

**AUSTRALIAN PAYMENTS CLEARING
ASSOCIATION LIMITED**

**SUBMISSION
TO
FINANCIAL SYSTEM INQUIRY**

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AUSTRALIAN PAYMENTS CLEARING ASSOCIATION LIMITED

MISSION:

To achieve and maintain international best practice in the operation of the Australian payments clearing system.

OBJECTIVES:

APCA's role is to manage and develop the Australian payments clearing system, so as to:

- ▲ preserve the integrity of the system;
- ▲ identify and control settlement risk;
- ▲ improve the effectiveness and efficiency of the system;
- ▲ ensure principles of equity and competitive neutrality are applied in determining participation in the system;
- ▲ facilitate the co-ordination of payments clearing arrangements among providers of payment services; and
- ▲ assist the community's understanding of the system and ensure that public debate is well informed.

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EXECUTIVE SUMMARY

The Australian Payments System

The purpose of this submission is to assist the Inquiry in understanding the operations of the Australian payments system and the fundamental principles underpinning the system.

The payments system carries payment messages and transfers funds from one party to another. It is at the core of the financial system. (Refer to section 1.1).

Payments Clearing and Settlement

Australian Payments Clearing Association Limited (APCA) manages the regulatory and procedural framework governing the conduct of clearing (the cross-institutional exchange of payment messages) and settlement of the resulting obligations. (1.2, 1.3, 2.21)

Clearing and settlement arises from the operations of “open systems”, that is, payment systems in which an organisation provides its customers with the ability to transfer value to third parties who are not customers of the same organisation. (1.1)

Organisations which participate in “open systems” are called ‘providers of payment services’ in APCA’s rules. Currently these are only banks (including the Reserve Bank), building societies and credit unions. (2.2.4)

Organisations such as American Express and Diners which issue payment instruments (charge cards) are not providers of payment services as defined. They operate within “closed systems” in the sense that their customers have the ability to transfer value only one to the other. (2.2.4)

Closed systems can be very widely used and form an important part of the payments system but they do not generate clearing and settlement processes and do not, therefore, impinge on the integrity and efficiency of these processes. (2.2.4)

APCA

APCA, whose shareholders are the Reserve Bank, banks, and the building society and credit union industry bodies, has developed a reporting and decision-making structure which ensures a much higher degree of co-ordination in the management and development of Australia’s payments clearing and settlement arrangements than in the past. (2.2.1)

Payments clearing under APCA has been segmented into four systems. Additional clearing systems can be established if the need arises and there is flexibility to accommodate new payments clearing arrangements as and when they develop, whether based around new instruments, new technologies or new delivery channels. (2.2.1 to 2.2.3, 4.1, 4.2.1)

Participation in APCA's clearing systems is not based on institutional status. Participants must meet objective entry criteria and rules of operation which are designed to preserve the integrity and efficiency of payments clearing, to contain and control settlement and systemic risk, and to ensure equity of participation. (2.2.3, 3)

Integrity

It is essential that the integrity of payments clearing arrangements, and public confidence in them, is maintained and protected. (3.2, 3.3)

This applies to new and developing payments systems, built around new instruments and/or new delivery channels, as it does to existing systems. Payments systems must be sound and not easily compromised so that reliance can be placed on the wholeness, accuracy and attribution of payment messages. (4.1)

Efficiency

APCA's charter, and deliberative and decision-making structure, is supportive of continual improvements to the efficiency of payments clearing. Progress is occurring on a number of fronts, particularly in respect of replacing the physical presentment of payments clearing data with direct electronic transmission. (3.4)

Settlement and Systemic Risk

Settlement risk is the risk of a participant failing to meet its settlement obligations to other participants arising out of payments clearing. Systemic risk is the risk that the failure of one participant will bring down others. (3.3)

It is important to control and contain these risks, particularly systemic risk. Failure to settle on the part of one or more participants might well undermine confidence in the payments system and in the financial system more generally. (3.3)

APCA's rules require that organisations in the front line of settlement must be prudentially supervised to the highest standards and provide finality of payment, *i.e.*, payment which is free of default risk. Effectively this means that such organisations must have an exchange settlement account with the Reserve Bank. (3.3.4)

Failure-to-settle rules are in place in APCA's clearing systems covering cheque and direct entry payments to lessen systemic risk. (2.2.2)

In respect of large-value payments, APCA and the Reserve Bank are working closely together to develop a real-time gross settlement system to eliminate settlement and systemic risk. (3.3.3)

Competition

Artificial barriers to competition in payments clearing would tend to impair efficiency and create inequity.

APCA's approach is to marry the need for competition with the requirements of upholding the integrity and efficiency of payments clearing, and containing settlement risk. This is done by setting objective criteria for entry and participation which are all subject to trade practices authorisation. APCA's policy is that having particular institutional status (*e.g.* being a bank or building society) should not be a requirement for participation in APCA's clearing systems. (3.5)

New Developments

Development of new payment instruments and new categories of organisations offering payment services (*e.g.* telecommunication companies/software houses/retailers) might well have public policy implications. They will not necessarily fall within APCA's compass. Potentially they will do so if they result in payments clearing. (4.1)

Self-Regulation - the APCA Model

To the extent that new payment instruments and arrangements generate clearing APCA has the ability to accommodate them in its co-operative, self-regulatory structure. (4.2.1)

APCA provides a unique model for regulation which does not require legislative support. It is based on co-operation but in context of a voting and decision-making structure which facilitates effective management.

1. PAYMENTS SYSTEMS GENERALLY

1.1 Payment Services

A **payment** is the transfer of a financial asset, of the kind generally used as a medium of exchange, from one person to another. Such assets are generally cash or obligations drawn on organisations which, in the normal course of their business, provide the means for their customers to transfer value to third parties.

In Australia banks, building societies, credit unions and card organisations provide the means for individuals and entities to transfer value, one to another. In that sense they all provide payment services.

Cash payments are still important in volume terms. But non-cash means of making payments predominate in value terms and are increasingly replacing cash. This paper deals only with non-cash means of making payments.

The payments system is the institutional infrastructure which carries payment messages and transfers funds from one party's account to another's. It underpins commerce and is at the core of the financial system.

A payments system comprises payment instrument(s) and delivery mechanism(s). A **payment instrument** is the form which a payment message takes (*e.g.* cheque, credit card) and is the means by which one party transfers value to a third party. Such a message is typically a request by one party (the drawer) to another party (the drawee) to pay a certain sum to a third party (the payee).

A **delivery mechanism** is the means by which payment messages are carried from one point within the payments system to another.

Where both parties to a payment transaction maintain accounts with the same organisation payment arrangements are relatively simple. The organisation debits the paying customer and credits the receiving customer. Where the parties to the payment instruction are customers of different organisations, a process is needed for both organisations to reflect the change in their customers' accounts and for value to pass between those organisations. The process established is called clearing and settling.

The need to clear and settle payments transactions between organisations is generated by the use of payment instruments which enable value to be transferred to third parties generally rather than only to third parties who are also customers of the organisation issuing the instrument.

The provision by an organisation to its customers of a payment instrument which restricts the transfer of value to third parties who are also customers of the same organisation (**within what can be called “closed systems”**) will not, as a general rule, generate the need to clear and settle, no matter how extensive is the use of that payment instrument. Charge cards issued by organisations such as American Express and Diners come into this category.

Currently, only banks, building societies, and credit unions provide their customers with the means to transfer value to the generality of third parties (**within “open systems”**) and thereby generate the need to clear and settle transactions among themselves. This is why only these institutions (and in the case of building societies and credit unions, their Special Services Providers¹) are members of APCA.

In “closed systems” only the issuing organisation gives value to third parties which accept the instrument. In “open systems” a third party which is prepared to accept the instrument can receive value for it from an organisation other than the issuer, without needing special arrangements in place with the issuer.

1.2 Clearing

Clearing is the cross institutional exchange of individual payment messages for the purposes of obtaining settlement. It entails sorting, routing and exchanging payment instructions; verifying the integrity of the instructions and the accuracy of the sums involved; correcting the sums for errors and other adjustments and finally, determining net amounts which, once paid, will settle any resultant debt between the financial institutions involved.

The role of a clearing house was traditionally to provide a physical location where paper payment instructions could be exchanged, the associated balances tallied and the net balances owing to and by each members determined between them for subsequent settlement. Electronic exchanges, though different in form, give rise to the same process.

¹ Special Services Providers (SSPs) are industry bodies registered by the Australian Financial Institutions Commission

Clearing in Australia primarily falls under APCA's rules.

1.3 Settlement

Settlement is the exchange of value between organisations providing payment services for the purpose of providing finality of payment for the obligations arising out of payments clearing. As a general rule, settlement between banks for their obligations arising from domestic clearing payment messages is effected through transfers of balances held by those banks with the central bank of the country concerned.

Central bank money is generally regarded as the only medium which provides finality of payment; in other words payment which is free of default risk.

“One of the major roles of central banks is to provide a monetary asset free of default risk that can be used for making interbank transfers and settling interbank obligations.”²

Settlement between banks in Australia is achieved through transfers of their Exchange Settlement Account (ESA) balances held with the Reserve Bank of Australia. The Reserve Bank has also provided settlement accounts to two Special Services Providers representing majority sections of the building society and credit union industries.

Australia has a deferred settlement payment system. That is, one in which the settlement of clearing obligations between financial institutions occurs at some interval after the transfers of the payment messages underlying settlement have taken place. In Australia, settlement occurs the following morning.

Deferred settlement systems carry the inherent risk of an institution paying away and then not receiving due settlement.

Procedures in place to deal with a situation where an institution fails to settle are contained within APCA's rules for paper and direct entry clearings. The risk of failure to settle high value electronic clearing (where most risk lies) is being addressed through the development of real time gross settlement arrangements (refer to section 3.3 on Settlement Risk).

² *Central Bank Payment & Settlement Services with Respect to Cross Border and Multicurrency Transactions*. Bank for International Settlements, 1993.

2. AUSTRALIAN PAYMENTS SYSTEM

2.1 Types of Payments Systems in Australia

2.1.1 Overview

The systems used for making payments in Australia are as follows:

- (i) paper, mainly cheques
- (ii) direct entry
- (iii) financial EDI
- (iv) consumer electronic
 - electronic funds transfer at point of sale (EFTPOS)
 - debit and credit cards
 - stored value cards
- (v) high value electronic transfer systems
 - Bank Interchange and Transfer System (BITS)
 - Reserve Bank Information and Transfer System (RITS)
 - Austraclear's FINTRACS system

There are an estimated 8 million non-cash payment transactions in Australia each working day, with an estimated value of over \$90 billion³.

Cheque payments remain particularly significant though they have declined in relative importance in recent years as large-value payments have shifted to BITS, RITS and Austraclear's FINTRACS system, and as small-value payments made by individuals have shifted to credit cards and EFTPOS.

Based on the gross value of payments exchanged between the settlement members of APCA's clearing systems (refer section 2.2), cheque payments accounted for 35 per cent of the value of non-cash payments in November 1995; BITS payments accounted for 28 per cent, FINTRACS for 23 per cent and RITS for 13 per cent. The remaining 1 to 2 per cent was accounted for by direct entry payments, credit card payments and EFTPOS.

³ Based on 1991 survey data supplemented by more recent data (see Appendix 1, p.34).

Volume figures give a different perspective. The large-value electronic systems BITS, FINTRACS and RITS handle relatively few payments compared with the other systems. It was estimated in the 1991 survey that around 4 million cheques were used for payments transactions each day, and there is no particular evidence that this number has declined to any marked extent in recent years. When taken together, the number of direct entry, credit card and EFTPOS payments were also at, or slightly above, 4 million per day at the end of 1995.

Payments systems can be classified in a number of ways, but in general terms they are often classified according to the values passing over them as either large (or high) value transfer systems or small-value transfer systems.

Another important feature which distinguishes some payments systems from others, and which cuts across the classification of large-value and small-value, is the status of each payment transaction within the system. Transactions in some payments systems are irrevocable; that is, once done they cannot be undone. An example is an authorised credit card transaction. In other payments systems, transactions are provisional in nature and subject to confirmation. An example is a cheque deposit.

