

# A national strategy for investing resource wealth

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## The Norwegian Government Petroleum Fund

by

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*Norway is one of the world's largest exporters of oil. A substantial portion of the ensuing oil revenue is channeled to the government budget. Over the last few years, a considerable part of the state's resource revenue has been invested in the Norwegian Government Petroleum Fund. The Fund has grown to EUR 70 billion, and is expected to show continued high growth through this decade. The Petroleum Fund serves two main purposes. It serves as a buffer for the government budget to shelter the domestic economy from fluctuations in the income from petroleum. The Fund is also a Government instrument for meeting the long-term challenges of a combination of an expected decline in resource revenue and an increase in government pension expenditure. This presentation outlines the investment strategy of the Fund and describes the operational management.*

The Norwegian Government Petroleum Fund was established in 1990 when the Norwegian parliament ('Stortinget') adopted the Act on the Government Petroleum Fund (Act of June 22 1990 No. 36). The Fund's income is defined as the central government's net cash flow from petroleum activities plus the return on the Fund's investments. The Fund's expenditure consists of an annual transfer to the central government budget to cover the non-oil budget deficit.

Pursuant to the Act relating to the Petroleum Fund, the capital in the Fund shall be invested in the same manner, as the central government's other assets. Responsibility for the management of the Fund rests with the Ministry of Finance. The Ministry has delegated the responsibility for the operational management of the Fund to the Central Bank of Norway, Norges Bank.

The Government Petroleum Fund is intended to serve as a fiscal policy instrument by making the spending of the petroleum revenue more visible. It has been emphasised that the allocation of funds to the Petroleum Fund must form part of a coherent budgetary process. When the Fund was established it was therefore stressed that no net allocations would be made to the Fund unless the central government budget was in surplus.

Formally, the Petroleum Fund is a deposit account denominated in Norwegian kroner at Norges Bank, owned by the government. As such, it is a liability for Norges Bank. However, the guidelines state that Norges Bank is to acquire foreign securities in its own name for a value corresponding to the krone bank account. The return on these foreign investments, less Norges Bank's management fee, is defined as the return on the Petroleum Fund.

The accumulated wealth of the Petroleum Fund is to serve two purposes. First, it is to form a buffer against fluctuations in petroleum revenue, which gives the government more freedom of action should the oil price or mainland activity decline. Second, it is a tool to help the government face the challenge of an ageing population concurrently with a gradual decline in petroleum revenue. The first aim suggests that part of the Fund should be invested as a financial buffer, which can easily be realised if it is needed to cover a budget deficit. The second is best served if part of the Fund is invested from a more long-term perspective.

## Saving windfall revenue

Empirical findings suggest a strong correlation between an abundance of natural resources, on the one hand, and long-term economic deterioration, on the other [\(1\)](#). In short, it can be stated that in many nations blessed with rich resources by nature, the temptation to spend the revenue in an unproductive manner has been irresistible. "Dutch disease" and rent-seeking behaviour have severely hurt the long-term growth potential of several economies that have suddenly benefited from valuable new resources.

In an attempt to avoid the mistakes of the past, several countries have set up oil stabilisation funds. The intention of such funds has been to separate the extraction of petroleum from the spending of revenue. By setting aside a large share of revenue when the cash flow from extraction of non-renewable resources is high, the countries have tried to meet two policy challenges at the same time. The first challenge has been to protect the domestic economy from the negative impact of sharp and unpredictable variations in the oil price and revenue. The second challenge has been to distribute the wealth fairly among generations.

When the Government Petroleum Fund was established in 1990, oil-dependent economies in the Middle East like Kuwait and Oman and the mineral-dependent Chile already had funds with a similar purpose in place. Alberta in Canada and Alaska in the US also have Energy Revenue Funds with longer histories than their Norwegian counterpart. Recently both Azerbaijan and Kazakhstan have set up oil stabilisation funds.

