

**Investment**  
**Benchmarking Analysis**  
(for the 10-year period ending December 31, 2021)

**Norwegian Government Pension Fund Global**



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# Key Takeaways

## Returns

- All returns have been converted using the GPFG currency basket. However, differences in total returns reflect in large part home-market biases and the relative performance of currencies. So they are not the primary focus of this report.
- Your 10-year net total return was 9.6%. This was above both the Global median of 9.0% and the peer median of 8.8%.
- Your 10-year policy return was 9.5%. This was above both the Global median of 8.8% and the peer median of 8.6%.

## Value added

- Your 10-year net value added was 0.2%. This was close to both the Global median of 0.3% and the peer median of 0.3%.

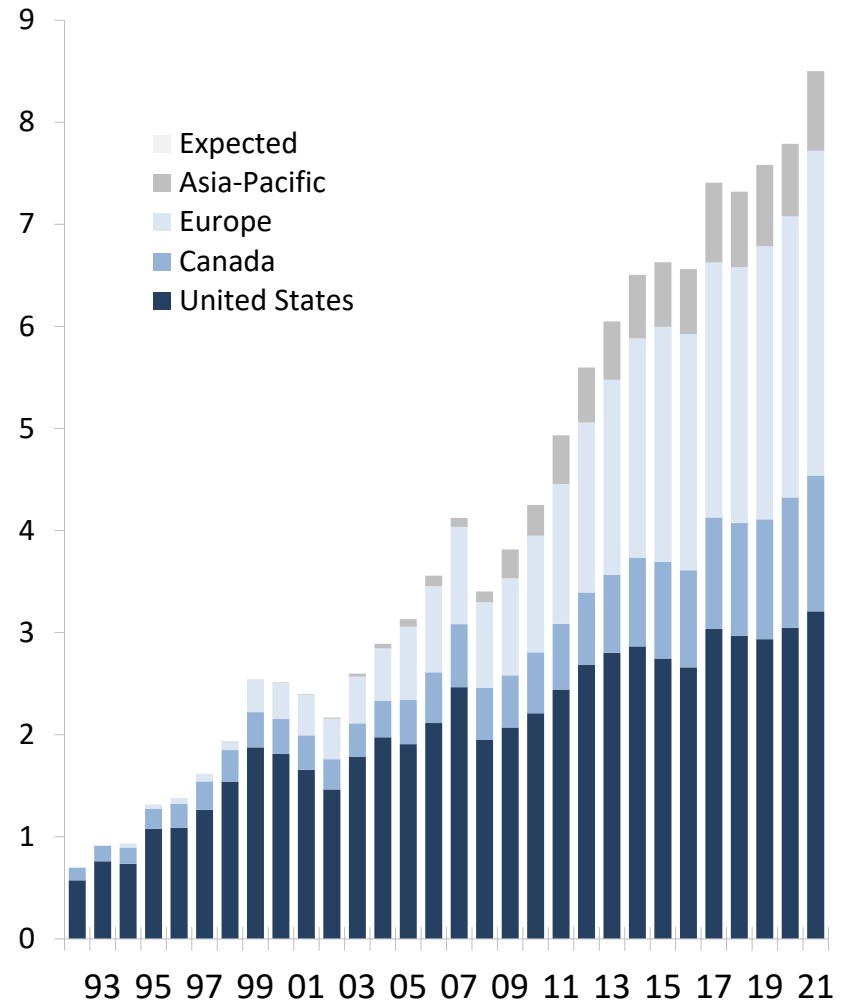
## Cost

- Your 2021 investment cost of 4.2 bps was below your benchmark cost of 21.9 bps. This suggests that your fund was low cost compared to your peers.
- Your fund was low cost because it had a lower cost implementation style and it paid less than peers for similar services.

# This benchmarking report compares your cost and return performance to the 296 funds in CEM's extensive pension database.

- 149 U.S. pension funds participate. The median U.S. fund had assets of €9.1 billion and the average U.S. fund had assets of €21.5 billion. Total participating U.S. assets were €3.2 trillion.
- 68 Canadian funds participate with assets totaling €1.3 trillion.
- 69 European funds participate with aggregate assets of €3.2 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.
- 6 Asia-Pacific funds participate with aggregate assets of €780.4 billion. Included are funds from Australia, New Zealand, China and South Korea.
- 4 funds from other regions participate.

Participating assets (€ trillions)



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

### Peer group for Norwegian Government Pension Fund Global

- 10 largest Global sponsors from €124.0 billion to €551.8 billion
- Median size of €246.4 billion versus your €1,122.7 billion

- Your global peer group is composed of 3 Canadian funds, 2 European funds, 4 U.S. funds and 1 Asian-Pacific fund.
- In the report there are also comparisons to CEM's Global database of participants.

## Your 10-year net total return of 9.6% was above the peer median of 8.8%

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

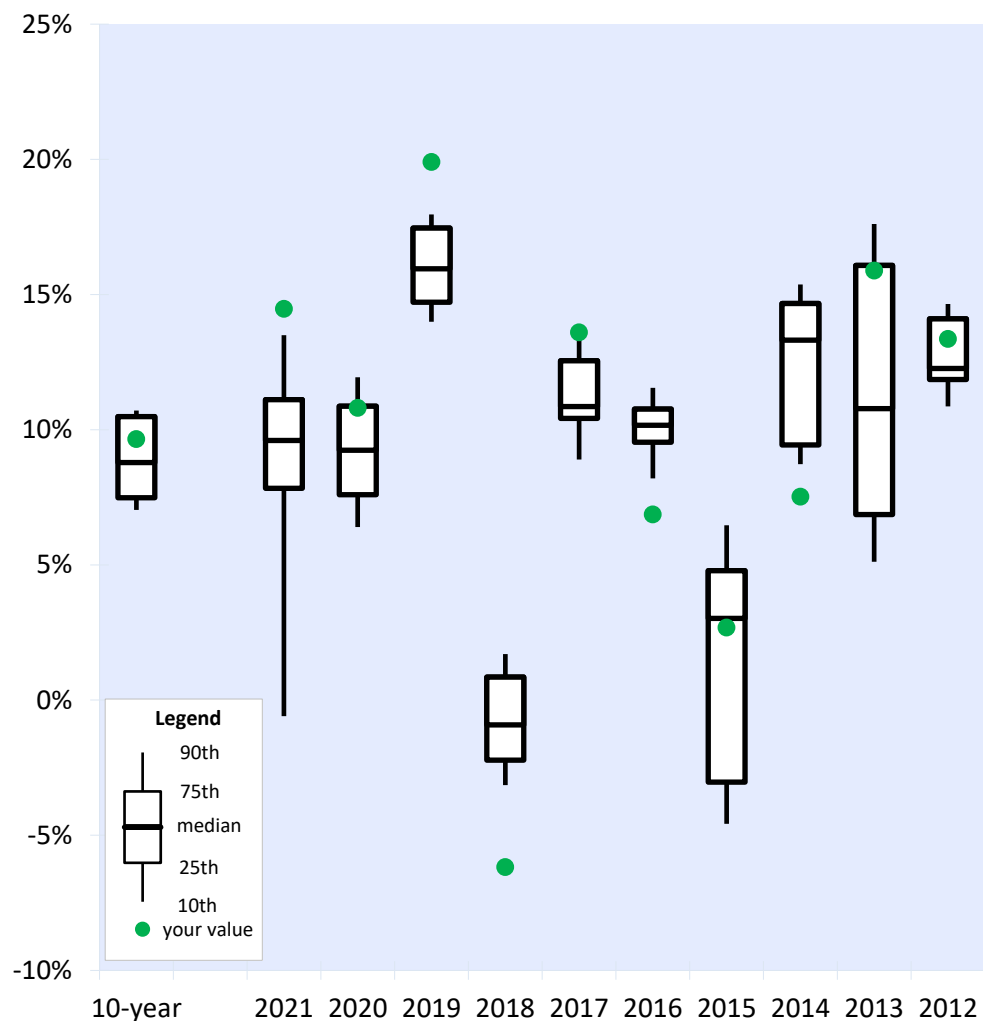
	Your 10-year
Net total fund return	9.6%
- Policy return	9.5%
= Net value added	0.2%

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

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

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

Peer net total returns - quartile rankings



## Your 10-year policy return of 9.5% was above the peer median of 8.6%.

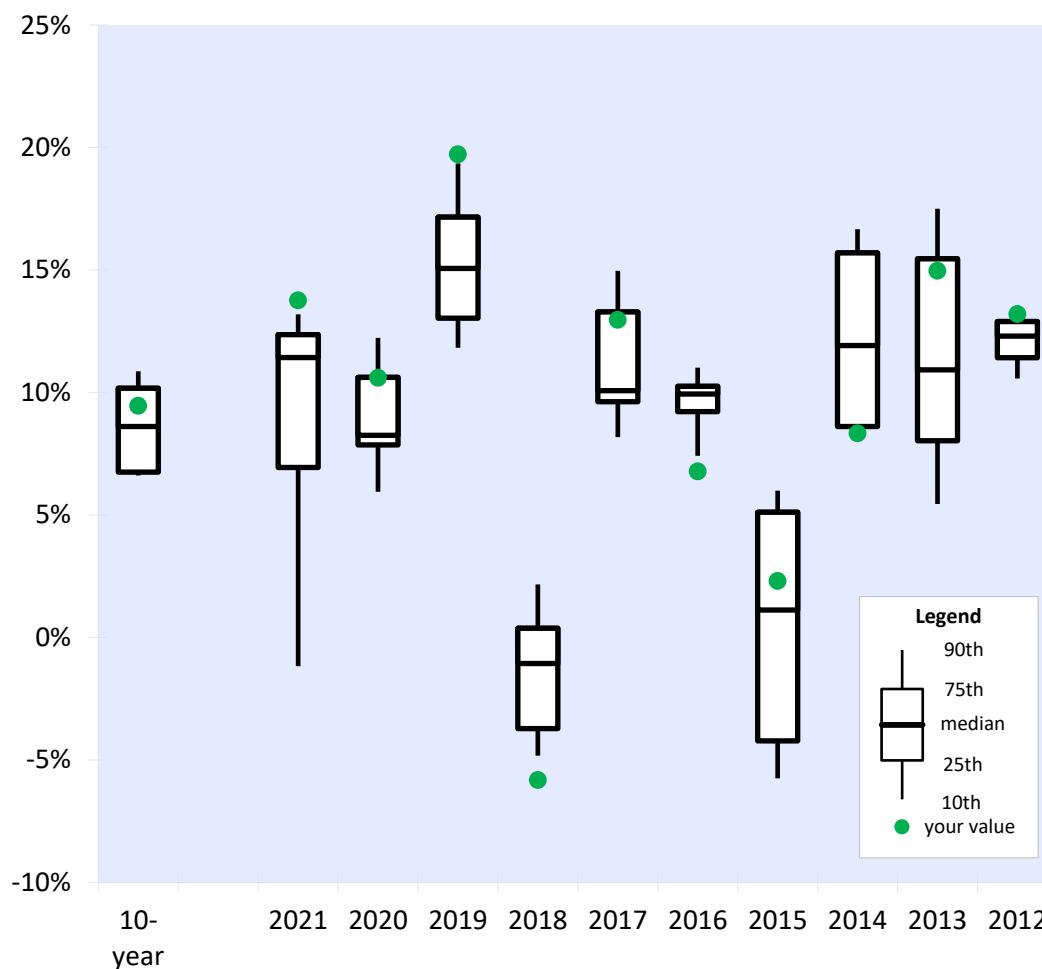
Your policy return is the return you could have earned passively by indexing your investments according to your policy mix.

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

- Long term capital market expectations
- Liabilities
- Appetite for risk

Each of these three factors is different across funds. Therefore, it is not surprising that policy returns often vary widely between funds.

Peer policy returns - quartile rankings



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

- Your fund currently has no allocation to real assets, hedge funds or private equity whereas the peer funds had average allocations of 15%, 3%, and 8% respectively. The Global funds' average allocations were 10%, 4% and 6%. The manager however can invest up to 7% in unlisted real estate and up to 2% in unlisted infrastructure for renewable energy.
- Your policy asset mix is more globally diversified than the average Peer or Global fund.

### 10-year average policy mix

	Your Fund	Peers Avg.	Global Avg.
Equity	66%	43%	43%
Fixed Income	33%	30%	36%
Hedge Funds	0%	3%	4%
Real Assets	1%	15%	10%
Private Equity	0%	8%	6%
Private Credit	0%	1%	1%
Total	100%	100%	100%

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



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

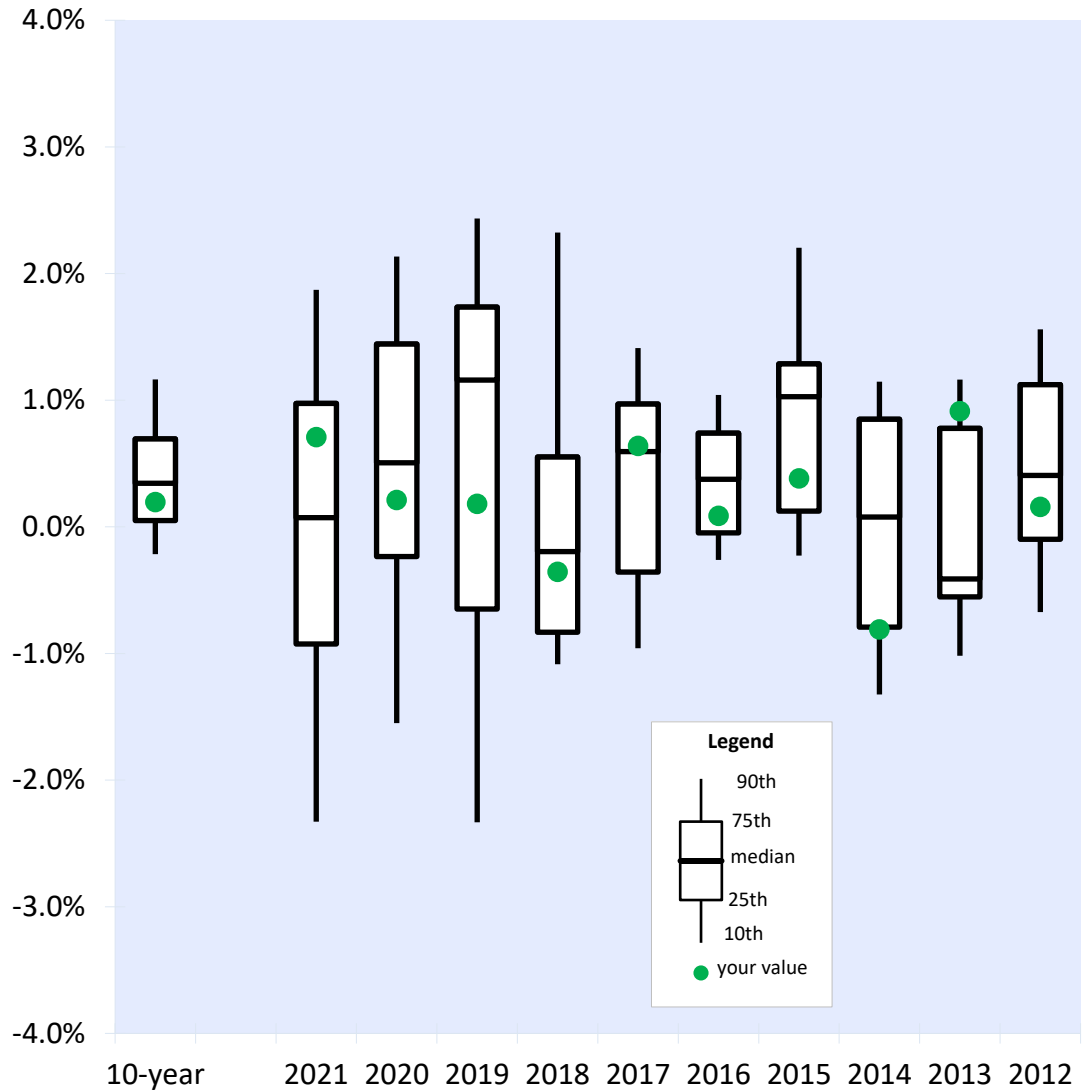
Net value added equals total net return minus policy return.

## Value added for Norwegian Government Pension Fund Global

Year	Net return	Policy return	Net value added
2021	14.5%	13.8%	0.7%
2020	10.8%	10.6%	0.2%
2019	19.9%	19.7%	0.2%
2018	-6.2%	-5.8%	-0.4%
2017	13.6%	13.0%	0.6%
2016	6.9%	6.8%	0.1%
2015	2.7%	2.3%	0.4%
2014	7.5%	8.3%	-0.8%
2013	15.9%	15.0%	0.9%
2012	13.4%	13.2%	0.2%
10-Year	9.6%	9.5%	0.2%

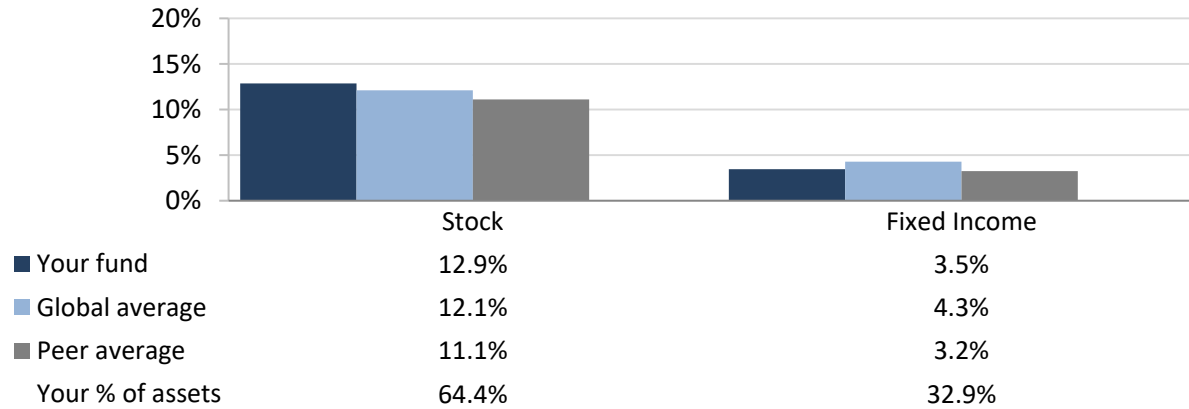
Your 10-year net value added of 0.2% compares to a median of 0.3% for your peers and 0.3% for the Global universe.

## Peer net value added - quartile rankings

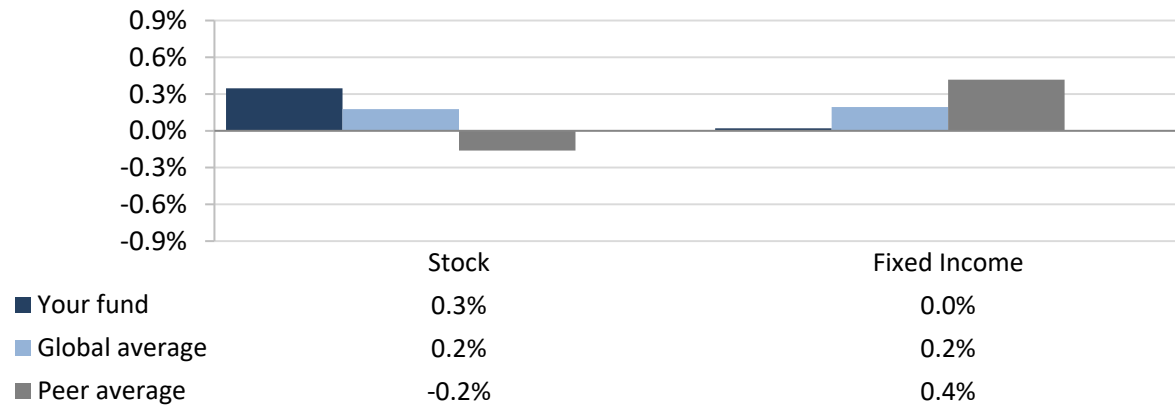


# Comparisons of your 10-year net return and net value added by major asset class:

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



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

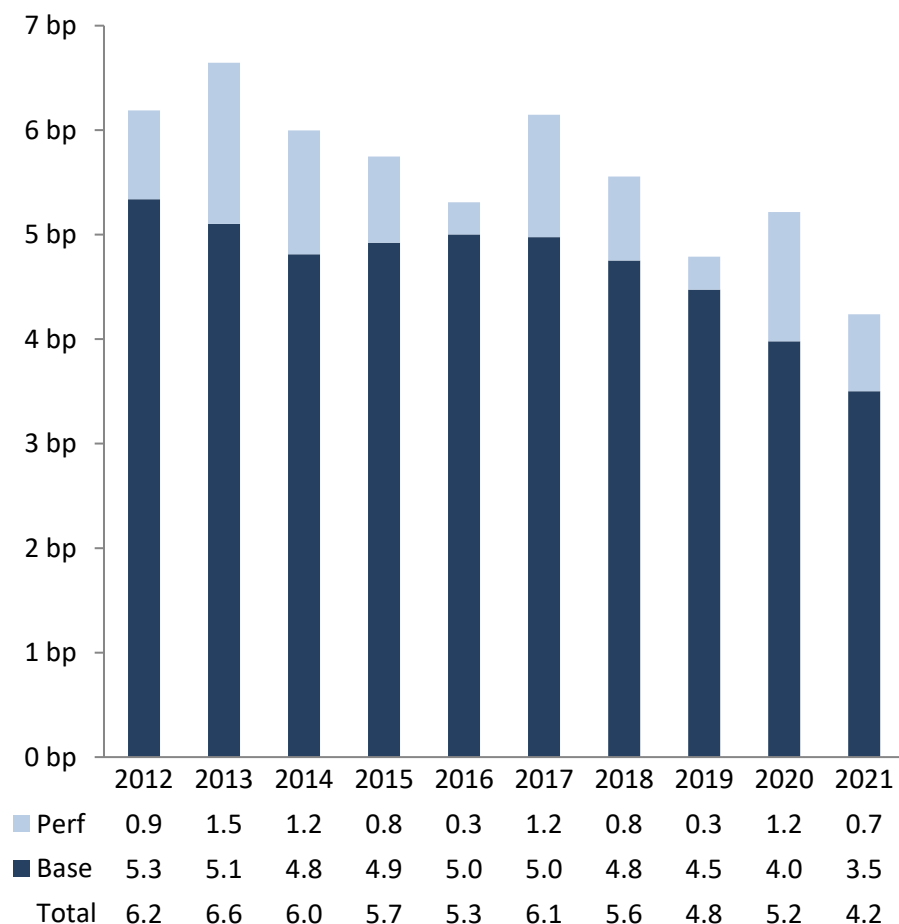


## Your investment costs, excluding private asset performance fees, were €475.8 million or 4.2 basis points in 2021.

Asset management costs by asset class and style (€000s)	Internal Mgmt		External Mgmt		Total	
	Active	Overseeing of external	Active base fees	Perform. fees		
Stock - U.S.		212	3,377	-1,163	2,426	
Stock - EAFE		1,254	16,281	6,177	23,713	
Stock - Emerging		5,209	68,469	77,560	151,239	
Stock - Global	87,800				87,800	
Fixed income - Global	31,769				31,769	
REITs	2,951				2,951	
Infrastructure	2,272				2,272	
Real estate	37,863				37,863	
<b>Total excluding private asset performance fees</b>					<b>340,033</b>	<b>3.0bp</b>
<b>Oversight, custodial and other costs</b>						
Oversight of the fund					78,246	
Trustee & custodial					45,995	
Consulting and performance measurement					7,681	
Audit					3,800	
Other					0	
<b>Total oversight, custodial &amp; other costs</b>					<b>135,722</b>	<b>1.2bp</b>
<b>Total investment costs (excl. transaction costs &amp; private asset performance fees)</b>					<b>475,755</b>	<b>4.2bp</b>

**Your costs decreased by 2.0 bps, from 6.2 bps in 2012 to 4.2 bps in 2021, because you paid less in total for similar investment styles and had a lower cost implementation style. This was partly offset by a higher cost asset mix.**

**Trend in cost**



In addition, there would have been some economies of scale achieved due to the fund doubling in size over this period.

**Reasons why your costs decreased by 2.0 bps**

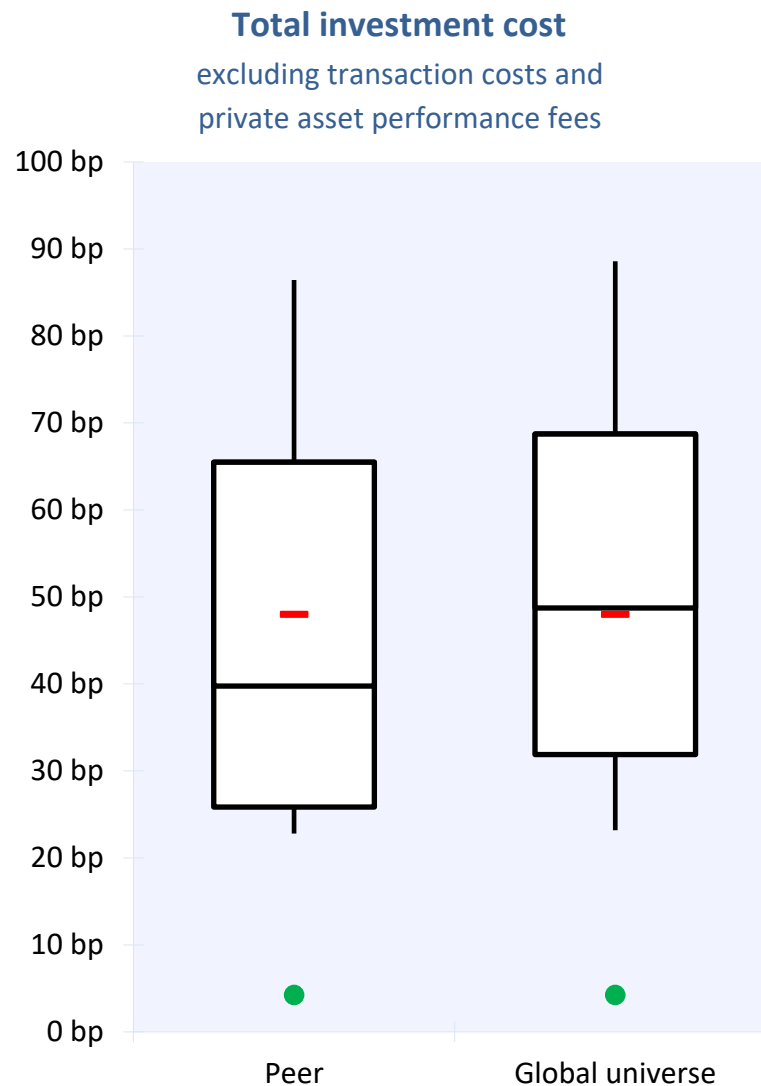
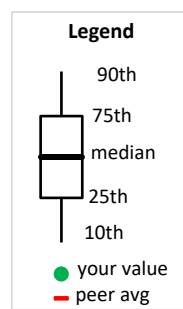
	Impact in bps
<b>1. Higher cost asset mix</b>	
• More Stock: 2012 60% vs 2021 72%	1.9
• More Real estate ex-REITs: 2012 0% vs 2021 2%	1.7
• All other mix changes	(0.2)
	<hr/>
	3.4
<b>2. Lower cost implementation style</b>	
• More internal as a % of active	(1.7)
	<hr/>
	(1.7)
<b>3. Paid less in total for similar investment styles</b>	
Lower internal investment management costs	
• Lower Real Estate base fees	(1.7)
• Lower internal active Global Stock costs	(0.8)
• All other internal investment mgmt. differences	(0.1)
• Lower oversight, custodial & other costs	(0.9)
• All other differences	0.0
	<hr/>
	(3.6)
<b>Total decrease</b>	<hr/>
	<b>(2.0)</b>

## Your total investment cost of 4.2 bps was the lowest of the peers and was substantially below the peer median of 39.8 bps.

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

- Asset mix, particularly holdings of the highest cost asset classes: real estate (excl. REITs), infrastructure, hedge funds, private equity and private credit. These high cost assets equaled 3% of your funds assets at the end of 2021 versus a peer average of 32%.
- 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 17.7 basis points in 2021.

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

Your total cost of 4.2 bp was below your benchmark cost of 21.9 bp. Thus, your cost savings were 17.7 bp.

### Your cost versus benchmark

	€000s	basis points
Your total investment cost	475,755	4.2 bp
Your benchmark cost	2,462,348	21.9 bp
Your excess cost	(1,986,592)	(17.7) bp

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

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	€000s	bps
1. Implementation style differences	(1,288,298)	(11.5)
2. Paying less than peers for similar services		
• External investment management costs	(87,490)	(0.8)
• Internal investment management costs	(548,074)	(4.9)
• Oversight, custodial & other costs	(62,730)	(0.6)
	<u>(698,294)</u>	<u>(6.2)</u>
<b>Total savings</b>	<b>(1,986,592)</b>	<b>(17.7)</b>

## Alternative benchmark cost:

	Average holdings in €mils	GPFG cost in bps	Cost comparison with median peer across all management styles (bps)			Cost comparison with median peer with similar management style (bps)		
			Benchmark cost	Difference to benchmark cost	Contribution to total cost difference	Benchmark cost	Difference to benchmark cost	Contribution to total cost difference
<b>External asset management</b>								
Stock - U.S.	1,571	15.4	9.2	(6.3)	(0.0)	39.6	24.2	0.0
Stock - EAFE	9,288	25.5	28.5	2.9	0.0	50.7	25.1	0.2
Stock - Emerging	38,571	39.2	34.6	(4.6)	(0.2)	54.9	15.6	0.5
<b>Internal asset management</b>								
Stock - Global	742,890	1.2	20.6	19.5	12.9	7.2	6.1	4.0
Fixed income - Global	282,627	1.1	6.7	5.6	1.4	2.7	1.6	0.4
REITs	19,607	1.5	9.2	7.7	0.1	6.1	4.6	0.1
Real estate ex-REITs	27,377	13.8	68.8	55.0	1.3	29.9	16.1	0.4
Infrastructure	801	<u>28.4</u>	<u>68.8</u>	40.5	<u>0.0</u>	<u>37.0</u>	8.6	<u>0.0</u>
<b>Total, excl. Overlays and overhead</b>		<b>3.0</b>	<b>18.7</b>		<b>15.6</b>	<b>8.7</b>		<b>5.7</b>
Overlay Programs	1,122,732	0.0	1.5	1.5	1.5	1.5	1.5	1.5
Overhead	1,122,732	1.2	1.8	0.6	0.6	1.8	0.6	0.6
<b>Total</b>	<b>1,122,732</b>	<b>4.2</b>	<b>21.9</b>		<b>17.7</b>	<b>12.0</b>		<b>7.7</b>

Notes:

Internal Global stock uses All stock as the benchmark.

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

Rounding may cause summation issues



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

	Average holdings in €mils	Current cost in bps	Benchmark target cost in bps
<i>External asset management</i>			
Stock - U.S.	1,571	15.4	0.7
Stock - EAFE	9,288	25.5	1.9
Stock - Emerging	38,571	39.2	2.5
<i>Internal asset management</i>			
Stock - Global	742,890	1.2	2.1
Fixed income - Global	282,627	1.1	1.6
REITs	19,607	1.5	2.0
Real estate ex-REITs	27,377	13.8	2.0
Overhead	1,122,732	1.2	1.2
<b>Total</b>	<b>1,122,732</b>	<b>4.2</b>	<b>3.2</b>

Notes:

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

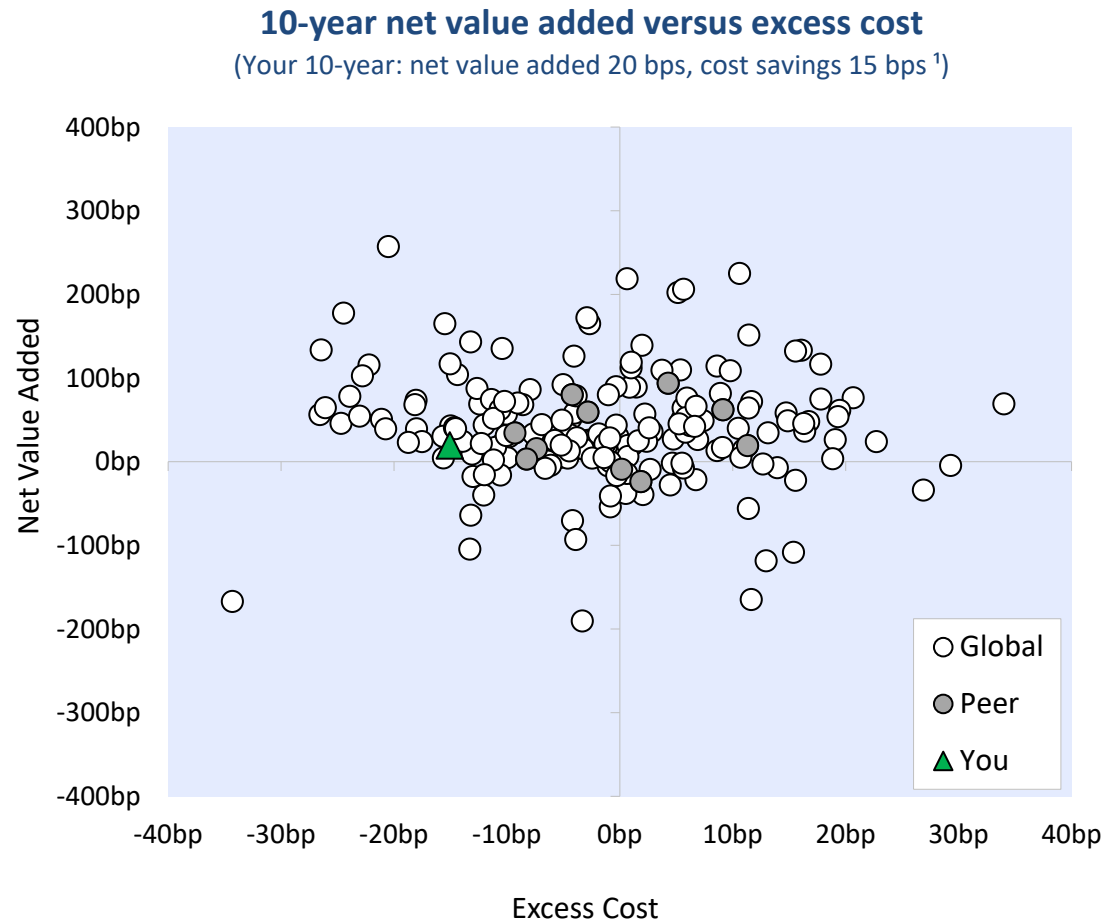
Internal Global stock uses All stock as the benchmark.

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

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

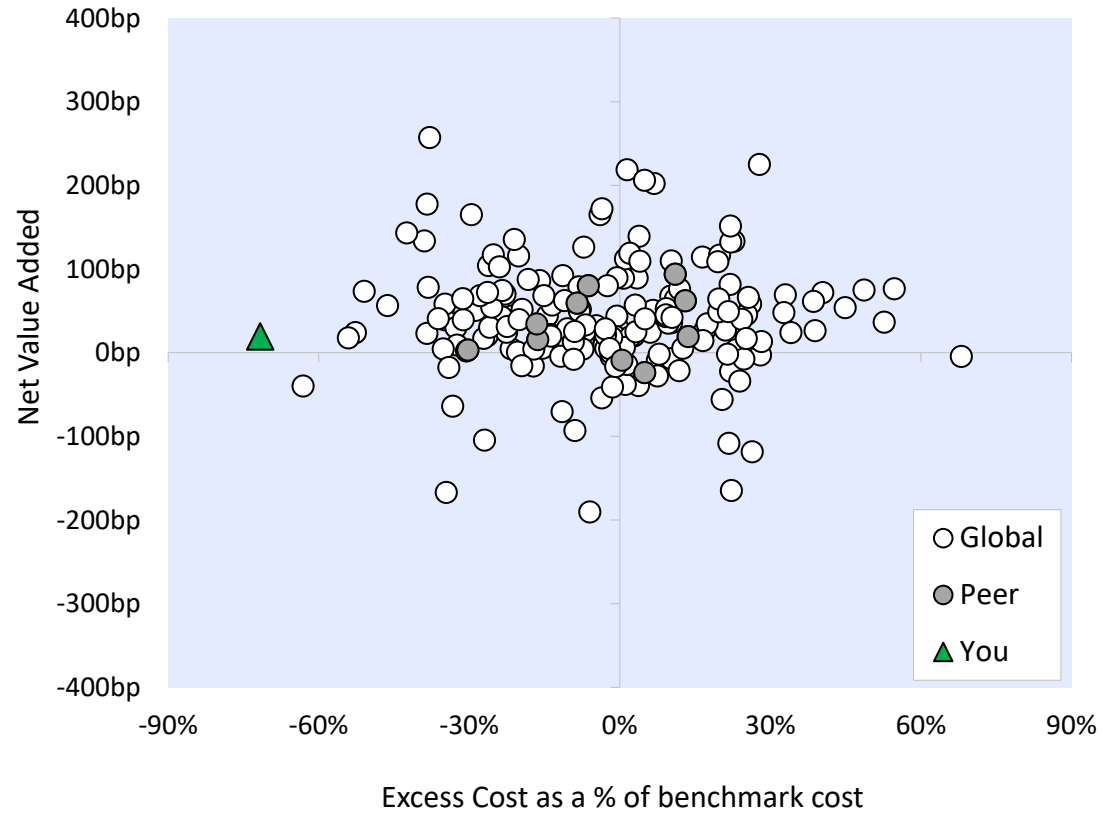
The benchmark result needs to be interpreted with caution since the value is very low and based on a limited number of observations.

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



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

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



# 2

## Description of peer group and universe

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## Peer group

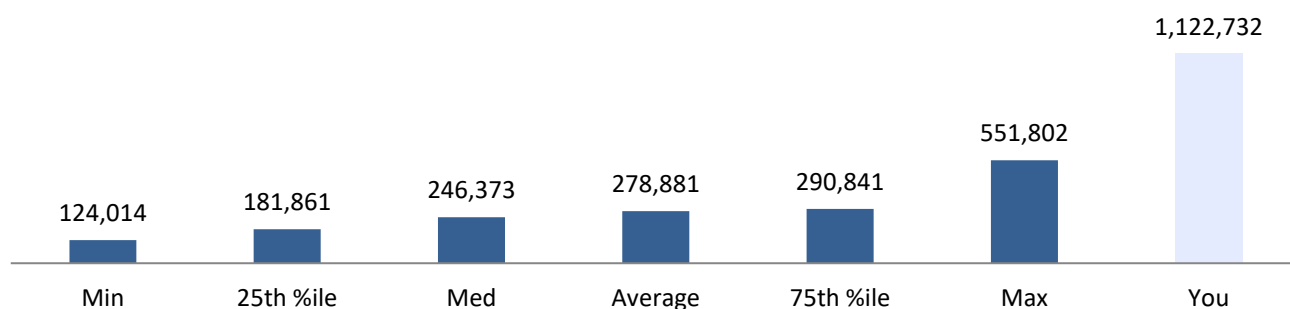
Your peer group is comprised of 10 Global funds, with assets ranging from €124.0 billion to €551.8 billion versus your €1,122.7 billion. The median size is €246.4 billion.

In order to preserve client confidentiality, we do not disclose your peers' names in this document due to the Freedom of Information Act. Your peer group consist of plans with the following characteristics:

### Peer Group Characteristics - 2021

	You	Peers	Global average
<u>Plan Assets (\$ billions)</u>			
Range	1,122.7	124.0 - 551.8	0.1 - 1,122.7
Median		246.4	7.5
<u># of Plans</u>			
Corporate		0	130
Public	1	8	126
Other		2	40
Total		10	296
<u>Implementation style</u>			
% External active	4.4	38.3	66.5
% External passive	0.0	4.3	18.1
% Internal active	95.6	29.3	11.6
% Internal passive	0.0	28.2	3.8
<u>Asset mix</u>			
% Stock	70.6	37.6	38.2
% Fixed Income	25.2	27.1	37.9
% Real Assets	4.3	16.8	10.1
% Private Equity	0.0	12.8	6.4
% Private Credit	0.0	2.4	2.5
% Hedge Funds & Other	0.0	3.3	5.0

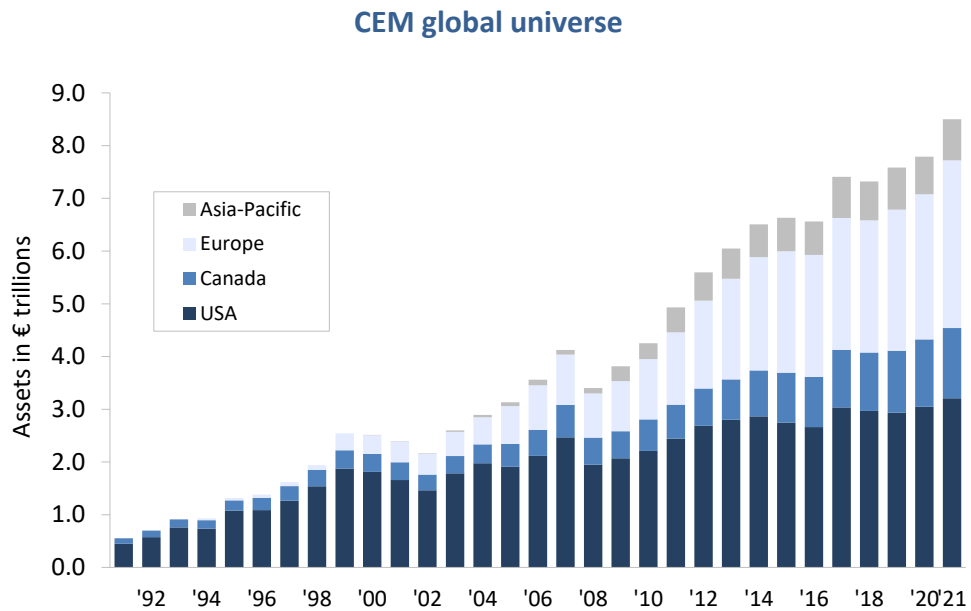
### Total fund assets (€ millions) - you versus peers



## CEM global universe

CEM has been providing investment benchmarking solutions since 1991. The 2021 survey universe is comprised of 296 funds representing €8.6 trillion in assets. The breakdown by region is as follows:

- 149 U.S. pension funds with aggregate assets of €3.2 trillion.
- 68 Canadian pension funds with aggregate assets of €1.3 trillion.
- 69 European pension funds with aggregate assets of €3.2 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Denmark, UK, and Ireland.
- 6 Asia-Pacific pension funds with aggregate assets of €0.8 trillion.



