pay more/-less)	-0.2	-665	-1.5	-7,076	-0.8	-4,829	1.6	9,355	-0.9	-5,236
Total difference	-6.5	-13,181	-3.1	-4,612	0.0	34,244	21.5	123,957	11.9	140,407
Ending total cost	32.2	138,865	29.1	134,253	29.1	168,497	50.6	292,453	50.6	292,453
	2019		2020		2021		2022		2022	

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 \$140 million in 2022 compared to 2018. An increase of \$72 million was due to the \$19 billion rise in plan total average nav holdings. The remaining increase of \$69 million is explained by the changes in the asset mix (\$51 million), implementation style (\$88 million), and paying more/less for similar services (-\$71 million).

Asset class ¹	2018 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	2022 cost \$000s
	A	B	C	D	E=B+C+D	F=G-A	F-E	G
Stock - Europe & Far East	6,279	-94	-653	391	-357	2,607	2,964	8,886
Stock - Emerging	6,019	-4,914	-2,489	329	-7,074	-4,233	2,841	1,786
Stock - Global	10,549	306	5,261	-4,289	1,278	6,257	4,979	16,806
Fixed income - U.S.	72	-106	0	0	-106	-72	34	n/a
Fixed income - Global	2,646	352	1,240	-1,571	21	1,270	1,249	3,916
Cash	3,193	-740	0	890	151	1,658	1,507	4,851
Real estate ex-REITs	733	30,319	84,317	-102,123	12,512	12,858	346	13,591
Infrastructure	12,413	-8,266	-812	640	-8,439	-2,580	5,859	9,833
Natural resources	9,889	-1,529	-5,115	536	-6,108	-1,440	4,668	8,449
Hedge funds	15,576	8,971	0	-1,084	7,887	15,239	7,352	30,815
Top layer perf. fees	30,557	17,599	0	35,157	52,755	67,178	14,423	97,735
Private equity - Diversified	8,195	3,314	-4,826	4,183	2,672	6,540	3,868	14,735
Underlying base fees	374	151	-642	-61	-551	-374	177	0
Venture capital	n/a	3,655	0	0	3,655	3,655	0	3,655
Private equity - Other	12,469	2,389	11,883	-837	13,435	19,320	5,885	31,789
Total for asset management	118,964	51,407	88,164	-67,840	71,731	127,882	56,151	246,846
Overlays and unfunded strategies ²	9,503	0		2,146	2,146	6,632	4,485	16,135
Oversight	16,626			-1,980	-1,980	5,868	7,848	22,494
Trustee & custodial	0			0	0	0	0	0
Consulting	6,465			-3,242	-3,242	-190	3,051	6,275
Audit	488			-14	-14	216	230	704
Other	0			0	0	0	0	0
Total for fund oversight ³	23,579			-5,236	-5,236	5,894	11,129	29,473
Total	152,046	51,407	88,164	-70,930	68,641	140,407	71,766	292,453

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 11.9 bps in 2022 vs. 2018. It was driven by the changes in the asset mix (8.9 bps), implementation style (15.3 bps), and paying more/less for similar services (-12.3 bps).

Asset class	Asset mix bps	Implement. style bps	Paying more/-less bps	Total difference bps	Total ¹ ex asset gr. \$000s
	B	C	D	B+C+D	
Stock - Europe & Far East	0.0	-0.1	0.1	-0.1	-357
Stock - Emerging	-0.9	-0.4	0.1	-1.2	-7,074
Stock - Global	0.1	0.9	-0.7	0.2	1,278
Fixed income - U.S.	0.0	0.0	0.0	0.0	-106
Fixed income - Global	0.1	0.2	-0.3	0.0	21
Cash	-0.1	0.0	0.2	0.0	151
Real estate ex-REITs	5.2	14.6	-17.7	2.2	12,512
Infrastructure	-1.4	-0.1	0.1	-1.5	-8,439
Natural resources	-0.3	-0.9	0.1	-1.1	-6,108
Hedge funds	1.6	0.0	-0.2	1.4	7,887
Top layer perf. fees	3.0	0.0	6.1	9.1	52,755
Private equity - Diversified	0.6	-0.8	0.7	0.5	2,672
Underlying base fees	0.0	-0.1	0.0	-0.1	-551
Venture capital	0.6	0.0	0.0	0.6	3,655
Private equity - Other	0.4	2.1	-0.1	2.3	13,435
Total for asset management	8.9	15.3	-11.7	12.4	71,731
Overlays and unfunded strategies	0.00		0.37	0.37	2,146
Oversight			-0.3	-0.3	-1,980
Trustee & custodial			0.0	0.0	0
Consulting			-0.6	-0.6	-3,242
Audit			0.0	0.0	-14
Other			0.0	0.0	0
Total for fund oversight			-0.9	-0.9	-5,236
Total	8.9	15.3	-12.3	11.9	68,641
Total basis point costs in years 2022 and 2018		50.6	38.7	11.9	

1. Calculated by multiplying total difference in bps by plan total nav average holdings for year 2022, \$58 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 \$51 million or 8.9 bps.

Asset class	2018 Cost bps	2022 Cost bps	2018 asset ¹ weight %	2022 asset ¹ weight %	Change in asset weight	Asset mix changes ² bps	Asset mix changes ³ \$000s
	A	B	C	D	E=D-C	A (or B) x E	
Stock - Europe & Far East	38.4	37.3	4%	4%	0%	0.0	-94
Stock - Emerging	26.8	12.1	6%	3%	-3%	-0.9	-4,914
Stock - Global	5.8	6.2	46%	47%	1%	0.1	306
Fixed income - U.S.	25.5	n/a	0%	0%	0%	0.0	-106
Fixed income - Global	6.9	6.3	10%	11%	1%	0.1	352
Cash	6.8	8.4	12%	10%	-2%	-0.1	-740
Real estate ex-REITs	135.0	58.4	0%	4%	4%	5.2	30,319
Infrastructure	92.6	91.0	3%	2%	-2%	-1.4	-8,266
Natural resources	37.9	24.6	7%	6%	-1%	-0.3	-1,529
Hedge funds	78.1	75.4	5%	7%	2%	1.6	8,971
Top layer perf. fees	153.2	239.3	5%	7%	2%	3.0	17,599
Private equity - Diversified	194.5	186.3	1%	1%	0%	0.6	3,314
Underlying base fees	8.9	0.0	1%	1%	0%	0.0	151
Venture capital	n/a	240.8	0%	0%	0%	0.6	3,655
Private equity - Other	43.9	67.2	7%	8%	1%	0.4	2,389
Total for asset management						8.9	51,407

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 2022, \$58 billion.

Impact of changes in implementation style

Changes in implementation style (passive vs. active, internal vs. external, etc.) in 2022 vs. 2018 cost you \$88 million.

Implementation choices	2022	Cost, 2018			Style 1 %			Cost/ \$000s
	avg. assets \$mils	Style 1	Style 2	Style 1 -Savings	2022	2018	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	2,384	15 bp	39 bp	-24 bp	15%	4%	12%	-657
Stock - Emerging	1,471	10 bp	91 bp	-81 bp	100%	79%	21%	-2,489
Stock - Global	27,154	6 bp	12 bp	-6 bp	69%	100%	-31%	5,238
Less passive, more active								2,092
<u>Internal passive vs external passive</u>	Passive assets	Internal passive	External passive		Internal passive % of passive			
Stock - Global	18,642	5 bp	6 bp	-1 bp	0%	2%	-2%	23
Fixed income - Global	6,192	11 bp	7 bp	5 bp	46%	2%	44%	1,240
Mix of int. pass. % of total passive								1,263
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active			
Stock - Europe & Far East	2,019	32 bp	49 bp	-17 bp	57%	57%	0%	4
Real estate ex-REITs	2,326	81 bp	646 bp	-565 bp	7%	90%	-84%	110,220
Infrastructure	1,081	21 bp	123 bp	-102 bp	40%	30%	10%	-1,086
Natural resources	3,436	10 bp	109 bp	-100 bp	87%	72%	15%	-5,115
Private equity - Other	4,730	28 bp	66 bp	-37 bp	40%	58%	-18%	3,168
Less int. active % of total active								107,190
<u>Evergreen vs LP/Co & fund of funds</u>	External assets	Ever- green	LP/Co & FoF		Evergreen fund % of external			
Infrastructure	648	120 bp	134 bp	-15 bp	45%	74%	-29%	274
Less evergreen % of external								274
<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	791	187 bp	469 bp	-281 bp	100%	94%	5%	-1,156
More LP, less fund of funds								-1,156
<u>Co-investment vs LP</u>	LP/Co	Co-invest	LP		Co-invest % of LP/Co			
Real estate ex-REITs	2,173	93 bp	646 bp	-553 bp	22%	0%	22%	-25,903
Private equity - Diversified	787	28 bp	187 bp	-159 bp	34%	0%	34%	-4,311
Private equity - Other	2,816	97 bp	66 bp	31 bp	100%	0%	100%	8,715
More co-investment								-21,499
Total								88,164

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 2022, you paid \$71 million less for similar asset management and oversight / support services vs. 2018.

Asset class styles where you had assets in both 2022 and 2018 ¹	Style	2022	Cost in bps		More/ -less	Cost/ -Savings
		avg. assets \$mils	2022	2018		\$000s
<u>External asset management</u>		A			B	A x B
Stock - Europe & Far East	active	878	42.1	48.8	-6.7	-585
Stock - Emerging	passive	1,471	12.1	9.9	2.2	329
Stock - Global	passive	18,642	3.5	5.8	-2.3	-4,289
Fixed income - Global	passive	3,367	7.0	6.8	0.2	83
Real estate ex-REITs	LP	1,704	47.6	646.2	-598.6	-102,007
Infrastructure	active	292	74.3	119.6	-45.3	-1,323
Infrastructure	LP	356	190.4	134.3	56.1	1,998
Natural resources	active	458	142.8	109.4	33.4	1,529
Hedge funds	active	4,085	75.4	78.1	-2.7	-1,084
Top layer perf. fees	active	4,085	239.3	153.2	86.1	35,157
Private equity - Diversified	LP	517	254.8	187.3	67.5	3,486
Private equity - Diversified	FoF	4	2100.8	312.5	1788.3	697
Underlying base fees	FoF	4	0.0	156.0	-156.0	-61
Total for external management						-66,071
<u>Internal asset management</u>		A			B	A x B
Stock - Europe & Far East	passive	365	35.1	15.5	19.6	716
Stock - Europe & Far East	active	1,141	34.3	32.0	2.3	259
Fixed income - Global	passive	2,825	5.5	11.4	-5.9	-1,654
Cash	active	5,790	8.4	6.8	1.5	890
Real estate	active	153	73.3	80.9	-7.6	-116
Infrastructure	active	433	20.3	21.1	-0.8	-35
Natural resources	active	2,978	6.4	9.7	-3.3	-993
Private equity - Other	active	1,914	23.9	28.3	-4.4	-837
Total for internal management						-1,770
Overlays and unfunded strategies		57,799	2.8	2.4	0.4	2,146
Oversight		57,799	3.9	4.2	-0.3	-1,979.9
Trustee & custodial		57,799	0.0	0.0	0.0	0
Consulting		57,799	1.1	1.6	-0.6	-3,242
Audit		57,799	0.1	0.1	0.0	-14
Other		57,799	0.0	0.0	0.0	0
Total for fund oversight						-5,236
Total						-70,930

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

5

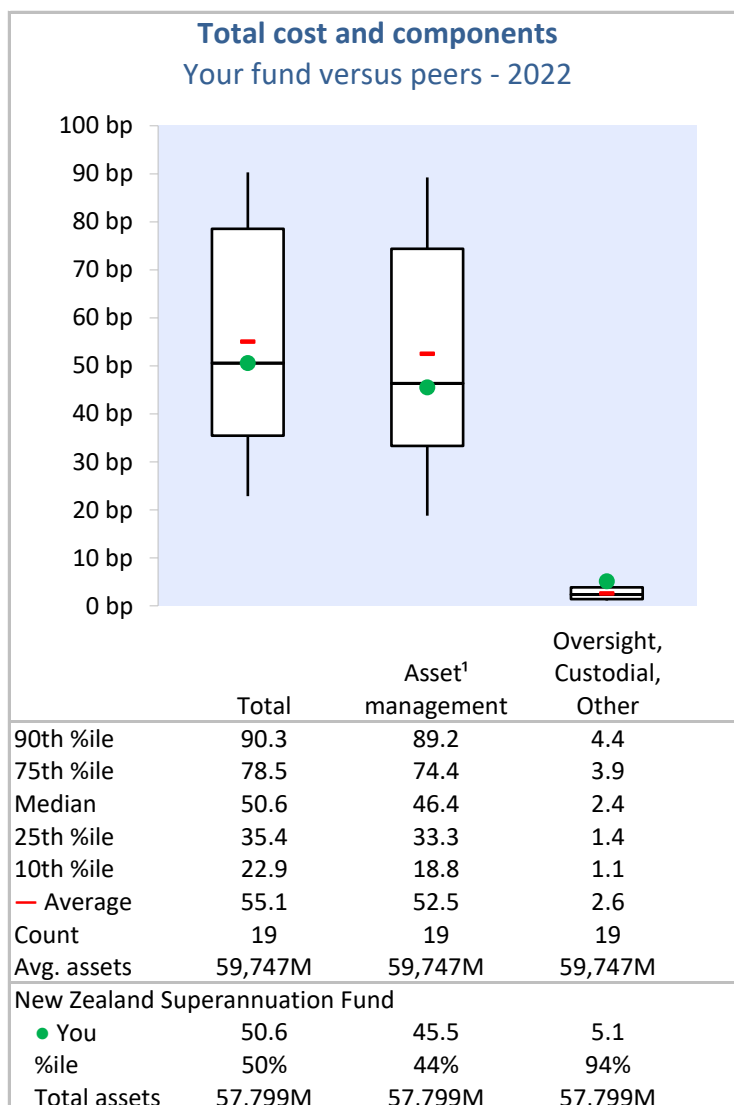
Cost comparisons

Total fund cost	2
Governance, operations & support	3
Public asset classes	
- Stock	4
- Fixed Income	10
- Commodities	22
- REITs	23
Real asset classes	
- Real estate ex-REITs	25
- Infrastructure	27
- Natural resources	28
- Other real assets	29
Private equity	
- Diversified private equity	30
- LBO	31
- Venture capital	32
- Private credit	33
- Mortgages	34
- Other private equity	35
Global TAA	36
RiskParity	37
Hedge Funds	38
Overlays	39

Total fund cost

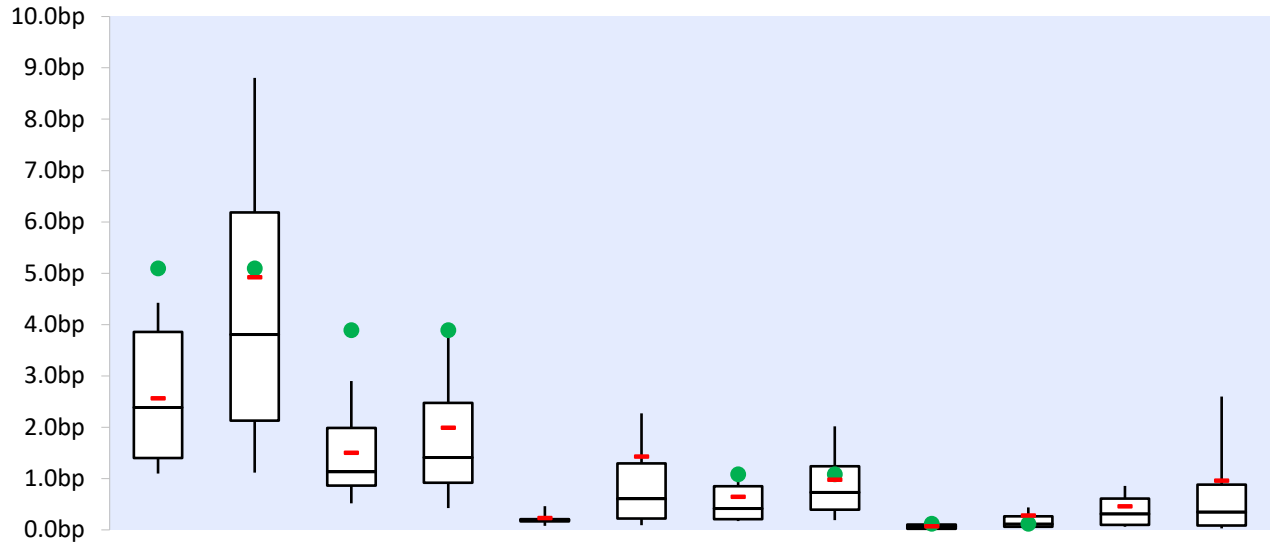
Total costs are benchmarked in the previous section. In this section, your fund's costs are compared on a line-item basis to your peers. This enables you to understand better why you may be a high or low cost fund and it also identifies and quantifies major cost differences that may warrant further investigation.

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



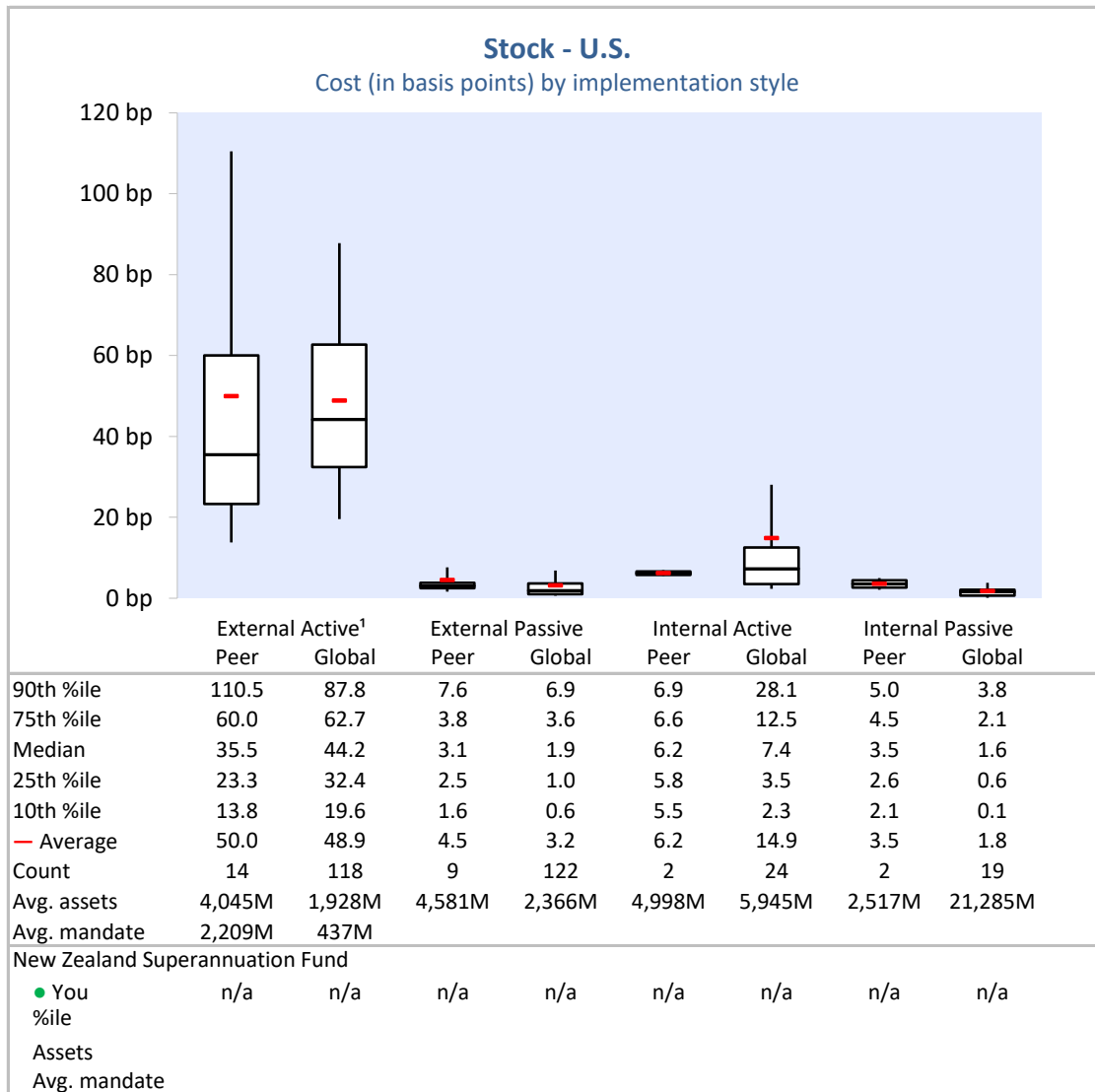
Governance, operations & support

Cost as a % of total plan assets



	<u>Total</u>		<u>Oversight¹</u>		<u>Consulting & Perf. Meas.</u>		<u>Custody</u>		<u>Audit</u>		<u>Other</u>	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	4.4	8.8	2.9	4.0	0.5	2.3	1.2	2.0	0.1	0.4	0.9	2.6
75th %ile	3.9	6.2	2.0	2.5	0.2	1.3	0.9	1.2	0.1	0.3	0.6	0.9
Median	2.4	3.8	1.1	1.4	0.2	0.6	0.4	0.7	0.1	0.1	0.3	0.3
25th %ile	1.4	2.1	0.9	0.9	0.2	0.2	0.2	0.4	0.0	0.1	0.1	0.1
10th %ile	1.1	1.1	0.5	0.4	0.1	0.1	0.2	0.2	0.0	0.0	0.1	0.0
— Average	2.6	4.9	1.5	2.0	0.2	1.4	0.6	1.0	0.1	0.3	0.5	1.0
Count	19	243	19	243	9	188	17	229	14	206	13	167
Avg. assets	59,747M	62,597M	59,747M	62,597M	59,747M	62,597M	59,747M	62,597M	59,747M	62,597M	59,747M	62,597M
New Zealand Superannuation Fund												
● You	5.1	5.1	3.9	3.9	n/a	n/a	1.1	1.1	0.1	0.1	n/a	n/a
%ile	94%	69%	100%	90%			88%	70%	85%	51%		
Plan assets	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M	57,799M

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

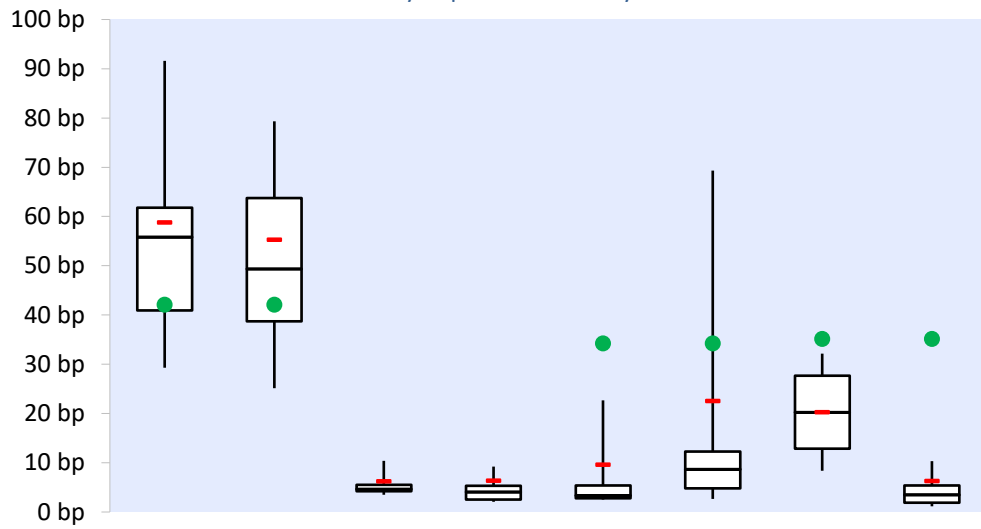


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	27.9	43.0
Performance fees*	n/a	20.2	4.9
Internal and other	<u>n/a</u>	<u>1.9</u>	<u>1.0</u>
Total	n/a	50.0	48.9

* 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 25.7 bps for peers (11 funds) and 13.1 bps for Global participants (44 funds).

