NBIM
Norges Bank Investment Management

From passive to enhanced index management of equities

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In 2001, Norges Bank transferred substantial equity portfolios from external to internal management. These were index portfolios, i.e. portfolios managed with the objective of achieving the same return as well defined indices. The main purpose of moving the portfolios was to use various techniques to achieve somewhat higher returns than the index (enhanced indexing). This article describes why and how Norges Bank has changed its index management of equities.

Introduction

The Petroleum Fund invested in equities for the first time in 1998. It was natural for Norges Bank to start up by outsourcing all equity management to external managers. Up to the end of 1998, the entire portfolio was managed by index managers. The international trend for several years has been to increase the portion of index management, not least because of the favourable results achieved relative to active portfolio management. Index management is a low-cost form of management and it provides a wide risk diversification for the portfolios.

As index management has become increasingly widespread, there is a risk that equity prices are influenced in an unfavourable direction for those who use an index strategy. The negative effect may primarily stem from price movements when companies enter or leave indices, or when outstanding equity capital is changed. In the FTSE index, which is the index that the Ministry of Finance has defined as the benchmark index for the Petroleum Fund, such changes may occur as many as 500 times in a normal year. One of the main reasons that Norges Bank prefers a new strategy for index management is in effect to avoid return losses as result of index changes. .

Norges Bank started its internal index management in January 2000. At the end of 2001, the internal index portfolio amounted to a good NOK 50 billion in the Petroleum Fund, and NOK 23 billion in the long-term portion of foreign exchange reserves .

With an equity index portfolio of this magnitude, it is more cost-efficient to engage in internal management. There are clear economies of scale within management in general and indexing in particular because the administrative work involved in portfolio maintenance is independent of the size of the portfolio. The cost of managing an additional capital unit is relatively small, and average costs are thus reduced. Another merit of internal indexing is that it facilitates active management because the monitoring of corporate events, index changes and focus on data quality can be left to the index mandate/group. Third, internal indexing provides greater scope for flexible management of the active management resources of selected regions or sectors. However, the most important reason for choosing a large degree of internal indexing is the associated opportunities for achieving excess returns by using relatively simple strategies. This type of management is referred to as enhanced indexing. The strategies employed are described below.

The goal of index management

Active indexing shall result in outperformance of the benchmark. This is what distinguishes this strategy from traditional passive indexing where the goal is to track the benchmark as closely as possible.

The opportunities for enhanced index management are created by technical or structural aspects of equities or equity markets, and they exist for short periods of time. The strategies that are used are relatively precisely defined, and are implemented when the conditions are appropriate. Market risk is limited and is considerably lower for index management than for enhanced management. The expected excess return is also lower. But index strategies can be expected to provide a more stable positive excess return than enhanced management. Taking into account the lower level of risk, one can argue that many of the index strategies have a higher expected information ratio than enhanced management, i.e. that they have a higher expected return in relation to the risk level.

The structure and organisation of index management at Norges Bank

The structure of index management

Index management can roughly be divided into three parts. First, there is a substantial element of administration and portfolio maintenance. One important aspect is the monitoring of corporate events such as stock issues or acquisitions and mergers. The monitoring of such corporate events is not only an administrative task, but is also an important source of information that can result in investment opportunities. This is why such events are part of investment analyses. In addition, many corporate events have implications for the composition of the benchmark portfolio. Furthermore, this information can often be used in enhanced indexing

Pure administrative tasks include the management of cash holdings in the portfolios. For example, dividends received must be reinvested in the equity market. Considerable work is involved in maintaining an overview of all the holdings, prices and outstanding equities in each company. The data quality standards are higher in a management environment with index management than without such management.

Another important function is the execution of buying and selling orders in the equity market. When the transaction volumes are sizeable, a cost-efficient execution of trades is important. Large transaction volumes arise in particular when new capital is transferred to the Petroleum Fund, and when the portfolio composition must be adjusted in accordance with changes in the benchmark index. Trades that involve positions that deviate from the benchmark index also require flexible and cost-efficient implementation. Many investment opportunities have relatively small profit margins, and transactions must often involve fairly large volumes for noticeable gains to be achieved. This makes it important to execute the trades in a cost-efficient manner, and with sound control in line with precisely defined trading strategies.

The third type of administrative task involves monitoring the investment universe to identify investment opportunities, and assessing the most interesting opportunities. This requires a carefully considered profile of the positions to be taken, with emphasis on risk isolation, and on the creation of orders to be executed.

Organisation of index management

Index management is organised as a separate group within equity management. The group cooperates closely with the other groups, both in order to receive contributions to its own management, and by offering its services to the active management groups. An example of the latter is the responsibility of the index group for monitoring corporate events for all internal portfolios, including the portfolios managed by other groups.

