

Investment
Cost Effectiveness Analysis
(for the 5-year period ending December 31, 2020)

New Zealand Superannuation Fund



Key Takeaways

Returns

- Your 5-year net total return was 12.0%. This was above the Global median of 9.4% and above the peer median of 9.3%.
- Your 5-year policy return was 11.1%. This was above the Global median of 9.0% and above the peer median of 8.2%.
- 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 0.9%. This was above the Global median of 0.3% and above the peer median of 0.6%.

Cost

- Your investment cost of 29.1 bps was below your benchmark cost of 39.3 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was low cost because it had a lower cost implementation style and it paid less than peers for similar services.
- Your costs decreased by 4.6 bps, from 33.8 bps in 2016 to 29.1 bps in 2020, because you paid less in 2020 for similar investment styles and had a lower cost implementation style. This was partly offset by a higher cost asset mix.

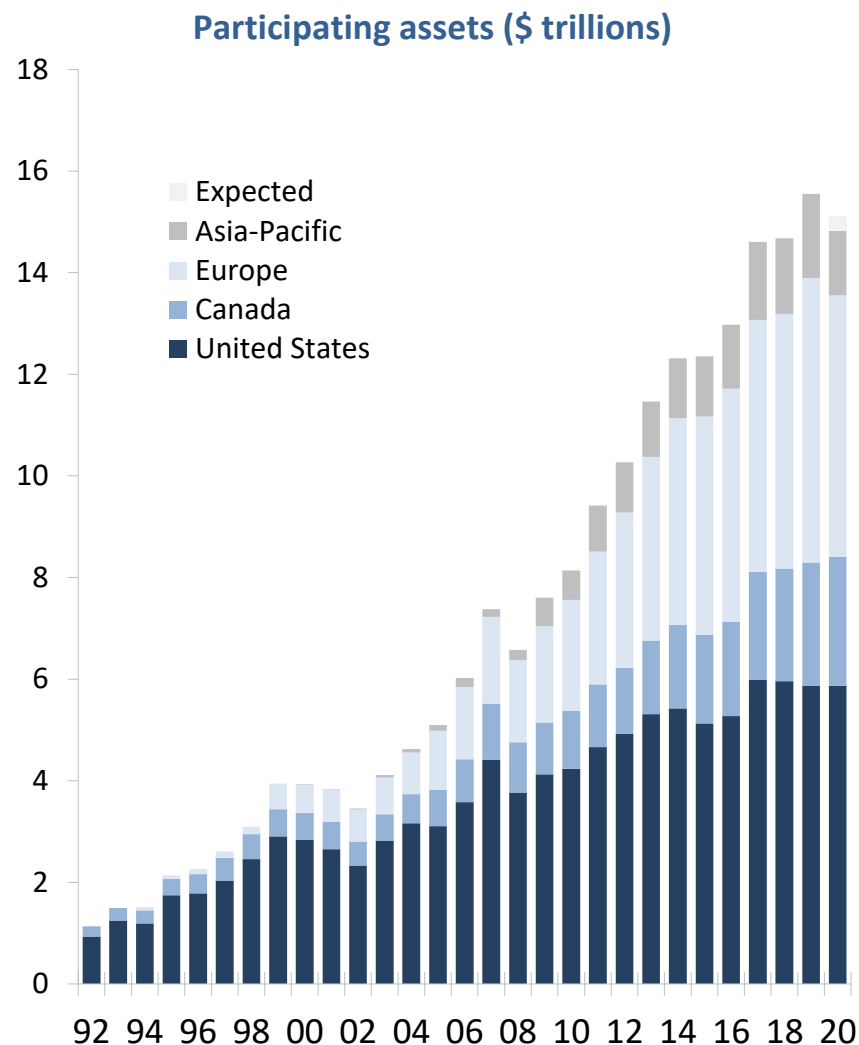
Risk

- Your asset risk of 13.4% was above the Global median of 9.0%.

This benchmarking report compares your cost and return performance to the 263 funds in CEM's extensive pension database.

- 157 U.S. pension funds participate. The median U.S. fund had assets of \$14.7 billion and the average U.S. fund had assets of \$37.4 billion. Total participating U.S. assets were \$5.9 trillion.
- 65 Canadian funds participate with assets totaling \$2.5 trillion.
- 33 European funds participate with aggregate assets of \$5.1 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 5 Asia-Pacific funds participate with aggregate assets of \$1.3 trillion. Included are funds from Australia, New Zealand, China and South Korea.
- 3 funds from other regions participate.