APCA has adopted a specific classification of payments systems for managing payments clearing in Australia (see section 2.2 below).

2.1.2 Paper (Cheques and Payment Orders)

2.1.2.1 Cheque Payments

A cheque is a written instruction to a financial institution made by its customer to pay a third party.

Cheque facilities are provided to their customers by banks, building societies and credit unions. Fifteen banks are direct clearers. This means they process cheques and then exchange them with other direct clearers at regional exchange centres. Other banks, building societies and credit unions use a direct clearer to process and exchange cheques for them.

2.1.2.2 Cheques & Payment Orders Act

The Cheques and Payment Orders Act 1986 is the body of law governing the issuance of cheques and payment orders in Australia⁴. All licensed banks in Australia may issue cheques in their own name. Non-banks are not permitted (under the Cheques and Payments Order Act 1986) to issue cheques in their own name but may issue, and have drawn on them, payment orders (which functionally are no different from cheques). In practice, however, most non-bank financial institutions which wish to provide their customers with a 'cheque' facility, issue cheques which carry their name but which are drawn on a bank under a cheque issuance facility.

The Cheques and Payment Orders Act does not detail the procedural and practical issues governing the clearance of cheques and payment orders. These are specifically covered by APCA's rules. (Refer to Appendix 4 for a note on cheque clearing.)

2.1.3 Direct Entry

The direct entry system, available to businesses/organisations for making payments to, or receiving payments from, large numbers of their employees/clients, is a development and refinement of long-standing pre-authorised payments arrangements. The Reserve Bank is a major participant in the direct entry system, processing social security and other government payments. (Refer to Appendix 4 for a note on clearing direct entry transactions.)

The direct entry system allows approved organisations, currently numbering over 59,000⁵, to make arrangements with their financial institution to debit and/or credit large numbers of customer accounts on a regular basis. Organisations can be credit users in the system, making payments (direct credits), or debit users receiving payments (direct debits).

The most common examples of credit users are those businesses that credit their employees' accounts with the amount of their salaries. Other

⁴ Among paper instruments, it is also worth noting the bank 'warrant'. Unlike a cheque or payment order, a warrant has no legislative status. By common practice and convention it is sometimes used by Australian banks to pass value one to the other; it is often underpinned by a telegraphic transfer between customers of the banks concerned. The recipient bank passes the warrant through the clearings to obtain settlement from the issuing bank. It is expected that the use of warrants will substantially decline when the new RTGS system, currently under development, is established.

⁵ APCA data base of direct entry users as at end July 1996.

less common examples of direct credits made to accounts by credit users are for payment of interest and dividends, rent and commissions.

Businesses and organisations use direct debits to draw funds from their customers' accounts for the value of, for example, insurance premiums, utility bills, repayments of debt and the like. Direct debiting of these accounts is carried out under an authority signed by each customer.

A single counterpart cover payment in the form of an offsetting debit or credit, as the case may be, is made to the organisation's account corresponding to the sum of the credits or debits made to their employees'/customers'/debtors' etc. accounts.

Credits to accounts are irrevocable in nature and cannot be reversed. Debits, on the other hand, are provisional and can be dishonoured in somewhat similar fashion to cheques.

2.1.4 Financial EDI

Electronic Data Interchange (EDI) is the electronic (computer-to-computer) transfer of business information (messages) between trading partners. The established standards for such messages are ANSI X12 and EDIFACT, with EDIFACT, the United Nations standard, progressively being accepted as the common worldwide standard.

Financial EDI is an EDI message using established standards, which contains both the remittance advice relating to a purchase of goods or services and the corresponding payment message.

Banks in Australia participate in various ways and to various extents in transactions involving both the remittance advice and the payment message. There is no common industry standard. Sometimes remittance advices are sent via Value Added Networks (VANS); sometimes they are sent by facsimile with the payment message carried by the direct entry system where interbank payments are involved; and sometimes by proprietary bank systems where the trading partners involved are customers of the same bank.

APCA is currently working to develop industry procedures and standards (based on accepted international standards) for exchanging financial EDI messages between financial institutions.

There are no statistics on the volume of transactions where the remittance advice and payment message are linked. It is clear that volumes, while growing, are still small in the overall payments system. Equally, however, the predominant use of cheques in settling business transactions

points towards the potential for financial EDI (*i.e.* using established standards) to play a large role in the payments system in the future.

2.1.5 Consumer Electronic Systems

2.1.5.1 The Systems

The payment instruments which fall in the category of "consumer electronic" are electronic funds transfer at point of sale (EFTPOS) and debit and credit card transactions. Currently, a number of Australian financial institutions and card organisations are trialing stored value cards, which also fall into this category.

In general, stored value cards are used for relatively small-value consumer transactions instead of cash. EFTPOS fills the next market niche with supermarket bills being the typical type and size of transaction. Debit and credit cards have wide usage for transactions of relatively small size but also occupy the position of being a popular payments medium for consumer durable purchases. (Refer to Appendix 4 for a note on clearing consumer electronic transactions).

2.1.5.2 EFTPOS

EFTPOS provides customers with a payment mechanism for the supply of goods and services at the point of sale. Payment is made through an on-line debit of the customer's savings or cheque account, with a resultant credit to the merchant's account overnight. This transaction, like the ATM transaction, uses a plastic card with a magnetic stripe and a PIN to identify the customer.

EFTPOS terminals are owned either by the merchant or by its financial institution.

While the service offered by EFTPOS is principally a substitute for cash and cheque payments, some merchants also offer "cash out" services, where the customer's savings or cheque account is debited in return for the provision of cash by the merchant.

Australia had over 95,000 EFTPOS terminals as at March 1996⁶. As distinct from the ATM network, the interchange arrangements between financial institutions in the Australian EFTPOS system are fully linked, allowing all EFTPOS-capable cards, regardless of financial institution issuer, to transact at all terminals.

⁶ APCA survey data - see Appendix 1.

2.1.5.3 Credit/Debit Cards

Australian financial institutions issue their own proprietary debit cards which can be used in ATMs and for EFTPOS transactions. They also issue three combined function credit/debit cards: Bankcard, Visa and MasterCard. All three cards can be used in ATMs and are widely accepted in retail establishments for credit and EFTPOS transactions.

The Bankcard Association, which has nine member banks, determines policy in respect of Bankcard. The rules governing participation in Visa and MasterCard schemes are established by their respective international bodies.

Some members of Visa International issue a Visa credit card with the supporting account being a deposit (or debit account). However, in general, credit card transactions are supported by an extension of credit by the issuer of the card to its cardholder customer.

Charge cards, *e.g.*, American Express and Diners' Club, are issued directly by the card companies themselves. These companies deal directly with both cardholders and merchants in a "closed system". Accordingly, no cross-financial institution clearing obligations are engendered by the use of these charge cards.

Some card transactions are still recorded on paper vouchers. But, for the most part, card transactions are now processed electronically from the point of capture, with card-holder accounts debited, on line, in real time.

It is estimated that, on average, Australians each have 1.5 credit/debit cards. This is slightly less than in the United States and Japan but more than in most comparable countries⁷. Merchant acceptance of credit cards has also become more widespread in the last five years and is extending to public utility organisations and other service providers offering pay-by-phone services.

2.1.5.4 Stored Value Cards

Cards which store 'rechargeable' value (and other information) in a computer chip - "rechargeable stored value", "smart cards" or "electronic purses" - come with various characteristics and degrees of sophistication.

⁷ Bank for International Settlements, 1994, *Payment Systems in Australia*.

Some organisations in Australia are issuing 'non-rechargeable' stored value cards built around magnetic stripe technology. However, these cards can only be used for a very restricted range of purposes (for example, some cards can only be used for making telephone calls, others only for travel on public transport) and because of this do not give rise to the need for clearing and settling.

The important characteristic of a stored value card issued by a financial institution is that its use creates the need for clearing and settling.

2.1.5.5 ATMs

Most ATM transactions are customer withdrawals from accounts with their own financial institution. These transactions are really part of the cash system, not the non-cash payments system described in this submission. However, when customers use ATMs other than those provided by their own financial institution, cross-institution clearing and settling is needed. ATM transactions of this type may be considered to be part of the non-cash payments system.

A number of banks have proprietary ATM networks as does CASHCARD and CUSCAL. These networks are only partially linked through bilateral arrangements. This means that while all card holders can access a large number of ATMs, unlike the position with EFTPOS, a single card cannot access all ATMs.

There were just under 7,000 ATMs in Australia in March 1996⁸. Corrected for population, Australia ranks sixth internationally in number of ATMs⁹.

2.1.6 Bank Interchange and Transfer System (BITS)

BITS is a real time, large-value electronic payments system. It is built around bilateral links between its members rather than around a central switch. BITS is owned by the four major banks and the State Bank of NSW. No other bank participates in the system, though there is provision to do so by agreement with the BITS owners.

As a general rule, BITS payments are \$10,000 or more in value and include interbank money market and foreign exchange transactions, and corporate to corporate payments. Payments, once made, are irrevocable. Recipients receive immediate and clear funds.

⁸ APCA survey data - see Appendix 1.

⁹ Bank for International Settlements, 1994, *Payment Systems in Australia*.

2.1.7 Austraclear's FINTRACS System

Austraclear is an unlisted public company. Its members are the major participants in the money market: banks, government and semi-government bodies, insurance and superannuation companies, trustee companies, non-bank financial institutions and larger corporations.

Austraclear provides a central depository and registry for money market securities (private sector and semi-government securities) and an electronic system for transferring ownership of securities at the end of day without the need for the physical transfer of paper.

Non-bank members arrange for bank members to make required payments for security purchases. At the end of the day, all banks confirm their respective net (whether bilateral or multilateral) positions, due and owing. The interbank payments then become irrevocable as do the underlying trades. Austraclear also provides its members with the ability to transfer cash, one to the other, without there being an underlying security transaction.

2.1.8 Reserve Bank Information and Transfer System (RITS)

RITS is an electronic system, established and operated since August 1991 by the Reserve Bank, which allows Commonwealth Government Securities to be transferred and settled simultaneously (*i.e.* on a 'delivery versus payment' basis), in real-time. It performs depository and regulatory functions for Commonwealth Government Securities (CGS). Transactions are irrevocable when made.

RITS transactions account for 95% of the market in CGS¹⁰. Members of RITS include all the banks and other major traders of CGS. Non-bank members (other than credit unions and building societies) must have a member bank take responsibility for their payments. Credit unions and building societies may use their SSP member.

Member banks can make cash transfers one to the other on the RITS system: *either* in real-time involving the transfer of ESA funds *or* for settlement at 9:00am on day two.

RITS has a particular role in the settlement process. Institutions with settlement accounts at the Reserve Bank (currently banks and two SSPs) are able to view their overall settlement position, as a result of the previous day's payments system operations, on their RITS screens at 7:00am. They are then able to trade on RITS from 7:00am to 8:45am to

¹⁰ Bank for International Settlements, 1994, *Payment Systems in Australia*.

ensure their settlement account will not be in debit at 9:00am, when postings are made to settlement accounts.

2.2 Australian Payments Clearing Association Limited

2.2.1 Charter

APCA was incorporated as a public company on 8 February 1992. It has specific accountability for key parts of the Australian payments system, particularly payments clearing operations. APCA's charter, as set out in its Memorandum of Association, is to co-ordinate, manage and ensure the implementation and operation of effective payments clearing and settlement systems, policies and procedures.

The impetus to establish APCA can be traced in part to recommendations of the Campbell Committee. While the Committee did not specifically recommend the establishment of a separate body for the management and regulation of payments clearing, its recommendations that there be general oversight by the Reserve Bank of applications for direct participation in cheque clearing, and for the availability of agency facilities for non-clearing banks and non-bank institutions, directed banks towards the need to review arrangements for payments clearing and to a process some years later which led to the formation of APCA. These moves were in line also with developments internationally in the reform of payments clearing arrangements. (See Appendix 2 for more detail.)

APCA does not process payments. It co-ordinates and manages payments clearing arrangements for each of the clearing systems it establishes. Individual institutions are responsible for their own clearing operations, and must conduct their operations according to APCA's rules as set out in the Regulations and Procedures for each system.

