

Reform of the New Zealand Payment System

In this article, John Tait discusses payment system risks, and methods available to monitor, manage and reduce that risk.

Executive Summary

In recent years financial sector and, in particular, payment system changes have allowed banks to provide improved payment services to the public. However, as a result of these changes, banks are increasingly providing cleared funds to other banks, and bank customers, before receiving cleared funds themselves. If business continues as normal, then settlement is eventually received. However, should a crisis occur, perhaps as a result of a failure of a bank, then banks may not receive the amounts due to them, and could experience some difficulties. In extreme cases, the failure of one bank to settle large values of payments could cause failures of other banks, and the banking system as a whole could cease to function for a period. This is referred to as systemic failure.

Although the chance of a systemic failure is considered to be very low, the costs of such an occurrence would be very high. Hence, the Reserve Bank and the banking industry are concerned to ensure that the risk is kept to an acceptably low level.

This article discusses the causes of payment system risks, and actions that banks should take to identify, monitor and manage these risks. Methods for removing risk, in particular real time settlement and netting, are generally supported.

For those risks that are not successfully removed, payment systems should provide arrangements that would enable participants to monitor and control material exposures. Appropriate failure-to-settle agreements are also required so that, in the event of a member's failure, the system would be able to continue operating without disruption.

Introduction

A previous article, in the March 1992 Bulletin, described current New Zealand payment system arrangements, and outlined some of the risks involved and possible methods for dealing with these risks. This article focuses in more detail on the nature of the risks, and on options for reform which are now being actively considered.

Bank Payment Instructions

Most economic transactions give rise to the need to make payment with money. Payment can be made with cash, or by issuing an instruction to a bank. Instructions to banks can take the form of a cheque, a transaction on a credit card account, an electronic funds transfer (EFT), or a direct credit or debit instruction. Successful operation of all non-cash methods of payment requires:

- banks and bank customers to follow an agreed procedure that meets legal requirements and imposes clear and binding obligations on all those involved;
- the payer and the paying bank to have sufficient funds to pay the receiving customer's bank (receiving bank) for the account of the receiving customer;
- successful operation of bank and clearing house payment systems so that the transfer of money to the receiving customer actually takes place.

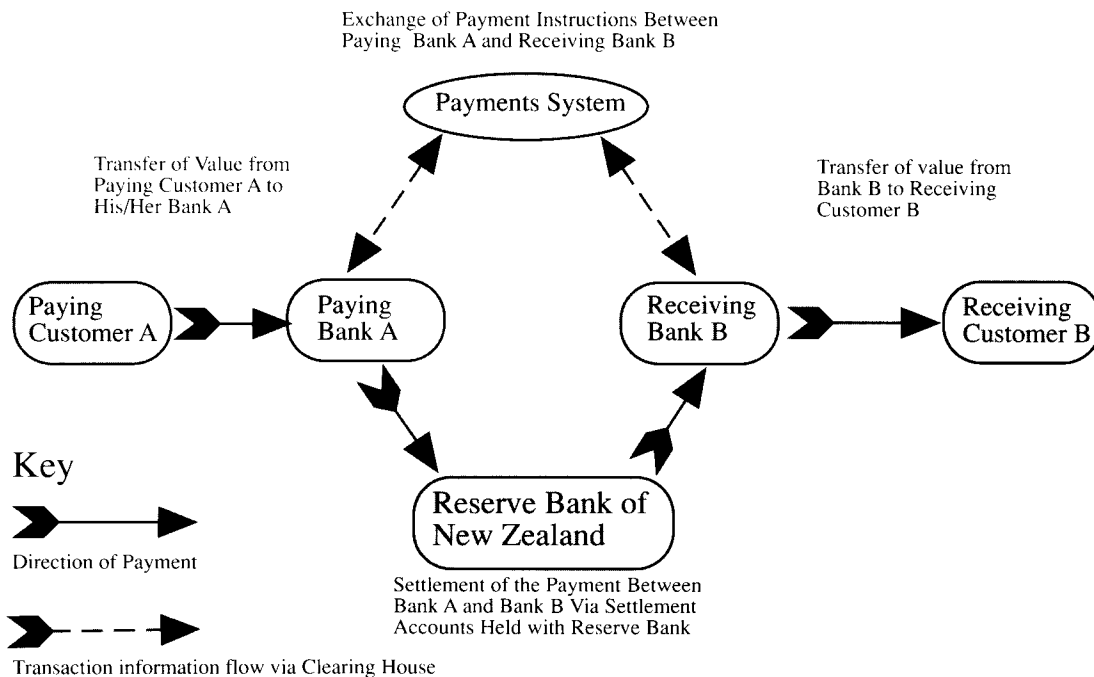
If any one of these three requirements is breached, the payment may not be made with certainty and finality, and the receiving customer will need to obtain payment again. The banking industry and the Reserve Bank are concerned to see that each of these requirements can be met appropriately - although the technical issues involved in doing this have not yet been fully traversed. As the reform process continues, the Reserve Bank and the industry will increasingly concentrate on the technical issues involved.

