

**Investment**  
**Cost Effectiveness Analysis**  
(for the 10-year period ending December 31, 2019)

**Norwegian Government Pension Fund Global**



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# Key takeaways

## Returns

- All returns have been converted using the GPFG currency basket. However, differences in total returns reflect in large part home-market biases and the relative performance of currencies. So they are not the primary focus of this report.
- Your 10-year net total return was 7.8%. This was below the Global median of 9.6% and below the peer median of 9.7%.
- Your 10-year policy return was 7.6%. This was below the Global median of 9.3% and below the peer median of 8.7%.

## Value added

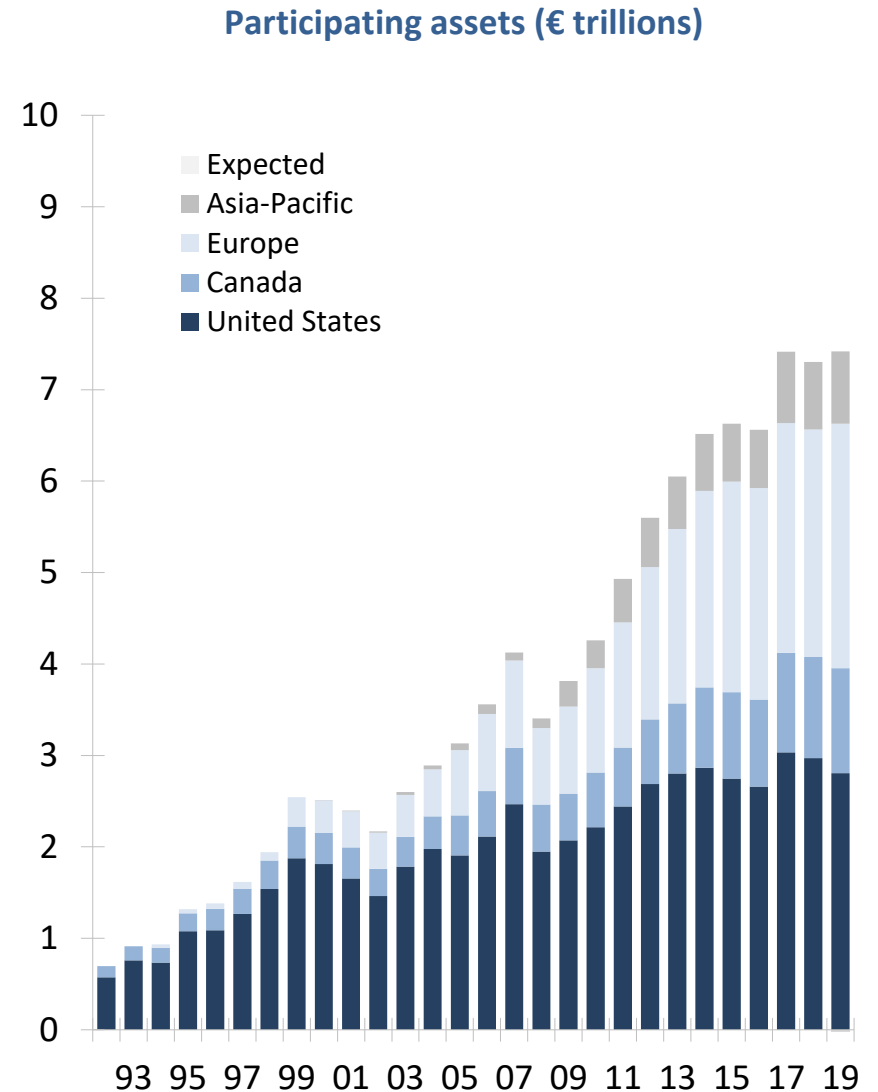
- Your 10-year net value added was 0.2%. This was equal to the Global median of 0.2% and close to the peer median of 0.4%.

## Cost

- Your 2019 investment cost of 4.7 bps was below your benchmark cost of 18.6 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was low cost because you had a lower cost implementation style and you paid less than peers for similar services.
- Your 10-year performance placed in the positive value added, low cost quadrant of the cost effectiveness chart.

## This benchmarking report compares your cost and return performance to the 305 funds in CEM's extensive pension database.

- 151 U.S. pension funds participate. The median U.S. fund had assets of €8.1 billion and the average U.S. fund had assets of €18.6 billion. Total participating U.S. assets were €2.8 trillion.
- 69 Canadian funds participate with assets totaling €1.1 trillion.
- 74 European funds participate with aggregate assets of €2.7 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 6 Asia-Pacific funds participate with aggregate assets of €791.2 billion. Included are funds from Australia, New Zealand, China and South Korea.



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

### Peer group for Norwegian Government Pension Fund Global

- 10 largest Global sponsors from €116 billion to €464 billion
  - Median size of €203 billion versus your €938 billion
- 2 Canadian funds, 2 European funds, 2 Asia-Pacific funds and 4 U.S. funds make up the Global peer group.
- In the report there are also comparisons to CEM's Global database of participants.

## Your 10-year net total return of 7.8% was below the peer median of 9.7%.

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.

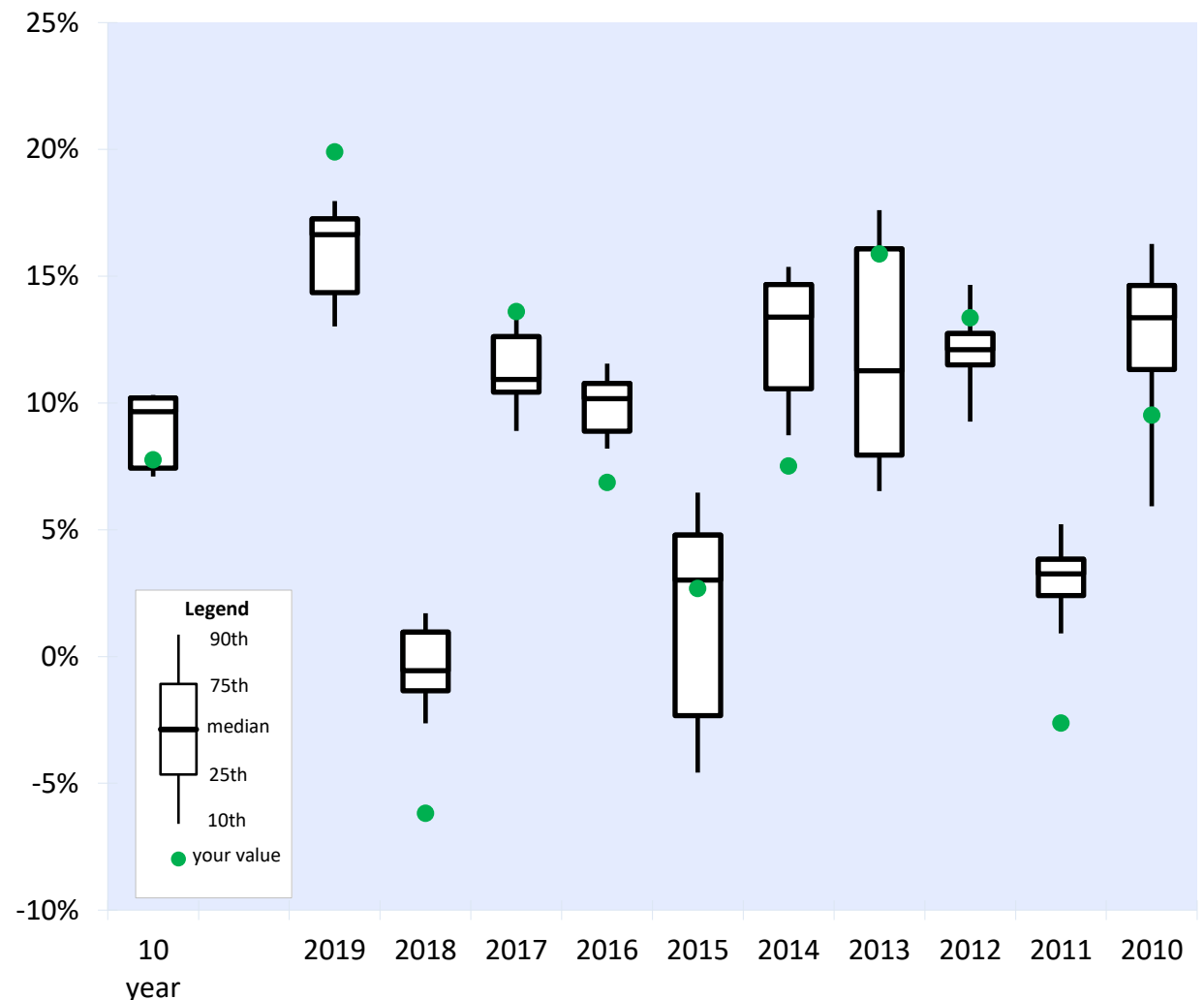
Your 10-year	
Net total fund return	7.8%
- Policy return	<u>7.6%</u>
= Net value added	0.2%

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

Actual and policy returns have been converted to your currency using unhedged currency returns.

The fund return consists of Equity, Fixed Income and Real Estate. The fund benchmark is the weighted benchmark of Equity and Fixed Income. The benchmark for Real Estate used in the report prior to 2017 was the actual portfolio return, and thereafter the financing cost for the real estate investments.

Peer net total returns - quartile rankings



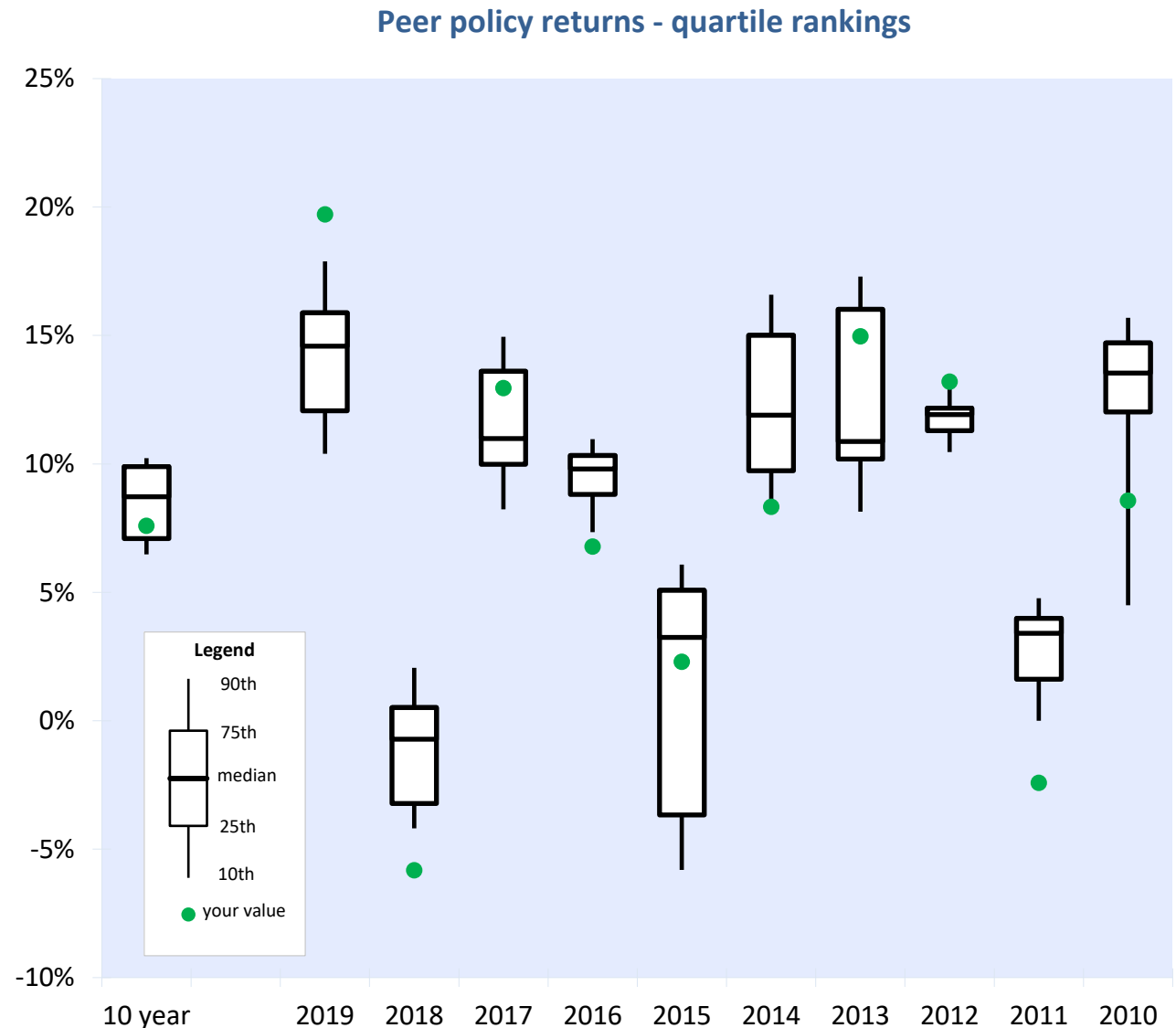
## Your 10-year policy return of 7.6% was below the peer median of 8.7%.

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:

- 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.



## Your 10-year average policy asset mix compares to the Peer and Global funds as follows.

- Your fund currently has no allocation to real assets, hedge funds or private equity whereas the peer funds had average allocations of 12%, 3%, and 7% respectively. The Global funds' average allocations were 9%, 3% and 5%. The manager however can invest up to 7% in unlisted real estate and up to 2% in unlisted infrastructure for renewable energy.
- Your policy asset mix is more globally diversified than the average Peer or Global fund.

### 10-year average policy mix

	Your Fund	Peer Avg.	Global Avg.
Equity	63%	45%	45%
Fixed Income	36%	33%	38%
Hedge Funds	0%	3%	3%
Real Assets	1%	12%	9%
Private Equity	0%	7%	5%
Total	100%	100%	100%

Regional allocations can significantly influence the policy return. GPFG's overweight in European securities and the peer group's overweight in North American securities would cause a difference in the policy returns. Variations in the fixed income portfolios, such as duration, credit quality and country allocation within regions would have an impact as well. Not being invested in asset classes like private equity and having a lower allocation to real estate also had an impact on GPFG's policy return.



## Net value added is the component of total return from active management. Your 10-year net value added was 0.2%.

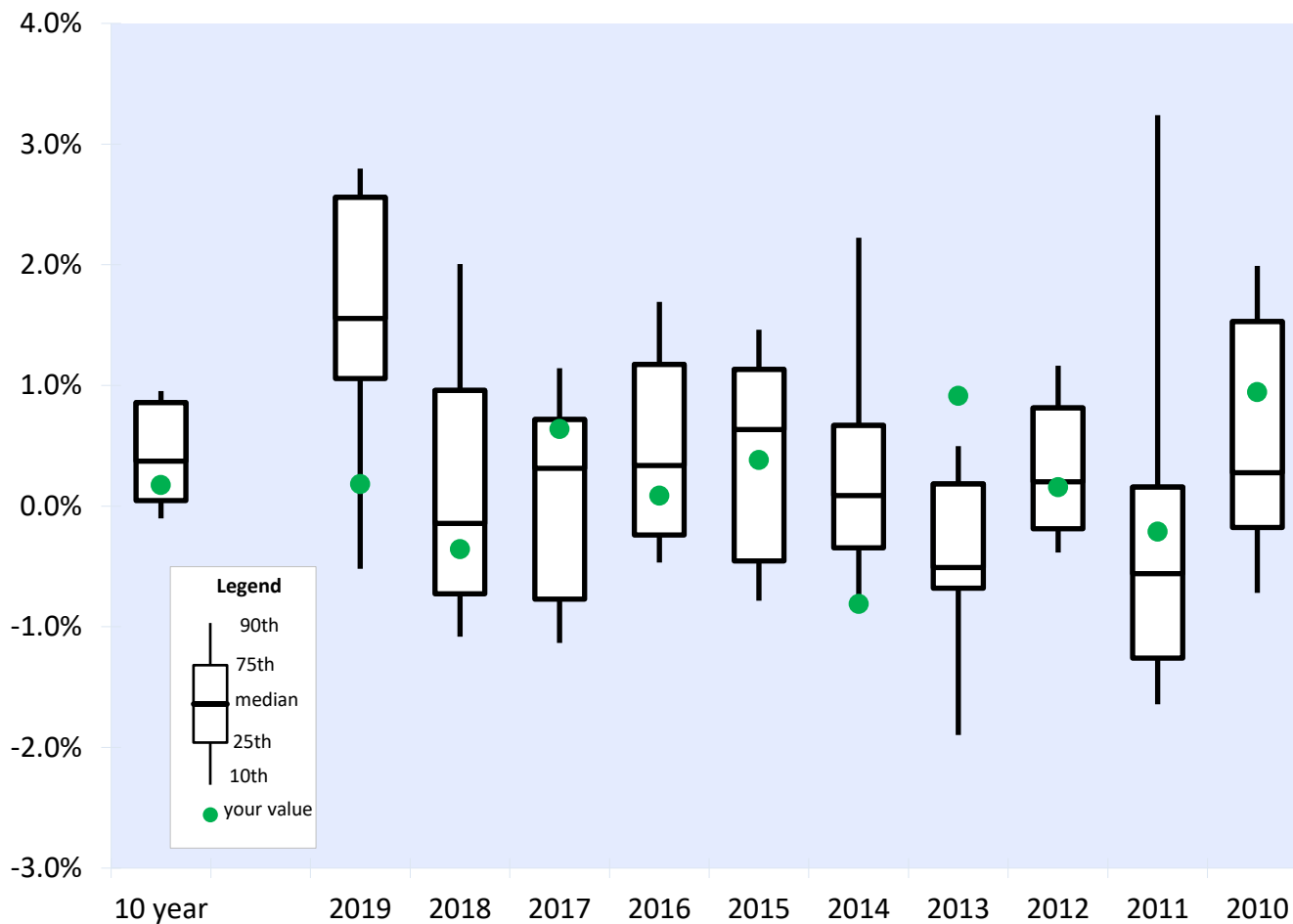
Net value added equals total net return minus policy return.

### Value added for Norwegian Government Pension Fund Global

Year	Net Return	Policy Return	Net Value Added
2019	19.9%	19.7%	0.2%
2018	-6.2%	-5.8%	-0.4%
2017	13.6%	13.0%	0.6%
2016	6.9%	6.8%	0.1%
2015	2.7%	2.3%	0.4%
2014	7.5%	8.3%	-0.8%
2013	15.9%	15.0%	0.9%
2012	13.4%	13.2%	0.2%
2011	-2.6%	-2.4%	-0.2%
2010	9.5%	8.6%	0.9%
10-Year	7.8%	7.6%	0.2%

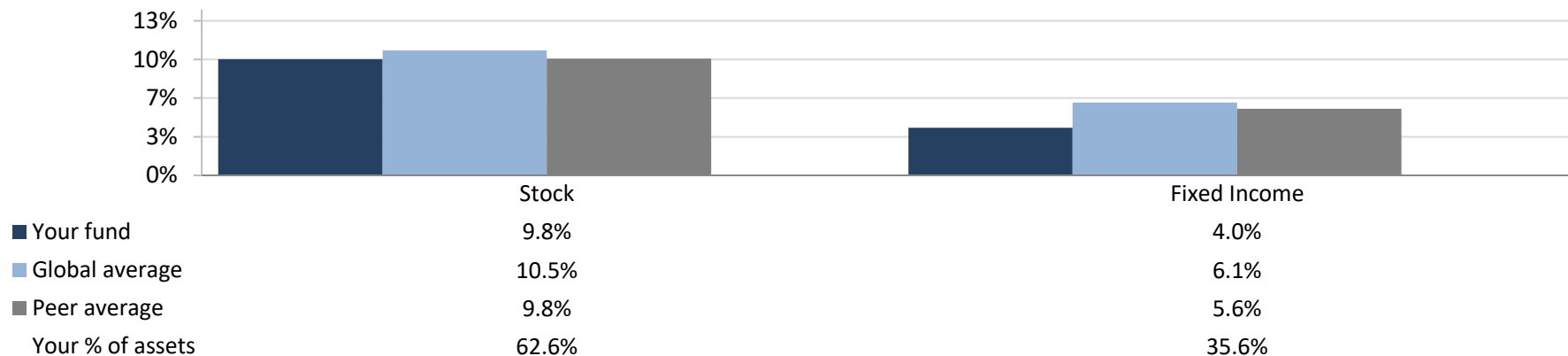
Your 10-year net value added of 0.2% compares to a median of 0.4% for your peers and 0.2% for the Global universe.

Peer net value added - quartile rankings

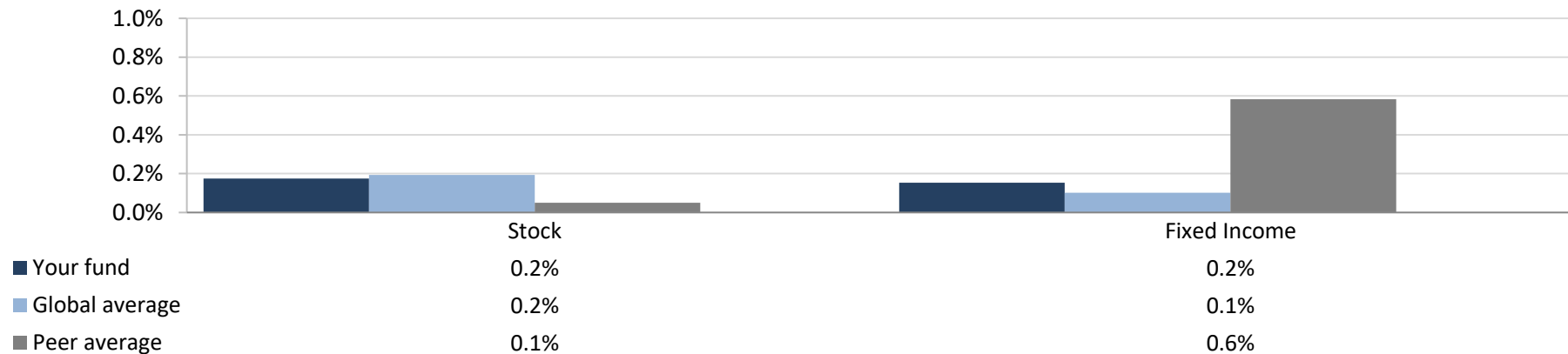


# Comparisons of your 10-year net return and net value added by major asset class:

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



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



## Your investment costs were €437.8 million or 4.7 basis points in 2019.

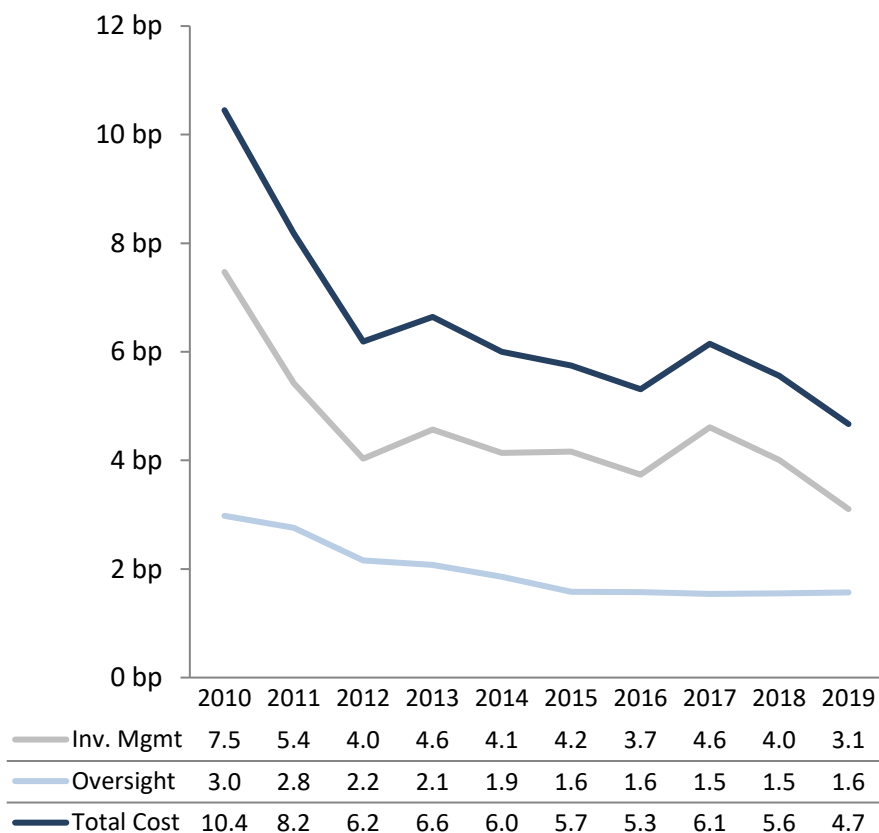
Asset management costs by asset class and style (€000s)	Internal Mgmt		External Mgmt		Total	
	Active	Overseeing of external	Active base fees	Perform. fees <sup>1</sup>		
Stock - EAFE		1,025	10,989	(2,372)	9,642	
Stock - Emerging		4,515	50,999	31,936	87,450	
Stock - Global	115,092				115,092	
Fixed Income - Global	44,434				44,434	
REITs	1,620				1,620	
Real Estate <sup>1</sup>	32,738				32,738	
<b>Total excluding private asset performance fees</b>					<b>290,976</b>	<b>3.1bp</b>
<b>Oversight, custodial and other costs <sup>2</sup></b>						
Oversight of the fund					89,677	
Trustee & custodial					42,622	
Consulting and performance measurement					10,715	
Audit					3,792	
Other					0	
<b>Total oversight, custodial &amp; other costs</b>					<b>146,806</b>	<b>1.6bp</b>
<b>Total investment costs (excl. transaction costs)</b>					<b>437,782</b>	<b>4.7bp</b>

### Footnotes

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

**Your costs decreased by 5.8 bps, from 10.4 bps in 2010 to 4.7 bps in 2019, because you had a lower cost implementation style and paid less in 2019 for similar investment styles. This was partly offset by a higher cost asset mix.**

### Trend in cost



### Reasons why you costs decreased by 5.8 bps

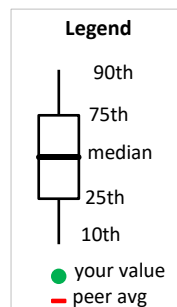
	Impact in bps
1. Higher cost asset mix	
• More Stock and REITs: 69% vs 61%	1.4
• All other mix changes	0.1
	<hr/> 1.5
2. Lower cost implementation style	
• Less external as a % of active	(5.2)
	<hr/> (5.2)
3. Paid less, net, for similar investment styles	
• Lower oversight, custodial & other costs	(1.4)
• Lower internal investment management costs	(0.6)
• All other differences	(0.6)
	<hr/> (2.0)
Total decrease	<hr/> <hr/> (5.8)

## Your total investment cost of 4.7 bps was the lowest of the peers and was substantially below the peer median of 39.2 bps.

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

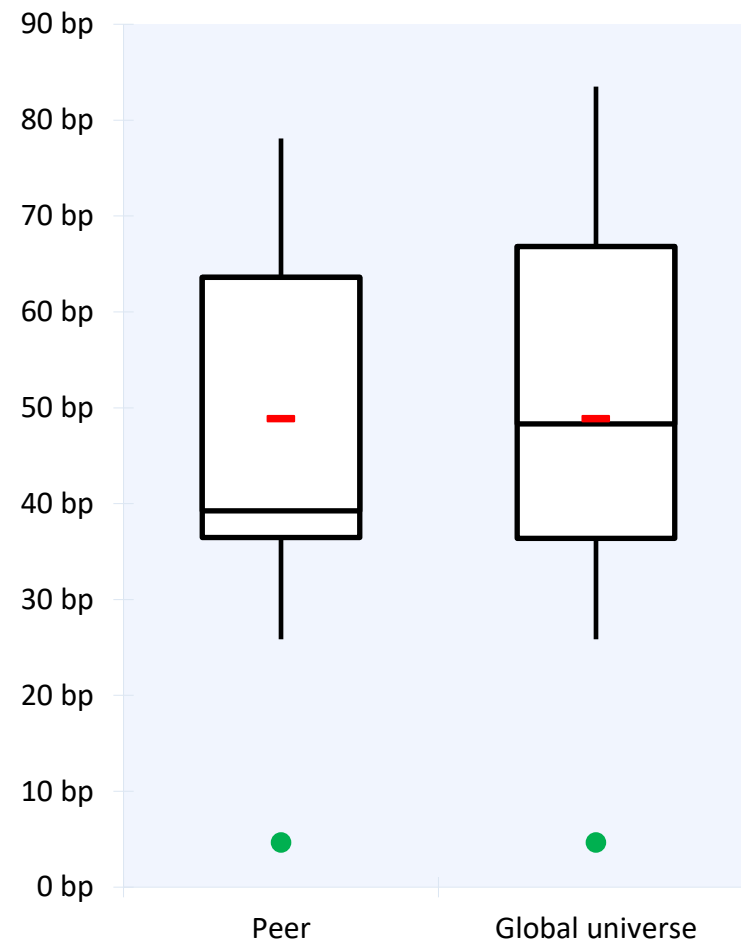
- Asset mix, particularly holdings of the highest cost asset classes: real estate (excl. REITs), infrastructure, hedge funds and private equity. These high cost assets equaled 3% of your funds assets at the end of 2019 versus a peer average of 29%.
- Fund size. Bigger funds have advantages of scale.

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.



\* Initial insights into transaction costs are discussed at the end of section 5.

**Total investment cost**  
excluding transaction costs\* and  
private asset performance fees



## Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was low cost by 13.9 basis points in 2019.

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 4.7 bp was below your benchmark cost of 18.6 bp. Thus, your cost savings were 13.9 bp.

### Your cost versus benchmark

	€000s	basis points
Your total investment cost	437,782	4.7 bp
Your benchmark cost	1,745,221	18.6 bp
Your excess cost	(1,307,439)	(13.9) bp

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

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	€000s	bps
1. Implementation style differences	(848,659)	(9.1)
2. Paying less than peers for similar services		
• External investment management costs	(80,111)	(0.9)
• Internal investment management costs	(354,686)	(3.8)
• Oversight, custodial & other costs	(23,983)	(0.3)
	<u>(458,780)</u>	<u>(4.9)</u>
<b>Total savings</b>	<b>(1,307,439)</b>	<b>(13.9)</b>

## Alternative benchmark cost:

	Average holdings in €mils	GPFG cost in bps	Cost comparison with median peer across all management styles (bps)			Cost comparison with median peer with similar management style (bps)		
			Benchmark cost	Difference to benchmark cost	Contribution to total cost difference	Benchmark cost	Difference to benchmark cost	Contribution to total cost difference
<b>External asset management</b>								
Stock - EAFE	6,303	15.3	24.3	9.0	0.1	41.8	26.5	0.2
Stock - Emerging	27,759	31.5	33.8	2.3	0.1	54.4	22.8	0.7
<b>Internal asset management</b>								
Stock - Global	602,785	1.9	16.5	14.6	9.4	6.6	4.7	3.0
Fixed Income- Global	264,597	1.7	6.6	4.9	1.4	2.9	1.2	0.3
REITs	10,402	1.6	8.1	6.5	0.1	5.7	4.2	0.0
Real Estate ex-REITs	25,724	<u>12.7</u>	<u>82.9</u>	70.2	<u>1.9</u>	<u>27.3</u>	14.6	<u>0.4</u>
<b>Total, excl. Overlays and overhead</b>		<b>3.1</b>	<b>16.0</b>		<b>12.9</b>	<b>7.7</b>		<b>4.6</b>
Overlay Programs	937,571	0.0	0.8	0.8	0.8	0.8	0.8	0.8
Overhead	937,571	1.6	1.8	0.3	0.3	1.8	0.3	0.3
<b>Total</b>	<b>937,571</b>	<b>4.7</b>	<b>18.6</b>		<b>13.9</b>	<b>10.4</b>		<b>5.7</b>

Notes:

Internal Global stock uses All stock as the benchmark.

Internal Global fixed income uses All fixed income as the benchmark.



## High-level estimate of management costs incurred if GPFG were managed passively:

	Average holdings in €mils	Current cost in bps	Benchmark target cost in bps
<i>External asset management</i>			
Stock - EAFE	6,303	15.3	1.5
Stock - Emerging	27,759	31.5	2.6
<i>Internal asset management</i>			
Stock - Global	602,785	1.9	1.5
Fixed Income- Global	264,597	1.7	1.0
REITs	10,402	1.6	1.4
Real Estate ex-REITs	25,724	12.7	1.4
Overhead	937,571	1.6	1.6
<b>Total</b>	<b>937,571</b>	<b>4.7</b>	<b>3.0</b>

Notes:

Internal passive asset class costs at the first quartile are used for the benchmark proxies for the externally managed assets.

Internal Global stock uses All stock as the benchmark.

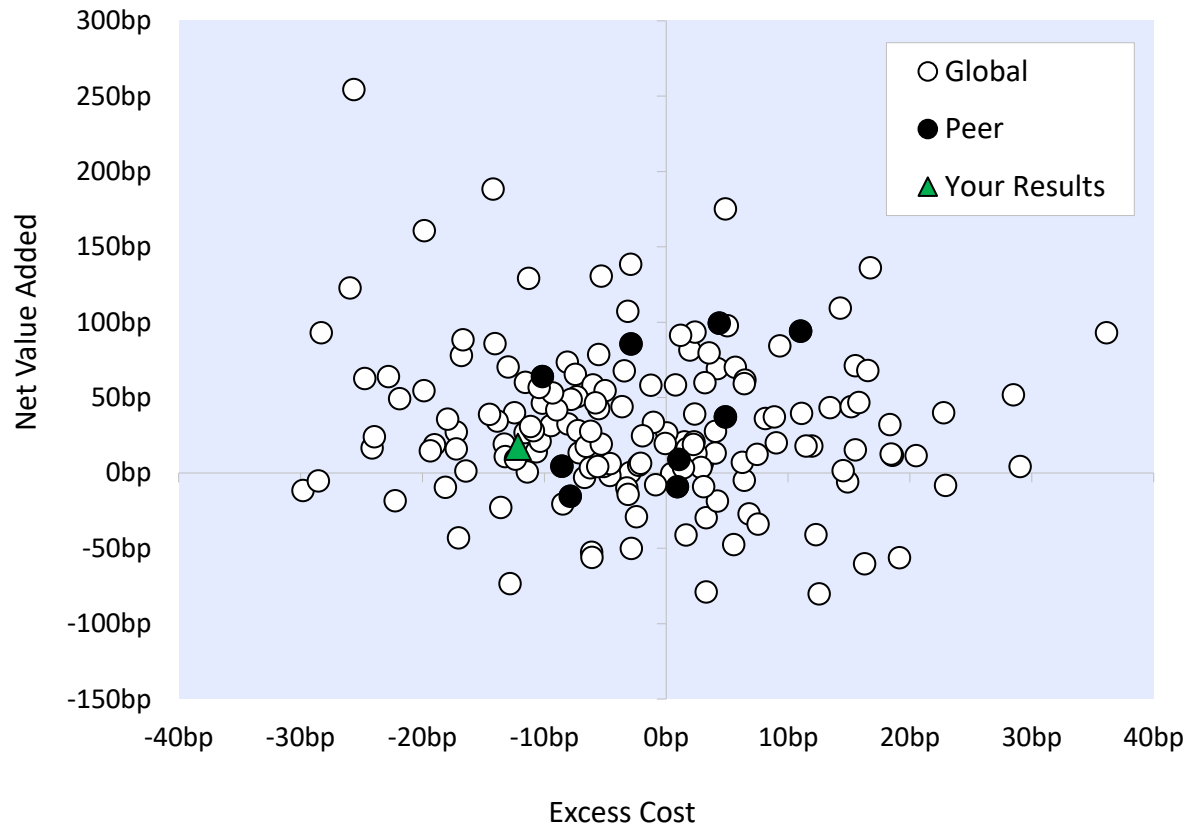
Internal Global fixed income uses All fixed income as the benchmark.

Real estate and REITs use the weighted average benchmark for stock and fixed income.

The benchmark result needs to be interpreted with caution since the value is very low and based on a limited number of observations.

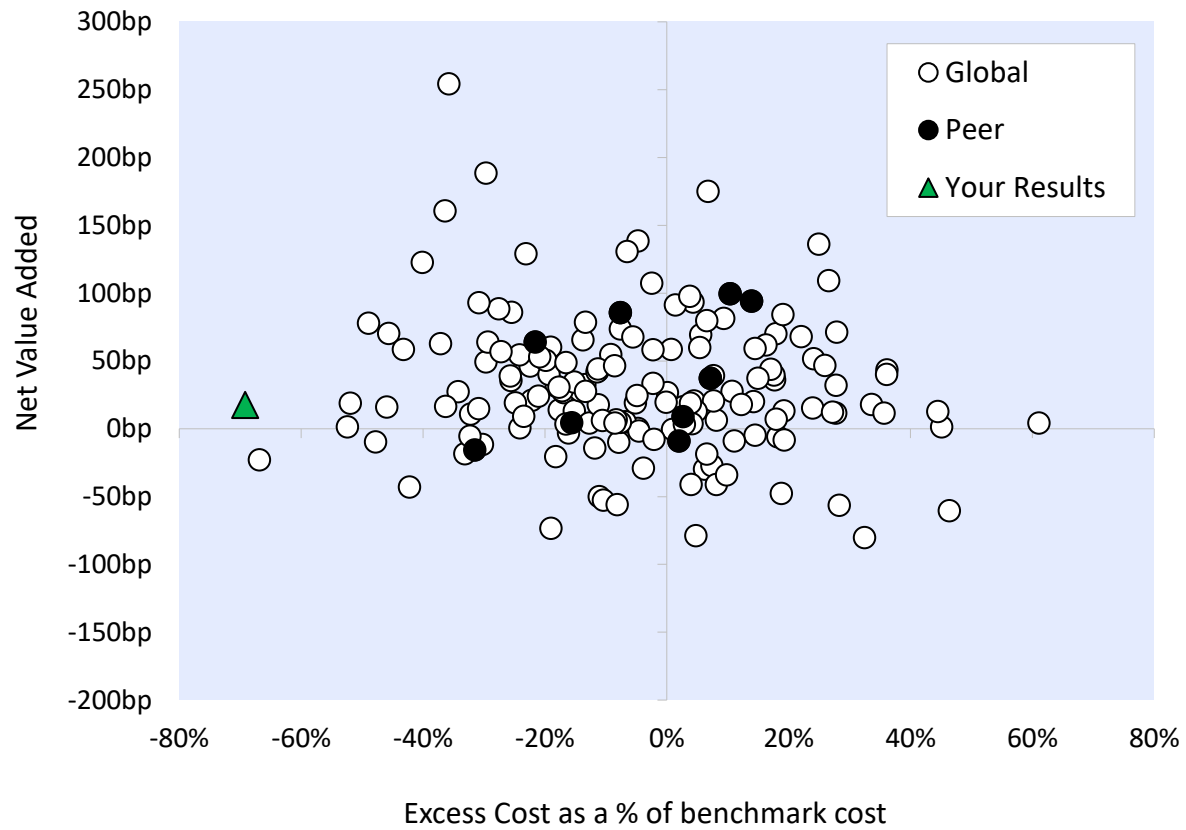
# Your 10-year performance placed in the positive value added, low cost quadrant of the cost effectiveness chart.

