SOUTHERN EXPOSURE

If you really care how your government manages its finances, you should be living in New Zealand. William Falloon **explains**

If governments were to be traded like futures contracts, which ones would investors choose? Everyone has a view of their country's worth, but perhaps the only citizens in the world with an informed answer to this hypothetical question are those of New Zealand.

This, after all, is the only country where the government can boast of publishing financial statements and deploying accrual-based accounting when it releases an operating statement of income and expenses. The first set of financial statements was prepared for the six months ending December 31, 1991, and they have been published twice a year since.

This unique government-goes-corporate approach to financial reporting and valuing the Crown's net worth has not gone unnoticed. Indeed, US Vice-President Al Gore sought the advice of former New Zealand Treasury Secretary Graham Scott on how to apply generally accepted accounting practices to make government more cost-efficient. And Ross Perot proclaimed a similar objective during his independent bid for the US presidency.

New Zealand, then, appears to be well ahead of other OECD countries. Before the general election (scheduled for later this year), for example, citizens will have access to comprehensive economic and fiscal updates. "Can you imagine what would have happened if such reports had been published before the US presidential election?" asks one banker in New Zealand. "It would give you something against which you could measure the pre-election words and post-election actions of President Clinton. It would be a little easier to judge his performance with some hard facts, don't you think?"

Adapting the best private sector management practices to the public sector has been a common theme of government reform in New Zealand. Established to take over the management of the Crown's net debt portfolio in 1988, the New Zealand Debt Management Office (NZDMO) is a strong advocate of this approach. Since its inception, the NZDMO asked itself how far the best private sector techniques could be implemented by a country with a large budget deficit. It developed a framework for asset/liability management activities with assistance from Southpac (the investment bank associated with National Bank of New Zealand), JP Morgan and CS First Boston, according to Pat Duignan, NZDMO treasurer until May this year and now a director in the investment banking division of CS First Boston NZ.

As the branch of the Treasury responsible for managing the Crown's debt and fixed-income assets, the NZDMO operates in many respects like a corporate treasury operation. According to its current treasurer, Graeme Wheeler, reform required a floating exchange rate (the NZ dollar was floated in April 1985), the removal of capital controls, deregulation of the domestic financial market, and an acceptance that debt management goals should be disentangled from monetary policy objectives.

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The NZDMO is now trying to value real physical assets more precisely, with the goal of matching them wherever possible with the structure of its liability portfolio, in order to dampen the impact of interest rate and currency movements on the Crown's net worth.

In many instances these real physical assets do not generate cashflow, but rather streams of services. This made it much harder to assess the duration of assets such as schools, hospitals and roads than that of the Crown's financial assets and liabilities (see box on page 107). The NZDMO already marks its financial assets and liabilities to market

eral taxation, then you don't have identifiable cashflows on those assets," explains Bryce Wilkinson, a director at CS First Boston NZ in Wellington and a consulting adviser to the NZDMO. "But it's quite clear that those assets do impose risks. If those assets are closed down or made vacant, then that's a loss for the taxpayer. A loss of net worth is a loss of net worth, whether it shows up on an accounting report or not. As a result, in managing your liabilities you should also be worrying about the value of your assets, even if that value is hard to observe or quantify."

Three leading academics in interest rate risk management and duration analysis investigated the most appropriate ways of measuring the durations of important classes of Crown assets. Their study, which also addressed the sensitivities of these assets and liabilities to fluctuations in exchange rates, is in the final stages of preparation.

The study aimed to assess the feasibility of measuring the duration of real assets and hedging the Crown's net worth against unexpected interest rate moves. Advice on the overall framework was obtained from Eric Sorenson, director of quantitative research at Salomon Brothers in New York, and Michael Baskin, the chairman of the Council of Economic Advisers during the Bush administration.

Conducting the study from Dalhousie University in Halifax, Nova Scotia, were Gordon Roberts, Bank of Montreal professor of finance, and Iraj Fooladi, professor of finance. The other member of this consulting team was Gerald Bierwag, holder of the Ryder Sys-

The knowledge gained from their work is starting to pay off. "We entered this intellectual exercise in an attempt to get a better conceptual framework for strategic debt management," says Wheeler. "As a result, we've got a better feel for our overall risk. We've got broad magnitudes for the durations of a subset of assets, and the consulting team is attempting to derive a duration range for the total portfolio."

