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New Zealand

767. This report outlines the framework for managing foreign reserves in New Zealand. We cover matters raised in the IMF's guidelines on reserves management under two broad themes: developing a sound governance and institutional framework and establishing a capacity to assess and manage risk.

Developing a Sound Governance and Institutional Framework

768. The responsibility for foreign reserves management rests with the central bank—Reserve Bank of New Zealand (the Bank). Two major benefits arise from this arrangement. First, synergistic benefits arise with a single organization taking responsibility for monetary policy, financial system oversight, and foreign reserves management. Second, the Bank's independence from the government means that the management of foreign reserves is undertaken at arm's length from the political process.

769. The Minister of Finance has important roles in setting the range within which the Bank must maintain foreign reserves and can direct the Bank to intervene in the foreign exchange market.

Objectives and strategies

770. The Bank's reserve management objectives are to actively manage the foreign reserves portfolio to:

- Meet the immediate liquidity needs for any foreign exchange market intervention.
- Maximize risk-adjusted net returns (or minimize risk-adjusted net costs), subject to the first objective.
- Develop and maintain a broad skill base in foreign securities and foreign exchange dealing to support the Bank's capability for conducting foreign currency market intervention or responding to other crises, and to enhance the Bank's general understanding of financial markets, instruments, and practices.

771. These objectives are long-standing—they were first developed in the late 1980s. The objectives have been subject to review since then, but have remained substantially the same because the principles that underlie them have remained relevant through time. These principles are that the Bank should:

- have both the funds and expertise to be able to intervene effectively in times of extreme market disorder; and
- manage public assets prudently and cost-effectively.

772. These underlying principles are reflected in the reserves management objectives in the following ways. First, the primary objective for reserves management is to maintain liquid assets so that even in the event of extreme market disorder

in both the foreign exchange market and global bond market the Bank has the capacity to undertake effective foreign exchange intervention.

773. Second, the Bank actively manages foreign reserves. It does so because it believes that active management:

- generates positive returns (in excess of compensation for risk and of active management overheads) and so reduces the costs of holding reserves; and
- encourages the dealers to actively participate in a wider range of instruments and markets than would otherwise be the case and so improves the Bank's market intelligence and contacts, knowledge of market practices, and foreign exchange intervention and risk management skills. The skills and experience gained from reserves management have been of value to the Bank in the context of its other roles too. For instance, foreign reserves dealers were able to provide valuable input when the Bank, in the context of its financial system oversight responsibilities, was managing the sale of a derivatives portfolio of a failed financial institution. It is not possible to be precise about how much added value is obtained from active management but, in times of crises, extensive market knowledge, contacts, and experience become invaluable.

774. The key strategic issues arising from New Zealand's reserves management center around two issues: the level of reserves and the funding of reserves.

Level of reserves

775. The Bank manages reserves at a level agreed with the Minister of Finance—currently this is SDR 1.5b–SDR 1.8b. The level of reserves is determined in the context of our exchange rate/monetary policy implementation strategy and foreign exchange intervention strategy. New Zealand operates a free-floating exchange rate regime—the Bank does not enter the New Zealand dollar (NZD) market to support a level or range for the NZD that it may consider appropriate in the context of monetary policy.

776. The level of reserves also reflects our intervention strategy. We hold reserves to preserve the functioning of the market for NZDs in time of crisis—i.e., when the market ceases to make a two-way price (bid and offer) for NZDs. If price-makers exit the NZD market, the Bank may enter the market as a temporary "price-maker of last resort." The aim would be to facilitate early reentry of price-makers, by taking on foreign exchange risks that arise in price making in times of heightened foreign exchange or financial market uncertainty, until a new price-clearing level for the NZD is determined. The Bank would maintain control over the transaction sizes used to determine a market clearing price. The Bank has not had to intervene in the foreign exchange market since the NZD was floated in March 1985.

777. Our base-line level of reserves was first approved in the late 1980s. Much has happened since then, including the Asian crisis and a greater understanding internationally of factors influencing macro-financial stability. The Bank is embarking on a review of reserves levels with these lessons in mind.