**10-Year net value added versus excess cost**  
(Your 10-year: net value added 17 bps, cost savings 12 bps)



# 10-year excess cost as a % of benchmark cost versus net value added:

## 10-year excess cost as a % of BM cost vs. net value added



# 2

## Description of peer group and universe

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## Peer group

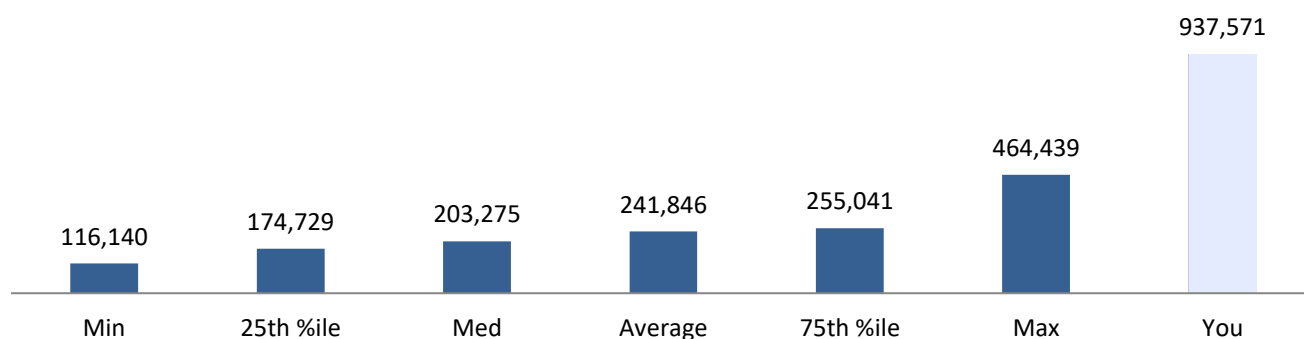
Your peer group is comprised of 10 Global funds, with assets ranging from €116.1 billion to €464.4 billion versus your €937.6 billion. The median size is €203.3 billion.

In order to preserve client confidentiality, we do not disclose your peers' names in this document due to the

### Peer Group Characteristics - 2019

	Your Plan	Peers	Global average
<u>Plan Assets (\$ billions)</u>			
Range	937.6	116.1 - 464.4	0.0 - 937.6
Median		203.3	6.1
<u># of Plans</u>			
Corporate		0	134
Public	1	8	131
Other		2	40
Total		10	305
<u>Implementation style</u>			
% External active	3.6	40.4	65.5
% External passive	0.0	5.5	18.1
% Internal active	96.4	31.6	12.5
% Internal passive	0.0	22.5	3.9
<u>Asset mix</u>			
% Stock	67.9	39.5	38.8
% Fixed Income	28.2	28.0	38.3
% Real Assets	3.9	15.3	10.0
% Private Equity	0.0	9.9	5.1
% Hedge Funds & Other	0.0	4.8	5.7

### Total fund assets (€ millions) - you versus peers

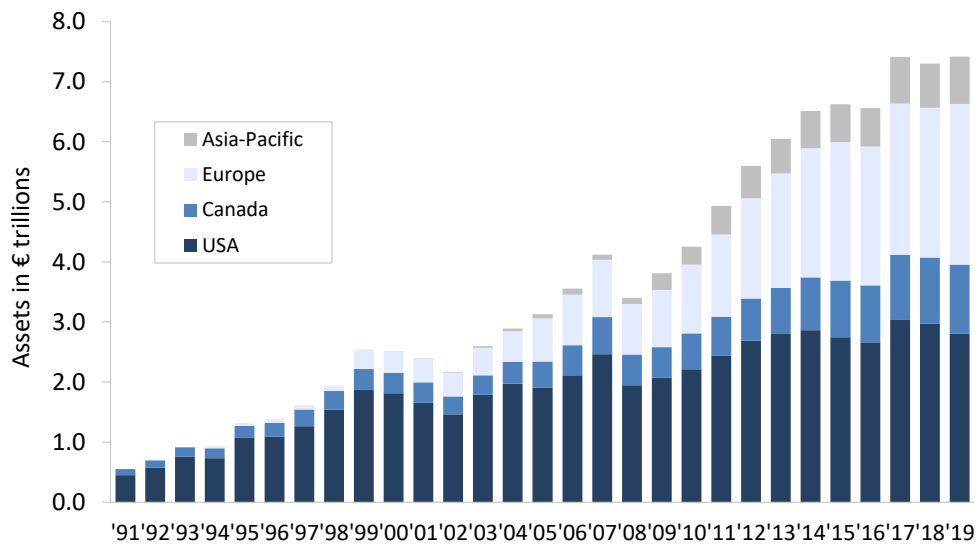


## CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2019 survey universe is comprised of 305 funds representing €7.5 trillion in assets. The breakdown by region is as follows:

- 151 U.S. pension funds with aggregate assets of €2.8 trillion.
- 69 Canadian pension funds with aggregate assets of €1.1 trillion.
- 74 European pension funds with aggregate assets of €2.7 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 6 Asia-Pacific pension funds with aggregate assets of €0.8 trillion.

CEM global universe



## Universe subsets

CEM's global survey universe is comprised of 305 funds with total assets of €7.5 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 10 Global funds ranging in size from €116.1 - €464.4 billion. The peer median of €203.3 billion compares to your €937.6 billion.
- Global - The global universe is comprised of 305 funds ranging in size from €0.0 - €937.6 billion. The median fund is €6.1 billion.

### Universe subsets by number of funds and assets

	Peer group <sup>1</sup>	Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b># of funds</b>										
2019	10	134	131	40	305	151	69	74	11	305
2018	10	146	146	43	335	170	78	75	12	335
2017	10	150	155	46	351	167	79	91	14	351
2016	10	155	146	47	348	170	81	83	14	348
2015	10	162	149	53	364	176	81	92	15	364
2014	10	165	206	53	424	178	89	144	13	424
2013	10	186	200	61	447	193	90	152	12	447
2012	10	189	204	57	450	203	89	144	14	450
2011	10	196	115	66	377	204	89	70	14	377
2010	9	181	120	47	348	206	95	38	9	348
<b># of funds with uninterrupted data for:</b>										
1 yr	10	134	131	40	305	151	69	74	11	305
2 yrs	10	124	129	38	291	145	66	71	9	291
3 yrs	10	115	124	36	275	136	60	70	9	275
4 yrs	10	109	122	36	267	132	57	69	9	267
5 yrs	10	103	115	34	252	126	51	66	9	252
6 yrs	10	97	112	33	242	123	50	63	6	242
7 yrs	10	93	108	31	232	116	48	62	6	232
8 yrs	10	86	104	27	217	111	47	53	6	217
9 yrs	10	83	71	26	180	109	44	21	6	180
10 yrs	9	77	67	21	165	101	44	16	4	165
<b>Total assets (€ billions)</b>										
2019	2,418	1,187	4,839	1,468	7,494	2,806	1,148	2,674	865	7,494
2018	2,272	1,098	4,925	1,345	7,369	2,969	1,107	2,490	804	7,369
2017	2,254	1,119	5,022	1,493	7,634	3,035	1,088	2,512	999	7,634
2016	1,954	1,080	4,292	1,377	6,749	2,661	950	2,314	825	6,749
2015	1,935	1,102	4,468	1,340	6,910	2,746	946	2,303	916	6,910
2014	1,872	1,164	4,373	1,229	6,767	2,866	879	2,149	873	6,767
2013	1,705	1,106	4,051	1,107	6,264	2,802	765	1,909	788	6,264
2012	1,573	1,096	3,795	852	5,744	2,687	707	1,665	685	5,744
2011	1,366	1,075	3,223	761	5,060	2,442	644	1,368	605	5,060
2010	1,202	941	2,723	625	4,290	2,215	598	1,142	335	4,290
<b>2019 asset distribution (€ billions)</b>										
Avg	241.8	8.9	36.9	36.7	24.6	18.6	16.6	36.1	78.7	24.6
Max	464.4	54.0	937.6	464.4	937.6	262.3	233.1	937.6	452.8	937.6
75th %ile	255.0	12.0	28.7	32.9	19.4	18.8	10.2	24.4	71.7	19.4
Median	203.3	4.5	6.5	11.4	6.1	8.1	3.5	7.0	20.7	6.1
25th %ile	174.7	1.9	2.3	2.4	2.2	2.4	1.4	2.5	2.0	2.2
Min	116.1	0.2	0.0	0.1	0.0	0.2	0.0	0.5	0.5	0.0

1. Peer group statistics are for your 2019 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 - 2019 (as a % of year-end assets)

	Your fund <sup>1</sup>	Peer group	Global by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<u>Implementation style</u>											
External Active	3.6	38.9	69.1	57.4	60.4	62.9	71.0	60.6	49.1	59.6	62.9
Fund of funds	0.0	1.6	2.1	3.1	2.3	2.6	2.4	1.6	3.8	2.3	2.6
External passive	0.0	5.5	18.7	17.2	19.0	18.1	18.0	12.3	24.8	11.0	18.1
Internal Active	96.4	31.6	7.7	17.0	13.4	12.5	5.4	20.5	18.4	18.8	12.5
Internal Passive	<u>0.0</u>	<u>22.5</u>	<u>2.4</u>	<u>5.3</u>	<u>4.8</u>	<u>3.9</u>	<u>3.2</u>	<u>5.0</u>	<u>3.9</u>	<u>8.3</u>	<u>3.9</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<u>Actual asset mix</u>											
Stock	67.9	39.5	31.1	45.9	41.0	38.8	37.1	38.7	41.4	44.9	38.8
Fixed Income	28.2	27.7	52.3	26.1	35.4	38.8	41.9	36.3	36.6	28.3	38.8
Global TAA	0.0	0.3	0.7	1.4	0.2	0.9	1.1	0.7	0.8	1.2	0.9
Real Assets	3.9	15.3	6.1	13.3	12.1	10.0	7.0	15.6	10.9	9.1	10.0
Hedge Funds	0.0	3.5	3.5	3.0	2.7	3.2	4.4	1.9	1.8	4.8	3.2
Balanced Funds	0.0	0.0	0.0	0.9	0.0	0.4	0.0	0.0	1.7	0.0	0.4
Risk Parity	0.0	1.4	0.6	0.6	1.0	0.6	0.9	0.2	0.1	3.6	0.6
Private Debt	0.0	2.6	1.6	2.2	3.6	2.1	1.5	2.5	3.1	1.4	2.1
Private Equity	<u>0.0</u>	<u>9.9</u>	<u>4.1</u>	<u>6.6</u>	<u>4.0</u>	<u>5.1</u>	<u>6.2</u>	<u>4.2</u>	<u>3.7</u>	<u>6.7</u>	<u>5.1</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<u>Policy asset mix</u>											
Stock	71.1	44.5	31.6	46.1	42.0	39.2	37.3	39.0	42.0	47.2	39.2
Fixed Income	28.9	27.3	52.0	26.7	35.7	39.0	41.7	37.2	36.6	29.4	39.0
Global TAA	0.0	0.1	0.6	1.4	0.2	0.9	1.0	0.8	0.8	1.0	0.9
Real Assets	0.0	14.4	6.3	13.5	12.4	10.2	7.7	15.3	10.8	8.3	10.2
Hedge funds	0.0	2.8	3.3	2.6	2.0	2.8	3.8	1.6	1.8	3.8	2.8
Balanced Funds	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.8	0.0	0.2
Risk Parity	0.0	1.3	0.5	0.4	1.0	0.5	0.8	0.2	0.1	2.3	0.5
Private Debt	0.0	1.6	1.4	2.4	3.2	2.1	1.3	2.3	3.4	2.1	2.1
Private Equity	<u>0.0</u>	<u>7.9</u>	<u>4.2</u>	<u>6.5</u>	<u>3.6</u>	<u>5.1</u>	<u>6.4</u>	<u>3.6</u>	<u>3.7</u>	<u>5.9</u>	<u>5.1</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.



## Implementation style, actual mix and policy mix trends

### Implementation style, actual mix and policy mix - 2015 to 2019 (as a % of year-end assets)

	Your fund <sup>1</sup>					Peer average <sup>2</sup>					Global average <sup>2</sup>				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
<b>Implementation style</b>															
External active	3.6	4.4	4.8	4.3	4.1	37.5	37.3	36.4	36.5	36.1	62.7	62.5	61.6	61.1	61.1
Fund of funds	0.0	0.0	0.0	0.0	0.0	1.4	1.6	2.0	2.1	2.0	2.2	2.4	2.4	2.6	2.7
External passive	0.0	0.0	0.0	0.0	0.0	5.3	5.9	5.6	5.0	5.8	16.1	16.3	17.1	17.6	17.9
Internal active	96.4	95.6	95.2	95.7	95.9	32.6	31.2	33.4	34.5	33.7	13.8	13.8	14.1	13.9	13.4
Internal passive	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>23.2</u>	<u>24.0</u>	<u>22.7</u>	<u>21.8</u>	<u>22.3</u>	<u>5.2</u>	<u>4.9</u>	<u>4.7</u>	<u>4.9</u>	<u>4.9</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>															
Stock	67.9	66.1	65.0	60.3	61.9	39.4	39.4	42.0	40.1	41.0	37.6	37.6	41.3	41.4	42.5
Fixed income	28.2	30.3	32.5	36.6	35.4	28.8	29.3	29.0	30.5	30.6	39.3	39.0	37.1	36.9	36.6
Global TAA	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.9	0.9	0.8	1.1	1.4
Real assets	3.9	3.5	2.5	3.1	2.7	15.4	15.5	14.6	14.9	13.9	10.3	10.5	9.8	9.7	9.1
Hedge funds	0.0	0.0	0.0	0.0	0.0	3.2	3.5	3.3	3.2	3.6	3.5	3.8	3.7	4.0	4.0
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	0.9	0.6	0.5	0.5	0.2	0.5	0.5	0.6	0.4	0.3
Private credit	0.0	0.0	0.0	0.0	0.0	2.5	2.2	1.9	2.1	2.1	1.9	1.8	1.4	1.2	0.9
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>9.7</u>	<u>9.3</u>	<u>8.6</u>	<u>8.7</u>	<u>8.5</u>	<u>6.0</u>	<u>5.9</u>	<u>5.3</u>	<u>5.4</u>	<u>5.3</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>															
Stock	71.1	67.3	67.1	62.2	61.6	45.4	45.3	45.5	45.5	43.8	38.5	39.0	41.4	42.0	43.0
Fixed income	28.9	32.7	33.0	35.3	35.3	28.3	30.1	30.4	30.8	32.0	39.4	38.9	37.3	36.9	36.7
Global TAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.2	1.2
Real assets	0.0	0.0	0.0	2.5	3.1	14.2	13.6	13.5	13.0	12.8	10.3	10.2	9.9	9.6	9.0
Hedge funds	0.0	0.0	0.0	0.0	0.0	2.3	2.7	2.3	1.8	2.6	3.0	3.2	3.3	3.4	3.4
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	0.9	0.6	0.6	0.6	0.6	0.4	0.5	0.5	0.3	0.4
Private credit	0.0	0.0	0.0	0.0	0.0	1.5	0.6	0.8	1.4	0.6	1.6	1.5	1.2	1.0	0.8
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>7.4</u>	<u>7.1</u>	<u>6.9</u>	<u>6.9</u>	<u>7.6</u>	<u>5.8</u>	<u>5.6</u>	<u>5.5</u>	<u>5.6</u>	<u>5.5</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 165 Global and 9 peer funds with 10 or more consecutive years of data ending 2019.

## 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 - 2019 (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 Index	Active	FOFs	Index	Active Index		
Stock - U.S.					24.6		33.2	7.5	34.6	38.3		44.0	9.6	8.1
Stock - EAFE	100.0		0.0	0.0	51.0		10.9	16.7	21.4	50.6		26.1	20.0	3.3
Stock - Global	0.0		0.0	100.0	28.1		0.0	32.0	39.9	61.1		25.6	10.5	2.8
Stock - Other					30.8		0.0	45.2	24.0	69.4		9.9	15.5	5.2
Stock - Emerging	100.0		0.0	0.0	53.7		5.8	15.2	25.4	76.3		12.9	6.8	4.0
Stock - ACWI x U.S.					0.0		0.0	0.0	0.0	69.2		29.4	0.6	0.8
Stock - Aggregate	5.3		0.0	94.7	34.0		9.5	23.3	33.2	55.4		28.8	11.2	4.5
Fixed Income - U.S.					31.4		16.3	51.8	0.5	63.3		17.2	16.2	3.2
Fixed Income - EAFE					0.0		0.0	62.0	38.0	40.3		34.9	16.9	7.9
Fixed Income - Global	0.0		0.0	100.0	14.0		0.0	61.5	24.5	59.6		7.5	29.0	3.9
Fixed Income - Other					16.4		0.0	6.9	76.7	55.4		15.3	24.6	4.7
Fixed Income - Long Bonds					6.7		0.0	69.3	24.1	78.8		11.0	5.9	4.2
Fixed Income - Emerging					58.3		1.9	27.6	12.2	83.0		4.7	10.9	1.4
Fixed Income - Inflation Indexed					6.9		21.8	60.5	10.9	10.2		47.4	17.3	25.2
Fixed Income - High Yield					75.2		0.0	24.8	0.0	88.8		2.2	7.8	1.2
Fixed Income - Bundled LDI					0.0		0.0	0.0	0.0	45.4		27.9	14.3	12.4
Fixed Income - Convertibles					100.0		0.0	0.0	0.0	100.0		0.0	0.0	0.0
Cash					-0.1			100.1		54.8			45.2	
Fixed Income - Aggregate	0.0		0.0	100.0	20.8		4.4	43.8	31.0	63.0		16.3	15.3	5.5
Commodities					7.3		0.7	92.0	0.1	59.4		15.4	11.0	14.1
Infrastructure					32.0	0.0		68.0		77.7	5.5		16.8	
Natural Resources					63.4	0.2		36.4		76.3	1.4		22.2	
REITs	0.0		0.0	100.0	5.6		0.0	94.4	0.0	69.1		16.4	12.1	2.4
Real Estate	0.0	0.0		100.0	65.4	0.4		34.2		76.3	7.0		16.7	
Other Real Assets					26.4			73.6		95.1			4.9	
Real Assets - Aggregate	0.0	0.0	0.0	100.0	49.5	0.2	0.0	50.2	0.0	76.2	5.7	1.3	16.2	0.5
Hedge Funds					82.8	17.2				71.7	28.3			
Global TAA					75.1			24.9		78.3			21.7	
Balanced Funds					0.0		0.0	0.0	0.0	85.8	14.2	0.0	0.0	
Risk Parity					40.6			59.4		93.7			6.3	
Private Credit					61.9	0.3		37.8		91.5	0.9		7.7	
Mortgages					25.8			74.2		87.5			12.5	
Diversified Private Equity					66.6	11.6		21.7		71.6	23.2		5.2	
Venture Capital					97.7	2.3		0.0		58.7	40.9		0.4	
LBO					96.0	4.0		0.0		95.1	4.7		0.2	
Other Private Equity					64.4	0.0		35.6		86.8	0.0		13.2	
Private Equity - Aggregate					73.9	9.2		16.9		74.1	21.2		4.7	
Total Fund - Avg. Holdings	3.6	0.0	0.0	96.4	38.9	1.6	5.5	31.6	22.5	62.9	2.6	18.1	12.5	3.9

## Actual mix

### Actual asset mix - 2015 to 2019 (as a % of total average assets)

	Your fund <sup>1</sup>					Peer average %					Global average %				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Stock - U.S.		0.0	0.1	0.1		8.7	9.1	12.3	12.2	13.0	10.7	11.2	12.2	13.4	13.6
Stock - EAFE	0.7	1.0	1.2	1.0		5.0	5.5	7.7	5.5	6.1	6.3	6.9	8.1	8.4	8.2
Stock - Global	64.3	61.7	60.3	56.3	61.9	17.2	16.9	12.7	14.1	12.9	13.3	12.5	13.0	11.8	11.8
Stock - Other						3.1	3.0	4.0	4.0	4.6	3.0	3.4	3.8	4.3	4.2
Stock - Emerging	3.0	3.4	3.5	2.8		5.5	5.5	5.8	5.2	5.4	3.0	3.1	3.4	3.0	2.9
Stock - ACWI x U.S.											2.5	2.3	2.5	2.6	2.7
Stock - Aggregate	67.9	66.1	65.0	60.3	61.9	39.5	40.0	42.6	41.0	42.0	38.8	39.4	43.1	43.5	43.4
Fixed Income - U.S.						5.3	5.2	4.6	4.8	5.0	6.9	7.0	5.7	6.2	6.8
Fixed Income - EAFE						3.8	3.5	3.5	3.7	3.6	3.5	3.2	3.8	3.7	4.3
Fixed Income - Global	28.2	30.3	32.4	36.3	35.4	6.9	6.5	6.2	3.4	3.1	2.5	2.4	2.8	2.7	2.9
Fixed Income - Other						6.1	6.7	6.6	9.8	10.1	4.8	5.0	5.3	5.9	6.0
Fixed Income - Long Bonds						1.9	1.6	1.5	1.4	1.4	12.6	12.8	10.7	10.0	9.7
Fixed Income - Emerging			0.1	0.3		1.4	1.2	1.2	1.0	1.0	1.3	1.1	1.1	1.0	1.1
Fixed Income - Inflation Indexed						1.6	2.4	2.5	2.8	2.5	1.8	1.8	2.1	2.4	2.0
Fixed Income - High Yield						1.4	1.1	1.0	0.9	0.9	1.3	1.2	1.2	1.3	1.3
Fixed Income - Bundled LDI											2.0	2.2	1.2	0.2	0.1
Fixed Income - Convertibles						0.1	0.1	0.1			0.0	0.0	0.1	0.0	0.0
Cash						-0.5	-0.4	-0.4	0.4	0.5	1.4	1.7	2.1	2.0	1.8
Fixed Income - Aggregate	28.2	30.3	32.5	36.6	35.4	28.0	27.8	26.8	28.3	28.2	38.3	38.6	36.1	35.6	36.1
Commodities						0.8	1.1	1.0	1.0	1.0	0.3	0.3	0.3	0.3	0.3
Infrastructure						3.3	3.2	2.9	2.6	2.3	2.3	2.1	1.9	1.7	1.3
Natural Resources						1.1	1.0	0.9	0.9	0.7	0.3	0.4	0.5	0.4	0.3
REITs	1.1	0.9				1.3	1.2	1.2	1.4	1.4	0.5	0.6	0.6	0.5	0.6
Real Estate	2.7	2.6	2.5	3.1	2.7	8.6	8.6	8.0	8.3	7.9	6.3	6.3	5.7	5.7	5.5
Other Real Assets						0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Real Assets - Aggregate	3.9	3.5	2.5	3.1	2.7	15.3	15.3	14.3	14.4	13.5	10.0	9.9	9.1	9.0	8.4
Hedge Funds						3.5	3.8	3.6	3.6	4.0	3.2	3.4	3.4	3.8	3.8
Global TAA						0.3	0.3	0.1	0.6	0.6	0.9	0.9	0.9	1.2	1.6
Balanced Funds											0.4	0.4	0.5	0.5	0.5
Risk Parity						1.4	1.0	1.0	0.4	0.2	0.6	0.5	0.4	0.3	0.3
Mortgages						1.4	1.2	1.1	1.3	1.3	0.6	0.6	0.5	0.4	0.4
Private Credit						1.2	1.0	0.9	0.6	0.6	1.5	1.3	1.0	0.8	0.7
Diversified Private Equity						7.0	6.7	6.2	6.6	6.0	4.2	3.8	3.4	3.5	3.3
Venture Capital						0.4	0.4	0.3	0.1	0.1	0.2	0.3	0.2	0.2	0.3
LBO						2.1	1.9	1.8	1.7	1.8	0.6	0.5	0.5	0.5	0.5
Other Private Equity						0.4	0.3	0.3	0.4	0.4	0.2	0.2	0.2	0.2	0.2
Private Equity - Aggregate						9.9	9.4	8.5	8.8	8.5	5.1	4.8	4.3	4.5	4.3
Derivatives/Overlays Mkt Value						-0.4	0.0	1.0	1.0	1.2	0.6	0.3	0.6	0.4	0.6
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	10	10	10	10	10	305	335	351	348	364
Median Assets (€ billions)	937.6	872.0	844.4	776.1	783.2	203.3	189.9	180.3	161.8	163.2	6.1	5.2	5.2	4.8	4.3

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

## Policy mix

### Policy asset mix - 2015 to 2019 (as a % of total assets)

	Your fund %					Peer average %					Global average %				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Stock - U.S.						9.0	9.2	9.4	9.9	9.8	9.7	10.6	11.3	12.2	12.6
Stock - EAFE						5.5	5.8	6.4	4.6	4.6	5.7	6.4	7.4	7.7	7.6
Stock - Global	71.1	67.3	67.1	62.2	61.6	23.7	23.4	22.6	23.6	20.3	15.4	14.6	15.0	13.8	13.3
Stock - Other						2.6	2.5	3.1	2.9	3.0	3.2	3.3	3.7	4.0	4.3
Stock - Emerging						3.7	3.8	3.9	3.8	4.2	2.7	2.8	2.9	2.7	2.8
Stock - ACWI x U.S.											2.6	2.6	2.6	2.8	2.9
Stock - Aggregate	71.1	67.3	67.1	62.2	61.6	44.5	44.7	45.5	44.8	42.0	39.2	40.3	42.8	43.3	43.5
Fixed Income - U.S.						4.7	5.8	5.1	5.0	6.0	7.0	7.3	6.0	6.2	6.9
Fixed Income - EAFE						4.9	4.4	4.4	4.5	4.2	3.7	3.3	3.8	3.7	4.5
Fixed Income - Global	28.9	32.7	33.0	35.3	35.3	5.8	5.6	5.5	2.5	2.6	2.7	2.7	3.1	3.2	3.1
Fixed Income - Other						6.6	7.0	6.8	10.2	11.2	5.0	5.0	5.9	6.3	6.3
Fixed Income - Long Bonds						1.7	1.2	1.2	1.2	1.2	13.1	13.1	11.3	10.8	10.4
Fixed Income - Emerging						1.3	1.2	1.2	1.0	1.1	1.3	1.1	1.0	1.0	1.1
Fixed Income - Inflation Indexed						1.2	2.2	3.1	3.1	3.0	2.1	2.0	2.3	2.6	2.2
Fixed Income - High Yield						1.1	0.7	0.8	0.9	0.6	1.3	1.1	1.2	1.4	1.4
Fixed Income - Bundled LDI											2.2	2.3	1.2	0.1	0.1
Fixed Income - Convertibles											0.0	0.0	0.1	0.0	0.0
Cash						0.1	0.6	0.9	0.9	0.5	0.4	0.5	0.6	0.9	0.7
Fixed Income - Aggregate	28.9	32.7	33.0	35.3	35.3	27.3	28.8	29.2	29.1	30.5	39.0	38.5	36.6	36.3	36.6
Commodities						0.8	0.8	0.8	0.9	1.1	0.3	0.3	0.3	0.4	0.5
Infrastructure						3.0	2.8	2.5	2.1	2.3	2.3	2.1	2.0	1.9	1.6
Natural Resources						0.9	0.8	0.7	0.7	1.9	0.3	0.3	0.4	0.3	0.3
REITs						1.1	1.1	1.2	1.2	1.3	0.5	0.6	0.6	0.5	0.5
Real Estate				2.5	3.1	8.6	8.2	7.9	8.1	7.7	6.5	6.4	6.1	5.9	5.6
Other Real Assets						0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4
Real Assets - Aggregate				2.5	3.1	14.4	13.9	13.1	13.1	14.4	10.2	10.0	9.6	9.3	8.9
Hedge Funds						2.8	3.1	2.8	2.5	3.0	2.8	3.1	3.2	3.3	3.3
Global TAA						0.1	0.1	0.2	0.7	0.5	0.9	0.9	1.0	1.2	1.5
Balanced Funds											0.2	0.2	0.2	0.3	0.2
Risk Parity						1.3	1.0	1.1	0.5	0.5	0.5	0.5	0.4	0.3	0.3
Mortgages						0.9	0.2	0.3	1.0	0.6	0.7	0.6	0.5	0.4	0.4
Private Credit						0.7	0.7	0.8	0.3	0.0	1.4	1.2	1.0	0.8	0.7
Diversified Private Equity						7.9	7.5	7.1	8.0	8.5	4.4	4.1	4.0	4.1	4.0
Venture Capital						0.0	0.0	0.0			0.2	0.2	0.1	0.2	0.2
LBO											0.4	0.4	0.3	0.3	0.4
Other Private Equity											0.1	0.1	0.2	0.2	0.1
Private Equity - Aggregate						7.9	7.5	7.1	8.0	8.5	5.1	4.8	4.6	4.8	4.7
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	10	10	10	10	10	305	335	351	348	364

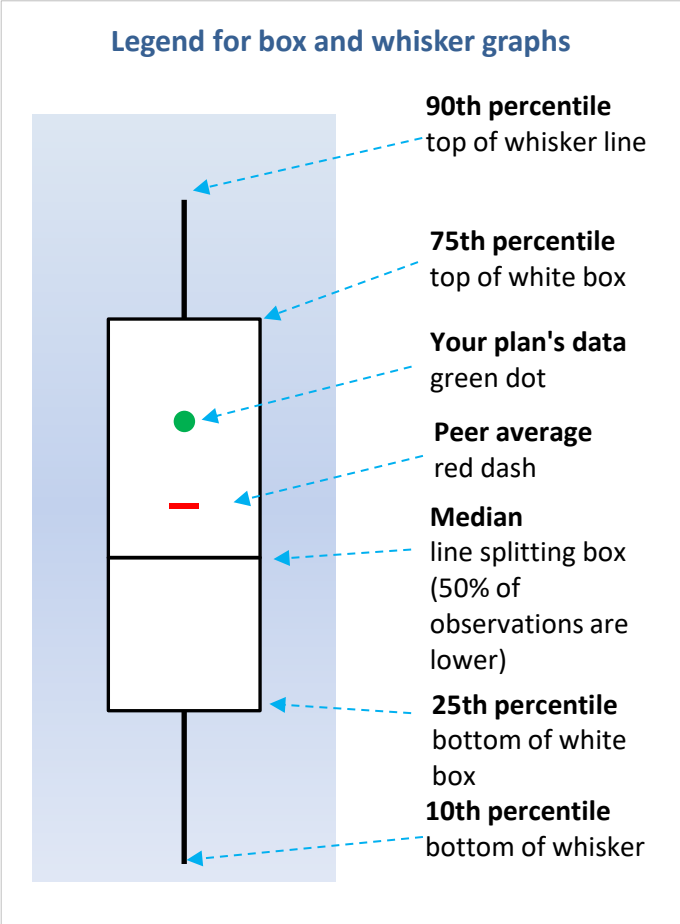
# 3

## Returns, Benchmarks and Value Added

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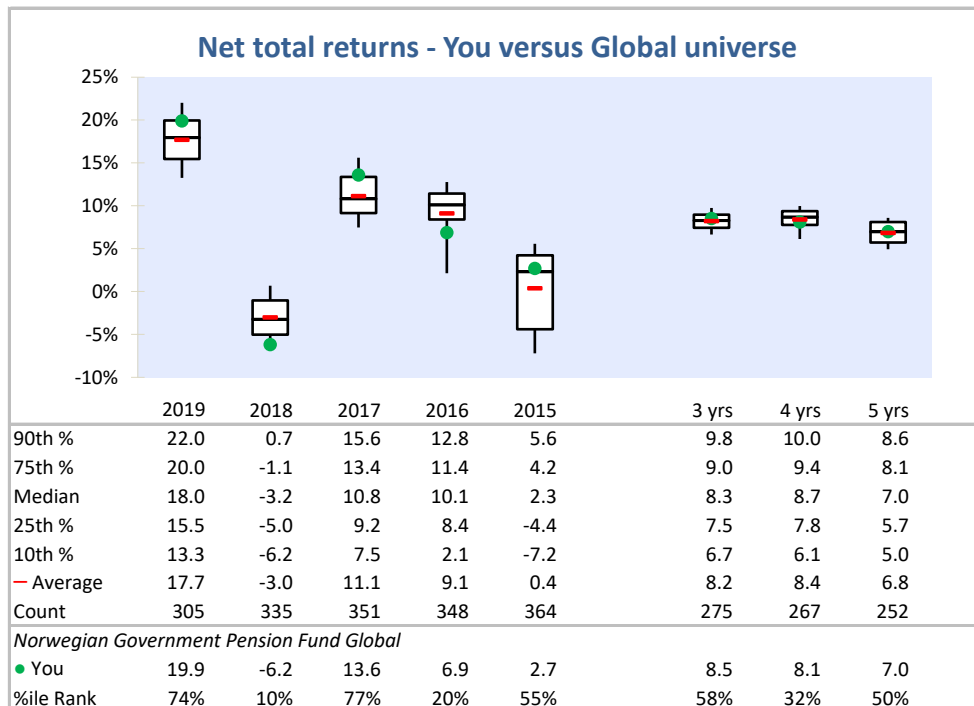
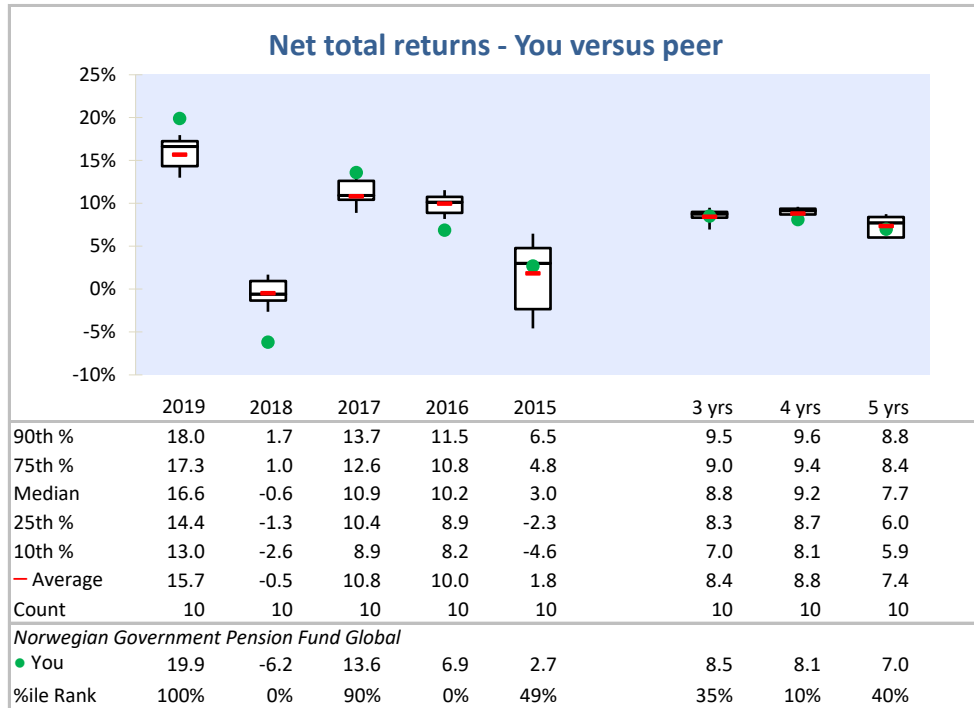
# Interpreting box and whisker graphs

Box and whisker graphs are used extensively in this report because they show visually where you rank relative to all observations. At a glance you can see which quartile your data falls in.



