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Foreword

The Committee on Payment and Settlement Systems (the CPSS) of the central banks of the Group of Ten countries periodically publishes – under the aegis of the Bank for International Settlements – a reference work on payment systems in the G-10 countries known as the “Red Book”, with regular statistical updates. The CPSS has also invited central banks in a number of countries where important developments in payment systems are under way to publish – in collaboration with its Secretariat at the Bank for International Settlements – separate “Red Book” studies for their country. This is the second edition of the “Red Book” for Australia.

Central banks in many countries have been influential in improving the public understanding of payment system arrangements in their countries and of the various policy issues connected with such arrangements. Just as central banks have an interest in the retail money transfer systems used by businesses and consumers for commercial purposes, so also do they have a specific interest in large-value inter-bank funds transfer systems that underpin the money and credit markets of market-orientated economies. In addition, major settlement systems include so-called exchange-for-value systems that are increasingly used for settlement of securities transactions. Public interest in issues relating to both the economic efficiency and financial risks in all types of payment and settlement systems has continued to increase in recent years.

Payment system reform and improvement is necessarily an ongoing process in all countries. In Australia, there have been important changes to the payments system since the first “Red Book” for Australia was published in 1994. Of particular note, real-time gross settlement for high-value payments was introduced in June 1998, while in July 1998, a Payments System Board was established at the Reserve Bank and given wide-ranging statutory powers to regulate Australia’s payment systems to control risks and promote efficiency and competition.

We hope that this revised edition of the “Red Book” will continue to contribute to the understanding of the payment and settlement system in Australia, both domestically and internationally.

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Introduction

The Australian financial system comprises three broad groups of institutions. Banks authorised to operate in Australia account for around 49% of the assets of the financial system. Other financial intermediaries (including building societies, credit unions and locally incorporated merchant bank subsidiaries of overseas banks) hold about 13% of assets. Funds managers (such as life insurance offices, superannuation funds and unit trusts) make up the remaining 38%.

Banks, building societies and credit unions are the principal providers of payments services in Australia. The Australian Payments Clearing Association (APCA), an industry body, has responsibility for the day-to-day management of the major payments clearing systems. Non-cash payments are settled through Exchange Settlement (ES) Accounts held by payment service providers at the Reserve Bank.

Far-reaching changes to Australia's financial regulatory structure came into effect on 1 July 1998. These changes represent the Government's response to the recommendations of the Financial System Inquiry (the Wallis Committee), set up in May 1996 to analyse the forces driving change in Australia's financial system and advise on ways to improve regulatory arrangements. Under the new structure, the Reserve Bank gained extensive regulatory powers in the payments system under the *Payment Systems (Regulation) Act 1998*. These powers are exercised by the Payments System Board (PSB) established within the Reserve Bank.

In common with many countries around the world, the payments system in Australia has changed significantly in recent years. In part, this has been a response to technological change, but it has also been the result of a comprehensive program of reform. The key objective of the reform process to date has been to enhance the safety and integrity of the system. The introduction of Australia's real-time gross settlement (RTGS) system in June 1998 has been integral to that reform. It is also the first step in dealing effectively with foreign exchange settlement risk. In the future, the focus will also be on improving the efficiency with which payments are made and funds become available, and on ensuring competitive equity among service providers.

1. Institutional aspects

1.1 General and legal regulatory aspects

Australia is a federation and both Commonwealth and State legislation bear on aspects of the payments system. In June 1998, the Australian Parliament passed legislation that gave the Reserve Bank explicit responsibility for regulating the payments system in Australia and changed responsibilities for supervising financial institutions. Those changes are reflected in this description.

The *Payment Systems (Regulation) Act 1998* gives the Reserve Bank powers to regulate the payments system and purchased payment facilities (such as travellers' cheques and stored-value cards). The Reserve Bank's powers under the Act are exercised by its Payments System Board (PSB) which, under the *Reserve Bank Act 1959*, determines payments system policy. This policy is to be directed to controlling risk in the financial system, promoting efficiency of the payments system and promoting competition in the market for payment services, consistent with overall stability of the financial system.

The *Payment Systems (Regulation) Act* allows the Bank to designate a payments system where this is considered to be in the national interest. Designation enables the Bank to impose an access regime on a payments system, to determine standards to be complied with by participants in the system and to give directions to those participants. In addition, the Bank has the power to authorise parties, other than authorised deposit-taking institutions (refer to 1.2.1 below), to act as the holder of the store of value for purchased payment facilities.

It is expected that designation of a payments system and the imposition of requirements on it will generally occur only after substantial consultation with participants and after voluntary arrangements have been exhausted. Effectively, it is a reserve power.

The *Payment Systems and Netting Act 1998* allows the Reserve Bank to exempt transactions in systems which settle on a RTGS basis from the potential application of the "zero-hour rule". Under this rule, a court-ordered liquidation is deemed to commence from the first moment of time on the day the court order was granted. The application of this rule would have resulted in payments made by a failed institution between midnight and the time the court order was made being declared invalid. This would have undermined the irrevocable nature of RTGS payments and may have created severe liquidity, and potentially systemic, problems in the payments system. The Reserve Bank has approved the Reserve Bank Information and Transfer System (RITS), which includes all RTGS transactions, and Austraclear Ltd's FINTRACS system as systems exempted from this rule.

This legislation also gives legal certainty to existing multilateral net settlement arrangements approved by the Reserve Bank, such as those for direct-entry and card-based payments. Other provisions in the Act give certainty to netting in financial markets; this will enable Australian banks to join multilateral netting schemes aimed at reducing foreign exchange settlement risk.

The *Cheques Act 1986* is the principal piece of legislation dealing with paper payment instruments in Australia. It establishes the framework under which cheques are drawn, accepted and paid. The Act was amended in 1998 to allow non-bank deposit-taking institutions to issue cheques in their own right. As a result, the provisions relating to payment orders (cheque-like instruments drawn on non-bank financial intermediaries, such as building societies and credit unions) were deleted. The Act now also allows for the turnback or presumed dishonour of cheques for which a failed institution has not settled.

The *Financial Transaction Reports Act 1988* aids law enforcement agencies in detecting money laundering, other financial crime and the recipients of the proceeds of crime. It obliges cash dealers (financial institutions, securities dealers, brokers, bullion dealers, cash carriers, gambling enterprises, etc.) to verify the identity of customers before opening accounts, and to report to the Australian Transaction Reports and Analysis Centre (AUSTRAC) all cash transactions of AUD10,000 and above, information about suspect transactions and all international funds transfers. The Act also requires the public to report cash transfers into and out of Australia of AUD10,000 or more or the foreign currency equivalent. AUSTRAC analyses the data, and provides information to law enforcement agencies and to the Australian Taxation Office. The *Proceeds of Crime Act 1987* makes money laundering an offence, and several supporting pieces of legislation provide for the confiscation of the proceeds of crime.

Provisions in the Commonwealth *Trade Practices Act 1974* dealing with restrictive trade practices and consumer protection are relevant to the operation of the payments system. The Act prohibits, inter alia, conduct such as price agreements, boycotts and exclusive dealing with the purpose or effect of substantially lessening competition. However, the Australian Competition and Consumer Commission (ACCC) may authorise such conduct if it judges it to be in the public interest. The regulations and procedures for three clearing streams operated by the Australian Payments Clearing Association Limited (APCA; see section 1.4.3) have been authorised by this process; authorisation of a fourth stream is currently being sought. Should the Reserve Bank impose an access regime or standards on a payments system, the system and its members will not be at risk under the *Trade Practices Act* by complying with the Reserve Bank requirements. There are also provisions in the Act giving the Australian Securities and Investment Commission (ASIC) consumer protection powers in relation to the finance sector.

A Uniform Consumer Credit Code covering the provision of credit was enacted by each of the State and Territory governments in November 1996. The Code focuses primarily on consumer protection. The Code was introduced following an extensive review of previous legislation, which varied widely between the States.

1.2 Financial intermediaries that provide payment services

1.2.1 Banks

Banking in Australia is controlled by Commonwealth legislation. The *Banking Act 1959* provides for the authorisation of deposit-taking institutions in Australia and their supervision by the Australian Prudential Regulation Authority (APRA; refer to section 1.4.1). It also permits other financial institutions to offer some banking services, including payments services.

In December 1998 there were 46 banking groups[1] in Australia authorised under the *Banking Act*. The sector is dominated by four nationally operating groups, which account for around 65% of deposits and around 80% of non-cash transactions. Other Australian-owned banks tend to be regionally based. There are 36 foreign-owned banks in Australia; 25 operate as branches and 11 as locally incorporated subsidiaries.

Foreign bank branches may only accept wholesale deposits, which are not covered by the depositor protection provisions of the *Banking Act*. They generally undertake wholesale, commercial and foreign exchange business. A number of foreign banks operate non-bank subsidiaries in Australia, which are known as merchant or investment banks.

Locally incorporated banks generally provide cheque and savings facilities. Those offering retail services provide credit and debit card services and access to national automated teller machine (ATM) networks and electronic funds transfer at point of sale (EFTPOS) systems.

In June 1998, locally incorporated banks had around 5,615 branches, down from around 7,000 branches at the end of 1993 (see Table 5). Banks have reduced branches in pursuit of operating efficiencies and as a result of rationalisation following mergers.

1.2.2 Building societies

Pending the transfer of supervisory responsibility to the Australian Prudential Regulation Authority (APRA), expected by mid 1999, building societies operate under State legislation, and are subject to uniform prudential arrangements which were introduced across the States and Territories in 1992 (see Section 1.4 below). The societies are generally organised on a mutual basis and lend mainly for housing. There were 20 societies in December 1998. Mergers and conversions to bank status have reduced the number from 54 in 1987.

Most building societies offer comprehensive retail payment services. Cheque-issuing arrangements with banks enable them to offer depositors access to cheque account facilities. With the recent amendments to the *Cheques Act* (see section 1.1 above) one society has commenced issuing its own cheques and a number of others are expected to do likewise. Most building societies provide bulk electronic transfers, ATM and EFTPOS services through an industry bureau.

1.2.3 Credit unions

Pending the transfer of supervisory responsibility to APRA, also expected by mid 1999, credit unions operate under legislative arrangements similar to those for building societies. Numbers fell from 414 at end-June 1988 to 234 in December 1998 following a series of mergers. Credit unions are mutual organisations that provide for deposits and borrowing by their members. Loans are mainly for the purchase of consumer durables, motor vehicles and housing.

Large credit unions provide a wide range of retail payments services to members. Most credit unions have an arrangement with a major national bank whereby depositors with the credit union are able to draw cheques on the credit union's account with the bank. Some changes to cheque arrangements may

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1 Of 51 individual banks, 5 are subsidiaries of another.

follow the recent changes to the *Cheques Act*. Most credit unions also provide ATM and EFTPOS services through central industry-owned organisations (see 1.2.4 below).

1.2.4 Special Service Providers for non-bank financial institutions

Special Service Providers (SSPs) are industry bodies providing a range of settlement and financial services to the building society and credit union industries. SSPs are currently supervised by the Australian Financial Institutions Commission (AFIC; see 1.4.4 below); they are expected to come under APRA's supervision shortly. At present there is one for building societies and two for the credit union industry.

Two SSPs have Exchange Settlement (ES) Accounts at the Reserve Bank which they use to settle direct-entry transactions (such as salary credits), ATM and EFTPOS interchanges and high-value payments. With the changes to the *Cheques Act* they may seek to use the accounts to settle cheques issued by their members.

1.2.5 Credit and debit card companies

There are three major credit cards issued in Australia. Banks, and many building societies and credit unions, issue cards which are affiliated with either the Visa or MasterCard schemes. Some banks also issue Bankcard, a local credit card used in Australia and New Zealand. American Express recently signed agreements with two banks to issue Amex credit cards. Many institutions issue proprietary debit cards for ATM and EFTPOS transactions.

1.2.6 Charge card issuers

American Express and Diners Club also issue charge cards in Australia. American Express cardholders have access to some bank ATM networks. Some other overseas card issuers have arrangements with Australian merchants to accept their cards.

1.2.7 Cash management trusts

Cash management trusts are a type of unit trust. Some provide limited cheque payment facilities, or otherwise provide a "sweep" facility whereby funds can be transferred to a bank transaction account when needed.

1.2.8 Retailers

Retailers are not generally providers of third-party payment services. However, many stores and retail chains issue their own cards for use in their premises only; in some cases processing is outsourced. Some oil companies issue their own cards (both credit and debit cards), aimed mainly at commercial fleets. Many stores will provide customers with cash through a "cash out" facility at their EFTPOS terminals.

1.2.9 Australia Post

There are around 3,900 post offices or agencies throughout Australia. Australia Post offers access to banking facilities as an agent for the Commonwealth Bank and for a range of other financial institutions through its giroPost network. While the agreement with the Commonwealth Bank is of long-standing, giroPost was introduced in July 1995. It is an electronic banking and financial services network which provides post office access to card-based accounts of participating financial institutions. Customers of these institutions can open accounts, make deposits and withdrawals, pay bills and make balance inquiries. In June 1998, there were 2,720 post offices connected to the network, which was used by 11 financial institutions.

Australia Post acts as a payment collection agent for over 300 companies, including a range of public utilities and others such as insurance companies. Australia Post's Electronic Counter Services network is the largest single network in Australia for receiving payments of utilities' accounts.

Australia Post also sells money orders payable to third parties. Use of money orders has diminished greatly in recent years; Australia Post is the sole issuer of those denominated in Australian dollars. American Express, as agent for Australia Post, issues foreign currency money orders.

1.3 The role of the central bank

The Reserve Bank of Australia operates under the *Reserve Bank Act*, and most of its powers and functions in the payments system derive from that Act and the *Payment Systems (Regulation) Act*.

The power to determine and carry out the policy of the Reserve Bank (other than payments system policy) is vested in the Reserve Bank's Board which comprises the Governor as chair, its Deputy Governor, the Secretary to the Department of the Treasury and up to six other members. The latter are drawn from various sectors of the economy.

The power to determine the payments system policy of the Reserve Bank resides with its Payments System Board (PSB). This includes the exercise of responsibilities under the *Payment Systems (Regulation) Act* and the *Payment Systems and Netting Act.* The PSB comprises the Governor as chair, one other Reserve Bank appointee, an appointee from APRA and up to five other members. Some of the PSB's responsibilities were previously discharged by the Australian Payments System Council (APSC), which was disbanded in June 1998.

Under the *Reserve Bank Act*, the PSB has responsibility for regulating the payments system in a way that will best contribute to controlling risk in the financial system; promoting efficiency of the payment system; and promoting competition in the market for payment services, consistent with overall stability of the financial system. It may:

– designate a particular payment system as being subject to Reserve Bank direction;

– determine rules for participation in the system, including to ensure access to new participants;

– set standards for the system on matters relating to safety and efficiency; and

– arbitrate on disputes concerning the system over matters relating to access, financial safety, competitiveness and systemic risk.

A co-regulatory approach will be adopted and designation of a payment system will occur only after substantial consultation with participants and after voluntary arrangements have been exhausted.

The Reserve Bank is also required to regulate holders of the stored value behind purchased payment facilities. The holder will either have to be an authorised deposit-taking institution or have an authority or exemption issued by the Reserve Bank.

