PAYMENT SYSTEMS IN NEW ZEALAND

In this Bulletin article John Tait introduces the reader to New Zealand payment systems and the financial risks banks and customers incur using payment arrangements. The chapter then considers methods of reducing or managing these risks.

Executive Summary

Banks provide customers with current accounts, financial instruments and access to payment systems which enable individuals, companies and government organisations to make and receive payments. It has generally been taken for granted that New Zealand banks providing such payment services are secure and operate payment systems to high standards. However, in recent years a number of developments in the overall financial system have raised some questions concerning this view.

The Bank has an interest in these matters in line with statutory requirements to promote both the soundness and the efficiency of the financial system. In particular, the Bank is concerned to ensure that payment system risks and exposures are clearly identified and managed; and that clear rules and procedures exist to handle situations where settlement of a payment system is prevented either because of technical disruptions (such as computer failures and natural disasters) or because of the failure of one of the participants in the system.

The banks share these concerns, and the various issues involved are currently being examined in detail in association with the Reserve Bank. These investigations are intended to identify key payment risks, evaluate possible options for dealing with those risks and generate movement towards best practice in the area, judged in terms of the soundness and efficiency objectives.
Instructions to Banks to Make Payment
Most economic transactions give rise to the need to make payment with money. Payment with currency (cash) is very simple and effective for many payments, in particular small ones. However, the difficulty of carrying large sums of notes and the possibility of theft or loss makes the use of cash unpopular for many transactions. Alternative methods of making payment include cheques, electronic transfers, automatic payments and credit card transactions. These methods are often referred to generically as payment instructions and are, in effect, instructions to banks to make a payment on behalf of a bank customer. In these cases a paying bank customer may issue a payment instruction that requires the customer’s bank to make payment. The receiver of a cheque (for example a retailer), will lodge the instruction with his or her banker (see figure 1). The retailer’s banker, referred to as the receiving banker, notifies the customer’s banker (paying banker) that a payment is required and requests payment on behalf of the retailer. The paying bank arranges settlement of the debt by making payment with credit balances held at the Reserve Bank. The paying bank debits the customer’s account and the receiving bank credits the retailer’s account. In New Zealand this process is completed within one banking day of the banking of the instruction for most transactions.

FIGURE 1
The Process of Making Payment

---

Reserve Bank Bulletin, Vol 55, No. 1 1992
Types of Retail Payment Instructions

In New Zealand, as in most countries with developed financial systems, there are a number of forms of payment instructions used. Cheques, written instructions on paper to a banker to pay, are amongst the oldest methods, and are still a popular choice in many countries including Australia, Canada, the United Kingdom and the United States. In New Zealand at present, a majority of non-cash payments are made by cheque.

Cheques are collected by retailers and others receiving payments and are deposited to their banks (receiving bank). All cheques issued have a string of numbers in magnetic ink at the bottom of the front. The cheque is passed through a cheque reader which electronically records the numbers - including the paying bank’s identity number and the paying bank customer’s account number. The amount of the cheque is generally recorded in magnetic ink on the cheque prior to being passed through the cheque reader. The receiving bank forwards the electronic information from the cheque and the cheque itself, to the paying bank to organise and make payment on behalf of the paying customer.

If the paying customer has insufficient funds, or the cheque is incorrectly issued, the paying bank retains the right to return the cheque unpaid to the receiving bank. The receiving bank then has the right to reverse the receipt out of the receiving customer’s account. This process can take a number of days, leaving the receiving customer exposed for that period of time. In the unlikely event that the paying bank defaults before settlement, the receiving bank may also be able to return the cheque to the receiving customer. However, the length of time that this exposure exists is much shorter, as settlement normally occurs on the banking morning following the day the cheque is lodged with the receiving banker for collection.

The receiving customer’s financial exposure to banks and bank customers, referred to above, continues from the time a payment instruction is tendered and accepted until the instruction is finally paid and cleared by the paying customer’s bank branch. This exposure is referred to technically as payment system risk. The level of these payment system risks is a function of the type of payment instruction issued (in particular, the contractual and legal relationships and responsibilities generated by the instruction); the size of the transaction; the time the instruction takes to be finally paid and cleared; and the credit worthiness of the paying customer and paying bank.

In the case of cheques, significant levels of payment system risk are generated as volumes of cheques issued are large, amounts involved on a small number of cheques are high and cheques can take a number of days to clear. Over recent years, however, overall payment system risks generated by cheques may have declined for two reasons. First, large value electronic payment systems have decreased the need to use cheques to pay large value transactions and secondly, newer forms of making payment such as cards and electronic systems have become increasingly popular.