Funding reserves

778. The Bank funds its foreign reserves by way of foreign currency borrowing. The benefit of this strategy is that the Bank is not as exposed to significant foreign exchange risk as it would have been had it funded reserves from NZD liabilities (including notes and coins).[44] This assists the Bank in maintaining its independence as it is less exposed to political risks that arise (rightly or wrongly) when a government or public sector entity reports large losses from risk positions. A strategic issue for the Bank to consider in the future is whether costs of holding reserves could be reduced by financing reserves from notes and coins and/or fixed rate borrowing in the local market (where the Government's AAA rating gives it a competitive

[44]This funding arrangement requires the Bank to spread its borrowing requirements to minimize its exposure to refinancing risk—i.e., minimize the risk that the Bank has to finance a substantial portion of reserves at a time when an extreme event in international markets has a significant adverse effect on borrowing (refinancing) costs.

advantage). The Bank would enter into a currency swap to continue to hedge its foreign exchange risk.

Institutional framework

779. As noted at the outset, the Bank is the entity responsible for foreign reserves management; however, it has a working relationship with the Treasury and in particular the Treasury's Debt Management Office (DMO) in two respects. We discuss this relationship and then outline the institutional arrangements within the Bank.

The Bank and Treasury

780. The relationship with the Treasury arises in two contexts. First, the Minister of Finance has the power to direct the Bank to intervene in the foreign exchange market. It is anticipated that in a foreign exchange crisis, the Bank will be intervening with the approval of the Minister of Finance, although the Bank has the power to intervene in the foreign exchange market of its own accord, if required.

781. The Bank also has a close working relationship with the DMO in the context of funding reserves (among other functions—e.g., government cash management and bond tendering). The Bank decides on the timing and nature of reserves funding (i.e., fixed or floating rate, maturity, currency), consistent with its reserves management strategy, but it is the DMO that raises the funds (borrowing is undertaken in the Government/Crown name). The proceeds of the borrowing are passed to the Bank by way of loans from the DMO to the Bank and in this way the risks arising from the reserve assets and liabilities are managed by the Bank.

Arrangements within the Bank

782. Foreign reserves management is carried out across two departments. The Financial Markets Department conducts front-office operations (e.g., dealing, portfolio and asset/liability management, counterparty relationship management) and some middle-office operations (e.g., risk management policy, contract maintenance, counterparty credit rating reviews). The Financial Services Group conducts back-office operations (e.g., settlements, treasury, and financial accounting) and some middle-office operations (e.g., compliance monitoring, risk and exposure reporting, risk system maintenance).

783. Other departments and committees also play important roles in the management of foreign reserves. The Risk Assessment and Assurance Department (RAA) participates in high-level strategic reserves management issues, acting as the Governor's advisor on risk frameworks and architecture. This department also contains the internal audit function. The Reserves Oversight Committee (ROC) comprises Governors and senior managers and reviews the appropriateness of the portfolio structure, approves new business initiatives (including new financial instruments), and monitors active management and passive benchmark performance. The Risk Management Committee (RMC) comprises Governors and senior managers and reviews the risk management arrangements with respect to all the Bank's operations, including reserves management.

Accountability through governance and transparency

784. Accountability for the cost-effective management of reserves in accordance with performance expectations and risk tolerances is achieved through formal governance arrangements and transparent reporting of results and processes.

Governance

785. The Bank's powers, authorities, and accountabilities are contained in the Reserve Bank of New Zealand Act 1989 (the Act). The Bank's powers and authorities are vested with the Governor, who delegates appropriate authorities to relevant staff. The Bank conducts its foreign reserves operations in accordance with a mandate from the Governor. The Mandate for the Management of the Foreign Reserves Portfolio (the Mandate) contains the purpose, objectives, reserves level, performance expectations, risk management policies, and key management responsibilities and delegations with respect to reserves management. The Mandate,

which was implemented in September 2000, was designed to avoid any misdirection of focus toward detailed and immaterial risk and procedural issues. It was felt that a succinct, high-level mandate modeled along funds management industry lines would emphasize high-level, strategic focus on risk and return issues with respect to the foreign reserves management function. Based on the experience of two years of operations, the Mandate appears to be serving its purpose.

786. The Bank's Board of Directors[45] (which comprises a majority of independent directors) has responsibility for, among other matters, keeping under constant review the performance of the Bank in carrying out its functions. Unlike boards of most entities, which have a capacity to direct and influence the entity's functions and operations, the Bank's board may only advise the Governor with respect to matters relating to the Bank's functions and exercise of its powers. However, if the board considers that the Bank is not adequately carrying out its functions, it may recommend to the Minister of Finance that the Governor be removed from office. Senior managers report to the Board monthly on the financial results of foreign reserves management. The Board's Audit Committee also meets regularly to monitor the audit function within the Bank, receive reports from the Bank's external auditor, review the Bank's financial statements, and advise the Board on the Bank's accounts.