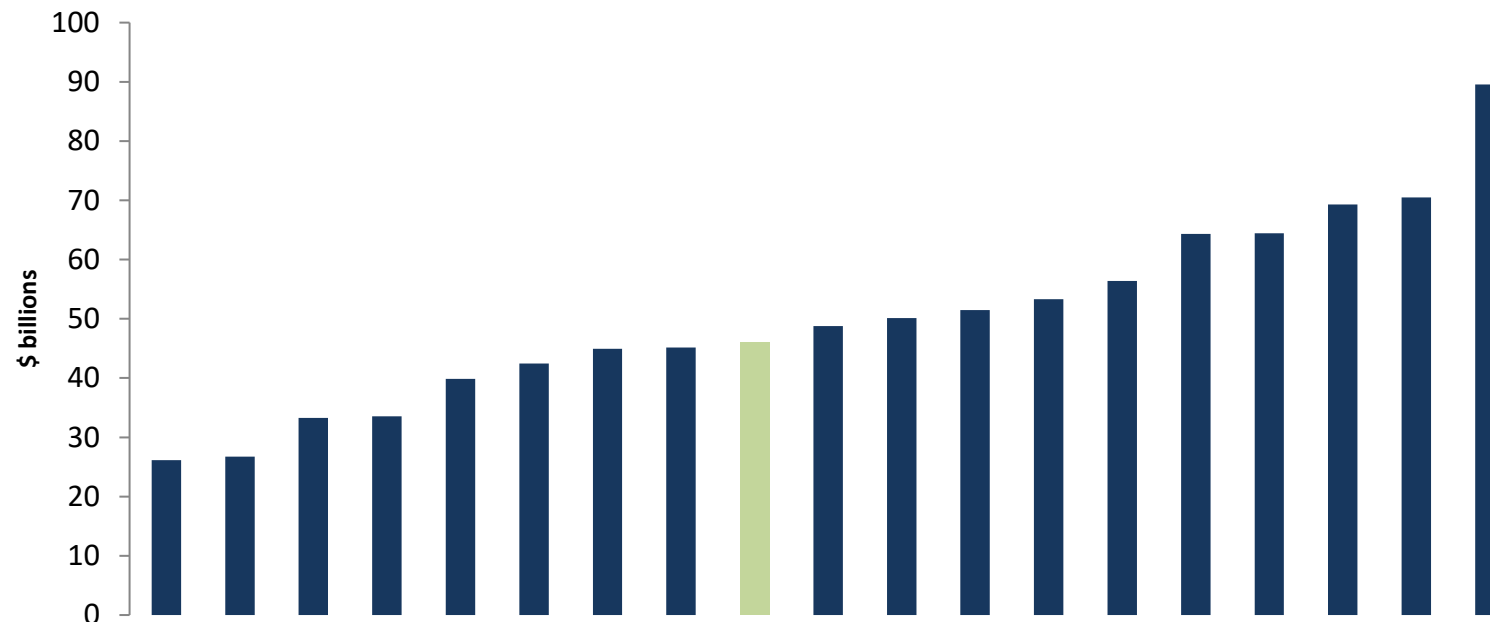
The most meaningful comparisons for your returns and value added are to the Global universe, which consists of 263 funds.



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 \$26.1 billion to \$89.6 billion
- Median size of \$48.8 billion versus your \$46.1 billion



Your 5-year net total return of 12.0% was above both the Global median of 9.4% and the peer median of 9.3%.

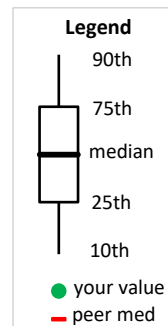
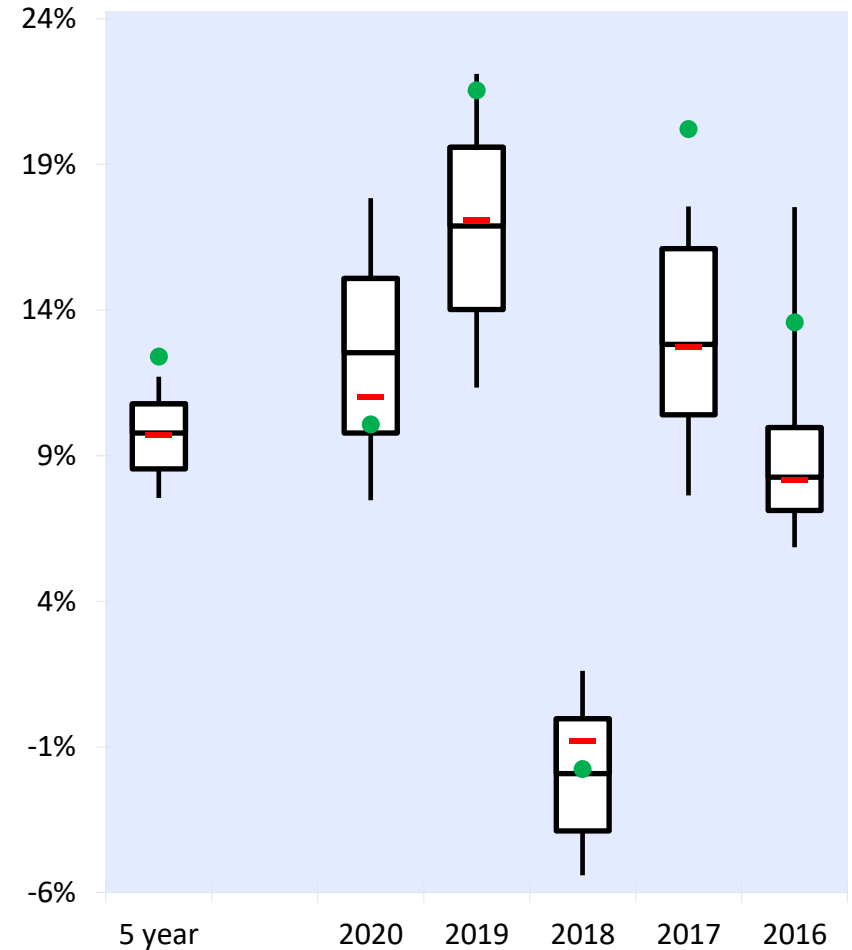
Total returns, by themselves, provide little insight into the reasons behind relative performance. Therefore, we separate total return into its more meaningful components: policy return and value added.

