

**Investment**  
**Cost Effectiveness Analysis**  
(for the 10-year period ending December 31, 2018)

**Government Pension Fund Norway**



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# Key takeaways

## Value added

- Your 10-year net value added was 0.4%. This was above the Global median of 0.3% and above the peer median of 0.3%.

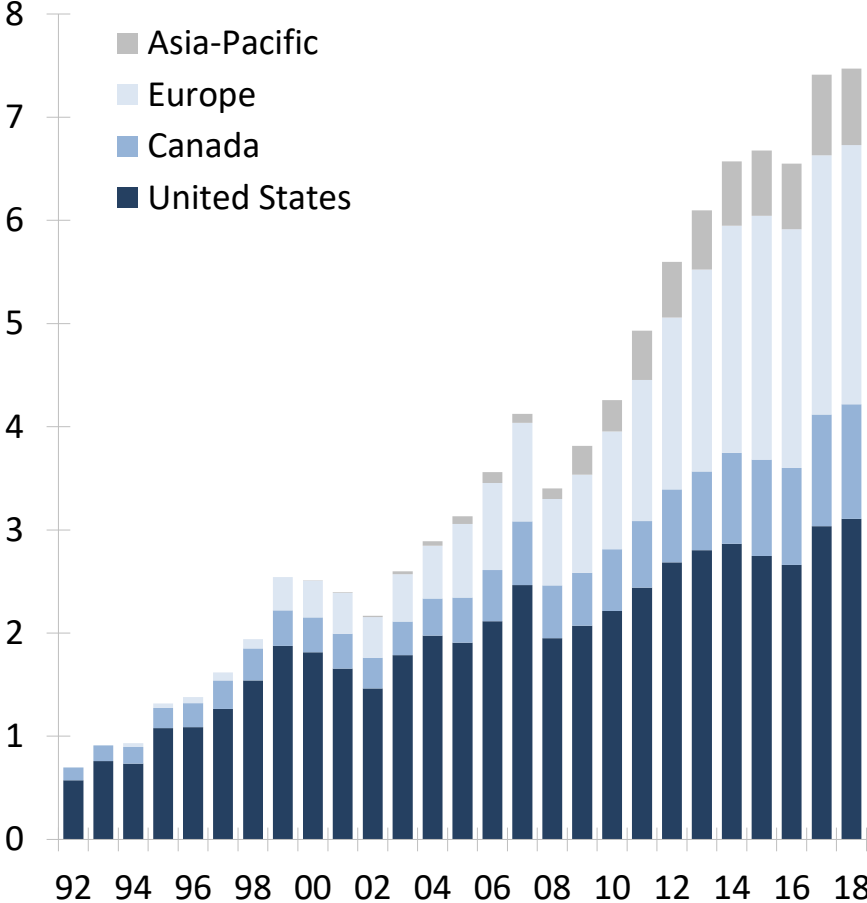
## Cost

- Your investment cost in 2018 of 6.6 bps was below your benchmark cost of 15.9 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 332 funds in CEM's extensive pension database.

- 167 U.S. pension funds participate. The median U.S. fund had assets of €6.2 billion and the average U.S. fund had assets of €17.4 billion. Total participating U.S. assets were €2.9 trillion.
- 78 Canadian funds participate with assets totaling €1.1 trillion.
- 78 European funds participate with aggregate assets of €2.5 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 7 Asia-Pacific funds participate with aggregate assets of €738.9 billion. Included are funds from Australia, New Zealand, China and South Korea.
- 2 Gulf region funds participate.

Participating assets (€ trillions)



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

### Peer group for Government Pension Fund Norway

- 16 Global sponsors from €14.5 billion to €71.6 billion
- Median size of €49.9 billion versus your €24.2 billion
- Median size of internal equity program is €13 billion versus your €14 billion

- 3 Canadian funds, 7 European funds, 1 Asia-Pacific fund and 5 U.S. funds make up the Global peer group.
- In the report there are also comparisons to CEM's Global database of participants.

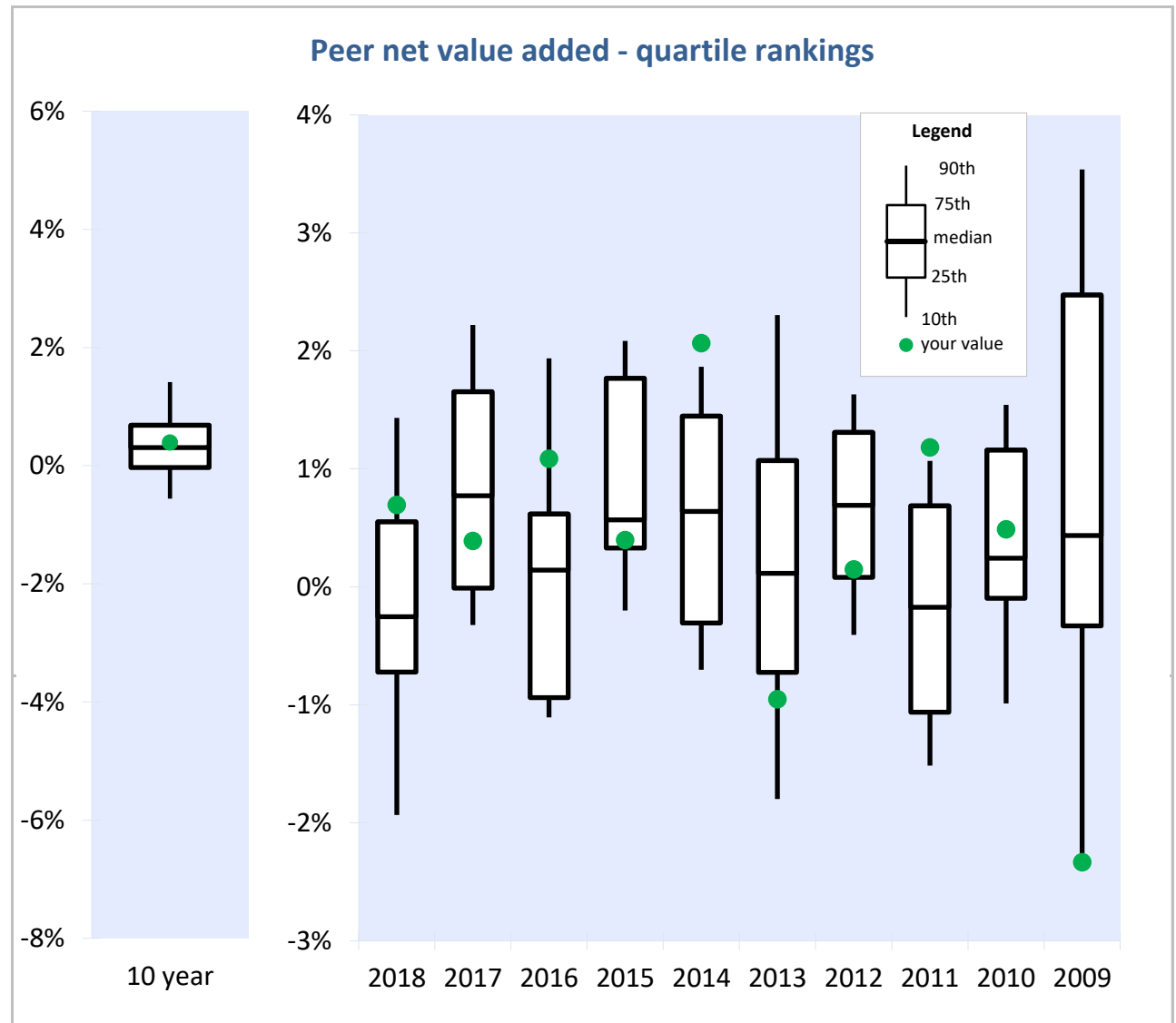
# Net value added is the component of total return from active management. Your 10-year net value added was 0.4%.

Net value added equals total net return minus policy return.

## Value added for Government Pension Fund Norway

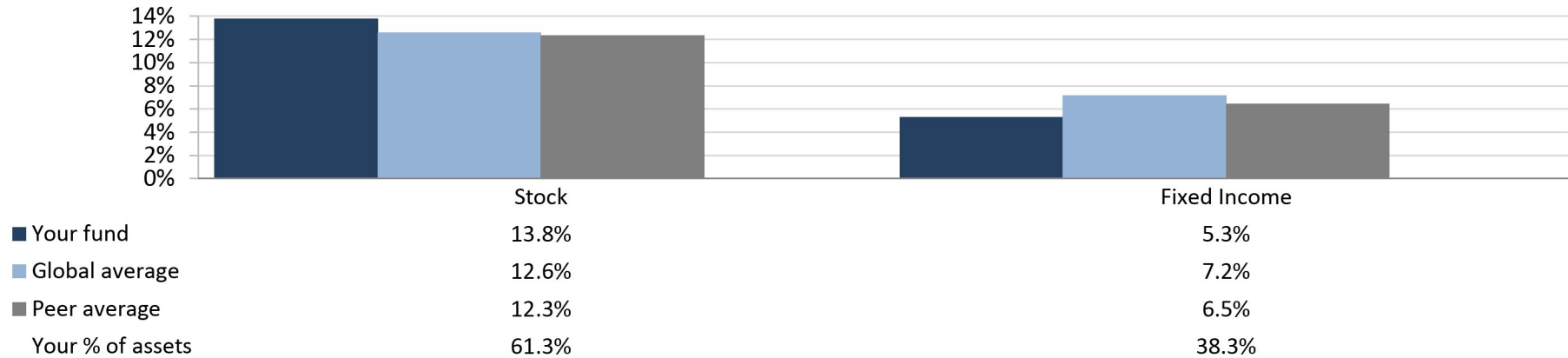
Year	Net Return	Policy Return	Net value Added
2018	-0.4%	-1.1%	0.7%
2017	13.2%	12.8%	0.4%
2016	7.0%	5.9%	1.1%
2015	6.9%	6.5%	0.4%
2014	10.6%	8.5%	2.1%
2013	15.6%	16.6%	-1.0%
2012	12.1%	11.9%	0.1%
2011	-4.0%	-5.2%	1.2%
2010	15.2%	14.7%	0.5%
2009	33.4%	35.8%	-2.3%
10-Year	10.5%	10.1%	0.4%

Your 10-year net value added of 0.4% compares to a median of 0.3% for your peers and 0.3% for the Global universe.

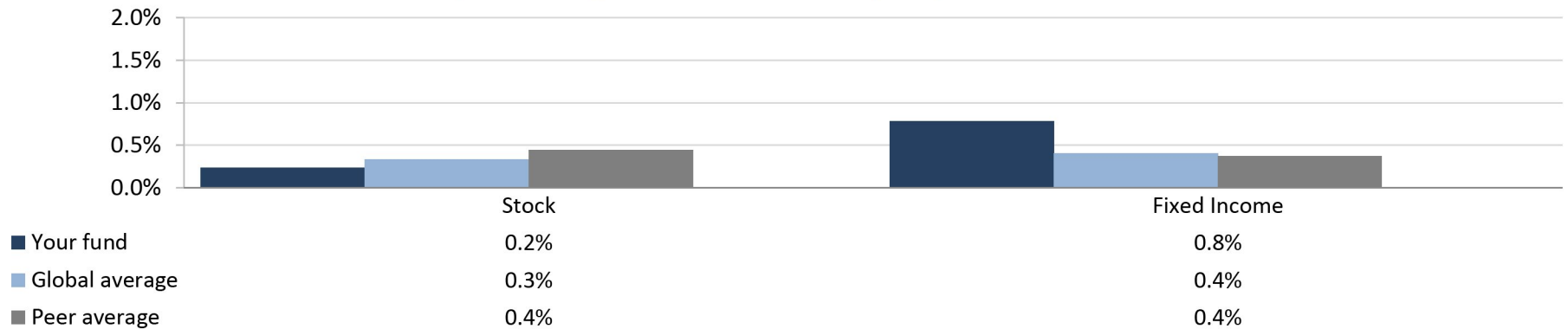


# Comparisons of your 10-year net return and net value added by major asset class:

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



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



## Your investment costs were €15.9 million or 6.6 basis points in 2018.

Asset management costs by asset class and style (€000s)			
	Internal Active	Total	
Stock - Europe	7,472	7,472	
Fixed Income - Europe	6,426	6,426	
Total investment management costs		13,899	5.7bp
<b>Oversight, custodial and other costs <sup>1</sup></b>			
Oversight of the fund		937	
Trustee & custodial		624	
Consulting and performance measurement		66	
Audit		227	
Other		155	
Total oversight, custodial & other costs		2,009	0.8bp
Total asset management costs (excl. transaction costs)		15,908	6.6bp

### Footnotes

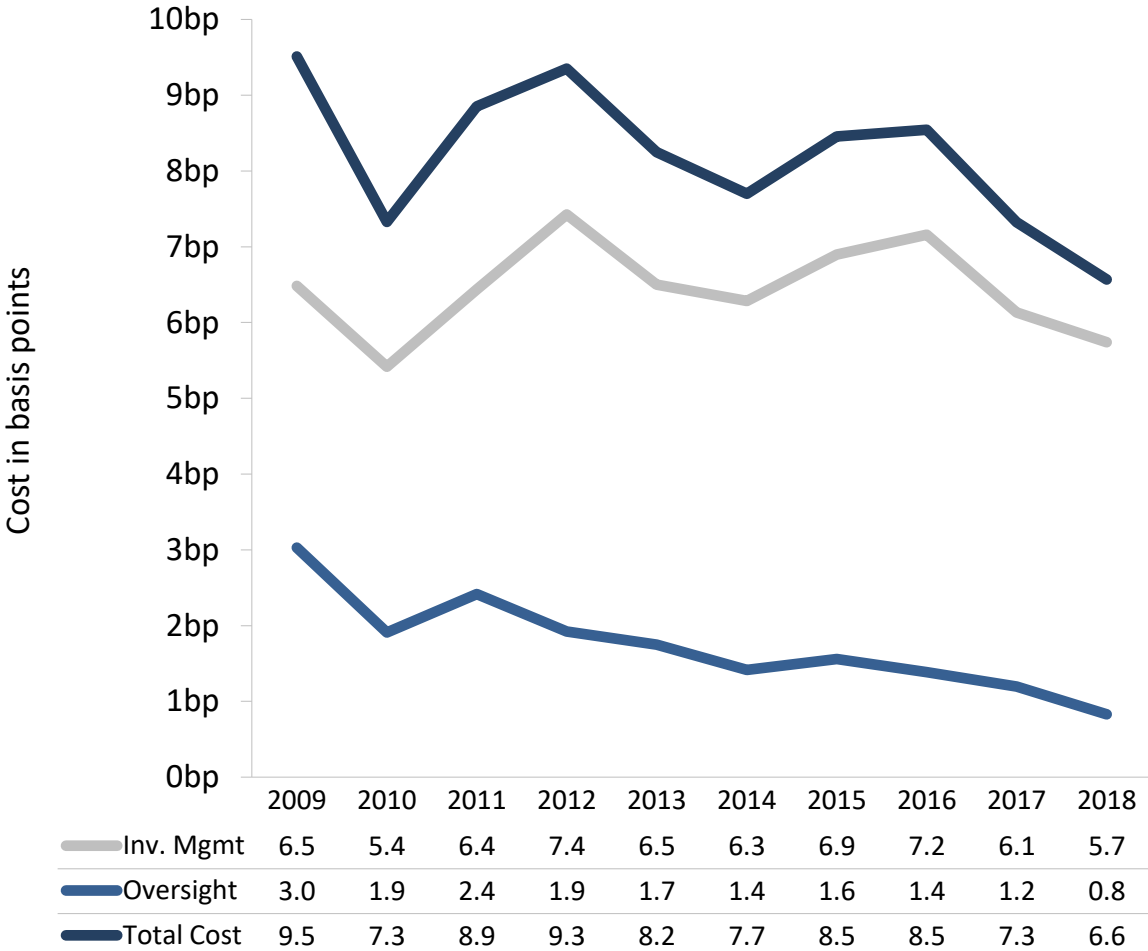
1. Excludes non-investment costs, such as benefit insurance premiums and preparing cheques for retirees.



# Your costs decreased between 2009 and 2018.

Your costs have continued to come down in both 2017 and 2018, both asset management and oversight costs were lower in 2018.

Trend in your investment costs

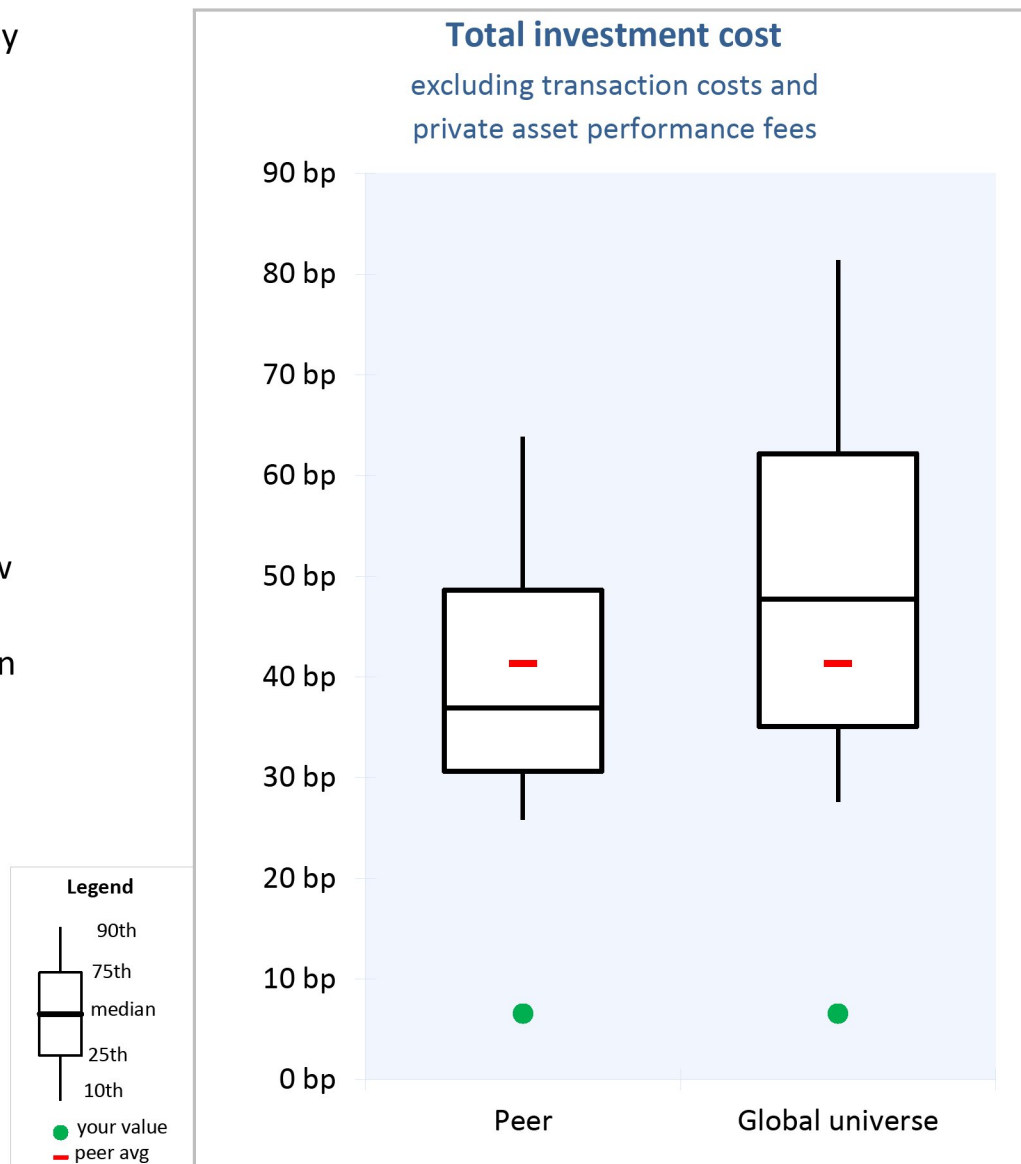


## Your total investment cost in 2018 of 6.6 bps was the lowest of the peers and was substantially below the peer median of 36.9 bps.

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

- Asset mix, particularly holdings of the highest cost asset classes: real estate (excl. REITS), infrastructure, hedge funds and private equity. These high cost assets equaled 0% of your funds assets at the end of 2018 versus a peer average of 23%.
- Fund size. Bigger funds have advantages of scale.

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



## Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was low cost by 9.3 basis points in 2018.

Your benchmark cost is an estimate of what your cost would be given your actual asset mix and the median costs that your peers pay for similar services. It represents the cost your peers would incur if they had your actual asset mix.

Your total cost of 6.6 bp was below your benchmark cost of 15.9 bp. Thus, your cost savings were 9.3 bp.

### Your cost versus benchmark

	€000s	basis points
Your total investment cost	15,908	6.6 bp
Your benchmark cost	38,414	15.9 bp
Your excess cost	(22,507)	(9.3) 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. Lower cost implementation style	(16,181)	(6.7)
2. Paying less than peers for similar services		
• Internal investment management costs	(3,505)	(1.4)
• Oversight, custodial & other costs	(2,821)	(1.2)
	<u>(6,325)</u>	<u>(2.6)</u>
<b>Total savings</b>	<b>(22,507)</b>	<b>(9.3)</b>

## Alternative benchmark cost

	Average holdings in €mils	GPFN 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><i>Internal asset management</i></b>								
Stock - Europe	14,256	5.2	16.1	10.9	6.4	8.7	3.4	2.0
Fixed Income - Europe	9,909	6.5	9.1	2.6	1.1	5.1	(1.4)	(0.6)
<b>Total, excl. Overlays and overhead</b>		<b>5.7</b>	<b>13.2</b>		<b>7.5</b>	<b>7.2</b>		<b>1.4</b>
Overlay programs	24,221	0.0	0.7	0.7	0.7	0.7	0.7	0.7
Overhead	24,221	0.8	2.0	1.2	1.2	2.0	1.2	1.2
<b>Total</b>	<b>24,221</b>	<b>6.6</b>	<b>15.9</b>		<b>9.3</b>	<b>9.8</b>		<b>3.3</b>

### Notes:

Internal Europe stock uses All stock as the benchmark.

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

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

	Average holdings in €mils	Current cost in bps	Benchmark target cost in bps
<i>Internal asset management</i>			
Stock	14,256	5.2	3.9
Fixed Income	9,909	6.5	1.7
<b>Total, excl. Overlays and overhead</b>		<b>5.7</b>	<b>3.0</b>
Overhead	24,221	0.8	0.8
<b>Total</b>	<b>24,221</b>	<b>6.6</b>	<b>3.8</b>

Notes:

Internal stock uses Europe stock as the benchmark.

Internal fixed income uses All fixed income as the benchmark.

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

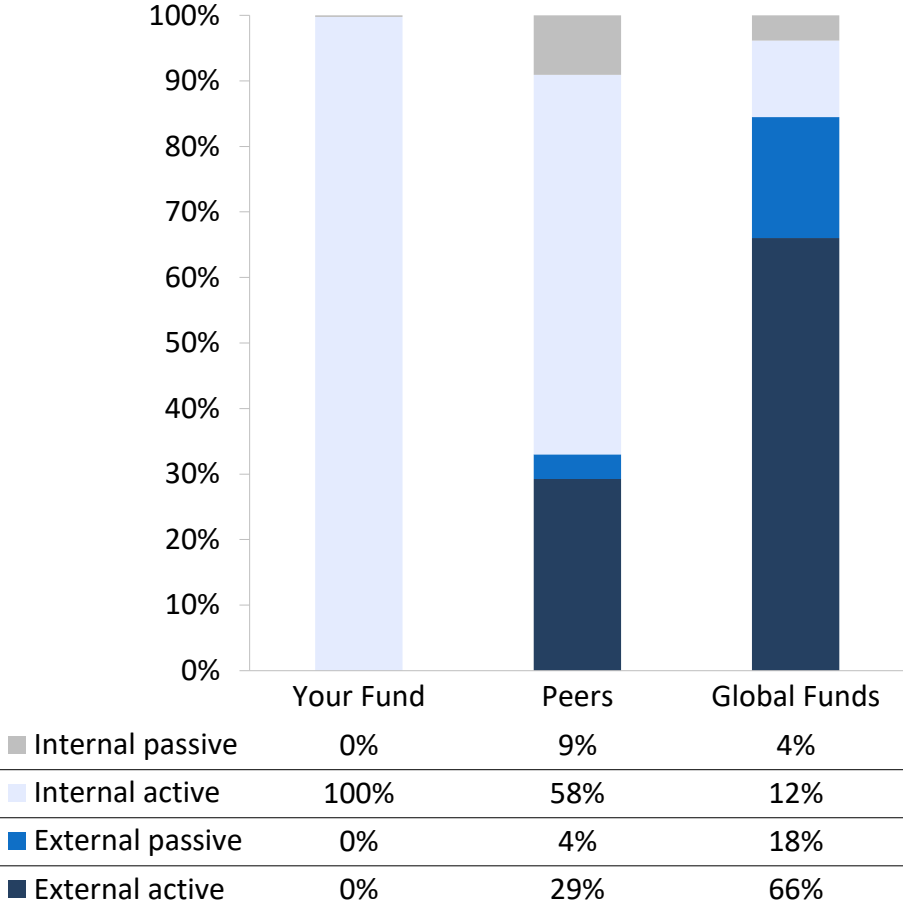
# Differences in cost performance are often caused by differences in implementation style.

Implementation style is defined as the way in which your fund implements asset allocation. It includes internal, external, active, passive and fund of funds styles.

The greatest cost impact is usually caused by differences in the use of:

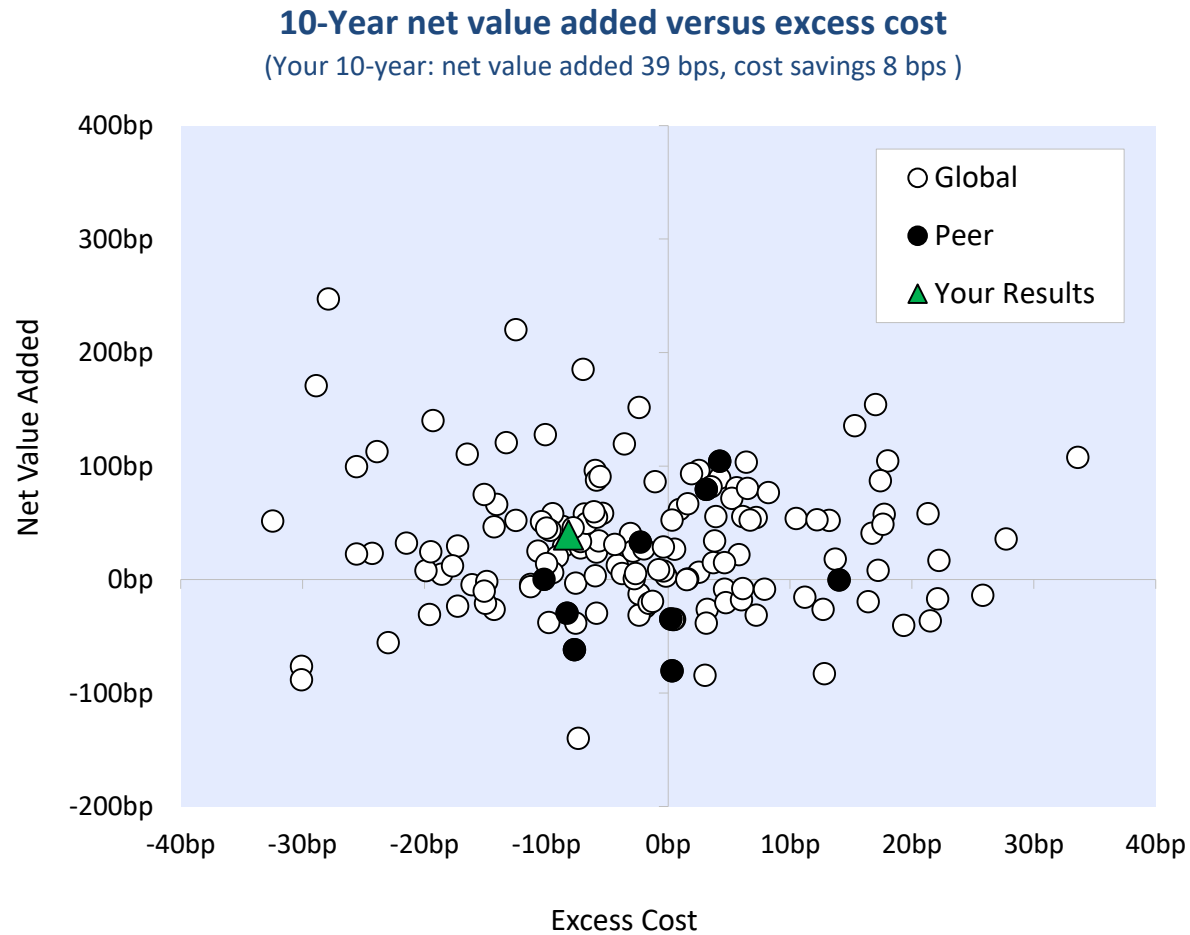
- External active management because it tends to be much more expensive than internal or passive management. You used less external active management than your peers (your 0% versus 29% for your peers).

Implementation style<sup>1</sup>



1. The graph above does not take into consideration the impact of derivatives. The values in the graph above are calculated using average holdings.

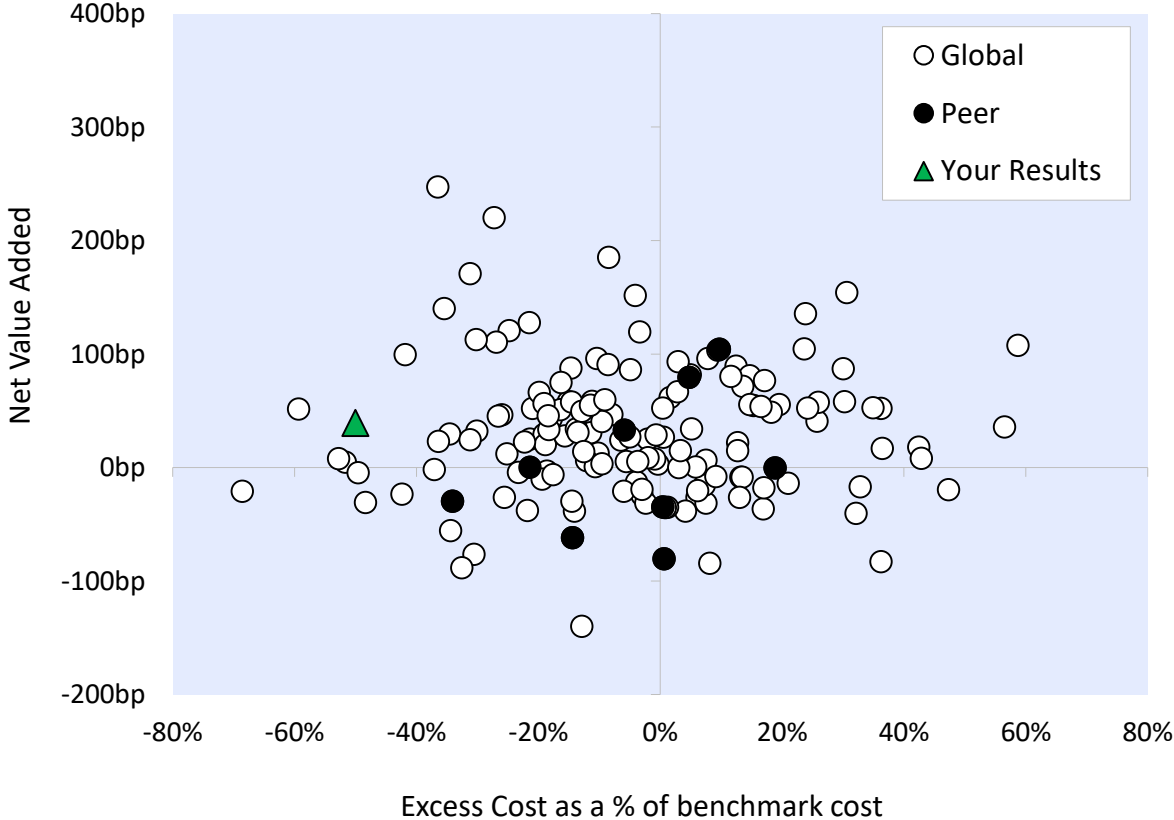
**Your 10-year performance placed in the positive value added, low cost quadrant of the cost effectiveness chart.**





# 10-year Excess cost as a % of benchmark cost versus Net value added

10-Year net value added versus excess cost as a % of benchmark cost



# 2

## Description of peer group and universe

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## Peer group

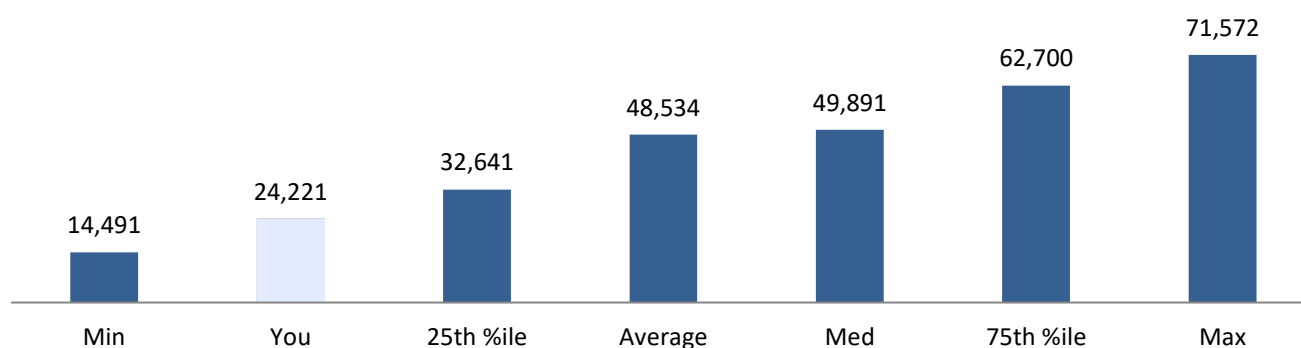
Your peer group is comprised of 16 Global funds, with assets ranging from €14.5 billion to €71.6 billion versus your €24.2 billion. The median size is €49.9 billion.

