

Norges Bank Investment Management

GIPS report

31 December 1997 through 31 December 2022

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Policies for valuing investments, calculating performance, and preparing GIPS reports are available upon request.

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General disclosures

Verification

Norges Bank Investment Management has been independently verified for the period 31 December 1997 through 31 December 2022. The third-party verifier's report is available on our website www.nbim.no.

The firm

Norges Bank Investment Management, as the firm, is an asset management unit of the Norwegian central bank (Norges Bank). Norges Bank Investment Management manages the Government Pension Fund Global (Pension Fund) and the equity investments of Norges Bank's foreign exchange reserves (Reserves Fund, equity).

Firm assets

Firm assets represent all assets for which Norges Bank Investment Management has management responsibility. As of year-end 2022 this is the sum of the Government Pension Fund Global and the equity investments of Norges Bank's foreign exchange reserves.

Calculation methodology

Norges Bank Investment Management implements a time-weighted monthly rate of return methodology in the return calculations. The assets' fair values are determined at all month-ends, as well as on the day of an external cash flow and interim returns are geometrically linked. All composite returns are calculated net of non-reclaimable withholding taxes on dividend, interest and capital gains. Withholding taxes are recognised when incurred. Securities lending income is included in the portfolio return.

Assets and liabilities are reported on a fair value basis and in Norwegian kroner (NOK). Fair value is the estimated realisable value of an asset or the estimated cost of settling a liability in an arm's length transaction between well-informed and willing parties. The sources of valuation and pricing follow Norges Bank Investment Management's valuation hierarchy, which is aligned with the GIPS standards' recommendations.

For the Pension Fund's composites, investment performance is reported in terms of an international currency basket corresponding to the currency composition of the Pension Fund's benchmark. This measure reflects the actual performance of the fund in purchasing-power terms and eliminates the effect of Norwegian kroner fluctuations versus the currencies in which the Pension Fund's benchmark is invested. Currency movements in Norwegian kroner do not affect the international purchasing power of the fund.

The investment performance of the Reserves Fund, equity, composite is reported in Norwegian kroner, in accordance with the reporting requirements from Norges Bank.

Carve-outs

In addition to the Pension Fund aggregate composites, we present what constitute two types of carve-outs; the traditional composites are carve-outs from the Pension Fund along the conventional investment asset class definitions of equity, fixed income, unlisted real estate and unlisted renewable infrastructure. With the updated management mandate of January 2017, we included a set of composites that represent how NBIM has organised the asset management into four investment areas: equity management, fixed-income management, real estate management and renewable infrastructure management.

For fixed-income management, the composite assets are identical to the traditional composite, and we present the fixed-income composite versus the corresponding benchmarks. For equity management

and real estate management, the difference in composite assets is the inclusion of selected listed real estate holdings managed together with unlisted real estate in the real estate management composite.

In 2017, the listed real estate investments were transferred over to the equity asset class, leaving only unlisted real estate investments in the real estate composite. From 2017, the real estate composite is therefore identical to the unlisted real estate composite. The real estate management composite includes both listed and unlisted real estate since November 2014 and represents the Pension Fund's overall real estate strategy.

All assets managed by the firm are represented in one or more composites. Each composite holds its own cash balance.

2021 returns

Returns for 2021 have been adjusted due to a correction of the benchmark index return. The relative return impact of the correction was 0.003 percentage point for the Government Pension Fund Global composite, 0.009 percentage point and 0.010 for the Government Pension Fund Global fixed income asset class and management respectively. The correction of the benchmark index changed the currency composition of the Pension Fund's benchmark and impacted the portfolio returns by 0.002 percentage point for 2021 returns when measured in the currency basket.

Additional information

A list of composite descriptions and additional information regarding policies for valuing portfolios, calculating performance, and preparing GIPS reports is available upon request.

A large part of the information is available on our website www.nbim.no.

Performance results: Government Pension Fund Global 31 December 1997 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	Firm Assets ⁵
1998	9.26					1	171,832	279,205
1999	12.44					1	222,408	340,855
2000	2.49			5.68		1	386,450	522,544
2001	-2.47			5.89		1	613,686	739,116
2002	-4.74			5.91		1	609,007	743,670
2003	12.59			6.27		1	845,306	1,044,264
2004	8.94			5.33		1	1,016,402	1,236,653
2005	11.09			4.00		1	1,399,050	1,648,874
2006	7.92			3.36		1	1,783,683	2,047,074
2007	4.26			3.60		1	2,018,643	2,261,368
2008	-23.31			9.39		1	2,275,426	2,498,961
2009	25.62			12.27		1	2,640,043	2,851,020
2010	9.62			13.30		1	3,077,420	3,317,700
2011	-2.54			10.52		1	3,311,572	3,539,396
2012	13.42			8.24		1	3,815,769	4,043,153
2013	15.95			7.24		1	5,037,734	5,311,043
2014	7.58			5.72		1	6,430,739	6,778,049
2015	2.74			6.68		1	7,475,153	7,886,255
2016	6.92			6.54		1	7,510,494	7,687,711
2017	13.66	12.96	0.70	6.22		1	8,488,455	8,672,176
2018	-6.12	-5.82	-0.30	6.20		1	8,255,945	8,353,411
2019	19.95	19.72	0.23	6.94	6.87	1	10,088,083	10,215,370
2020	10.86	10.60	0.27	11.99	11.84	1	10,913,762	11,032,367
2021	14.51	13.76	0.75	11.24	11.12	1	12,339,549	12,461,505
2022	-14.11	-14.98	0.87	13.59	13.72	1	12,429,059	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the end of 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns. Standard deviation for the benchmark for periods prior to 2019 is not shown as a full 36-month history is not available.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

	3 years	5 years	10 years	Since inception
Composite gross return ¹	2.92	4.19	6.70	5.70
Custom benchmark return ¹	2.27	3.82		
Relative return ¹	0.65	0.37		
Standard deviation of composite return ²	13.59	11.70	9.25	8.36
Standard deviation of custom benchmark return ²	13.72	11.77		
Tracking error ³	0.49	0.44		
Information ratio ⁴	1.28	0.80		
Composite Sharpe ratio ⁵	0.23	0.31	0.68	0.50
Benchmark Sharpe ratio ⁵	0.19	0.28		
Jensen's alpha ⁶	0.65	0.37		
Appraisal ratio ⁷	1.36	0.85		

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

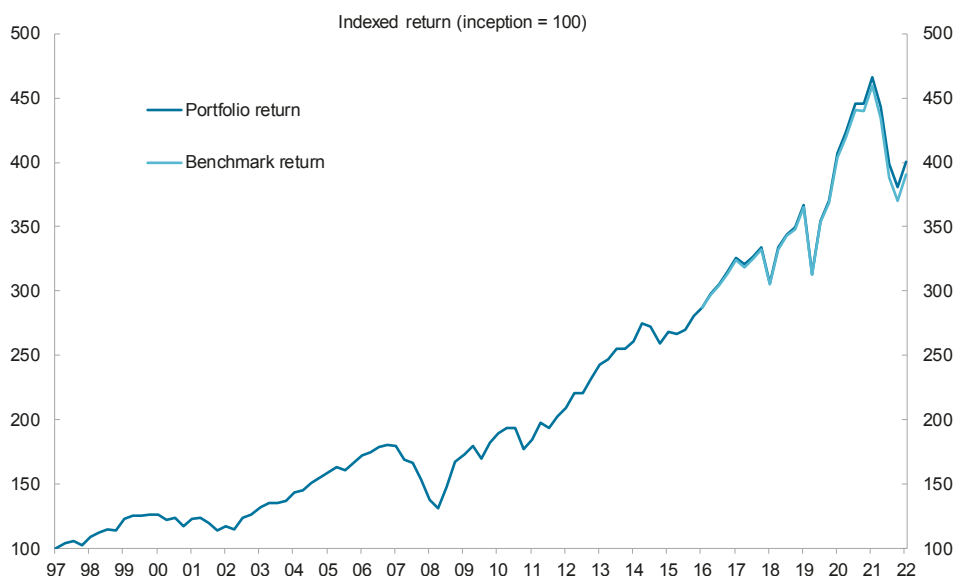
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The composite inception date and the composite creation date of the Government Pension Fund Global composite are both 31 December 1997.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global composite contains only this portfolio. The fund is invested in four asset classes: equity, fixed income, real estate and unlisted renewable infrastructure.

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure¹ investments, are measured against the assigned equity and fixed-income benchmark, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. It is up to Norges Bank Investment Management to decide whether and how much to invest in unlisted real estate and unlisted renewable infrastructure, within a limit of 7 percent and 2 percent of the fund respectively. On 1 May 2019 the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

In the period from June 2009 to December 2016, the strategic weights were 60 percent equity and 40 percent fixed income, with real estate investments, when introduced in 2011, gradually reducing the fixed-income weight according to their market value. Before June 2009, the strategic weights were 40 percent equity and 60 percent fixed income.

Norges Bank Investment Management seeks to achieve the highest possible return after costs measured in the Pension Fund's currency basket and within the applicable management framework. The Ministry of Finance has, however, set limits for how much risk Norges Bank Investment Management may take in its active management of the Pension Fund. The management shall be organised with the aim that the expected annualised standard deviation for the relative return of the Pension Fund and the associated benchmark index (expected tracking error) does not exceed 1.25 percentage points. This level was increased from 1.00 percentage point on 1 February 2016.

The fund is not allowed to invest in companies that Norges Bank has excluded from the investment universe and further not in securities issued by a Norwegian enterprise, securities denominated in Norwegian kroner, real estate or renewable infrastructure located in Norway or real estate or renewable

¹ from 31st of May 2021

infrastructure companies, funds or similar structures where the primary purpose is to invest in Norway. Accrued costs and deposits on real estate and renewable infrastructure are included in the composite's assets and firm assets prior to inception of real estate on 31 March 2011 and prior to inception of renewable infrastructure on 31 May 2021.

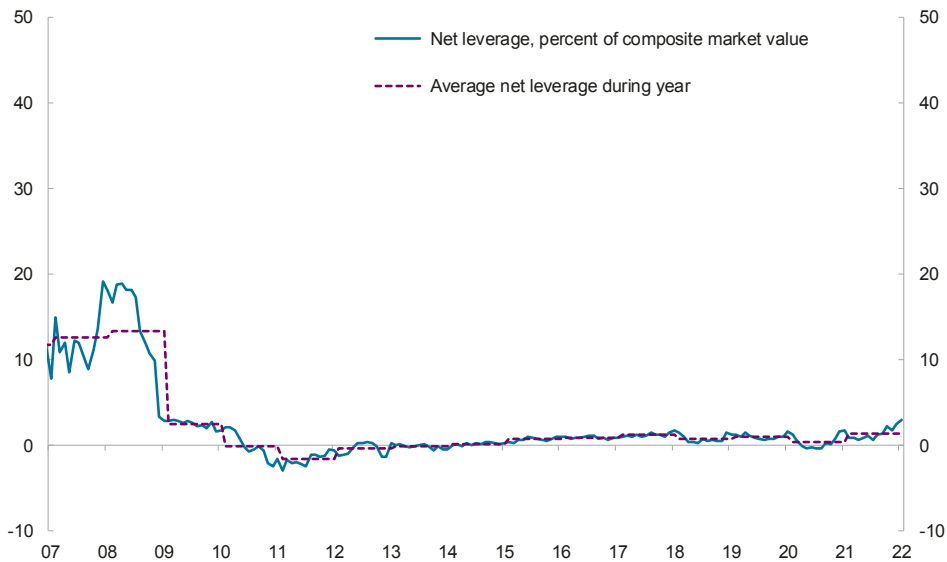
From the second quarter of 2000 and up to the fourth quarter of 2002, a tactical allocation fund was included in the numbers for the Government Pension Fund Global, but not at asset class level. Its mandate was to invest across asset classes using quantitative analysis, and it had average total assets under management of around 4 billion kroner during that period.

Derivatives, leverage and short positions

Norges Bank Investment Management's access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. Specifically, financial derivatives that are naturally linked to investments in the equity and bond portfolio may be used. In accordance with the investment mandate, the Pension Fund may use derivative in order to achieve the lowest possible transaction cost, and to efficiently rebalance the portfolio. Foreign exchange contracts are the most widely used financial derivatives. The average net one-leg exposure of foreign exchange contracts through 2022 was 371,882 million Norwegian Kroner, up from 205,538 million last year.

Leverage may be used with a view to performing the management task in an effective manner, but not with a view to increasing the investment portfolio's exposure to risky assets in the equity and bond portfolio. More specifically, leveraging the equity and fixed-income portfolio is not permitted beyond what is necessary to minimise transaction costs or is a normal part of investment management, and not in excess of 5 percent of the net asset value of the combined equity and fixed-income portfolios. At the end of 2022, the net leverage was 2.8 percent of the aggregated equity and fixed-income portfolios. For the unlisted real estate portfolio, the maximum allowed debt ratio is 35 percent, equating to a net leverage level of 54 percent for that portfolio. The debt ratio of the unlisted real estate portfolio was 7.6 percent of total real estate assets at the end of 2022. For the unlisted renewable infrastructure portfolio, the maximum allowed debt ratio is 60 percent, equating to a net leverage level of 150 percent for that portfolio. The unlisted renewable infrastructure portfolio had no debt at the end of 2022. For the composite as a whole, the net leverage was 3.0 percent at the end of 2022 and 1.4 percent on average during 2022.

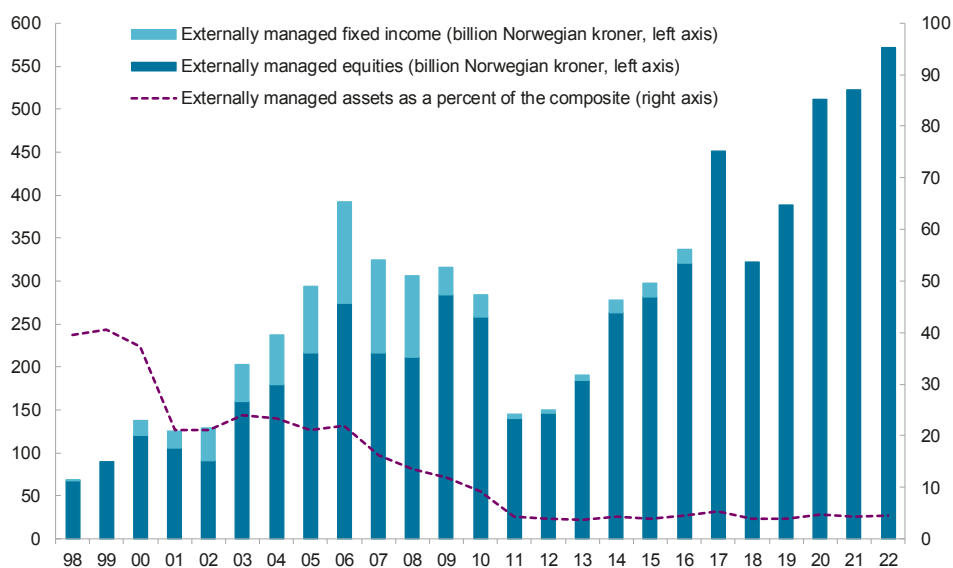
The use of leverage was scaled back in the second half of 2009 due to changes in market conditions and a reorganisation of Norges Bank Investment Management's fixed-income management. Historically, leverage has predominantly been used within the fixed-income composite to exploit differences in rates or credit spreads by combining derivatives, forward contracts and repurchase agreements. Within the equity segment, leverage is mainly used to efficiently handle fund management activities and has historically been insignificant. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011 the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite's fair value is shown as a time series.



Short positions are permitted in the management of the Pension Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions are laid down as part of the CEO investment mandate issued by Norges Bank's Executive Board. The current use of short positions in the composite's portfolio is immaterial.

Sub-advisors

Norges Bank Investment Management uses external investment managers to handle parts of the portfolio. Norges Bank Investment Management awards management mandates to organisations with expertise in clearly defined sectors, countries or regions. The fund's externally managed mandates had assets under management worth 572 billion kroner at the end of 2022. This was equivalent to approximately 4.6 percent of the composite's total value. There was a total of 107 external mandates, all equity, managed by 100 different investment managers as at year-end 2022. The graph below shows the composition of externally managed assets at each year-end since inception as well as its share of the composite's net asset value. The complete list of organisations managing assets on behalf of Norges Bank Investment Management is available on our website www.nbim.no.



Benchmark description

The Government Pension Fund Global composite was assigned a benchmark on 1 January 2017, after the Ministry of Finance changed its management mandate to specify that all the fund's investments, including the real estate and unlisted renewable infrastructure² investments, are to be measured against the fund's benchmark index consisting of global equity and bond indices. For periods prior to 2017 no benchmark returns are presented, as no appropriate benchmark had previously been assigned to the real estate portion of the fund. Any benchmark for the total portfolio would have excluded this asset class; therefore, none had been deemed appropriate. The current strategic benchmark index weights, adopted on 1 May 2019, are 70 percent for equity and 30 percent for fixed income.

In the period from 1 January 2017 to 1 May 2019 the strategic weights for the benchmark assigned by the Ministry of Finance were 62.5 percent equity and 37.5 percent fixed income. On 30 June 2017, the Ministry of Finance set a target for moving the strategic benchmark weights to 70 percent for equity and 30 percent for fixed income. On 1 May 2019, the transition was complete and the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

The equity part of the strategic benchmark index is composed on the basis of the FTSE Global All Cap Index. The benchmark is market capitalisation weighted with an additional layer of country factors applied to it. The equities in the benchmark index are assigned the following factors based on their country of origin: European developed markets excluding Norway 2.5, USA and Canada 1, other developed markets 1.5 and emerging markets 1.5. The allocation to countries and regions and the distinction between developed and emerging markets are based on the FTSE Global All Cap Index. New markets added to the FTSE Global All Cap Index from 1 January 2019 onwards are assigned a weight of 0. The benchmark is adjusted for the Norges Bank's tax position on dividends. Securities issued by companies excluded by Norges Bank pursuant to the guidelines for observation and exclusion from the Government Pension Fund Global are not included in the benchmark index for the equity portfolio. At year-end the equity benchmark consisted of 45 countries and around 9,000 securities.

The fixed-income part of the strategic benchmark index consists of 70 percent developed market government debt (nominal and inflation-linked government bonds, and including bonds issued by supranational organisations) and 30 percent developed market corporate debt (corporate bonds, including covered bonds). The index consists of the Bloomberg Barclays Global Treasury, GDP weighted by country, the Bloomberg Barclays Global Inflation-Linked index (Series L), and the subgroup Supranational (within government related) in the Bloomberg Barclays Global Aggregate bond index for the government sector and all corporate bonds and the subgroup covered bonds within Bloomberg Barclays Global Aggregate limited to the currencies US dollars, Canadian dollars, euros, British pounds, Swedish kronor, Danish kroner and Swiss francs. The Bloomberg Barclays indices are not adjusted for withholding tax but are adjusted for excluded companies/issuers. At year-end the benchmark consisted of 12 currencies and around 17,000 securities.

