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# Changes to the liquidity management regime

Ian Nield

In July 2006, the Reserve Bank commenced implementation of changes to its liquidity management regime. Under the existing regime, there had been increasing evidence of insufficient liquidity in the banking system at various times and some inefficiencies in the way in which it was provided. Under the new regime, there has been a significant increase in the level of cash left in the payment system overnight. This article details the motivation for the changes and the key features of the new regime and provides some initial observations of their impact. The article notes that the implementation of the new regime, which occurred over a four-month period, has been largely uneventful and that there have been few signs of stress since the Reserve Bank liquefied the system.

## 1 Introduction

This article provides details of the changes to the liquidity management regime that have taken place since June 2006. A previous *Bulletin* article<sup>1</sup> provided an overview of how the Reserve Bank conducted liquidity management at that time; readers are referred to that article for a detailed description.

In the 2004/05 *Annual Report*, the Reserve Bank announced that one of the Governor's priorities for the 2005/06 financial year was for the Bank to work to ensure that adequate liquidity was being provided to the banking system, with collateral requirements and risks being balanced appropriately between the Reserve Bank and the New Zealand banking sector.<sup>2</sup>

The method the Bank had used to provide liquidity to holders of accounts in the Exchange Settlement Account System (ESAS) had not been comprehensively reviewed for a number of years. Recent years had seen the Bank make a number of incremental changes to the methods it used to provide liquidity to the system, mainly in response to problems it had encountered, and as a result of other regime changes. These included the implementation of the Real Time Gross Settlement (RTGS) system, Official Cash Rate (OCR), and the New Zealand dollar's entry into Continuous Linked Settlement (CLS).

Subsequent to a comprehensive internal review in the latter half of 2005, the Bank issued a consultation document<sup>3</sup>

in March 2006. The document detailed the shortcomings of the system as it was then and a preferred regime for liquidity management. Following this, the new regime was introduced in July 2006.<sup>4</sup> This article summarises the motivations for the changes, the new framework and how it was implemented.<sup>5</sup>

## 2 Time to change

Prior to the changes in July 2006, the prevailing regime had been in existence since the introduction of the OCR in March 1999. In general terms, the main elements of the liquidity management framework were as follows:

- There was a \$20 million target for the cash left in the payment system overnight.
- ESAS participants raised cash each day by lodging securities with the Reserve Bank (predominantly government securities, but also limited quantities of private sector securities). This is known as the automated intra-day repurchase facility (Autorepo).
- Automated overnight rollover<sup>6</sup> of Autorepo as well as a manual overnight facility – the overnight reverse

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<sup>4</sup> The June implementation paper is available at <http://www.rbnz.govt.nz/finmarkets/2651623.pdf>

<sup>5</sup> For a detailed discussion of the new regime, readers are referred to the consultation and implementation papers. The regime and its implementation have also been discussed in the May 2006 and November 2006 editions of the Reserve Bank of New Zealand *Financial Stability Report*.

<sup>6</sup> Autorepo rollover was a facility where users of the Bank's intra-day cash facility could roll a transaction overnight using government security and limited amounts of bank and corporate paper. This facility was transacted at 30 basis points above the OCR.

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<sup>1</sup> See Frazer J, (2004).

<sup>2</sup> Available on the RBNZ's website at <http://www.rbnz.govt.nz/about/whatwedo/0094054.html> – see p40.

<sup>3</sup> The March paper is available at <http://www.rbnz.govt.nz/finmarkets/liquiditymanagement/2468835.pdf>.

repurchase facility (ORRF).<sup>7</sup>

- Typically, daily open market tenders were used to inject (reverse repurchase using government securities) or withdraw (repurchase using government securities) cash
- Foreign exchange (fx) swaps were used to inject cash.

Incremental changes had been made over the intervening seven years. Most of these changes had been driven by the emergence of symptoms of stress either in the money markets or in the Bank's open market operations (OMOs). These symptoms suggested that insufficient liquidity was at times available to the banking system or that the liquidity that had been provided was injected in an inefficient manner.

Examples of these symptoms included delayed or 'just-in-time' payments between market participants and failed payments (albeit rare). There had also been an increase in the level of underbid OMOs to an unsatisfactory level. The use of the Bank's standing facilities at the end of the day had also increased, namely the ORRF and Autorepo rollover. The use of these facilities had increased as a result of the underbid OMOs and inefficiencies within the inter-bank cash market. Figure 1 below shows the use of these facilities increasing, especially within the 2005/06 financial year.