Healthcare of Ontario Pension Plan	Varma Mutual Pension Insurance Company
Ontario Municipal Employees Ret. Sys.	Virginia Ret. Sys.
Pensioenfond Metalektro	West Yorkshire Pension Fund

### Peer Group Characteristics - 2018

	Your Plan	Peers	Global average
<u>Plan Assets (\$ billions)</u>			
Range	24.2	14.5 - 71.6	0.0 - 872.0
Median		49.9	5.2
<u># of Plans</u>			
Corporate		0	145
Public	1	12	140
Other		4	47
Total		16	332
<u>Implementation style</u>			
% External active	0.0	29.2	66.0
% External passive	0.0	3.7	18.5
% Internal active	99.8	57.9	11.7
% Internal passive	0.2	9.1	3.8
<u>Asset mix</u>			
% Stock	58.9	41.3	39.5
% Fixed Income	40.9	29.0	38.7
% Real Assets	0.0	12.8	9.9
% Private Equity	0.0	7.3	4.7
% Hedge Funds & Other	0.2	7.3	5.4

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

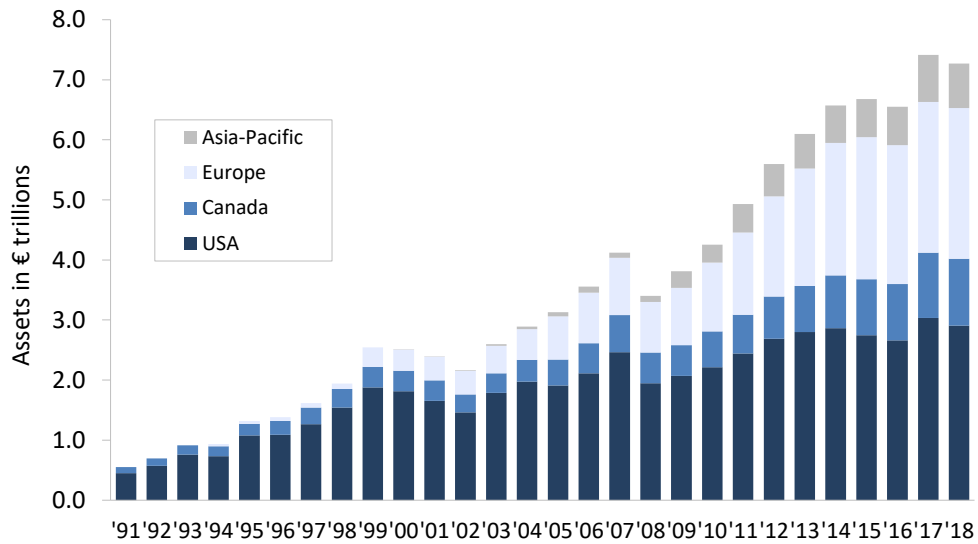


## CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2018 survey universe is comprised of 332 funds representing €7.3 trillion in assets. The breakdown by region is as follows:

- 167 U.S. pension funds with aggregate assets of €2.9 trillion.
- 78 Canadian pension funds with aggregate assets of €1.1 trillion.
- 78 European pension funds with aggregate assets of €2.5 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 7 Asia-Pacific pension funds with aggregate assets of €0.7 trillion.

CEM global universe



## Universe subsets

CEM's global survey universe is comprised of 332 funds with total assets of €7.3 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 16 Global funds ranging in size from €14.5 - €71.6 billion. The peer median of €49.9 billion compares to your €24.2 billion.
- Global - The global universe is comprised of 332 funds ranging in size from €0.0 - €872.0 billion. The median fund is €5.2 billion.

### Universe subsets by number of funds and assets

	Peer group <sup>1</sup>	Global by type				Global by Country				
		Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b># of funds</b>										
2018	16	145	140	47	332	167	78	78	9	332
2017	16	151	152	48	351	168	79	91	13	351
2016	16	154	143	48	345	170	80	83	12	345
2015	16	161	146	55	362	176	80	93	13	362
2014	16	164	206	55	425	178	89	145	13	425
2013	16	185	200	63	448	193	90	153	12	448
2012	15	188	204	58	450	203	89	144	14	450
2011	15	195	115	67	377	204	89	70	14	377
2010	13	180	120	48	348	206	95	38	9	348
2009	13	177	115	45	337	208	93	27	9	337
<b># of funds with uninterrupted data for:</b>										
1 yr	16	145	140	47	332	167	78	78	9	332
2 yrs	16	132	132	40	304	152	69	75	8	304
3 yrs	16	120	125	38	283	141	64	71	7	283
4 yrs	16	109	118	35	262	132	55	68	7	262
5 yrs	16	101	118	34	253	128	53	65	7	253
6 yrs	16	95	114	32	241	119	51	64	7	241
7 yrs	15	87	109	28	224	114	49	55	6	224
8 yrs	14	83	73	27	183	111	45	21	6	183
9 yrs	13	77	68	22	167	102	45	16	4	167
10 yrs	11	74	63	21	158	96	44	14	4	158
<b>Total assets (€ billions)</b>										
2018	777	1,091	4,834	1,364	7,289	2,908	1,110	2,513	757	7,289
2017	772	1,138	5,009	1,500	7,648	3,037	1,082	2,512	1,016	7,648
2016	690	1,078	4,279	1,380	6,737	2,661	939	2,314	823	6,737
2015	682	1,100	4,455	1,404	6,958	2,746	935	2,364	914	6,958
2014	662	1,162	4,373	1,286	6,822	2,866	879	2,203	873	6,822
2013	604	1,104	4,051	1,156	6,311	2,802	765	1,956	788	6,311
2012	536	1,094	3,795	854	5,744	2,687	707	1,665	685	5,744
2011	507	1,074	3,223	763	5,060	2,442	644	1,368	605	5,060
2010	427	939	2,723	627	4,290	2,215	598	1,142	335	4,290
2009	394	858	2,342	616	3,815	2,071	512	952	281	3,815
<b>2018 asset distribution (€ billions)</b>										
Avg	48.5	7.5	34.5	29.0	22.0	17.4	14.2	32.2	84.2	22.0
Max	71.6	50.8	872.0	425.3	872.0	243.6	214.7	872.0	411.5	872.0
75th %ile	62.7	9.7	27.9	26.0	16.4	17.6	7.4	22.8	69.2	16.4
Median	49.9	3.3	7.5	6.4	5.2	6.2	3.0	6.3	23.0	5.2
25th %ile	32.6	1.4	2.5	1.6	1.8	1.8	1.1	2.7	11.4	1.8
Min	14.5	0.2	0.1	0.0	0.0	0.2	0.0	0.4	2.2	0.0

1. Peer group statistics are for your 2018 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 - 2018 (as a % of year-end assets)

	Your fund <sup>1</sup>	Peer group	Global by type				Global by Country				
			Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b>Implementation style</b>											
External Active	0.0	28.5	69.3	57.3	62.7	63.3	70.0	64.7	49.7	45.2	63.3
Fund of funds	0.0	0.8	2.5	2.9	2.8	2.7	2.7	1.8	3.8	2.1	2.7
External passive	0.0	3.7	18.6	18.3	18.3	18.5	18.8	10.5	25.3	21.0	18.5
Internal Active	99.8	57.9	7.2	16.3	11.8	11.7	5.1	18.3	18.3	19.2	11.7
Internal Passive	<u>0.2</u>	<u>9.1</u>	<u>2.4</u>	<u>5.2</u>	<u>4.4</u>	<u>3.8</u>	<u>3.5</u>	<u>4.6</u>	<u>2.8</u>	<u>12.5</u>	<u>3.8</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>											
Stock	58.9	41.3	31.7	46.6	42.5	39.5	37.1	40.4	43.1	46.6	39.5
Fixed Income	41.1	30.5	51.7	27.0	34.7	38.9	42.3	35.9	35.8	28.1	38.9
Global TAA	0.0	1.9	0.8	1.5	0.1	1.0	1.1	0.6	1.2	0.3	1.0
Real Assets	0.0	12.8	6.5	12.5	12.6	9.9	7.2	14.8	10.3	13.3	9.9
Hedge Funds	0.0	3.7	3.7	3.2	2.2	3.3	4.4	2.2	1.9	3.8	3.3
Balanced Funds	0.0	0.0	0.0	0.9	0.0	0.4	0.0	0.0	1.6	0.0	0.4
Risk Parity	0.0	0.3	0.4	0.5	0.6	0.5	0.8	0.2	0.1	0.9	0.5
Private Credit	0.0	2.3	1.4	1.7	3.5	1.8	1.2	2.3	2.6	1.3	1.8
Private Equity	<u>0.0</u>	<u>7.3</u>	<u>3.7</u>	<u>6.1</u>	<u>3.7</u>	<u>4.7</u>	<u>5.9</u>	<u>3.5</u>	<u>3.3</u>	<u>5.6</u>	<u>4.7</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>											
Stock	59.0	44.1	32.3	47.7	43.2	40.3	38.4	40.5	43.0	51.6	40.3
Fixed Income	41.0	30.1	51.3	26.7	34.3	38.5	41.2	36.7	36.0	27.1	38.5
Global TAA	0.0	3.2	0.8	1.6	0.1	1.0	1.0	0.9	1.2	0.2	1.0
Real Assets	0.0	11.9	6.6	12.9	12.5	10.1	7.5	14.7	10.8	12.2	10.1
Hedge funds	0.0	2.3	3.5	2.8	2.5	3.0	4.2	1.9	1.9	2.7	3.0
Balanced Funds	0.0	0.0	0.0	0.4	0.0	0.2	0.0	0.0	0.7	0.0	0.2
Risk Parity	0.0	0.3	0.3	0.4	0.7	0.4	0.6	0.2	0.2	1.0	0.4
Private Credit	0.0	1.9	1.3	1.8	3.1	1.8	1.1	2.2	2.7	1.1	1.8
Private Equity	<u>0.0</u>	<u>6.2</u>	<u>3.9</u>	<u>5.8</u>	<u>3.6</u>	<u>4.7</u>	<u>6.0</u>	<u>3.1</u>	<u>3.5</u>	<u>4.1</u>	<u>4.7</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 - 2014 to 2018 (as a % of year-end assets)

	Your fund <sup>1</sup>					Peer average <sup>2</sup>					Global average <sup>2</sup>				
	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014
<b>Implementation style</b>															
External active	0.0	0.0	0.0	0.0	0.0	25.5	25.1	26.1	27.3	28.9	63.3	62.5	62.1	62.3	62.1
Fund of funds	0.0	0.0	0.0	0.0	0.0	0.7	0.8	0.7	0.7	0.6	2.3	2.3	2.5	2.6	2.5
External passive	0.0	0.0	0.0	0.0	0.0	4.2	5.2	5.7	6.1	6.6	15.9	16.6	16.9	17.0	17.3
Internal active	99.8	99.5	99.5	99.5	99.3	58.1	57.8	57.1	54.4	53.9	13.7	13.7	13.5	13.0	12.9
Internal passive	<u>0.2</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.7</u>	<u>11.5</u>	<u>11.1</u>	<u>10.5</u>	<u>11.5</u>	<u>10.0</u>	<u>4.9</u>	<u>4.8</u>	<u>5.0</u>	<u>5.0</u>	<u>5.3</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>															
Stock	58.9	62.3	60.8	59.2	57.7	41.0	42.7	41.2	41.8	41.4	37.7	41.4	41.4	42.5	43.7
Fixed income	41.1	37.7	39.2	40.8	42.3	32.1	32.2	32.1	31.3	32.5	38.9	37.0	36.9	36.4	36.9
Global TAA	0.0	0.0	0.0	0.0	0.0	2.7	3.0	3.7	4.7	4.8	1.0	0.8	1.2	1.4	1.4
Real assets	0.0	0.0	0.0	0.0	0.0	13.0	12.4	12.9	12.4	11.9	10.6	9.8	9.8	9.1	8.3
Hedge funds	0.0	0.0	0.0	0.0	0.0	2.0	2.1	2.3	2.3	2.4	3.7	3.7	4.0	4.1	3.7
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	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.2	0.2	0.3
Private credit	0.0	0.0	0.0	0.0	0.0	1.5	0.9	0.7	0.5	0.5	1.6	1.3	1.1	0.8	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>7.3</u>	<u>6.3</u>	<u>6.7</u>	<u>6.5</u>	<u>6.1</u>	<u>6.0</u>	<u>5.4</u>	<u>5.5</u>	<u>5.3</u>	<u>5.0</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>															
Stock	59.0	64.5	61.1	59.5	58.1	43.1	44.6	44.4	44.6	42.5	39.1	41.6	42.1	43.1	43.5
Fixed income	41.0	35.5	38.9	40.5	41.9	32.5	31.7	31.9	32.0	32.9	38.9	37.2	36.9	36.6	36.7
Global TAA	0.0	0.0	0.0	0.0	0.0	4.6	4.5	5.1	5.2	5.8	1.1	1.0	1.2	1.3	1.3
Real assets	0.0	0.0	0.0	0.0	0.0	11.6	11.7	11.2	11.0	10.4	10.4	9.9	9.6	9.1	8.8
Hedge funds	0.0	0.0	0.0	0.0	0.0	1.4	1.2	1.2	1.1	1.4	3.2	3.3	3.4	3.5	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	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3
Private credit	0.0	0.0	0.0	0.0	0.0	0.8	0.6	0.5	0.4	0.4	1.3	1.0	0.9	0.7	0.5
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>5.6</u>	<u>5.4</u>	<u>5.2</u>	<u>5.2</u>	<u>6.1</u>	<u>5.6</u>	<u>5.5</u>	<u>5.6</u>	<u>5.5</u>	<u>5.4</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

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

2. Trends are based on the 158 Global and 11 peer funds with 10 or more consecutive years of data ending 2018.

## 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 - 2018 (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.						9.6		10.3	46.6	33.4	41.0		44.6	6.7	7.7
Stock - EAFE	0.0		0.0	100.0	0.0	12.8		5.2	75.2	6.8	52.3		29.0	16.0	2.7
Stock - Global						36.7		0.2	63.0	0.1	64.0		22.0	11.5	2.5
Stock - Other						21.4		20.4	43.2	15.0	70.6		9.7	13.4	6.2
Stock - Emerging						44.8		8.9	38.8	7.5	78.3		13.4	5.1	3.2
Stock - ACWI x U.S.						71.6		0.0	28.3	0.1	66.7		31.4	0.6	1.3
Stock - Aggregate	0.0		0.0	100.0	0.0	21.2		6.7	58.8	13.3	57.4		28.3	10.0	4.3
Fixed Income - U.S.						5.4		6.7	87.1	0.8	57.5		23.5	13.6	5.4
Fixed Income - EAFE	0.0		0.0	100.0	0.0	2.7		0.3	76.9	20.1	40.6		31.7	22.6	5.2
Fixed Income - Global						12.2		0.0	77.2	10.6	60.0		9.4	26.1	4.4
Fixed Income - Other						8.6		6.5	84.8	0.2	61.2		12.9	20.6	5.3
Fixed Income - Long Bonds						1.5		0.0	98.5	0.0	79.2		10.8	5.7	4.2
Fixed Income - Emerging						64.6		0.0	31.8	3.6	82.1		5.5	11.2	1.3
Fixed Income - Inflation Indexed						0.0		2.5	63.1	34.4	9.1		51.3	16.9	22.7
Fixed Income - High Yield						95.4		0.0	0.0	4.6	89.5		2.5	7.9	0.1
Fixed Income - Bundled LDI						0.0		0.0	0.0	0.0	44.4		35.5	11.8	8.3
Fixed Income - Convertibles						100.0		0.0	0.0	0.0	100.0		0.0	0.0	0.0
Cash						43.0			57.0		54.4			45.6	
Fixed Income - Aggregate	0.0		0.0	100.0	0.0	14.5		2.4	72.9	10.2	62.6		17.4	14.7	5.4
Commodities						0.0		0.0	13.7	86.3	62.1		9.4	17.9	10.6
Infrastructure						26.1	0.6		72.2		71.8	5.3		16.2	
Natural Resources						49.1	0.0		48.0		78.4	1.2		17.9	
REITs						17.7		0.0	19.3	63.0	71.5		18.3	8.1	2.1
Real Estate						37.6	0.5		61.4		76.4	6.8		15.5	
Other Real Assets						100.0			0.0		96.1			3.9	
Real Assets						35.4	0.5	0.0	61.7	1.7	75.2	5.5	1.5	15.1	0.4
Hedge Funds						96.2	3.8				68.1	31.9			
Global TAA						10.4			89.6		82.2			17.8	
Balanced Funds						0.0		0.0			75.2		24.8		
Risk Parity						100.0			0.0		94.2			5.8	
Private Credit						60.3	0.0		38.7		89.8	0.2		9.2	
Mortgages						59.2			40.8		87.0			13.0	
Diversified Private Equity						61.4	6.9		23.7		64.9	27.4		4.8	
Venture Capital						70.0	24.4		3.9		63.7	34.2		1.8	
LBO						83.2	7.3		1.2		86.5	4.1		3.0	
Other Private Equity						70.1			24.0		78.7			18.0	
Private Equity						67.4	7.8		17.1		67.9	24.0		4.8	
Total Fund - Avg. Holdings	0.0	0.0	0.0	99.8	0.2	27.8	0.8	3.7	57.9	9.1	62.9	2.7	18.5	11.7	3.8



## Actual mix

### Actual asset mix - 2014 to 2018 (as a % of total average assets)

	Your fund <sup>1</sup>					Peer average %					Global average %				
	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014
Stock - U.S.						11.4	11.4	11.1	11.1	10.8	11.0	12.2	13.5	13.6	13.0
Stock - EAFE	58.9	62.3	60.8	59.2	57.7	15.3	16.4	16.8	17.1	16.7	7.0	8.1	8.4	8.3	10.1
Stock - Global						7.5	7.5	6.1	6.1	6.1	12.8	13.0	11.6	11.5	13.1
Stock - Other						2.0	2.5	3.0	3.2	3.5	3.5	3.9	4.3	4.2	4.4
Stock - Emerging						4.3	4.5	4.4	4.4	4.5	3.1	3.4	3.0	2.9	3.0
Stock - ACWI x U.S.						0.8	0.9	0.8	0.8	1.0	2.2	2.5	2.6	2.7	2.3
Stock - Aggregate	58.9	62.3	60.8	59.2	57.7	41.3	43.2	42.3	42.6	42.5	39.5	43.1	43.4	43.2	45.9
Fixed Income - U.S.						6.5	6.2	6.0	6.4	6.3	7.0	5.7	6.2	6.8	5.6
Fixed Income - EAFE	40.9	37.2	38.7	40.2	41.6	6.7	6.3	6.9	7.1	7.7	3.1	3.8	3.8	4.4	4.7
Fixed Income - Global						4.1	4.0	4.2	3.5	3.6	2.6	2.8	2.7	2.9	3.2
Fixed Income - Other						2.5	3.2	3.8	4.0	4.2	5.0	5.4	6.0	6.1	5.8
Fixed Income - Long Bonds						1.5	1.2	1.3	1.3	1.3	12.7	10.8	10.1	9.7	8.6
Fixed Income - Emerging						1.9	1.9	1.8	1.7	1.7	1.1	1.1	1.0	1.1	1.1
Fixed Income - Inflation Indexed						3.0	3.3	3.0	3.0	2.9	1.8	2.0	2.4	2.0	2.0
Fixed Income - High Yield						0.7	1.0	1.2	1.3	1.3	1.3	1.2	1.4	1.3	1.1
Fixed Income - Bundled LDI											2.2	1.2	0.2	0.1	0.1
Fixed Income - Convertibles						0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Cash						1.9	2.3	1.4	1.4	1.9	1.7	2.1	2.0	1.8	2.0
Fixed Income - Aggregate	40.9	37.2	38.7	40.2	41.6	29.0	29.5	29.5	29.7	30.9	38.7	36.2	35.8	36.3	34.3
Commodities						0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4
Infrastructure						3.1	3.1	2.9	2.6	2.4	2.1	1.8	1.7	1.4	1.1
Natural Resources						0.7	0.6	0.7	0.6	0.5	0.4	0.5	0.4	0.3	0.3
REITs						0.2	0.2	0.2	0.2	0.2	0.7	0.7	0.6	0.6	0.5
Real Estate						8.6	8.0	8.5	8.4	7.8	6.3	5.6	5.8	5.5	5.3
Other Real Assets						0.1	0.1	0.1	0.2	0.4	0.2	0.2	0.2	0.3	0.3
Real Assets						12.8	12.1	12.6	12.1	11.4	9.9	9.1	9.0	8.5	7.8
Hedge Funds						3.7	3.7	3.9	3.9	3.8	3.3	3.4	3.8	3.8	3.6
Global TAA						1.9	2.0	2.5	3.2	3.3	1.0	1.0	1.2	1.6	2.7
Balanced Funds											0.4	0.4	0.4	0.4	0.4
Risk Parity						0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.3	0.2	0.2
Mortgages						0.6	0.5	0.5	0.4	0.4	0.6	0.4	0.4	0.4	0.3
Private Credit						1.7	1.2	1.0	0.6	0.6	1.2	1.0	0.8	0.7	0.5
Diversified Private Equity						4.8	4.1	4.2	3.9	4.0	3.7	3.3	3.5	3.4	3.1
Venture Capital						0.5	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.3	0.2
LBO						1.7	1.3	1.3	1.4	1.0	0.6	0.5	0.5	0.5	0.4
Other Private Equity						0.3	0.4	0.5	0.5	0.5	0.2	0.2	0.2	0.2	0.1
Private Equity						7.3	6.2	6.4	6.2	5.8	4.7	4.3	4.5	4.3	3.9
Derivatives/Overlays Mkt Value	0.2	0.5	0.5	0.5	0.7	1.4	1.2	0.9	0.9	0.8	0.3	0.6	0.4	0.6	0.5
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	16	16	16	16	16	332	351	345	362	425
Median Assets (€ billions)	24.2	23.0	23.5	20.8	20.6	49.9	51.4	46.6	44.0	39.8	5.2	5.2	4.8	4.4	3.4

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

## Policy mix

### Policy asset mix - 2014 to 2018 (as a % of total assets)

	Your fund %					Peer average %					Global average %				
	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014	2018	2017	2016	2015	2014
Stock - U.S.						10.0	9.8	11.3	11.3	9.6	10.4	11.3	12.3	12.6	11.7
Stock - EAFE	59.0	64.5	61.1	59.5	58.1	13.9	14.6	15.9	15.5	15.5	6.5	7.4	7.8	7.6	9.4
Stock - Global						13.0	13.3	9.6	9.7	9.5	14.9	15.0	13.8	13.2	14.6
Stock - Other						2.8	3.2	3.8	4.0	4.2	3.3	3.7	4.0	4.3	4.3
Stock - Emerging						3.9	3.7	4.0	4.2	4.0	2.8	2.9	2.7	2.8	2.7
Stock - ACWI x U.S.						0.5	0.5	0.5	0.5	0.6	2.4	2.6	2.8	3.0	2.6
Stock - Aggregate	59.0	64.5	61.1	59.5	58.1	44.1	45.0	45.0	45.2	43.4	40.3	42.9	43.4	43.6	45.2
Fixed Income - U.S.						6.2	6.0	6.0	5.9	6.0	7.1	6.0	6.2	6.9	5.9
Fixed Income - EAFE	41.0	35.5	38.9	40.5	41.9	7.0	6.3	6.5	6.9	7.5	3.3	3.8	3.8	4.6	4.8
Fixed Income - Global						5.8	6.2	6.5	6.4	6.1	2.8	3.1	3.2	3.1	3.4
Fixed Income - Other						2.7	2.9	3.5	3.7	3.8	5.1	6.0	6.4	6.3	6.2
Fixed Income - Long Bonds						1.5	1.6	1.7	1.6	1.6	13.2	11.4	10.8	10.4	9.2
Fixed Income - Emerging						1.8	1.7	1.5	1.6	1.6	1.1	1.0	1.0	1.1	1.0
Fixed Income - Inflation Indexed						4.4	3.8	3.9	3.6	3.2	2.1	2.3	2.6	2.2	2.1
Fixed Income - High Yield						0.5	0.7	0.8	1.0	0.9	1.2	1.2	1.4	1.4	1.2
Fixed Income - Bundled LDI											2.3	1.2	0.1	0.1	0.1
Fixed Income - Convertibles						0.2	0.2	0.0		0.1	0.0	0.1	0.0	0.0	0.0
Cash						0.0	0.9	0.6	0.6	1.4	0.4	0.6	0.9	0.7	0.8
Fixed Income - Aggregate	41.0	35.5	38.9	40.5	41.9	30.1	30.3	31.0	31.3	32.2	38.5	36.8	36.4	36.7	34.8
Commodities						0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.4	0.5	0.5
Infrastructure						2.7	2.7	2.6	2.4	2.2	2.2	2.0	1.9	1.5	1.4
Natural Resources						0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2
REITs						0.2	0.2	0.3	0.2	0.2	0.6	0.6	0.5	0.5	0.5
Real Estate						8.3	8.2	7.8	7.6	7.6	6.4	6.0	5.8	5.6	5.8
Other Real Assets						0.2	0.2	0.1	0.2	0.1	0.3	0.3	0.3	0.4	0.3
Real Assets						11.9	11.9	11.3	11.0	10.5	10.1	9.6	9.3	8.8	8.8
Hedge Funds						2.3	1.8	2.0	2.0	2.3	3.0	3.1	3.3	3.3	3.4
Global TAA						3.2	3.1	3.5	3.6	4.0	1.0	1.0	1.3	1.6	2.5
Balanced Funds											0.2	0.2	0.2	0.2	0.2
Risk Parity						0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2
Mortgages						0.8	0.5	0.5	0.4	0.5	0.7	0.5	0.4	0.4	0.2
Private Credit						1.1	1.0	0.7	0.8	0.8	1.1	0.9	0.7	0.6	0.4
Diversified Private Equity						4.5	4.5	4.1	3.9	5.2	4.0	4.0	4.1	4.0	3.7
Venture Capital						0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.2
LBO						1.5	1.3	1.3	1.4	0.5	0.4	0.3	0.3	0.4	0.2
Other Private Equity						0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
Private Equity						6.2	6.0	5.7	5.5	6.0	4.7	4.6	4.8	4.6	4.2
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1					16	16	16	16	16	332	351	345	362	425

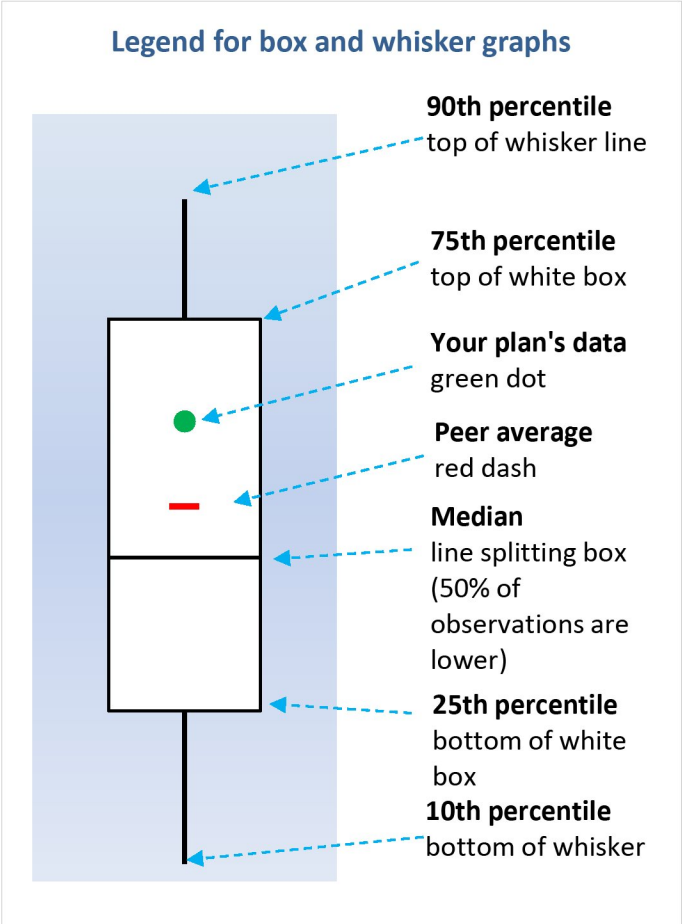
# 3

## Returns, Benchmarks and Value Added

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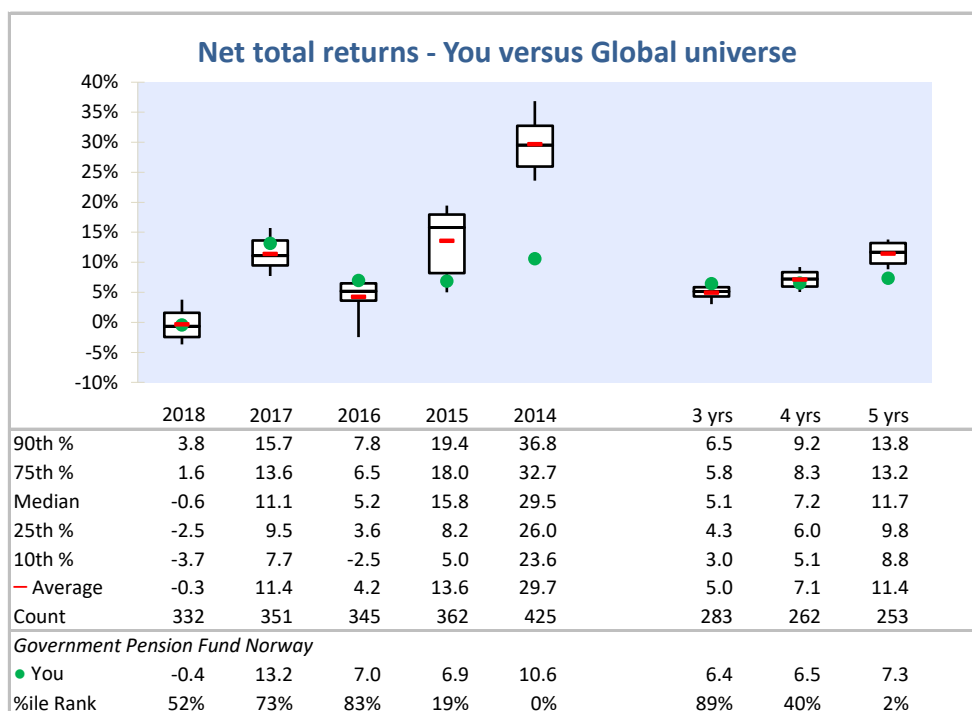
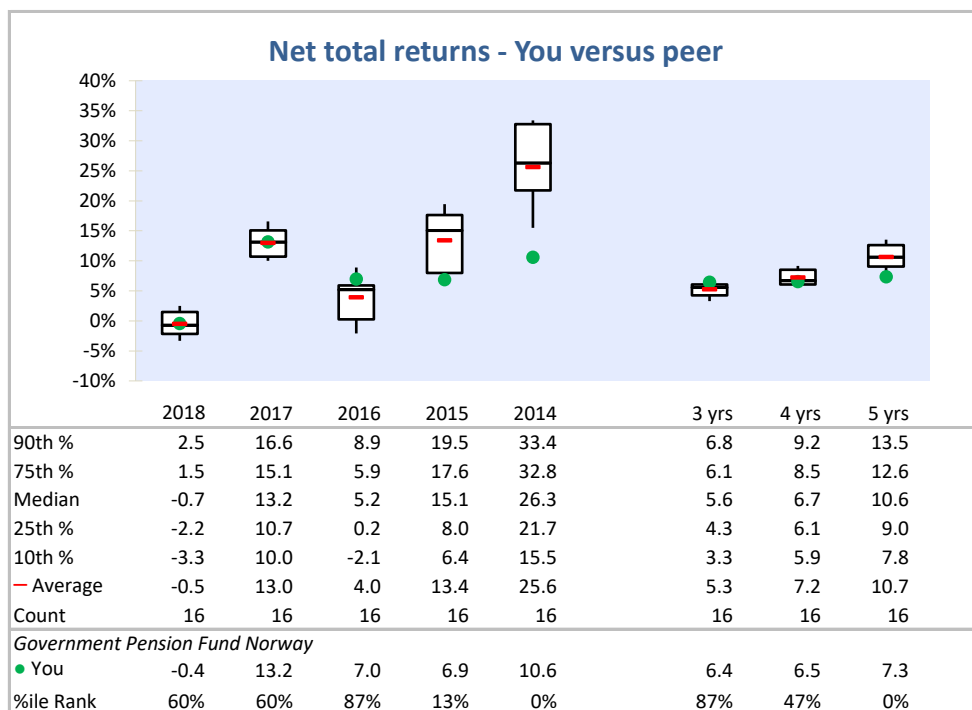
# Interpreting box and whisker graphs

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.