Wheeler adds that the initial work suggests that the duration of some of the Crown's real assets is more than eight years. While a duration range for the total asset portfolio is unavailable, the results are expected to support the NZDMO's efforts to lengthen the duration of the Crown's domestic debt portfolio. This is a little over three years, compared with about 1.5 years in 1990.

In the past three years, the NZDMO has issued two five-year benchmark bonds, together with one seven-year and two 10-year issues, totalling NZ$10.7 billion, to create a new domestic debt maturity profile (see figure on page 106). Its strategy is to issue benchmark bonds in a predictable fashion in sizes of NZ$2 billion–2.5 billion.

By encouraging a wide range of dealers and investors to bid for government bonds and Treasury bills, it aims to achieve the lowest cost borrowing profile possible. In a recent move, the government removed a 2% withholding tax on interest income for foreign investors. The NZDMO will pay the 2%, expected to cost less than NZ$2 million.

"The reason NZDMO embarked on all of these moves," says Duignan, "was that the short-term and illiquid characteristics of our bond market in the past were undesirable to international investors who were interested in investing in New Zealand with the expectation that the country might develop a reputation as a low-inflation country with good returns from investments in bonds."

The attractiveness of New Zealand's bond market to foreign investors has improved substantially in recent years as a result of these changes and the general economic policy. Foreign investors now hold just over 20% of outstanding government bonds and over 40% of the 2004 issue.

The academics' duration study has given added insights into the appropriate maturities for new bond issues, but has not provided the NZDMO with a means with which to hedge the interest rate risk within its overall balance sheet.

"The report hasn't provided us with a Rosetta Stone that gives us a clear indication of the one risk minimisation point on our efficient frontier," says Alex Jurshevski, head of portfolio management at the NZDMO. "But it has given us a better idea of how our debt management process should evolve in the future, in terms of the types of instrument and maturity structure for the portfolio."

The NZDMO has no plans to become a market-maker in the domestic swap market and futures markets, Jurshevski reveals: "We would not want to compete against the few players trying to develop a viable derivatives market in New Zealand, because their participation in that market will help tighten bid–offer spreads in the underlying market." The department is, however, developing a policy to cover certain one-off transactions in the domestic OTC markets which would complement the efforts of private sector participants.

To tighten spreads, the NZDMO sup-

NZDMO's Alex Jurshevski (left, with colleagues Paul Daley, centre, and Graeme Wheeler): "We would not want to compete against the few players trying to develop a viable derivatives market in New Zealand, because their participation will help tighten bid–offer spreads in the underlying market"

ports the development of three- and 10-year interest rate futures contracts and the elimination of the five-year bond contract at the New Zealand Futures Exchange (recently bought by the Sydney Futures Exchange). It also supports the development of an efficient repurchase (repo) market.

"Once the repo market gets going," says Jurshevski, "we will see greater underlying turnover and also greater futures turnover. If dealers have to cross the spread every time they trade, it can become very costly. This will assist dealers in quoting prices to offshore and domestic investors."

In contrast, the NZDMO frequently uses the swap market with international borrowings to manage foreign exchange and interest rate risk. Jurshevski estimates that 95% of all the NZDMO's medium-term notes have to date involved swaps of two or more currencies, helping it build a sizeable portfolio of interest rate and currency swaps. At the end of 1992, the Crown had a net obligation (at current market values) of NZ$305 million on interest rate swaps, currency swaps and foreign exchange contracts, according to its financial statements.

"When we do a medium-term note transaction," says Jurshevski, "we will look into those books and see if we should do a new swap in respect of a financing, or peel off some of the old exposures to achieve the same exposure profile at a lower cost. This may also produce a smaller credit exposure, in terms of number of counterparties. So we look at existing exposures in order to transact new financings at better price levels."