## Universe subsets

CEM's global survey universe is comprised of 296 funds with total assets of €8.6 trillion. Your fund's returns and costs are compared to the following two subsets of the global universe:

- Peers - Your peer group is comprised of 10 Global funds ranging in size from €124.0 - €551.8 billion. The peer median of €246.4 billion compares to your €1,122.7 billion.
- Global - The global universe is comprised of 296 funds ranging in size from €0.1 - €1,122.7 billion. The median fund is €7.5 billion.

### Universe subsets by number of funds and assets

	Peer group <sup>1</sup>	Corp.	Public	Other	Total	U.S.	Canada	Europe	Asia-Pacific	Total
<b># of funds</b>										
2021	10	130	126	40	296	149	68	69	10	296
2020	10	134	137	37	308	160	69	70	9	308
2019	10	135	139	42	316	155	72	75	14	316
2018	10	147	148	44	339	170	78	77	14	339
2017	10	151	155	47	353	168	80	89	16	353
2016	10	155	147	47	349	170	81	83	15	349
2015	10	162	150	53	365	176	81	92	16	365
2014	10	165	206	54	425	178	88	144	15	425
2013	10	186	200	62	448	193	90	152	13	448
2012	10	189	203	58	450	203	89	144	14	450
<b># of funds with uninterrupted data for:</b>										
1 yr	10	130	126	40	296	149	68	69	10	296
2 yrs	10	120	119	35	274	141	64	61	8	274
3 yrs	10	111	114	34	259	130	63	58	8	259
4 yrs	10	106	113	33	252	126	62	56	8	252
5 yrs	10	99	106	31	236	119	56	53	8	236
6 yrs	10	94	103	31	228	115	53	52	8	228
7 yrs	10	88	98	29	215	109	48	50	8	215
8 yrs	10	85	97	29	211	107	46	50	8	211
9 yrs	10	81	95	27	203	102	45	49	7	203
10 yrs	10	76	91	24	191	100	44	41	6	191
<b>Total assets (€ billions)</b>										
2021	2,789	1,291	5,631	1,695	8,618	3,209	1,330	3,182	897	8,618
2020	2,610	1,201	5,192	1,486	7,879	3,048	1,276	2,754	801	7,879
2019	2,388	1,170	4,970	1,545	7,684	2,936	1,174	2,676	898	7,684
2018	2,205	1,119	4,925	1,361	7,406	2,969	1,107	2,505	825	7,406
2017	2,188	1,139	5,010	1,498	7,647	3,036	1,093	2,499	1,019	7,647
2016	1,898	1,080	4,294	1,377	6,751	2,661	951	2,313	826	6,751
2015	1,875	1,102	4,470	1,340	6,912	2,746	948	2,302	916	6,912
2014	1,796	1,164	4,390	1,243	6,798	2,866	869	2,149	914	6,798
2013	1,630	1,106	4,078	1,120	6,304	2,802	765	1,909	827	6,304
2012	1,505	1,096	3,783	864	5,743	2,687	707	1,665	685	5,743
<b>2021 asset distribution (€ billions)</b>										
Avg	278.9	9.9	44.7	42.4	29.1	21.5	19.6	46.1	89.7	29.1
Max	551.8	89.6	1,122.7	518.2	1,122.7	284.2	293.0	1,122.7	551.8	1,122.7
75th %ile	290.8	13.3	36.1	43.7	22.1	18.6	11.7	32.6	59.3	22.1
Median	246.4	4.6	11.2	13.4	7.5	9.1	4.1	9.8	35.1	7.5
25th %ile	181.9	1.8	3.6	2.4	2.4	2.4	1.6	3.6	21.4	2.4
Min	124.0	0.3	0.1	0.1	0.1	0.3	0.1	0.5	2.5	0.1

1. Peer group statistics are for your 2021 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 - 2021 (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	4.4	37.2	72.4	56.1	60.9	63.9	72.4	63.0	49.4	43.6	63.9
Fund of funds	0.0	1.1	2.3	3.0	2.1	2.6	2.6	1.7	3.5	1.6	2.6
External passive	0.0	4.3	18.0	17.9	19.1	18.1	17.8	11.9	24.9	19.1	18.1
Internal Active	95.6	29.3	5.5	17.3	13.4	11.6	4.1	18.6	18.8	26.1	11.6
Internal Passive	<u>0.0</u>	<u>28.2</u>	<u>1.7</u>	<u>5.7</u>	<u>4.5</u>	<u>3.8</u>	<u>3.1</u>	<u>4.8</u>	<u>3.4</u>	<u>9.6</u>	<u>3.8</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>											
Stock	70.6	37.6	28.8	46.1	43.6	38.2	35.2	38.1	43.2	48.5	38.2
Fixed Income <sup>2</sup>	25.2	26.4	53.0	25.8	33.0	38.7	43.1	34.2	35.1	29.0	38.7
Global TAA	0.0	0.1	0.5	1.0	0.2	0.7	0.6	0.5	1.0	0.1	0.7
Real Assets	4.3	16.8	6.2	13.5	12.2	10.1	6.6	16.6	11.3	10.7	10.1
Hedge Funds	0.0	3.2	3.8	2.7	2.0	3.1	4.4	1.9	1.4	3.0	3.1
Balanced Funds	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Risk Parity	0.0	0.8	0.5	0.3	0.1	0.4	0.7	0.0	0.0	0.0	0.4
Private Debt	0.0	2.4	2.0	2.6	3.7	2.5	1.6	3.2	3.8	1.1	2.5
Private Equity	<u>0.0</u>	<u>12.8</u>	<u>5.2</u>	<u>7.9</u>	<u>5.2</u>	<u>6.4</u>	<u>7.8</u>	<u>5.4</u>	<u>4.0</u>	<u>7.5</u>	<u>6.4</u>
Total	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>											
Stock	73.2	43.3	28.9	45.6	43.1	38.0	35.3	37.1	42.9	53.1	38.0
Fixed Income	26.8	26.9	54.1	26.0	33.6	39.2	44.6	34.8	33.6	26.9	39.2
Global TAA	0.0	0.0	0.4	1.1	0.2	0.7	0.6	0.7	0.9	0.1	0.7
Real Assets	0.0	15.5	6.5	14.9	13.0	11.0	7.2	17.6	12.8	10.7	11.0
Hedge funds	0.0	3.0	3.1	1.9	1.8	2.4	3.3	1.6	1.1	2.3	2.4
Balanced Funds	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Risk Parity	0.0	0.8	0.5	0.4	0.0	0.4	0.7	0.0	0.0	0.0	0.4
Private Debt	0.0	2.5	1.9	3.0	3.7	2.6	1.4	3.9	4.4	0.9	2.6
Private Equity	<u>0.0</u>	<u>8.0</u>	<u>4.6</u>	<u>7.0</u>	<u>4.6</u>	<u>5.6</u>	<u>6.9</u>	<u>4.4</u>	<u>4.1</u>	<u>6.0</u>	<u>5.6</u>
Total	100	100	100	100	100	100	100	100	100	100	100

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

2. Includes derivatives and overlays.



## Implementation style, actual mix and policy mix trends

### Implementation style, actual mix and policy mix - 2017 to 2021 (as a % of year-end assets)

	Your fund <sup>1</sup>					Peer average <sup>2</sup>					Global average <sup>2</sup>				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>Implementation style</b>															
External active	4.4	4.0	3.6	4.4	4.8	37.2	35.9	35.9	35.4	34.5	61.4	61.5	61.6	61.6	60.8
Fund of funds	0.0	0.0	0.0	0.0	0.0	1.1	1.2	1.3	1.4	1.8	2.7	2.3	2.4	2.6	2.6
External passive	0.0	0.0	0.0	0.0	0.0	4.3	4.2	4.6	5.3	5.1	17.8	18.0	17.9	18.1	18.9
Internal active	95.6	96.0	96.4	95.6	95.2	29.3	30.4	30.1	30.9	33.3	13.3	13.4	13.2	13.2	13.3
Internal passive	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>28.2</u>	<u>28.4</u>	<u>28.1</u>	<u>26.9</u>	<u>25.3</u>	<u>4.8</u>	<u>4.8</u>	<u>4.8</u>	<u>4.6</u>	<u>4.4</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Actual asset mix</b>															
Stock	70.6	68.4	67.9	66.1	65.0	37.6	37.3	37.6	37.3	39.9	38.7	39.9	39.9	40.0	43.5
Fixed income <sup>3</sup>	25.2	27.5	28.2	30.3	32.5	26.4	28.6	27.2	28.8	28.8	36.8	37.1	36.6	36.4	34.7
Global TAA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.7	0.8	0.9	0.9	0.8
Real assets	4.3	4.2	3.9	3.5	2.5	16.8	16.5	17.4	17.3	16.3	10.8	10.5	10.9	10.8	10.0
Hedge funds	0.0	0.0	0.0	0.0	0.0	3.2	3.5	3.3	3.6	3.3	3.0	3.0	3.2	3.4	3.4
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.5
Risk Parity	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.5	0.5	0.4	0.5	0.4	0.5	0.5
Private credit	0.0	0.0	0.0	0.0	0.0	2.4	1.9	2.9	2.2	1.8	2.2	2.0	1.9	1.7	1.4
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>12.8</u>	<u>11.3</u>	<u>10.6</u>	<u>10.1</u>	<u>9.3</u>	<u>7.3</u>	<u>6.2</u>	<u>5.9</u>	<u>5.7</u>	<u>5.2</u>
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Policy asset mix</b>															
Stock	73.2	73.0	71.1	67.3	67.1	43.3	44.2	44.2	44.3	44.6	38.8	40.0	40.6	41.4	43.6
Fixed income	26.8	27.0	28.9	32.7	33.0	26.9	27.2	27.6	29.1	30.5	37.5	36.7	37.0	36.4	34.8
Global TAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.9	0.9	1.0	0.9
Real assets	0.0	0.0	0.0	0.0	0.0	15.5	15.1	15.3	14.9	14.7	11.3	11.4	10.9	10.8	10.4
Hedge funds	0.0	0.0	0.0	0.0	0.0	3.0	2.9	3.0	3.3	2.7	2.3	2.5	2.7	2.9	3.0
Balanced Funds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Risk Parity	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.5
Private credit	0.0	0.0	0.0	0.0	0.0	2.5	2.3	2.3	1.6	0.8	2.3	2.1	1.7	1.5	1.2
Private equity	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>8.0</u>	<u>7.5</u>	<u>6.8</u>	<u>6.4</u>	<u>6.2</u>	<u>6.5</u>	<u>6.0</u>	<u>5.8</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 191 Global and 10 peer funds with 10 or more consecutive years of data ending 2021.
3. Includes derivatives and overlays.

## Implementation style by asset class

Implementation style impacts your costs, because external active management tends to be more expensive than internal or passive (or indexed) management and fund-of-funds usage is more expensive than direct fund investment.

### Implementation style by asset class - 2021 (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.	100.0		0.0	0.0	0.0	17.5	30.4	8.3	43.8	34.0	50.6	8.1	7.3
Stock - EAFE	100.0		0.0	0.0	0.0	52.9	6.1	18.8	22.2	49.9	27.3	20.6	2.1
Stock - Global	0.0		0.0	100.0	0.0	33.4	0.0	22.4	44.2	60.3	26.3	9.9	3.4
Stock - other						39.7	0.0	34.8	25.4	66.2	13.3	12.6	7.9
Stock - Emerging	100.0		0.0	0.0	0.0	56.0	5.6	18.1	20.2	72.2	17.4	7.3	3.1
Stock - ACWI x U.S.						0.0	0.0	0.0	0.0	71.9	26.1	0.9	1.1
Stock - Aggregate	6.2		0.0	93.8	0.0	35.2	8.1	19.2	37.5	53.8	31.2	10.6	4.4
Fixed income - U.S.						27.2	13.4	45.7	13.6	69.5	13.9	13.1	3.5
Fixed income - EAFE						0.0	0.0	10.1	89.9	38.8	30.7	18.9	11.6
Fixed income - Global	0.0		0.0	100.0	0.0	13.6	0.0	43.2	43.1	61.2	10.0	24.7	4.2
Fixed income - other						9.3	0.0	22.3	68.4	59.5	16.1	19.1	5.3
Fixed income - Long bonds						4.3	0.0	0.0	95.7	83.5	7.0	5.6	3.9
Fixed income - Emerging						35.6	12.5	38.3	13.5	82.3	6.7	9.8	1.2
Fixed income - Inflation indexed						6.2	16.1	6.2	71.5	12.7	46.3	20.8	20.2
Fixed income - High yield						61.3	0.0	38.7	0.0	83.8	6.6	7.5	2.1
Fixed income - Bundled LDI						0.0	0.0	100.0	0.0	51.3	30.0	14.2	4.5
Fixed income - Convertibles						100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Fixed income - Public mortgages						0.0	0.0	0.0	0.0	60.7	0.0	39.3	0.0
Cash						0.0		100.0		45.4		54.6	
Fixed income - Aggregate	0.0		0.0	100.0	0.0	17.6	4.5	29.4	48.5	66.5	14.5	14.1	4.9
Commodities						3.6	0.8	62.3	33.3	29.0	16.0	23.1	31.9
Infrastructure	0.0	0.0		100.0		18.4	0.0		81.6	79.6	4.7		15.7
Natural resources						50.0	0.3		49.7	74.7	2.7		22.7
REITs	0.0		0.0	100.0	0.0	5.1	0.0	94.9	0.0	67.7	19.4	11.1	1.8
Real estate	0.0	0.0		100.0		62.2	0.3		37.5	76.1	7.1		16.8
Other real assets						12.0	0.0		88.0	95.2	0.0		4.8
Other listed real assets						0.0	0.0	0.0	0.0	78.5	11.4	6.8	3.3
Real assets - Aggregate	0.0	0.0	0.0	100.0	0.0	39.4	0.2	0.1	56.9	76.0	5.6	1.5	16.3
Hedge funds						91.5	8.5			78.3	21.7		
Global TAA						97.3			2.7	70.8			29.2
Balanced funds						0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Risk parity						33.1			66.9	95.1			4.9
Private credit						55.5	0.0		44.5	91.3	1.2		7.5
Mortgages						23.2			76.8	90.6			9.4
Private equity - Diversified						57.4	7.0		35.6	74.4	21.1		4.5
Venture capital						71.0	1.5		27.5	46.5	51.8		1.7
LBO						96.3	3.7		0.0	93.4	6.4		0.2
Private equity - Other						67.4	0.0		32.6	80.5	0.0		19.5
Private equity - Aggregate						65.7	5.9		28.4	75.0	20.6		4.4
Total Fund - Avg. Holdings	4.4	0.0	0.0	95.6	0.0	37.2	1.1	4.3	29.3	28.2	63.9	2.6	18.1

## Actual mix

### Actual asset mix - 2017 to 2021 (as a % of total average assets)

	Your fund <sup>1</sup>					Peer average %					Global average %				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Stock - U.S.	0.1	0.1		0.0	0.1	8.4	7.4	7.6	7.4	10.5	10.1	10.6	10.7	11.1	12.3
Stock - EAFE	0.8	0.8	0.7	1.0	1.2	3.7	3.9	4.3	4.3	6.3	5.9	6.5	6.3	6.8	8.2
Stock - Global	66.2	64.4	64.3	61.7	60.3	17.9	17.5	17.7	17.7	13.8	14.1	14.2	13.4	12.8	12.8
Stock - other						2.7	3.2	2.9	3.0	3.9	3.0	2.9	3.1	3.4	3.8
Stock - Emerging	3.4	3.2	3.0	3.4	3.5	4.9	5.2	5.1	4.9	5.4	3.0	3.2	3.0	3.2	3.5
Stock - ACWI x U.S.											2.1	2.4	2.4	2.3	2.5
Stock - Aggregate	70.6	68.4	67.9	66.1	65.0	37.6	37.3	37.6	37.3	39.9	38.2	39.8	38.8	39.5	43.2
Fixed income - U.S.						5.2	5.0	5.2	5.0	4.0	6.6	6.6	6.7	6.8	5.7
Fixed income - EAFE						2.1	2.4	4.3	3.6	3.5	2.7	2.5	3.0	3.1	3.8
Fixed income - Global	25.2	27.5	28.2	30.3	32.4	4.1	4.8	5.1	5.7	5.4	2.2	2.3	2.5	2.4	2.8
Fixed income - other						8.4	6.4	6.3	6.9	6.9	4.8	4.8	4.9	5.0	5.4
Fixed income - Long bonds						1.7	3.7	3.7	3.3	3.3	12.1	12.8	12.5	12.8	10.7
Fixed income - Emerging					0.1	2.1	1.8	1.5	1.3	1.1	1.1	1.1	1.3	1.1	1.1
Fixed income - Inflation indexed						1.6	2.2	3.1	3.9	4.3	1.5	1.4	1.8	1.7	2.0
Fixed income - High yield						1.6	1.6	1.5	1.2	1.1	1.2	1.1	1.2	1.2	1.2
Fixed income - Bundled LDI						2.9	3.3				3.5	3.0	2.2	2.2	1.2
Fixed income - Convertibles						0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
Fixed income - Public mortgages											0.1	0.1	0.1	0.0	0.0
Cash						-2.7	-1.9	-3.6	-2.6	-2.1	1.4	1.5	1.4	1.6	2.0
Fixed income - Aggregate	25.2	27.5	28.2	30.3	32.5	27.1	29.5	27.2	28.5	27.6	37.9	37.7	37.9	38.2	36.1
Commodities						1.7	1.3	1.6	1.7	1.4	0.2	0.2	0.3	0.3	0.3
Infrastructure	0.1					4.2	4.0	3.9	3.8	3.5	2.7	2.4	2.3	2.1	1.8
Natural resources						1.2	1.1	1.3	1.2	1.0	0.4	0.3	0.4	0.4	0.5
REITs	1.7	1.3	1.1	0.9		1.2	1.1	1.3	1.2	1.2	0.6	0.5	0.5	0.6	0.6
Real estate	2.4	2.8	2.7	2.6	2.5	8.2	8.7	9.3	9.3	8.9	6.0	6.1	6.3	6.3	5.6
Other real assets						0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
Other listed real assets											0.1	0.1	0.0	0.0	0.0
Real assets - Aggregate	4.3	4.2	3.9	3.5	2.5	16.8	16.5	17.4	17.3	16.3	10.1	9.8	10.0	9.9	9.0
Hedge funds						3.2	3.5	3.3	3.6	3.3	3.1	3.1	3.3	3.4	3.4
Global TAA						0.1	0.1	0.2	0.2	0.1	0.7	0.9	1.0	0.9	1.0
Balanced funds											0.0	0.0	0.2	0.4	0.5
Risk parity						0.8	0.8	0.8	0.5	0.5	0.4	0.5	0.6	0.5	0.5
Mortgages						1.2	0.9	1.9	1.3	1.1	0.6	0.4	0.6	0.6	0.4
Private credit						1.2	1.0	1.0	0.9	0.7	1.9	1.7	1.6	1.3	1.0
Private equity - Diversified						9.3	8.3	7.8	7.4	6.9	5.2	4.3	4.3	3.9	3.3
Venture capital						0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2
LBO						2.4	2.2	2.0	1.9	1.8	0.6	0.6	0.6	0.5	0.5
Private equity - Other						0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Private equity - Aggregate						12.8	11.3	10.6	10.1	9.3	6.4	5.3	5.3	4.9	4.3
Derivatives/Overlays Mkt Value						-0.7	-1.0	0.0	0.4	1.2	0.8	0.8	0.6	0.3	0.6
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	10	10	10	10	10	296	308	316	339	353
Median Assets (€ billions)	1122.7	966.7	937.6	872.0	844.4	246.4	218.0	207.0	189.9	180.3	7.5	6.1	6.3	5.4	5.0

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

## Policy mix

### Policy asset mix - 2017 to 2021 (as a % of total assets)

	Your fund %					Peer average %					Global average %				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Stock - U.S.						4.6	7.4	7.6	7.8	7.6	8.6	9.7	9.8	10.5	11.4
Stock - EAFE						2.3	4.4	4.7	4.9	5.1	5.1	5.7	5.6	6.4	7.6
Stock - Global	73.2	73.0	71.1	67.3	67.1	30.7	26.4	25.9	25.8	25.3	16.6	16.3	15.4	14.8	14.7
Stock - other						2.5	3.0	2.5	2.4	3.0	3.0	3.0	3.3	3.2	3.7
Stock - Emerging						3.2	3.0	3.4	3.4	3.5	2.6	2.7	2.7	2.8	2.9
Stock - ACWI x U.S.											2.0	2.2	2.4	2.6	2.6
Stock - Aggregate	73.2	73.0	71.1	67.3	67.1	43.3	44.2	44.2	44.3	44.6	38.0	39.6	39.3	40.4	42.9
Fixed income - U.S.						5.2	5.3	4.3	5.1	4.8	7.1	6.9	6.8	7.1	6.0
Fixed income - EAFE						2.2	2.2	4.9	4.4	4.4	2.8	2.6	3.3	3.2	3.8
Fixed income - Global	26.8	27.0	28.9	32.7	33.0	3.3	2.9	4.6	4.9	4.7	2.6	2.6	2.8	2.7	3.1
Fixed income - other						6.7	7.0	6.6	7.0	6.8	5.0	4.7	5.1	5.0	6.0
Fixed income - Long bonds						5.0	5.3	6.7	5.2	4.5	13.4	13.2	13.0	13.2	11.3
Fixed income - Emerging						1.5	1.5	1.1	1.0	0.9	1.1	1.1	1.3	1.1	1.0
Fixed income - Inflation indexed						2.3	2.2	2.6	3.6	4.4	1.6	1.5	2.1	1.9	2.3
Fixed income - High yield						1.1	1.0	1.1	0.7	1.5	1.1	1.1	1.2	1.1	1.2
Fixed income - Bundled LDI						3.1	3.1				3.3	3.2	2.4	2.2	1.2
Fixed income - Convertibles						0.1	0.1				0.1	0.0	0.0	0.0	0.1
Fixed income - Public mortgages											0.1	0.1	0.1	0.0	0.0
Cash						-3.7	-3.2	-4.2	-2.8	-1.4	0.3	0.3	0.4	0.5	0.6
Fixed income - Aggregate	26.8	27.0	28.9	32.7	33.0	26.9	27.2	27.6	29.1	30.5	39.2	37.9	38.6	38.2	36.7
Commodities						0.6	0.7	0.8	0.8	0.8	0.2	0.3	0.3	0.3	0.3
Infrastructure						3.0	2.6	2.5	2.2	2.1	3.1	2.8	2.5	2.2	1.9
Natural resources						0.7	0.7	0.7	0.6	0.7	0.3	0.3	0.3	0.3	0.4
REITs						1.1	1.1	1.1	1.1	1.2	0.5	0.5	0.5	0.6	0.6
Real estate						10.2	9.9	10.2	10.0	9.9	6.7	6.8	6.6	6.4	6.0
Other real assets						0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Other listed real assets											0.1	0.0	0.0		0.0
Real assets - Aggregate						15.5	15.1	15.3	14.9	14.7	11.0	10.9	10.4	10.1	9.5
Hedge funds						3.0	2.9	3.0	3.3	2.7	2.4	2.7	2.9	3.2	3.1
Global TAA						0.0					0.7	0.9	0.9	0.9	1.0
Balanced funds											0.0	0.0	0.1	0.2	0.2
Risk parity						0.8	0.8	0.8	0.5	0.5	0.4	0.4	0.5	0.5	0.4
Mortgages						0.8	0.9	1.1	0.4	0.3	0.6	0.5	0.6	0.6	0.5
Private credit						1.7	1.4	1.2	1.2	0.5	2.0	1.8	1.5	1.3	0.9
Private equity - Diversified						7.6	7.1	6.8	6.4	6.2	4.9	4.5	4.5	4.1	4.0
Venture capital						0.4	0.4				0.2	0.2	0.2	0.2	0.1
LBO											0.4	0.4	0.4	0.5	0.3
Private equity - Other											0.1	0.1	0.1	0.1	0.2
Private equity - Aggregate						8.0	7.5	6.8	6.4	6.2	5.6	5.3	5.2	4.8	4.6
Total Fund	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Count	1	1	1	1	1	10	10	10	10	10	293	307	316	339	353

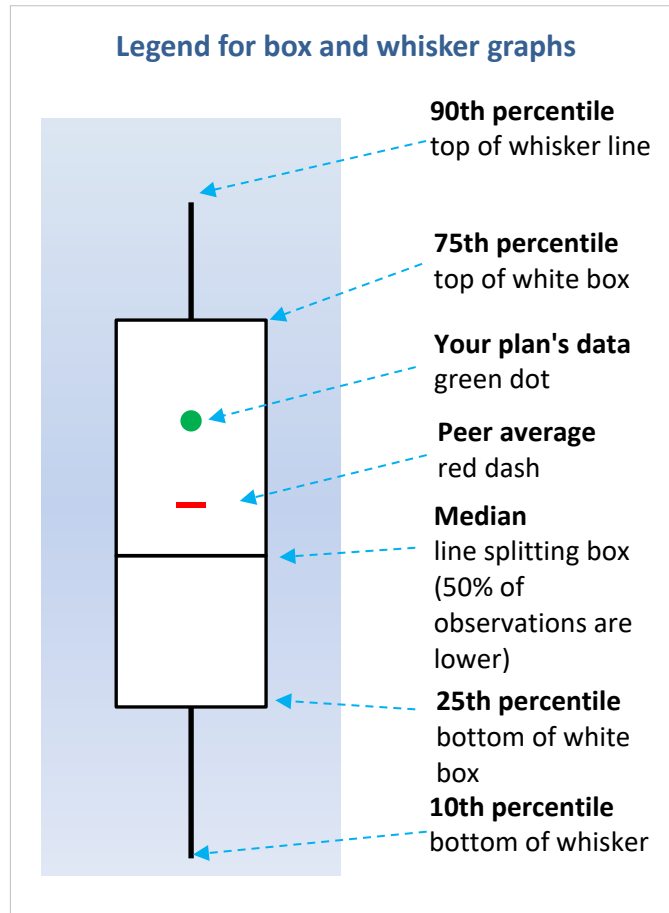
# 3

## Returns, Benchmarks and Value Added

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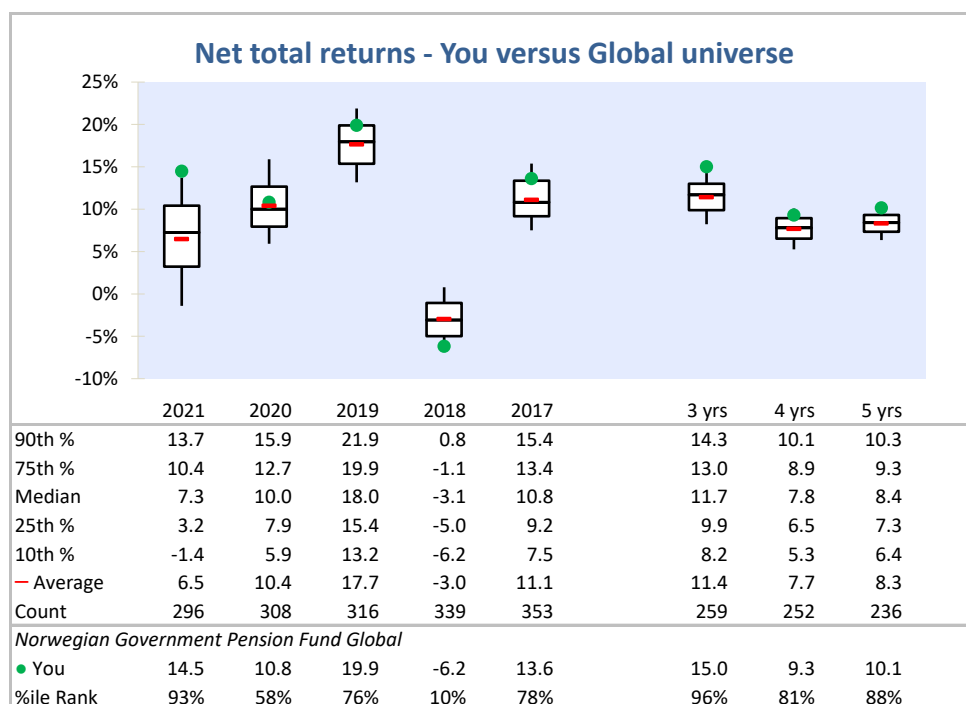
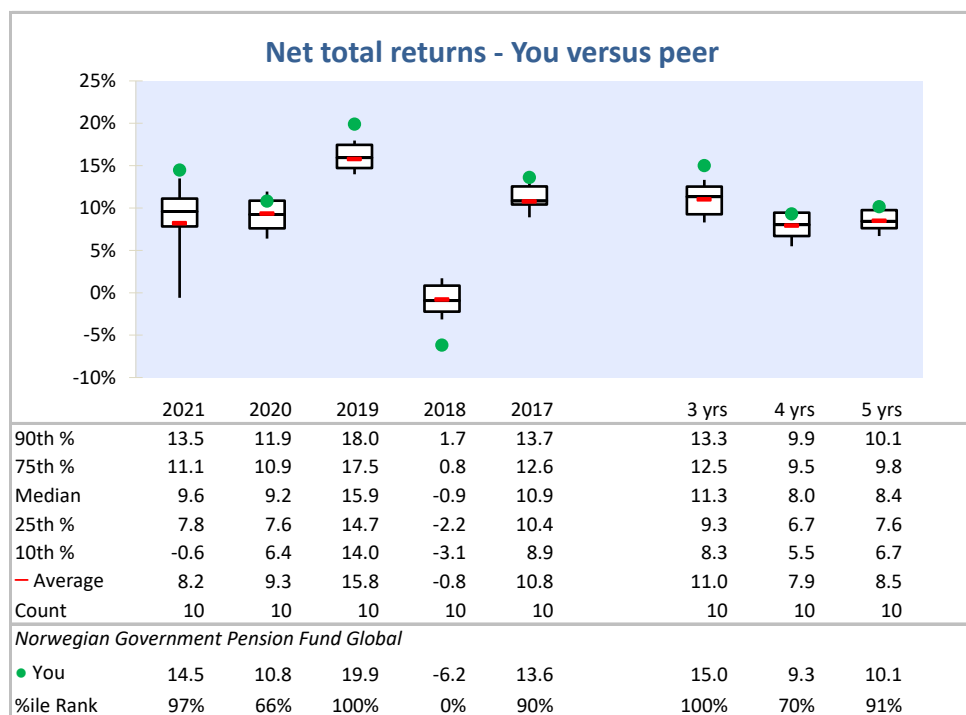
## Interpreting box and whisker graphs

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.



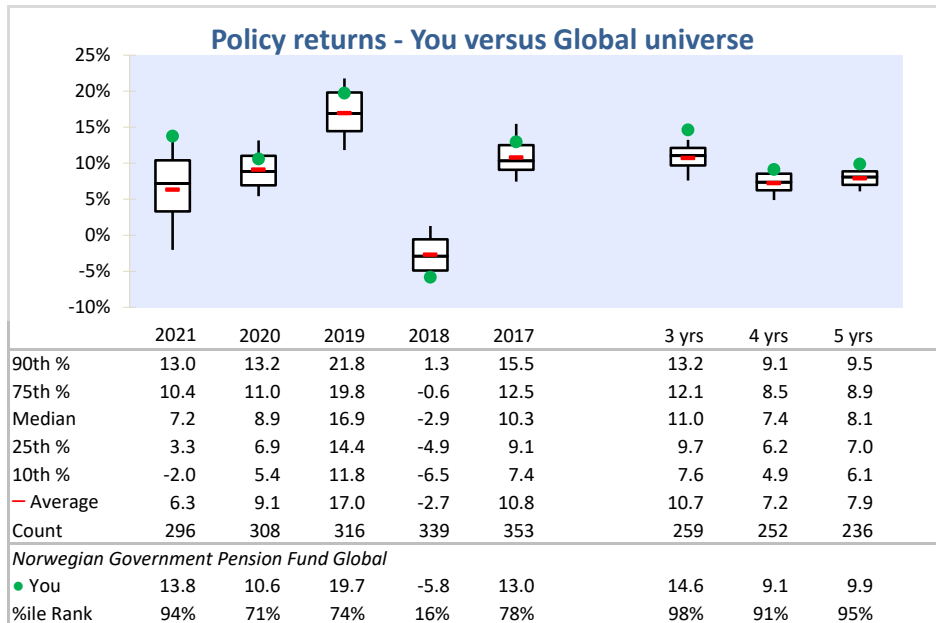
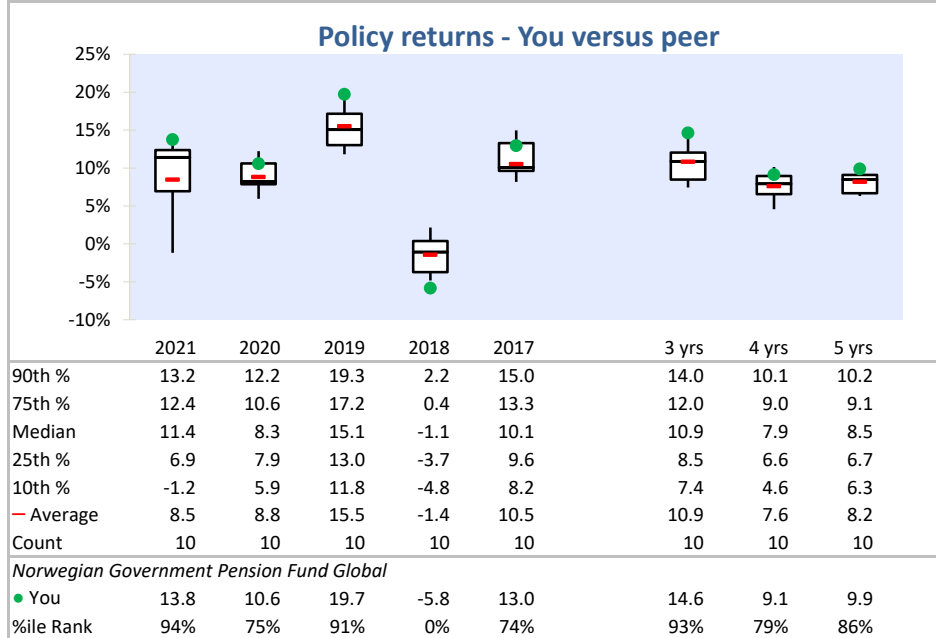
## Net total returns

Your 5-year net total return of 10.1% was among the highest in your peer group and among the highest in the Global universe. Comparisons of total return do not help you understand the reasons behind relative performance. To understand the relative contributions from policy asset mix decisions and implementation decisions we separate total return into its more meaningful components - policy return and implementation value added.



## Policy returns

Your 5-year policy return of 9.9% was among the highest in your peer group and among the highest in the Global universe. Policy return is the return you would have earned had you passively implemented your policy asset mix decision through your benchmark portfolios.

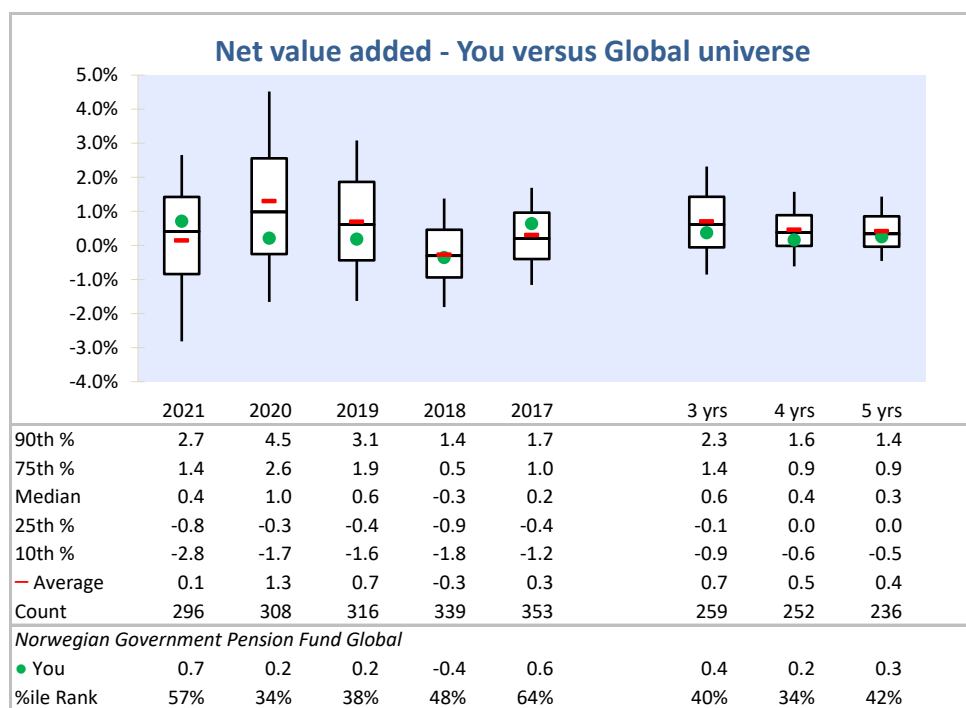
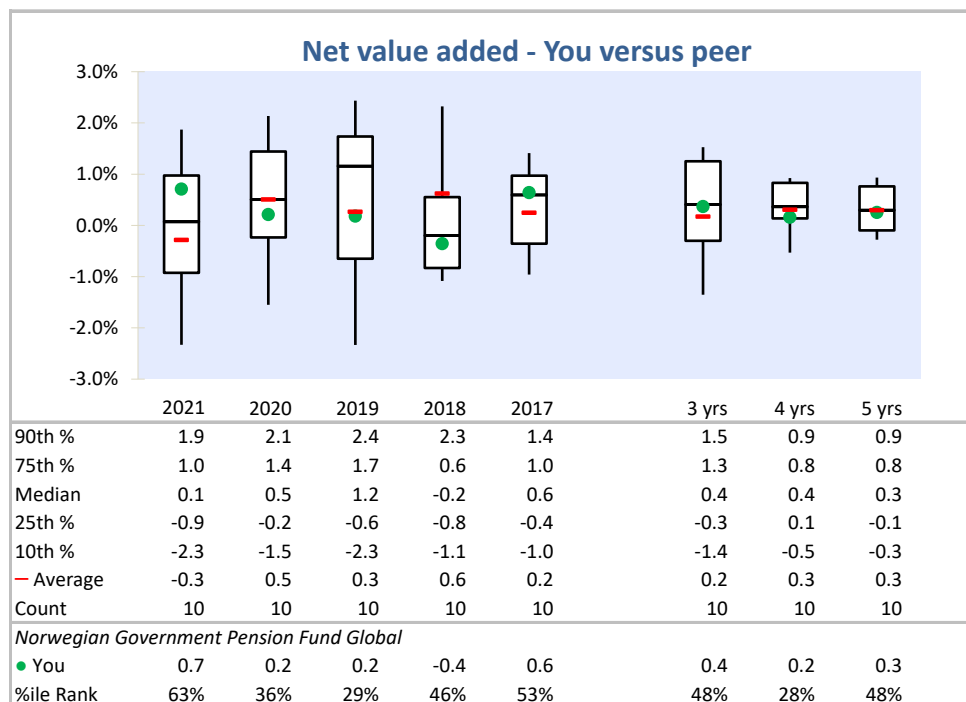


To enable fairer comparisons, the policy returns of all participants except your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. Refer to the appendix of this section for details.