A working paper published by the IMF recognises the efforts made by the Norwegian authorities to stabilise the economy through the Petroleum Fund mechanism [\(2\)](#):

*The [Norwegian] State Petroleum Fund can be considered a successful institutional arrangement. It has served as a tool for managing the resources needed in connection with the increase in pension outlays and helped enhance the effectiveness by facilitating the adoption of a countercyclical fiscal stance”*

In a country report on Norway (published March 2001), following the IMF consultations with Norway last autumn, the IMF’s Executive Board gave a positive account of the state of the Norwegian economy:

*“Norway, one of the world’s richest economies and its second largest oil exporter, has been a model of prudent economic management of resource wealth in recent years. The policy of investing abroad a substantial part of the government’s oil and gas export revenue through the State Petroleum Fund, pursued in the 1990s, has helped insulate the mainland (non-oil) economy from fluctuations in oil revenue. Coupled with a consensual incomes policy framework, this strategy has been generally successful in managing the economic cycle and has helped raise living standards markedly over the past quarter century”.*

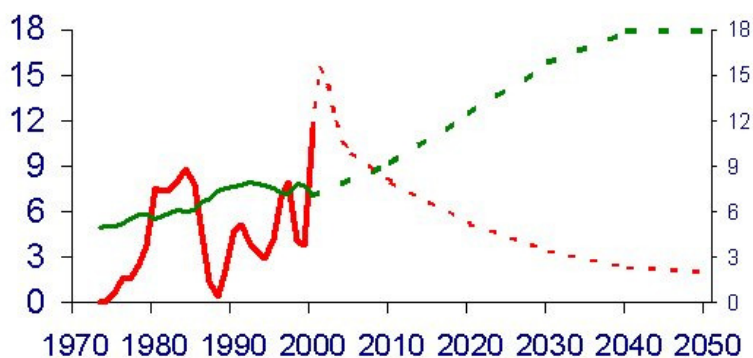
## Purpose of the Petroleum Fund

The Petroleum Fund is a key instrument for managing central government financial savings. When petroleum wealth is spent, this spending is matched by export earnings, which mainly end up in the Treasury as tax revenue, and income linked to central government ownership stakes on the continental shelf. Some of this income is used in the central government budget, partly to accumulate fixed assets and expertise in order to enhance future production capacity, and partly to finance public and private consumption. A substantial part of oil revenue, however, is saved in the form of financial assets. The Fund is intended to meet a number of needs:

- The need to maintain the **central government budget as a management tool**. The Petroleum Fund consists of the part of petroleum revenue that is not used in the central government budget, and the return on this capital. In the budgetary deliberations, the Storting takes into account the extent of central government expenditure, including which investments are to be made and which other purposes are to be considered. If, in addition, the Petroleum Fund were used to finance domestic investments in infrastructure, know-how and business, the Petroleum Fund would become a second central government budget. This would weaken the position of the central government budget as a political management tool.
- The need for a **varied industrial structure**. The investment of the Petroleum Fund abroad helps to ensure that the oil revenue used in the economy do not result in an industrial structure that cannot be sustained when oil revenue start to decline. Increased domestic use of the revenue could also result in a low return on investments.
- The need to **stabilise** the Norwegian economy. The corollary to substantial surpluses on the current account will be a considerable outflow of capital abroad in years to come. If the private sector were to contribute to this capital outflow to any major extent, interest rates in Norway would have to be lower than interest rates abroad in order to entice private investors to invest abroad rather than at home. By investing the Petroleum Fund directly abroad, the central government will contribute to the substantial capital outflow and thereby shelter the domestic economy from the effects of high petroleum revenue more effectively.
- The need to use the Petroleum Fund as a **buffer**. For the Fund to function as a financial buffer which can be drawn on to finance any budget deficits, it is important that the size of the buffer can vary without affecting the rest of the economy to any extent. Substantial and strongly fluctuating central government financial wealth vis-à-vis domestic sectors would not satisfy such a requirement.
- To meet the challenge from the expected increase in the public **pension expenditures** over the next decades. Like most other European countries, Norway faces an increase in pension outlay. Norway has a two-tier pay-as-you-go system for public pensions. The first tier is a minimum pension level for all citizens over the age of 67. The second tier is an income-related scheme. In addition, there is a voluntary third scheme covering all public employees and half of the employees in the private sector.