Wheeler reveals that a major project under way is looking at ways of pricing credit risk to provide a credit risk benchmark. In recent months, the emphasis on understanding credit risk has seen the NZDMO unwind transactions with counterparties that no longer meet minimum credit standards. The exposures were then replicated by using different instruments and transacting with higher-rated counterparties.

"Having access to the futures markets around the world will again supply us with additional flexibility around the times we do our refinancings"

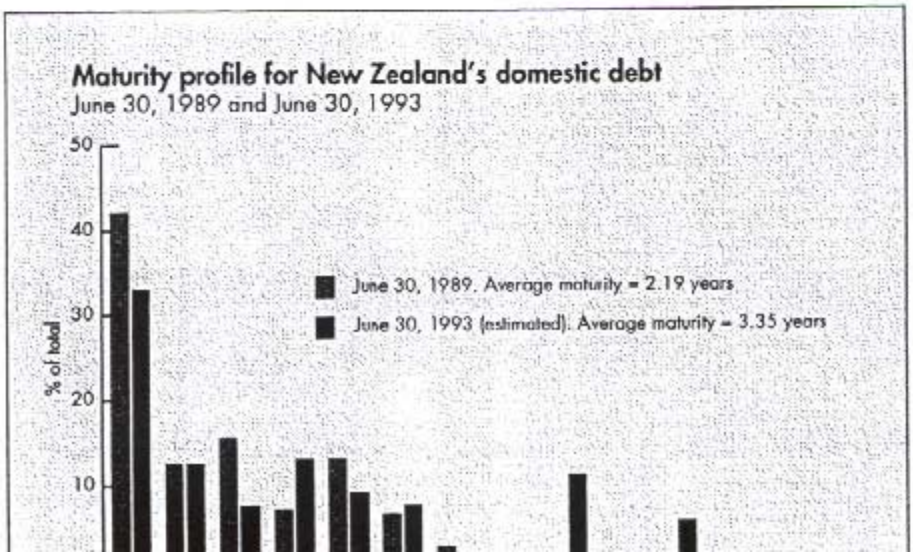
Alex Jurshevski, NZDMO

Paul Daley, the NZDMO's head of research, says bilateral credit arrangements have been put in place with a couple of counterparties, and that it has continued to take a more conservative view of credit risk extension. "We've seen the credit quality of banks deteriorating over the past few years, and that has tended to shrink the universe of institutions with which we are prepared to transact."

One other initiative is to add the ability to trade and account for positions in non-domestic futures markets. The NZDMO has spent the past six months reconfiguring its computer systems in this way, and expects to begin trading interest rate contracts in the next two months. It expects to use interest rate contracts at the Chicago Board of Trade, Chicago Mercantile Exchange, London International Financial Futures and Options Exchange and Tokyo International Financial Futures Exchange.

"Having access to the futures markets around the world will again supply us with additional flexibility around the times that we do our refinancings," says Jurshevski. "We are always looking at the instruments that will provide us with the cheapest and most efficient course of action. We expect to use those contracts to manage short- and medium-term exposures in our offshore book."

When it comes to placing temporary hedges against liabilities, Wheeler has found that exchanges offer a cheaper, more liquid and less credit-intensive alternative to the OTC market. A key area in which futures contracts will be used, he says, is to control the cost of floating-rate exposures denominated in foreign currencies. Futures could also be used to hedge the refinancing cost of maturing debt, or



ROAD WORKS IN PROGRESS

Institutions that make few sales or purchases are frequently unaware that the value of their assets is sensitive to interest rate changes. Even where rate changes do not affect cashflows, though, the same may not be true for asset values. This is as valid for a building as for a bond mutual fund, notes Graeme Wheeler, treasurer of the New Zealand Debt Management Office (NZDMO).

In an attempt to quantify the duration of its physical assets, such as roads and buildings, the NZDMO commissioned a study that recently recommended it base its calculations on 1) the cashflows or benefits guaranteed by the assets; 2) the discount rate; and 3) the remaining asset life. (Some simplifying assumptions will need to be made about the pattern of future benefits.)

If the cashflows are constant, it will be possible to compute duration, given a discount rate and maturity. Similarly, if the cashflows grow at a certain rate per period, the only information needed will be the growth rate, the discount rate(s) and the maturity.