## Net value added

Your 5-year net value added of 0.3% was close to the peer median and below the median of 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 %					
	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>
Stock - U.S.	3.0	49.8		0.0	18.4		24.9	13.6	25.1	-1.4	13.7	14.3	21.3	15.8	29.7	-4.0	14.9	15.0
Stock - EAFE	16.7	9.4	21.2	-15.2	27.2	10.8	9.0	8.6	23.4	-12.1	20.5	7.9	8.0	8.2	21.9	-12.3	19.6	8.5
Stock - Global	21.2	12.9	26.6	-9.2	18.9	13.3	14.9	10.6	27.6	-4.5	14.5	11.3	14.1	13.0	25.5	-6.4	19.1	12.2
Stock - other							11.8	9.3	23.6	-13.8	13.3	7.6	13.7	8.7	20.7	-11.3	10.0	7.4
Stock - Emerging	11.1	8.1	16.0	-13.9	26.1	8.6	-2.6	13.4	20.8	-11.4	27.2	8.6	-4.3	15.7	20.2	-13.0	28.3	8.2
Stock - ACWI x U.S.													5.9	10.6	22.7	-12.8	22.3	9.0
Stock - Aggregate	20.6	12.7	26.1	-9.5	19.4	13.1	12.1	11.9	24.9	-7.5	17.4	11.0	13.6	12.3	25.5	-8.1	18.1	11.6
Fixed income - U.S.							3.8	6.6	10.0	1.3	-1.1	3.7	-4.7	7.6	10.1	1.6	0.0	2.8
Fixed income - EAFE							-13.2	11.9	5.2	-0.8	7.6	1.8	-9.8	11.9	6.5	-2.3	7.2	2.0
Fixed income - Global	-2.0	7.4	7.5	0.5	3.3	3.3	-3.3	3.3	11.7	1.1	1.0	2.7	-5.8	8.5	5.7	-2.1	5.2	2.5
Fixed income - other							-2.0	2.2	7.6	2.5	51.3	1.8	-2.6	6.3	9.4	-1.3	5.9	2.9
Fixed income - Long bonds							-6.3	12.6	14.7	-1.8	4.9	4.5	-5.7	12.7	19.3	-3.4	6.2	5.5
Fixed income - Emerging					5.8		0.1	1.6	13.1	-4.4	7.9	3.7	-7.9	3.2	12.6	-4.4	8.0	1.9
Fixed income - Inflation indexed							-2.0	-0.4	8.1	-3.6	2.8	3.5	0.6	8.6	10.7	-2.4	2.1	4.0
Fixed income - High yield							2.3	2.9	12.2	2.0	2.4	4.2	1.4	4.0	11.1	-0.9	3.8	3.7
Fixed income - Bundled LDI							-24.4	24.5					-7.0	21.6	19.3	-3.1	8.3	9.6
Fixed income - Public mortgages													-1.7	0.3	8.1	6.1	1.5	4.3
Fixed income - Convertibles								4.8	16.0	1.8	6.7		-2.1	20.9	13.6	-1.2	6.6	9.3
Cash							-2.5	-0.4	2.8	0.9	1.7	0.2	-4.1	-0.8	2.3	0.9	-0.6	-1.1
Fixed income - Aggregate	-2.0	7.4	7.5	0.5	3.3	3.3	-5.0	8.0	11.2	0.5	2.1	3.2	-5.1	10.2	13.0	-1.8	4.1	3.7
Commodities							16.3	1.4	0.7	-15.6	12.2	-2.5	18.7	-4.2	7.8	-9.9	-0.1	1.3
Infrastructure	3.9						7.3	3.7	9.0	8.6	12.9	7.9	7.3	5.6	10.8	6.8	13.8	8.7
Natural resources							14.3	-2.7	3.5	-0.4	0.6	4.5	10.3	-5.3	3.4	5.2	1.8	2.3
REITs	26.8	-14.9	20.9	-10.4			21.6	-13.7	31.0	-7.1	4.3	3.5	24.9	-8.2	23.0	-2.8	5.9	8.0
Real estate	13.5	-0.2	6.7	7.3	8.8	7.1	7.9	-4.5	8.5	7.9	6.9	5.3	13.0	-0.1	7.1	9.4	7.3	6.5
Other real assets							12.6	1.6	-1.6	-5.5	-10.5	-1.5	14.8	-1.6	3.5	-3.7	-0.5	-2.4
Real assets - Aggregate	18.8	-4.9	10.8	2.8	8.8	6.9	11.6	-2.8	9.7	5.2	6.7	6.0	13.0	0.1	8.6	6.0	6.8	6.6
Hedge funds							4.8	3.9	6.6	-1.5	-0.3	2.5	4.5	2.2	6.1	-1.0	2.3	2.9
Global TAA							-6.1	-6.9	10.1	-12.2	-0.5	-7.6	3.9	2.1	11.8	-3.4	4.7	3.3
Balanced funds													0.8	-11.5	29.8	-15.5	16.9	
Risk parity							8.7	0.1	23.4	-4.2	9.7	7.1	6.1	5.6	18.0	-5.2	8.2	6.0
Mortgages							-1.7	7.0	7.1	1.0	6.1	4.0	-2.5	6.6	6.9	-0.3	6.3	3.6
Private credit							4.1	2.6	6.3	6.7	3.4	4.3	7.9	2.7	9.8	5.2	6.4	5.5
Private equity - Diversified							30.7	15.2	11.4	12.8	14.2	16.9	38.1	12.3	9.5	15.8	12.6	17.2
Venture capital							41.2	22.7	13.2	20.3	9.5	21.0	49.9	22.8	8.8	20.0	9.7	20.8
LBO							42.9	19.9	10.7	12.4	13.9	18.8	39.5	12.3	11.9	15.7	13.0	18.7
Private equity - Other							10.1	22.4	9.4	48.1	16.2	16.6	19.5	12.9	8.5	11.5	8.7	14.2
Private equity - Aggregate							34.9	16.4	12.1	13.1	14.2	18.0	38.9	13.1	9.3	15.8	12.4	17.4
Total Fund Return	14.5	10.8	19.9	-6.2	13.6	10.1	8.2	9.3	15.8	-0.8	10.8	8.5	6.5	10.4	17.7	-3.0	11.1	8.3

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 %					
	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>
Stock - U.S.	13.3	47.1		3.6	18.9		22.3	17.4	30.6	-3.6	14.3	15.9	21.0	16.5	29.9	-3.7	14.8	15.1
Stock - EAFE	18.0	5.4	22.7	-13.7	25.6	10.6	9.2	4.4	22.1	-11.7	18.8	7.7	8.3	4.5	22.0	-11.5	18.9	7.8
Stock - Global	20.4	12.2	26.1	-8.4	18.5	13.1	15.7	10.2	26.5	-6.8	14.7	11.5	15.1	12.2	26.0	-7.0	17.3	12.0
Stock - other							10.6	9.6	25.6	-11.1	15.0	8.8	14.9	5.6	24.1	-10.7	10.9	8.2
Stock - Emerging	8.9	3.4	15.0	-14.7	20.5	5.9	-2.0	12.4	20.7	-10.6	27.2	8.5	-4.1	14.7	18.2	-11.9	29.1	8.1
Stock - ACWI x U.S.													5.6	7.7	21.6	-12.2	21.1	8.1
Stock - Aggregate	19.8	11.8	25.6	-8.8	18.7	12.7	12.5	11.9	25.3	-7.3	17.0	11.1	14.1	11.8	25.5	-7.9	17.5	11.6
Fixed income - U.S.							1.7	8.7	11.1	0.5	0.6	1.8	-5.0	6.8	9.2	1.6	-0.3	2.1
Fixed income - EAFE							-13.4	11.0	5.1	-0.5	7.2	1.7	-10.0	11.6	6.5	-2.2	6.8	1.8
Fixed income - Global	-1.9	6.7	7.5	0.6	2.9	3.1	-3.1	2.0	10.4	0.9	0.7	2.0	-5.8	7.2	7.7	-1.3	4.2	2.4
Fixed income - other							-3.5	3.5	6.6	1.0	1.7	1.9	-3.4	5.5	9.6	-1.4	3.4	2.5
Fixed income - Long bonds							-8.2	11.7	15.4	-1.8	4.0	4.0	-5.7	11.3	19.2	-3.3	5.9	5.2
Fixed income - Emerging					2.9		-2.6	1.0	13.5	-4.4	8.3	2.9	-7.5	2.7	13.0	-3.3	6.8	1.9
Fixed income - Inflation indexed							-0.3	0.8	8.0	-3.9	2.6	3.5	0.0	9.1	9.8	-2.3	2.3	3.9
Fixed income - High yield							0.3	2.4	12.1	1.5	1.3	3.3	0.5	3.7	12.4	-1.0	4.0	3.8
Fixed income - Bundled LDI							-25.0	24.6					-7.8	21.0	19.5	-2.9	8.1	7.8
Fixed income - Public mortgages													-3.0	-0.1	5.6	5.4	0.2	3.0
Fixed income - Convertibles								47.4	22.6	3.2	9.7		2.8	23.6	15.5	-1.1	11.6	11.2
Cash							-4.7	0.0	2.4	0.4	0.2	-0.3	-3.8	-0.7	2.6	0.8	-0.5	-0.4
Fixed income - Aggregate	-1.9	6.7	7.5	0.6	2.9	3.1	-8.1	9.3	10.0	-0.4	2.3	2.2	-5.5	9.5	12.8	-1.8	4.0	3.6
Commodities							25.3	-13.0	13.8	-12.0	1.5	1.4	19.6	-7.3	10.6	-9.6	-0.3	1.7
Infrastructure	-3.9						1.8	4.4	9.0	3.6	6.5	5.3	4.9	5.9	11.0	2.0	9.7	6.2
Natural resources							20.2	-1.6	2.4	3.4	-0.2	4.2	12.2	-2.1	8.4	2.5	1.7	3.5
REITs	17.1	10.1	17.1	-4.6			23.9	-18.0	32.8	-4.1	6.4	4.5	23.8	-9.3	21.7	-2.8	6.4	6.8
Real estate	7.3	8.7	13.0	-2.1	8.3	7.0	7.2	-2.1	8.0	7.6	5.3	5.4	11.0	0.8	7.9	6.4	6.0	6.2
Other real assets							4.5	11.7	20.1	-0.1	8.9	8.6	13.9	3.4	10.9	-0.1	1.6	5.2
Real assets - Aggregate	11.2	8.8	14.2	-2.7	8.3	7.8	9.0	-1.9	9.5	5.2	5.0	5.4	10.4	0.7	9.4	4.2	6.0	5.8
Hedge funds							0.0	3.6	7.4	1.4	0.9	2.3	1.8	3.1	8.7	-0.1	3.3	3.2
Global TAA							3.4	7.9	13.1	-7.5	5.3	8.7	4.2	4.4	14.1	-1.5	7.1	6.1
Balanced funds													0.0	-25.8	40.1	-14.4	20.1	
Risk parity							6.9	6.7	22.5	-4.3	8.7	7.8	6.8	5.0	15.8	-1.1	6.9	6.3
Mortgages							-5.3	8.4	5.3	-0.4	2.9	2.0	-6.2	7.3	6.5	-1.2	4.6	2.2
Private credit							-1.1	4.0	8.0	1.2	3.1	2.7	2.6	1.4	13.1	1.0	5.3	4.1
Private equity - Diversified							41.9	-1.6	-9.2	20.3	14.1	11.7	42.3	-4.1	-7.7	19.3	17.5	11.7
Venture capital							45.3	-1.0	-10.8	23.4	10.9	12.1	39.6	-2.2	-8.5	20.8	15.8	11.5
LBO							49.1	-1.5	-11.8	24.2	10.3	12.3	41.4	-1.7	-9.4	21.9	15.5	11.7
Private equity - Other							49.1	-0.9	-10.9	22.6	10.6	12.3	39.2	-3.6	-8.2	18.6	16.9	10.9
Private equity - Aggregate							41.9	-1.6	-9.2	20.3	14.1	11.7	42.2	-3.8	-7.9	19.4	17.5	11.7
Total Policy Return	13.8	10.6	19.7	-5.8	13.0	9.9	8.5	8.8	15.5	-1.4	10.5	8.2	6.3	9.1	17.0	-2.7	10.8	7.9

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 %					
	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>	2021	2020	2019	2018	2017	5-yr <sup>1</sup>
Stock - U.S.	-10.3	2.8		-3.6	-0.5		2.6	-3.7	-5.6	2.2	-0.6	-1.6	0.3	-0.6	-0.1	-0.3	0.1	-0.1
Stock - EAFE	-1.3	4.0	-1.5	-1.5	1.6	0.2	-0.2	4.2	1.4	-0.4	1.8	0.2	-0.3	3.6	0.0	-0.8	0.7	0.6
Stock - Global	0.8	0.7	0.5	-0.8	0.4	0.2	-1.0	0.4	1.1	2.3	-0.2	-0.3	-1.1	0.8	-0.5	0.6	1.8	0.2
Stock - other							1.2	-0.5	-2.0	-2.8	-1.7	-1.2	-0.1	6.1	-3.8	-0.6	-0.7	-0.6
Stock - Emerging	2.2	4.7	1.0	0.8	5.6	2.7	-0.6	0.9	0.1	-0.8	0.3	0.1	-0.2	1.0	1.9	-1.0	-0.9	0.1
Stock - ACWI x U.S.													0.3	2.9	1.1	-0.7	1.2	0.9
Stock - Aggregate	0.8	0.9	0.5	-0.7	0.7	0.4	-0.3	0.1	-0.4	-0.2	0.4	-0.2	-0.5	0.5	0.0	-0.2	0.6	0.0
Fixed income - U.S.							8.0	-2.1	-1.1	0.9	-0.7	1.9	0.5	0.7	0.7	0.0	0.3	0.6
Fixed income - EAFE							0.1	0.2	0.0	-0.3	0.4	0.0	0.0	0.1	0.9	-0.1	0.4	0.3
Fixed income - Global	-0.1	0.7	0.1	0.0	0.4	0.2	-0.3	1.3	1.9	0.2	0.3	0.7	0.0	0.7	-1.9	-0.7	1.3	0.1
Fixed income - other							1.5	-1.3	1.1	1.5	49.6	0.0	1.1	0.5	-0.2	0.3	2.6	0.4
Fixed income - Long bonds							1.9	0.9	-0.7	0.1	0.9	0.5	0.0	1.3	0.2	-0.1	0.3	0.3
Fixed income - Emerging					2.9		2.7	0.6	-0.4	0.0	-0.5	0.9	-0.2	0.7	-0.5	-1.2	1.1	-0.1
Fixed income - Inflation indexed							-0.3	-0.1	0.1	0.3	0.2	0.0	0.8	-0.5	0.8	-0.1	-0.1	0.3
Fixed income - High yield							2.1	0.6	0.0	0.6	1.1	0.9	0.8	0.4	-1.5	0.2	-0.3	0.0
Fixed income - Bundled LDI							0.6	-0.1					0.3	0.5	0.3	-0.1	0.0	-0.1
Fixed income - Public mortgages													0.6	1.7	0.5	0.0	1.3	1.3
Fixed income - Convertibles								-42.6	-6.6	-1.4	-2.9		-3.4	-2.6	-4.8	-0.4	-4.4	-3.5
Cash							-0.3	0.1	0.4	-0.6	2.4	0.6	-0.5	-0.2	-0.3	0.0	0.0	-0.6
Fixed income - Aggregate	-0.1	0.7	0.1	0.0	0.4	0.2	3.1	-1.3	1.2	1.0	-0.2	1.0	0.4	0.6	0.1	0.0	0.1	0.1
Commodities							-9.0	14.4	-14.3	-3.6	9.5	-4.2	-3.5	2.3	-3.3	-0.9	-0.1	-0.8
Infrastructure	7.8						5.5	-0.8	0.0	5.0	6.4	2.6	2.3	0.0	-0.1	4.7	4.1	2.6
Natural resources							-5.9	-1.2	1.1	-3.8	0.8	0.3	-1.5	-3.7	-4.9	2.4	0.4	-1.3
REITs	9.7	-25.0	3.7	-5.7			-2.3	4.3	-1.8	-3.1	-2.1	-1.0	1.2	1.6	1.2	-0.3	0.0	1.2
Real estate	6.2	-9.0	-6.4	9.4	0.5	0.2	0.8	-2.5	0.5	0.3	1.6	-0.1	1.9	-0.9	-0.8	2.9	0.9	0.2
Other real assets							8.1	-10.1	-21.7	-5.4	-19.4	-10.1	-0.5	-5.0	-8.0	-3.1	-2.1	-7.5
Real assets - Aggregate	7.7	-13.7	-3.4	5.5	0.5	-0.8	2.6	-0.8	0.3	0.1	1.8	0.7	2.7	-0.6	-0.8	1.8	0.8	0.8
Hedge funds							4.8	0.3	-1.0	-3.7	-1.2	-0.2	2.8	-1.4	-2.7	-0.9	-1.0	-0.1
Global TAA							-6.9	-14.8	-0.9	-4.8	1.8		-0.7	-3.1	-3.0	-2.2	-2.2	-2.4
Balanced funds													0.9	16.5	-10.3	-0.7	-3.8	
Risk parity							1.7	-6.7	0.9	0.1	1.1	-0.7	-0.6	-1.0	2.0	-4.0	1.3	-0.4
Mortgages							3.6	-0.7	1.8	2.0	2.2	2.0	3.8	-1.0	0.5	1.2	1.4	1.4
Private credit							5.2	0.1	-1.7	5.4	0.4	0.9	4.8	0.8	-2.9	4.1	1.2	1.7
Private equity - Diversified							-11.1	16.7	20.5	-7.5	0.1	5.2	-4.3	16.3	16.9	-3.3	-4.9	5.5
Venture capital							-4.1	23.7	24.0	-3.1	-1.4	8.9	9.7	24.1	17.2	-0.8	-5.6	9.1
LBO							-6.3	21.4	22.5	-11.8	3.6	6.6	-4.1	13.6	21.3	-6.3	-2.6	7.1
Private equity - Other							-43.7	23.2	20.3	25.4	5.6	4.5	-19.6	15.2	16.3	-7.9	-7.8	3.2
Private equity - Aggregate							-7.0	18.0	21.2	-7.3	0.1	6.3	-3.0	16.8	16.9	-3.5	-5.2	5.6
Total Fund Return	0.7	0.2	0.2	-0.4	0.6	0.3	-0.3	0.5	0.3	0.6	0.2	0.3	0.1	1.3	0.7	-0.3	0.3	0.4

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 - 2021

### 2021 Policy Return and Value Added

Asset class	Policy weight	Benchmark Description	Return	Net return	Value added
Stock - U.S.		Custom	13.3%	3.0%	-10.3%
Stock - EAFE		Custom	18.0%	16.7%	-1.3%
Stock - Global	73.2%	Your Stock: Global benchmark	20.4%	21.2%	0.8%
Stock - Emerging		Custom	8.9%	11.1%	2.2%
Fixed income - Global	26.8%	Barclays Global Aggregate + Barclays Global Infl	-1.9%	-2.0%	-0.1%
Infrastructure		Custom	-3.9%	3.9%	7.8%
REITs		Custom	17.1%	26.8%	9.7%
Real estate		Custom	7.3%	13.5%	6.2%
<b>Total</b>	<b>100.0%</b>				
Net Actual Return (reported by you)					14.5%
Calculated Policy Return = sum of (policy weights X benchmark returns)				14.4%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.7%</u>	
Policy Return (reported by you)					<u>13.8%</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 Equity and Fixed Income. The benchmark for Real Estate used in the report prior to 2017 was the actual portfolio return, and thereafter the financing cost for the real estate investments.

## Your policy return and value added calculations - 2017 to 2020

### 2020 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	47.1%	49.8%	2.8%
Stock - EAFE		Custom	5.4%	9.4%	4.0%
Stock - Global	73.0%	Your Stock: GloI	12.2%	12.9%	0.7%
Stock - Emerging		Custom	3.4%	8.1%	4.7%
Fixed income - Global	27.0%	Barclays Global	6.7%	7.4%	0.7%
REITs		Custom	10.1%	-14.9%	-25.0%
Real estate		Custom	8.7%	-0.2%	-9.0%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					10.8%
Calculated policy return (sum: Policy weights x benchmarks)				10.7%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.1%</u>	
Policy return (reported by you)					<u>10.6%</u>
Net Value Added (Net Return - Policy Return)					0.2%

### 2019 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	22.7%	21.2%	-1.5%
Stock - EAFE		Custom	22.7%	21.2%	-1.5%
Stock - Global	71.1%	Your Stock: GloI	26.1%	26.6%	0.5%
Stock - Emerging		Custom	15.0%	16.0%	1.0%
Fixed income - Global	28.9%	Barclays Global	7.5%	7.5%	0.1%
REITs		Custom	17.1%	20.9%	3.7%
Real estate		Custom	13.0%	6.7%	-6.4%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					19.9%
Calculated policy return (sum: Policy weights x benchmarks)				20.7%	
Adjustment to reflect rebalancing and overlay impacts				<u>-1.0%</u>	
Policy return (reported by you)					<u>19.7%</u>
Net Value Added (Net Return - Policy Return)					0.2%

### 2018 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	3.6%	0.0%	-3.6%
Stock - EAFE		Custom	-13.7%	-15.2%	-1.5%
Stock - Global	67.3%	Your Stock: GloI	-8.4%	-9.2%	-0.8%
Stock - Emerging		Custom	-14.7%	-13.9%	0.8%
Fixed income - Global	32.7%	Barclays Global	0.6%	0.5%	0.0%
Fixed income - Emerging		Custom	-4.6%	-10.4%	-5.7%
REITs		Custom	-4.6%	-10.4%	-5.7%
Real estate		Custom	-2.1%	7.3%	9.4%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					-6.2%
Calculated policy return (sum: Policy weights x benchmarks)				-5.5%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.4%</u>	
Policy return (reported by you)					<u>-5.8%</u>
Net Value Added (Net Return - Policy Return)					-0.4%

### 2017 Policy Return and Value Added

Asset class	Policy weight	Benchmark		Net return	Value added
		Description	Return		
Stock - U.S.		Custom	18.9%	18.4%	-0.5%
Stock - EAFE		Custom	25.6%	27.2%	1.6%
Stock - Global	67.1%	Your Stock: GloI	18.5%	18.9%	0.4%
Stock - Emerging		Custom	20.5%	26.1%	5.6%
Fixed income - Global	33.0%	Barclays Global	2.9%	3.3%	0.4%
Fixed income - Emerging		Barclays Global	2.9%	5.8%	2.9%
REITs		Custom	8.3%	8.8%	0.5%
Real estate		Custom	8.3%	8.8%	0.5%
<b>Total</b>	<b>100.0%</b>				
Net Return (reported by you)					13.6%
Calculated policy return (sum: Policy weights x benchmarks)				13.4%	
Adjustment to reflect rebalancing and overlay impacts				<u>-0.4%</u>	
Policy return (reported by you)					<u>13.0%</u>
Net Value Added (Net Return - Policy Return)					0.6%

## Profit/Loss on overlay programs

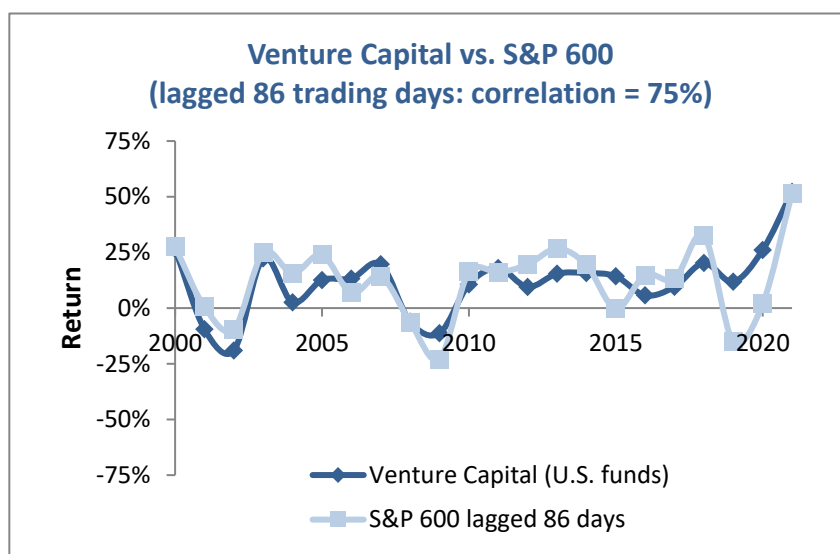
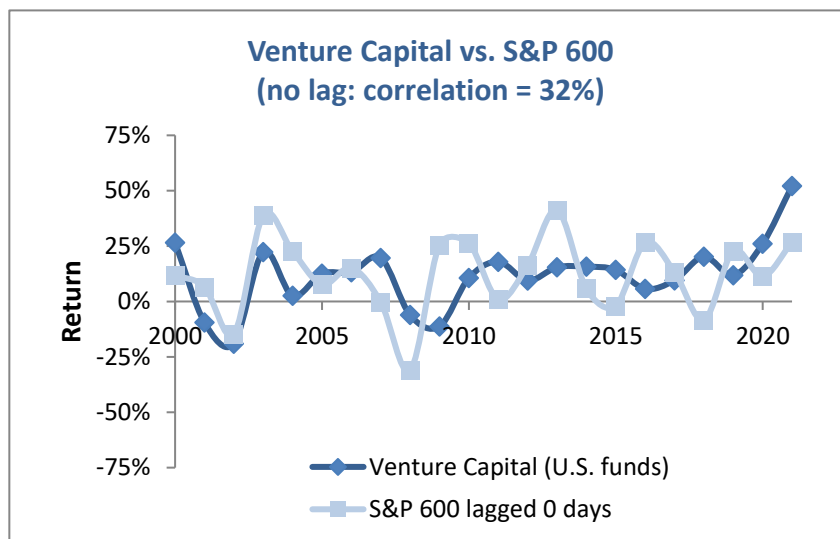
Overlay type	Your fund		Peer median				Global median			
	2021	2020	2021		2020		2021		2020	
	bps	bps	bps	#	bps	#	bps	#	bps	#
Int. Discretionary Currency			-15.1	1	50.8	1	2.6	9	0.0	8
Ext. Discretionary Currency			0.5	1	-1.0	1	0.3	10	-0.2	8
Internal Global TAA							18.9	5	19.5	6
External Global TAA							3.0	2		
Internal PolicyTilt TAA							3.9	8	14.8	7
External PolicyTilt TAA							11.3	1	14.6	1
Internal Commodities							0.0	1	14.0	2
External Commodities							38.0	2	-1.7	2
Internal Long/Short							6.0	7	1.1	8
External Long/Short							-2.2	1	3.0	1
Internal Other			31.5	1	94.5	1	15.0	7	19.6	8
External Other							0.0	7	10.2	8

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

## Appendix - Private equity benchmarks used by most funds are flawed.

A high proportion of the benchmarks used for illiquid assets by participants in the CEM universe are flawed. Flaws include:

- Timing mismatches due to lagged reporting. For example, as the graphs on the right demonstrate, reported venture capital returns clearly lag the returns of stock indices. Yet most funds that use stock indices to benchmark their private equity do not use lagged benchmarks. The result is substantial noise when interpreting performance. For example, for 2008 the S&P 600 index return was -31.1% versus -6.2% if lagged 86 trading days. Thus if a fund earned the average reported venture capital return for 2008 of -6.1%, they would have mistakenly believed that their value added from venture capital was 25.0% using the un-lagged benchmarks versus 0.1% using the same benchmark lagged to match the average 86 day reporting lag of venture capital funds.



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

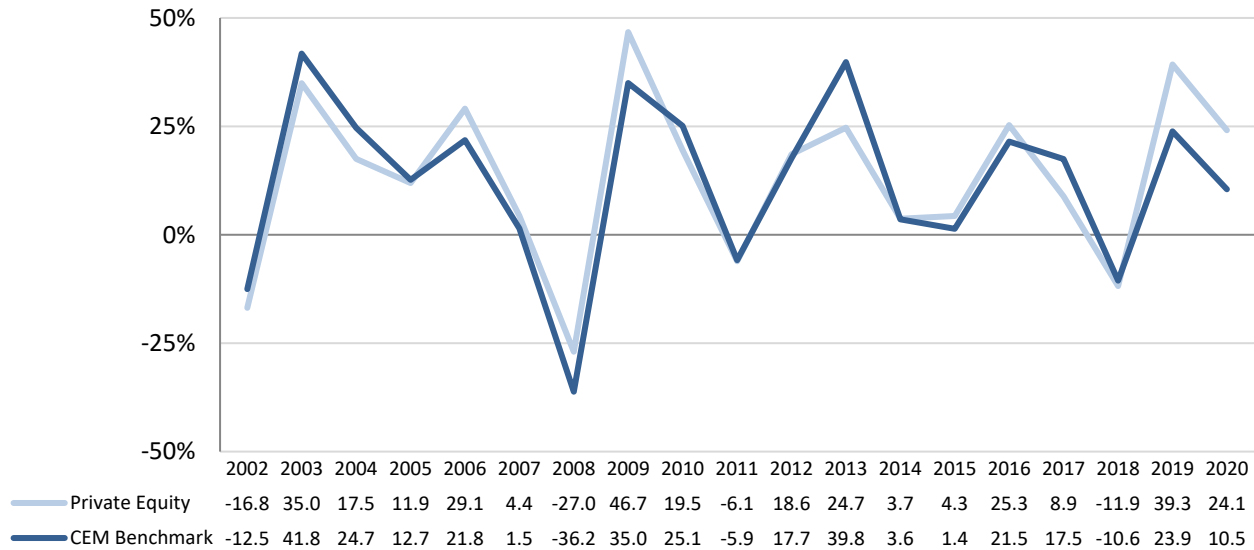


## To enable fairer comparisons, CEM uses default private equity benchmarks.

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 default benchmark returns - Global median



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

# 4

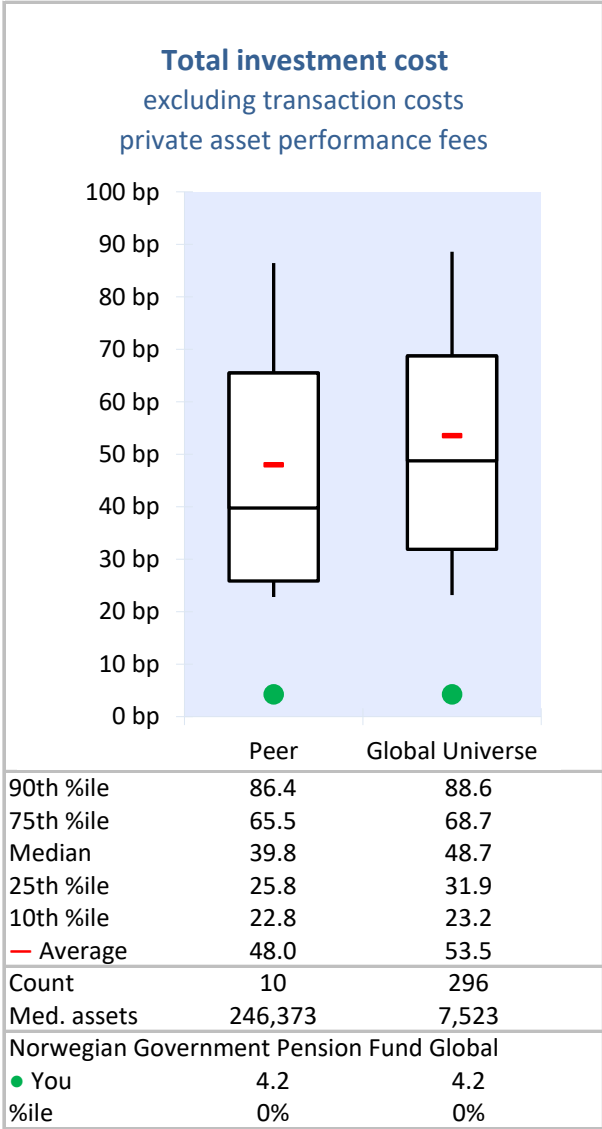
## Cost: total, benchmark, trend

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# Comparisons of total investment cost

Your total investment cost, excluding transaction costs and private asset performance fees, of 4.2 bps was below the peer median of 39.8 bps.

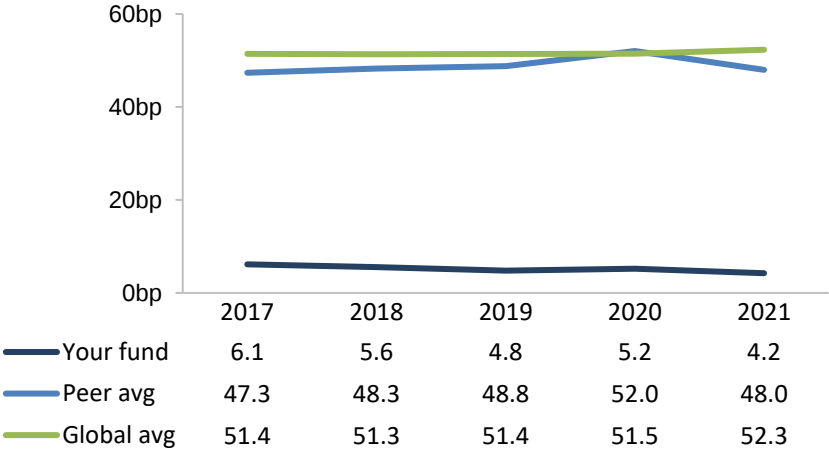
Differences in total investment cost are often caused by two factors that are usually outside of management's control: asset mix and fund size. Therefore, to assess whether your fund's total investment cost is high or low given your unique asset mix and size, CEM calculates a benchmark cost for your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



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

Your total investment cost, excluding transaction costs and private asset performance fees, decreased from 6.1 bps in 2017 to 4.2 bps in 2021.

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



Trend analysis is based on 236 Global funds and 10 peer funds with 5 or more consecutive years of data.

## Types of costs included in your total investment cost

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

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

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

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

## Detailed breakdown of your total investment cost

Your 2021 total investment cost, excluding transaction costs and private asset performance fees, was 4.2 bp or €475.8 million.

	Internal		External passive		External active			Total <sup>1</sup>		
	Passive	Active	Fees	Monitoring & Other	Base Fees	Perform. Fees	Monitor. & Other	€000s	bps	% of Total
<b>Asset management</b>										
Stock - U.S.					3,377	-1,163	212	2,426		1%
Stock - EAFE					16,281	6,177	1,254	23,713		5%
Stock - Emerging					68,469	77,560	5,209	151,239		32%
Stock - Global		87,800						87,800		18%
Fixed income - Global		31,769						31,769		7%
REITs		2,951						2,951		1%
Real estate <sup>1</sup>		37,863						37,863		8%
Infrastructure <sup>1</sup>		2,272						2,272		0%
Total asset management costs excluding private asset performance fees								340,033	3.0bp	71%
<b>Oversight, custodial &amp; other asset related costs</b>										
Oversight of the fund								78,246		16%
Trustee & custodial								45,995		10%
Consulting and performance measurement								7,681		2%
Audit								3,800		1%
Other										
Total oversight, custodial & other costs								135,722	1.2bp	29%
Total investment costs excluding transaction costs and private asset performance fees								475,755	4.2bp	100%

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

## 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 (2021 - 2017)

	Investment costs (€000s)					Change (€000s)				Change (%)			
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2021	2020	2019	2018
<b>Asset management</b>													
Stock - U.S.	2,426	6,720		855	1,608	-4,295			-753	-64%			-47%
Stock - EAFE	23,713	29,828	9,642	27,553	26,360	-6,115	20,186	-17,911	1,193	-20%	209%	-65%	5%
Stock - Emerging	151,239	157,543	87,450	122,257	156,712	-6,304	70,093	-34,807	-34,455	-4%	80%	-28%	-22%
Stock - Global	87,800	104,566	115,092	104,260	108,209	-16,766	-10,526	10,832	-3,949	-16%	-9%	10%	-4%
Fixed income - Global	31,769	40,877	44,434	42,087	41,515	-9,108	-3,557	2,347	572	-22%	-8%	6%	1%
REITs	2,951	2,681	1,620	2,013		270	1,061	-393		10%	66%	-20%	
Real estate <sup>1</sup>	37,863	35,060	44,007	50,360	54,425	2,803	-8,948	-6,353	-4,065	8%	-20%	-13%	-7%
Infrastructure <sup>1</sup>	2,272												
Total excl. private asset perf. fees	340,033	377,276	302,245	349,386	389,015	-37,243	75,030	-47,140	-39,629	-10%	25%	-13%	-10%
<b>Oversight, custodial &amp; other asset related costs</b>													
Oversight of the fund	78,246	71,921	89,677	76,723	73,798	6,325	-17,756	12,954	2,925	9%	-20%	17%	4%
Trustee & custodial	45,995	44,144	42,622	39,045	41,965	1,851	1,523	3,576	-2,920	4%	4%	9%	-7%
Consulting and performance measurement	7,681	7,035	10,715	14,930	10,050	646	-3,680	-4,215	4,880	9%	-34%	-28%	49%
Audit	3,800	3,892	3,792	4,358	4,312	-93	100	-566	46	-2%	3%	-13%	1%
Other													
Total oversight, custodial & other	135,722	126,992	146,806	135,056	130,125	8,730	-19,814	11,750	4,931	7%	-13%	9%	4%
Total investment costs <sup>1</sup>	475,755	504,268	449,051	484,442	519,140	-28,513	55,216	-35,390	-34,698	-6%	12%	-7%	-7%
Total in basis points	4.2bp	5.2bp	4.8bp	5.6bp	6.1bp								

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

## Total cost versus benchmark cost

Your fund's total investment cost, excluding transaction costs and private asset performance fees, was 17.7 bps below your benchmark cost of 21.9 bps. This implies that your fund was low cost by 17.7 bps compared to the peer median, after adjusting for your fund's asset mix.

### Your cost versus benchmark

	€000s	bps
Your fund's total investment costs excluding transaction costs and private asset performance fees	475,755	4.2 bp
- Your fund's benchmark	2,462,348	21.9 bp
= Your fund's cost savings	-1,986,592	-17.7 bp

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

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

### Reasons why your fund was low cost

	Cost/-Savings impact	
	€000s	bps
<u>Differences in implementation style:</u>		
Less passive	1,368,520	12.2 bp
More int. active % of total active	-2,487,834	-22.2 bp
Less overlays and unfunded strategies	-168,985	-1.5 bp
Total style impact	-1,288,298	-11.5 bp
<u>Paying more/-less for similar services:</u>		
External investment management	-87,490	-0.8 bp
Internal investment management	-548,074	-4.9 bp
Oversight, custodial and other	-62,730	-0.6 bp
Total impact of paying more /-less	-698,294	-6.2 bp
Total savings	-1,986,592	-17.7 bp



## Benchmark cost calculation

Your 2021 benchmark cost was 21.9 basis points or 2.5 billion. It equals your holdings for each asset class multiplied by the peer median cost for the asset class. The peer median cost is the style weighted average for all implementation styles (i.e., internal passive, internal active, external passive, external active).

Asset class	Your average assets	Weighted peer median cost <sup>1</sup>	Benchmark €000s
	(A)	(B)	(A X B)
<b>Asset management costs</b>			
Stock - U.S.	1,571	9.2 bp	1,440
Stock - EAFE	9,288	28.5 bp	26,430
Stock - Emerging	38,571	34.6 bp	133,443
Stock - Global <sup>4</sup>	742,890	20.6 bp	1,532,799
Fixed income - Global <sup>4</sup>	282,627	6.7 bp	189,156
REITs	19,607	9.2 bp	18,128
Real estate	27,377	69.2 bp	189,466
Infrastructure	801	50.5 bp	4,049
Overlay Programs <sup>2</sup>	1,122,732	1.5 bp	168,985
Benchmark for asset management	1,122,732	20.2 bp	2,263,896
<b>Oversight, custody and other costs<sup>3</sup></b>			
Oversight	1,122,732	0.9 bp	
Trustee & custodial	1,122,732	0.5 bp	
Consulting	1,122,732	0.0 bp	
Audit	1,122,732	0.0 bp	
Other	1,122,732	0.1 bp	
Benchmark for oversight, custody, other	1,122,732	1.8 bp	198,452
<b>Total benchmark cost</b>		<b>21.9 bp</b>	<b>2,462,348</b>

1. The weighted peer median cost for asset management is the style-weighted average of the peer median costs for all implementation styles (i.e., internal passive, internal active, external passive, external active, fund of fund). It excludes performance fees on private assets. The style weights by asset class for your fund and the peers are shown on page 15 of this section.
2. Total fund average holdings is used as the base when calculating the relative cost impact of the overlay programs.
3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.
4. A different asset was used as a proxy to determine the benchmarks and style percentages: 'Stock - Aggregate' for 'Stock - Global', 'Fixed income - Aggregate' for 'Fixed income - Global'.

## Cost impact of differences in implementation style

Differences in implementation style (passive vs. active, internal vs. external, etc.) relative to your peers saved you 11.5 bps.