APCA's reporting and decision-making structure ensures a much higher degree of co-ordination in the management and development of Australia's payments clearing and settlement arrangements than in the past. Membership criteria, and conditions of access and participation are open to scrutiny and can be changed as circumstances change.

APCA is currently responsible for establishing and managing four payments clearing systems. The first two of these clearing systems have been established, the third and fourth are in process of being established. Existing participants in, and new entrants to, each clearing system are (or will be) provided with a single, clear body of rules and decision-making

structure governing the conduct of clearing and settling. APCA's four clearing systems are described below (section 2.2.2).

APCA's charter does not restrict it to its four current clearing systems; APCA may establish additional clearing systems if the need arises.

The Regulations and the Procedures for each of APCA's clearing systems have the effect of a contract under seal between APCA and each Participating Member in that system, and between the Participating Members in that system.

It is APCA's policy that trade practices authorisation should be sought for the activities of the Company and each of its clearing systems. The grounds on which such authorisation has been sought, and granted, to date are that the public benefit outweighs any detriment that might be caused if APCA's rules give rise to an exclusionary provision, or constitute exclusive dealing, or would substantially lessen competition within a market.

Clearing system management very much involves a participatory approach. The members of each clearing system appoint a committee of management with delegated powers and responsibilities. System members are entitled to participate in annual meetings of the relevant systems. These provide a forum for discussion on all matters relating to the operations and management of the system.

Where one of APCA's formal clearing systems has not yet been established and its requirements are still being developed, APCA provides a forum for its members in respect of the payments systems that will be regulated under that formal clearing system.

2.2.2 Clearing Systems

2.2.2.1 Australian Paper Clearing System

The Australian Paper Clearing System (APCS or CS1) has the role of co-ordinating, managing and ensuring the implementation and operation of policies and procedures for the conduct and settlement of exchanges of paper-based payment instructions between its participating members. It is responsible for preservation of the integrity and efficiency of such exchanges.

Members can participate in three capacities according to whether they directly clear and directly settle to the system for their own obligations, *or* appoint a representative to clear and settle on their behalf (*i.e.* indirectly clear and settle), *or* appoint a representative to clear on their behalf while settling directly.

Members which settle directly to the system have agreed to provide liquidity support and ultimately to share any residual settlement shortfall if a member fails to settle.

2.2.2.2 Bulk Electronic Clearing System

The Bulk Electronic Clearing System (BECS or CS2) has the role of managing the conduct of the exchange and settlement of bulk electronic low value transactions in similar fashion to that applying to paper-based payment instructions in the APCS. Similar rules are in place in respect to failure to settle.

BECS currently covers direct entry payments and might cover other types of payment instructions in the future, in so far as it provides a framework to encompass large volumes of individual payments which are batched for delivery between financial institutions.

Members can participate in two capacities: *either* as direct clearers and settlers *or* as indirect clearers and settlers.

2.2.2.3 Consumer Electronic Clearing System

APCA is close to finalising rules for its Consumer Electronic Clearing System (CECS or CS3).

In CECS the management of clearing will primarily involve setting minimum interchange standards to protect and enhance the security, integrity and efficiency of exchanges of consumer electronic payment messages.

Initially, CECS will cover ATM interchanges and EFTPOS only. Providers of credit cards (Visa, MasterCard and Bankcard) have set their own rules for participation in their respective schemes and for clearing, where it arises. Therefore these payment instruments have not been included in the interchanges covered by the CECS rules. Other types of interchange activities can be covered later by determination of APCA directors on the recommendation of the relevant management committee. A single category of membership is currently envisaged for CECS.

Taking into account the low values in consumer systems it is not currently envisaged that CECS rules will extend to loss-sharing arrangements among participants in the event of failure to settle.

2.2.2.4 High Value Clearing System

APCA proposes to establish its High Value Clearing System (HVCS or CS4) as part of the more general development of Real Time Gross Settlement (RTGS) in Australia (refer to section 3.3).

APCA and its members are implementing a payment delivery system using SWIFT FIN-Copy as the platform for the transmission of payment messages between financial institutions, and for interfacing with the Reserve Bank's central RTGS platform.

Membership of the High Value Clearing System will be available to all financial institutions with an ESA account, and wide take-up of membership is expected. The use of SWIFT FIN-Copy will supplant BITS for large-value payments, and it is expected that other large-value payments (eg warrants), and payments generally which are time critical, (other than those related to security transactions which will continue to flow over RITS and FINTRACS) will substantially shift to the new system.

SWIFT FIN-Copy is a service built on SWIFT's existing worldwide financial application network service (FIN). SWIFT FIN-Copy will allow Australian financial institutions to exchange domestic payment messages in a closed user group. APCA's HVCS will encompass rules of participation for membership of this Closed User Group.

As a result of requirements for settlement determined by the Reserve Bank, all members of the Closed User Group will directly settle for their own transactions. Consequently, there will be only one category of member in HVCS - a direct clearer/direct settler.

Failure to settle rules will be established to deal with fall-back circumstances when RTGS may, for one reason or another, be turned off. In general, however, no settlement exposure will exist in the system.

2.2.3 The APCA Model

Under APCA, the common function of payments clearing and settling is co-operatively regulated across a range of institutional types. The essential principle that has enabled cross-institutional regulation is that participation in APCA's clearing systems is not based on institutional status and is entirely dependent on meeting a set of

objective criteria relating to payments clearing and settling requirements.

Further, each clearing system puts in place its own set of objective criteria to determine participation. While in practice a common set of objective criteria is applicable to all systems, there is also the flexibility for technological differences between payments systems to be taken into account, as necessary, in setting entry criteria.

A cross-institutional approach to payments clearing and settling has produced a high degree of co-ordination in managing and developing Australia's payments clearing arrangements. Setting entry criteria and managing and developing the clearing systems occurs within the framework of a number of fundamental objectives which underpin payments clearing arrangements (refer to section 3).

Delegation to a Committee of Management of responsibility for oversight of the operations of each system enables the rules governing daily operations of clearing and settlement to be regularly reviewed and updated to take account of technological changes impacting development of clearing. The procedural rules for operating within each system can be altered by the relevant Committee of Management. These flexible regulatory processes have meant that, under APCA, the efficiency of each clearing system is subject to ongoing review and development (refer to section 3.4).

APCA's charter allows it to be responsive to developments in payments services. It is not restricted to regulating clearing and settlement of prevailing payments services. As noted above, its charter specifically enables it to adapt to the development of new payments systems by altering the classification and structure of its existing clearing systems or creating new clearing systems as the need arises.

Finally, participants in payments services have available an objective and transparent set of eligibility criteria, authorised under trade practices rules. If their role in payments gives rise to the need to clear and settle, then they can participate in APCA's arrangements if they meet the various criteria which have been set to ensure that established, fundamental objectives for payments clearing systems are maintained¹¹.

APCA provides a unique model for efficient regulation encompassing a range of organisations. The model does not require legislative

¹¹ Institutions which participate in payments clearing are provided with a unique identifier (BSB) to assist with clearing processes (see Appendix 5).

support but operates under cooperative arrangements, with voting and decision-making structures reflecting the extent of each member's involvement.

Importantly, it allows matters of a competitive nature to remain proprietary to its members. APCA does not seek to regulate payments instruments or provision of these instruments. These are areas in which its members compete with each other.

APCA's rules do not affect competition in the provision of payment services but provide a framework for efficient and effective cooperative regulation of payments clearing and settlement - an area in which cooperation by its members is appropriate and which produces efficiencies which can be of benefit to the community at large.

2.2.4 Provider of Payment Services

One of the criteria for participation, which has been applied across all clearing systems is the need to be a 'provider of payment services'. This requirement is in effect a qualifying test applicable to all organisations which might be considering membership of one or more of APCA's clearing systems.

A body corporate is a 'provider of payment services', as defined by APCA, if it provides financial deposit facilities and/or credit facilities to members of the public whereby its customers are provided with the means of transferring value to, and receiving value from, third parties. Currently only banks (including the Reserve Bank), building societies and credit unions are providers of payment services, as defined.

Provision by organisations to their customers of the *means of transferring value to third parties generally*; i.e., provision of payment instruments which can be used in an "open system", is the underlying activity giving rise to the need for organisations to clear and settle among themselves. Since APCA's charter relates to the *clearing of payment instructions*, the qualification that organisations be 'providers of payment services' is essential for participation in the clearing systems.

This criterion means that a card organisation like American Express or Diners, or retail stores which issues charge cards to their customers, are not 'providers of payment services'. Nor is a telecommunications company which might provide its customers with access over communication

networks to a fund of credits which can be transferred to other customers in that network.

While these facilities might be or might become extensively used, none allows customers to transfer value to third parties generally. In other words, none constitutes an “open system”; all are “closed systems”. In the retail store case, only a credit facility operating between the store and the customer is provided; in the card organisation and telecommunications company cases, the ability to transfer value is limited to “customers” of the same organisation.

Building society and credit union industry SSPs do not themselves meet the ‘provider of payment services’ definition. However, they have been specifically provided for in APCA’s rules because they settle on behalf of their members which do, in turn, provide payment services that give rise to the need to clear and settle.

3. PAYMENTS CLEARING OBJECTIVES AND ISSUES

3.1 Overview

A reliable, efficient and secure payments system is essential to the well-being of the economy. Payments arrangements must provide the means to transfer value with certainty, quickly and at low cost.

A payments system that underpins the economy by minimising uncertainty about payment can only be achieved if its integrity is preserved and enhanced, and settlement risk minimised. These are paramount requirements. The payments system must also be competitive and efficient since this results in speed (assisting risk minimisation) and low cost.

3.2 System Integrity

In developing rules, procedures and practices governing clearing and settling under its jurisdiction, APCA's first priority is to ensure that the integrity of payments clearing is protected and where possible enhanced.

It is essential that the integrity of the payments system and public confidence in it is maintained and protected for the very reason that the payments system is at the core of the financial system.

Payments system integrity requires that payments systems are sound and not easily compromised. Payment messages must be transmitted complete, or whole. They must be received and acted on in a timely manner. The system must be secure so that the payment message can be relied on by the receiving institution. This means that the system must be resistant to external interference (i.e. unable to be tampered with) and also that the identity of users of payment instruments cleared across the system can be relied on.

The payments system must also be robust in order to meet standards of integrity. This means that it must have a high level of tolerance to disruption, whether caused, for example, by a physical inability to exchange, technical failure from computer systems, or natural disasters.

One of the objective criteria applied for participation in each system is compliance with these standards. Clearing systems also include the obligation to “..... not adversely affect the integrity of exchanges”.

The objective of ensuring payments system integrity is applied in each clearing system by the establishment of technical and operational standards which must be met by all members.

3.2.1 Integrity Issues for Emerging Instruments and Systems

The impetus to provide financial services over public communication networks has increased, as the costs of maintaining extensive branch networks has grown, and in keeping with the demand from increasingly technology-literate customers who want fast, efficient and convenient services. It is frequently proposed that the Internet will develop as a delivery channel for payment messages and that it will be the catalyst for the development of new types of payment instruments.

However, electronic delivery systems are not automatically secure, and messages passed over them are capable of being interfered with. To date, there has been limited uptake by providers of payment services of the use of public communication networks to deliver payments. This is largely because of the current difficulty of authenticating messages sent across such networks.

When public networks are used for the delivery of payment messages customers will provide their financial institution with *electronic* messages instructing them to make payments on their behalf. These messages will be acted upon through financial institutions' payments systems. While the safeguarding of the relationship between the customer and the institution is the responsibility of the institution, it is the responsibility of the industry as a whole (through APCA) to ensure that methods of transmitting payment messages do not compromise payments clearing arrangements.

Any process for authentication of messages must operate within a credible, secure framework if it is to be truly effective. No such framework currently exists nationally in Australia. However, investigations are underway into the establishment of a national framework based on the use of digital signatures, and a system to authenticate users and certify public keys (refer to Appendix 6).

Within the payments industry, security processes will need to be established and implemented to a very high standard because it is

essential that institutions ensure that drawings on accounts are made only on the instruction of the holder of that account.