The trading function is covered outside the index group by a separate trading group responsible for all trades in the internal portfolios - not only in the index portfolio. The trading group is also responsible for investing the flows of new capital into the Petroleum Fund, and for risk management of the total portfolio. In this way, the index group make use a unit that has been established to carry out other tasks as well.

As mentioned in the introduction, index management is a form of management with obvious economies of scale. External management can be bought at a price that is only a few basis points of the portfolio size (1 basis point is one hundreth of a percent). However, in the light of the substantial size of the capital managed by Norges Bank, it is still cost-efficient to engage in internal index portfolio management. Today the index group only devotes 3 man-years to managing NOK 73 billion. The cost savings in 2002 will be roughly NOK 50 million compared with external management.

Data systems in index management

Index management is critically dependent on high-quality information systems, and with stringent quality requirements as to the data that are used. In 2001, equity management started using a new system for order processing and position monitoring. This system provides an updated overview of holdings of cash and equities in all the internal portfolios. Lists of all transactions and holdings are communicated daily by the external supplier of settlement services. The custodian institution, which is responsible for the safekeeping of the equities, provides us with value assessments on a daily basis. We also receive daily information about the benchmark index. On its website, FTSE publishes information on current changes in the benchmark index, both about changes in companies included and changes in the total number of outstanding equities in each company. This information makes it possible for us to monitor all deviations from the benchmark index, which is one of the most important tasks involved in index management.

The external settlement supplier assists in the administrative work and follow-up of corporate events. The settlement supplier is primarily used in connection with the implementation of decisions taken as a result of events, for example whether to participate in a private placement of equities. In order to obtain knowledge of events at an early stage, we subscribe to market information systems. Such systems provide continuous price information and other news, and also provide access to historical data. A standard system from the model producer BARRA is used to control portfolio risk. In addition to various standard systems, we also use data systems that we have developed in-house as an aid in constructing portfolios, analytical work and reporting.

Equity lending and calculating the financial cost of positions

The index group is also responsible for following up security lending from the equity portfolios under management at Norges Bank. The lending is organised by the external custodian institution, which gives us access to one of the world's largest lending markets. Market participants borrow equities for different reasons. To some extent, it seems that high borrowing activity is linked to corporate events. This means that we can try to interpret demand for borrowing as signals that other market participants see interesting opportunities. This means that if we want to take positions we will be competing with equity lending. Lending income is thereby an opportunity cost for the position, and is subtracted in the calculation of the net gain deriving from the strategy.

Developments in Norges Bank's index management in 2001

At the beginning of 2001, a smaller portfolio of the Petroleum Fund's capital was managed by the index group. In the course of 2001, a total of NOK 49 billion of the regional index portfolios in the UK, Europe and the Pacific (Asia and Oceania) were transferred from external to internal management. The UK portfolio was formally transferred at the end of February, and the Pan European and the Pacific portfolios at the end of April.

In 2001, there were substantial changed in the indices supplied by the two major index suppliers FTSE and MSCI. The FTSE index is the index used by the Ministry of Finance as the benchmark index for the management of the Petroleum Fund. A common objective of the changes made by the two index suppliers was to achieve a better accord between the supply of marketable equities, so-called free float, and the weight of these equities in the indices.

By taking over direct control of these large portfolios it became easier to implement the necessary changes in the portfolios - well distributed over time and in due time ahead of changes in the indices themselves. Some of the portfolio shifts were made by channelling transfers of new capital for the Petroleum Fund to the large index portfolios. It should be noted that early adaptations to index changes that we knew would occur, entailed deviations from the benchmark index up to 15 June. These positions were taken because we believed that we could achieve higher returns than if we had waited for the actual index changes to be implemented. The purpose here was to act before others made the same shift. This strategy involved a

true risk, and in order to reduce the risk we applied hedging strategies both in the equity market, where we used co-varying equities in the same industry, and in the market for equity futures at country level.

A considerable portion of the index group's performance contribution in 2000 stems from this early adaptation to the substantial changes in the index, which enabled it to achieve excess returns.

At the beginning of 2002, the index group managed the following portfolios:

Portfolio	Type	Size, NOK	Fund
Europe	Regional sector	28.2bn	Petroleum Fund
UK	Regional	5.8bn	Petroleum Fund
Australia and Oceania	Regional sector	9.4bn	Petroleum Fund
Americas	Regional sector	6.8bn	Petroleum Fund
Long-term portion of foreign exchange reserves	Global	23.0bn	Foreign exchange reserves
The Pension Fund’s foreign portfolio	Global	0.4bn	Norges Bank’s Pension Fund
The Environmental Fund	Global	0.8bn	Petroleum Fund
Total in internal index management		74.3bn	

Norges Bank uses one external manager for enhanced indexing. The strategies that are employed are in principle the same as for internal index management, but the focus may vary somewhat. It is an advantage to have an external manager whose performance can be compared with our own - a dynamic benchmark for comparing internal and external index management. The external manager has long experience in the field of such management, and we have benefited greatly from the professional contact.