Implementation choices	Assets by style	Peer benchmark cost			Style 1 %			Cost/ -Savings €000s	bps
		Style 1	Style 2	Style 1 -Savings	Your	Peer average	More/ -Less		
	a	b	c	d = b - c			e	a x d x e	
<u>Passive vs active</u>									
	Total	Passive	Active		Passive % of total assets				
Stock - U.S.	1,571	2 bp	29 bp	-27 bp	0%	73%	-73%	3,117	
Stock - EAFE	9,288	3 bp	38 bp	-35 bp	0%	28%	-28%	9,291	
Stock - Emerging	38,571	6 bp	45 bp	-39 bp	0%	26%	-26%	40,025	
Stock - Global	742,890	2 bp	36 bp	-35 bp	0%	45%	-45%	1,147,967	
Fixed income - Global	282,627	1 bp	13 bp	-11 bp	0%	53%	-53%	168,119	
Less passive								1,368,520	12.2 bp
<u>Internal active vs external active</u>									
	Active assets	Internal active	External active		Internal active % of active				
Stock - U.S.	1,571	9 bp	40 bp	-30 bp	0%	35%	-35%	1,666	
Stock - EAFE	9,288	6 bp	51 bp	-45 bp	0%	27%	-27%	11,337	
Stock - Emerging	38,571	17 bp	55 bp	-38 bp	0%	26%	-26%	38,118	
Stock - Global	742,890	7 bp	53 bp	-45 bp	100%	37%	63%	-2,143,331	
Fixed income - Global	282,627	3 bp	29 bp	-26 bp	100%	62%	38%	-280,692	
REITs	19,607	6 bp	49 bp	-43 bp	100%	93%	7%	-6,236	
Real estate	27,377	30 bp	90 bp	-60 bp	100%	35%	65%	-107,613	
Infrastructure	801	37 bp	96 bp	-59 bp	100%	77%	23%	-1,084	
More int. active % of total active								-2,487,834	-22.2 bp
Less overlays and unfunded strategies								-168,985	-1.5 bp
Total impact of differences in implementation style								-1,288,298	-11.5 bp

## Cost impact of overlays

As summarized on the previous page, the style impact of overlays saved you 1.5 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	1,122,732	NA	0.00 bp	-414
Currency - Discretionary	1,122,732	NA	0.01 bp	-1,094
Inflation linked - Hedge	1,122,732	NA	0.00 bp	-39
Long/Short - Discretionary	1,122,732	NA	1.39 bp	-156,151
Other overlay - Discretionary	1,122,732	NA	0.00 bp	-506
<b>External Overlays</b>				
Currency - Discretionary	1,122,732	NA	0.02 bp	-1,828
Duration management - Hedge	1,122,732	NA	0.02 bp	-2,418
Long/Short - Discretionary	1,122,732	NA	0.06 bp	-6,535
Total impact in 000s				-168,985
Total impact in basis points				-1.5 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 6.2 bps.

	Style	Your avg holdings (mils)	Cost in bps			Cost/-Savings	
			Your	Peer median	More/-less	€000s	bps
<b>External asset management</b>		(A)			(B)	(A X B)	
Stock - U.S.	active	1,571	15.4	39.6	-24.2	-3,798	
Stock - EAFE	active	9,288	25.5	50.7	-25.1	-23,345	
Stock - Emerging	active	38,571	39.2	54.9	-15.6	-60,347	
Total for external management						-87,490	-0.8 bp
<b>Internal asset management</b>		(A)			(B)	(A X B)	
Stock - Global	active	742,890	1.2	7.2	-6.1	-449,636	
Fixed income - Global	active	282,627	1.1	2.7	-1.6	-44,814	
REITs	active	19,607	1.5	6.1	-4.6	-8,942	
Real estate	active	27,377	13.8	29.9	-16.1	-43,990	
Infrastructure	active	801	28.4	37.0	-8.6	-693	
Total for internal management						-548,074	-4.9 bp
<b>Oversight, custody and other costs<sup>1</sup></b>							
Oversight			0.7	0.9	-0.2		
Trustee & custodial			0.4	0.5	-0.1		
Consulting			0.1	0.0	0.1		
Audit			0.0	0.0	0.0		
Other			0.0	0.1	-0.1		
Benchmark for oversight, custody, other		1,122,732	1.2	1.8	-0.6	-62,730	-0.6 bp
<b>Total</b>						-698,294	-6.2 bp

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

## Summary of why you are high or low cost by asset class

The table below summarizes where you are high and low cost by asset class. It also quantifies how much is due to differences in implementation style (i.e., differences in the mix of external active, external passive, internal active, internal passive and fund of fund usage) and how much is due to paying more or less for similar services (i.e., same asset class and style).

	Your cost	Benchmark = peer weighted median cost <sup>1</sup>	More/-less	Your average assets (or fee basis)	More/-less in €000s		
					Total More/-less	Due to Impl. style	Due to paying more/less
	(A)	(B)	(C = A - B)	(D)	(C X D)		
<b>Asset management costs</b>							
Stock - U.S.	15.4 bp	9.2 bp	6.3 bp	1,571	986	4,784	-3,798
Stock - EAFE	25.5 bp	28.5 bp	-2.9 bp	9,288	-2,716	20,628	-23,345
Stock - Emerging	39.2 bp	34.6 bp	4.6 bp	38,571	17,796	78,143	-60,347
Stock - Global <sup>4</sup>	1.2 bp	20.6 bp	-19.5 bp	742,890	-1,444,999	-995,363	-449,636
Fixed income - Global <sup>4</sup>	1.1 bp	6.7 bp	-5.6 bp	282,627	-157,387	-112,572	-44,814
REITs	1.5 bp	9.2 bp	-7.7 bp	19,607	-15,177	-6,236	-8,942
Real estate	13.8 bp	69.2 bp	-55.4 bp	27,377	-151,603	-107,613	-43,990
Infrastructure	28.4 bp	50.5 bp	-22.2 bp	801	-1,777	-1,084	-693
Overlay Programs <sup>2</sup>	0.0 bp	1.5 bp	-1.5 bp	1,122,732	-168,985	-168,985	0
<b>Total asset management</b>	<b>3.0 bp</b>	<b>20.2 bp</b>	<b>-17.1 bp</b>	<b>1,122,732</b>	<b>-1,923,863</b>	<b>-1,288,298</b>	<b>-635,564</b>
<b>Oversight, custody and other costs<sup>3</sup></b>							
Oversight of the fund	0.7 bp	0.9 bp	-0.2 bp				
Trustee & custodial	0.4 bp	0.5 bp	-0.1 bp				
Consulting	0.1 bp	0.0 bp	0.1 bp				
Audit	0.0 bp	0.0 bp	0.0 bp				
Other	0.0 bp	0.1 bp	-0.1 bp				
<b>Total oversight, custody &amp; other</b>	<b>1.2 bp</b>	<b>1.8 bp</b>	<b>-0.6 bp</b>	<b>1,122,732</b>	<b>-62,730</b>	<b>n/a</b>	<b>-62,730</b>
<b>Total</b>	<b>4.2 bp</b>	<b>21.9 bp</b>	<b>-17.7 bp</b>	<b>1,122,732</b>	<b>-1,986,592</b>	<b>-1,288,298</b>	<b>-698,294</b>

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

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

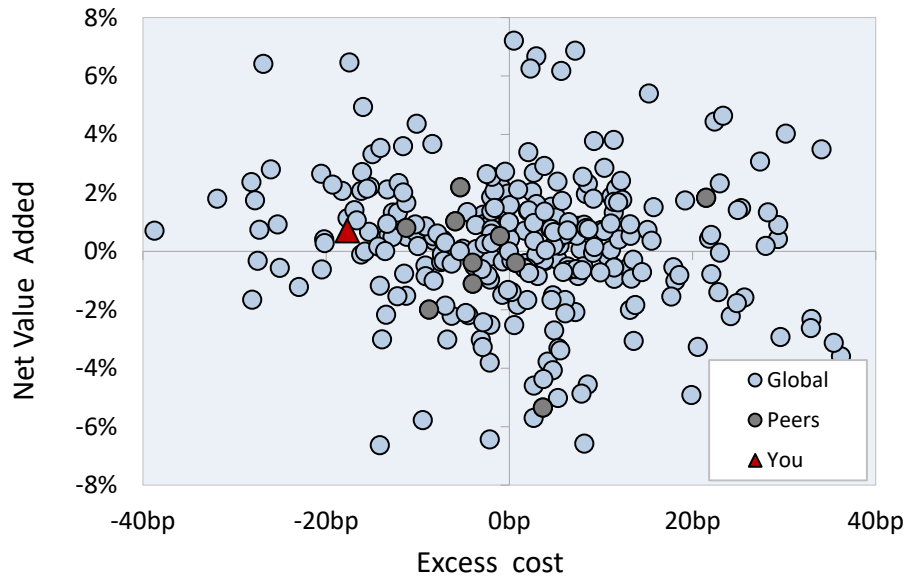
3. Benchmarks for oversight total and individual lines are based on peer medians. Sum of the lines may be different from the total.

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

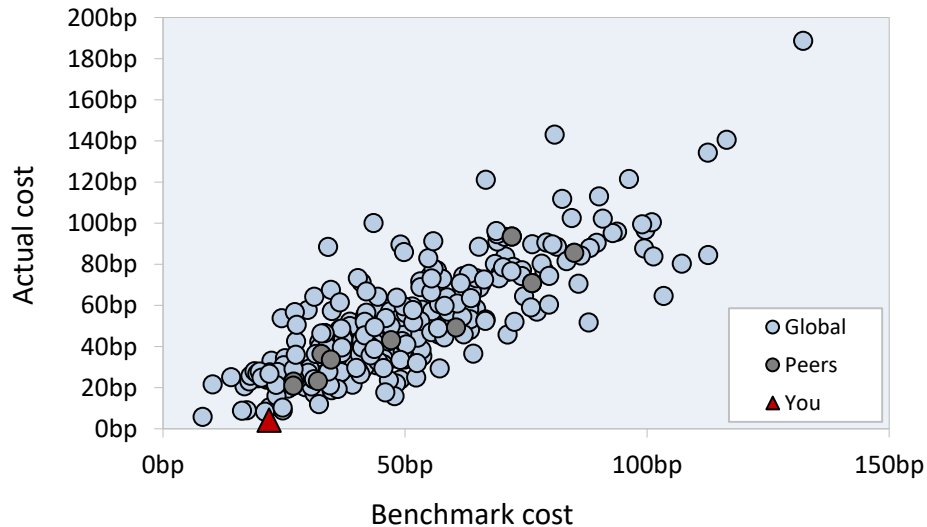
## Your cost effectiveness ranking

Being high or low cost is neither good nor bad. More important is whether you are receiving sufficient value for your excess cost. At the total fund level, we provide insight into this question by combining your value added and excess cost to create a snapshot of your cost effectiveness performance relative to that of the global universe. In 2021, your fund ranked in the positive value added, low cost quadrant.

**Your 2021 Net value added 0.7%, Excess cost -18 bps**



**Your 2021 Actual cost 4.2 bps, Benchmark cost 21.9 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 14 of this section.

## Benchmarking methodology formulas and data

### a) Formulas

Example calculations for 'Stock - U.S.'

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

$$= (44\% \times 1.5 \text{ bp}) + (10\% \times 9.3 \text{ bp}) + (29\% \times 2.0 \text{ bp}) + (18\% \times 39.6 \text{ bp}) = 9.2 \text{ bp}$$

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

$$= 15.4 \text{ bp} - 9.2 \text{ bp} = 6.3 \text{ bp}$$

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

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

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

$$= 19.8 \text{ bp} + 0.0 \text{ bp} + 10.6 \text{ bp} = 30.4 \text{ bp}$$

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

$$\begin{aligned} &= (\text{peer average passive cost} - \text{peer average active cost}) \times \\ &\quad (\text{passive \% of asset, you} - \text{passive \% of asset, peer average}) \\ &= (1.7 \text{ bp} - 29.0 \text{ bp}) \times (0\% - 73\%) = 19.8 \text{ bp} \end{aligned}$$

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

$$= [(44\% \times 1.5 \text{ bp}) + (29\% \times 2.0 \text{ bp})] / (44\% + 29\%) = 1.7 \text{ bp}$$

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

$$= [(10\% \times 9.3 \text{ bp}) + (18\% \times 39.6 \text{ bp})] / (10\% + 18\%) = 29.0 \text{ bp}$$

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

$$\begin{aligned} &= (\text{peer average internal passive cost} - \text{peer average external passive cost}) \times \\ &\quad (\text{internal passive \% of passive, you} - \text{internal passive \% of passive, peer average}) \times \text{passive \% of asset, you} \\ &= (1.5 \text{ bp} - 2.0 \text{ bp}) \times (0\% - 0\%) \times 0\% = 0.0 \text{ bp} \end{aligned}$$

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

$$\begin{aligned} &= (\text{peer average internal active cost} - \text{peer average external active cost}) \times \\ &\quad (\text{internal active \% of active, you} - \text{internal active \% of active, peer avg}) \times \text{active \% of asset, you} \\ &= (9.3 \text{ bp} - 39.6 \text{ bp}) \times (0\% - 35\%) \times 100\% = 10.6 \text{ bp} \end{aligned}$$

##### Cost impact of paying more/-less

$$\begin{aligned} &= (\text{cost internal passive, you} - \text{cost internal passive, peer}) \times \text{internal passive \% of asset, you} + \\ &\quad (\text{cost internal active, you} - \text{cost internal active, peer}) \times \text{internal active \% of asset, you} + \\ &\quad (\text{cost external passive, you} - \text{cost external passive, peer}) \times \text{external passive \% of asset, you} + \\ &\quad (\text{cost external active, you} - \text{cost external active, peer}) \times \text{external active \% of asset, you} \\ &= (0.0 \text{ bp} - 1.5 \text{ bp}) \times 0\% + (0.0 \text{ bp} - 9.3 \text{ bp}) \times 0\% + (0.0 \text{ bp} - 2.0 \text{ bp}) \times 0\% + (15.4 \text{ bp} - 39.6 \text{ bp}) \times 100\% = -24.2 \text{ bp} \end{aligned}$$

##### Your cost versus benchmark (-savings/+excess)

= cost impact of differences in implementation style + cost impact of paying more/-less

$$= 30.4 \text{ bp} + -24.2 \text{ bp} = 6.3 \text{ bp}$$

## Benchmarking methodology formulas and data

### b) 2021 cost data used to calculate weighted peer median costs and impact of mix differences.

Asset Class	Your costs (basis points)							Peer median costs (basis points)							
	Internal Passive	Internal Active	External Passive	External Active	Co-invest	Limited Partner.	Fund of Funds	Internal Passive	Internal Active	External Passive	External Active	Co-invest	Limited Partner.	Fund of Funds	Weighted Median
Stock - U.S.				15.4				1.5	9.3	2.0	39.6				9.2
Stock - EAFE				25.5				2.7	6.1	4.1	50.7				28.5
Stock - Emerging				39.2				4.9	16.7	8.4	54.9				34.6
Stock - Global		1.2						1.6	7.2	1.2	52.7				20.6
Fixed income - Global		1.1						1.2	2.7	3.8	28.8				6.7
REITs		1.5							6.1		49.0				9.2
Real estate		13.8							29.9		75.0	44.8	142.7	54.1	68.8
Underlying base fees														106.8	0.4
Infrastructure		28.4							37.0		69.0	15.2	135.7		50.5
Underlying base fees															0.0



## Benchmarking methodology formulas and data

### c) 2021 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 - U.S.	0.0%	0.0%	0.0%	100.0%				43.5%	9.6%	29.2%	17.8%			
Stock - EAFE	0.0%	0.0%	0.0%	100.0%				21.7%	19.7%	6.6%	52.1%			
Stock - Emerging	0.0%	0.0%	0.0%	100.0%				20.0%	19.1%	6.5%	54.5%			
Stock - Global	0.0%	100.0%	0.0%	0.0%				36.9%	20.2%	7.9%	35.1%			
Fixed income - Global	0.0%	100.0%	0.0%	0.0%				49.2%	29.1%	3.9%	17.8%			
REITs		100.0%		0.0%					92.6%		7.4%			
Real estate		100.0%		0.0%	0.0%	0.0%	0.0%		34.9%		39.1%	7.8%	17.8%	0.3%
Underlying base fees		100.0%		0.0%	0.0%	0.0%	0.0%		34.9%		39.1%	7.8%	17.8%	0.3%
Infrastructure		100.0%		0.0%	0.0%	0.0%			77.2%		11.4%	1.2%	10.3%	
Underlying base fees		100.0%		0.0%	0.0%	0.0%			77.2%		11.4%	1.2%	10.3%	

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

## Methodology of the cost trend model

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

### Factors affecting the cost differences

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

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

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

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

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

### Attribution of the cost differences and other assumptions

Change in the cost amount for one asset =

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

Change in the basis point costs for one asset =

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

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

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

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

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

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

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

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

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

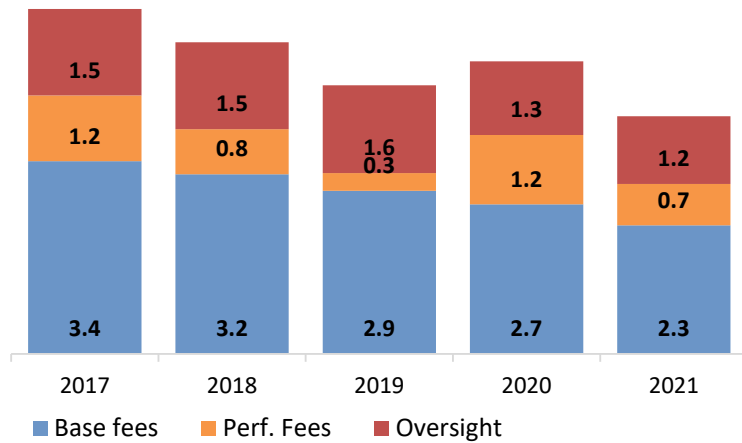
Further, cost difference for style & paying impacts (CostBpsH - CostBpsL) for one style =

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

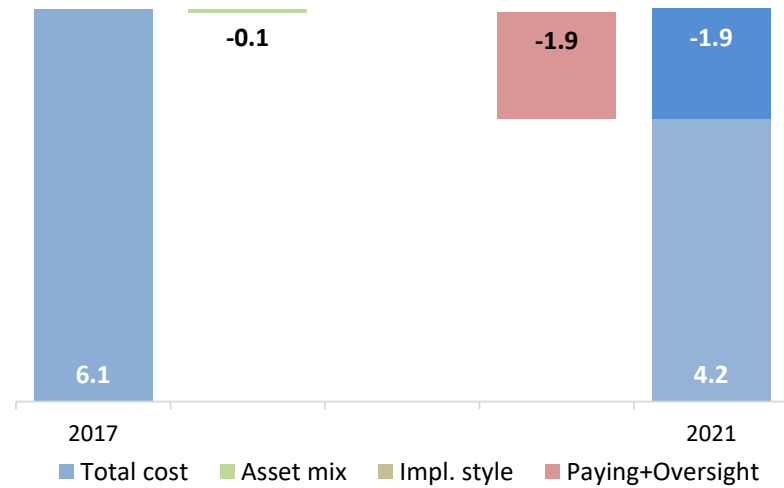
where CostStyleBps is the style cost in basis points; Wg is the weight for that style within the asset class.

## Total plan cost and cost changes

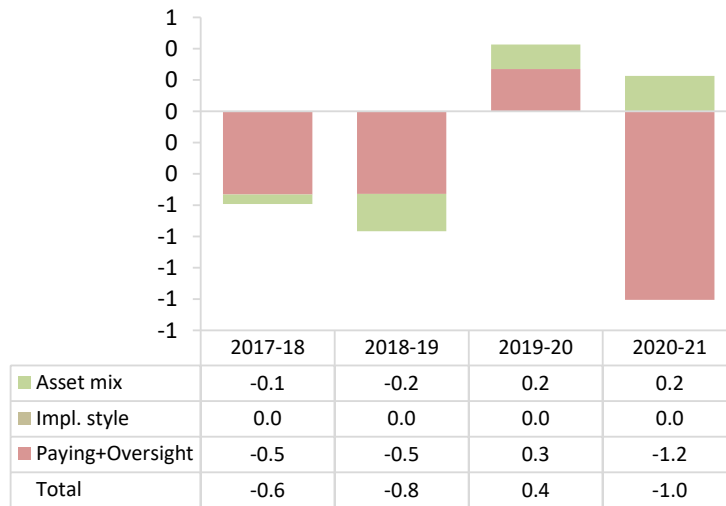
### Total plan cost over time, bps



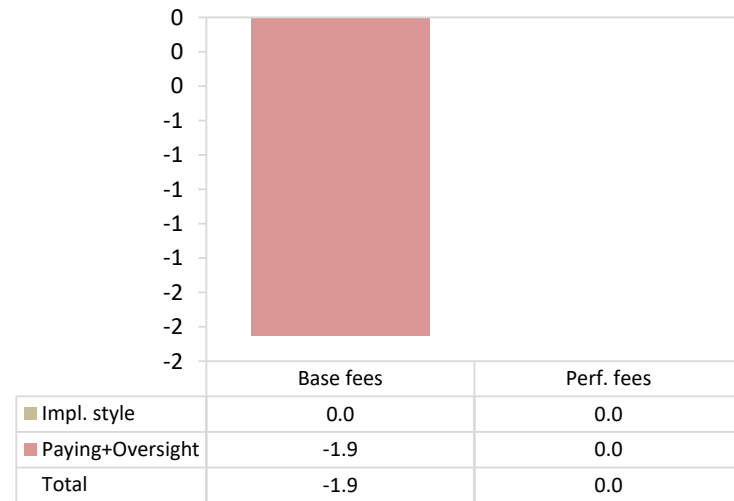
### Cost differences, 2021 versus 2017, bps



### Reasons for cost differences over time, bps



### Impact of base and performance fees, 2021 vs. 2017, bps



## Summary of cost differences, 2021 versus 2017

Your total cost decreased by 1.9 bps between 2017 and 2021 because of changes in: asset mix (-0.1 bps), implementation style (0.0 bps), and paying more/less for similar services (-1.9 bps).

	bps	€000s
Starting total cost, 2017	6.1	519,140
Growth in asset value		171,118
Asset mix	<u>-0.1</u>	<u>-6,453</u>
Stock	0.0	2,117
Fixed income	-0.1	-12,597
Real estate ex-REITs	0.0	-1,196
Real assets ex real estate	0.0	5,223
Implementation style (less expensive vs. more )	<u>0.0</u>	<u>0</u>
Paying more/-less for	<u>-1.5</u>	<u>-170,756</u>
Stock	-1.1	-126,370
Fixed income	-0.1	-11,081
Real estate ex-REITs	-0.3	-33,305
Oversight, custodial, other (pay more/-less)	<u>-0.3</u>	<u>-37,294</u>
Total difference	-1.9	-43,385
Ending total cost, 2021	4.2	475,755

## Summary of cost differences, year over year

	bps	€000s	bps	€000s	bps	€000s	bps	€000s	bps	€000s
	2017		2018		2019		2020		2021	
Starting total cost	6.1	519,140	5.6	484,442	4.8	449,051	5.2	504,268	6.1	519,140
Growth in asset value		16,947		36,448		13,928		81,422		171,118
Asset mix	<u>-0.1</u>	<u>-5,246</u>	<u>-0.2</u>	<u>-22,378</u>	<u>0.2</u>	<u>15,189</u>	<u>0.2</u>	<u>25,352</u>	<u>-0.1</u>	<u>-6,453</u>
Stock	-0.1	-7,909	-0.2	-21,855	0.2	14,775	0.3	31,628	0.0	2,117
Fixed income	0.0	-2,961	0.0	-3,151	0.0	-1,174	0.0	-4,015	-0.1	-12,597
Real estate ex-REITs	0.0	3,610	0.0	2,155	0.0	1,253	0.0	-5,503	0.0	-1,196
Real assets ex real estate	0.0	2,013	0.0	474	0.0	334	0.0	3,242	0.0	5,223
Implementation style (less expensive vs. more )	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>
Paying more/-less for	<u>-0.5</u>	<u>-47,082</u>	<u>-0.5</u>	<u>-51,049</u>	<u>0.5</u>	<u>50,467</u>	<u>-1.1</u>	<u>-123,512</u>	<u>-1.5</u>	<u>-170,756</u>
Stock	-0.5	-39,616	-0.4	-40,066	0.7	65,117	-1.0	-113,330	-1.1	-126,370
Fixed income	0.0	1,986	0.0	2,331	0.0	-3,761	-0.1	-11,694	-0.1	-11,081
Real estate ex-REITs	-0.1	-9,452	-0.1	-12,296	-0.1	-11,565	0.0	2,645	-0.3	-33,305
Real assets ex real estate	0.0	0	0.0	-1,018	0.0	677	0.0	-1,133	0.0	0
Oversight, custodial, other (pay more/-less)	<u>0.0</u>	<u>683</u>	<u>0.0</u>	<u>1,589</u>	<u>-0.3</u>	<u>-24,367</u>	<u>-0.1</u>	<u>-11,775</u>	<u>-0.3</u>	<u>-37,294</u>
Total difference	-0.6	-34,698	-0.8	-35,390	0.4	55,216	-1.0	-28,513	-1.9	-43,385
Ending total cost	5.6	484,442	4.8	449,051	5.2	504,268	4.2	475,755	4.2	475,755
	2018		2019		2020		2021		2021	

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

## Reasons by asset class and cost type, €000

Your total cost has decreased by €43 million in 2021 compared to 2017. An increase of €171 million was due to the €278 billion rise in plan total average nav holdings. The remaining decrease of €215 million is explained by the changes in the asset mix (-€6.5 million), implementation style (€0.0 thousand), and paying more/less for similar services (-€208 million).

Asset class <sup>1</sup>	2017 cost €000s	Asset mix €000s	Implement. style €000s	Paying more/-less €000s	Total ex asset gr. €000s	Total difference €000s	Growth in asset value €000s	2021 cost €000s
	A	B	C	D	E=B+C+D	F=G-A	F-E	G
Stock - U.S.	1,608	1,666	0	-1,378	288	818	530	2,426
Stock - EAFE	26,360	-9,850	0	-1,485	-11,335	-2,646	8,689	23,713
Stock - Emerging	156,712	-3,710	0	-53,419	-57,129	-5,474	51,655	151,239
Stock - Global	108,209	14,011	0	-70,088	-56,077	-20,409	35,668	87,800
Fixed income - Emerging	186	-247	0	0	-247	-186	61	n/a
Fixed income - Global	41,515	-12,349	0	-11,081	-23,430	-9,746	13,684	31,769
REITs	n/a	2,951	0	0	2,951	2,951	0	2,951
Real estate	54,425	-1,196	0	-33,305	-34,502	-16,562	17,940	37,863
Infrastructure	n/a	2,272	0	0	2,272	2,272	0	2,272
Total for asset management	389,015	-6,453	0	-170,756	-177,209	-48,982	128,227	340,033
Oversight	73,798			-19,877	-19,877	4,448	24,325	78,246
Trustee & custodial	10,050			-5,681	-5,681	-2,369	3,313	7,681
Consulting	41,965			-9,802	-9,802	4,030	13,832	45,995
Audit	4,312			-1,934	-1,934	-512	1,421	3,800
Other	0			0	0	0	0	0
Total for fund oversight <sup>2</sup>	130,125			-37,294	-37,294	5,597	42,892	135,722
Total	519,140	-6,453	0	-208,050	-214,503	-43,385	171,118	475,755

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

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

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

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

Your total cost has decreased by 1.9 bps in 2021 vs. 2017. It was driven by the changes in the asset mix (-0.1 bps), implementation style (0.0 bps), and paying more/less for similar services (-1.9 bps).

Asset class	Asset mix bps	Implement. style bps	Paying more/-less bps	Total difference bps	Total <sup>1</sup> ex asset gr. €000s
	B	C	D	B+C+D	
Stock - U.S.	0.0	0.0	0.0	0.0	288
Stock - EAFE	-0.1	0.0	0.0	-0.1	-11,335
Stock - Emerging	0.0	0.0	-0.5	-0.5	-57,129
Stock - Global	0.1	0.0	-0.6	-0.5	-56,077
Fixed income - Emerging	0.0	0.0	0.0	0.0	-247
Fixed income - Global	-0.1	0.0	-0.1	-0.2	-23,430
REITs	0.0	0.0	0.0	0.0	2,951
Real estate	0.0	0.0	-0.3	-0.3	-34,502
Infrastructure	0.0	0.0	0.0	0.0	2,272
Total for asset management	-0.1	0.0	-1.5	-1.6	-177,209
Oversight			-0.2	-0.2	-19,877
Trustee & custodial			-0.1	-0.1	-5,681
Consulting			-0.1	-0.1	-9,802
Audit			0.0	0.0	-1,934
Other			0.0	0.0	0
Total for fund oversight			-0.3	-0.3	-37,294
Total	-0.1	0.0	-1.9	-1.9	-214,503
Total basis point costs in years 2021 and 2017		4.2	6.1	-1.9	

1. Calculated by multiplying total difference in bps by plan total nav average holdings for year 2021, €1,123 billion. Similarly, basis point costs on this page are converted from the amounts on the previous page using the same total nav holdings as the fee basis.

## Impact of changes in asset mix

Changes in the asset mix decreased your total cost by €6.5 million or -0.1 bps.

Asset class	2017 Cost bps	2021 Cost bps	2017 asset <sup>1</sup> weight %	2021 asset <sup>1</sup> weight %	Change in asset weight	Asset mix changes <sup>2</sup> bps	Asset mix changes <sup>3</sup> €000s
	A	B	C	D	E=D-C	A (or B) x E	
Stock - U.S.	24.2	15.4	0%	0%	0%	0.0	1,666
Stock - EAFE	27.1	25.5	1%	1%	0%	-0.1	-9,850
Stock - Emerging	53.1	39.2	3%	3%	0%	0.0	-3,710
Stock - Global	2.1	1.2	60%	66%	6%	0.1	14,011
Fixed income - Emerging	3.2	n/a	0%	0%	0%	0.0	-247
Fixed income - Global	1.5	1.1	32%	25%	-7%	-0.1	-12,349
REITs	n/a	1.5	0%	2%	2%	0.0	2,951
Real estate	26.0	13.8	2%	2%	0%	0.0	-1,196
Infrastructure	n/a	28.4	0%	0%	0%	0.0	2,272
Total for asset management						-0.1	-6,453

1. Weight % = asset's average (NAV for performance lines) holdings / plan total nav average holdings.

2. If asset is not available in one of the years, the entire weighted cost difference in bps is attributed to the asset mix.

3. Calculated by multiplying asset mix changes in bps by plan total nav average holdings for year 2021, €1,123 billion.



## Impact of changes in implementation style

Changes in implementation style (passive vs. active, internal vs. external, etc.) in 2021 vs. 2017 saved you €0.0 thousand.

Implementation choices	2021 avg. assets €mils	<u>Cost, 2017</u>			<u>Style 1 %</u>			Cost/ €000s
	A	Style 1 B	Style 2 C	Style 1 -Savings D = B - C	2021	2017	More/ -Less E	
Total								0

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

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

In 2021, you paid €208 million less for similar asset management and oversight / support services vs. 2017.

Asset class styles where you had assets in both 2021 and 2017 <sup>1</sup>	Style	2021 avg. assets €mils	Cost in bps			Cost/ -Savings €000s
			2021	2017	More/ -less	
<u>External asset management</u>		A			B	A x B
Stock - U.S.	active	1,571	15.4	24.2	-8.8	-1,378
Stock - EAFE	active	9,288	25.5	27.1	-1.6	-1,485
Stock - Emerging	active	38,571	39.2	53.1	-13.8	-53,419
Total for external management						-56,282
<u>Internal asset management</u>		A			B	A x B
Stock - Global	active	742,890	1.2	2.1	-0.9	-70,088
Fixed income - Global	active	282,627	1.1	1.5	-0.4	-11,081
Real estate	active	27,377	13.8	26.0	-12.2	-33,305
Total for internal management						-114,474
Oversight		1,122,732	0.7	0.9	-0.2	-19,877.2
Trustee & custodial		1,122,732	0.1	0.1	-0.1	-5,681
Consulting		1,122,732	0.4	0.5	-0.1	-9,802
Audit		1,122,732	0.0	0.1	0.0	-1,934
Other		1,122,732	0.0	0.0	0.0	0
Total for fund oversight						-37,294
Total						-208,050

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

# 5

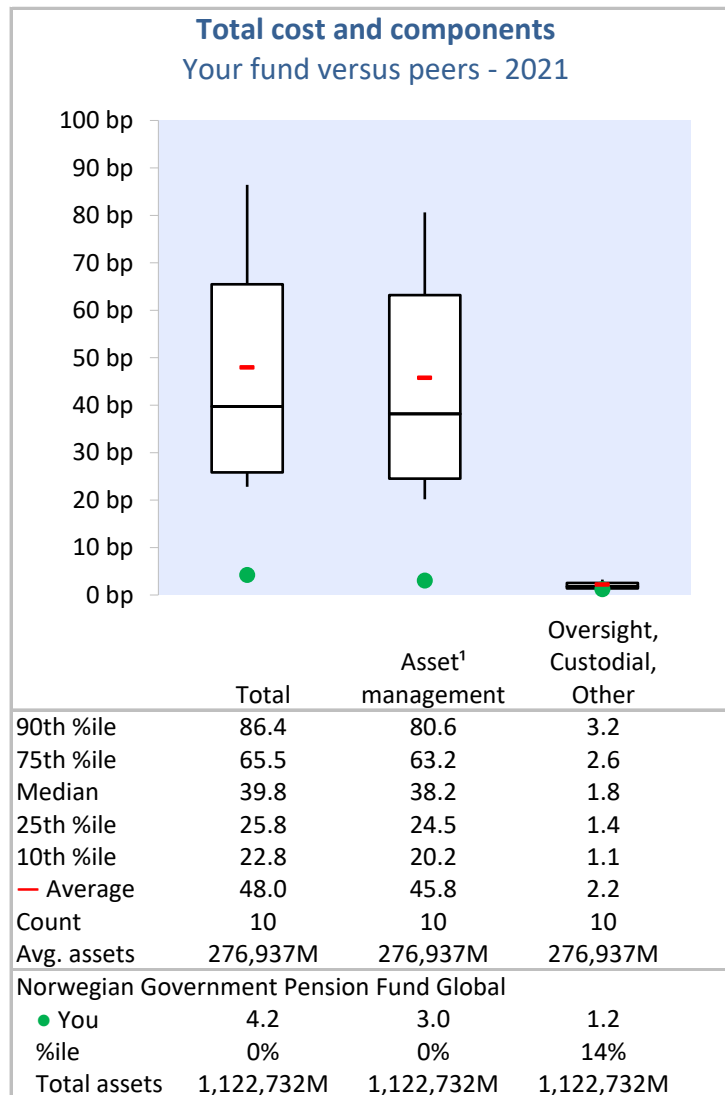
## Cost comparisons

Total fund cost	2
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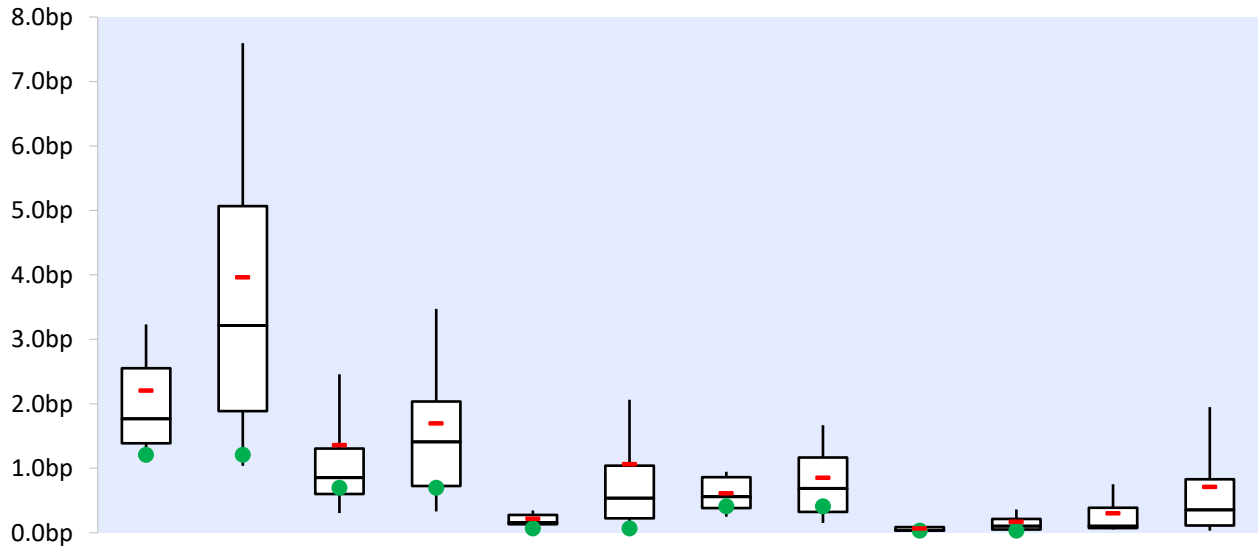
## Total fund cost

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.