	Your 5-year
Net total fund return	12.0%
- Policy return	11.1%
= Net value added	0.9%

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



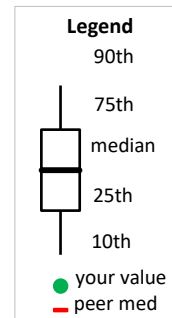
Your 5-year policy return of 11.1% was above both the Global median of 9.0% and the peer median of 8.2%.

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

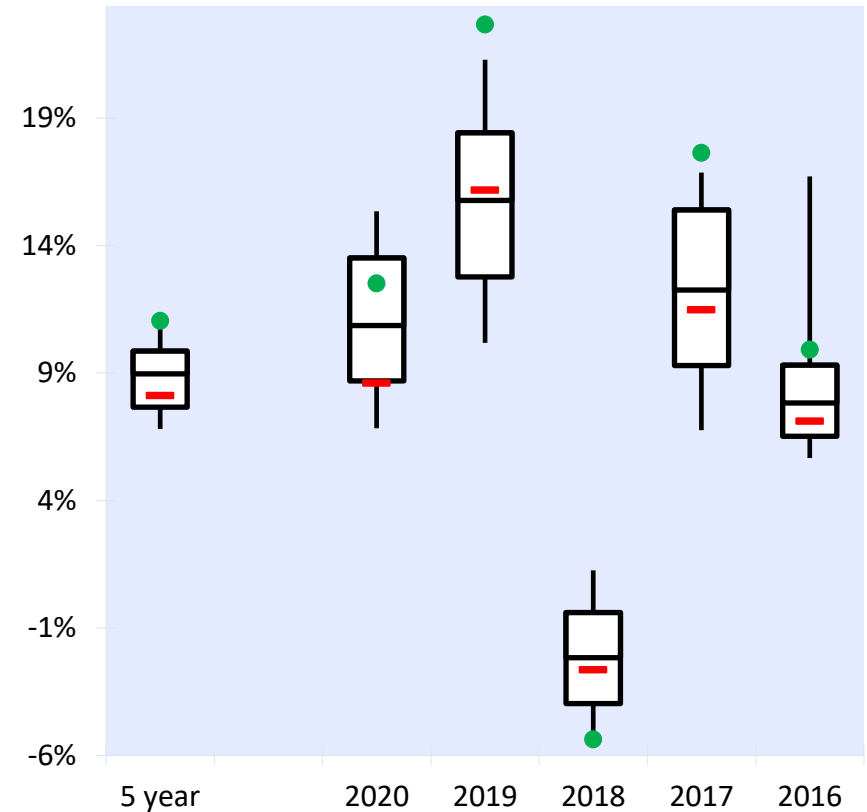
Having a higher or lower relative policy return is not necessarily good or bad. Your policy return reflects your investment policy, which should reflect your:

- 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 2020 your policy mix compared to your peers and the Global universe as follows:

- Your fund had substantially more stock than the peer and Global averages (your 80% versus a Global average of 40% and peer average of 44%).

2020 Policy asset mix

Asset class	Your fund	Peer avg.	Global avg.
Stock - Europe & Far East	5%	4%	5%
Stock - U.S.	0%	5%	11%
Stock - Emerging	10%	5%	3%
Stock - Global	65%	22%	14%
Other Stock ¹	0%	9%	7%
Total Stock	80%	44%	40%
Fixed Income - U.S.	0%	2%	8%
Fixed Income - Long Bonds	0%	12%	16%
Fixed Income - Global	20%	6%	2%
Cash	0%	2%	0%
Other Fixed Income ¹	0%	11%	14%
Total Fixed Income	20%	33%	40%
Hedge Funds	0%	5%	3%
Real Estate incl. REITs	0%	7%	7%
Other Real Assets ¹	0%	3%	3%
Private Equity	0%	6%	5%
Private Debt	0%	2%	2%
Total	100%	100%	100%

1. Other stock includes Canada and ACWI x U.S. stock. Other fixed income includes Canada, Inflation Indexed, Europe/Far East, High Yield and Emerging bonds. Real assets includes commodities, natural resources and infrastructure.

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

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

Asset class	Policy mix	Actual asset mix	
		excluding derivatives	including derivatives
Stock - New Zealand (EAFE)	5%	4%	4%
Stock - Emerging	10%	3%	8%
Stock - Global	65%	36%	57%
	80%	43%	70%
Fixed Income - U.S.	0%	0%	0%
Fixed Income - Global	20%	8%	8%
Cash	0%	25%	-1%
	20%	34%	8%
Real Estate ex-REITs	0%	1%	1%
Infrastructure	0%	2%	2%
Natural Resources	0%	6%	6%
Hedge Funds	0%	6%	6%
Diversified Private Equity	0%	1%	1%
Other Private Equity	0%	7%	7%
Total	100%	100%	100%

Net value added is the component of total return from active management. Your 5-year net value added was 0.9%.