As well as its specific payments system powers, the Reserve Bank also has several statutory responsibilities and operational roles in the payments system:

– it prints and issues Australian currency notes and coordinates the distribution of currency (including coin, which is minted by the Royal Australian Mint and issued by the Treasury);

– it conducts the Exchange Settlement (ES) Accounts used for final settlement of payments;

– it is the main banker to the Commonwealth Government, some State governments and a number of government instrumentalities, and in that role processes a substantial volume of cheque and direct-entry (electronic credit) transactions;

– it operates the Reserve Bank Information and Transfer System (RITS), the central platform for the RTGS system and settlement system for Commonwealth Government securities; and

– it conducts accounts for other central banks and some international financial organisations.

The role of the Reserve Bank in specific areas of payments system policy and operations is spelled out in more detail in Sections 3.4 and 5.

1.4 The role of other private and public sector bodies

1.4.1 Australian Prudential Regulation Authority

The Australian Prudential Regulation Authority (APRA) was established on 1 July 1998. It has responsibility for the supervision of banks, life and general insurance companies and superannuation funds. Supervision of building societies and friendly societies is expected to transfer to APRA from state jurisdiction by mid 1999.

APRA operates under the *Australian Prudential Regulation Authority Act 1998* and its powers derive from the *Banking Act*, the *Insurance Act 1973*, the *Life Insurance Act 1995* and the *Superannuation Industry (Supervision) Act 1993*. The power to determine, and carry out, the policy of APRA is vested in its Board.

All authorised deposit-takers will be supervised by APRA under one licensing regime and will be covered by the same depositor protection provisions. If an authorised deposit-taking institution is, or is likely to be, unable to meet its obligations, APRA may assume control and carry on its business, or appoint an administrator, until its deposits are repaid or APRA is satisfied that suitable provision has been made for their repayment. If APRA believes that the institution will be unable to meet its obligations within a reasonable time period, it has the power to wind it up and distribute its assets, with depositors having first claim. The *Banking Act* provides that the Australian assets of an authorised deposit-taking institution shall be available to meet deposit liabilities in Australia in priority to all other claims, conferring a depositor repayment preference in the event of liquidation.

There is close liaison between APRA and the Reserve Bank. The Reserve Bank has two representatives on the APRA Board and APRA one on the Payments System Board.

1.4.2 Australian Competition and Consumer Commission

The Australian Competition and Consumer Commission (ACCC) is Australia's competition regulator. It is responsible for ensuring that payments system arrangements comply with the competition and access provisions of the *Trade Practices Act*. It may exempt the conduct of organisations and arrangements from the competition provisions if it judges it to be in the public interest. It may also accept undertakings in respect of third-party access to essential facilities.

The ACCC and the Reserve Bank both have responsibilities for access to the payments system and have agreed a Memorandum of Understanding to ensure a coordinated policy approach. The Reserve Bank may, under the *Payment Systems (Regulation) Act*, impose an access regime on participants and/or set standards for a system. Where the Reserve Bank takes such initiatives, members of that system will not be at risk under the *Trade Practices Act* by complying with the Reserve Bank's requirements. The effect is that the ACCC retains responsibility for competition and access in a payments system unless the Reserve Bank imposes an access regime or sets standards for that system.

1.4.3 Australian Payments Clearing Association Limited

The Australian Payments Clearing Association Limited (APCA) was established in 1992 to oversee and manage the development and operation of Australian payments clearing. APCA is a limited liability company, with a board of directors drawn from shareholders in the payments industry.

Shareholders are the Reserve Bank, banks and the industry bodies of building societies and credit unions. The costs of running APCA are met by members in shares broadly proportional to their relative importance in the payments system. Other interested groups or individuals may join as associate members.

APCA operates three clearing streams whose rules have been approved by the ACCC:

– the Australian Paper Clearing System (APCS) for cheques and other paper-based payment instructions;

– the Bulk Electronic Clearing System (BECS) for relatively low-value bulk electronic debit and credit payment instructions; and

– the High-Value Clearing System (HVCS) for high-value electronic payment instructions.

APCA is seeking ACCC approval for the rules of a fourth clearing stream, the Consumer Electronic Clearing System (CECS), which would cover ATM and EFTPOS interchanges.

1.4.4 Australian Financial Institutions Commission

The Australian Financial Institutions Commission (AFIC) has overseen prudential supervision of building societies and credit unions since 1992. It will be abolished when prudential responsibilities for these institutions are transferred to APRA, expected by mid 1999.

1.4.5 Australian Securities and Investments Commission

The Australian Securities and Investments Commission (ASIC) was established on 1 July 1998, as the successor to the Australian Securities Commission. It has responsibility for market integrity and consumer protection across the financial system, including payments transactions. It administers the Corporations Law and regulates Australian corporations and securities markets. The major functions of ASIC include the regulation of securities markets, licensing of securities dealers and advisers, registration of auditors and liquidators, and investigating and enforcing corporate and securities law. Some of ASIC's consumer protection responsibilities for payments transactions were previously undertaken by the Australian Payments System Council, which was disbanded in June 1998.

1.4.6 Council of Financial Regulators

The Council of Financial Regulators is a non-statutory body chaired by the Reserve Bank and comprising the head and one other representative of the Reserve Bank, APRA and ASIC. Its role, like that of its predecessor – the Council of Financial Supervisors – is to contribute to the efficiency and effectiveness of regulation by providing a high-level forum for cooperation and collaboration among its members. The Council is not a regulator in its own right.

1.4.7 Financial Sector Advisory Council

The Financial Sector Advisory Council was established in 1998 to provide ongoing advice to the Federal Treasurer on financial sector developments and policies. The Council will also undertake a detailed evaluation of the financial sector reforms implemented in 1998.

1.4.8 Banking Ombudsman

The Australian Banking Industry Ombudsman Scheme is run by the Australian Bankers' Association and funded by participating banks. The Ombudsman's role is to facilitate the resolution of disputes between customers and banks including those relating to the payments system. The Ombudsman may consider disputes where an individual claimant is claiming damages of up to AUD150,000 and the bank is unable to resolve the dispute through its internal dispute resolution procedures. The Ombudsman has the power to make recommendations and awards which are binding on the banks but not on the complainant, who retains the right to take legal action if he or she does not accept the Ombudsman's ruling.

2. Payment media

2.1 Cash payments

Currency continues to be the most convenient and popular form of payment for everyday, low-value transactions. Coin is produced by the Royal Australian Mint in 5c, 10c, 20c, 50c, AUD1 and AUD2 denominations. The Reserve Bank is the sole issuing authority for Australian currency notes. Currency notes are printed by Note Printing Australia Ltd, a wholly owned subsidiary of the Reserve Bank. Notes are issued in denominations of AUD5, AUD10, AUD20, AUD50 and AUD100. All notes are printed on polymer substrate and incorporate a number of security features which make them highly resistant to counterfeiting.

2.2 Non-cash payments

2.2.1 Cheques

The use of cheques has traditionally dominated Australian non-cash payments and they were, until the mid 1970s, virtually the only non-cash payment instrument. (Unlike European countries, there is no "giro" network for retail credit transfers in Australia, although progressively greater use is being made of credit and debit transfer payments in the electronic, direct-entry payments system for periodical payments.) Despite the development of other payment instruments, cheques remain the most common form of non-cash payment; there are around one billion cheques issued each year. Banks also use warrants, instruments similar to cheques, for transactions between themselves. Over recent years, however, the value of cheques and warrants cleared has become less important. In 1997 they accounted for only 34% of values exchanged between direct clearers, and the introduction of RTGS saw this figure drop significantly, to around 9% in 1998 when most large-value warrants were replaced with electronic payments.

The *Cheques Act* allows cheques to be drawn on authorised deposit-taking institutions. Prior to the 1998 amendments to the Act, cheques could only be drawn on a bank.

2.2.2 Direct-entry transactions

Direct-entry payments are exchanged by direct computer-to-computer linkages, usually after payments have been bulked. In Australia the payments are exchanged bilaterally, in contrast to some countries where they are processed through a central Automated Clearing House. Since March 1994, banks, building societies and credit unions have been linked in an integrated but decentralised national system. Section 3.2.2 describes arrangements for clearing and settlement of direct-entry transactions.

Direct credits enable a paying institution to transfer funds to the accounts of a large number of recipients. Direct crediting of accounts is used widely, especially by government departments and companies for regular payments such as social security benefits, salary and dividend payments. In 1998, 482 million direct credit transactions were made, with a value of around AUD911 billion. They represented about 20% of retail non-cash transactions by volume, and 17% by value.

The Reserve Bank's Government Direct Entry Service (GDES) performs a large number of direct-entry payments for government departments. The system uses high-speed data links to gather payments data from government agencies which, after amalgamation, verification and sorting, are distributed electronically to relevant financial institutions. Around 210 million transactions were processed in 1998. Around 300 financial institutions receive customer payments through the system.

Direct debits are used mostly by insurance and utilities companies and like bodies for collecting regular policy premiums and payments, and by financial institutions to collect loan repayments. Under these arrangements, payers give financial institutions authority to debit their accounts at the initiative of nominated payees.

Direct debits totalled about 151 million in 1998, with a value of AUD608 billion. In 1998 direct debits represented about 6% of the number and 12% of the value of retail non-cash payments.

2.2.3 Payment cards

The use of plastic cards as a payment medium has become increasingly popular in Australia.

Debit cards allow access to funds already in customers' accounts. In Australia, banks, credit unions and building societies are the main issuers of debit cards, which can be used in ATMs, cash dispensers, automated petrol dispensers, telephones and EFTPOS terminals. In 1998, there were around 16 million debit cards on issue in Australia.

Credit cards are issued mainly by banks. The most common are Visa, MasterCard and the local Bankcard. These cards provide prearranged revolving credit, up to a specified limit. Payments for goods and services and withdrawals of cash are made against the line of credit. Restrictions on annual fees for credit cards were removed in 1993. Most issuers offer a range of structures: annual fees of AUD18-30 per annum with up to 55 days interest-free; no annual fees and higher interest rates; lower interest rates with interest charged from the date of purchase etc. In 1998, there were around 10 million credit and multifunction cards on issue in Australia; they were used to make about 424 million transactions with a total value of around AUD42 billion.

Travel, entertainment and retailer cards[2] allow payment to be deferred from the date of purchase until the account due date. They do not generally provide revolving credit. Accumulated balances are payable in full on receipt of the monthly statement. No interest is charged if payments are made on time, but there may be joining and annual membership fees. In some instances, the card may be linked to a separate line of credit through an account with a financial institution.

2.2.4 Automated teller machines

Automated teller machines (ATMs) were introduced on a wide scale in 1981; by June 1998 there were 8,814 ATMs across Australia. ATMs allow cash withdrawals, deposits, balance enquiries, transfers between accounts and ordering of cheque books and statements. There are no legal restrictions on the siting or number of machines financial institutions may install. Operators have agreed to meet standards established by Standards Australia covering design and placement. Most operate 24 hours a day. Some financial institutions also provide limited-purpose Cash Dispensers which can be used only for withdrawals and account balance enquiries. ATM and cash dispenser transactions are authorised by debit cards and certain credit cards with a Personal Identification Number (PIN).

2.2.5 Electronic funds transfer at point of sale

All electronic funds transfers at point of sale (EFTPOS) in Australia are PIN-based. Most debit customers' accounts in real time. Payment to the merchant is guaranteed by the bank which acquires its transactions. Many EFTPOS points offer a cash-back facility to cardholders making purchases. Terminals operate whenever the merchant is open; for some merchants, such as petrol stations, this is 24 hours a day, seven days a week. Many EFTPOS terminals are integrated with retailer cash registers.

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2 Also called charge, store and private label cards.

There were 218,330 EFTPOS terminals in Australia in June 1998, an increase of about 400% over the previous four years. The number of transactions has doubled over the same period.

2.2.6 Stored-value cards

The use of prepaid stored-value cards (SVCs) in Australia is growing but is not yet widespread. The major issuer is Telstra with its Phonecard, which is used for making calls from public telephones. Telstra began issuing a new disposable chip-based phonecard in August 1997 and is currently trialing a multifunction reloadable SVC based on the Netherlands' Chipper card system.

There have been extensive trials of SVCs in Australia. The major operators and technology involved are MONDEX, VisaCash, ERG (using Proton technology) and Chip Application Technologies Ltd, a domestic operator. ERG Ltd, in conjunction with a state health insurer has issued about 450,000 cards and established a merchant base of around 1,200 retailers. The cards have an electronic purse function which was recently "turned-on", but to date the take-up of this facility has been modest.

Prepaid tickets have been used in urban transport systems for some time, and some tertiary institutions sell prepaid rechargeable cards for use by students in their library photocopying machines.

2.2.7 E-cash

A regional bank began issuing AUD-denominated DigiCash electronic cash in June 1997. Both consumers and merchants must hold an account with the institution to enable the purchase and redemption of the electronic cash. Use to date has been very limited.

2.2.8 Electronic Data Interchange

Electronic Data Interchange (EDI) is the computer-to-computer exchange of information in a standard format. Both the ANSI.X12 and the United Nations-sponsored EDIFACT standards are currently used in Australia. EDI is most commonly used in the retail, transport, automotive and heavy engineering industries. Some areas of the public sector, particularly Customs, the Reserve Bank and the Department of Finance and Administration, are also involved in EDI. Although the banking and finance industries are beginning to use EDI, the number of EDI-generated payments in Australia is still relatively small.

There are currently five main value added networks (VANs) in Australia that may be used for EDI purposes. All major Australian banks can receive EDI payment requests from their customers direct or by logging into a VAN. The payments are then processed through the direct-entry system with the payment remittance advice being sent to the beneficiary once the transfer is complete.

2.2.9 Third-party bill payments

Australia Post is the largest operator of third-party bill payments, with an estimated 25% of bill payment transactions in 1998. Post offices accept over-the-counter cheque and cash payments for over 300 principals. Debit card transactions are available for customers of the Commonwealth Bank and institutions participating in giroPost.

A bank-owned service company, BPAY, recently established a new third-party bill payment service. It allows customers of participating financial institutions to arrange for the transfer of funds from their bank account using phone banking (and in limited cases Internet banking) services.

2.2.10 Pricing

Historically, Australian banks have tended to recover much of the costs of providing transaction services through their general deposit and loan business; for the most part, no interest was paid on deposits in cheque accounts. Transactions services were often provided free of explicit charge.

Competition from other providers of payments facilities has changed this situation substantially, and both retail and wholesale payments have increasingly attracted explicit fees. Transaction accounts generally permit a number of free transactions a month, with charges for excess transactions. Higher charges are applied to over-the-counter transactions. Charges may depend on the average balance of the account and the extent of other business held with an institution. For business customers, charges are generally set on the basis of the overall relationship, though there is generally a limit on the number of free cheques that can be written each month.

The Reserve Bank charges explicitly for the banking services it provides and has supported moves towards appropriate and transparent pricing of payments transactions generally.