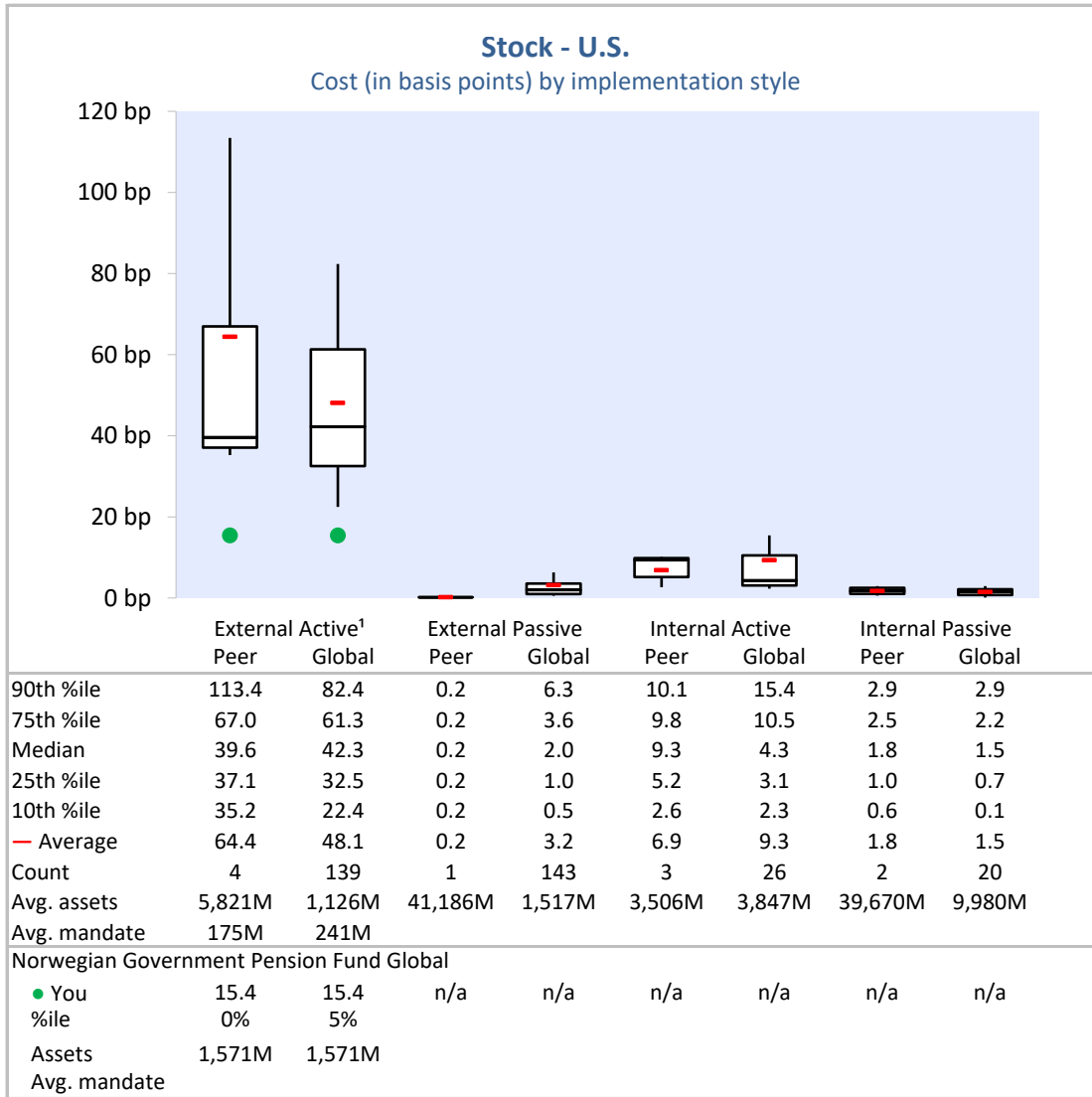


## Governance, operations & support Cost as a % of total plan assets



	<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	3.2	7.6	2.5	3.5	0.3	2.1	0.9	1.7	0.1	0.4	0.8	1.9
75th %ile	2.6	5.1	1.3	2.0	0.3	1.0	0.9	1.2	0.1	0.2	0.4	0.8
Median	1.8	3.2	0.9	1.4	0.2	0.5	0.6	0.7	0.0	0.1	0.1	0.4
25th %ile	1.4	1.9	0.6	0.7	0.1	0.2	0.4	0.3	0.0	0.0	0.1	0.1
10th %ile	1.1	1.0	0.3	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.1	0.0
— Average	2.2	4.0	1.4	1.7	0.2	1.1	0.6	0.9	0.1	0.2	0.3	0.7
Count	10	296	10	296	3	230	9	286	7	251	6	195
Avg. assets	276,937M	28,836M	276,937M	28,836M	276,937M	28,836M	276,937M	28,836M	276,937M	28,836M	276,937M	28,836M
Norwegian Government Pension Fund Global												
● You	1.2	1.2	0.7	0.7	0.1	0.1	0.4	0.4	0.0	0.0	n/a	n/a
%ile	14%	12%	29%	24%	0%	6%	38%	32%	28%	16%		
Plan assets	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M	1,122,732M

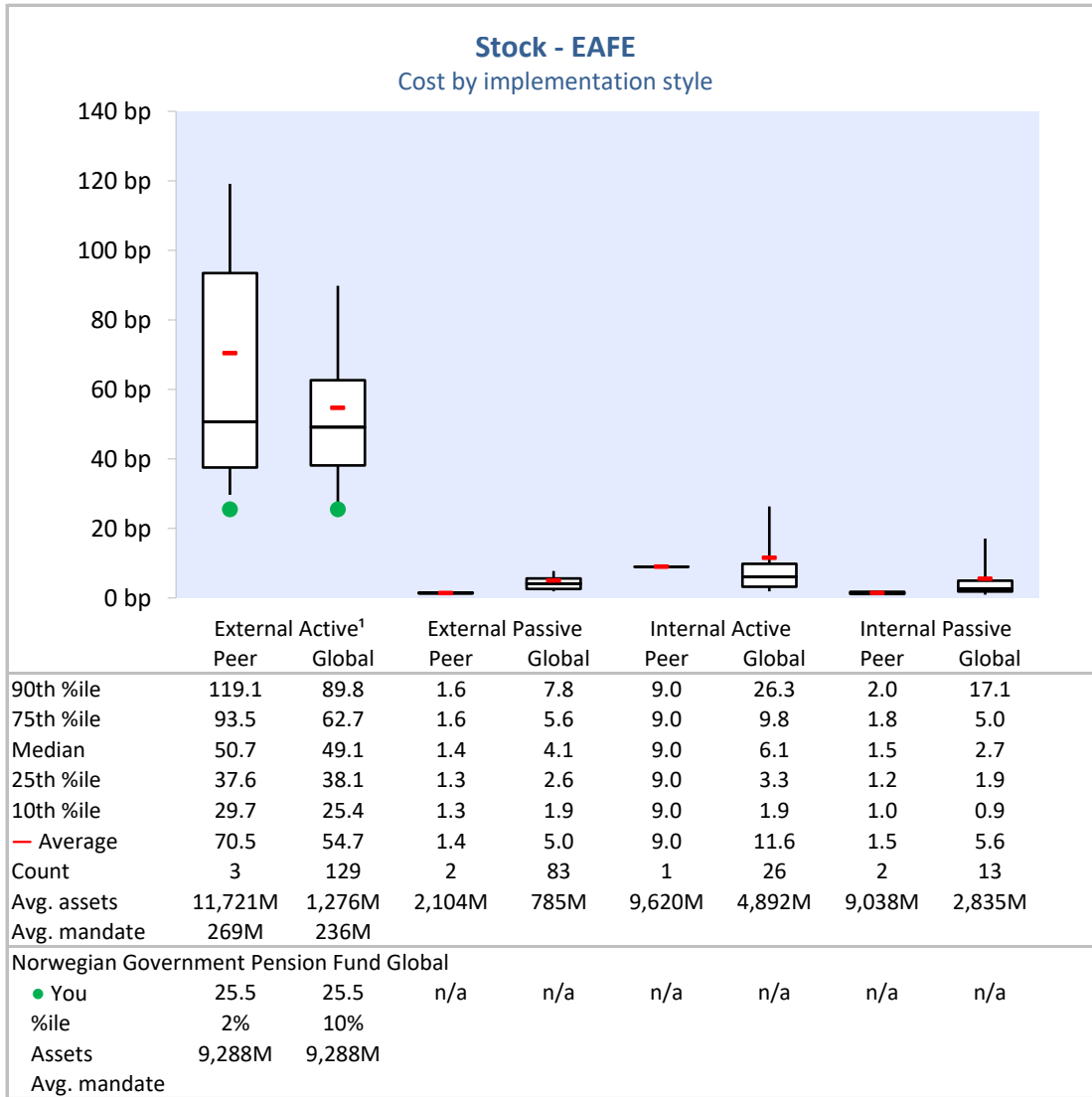
1. Oversight costs include the salaries and benefits of executives and their staff responsible for overseeing the entire fund or multiple asset classes and the fees/salaries of the Board or Investment Committee. All costs associated with the above including fees/salaries, travel, director's insurance 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	21.5	28.7	41.5
Performance fees*	-7.4	27.1	5.8
Internal and other	<u>1.4</u>	<u>8.5</u>	<u>0.8</u>
Total	15.4	64.4	48.1

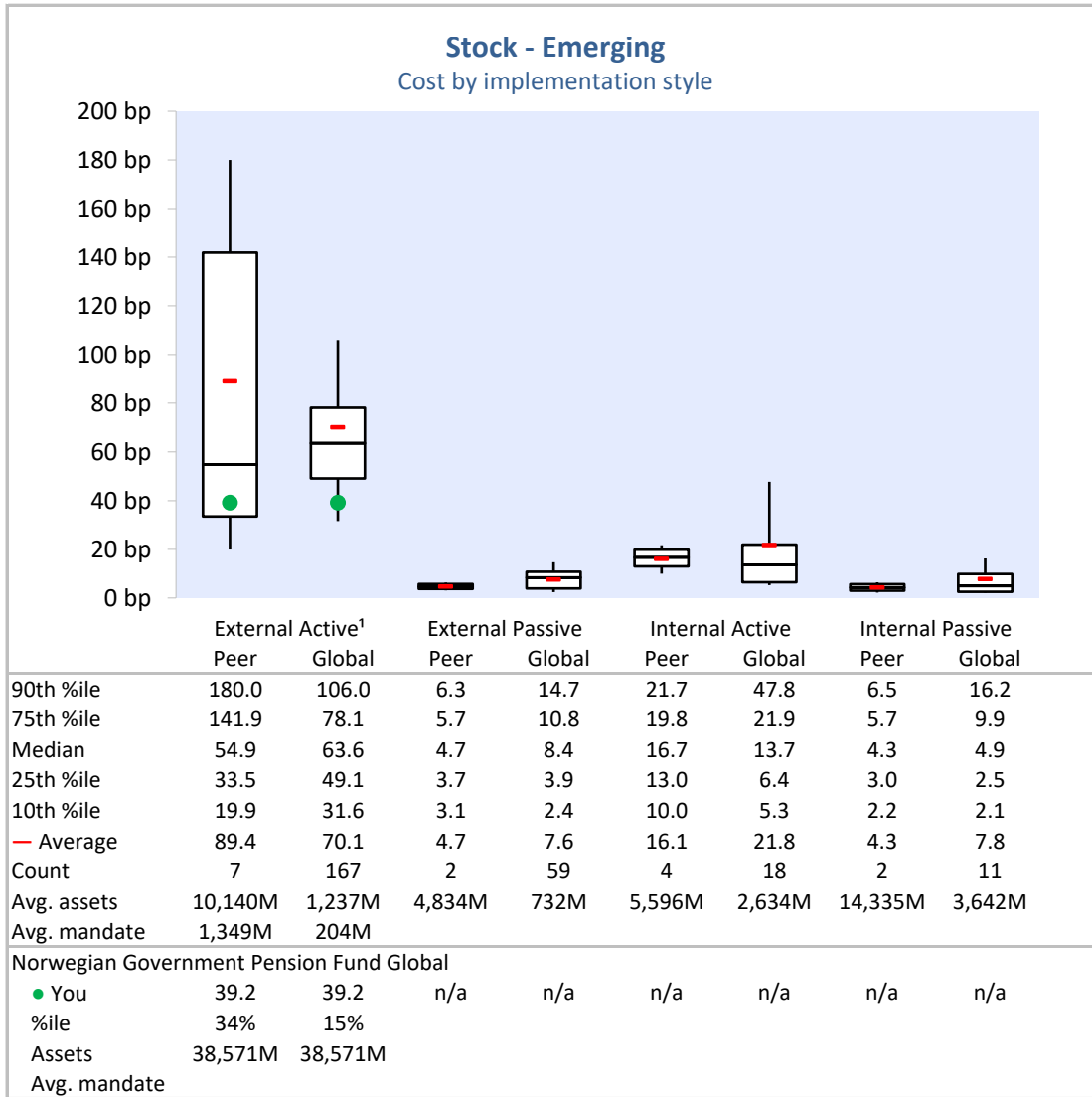
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 36.2 bps for peers (3 funds) and 18.7 bps for Global participants (43 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	17.5	35.1	44.9
Performance fees*	6.7	34.6	9.0
Internal and other	<u>1.4</u>	<u>0.7</u>	<u>0.8</u>
Total	25.5	70.5	54.7

\* 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 51.9 bps for peers (2 funds) and 26.5 bps for Global participants (44 funds).

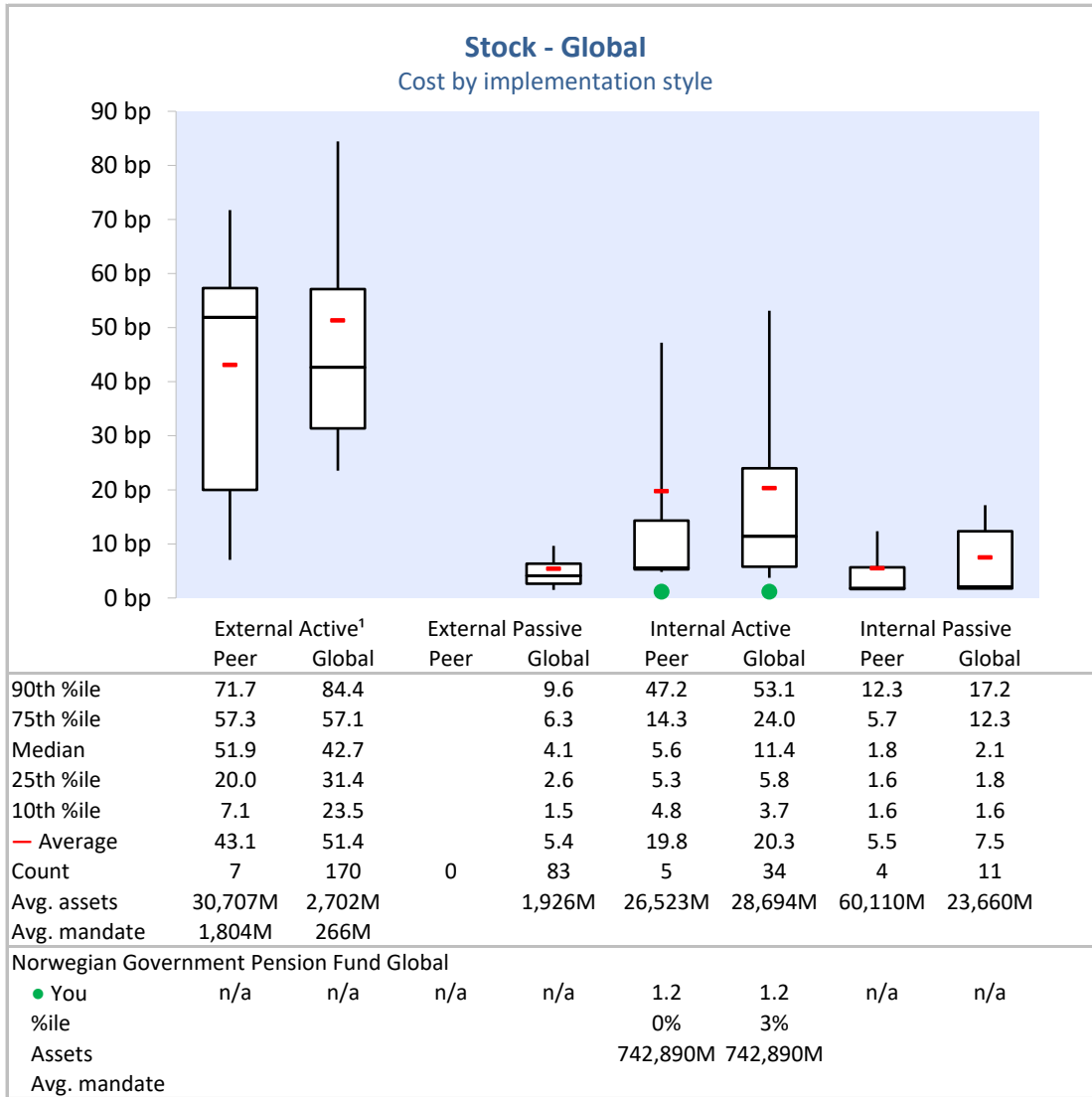


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	17.8	47.2	56.8
Performance fees*	20.1	36.3	11.7
Internal and other	<u>1.4</u>	<u>5.9</u>	<u>1.7</u>
Total	39.2	89.4	70.1

\* 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 42.4 bps for peers (6 funds) and 34.8 bps for Global participants (56 funds).

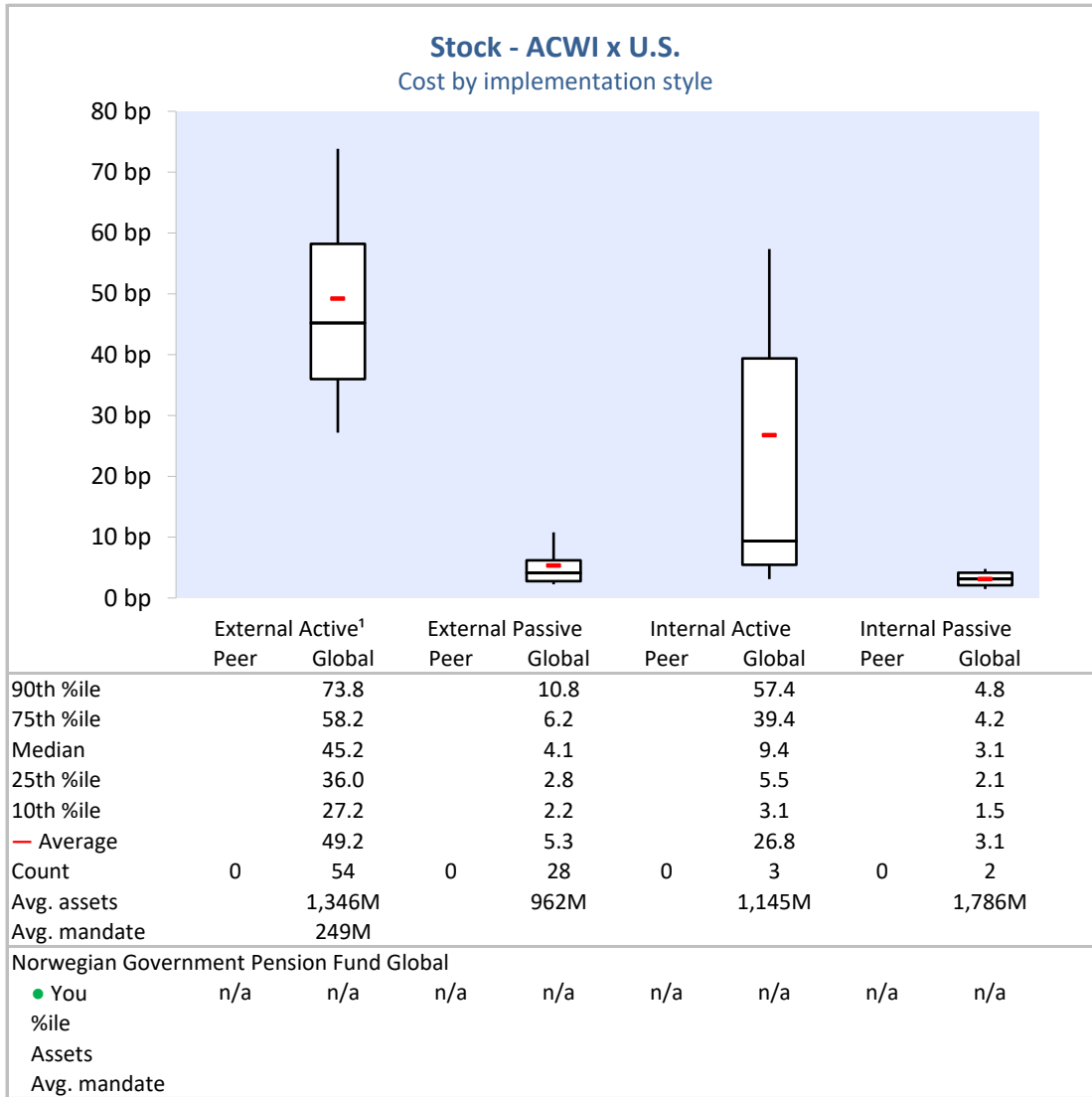




1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	35.6	41.2
Performance fees*	n/a	6.6	9.1
Internal and other	<u>n/a</u>	<u>1.0</u>	<u>1.0</u>
Total	n/a	43.1	51.4

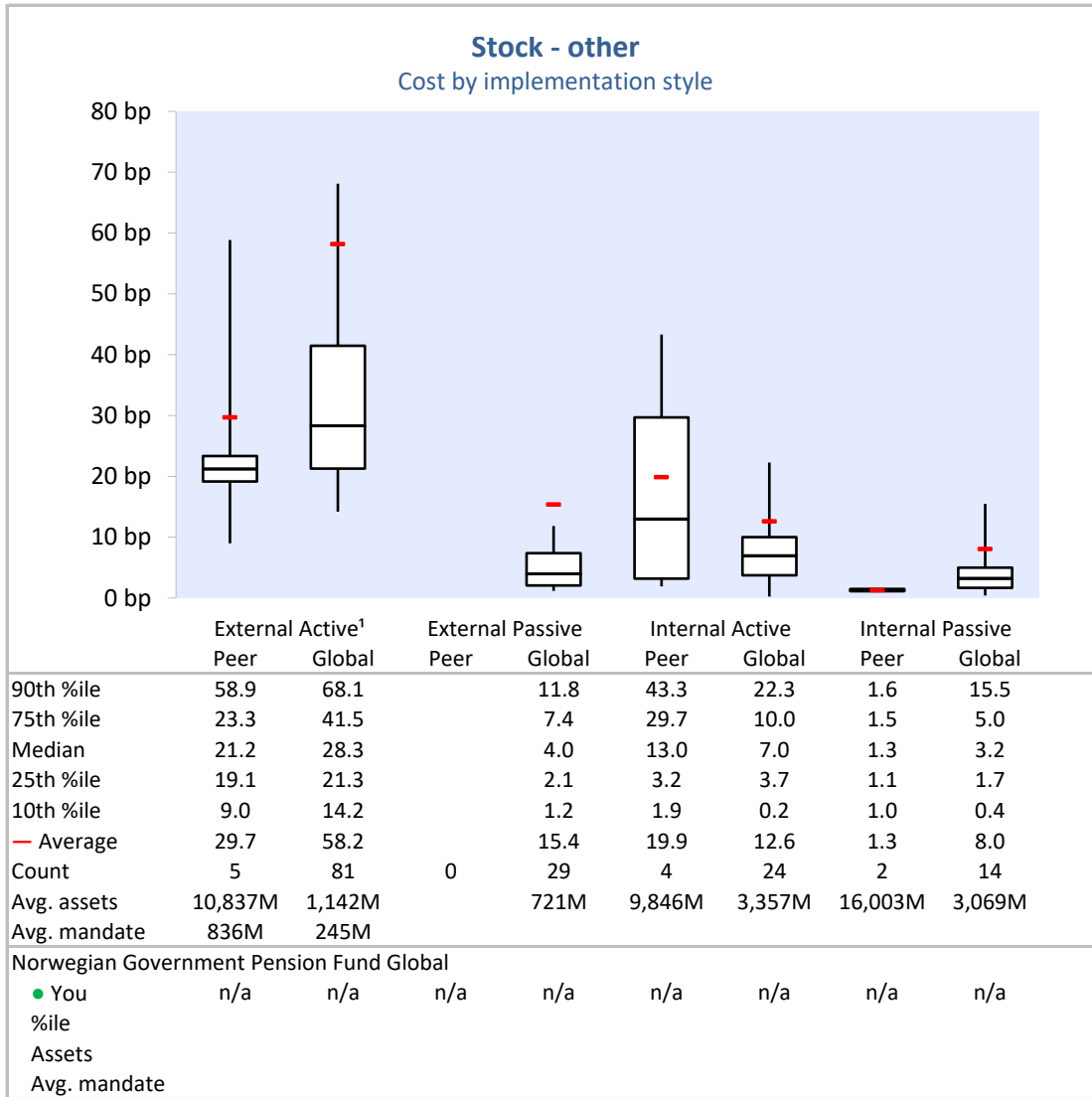
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 7.7 bps for peers (6 funds) and 22.2 bps for Global participants (70 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	45.0
Performance fees*	n/a	n/a	3.8
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.4</u>
Total	n/a	n/a	49.2

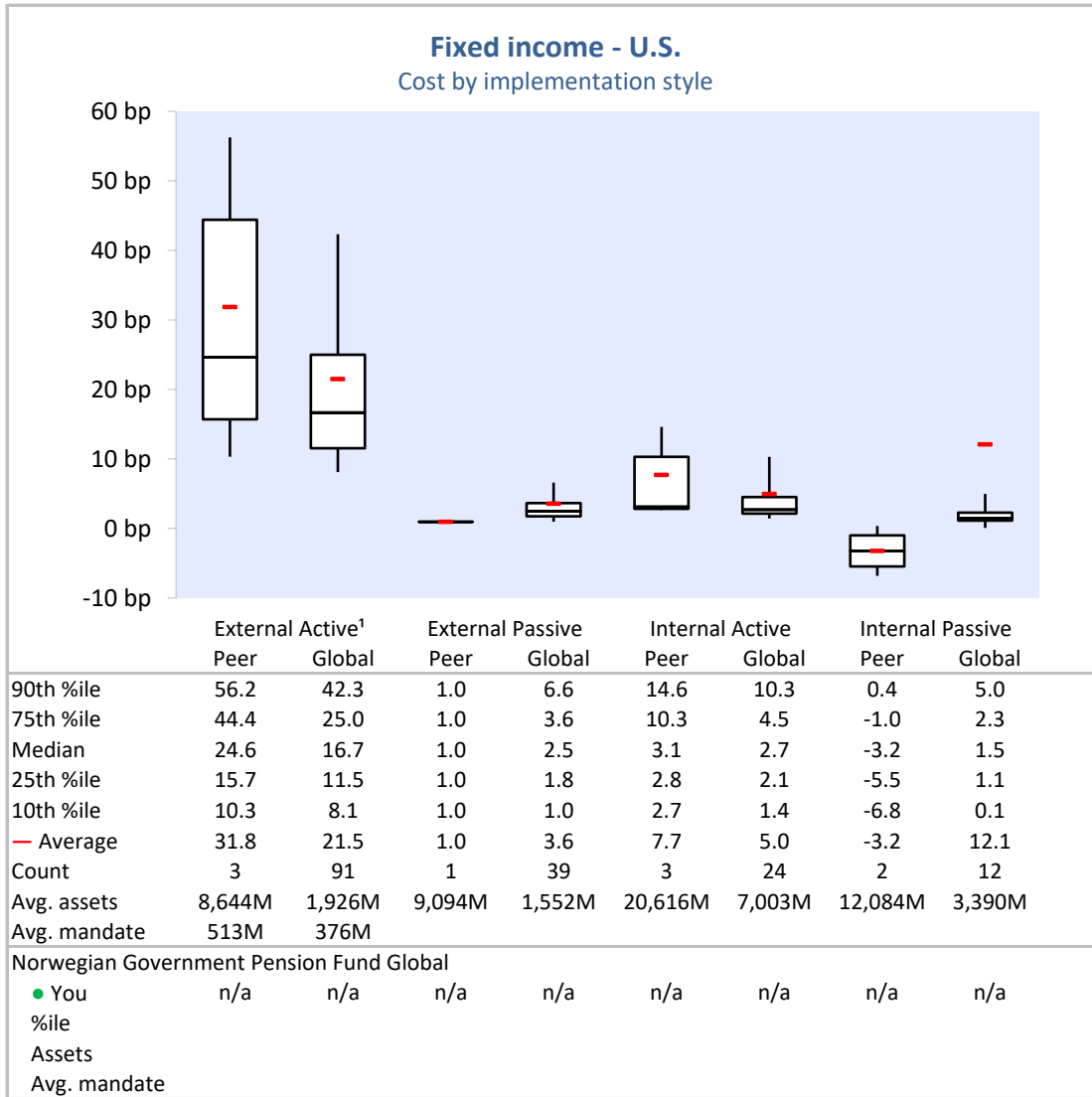
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 29.4 bps for Global participants (7 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	27.2	54.4
Performance fees*	n/a	1.1	2.6
Internal and other	<u>n/a</u>	<u>1.3</u>	<u>1.2</u>
Total	n/a	29.7	58.2

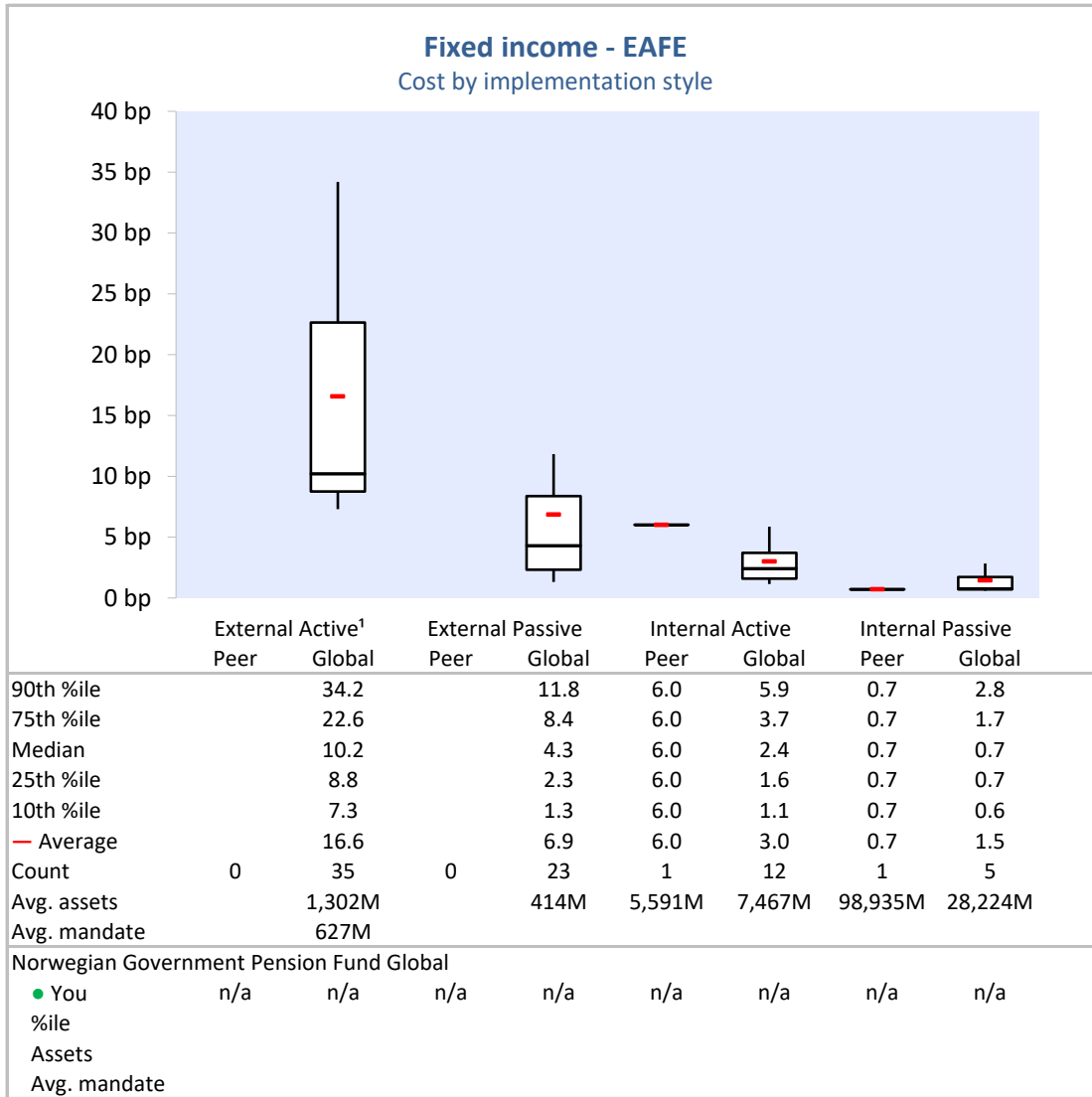
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 1.9 bps for peers (3 funds) and 9.9 bps for Global participants (21 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	24.7	19.7
Performance fees*	n/a	6.0	1.4
Internal and other	<u>n/a</u>	<u>1.2</u>	<u>0.3</u>
Total	n/a	31.8	21.5

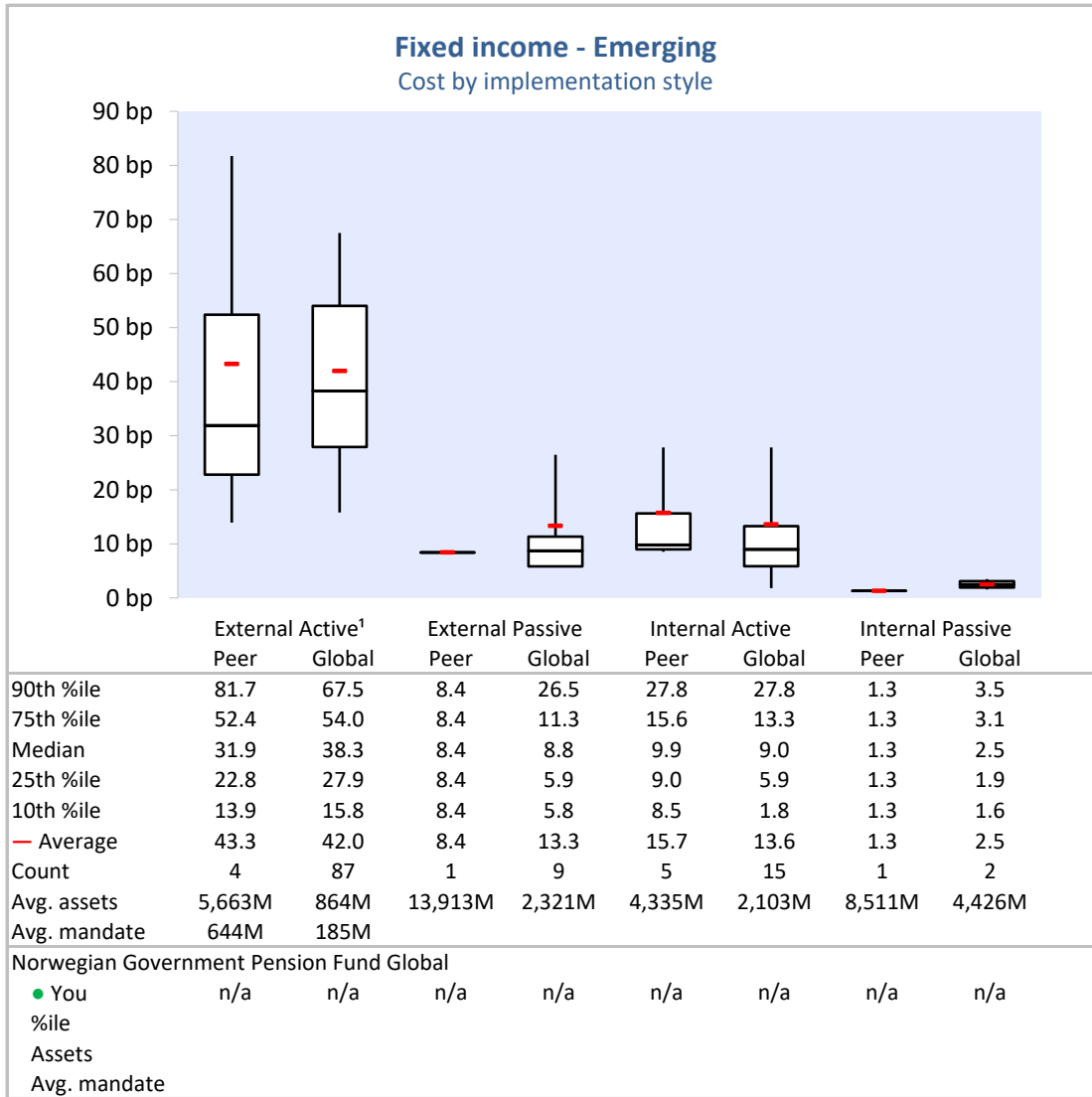
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 9.0 bps for peers (2 funds) and 5.7 bps for Global participants (23 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	15.3
Performance fees*	n/a	n/a	0.5
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.8</u>
Total	n/a	n/a	16.6

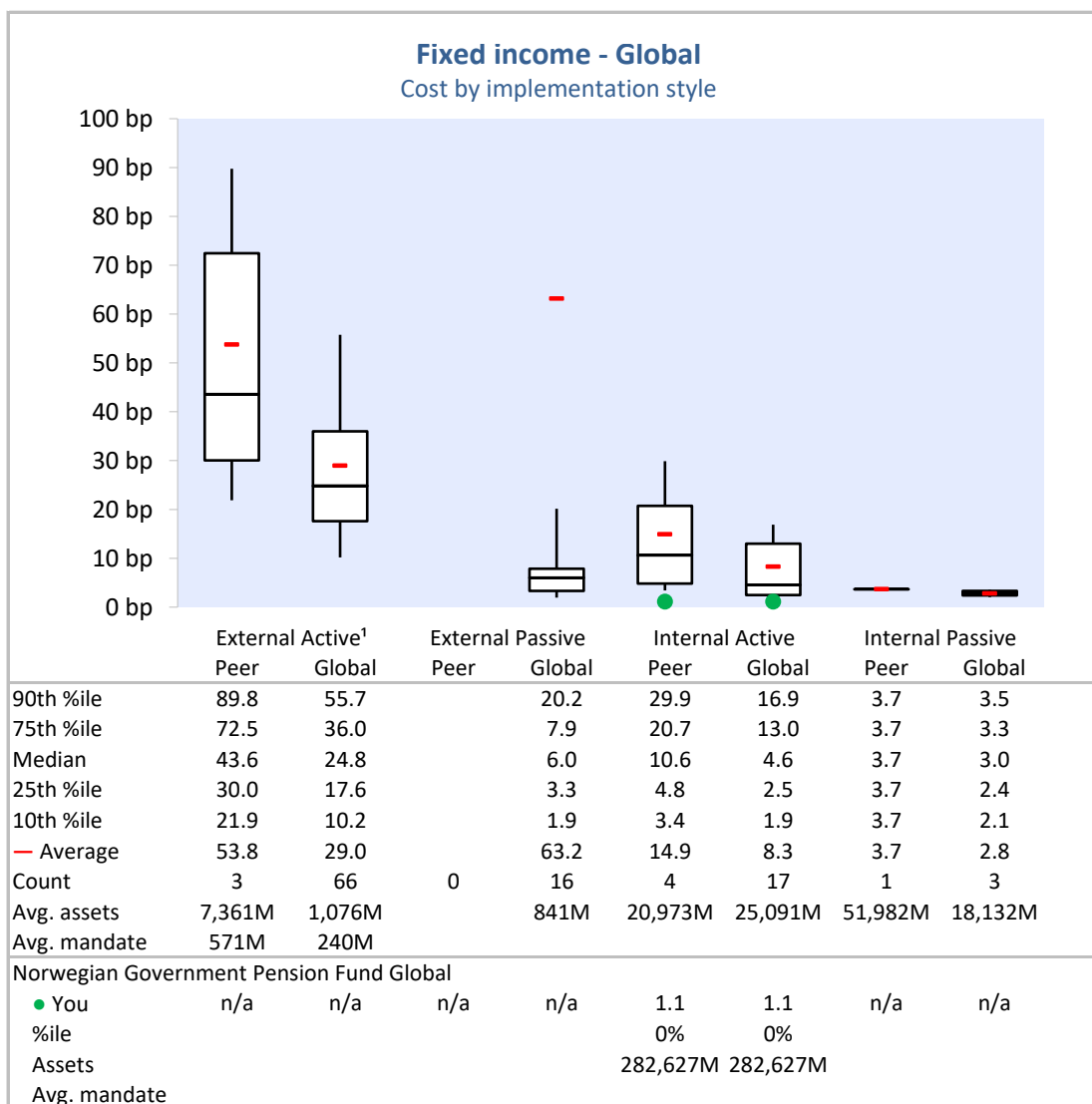
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.7 bps for Global participants (23 funds).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	22.3	38.2
Performance fees*	n/a	8.9	1.2
Internal and other	<u>n/a</u>	<u>12.1</u>	<u>2.6</u>
Total	n/a	43.3	42.0

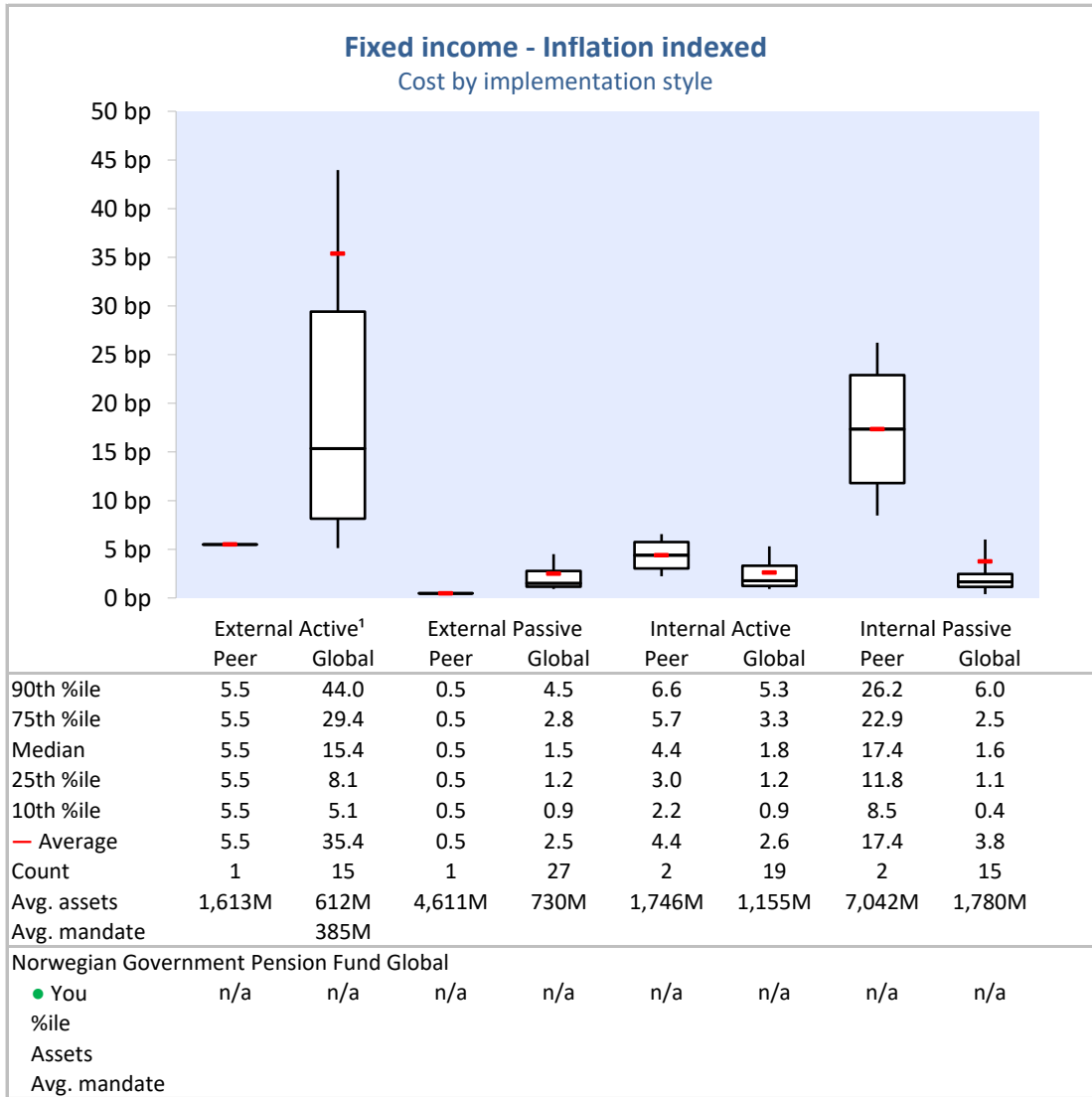
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 17.8 bps for peers (2 funds) and 3.2 bps for Global participants (32 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	20.7	26.2
Performance fees*	n/a	9.4	0.6
Internal and other	<u>n/a</u>	<u>23.7</u>	<u>2.1</u>
Total	n/a	53.8	29.0

\* 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 9.4 bps for peers (3 funds) and 1.7 bps for Global participants (25 funds).