787. The Head of Financial Markets, who reports to the Governor, is accountable for reserves management performance and compliance with risk management arrangements. The ROC assists the Governor in monitoring performance and portfolio structures at a high level. The Chief Financial Officer (who heads the Financial Services Group and reports to the Deputy Governor) is accountable for, among other matters, settlement operations, reserves accounting/financial reporting, and monitoring the Financial Markets Department's compliance. Reserves operations in both the Financial Markets Department and Financial Services Group are subject to both internal and external audit.

Transparency

788. The Bank publishes an annual report that lays out the governance arrangements, reports on the key performance indicators with respect to its functions (including reserves management), contains a report from the non-executive directors, and includes audited financial statements prepared in accordance with New Zealand generally accepted accounting practice (GAAP). New Zealand GAAP requires compliance with New Zealand accounting standards, which are at least as rigorous as international accounting standards. In addition, the Bank applies relevant financial risk disclosures recommended by the Basel Committee on Banking Supervision. The key financial reporting implications of these policies are:

- Foreign reserve assets and foreign currency liabilities funding those assets are valued in the Statement of Financial Position (Balance Sheet) on a marked-to-market basis with gains and losses booked to the Statement of Financial Performance (Profit and Loss). This fair value methodology is employed because we regard the reserves as available for sale (intervention). Liabilities are valued using the same methodology as the assets so that the financial statements capture the effects of the quality of our financial risk management—gains/losses from unhedged risk positions are booked to P&L.
- Extensive disclosures are provided in the notes to the accounts on a range of reserve management matters—e.g., risk management policies, quantitative risk exposures (including credit risk and market risk losses, including from tail (extreme) events), net reserves management income (active management performance and passive or risk neutral performance are separately identified).[46]

[45]The Bank's Board is about to undergo a restructuring—a non-executive director will replace the Governor as Chair of the Board, and Deputy Governors will no longer hold Board positions. This follows an independent review of the operation of monetary policy in New Zealand.

[46]Note, the effect of translating reserves management performance back into NZD is not material (but is separately disclosed) because foreign reserves are funded by foreign currency liabilities.

Establishing a Capacity to Assess and Manage Risk

Benchmark portfolio and instruments

789. The Bank's framework for managing all risks arising from foreign reserves management is documented in the Risk Management Document. The main risks the Bank faces from this activity are business risk, liquidity risk, credit risk, market risk (interest rate and foreign exchange risk), and operational risk (including custodial risk). The key elements of the strategy for managing these risks are outlined below. This section concludes with a discussion of active management performance monitoring and controls.

Business risk

790. This encapsulates the political and infrastructural risks arising from the markets in which, and instruments with which, we manage reserves. We aim to minimize reputational risk by limiting authorized instruments to "plain-vanilla" fixed income instruments and derivatives. The derivatives activities encompass only futures and swaps. We do not invest in non-fixed income instruments such as equities. Nor do we invest in options or fixed income securities with material option risk such as mortgage-backed securities.

791. The markets in which we operate are in essence restricted to those of well-developed countries (mainly the U.S. and Germany although we have scope to participate in G-10). We do not operate in emerging markets.

Liquidity risk

792. Reserves are not divided into tranches to meet different objectives per se. However, reserves are actively managed within the overriding constraints that reserves must be liquid and diversified primarily across the U.S. and Germany. This means that the base level of reserves must be invested in specified classes of liquid assets in these markets—i.e., Government securities (including central bank deposits), reverse repos (with Government security collateral), and CD/CPs (primarily by issuers rated AA- or better). In broad terms, at least a third of the liquid reserves must be held in Government securities and no more than a third of the liquid reserves can be held in CD/CPs. The investment of a significant proportion of reserves in CD/CPs instead of Government securities significantly reduces the cost of holding reserves (the CD/CP investment yield is close to the funding costs), without significantly reducing credit quality (given the credit rating criteria we apply and the short maturity of the instruments) or materially altering our liquidity (since our holdings represent a small proportion of turnover and amount on issue).