2.2.11 Taxation

Many financial transactions in Australia are subject to taxation. Financial Institutions Duty (FID) is levied by all but one of the States and Territories on deposits to accounts (with some exceptions), whether with a bank or other deposit-taking institution. Rates vary between jurisdictions. Most transactions attract a rate of 6 cents per AUD100, while the highest rate is 10 cents and the maximum charge is AUD1,500 per transaction.

Debits Tax is levied by State Governments on debits to any account with a cheque facility; it has a tiered structure according to the size of the debit, with a maximum charge of AUD4 for transactions of AUD10,000 or more.

2.3 Recent developments

As noted in the Introduction and in Section 1.1, the Commonwealth Government's acceptance of the recommendations of the Financial System Inquiry (FSI) led to wide-ranging legislative reforms that were implemented in 1998.

From a payments system perspective, the broad aim of the reforms is to promote greater competition and efficiency in the provision of payments services. Consistent with these aims, the Reserve Bank will consider applications for Exchange Settlement (ES) Accounts by non-bank institutions with significant third-party payments business. See Section 5.2 for details.

3. Interbank exchange and settlement circuits

3.1 General overview

As described in 1.4.3 above, there are three general-purpose payments clearing systems under the management of the Australian Payments Clearing Association (APCA). These deal with:

- cheques and other paper instruments;
- bulk electronic (direct-entry) payments; and
- large-value electronic payments.

ATM, EFTPOS and credit card transactions are currently cleared under bilateral arrangements between participants, though APCA is currently seeking ACCC authorisation for rules to govern ATM and EFTPOS interchanges.

BPAY transactions are cleared multilaterally outside the APCA arrangements.

Obligations arising from the clearing of instruments in each of these systems are settled across ES Accounts at the Reserve Bank. For each of cheques, direct entry (including obligations arising in the BPAY system), ATM, EFTPOS and credit cards, a multilateral net settlement position is determined for each participant. These are combined to calculate the overall net position for each participant. This is settled on a deferred basis at 9.00 a.m. the following business day. Large-value electronic payments and payment obligations that arise from trading in Commonwealth Government securities in the Reserve Bank Information and Transfer System (RITS) and in other fixed interest securities in Austraclear (see section 4.2.2), as well as other cash transfers made across those systems, are settled on a RTGS basis.

The introduction in June 1998 of the RTGS system, accounting for 90% of the value of interbank settlements, has substantially reduced settlement risk. Previously, all transactions were settled on a deferred net basis and there were no limits on banks' within-day settlement obligations. There were no arrangements to ensure that settlement would take place in a timely fashion. Amendments to the *Cheques Act* ensure that banks will not have to give depositing customers value for cheques for which the paying bank cannot settle and the provisions of the *Payment Systems and Netting Act* provide legislative protection for the low-value multilateral net settlement arrangements.

3.2 Interbank systems for retail transactions

3.2.1 Cheques

Cheques, and other paper instruments such as money orders, AUD travellers' cheques and warrants are cleared through the Australian Paper Clearing System (APCS), which is managed by an APCA committee drawn from the participants – banks, building societies, credit unions and the Reserve Bank.

There are currently three classes of members of APCS. Tier 1A members clear directly with one another and settle resulting obligations across ES Accounts. Tier 1B members appoint Tier 1A members to clear paper on their behalf, but retain responsibility for their own settlement obligations. Tier 2 members appoint Tier 1A members as their agents to both clear and settle on their behalf. In June 1998 there were 12 Tier 1A and 56 Tier 2 members of APCS. Subsequently, a Tier 2 member has changed its membership to Tier 1B status.

Cheques deposited by customers are credited to their accounts on the day of deposit. Where appropriate, interest accrues from the day of deposit although funds can usually not be withdrawn until a few days later (see below). Cheques deposited at the branches of deposit-taking institutions are value-encoded at the data centres of the institutions or their clearers. These details are added to the magnetic ink character recognition line (the MICR line), which includes details of the customer's account number, institution and branch. Banks and other financial institutions that use agents to clear for them generally have arrangements to lodge cheques initially deposited with them at convenient branches of the agent.

Most cheques are delivered to each institution's processing centre in the State or Territory capital city on the day of lodgement. This involves an extensive network of air and road transport. Cheques are then sorted into those drawn on the institution itself and those drawn on other institutions. Those drawn on other institutions are sent to regional clearing centres for exchange with the paying institution.

The clearing centres operate under the auspices of APCA. Institutions may choose to clear directly at some, all, or none of the centres, and may appoint direct clearing institutions to act as their agent at any or all centres. Cheques for those institutions which are not members of the relevant clearing centre are passed to their agents.

Most institutions post debits to their customers' accounts on the night a cheque is exchanged. This means that customers' accounts are almost always debited on the same day that those of customers depositing cheques are credited, so there is little institution/customer float generated in the cheque clearing cycle.

At the completion of each clearing, institutions advise the Collator at the Reserve Bank in Sydney of the bilateral value of the exchanges made in each region. (Agents incorporate in their settlement balances figures for those institutions that have appointed them to clear and settle on their behalf.) Before 3.00 a.m. Sydney time on the following day, the final regional balances for all the previous day's exchanges are available to the Collator, who calculates the net position of each institution resulting from the previous day's clearances, for final settlement at 9.00 a.m.. Thus, settlement each morning is based on the previous day's clearings. Institutions' ES Accounts are credited and debited simultaneously. Accordingly, no central bank/institution float is generated. A record of net daily settlement positions is kept, so that at the end of each month interest adjustments can be made between institutions to reflect the fact that although institutions pay interest to their customers from the day of deposit, they do not receive funds from the paying institution until settlement the next day.

In the absence of a covering line of credit, customers are not generally able to withdraw funds from accounts until the collecting institution is reasonably sure that the cheque will be paid. Cheques are not considered paid until the paying institution has had time to validate the cheque and the drawer's capacity to cover it. The industry works on an exception basis, with paying institutions notifying collecting institutions only of those cheques which are dishonoured. Arrangements for paying against cheque deposits are a matter for individual institutions; although institutions give some customers faster access, generally four to five days are required before a collecting institution will be prepared to pay funds away for most customers.

The *Cheques Act* allows for the truncated presentation of cheques exchanged between institutions (i.e. electronic transmittal of data). Institutions are implementing systems for the electronic presentment and dishonour of cheques which are scheduled to be fully operational by the end of April 1999. Collecting institutions will electronically transmit to paying institutions a file containing details of the MICR line of the cheque. The physical cheques will continue to be exchanged as outlined above, but the values used in settlement calculations will be based on the electronic presentment.

Under these arrangements, banks will be in a position to provide cleared funds for most cheques two business days after they have been deposited.

Arrangements to apply if any bank were to fail to meet its interbank settlement obligations in the cheque clearing system are currently under review. Amendments to the *Cheques Act* in 1998 allow for the turnback or presumed dishonour of cheques for which a failed institution has not settled.

3.2.2 Bulk electronic (direct-entry) payments

Large-volume electronic credit and debit transfers are processed under the rules of APCA's Bulk Electronic Clearing System (BECS), which is managed by a committee drawn from the participants – banks, building societies, credit unions and the Reserve Bank.

There are two classes of members of BECS. Tier 1 members clear directly with one another and settle resulting obligations across settlement accounts at the Reserve Bank. Tier 2 members appoint Tier 1 members as their agents to both clear and settle on their behalf. In June 1998 there were 17 Tier 1 and 43 Tier 2 members of BECS.

Unlike Automated Clearing Houses in some other countries, BECS is not centralised and relies upon bilateral arrangements between participants. Files of direct-entry credits and debits are prepared by financial institutions and bilaterally exchanged between Tier 1 members using electronic links. Transactions which cannot be accepted by the receiving institution (due to, for example, incorrect account or insufficient funds) are also returned electronically.

At the end of each day, Tier 1 members reconcile their inward and outward exchanges (which include the positions of their Tier 2 appointers) and report bilateral and multilateral positions to the Reserve Bank Collator in Sydney by 11 p.m.. These are settled on a multilateral net basis at 9.00 a.m. on the following business day.

Direct-entry credit transfers are irrevocable and there is no risk of dishonour. This contrasts with the situation for direct debits which, like cheques, always carry the risk to beneficiaries of payments being dishonoured. In contrast to cheques, dishonours of direct debits are communicated almost immediately by the payer's financial institution.

Arrangements to apply if any bank were to fail to meet its interbank settlement obligations in the direct entry clearing system are currently under review.

3.2.3 Consumer electronic card-based payments

There is no single framework governing the operation of card-based payments systems in Australia. APCA is currently seeking ACCC approval for its rules and procedures covering the use of debit cards in ATM and EFTPOS systems. If approval is granted, APCA will assume responsibility for arrangements governing exchanges, including relevant technical standards, but will not have a day-to-day operational role.

Each day, financial institutions calculate their national bilateral positions from debit and credit card transactions against other clearing institutions and report these by 4.00 a.m. the following business day to the Collator at the Reserve Bank. These balances are then settled on a multilateral net basis at 9.00 a.m.. For charge cards and private-issue credit cards, settlement is conducted through their banker, as it would be for any corporate customer.

While the volume of card-based payments in Australia is both substantial and growing relatively quickly, total interbank settlement obligations (and hence the risks) generated from these systems are comparatively small, less than half of 1% of daily settlement flows. Arrangements in the event that a participant in ATM and EFTPOS interchanges cannot settle its obligations are currently being devised. The international card schemes MasterCard and Visa have their own rules.

Linkages between proprietary networks mean there is effectively one national ATM system; except for some smaller financial institutions, any card is acceptable in any ATM terminal.

Linkages between systems mean that there is one national system of EFTPOS terminals to which all card issuers have access. Much of the national EFTPOS infrastructure is provided by the major national banks and the large regional banks, which service the bulk of the merchant base. One major retailer has its own national network of terminals and is able to switch transactions to different card issuers and transaction processors. Other financial institutions, such as small regional banks, building societies and credit unions, are linked to the national system through arrangements with banks. Service companies provide switching and transaction processing services to smaller institutions using ATM and EFTPOS networks.

Increasingly, customers are being charged for ATM and EFTPOS transactions. Transaction accounts held by customers typically permit a maximum number of fee-free electronic transactions a month, after which a fee is charged for each additional transaction. Institutions pay ATM interchange fees for transactions undertaken by their customers at ATMs of other institutions or networks and generally charge their customers a “foreign” ATM fee. Transaction charges are generally not levied on consumers for credit card transactions but a merchant service fee is levied on retailers.

3.2.4 BPAY Scheme

BPAY is an electronic bill payment service owned by a consortium of banks. BPAY operates through a centralised facility under rules agreed between its owners and has no connection to APCA. It allows payers to issue payment instructions via telephone or the Internet. Fees are charged for payments made using the BPAY service.

3.3 Large-value payments systems

There are three large-value payment systems in Australia - the S.W.I.F.T. Payment Delivery System (PDS), the Reserve Bank Information and Transfer System (RITS), and Austraclear Limited's Financial Transactions Recording and Clearance System (FINTRACS). Together they account for over 90% of the value of payments exchanged. All three systems have been operating on a real-time gross settlement (RTGS) basis since 22 June 1998. Further detail on RTGS is in section 3.4.

3.3.1 S.W.I.F.T. PDS

S.W.I.F.T. PDS was established in August 1997 and accounts for up to 61% of the total value of transactions settled on a RTGS basis. It is based on S.W.I.F.T.'s FIN-Copy service and is controlled by the Australian Payments Clearing Association (APCA).

(a) Membership

The Reserve Bank and all ES Account holders are entitled to join S.W.I.F.T. PDS. There are no special membership categories and all members are directly responsible for their own settlement obligations.

(b) Operation of S.W.I.F.T. PDS

S.W.I.F.T. PDS carries large-value payments such as the Australian dollar leg of foreign exchange transactions. However, there is no minimum transaction value and over 40 per cent of the total number of S.W.I.F.T. PDS transactions are below AUD50,000 in value.

S.W.I.F.T. PDS payments are initiated by using a S.W.I.F.T. computer-based terminal to generate a payment instruction to S.W.I.F.T. PDS. S.W.I.F.T.'s FIN-Copy passes the settlement details associated with each payment to RITS through a central computer interface. Customer details are retained by FIN-Copy for forwarding to the receiving financial institution after RITS confirms settlement of the transaction.

S.W.I.F.T. PDS operating hours are 9.15 a.m. to 4.30 p.m., Monday to Thursday (5.00 p.m. Friday).

(c) Management and pricing

S.W.I.F.T. PDS is managed by an APCA Committee drawn from the system's participants. Users must pay S.W.I.F.T. charges and message fees and charges imposed by APCA to recoup its development and management costs. Currently APCA charges a joining fee of AUD25,200 and an annual membership fee of AUD1,000 (fees are indexed to inflation).

3.3.2 Cash transfer facilities in Austraclear and the Reserve Bank Information and Transfer System

Australia's two electronic registry and settlement systems, RITS and Austraclear's FINTRACS system, include facilities which allow their members to send and receive cash transfers unrelated to securities trades. Like all transactions in these systems, interbank settlement obligations arising from these cash transfers are settled on a RTGS basis.

3.4 Settlement procedures

Exchange Settlement (ES) Accounts, held at the Reserve Bank, are the means by which providers of payments services settle obligations which they have accrued in the clearing process. Until March 1999, access to ES Accounts had been restricted to banks and to two Special Service Providers (see section 1.2.4). However, following the outcome of the Financial System Inquiry, the Reserve Bank will now consider applications from actual or prospective providers of third-party (customer) payment services with a need to settle clearing obligations with other providers (see Section 5.2).

ES Accounts must remain in credit at all times. Interest is paid on end-of-day ES Account balances at the Reserve Bank's publicly announced target cash rate (which reflects the stance of monetary policy) less 25 basis points.

Since 22 June 1998, obligations between financial institutions arising from transactions in RITS, FINTRACS and S.W.I.F.T. PDS have been settled on a RTGS basis. These RTGS systems account for around 90% of the total value of exchanged payments. The remaining clearing systems which exchange cheque, direct-entry and card-based payments settle on a deferred net basis via RITS at 9.00 a.m. on the following business day.

3.4.1 RTGS

The Reserve Bank Information and Transfer System (RITS), which also acts as an electronic depository and settlement system for Commonwealth Government securities, is Australia's core RTGS system. FINTRACS and S.W.I.F.T. PDS are linked to RITS as feeder systems; see Diagram 3.1 below. FINTRACS is an electronic registry and settlement system for semi-government and private sector debt securities, while S.W.I.F.T. PDS is a purpose-built large-value funds transfer system. Further detail on FINTRACS is in Section 4.2.2 and the management and operation of S.W.I.F.T. PDS is described in Section 3.3.1 above.

All transactions in RITS, FINTRACS and S.W.I.F.T. PDS which generate settlement obligations between financial institutions are settled individually as they occur using credit funds in ES Accounts. All ES Account holders are required to settle their own RTGS obligations, rather than by appointing an agent to settle on their behalf. Transactions of members of RITS and Austraclear without an ES Account (such as securities dealers) are settled using the ES Account funds of a sponsoring bank or SSP.

Banks can control how their ES funds are utilised by assigning a status of "deferred", "active" or "priority" to each individual transaction entered onto the RITS central queue. Active transactions will be processed unless a payment would cause the level of the paying institution's ES balances to fall below that specified by each bank (sub-limits can be set within the system so as to reserve a tranche of liquidity). Priority transactions ignore any sub-limit and use the full level of ES Account balances.