APCA, as a body representing all financial institutions providing payment services, has a strong interest in these issues and potentially may have a central role to play in the development of security standards.

3.3 Settlement Risk

3.3.1 Settlement/Systemic Risk

Payments system risk or, as it is otherwise called, "settlement risk", refers to the risk of an institution or institutions failing to settle their clearing obligations when they fall due.

Settlement risk arises when settlement between financial institutions is 'deferred'; that is, when it occurs after payment instructions have passed between them and after the recipient (or payee) institution has credited its customers' accounts or has otherwise paid away. The recipient institution, immediately on paying away, is subject to the risk that the paying institution may default on its settlement obligation.

The failure of an institution has particular implications for the payments system to the extent that the failure of any one institution to settle its obligations has the potential to undermine the capacity of other institutions to settle. It is this risk, termed "systemic risk", which underpins the measures which have been, or which are being, taken in a number of countries to counter and better manage settlement risk.

3.3.2 RTGS

Internationally, there is a strong trend towards the adoption of real time gross settlement (RTGS) for large-value clearings, to eliminate settlement risk in respect of such clearings.

In RTGS systems each (large-value) payment instruction between financial institutions results in a real time (*i.e.*, immediate) counterpart flow of settlement balances held at the central bank. Depending on the system, such flows are pre-funded or based on credit, usually collateralised credit, extended by the central bank.

Whatever the variant of RTGS systems, their essential feature is in providing **irrevocable finality of payment**. The payee financial institution knows that the funds received are good and cannot be pulled back or dishonoured by the paying institution. This same assurance can be given by the payee financial institution to its customers who are receiving funds from customers of paying financial institutions.

3.3.3 Australian RTGS

APCA and the Reserve Bank are working towards the implementation of RTGS at the end of 1997. Under RTGS, individual payments will be settled across exchange settlement accounts (ESAs) at the Reserve Bank as they are made.

The Reserve Bank is building and will operate a 'RITS/RTGS central site' to process and authorise payment messages which will be delivered to the central site via Austraclear's FINTRACS system, or RITS, or SWIFT FIN-Copy. (Refer to section 2.2.2.4.)

3.3.4 Finality of Payment/Prudential Supervision

Participation as a direct settler in each of APCA's clearing systems requires special criteria, related to the settlement obligation, to be met. These criteria are in addition to the entry criteria which apply to all participants regardless of their settlement method. They are in place to underpin confidence in the process of settlement.

The only acceptable means of providing finality of payment, is by the debiting or crediting of an ESA (or a similar account) at the Reserve Bank (or by some similar approved method). (Refer to section 1.3).

While this reflects the current legislative requirement for interbank settlement of domestic clearings (s.64 of the Reserve Bank Act 1959), it is important to note settlement through an ESA is the only means which participants in payments clearing have themselves so far commonly accepted.

The other objectively applied criterion which direct settlers must meet is the requirement for prudential supervision. Clearly it is considered by participants that the risk of failure is reduced if those participating in the front line of settlement are prudentially supervised to the highest standards. This echoes the position of the Campbell Committee.

3.4 Operational Efficiency

Because domestic payments clearing is a co-operative venture between all participants it is not directly subject to market forces to ensure its efficiency. However, against this backdrop APCA and its members have a clear interest in ensuring that clearing operations occur as efficiently as possible.

One of the objective criteria applied to entry to existing systems, to ensure that a minimum level is set in meeting this objective, is that overall efficiency of the system must not be impaired by the participant. The obligation to comply with technical operational standards also ensures that established levels of efficiency are met, and that all members of the system meet any new agreed standards improving efficiency levels.

APCA's deliberative and decision-making structure enables regular review of and ongoing improvements to efficiency within each system. Accordingly, progress is occurring on a number of fronts within each payments clearing system.

For example, operational efficiency is being progressed in both the APCS and BECS through the replacement of manual processing with electronic processing. Work is underway in the APCS to replace the physical presentment and dishonour of cheques with electronic presentment and dishonour.

In BECS direct electronic links universally replaced magnetic tape exchanges in December 1995, and it is planned to replace paper returns of direct entry items with electronic returns by the end of October 1996.

3.5 Competition

Barriers to competition tend to impair efficiency and create inequity.

APCA's approach is to marry the need for competition in payments clearing arrangements with the other priority objectives of retaining the integrity of those arrangements, preserving their efficiency, and containing settlement risk. This has been tackled by establishing objective criteria for entry and participation in APCA's clearing systems (detailed in Appendix 3) which, as previously noted, are subject to trade practices authorisation.

Quite specifically the criteria do not refer to institutional status. Banks, small and large, building societies and credit unions are all contemplated as participating members of APCA, with equal rights and obligations under APCA's rules. Entry is potentially open also to other 'payment

services providers' which might develop outside these institutional groupings.

This is an appropriate policy. It would be as equally inappropriate to dismantle barriers to entry which serve the purpose of protecting the integrity of the system, as it would be to return to the position pre-Campbell when institutional barriers to entry were in place.

4. PAYMENTS SYSTEM INNOVATIONS

4.1 Likely Innovations

New types of payments instruments are developing in a number of areas, and there is potential for new players to offer payment services to the public. The convergence of computing with telecommunications is particularly encouraging of these developments, especially in the consumer electronic area where customers want more efficient and convenient means of making payments.

To the extent that these developments generate clearing between financial institutions there is a paramount need to ensure the integrity of the payment message and its clearing process.

4.1.1 *Stored Value Cards*

A number of stored value cards are being trialed in various regions in Australia. They will be used primarily for low value transactions, with reports from the trials indicating these will be for amounts under \$20. Some cards (Transcard and QuickLink) are issued directly by the card organisation and can be used where providers of goods have made arrangements to accept the card. These do not generate the need for clearing and settling.

Stored value cards issued by financial institutions (the Visa, MasterCard and, it is expected, Mondex cards) will generate clearing and settling.

APCA's clearing system structure is capable of accommodating these developments. Proposed participation criteria in the Consumer Electronic Clearing System include the issue by participants of one of a number of consumer payment instruments. Particular stored value cards could be added under this criterion if it was desired that they operate under APCA's rules for clearing and settling consumer electronic transactions.

4.1.2 *The Internet*

The Internet is in prospect as a new electronic means for customers to deliver payment messages to pay third parties. Use of the Internet for payment purposes has been limited to date because there are no national (or international) standards in place for authentication (refer to section 3.2). However, once an accepted authentication process is established it is expected that there will be a significant increase in payment services offered over the Internet.

Payment messages, whether for goods or services purchased over the Internet or otherwise, could be sent over the medium of the Internet in a number of ways.

4.1.2.1 Payment messages to financial institutions to pay funds to a third party.

The development of specialised software is likely to enable customers of financial institutions to send payment messages from their PCs directly to their financial institutions, instructing that funds be paid to a third party. Such messages would operate as a new payment instrument, creating new obligations for financial institutions to clear and settle since the third party's financial institution would seek payment from the Internet user's financial institution.

The categories of consumer payment instrument covered by APCA's regulations could be expanded to accommodate such a new payment instrument.

4.1.2.2 Payment messages to Merchants

Messages to merchants will undoubtedly be sent via the Internet, much as is done now via the telephone, but to a greater extent, to authorise payments using the medium of charge cards, debit and credit cards.

4.1.2.3 Payment messages to a non-financial institution service provider

Electronic instructions could be sent to a service provider to debit an account held with that service provider and credit the same amount to another account held by a third party with that service provider.

For example, a telecommunications service provider could offer a facility for payment of accounts over the Internet. It would set up accounts in its customers' names for this purpose, operating in an electronic credit and debit environment.

An important feature of such a scenario is that payments could only be made between parties who hold "accounts" with the service provider, i.e.

they would be made within a “closed system” and would not of themselves generate clearing and settlement. If the service provider itself is to be reimbursed then its customers must draw on funds held with a financial institution.

While, as noted, clearing and settlement issues would not arise, the growth of payment services through this means could have public policy implications arising from flow-on effects caused by a disruption to such services.

4.1.2.4 Payment messages via overseas banks

Potential exists for the development of bill paying through the medium of accounts held with banks overseas. This in itself has no particular implications for domestic payments clearing but it may have public policy implications (*e.g.* taxation, consumer protection) which may need to be addressed.

4.1.2.5 E Cash

E Cash is akin to an electronic manifestation of stored value cards. If it were to develop E Cash would allow value to be passed from one entity to another in the form of an electronic message appropriately secured. To be effective, E Cash would need to be denominated so that particular E Cash accounts could be split and/or amalgamated as the need arose.

E Cash would need, at its base, to be an obligation drawn on a financial institution, in so far as holders of E Cash would presumably want the option of purchasing a conventional financial institution deposit with it as well as goods and services. This however would not prevent third parties from operating E Cash deposit registries which would record debit and credits to their customer’s E Cash accounts.

The development of E Cash, as described above, would occur within an open system and create clearing and settlement obligations between those financial institutions which originated the E Cash.

Whether this new payment instrument will develop to a substantial extent is conjectural. It would need to find a place among more conventional payment instruments - charge cards, debit and credit cards - using the Internet as the delivery channel.

4.1.3 New Cards

Card-based payment services could be further developed by non-traditional providers of cards, such as retailers or telecommunications service providers, for use by their customers to pay bills generally.

For example, a retailer could issue its own credit card for paying accounts of merchants that have arrangements in place for the retailer to reimburse them. Such a card would be no different in effect from existing charge card arrangements for, say, American Express or Diners. It would only operate between parties who are “customers” of the retailer, in a “closed system”.

However, if the retailer wished to issue an instrument to its customers which would be generally accepted by third parties it would be acting as a ‘provider of payment services’ - as defined by APCA - and would need to have the means to provide finality of settlement to other providers of payment services.

As a clearing and settling organisation it would also have to meet a range of other criteria which are set out in APCA’s rules and which fundamentally exist to protect the integrity of payments clearing and reduce settlement risk.

On application of those criteria currently, it would fail to meet the prudential supervision criteria, and the requirement for finality of payment by settlement of balances across ESA accounts with the Reserve Bank.

4.1.4 New Payment Services Providers

A range of new payment services providers could develop; for example, telecommunications companies, software suppliers, retailers.

Because of their access to electronic communications systems such as the public switched telephone network and the Internet, telecommunications companies are in position to provide payment services over those systems. These services could be electronic (such as over the Internet (see above)) or telephone-based (using the medium of the telephone to initiate an existing payment instrument such as a credit card for bill paying).

Telecommunications companies might, for example, also develop cards which are more widely accepted for payment purposes. Such cards could allow customers to be identified through the public switched telephone

network (e.g. by entering a PIN on a telephone designed to accept the card).

Large retailers might also look to develop their own payment services because of the size of their customer base and the presence of card reader machines in retail stores.

The development of more widespread telephonic bill paying services using existing payments instruments (e.g. credit cards) does not create any new issues in payments clearing and settling, nor would the widespread use of instruments within closed systems which require both payer and payee to have arrangements in place with the issuer of the instrument.

4.2 Regulatory Flexibility and Robustness

4.2.1 APCA's Structure and Participation Criteria

Development of new payment instruments, or the offering of existing payment instruments by new players, will not necessarily fall within APCA's compass. The essential requirement is that a need arises for inter-institutional clearing. This is dependent on the instrument in question being accepted by third parties generally (so that the provider of the instrument is a 'provider of payment services' within APCA's rules). It is only when this fundamental test is met that the potential exists to participate in clearing systems.

APCA, as previously explained, has the ability to alter the structure of its payment systems and accommodate new and additional systems; to amend its entry criteria from system to system; to adapt its technical and operational rules to provide for technological developments.

It is therefore in position to respond to any new payments instruments that may develop by putting in place new systems, and/or rules while maintaining payments system objectives.

APCA regulates only payments clearing and settlement. It has clear guidelines as to the matters that come within its jurisdiction. It does not regulate the provision of payment instruments *per se* and does not step across the boundary of inter-institutional competitive issues.

