MERCER
Manager Advisory Services

# Evaluation of Norges Bank's Operational Management of the Petroleum Fund

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# 1. INTRODUCTION

## 1.1 Scope of the Evaluation

Mercer Investment Consulting (Mercer) was appointed by the Norwegian Ministry of Finance to evaluate Norges Bank's operational management of the Petroleum Fund.

The Norwegian Government Petroleum Fund was formally established in 1990 when the Norwegian parliament ("Stortinget") adopted the Act on the Government Petroleum Fund (Act of June 22 1990 No. 36). The first transfer from the state budget to the Petroleum Fund was made in 1996 for fiscal year 1995. The Ministry of Finance has delegated the operational management of the Petroleum Fund to Norges Bank, with a mandate stipulated in a regulation, a management agreement and in letters from the Ministry. According to the regulation, Norges Bank shall seek to achieve the highest possible return, given the restrictions implied by the regulation. In 1998, Norges Bank established Norges Bank Investment Management (NBIM) as a separate arm of the Bank, to be responsible for the operational management of the Petroleum Fund.

Our evaluation has therefore been primarily concerned with NBIM. The assessment is based on 6 days of meetings with 32 different individuals in NBIM as well as the Governor and Deputy Governor of Norges Bank. In November and December 2002, we met with people on site in Oslo and London, and by video-conference we met with members of the team in New York. We also had access to considerable documentation and had a number of follow up conversations to clarify specific points.

Our assignment is the first of its kind given to an external consultant by the Ministry of Finance. Taking this and the size and complexity of the Fund into account, the assignment has focused on assessing the "big picture", including the management and overall effectiveness of the structure. The aim was not to benchmark NBIM quantitatively against a peer group.

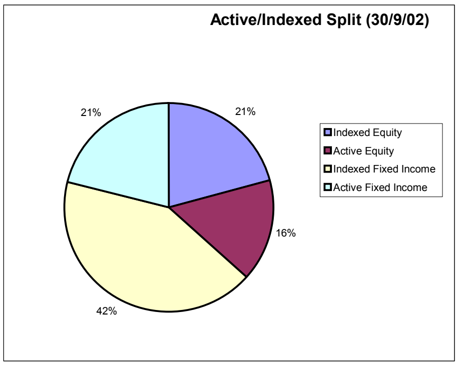
## 1.2 Norges Bank's Mandate

In the mandate given to Norges Bank, the Ministry of Finance has defined a benchmark portfolio, consisting of specific equities and fixed income securities, which reflect the Ministry's investment strategy for the Petroleum Fund. The Ministry has also defined an upper limit for the actual portfolio's allowed deviation from the benchmark in terms of relative risk, which must at all times have an expected tracking error of less than 1.5%.

## 1.3 Background to Organisation and Approach

Considerable thought and research has gone into the organisational set-up and structure of NBIM and how it manages the Petroleum Fund. This has drawn on experience learnt from similar entities worldwide and there has been a systematic effort to benchmark the management of the Fund to best practice in order to evolve the optimal approach in terms of managing the Petroleum Fund.

Essentially the Fund has a core/satellite structure, this is shown in the chart below: with 63% in indexed strategies together with a growing number of alpha satellite portfolios (i.e. high excess return strategies). The over-riding aim of the alpha portfolios is that the sources of alpha should be mutually uncorrelated. The Fund is managed by a mix of internal and external managers. Overall the structure is "controlled" primarily through risk allocation and ongoing risk monitoring, at the portfolio, asset class and the total Fund levels.




NBIM's investment approach is built around a three-pillar philosophy:

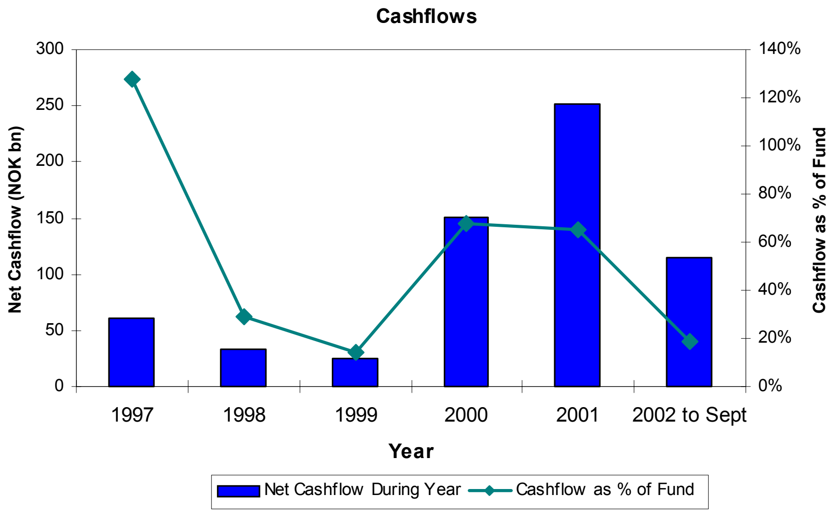
i. **Adding value.** Creation of incremental return enhancements through a series of uncorrelated internal/external alpha generating mandates

ii. **Risk management.** Adding value is combined with careful ongoing risk management of all elements of the Fund and a rigorous reporting framework

iii. **Efficient cashflow and transaction management.** Key to successful implementation for the Fund is having well thought out procedures for dealing with the strong cash inflows and transactions generally.

### 1.4 Managing Cash Flows

One of the specific challenges for the Petroleum Fund is managing the sizeable cashflows. In addition to the absolute size of the inflows, by their nature the cashflows are somewhat variable, as shown in the chart below. To meet this challenge, NBIM has created a dedicated team to ensure efficient management of the Fund's cashflows.




*Source: Government Petroleum Fund Annual Reports*

## 1.5 Impact of Size

The Petroleum Fund is already a large fund and projected to grow to become the largest fund in Europe. There are both advantages and disadvantages associated with size.

The main disadvantage, supported by both empirical and quantitative evidence, is that size generally has a negative impact on performance[1]. This is due to a combination of market impact, loss of flexibility in implementing investment ideas and the length of time to execute transactions. Due to its size, this is a consideration that cannot be ignored. NBIM is sensitive to size effects and has taken a number of steps to reduce the impact: the indexation approach which has lower transaction characteristics thus reducing the volumes being traded, the importance and resources attached to efficient trading, and the uncorrelated nature of the underlying portfolios which should reduce the size of individual trades.

There are a number of advantages associated with size, which NBIM also aims to capture. The main advantages are in providing the possibility of liquidity to the market and in economies of scale particularly in the operational areas. There is also a potential information advantage, although in our view this is a less robust benefit.

## 1.6 Accomplishments Since 1997

In a relatively short period of time, NBIM has moved significantly in the direction of becoming a bone fide investment organisation. As in any quality investment organisation, there is an ethos of responsibility and accountability. This is underpinned with well-defined goals and incentivisation measures. Much has been accomplished on the support side as well, again learning from best practice around the world. The overall infrastructure (both in the front office and support departments) is impressive and appears eminently scalable, which is important for a Fund that is scheduled to grow strongly.

We should stress that, because both NBIM and the Fund have been evolving rapidly, it would be premature to draw too definitive a conclusion in terms of the structure and strategic choices. Nevertheless, NBIM set out to establish itself as leading edge in asset management and we think it has to a large extent accomplished this goal. The real test, of course, will be in the results going forward.

[1] For example, see Stan Beckers and Greg Vaughan. "Small is Beautiful." *The Journal of Portfolio Management*, Summer 2001

## 2. EVALUATION

This section outlines the strengths and weaknesses of NBIM's operational management of the Petroleum Fund. Where applicable we distinguish between *actual* "weaknesses" (being issues that apply today) and "*potential* challenges" (which are not currently issues but about which NBIM should be mindful so as to avoid problems arising in the future).

### 2.1 Organisational Structure

- **Strengths:** The organisational structure has reached a certain stage of maturity. NBIM, as with any good investment management organisation, has a flat structure and from the beginning has sought to outsource all non-core activities. One of NBIM's strengths is the infrastructure that has been built including state of the art systems. A further positive is the ongoing prioritised work tasks assigned to all professionals. The successful accomplishment of these tasks is a key element in individuals' bonuses. This enables the organisation to keep improving and meet new challenges.

