
Volume 71 No. 4, December 2008
*Themed issue: Liquidity and the
New Zealand financial system*

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ISSN 1174-7943 (print)
ISSN 1177-8644 (online)



Editor's note

This edition of the Reserve Bank *Bulletin* is built around the theme of liquidity and New Zealand's financial markets. 'Liquidity' in a general sense relates to the ability for payments and other financial transactions to occur without hindrance, disruption or surprise. In some contexts it means the ready availability of cash and credit; in others, well-functioning financial markets. In all cases, the desired state of liquidity conditions is such that the financial system can support economic activity in a manner that is, for most people, largely invisible.

Such conditions do not currently prevail in New Zealand or in much of the rest of the world. In recent months the Reserve Bank and other central banks around the world, and governments as well, have undertaken extraordinary action to shield the financial system and global economy from the effects of extremely disrupted liquidity and credit conditions. Various, central banks have injected large volumes of cash into their local banking systems, or made it more readily available, and have cut official interest rates dramatically. Supervisory authorities have closed down distressed or problematic institutions, or facilitated their merger with stronger institutions. Governments have removed impaired and illiquid assets from weakened financial institutions, or injected capital into them; introduced or extended guarantees of wholesale bank liabilities and retail deposits; and announced major new fiscal stimulus packages.

The articles in this edition put these actions into a broader context. Our first article, by Ian Nield, discusses the evolution of the Reserve Bank's liquidity management arrangements over the past few years. This evolution includes the measures introduced this year as the global financial system turmoil deepened. As a result of changes to the arrangements and our thinking over this time, the arrangements and New Zealand liquidity conditions are now more robust and adaptable to a variety of stresses, including those of the type we currently face.

Paul Bedford explores in our second article how instability in the international financial system spread far beyond its original source, including to New Zealand. The article discusses the impact of the global developments on the domestic financial system. The impact is modulated by the scale, composition and maturity structure of the international

assets and liabilities that comprise New Zealand's external accounts. The article highlights the role of the international liabilities – a substantial part of which are due to local banks' offshore funding operations – and how they are intermediated.

In our third article, Phoebe Chan and Stuart Irvine look at settlement risk in the retail payment system. The existence of settlement risk is one reason why banks need to ensure they have adequate liquidity resources at all times. The current typical pattern of payment flows through the New Zealand retail payment system includes a proportion of very high value payments. Although these payments are very low in number, they significantly increase banks' exposures to each other at the time that their retail payment obligations must be settled. The article discusses a proposal from the New Zealand Bankers' Association to address settlement risk in the retail payment system in light of the Reserve Bank's payment system oversight and financial stability objectives.

Noemi Javier explains in our fourth article the new regulatory framework for non-bank deposit takers introduced with the amendments to Reserve Bank of New Zealand Act in September 2008. Under the new legislation, the Reserve Bank becomes the sector's prudential regulator. Non-bank deposit takers will be required to comply with prudential standards set by the Reserve Bank, including credit rating, capital and liquidity requirements, and restrictions on related-party exposures.

Finally, Victoria Zhang and I provide a note summarising the results of our August 2008 survey of *Bulletin* readers. Thanks again to all respondents for taking the time to return the survey. We received useful suggestions on the *Bulletin*'s content and style, which we will take on board. In particular, I am glad to announce that from the September 2009 issue, the Reserve Bank will provide printed copies of the *Bulletin* free of charge.

I hope you enjoy the range of articles in this edition. Best wishes for the holiday season.

Tim Ng
Editor



**RESERVE
BANK**
MUSEUM

The Reserve Bank Museum celebrates and records New Zealand's economic and banking heritage.

Displays range from timelines and interactive exhibits to comprehensive display panels outlining both the Reserve Bank's history and role, and how the New Zealand economic system has developed.

Artefacts include the only working example in New Zealand of the MONIAC hydro-mechanical econometric computer developed by New Zealand economist and inventor Bill Phillips in the late 1940s.

In early 2008, the museum received its 10,000th visitor.

The museum is open 9.30 a.m.–4.00 p.m. weekdays. It is closed weekends, public holidays, and for special events. Please call to confirm opening hours.

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<http://www.rbnz.govt.nz/about/museum/2766074.html>



Photography by Stephen A'Court.

ARTICLES

Evolution of the Reserve Bank's liquidity facilities

Ian Nield¹

In this article, the evolution of the liquidity management regime over the past few years is detailed. This evolution is placed in the context of the prevailing financial market stresses. The robustness and adaptability of the system to a variety of shocks is discussed. Particular mention is made of the steps taken in the past year to ensure the stability of the New Zealand financial system.

1 Introduction

Central banks have a number of functions. A key function is the provision of cash to the economy and the banking system in particular. Providing cash to the public as notes and coins enables the settlement of payment obligations between individuals. The electronic equivalents of notes and coins, which enable commercial banks to settle wholesale payment obligations, are the balances in the settlement accounts that the Reserve Bank offers to the commercial banks.

The source of funds for the settlement accounts is the various liquidity operations undertaken by the Reserve Bank – the standing facilities and open market operations.

Generically, there are two facilities that effect the provision of cash to the settlement accounts: the standing liquidity facilities, which are on-demand borrowing facilities, and the open market operations. This article discusses developments in the Reserve Bank's liquidity facilities over the past decade. Over this time, there have been two major changes.

The first of these was in 1999 when the way in which the Reserve Bank implemented monetary policy changed to the official cash rate (OCR) regime. The second was in 2006 when the Reserve Bank adopted a 'fully cashed up' settlement account system.^{2,3} This second change was the result of fundamental changes in our framework for thinking about a central bank's domestic market activities. It also enabled the Reserve Bank to be more flexible regarding changes.

The article proceeds as follows. In section 2, we provide

an overview of the purpose of the Reserve Bank's liquidity management system. The way this is put in practice is explained in more detail in box 1, "Assessing the appropriate level of settlement cash", and box 2, "Tools for injecting and withdrawing liquidity".

The motivation for the 2005/6 liquidity management review and the changes made at that time is provided in section 3, "Making liquidity provision systems more robust and scaleable: 2003-2007". The section includes discussion on the development of the 'Kauri' market in New Zealand and the introduction of a tiered approach to remuneration settlement account balances.

With the advent of the current crisis conditions, the liquidity facilities were widened and adapted. The Reserve Bank's approach to this is provided in section 4, "Enhancements to liquidity facilities to address crisis conditions – a question of confidence". Included in this section is a discussion on funding the New Zealand banking system in a crisis.

The article closes with a discussion on the coherence of the facilities and their robustness in section 5 and closing comments in section 6.

2 Overview of the New Zealand liquidity management system

Operationally, the liquidity management role, undertaken by the Financial Markets Department's Domestic Markets team, has three broad elements:

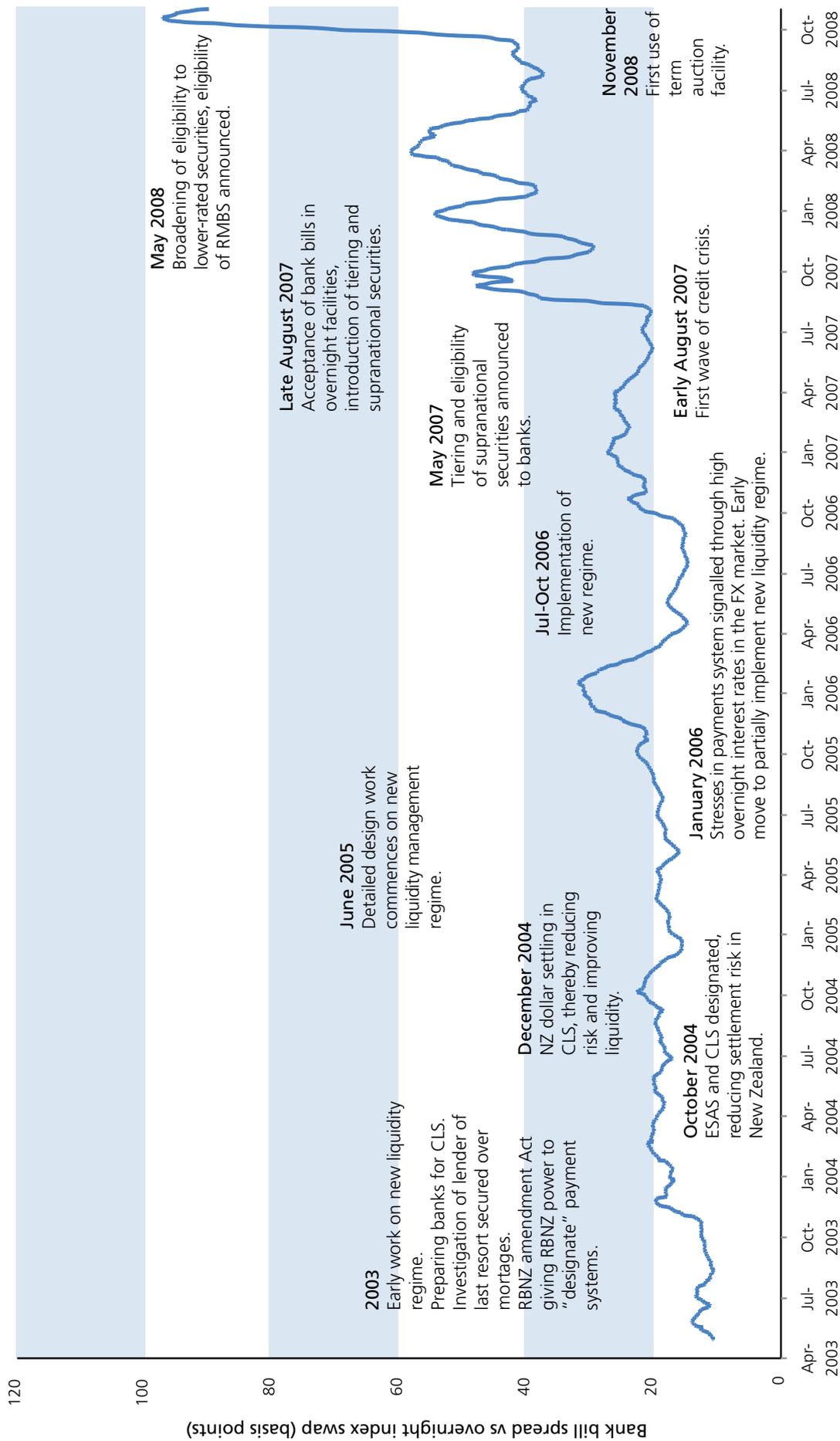
¹ The author gratefully acknowledges the thoughtful comments of Kelly Eckhold, John Groom, Bernard Hodgetts, Tim Ng, Simon Tyler and Tina Sutherland. He is especially thankful to Tina Sutherland for providing the material in boxes 1 and 2.

² Previously the Reserve Bank had targeted an overnight cash balance in the settlement account system of \$20m. This meant that banks had to make use of the standing liquidity facilities many

times during the banking day to raise cash to effect their payments. The open market operations had to be finely tuned to balance the Crown's income and expenditure. As a result, the operations were highly demanding on both the Reserve Bank and the commercial banks. For further details of how the previous regime worked, see Frazer (2005).

³ For a more detailed discussion on the changes in 2006, see Nield (2006).

Figure 1
Key events timeline 2003-2008



- supporting monetary policy by keeping liquidity conditions consistent with the current setting of the OCR (see box 2);
- providing facilities to registered banks, enabling them to maintain sufficient settlement cash at the Reserve Bank so they can meet payment obligations to other banks; and
- balancing the flows between the government and private sectors.

The standing liquidity facilities are designed to ensure that domestic overnight interbank borrowing/lending rates stay close to the OCR.⁴ The open market operations are designed to ensure that cash is generally supplied to the banking system at a rate that is commensurate with the OCR and in quantities that satisfy the payment demands of the commercial banks. As currently structured in New Zealand,

these facilities also provide a significant buffer of liquidity to assist in the maintenance of a sound financial system.

The liquidity facilities available at central banks tend to be relatively static, changing rarely and slowly as markets evolve. Recently, central banks around the world have demonstrated an ability and willingness to make changes in the face of serious threats to the stability of their financial systems.

⁴ **There is a variety of overnight rates observable for the New Zealand cash market. The Reserve Bank is more readily able to influence the purely domestic market. There are important linkages between the offshore London interbank market for New Zealand dollars (that sets the LIBOR offshore benchmark interest rate) and the foreign exchange (FX) market, in particular the ‘overnight FX swaps’ market. The Reserve Bank has relatively little influence over these ‘implied’ overnight rates in offshore markets.**

Box 1

Assessing the appropriate level of settlement cash

How does the Reserve Bank know there is enough cash in the settlement system? The Reserve Bank uses a number of key market indicators when assessing the appropriate range for the level of settlement cash. These include:

- The level of short-term interest rates. The Reserve Bank monitors market interest rates in the FX swap, overnight cash and short-term bank bill markets. These rates are compared to the market’s expectation of the OCR for the equivalent period (using the overnight interest rate swap rate⁵ – OIS). If these indicators are trading substantially below the market’s expectation of the OCR, it is a signal that there may be too much liquidity in the banking system. On the other hand, rates trading significantly higher may indicate there is not enough liquidity.
- Liquidity in the payment system and monitoring that payment and settlement obligations are being met.

⁵ **The Overnight Indexed Swap (OIS) rate is an interest rate swap involving an exchange of a fixed rate obligation for a floating rate obligation. The OIS provides a good guide to the market’s future expectations for the OCR.**

- Frequency of use of the Reserve Bank’s Overnight and Term Reverse Repurchase Facilities (ORRF and TRRF). These facilities keep interest rates within an appropriate range. If approved market participants are unable to source liquidity from the market, they can access the Reserve Bank’s ORRF/TRRF. If they do, it may be a signal that there is not enough liquidity in the market. It is worth noting that there may be other factors aside from liquidity pressures that may influence a market participant’s use of these facilities. An example may be that the cost of borrowing overnight cash in the market is higher than the cost of borrowing through the ORRF or TRRF, in which case it is cheaper to use the ORRF or TRRF.

Other influences such as government activities (e.g., revenue from taxes, or government disbursements) impact on liquidity in the banking system. The Reserve Bank forecasts the impact of these transactions using cashflow estimates provided by the more active government departments, and aims to offset these transactions through its domestic market operations.⁶

⁶ **Only approved counterparties may participate in the Reserve Bank’s domestic operations. Full documentation is in the Reserve Bank’s operating rules and guidelines, RBNZ (2008a).**

Box 2

Tools for injecting and withdrawing liquidity

This box provides an overview of the tools the Reserve Bank can use to inject or withdraw liquidity to achieve its desired target settlement cash level.

FX swaps and basis swaps

In foreign exchange swap transactions (FX swaps) the Reserve Bank and the counterparty agree to exchange two currencies, at the current market spot rate, with an agreement to reverse the transaction at a specified maturity date in the future. For liquidity management purposes, the Reserve Bank transacts in FX swaps for terms from overnight to six months.

Basis swaps are like FX swaps but for longer terms. Floating interest rate payments in the different currencies are made throughout the life of the transaction. The Reserve Bank transacts in basis swaps of durations between one and three years for liquidity management purposes.

FX swaps have become a key tool for injecting liquidity since the move to a cashed-up system back in June 2006 (see text). The Reserve Bank mainly deals directly with approved local and offshore counterparties, but has in the past transacted FX swaps through a tender process.

Repurchase transactions

The Reserve Bank enters into two types of repurchase transactions. Reverse repurchases (reverse repo) are where the Reserve Bank buys acceptable securities in exchange for cash with an agreement to sell them back at a future date (this injects cash into the banking system). A repurchase (repo) transaction is where the Reserve Bank sells New Zealand Government securities in exchange for cash, with an agreement to repurchase them at a future date (this withdraws cash from the banking system).

Repurchase transactions are held through a competitive tender process known as the Open Market Operation

(OMO). Each day at 9.30am, the Reserve Bank announces whether or not it intends to offer an OMO. The Reserve Bank publishes minimum/maximum rates it is willing to transact at and usually offers one to four maturity dates.

In November 2008, the Reserve Bank introduced a Term Auction Facility (TAF), which gives market participants access to longer-term liquidity. The TAF is run in a similar manner to the OMO (as a reverse repo) but is only held once a week. The TAF typically offers between \$500 million and \$2 billion dollars for terms of approximately three, six and 12 months.

Reserve Bank (RB) bill tenders

The Reserve Bank re-introduced⁷ RB bill tenders at the same time as the TAF. This facility is designed to withdraw liquidity from the banking system and sterilise, either partially or fully, the cash injected via the TAF. RB bill tenders are held weekly as required. As with other operations, the Reserve Bank publishes a maximum rate it is willing to transact at.

Standing facilities

The Reserve Bank offers a number of standing facilities for transactions in cash and government bonds. These are outlined below:

Deposit facility

All settlement cash in the banking system is held by Exchange Settlement Account System (ESAS)⁸ account holders and deposited at the Reserve Bank. Each ESAS account holder has an individual assigned tier (see text). The Reserve Bank remunerates account balances at or below the assigned tier at the OCR. For balances in excess of the assigned tier, the remuneration rate is the OCR less

⁷ The Reserve Bank issued RB bills between 1988 and 1999 as part of its domestic market operations.

⁸ The ESAS allows payment obligations between account holders to be irrevocably settled on a real time gross settlement basis.

100 basis points. The Reserve Bank reserves the right to change the rates of remuneration at any time.

Overnight and Term Reverse Repurchase Facilities (ORRF and TRRF)

The ORRF and TRRF allow approved counterparties to access cash on demand. Counterparties normally access these facilities when they are unable to acquire cash from the market, or when the cost of acquiring cash exceeds that at which they can obtain it from the Reserve Bank. The cost of using the ORRF or TRRF is OCR plus 50 basis points. Approved counterparties can borrow overnight or up to a maximum term of 30 days. These are standard reverse repurchase agreements secured against approved eligible security.

Bond lending facilities

The Reserve Bank currently offers two types of bond lending facilities designed to assist in alleviating shortages of bonds that arise in the New Zealand government bond market, which differ in the method by which the deal

prices are struck. The Reserve Bank holds a portfolio of New Zealand government bonds that it makes available to the market via repurchase transactions. These facilities are limited only by the volume of bonds the Reserve Bank holds and the maximum daily limit across both facilities that the Reserve Bank is willing to secure against cash (currently \$500 million).

The first form of lending is via tendered bond repurchase facility. The Reserve Bank holds a bond repurchase tender operation with a maximum rate of 70 basis points below the OCR, every Monday, Wednesday and Friday. The Reserve Bank will lend up to a maximum of \$250 million of bonds in this facility and they must be secured against cash.

The second bond lending facility is available every day for a period of 30 minutes in the afternoon at a fixed price. Transactions are executed on a 'first-come, first-served' basis. Bonds can be secured against cash or bonds and are transacted at a fixed rate of 150 basis points below the OCR.

Box 2 Figure 1
Injecting liquidity via the standing and tender facilities



Standing facilities (ORRF/TRRF) – cash provided at a fixed price over the official cash rate with risk margins applied as appropriate to the type of security.

Tender facilities (OMO/TAF) – cash provided at a price determined in an auction. The risk margins are applied as in the standing facilities.

At the maturity of a loan, obtained through these facilities, the flows reverse.

3 Making liquidity provision systems more robust and scaleable: 2003–2007

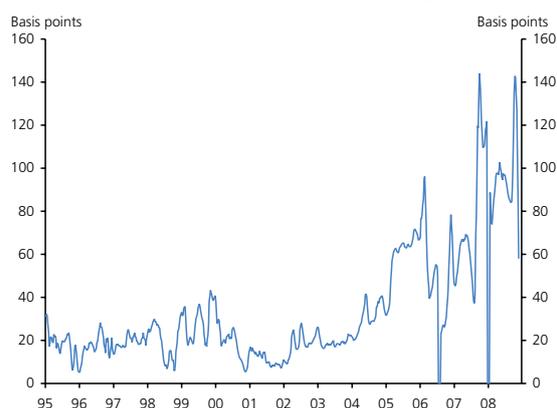
The changes that were effected in 2006 should not be looked at in isolation to the other issues that the Reserve Bank had been working on over some years. For instance, they should be looked at in terms of the wider failure management and prevention work that had been in progress for some years. In particular, the Reserve Bank has for a long period of time worked at implementing measures that reduce risk and enhance certainty in the financial system.⁹

The 2005-06 liquidity management review

Commencing in 2003, a back-to-basics review was undertaken to determine how the Reserve Bank viewed its domestic liquidity management operations. For example, why does the Reserve Bank have domestic market operations? Are they purely for monetary policy implementation purposes? What synergies are there to be gained from these operations and other policy purposes? What are the appropriate market price benchmarks for such operations?

Figure 2

Three-month bank bill versus Treasury bill spread



⁹ The investigations in 2002-03 that the Reserve Bank made into secured lending over mortgages; designation legislation to ensure finality of settlement in payment systems; the consequential designation of ESAS; and the introduction of the New Zealand dollar into the Continuous Linked Settlement (CLS) system are examples that link both risk and liquidity. CLS has been important in assuring that there has been a significant reduction both in risk and need for liquidity. This past year CLS has been critical to the smooth functioning of the world's FX markets. Also see Chan and Irvine (2008) in this edition.