Stock - Europe & Far East Cost by implementation style

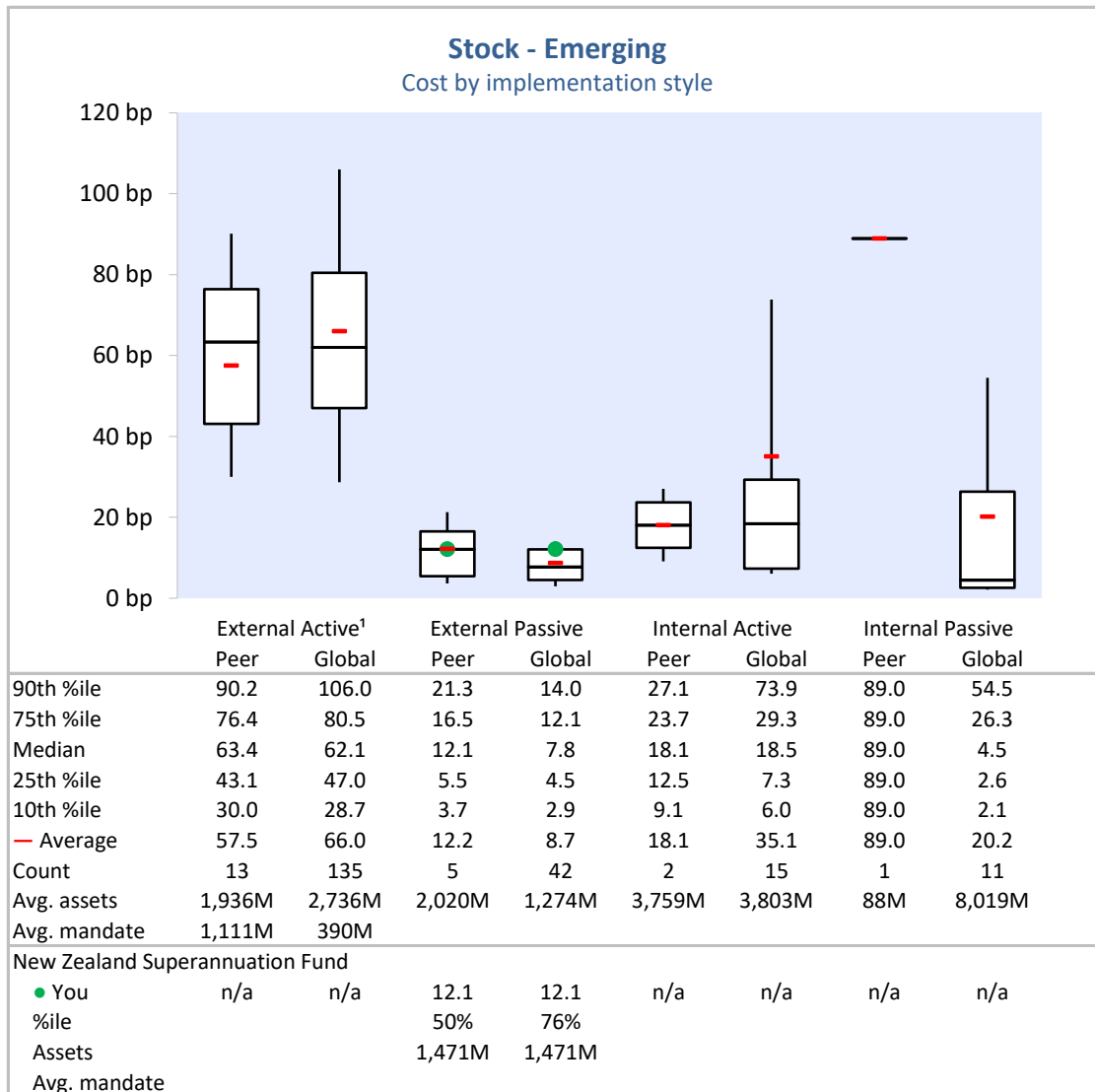


	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	91.6	79.3	10.4	9.2	22.7	69.3	32.2	10.3
75th %ile	61.8	63.7	5.5	5.3	5.4	12.3	27.7	5.4
Median	55.9	49.4	4.7	4.1	3.4	8.7	20.3	3.5
25th %ile	40.9	38.7	4.2	2.5	2.8	4.8	12.8	1.9
10th %ile	29.3	25.1	3.5	2.1	2.5	2.7	8.4	1.2
— Average	58.8	55.3	6.2	6.4	9.6	22.5	20.3	6.3
Count	8	106	5	60	5	19	2	13
Avg. assets	2,284M	2,378M	3,078M	1,328M	5,146M	8,703M	183M	5,982M
Avg. mandate	959M	426M						
New Zealand Superannuation Fund								
● You	42.1	42.1	n/a	n/a	34.3	34.3	35.1	35.1
%ile	29%	32%			100%	83%	100%	100%
Assets	878M	878M			1,141M	1,141M	365M	365M
Avg. mandate	439M	439M						

1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	32.4	34.7	43.8
Performance fees*	n/a	19.9	10.4
Internal and other	<u>9.7</u>	<u>4.3</u>	<u>1.1</u>
Total	42.1	58.8	55.3

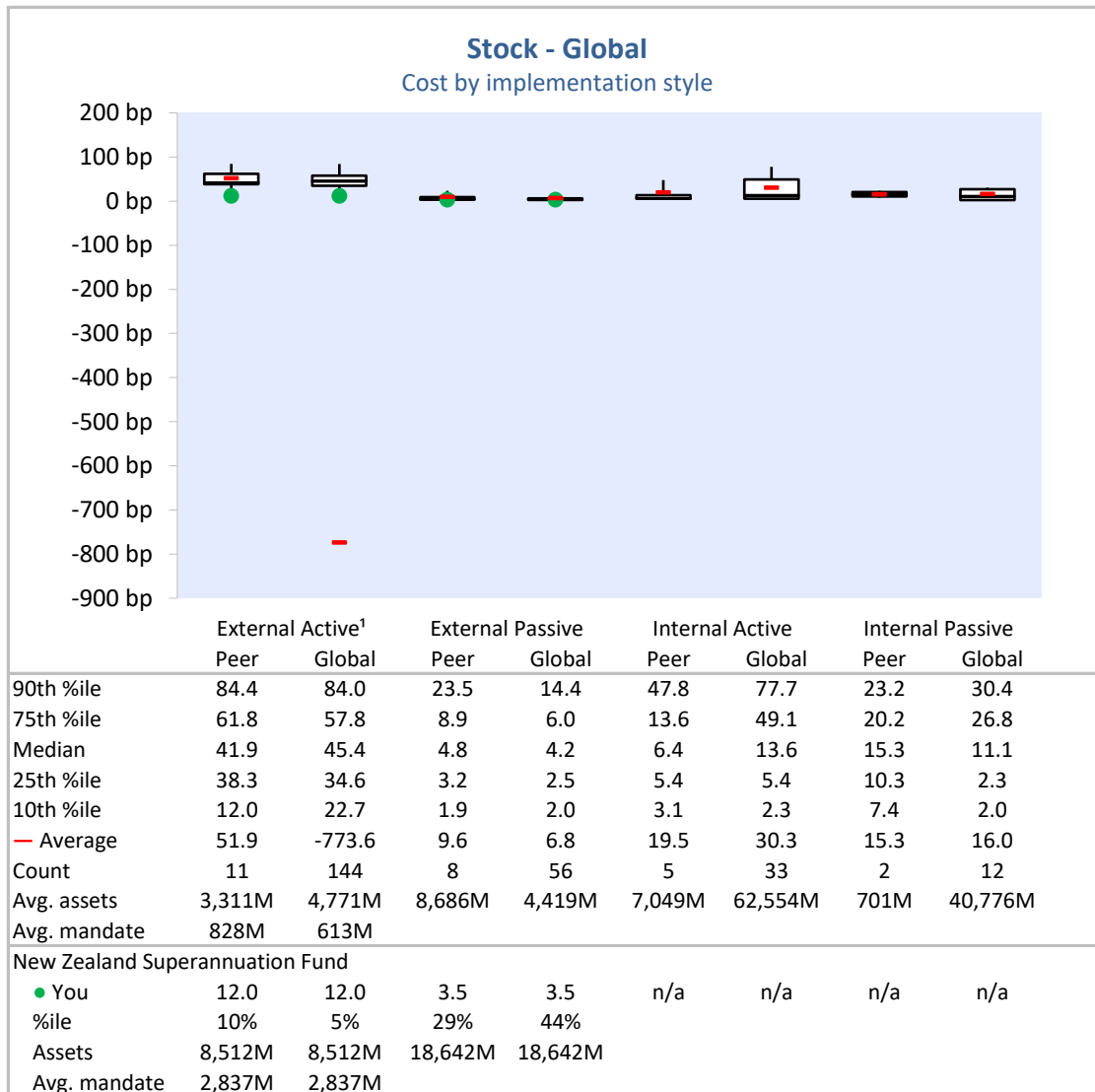
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 39.7 bps for peers (4 funds) and 27.5 bps for Global participants (40 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	51.3	57.0
Performance fees*	n/a	2.0	6.9
Internal and other	<u>n/a</u>	<u>4.2</u>	<u>2.2</u>
Total	n/a	57.5	66.0

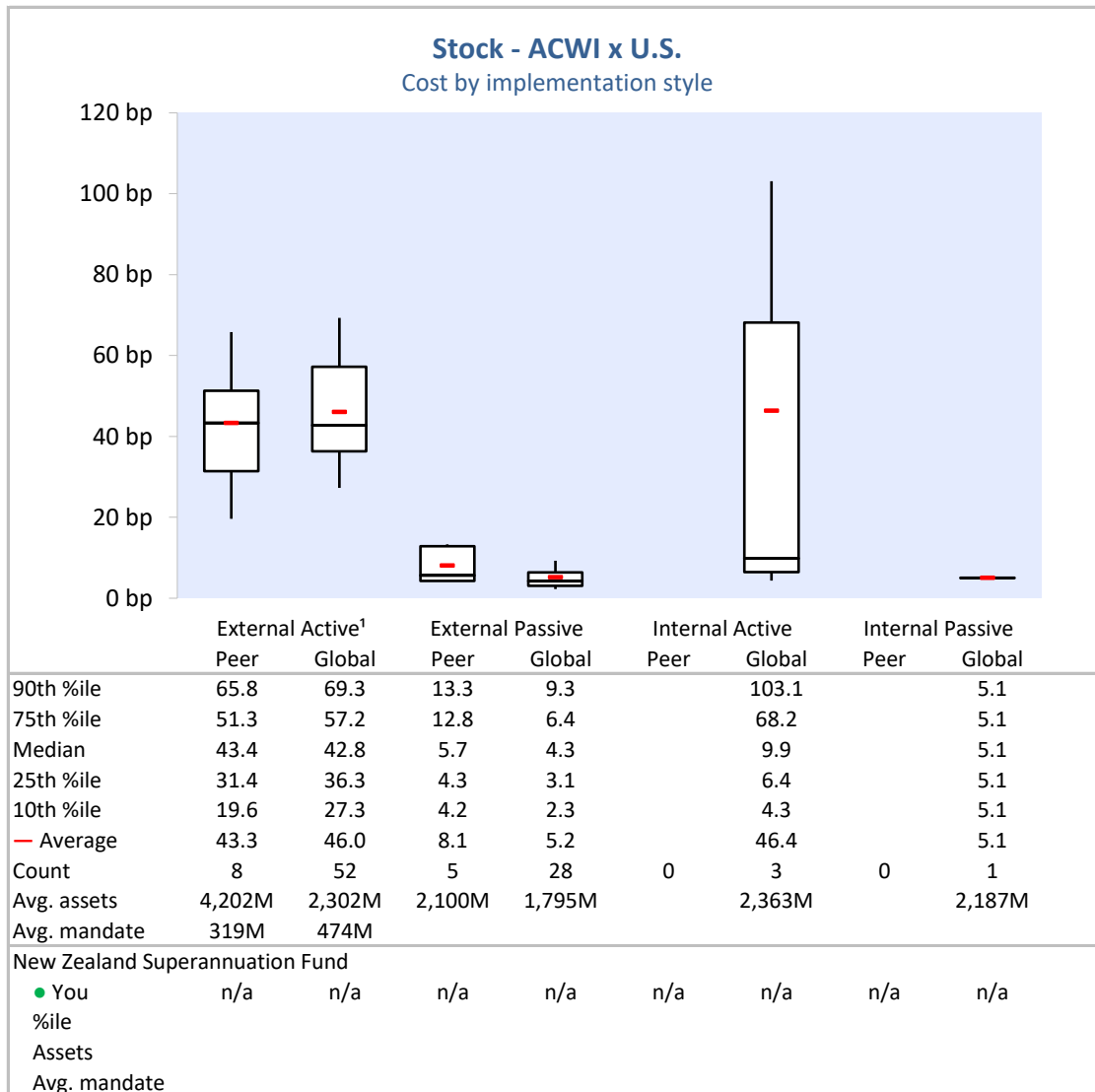
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 3.3 bps for peers (8 funds) and 17.5 bps for Global participants (53 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	9.5	35.0	-784.9
Performance fees*	n/a	13.4	9.5
Internal and other	<u>2.5</u>	<u>3.5</u>	<u>1.8</u>
Total	12.0	51.9	-773.6

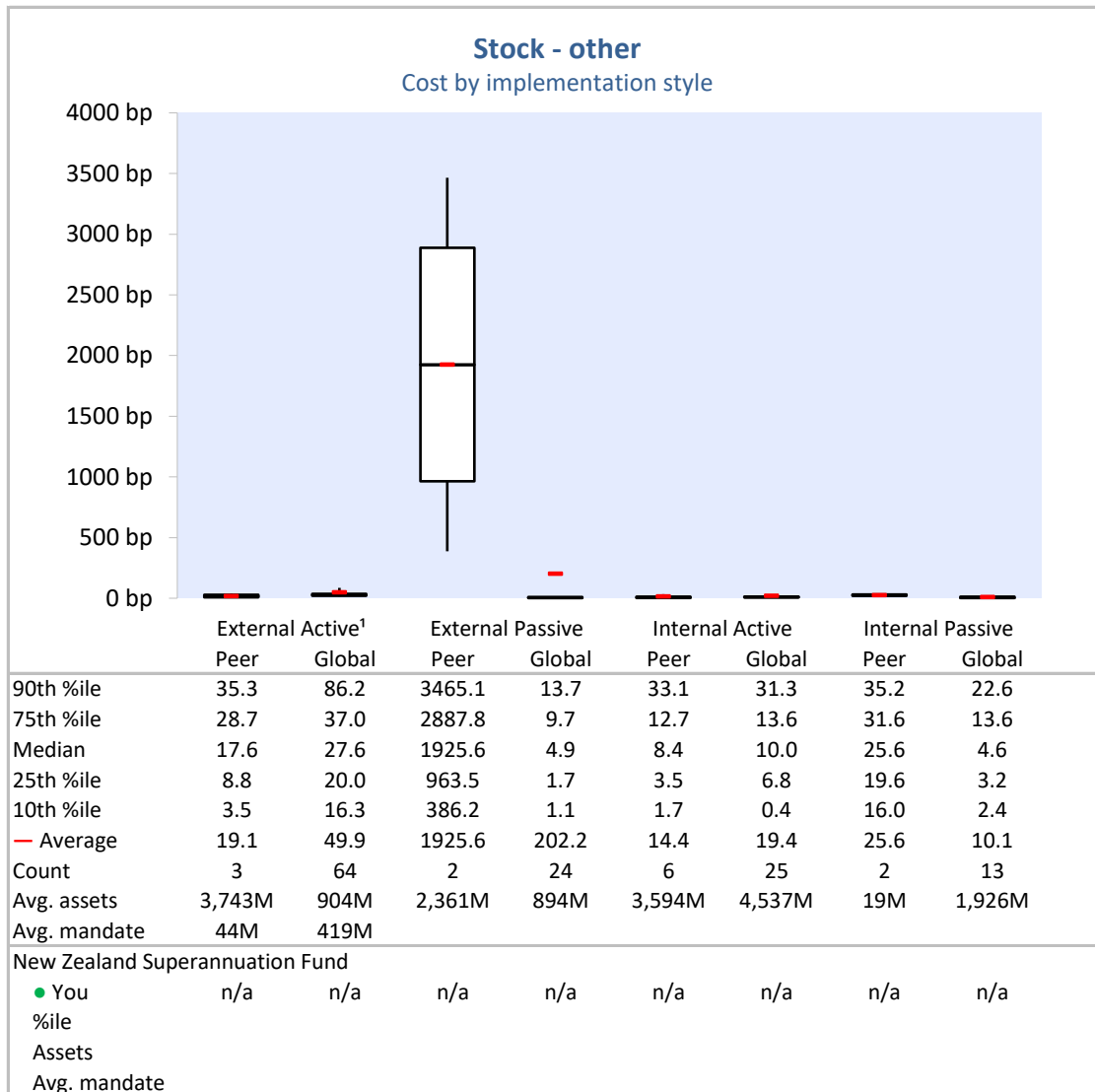
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 24.5 bps for peers (6 funds) and 22.8 bps for Global participants (60 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	39.0	43.2
Performance fees*	n/a	2.6	2.4
Internal and other	<u>n/a</u>	<u>1.8</u>	<u>0.5</u>
Total	n/a	43.3	46.0

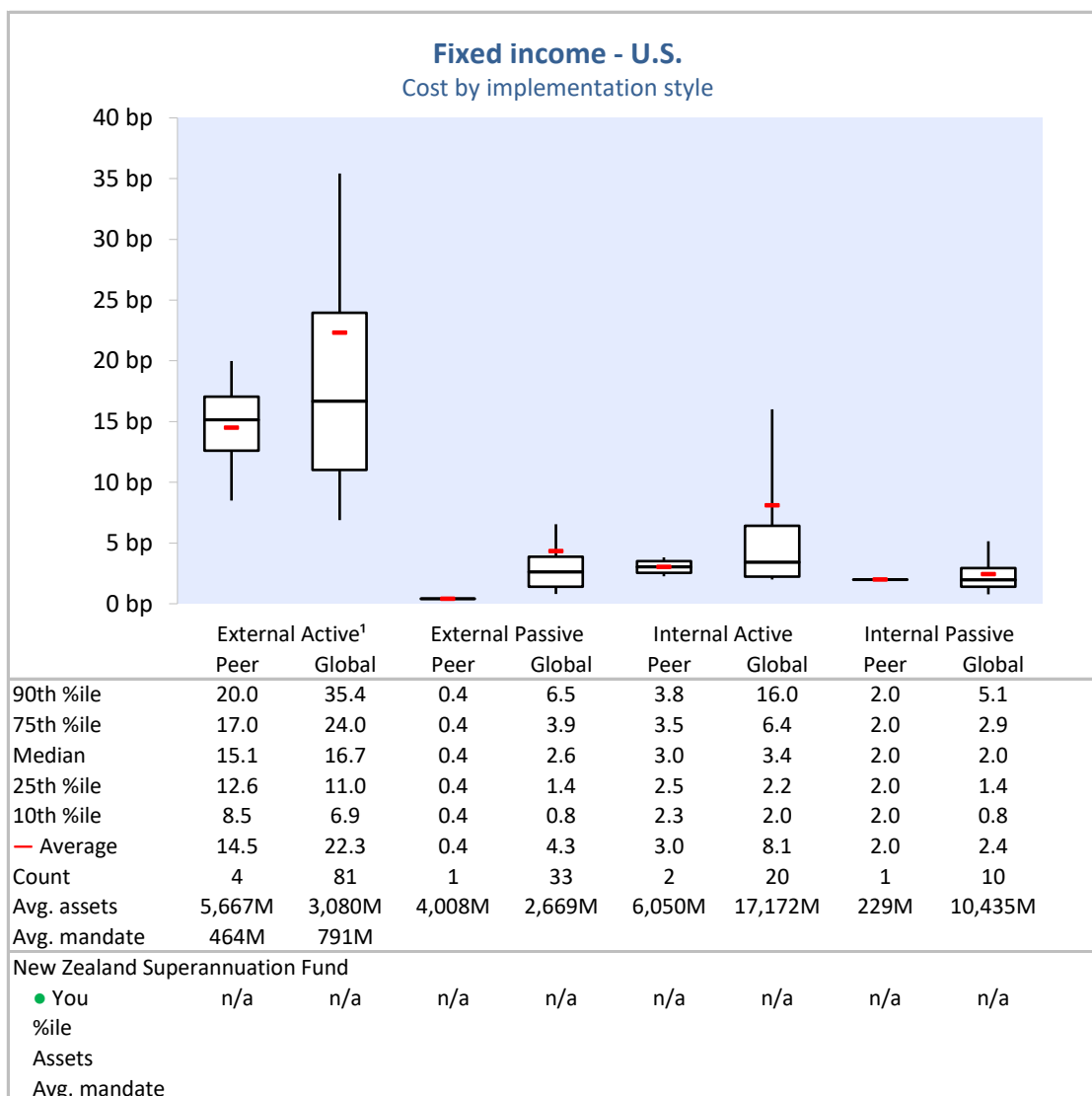
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 4.1 bps for peers (5 funds) and 8.7 bps for Global participants (14 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	10.9	46.4
Performance fees*	n/a	n/a	1.7
Internal and other	<u>n/a</u>	<u>8.3</u>	<u>1.8</u>
Total	n/a	19.1	49.9

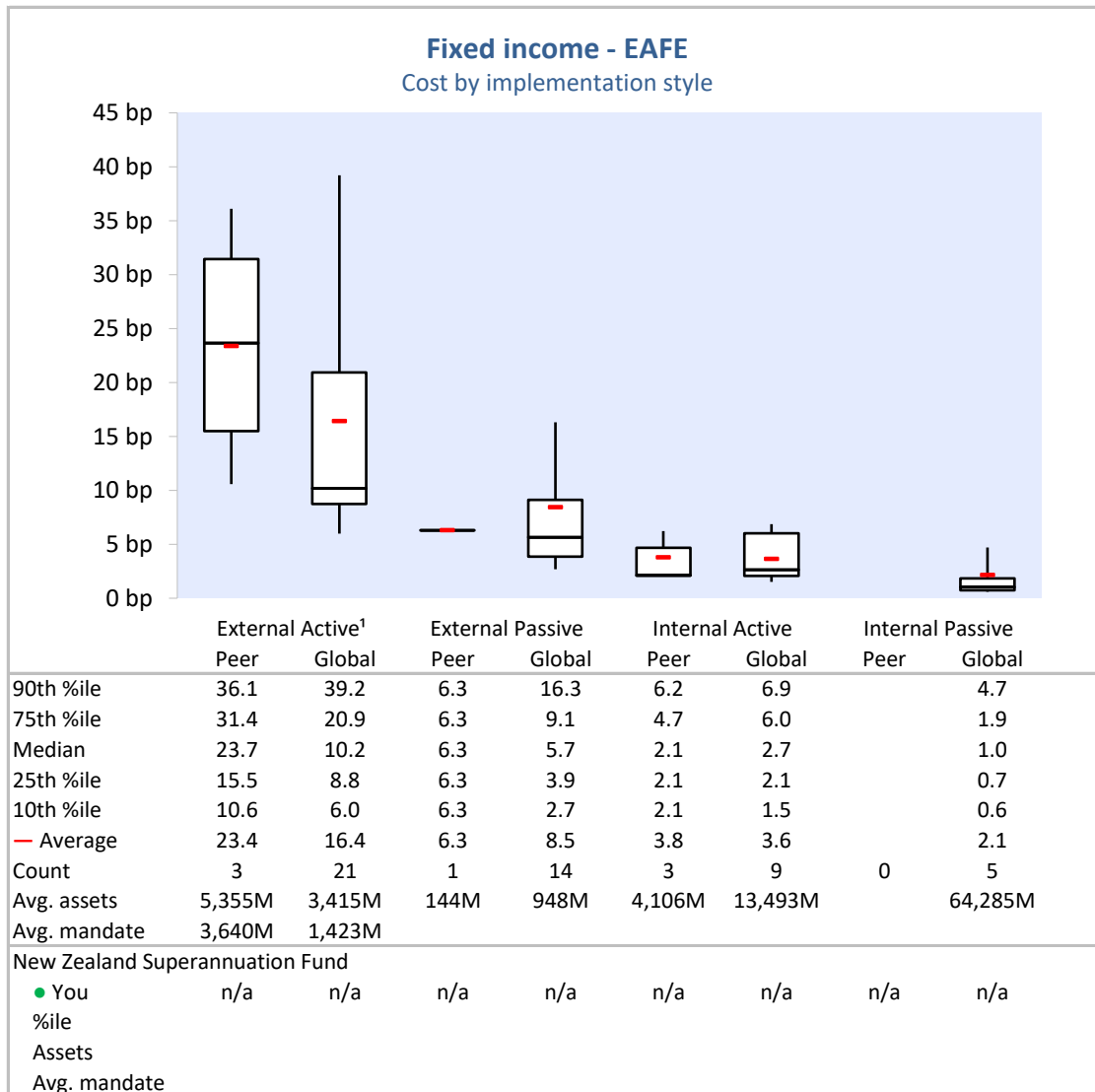
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 6.2 bps for Global participants (18 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	14.5	20.5
Performance fees*	n/a	0.0	1.2
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.6</u>
Total	n/a	14.5	22.3