- **Weaknesses:** The investment teams are highly atomised and bottom-up. Although this is consistent with NBIM's philosophical approach, there are a number of potentially negative consequences: in terms of fragility of the culture, lack of robustness in times of stress and lack of knowledge sharing between teams/ individuals.

- **Potential challenges:** Going forward, it will be important for the management team to adapt their model for the more developed business that NBIM is becoming. Also NBIM will need to strike the right balance between leveraging the existing infrastructure effectively and ongoing enhancements.

### 2.2 Management

- **Strengths:** The senior management team is clearly comprised of capable, articulate and motivated individuals. They see their roles as focused on people management and risk management. Accordingly, except to a very modest extent, none of the top people are hands-on in portfolio management, which is the right approach since they are closely involved with monitoring the investment activity.

- **Potential challenges:** There has been a high level of turnover (50%) among the senior management team since inception. Whilst this is explained as resulting from being in the build-up phase, and in fact all but one of the people involved have remained within NBIM in a different job, it will be important to monitor staff stability and retention going forward as this has consequences in terms of culture and morale, which are particularly critical in a people business.

### 2.3 People [Please note that it was not part of this assignment to form detailed views on individuals' capabilities.]

- **Strengths:** There was a strong sense of pride in working for NBIM. The organisation has avoided the potential pitfall of complacency, due to having a large "captive" client. In fact, quite the contrary, we found a high level of professionalism amongst all the people we met and the environment is one of internal competitive pressure, underlined by specific individual goals, which are linked to compensation.

- **Weaknesses:** The Scandinavian bias limits the talent pool, although this is recognised and is being addressed through expansion in London and New York. The pressurised environment may be counter-productive when an individual is not doing well – key is to distinguish between good managers going through a bad phase and poor managers.

- **Potential challenges:** It will be important both to ensure that the spirit of competitiveness remains healthy and to avoid developing a "blame culture". Also we note that the challenge of successfully building and managing offshore teams should not be underestimated.

### 2.4 Investment Process

- **General:** At NBIM, we observed a trading-type culture among the investment teams, with individuals each managing a "trading account" of assets. The main issue is that this approach represents a relatively short-term time horizon and contrasts with a more conventional institutional approach which would adopt an overall investment philosophy and process with an investment horizon of 3-5 years. We are not debating whether one is superior to the other, however they are different, and the key test is whether the "trading" approach can deliver sustainable results.

- **Strengths:** NBIM's approach has been well thought through; the philosophy is both logical and rigorously implemented. The investment professionals are well motivated, have clear goals, have good support tools and are closely monitored. The overall structure is managed by the Executive Director in conjunction with the Head of Equities and Head of Fixed Income, they in turn manage the individual portfolio managers.

  Each portfolio manager is given a closely-defined mandate and corresponding risk budget, but considerable freedom within this. The internal management teams operate autonomously, but all benefit from the strong systems and infrastructure. The systems also give NBIM the flexibility to create very specific mandates and to rebalance the overall Fund through the index portfolios as appropriate. On the equity side the trading team ensures that transactions are implemented as cost efficiently as possible. In addition the specialist transition team is highly effective at ensuring that any cashflows or changes between portfolios are implemented as efficiently as possible. Both equity and bond teams seek to use NBIM's size and standing to maximum advantage.

- **Weaknesses:** Whilst we understand and agree with the theory of combining lowly correlated alpha portfolios, we question how well these low correlations stand up in extreme market conditions – the evidence suggests that they can become highly correlated in extreme conditions. Although this concern is mitigated to some extent by NBIM's strong risk measurement environment. A second issue is how numerous these uncorrelated opportunities are and how easy is it to find a manager to implement them.

  There is a certain contradiction in NBIM between the amount of sophistication put into the construction of the total Fund, in terms of risk allocation and the monitoring of risk, and the actual bottom-up portfolio investments which adopt relatively traditional and short-term approaches. We suggest NBIM considers developing more proprietary investment processes, as the Fund moves into a more mature phase.