By early 2005, it was clear that a major revision of the Reserve Bank's liquidity operations was necessary. The sign that the prevailing system needed at least partial adjustment was the rising spread between Treasury bills and bank bills (see figure 2). From mid-2005, the spread had risen to over 60 basis points – double the historic norms. Other indicators were failures of tightly timed back-to-back settlements of securities in the payment and settlement systems, which often led to (or were caused by) failed settlement of bond trades and distortions in the bond repurchase market.

The focus of the 2005-06 review was the OMOs. The objectives and constraints borne in mind were: the need for, and level of, a cash target; the impact on monetary policy traction (i.e., the effectiveness of monetary policy transmission through the financial markets); the smooth functioning of the financial markets and provision of intra-day liquidity; the durability of changes to policy; scope of OMO's (i.e., a narrow focus on implementing the OCR, or wider objectives such as facilitating the development of domestic debt markets); the financial risk to the Reserve Bank; the ability to carry on other Reserve Bank business; information gathering; staff training; and implications for the Reserve Bank's balance sheet.

In reaching our conclusion regarding the best way to meet the objectives of the review, we considered a number of factors.

Of concern was the scalability of the system – we needed whatever system that was adopted to be able to grow (and shrink) without being constrained by external factors such as the issuance of eligible collateral by other parties. We were also concerned that it should use liquidity instruments and channels that were used by system participants as part of their normal business. Consideration was also taken of synergies with other Reserve Bank objectives and operations, such as crisis management.

Serious consideration was given to ways of encouraging wider liquidity holdings and the use of supranational ('Kauri') securities, local authority debt, other New Zealand dollar-denominated corporate debt and non-New Zealand dollar-denominated sovereign debt. Credit risk exposure issues and technical difficulties regarding settlement rather than

any objection in principle were the key stumbling blocks to the use of offshore securities. When some commercial banks and issuers of supranational debt approached the Reserve Bank in early 2007, the Bank was already well disposed to facilitating the development of this market.

Similarly, the use of non-New Zealand dollar cash and a variety of other instruments (e.g., overnight swaps) were investigated. On the whole, the same issues as above precluded their use. Some of these issues have now been resolved with the Reserve Bank's membership of the CLS system.

Scalability was a key concern. The primary instrument used to liquefy the banking system through daily OMOs was New Zealand government Treasury bills. Treasury bills were in short supply (the Crown had no need to issue them) and sought after not only by the commercial banks but also by overseas investors, who were not particularly inclined to trade them. Thus the scale of the system was at least partially constrained by the quantity of Treasury bills on issue.

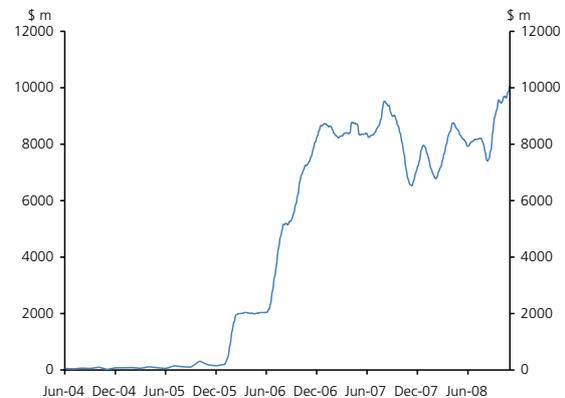
As a result of the review, banks' own demands for cash now determine the overall level of cash in the payment system.

The Reserve Bank provides liquidity in a variety of ways through both open market operations and on demand in the standing facilities. This liquidity is provided at prices linked to the OCR. In the open market operations, cash is injected into the banking system using a variety of mechanisms including FX swaps and loans ('reverse repurchase') – see box 2. Cash balances in the settlement accounts are remunerated¹⁰ at the OCR. Under the previous regime, there was no charge for intraday borrowing secured over acceptable high-quality debt securities such as government bonds. Under the new regime, there is no distinction between intra-day and overnight borrowing, and all borrowing (whether overnight or intra-day) is charged for as if it were overnight.

¹⁰ **Remuneration of balances in the settlement accounts is also known as 'remuneration of reserves' by other central banks. The Reserve Bank of New Zealand does not require a set level of reserves to be deposited with it. There is an expectation that banks hold a variety of liquidity instruments on their balance sheets to enable a bank to cope with a wide range of liquidity crisis events. The Reserve Bank is currently consulting on a proposed liquidity policy that will formalise these expectations.**

As a consequence, non-government securities were to be removed from eligibility in the overnight facility. This was to encourage market participants to borrow from each other rather than the Reserve Bank. In doing so, this ensured that, as a normal practice, the Reserve Bank was not exposed to the banking system.¹¹ There was also an acceptance of a greater tolerance for the variability of the day-to-day settlement cash level due to the Crown's activities (as opposed to those of the Reserve Bank).

Figure 3
Level of settlement cash in the New Zealand payment system

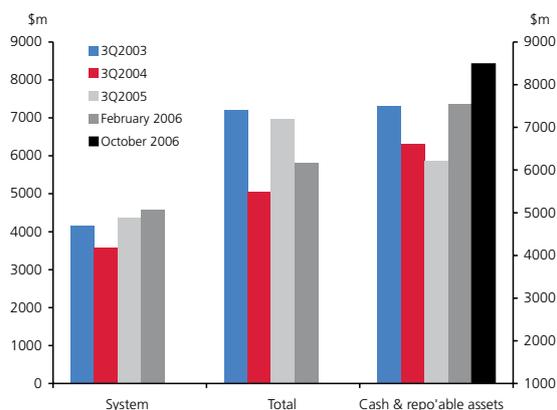


After a period of consultation, the new system was implemented over a three-month period ending in October 2006, with relatively few issues. There were a number of matters that the Reserve Bank monitored carefully; in particular, the revealed demand for cash, whether or not individual institutions held significantly more cash than expected and the willingness of ESAS participants to lend cash to each other rather than approach the Reserve Bank. Because of the flexibility of the new system, the Reserve Bank was also alert to opportunities to make adjustments pre-emptively.

Of concern to market participants (commercial banks, the Treasury and the Reserve Bank itself) was the level of cash in the settlement system. Under the old regime, about \$4,000 million of cash was raised each day in the facilities to enable payments to be made. It was estimated that the likely level

¹¹ **As the Crown's banking crisis resolution agent and regulator of the banking system, the Reserve Bank has a preference to not be already committed to a particular line of resolution management. Being exposed to the banking system on a day-to-day basis can engender moral hazard.**

Figure 4
Capacity for system to raise or utilise cash



Note: ‘System’ is the peak of the cash raised in the system, ‘Total’ is the aggregate peak cash raised in the system by each bank, and ‘Cash and repurchasable assets’ is the total of cash in the system and ESAS participants’ holdings of government securities and eligible private sector securities’.

of cash would be about \$7,000 million – but possibly has high as \$10,000 million. Figure 4 depicts the cash usage in the system and the amount of securities and cash held in the system to liquefy it before and shortly after the new system was implemented.

When moving to cash up the system, banks gradually unwound their holdings of Treasury bills and used FX swaps to purchase New Zealand dollars to leave in their settlement accounts. Thus, at least initially, there was a replacement of one type of asset with another in approximately equal amounts. Since the cash was being lent through the FX swap market at rates consistent with the OCR, this was not inflationary. As can be seen in figures 3 and 4, the ability for commercial banks to liquefy themselves improved significantly as the system was cashed up.

There were a number of matters that had been left open; in particular:

- a phased and not disjointed approach to crisis liquidity management;
- a robust method of risk and exposure management that was not discontinuous when moving from normal to crisis conditions;

- linkages to the wider remit of the Reserve Bank to facilitate the development of the New Zealand capital markets;¹² and
- the development of a liquidity policy for the institutions that were supervised by the Reserve Bank.

It was expected that these would be clarified and articulated more clearly as the system became bedded in and the need for any action became more widely appreciated.

The development of the Kauri market

The new system had been operational for about nine months when a number of private sector groups approached the Reserve Bank regarding the acceptance of supranational debt in its operations. From those discussions it became clear that the issuers were prepared to issue the debt on New Zealand registers and have the securities lodged in the Austraclear system.

With this settlement obstacle removed, the Reserve Bank was able to move relatively quickly and announce that appropriately rated supranational securities issued in New Zealand and lodged in Austraclear would be eligible in the Bank’s operations.

Another reason that the Reserve Bank was well disposed to encouraging the development of a local market in supranational securities was to broaden the range of liquidity instruments that the domestic banks could trade amongst themselves. With dwindling transaction volumes for New Zealand government securities, there were very few other high-quality instruments available. One possibility that had been considered was local authority securities, but there was (and still is) a lack of depth to the market due to co-ordination issues in that sector.

To give the supranational issuers time to issue, the change in policy was notified in May 2007 for implementation of the acceptance of supranational securities in early September. Within a short period of time, about \$3,000m of securities had been issued. This has steadily increased since then and

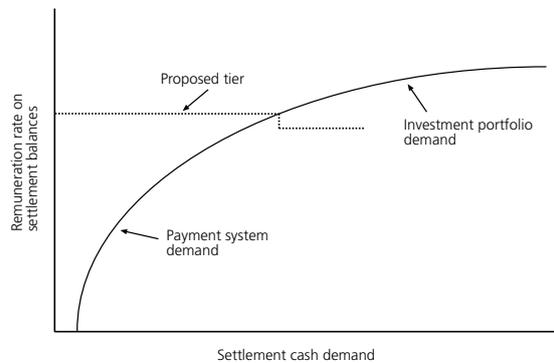
¹² Although there was no explicit remit to facilitate the development of the capital markets per se at that time, there is one now (see RBNZ, 2008b, at p.13).

currently stands at somewhat over \$7,000m. Ownership of the securities has been spread both domestically and internationally, with domestic banks owning a significant proportion.

The introduction of tiered remuneration of settlement balances – encouraging banks to hold a diverse range of liquidity instruments

In principle, there is no reason why the level of cash should not be allowed to rise to accommodate the needs of the financial system. However, the Reserve Bank did not see its role as being that of providing the primary on-call investment needs of financial institutions and the public more generally. The Reserve Bank considered that its role was to satisfy the demand for settlement account balances that were required for payment system purposes. A stylised diagram of the demand for payment system purposes and investment is depicted in figure 5.

Figure 5
Stylised settlement cash demand



We therefore considered a pricing mechanism to discourage holdings of settlement balances beyond those needed for payment system purposes. A number of issues were considered in determining how to tier the settlement account balances; in particular:

- what role does the Reserve Bank have as ‘depositor of last resort’?
- the method of discriminating between payment system demand and investment demand – this would be particular to each ESAS participant;

- how to balance the needs of the Reserve Bank, those of the Crown generally and those of payment system participants; and
- what would encourage settlement members to invest in other liquidity instruments.

To assist with this task, the Reserve Bank analysed the payment system flows of each participant for the period 1999-2006. The flows through the CLS system were isolated and analysed separately. From these analyses, a relatively simple method of discriminating between payment system and investment demands was identified.

The price discrimination was determined by the need to balance a penalty rate with the investment rates provided by the Crown for shorter-dated instruments. The penalty rate of 100 basis points below the OCR ensures that the rate offered by the Reserve Bank is not normally competitive with that offered by the Crown. This provides an incentive for ESAS account holders to seek alternative investments for balances that are expected to persist in excess of the allocated tier limit.

This method of tier allocation linked to payment system needs ensures that a bank is allocated an ESAS tier that should satisfy its cash requirements for all but the most extreme circumstances. The Reserve Bank monitors the needs of each bank and formally reviews the entire allocation system annually. To cater for extreme events, banks were expected to hold a range of liquid assets other than cash – that is, assets that can be readily exchanged for cash either with other system participants or, if necessary, the Reserve Bank.

The key attributes of the tiering system as implemented are:

- tier allocation determined primarily by revealed demand and behaviour in the payment system – individually allocated tiers up to \$100 million, \$250 million, then increments of \$250 million to \$1500 million, and in steps of \$500 million thereafter;
- remuneration of settlement account balances at the OCR up to the tier limit and then at 1 percent per annum less than the OCR; and

-
- periodic reviews of the appropriateness of an individual bank's tier allocation.

The tiering system and the opening of the liquidity facilities to approved supranational debt issues took place at the end of August 2007.

4 Enhancements to liquidity facilities to address crisis conditions – a question of confidence

When the Reserve Bank was in the final stages of its decisions relating to the ESAS tiering, in the US there were the first significant signs of what was to be a major global financial crisis. By late July 2007, early signs of stress on the New Zealand money market were appearing. The key signs of stress were: elevated overnight rates in London for New Zealand dollars – expressed particularly in the overnight FX swap market; the domestic bank bill market with a fall in volumes offered, and a rise in yields; and widening in the difference between bank bill yields and the market expectation of the future path of the OCR (the 'bank bill – overnight index swap' spread).

The stresses both domestically and internationally all had one thing in common – confidence in the financial system. Confidence in the banks is paramount to a well-functioning financial system. There were no doubts within the Reserve Bank that the New Zealand system was sound, but the growing global panic had created an air of unease in the domestic system. This was compounded by the failures that had occurred in the domestic finance company sector.

There was no need to make any changes to the liquidity system itself. However, to instil confidence that liquidity would continue to be available, the Reserve Bank considered re-accepting domestic bank bills in its overnight standing facility. As a temporary step, the Bank decided to accept bank bills at a risk margin¹³ of 10 percent and a price

of 100 basis points over the OCR. This was, in effect, a secondary discount window that banks could access as a standing liquidity facility. At the same time, the date for introducing remuneration tiering and the eligibility of supranational securities was brought forward to coincide with the acceptance of bank bills. By accepting bank bills, the Reserve Bank was signalling two things:

- confidence in the banks (i.e., a preparedness to accept bank credit risk in its operations); and
- a level of interest rates (i.e., OCR + 100 basis points) above which the Reserve Bank perceived the inter-bank overnight lending rate using bank bills as security to be dysfunctional.

The combination of tiering and acceptance of bank bills had an immediate effect which, broadly speaking, re-normalised the domestic bank bill market. In particular, the bank bill spread to OIS, which had risen to over 80 basis points, fell back to about 30 basis points, some 10 basis points above the more usual level of around 20 basis points. However, the overnight foreign exchange forward market continued to exhibit a degree of dysfunction – in particular, implied overnight rates from the FX market well in excess of those prevailing in the domestic overnight cash market.

The Reserve Bank prefers not to transact in significant volume in the overnight FX forward market, primarily because of the settlement risk involved in these transactions. If the Reserve Bank was more able to transact in that market, it would be better able to address such dysfunctional pricing that is evident there from time to time.

The pressures that arose in August 2007 had not dissipated by early 2008. There continued to be serious disruption to the US and European commercial paper markets. Confidence in the credit quality of a number of institutions was significantly degraded and several major banks in the US and Europe were on the brink of insolvency. At that time, the Reserve Bank commenced more detailed work on planning for a prolonged disruption to global capital markets; in particular, providing back-up for a loss of access by New Zealand banks to offshore funding.

¹³ In repurchase transactions, additional security is usually lodged in addition to the security required to cover the loan. This extra margin is called variously: 'risk margin', 'cover factor', 'cover ratio' and 'haircut', to name a few.

The Reserve Bank's concern was focussed on the high reliance of the New Zealand banking system on the smooth functioning of the overseas capital markets.¹⁴ Despite the banks being fundamentally sound institutions, their lack of access to the offshore markets could eventually cause significant disruption to the New Zealand financial system.

The Reserve Bank released its proposals for consultation in late May. The final details as released were:

- extension of the range of securities eligible for acceptance in the Reserve Bank's domestic liquidity operations to include: New Zealand-registered New Zealand dollar AAA-rated securities, including Residential Mortgage-Backed Securities (RMBS), and AA-rated New Zealand government sector debt – including that of Government agencies, state owned enterprises and local authorities;¹⁵
- the discount margin applied in the Bank's ORRF to be standardised at 50 basis points above the OCR for all eligible securities (i.e., a 'single discount window');
- a graduated risk margin regime ('haircut') to replace the prevailing limit structure for all securities eligible for domestic liquidity operations; and
- extension of the ORRF to allow loans to a maximum maturity of 30 days.

These measures were aimed at bolstering the liquidity of the New Zealand markets in the event of further significant disruption to global markets.

As well as providing a funding channel for the banking system, the Reserve Bank was keen to demonstrate that it was prepared to promote the development of the domestic

debt market by widening the range of eligible securities. Broadening the pool of eligible securities gives comfort to investors that they can liquefy their holdings if necessary (albeit indirectly, through a commercial bank's ability to use the securities to access the Reserve Bank's standing facilities).

Funding the New Zealand banking system

If the New Zealand banks were unable to access the key capital markets for more than a few weeks, there would be serious repercussions for both the banks and New Zealand. The key issue would be to replace the funding that the banks were obtaining from offshore markets.

The Reserve Bank could, in principle, fund the entire banking system. But to do this, and preserve market mechanisms to the extent possible, such funding needs to be over a sufficiently high-quality asset base. Hence, the knowledge gained some five years earlier on secured lending over mortgages proved to be very useful.

The key aspects of facilitating the replacement of offshore funding, if necessary, are:

- availability of securitised mortgage assets;
- a price that encourages banks to seek commercial market funding if it is available;
- tenders to ensure a market-driven price; and
- if desired (though it is not strictly necessary in the current system), the ability to withdraw any excess cash by issuing Reserve Bank securities (i.e. to 'sterilise' the funding flow into the banking system).

It was understood at the time that the decision to accept RMBS was taken that none of the major banks had active securitisation programmes for their mortgages. It was accepted that there would likely be a significant time lag (possibly six months) between the Reserve Bank announcing acceptance of RMBS in its facilities and the commercial banks being able to deliver them. Most of the banks were well placed to make use of the Reserve Bank's facilities that accepted RMBS by late November 2008.

¹⁴ **The high reliance on wholesale funding, in particular from one or two offshore capital markets, has been discussed in *Financial Stability Reports* in the past several years. Also see the discussion in Bedford (2008) in this edition. Although raised as a concern, it would be true to say that few envisaged a situation where there was a co-ordinated freeze in the world's major capital markets.**

¹⁵ **Although these were the securities that the Reserve Bank was readily prepared to extend eligibility to, it was prepared to go further if required. This has subsequently been the case with the acceptance of a broad range of lower-rated credit quality securities, primarily with the aim of supporting the domestic corporate debt market.**

Open market operations typically have maturities of three months or less. Much larger and longer-dated operations are required to provide stable funding for the banking system. To distinguish between the two, the Reserve Bank decided to create a new facility, the Term Auction Facility (TAF), which would specialise in such longer-term funding transactions. This new facility was publicly announced on 7 November, with the first tender held on 12 November (see RBNZ, 2008c).

As at 1 December 2008, the Reserve Bank had undertaken three tenders in the TAF. Through the tenders, some \$3,450 million of medium- and longer-term funding was provided to the New Zealand banking system. In parallel with these tenders, the Reserve Bank has issued \$2,475 million of RB Bills to partially sterilise the impact of this funding on the level of settlement cash.

5 Assessing the coherence of the facilities

The liquidity management system adopted in 2006 provides a robust and stable but flexible framework. As the disruption to the global financial system deepened, the Reserve Bank broadened the eligibility criteria to its facilities and changed the risk framework it uses. Although the recent changes are subject to review once credit markets return to normal, they do indicate the possible shape of future arrangements in the medium term.

The key change that has been made is more to do with the risk framework than the eligibility of securities. The risk-margining approach is more suited to crisis conditions, when provision of liquidity to the system might need to be increased very quickly and in large volume – but that does not mean that there should be a different system during normal times.

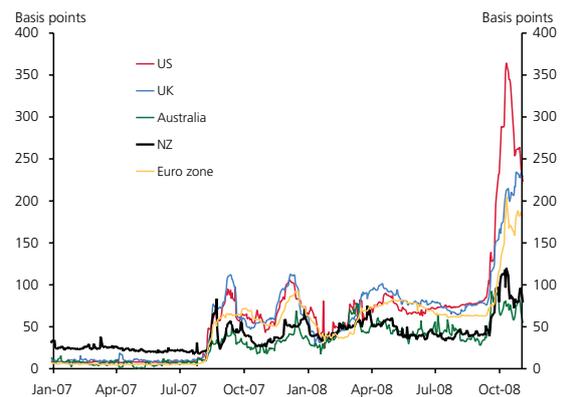
It is possible that when reviewing the recently introduced facilities the Reserve Bank will look to retain a core framework comprising: a cashed-up system, flexible methods of adjusting system liquidity, and a risk margin regime that discriminates between different types of credit exposure.

Robustness of New Zealand's approach to liquidity management

When the current system was introduced in 2006, two of the changes were an acceptance that the Reserve Bank should use as liquidity instruments those assets that were held as a natural part of a commercial bank's business, and that price signals should be used as a primary indicator of what, and where, action needs to be taken.