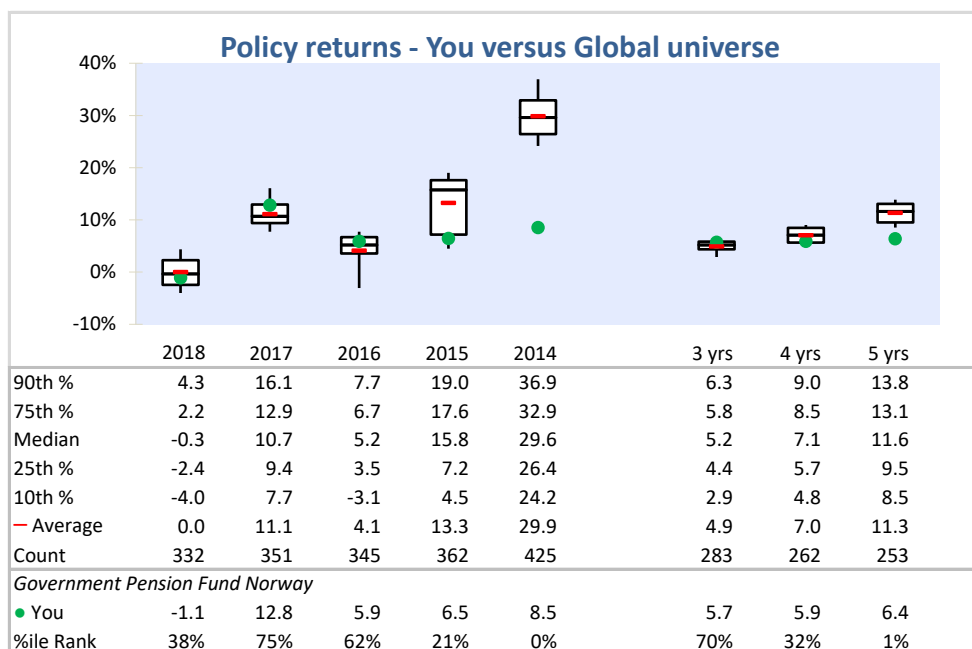
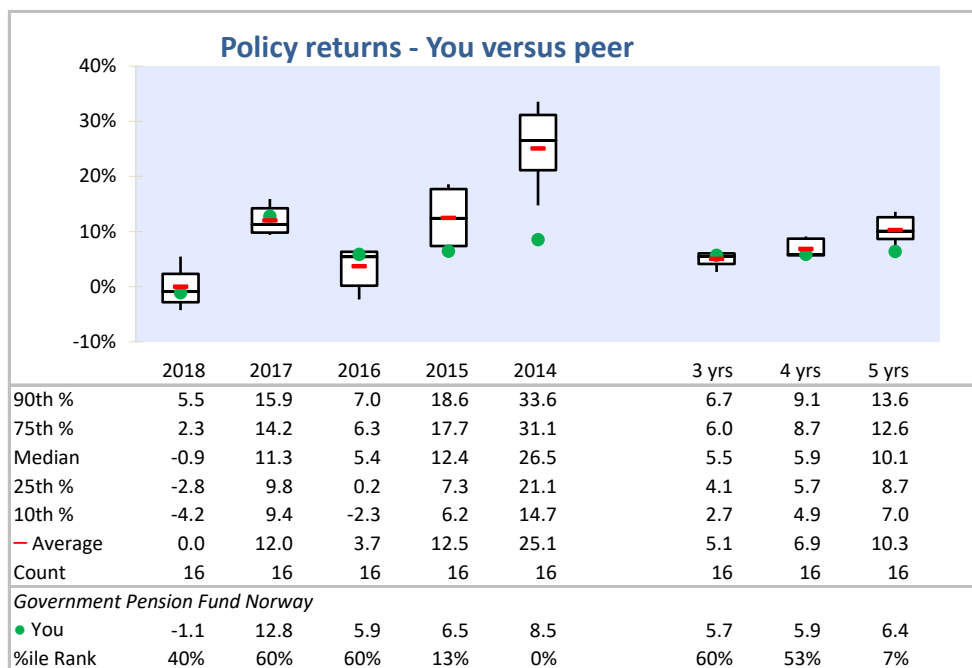
## Net total returns

Your 5-year net total return of 7.3% was below the peer median and below the median of the Global universe. Comparisons of total return do not help you understand the reasons behind relative performance. To understand the relative contributions from policy asset mix decisions and implementation decisions we separate total return into its more meaningful components - policy return and implementation value added.



## Policy returns

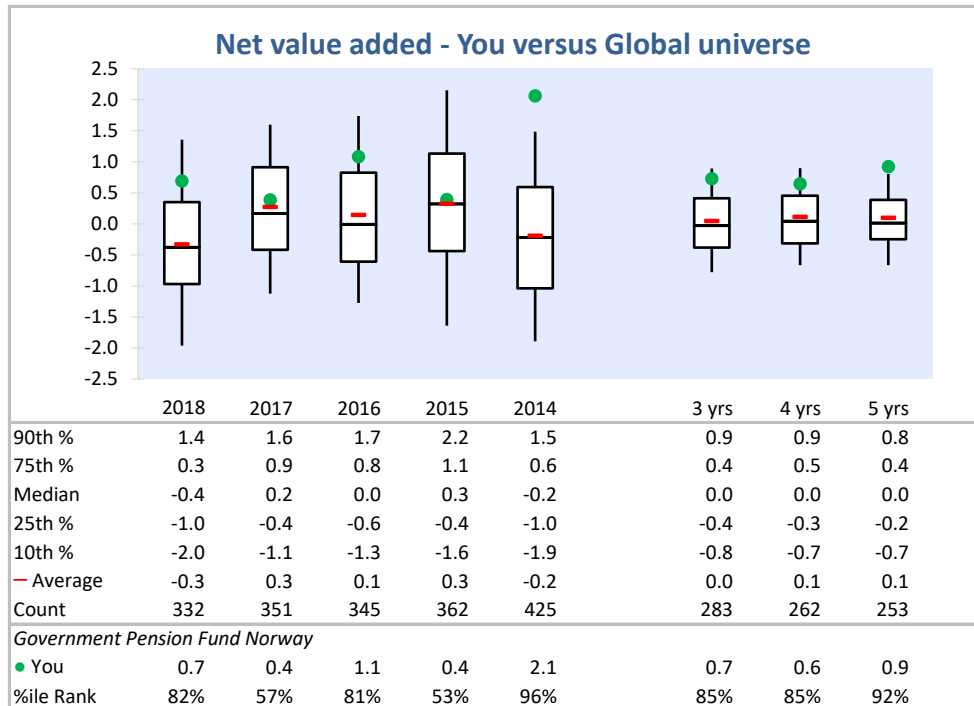
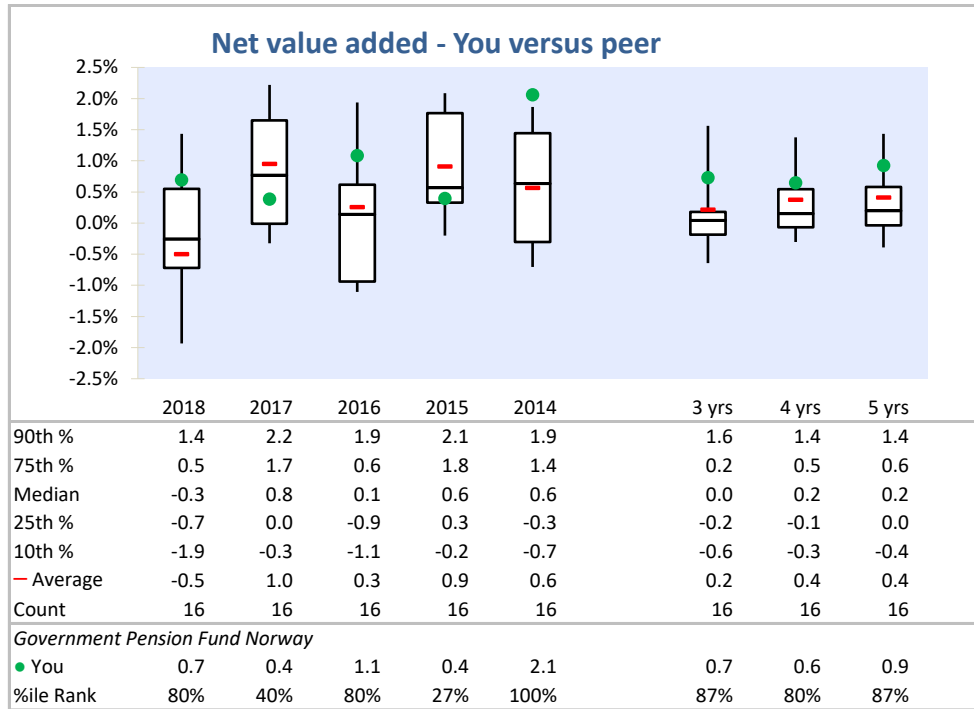
Your 5-year policy return of 6.4% was below the peer median and below the median of the Global universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.



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

## Net value added

Your 5-year net value added of 0.9% was among the highest in your peer group and among the highest in the Global universe. Net value added is the difference between your net total return and your policy return.



## Net returns by asset class

Asset class	Your fund %						Peer average %						Global average %					
	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>
Stock - U.S.							-1.4	17.3	8.5	15.3	35.0	14.3	-1.4	15.2	9.7	17.6	36.3	14.8
Stock - EAFE	-1.9	19.3	10.4	9.8	10.6	9.4	-9.4	18.9	1.3	18.0	18.3	8.7	-10.1	20.1	-1.0	17.2	18.1	8.3
Stock - Global							-5.3	17.0	6.6	17.8	29.1	12.6	-4.1	19.3	3.9	16.8	28.2	12.2
Stock - Other							-3.0	9.4	14.7	-4.4	27.7	13.1	-9.4	10.2	16.0	0.3	26.0	7.9
Stock - Emerging							-11.3	28.0	8.0	2.2	22.0	8.9	-10.8	28.7	7.4	1.8	21.1	8.8
Stock - ACWI x U.S.							-8.4	20.9	3.4	15.5	22.1	10.1	-10.5	22.6	1.0	15.3	19.0	8.8
Stock - Aggregate	-1.9	19.3	10.4	9.8	10.6	9.4	-6.5	19.0	6.4	13.3	24.9	10.8	-5.7	18.4	6.2	14.0	27.2	11.5
Fixed Income - U.S.							2.8	2.3	0.7	15.6	31.3	9.5	4.1	0.3	1.4	17.5	30.9	10.2
Fixed Income - EAFE	1.6	3.6	2.1	2.9	9.7	3.9	0.1	7.8	-3.5	7.3	20.8	6.0	0.5	7.3	-3.8	8.3	31.2	7.8
Fixed Income - Global							-0.7	13.1	2.4	9.1	20.7	8.8	0.3	5.7	0.1	11.4	25.6	7.9
Fixed Income - Other							2.8	4.3	0.9	9.5	18.8	7.5	1.3	6.4	2.5	8.8	25.9	7.8
Fixed Income - Long Bonds							-1.9	12.9	4.7	6.1	46.8	12.5	-1.0	6.4	4.7	11.1	43.0	12.3
Fixed Income - Emerging							-1.4	9.2	7.5	8.0	18.6	8.0	-2.0	8.3	7.3	9.3	20.9	8.7
Fixed Income - Inflation Indexed							-0.2	2.5	2.1	10.0	28.5	8.0	0.2	2.3	2.9	10.7	31.1	8.6
Fixed Income - High Yield							1.4	4.9	9.6	12.6	22.2	9.8	1.8	4.1	8.0	12.3	23.5	9.6
Fixed Income - Bundled LDI													-0.5	8.6	8.2	2.7	91.6	20.7
Fixed Income - Convertibles							0.2	7.2	-6.1	9.3	2.2	1.9	1.0	7.6	-0.4	10.8	17.0	7.0
Cash							1.7	1.8	-3.8	13.4	17.3	5.5	3.4	-0.3	-3.3	12.2	18.9	6.0
Fixed Income - Aggregate	1.6	3.6	2.1	2.9	9.7	3.9	1.0	4.4	1.5	10.8	25.8	8.2	0.7	4.4	2.1	11.4	31.0	9.5
Commodities							-5.6	4.8	9.4	-20.1	-16.4	-7.6	-8.1	-0.4	9.9	-13.6	1.8	-3.6
Infrastructure							9.3	13.8	5.3	25.7	27.7	15.8	9.5	14.1	1.5	23.1	29.7	15.1
Natural Resources							9.1	2.3	3.7	14.8	23.9	10.0	7.3	2.4	3.5	11.1	33.3	10.9
REITs							0.4	1.7	4.1	21.6	56.8	15.1	-0.4	6.5	1.6	17.8	44.2	13.1
Real Estate							10.7	11.9	3.5	23.9	27.4	14.9	12.2	7.5	2.2	25.7	31.6	14.9
Other Real Assets							-18.8	6.4	7.4	-1.3	12.5	-0.1	-0.3	-0.6	3.3	8.4	25.5	5.6
Real Assets							9.8	11.4	4.4	23.1	27.2	14.7	8.8	7.3	2.2	22.3	30.7	13.8
Hedge Funds							2.7	6.3	-5.2	9.7	17.9	7.9	1.7	2.4	-2.6	15.3	26.0	8.6
Global TAA							-4.6	8.9	0.1	14.9	26.6	9.8	-0.9	5.2	1.3	13.4	25.6	9.1
Balanced Funds													-12.0	16.0	-10.3	15.2	24.3	5.1
Risk Parity							-5.2	12.6	12.9	6.0	35.2	11.5	-2.6	8.8	8.3	9.4	31.8	10.2
Mortgages							5.6	5.7	-0.4	12.7	26.8	9.3	2.7	6.5	1.5	13.1	24.9	8.8
Private Credit							6.3	4.5	4.1	15.2	27.2	11.4	7.9	6.8	2.3	16.4	25.9	11.8
Diversified Private Equity							18.2	14.9	5.6	24.2	33.4	18.7	18.5	13.1	4.5	27.2	37.8	19.8
Venture Capital							17.8	7.2	-7.0	23.6	45.1	15.4	22.8	9.8	-1.3	30.9	39.5	18.8
LBO							14.5	10.4	5.2	23.5	33.0	17.2	18.5	13.6	7.7	25.7	40.7	19.2
Other Private Equity							2.6	11.8	7.9	26.2	37.7	19.8	15.3	7.9	3.8	23.6	34.7	17.1
Private Equity							16.9	13.5	6.4	24.9	35.4	18.9	18.6	12.9	4.6	27.1	37.9	19.9
Total Fund Return	-0.4	13.2	7.0	6.9	10.6	7.3	-0.5	13.0	4.0	13.4	25.6	10.7	-0.3	11.4	4.2	13.6	29.7	11.4

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 %					
	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>
Stock - U.S.							-2.6	16.4	8.4	14.9	35.2	13.8	-1.1	15.2	10.2	17.7	36.9	15.1
Stock - EAFE	-2.6	19.1	8.7	9.2	7.4	8.1	-8.6	18.2	0.8	15.8	17.9	8.2	-9.1	19.0	-1.1	16.2	17.8	8.0
Stock - Global							-5.1	17.6	5.5	17.0	27.8	11.9	-4.6	17.5	5.0	16.3	28.1	11.9
Stock - Other							-8.9	4.6	11.7	-2.6	24.9	8.2	-8.5	11.1	15.1	-0.6	25.7	7.6
Stock - Emerging							-11.1	28.7	7.9	0.2	20.5	8.5	-9.7	29.5	8.1	1.3	21.0	9.1
Stock - ACWI x U.S.							-8.9	20.0	3.5	13.1	21.2	9.2	-9.9	21.4	2.0	13.2	18.7	8.5
Stock - Aggregate	-2.6	19.1	8.7	9.2	7.4	8.1	-6.1	18.2	5.8	12.7	23.8	10.3	-5.5	17.8	6.8	13.4	27.3	11.4
Fixed Income - U.S.							3.1	2.4	0.6	15.3	31.1	9.5	4.2	0.0	0.5	17.1	29.9	9.7
Fixed Income - EAFE	1.0	2.9	1.8	2.7	9.2	3.5	-0.3	6.8	-3.5	8.1	21.3	6.0	0.6	6.9	-3.6	8.9	32.5	7.7
Fixed Income - Global							1.3	4.3	-0.5	11.9	21.3	7.4	1.0	4.5	-1.3	12.1	25.2	7.3
Fixed Income - Other							2.5	3.0	1.6	9.8	22.0	7.0	1.1	3.8	1.9	9.4	27.8	7.5
Fixed Income - Long Bonds							-2.3	12.0	3.9	6.1	47.0	12.1	-0.8	6.2	4.1	11.2	42.6	12.0
Fixed Income - Emerging							-0.3	7.9	4.7	11.3	23.2	9.0	-0.7	7.2	6.4	10.5	22.8	9.0
Fixed Income - Inflation Indexed							0.5	2.7	1.6	10.0	27.9	8.0	0.2	2.5	3.2	10.9	32.2	8.6
Fixed Income - High Yield							1.5	4.9	10.9	11.1	19.7	9.9	1.6	4.3	10.2	11.2	23.1	9.9
Fixed Income - Bundled LDI													-0.4	8.3	4.9	2.9	76.3	18.7
Fixed Income - Convertibles							-1.9	16.9	-0.2	12.0	12.5	7.5	0.7	12.4	4.4	12.2	17.9	9.5
Cash							2.3	1.1	-5.1	10.8	16.5	4.9	3.3	-0.1	-3.7	11.9	18.6	5.7
Fixed Income - Aggregate	1.0	2.9	1.8	2.7	9.2	3.5	1.0	3.8	0.7	11.0	25.1	7.9	0.7	4.3	1.8	11.6	31.8	9.6
Commodities							-7.3	8.0	4.5	-8.7	-3.2	-4.3	-6.9	-0.1	7.7	-12.5	0.6	-3.6
Infrastructure							7.7	12.0	2.0	18.7	26.9	12.8	4.8	10.1	-1.0	16.4	25.7	10.1
Natural Resources							6.5	7.0	2.0	17.2	26.6	11.4	5.1	2.1	2.6	14.8	28.2	10.4
REITs							0.5	1.5	4.3	21.4	55.1	14.8	0.0	6.6	2.5	18.1	43.2	13.1
Real Estate							9.4	9.9	3.1	24.0	26.5	14.0	9.1	6.1	2.0	25.0	31.1	14.1
Other Real Assets							-3.0	15.7	-1.8	11.0	17.9	7.1	1.7	2.4	2.9	10.5	25.5	9.2
Real Assets							8.6	9.9	2.8	22.1	26.6	13.4	7.0	6.3	1.7	20.8	29.2	12.4
Hedge Funds							3.5	9.1	-6.4	9.4	19.6	8.5	2.9	3.4	-1.3	16.2	24.2	8.8
Global TAA							5.3	10.1	0.5	16.4	23.2	10.6	1.1	7.3	0.3	16.7	24.1	9.9
Balanced Funds													-11.9	20.5	-12.0	18.9	23.4	6.2
Risk Parity							-5.4	5.9	4.5	22.2	32.6	11.2	1.1	7.6	7.8	14.5	31.2	11.4
Mortgages							3.7	4.8	1.2	10.4	21.7	7.9	1.7	4.7	0.5	10.2	21.4	6.6
Private Credit							2.6	3.6	4.4	11.1	22.4	8.5	4.2	5.8	0.5	13.3	22.4	9.5
Diversified Private Equity							21.1	19.0	2.4	20.4	36.7	19.1	22.5	18.7	2.9	21.1	39.2	20.0
Venture Capital							22.0	15.8	4.5	21.2	34.5	19.0	23.1	17.3	2.1	21.6	39.9	20.3
LBO							22.5	16.1	2.8	23.2	30.2	17.7	23.4	17.3	2.4	21.9	40.2	20.1
Other Private Equity							17.6	20.8	-0.8	20.4	35.0	16.2	20.7	19.6	1.3	20.9	36.8	18.6
Private Equity							21.1	19.0	2.4	20.4	36.7	19.1	22.5	18.8	2.8	21.2	39.0	20.0
Total Policy Return	-1.1	12.8	5.9	6.5	8.5	6.4	0.0	12.0	3.7	12.5	25.1	10.3	0.0	11.1	4.1	13.3	29.9	11.3

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

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

## Net value added by asset class

Asset class	Your fund %						Peer average %						Global average %					
	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>	2018	2017	2016	2015	2014	5-yr <sup>1</sup>
Stock - U.S.							1.2	0.9	0.0	0.4	-0.3	0.5	-0.3	0.0	-0.5	-0.1	-0.7	-0.2
Stock - EAFE	0.7	0.2	1.7	0.6	3.2	1.3	-0.8	0.7	0.4	2.2	0.3	0.5	-0.9	1.1	0.1	0.9	0.2	0.3
Stock - Global							-0.1	-0.4	1.2	0.6	-0.7	0.5	0.5	1.8	-1.1	0.4	-0.1	0.2
Stock - Other							7.1	6.6	0.3	1.1	3.7	5.6	-0.7	-0.7	0.3	1.4	0.4	0.6
Stock - Emerging							-0.2	-0.7	0.1	2.0	1.5	0.4	-1.1	-1.0	-0.8	0.5	0.0	-0.3
Stock - ACWI x U.S.							0.5	0.9	-0.1	2.4	0.9	0.9	-0.7	1.2	-1.0	2.1	0.3	0.3
Stock - Aggregate	0.7	0.2	1.7	0.6	3.2	1.3	-0.4	0.8	0.6	0.6	1.0	0.5	-0.2	0.6	-0.5	0.6	-0.1	0.1
Fixed Income - U.S.							-0.2	-0.2	0.1	0.2	0.2	0.0	-0.1	0.3	0.9	0.4	0.5	0.5
Fixed Income - EAFE	0.6	0.7	0.3	0.1	0.5	0.4	0.4	1.0	0.0	-0.8	-0.5	0.0	-0.1	0.4	-0.1	-0.2	-1.3	0.0
Fixed Income - Global							-2.0	8.8	2.8	-2.5	-2.5	1.1	-0.7	1.4	1.4	-0.9	-0.1	0.5
Fixed Income - Other							0.3	1.3	-0.6	-0.3	-2.1	0.4	0.3	2.6	0.6	-0.2	-0.2	0.4
Fixed Income - Long Bonds							0.3	0.8	0.9	0.0	-0.2	0.4	-0.1	0.3	0.3	-0.2	0.3	0.2
Fixed Income - Emerging							-1.2	1.3	2.8	-3.3	-4.6	-1.0	-1.3	1.2	0.9	-1.0	-2.0	-0.3
Fixed Income - Inflation Indexed							-0.7	-0.2	0.5	0.0	0.6	0.0	0.0	-0.1	-0.3	0.0	-1.5	0.1
Fixed Income - High Yield							-0.1	0.0	-1.3	1.6	-0.5	-0.1	0.2	-0.3	-2.0	1.3	0.1	-0.2
Fixed Income - Bundled LDI													-0.1	0.0	1.6	-0.2	15.3	2.0
Fixed Income - Convertibles							2.0	-9.6	-6.0	-2.6	-10.2	-5.6	0.3	-4.7	-4.8	-1.4	-0.9	-2.6
Cash							-0.3	0.2	0.1	3.6	0.2	0.7	0.0	-0.1	0.4	0.1	0.3	0.0
Fixed Income - Aggregate	0.6	0.7	0.3	0.1	0.5	0.4	0.0	0.7	0.8	0.1	0.7	0.3	0.0	0.1	0.3	-0.2	-0.9	-0.1
Commodities							1.7	-3.2	0.5	0.5	1.2	0.6	-1.0	-0.2	1.4	-0.7	2.9	0.3
Infrastructure							1.7	1.8	3.3	7.0	0.8	3.0	4.7	4.0	2.2	7.1	3.7	4.7
Natural Resources							2.6	-4.7	1.7	-2.4	-2.7	-1.4	2.2	0.2	0.6	-3.7	4.9	0.4
REITs							-0.1	0.2	-0.2	0.2	1.6	0.3	-0.4	0.1	-1.1	-0.6	1.0	-0.1
Real Estate							1.3	2.0	0.7	0.8	1.7	1.4	3.1	1.3	0.2	0.5	0.5	0.8
Other Real Assets							-15.8	-9.3	9.2	-12.3	-3.5	-7.2	-1.8	-2.7	0.2	-2.9	-0.7	-2.8
Real Assets							1.2	1.5	2.0	1.3	1.2	1.6	1.7	0.9	0.5	1.5	1.5	1.3
Hedge Funds							-0.8	-2.8	1.0	0.3	-1.7	-0.6	-1.3	-1.1	-1.2	-0.9	1.5	-0.5
Global TAA							-9.9	-1.2	-0.3	-1.5	3.4	-0.8	-2.3	-2.0	1.3	-3.5	1.5	-0.5
Balanced Funds													-0.1	-4.4	1.7	-3.7	0.8	-1.1
Risk Parity							0.2	6.7	8.3	-16.2	2.6	0.4	-3.8	1.1	1.0	-6.4	0.0	-1.3
Mortgages							1.9	0.9	-1.6	2.3	5.1	1.4	1.1	1.5	1.0	2.5	3.0	2.4
Private Credit							3.6	-0.3	0.4	5.2	4.8	2.9	3.9	1.2	0.8	3.4	3.1	2.7
Diversified Private Equity							-3.0	-4.2	3.1	4.0	-4.2	-0.6	-3.8	-5.7	1.5	5.8	-1.6	-0.3
Venture Capital							-4.7	-8.4	-12.1	2.6	9.1	-4.0	-0.3	-7.0	-3.7	8.7	-1.1	-1.4
LBO							-8.5	-5.5	2.0	0.3	1.2	-0.8	-4.9	-3.8	6.1	3.1	0.6	-0.7
Other Private Equity							-14.7	-10.1	9.1	6.7	-0.9	3.7	-5.5	-11.3	2.1	1.9	-2.0	-1.7
Private Equity							-4.4	-5.6	3.9	4.7	-2.1	-0.4	-3.7	-5.9	1.8	5.5	-1.4	-0.2
Total Fund Return	0.7	0.4	1.1	0.4	2.1	0.9	-0.5	1.0	0.3	0.9	0.6	0.4	-0.3	0.3	0.1	0.3	-0.2	0.1

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 except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. Refer to the appendix of this section for details.

## Your policy return and value added calculation - 2018

### 2018 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
Stock - EAFE	59.0%	CMVINXBINN - Custom Index - OSEBX	-2.6%	-1.9%	0.7%
Fixed Income - EAFE	41.0%	Barclays Capital Global Aggregate Nordic ex Norv	1.0%	1.6%	0.6%
<b>Total</b>	<b>100.0%</b>				
Net Actual Return (reported by you)					-0.4%
Calculated Policy Return = sum of (policy weights X benchmark returns)				-1.1%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.0%</u>	
Policy Return (reported by you)					<u>-1.1%</u>
Net Value Added (Net Return - Policy Return)					0.7%

The fund return consists of Equity, Fixed Income and Real Estate. The fund benchmark is the weighted benchmark of

## Your policy return and value added calculations - 2014 to 2017

### 2017 Policy Return and Value Added

Asset class	Policy	Benchmark		Net return	Value added
	weight	Description	Return		
Stock - EAFE	64.5%	CMVINXBINN -	19.1%	19.3%	0.2%
Fixed Income - EAFE	35.5%	Barclays Capital	2.9%	3.6%	0.7%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					13.2%
Calculated policy return (sum: Policy weights x benchmarks)				13.4%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.6%</u>	
Policy return (reported by you)					<u>12.8%</u>
Net Value Added (Net Return - Policy Return)					0.4%

### 2015 Policy Return and Value Added

Asset class	Policy	Benchmark		Net return	Value added
	weight	Description	Return		
Stock - EAFE	59.5%	CMVINXBINN -	9.2%	9.8%	0.6%
Fixed Income - EAFE	40.5%	Barclays Capital	2.7%	2.9%	0.1%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					6.9%
Calculated policy return (sum: Policy weights x benchmarks)				6.6%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.1%</u>	
Policy return (reported by you)					<u>6.5%</u>
Net Value Added (Net Return - Policy Return)					0.4%

### 2016 Policy Return and Value Added

Asset class	Policy	Benchmark		Net return	Value added
	weight	Description	Return		
Stock - EAFE	61.1%	CMVINXBINN -	8.7%	10.4%	1.7%
Fixed Income - EAFE	38.9%	Barclays Capital	1.8%	2.1%	0.3%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					7.0%
Calculated policy return (sum: Policy weights x benchmarks)				6.0%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.1%</u>	
Policy return (reported by you)					<u>5.9%</u>
Net Value Added (Net Return - Policy Return)					1.1%

### 2014 Policy Return and Value Added

Asset class	Policy	Benchmark		Net return	Value added
	weight	Description	Return		
Stock - EAFE	58.1%	CMVINXBINN -	7.4%	10.6%	3.2%
Fixed Income - EAFE	41.9%	Barclays Capital	9.2%	9.7%	0.5%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					10.6%
Calculated policy return (sum: Policy weights x benchmarks)				8.1%	
Adjustment to reflect rebalancing and overlay impacts				<u>0.4%</u>	
Policy return (reported by you)					<u>8.5%</u>
Net Value Added (Net Return - Policy Return)					2.1%

## Profit/Loss on overlay programs

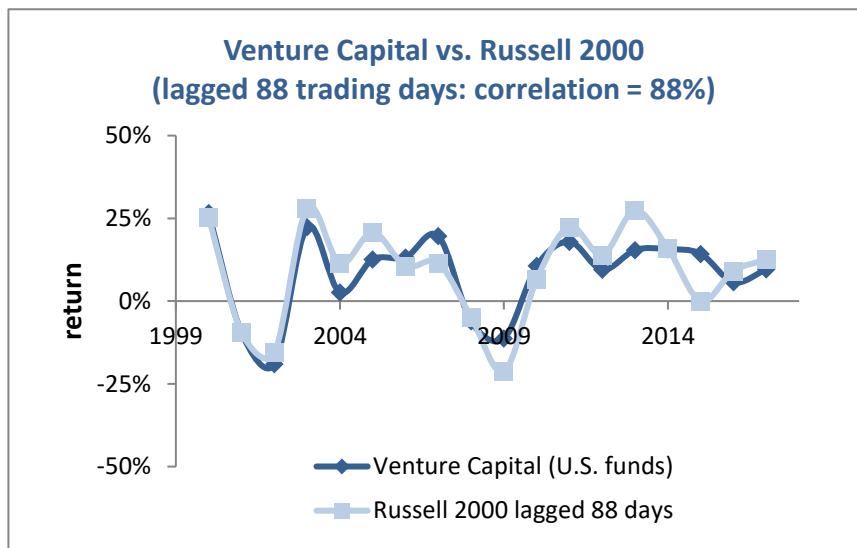
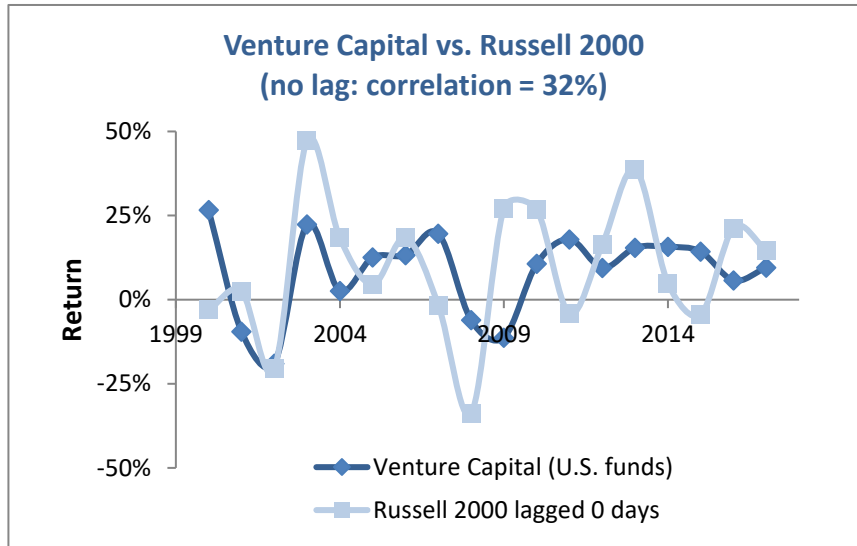
Overlay type	Your fund		Peer median				Global median			
	2018	2017	2018		2017		2018		2017	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			-1.8	5	0.0	5	-0.1	14	0.1	13
Ext. Discretionary Currency							-0.3	10	-0.1	12
Internal Global TAA			-21.9	4	35.6	4	-16.5	9	15.0	8
External Global TAA							-1.1	3	6.4	3
Internal PolicyTilt TAA			4.6	3	5.1	3	0.0	13	-0.1	11
External PolicyTilt TAA							0.0	2	18.2	2
Internal Commodities			-4.7	1	0.4	1	-4.7	3	0.4	3
External Commodities							-2.7	4	1.9	3
Internal Long/Short			3.2	4	8.8	4	-0.7	7	14.4	8
External Long/Short							0.0	1	38.6	1
Internal Other			-1.5	4	12.4	4	0.0	11	0.6	12
External Other			-21.5	1	-2.1	1	0.0	15	0.0	11

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 Russell 2000 index return was -33.8% versus -4.8% 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 27.7% using the un-lagged benchmarks versus -1.3% using the same benchmark lagged to match the average 88 day reporting lag of venture capital funds.