For the indexation teams, their approach is to adopt a range of added value methods. This is effectively a large number of small amounts of alpha and it is therefore key that any major negative returns are avoided and this area should be monitored carefully. The internal active equity teams are currently small (albeit growing) and care is needed to make sure their workloads remain manageable. The screening and research tools, although impressive, still need to be bedded down. On the fixed income side, in order to be robust in a range of different market conditions, a broader range of proprietary value-added strategies should be considered. Given the growing amount of credit investment managed internally and the complexity of the asset class, the team is relatively small and the adequacy of resources should be monitored carefully.

### 2.5 Selection and Monitoring of External Managers

- **Strengths**: We agree with the approach of running both internal and external active mandates – this is normal practice among similar very large funds. The effort given to determining the mandate structure is very thorough and the process for selection and ongoing monitoring of external mandates is very detailed.

- **Weaknesses:** The selection and monitoring of external managers requires significant effort. Our primary question is whether NBIM has sufficient resource dedicated to this area; although there are dedicated selection/monitoring teams, they are very small. In addition, some of the individuals responsible for selection and monitoring also do portfolio management; we think that these activities require different skills and therefore favour having a dedicated selection/monitoring team. We also note the high turnover of external managers. We understand that this was due to changes within the managers' organisations as well as the strategic move to bring equity index management in-house, but turnover *per se* is negative and we suggest that turnover levels should be kept under watch.

### 2.6 Risk Measurement/Management

- **Strengths**: NBIM manages the Petroleum Fund against strict guidelines set by the Ministry of Finance. In addition to which NBIM is very sensitive to the range of potential risks and has set itself up to manage risk accordingly. In addition they have strict rules relating to integrity, personal dealing, relationships with providers and IT firewalls/usage.

  In terms of investment risk, NBIM has developed various independent levels of risk monitoring. Importantly, risk measurement is totally independent of the investment teams and reports directly to the Executive Director; in addition monthly risk reports go to the Governor of Norges Bank. There are also clear rules with respect to the reporting of risk violations, while counterparty and credit risks are also monitored. We note that the risk systems in the front office are different to those used by the Risk Management department, which adds a further check to the risk monitoring process.

**Potential challenges**: The challenge for all investment organisations – not only NBIM – is that ex-ante risk measurement is somewhat unreliable. However NBIM's approach is dependent on the active monitoring of risk, for each individual mandate, and aggregated at all levels up to the total Fund; nevertheless NBIM's infrastructure and processes are set up to handle it. But we note that this is a challenge and that, to get around the shortcomings, NBIM leaves a wide margin from the prescribed tracking error limits so as to avoid any risk of breaching them.

## 2.7 Investment Support and IT

- **Strengths**: NBIM's overall infrastructure framework is of a very high standard, and the support personnel are aligned and directly incentivised to work with the end users. The single IT platform (across Oslo, London and New York) is impressive and facilitates many of the front office tasks. Key to the IT success was the fact that it was allowed to be built independently from Norges Bank's systems, and therefore focused on the needs of an investment organisation. The outsourcing approach appears to be implemented well and seems to be readily scalable. The proposal to outsource the fixed income back office function would streamline the organisation even further.

- **Weaknesses**: The focus of effort has been on the equity side to date, which was logical as it was started from scratch. Effort is now underway in the fixed income area, in terms of consolidating custody, but there is still some way to go. There continues to be high demand for IT and it will be important to get the priorities right, although the vertical integration of the business lines should make this easier.

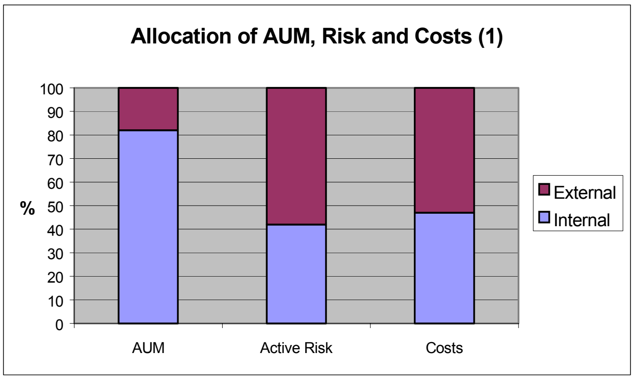
## 2.8 Tactical Asset Allocation and Currency Overlay