The net present value of public pensions is estimated at EUR 370 billion. In the last government long-term programme delivered in March this year, it was forecast that public pension expenditure would increase from 7 per cent of GDP this year to 16 per cent in 2030. Chart 1 illustrates the challenge posed by a combination of increased pension expenditure and an expected fall in petroleum revenue.

**Chart 1: Net cash flow from the petroleum sector and pension expenditure as a percentage of GDP.**  
**Source: The Government Long-Term programme 2002-2005**



### The fund management model

The Ministry of Finance is responsible for the management of the Petroleum Fund. The operational management of the Fund has been delegated to Norges Bank. The guidelines for the Fund clearly define the division of responsibility between the Ministry of Finance and Norges Bank. The Ministry is responsible for defining the long-term investment strategy. This reflects the strategic choices made in the management of the Fund regarding currency and country distribution, the distribution between asset classes and between securities in different market segments.

The strategic choices are reflected in a benchmark portfolio. The Ministry has also defined limits for the maximum variations permitted in relation to the benchmark portfolio. The limit is defined as a maximum expected tracking error of 1.5 per cent.

These are the main elements of the current investment guidelines:

- Equity portion 30-50%
- Regional distribution (Europe 40-60%, the Americas 20-40%, Asia/Oceania 10-30%)
- Investment area: 28 countries; (7 emerging markets included from 31 January 2001)
- Maximum ownership share in any one company is 3%
- A benchmark portfolio for bonds and equities has been composed on the basis of well-defined market indices (FTSE All World Index for equities and Schroder Salomon Smith Barney's World Government Bond Index).
- The fixed income portfolio is to have a duration of between 3 and 7

A government proposal in 1997 also included a discussion of the Petroleum Fund's role as investor. The government's view was that the Fund should operate as a purely financial investor and that the ownership interest in any one company should be small. The Fund's equity investments should be distributed so as to yield a return similar to that of highly diversified stock portfolios on international stock exchanges. It was also required that investments should only be made over major stock exchanges in countries with highly developed legislation and regulation with respect to companies, stock exchanges and securities.

In addition to the Ministry of Finance's guidelines for the Petroleum Fund, an agreement has been drawn up that regulates the relationship between the Ministry and Norges Bank in connection with the management of the Fund.

Norges Bank delivers detailed annual reports on the management of the Petroleum Fund. These reports describe how the Fund is managed and include a list of the companies in which the Fund's capital has been invested. The reports provide figures on total return, benchmark return, attribution of the excess return and management costs. The annual reports also contain articles on the investment philosophy behind the operational management, information on the process of selecting external managers etc.

In addition, Norges Bank submits quarterly reports containing the main return and cost data to the Ministry of Finance. The reports are presented and debated at press conferences. It is not unusual for representatives of more than 10-20 media companies to attend the quarterly press conferences.

### The equity portion

When the first allocations to the Petroleum Fund were made in 1996, the Fund's entire capital was invested in bonds and other fixed-income instruments, according to roughly the same guidelines that applied to the foreign exchange reserves. In the course of 1997, however, considerable capital was allocated to the Petroleum Fund, and in a submission to the Ministry of Finance, Norges Bank raised the issue of investing some of the Fund's capital in equities. This submission was published as an annex to the Revised National Budget for 1997, in which the Ministry of Finance also proposed that investment in equities be permitted. The Storting endorsed the proposal.

The point of departure for Norges Bank's submission was that the size of the Petroleum Fund made it improbable that its capital would be used in the next decade. Consequently, when deciding how to invest the capital, the return over a time horizon of at least ten years should be considered. With such a long investment horizon, Norges Bank believed that equity investments would, with a high degree of probability, provide a higher return than investments in fixed-income instruments. This was supported by a study carried out by the G-10 countries, with return figures for the past two decades and a study of equity and bond markets in the US since 1871.