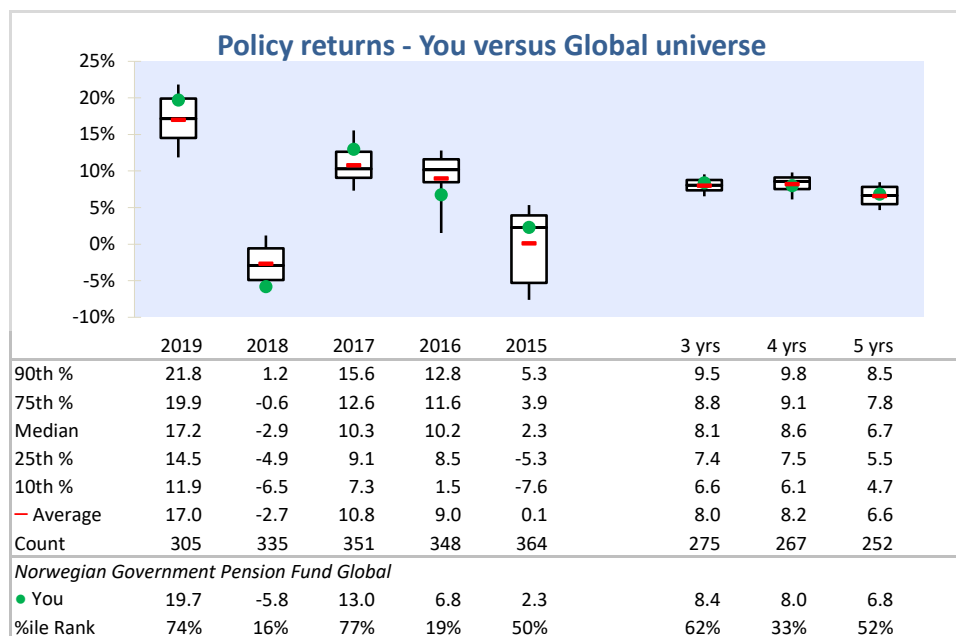
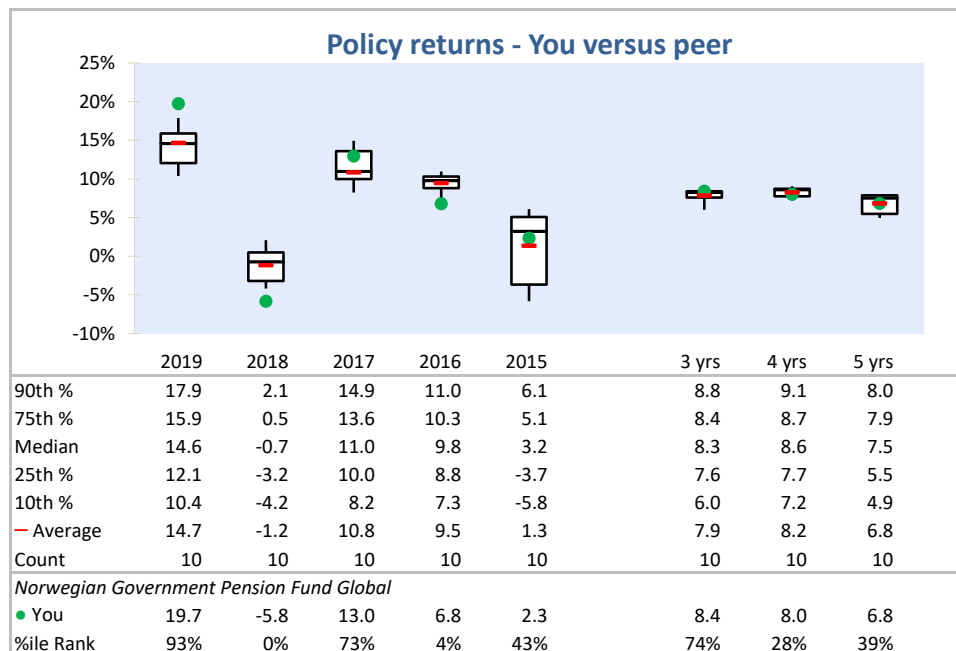
## Net total returns

Your 5-year net total return of 7.0% was below the peer median and close to the Global universe median. 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 6.8% was below the peer median and close to the Global universe median. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.

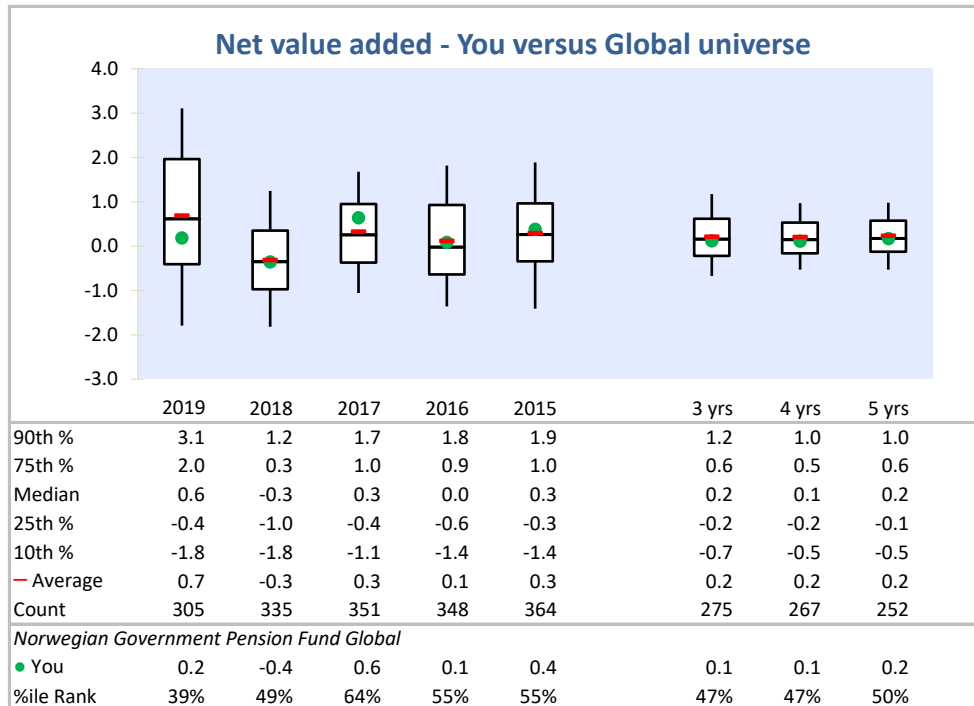
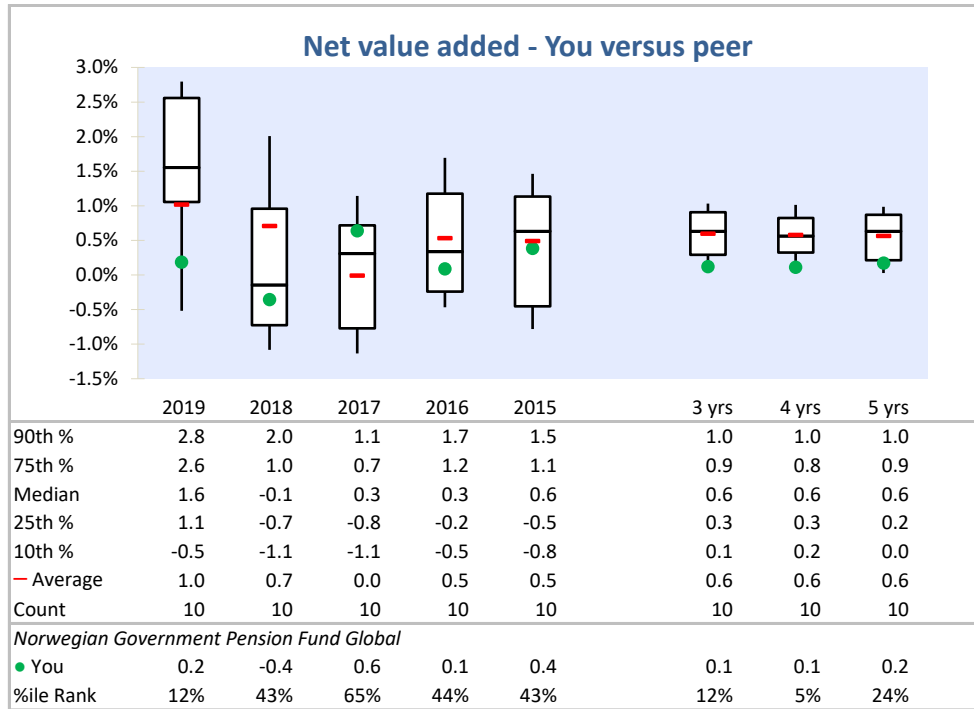


To enable fairer comparisons, the policy returns of all participants, including your fund, were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. Refer to the appendix of this section for details.



## Net value added

Your 5-year net value added of 0.2% was below the peer median and close to the Global universe median. 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 %					
	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>
Stock - U.S.		0.0	18.4	22.7			29.3	-3.1	14.2	14.7	5.0	11.5	29.7	-4.0	14.9	14.9	3.9	11.3
Stock - EAFE	21.2	-15.2	27.2	2.1			22.7	-12.0	20.1	5.0	3.7	6.8	21.7	-12.2	19.5	3.7	3.7	6.7
Stock - Global	26.6	-9.2	18.9	8.7	3.8	9.0	28.4	-3.9	14.3	9.6	4.9	9.9	25.5	-6.5	19.0	8.7	3.3	9.3
Stock - Other							18.7	-10.6	15.6	18.7	-2.9	6.9	19.9	-11.4	10.0	21.4	-11.3	4.3
Stock - Emerging	16.0	-13.9	26.1	11.0			21.3	-11.6	27.5	14.5	-10.4	7.1	20.4	-13.1	28.3	12.4	-10.0	6.4
Stock - ACWI x U.S.													22.7	-12.9	22.3	5.7	1.9	7.2
Stock - Aggregate	26.1	-9.5	19.4	8.7	3.8	9.0	25.6	-7.3	17.5	11.8	1.4	9.1	25.5	-8.1	18.1	11.2	0.8	8.8
Fixed Income - U.S.							10.1	2.2	-0.8	6.0	4.8	4.3	10.2	1.5	0.0	6.1	4.0	4.1
Fixed Income - EAFE							5.2	-1.2	7.6	3.5	-5.2	1.8	6.6	-2.3	7.1	0.6	-4.2	1.8
Fixed Income - Global	7.5	0.5	3.3	4.2	0.3	3.1	10.5	1.5	0.5	5.2	2.9	4.1	6.8	-2.0	5.2	4.6	-1.4	1.7
Fixed Income - Other							8.1	4.1	61.2	25.9	1.9	4.4	9.4	-1.3	5.9	7.3	-3.8	3.0
Fixed Income - Long Bonds							15.4	-1.3	5.0	6.8	-2.1	5.1	19.2	-3.5	6.2	9.6	-1.8	5.9
Fixed Income - Emerging			5.8	13.1			13.7	-4.0	6.5	9.9	-5.2	4.0	12.8	-4.3	8.0	12.2	-3.4	4.8
Fixed Income - Inflation Indexed							5.2	-2.9	2.4	5.6	-2.4	0.9	10.6	-2.4	2.1	7.7	-2.1	3.0
Fixed Income - High Yield							13.0	1.2	2.0	15.2	1.8	6.5	11.0	-0.9	3.8	13.1	-0.7	5.3
Fixed Income - Bundled LDI													19.6	-3.1	8.3	13.2	-9.2	6.4
Fixed Income - Convertibles								1.8	6.7				10.2	-1.4	6.8	6.0	-0.5	2.3
Cash							2.1	0.8	0.7	5.7	-3.4	1.7	2.2	0.9	-0.6	1.2	-0.7	0.3
Fixed Income - Aggregate	7.5	0.5	3.3	4.3	0.3	3.2	10.7	1.0	1.6	6.0	0.3	3.9	12.9	-1.8	4.1	6.9	-1.5	4.0
Commodities							-2.3	-17.0	16.3	22.4	-36.2	-12.9	7.9	-9.9	-0.1	15.2	-23.1	-3.2
Infrastructure							8.8	9.3	11.9	10.5	5.1	9.0	11.1	6.7	13.7	6.2	8.6	9.3
Natural Resources							-0.2	1.2	-1.1	3.0	-8.2	-1.3	2.2	5.2	1.8	8.1	-2.5	2.4
REITs	20.9	-10.4					33.3	-7.1	4.3	13.4	1.7	6.2	23.4	-2.8	5.9	6.6	3.8	6.8
Real Estate	6.7	7.3	8.8	0.6	9.8	6.6	10.0	9.2	7.5	12.4	12.5	10.3	7.1	9.4	7.3	6.9	11.1	8.3
Other Real Assets							-1.6	-5.5	-10.5	6.2	0.3	-2.7	3.2	-3.6	-0.8	8.3	-4.1	-1.8
Real Assets - Aggregate	10.8	2.8	8.8	0.6	9.8	6.5	10.3	6.5	6.6	11.0	6.6	7.8	8.6	6.0	6.9	7.1	7.8	7.2
Hedge Funds							7.5	-0.5	-0.3	2.5	3.3	2.6	5.7	-1.0	2.3	2.3	1.5	2.6
Global TAA							19.8	-8.3	4.8	9.7	1.5	5.5	11.4	-3.4	4.8	7.0	-0.4	4.0
Balanced Funds													29.7	-15.5	16.9	-7.0	1.5	4.8
Risk Parity							22.7	-4.2	8.6	16.1			19.7	-5.2	8.3	13.2	-3.2	6.1
Mortgages							5.1	1.0	6.1	7.3	1.8	4.6	6.7	0.0	6.1	6.2	-0.1	3.5
Private Credit							7.2	6.4	4.8	12.0	5.8	7.1	9.6	5.3	6.5	7.2	2.9	5.5
Diversified Private Equity							10.9	12.5	14.1	13.7	10.5	12.4	9.5	15.7	12.8	9.5	12.4	12.2
Venture Capital							9.7	16.7	11.7	10.4	7.6	11.4	6.5	19.8	9.7	3.5	15.4	10.5
LBO							8.8	12.4	13.9	15.2	6.2	10.7	12.9	15.6	13.3	12.8	11.1	12.2
Other Private Equity							9.4	48.1	16.2	16.7	8.3	16.7	9.8	11.4	8.7	8.6	9.0	12.4
Private Equity - Aggregate							9.3	12.7	14.1	13.5	10.3	12.1	9.3	15.7	12.6	9.6	12.3	12.3
Total Fund Return	19.9	-6.2	13.6	6.9	2.7	7.0	15.7	-0.5	10.8	10.0	1.8	7.4	17.7	-3.0	11.1	9.1	0.4	6.8

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 %					
	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>
Stock - U.S.		3.6	18.9	16.1			30.9	-2.6	13.9	16.2	5.4	12.2	29.6	-3.7	14.8	15.3	4.1	11.4
Stock - EAFE	22.7	-13.7	25.6	3.8			22.1	-11.7	18.5	5.2	2.7	6.3	21.9	-11.4	18.9	3.4	2.8	6.4
Stock - Global	25.6	-8.8	18.7	8.6	3.0	8.7	27.5	-6.4	14.8	10.5	3.7	9.5	25.9	-7.0	17.1	9.7	2.7	9.1
Stock - Other							24.7	-9.4	14.2	11.8	-1.1	7.1	23.8	-10.6	10.9	20.2	-12.0	4.9
Stock - Emerging	15.0	-14.7	20.5	10.7			19.8	-11.3	29.0	13.6	-10.8	6.8	18.1	-12.0	29.2	13.1	-10.4	6.3
Stock - ACWI x U.S.													21.6	-12.2	21.1	6.8	0.1	6.6
Stock - Aggregate	25.6	-8.8	18.7	8.6	3.0	8.7	25.8	-7.1	17.1	11.4	1.5	9.1	25.5	-7.9	17.5	11.7	0.2	8.7
Fixed Income - U.S.							10.0	1.3	-0.3	4.5	5.1	4.0	9.4	1.6	-0.3	5.2	3.7	3.6
Fixed Income - EAFE							5.2	-0.8	7.2	3.6	-4.8	1.7	6.4	-2.2	6.7	0.9	-3.6	1.5
Fixed Income - Global	7.5	0.6	2.9	4.2	0.6	3.1	11.2	1.4	0.2	5.0	2.5	4.0	8.3	-1.2	4.2	3.6	-0.9	2.3
Fixed Income - Other							6.8	2.2	1.7	7.1	-0.9	3.5	9.2	-1.4	3.3	6.6	-3.2	2.8
Fixed Income - Long Bonds							15.7	-1.4	3.9	5.4	-0.3	4.3	19.1	-3.3	5.9	9.0	-1.7	5.7
Fixed Income - Emerging			2.9	13.0			13.8	-3.8	6.6	10.6	-5.8	3.9	12.7	-3.3	7.0	11.2	-2.3	4.8
Fixed Income - Inflation Indexed							7.4	-3.2	2.0	5.6	-2.2	1.5	9.8	-2.3	2.3	8.0	-2.0	2.7
Fixed Income - High Yield							12.0	1.3	1.5	14.7	1.5	6.0	12.5	-1.0	4.0	15.4	-1.6	5.8
Fixed Income - Bundled LDI													19.6	-2.9	8.1	9.8	-9.1	6.7
Fixed Income - Convertibles							19.0	3.2	9.7				14.4	-1.9	12.1	9.3	-0.8	7.6
Cash							1.6	0.9	-0.6	2.5	-1.7	0.4	2.5	0.8	-0.4	0.7	-1.0	0.5
Fixed Income - Aggregate	7.5	0.6	2.9	4.2	0.6	3.1	10.1	0.1	1.8	5.7	-0.1	3.4	12.8	-1.8	4.1	6.5	-1.3	3.9
Commodities							13.9	-12.9	2.4	15.5	-28.2	-4.4	10.7	-9.6	-0.3	12.8	-22.8	-3.2
Infrastructure							8.9	4.4	5.7	9.4	1.4	5.7	11.1	2.0	9.8	3.6	2.9	5.1
Natural Resources							2.1	5.9	0.1	7.9	-7.2	1.8	7.0	2.3	1.9	7.5	1.4	3.8
REITs	17.1	-4.6					32.1	-4.1	6.4	11.1	4.9	8.3	23.2	-2.7	6.3	7.3	4.3	7.0
Real Estate	13.0	-2.1	8.3	0.8	10.0	5.9	8.5	8.2	5.3	12.0	13.0	9.3	7.9	6.3	5.9	6.7	10.6	7.3
Other Real Assets							20.1	-0.1	8.9	9.2	2.2	7.2	10.2	-0.1	1.2	7.8	-1.9	3.9
Real Assets - Aggregate	14.2	-2.7	8.3	0.8	10.0	5.9	9.4	5.9	4.7	11.4	6.3	7.3	9.6	4.1	6.0	6.4	6.7	6.3
Hedge Funds							9.0	1.7	1.0	3.7	3.7	3.7	8.7	0.0	3.3	3.4	2.4	3.4
Global TAA							19.1	-3.3	7.0	9.1	9.3	8.0	14.0	-1.5	7.2	5.6	2.9	6.0
Balanced Funds													38.2	-14.4	20.1	-9.0	5.3	6.0
Risk Parity							21.5	-4.0	9.9	14.7	-3.5	7.1	16.2	-1.0	6.8	12.1	3.0	7.3
Mortgages							5.9	-1.1	2.9	7.1	-1.6	2.7	6.7	-1.2	4.5	5.4	-2.5	2.1
Private Credit							8.5	1.5	4.2	11.6	-1.1	4.9	12.7	1.2	5.5	5.3	0.4	4.5
Diversified Private Equity							-5.4	15.7	16.6	9.2	7.4	8.1	-8.3	20.0	17.1	8.6	7.0	8.1
Venture Capital							-6.0	15.9	15.1	13.3	4.6	8.2	-9.0	21.7	14.9	8.9	7.0	7.9
LBO							-6.0	17.3	14.8	13.3	4.6	8.2	-9.8	22.6	14.4	10.3	6.5	7.9
Other Private Equity							-11.3	22.2	10.4	17.9	2.0	7.2	-8.5	18.4	17.4	7.4	6.8	7.7
Private Equity - Aggregate							-4.4	14.1	16.8	9.8	6.3	7.9	-8.4	20.0	17.1	8.6	7.0	8.1
Total Policy Return	19.7	-5.8	13.0	6.8	2.3	6.8	14.7	-1.2	10.8	9.5	1.3	6.8	17.0	-2.7	10.8	9.0	0.1	6.6

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, including 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 %					
	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>	2019	2018	2017	2016	2015	5-yr <sup>1</sup>
Stock - U.S.		-3.6	-0.5	6.6			-1.6	-0.6	0.3	-1.5	-0.3	-0.9	0.1	-0.3	0.0	-0.5	-0.2	-0.2
Stock - EAFE	-1.5	-1.5	1.6	-1.7			0.5	-0.3	1.6	-0.2	1.1	0.5	-0.3	-0.7	0.6	0.2	0.7	0.1
Stock - Global	1.0	-0.4	0.2	0.1	0.8	0.3	0.5	2.5	-0.4	-0.9	1.3	0.1	-0.5	0.5	1.8	-1.1	0.5	0.1
Stock - Other							-5.3	-1.2	1.3	7.0	-1.8	-0.6	-3.7	-0.6	-0.7	0.5	1.2	-0.3
Stock - Emerging	1.0	0.8	5.6	0.4			0.5	-0.8	0.1	0.0	0.5	-0.1	2.2	-1.0	-0.9	-0.8	0.4	0.1
Stock - ACWI x U.S.													1.1	-0.7	1.2	-1.1	1.8	0.6
Stock - Aggregate	0.5	-0.7	0.7	0.1	0.8	0.2	-0.3	-0.2	0.4	0.4	-0.2	-0.1	-0.1	-0.2	0.6	-0.5	0.5	0.1
Fixed Income - U.S.							0.0	0.9	-0.5	1.6	-0.3	0.3	0.7	0.0	0.3	1.0	0.2	0.5
Fixed Income - EAFE							0.1	-0.4	0.4	-0.1	-0.4	0.0	1.0	-0.2	0.4	-0.2	-0.2	0.3
Fixed Income - Global	0.1	0.0	0.4	0.1	-0.3	0.1	-0.2	0.1	0.3	0.2	0.4	0.1	-1.6	-0.7	1.3	1.0	-0.7	-0.7
Fixed Income - Other							2.0	1.9	59.5	18.8	4.0	1.5	0.0	0.1	2.6	0.7	-0.3	0.1
Fixed Income - Long Bonds							0.7	0.1	1.1	0.8	-1.7	0.2	0.2	-0.1	0.3	0.3	-0.2	0.1
Fixed Income - Emerging			2.9	0.1			-0.1	-0.3	-0.1	-0.7	0.6	0.1	-0.2	-1.1	1.1	1.0	-1.0	0.0
Fixed Income - Inflation Indexed							0.0	0.3	0.3	0.0	-0.2	0.2	0.7	-0.1	-0.1	-0.3	0.0	0.3
Fixed Income - High Yield							1.3	0.0	0.5	0.6	0.3	0.6	-1.4	0.2	-0.3	-2.0	1.1	-0.4
Fixed Income - Bundled LDI													0.4	-0.1	0.0	1.7	-0.2	-0.4
Fixed Income - Convertibles								-1.4	-2.9				-6.1	0.0	-4.7	-5.0	-1.3	-7.8
Cash							0.6	-0.6	1.9	3.9	-2.2	0.7	-0.3	0.0	-0.1	0.4	0.0	-0.3
Fixed Income - Aggregate	0.1	0.0	0.4	0.2	-0.3	0.1	0.9	0.9	-0.2	0.3	0.4	0.5	-0.1	0.0	0.0	0.3	-0.1	0.0
Commodities							-17.8	-4.1	12.2	6.8	-8.0	-8.9	-3.4	-0.9	-0.1	1.5	-0.5	-1.0
Infrastructure							1.1	4.9	6.2	1.0	3.7	3.2	0.0	4.6	3.9	2.3	6.2	4.0
Natural Resources							-2.3	-4.7	-1.3	-5.3	-1.0	-4.0	-4.8	2.7	0.1	0.3	-3.9	-1.3
REITs	3.7	-5.7					-2.9	-3.1	-2.1	2.2	-3.2	-2.7	1.3	-0.3	0.0	-1.2	-0.5	-0.3
Real Estate	-6.3	9.4	0.5	-0.2	-0.2	0.7	1.6	1.0	2.2	0.4	-0.5	0.9	-0.8	3.0	1.4	0.3	0.2	0.8
Other Real Assets							-21.7	-5.4	-19.4	-2.9	-1.9	-9.8	-7.7	-3.0	-2.0	0.1	-3.0	-6.1
Real Assets - Aggregate	-3.4	5.5	0.5	-0.2	-0.2	0.5	1.0	0.6	1.9	-0.3	0.3	0.6	-0.9	1.9	0.9	0.7	1.1	0.8
Hedge Funds							-1.2	-2.9	-1.3	-1.1	-2.4	-1.5	-2.9	-1.0	-1.0	-1.0	-1.0	-0.8
Global TAA							-0.3	-5.0	-2.2	0.6	-7.8	-2.9	-3.1	-2.2	-2.2	1.3	-3.4	-1.7
Balanced Funds													-8.7	-0.7	-3.8	2.3	-3.7	-1.1
Risk Parity							1.1	-0.2	-1.3	1.4			3.4	-4.3	1.5	1.4	-7.3	-1.4
Mortgages							0.1	2.0	2.2	1.1	2.7	1.8	0.1	1.3	1.4	0.8	2.0	1.4
Private Credit							-1.0	4.9	0.6	0.4	6.9	2.3	-2.7	4.0	1.1	0.9	2.9	1.2
Diversified Private Equity							19.1	-3.2	-2.5	4.5	3.2	4.6	17.6	-4.2	-4.3	0.8	5.2	4.0
Venture Capital							19.3	0.7	-3.4	-2.9	3.0	4.2	15.3	-2.0	-4.6	-6.0	8.3	2.5
LBO							20.1	-4.9	-0.9	1.9	1.6	3.4	23.2	-7.0	-1.2	3.0	4.3	4.3
Other Private Equity							20.7	25.9	5.9	-1.3	6.3	9.4	17.8	-7.5	-8.0	0.5	1.8	4.3
Private Equity - Aggregate							16.3	-1.4	-2.7	3.7	4.0	4.6	17.3	-4.2	-4.5	1.0	5.1	4.1
Total Fund Return	0.2	-0.4	0.6	0.1	0.4	0.2	1.0	0.7	0.0	0.5	0.5	0.6	0.7	-0.3	0.3	0.1	0.3	0.2

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.

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, including 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 - 2019

### 2019 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
Stock - EAFE		Custom	22.7%	21.2%	-1.5%
Stock - Global	71.1%	Your Stock: Global benchmark	25.6%	26.6%	1.0%
Stock - Emerging		Custom	15.0%	16.0%	1.0%
Fixed Income - Global	28.9%	Barclays Global Aggregate + Barclays Global Inflation	7.5%	7.5%	0.1%
REITs		Custom	17.1%	20.9%	3.7%
Real Estate		Custom	13.0%	6.7%	-6.3%
<b>Total</b>	<b>100.0%</b>				
Net Actual Return (reported by you)					19.9%
Calculated Policy Return = sum of (policy weights X benchmark returns)				20.4%	
Adjustment to reflect rebalancing and overlay impacts				-0.7%	
Policy Return (reported by you)					<u>19.7%</u>
Net Value Added (Net Return - Policy Return)					0.2%

The fund return consists of Equity, Fixed Income and Real Estate. The fund benchmark is the weighted benchmark of Equity and Fixed Income. The benchmark for Real Estate used in the report prior to 2017 was the actual portfolio return, and thereafter the financing cost for the real estate investments.

## Your policy return and value added calculations - 2015 to 2018

### 2018 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	3.6%	0.0%	-3.6%
Stock - EAFE		Custom	-13.7%	-15.2%	-1.5%
Stock - Global	67.3%	Your Stock: Glot	-8.8%	-9.2%	-0.4%
Stock - Emerging		Custom	-14.7%	-13.9%	0.8%
Fixed Income - Global	32.7%	Barclays Global	0.6%	0.5%	0.0%
Fixed Income - Emerging					
REITs		Custom	-4.6%	-10.4%	-5.7%
Real Estate		Custom	-2.1%	7.3%	9.4%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					-6.2%
Calculated policy return (sum: Policy weights x benchmarks)				-5.7%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.1%</u>	
Policy return (reported by you)					<u>-5.8%</u>
Net Value Added (Net Return - Policy Return)					-0.4%

### 2016 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Your Stock: U.S.	16.1%	22.7%	6.6%
Stock - EAFE		Your Stock: Eurc	3.8%	2.1%	-1.7%
Stock - Global	62.2%	Your Stock: Glot	8.6%	8.7%	0.1%
Stock - Emerging		Your Stock: Eme	10.7%	11.0%	0.4%
Fixed Income - Global	35.3%	Barclays Global	4.2%	4.2%	0.1%
Fixed Income - Emerging		Custom	13.0%	13.1%	0.1%
Real Estate	2.5%	Custom (Actual)	0.8%	0.6%	-0.2%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					6.9%
Calculated policy return (sum: Policy weights x benchmarks)				6.8%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.0%</u>	
Policy return (reported by you)					<u>6.8%</u>
Net Value Added (Net Return - Policy Return)					0.1%

### 2017 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	18.9%	18.4%	-0.5%
Stock - EAFE		Custom	25.6%	27.2%	1.6%
Stock - Global	67.1%	Your Stock: Glot	18.7%	18.9%	0.2%
Stock - Emerging		Custom	20.5%	26.1%	5.6%
Fixed Income - Global	33.0%	Barclays Global	2.9%	3.3%	0.4%
Fixed Income - Emerging		Barclays Global	2.9%	5.8%	2.9%
REITs					
Real Estate		Custom	8.3%	8.8%	0.5%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					13.6%
Calculated policy return (sum: Policy weights x benchmarks)				13.5%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.5%</u>	
Policy return (reported by you)					<u>13.0%</u>
Net Value Added (Net Return - Policy Return)					0.6%

### 2015 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.					
Stock - EAFE					
Stock - Global	61.6%	Your Stock: Glot	3.0%	3.8%	0.8%
Stock - Emerging					
Fixed Income - Global	35.3%	Barclays Global	0.6%	0.3%	-0.3%
Fixed Income - Emerging					
Real Estate	3.1%	Custom (Actual)	10.0%	9.8%	-0.2%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					2.7%
Calculated policy return (sum: Policy weights x benchmarks)				2.4%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.1%</u>	
Policy return (reported by you)					<u>2.3%</u>
Net Value Added (Net Return - Policy Return)					0.4%

## Profit/Loss on overlay programs

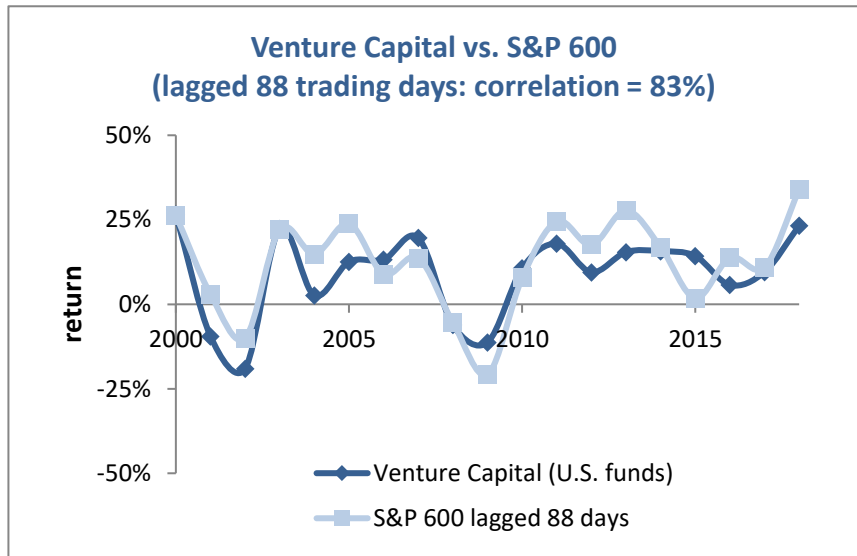
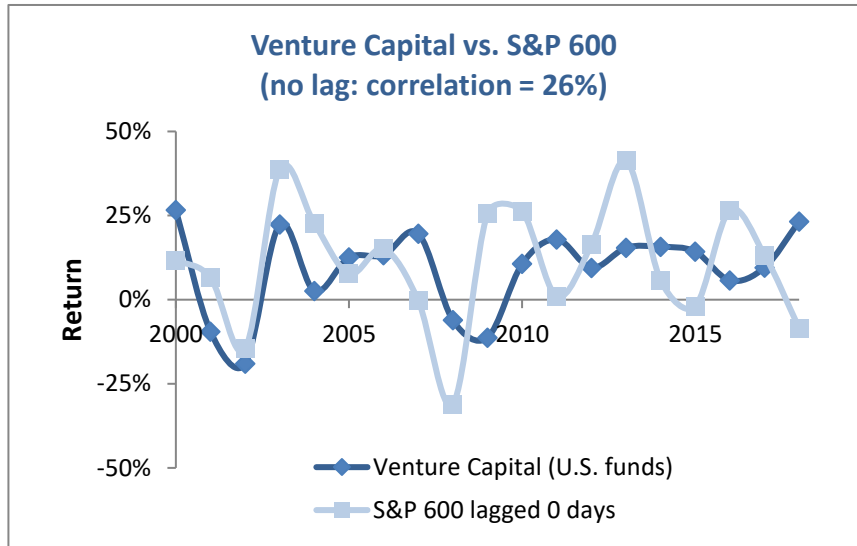
Overlay type	Your fund		Peer median				Global median			
	2019	2018	2019		2018		2019		2018	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			9.9	1	-3.4	1	0.1	11	-0.1	14
Ext. Discretionary Currency			-1.3	1	-0.8	1	0.0	9	-0.8	9
Internal Global TAA			0.0	1	0.0	1	24.1	6	-15.7	8
External Global TAA									-9.7	2
Internal PolicyTilt TAA			0.1	1	0.0	1	0.1	9	0.0	12
External PolicyTilt TAA							-26.3	1	0.0	2
Internal Commodities							0.0	3	-4.7	3
External Commodities							10.5	3	-2.7	4
Internal Long/Short					-26.5	1	1.7	5	-0.7	7
External Long/Short									0.0	1
Internal Other			-12.5	1	0.0	1	-2.2	11	0.0	11
External Other							0.2	15	0.0	14

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 -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.

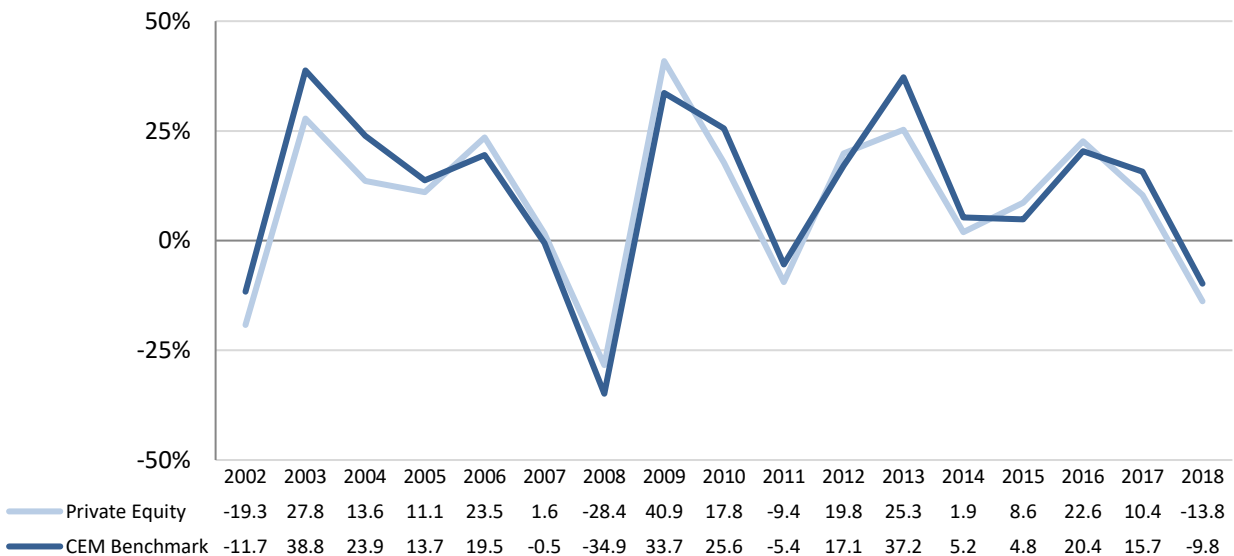


## To enable fairer comparisons, CEM uses default private equity benchmarks.

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

- Investable. They are comprised of lagged small cap benchmarks.
- Custom lagged for each participant. Different portfolios had different lags. CEM estimated the lag on private equity portfolios 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 some number of days lag, correlation between the two series is maximized. The median lag was 85 trading days (i.e., approximately 119 calendar days or 3.9 calendar months)
- 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 reported and 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

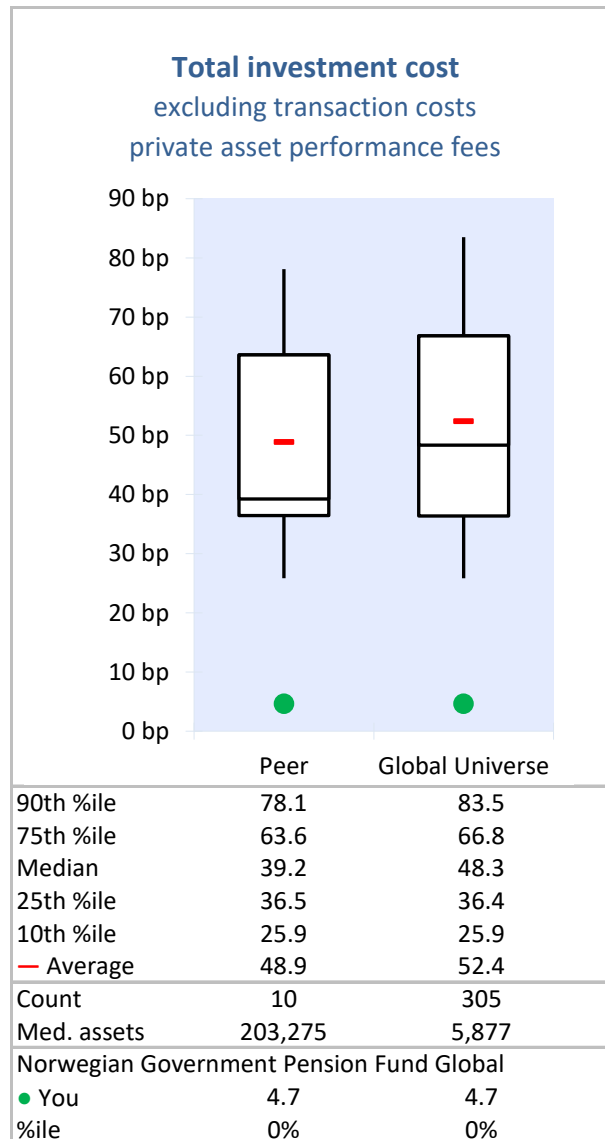
## Cost: total, benchmark, trend

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## Comparisons of total investment cost

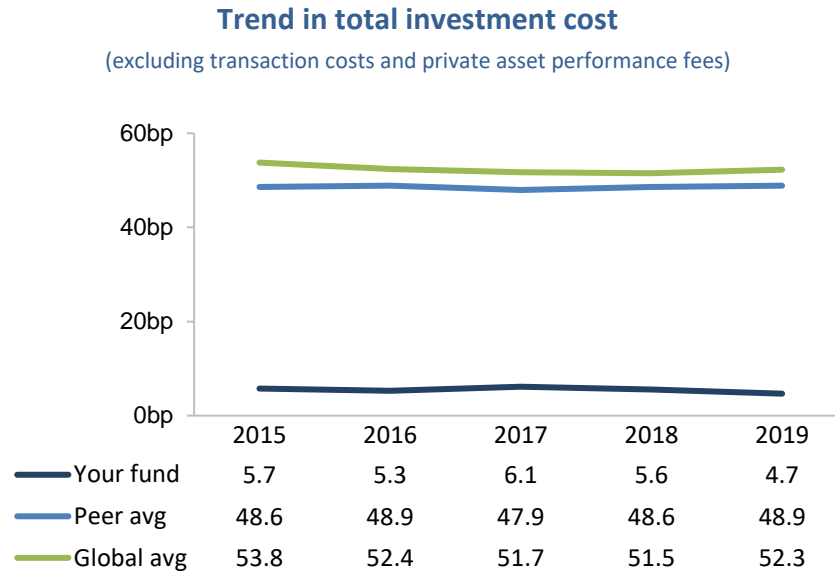
Your total investment cost, excluding transaction costs and private asset performance fees, of 4.7 bps was below the peer median of 39.2 bps.