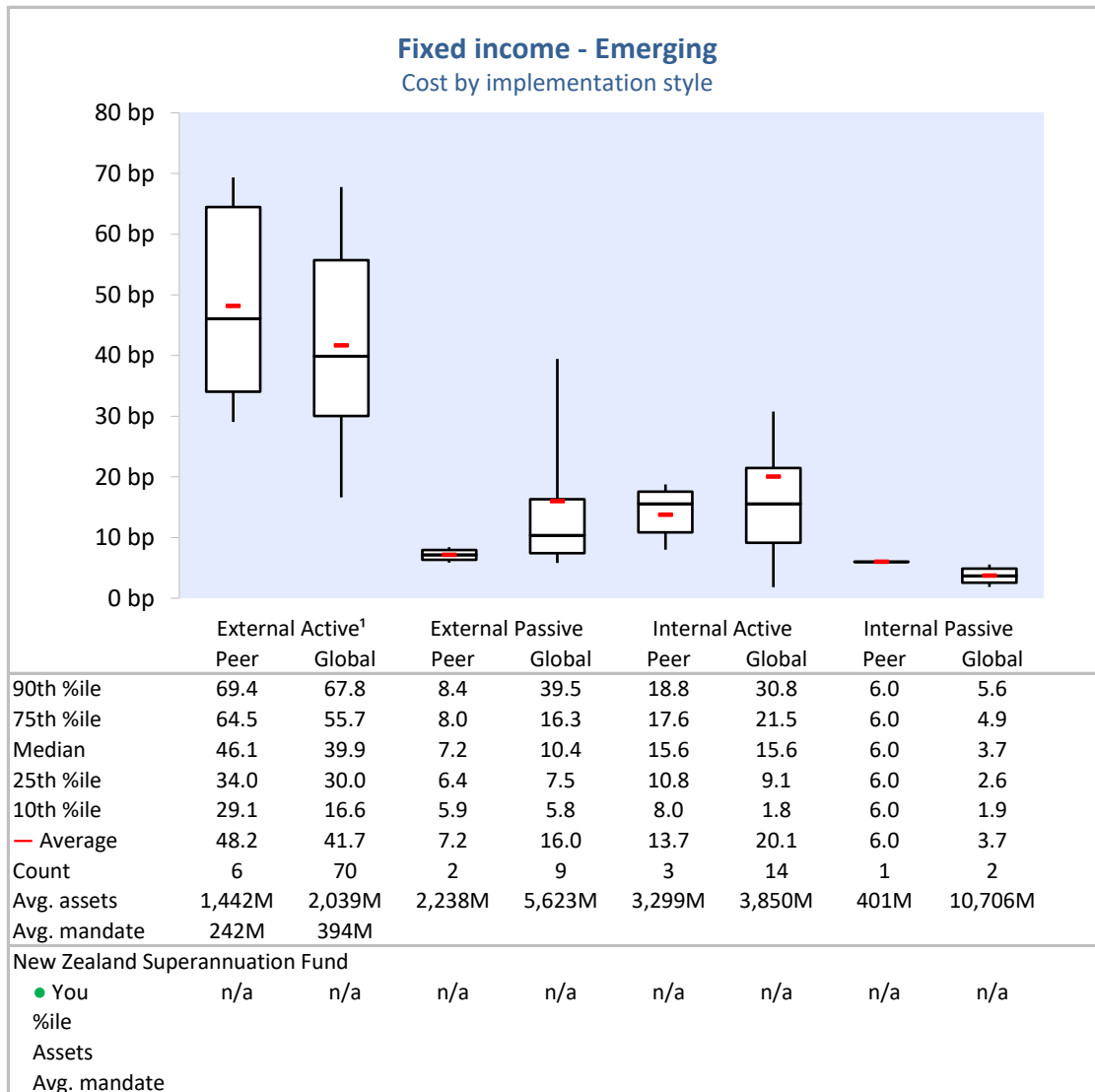
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 3.8 bps for Global participants (25 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	21.5	15.0
Performance fees*	n/a	1.5	0.2
Internal and other	<u>n/a</u>	<u>0.4</u>	<u>1.2</u>
Total	n/a	23.4	16.4

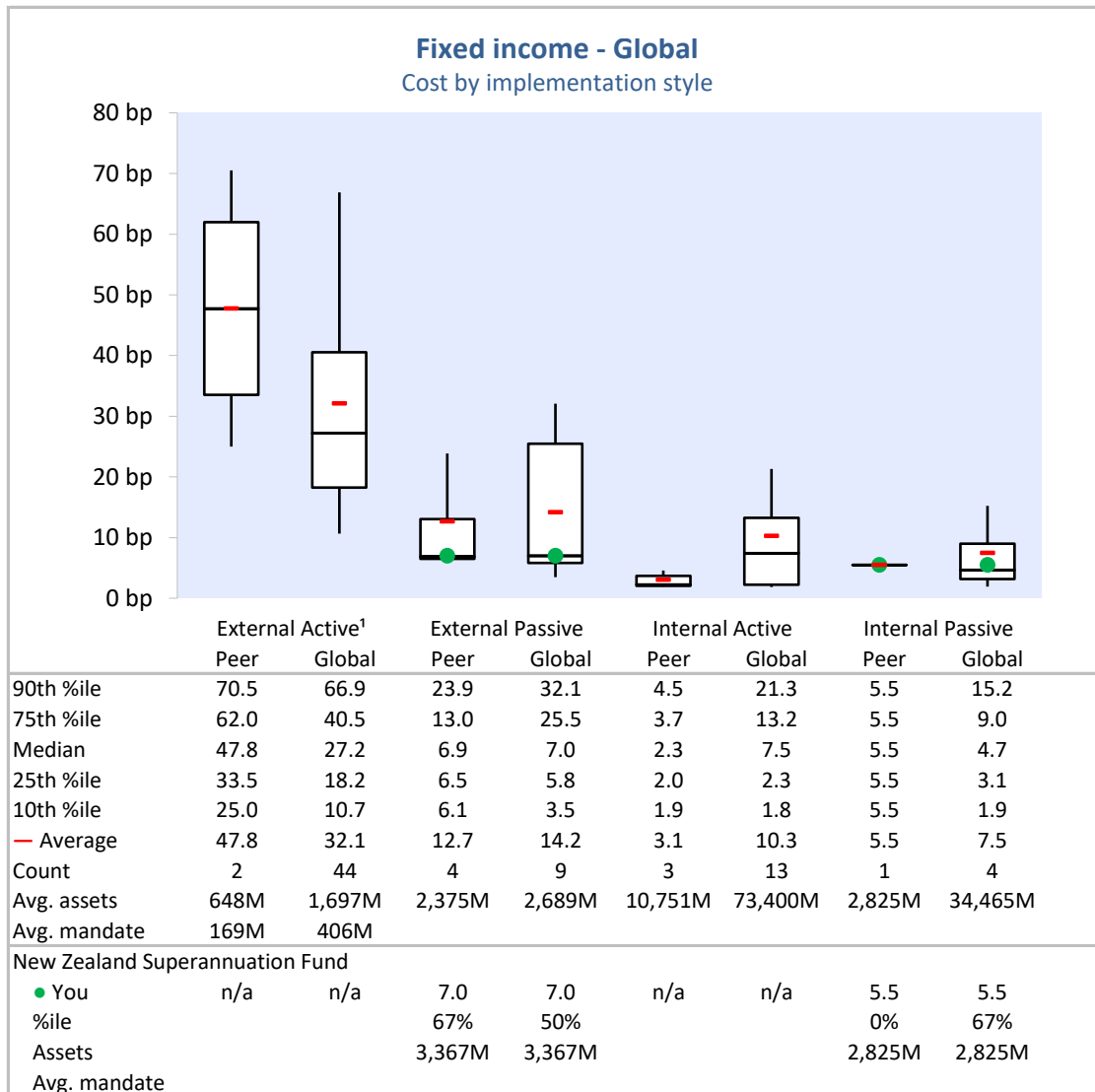
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 4.6 bps for peers (1 fund) and 0.3 bps for Global participants (14 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	41.3	37.6
Performance fees*	n/a	0.0	0.2
Internal and other	<u>n/a</u>	<u>6.9</u>	<u>3.8</u>
Total	n/a	48.2	41.7

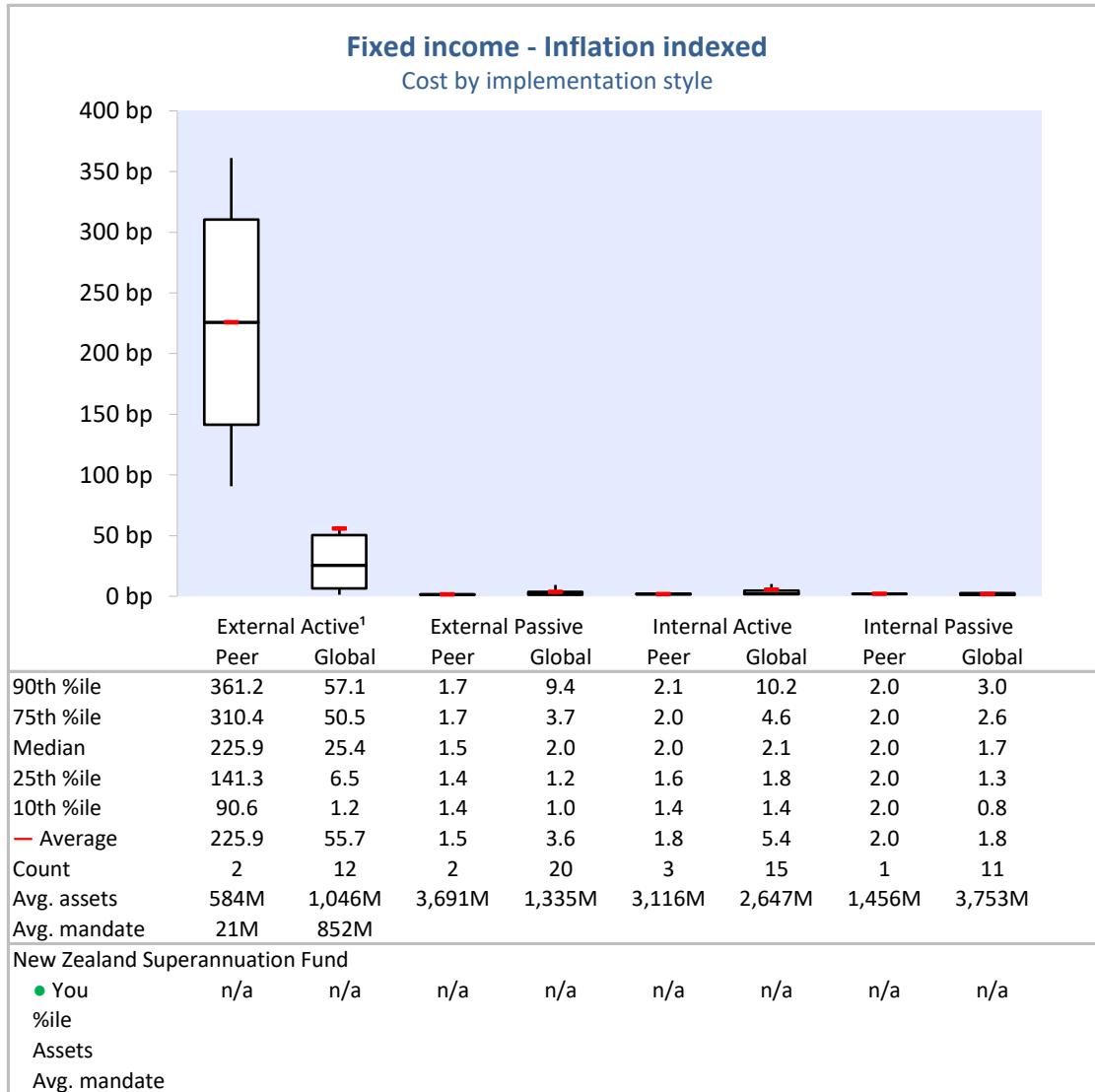
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (4 funds) and 0.6 bps for Global participants (29 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	22.8	27.3
Performance fees*	n/a	3.8	0.1
Internal and other	<u>n/a</u>	<u>21.2</u>	<u>4.7</u>
Total	n/a	47.8	32.1

* 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 7.7 bps for peers (1 fund) and 0.3 bps for Global participants (13 funds).

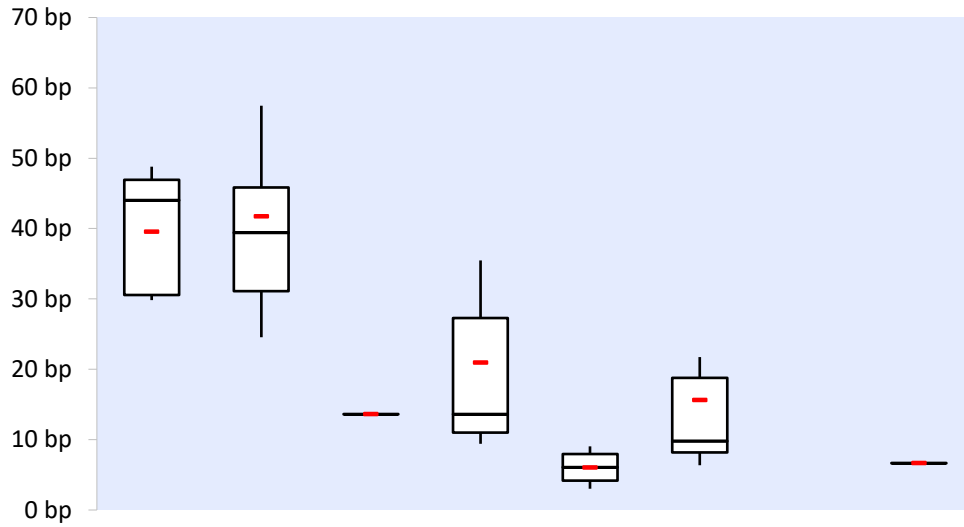


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	47.2	25.5
Performance fees*	n/a	177.6	29.8
Internal and other	<u>n/a</u>	<u>1.0</u>	<u>0.4</u>
Total	n/a	225.9	55.7

* 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 355.3 bps for peers (1 fund) and 89.4 bps for Global participants (4 funds).

Fixed income - High yield
Cost by implementation style



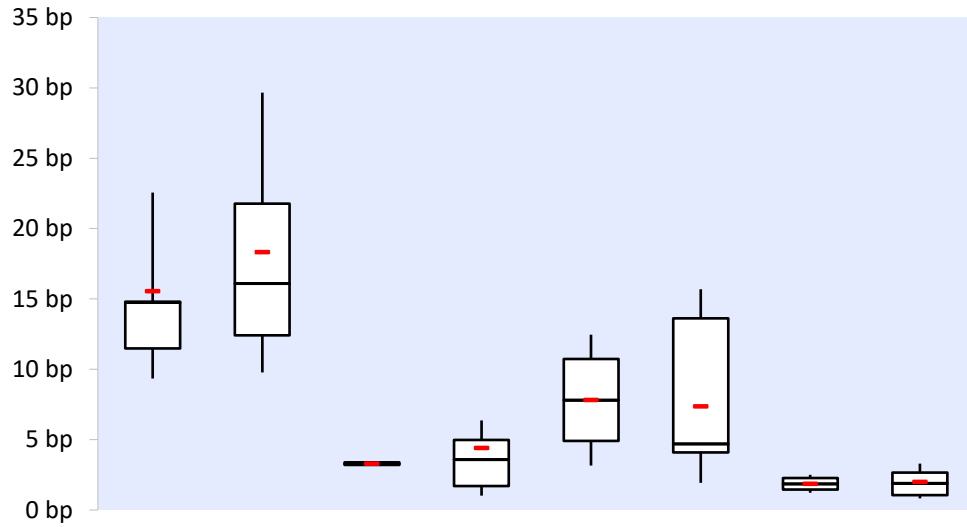
	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	48.8	57.5	13.6	35.5	9.1	21.7		6.7
75th %ile	46.9	45.8	13.6	27.3	7.9	18.8		6.7
Median	44.0	39.4	13.6	13.6	6.1	9.8		6.7
25th %ile	30.6	31.1	13.6	11.0	4.2	8.2		6.7
10th %ile	29.8	24.5	13.6	9.4	3.0	6.4		6.7
— Average	39.6	41.8	13.6	21.0	6.0	15.6		6.7
Count	7	75	1	3	3	13	0	1
Avg. assets	1,198M	1,474M	5M	85M	164M	3,902M		1,664M
Avg. mandate	974M	419M						
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	31.5	37.0
Performance fees*	n/a	4.8	2.3
Internal and other	<u>n/a</u>	<u>3.3</u>	<u>2.4</u>
Total	n/a	39.6	41.8

* 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 11.1 bps for peers (3 funds) and 6.8 bps for Global participants (26 funds).

Fixed income - Long bonds Cost by implementation style

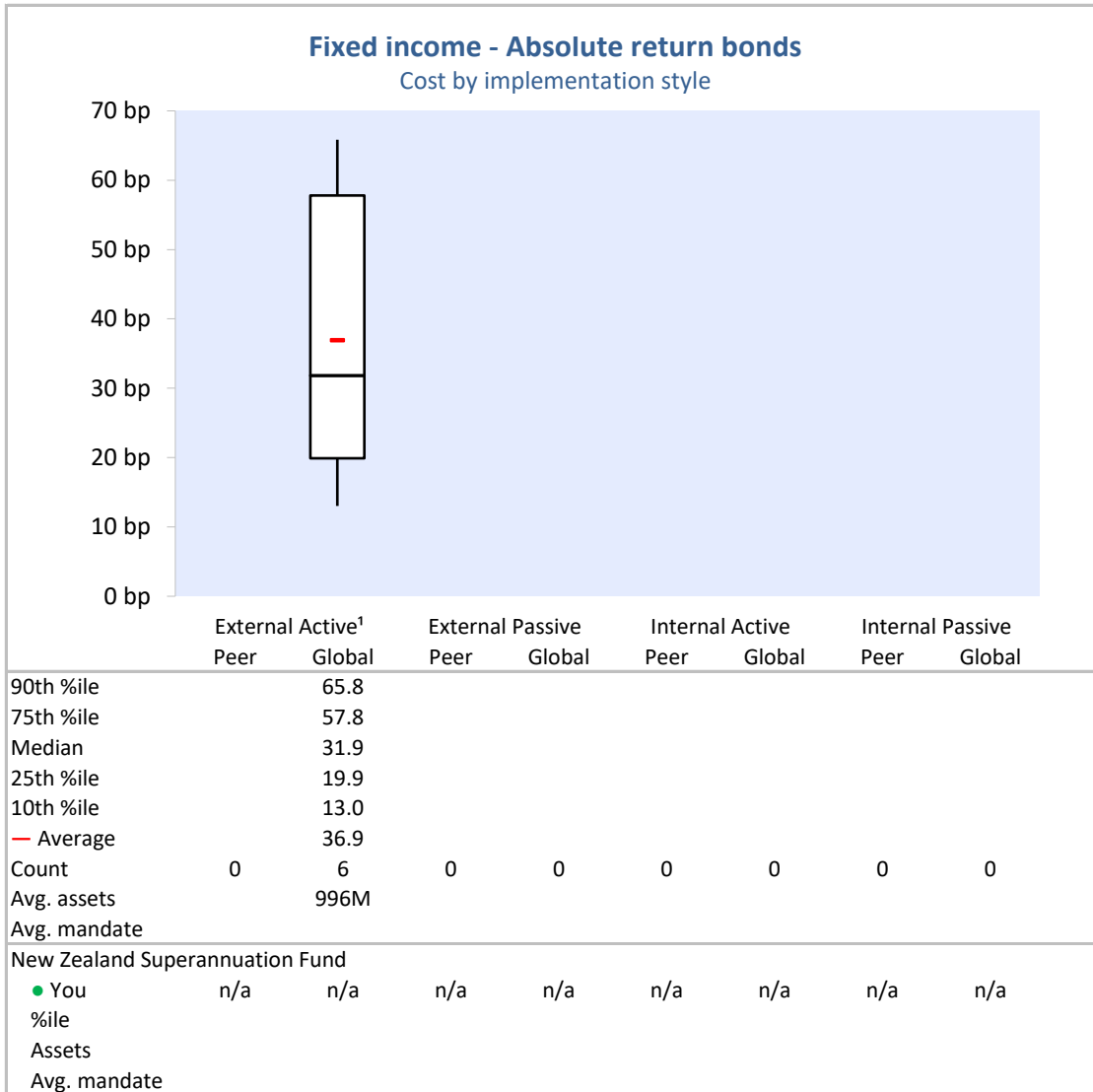


	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	22.6	29.7	3.4	6.4	12.5	15.7	2.5	3.3
75th %ile	14.8	21.8	3.4	5.0	10.7	13.6	2.3	2.7
Median	14.8	16.1	3.3	3.6	7.8	4.7	1.9	1.9
25th %ile	11.5	12.4	3.2	1.7	4.9	4.1	1.5	1.1
10th %ile	9.3	9.8	3.2	1.0	3.2	1.9	1.2	0.8
— Average	15.6	18.3	3.3	4.4	7.8	7.4	1.9	2.0
Count	6	84	2	32	2	13	2	9
Avg. assets	14,920M	6,007M	482M	541M	4,300M	4,313M	12,770M	11,157M
Avg. mandate	2,080M	987M						
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	10.9	16.0
Performance fees*	n/a	1.8	1.7
Internal and other	<u>n/a</u>	<u>2.8</u>	<u>0.7</u>
Total	n/a	15.6	18.3

* 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 3.6 bps for peers (3 funds) and 6.7 bps for Global participants (21 funds).

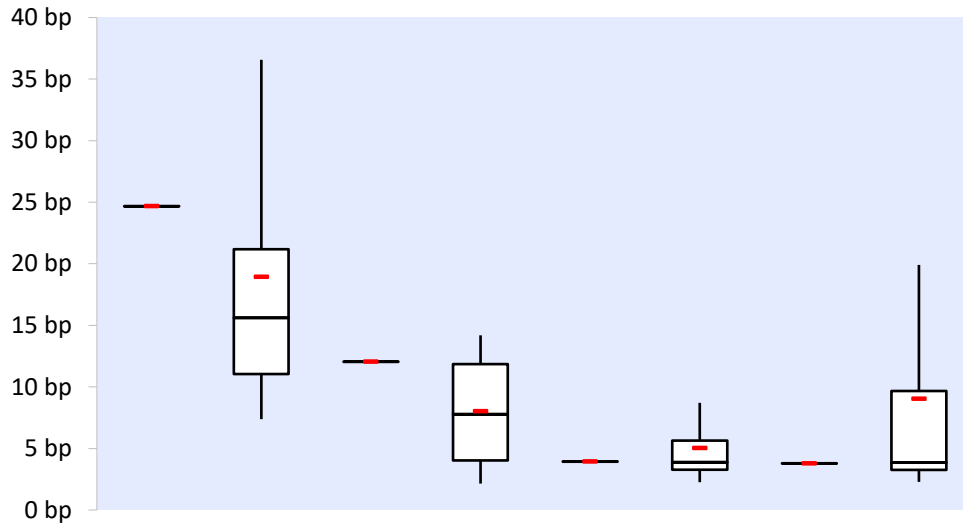


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	35.1
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>1.8</u>
Total	n/a	n/a	36.9

* 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 (3 funds).

Fixed income - Bundled LDI Cost by implementation style



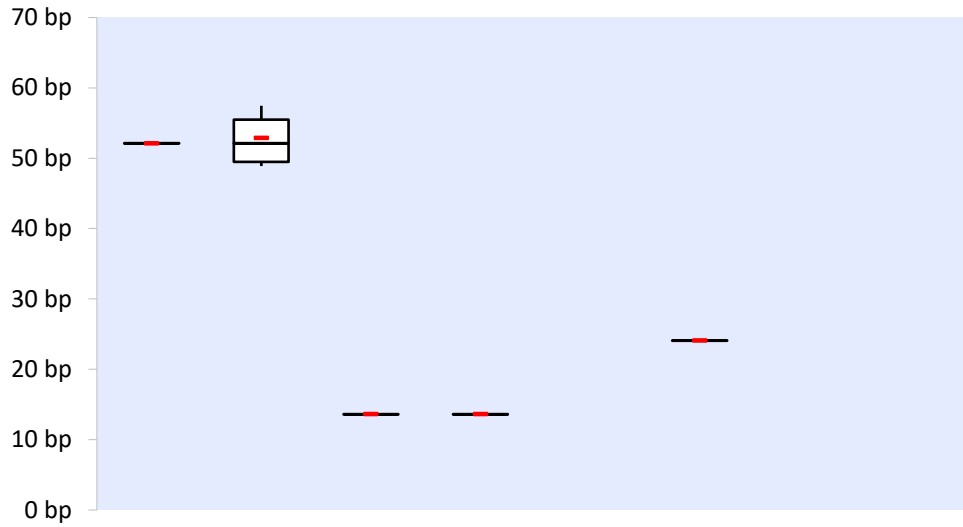
	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	24.7	36.6	12.1	14.2	4.0	8.7	3.8	19.9
75th %ile	24.7	21.2	12.1	11.9	4.0	5.6	3.8	9.7
Median	24.7	15.6	12.1	7.8	4.0	3.9	3.8	3.9
25th %ile	24.7	11.0	12.1	4.0	4.0	3.3	3.8	3.3
10th %ile	24.7	7.4	12.1	2.1	4.0	2.3	3.8	2.3
— Average	24.7	18.9	12.1	8.0	4.0	5.0	3.8	9.0
Count	1	18	1	6	1	4	1	4
Avg. assets	4,145M	7,196M	1,527M	7,964M	202M	42,739M	24,229M	15,505M
Avg. mandate	1,036M	1,214M						
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	20.6	17.3
Performance fees*	n/a	0.0	0.0
Internal and other	<u>n/a</u>	<u>4.1</u>	<u>1.6</u>
Total	n/a	24.7	18.9

* 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 (3 funds).