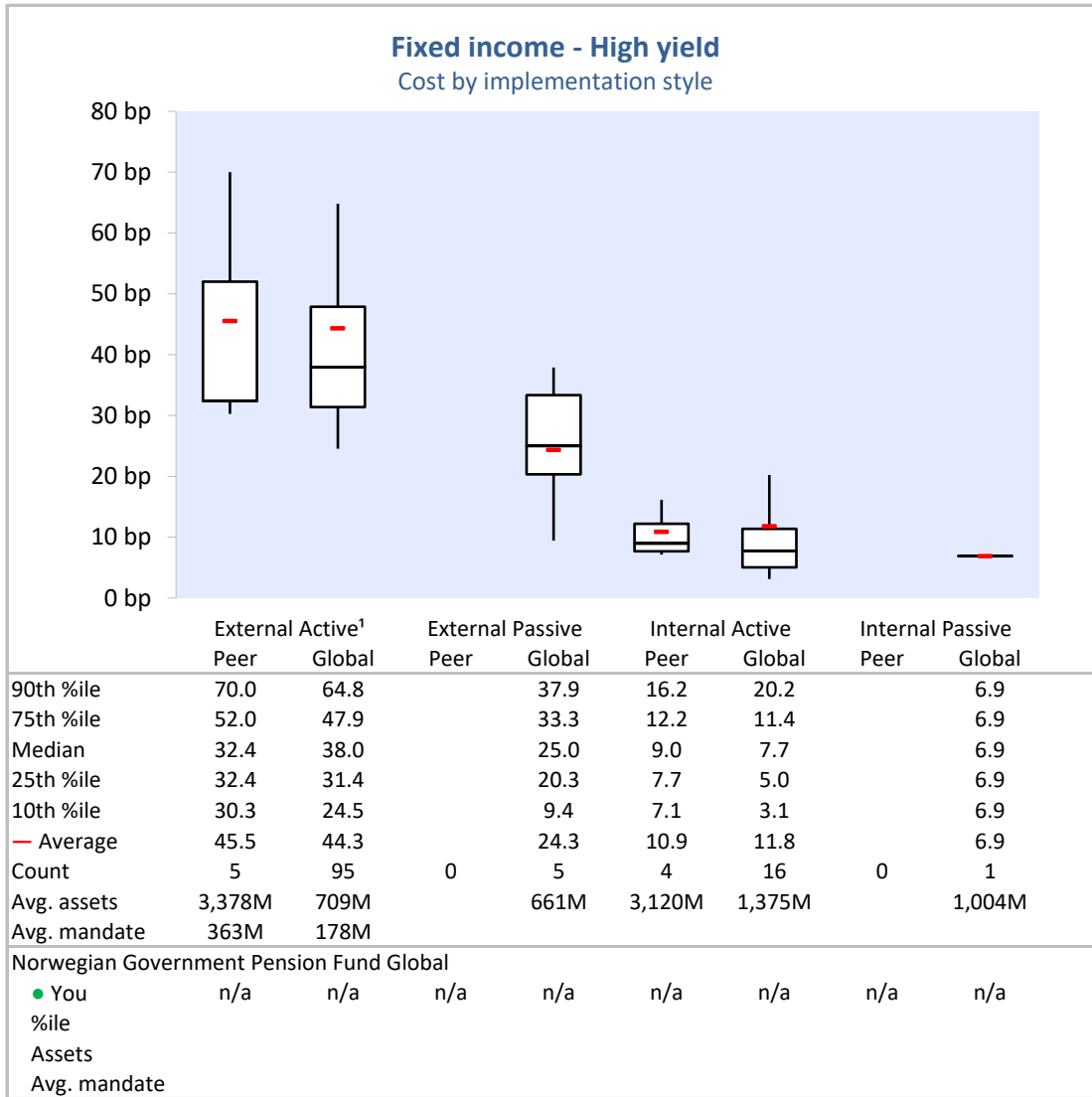


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	5.5	35.0
Performance fees*	n/a	n/a	0.3
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.1</u>
Total	n/a	5.5	35.4

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 2.1 bps for Global participants (2 funds).



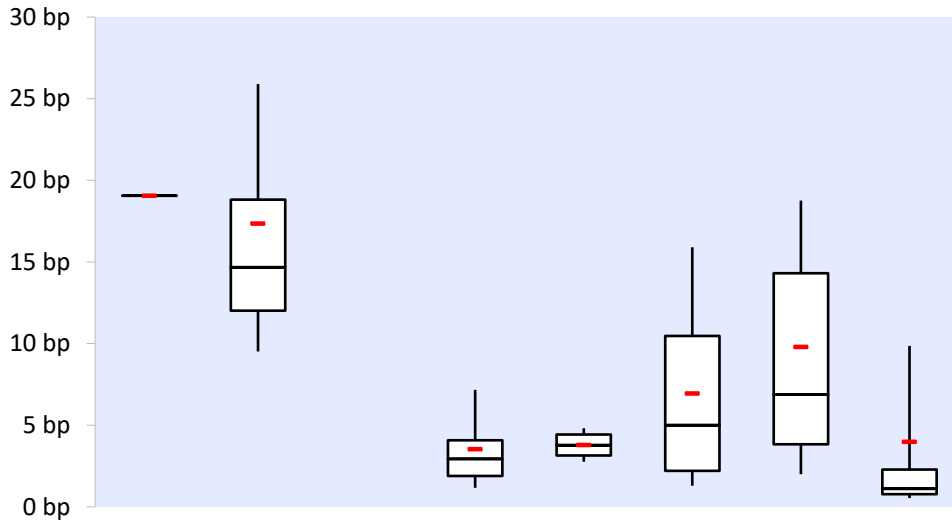


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	31.7	37.5
Performance fees*	n/a	11.1	4.7
Internal and other	<u>n/a</u>	<u>2.7</u>	<u>2.1</u>
Total	n/a	45.5	44.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 27.8 bps for peers (2 funds) and 14.4 bps for Global participants (31 funds).

### Fixed income - Long bonds Cost by implementation style

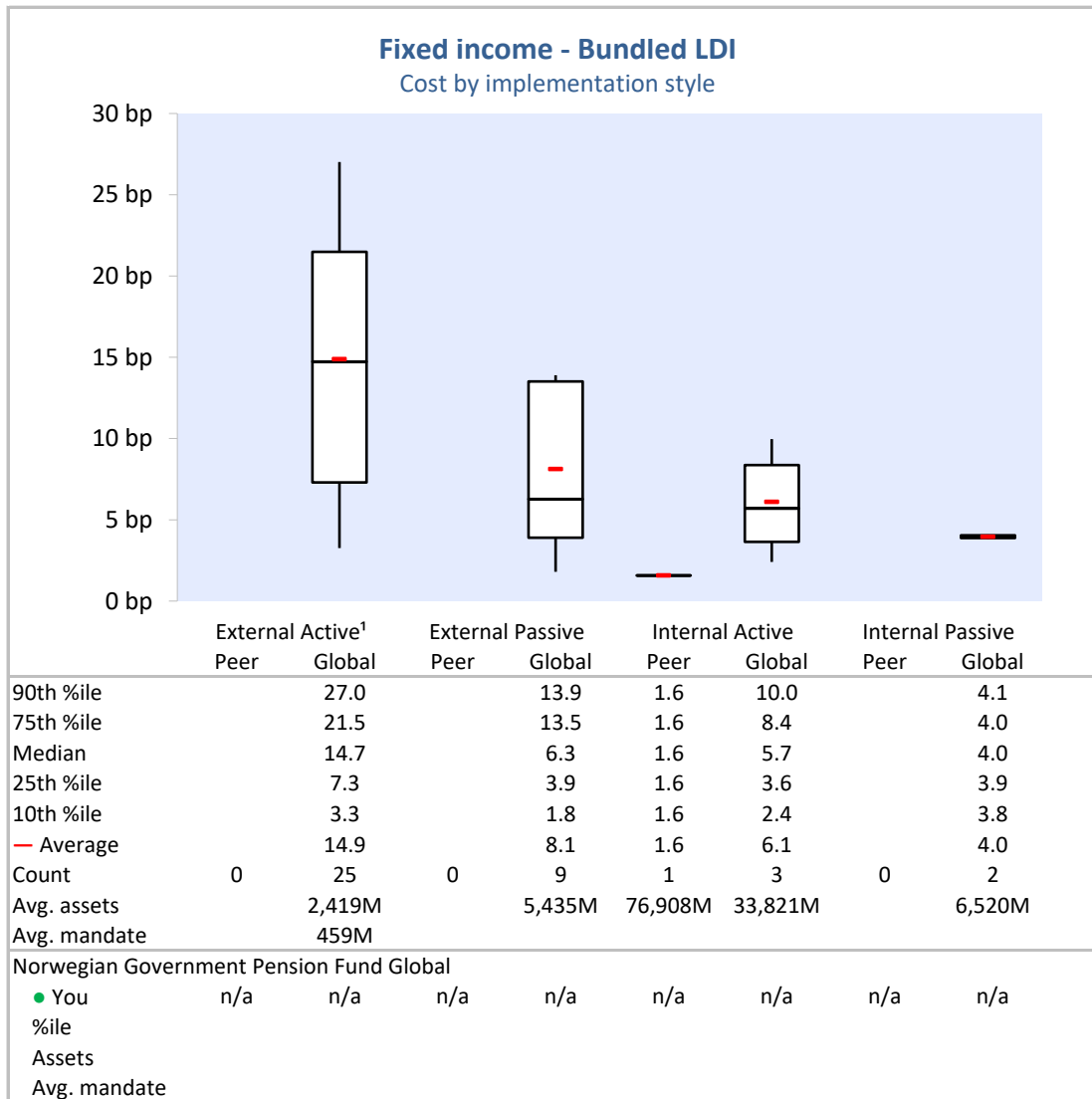


	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	19.1	25.9		7.2	4.8	15.9	18.8	9.9
75th %ile	19.1	18.8		4.1	4.4	10.5	14.3	2.3
Median	19.1	14.7		2.9	3.8	5.0	6.9	1.1
25th %ile	19.1	12.0		1.9	3.1	2.2	3.8	0.8
10th %ile	19.1	9.5		1.2	2.8	1.3	2.0	0.5
— Average	19.1	17.4		3.5	3.8	6.9	9.8	4.0
Count	1	93	0	36	2	15	3	9
Avg. assets	1,082M	3,249M		274M	1M	2,036M	7,046M	4,953M
Avg. mandate		565M						
Norwegian Government Pension Fund Global								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	9.8	15.5
Performance fees*	n/a	8.8	1.6
Internal and other	<u>n/a</u>	<u>0.5</u>	<u>0.3</u>
Total	n/a	19.1	17.4

\* 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 8.8 bps for peers (1 fund) and 10.1 bps for Global participants (15 funds).

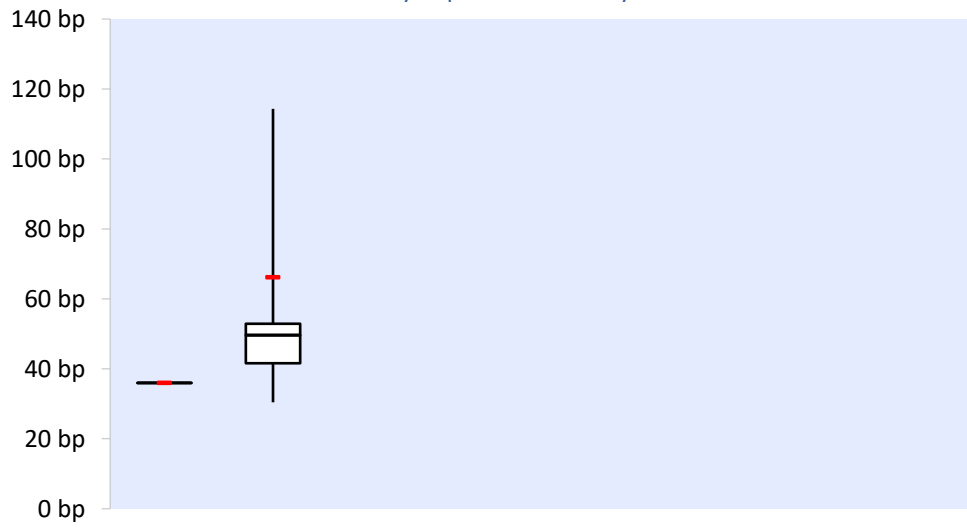


#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	14.5
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.4</u>
Total	n/a	n/a	14.9

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

### Fixed income - Convertibles Cost by implementation style

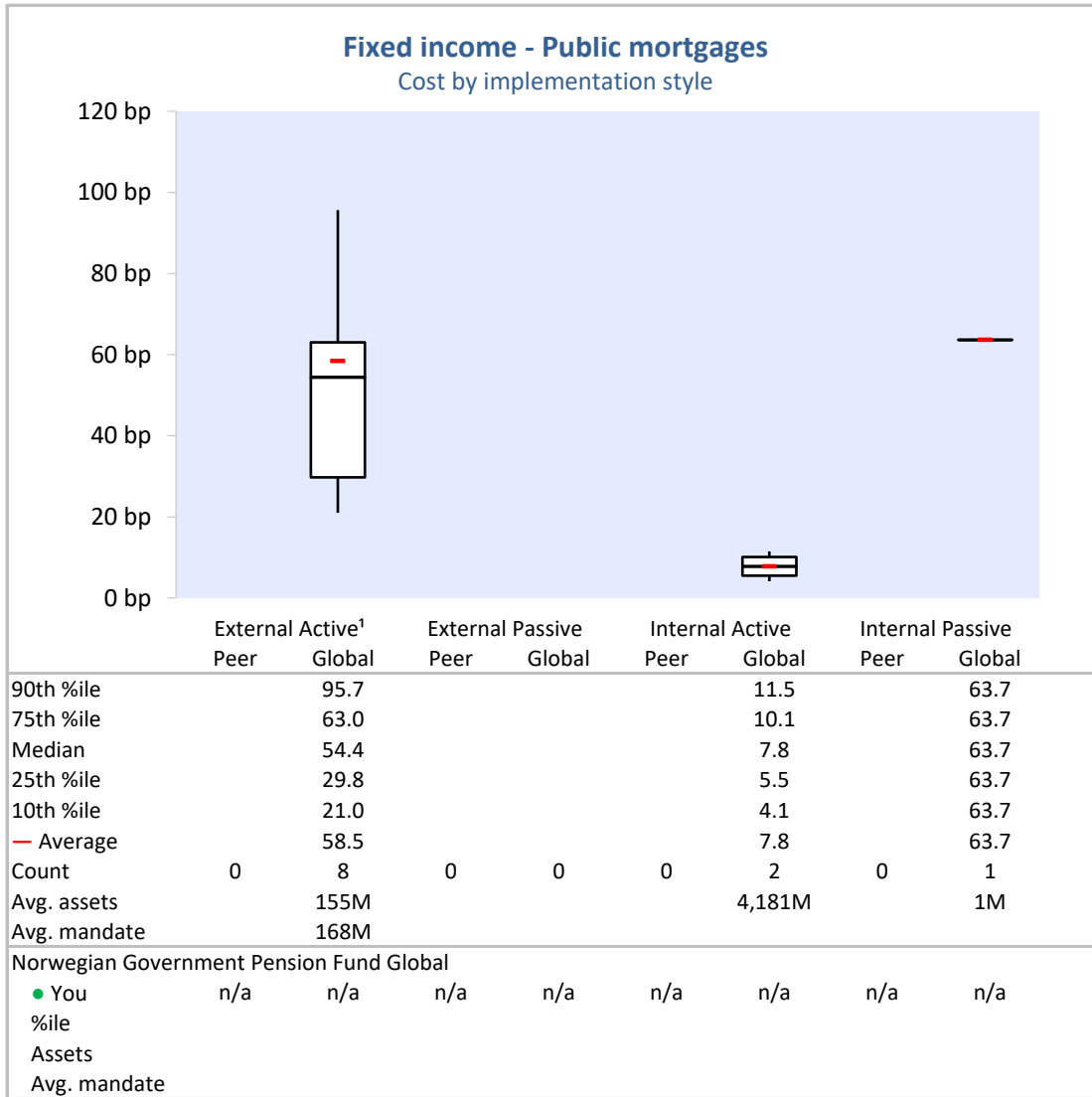


	External Active <sup>1</sup>		External Passive		Internal Active		Internal Passive	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	36.0	114.3						
75th %ile	36.0	52.9						
Median	36.0	49.7						
25th %ile	36.0	41.6						
10th %ile	36.0	30.4						
— Average	36.0	66.2						
Count	1	7	0	0	0	0	0	0
Avg. assets	1,583M	562M						
Avg. mandate		245M						
Norwegian Government Pension Fund Global								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Assets								
Avg. mandate								

#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	36.0	45.0
Performance fees*	n/a	n/a	20.9
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.2</u>
Total	n/a	36.0	66.2

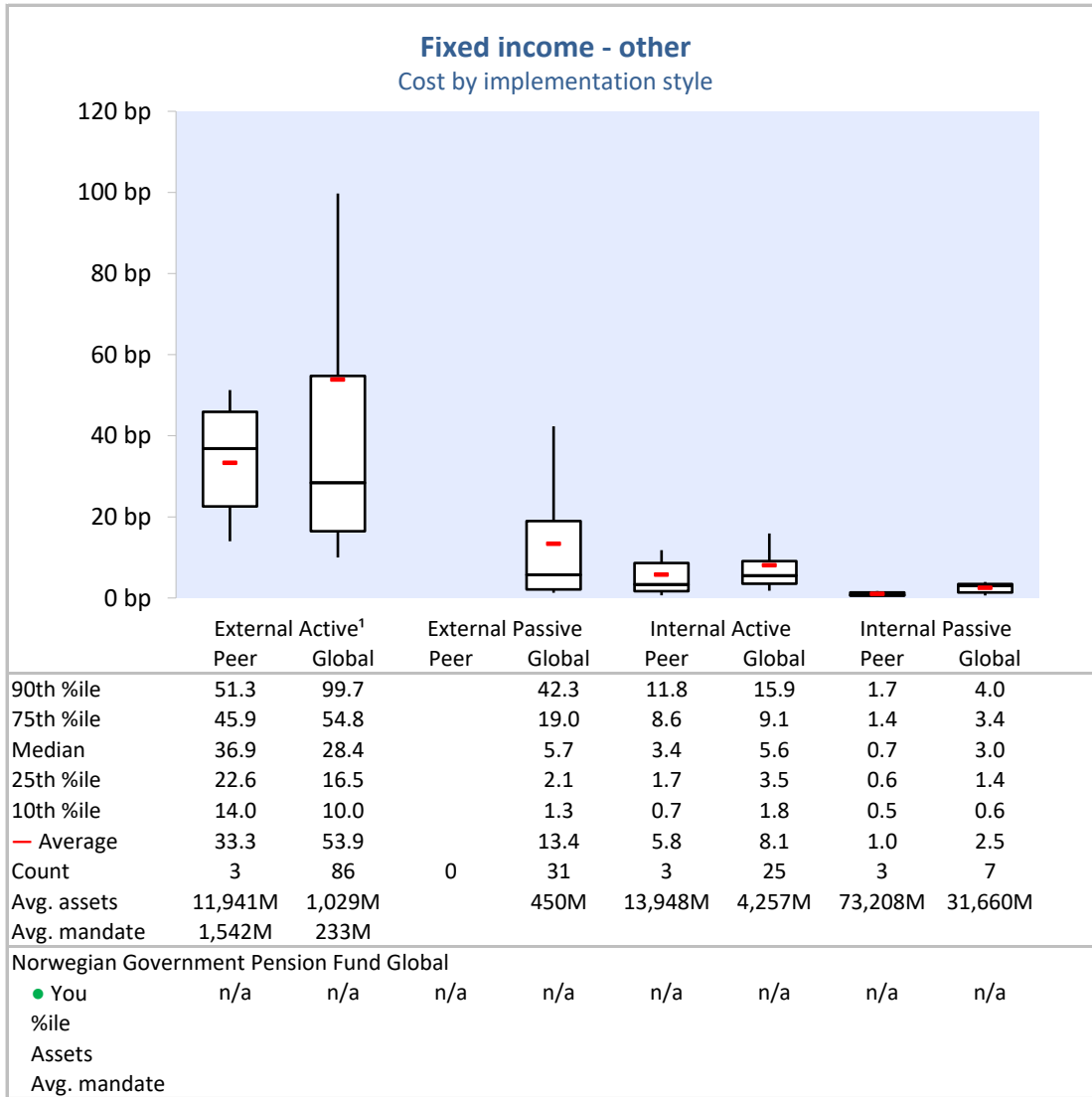
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 146.6 bps for Global participants (1 fund).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	58.3
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.2</u>
Total	n/a	n/a	58.5

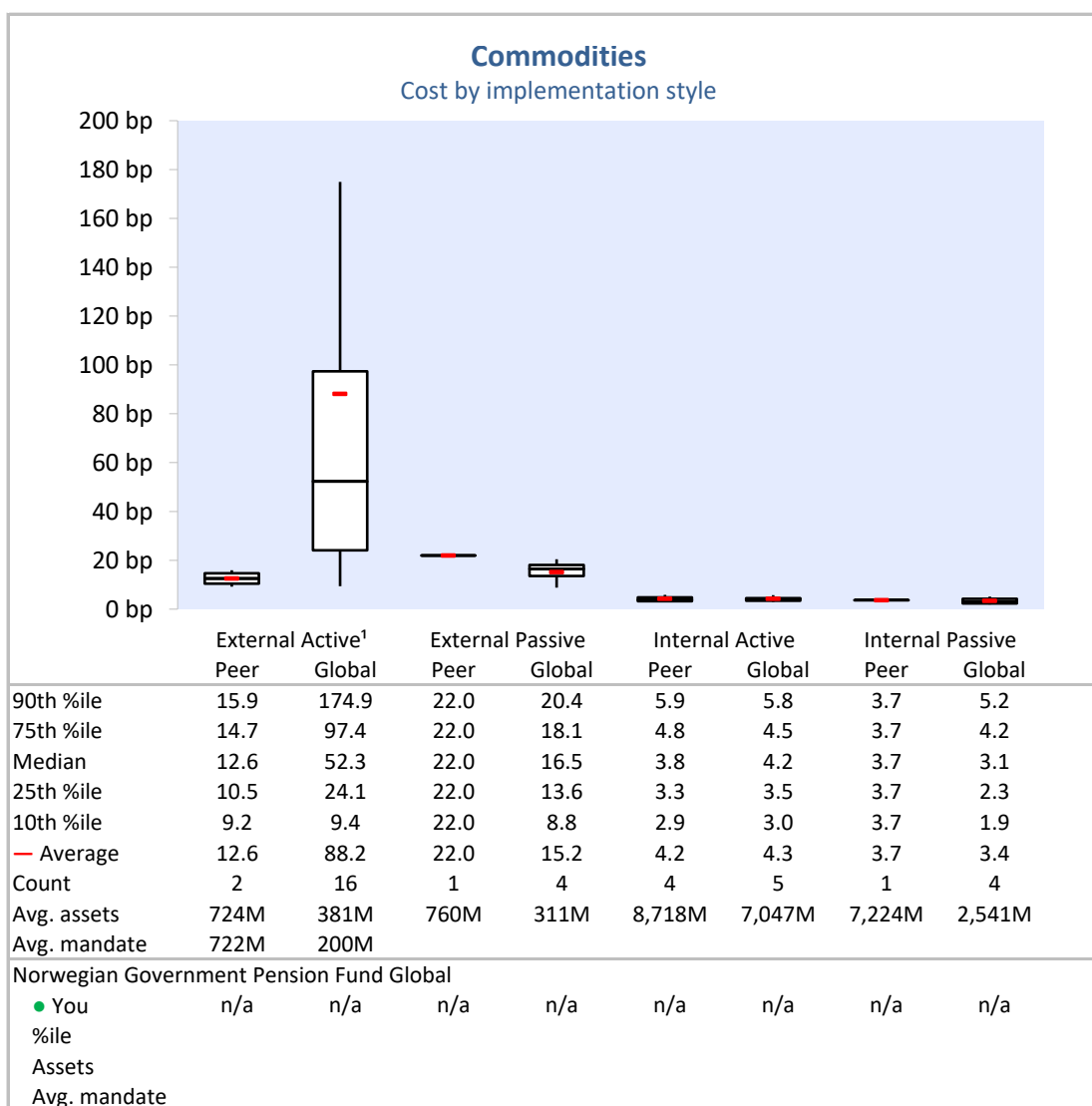
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for Global participants (1 fund).



1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	32.0	40.4
Performance fees*	n/a	0.0	12.5
Internal and other	<u>n/a</u>	<u>1.3</u>	<u>0.9</u>
Total	n/a	33.3	53.9

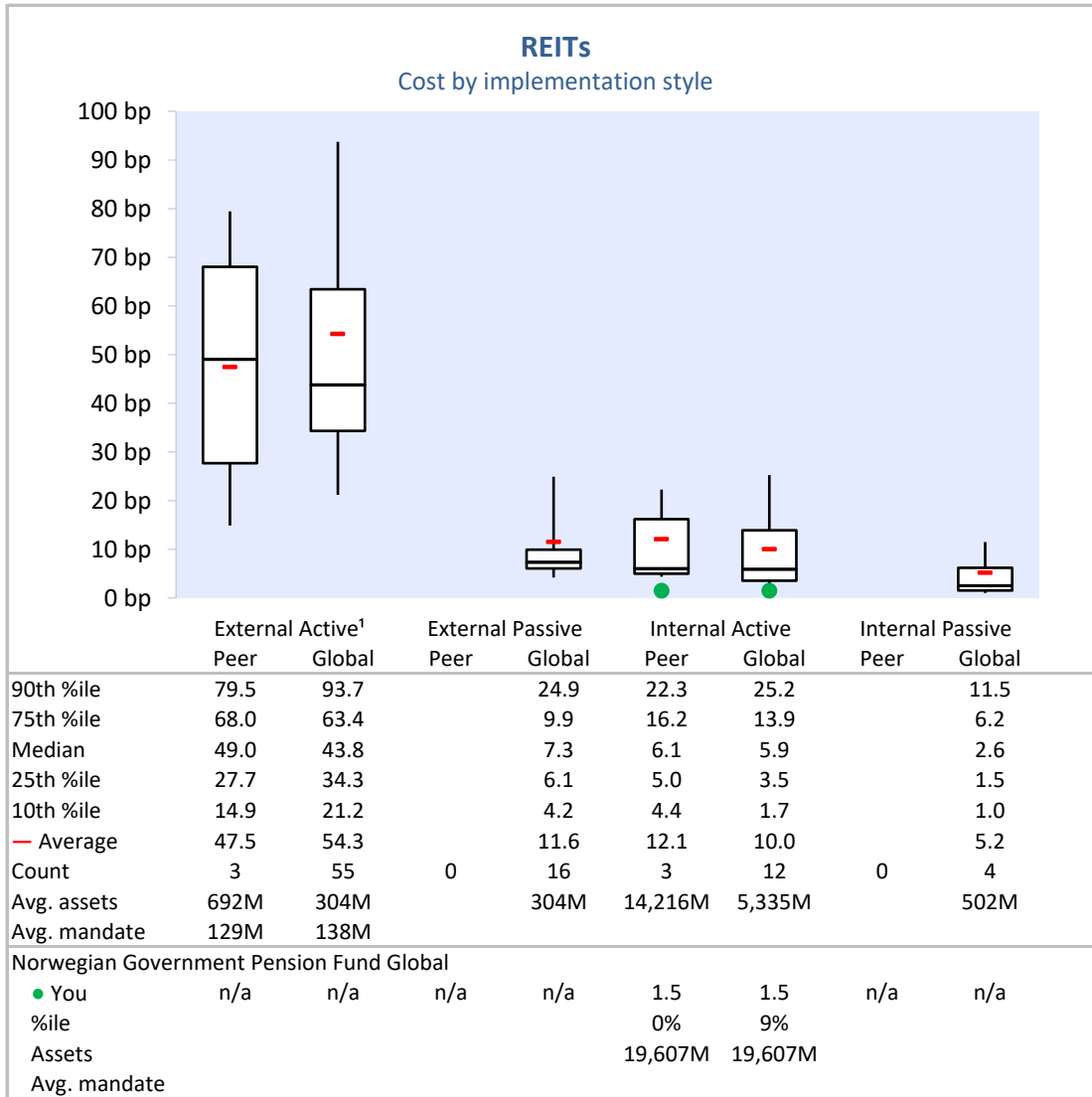
\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.1 bps for peers (1 fund) and 43.1 bps for Global participants (25 funds).



#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	8.9	63.4
Performance fees*	n/a	1.5	24.0
Internal and other	<u>n/a</u>	<u>2.2</u>	<u>0.7</u>
Total	n/a	12.6	88.2

\* 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 1.5 bps for peers (2 funds) and 54.9 bps for Global participants (7 funds).

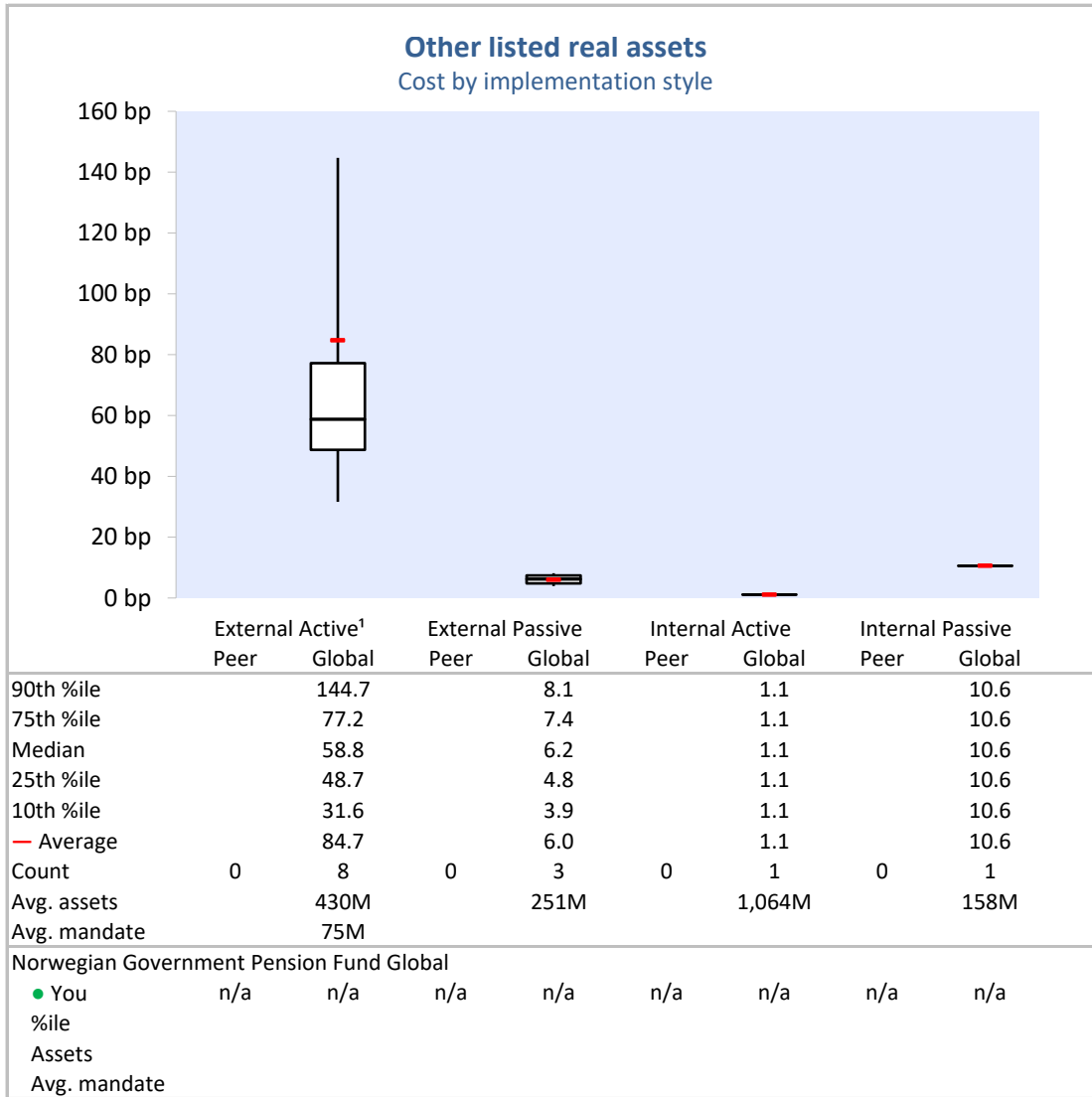


1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	35.7	42.2
Performance fees*	n/a	10.3	9.8
Internal and other	<u>n/a</u>	<u>1.5</u>	<u>2.3</u>
Total	n/a	47.5	54.3

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 15.5 bps for peers (2 funds) and 24.4 bps for Global participants (22 funds).





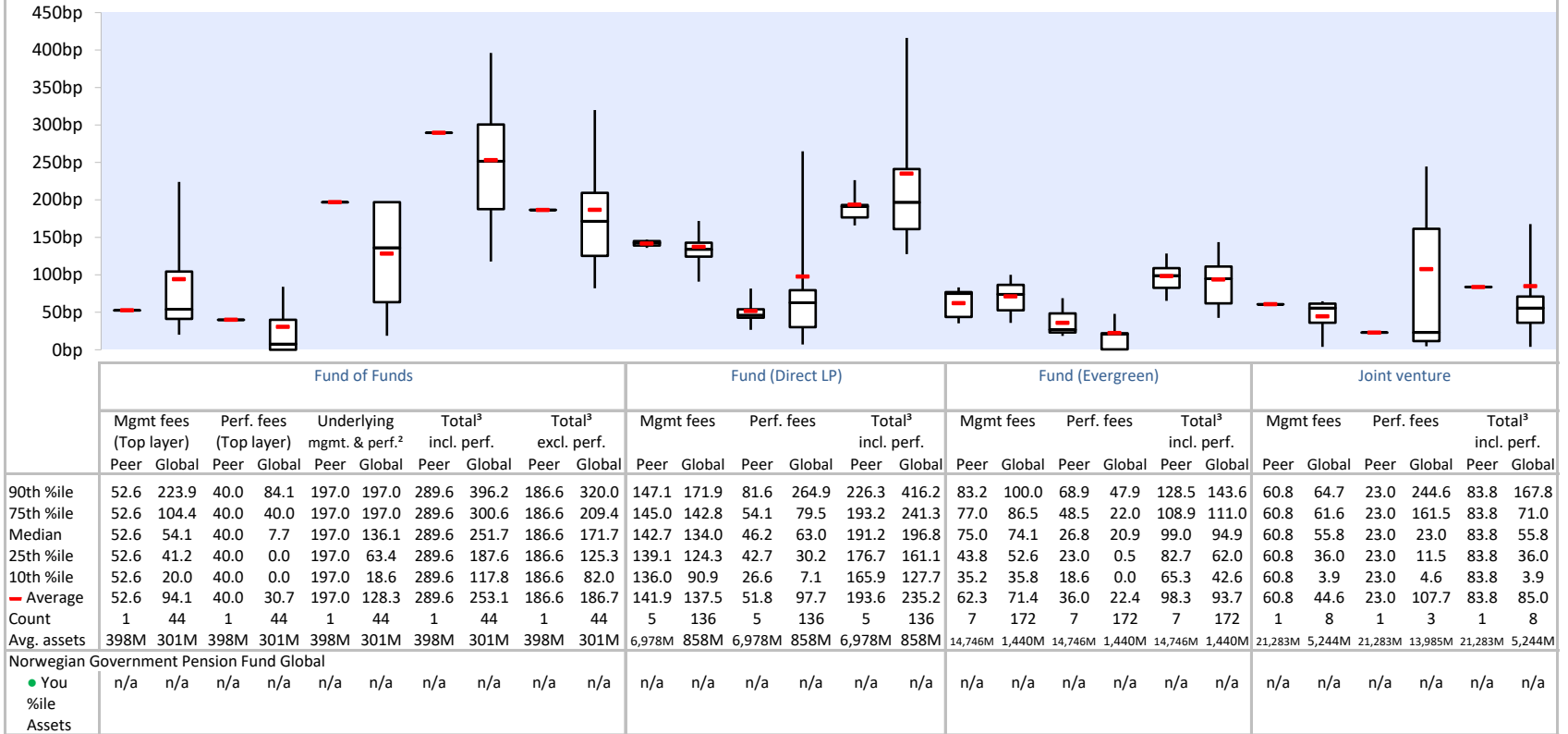
#### 1. Breakdown of external active fees

	You	Peer Average	Global Average
Base fees	n/a	n/a	84.6
Performance fees*	n/a	n/a	0.0
Internal and other	<u>n/a</u>	<u>n/a</u>	<u>0.1</u>
Total	n/a	n/a	84.7

\* For funds that did not report a performance fee, a value of 'zero' was used. The average performance fee for those funds that reported a performance fee is 0.0 bps for Global participants (3 funds).