The Bank had also observed significant variations in the rate at which overnight cash was trading in different markets. Figure 2 highlights the rate at which overnight cash has traded in the fx swap market relative to the OCR since late 2004. The cost of overnight funding through the fx swap market has typically been above the OCR, at times by a considerable margin.

Figure 1  
Average volume of rolled Autorepo and ORRF

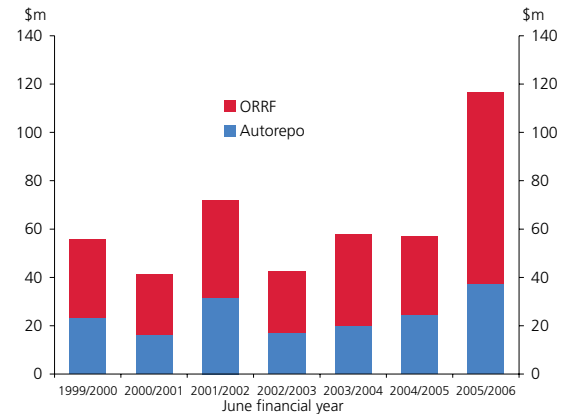
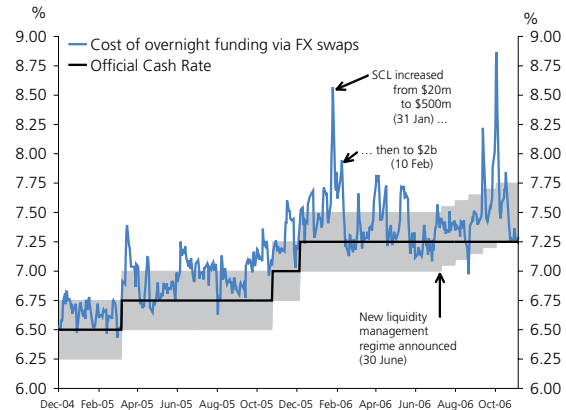


Figure 2  
The cost of funding via overnight fx swaps and the OCR



Evidence of underlying demand for an increase in intra-day liquidity was evident when the Bank temporarily allowed banks to pledge more bank paper (also known as bank bills) as collateral for intra-day loans. This measure had been undertaken to ease the introduction of the New Zealand dollar into Continuous Linked Settlement Bank's system and an associated decline in settlement and payment system problems during that period.<sup>8</sup>

There was also evidence of uncooperative behaviour in ESAS. Examples included hoarding collateral, and utilising non-government paper limits when the liquidity was not immediately required, which acted against the system working to its full potential.

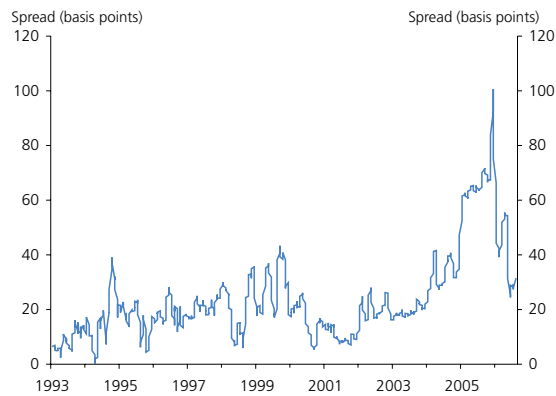
Finally, there had been a significant increase in the demand

<sup>7</sup> This facility allows the Bank's counterparties, who have signed an inter-day Master Repurchase Agreement, to borrow cash overnight using government securities as collateral. This facility was transacted at 25 basis points above the OCR. Since 5 October 2006, the ORRF rate has been 50 basis points above the OCR.

<sup>8</sup> See 'Box 2 – Continuous Linked Settlement Bank', October 2004 Reserve Bank of New Zealand *Financial Stability Report*.

for government securities (in particular Treasury bills) for use as collateral in ESAS, and for obtaining overnight or longer liquidity from the Bank. Higher demand, combined with a stable level of supply of government securities and a lack of alternative sources of collateral, had resulted in the prices of government securities increasing to historically high levels relative to their long-term average. Figure 3 shows the four-week moving average of the three-month bank bill/Treasury bill spread since 1993 and highlights the increased cost of holding Treasury bills since December 2004.