In the operational management of the fund, to ensure an overall risk management of the fund, the listed, unlisted real estate and unlisted renewable infrastructure investments are assigned benchmarks with a combination of bonds and equities from the overall GPFGB benchmarks tailor-made to the actual currency composition and characteristics of the real estate and unlisted renewable infrastructure investments. The remaining investments are assigned benchmarks where the actual composition of the unlisted renewable infrastructure, unlisted and listed real estate benchmark are adjusted from the actual benchmark.

The actual weights of the benchmark as at 31 December 2022 are shown below together with historical strategic changes to the benchmark.

² from 31st of May 2021

Country for equity benchmark (Currency for fixed-income benchmark)	Equities Actual benchmark index	Fixed-income Actual benchmark index
Asset class weights	70.88	29.12
USA (USD)	44.59	49.32
Canada (CAD)	2.09	3.56
Brazil	0.57	
Mexico (MXN)	0.33	
Chile (CLP)	0.08	
Colombia	0.02	
Total Americas	47.68	52.88
France	4.78	
Germany	3.71	
Netherlands	1.98	
Italy	1.21	
Spain	1.17	
Finland	0.66	
Belgium	0.55	
Austria	0.16	
Ireland	0.12	
Portugal	0.12	
Greece	0.04	
<i>Euro-area (EUR)</i>	<i>14.50</i>	<i>28.74</i>
United Kingdom (GBP)	7.10	5.47
Switzerland (CHF)	4.53	0.88
Sweden (SEK)	1.65	0.71
Denmark (DKK)	1.38	0.47
Poland (PLN)	0.15	
Turkey (TRY)	0.14	
Hungary (HUF)	0.02	
Czech Republic (CZK)	0.01	
Total Europe	29.47	36.26
Japan (JPY)	7.27	7.74
China (CNH)	4.00	
Australia (AUD)	2.44	2.24
Taiwan (TWD)	1.98	
South Korea (KRW)	1.51	
India (INR)	2.06	
Hong Kong (HKD)	0.91	0.04
Singapore (SGD)	0.44	0.49
Thailand (THB)	0.35	
Malaysia (MYR)	0.23	
Indonesia (IDR)	0.26	
New Zealand (NZD)	0.12	0.35
Philippines (PHP)	0.10	
Pakistan (PKR)	0.01	
Total Asia / Oceania	21.69	10.86
South Africa (ZAR)	0.48	
Israel (ILS)	0.21	
Qatar (QAR)	0.13	
United Arab Emirates (AED)	0.20	
Kuwait (KWD)	0.13	
Egypt (EGP)	0.01	
Total Middle East and Africa	1.16	

Figures in percent.

Strategic benchmark changes	Implementation
Capital Allocation	
Equity is introduced to the fund and allocation is set at 40%	June 1998
Equity allocation is increased to 60% and Fixed Income reduced to 40%	June 2009
Equity allocation was increased to 62.5% and fixed income reduced 37.5%	January 2017
Equity allocation was increased to 70% and fixed income allocation reduced to 30%	May 2019

Benchmark rebalancing

The actual benchmark weights may differ from the strategic benchmark weights due to the price movements in the market. For example, a stronger increase in equity prices will push the equity portion above its strategic weight. As a result, the actual benchmark portfolio may deviate from the strategic long-term benchmark portfolio. Inflows and outflows are determined based on asset class weight in the actual benchmark.

The Ministry of Finance has set rules for rebalancing back to the strategic weights. These rules specify the maximum permitted deviation between the weights in the actual benchmark portfolio and the strategic benchmark portfolio before the benchmark must be rebalanced back to strategic weights. Rebalancing shall take place when the equity share in the actual benchmark index differs by more than 2 percentage points from the equity weight in the strategic benchmark index on the last trading day of the month. The Ministry of Finance has set more detailed provisions on the rebalancing of the actual benchmark index.

Portfolio rebalancing

Inflows and outflows to the portfolio are treated independently of the benchmark. The portfolio is rebalanced independently of the benchmark but is governed by the tracking error limits.

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio was 4 basis points for 2022, at the same level as for 2021. The table below shows the different components of the total management costs. Note that this table also covers internal costs (e.g. personnel costs, IT/support systems costs) in relation to real estate investment management and unlisted renewable infrastructure management, but not direct costs incurred holdings structures.

Management costs	2022		2021	
	Amount	Percent	Amount	Percent
Custody and settlement costs	473		468	
Minimum fees to external managers	963		896	
Performance based fees to external managers	718		840	
Internal and other costs	3,072		2,437	
Total management costs	5,226	0.04	4,640	0.04
Total management cost excl. performance based fees	4,508	0.04	3,801	0.03

Amounts stated in millions of Norwegian kroner.

Performance results: Government Pension Fund Global ex. real estate through the end of 2016 31 December 1997 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	Firm Assets ⁵
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2010	9.62	8.57	1.06	13.30	12.13	1	3,077,441	3,317,700
2011	-2.55	-2.42	-0.13	10.53	9.96	1	3,300,444	3,539,396
2012	13.45	13.24	0.21	8.25	8.05	1	3,790,646	4,043,153
2013	15.97	14.98	0.99	7.27	7.11	1	4,985,940	5,311,043
2014	7.53	8.30	-0.77	5.76	5.62	1	6,289,870	6,778,049
2015	2.52	2.07	0.45	6.80	6.68	1	7,239,955	7,886,255
2016	7.12	6.97	0.15	6.67	6.55	1	7,268,738	7,687,711
2017	13.66	12.96	0.70	6.33	6.25	1	8,488,455	8,672,176
2018	-6.12	-5.82	-0.30	6.22	6.15	1	8,255,945	8,353,411
2019	19.95	19.72	0.23	6.94	6.87	1	10,088,083	10,215,370
2020	10.86	10.60	0.27	11.99	11.84	1	10,913,762	11,032,367
2021	14.51	13.76	0.75	11.24	11.12	1	12,339,549	12,461,505
2022	-14.11	-14.98	0.87	13.59	13.72	1	12,429,059	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the end of 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

	3 Years	5 Years	10 Years	Since inception
Composite gross return ¹	2.92	4.19	6.69	5.70
Custom benchmark return ¹	2.27	3.82	6.36	5.41
Relative return ¹	0.65	0.37	0.33	0.30
Standard deviation of composite return ²	13.59	11.70	9.28	8.38
Standard deviation of custom benchmark return ²	13.72	11.77	9.29	8.13
Tracking error ³	0.49	0.44	0.41	0.65
Information ratio ⁴	1.28	0.80	0.77	0.47
Composite Sharpe ratio ⁵	0.23	0.31	0.67	0.50
Benchmark Sharpe ratio ⁵	0.19	0.28	0.64	0.48
Jensen's alpha ⁶	0.65	0.37	0.32	0.19
Appraisal ratio ⁷	1.36	0.85	0.79	0.32

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly returns.

³ Ex-post standard deviation of monthly relative returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

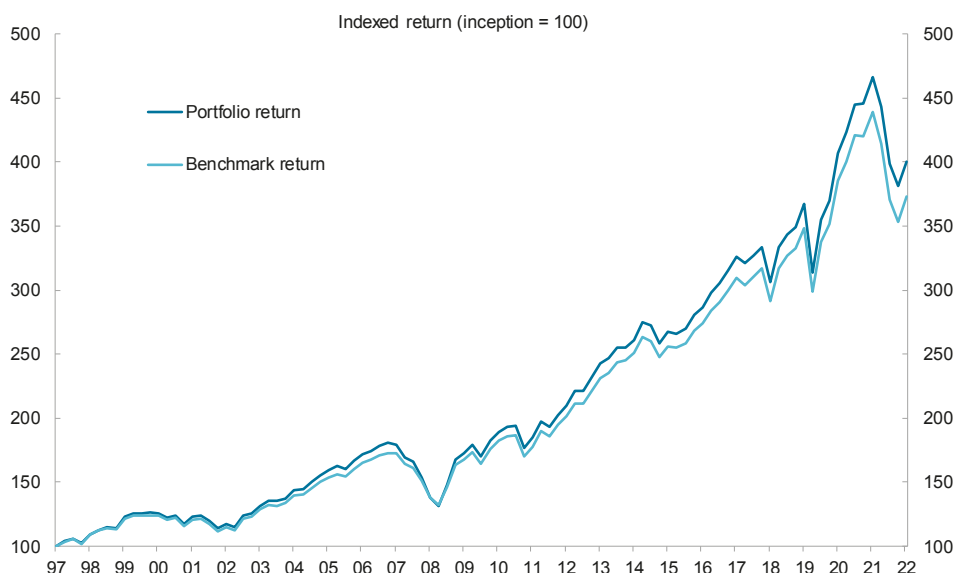
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite name change

As of 1 January 2019, the Government Pension Fund Global (ex. real estate until end of 2016) composite has been renamed the Government Pension Fund Global ex. real estate through the end of 2016 composite.

Composite creation date and inception date

The composite inception date and the composite creation date of the Government Pension Fund Global ex. real estate through the end of 2016 composite are both 31 December 1997.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The fund is invested in four asset classes: equity, fixed income, real estate and unlisted renewable infrastructure. The Government Pension Fund Global ex. real estate through the end of 2016 composite is from 2017 onwards the same as the Government Pension Fund Global composite. However, before 2017 the composite excluded the real estate investments because those investments were not part of the assets that were compared with the benchmark assigned by the Ministry of Finance.

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure³ investments, are measured against the assigned equity and fixed-income benchmark, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. It is up to Norges Bank Investment Management to decide whether and how much to invest in unlisted real estate and unlisted renewable infrastructure, within a limit of 7 percent and 2 percent of the fund respectively. On 1 May 2019, the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

In the period from June 2009 to December 2016, the strategic weights were 60 percent equity and 40 percent fixed income, with real estate investments, when introduced in 2011, gradually reducing the fixed-income weight according to their market value. Before June 2009, the strategic weights were 40 percent equity and 60 percent fixed income.

Norges Bank Investment Management seeks to achieve the highest possible return after costs measured in the Pension Fund's currency basket and within the applicable management framework. The Ministry of Finance has, however, set limits for how much risk Norges Bank Investment Management may

³ from 31st of May 2021

take in its active management of the Pension Fund. The management shall be organised with the aim that the expected annualised standard deviation for the relative return between the Pension Fund and the associated benchmark index (expected tracking error) does not exceed 1.25 percentage points. This level was increased from 1.00 percentage point on February 1, 2016.

The fund is not allowed to invest in companies that Norges Bank has excluded from the investment universe and further not in securities issued by a Norwegian enterprise, securities denominated in Norwegian kroner, real estate or renewable infrastructure located in Norway or real estate or renewable infrastructure companies, funds or similar structures where the primary purpose is to invest in Norway.

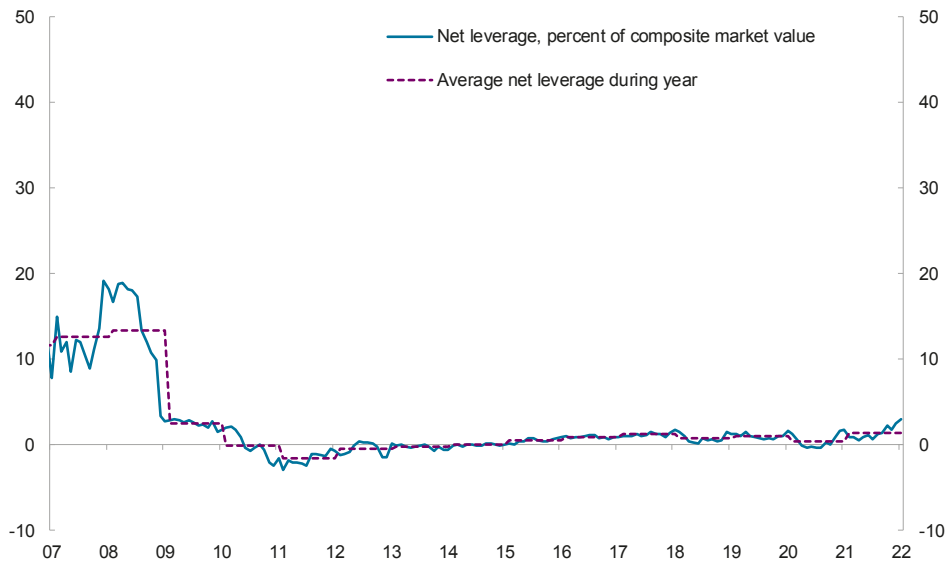
From the second quarter of 2000 and up to the fourth quarter of 2002, a tactical allocation fund was included in the numbers for the Government Pension Fund Global ex. real estate through the end of 2016 composite, but not at asset class level. Its mandate was to invest across asset classes using quantitative analysis, and it had average total assets under management of around 4 billion kroner during that period.

Derivatives, leverage and short positions

Norges Bank Investment Management's access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. Specifically, financial derivatives that are naturally linked to investments in the equity and bond portfolio may be used. In accordance with the investment mandate, the Pension Fund may use derivative in order to achieve the lowest possible transaction cost, and to efficiently rebalance the portfolio. Foreign exchange contracts are the most widely used financial derivatives. The average net one-leg exposure of foreign exchange contracts through 2022 was 371,882 million Norwegian Kroner, up from 205,538 million last year.

Leverage may be used with a view to performing the management task in an effective manner, but not with a view to increasing the investment portfolio's exposure to risky assets in the equity and bond portfolio. More specifically, leveraging the equity and fixed-income portfolio is not permitted beyond what is necessary to minimise transaction costs or is a normal part of investment management, and not in excess of 5 percent of the net asset value of the combined equity and fixed-income portfolios. At the end of 2022, the net leverage was 2.8 percent of the aggregated equity and fixed-income portfolios. For the unlisted real estate portfolio, the maximum allowed debt ratio is 35 percent, equating to a net leverage level of 54 percent for that portfolio. The debt ratio of the unlisted real estate portfolio was 7.6 percent of total real estate assets at the end of 2022. For the unlisted renewable infrastructure portfolio, the maximum allowed debt ratio is 60 percent, equating to a net leverage level of 150 percent for that portfolio. The unlisted renewable infrastructure portfolio had no debt at the end of 2022. For the composite as a whole, the net leverage was 3.0 percent at the end of 2022 and 1.4 percent on average during 2022.

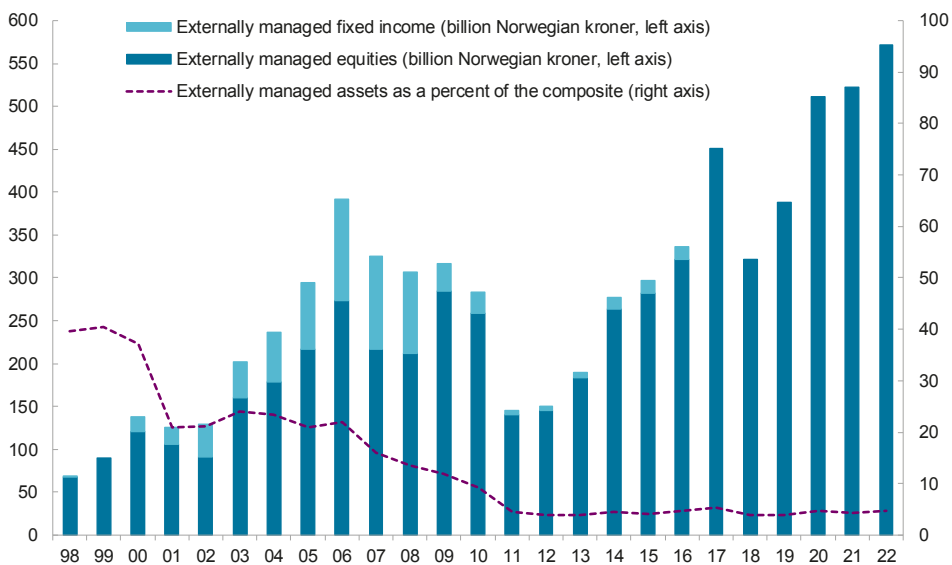
The use of leverage was scaled back in the second half of 2009 due to changes in market conditions and a reorganisation of Norges Bank Investment Management's fixed-income management. Historically, leverage has predominantly been used within the fixed-income composite to exploit differences in rates or credit spreads by combining derivatives, forward contracts and repurchase agreements. Within the equity segment leverage is mainly used to efficiently handle fund management activities and has historically been insignificant. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011 the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite's fair value is shown as a time series.



Short positions are permitted in the management of the Pension Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions are laid down as part of the CEO investment mandate issued by Norges Bank’s Executive Board. The current use of short positions in the composite’s portfolio are immaterial.

Sub-advisors

Norges Bank Investment Management uses external investment managers to handle parts of the portfolio. Norges Bank Investment Management awards management mandates to organisations with expertise in clearly defined sectors, countries and/or regions. The fund’s externally managed mandates had assets under management worth 572 billion kroner at the end of 2022. This was equivalent to 4.6 percent of the composite’s total value. There was a total of 107 external mandates, all equity, managed by 100 different investment managers as at year-end 2022. The graph below shows the composition of externally managed assets at each year-end since inception as well as its share of the composite’s net asset value. The complete list of organisations managing assets on behalf of Norges Bank Investment Management is available on our website www.nbim.no.



Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure⁴ investments, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. In a subsequent update to the mandate on 30 June 2017, the Ministry of Finance set a target for eventually moving the strategic benchmark weights to 70 percent for equity and 30 percent for fixed income. On 1 May 2019, the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

The equity part of the strategic benchmark index is composed on the basis of the FTSE Global All Cap Index. The benchmark is market capitalisation weighted with an additional layer of country factors applied to it. The equities in the benchmark index are assigned the following factors based on their country of origin: European developed markets excluding Norway 2.5, USA and Canada 1, other developed markets 1.5 and emerging markets 1.5. The allocation to countries and regions and the distinction between developed and emerging markets are based on the FTSE Global All Cap Index. New markets added to the FTSE Global All Cap Index from 1 January 2019 onwards are assigned a weight of 0. The benchmark is adjusted for the Norges Bank's tax position on dividends. Securities issued by companies excluded by Norges Bank pursuant to the guidelines for observation and exclusion from the Government Pension Fund Global are not included in the benchmark index for the equity portfolio. At year-end the equity benchmark consisted of 45 countries and around 9,000 securities.