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, decreased from 5.7 bps in 2015 to 4.7 bps in 2019.



Trend analysis is based on 252 Global funds and 10 peer funds with 5 or more consecutive years of data.

## Types of costs included in your total investment cost

The table below outlines the types of costs included in your total investment cost.

Asset class	Internal		External			
	In-house total cost	Transaction costs	Manager base fees	Monitoring & other costs	Perform. fees (active only)	Transaction costs
<u>Public</u> (Stock, Fixed income, commodities, REITs)	✓	✗	✓	✓	✓	✗
Derivatives/Overlays	✓	✗	✓	✓	✓	✗
<u>Hedge funds &amp; Global TAA</u>						
Hedge Funds	n/a	n/a	✓	✓	✓	✗
Global TAA	✓	✗	✓	✓	✓	✗
<u>Private real assets</u> (Infrastructure, natural resources, real estate ex-REITs, other real assets)	✓	✗	✓	✓	✗	✗
<u>Private equity</u> (Diversified private equity, venture capital, LBO, other private equity)	✓	✗	✓*	✓	✗	✗

\*External manager base fees represent gross contractual management fees.

- ✓ indicates cost is included.
- ✗ indicates cost is excluded.
- CEM currently excludes performance fees for certain external assets and all transaction costs from your total cost because only a limited number of participants are currently able to provide complete data.

## Detailed breakdown of your total investment cost

Your 2019 total investment cost, excluding transaction costs and private asset performance fees, was 4.7 bp or €437.8 million.

	Internal		External Passive		External Active			Total <sup>1</sup>		
	Passive	Active	Fees	Monitoring & Other	Base Fees	Perform. Fees	Monitor. & Other	€000s	bps	% of Total
<b>Asset management</b>										
Stock - U.S.										
Stock - EAFE					10,989	-2,372	1,025	9,642		2%
Stock - Emerging					50,999	31,936	4,515	87,450		20%
Stock - Global		115,092						115,092		26%
Fixed Income - Emerging										
Fixed Income - Global		44,434						44,434		10%
REITs		1,620						1,620		0%
Real Estate <sup>1</sup>		32,738						32,738		7%
Real Estate - Operating Sub. <sup>1</sup>										
Total asset management costs excluding private asset performance fees								290,976	3.1bp	66%
<b>Oversight, custodial &amp; other asset related costs</b>										
Oversight of the Fund								89,677		20%
Trustee & Custodial								42,622		10%
Consulting and Performance Measurement								10,715		2%
Audit								3,792		1%
Other										
Total oversight, custodial & other costs								146,806	1.6bp	34%
Total investment costs excluding transaction costs and private asset performance fees								437,782	4.7bp	100%

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.

## 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 (2019 - 2015)

	Investment costs (€000s)					Change (€000s)				Change (%)			
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2019	2018	2017	2016
<b>Asset management</b>													
Stock - U.S.		855	1,608	1,827		-753	-219			-47%	-12%		
Stock - EAFE	9,642	27,553	26,360	25,123		-17,911	1,193	1,237		-65%	5%	5%	
Stock - Emerging	87,450	122,257	156,712	67,156		-34,807	-34,455	89,556		-28%	-22%	133%	
Stock - Global	115,092	104,260	108,209	102,953	249,652	10,832	-3,949	5,256	-146,699	10%	-4%	5%	-59%
Fixed Income - Emerging			186	5,042				-4,856				-96%	
Fixed Income - Global	44,434	42,087	41,515	40,473	37,010	2,347	572	1,042	3,463	6%	1%	3%	9%
REITs	1,620	2,013				-393				-20%			
Real Estate <sup>1</sup>	32,738	50,360	54,425	0	0	-17,622	-4,065	54,425		-35%	-7%		
Real Estate - Operating Sub. <sup>1</sup>				47,438	39,477				7,961				20%
Total excl. private asset perf. fees	290,976	349,386	389,015	290,012	326,139	-58,410	-39,629	99,003	-36,127	-17%	-10%	34%	-11%
<b>Oversight, custodial &amp; other asset related costs</b>													
Oversight of the Fund	89,677	76,723	73,798	66,954	67,859	12,954	2,925	6,844	-905	17%	4%	10%	-1%
Trustee & Custodial	42,622	39,045	41,965	39,503	42,400	3,576	-2,920	2,462	-2,897	9%	-7%	6%	-7%
Consulting and Performance Measurement	10,715	14,930	10,050	9,570	8,868	-4,215	4,880	480	702	-28%	49%	5%	8%
Audit	3,792	4,358	4,312	6,110	4,840	-566	46	-1,798	1,270	-13%	1%	-29%	26%
Other													
Total oversight, custodial & other	146,806	135,056	130,125	122,137	123,967	11,750	4,931	7,988	-1,830	9%	4%	7%	-1%
Total investment costs <sup>1</sup>	437,782	484,442	519,140	412,149	450,106	-46,660	-34,698	106,991	-37,957	-10%	-7%	26%	-8%
Total in basis points	4.7bp	5.6bp	6.1bp	5.3bp	5.7bp								

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.

## Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 13.9 bps below your benchmark cost of 18.6 bps. This implies that your fund was low cost by 13.9 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	437,782	4.7 bp
- Your fund's benchmark	1,745,221	18.6 bp
= Your fund's cost savings	-1,307,439	-13.9 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>		
Less passive	767,224	8.2 bp
More int. active % of total active	-1,540,346	-16.4 bp
Less overlays and unfunded strategies	-75,537	-0.8 bp
Total style impact	-848,659	-9.1 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-80,111	-0.9 bp
Internal investment management	-354,686	-3.8 bp
Oversight, custodial and other	-23,983	-0.3 bp
Total impact of paying more /-less	-458,780	-4.9 bp
Total savings	-1,307,439	-13.9 bp



## Benchmark cost calculation

Your 2019 benchmark cost was 18.6 basis points or 1.7 billion. It equals your holdings for each asset class multiplied by the peer median cost for the asset class. The peer median cost is the style weighted average for all implementation styles (i.e., internal passive, internal active, external passive, external active).

Asset class	Your average assets (A)	Weighted peer median cost <sup>1</sup> (B)	Benchmark €000s (A X B)
<b>Asset management costs</b>			
Stock - EAFE	6,303	24.3 bp	15,288
Stock - Emerging	27,759	33.8 bp	93,882
Stock - Global <sup>4</sup>	602,785	16.5 bp	993,184
Fixed Income - Global <sup>4</sup>	264,597	6.6 bp	174,905
REITs	10,402	8.1 bp	8,423
Real Estate	25,724	82.9 bp	213,213
Overlay Programs <sup>2</sup>	937,571	0.8 bp	75,537
Benchmark for asset management	937,571	16.8 bp	1,574,432
<b>Oversight, custody and other costs<sup>3</sup></b>			
Oversight	937,571	0.6 bp	
Trustee & Custodial	937,571	0.6 bp	
Consulting	937,571	0.0 bp	
Audit	937,571	0.0 bp	
Other	937,571	0.1 bp	
Benchmark for oversight, custody & other	937,571	1.8 bp	170,789
<b>Total benchmark cost</b>		<b>18.6 bp</b>	<b>1,745,221</b>

1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). 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.
4. A different asset was used as a proxy to determine the benchmarks and style percentages: 'Stock - Aggregate' for 'Stock - Global', 'Fixed Income - Aggregate' for 'Fixed Income - Global'.

## Cost impact of differences in implementation style

Differences in implementation style (passive vs. active, internal vs. external, etc.) relative to your peers saved you 9.1 bps.

Implementation choices	Assets by style	Peer benchmark cost			Style 1 %			Cost/ -Savings €000s	bps
		Style 1	Style 2	Style 1 -Savings	Your	Peer average	More/ -Less		
	a	b	c	d = b - c			e	a x d x e	
<u>Passive vs active</u>	Total assets	Passive	Active		Passive % of total assets				
Stock - EAFE	6,303	3 bp	34 bp	-31 bp	0%	33%	-33%	6,393	
Stock - Emerging	27,759	6 bp	47 bp	-41 bp	0%	32%	-32%	36,780	
Stock - Global	602,785	2 bp	27 bp	-25 bp	0%	43%	-43%	648,341	
Fixed Income - Global	264,597	2 bp	9 bp	-8 bp	0%	37%	-37%	75,710	
Less passive								767,224	8.2 bp
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active				
Stock - EAFE	6,303	9 bp	42 bp	-32 bp	0%	23%	-23%	4,648	
Stock - Emerging	27,759	19 bp	54 bp	-35 bp	0%	21%	-21%	20,212	
Stock - Global	602,785	7 bp	41 bp	-34 bp	100%	40%	60%	-1,245,180	
Fixed Income - Global	264,597	3 bp	23 bp	-20 bp	100%	66%	34%	-174,568	
REITs	10,402	6 bp	48 bp	-43 bp	100%	94%	6%	-2,467	
Real Estate	25,724	27 bp	107 bp	-80 bp	100%	30%	70%	-142,991	
More int. active % of total active								-1,540,346	-16.4 bp
Less overlays and unfunded strategies								-75,537	-0.8 bp
Total impact of differences in implementation style								-848,659	-9.1 bp

## Cost impact of overlays

As summarized on the previous page, the style impact of overlays saved you 0.8 bps. If you use more overlays than your peers, or more expensive types of overlays, then it increases your relative cost.

	Your average total holdings (mils)	Cost as % of total holdings		Cost/-Savings Impact (000s)
		You	Peer avg.	
	(A)	(B)	(C)	A X (B - C)
<b>Internal Overlays</b>				
Currency - Hedge	937,571	NA	0.00 bp	-142
Currency - Discretionary	937,571	NA	0.01 bp	-562
Duration Management - Hedge	937,571	NA	0.01 bp	-831
Global TAA - Discretionary	937,571	NA	0.05 bp	-4,443
Policy tilt TAA - Discretionary	937,571	NA	0.04 bp	-4,142
Long/Short - Discretionary	937,571	NA	0.64 bp	-60,290
<b>External Overlays</b>				
Currency - Hedge	937,571	NA	0.00 bp	-25
Currency - Discretionary	937,571	NA	0.03 bp	-2,415
Duration Management - Hedge	937,571	NA	0.00 bp	-25
Long/Short - Discretionary	937,571	NA	0.03 bp	-2,661
Total impact in 000s				-75,537
Total impact in basis points				-0.8 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 4.9 bps.

	Style	Your avg holdings (mils) (A)	Cost in bps			Cost/-Savings	
			Your	Peer median	More/-less (B)	€000s (A X B)	bps
<b>External asset management</b>							
Stock - EAFE	active	6,303	15.3	41.8	-26.5	-16,688	
Stock - Emerging	active	27,759	31.5	54.4	-22.8	-63,424	
Total for external management						-80,111	-0.9 bp
<b>Internal asset management</b>							
Stock - Global	active	602,785	1.9	6.6	-4.7	-281,253	
Fixed Income - Global	active	264,597	1.7	2.9	-1.2	-31,613	
REITs	active	10,402	1.6	5.7	-4.2	-4,336	
Real Estate	active	25,724	12.7	27.3	-14.6	-37,484	
Total for internal management						-354,686	-3.8 bp
<b>Oversight, custodial, other<sup>1</sup></b>							
Oversight			1.0	0.6	0.3		
Trustee & Custodial			0.5	0.6	-0.1		
Consulting			0.1	0.0	0.1		
Audit			0.0	0.0	0.0		
Other			0.0	0.1	-0.1		
Total for oversight, custodial, other						-23,983	-0.3 bp
Total						-458,780	-4.9 bp

1. The benchmark for 'oversight, custodial and other costs' is based on the total costs for these activities.

## 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 <sup>1</sup>	Benchmark = peer weighted median cost <sup>1</sup>	More/-less	Your average assets (or fee basis)	More/-less in €000s		
					Total More/-less	Due to Impl. style	Due to paying more/less
<b>Asset management costs</b>	(A)	(B)	(C = A - B)	(D)	(C X D)		
Stock - EAFE	15.3 bp	24.3 bp	-9.0 bp	6,303	-5,646	11,041	-16,688
Stock - Emerging	31.5 bp	33.8 bp	-2.3 bp	27,759	-6,432	56,992	-63,424
Stock - Global <sup>4</sup>	1.9 bp	16.5 bp	-14.6 bp	602,785	-878,092	-596,839	-281,253
Fixed Income - Global <sup>4</sup>	1.7 bp	6.6 bp	-4.9 bp	264,597	-130,471	-98,858	-31,613
REITs	1.6 bp	8.1 bp	-6.5 bp	10,402	-6,803	-2,467	-4,336
Real Estate	12.7 bp	82.9 bp	-70.2 bp	25,724	-180,475	-142,991	-37,484
Overlay Programs <sup>2</sup>	0.0 bp	0.8 bp	-0.8 bp	937,571	-75,537	-75,537	0
Total asset management	3.1 bp	16.8 bp	-13.7 bp	937,571	-1,283,456	-848,659	-434,797
<b>Oversight, custody and other costs<sup>3</sup></b>							
Oversight of the Fund	1.0 bp	0.6 bp	0.3 bp				
Trustee & Custodial	0.5 bp	0.6 bp	-0.1 bp				
Consulting	0.1 bp	0.0 bp	0.1 bp				
Audit	0.0 bp	0.0 bp	0.0 bp				
Other	0.0 bp	0.1 bp	-0.1 bp				
Total oversight, custody & other	1.6 bp	1.8 bp	-0.3 bp	937,571	-23,983	n/a	-23,983
<b>Total</b>	<b>4.7 bp</b>	<b>18.6 bp</b>	<b>-13.9 bp</b>	<b>937,571</b>	<b>-1,307,439</b>	<b>-848,659</b>	<b>-458,780</b>

1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). It excludes performance fees on private assets. The style weights by asset class for your fund and the peers are shown on page 15 of this section.

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

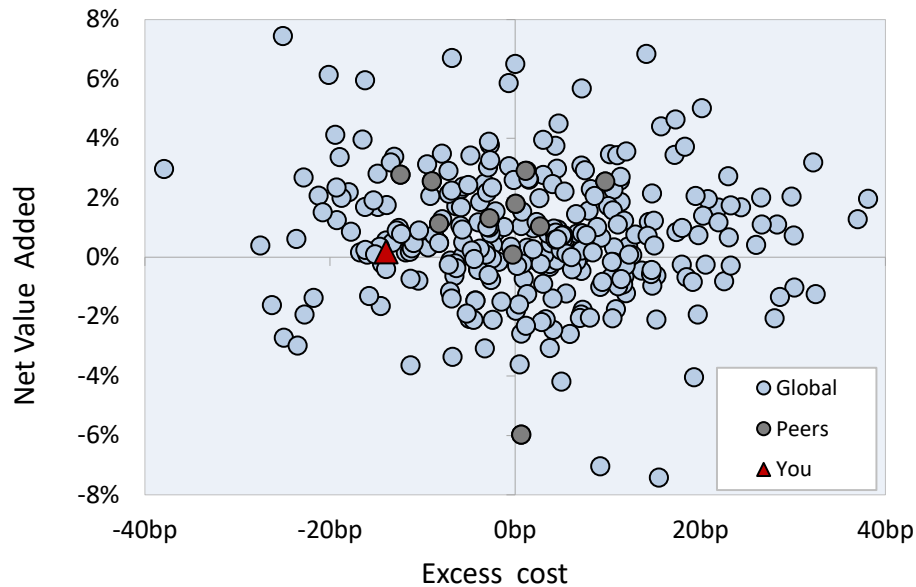
3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.

4. A different asset was used as a proxy to determine the benchmarks and style percentages: 'Stock - Aggregate' for 'Stock - Global', 'Fixed Income - Aggregate' for 'Fixed Income - Global'.

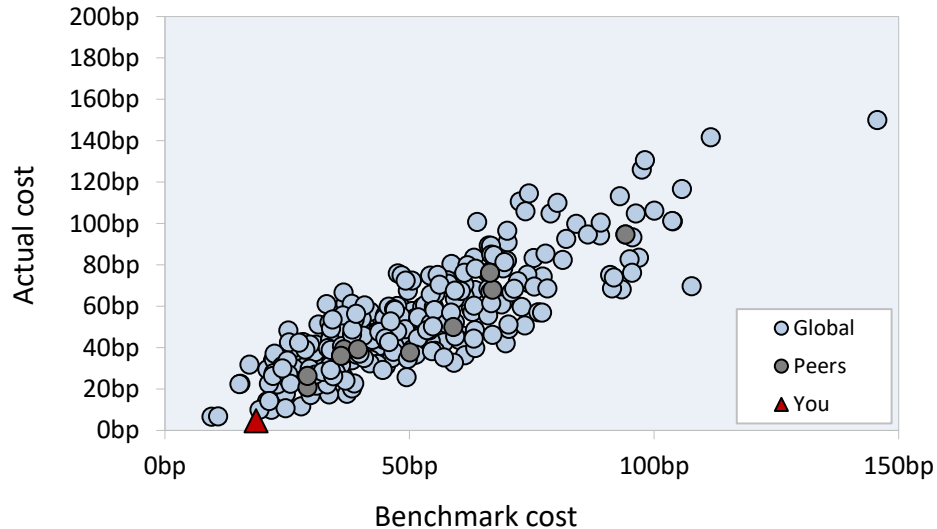
## Your cost effectiveness ranking

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 value added and excess cost to create a snapshot of your cost effectiveness performance relative to that of the global universe. In 2019, your fund ranked in the positive value added, low cost quadrant.

**Your 2019 Net value added 0.2%, Excess cost -14 bps**



**Your 2019 Actual cost 4.7 bps, Benchmark cost 18.6 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 7 of this section.

## Benchmarking methodology formulas and data

### a) Formulas

Example calculations for 'Stock - EAFE'

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

$$= (22\% \times 3.9 \text{ bp}) + (15\% \times 9.3 \text{ bp}) + (11\% \times 2.6 \text{ bp}) + (52\% \times 41.8 \text{ bp}) = 24.3 \text{ bp}$$

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

$$= 15.3 \text{ bp} - 24.3 \text{ bp} = -9.0 \text{ bp}$$

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)

$$= 10.1 \text{ bp} + 0.0 \text{ bp} + 7.4 \text{ bp} = 17.5 \text{ bp}$$

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

$$= (\text{peer average passive cost} - \text{peer average active cost}) \times (\text{passive \% of asset, you} - \text{passive \% of asset, peer average}) \\ = (3.5 \text{ bp} - 34.4 \text{ bp}) \times (0\% - 33\%) = 10.1 \text{ bp}$$

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

$$= [(22\% \times 3.9 \text{ bp}) + (11\% \times 2.6 \text{ bp})] / (22\% + 11\%) = 3.5 \text{ bp}$$

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

$$= [(15\% \times 9.3 \text{ bp}) + (52\% \times 41.8 \text{ bp})] / (15\% + 52\%) = 34.4 \text{ bp}$$

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

$$= (\text{peer average internal passive cost} - \text{peer average external passive cost}) \times (\text{internal passive \% of passive, you} - \text{internal passive \% of passive, peer average}) \times \text{passive \% of asset, you} \\ = (3.9 \text{ bp} - 2.6 \text{ bp}) \times (0\% - 0\%) \times 0\% = 0.0 \text{ bp}$$

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

$$= (\text{peer average internal active cost} - \text{peer average external active cost}) \times (\text{internal active \% of active, you} - \text{internal active \% of active, peer avg}) \times \text{active \% of asset, you} \\ = (9.3 \text{ bp} - 41.8 \text{ bp}) \times (0\% - 23\%) \times 100\% = 7.4 \text{ bp}$$

Cost impact of paying more/-less

$$= (\text{cost internal passive, you} - \text{cost internal passive, peer}) \times \text{internal passive \% of asset, you} + (\text{cost internal active, you} - \text{cost internal active, peer}) \times \text{internal active \% of asset, you} + (\text{cost external passive, you} - \text{cost external passive, peer}) \times \text{external passive \% of asset, you} + (\text{cost external active, you} - \text{cost external active, peer}) \times \text{external active \% of asset, you} \\ = (0.0 \text{ bp} - 3.9 \text{ bp}) \times 0\% + (0.0 \text{ bp} - 9.3 \text{ bp}) \times 0\% + (0.0 \text{ bp} - 2.6 \text{ bp}) \times 0\% + (15.3 \text{ bp} - 41.8 \text{ bp}) \times 100\% = -26.5 \text{ bp}$$

Your cost versus benchmark (-savings/+excess)

$$= \text{cost impact of differences in implementation style} + \text{cost impact of paying more/-less} \\ = 17.5 \text{ bp} + -26.5 \text{ bp} = -9.0 \text{ bp}$$

## Benchmarking methodology formulas and data

### b) 2019 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 - EAFE				15.3				3.9	9.3	2.6	41.8				24.3
Stock - Emerging				31.5				4.8	19.1	9.0	54.4				33.8
Stock - Global		1.9						1.7	6.6	2.8	41.0				16.5
Fixed Income - Global		1.7						1.4	2.9	3.7	22.6				6.6
REITs		1.6							5.7		48.4				8.1
Real Estate		12.7							27.3		67.7	53.3	134.6	39.1	82.5
Underlying base fees														130.0	0.4

### c) 2019 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 - EAFE	0.0%	0.0%	0.0%	100.0%				21.8%	15.3%	11.0%	51.9%			
Stock - Emerging	0.0%	0.0%	0.0%	100.0%				26.0%	14.1%	6.0%	54.0%			
Stock - Global	0.0%	100.0%	0.0%	0.0%				32.9%	23.0%	9.6%	34.5%			
Fixed Income - Global	0.0%	100.0%	0.0%	0.0%				32.2%	42.1%	4.5%	21.2%			
REITs		100.0%		0.0%					94.4%		5.6%			
Real Estate		100.0%		0.0%	0.0%	0.0%	0.0%		30.4%		19.2%	7.9%	42.2%	0.3%
Underlying base fees		100.0%		0.0%	0.0%	0.0%	0.0%		30.4%		19.2%	7.9%	42.2%	0.3%

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.

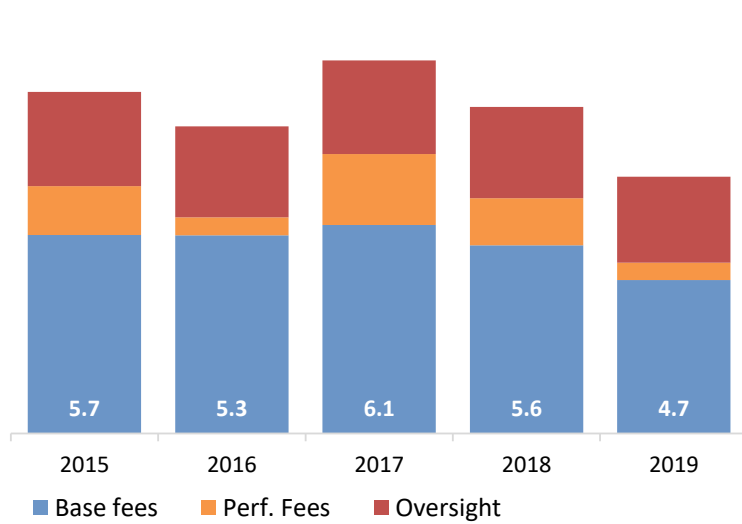
Further, cost difference for style & paying impacts (CostBpsH - CostBpsL) for one style =

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

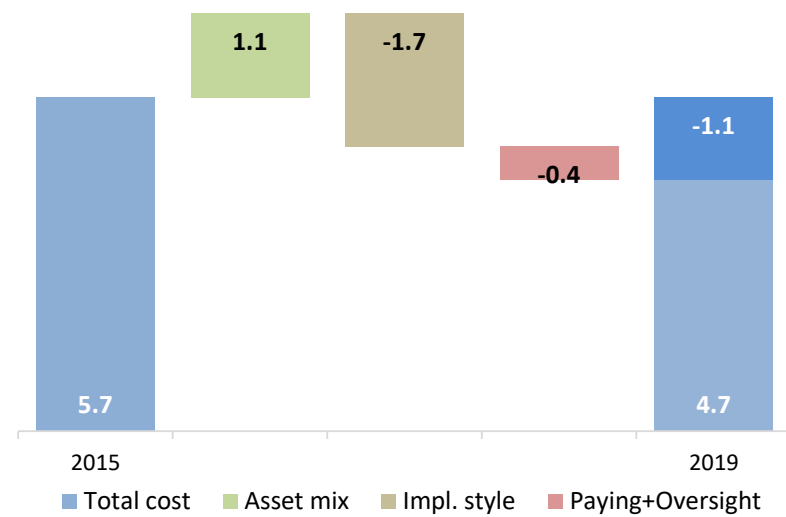
where CostStyleBps is the style cost in basis points; Wg is the weight for that style within the asset class.

## Total plan cost and cost changes

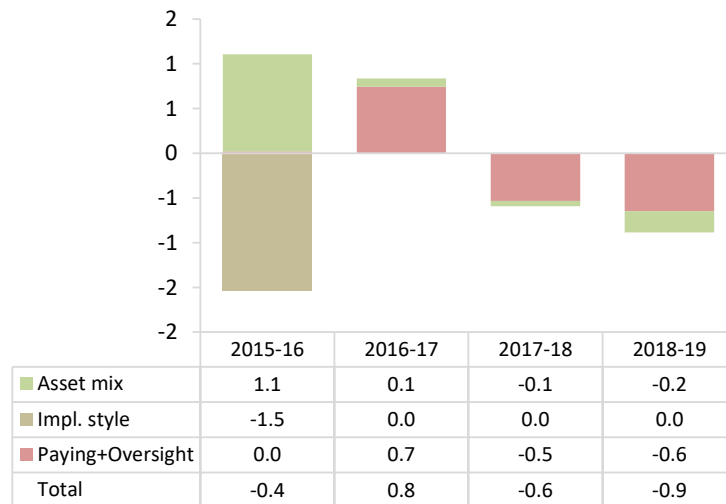
### Total plan cost over time, bps



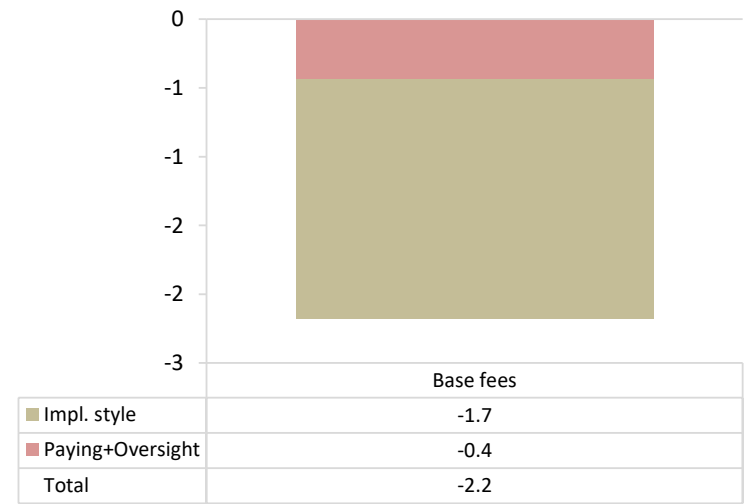
### Cost differences, 2019 versus 2015, bps



### Reasons for cost differences over time, bps



### Impact of base and performance fees, 2019 vs. 2015, bps



## Summary of cost differences, 2019 versus 2015

Your total cost decreased by 1.1 bps between 2015 and 2019 because of changes in: asset mix (1.1 bps), implementation style (-1.7 bps), and paying more/less for similar services (-0.4 bps).

	bps	€000s
Starting total cost, 2015	5.7	450,106
Growth in asset value		88,735
Asset mix	<u>1.1</u>	<u>102,748</u>
Stock and REITs	1.2	110,228
Fixed Income	-0.1	-9,020
Real Estate ex-REITs	0.0	1,540
Implementation style (less expensive vs. more )	<u>-1.7</u>	<u>-163,002</u>
More int. active % of total active	-1.7	-163,002
Paying more/-less for	<u>-0.4</u>	<u>-39,204</u>
Stock and REITs	-0.4	-36,879
Fixed Income	0.1	13,736
Real Estate ex-REITs	-0.2	-16,061
Oversight, custodial, other (pay more/-less)	<u>0.0</u>	<u>-1,600</u>
Total difference	-1.1	-12,324
Ending total cost, 2019	4.7	437,782

## Summary of cost differences, year over year

	bps	€000s	bps	€000s	bps	€000s	bps	€000s	bps	€000s
	2015		2016		2017		2018		2019	
Starting total cost	5.7	450,106	5.3	412,149	6.1	519,140	5.6	484,442	5.7	450,106
Growth in asset value		-4,041		36,248		16,947		36,448		88,735
Asset mix	1.1	84,295	0.1	7,795	-0.1	-5,246	-0.2	-22,378	1.1	102,748
Stock and REITs	0.9	71,646	0.3	27,072	-0.1	-5,896	-0.2	-21,381	1.2	110,228
Fixed Income	0.1	5,984	-0.1	-8,815	0.0	-2,961	0.0	-3,151	-0.1	-9,020
Real Estate ex-REITs	0.1	6,665	-0.1	-10,462	0.0	3,610	0.0	2,155	0.0	1,540
Implementation style (less expensive vs. more )	-1.5	-119,702	0.0	0	0.0	0	0.0	0	-1.7	-163,002
Internal active vs. external active	-1.5	-119,702	0.0	0	0.0	0	0.0	0	-1.7	-163,002
Paying more/-less for	0.0	2,208	0.8	65,702	-0.5	-47,082	-0.7	-62,319	-0.4	-39,204
Stock and REITs	-0.1	-7,188	0.6	51,427	-0.5	-39,616	-0.4	-41,084	-0.4	-36,879
Fixed Income	0.1	7,745	0.0	998	0.0	1,986	0.0	2,331	0.1	13,736
Real Estate ex-REITs	0.0	1,651	0.2	13,276	-0.1	-9,452	-0.3	-23,566	-0.2	-16,061
Oversight, custodial, other (pay more/-less)	0.0	-717	0.0	-2,754	0.0	683	0.0	1,589	0.0	-1,600
Total difference	-0.4	-37,957	0.8	106,991	-0.6	-34,698	-0.9	-46,660	-1.1	-12,324
Ending total cost	5.3	412,149	6.1	519,140	5.6	484,442	4.7	437,782	4.7	437,782
	2016		2017		2018		2019		2019	

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 decreased by €12 million in 2019 compared to 2015. An increase of €89 million was due to the €154 billion rise in plan total average nav holdings. The remaining decrease of €101 million is explained by the changes in the asset mix (€103 million), implementation style (-€163 million), and paying more/less for similar services (-€41 million).

Asset class <sup>1</sup>	2015 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	2019 cost €000s
	A	B	C	D	E=B+C+D	F=G-A	F-E	G
Stock - EAFE	n/a	9,642	0	0	9,642	9,642	0	9,642
Stock - Emerging	n/a	87,450	0	0	87,450	87,450	0	87,450
Stock - Global	249,652	11,516	-158,414	-36,879	-183,777	-134,560	49,217	115,092
Fixed Income - Global	37,010	-9,020	-4,588	13,736	128	7,424	7,296	44,434
REITs	n/a	1,620	0	0	1,620	1,620	0	1,620
Real Estate	39,477	1,540	0	-16,061	-14,522	-6,739	7,783	32,738
<b>Total for asset management</b>	<b>326,139</b>	<b>102,748</b>	<b>-163,002</b>	<b>-39,204</b>	<b>-99,459</b>	<b>-35,163</b>	<b>64,296</b>	<b>290,976</b>
Oversight	67,859			8,440	8,440	21,818	13,378	89,677
Trustee & Custodial	8,868			99	99	1,847	1,748	10,715
Consulting	42,400			-8,137	-8,137	222	8,359	42,622
Audit	4,840			-2,002	-2,002	-1,048	954	3,792
Other	0			0	0	0	0	0
<b>Total for fund oversight<sup>2</sup></b>	<b>123,967</b>			<b>-1,600</b>	<b>-1,600</b>	<b>22,839</b>	<b>24,439</b>	<b>146,806</b>
<b>Total</b>	<b>450,106</b>	<b>102,748</b>	<b>-163,002</b>	<b>-40,805</b>	<b>-101,059</b>	<b>-12,324</b>	<b>88,735</b>	<b>437,782</b>

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

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

2. Cost differences for 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 decreased by 1.1 bps in 2019 vs. 2015. It was driven by the changes in the asset mix (1.1 bps), implementation style (-1.7 bps), and paying more/less for similar services (-0.4 bps).

Asset class	Asset mix bps	Implement. style bps	Paying more/-less bps	Total difference bps	Total <sup>1</sup> ex asset gr. €000s
	B	C	D	B+C+D	
Stock - EAFE	0.1	0.0	0.0	0.1	9,642
Stock - Emerging	0.9	0.0	0.0	0.9	87,450
Stock - Global	0.1	-1.7	-0.4	-2.0	-183,777
Fixed Income - Global	-0.1	0.0	0.1	0.0	128
REITs	0.0	0.0	0.0	0.0	1,620
Real Estate	0.0	0.0	-0.2	-0.2	-14,522
Total for asset management	1.1	-1.7	-0.4	-1.1	-99,459
Oversight			0.1	0.1	8,440
Trustee & Custodial			0.0	0.0	99
Consulting			-0.1	-0.1	-8,137
Audit			0.0	0.0	-2,002
Other			0.0	0.0	0
Total for fund oversight			0.0	0.0	-1,600
Total	1.1	-1.7	-0.4	-1.1	-101,059
Total basis point costs in years 2019 and 2015		4.7	5.7	-1.1	

1. Calculated by multiplying total difference in bps by plan total nav average holdings for year 2019, €938 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 €103 million or 1.1 bps.

Asset class	2015 Cost bps	2019 Cost bps	2015 asset <sup>1</sup> weight %	2019 asset <sup>1</sup> weight %	Change in asset weight	Asset mix changes <sup>2</sup> bps	Asset mix changes <sup>3</sup> €000s
	A	B	C	D	E=D-C	A (or B) x E	
Stock - EAFE	n/a	15.3	0%	1%	1%	0.1	9,642
Stock - Emerging	n/a	31.5	0%	3%	3%	0.9	87,450
Stock - Global	5.1	1.9	62%	64%	2%	0.1	11,516
Fixed Income - Global	1.3	1.7	35%	28%	-7%	-0.1	-9,020
REITs	n/a	1.6	0%	1%	1%	0.0	1,620
Real Estate	19.0	12.7	3%	3%	0%	0.0	1,540
Total for asset management						1.1	102,748

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 2019, €938 billion.

## Impact of changes in implementation style

Changes in implementation style (passive vs. active, internal vs. external, etc.) in 2019 vs. 2015 saved you €163 million.

Implementation choices	2019	Cost, 2015			Style 1 %			Cost/ €000s
	avg. assets €mils	Style 1	Style 2	Style 1 -Savings	2019	2015	More/ -Less	
	A	B	C	D = B - C	E			A x D x E
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active			
Stock - Global	602,785	3 bp	44 bp	-42 bp	100%	94%	6%	-158,414
Fixed Income - Global	264,597	1 bp	33 bp	-31 bp	100%	99%	1%	-4,588
More int. active % of total active								-163,002
<b>Total</b>								<b>-163,002</b>

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



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

In 2019, you paid €41 million less for similar asset management and oversight / support services vs. 2015.