A major advantage of this approach is that it is not necessary to specify the absolute level of benefits flowing from the assets, which would be almost impossible for some assets, particularly those without a clearly defined set of cashflows. In many cases it is easier to develop an estimate of the likely future *growth* of benefits.

Test results suggest that for some assets duration estimates are highly sensitive to the estimates of remaining asset life. For others, real duration is more sensitive to projected growth rates and real discount rates. The NZDMO and its consultants therefore have greater confidence in a range, rather than a point, estimate for the duration of the major real assets.

To find a figure for the national highways system, for example, the NZDMO's consultants gathered technical data about the economic life of the asset, and used scenarios for different growth rates in services and the real discount rate to produce a range of estimates of duration. These were then combined to produce an overall weighted duration of around 15 years.

The consultants are also looking at the possibility of relating the durations of physical assets to the nominal durations of the government's debt portfolio.■

have also indicated that the Crown's real assets have scant foreign exchange exposure. But, to minimise any currency mismatch, the government would be wise to reduce the NZ$15.3 billion in net foreign currency debt that it holds. This has been the policy of recent New Zealand governments. The proportion of gross public debt denominated in foreign currencies has been reduced from roughly 50% in 1987 to 42% in fiscal 1993. This exposure, however, is still sizeable. If the New Zealand dollar weakens, NZDMO's overall debt liability increases on that portion of its portfolio.

To manage this risk, the government has been using receipts from the privatisation of state-owned assets (totalling NZ$11.6 billion since 1987) to reduce refinancing requirements, promoting the development of the New Zealand dollar-denominated government securities market, and increasing the range of maturities. Since 1987, some NZ$7.6 billion of foreign currency debt has been retired, including NZ$410 million by a one-year Treasury bill issue last year. To some degree, this effort has been offset by the negative impact of NZ$2.85 billion in currency realignments.

Wheeler notes, however, that there are limits to the speed at which the foreign currency debt can be reduced through privatisation or by overfunding the domestic borrowing requirement (and converting New Zealand dollar borrowing into foreign exchange), given the short-term exchange rate pressures that would develop.

The NZDMO's strategy to cope with residual exposure is to develop a foreign currency debt composition based on GDP weights and durations that closely match the government markets. Wheeler explains that this assumes the market is liquid enough to reflect efficient pricing and the market's average risk/return preferences.

The overall risk management approach for this residual exposure is passive, say Jurshevski and Daley. The non-New Zealand dollar-denominated fluctuation bands of roughly 5% have been established to reduce the transaction costs associated with constantly readjusting the portfolio. "While the portfolio is tending to get smaller," Daley says, "what we are really trying to do is diversify and optimise a risk that cannot be hedged."

The NZDMO also has a currency optimisation model based on historical variance and covariance data, developed by JP Morgan. The NZDMO will continue to study this approach, Daley says, but is somewhat concerned that data used by the model cover a period in which the New Zealand economy was undertaking extensive structural reform, so that historical covariance may not be valid.

But it is not known how much of the NZDMO's balance sheet can be hedged against financial risk. As the duration study notes, the goal of hedging is to insure against fluctuations in net worth caused by unanticipated shifts in interest rates. This approach requires the real and nominal durations of real physical assets and nominal financial assets and liabili-

Zealand's debt to inflation. Wheeler notes that inflation-indexed bonds have attracted significant investor interest elsewhere. In Australia, for example, dealers say the market could grow to A$10 billion by the end of 1993.

The NZDMO's work on strategic debt management may not have provided it with all the answers, but has certainly put it on the right path. "It is too dogmatic to aim to eliminate all of the risk, and this is typically an unrealistic goal," Wilkinson admits. "But where the NZDMO can identify instances where it is efficient to do so, it may make sense to seek to immunise net worth... And where the government has a sophisticated knowledge of its asset structures, then it is better able to do that.

"The logic of having a [sovereign] balance sheet, of worrying about the value of assets, helps make asset managers more aware of the risk associated with those assets. You want the managers of the Crown's assets to be conscious of the risks, and there were cases in the past where no-one in particular