**Figure 3**  
**Three-month Treasury bill spread under bank bill**  
**(four-week moving average)**



For their part, market participants had been increasingly calling for the Bank to review the liquidity management regime and, in particular, for the Bank to accept more commercial bank debt as collateral in ESAS. These calls reflected participants' discomfort at the increasing costs of holding liquid assets to pledge as security to raise intra-day liquidity via Autorepo.

### 3 The new regime

#### Desirable characteristics

In light of these issues, the Bank identified a range of features that a preferred liquidity management regime would ideally display.

The regime should be scalable. It should readily cope with changes in the level of demand for liquidity, either over the cycle or in the long run, as the payment system grows and

when the number of market participants changes.

Regarding collateral, banks should be able to access sufficient liquidity from the Reserve Bank using collateral that is fairly valued, readily available, and naturally held by payment system participants (ie, the system should not in itself distort participants' asset allocation decisions). The supply of acceptable collateral to payment system participants should be flexible and responsive to demand, and not dependent upon exogenous factors such as changes in the Crown fiscal position. The supply of collateral should ideally be within control of the Reserve Bank so that the Bank is in a position to adjust the supply of liquidity in response to changes in the demand for liquidity. This would allow the Bank to respond effectively to changes in the requirement for liquidity, although such changes are likely to be infrequent.

In providing liquidity to banks, the Reserve Bank should not be routinely exposed to an undue amount of credit risk to banks that the Bank might otherwise supervise, or manage, in a failure situation. Having a financial exposure to the domestic banks becomes a potential conflict of interest for the Bank, as a prudential regulator, during times of financial stress.

The Reserve Bank's liquidity management operations should be in liquid markets and instruments. As previously noted, the Bank has often faced difficulties in its OMOs, especially when injecting cash via reverse repurchase at what it considered to be market rates. Operating in more liquid markets will enhance the Bank's ability to discover market rates.

Incentives should be in place to foster an environment where the commercial banks get liquidity from each other and deal with the Reserve Bank only when liquidity is not otherwise available in the market. The Bank's main role is to transact its own business and provide liquidity when it is not otherwise available through other sources (ie, other ESAS account holders).

Lastly, the Reserve Bank's operations should yield information and encourage the development of skills that will add to the Bank's role in promoting a stable and vibrant financial system. If the Bank is able to transact in more liquid money-market instruments than it has in the past, then this will

routinely provide a richer source of information on the operation of those markets, and assist the Bank in carrying out its payment-system oversight duties.

### The new regime — key features

After considering the alternatives, in March 2006, the Bank proposed moving to a fully cashed-up payment system. In such a system, the settlement cash level is set by the Reserve Bank from time to time, but driven by the medium-term demand revealed by payment system participants. The Bank expects that changes in the volume will be relatively infrequent, thus providing ESAS participants with some certainty over the supply of liquidity. This system was implemented from July to October 2006.

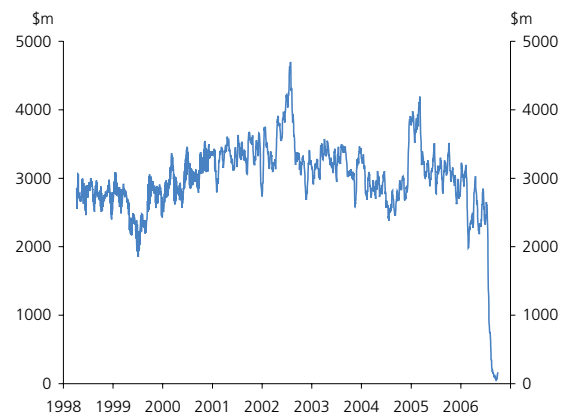
The Bank's work indicated that a level of around \$5-7 billion was likely to be appropriate. In particular, an examination of the historic and current size of liquid asset holdings by banks, and the sum of peak intra-day liquidity demands across all ESAS banks (ie, the sum of peak Autorepo demand for each ESAS participant on any given day), pointed to a requirement for around \$7 billion of settlement cash. In practice, this appears to be the case, with (as at November 2006) the level of settlement cash typically in the range \$7-7.5 billion. Typically, the peak daily liquidity raised in Autorepo was around \$3 billion, with occasional spikes of over \$5 billion. Figure 4 shows a moving average of peak Autorepo usage.