While the market-based rate of interest paid on ES balances means that banks retain a pool of liquid funds at the Reserve Bank, this pool is quite small when compared to the total value of transactions settled through the system. However, the liquidity of the system is boosted in two main ways – a liquidity conserving feature, auto-offset, and access to additional ES funds through intraday repos.

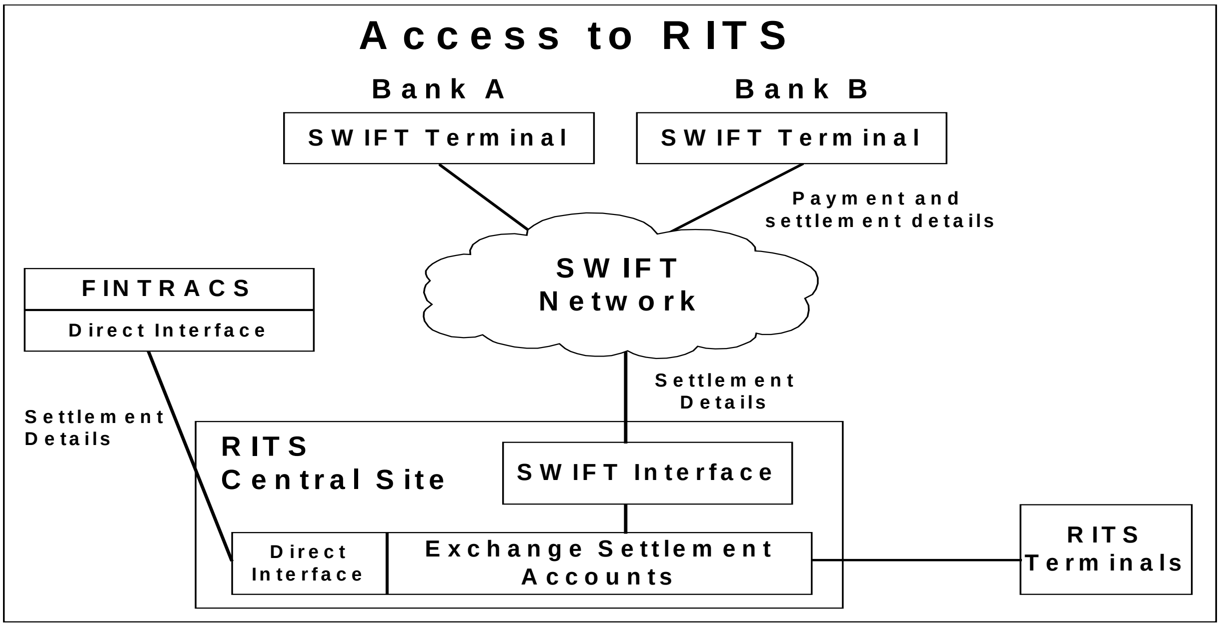

Diagram 3.1

The auto-offset facility automatically searches for bilateral offsetting transactions, or groups of transactions, between banks for simultaneous settlement – which potentially reduces the call upon each bank's liquidity. The intraday repo facility with the Reserve Bank enables banks, for a flat fee of AUD3 per parcel of stock per side, to convert holdings of Commonwealth Government securities and securities issued by State and Territory governments into ES funds by a repurchase transaction with an agreement to reverse by the end of the same day. This facility expands the potential pool of liquidity to include the stock of government securities on issue. In December 1998, banks held around AUD22 billion in such securities.

The intraday repo facility can be utilised either manually by banks (the first leg of the transaction proceeds automatically at the Reserve Bank) or automatically. In the latter case, stock that has been placed in an auto-repo sub account is sold as needed to the Reserve Bank. The system queue will proceed with an auto-repo after checking that: there are insufficient funds in that bank's ES Account to allow settlement; the payment has been on the queue for five minutes or more; the auto-repo functionality has been turned on; and there is stock in the repo sub-account.

To provide further liquidity, the Reserve Bank endeavours to make payments to the banking system (either on its own account or for its customers) at the start of the trading day.

An end-of-day standby facility is also available which allows banks, through an overnight repo facility, to obtain funds at a cost of 25 basis points above the target cash rate.

4. Special use of interbank transfer systems for international and domestic financial transactions

4.1 Exchange and settlement systems for international transactions

At the end of December 1998, there were 64 institutions authorised to deal in foreign exchange in Australia, of which 44 were banks (including branches of foreign banks) and 20 non-bank financial institutions (mainly merchant banks). The larger Australian-based banks also have a presence abroad.

International funds transfers are mainly effected through cross-border correspondent banks, with S.W.I.F.T. being the main method of international message transmission. Most banks and a little over half of the non-bank dealers are S.W.I.F.T. members. Australian-based institutions send and receive around 1.7 million messages over the S.W.I.F.T. network each month, mostly bank-to-bank and customer transfers.

4.1.1 Retail transactions

Travellers' cheques denominated in major currencies are offered by most Australian-based banks. They are negotiated for cash and services by travellers and presented for payment to the paying bank.

MasterCard and Visa cards issued by Australian institutions are increasingly being used abroad. In addition, many Australian institutions issue debit cards that can be used throughout the overseas Cirrus/Maestro and the Plus/Interlink ATM/EFTPOS networks operated by MasterCard and Visa, respectively. Similarly, cards issued by overseas institutions with access to these networks can be used in Australia.

There are no clearing arrangements for foreign currency paper instruments. Items drawn on banks outside Australia have to be sent for collection, or negotiated, to the countries concerned.

Transactions invoiced in other currencies may be paid by customers purchasing and forwarding a bank draft to the beneficiary for presentation and clearance through the relevant local clearing system. Similarly, a foreign currency money order can be purchased through the post office.

4.1.2 Large-value transfers

Most large-value transfers in Australian dollars, for settlement of foreign exchange transactions, take place through the RTGS system. Large-value transfers in other currencies are arranged through correspondents and the relevant local clearing systems.

Four Australian-based banks have become shareholders in CLS Services which is developing a settlement service to reduce settlement risk in foreign exchange transactions.

4.2 Exchange and settlement systems for securities transactions

4.2.1 Reserve Bank Information and Transfer System (RITS)

In addition to its role as Australia's core RTGS system, RITS is the electronic registry and settlement system for Commonwealth Government securities (CGS). All securities transactions in RITS are irrevocably settled on a delivery-versus-payment basis.

In December 1998, RITS held around AUD86 billion worth of CGS, approximately 91% of the stock on issue. Daily turnover in RITS averages around AUD17 billion and accounts for around 96% of the turnover in CGS.

Transactions originating in RITS itself account for around 12% of the total value of transactions settled on a RTGS basis.

(a) Membership

Members of RITS include the Reserve Bank, all authorised banks, two Special Service providers and large non-bank traders of CGS. There are two broad categories of membership in RITS: members and participating banks.

All members of RITS can undertake securities transactions and must have a settlement arrangement with a participating bank. Participating banks in RITS settle for the obligations generated by the RITS members that they sponsor (including themselves) on a RTGS basis. At end December 1998, there were 146 RITS members, including 52 banks and two SSPs.

(b) Operation of RITS

Trade details of all RITS transactions must be entered by both parties through computer terminals located in their offices. RITS then matches these details. Matched transactions are held within RITS pending settlement unless countermanded by both parties.

The Reserve Bank uses RITS to settle transactions arising from its market operations in CGS, obligations relating to the provision of currency and some foreign exchange transactions. The RITS system is also used to accept electronic bids for tenders of CGS. Members may settle through RITS for securities won at tender and simultaneously lodge the securities into the system.

Day-to-day maintenance of RITS software and hardware is undertaken by Austraclear, which developed RITS on behalf of the Reserve Bank.

RITS operating hours for cash transactions by banks are between 7.30 a.m. and 5.15 p.m. Monday to Thursday (5.45 p.m. on Fridays). Non-banks can conduct transactions between 9.15 a.m. and 4.30 p.m..

(c) Management and pricing

RITS is owned and managed by the Reserve Bank. Its regulations are determined by the Reserve Bank and are contractually binding upon all RITS members.

All members pay transaction fees based on their use of RITS (AUD12.50 per side for recording and settling a CGS transfer and AUD3.00 per side for a cash transfer) and an annual subscription fee (set by Austraclear) for their communications linkages. There are no RITS joining or annual fees. The standard RTGS fee of 90 cents for each debit and credit to financial institutions' ES Accounts, which arise from the settlement of transactions originating in RITS or one of its feeder systems, also applies.

(d) Risk management

Banks can control their credit exposures to client members of RITS in two ways. They may set a limit on the maximum debit balance for each member's cash account within RITS. The system does not allow transactions which breach this limit to proceed. Banks may alter this cash account limit during the day, but banks will remain obligated for payments made up to the time that the limit was changed. Banks may also, at their discretion, secure this overdraft by taking a mortgage over securities in the member's security account.

Alternatively, banks can use an automated information facility (AIF). The AIF allows banks to authorise transactions on the RITS queue and their RTGS queue. It can be used by banks to control credit allocation to client members and their own ES Account liquidity by advising banks of individual transactions and allowing them to determine the priority of each transaction.

As a further check on the matching of trades and payments, the Reserve Bank sets daily reference prices for all eligible CGS. The consideration for any trade or mortgage transaction must lie within a margin on either side of the reference price for the transaction to proceed. Transactions whose prices lie outside the allowable margins cannot proceed unless they have been nominated for external cash settlement.

No interbank settlement risk is generated in RITS. All transactions that involve more than one bank are subject to an ES Account test, and will not be processed unless the paying bank has sufficient ES funds to allow it to proceed. Once transactions have passed the customer credit test and the bank ES Account test and securities are available, all parts of the transaction are posted simultaneously in real time. Accordingly, RITS is a Model 1 DvP system.

4.2.2 Austraclear – Financial Transactions Recording and Clearance System (FINTRACS)

Settlement of most debt securities other than CGS is through FINTRACS, an electronic registry and settlement system owned by Austraclear Limited. Transactions originating in Austraclear account for around 20% of the total value of transactions settled on a RTGS basis.

(a) Membership

Major traders and issuers in the Australian debt securities market are participants in Austraclear. There are four classes of membership. Full members are mostly institutions trading in their own name, such as the main participants in the Australian money markets (banks, securities dealers, insurance companies and large corporations). In December 1998 there were 196 full members of Austraclear. Associate members are generally corporations or smaller financial institutions that participate in the securities markets only occasionally. Associate members are admitted to the system on the recommendation of full members, but can deal only with full members. Trustee companies and many custodial affiliates of financial institutions operate as public trust members. Public trust members can settle securities transactions on behalf of clients who have dealt as principals with full members of Austraclear. Special purpose members are parties with a limited requirement for use of the system or who only wish to record dealings in a limited range of securities. In December 1998 there were 196 associate members, 165 public trust members and 39 special purpose members.

Each Austraclear member arranges for a bank to make and receive payments in the system on its behalf; bank members usually act on their own behalf.

Operating hours are 7.30 a.m. to 4.25 p.m. Monday to Friday. However, cash transfers can not be initiated before 9.15a.m..

(b) Operation of Austraclear

Austraclear requires both parties to a transaction to enter trade details into computer terminals, which the system then matches. Reflecting its initial design as a securities settlement system, Austraclear's cash transfer facility also requires both parties to enter details.

Through an interface with RITS, transactions entered into Austraclear are passed to the RTGS system queue for settlement across ES Accounts.

(c) Management and pricing

FINTRACS is owned and operated by Austraclear, an unlisted company that is owned by the major participants in the Australian money markets. Major shareholders are represented on its board, which is responsible for determining the Regulations that govern the operation of FINTRACS. These Regulations are contractually binding on all members of Austraclear.

Austraclear charges a flat trade settlement fee of AUD11 per side plus a AUD3 per side trade confirmation fee (cash transfers incur a AUD3 per side fee). A monthly holding charge is also imposed for stock lodged within Austraclear (based on the highest end-of-day balance for the month). Presently this is based on a sliding scale, starting at 50 cents per AUD1 million for fixed interest securities and 80 cents per AUD1 million for discount securities. A full member fee of AUD5,000 per annum also applies.

(d) Risk management

In common with the approach to managing risk in RITS, banks can set a limit on the maximum debit balances for each member's cash account within FINTRACS or approve individual transactions using the AIF.

FINTRACS transactions must pass the same tests as RITS transactions and are thus settled on a Model 1 DvP basis.

4.2.3 Settlement of equity transactions

All securities traded on the Australian Stock Exchange (ASX) are cleared and settled by the Clearing House Electronic Sub-register System (CHESS). CHESS is owned and operated by the Australian Stock Exchange Settlement and Transfer Corporation Pty Ltd (ASTC), a wholly owned subsidiary of the ASX.

CHESS maintains an electronic sub-register of CHESS-approved securities[3] to enable electronic transfer of ownership. This sub-register forms part of the central register of an issuer's equity holders. In contrast to RITS and Austraclear, CHESS is not a depository – it does not acquire title to securities dematerialised in the CHESS sub-register. Virtually all shares are now in uncertificated form, and as at December 1998, around 64% of shares on issue were held in uncertificated form in the CHESS sub-register.

There are two types of participants in CHESS, brokers and non-brokers. Brokers are participants by virtue of their membership of the ASX. Non-broker participants include financial institutions, insurance companies, trustees and custodians.

All CHESS participants have direct electronic access to the CHESS sub-register. This enables them to transfer and receive securities on their own behalf and for any wholly owned subsidiaries. Non-participants enter into sponsorship agreements with participants, allowing participants to transfer and receive securities on their behalf. While securities are transferred on the CHESS sub-register, the "cash leg" of equity trades is settled through the RTGS system. To facilitate this, CHESS participants are required to have established arrangements with "payments providers" (i.e. banks, building societies, credit unions and SSPs).

[3] The following types of securities are eligible to be transferred in CHESS: equities, warrants, units (of listed unit trusts), units of some foreign securities, preference shares, unsecured notes, convertible notes and company-issued options.

Settlement of equity trades in CHESS occurs on a Model 3 DvP basis three business days after the trade date (T+3)[4]. At 8.00 a.m. on settlement day the ASTC notifies each CHESS participant of its projected cash and securities settlement obligations. Participants have until 10.30 a.m. Sydney time (the settlement cut-off time) to ensure that they have sufficient funds and securities to allow settlement to proceed.

Once the settlement cut-off time has passed, the ASTC calculates participants' multilateral net settlement obligations, for both securities and cash. The net cash position of each participant is advised to its payments provider, which then has approximately 90 minutes to confirm that it is willing to make or receive the payment on behalf of its customer.

The multilateral net obligations of payments providers' arising from their participants' settlement positions in CHESS are settled through a closed-user group facility on RITS. CHESS's banker enters all payments providers' multilateral net positions into RITS. Once the amounts registered in RITS have been confirmed by the relevant payments providers and net to zero, the CHESS banker instructs the Reserve Bank to effect simultaneous settlement of the batch in real time. This generally occurs around 12.30 p.m. Sydney time. The ASTC is informed when the batch has settled and it then transfers the titles to securities on the CHESS sub-register.