Fixed income - Convertibles
Cost by implementation style

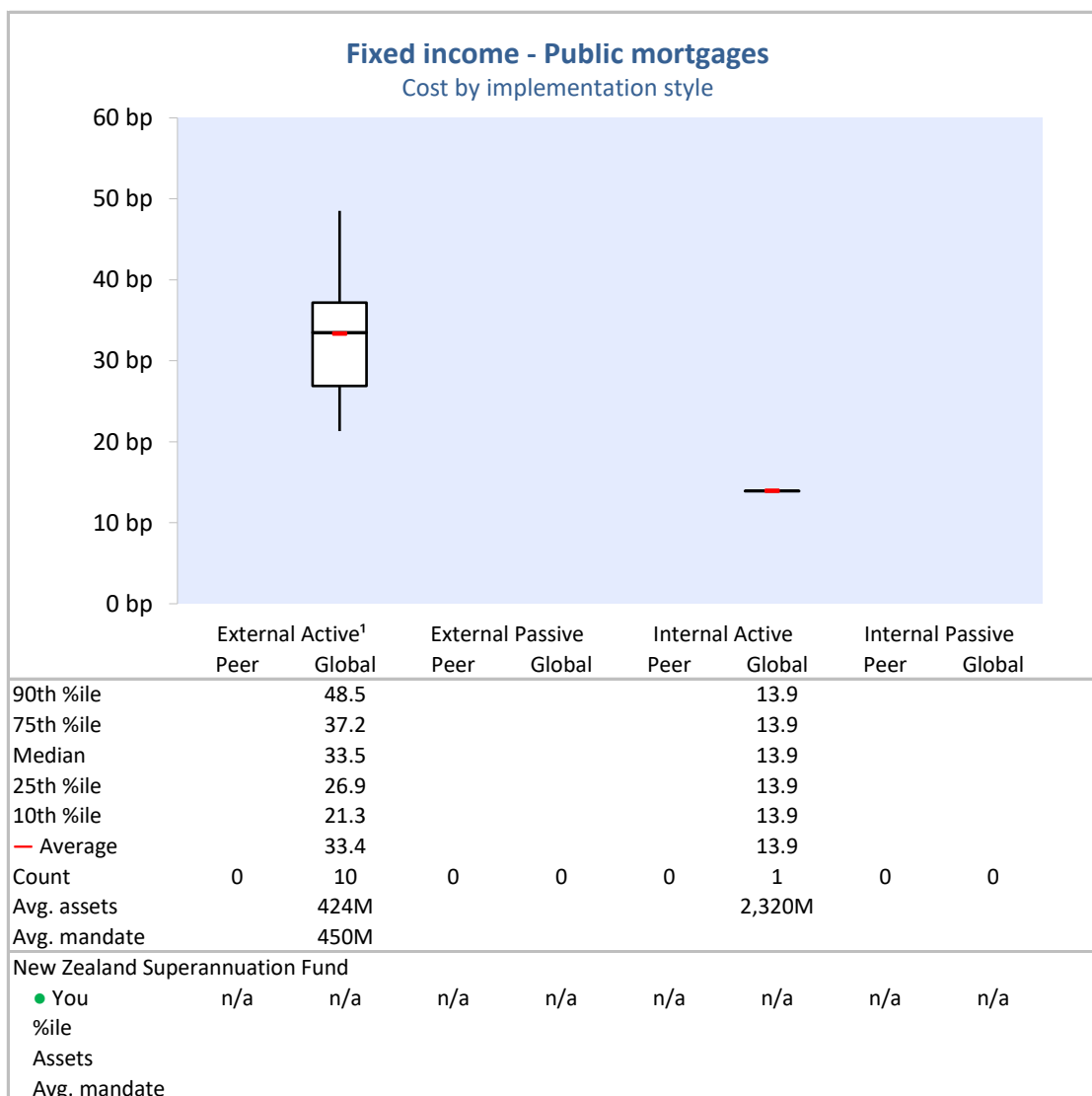


	External Active ¹		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	52.1	57.5	13.6	13.6		24.1		
75th %ile	52.1	55.5	13.6	13.6		24.1		
Median	52.1	52.1	13.6	13.6		24.1		
25th %ile	52.1	49.5	13.6	13.6		24.1		
10th %ile	52.1	48.9	13.6	13.6		24.1		
— Average	52.1	52.9	13.6	13.6		24.1		
Count	1	5	1	1	0	1	0	0
Avg. assets	130M	633M	0M	0M		1,324M		
Avg. mandate		125M						
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	51.2	52.6
Performance fees*	n/a	n/a	n/a
Internal and other	<u>n/a</u>	<u>0.9</u>	<u>0.3</u>
Total	n/a	52.1	52.9

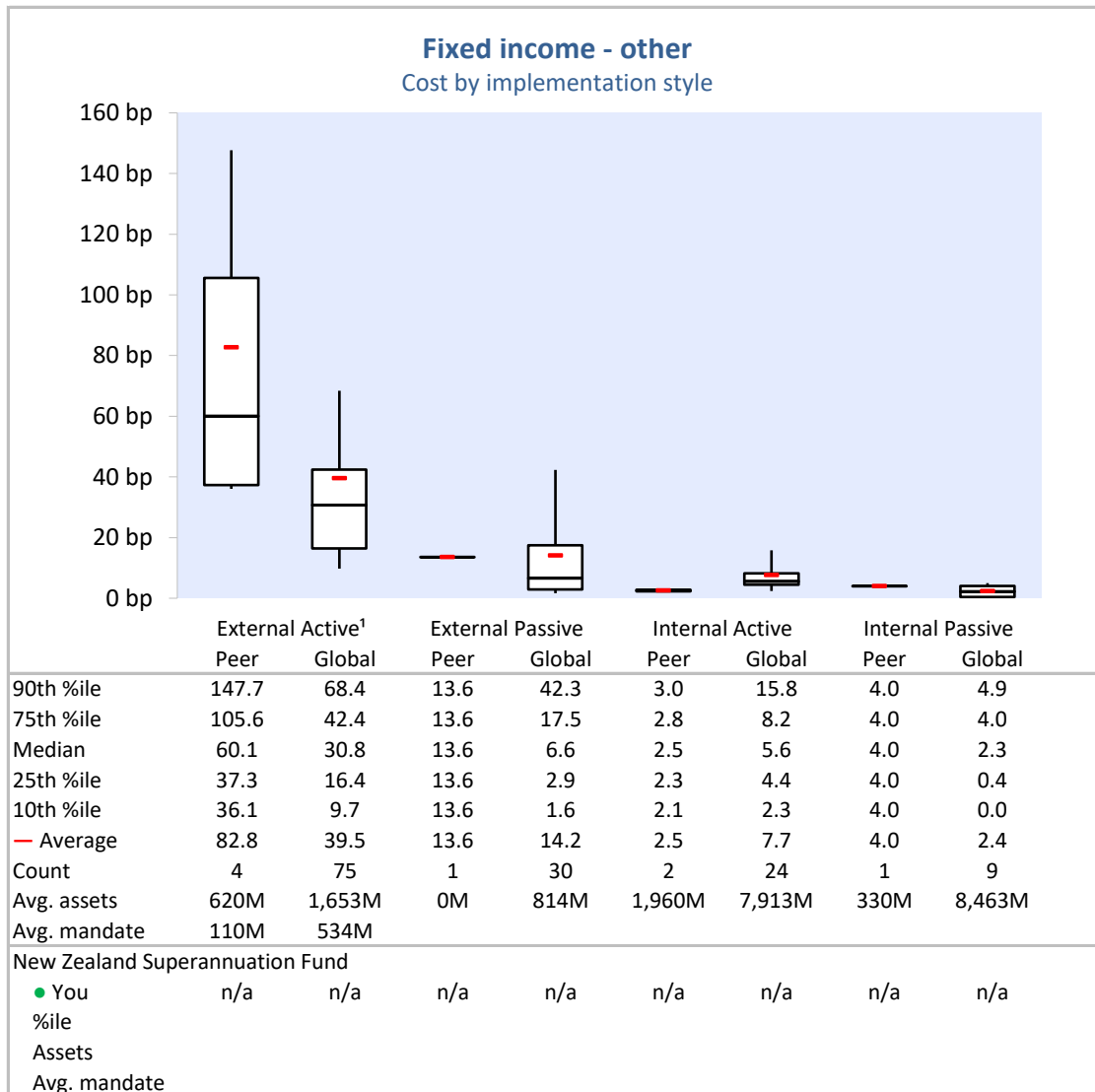
No funds reported a performance fee.



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	33.2
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	33.4

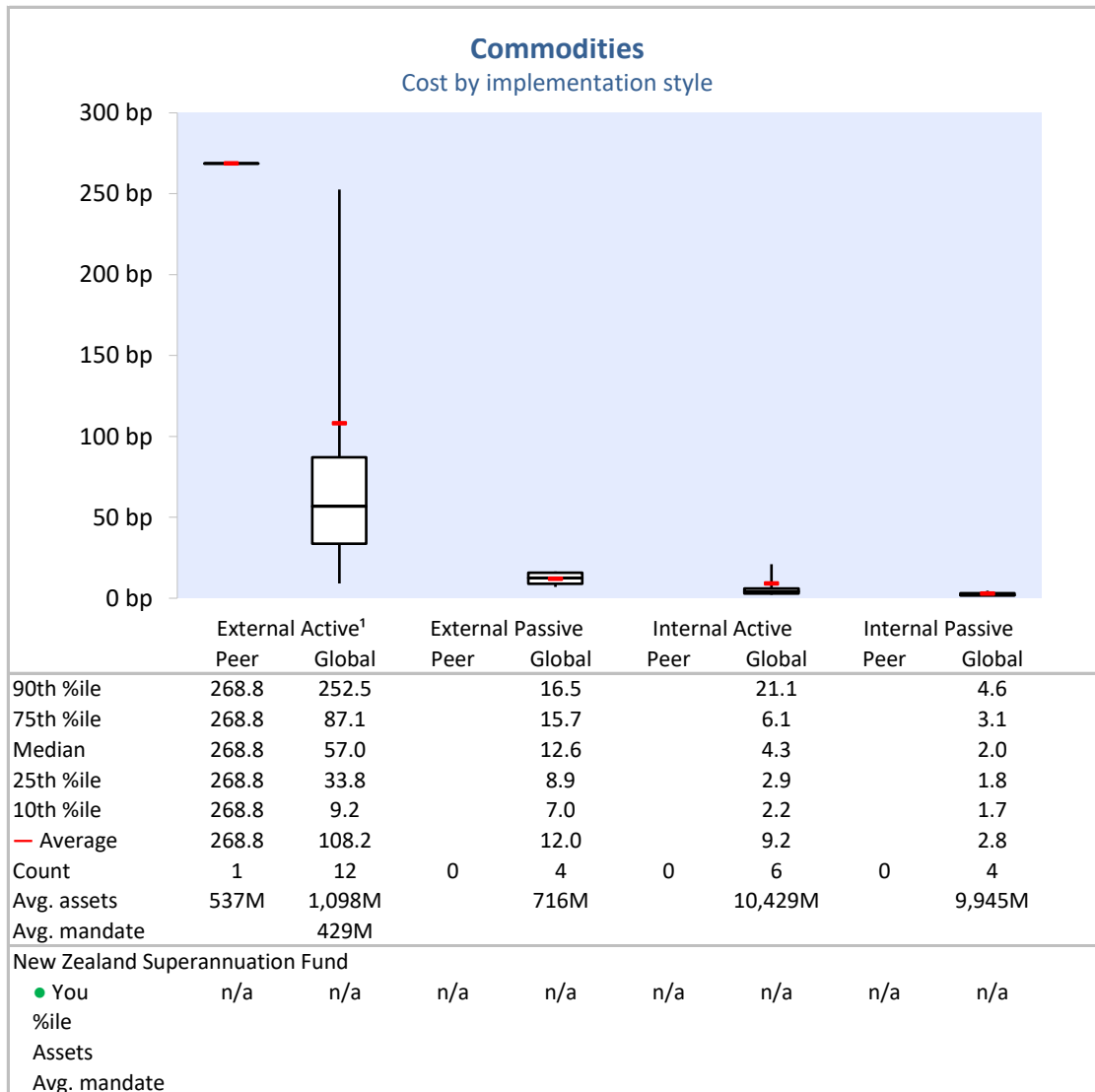
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for Global participants (1 fund).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	81.4	33.7
Performance fees*	n/a	1.3	5.4
Internal and other	<u>n/a</u>	<u>0.1</u>	<u>0.5</u>
Total	n/a	82.8	39.5

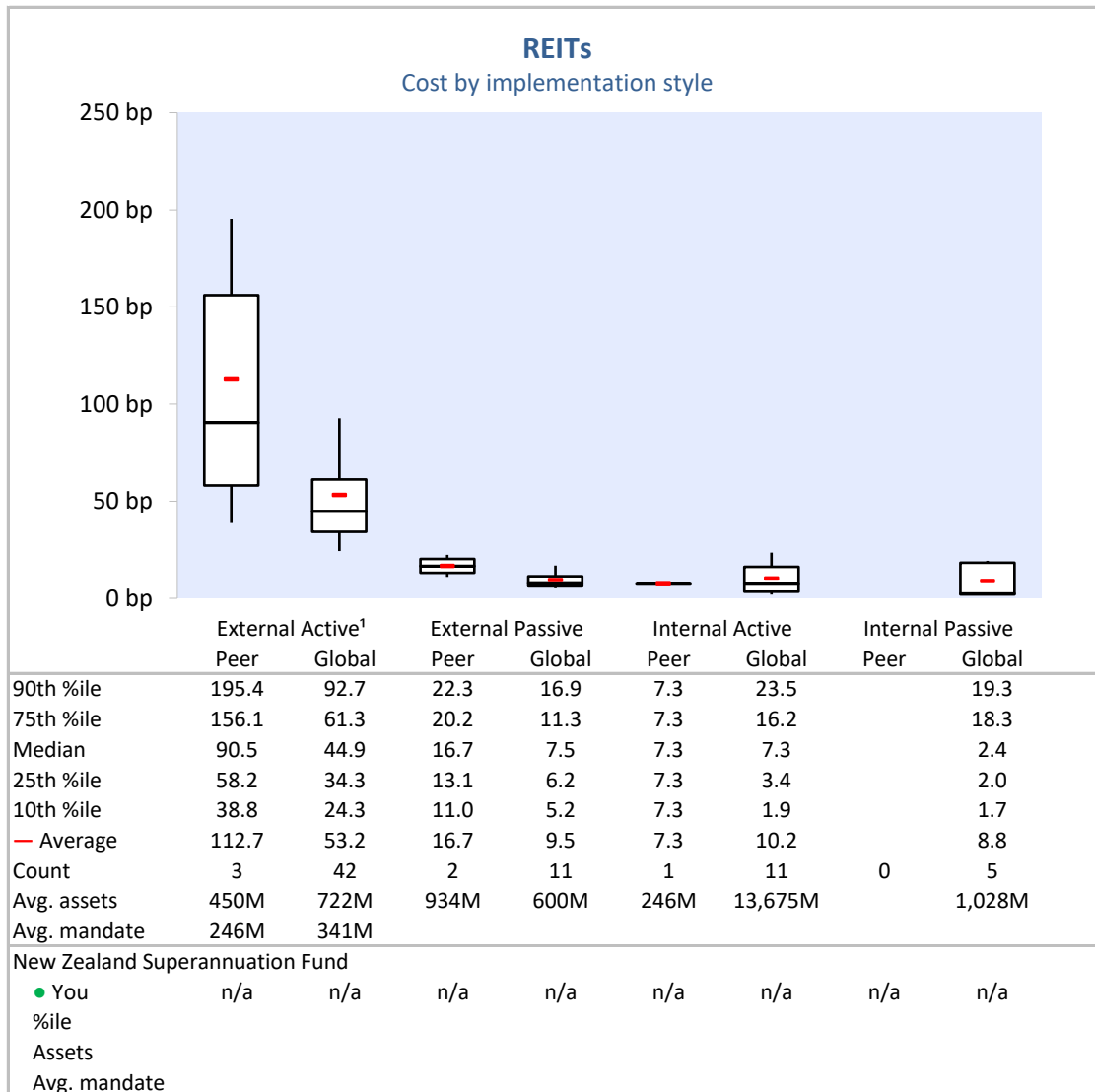
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 2.6 bps for peers (2 funds) and 21.2 bps for Global participants (19 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	255.2	75.7
Performance fees*	n/a	0.0	30.0
Internal and other	<u>n/a</u>	<u>13.6</u>	<u>2.5</u>
Total	n/a	268.8	108.2

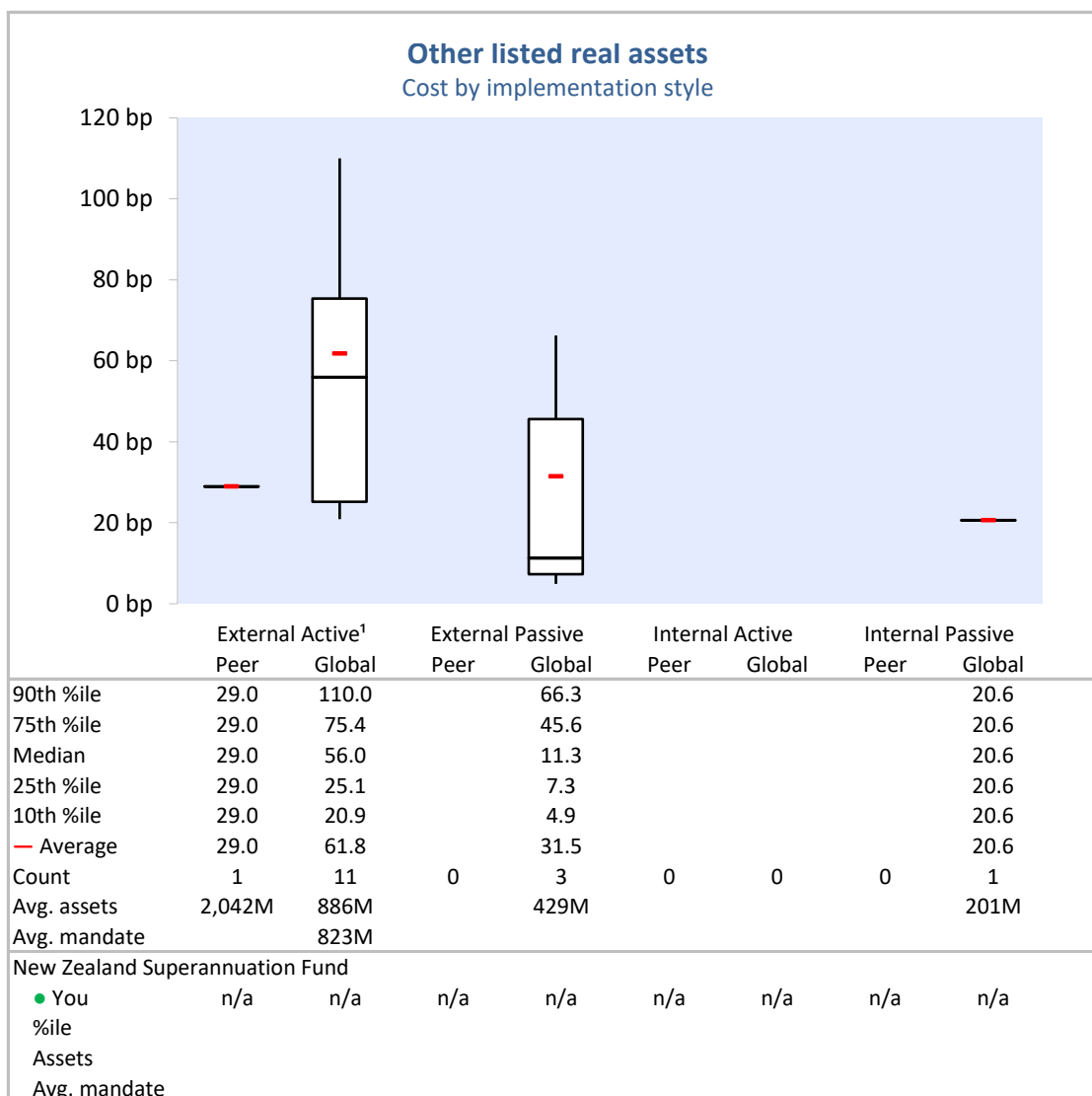
* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 51.4 bps for Global participants (7 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	29.0	41.2
Performance fees*	n/a	82.8	10.2
Internal and other	<u>n/a</u>	<u>0.9</u>	<u>1.8</u>
Total	n/a	112.7	53.2

* 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 124.2 bps for peers (2 funds) and 25.3 bps for Global participants (17 funds).



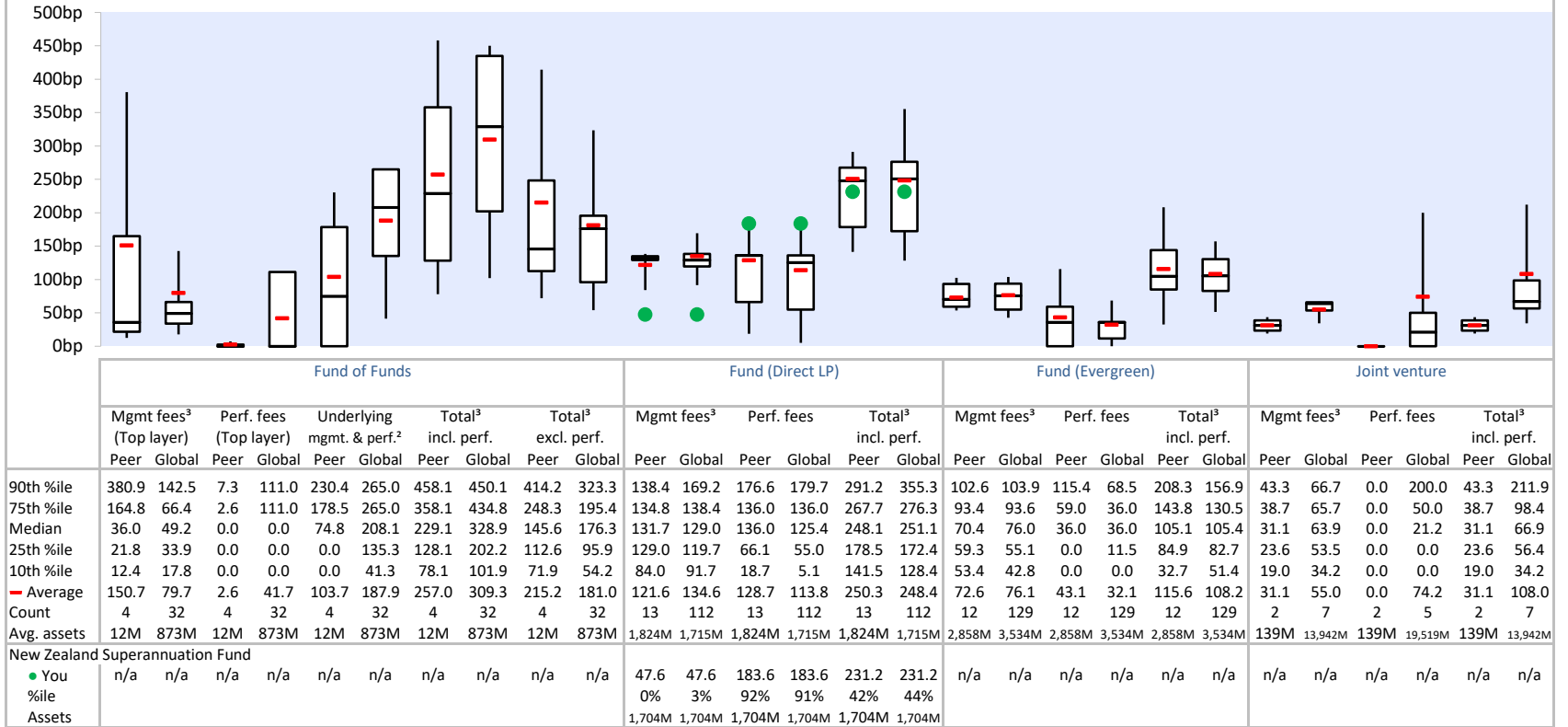
1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	29.0	61.8
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>
Total	n/a	29.0	61.8

* 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 (3 funds).

Real estate ex-REITs

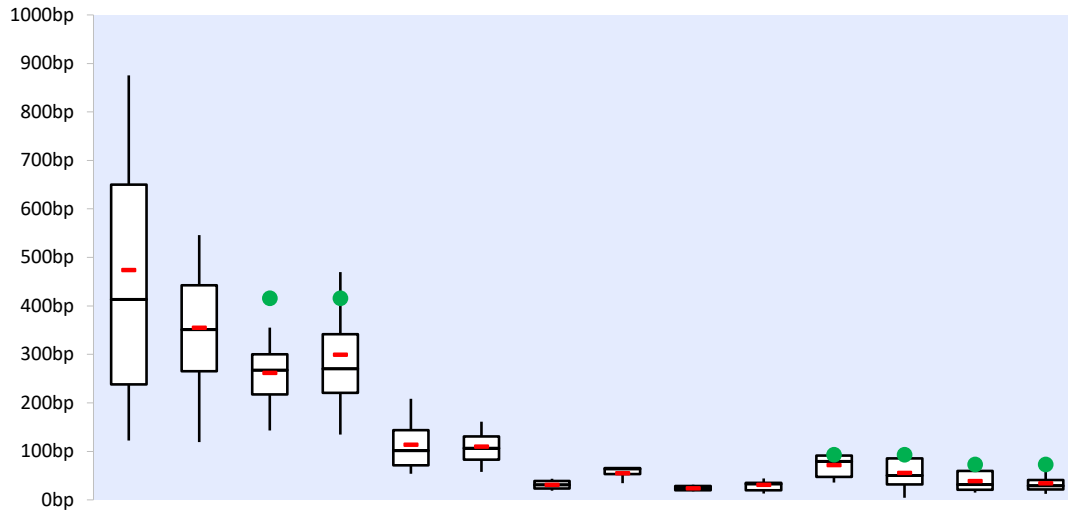
Cost as a % of the amount fees are based on¹



1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 65 bps (on amount fees are based on) for underlying management fees and 10 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 20.4 bps for LPs. The peer average cost of monitoring and selecting was 0.9 bps for fund of funds, 24.2 bps for LPs and 5.3 bps for external (not LPs).