The fixed-income part of the strategic benchmark index consists of 70 percent developed market government debt (nominal and inflation-linked government bonds, and including bonds issued by supranational organisations) and 30 percent developed market corporate debt (corporate bonds, including covered bonds). The index consists of the Bloomberg Barclays Global Treasury, GDP weighted by country, the Bloomberg Barclays Global Inflation-Linked index (Series L), and the subgroup Supranational (within government related) in the Bloomberg Barclays Global Aggregate bond index for the government sector and all corporate bonds and the subgroup covered bonds within Bloomberg Barclays Global Aggregate limited to the currencies US dollars, Canadian dollars, euros, British pounds, Swedish kronor, Danish kroner and Swiss francs. The Bloomberg Barclays indices are not adjusted for withholding tax but are adjusted for excluded companies/issuers. At year-end the benchmark consisted of 12 currencies and around 17,000 securities.

In the operational management of the fund, to ensure an overall risk management of the fund, the listed real estate, unlisted real estate and unlisted renewable infrastructure investments are assigned benchmarks with a combination of bonds and equities from the overall GPFG benchmarks tailor-made to the actual currency composition and characteristics of the real estate and unlisted renewable infrastructure investments. The remaining investments are assigned benchmarks where the actual composition of the unlisted renewable infrastructure, unlisted and listed real estate benchmark are adjusted from the actual benchmark.

In the period from June 2009 to December 2016, the benchmark's strategic weights were 60 percent equity and 40 percent fixed income, with real estate investments, when introduced in 2011, gradually reducing the fixed-income weight according to their market value. Before June 2009, the strategic weights were 40 percent equity and 60 percent fixed income.

The actual weights of the benchmark as at 31 December 2022 are shown below together with historical strategic changes to the benchmark.

⁴ from 31st of May 2021

Country for equity benchmark (Currency for fixed-income benchmark)	Equities Actual benchmark index	Fixed-income Actual benchmark index
Asset class weights	70.88	29.12
USA (USD)	44.59	49.32
Canada (CAD)	2.09	3.56
Brazil	0.57	
Mexico (MXN)	0.33	
Chile (CLP)	0.08	
Colombia	0.02	
Total Americas	47.68	52.88
France	4.78	
Germany	3.71	
Netherlands	1.98	
Italy	1.21	
Spain	1.17	
Finland	0.66	
Belgium	0.55	
Austria	0.16	
Ireland	0.12	
Portugal	0.12	
Greece	0.04	
<i>Euro-area (EUR)</i>	<i>14.50</i>	<i>28.74</i>
United Kingdom (GBP)	7.10	5.47
Switzerland (CHF)	4.53	0.88
Sweden (SEK)	1.65	0.71
Denmark (DKK)	1.38	0.47
Poland (PLN)	0.15	
Turkey (TRY)	0.14	
Hungary (HUF)	0.02	
Czech Republic (CZK)	0.01	
Total Europe	29.47	36.26
Japan (JPY)	7.27	7.74
China (CNH)	4.00	
Australia (AUD)	2.44	2.24
Taiwan (TWD)	1.98	
South Korea (KRW)	1.51	
India (INR)	2.06	
Hong Kong (HKD)	0.91	0.04
Singapore (SGD)	0.44	0.49
Thailand (THB)	0.35	
Malaysia (MYR)	0.23	
Indonesia (IDR)	0.26	
New Zealand (NZD)	0.12	0.35
Philippines (PHP)	0.10	
Pakistan (PKR)	0.01	
Total Asia / Oceania	21.69	10.86
South Africa (ZAR)	0.48	
Israel (ILS)	0.21	
Qatar (QAR)	0.13	
United Arab Emirates (AED)	0.20	
Kuwait (KWD)	0.13	
Egypt (EGP)	0.01	
Total Middle East and Africa	1.16	

Figures in percent.

Strategic benchmark changes	Implementation
Capital Allocation	
Equity is introduced to the fund and allocation is set at 40%	June 1998
Equity allocation is increased to 60% and Fixed Income reduced to 40%	June 2009
Equity allocation was increased to 62.5% and fixed income reduced 37.5%	January 2017
Equity allocation was increased to 70% and fixed income allocation reduced to 30%	May 2019
Equity	
Inclusion of Emerging Markets	
Brazil, Mexico, Greece, Turkey, Taiwan, Thailand and South Korea	January 2001
Small-cap included in the benchmark	March 2008
Benchmark consisting of countries in categories "Developed", "Advanced Emerging" and "Secondary Emerging" within FTSE All Cap and specific country list is discontinued	December 2008
Country market capitalisation factors introduced. Strategic weights on regions removed	July 2012
The actual composition of stocks in the real estate benchmark is eliminated from the equity benchmark	January 2017
<i>Exclusion of crude oil producer classified stock from benchmark</i>	January 2021
Exclusion of offshore drilling and other services classified stock from benchmark	September 2022
Fixed income	
Introduction of corporate and securitised bonds	December 2003
Asia/Oceania regional fixed income weight reduced by 10% (offset by a 5% increase in the regional weights for America and Europe)	December 2003
Inflation linked government bonds included in the benchmark	November 2005
Reduction of 5% in the regional Asia weight met with a corresponding increase in the Europe weight	September 2006
GDP weighting of government segment and 70%/30% split of government/private segments introduced. Strategic weights on regions removed	February 2012
Emerging market currencies introduced to benchmark	July 2012
Weighting factors introduced for selected currencies in the government segment	April 2014
The actual composition of bonds in the real estate benchmark is eliminated from the fixed-income benchmark	January 2017
Emerging market currencies removed from the benchmark	July 2021
Real estate	
Combination of bonds and equities as part of the overall GPFGB benchmarks tailor-made to the actual currency composition and characteristics of the investments	January 2017

Benchmark rebalancing

The actual benchmark weights may differ from the strategic benchmark weights due to the price movements in the market. For example, a stronger increase in equity prices will push the equity portion above its strategic weight. As a result, the actual benchmark portfolio may deviate from the strategic long-term benchmark portfolio. Inflows and outflows are determined based on asset class weights in the actual benchmark.

The Ministry of Finance has set rules for rebalancing back to the strategic weights. These rules specify the maximum permitted deviation between the weights in the actual benchmark portfolio and the strategic benchmark portfolio before the benchmark must be rebalanced back to strategic weights. Rebalancing shall take place when the equity share in the actual benchmark index differs by more than 2 percentage points from the equity weight in the strategic benchmark index on the last trading day of the month. The Ministry of Finance has set more detailed provisions on the rebalancing of the actual benchmark index.

Portfolio rebalancing

Inflows and outflows to the portfolio are treated independently of the benchmark. The portfolio is rebalanced independently of the benchmark but is governed by the tracking error limits.

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio was 4 basis points for 2022, at the same level as for 2021. The table below shows the different components of the total management costs. Note that this table also covers internal costs (e.g. personnel costs, IT/support systems costs) in relation to real estate investment management and unlisted renewable infrastructure management, but not direct costs incurred in the holdings structures.

Management costs	2022		2021	
	Amount	Percent	Amount	Percent
Custody and settlement costs	473		468	
Minimum fees to external managers	963		896	
Performance based fees to external managers	718		840	
Internal and other costs	3,072		2,437	
Total management costs	5,226	0.04	4,640	0.04
Total management cost excl. performance based fees	4,508	0.04	3,801	0.03

Amounts stated in millions of Norwegian kroner.

Performance results:

Government Pension Fund Global equity

31 December 1998 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	Firm Assets ⁵
1999	34.81	31.32	3.49			1	93,651	340,855
2000	-5.82	-6.31	0.49			1	152,829	522,544
2001	-14.60	-14.66	0.06	15.24	14.81	1	246,412	739,116
2002	-24.39	-24.47	0.07	16.94	16.74	1	230,993	743,670
2003	22.84	22.33	0.51	18.15	18.02	1	361,165	1,044,264
2004	13.00	12.21	0.79	15.30	15.26	1	416,298	1,236,653
2005	22.49	20.33	2.16	9.71	9.53	1	582,305	1,648,874
2006	17.04	17.13	-0.09	7.66	7.17	1	725,922	2,047,074
2007	6.82	5.67	1.15	8.70	8.25	1	957,895	2,261,368
2008	-40.71	-39.56	-1.15	17.01	16.28	1	1,128,937	2,498,961
2009	34.27	32.41	1.86	20.85	20.19	1	1,644,106	2,851,020
2010	13.34	12.61	0.73	22.20	21.56	1	1,891,250	3,317,700
2011	-8.84	-8.36	-0.48	17.74	17.46	1	1,944,722	3,539,396
2012	18.06	17.54	0.52	14.29	14.03	1	2,335,830	4,043,153
2013	26.28	24.99	1.28	12.39	12.12	1	3,106,944	5,311,043
2014	7.90	8.73	-0.82	9.14	8.95	1	3,939,923	6,778,049
2015	3.83	3.00	0.83	10.24	10.05	1	4,571,808	7,886,255
2016	8.72	8.58	0.15	10.50	10.29	1	4,691,863	7,687,711
2017	19.44	18.68	0.76	9.99	9.80	1	5,653,440	8,672,176
2018	-9.49	-8.80	-0.69	9.73	9.57	1	5,477,159	8,353,411
2019	26.02	25.65	0.37	10.34	10.22	1	7,145,463	10,215,370
2020	12.14	11.74	0.40	17.12	16.88	1	7,945,475	11,032,367
2021	20.76	19.98	0.78	15.91	15.70	1	8,878,464	12,461,505
2022	-15.36	-15.32	-0.04	18.28	18.16	1	8,672,186	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the end of 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

	3 years	5 years	10 years	Since inception
Composite gross return ¹	4.65	5.51	9.16	6.02
Custom benchmark return ¹	4.32	5.40	8.90	5.60
Relative return ¹	0.33	0.10	0.25	0.42
Standard deviation of composite return ²	18.28	16.08	13.09	14.63
Standard deviation of custom benchmark return ²	18.16	15.96	12.95	14.35
Tracking error ³	0.43	0.42	0.44	0.72
Information ratio ⁴	0.79	0.28	0.58	0.62
Composite Sharpe ratio ⁵	0.30	0.34	0.69	0.36
Benchmark Sharpe ratio ⁵	0.29	0.34	0.67	0.34
Jensen's alpha ⁶	0.31	0.08	0.16	0.35
Appraisal ratio ⁷	0.73	0.19	0.39	0.53

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

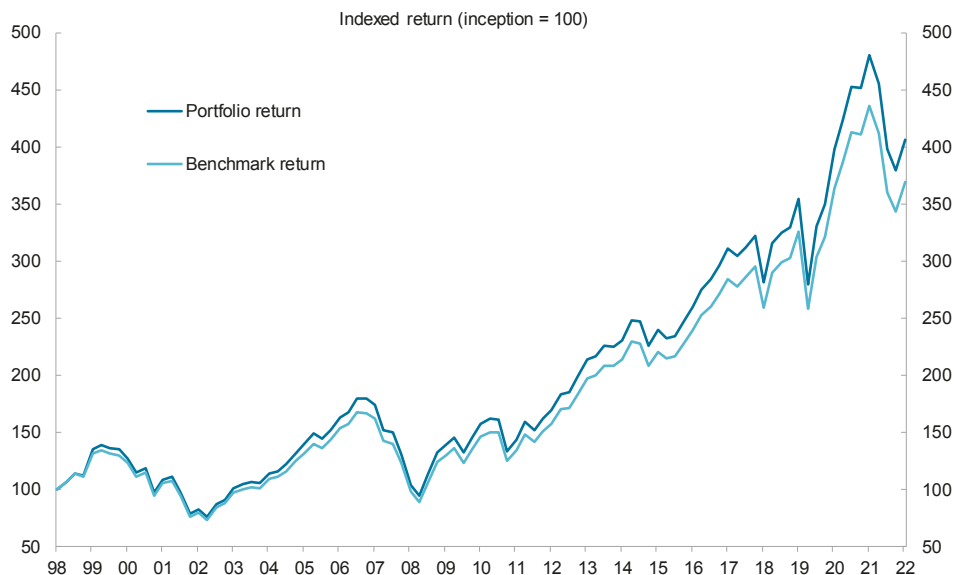
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The composite inception date and the composite creation date of the Government Pension Fund Global equity composite are both 31 December 1998.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global equity composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the equity asset class. The composite's investment strategies can be grouped into three broad categories: asset management, security selection and strategies for allocation.

Asset management strategies aim to implement the targeted market exposure, balancing transaction costs and risk and return considerations. The strategy aims to take advantage of the relative valuation across instruments and issuers, the pricing effects of corporate and market events. Securities lending is an integrated part of our asset management strategies where counterparty default risk exposure is actively managed.

The securities selection strategy is based on company analysis with the aim of improving return on investments, providing deep insight into the fund's largest investments and contribute to the fund's role as a responsible and active owner.

The allocation strategy includes various sub-strategies seeking to improve the fund's market and risk exposure in the long term.

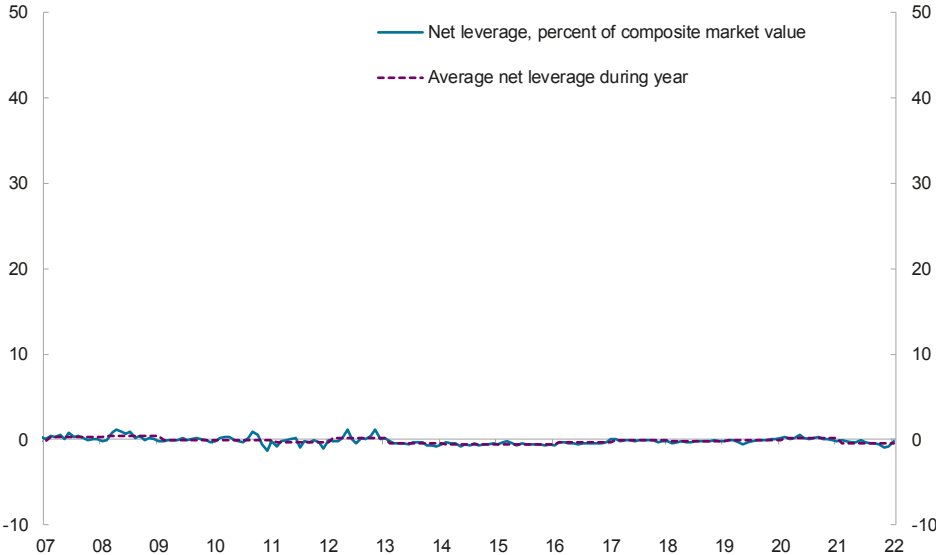
During 1998, the equity part of the Pension Fund was established as part of a transition process. In this process, large cash inflows and subsequent large asset purchases took place. No return numbers or assets are reported for 1998. Irrespective of this, the equity portfolio's fair value is included in the total Pension Fund's assets and the firm assets as at 31 December 1998.

Derivatives, leverage and short positions

Norges Bank Investment Management's access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. Specifically, financial derivatives that are naturally linked to investments in the equity portfolio may be used. In accordance with the investment mandate, the Pension Fund may use derivative in order to

achieve the lowest possible transaction cost, and to efficiently rebalance the portfolio. Within the equity asset class, the use of derivatives has been limited and have been used for efficient portfolio management. Contract for difference are the most widely used financial derivatives. At year end the net fair value of the contract for difference contract was -366 million Norwegian Kroner, compared with -517 million Norwegian Kroner last year. The average exposure on purchased contract for difference through 2022 was 78,136 million Norwegian Kroner, up from 63 332 million last year. The average exposure on sold contract for difference through 2022 was 76,607 million Norwegian Kroner, up from 67 206 million last year.

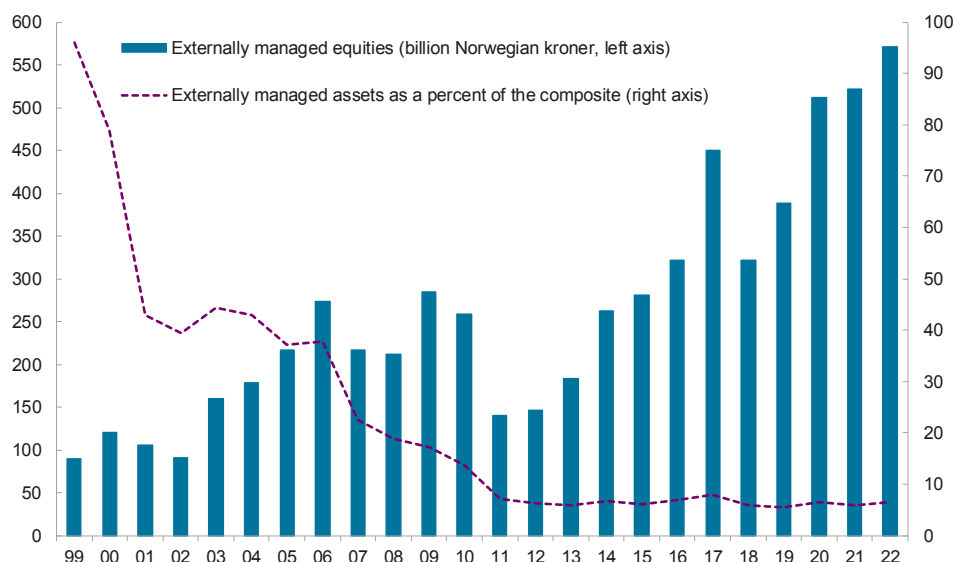
Leverage may be used with a view to performing the management task in an effective manner, but not with a view to increasing the investment portfolio’s exposure to risky assets in the equity portfolio. More specifically, leveraging the portfolio is not permitted beyond what is necessary to minimise transaction costs or is a normal part of investment management, and not in excess of 5 percent of the net asset value of the combined equity and fixed-income portfolios. Within the equity segment leverage is mainly used to efficiently handle fund management activities and has historically not been material. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011 the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite’s fair value is shown as a time series.



Short positions are permitted in the management of the Pension Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions are laid down as part of the CEO investment mandate issued by Norges Bank’s Executive Board. The current use of short positions in the composite’s portfolio is immaterial.

Sub-advisors

Norges Bank Investment Management uses external investment managers to handle parts of the portfolio. Norges Bank Investment Management awards management mandates to organisations with expertise in clearly defined sectors and/or regions. The fund’s externally managed equity mandates had assets under management worth 572 billion kroner at the 2022. This was equivalent to around 6.6 percent of the composite’s total value. There was a total of 107 external equity mandates managed by 100 different investment managers as at year-end 2022. The graph below shows the value of externally managed assets in the composite at each year-end since inception as well as its share of the composite’s net asset value. The complete list of organisations managing equity assets on behalf of Norges Bank Investment Management is available on our website www.nbim.no.



Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure⁵ investments, are measured against the assigned equity and fixed-income benchmark, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. In a subsequent update to the mandate on 30 June 2017, the Ministry of Finance set a target for eventually moving the strategic benchmark weights to 70 percent for equity and 30 percent for fixed income. On 1 May 2019, the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

The equity part of the strategic benchmark index is composed on the basis of the FTSE Global All Cap Index. The benchmark is market capitalisation weighted with an additional layer of country factors applied to it. The equities in the benchmark index are assigned the following factors based on their country of origin: European developed markets excluding Norway 2.5, USA and Canada 1, other developed markets 1.5 and emerging markets 1.5. The allocation to countries and regions and the distinction between developed and emerging markets are based on the FTSE Global All Cap Index. New markets added to the FTSE Global All Cap Index from 1 January 2019 onwards are assigned a weight of 0. The benchmark is adjusted for the Norges Bank's tax position on dividends. Securities issued by companies excluded by Norges Bank pursuant to the guidelines for observation and exclusion from the Government Pension Fund Global are not included in the benchmark index for the equity portfolio. At year-end the equity benchmark consisted of 45 countries and around 9,000 securities.

The actual weights of the benchmark as at 31 December 2022 are shown below together with historical strategic changes to the benchmark.

⁵ from 31st of May 2021

Country for equity benchmark	Actual benchmark index
Asset class weights	100.00
USA (USD)	44.59
Canada (CAD)	2.09
Brazil	0.57
Mexico (MXN)	0.33
Chile (CLP)	0.08
Colombia	0.02
Total Americas	47.68
France	4.78
Germany	3.71
Netherlands	1.98
Italy	1.21
Spain	1.17
Finland	0.66
Belgium	0.55
Austria	0.16
Ireland	0.12
Portugal	0.12
Greece	0.04
<i>Euro-area (EUR)</i>	<i>14.50</i>
United Kingdom (GBP)	7.10
Switzerland (CHF)	4.53
Sweden (SEK)	1.65
Denmark (DKK)	1.38
Poland (PLN)	0.15
Turkey (TRY)	0.14
Hungary (HUF)	0.02
Czech Republic (CZK)	0.01
Total Europe	29.47
Japan (JPY)	7.27
China (CNH)	4.00
Australia (AUD)	2.44
Taiwan (TWD)	1.98
South Korea (KRW)	1.51
India (INR)	2.06
Hong Kong (HKD)	0.91
Singapore (SGD)	0.44
Thailand (THB)	0.35
Malaysia (MYR)	0.23
Indonesia (IDR)	0.26
New Zealand (NZD)	0.12
Philippines (PHP)	0.10
Pakistan (PKR)	0.01
Total Asia / Oceania	21.69
South Africa (ZAR)	0.48
Israel (ILS)	0.21
Qatar (QAR)	0.13
United Arab Emirates (AED)	0.20
Kuwait (KWD)	0.13
Egypt (EGP)	0.01
Total Middle East and Africa	1.16

Figures in percent.

Strategic benchmark changes	Implementation
Inclusion of Emerging Markets:	
Brazil, Mexico, Greece, Turkey, Taiwan, Thailand and South Korea	January 2001
Small-cap included in the benchmark	March 2008
Benchmark consisting of countries in categories “Developed”, “Advanced Emerging” and “Secondary Emerging” within FTSE All Cap and specific country list is discontinued	December 2008
Country market capitalisation factors introduced. Strategic weights on regions removed	July 2012
Exclusion of crude oil producer classified stock from benchmark	January 2021
Exclusion of offshore drilling and other services classified stock from benchmark	September 2022

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. For this equity composite, the expense ratio was 5 basis points for 2022, at the same level as in 2021.

Performance results: Government Pension Fund Global equity management

31 December 1998 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	Firm Assets ⁵
1999	34.81	31.32	3.49			1	93,651	340,855
2000	-5.82	-6.31	0.49			1	152,829	522,544
2001	-14.60	-14.66	0.06	15.24	14.81	1	246,412	739,116
2002	-24.39	-24.47	0.07	16.94	16.74	1	230,993	743,670
2003	22.84	22.33	0.51	18.15	18.02	1	361,165	1,044,264
2004	13.00	12.21	0.79	15.30	15.26	1	416,298	1,236,653
2005	22.49	20.33	2.16	9.71	9.53	1	582,305	1,648,874
2006	17.04	17.13	-0.09	7.66	7.17	1	725,922	2,047,074
2007	6.82	5.67	1.15	8.70	8.25	1	957,895	2,261,368
2008	-40.71	-39.56	-1.15	17.01	16.28	1	1,128,937	2,498,961
2009	34.27	32.41	1.86	20.85	20.19	1	1,644,106	2,851,020
2010	13.34	12.61	0.73	22.20	21.56	1	1,891,250	3,317,700
2011	-8.84	-8.36	-0.48	17.74	17.46	1	1,944,722	3,539,396
2012	18.06	17.54	0.52	14.29	14.03	1	2,335,830	4,043,153
2013	26.28	24.99	1.28	12.39	12.12	1	3,106,944	5,311,043
2014	7.90	8.73	-0.82	9.14	8.95	1	3,939,923	6,778,049
2015	3.83	3.00	0.83	10.24	10.05	1	4,571,808	7,886,255
2016	8.72	8.58	0.15	10.50	10.29	1	4,691,863	7,687,711
2017	19.50	18.70	0.79	9.99	9.80	1	5,580,827	8,672,176
2018	-9.49	-8.80	-0.69	9.75	9.56	1	5,395,801	8,353,411
2019	26.13	25.62	0.51	10.39	10.21	1	7,004,117	10,215,370
2020	12.75	11.77	0.98	17.13	16.85	1	7,798,797	11,032,367
2021	20.60	19.82	0.78	15.89	15.66	1	8,616,792	12,461,505
2022	-14.88	-15.40	0.52	18.21	18.12	1	8,455,209	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

	3 years	5 years	10 years	Since inception
Composite gross return ¹	5.00	5.73	9.28	6.07
Custom benchmark return ¹	4.25	5.36	8.88	5.59
Relative return ¹	0.75	0.38	0.40	0.48
Standard deviation of composite return ²	18.21	16.06	13.08	14.62
Standard deviation of custom benchmark return ²	18.12	15.93	12.93	14.34
Tracking error ³	0.33	0.37	0.41	0.71
Information ratio ⁴	2.20	1.01	0.94	0.70
Composite Sharpe ratio ⁵	0.32	0.36	0.69	0.37
Benchmark Sharpe ratio ⁵	0.28	0.33	0.67	0.34
Jensen's alpha ⁶	0.71	0.34	0.29	0.41
Appraisal ratio ⁷	2.17	0.94	0.75	0.62

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

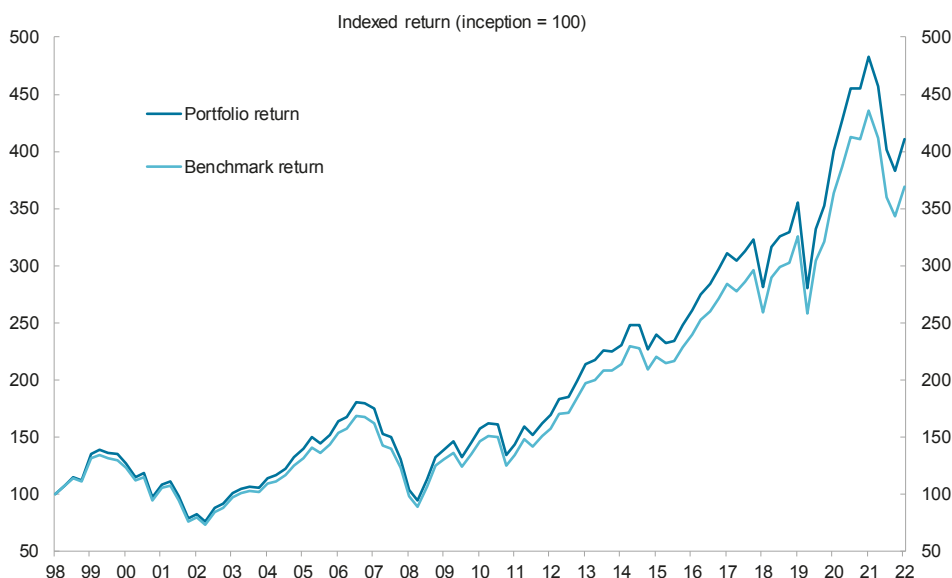
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The inception date of the Government Pension Fund Global equity management composite is 31 December 1998. The composite creation date is 31 December 2017.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global equity management composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the equity asset class and excluding selected listed real estate holdings that is managed as part of the real estate strategy. The composite's investment strategies can be grouped into three broad categories: asset management, security selection and strategies for allocation.

Asset management strategies aim to implement the targeted market exposure, balancing transaction costs and risk and return considerations. The strategy aims to take advantage of the relative valuation across instruments and issuers, the pricing effects of corporate and market events. Securities lending is an integrated part of our asset management strategies where counterparty default risk exposure is actively managed.

The securities selection strategy is based on company analysis with the aim of improving return on investments, providing deep insight into the fund's largest investments and contribute to the fund's role as a responsible and active owner.

The allocation strategy includes various sub-strategies seeking to improve the fund's market and risk exposure in the long term.

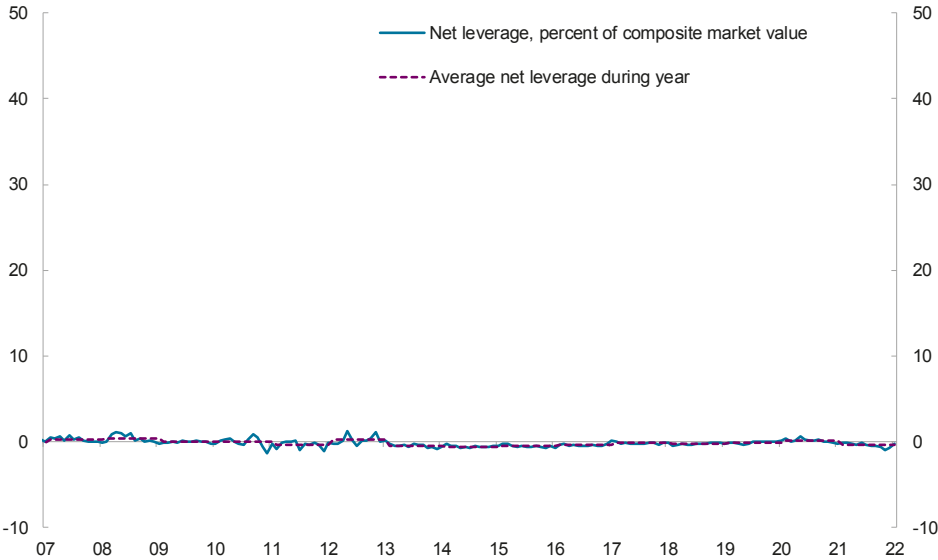
During 1998, the equity part of the Pension Fund was established as part of a transition process. In this process, large cash inflows and subsequent large asset purchases took place. No return numbers or assets are reported for 1998. Irrespective of this, the equity portfolio's fair value is included in the total Pension Fund's assets and the firm assets as at 31 December 1998.

Derivatives, leverage and short positions

Norges Bank Investment Management's access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. Specifically, financial derivatives that are naturally linked to investments in the equity portfolio

may be used. In accordance with the investment mandate, the Pension Fund may use derivative in order to achieve the lowest possible transaction cost, and to efficiently rebalance the portfolio. Within equity management, the use of derivatives has been limited and have been used for efficient portfolio management. Contract for difference are the most widely used financial derivatives. At year end the net fair value of the contract for difference contract was -366 million Norwegian Kroner, compared with -517 million Norwegian Kroner last year. The average exposure on purchased contract for difference through 2022 was 78,136 million Norwegian Kroner, up from 63 332 million last year. The average exposure on sold contract for difference through 2022 was 76,607 million Norwegian Kroner, up from 67 206 million last year.

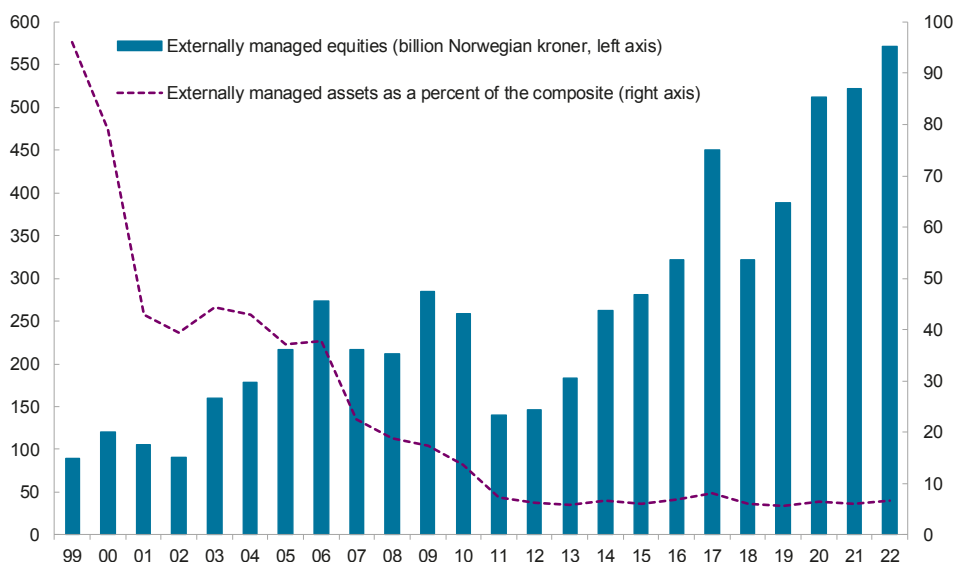
Leverage may be used with a view to performing the management task in an effective manner, but not with a view to increasing the investment portfolio’s exposure to risky assets in the equity portfolio. More specifically, leveraging the portfolio is not permitted beyond what is necessary to minimise transaction costs or is a normal part of investment management, and not in excess of 5 percent of the net asset value of the combined equity and fixed-income portfolios. Within the equity segment leverage is mainly used to efficiently handle fund management activities and has historically not been material. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011 the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite’s fair value is shown as a time series.



Short positions are permitted in the management of the Pension Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions are laid down as part of the CEO investment mandate issued by Norges Bank’s Executive Board. The current use of short positions in the composite’s portfolio is immaterial.

Sub-advisors

Norges Bank Investment Management uses external investment managers to handle parts of the portfolio. Norges Bank Investment Management awards management mandates to organisations with expertise in clearly defined sectors and/or regions. The fund’s externally managed equity mandates had assets under management worth 572 billion kroner at the 2022. This was equivalent to 6.8 percent of the composite’s total value. There was a total of 107 external equity mandates managed by 100 different investment managers as at year-end 2022. The graph below shows the value of externally managed assets in the composite at each year-end since inception as well as its share of the composite’s net asset value. The complete list of organisations managing equity assets on behalf of Norges Bank Investment Management is available on our website www.nbim.no.



Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure⁶ investments, are measured against the assigned equity and fixed-income benchmark, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. In a subsequent update to the mandate on 30 June 2017, the Ministry of Finance set a target for eventually moving the strategic benchmark weights to 70 percent for equity and 30 percent for fixed income. On 1 May 2019, the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

The equity part of the strategic benchmark index is composed on the basis of the FTSE Global All Cap Index. The benchmark is market capitalisation weighted with an additional layer of country factors applied to it. The equities in the benchmark index are assigned the following factors based on their country of origin: European developed markets excluding Norway 2.5, USA and Canada 1, other developed markets 1.5 and emerging markets 1.5. The allocation to countries and regions and the distinction between developed and emerging markets are based on the FTSE Global All Cap Index. New markets added to the FTSE Global All Cap Index from 1 January 2019 onwards are assigned a weight of 0. The benchmark is adjusted for the Norges Bank's tax position on dividends. Securities issued by companies excluded by Norges Bank pursuant to the guidelines for observation and exclusion from the Government Pension Fund Global are not included in the benchmark index for the equity portfolio. At year-end the equity benchmark consisted of 45 countries and around 9,000 securities.

The fund is invested in equity, fixed income listed real estate and unlisted real estate and renewable infrastructure. The real estate and renewable infrastructure investments are assigned a benchmark with combination of bonds and equities from the overall GPFPG benchmarks tailor-made to the actual currency composition and characteristics of the investments. The equity management composite is assigned a benchmark where the actual composition of the equity part of the unlisted real estate, listed real estate and unlisted renewable infrastructure benchmarks are taken out from the equity part of the strategic benchmark.

The actual weights of the benchmark as at 31 December 2022 are shown below together with historical strategic changes to the benchmark.

⁶ from 31st of May 2021

Country for equity benchmark	Actual benchmark index
Total	100.00
USA	43.85
Canada	2.17
Brazil	0.59
Mexico	0.34
Chile	0.08
Colombia	0.02
Total Americas	47.06
France	4.71
Germany	3.63
Netherlands	2.00
Italy	1.21
Spain	1.17
Finland	0.67
Belgium	0.55
Austria	0.16
Ireland	0.12
Portugal	0.12
Greece	0.05
<i>Euro-area</i>	<i>14.38</i>
United Kingdom	6.86
Switzerland	4.66
Sweden	1.65
Denmark	1.43
Poland	0.15
Turkey	0.15
Hungary	0.02
Czech Republic	0.01
Total Europe	29.31
Japan	7.49
China	4.15
Australia	2.53
Taiwan	2.05
South Korea	1.57
India	2.13
Hong Kong	0.94
Singapore	0.46
Thailand	0.36
Malaysia	0.23
Indonesia	0.27
New Zealand	0.13
Philippines	0.10
Pakistan	0.01
Total Asia / Oceania	22.43
South Africa	0.49
Israel	0.22
Qatar	0.14
United Arab Emirates	0.21
Kuwait	0.13
Egypt	0.01
Total Middle East and Africa	1.20

Figures in percent.

Strategic benchmark changes	Implementation
Inclusion of Emerging Markets:	
Brazil, Mexico, Greece, Turkey, Taiwan, Thailand and South Korea	January 2001
Small-cap included in the benchmark	March 2008
Benchmark consisting of countries in categories “Developed”, “Advanced Emerging” and “Secondary Emerging” within FTSE All Cap and specific country list is discontinued	December 2008
Country market capitalisation factors introduced. Strategic weights on regions removed	July 2012
The actual composition of stocks in the real estate benchmark is eliminated from the equity benchmark	January 2017
Exclusion of crude oil producer classified stock from benchmark	January 2021
Exclusion of offshore drilling and other services classified stock from benchmark	September 2022

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. For this equity management composite, the expense ratio was 5 basis points for 2022, at the same level as for 2021.