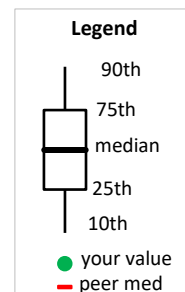
Net value added equals total net return minus policy return.

Value added for New Zealand Superannuation Fund

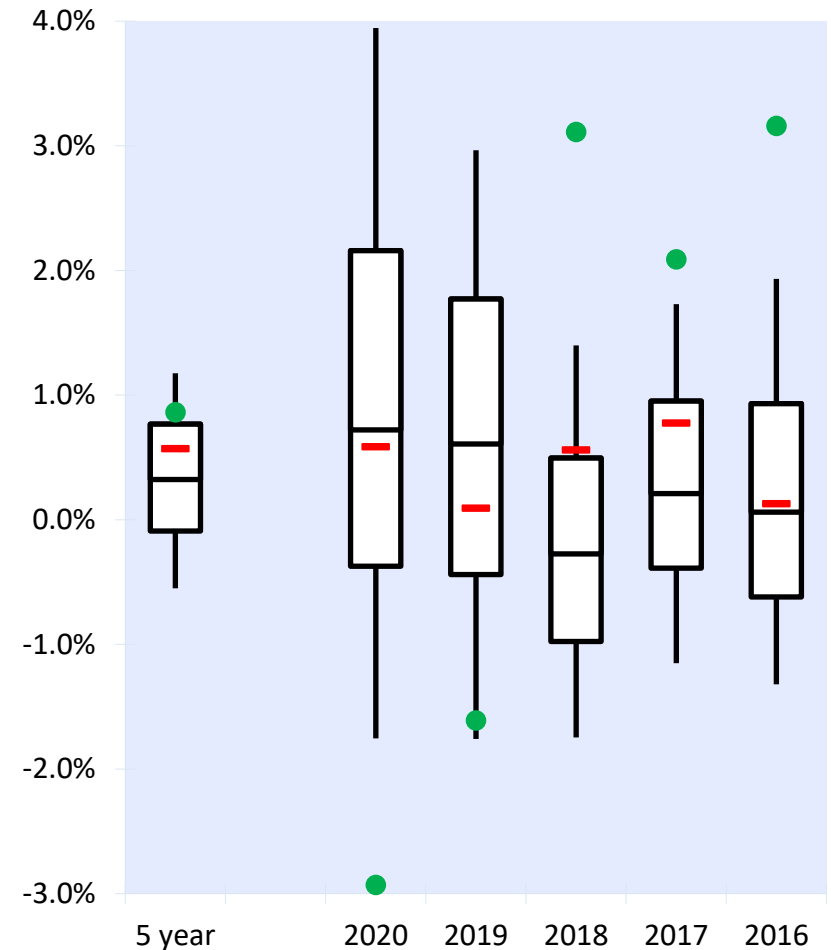
Year	Net return	Policy return	Net value added
2020	9.7%	12.6%	-2.9%
2019	21.1%	22.7%	-1.6%
2018	-2.2%	-5.3%	3.1%
2017	19.8%	17.7%	2.1%
2016	13.2%	10.0%	3.2%
5-Year	12.0%	11.1%	0.9%

Your 5-year net value added of 0.9% compares to a median of 0.6% for your peers and 0.3% for the Global universe.

Your 0.9% 5-year value added translates into approximately \$2.0 billion of cumulative value added over 5 years.