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 ¹		Total ¹		Total ¹		Total ¹		Total ¹		Total ¹		Total	
	incl. perf.		incl. perf.		incl. perf.		incl. perf.		incl. perf.		incl. perf.			
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	875.3	546.1	355.2	469.4	208.3	161.0	43.3	66.7	31.2	44.1	101.0	93.5	69.9	69.2
75th %ile	650.0	442.4	300.4	341.3	143.8	130.5	38.7	65.7	28.4	35.1	91.4	85.7	59.8	41.0
Median	413.7	351.6	267.7	270.2	101.9	107.0	31.1	63.9	23.9	33.0	79.9	50.6	31.7	29.5
25th %ile	238.0	265.4	217.4	221.0	71.3	83.2	23.6	53.5	19.8	19.8	47.4	32.0	20.7	21.2
10th %ile	122.1	119.2	143.0	134.9	53.7	57.8	19.0	34.2	17.4	12.9	35.4	4.3	15.0	12.2
— Average	474.4	355.3	262.0	299.5	114.0	110.1	31.1	55.0	24.2	31.4	72.1	56.0	38.8	34.5
Count	4	32	13	112	12	129	2	7	3	11	6	29	6	27
Avg. assets	6M	732M	1,538M	1,418M	2,833M	3,332M	139M	13,942M	11,786M	16,627M	499M	1,212M	1,029M	7,643M
New Zealand Superannuation Fund														
● You	n/a	n/a	415.8	415.8	n/a	n/a	n/a	n/a	n/a	n/a	93.0	93.0	73.3	73.3
%ile			100%	89%							80%	89%	100%	92%
Assets			947M	947M							460M	460M	153M	153M

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 5 of your peers and 25 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 0.9 bps for fund of funds, 24.2 bps for LPs and 5.3 bps for external (not LPs).

Infrastructure

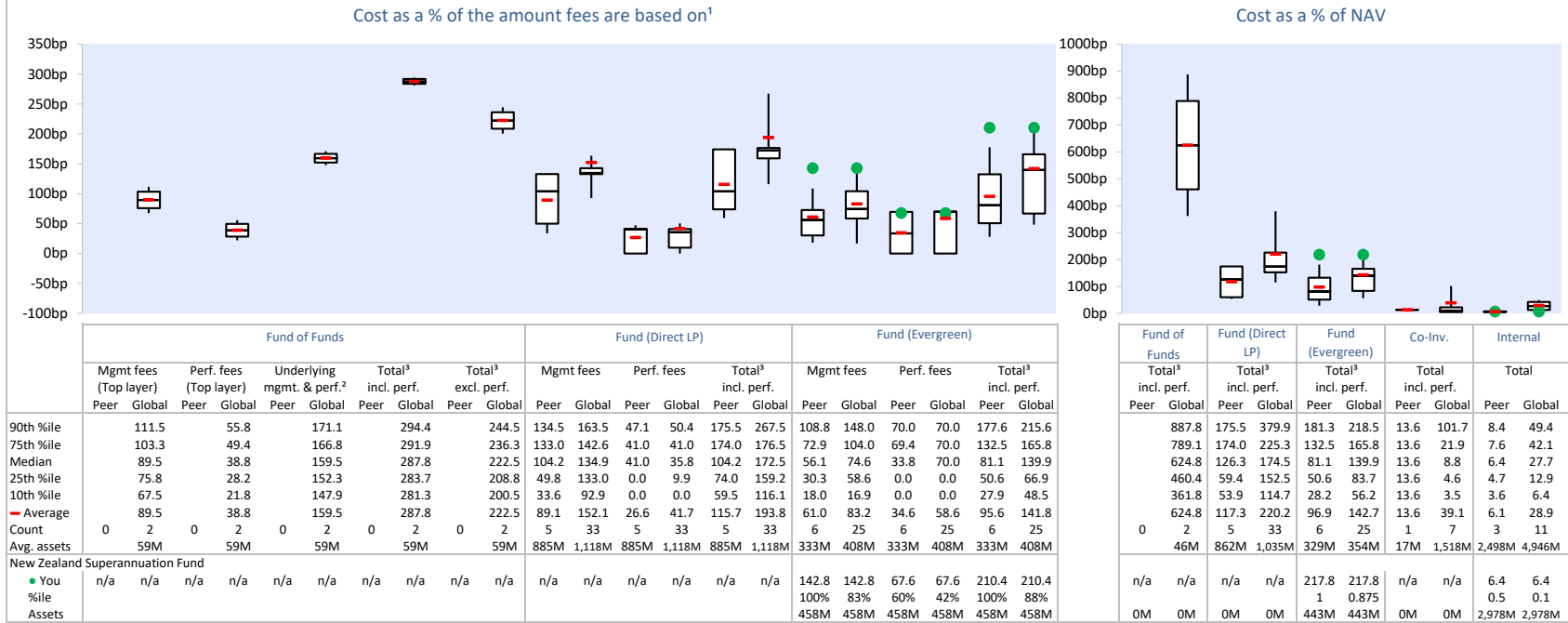
Cost as a % of the amount fees are based on¹

Cost as a % of NAV



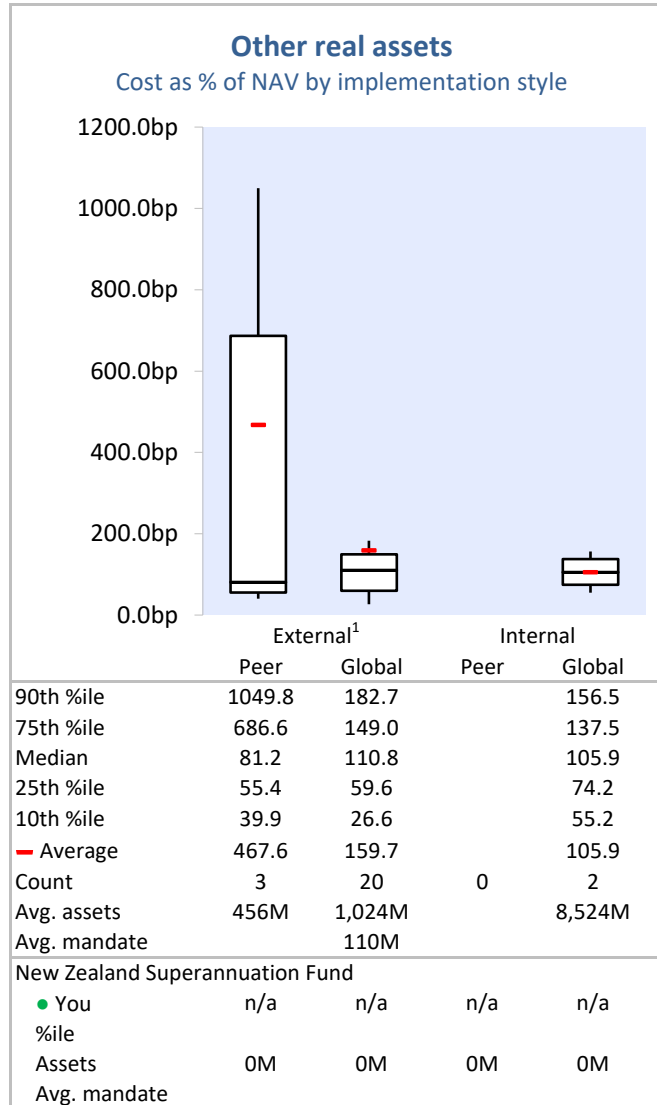
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 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 54.0 bps for LPs and 13.8 bps for external (not LPs). The peer average cost of monitoring and selecting was 11.1 bps for LPs and 6.1 bps 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 default of 150 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.

Natural resources



1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 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 72.6 bps for external (not LPs). The peer average cost of monitoring and selecting was 9.0 bps for LPs and 41.6 bps for external (not LPs).

A default of 70 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.



1. Breakdown of external fees

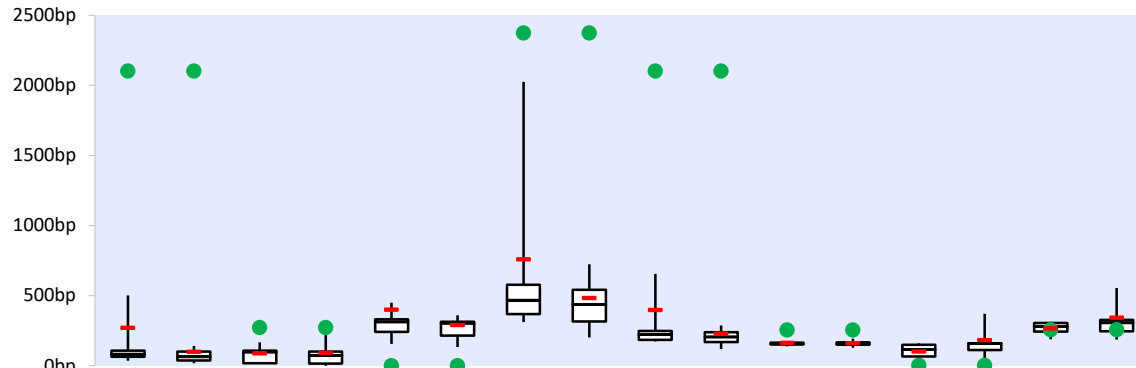
	Your Plan	Peer Average	Global Average
Base fees	n/a	458.2	147.5
Internal and other	<u>n/a</u>	<u>9.4</u>	<u>12.2</u>
Total*	n/a	467.6	159.7
Performance fees**	n/a	0.0	25.3

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

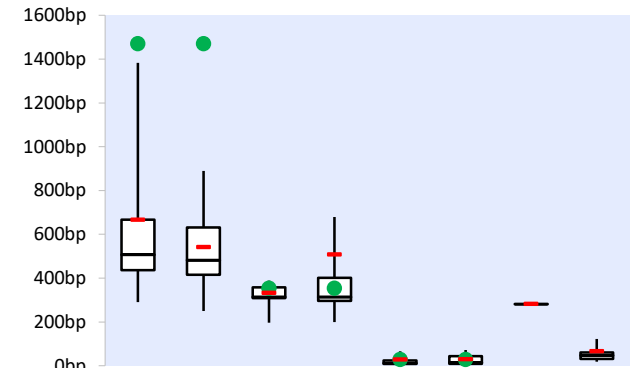
** For funds that did not report a performance fee, a default value of 32 bps was applied. The average performance fee for only those funds that reported a performance fee is 0.0 bps for peers (3 funds) and 22.4 bps for Global participants (14 funds).

Private equity - Diversified

Cost as a % of the amount fees are based on¹



Cost as a % of NAV



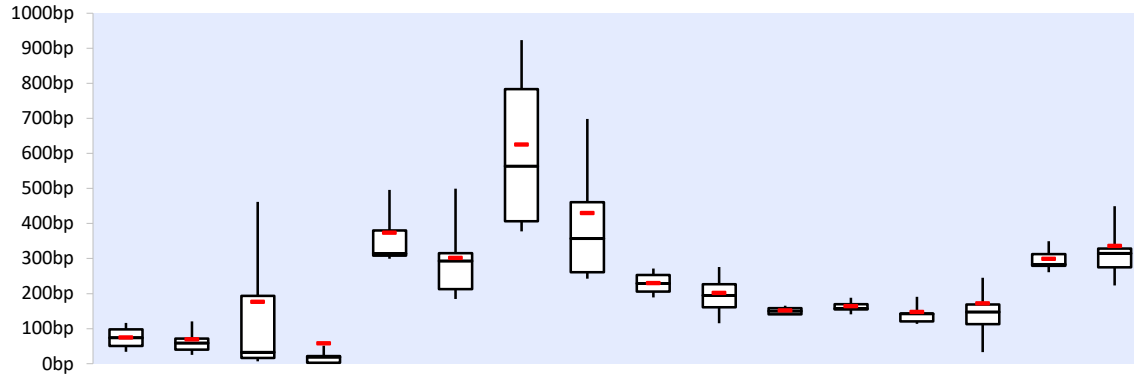
	Fund of Funds										Direct LP					
	Mgmt fees ³ (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	501.2	141.3	167.9	247.1	448.9	359.4	2025.3	722.9	655.2	288.2	172.5	194.2	160.0	370.6	314.0	554.2
75th %ile	106.9	100.7	107.2	101.0	330.3	314.0	577.5	540.8	247.4	238.7	165.3	167.5	149.9	160.0	303.9	327.5
Median	83.0	65.0	100.0	75.7	314.0	304.2	468.3	437.7	224.8	207.2	155.2	154.0	117.3	160.0	280.3	307.0
25th %ile	64.3	37.3	17.9	15.2	242.4	215.5	368.4	316.1	185.4	169.2	154.0	153.7	65.6	111.3	243.9	244.8
10th %ile	36.0	16.8	13.7	0.0	155.2	134.8	311.8	201.9	173.3	119.2	137.3	128.0	8.2	15.3	188.6	185.7
— Average	270.4	100.0	88.0	93.0	399.9	289.1	758.2	482.2	397.8	229.3	162.4	160.5	102.2	181.3	264.6	341.8
Count	13	86	13	86	13	86	13	86	13	86	12	134	12	134	12	134
Avg. assets	1,287M	1,403M	1,287M	1,403M	1,287M	1,403M	1,287M	1,403M	1,287M	1,403M	2,886M	5,338M	2,886M	5,338M	2,886M	5,338M
New Zealand Superannuation Fund																
● You	2100.8	2100.8	273.1	273.1	0.0	0.0	2373.8	2373.8	2100.8	2100.8	254.8	254.8	2.8	2.8	257.6	257.6
%ile	100%	100%	100%	91%	0%	2%	92%	99%	100%	100%	100%	97%	9%	8%	36%	29%
Assets	4M	4M	4M	4M	4M	4M	4M	4M	4M	4M	517M	517M	517M	517M	517M	517M

	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total ³ incl. perf.		Total ³ incl. perf.		Total incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	1382.8	888.9	388.2	678.7	66.8	71.2	281.8	122.7
75th %ile	666.9	631.0	357.6	401.0	24.6	43.9	281.8	60.5
Median	507.4	482.8	314.0	314.0	12.1	16.1	281.8	47.5
25th %ile	435.7	415.2	308.6	295.9	8.3	8.4	281.8	31.7
10th %ile	290.7	249.5	196.6	199.9	7.9	5.6	281.8	17.8
— Average	666.8	541.4	333.2	507.4	28.9	30.2	281.8	65.8
Count	13	85	12	134	6	33	1	15
Avg. assets	1,392M	1,467M	2,654M	4,903M	458M	3,126M	0M	12,669M

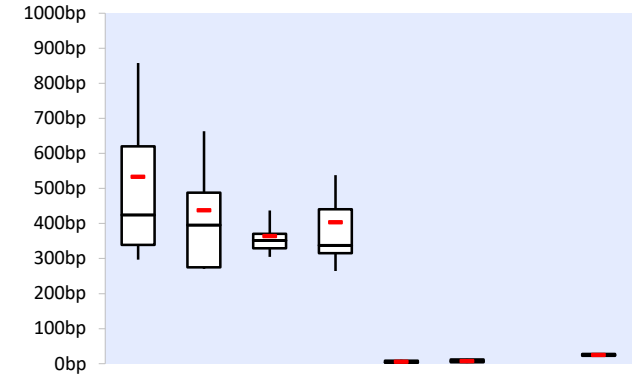
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 154 bps (on amount fees are based on) for underlying management fees and 160 bps (on NAV) for underlying performance fees were used.
3. 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 2,058.7 bps for fund of funds and 128.6 bps for LPs. The peer average cost of monitoring and selecting was 240.4 bps for fund of funds, 22.6 bps for LPs and 6.0 bps for co-investments.

LBO

Cost as a % of the amount fees are based on¹



Cost as a % of NAV

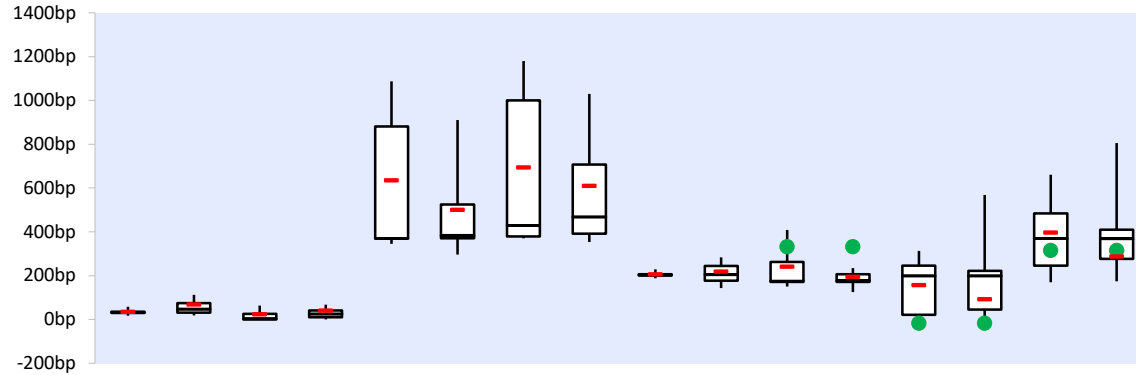


	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal	
	Mgmt fees ³ (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.		Total ³ incl. perf.		Total incl. perf.		Total			
	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	116.6	120.8	462.0	51.7	496.3	499.2	923.3	698.7	271.6	275.8	165.8	188.0	190.6	244.8	349.1	449.5	857.9	663.3	437.2	538.1	11.1	13.9		30.1
75th %ile	98.0	71.4	193.3	22.0	379.7	315.0	783.5	460.6	253.0	226.4	158.6	169.9	142.8	169.0	312.9	328.2	620.1	488.0	370.1	440.3	8.5	12.1		28.2
Median	74.0	59.0	32.9	19.3	314.2	293.5	564.2	357.8	229.0	195.0	150.8	157.4	142.3	147.5	283.6	315.0	424.8	396.0	351.8	338.2	4.2	7.7		25.2
25th %ile	50.9	40.0	16.3	2.7	308.4	213.2	406.4	260.8	205.9	161.0	140.8	155.0	120.7	112.9	279.3	274.8	338.6	274.8	329.5	315.0	3.0	3.9		22.2
10th %ile	34.0	25.2	6.5	0.0	299.5	185.1	377.2	242.8	189.0	115.5	140.3	140.7	113.9	32.8	261.3	223.0	297.1	270.3	304.9	264.8	2.3	1.7		20.4
Average	74.9	69.6	176.7	58.3	374.0	302.1	625.7	429.9	229.9	202.6	152.2	164.5	147.5	172.2	299.7	336.6	533.9	438.4	364.4	403.5	6.3	7.7		25.2
Count	4	13	4	13	4	13	4	13	4	13	5	30	5	30	5	30	4	13	5	30	3	10	0	2
Avg. assets	205M	1,080M	205M	1,080M	205M	1,080M	205M	1,080M	205M	1,080M	3,673M	7,754M	3,673M	7,754M	3,673M	7,754M	216M	814M	3,073M	6,274M	441M	2,374M		394M
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 defaults of 155 bps (on amount fees are based on) for underlying management fees and 160 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 6.5 bps for fund of funds , 5.9 bps for LPs and 2.0

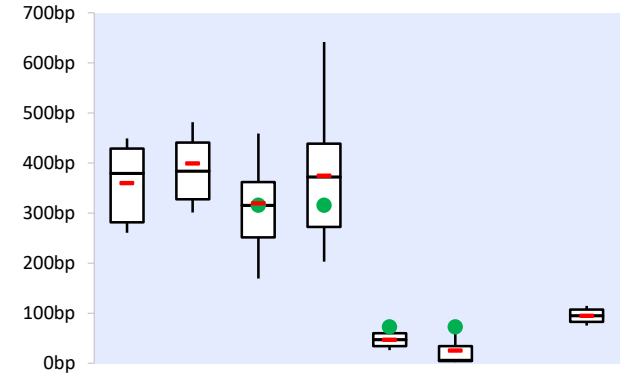
Venture capital

Cost as a % of the amount fees are based on¹



	Fund of Funds										Direct LP					
	Mgmt fees ³ (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	57.5	112.9	63.3	68.2	1087.3	911.1	1179.8	1030.0	228.5	283.9	408.6	234.8	313.4	568.7	661.4	805.4
75th %ile	36.0	74.1	25.0	40.4	881.7	524.3	1000.1	706.5	207.0	244.2	262.7	206.4	245.0	221.9	484.5	409.4
Median	32.7	47.4	3.5	25.0	371.0	383.8	428.7	468.5	203.7	205.3	175.0	178.9	200.0	200.0	371.0	368.9
25th %ile	29.6	31.4	0.0	10.0	371.0	371.0	379.5	391.9	200.6	177.4	170.9	171.1	21.1	44.4	245.4	275.9
10th %ile	16.9	17.8	0.0	0.0	345.6	295.7	370.6	354.1	187.9	143.9	150.9	125.7	-6.7	-1.4	170.4	174.6
— Average	35.7	68.4	23.5	40.8	635.3	501.3	694.5	610.5	206.7	219.4	240.9	195.3	156.9	92.6	397.8	288.0
Count	5	20	5	20	5	20	5	20	5	20	7	30	7	30	7	30
Avg. assets	383M	635M	383M	635M	383M	635M	383M	635M	383M	635M	816M	1,677M	816M	1,677M	816M	1,677M
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	332.5	332.5	-16.7	-16.7	315.8	315.8
%ile											83%	97%	0%	3%	33%	45%
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	98M	98M	98M	98M	98M	98M

Cost as a % of NAV



Fund of Funds		Direct LP		Co-Investment		Internal	
Total ³ incl. perf.		Total ³ incl. perf.		Total incl. perf.		Total	
Peer	Global	Peer	Global	Peer	Global	Peer	Global
449.0	481.7	459.0	641.7	67.5	78.6		114.5
428.7	440.8	362.2	438.3	59.8	34.1		107.2
379.5	384.1	315.8	372.6	47.0	6.4		95.0
281.4	327.6	251.5	272.6	34.1	4.4		82.8
260.6	300.8	169.3	202.7	26.4	2.2		75.5
359.8	399.6	319.4	374.7	47.0	25.9		95.0
5	20	7	30	2	8	0	2
383M	635M	1,024M	1,562M	38M	1,440M		3,348M
n/a	n/a	315.8	315.8	72.7	72.7	n/a	n/a
		50%	31%	100%	86%		
0M	0M	98M	98M	54M	54M	0M	0M

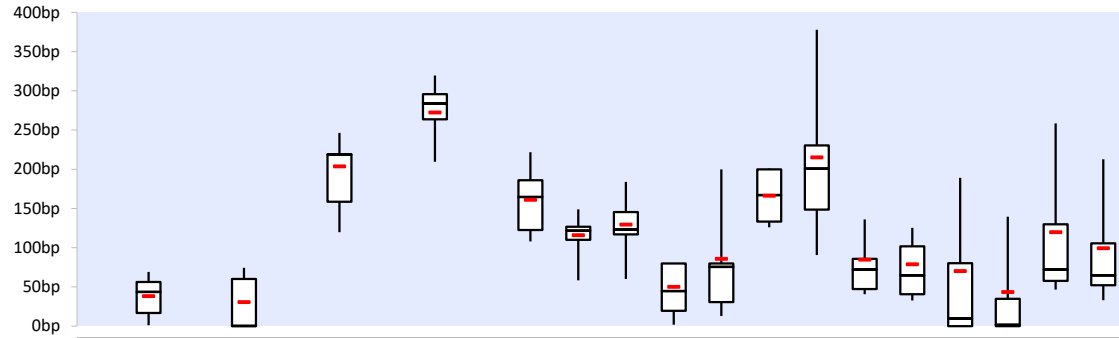
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

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 defaults of 171 bps (on amount fees are based on) for underlying management fees and 200 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. Your cost of monitoring and selecting was 113.0 bps for LPs. The peer average cost of monitoring and selecting was 15.3 bps for fund of funds, 28.9 bps for LPs and 2.0 bps for co-investments.