Performance results:

Government Pension Fund Global fixed income

31 December 1997 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²		Relative Return ²		Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³		Number of Portfolios ⁴	Composite Assets ⁵	Firm Assets ⁵
		Asset class	Mngt.	Asset class	Mngt.		Asset class	Mngt.			
1998	9.31	9.10	9.10	0.21	0.21				1	102,300	279,205
1999	-0.99	-1.00	-1.00	0.01	0.01				1	128,751	340,855
2000	8.41	8.34	8.34	0.07	0.07	2.67	2.69	2.69	1	227,323	522,544
2001	5.04	4.96	4.96	0.08	0.08	2.95	2.93	2.93	1	362,945	739,116
2002	9.90	9.41	9.41	0.49	0.49	3.11	3.08	3.08	1	378,014	743,670
2003	5.26	4.77	4.77	0.48	0.48	3.93	3.90	3.90	1	484,141	1,044,264
2004	6.10	5.73	5.73	0.37	0.37	3.70	3.70	3.70	1	600,104	1,236,653
2005	3.82	3.46	3.46	0.36	0.36	3.39	3.40	3.40	1	816,746	1,648,874
2006	1.93	1.68	1.68	0.25	0.25	2.63	2.67	2.67	1	1,057,761	2,047,074
2007	2.96	4.26	4.26	-1.29	-1.29	2.45	2.59	2.59	1	1,060,749	2,261,368
2008	-0.54	6.06	6.06	-6.60	-6.60	4.19	3.90	3.90	1	1,146,489	2,498,961
2009	12.49	5.13	5.13	7.36	7.36	5.02	4.06	4.06	1	995,937	2,851,020
2010	4.11	2.58	2.58	1.53	1.53	5.20	4.22	4.22	1	1,186,191	3,317,700
2011	7.03	6.51	6.51	0.52	0.52	3.79	3.17	3.17	1	1,355,722	3,539,396
2012	6.68	6.97	6.97	-0.29	-0.29	2.72	2.81	2.81	1	1,454,816	4,043,153
2013	0.10	-0.15	-0.15	0.25	0.25	2.67	2.89	2.89	1	1,878,996	5,311,043
2014	6.88	7.59	7.59	-0.70	-0.70	2.40	2.63	2.63	1	2,349,948	6,778,049
2015	0.33	0.57	0.57	-0.24	-0.24	2.64	2.92	2.92	1	2,668,147	7,886,255
2016	4.32	4.16	4.16	0.16	0.16	2.85	3.10	3.10	1	2,576,875	7,687,711
2017	3.31	2.88	2.92	0.43	0.39	2.80	3.00	3.00	1	2,616,372	8,672,176
2018	0.56	0.56	0.57	0.00	-0.01	2.56	2.74	2.73	1	2,532,774	8,353,411
2019	7.56	7.35	7.45	0.21	0.11	2.56	2.69	2.66	1	2,669,606	10,215,370
2020	7.46	6.77	6.70	0.69	0.76	3.35	3.36	3.39	1	2,695,184	11,032,367
2021	-1.93	-1.91	-1.89	-0.02	-0.04	3.66	3.70	3.71	1	3,135,259	12,461,505
2022	-12.11	-13.96	-13.79	1.85	1.68	5.25	5.58	5.58	1	3,412,044	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

Composite versus asset class custom benchmark:

	3 years	5 years	10 years	Since inception
Composite gross return ¹	-2.52	0.03	1.48	3.80
Custom benchmark return ¹	-3.41	-0.55	1.19	3.56
Relative return ¹	0.89	0.59	0.29	0.24
Standard deviation of composite return ²	5.25	4.53	3.73	3.62
Standard deviation of custom benchmark return ²	5.58	4.82	4.00	3.61
Tracking error ³	0.55	0.50	0.49	0.95
Information ratio ⁴	1.62	1.15	0.56	0.25
Composite Sharpe ratio ⁵	-0.58	-0.23	0.23	0.57
Benchmark Sharpe ratio ⁵	-0.71	-0.33	0.15	0.51
Jensen's alpha ⁶	0.65	0.47	0.32	0.28
Appraisal ratio ⁷	1.50	1.18	0.80	0.30

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.

Composite versus asset management custom benchmark:

	3 years	5 years	10 years	Since inception
Composite gross return ¹	-2.52	0.03	1.48	3.80
Custom benchmark return ¹	-3.36	-0.50	1.22	3.57
Relative return ¹	0.84	0.54	0.26	0.23
Standard deviation of composite return ²	5.25	4.53	3.73	3.62
Standard deviation of custom benchmark return ²	5.58	4.81	3.99	3.60
Tracking error ³	0.48	0.45	0.46	0.94
Information ratio ⁴	1.74	1.17	0.53	0.24
Composite Sharpe ratio ⁵	-0.58	-0.23	0.23	0.57
Benchmark Sharpe ratio ⁵	-0.70	-0.32	0.15	0.51
Jensen's alpha ⁶	0.61	0.43	0.29	0.27
Appraisal ratio ⁷	1.75	1.25	0.79	0.29

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

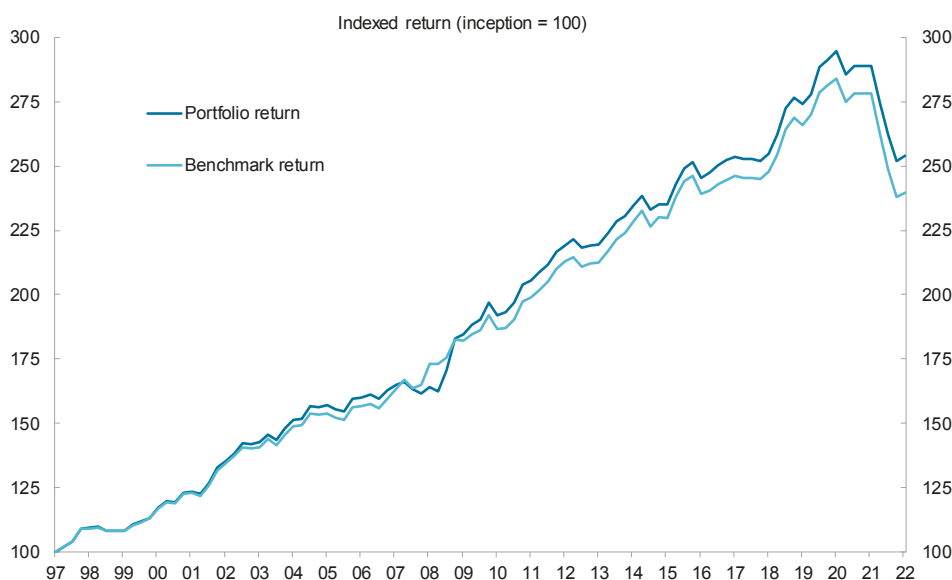
³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.



Composite creation date and inception date

The composite inception date and the composite creation date of the Government Pension Fund Global fixed income composite are both 31 December 1997.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global fixed-income composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the fixed-income asset class. The composite's investment strategies can be grouped into three broad categories: asset management, security selection and strategies for allocation.

Asset management strategies aim to implement the targeted market exposure, balancing transaction costs and risk and return considerations. The strategy aims to take advantage of the relative valuation across instruments and issuers, the pricing effects of corporate and market events, as well as positioning related to interest rate market development, including interest rates, inflation, currency and interest rate differences between countries. Securities lending is an integrated part of our asset management strategies where counterparty default risk exposure is actively managed.

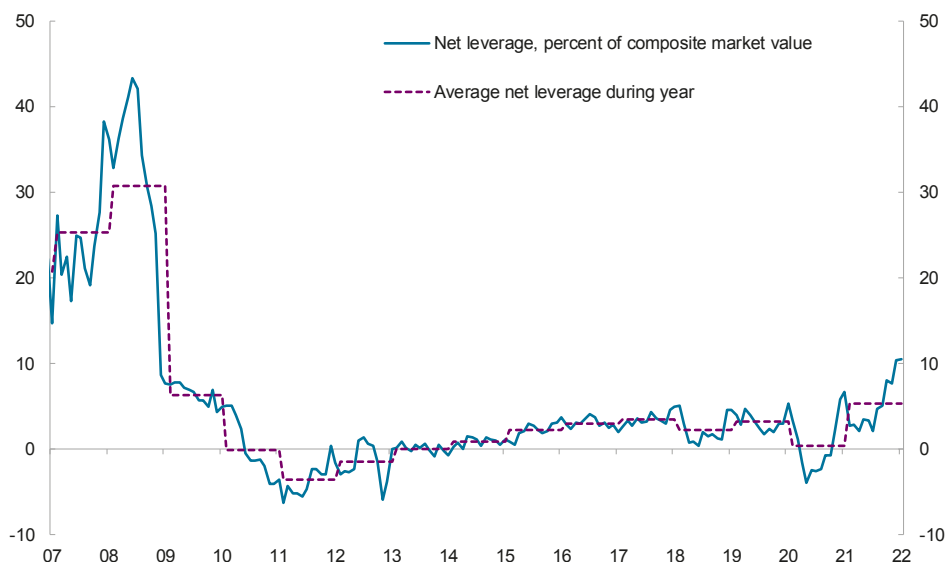
The securities selection strategy is based on company analysis with the aim of improving return on investments, providing deep insight into the fund's largest investments and contribute to the fund's role as a responsible and active owner. In fixed income management, the selection strategy focuses on corporate bonds.

The allocation strategy includes various sub-strategies seeking to improve the fund's market and risk exposure in the long term.

Derivatives, leverage and short positions

Norges Bank Investment Management's access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. Specifically, financial derivatives that are naturally linked to investments in the fixed income portfolio may be used. In accordance with the investment mandate, the Pension Fund may use derivative in order to achieve the lowest possible transaction cost, and to efficiently rebalance the portfolio. Foreign exchange contracts and interest rate swaps are the most widely used financial derivatives. The average net one-leg exposure of foreign exchange contracts through 2022 was 372,302 million Norwegian Kroner, up from 206,124 million last year. The interest rate swaps reduced the duration in the portfolio by 0.2 year on average in 2022, similar to the previous year.

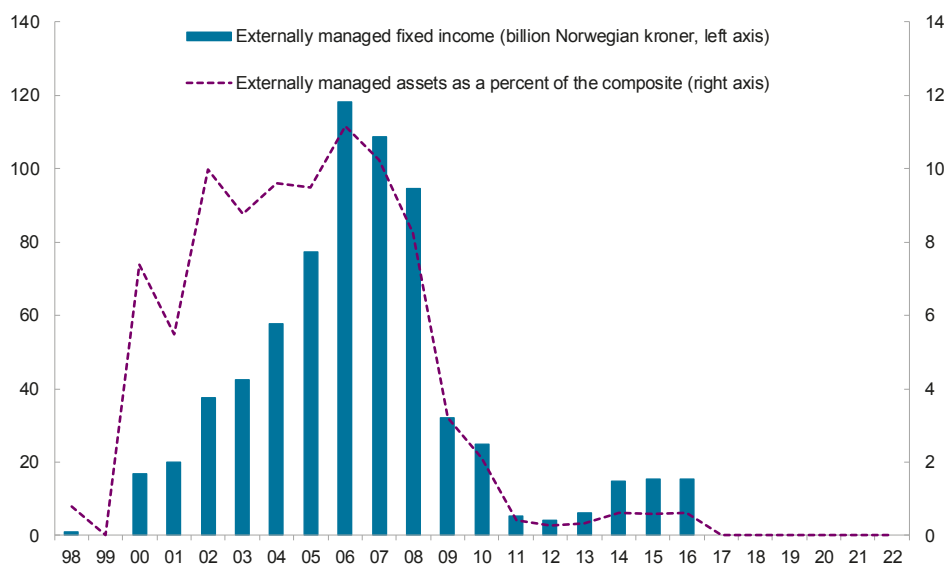
Leverage may be used with a view to performing the management task in an effective manner, but not with a view to increasing the investment portfolio's exposure to risky assets in the bond portfolio. More specifically, leveraging the fixed-income portfolio is not permitted beyond what is necessary to minimise transaction costs or is a normal part of investment management, and not in excess of 5 percent of the net asset value of the combined equity and fixed-income portfolios. The use of leverage was scaled back in the second half of 2009 due to changes in market conditions and a reorganisation of Norges Bank Investment Management's fixed-income management. Historically, leverage has predominantly been used within the fixed-income composite to exploit differences in rates or credit spreads by combining derivatives, forward contracts and repurchase agreements. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011 the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite's fair value is shown as a time series.



Short positions are permitted in the management of the Pension Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions are laid down as part of the CEO investment mandate issued by Norges Bank's Executive Board. The current use of short positions in the composite's portfolio is immaterial.

Sub-advisors

Norges Bank Investment Management currently has since 2017 no fixed-income assets managed by external investment managers. However, external fixed-income managers have been used to varying degrees for the management of parts of the composite historically. The graph below shows the value of externally managed assets in the composite at each year-end since inception as well its a share of the composite's net asset value.



Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate and unlisted renewable infrastructure⁷ investments, are measured against the assigned equity and fixed-income benchmark, and the strategic weights for the benchmark assigned by the Ministry of Finance were amended to 62.5 percent equity and 37.5 percent fixed income. In a subsequent update to the mandate on 30 June 2017, the Ministry of Finance set a target for eventually moving the strategic benchmark weights to 70 percent

⁷ from 31st of May 2021

for equity and 30 percent for fixed income. On 1 May 2019, the strategic benchmark weights were amended to 70 percent for equity and 30 percent for fixed income.

The fixed-income part of the strategic benchmark index consists of 70 percent developed market government debt (nominal and inflation-linked government bonds, and including bonds issued by supranational organisations) and 30 percent developed market corporate debt (corporate bonds, including covered bonds). The index consists of the Bloomberg Barclays Global Treasury, GDP weighted by country, the Bloomberg Barclays Global Inflation-Linked index (Series L), and the subgroup Supranational (within government related) in the Bloomberg Barclays Global Aggregate bond index for the government sector and all corporate bonds and the subgroup covered bonds within Bloomberg Barclays Global Aggregate limited to the currencies US dollars, Canadian dollars, euros, British pounds, Swedish kronor, Danish kroner and Swiss francs. The Bloomberg Barclays indices are not adjusted for withholding tax but are adjusted for excluded companies/issuers. At year-end the benchmark consisted of 12 currencies and around 17,000 securities.

In the operational management of the fund, to ensure an overall risk management of the fund, the listed real estate, unlisted real estate and unlisted renewable infrastructure investments are assigned benchmarks with a combination of bonds and equities from the overall GPFM benchmarks tailor-made to the actual currency composition and characteristics of the real estate and unlisted renewable infrastructure investments. The remaining investments are assigned benchmarks where the actual composition of the unlisted renewable infrastructure, unlisted and listed real estate benchmark are adjusted from the actual benchmark.

The fixed-income composite is assigned both the fixed-income component of the strategic asset class benchmark as well as the operational management benchmarks where the benchmark constituencies in the real estate and unlisted renewable infrastructure benchmarks are adjusted out from the fixed-income benchmark. The composite is presented versus both benchmarks, with the strategic asset class benchmark indicated as type *Asset class* and the operational management benchmark indicated with type *Management* or *Mngt*.

The actual weights of the benchmarks as at 31 December 2022 are shown below together with historical strategic changes to the benchmark.

Currency for fixed-income asset class benchmark	Actual benchmark index
Total	100.00
USA (USD)	49.32
Canada (CAD)	3.56
Total Americas	52.88
<i>Euro-area (EUR)</i>	28.74
United Kingdom (GBP)	5.47
Switzerland (CHF)	0.88
Sweden (SEK)	0.71
Denmark (DKK)	0.47
Total Europe	36.26
Japan (JPY)	7.74
Australia (AUD)	2.24
Singapore (SGD)	0.49
New Zealand (NZD)	0.35
Hong Kong (HKD)	0.04
Total Asia / Oceania	10.86

Currency for fixed-income management benchmark	Actual benchmark index
Total	100.00
USA (USD)	49.21
Canada (CAD)	3.86
Total Americas	53.07
<i>Euro-area (EUR)</i>	28.68
United Kingdom (GBP)	4.74
Switzerland (CHF)	0.66
Sweden (SEK)	0.73
Denmark (DKK)	0.51
Total Europe	35.31
Japan (JPY)	8.24
Australia (AUD)	2.42
Singapore (SGD)	0.53
New Zealand (NZD)	0.38
Hong Kong (HKD)	0.04
Total Asia / Oceania	11.62

Figures in percent.

Strategic benchmark changes	Implementation
Introduction of corporate and securitised bonds	December 2003
Asia/Oceania regional fixed income weight reduced by 10% (offset by a 5% increase in the regional weights for America and Europe)	December 2003
Inflation linked government bonds included in the benchmark	November 2005
Reduction of 5% in the regional Asia weight met with a corresponding increase in the Europe weight	September 2006
GDP weighting of government segment and 70%/30% split of government/private segments introduced. Strategic weights on regions removed	February 2012
Emerging market currencies introduced to benchmark	July 2012
Weighting factors introduced for selected currencies in the government segment	April 2014
The actual composition of bonds in the real estate benchmark is eliminated from the fixed-income management benchmark. The strategic fixed-income benchmark is not affected by this change	January 2017
Emerging market currencies removed from the benchmark	July 2021

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. For this fixed-income composite, the expense ratio was 2 basis points for 2022, at the same level as for 2021.

Performance results: Government Pension Fund Global real estate 31 March 2011 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Bench-mark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Bench-mark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	External Valuation ⁶	Firm Assets ⁵
2011 ⁷	-4.37					1	11,129	100	3,539,396
2012	5.77					1	25,123	100	4,043,153
2013	11.79					1	51,794	100	5,311,043
2014	10.42			4.24		1	140,868	100	6,778,049
2015	9.99			3.72		1	235,199	100	7,886,255
2016	0.78			4.30		1	241,756	100	7,687,711
2017	7.52	6.77	0.75	4.09		1	218,643	100	8,672,176
2018	7.53	-2.06	9.59	4.12		1	246,013	100	8,353,411
2019	6.84	13.02	-6.18	3.10	3.49	1	273,014	100	10,215,370
2020	-0.08	8.74	-8.82	2.78	5.55	1	273,109	100	11,032,367
2021	13.64	7.33	6.31	3.98	5.52	1	311,538	100	12,461,505
2022	0.07	-14.54	14.61	5.92	8.84	1	330,300	100	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. A benchmark was not assigned to the composite until 1 January 2017. Hence, benchmark and relative returns are not available for the years 2011 to 2016. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns. The measure is not provided for 2011, 2012 and 2013, since the inception date is 31 March 2011 and a full 36 months history is not available. The measure is also not provided for the benchmark before 2019, since 36 months of data were not available for it before then.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

⁶ Percentage of composite assets valued using an external valuation.