It was also pointed out that, calculated over five-year periods, the return on portfolios consisting of both equities and fixed-income instruments has varied less than the return on portfolios consisting only of securities from one of these asset classes. Fixed-income instruments have often provided a solid return when the return on equities was low, and vice versa. Such diversification gains have been achieved for equity portions of up to 50 per cent.

In December 2000, the Ministry of Finance announced in a letter to Norges Bank that it would undertake a new evaluation of the Petroleum Fund's equity allocation. This was deemed necessary as a result of the increased size of the Fund and the longer investment horizon than assumed when the equity proportion was set at 40 per cent in the autumn of 1997. Norges Bank was requested to assess factors that are relevant to this evaluation. The Ministry was particularly interested in an assessment of the Fund's expected return and risk in connection with different equity allocations. Moreover, the Ministry wished to receive information concerning the equity allocation chosen by large international funds.

Norges Bank submitted a reply in March 2001. The letter discussed how changes in the equity allocation might influence the Fund's return and risk. Several methods were used to estimate the size of the return on equities and fixed income instruments. The first point of departure was historical return rates. These showed that the average return on equities has been between 5 and 6 percentage points higher than the return on fixed income instruments. The estimates for historical return differentials, however, are associated with considerable uncertainty. It is also difficult to explain such large return differentials on the basis of theoretical models for the pricing of financial assets.

An alternative method for estimating the return on equities is to use the dividend-price ratio or the earnings-price ratio. Norges Bank used this method to make some illustrative calculations. They show that the return on equities in the period ahead may be lower than the historical average. The results were very sensitive to underlying assumptions, however.

The letter also referred to the discussion of the implications of the sharp rise in equity prices in the latter part of the 1990s for the future return on equities. Usually, a lower risk premium or expectations of higher corporate earnings can explain a rise in equity prices. If the rise in prices reflects reduced equity premiums, the return on equities will be lower in the years ahead than the historical performance. If the rise in equity prices is related to investor expectations of higher corporate earnings, the excess return on equities in the years ahead may be of the same magnitude as we have seen in a longer historical context.

Equity risk is often measured by the standard deviation of the return or by the probability that the return on equities will be either negative or lower than the return on other asset classes. Norges Bank used both these methods to illustrate the risk associated with equities. On the basis of data on historical returns, we found that the standard deviation of annual returns is about three times higher for equities than for fixed income instruments. However, the Petroleum Fund has a long investment horizon, a factor that makes it important to focus on risk measured over longer time periods. How risk changes with the length of the horizon depends on the time series properties of the return on equities and fixed income instruments. We did not have access to sufficiently long time periods for most markets to examine time series properties. Our studies of US data for the period 1926-2000 may indicate, however, that the standard deviation of the return on equities increases more slowly than the standard deviation of the return on fixed income securities when the length of the investment horizon is increased. If this applies more generally, this would in isolation be an argument for increasing the equity allocation when the investment horizon is longer.

## **The organisation of the operational management**

Until 1998, Norges Bank had no experience of managing portfolios of international equities. Drawing on the Bank's expertise in managing large portfolios in international government bonds, a project group started in spring 1997 to prepare for investing part of the Petroleum Fund in equities. A new department, Norges Bank Investment Management (NBIM) was established in January 1998. The board of the bank delegated to NBIM the operational management of the Petroleum Fund (EUR 14 billion at that time), the long term portfolio of the foreign exchange reserves (EUR 12 billion) and the Norwegian Petroleum Insurance Fund (EUR 1.2 billion.) Today the combined assets under management are EUR 89 billion.