Cards are used for credit card transactions as well as a means of operating on bank accounts through automatic teller machines (ATMs) and terminals providing for electronic fund transfers at point of sale (EFTPOS). The ATM and EFTPOS systems generally check that the customer has sufficient funds for the transaction, and update
electronic records linked to the bank account of the customer at the same time. In some
cases the customer’s account itself is updated real-time. Credit card transactions are valid
as long as the retailer or other customer accepting payment adheres to particular rules
concerning the size of the transaction and other factors.

In the case of ATMs, a customer undertaking a transaction generally receives cash and
the customer’s account is debited by the amount involved. EFTPOS and credit card
transactions result in the customer’s current or credit account being debited and the
account of the retailer, or merchant, holding the EFTPOS machine being credited. The
retailer receives a guaranteed claim against a bank that in general can not be dishonoured.
Consequently, the retailer accepting a payment instruction through the EFTPOS and
credit card systems is not generally exposed to the risk that a customer may not honour
the payment, but still may be exposed to a loss in the relatively unlikely event that the
guaranteeing bank fails before settling the guarantee. As a result, the retailer does incur
some payment system risk but this risk is primarily a bank risk. EFTPOS, ATMs and
credit cards are used primarily for retail transactions and the dollar values transferred
using cards are relatively low. Overall payment system risk generated by these systems
is therefore relatively low.

Automatic payments, direct debits and direct credits are also important mechanisms for
making payment. Companies and others requiring regular payment often obtain
agreement from customers to instruct customers’ banks to debit the customers’ bank
account. Receivers of funds resulting from automatic payments, direct debits and direct
credits may absorb payment system exposures to both the paying bank and the paying
customer. These risks are in principle the same as the risks incurred when depositing a
cheque. However, automatic payments generally take a shorter time to clear than
cheques and so for a transaction of the same value, the exposure to the paying bank
customer lasts a shorter time and is therefore less.

Wholesale Payment Instructions
As well as the above systems geared predominantly for smaller payments, there are two
payment systems used to transfer large sums electronically. These two systems are
Austraclear and KITS.

Austraclear is run by the Reserve Bank and is used by banks, financial institutions,
money market dealers and companies. It is a computer system for matching, recording,
clearing and settling security transactions. This system is based on the Australian system
of the same name.

Members of Austraclear notify the Austraclear system electronically of a trade they wish
settled through Austraclear. Once the buyer and seller of the security have notified the
same information, the “deal” is confirmed. During the day confirmed deals result in
provisional transfers of securities held in the Reserve Bank central security depository
and these securities can be on-sold on Austraclear. However, the transfers are normally
only finally settled when payment has been confirmed at a member’s nominated bank.
Settlement usually occurs at approximately 4:30 pm on the same day. Confirmation occurs when a member has access to sufficient funds to cover their positions. While no failure to settle has occurred to date, if a member did owe money on Austclear and had access to insufficient funds at the member’s nominated bank, the unsettled deals would be reversed chronologically beginning with the last transaction confirmed. This process would continue until the member’s debt on Austclear was small enough to allow settlement with funds sourced at the member’s bank. The sellers in all of the reversed transactions would receive back the securities that had been notified to Austclear as sold. Consequently, if payment is not made, the seller does not lose the securities notified to Austclear and is not exposed to the buyer to any large extent. It should be noted however, that should the price of the security fall after an aborted trade is made, then the seller may have to take a lower price for the security when selling again, and thus suffer a loss. This exposure is probably relatively low on normal trading days, but could become significant should a default of a major member occur.

After settlement on Austclear, nominated banks are liable to other banks for the net debit positions generated by their customers’ settlement on Austclear, as well as any net positions of their own. These payment system risks continue until settled the following morning during inter-bank settlement.

The Kiwi Inter-bank Transfer System (KITS) is a clearing system for high value inter-bank electronic payments. Four large banks operating in New Zealand currently use the system to transfer the New Zealand dollar leg of foreign exchange transactions.

A bank paying New Zealand dollars for foreign exchange on its own account or on behalf of a customer (often an overseas correspondent bank) will send an electronic message via the KITS system to the receiving bank indicating that the funds will be paid away to that bank at settlement. The KITS system has a facility which in future may enable receiving banks to limit payment system exposures by allowing banks to not accept payments which would increase exposure to unacceptable levels. However, once a payment has been accepted by the receiving bank, the payment is considered to be irrevocable and so may not be able to be dishonoured, reversed or otherwise unwound by the paying bank.

Final settlement of KITS transactions occurs on the morning of the following banking day and so exposures on KITS continue overnight or over the weekend. As such, the exposures are shorter in time than for cheques or some other payments but the size of the transactions is such as to make KITS generated payment system risks large.