Asset class styles where you had assets in both 2019 and 2015 <sup>1</sup>	Style	2019 avg. assets €mils	Cost in bps		More/ -less	Cost/ -Savings €000s
			2019	2015		
<u>Internal asset management</u>		A			B	A x B
Stock - Global	active	602,785	1.9	2.5	-0.6	-36,879
Fixed Income - Global	active	264,597	1.7	1.2	0.5	13,736
Real Estate	active	25,724	12.7	19.0	-6.2	-16,061
Total for internal management						-39,204
Oversight		937,571	1.0	0.9	0.1	8,440.0
Trustee & Custodial		937,571	0.1	0.1	0.0	99
Consulting		937,571	0.5	0.5	-0.1	-8,137
Audit		937,571	0.0	0.1	0.0	-2,002
Other		937,571	0.0	0.0	0.0	0
Total for fund oversight						-1,600
Total						-40,805

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

# 5

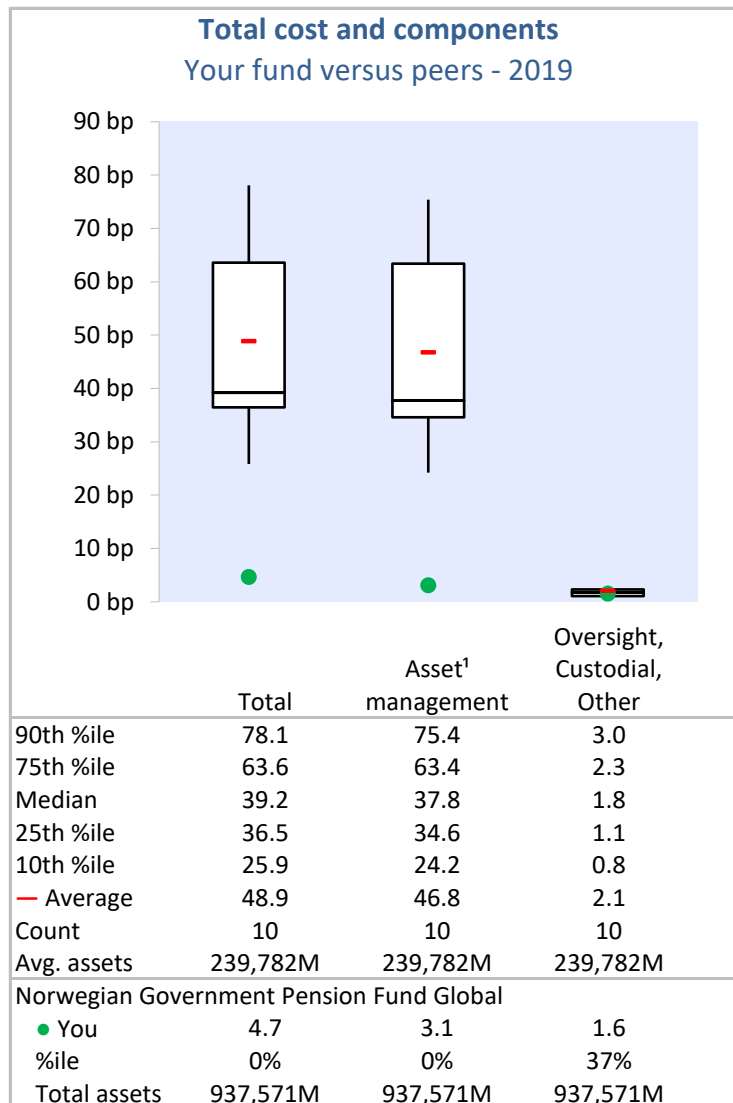
## Cost comparisons

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

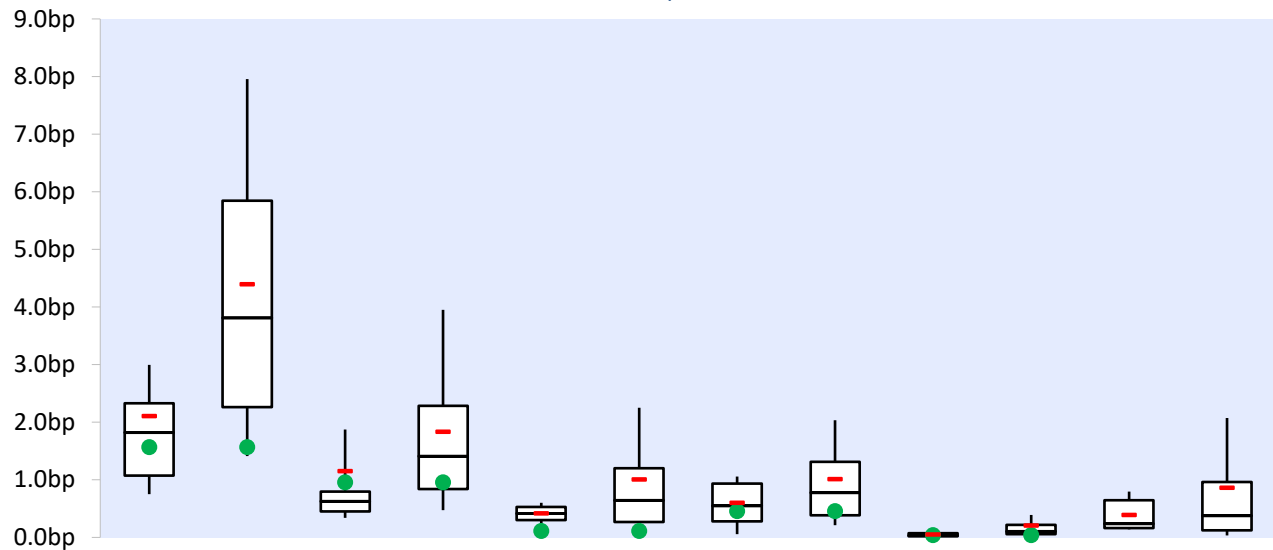
Total costs are benchmarked in the previous section. In this section, your fund's costs are compared on a line-item basis to your peers. This enables you to understand better why you may be a high or low cost fund and it also identifies and quantifies major cost differences that may warrant further investigation.

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



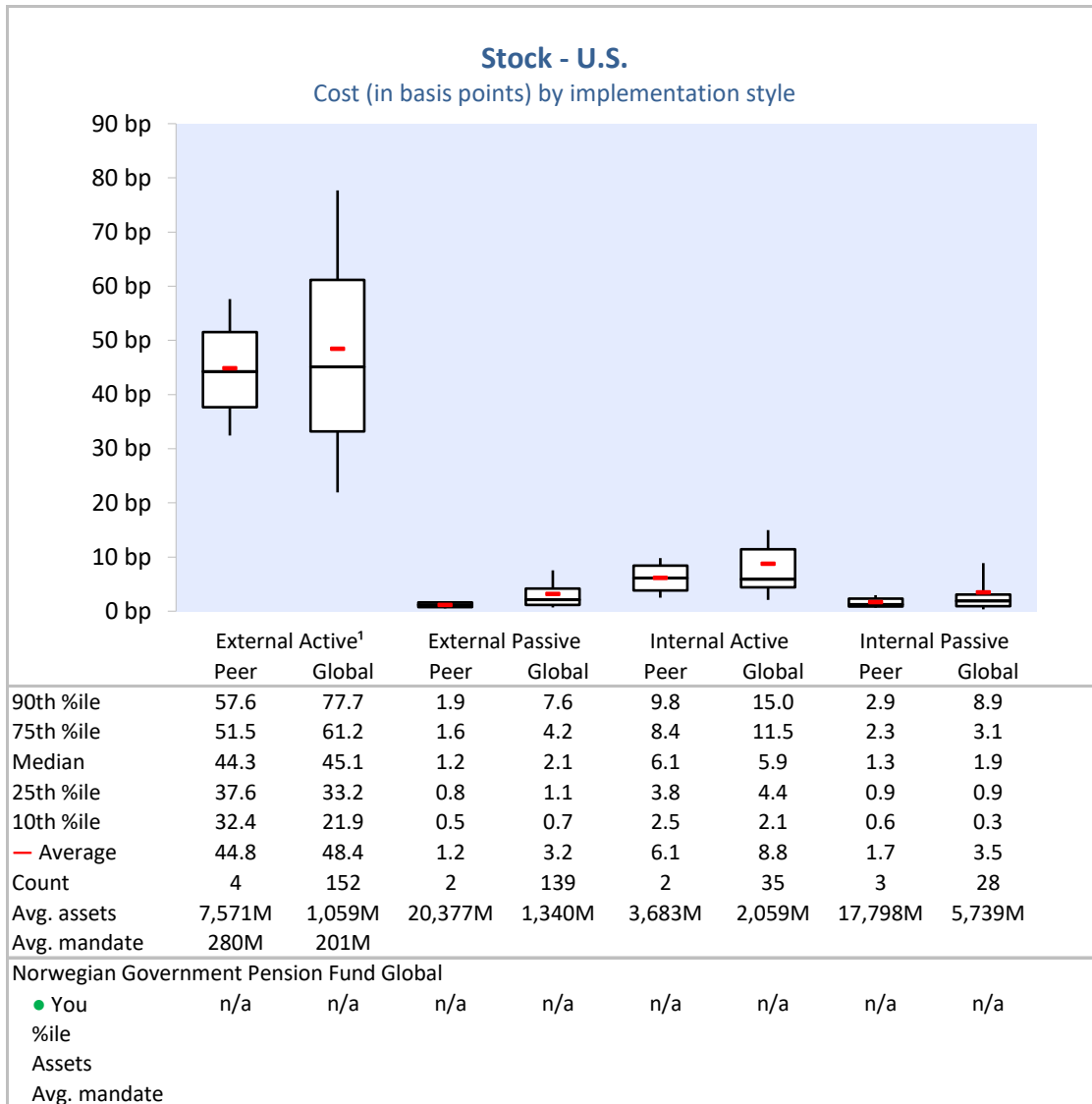
## Governance, operations & support

Cost as a % of total plan assets



	Total		Oversight <sup>1</sup>		Consulting & Perf. Meas.		Custody		Audit		Other	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	3.0	8.0	1.9	4.0	0.6	2.3	1.1	2.0	0.1	0.4	0.8	2.1
75th %ile	2.3	5.8	0.8	2.3	0.5	1.2	0.9	1.3	0.1	0.2	0.6	1.0
Median	1.8	3.8	0.6	1.4	0.4	0.6	0.6	0.8	0.0	0.1	0.2	0.4
25th %ile	1.1	2.3	0.5	0.8	0.3	0.3	0.3	0.4	0.0	0.1	0.2	0.1
10th %ile	0.8	1.4	0.3	0.5	0.2	0.1	0.1	0.2	0.0	0.0	0.1	0.0
— Average	2.1	4.4	1.2	1.8	0.4	1.0	0.6	1.0	0.0	0.2	0.4	0.9
Count	10	305	10	305	2	247	10	289	7	265	6	215
Avg. assets	239,782M	24,166M	239,782M	24,166M	239,782M	24,166M	239,782M	24,166M	239,782M	24,166M	239,782M	24,166M
Norwegian Government Pension Fund Global												
● You	1.6	1.6	1.0	1.0	0.1	0.1	0.5	0.5	0.0	0.0	n/a	n/a
%ile	37%	12%	80%	30%	0%	10%	42%	31%	68%	16%		
Plan assets	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M	937,571M

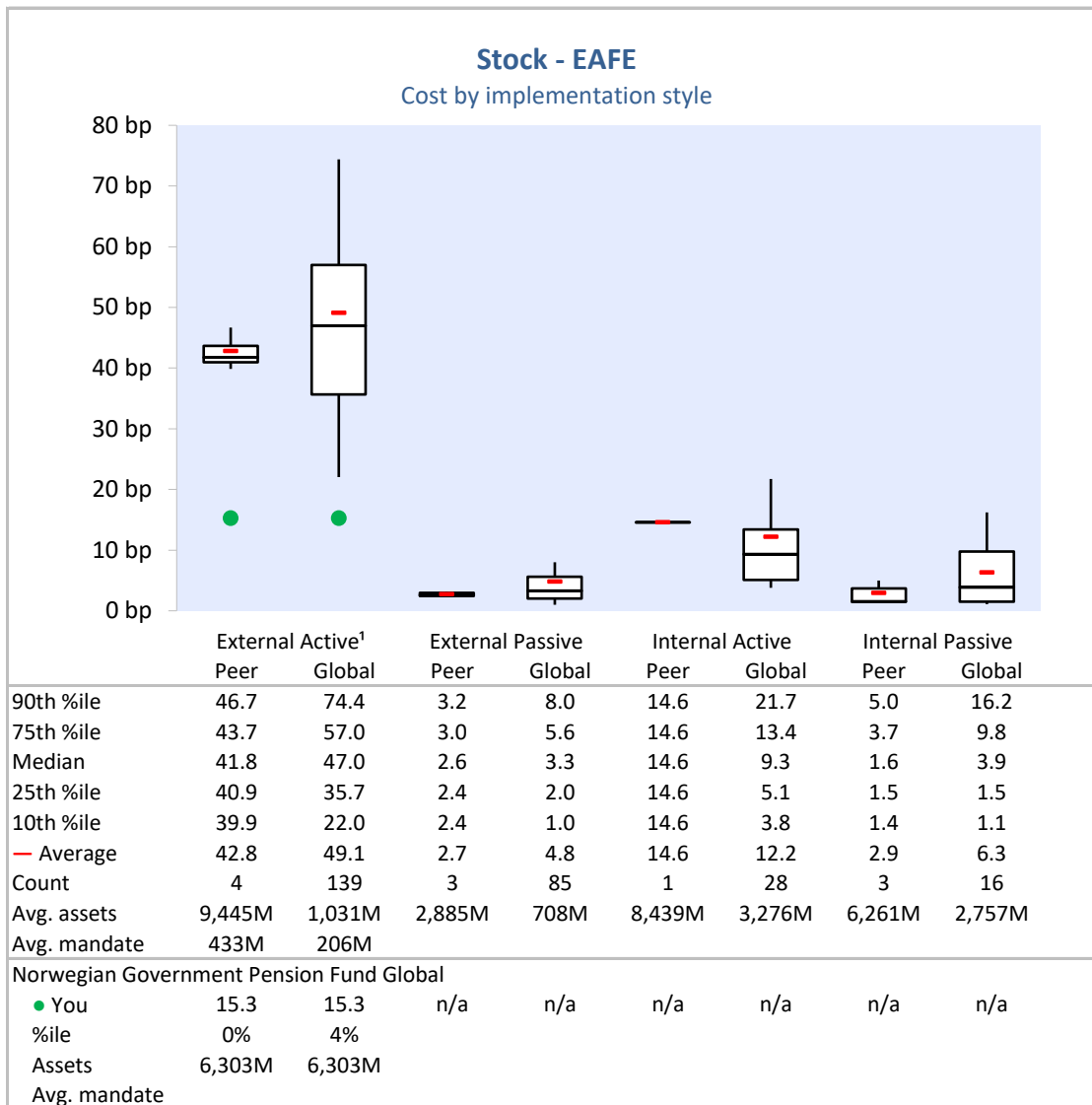
1. Oversight costs include the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees/salaries of the Board or Investment Committee. All costs associated with the above including fees/salaries, travel, director's insurance 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	30.6	42.1
Performance fees*	n/a	12.5	5.7
Internal and other	<u>n/a</u>	<u>1.7</u>	<u>0.7</u>
Total	n/a	44.8	48.4

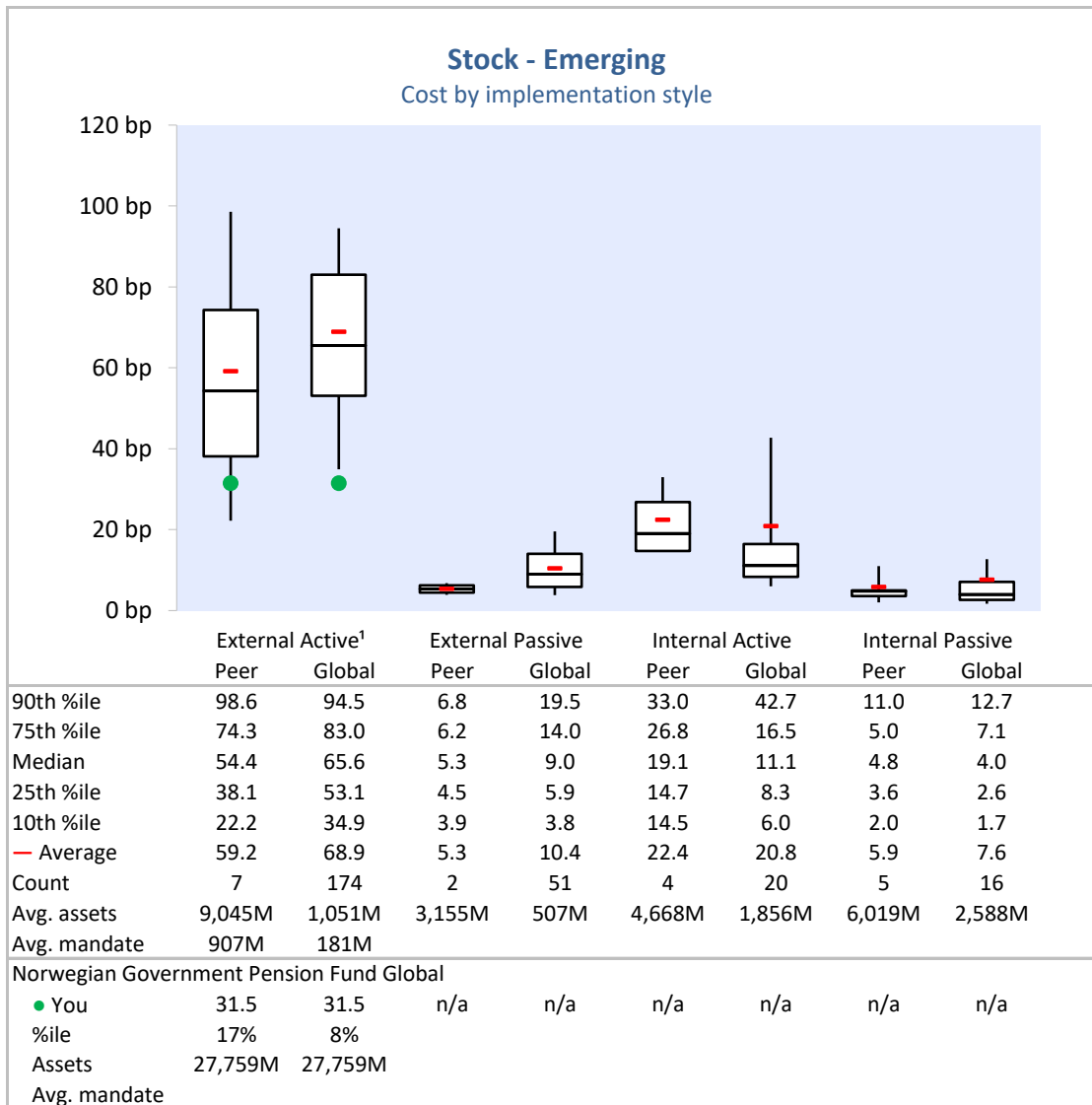
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 12.5 bps for peers (4 funds) and 20.0 bps for Global participants (43 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	17.4	36.5	45.9
Performance fees*	-3.8	5.2	2.4
Internal and other	<u>1.6</u>	<u>1.2</u>	<u>0.8</u>
Total	15.3	42.8	49.1

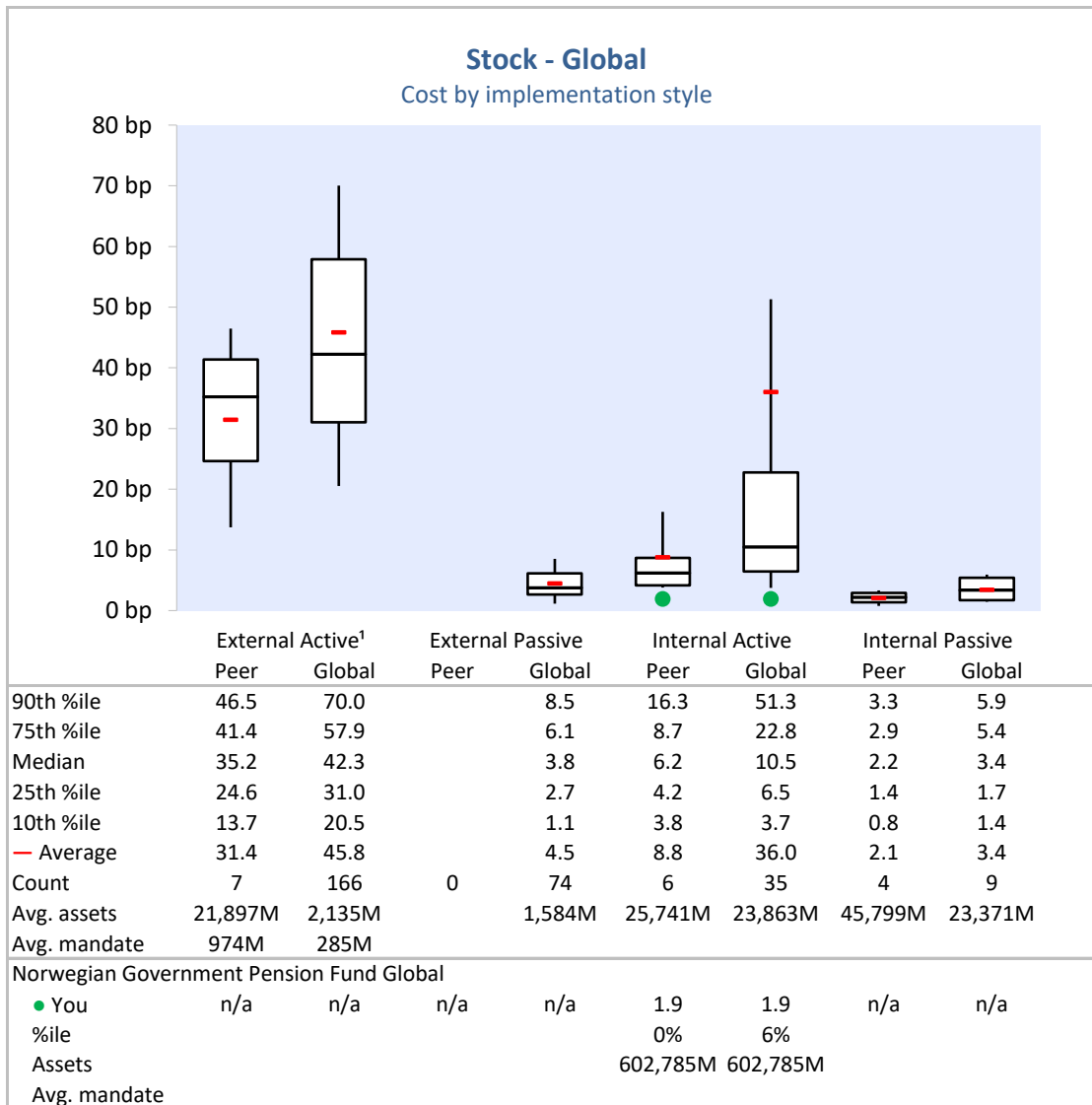
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 10.4 bps for peers (2 funds) and 10.4 bps for Global participants (32 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	18.4	34.0	60.7
Performance fees*	11.5	19.8	6.8
Internal and other	<u>1.6</u>	<u>5.4</u>	<u>1.4</u>
Total	31.5	59.2	68.9

\* 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 34.6 bps for peers (4 funds) and 28.3 bps for Global participants (42 funds).

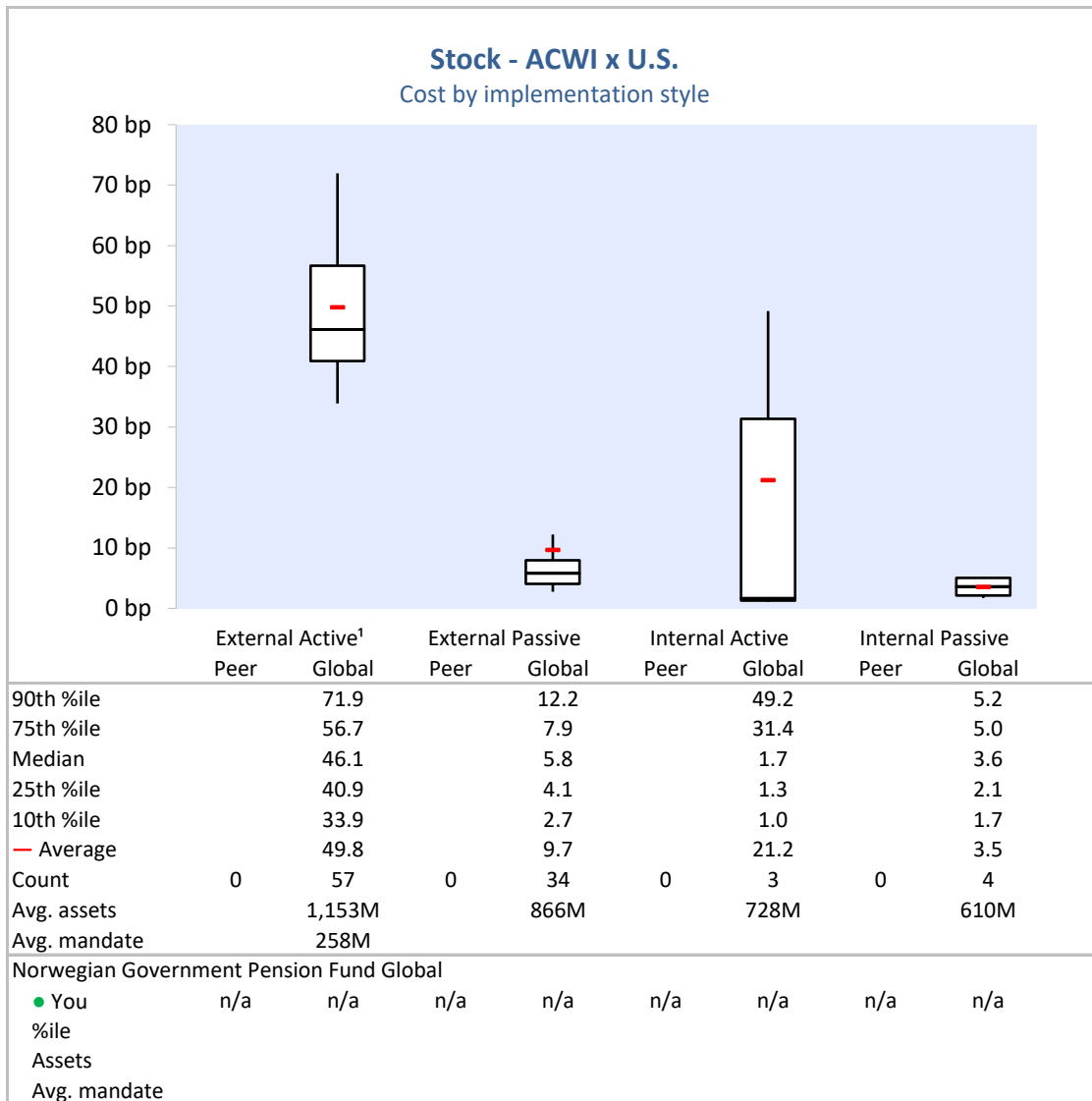


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	25.9	42.3
Performance fees*	n/a	3.3	2.3
Internal and other	<u>n/a</u>	<u>2.3</u>	<u>1.3</u>
Total	n/a	31.4	45.8

\* 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 3.8 bps for peers (6 funds) and 7.6 bps for Global participants (49 funds).

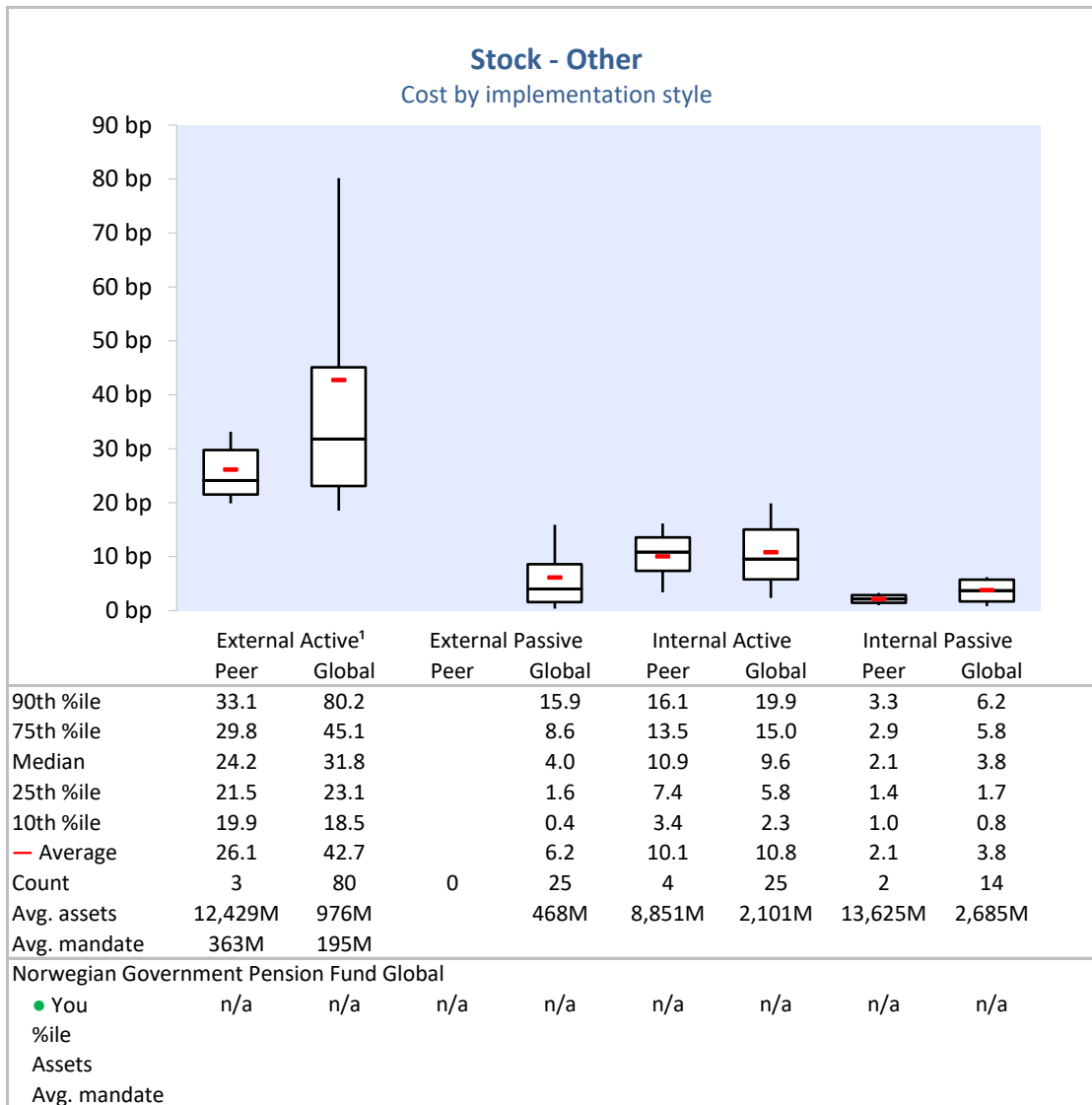




#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	48.5
Performance fees*	n/a	n/a	1.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.3</u>
Total	n/a	n/a	49.8

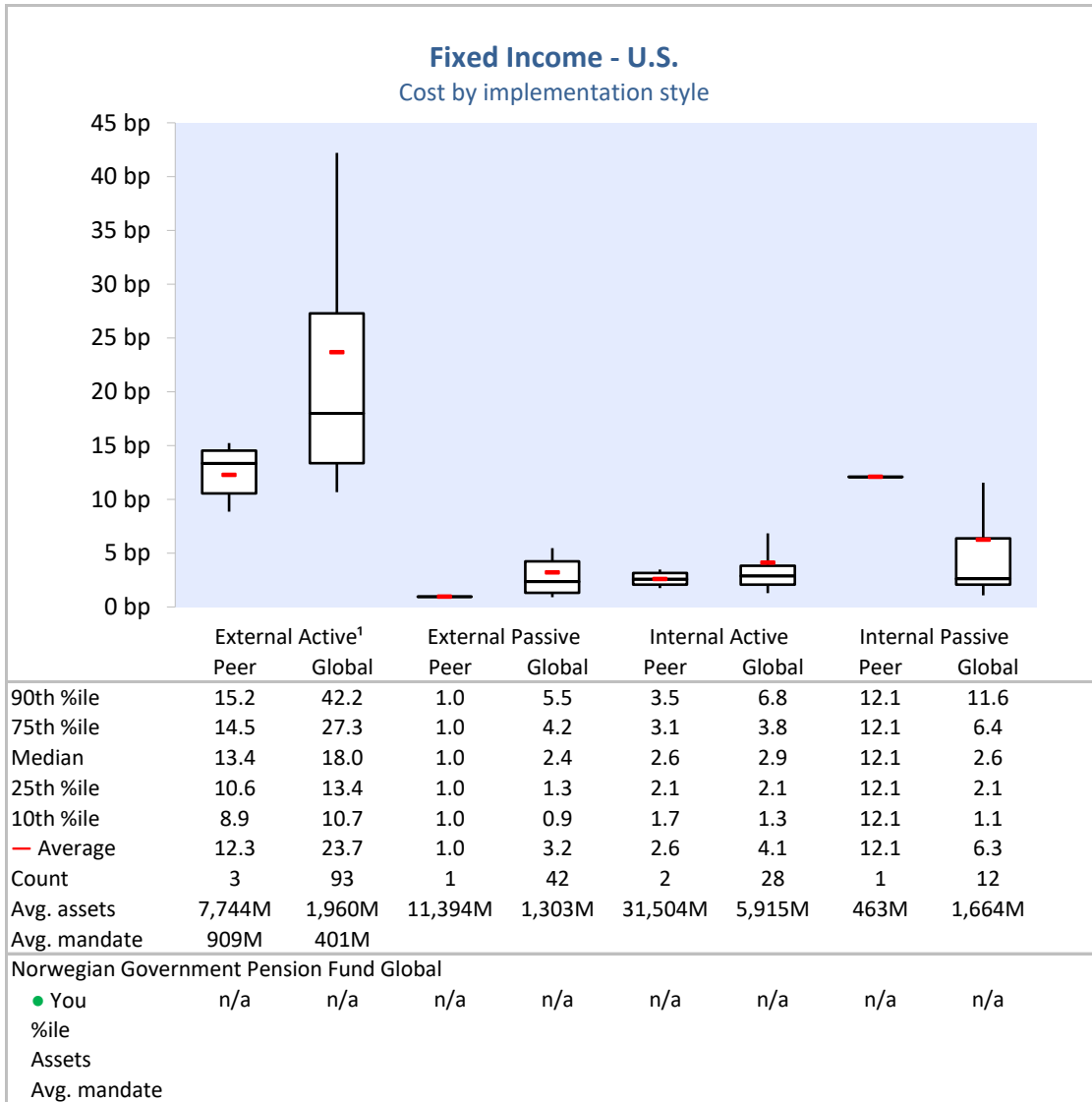
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 5.9 bps for Global participants (10 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	25.6	37.1
Performance fees*	n/a	-0.3	4.6
Internal and other	<u>n/a</u>	<u>0.8</u>	<u>1.0</u>
Total	n/a	26.1	42.7

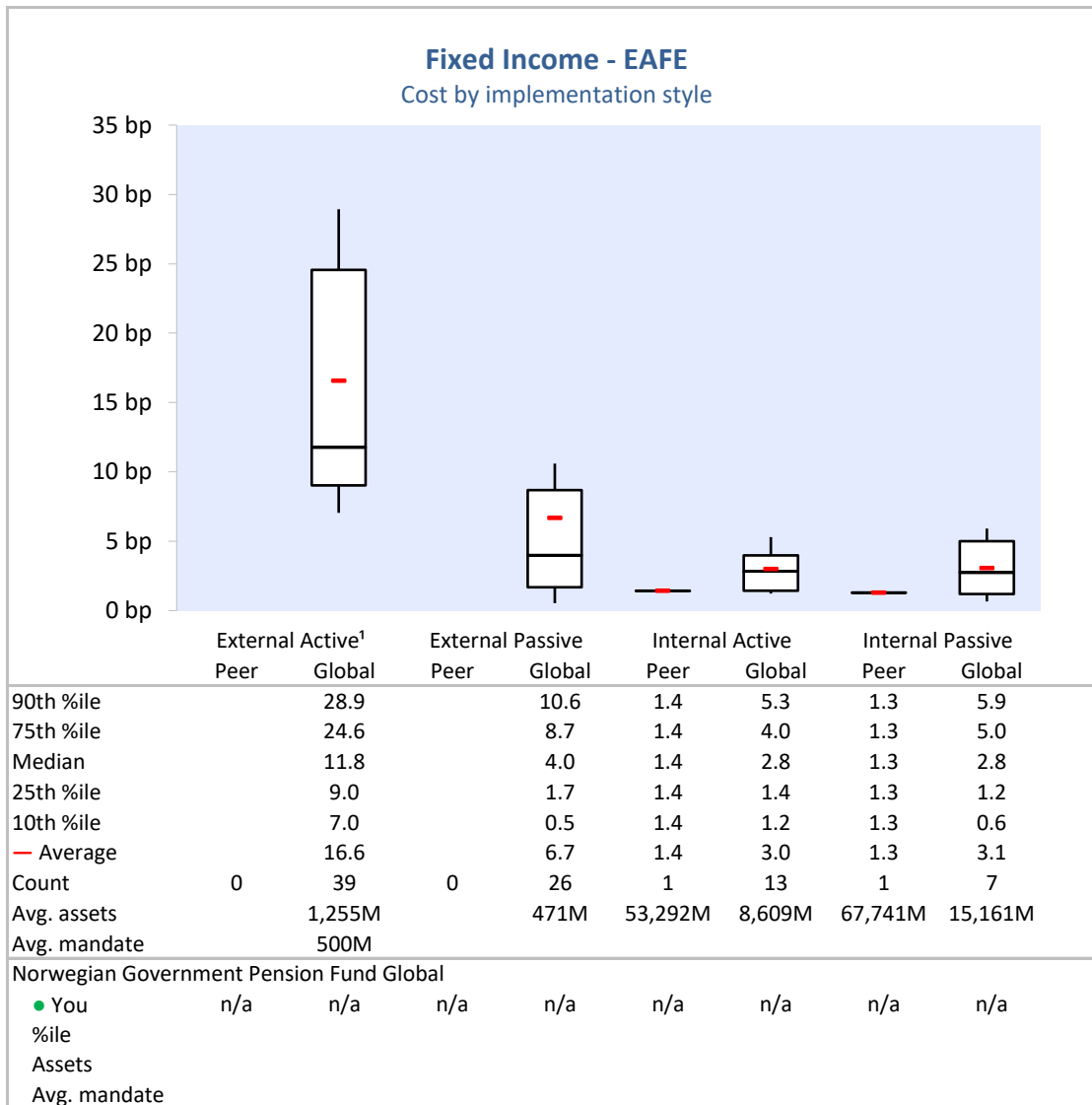
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is -0.9 bps for peers (1 fund) and 33.6 bps for Global participants (11 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	10.8	22.2
Performance fees*	n/a	0.0	0.8
Internal and other	<u>n/a</u>	<u>1.5</u>	<u>0.7</u>
Total	n/a	12.3	23.7

\* 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 (1 fund) and 4.8 bps for Global participants (15 funds).