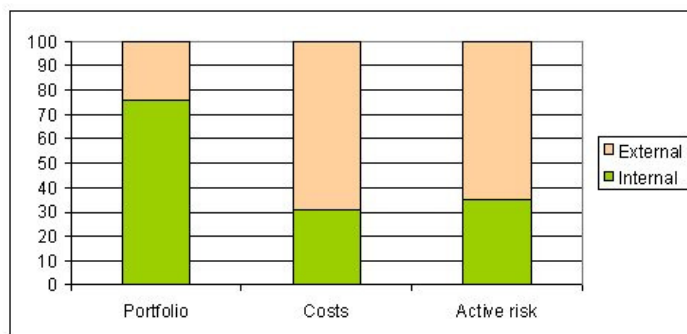
NBIM is organised with Chinese walls to the ordinary central bank functions. The head of NBIM reports to the governor of Norges Bank but takes no part in the internal discussion on monetary policy. All investment decisions are delegated to NBIM according to clearly defined guidelines, and NBIM reports to the governor and his staff on a monthly basis. Within NBIM, investment decisions are delegated to three front office units: Equities, Fixed Income and Tactical Asset Allocation. The head of NBIM defines investment mandates and sets risk limits for each front office unit. There are no committees taking investment decisions.

The staff of NBIM has grown from 71 at year-end 1998 to just over 100 now. During the first half of 1998 the portfolio of the Petroleum Fund was transformed from 100 per cent fixed income instruments in 8 countries to a diversified portfolio of 60 percent fixed income and 40 percent equities in 21 countries. All investments in equities were carried out by four external index managers. Since autumn 1998, NBIM has also farmed out external mandates for active equity management. In 1999 NBIM started with internal active equity management, and in 2000 small portfolios for indexing and enhanced indexing were also put in place. By spring 2001 large external index mandates were transformed to internal enhanced index portfolios. About 50 per cent of the equity portfolio is now managed in-house, while 15 external managers manage the rest. The external active managers do the bulk of active risk taking.

In 1998, the entire fixed income portfolio was managed by the NBIM staff in Oslo and at the branch office in New York. Since 1999, some active management has been farmed out to four external managers. Tactical Asset Allocation is also organised as a mixture of external and internal management.

Chart 2 shows some key figures associated with the distribution of external and internal management. The chart shows that at the end of the second quarter 2001, 76 per cent of the Petroleum Fund was managed internally by Norges Bank, whereas the costs of internal management amounted to only 31 per cent of overall management costs. Moreover, the active risk associated with internal management represented about one third of the total risk associated with active management.

**Chart 2: Distribution of portfolio, management costs and active risk\* between internal and external management. Per cent**



\*There is no absolutely correct way to compute the distribution of active risk. The distribution shown in the graph is based on summation of the value at risk (VAR) of each mandate, disregarding the correlation between mandates.

As the figure shows, external managers assume most of the risk associated with active management. Active management is distinctly more expensive than index management, which is part of the reason that the costs of external management are far higher than the costs of internal management, although the internally managed portfolio is far larger. A supplementary explanation is that because of economies of scale in capital management, internal management of large portfolios can be cost-effective compared with buying management services in the market. Norges Bank's strategy is to allow external managers with specialist expertise to be responsible for a significant proportion of the overall active management.

### The investment philosophy

The primary goal of Norges Bank's management of the Petroleum Fund is to outperform the benchmark portfolio defined by the Ministry of Finance. The strategy for surpassing the performance of the benchmark portfolio was presented in the annual report for 1999. The following are vital components of the strategy: Spreading active management over several types of positions, combining external and internal management and specialising internal management in areas where there is a good possibility of predicting price movements better than the average market participant. Special emphasis is also placed on risk management, portfolio analysis and efficient trading in the market. By spreading active management over a large number of independent decisions, NBIM seeks to make effective use of the clearly defined risk limits set out by the Ministry of Finance.

In academic analyses, financial markets are normally assumed to be efficient. The definition of efficient markets is that "all information" is immediately reflected in prices. It is thus not possible to predict prices, and active management is not profitable. Several empirical studies provide support for this view, by showing that very few active managers succeed in outperforming the benchmark index consistently from year to year. However, in recent years several academic studies have indicated that it is possible to predict some price trends and to deduct trading strategies, which result in a positive information ratio. There are also theoretical reasons for this being the case, since information is not freely available and adjusting a portfolio involves costs.