⁷ Partial year; from inception date 31 March 2011.

Real estate component returns

Year	Composite gross return	Unlisted real estate gross return	Unlisted real estate income return	Unlisted real estate capital return	Listed real estate gross return
2011	-4.37	-4.37	2.11	-6.35	
2012	5.77	5.77	4.23	1.53	
2013	11.79	11.79	4.52	6.98	
2014	10.42	9.65	4.23	5.26	5.97
2015	9.99	10.79	4.03	6.55	7.77
2016	0.78	1.70	3.72	-2.00	-2.34
2017	7.52	7.52	3.69	3.75	
2018	7.53	7.53	3.60	3.82	
2019	6.84	6.84	3.61	3.14	
2020	-0.08	-0.08	3.42	-3.38	
2021	13.64	13.64	3.40	9.98	
2022	0.07	0.07	3.11	-2.98	

Notes:

Returns are in the fund's currency basket and stated in percentage points.

Listed real estate returns are not presented for the years 2011-2013 or 2017-2022, as listed real estate investments were only a part of the Pension Fund, real estate composite in the period from 1 November 2014 to the end of 2016.

	3 years	5 years	10 years	Since inception
Composite gross return ¹	4.35	5.47	6.74	5.81
Custom benchmark return ¹	-0.09	2.00		
Relative return ¹	4.44	3.47		
Standard deviation of composite return ²	5.92	4.91	4.52	4.70
Standard deviation of custom benchmark return ²	8.84	7.28		
Tracking error ³	10.33	8.51		
Information ratio ⁴	0.40	0.38		
Composite Sharpe ratio ⁵	0.64	0.88	1.32	1.10
Benchmark Sharpe ratio ⁵	-0.04	0.15		
Jensen's alpha ⁶	3.83	4.24		
Appraisal ratio ⁷	0.62	0.84		

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

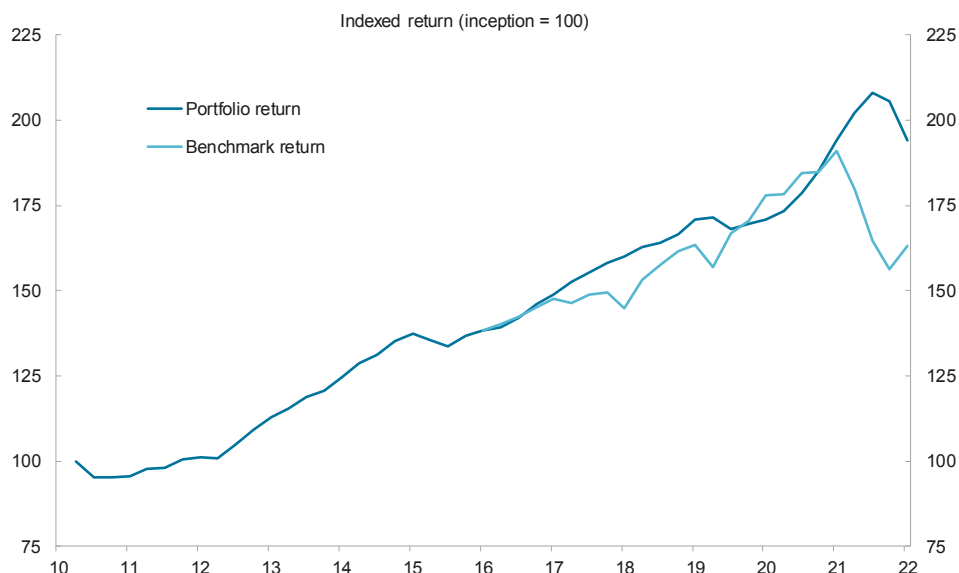
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The composite inception date and the composite creation date of the Government Pension Fund Global real estate composite are both 31 March 2011.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global real estate composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the unlisted real estate asset class. In addition to the unlisted real estate investments, the composite also held listed real estate investments limited to around 25 percent of the composite's net asset value in the period from 1 November 2014 to the end of 2016.

In March 2010, the fund was given a mandate to invest up to 5 percent of its assets in real estate, while correspondingly reducing the share of fixed-income investments. Real estate investments take place over time and are spread over different types of sectors and countries. The real estate portfolio mainly invests in commercial property types located within well-developed markets.

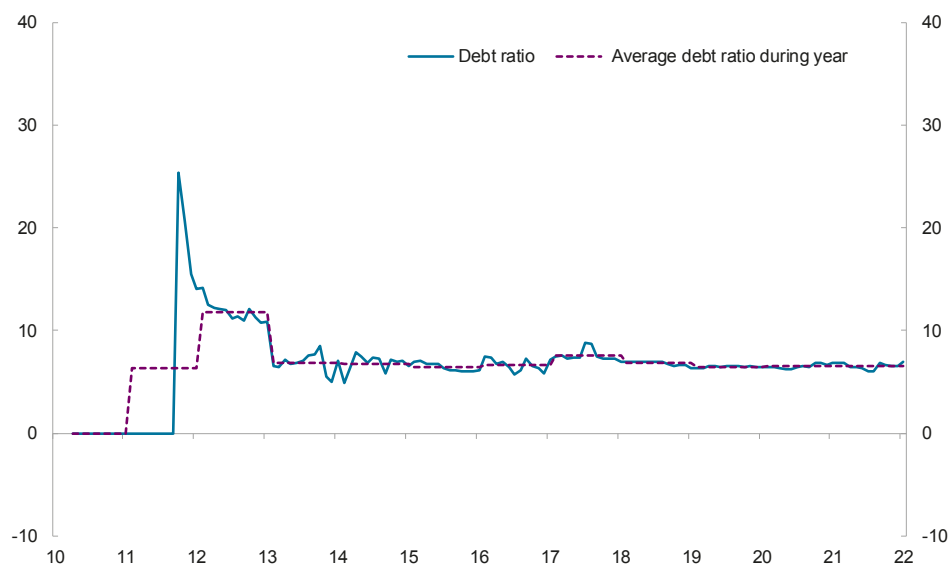
The management mandate issued by the Ministry of Finance on 1 January 2017 set a limit on investments in unlisted real estate at 7 percent of the Pension Fund. The real estate composite may be invested in unlisted real estate or in equity and interest-bearing instruments issued by non-listed companies, fund structures and other legal entities whose primary business is the acquisition, development, management or financing of real estate. These investments may be made through Norwegian or other legal entities, but not in real estate located in Norway. The fund's unlisted property investments are made through corporate structures. The companies are directly or indirectly wholly owned by Norges Bank or jointly owned with co-investors, and ownership control is exercised at several levels. The legal entities have their own boards where we usually appoint or nominate directors. Real estate is defined as rights to land and any buildings thereon. Norges Bank's Executive Board has further set specific limits on real estate management.

Derivatives and leverage

The access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. The composite, through its property managing real estate subsidiaries, may include derivative instruments in the normal course of

investment management. At year-end 2022 the portfolio includes minor derivatives positions in the real estate subsidiaries in the United Kingdom.

The Norges Bank's Executive Board has specified that the maximum allowed debt ratio of the unlisted real estate portfolio is 35 percent. The debt ratio is calculated as the ratio of debt on gross asset property value. At year-end 2022 the debt ratio of the unlisted real estate portfolio was 7.6. Net leverage is the ratio of net exposure and actual market value. Through 2022, the average net leverage was 9.0 percent. Below, the debt ratio of the composite is shown as a time series.



Description of discretion

Within the mandate, Norges Bank Investment Management has discretion in its investment selection activities. Regarding rights to dispose of the assets, there exist certain general lock-up provisions on the current portfolio of investments as set forth in the agreements with Norges Bank Investment Management's counterparts.

Valuation

Unlisted real estate investments are measured at fair value on the basis of International Financial Reporting Standards (IFRS). At each calendar quarter the fair value estimates are updated for all assets. The process is supported, each quarter, by external independent valuation reports. The valuations are provided by independent and certified specialists whom provide valuations according to internationally recognized valuation standards.

Calculation methodology – unlisted real estate

In addition to the general disclosures on calculation methodology, this section describes specific methodology related to real estate. Composite total returns are calculated monthly and income and capital component returns are calculated daily both on a time-weighted basis and geometrically linked across months. Returns include cash and cash equivalents. The linking of component returns across months results in a residual when comparing annual total returns and the sum of annual component returns. This is a result of compounding, and no adjustments are made to counter this effect. Returns are gross-of-fees. Returns are presented after transaction costs and after expensed operating costs relating to the operations of the real estate investment structure. Operating costs include bank charges, consulting and legal fees and administration expenses. Transaction costs are included in the capital return component and operating costs are included in the income return component. Returns are presented before Norges Bank Investment Management's internal costs. Returns are measured in the

currency basket corresponding to the currencies in the Pension Fund's equity and fixed-income benchmark.

Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate investments, are measured against the assigned equity and fixed-income benchmark. Prior to this, the investment mandate from the Ministry of Finance did not specify a benchmark for the real estate asset class. As the real estate portfolio was still considered under development Norges Bank Investment Management concluded that given the development state of the portfolio, comparing the return against available benchmarks could be misleading. Hence, no benchmark returns were presented.

The real estate composite is assigned a benchmark with combination of bonds and equities from the overall GPFGB benchmarks, tailor-made to the actual currency composition and characteristics of the real estate investments. The rules for this benchmark are decided by the Investment Risk Committee in Norges Bank Investment Management. The actual weights of the benchmark as at 31 December 2022 are shown below.

Country for equity benchmark (Currency for fixed-income benchmark)	Equities Actual benchmark index	Fixed income Actual benchmark index
Asset class weights	39.30	60.70
USA (USD)	52.65	51.14
Total Americas	52.65	51.14
France	8.71	
Germany	6.77	
Netherlands	3.62	
Italy	2.20	
Spain	2.13	
Finland	1.21	
Belgium	1.00	
Austria	0.28	
Ireland	0.22	
Portugal	0.21	
<i>Euro-area (EUR)</i>	26.35	25.59
United Kingdom (GBP)	16.97	16.48
Switzerland (CHF)	1.77	4.60
Total Europe	45.09	46.67
Japan (JPY)	2.25	2.19
Total Asia / Oceania	2.25	2.19

Figures in percent.

Fee schedule

Performance figures are gross of investment management fees in relation to real estate investment management. However, all costs occurring in the unlisted real estate holding structures, all trading expenses (transaction costs, including stamp duty), taxes, and fixed and variable asset management fees, are included. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. The reimbursable investment management fees in relation to the unlisted real estate investment management of the composite totalled 8 basis points in 2022, at the same level as for 2021.

Performance results: Government Pension Fund Global real estate management 31 March 2011 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Com-posite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Port-folios ⁴	Com-posite Assets ⁵	External Valuation ⁶	Firm Assets ⁵
2011 ⁷	-4.37					1	11,129	100	3,539,396
2012	5.77					1	25,123	100	4,043,153
2013	11.79					1	51,794	100	5,311,043
2014	10.42			4.24		1	140,868	100	6,778,049
2015	9.99			3.72		1	235,199	100	7,886,255
2016	0.78			4.30		1	241,756	100	7,687,711
2017	9.03	8.32	0.70	4.11		1	291,256	100	8,672,176
2018	2.76	-2.74	5.49	4.58		1	327,371	100	8,353,411
2019	10.36	14.25	-3.89	4.16	4.04	1	414,359	100	10,215,370
2020	-5.01	8.79	-13.81	6.73	6.76	1	419,786	100	11,032,367
2021	18.58	11.22	7.36	7.29	6.78	1	573,211	100	12,461,505
2022	-14.06	-14.28	0.22	9.61	10.39	1	547,277	100	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. A benchmark was not assigned to the composite until 1 January 2017. Hence, benchmark and relative returns are not available for the years 2011 to 2016. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns. The measure is not provided for 2011, 2012 and 2013, since the inception date is 31 March 2011 and a full 36 months history is not available. The measure is also not provided for the benchmark before 2019, since 36 months of data were not available for it before then.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

⁶ Percentage of composite assets valued using an external valuation.

⁷ Partial year; from inception date 31 March 2011.

Real estate component returns

Year	Composite gross return	Unlisted real estate gross return	Unlisted real estate income return	Unlisted real estate capital return	Listed real estate gross return
2011	-4.37	-4.37	2.11	-6.35	
2012	5.77	5.77	4.23	1.53	
2013	11.79	11.79	4.52	6.98	
2014	10.42	9.65	4.23	5.26	5.97
2015	9.99	10.79	4.03	6.55	7.77
2016	0.78	1.70	3.72	-2.00	-2.34
2017	9.03	7.52	3.69	3.75	14.15
2018	2.76	7.53	3.60	3.82	-10.34
2019	10.36	6.84	3.61	3.14	20.88
2020	-5.01	-0.08	3.42	-3.38	-14.92
2021	18.58	13.64	3.40	9.98	26.84
2022	-14.06	0.07	3.11	-2.98	-30.77

Notes:

Returns are in the fund's currency basket and stated in percentage points.

Listed real estate returns are not presented for the years 2011, 2012 and 2013, as listed real estate investments were included in the Pension Fund's real estate management composite from November 2014.

	3 Years	5 Years	10 Years	Since inception
Composite gross return ¹	-1.08	1.88	5.06	4.39
Custom benchmark return ¹	1.22	2.88		
Relative return ¹	-2.31	-1.00		
Standard deviation of composite return ²	9.61	7.97	6.37	6.25
Standard deviation of custom benchmark return ²	10.39	8.53		
Tracking error ³	6.15	5.49		
Information ratio ⁴	-0.39	-0.19		
Composite Sharpe ratio ⁵	-0.13	0.13	0.70	0.63
Benchmark Sharpe ratio ⁵	0.11	0.24		
Jensen's alpha ⁶	-2.11	-0.48		
Appraisal ratio ⁷	-0.37	-0.10		

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

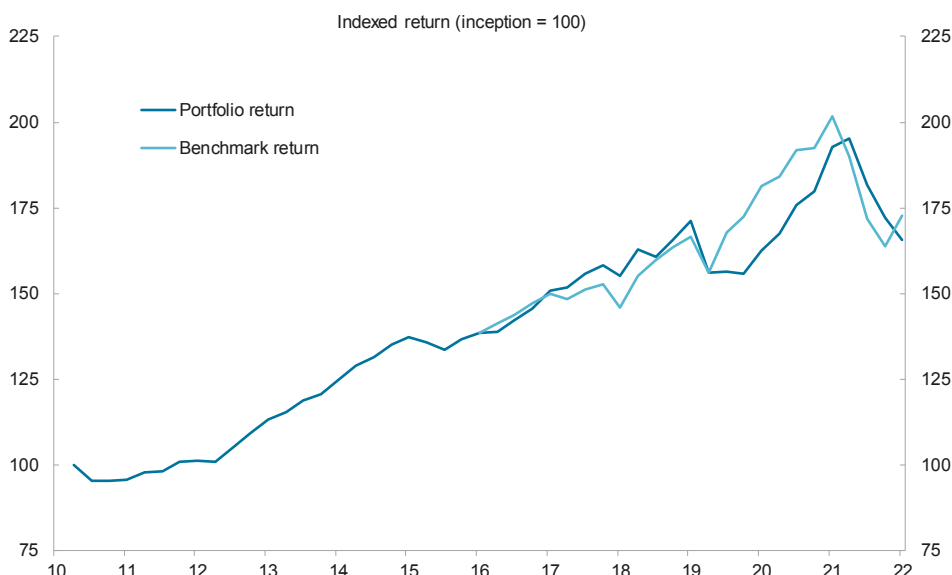
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The inception date of the Government Pension Fund Global real estate management composite is 31 March 2011. The composite creation date is 31 December 2017.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global real estate management composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the real estate asset class in addition to selected listed real estate holdings managed together with the unlisted real estate in the overall real estate strategy.

In March 2010, the fund was given a mandate to invest up to 5 percent of its assets in real estate, while correspondingly reducing the share of fixed-income investments. Real estate investments take place over time and are spread over different types of sectors and countries. The real estate portfolio mainly invests in commercial property types located within well-developed markets. In addition to the unlisted real estate investments, the composite also includes listed real estate investments since 1 November 2014.

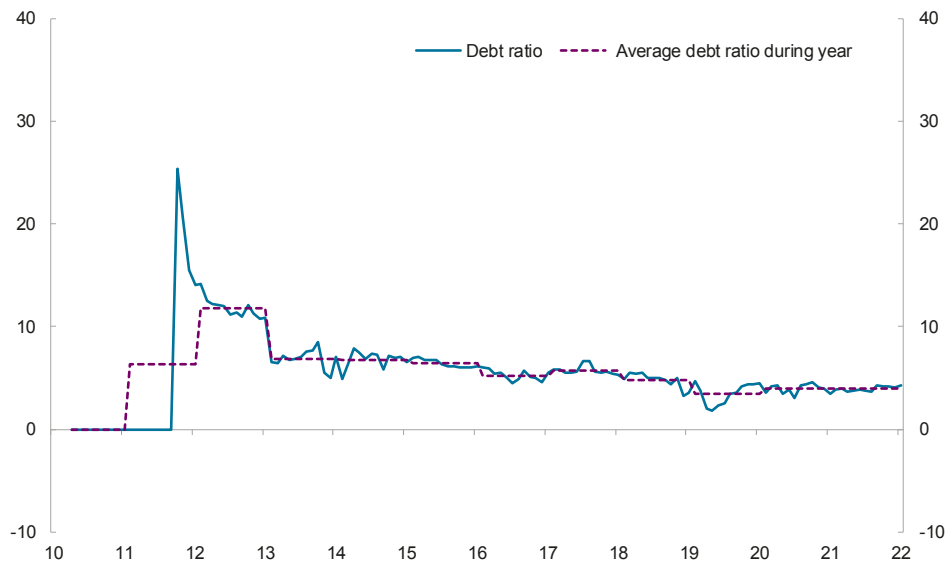
The management mandate issued by the Ministry of Finance on 1 January 2017 set a limit for investments in unlisted real estate at 7 percent of the Pension Fund. The real estate management composite may, in addition to listed real estate, be invested in unlisted real estate or in equity and interest-bearing instruments issued by non-listed companies, fund structures and other legal entities whose primary business is the acquisition, development, management or financing of real estate, as well as in listed real estate. These investments may be made through Norwegian or other legal entities, but not in real estate located in Norway. The fund's unlisted property investments are made through corporate structures. The companies are directly or indirectly wholly owned by Norges Bank or jointly owned with co-investors, and ownership control is exercised at several levels. The legal entities have their own boards where we usually appoint or nominate directors. Real estate is defined as rights to land and any buildings thereon. Norges Bank's Executive Board has further set specific limits on the real estate management.