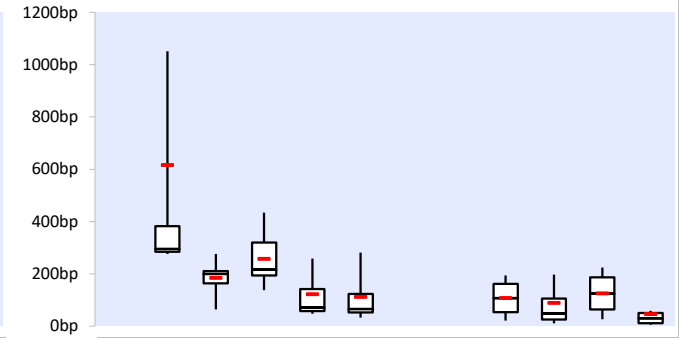
Private credit

Cost as a % of the amount fees are based on¹



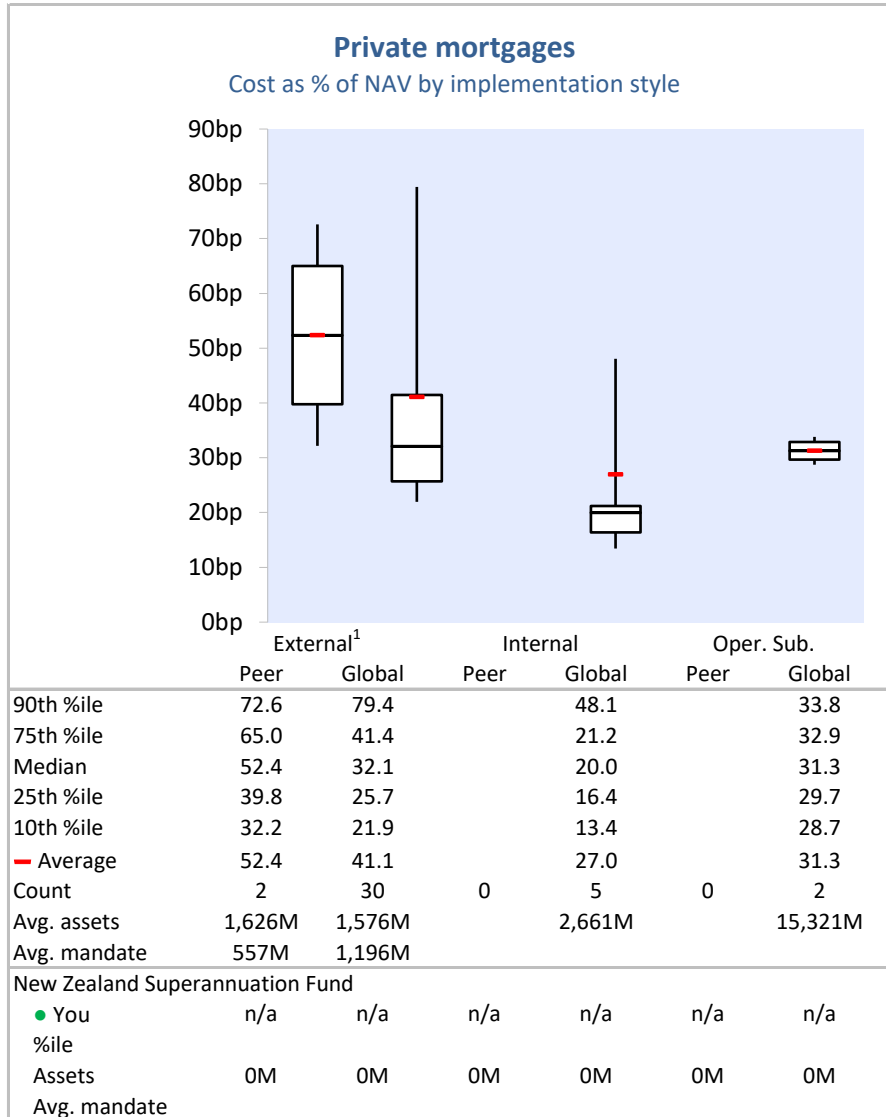
	Fund of Funds						Direct LP						Evergreen									
	Mgmt fees ³ (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	69.0	74.4	246.3	319.7	221.7	148.8	183.8	80.0	200.0	201.0	377.9	135.9	125.4	189.0	139.6	258.3	212.6					
	56.2	60.0	219.0	295.8	186.0	126.7	145.5	80.0	80.0	199.8	230.2	85.9	101.8	80.3	34.8	129.8	105.7					
	44.0	0.6	219.0	284.0	165.0	121.8	123.4	44.9	75.7	167.3	201.0	72.1	65.0	10.0	2.0	72.1	65.0					
	16.8	0.0	158.6	263.5	122.7	110.0	117.0	19.5	30.6	133.2	148.6	47.3	40.7	0.0	0.0	57.8	52.1					
	1.3	0.0	119.9	209.5	108.0	58.5	60.2	1.9	13.1	126.0	90.8	40.7	32.6	0.0	0.0	46.8	33.3					
	38.2	30.6	203.6	272.4	160.9	115.8	129.5	50.3	85.7	166.1	215.2	84.7	78.7	70.4	43.5	119.9	99.3					
	0	9	0	9	0	9	9	0	9	12	92	12	92	12	92	8	53	4	25	8	53	
	445M	445M	445M	445M	445M	1,271M	1,475M	1,271M	1,475M	1,271M	1,475M	1,138M	1,305M	2,276M	2,767M	1,138M	1,305M					
New Zealand Superannuation Fund	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	
● 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	
%ile																						
Assets																						

Cost as a % of NAV



	Fund of Funds		Direct LP		Evergreen		Oper. Sub.		Co-Inv.		Internal		
	Total ³ incl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total		Total incl. perf.		Total		
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	
	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	Peer	Global	Peer	Global	
	1051.4	276.3	434.4	258.3	281.6					193.6	197.2	223.9	59.1
	382.4	210.4	319.8	141.6	123.2					161.3	105.6	186.9	50.2
	295.8	200.3	216.6	72.1	65.8					107.5	49.7	125.3	30.7
	284.0	163.6	193.5	58.0	52.3					53.8	25.4	63.7	11.3
	275.9	63.9	137.7	47.3	33.3					21.5	10.9	26.7	5.5
	616.8	184.5	257.5	121.9	112.3					107.5	88.8	125.3	46.1
	0	9	12	92	8	53	0	0	2	13	2	22	
	312M	1,059M	1,266M	1,126M	1,226M					73M	493M	1M	5,587M
	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

- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 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.
- 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 9.5 bps for LPs and 8.8 bps for external (not LPs).

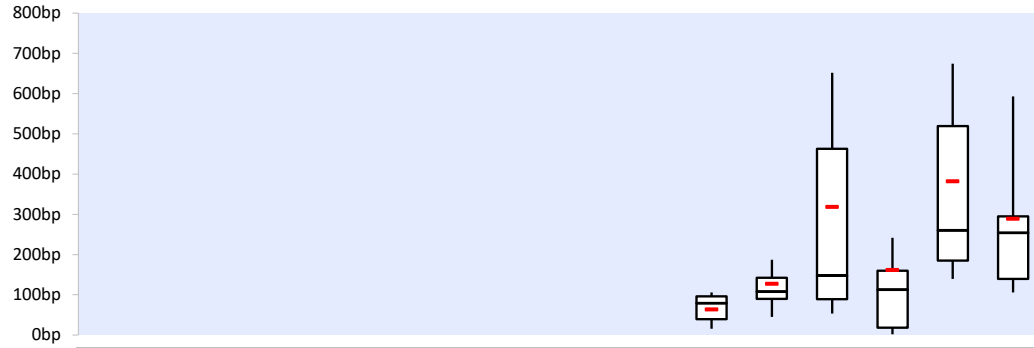


1. Breakdown of external fees

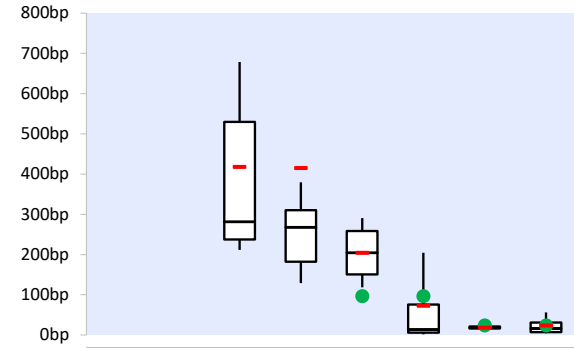
	Your Plan	Peer Average	Global Average
Base fees	n/a	50.8	38.9
Internal and other	<u>n/a</u>	<u>1.5</u>	<u>2.2</u>
Total*	n/a	52.4	41.1
Performance fees**	n/a	0.0	2.9

Private equity - Other

Cost as a % of the amount fees are based on¹



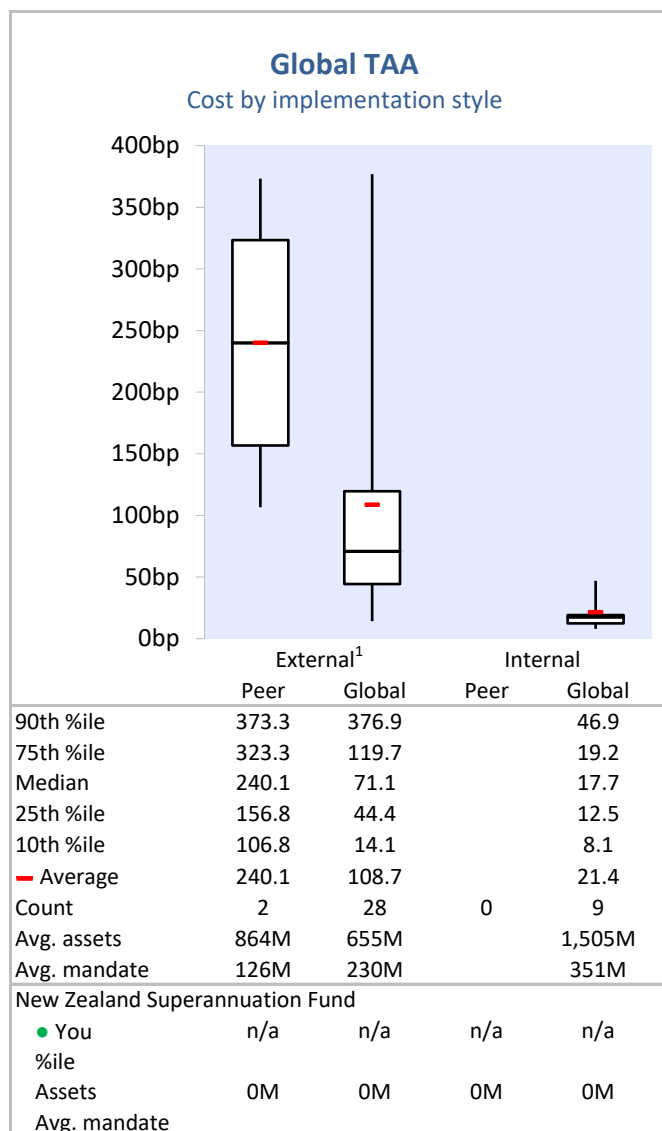
Cost as a % of NAV



	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal				
	Mgmt fees ³ (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. ²		Total ³ incl. perf.		Total ³ excl. perf.		Mgmt fees ³		Perf. fees		Total ³ incl. perf.		Total ³ incl. perf.		Total ³ incl. perf.		Total ³						
	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										106.0	187.1	651.8	241.8	674.4	592.7			678.5	379.8	290.9	204.6	22.9	56.4				
75th %ile										96.1	142.2	463.0	160.0	519.3	294.9			529.7	310.2	258.5	75.9	21.4	30.8				
Median										79.6	108.3	148.1	112.9	260.8	254.1			281.6	268.4	204.6	13.7	18.8	17.2				
25th %ile										39.8	89.6	88.9	18.3	185.0	139.9			237.8	182.0	150.6	6.0	16.2	7.2				
10th %ile										15.9	45.0	53.4	1.9	139.6	106.1			211.5	129.3	118.2	1.7	14.7	4.3				
Average										64.1	127.3	318.5	162.0	382.6	289.4			417.8	415.0	204.6	73.3	18.8	24.1				
Count	0	0	0	0	0	0	0	0	0	3	20	3	20	3	20	0	0	3.0	20	2	6	2	8				
Avg. assets										955M	2,739M	955M	2,739M	955M	2,739M			839M	1,953M	1,417M	829M	843M	3,368M				
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	96.6	96.6	23.9	23.9				
	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0%	80%	100%	71%				
	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	2,692M	2,692M	1,914M	1,914M				

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

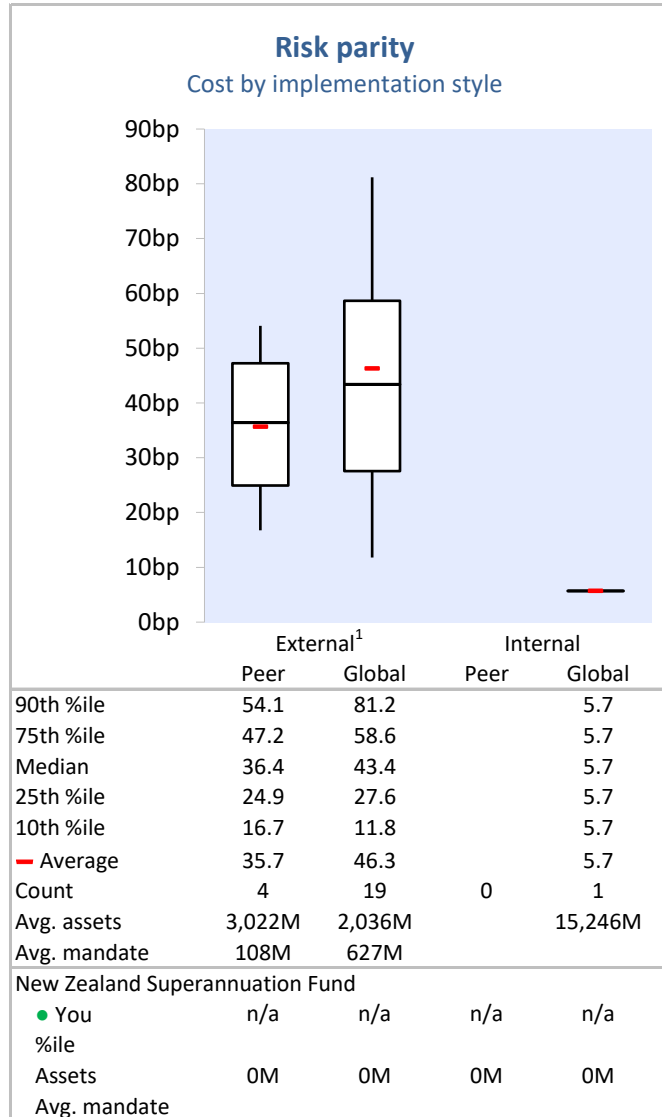
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of n/a bps (on amount fees are based on) for underlying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



1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	108.8	727.2
Internal and other	n/a	3.7	8.9
Performance fees	<u>n/a</u>	<u>129.4</u>	<u>62.7</u>
Total*	n/a	240.1	108.7

* 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 129.4 bps for peers (2 funds) and 62.7 bps for Global participants (13 funds).



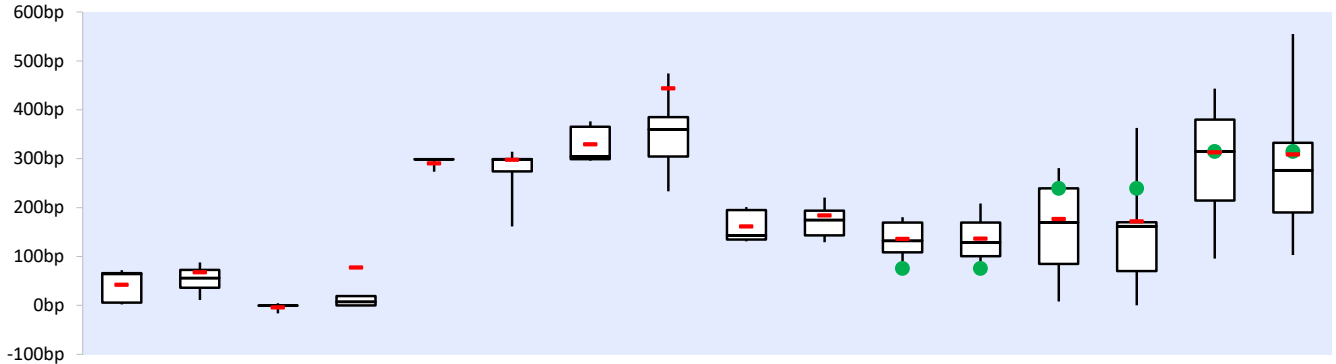
1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	32.2	41.9
Internal and other	n/a	4.7	4.5
Performance fees	<u>n/a</u>	<u>0.0</u>	<u>5.4</u>
Total*	n/a	35.7	46.3

* 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 5.4 bps for Global participants (7 funds).

Hedge funds

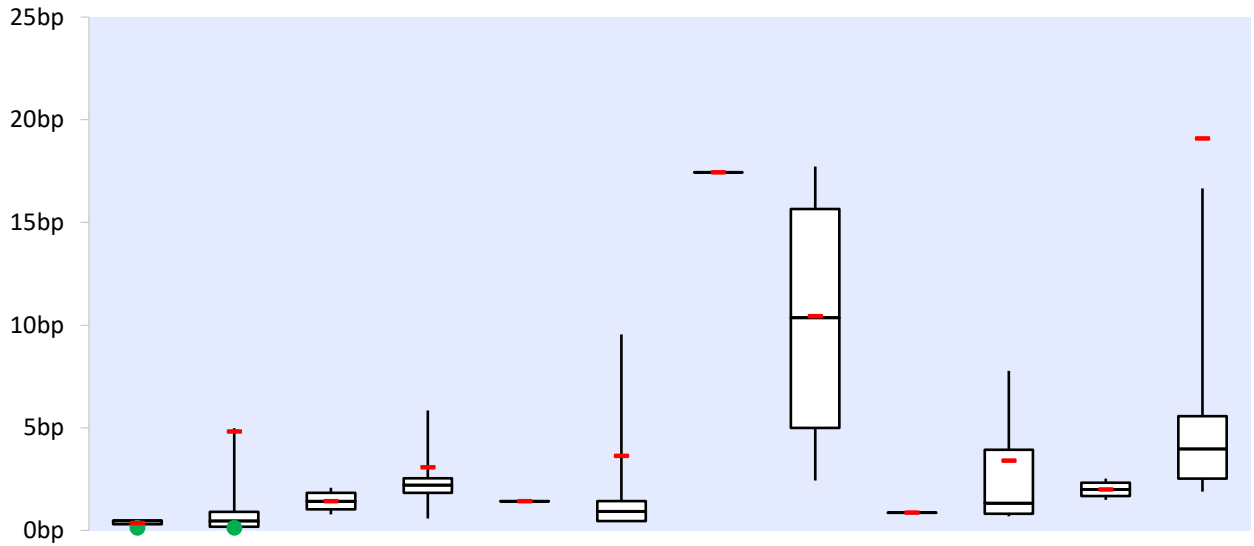
Cost by implementation style



	Fund of Funds										External Direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. and perf. ¹		Total ² incl. perf.		Total ² excl. perf.		Mgmt fees		Perf. fees		Total ² incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	72.2	88.2	4.8	19.0	299.0	314.1	376.1	474.1	201.2	220.4	180.7	208.6	281.1	363.1	443.1	554.9
75th %ile	66.2	72.4	0.0	19.0	299.0	299.0	365.2	385.0	195.2	193.9	169.4	169.4	239.3	170.3	380.2	332.4
Median	64.6	56.1	0.0	7.5	299.0	299.0	304.6	360.0	143.3	174.9	132.5	129.0	170.0	162.2	314.7	276.3
25th %ile	5.6	36.2	0.0	0.0	299.0	274.1	299.0	304.5	134.6	143.3	108.4	100.8	84.6	70.1	214.3	190.1
10th %ile	2.2	10.9	-16.2	0.0	273.6	161.3	296.1	233.1	131.2	129.0	76.8	67.9	8.1	0.0	95.6	103.3
— Average	42.5	67.8	-3.8	77.8	290.5	298.1	329.2	443.8	161.5	184.2	135.8	136.8	177.0	172.2	312.8	309.0
Count	5	46	5	46	5	46	5	46	5	46	13	93	13	93	13	93
Avg. assets	479M	1,461M	479M	1,461M	479M	1,461M	479M	1,461M	479M	1,461M	3,053M	4,141M	3,053M	4,141M	3,053M	4,141M
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	75.4	75.4	239.3	239.3	314.7	314.7
%ile											8%	12%	75%	85%	50%	67%
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	4,085M	4,085M	4,085M	4,085M	4,085M	4,085M

- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 129 bps (on NAV) for underlying management fees and 170 bps (on NAV) for underlying performance fees were used.
- The total cost also includes the internal cost of monitoring and selecting real estate investments. The peer average cost of monitoring and selecting was 8.1 bps for fund of funds and 12.1 bps for LPs.

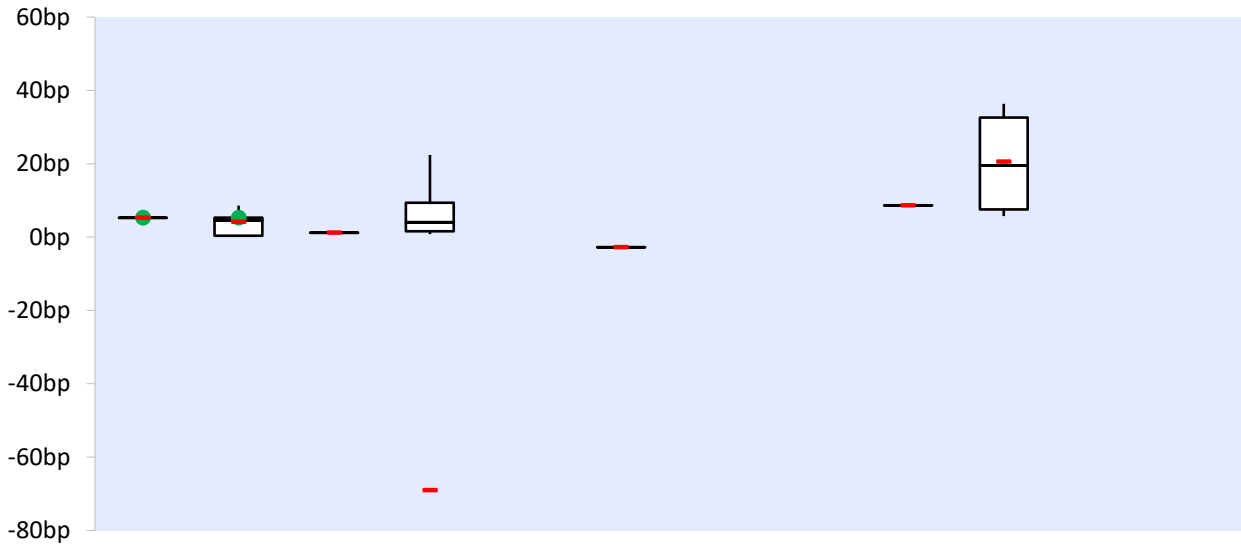
Overlays: currency, duration Cost by implementation style



	Currency Hedge				Discretionary Currency				Duration Management			
	Internal		External		Internal		External		Internal		External	
	% of notional Peer	% of notional Global	% of notional Peer	% of notional Global	% of notional Peer	% of notional Global	% of notional Peer	% of notional Global	% of notional Peer	% of notional Global	% of notional Peer	% of notional Global
90th %ile	0.5	5.0	2.1	5.8	1.4	9.5	17.4	17.7	0.9	7.8	2.5	16.7
75th %ile	0.5	0.9	1.8	2.5	1.4	1.4	17.4	15.7	0.9	3.9	2.3	5.6
Median	0.5	0.5	1.4	2.2	1.4	0.9	17.4	10.4	0.9	1.3	2.0	4.0
25th %ile	0.3	0.2	1.0	1.8	1.4	0.5	17.4	5.0	0.9	0.8	1.7	2.5
10th %ile	0.2	0.1	0.8	0.6	1.4	0.4	17.4	2.4	0.9	0.7	1.5	1.9
— Average	0.4	4.8	1.4	3.1	1.4	3.6	17.4	10.4	0.9	3.4	2.0	19.1
Count	3	14	2	20	1	5	1	19	1	4	2	19
Avg. notional	25,167M	43,647M	9,360M	3,817M	3,148M	31,596M	319M	2,763M	17,546M	5,407M	4,439M	3,914M
New Zealand Superannuation Fund												
● You	0.1	0.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile	0%	23%										
Avg. notional	46,500M	46,500M										

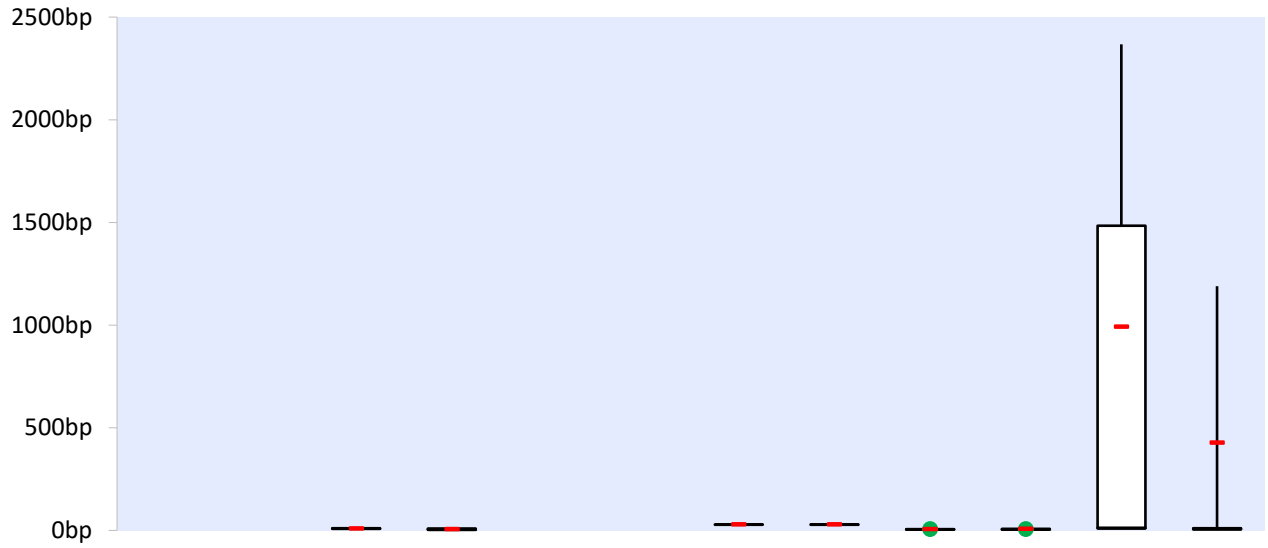
Overlays: passive beta/rebalancing, global TAA, policy tilt TAA