Distinguishing between index management and active management is an important aspect of the management strategy. The risk limits defined by the Ministry of Finance state that management of the Fund must, by and large, closely follow the benchmark portfolio. A number of effects are achieved by "earmarking" a portion of the portfolio to follow the benchmark portfolio very closely. Management costs for this portion of the portfolio are kept low since this type of management can be achieved using simple techniques. This also results in a sharper focus on the portion of the portfolio that can be managed actively. A broader overview is obtained, which makes it possible to assess the merits of the different types of management, and to make use of the special strengths of the various managers.

An important means of keeping costs low is to allow the active managers, who cost more, to invest only in what they specialise in. In the contracts entered into with active managers, a target area is established for minimum and maximum risk relative to the benchmark indices. Part of the fees of most managers is based on how successful they are in achieving an excess return. This provides them with an incentive to use their own specialist expertise to take active positions. If, alternatively, NBIM had delegated the entire equity portfolio to external active managers, the total management fee would have been considerably higher than that resulting from a division into index and active management.

Another important element of the strategy for keeping management costs down is a keen focus on transaction costs. Over time, transaction costs will be of considerable importance for the net return, particularly for the Petroleum Fund, which enters the market each quarter with large amounts of new capital. The question of which transaction pattern will result in the lowest overall transaction costs is considered each time.

When purchasing external services, NBIM has attempted to create as much competition as possible between potential suppliers, for example by placing an invitation for tenders on the Internet. The activities of Norges Bank's own management are subject to its internal budget and accounting regulations, and are monitored by the Bank's control system in the same ways as the other departments in Norges Bank.

With respect to internal management, NBIM views active and passive management as different areas of specialisation. We also place some limitations on active internal management. Our strategy is to select certain areas for each of the three management departments and then acquire expertise by specialising in these areas. For example, our Tactical Asset Allocation unit is going in for both quantitative modelling and macro-based investment. Fixed Income Management has special teams for assessing differences in the pricing of almost identical cash flows and for taking open positions. In Equity

Management, the focus is on the selection of individual shares, with special teams to cover selected sectors in which conditions may be expected to be most conducive to achieving an excess return. Building up expertise in only one area would be akin to putting all one's eggs in one basket.

To a certain extent, the areas singled out for focus resemble the activities of the external managers. A common feature of the equity managers selected up to the present is that, in general, their investment strategy is to analyse and choose from among individual companies with the aid of a range of valuation models, and without any restrictions on country or sector positions. This means that their results (excess or deficit return) will normally show less co-variation with more general market trends than if the strategy had placed most of its emphasis on analyses at a macro-level. On the allocation side, the emphasis has been on achieving a low correlation among the external managers.

It is not only the number of independent decisions which is of importance, but also how wide price trend variations are among the securities from which selection has taken place. There were very large differences in the performances of comparable companies in the autumn of 1999. There was a broad spread between the price trends of companies that performed well and those that fell behind, particularly in the technology and IT sectors. Under such conditions, the potential for excess return is greater for managers who select individual equities than it is in periods of substantial co-variation in the return on individual equities. This suggests that the degree of risk-taking may vary over time as the potential for excess returns changes. In other words, it is also important to predict risk, and not just prices and returns.

In summary, in setting out to achieve an excess return, a fundamental choice has been made to take many small positions against the benchmark index rather than a few large positions. Our strategy is that spreading our active management over many different types of positions (diversification of risk-taking) can result in a more robust excess return in the face of general fluctuations in the market. Unless one is particularly skilled at forecasting market trends, a conscious strategy of spreading risk in position taking results in the best trade-off between excess return and risk.

## Main figures

The Petroleum Fund's average real annual return in the period from January 1998 to June 2001 was 4.7 per cent. Table 1 shows the real return up to the end of the second quarter of 2001, calculated as annualised rates from 1 January 2000, 1 January 1999 and 1 January 1998 respectively. Price inflation is a weighted average of the price inflation rates in the countries in the benchmark portfolio defined by the Ministry of Finance. The right-hand column shows the excess return. This is the difference between the return on the actual portfolio and the return on the benchmark portfolio. Excess returns are calculated as arithmetic differentials, and then converted into annualised rates.