4.2.4 Settlement of futures and options contracts

Derivatives are traded on two exchanges in Australia, the Sydney Futures Exchange Ltd (SFE) and the Australian Derivatives Market Pty Ltd (ADM). These exchanges are supported by separate clearing houses, the SFE Clearing House Pty Ltd (SFECH) and the Options Clearing House Pty Ltd (OCH), respectively.

The registration, clearing and processing of all contracts traded on the SFE is performed by the SFECH. It also clears all futures and options contracts traded on the Sydney Computerised Overnight Market (SYCOM) and the New Zealand Futures and Options Exchange (NZFOE). As the SFECH acts as the central counterparty in each open contract, it guarantees the performance of the contract to every clearing member.

The SFECH's major risk management tool is the setting, calculation and collection of margins from clearing members. Margin payments between clearing members and the SFECH are made at 10.30 a.m. each business day through the cash transfer facility provided by Austraclear. These margin payments are settled in real time across members' ES Accounts. Margin liabilities can only be satisfied in Australian dollars (or New Zealand dollars for NZFOE contracts).

Only 3% of SFE contracts are delivered on settlement date; most contracts are settled in cash using the Austraclear cash transfer facility.

All ADM option contracts are cleared by the OCH. The OCH performs a similar role to the SFECH, that is, it acts as a central counterparty to each ADM contract and guarantees its performance. Like the SFECH, the OCH collects margins from clearing members as part of its risk management procedures. OCH margin liabilities can be satisfied by cash or collateral. Acceptable forms of collateral are shares, bank guarantees and money market securities. Margin payments between the clearing members and the OCH are made using the cash transfer facility provided by Austraclear. Where collateral is used to satisfy margin requirements, the securities are held by Austraclear or in the CHESS sub-register, and pledged to the OCH.

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4 Prior to February 1999, settlement in CHESS occurred five business days after the trade date (T+5).

5. The role of the central bank in interbank settlement systems

5.1 General responsibilities

The functions, powers and responsibilities of the Reserve Bank are specified in the *Reserve Bank Act*, the *Financial Corporations Act 1974*, the *Payment Systems (Regulation) Act*, the *Payment Systems and Netting Act* and in any regulations that may be made under those Acts.

The Reserve Bank is the regulator of the payments system. This responsibility is exercised by its Payments System Board (see section 1.3). It provides settlement facilities to the system through its Exchange Settlement Accounts. It is also a participant in the system, processing a large number of payments on behalf of its clients in the official sector. The Reserve Bank is a shareholder member of APCA and has a director on the APCA Board.

5.2 Provision of settlement facilities

The Reserve Bank has traditionally been at the centre of the settlement system for payments cleared between banks, and will remain so as direct access to the system is expanded to non-bank entities.

The final settlement of transactions occurs by passing entries to Exchange Settlement (ES) Accounts at the Reserve Bank. Accounts must be in credit at all times. Interest is paid on the end-of-day settlement account balances at the publicly announced target cash rate less 25 basis points.

Banks as well as Special Service Providers to the building society and credit union industries hold Settlement Accounts at the Reserve Bank. The Reserve Bank will also consider applications for ES Accounts from non-bank entities with significant third-party payment obligations, subject to being satisfied about their ability to meet settlement obligations.

Institutions which are supervised by APRA, and which satisfy the Reserve Bank that they have the capacity to meet their settlement obligations, are eligible for ES Accounts without special conditions. However, the Bank may impose collateral requirements on a transitional basis for institutions with only limited payments experience.

Organisations not supervised by APRA which operate in deferred net settlement systems will have to meet collateral requirements on an ongoing basis, except where they are always net receivers in payment clearing arrangements. Organisations which operate in the RTGS system will have to demonstrate that they have the necessary operational capacity and adequate liquidity, but will not be subject to ongoing collateral requirements

Details of the daily settlement cycle are in Section 3.4.

5.3 Monetary policy and payment systems

The broad policy objectives of the Reserve Bank set out in the *Reserve Bank Act* are:

- stability of the currency;
- maintenance of full employment; and
- the economic prosperity and welfare of the people of Australia.

In 1993 the Reserve Bank adopted an inflation target as an operating objective. The target is to keep underlying inflation between 2 and 3%, on average, over the cycle. This formulation allows the Reserve Bank to pursue the goal of medium-term price stability while taking into account the implications of monetary policy for activity and employment in the short term. Australia’s monetary policy framework was clarified in a Statement on the Conduct of Monetary Policy issued by the Governor of the Reserve Bank and the Commonwealth Treasurer in August 1996.

Since the Reserve Bank began announcing monetary policy changes in early 1990, the stance of monetary policy has been expressed in terms of a target cash rate. The Reserve Bank influences this rate by conducting daily open market operations to maintain liquidity conditions consistent with the announced target. Changes in the level of the cash rate flow through quickly to other short-term interest rates.

The Reserve Bank's market operations are conducted in CGS and securities issued by State and Territory governments. The Reserve Bank accepts bids or offers from any member of RITS. The bulk of its market operations are in the form of repurchase agreements. In addition to term repos which are undertaken to implement monetary policy, the Reserve Bank also provides an intraday repo facility to provide banks with liquidity to make RTGS payments.

The Reserve Bank's ability to achieve a particular cash rate stems from its control over the supply of Exchange Settlement (ES) funds. Commercial banks need to hold ES funds because they are the means used to settle transactions among themselves and with the Reserve Bank; each bank needs to hold enough to meet its settlement obligations. If the Reserve Bank supplies more ES funds than banks wish to hold, banks will try to shed funds by lending more in the cash market, resulting in a tendency for the cash rate to fall; the RBA would normally respond by withdrawing ES funds to keep the cash rate at its target. Conversely, if the amount of funds supplied is less than desired holdings, banks will respond by borrowing in the cash market to try and build up their ES holdings, thereby putting upward pressure on the cash rate; the RBA would normally act to boost the supply of ES funds to maintain the cash rate target.

5.4 Main projects being implemented

The Reserve Bank has recently gained wider powers in the payments system. A new Payment System Board has been established in the Bank to determine its payments system policy. Significant projects include:

- assessing the safety of existing payment systems;
- developing benchmarks and statistical collections for assessing efficiency in the payment system;
- establishing criteria for the approval of netting schemes under the *Payment Systems and Netting Act*.

*   *   *

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Glossary

Part A: Australian institutions and terminology

ACCC: Australian Competition and Consumer Commission. Refer to Section 1.4.2.

ADM: Australian Derivatives Market Pty Limited. Refer to Section 4.2.4.

AFIC: Australian Financial Institutions Commission. Refer to Section 1.4.4.

APCA: Australian Payments Clearing Association Limited. Refer to Section 1.4.3.

APRA: Australian Prudential Regulation Authority. Refer to Section 1.4.1.

ASIC: Australian Securities and Investments Commission. Refer to Section 1.4.5.

ASTC: Australian Stock Exchange Settlement and Transfer Corporation Pty Ltd. Refer to Section 4.2.3.

ASX: Australian Stock Exchange. Refer to Section 4.2.3.

AUSTRAC: Australian Transaction Reports and Analysis Centre. Refer to Section 1.1.

Austraclear Limited: Refer to Sections 3.3.2 and 4.2.2.

Australian Payments System Council: Refer to Section 1.4.5.

Authorised Deposit-taking Institution (ADI): Refer to Section 1.4.1.

Banking Ombudsman: Refer to Section 1.4.8.

BPAY: Refer to Section 3.2.4.

CHESS: Clearing House Electronic Subregister System. Refer to Section 4.2.3.

Council of Financial Regulators: Refer to Section 1.4.6.

Debit card: a card enabling the holder to draw cash from ATMs and cash dispensers and/or to have his retail purchases through an EFTPOS terminal directly charged to funds on his account at a deposit-taking institution. Refer to Section 1.2.5.

Debits Tax: a tax levied by State Governments on withdrawals from accounts with a cheque facility. Refer to Section 2.2.11.

Direct credit: a payment made by the payer's financial institution crediting the payee's account at another financial institution directly using electronic file transfers or magnetic tapes.

Exchange Settlement (ES) Account: a settlement account held at the Reserve Bank to settle debts arising from the clearing of payments. Refer to section 5.2.

Financial Institutions Duty (FID): a charge levied by State Governments on deposits to customer accounts at financial institutions. Refer to Section 2.2.11.

Financial Sector Advisory Council: Refer to Section 1.4.7.

FSI: Financial System Inquiry. Refer to Section 2.3.

FINTRACS: Financial Transactions Recording and Clearance System. Refer to Section 4.2.2.

OCH: Options Clearing House Pty Limited. Refer Section 4.2.4.

PSB: Payments System Board. Refer to Section 1.3.

Purchased Payment Facilities: Refer to Section 1.3.

RITS: Reserve Bank Information and Transfer System. Refer to Sections 3.3.2 and 4.2.1.

RTGS: Real-time Gross Settlement. Refer to Section 3.4.

SFE: Sydney Futures Exchange. Refer to Section 4.2.4.

SFECH: Sydney Futures Exchange Clearing House Pty Limited. Refer to Section 4.2.4.

SSP: Special Service Provider. Refer to Section 1.2.4.

S.W.I.F.T. PDS: S.W.I.F.T. Payment Delivery System. Refer to Section 3.3.1.

SYCOM: Sydney Computerised Overnight Market. Refer to Section 4.2.4.

Warrant: a purely interbank paper debit instrument. Refer to Section 2.2.1.

Part B: Standard Red Book terminology

Advisory netting: see position netting.

Assured payment system (APS): an arrangement in an exchange-for-value system under which completion of timely settlement of a payment instruction is supported by an irrevocable and unconditional commitment from a third party (typically a bank, syndicate of banks or clearing house). See exchange-for-value settlement system.

Automated clearing house (ACH): an electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunication networks, and handled by a data-processing centre. See also clearing.

Automated teller machine (ATM): electro-mechanical device that permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits. ATMs may be operated either on-line with real-time access to an authorisation database or off-line.

Bank draft: in Europe, the term generally refers to a draft drawn by a bank on itself. The draft is purchased by the payer and sent to the payee, who presents it to his bank for payment. That bank presents it to the payer's bank for reimbursement. In the United States, the term generally refers to a draft or cheque drawn by a bank on itself or on funds deposited with another bank. In the case of a cashier's cheque, the bank is both the drawer and drawee. In the case of a teller's cheque, one bank is the drawer and a second bank is the drawee. Bank drafts may be written by a bank for its own purposes or may be purchased by a customer and sent to a payee to discharge an obligation. See draft.

Batch: the transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete intervals of time.

Beneficial ownership/interest: the entitlement to receive some or all of the benefits of ownership of a security or other financial instrument (e.g. income, voting rights, power to transfer). Beneficial ownership is usually distinguished from "legal ownership" of a security or financial instrument. See legal ownership.

Bilateral net settlement system: a settlement system in which participants' bilateral net settlement positions are settled between every bilateral combination of participants. See also net credit or debit position.

Bilateral netting: an arrangement between two parties to net their bilateral obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. See netting, multilateral netting, net settlement.

Bill of exchange: a written order from one party (the drawer) to another (the drawee) to pay a specified sum on demand or on a specified date to the drawer or to a third party specified by the drawer. Widely used to finance trade and, when discounted with a financial institution, to obtain credit. See also draft.

Book-entry system: an accounting system that permits the transfer of claims (e.g. securities) without the physical movement of paper documents or certificates. See also dematerialisation, immobilisation.

Bulk transfer system: see retail transfer system.

Call money: a loan contract which is automatically renewed every day unless the lender or the borrower indicates that it wishes the funds to be returned within a short period of time.

Capital risk: see principal risk.

Caps: for risk management purposes, the quantitative limits placed on the positions (debit or credit positions, which may be either net or gross) that participants in a funds or securities transfer system can incur during the business day. Caps may be set by participants on credit extended bilaterally to other participants in a system, e.g. bilateral credit limits, or by the system operator or by the body governing the transfer system on the aggregate net debit a participant may incur on the system, e.g. sender net debit limits. Sender net debit limits may be either collateralised or uncollateralised.

Card: see cash card, cheque guarantee card, chip card, credit card, debit card, delayed debit card, prepaid card, retailer's card, travel and entertainment card.

Cash card: card for use only in ATMs or cash dispensers (often, other cards also have a cash function that permits the holder to withdraw cash).

Cash dispenser: electro-mechanical device that permits consumers, typically using machine-readable plastic cards, to withdraw banknotes (currency) and, in some cases, coins. See also automated teller machine (ATM).

Cashier's cheque: see bank draft.

Central bank credit (liquidity) facility: a standing credit facility that can be drawn upon by certain designated account holders (e.g. banks) at the central bank. In some cases, the facility can be used automatically at the initiative of the account holder, while in other cases the central bank may retain some degree of discretion. The loans typically take the form either of advances or overdrafts on an account holder's current account which may be secured by a pledge of securities (also known as lombard loans in some European countries), or of traditional rediscounting of bills.

Central securities depository: a facility for holding securities which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (i.e. so that they exist only as electronic records). In addition to safekeeping, a central securities depository may incorporate comparison, clearing and settlement functions.

Certificate: physical document which evidences an ownership claim in, indebtedness of, or other outstanding financial obligations of the issuer.

Chaining: a method used in certain transfer systems (mostly for securities) for processing instructions. It involves the manipulation of the sequence in which transfer instructions are processed to increase the number or value of transfers that may be settled with available funds and/or securities balances (or available credit or securities lending lines).

Charge card: see travel and entertainment card.

Cheque: a written order from one party (the drawer) to another (the drawee, normally a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer. Widely used for settling debts and withdrawing money from banks. See also bill of exchange.

Cheque guarantee card: a card issued as part of a cheque guarantee system. This function may be combined with other functions in the same card, e.g. those of a cash card or debit card. See also cheque guarantee system.

Cheque guarantee system: a system to guarantee cheques, typically up to a specified amount, that have been validated by the merchant either on the basis of a card issued to the cheque writer or through a central database accessible to merchants. Validated cheques are guaranteed by the issuer of the guarantee card, the drawee bank or the system operator.

Chip card: also known as an IC (integrated circuit) card or smart card. A card containing one or more computer chips or integrated circuits for identification, data storage or special-purpose processing used to validate personal identification numbers (PINs), authorise purchases, verify account balances and store personal records. In some cases, the memory in the card is updated every time the card is used, e.g. an account balance is updated.

Clearing/Clearance: clearing is the process of transmitting, reconciling and in some cases confirming payment orders or security transfer instructions prior to settlement, possibly including netting of instructions and the establishment of final positions for settlement. In the context of securities markets this process is often referred to as clearance. Sometimes the terms are used (imprecisely) to include settlement.

Clearing house: a central location or central processing mechanism through which financial institutions agree to exchange payment instructions or other financial obligations (e.g. securities). The institutions settle for items exchanged at a designated time based on the rules and procedures of the clearing house. In some cases, the clearing house may assume significant counterparty, financial or risk management responsibilities for the clearing system. See clearing/clearance, clearing system.