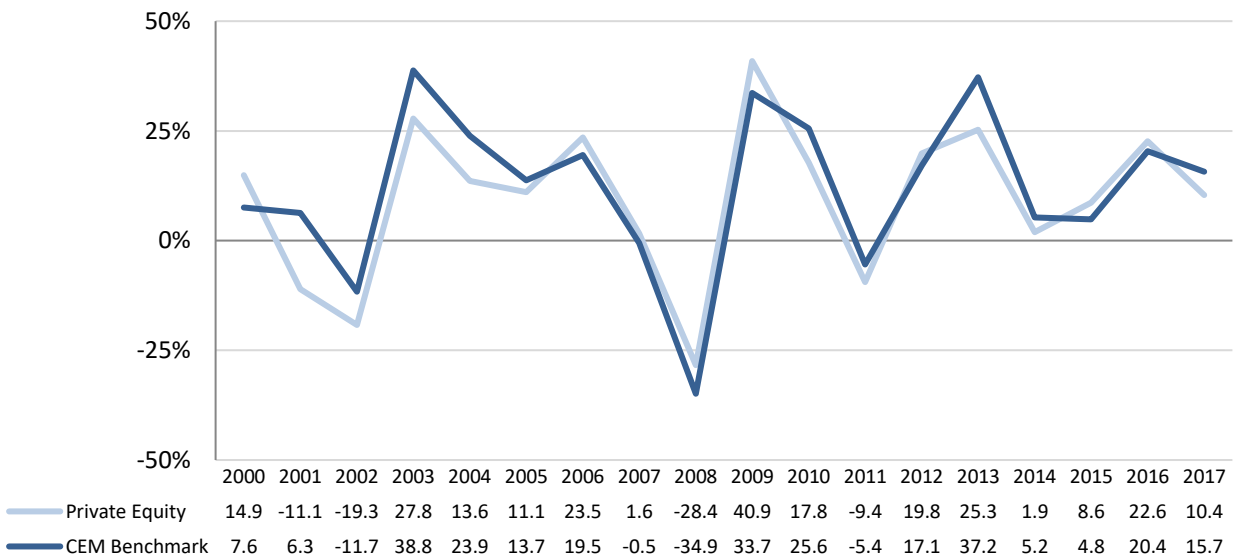
- Un-investable peer-based benchmarks. Peer based benchmarks reflect the reporting lags in peer portfolios so they have much better correlations than un-lagged investable benchmarks. But their relationship statistics are not as good as for lagged investable benchmarks.
- Aspirational premiums (i.e.,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

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

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

- Investable. They are comprised of 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

## Total cost and benchmark cost

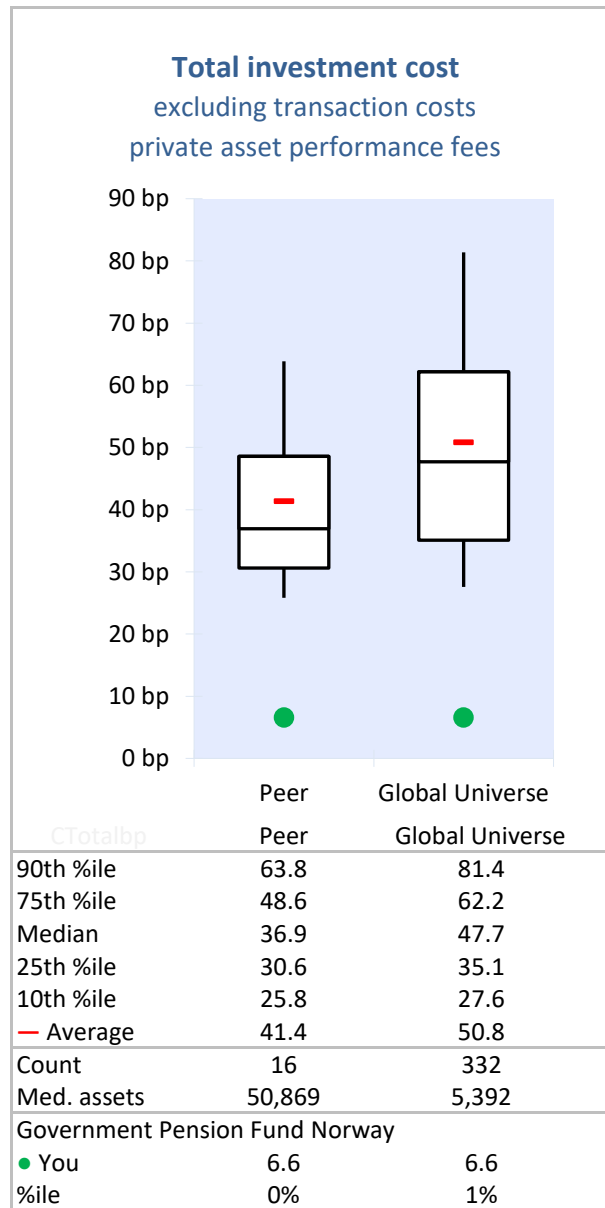
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## Comparisons of total investment cost

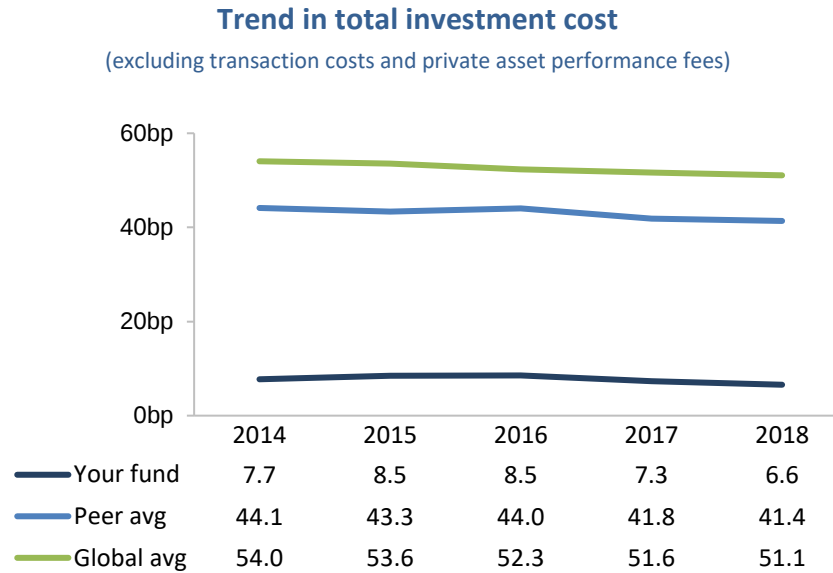
Your total investment cost, excluding transaction costs and private asset performance fees, of 6.6 bps was below the peer median of 36.9 bps.

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

Your total investment cost, excluding transaction costs and private asset performance fees, decreased from 7.7 bps in 2014 to 6.6 bps in 2018.



Trend analysis is based on 253 Global funds and 16 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.
- Green shading indicates that the cost type has been newly added for the 2014 data year.
- CEM currently excludes external private asset performance fees 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 2018 total investment cost, excluding transaction costs and private asset performance fees, was 6.6 bp or €15.9 million.

### Your investment costs

	Internal		External Passive	External Active			Total <sup>1</sup>		
	Passive	Active	Monitoring Fees & Other	Base Fees	Perform. Fees	Monitor. & Other	€000s	bps	% of Total
<b>Asset management</b>									
Stock - EAFE		7,472					7,472		47%
Fixed Income - EAFE		6,426					6,426		40%
Total asset management costs excluding private asset performance fees							13,899	5.7bp	87%
<b>Oversight, custodial &amp; other asset related costs</b>									
Oversight of the Fund							937		6%
Trustee & Custodial							624		4%
Consulting and Performance Measurement							66		0%
Audit							227		1%
Other							155		1%
Total oversight, custodial & other costs							2,009	0.8bp	13%
Total investment costs excluding transaction costs and private asset performance fees							15,908	6.6bp	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 (2018 - 2014)

	Investment costs (€000s)					Change (€000s)				Change (%)			
	2018	2017	2016	2015	2014	2018	2017	2016	2015	2018	2017	2016	2015
<b>Asset management</b>													
Stock - EAFE	7,472	7,445	8,622	7,910	7,120	27	-1,177	712	790	0%	-14%	9%	11%
Fixed Income - EAFE	6,426	6,647	7,217	6,353	5,657	-221	-570	864	696	-3%	-8%	14%	12%
Total excl. private asset perf. fees	13,899	14,092	15,839	14,263	12,777	-194	-1,747	1,576	1,486	-1%	-11%	11%	12%
<b>Oversight, custodial &amp; other asset related costs</b>													
Oversight of the Fund	937	1,604	1,519	1,721	1,480	-667	85	-202	241	-42%	6%	-12%	16%
Trustee & Custodial	624	721	895	763	721	-97	-174	132	42	-13%	-19%	17%	6%
Consulting and Performance Measurement	66	45	52	71	59	21	-7	-19	12	47%	-13%	-27%	20%
Audit	227	270	306	267	283	-43	-36	39	-16	-16%	-12%	15%	-6%
Other	155	105	293	400	336	50	-188	-107	64	48%	-64%	-27%	19%
Total oversight, custodial & other	2,009	2,745	3,065	3,222	2,879	-736	-320	-157	343	-27%	-10%	-5%	12%
Total investment costs <sup>1</sup>	15,908	16,837	18,904	17,485	15,656	-930	-2,067	1,419	1,829	-6%	-11%	8%	12%
Total in basis points	6.6bp	7.3bp	8.5bp	8.5bp	7.7bp								

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 9.3 bps below your benchmark cost of 15.9 bps. This implies that your fund was low cost by 9.3 bps compared to the peer median, after adjusting for your fund's asset mix.

### Your cost versus benchmark

	€000s	bps
Your fund's total investment cost excluding transaction costs and illiquid asset performance fees	15,908	6.6 bp
- Your fund's benchmark	38,414	15.9 bp
= Your fund's cost savings	-22,507	-9.3 bp

Your benchmark cost is an estimate of your total costs assuming that you paid the peer median cost for each of your investment mandates and fund oversight. The calculation of your benchmark cost is shown on the following page.

The reasons why your fund's total cost was below your benchmark are summarized in the table below. Details of each of the impacts below are provided on pages 9 to 11.

### Reasons why your fund was low cost

	Cost/-Savings impact	
	€000s	bps
<u>Differences in implementation style:</u>		
Less passive	5,377	2.2 bp
More int. active % of total active	-19,973	-8.2 bp
Less overlays and unfunded strategies	-1,585	-0.7 bp
Total style impact	-16,181	-6.7 bp
<u>Paying more/-less for similar services:</u>		
External investment management	0	0.0 bp
Internal investment management	-3,505	-1.4 bp
Oversight, custodial and other	-2,821	-1.2 bp
Total impact of paying more /-less	-6,325	-2.6 bp
Total savings	-22,507	-9.3 bp

## Benchmark cost calculation

Your 2018 benchmark cost was 15.9 basis points or 38.4 million. It equals your holdings for each asset class multiplied by the peer median cost for the asset class. The peer median cost is the style weighted average for all implementation styles (i.e., internal passive, internal active, external passive, external active).

Asset class	Your average assets (A)	Weighted peer median cost <sup>1</sup> (B)	Benchmark €000s (A X B)
<b>Asset management costs</b>			
Stock - EAFE	14,256	16.1 bp	22,991
Fixed Income - EAFE	9,909	9.1 bp	9,009
Overlay Programs <sup>2</sup>	24,221	0.7 bp	1,585
Benchmark for asset management	24,221	13.9 bp	33,584
<b>Oversight, custody and other costs<sup>3</sup></b>			
Oversight	24,221	1.0 bp	
Trustee & Custodial	24,221	0.4 bp	
Consulting	24,221	0.0 bp	
Audit	24,221	0.0 bp	
Other	24,221	0.1 bp	
Benchmark for oversight, custody & other	24,221	2.0 bp	4,830
<b>Total benchmark cost</b>		<b>15.9 bp</b>	<b>38,414</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.

## Cost impact of differences in implementation style

Differences in implementation style (passive vs. active, internal vs. external, etc.) relative to your peers saved you 6.7 bps.

Implementation choices	Assets by style	Peer benchmark cost			Style 1 %			Cost/	
		Style 1	Style 2	Style 1 -Savings	Your	Peer average	More/ -Less	-Savings €000s	bps
	a	b	c	d = b - c			e	a x d x e	
<u>Passive vs active</u>	Total	Passive	Active		Passive % of total assets				
Stock - EAFE	14,256	3 bp	19 bp	-16 bp	0%	20%	-20%	4,540	
Fixed Income - EAFE	9,909	3 bp	10 bp	-7 bp	0%	12%	-12%	837	
Less passive								5,377	2.2 bp
<u>Internal active vs external active</u>	Active assets	Internal active	External active		Internal active % of active				
Stock - EAFE	14,256	9 bp	49 bp	-40 bp	100%	74%	26%	-15,159	
Fixed Income - EAFE	9,909	5 bp	35 bp	-30 bp	100%	84%	16%	-4,814	
More int. active % of total active								-19,973	-8.2 bp
Less overlays and unfunded strategies								-1,585	-0.7 bp
Total impact of differences in implementation style								-16,181	-6.7 bp



## Cost impact of overlays

As summarized on the previous page, the style impact of overlays saved you 0.7 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	24,221	NA	0.09 bp	-207
Currency - Discretionary	24,221	NA	0.08 bp	-204
Rebalancing / Passive Beta - Hedge	24,221	NA	0.05 bp	-125
Duration Management - Hedge	24,221	NA	0.01 bp	-17
Global TAA - Discretionary	24,221	NA	0.08 bp	-187
Policy tilt TAA - Discretionary	24,221	NA	0.06 bp	-135
Commodity Futures - Discretionary	24,221	NA	0.00 bp	-8
Long/Short - Discretionary	24,221	NA	0.16 bp	-377
Other Overlay - Discretionary	24,221	NA	0.06 bp	-135
<b>External Overlays</b>				
Currency - Hedge	24,221	NA	0.01 bp	-13
Currency - Discretionary	24,221	NA	0.03 bp	-62
Rebalancing / Passive Beta - Hedge	24,221	NA	0.04 bp	-89
Other Overlay - Discretionary	24,221	NA	0.01 bp	-27
Total impact in 000s				-1,585
Total impact in basis points				-0.7 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 2.6 bps.

Style	Your avg holdings (mils)	Cost in bps			Cost/-Savings	
		Your	Peer median	More/-less	€000s	bps
<b>Internal asset management</b>		(A)		(B)	(A X B)	
Stock - EAFE	active	14,256	5.2	8.7	-3.4	-4,899
Fixed Income - EAFE	active	9,909	6.5	5.1	1.4	1,395
Total for internal management						-3,505 -1.4 bp
<b>Oversight, custodial, other<sup>1</sup></b>						
Oversight			0.4	1.0	-0.6	
Trustee & Custodial			0.3	0.4	-0.2	
Consulting			0.0	0.0	0.0	
Audit			0.1	0.0	0.1	
Other			0.1	0.1	0.0	
Total for oversight, custodial, other		24,221	0.8	2.0	-1.2	-2,821 -1.2 bp
Total						-6,325 -2.6 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	5.2 bp	16.1 bp	-10.9 bp	14,256	-15,518	-10,619	-4,899
Fixed Income - EAFE	6.5 bp	9.1 bp	-2.6 bp	9,909	-2,582	-3,977	1,395
Overlay Programs <sup>2</sup>	0.0 bp	0.7 bp	-0.7 bp	24,221	-1,585	-1,585	0
Total asset management	5.7 bp	13.9 bp	-8.1 bp	24,221	-19,686	-16,181	-3,505
<b>Oversight, custody and other costs<sup>3</sup></b>							
Oversight of the Fund	0.4 bp	1.0 bp	-0.6 bp				
Trustee & Custodial	0.3 bp	0.4 bp	-0.2 bp				
Consulting	0.0 bp	0.0 bp	0.0 bp				
Audit	0.1 bp	0.0 bp	0.1 bp				
Other	0.1 bp	0.1 bp	0.0 bp				
Total oversight, custody & other	0.8 bp	2.0 bp	-1.2 bp	24,221	-2,821	n/a	-2,821
<b>Total</b>	<b>6.6 bp</b>	<b>15.9 bp</b>	<b>-9.3 bp</b>	<b>24,221</b>	<b>-22,507</b>	<b>-16,181</b>	<b>-6,325</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.

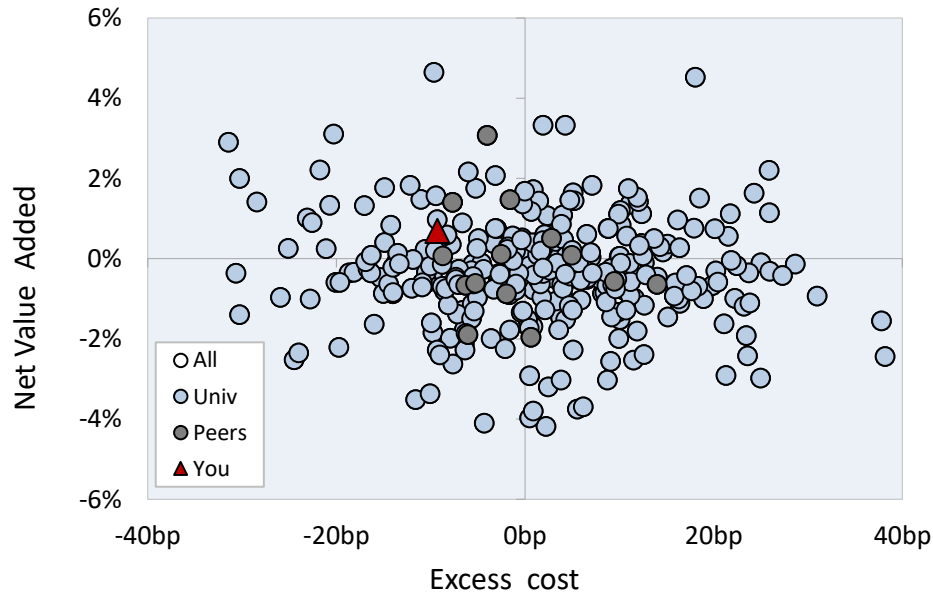
2. Total fund average holdings is used as the base when calculating the relative cost impact of the overlay programs.

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

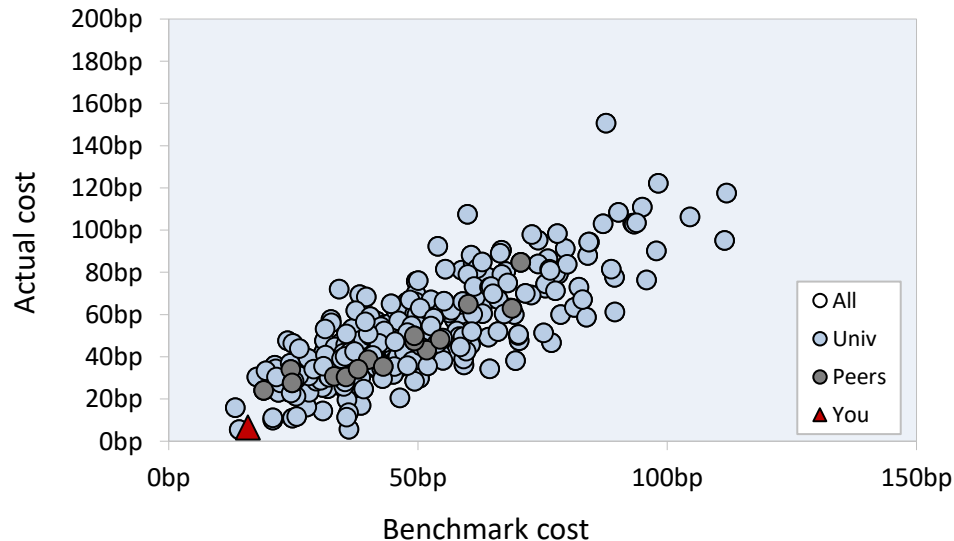
## Your cost effectiveness ranking

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 2018, your fund ranked in the positive value added, low cost quadrant.

**Your 2018 Net value added 0.7%, Excess cost -9 bps**



**Your 2018 Actual cost 6.6 bps, Benchmark cost 15.9 bps**



For all funds except your fund, benchmark cost equals the sum of group median costs x fund's average holdings by asset class plus group median cost of derivatives/overlays plus group median cost of oversight/support. Group is peer if the fund is in the peer group, universe - if the fund is part of the universe, and global/database otherwise. Your fund's benchmark cost is calculated using peer-based methodology per page 7 of this section.

## Appendix A: 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  
= (13% x 2.2 bp) + (59% x 8.7 bp) + (7% x 5.2 bp) + (21% x 48.8 bp) = 16.1 bp

Your cost versus benchmark (-savings/+excess) = asset class your cost - asset class peer cost  
= 5.2 bp - 16.1 bp = -10.9 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)  
= 3.2 bp + 0.0 bp + -10.6 bp = -7.4 bp

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

= (peer average passive cost - peer average active cost) x  
(passive % of asset, you - passive % of asset, peer average)  
= (3.2 bp - 19.3 bp) x (0% - 20%) = 3.2 bp

Peer average passive cost = weighted average by peer average style of peer median costs for  
internal passive and external passive management  
= [(13% x 2.2 bp) + (7% x 5.2 bp)] / (13% + 7%) = 3.2 bp

Peer average active cost = weighted average by peer average style of peer median costs for  
internal active and external active management  
= [(59% x 8.7 bp) + (21% x 48.8 bp)] / (59% + 21%) = 19.3 bp

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

= (peer average internal passive cost - peer average external passive cost) x  
(internal passive % of passive, you - internal passive % of passive, peer average) x passive % of asset, you  
= (2.2 bp - 5.2 bp) x (0% - 0%) x 0% = 0.0 bp

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

= (peer average internal active cost - peer average external active cost) x  
(internal active % of active, you - internal active % of active, peer avg) x active % of asset, you  
= (8.7 bp - 48.8 bp) x (100% - 74%) x 100% = -10.6 bp

Cost impact of paying more/-less

= (cost internal passive, you - cost internal passive, peer) x internal passive % of asset, you +  
(cost internal active, you - cost internal active, peer) x internal active % of asset, you +  
(cost external passive, you - cost external passive, peer) x external passive % of asset, you +  
(cost external active, you - cost external active, peer) x external active % of asset, you  
= (0.0 bp - 2.2 bp) \* 0% + (5.2 bp - 8.7 bp) \* 100% + (0.0 bp - 5.2 bp) \* 0% + (0.0 bp - 48.8 bp) \* 0% = -3.4 bp

Your cost versus benchmark (-savings/+excess)

= cost impact of differences in implementation style + cost impact of paying more/-less  
= -7.4 bp + -3.4 bp = -10.9 bp

## Appendix A: Benchmarking methodology formulas and data (page 2 of 2)

### b) 2018 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)							Weighted Median
	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		5.2						2.2	8.7	5.2	48.8				16.1
Fixed Income - EAFE		6.5						2.8	5.1	4.3	34.7				9.1

### c) 2018 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%	100.0%	0.0%	0.0%				13.1%	59.0%	6.7%	21.2%			
Fixed Income - EAFE	0.0%	100.0%	0.0%	0.0%				9.8%	73.3%	2.6%	14.4%			

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

# 5

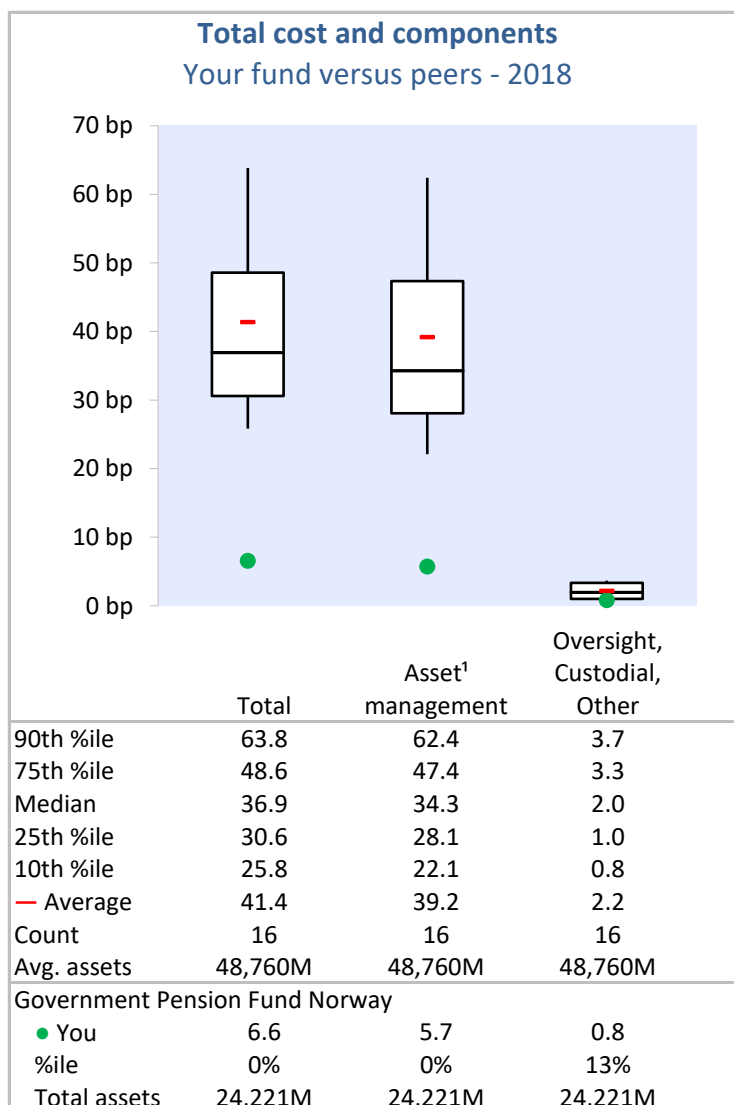
## Cost comparisons

Total fund cost	2
Governance, operations & support	3
Public asset classes	
- Stock	4
- Fixed Income	10
- Commodities	21
- REITs	22
Real asset classes	
- Real estate ex-REITs	23
- Infrastructure	24
- Natural resources	25
- Other real assets	26
Private equity	
- Diversified private equity	27
- LBO	28
- Venture capital	29
- Private credit	30
- Other private equity	32
Global TAA	33
RiskParity	34
Hedge Funds	35
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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.

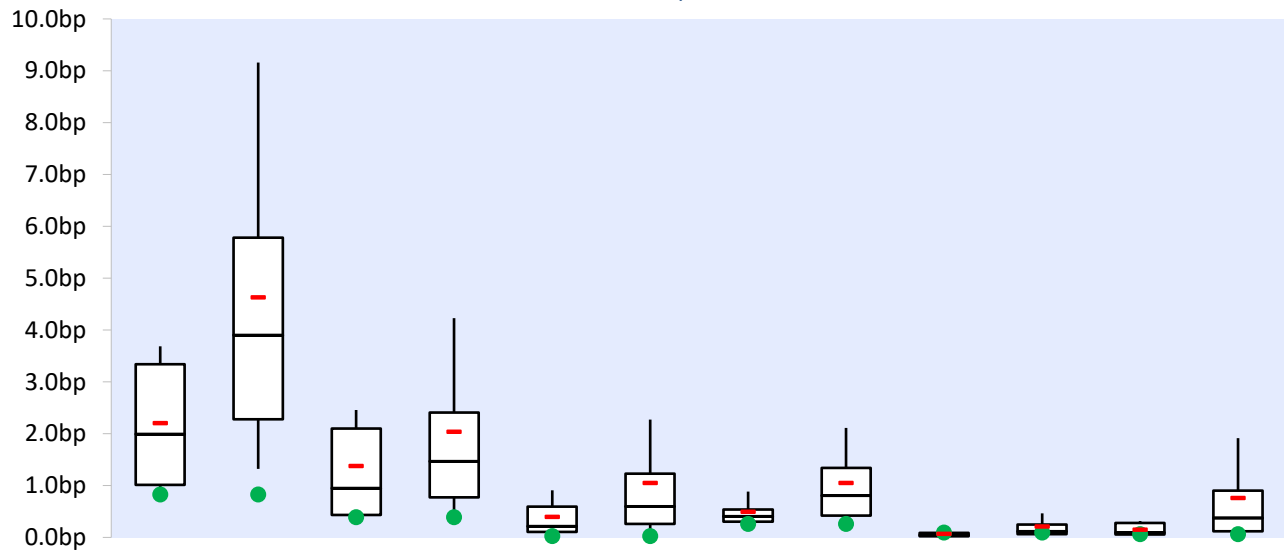
The 25th to 75th percentile range is the most relevant since higher and lower values may include outliers caused by unusual circumstances, such as performance-based fees. Count refers to the number of funds in your peer group that have costs in this category. It enables you to gauge the statistical significance.





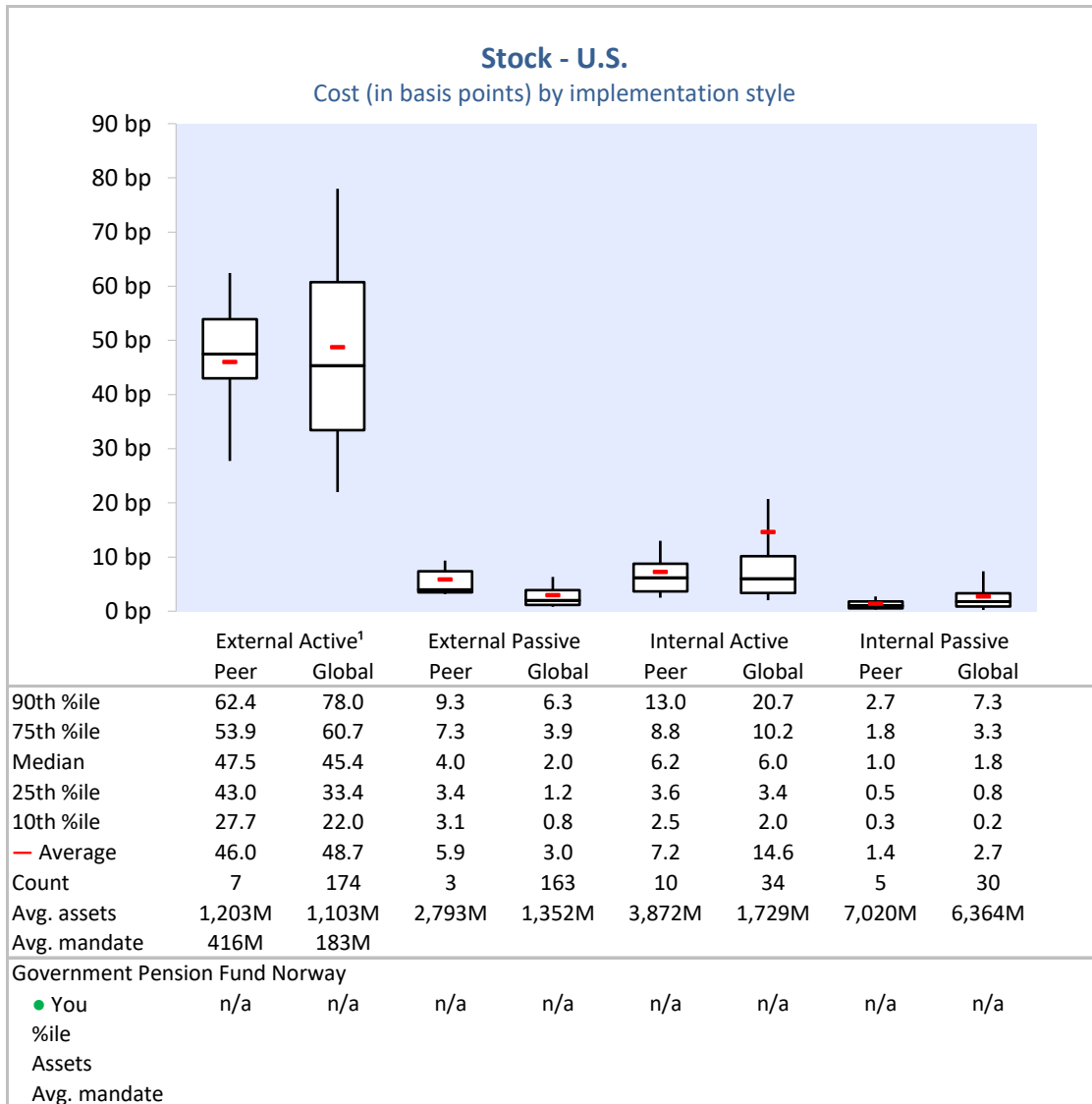
## Governance, operations & support

Cost as a % of total plan assets



	<u>Total</u>		<u>Oversight<sup>1</sup></u>		<u>Consulting &amp; Perf. Meas.</u>		<u>Custody</u>		<u>Audit</u>		<u>Other</u>	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	3.7	9.2	2.5	4.2	0.9	2.3	0.9	2.1	0.1	0.5	0.3	1.9
75th %ile	3.3	5.8	2.1	2.4	0.6	1.2	0.5	1.3	0.1	0.2	0.3	0.9
Median	2.0	3.9	1.0	1.5	0.2	0.6	0.4	0.8	0.0	0.1	0.1	0.4
25th %ile	1.0	2.3	0.4	0.8	0.1	0.3	0.3	0.4	0.0	0.1	0.1	0.1
10th %ile	0.8	1.3	0.3	0.4	0.1	0.1	0.3	0.2	0.0	0.0	0.0	0.0
— Average	2.2	4.6	1.4	2.0	0.4	1.1	0.5	1.0	0.1	0.2	0.1	0.8
Count	16	332	16	332	6	268	16	319	14	292	13	240
Avg. assets	48,760M	22,091M	48,760M	22,091M	48,760M	22,091M	48,760M	22,091M	48,760M	22,091M	48,760M	22,091M
Government Pension Fund Norway												
● You	0.8	0.8	0.4	0.4	0.0	0.0	0.3	0.3	0.1	0.1	0.1	0.1
%ile	13%	4%	20%	9%	0%	3%	7%	14%	85%	41%	33%	15%
Plan assets	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M	24,221M