Interchange and Settlement
At present final settlement of all payment system positions occurs on the morning of the banking day following the day the transactions are processed. In order to settle payments next morning, payment instructions need to be processed, confirmed, notified to the other bank involved (interchanged), and otherwise handled in line with agreed rules. The rules for the interchange of payment instructions are covered by operational rules and

Reserve Bank Bulletin, Vol 55, No. 1 1992
industry-wide interchange and settlement rules of the New Zealand Bankers’ Association (NZBA). Banks meet processing and interchange requirements through a combination of in-house processing and processing by computer firms including Databank Systems Limited.

At present Databank receives information concerning transactions from banks and other computer firms (prepared on behalf of banks) during and after the end of the banking day and prepares a sum of each bank’s positions against other banks. These inter-bank bilateral positions are then summed to obtain net net positions or multilateral positions for each bank against all other banks. The multilateral positions are notified to the Reserve Bank the following banking morning for settlement. On the instruction of the paying banks, the Reserve Bank arranges to debit or credit each bank’s settlement account at the Reserve Bank with the amount of its multilateral position. If the debiting of a bank’s multilateral position would result in the settlement account moving into overdraft, the Reserve Bank requires that the bank obtain sufficient balances to return the account to zero or a credit balance. Settlement account funds can be obtained by borrowing from other banks with surplus funds on the inter-bank market, borrowing settlement cash from the Reserve Bank in the float tender at the start of the settlement process, or by discounting Reserve Bank bills to the Reserve Bank. As long as sufficient settlement funds are obtained to cover the full day’s multilateral positions and transactions with the Reserve Bank, settlement is deemed to have been arranged and all the previous banking day’s transactions are then settled.

In the event that a settlement bank is unable to successfully arrange settlement due to severe financial distress or failure, the Reserve Bank would consider what, if any, actions should be taken - including whether or not the option of placing the bank into statutory management should be invoked. An important concern for the Bank would be to seek to minimise disruption to the payment system and preserve confidence in the financial system as far as is practicable. In considering any actions, the Bank would seek to avoid overturning any sound and workable failure to settle arrangements that were in place at the time of the bank failure or distress.

Payment System Risk and Systemic Risk
There are a number of different payment system risks incurred by banks and bank customers. Although many of these risks may be individually relatively small, in aggregate a bank or a bank customer may face significant payment systems risk. For example, on the KITS system under current arrangements inter-bank exposures may often exceed $500 million and can approach $1.5 billion. If a bank defaulted before settlement owing large sums to other banks through payment systems, then those other banks could in turn face problems settling and could also default. Examples from overseas experience illustrate how just one institution’s inability to discharge its payment obligations can seriously affect the position of other payment system participants and possibly lead to further failures. Such domino effects within payment systems may result in failures of a number of banks and in overall systemic failure.
Systemic risks of this sort are generated and fed by payment system risks, and so banks tend to invest in systems and arrangements that either reduce or manage these risks, or transfer them to other parties in the payment systems.

At one extreme, payment system risks can be eliminated by the adoption of real-time clearing and settlement arrangements. The paying bank customer and bank provide the funds to settle at the same time as the transaction is made, so that there is no payment system risk absorbed by receiving banks and bank customers or other payment system participants. Such arrangements require the maintenance of electronic real-time links between banks, retailers and others accepting payment instructions through to electronic interchanges and the central bank of the country. When a transaction is made, a customer will notify his bank through electronic systems to transfer funds to a receiving bank and receiving bank customer. The paying bank will notify the central bank via the electronic interchange to transfer funds from the paying bank’s to the receiving bank’s settlement account to cover the transaction. Once information concerning the transaction has passed through the electronic systems, and the transfer of funds on the settlement accounts is made, the transaction will be completed and the payment will be final. No payment system risk will be created.

Another possible method of decreasing payment system risks is to ‘net’ receipts to members of clearing arrangements against payments made by these members - leaving members exposed only to net positions against other members rather than all the ‘gross’ payments. Netting may be arranged on a bilateral or multilateral basis. Bilateral netting occurs when members net off receipts and payments between two members and so reduce risks, whereas multilateral netting generally occurs between all members of a payment system and is likely to reduce overall exposures between members significantly. The daily settlement process in New Zealand is at present a multilateral netting process.

Unfortunately, in most countries (including New Zealand) there are a number of legal concerns as to the legally binding nature of netting arrangements in some circumstances. These doubts are related to the powers of liquidators and statutory managers to reverse netted transactions in the event of a default, and perhaps more fundamentally to the enforceability of a netted position. In New Zealand it may be necessary to consider in detail the legal status of netting arrangements. This consideration might result in a review of the law as has occurred in some overseas countries.