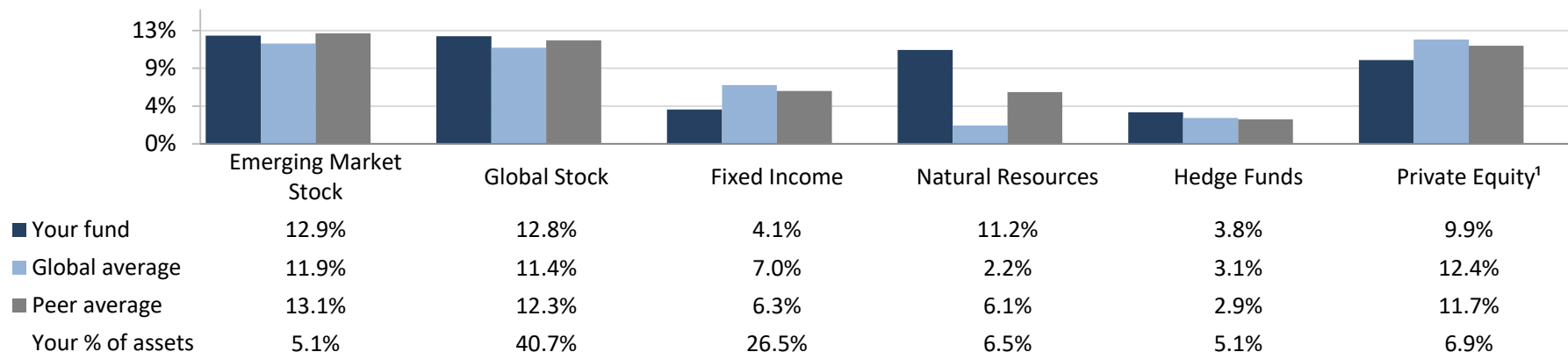


Global net value added - quartile rankings

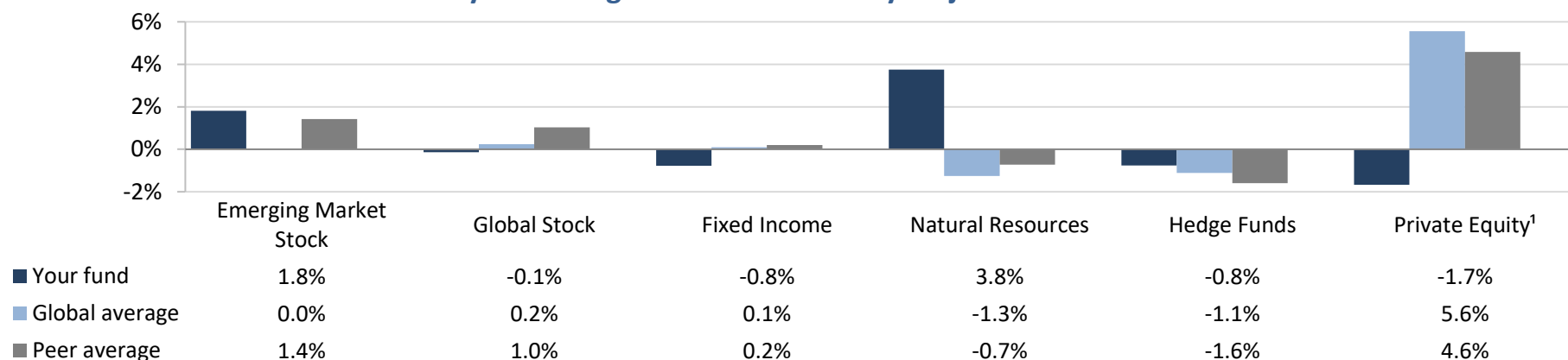


Comparisons of your 5-year net return and net value added by major asset class:

5-year average net return by major asset class



5-year average net value added by major asset class



1. To enable fairer comparisons, the private equity benchmarks of all participants, except your fund, were adjusted to reflect lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your fund's 5-year private equity net value added would have been 2.0%.

Your investment costs, excluding private asset performance fees, were \$134.3 million or 29.1 basis points in 2020.

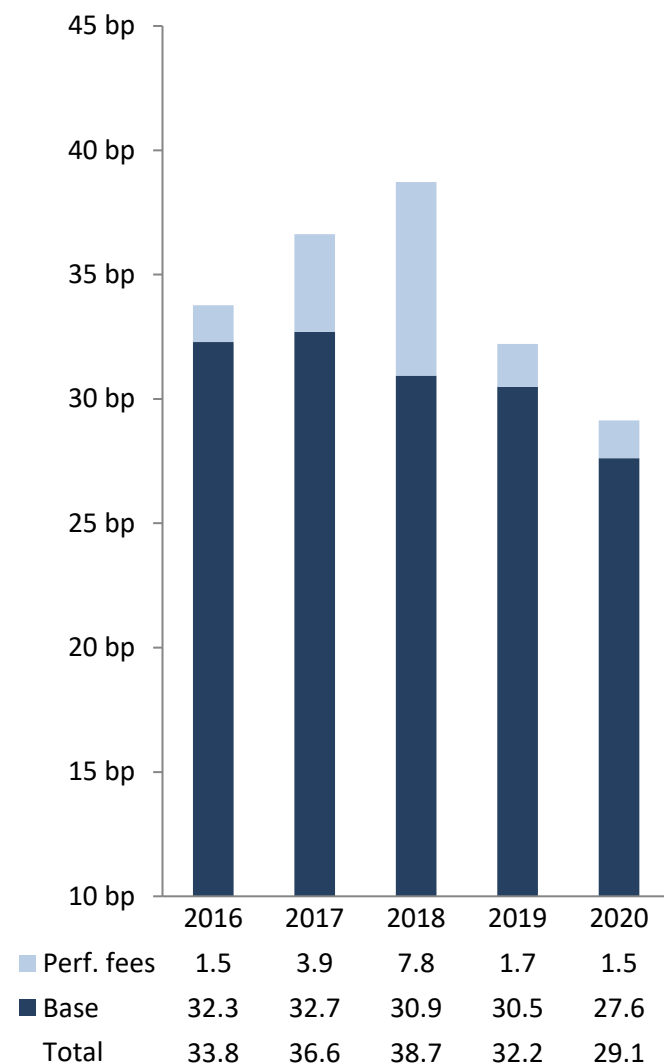
Asset management costs by asset class and style (\$000s)	Internal Management			External Management			Total	
	Passive	Active	Overseeing of external	Passive fees	Active base fees	Perform. fees ²		
Stock - Europe & Far East	768	1,957	548		3,764		7,036	
Stock - Emerging			906	1,276			2,181	
Stock - Global			3,721	8,013			11,734	
Fixed Income - U.S.	262						262	
Fixed Income - Global	872		675	927			2,473	
Cash		3,296					3,296	
Infrastructure ²		454	318		1,246	1,905	2,018	
Infrastructure - LP ²			507		2,013	2,537	2,519	
Natural Resources ²		1,559	1,760		2,525	1,975	5,843	
Real Estate ex-REITs ²		459					459	
Real Estate ex-REITs - LP ²			544		192	678	736	
Real Estate ex-REITs - Co-Invest. ²			1,732		704		2,436	
Hedge Funds - External Active			2,679		18,816	7,020	28,515	
Diversified Private Equity - LP ²			4,615		6,404	1,303	11,019	
Diversified Private Equity - FoFs ^{1 2}			841		442	356	1,282	
Other Private Equity - LP ²		6,219					6,219	
Other Private Equity - Co-Invest. ²			3,435		11,542		14,977	
Derivatives/Overlays	3,641	7,724					11,365	
Total excluding private asset performance fees							114,370	24.8bp
Oversight, custodial and other costs ³								
Oversight of the fund							12,307	
Trustee & custodial							6,980	
Consulting and performance measurement							0	
Audit							596	
Other							0	
Total oversight, custodial & other costs							19,883	4.3bp
Total investment costs (excl. transaction costs & private asset performance fees)							134,253	29.1bp