Enhanced indexing strategies

Enhanced indexing involves applying strategies to various phenomena that have been tested in empirical research . The strategies focus on broadly observed phenomena and structural changes linked to specific equities and equity markets in general rather than to in-depth/fundamental evaluations of individual companies. The strategies are still implemented as positions in individual companies. The empirical testing of the strategies show that as a rule the excess returns are significantly positive in relation to a benchmark .

The strategies consist, for example, of using the following observations in the markets:

When the weight of a company is changed or the company is entering or exiting an index, investors, particularly passive index funds, tend to implement the change at the index effective date.
This behaviour creates price effects because of higher supply of or increased demand for the equities. One strategy is to implement changes at times other than the benchmark index effective date, and function as liquidity supplier of the equities at the time of a shift in other indices than our own index This is a well known strategy that is used by many other investors, and that involves risk of excess liquidity supply. Maintaining these positions over a longer period obviously involves an additional and substantial risk of capturing value changes that are not related to the index change. It is therefore important to confine the risk as far as possible to the effects for which we are seeking exposure.

In connection with the publication of index changes, most equities involved show a price shift, both because of expectations that passive index funds will boost supply/demand and because of a change in the relevant equities' liquidity discount/premium
When an equity is incorporated in a widely tracked index, the turnover of the equity tends to increase and its liquidity discount tends to decrease. The liquidity discount of equities that are removed from an index tends to increase. If one can anticipate which equities will be taken into or out of indices, a profit can be made on early trades.

In mergers and acquisitions of companies, the value of the bid is often higher than the market price of the company in question. companies, the value of the bid is often higher than the market price of the company in question.
This may be the case even shortly before the merger or acquisition is to take place. This overpricing or premium exists because there is a risk that the merger or acquisition will not be successful. But the premium may be higher than the reasonable compensation for this risk. The reason may be that there is an insufficient number of participants that want to or are in a position to trade to pocket the premium. Active managers may not find it worth while to take the position.

Hedge funds and other investors that engage in arbitrage trading[1] may not be able to borrow a sufficient number of equities in the buyer's company to be able to sell short. However, an index portfolio will normally contain these equities, and an underweight can be established by simply selling own equities, i.e. without having to rely on borrowing. As regards mergers and acquisitions of

It is often profitable to subscribe to IPOs in listed companies, particularly when there is a good chance that the new equities will be included in a widely tracked index.

There is a possibility that one type or class of stock seems cheap or expensive in relation to other types/classes of stock in the same company.
It may then be profitable to buy or sell different types or classes. Examples of such types/classes of are:

- international issues[2] (ADR, GDR) of locally listed stocks with the possibility of conversion to the local stocks when random or systematic price differences occur
- twin stocks where the shares have the same voting rights and underlying dividend flow, but are listed on different stock exchanges may involve temporary price difference, for instance because of difference in liquidity
- A and B issues or ordinary or preference shares where the different stock classes may have different voting rights and dividend flows, but are linked to developments in the value of the same company and have a high degree of correlation.

Similar strategies are also used to buy or sell equities within the same industry if the equities have a sufficiently high and stable correlation so that particular differences in price developments will be offset with high degree of probability.

Work is continually being devoted to improving existing strategies and developing new ones.

Performance

2001 was a year that offered good opportunities within enhanced indexing - particularly in connection with the considerable changes in the FTSE and MSCI indices.

The index strategies generated an excess return of 0.35 percentage point of indexed capital in 2001. The main contribution to the excess return came from the positioning in connection with the changes in the FTSE index. This shift turned out approximately as expected, with some surplus demand for (supply of) equities whose weight was increased (reduced) in the index. As to the shifts in the MSCI index, there was an effect opposite to what we expected the last two days before the shift was implemented at the end of November. This shows that investment strategies are far from risk-free.

The results can be characterised as very favourable by the measures normally used for this type of management, given the sizeable amount of capital under management. Internal index management generated a somewhat higher return than external index management in 2001.

The opportunities for relative excess returns in enhanced indexing are, however, reduced when the capital under management increases. This is because there are limits to the size of the positions that can be taken on each occasion. The results achieved using this type of management will vary in relation to the investment opportunities that arise and how large a transaction volume it is then possible to have traded at advantageous prices.

The total excess return on indexing (0.35 percentage point) is higher than both the internal (0.33 percentage point) and the external (0.26 percentage point) rate of return. This is because internal and external returns are calculated monthly in relation to the capital that the internal/external managers have managed. The distribution of capital between internal and external management was changed significantly over the year, and the reason why the higher

[1] Trading with the aim of taking advantage of price differences that are not due to different risks and the like.

[2] Securities that are not equities, but that give the right to a certain number of equities in a specific company. The return will therefore be the same as for the equities in the company.

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