793. The currency composition of reserves is determined by the intervention strategy and risk preferences. The U.S. dollar is our intervention currency so the majority of our liquid assets are denominated in this currency. The proportion of reserves held in other major currencies varies depending on prevailing risk conditions and net borrowing costs. Depending on local market conditions we may hold reserves in only one currency other than the U.S. dollar. Currently, we hold liquid reserves in U.S.dollar- and euro-denominated assets.

794. The instrument composition of reserves is reviewed periodically in the context of liquidity risk stress scenarios—e.g., widening of credit spreads and bid/offer spreads. The Risk Management Committee reviews underlying assumptions about extreme market conditions, our intervention strategy under those conditions, and the financial cost of liquidating reserves under such conditions. Based on this analysis, the instrument composition of liquid assets is determined.

Credit risk

795. The risk of loss from counterparty default is managed by way of individual counterparty and aggregate credit risk limits. Individual counterparty limits are determined in accordance with the Governor's strategic tolerance for loss—the loss from default of a non-sovereign counterparty should not exceed the Bank's capital. In practice, this means we set the counterparty limit for AAA/AA+ rated entities at a level just below Bank capital. Limits for counterparties with a lower rating are assigned a proportionately lower limit

based on the relative default rate for entities with that lower rating. For instance, if the probability of default of a single-A rated entity was three times higher than that of an AA+ rated entity, the limit for the single-A rated entity would be one third the limit of the AA+ rated entity. We do not permit credit exposures to entities rated lower than A-.

796. Concentration of credit risk is controlled by aggregate credit limits—primarily country limits and, in some cases, bank or corporate sector limits within countries. The thresholds for aggregate credit limits are set on the basis of judgments about political risks arising from losses in the event of sector or country crises. We are in the process of supplementing these judgments with a quantitative analysis of counterparty default correlation. Our aggregate credit limits also include a cap on the aggregate amount of credit exposure we have to all single-A rated counterparties to ensure that the credit quality on the reserves portfolio is maintained at a high level.

797. Credit exposures relative to limits are generally reported on a gross basis—exposures are only reported on a net basis where there is a legally enforceable netting contract.

Market risk

798. The market risks the Bank is exposed to are interest rate risk and foreign exchange risk. Both these risks are controlled by the same market risk limit framework. The (parametric) Value-at-Risk (VAR) methodology is used to measure and control market risk. The VAR limits are set well within the Governor's stated tolerance for market risk losses in a year to allow for both accumulated market risk losses over a year under normal market conditions and losses from extreme movements in market prices or "tail-events." The accumulated losses over a year allow for poor active management performance and (mark to market) losses on the passive portion of reserves due to adverse interest rate trends (narrowing credit spreads). The allowance for tail-events is based on an analysis of simulated worst single day losses on a diversified portfolio over the 1990s, scaled up to allow for unobserved tail-events. This simulation/stress test analysis is conducted annually. Given that we invest in instruments that are highly liquid (even in extreme/stress scenarios) we believe it is appropriate to measure market risk (including tail-event market risk) with only a one-day holding period.

799. Actual daily P&L results are compared with estimated gains and losses from the VAR model each month. The results of the "back-testing" analysis are reported to the Reserves Oversight Committee quarterly.

800. The VAR-based framework for managing market risk has been in operation since 1998. It is a considerable improvement over our in-house duration and convexity market risk model, which it replaced, because VAR captures spread risk and FX risk. We have found VAR a very useful "common ruler" for measuring market risk on a range of different instruments and positions and most helpful in communicating to senior management about the quantum of risk (under normal market conditions). VAR presents challenges for us in terms of understanding where our market risk exposures lie and what are our key risk factors (nature of and changes in interest rate and exchange rate volatilities and correlations). We are in the process of developing management reports to get better insights into our risks that lie behind VAR. Senior management are aware of market risks that lie beyond VAR—the results of the annual tail-event analysis are reported to them and estimates of extreme losses are published in the annual report. We also find (parametric) VAR less useful for capturing the risks over time on the passive portion of reserves because the main market risk on this portion of reserves—credit spreads—is mean-reverting. This means scaling parametric VAR by time overstates risk. VAR derived from historical simulation is our preference for the future, but system and database management issues constrain our desire to move in this direction in the foreseeable future.

Operational risk

801. Minimizing operational risks in the management of reserves is of critical importance in two respects:

- Maintaining a continuous intervention capacity; and

- Minimizing financial loss and reputation damage from fraud.

