

# Experience with external active fixed income managers

This article summarises nearly five years' experience with external fixed income managers. During this period, net excess return in relation to the benchmark has been NOK 1.3 billion. Risk has been low and few of the fund managers have been replaced. At the end of 2004, external fixed income management accounted for 28 per cent of the risk in the fixed income portfolio. Sixteen asset management companies managed 21 different mandates with assets totalling NOK 58 billion. This is equivalent to approximately 10 per cent of the total fixed income portfolio at the end of 2004.

## External fixed income management performance

*The management of the external fixed income portfolio has generated solid results under varying market conditions. Gross excess return compared to the benchmark has been NOK 1.58 billion since the portfolio was established and was NOK 400 million in 2004.*

Return and risk in the fixed income portfolio under external management is presented in Table 1. The figures must be seen in the light of the fact that the portfolio has been under establishment and that the composition of the portfolio has changed considerably during the period. The portfolio will continue to grow in the years ahead, although the growth rate will probably be considerably slower than during the first few years. Figures for the last few years reflect the distinctive features of the current fixed income portfolio under external management.

**Table 1: Return and risk**

	Since start-up	Last 4 years	Last 3 years	Last 12 months
Annual excess return	0.73%	1.10%	1.43%	0.66%
Annual tracking error	1.09%	0.84%	0.57%	0.39%
Information ratio	0.68	1.31	2.51	1.69
<b>Cumulative gross value added</b>	<b>NOK 1.58bn</b>			
<b>Cumulative net value added*</b>	<b>NOK 1.34bn</b>			

\* Gross value added after deduction of management fees

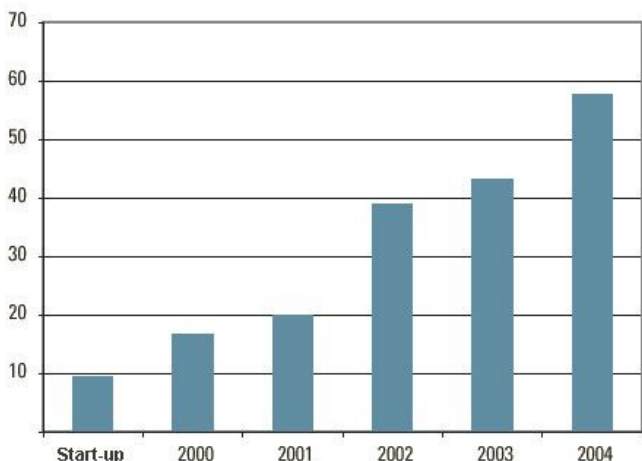
Since the external fixed income portfolio was established, the fixed income markets have experienced a number of periods with wide fluctuations in interest rates, inverse and very steep yield curves and credit spreads that have moved up and down. The equity markets have also experienced large price movements. Despite this, the externally managed fixed income portfolio has performed very well, which may indicate that the mandates are well balanced.

In the last four years, the annual excess return has been 1.1 per cent and the annual tracking error has been 0.84 per cent. The information ratio (ratio of excess return to risk associated with active management) has been 0.7 since the external fixed income portfolio was established, and during the last four years the ratio has been 1.3. In the start-up phase, the portfolio comprised very few mandates. It was very concentrated and the information ratio was lower than during the last few years. With the exception of the first period, the information ratio has hovered around 2 each year and external management has generated a solid return. In the last four years, the excess return on the externally managed fixed income portfolio has been positive in 40 per cent more months than it has been negative. In the best month the portfolio outperformed the benchmark by NOK 207 million, and in the worst month the portfolio underperformed the benchmark by NOK 137 million.