Payment System Rules

Banks and their customers face payment system risk with respect to other participants in the chain of payment from paying customer to the receiving customer (see Figure 1). The most obvious risk is that borne by the customer receiving a cheque, who is exposed to all the parties in the chain of payment. If any one of these parties fails while the transaction is 'in the pipeline', then the payment will not go through. The other parties shown in Figure 1, including the banks involved, can also bear risk. Even the paying customer may bear risk if the paying bank transfers funds to the receiving bank, but for some reason the funds do not reach the receiving customer. In that situation the receiving customer may still maintain a legal claim for payment against the paying customer.

All the parties to a payment can therefore bear payment system risk. The extent to which each party bears risk depends on the speed with which a payment progresses, and the contractual arrangements that the banks and bank customers enter into when undertaking a payment transaction.

Figure 1
The Process of Making Payment



In the past the means of making payment were generally limited to 'paper' transactions and, in particular, cheques. This was an important limitation as cheques can take up to seven days to process. During the processing period, the paying customer (and in some circumstances the paying bank) can dishonour the cheque. As a result, a receiving customer who accepts a cheque may not receive cleared funds for some days and bears payment system risk over that period. In contrast, the paying bank and the receiving bank may not incur substantial payment system risk to the extent that they are able to dishonour cheques or reverse entries.

In recent years the development of electronic payment systems (such as EFT) have provided new instruments for making payments. EFT systems can be used to make payment instantaneously, thereby normally removing the ability of paying customers to dishonour, and providing receiving customers with cleared funds prior to the receipt of funds from the paying bank. However, EFT systems in New Zealand do not currently allow the instantaneous transfer of final cleared funds between banks and so inter-bank risks remain (see Figure 1). As a result, although risk - in particular customer risk - is decreased by EFT systems, banks at the centre of the payment system may bear greater risks.

EFT systems generally handle large volumes of small payments. However, two electronic systems, Austraclear and the Kiwi Inter-bank Transfer System (KITS)¹, handle relatively small numbers of high value transactions. In total, these two high value systems transfer hundreds of millions of dollars per day of cleared funds, and have the potential to concentrate significant exposures on bank members.

¹ The Austraclear system is described in the following article. For some information on the KITS system refer to the article by John Tait "Payment Systems in New Zealand" in the March 1992 *Reserve Bank Bulletin*.

In contrast to the recent past, when the use of cheques effectively spread payment system risks more widely, banks are now bearing an increasing proportion of the payment system risk generated in New Zealand. This increasing concentration of risk on a small group of 'core' settlement banks has the potential to magnify any weakness in the banking system. In particular, if a bank failed without settling large debts to creditor banks, then these creditor banks could also experience considerable difficulties. In an extreme situation, there could be a 'domino' type collapse of banks, and the banking system as a whole might cease to function. The risk that the banking system may fail in this way is called systemic risk. Both the Reserve Bank, and the banking industry itself, have a strong interest in ensuring that systemic risk is kept to an acceptably low level. The reforms now being considered have this as a primary goal.

The Reform Process

As is implied above, systemic risk has increased in recent years because of the development of new payments arrangements. However, there are other factors at work, including the deregulation of the banking and financial sectors, the evolution of sophisticated methods for packaging and shifting risk rapidly between banks, and the increased international mobility of capital. To ensure that payment system risk and systemic risk do not rise to unacceptable levels, a number of specific issues were identified as requiring investigation. They included the options available for managing payment system risks, the practicality of alternative arrangements to manage the failure of a bank (failure-to-settle arrangements), and banking legal issues. Much of the detailed work on these issues has been carried out by a Working Party involving several commercial bankers and one official from the Reserve Bank, with input from others as required. This article now examines various payment system risk management options.

Real Time Settlement

The most obvious method to deal with the problem of inter-bank payment system risk and systemic risk is to remove it. Payment system risk, as indicated above, is a function of the time taken to finally arrange payment in 'cash', and the contractual form of the transaction. If the customers, banks and clearing houses involved in the payment system could arrange and agree to instantaneous payment, then inter-bank payment system risk would be removed. This solution would require 'real time' payment of any inter-bank obligation with 'cash', at the time the obligation was incurred. Central banks provide bank 'cash' (settlement cash)². By debiting the paying bank's settlement account at the central bank, and simultaneously crediting the receiving bank's settlement account 'real time settlement' could be achieved. These transactions though, would have to be irreversible.