Footnotes

1. Default underlying costs were added: Diversified Private Equity - FoFs 157 bps. Refer to Appendix A for full details regarding defaults.
2. Total cost excludes carry/performance fees for real estate, infrastructure, natural resources and private equity. Performance fees are included for the public market asset classes and hedge funds.
3. Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.

Your costs decreased by 4.6 bps, from 33.8 bps in 2016 to 29.1 bps in 2020, because you paid less in 2020 for similar investment styles and had a lower cost implementation style. This was partly offset by a higher cost asset mix.

Trend in cost



Reasons why your costs decreased by 4.6 bps

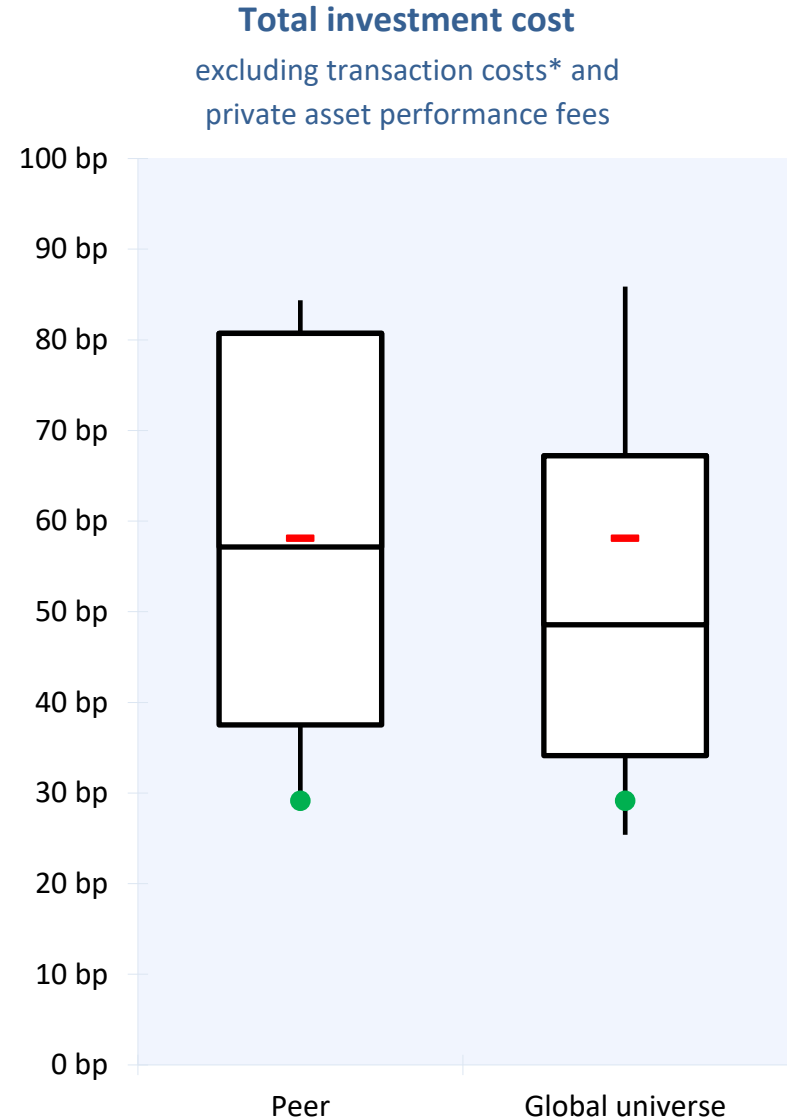
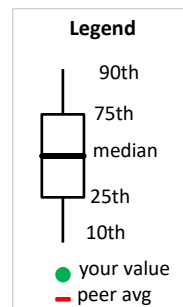
	Impact in bps		
1. Higher cost asset mix			
• More Real Estate ex-REITs: 2016 0% vs 2020 1%		1.7	
• Less Infrastructure & Natural Resources: 2016 11% vs 2020 8%		(1.9)	
• More Hedge Funds & Multi-Asset: 2016 4% vs 2016 6%		2.3	
• All other mix changes		(0.1)	
		<u>2.0</u>	
2. Lower cost implementation style			
• More passive, less active		(0.8)	
• More internal as a % of active		(1.4)	
• All other implementation style changes		(0.2)	
		<u>(2.4)</u>	
3. Paid less, net, for similar investment styles			
	<u>2016 cost</u>	<u>2020 cost</u>	
• Lower Hedge Funds base fees	121.5 bp	78.3 bp	(2.6)
• Higher external passive Stock - Global costs	4.4 bp	7.1 bp	1.0
• Higher Private Equity LP base fees	150.8 bp	250.6 bp	1.0
• Lower Infrastructure LP base fees	178.2 bp	96.3 bp	(0.5)
• Lower Hedge Funds performance fees	33.2 bp	25.6 bp	(0.5)
• Lower internal investment management costs			(0.7)
• Lower overlays and unfunded strategies costs	2.8 bp	2.5 bp	(0.3)
• Lower oversight, custodial & other costs	6.2 bp	4.3 bp	(1.8)
• All other differences			0.2
			<u>(4.2)</u>
Total decrease			<u><u>(4.6)</u></u>