## Portfolio growth

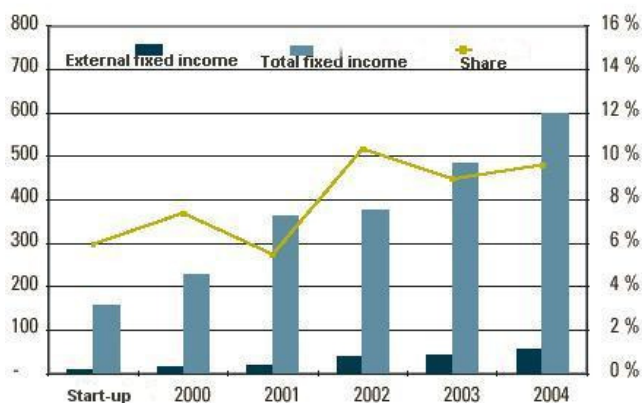
*The Petroleum Fund's externally managed fixed income portfolio has grown from NOK 10 billion at the time of establishment in 2000 to NOK 58 billion at the end of 2004. This represents an annual growth rate of 46 per cent. Chart 1 illustrates this growth.*

**Chart 1: Externally managed fixed income portfolio. Assets under management (NOK billion at 31 December)**



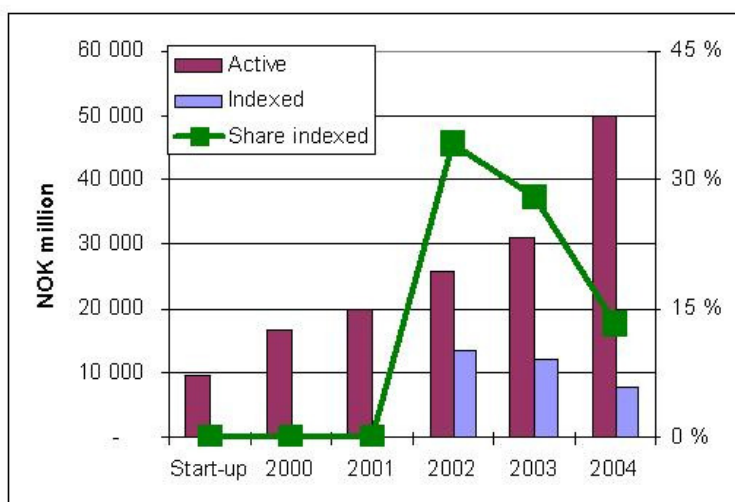
At the end of 2004, the externally managed fixed income portfolio had increased to 10 per cent of the total fixed income portfolio. This means that the assets under external management have grown 14 per cent faster than the total fixed income portfolio (see Chart 2). Norges Bank does not have a specific target for the share of assets under external management. Asset allocation is an ongoing process that is based on experience, expected profitability and costs.

**Chart 2: External fixed income management in relation to total fixed income portfolio (at 31 December)**



At the outset, 100 per cent of the external fixed income portfolio was managed actively. After the Ministry of Finance, with effect from February 2002, approved a new strategic benchmark portfolio that included securitised bonds, the share of the portfolio under active management was reduced somewhat. This was because Norges Bank lacked experience in the management of US securitised bonds and did not have the necessary fund administration and IT systems to handle investments of this kind. Therefore, it was natural to give external managers with specialist expertise in this field responsibility for indexing this relatively large portfolio of US securitised bonds. Chart 3 presents the distribution between active management and index management.

**Chart 3: Active and index management**



At the end of 2002, 34 per cent of the externally managed portfolio consisted of index mandates. At the end of 2004, the share had declined to 13 per cent. Although these mandates are referred to as index mandates and have lower limits for active risk than active mandates, they are nevertheless expected to generate a higher return than the index at the same time

as their risk profile is very low. These enhanced index mandates are denoted index plus mandates.

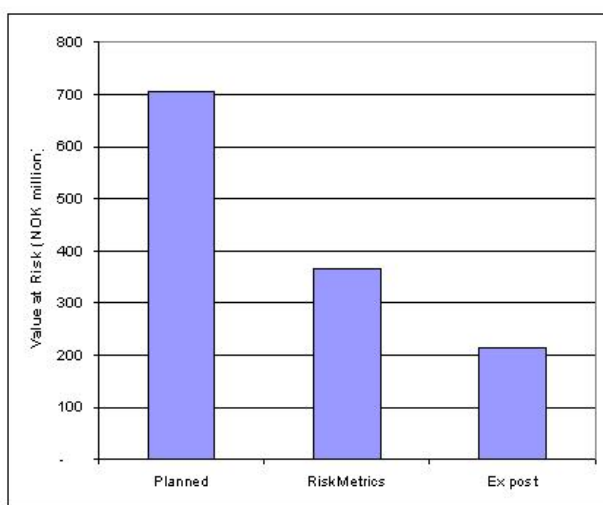
### Risk and activity in the portfolio

Norges Bank utilises different systems and methods for calculating the market risk associated with the externally managed fixed income portfolios. These methods include Value at Risk models that are based on different assumptions about correlations between the various external fixed income mandates.