Typically, in the past 15 months, the Reserve Bank has been able to act pre-emptively to prevent serious disorder from occurring. When we did act, stresses in the form of elevated pricing were clearly evident, but disorder in the form of disrupted liquidity conditions was not.

Figure 6
The difference ('spread') between relevant market rates and expectations of policy rates in Australia, Europe, New Zealand, the UK and US



The cashed-up liquidity system was able to act as a significant buffer for the financial system, absorbing the shock and giving the Reserve Bank the time to act in a considered manner.

The way in which the New Zealand system was able to withstand and adapt to the global situation compares favourably with other systems. After the initial shock in August 2007, the New Zealand dollar inter-bank versus OIS spread has been broadly similar to that of Australia, and significantly lower than that of other markets. It is notable that the relative change in yield spread between bank bills and the OIS has generally been less in New Zealand than in the other key markets we monitor (see figure 6).

6 Conclusion

The past 15 months have been a severe test of New Zealand's financial system. It is not possible at this juncture to determine whether or not the measures put in place have been fully successful, but the early indications are encouraging. The new facilities appear to be operating as intended. New Zealand, like Australia, has been fortunate that its banks were not as exposed to the same problems as the US and European banks. However, as they source significant funds from offshore capital markets, they have experienced serious liquidity pressures as a result of the global credit market turmoil.

The domestic financial system has coped well in this environment, but will need to continue to adapt with the markets. As the Reserve Bank's liquidity management systems continue to evolve, they will be kept relevant to the needs of the financial system, while ensuring that the Reserve Bank's risk is controlled.

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The global financial crisis and its transmission to New Zealand – an external balance sheet analysis

Paul Bedford¹

Recent global events have underscored how instability in the international financial system can have a pervasive impact on the world economy. Starting in the middle of 2007, deteriorating credit quality in the US residential mortgage market served as the catalyst for a systemic financial crisis that has spread far beyond its original source, including to New Zealand. This article aims to shed light on the channels through which these global developments have affected the domestic financial system and real economy, principally by examining the scale and composition of the international assets and liabilities that comprise New Zealand's external balance sheet.

1 Introduction

The international financial system has been under extreme strain over the past 18 months. As described in recent editions of the Reserve Bank's *Financial Stability Report*, rising credit losses on US residential mortgages during the first half of 2007 triggered a sustained period of disruption in financial markets across most of the developed world. Having narrowed to historic lows in recent years, credit spreads widened sharply and equity prices declined as investors reassessed the price of risk.² Measures of market volatility reached record highs and a number of prominent financial institutions in the US and Europe encountered severe balance sheet distress, especially as the cost and availability of new equity capital and wholesale debt funding became increasingly restrictive.

The international policy response to the financial crisis has been unprecedented in scale and scope (see RBNZ, 2008a, for a more detailed discussion). Among other things, several governments have injected capital directly into distressed institutions and offered to guarantee eligible banks' wholesale debt, typically for a fee. Retail deposit insurance

schemes have also been extended or established in a number of countries. Central banks have significantly extended their market operations in response to increased liquidity demands. These actions have helped to restore a degree of market stability, but credit spreads remain at elevated levels and there is mounting evidence of substantial impairment of financial intermediation in the major economies, leading to weaker economic activity. Global growth forecasts have been revised sharply downward, prompting substantial cuts in official interest rates and proposals for fiscal stimulus programmes in many countries.

Strains in international financial markets have also affected New Zealand's financial system and real economy. The New Zealand banks did not invest in the US mortgage assets that have been at the centre of the current financial crisis, allowing them to avoid the substantial credit losses incurred by many of their international counterparts. Nevertheless, the disruption in global credit markets has placed significant pressure on the major New Zealand banks' funding and liquidity. Access to offshore debt markets has become increasingly difficult and expensive for the banks and other borrowers, ultimately leading to tighter credit conditions in the real economy. This article explores the transmission channels in more depth.³

¹ An earlier version of this analysis was prepared for the Bank for International Settlements (BIS) Autumn Economists' Meeting held in Basel in October 2008. The article has benefited from input from several Reserve Bank colleagues, including David Hargreaves, Bernard Hodgetts, Chris Hunt and Tim Ng.

² The compression of risk premia over several years prior to 2007 can be traced to the accumulation of large current account imbalances between major economies and the ensuing cross-border flow of capital, as described in, for example, Hunt (2008) and Bean (2008).

³ The focus of the article is on *direct* transmission channels. To the extent that a global financial shock adversely affects economic activity in New Zealand's key trading partners, there will also be an *indirect* effect through reduced export demand and lower international commodity prices.

Figure 1

The external balance sheet

International assets	International liabilities
Outward foreign direct investment	Inward foreign direct investment
Portfolio assets	Portfolio liabilities
<ul style="list-style-type: none"> • Equity securities • Debt securities 	<ul style="list-style-type: none"> • Equity securities • Debt securities
Other international claims	Other international obligations
Foreign exchange reserves	

Note: Other international claims/obligations include (non-tradable) loans, deposits, trade credit and derivative positions.

The following section outlines a framework for analysing the channels through which a global financial shock of the type observed recently can affect a small developed economy such as New Zealand, focusing in particular on the scale and composition of the external balance sheet. Section 3 examines New Zealand’s international assets and liabilities from this perspective, while section 4 discusses the central role of the banking system as an intermediary for capital flows into the country and highlights the associated risks, some of which have crystallised over recent months. Section 5 briefly summarises the steps taken by the Reserve Bank and the government to mitigate these risks and identifies some longer-term analytical and policy challenges stemming from recent events. Section 6 concludes.

2 Potential transmission channels

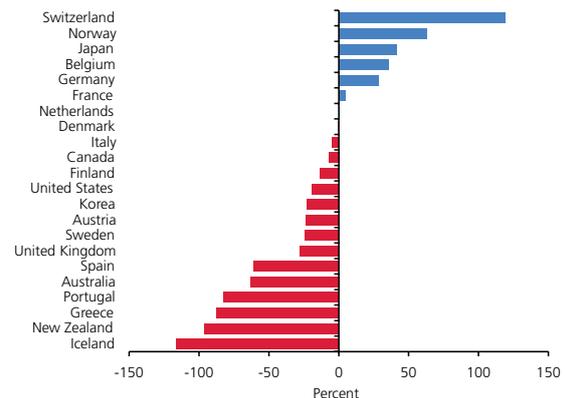
Global financial shocks can have a significant impact on small developed economies. The way in which different countries are affected will naturally depend on specific national circumstances and the nature of the original shock. A convenient framework for analysing potential transmission channels is to examine a country’s external balance sheet, which comprises international assets (claims on non-residents) and international liabilities (obligations towards non-residents). Figure 1 provides a stylised representation.

The difference between the recorded value of international assets and liabilities defines the net international investment position (IIP), which can be either positive or negative. Across developed economies, for example, the balance between international assets and liabilities varies substantially (figure 2), ranging from net assets of more than 100 percent of gross

domestic product (GDP) in Luxembourg and Switzerland to net liabilities of around 125 percent of GDP in Iceland.⁴ New Zealand is also relatively heavily indebted by international standards (see section 3).

Figure 2

Developed economies’ net international investment positions
(percent of domestic GDP, end-2006)



Source: IMF Balance of Payments Statistics and World Economic Outlook.

A small developed economy can maintain a positive net IIP indefinitely, but the same is not necessarily true for a negative position. The sustainability of a large stock of net international liabilities rests critically on the willingness of international investors to hold claims on the country concerned (Edwards, 2006). Traditional IIP analysis maps this sustainability condition to the ability of the country to generate sufficient trade surpluses to prevent net

⁴ To facilitate cross-country comparison, figure 2 is constructed using annual IMF balance of payments data, for which the latest available data point is end-2006 for most developed economies. According to national sources, Iceland’s net international liabilities had increased to approximately 160 percent of GDP by the second quarter of 2008.

international liabilities from growing indefinitely.⁵ A limitation of this analytical approach, however, is that it focuses primarily on the fundamental creditworthiness of the country, with little explicit consideration of how exogenous developments in the global financial system can affect international demand for the country's assets. A more granular analysis is required to uncover how global financial shocks will affect the external balance sheet, even where the sustainability of the net IIP is not in doubt.

Episodes of global financial instability are typically associated with reduced risk appetite, increased market volatility, widening credit spreads, and declining asset prices. One productive avenue for investigating the impact on a small developed economy such as New Zealand is to examine how the value of gross international assets and gross international liabilities will be affected. It is also worthwhile to consider the overall size (or leverage) of the external balance sheet.

International assets

Declining asset prices will have an immediate effect on the market value of international portfolio investment, with the potential downside generally greatest for equity assets. The impact on outward foreign direct investment (FDI) and other non-tradable instruments (such as loans and trade credit) will typically be less significant, since these assets are typically recorded on the external balance sheet at book value rather than being 'marked-to-market' in the same way as portfolio securities. However, recent experience has clearly demonstrated that global financial shocks can have a malign impact on the world economy, which will ultimately depress the 'true' value of outward FDI and may increase default risk on non-tradable debt assets.

Valuation effects can also stem from the sharp exchange rate adjustments that tend to accompany wider episodes of financial market turmoil. By definition, foreign exchange

reserves will not be denominated in the local currency, and the same is likely to be true of most other international assets (especially for smaller economies such as New Zealand). A depreciation of the local currency will therefore increase the recorded value of international assets, with an appreciation having the opposite effect.

International liabilities

The liabilities side of the external balance sheet is subject to similar valuation effects. Assuming that global market developments are broadly mirrored in local debt and equity markets, declining asset prices will erode the value of international portfolio liabilities. It is also possible that the value of inward FDI will be marked down if the outlook for the domestic economy deteriorates significantly.

Exchange rate depreciation will not generally affect the recorded value of international equity liabilities (denominated in local currency), but will increase the local-currency value of international debt liabilities issued in foreign currency.⁶ Adverse valuation effects of this kind can, however, be hedged by matching the currency composition of international assets and liabilities – an increase in the local-currency value of international debt liabilities would then be offset by a rise in the recorded value of international assets. An alternative hedging option is to use financial derivatives such as foreign exchange (FX) swaps, although this strategy may be less than fully effective if derivatives markets become impaired during episodes of wider financial instability (Woolford *et al.*, 2001).

As a general rule, equity liabilities (inward FDI and portfolio securities) are considered to be a relatively stable source of international capital, principally because they are not subject to the same rollover risks as debt liabilities.⁷ An

⁵ Edwards (2006) and, more formally, Obstfeld and Rogoff (1996) note that, in equilibrium, the net IIP-to-GDP ratio must stabilise at some level. Abstracting from valuation effects, this is achieved when net export earnings cover any shortfall between GDP growth and the average interest rate payable on net international liabilities.

⁶ Exchange rate depreciation and the impact on the local-currency value of foreign-currency denominated debt played a central role in a number of emerging market financial crises during the late 1990s and early part of the present decade.

⁷ It is, however, plausible that, in some circumstances, long-term debt liabilities may actually be more stable than portfolio equity liabilities (Woolford *et al.*, 2001). For example, sharp shifts in international investors' appetite for local equities could create significant volatility in the local market.

international debt liability will, by definition, mature on some defined date, at which time it must be refinanced through new debt issuance on terms dictated by conditions in global credit markets. If the latter deteriorate along the lines observed from the middle of 2007 onward, the cost of the new debt will increase, ultimately leading to tighter domestic credit conditions. The effect is likely to be particularly pronounced for countries, such as New Zealand, that are heavily reliant on international capital by virtue of a negative net IIP. For these countries, the global financial system is effectively the *marginal* source of debt and equity finance to the real economy. The impact will also be greater where the average maturity of international debt is relatively short, thus requiring the country to refinance maturing debt on a regular basis and ensuring that increases in the marginal cost of new international borrowing will be more quickly reflected in the average interest rate payable on all international liabilities. The pass-through to domestic credit conditions will also be faster.

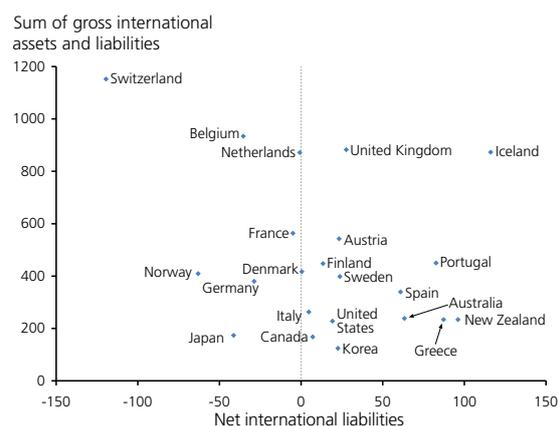
Heavy reliance on short-term international debt also entails substantial rollover risk. Although a remote possibility in normal circumstances, the recent financial market turmoil demonstrates that, in the event of an especially severe global financial shock, even a fundamentally creditworthy country may not be able to refinance maturing international debt at *any* price. The resulting net capital outflow would place downward pressure on the exchange rate and likely trigger significant economic disruption. It is critically important, therefore, to conduct rigorous analysis of the potential for rollover risks of this kind to crystallise and also develop contingency arrangements to cater for the effective closure of key international credit markets.

International financial leverage

The extent of a country's exposure to global financial shocks is also influenced by the absolute size of its external balance sheet, as measured by the sum of gross international assets and liabilities relative to domestic GDP. Figure 3 illustrates how a balanced or positive net IIP can disguise very large gross positions. In particular, a number of small developed economies (including Iceland, Belgium and the Netherlands) have accumulated sizeable stocks of international assets

funded in large part by international liabilities. These countries' external balance sheets can be described as highly leveraged.

Figure 3
Developed economies' net indebtedness and international financial leverage
(percent of domestic GDP, end-2006)



Note: Country sample as in figure 2, excluding extreme outliers Luxembourg and Ireland.

Source: IMF Balance of Payments Statistics and World Economic Outlook.

A more leveraged external balance sheet entails increased exposure to global financial shocks through at least two channels (Whitaker, 2006). First, fluctuations in the average yields on international assets and liabilities will have a larger impact on net investment income and the current account, possibly with implications for the sustainable level of the net IIP. The second channel concerns the valuation effects discussed previously – a larger balance sheet will mean that falling international and domestic asset prices and/or sharp exchange rate adjustments will have a greater impact on the value of international assets and liabilities (relative to GDP).

Summary of transmission channels

The preceding analysis identifies a variety of channels through which instability in the international financial system can affect the external balance sheet and the net IIP – falling asset valuations, higher cost and/or reduced availability of international credit, and the impact of movements in the exchange rate. An effective hedging strategy can, in principle, offset the effect of the third of these channels, and shifting the composition of international liabilities towards equity instruments and longer-term debt can help to minimise

the impact of the second channel. Moreover, the impact of declining asset prices on the net IIP is ambiguous, since both sides of the external balance sheet will be affected.

For most developed economies, however, lower international asset prices can be expected, *a priori*, to have a negative impact on the net IIP, since these countries' external balance sheets are typically "short debt, long equity" (Lane and Milesi-Ferretti, 2006).⁸ That is, international liabilities are biased towards debt instruments, while international assets are relatively more concentrated in equity investments, for which valuation effects are likely to be larger. As discussed in section 3, New Zealand is a notable exception to this pattern, along with a handful of other developed economies (including Australia and Spain) with large negative net IIPs.

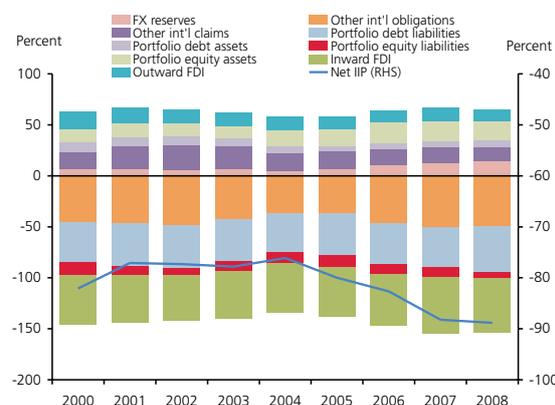
Most small developed economies have ample capacity to absorb a deterioration of their net IIP, even where the impact of a global financial shock is amplified by leverage and a "short debt, long equity" international investment strategy. Greater economic costs may arise, however, where a country is both heavily indebted and highly leveraged, particularly if a large proportion of international assets are held in relatively illiquid equity investments and most liabilities are in the form of short-term debt. From this starting point, even a relatively small negative shock to the asset side of the external balance sheet could increase net international liabilities beyond sustainable levels and present significant rollover risks. This logic is consistent with recent experience in Iceland, which has been severely affected by the dislocation in global credit markets over the past 18 months, culminating in a systemic banking and currency crisis in October this year.⁹

3 New Zealand's external balance sheet

Figure 2 shows that New Zealand is one of the most heavily indebted developed countries in the world and, consequently, heavily dependent on international capital, although the level of financial leverage is relatively low by developed economy standards (figure 3). This section takes a closer look at the scale and composition of the external balance sheet.

New Zealand's net international liabilities reached nearly 90 percent of GDP in the second quarter of 2008 – a record high.¹⁰ Large and persistent current account deficits have driven a trend increase in international indebtedness through most of the decade, with the net IIP declining by more than 15 percent of GDP since 2004 (figure 4). Unlike most other developed economies, New Zealand has net international liabilities in both equity and debt instruments (approximately 10 percent and 80 percent of GDP respectively).¹¹ A similar situation is evident in Australia.¹²

Figure 4
New Zealand's international assets and liabilities
(percent of GDP, June years)



Source: Statistics New Zealand.

⁸ As noted by, among others, Kubelec *et al.* (2007), this type of international investment strategy can be likened to the business models of hedge funds and venture capitalists.

⁹ See Svavarsson (2007) for an analysis of the composition of the Icelandic external balance sheet prior to the crisis, and IMF (2008) for a brief summary of how the crisis developed.

¹⁰ The data reported in this section are sourced from Statistics New Zealand (SNZ). Owing to different statistical conventions, there are small discrepancies between the SNZ data and IMF data used to construct figures 2 and 3 in section 2.

¹¹ A significant factor in New Zealand's net international equity liabilities is large-scale inward FDI from Australia, due largely to parent-subsidiary relationships, notably in the banking sector. Edwards (2006) reports that around 50 percent of inward FDI originates in Australia.

¹² See Lane and Milesi-Ferretti (2006).

The composition of New Zealand's external balance has remained relatively static through time, although the share of equity securities and foreign exchange reserves in total international assets has increased slightly over recent years. On the liabilities side, inward FDI consistently accounts for roughly one-third of the gross stock of international capital in New Zealand. The remaining two-thirds comprises mostly debt instruments, encompassing a mixture of securities and non-tradable credit instruments (including loans and trade credits) captured in the 'other international obligations' category. Offshore investors' holdings of New Zealand equity securities are relatively limited and currently account for less than five percent of gross international liabilities.

Another relative constant is New Zealand's financial leverage. The sum of gross international assets and liabilities has fluctuated between 200 and 220 percent of GDP since 2000 – low by international standards (figure 3). Despite being heavily indebted, New Zealand is not, therefore, exposed to global financial shocks to the same degree as Iceland and some other highly leveraged developed economies. Nevertheless, the relatively high debt-to-equity ratio on the liabilities side of the external balance sheet implies a significant potential vulnerability to adverse developments in international credit markets.

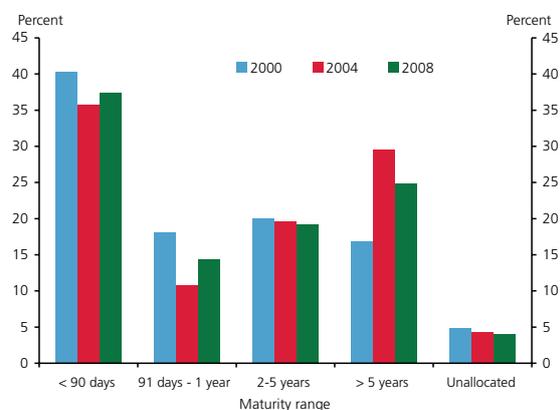
The extent of this vulnerability is determined by the composition, maturity profile and currency denomination of New Zealand's gross international debt. As discussed in section 4, the major New Zealand banks obtain a material amount of (non-tradable) debt funding directly from their Australian parents. These liabilities will generally be counted as 'other international obligations' on New Zealand's external balance sheet and can be considered a relatively stable form of international capital.¹³ However, the banks, the government and some New Zealand businesses also borrow externally by issuing debt securities in offshore credit markets (currently around 45 percent of domestic GDP) and through direct loans from international banks and other lenders. Both forms of borrowing are subject to the type

of rollover risks described in section 2, especially where the maturity profile of the debt is relatively short.

Given available data, it is not possible to examine the maturity structure of parental and non-parental debt separately. Across New Zealand's gross international debt as a whole, however, around 40 percent is scheduled to mature within three months, with substantially more than half due for renewal within a year (figure 5). These ratios have remained relatively static since 2000, although the fraction of international debt classified as long term (maturity more than five years) has fluctuated more significantly, reaching a high of 30 percent in 2004, before falling back to around 25 percent currently.