802. In order to maintain a continuous intervention capacity the Bank sets internal controls and processes with respect to system and data integrity (e.g., data reconciliation), disaster recovery planning (including maintaining an off-site capacity and crisis procedures and contacts), and key-person risk (including succession planning, mentoring, knowledge sharing, and information dissemination). The Bank is also dependent on its securities custodians effectively managing their operational risk. We review custodians' controls before we place securities with them and, on an ongoing basis, test their systems (with their cooperation) by executing securities transfers instructions from time to time to simulate cash raising in time of intervention. In addition, we have a policy of diversifying our security holdings across a few custodians so that our intervention capacity is not entirely exposed to operational risks or disaster scenarios with respect to a single custodian.

Fraud

803. The Bank has in place a number of operational controls to minimize financial and reputational damage from fraud. These include separation of front- and back-office operations, logged dealer phones, tracking of deal tickets, transaction and position reconciliation across P&L and risk reporting, and confirmation and settlement instruction matching with counterparties. The Bank also places considerable importance on front-, middle-, and back-office operations having a good understanding of the nature of, and risks arising from, the instruments in which we deal, so transactions will be subject to reasonableness checks along the process chain. The aim here is to not rely too heavily on any one person (particularly in the front office) for advice on appropriate processing of transactions. This widespread understanding of appropriate processes is an objective we are continually striving to achieve.

Active management

804. As noted above, the Mandate includes provisions for active management of reserves and clearly outlines the performance expectations that must be met to continue this activity. Active management takes the form of interest rate and currency trading over short-term (ranging from intraday to up to three months) and medium-term (three to 24 months) horizons. Positions are entered into at the discretion of dealers and on the basis of rule-based analytics. Given the rather limited range of instruments and markets in which we can operate, we strive for diversification by trading with different investment horizons and by using different decision processes (dealer discretion and rule-based analytics).

805. Active management returns and risks are measured against a benchmark (comprising both assets and corresponding liabilities), which is constructed within the Bank, independently of the front office, to reflect the composition of reserves and funding under passive management—the risk-neutral position. The benchmark is managed within broad risk parameters defined by the Governor and with the objective of minimizing costs, consistent with a passive management strategy. Portfolio managers must actively manage reserves in a manner that adds value—i.e., generates a return that exceeds the benchmark and covers charges for additional risks from active management as well as additional costs arising from active management. Performance is measured on a rolling three-year basis, but attention is also paid to performance in a financial year to monitor the Bank's political risk exposure that may arise when it publishes results of operations in the annual report. Active management performance is also monitored relative to that of comparable (external) fund managers, six monthly. Information ratios are used for this purpose. This enriches our understanding of our portfolio managers' performance; however, it is not the relative performance of portfolio managers that determines whether we continue with this activity; it is their absolute performance—they must add value (as defined above).

806. Active management risks are controlled using the same framework used to control the risks on the entire reserves (active and passive reserves), as outlined above. Market risk is the only area where we have separate active management limits. VAR and stop-loss limits are applied

at the portfolio and aggregate (all portfolios combined) level.

807. The Bank does not currently use external fund managers as we believe that this would constrain our capacity to meet the objective of reserves management to increase the Bank's knowledge of instruments and market practice and maintain market contact; divert scarce resources to managing the relationship; and not significantly increase returns if the managers were subject to the same risk constraints as our portfolio managers.

808. However, we would consider using external fund managers if there were markets or instruments in which we wished to participate but did not have the expertise to do so directly. In these circumstances, we would expect that external fund managers would not only improve active management risk-adjusted performance, but also provide a means by which we could learn from their activities.

809. We do make use of overseas investment banks' bond lending services. The Bank undertakes this activity itself, but time zone differences mean that it is economical for us to outsource this activity to entities that operate in markets at night in New Zealand.

Conclusions

810. The Bank's management of foreign reserves is continually evolving. There are a number of strategic issues that underlie reserves arrangement and it is the Bank's (and government's) practice to review these issues periodically. Reserves management in New Zealand also evolves in light of market developments in financial instruments and risk management practices, and of our own experiences and lessons. We recognize that our practices differ in many significant respects from the practices in other countries (there are also significant similarities too). We believe that this is appropriate because, while there are core principles underlying reserves management, the practices adopted in meeting those core principles should vary according to countries' public policy, institutional frameworks, skills, and resources.