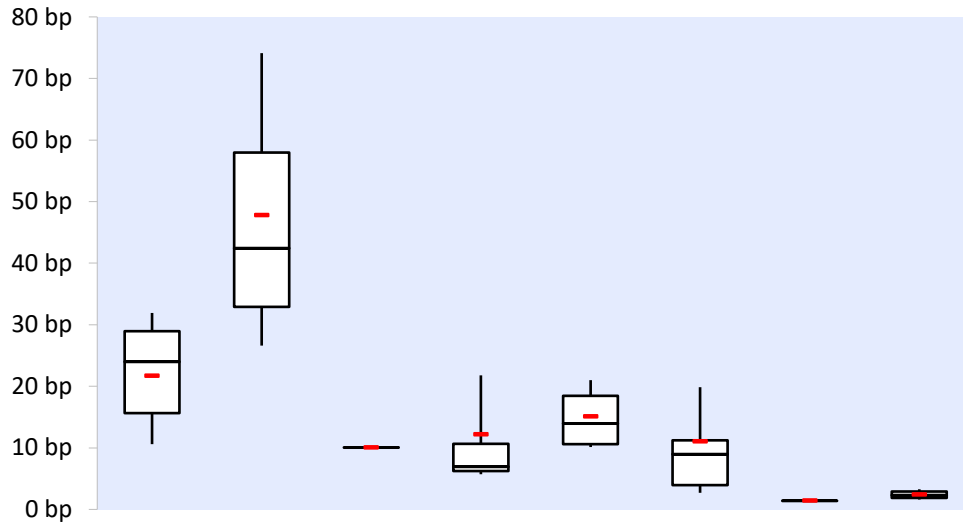


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	15.2
Performance fees*	n/a	n/a	1.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.4</u>
Total	n/a	n/a	16.6

\* 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 3.9 bps for Global participants (10 funds).

### Fixed Income - Emerging Cost by implementation style

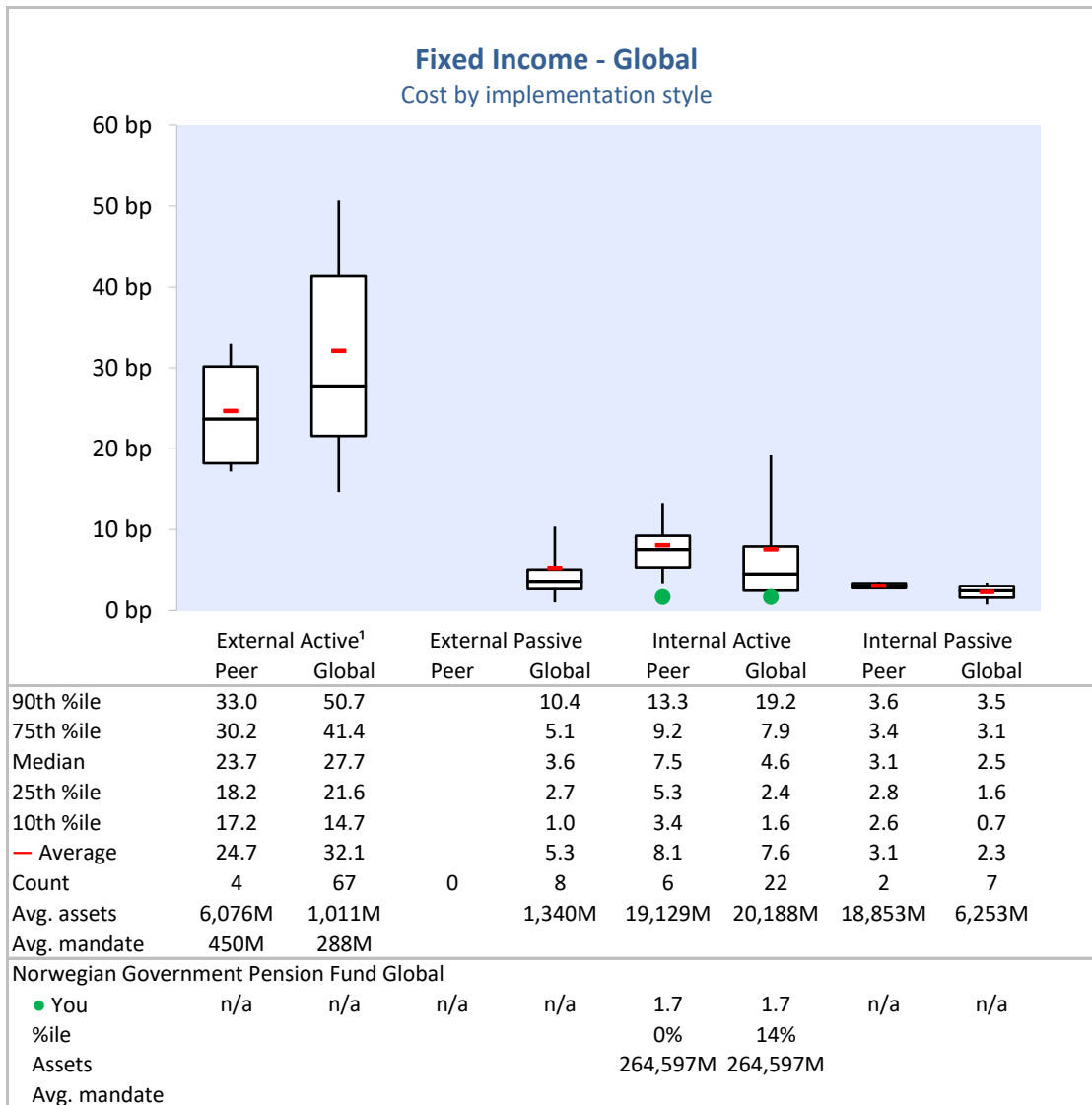


	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	31.9	74.1	10.1	21.8	21.0	19.9	1.4	3.3
75th %ile	29.0	58.0	10.1	10.7	18.4	11.2	1.4	2.9
Median	24.0	42.5	10.1	7.0	14.0	9.0	1.4	2.3
25th %ile	15.6	32.9	10.1	6.2	10.6	4.0	1.4	1.9
10th %ile	10.6	26.6	10.1	5.7	10.1	2.7	1.4	1.6
— Average	21.7	47.8	10.1	12.2	15.1	11.1	1.4	2.4
Count	3	90	1	8	4	16	1	3
Avg. assets	7,769M	789M	1,280M	783M	2,648M	1,403M	4,088M	2,478M
Avg. mandate	531M	203M						
Norwegian Government Pension Fund Global								
● 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	18.9	45.4
Performance fees*	n/a	0.6	0.7
Internal and other	<u>n/a</u>	<u>2.2</u>	<u>1.7</u>
Total	n/a	21.7	47.8

\* 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 1.9 bps for peers (1 fund) and 3.4 bps for Global participants (19 funds).



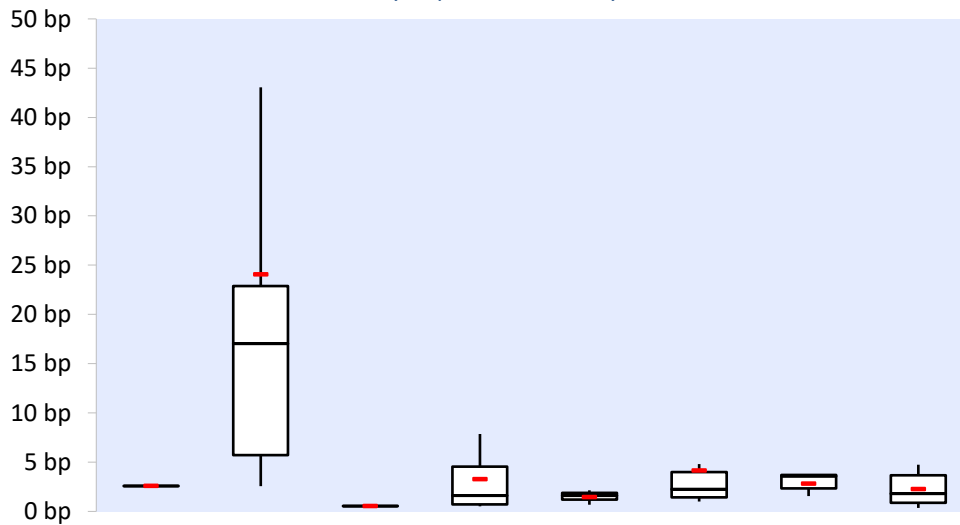
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	15.2	29.8
Performance fees*	n/a	4.2	1.5
Internal and other	<u>n/a</u>	<u>5.3</u>	<u>0.8</u>
Total	n/a	24.7	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 5.6 bps for peers (3 funds) and 6.5 bps for Global participants (16 funds).

## Fixed Income - Inflation Indexed

Cost by implementation style



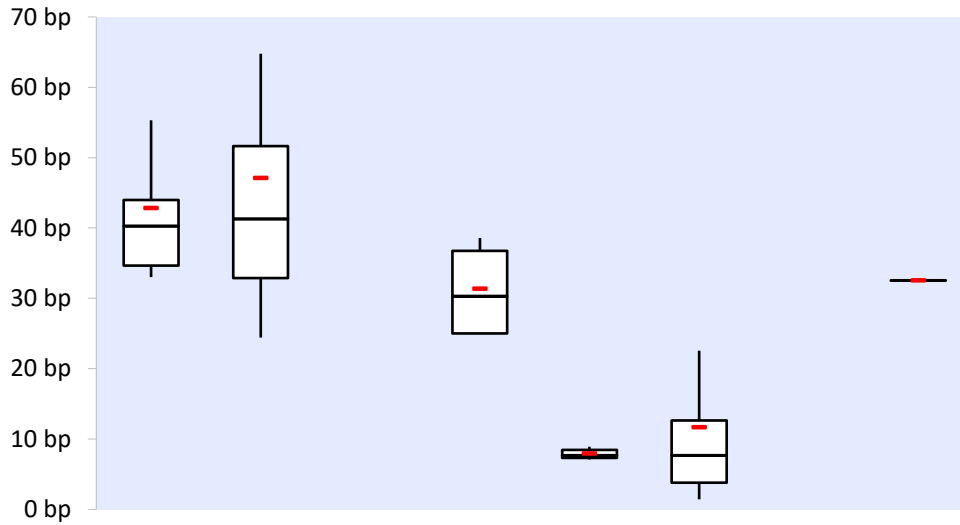
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	2.6	43.1	0.6	7.8	2.1	4.8	3.8	4.7
75th %ile	2.6	22.9	0.6	4.5	1.9	4.0	3.7	3.7
Median	2.6	17.0	0.6	1.6	1.6	2.3	3.6	1.8
25th %ile	2.6	5.7	0.6	0.7	1.2	1.4	2.3	0.9
10th %ile	2.6	2.6	0.6	0.5	0.7	1.0	1.6	0.4
— Average	2.6	24.1	0.6	3.3	1.5	4.1	2.8	2.3
Count	1	19	1	27	4	22	3	20
Avg. assets	1,460M	523M	4,614M	823M	8,960M	2,448M	1,081M	2,423M
Avg. mandate		317M						
Norwegian Government Pension Fund Global								
● 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	2.6	21.7
Performance fees*	n/a	n/a	1.8
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.6</u>
Total	n/a	2.6	24.1

\* 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 11.3 bps for Global participants (3 funds).

### Fixed Income - High Yield Cost by implementation style



	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	55.3	64.8		38.6	8.9	22.5		32.6
75th %ile	44.0	51.6		36.7	8.5	12.6		32.6
Median	40.3	41.3		30.4	7.7	7.7		32.6
25th %ile	34.7	32.9		25.0	7.3	3.8		32.6
10th %ile	33.0	24.4		25.0	7.1	1.4		32.6
— Average	42.9	47.1		31.4	7.9	11.7		32.6
Count	6	111	0	4	3	16	0	1
Avg. assets	2,466M	536M		590M	2,865M	990M		548M
Avg. mandate	342M	171M						
Norwegian Government Pension Fund Global								
● 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

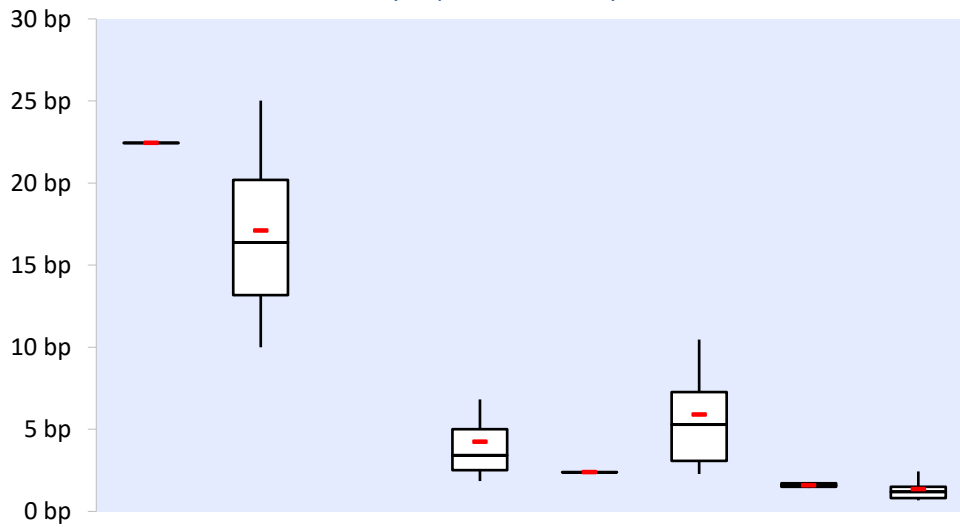
	You	Peer Average	Global Average
Base fees	n/a	35.7	43.4
Performance fees*	n/a	4.3	2.0
Internal and other	<u>n/a</u>	<u>2.8</u>	<u>1.7</u>
Total	n/a	42.9	47.1

\* 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 26.0 bps for peers (1 fund) and 11.9 bps for Global participants (19 funds).



## Fixed Income - Long Bonds

### Cost by implementation style



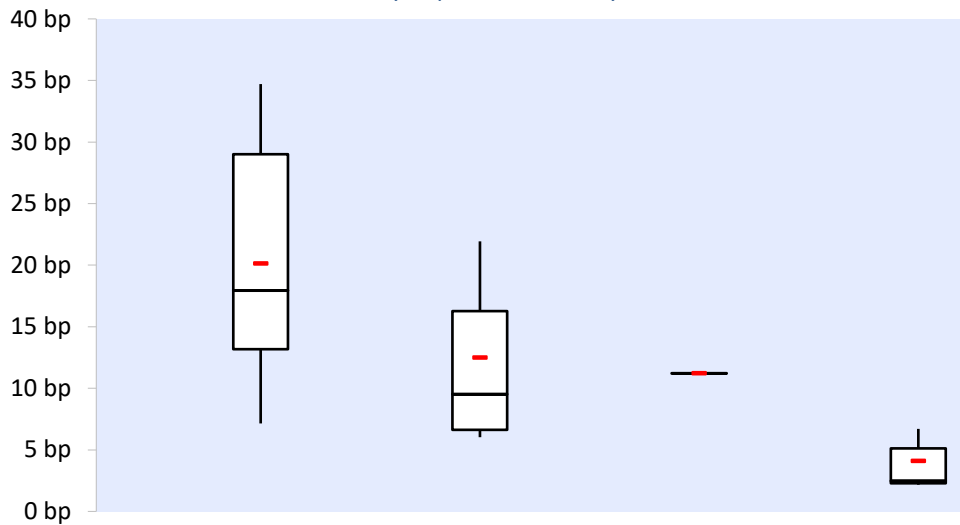
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	22.5	25.0		6.8	2.4	10.5	1.8	2.4
75th %ile	22.5	20.2		5.0	2.4	7.3	1.7	1.5
Median	22.5	16.4		3.4	2.4	5.3	1.6	1.2
25th %ile	22.5	13.2		2.5	2.4	3.1	1.5	0.8
10th %ile	22.5	10.0		1.8	2.4	2.3	1.4	0.7
— Average	22.5	17.1		4.3	2.4	5.9	1.6	1.4
Count	1	89	0	33	1	13	2	12
Avg. assets	1,773M	2,922M		375M	13,632M	2,931M	3,985M	3,950M
Avg. mandate		454M						
Norwegian Government Pension Fund Global								
● 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	17.6	16.4
Performance fees*	n/a	4.4	0.7
Internal and other	<u>n/a</u>	<u>0.5</u>	<u>0.1</u>
Total	n/a	22.5	17.1

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 4.4 bps for peers (1 fund) and 3.9 bps for Global participants (15 funds).

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



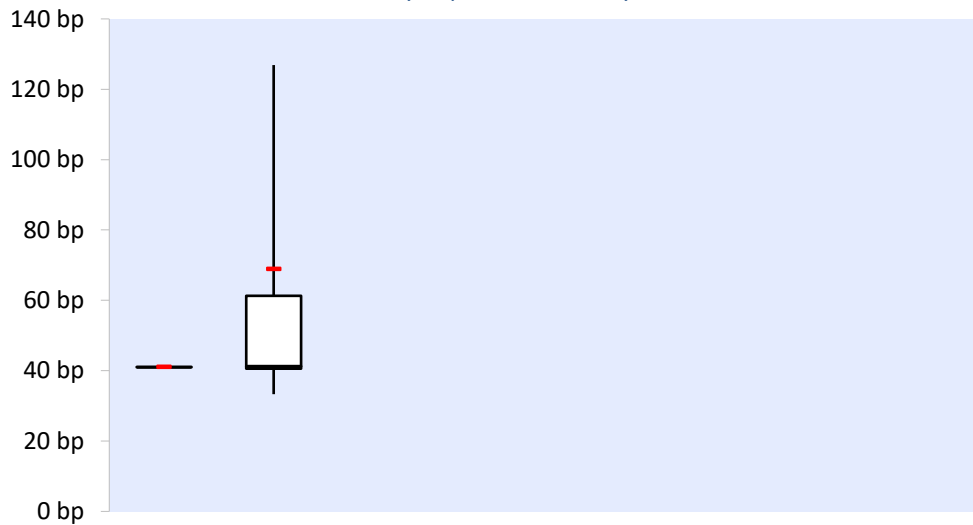
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile		34.7		21.9		11.2		6.7
75th %ile		29.0		16.3		11.2		5.1
Median		18.0		9.5		11.2		2.5
25th %ile		13.2		6.6		11.2		2.3
10th %ile		7.2		6.0		11.2		2.2
— Average		20.1		12.5		11.2		4.1
Count	0	14	0	6	0	1	0	3
Avg. assets		1,796M		5,830M		909M		7,780M
Avg. mandate		276M						
Norwegian Government Pension Fund Global								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	19.6
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.5</u>
Total	n/a	n/a	20.1

\* 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 0.3 bps for Global participants (2 funds).

### Fixed Income - Convertibles Cost by implementation style

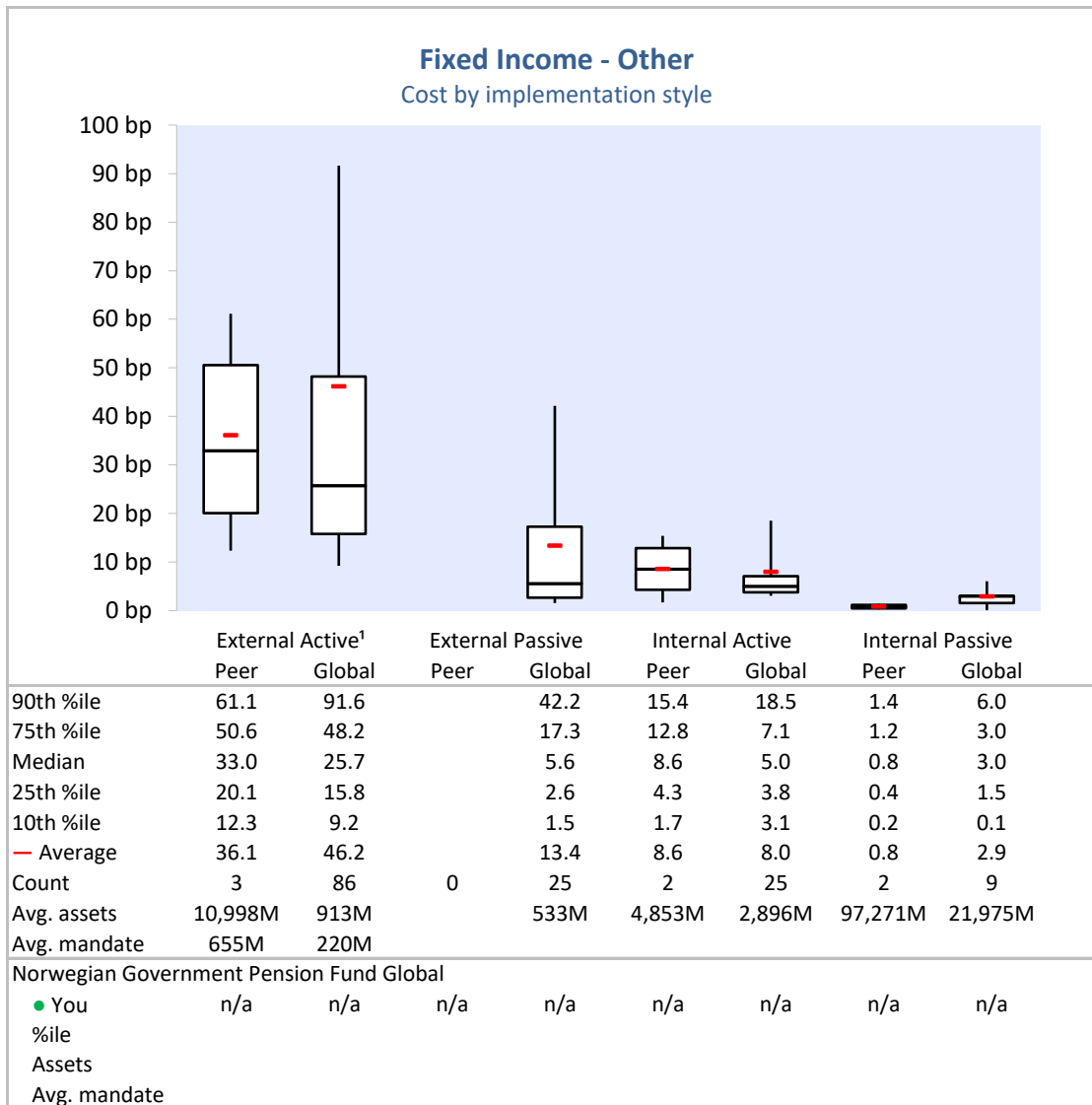


	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	41.1	126.9						
75th %ile	41.1	61.3						
Median	41.1	41.3						
25th %ile	41.1	40.6						
10th %ile	41.1	33.3						
— Average	41.1	68.9						
Count	1	7	0	0	0	0	0	0
Avg. assets	1,318M	610M						
Avg. mandate		270M						
Norwegian Government Pension Fund Global								
● 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	41.1	44.9
Performance fees*	n/a	n/a	23.3
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.7</u>
Total	n/a	41.1	68.9

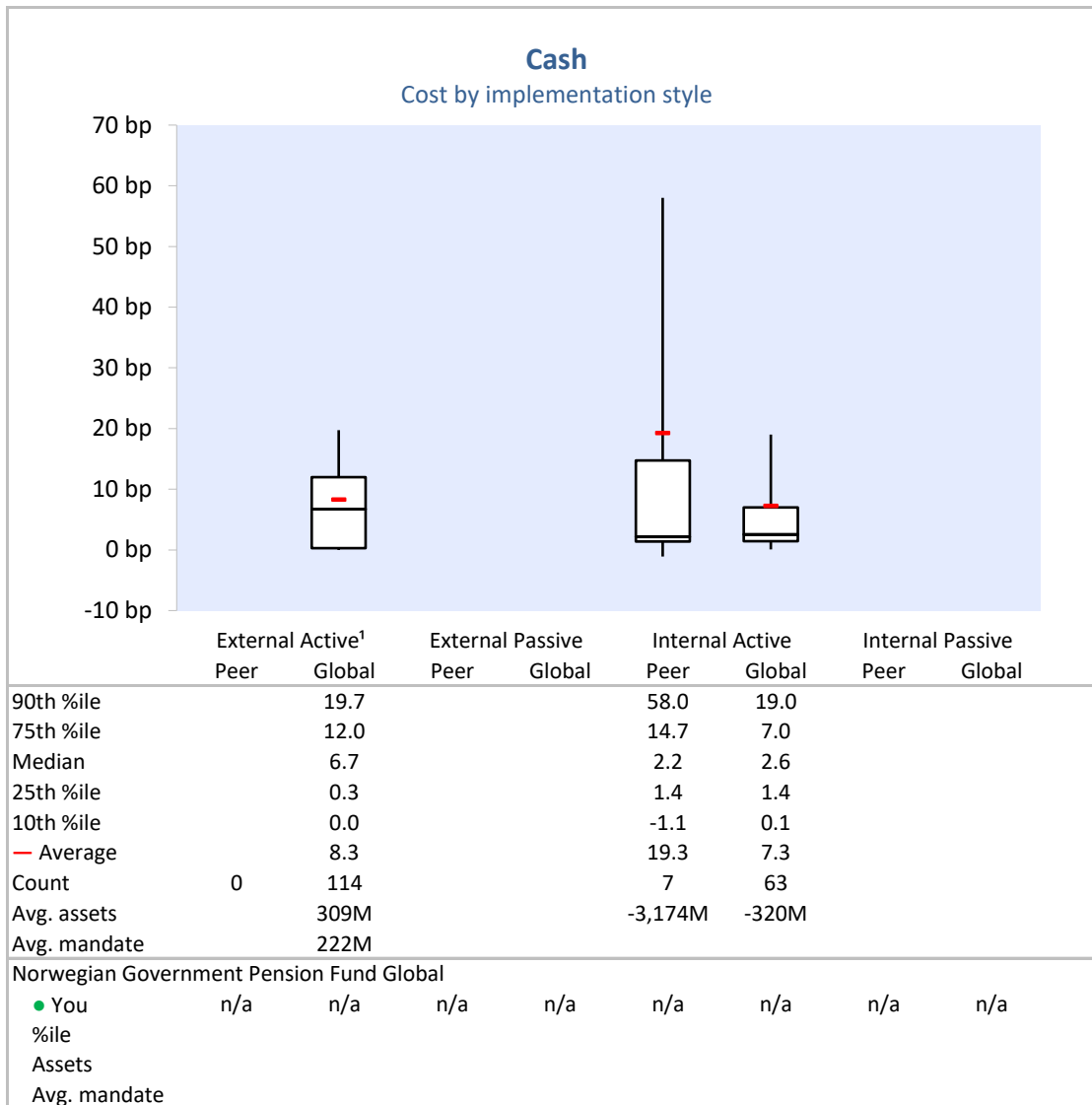
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 81.5 bps for Global participants (2 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	34.5	38.7
Performance fees*	n/a	0.1	5.9
Internal and other	<u>n/a</u>	<u>1.4</u>	<u>1.6</u>
Total	n/a	36.1	46.2

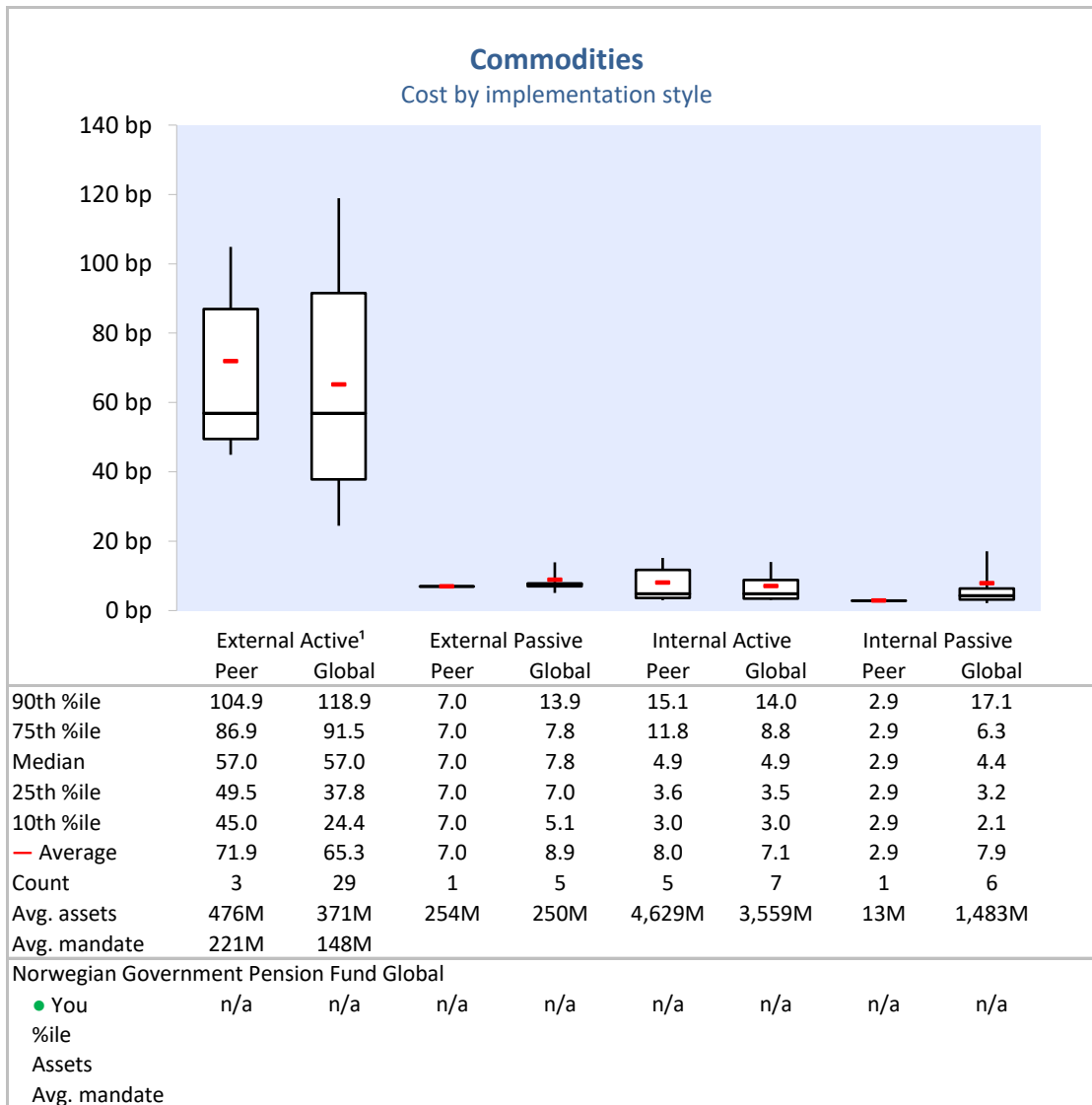
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.4 bps for peers (1 fund) and 34.1 bps for Global participants (15 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	9.2
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>-1.0</u>
Total	n/a	n/a	8.3

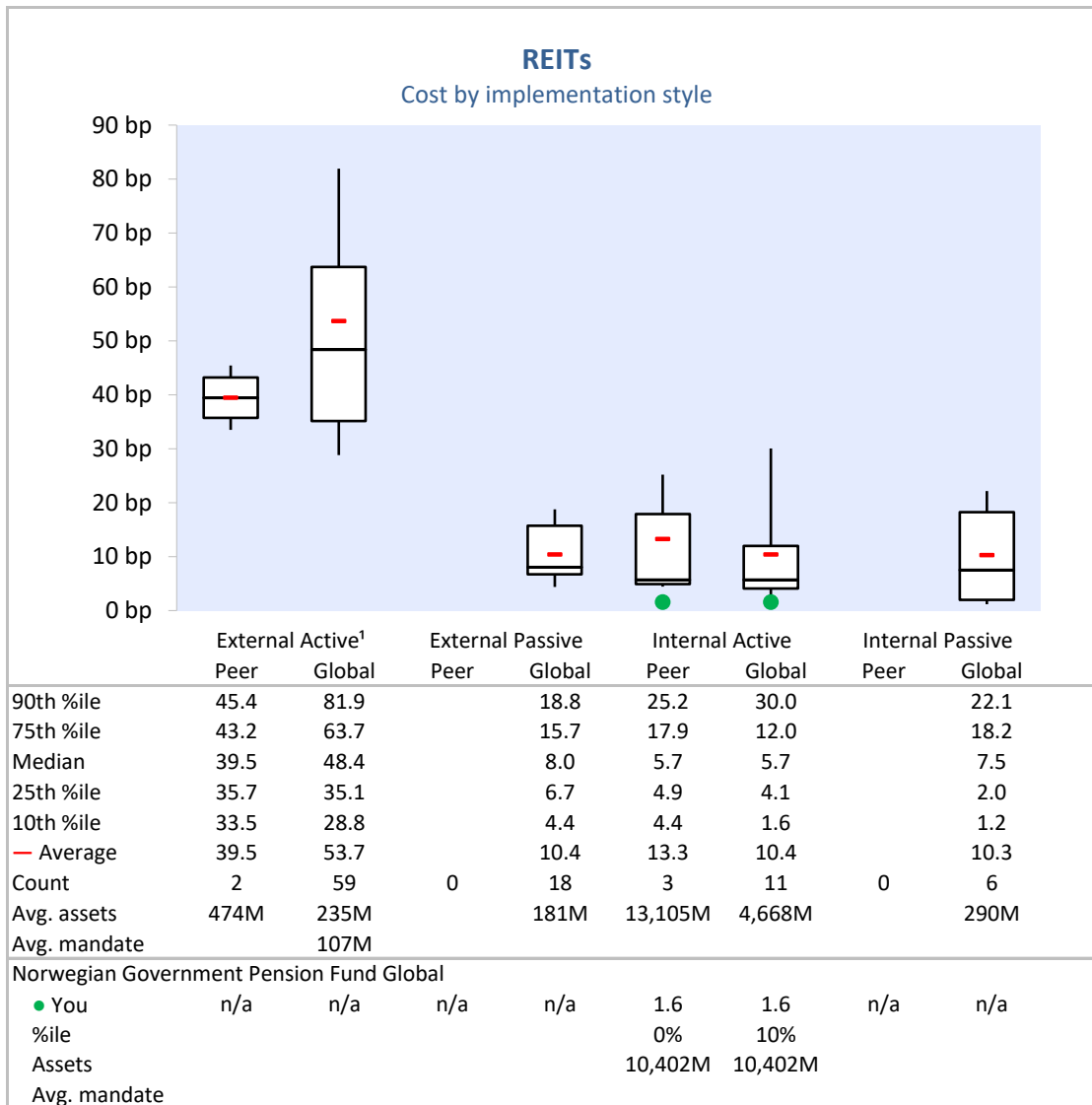
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.6 bps for Global participants (9 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	48.6	61.7
Performance fees*	n/a	18.8	2.6
Internal and other	<u>n/a</u>	<u>4.5</u>	<u>1.0</u>
Total	n/a	71.9	65.3

\* 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 56.3 bps for peers (1 fund) and 12.5 bps for Global participants (6 funds).



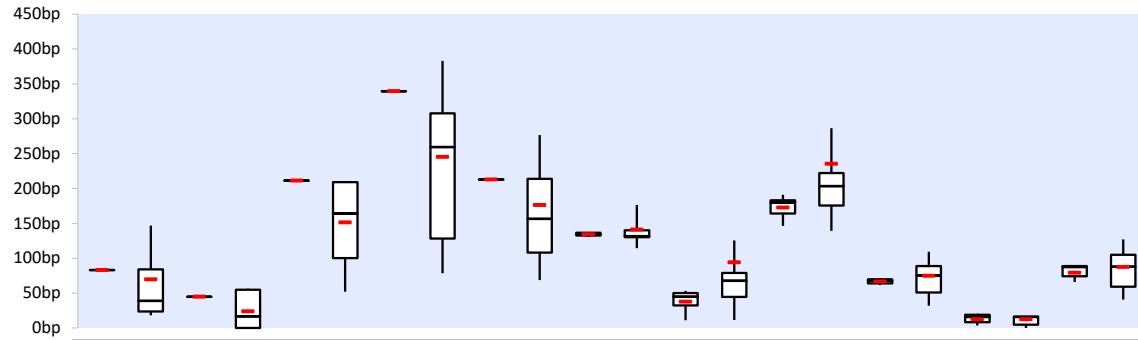
1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	37.5	47.9
Performance fees*	n/a	0.0	4.9
Internal and other	<u>n/a</u>	<u>1.9</u>	<u>0.9</u>
Total	n/a	39.5	53.7

\* 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 (1 fund) and 18.0 bps for Global participants (16 funds).