In outline, the new regime has the following characteristics:

- Compared with the old regime, a high level of cash – currently around \$7 billion versus \$20 million previously.
- The day-to-day balancing of Crown flows managed within a  $\pm$ \$500 million corridor around the target level.
- Changes in the target level of settlement cash balances considered by the Bank periodically and informed by a number of indicators of the observed demand, including: the efficient conduct of payments in ESAS, the level of usage of the Bank's standing facilities, the level and shape of the yield curve for maturities up to around a month, and the relative prices of money market

Figure 4

Peak ESAS system liquidity raised in the Autorepo facility (five-day moving average)



instruments. In general, the Bank aims to maintain a broadly stable level of liquidity in the system.

- As previously, the Bank remunerates overnight cash balances in the payment system. As described below, the rate paid is the same as the Bank's key policy rate (i.e., the OCR).
- There continues to be an ORRF (using government securities as collateral) but costing OCR+50 basis points as opposed to OCR+25 basis points previously (ie, preserving the 50 basis point corridor between overnight cash balances and borrowings).
- Intra-day Autorepo has been discontinued, thus removing the distinction between intra-day and overnight cash markets.
- The acceptance of bank bills and corporate paper as collateral as part of the Bank's normal domestic market operations has been discontinued.

### Benefits of the new regime

The new regime is scalable and flexible. The supply of settlement account balances can be easily changed and is under the control of the Bank. Further, the demand for settlement account balances is not likely to be as affected by other exogenous factors (eg, offshore demand for government securities or changes in the government fiscal position).

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Settlement account balances have become a natural part of payment system participants' balance sheets, as banks hold these balances as part of their liquidity and prudential holdings.

The price of Reserve Bank liquidity is fairly valued given that the Bank pays the OCR on settlement account balances. The OCR therefore provides a benchmark against which alternative money-market instruments, such as overnight fx swaps, can be priced. This allows the banks more choice in the liquidity instruments they hold on their balance sheets, which in turn allows banks to reduce the costs paid to generate liquidity.

The increased base level of settlement account balances in the system should better foster the development of an inter-bank cash market. In the presence of significant market liquidity, market participants should transact cash with each other at the end of the day in preference to using the Bank's standing facilities. Development of the inter-bank market is desirable to improve the distribution of cash between ESAS participants, leaving the Bank to concentrate on the provision of liquidity to the system as a whole. Greater development of the inter-bank cash market would improve the richness of this source of information for the Bank.

Finally, to support the above system, the Bank routinely operates with reference to more liquid money-market instruments than it has in the past. In the current climate of significant fiscal surpluses, fx swap rates provide the benchmark for liquidity management operations. The fx swaps market is deep and liquid in comparison to the repurchase and reverse repurchase markets. Operating more routinely in liquid markets provides a richer source of information to the Bank in its financial stability role.

### Impact on monetary policy

The new regime is a technical change to the way the payment system is liquefied – there is no impact on monetary policy. Since the introduction of the OCR, the actual quantum of cash left in the payment system overnight has not been relevant from a monetary policy perspective, provided that

the liquidity is supplied at a rate consistent with the OCR.<sup>9</sup>

Generally, the cost of raising funds relative to the OCR does not change under the new regime; but the cost of raising liquidity is de-coupled from the cost of holding acceptable security. By fully cashing up the payment system, and not relying on the lodgement of securities, payment system participants are no longer subject to the vagaries of supply and demand (and therefore price) of securities that are acceptable to the Reserve Bank.

## 4 A review of implementation

The Bank adopted a phased approach to implementation. The new regime was gradually introduced in four steps over a twelve-week period, commencing 3 July 2006. The four steps were as follows.

- The removal of commercial bank securities as eligible security in the Bank's liquidity operations on 13 July 2006. Treasury bills issued after 13 July 2006 were not eligible for use in the Reserve Bank's Autorepo facility; however, they continued to be eligible for use in the Reserve Bank's ORRF.
- Government bonds and corporate securities removed as eligible securities in the Bank's intra-day facility on 3 August 2006. Government bonds continued to be eligible securities in the ORRF.
- Interest paid on ESAS account balances was raised in increments of five basis points from OCR – 25 basis points to the OCR.
- Autorepo was discontinued on 5 October 2006.

Treasury bills continue to be eligible securities in the ORRF. The gradual reduction in the stock of eligible securities, combined with the increasing levels of cash in the system, resulted in Autorepo usage falling steadily over the period 13 July to 5 October. As can be seen in figure 4, only very modest levels of cash were raised each day in Autorepo in the month before access to Autorepo was closed.