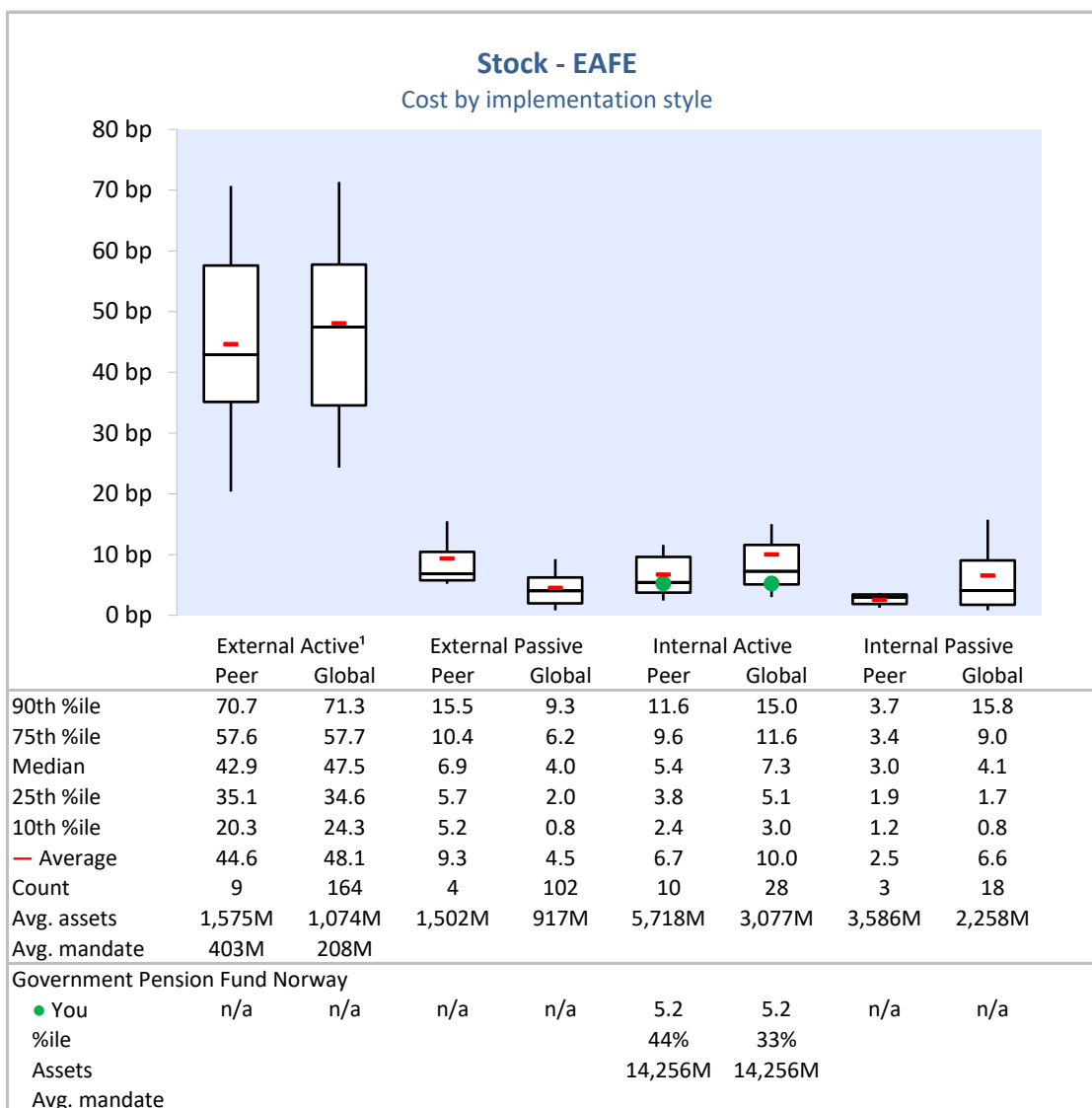
1. Oversight costs include the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees/salaries of the Board or Investment Committee. All costs associated with the above including fees/salaries, travel, director's insurance 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	31.0	43.4
Performance fees*	n/a	13.4	4.6
Internal and other	<u>n/a</u>	<u>1.6</u>	<u>0.7</u>
Total	n/a	46.0	48.7

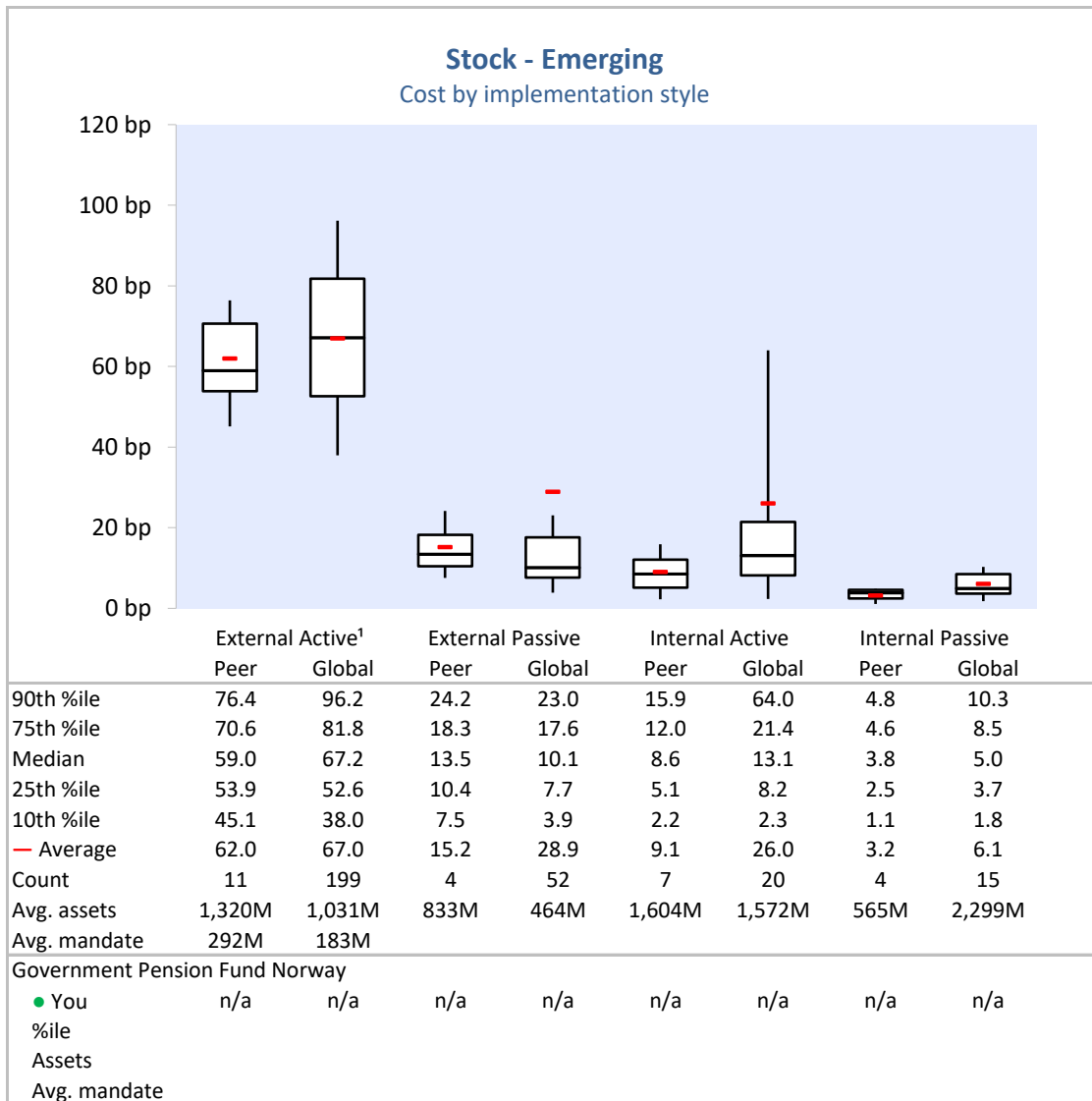
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 4.0 bps for peers (94 funds) and 16.9 bps for Global participants (47 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	36.9	45.0
Performance fees*	n/a	5.2	2.4
Internal and other	<u>n/a</u>	<u>2.5</u>	<u>0.7</u>
Total	n/a	44.6	48.1

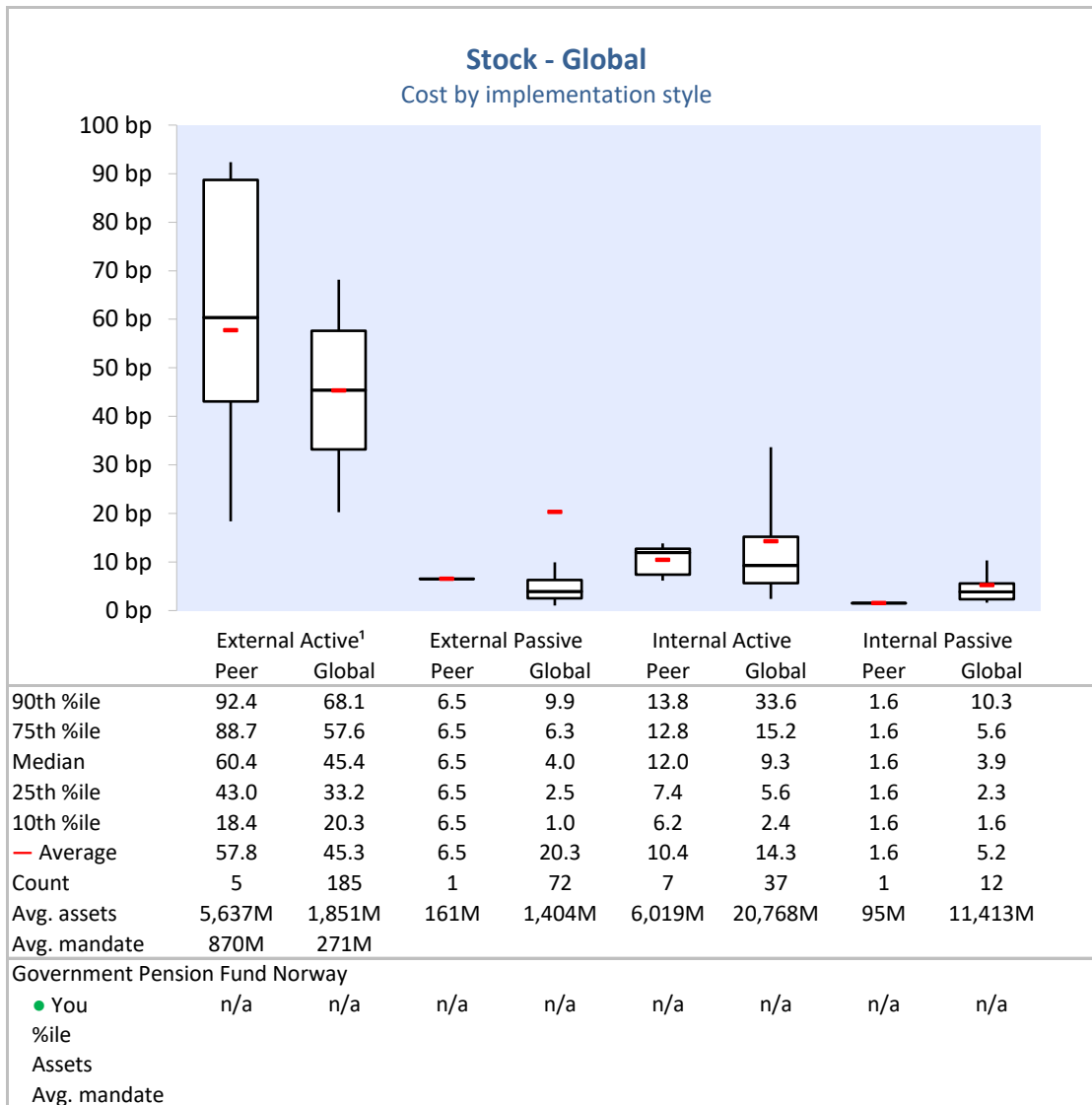
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 23.5 bps for peers (2 funds) and 11.4 bps for Global participants (35 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	51.1	64.2
Performance fees*	n/a	7.0	1.6
Internal and other	<u>n/a</u>	<u>3.9</u>	<u>1.1</u>
Total	n/a	62.0	67.0

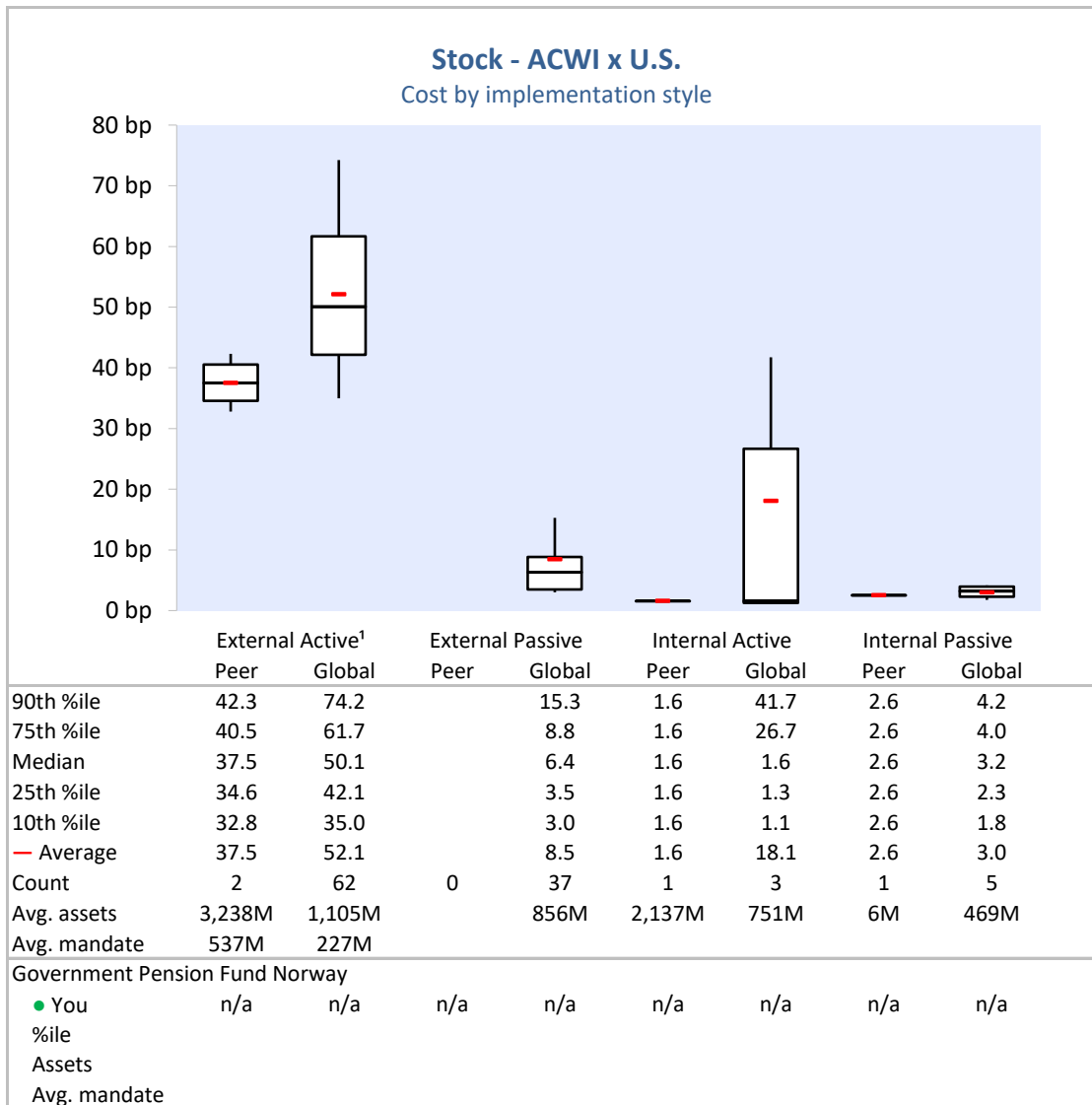
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 19.2 bps for peers (4 funds) and 9.0 bps for Global participants (36 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	44.2	42.5
Performance fees*	n/a	10.0	2.0
Internal and other	<u>n/a</u>	<u>3.6</u>	<u>0.9</u>
Total	n/a	57.8	45.3

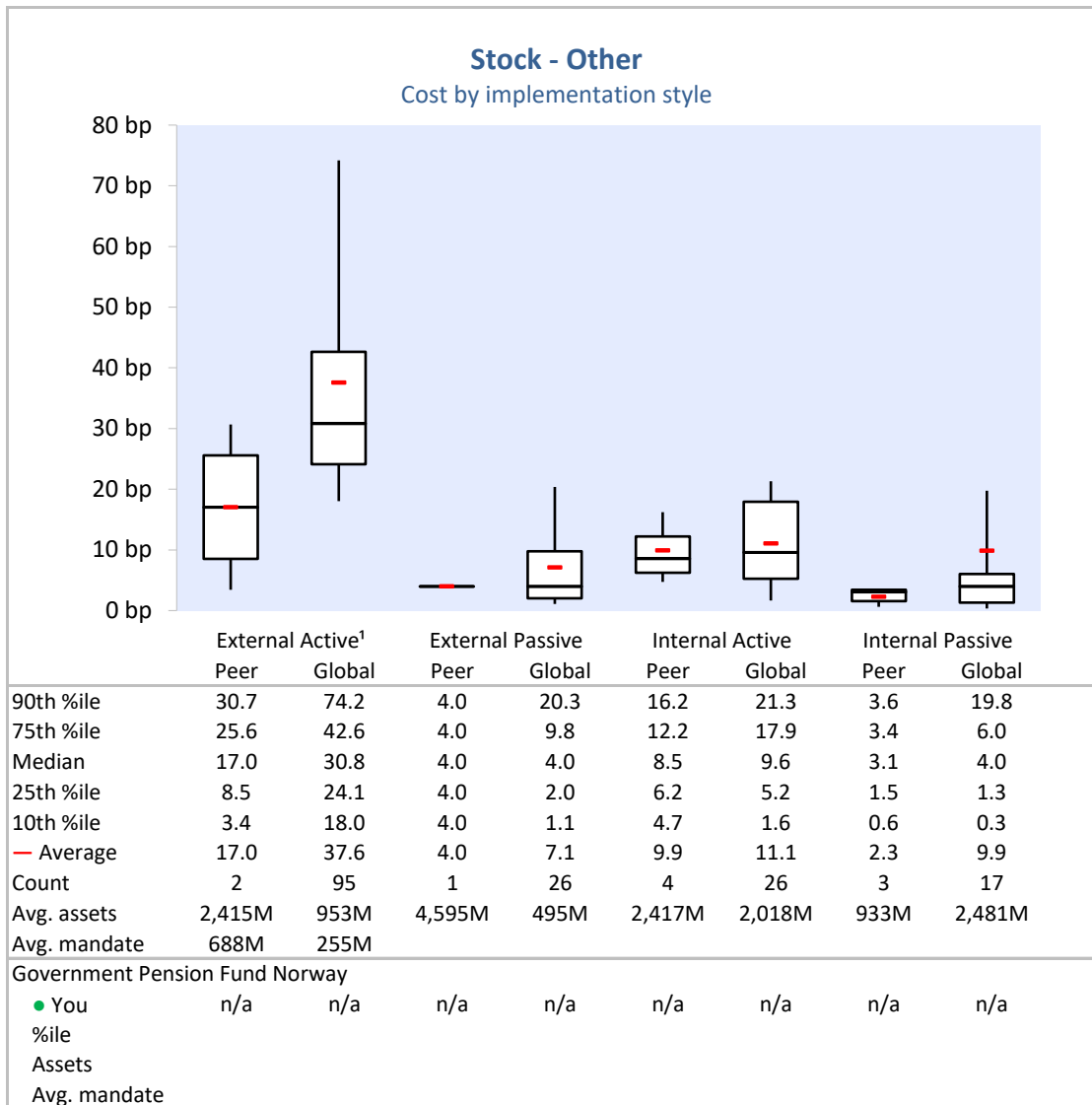
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 12.5 bps for peers (4 funds) and 7.2 bps for Global participants (50 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	37.0	49.8
Performance fees*	n/a	n/a	2.1
Internal and other	<u>n/a</u>	<u>0.6</u>	<u>0.1</u>
Total	n/a	37.5	52.1

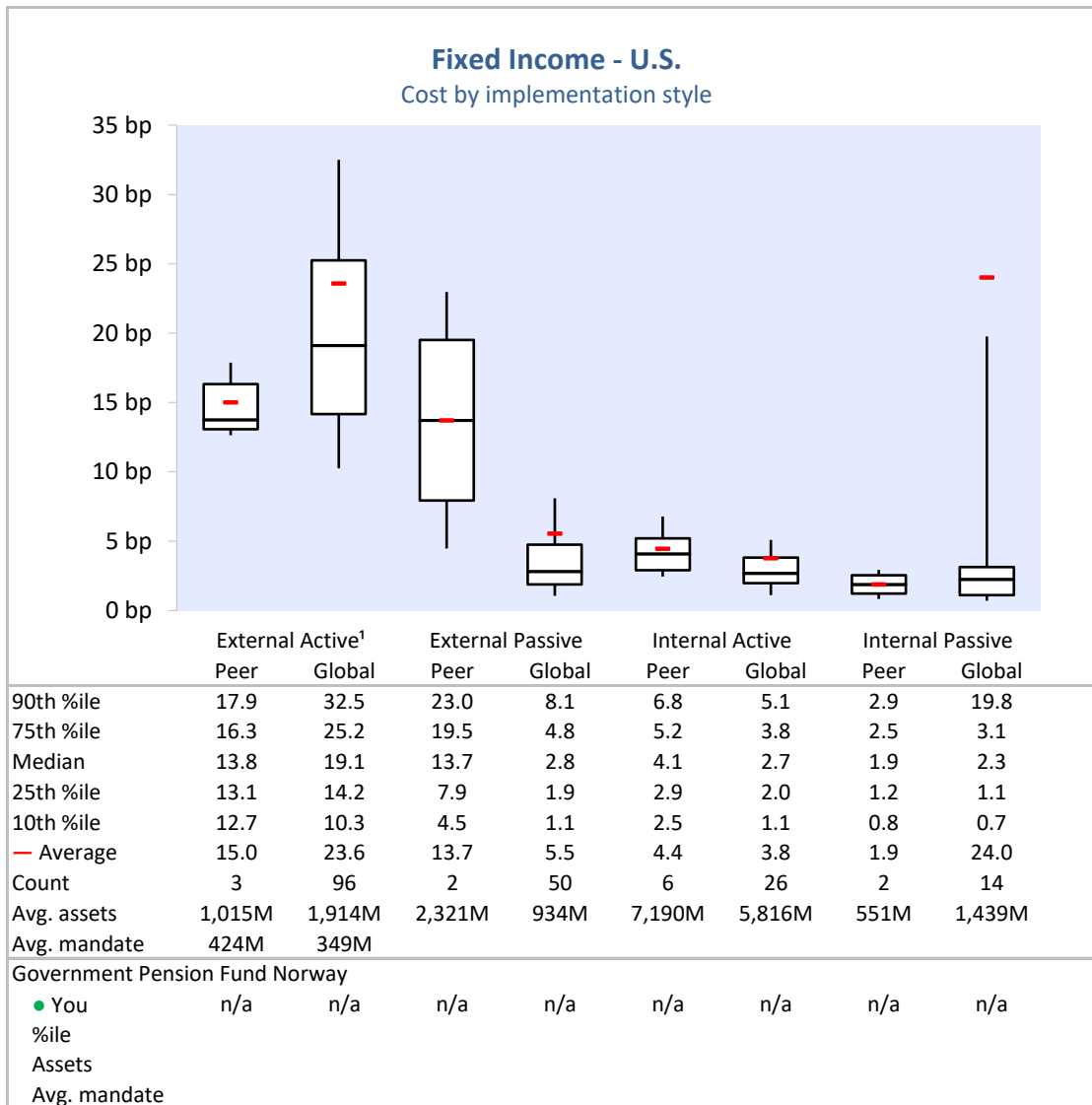
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 10.2 bps for Global participants (13 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	15.4	36.1
Performance fees*	n/a	0.3	0.8
Internal and other	<u>n/a</u>	<u>1.3</u>	<u>0.7</u>
Total	n/a	17.0	37.6

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.7 bps for peers (1 fund) and 5.6 bps for Global participants (14 funds).

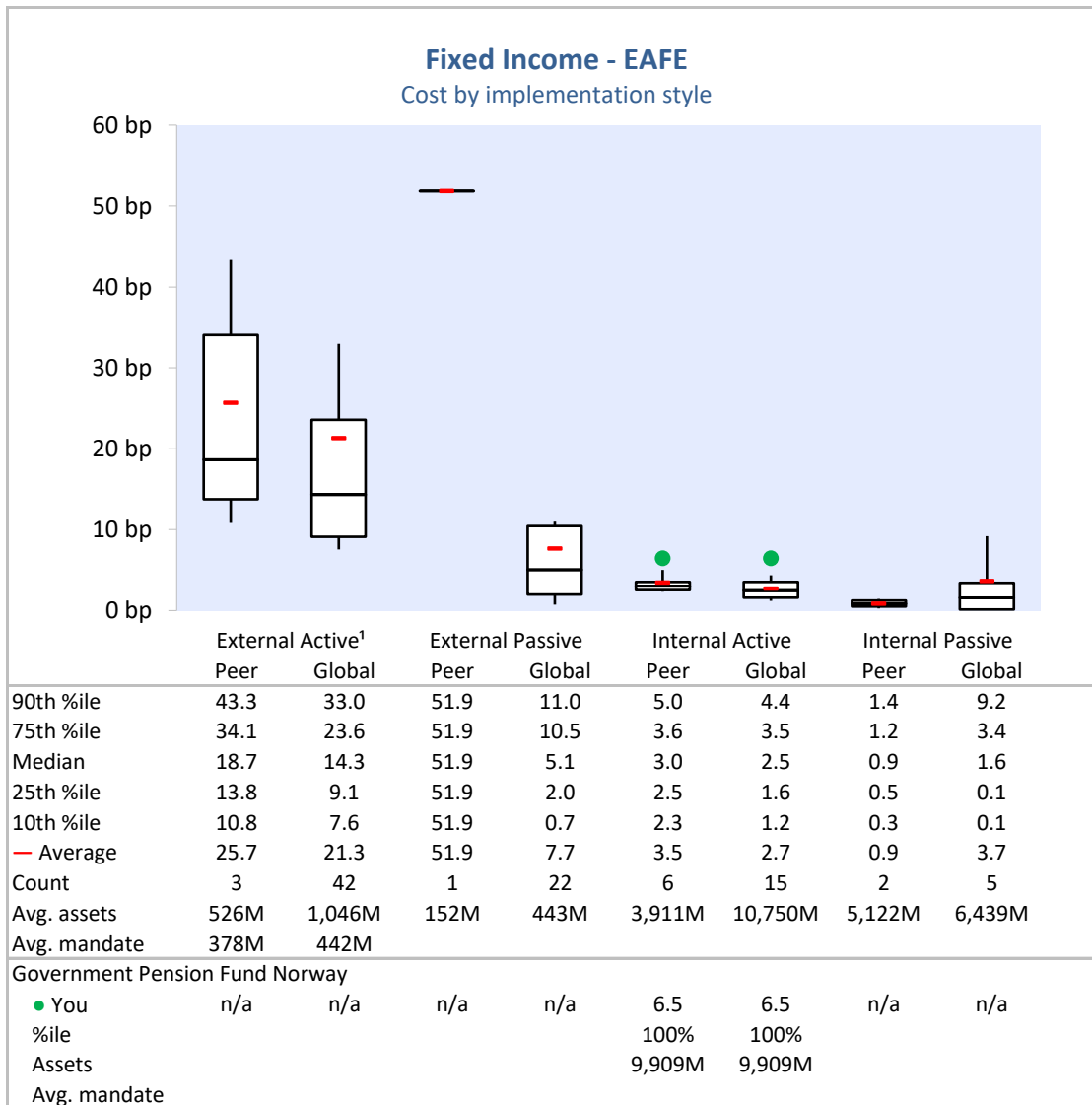


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	13.3	21.1
Performance fees*	n/a	n/a	2.0
Internal and other	<u>n/a</u>	<u>1.7</u>	<u>0.6</u>
Total	n/a	15.0	23.6

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 10.4 bps for Global participants (18 funds).



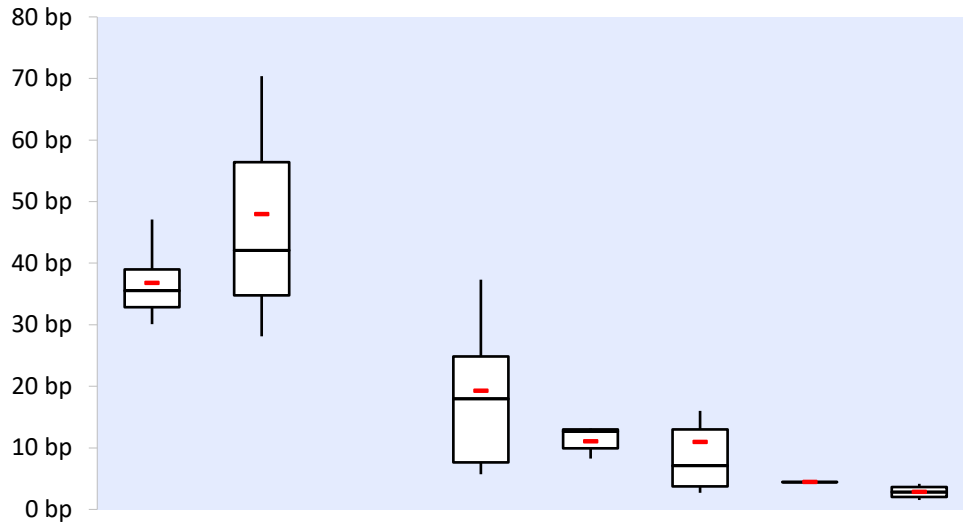


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	24.7	16.2
Performance fees*	n/a	0.0	4.1
Internal and other	<u>n/a</u>	<u>1.0</u>	<u>1.0</u>
Total	n/a	25.7	21.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for peers (1 fund) and 21.3 bps for Global participants (8 funds).