Around half of New Zealand's international debt liabilities are denominated in foreign currency (mostly US dollars), although this ratio has declined over recent years. The total stock of foreign-currency debt outstanding amounted to nearly 60 percent of GDP in the second quarter of 2008, with the banking sector accounting for a sizable fraction (see section 4). Most of the associated exchange rate risk is hedged using financial derivatives. The annual hedging survey conducted by Statistics New Zealand indicates that, in March 2008, more than 80 percent of gross foreign-currency debt was hedged using derivatives, with a further 11 percent hedged 'naturally' against assets or other receipts.

Figure 5
Maturity profile of New Zealand's gross international debt liabilities
(June years)



Source: Statistics New Zealand.

¹³ If, however, the debt is interpreted as 'permanent', it will be counted as inward FDI (that is, equity rather than debt). Examples of permanent debt (as defined by SNZ) include subordinated debt that is treated as eligible capital for prudential purposes.

4 Role of the domestic banking system in intermediating capital flows

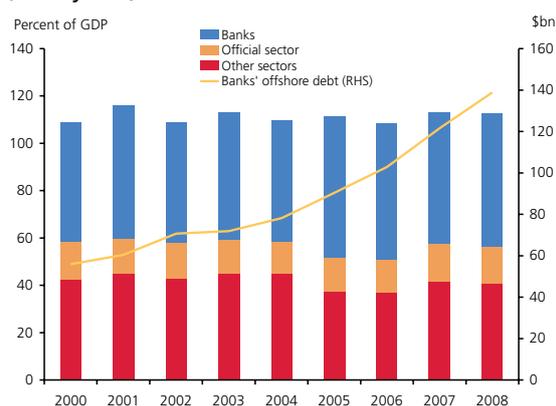
Analysis of the scale and composition of the external balance sheet can provide useful insights into the channels through which global financial shocks can affect a small developed economy such as New Zealand. However, it is also crucial to examine *how* international capital flows into and out of the country. Given New Zealand's negative IIP, a key factor is the distribution of gross international liabilities across sectors.

One way in which international capital can enter New Zealand is through offshore investors' direct purchases of domestic assets. As noted in section 3, inward FDI covers approximately one-third of New Zealand's external financing requirements. However, offshore investors' willingness and ability to purchase portfolio assets in New Zealand is restricted by the relatively small size of local corporate debt and equity markets. Moreover, fiscal surpluses over recent years have resulted in gross government debt declining to less than 20 percent of GDP – relatively low by international standards.¹⁴

Alternatively, capital inflows can stem from New Zealand borrowers (including the government) issuing debt in international credit markets. The major banks account for the majority of this issuance, principally because relatively few New Zealand firms have sufficient scale and 'name recognition' to access offshore markets directly on affordable terms. Overall, the banking sector currently accounts for approximately 60 percent of New Zealand's gross international debt liabilities, up from around 50 percent at the start of the decade (figure 6).¹⁵ In nominal terms, the banks have borrowed nearly \$140 billion (90 percent of annual GDP) from international investors.

This pattern is also evident in the New Zealand banks' funding profiles. Retail deposits account for less than half of total funding, with the remainder obtained from wholesale sources (RBNZ, 2008a). Although the banks are able to obtain some wholesale funding in local debt markets, by far the larger share (around 75 percent) is obtained from offshore – a natural corollary of the negative IIP and limited scope for capital to flow into New Zealand via alternative means. Moreover, the maturity profile of the banks' offshore funding is relatively short, consistent with the aggregate picture shown in figure 5, with more than 40 percent typically due to mature within 90 days.

Figure 6
Sectoral distribution of New Zealand's gross international debt
(June years)



Note: Official sector includes general government plus monetary authorities (the Reserve Bank).
Source: Statistics New Zealand.

The four largest New Zealand banks obtain offshore (debt) funding in two ways. First, as noted in section 3, they receive funds directly from their Australian parents, typically in the form of a 'loan' between the parent institution and its New Zealand subsidiary.¹⁶ Second, the banks issue substantial quantities of debt securities in international credit markets. Although these securities could, in principle, be denominated in New Zealand dollars (NZD), in practice the banks have been able to achieve a lower overall cost of

¹⁴ A substantial fraction (typically around three-quarters) of New Zealand sovereign debt is held by offshore investors.

¹⁵ Although statistical compilation methodologies differ somewhat, to a first approximation at least, the international liabilities captured in figure 6 correspond to the 'portfolio debt liabilities' and 'other international obligations' categories in figure 4.

¹⁶ The Australian Prudential Regulation Authority (APRA) places limits on the scale of these flows in order to prevent a detrimental impact on the financial condition of the parent institution. For similar reasons, the Reserve Bank limits 'connected lending' from a New Zealand bank to its Australian parent.

funding by issuing in US dollars or euros and subsequently swapping the proceeds into NZD. The counterparty to the swap transaction is typically a highly-rated supranational institution that has been able to use its strong credit standing to issue NZD-denominated bonds in, for example, the Japanese retail market (Drage *et al.*, 2005). The swap also ensures that the exchange rate risk associated with the banks' foreign-currency borrowing is hedged.

Parental funding flows should be relatively stable and insulated from market developments, at least provided there is no material deterioration in the aggregate financial position of the Australian banking system. By contrast, recent events underscore that the cost and availability of offshore funding obtained via debt issuance can be materially affected by global financial shocks.

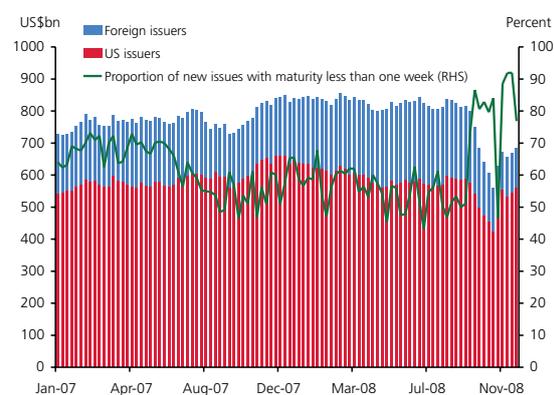
Impact of the financial crisis on New Zealand banks' funding

As noted previously, the generalised reassessment of risk from the middle of 2007 onward precipitated a sharp rise in credit spreads in international debt markets. The major New Zealand banks' marginal cost of offshore funding increased accordingly, at least relative to the level of the official cash rate (OCR) set by the Reserve Bank.¹⁷ The average cost also increased relatively quickly as the banks were required to roll over substantial amounts of maturing debt on less favourable terms.

The New Zealand banks also encountered, from time to time, quantity constraints on the amount of debt they could issue in international credit markets, particularly following the failure of US investment bank Lehman Brothers in September 2008. As described in the November 2008 edition of the Reserve Bank's *Financial Stability Report* (RBNZ, 2008a), this event triggered a sharp contraction in the US commercial paper (CP) market as investors shifted into 'safe-haven' assets, principally government debt, amid concern over the

viability of other major financial institutions in the US and elsewhere. Financial issuers' CP outstanding declined more than 25 percent in the space of six weeks and new issuance became increasingly concentrated in short maturities (figure 7). Some other wholesale funding markets experienced similar levels of dysfunction.

Figure 7
US commercial paper outstanding and the maturity profile of new issuance (financial issuers only)



Source: Federal Reserve, Bloomberg and Reserve Bank calculations

Note: Weekly data, to end-November 2008.

The CP market is a key source of short-term funding for many US and international financial institutions, including the major New Zealand banks. The near-seizure of this market during October and November 2008 underscores the rollover risks inherent in heavy reliance on short-term international debt. For a period of several weeks, the banks' ability to issue CP was limited to very short maturities, meaning that rollover requirements increased steadily as longer-term debt issued prior to September 2008 started to mature. In this environment, a further deterioration in market conditions (possibly even precluding all new issuance) has the potential to create balance sheet liquidity pressures very quickly, emphasising the importance of identifying alternative funding sources wherever possible.

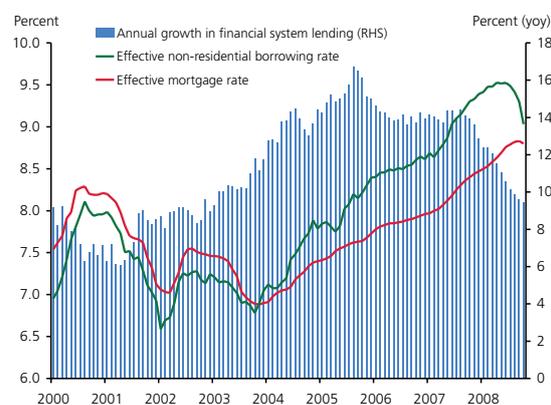
Higher costs and reduced availability of offshore funding naturally spurred increased competition among the New Zealand banks for domestic wholesale and retail funding. Aggressive pricing of retail products (together with investor concerns over alternative investments) helped the local banks to attract larger volumes of retail deposits through most of

¹⁷ Firm data on the New Zealand banks' actual cost of offshore funding are not available, but recent and expected future reductions in the OCR are likely to have more than offset the impact of widening international credit spreads. For example, Reserve Bank of Australia (2008) reports that Australian bank bond yields fell over 100 basis points between June and September 2008.

2008. At the same time, increased demand for domestic wholesale funding placed upward pressure on New Zealand bank bill yields. From a benchmark level of around 20 basis points prior to the onset of the financial market turmoil, the spread between 90-day bank bill yields and the expected level of the OCR climbed to more than 100 basis points during October 2008.

Overall, therefore, the ongoing disruption in global financial markets presented significant funding challenges for the New Zealand banks. The banks responded by tightening loan criteria (for example, by imposing a lower maximum loan-to-value ratio on new residential mortgages) and increasing lending margins, particularly for riskier borrowers. Despite substantial reductions in the OCR during the second half of 2008, average interest rates payable by households and businesses in New Zealand declined relatively slowly, while annual growth in financial system lending slowed from more than 16 percent in the middle of 2005 to less than 10 percent by October 2008 (figure 8).¹⁸

Figure 8
Effective interest rates and domestic credit growth in New Zealand



Note: Effective non-residential lending rate is estimated from data on average economy-wide interest rates.
Source: RBNZ.

5 Policy responses and future challenges

The New Zealand authorities responded to the impact of the global financial crisis by adopting a number of significant policy measures during 2008. The Reserve Bank, for example, implemented a series of changes to its domestic market operations designed to ensure the New Zealand banks have adequate access to central bank liquidity if required, including the introduction of a Term Auction Facility (TAF) and expanding the universe of eligible collateral to encompass residential mortgage-backed securities (RMBS). The article by Ian Nield in this edition of the *Bulletin* explains the new arrangements and the rationale behind them in greater detail (Nield, 2008). In addition, the Minister of Finance announced in early November that the government would guarantee the (new) wholesale debt of New Zealand's major banks and other investment-grade financial institutions. The guarantee facility aims to improve the banks' access to offshore debt markets (on affordable terms) and complements a similar arrangement guaranteeing retail deposits in New Zealand.¹⁹

These measures are primarily aimed at mitigating the near-term impact of adverse developments in the international financial system on New Zealand. Looking further ahead, the experience of the past 18 months highlights a number of important analytical and policy challenges.

Perhaps the most immediate 'lesson' is that analysis of external balance sheets should be enhanced, moving beyond the traditional approach of focussing on the sustainability of the *net* IIP. Regular examination of the scale and composition of *gross* international assets and liabilities (along the lines of this article) is required to assess how developments in the international financial system may affect the domestic economy.²⁰ For most small economies, including New Zealand, this will typically overlap assessments of the extent to which the local banking system is able to absorb a sudden deterioration in global financial market conditions and the likely degree of pass-through to domestic credit conditions

¹⁸ A further factor in the relatively slow pass-through of cuts in the OCR to average interest rates, particularly in the household sector, is the relatively high incidence of fixed-rate borrowing in New Zealand.

¹⁹ Further details on the guarantee schemes can be found in The Treasury (2008a, 2008b).

²⁰ Along similar lines, King (2006) advocates placing external balance sheet analysis at the centre of IMF surveillance activities.

and the real economy. The Reserve Bank conducts this type of analysis on an ongoing basis and reports key findings in the *Financial Stability Report* every six months.

From a policy perspective, one important issue stemming from the global financial crisis concerns the suitability of relying heavily on the banking sector to intermediate international capital inflows into New Zealand. The current situation offers both advantages and disadvantages. Managing financial risks is a core banking activity, suggesting that the major New Zealand banks should have a comparative advantage over other potential borrowers in understanding and, where possible, mitigating the risks associated with international debt issuance. The banks also possess strong credit ratings and have direct access to Reserve Bank liquidity facilities. At the same time, however, relying on a relatively small number of institutions to intermediate a large fraction of aggregate capital flows entails a degree of concentration risk and underscores the importance of proper risk management.

One way of reducing dependence on the banking system is to promote the development of larger and more liquid capital markets in New Zealand. Ongoing work by the inter-agency Capital Market Development Task Force established in July 2008 is expected to deliver some progress in this regard.²¹ The Reserve Bank supports these initiatives. Over time, the establishment of, for example, a more extensive corporate debt market should provide an additional channel for international capital to flow into the country. The eventual development of a secondary market in RMBS originated in New Zealand would achieve a similar outcome. More immediately, fresh issuance of Reserve Bank bills (as part of wider changes to domestic market operations) should provide offshore investors with increased opportunity to purchase portfolio assets in New Zealand.

Nevertheless, the banking sector is likely to remain the dominant intermediation channel for the foreseeable future. There is consequently an important role for prudential supervision in ensuring that the New Zealand banks manage the liquidity risk associated with offshore borrowing in a suitably prudent manner. The Reserve Bank issued in

October 2008 a consultation paper setting out proposals for enhancing liquidity regulation in New Zealand (RBNZ, 2008b), with the principal aim of encouraging the banks to diversify the sources and lengthen the maturity profile of their wholesale funding once global market conditions begin to normalise. As recent events have demonstrated, the terms on which the New Zealand banks are able to obtain offshore funding can have important macroeconomic effects; therefore calibration of the proposed policy will need to pay close attention to the impact on the real economy.

6 Conclusion

New Zealand, along with many other small developed economies, has been materially affected by the disruption in global financial markets over the past 18 months. This article has explored the transmission channels through the lens of the scale and composition of the international assets and liabilities that comprise the external balance sheet. As well as being heavily indebted in net terms, New Zealand's gross international liabilities comprise mostly debt (rather than equity), a large proportion of which is issued by the banking sector at relatively short maturities. Difficult conditions in offshore credit markets have consequently placed strain on the banks' funding and liquidity, ultimately leading to tighter domestic credit conditions.

The Reserve Bank and the Government have implemented a range of policy measures intended to ensure that global developments do not undermine economic and financial stability in New Zealand. Over the longer term, there are important questions to address regarding the role of the banking system in intermediating capital flows and the macroeconomic implications of how these institutions manage funding and liquidity risks. The Reserve Bank is actively exploring these issues.

²¹ The Task Force published an interim report in November 2008 (Capital Market Development Task Force, 2008).

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The Reserve Bank's payment system oversight role applied to settlement risk in the retail payment system

Phoebe Chan and Stuart Irvine¹

The Reserve Bank oversees the payment system for the purpose of promoting the maintenance of a sound and efficient financial system. Consistent with the Reserve Bank's relatively light-handed payment system oversight powers, the Reserve Bank's approach is to be clear about its objectives and to encourage industry to develop solutions towards these objectives. However, as other central banks have found, industry-led solutions cannot always be delivered, or delivered in a timely manner. Consequently, the Reserve Bank is stepping up engagement with industry to expedite projects that help meet our policy objectives. A current payment system oversight issue for the Reserve Bank is settlement risk in the retail payment system. Empirical analysis shows that routing high-value transactions through the retail system significantly increases end-of-day inter-bank exposures. This article assesses this risk and possible ways to address settlement risk in the retail payment system.

1 Introduction

Payment systems are an essential mechanism supporting the effectiveness of the financial system. The oversight of these systems is therefore a key part of the Reserve Bank's efforts to promote financial stability.

The conceptual framework for the Reserve Bank's payment system oversight has been discussed elsewhere.² The main aim of this article is to illustrate the Reserve Bank's payment system oversight role by highlighting a current oversight issue of interest: settlement risk originating in the retail payment system.

The article proceeds as follows. Section 1 provides an introduction to payments and payment systems, and notes the distinction between 'retail' and 'large-value' payments. Section 2 describes the Reserve Bank's payment oversight role and includes a box that describes the oversight roles of other selected central banks and how these roles have changed over time. Section 3 describes settlement risk originating in the retail payment system. Section 4 links the issue of settlement risk to the Reserve Bank's objectives, and describes how the Reserve Bank's payment oversight approach has been applied to this issue. Section 5 summarises.

2 Payments and payment systems

The payment system is the means by which individuals and organisations make and receive payments for goods and services. Payments can be made by handing over cash (coins or notes) or by shifting funds from the account of one person or business to another. The latter involves a shift of funds from one financial institution to another when the transacting parties use payment accounts held at different financial institutions.

Payments literature generally recognises a distinction between retail payments and large-value payments. There is no clear dividing line in dollar value between these two types of payments. The typical features of retail and large-value payments that are of interest can be distinguished as set out in table 1 overleaf.³

A country's payment system will comprise a number of elements, including payment instruments (such as cash, EFTPOS, credit card, cheques, direct debits and credits, and automatic payments), payment instructions or messages, contractual arrangements, and physical and electronic infrastructure for exchanging messages and for interchanging and settling payment obligations.

¹ The authors are grateful to the following Reserve Bank colleagues for their valuable comments: Willy Chetwin, Tim Ng, Andrew Rodgers and Ian Woolford.

² See Stinson, A and M Wolyncewicz (2003), and Reserve Bank of New Zealand (2006b), p35.

³ Table One draws on Committee on Payment and Settlement Systems (CPSS) (2001a), p28; CPSS (2003), p6; and CPSS (2005), p5.

Table 1
Typical features of retail and large-value payments

Retail payments	Large-value payments
<p>Relatively small amounts.</p> <p>Very large and diverse number of participants, and large number of transactions per day.</p> <p>Wide range of payment instruments (e.g. cash, credit/debit card, internet-based).</p> <p>Payments not generally urgent.</p> <p>Includes payments made by individuals and small businesses.</p> <p>Extensive use of private sector payment system infrastructure more likely.</p>	<p>Large amounts.</p> <p>Smaller number of participants with greater financial sophistication, and fewer transactions per day.</p> <p>In practice, a narrower range of payment instruments.</p> <p>Payments may be urgent.</p> <p>Typically payments made by government departments, large corporations or between financial institutions.</p> <p>In practice, more likely to make use of central bank payment system infrastructure.</p>

Many payment systems are characterised as either retail or large-value payment systems. However, not all retail payments are directed through retail payment systems, and not all large payments are directed through large-value payment systems.

The retail and large-value payment systems within any country are typically connected and do not operate in isolation from one another. For instance, payments made from one individual (payer) to another individual (payee) initiated through the retail payment system often ultimately result in a transfer of funds from the financial institution of the payer to the financial institution of the payee via a large-value payment system.

3 The role of the Reserve Bank

The Reserve Bank has multiple roles in the payment system, including as supplier of New Zealand notes and coins and as provider and operator of New Zealand's large-value payment system, the Exchange Settlement Account System (ESAS).⁴ The Reserve Bank may also 'designate' payment systems. Under section 156M of the Act the Reserve Bank can recommend a payment system be designated to provide greater legal certainty to payments executed through it.⁵

⁴ For more complete descriptions of the Reserve Bank's roles in the payment system see: Bollard (2005) and Reserve Bank of New Zealand (2008).

⁵ In September 2008 the Settlement Systems, Futures and Emissions Units Bill was introduced into Parliament. Among the changes made by this Bill are amendments to expand Part 5C of the Act to allow for the designation of settlement systems in addition to designation of payment systems. If this Bill becomes law, the Reserve Bank and the

Finally, another role, and the focus of this article, is the role of payment system oversight.

The Reserve Bank conducts payment system oversight for the purpose of promoting the maintenance of a sound and efficient financial system. This purpose is set out in section 156B of the Reserve Bank of New Zealand Act 1989 (the Act). The Act provides for the Reserve Bank to oversee the payment system by (at its discretion):

- Requiring the supply of information or data relating to a payment system (section 156C).
- Requiring the independent review of information (section 156E).
- Publishing or disclosing any information or data supplied in accordance with section 156C, subject to certain conditions (section 156G).

The provisions of the Act set the high-level framework for the Reserve Bank's payment system oversight objectives and activities. The Reserve Bank has articulated how this broad framework translates into more specific objectives in the document 'Statement of principles: payment system oversight'.⁶ These specific objectives are closely aligned to the recognised set of international standards for payment systems known as the Core Principles for Systemically Important Payment System (Core Principles). The Core

Securities Commission will become joint regulators of designated systems other than those classified as "pure payment systems", which will be regulated by the Reserve Bank only.

⁶ The 'Statement of principles: payment system oversight' is available on the Reserve Bank website at <http://www.rbnz.govt.nz/finstab/payment/1911038.html>.