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	% of notional	% of notional	% of notional	% of notional	% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	5.3	8.5	1.2	22.4	-2.7				8.6	36.4		
75th %ile	5.3	5.3	1.2	9.3	-2.7				8.6	32.6		
Median	5.3	4.6	1.2	4.1	-2.7				8.6	19.6		
25th %ile	5.3	0.4	1.2	1.6	-2.7				8.6	7.6		
10th %ile	5.3	0.2	1.2	0.8	-2.7				8.6	5.7		
— Average	5.3	4.2	1.2	-69.0	-2.7				8.6	20.6		
Count	1	5	1	30	0	1	0	0	1	4	0	0
Avg. notional	7,700M	22,698M	7,887M	3,540M					1,421M	1,188M		
New Zealand Superannuation Fund												
● You	5.3	5.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile	0%	75%										
Avg. notional	7,700M	7,700M										

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			10.6	9.9			29.3	29.3	5.8	14.3	2367.3	1189.5
75th %ile			10.3	8.6			29.3	29.3	5.7	8.5	1483.9	10.9
Median			9.9	5.9			29.3	29.3	5.7	5.7	11.7	8.7
25th %ile			9.4	2.8			29.3	29.3	5.6	4.5	10.9	5.1
10th %ile			9.1	1.2			29.3	29.3	5.5	2.8	10.3	1.8
— Average			9.9	5.6			29.3	29.3	5.7	7.6	992.6	428.1
Count	0	0	2	6	0	0	1	1	2	6	3	7
Avg. notional			5,241M	2,210M			1,033M	1,033M	2,945M	2,023M	2,741M	2,896M
New Zealand Superannuation Fund												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.8	5.8	n/a	n/a
%ile									100%	60%		
Avg. notional									2,800M	2,800M		

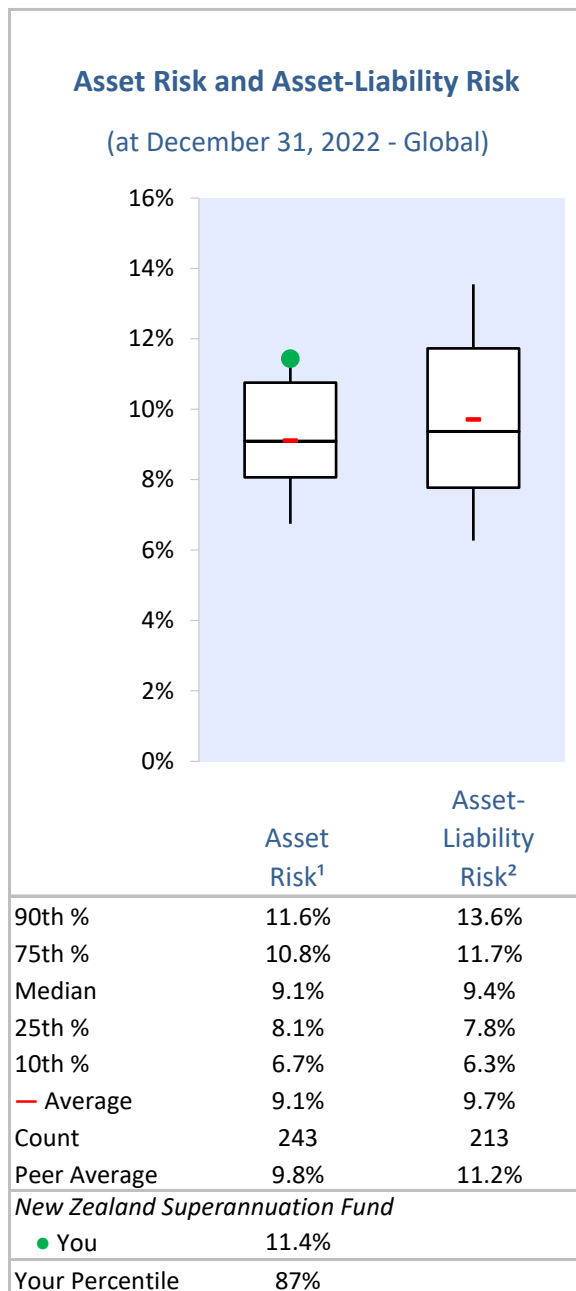
6

Risk

Comparison of your risk levels to the Global universe	2
Calculation of asset risk	3
Reduction in asset risk due to diversification	4
Asset-liability risk*	5
Liability proxy portfolio	6
Liability risk	7
Projected worst case scenarios	8
Historic worst case scenarios during the past 5 years	9
Risk Trends - 2018 to 2022	10
Risk levels based on the policy mix and the effective asset mix	11
Appendix A-B - Risk methodology	12
Appendix C - Correlation Matrix	16

*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.

Comparison of your risk levels to the Global universe



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

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

Calculation of asset risk

Before considering the benefit of diversification, the weighted average risk of the asset classes in your asset mix policy was 13.3%.

Calculation of your weighted asset class risk

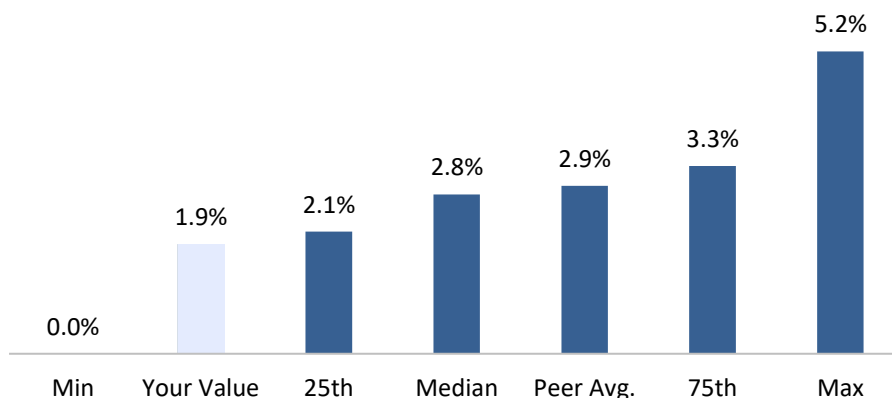
Asset Class	Policy weight (A)	Risk ¹ (B)	Weighted risk (A X B)
Stock: EAFE	5.0%	15%	0.8%
Stock: Emerging	7.3%	19%	1.4%
Stock: Global	67.8%	13%	9.1%
Bonds: Global	20.0%	10%	2.0%
Weighted Total			13.3%

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

Reduction in asset risk due to diversification

Your asset risk is less than your weighted asset risk because of the benefit of diversification. Diversification reduces risk because when one asset class has a negative return, it might be offset by another asset class with a positive return. The lower the correlation between your policy asset classes, the greater the diversification benefit. The correlation between your policy asset classes is shown on page 15 of this section.

Diversification benefit: Global universe



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

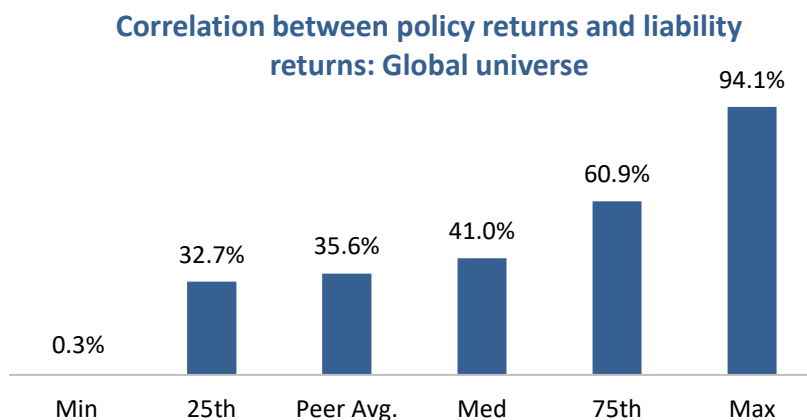
Components of asset risk

	You	Peer median*	Peer average	Global median*	Global average
Weighted asset risk	13.3%	13.1%	12.7%	12.0%	11.8%
Benefit of diversification	1.9%	3.0%	2.9%	2.8%	2.7%
Asset risk	11.4%	9.6%	9.8%	9.1%	9.1%

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

Asset-liability risk

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



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

Components of asset-liability risk

	You	Peer median	Peer average	Global median	Global average
Asset risk (R_A)	11.4%	9.6%	9.8%	9.1%	9.1%
Liability risk (R_L)		9.9%	9.7%	9.5%	9.1%
Correlation between policy returns and liability returns (ρ_{AL})		40.3%	35.6%	41.0%	44.3%
Asset-liability risk		10.5%	11.2%	9.4%	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	10.3	47%	11.4	54%
Nominal Bonds	n/a	n/a	16.6	53%	14.7	46%
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 11-13 of this section.

Liability risk

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

A plan's inflation sensitivity depends on:

a) The type of plan

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

Plan type	# of plans	% of Total
Flat Benefit	19	7%
Career Average	49	18%
Final/Highest/Best Avg	161	60%
Other	40	15%
Total	269	100%

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%	91	31	22
>0% and <50%	5	1	1
50%	1	1	1
>50% and <100%	4	12	2
100%	13	31	6
Total	114	76	32

c) Member demographics

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

	Your fund	Peer Average	Global Average
Active Members	n/a	42%	42%
Retired Members	n/a	58%	58%
Total		100%	100%

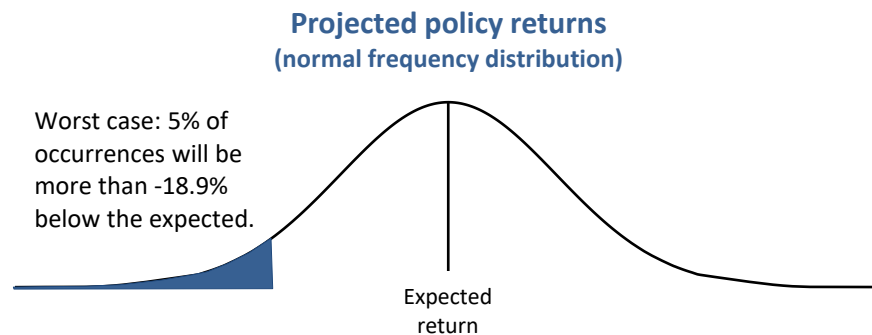
Projected worst case scenarios

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

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

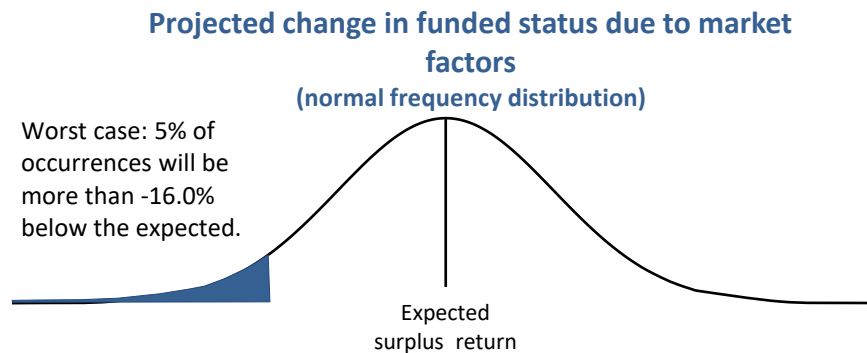
a) Worst case policy returns

Every year there is a 5% probability that your policy return will be worse than your expected policy return by more than -18.9% (-18.9% equals $-1.65 \times$ your asset risk of 11.4%). -18.9% 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 $-1.65 \times$ 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 -18.1% in 2022.

Historic policy returns - Global universe

	2022	2021	2020	2019	2018
90th %	-6.4%	16.6%	15.1%	21.3%	1.5%
75th %	-9.8%	14.2%	12.9%	18.1%	-0.2%
Median	-14.6%	10.9%	10.5%	15.1%	-1.9%
25th %	-19.8%	7.1%	8.1%	12.4%	-3.6%
10th %	-23.6%	3.3%	5.7%	9.9%	-5.3%
Average	-15.0%	10.5%	10.4%	15.3%	-1.8%
Count	243	290	314	318	341
Peer Avg	-15.2%	13.1%	9.1%	15.9%	-1.9%
Your Value	-18.1%	14.4%	12.6%	22.7%	-5.3%

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 2018, when the median fund experienced a -1.4% decline.

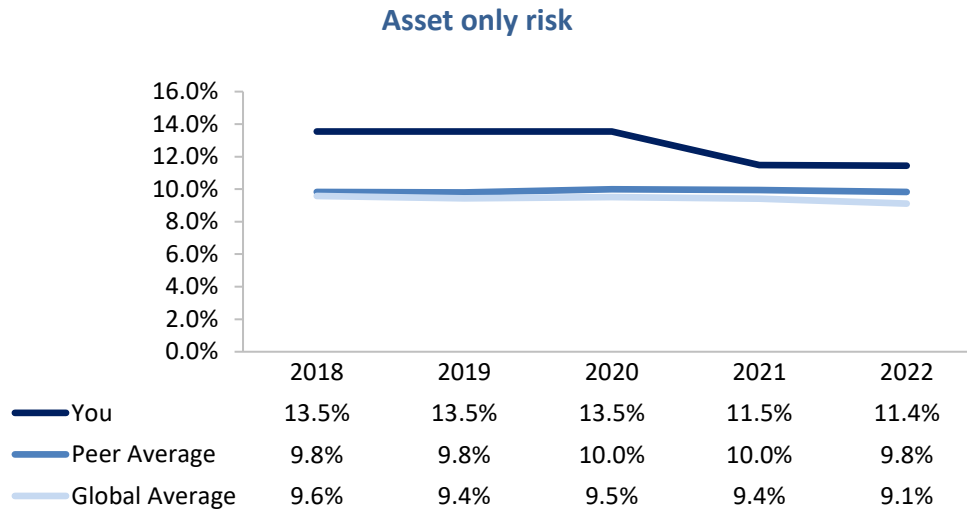
Historic changes in funded status caused by market factors - Global universe

	2022	2021	2020	2019	2018
90th %	20.7%	18.5%	5.1%	11.0%	1.6%
75th %	14.4%	15.6%	2.5%	9.2%	0.1%
Median	10.0%	11.4%	-0.8%	7.0%	-1.4%
25th %	4.1%	8.4%	-4.0%	5.2%	-3.2%
10th %	0.0%	5.0%	-6.3%	3.3%	-4.4%
Average	10.2%	11.8%	-0.6%	7.0%	-1.5%
Count	213	251	276	278	299
Peer Avg	12.0%	13.9%	-0.7%	6.4%	-1.4%
Your Value	n/a	n/a	n/a	n/a	n/a

Risk Trends - 2018 to 2022

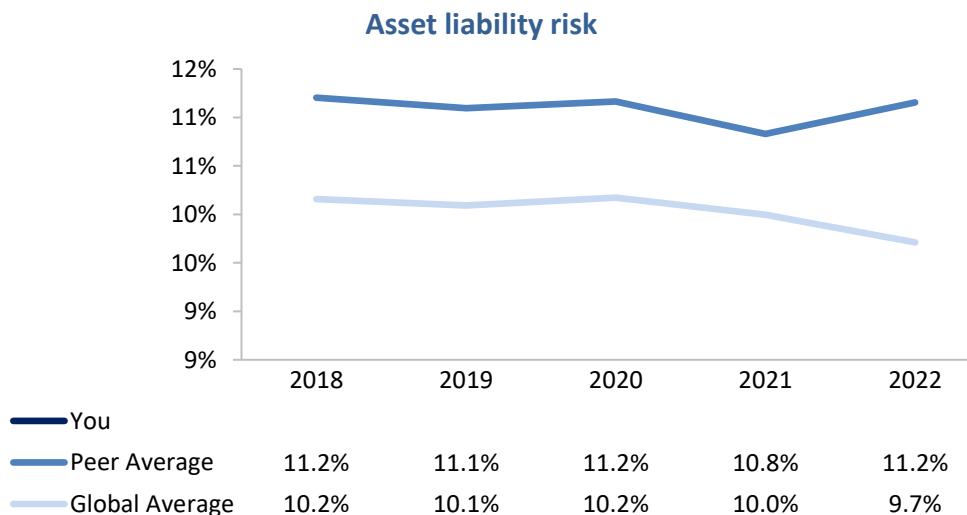
a) Asset risk trends

Asset risk will only change if policy asset mix changes. Between 2018 and 2022 the asset risk for your fund decreased from 13.5% to 11.4%.

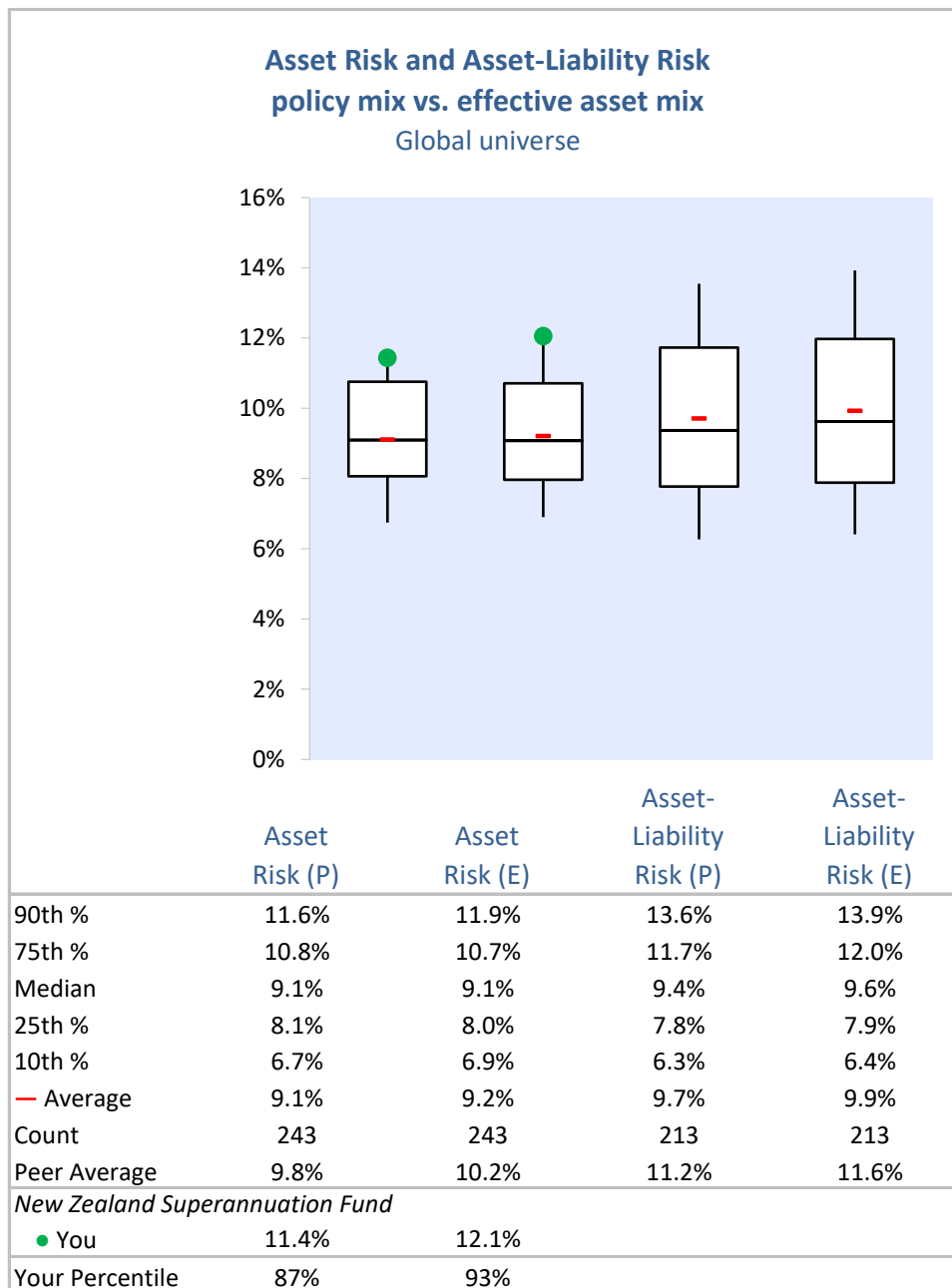


b) Asset-liability risk trends

Asset-liability risk will change if policy asset mix changes, or if the nature of your liabilities changes. Between 2018 and 2022 the asset-liability risk for Global funds that have provided 5 consecutive years of data decreased from 10.2% 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 2.

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

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.

Equivalency Table	
Retirees as a % of Active + Retirees	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 15 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	
2022	3.83	2.33	1.76	2.25	8.00
2021	1.50	0.59	-0.49	-0.05	4.70
2020	0.91	-1.00	-0.44	-1.01	1.23
2019	1.91	-0.78	0.57	-0.64	1.81
2018	2.69	0.28	1.21	0.51	2.44

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

Asset mix

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

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

$$\begin{aligned}\text{Expected monthly variance of policy mix} &= \sum \sum w_X w_Y \text{Cov}(X, Y) \\ &= \sum \sum w_X w_Y \sigma_X \sigma_Y \rho_{X,Y}\end{aligned}$$

where

w_X = policy weight of asset class X

σ_X = standard deviation of monthly returns for asset class X

w_Y = policy weight of asset class Y

σ_Y = standard deviation of monthly returns for asset class Y

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

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

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

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

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

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

Asset-liability risk

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

Appendix C - Correlation Matrix

	Stock: EAFE	Stock: Emerging	Stock: Global	Bonds: Global
Stock: EAFE	1.00	0.60	0.93	0.21
Stock: Emerging	0.60	1.00	0.66	0.00
Stock: Global	0.93	0.66	1.00	0.27
Bonds: Global	0.21	0.00	0.27	1.00

7

Appendices

Appendix A - Data Summary

Appendix B - Currency conversion

Appendix C - Data quality

Appendix D - Glossary of terms

Appendix A - Data Summary

New Zealand Superannuation Fund

Plan Info	2022	2021	2020	2019	2018
Survey Preparer	Christi Naude	Ben Nott	Ben Nott	Ben Nott	Ben Nott
Additional Contact	Gareth Ballantyne	Gareth Ballantyne	Seyoung Chung	Seyoung Chung	Seyoung Chung
Type of fund (corporate, public, other)	Other	Other	Other	Other	Other
Total fund size (\$mils) as at December 31	58,257.3	61,304.0	52,675.2	46,684.0	37,424.1
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Average	Average	Average
Total return for year ended	-9.23%	16.30%	9.66%	21.13%	-2.18%
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	-18.10%	14.40%	12.59%	22.74%	-5.29%