Derivatives and leverage

The access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global laid down by the Ministry of Finance. The composite, through its

property managing real estate subsidiaries, may include derivative instruments in the normal course of investment management. At year-end 2022 the portfolio includes minor derivatives positions in the real estate subsidiaries in the United Kingdom. Derivatives have not been used to manage risk at portfolio level during 2022.

The Norges Bank’s Executive Board has specified that the maximum allowed debt ratio of the unlisted real estate portfolio is 35 percent. The debt ratio is calculated as the ratio of debt on gross asset property value. At year-end 2022 the debt ratio of the unlisted real estate portfolio was 7.6. Net leverage is the ratio of net exposure and actual market value. Through 2022, the average net leverage was 5.2 percent. Below, the debt ratio of the composite is shown as a time series.



Description of discretion

Within the mandate, Norges Bank Investment Management has discretion in its investment selection activities. Regarding rights to dispose of the assets, there exist certain general lock-up provisions on the current portfolio of investments as set forth in the agreements with Norges Bank Investment Management’s counterparts.

Valuation

Unlisted real estate investments are measured at fair value on the basis of International Financial Reporting Standards (IFRS). At each calendar quarter the fair value estimates are updated for all assets. The process is supported, each quarter, by external independent valuation reports. The valuations are provided by independent and certified specialists whom provide valuations according to internationally recognized valuation standards.

Calculation methodology – unlisted real estate

In addition to the general disclosures on calculation methodology, this section describes specific methodology related to unlisted real estate. Composite total returns are calculated monthly and income and capital component returns are calculated daily both on a time-weighted basis and geometrically linked across months. Returns include cash and cash equivalents. The linking of component returns across months results in a residual when comparing annual total returns and the sum of annual component returns. This is a result of compounding, and no adjustments are made to counter this effect. Returns are gross-of-fees. Returns are presented after transaction costs and after expensed operating costs relating to the operations of the real estate investment structure. Operating costs include bank charges, consulting and legal fees and administration expenses. Transaction costs are included in the

capital return component and operating costs are included in the income return component. Returns are presented before Norges Bank Investment Management's internal costs. Returns are measured in the currency basket corresponding to the currencies in the Pension Fund's equity and fixed-income benchmark.

Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate investments, are measured against the assigned equity and fixed-income benchmark. Prior to this, the investment mandate from the Ministry of Finance did not specify a benchmark for the real estate asset class. As the real estate portfolio was still considered under development Norges Bank Investment Management concluded that given the development state of the portfolio, comparing the return against available benchmarks could be misleading. Hence, no benchmark returns were presented.

The real estate management composite is assigned a benchmark with combination of bonds and equities from the overall GPFGB benchmarks, tailor-made to the actual currency composition and characteristics of the real estate management. The rules for this benchmark are decided by the Investment Risk Committee in Norges Bank Investment Management. The actual weights of the benchmark as at 31 December 2022 are shown below.

Country for equity benchmark (Currency for fixed-income benchmark)	Equities Actual benchmark index	Fixed-income Actual benchmark index
Asset class weights	54.05	45.95
USA (USD)	65.45	53.22
Total Americas	65.45	53.22
France	6.60	
Germany	6.10	
Netherlands	1.59	
Italy	0.97	
Spain	0.93	
Finland	0.53	
Belgium	0.44	
Austria	0.12	
Ireland	0.10	
Portugal	0.09	
<i>Euro-area (EUR)</i>	<i>17.47</i>	<i>25.92</i>
United Kingdom (GBP)	13.60	14.95
Sweden (SEK)	1.71	0.50
Switzerland (CHF)	0.78	3.66
Total Europe	33.56	45.04
Japan (JPY)	0.99	1.75
Total Asia / Oceania	0.99	1.75

Figures in percent.

Fee schedule

Performance numbers are gross of investment management fees in relation to real estate investment management of the unlisted real estate part of the composite. However, all costs occurring in the unlisted real estate holding structures, all trading expenses (transaction costs, including stamp duty), taxes, and fixed and variable asset management fees, are included. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. The reimbursable investment management fees in relation to the unlisted real estate investment management of the composite totalled 8 basis points for 2022, at the same level as for 2021. For this real estate management composite, the expense ratio was 6 basis points in 2022, at the same level as for 2021.

Performance results: Government Pension Fund Global unlisted real estate 31 March 2011 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Composite Gross Return ²	Custom Benchmark Return ²	Relative Return ²	Composite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Composite Assets ⁵	External Valuation ⁶	Firm Assets ⁵
2011 ⁷	-4.37					1	11,129	100	3,539,396
2012	5.77					1	25,123	100	4,043,153
2013	11.79					1	51,794	100	5,311,043
2014	9.65			4.25		1	107,637	100	6,778,049
2015	10.79			3.96		1	181,141	100	7,886,255
2016	1.70			4.02		1	190,670	100	7,687,711
2017	7.52	6.77	0.75	3.80		1	218,643	100	8,672,176
2018	7.53	-2.06	9.59	3.60		1	246,013	100	8,353,411
2019	6.84	13.02	-6.18	3.10	3.49	1	273,014	100	10,215,370
2020	-0.08	8.74	-8.82	2.78	5.55	1	273,109	100	11,032,367
2021	13.64	7.33	6.31	3.98	5.52	1	311,538	100	12,461,505
2022	0.07	-14.54	14.61	5.92	8.84	1	330,300	100	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. A benchmark was not assigned to the composite until 1 January 2017. Hence, benchmark and relative returns are not available for the years 2011 to 2016. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns. The measure is not provided for 2011, 2012 and 2013, since the inception date is 31 March 2011 and a full 36 months history is not available. The measure is also not provided for the benchmark before 2019, since 36 months of data were not available for it until then.

⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

⁶ Percentage of composite assets valued using an external valuation.

⁷ Partial year; from inception date 31 March 2011.

Unlisted real estate component returns

Year	Composite gross return	Income return	Capital return
2011	-4.37	2.11	-6.35
2012	5.77	4.23	1.53
2013	11.79	4.52	6.98
2014	9.65	4.23	5.26
2015	10.79	4.03	6.55
2016	1.70	3.72	-2.00
2017	7.52	3.69	3.75
2018	7.53	3.60	3.82
2019	6.84	3.61	3.14
2020	-0.08	3.42	-3.38
2021	13.64	3.40	9.98
2022	0.07	3.11	-2.98

Note:

Returns are in the fund's currency basket and stated in percentage points.

	3 Years	5 Years	10 Years	Since inception
Composite gross return ¹	4.35	5.47	6.84	5.90
Custom benchmark return ¹	-0.09	2.00		
Relative return ¹	4.44	3.47		
Standard deviation of composite return ²	5.92	4.91	4.45	4.64
Standard deviation of custom benchmark return ²	8.84	7.28		
Tracking error ³	10.33	8.51		
Information ratio ⁴	0.40	0.38		
Composite Sharpe ratio ⁵	0.64	0.88	1.36	1.13
Benchmark Sharpe ratio ⁵	-0.04	0.15		
Jensen's alpha ⁶	3.83	4.24		
Appraisal ratio ⁷	0.62	0.84		

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

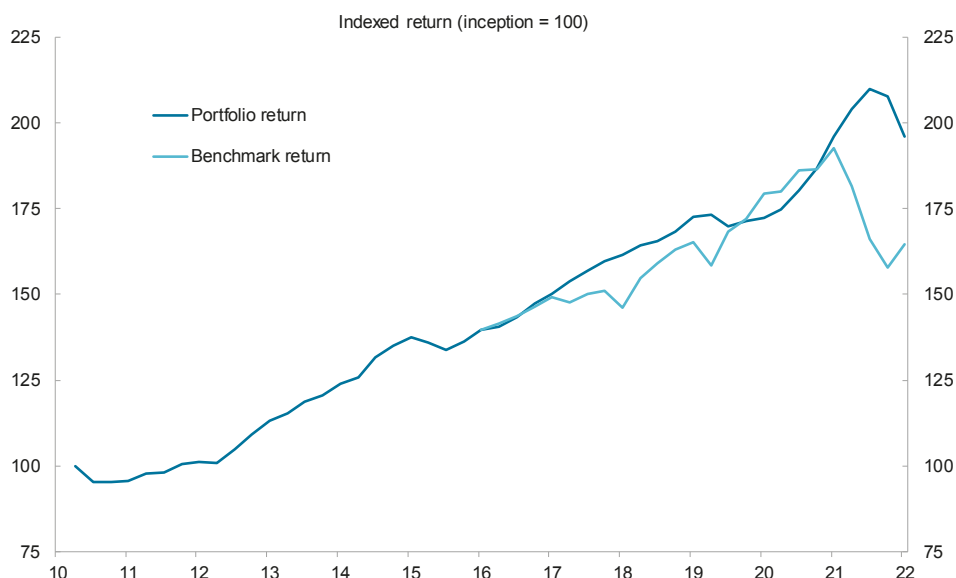
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The composite inception date of the Government Pension Fund Global unlisted real estate composite is 31 March 2011. The composite's creation date is 31 December 2015.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global unlisted real estate composite is a carve-out of the Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the unlisted real estate asset class.

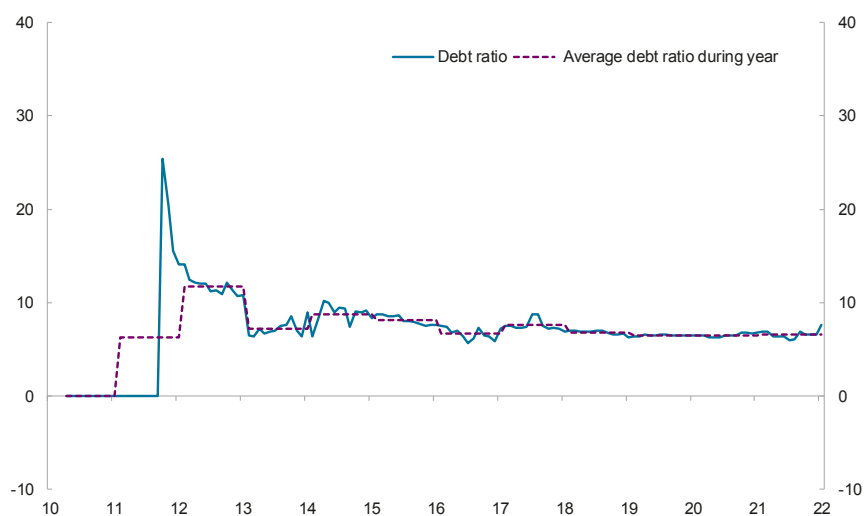
In March 2010, the fund was given a mandate to invest up to 5 percent of its assets in real estate, while correspondingly reducing the share of fixed-income investments. Unlisted real estate investments take place over time and are spread over different types of sectors and countries. The real estate portfolio mainly invests in commercial property types located within well-developed markets.

The management mandate issued by the Ministry of Finance set a limit on investments in unlisted real estate at 7 percent of the Pension Fund. The unlisted real estate composite may be invested in unlisted real estate or in equity and interest-bearing instruments issued by non-listed companies, fund structures and other legal entities whose primary business is the acquisition, development and management or financing of real estate. These investments may be made through Norwegian or other legal entities, but not in real estate located in Norway. The fund's unlisted property investments are made through corporate structures. The companies are directly or indirect wholly owned by Norges Bank or jointly owned with co-investors, and ownership control is exercised at several levels. The legal entities have their own boards where we usually appoint or nominate directors. Real estate is defined as rights to land and any buildings thereon. Norges Bank's Executive Board has further set specific limits on real estate management.

Derivatives and leverage

The access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global unlisted real estate laid down by Norges Bank Investment Management's CEO. The composite, through its property managing real estate subsidiaries, may include derivative instruments in the normal course of investment management. At year-end 2022 the portfolio includes minor derivatives positions in the real estate subsidiaries in the United Kingdom.

The Norges Bank's Executive Board has specified that the maximum allowed debt ratio of the unlisted real estate portfolio is 35 percent. The debt ratio is calculated as the ratio of debt on gross asset property value. At year-end 2022 the debt ratio of the unlisted real estate portfolio was 7.6. Net leverage is the ratio of net exposure and actual market value. Through 2022, the average net leverage was 9.0 percent. Below, the debt ratio is shown as a time series.



Description of discretion

Within the mandate, Norges Bank Investment Management has discretion in its investment selection activities. Regarding rights to dispose of the assets, there exist certain general lock-up provisions on the current portfolio of investments as set forth in the agreements with Norges Bank Investment Management's counterparts.

Valuation

Unlisted real estate investments are measured at fair value on the basis of International Financial Reporting Standards (IFRS). At each calendar quarter the fair value estimates are updated for all assets. The process is supported, each quarter, by external independent valuation reports. The valuations are provided by independent and certified specialists whom provide valuations according to internationally recognized valuation standards.

Calculation methodology – unlisted real estate

In addition to the general disclosures on calculation methodology, this section describes specific methodology related to unlisted real estate. Composite total returns are calculated monthly, and income and capital component returns are calculated daily both on a time-weighted basis and geometrically linked across months. Returns include cash and cash equivalents. The linking of component returns across months results in a residual when comparing annual total returns and the sum of annual component returns. This is a result of compounding, and no adjustments are made to counter this effect. Returns are gross-of-fees. Returns are presented after transaction costs and after expensed operating costs relating to the operations of the real estate investment structure. Operating costs include bank charges, consulting and legal fees and administration expenses. Transaction costs are included in the capital return component and operating costs are included in the income return component. Returns are presented before Norges Bank Investment Management's internal costs. Returns are measured in the currency basket corresponding to the currencies in the Pension Fund's equity and fixed-income benchmark.

Benchmark description

Since 1 January 2017, all the fund's investments, including the real estate investments, are measured against the assigned equity and fixed-income benchmark. Prior to this, the investment mandate from the Ministry of Finance did not specify a benchmark for the real estate asset class. As the real estate portfolio was still considered under development, Norges Bank Investment Management concluded that given the development state of the portfolio, comparing the return against available benchmarks could be misleading. Hence no benchmark returns were presented.

The unlisted real estate composite is assigned a benchmark with combination of bonds and equities from the overall GPFG benchmarks, tailor-made to the actual currency composition and characteristics of the unlisted real estate investments. The rules for this benchmark are decided by the Investment Risk Committee in Norges Bank Investment Management. The actual weights of the benchmark as at 31 December 2022 are shown below.

Country for equity benchmark (Currency for fixed-income benchmark)	Equities Actual benchmark index	Fixed-income Actual benchmark index
Asset class weights	39.30	60.70
USA (USD)	52.65	51.14
Total Americas	52.65	51.14
France	8.71	
Germany	6.77	
Netherlands	3.62	
Italy	2.20	
Spain	2.13	
Finland	1.21	
Belgium	1.00	
Austria	0.28	
Ireland	0.22	
Portugal	0.21	
<i>Euro-area (EUR)</i>	26.35	25.59
United Kingdom (GBP)	16.97	16.48
Switzerland (CHF)	1.77	4.60
Total Europe	45.09	46.67
Japan (JPY)	2.25	2.19
Total Asia / Oceania	2.25	2.19

Figures in percent.

Fee schedule

Performance numbers are gross of investment management fees in relation to real estate investment management. However, all costs occurring in the unlisted real estate holding structures, all trading expenses (transaction costs, including stamp duty), taxes, and fixed and variable asset management fees, are included. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. The reimbursable investment management fees in relation to the unlisted real estate investment management of the composite totalled 8 basis points for 2022, at the same level as for 2021.

Performance results: The Government Pension Fund Global unlisted renewable infrastructure 31 May 2021 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Currency basket¹

Year	Com- posite Gross Return ²	Custom Bench- mark Return ²	Relative Return ²	Com- posite 3-Yr St Dev ³	Custom Benchmark 3-Yr St Dev ³	Number of Portfolios ⁴	Com- posite Assets ⁵	External Valuation ⁶	Firm Assets ⁵
2021 ⁷	4.15	-3.89	8.04			1	14,288	100	12,461,505
2022	5.12	-19.98	25.09			1	14,530	100	12,539,505

Notes:

¹ The currency basket corresponds to the currency composition in the fund's benchmark portfolio. The basket consisted of 35 international currencies at the 2022. The use of the currency basket is mandated by the Ministry of Finance.

² Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

³ Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns. The measure is not provided for 2021, since the inception date is 31 May 2021 and a full 36 months history is not available.

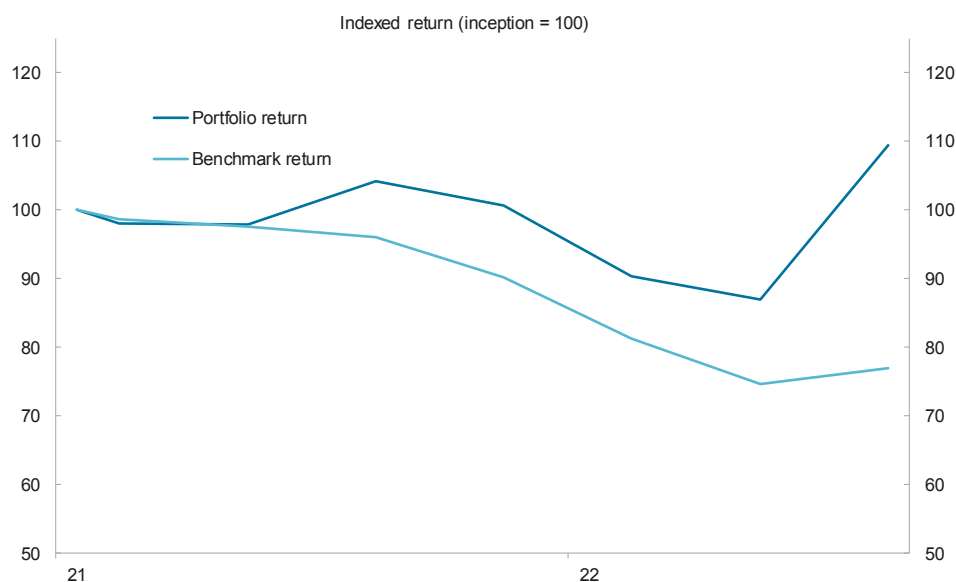
⁴ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁵ Assets are stated in millions of Norwegian kroner.

⁶ Percentage of composite assets valued using an external valuation.

⁷ Partial year; from inception date 31 May 2021.

Due to limited history of the composite standard deviation, tracking error, information ratio, Sharpe ratio, Jensen's alpha and appraisal ratio is not calculated.



Composite creation date and inception date

The composite inception date of the Government Pension Fund Global unlisted renewable infrastructure composite is 31 May 2021. The composite's creation date is 31 May 2021.