In determining those areas that it does regulate the application of the clearly objective criterion of 'provider of payment services' operates as a qualifying test, providing unequivocal guidance as to what is a clearing matter and what is not. This objective test means that questions of

institutional status *per se* are not considered. Any new player providing payment services that generate clearing and settling would be eligible for consideration for membership.

4.2.2 Settlement Criteria

If a new player does provide an instrument that would be generally acceptable by third parties in an “open system” then it must, as a prerequisite, have the means of settling its obligations with other payments services providers.

As settlement criteria are in place under APCA’s rules to minimise settlement risk and maximise certainty of payment, they are critically important.

One criterion is prudential supervision to the highest standard appropriate for the risks arising from clearing and settling. The other is the holding of an ESA (or some such other account) with the Reserve Bank. This is the commonly accepted standard of providing finality of payment.

Both these criteria respond to concerns about settlement and systemic risk. To reduce the stringency of these criteria would undermine confidence in the payments system as the basis for transacting business.

Appendix 1

PAYMENTS STATISTICS

A1.1 Payments Exchanged by Instrument

	Gross value per day (\$billion)			Per Cent of Total		
	1991	1993	1995	1991	1993	1995
Paper (mainly cheques)	30	25	27	59	36	35
Electronic (Retail)						
Direct entry	1	1	1	2	1	1
Plastic cards	**	**	**	#	#	#
Electronic (Wholesale)						
BITS	12	20	22	24	29	28
Austraclear	7	14	18	13	20	23
RITS	1	10	10	2	14	13
Total	51	70	78	100	100	100

** less than half of \$1 billion.

less than half of one per cent.

Notes:

Payments Exchanged is the gross value of items exchanged between participants in a particular clearing system whose settlement obligations are notified directly to the National Collator.

Estimates for 1991 are derived from a special survey conducted in September that year, supplemented by estimated now available from Austraclear and RITS. Figures for 1993 and 1995 are based on November figures provided to the APCA National Collator by banks and financial institutions which are participating members of APCA.

The 1991 and 1995 figures have been previously published in the *Australian Payments System Council Annual Report 1994/95*. (Table 14 on page 44).

A1.2 Cheque Transactions

	1991	1994	1995
Number of cheque transactions (millions of items per day)	4.1	3.7	3.9
Value of cheques transactions (\$ billion per day)	**	24.8	23.4

Notes:

Estimates are based on surveys conducted in September 1991 and in November 1994 and 1995. The figures are not strictly comparable.

The 1991 survey measured "cheques and paper debits" which included other (high value) paper items such as warrants.

** The 1991 survey gave a value of cheque transactions of \$69 billion per day. This was a very proximate estimate. Nevertheless the change in value between 1991 and 1994 as large-value items, particularly warrants, shifted to electronic systems (BITS, FINTRACS and RITS) is significant.

Non-Cash Payment Transactions

Based on results from the 1991 survey, supplemented by more recent estimates available from Austraclear and RITS, the dollar value of all non-cash payment transactions is estimated to be over \$90 billion per day.

A1.3 Direct Entry Payments

A1.3.1 Number & value

	1991	1994	1995
Number of direct entry credits (millions of items per day)	) 1.7	1.6	1.9
Number of direct entry debits (millions of items per day)	)	0.3	0.4
Value of direct entry credits (\$ billion per day)	) 2.4	1.9	2.6
Value of direct entry debits (\$ billion per day)	)	1.3	1.2

Notes:

Estimates are based on surveys conducted in September 1991 and in November 1994 and 1995. Separate figures for “credits” and “debits” are not available for 1991.

A1.3.2 Number of users

APCA maintains a database of identification numbers for credit users and debit users in the direct entry system. Approved users are businesses or individuals who have a commercial arrangement with any participant to process direct entry credit or debit transactions through BECS.

Credit users are much larger in number than debit users. Debit users are “sponsored” by their financial institutions and have to comply with the relevant BECS Procedures and with credit assessment and other commercial criteria set by their own financial institution(s).

The table following provides details of the number of users, both credit users and debit users, from 1992.

A3.2 Direct Entry Payments (Continued)

	No. of Credit Users	No. of Debit Users
July 1992	18,442	570
January 1993	20,764	673
July 1993	23,495	780
January 1994	26,137	870
July 1994	29,919	1,063
January 1995	34,256	1,180
July 1995	42,646	1,359
January 1996	48,845	1,614
July 1996	56,678	1,947

Notes:

Some businesses, companies etc. using the direct entry system have more than one user ID number. This means that the actual number of users in the system is fewer than shown in the table. However, this double counting would be very small and affects the credit users more than debit users.

A1.4 ATM, EFTPOS and Credit Cards

A1.4.1 Number & value - ATM & EFTPOS

	1991	1994	1995
Number of ATM withdrawals (\$ million per month)	31.3	40.7	38.8
Number of EFTPOS transactions (\$ million per month)	6.9	19.6	27.2
Value of ATM withdrawals (\$ billion per month)	3.2	4.4	4.9
Value of EFTPOS Transactions (\$ billion per month)	0.4	1.0	1.4

Notes:

Care must be exercised when comparing the data shown. The ATM figures are based on data collected by APCA, the EFTPOS figures for 1994 and 1995 were collected by the Reserve Bank and are as published in the Reserve Bank Bulletin. ATM and EFTPOS figures were taken from surveys in the months of: September for 1991, and August for 1994 & 1995.

The "ATM withdrawals" figure for 1995 may have been affected by ATMs that were out of service due to the security guards strike in August.

A1.4 ATM, EFTPOS and Credit Cards (Continued)

A1.4.2 Transactions Acquired at Merchants - Credit Cards & EFTPOS

The Reserve Bank publishes in its Bulletin figures showing credit card and EFTPOS transactions acquired from merchants each month. Transactions at merchants are passed to the sponsoring financial institution which has acquired the transaction and arranges to clear it to the institution which issued the card on which the transaction was made. The earliest available figures in this collection are for May 1994.

	Credit Card Transactions		EFTPOS	
	No. (millions)	Value (\$ million)	No. (millions)	Value (\$ million)
June 1994	17.0	1,525	17.5	923
September 1994	18.5	1,674	19.7	1,049
December 1994	25.3	2,162	23.2	1,338
March 1995	19.2	1,768	23.1	1,204
June 1995	18.8	1,742	24.0	1,264
September 1995	19.7	1,814	27.1	1,421
December 1995	27.8	2,446	31.9	1,802
March 1996	20.6	1,935	29.7	1,524
May 1996	22.8	2,025	32.8	1,686

A1.4 ATM, EFTPOS and Credit Cards (Continued)

A1.4.3 Number of ATM and EFTPOS Terminals

Financial institutions provide APCA with quarterly statistics showing the number of ATM and EFTPOS terminals. The APCA collection extends the annual figures previously published by the Australian Payments System Council (APSC) in its reports for 1992/93 and 1993/94. The table below provide a picture of the trend in the growth of ATM and EFTPOS terminals in Australia.

	EFTPOS Terminals	ATMs
APSC figures:		
June 1989	11,452	4,073
June 1990	15,514	4,636
June 1991	22,752	4,956
June 1992	26,260	5,314
June 1993	30,486	5,483
 APCA figures:		
June 1994	38,875	5,848
September 1994	41,269	5,914
December 1994	43,950	6,008
 March 1995	44,537	6,094
June 1995	62,975	6,249
September 1995	72,867	6,462
December 1995	85,234	6,775
 March 1996	96,821	6,949

Appendix 2

DEVELOPMENTS SINCE THE CAMPBELL REPORT

A2.1 Pre-Campbell

The structure of the Australian payments clearing system has changed markedly since the Campbell Report (1981)¹². This has largely been due to the de-regulation of the financial system and technological advances. In 1980 there were three centralised clearing mechanisms for non-cash payments:

- (i) **Cheque clearing** took place through the Australian Clearing House Association (ACHA), whose members comprised a number of banks which directly exchanged and cleared. The ACHA played a co-ordinating and overseeing role; setting rules for clearing and the resolution of disputes.
- (ii) **Direct entry** transactions were processed by the Central Magnetic Tape Exchange (CEMTEX) established by the banks to act as an automated clearing house.
- (iii) **Credit Card** processing facilities for Bankcard were provided by a service company, Charge Card Services Limited, (CCSL), owned by the four nationally operating banks and the State Bank of New South Wales. CCSL operated the computer processing system, carried out accounting and sales authorisation functions, and provided settlement figures to its participants.

A2.2 The Campbell Report

The Campbell Committee judged the Australian payments system to have been heavily influenced by government regulation and to suffer from inadequate competition. In particular, it observed that:

- (i) Australian banks had been reluctant to weaken their competitive position by facilitating the participation of non-bank financial intermediaries. The Australian authorities had both supported the banks' central position in payments arrangements and limited the range of institutions eligible to offer banking services.

¹² Committee of Inquiry into the Australian Financial System.

- (ii) The banks' dominance was also due to their reluctance "to extend agency and similar arrangements to non-bank financial corporations". The Campbell Committee noted that overseas, in contrast, there had been growing participation by non-banks, particularly through agency arrangements, in the provision of payment clearing services.
- (iii) While non-banks could settle net claims between themselves outside the ACHA arrangements, establishment of separate clearing arrangements by small players would be unlikely to be effective or efficient from a public interest point of view.

The Committee's key recommendations concerning the payments system were that:

- the Reserve Bank should exercise general oversight of applications for direct participation by new banks in the cheque clearing system and, if invited to do so, give evidence to the (then) Trade Practices Commission on any undesirable restrictions;
- the Reserve Bank should exercise general oversight to encourage the availability of agency facilities for non-clearing banks on reasonable but commercial terms and conditions; and
- there should be no barriers to individual, cheque-issuing banks entering agency arrangements with non-bank institutions on mutually agreeable terms.

Each recommendation was made in the context that the Committee expected the highest prudential standards to be maintained.

A2.3 The Martin Review Group

The Martin Review Group (1984) placed high priority on the need for new suppliers, including non-banks, to have access to the developing payments service industry.

It also noted the key role of banks in the cheque clearing system but considered that *prudential concerns* justified restricting the range of institutions allowed to participate directly in cheque clearing. Like the Campbell Committee, the Martin Review Group noted that, although the ACHA constituted a private commercial arrangement, its operations, including the terms and conditions of entry, fell within the purview of public policy.

The Group recommended that the Reserve Bank oversee the negotiations by new banks for membership of cheque clearing houses or for the provision of agency facilities by clearing banks.

The Group noted that overseas experience had shown that "direct participation by non-bank financial institutions in the clearing system may be compatible with maintenance of confidence in the system". Nevertheless, it did not recommend that non-bank financial intermediaries be given permission to issue cheques in their own right, or clear payment orders as principals in the clearing system.

Instead, its recommendation was that banks make available, as a matter of high priority, agency facilities to non bank financial institutions on commercial terms, subject to appropriate prudential arrangements, again with the Reserve Bank overseeing negotiations.

In other areas such as credit cards and direct entry business, the Martin Review Group was less concerned about restrictions on non-bank access. It recommended that new banks should be given access to CEMTEX. It encouraged banks to look favourably on non-bank participation for the purpose of receipt of credits. It also encouraged banks to take a positive attitude to approaches by non-banks for participation in Bankcard on an agency basis.

A2.4 Post-Campbell

A2.4.1 Overview

Major changes have occurred in domestic payments arrangements since the Campbell Committee reported on the Australian financial system:

- (i) the range and number of financial institutions now providing payments services has increased
- (ii) the variety of payment instruments available has increased
- (iii) competition in the provision of payment services - among banks and between banks and other financial institutions - is more intense.
- (iv) the establishment of self-regulation of payments clearing and settling through APCA.

A2.4.2 Paper (Cheques and Payment Orders)

There has been substantial implementation of the more important recommendations made by Campbell and Martin in regard to access to cheque clearing:

- all banks now participate in the cheque system either as direct clearers or through agency arrangements;
- in addition, there are some 60 or so cheque issuance arrangements between banks and non-bank organisations; and
- non-bank financial organisations now have the right to participate via agency arrangements in the paper clearing system.