Norges Bank's risk management system RiskMetrics (see discussion in the Annual Report for 2002 and the article "Measuring and managing market risk", published on Norges Bank's web site in June 2003) measures the portfolio risk (expected tracking error). Realised risk based on the portfolio's actual development (ex post, i.e. actual tracking error) is also calculated. The group responsible for external fixed income management also utilises a spreadsheet-based model that is based on explicit risk measures for each mandate. This model has an estimated co-variance matrix that is not based on historical data.

Chart 4 shows that realised risk (measured by ex post risk) for the externally managed fixed income portfolio is substantially lower than both expected risk (measured by RiskMetrics) and planned risk. This illustrates that historically the external managers have taken less risk than expected and desired. Despite less risk-taking, the external managers have delivered a high excess return. Even though the return objectives are more than satisfied, the Petroleum Fund could have achieved even higher returns on the externally managed fixed income portfolio if the risk limits had been more fully utilised.

#### Chart 4 Risk analysis



### Strategies in the externally managed fixed income portfolio

Norges Bank Investment Management's strategy to generate an excess return in relation to the benchmark portfolio is described in the article "Highest possible excess return at lowest possible risk" published on Norges Bank's web site in May 2004. The external fixed income portfolio is managed in accordance with this strategy. Each mandate has exposures to different markets and financial instruments. The correlation between the different strategies is very low, indicating that the efforts to develop strategies and select skilled managers within each strategy have been successful.

The main strategy for achieving an excess return is to take a large number of independent positions so that chance is neutralised and the manager's skill determines the result. In order to achieve the highest possible excess return with such a strategy, individual positions must generate positive returns and the correlation between different positions must be low. Both expected and actual risk-adjusted returns are monitored continuously.

This philosophy does not exclude the possibility that external managers may take on mandates with considerable exposures to certain risk factors. This type of risk exposure at the mandate level is taken into account through the size and expected risk of each mandate. In addition, the risk in each mandate is balanced and the total portfolio is diversified because the different mandates have exposures to different risk factors. Diversification of the portfolio ensures that the total risk profile is within the limits set for external fixed income management.

At the end of 2004, the external fixed income portfolio consisted of 21 different mandates distributed among 16 management organisations. The largest mandate was NOK 6 billion, while the smallest mandate was NOK 550 million. The average mandate size was NOK 3 billion. The mandates are spread across 12 different strategies. The diversity of the programme is reflected in the large number of strategies, the wide variations in the mandates' risk profiles and the major differences in the size of the mandates. Some of the mandates are traditional fully funded long only mandates while others are non-funded or pure absolute return long/short mandates with a money market rate (Libor) as a benchmark.

The most important strategies for external fixed income management are listed below. The list is not complete and is changed regularly as new strategies are developed. One or more mandates are assigned within each strategy.

**Global Macro:** Active positions in different countries' bond markets which exploit each market's forward rate structure as well as differences in various markets' forward rate structures.

**Absolute currency:** Active positions in the global currency markets. Positions may be concentrated on major currencies

such as the US dollar, the euro and the Japanese yen, but may also include less important currencies. Mandates and strategies may be based on technical analysis, analysis of fundamentals or a combination.