Composite description

Norges Bank Investment Management manages the Pension Fund on behalf of the Ministry of Finance. The Government Pension Fund Global unlisted renewable infrastructure composite is a carve-out of the

Government Pension Fund Global composite, which only includes the fund's portfolio holdings in, or relating to, the unlisted renewable infrastructure asset class.

In January 2020, the fund was given a mandate to invest up to 2 percent of its assets in unlisted renewable infrastructure, while correspondingly reducing the share of equity and fixed-income investments. Unlisted renewable infrastructure take place over time and will spread over different types of sectors and countries. The unlisted renewable infrastructure portfolio will mainly invest in wind and solar project in Europe and North America.

The management mandate issued by the Ministry of Finance set a limit on investments in unlisted renewable infrastructure at 2 percent of the Pension Fund. The unlisted renewable infrastructure composite may be invested in unlisted renewable infrastructure or in equity and interest-bearing instruments issued by non-listed companies, fund structures and other legal entities whose primary business is the acquisition, development and management or financing of unlisted renewable infrastructure. These investments may be made through Norwegian or other legal entities, but not in unlisted renewable infrastructure located in Norway or through entities that primarily invest in Norway. The fund's unlisted renewable infrastructure investments are made through corporate structures. The companies are directly or indirect wholly owned by Norges Bank or jointly owned with co-investors, and ownership control is exercised at several levels. The legal entities have their own boards where we usually appoint or nominate directors. Norges Bank's Executive Board has further set specific limits on unlisted renewable management.

Derivatives and leverage

The access to the use of financial derivatives is regulated as part of the provisions on the management of the Government Pension Fund Global unlisted renewable infrastructure laid down by Norges Bank Investment Management's CEO. The composite, through its asset managing renewable infrastructure subsidiaries, may include derivative instruments in the normal course of investment management. The unlisted renewable infrastructure portfolio added power future exposure to manage risk during 2022. At year-end 2022 the exposure to power futures was -1,103 million kroner. Throughout 2022, the average exposure to power futures were -1,463 million kroner.

The Norges Bank's Executive Board has specified that the maximum allowed debt ratio of the unlisted renewable infrastructure portfolio is 60 percent. The debt ratio is calculated as the ratio of debt on gross asset value of renewable infrastructure investments. At year-end 2022 the composite did not have any debt. Below, the debt ratio is shown as a time series.

Description of discretion

Within the mandate, Norges Bank Investment Management has discretion in its investment selection activities. Regarding rights to dispose of the assets, there exist certain general lock-up provisions on the current portfolio of investments as set forth in the agreements with Norges Bank Investment Management's counterparts.

Valuation

Unlisted renewable infrastructure investments are measured at fair value on the basis of International Financial Reporting Standards (IFRS). At each calendar quarter the fair value estimates are updated for all assets. The process is supported by external independent valuation reports at year end and mid-year. The valuations are provided by independent specialists whom provide valuations according to internationally recognized valuation standards.

Calculation methodology – unlisted renewable infrastructure investments

In addition to the general disclosures on calculation methodology, this section describes specific methodology related to unlisted renewable infrastructure. Returns include cash and cash equivalents. Returns are gross-of-fees. Returns are presented after transaction costs and after expensed operating costs relating to the operations of the unlisted renewable infrastructure investment structure. Operating costs include bank charges, consulting fees, legal fees and administration expenses. Returns are presented before Norges Bank Investment Management's internal costs. Returns are measured in the currency basket corresponding to the currencies in the Pension Fund's equity and fixed-income benchmark.

Benchmark description

The unlisted renewable infrastructure investments, are measured against the assigned fixed-income benchmark. The unlisted renewable infrastructure composite is assigned a benchmark with bonds and equities overall GPFG benchmarks, tailor-made to the actual currency composition and characteristics of the unlisted renewable infrastructure investments. The rules for this benchmark are decided by the Investment Risk Committee in Norges Bank Investment Management. The actual weights of the benchmark as at 31 December 2022 are shown below.

Currency for unlisted renewable infrastructure investments	Actual benchmark index
Euro-area (EUR)	100.00

Fee schedule

Performance numbers are gross of investment management fees in relation to unlisted renewable infrastructure investment management. However, all costs occurring in the unlisted renewable infrastructure holding structures, all trading expenses, taxes, and fixed and variable asset management fees, are included. The management expense ratio for the Pension Fund as a whole was 4 basis points for 2022, at the same level as for 2021. The reimbursable investment management fees in relation to the unlisted renewable infrastructure investment management of the composite totalled 24 basis points for 2022.

Performance results: The investment portfolio of Norges Bank's foreign exchange reserves, equity 31 December 2001 – 31 December 2022

Report presented as at: 31 December 2022

Reported assets' currency: Norwegian kroner

Reported returns' currency: Norwegian kroner

Year	Composite Gross Return ²	Custom Benchmark Return ¹	Relative Return ¹	Composite 3-Yr St Dev ²	Custom Benchmark 3-Yr St Dev ²	Number of Portfolios ³	Composite Assets ⁴	Firm Assets ⁴
2002	-36.81	-36.30	-0.50			1	16,909	743,670
2003	29.42	29.99	-0.58			1	34,190	1,044,264
2004	6.51	7.07	-0.56	18.35	18.30	1	56,134	1,236,653
2005	24.09	23.92	0.17	12.22	12.17	1	70,669	1,648,874
2006	14.72	14.99	-0.27	10.77	10.83	1	92,143	2,047,074
2007	-3.75	-2.94	-0.81	10.74	10.56	1	88,953	2,261,368
2008	-26.59	-26.07	-0.52	14.26	13.99	1	70,552	2,498,961
2009	13.02	12.14	0.88	17.11	16.83	1	82,865	2,851,020
2010	12.25	11.66	0.59	17.31	17.09	1	93,835	3,317,700
2011	-3.81	-3.81	0.00	14.36	14.29	1	90,720	3,539,396
2012	9.38	9.21	0.17	9.42	9.37	1	99,230	4,043,153
2013	39.56	38.91	0.65	8.95	8.90	1	118,532	5,311,043
2014	29.79	29.54	0.24	7.39	7.38	1	139,984	6,778,049
2015	17.85	17.82	0.03	9.20	9.21	1	169,245	7,886,255
2016	5.59	5.09	0.50	11.58	11.63	1	177,217	7,687,711
2017	16.86	16.79	0.07	11.74	11.79	1	183,721	8,672,176
2018	-2.88	-2.84	-0.04	11.80	11.83	1	97,465	8,353,411
2019	30.60	30.61	-0.01	11.05	11.03	1	127,287	10,215,370
2020	14.45	14.48	-0.03	12.05	12.03	1	118,606	11,032,367
2021	26.20	25.95	0.25	10.58	10.56	1	121,956	12,461,505
2022	-9.44	-9.54	0.10	11.99	12.00	1	110,445	12,539,505

Notes:

¹ Returns are gross-of-fees and stated in percent. Relative return is supplemental information.

² Three-year annualised ex-post standard deviation in percent using 36 monthly gross-of-fees returns.

³ A measure of internal dispersion is not provided since the composite contains only one portfolio.

⁴ Assets are stated in millions of Norwegian kroner.

	3 years	5 years	10 years	Since inception
Composite gross return ¹	9.36	10.66	15.89	8.08
Custom benchmark return ¹	9.26	10.60	15.72	8.10
Relative return ¹	0.11	0.05	0.17	-0.03
Standard deviation of composite return ²	11.99	11.80	11.11	13.26
Standard deviation of custom benchmark return ²	12.00	11.79	11.11	13.19
Tracking error ³	0.06	0.08	0.13	0.37
Information ratio ⁴	1.55	0.63	1.11	-0.04
Composite Sharpe ratio ⁵	0.76	0.82	1.33	0.57
Benchmark Sharpe ratio ⁵	0.75	0.82	1.32	0.57
Jensen's alpha ⁶	0.10	0.04	0.15	-0.05
Appraisal ratio ⁷	1.61	0.51	1.17	-0.15

Notes:

All figures are annualised.

¹ Gross-of-fees returns stated in percent. Relative return is supplemental information.

² Ex-post standard deviation in percent using monthly gross-of-fees returns.

³ Ex-post standard deviation of monthly relative gross-of-fees returns.

⁴ Average relative return divided by the tracking error.

⁵ Average monthly return in excess of the risk-free rate divided by the standard deviation of monthly gross-of-fees returns. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁶ Average return in excess of the risk-free rate minus beta-adjusted benchmark excess gross-of-fees return. The 1-month US T-bill rate collected from Kenneth French's website is used as a proxy for the risk-free return.

⁷ Jensen's alpha divided by the standard deviation of the residuals of the CAPM regression.

Standard deviation reflects the level of risk in the composite. This statistical measure shows how much the gross-of-fee return has varied during the measurement period. The larger the standard deviation, the larger the risk is estimated to be.

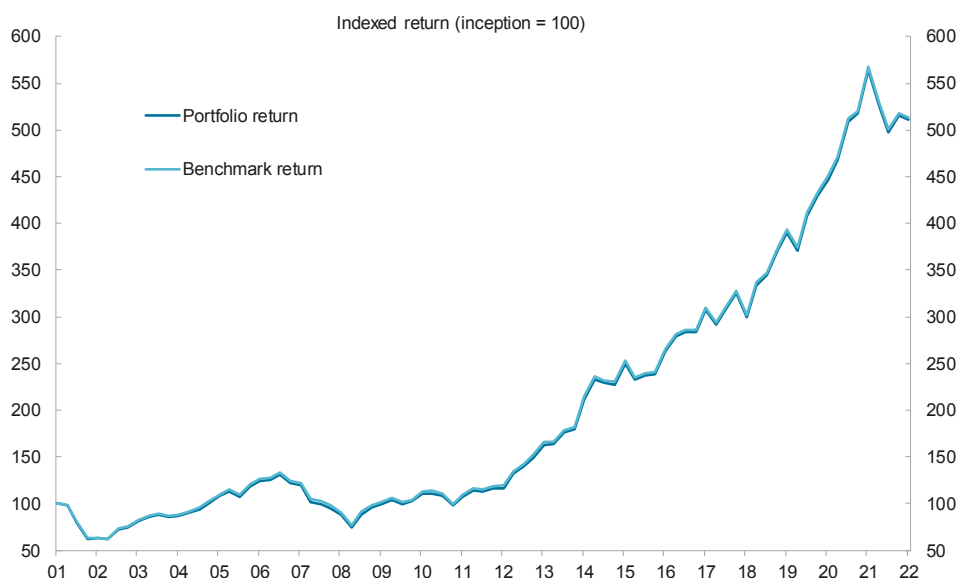
Tracking error measures the variability in the deviations of the composite's gross-of-fee return from the benchmark's gross-of-fee return. The more variability, the larger is the tracking error (also called active risk). The monthly tracking error is the standard deviation of the difference between the monthly returns of a composite and its associated benchmark.

Information ratio is a risk-adjusted performance measure. It determines the average portfolio gross-of-fee return relative to the benchmark per unit of tracking error as measured by the standard deviation of relative returns. The higher the information ratio is, the greater is the relative return per unit of relative risk.

Sharpe ratio is a reward-to-variability ratio. Compared to the Information ratio, it substitutes the risk-free rate for the benchmark. It reports the average excess gross-of-fee return per unit of total risk as measured by the standard deviation of returns.

Jensen's alpha is a risk-adjusted excess return measure, that adjusts the average relative return for beta as derived from CAPM. Beta captures systematic risk that cannot be diversified away.

The Appraisal ratio is a reward-to-variability ratio similar to the Sharpe ratio but using investment specific gross-of-fee returns and risk. Instead of total return and risk, it uses the residual return and risk that is left after correcting for systematic risk using the CAPM. It divides Jensen's alpha by the standard deviation of residual returns from the CAPM equation.



Composite creation date and inception date

The composite inception date and the composite creation date of the investment portfolio of Norges Bank's foreign exchange reserves, equity are 31 December 2001.

Composite description

Norges Bank Investment Management has been responsible for the management of the long-term investment portfolio of the Norges Bank's foreign exchange reserves. The long-term investment portfolio has been managed with the objective to achieve the highest possible long-term return and in a way that ensures sufficient liquidity, subject to the constraints set out in the management guidelines issued by the Central Bank Governor and the principles for management set by Norges Bank's Executive Board. In November 2016 the responsibility for the fixed-income part of the portfolio was moved to Norges Banks Markets and ICT division. The equity part of the portfolio remains under management by Norges Bank Investment Management.

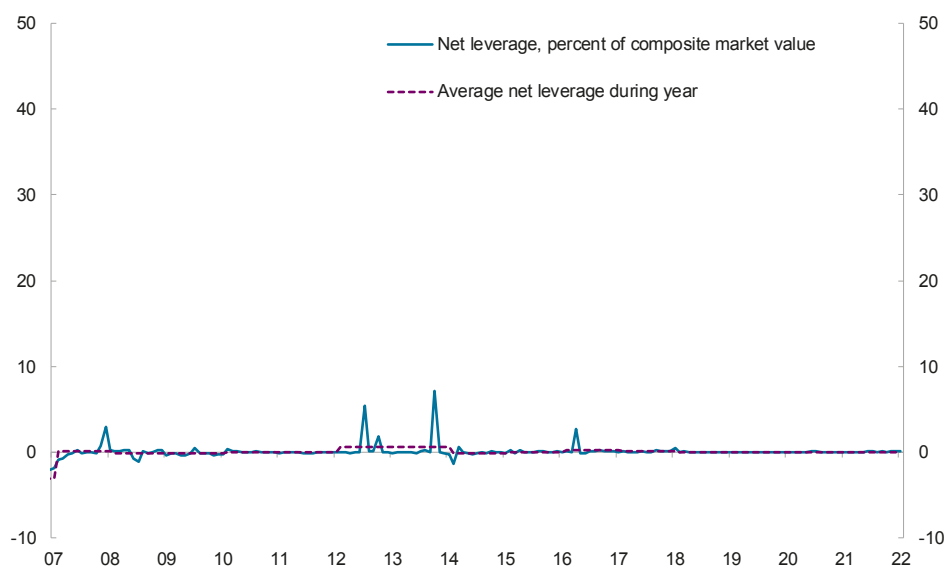
The investment portfolio of Norges Bank's foreign exchange reserves, equity is the equity composite of the Reserves Fund. The investment strategy for equity management has been relatively stable throughout its history with enhanced indexing as the core strategy. During 2001, the equity part of the Reserves Fund was established as part of a transition process. In this process large cash inflows and subsequent large asset purchases were incurred. No return numbers or fair values are reported for 2001. Irrespective of this, the equity portfolio's fair value is included in the firm assets as at 31 December 2001.

Until 2010, the management of the portfolio was based on the same overall processes and procedures as the management of the Pension Fund, albeit different investment mandates. However, in February 2010 Norges Bank's Executive Board adopted new guidelines for the management of the portfolio with more focus towards holding liquid assets. For the equity management, emerging markets were removed, and custom regional weights were replaced by market capitalisation weights. The changes were effective from June 2010 on the benchmark side, while the changes in the portfolio were implemented gradually. After the removal of the fixed-income part of the portfolio, the composite's base currency was changed to Norwegian kroner, as the currency basket calculated on the overall portfolio was no longer representative.

Derivatives, leverage and short positions

Norges Bank's Executive Board has laid down guidelines for the Reserves Fund's investments. These guidelines state that the portfolio may be invested in derivatives that are naturally linked to listed equity instruments, fixed-income securities and money market instruments. However, the use of derivatives in the Reserves Fund's equity composite is very limited and immaterial for the investment strategy. The average exposure on purchased exchange traded futures through 2022 was 46 million Norwegian Kroner, up from 7 last year. The average exposure on sold exchange traded futures through 2022 was 7 million Norwegian Kroner, down from 216 last year.

Leverage in the composite is mainly used to efficiently handle fund management activities and has been immaterial. Net leverage is calculated by comparing net exposure and actual market value (net asset value). Net exposure is found by converting all derivatives to underlying exposure. Prior to 2011, the leverage was calculated from the net sum of all cash positions. Below, the net leverage in percent of the composite's fair value is shown as a time series.



*The leverage shown in June 2013, September 2014 and March 2017 was related to rebalancing of the portfolio.

Short positions are permitted in the management of the equity portfolio of the Reserves Fund given that Norges Bank Investment Management has access to the securities through an established borrowing arrangement. However, restrictions exist in the management guidelines laid down by the Central Bank Governor. The current use of short positions in the composite's portfolio is immaterial.

Sub-advisors

Norges Bank Investment Management currently does not use external investment managers in the equity portfolio of the Reserves Fund. However, external managers were previously used to manage parts of the Reserves Fund equity composite's portfolio from its inception until March 2005.

Benchmark description

The strategic benchmark index for the investment portfolio of Norges Bank's foreign exchange reserves, equity composite is a market capitalisation weighted custom benchmark compiled by FTSE Russell. It consists of the FTSE All World Developed Market Index limited to members of the Eurozone, United States, United Kingdom, Japan, Canada, Australia, Switzerland, Sweden and Denmark. It is adjusted for Norges Bank's tax position on dividends and for excluded companies following the exclusion list in the Pension Fund.

At year-end the benchmark consisted of around 1,800 securities from 18 countries. The actual country weights of the benchmark as at 31 December 2022 are shown below, together with a summary of historical strategic changes to the benchmark.

Country for equity benchmark	Actual benchmark index
Total	100.00
USA	67.99
Canada	2.86
Total Americas	70.84
France	3.23
Germany	2.46
Netherlands	1.35
Spain	0.75
Italy	0.75
Finland	0.43
Belgium	0.33
Ireland	0.08
Austria	0.07
Portugal	0.07
<i>Euro-area</i>	9.53
United Kingdom	4.55
Switzerland	3.04
Sweden	0.96
Denmark	0.89
Total Europe	18.97
Japan	7.64
Australia	2.55
Total Asia / Oceania	10.19

Figures in percent.

Strategic benchmark changes	Implementation
Inclusion of developed Emerging Markets	November 2004
Benchmark changed from FTSE All World to FTSE All Cap	September 2007
Emerging markets removed from the benchmark	June 2010
Benchmark changed from FTSE All Cap to FTSE All World Developed Market indices limited to a small number of countries	March 2015
Exclusion of crude oil producer classified stock from benchmark	January 2020
Exclusion of offshore drilling and other services classified stock from benchmark	January 2022

Fee schedule

Performance numbers are gross of management fees and custodial fees, but net of all trading expenses (transaction costs). In addition, non-reclaimable withholding taxes are deducted in the performance numbers. The management expense ratio for the Reserves Fund equity composite was 5 basis points for 2022, at the same level as in 2021.