### Fixed Income - Emerging Cost by implementation style

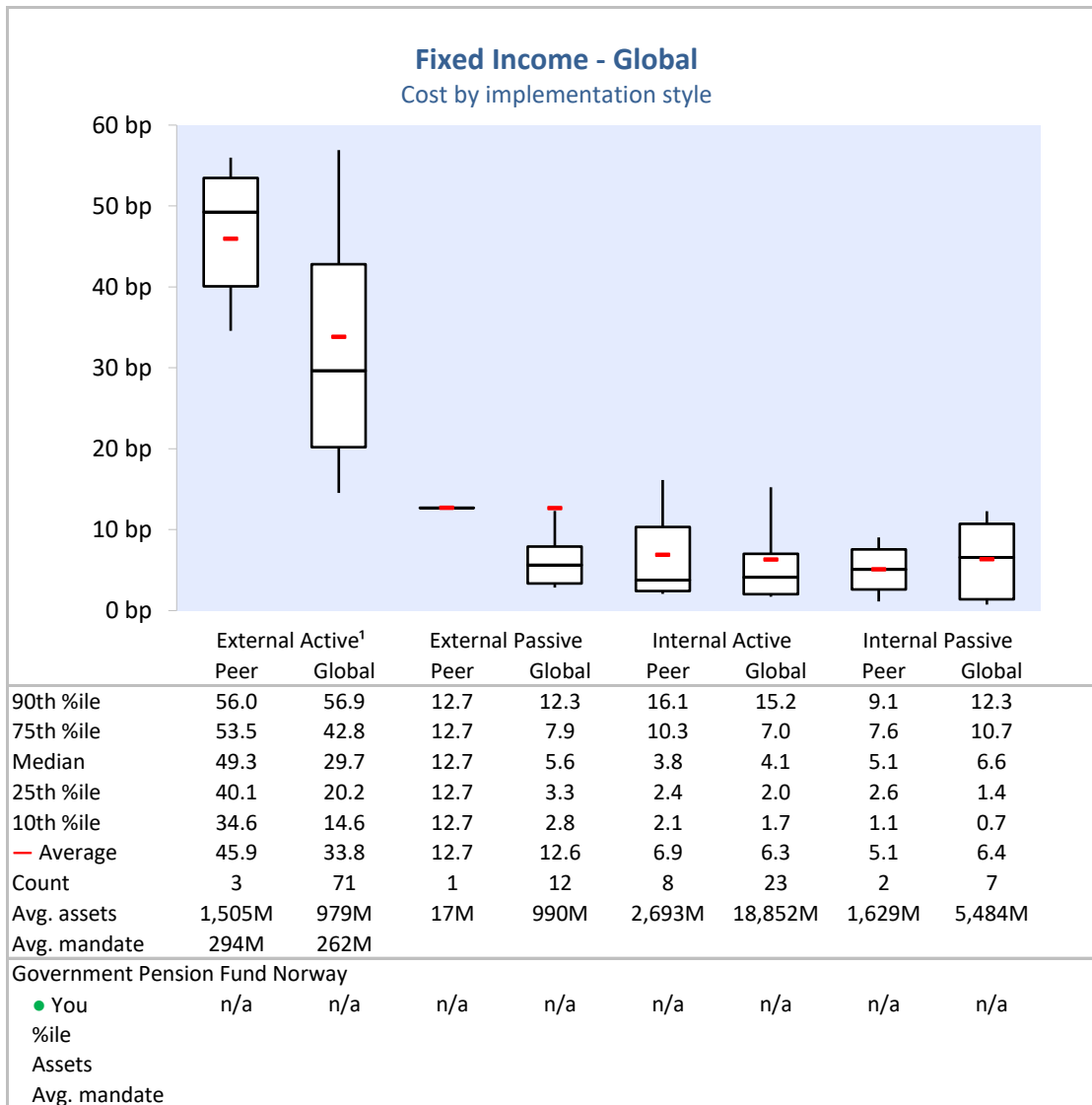


	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	47.1	70.4		37.3	13.2	16.0	4.5	4.1
75th %ile	39.0	56.4		24.8	13.0	13.0	4.5	3.6
Median	35.6	42.1		18.0	12.8	7.1	4.5	2.8
25th %ile	32.8	34.8		7.6	9.9	3.7	4.5	2.0
10th %ile	30.1	28.1		5.7	8.2	2.7	4.5	1.5
— Average	36.8	48.0		19.3	11.0	10.9	4.5	2.8
Count	8	89	0	8	3	15	1	3
Avg. assets	1,497M	671M		1,492M	1,176M	1,287M	174M	1,687M
Avg. mandate	372M	205M						
Government Pension Fund Norway								
● 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	35.1	46.1
Performance fees*	n/a	-0.5	0.2
Internal and other	<u>n/a</u>	<u>2.2</u>	<u>1.7</u>
Total	n/a	36.8	48.0

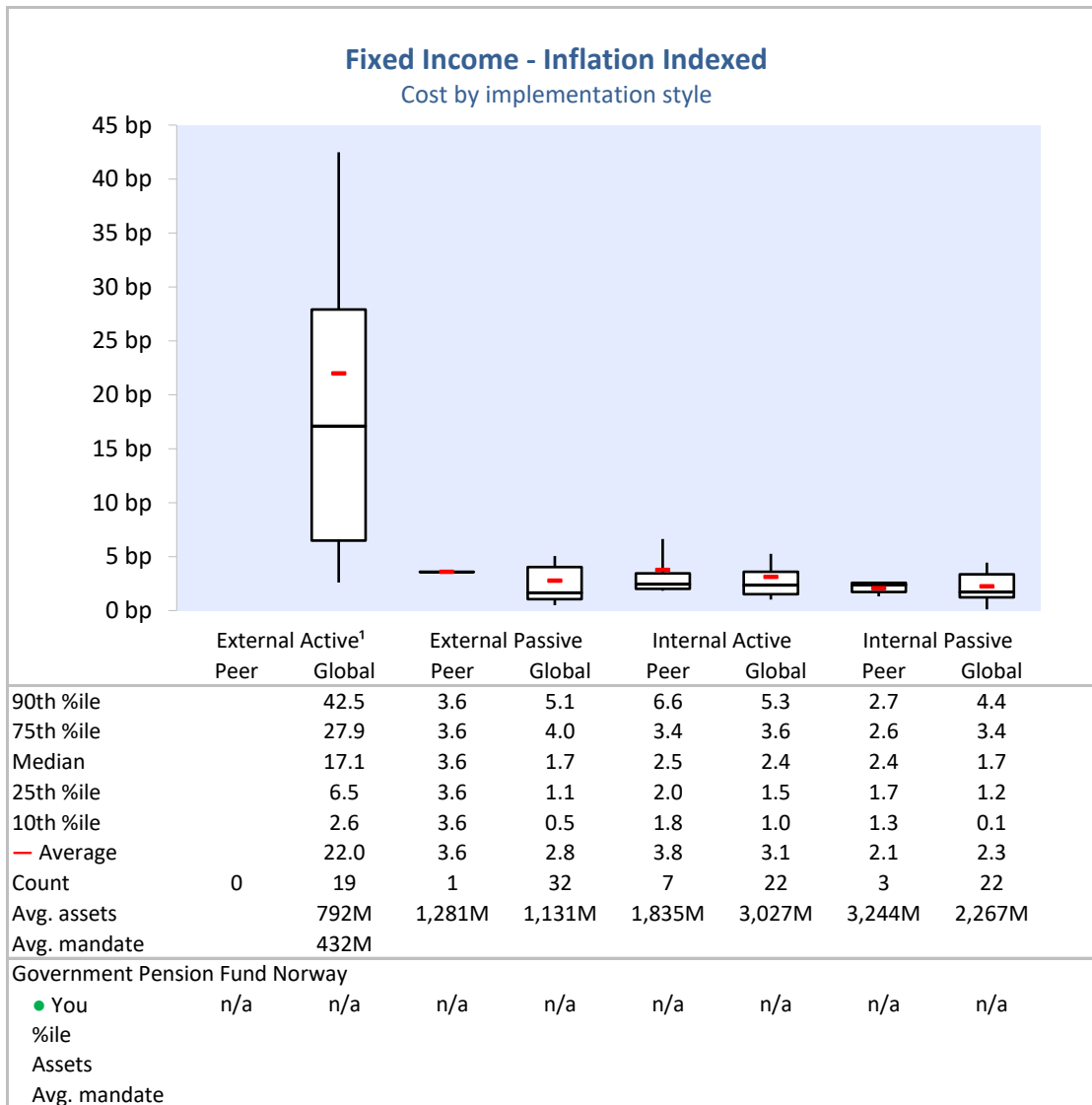
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is -2.0 bps for peers (2 funds) and 1.2 bps for Global participants (12 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	42.9	30.7
Performance fees*	n/a	n/a	2.5
Internal and other	<u>n/a</u>	<u>3.1</u>	<u>0.6</u>
Total	n/a	45.9	33.8

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 10.5 bps for Global participants (17 funds).

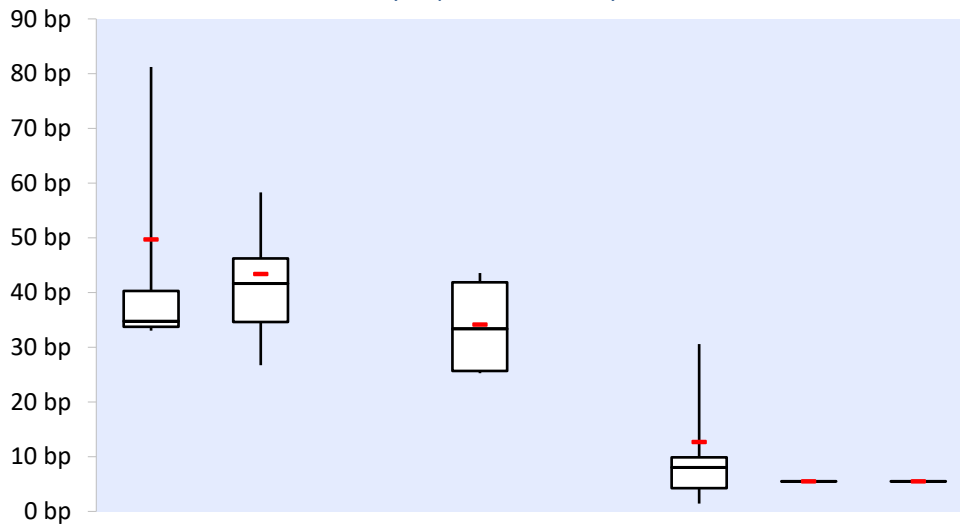


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	20.1
Performance fees*	n/a	n/a	1.1
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.7</u>
Total	n/a	n/a	22.0

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 3.6 bps for Global participants (6 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	81.2	58.3		43.6		30.6	5.5	5.5
75th %ile	40.3	46.2		41.8		9.9	5.5	5.5
Median	34.8	41.7		33.4		8.1	5.5	5.5
25th %ile	33.7	34.6		25.7		4.2	5.5	5.5
10th %ile	33.0	26.7		25.3		1.4	5.5	5.5
— Average	49.7	43.4		34.1		12.7	5.5	5.5
Count	6	111	0	4	0	14	1	1
Avg. assets	997M	579M		653M		680M	365M	365M
Avg. mandate	272M	171M						
Government Pension Fund Norway								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

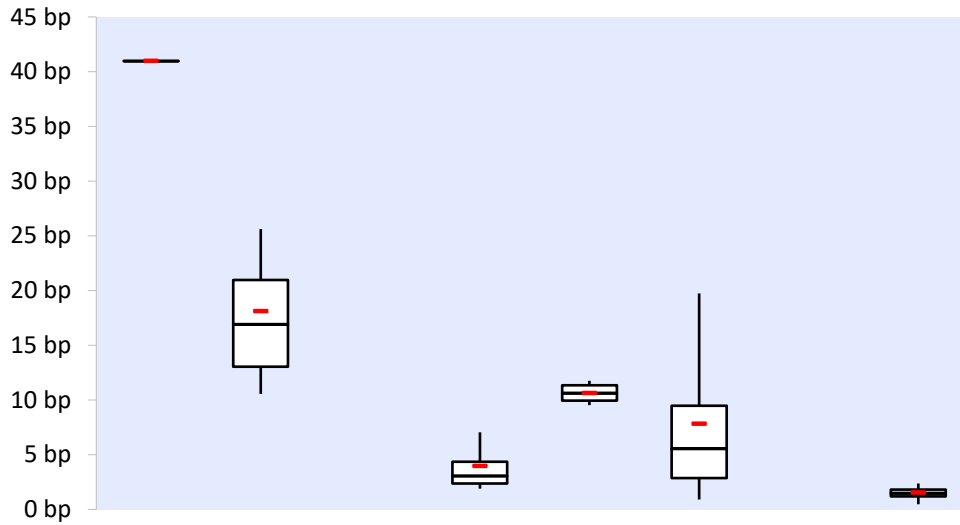
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	42.7	41.0
Performance fees*	n/a	5.3	0.8
Internal and other	<u>n/a</u>	<u>1.7</u>	<u>1.6</u>
Total	n/a	49.7	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 31.6 bps for peers (1 fund) and 5.6 bps for Global participants (16 funds).

## Fixed Income - Long Bonds

### Cost by implementation style



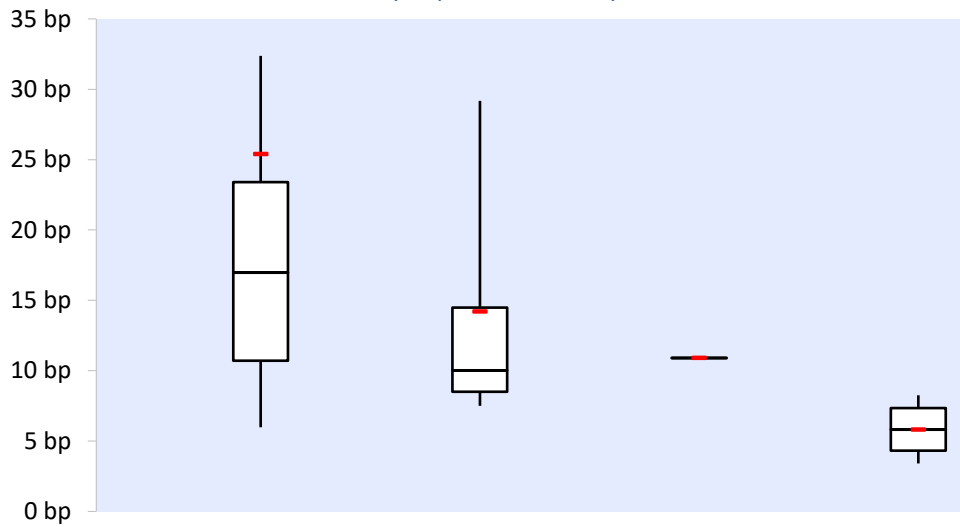
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	41.0	25.6		7.0	11.8	19.7		2.4
75th %ile	41.0	21.0		4.4	11.3	9.5		1.8
Median	41.0	16.9		3.1	10.6	5.6		1.5
25th %ile	41.0	13.0		2.4	9.9	2.9		1.2
10th %ile	41.0	10.6		1.9	9.5	0.9		0.5
— Average	41.0	18.1		4.0	10.6	7.8		1.5
Count	1	98	0	36	2	13	0	13
Avg. assets	219M	2,571M		365M	5,292M	1,490M		3,752M
Avg. mandate		432M						
Government Pension Fund Norway								
● 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	30.2	17.0
Performance fees*	n/a	n/a	0.9
Internal and other	<u>n/a</u>	<u>10.8</u>	<u>0.2</u>
Total	n/a	41.0	18.1

\* 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 6.6 bps for Global participants (13 funds).

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



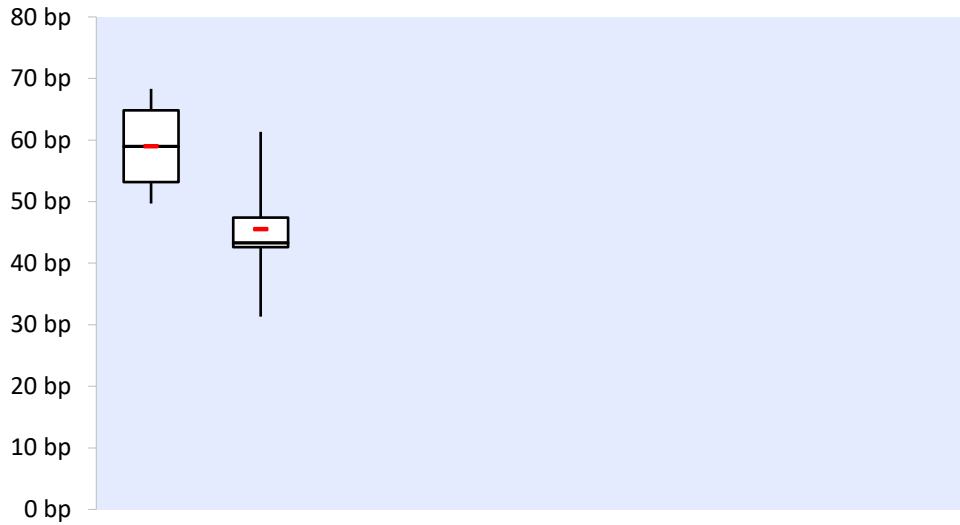
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile		32.4		29.2		10.9		8.3
75th %ile		23.4		14.5		10.9		7.3
Median		17.0		10.0		10.9		5.8
25th %ile		10.7		8.5		10.9		4.3
10th %ile		6.0		7.5		10.9		3.4
— Average		25.4		14.2		10.9		5.8
Count	0	14	0	8	0	1	0	2
Avg. assets		1,646M		4,413M		846M		6,348M
Avg. mandate		786M						
Government Pension Fund Norway								
● 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	24.4
Performance fees*	n/a	n/a	1.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.1</u>
Total	n/a	n/a	25.4

\* 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 13.7 bps for Global participants (1 fund).

### Fixed Income - Convertibles Cost by implementation style



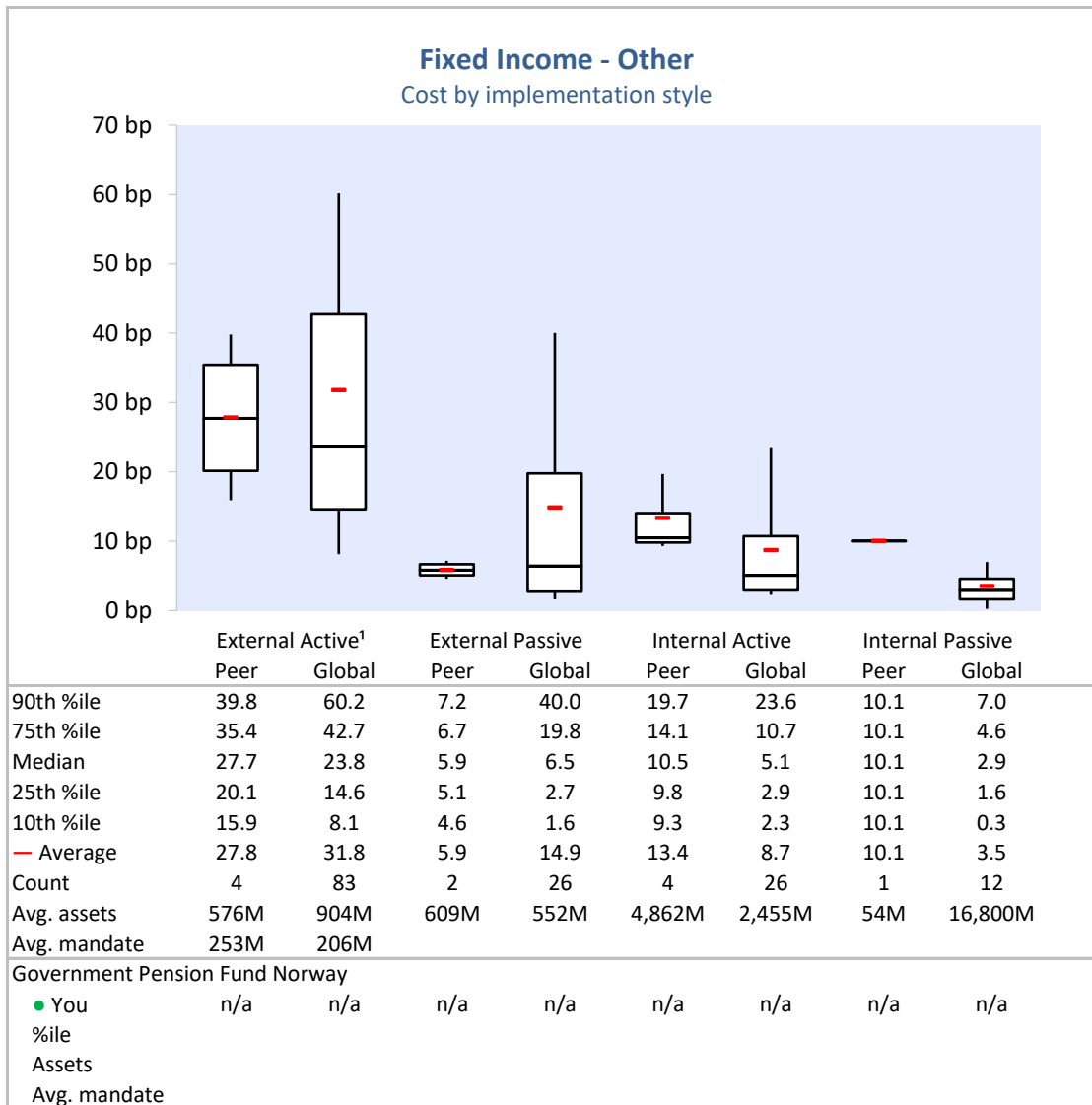
	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	68.3	61.3						
75th %ile	64.8	47.4						
Median	59.0	43.3						
25th %ile	53.2	42.6						
10th %ile	49.7	31.3						
— Average	59.0	45.5						
Count	2	5	0	0	0	0	0	0
Avg. assets	844M	772M						
Avg. mandate	226M	261M						
Government Pension Fund Norway								
● 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	48.7	40.5
Performance fees*	n/a	8.6	3.7
Internal and other	<u>n/a</u>	<u>1.7</u>	<u>1.4</u>
Total	n/a	59.0	45.5

\* 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 17.2 bps for peers (1 fund) and 9.1 bps for Global participants (2 funds).

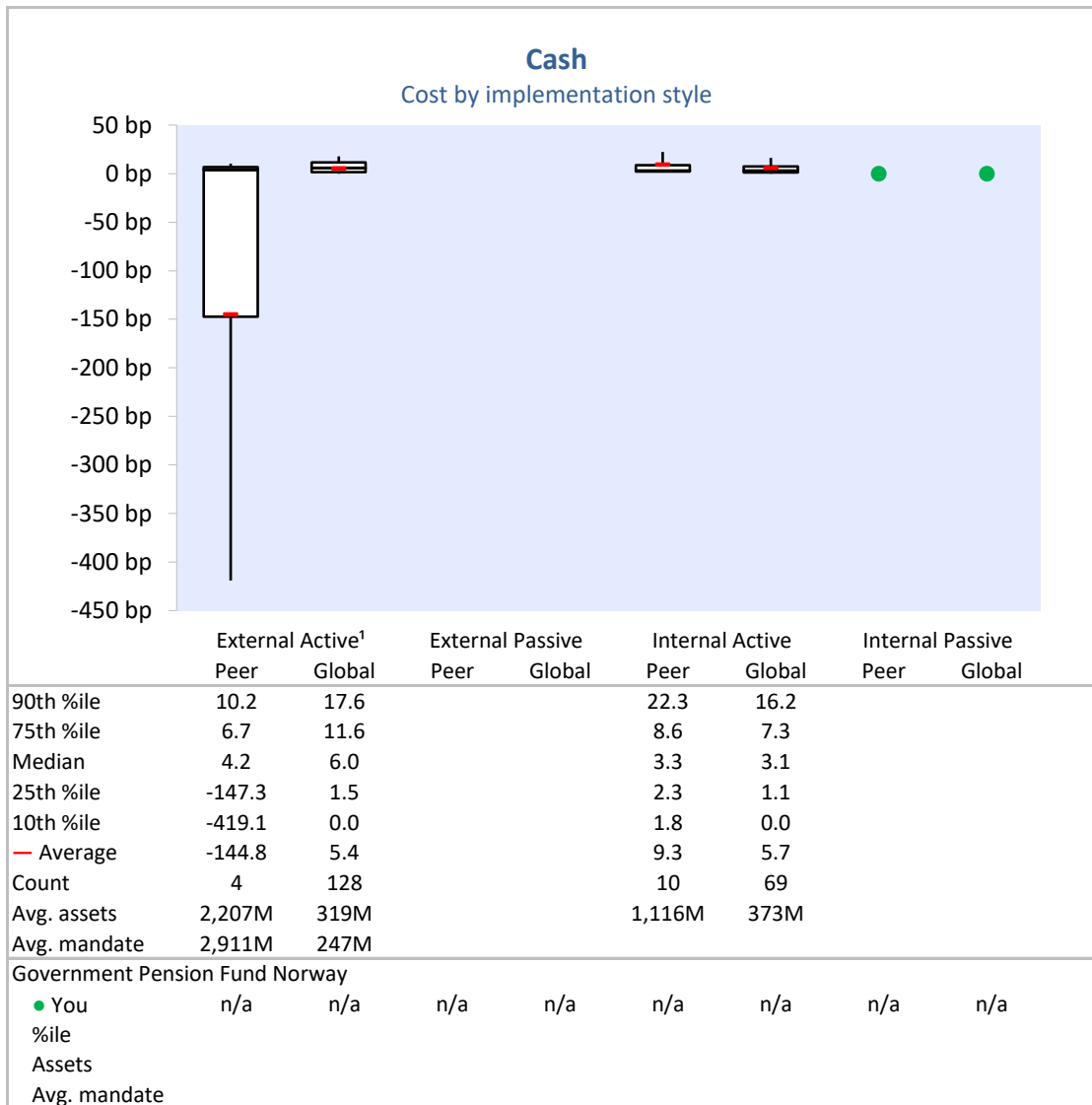




#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	22.7	28.8
Performance fees*	n/a	n/a	1.7
Internal and other	<u>n/a</u>	<u>5.1</u>	<u>1.3</u>
Total	n/a	27.8	31.8

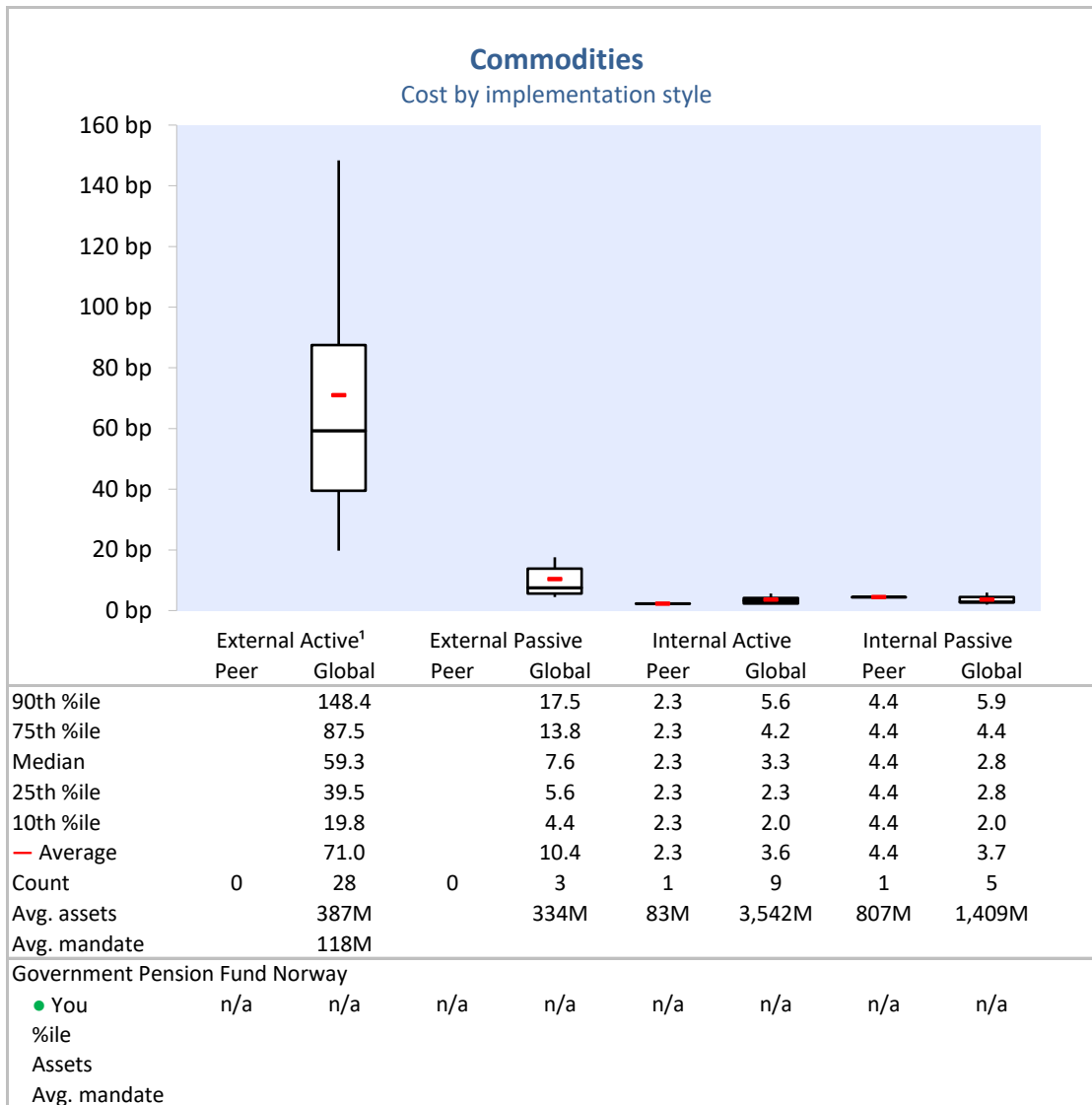
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 12.8 bps for Global participants (11 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	-146.5	4.9
Performance fees*	n/a	n/a	0.1
Internal and other	<u>n/a</u>	<u>1.7</u>	<u>0.3</u>
Total	n/a	-144.8	5.4

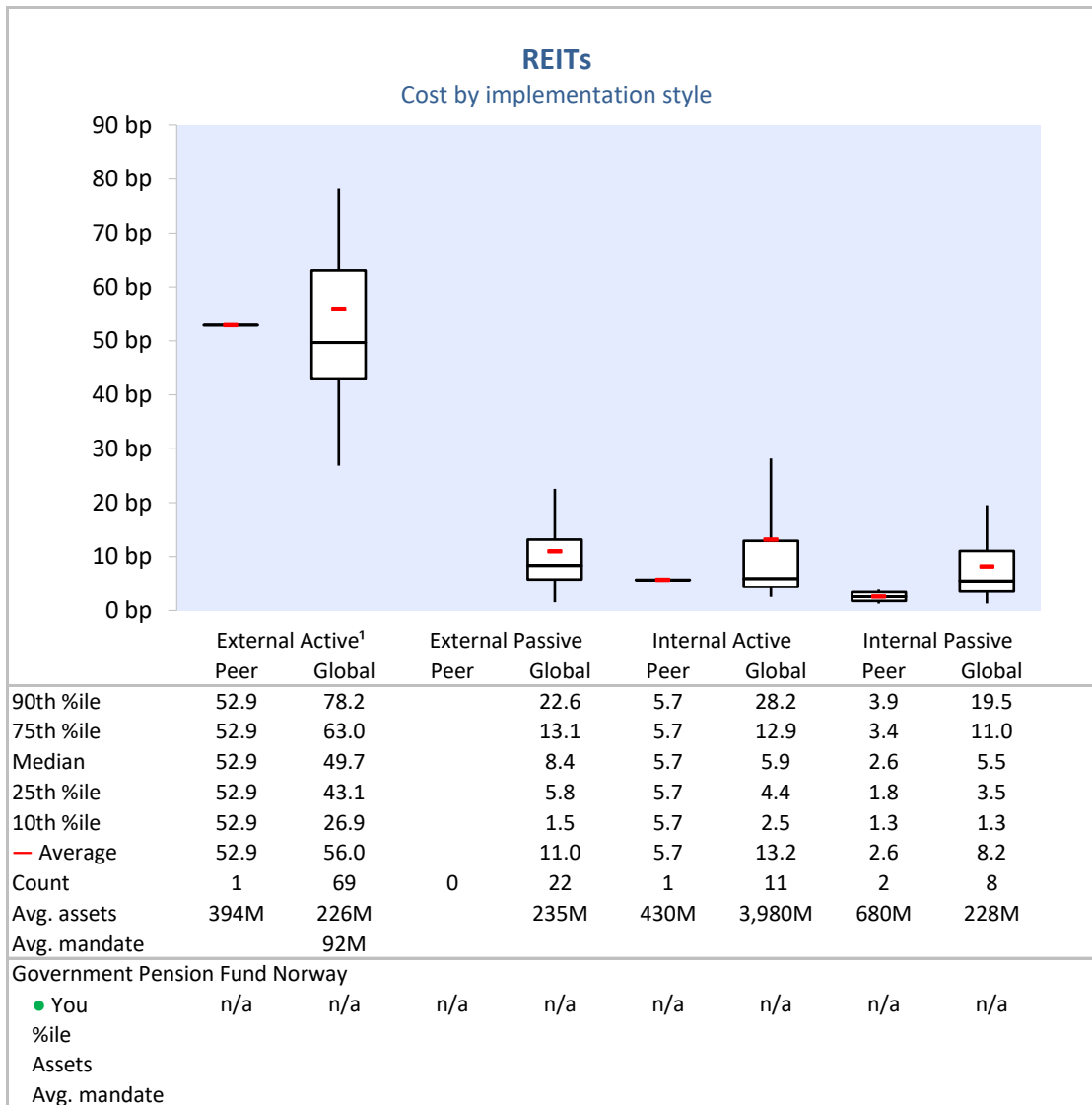
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 1.6 bps for Global participants (10 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	60.6
Performance fees*	n/a	n/a	8.5
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>1.9</u>
Total	n/a	n/a	71.0

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 15.9 bps for Global participants (15 funds).



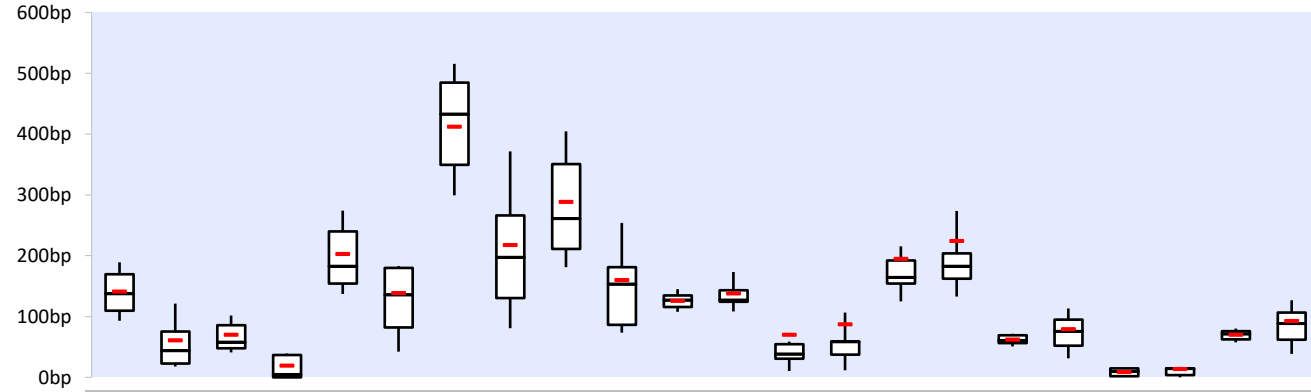
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	50.6	50.0
Performance fees*	n/a	n/a	5.2
Internal and other	<u>n/a</u>	<u>2.3</u>	<u>0.8</u>
Total	n/a	52.9	56.0

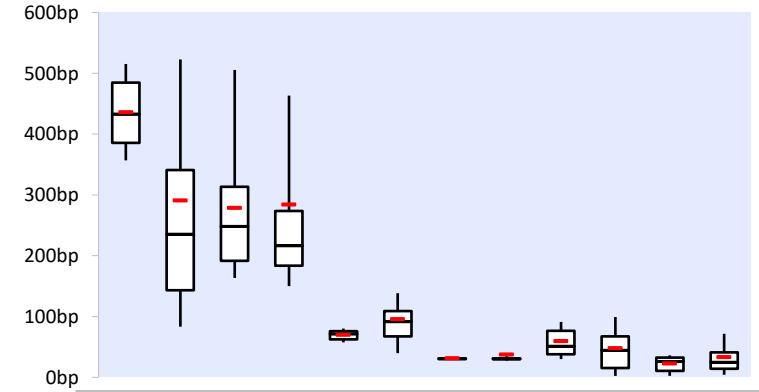
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 29.9 bps for Global participants (12 funds).