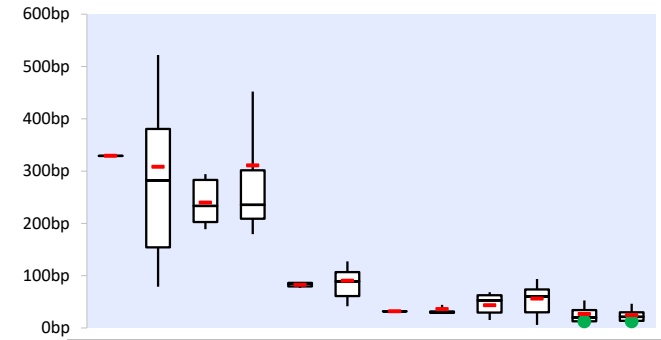
## Real Estate

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



	Fund of Funds										Direct LP						Evergreen					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	90th %ile	83.2	146.7	45.0	56.3	211.5	209.0	339.7	383.1	213.2	276.7	137.9	176.4	53.2	125.6	190.9	286.6	70.9	109.3	20.6	17.0	89.1
75th %ile	83.2	83.9	45.0	55.0	211.5	209.0	339.7	308.0	213.2	213.9	136.6	140.2	49.9	79.0	183.2	222.2	69.7	88.8	18.9	16.0	88.6	105.1
Median	83.2	39.1	45.0	16.9	211.5	164.5	339.7	259.5	213.2	156.5	134.6	131.8	44.8	67.9	180.3	203.5	67.7	75.5	16.0	16.0	87.7	88.0
25th %ile	83.2	23.5	45.0	0.0	211.5	100.4	339.7	128.2	213.2	108.2	132.7	130.0	32.3	44.4	164.2	175.6	63.9	50.9	8.1	4.8	74.0	59.0
10th %ile	83.2	18.2	45.0	0.0	211.5	52.0	339.7	78.5	213.2	68.5	130.7	114.5	11.1	11.2	146.2	139.2	61.6	32.0	3.4	0.0	65.8	40.8
Average	83.2	69.9	45.0	24.0	211.5	151.6	339.7	245.5	213.2	176.4	134.7	141.3	38.0	94.4	172.6	235.7	66.5	74.9	12.7	12.7	79.2	87.6
Count	1	42	1	42	1	42	1	42	1	42	8	142	8	142	8	142	3	166	3	166	3	166
Avg. assets	356M	355M	356M	355M	356M	355M	356M	355M	356M	355M	11,131M	1,161M	11,131M	1,161M	11,131M	1,161M	14,807M	1,017M	14,807M	1,017M	14,807M	1,017M
Norwegian Government Pension Fund Global																						
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Cost as a % of NAV



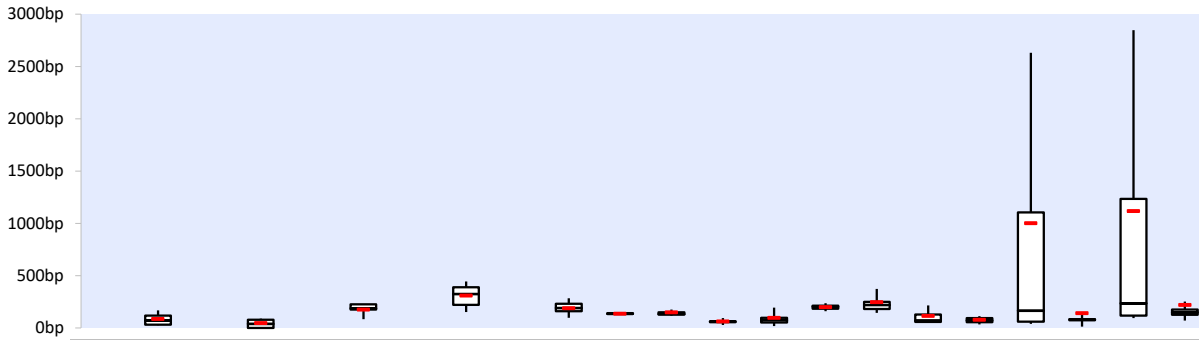
	Fund of Funds		Direct LP		Evergreen		Oper. Sub.		Co-Inv.		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	90th %ile	329.3	521.9	294.2	452.1	87.1	127.4	32.2	43.9	68.5	93.4	52.3
75th %ile	329.3	380.5	283.2	301.5	86.2	107.0	32.2	31.6	62.8	73.7	34.0	29.8
Median	329.3	282.3	233.7	235.6	84.6	89.2	32.2	30.6	53.3	60.3	20.5	21.7
25th %ile	329.3	154.1	202.8	209.0	79.6	61.0	32.2	28.9	29.4	30.0	12.8	13.5
10th %ile	329.3	78.7	188.7	179.3	76.7	41.4	32.2	26.9	15.0	5.8	7.3	9.6
Average	329.3	308.2	240.1	310.9	82.3	90.6	32.2	36.4	43.7	56.3	26.7	24.9
Count	1	42	8	142	3	166	1	11	3	23	6	42
Avg. assets	367M	300M	8,779M	946M	13,702M	986M	21,040M	6,405M	3,144M	1,092M	6,739M	2,895M
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	12.7	12.7
											25%	22%
											25,724M	25,724M

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 130 bps (on amount fees are based on) for underlying management fees and 81 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting real estate investments. The peer average cost of monitoring and selecting was 2.2 bps for fund of funds, 5.3 bps for LPs and 3.7 bps for external (not LPs).



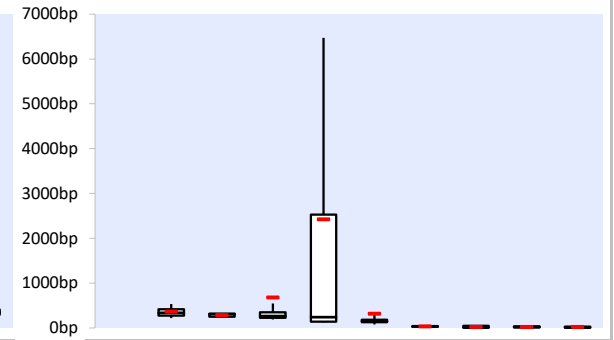
## Infrastructure

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



	Fund of Funds						Direct LP						Evergreen									
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile		168.9		90.0		226.0		443.5		284.3	145.3	174.9	95.5	195.0	235.3	372.5	215.0	113.9	2632.1	126.4	2847.1	252.2
75th %ile		119.0		79.2		226.0		388.5		232.3	140.8	148.5	64.1	97.0	212.4	249.3	128.2	93.3	1105.7	82.8	1234.0	176.1
Median		73.7		40.0		189.4		325.7		191.9	136.2	133.5	63.7	76.9	204.5	219.5	69.8	72.2	165.7	82.0	235.4	149.3
25th %ile		30.2		0.0		176.5		219.6		159.1	134.0	129.0	55.8	51.1	184.8	181.3	57.9	55.2	61.1	72.5	119.0	125.5
10th %ile		24.9		0.0		82.7		151.4		97.2	131.0	118.0	27.8	17.9	161.1	145.7	54.9	33.8	38.7	12.9	93.7	71.0
Average		87.1		45.9		176.1		309.2		188.3	137.7	148.8	61.8	97.6	199.5	246.4	116.4	79.8	1001.2	140.9	1117.6	220.7
Count	0	23	0	23	0	23	0	23	0	23	5	103	5	103	5	103	4	58	4	58	4	58
Avg. assets		122M		122M		122M		122M		122M	3,631M	514M	3,631M	514M	3,631M	514M	3,722M	600M	3,722M	600M	3,722M	600M
Norwegian Government Pension Fund Global																						
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Cost as a % of NAV

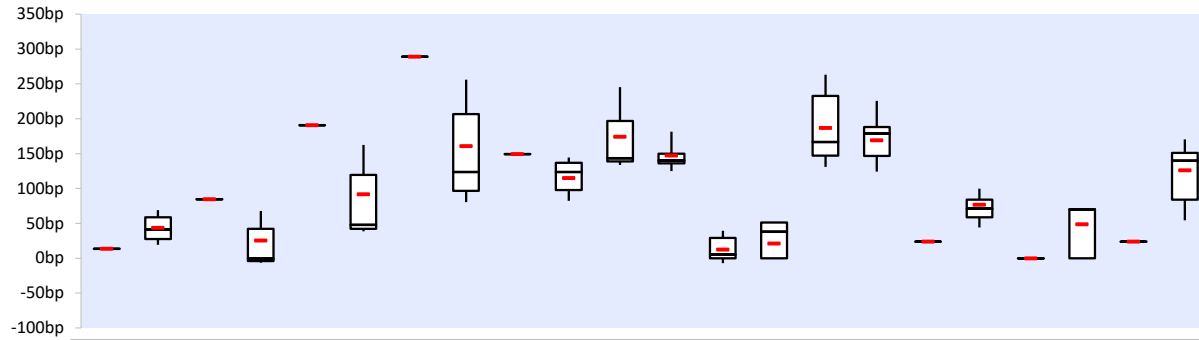


	Fund of Funds		Direct LP		Evergreen		Co-Inv.		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	536.5	324.3	547.4	6471.6	293.9	51.2	55.1	49.4	49.5	
	414.2	321.1	349.1	2528.4	183.4	44.5	47.9	37.3	30.3	
	339.2	311.6	272.0	243.1	154.2	33.5	19.3	21.3	20.2	
	274.6	248.1	226.0	138.3	125.5	22.4	5.1	14.3	6.4	
	219.5	232.8	189.8	120.2	77.9	15.7	1.3	8.4	2.7	
	365.5	286.0	682.4	2423.7	317.6	33.5	26.5	25.7	24.1	
0	23	5	103	4	58	2	23	7	29	
	104M	2,873M	392M	3,254M	554M	1,728M	473M	7,582M	3,710M	
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
	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 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 total cost also includes the internal cost of monitoring and selecting infrastructure investments. The peer average cost of monitoring and selecting was 10.1 bps for LPs and 2.4 bps for external (not LPs).

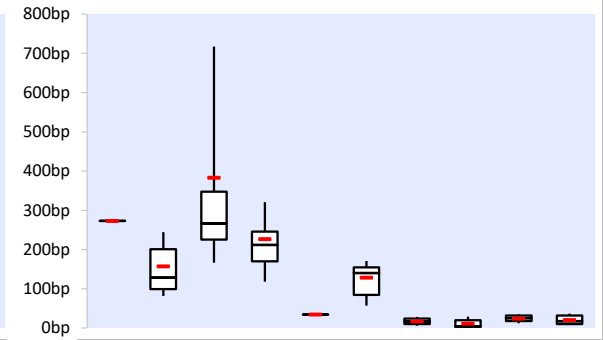
## Natural Resources

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



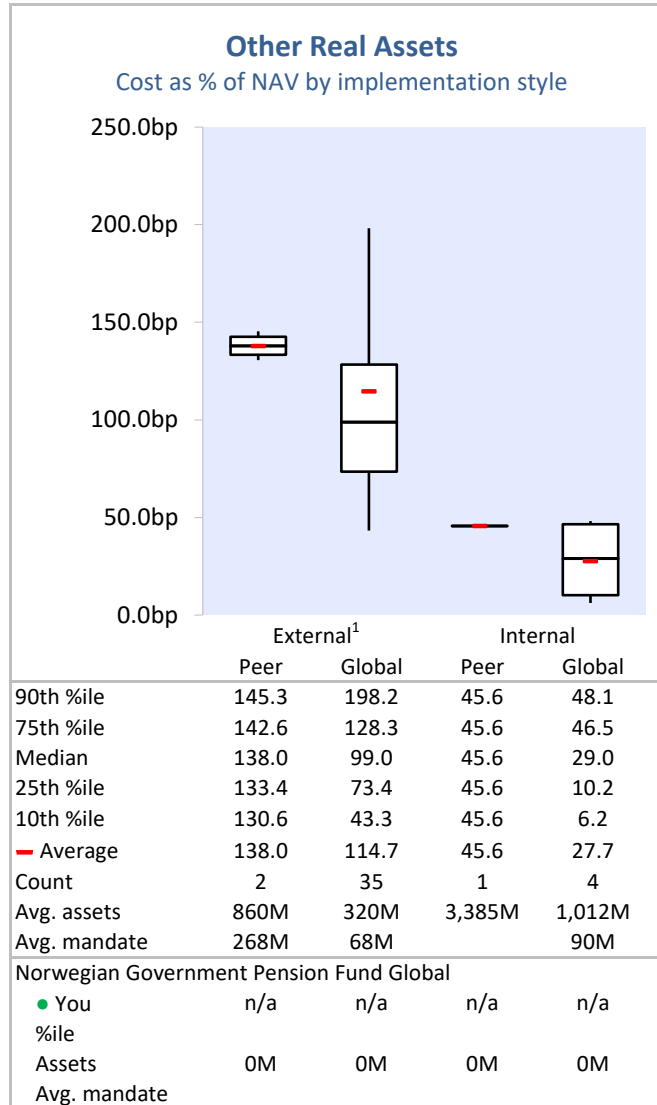
	Fund of Funds										Direct LP						Evergreen					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	13.6	69.0	84.6	67.7	191.0	162.4	289.2	256.1	149.6	144.4	245.5	181.4	39.6	52.0	263.1	225.6	23.8	99.8	0.0	70.0	23.8	170.4
75th %ile	13.6	58.5	84.6	42.3	191.0	119.5	289.2	206.6	149.6	136.7	197.0	149.8	29.1	51.2	232.9	188.1	23.8	84.0	0.0	70.0	23.8	150.9
Median	13.6	41.2	84.6	0.0	191.0	48.0	289.2	123.9	149.6	123.9	143.4	140.3	5.4	38.4	166.7	179.2	23.8	71.4	0.0	70.0	23.8	140.0
25th %ile	13.6	27.4	84.6	-4.1	191.0	42.2	289.2	96.7	149.6	97.8	138.9	136.0	0.0	0.0	147.2	146.5	23.8	58.6	0.0	0.0	23.8	84.0
10th %ile	13.6	19.1	84.6	-6.5	191.0	38.7	289.2	80.3	149.6	82.2	133.8	124.9	-7.0	0.0	130.8	124.3	23.8	44.0	0.0	0.0	23.8	54.4
Average	13.6	43.6	84.6	25.5	191.0	91.8	289.2	160.8	149.6	115.1	174.2	147.6	12.6	21.4	186.9	169.0	23.8	77.0	0.0	49.0	23.8	126.0
Count	1	3	1	3	1	3	1	3	1	3	6	43	6	43	6	43	1	24	1	24	1	24
Avg. assets	20M	36M	20M	36M	20M	36M	20M	36M	20M	36M	1,775M	600M	1,775M	600M	1,775M	600M	178M	156M	178M	156M	178M	156M
Norwegian Government Pension Fund Global																						
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Cost as a % of NAV



	Fund of Funds		Direct LP		Evergreen		Co-Inv.		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	273.4	244.4	717.4	320.5	34.6	170.4	28.2	29.2	34.7	36.8
75th %ile	273.4	200.9	347.4	245.6	34.6	154.2	24.1	20.1	31.4	31.5
Median	273.4	128.4	266.6	211.8	34.6	140.4	17.1	4.0	25.4	17.4
25th %ile	273.4	98.9	225.5	169.7	34.6	84.5	10.2	2.9	17.9	10.1
10th %ile	273.4	81.2	166.6	117.8	34.6	57.0	6.0	1.5	12.0	8.1
Average	273.4	157.0	383.5	226.8	34.6	128.5	17.1	11.6	23.9	20.6
Count	1	3	6	43	1	24	2	7	4	11
Avg. assets	21M	37M	1,233M	444M	123M	150M	1,193M	403M	2,106M	1,845M
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 136 bps (on amount fees are based on) for underlying management fees and 55 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting natural resource investments. The peer average cost of monitoring and selecting was 1.2 bps for fund of funds and 7.8 bps for LPs and 7.0 bps for external (not LPs).



#### 1. Breakdown of external fees

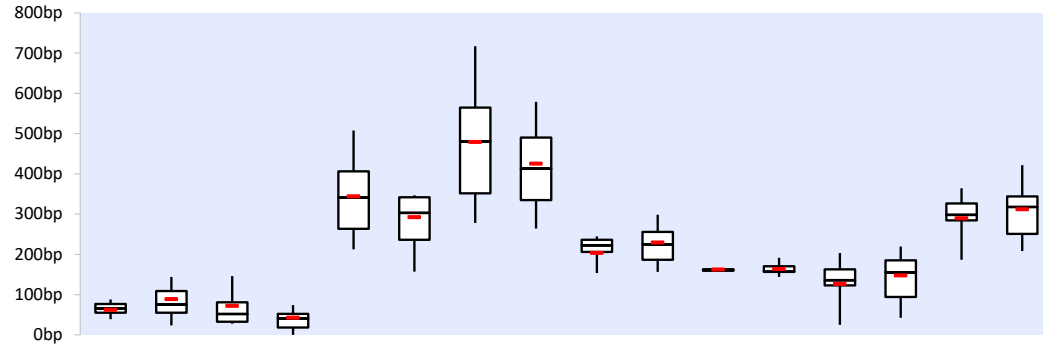
	Your Plan	Peer Average	Global Average
Base fees	n/a	132.0	97.3
Internal and other	<u>n/a</u>	<u>6.0</u>	<u>35.8</u>
Total*	n/a	138.0	114.7
Performance fees**	n/a	-172.1	44.3

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

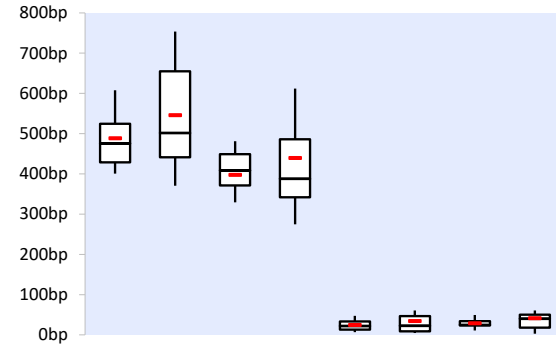
\*\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is -172.1 bps for peers (2 funds) and 44.3 bps for Global participants (35 funds).

## Diversified Private Equity

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



Cost as a % of NAV

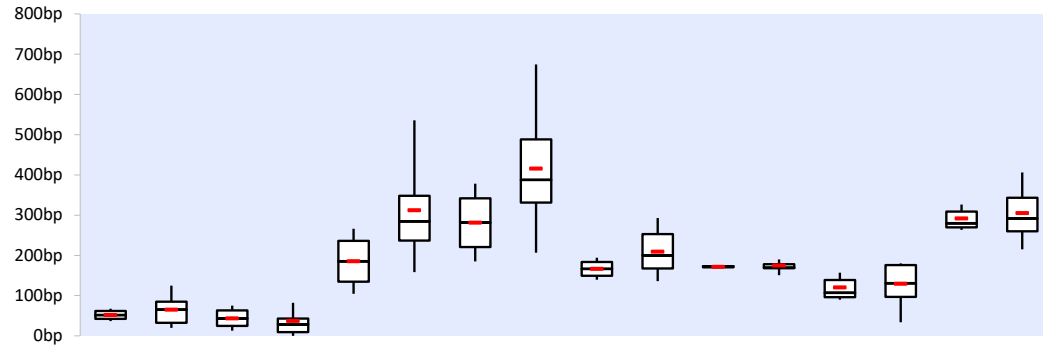


	Fund of Funds										Direct LP					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	87.7	143.9	146.0	74.2	507.8	346.7	717.3	579.1	244.7	298.5	166.3	191.8	203.2	219.4	364.6	421.7
75th %ile	76.4	108.6	80.6	52.0	406.5	342.0	564.8	490.1	236.0	255.6	162.9	170.2	162.7	185.0	326.8	343.7
Median	65.7	76.0	52.0	41.4	342.0	303.6	480.7	413.6	222.7	225.1	162.0	157.0	135.8	155.7	298.7	318.0
25th %ile	55.2	55.3	32.4	18.2	263.8	236.2	351.9	334.6	206.4	186.9	159.2	157.0	122.7	94.2	284.7	251.2
10th %ile	39.1	23.2	27.9	0.0	212.1	157.0	278.2	264.0	153.7	156.1	158.6	143.7	24.7	42.6	186.8	208.1
Average	62.8	89.5	72.3	43.4	344.9	293.2	480.1	426.2	204.3	229.9	162.6	164.0	127.3	148.1	289.9	312.2
Count	7	125	7	125	7	125	7	125	7	125	9	163	9	163	9	163
Avg. assets	2,627M	461M	2,627M	461M	2,627M	461M	2,627M	461M	2,627M	461M	11,253M	1,945M	11,253M	1,945M	11,253M	1,945M
Norwegian Government Pension Fund Global																
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

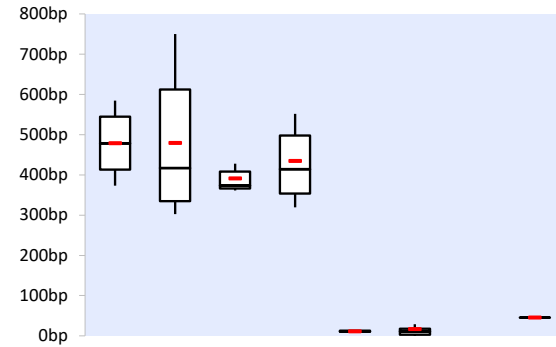
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 157 bps (on amount fees are based on) for underlying management fees and 185 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 5.3 bps for fund of funds.

## LBO

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



Cost as a % of NAV



	Fund of Funds										Direct LP					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	67.3	124.9	75.0	82.3	266.2	535.9	377.8	674.4	193.9	292.9	173.3	190.1	157.3	180.0	326.3	406.1
75th %ile	61.5	84.6	63.4	42.9	235.9	348.0	341.6	488.2	183.7	252.6	173.2	177.7	138.5	175.6	309.0	343.3
Median	51.9	65.3	44.0	28.9	185.4	285.0	281.3	388.0	166.7	200.7	172.9	169.3	107.1	131.1	280.0	292.3
25th %ile	42.3	32.7	24.6	9.3	134.9	236.7	221.0	331.0	149.6	167.8	170.4	168.0	96.3	96.7	269.5	260.1
10th %ile	36.6	19.5	12.9	0.0	104.6	158.2	184.8	206.9	139.4	135.7	169.0	150.4	89.9	33.5	263.2	214.8
Average	51.9	65.6	44.0	37.5	185.4	312.5	281.3	415.7	166.7	209.5	171.4	175.2	120.9	129.8	292.3	305.0
Count	2	16	2	16	2	16	2	16	2	16	3	38	3	38	3	38
Avg. assets	1,516M	331M	1,516M	331M	1,516M	331M	1,516M	331M	1,516M	331M	16,984M	2,537M	16,984M	2,537M	16,984M	2,537M
Norwegian Government Pension Fund Global																
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

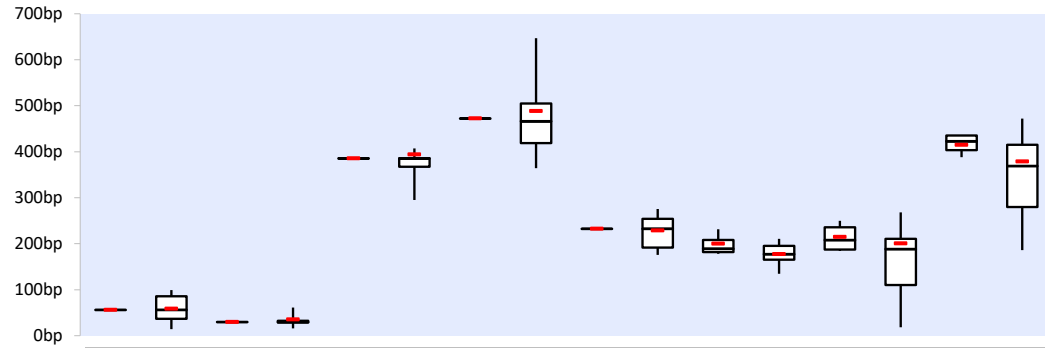
  

	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	584.4	750.0	428.1	551.4	13.5	28.9		45.5
75th %ile	544.8	612.2	407.9	498.1	12.7	17.4		45.5
Median	478.8	417.5	374.3	414.5	11.5	11.5		45.5
25th %ile	412.9	334.5	366.1	353.9	10.2	2.9		45.5
10th %ile	373.3	302.4	361.2	319.3	9.5	0.0		45.5
Average	478.8	479.9	391.3	434.9	11.5	17.3		45.5
Count	2	16	3	38	2	10	0	1
Avg. assets	793M	225M	11,489M	1,808M	1,307M	571M		211M

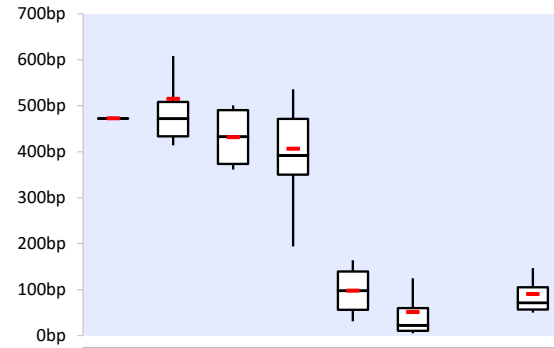
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 115 bps (on amount fees are based on) for underlying management fees and 115 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 5.8 bps for fund of funds.

## Venture Capital

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



Cost as a % of NAV



	Fund of Funds										Direct LP					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	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	56.4	99.3	30.0	61.4	386.0	407.4	472.4	646.8	232.4	275.3	231.4	210.5	249.7	267.9	435.6	471.9
75th %ile	56.4	85.6	30.0	32.3	386.0	386.0	472.4	504.9	232.4	253.8	208.0	195.2	235.7	210.6	435.2	415.0
Median	56.4	56.4	30.0	30.0	386.0	386.0	472.4	466.4	232.4	232.4	189.4	177.4	208.4	188.8	423.3	369.1
25th %ile	56.4	36.9	30.0	28.6	386.0	367.1	472.4	419.0	232.4	191.5	181.8	165.1	187.3	110.0	403.2	279.7
10th %ile	56.4	14.2	30.0	15.6	386.0	295.4	472.4	364.4	232.4	176.0	178.3	134.4	184.6	18.3	387.9	186.2
Average	56.4	58.5	30.0	35.7	386.0	394.3	472.4	488.5	232.4	228.9	200.5	177.8	214.6	201.0	415.1	378.8
Count	1	21	1	21	1	21	1	21	1	21	4	43	4	43	4	43
Avg. assets	119M	213M	119M	213M	119M	213M	119M	213M	119M	213M	2,241M	458M	2,241M	458M	2,241M	458M
Norwegian Government Pension Fund Global																
● 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
%ile																
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

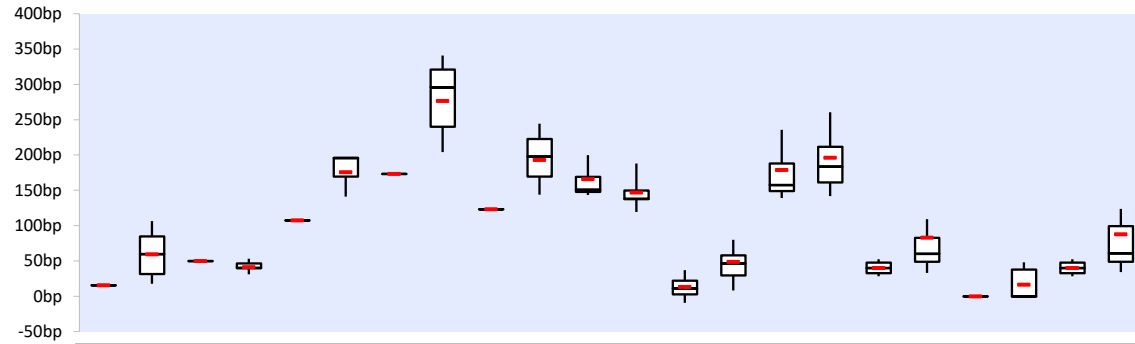
Fund of Funds		Direct LP		Co-Investment		Internal	
Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total	
Peer	Global	Peer	Global	Peer	Global	Peer	Global
472.4	608.1	500.7	535.8	164.2	125.1		146.9
472.4	508.2	490.5	471.2	139.3	59.9		105.5
472.4	472.2	432.6	392.1	97.7	23.0		71.6
472.4	433.2	373.5	350.5	56.2	10.6		56.9
472.4	414.1	361.0	194.1	31.2	5.3		50.1
472.4	514.7	431.4	406.4	97.7	51.1		90.8
1	21	4	43	2	6	0	4
119M	213M	1,883M	393M	30M	54M		42M
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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 176 bps (on amount fees are based on) for underlying management fees and 210 bps (on NAV) for underlying performance fees were used.

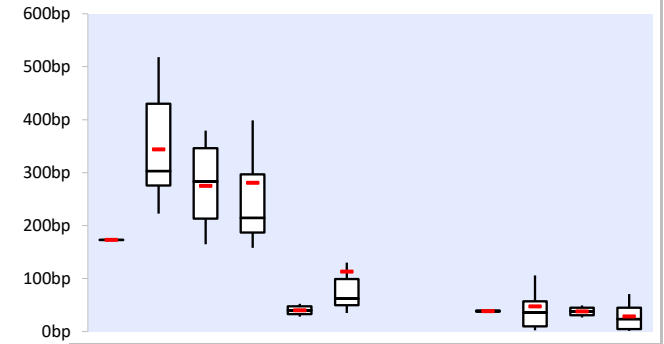
## Private Credit

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



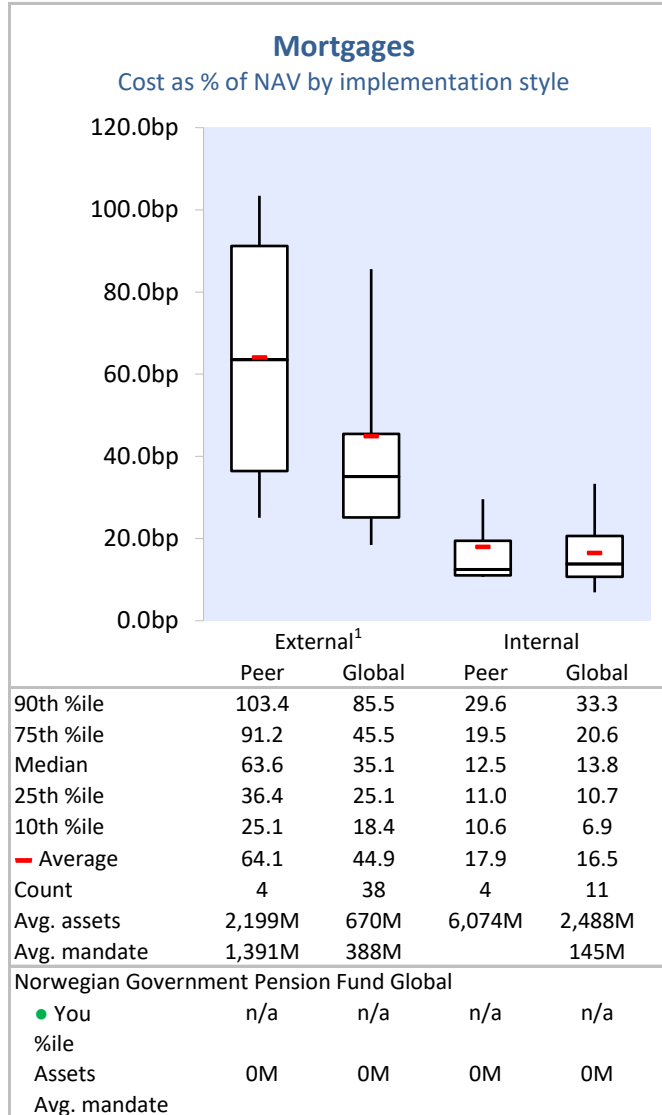
	Fund of Funds										Direct LP						Evergreen					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	15.7	106.3	50.2	53.3	107.6	196.0	173.4	340.8	123.3	244.3	199.7	188.1	37.2	80.0	235.6	260.6	52.2	109.3	0.0	48.0	52.2	123.7
75th %ile	15.7	84.7	50.2	46.5	107.6	196.0	173.4	320.9	123.3	222.7	169.0	149.8	22.0	58.0	187.8	211.6	47.8	82.9	0.0	37.9	47.8	99.4
Median	15.7	60.0	50.2	40.0	107.6	196.0	173.4	296.0	123.3	198.0	151.0	138.0	11.4	46.6	157.8	183.6	40.3	60.2	0.0	0.0	40.3	61.0
25th %ile	15.7	31.6	50.2	40.0	107.6	169.5	173.4	239.9	123.3	169.6	147.7	137.9	2.6	29.6	148.9	161.2	32.9	48.6	0.0	0.0	32.9	48.6
10th %ile	15.7	17.8	50.2	31.0	107.6	141.0	173.4	204.1	123.3	143.6	143.5	119.3	-9.3	8.2	139.3	142.0	28.4	33.3	0.0	0.0	28.4	34.4
Average	15.7	59.5	50.2	41.2	107.6	175.8	173.4	276.5	123.3	193.1	165.7	147.2	13.2	49.0	178.9	196.1	40.3	83.0	0.0	16.5	40.3	88.0
Count	1	7	1	7	1	7	1	7	1	7	4	85	4	85	4	85	2	60	1	18	2	60
Avg. assets	77M	111M	77M	111M	77M	111M	77M	111M	77M	111M	2,887M	589M	2,887M	589M	2,887M	589M	1,844M	365M	3,688M	1,216M	1,844M	365M
Norwegian Government Pension Fund Global																						
● You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Cost as a % of NAV



	Fund of Funds		Direct LP		Evergreen		Oper. Sub.		Co-Inv.		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	173.4	518.1	379.2	398.6	52.2	130.5			40.3	106.0	49.3	70.7
75th %ile	173.4	430.1	346.2	296.5	47.8	99.4			39.7	56.9	45.1	45.0
Median	173.4	303.2	283.8	214.7	40.3	62.5			38.6	36.3	38.1	23.8
25th %ile	173.4	275.6	213.0	187.1	32.9	49.7			37.5	10.0	31.0	4.7
10th %ile	173.4	222.5	164.9	158.1	28.4	34.9			36.8	2.7	26.8	1.2
Average	173.4	344.2	275.4	281.2	40.3	113.4			38.6	47.8	38.1	28.8
Count	1	7	4	85	2	60	0	0	2	9	2	20
Avg. assets	77M	103M	2,058M	461M	1,844M	353M			953M	297M	5,261M	1,200M
● 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

- 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 108 bps (on amount fees are based on) for underlying management fees and 0 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 15.7 bps for fund of funds, 7.4 bps for LPs and 5.1 bps for external (not LPs).



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	58.8	40.3
Internal and other	<u>n/a</u>	<u>5.3</u>	<u>4.4</u>
Total*	n/a	64.1	44.9
Performance fees**	n/a	0.0	6.2

\* 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 value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is -172.1 bps for peers (2 funds) and 44.3 bps for Global participants (35 funds).

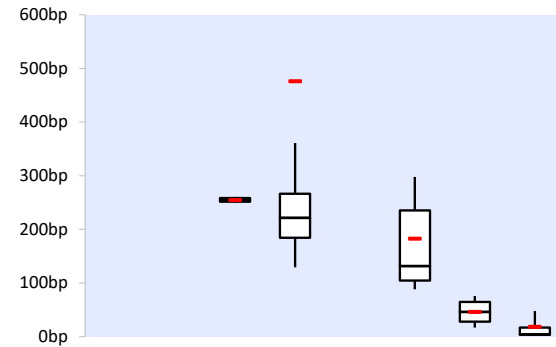


## Other Private Equity

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

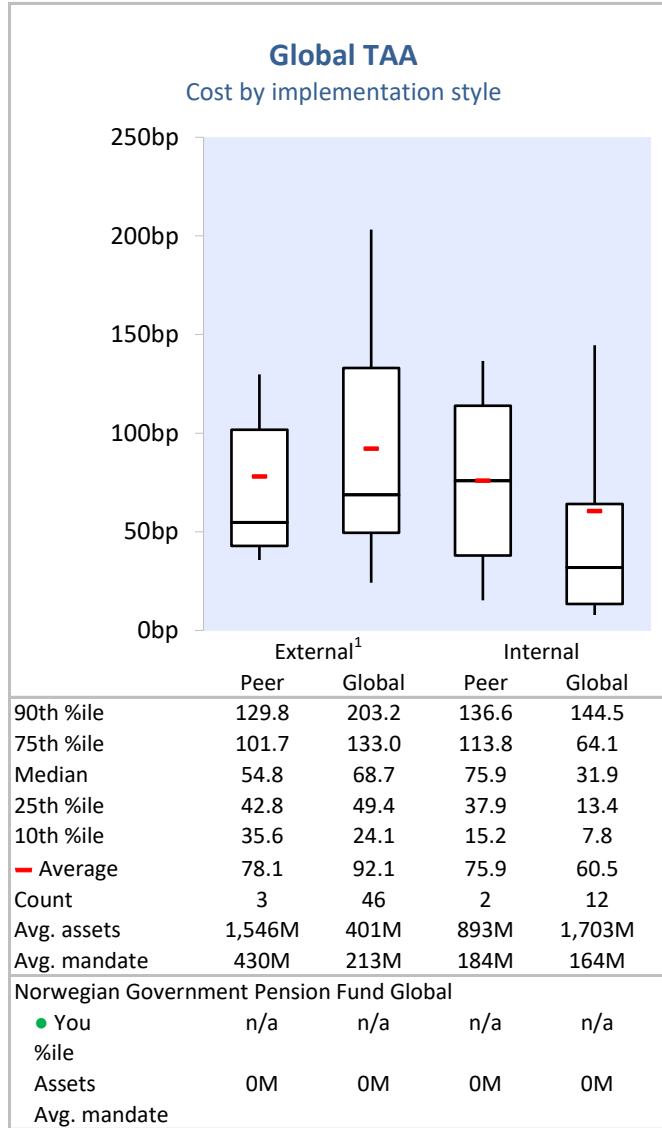


Cost as a % of NAV



	Fund of Funds										Direct LP					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	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																
Norwegian Government Pension Fund Global																
● You																
%ile																
Assets																

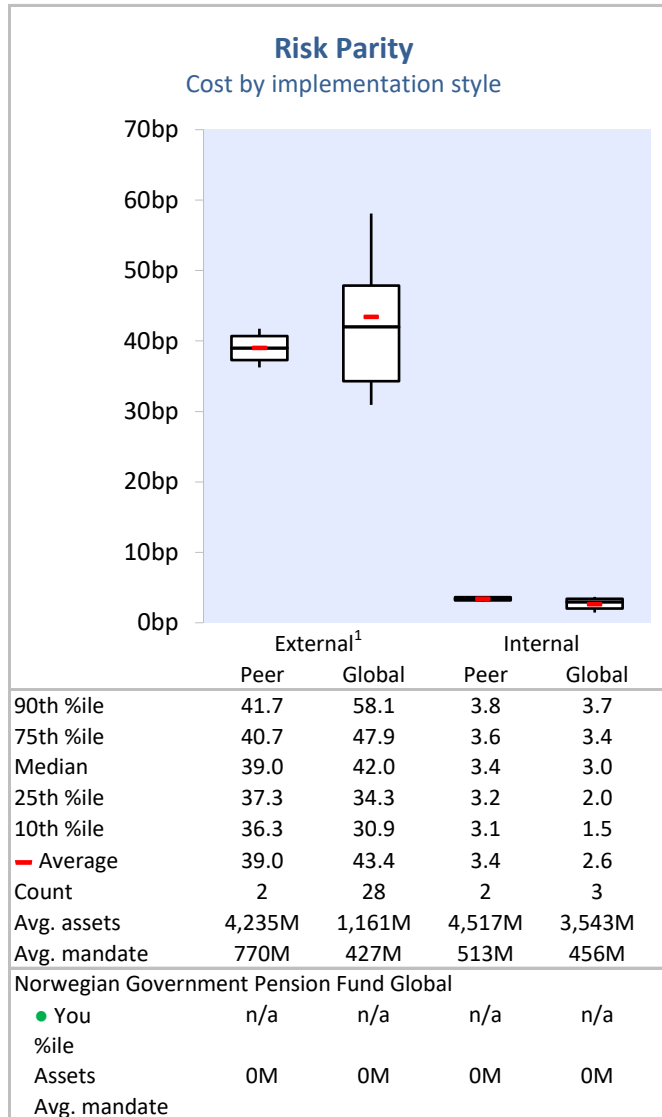
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.  
 2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund 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	73.8	80.8
Internal and other	<u>n/a</u>	<u>3.5</u>	<u>14.2</u>
Performance fees	n/a	1.2	9.9
Total*	n/a	78.1	92.1

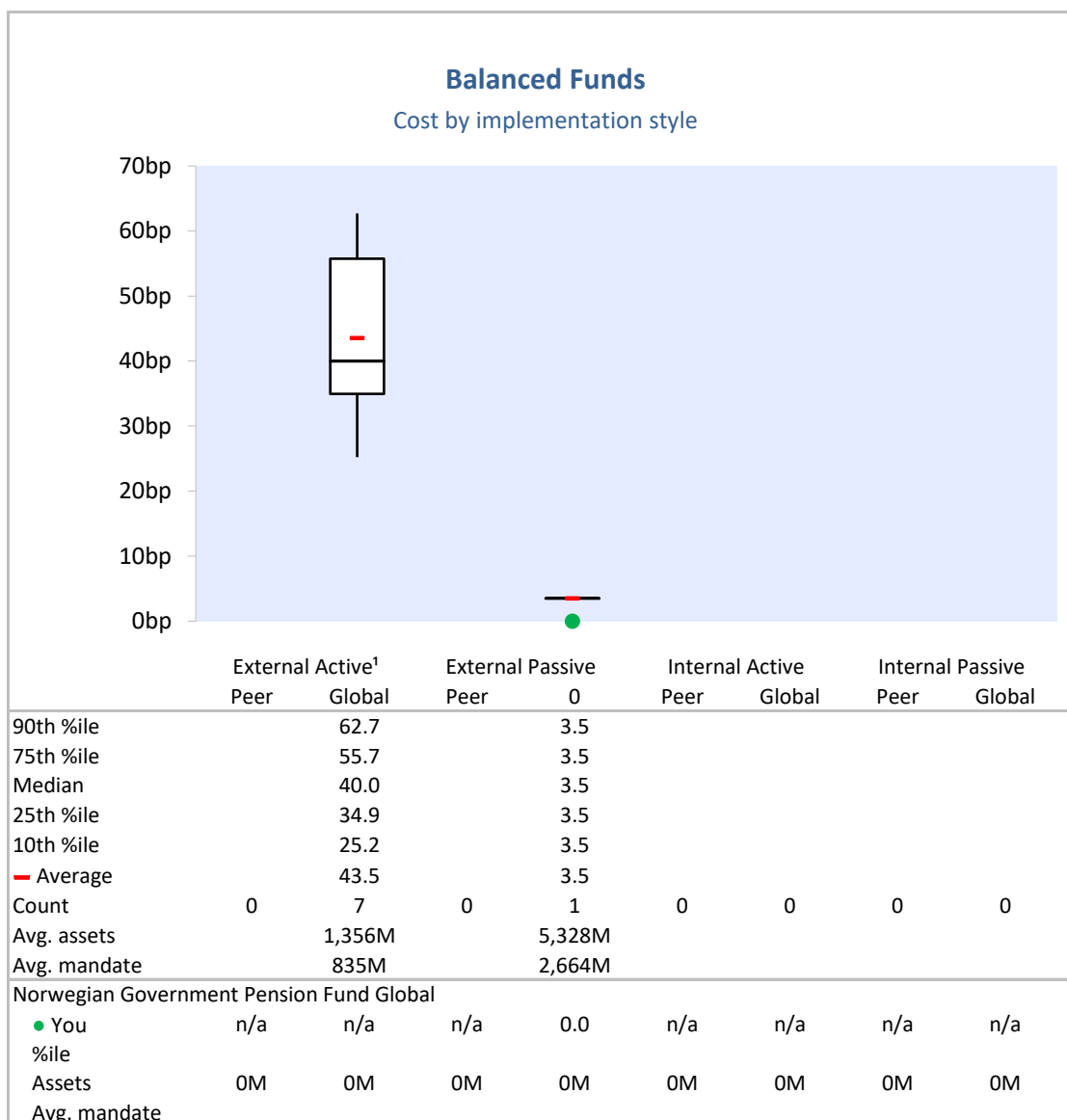
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 1.2 bps for peers (2 funds) and 9.9 bps for Global participants (27 funds).