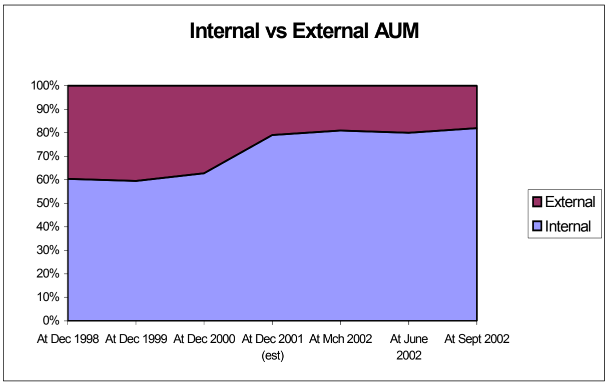
After a poor early experience, NBIM has largely retreated from doing explicit tactical asset allocation – we consider this a reasonable response. However we believe that under certain circumstances tactical asset allocation can add value, and suggest that NBIM might re-examine whether it could benefit the Fund. Critically, however, this should only be attempted if NBIM feels totally comfortable with such an approach and in particular with the risk of short-term losses inherent in a tactical asset allocation programme.

As a separate point, we would also suggest that the opportunities for currency overlay be reviewed as this can add value and/or reduce risk in the overall fund; currently, currency overlay is done only in a minor way.

## 2.9 Comment on Internal vs External Management

Although the value of the internally managed assets has been rising and is now c.82%, this is largely explained by NBIM's bringing the indexed equity assets in-house. Indeed the risk allocation between internal (42%) and external (58%) is more evenly balanced. Also the split of management costs is in line with the allocation of risk which is logical. These points are illustrated in the charts below.




*Source: Management Report Third Quarter 2002; Annual Reports*

Note 1: AUM: assets under management
Active risk: allocation of value at risk - risk budgeting

We agree with NBIM's rationale for bringing the indexed equity assets in-house. There are two fundamental reasons:

- NBIM has dedicated significant resources to indexation and this appears to be highly effective. From a Fund structure perspective, the alpha mandates are "carved out" of the index portfolios which is complex but NBIM's systems have been built to handle it. Indeed it would be much more difficult to outsource this activity.

- It is appropriate for a fund of this size to seek enhancement strategies to augment the index portfolios. The evidence shows that low risk enhanced indexation offers high added value relative to the risk taken. While there are external managers that offer enhanced indexation, if the skills exist internally then this should be the most efficient approach. But this point should be reviewed regularly.

The case for internal active management is more organisation-dependent, but it is not unusual in similar very large funds. Indeed where internal and external active management co-exist, they are often run in competition and must justify their existence. We understand that this is the approach at NBIM and such an environment is positive as long as the spirit of competition remains healthy.

## 2.10 Comment on Scalability

On the operational side, NBIM is well positioned to accommodate growth in the Fund and the assets managed. Indeed the real benefits of scale will be seen when the systems and infrastructure can be leveraged.

On the investment management side there are three key areas where scalability is more difficult. The first area is the market impact of size, which is covered in paragraph 1.5.

The second area is the limitation of how far the alpha-generating mandates can be extended in practice, without either recreating the index or struggling to identify the required alpha skills. The third area is that, despite the mandates being independent, at an organisation and culture level it becomes increasingly difficult to manage the people and maintain an *esprit de corps*.

NBIM is not alone in facing these types of issues. To their credit NBIM appears to have recognised the issues and have taken some steps to reduce the effects. However we see this as an ongoing challenge.

### 2.11 Comment on Fund Performance

The Fund has outperformed its actual benchmark in each year since inception. 1999 was an especially strong year due primarily to the significant outperformance of the equity portfolio, particularly in the fourth quarter.

The equity market environment has been extremely difficult over the past four years, and many managers failed to outperform the index in both the “up” and “down” phases of the market. It is therefore to NBIM’s credit that they have been able to deliver positive excess returns both during the last three years of falling equity markets as well as in the final stages of the bull market in 1999.

As would be expected, the returns on fixed income are more muted; however the relative performance has been consistently positive with only four quarters of underperformance over the entire period since inception. Again it is worth noting that 2002 was a difficult year for credit investments and NBIM can be commended for the successful build up of the credit portfolio.