Clearing house funds: term most commonly used in certain US markets to refer to funds that typically are provisional on the day of receipt and final on the following day. More specifically, the term is used to refer to monetary claims with next-day finality that are exchanged by participants in certain clearing house arrangements in settlement of obligations arising from the clearing process. Such claims are typically transferred via cheques, drafts or other similar payment

Clearing system: a set of procedures whereby financial institutions present and exchange data and/or documents relating to funds or securities transfers to other financial institutions at a single location (clearing house). The procedures often also include a mechanism for the calculation of participants' bilateral and/or multilateral net positions with a view to facilitating the settlement of their obligations on a net or net net basis. See also netting.

Comparison: see matching.

Confirmation: a particular connotation of this widely used term is the process whereby a market participant notifies its counterparties or customers of the details of a trade and, typically, allows them time to affirm or to question the trade.

Correspondent banking: an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as agency relationships in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle foreign exchange transactions. Reciprocal correspondent banking relationships may involve the use of so-called nostro and vostro accounts to settle foreign exchange transactions.

Counterparty: the opposite party to a financial transaction, such as a securities trade or swap agreement.

Credit caps: see caps.

Credit card: card indicating that the holder has been granted a line of credit. It enables him to make purchases and/or draw cash up to a prearranged ceiling; the credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.

Credit card company: a company which owns the trademark of a particular credit card, and may also provide a number of marketing, processing or other services to the members using the card services.

Credit risk/exposure: the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value systems, the risk is generally defined to include replacement cost risk and principal risk.

Credit transfer: a payment order or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system.

Credit transfer system (or giro system): a system through which payment instructions and the funds described therein may be transmitted for the purpose of effecting credit transfers.

Cross-currency settlement risk (or Herstatt risk): see principal risk.

Custody: the safekeeping and administration of securities and financial instruments on behalf of others.

Daylight credit (or daylight overdraft, daylight exposure, intraday credit): credit extended for a period of less than one business day; in a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day.

Debit caps: see caps.

Debit card: card enabling the holder to have his purchases directly charged to funds on his account at a deposit-taking institution (may sometimes be combined with another function, e.g. that of a cash card or cheque guarantee card).

Debit transfer system (or debit collection system): a funds transfer system in which debit collection orders made or authorised by the payer move from the bank of the payee to the bank of the payer and result in a charge (debit) to the account of the payer; for example, cheque-based systems are typical debit transfer systems.

Default: failure to complete a funds or securities transfer according to its terms for reasons that are not technical or temporary, usually as a result of bankruptcy. Default is usually distinguished from a "failed transaction".

Delayed debit card: card issued by banks indicating that the holder may charge his account up to an authorised limit. It enables him to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

Deletion: a mechanism whereby some or all transfers to/from a defaulting participant are excluded from the settlement process. In a netting scheme, other participants' bilateral and/or multilateral net positions are recalculated. See unwinding.

Delivery: final transfer of a security or financial instrument.

Delivery versus payment system (or DVP, delivery against payment): a mechanism in an exchange-for-value settlement system that ensures that the final transfer of one asset occurs if and only if the final transfer of (an)other asset(s) occurs. Assets could include monetary assets (such as foreign exchange), securities or other financial instruments. See exchange-for-value settlement system, final transfer.

Dematerialisation: the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.

Direct debit: a pre-authorised debit on the payer's bank account initiated by the payee.

Direct participant/member: the term generally denotes participants in a funds or securities transfer system that directly exchange transfer orders with other participants in the system. In some systems direct participants also exchange orders on behalf of indirect participants. Depending on the system, direct participants may or may not also be settling participants. In the EC context this term has a specific meaning: it refers to participants in a transfer system which are responsible to the settlement institution (or to all other participants) for the settlement of their own payments, those of their customers and those of indirect participants on whose behalf they are settling. See participant/member, indirect participant/member, settling participant/member.

Discharge: release from a legal obligation imposed by contract or law.

Draft: a written order from one party (the drawer) to another (the drawee) to pay a party identified on the order (payee) or to bearer a specified sum, either on demand (sight draft) or on a specified date (time draft). See cheque, bank draft, bill of exchange.

EFTPOS: see point of sale (POS).

Electronic data interchange (EDI): the electronic exchange between commercial entities (in some cases also public administrations), in a standard format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments. EDI messages are sent through public data transmission networks or banking system channels. Any movement of funds initiated by EDI is reflected in payment instructions flowing through the banking system. EDIFACT, a United Nations body, has established standards for electronic data interchange.

Exchange-for-value settlement system: system which involves the exchange of assets, such as money, foreign exchange, securities or other financial instruments, in order to discharge settlement obligations. These systems may use one or more funds transfer systems in order to satisfy the payment obligations that are generated. The links between the exchange of assets and the payment system(s) may be manual or electronic. See delivery versus payment system.

Face-to-face payment: payment carried out by the exchange of instruments between the payer and the payee in the same physical location.

Failed transaction: a transaction (e.g. a funds or securities transfer) that does not settle on time, usually for technical or temporary reasons.

Final (finality): irrevocable and unconditional.

Final settlement: settlement which is irrevocable and unconditional.

Final transfer: an irrevocable and unconditional transfer which effects a discharge of the obligation to make the transfer. The terms “delivery” and “payment” are each defined to include a final transfer.

Giro system: see credit transfer system.

Gridlock: a situation that can arise in a funds or securities transfer system in which the failure of some transfer instructions to be executed (because the necessary funds or securities balances are unavailable) prevents a substantial number of other instructions from other participants from being executed. See also failed transaction, queuing, systemic risk.

Gross settlement system: a transfer system in which the settlement of funds or securities transfers occurs individually on an order-by-order basis according to the rules and procedures of the system, i.e. without netting debits against credits. See real-time gross settlement, net settlement system.

Haircut: the difference between the market value of a security and its collateral value. Haircuts are taken by a lender of funds in order to protect the lender, should the need arise to liquidate the collateral, from losses owing to declines in the market value of the security. See margin.

Herstatt risk: see principal risk.

Home banking: banking services which a retail customer of a financial institution can access using a telephone, television set, terminal or personal computer as a telecommunication link to the institution’s computer centre.

IC card: see chip card.

Immobilisation: Placement of certificated securities and financial instruments in a central securities depository to facilitate book-entry transfers.

Imprinter: mechanical device to reproduce the name and account number of a cardholder on a paper sales slip. See also imprinter voucher.

Imprinter voucher: in card transactions, a sales slip that is to be signed by the customer on which the name and card number of the customer are imprinted. See also imprinter.

Indirect participant/member: refers to a funds or securities transfer system in which there is a tiering arrangement. Indirect participants are distinguished from direct participants by their inability to perform some of the system activities (e.g. input of transfer orders, settlement) performed by direct participants. Indirect participants, therefore, require the services of direct participants to perform those activities on their behalf. In the EC context the term refers more specifically to participants in a transfer system which are responsible only to their direct participants for settling the payments input to the system. See direct participant/member, settling participant/member, tiering arrangement.

Interbank funds transfer system (IFTS): a funds transfer system in which most (or all) direct participants are financial institutions, particularly banks and other credit institutions.

Intraday credit: see daylight credit.

Irrevocable and unconditional transfer: a transfer which cannot be revoked by the transferor and is unconditional.

Issuer: the entity which is obligated on a security or other financial instrument. For example, a corporation or government having the authority to issue and sell a security; a bank that approves a letter of credit. Sometimes used to refer to a financial institution that issues credit or debit cards.

Large-value funds transfer system: interbank funds transfer system through which large-value and high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Though as a rule no minimum value is set for the payments they carry, the average size of payments through such systems is relatively large. Large-value funds transfer systems are sometimes called wholesale funds transfer systems.

Legal ownership: recognition in law as the owner of a security or other financial instrument.

Letter of credit (L/C): a promise by a bank or other issuer to a third party to make payment on behalf of a customer in accordance with specified conditions. Frequently used in international trade to make funds available in a foreign location.

Liquidity risk: the risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified time thereafter.

Loss-sharing rule (or loss-sharing agreement): an agreement between participants in a transfer system or clearing house arrangement regarding the allocation of any loss arising when one or more participants fail to fulfil their obligation: the arrangement stipulates how the loss will be shared among the parties concerned in the event that the agreement is activated.

Magnetic ink character recognition (MICR): a technique, using special MICR machine-readable characters, by which documents (i.e. cheques, credit transfers, direct debits) are read by machines for electronic processing. See optical character recognition (OCR).

Margin: margin has at least two meanings. In the futures/commodity markets, margin is a good faith deposit (of money, securities or other financial instruments) required by the futures clearing system to assure performance. In the equities markets, margin is a sum of money deposited by a customer when borrowing money from a broker to purchase shares. The money deposited with the broker is the difference between the purchase value of the shares and the collateral value of the shares. See haircut.

Marking to market: the practice of revaluing securities and financial instruments using current market prices. In some cases unsettled contracts to purchase and sell securities are marked to market and the counterparty with an as yet unrealised loss on the contract is required to transfer funds or securities equal to the value of the loss to the other counterparty.

Matching (or comparison checking): the process used by market participants before settlement of a transaction to ensure that they agree with respect to the terms of the transaction.

Money order: an instrument used to remit money to the named payee, often used by persons who do not have a chequing account relationship with a financial institution, to pay bills or to transfer money to another person or to a company. There are three parties to a money order: the remitter (payer), the payee and the drawee. Drawees are usually financial institutions or post offices. Payees can either cash their money orders or present them to their bank for collection.

Multilateral net settlement position: the sum of the value of all the transfers a participant in a net settlement system has received during a certain period of time less the value of the transfers made by the participant to all other participants. If the sum is positive, the participant is in a multilateral net credit position; if the sum is negative, the participant is in a multilateral net debit position.

Multilateral net settlement system: a settlement system in which each settling participant settles (typically by means of a single payment or receipt) the multilateral net settlement position which results from the transfers made and received by it, for its own account and on behalf of its customers or non-settling participants for which it is acting. See multilateral netting, multilateral net settlement position, settling participant and direct participant.

Multilateral netting: an arrangement among three or more parties to net their obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. The multilateral netting of payment obligations normally takes place in the context of a multilateral net settlement system. See bilateral netting, multilateral net settlement position, multilateral net settlement system.

Net credit or debit position: a participant's net credit or net debit position in a netting system is the sum of the value of all the transfers it has received up to a particular point in time less the value of all transfers it has sent. If the difference is positive, the participant is in a net credit position; if the difference is negative, the participant is in a net debit position. The net credit or net debit position at settlement time is called the net settlement position. These net positions may be calculated on a bilateral or multilateral basis.

Net debit cap: see caps, net credit or debit position.

Net settlement: the settlement of a number of obligations or transfers between or among counterparties on a net basis. See netting.

Net settlement system: a system to effect net settlement.

Netting: an agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions. Netting may take several forms which have varying degrees of legal enforceability in the event of default of one of the parties. See also bilateral and multilateral netting, position netting, novation, substitution.

Nominee: a person or entity named by another to act on his behalf.

Novation: satisfaction and discharge of existing contractual obligations by means of their replacement by new obligations (whose effect, for example, is to replace gross with net payment obligations). The parties to the new obligations may be the same as to the existing obligations or, in the context of some clearing house arrangements, there may additionally be substitution of parties. See substitution.

Obligation: a duty imposed by contract or law. It is also used to describe a security or other financial instrument, such as a bond or promissory note, which contains the issuer's undertaking to pay the owner.

Off-line: in the context of payment and settlement systems, the term may refer to the transmission of transfer instructions by users, through such means as voice, written or telefaxed instructions, that must subsequently be input into a transfer processing system. The term may also refer to the storage of data by the transfer processing system on media such as magnetic tape or disk such that the user may not have direct and immediate access to the data. See on-line.

On-line: in the context of payment and settlement systems, the term may refer to the transmission of transfer instructions by users, through such electronic means as computer-to-computer interfaces or electronic terminals, that are entered into a transfer processing system by automated means. The term may also refer to the storage of data by the transfer processing system on a computer database such that the user has direct access to the data (frequently real-time) through input/output devices such as terminals. See off-line.

Optical character recognition (OCR): a technique, using special OCR machine-readable characters, by which documents (e.g. cheques, credit transfers, direct debits) are read by machines for electronic processing. See magnetic ink character recognition (MICR).

Overnight money (or day-to-day money): a loan with a maturity of one business day.

Paperless credit transfers: credit transfers that do not involve the exchange of paper documents between banks. Other credit transfers are called paper-based.

Participant/Member: a party who participates in a transfer system. This generic term refers to an institution which is identified by a transfer system (e.g. by a bank identification number) and is allowed to send payment orders directly to the system or which is directly bound by the rules governing the transfer system. See direct participant/member, indirect participant/member.

Payment: the payer's transfer of a monetary claim on a party acceptable to the payee. Typically, claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.

Payment lag: the time-lag between the initiation of the payment order and its final settlement.

Payment order (or payment instruction): an order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee. The order may relate either to a credit transfer or to a debit transfer.

Payment system: a payment system consists of a set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money.

PIN (personal identification number): a numeric code which the cardholder may need to quote for verification of identity. In eletronic transactions, it is seen as the equivalent of a signature.

Point of sale (POS): this term refers to the use of payment cards at a retail location (point of sale). The payment information is captured either by paper vouchers or by electronic terminals, which, in some cases, are designed also to transmit the information. Where this is so, the arrangement may be referred to as "electronic funds transfer at the point of sale" (EFTPOS).

Position netting (or advisory netting): the netting of instructions in respect of obligations between two or more parties which neither satisfies nor discharges those original individual obligations. Also referred to as payment netting in the case of payment instructions.

Prepaid card (or payment card): a card "loaded" with a given value, paid for in advance.

Principal risk: the credit risk that a party will lose the full value involved in a transaction. In the settlement process, this term is typically associated with exchange-for-value transactions when there is a lag between the final settlement of the various legs of a transaction (i.e. the absence of delivery versus payment). Principal risk that arises from the settlement of foreign exchange transactions is sometimes called cross-currency settlement risk or Herstatt risk. See credit risk.

Provisional transfer: a conditional transfer in which one or more parties retain the right by law or agreement to rescind the transfer.

Queuing: a risk management arrangement whereby transfer orders are held pending by the originator/deliverer or by the system until sufficient cover is available in the originator's/deliverer's clearing account or under the limits set against the payer; in some cases, cover may include unused credit lines or available collateral. See also caps.

Real-time gross settlement (RTGS): a gross settlement system in which processing and settlement take place in real time (continuously).

Real-time transmission, processing or settlement: the transmission, processing or settlement of a funds or securities transfer instruction on an individual basis at the time it is initiated.

Receiver finality: analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the receiving participant in a transfer system to make final funds available to its beneficiary customer on the value date. See final settlement.

Registration: the listing of ownership of securities in the records of the issuer or its transfer agent/registrar.

Remote participant: a participant in a transfer system which has neither its head office nor any of its branches located in the country where the transfer system is based.

Remote payment: payment carried out through the sending of payment orders or payment instruments (e.g. by mail). Contrast with face-to-face payment.

Replacement cost risk (or market risk, price risk): the risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date. This failure may leave the solvent party with an unhedged or open market position or deny the solvent party unrealised gains on the position. The resulting exposure is the cost of replacing, at current market prices, the original transaction. See also credit risk.