Principles were developed by the Committee on Payment and Settlement Systems (CPSS).⁷

The 'Statement of Principles' also sets out the Reserve Bank's approach to payment system oversight. The document notes that the Reserve Bank carries out payment system oversight by:

- engaging with the industry on specific issues from time to time;
- regularly engaging with the industry more generally;
- collecting information and data relating to the payment system from time to time; and
- regularly publishing its analysis of payment system issues in the *Financial Stability Report*.

The Reserve Bank's approach to oversight is light-handed, consistent with the nature of its payment system oversight powers. The Reserve Bank's current oversight approach is to be clear about our objectives, and to be generally open to ideas for achieving these objectives with a preference for industry to lead the development of solutions. However, as other central banks have found, industry is not always able to develop solutions consistent with payment system oversight objectives within reasonable timeframes. Potential reasons for this may include:

- The commercial interests of the industry as a whole or of some particular entities may not align with the public-interest objectives of the central bank.⁸
- Individual industry players may be forced to act individually, while if they were willing and able to act collectively they would be better off.⁹

In New Zealand, the payments industry is currently progressing two projects that have important implications for the soundness and efficiency of the retail payment system.¹⁰ Recently the Governor of the Reserve Bank of New Zealand

wrote to bank chief executives to note concern about the slow speed at which these projects were progressing. The letter noted that in light of this concern, and to help expedite any future projects to meet its policy objectives, the Reserve Bank intended to take a more active interest in payment system matters going forward.

Internationally, payment system oversight powers vary among central banks, and the powers of some central banks have evolved over time in response to circumstances. Central bank powers can include, for example, authority to collect information, licensing regimes, and authority to approve or impose payment system rules. The oversight powers of the Reserve Bank are towards the light end of the spectrum and have not changed since their inception in 2003. Box 1 describes the payment system oversight powers of the Reserve Bank of Australia and those of the Bank of England, and provides the background to recent or planned changes to these powers.

To some extent the more active interest shown by the Reserve Bank parallels the responses seen in other jurisdictions when there have been difficulties achieving payment system oversight objectives. However, in the case of the Reserve Bank, the response does not entail a change in regulatory objectives or powers, but rather an adjustment to its approach within the existing legislative framework.

⁷ CPSS (2001b).

⁸ This point is noted in Lowe (2006).

⁹ This point is noted in Lowe (2008).

¹⁰ The Reserve Bank is actively engaged with the NZBA on two NZBA-led projects: the Failure to Settle project and the Access and Governance project. Several recent editions of the Reserve Bank's *Financial Stability Report* discuss these projects. The Failure to Settle project is discussed further on in this article.

Box 1

Payment system oversight powers – selected international comparisons

Australia

The Payment Systems Board at the Reserve Bank of Australia is an example of a central bank with relatively extensive payment system oversight powers. These powers include the ability to: designate a particular payment system as being subject to its regulation; determine rules of participation in that system; set standards for safety and efficiency of that system; and direct participants to comply with a standard or access regime. It can also arbitrate on disputes over matters relating to access, financial safety, competitiveness and systemic risk, if the parties concerned wish.

The establishment of the Payment Systems Board in 1998 stemmed from the Financial System Inquiry, which recommended changes to the payment system regulatory arrangements within Australia to resolve certain issues in the payment system industry.¹¹ Although the Payment System Board has extensive powers, its approach has been to work cooperatively with industry, viewing regulation as a last resort. As noted by the RBA, in a number of cases voluntary reform has proved possible, while in others it has not, and the RBA has used its regulatory powers in response.¹²

United Kingdom

The Bank of England is an example of a central bank that undertakes payment system oversight on a non-statutory basis. However, the UK Government plans to give the Bank of England various powers with respect to 'recognised' inter-bank payment systems including the power to:

- Publish principles to which operators of payment systems must have regard.

- Publish codes of practice.
- Require a payment system to establish rules or change its rules;
- Give directions to the operator of a payment system.
- Appoint a person to inspect the operation of a payment system.
- Require the operator of a payment system to appoint an expert to report on the operation of the system.
- Publish details of a payment system compliance failure.
- Impose penalties.
- Require a payment system to cease certain activities (or close the payment system).
- Disqualify a person from managing a payment system.¹³

The powers planned for the Bank of England stem from a broad review of Financial Stability and Depositor Protection led by the UK Treasury.¹⁴ Although the proposed powers are extensive, they have been characterised as 'graduated' powers, to be used only after the Bank of England has requested change through informal means akin to its current approach. However, the motivations for the granting of the powers were in part recognition of the difficulties the UK authorities have meeting payment and related policy objectives by relying on moral suasion.¹⁵

¹¹ More information on the Financial System Inquiry can be found at <http://fsi.treasury.gov.au/content/default.asp>, accessed 19 November 2008.

¹² Reserve Bank of Australia (2007), p4.

¹³ These powers are contained in the 'Banking Bill' which is currently before Parliament (see <http://services.parliament.uk/bills/>, accessed 24 November 2008).

¹⁴ Information about the review is on the UK Treasury website: http://www.hm-treasury.gov.uk/financial_stability_depositor.htm, accessed 24 November 2008.

¹⁵ Bank of England, HM Treasury and Financial Services Authority (2008).

Box 2

The operation of New Zealand's retail payment system

The processing of non-cash retail payments in the current New Zealand retail payment system follows a daily cycle as set out below and illustrated in Figure 1.

Step 1

Payment instruction is issued

Non-cash payments are initiated when a bank's customer issues a payment instruction to its bank via a payment instrument.

The customer initiating the transaction may be the payer or the payee. For example, in the case of the purchase of goods from a shop, the payment instruction would be issued by the payer; while in the case of a direct debit arrangement for a telephone or power bill, the payment instruction would be initiated by the payee.

If the accounts of the payer and the payee are with the same bank, then ordinarily that bank will simply debit the account of the payer and credit the account of the payee. If the accounts of the payer and the payee are with different banks then the remaining steps below apply.

Step 2

Banks send payment instructions to Interchange and Settlement Limited (anytime between 'start of day' at 2:00am and 'end of day' at 12:15am).

Interchange and Settlement Limited (ISL) is the main retail payment switch in New Zealand. Its function is to determine the net bilateral positions of each of its users

(its users are banks).¹⁶ In other words, it determines who owes what to whom. For example, if Bank A's customers wished to pay Bank B's customers \$100 and Bank B's customers wished to pay Bank A's customer \$60, then the next bilateral position between these two banks would be that Bank A owes Bank B \$40.

Banks send the customer payment instructions they receive to Interchange and Settlement Limited (ISL) in batches during the business day.

Some payment instructions (those relating to debit and credit card transactions) are routed through other switches prior to being sent to ISL (not shown in Figure 1). These instructions are sent to ISL by the other switches' banks already in the form of net bilateral positions rather than as individual payment instructions. In order to calculate the net bilateral positions from all payment instructions, the information from other switches is combined with individual payment instructions sent directly from banks to ISL.

Step 3

Net bilateral positions are determined and banks are advised of their obligations (inter-bank debt created by 12:15am).

ISL calculates the net bilateral positions of each of its users (banks) against all other users as a result of each day's transactions. ISL then sends each bank all payment instructions affecting each of its customers (i.e. for each transaction, the account affected and the debit or credit that applies), and information about that bank's inter-bank payment obligations arising from the calculations of net bilateral positions.

At this point a bank may credit and debit its customer accounts according to the day's transactions.

Step 4:

Transfer of funds between banks (between 7:30am and 8:30am).

The final step is the transfer of funds between ISL users in line with the net bilateral positions calculated by ISL. This takes place within the Reserve Bank's Exchange Settlement

¹⁶ At present, all of the direct participants in New Zealand's retail payment system are registered banks, although not all registered banks are direct participants. Other financial institutions may gain indirect access to ISL by holding an account with an ISL user. Suppose for example that Bank X is not an ISL user but holds an account at Bank A that is an ISL user. If a customer of Bank X sends a payment instruction to Bank X, unless it relates to a transfer of deposits from one account to another within Bank X, this instruction will be sent to Bank A. The payment instruction will then be treated in a similar way to an instruction from any other customer of Bank A.

Account System (ESAS). Each ISL user holds an ESAS account with the Reserve Bank. These accounts are called settlement accounts.

ISL users send payment instructions to ESAS at the end of each banking day to settle their payment obligations with other ISL users. These instructions are based on the information received by the ISL users regarding their net bilateral obligations. Settlement within ESAS occurs on a bilateral net basis. That is, one net payment between each pair of ISL users takes place in accordance with the net bilateral positions calculated in ISL. For instance, if Bank

A owed Bank B \$40, then \$40 would transfer from the settlement account of Bank A to the settlement account of Bank B.

The payment instructions from ISL users to ESAS are sent via the Austraclear system. Austraclear is principally a Securities Settlement System for wholesale trades in securities such as shares and bonds. Payment instructions in respect of Austraclear trades are sent from Austraclear to ESAS and are executed once authorised by the paying bank. The same process is used to make inter-bank payments in respect of ISL net bilateral positions.

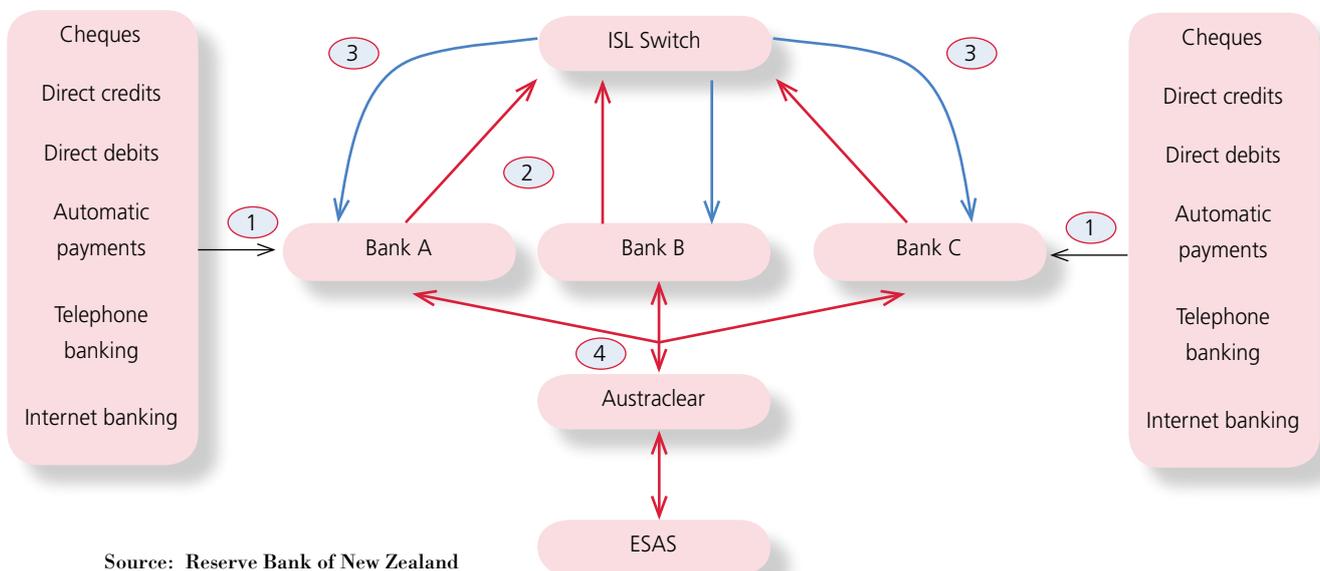
4 Settlement risk originating in the retail payment system

The remainder of this article illustrates the Reserve Bank's payment system oversight role by considering the issue of settlement risk originating in the New Zealand retail payment system. The aim of the discussion is to link these issues to the Reserve Bank's objectives, and to describe how the Reserve Bank's payment oversight approach has been applied to this issue. The discussion assumes some knowledge of the New Zealand retail payment system. Readers are encouraged to read box 2, which provides an overview of how the retail payment system works.

The nature of settlement risk

Settlement risk is the risk that one participant in a payment system will not meet its payment obligations to another party as expected. It may comprise liquidity risk (obligations are not met in full when due) or credit risk (obligations are not met in full when due or at any time thereafter). Settlement risk is relevant to both retail and large-value payment systems. Management of settlement risk in the payment system is critical for the soundness of the financial system and is the motivation for several of the Core Principles.

Figure 1
Transactions passing through the ISL Switch



Source: Reserve Bank of New Zealand

In recent times there has been a heightened awareness of settlement risk, especially in foreign exchange transactions. This has been particularly the case earlier in 2008 with problems at Bear Stearns and more recently with Lehman Brothers. The risk of settlement failure of FX transactions undertaken by counterparties with these and other institutions was significantly reduced by the use of CLS Bank, a system that eliminates credit risk in the settlement of foreign exchange transactions. In New Zealand, the Crown's foreign exchange settlement risk has been reduced by the Reserve Bank itself joining CLS for its foreign exchange settlement (see Nield, 2008).

One of the features of the retail payment system is the settlement risk (or exposure) faced by ISL users when they are owed money on the basis of their net bilateral positions with other ISL users. Settlement of net bilateral positions relating to a particular day's transactions ordinarily takes place across ESAS on the morning of the following business day. There is normally at least seven hours from the time that ISL users incur settlement debt based on their net bilateral positions and when settlement of these positions takes place. During this period, ISL users that are owed money by other users face the risk that they will not receive full payment when it is due (liquidity risk) or at all (credit risk).

Settlement risk can in turn create a risk that ISL users that are reliant on receiving money owed from other users to meet their obligations will not be able to meet those obligations. This could occur, for example, if an ISL user credits the account of a customer on the basis of payment instructions that have still to be processed across ESAS. In this example, the nature of the settlement risk would depend on the legal obligation of the ISL user to honour the amount it has credited in its customer's account ahead of settlement. The legal obligation may vary among different account types and among different ISL users.

The contagion effect that occurs when the failure of one payment system participant to meet its obligations results in the failure of another participant to meet its obligations can spread rapidly, resulting in liquidity or credit problems for a number of participants and in turn threaten the stability of the financial system.

Settlement risk in the New Zealand retail payment system is an example of that which typically arises in a 'deferred net settlement' (DNS) system. A DNS system can be described as a system in which payment orders are accumulated throughout the day, with settlement of the net amount taking place typically once, at the end of the day.¹⁷

Internationally, high-value payments are increasingly being settled on a 'Real Time Gross Settlement' (RTGS) basis. In this context 'gross' means payments are processed transaction by transaction rather than on the basis of net positions, and 'real time' means settlement occurs on receipt of payment messages (providing the payer's balance is sufficient) rather than deferring until the end of the day as a matter of course. In RTGS, if the payer's balance is insufficient, the payment is typically queued until funds are sufficient to settle, at which point settlement occurs. ESAS is a high-value payment system that operates on a RTGS basis.

The alternatives of DNS and RTGS represent a trade-off between risks and costs. An RTGS system is safer in terms of settlement risk, but is more costly for participants because of the need to have funds available throughout the day to settle transactions on a gross basis. In some jurisdictions the trade-off between risks and costs is becoming more favourable over time as innovations providing liquidity saving features are incorporated into RTGS systems.¹⁸ For example, there are liquidity-saving features built into ESAS including the 'auto-offset' functionality¹⁹ and an operation called 'freeze frame'.²⁰

¹⁷ Committee on Payment and Settlement Systems (2005), p1.

¹⁸ Committee on Payment and Settlement Systems (2005) provides fuller discussion of liquidity savings features and of the comparison between DNS and RTGS systems.

¹⁹ ESAS account holders have access to auto-offset functionality, which is the process of searching the payment queue for eligible settlement requests that, if settled simultaneously, would allow an initiating settlement request to settle. This test is applied if an account holder has insufficient funds to settle an authorised payment instruction.

²⁰ The ESAS system also has an operation called Freeze Frame which is run every hour and will settle all settlement requests within the ESAS system if it means that no accounts will go below its minimum allowed balance. If one account goes below its minimum allowed balance then no settlement requests will be settled.

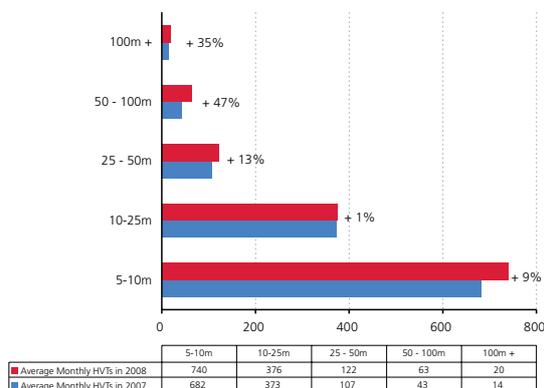
Intuitively, the size of a payment should be a key factor determining the net benefit of settling it on a RTGS rather than a DNS basis. In New Zealand, large payments from one bank to another processed through ISL that are not offset by payments proceeding in the opposite direction potentially result in significant end-of-day net bilateral exposures and thus increase settlement risk. Moreover, this risk could increase quickly and significantly during a period of stress, if high-value transactions that are usually settled in the RTGS system are diverted to ISL due to liquidity constraints.

Evidence of the impact of high-value transactions in the retail payment system

Data from New Zealand's retail payment system allow an examination of the impact of high value transactions (HVTs), defined as those of \$1 million or more, on end-of-day exposures.²¹ It also allows observation of retail payment flows during the recent period of liquidity pressure.

The data show that the level of net bilateral exposure increases significantly when some transactions are of very high value (eg, over \$25 million). Transactions of this value are not uncommon in ISL. Throughout 2007, there was an average of 160 transactions of \$25 million or more each month, and this increased to an average of 200 in the first

Figure 2
Growth in HVT's between 2007-2008



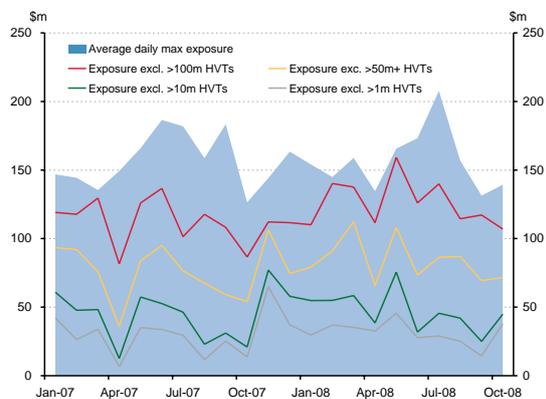
Source: New Zealand Bankers' Association

ten months of 2008 (see the breakdown of growth in various HVTs categories in Figure 2). To provide context, the average transaction settled through ESAS (which is designed and used mainly for large-value transactions), was about \$5.5 million in the year to June 2008.

Figure 3 below shows that from January 2007 to October 2008 the average, over a calendar month, of the largest daily bilateral net exposures between any two banks:

- ranged between \$130 to \$210 million;
- would have declined by about 25 percent if exceptionally large transactions (ie, those above \$100 million) were excluded;
- would have declined by about 50 percent if transactions over \$50 million were excluded;
- would have declined by 70 percent if transactions over \$10 million were excluded; and
- would have declined by over 80 percent if transactions over \$1 million were excluded.

Figure 3
Average daily maximum bilateral net exposure



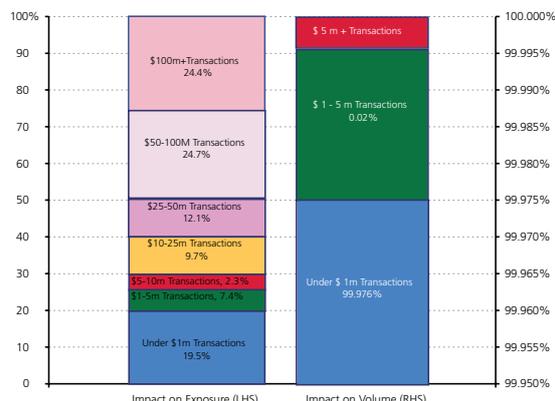
Source: New Zealand Bankers' Association

Figure 3 demonstrates the intuition that the size of the transaction impacts on retail payment system settlement risk.

Figure 4 below shows that a significant portion of average net bilateral exposure is associated with only a very small portion of total payments. In particular, the chart shows how much various HVT categories contribute to the average daily net bilateral exposure, as compared to their respective volumes. For example, HVTs that are over \$1

²¹ The analysis reported here has been undertaken using data provided by the New Zealand Bankers' Association.

Figure 4
Impact on exposure and impact on volume



Source: New Zealand Bankers' Association

million contribute to about 80 percent of the average daily maximum net bilateral exposure, but they only make up 0.024 percent of daily volume going through ISL. In theory, this suggests if, for instance, a blanket approach of diverting all transactions above \$1 million out of ISL and into ESAS is applied, it will reduce the net bilateral exposure significantly without impacting on over 99.976 percent of transactions in ISL. The recent period of liquidity pressure has not resulted in any discernible impact on retail payment flows to date. In particular, there is no evidence of high-value transactions being diverted through the retail payment system. However, this does not mean that future periods of liquidity pressure would not result in large-value payments being diverted.