## 3. CONCLUSIONS

Our overall assessment is highly positive. Much has been accomplished in a relatively short time and in difficult market conditions. Both the structure and investment approach have been carefully thought through and NBIM continuously strives to achieve excellence. We summarise below the key conclusions of our evaluation.

### Strengths

**3.1** The organisational structure has reached a certain stage of maturity. As with any good investment management organisation, NBIM has a flat structure and the business is focused, with non-core activities having been outsourced. The overall infrastructure framework is of a very high standard, and the support personnel are both aligned and directly incentivised to work with the end users.

**3.2** There is a high level of professionalism amongst the staff who are also highly motivated to deliver results. Importantly, NBIM has thus avoided the potential pitfall of complacency due to having a large "captive" client.

**3.3** The investment approach that guides the management of the Petroleum Fund has been carefully thought through, and is both logical and disciplined.

**3.4** The approach of running mandates both internally and externally is normal practice among similar funds. Although the value of assets managed internally has been rising, this is mostly a result of bringing the passive management in-house (for reasons with which we agree) whereas the internal/external split is more evenly balanced in terms of risk allocation.

**3.5** Given the size of the Fund, a key strength is NBIM's efficient handling of cashflows and transactions.

**3.6** The Petroleum Fund is managed against strict risk guidelines set by the Ministry of Finance. NBIM takes these guidelines very seriously and has developed various independent levels of risk monitoring. As is best practice, risk measurement is totally independent of the investment teams.

**3.7** The Fund has outperformed its benchmark in every year since inception, despite the difficult market conditions over the period.

### Actual Weaknesses or Potential Challenges

Whilst there are many positives, our assignment was to identify weaknesses as well. The following comments focus on the areas of actual weakness or potential challenge.

**3.8** **Complexity of Structure.** The mandate structure is relatively complex, with a heavy reliance on risk systems which by their nature are imperfect. Our concern is that the mandate structure, which is constructed to reduce risk, may break down under extreme market conditions. Since the structure is an integral part of NBIM's approach, we suggest that the different aspects of risk are particularly closely monitored at such times and remedial action taken where appropriate.

3.9 **Scalability.** Although NBIM has taken steps to reduce the negative effects of size, there are some areas on the investment management side where scalability will be a challenge as the Fund grows. These include the market impact of size, limitations to the number of alpha generating opportunities and the people/cultural challenges as the organisation becomes larger. NBIM is not alone in facing these issues, but it will need to manage them proactively.

3.10 **Moving to a More Developed Phase.** The start-up phase is largely over in terms of establishing systems, support functions and recruitment. Now more emphasis will need to be placed on managing and monitoring the existing structure. As the newness wears off, staff retention is likely to start to be an issue and more of a "bonding" culture will need to be established. It will also be important to make sure that the infrastructure is being effectively leveraged whilst maintaining a balance of ongoing development.

3.11 **Corporate Culture.** The current culture is very individualistic and results orientated. To date it has also relied on the newness and success of the business. The risk is that it will be vulnerable in times when performance is less good. Moreover, as the business matures and the Fund grows, it is likely to be increasingly difficult to manage the people and, to address this, we suggest that a more team-orientated culture will be needed. For example, whilst not diluting the philosophy of independence, this is the time to investigate ways of knowledge sharing and developing of shared tools/processes within NBIM. Related to team orientation, it will be equally important to ensure that the foreign offices are integrated properly and stay "in step" with the rest of the group.

3.12 **Manager Selection/Monitoring.** We would recommend increasing the dedicated resource allocated to manager selection and monitoring activity. Also, whilst it is reasonable for the in-house portfolio managers to spend a small amount of time doing external manager selection, we would argue that this requires a different skill set and the time involved should not divert their attention from managing portfolios. We would therefore favour having larger dedicated selection/monitoring teams and suggest that NBIM considers a degree of "upstream outsourcing" to reduce some of the burden. Lastly the level of manager turnover should be monitored to avoid unnecessary change.

3.13 **Tactical Asset Allocation and Currency Overlay.** Whilst we understand and appreciate NBIM's philosophy of making many small diversified "bets", we suggest that NBIM re-examines whether the potential offered by Tactical Asset Allocation and/or Currency Overlay might add value to the Fund.