Real time settlement of inter-bank transactions already exists in some overseas countries. Systems now operating in this way include the Swiss SIC system and Fedwire in

2 Settlement cash is often referred to as bankers' cash. It consists of the credit balances in banks' demand deposit accounts at the Reserve Bank.

the United States³. Systems are planned for the United Kingdom, Australia and a number of other countries, as banks attempt to minimise their exposures to other banks and their customers.

Real time settlement would also benefit New Zealand. The benefits of real time settlement include the removal of payment system risk as discussed above, and may also include the provision of improved customer service. Real time settlement would allow banks to deliver real time cleared funds to the receiving customer through EFT systems without absorbing risk themselves. Customers are increasingly demanding real time cleared funds in payment, as an alternative to traditional instruments such as bank cheques.

There may be some costs involved with real time settlement. At a technical level, there would probably be computing, communications and development costs, although whether these would outweigh those incurred under current payment arrangements is a moot point.

More significantly, real time settlement requires banks to maintain access to sufficient funds at the central bank to provide funds to cover their own and their customers' transactions at all times. As the needs for cash at the central bank would rise, it is conceivable that the costs of maintaining access to that cash could also rise if nothing else changed. In New Zealand, however, the Reserve Bank is well able to control the costs and yields to banks from holding settlement cash and so there is no reason to see that as a material concern.

Netting

Another option which can substantially reduce the payment system risk faced by banks is 'netting'. Netting involves the offsetting of receipts against payments so that a party to a netting arrangement need pay only the net position. For example, if a netting arrangement is in existence between two banks, then the two banks could keep a running net position, or at regular intervals add up all the receipts and payments that fall within the ambit of the netting arrangement. The bank which had the largest total value of payments since the last time the payments were settled, would then pay funds to the other member bank to cover the net amount due. If a member of a netting arrangement defaulted, the other (surviving) members would only be out-of-pocket to the extent of this net balance. Without netting, surviving banks could be required to give funds to cover all of their own and their customers' unsettled payments to the failed bank or its customers. At the same time, however, surviving banks could not expect to receive funds from the failed bank to cover unsettled payments received from the failed bank or its customers. As a result, netting can decrease the payment system risks of surviving banks very significantly. Netting can also decrease the number and value of payments to other banks and this may increase the efficiency of the payment system.

Multilateral netting extends the above general netting principles and coverage of netting to a number of participants. In this situation, all payments amongst members may be

3 For information concerning these two payment systems refer to the publication - "Large Value Transfer Systems in the Group of Ten Countries" *Bank for International Settlements*.

netted, so that each member absorbs an overall net exposure to all the members of the netting agreement. As it is possible to include more members, more transactions will be netted and payment system risk will be potentially lower than under bilateral netting explained above. However, successful multilateral netting relies on robust legal arrangements that indisputably remove the underlying gross transactions and replaces them with the netted position. This form of netting is often referred to as 'netting by novation'⁴. Unfortunately, robust enforceable multilateral netting would appear to be difficult to arrange in many countries, including New Zealand, and so there is some reluctance in the industry to rely on it here. It would be necessary to be sure that netting contracts are enforceable in the event of insolvency or crisis, and that any net balances remaining after netting had occurred would be of a manageable size that did not involve systemic risk.

In New Zealand, an informal netting arrangement offsets all payments between banks each day. Each settlement bank funds the vast bulk of payments by either receiving or paying a net position calculated from the sum of all the day's payments. One debit or credit is then made to each bank's settlement account at the Reserve Bank to cover the end of day net position during settlement. The end of day netting used during the settlement process successfully decreases the number of transactions amongst banks, but probably does not decrease inter-bank payment system exposures, as the netting arrangement is informal and may not be legally binding. The current failure-to-settle arrangements of the New Zealand Bankers' Association recognise this in that they provide that the individual transactions feeding into the netting arrangement can be unwound in the event of a settlement problem.

Management of Payment System Risk

Unless there is bank customer to bank customer real time settlement of all payment transactions, then inevitably payment system participants will bear payment system risk. The contractual relationships between banks and customers, and banks and clearing houses, decide the risks that parties bear. For example, as mentioned above, bank customers normally bear risk when cheques are used, while EFT transactions normally transfer risks to banks.

When material, payment system risks should be managed carefully. In order to do this, entities such as banks bearing material risk should investigate that risk and identify it clearly. This is not always as simple as it may sound, as the effect of insolvency law and other law, which has a bearing on payment system risk, is often less than clear. The legal basis of some payment methods and instructions may also be open to differing interpretations, which may also cloud the issue.