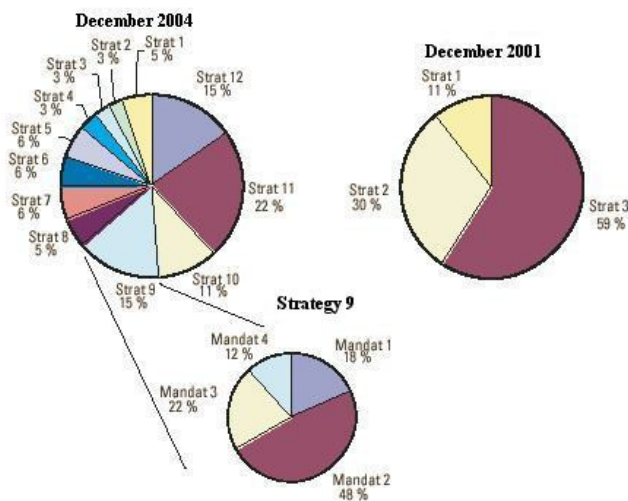
**Credit:** Active positions in different issuers' securities, usually in corporate bonds. The strategy also includes active positions in different industries. The strategies may be global, regional or concentrated to certain countries.

**Securitized/MBS:** Active positions in different kinds of collateralised securities such as ABS (Asset Backed Securities), CMBS (Commercial Mortgage Backed Securities) and MBS (Mortgage Backed Securities). Management within this strategy contains option elements and sometimes credit elements as well.

**Quant:** Active positions based on quantitative models. The models are based on price information and other relevant information. One feature of these strategies is that subjective considerations are not an important aspect.

Chart 5 illustrates the risk distribution (measured by value at risk) between the strategies at the end of December 2004 and at the end of December 2001. At the end of 2004, the external fixed income portfolio was far more diversified and balanced than three years earlier. The pie chart at the bottom right, taken from the chart for December 2004, provides an example of the risk distribution at the mandate level within a given strategy.

**Chart 5 Risk distribution for the external fixed income portfolio (Per cent Value at Risk)**



Illustrating the qualitative decisions through a quantitative analysis has proved to be useful. Table 3 presents the correlation between nine of 12 different strategies underlying the management of the external fixed income portfolio. Three of the strategies are not included in the table due to insufficient historical data. The table reflects a large degree of diversification. The average correlation between the strategies is as low as 0.02. The results document that the qualitative approach to diversification has been successful.

**Table 3 Correlation between external strategies (monthly figures)**

	Strat 1	Strat 2	Strat 3	Strat 4	Strat 5	Strat 6	Strat 7	Strat 8	Strat 9	
Strat 1	1	-0.35	0.57	0.03	-0.01	0.41	0.14	-0.16	0.00	
Strat 2	-0.35	1	-0.17	0.13	-0.08	0.02	-0.19	0.08	0.08	
Strat 3	0.57	-0.17	1	-0.15	0.19	0.10	0.16	0.07	-0.18	
Strat 4	0.03	0.13	-0.15	1	0.32	-0.13	0.03	-0.37	0.09	
Strat 5	-0.01	-0.08	0.19	0.32	1	-0.07	0.11	0.00	0.04	
Strat 6	0.41	0.02	0.10	-0.13	-0.07	1	0.03	0.04	0.17	
Strat 7	0.14	-0.19	0.16	0.03	0.11	0.03	1.00	0.17	-0.21	
Strat 8	-0.16	0.08	0.07	-0.37	0.00	0.04	0.17	1.00	-0.10	
Strat 9	0.00	0.08	-0.18	0.09	0.04	0.17	-0.21	-0.10	1.00	
Average	0.08	-0.06	0.07	-0.01	0.06	0.07	0.03	-0.03	-0.01	0.02

**Background for the results**

**Development of the external fixed income management**

Capital was transferred to the Petroleum Fund for the first time in 1996. During the first years, the Fund's assets were only invested in fixed income instruments, on the basis of the same guidelines and organisation that applied for Norges Bank's foreign exchange reserves. Norges Bank Investment Management was established as a separate wing of Norges Bank on 1 January 1998 at the same time as the Fund's equity share was gradually built up.

Despite Norges Bank's broad experience with fixed income management through its internal management, external fixed income management was established as a separate profit centre as early as 1998. The reason for this was a desire to acquire expertise in management areas where Norges Bank lacked skills. Underlying this was a goal of achieving a high excess return through active management.