Only three non-bank financial institutions have taken up the opportunity provided by amendments to the Cheques and Payment Orders Act in 1986 to issue payment orders drawn upon themselves. This may reflect a perception in the financial community that payment orders are second class instruments.

In 1995 the Attorney General announced that legislative changes would be made to permit non-bank financial institutions to issue cheques. The current government is considering the matter.

A2.4.3 Direct Entry

The recommendation of the Martin Group that non-banks be encouraged to participate in CEMTEX has effectively been implemented. CEMTEX was disbanded in 1984 and tapes for direct entry were then exchanged bilaterally by banks.

Building societies and credit unions developed their own separate direct entry systems through their respective industry organisations. These systems operated alongside the longer-established system operated by banks. All three systems were linked in March 1994 under APCA's regulatory umbrella, excepting that credit unions, for the time being, still operate the direct debit side of their system separately from APCA's system.

An essential requirement for the linking of the systems was the granting of settlement accounts held with the Reserve Bank to the representative bodies for the building society and credit union industries.

Since December 1995, under APCA, exchanges in the direct entry system are required to occur via electronic links, and tapes are no longer exchanged between direct clearer institutions.

A2.4.4 Consumer Electronic Systems

Some Campbell Committee recommendations which were adopted have not of themselves brought about the changes intended. In particular, agency arrangements for non-bank financial institution participation in Bankcard were offered but were not taken up because wider access to credit cards became available through Visa and MasterCard.

A2.4.5 Payments Clearing Reform

Reform of payments systems has been occurring in many countries as a result of financial deregulation, increases in the scale and complexity of international and domestic intermediation, and development of new payment instruments.

In Australia, payments system reform was undertaken both for domestic reasons, and to keep pace with international best practice.

The process began in 1988 with the establishment of a Task Force by the Australian Bankers' Association (ABA). Following this, the Reserve Bank established a group known as the Reform of the Clearing System Steering Committee (ROCS) to take over from the ABA Task Force.

Several concerns with oversight of payments clearing arrangements were identified. Clearing arrangements were fragmented and lacked co-ordination. It was perceived that more information needed to be made available both to participants and to users of the payments system. Non-bank providers of payments services did not have a voice in decision-making.

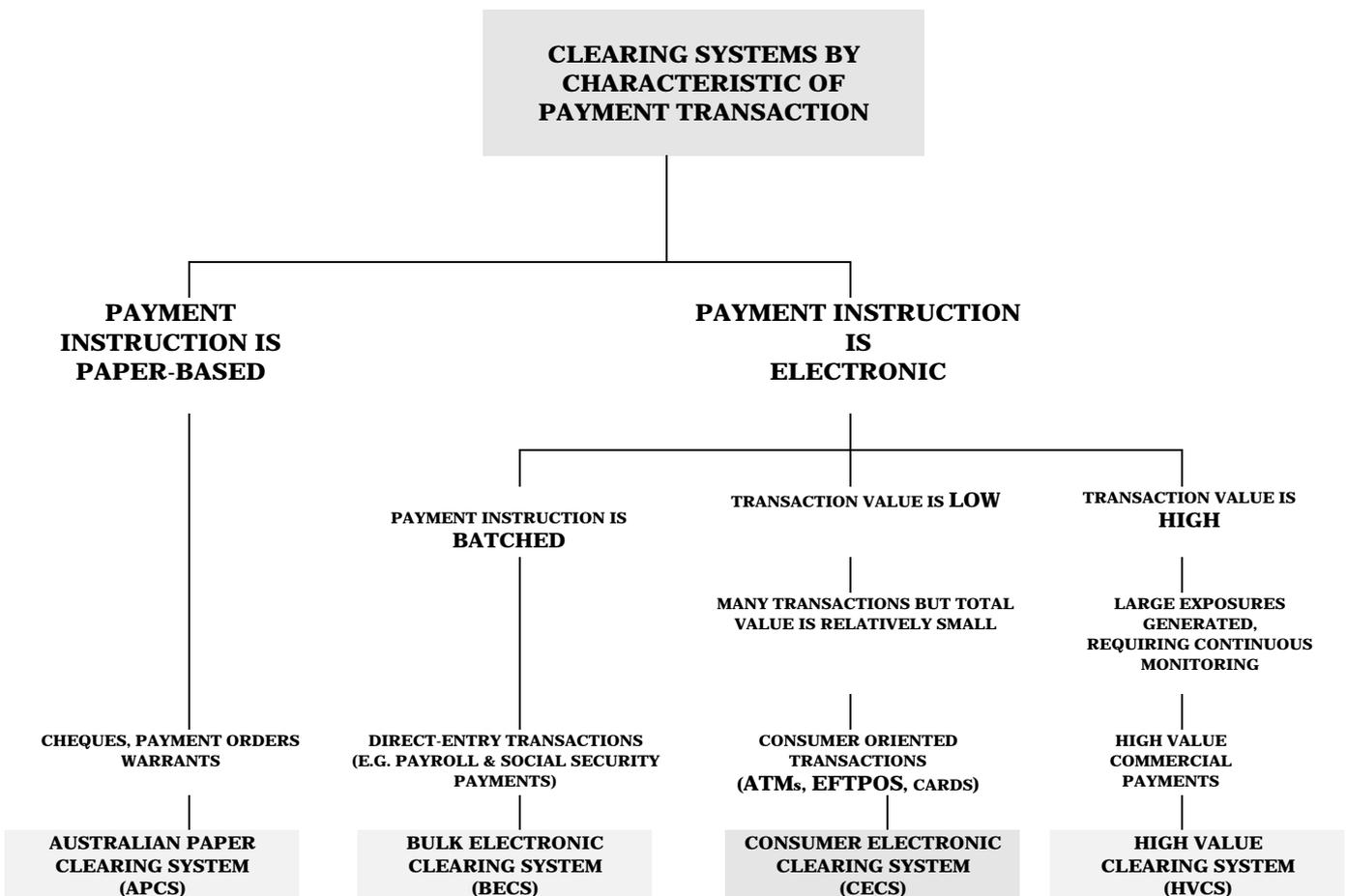
ROCS recommendations were that clearing arrangements be structured into several different systems catering for different types of payment instruments. The advantages of separate clearing systems were that:

- (i) a financial institutions could choose to participate in particular segments of clearing
- (ii) scope existed for losses in any particular system to be borne only by institutions participating in that system
- (iii) risk and exposure within individual systems could be closely and separately monitored
- (iv) efficiency would be promoted through the tailoring of rules and operational procedures to the particular requirements of each clearing system.

The deliberations and decisions of ROCS led to the establishment of APCA in February 1992. The structure adopted for organisation of the payments system under APCA reflects current technology and clearing methods. It is capable of being altered in the future to reflect new developments. The current structure is based around three characteristics:

- (i) processing of transactions - whether immediate or delayed;
- (ii) the form of payment instructions - whether electronic or paper; and
- (iii) value - whether high or low.

The following diagram illustrates the organisation of clearing systems under APCA.



Appendix 3

APCA CORPORATE STRUCTURE

A3.1 Company Form

APCA is a public company limited by both shares and guarantee. This is not a common arrangement, but it provides maximum flexibility by combining the limited liability and corporate governance features of a company limited by shares with the participatory rights more commonly associated with unincorporated associations.

In particular, this form of public company allows multiple categories of membership with different rights and obligations without the restrictions of share ownership, and the creation of a "capital base" by way of guarantee without the need for utilisation of current resources.

A3.2 Membership

APCA has three categories of membership:

- (a) share membership, which confers rights relating to the governance of the company, including rights to appoint directors and vote at company meetings;
- (b) participating membership, which confers rights of participation in the relevant clearing system or systems, and rights relating to the governance of that clearing system; and
- (c) associate membership which allows individuals and organisations to be kept abreast of the Company's activities.

The Memorandum and Articles of Association provide for the creation of additional categories of membership if required. A new category of participating membership, for example, might be needed if technological change were to give rise to a new and different type of payment instrument.

A3.2.1 Share Membership

Share membership is divided into five classes. Each of the following groups of institutions comprises one class of members:

- (i) the Reserve Bank and the four nationally operating trading banks (one ordinary share each);
- (ii) state and regional banks ('A' class shares);

- (iii) other licensed banks ('B' class shares);
- (iv) building societies' Special Services Providers (SSP), and building societies not affiliated with a share member SSP ('C' class shares); and
- (v) credit unions' Special Services Providers (SSP) and credit unions not affiliated with a share member SSP ('D' class shares).

Share members are responsible (through the board of directors) for the governance of APCA and the oversight/control of the clearing systems. The five ordinary share members each appoint one director, and the remaining four share groups each appoint one director.

All banks, building societies and credit unions (ie those institutions providing payment services) are **presently** contemplated as shareholder members, either singly or through representative bodies. Almost all institutions in Australia entitled to shares have taken them up.

A3.2.2 Participating Membership

Participating Members are institutions which participate on a day-to-day operational basis in one or more of APCA's clearing systems. Participating members need not be share members, but are encouraged to become share members if they are entitled.

Separate participating membership exists for each clearing system, so that membership is divided into four classes based on APCA's four clearing systems. Within each of these four classes there may be different *categories* of participating membership depending on whether a member clears and settles directly or indirectly.

A participating member's rights and obligations on clearing and settling payment instructions are dependent on its particular *category* of membership. All categories of participants have the same rights to vote at meetings of the relevant clearing system, and to appoint a committee of management for that clearing system. Each clearing system has Regulations and Procedures in place setting out these rights and obligations, and detailing operating procedures required in the system.

Participation in APCA's clearing systems is not based on institutional status. It is dependent on a set of objective criteria which relate solely to payments clearing and settlement requirements.

The requirements for participating membership are that a participant must:

- (a) be a body corporate which carries on business at or through a permanent establishment in Australia;
- (b) be a provider of payment services or a Special Services Provider approved by the Australian Financial Institutions Commission;
- (c) be able to comply with the Regulations and the Procedures and related technical and operational standards;
- (d) agree to pay all applicable fees, costs, charges and expenses;
- (e) not adversely affect the integrity of exchanges or otherwise introduce a significant new risk into the system;
- (f) not impair overall efficiency.

Clearing system participants which directly settle must meet additional criteria related to their settlement obligation.

They must be subject (whether by legislation, mutual agreement or otherwise) to prudential supervision by the Reserve Bank, AFIC or a State Supervisory Authority (or fall within one or more other categories involving criteria as to prudential supervision and financial standing).

Additionally, they must provide finality of payment for the obligations they incur as a result of exchanging payment instructions, by the debiting or crediting of an ESA (or a similar account) at the Reserve Bank (or by another approved method).

It should be noted that the Banking Act 1959 (s.64) requires that settlement of the balance between banks arising from domestic clearing transactions must occur by means of accounts held with the Reserve Bank.

A3.2.3 Associate Membership

Associate members are persons or organisations, not being share members or participating members, who are otherwise interested in the functional integrity and efficiency of clearing systems. Associate members have no voting or participation rights but are entitled to attend Annual General Meetings and receive information about the Company and its clearing systems.