Management of settlement risk in the retail payment system

Given that DNS systems are typically associated with a higher level of settlement risk, management of settlement risk in these systems is desirable. Approaches to managing settlement risk within a DNS system include:

- Limiting access: access could be limited to those institutions that are most able to manage the risks created in the system. However, restrictions on access can reduce the overall efficiency of the payment system.
- Direct measures to limit risks: this includes measures such as limits on exposures to other participants, controls on the value of payments that can be processed by the

system, posting of collateral, and limits on the time between an instruction entering the settlement queue and being settled.

Settlement risk in the retail payment system is an issue that is relevant to the payment oversight role of many central banks. Planned developments to key payment system infrastructure in Japan are an example of an initiative to manage settlement risk in the retail payment system. Japan's main retail payment switch is the Zengin Data Telecommunication System (Zengin System). Payments processed through this system are settled on a DNS basis. As part of a project to enhance its RTGS system, the Bank of Japan is planning measures that will substantially reduce the value of transactions settled on a DNS basis. These plans included changes to the Zengin System so that it will sort payments into small and large-value categories. Small value payments will continue to be processed on a DNS basis, while large-value payments will be directed through the RTGS system. New liquidity-saving features within the RTGS system (payment queuing and offsetting functionality) will help manage the additional liquidity demands associated with more payments being settled on a RTGS rather than DNS basis.²²

5 Payment system oversight applied to settlement risk

The Statement Of Principles: Payment System Oversight states that in the Reserve Bank's view, a sound and efficient

²² The Bank of Japan is currently phasing in the implementation of the 'next-generation real-time gross settlement (RTGS-XG) project'. The project consists of two measures with a view to further enhancing the safety and efficiency of large-value payment systems in Japan. The first measure is the introduction of liquidity-saving features into the RTGS mode of the BOJ-NET Funds Transfer System (Japan's RTGS system). The second is the modification of the BOJ-NET Funds Transfer System to incorporate large-value payments that are currently handled by two private-sector deferred net settlement systems into the new RTGS system with liquidity-saving features. One of these systems is the Foreign Exchange Yen Clearing System (which processes mainly large-value payments) and the other is the Zengin System. More information about the RTGS-XG project can be found on the Bank of Japan's website: http://www.boj.or.jp/en/theme/psys_seibi/paysys/bojnet/index.htm

payment system is one that does not generate high levels of risk to participants and in which any risks that are generated are managed appropriately by system participants. The Reserve Bank's objective is that settlement risk is eliminated or minimised, and where residual risk remains that this be borne by those best placed to manage it.

As outlined above, significant settlement risk exists in the New Zealand retail payment system. Moreover, this risk is not always borne by those best placed to manage it. For instance, a payment instruction sent to ISL can expose the bank that will be due to receive the funds to the bank which sent the instruction and will be due to send the funds.

Satisfactory resolution is likely to require collective action as individual action could be disadvantageous to the individual. For instance, if a bank elected to stop sending high-value transactions through the retail payment system, it might lose customers to another bank that continued to do so. Not initiating such transactions might also increase a bank's end-of-day net bilateral exposure if such action meant its gross obligations to other banks decreased but the gross obligations other banks had to it remained unaffected.

The industry has been working collectively to identify how settlement risk can be reduced in the retail payment system as part of the NZBA Failure to Settle project. The current proposal, known as 'Settlement Before Interchange' (SBI) seeks to mitigate inter-bank settlement risk by settling interbank payments prior to banks incurring obligations based on (the expectation of) inter-bank payments being made. Under this approach:

- a number of batches of net bilateral obligations would be processed each day through ESAS;
- net bilateral obligations would be incurred at the time payment instructions are sent to ESAS;
- once ESAS had processed inter-bank payments, participating banks would receive payment confirmation messages; and
- once banks receive the payment confirmation message, customer accounts would be credited or debited.

The Reserve Bank has engaged with industry as the Failure to Settle project has progressed. However, consistent with

its approach to payment system oversight, the Reserve Bank has encouraged industry to resolve the issue of settlement risk and has not promoted any particular solutions.

The main way that the Reserve Bank has engaged with industry on retail payment system policy issues is through acting as an observer in the NZBA Payment Systems Committee (which oversees, among other things, the Failure to Settle project).²³ Also, through various editions of the *Financial Stability Report* the Reserve Bank has expressed its views and has published analysis of the incidence of high-value transactions in the retail payment system.

Through its engagement, the Reserve Bank has stated that its support for the SBI proposal is conditional on the development of further arrangements to limit the amount of time between when an instruction enters the payment system and when it is settled and banks are advised of settlement, and to limit the value of transactions that could be awaiting settlement and/or payment confirmation at any time.

The Reserve Bank has also, on a number of occasions, noted its concern about the slow pace of the Failure to Settle Project.²⁴ Although recent progress has been made the timeline for the SBI solution has been extended on several occasions and is currently not expected to be implemented until late in 2011. The recent letter from the Governor of the Reserve Bank to bank chief executives noted above was partly in response to concerns about the timing of the Failure to Settle project.

Conclusion

The Reserve Bank's approach to payment oversight is to be clear about its objectives and encourage industry to lead the development of solutions towards those objectives. This approach is consistent with our relatively limited payment

²³ The NZBA is also progressing the Access and Governance project. The Failure to Settle project and the Access and Governance project are related to each other and are both relevant to the Reserve Bank's payment system oversight objectives. However, in order to contain the discussion, this article focuses only on the Failure to Settle project.

²⁴ The Reserve Bank has expressed the same concern in relation to the Access and Governance project.

system oversight powers. Our experience engaging industry on the issue of settlement risk in the retail payment system demonstrates our payment system oversight approach 'in action', and the way the Reserve Bank responds to industry initiatives relevant to our oversight objectives. Recently, in light of our experience working with industry, we have indicated that we intend to take a more active interest in payment system matters in order to help expedite projects that meet our policy objectives.

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New legislation for regulation of non-bank deposit takers

Noemi Javier¹

This article provides a broad overview of the regulatory framework for non-bank deposit takers and the role of the Reserve Bank of New Zealand as the sector's prudential regulator. This new responsibility is embodied in the amendments made to the Reserve Bank of New Zealand Act and passed by Parliament in September 2008.

The new regime requires non-bank deposit takers to comply with minimum prudential standards to be issued by the Reserve Bank. These standards will comprise the core prudential regime for the sector, and include credit rating, capital, and liquidity requirements, and restrictions on related party exposures.

1 Introduction

On 3 September 2008, Parliament passed the Reserve Bank Amendment Act (the Amendment Act). The new legislation empowers the Reserve Bank as the prudential regulatory authority for non-bank deposit takers (NBDTs), by introducing a new part (Part 5D) into the Reserve Bank of New Zealand Act 1989 (the Act). The Reserve Bank's added responsibility over NBDTs is in line with its purpose of promoting the maintenance of a sound and efficient financial system, and avoiding significant damage to the financial system if a deposit taker fails.

The rest of this article explains the main elements of the new legislation.

The bill amending the Reserve Bank Act was first presented to Parliament in November 2007 after Cabinet decided to adopt a new regulatory framework for NBDTs. Box 1 sets out the key provisions of the Amendment Act. The law changes followed from a 2005 review of the regulatory framework of non-bank financial institutions that concluded that reforms were needed to address weaknesses in the system that could potentially undermine public confidence.²

Aside from non-bank deposit takers, it is expected that the Reserve Bank will in due course be the prudential regulator and supervisor of insurance companies. Consultations are thus under way with the insurance industry and other

interested stakeholders in preparation for the introduction of a bill in 2009 laying out the regulatory regime for the insurance sector. With this added responsibility, the Reserve Bank will be the single prudential regulatory authority for the New Zealand financial system.

Unlike the banking regime, where the Reserve Bank is both the regulator and supervisor of registered banks, for the NBDT sector the Reserve Bank is the regulator only, and trustee corporations are the supervisors. As well as making the Reserve Bank the prudential regulator of the NBDT sector, the legislation provided trustees with certain powers to amend trust deeds and places a number of obligations on trustees.

2 Origin of the legislation

The NBDT sector plays an important role in the financial system. NBDTs complement banks and often service a particular niche market. With an appropriate incentive structure and a well-designed regulatory framework, non-bank deposit takers can assume a vital role in the financial system, thereby contributing to overall economic development.³

Banks and NBDTs accept deposits from, and make loans to, different sectors of the economy. In both cases, the underlying promise is to pay back the amount owed to the depositor at the nominal value plus interest. In this sense, deposits are said to be 'capital certain'. Because risks arising from the deposit taker's loans and investments are pooled

¹ I would like to thank Ian Woolford, Andy Wood and Tim Ng for helpful comments on this article.

² This review can be found at: <http://www.rbnz.govt.nz/finstab/banking/supervision/1498932.html>. The review was produced for the Minister of Finance by a working group comprising Reserve Bank, Treasury, and Ministry of Economic Development officials.

³ Carmichael and Pomerleano (2002).

Box 1

Key provisions of the Amendment Act

The main elements of the Amendment Act relate to the role of the Reserve Bank as the prudential regulator of NBDTs. In this capacity, the Reserve Bank is responsible for developing prudential standards for the non-bank regulatory regime. Trustees, on the other hand, will continue with their role as supervisors of NBDTs.

As prudential regulator, the Reserve Bank will introduce: regulations on minimum capital and capital ratio requirements; restrictions on related party exposures; liquidity requirements; and credit-rating requirements. The legislation also includes governance and risk management requirements for deposit takers. The governance requirement provides that the governing body of the NBDT must have at least two independent directors and that the chairperson should not be an employee of the deposit taker or of a related party. The risk management requirement is for all NBDTs to have a risk management programme and take all practicable steps to comply with that programme.

As it will take some time for deposit takers to comply with the new requirements, the Act imposes certain commencement dates:

- Credit-rating requirements come into force on 1 March 2010.
- Risk management requirements come into force on 1 September 2009.
- Capital, related party, liquidity and governance requirements come into force on dates specified by Order in Council.

The Reserve Bank has the power to require deposit takers to submit reports relating to their business, operation or management. Such reports must be prepared by a qualified person acceptable to the Reserve Bank. The Reserve Bank is also empowered to secure information and documents if there are grounds to suspect that a violation of the Act has been committed.

Supervision of NBDTs is entrusted to trustee companies. As supervisors, trustees are responsible for ensuring that prudential requirements are included in trust deeds. Trustees must also report to the Reserve Bank any actual or possible non-compliance, including any breach of the terms and conditions of trust deeds.

Other provisions introduced by the Amendment Act relate to the Reserve Bank's duty to review the implementation of the policy changes within five years from enactment and provide policy advice to the Minister on matters relating to the Reserve Bank's function and responsibility.

together, the depositors essentially rely on the viability and soundness of the deposit-taking institution in which they have invested their funds for reasonable assurance of getting their money back when their deposit matures. Prudential regulations are put in place by way of minimum standards and requirements for deposit takers to meet, in order to increase the probability that this occurs.

The broad objectives behind the new regulatory framework are to promote a sound and efficient financial system by:

- encouraging sound governance and risk management in registered deposit takers and promoting depositor confidence;
- providing depositors with a clearer basis for distinguishing

between lower-risk and higher-risk registered deposit takers; and

- resolving registered deposit takers' distress or failure in an orderly and timely manner, with minimum disruption to the financial system and depositors.⁴

It is important to note that depositors are responsible for their investment decisions, and will be assisted in their decision by the availability of credit ratings to differentiate deposit takers' financial conditions and risk profiles. This remains the case even though the Government has put in place a retail deposit guarantee scheme (until October 2010).

⁴ See *Review of Financial Products and Providers: Regulation of Non-Bank Deposit-Takers*.

3 What is a non-bank deposit taker?

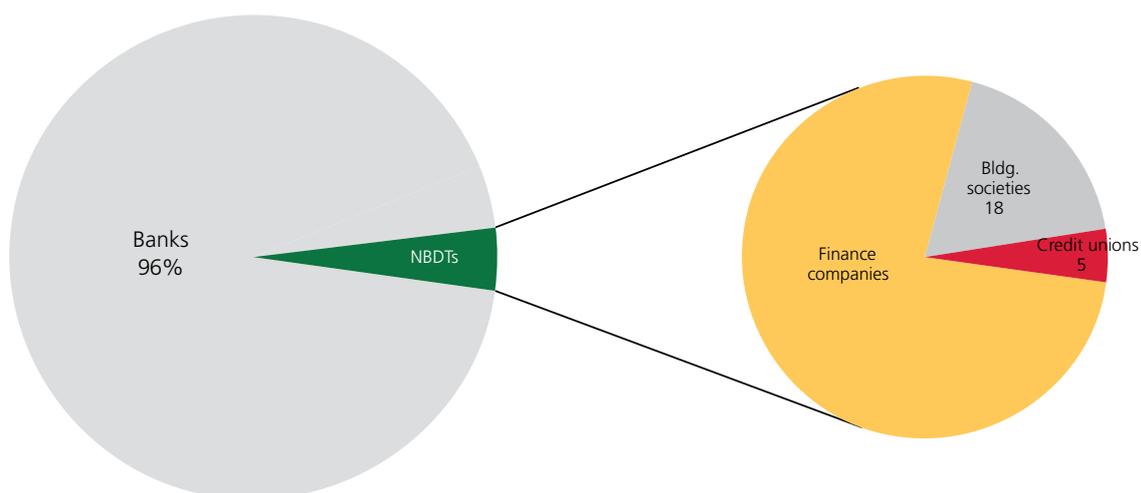
A non-bank deposit taker is defined as a person, other than a registered bank, that offers debt securities to the public within the meaning of the Securities Act, and is in the business of borrowing and lending money, or providing financial services, or both. The NBDT sector comprises finance companies and savings institutions (which include building societies, credit unions and the PSIS Ltd).

Building and friendly societies and credit unions are governed by specific legislation, namely the Building Societies Act 1965 and the Friendly Societies and Credit Unions Act (FSCUA) 1982. Amongst other things, the FSCUA includes requirements that could be characterised as prudential requirements. (Examples of this are limits on the size of deposits, restrictions on borrowing and investing surplus funds, and a number of other similar restrictions.) However, these requirements are expected to be removed in the light of prudential requirements on credit unions that will come into force under Part 5D of the Act.

Finance companies are organised as limited liability companies engaged in the provision of financial services. Finance companies provide a diverse range of financial services such as motor vehicle and vendor finance, property development and commercial finance, consumer finance and other diversified retail lending activities. Savings institutions are engaged in retail financial services, residential mortgage lending and commercial lending as well as personal secured lending. Over recent years the Southland Building Society and the PSIS have been the largest of the savings institutions (although the Southland Building Society has recently become a registered bank).

Figure 1 shows that a substantial portion – 96 percent – of the financial system’s assets held in deposit-taking institutions is held with banks, with the remaining 4 percent held with non-bank deposit takers. Within the non-bank deposit taking sector, finance companies have 77 percent of total assets, building societies 18 percent, and credit unions 5 percent. Finance companies have been experiencing major challenges and difficulties, resulting in a number of these companies going into receivership or moratorium in the past two years.⁵

Figure 1
Assets by type of deposit-taking institution, as at 30 June 2008



Notes: Asset values for finance companies include firms in receivership /moratorium and may not be updated to reflect market conditions.
Southland Building Society (SBS) became a registered bank on 7 October. Its assets are treated as registered bank assets at 30 June 2008 for purposes of this chart.
Building societies group includes PSIS Limited.

⁵ See *Financial Stability Report* publications for analysis of the state of the non-bank financial sector.

4 Scope of prudential regime for NBDTs

Prudential measures outlined in the Amendment Act will be implemented through regulations recommended by the Reserve Bank or by way of direct imposition on the deposit taker by legislation or Order in Council. In general, the Reserve Bank may carry out its prudential function by issuing regulations on the following matters:

- designating entities to be covered or not covered by the regime (defining a deposit taker beyond those already included in legislation, and exempting entities from the regime);
- requiring credit ratings;
- imposing minimum capital and a minimum capital ratio requirement;
- restricting associations with related parties; and
- setting liquidity requirements.

The Act also obliges the deposit taker to have and comply with a risk management programme that sets out the procedures for the identification and management of credit risk, liquidity risk, market risk, and operational risk. The programme should ensure that there are records and procedures in place to enable the NBDT to measure and monitor these risks. In this connection, the Reserve Bank may issue guidelines relating to the risk areas to be covered by the risk management programme. The risk management programme is required to be in place by 1 September 2009.

Although the Reserve Bank is responsible for prudential regulation, some elements of the regime approved by Cabinet in 2007 are yet to be enacted. Therefore, future legislation may include the power for the Reserve Bank to license NBDTs and have certain crisis management powers. The licensing requirements are also likely to include fit and proper tests (that is, suitability and integrity criteria for the NBDTs' directors and senior management).

5 Exemption

The Reserve Bank is authorised to grant two types of exemption from the regime. The first type of exemption is where the Reserve Bank declares a person or class of persons not to be a deposit taker, thereby exempting them from all obligations under the regime. The second type of exemption is where the Reserve Bank exempts a deposit taker from a particular or specific requirement or all requirements set in regulation, such as with respect to capital, liquidity, related party, risk management, and governance. Exemptions may either remove the obligation for a deposit taker, or class of deposit takers, to comply with requirements from a given section of the Act, or be given subject to alternative terms and conditions.

Similarly, the Reserve Bank has the power to declare a person or class of persons to be a deposit taker for purposes of the Act. This power exists because it may be possible that some entities are not caught by the definition but are deposit takers in substance.

In exercising these powers, the Reserve Bank needs to be satisfied that any exemption granted is consistent with the maintenance of a sound and efficient financial system and that compliance with the regime by the NBDT or by its trustee would be unduly onerous or burdensome.

6 Credit rating

A key provision of Part 5D of the Act is the requirement for the deposit taker – or the borrowing group to which it belongs – to have a current credit rating from a rating agency approved by the Reserve Bank. The borrowing group in this context means the deposit taker and all its subsidiaries that are unconditionally liable to repay some or all debt securities issued by the deposit taker, or are liable to repay the debt securities if the deposit taker is unable to do so.

The credit-rating regulations will specify the type of rating that may be required – that is, whether it is a short-term or a long-term rating and what the rating refers to (for example, whether it is a rating of a specific financial obligation or a rating of the deposit taker's overall creditworthiness). The regulations will also include a threshold, based on size,

below which NBDTs will not be required to obtain a rating. This reflects the desire to not impose unreasonable costs on very small entities.

The regulations are also likely to prohibit the deposit taker from making any public disclosure of a credit rating other than that which has been secured from an approved rating agency. The Reserve Bank has set clear guidelines, based on international best practice, that a rating agency must meet in order to be qualified to rate non-bank deposit takers. The intent here is to obtain a reasonable degree of assurance that the rating agency will perform up to standard. The criteria are essentially the same as those for approving rating agencies for banks and cover aspects of a rating agency's practices that will enable the Reserve Bank to carry out its approval function. These criteria refer to the following: the independence of the rating agency; adequacy of resources; credibility and objectivity of methodology; consistency and comparability of the rating agency's ratings vis-a-vis industry practice; adequacy of disclosure of information; and other relevant international standards, codes, and recommended practices.

A rating represents an independent assessment of (mainly credit) risk, and can provide investors with a handy tool to compare rated companies. While it is a tool that some investors or depositors will already be able to understand and use as a basis for identifying and comparing risks among different deposit takers, the Reserve Bank intends to undertake an education programme focused on enhancing the public's understanding of the use of credit ratings. Investors must, however, be aware that while ratings are useful for investment decisions, they cannot guarantee or predict future performance. Also, they are generally revised only if it is clear that the risk profile of a rated company has changed and that the change is likely to be permanent.⁶

NBDTs are obligated to secure a credit rating from an approved rating agency beginning 1 March 2010 (unless they are exempted). An NBDT without a rating will also be required to disclose that fact, unless an exemption for this purpose has been secured from the Reserve Bank.

⁶ **Widdowson and Wood (2008) discuss the key issues in using ratings as a tool for investment decision making.**

7 Capital requirements

Capital regulations for NBDTs may include a minimum dollar level of capital that the NBDT has to maintain, rules about the form of capital or the instruments that qualify as capital, and a minimum capital ratio requirement. A capital ratio may be imposed either on the deposit taker or the borrowing group.

Prescribing minimum capital is a basic prudential requirement for banks and other financial institutions. Capital represents owners' funds at risk and demonstrates their commitment to the business. Because capital provides a buffer against losses, owners must be able to meet capital requirements on an ongoing basis.

Owners and senior management will be better motivated to act prudently if there is a sufficient level of capital in relation to the size, nature and type of risks undertaken by the NBDT. Prudential capital standards thus help align incentives of owners, managers and regulators. Work is under way on the regulatory capital model for NBDTs, and the Reserve Bank expects to begin consulting stakeholders in late 2008.

8 Related party exposures

Section 157V of the amended Act provides that the deposit taker and trustee must ensure that a maximum limit on exposures to related parties prescribed by regulation is incorporated in the trust deed. The deposit taker must not exceed its maximum limit. A given maximum limit may be in relation to the capital of the deposit taker, or to the capital of the borrowing group to which the deposit taker belongs.