Norges Bank actively sought external fixed income managers for the first time in September 1998 through a public announcement of mandates. The first mandates were assigned in 2000 and several of the mandates that were assigned at that time are still part of the externally managed fixed income portfolio. All of these mandates were global and the investment universe was virtually the same as that of the internally managed fixed income portfolio.

In January 2002, the Ministry of Finance decided to make a substantial change in the Petroleum Fund's benchmark portfolio for fixed income investments. Instead of containing only government bonds, the benchmark portfolio would in the future also include other bonds issued by the public sector, bonds issued by international organisations, corporate bonds and securitised bonds. Norges Bank lacked experience in the management of US securitised bonds and did not have the necessary fund administration and IT systems to handle investments of this kind. Therefore, it was decided that external managers would be hired to handle this part of the portfolio. The first mandate of this kind was assigned in May 2002. External management of US securitised bonds is still an important part of external fixed income management.

Since spring 2002, the Petroleum Fund's external fixed income management has focused on further developing active management in order to outperform the benchmark. The objective is that external management shall make a significant contribution to the overall results of fixed income management.

### **Organisation of external fixed income management**

A separate group reporting to the Chief Investment Officer Fixed Income has been established. This group is responsible for selecting and following up the external fixed income managers. The group operates independently and only exchanges general information and expertise with Norges Bank's internal fixed income managers. There is no exchange of information concerning positions. In the future, the external management will grow and become increasingly specialised. Increased specialisation is necessary to increase the potential for increasing total excess return.

### **Selection and evaluation of external managers**

The investment process consists of a thorough identification of investment opportunities and the development of different, clearly defined strategies to implement the investment philosophy. The first part of defining a specific strategy is a qualitative assessment of those distinctive features that differentiate the strategy in question from other strategies. This qualitative assessment is verified by using quantitative methods. Establishing risk profiles is an important aspect of the development of each strategy. A risk budget is allocated to each strategy on the basis of Value at Risk. The risk budget is then distributed among the different mandates linked to each strategy.

The most challenging aspect of the investment process is finding managers and identifying mandates that will ensure the execution of the defined strategies. In some cases, it is difficult to find managers that can execute a given strategy. In other cases, the challenge lies in the quality of the available managers. Therefore, the portfolio is never fully optimal and there will always be parts of some strategies that cannot be realised. In addition, changes occur on a regular basis, both within the external management organisation and within each strategy, and this necessitates continuous follow up of the external managers.

Before Norges Bank signs an agreement with external managers, the Bank makes a thorough evaluation and clarifies its expectations for the mandate. Expectations cover the composition of the portfolio, portfolio risk, portfolio developments over time, and the markets in which the portfolio is to be invested. The actual management of the mandates is followed up on the basis of this framework and measures are initiated if expectations are not met.

The group for external fixed income management also receives detailed reports from both internal systems and the manager concerning investments, risk and compliance with rules. As long as the manager acts in line with expectations and within given frameworks (limits), there is little reason to initiate measures. An investment in a mandate is not very different from an investment in an individual stock or bond. Both types of investments may be managed through expected risk and return within certain limits.

Twenty-four mandates have been assigned since 1998. The Petroleum Fund currently has 21 active fixed income mandates under external management. This implies a very low turnover of 5.2 per cent calculated on the basis of assets under management. The external fixed income management group does not make frequent changes in allocations between different mandates and different external managers. However, since some of the mandates have considerable exposures to certain risk factors, market situations can arise necessitating rapid asset shifts.

The stability of the external managers is not simply a result of correct investment decisions, but is also a consequence of the external fixed income group's choice of products, individual managers and management organisations. Another factor contributing to the low turnover is that the programmes have existed for a relatively short period of time and that management agreements have been signed with a number of external managers during the last two years. An increase in turnover must be expected in the years ahead as a result of changes in external management organisations, for example, when key individuals change jobs. Norges Bank has experienced that this is common among external equity managers, as pointed out in the feature article "Our experience with external active equity managers" published on Norges Bank's web site in May 2004.