Respondent: see correspondent banking.

Retailer's card: a card issued by non-banking institutions, to be used in specified stores. The holder of the card has usually been granted a line of credit.

Retail transfer system: interbank funds transfer system which handles a large volume of payments of relatively low value in such forms as cheques, credit transfers, direct debits, ATM transactions and EFT at the point of sale.

Same-day funds: money balances that the recipient has a right to transfer or withdraw from an account on the day of receipt.

Securities depository (book-entry system): see central securities depository.

Sender finality: analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the initiating participant in a funds transfer system to make final payment to the receiving participant on the value date. See final settlement.

Settlement: an act that discharges obligations in respect of funds or securities transfers between two or more parties. See gross and net settlement system, net settlement, final settlement.

Settlement agent: an institution that manages the settlement process (e.g. the determination of settlement positions, monitoring the exchange of payments, etc.) for transfer systems or other arrangements that require settlement. See final settlement, settlement, settlement institution(s), multilateral net settlement system.

Settlement finality: see final settlement.

Settlement institution(s): the institution(s) across whose books transfers between participants take place in order to achieve settlement within a settlement system. See settling participant/member, settlement agent, multilateral net settlement system, bilateral net settlement system.

Settlement lag: in an exchange-for-value process, the time-lag between entering into a trade/bargain and its discharge by the final exchange of a financial asset for payment. See payment lag.

Settling participant/member: in some countries, a settling participant in a funds or securities transfer system delivers and receives funds or securities to/from other settling participants through one or more accounts at the settlement institution for the purpose of settling funds or securities transfers for the system. Other participants require the services of a settling participant in order to settle their positions. Currently in the EC direct participants are by definition also settling participants. See direct participant/member, tiering arrangement.

Settlement risk: general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.

Settlement system: a system in which settlement takes place.

Standing order: an instruction from a customer to his bank to make a regular payment of a fixed amount to a named creditor.

Substitution: the substitution of one party for another in respect of an obligation. In a netting and settlement context the term typically refers to the process of amending a contract between two parties so that a third party is interposed as counterparty to each of the two parties and the original contract between the two parties is satisfied and discharged. See novation.

S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication): a cooperative organisation created and owned by banks that operates a network which facilitates the exchange of payment and other financial messages between financial institutions (including broker-dealers and securities companies) throughout the world. A S.W.I.F.T. payment message is an instruction to transfer funds; the exchange of funds (settlement) subsequently takes place over a payment system or through correspondent banking relationships.

Systemic risk: the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.

Telematics: the combined use of data-processing and data-transmission techniques.

Teller's cheque: see bank draft.

Tiering arrangement: an arrangement which may exist in a funds or securities transfer system whereby participants in one category require the services of participants in another category to exchange and/or settle their transactions. See direct, indirect and settling participant/member.

Trade date: the date on which a trade/bargain is struck.

Trade netting: a consolidation and offsetting of individual trades into net amounts of securities and money due between trading partners or among members of a clearing system. A netting of trades which is not legally enforceable is a position netting.

Trade-for-trade (gross) settlement: the settlement of individual transactions between counterparties. See gross settlement system.

Trade-for-trade settlement system: see gross settlement system.

Transfer: operationally, the sending (or movement) of funds or securities or of a right relating to funds or securities from one party to another party by (1) conveyance of physical instruments/money; (2) accounting entries on the books of a financial intermediary; or (3) accounting entries processed through a funds and/or securities transfer system. The act of transfer affects the legal rights of the transferor, transferee and possibly third parties in relation to the money balance, security or other financial instrument being transferred.

Transfer system: a generic term covering interbank funds transfer systems and exchange-for-value systems.

Travel and entertainment (charge) card: card issued by non-banks indicating that the holder has been granted a line of credit. It enables him to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

Truncation: a procedure in which the physical movement of paper payment instruments (e.g. paid cheques or credit transfers) within a bank, between banks or between a bank and its customer is curtailed or eliminated, being replaced, in whole or in part, by electronic records of their content for further processing and transmission.

Ultimate settlement: sometimes used to denote final settlement in central bank money.

Unwinding (or settlement unwind): a procedure followed in certain clearing and settlement systems in which transfers of securities or funds are settled on a net basis, at the end of the processing cycle, with all transfers provisional until all participants have discharged their settlement obligations. If a participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system and the settlement obligations from the remaining transfers are then recalculated. Such a procedure has the effect of transferring liquidity pressures and possibly losses from the failure to settle to other participants, and may, in the extreme, result in significant and unpredictable systemic risks.

Variation margin (or mark-to-market payments): the amount which is paid by a counterparty to reduce replacement cost exposures resulting from changes in market prices, following the revaluation of securities or financial instruments that are the subject of unsettled trades.

Wholesale funds transfer system: see large-value funds transfer system.

Statistical tables

Table 1

Basic statistical data

	1993	1994	1995	1996	1997	1998
Population:						
year-end	*17,760,000*	*17,951,500*	*18,196,100*	*18,422,700*	*18,631,100*	.
average	*17,670,650*	*17,855,750*	*18,073,800*	*18,309,400*	*18,526,900*	.
GDP (AUD millions)	436,136	462,545	489,581	519,908	546,392	578,233
GDP per capita (AUD)	24,557	25,776	26,906	28,221	29,327	.
Exchange rate (domestic currency vis-à-vis USD):*						
year-end	*0.6771*	*0.7768*	*0.7450*	*0.7965*	*0.6527*	*0.6139*
average	*0.6785*	*0.7346*	*0.7394*	*0.7846*	*0.7374*	*0.6285*

* These exchange rates are quoted as the USD value of one AUD.

Table 2

Settlement media used by non-banks

(AUD millions)

	1993	1994	1995	1996	1997	1998
Total notes and coin on issue[1]	17,452	18,629	19,785	20,479	21,512	23,163
Private non-bank sector's holding of notes and coin	17,279	18,208	19,092	19,628	21,098	22,766
Transferable deposits[2]	53,747	60,554	64,806	75,837	87,039	91,953
of which held by:						
households		.	.	.	.	.
corporate sector		.	.	.	.	.
other		.	.	.	.	.
Other		.	.	.	.	.
Narrow money supply (M_1)	71,026	78,762	83,898	95,465	108,137	114,719
Memorandum item:						
Broad money supply	286,837	313,938	341,113	372,700	400,461	433,921

[1] June average. [2] Includes interest bearing and non-interest bearing current deposits with banks.

Table 3

Settlement media used by credit/deposit-taking institutions

(AUD millions)

	1993	1994	1995	1996	1997	1998
Reserve balances held at central bank	3,078	3,419	3,762	11,148 [5]	6,405	6,756
Transferable deposits at other institutions:						
Banks[1]	4,271	5,975	5,007	406 [5]	503	534
Non-banks[2]	1,443 [3]	1,462 [3]	1,450 [3]	1,528	1,671	1,684
Other		.	.	.	.	.
Memorandum item:						
Required reserves[4]	3,072	3,409	3,751	4,105	4,501	4,957
Institutions' borrowing from central bank		.	.	.	.	.

[1] This figure includes banks' deposits with other banks and authorised money market dealers, but does not include banks' certificates of deposits at other institutions and their holding of Treasury notes and other Commonwealth Government Securities. [2] This figure is made up of non-banks' (i.e. building societies and credit unions) deposits with banks and authorised money market dealers. [3] June figure. [4] Banks' non-callable deposits with the Reserve Bank. [5] Effective close of business 9 August 1996, authorised short-term money market dealers ceased to exist. From 12 July 1996, the RBA paid interest on ESA balances. This accounts for the sharp decline in banks' transferable deposits at other institutions and sharp rise in reserve balances held at central bank from 1995 to 1996.

Table 4

Banknotes and coin[1]

(AUD millions)

	1993	1994	1995	1996	1997	1998
Total banknotes and coin issued	17,452	18,629	19,785	20,479	21,512	23,163
Denomination of banknotes:						
100 dollars	*7,231*	*7,838*	*8,464*	*8,431*	*8,257*	*9,235*
50 dollars	*6,236*	*6,721*	*7,149*	*7,815*	*8,952*	*9,556*
20 dollars	*1,809*	*1,770*	*1,863*	*1,855*	*1,835*	*1,819*
10 dollars	*590*	*631*	*568*	*582*	*598*	*616*
5 dollars	*296*	*311*	*325*	*335*	*348*	*361*
2 dollars[2]	*456*	*485*	*512*	*517*	*540*	*565*
1 dollar[2]	*279*	*305*	*320*	*347*	*371*	*384*
Banknotes held by credit institutions	.	.	.	.	.	.
Total banknotes outside credit institutions	.	.	.	.	.	.

[1] June average. [2] Includes both notes and coin issued in this denomination.

Table 5

Institutional framework

(as at end-December 1998)

Categories	Number of institutions	Number of branches	Number of accounts	Value of accounts (AUD millions)
Central bank	1	6	.	4,577
Commercial banks	51	5,615 *	.	334,893 *
Building societies	20	371	.	10,000
Credit unions	234	900	.	16,300
Post Office	1	3,922 *	.	.
Memorandum item:				
Branches of foreign banks	25	72 *	.	25,196 *

* June figure.

Table 6

Cash dispensers, ATMs and EFTPOS terminals

	1994	1995	1996	1997	1998
Cash dispensers and ATMs:					
Number of networks[1]	*2*	*2*	*2*	*1*	*1*
Number of machines	*6,008*	*6,775*	*7,718*	*8,182*[2]	*8,814*[2]
Volume of transactions ('000)[3]	*488,400*	*465,600*	*499,200*	*470,400*	*514,800*
Value of transactions (AUD millions)[3]	*52,800*	*58,800*	*67,200*	*64,800*	*74,400*
EFTPOS:					
Number of networks[4]	*1*	*1*	*1*	*1*	*1*
Number of machines	*43,950*	*85,234*	*136,645*	*164,199*[2]	*218,330*[2]
Volume of transactions ('000)	*234,907*	*304,216*	*397,795*	*484,843*	*559,016*
Value of transactions (AUD millions)	*12,585*	*16,078*	*20,854*	*25,834*	*31,098*

[1] There are a number of proprietary ATM networks, but the linkages between these are extensive. From a cardholder's perspective there is now effectively one national network through which customers can access funds across most institutions. [2] June figure. [3] Annual figures are estimated using monthly survey data. The figures for 1994 to 1996 are for August. Figures for 1997 to 1998 are for May. [4] There are seven proprietary EFTPOS networks in Australia; however, because of the linkages between these networks, there is effectively one EFTPOS network from a cardholder's perspective.

Table 7

Number of payment cards in circulation*

	1994	1995	1996	1997	1998
Cards with a cash function	.	.	.	.	.
Cards with a debit/credit function					
of which:					
debit cards	*13,200,000*	*13,600,000*	*15,100,000*	*15,300,000*	*16,400,000*
credit and multifunction cards	*9,100,000*	*9,900,000*	*9,800,000*	*9,700,000*	*10,300,000*
Cards with a cheque guarantee function	.	.	.	.	.
Retailer cards	.	.	.	.	.

* As at 31 August, except for 1997 and 1998 where figures are for May.

Table 8

Payment instructions handled by selected payment systems: volume of transactions

	1993	1994	1995	1996	1997	1998
Austraclear	238,000	305,000	367,000	422,000	447,000	400,000
BITS/SWIFT PDS[1]	856,000	1,012,000	1,133,000	1,271,000	1,375,000	2,686,000
RITS[2]	35,000	43,000	47,000	50,000	49,000	52,000

[1] As part of the introduction of RTGS, all payments formerly made through BITS, a domestic inter-bank electronic funds transfer system, migrated to SWIFT PDS. SWIFT PDS is more widely used than BITS, which ceased operations after the migration. [2] Figures for 1993 to 1997 are estimates.

Table 9

Payment instructions handled by selected payment systems: value of transactions

(AUD billions)

	1993	1994	1995	1996	1997	1998
Austraclear	.	.	.	.	.	.
BITS/SWIFT PDS[1]	4,100	5,100	5,600	5,800	6,700	15,700
RITS[2]	1,200	1,500	1,400	1,800	1,800	1,200

[1] Refer to the footnote on Table 8. [2] Figures for 1993 to 1997 are estimates.

Table 10

Transfer instructions handled by securities settlement systems: volume of transactions

	1993	1994	1995	1996	1997	1998
RITS*	140,000	190,000	201,000	187,000	172,000	149,000
Equity transactions	2,315,000	3,938,000	3,052,000	4,016,000	5,389,000	6,554,000
Austraclear	185,000	183,000	165,000	149,000	151,000	168,000

* Figures for 1993 to 1997 are estimates.

Table 11

Transfer instructions handled by securities settlement systems: value of transactions

(AUD billions)

	1993	1994	1995	1996	1997	1998
RITS[1]	2,100	2,900	3,400	3,700	3,400	4,300
Equity transactions	70	130	120	160	210	245
Austraclear	1,600	1,600	1,400	1,500	1,600	1,800[2]

[1] Figures for 1993 to 1997 are estimates. [2] Estimate

Table 12

Indicators of use of various cashless payment instruments: volume of transactions

(millions)

	1993	1994	1995	1996	1997	1998
Cheques issued	.	976.8	1,022.4	982.8	986.4	927.6
Payments by card:	.	463.6	546.5	679.2	814.8	983.0
debit	.	*234.9*	*304.2*	*397.8*	*484.8*	*559.0*
credit	.	*228.7*	*242.3*	*281.4*	*330.0*	*424.0*
Paper-based credit transfers:						
customer initiated	.	.	.	.	.	.
inter-bank/large-value	.	.	.	.	.	.
Paperless credit transfers:	.	421.3	500.7	436.1	468.7	485.5
*customer initiated**	.	*420.0*	*499.2*	*434.4*	*466.8*	*482.4*
inter-bank/large-value	.	*1.3*	*1.5*	*1.7*	*1.9*	*3.1*
Direct debits	.	86.4	102.0	106.8	114.0	151.2
Total	.	**1,948.1**	**2,171.6**	**2,204.9**	**2,383.9**	**2,547.3**

* Annual figures estimated using monthly survey data. Figures for 1994-1996 are for November. Figures for 1997 and 1998 are for May.

Table 13

Indicators of various cashless payment instruments: value of transactions

(AUD billions)

	1993[1]	1994	1995	1996	1997	1998
Cheques issued[2]	13,000	6,546 [3]	6,168 [3]	6,133 [3]	6,589 [3]	3,691 [3]
Total payments by card:	25	33	38	47	58	73
debit	.	*13*	*16*	*21*	*26*	*31*
credit	.	*20*	*22*	*26*	*32*	*42*
Paper-based credit transfers:						
customer initiated	.	.	.	.	.	
inter-bank/large-value	.	.	.	.	.	
Paperless credit transfers:	10,464	12,457	13,486	14,980	16,460	25,542
customer initiated[2]	*447*	*510*	*684*	*1,066*	*906*	*911*
inter-bank/large-value[4]	*10,017*	*11,947*	*12,802*	*13,914*	*15,554*	*24,631*
Direct debits[2]	114	346	308	418	424	608
Total	**23,603**	**19,382**	**20,000**	**21,578**	**23,531**	**29,914**

[1] Survey data - may not be strictly comparable. [2] Annual figures estimated using monthly survey data. Figures for 1994 –1996 are for November. Figures for 1997 and 1998 are for May. [3] Break in series. Prior to 1994, the value of all paper debit items was collected. The 1994 - 1998 data refers only to the value of cheques. [4] This figure is an estimate of cash payments made via all high-value electronic payment systems.