In simple terms, connected parties are defined as individuals or companies who are either directly or indirectly related by way of ownership or that have the ability to influence or control the institution. Prudential regulations about related party exposures are likely to include the following:

- a definition of 'related party' and 'credit exposure'; and
- a maximum limit on aggregate credit exposures to related parties calculated on the basis of the capital of the deposit taker or the borrowing group.

Related party restrictions are important because any undue

Box 2

Ways through which regulations may be incorporated into trust deeds

Any requirement imposed by regulation must be complied with by the deposit taker and the trustee. By and large, these requirements are to be incorporated in the trust deed, which is a contract between the trustee and the deposit taker and contains covenants intended to ensure that the deposit taker manages its affairs prudently.

Regulation can be issued prescribing a particular requirement such as a capital ratio or a maximum limit on exposures to related parties, or it can prescribe a reference framework to which specific requirements relate.

The deposit taker and the trustee would then negotiate and agree on the amendments necessary to effect the requirements in regulation. It is expected that trustees and deposit takers will reflect individual circumstances in the amendments, such that trust deeds may require, for example, a capital ratio that is more conservative than the regulatory minimum.

If the deposit taker and trustee have not come into any agreement after a reasonable period, the trustee can execute an amendment to the trust deed without the concurrence of the deposit taker. As a last resort, the regulation itself may provide that the certain requirements are deemed to be incorporated or adopted into the trust deed.

influence exerted by insiders on the deposit taker could lead to a potential erosion of the deposit taker's capital base and undermine public confidence.

way deposit takers operate (e.g., by setting minimum capital requirements) while trustees, acting as supervisors, assess the performance and compliance of their respective NBDTs with their trust deed.

9 Liquidity

The objective of liquidity requirements for NBDTs is to ensure that deposit takers are able to manage their liquidity needs and that they have access to sufficient liquidity to meet their payment obligations, particularly during times of stress. For example, the regulation may set minimum levels of liquid assets in relation to liabilities, define what constitutes liquid assets, require maturity matching of assets and liabilities, or impose other measures that will influence the management of the deposit taker's cash flows, including a requirement that consideration be made with respect to the liquidity of the borrowing group. The intention is for NBDTs to be prepared for events that may force them to draw heavily on their available liquidity buffers.

Trustees negotiate and agree on a trust deed, which contains the financial and reporting responsibilities of the deposit taker, consistent with the requirements set by regulation. Box 2 explains how the requirements set by regulation might be incorporated into trust deeds. The trustees monitor the deposit taker's compliance with the trust deed and regularly assess and monitor the NBDT's business operations and performance to ensure that depositors are adequately protected. Trustees are expected to enforce compliance with the provisions of the trust deed and to take appropriate action during times of financial stress and difficulty.

In the light of the trustees' role as supervisors of NBDTs, they are obliged to report instances of material non-compliance or likely non-compliance with regulations to the Reserve Bank.

10 Role of trustees

Under the NBDT regime, the Reserve Bank is the prudential regulator while trustee corporations are the supervisors of deposit takers. The Reserve Bank formulates prudential regulations through the issuance of rules that will affect the

11 Conclusion

The Reserve Bank of New Zealand Amendment Act 2008 established a prudential regime for the non-bank deposit taking sector. Consultation for rating agency approval

criteria has already been completed. The Reserve Bank expects to begin the consultation process for capital and related party exposures towards the end of 2008, and to have all regulations in place over 2009. The Reserve Bank expects that the new legislation will see improvements in the capacity of the New Zealand financial system to manage and cope with stresses and difficulties in the NBDT sector as they arise.

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Results from our recent survey of *Bulletin* readers

Victoria Zhang and Tim Ng

This note summarises the results of our August 2008 survey of *Bulletin* readers. Overall, we received very positive feedback. Survey respondents found *Bulletin* articles to be readable, topical, good quality and in-depth. We also received a number of useful suggestions on the *Bulletin's* content and style, which we will take on board. In particular, we are pleased to announce that from the September 2009 issue, we will provide printed copies of the *Bulletin* free of charge.

We launched the survey of *Bulletin* readers with the June 2008 issue of the *Bulletin*, in both printed and online form. As with our previous survey in 2002,¹ we were looking for feedback and suggestions for improvements from readers on the *Bulletin's* content, style and format.

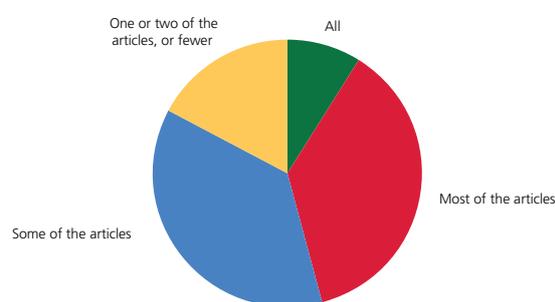
We received a satisfactory number of responses, especially though the online survey, with 165 responses in total. A large majority said that they access the *Bulletin* through the Reserve Bank's website, either exclusively or as well as using the print version. We received a number of suggestions for improvements to the presentation of our content on the website, which we will take on board.

The *Bulletin* seems to appeal to a fairly wide range of audiences. Most respondents identified themselves as economists, analysts from central banks, or analysts from commercial banks. Other types of respondent included researchers, students, teachers, journalists, and investors.

Most respondents said they read the *Bulletin* for purposes related to their work and research. A number of respondents commented that they look to the *Bulletin* for insights on the Reserve Bank's various functions, for its view on the global and domestic economic and financial environments, and to inform their investment or business decisions. Some respondents who were teachers or lecturers said they use the *Bulletin* as a source of supplementary reading for their teaching.

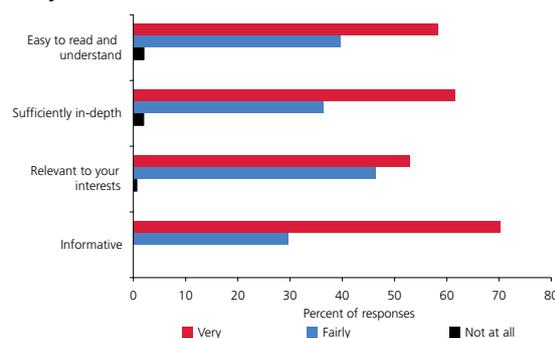
A majority of respondents read the *Bulletin* every quarter, and almost half find most or all of the articles of interest (figure 1).

Figure 1
How many articles do you find of interest to you in each issue (on average)?



Respondents generally found *Bulletin* articles to be well written, and considered them reliable, authoritative and relevant (figure 2).

Figure 2
Do you think *Bulletin* articles are:



Our recent move to using themes for each edition where we can, and encouraging authors to include visuals, images and diagrams where they can, was well received. We will continue to look for opportunities to present our material in interesting ways.

As in the 2002 survey, we received a number of suggestions to pitch content at a more accessible level. Since then, we have tried to move in this direction with at least some articles, and will continue to do so.

¹ Reserve Bank of New Zealand (2002) 'Results of *Bulletin* readers survey', *Reserve Bank Bulletin* 65(3), pp. 56-58.

When respondents were asked about the topics they most want to read about, they said monetary policy, interest rates and exchange rates, and domestic economic developments. This response pattern broadly matches that in the 2002 survey. However, it seems that international economic developments have become more interesting to readers, probably reflecting the recent dramatic developments in the international economy and financial system. Also, compared with the 2002 survey results, more readers are now interested in currency-related topics.

Responses were mixed to the question about whether the print version of the *Bulletin* was value for money at the current \$12 per issue charge. A number of respondents said yes, but some argued that there was enough of a public service element to the *Bulletin* that it should be free (noting that the online version is free) to encourage wider readership. Having considered the various arguments, we have decided to cease charging for printed copies of the *Bulletin*, from the September 2009 issue onwards.

DISCUSSION PAPERS

DP2008/14

Over the hedge? Exporters' optimal and selective hedging choices

Richard Fabling and Arthur Grimes

How do exporting firms manage currency exposures? We examine this issue at the firm level using comprehensive data from the prototype Longitudinal Business Database recently developed by Statistics New Zealand. We use these data to test both optimal and selective hedging theories. Optimal hedging theory hypothesises that firms' hedging choices depend on the probability and cost of financial distress, underinvestment risks, scale, managerial risk aversion, information asymmetry, governance, ownership structures and tax rules. Recent literature suggests that some firms vary hedging positions relative to their optimal position in a selective attempt to beat the market. We examine whether hedging behaviour is consistent with hypotheses derived from optimal hedging theories, and test whether hedging positions change (possibly sub-optimally) when the NZD/AUD is perceived to be high or low relative to an historical average.

DP 2008/15

Practical monetary policies

Alfred V. Guender and David Gillmore

This paper investigates the theoretical implications of targeting average inflation or following a speed limit policy in a dynamic backward-looking model where monetary policy works with lags. Our findings reveal that the target horizon for expected inflation in the target rule must be correctly specified for the monetary policy strategies to achieve best results. Average inflation targeting dominates a speed limit policy for plausible values of society's relative aversion to inflation variability. The efficiency loss associated with average inflation targeting relative to optimal policy is very small if society values output stability. A speed limit policy becomes attractive only if society places great emphasis on inflation stability.

DP2008/16

Inheritances and their impact on housing equity withdrawal

Phil Briggs

Housing equity withdrawal (HEW) was very high in New Zealand – in fact it was at unprecedented levels – between 2004 and 2007. It has been postulated that a significant proportion of this equity withdrawal could be the result of inheritances, which would have increased in value as house prices rose over the period. This report looks at how much of recent HEW might be due to the sale of inherited dwellings. It briefly surveys earlier work on inheritances in New Zealand, and reviews various sources of data on inheritances. It then uses data from household wealth surveys, together with mortality data, to estimate the value of inheritances in 2001 and 2006. Estimates of the equity withdrawn from inherited houses are also derived. The results suggest that transactions related to inherited houses probably accounted for no more than about one-seventh of the change in net HEW between 2001 and 2006. Clearly other factors – more active forms of equity withdrawal – accounted for most of the change in HEW over the period.

DP2008/17

Does natural rate variation matter? Evidence from New Zealand

Michael Kirker

Natural rates are an important concept within the new Keynesian models often used for monetary policy advice. However, many of these models rely on demeaned interest rate and inflation data. Thus, they implicitly impose the strict assumption that the natural rates of these series are constant. Using New Zealand data and a small open-economy new Keynesian model with time-varying parameters, we estimate the natural real rate of interest, inflation target, potential output, and neutral real exchange rate. We find that the model estimates of the natural real rate of interest and neutral exchange rate display noticeable time variation and considerable uncertainty, while the inflation target has been relatively stable over the sample period. We also compare the

results of this model to a model with time-invariant natural rates. The comparison reveals the data prefers the fit of the time varying model. It also shows that allowing the natural rates to vary over time has implications for the persistence parameters and impulse responses of the model.

DP2008/18

Combining forecast densities from VARs with uncertain instabilities

Anne Sofie Jore, James Mitchell and Shaun Vahey

Recursive-weight forecast combination is often found to be an ineffective method of improving point forecast accuracy in the presence of uncertain instabilities. We examine the effectiveness of this strategy for forecast densities using (many) VARs and ARs of output, prices and interest rates. Our proposed recursive-weights density combination strategy, based on the recursive logarithmic score of the forecast densities, produces accurate predictive densities by giving substantial weight to models that allow for structural breaks. In contrast, equal-weight combinations produce poor real-time US forecast densities for Great Moderation data.

DP2008/19

The evolution of the Forecasting and Policy System (FPS) at the Reserve Bank of New Zealand

Felix Delbrück, Ashley Dunstan, David Hargreaves, Ashley Lienert, Hamish Pepper and Cath Sleeman

The Forecasting and Policy System model (FPS) has been a very useful tool for forecasting and communication at the Reserve Bank of New Zealand. In part, its success has been due to pragmatic use, and the evolution of the model to reflect changing views of the New Zealand economy. However, as economic theory and modelling technology have developed, it is likely that the next core model for producing projections at the Reserve Bank will be a Dynamic Stochastic General Equilibrium (DSGE) model. This note looks forward to that possibility with two aims in mind. First, the paper discusses how FPS has been used at the Reserve Bank over the last 11 years. Second, we describe how the structure of FPS has changed over time.

NEWS RELEASES

Reserve Bank confident in NZ financial system

19 September 2008

The Reserve Bank today reiterated its confidence that the New Zealand banking system remains sound, despite significant further turbulence in the US and global financial markets over the past week.

Reserve Bank Governor Alan Bollard said disruptions in the US markets are reverberating around the world. New Zealand banks are not directly involved, although there are indirect adverse effects on liquidity in New Zealand's financial markets.

"Financial prices have become volatile and, with heightened uncertainty, investors are becoming more risk averse," Dr Bollard said. "While New Zealand will inevitably feel the effects of major financial shocks such as this, New Zealand banks are not involved in the sort of complex financial transactions that have caused significant losses in many of the large global institutions.

"However, as stated in the Bank's *May Financial Stability Report*, the New Zealand banks have seen a tightening in the availability of funding in global debt markets, on which they are relatively reliant. These pressures are exacerbated by recent events.

"There is no immediate problem, but the Reserve Bank always stands ready to support the liquidity of the New Zealand financial system," he said.

Deputy Governor Grant Spencer said two new measures are being introduced which will assist in alleviating the current liquidity pressures.

First, the Reserve Bank proposes to facilitate the injection of funds into the banking system by accepting bank paper in its daily market operations.

"While bank paper is already eligible for use in our standing facility, it has not been accepted to date in the Bank's open market operations," Mr Spencer said. "This measure should take some pressure off the FX swap market which is the usual channel for injecting Reserve Bank funds.

"It is our intention to offer longer terms than usual in our operations, up to six months, in order to help ease pressure at the short end of the market.

"Second, the Reserve Bank is intending to introduce a new facility which will make certain Asset Backed Securities (ABS) eligible as collateral in its domestic liquidity facilities. This is intended to further broaden the range of assets and institutions that have access to Reserve Bank liquidity. The proposed terms for this facility will be released separately and will be subject to industry consultation before they are finalised."

In addition, the Bank will soon be releasing a consultation document on a proposed revised policy for banks in regards to the management of their own liquidity and funding. This policy is aimed at ensuring that the banks are less vulnerable to future liquidity shocks and disruptions in global funding markets.

"While these measures will assist in promoting a more stable liquidity situation, the Reserve Bank retains full confidence in the underlying solvency of the New Zealand banking system," Mr Spencer said.

September 2008 Reserve Bank *Bulletin* released

26 September 2008

The Reserve Bank today released the September 2008 issue of the Reserve Bank of New Zealand *Bulletin*.

This edition of the Reserve Bank *Bulletin* is built around the theme of inflation.

The first article notes that New Zealand's long-serving inflation-targeting framework has served the country well, and continues to do so. However, the article also discusses the strength of the current forces on the economy, and argues that inflation targeting can only do so much to buffer these forces and promote stability.

The second article discusses how inflation developments overseas over the past decade have influenced inflation pressures in New Zealand.

The third article reviews the research on why inflation is costly, and why price stability is therefore important.

The fourth article is an interview with the well-known macroeconomist Bob Gordon, who offers some interesting

insights into how the inflation process works in modern economies, how macroeconomic research on inflation has developed, and some of the challenges currently facing monetary policy.

This edition of the *Bulletin* also provides an article discussing the current financial market turmoil's origins in world macroeconomic dynamics. The very large flows of funds internationally in recent years have played a key role.

The final article explains credit ratings and their role in the financial system. Credit ratings are a simple risk measure that can assist investors to make investment decisions, but also have limitations. The article highlights some of the key issues that investors should be aware of when using credit ratings.

Reserve Bank confident in NZ financial system

30 September 2008

The Reserve Bank today reiterated its previous comments that the New Zealand banking system remains sound. Its comments follow financial market turbulence following the failure of the US Troubled Assets Relief Program to pass through Congress.

Reserve Bank Governor Alan Bollard said the liquidity measures taken to date by the Bank are handling the pressures from global markets.

"We are monitoring current events in the financial markets very closely," Dr Bollard said. "The failure of the US Congress to agree the bail-out package was a disappointment, and it leaves parts of the financial markets in limbo until the matter is resolved.

"In the meantime, the very short-term effects on the New Zealand market are not major. However, there could well be medium-term effects on the economy – but we will continue to deal with them through our normal monetary policy process. The next OCR decision is due on October 23.

"The banking system is sound in New Zealand, and we do not expect this to alter. Over the past year, we have announced a number of measures that will make it easier for financial market participants to maintain liquidity during a period of financial market disruption. While we believe these are

sufficient, we are keeping liquidity support arrangements under review and will respond as appropriate.

"In the meantime we are staying in close touch with the banks, and also with the Government."

Reserve Bank releases *Annual Report*

2 October 2008

The Reserve Bank is in good shape to deal with current macroeconomic and financial stresses, Governor Alan Bollard said today when releasing the Bank's 2007-2008 *Annual Report*, covering the year to 30 June 2008.

"We are a full-service central bank," Dr Bollard said. "That means we do monetary policy, bank supervision, payment and settlement services, currency, liquidity and foreign reserves management all in one building. In addition, we maintain close relations with The Treasury and other parts of Government. In principle, that means we are better placed than some of our offshore colleagues – where these functions are split – to identify economic-financial stresses and do something about them."

Dr Bollard said the Bank has done a lot of work over the past few years to prepare for market stresses. These developments are described in the *Annual Report*.

"They include work to improve the robustness of the financial system: improved bank surveillance, better bank governance requirements, new Reserve Bank liquidity measures, minimum bank liquidity requirements, refreshed and extended payment and settlements technologies, stress testing, and new regulation planned for non-bank financial institutions and the insurance industry.

"The Bank is also using its balance sheet differently. We have a new foreign exchange policy to help smooth peaks and troughs in the exchange rate. In addition, we have built up a planned open foreign exchange position to give us more leverage in the event of severe volatility in the markets. We have a new capital injection from the Government, and have invested in a more sophisticated treasury management system."

Dr Bollard said the Bank continues to develop its macroeconomic analysis tools, which now include a suite

of data-driven forecasting models, and a new central forecasting and policy model. It has done considerable work on the effects and management of a slowing economy.

The Bank spent a net \$38.1 million on activities covered by its Funding Agreement, which was 7.1 percent below the \$41 million in the Agreement. The Bank generated a surplus of \$535 million. Gross mark-to-market gains on the Bank's open foreign exchange position were \$344 million. A dividend of \$168 million has been paid to the Crown.

The *Annual Report* includes a pictorial supplement illustrating where the Bank's funding comes from, where this is invested, what incomes it derives and how this is spent. This is a new initiative aimed at providing a simple overview of the Bank's finances for the lay reader. The *Annual Report* can be viewed on the Reserve Bank website (www.rbnz.govt.nz).

New legislation provides a strong basis for confidence

3 October 2008

The passing of the Reserve Bank Amendment Bill (No 3), making the Reserve Bank the regulator of deposit takers, provides a strong basis for confidence in the non-bank deposit-taking sector, Reserve Bank Governor, Alan Bollard, said today.

Speaking to an Auckland business audience, Dr Bollard said there has been over the last year or so a 'slow-burn' contagion of finance company failures.

"A number of factors have contributed to the casualties," he said. "There has been a downturn in the property development sector. Investors have been exposed to significant risks in exchange for a relatively small margin over bank deposit rates. People have shifted their money from finance companies to institutions with a lower degree of risk, notably the banks. And then there has been the international credit crisis."

Dr Bollard said that the failures have also highlighted fragile business structure, poor risk management, and inadequate governance. The passing of the Reserve Bank Amendment Act, making the Reserve Bank the regulator of non-bank

deposit takers, will help to address these issues in the future.

"The major players in the financial systems are, of course, the commercial banks, and despite the crisis on Wall Street, they have continued to operate strongly in New Zealand. These institutions are well capitalised businesses and give no current reason for concern," commented Dr Bollard.

Under the new legislation trustees will continue to be front-line supervisors of deposit takers. The Reserve Bank's role will be to require information from trustees of deposit takers, to develop and enforce minimum prudential and governance requirements, and to administer credit rating requirements.

Credit ratings from reputable rating agencies will play an important role. Credit ratings will assist depositors to compare the level of risk they are taking with the return they are getting when they invest in a deposit taker.

New bank registered

7 October 2008

The Reserve Bank of New Zealand today announced that Southland Building Society has been registered as a bank in New Zealand. Southland Building Society will continue to be a mutually-owned building society although also registered as a bank.

There are now 18 registered banks in New Zealand, which are listed on the Reserve Bank's website.

Reserve Bank announces further liquidity measure

9 October 2008

Reserve Bank Governor Alan Bollard said today that the Bank is monitoring international developments very closely.

"At the moment the New Zealand financial system is working satisfactorily. It has held up relatively well in the face of the volatility and disruptions that we are seeing internationally," he said.

“New Zealand banks have high-quality assets. Fortunately they do not have the poor-quality assets that have proved so damaging overseas.”

Dr Bollard said that over the past year the Bank has announced a number of measures that will make it easier for financial market participants to maintain liquidity during a period of financial market disruption.