Ancillary Data	2022	2021	2020	2019	2018
What is your hedging policy for:					
Foreign non-U.S. Holdings?			100%	100%	100%
U.S. Holdings?			100%	100%	100%
What were your actuarial fees in 000s?	0	0			0
How many plan members/beneficiaries do you have:					
Active?					
Active (no-accrual)?					
Retired?					
Other?					
What type of plan(s) do you have?					
To what extent are your retired members' benefits indexed to inflation?					
Contractual %					0%
If the indexation is subject to a cap, describe the cap					
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	2022	5.0	NZX 50 Custom	-12.1
	2021	5.0	NZX 50 Custom	-0.2
	2020	5.0	NZX 50	13.7
	2019	5.0	NZX 50	30.5
	2018	5.0	NZX 50	4.8
Stock - Emerging	2022	7.3	MSCI All Countries World Index Custom/MSCI Emerging Markets Climate Paris Aligned Index	-19.0
	2021		MSCI All Countries World Index Custom	20.3
	2020	10.0	MSCI Emerging Markets	17.9
	2019	10.0	MSCI Emerging Markets	16.4
	2018	10.0	MSCI Emerging Markets	-12.4
Stock - Global	2022	67.8	MSCI All Countries World Index Custom/MSCI World Climate Paris Aligned Index	-20.3
	2021	75.0	MSCI All Countries World Index Custom	20.3
	2020	65.0	MSCI Developed Markets	13.7
	2019	65.0	MSCI Developed Markets	28.4
	2018	65.0	MSCI Developed Markets	-6.0
Fixed income - U.S.	2022			
	2021		Barclays Global Aggregate	-1.2
	2020		Barclays Global Aggregate	5.4
	2019		BC Custom (NZSF) Index	7.5
	2018		BC Custom (NZSF) Index	1.6
Fixed income - Global	2022	20.0	Barclays Global Aggregate	-11.8
	2021	20.0	Barclays Global Aggregate	-1.2
	2020	20.0	Barclays Global Aggregate	5.4
	2019	20.0	Barclays Global Aggregate	7.5
	2018	20.0	Barclays Global Aggregate	1.6
Cash	2022		Cash BM	1.9
	2021		NZD Cash Benchmark	1.9
	2020		NZD Cash Benchmark	0.7
	2019		NZD Cash Benchmark	1.7
	2018		NZD Cash Benchmark	2.0
Real estate ex-REITs	2022		Real Estate BM	-16.8
	2021		Property BM	12.7
	2020		NZ Property Benchmark	14.8
	2019		NZ Property Benchmark	20.6
	2018		NZ Property Benchmark	-3.1
Infrastructure	2022		Infrastructure BM	-15.9
	2021		Infrastructure BM	12.0
	2020		Infrastructure BM	12.8
	2019		Infrastructure BM	20.6
	2018		Infrastructure BM	-3.9
Natural resources	2022		Natural Resources BM	-10.9
	2021		Natural Resources Benchmark	4.8
	2020		Timber Benchmark	9.0
	2019		Timber Benchmark	12.7
	2018		Timber Benchmark	-0.6
Hedge funds	2022		Hedge Fund BM	-6.9
	2021		Hedge Fund BM	1.8
	2020		Custom	6.1
	2019		Custom	7.8
	2018		Custom	0.8
Private equity - Diversified	2022		Diversified or All BM	-19.9
	2021		Private Equity BM	21.0
	2020		Private Equity Benchmark	16.9
	2019		Private Equity Benchmark	28.5
	2018		Private Equity Benchmark	-7.2
Venture capital	2022		Venture Capital BM	-20.5
	2021		Private Equity BM	21.0
Private equity - Other	2022		Other Non-Listed Assets BM	-16.5
	2021		Other Private Equity BM	15.7
	2020		Private Equity Benchmark	13.2
	2019		Private Equity Benchmark	24.4
	2018		Private Equity Benchmark	-5.6

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

New Zealand Superannuation Fund

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	
Stock - EAFE	Internal passive	2022	364.7	-9.40	1,281.0			1,281.0	35.1			35.1
		2021	388.1	-2.60	967.0			967.0	24.9			24.9
		2020	26.8	10.70	767.6			767.6	286.4			286.4
		2019			35.0			35.0	11.5			11.5
		2018	60.7	11.40	94.0			94.0	15.5			15.5
	Internal active	2022	1,141.0	-14.00	3,908.0			3,908.0	34.3			34.3
		2021	1,170.0	-0.50	2,649.0			2,649.0	22.6			22.6
		2020	1,057.0	17.00	1,957.3			1,957.3	18.5			18.5
		2019	961.5	34.20	3,645.0			3,645.0	37.9			37.9
		2018	891.9	4.50	2,852.0			2,852.0	32.0			32.0
	External active	2022	877.9	-11.10	854.4	2,842.8		3,697.2	9.7	32.4		42.1
		2021	956.6	0.20	707.0	4,006.0		4,713.0	7.4	41.9		49.3
		2020	894.1	16.40	547.8	3,763.6		4,311.4	6.1	42.1		48.2
		2019	827.0	30.50	605.0	3,451.0	-	4,056.0	7.3	41.7	-	49.0
2018		683.3	6.40	436.0	2,897.0		3,333.0	6.4	42.4		48.8	
Stock - Emerging	External passive	2022	1,470.6	-17.60	880.2	905.9		1,786.1	6.0	6.2		12.1
		2021	1,565.3	-3.20	707.0	958.0		1,665.0	4.5	6.1		10.6
		2020	1,612.3	22.40	905.5	1,275.6		2,181.1	5.6	7.9		13.5
		2019	1,888.9	18.40	816.0	1,203.0		2,019.0	4.3	6.4		10.7
		2018	1,775.7	-11.40	702.0	1,058.0		1,760.0	4.0	6.0		9.9
	External active	2022										
		2021										
		2020										
		2019	483.3	11.90	252.0	4,318.0	-	4,570.0	5.2	89.3	-	94.6
		2018	467.3	-10.30	285.0	3,974.0		4,259.0	6.1	85.0		91.1
Stock - Global	Internal passive	2022										
		2021										
		2020										
		2019										
		2018	298.3	0.30	152.0			152.0	5.1			5.1
	External passive	2022	18,641.9	-19.50	3,417.2	3,187.1		6,604.3	1.8	1.7		3.5
		2021	25,755.6	24.70	4,418.0	9,335.0		13,753.0	1.7	3.6		5.3
		2020	16,429.2	12.10	3,721.4	8,012.6		11,734.0	2.3	4.9		7.1
		2019	19,843.4	28.50	5,036.0	8,385.0		13,421.0	2.5	4.2		6.8
		2018	17,791.9	-5.50	4,479.0	5,918.0		10,397.0	2.5	3.3		5.8
External active	2022	8,512.0	-11.80	2,101.4	8,100.3		10,201.7	2.5	9.5		12.0	
Fixed income - U.S.	Internal passive	2022										
		2021	23.4	6.00	314.0			314.0	134.2			134.2
		2020	25.7	11.20	261.7			261.7	101.8			101.8
		2019	27.0	10.00	91.0			91.0	33.7			33.7
		2018	28.2	4.10	72.0			72.0	25.5			25.5
Fixed income - Global	Internal passive	2022	2,824.7	-11.90	1,554.0			1,554.0	5.5			5.5
		2021	2,722.0	-1.20	808.0			808.0	3.0			3.0
		2020	1,765.1	5.30	871.7			871.7	4.9			4.9
		2019	427.4	6.40	142.0			142.0	3.3			3.3
		2018	76.6	3.80	87.0			87.0	11.4			11.4
	External passive	2022	3,367.3	-12.20	825.0	1,537.1		2,362.1	2.5	4.6		7.0
		2021	2,728.2	-0.90	515.0	1,275.0		1,790.0	1.9	4.7		6.6
		2020	2,013.5	5.20	674.6	926.8		1,601.4	3.4	4.6		8.0
		2019	3,504.7	7.00	688.0	1,702.0		2,390.0	2.0	4.9		6.8

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

New Zealand Superannuation Fund

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 (cont'd)	2018	3,781.0	1.40	845.0	1,714.0		2,559.0	2.2	4.5		6.8	
Cash	Internal active	2022	5,789.6	5.50	4,850.8			4,850.8	8.4			8.4
		2021	9,390.8	1.90	3,454.0			3,454.0	3.7			3.7
		2020	9,957.4	2.50	3,295.9			3,295.9	3.3			3.3
		2019	5,147.2	3.00	3,009.0			3,009.0	5.8			5.8
		2018	4,667.8	3.80	3,193.0			3,193.0	6.8			6.8

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

New Zealand Superannuation Fund

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

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

New Zealand Superannuation Fund

(Default costs are highlighted with blue shading. 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	
Hedge funds	External active	2022	4,084.6		-0.30	5,017.5	25,797.3	97,735.2			30,814.8	128,550.0
		2021	3,217.4		6.70	3,130.0	20,099.0	23,895.0			23,229.0	47,124.0
		2020	2,744.0		-2.10	2,678.6	18,816.4	7,019.7			21,495.0	28,514.7
		2019	2,382.6		3.50	2,136.0	18,517.0	7,468.0			20,653.0	28,121.0
		2018	1,994.5		4.40	1,590.0	13,986.0	30,557.0			15,576.0	46,133.0
Real estate ex-REITs	Internal active	2022	153.4		8.50	1,123.9					1,123.9	1,123.9
		2021	114.1		32.60	1,023.0					1,023.0	1,023.0
		2020	67.1		-3.67	459.2					459.2	459.2
		2019	148.7		-6.00	783.0					783.0	783.0
		2018	49.1		29.70	397.0					397.0	397.0
	Co-investment	2022	460.0	468.3	12.50	2,127.0	2,229.6				4,356.6	4,356.6
		2021	306.0	329.0	25.40	1,977.0	1,579.0				3,556.0	3,556.0
		2020	225.9	225.9	-7.20	1,731.5	704.3				2,435.8	2,435.8
	LP	2022	947.4	1,704.2	19.40	3,477.4	4,633.1	31,282.2			8,110.5	39,392.7
		2021	107.2	126.0	53.20	2,960.0	1,101.0	6,209.0			4,061.0	10,270.0
		2020	36.5	55.0	2.60	543.5	192.4	678.0			735.9	1,413.9
		2019	1.9	1.9	0.00	95.0	7.0	15.0			102.0	117.0
		2018	5.2	5.2	281.70	234.0	102.0	754.0			336.0	1,090.0
Infrastructure	Internal active	2022	432.7		7.60	879.1					879.1	879.1
		2021	408.8		13.70	683.0					683.0	683.0
		2020	404.6		-1.60	454.3					454.3	454.3
		2019	407.0		10.60	549.0					549.0	549.0
		2018	405.1		6.40	856.0					856.0	856.0
	External active	2022	294.6	291.9	-14.50	403.9	1,764.3	119,884.7			2,168.2	122,052.9
		2021	276.7	276.7	22.90	328.0	1,564.0	1,660.0			1,892.0	3,552.0
		2020	235.2	235.2	-12.80	318.4	1,245.5	1,905.1			1,563.9	3,469.0
		2019	231.2	231.2	12.90	462.0	1,003.0	1,895.8			1,465.0	3,360.8
		2018	690.4	690.4	-6.40	1,687.6	6,570.2	11,012.0			8,257.8	19,269.8
	LP	2022	348.5	356.4	-3.00	1,925.5	4,859.7	5,227.5			6,785.2	12,012.7
		2021	217.3	217.3	3.30	662.0	1,869.0	256.0			2,531.0	2,787.0
		2020	261.5	261.5	7.00	506.6	2,012.6	2,536.6			2,519.2	5,055.8
		2019	254.1	254.1	6.20	691.0	2,354.0	1,608.0			3,045.0	4,653.0
		2018	245.6	245.6	5.40	806.0	2,492.9	1,256.0			3,298.9	4,554.9
Natural resources	Internal active	2022	2,977.6		11.30	1,904.2					1,904.2	1,904.2
		2021	2,735.6		6.70	1,608.0					1,608.0	1,608.0
		2020	2,649.6		2.70	1,558.6					1,558.6	1,558.6
		2019	2,503.8		-0.01	2,667.0					2,667.0	2,667.0
		2018	1,870.8		17.60	1,820.0					1,820.0	1,820.0
	External active	2022	442.7	458.3	30.50	3,326.3	3,218.2	3,098.9			6,544.5	9,643.4
		2021	297.1	263.0	26.40	1,824.0	2,441.0	2,079.7			4,265.0	6,344.7
		2020	282.2	282.2	8.80	1,759.7	2,525.0	1,975.4			4,284.7	6,260.1
		2019	282.6	282.6	19.90	1,312.0	2,565.0	1,978.2			3,877.0	5,855.2
		2018	737.3	737.3	10.60	2,293.0	5,776.0	1,548.0			8,069.0	9,617.0
Private equity - Diversified	Co-investment	2022	133.2	270.3	-4.30	753.1	-	284.4			753.1	1,037.5
		2021	13.9	13.9		620.0					620.0	620.0
	LP	2022	376.3	516.5	1.00	6,644.5	6,517.7	143.5			13,162.2	13,305.7
		2021	334.0	449.0	14.60	4,999.0	7,762.0	3,913.0			12,761.0	16,674.0
		2020	304.8	439.7	26.20	4,614.5	6,404.0	1,302.8			11,018.5	12,321.3
		2019	234.2	370.0	19.00	2,038.0	5,889.0	729.0			7,927.0	8,656.0
		2018	209.1	397.4	14.10	1,292.0	6,153.0	3,868.4			7,445.0	11,313.4

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

New Zealand Superannuation Fund

(Default costs are highlighted with blue shading. 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	
Fund of funds (cont'd)	2022	6.3	3.9	-16.60	802.9	16.4	106.5	-	-	819.3	925.8
	2021	11.0	11.0	34.10	881.0	107.0	107.9	169.4	275.3	1,157.4	1,540.5
	2020	13.8	13.8	21.10	840.7	225.0	91.1	216.7	265.0	1,282.4	1,638.4
	2019	18.9	18.6	2.30	300.0	367.0	-	-	-	667.0	667.0
	2018	23.9	24.0	29.20	203.0	547.0	4.7	374.4	442.2	1,124.4	1,571.3
Venture capital											
Co-investment	2022	53.6	53.6	22.90	389.6					389.6	389.6
	2021	2.9	2.9	-0.10	317.0					317.0	317.0
LP	2022	98.2	98.2	0.80	1,109.6	2,155.6	(163.7)			3,265.2	3,101.5
	2021	0.6	0.6		304.0	10.6	16.0			314.6	330.6
Private equity - Other											
Internal active	2022	1,913.7		-12.90	4,579.9					4,579.9	4,579.9
	2021	1,789.0		14.70	5,022.0					5,022.0	5,022.0
	2020	1,823.1		-4.30	6,218.9					6,218.9	6,218.9
	2019	1,824.3		14.70	4,422.0					4,422.0	4,422.0
	2018	1,660.0		12.20	4,699.0					4,699.0	4,699.0
Co-investment	2022	2,692.0	2,816.1	43.20	5,539.7	21,669.7	42,676.7			27,209.4	69,886.1
	2021	1,718.7	1,782.5	13.20	3,631.0	15,013.0				18,644.0	18,644.0
	2020	1,481.8	1,481.8	2.40	3,435.1	11,541.6				14,976.7	14,976.7
	2019	1,217.8	1,217.8	6.30	2,002.0	14,044.0				16,046.0	16,046.0
	2018	706.8	1,183.1	24.80	783.8	6,986.2	1,652.0			7,770.0	9,422.0
LP	2022										
	2021										
	2020										
	2019										

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
(Default costs are highlighted with blue shading. 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	Underlying fees Perf	Total excl. perf	Total incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Underlying fees Perf	Total excl. perf	Total incl. perf	
Hedge funds	External active	2022	12.3	63.2	239.3			75.4	314.7	12.3	63.2	239.3			75.4	314.7
		2021	9.7	62.5	74.3			72.2	146.5	9.7	62.5	74.3			72.2	146.5
		2020	9.8	68.6	25.6			78.3	103.9	9.8	68.6	25.6			78.3	103.9
		2019	9.0	77.7	31.3			86.7	118.0	9.0	77.7	31.3			86.7	118.0
		2018	8.0	70.1	153.2			78.1	231.3	8.0	70.1	153.2			78.1	231.3
Real estate ex-REITs	Internal active	2022	73.3					73.3	73.3	73.3					73.3	73.3
		2021	89.7					89.7	89.7	89.7					89.7	89.7
		2020	68.4					68.4	68.4	68.4					68.4	68.4
		2019	52.6					52.6	52.6	52.6					52.6	52.6
		2018	80.9					80.9	80.9	80.9					80.9	80.9
	Co-investment	2022	46.2	48.5				94.7	94.7	45.4	47.6				93.0	93.0
		2021	64.6	51.6				116.2	116.2	60.1	48.0				108.1	108.1
		2020	76.6	31.2				107.8	107.8	76.6	31.2				107.8	107.8
	LP	2022	36.7	48.9	330.2			85.6	415.8	20.4	27.2	183.6			47.6	231.2
		2021	276.1	102.7	579.2			378.8	958.0	234.9	87.4	492.8			322.3	815.1
		2020	148.9	52.7	185.8			201.6	387.4	98.8	35.0	123.3			133.8	257.1
		2019	500.0	36.8	79.0			536.8	615.8	500.0	36.8	79.0			536.8	615.8
2018	450.0	196.2	1,450.0			646.2	2,096.2	450.0	196.2	1,450.0			646.2	2,096.2		
Infrastructure	Internal active	2022	20.3					20.3	20.3	20.3					20.3	20.3
		2021	16.7					16.7	16.7	16.7					16.7	16.7
		2020	11.2					11.2	11.2	11.2					11.2	11.2
		2019	13.5					13.5	13.5	13.5					13.5	13.5
		2018	21.1					21.1	21.1	21.1					21.1	21.1
	External active	2022	13.7	59.9	4,069.4			73.6	4,143.0	13.8	60.4	4,107.0			74.3	4,181.3
		2021	11.9	56.5	60.0			68.4	128.4	11.9	56.5	60.0			68.4	128.4
		2020	13.5	53.0	81.0			66.5	147.5	13.5	53.0	81.0			66.5	147.5
		2019	20.0	43.4	82.0			63.4	145.4	20.0	43.4	82.0			63.4	145.4
		2018	24.4	95.2	159.5			119.6	279.1	24.4	95.2	159.5			119.6	279.1
	LP	2022	55.3	139.4	150.0			194.7	344.7	54.0	136.4	146.7			190.4	337.1
		2021	30.5	86.0	11.8			116.5	128.2	30.5	86.0	11.8			116.5	128.2
		2020	19.4	77.0	97.0			96.3	193.3	19.4	77.0	97.0			96.3	193.3
		2019	27.2	92.6	63.3			119.8	183.1	27.2	92.6	63.3			119.8	183.1
2018	32.8	101.5	51.1			134.3	185.5	32.8	101.5	51.1			134.3	185.5		
Natural resources	Internal active	2022	6.4					6.4	6.4	6.4					6.4	6.4
		2021	5.9					5.9	5.9	5.9					5.9	5.9
		2020	5.9					5.9	5.9	5.9					5.9	5.9
		2019	10.7					10.7	10.7	10.7					10.7	10.7
		2018	9.7					9.7	9.7	9.7					9.7	9.7
	External active	2022	75.1	72.7	70.0			147.8	217.8	72.6	70.2	67.6			142.8	210.4
		2021	61.4	82.2	70.0			143.6	213.6	69.4	92.8	79.1			162.2	241.2
		2020	62.4	89.5	70.0			151.8	221.8	62.4	89.5	70.0			151.8	221.8
		2019	46.4	90.8	70.0			137.2	207.2	46.4	90.8	70.0			137.2	207.2
		2018	31.1	78.3	21.0			109.4	130.4	31.1	78.3	21.0			109.4	130.4
		Private equity - Diversified	Co-investment	2022	56.5	-	21.4			56.5	77.9	27.9	-	10.5		
2021	446.0							446.0	446.0	446.0					446.0	446.0
LP	2022		176.6	173.2	3.8			349.8	353.6	128.6	126.2	2.8			254.8	257.6
	2021		149.7	232.4	117.2			382.1	499.2	111.3	172.9	87.1			284.2	371.4
	2020		151.4	210.1	42.7			361.5	404.2	104.9	145.6	29.6			250.6	280.2
	2019		87.0	251.5	31.1			338.5	369.6	55.1	159.2	19.7			214.2	233.9
	2018		61.8	294.3	185.0			356.0	541.0	32.5	154.8	97.3			187.3	284.7

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

New Zealand Superannuation Fund

(Default costs are highlighted with blue shading. 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	Underlying fees Perf	Total excl. perf	Total incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Underlying fees Perf	Total excl. perf	Total incl. perf		
Fund of funds (cont'd)	2022	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	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	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	158.7	194.2	-	-	-	352.9	352.9	161.3	197.3	-	-	-	358.6	358.6		
	2018	84.9	228.9	2.0	156.7	185.0	470.5	657.4	84.6	227.9	2.0	156.0	184.2	468.5	654.7		
Venture capital	Co-investment	2022	72.7					72.7	72.7	72.7					72.7	72.7	
		2021	1,112.3					1,112.3	1,112.3	1,112.3					1,112.3	1,112.3	
	LP	2022	113.0	219.5	(16.7)			332.5	315.8	113.0	219.5	(16.7)			332.5	315.8	
		2021	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	2022	23.9					23.9	23.9	23.9					23.9	23.9
2021			28.1					28.1	28.1	28.1					28.1	28.1	
2020			34.1					34.1	34.1	34.1					34.1	34.1	
2019			24.2					24.2	24.2	24.2					24.2	24.2	
2018			28.3					28.3	28.3	28.3					28.3	28.3	
Co-investment		2022	20.6	80.5	158.5			101.1	259.6	19.7	76.9	151.5			96.6	248.2	
		2021	21.1	87.4				108.5	108.5	20.4	84.2				104.6	104.6	
		2020	23.2	77.9				101.1	101.1	23.2	77.9				101.1	101.1	
		2019	16.4	115.3				131.8	131.8	16.4	115.3				131.8	131.8	
		LP	2022														
			2021														
			2020														
			2019														
2018	11.1	98.8	23.4			109.9	133.3	6.6	59.0	14.0			65.7	79.6			

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 ¹	2022	22,493.6	3.9bp
	2021	14,014.0	2.4bp
	2020	12,307.4	2.7bp
	2019	18,511.0	4.3bp
	2018	16,626.0	4.2bp
Custodial total	2022	6,274.9	1.1bp
	2021	5,510.0	1.0bp
	2020	6,979.8	1.5bp
	2019	6,234.0	1.4bp
	2018	6,465.0	1.6bp
Custodial foreign (if available)	2019	6,234.0	1.4bp
Audit	2022	704.0	0.1bp
	2021	612.0	0.1bp
	2020	596.0	0.1bp
	2019	487.0	0.1bp
	2018	488.0	0.1bp
Total	2022	29,472.5	5.1bp
	2021	20,136.0	3.5bp
	2020	19,883.2	4.3bp
	2019	25,232.0	5.9bp
	2018	23,579.0	6.0bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2022	262,981.0	45.5bp
	2021	148,361.0	25.6bp
	2020	114,369.8	24.8bp
	2019	113,633.0	26.3bp
	2018	128,467.1	32.7bp
Oversight, Custodial & Other Costs	2022	29,472.5	5.1bp
	2021	20,136.0	3.5bp
	2020	19,883.2	4.3bp
	2019	25,232.0	5.9bp
	2018	23,579.0	6.0bp
Total	2022	292,453.5	50.6bp
	2021	168,497.0	29.1bp
	2020	134,252.9	29.1bp
	2019	138,865.0	32.2bp
	2018	152,046.1	38.7bp

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	2022	46,500.0	-1,477.3		605.1	0.1										
	2021	42,643.1	479.5		389.0	0.1										
Rebalancing/ Passive Beta	2022	7,700.0	42.2		4,091.5	5.3										
	2021	11,604.3	476.9		3,252.0	2.8										
Policy tilt TAA	2022		650.2	1,299,296.2	8,440.9											
	2021		561.1	37,360.6	6,366.0											
Long/Short	2022		175.1	17,604.1	1,364.7											
	2021		156.1	34,800.7	1,032.0											
Other Overlay	2022	2,800.0	4.4	-331,231.1	1,632.7	5.8										
	2021	146.6	-72.4	32,988.6	1,630.0	111.2										

Appendix A - Data Summary: Comments and defaults

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

- 2022 - Infrastructure - LP: A default of 150 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2022 - Natural resources - Evergreen: A default of 70 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2021 - Infrastructure - Evergreen: A default of 60 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2021 - Natural resources - Evergreen: A default of 70 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2021 - Private equity - Diversified - FoFs: A default 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 default is not included in your total fund cost or in benchmark analysis.
- 2021 - Private equity - Diversified - FoFs: A default 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 - Private equity - Diversified - FoFs: A default 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 default is not included in your total fund cost or in benchmark analysis.
- 2021 - Venture capital - LP: A default of 165 bps was applied to the LP base fee because it was not provided.
- 2021 - Venture capital - LP: A default of 250 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2020 - Infrastructure - Evergreen: A default of 81 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2020 - Infrastructure - LP: A default of 97 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2020 - Natural resources - Evergreen: A default of 70 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2020 - Private equity - Diversified - FoFs: A default 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 default is not included in your total fund cost or in benchmark analysis.
- 2020 - Private equity - Diversified - FoFs: A default 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 - Private equity - Diversified - FoFs: A default 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 default is not included in your total fund cost or in benchmark analysis.
- 2019 - Real estate ex-REITs - LP: A default of 79 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.

- 2019 - Infrastructure - Evergreen: A default of 82 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2019 - Natural resources - Evergreen: A default of 70 bps (on NAV) was applied to the evergreen performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2018 - Private equity - Diversified - LP: A default of 185 bps (on NAV) was applied to the LP performance fee to enable comparisons of the total cost of different implementation styles. This default is not included in your total fund cost or in benchmark analysis.
- 2018 - Private equity - Diversified - FoFs: A default of 156 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.
- 2018 - Private equity - Diversified - FoFs: A default of 185 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 default is not included in your total fund cost or in benchmark analysis.

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 OECD¹. The table below shows the foreign exchange rates for the past 5 years.

Currency conversion table					
	2022	2021	2020	2019	2018
United States Dollars - USD*	1.485	1.430	1.459	1.489	1.450
Canada Dollars - CAD	1.180	1.147	1.218	1.193	1.163
Euro - EUR*	2.171	2.072	2.052	2.084	2.007
Sweden Kronor - SEK	0.172	0.164	0.164	0.165	0.160
United Kingdom Pounds - GBP	2.150	2.104	2.037	2.115	2.033
Australia Dollars - AUD	1.026	0.956	0.998	1.026	0.995
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 quality

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

Improved survey clarity

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

Computer and desktop verification

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

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

Learning curve

This is CEM's 32nd year of gathering this data and experience is teaching the firm and the participants how to do a better job.

Growing universe

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

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

Currency Conversions

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

Appendix 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.