**Table 1: Annualised rates of return up to the end of the second quarter of 2001, measured against the benchmark portfolio's currency basket. Per cent**

	Nominal annual rate of return	Annual price inflation	Real annual return	Annual excess return
Since 01.01.2000	0.50	1.74	-1.24	0.13
Since 01.01.1999	5.12	1.80	3.31	0.52
Since 01.01.1998	6.28	1.58	4.71	0.41

The real return has been negative for the last six quarters, but the table shows that over a longer period of time it has been clearly positive. As might be expected, when equities have been included in the portfolio with a weight of around 40 per cent since 1998, there have been substantial fluctuations in the return from quarter to quarter and also from year to year.

Chart 3 also shows cumulative rates of return from 1 January 1998 for the fixed income and equity portfolios. In the 14 quarters since then, there has been a cumulative nominal return on equity instruments of 34 per cent and on fixed income investments of 19 per cent.

**Chart 3: Index for cumulative return on subportfolios in the Petroleum Fund 1998-2001. The Fund's currency basket at 31 December 1997=100**

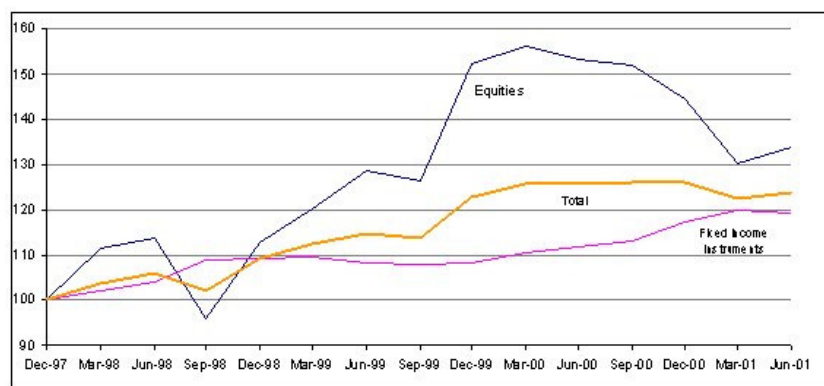
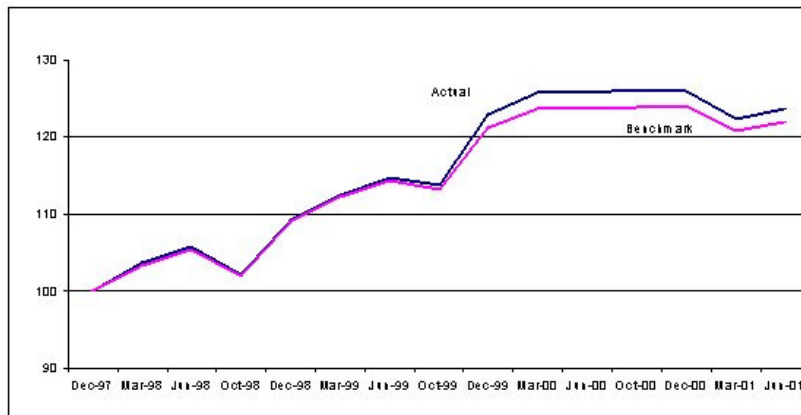


Chart 3 shows cumulative rates of return for the whole Petroleum Fund since the beginning of 1998. The return up to the end of the second quarter of 2001 was 23.8 per cent. During the same period, the return on the benchmark portfolio was 22.0 per cent. The difference between the actual return and the return on the benchmark portfolio is the excess return achieved by Norges Bank. The cumulative excess return since 1998 has been 1.8 percentage points.