Having determined the level of payment system risks, participants should then decide if they are considered to be material. Once material risks have been identified then participants should set up processes and systems that monitor that risk. These systems may not need to be sophisticated, but should portray a clear profile of the risk and how that risk relates to the forms of payments used. The risk profile should identify maximum

⁴ The replacement of two existing gross contracts between two parties for the delivery of a specified currency by one single net contract such that the original contracts are discharged.

exposures. The systems should be able to alert banks and others to jumps in significant areas of risk - for example, rises in exposures on large value payment systems intra-day. Banks and other significant participants would then be able to implement methods to decrease unacceptable risks should they arise. For example, banks or clearing houses could build systems with internal bilateral limits to other payment participants. Such systems could restrict payment exposures by allowing banks and any other participants the ability to stop or delay any transactions that would result in excess exposures to paying banks. Banks or other participants could also move to increase the use and acceptance of payment instruments or clearing systems that decrease the risks faced - for example by using real time electronic systems rather than deferred settlement paper based systems.

Banks and others can decrease, or perhaps remove, any remaining systemic risk by agreeing beforehand how best to liquefy a payment system in the event of a default. These agreements - called failure-to-settle arrangements - set down the methods payment participants should follow to fund the deficiencies of a failed member. For example, in the CHIPS⁵ system in the United States, the participants set aside collateral, and will use an agreed formula to share losses should a failure by a member of CHIPS occur. Surviving members of CHIPS would fund some of the resultant loss of liquidity in proportion to average exposures over the recent past to the failed member. In this way the members who deal regularly with the failed member would tend to bear a higher share of the cost of a failure. However, a member who was dealing unusually heavily with a failed member just before failure would not face the extent of losses that would probably result without a failure-to-settle agreement. Thus failure-to-settle arrangements act to spread risks and encourage participants to manage exposures to less secure members. Payment system participants can agree to failure-to-settle arrangements that spread risk amongst members, but still retain strong incentives for members to avoid dealings with organisations that could be risky. There are also incentives to avoid membership of clearing systems that include members that are less secure than desired.

When planning such arrangements, however, it is necessary to consider carefully the practicality and the true impact of failure-to-settle arrangements. It would be difficult to ensure that the arrangements will work as expected after a default by a member, if insolvency and related law is uncertain. If a failure should occur, members of a clearing system may attempt to maintain liquidity at all costs, undermining the ability of the arrangements to work. Collateral provided to the clearing house may be difficult to access in practice. Concerns such as these have tended to cast some doubt on the effectiveness of some types of failure-to-settle arrangement, although there are a number of such arrangements which currently appear to be successful.

Concluding Comment

Payment systems are potentially vulnerable because the linkages inherent in payment systems concentrate risk on a small number of members, often banks. Should a default in that 'core' of the payment system occur, then other banks and payment system participants could face severe problems, which might spread into the economy more generally.

5 The Clearing House Interbank Payment System (CHIPS) is an interchange system owned by the New York Clearing House Association.

Payment system risks can easily be taken for granted, because they are generally hidden. Other financial problems may appear more important on a daily basis, but few other problems would cause the extent of disruption that could occur in the event of a payment system crisis. The situation is especially worrying if, as in New Zealand, there are significant risks but no robust failure-to-settle arrangements that could be confidently relied on to maintain stability of the banking system in a failure or other crisis situation.

The key to reform of the payment system must therefore be to develop payment arrangements that are aimed at removing systemic risk by ensuring that a payments crisis cannot undermine the stability of banks generally. In order to reach this goal it is necessary to identify the risks that can cause a crisis, and then establish appropriate procedures to monitor and manage these risks.

In order to reach these key reform objectives, the following key elements will have to be considered.

- The legal status of transactions should be clearly defined at all times as they are processed through to settlement. The point at which each transaction is finally paid should be clearly determined.
- The payment system should have attached to it a reliable and trusted method for achieving final settlement with settlement cash held at the Reserve Bank.
- Payment systems should have in place clear rules specifying the obligations and rights of members, their customers, settlement banks, and the payment system (or clearing house) itself.
- Payment systems that may generate material payment system risks should provide the structural capability for members and banks to be able to assess risks and control them on an intra-day basis.
- Payment systems that include netting arrangements must ensure, as far as possible, that the netting arrangements are robust and not vulnerable to any legal challenge.
- For systems that require a failure-to-settle arrangement to guard against systemic risk, then those arrangements should be sufficient to enable the payment system and its surviving members to continue to function if major members of the system failed or, for some reason, could not settle.
- Appropriate standards should be required of members of any payment systems incorporating a failure-to-settle arrangement.

All of these elements do not have any single, definitive solution, and all involve a need to balance risk reduction objectives against other considerations. However, judgements need to be made. The industry and the Reserve Bank will need to make those judgements using a cautious and conservative bias that realistically takes account of the dangers and consequences of a payment system crisis.