## Real Estate

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



### Cost as a % of NAV

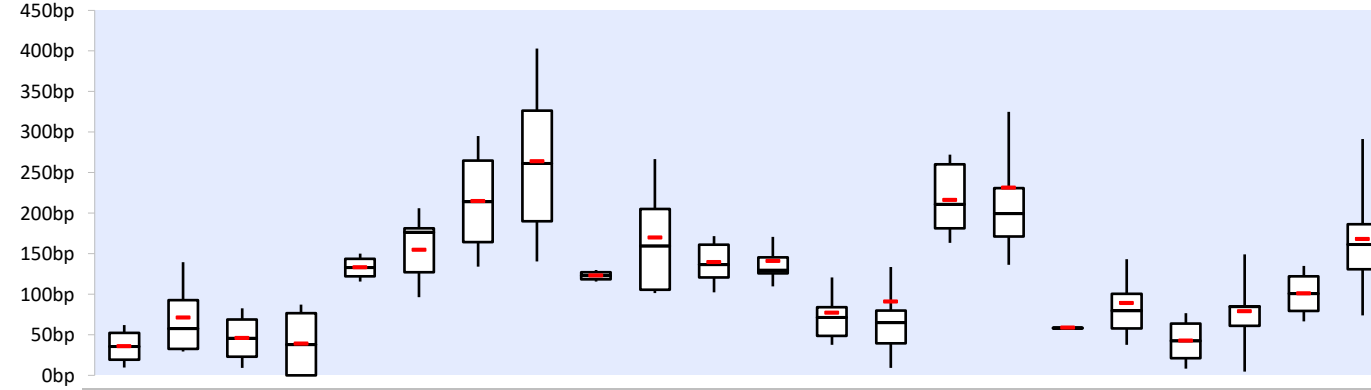


	Fund of Funds										Direct LP				Evergreen				Fund of Funds		Direct LP		Evergreen		Oper. Sub.		Co-Inv.		Internal							
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Total <sup>3</sup> incl. perf.		Total		Total		Total					
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global															Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	189.0	121.1	101.8	39.5	274.4	183.0	515.5	371.4	404.4	253.9	145.2	173.1	59.0	106.2	215.6	273.8	71.8	113.2	15.0	17.1	80.3	126.7	515.5	522.7	505.5	463.0	80.2	138.1	31.1	39.4	91.3	99.3	36.2	71.6		
75th %ile	169.7	75.4	85.5	37.0	240.1	180.2	484.6	266.2	350.8	181.4	134.7	143.1	54.4	59.0	192.0	203.7	69.1	95.0	15.0	15.0	75.7	106.5	484.6	341.1	313.1	273.5	75.7	108.8	31.0	31.0	76.5	67.4	32.6	40.9		
Median	137.5	44.0	58.3	5.0	183.0	135.8	433.1	197.9	261.5	153.5	127.4	127.4	38.7	59.0	164.8	183.0	60.7	75.7	9.8	15.0	71.9	88.9	433.1	235.8	248.6	216.5	71.9	91.6	30.9	30.5	51.7	44.6	26.1	25.1		
25th %ile	109.7	22.8	47.7	0.0	154.5	82.3	349.6	130.5	211.4	86.4	115.9	124.0	30.6	37.1	154.1	161.9	56.3	51.8	1.6	3.5	62.7	62.1	385.4	143.3	191.3	183.8	62.7	67.2	30.7	30.0	38.1	15.5	10.7	14.1		
10th %ile	93.0	18.0	41.3	0.0	137.4	42.1	299.5	80.6	181.4	73.6	107.8	108.3	10.3	11.6	125.0	133.1	50.7	31.4	0.6	0.0	57.7	38.9	356.8	83.0	163.3	150.0	57.7	39.9	30.6	27.5	29.9	2.4	2.7	4.6		
Average	140.4	60.1	69.3	18.8	202.1	137.9	411.8	216.8	287.6	159.4	124.8	137.5	69.3	86.3	194.2	223.9	61.3	78.9	8.4	12.9	69.7	91.8	435.6	290.4	278.3	283.8	69.7	95.2	30.9	36.9	59.1	47.5	22.2	32.4		
Count	3	46	3	46	3	46	3	46	3	46	11	137	11	137	11	137	8	188	8	188	8	188	3	46	11	137	8	188	2	10	3	19	8	51		
Avg. assets	178M	308M	178M	308M	178M	308M	178M	308M	178M	308M	770M	1,240M	770M	1,240M	770M	1,240M	2,572M	944M	2,572M	944M	2,572M	944M	142M	274M	596M	1,096M	2,574M	908M	6,324M	5,557M	116M	672M	3,421M	2,370M		
Government Pension Fund Norway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

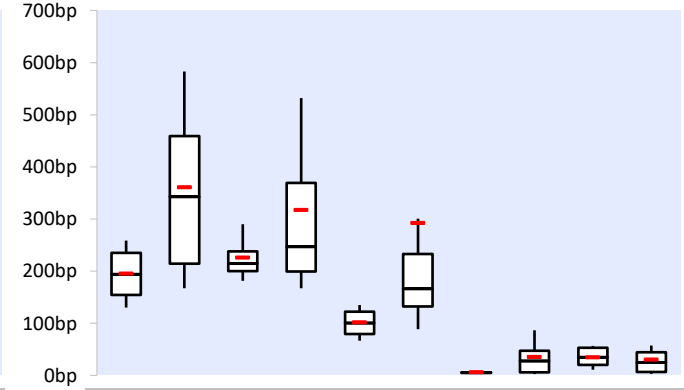
- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 124 bps (on amount fees are based on) for underlying management fees and 59 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 3.0 bps for fund of funds, 9.0 bps for LPs and 4.0 bps for external (not LPs).

# Infrastructure

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



## Cost as a % of NAV

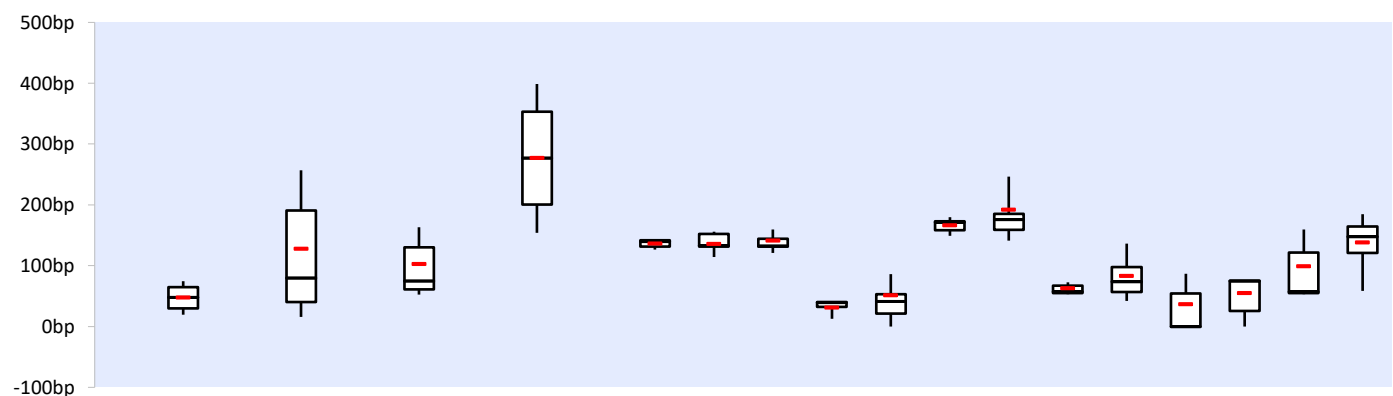


	Fund of Funds										Direct LP						Evergreen						Fund of Funds		Direct LP		Evergreen		Co-Inv.		Internal		
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total						
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	
90th %ile	62.1	139.7	82.5	87.0	150.3	206.0	294.9	403.0	129.9	266.7	171.8	170.8	120.7	133.5	272.3	325.1	58.7	143.2	76.5	149.3	135.2	291.6	258.8	582.8	289.6	531.7	135.2	300.4	6.2	86.2	56.5	57.5	
75th %ile	52.2	92.9	68.8	76.6	143.8	181.5	264.8	326.4	127.2	205.3	160.9	145.6	84.2	80.0	260.2	230.7	58.6	100.5	63.8	85.0	122.3	186.2	234.7	459.0	237.5	368.9	122.3	232.8	6.0	47.5	52.8	44.2	
Median	35.8	57.9	45.8	38.2	132.9	176.9	214.6	261.5	122.9	159.8	136.8	130.1	71.8	65.3	211.1	199.5	58.4	80.0	42.5	85.0	100.9	161.4	194.5	342.9	215.2	247.2	100.9	166.2	5.5	28.0	34.9	24.8	
25th %ile	19.4	32.8	22.9	0.0	122.1	127.0	164.4	190.0	118.5	105.5	120.8	125.9	48.9	39.3	181.3	171.3	58.2	58.1	21.3	60.9	79.4	131.0	154.3	214.3	200.2	199.2	79.4	132.3	5.0	6.1	19.9	6.4	
10th %ile	9.5	29.6	9.2	0.0	115.6	96.3	134.2	140.3	115.9	101.2	102.2	109.7	37.8	9.1	163.2	136.5	58.1	37.4	8.5	4.8	66.6	74.1	130.2	167.3	181.6	166.8	66.6	88.6	4.7	2.5	10.5	2.8	
Average	35.8	70.9	45.8	38.6	132.9	154.3	214.6	263.8	122.9	169.4	139.3	140.5	76.8	90.6	216.1	231.1	58.4	89.0	42.5	78.9	100.9	167.9	194.5	360.2	225.2	316.8	100.9	291.4	5.5	34.9	34.0	29.4	
Count	2	25	2	25	2	25	2	25	2	25	8	99	8	99	8	99	2	62	2	62	2	62	2	25	8	99	2	62	2	18	6	30	
Avg. assets	91M	90M	91M	90M	91M	90M	91M	90M	91M	90M	362M	423M	362M	423M	362M	423M	2,045M	598M	2,045M	598M	2,045M	598M	94M	71M	350M	354M	2,045M	551M	124M	384M	3,518M	3,192M	
Government Pension Fund Norway																																	
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																																	
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

- The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
- The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 87 bps (on amount fees are based on) for underlying management fees and 46 bps (on NAV) for underlying performance fees were used.
- The total cost also includes the internal cost of monitoring and selecting infrastructure investments. The peer average cost of monitoring and selecting was 2.2 bps for fund of funds, 9.9 bps for LPs and 3.5 bps for external (not LPs).

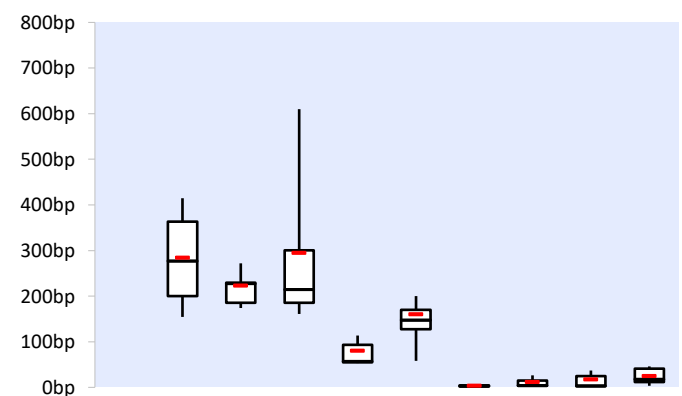
# Natural Resources

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
90th %ile	74.4	256.8	163.1	398.8	143.4	155.7	159.8	40.6	86.1	180.0	246.7	72.8	136.1	86.9	75.0	159.7	184.5					
75th %ile	64.5	190.5	130.2	353.2	142.1	152.0	144.2	40.0	53.0	173.1	185.0	67.1	97.7	54.3	75.0	121.4	164.7					
Median	48.0	80.0	75.3	277.3	139.9	133.1	132.8	39.9	41.5	171.5	176.0	57.7	73.9	0.0	75.0	57.7	148.0					
25th %ile	30.2	40.0	61.2	200.3	131.6	131.6	131.7	32.5	21.3	158.2	159.2	54.9	57.0	0.0	25.4	54.9	121.1					
10th %ile	19.4	16.0	52.8	154.1	126.7	114.1	120.7	13.0	0.0	149.3	140.9	53.3	41.8	0.0	0.0	53.3	58.8					
- Average	47.1	127.0	102.5	276.6	135.9	135.5	140.8	30.7	50.8	166.2	191.5	62.2	82.8	36.2	54.8	98.4	137.5					
Count	0	3	0	3	0	3	3	0	3	5	38	5	38	5	38	3	32	3	32	3	32	
Avg. assets	32M	32M	32M	32M	32M	357M	513M	357M	513M	357M	513M	380M	330M	380M	330M	380M	330M					
Government Pension Fund Norway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a					
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a					
%ile																						
Assets																						

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 incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	414.9	272.1	609.8	113.9	200.2	4.4	26.4	37.1	45.6	
75th %ile	363.3	229.2	300.2	92.8	170.3	3.9	15.1	24.4	40.8	
Median	277.3	227.8	214.8	57.7	148.0	3.1	4.7	3.3	17.8	
25th %ile	200.3	185.6	185.0	54.9	127.5	2.4	3.1	2.9	11.9	
10th %ile	154.1	174.2	161.2	53.3	58.5	1.9	1.0	2.6	3.3	
- Average	283.3	222.0	293.7	79.3	159.8	3.1	11.2	17.1	24.0	
Count	0	3	5	38	3	32	2	7	3	11
Avg. assets	32M	263M	353M	416M	302M	85M	368M	571M	1,548M	
Government Pension Fund Norway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
%ile										
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	

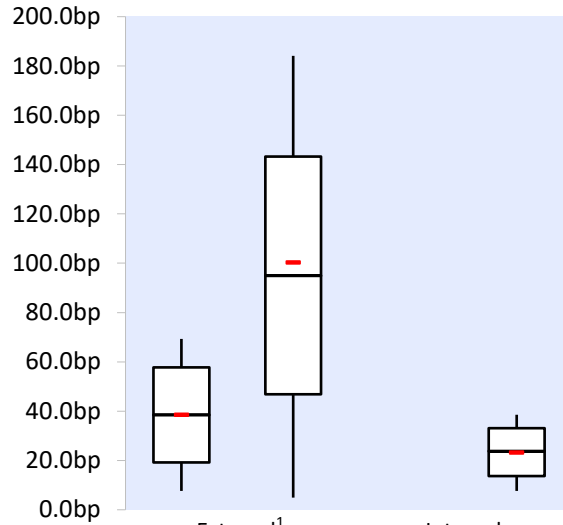
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

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 natural resource investments. The peer average cost of monitoring and selecting was 8.6 bps for LPs and 2.2 bps for external (not LPs).

## Other Real Assets

Cost as % of NAV by implementation style



	External <sup>1</sup>		Internal	
	Peer	Global	Peer	Global
90th %ile	69.3	184.1		38.5
75th %ile	57.7	143.3		33.0
Median	38.5	95.0		23.8
25th %ile	19.2	46.9		13.7
10th %ile	7.7	4.9		7.6
— Average	38.5	100.4		23.2
Count	2	39	0	3
Avg. assets	249M	359M		1,016M
Avg. mandate	89M	100M		163M
Government Pension Fund Norway				
● You	n/a	n/a	n/a	n/a
%ile				
Assets	0M	0M	0M	0M
Avg. mandate				

### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	38.3	97.4
Internal and other	<u>n/a</u>	<u>0.3</u>	<u>5.4</u>
Total*	n/a	38.5	100.4
Performance fees**	n/a	2.3	33.9

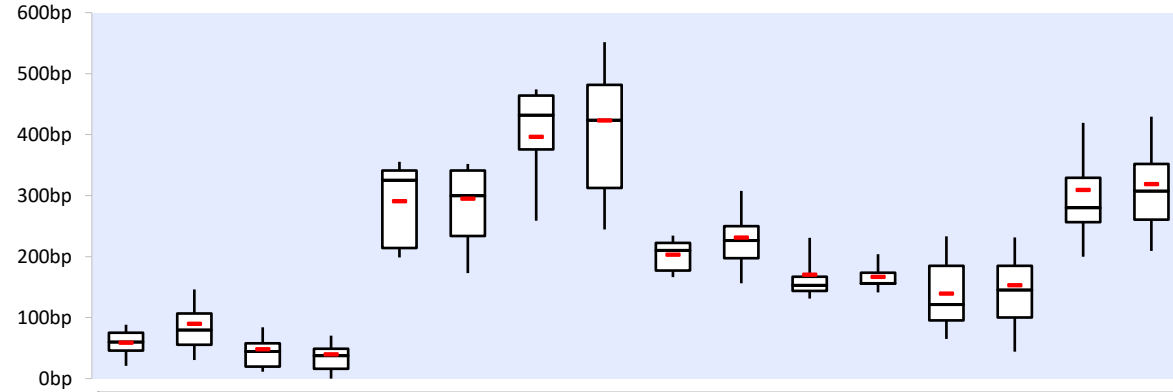
\* Total cost excludes performance fees because most participants did not provide performance fees for other real assets.

\*\* 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 2.3 bps for peers (2 funds) and 33.9 bps for Global participants (39 funds).



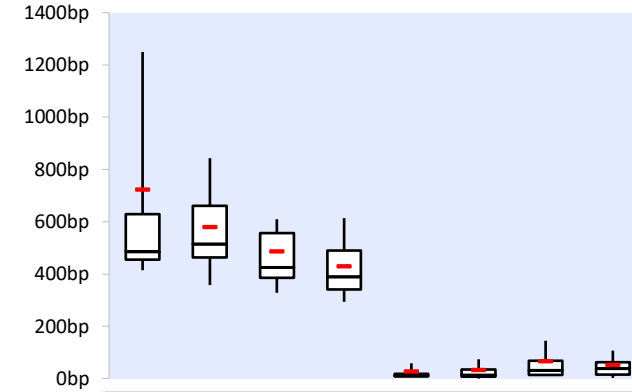
## Diversified Private Equity

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



	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	88.1	146.1	84.2	70.5	355.8	352.0	474.2	551.6	234.4	307.9	230.8	204.2	233.1	231.4	419.5	429.6
75th %ile	75.1	106.9	57.7	49.0	341.0	341.0	464.2	481.6	222.7	249.7	166.9	173.4	185.0	185.0	329.4	352.0
Median	60.0	80.0	44.9	37.8	325.4	300.3	432.3	424.4	210.5	226.9	153.2	156.0	121.8	145.6	280.3	307.5
25th %ile	46.1	55.3	19.7	16.1	214.4	234.0	375.9	312.4	177.1	197.5	143.5	155.6	95.4	99.9	256.4	260.6
10th %ile	20.9	30.3	11.1	0.0	198.7	172.9	258.7	244.3	166.3	156.0	131.5	141.3	64.8	44.4	200.0	209.2
— Average	58.2	89.0	47.6	39.0	290.2	294.5	396.0	422.5	202.6	230.6	169.8	165.9	138.8	152.4	308.6	318.4
Count	8	138	8	138	8	138	8	138	8	138	13	163	13	163	13	163
Avg. assets	407M	510M	407M	510M	407M	510M	407M	510M	407M	510M	2,367M	1,932M	2,367M	1,932M	2,367M	1,932M
Government Pension Fund Norway																
● 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
	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

Cost as a % of NAV

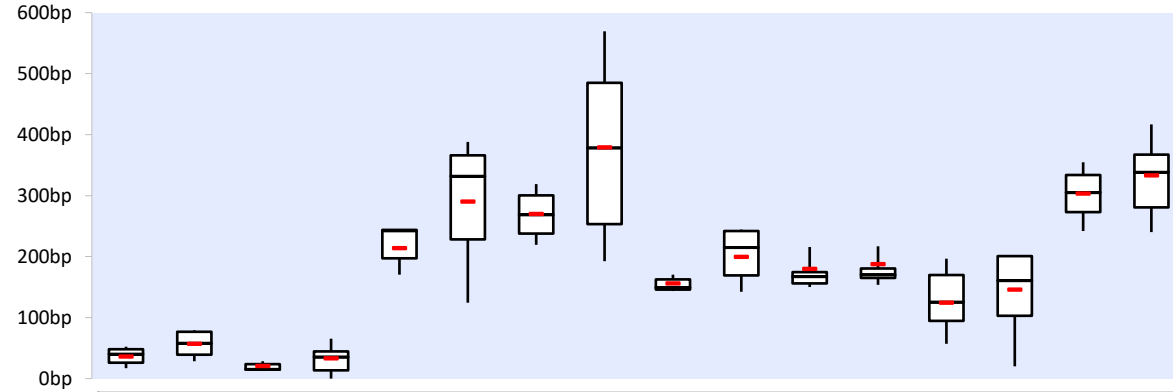


Fund of Funds		Direct LP		Co-Investment		Internal	
Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total	
Peer	Global	Peer	Global	Peer	Global	Peer	Global
1249.5	843.5	609.5	613.1	58.2	73.7	144.9	107.8
629.3	660.9	557.4	490.3	17.6	35.2	67.7	62.2
485.9	515.4	426.5	389.6	12.2	14.4	32.7	38.7
455.1	463.6	385.1	341.0	8.6	7.6	14.4	15.1
414.9	358.4	329.1	294.2	5.2	0.0	11.0	3.0
721.6	578.2	485.8	428.1	25.3	31.6	65.4	50.6
8	138	13	163	5	27	7	20
320M	456M	1,737M	1,405M	754M	683M	1,410M	2,556M
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
0M	0M	0M	0M	0M	0M	0M	0M

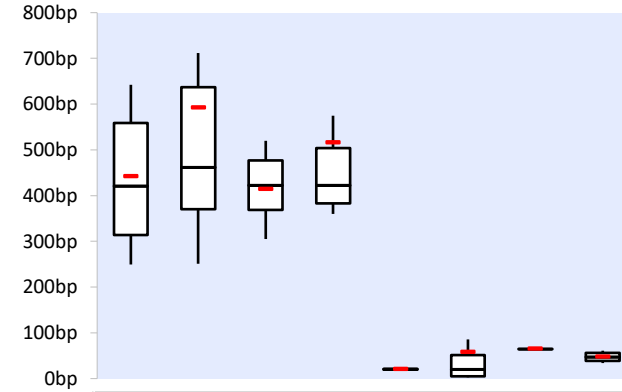
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 156 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 3.6 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	52.4	79.2	28.3	65.7	244.4	388.3	319.1	569.4	170.6	244.2	215.9	216.8	196.8	201.0	354.9	416.6
75th %ile	48.0	77.0	23.5	44.8	243.7	366.0	300.2	485.0	162.7	242.0	174.4	180.4	170.0	201.0	333.6	367.0
Median	40.7	58.6	15.4	35.8	242.5	332.1	268.8	378.5	149.5	215.0	167.1	170.6	125.7	160.7	305.4	338.3
25th %ile	25.8	39.4	14.7	13.5	197.4	228.4	237.9	253.3	145.7	169.3	155.9	165.0	94.9	103.2	273.0	280.6
10th %ile	16.8	28.5	14.3	0.0	170.4	124.2	219.3	192.6	143.4	142.3	149.9	153.6	56.9	20.4	242.1	239.9
— Average	35.6	56.5	20.3	32.7	213.2	289.5	269.2	378.7	155.7	199.0	179.4	187.1	123.7	145.6	303.1	332.6
Count	3	16	3	16	3	16	3	16	3	16	8	44	8	44	8	44
Avg. assets	438M	302M	438M	302M	438M	302M	438M	302M	438M	302M	2,072M	2,435M	2,072M	2,435M	2,072M	2,435M
Government Pension Fund Norway																
● 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
	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

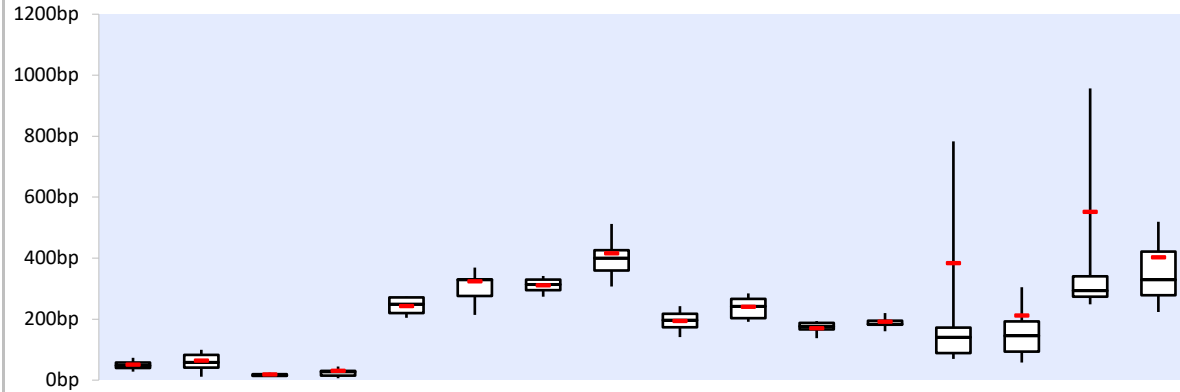
  

	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	642.1	711.8	520.0	575.0	21.0	85.8	64.8	61.3
75th %ile	559.2	637.0	477.1	503.7	20.9	51.5	64.8	56.1
Median	421.0	462.1	423.2	422.7	20.7	20.4	64.8	47.4
25th %ile	314.0	370.7	368.9	382.8	20.6	5.0	64.8	38.8
10th %ile	249.8	251.2	304.8	359.7	20.5	2.7	64.8	33.6
— Average	441.8	592.4	413.7	516.1	20.7	57.8	64.8	47.4
Count	3	16	8	44	2	11	1	2
Avg. assets	325M	217M	1,499M	1,673M	591M	713M	209M	5,888M
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	0M	0M	0M	0M	0M	0M	0M	0M

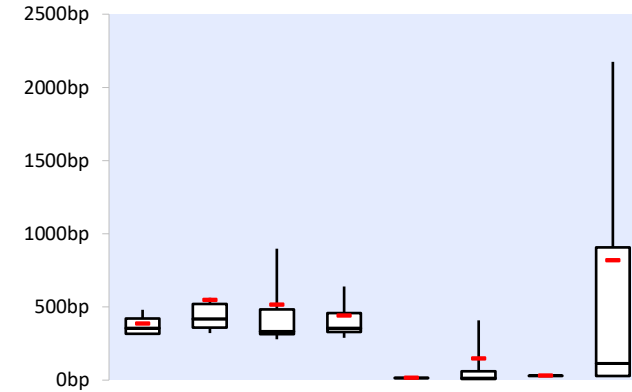
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 109 bps (on amount fees are based on) for underlying management fees and 201 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 2.2 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	73.3	100.0	24.3	44.6	274.1	369.5	341.9	512.6	242.6	284.0	193.5	220.0	783.2	304.1	956.6	519.5
75th %ile	58.3	83.3	20.0	30.0	271.6	330.0	329.3	426.1	217.2	266.1	187.7	194.6	172.4	192.5	340.6	421.8
Median	48.7	59.0	16.4	28.4	249.2	330.0	314.6	400.7	197.3	243.0	176.5	184.0	141.6	146.0	293.8	330.0
25th %ile	40.3	40.7	13.9	15.0	219.9	275.8	295.1	360.0	173.4	203.1	165.8	181.4	88.6	93.8	274.0	279.0
10th %ile	27.6	10.8	12.0	6.2	204.8	214.1	273.9	307.0	141.0	191.4	137.3	160.4	69.5	57.8	249.1	223.1
— Average	49.9	63.3	17.6	28.9	242.2	322.7	309.8	415.0	193.3	239.6	169.3	190.5	382.0	211.2	551.3	401.8
Count	4	21	4	21	4	21	4	21	4	21	8	49	8	49	8	49
Avg. assets	296M	213M	296M	213M	296M	213M	296M	213M	296M	213M	370M	407M	370M	407M	370M	407M
Government Pension Fund Norway																
● 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		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	480.5	562.6	898.7	640.0	14.7	408.4	30.2	2174.7
75th %ile	421.1	520.1	483.6	457.1	14.7	60.2	30.2	906.8
Median	355.2	419.0	334.2	355.6	14.7	14.6	30.2	116.3
25th %ile	317.3	360.0	315.1	330.0	14.7	7.9	30.2	27.4
10th %ile	308.4	322.3	278.6	290.4	14.7	1.3	30.2	22.4
— Average	383.2	545.2	514.7	438.2	14.7	147.1	30.2	817.9
Count	4	21	8.0	49	1	8	1	4
Avg. assets	296M	213M	310M	347M	90M	22M	178M	162M
Government Pension Fund Norway								
● You %ile	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

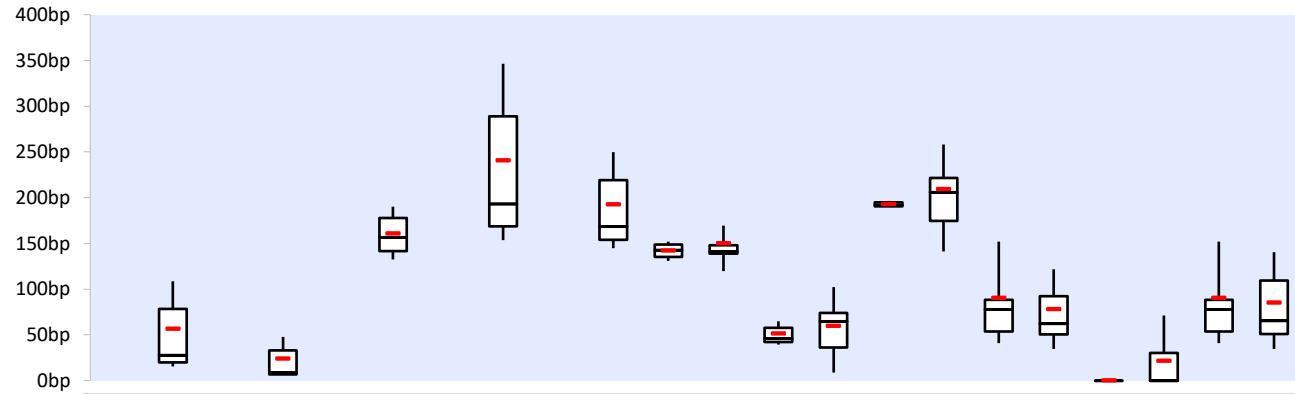
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.

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 160 bps (on amount fees are based on) for underlying management fees and 146 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 2.7 bps for fund of funds.

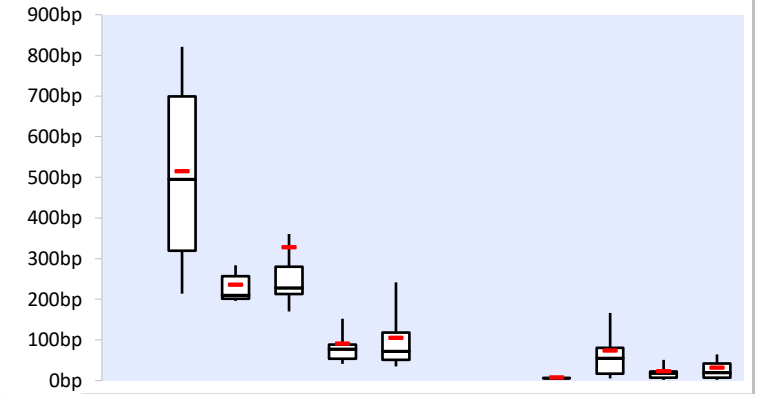
## Private Credit

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



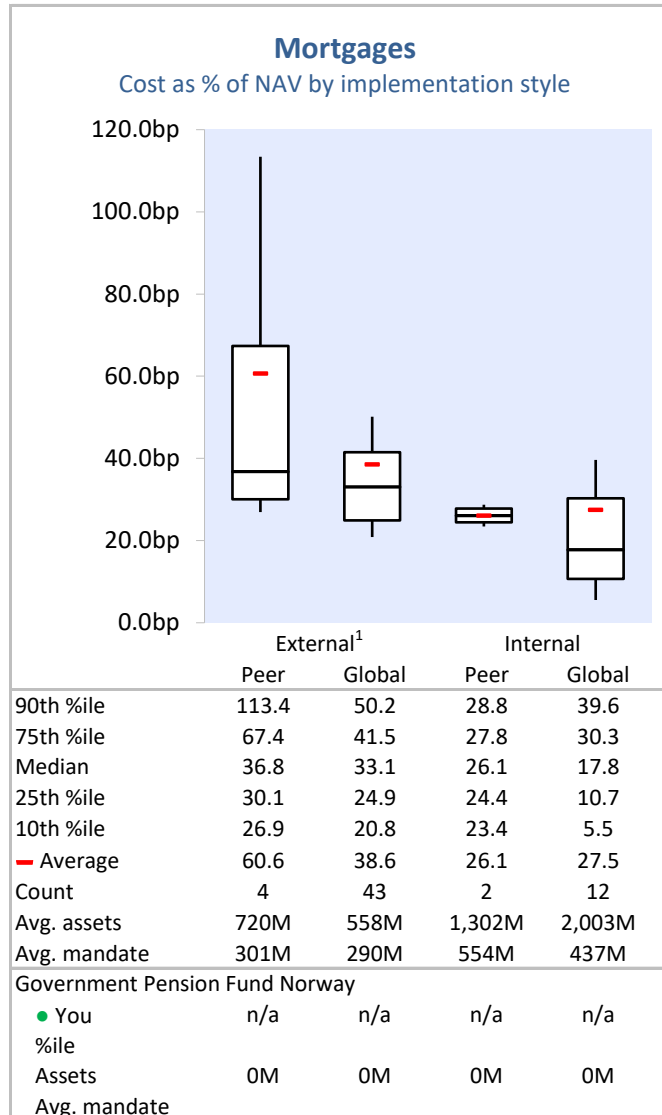
	Fund of Funds										Direct LP						Evergreen					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	108.6	47.7	190.1	346.4	249.6	152.0	169.2	64.7	102.3	196.4	258.1	151.8	121.8	0.0	71.1	151.8	140.5					
75th %ile	78.2	33.0	177.6	288.9	219.2	148.5	148.0	57.8	74.0	194.8	221.6	88.2	92.2	0.0	30.1	88.2	109.4					
Median	27.7	8.6	156.8	193.1	168.7	142.7	141.0	46.3	64.8	192.2	205.9	77.8	62.5	0.0	0.1	77.8	65.6					
25th %ile	20.0	6.8	141.6	168.5	153.7	135.4	138.9	42.0	36.4	190.6	174.5	53.5	50.5	0.0	0.0	53.5	50.9					
10th %ile	15.4	5.8	132.5	153.7	144.7	131.0	119.9	39.5	8.7	189.6	141.0	41.1	34.5	0.0	0.0	41.1	34.5					
— Average	56.3	23.7	160.6	240.5	192.4	141.7	149.8	51.1	59.4	192.9	209.2	90.2	77.8	0.0	21.4	90.2	85.1					
Count	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3
Avg. assets	70M	70M	70M	70M	70M	1,321M	547M	1,321M	547M	1,321M	547M	705M	373M	4,229M	1,104M	705M	373M					
Government Pension Fund Norway	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
● You																						
%ile																						
Assets																						

### 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	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	
90th %ile	820.9	283.8	360.3	151.8	241.6					6.5	166.3	51.2	64.4
75th %ile	698.9	256.4	280.4	88.2	118.4					6.5	80.7	22.2	42.0
Median	495.5	210.7	228.3	77.8	72.3					6.5	55.1	18.9	19.6
25th %ile	319.7	201.4	212.8	53.5	51.2					6.5	16.9	7.3	7.4
10th %ile	214.2	195.9	170.2	41.1	34.5					6.5	5.2	1.7	2.1
— Average	513.9	235.0	326.7	90.2	104.8					6.5	73.1	22.5	30.8
Count	0	3	3	55	6	74	0	0	1	7	9	22	
Avg. assets	58M	1,190M	461M	705M	356M					162M	141M	649M	960M
Government Pension Fund Norway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
● You													
%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.
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 12.2 bps for LPs and 18.0 bps for external (not LPs).