**Chart 4 Index for cumulative return on the actual portfolio and on the benchmark portfolio, 1998-2001. The Fund's**

*currency basket as at 31 December 1997=100*



**Chart 5: Relative market risk at the end of each month, measured by expected tracking error and the standard deviation of the return differential for the past 12 months. In basis points (hundredths of a percentage point)**

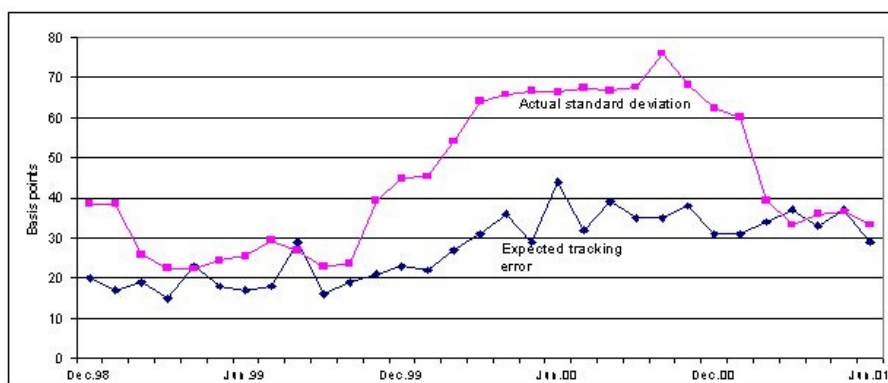


Chart 5 shows developments in relative market risk from December 1998, measured in two different ways. In the guidelines from the Ministry of Finance, expected tracking error is used as a measure of market risk. In retrospect we can use the variation in the difference between the returns on the actual and benchmark portfolios (the differential return) as a measure of actual market risk in the period. In Chart 4, this standard deviation is calculated as an annualised rate using 12-month moving windows. The actual variation in the monthly return differential has as a rule been somewhat higher than the figures for expected tracking error. In recent months, however, the figures have been very similar.

The increase in expected tracking error over time reflect the fact that Norges Bank has gradually increased the proportion of active management, with the objective of outperforming the benchmark portfolio. However, both expected tracking error and standard deviation measured retroactively are also influenced by various aspects of market development, such as changes in correlation between the various asset classes and securities.

The information ratio is a widely used measure of the skill of operational managers. The information ratio is the ratio between excess return for the year and relative market risk (measured here as the actual standard deviation of the return differential over the past 12 months). The average information ratio for the Fund from the second quarter of 1998 to the second quarter of 2001 was 0.86, measured as an annual rate.

## References

Norges Bank's web site [www.norges-bank](http://www.norges-bank), includes reports and articles in English. The following articles are of special relevance to the topics covered in this presentation:

*Challenges associated with portfolio and risk management*

*Relationship between size, cost and return performance in investment management*

*Strategy for achieving the best possible performance*

*Can index performance be achieved through index management?*

*Tracking error as a measure of market risk*

*Equity investments and choice of external equity managers*

*Risk management for the Petroleum Fund*

The web site also contains all letters from Norges Bank to the Ministry of Finance containing advice on investment strategy. The following letters may be of special interest:

*An analysis of the Government Petroleum Fund's equity allocation*  
(Norges Bank's submission to the Ministry of Finance on 15 March 2001)

*Bonds with no government guarantee in the benchmark*  
(Norges Bank's submission to the Ministry of Finance on 15 March 2001 -2000)

*Choosing between internal and external management for the Government Petroleum Fund*  
(Norges Bank's submission to the Ministry of Finance on 5 September 2000)

*The limit on tracking error for the Petroleum Fund* (submission to the Ministry of Finance on 5 May 2000)

*Consequences of introducing special ethical guidelines for the management of the Petroleum Fund*  
(submission to the Ministry of Finance on 22 April 1998)

In two submissions to the Ministry of Finance in April and May 1997, Norges Bank recommended a change in management strategy to allow investments in equity instruments, such as shares.

(1) See for example Sachs/Warner: Natural Resource Abundance and Economic Growth, NBER Working Paper no. W5398, (Harvard, 1995) and Hannesson, R: Investing for Sustainability – The Management of Mineral Wealth, Kluwer Academic Publishers, 2001

(2) Ugo Fasano: Reviews of the Experience with Oil Stabilization and Savings Funds in Selected Countries, IMF Working Paper WP/00/112, June 2000



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