Failure-to-Settle Arrangements

Not all payment system arrangements may be amenable to real time settlement and, of course, netting does not remove all risk as final netted positions require settlement. As a result, for some payment arrangements risks may still be significant after introduction of risk management arrangements. In order to ensure that these risks do not generate systemic problems, arrangements to manage a settlement failure are required. Traditionally, these arrangements have often involved banks dishonouring payment instructions (reversing or unwinding) in the event of a bank default, implying that bank customers bear much of the initial impact of a default.

_Reserve Bank Bulletin, Vol 55, No. 1 1992_
On the surface, unwinding could be seen as protecting the banking and financial sector against systemic problems as banks would be likely to survive failures of other banks if customers are bearing the cost. However, this view of banks’ ability to survive a failure is perhaps a little simplistic for several reasons. First, the ability to revoke payments in this way depends on technical systems which may not be able to reverse a very large number of payments within a reasonable time, leaving banks exposed to unsettled payments for a lengthy period. Secondly, reversing payments could result in problems for some bank customers. Thirdly, banks do a lot of business with one another, and a failure to settle own-account transactions clearly can not be shifted onto customers. Finally, reversing payments is likely to severely undermine confidence in the banks involved and could ultimately result in a loss of confidence in banks in general.

Other failure-to-settle arrangements include collateralisation and loss-sharing arrangements. Collateralised systems generally require payment system participants to post collateral with the central bank or clearing house for use should the participant default on payment system obligations. Loss-sharing arrangements, which may also be collateralised, require payment system participants to contract to share in any losses created by a default of another participant. Often, loss-sharing arrangements require that participants provide support to the payment system in proportion to the exposure of the participant to the defaulting participant.

Loss-sharing and collateralised systems where the losses are linked to exposures to the failed participant are likely to be helpful in restricting systemic risks. Payment system participants face a direct incentive to manage exposures to other participants, and particularly to those that are considered more likely to fail. Loss-sharing arrangements are often supported because payment system risks and the costs of a failure tend to be clearly sheeted home to those best able to control and manage those risks.

Conclusion

Payment system arrangements are a vital part of the nation’s financial infrastructure. Individuals, companies and government agencies all need to be able to make and receive payments (ranging from small to very large) using methods which are efficient and reliable. In New Zealand, it has generally been taken for granted that our payment arrangements operate to very high standards. However, a number of recent developments have raised some questions about this view. In particular, the more fragile financial environment means that it is no longer possible to be complacent about the possibility of the failure of a significant participant in the payment system, or about the consequences this might have for the financial system more generally.

Traditional payment methods largely revolved around the use of cash and cheques. While the legal basis for payment by cheque is generally well established in the case of individual customer transactions, matters are less clear-cut when the proceeds of cheques are not collected due to the failure of one of the banks involved in the collection process. Current arrangements imply that cheques could be sent back unpaid in this
situation. However, even if this could be done with reasonable speed, it could have some serious consequences: it could lead to major legal disputes as to the rights of the parties involved and could throw some doubt on the status of the contracts and transactions in respect of which those payments were made.

In addition to these concerns, technological developments and the drive for greater efficiency have created strong incentives for the introduction of a number of new payment arrangements, many of which are wholly or partly electronic. These developments do not all have clear contractual or statutory underpinnings, and there is some uncertainty in a number of areas as to the amount of risk involved, who is bearing that risk, and what failure to settle arrangements would be invoked if one of the participants failed. There are also grounds for concern that many of those involved in making, receiving or handling payments do not have a clear understanding of the risks that they are potentially facing.

The Reserve Bank’s interest in payment arrangements stems mainly from its role in promoting the soundness and efficiency of the financial system, objectives which should be shared by all financial system participants. However, the aims are not always entirely consistent, and payment system issues bring this point into particularly sharp focus. For example, it may be possible to design a system that is absolutely safe in all circumstances, but the costs of doing this might be prohibitive. It is also possible that such a system could be significantly less ‘user-friendly’ than current arrangements. However, after taking into account such problems, it would appear that the right balance for the financial system probably involves three main elements. First, all participants in the payment system should be able to establish very clearly any risks which they face (including the effect on them of any failure to settle); secondly, that all significant participants should have available to them satisfactory options for reducing or eliminating those risks which they cannot prudently accept; and thirdly, payment system arrangements should minimise the potential for one bank’s distress or failure to impact on the soundness of the financial system. In order to reach such a balanced goal, some improvements will be required to the underlying legal framework, contractual relationships, failure to settle arrangements and the risk management characteristics of relevant payment systems.

The Reserve Bank’s interest in systemic stability implies that it will continue to take a close interest in these matters.