## Real estate

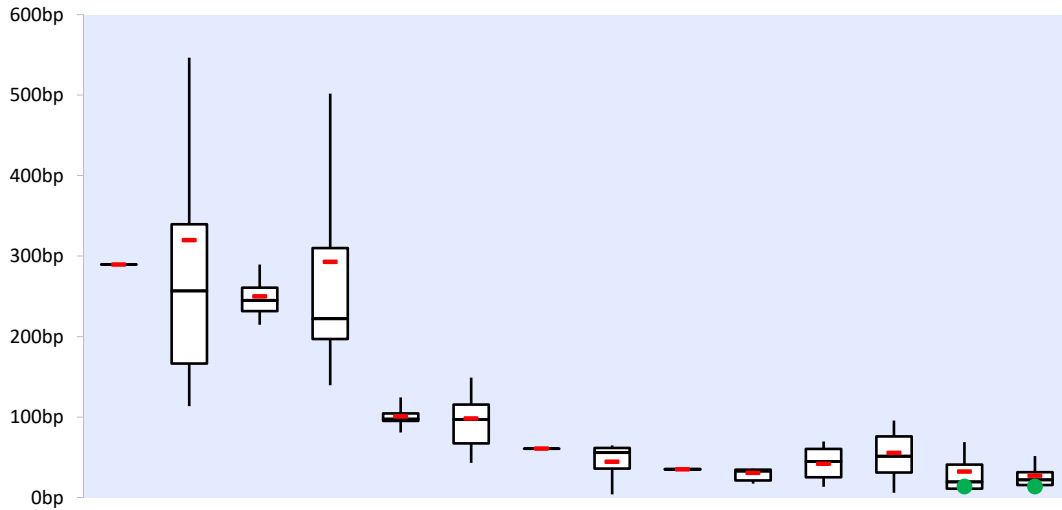
Cost as a % of the amount fees are based on<sup>1</sup>



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 134 bps (on amount fees are based on) for underlying management fees and 63 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 1.6 bps for fund of funds, 7.0 bps for LPs and 2.9

## Real estate - contd.

### Cost as a % of NAV

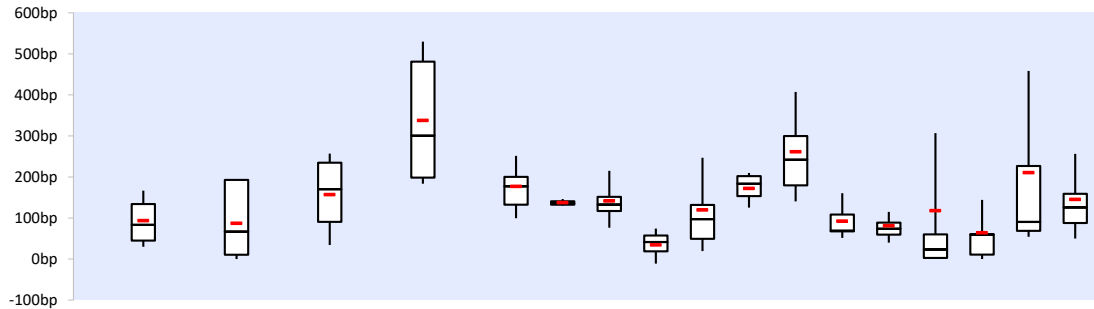


	Fund of Funds		Fund (Direct LP)		Fund (Evergreen)		Joint venture		Oper. Sub.		Co-Inv.		Internal	
	Total <sup>1</sup> incl. perf.		Total <sup>1</sup> incl. perf.		Total <sup>1</sup> incl. perf.		Total <sup>1</sup> incl. perf.		Total <sup>1</sup> incl. perf.		Total <sup>1</sup> incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	289.6	546.5	289.5	501.7	124.4	148.9	60.8	64.7	35.7	35.7	69.6	95.5	68.9	51.6
75th %ile	289.6	339.5	260.7	310.0	104.5	115.5	60.8	61.6	35.5	34.6	60.3	75.9	40.9	31.4
Median	289.6	256.7	245.2	222.1	97.5	97.1	60.8	55.8	35.1	33.0	44.8	51.4	19.5	22.0
25th %ile	289.6	166.4	231.7	197.0	95.3	67.3	60.8	36.0	34.8	21.3	25.2	31.1	11.0	15.5
10th %ile	289.6	113.5	214.8	139.4	80.9	43.0	60.8	3.9	34.6	17.3	13.3	5.9	6.1	7.7
— Average	289.6	319.8	250.0	292.9	100.8	98.3	60.8	44.6	35.1	30.8	42.0	55.6	32.3	27.2
Count	1	44	5	136	7	172	1	8	2	12	3	32	4	39
Avg. assets	398M	247M	5,797M	695M	13,102M	1,335M	21,283M	5,244M	17,677M	6,505M	3,329M	556M	1,953M	2,304M
Norwegian Government Pension Fund Global														
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	13.8	13.8
%ile													34%	21%
Assets													27,377M	27,377M

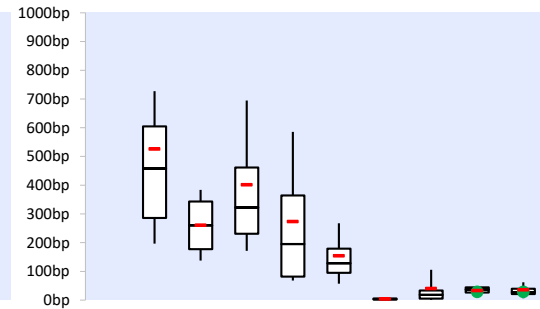
1. The total cost also includes the internal cost of monitoring and selecting real estate investments.
2. Co-investment is included with direct LPs because it can only be done alongside direct LPs. Co-investment is done by 3 of your peers and 24 of the Global funds.
3. The total cost also includes the internal cost of monitoring and selecting real estate investments. Internal and other - FoFs The peer

## Infrastructure

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



Cost as a % of NAV

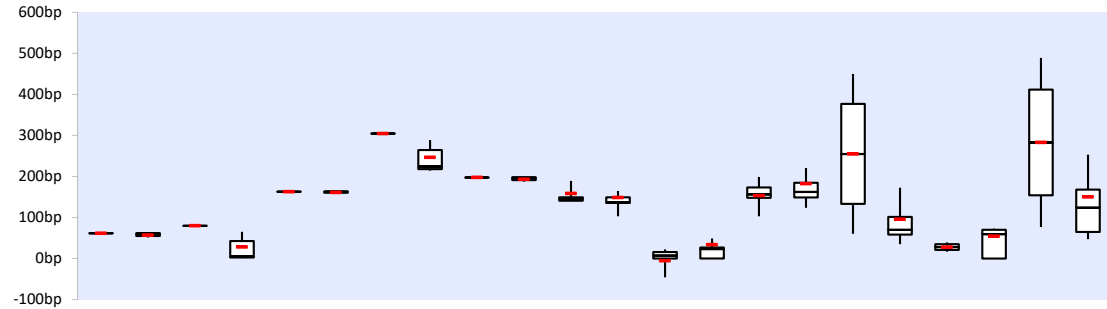


	Fund of Funds						Fund (Direct LP)						Fund (Evergreen)						Co-Inv.		Internal					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup>		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
90th %ile	166.7	195.0	257.0	529.8	251.2	146.3	215.0	74.3	246.7	209.7	407.3	160.4	115.0	306.8	144.1	458.5	256.2									
75th %ile	134.1	192.9	234.7	481.0	200.3	140.7	151.7	57.4	131.8	202.2	299.6	108.4	88.8	60.0	60.0	226.8	159.1									
Median	83.5	66.8	170.4	300.7	177.3	135.7	132.9	41.6	97.3	183.6	242.1	69.0	74.1	23.6	60.0	90.6	126.1									
25th %ile	45.2	10.6	90.6	198.5	132.3	132.6	117.2	18.7	49.2	153.5	179.5	67.5	59.4	2.7	10.9	68.8	87.8									
10th %ile	29.9	0.0	34.4	183.7	99.6	130.5	76.6	-11.1	19.5	125.4	140.4	51.4	40.3	0.4	0.0	54.3	49.8									
Average	93.5	87.2	157.0	337.7	177.2	137.6	141.7	34.5	119.6	172.1	261.3	92.4	81.2	118.0	64.0	210.5	145.2									
Count	0	28	0	28	0	28	0	28	0	28	4	128	4	128	4	128	7	66								
Avg. assets	70M	70M	70M	70M	70M	2,970M	502M	2,970M	502M	2,970M	502M	2,858M	645M	2,858M	645M	2,858M	645M									
Norwegian Government Pension Fund Global																										
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a							28.4	28.4
	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M							801M	801M

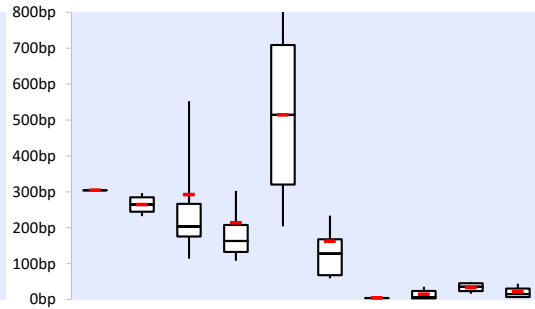
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of n/a bps (on amount fees are based on) for underlying management fees and n/a bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting infrastructure investments. The peer average cost of monitoring and selecting was 11.5 bps for LPs and 7.8 bps for external (not LPs). Some averages on the right chart may be off the chart where there is outlier data resulting from large base or performance fees divided by small NAV.

## Natural resources

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

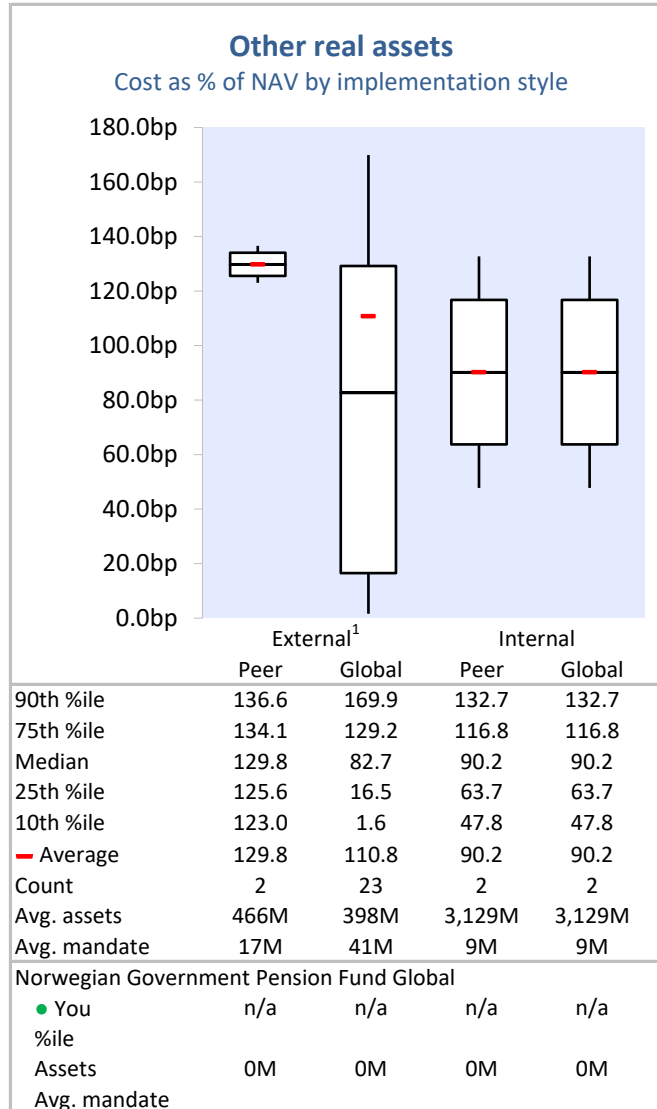


Cost as a % of NAV



	Fund of Funds										Fund (Direct LP)						Fund (Evergreen)						Fund of Funds		Fund (Direct LP)		Fund (Evergreen)		Co-Inv.		Internal	
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total					
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global				
90th %ile	61.7	61.6	80.0	65.1	163.0	163.0	304.7	288.6	197.7	197.6	189.1	164.6	22.3	48.6	198.7	220.7	449.8	172.7	39.1	72.7	488.9	253.0	304.7	296.8	552.2	302.8	825.4	233.7	4.5	35.5	48.3	44.0
75th %ile	61.7	61.5	80.0	42.6	163.0	163.0	304.7	264.5	197.7	197.5	149.1	149.2	15.9	27.0	173.1	184.5	376.7	101.5	34.9	70.0	411.6	167.9	304.7	284.9	266.3	207.9	708.8	167.9	4.5	24.0	45.6	30.7
Median	61.7	61.2	80.0	5.3	163.0	163.0	304.7	224.2	197.7	197.2	146.5	136.4	7.2	23.2	156.6	162.5	254.9	69.9	28.0	59.6	282.9	123.9	304.7	265.1	203.9	163.2	514.6	128.2	4.5	6.4	36.0	15.5
25th %ile	61.7	55.0	80.0	2.6	163.0	160.3	304.7	217.9	197.7	191.0	140.7	136.0	0.0	0.1	147.9	148.9	133.1	58.4	21.1	0.0	154.2	65.0	304.7	244.7	175.8	132.6	320.4	67.9	4.5	3.5	23.7	7.2
10th %ile	61.7	51.2	80.0	1.1	163.0	158.6	304.7	214.1	197.7	187.2	140.7	102.9	-45.7	0.0	102.9	123.5	60.1	35.1	16.9	0.0	77.0	47.2	304.7	232.4	114.0	108.0	203.9	59.2	4.5	1.4	16.2	5.9
Average	61.7	57.2	80.0	28.4	163.0	161.2	304.7	246.8	197.7	193.2	158.6	148.9	-5.3	33.7	153.2	182.6	254.9	95.8	28.0	54.5	282.9	150.3	304.7	264.7	292.3	213.8	514.6	162.6	4.5	14.9	33.3	21.3
Count	1	3	1	3	1	3	1	3	1	3	5	48	5	48	5	48	2	28	2	28	2	28	1	3	5	48	2	28	1	8	4	11
Avg. assets	38M	119M	38M	119M	38M	119M	38M	119M	38M	119M	1,705M	426M	1,705M	426M	1,705M	426M	430M	174M	430M	174M	430M	174M	38M	98M	1,367M	357M	121M	148M	2,421M	672M	2,833M	1,824M
Norwegian Government Pension Fund Global																																
You %ile Assets	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 136 bps (on amount fees are based on) for underlying management fees and 27 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting natural resource investments. The peer average cost of monitoring and selecting was 1.7 bps for fund of funds and 7.1 bps for LPs and 2.2 bps for external (not LPs).



#### 1. Breakdown of external fees

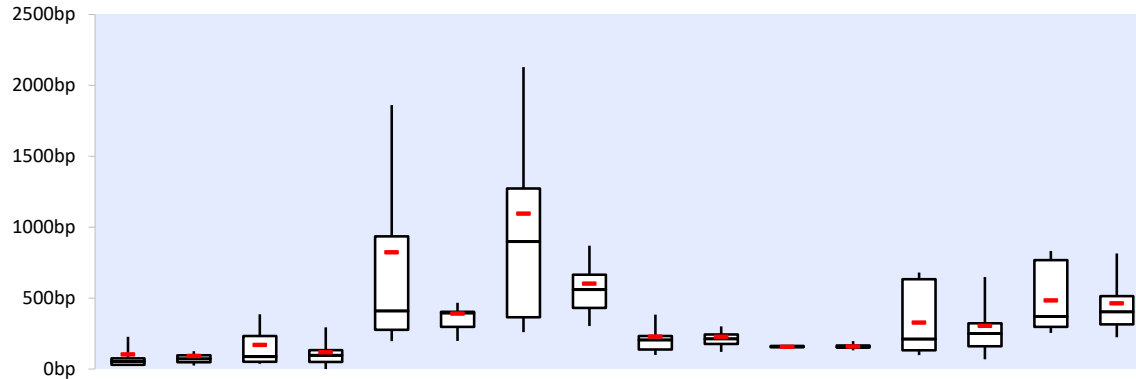
	Your Plan	Peer Average	Global Average
Base fees	n/a	118.9	103.6
Internal and other	<u>n/a</u>	<u>10.9</u>	<u>7.2</u>
Total*	n/a	129.8	110.8
Performance fees**	n/a	228.1	40.4

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

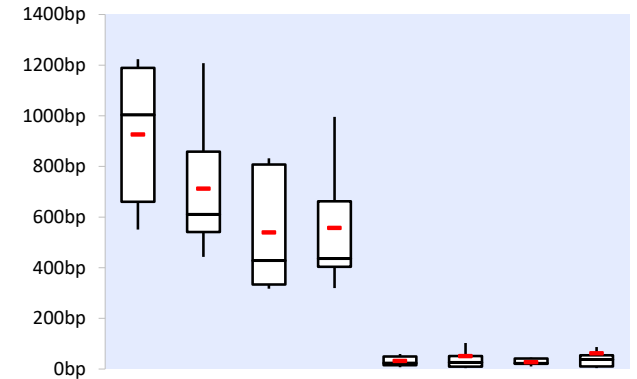
\*\* For funds that did not report a performance fee, a default value of 25 bps was applied. The average performance fee for only those funds that reported a performance fee is 228.1 bps for peers (2 funds) and 47.2 bps for Global participants (16 funds).

## Private equity - Diversified

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



Cost as a % of NAV

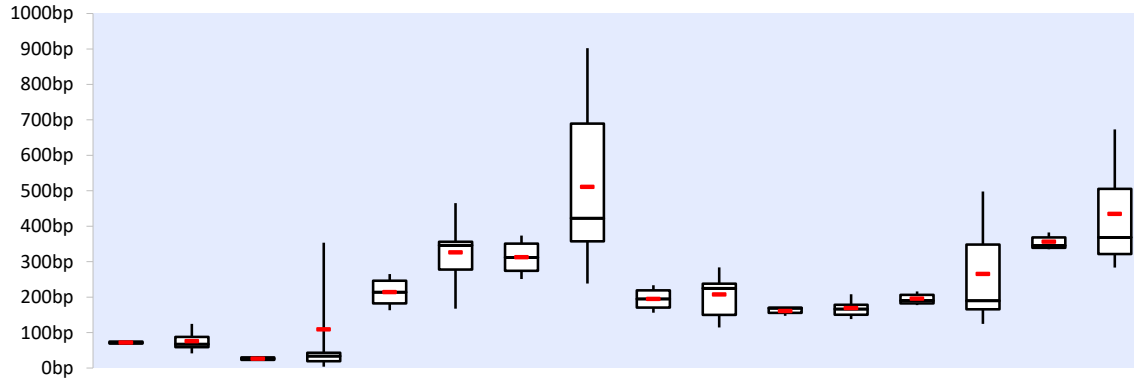


	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal	
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total			
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global		
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global		
90th %ile	227.3	126.2	386.1	294.1	1861.8	467.4	2129.3	869.6	383.9	301.1	165.3	197.3	680.0	648.8	832.1	815.5	1223.6	1207.9	832.1	995.8	59.2	102.6	45.0	86.8
75th %ile	75.4	96.8	232.8	133.8	935.9	404.0	1273.0	665.0	233.2	243.3	163.2	166.2	633.3	323.2	768.3	514.4	1189.2	858.4	807.4	662.2	49.5	51.5	41.3	54.7
Median	55.0	72.0	87.2	98.0	410.5	395.9	898.7	559.8	205.4	213.6	157.6	154.0	212.2	250.0	371.3	404.0	1003.8	611.7	428.4	436.4	24.0	26.9	23.2	37.8
25th %ile	29.9	47.7	50.9	50.4	276.9	297.9	364.8	431.3	137.1	176.8	154.0	153.8	132.4	160.5	297.0	315.4	660.7	541.2	334.2	404.0	15.5	9.5	20.8	10.1
10th %ile	26.8	24.5	36.9	0.0	196.6	197.6	260.4	303.3	99.2	121.6	145.5	132.0	97.8	68.8	255.3	223.6	550.6	442.7	317.3	319.6	7.4	3.7	10.5	3.7
— Average	103.0	92.3	170.1	118.6	823.0	390.9	1096.1	601.8	229.5	228.2	156.3	159.2	327.9	304.1	484.2	463.3	926.0	712.6	539.7	557.2	31.8	51.1	27.3	61.9
Count	6	119	6	119	6	119	6	119	6	119	9	167	9	167	9	167	6	119	9	167	7	38	5	21
Avg. assets	2,606M	535M	2,606M	535M	2,606M	535M	2,606M	535M	2,606M	535M	12,009M	2,173M	12,009M	2,173M	12,009M	2,173M	3,734M	528M	11,300M	1,950M	3,656M	1,336M	12,546M	3,758M
Norwegian Government Pension Fund Global																								
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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	0M	0M	0M	0M	0M	0M	0M	0M

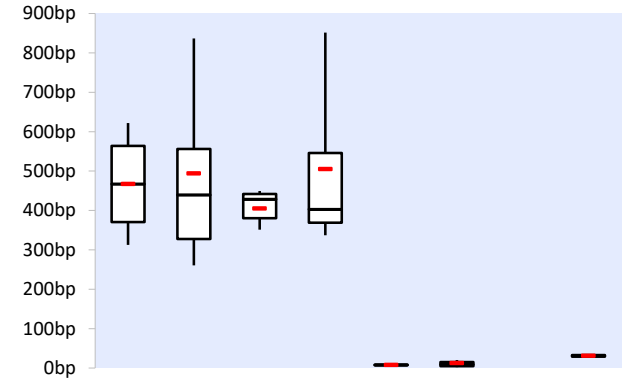
1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of 154 bps (on amount fees are based on) for underlying management fees and 250 bps (on NAV) for underlying performance fees were used.
3. The total cost also includes the internal cost of monitoring and selecting private equity investments. The peer average cost of monitoring and selecting was 5.3 bps for fund of funds.

## LBO

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



Cost as a % of NAV



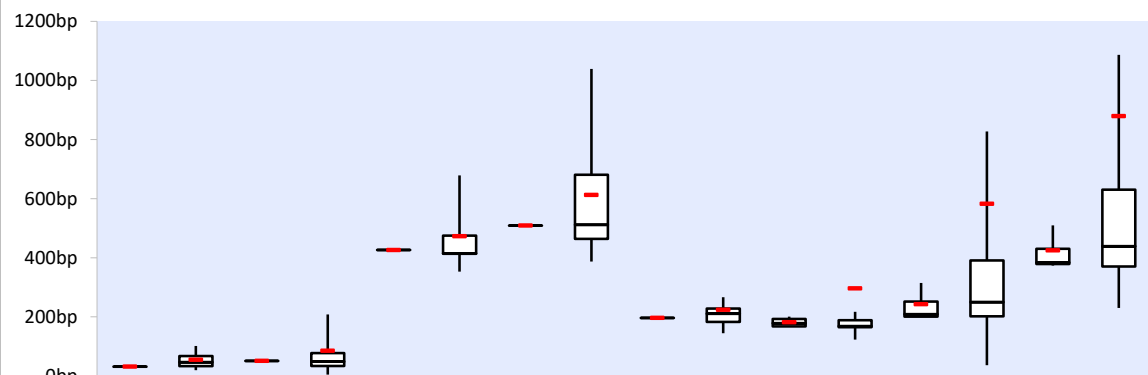
	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal	
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	76.3	124.5	32.3	353.5	265.2	465.0	373.7	902.2	233.7	283.8	170.9	208.1	215.9	497.8	382.3	673.0	621.9	836.7	449.3	851.5	8.9	20.4		34.2
75th %ile	74.6	87.9	30.1	42.9	246.1	356.0	350.8	689.4	219.2	237.7	170.2	178.2	206.2	348.3	368.6	505.6	563.9	556.1	441.7	545.9	8.5	15.2		33.0
Median	71.7	67.4	26.5	34.2	214.2	346.3	312.5	423.0	194.9	225.1	169.1	166.7	190.2	190.0	345.8	368.9	467.3	439.4	429.0	403.1	7.8	9.4		31.0
25th %ile	68.9	59.0	22.9	19.3	182.4	277.9	274.1	357.5	170.6	150.2	155.6	150.3	182.3	165.7	339.1	321.4	370.6	327.5	380.5	369.0	7.1	4.7		29.0
10th %ile	67.1	41.5	20.7	3.9	163.3	167.6	251.2	238.5	156.0	114.6	147.6	137.9	177.6	124.5	335.0	283.3	312.6	260.5	351.4	337.3	6.7	2.2		27.7
— Average	71.7	75.8	26.5	109.0	214.2	326.1	312.5	510.9	194.9	207.4	160.9	169.2	195.6	265.5	356.5	434.7	467.3	494.1	405.1	505.0	7.8	12.6		31.0
Count	2	17	2	17	2	17	2	17	2	17	3	35	3	35	3	35	2	17	3	35	2	10	0	2
Avg. assets	1,441M	321M	1,441M	321M	1,441M	321M	1,441M	321M	1,441M	321M	19,201M	3,043M	19,201M	3,043M	19,201M	3,043M	1,107M	289M	16,344M	2,585M	3,260M	1,159M		187M
Norwegian Government Pension Fund Global																								
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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	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 123 bps (on amount fees are based on) for underlying management fees and 136 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 23.2 bps for fund of funds.



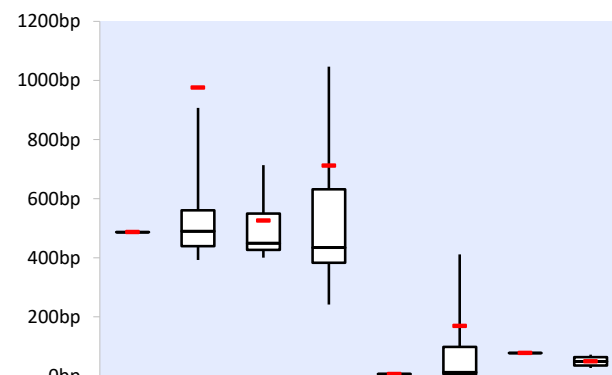
## Venture capital

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
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	31.6	101.3	51.2	207.9	426.4	678.8	509.3	1039.1	196.6	266.3	200.6	217.0	314.7	827.2	509.7	1086.8
75th %ile	31.6	67.1	51.2	77.1	426.4	475.1	509.3	680.9	196.6	227.9	192.9	188.6	251.4	391.0	430.5	630.6
Median	31.6	47.0	51.2	49.0	426.4	415.0	509.3	511.6	196.6	210.9	178.6	168.6	209.0	250.0	383.9	439.0
25th %ile	31.6	33.1	51.2	33.7	426.4	413.2	509.3	464.0	196.6	183.0	167.7	165.0	200.8	201.7	378.6	370.3
10th %ile	31.6	19.4	51.2	4.5	426.4	352.9	509.3	387.2	196.6	144.7	166.1	122.7	199.0	36.5	373.6	230.3
— Average	31.6	54.7	51.2	85.2	426.4	472.8	509.3	612.8	196.6	224.3	182.0	296.7	243.2	582.8	425.2	879.5
Count	1	27	1	27	1	27	1	27	1	27	4	37	4	37	4	37
Avg. assets	130M	233M	130M	233M	130M	233M	130M	233M	130M	233M	2,754M	586M	2,754M	586M	2,754M	586M
Norwegian Government Pension Fund Global																
● You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

Cost as a % of NAV



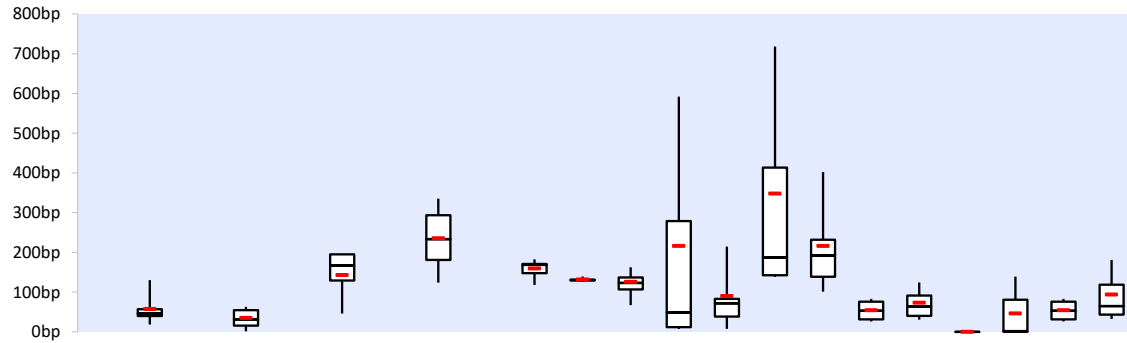
	Fund of Funds		Direct LP		Co-Investment		Internal	
	Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total incl. perf.		Total	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	487.1	907.1	713.4	1046.8	6.7	411.3	77.9	72.2
75th %ile	487.1	560.3	549.4	631.6	6.7	98.3	77.9	63.7
Median	487.1	490.3	449.5	434.5	6.7	12.9	77.9	49.5
25th %ile	487.1	439.3	426.3	383.2	6.7	5.9	77.9	35.3
10th %ile	487.1	392.5	400.5	241.7	6.7	3.5	77.9	26.7
— Average	487.1	976.4	526.2	712.2	6.7	169.5	77.9	49.5
Count	1	27	4	37	1	8	1	2
Avg. assets	130M	233M	2,368M	588M	59M	91M	1,941M	999M
● 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 165 bps (on amount fees are based on) for underlying management fees and 250 bps (on NAV) for underlying performance fees were used.

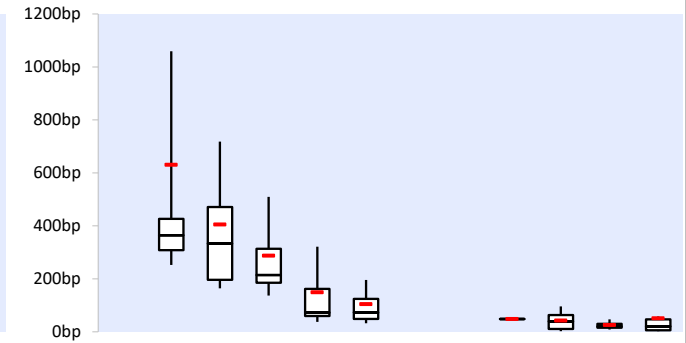
## Private credit

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



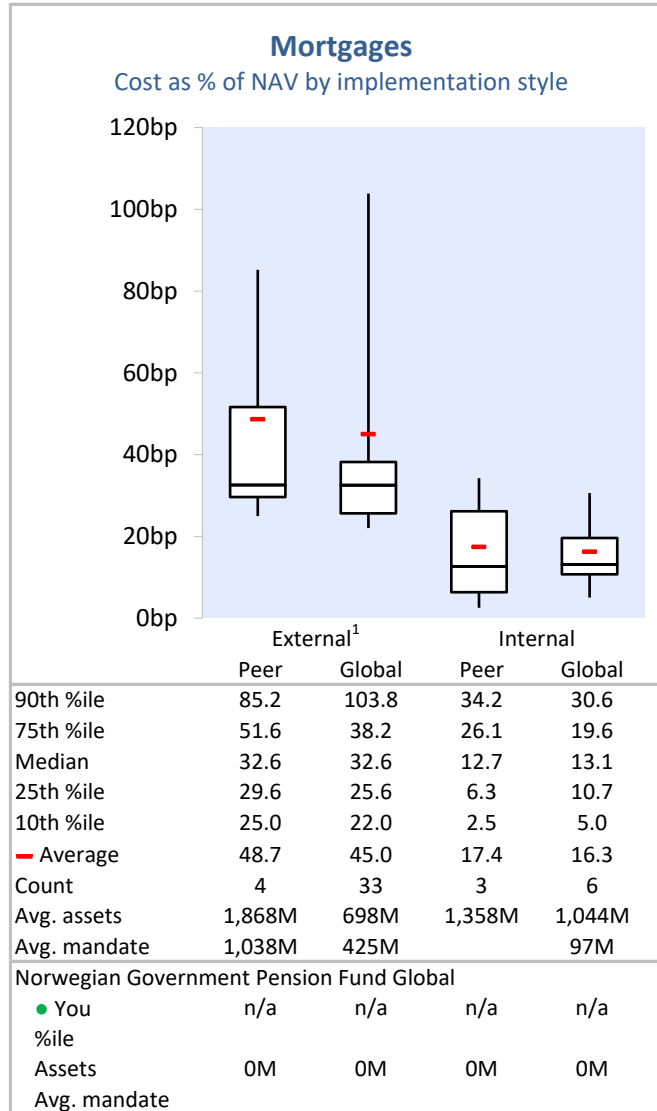
	Fund of Funds						Direct LP						Evergreen												
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. & perf. <sup>2</sup>		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.		Mgmt fees		Perf. fees		Total <sup>3</sup> incl. perf.				
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	
	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	
	130.3	62.9	195.0	335.2	182.3	139.3	162.6	591.8	214.6	718.0	402.2	83.0	124.1	0.0	138.9	83.0	180.8								
	57.0	54.4	195.0	293.4	170.9	131.3	136.7	278.8	82.9	413.3	231.6	76.0	91.4	0.0	80.9	76.0	118.5								
	46.0	31.9	166.8	233.5	168.8	130.5	123.0	49.4	72.0	187.6	192.3	53.2	63.6	0.0	1.8	53.2	65.1								
	39.7	15.4	129.0	181.0	147.8	129.5	106.8	11.6	38.4	142.6	138.5	31.4	40.0	0.0	0.0	31.4	43.4								
	18.5	1.1	46.0	123.9	118.1	125.6	67.1	7.2	7.4	138.4	101.0	26.1	30.6	0.0	0.0	26.1	32.5								
	57.6	35.0	142.8	235.4	159.3	131.8	125.9	216.2	90.2	348.0	216.1	54.2	73.4	0.0	46.1	54.2	93.8								
	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0
	103M	103M	103M	103M	103M	1,743M	605M	1,743M	605M	1,743M	605M	1,417M	576M	5,668M	1,301M	1,417M	576M								
Norwegian Government Pension Fund Global	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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 incl. perf.		Total							
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global						
	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets	90th %ile	75th %ile	Median	25th %ile	10th %ile	Average	Count	Avg. assets		
	#####	718.0	509.5	321.5	195.7			49.0	96.1	47.1	58.2							
	426.7	471.1	313.4	162.1	124.1			48.8	63.1	30.4	47.3							
	364.9	333.7	214.6	72.9	73.5			48.4	39.9	20.3	21.0							
	308.2	196.1	185.0	59.8	48.4			48.1	10.8	15.6	5.9							
	252.3	164.4	136.9	37.5	32.5			47.8	2.2	8.7	2.2							
	630.5	405.4	287.4	149.0	104.4			48.4	42.8	25.7	50.9							
	0	10	6	122	4	61	0	0	2	16	4	21						
	33M	1,616M	505M	1,490M	573M			383M	224M	3,458M	1,623M							
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a						

1. The base for fees is usually the committed amount during the commitment period, and unreturned invested capital afterwards.  
 2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so 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 7.1 bps for LPs and 4.1 bps for external (not LPs).

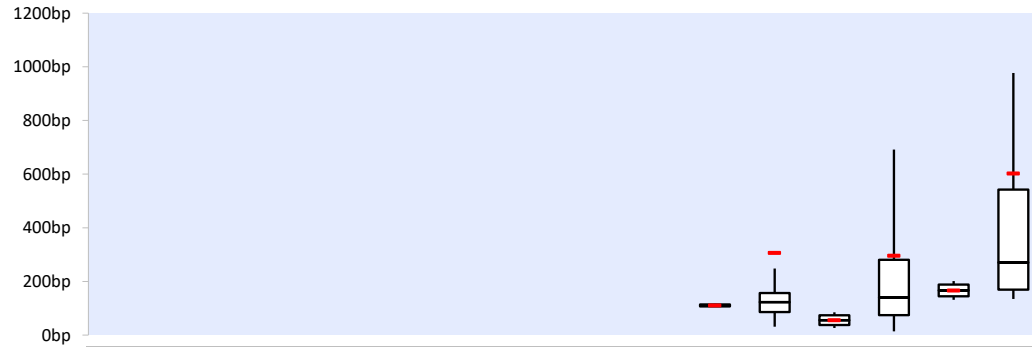


#### 1. Breakdown of external fees

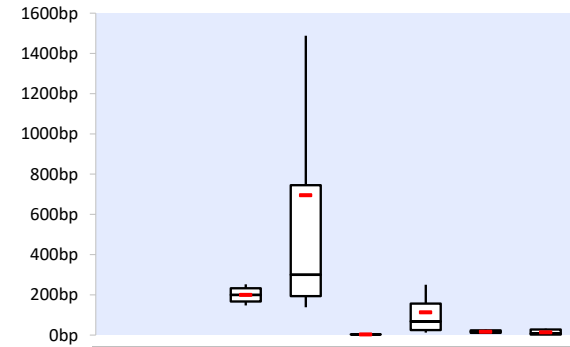
	Your Plan	Peer Average	Global Average
Base fees	n/a	45.3	42.8
Internal and other	n/a	3.3	2.2
Performance fees	<u>n/a</u>	<u>n/a</u>	<u>3.0</u>
Total	n/a	48.7	45.0

## Private equity - Other

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



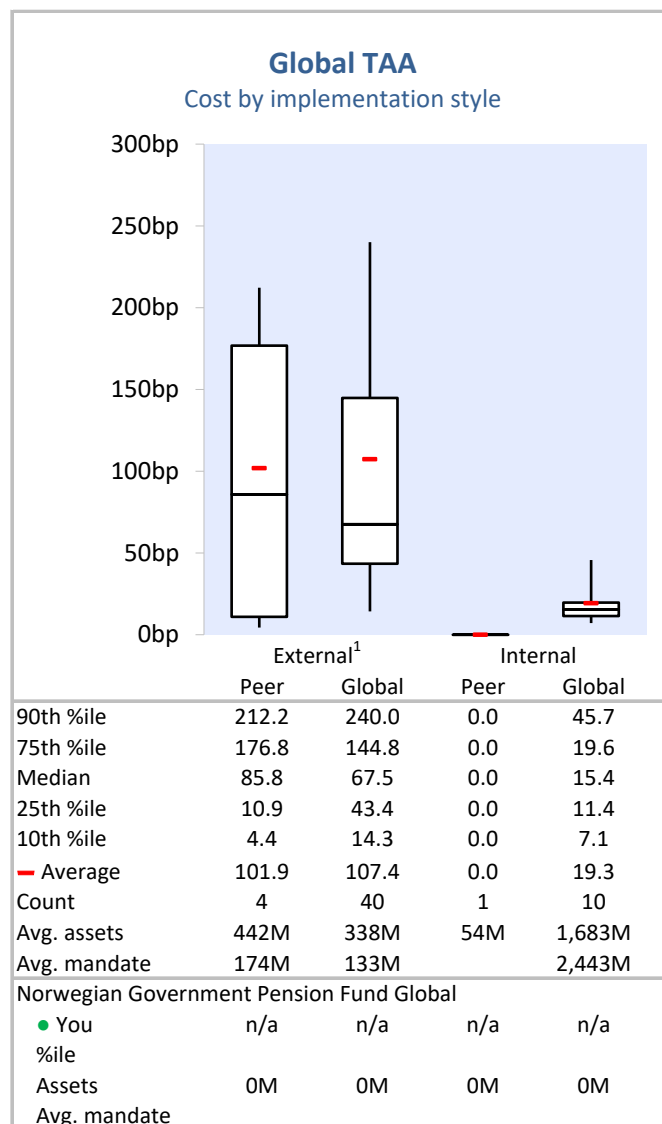
Cost as a % of NAV



	Fund of Funds										Direct LP						Fund of Funds		Direct LP		Co-Investment		Internal	
	Mgmt fees (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.		Total <sup>3</sup> incl. perf.		Total <sup>3</sup> incl. perf.		Total			
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global		
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global		
90th %ile										116.4	248.0	84.9	691.7	201.3	977.0			252.8	1487.8	3.7	250.1	27.2	31.7	
75th %ile										114.3	156.6	74.0	280.6	188.3	542.3			233.0	745.0	3.7	156.6	23.4	28.1	
Median										110.7	123.4	55.8	140.0	166.5	270.9			200.0	300.0	3.7	68.4	17.1	7.8	
25th %ile										107.2	85.9	37.6	74.3	144.7	169.3			167.0	193.7	3.7	25.1	10.8	2.7	
10th %ile										105.0	31.1	26.7	14.0	131.7	134.6			147.2	138.4	3.7	12.3	7.0	0.7	
Average										110.7	306.5	55.8	296.3	166.5	602.8			200.0	695.4	3.7	113.2	17.1	13.9	
Count	0	0	0	0	0	0	0	0	0	2	26	2	26	2	26	0	0	2.0	26	1	4	2	9	
Avg. assets										5,821M	861M	5,821M	861M	5,821M	861M			4,681M	712M	69M	350M	2,366M	1,096M	
Norwegian Government Pension Fund Global																								
You %ile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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	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.

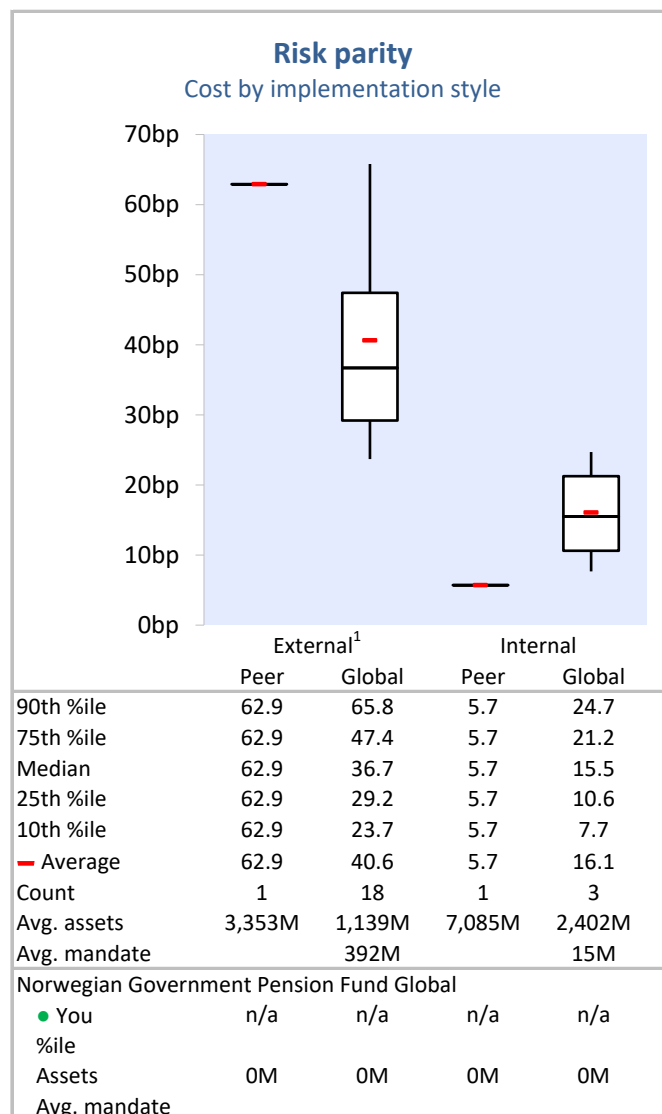
2. The fees of fund of funds include both the top layer fees paid to the fund of funds manager and the underlying fees paid to the 'underlying partnerships' held by the fund of funds. Most funds were unable to provide the underlying fees so defaults of n/a bps (on amount fees are based on) for underlying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



#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	81.9	77.6
Internal and other	n/a	14.7	8.4
Performance fees	<u>n/a</u>	<u>18.0</u>	<u>37.1</u>
Total*	n/a	101.9	107.4

\* 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 18.0 bps for peers (2 funds) and 37.1 bps for Global participants (29 funds).



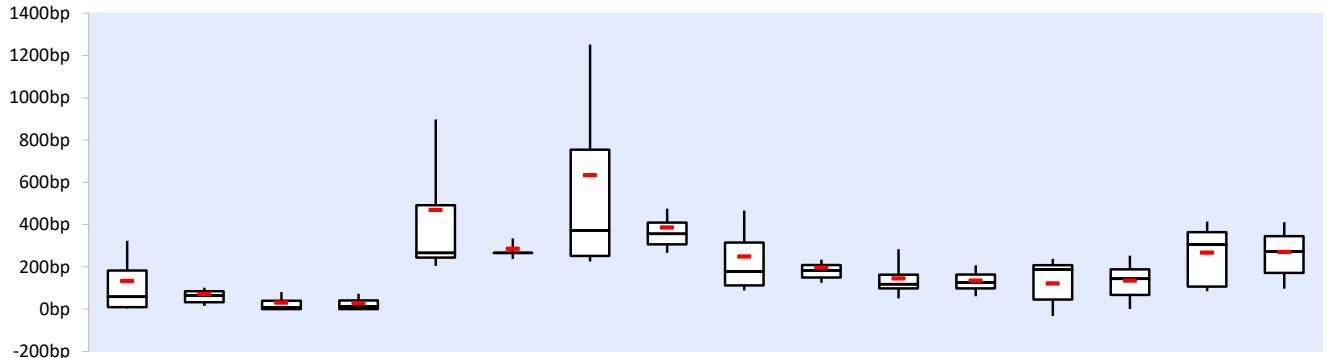
#### 1. Breakdown of external fees

	Your Plan	Peer Average	Global Average
Base fees	n/a	48.9	38.4
Internal and other	n/a	1.6	2.7
Performance fees	<u>n/a</u>	<u>12.4</u>	<u>2.1</u>
Total*	n/a	62.9	40.6

\* 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 12.4 bps for peers (1 fund) and 2.1 bps for Global participants (9 funds).