Your total investment cost of 29.1 bps was below the peer median of 57.1 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 23% of your funds assets at the end of 2020 versus a peer average of 24%.
- 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 low cost by 10.1 basis points in 2020.

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 29.1 bp was below your benchmark cost of 39.3 bp. Thus, your cost savings were 10.1 bp.

Your cost versus benchmark

	\$000s	basis points
Your total investment cost	134,253	29.1 bp
Your benchmark cost	180,874	39.3 bp
Your excess cost	(46,621)	(10.1) bp

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

Reasons for your low cost status

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less active management, more lower cost passive	(28,097)	(6.1)
• Less external management, more lower cost internal	(13,571)	(2.9)
• Less LPs as a percentage of external	(1,759)	(0.4)
• Less fund of funds	(4,668)	(1.0)
• Co-investment usage	124	0.0
• More overlays	7,703	1.7
	<u>(40,269)</u>	<u>(8.7)</u>
2. Paying less than peers for similar services		
• External investment management costs	(16,476)	(3.6)
• Internal investment management costs	1,873	0.4
• Oversight, custodial & other costs	8,251	1.8
	<u>(6,352)</u>	<u>(1.4)</u>
Total savings	(46,621)	(10.1)

Your implementation style was 8.7 bps lower cost than the peer average.

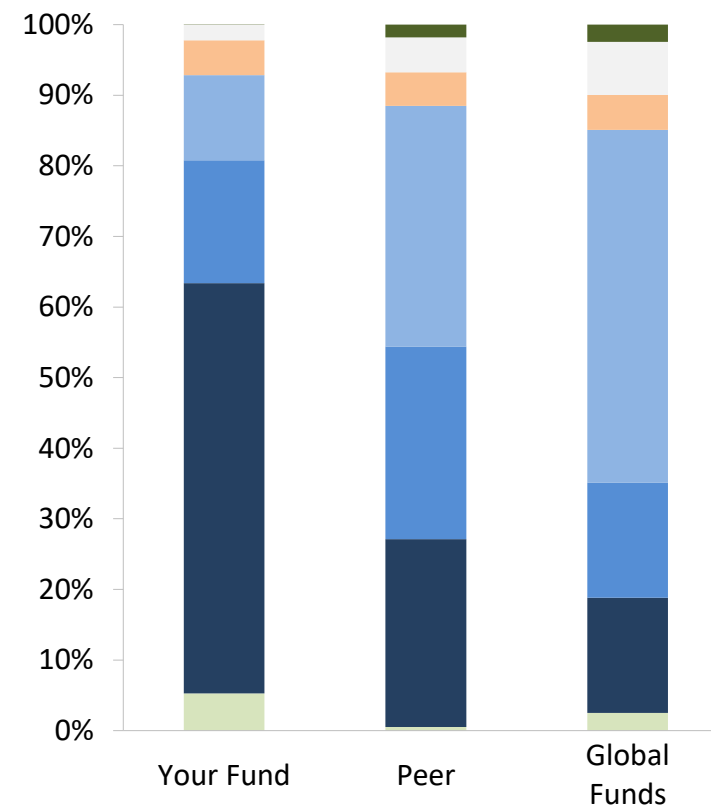
Implementation style is the way in which your fund implements asset allocation. Each implementation choice has a cost. Your first choice is how much to implement passively or actively. The table below summarizes your aggregate choices versus peers and their cost impact.

Implementation choices	Impact
More passive (47% vs 20%), less active	(6.1) bp
More internal as a % of passive (8% vs 2%)	(0.1) bp
More internal as a % of active (59% vs 44%)	(2.9) bp
More evergreen % private excl. PE (49% vs 28%)	(0.4) bp
Less fund of funds % of LP/Co/FoF (1% vs 16%)	(1.0) bp
More co-investment % of LP/Co (69% vs 49%)	0.0 bp
More overlays	1.7 bp
Total impact	(8.7) 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 style and derivative style is 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