“To further improve liquidity prospects for the banking system, we are announcing that the Reserve Bank will temporarily broaden its security programme. We will, if required, be prepared to lend on the basis of fully-secured Residential Mortgage-Backed Securities (RMBSs), prior to those securities achieving formal ratings.”

He said there has been good progress by institutions in developing RMBSs should they be needed.

“While we believe these measures are sufficient at this stage, the Bank retains a number of other regulatory powers. We are committed to ensuring the ongoing health of the financial system and remain ready to respond as appropriate.

“The centre of the financial crisis is in the United States and Europe and, while there will be ramifications for our economy, the next review of monetary policy is scheduled on 23 October.

“In the meantime we are staying in very close touch with the banks, and also with the Government.”

RBNZ and Treasury release detail of deposit guarantee scheme

12 October 2008

Disclaimer:

The Deed of Guarantee is in draft and the terms subject to change up to the point of signing.

The information posted as Question and Answers are provided for general guidance only and cannot be relied on as definitive. In particular please note that the final terms of the Deed will prevail to govern any guarantee arrangement.

The information posted as Questions and Answers are

subject to ongoing clarification, addition and amendment. The Reserve Bank’s general disclaimer also applies to information on this page.

The Minister of Finance announced today that the Government has introduced an opt-in deposit guarantee scheme. The scheme covers deposits for New Zealand-registered banks and eligible non-bank deposit-takers (including banking societies, credit unions and finance companies).

As noted in his statement, the Reserve Bank and the Treasury are now releasing more detail about the scheme.

“The purpose of the scheme is to assure New Zealand depositors that they can be assured their deposits are quite safe and the New Zealand financial system is sound,” said Reserve Bank Governor Dr Alan Bollard, and Acting Secretary to The Treasury, Dr Peter Bushnell.

For information about the deposit guarantee scheme and for all enquiries visit the Treasury website.

Deposit guarantee scheme introduced

12 October 2008

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The information posted as Questions and Answers is subject to ongoing clarification, addition and amendment. The Reserve Bank’s general disclaimer also applies to information on this page.

Finance Minister Michael Cullen has announced that, using his powers under the Public Finance Act, the government is to introduce an opt-in retail deposit guarantee scheme.

“The scheme will cover all retail deposits of participating New Zealand-registered banks and retail deposits by locals

in non-bank deposit-taking entities. This would include building societies, credit unions and deposit-taking finance companies," he said.

The deposit guarantee scheme does not include related party liabilities.

The new scheme is an opt-in scheme and would take the form of a bilateral contractual agreement between the Crown and the individual institutions which take up the guarantee.

The scheme will be free for institutions with total retail deposits under \$5 billion. A fee of ten basis points per annum will be charged on total deposits above \$5 billion. This means that a bank with \$20 billion in retail deposits would pay \$15 million in fees per annum.

The government is offering this deposit guarantee to address the current situation of international financial market turbulence and it will be for a two-year term in the first instance. This will give time to see how well international financial markets stabilise in the months ahead.

"The deposit guarantee is designed to give assurance to New Zealand depositors. The New Zealand banking system remains sound. We want to ensure that ordinary New Zealanders feel that their deposits are safe in the current uncertain international financial market conditions," Dr Cullen said.

The Reserve Bank will be releasing further details later today.

Further details of deposit guarantee scheme announced

15 October 2008

Treasury and the Reserve Bank have this afternoon released further details of the opt-in retail deposit guarantee scheme announced by the Minister of Finance on 12 October.

The details include information about tighter requirements on non-bank deposit takers; a fee for non-bank deposit takers that are rated below BB or unrated; rating requirements

for new entrants; coverage of non-resident depositors with New Zealand branches of overseas banks; senior debt requirements; and the approval process.

The scheme will cover all retail deposits of participating New Zealand-registered banks and retail deposits by locals in non-bank deposit-taking entities, and is designed to give assurance to New Zealand depositors in the current uncertain international financial market conditions.

Reserve Bank Governor Dr Alan Bollard and Acting Secretary to The Treasury Dr Peter Bushnell noted today that "as the retail deposit guarantee scheme is being implemented, a number of policy issues are arising that are being addressed".

Decisions have now been made to:

- Tighten the requirements upon non-bank deposit takers. The deed for non-bank deposit-takers will be tailored to contain tighter controls including:
 - limiting potential for stripping out funds through, for example, dividends, or payments to related parties;
 - increasing reporting requirements and allowing the Crown to appoint an inspector; and
 - enabling an assessment of whether business behaviour is taking place that would then result in breach of the terms of the guarantee.

In addition there will be personal undertakings required from directors.

- Introduce a fee for non-rated non-bank deposit takers. A fee of 300 basis points per annum will be charged monthly to non-bank deposit takers that are rated below BB or are unrated (on the cumulative growth in the book since 12 October 2008).
- Require all new entrants to the scheme to be rated BBB- or better.

New entrant requirements (e.g., companies seeking to come into the scheme that were not in existence or ineligible on 12 October 2008) must be BBB- rated or better in order to be eligible to apply to join the scheme.

- Cover non-resident depositors in New Zealand branches of overseas banks as at 12 October 2008. Non-resident deposits in New Zealand branches of overseas banks will be brought into guarantee coverage. However, the guarantee is limited to the total amount of the non-resident deposit base as at 12 October 2008 and up to a further 10 percent per year of that deposit value (to cover for interest and any variation in deposit level).
- Ensure that deposits with building societies and credit unions are covered. As building societies and credit unions issue subordinated debt the deed will ensure such deposits are covered by the guarantee. Subordinated debt issued by other entities will not be covered.
- Include collective investment schemes (with certain conditions). As announced earlier in the week, it has also been decided to include, with certain conditions, collective investment schemes (CIS) that invest solely in government debt or institutions subject to a government guarantee and in debt of non-bank guaranteed institutions to the level held on 12 October 2008.

Assessment and approval process

Specimen deeds for banks (including branches) and non-banks will be made available via the Treasury website later tonight (Wednesday 15 October).

The specimen deed for collective investment schemes will be made available in the next few days.

Dr Bushnell said: "While no applications have been approved yet, once the final deeds are made available (tonight and tomorrow), the Treasury will work quickly to ensure that applications are processed and approvals made public."

For more information and enquiries visit the Treasury website.

Amendments to the Crown Retail Deposit Guarantee Scheme

22 October 2008

The Treasury and the Reserve Bank have today released amendments to the Crown Retail Deposit Guarantee Scheme announced on 12 October 2008.

Treasury Secretary John Whitehead and Reserve Bank Governor Alan Bollard said today: "The objective of the two year opt-in scheme is to ensure ongoing retail depositor confidence in New Zealand's financial system given the international financial market turbulence.

"The retail deposit guarantee scheme needs to engender confidence while continuing to ensure the efficient functioning of New Zealand financial markets.

"In pursuing this objective, a number of issues have arisen around pricing of the scheme and its coverage, and a number of technical changes (detailed below) are being announced today."

Scheme coverage

The issues relating to coverage of the scheme primarily relate to the boundary between what is retail and what is wholesale, as well as ensuring that the retail scheme continues to cover those it is primarily intended to cover (that is, retail depositors in what are essentially bank-like transactions and savings accounts).

Pricing

Refinements have been made to the scheme's pricing in order to mitigate the risk of material distortions to investor behaviour and incentives and choice among institutions over the life of the guarantee, while still ensuring that coverage remains affordable.

The following decisions have been made:

- A cap on the size of deposit that is covered by the guarantee of \$1 million per depositor per guaranteed institution.
- Fees for the new business component of registered banks and non-bank deposit takers that are not already subject to a fee charge as follows:

For entities whose covered liabilities are under \$5 billion:

- 10 basis points per annum to institutions rated AA minus and above;
- 20 basis points per annum to institutions rated A+, A and A minus;
- 50 basis points per annum to institutions rated BBB+, BBB and BBB minus; and
- 100 basis points per annum to institutions rated BB+ and BB.

These fees apply to the cumulative growth in the book since 12 October 2008 with an allowance of plus 10 percent per year on this amount. Growth will be measured, and charged for, monthly.

As announced last Wednesday, a fee of 300 basis points per annum will be charged monthly to non-bank deposit takers that are rated below BB or are unrated (on the cumulative growth in the book since 12 October 2008).

As an incentive for institutions that are unrated as at 12 October 2008 to become rated BB and above, if a rating of BB and above is achieved during the term of the retail guarantee scheme, the institution will be eligible for a rebate to give an effective fee of 100bps for the period they were unrated.

In addition, it has been agreed that:

- Collective investment schemes eligible for coverage under the guarantee scheme will not be charged a fee as this would, in effect, result in double charging for these entities.
- As an additional means of managing the risks in the non-bank deposit-taking sector, the Reserve Bank is investigating options that will, if feasible, bring forward prudential requirements that would impose a greater measure of prudential discipline on non-bank deposit takers.
- Deposits held by a provider of trustee or nominee services as a bare trustee on behalf of persons who themselves come within the ambit of the guarantee, will come within the scope of the guarantee and this will be clarified in the contractual agreements.

Process from here

While Treasury and the Reserve Bank are jointly responsible for the design of the deposit guarantee scheme, the Treasury is responsible for the overall implementation.

Mr Whitehead noted that: "The decisions announced today clearly have implications for our approval process." These include:

- New specimen deeds are being developed now, and will be released on the Treasury website within the next few days.
- Work has commenced to process the applications we have already received. Where we need more information from applicants as a result of today's announcement, we will contact them directly.

Treasury expects to be in a position to start announcing approved guarantees for banks from Tuesday 28 October (given that Monday is a public holiday) and non-banks after that. Approvals of Collective Investment Schemes are clearly dependent on the approvals of the institutions those schemes invest in, so those announcements will follow.

Mr Whitehead said that the Treasury is working quickly to ensure applications are assessed and decisions are made public as soon as possible.

Approved banks and non-bank deposit takers will be listed on the Treasury website at <http://www.treasury.govt.nz/economy/guarantee> along with a copy of the Crown Deed of Guarantee for each institution. Details of newly-approved institutions will be added to the website regularly.

Addition to the list of approved institutions will be based solely on the order in which Deeds of Guarantee are completed. As there are a large number of applications, it may take several days for any particular application to be processed. Therefore, absence from the list of approved institutions will not necessarily be an indication that a bank or non-bank deposit taker has failed to apply for the deposit guarantee scheme or has had their application declined.

The names of applicants will not be released by the Treasury during the assessment process.

Policy guidelines

We have today posted policy guidelines on the Treasury website to assist potential applicants in determining whether to apply for coverage under the scheme: <http://www.treasury.govt.nz/economy/guarantee/policyguidelines>.

Queries

Questions and Answers are available on the Treasury website: <http://www.treasury.govt.nz/economy/guarantee/qanda>.

OCR reduced to 6.5 percent

23 October 2008

The Reserve Bank today reduced the Official Cash Rate (OCR) from 7.5 percent to 6.5 percent.

Reserve Bank Governor Alan Bollard commented that "ongoing financial market turmoil and a deteriorating outlook for global growth have played a large role in shaping today's decision.

"Economic activity in New Zealand will be further constrained, relative to the outlook presented in our September *Monetary Policy Statement*, by these international developments. New Zealand can expect to face lower demand for exports and credit is likely to be less readily available. In this environment consumers and businesses are likely to be more cautious and curtail spending.

"The reduction in domestic spending will be partly offset by the depreciation of the New Zealand dollar over the past few months, falling oil prices and the recent loosening of fiscal policy.

"With weaker short-term growth and sharply lower oil prices we now expect that annual CPI inflation will return to the target band of 1 to 3 percent around the middle of 2009. However, we still have concerns that domestically generated inflation (particularly in labour costs, local body rates, electricity prices and construction costs) is remaining stubbornly high.

"Consistent with the Policy Targets Agreement, the Bank's focus will remain on medium-term inflation. Should the outlook for inflation evolve as projected we would expect

to lower the OCR further. However, the timing and extent of OCR reductions over the coming months will depend on evidence of actual reductions in domestic cost pressures as well as how the global financial developments play out."

RBNZ, Federal Reserve announce USD facility

29 October 2008

The United States Federal Reserve and the Reserve Bank of New Zealand today announced the establishment of a temporary reciprocal currency arrangement (swap line) to address ongoing elevated pressures in US dollar short-term funding markets.

The Federal Open Market Committee has approved the Reserve Bank's request for a swap facility that will support the provision of US dollar liquidity to the New Zealand markets in amounts of up to USD15 billion. This reciprocal currency arrangement has been authorised through to 30 April 2009.

Reserve Bank Deputy Governor Grant Spencer said the facility, like those already established between the Fed and other central banks, is to provide an additional source of liquidity for the US dollar funding market.

"While there is no need to use the facility right now, it is useful to have this capacity if markets become dysfunctional," Mr Spencer said.

Reserve Bank announces new facilities

7 November 2008

The Reserve Bank today announced two new facilities which are intended to support banking system liquidity at a time when offshore markets remain disrupted. The new facilities follow up the Reserve Bank's earlier announcement in May 2008 that it would accept Residential Mortgage Backed Securities (RMBS), as security in its Domestic Market Operations. Two banks have recently announced that they have had RMBS structures approved by the Reserve Bank and more approvals are expected. From 12 November the Reserve Bank will offer the following two facilities:

Term Auction Facility (TAF)

- The facility will operate in a similar manner to the Reserve Bank's Open Market Operation (OMO) and will be used to inject cash into the banking system using approved eligible collateral noted on the Reserve Bank's website at <http://www.rbnz.govt.nz/finmarkets/liquiditymanagement/3316334.html>
- The TAF will be held at 9.30am each Wednesday morning in place of the daily OMO. The TAF will offer up to NZD 2 billion dollars for terms of approximately 3, 6 and 12 months. The Reserve Bank reserves the right to alter both the volume and maturity dates at its discretion.
- The operation of this facility and the rules and guidelines applying to it will be similar to the OMO. These details can be found on the Reserve Bank's website at <http://www.rbnz.govt.nz/finmarkets/domesticmarkets/3329772.html>
- Each tender will be pre-announced at approximately 4.30pm on the working day preceding the tender day. Bids will be accepted between 9.30am and 9.45am and it is expected that results will be announced at approximately 10.00am.
- Settlement will occur on a T +1 basis (transaction day plus 1 banking day).
- The regular OMOs may be held less frequently, for smaller volumes and with shorter maturity dates.

Reserve Bank bill (RB bill) tenders

- The Reserve Bank will hold a weekly RB bill tender, as required, to withdraw cash from the banking system and sterilise, either partially or fully, the cash injected via the TAF to maintain settlement cash at an appropriate level. The RB bill is an existing instrument but has not been on issue since 1999. Details relating to the RB bill tenders can be found in the Operating Rules and Guidelines on the Reserve Bank's website at <http://www.rbnz.govt.nz/finmarkets/domesticmarkets/3329772.html>
- The RB bill tenders will be held at 2.00pm on Wednesday afternoons, as required. The RB bill tender will typically offer up to NZD 2 billion dollars for a term

of approximately 3 months. The Reserve Bank reserves the right to alter both the volume and maturity dates at its discretion (6 and 12 month maturities may also be offered).

- Each week's tender will be pre-announced at 11.00 am on the day of the tender. Bids will close at 2.15pm and it is expected that results will be announced at approximately 2.30pm.
- Settlement will occur on a T +1 basis (transaction day plus 1 banking day).

The attached schedules show the TAF and RB bill tender programme to the end of January. These liquidity arrangements will be reviewed in 12 months' time or sooner if demand diminishes.

NZ's financial systems hold up well, says RBNZ 12 November 2008

New Zealand's financial and payments systems have held up well in the face of extreme disorder within the international financial markets, Governor Alan Bollard said today, when releasing the Bank's November 2008 *Financial Stability Report*.

"While we are far from seeing the final impact of the financial and economic disruption, New Zealand's banks, and the Australian parents of the majors, are well positioned to withstand the economic downturn," Dr Bollard said.

Dr Bollard said that New Zealand's banks have not experienced the significant financial losses affecting financial institutions in the United States and Europe.

"Also, they have sufficient capital buffers to withstand the higher loan losses that will inevitably result from the economic downturn.

"However, recent global market conditions have affected the cost and accessibility of offshore funding that our banks – and the country – rely on heavily."

Measures undertaken by central banks and governments around the world have contributed to some improvement in market conditions over recent weeks. New Zealand has also adopted a range of policy measures to help reduce financial and economic risks.

Deputy Governor Grant Spencer said the retail deposit guarantee scheme that the Government announced in October assures New Zealanders that their deposits are safe. The wholesale guarantee scheme announced in early November is aimed at facilitating the re-entry of financial institutions to offshore wholesale debt markets.

“These schemes are a temporary response to exceptional circumstances. While some distortions are inevitable, the Government has tried to reduce these distortions through the use of risk-based pricing and other features. The Bank will also monitor and supervise the guaranteed institutions more intensively, and will accelerate implementation of the new non-bank prudential regime.

“Recently we issued a consultation document on proposed new standards for the banks’ management of their funding and liquidity. When finalised, this policy will reinforce incentives on banks to diversify away from short-term wholesale funding and reduce their vulnerability to credit market disruptions.”

Mr Spencer said banks have been constructing Residential Mortgage Backed Securities following the Reserve Bank’s announcement in May that it will accept these securities in its domestic market operations. “A number of banks now have these securities in place. This will enable us to maintain liquidity in the banking system if the offshore funding channels continue to be disrupted.”

Dr Bollard noted that a slowing in the economy had been reflected in an easing in credit growth, and savings appeared to be improving, particularly in the household sector. Together with the decline in the exchange rate, this is expected to improve New Zealand’s external balance and reduce the need for foreign borrowing over time.

“However, global developments have proven extremely disruptive and it will likely be some time before financial market conditions normalise. The Bank will continue to adopt measures as needed to maintain the stability of our financial system as far as possible in these difficult times.”

OCR reduced to 5.0 percent

4 December 2008

The Reserve Bank today reduced the Official Cash Rate (OCR) from 6.5 percent to 5.0 percent.

Reserve Bank Governor Alan Bollard commented that “ongoing financial market turmoil and the marked deterioration in the outlook for global growth have played a large role in shaping today’s decision. Activity in most of our trading partners is now expected to contract or grow only very slowly over the next few quarters.

“Economic activity in New Zealand will be further constrained as a result, compared with our view in October.

“Inflation is abating here and overseas as a consequence of these developments. We now have more confidence that annual inflation will return comfortably inside the target band of 1 to 3 percent some time in the first half of 2009 and remain there over the medium term. However, we still have concerns that domestically generated inflation (particularly local body rates and electricity prices) is remaining stubbornly high.

“Today’s decision brings the cumulative reduction in the OCR since July to 3.25 percent, and takes monetary policy to an expansionary position. Given recent developments in the global economy, the balance of risks to activity and inflation are to the downside. Thus it is appropriate to deliver this reduction quickly to support the economy and keep inflation from falling below the target band.

“Monetary policy is working together with the depreciation of the New Zealand dollar and the fiscal stimulus now in train, to provide substantial support to demand over the period ahead and to create the conditions for some rebound in growth as global conditions improve.

“To ensure the response we are seeking, we expect financial institutions to play their part in the economic adjustment process by passing on lower wholesale interest rates to their customers.

“Further movements in the OCR will be assessed against emerging developments in the global and domestic economies and the response to policy changes already in place.”

PUBLICATIONS

Regular publications

Annual Report

Financial Stability Report

Monetary Policy Statement

Reserve Bank of New Zealand Statement of Intent, 2007-2010

Published in October each year.

Published six-monthly. A statement from the Reserve Bank on the stability of the financial system.

Published quarterly. A statement from the Reserve Bank on the conduct of monetary policy.

Recent Reserve Bank Discussion Papers

2008

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DP2008/19	The evolution of the Forecasting and Policy System (FPS) at the Reserve Bank of New Zealand <i>Felix Delbrück, Ashley Dunstan, David Hargreaves, Ashley Lienert, Hamish Pepper and Cath Sleeman, December 2008</i>

A full list of Discussion Papers is available from Administration, Economics Department.

Selected other publications

Testing stabilisation policy limits in a small open economy: proceedings from a macroeconomic policy forum
Finance and Expenditure Select Committee inquiry into the future monetary policy framework: submission by the Reserve Bank of New Zealand

Pamphlets

Explaining Currency

Explaining Monetary Policy

The Reserve Bank and New Zealand's Economic History

Central Banking in New Zealand

This is the Reserve Bank

Your Bank's Disclosure Statement – what's in it for you?

Snakes and Ladders – a guide to risk for savers and investors, by Mary Holm

For further information, go to www.rbnz.govt.nz, or contact:

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Vol. 70, No. 4, December 2007

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Microeconomic analysis of household expenditures and their relationships with house prices

Introducing the MONIAC: an early and innovative economic model

Vol. 71, No. 1, March 2008

Money and credit

The use of money and credit measures in contemporary monetary policy

Recent trends and developments in currency

The Reserve Bank, private sector banks and the creation of money and credit

Future directions for Reserve Bank financial statistics

The business cycle, housing and the role of policy

Vol. 71, No. 2, June 2008

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Inflation

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The costs of inflation – what have we learned?

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Financial turmoil and global imbalances: the end of Bretton Woods II?

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