A3.3 Management

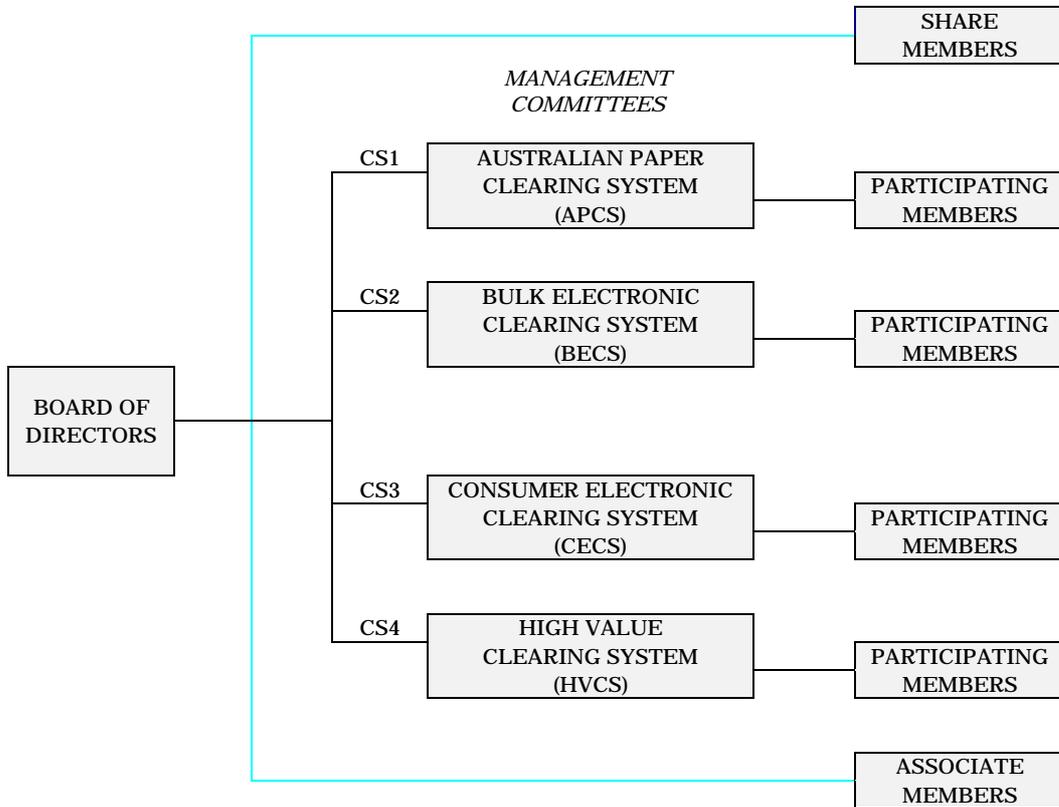
The Board of Directors, appointed by the shareholders, is ultimately responsible for the management of the company. Day-to-day management of the company is delegated to a Chief Executive Officer.

Committees of Management are appointed by the respective clearing system members to oversight the operations of each clearing system. Broadly, they are responsible for technical and efficiency standards, operating procedures and policies, supervision of observance of the clearing system rules, assessment of clearing volumes, dispute resolution, and approval of membership applications according to the rules.

The right to nominate members of Management Committees, and committees created by the Board to bring proposed clearing systems to the point of establishment (called Special Purpose Committees) mirrors the entitlement of share members to appoint directors to the Board. Appointment rights for participating members are structured on the categories of share membership and the accompanying individual or group entitlement to appoint a director. However, any direct clearing institution which attains a certain percentage of the clearing volumes in that system, is entitled to directly appoint a member on the relevant management committee.

The structure of Management Committee representation is not mandated by the Company's Articles of Association, and is able to be altered by the clearing system membership at general meetings.

APCA CORPORATE STRUCTURE



A3.4 List of Share Members

Ordinary share members

Australia & New Zealand Banking Group Limited
Commonwealth Bank of Australia
National Australia Bank Limited
Reserve Bank of Australia
Westpac Banking Corporation

"A" class voting redeemable preference share members (State bank members)

Advance Bank Australia Limited
Bank of Melbourne Limited
Bank of South Australia Limited
Bank of Queensland Limited
Bank of Western Australia Limited
State Bank of New South Wales Limited
Trust Bank

"B" class voting redeemable preference share members (Other bank members)

Adelaide Bank Limited
Arab Bank Australia Limited
Bank of America NT&SA
Bank of China
Bank of New Zealand
Bank of Singapore (Australia) Limited
Bank of Tokyo-Mitsubishi (Australia) Ltd
Bankers Trust Australia Limited
Banque Nationale de Paris
Barclays Bank PLC
Challenge Bank Limited
Citibank Limited

Deutsche Bank AG
HongkongBank of Australia Limited
IBJ Australia Bank Limited
ING Mercantile Mutual Bank Ltd
Lloyds Bank NZA Limited
Macquarie Bank Limited
Metway Bank Limited
Midland Bank plc
NatWest Markets Australia Limited
Overseas Union Bank Limited
Queensland Industry Development Corporation
Standard Chartered Bank Australia Limited
State Street Bank & Trust Company
St. George Bank Limited
The Asahi Bank, Ltd.
The Chase Manhattan Bank
The Dai-Ichi Kangyo Bank, Ltd.
The First National Bank of Chicago
United Overseas Bank Ltd

"C" class voting redeemable preference share members (Building society members)

Australian Association of Permanent Building Societies Incorporated
SUNCORP Building Society Limited

"D" class voting redeemable preference share members (Credit union members)

Credit Union Financial Services (Australia) Limited
Credit Union Settlement Services Limited

Appendix 4

CLEARING PROCESSES

A4.1 Cheque Clearing

When a cheque is deposited to an account in Australia the depositor's account is credited the same day and, if the account is interest bearing, interest begins to accrue immediately.

While interest accrues from day one, access to cheque proceeds is not necessarily available from day one. Some financial institutions provide immediate access to most of their customers, others provide such access only by arrangement with particular customers. Often customers must wait some days before the proceeds of cheque deposits become available. This period is related to the time it takes for cheques to 'clear'.

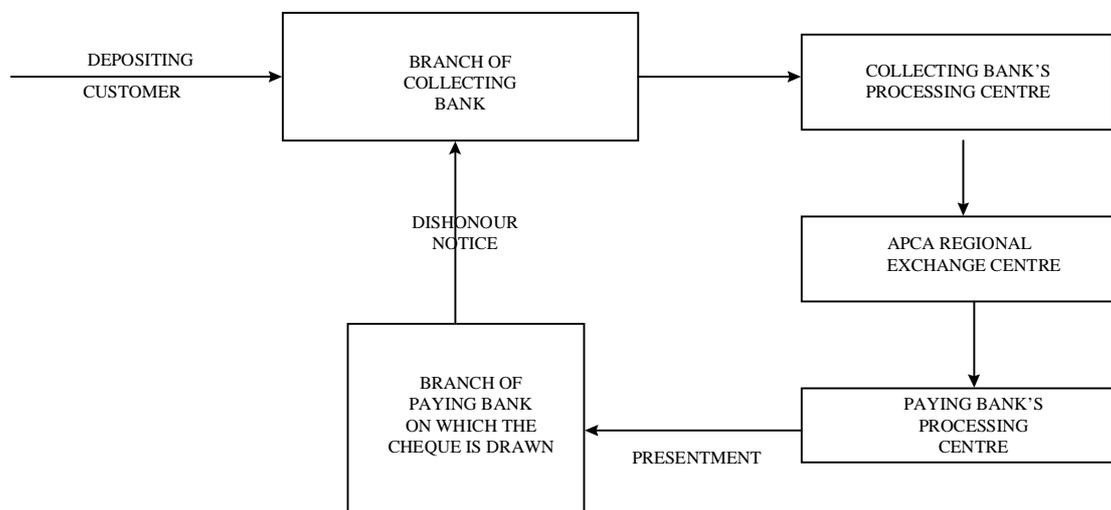
The clearance time of a cheque is the time it takes for a cheque, once deposited into an account, to travel from its collection point to the domicile of the account on which the cheque is drawn, plus an allowance for the time it takes for any advice of dishonour to travel back to the collecting point.

A recent sample survey conducted by APCA found that dishonoured cheques that had been deposited on day one were returned as dishonoured between days three and eight, with an average of days four to five.

In general, cheques take longer to clear the greater the number of indirect clearing institutions in the chain, and the greater the geographical distance between certain important points in the chain; *i.e.* between the point of collection and the applicable regional exchange centre and between this point and the place of domicile of the account on which the cheque is drawn.

Work is underway in APCA to shorten clearance times by the use of electronic messaging. That is, by transmitting cheque details electronically between institutions (see section 3.4).

CHEQUE CLEARING CYCLE

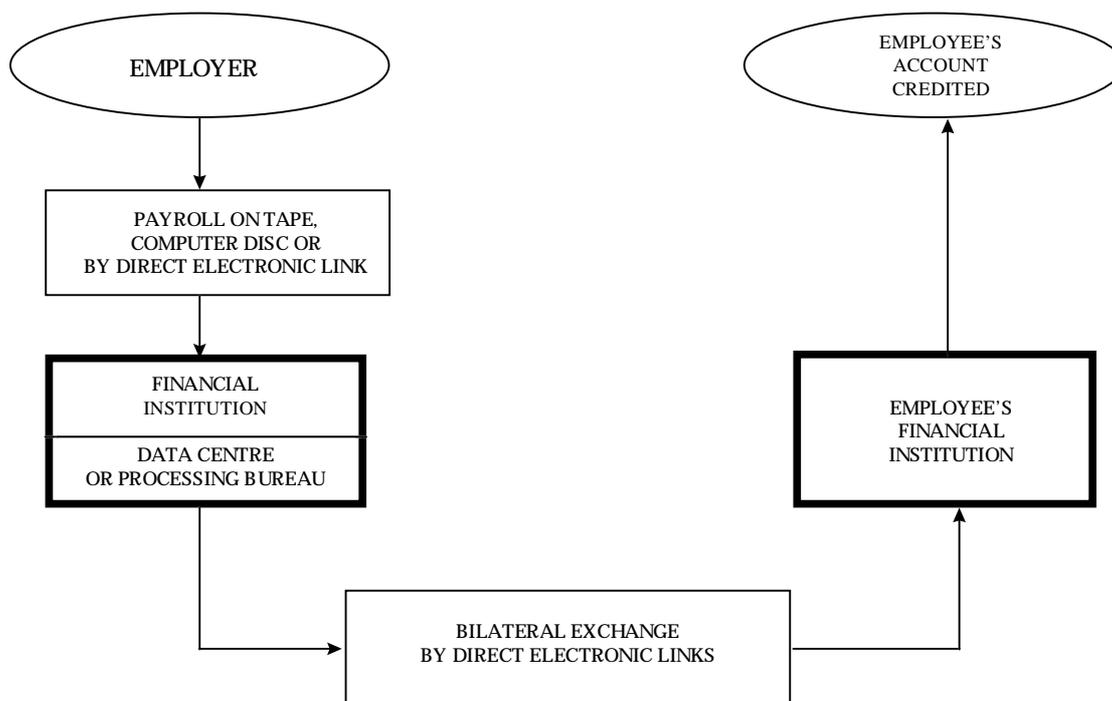


A4.2 Direct Entry Clearing

Instructions from approved organisations, containing details of the customers' accounts and amounts to be processed, are transmitted in electronic form to their financial institutional. Financial institutions, in turn, process this information, arrange it according to the financial institutions which hold the accounts to be credited and/or debited, and then exchange files accordingly.

Many countries have an automated central clearing house to perform the processing and exchange of direct entry transactions. In Australia, while some financial institutions use the services of specialised companies to process and exchange direct entry transactions, the bulk of transactions are processed by each participating financial institution and exchanged bilaterally in accordance with APCA's rules.

DIRECT ENTRY (EXAMPLE: PAYROLL PAYMENT)



A4.3 Consumer Electronic Clearing

The exchange of payment messages between financial institution participants in the consumer electronic systems occurs through bilateral arrangements. APCA is developing a range of common industry standards which will apply to those exchanges which are not otherwise covered by Bankcard, Visa and MasterCard rules.

Appendix 5

BSB NUMBERS

BSB numbers provide a way to identify financial institutions and to sort payment instructions accordingly. The BSB is a six-digit number where the first two (or three) digits comprise the ***institution identifier*** and the remaining digits are used to identify a particular branch, or a specific processing centre, or an administration point, within that financial institution.

BSB numbers appear on all cheque forms and paper vouchers as machine readable MICR encoded characters. They are also an integral part of the set of electronic messages making up an electronic payments instruction.

APCA has responsibility for allocating the institution identifier. Its policy for determining eligibility for a BSB identifier covers institutions other than financial institutions. All the banks and many building societies have each been allocated individual BSB identifiers. The credit unions and the remaining building societies chose to use a BSB number based on the identifier allocated to their industry bodies (CUSCAL and ASL respectively). To obtain a BSB, an applicant must:

- (a) be (or eligible to be) a Participating Member of at least one of APCA's Clearing Systems that uses BSB identifiers; or
- (b) be accepted as a Non-Member Appointor of at least one of APCA's Clearing System that uses BSB identifiers.