From 3 July the Bank injected cash consistent with revealed

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<sup>9</sup> That this is so was heralded when the Reserve Bank moved to the OCR regime in 1999. See Reserve Bank (1999), especially pp 49-50.

demand as observed by the Bank. Subsequent to 5 October, when Autorepo was closed, the Bank has continued to inject cash as revealed by various indicators of demand, primarily the price of overnight money.

Since the Reserve Bank liquefied the payment system, there have been few signs of stress. The system appears to be functioning more smoothly than in the past few years, if not at anytime since the introduction of RTGS in 1998. Figure 5 depicts the cumulative transaction flow during the day for three periods within the past two years. As can be seen, the time of day when half the payments are completed is now up to two hours earlier than in the most stressed period. This is a significant improvement in payment flows.

The demand for cash has been in accord with the Bank's expectations. At the time of writing, the settlement cash level was in the region of \$7-7.5 billion. The capacity for ESAS participants to raise liquidity is better than any time since the September quarter of 2003; see figure 6.

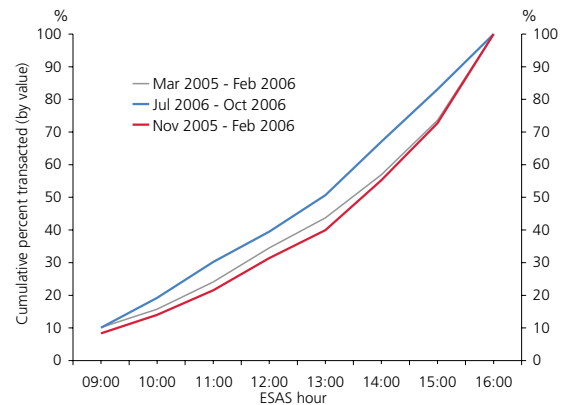
Previously, ESAS participants held in the region of \$6-7 billion of assets, which could be used to liquefy the payment system. Under the new arrangements, participants can select to use either outright cash, or lodge securities with the Reserve Bank to raise liquidity. In January and February 2006, the Bank increased the level of cash in the system to \$2 billion. As depicted in figure 6, since implementation commenced, the level of cash and repurchasable assets has risen a further \$1 billion to about \$8.4 billion. The injections of cash have all been at prices that are consistent with the OCR.

The improved liquidity has been reflected in several ways – in particular, the fall in the cost of funding through the overnight fx swap market. Subsequent to the volatility in the period immediately after the discontinuation of Autorepo, funding through the overnight fx swap market has fallen to close to the OCR (see figure 2).

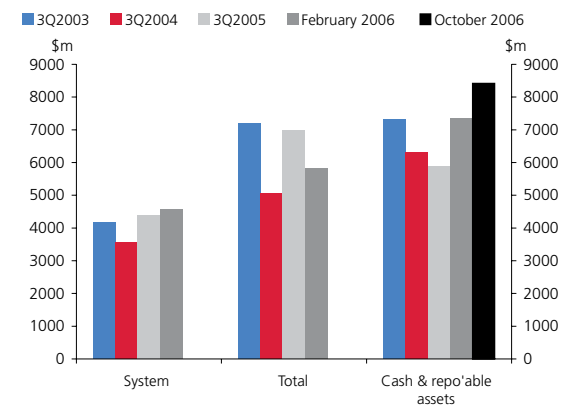
The interbank market has moved to settle transactions at about 10 basis points above the OCR. Previously, the majority of trades to bring accounts into balance were undertaken at the OCR. There now appears to be greater discrimination between unsecured and secured borrowing; but, as yet, there are too few observations to draw any conclusions.

To date, the transition to the new regime has been largely uneventful, although there have been some notable pressure points. All participants, including the Reserve Bank, are learning how to operate in the new environment. The Bank will continue to monitor the new regime closely and, as necessary, make adjustments.

**Figure 5**  
Wholesale payment flows through the day



**Figure 6**  
Capacity for system to raise or utilise cash<sup>10</sup>



## References

- Frazer J, (2004), "Liquidity management in the New Zealand banking system", Reserve Bank of New Zealand *Bulletin*, 67 (4), 2004.
- Reserve Bank, (1999), "Monetary policy implementation: changes to operating procedures", Reserve Bank of New Zealand *Bulletin*, 62 (1), 1999.

<sup>10</sup> 'System' is the peak of the cash raised in the system; 'Total' is the aggregate peak cash raised in the system by each bank; 'Cash and repurchasable assets' is the total of cash in the system and ESAS participants' holdings of government securities and eligible private sector securities'.