#### 1. Breakdown of external fees

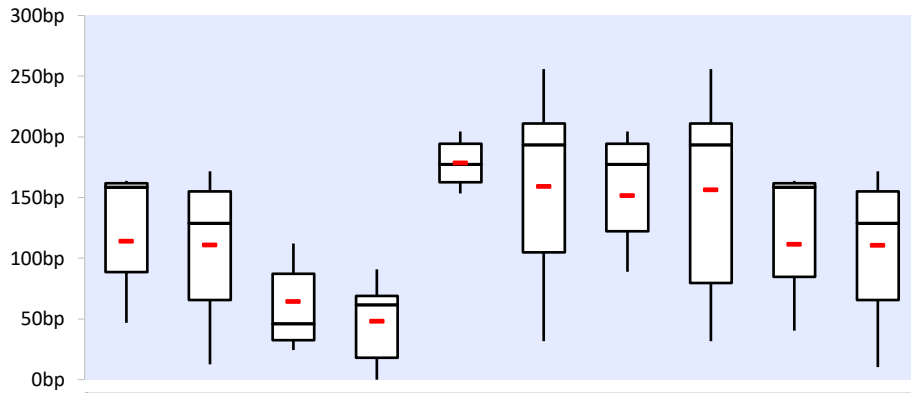
	Your Plan	Peer Average	Global Average
Base fees	n/a	54.0	34.4
Internal and other	<u>n/a</u>	<u>6.7</u>	<u>7.5</u>
Total*	n/a	60.6	38.6
Performance fees**	n/a	0.0	4.9

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

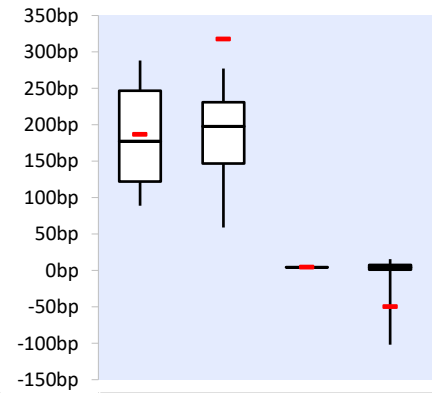
\*\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for only those funds that reported a performance fee is 2.3 bps for peers (2 funds) and 33.9 bps for Global participants (39 funds).

## Other Private Equity

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

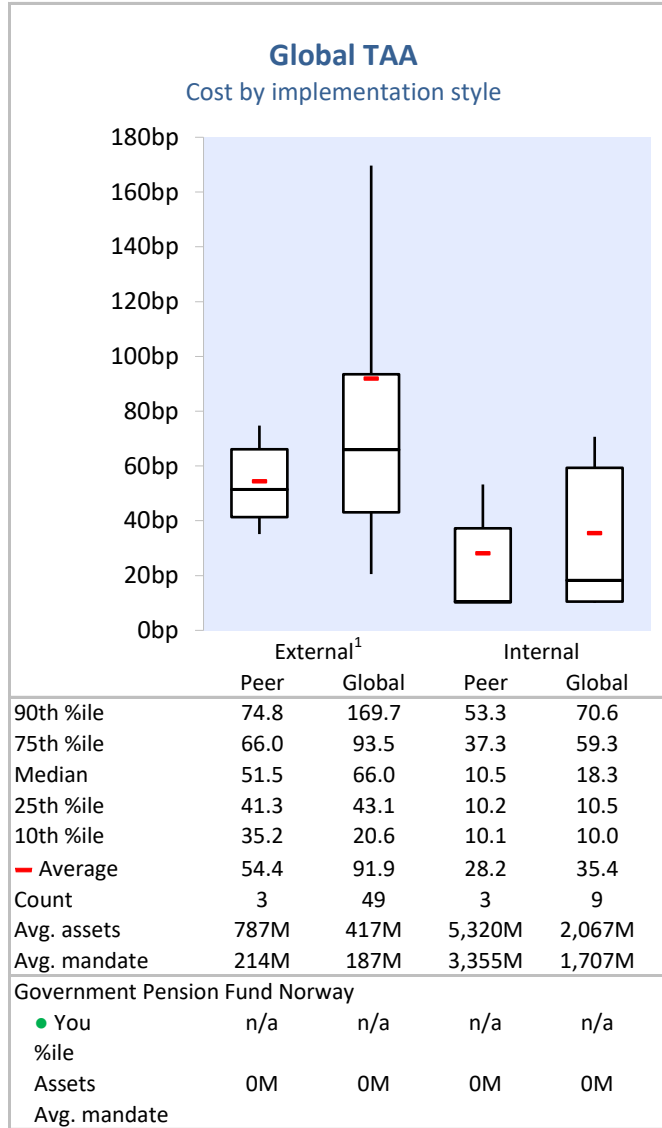


Cost as a % of NAV



	Direct LP						Direct LP & Co-Inv. <sup>3</sup>				Direct LP & Co-Inv. <sup>3</sup>		Internal	
	Mgmt fees		Perf. fees		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> excl. perf.		Total <sup>2</sup> incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	163.6	171.5	112.1	90.8	204.3	255.9	204.3	255.9	163.6	171.5	288.2	277.0	4.5	15.5
75th %ile	161.8	155.1	87.3	69.0	194.3	211.0	194.3	211.0	161.8	155.1	246.7	230.9	4.5	7.6
Median	158.6	129.0	46.1	61.6	177.6	193.5	177.6	193.5	158.6	129.0	177.6	198.0	4.5	4.5
25th %ile	88.7	65.7	32.6	18.1	162.5	105.0	122.1	79.6	84.8	65.7	122.1	146.7	4.5	1.0
10th %ile	46.8	12.7	24.4	0.0	153.5	31.7	88.9	31.7	40.5	10.4	88.9	59.2	4.5	-101.9
— Average	114.1	111.1	64.6	48.2	178.7	159.3	151.8	156.5	111.5	110.8	186.7	317.6	4.5	-49.6
Count	3	29	3	29	3	29	3	29	3	29	3	29	1	9
Avg. assets	487M	453M	487M	453M	487M	453M	556M	464M	556M	464M	556M	464M	482M	234M
Government Pension Fund Norway														
● 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
%ile														
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

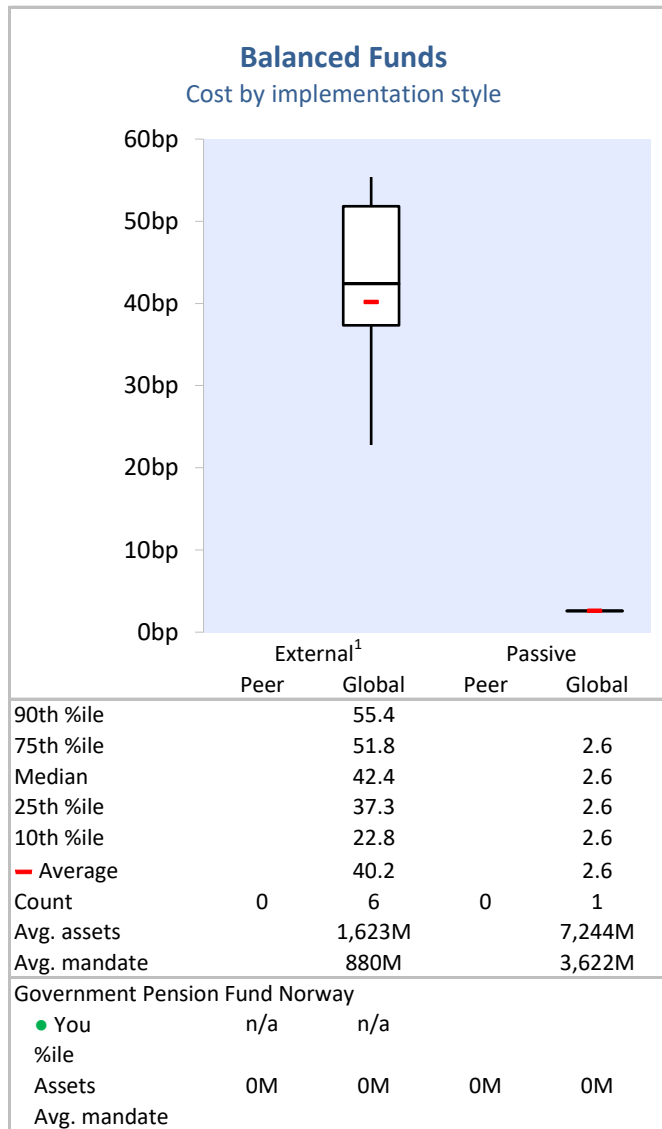
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The total cost also includes the internal cost of monitoring and selecting private equity investments.
3. Co-investment is included with direct LPs because it can only be done alongside direct LPs. Co-investment is done by 1 of your peers and 2 of the Global funds.



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	44.9	73.4
Internal and other	<u>n/a</u>	<u>3.4</u>	<u>12.7</u>
Performance fees	n/a	9.2	22.8
Total*	n/a	54.4	91.9

\* 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 9.2 bps for peers (2 funds) and 22.8 bps for Global participants (32 funds).

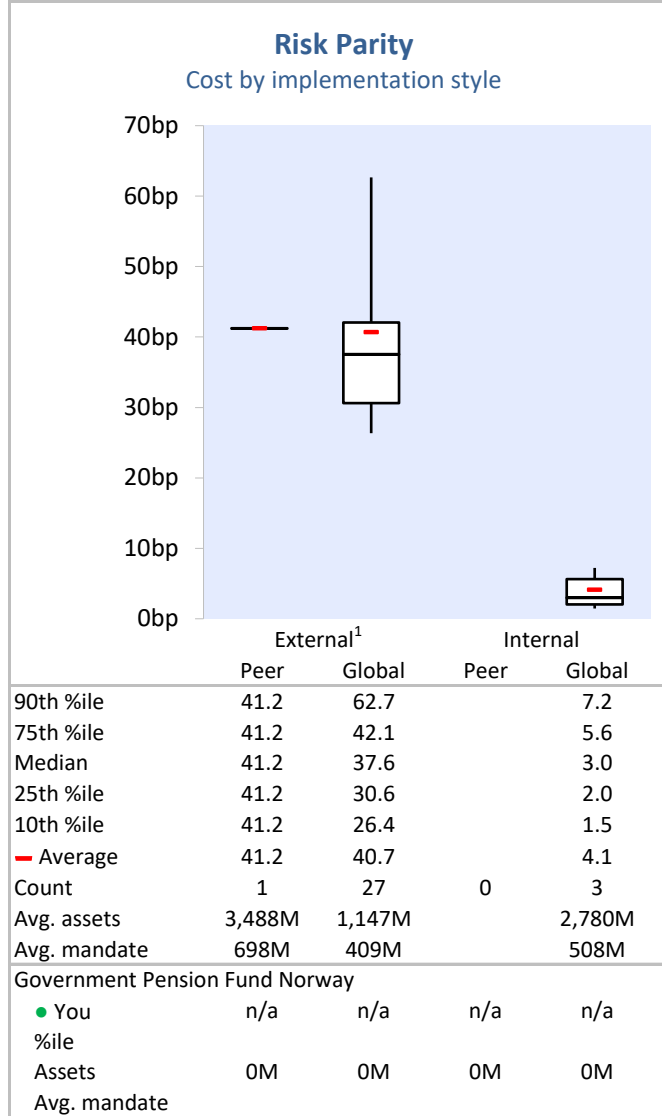


#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	n/a	40.2
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	40.2

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





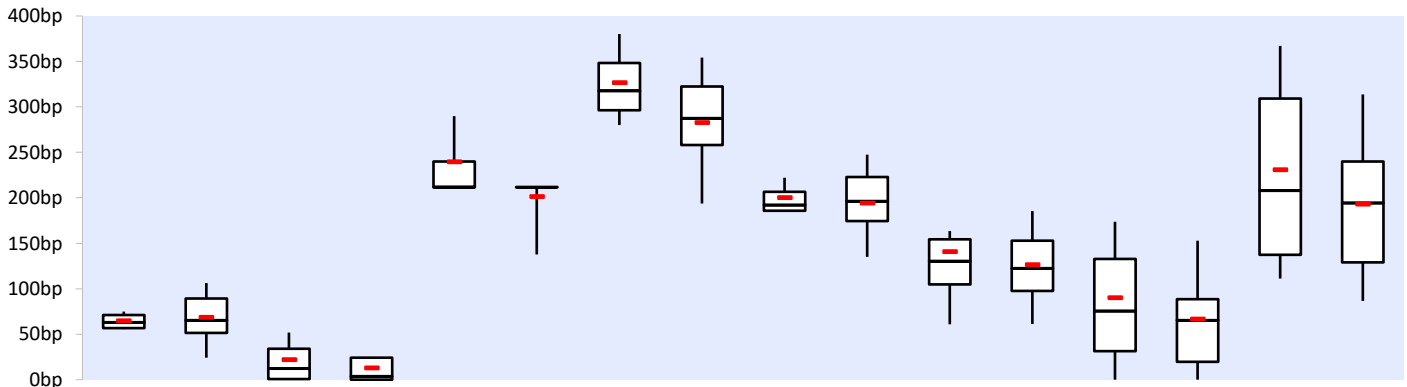
1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	40.8	38.8
Internal and other	<u>n/a</u>	<u>0.5</u>	<u>2.1</u>
Performance fees	n/a	n/a	1.6
Total*	n/a	41.2	40.7

\* 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 1.6 bps for Global participants (16 funds).

## Hedge Funds

### Cost by implementation style

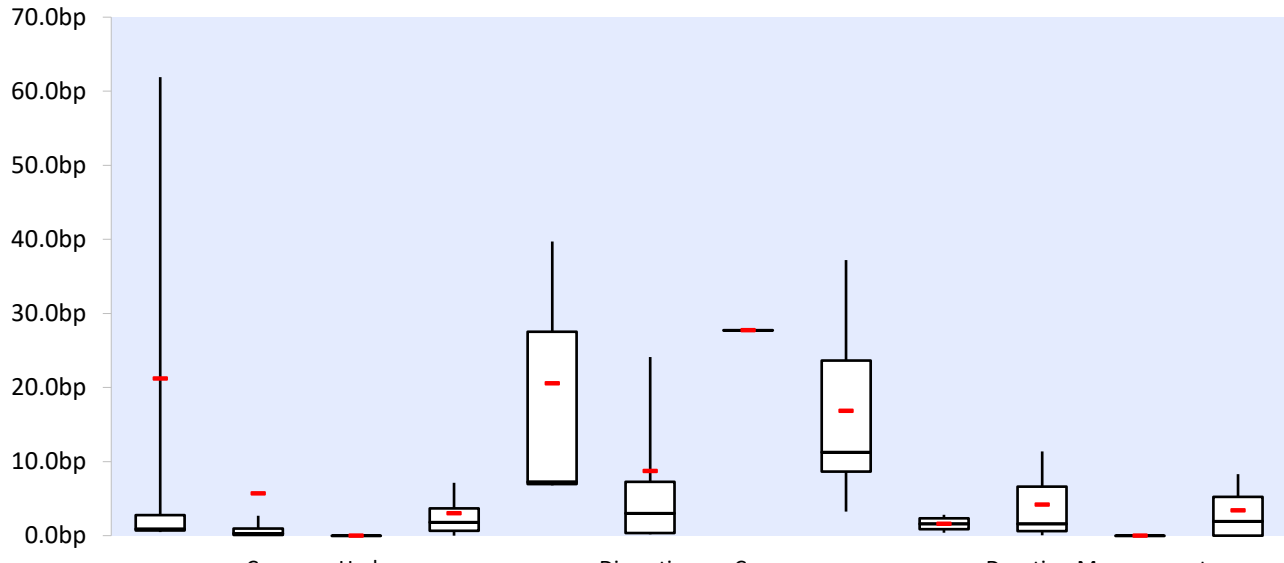


	Fund of Funds										External Direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. and perf. <sup>1</sup>		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>2</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	74.8	106.4	51.8	24.0	289.8	212.0	380.1	354.1	222.0	247.6	163.5	185.4	173.5	153.0	367.2	313.6
75th %ile	71.1	89.3	33.9	24.0	239.8	212.0	348.3	322.4	206.6	222.8	154.4	152.8	132.9	88.5	309.0	240.1
Median	63.2	65.4	12.5	3.8	212.0	212.0	317.8	287.5	192.2	196.2	130.6	122.5	75.8	65.4	208.3	194.4
25th %ile	56.8	51.3	0.8	0.0	212.0	212.0	296.1	258.1	185.8	174.3	104.6	97.8	31.5	19.6	137.4	129.2
10th %ile	55.7	24.3	0.3	0.0	212.0	137.6	280.1	193.8	184.7	135.1	60.9	61.1	0.0	0.0	111.1	86.5
— Average	64.7	68.6	22.2	12.8	239.8	201.5	326.6	282.9	200.2	194.2	140.7	126.6	90.3	66.5	231.0	193.1
Count	4	84	4	84	4	84	4	84	4	84	11	127	11	127	11	127
Avg. assets	199M	594M	199M	594M	199M	594M	199M	594M	199M	594M	2,986M	1,543M	2,986M	1,543M	2,986M	1,543M
Government Pension Fund Norway																
● 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

1. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 129 bps (on NAV) for underlying management fees and 83 bps (on NAV) for underlying performance fees were used.

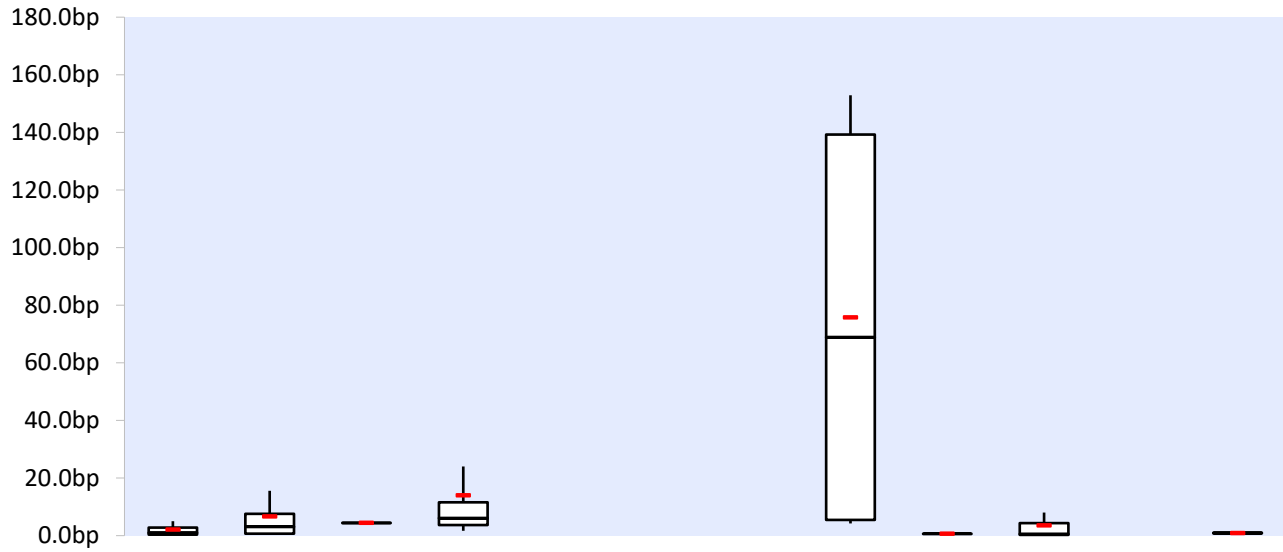
2. The total cost also includes the internal cost of monitoring and selecting real estate investments. The peer average cost of monitoring and selecting was 3.1 bps for fund of

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



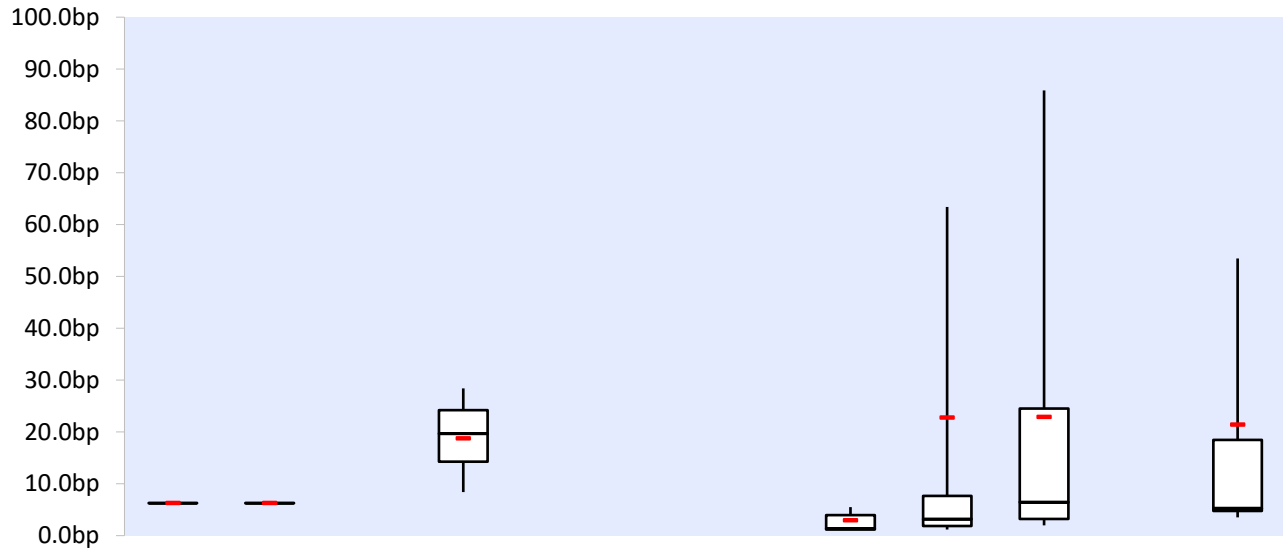
	Currency Hedge				Discretionary Currency				Duration Management			
	Internal		External		Internal		External		Internal		External	
	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	61.9	2.7	0.0	7.1	39.7	24.1	27.7	37.2	2.8	11.4	0.0	8.3
75th %ile	2.8	0.9	0.0	3.7	27.5	7.3	27.7	23.7	2.4	6.6	0.0	5.2
Median	0.9	0.3	0.0	1.8	7.3	3.0	27.7	11.3	1.6	1.6	0.0	2.0
25th %ile	0.7	0.1	0.0	0.7	7.0	0.3	27.7	8.6	0.9	0.6	0.0	0.0
10th %ile	0.5	0.0	0.0	0.0	6.8	0.2	27.7	3.2	0.4	0.1	0.0	0.0
— Average	21.2	5.7	0.0	3.0	20.6	8.7	27.7	16.9	1.6	4.2	0.0	3.4
Count	5	23	1	51	3	13	1	19	2	7	1	23
Avg. notional	8,388M	8,974M	13,366M	27,011M	906M	7,859M	867M	1,115M	1,337M	5,046M	31M	4,235M
Government Pension Fund Norway												
● 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	883M	883M							12,396M	12,396M		

**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	5.0	15.6	4.5	24.0				152.9	0.7	8.0		1.1
75th %ile	2.8	7.5	4.5	11.6				139.2	0.7	4.3		1.0
Median	1.0	3.1	4.5	6.2				69.0	0.7	0.6		0.9
25th %ile	0.4	0.7	4.5	3.7				5.5	0.7	0.3		0.9
10th %ile	0.3	0.3	4.5	1.7				4.2	0.7	0.1		0.8
— Average	2.2	6.7	4.5	14.0				75.8	0.7	3.6		0.9
Count	4	10	1	34	0	0	0	4	1	10	0	2
Avg. notional	13,676M	7,453M	9,177M	1,091M				1,206M	45,441M	44,379M		196M
Government Pension Fund Norway												
● 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	6.3	6.3	28.4				5.5		63.4	85.9		53.5
75th %ile	6.3	6.3	24.2				4.0		7.7	24.5		18.5
Median	6.3	6.3	19.7				1.3		3.2	6.5		5.3
25th %ile	6.3	6.3	14.3				1.2		1.9	3.2		4.8
10th %ile	6.3	6.3	8.4				1.1		1.2	2.0		3.5
— Average	6.3	6.3	18.8				3.0		22.8	22.9		21.4
Count	1	1	0	4	0	0	0	3	5	13	0	17
Avg. notional	391M	391M		539M				3,359M	3,606M	1,618M		560M
Government Pension Fund Norway												
● 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												

# 7

## Appendices

Appendix A - Data Summary

Appendix B - Currency conversion

Appendix C - Data quality

Appendix D - Glossary of terms

## Appendix A - Data Summary

### Government Pension Fund Norway

Plan Info	2018	2017	2016	2015	2014
Contact	Jørn Nilsen	Jørn Nilsen	Jørn Nilsen	Jørn Nilsen	Jørn Nilsen
Type of fund (corporate, public, other)	Public	Public	Public	Public	Public
Total fund size (mils) as at December 31	24,165.0	23,918.0	23,380.0	20,638.0	20,465.0
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Year End	Year End	Year End
Total return for year ended Is the return net or gross?	-0.36% Gross	13.25% Gross	7.06% Gross	6.95% Gross	10.65% Gross
Total fund policy or benchmark return	-1.12%	12.79%	5.89%	6.47%	8.51%

Ancillary Data	2018	2017	2016	2015	2014
What is your hedging policy for: Foreign non-U.S. Holdings?					
What were your actuarial fees in 000s?	6	10	23	88	13
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	0%	0%	0%	0%	0%
What % of the plan's liabilities pertain to retired members?					
Actuarial valuation assumptions for funding purposes: Liability discount rate				2.7%	2.3%
Salary progression rate			2.4%	2.5%	2.8%
What was your actuarial assumption for expected rate of return?				2.7%	2.3%

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

### Government Pension Fund Norway

Asset Class		Policy Weight	Benchmark	
			Description	Return
Stock - Europe	2018	59.0	CMVINXBINN - Custom Index - OSEBX	-2.6
	2017	64.5	CMVINXBINN - Custom Index - OSEBX	19.1
	2016	61.1	CMVINXBINN - Custom Index - OSEBX	8.7
	2015	59.5	CMVINXBINN - Custom Index - OSEBX	9.2
	2014	58.1	CMVINXBINN - Custom Index - OSEBX	7.4
Fixed Income - Europe	2018	41.0	Barclays Capital Global Aggregate Nordic ex Norway Custom Index 30% 70% Barclays Capital Clobal Aggregated Norway ex. treasuries Barclays Capital Treasuries Norway	1.0
	2017	35.5	Barclays Capital Global Aggregate Nordic ex Norway Custom Index 30% 70% Barclays Capital Clobal Aggregated Norway ex. treasuries Barclays Capital Treasuries Norway	2.9
	2016	38.9	Barclays Capital Global Aggregate Nordic ex Norway Custom Index 30% 70% Barclays Capital Clobal Aggregated Norway ex. treasuries Barclays Capital Treasuries Norway	1.8
	2015	40.5	Barclays Capital Global Aggregate Nordic ex Norway Custom Index 30% 70% Barclays Capital Clobal Aggregated Norway ex. treasuries Barclays Capital Treasuries Norway	2.7
	2014	41.9	Barclays Capital Global Aggregate Nordic ex Norway Custom Index - 70% Barclays Capital Clobal Aggregated Norway ex. treasuries - 30% Barclays Capital Treasuries Norway	9.2



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

Government Pension Fund Norway

Asset Class		Year	Asset (€millions)	Return %	Cost (€000)			
					Internal & Other	Base Fees	Perf Fees	Total
Stock - Europe								
Internal Active		2018	14,255.5	-1.83	7,472.3		7,472.3	5.2
		2017	14,312.0	19.34	7,445.3		7,445.3	5.2
		2016	14,290.0	10.46	8,622.0		8,622.0	6.5
		2015	12,288.0	9.89	7,910.0		7,910.0	6.5
		2014	11,887.0	10.66	7,120.0		7,120.0	5.8
Fixed Income - Europe								
Internal Active		2018	9,909.2	1.69	6,426.2		6,426.2	6.5
		2017	8,556.0	3.64	6,646.7		6,646.7	7.8
		2016	9,090.0	2.17	7,217.0		7,217.0	8.3
		2015	8,350.0	2.93	6,353.0		6,353.0	7.5
		2014	8,578.0	9.75	5,657.0		5,657.0	7.1

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

Government Pension Fund Norway

Asset Class	Year	NAV (€mils)	Fee Basis (€mils)	Return	Cost (€000)					
					Internal & Other	Base Fees	Perf. Fees	Underlying Base Fees	Underlying Perf Fees	Total bps

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

Government Pension Fund Norway

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets <sup>1</sup>	2018	937.0	0.4bp
	2017	1,604.0	0.7bp
	2016	1,519.0	0.7bp
	2015	1,721.0	0.8bp
	2014	1,480.0	0.7bp
Custodial total	2018	624.0	0.3bp
	2017	721.0	0.3bp
	2016	895.0	0.4bp
	2015	763.0	0.4bp
	2014	721.0	0.4bp
Consulting / performance measurement	2018	66.0	0.0bp
	2017	45.0	0.0bp
	2016	52.0	0.0bp
	2015	71.0	0.0bp
	2014	59.0	0.0bp
Audit	2018	227.0	0.1bp
	2017	270.0	0.1bp
	2016	306.0	0.1bp
	2015	267.0	0.1bp
	2014	283.0	0.1bp
Other (legal etc)	2018	155.0	0.1bp
	2017	105.0	0.0bp
	2016	293.0	0.1bp
	2015	400.0	0.2bp
	2014	336.0	0.2bp
Total	2018	2,009.0	0.8bp
	2017	2,745.0	1.2bp
	2016	3,065.0	1.4bp
	2015	3,222.0	1.6bp
	2014	2,879.0	1.4bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2018	13,898.5	5.7bp
	2017	14,092.0	6.1bp
	2016	15,839.0	7.2bp
	2015	14,263.0	6.9bp
	2014	12,777.0	6.3bp
Oversight, Custodial & Other Costs	2018	2,009.0	0.8bp
	2017	2,745.0	1.2bp
	2016	3,065.0	1.4bp
	2015	3,222.0	1.6bp
	2014	2,879.0	1.4bp
Total	2018	15,907.5	6.6bp
	2017	16,837.0	7.3bp
	2016	18,904.0	8.5bp
	2015	17,485.0	8.5bp
	2014	15,656.0	7.7bp

1. Oversight includes the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees / salaries of the board or investment committee. All costs associated with the above including fees / salaries, travel, director's insurance and attributed overhead should be included.

## Appendix A - Data Summary: Overlays

Government Pension Fund Norway

Overlays		Internal					External								
		Notional amount (mils)	Market value (mils)	Profit/Loss (000s)	Cost (000s)	% of Notion. (bps)	Duration (years)	Notional amount (mils)	Market value (mils)	Profit/Loss (000s)	Base fees (000s)	Perf. fees (000s)	Over-sight (000s)	Total (000s)	% of Notion. (bps)
Currency Hedge	2018	882.6	-14.0												
	2017	874.8	1.7												
	2016	1,103.0	-16.0												
Duration Management	2018	12,396.1	70.4												
	2017	10,889.4	116.6												
	2016	12,803.0	126.0												

## Appendix B - Currency conversion

Government Pension Fund Norway

#N/A

Currency conversion table					
	2018	2017	2016	2015	2014
United States Dollars - USD*	0.723	0.747	0.732	0.761	0.777
Canada Dollars - CAD	0.580	0.597	0.576	0.624	0.619
Euro - EUR*	1.000	1.000	1.000	1.000	1.000
Sweden Kronor - SEK	0.080	0.084	0.081	0.084	0.089
United Kingdom Pounds - GBP	1.013	1.048	1.055	1.087	1.109
Australia Dollars - AUD	0.496	0.500	0.499	0.527	0.518
New Zealand Dollars - NZD	0.498	0.507	0.505	0.536	0.528

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 28th 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.