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	35.1	40.2
Internal and other	<u>n/a</u>	<u>1.9</u>	<u>3.5</u>
Performance fees	n/a	2.0	2.9
Total*	n/a	39.0	43.4

\* 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 2.0 bps for peers (2 funds) and 2.9 bps for Global participants (15 funds).



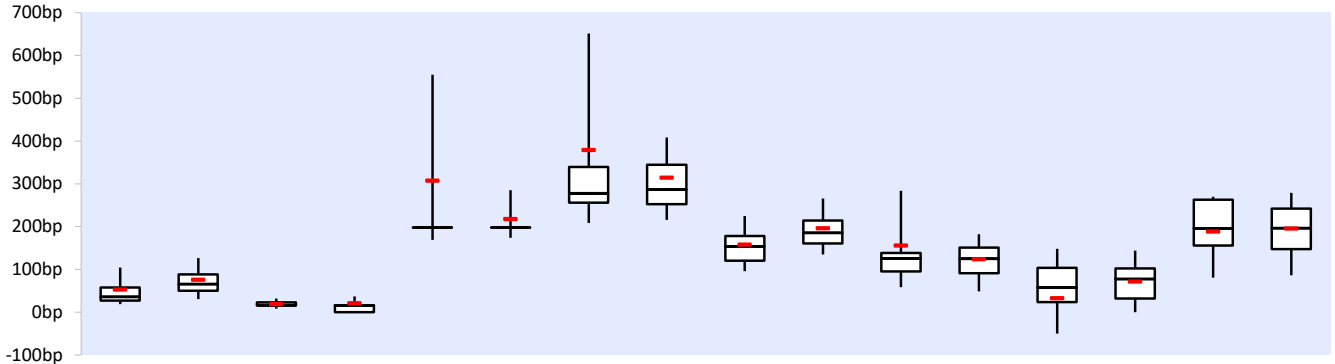
#### 1. Breakdown of external fees

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

\* 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 0.0 bps for Global participants (4 funds).

## Hedge Funds

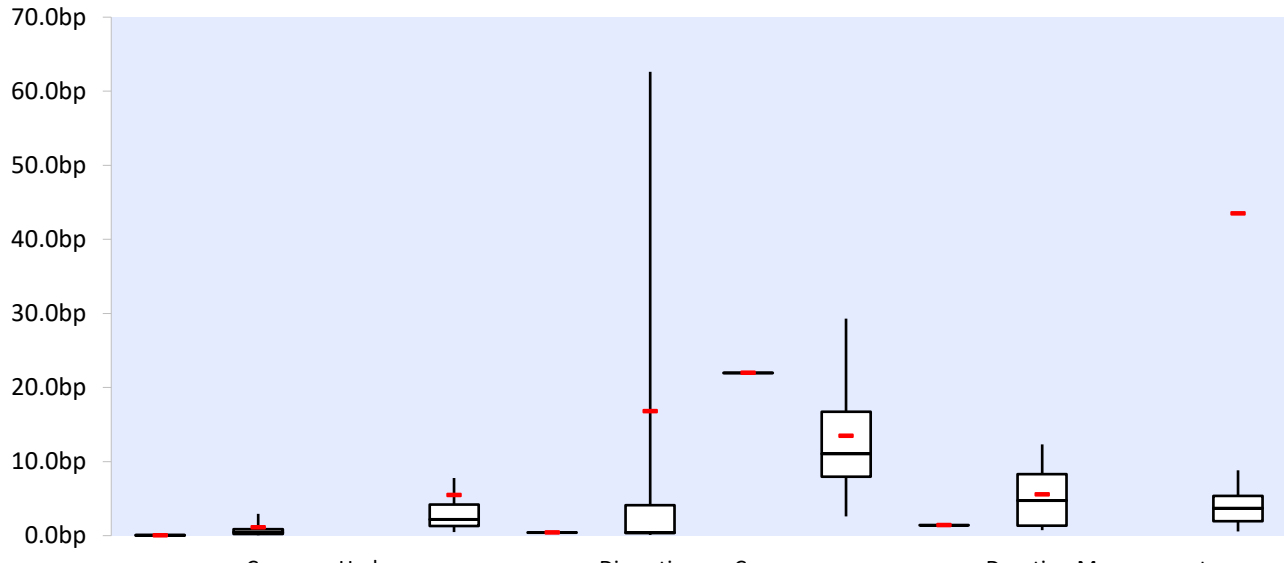
### Cost by implementation style



	Fund of Funds										External Direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. and perf. <sup>1</sup>		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>2</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	104.5	126.8	32.1	36.5	554.9	285.2	651.2	408.5	224.5	265.5	283.5	182.0	148.0	144.2	269.6	279.0
75th %ile	57.7	88.6	22.9	16.0	198.0	198.0	339.7	344.5	177.7	214.4	138.1	150.8	103.6	102.3	263.0	242.3
Median	35.9	66.0	16.5	16.0	198.0	198.0	278.0	287.2	153.8	186.0	125.8	124.9	58.0	78.0	196.1	196.6
25th %ile	27.3	49.9	16.0	0.0	198.0	198.0	256.0	252.7	119.9	160.7	95.4	91.4	23.7	32.0	156.1	147.6
10th %ile	18.8	30.6	8.0	0.0	169.2	174.2	208.9	215.6	95.6	134.6	58.5	48.8	-50.0	0.0	80.6	86.5
— Average	53.1	76.1	18.9	20.5	307.4	217.6	379.3	314.2	158.0	195.8	155.7	123.8	32.8	71.3	188.5	195.1
Count	6	73	6	73	6	73	6	73	6	73	9	115	9	115	9	115
Avg. assets	3,664M	617M	3,664M	617M	3,664M	617M	3,664M	617M	3,664M	617M	6,121M	1,645M	6,121M	1,645M	6,121M	1,645M
Norwegian Government Pension Fund Global																
● 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
%ile																
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

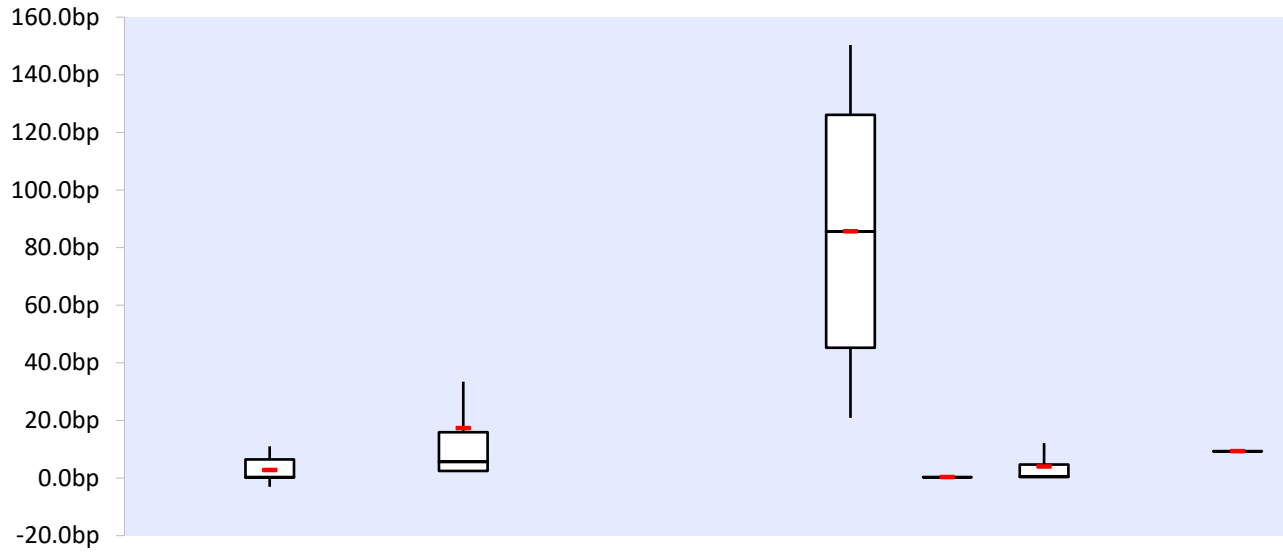
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 120 bps (on NAV) for underlying management fees and 78 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 10.8 bps for fund of

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



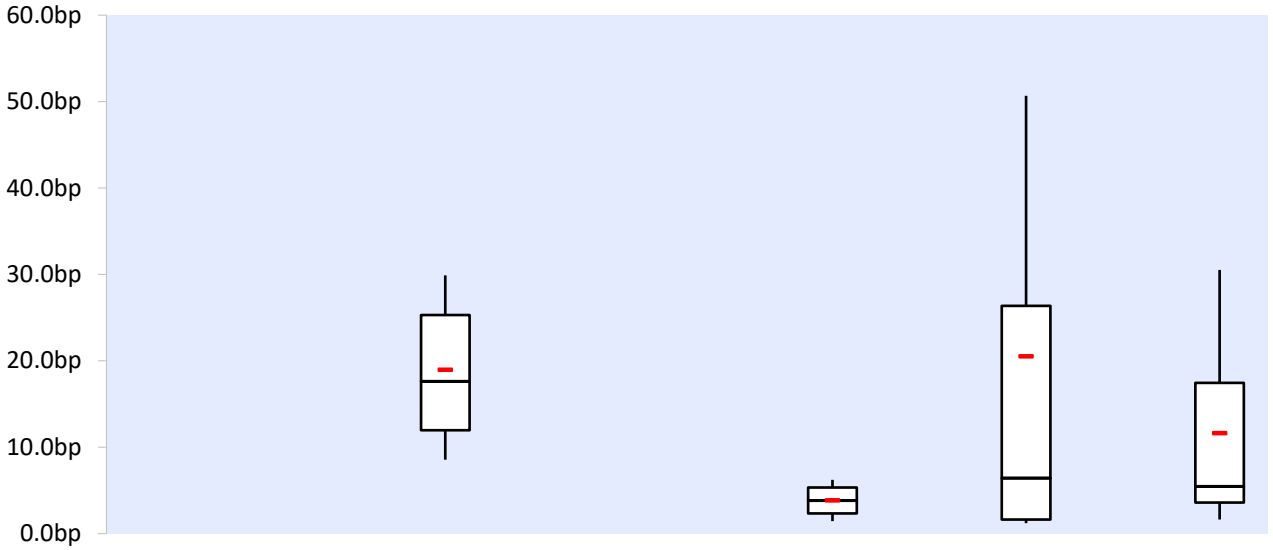
	Currency Hedge				Discretionary Currency				Duration Management			
	Internal		External		Internal		External		Internal		External	
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	0.1	3.0		7.8	0.4	62.6	22.0	29.3	1.4	12.3		8.8
75th %ile	0.1	0.9		4.2	0.4	4.1	22.0	16.7	1.4	8.3		5.4
Median	0.1	0.5		2.2	0.4	0.4	22.0	11.1	1.4	4.7		3.7
25th %ile	0.0	0.2		1.3	0.4	0.4	22.0	7.9	1.4	1.3		1.9
10th %ile	0.0	0.1		0.5	0.4	0.1	22.0	2.6	1.4	0.7		0.6
— Average	0.1	1.1		5.5	0.4	16.8	22.0	13.5	1.4	5.6		43.5
Count	2	20	0	34	1	9	1	16	1	8	0	16
Avg. notional	35,257M	303,025M		2,514M	24,879M	205,613M	1,786M	1,260M	13,804M	3,418M		2,839M
Norwegian Government Pension Fund Global												
● 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
%ile												
Avg. notional												

**Overlays: passive beta/rebalancing, global TAA, policy tilt TAA**  
 Cost by implementation style



	Passive Beta/Rebalancing				Global TAA				Policy Tilt TAA			
	Internal		External		Internal		External		Internal		External	
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile		11.1		33.4				150.4	0.4	12.1		9.3
75th %ile		6.4		15.9				126.1	0.4	4.7		9.3
Median		0.3		5.7				85.7	0.4	0.6		9.3
25th %ile		0.2		2.5				45.2	0.4	0.4		9.3
10th %ile		-3.0		2.2				20.9	0.4	0.2		9.3
— Average		2.8		17.4				85.7	0.4	4.1		9.3
Count	0	9	0	31	0	0	0	2	1	8	0	1
Avg. notional		10,840M		1,231M				778M	175,129M	38,596M		46M
Norwegian Government Pension Fund Global												
● 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
%ile												
Avg. notional												

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



	Commodity				Long/ Short				Other							
	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				29.9				6.2				50.7				30.5
75th %ile				25.3				5.3				26.4				17.5
Median				17.6				3.8				6.4				5.5
25th %ile				12.0				2.4				1.6				3.6
10th %ile				8.6				1.5				1.2				1.6
— Average				19.0				3.8				20.5				11.6
Count	0	0	0	3	0	0	0	2	0	9	0	19				
Avg. notional				803M				3,987M		2,613M		616M				
Norwegian Government Pension Fund Global																
● 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				
%ile																
Avg. notional																

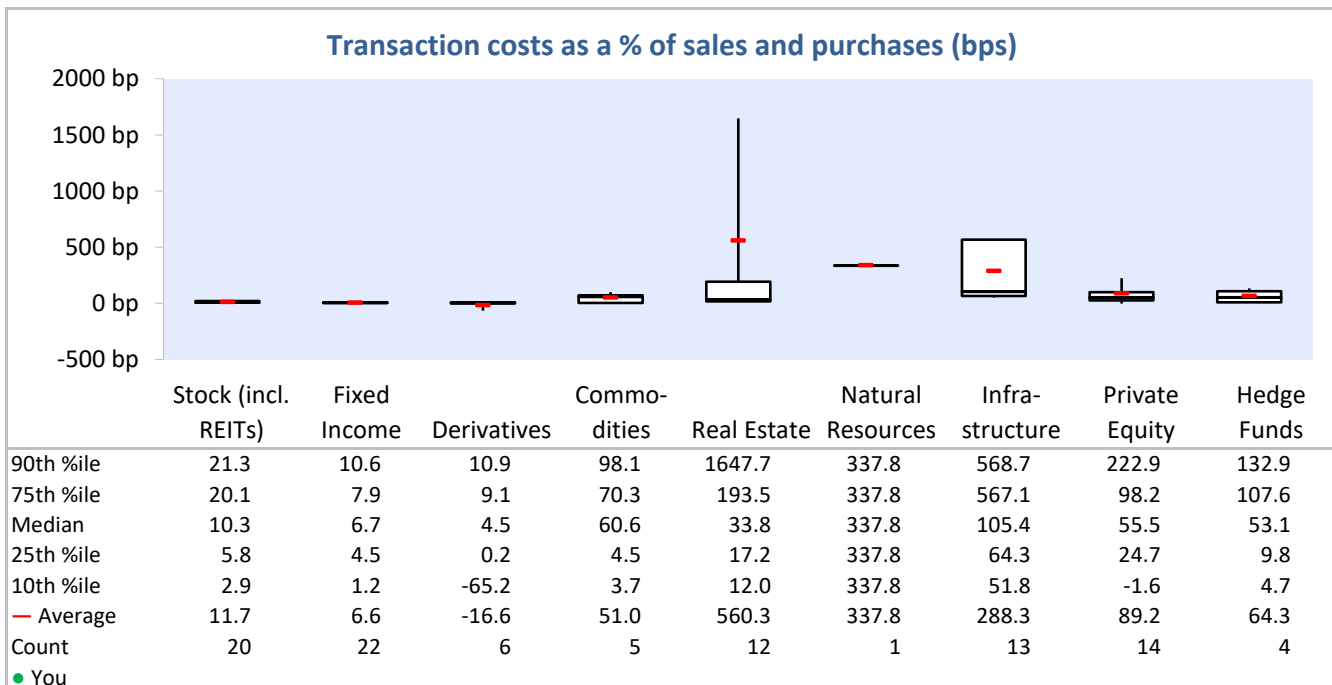
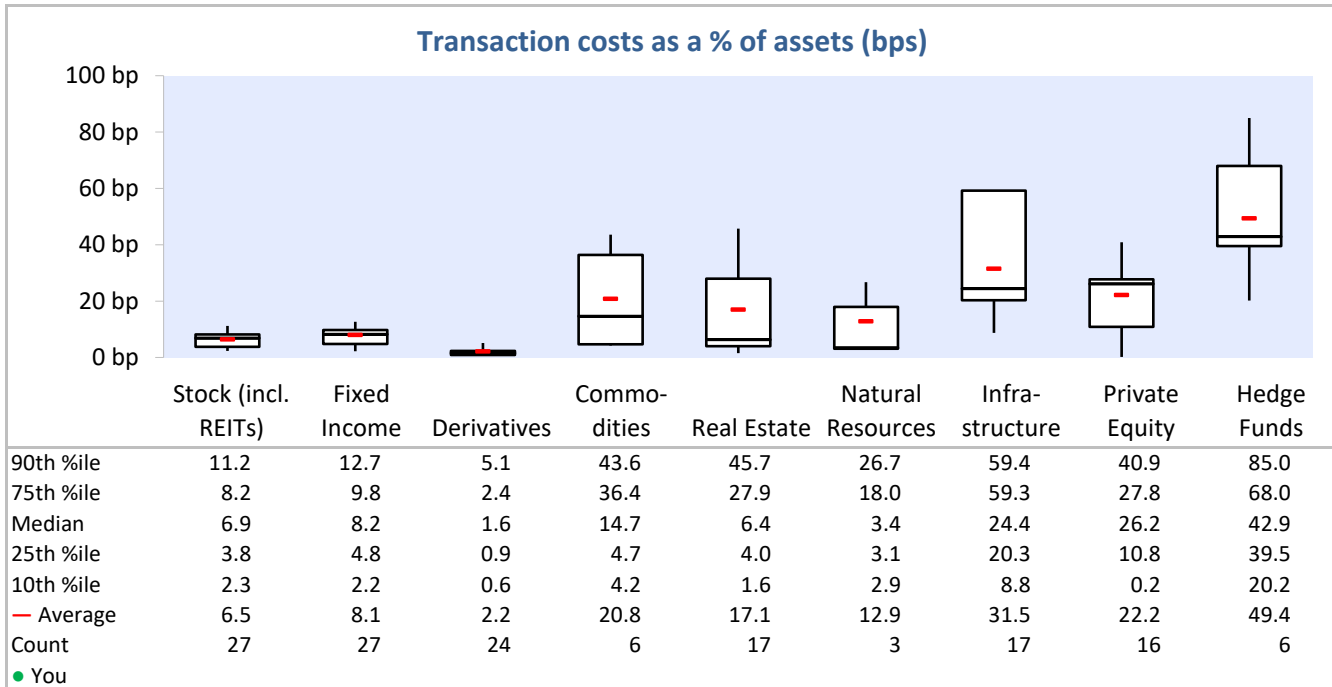


## Transaction costs

Throughout this report transaction costs are excluded as at this point not enough plans are able to provide consistent data. However, efforts to obtain these costs is increasing globally. This section provides some of the insights obtained from the data that was collected from the transaction cost survey.

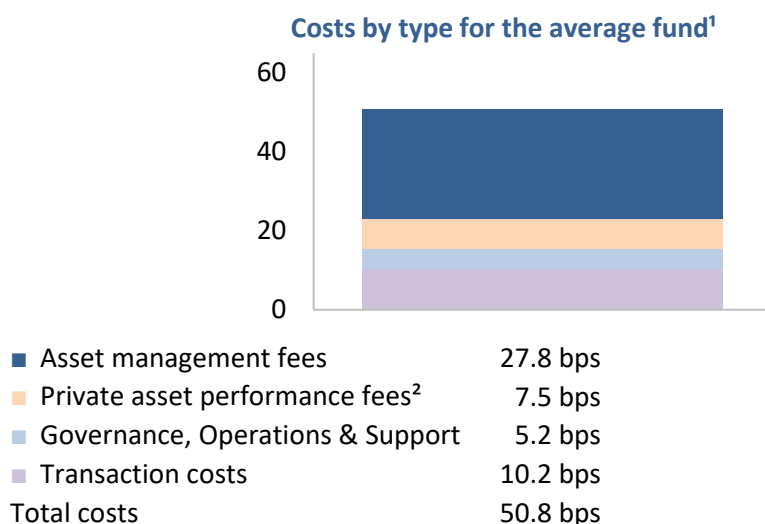
### Variance in transaction costs by asset class

Variance in reported cost for public equity and fixed income is smaller compared to the private asset classes. This can in part be explained by differences in transaction volumes.



## An estimate of total portfolio transaction costs for the average fund.

Transaction costs are estimated to be 10.2 bps and account for 20% of the average fund's total investment costs.



### Calculation of transaction costs for the average fund.

Asset class	Benchmark	Average	Impact
	cost <sup>3</sup>	holdings	
	<i>C</i>	<i>P</i>	<i>I = C x P</i>
Stock (incl. REITs)	6.9 bps	31%	2.1 bps
Fixed Income	8.2 bps	53%	4.4 bps
Commodities	14.7 bps	1%	0.1 bps
Real Estate	21.6 bps	6%	1.2 bps
Natural Resources	32.6 bps	0%	0.1 bps
Infrastructure	24.5 bps	2%	0.5 bps
Private Equity	27.0 bps	3%	0.8 bps
Hedge Funds	45.3 bps	1%	0.4 bps
<hr/>			
Total (ex. derivatives)		97%	9.6 bps
Derivatives	1.6 bps	42%	0.7 bps
<hr/>			
Total transaction costs		139%	10.2 bps

1. Total investment cost is calculated as the sum of the median fees paid for the different cost types by the funds that participated in the transaction cost survey.

2. Includes performance fees for real estate, infrastructure, natural resources, private credit and private equity. Performance fees for the public market asset classes, hedge funds and mortgages are included with asset management fees.

3. Benchmark cost is based on median costs of all transaction survey participants. For private assets medians are adjusted to exclude funds with unusually low transaction costs (i.e., lower than 5 bps).

## Your total portfolio transaction costs

Your transaction costs can be estimated based on your asset mix and the median universe costs and are estimated to account for 62% of your total investment costs (excl. private asset performance fees). Interpret this number with caution. Funds are working to collect more complete and comparable transaction cost data.

### Your estimated transaction costs as part of your total investment costs



	You
■ Asset management fees	3.1 bps
■ Private asset performance fees <sup>1</sup>	Excluded
■ Governance, Operations & Support	1.6 bps
■ Transaction costs	7.7 bps
<b>Total costs</b>	<b>12.3 bps</b>

### Calculation of your estimated transaction costs.

Asset class	Benchmark cost <sup>2</sup>	Your holdings	Impact
	<i>C</i>	<i>P</i>	<i>I = C x P</i>
Stock (incl. REITs)	6.9 bps	69%	4.8 bps
Fixed Income	8.2 bps	28%	2.3 bps
Commodities	14.7 bps	0%	0.0 bps
Real Estate	21.6 bps	3%	0.6 bps
Natural Resources	32.6 bps	0%	0.0 bps
Infrastructure	24.5 bps	0%	0.0 bps
Private Equity	27.0 bps	0%	0.0 bps
Hedge Funds	45.3 bps	0%	0.0 bps
<b>Total (excl. derivatives)</b>		<b>100%</b>	<b>7.7 bps</b>
Derivatives	1.6 bps		n/a
<b>Total transaction costs</b>		<b>100%</b>	<b>7.7 bps</b>

1. Includes performance fees for real estate, infrastructure, natural resources, private credit and private equity. Performance fees for the public market asset classes, hedge funds and mortgages are included with asset management fees.

2. Benchmark cost is based on median costs of all transaction survey participants. For private assets medians are adjusted to exclude funds with unusually low transaction costs (i.e., lower than 5 bps).

# 7

## Appendices

Appendix A - Data Summary

Appendix B - Currency conversion

Appendix C - Data quality

Appendix D - Glossary of terms

## Appendix A - Data Summary

### Norwegian Government Pension Fund Global

Plan Info	2019	2018	2017	2016	2015
Survey Preparer	Peter Christian	Peter Christian	Peter Christian	Peter Christian	Peter Christian
Additional Contact	Bonne Marie Julie Belck-Olsen	Bonne Marie Julie Belck-Olsen	Bonne Marie Julie Belck-Olsen	Bonne Marie Julie Belck-Olsen	Bonne Marie Julie Belck-Olsen
Type of fund (corporate, public, other)	Public	Public	Public	Public	Public
Total fund size (€mils) as at December 31	1,022,743.8	834,042.8	864,249.0	827,241.0	777,429.0
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Average	Average	Average
Total return for year ended	19.95%	-6.12%	13.66%	6.92%	2.74%
Is the return net or gross?	Gross	Gross	Gross	Gross	Gross
Total fund policy or benchmark return	19.72%	-5.82%	12.96%	6.78%	2.30%

Ancillary Data	2019	2018	2017	2016	2015
What is your hedging policy for: Foreign non-U.S. Holdings?					
What were your actuarial fees in 000s?	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 % 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

Norwegian Government Pension Fund Global

Asset Class	Year	Policy Weight	Benchmark	
			Description	Return
Stock - Europe	2019		Custom	22.7
	2018		Custom	-13.7
	2017		Custom	25.6
	2016		Your Stock: Europe benchmark	3.8
Stock - Emerging	2019		Custom	15.0
	2018		Custom	-14.7
	2017		Custom	20.5
	2016		Your Stock: Emerging benchmark	10.7
Stock - Global	2019	71.1	Your Stock: Global benchmark	25.6
	2018	67.3	Your Stock: Global benchmark	-8.8
	2017	67.1	Your Stock: Global benchmark	18.7
	2016	62.2	Your Stock: Global benchmark	8.6
	2015	61.6	Your Stock: Global benchmark	3.0
	2014	61.1	Your Stock: Global benchmark	8.7
	2013	60.9	Your Stock: Global benchmark	25.0
	2012	60.9	Your Stock: Global benchmark	17.5
	2011	58.7	Your Stock: Global benchmark	-8.4
	2010	61.4	Your Stock: Global benchmark	12.6
Fixed Income - Global	2019	28.9	Barclays Global Aggregate + Barclays Global Inflation Linked	7.5
	2018	32.7	Barclays Global Aggregate + Barclays Global Inflation Linked	0.6
	2017	33.0	Barclays Global Aggregate + Barclays Global Inflation Linked	2.9
	2016	35.3	Barclays Global Aggregate + Barclays Global Inflation Linked	4.2
	2015	35.3	Barclays Global Aggregate + Barclays Global Inflation Linked	0.6
	2014	36.7	Barclays Global Aggregate + Barclays Global Inflation Linked	7.6
	2013	38.1	Barclays Global Aggregate + Barclays Global Inflation Linked	-0.2
	2012	38.4	Barclays Global Aggregate + Barclays Global Inflation Linked	7.0
	2011	41.0	Barclays Global Aggregate + Barclays Global Inflation Linked	6.5
2010	38.6	Barclays Global Aggregate + Barclays Global Inflation Linked	2.6	
REITs	2019		Custom	17.1
	2018		Custom	-4.6
Real Estate ex-REITs	2019		Custom	13.0
	2018		Custom	-2.1
	2017		Custom	8.3
	2016	2.5	Custom (Actual)	0.8
	2015	3.1	Custom (Actual)	10.0
	2014	2.2	Custom (Actual)	10.4
	2013	1.0	Custom (Actual)	11.8
	2012	0.7	Custom (Actual)	5.8
Stock - U.S. Broad/All	2019			
	2018		Custom	3.6
	2017		Custom	18.9
	2016		Your Stock: U.S. Broad/All benchmark	16.1
Fixed Income - Emerging	2019			
	2017		Barclays Global Aggregate + Barclays Global Inflation Linked	2.9
	2016		Custom	13.0

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

Norwegian Government Pension Fund Global

Asset Class/Style		Year	Asset (€millions)	Return %	Cost (€000)				
					Internal & Other	Base Fees	Perf Fees	Total	Bps
Stock - U.S. Broad/All	External Active	2019							
		2018	283.1	0.30	38.9	815.8		854.7	30.2
		2017	664.0	18.60	82.8	1,862.0	(337.0)	1,607.8	24.2
		2016	767.0	22.90	156.0	1,333.0	338.0	1,827.0	23.8
Stock - Europe	External Active	2019	6,303.0	21.40	1,025.0	10,989.0	(2,372.0)	9,642.0	15.3
		2018	8,758.3	-14.90	1,202.7	18,306.9	8,043.5	27,553.1	31.5
		2017	9,716.0	27.50	1,211.7	21,744.0	3,404.0	26,359.7	27.1
		2016	8,128.0	2.44	4,543.0	16,996.0	3,584.0	25,123.0	30.9
Stock - Emerging	External Active	2019	27,759.0	16.30	4,515.0	50,999.0	31,936.0	87,450.0	31.5
		2018	29,349.0	-13.50	4,030.2	56,219.5	62,007.7	122,257.4	41.7
		2017	29,535.0	26.60	3,683.5	57,108.0	95,921.0	156,712.5	53.1
		2016	22,072.0	11.33	1,649.0	45,509.0	19,998.0	67,156.0	30.4
Stock - Global	Internal Active	2019	602,785.0	26.64	115,092.0			115,092.0	1.9
		2018	538,129.1	-9.19	104,260.3			104,260.3	1.9
		2017	509,143.0	18.92	108,209.0			108,209.0	2.1
		2016	436,866.0	8.71	102,953.0			102,953.0	2.4
		2015	454,193.0	4.26	114,509.0			114,509.0	2.5
	External Active	2019							
		2018							
		2017							
		2016							
		2015	30,644.5	-2.67	6,696.0	63,858.0	64,589.0	135,143.0	44.1
Fixed Income - Emerging	External Active	2019							
		2018							
		2017	583.0	5.79	-	186.0		186.0	3.2
		2016	2,075.0	13.31	287.0	4,755.0		5,042.0	24.3
Fixed Income - Global	Internal Active	2019	264,597.4	7.56	44,434.0			44,434.0	1.7
		2018	264,501.5	0.56	42,087.3			42,087.3	1.6
		2017	273,824.0	3.28	41,515.0			41,515.0	1.5
		2016	282,097.0	4.26	40,473.0			40,473.0	1.4
		2015	275,995.9	0.36	32,020.0			32,020.0	1.2
	External Active	2019							
		2018							
		2017							
		2016							
		2015	1,530.1	-8.52	175.0	4,815.0		4,990.0	32.6
REITs	Internal Active	2019	10,402.4	20.88	1,620.0			1,620.0	1.6
		2018	7,937.4	-10.34	2,013.0			2,013.0	2.5

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

Norwegian Government Pension Fund Global

Asset Class/Style		Year	Asset (€millions)	Fee basis (€millions)	Return %	Cost (€000)					Total	Bps
						Internal & Other	Base Fees	Perf Fees	Underlying Base Fees	Underlying Perf Fees		
Real Estate ex-REITs												
	Internal Active	2019	25,723.7		6.84	32,738.0					32,738.0	12.7
		2018	23,008.1		7.53	50,360.0					50,360.0	21.9
		2017	20,936.0		9.03	54,425.0					54,425.0	26.0
	Operating Subsidiary	2019										
		2018										
		2017										
		2016	24,136.0		0.78	47,438.0	0.0				47,438.0	19.7
		2015	20,809.6		9.99	39,477.0	0.0				39,477.0	19.0



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

Norwegian Government Pension Fund Global

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets <sup>1</sup>	2019	89,676.9	1.0bp
	2018	76,722.7	0.9bp
	2017	73,798.0	0.9bp
	2016	66,954.0	0.9bp
	2015	67,859.0	0.9bp
Custodial total	2019	42,621.5	0.5bp
	2018	39,045.2	0.4bp
	2017	41,965.0	0.5bp
	2016	39,503.0	0.5bp
	2015	42,400.0	0.5bp
Custodial foreign (if available)	2015	42,400.0	0.5bp
Consulting / performance measurement	2019	10,715.4	0.1bp
	2018	14,930.4	0.2bp
	2017	10,050.0	0.1bp
	2016	9,570.0	0.1bp
	2015	8,868.0	0.1bp
Audit	2019	3,792.3	0.0bp
	2018	4,357.9	0.0bp
	2017	4,312.0	0.1bp
	2016	6,110.0	0.1bp
	2015	4,840.0	0.1bp
Total	2019	146,806.1	1.6bp
	2018	135,056.2	1.5bp
	2017	130,125.0	1.5bp
	2016	122,137.0	1.6bp
	2015	123,967.0	1.6bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2019	290,976.0	3.1bp
	2018	349,385.8	4.0bp
	2017	389,015.0	4.6bp
	2016	290,012.0	3.7bp
	2015	326,139.0	4.2bp
Oversight, Custodial & Other Costs	2019	146,806.1	1.6bp
	2018	135,056.2	1.5bp
	2017	130,125.0	1.5bp
	2016	122,137.0	1.6bp
	2015	123,967.0	1.6bp
Total	2019	437,782.1	4.7bp
	2018	484,442.0	5.6bp
	2017	519,140.0	6.1bp
	2016	412,149.0	5.3bp
	2015	450,106.0	5.7bp

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: Comments and defaults

Norwegian Government Pension Fund Global

## Appendix B - Currency conversion

Norwegian Government Pension Fund Global

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

Currency conversion table					
	2019	2018	2017	2016	2015
United States Dollars - USD*	0.714	0.723	0.747	0.732	0.761
Canada Dollars - CAD	0.572	0.580	0.597	0.576	0.624
Euro - EUR*	1.000	1.000	1.000	1.000	1.000
Sweden Kronor - SEK	0.079	0.080	0.084	0.081	0.084
United Kingdom Pounds - GBP	1.015	1.013	1.048	1.055	1.087
Australia Dollars - AUD	0.493	0.496	0.500	0.499	0.527
New Zealand Dollars - NZD	0.480	0.498	0.507	0.505	0.536

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 29th 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.