Providers of Payment Services (banks, building societies and credit unions) and Special Services Providers (for example, ASL, CUSCAL and CUSS) would be eligible for a BSB identifier under condition (a) above.

Under (b), institutions that are not members of APCA's clearing systems may also be allocated a BSB identifier once that non-member has put a Representation arrangement in place with a Participating Member and been approved by the relevant Management Committee. The non-member must provide the system with an undertaking in which it agrees to abide by the Regulations and Procedures of that Clearing System.

Appendix 6

NATIONAL FRAMEWORK FOR PUBLIC KEY AUTHENTICATION

A6.1 Digital Signature Identification

Users in electronic systems are able to be identified through digital signatures if they are issued with a “digital key pair”. The digital key pair comprises :

- (i) a unique **digital signature generation key (private key)** which is private and confidential to that user; and
- (ii) a unique **digital signature verification key (public key)** which is made public.

The sender of a message can use his digital signature generation key to generate a digital signature which he attaches, as additional data, to the message. This digital signature can identify both the sender and the message itself. The receiver of the message uses the sender’s digital signature verification key to verify the sender’s digital signature. In this way, the authenticity of the message is capable of being established.

A6.2 Standards Australia Task Group Recommendations

A Standards Australia committee, the **Public Key Authentication Framework Task Group** (“PKAF Task Group”), has released a draft report providing “recommendations on the establishment of an infrastructure able to meet the needs of Australian business and government operations in their applications of electronic messaging and commerce by providing a credible national digital signature system”.

The PKAF Task Group has based its recommendations on the use of digital signatures and public key cryptography.

A6.3 Overview of Proposals

The draft proposals recommend an authentication process involving the issue to users of digital key pairs within a system which requires **registration** of users’ private keys, and **certification** of their public keys. The underpinning principle is that credibility of that registration and certification system is dependent on users having access to, and being able to rely on and trust in, information about both the registered identifier and the certified public key of the sender.

A system of standards and policies would be established, within an organisational framework, for the registration and certification processes. These standards and policies would create a credible infrastructure, or framework, within which a trustworthy verification process could be applied to a sender's public key. Certification would be undertaken by bodies known as certification authorities, approved and authenticated within the organisational framework.

A6.4 Certification

The registered private key would be verified by means of the public key listed in a certificate issued by a certification authority. The certificate is therefore crucial to the process because the recipient of an electronic message would rely on the certificate to verify that the public key detailed on it is uniquely tied to the private key attached to the message.

The crux of the certification framework is that certificates would be generated by, and obtained from, a trusted source - the certification authority - and that there would be mechanisms in place to confirm that a certificate has been generated by that certification authority.

Users in electronic systems would determine whether a certification authority is sufficiently "trustworthy" for their applications. There could be variations in levels of trust associated with different certification authorities, although minimum standards would be set for authenticating digital key pairs (ie. both the public and private keys of a user).

Financial institutions could appoint their own certification authorities to identify and authenticate their users to a level satisfying requirements for payments system integrity.

A6.5 Organisational Framework

An hierarchical structure is proposed. A certification authority must have its identity verified, and be authorised as a certification authority if certificates it issues are to be credible. It will need its own digital signature generating key, appearing on all certificates it issues, which must, in turn, have been issued by a certification authority above it in the hierarchical chain.

A user could be assured of authenticity within this framework because of the existence of a chain of certificates, starting with the certificate issued for a particular digital key pair and reaching back to a certificate for a certification authority issued by the "root" national certifying authority. This root authority would need to be legally recognised.

The root authority would set technical standards, including for interoperability between the PKAF and existing communications infrastructure, and between the PKAF and foreign infrastructures. It would also set minimum procedural requirements for authentication of users, certification, personnel standards, maintenance of confidentiality of digital signature generating keys, etc.

A6.6 Establishing the Framework

The PKAF would need to have flexibility to adapt policies and procedures to take account of technological change. One means of providing for this would be to amend existing legislation (such as the Evidence Act) to specifically recognise digital signatures which have been issued under an approved framework. Digital signatures could also be specifically legally recognised as though they were pen and ink signatures.

The framework could be legally established in a number of ways. The root authority could be established as a statutory authority. Alternatively, it could be sufficient for legislation to require that digital key pairs comply with a standard authorised by a body specified in the legislation and their use be administered by a separate organisation approved by that specified body. This approach would not enshrine the root authority itself in legislation.

GLOSSARY OF TERMS

APCS	<p>Australian Paper Clearing System (also referred to as CS1) A <i>clearing system</i> established by APCA which co-ordinates, manages and ensures the implementation and operation of policies and procedures for the conduct and settlement of exchanges of paper instructions (mainly <i>cheques</i>) between its <i>participating members</i>.</p>
ATM	<p>Automated Teller Machine A device that permits authorised users typically using plastic cards with a machine-readable magnetic stripe, to withdraw cash from their accounts and/or access other services (e.g. balance enquiries, transfers from one account to another, or acceptance of deposits).</p>
Austraclear	<p>See also <i>FINTRACS</i>. Austraclear is a public company providing a central depository and registry for money market securities, (both private sector and semi-government securities).</p>
BECS	<p>Bulk Electronic Clearing System (also referred to as CS2) A <i>clearing system</i> established by APCA which co-ordinates, manages and ensures the implementation and operation of policies and procedures for the conduct and settlement of exchanges of bulk electronic, low value payment instructions between its <i>participating members</i>.</p>
BITS	<p>Bank Interchange and Transfer System A domestic interbank electronic payments system designed for irrevocable, large-value transactions (generally \$10,000 or more).</p>
BSB number	<p>A code used to identify financial institutions and their branches, or processing centres, or administration points. BSB numbers appear on all cheque forms and paper vouchers as machine-readable <i>MICR</i> encoded characters.</p>
CECS	<p>Consumer Electronic Clearing System (also referred to as CS3) A <i>clearing system</i> to be established by APCA. The management of clearing in CECS will primarily involve setting minimum interchange standards to protect and enhance the security, integrity and efficiency of exchanges of consumer electronic payment messages between its <i>participating members</i>. Initially, CECS will only cover <i>ATM</i> and <i>EFTPOS</i> interchanges.</p>
Cheque	<p>A written instruction from one party (the drawer) to another (the drawee), requiring the drawee to pay a specified sum on demand to the drawer or a third party. Currently, the drawee must be a bank.</p>
Clearance time (cycle)	<p>A term usually applied in respect of a cheque, referring to the time taken for the cheque once deposited into an account, to travel from its collection point to the domicile of the account on which that cheque is drawn, and for the time it takes for any advice of</p>

	dishonour to travel back to the collection point.
Clearing	The cross-institutional exchange of individual payment instructions for the purpose of obtaining <i>settlement</i> . Clearing involves the sorting, routing and exchange of the payment instruments verifying integrity of the instructions, correcting sums for errors and determining net amounts.
Clearing system	The formal organisation of clearing and settling for particular payments instruments established under a set of rules (Regulations and Procedures) within which rights and obligations on entry, clearing and settling, and organisational decision-making are set.
Closed system	A generic term for payment arrangements where the payee must have special arrangements in place with the issuer of the payments instrument in order to receive value.
Deferred settlement	<i>Settlement</i> arrangement in which the act discharging the obligation arising from the exchange of payment instruments takes place some time after the exchange and after the recipient institution has credited its customers' accounts or otherwise paid away.
Digital signature	See <i>private key</i>
Direct credit	Payment, initiated by the payer, directly to the payee's account under a facility requiring no direct involvement by the payee other than initial authorisation.
Direct debit	Payment, initiated by the payee, directly from the payer's account to the payee's account, on an initial authority from the payer to his/her financial institution to debit his/her account at that financial institution on receiving a demand for payment (a direct debit instruction) from the payee.
Direct entry (payment)	The direct crediting or direct debiting of a third party's account on a regular basis by business and organisations.
EDI	Electronic Data Interchange The exchange of business data (orders, invoices, etc) in a standard format via a telecommunications network from one company's computer directly to another company's.
EFTPOS	Electronic Funds Transfer at Point of Sale A payment by a customer at a retail outlet that is processed electronically direct from his/her account. Details of the transaction and the card-holder's PIN are keyed into a card-readable terminal at the retail outlet and the account and other information is read from the card.
Exchange Settlement Account (ESA)	A special account facility held at the Reserve Bank of Australia by all banks and approved Special Services Providers to settle obligations arising from the clearing of payments.

Fallback	A generic description of procedures agreed in advance for use where a participating member in a clearing system is prevented by some contingency (usually of a temporary or technical nature) from taking part in exchanges and/or settlement.
Finality of payment	Payments free of the risk of default.
Financial EDI	An EDI messages using established international standards which contains the remittance advice relating to a purchase of goods or services and the corresponding payment message.
FIN	A worldwide financial application network operated by SWIFT.
FIN-Copy	A service built on SWIFT's existing worldwide financial application network service. It allows Australian financial institutions to exchange domestic payment messages in a closed user group.
FINTRACS	A proprietary electronic system operated by Austraclear Limited for transferring ownership of securities at the end of day without the need for the physical transfer of paper.
HVCS	High Value Clearing System (also referred to as CS4) The proposed high value clearing system to be established under APCA.
MICR	Magnetic Ink Character Recognition Numbers and symbols printed in magnetic ink to a standard format which can be read by machines for electronic processing. Used for the code-line of cheques which can then be read and sorted by high speed sorters.
Open system	A generic term for payment arrangements where the payee need not have special arrangements in place with the issuer of the payments instrument in order to receive value.
Participating Member	An organisation participating in a <i>clearing system</i> established by APCA and agreeing to abide by the obligations for clearing and settling in that system, and having voting and representation rights.
Payment	Transfer of a financial asset of the kind generally used as a medium of exchange from one person to another. These assets are generally cash or obligations drawn on organisations that provide the means for their customers to transfer value to third parties.
Payment instrument	The form which a <i>payment message</i> takes. It is used as the means for transferring value to a third party.
Payment	A request by one party (the drawer) to another party (the drawee)

message	to pay a certain sum to a third party (the payee).
Payments system	The institutional infrastructure that carries <i>payment messages</i> and transfers funds from one party's account to another's.
PIN	Personal Identification Number A personal code, usually consisting of four numbers, used for identifying customers using credit and debit cards in <i>ATMs</i> , cash dispensers and <i>EFTPOS</i> terminals. The PIN is akin to a signature in such electronic transactions..
Private key	A digital signature, being one of a pair of digital keys issued to a user sending a message in an electronic system, which is kept private and confidential to the user. It is applied by the user to messages he sends in that network, as part of a process for authenticating the electronic message.
Provider of payment services	As defined by APCA, a body corporate providing financial deposit facilities and/or credit facilities to members of the public whereby its customers are given the means to transfer value to, and receive value from, third parties generally.
Public key	One of a digital key pair issued to a user sending a message in an electronic system, which is made known to receivers of the message. It is used by the receiver of a message in that network as part of a process for authenticating the electronic message and its sender.
Real-Time Gross Settlement (RTGS)	<i>Settlement</i> arrangement in real-time (i.e. immediate) of counterpart flows of settlement balances held at the central bank; i.e. the act of discharging the obligation arising from the exchange of payment instruments occurs immediately the exchange has taken place, as opposed to <i>deferred settlement</i> .
RITS	Reserve Bank Information and Transfer System An electronic transfer and settlement system for Commonwealth government securities established and operated by the Reserve Bank, allowing real-time recording and settlement of transactions in those securities.
Settlement	The exchange of value between organisations providing payment services for the purpose of providing finality of payment for the obligations arising out of payments clearing.
Special Services Providers	Industry bodies supervised by AFIC providing a range of settlement and financial services to the building society and credit union industries.
Stored value cards	A machine-readable plastic card that records a store of value which can be used as payment for goods or services. The value

stored on a rechargeable stored value card can be replenished.

SWIFT	Society for Worldwide Interbank Financial Telecommunication A co-operative organisation owned by banks that operates a network which facilities the exchange of payment and other financial messages between financial institutions (including brokers-dealers and securities companies) throughout the world.
Warrant	A paper debit payment instrument used only between banks for high-value payments.