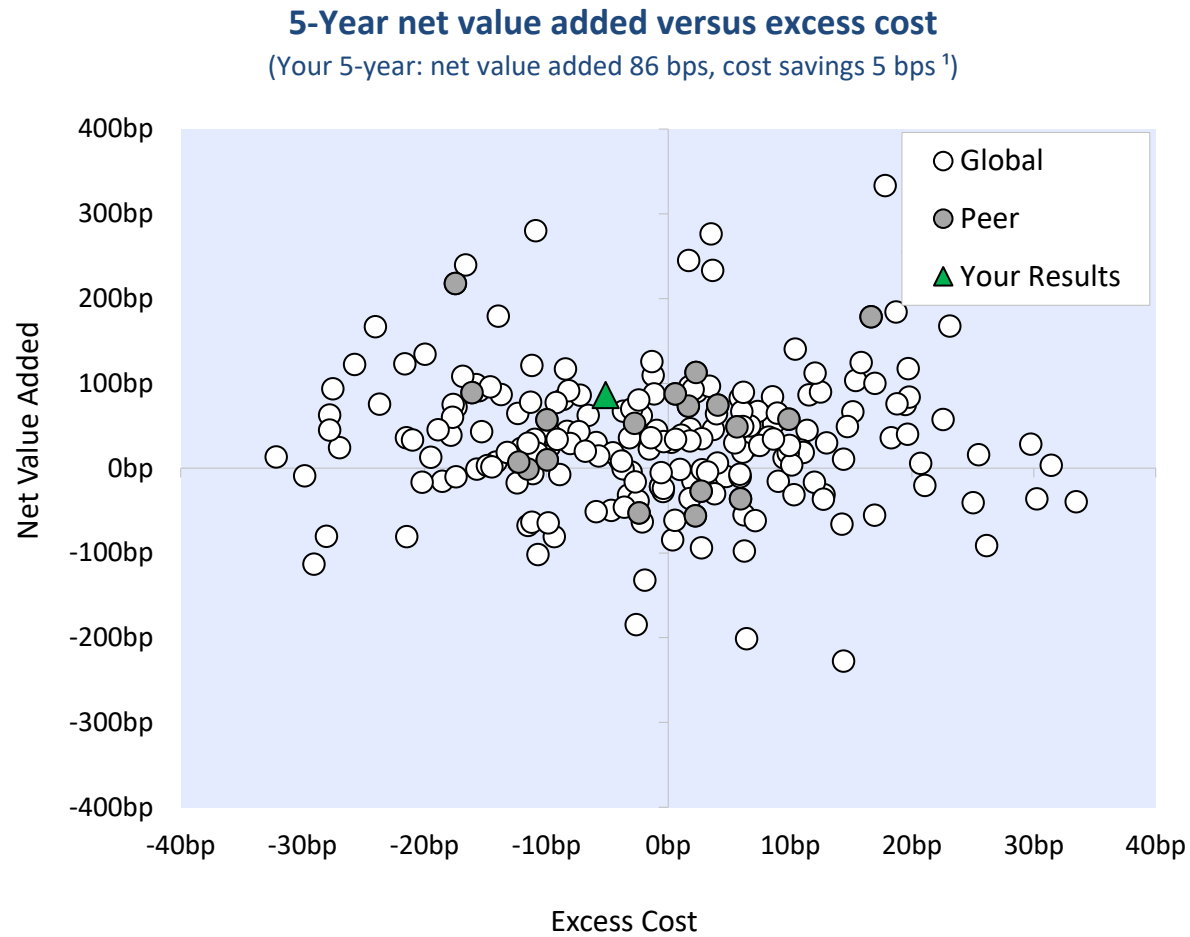
■ Fund of Funds	0.0%	1.8%	2.4%
■ LP	2.2%	4.9%	7.5%
■ Co-Investment	4.9%	4.7%	4.9%
■ External Active	12.0%	34.1%	50.0%
■ Internal Active	17.4%	27.3%	16.3%
■ External Passive	58.1%	26.6%	16.3%
■ Internal Passive	5.3%	0.5%	2.5%

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	413	2,120	2,532	12.8 bp
Stock - Emerging	(7,241)	0	(7,241)	(44.9) bp
Stock - Global	(21,320)	5,865	(15,455)	(9.4) bp
Fixed Income - U.S.	(24)	255	232	90.1 bp
Fixed Income - Global	(809)	742	(66)	(0.2) bp
Real Estate ex-REITs	121	584	705	20.3 bp
Infrastructure	(3,269)	(1,552)	(4,822)	(53.5) bp
Natural Resources	(12,216)	1,097	(11,120)	(37.9) bp
Hedge Funds	(3,405)	(28,619)	(32,024)	(116.7) bp
Diversified Private Equity	(222)	4,906	4,684	103.3 bp
Other Private Equity	--	--	Excluded	Excluded
Derivatives and overlays	7,703	0	7,703	1.7 bp
Oversight, custodial & other	n/a	8,251	8,251	1.8 bp
Total	(40,269)	(6,352)	(46,621)	(10.1) bp

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

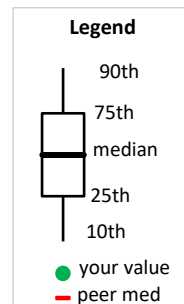


1. Your 5-year cost savings of 5 basis points is the average of your cost savings for the past 5 years.

	2020	2019	2018	2017	2016	5-year
Net value added	(293.0) bp	(161.0) bp	311.0bp	209.0bp	316.0bp	86.3bp
Excess cost	(10.1) bp	(8.4) bp	(2.0) bp	(1.4) bp	(3.8) bp	(5.1) bp

Comparison of risk levels:

Your asset risk of 13.4% was above the Global median of 9.0%. Asset risk is the standard deviation of your policy return. It is based on the historical variance of, and covariance between, the asset classes in your policy mix. Your asset risk was higher because you have a much higher relative policy allocation to stock. Refer to section 6 for further details.



Global risk levels at December 31, 2020