## Hedge funds

### Cost by implementation style

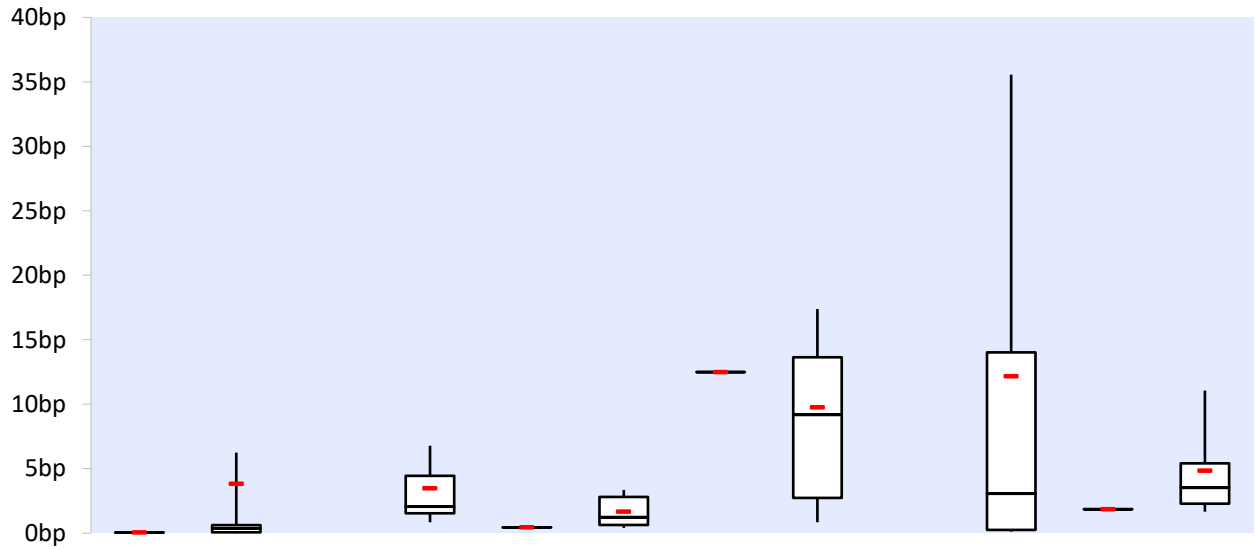


	Fund of Funds										External Direct					
	Mgmt fees (Top layer)		Perf. fees (Top layer)		Underlying mgmt. and perf. <sup>1</sup>		Total <sup>2</sup> incl. perf.		Total <sup>2</sup> excl. perf.		Mgmt fees		Perf. fees		Total <sup>2</sup> incl. perf.	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	323.1	101.6	80.2	72.8	896.7	334.7	1251.9	475.7	466.6	233.8	283.3	207.3	237.5	252.7	414.1	410.4
75th %ile	182.5	84.5	39.9	41.0	491.3	266.0	754.1	409.0	314.8	208.6	162.9	163.4	208.3	188.5	364.4	345.0
Median	58.4	64.7	8.7	13.9	266.0	266.0	371.8	356.3	178.2	183.7	118.2	127.0	187.7	143.9	305.2	273.4
25th %ile	9.2	32.7	0.0	0.0	244.0	266.0	251.5	306.7	112.5	149.2	97.9	97.9	45.6	67.2	106.7	171.2
10th %ile	3.7	15.1	0.0	0.0	204.4	236.6	225.3	266.0	88.2	125.1	51.1	60.9	-33.0	0.1	84.5	96.7
Average	133.4	71.5	31.1	28.5	469.3	286.0	633.8	386.0	249.1	196.1	145.4	135.1	121.7	135.2	267.1	270.3
Count	4	58	4	58	4	58	4	58	4	58	9	113	9	113	9	113
Avg. assets	3,450M	589M	3,450M	589M	3,450M	589M	3,450M	589M	3,450M	589M	6,823M	1,717M	6,823M	1,717M	6,823M	1,717M
Norwegian Government Pension Fund Global																
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile																
Assets	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M	0M

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 126 bps (on NAV) for underlying management fees and 140 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 138.8 bps for fund

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

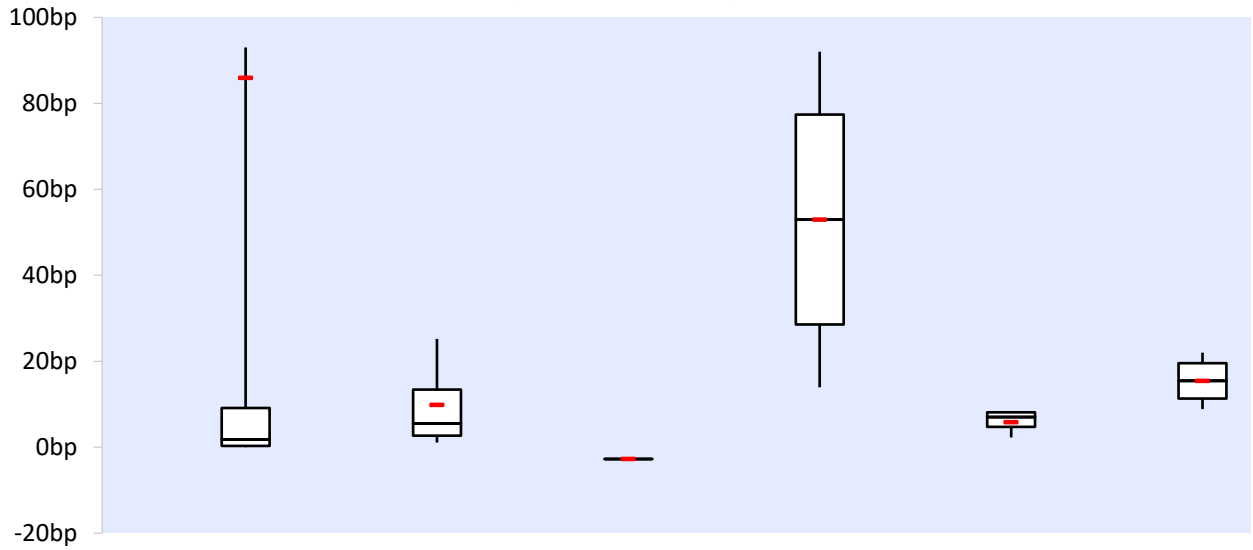


	Currency Hedge		Discretionary Currency		Duration Management							
	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile	0.1	6.2	6.8	0.5	3.4	12.5	17.4	35.6	1.9	11.1		
75th %ile	0.1	0.6	4.5	0.5	2.8	12.5	13.6	14.0	1.9	5.4		
Median	0.1	0.4	2.1	0.5	1.2	12.5	9.2	3.1	1.9	3.5		
25th %ile	0.1	0.1	1.5	0.5	0.6	12.5	2.7	0.2	1.9	2.3		
10th %ile	0.1	0.0	0.8	0.5	0.4	12.5	0.9	0.1	1.9	1.7		
— Average	0.1	3.8	3.5	0.5	1.7	12.5	9.8	12.2	1.9	4.9		
Count	1	16	0	27	1	6	1	18	0	8	1	18
Avg. notional	87,082M	18,209M	3,113M	26,850M	11,946M	2,760M	3,077M	6,770M	59,881M	5,614M		
Norwegian Government Pension Fund Global												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile												
Avg. notional												



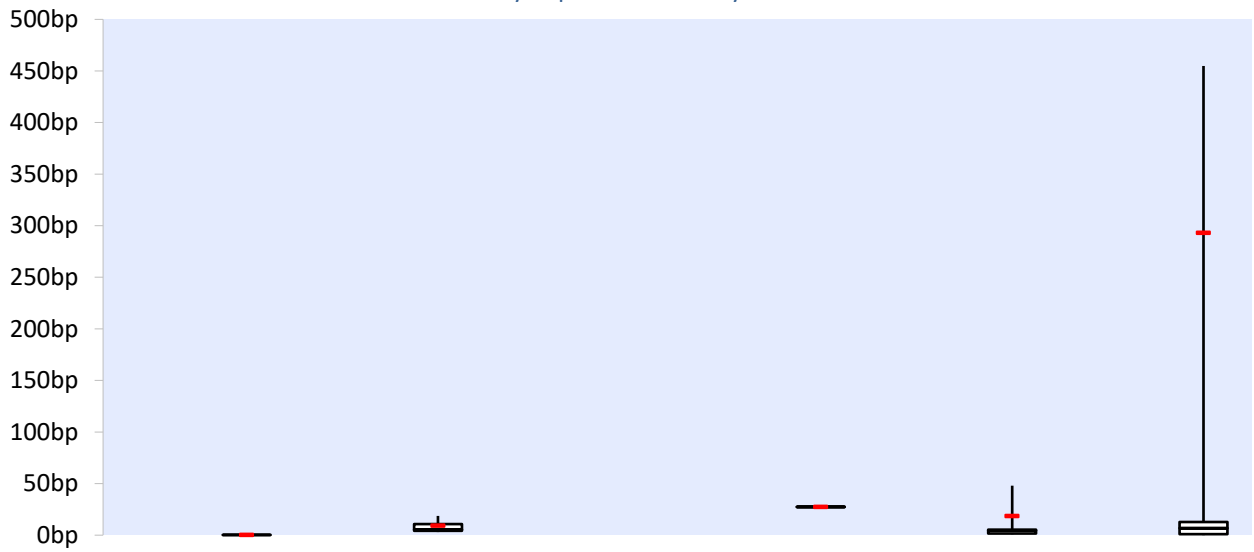
### Overlays: passive beta/rebalancing, global TAA, policy tilt TAA

Cost by implementation style



	Passive Beta/Rebalancing				Global TAA				Policy Tilt TAA			
	Internal		External		Internal		External		Internal		External	
	% of notional		% of notional		% of notional		% of notional		% of notional		% of notional	
	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global	Peer	Global
90th %ile		93.0		25.2		-2.7		92.0		8.4		22.0
75th %ile		9.1		13.4		-2.7		77.4		8.1		19.5
Median		1.8		5.5		-2.7		53.0		7.0		15.4
25th %ile		0.3		2.7		-2.7		28.6		4.7		11.3
10th %ile		0.0		1.1		-2.7		13.9		2.3		8.9
— Average		86.0		9.8		-2.7		53.0		5.8		15.4
Count	0	10	0	31	0	1	0	2	0	4	0	2
Avg. notional		6,726M		3,040M				1,099M		24,400M		411M
Norwegian Government Pension Fund Global												
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile												
Avg. notional												

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



	Commodity		Long/ Short				Other	
	Internal % of notional Peer	External % of notional Global	Internal % of notional Peer	Internal % of notional Global	External % of notional Peer	External % of notional Global	Internal % of notional Peer	External % of notional Global
90th %ile		18.7				27.5	47.9	454.9
75th %ile		10.8				27.5	5.3	12.7
Median		5.4				27.4	4.7	6.8
25th %ile		4.2				27.4	1.5	1.0
10th %ile		3.1				27.3	0.8	0.0
— Average		9.3				27.4	18.6	293.1
Count	0	5	0	0	0	2	7	12
Avg. notional		1,137M				152M	14,563M	4,057M
Norwegian Government Pension Fund Global								
● You	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
%ile								
Avg. notional								

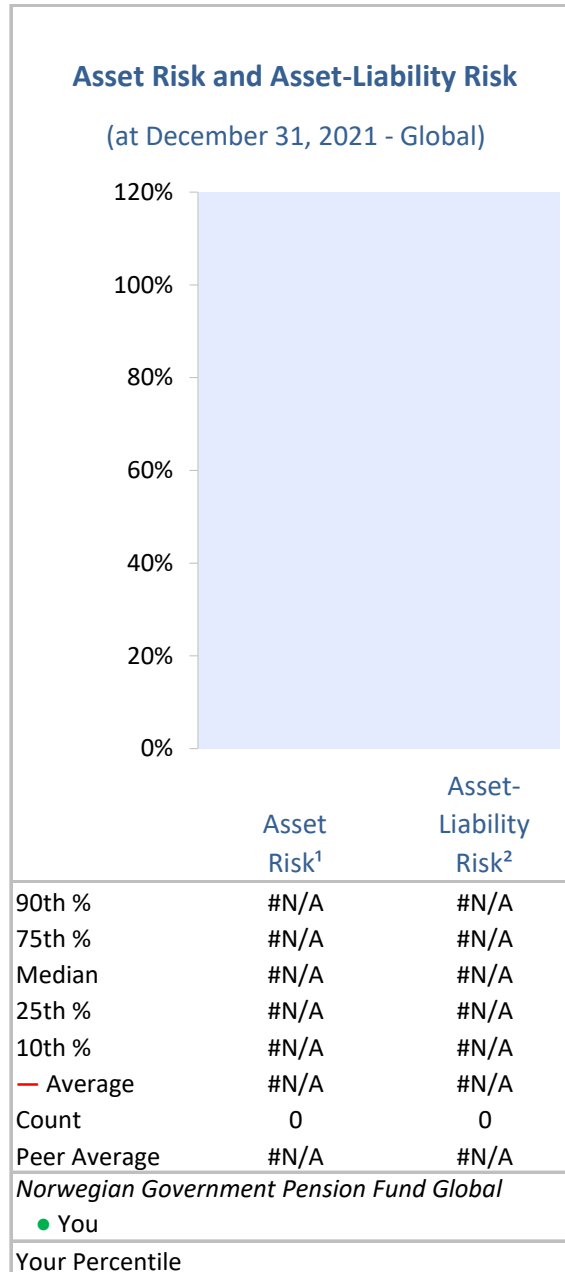
# 6

## Risk

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Liability risk	6
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\*Asset-liability risk is only calculated for DB or DB-like pension funds/pools.

## Comparison of your risk levels to the Global universe



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

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

## Reduction in asset risk due to diversification

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

### Diversification benefit: Global universe

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

### Components of asset risk

	You	Peer median*	Peer average	Global median*	Global average
Weighted asset risk	n/a	#N/A	#N/A	#N/A	#N/A
Benefit of diversification	n/a	#N/A	#N/A	#N/A	#N/A
Asset risk	n/a	#N/A	#N/A	#N/A	#N/A

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

## Asset-liability risk

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

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

#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

In addition to the correlation between asset returns and liability returns, asset-liability risk is also a function of the volatility of asset returns (asset risk) and the volatility of liability returns<sup>1</sup> (liability risk =  $\sqrt{R_A^2 + R_L^2 - 2\rho_{AL}R_AR_L}$ ).

### Components of asset-liability risk

	You	Peer median	Peer average	Global median	Global average
Asset risk ( $R_A$ )	n/a	#N/A	#N/A	#N/A	#N/A
Liability risk ( $R_L$ )		#N/A	#N/A	#N/A	#N/A
Correlation between policy returns and liability returns ( $\rho_{AL}$ )		#N/A	#N/A	#N/A	#N/A
Asset-liability risk		#N/A	#N/A	#N/A	#N/A

1. Liability returns equal the changes in your marked-to-market liabilities caused by market factors. These are assumed to equal the return on your liability proxy portfolio (see next page).

## Liability proxy portfolio

Your liability proxy portfolio is the portfolio of nominal and inflation-indexed bonds that best matches the sensitivity of your liabilities to changes in real and nominal interest rates.

### Comparisons of liability proxy portfolio

	Your fund		Peer average		Global average	
	Duration	% of Assets	Duration	% of Assets	Duration	% of Assets
Inflation Indexed Bonds	n/a	n/a	#N/A	#N/A	#N/A	#N/A
Nominal Bonds	n/a	n/a	#N/A	#N/A	#N/A	#N/A
Total		n/a		#N/A		#N/A

Your liability proxy portfolio is a tool that:

- a) Helps you understand how the unsmoothed market value of your liabilities responds to changes in real and nominal interest rates.
- b) Helps you make better asset mix policy decisions by providing an understanding of which assets will decrease your asset-liability risk (i.e., assets that behave similarly to the neutral asset mix) and which assets will increase your risk.
- c) Helps you understand how your liabilities are different from your peers. Differences in liabilities mean that the same asset will have different risk / reward characteristics for different funds. For example, the risk of a nominal bond for a fund with 100% inflation sensitivity is much higher than it is for a fund with less than 100% inflation sensitivity.

Asset-liability risk could theoretically be eliminated if your actual asset mix matched the liability proxy portfolio. However, we recognize that this is neither an option nor a goal for most funds because:

- The supply of inflation-indexed assets is limited. These assets are required to match the obligations of pension liabilities.
- This low-risk strategy also has a lower expected return, implying either higher future funding costs or lower future benefits.

The methodology and formula used to determine your liability proxy portfolio are provided on pages 11-13 of this section.

## Liability risk

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

A plan's inflation sensitivity depends on:

### a) The type of plan

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

Plan type	# of plans	% of Total
Flat Benefit	23	7%
Career Average	71	21%
Final/Highest/Best Avg	197	57%
Other	55	16%
Total	346	100%

### b) Contractual inflation protection for retired members

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

Retiree inflation protection	# of plans		
	Corporate	Public	Other
0%	101	38	22
>0% and <50%	4	1	1
50%	1	2	1
>50% and <100%	8	14	1
100%	14	59	7
Total	128	114	32

### c) Member demographics

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

	Your fund	Peer Average	Global Average
Active Members	n/a		
Retired Members	n/a		
Total			



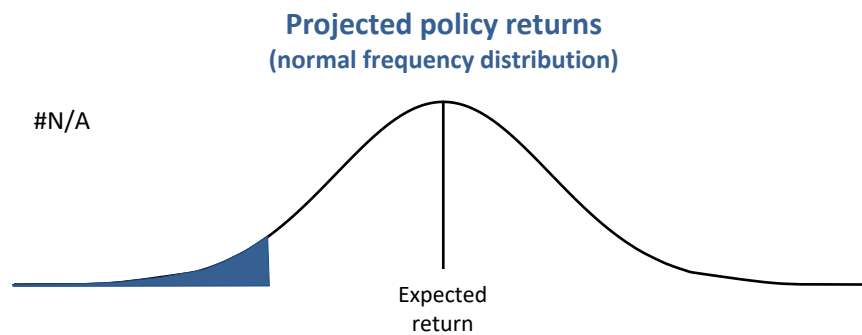
## Projected worst case scenarios

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

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

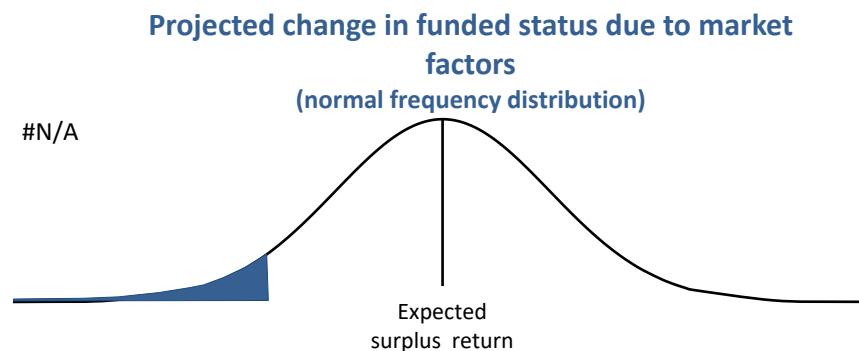
### a) Worst case policy returns

#VALUE!



### b) Worst case impact on funded status

#VALUE!



## Historic worst case scenarios during the past 5 years

### a) Historic worst case policy returns

During the past 5 years, your lowest policy return was -5.8% in 2018.

#### Historic policy returns - Global universe

	2021	2020	2019	2018	2017
90th %	13.0%	13.2%	21.8%	1.3%	15.5%
75th %	10.4%	11.0%	19.8%	-0.6%	12.5%
Median	7.2%	8.9%	16.9%	-2.9%	10.3%
25th %	3.3%	6.9%	14.4%	-4.9%	9.1%
10th %	-2.0%	5.4%	11.8%	-6.5%	7.4%
Average	6.3%	9.1%	17.0%	-2.7%	10.8%
Count	296	308	316	339	353
Peer Avg	8.5%	8.8%	15.5%	-1.4%	10.5%
Your Value	13.8%	10.6%	19.7%	-5.8%	13.0%

### b) Historic worst case changes in funded status

#VALUE!

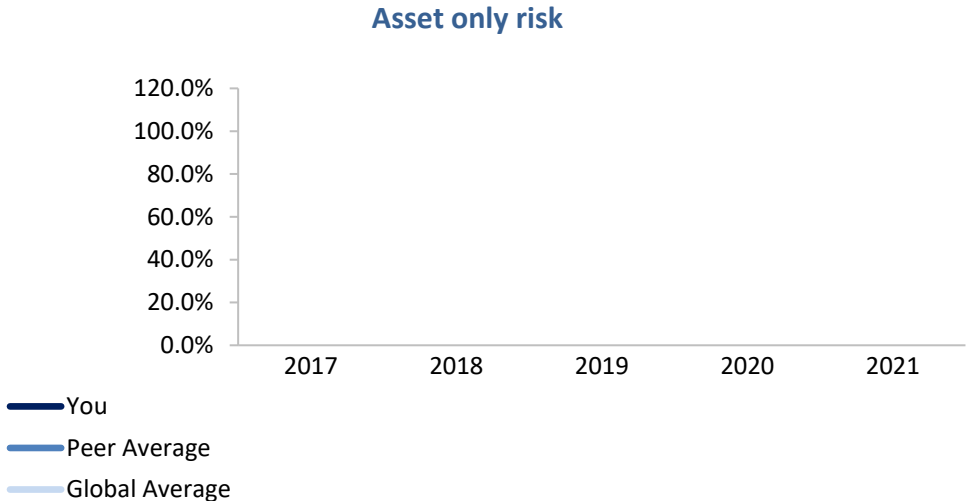
#### Historic changes in funded status caused by market factors - Global universe

	2021	2020	2019	2018	2017
90th %	#N/A	#N/A	#N/A	#N/A	#N/A
75th %	#N/A	#N/A	#N/A	#N/A	#N/A
Median	#N/A	#N/A	#N/A	#N/A	#N/A
25th %	#N/A	#N/A	#N/A	#N/A	#N/A
10th %	#N/A	#N/A	#N/A	#N/A	#N/A
Average	#N/A	#N/A	#N/A	#N/A	#N/A
Count	0	0	0	0	0
Peer Avg	#N/A	#N/A	#N/A	#N/A	#N/A
Your Value	n/a	n/a	n/a	n/a	n/a

# Risk Trends - 2017 to 2021

## a) Asset risk trends

#VALUE!



## b) Asset-liability risk trends

#VALUE!



## Appendix A - Methodology and formula used to calculate liability return and liability proxy portfolio

### Risk calculation descriptions

CEM would like to recognize and thank Malcolm Hamilton previously of Mercer for providing the key formulas used to calculate liability returns. We would also like to thank Stijn Oude Brunink previously of ORTEC Consultants in the Netherlands who provided the proofs and made adjustments to Mr. Hamilton's formulas. These formulas and this section use several simplifying assumptions that could cause your fund's individual results to differ from actual. We encourage you to pursue more precise calculations of your liability returns.

### Step 1 - Inflation sensitivity

The first step in estimating your liability return is to determine your liabilities' inflation sensitivity. The degree of total inflation sensitivity determines the proportion of inflation-indexed bonds versus nominal bonds that belong in your liability proxy portfolio.

#### **Total inflation sensitivity**

- = Inflation protection retirees X % liabilities relating to retirees
- + Inflation protection for active members X (1 - % liabilities relating to retirees)

#### **Inflation protection for retirees**

On the survey we asked for the amount of contractual inflation protection provided to retirees.

Ad hoc inflation protection is not considered because it is not a contractual liability. However, many funds are managed to maintain historic levels of ad hoc increases. If this is the case with your fund, then your inflation protection may have been understated. Please ask for CEM to make that adjustment for you.

#### **Inflation protection for active members**

We inferred inflation protection for your active members to be n/a based on your plan type of n/a.

Final and highest average plans have less than 100% inflation protection because during the averaging period, inflation protection is only 50%, not 100%. This is a natural function of taking an average of more than one year's earnings. Thus the weighted average inflation protection for active members in a 5-year final average plan is around 86% and in a 3-year average plan, 93%. These weighted averages are lower than intuition might suggest because the active members associated with the largest liabilities (i.e., the highest weights) are the ones closest to retirement.

Flat Benefit and Career Average plans are assumed to have 77% inflation protection. Contractually, flat benefit plans have zero inflation protection but negotiated increases tend to closely track inflation. However, just as with Final Average plans, inflation protection between negotiated increases is less than full inflation.

## Step 2 - Proportion of liabilities relating to retirees

The second step is to determine how much of your liabilities relate to your retirees versus your active members. This number is used to weight the liability proxy portfolio's obligations to retirees and active members.

**Equivalency Table**

of Active + Retirees	Relating to Retirees
0%	0%
10%	22%
20%	35%
30%	45%
40%	55%
50%	63%
60%	71%
70%	79%
80%	86%
90%	93%
100%	100%

This ratio depends on several factors including the ratio of retired and active members, member demographics and the inflation sensitivity of the promise made to these two member groups. Deferred (also known as inactive) members are ignored because even if they are large in number they tend to represent only a very small fraction of the future liability.

Most funds have provided the actual ratio from their actuarial reports (as requested on the survey). If the ratio is not provided, it is estimated based on the "Equivalency" table above.

Your percentage of liabilities that relates to retirees was n/a. The percentage of liability that relates to retirees is higher than the retirees as a percentage of active and retired members because retirees have accrued a higher benefit.

## Step 3 - Determining your duration relative to real and nominal yields

Duration enables you to determine the change in value of a cash flow, such as your pension liabilities, caused by a change in interest rates. The relationship between duration and cost of your pension liability is as follows.

Percentage change in pension liability cost

$$= (- \text{Modified duration relative to change in real yields} \times \text{change in real yields}) \\ + (- \text{Modified duration relative to change in nominal yields} \times \text{change in nominal yields})$$

The modified duration of your liabilities with respect to changes in real and nominal yields is determined by the following two formulas.

Modified duration relative to changes in real yields

$$= 10 \times [\text{Inflation protection for active members} \times (1 - \% \text{ of liabilities relating to retirees}) \\ + \text{Inflation protection for retirees} \times (1 - \% \text{ of liabilities relating to retirees}/4) \\ + (\text{Inflation protection for retirees}/10) \times (1.5 - 0.5 \times \% \text{ liabilities relating to retirees})]$$

Modified duration relative to changes in nominal yields

$$= 10 \times [(2 - 5 \times \% \text{ Liabilities relating to retirees}/4 - \text{inflation protection for actives} \times \\ (1 - \% \text{ liabilities relating to retirees}) \\ - (\text{Inflation protection for retirees}/10) \times (8.5 - 2 \times \% \text{ liabilities relating to retirees}) \\ - (\text{Inflation protection for retirees}/10) \times (1.5 - 0.5 \times \% \text{ liabilities relating to retirees})]$$

## Step 4 - Determining the liability proxy portfolio

Knowing the sensitivity of your pension liabilities to real and nominal interest rates enables you to construct a liability proxy portfolio using a combination of nominal bonds and inflation-indexed bonds.

Duration of inflation-indexed bonds in your liability proxy portfolio =  
 Modified Duration Relative to Change in Real yields ÷ Proportion of inflation-indexed bonds in your liability proxy portfolio (this is the total inflation sensitivity)

Duration of nominal bonds in your liability proxy portfolio =  
 Modified Duration Relative to Change in Nominal Yields ÷ Proportion of nominal bonds in your liability proxy portfolio (this is 1 minus the total inflation sensitivity)

Proportion of inflation-indexed bonds in your liability proxy portfolio = total inflation sensitivity

Proportion of nominal bonds in your liability proxy portfolio = 1 - total inflation sensitivity

## Step 5 - Liability returns

The return earned on your liability proxy portfolio is the liability return and matches the change in your plan's liabilities in response to changes in market factors. It uses a true market valuation rather than a smoothed actuarial valuation. See page 15 for benchmark details.

### Liability Return

- = Proportion indexed bonds in liability proxy portfolio X (CPI + average real yield)
- + Proportion nominal bonds in liability proxy portfolio X average long bond yield
- Modified duration relative to change in real yields X change in real yields
- Modified duration relative to change in nominal yields X change long yields

	Long Nominal Bonds		Inflation Indexed Bonds		CPI
	Year end yield	Change in yield	Year end yield	Change in yield	
2021	-0.18	0.40	-1.64	-0.60	2.59
2020	-0.58	-0.39	-1.04	-0.37	0.25
2019	-0.19	-0.43	-0.68	-0.63	1.20
2018	0.25	-0.18	-0.05	0.59	1.74
2017	0.42	0.08	-0.64	-0.16	1.54

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

### Asset mix

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

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

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

where

$w_X$  = policy weight of asset class X

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

$w_Y$  = policy weight of asset class Y

$\sigma_Y$  = standard deviation of monthly returns for asset class Y

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

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

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

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

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

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

### Asset-liability risk

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

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## Appendices

- Appendix A - Data Summary
- Appendix B - Currency conversion
- Appendix C - Data quality
- Appendix D - Glossary of terms



## Appendix A - Data Summary

### Norwegian Government Pension Fund Global

Plan Info	2021	2020	2019	2018	2017
Survey Preparer	Peter Christian	Peter Christian	Peter Christian	Peter Christian	Peter Christian
Additional Contact	Julie Belck-Olsen	Julie Belck-Olsen	Julie Belck-Olsen	Julie Belck-Olsen	Julie Belck-Olsen
Type of fund (corporate, public, other)	Public	Public	Public	Public	Public
Total fund size (€mils) as at December 31	1,230,488.6	1,041,789.7	1,022,743.8	834,042.8	864,249.0
Asset-class level holdings provided on survey are: year end or average?	Average	Average	Average	Average	Average
Total return for year ended Is the return net or gross?	14.51% Gross	10.86% Gross	19.95% Gross	-6.12% Gross	13.66% Gross
Total fund policy or benchmark return	13.76%	10.60%	19.72%	-5.82%	12.96%

Ancillary Data	2021	2020	2019	2018	2017
What is your hedging policy for: Foreign non-U.S. Holdings?					
What were your actuarial fees in 000s?			0		
How many plan members/beneficiaries do you have: Active? Active (no-accrual)? Retired? Other?					
What type of plan(s) do you have?					
To what extent are your retired members' benefits indexed to inflation? Contractual % If the indexation is subject to a cap, describe the cap What % of the plan's liabilities pertain to retired members?					
Actuarial valuation assumptions for funding purposes: Liability discount rate Salary progression rate					
What was your actuarial assumption for expected rate of return?					

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

Norwegian Government Pension Fund Global

Asset Class	Year	Policy Weight	Benchmark	
			Description	Return
Stock - U.S. broad/all	2021		Custom	13.3
	2020		Custom	47.1
	2018		Custom	3.6
	2017		Custom	18.9
	2016		Your Stock: U.S. broad/all benchmark	16.1
Stock - Europe	2021		Custom	18.0
	2020		Custom	5.4
	2019		Custom	22.7
	2018		Custom	-13.7
	2017		Custom	25.6
2016		Your Stock: Europe benchmark	3.8	
Stock - Emerging	2021		Custom	8.9
	2020		Custom	3.4
	2019		Custom	15.0
	2018		Custom	-14.7
	2017		Custom	20.5
2016		Your Stock: Emerging benchmark	10.7	
Stock - Global	2021	73.2	Your Stock: Global benchmark	20.4
	2020	73.0	Your Stock: Global benchmark	12.2
	2019	71.1	Your Stock: Global benchmark	26.1
	2018	67.3	Your Stock: Global benchmark	-8.4
	2017	67.1	Your Stock: Global benchmark	18.5
	2016	62.2	Your Stock: Global benchmark	8.6
	2015	61.6	Your Stock: Global benchmark	3.0
	2014	61.1	Your Stock: Global benchmark	8.7
	2013	60.9	Your Stock: Global benchmark	25.0
2012	60.9	Your Stock: Global benchmark	17.5	
Fixed income - Emerging	2021		Barclays Global Aggregate + Barclays Global Inflation Linked	2.9
	2017		Custom	13.0
Fixed income - Global	2021	26.8	Barclays Global Aggregate + Barclays Global Inflation Linked	-1.9
	2020	27.0	Barclays Global Aggregate + Barclays Global Inflation Linked	6.7
	2019	28.9	Barclays Global Aggregate + Barclays Global Inflation Linked	7.5
	2018	32.7	Barclays Global Aggregate + Barclays Global Inflation Linked	0.6
	2017	33.0	Barclays Global Aggregate + Barclays Global Inflation Linked	2.9
	2016	35.3	Barclays Global Aggregate + Barclays Global Inflation Linked	4.2
	2015	35.3	Barclays Global Aggregate + Barclays Global Inflation Linked	0.6
	2014	36.7	Barclays Global Aggregate + Barclays Global Inflation Linked	7.6
	2013	38.1	Barclays Global Aggregate + Barclays Global Inflation Linked	-0.2
2012	38.4	Barclays Global Aggregate + Barclays Global Inflation Linked	7.0	
REITs	2021		Custom	17.1
	2020		Custom	10.1
	2019		Custom	17.1
	2018		Custom	-4.6
Real estate ex-REITs	2021		Custom	7.3
	2020		Custom	8.7
	2019		Custom	13.0
	2018		Custom	-2.1
	2017		Custom	8.3
	2016	2.5	Custom (Actual)	0.8
	2015	3.1	Custom (Actual)	10.0
	2014	2.2	Custom (Actual)	10.4
	2013	1.0	Custom (Actual)	11.8
	2012	0.7	Custom (Actual)	5.8
Infrastructure	2021		Custom	-3.9

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

Norwegian Government Pension Fund Global

Asset Class/Style	Year	Asset (€millions)	Return %	Cost (€000)				Cost (bps)			
				Internal & Other	Base Fees	Perf Fees	Total	Internal & Other	Base Fees	Perf Fees	Total
Stock - U.S. broad/all External active	2021	1,571.0	3.19	212.1	3,376.6	(1,162.9)	2,425.8	1.4	21.5	(7.4)	15.4
	2020	580.0	51.00	99.8	801.9	5,818.6	6,720.3	1.7	13.8	100.3	115.9
	2019										
	2018	283.1	0.30	38.9	815.8		854.7	1.4	28.8		30.2
	2017	664.0	18.60	82.8	1,862.0	(337.0)	1,607.8	1.2	28.0	(5.1)	24.2
Stock - Europe External active	2021	9,288.0	17.00	1,254.4	16,281.5	6,177.5	23,713.3	1.4	17.5	6.7	25.5
	2020	7,357.2	9.80	1,265.8	12,744.1	15,818.0	29,827.9	1.7	17.3	21.5	40.5
	2019	6,303.0	21.40	1,025.0	10,989.0	(2,372.0)	9,642.0	1.6	17.4	(3.8)	15.3
	2018	8,758.3	-14.90	1,202.7	18,306.9	8,043.5	27,553.1	1.4	20.9	9.2	31.5
	2017	9,716.0	27.50	1,211.7	21,744.0	3,404.0	26,359.7	1.2	22.4	3.5	27.1
Stock - Emerging External active	2021	38,571.0	11.50	5,209.2	68,469.4	77,560.3	151,238.9	1.4	17.8	20.1	39.2
	2020	30,725.5	8.62	5,286.2	54,323.7	97,933.3	157,543.3	1.7	17.7	31.9	51.3
	2019	27,759.0	16.30	4,515.0	50,999.0	31,936.0	87,450.0	1.6	18.4	11.5	31.5
	2018	29,349.0	-13.50	4,030.2	56,219.5	62,007.7	122,257.4	1.4	19.2	21.1	41.7
	2017	29,535.0	26.60	3,683.5	57,108.0	95,921.0	156,712.5	1.2	19.3	32.5	53.1
Stock - Global Internal active	2021	742,890.3	21.17	87,800.0			87,800.0	1.2			1.2
	2020	622,049.2	12.90	104,565.8			104,565.8	1.7			1.7
	2019	602,785.0	26.64	115,092.0			115,092.0	1.9			1.9
	2018	538,129.1	-9.19	104,260.3			104,260.3	1.9			1.9
	2017	509,143.0	18.92	108,209.0			108,209.0	2.1			2.1
Fixed income - Emerging External active	2021										
	2020										
	2019										
	2018										
	2017	583.0	5.79	-	186.0		186.0	-	3.2		3.2
Fixed income - Global Internal active	2021	282,627.1	-1.94	31,769.0			31,769.0	1.1			1.1
	2020	265,813.1	7.46	40,877.4			40,877.4	1.5			1.5
	2019	264,597.4	7.56	44,434.0			44,434.0	1.7			1.7
	2018	264,501.5	0.56	42,087.3			42,087.3	1.6			1.6
	2017	273,824.0	3.28	41,515.0			41,515.0	1.5			1.5
REITs Internal active	2021	19,606.5	26.84	2,951.0			2,951.0	1.5			1.5
	2020	12,872.2	-14.92	2,681.3			2,681.3	2.1			2.1
	2019	10,402.4	20.88	1,620.0			1,620.0	1.6			1.6
	2018	7,937.4	-10.34	2,013.0			2,013.0	2.5			2.5

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

Norwegian Government Pension Fund Global

Asset Class/Style	Year	Asset (€millions)	Fee basis (€millions)	Return %	Cost (€000)						
					Internal & Other	Base Fees	Perf Fees	Underlying fees		Total	
							Base	Perf	excl. perf	incl. perf	
Real estate ex-REITs Internal active	2021	27,376.7		13.67	37,862.9					37,862.9	37,862.9
	2020	27,253.9		-0.08	35,059.8					35,059.8	35,059.8
	2019	25,723.7		6.84	44,007.4					44,007.4	44,007.4
	2018	23,008.1		7.53	50,360.0					50,360.0	50,360.0
	2017	20,936.0		9.03	54,425.0					54,425.0	54,425.0
Infrastructure Internal active	2021	800.9		4.15	2,272.0					2,272.0	2,272.0

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

Norwegian Government Pension Fund Global

Asset Class/Style	Year	Cost on NAV (bps)						Cost on fee basis (bps)							
		Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf	Internal & Other	Base Fees	Perf Fees	Underlying fees Base	Perf	Total excl. perf incl. perf		
Real estate ex-REITs Internal active	2021	13.8					13.8	13.8						13.8	13.8
	2020	12.9					12.9	12.9						12.9	12.9
	2019	17.1					17.1	17.1						17.1	17.1
	2018	21.9					21.9	21.9						21.9	21.9
	2017	26.0					26.0	26.0						26.0	26.0
Infrastructure Internal active	2021	28.4					28.4	28.4						28.4	28.4

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

Norwegian Government Pension Fund Global

Oversight, Custodial and Other Costs			
		000s	bps
Oversight of the fund assets <sup>1</sup>	2021	78,246.1	0.7bp
	2020	71,920.7	0.7bp
	2019	89,676.9	1.0bp
	2018	76,722.7	0.9bp
	2017	73,798.0	0.9bp
Custodial total	2021	45,995.4	0.4bp
	2020	44,144.1	0.5bp
	2019	42,621.5	0.5bp
	2018	39,045.2	0.4bp
	2017	41,965.0	0.5bp
Consulting / performance measurement	2021	7,681.4	0.1bp
	2020	7,035.2	0.1bp
	2019	10,715.4	0.1bp
	2018	14,930.4	0.2bp
	2017	10,050.0	0.1bp
Audit	2021	3,799.5	0.0bp
	2020	3,892.2	0.0bp
	2019	3,792.3	0.0bp
	2018	4,357.9	0.0bp
	2017	4,312.0	0.1bp
Total	2021	135,722.4	1.2bp
	2020	126,992.2	1.3bp
	2019	146,806.1	1.6bp
	2018	135,056.2	1.5bp
	2017	130,125.0	1.5bp

Summary of All Asset Management Costs			
		000s	bps
Investment Management Costs	2021	340,032.9	3.0bp
	2020	377,275.7	3.9bp
	2019	302,245.4	3.2bp
	2018	349,385.8	4.0bp
	2017	389,015.0	4.6bp
Oversight, Custodial & Other Costs	2021	135,722.4	1.2bp
	2020	126,992.2	1.3bp
	2019	146,806.1	1.6bp
	2018	135,056.2	1.5bp
	2017	130,125.0	1.5bp
Total	2021	475,755.3	4.2bp
	2020	504,267.9	5.2bp
	2019	449,051.5	4.8bp
	2018	484,442.0	5.6bp
	2017	519,140.0	6.1bp

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

## Appendix A - Data Summary: Comments and defaults

Norwegian Government Pension Fund Global

## Appendix B - Currency conversion

### Norwegian Government Pension Fund Global

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

Currency conversion table					
	2021	2020	2019	2018	2017
United States Dollars - USD*	0.690	0.711	0.714	0.723	0.747
Canada Dollars - CAD	0.553	0.594	0.572	0.580	0.597
Euro - EUR*	1.000	1.000	1.000	1.000	1.000
Sweden Kronor - SEK	0.079	0.080	0.079	0.080	0.084
United Kingdom Pounds - GBP	1.015	0.993	1.015	1.013	1.048
Australia Dollars - AUD	0.461	0.486	0.493	0.496	0.500
New Zealand Dollars - NZD	0.483	0.487	0.480	0.498	0.507

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 31st 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.