Table 14

Participation in S.W.I.F.T. by domestic institutions

	1993	1994	1995	1996	1997	1998
Domestic S.W.I.F.T. members	15	15	15	15	15	15
affiliated sub-members	*28*	*33*	*37*	*43*	*49*	*49*
S.W.I.F.T. users	44	61	73	79	90	90
of which:						
members	*15*	*15*	*15*	*14*	*15*	*15*
sub-members	*24*	*31*	*37*	*41*	*49*	*48*
participants	*5*	*15*	*21*	*24*	*26*	*27*
Share of total S.W.I.F.T. traffic:						
sent	*1.68*	*1.79*	*1.75*	*1.76*	*1.86*	*2.28*
received	*1.56*	*1.68*	*1.68*	*1.91*	*1.85*	*2.16*
Share of equity holding	1.97	1.99	1.93	1.98	1.76	1.76

Table 15

S.W.I.F.T. message flows to/from domestic users

	1993	1994	1995	1996	1997	1998
Total messages sent	7,660,646	9,263,450	10,586,681	12,149,112	15,165,428	21,347,060
of which:						
category I	*1,595,873*	*1,791,123*	*2,022,861*	*2,246,203*	*2,896,993*	*7,110,692*
category II	*1,726,770*	*2,063,916*	*2,264,236*	*2,426,991*	*3,032,391*	*4,356,614*
sent to domestic users	*1,062,377*	*1,524,196*	*1,969,309*	*2,136,434*	*2,457,182*	*8,055,817*
Total messages received	7,116,399	8,678,557	10,136,479	13,111,939	15,076,760	20,212,551
of which:						
category I	*1,617,366*	*1,782,148*	*2,041,430*	*2,307,263*	*3,023,256*	*7,304,469*
category II	*1,466,838*	*1,751,386*	*1,966,666*	*2,165,261*	*2,615,916*	*4,230,092*
received from domestic users	.	.	.	.	.	
Memorandum item:						
Global S.W.I.F.T. traffic ('000)	457,025	518,098	603,575	687,785	812,117	937,040

Comparative tables

Table 1

Notes and coin in circulation[1]

	1993	1994	1995	1996	1997	1998
			USD per inhabitant[2]			
Australia	659	788	782	849	739	.
Belgium	1,164	1,229	1,391	1,340	1,174	
Canada	637	635	662	675	676	
France	739	807	891	841	742	
Germany	1,511	1,790	2,025	1,936	1,679	
Italy	921	1,032	1,082	1,138	1,062	
Japan	3,243	3,736	3,873	3,740	3,582	
Netherlands	1,263	1,424	1,537	1,411	1,227	
Sweden	1,042	1,120	1,312	1,327	1,183	
Switzerland	2,638	2,985	3,394	3,127	2,832	
United Kingdom	455	504	528	606	627	
United States	1,272	1,385	1,442	1,506	1,617	
			As percentage of GDP			
Australia	4.0	3.9	3.9	3.8	3.9	3.9
Belgium	6.0	5.2	5.3	5.2	5.1	
Canada	3.4	3.4	3.4	3.4	3.4	
France	3.5	3.4	3.3	3.3	3.2	
Germany	6.7	6.8	6.9	7.0	6.8	
Italy	5.8	5.9	5.5	5.3	5.5	
Japan	9.5	9.7	10.4	10.9	11.6	
Netherlands	6.5	6.2	6.0	5.7	5.5	
Sweden	5.3	5.0	4.7	4.8	4.7	
Switzerland	7.7	7.8	7.7	8.1	7.8	
United Kingdom	2.8	2.8	2.8	2.8	2.9	
United States	5.0	5.2	5.2	5.2	5.3	
			As percentage of narrow money[3]			
Australia	24.3	23.1	22.8	20.6	19.5	19.8
Belgium	29.6	27.1	27.2	27.5	26.5	
Canada	44.0	44.2	42.8	37.7	36.0	
France	15.3	15.1	14.2	14.2	13.5	
Germany	29.2	29.6	29.1	26.9	26.3	
Italy	15.5	16.0	16.3	16.1	16.1	
Japan	31.1	30.7	29.2	29.0	28.7	
Netherlands	25.1	25.0	22.1	19.7	18.5	
Sweden	10.7	10.7	10.5	9.9	10.0	
Switzerland	19.7	19.7	18.0	17.3	15.6	
United Kingdom	4.5	4.6	4.6	4.5	4.6	
United States	28.5	30.7	32.9	36.2	39.5	

[1] For explanation of figures see relevant country tables. [2] Year-end figures converted at end-of year exchange rates. [3] Narrow money: M1; except for Sweden (M3) and the United Kingdom (M2).

Table 2

Transferable deposits held by non-banks[1]

	1993	1994	1995	1996	1997	1998
			USD per inhabitant[2]			
Australia	2,049	2,620	2,653	3,279	3,049	.
Belgium	2,764	3,307	3,715	3,536	3,261	
Canada	3,067	2,975	3,334	3,768	3,938	
France	4,080	4,543	5,381	5,082	4,761	
Germany	3,761	4,287	4,953	5,309	4,697	
Italy	4,863	5,236	5,399	5,784	5,386	
Japan[3]	8,160	9,425	11,032	10,623	9,507	
Netherlands	3,763	4,265	5,421	5,763	5,397	
Sweden	8,850	9,811	11,351	11,991	10,476	
Switzerland	5,839	6,799	8,359	8,303	8,692	
United Kingdom	9,589	10,493	11,073	12,797	12,895	
United States	3,180	3,103	2,917	2,631	2,465	
			As percentage of GDP			
Australia	12.3	13.1	13.2	14.6	15.9	15.9
Belgium	14.0	14.0	14.0	13.8	14.1	
Canada	16.2	16.1	17.3	19.1	20.0	
France	19.4	19.2	20.1	19.8	20.6	
Germany	16.7	16.3	16.8	19.1	19.1	
Italy	30.4	29.8	27.6	27.2	27.9	
Japan[3]	24.6	25.3	25.0	28.3	29.5	
Netherlands	19.3	18.6	21.2	23.4	24.2	
Sweden	44.6	42.4	40.6	44.3	42.0	
Switzerland	17.0	17.8	18.8	21.4	24.0	
United Kingdom	60.0	58.6	59.5	59.8	58.8	
United States	12.5	11.6	10.6	9.1	8.1	
			As percentage of narrow money[4]			
Australia	75.7	76.9	77.2	79.4	80.5	80.2
Belgium	70.0	72.9	72.8	72.5	73.5	
Canada	212.1	207.4	215.5	210.0	210.0	
France	84.7	84.9	85.8	85.8	86.5	
Germany	72.7	70.8	71.2	73.8	73.7	
Italy	81.9	81.4	81.1	81.8	81.8	
Japan[5]	86.5	85.3	82.7	81.6	80.5	
Netherlands	74.9	75.0	77.9	80.3	81.5	
Sweden	90.6	90.3	90.6	91.1	88.7	
Switzerland	43.6	44.9	44.2	45.8	48.0	
United Kingdom	95.5	95.4	95.4	95.5	95.4	
United States	71.2	68.9	66.6	63.2	60.2	

[1] For explanation of figures and definition of transferable deposits, see relevant country tables. [2] Year-end figures converted at end-of year exchange rates. [3] End-March figure converted at end-March exchange rate. [4] Narrow money: M1; except for Sweden (M3) and the United Kingdom (M2). [5] End-March figure.

Table 3

Settlement media used by banks[1]

(1997)

	Banks' reserves at central bank (USD billion)[2]	Banks' reserves at central bank in percentage of narrow money[3]	Transferable deposits at other banks (USD billion)[2]	Transferable deposits at other banks in percentage of narrow money[2]
Australia	4.18	5.92	0.33	0.47
Belgium	0.032	0.07	4.93	10.93
Canada	0.3	0.65	.	.
France	1.3	0.39	603.0	186.6
Germany	23.3	4.4	238.6	45.6
Italy	47.2	12.4	55.3	14.6
Japan	27.7	1.8	65.0 [4]	4.4 [5]
Netherlands	8.625	8.32	1.181	1.1
Sweden	0.25	0.24	12.1	11.6
Switzerland	3.7	2.9	21.8	17.0
United Kingdom	4.3	0.5	394.0	49.4
United States	30.8	2.8	31.8	2.9

[1] For explanation of figures see relevant country tables. [2] Year-end figures converted at end-of year exchange rates. [3] Narrow money: M1; except for Sweden (M3) and the United Kingdom (M2). [4] End-March figure converted at end-March exchange rate. [5] End-March figure.

Table 3

Settlement media used by banks[1]

(1998)

	Banks' reserves at central bank (USD billion)[2]	Banks' reserves at central bank in percentage of narrow money[3]	Transferable deposits at other banks (USD billion)[2]	Transferable deposits at other banks in percentage of narrow money[2]
Australia	4.15	5.89	0.33	0.47
Belgium				
Canada				
France				
Germany				
Italy				
Japan				
Netherlands				
Sweden				
Switzerland				
United Kingdom				
United States				

[1] For explanation of figures see relevant country tables. [2] Year-end figures converted at end-of year exchange rates. [3] Narrow money: M1; except for Sweden (M3) and the United Kingdom (M2).

Table 4

Institutional framework[1]

(1997)

	Number of institutions	Number of inhabitants per institution	Number of branches	Number of inhabitants per branch	Number of accounts per inhabitant
Australia	328	56,802	7,447 [5]	2,502	.
Belgium	136	74,853	9,041	1,126	1.23
Canada[2]	2,413	12,598	13,642	2,228	.
France	519	113,102	46,639	1,259	1.1
Germany	3,409	24,083	59,695 [3]	1,375	1.0
Italy	937	61,366	39,936	1,440	0.5
Japan	4,266	29,578	69,022	1,828	.
Netherlands	127	123,261	7,071	2,214	1.4
Sweden	125	70,800	3,624	2,442	.
Switzerland	362	19,604	6,995	1,015	.
United Kingdom	553	106,691	35,234	1,675	2.4
United States[4]	22,331	11,997	73,538	3,643	.

[1] For explanation of figures see relevant country tables. [2] Deposit-taking institutions only. [3] Including post office branches which are entrusted with the execution of semi-cashless payments for Deutsche Postbank AG. [4] Number of branches does not include head offices of any type of institution or branches of credit unions. [5] Excludes 6,992 agencies (staffed by non-bank employees) and 2,627 giroPost locations.

Table 5

Cash dispensers and ATMs[1]

	1993	1994	1995	1996	1997	1998
			Number of machines per 1,000,000 inhabitants			
Australia	.	335	372	419	439	.
Belgium	119	313	360	414	492	
Canada	554	576	595	617	645	
France	325	356	395	419	461	
Germany	308	361	436 [4]	459	504	
Italy	266	326	378	421	443	
Japan	935	978	1,013	1,051	1,115	
Netherlands	291	324	354	372	409	
Sweden	255	259	267	269	268	
Switzerland	439	481	532	587	678	
United Kingdom	328	342	358	376	393	
United States	367	418	466	524	616	
			Number of transactions per inhabitant			
Australia	.	27.2	25.6	27.1	25.2	.
Belgium	9.1	13.1	14.3	15.1	15.7	
Canada	37.4	40.7	45.9	49.2	52.7	
France	13.3	14.2	15.8	18.1	19.9	
Germany	.	11.5	13.4 [4]	15.3	.	
Italy	3.8	4.8	5.8	6.4	7.2	
Japan	3.3	3.6	3.8	4.1	5.0	
Netherlands	20.5	23.8	27.4	29.3	33.3	
Sweden	28.3	30.7	31.8	33.6	35.3	
Switzerland	8.3	9.1	10.0	10.6	11.4	
United Kingdom	21.3	22.9	25.2	27.2	29.6	
United States	29.8	31.8	36.9	40.3	40.7	
			Average value of transactions (USD)[2]			
Australia	.	79.4	93.4	105.6	101.6	90.8
Belgium	110.3	126.5	138.1	129.5	114.3	
Canada[3]	53.4	51.1	51.2	52.0	50.4	
France	77.0	76.5	81.3	77.5	68.0	
Germany	.	157.6	196.6 [4]	179.0	.	
Italy	189.4	191.3	198.3	202.7	184.7	
Japan	395.4	419.8	450.6	383.4	288.8	
Netherlands	95.9	97.4	108.4	105.4	87.9	
Sweden	101.2	104.7	112.6	104.4	104.5	
Switzerland	207.8	217.8	246.9	209.5	186.6	
United Kingdom	72.5	74.6	77.3	78.1	84.5	
United States	68.2	67.2	67.7	68.0	68.3	

[1] For explanation of figures see relevant country tables. [2] Converted at yearly average exchange rates. [3] Average value of a cash withdrawal only. [4] Increase partly due to a new data source.

Table 6

EFTPOS terminals[1]

	1993	1994	1995	1996	1997	1998
			Number of terminals per 1,000,000 inhabitants			
Australia	.	2,448	4,684	7,417	8,813	.
Belgium	5,246	6,294	7,174	7,997	8,421	
Canada	2,134	4,073	6,394	8,408	10,873	
France	7,435	7,574	9,394	9,333	9,540	
Germany[3]	344	767	856	1,402	1,983	
Italy	1,350	1,819	2,683	3,734	4,896	
Japan	168	227	200	183	155	
Netherlands	1,600	3,085	4,736	6,170	7,692	
Sweden	3,054	5,514	6,160	6,946	7,774	
Switzerland	1,433	2,379	3,499	4,747	5,803	
United Kingdom	4,639	5,993	8,647	9,345	8,983	
United States	600	1,320	2,009	3,296	4,853	
			Number of transactions per inhabitant			
Australia	.	13.1	16.7	21.6	26.0	.
Belgium	14.2	18.0	20.8	23.9	27.2	
Canada	2.6	6.3	13.3	22.5	34.2	
France	24.3	26.1	32.3	35.6	39.2	
Germany[3]	0.85	1.28	1.83	2.61	2.75	
Italy	0.99	1.56	2.12	2.94	4.41	
Japan	0.005	0.006	0.007	0.004	0.004	
Netherlands	4.4	9.3	16.5	23.8	31.0	
Sweden	6.5	8.8	10.4	12.6	15.9	
Switzerland	4.0	5.7	8.0	10.8	13.6	
United Kingdom	.	.	.	.	.	
United States	1.7	2.4	2.9	4.1	5.4	
			Average value of transactions (USD)[2]			
Australia	.	39.4	39.1	41.1	39.3	35.0
Belgium	63.2	71.2	77.6	72.6	63.3	
Canada	38.7	37.1	34.9	32.7	30.7	
France	58.0	57.6	63.3	60.0	50.9	
Germany[3]	54.2	64.0	95.7	98.2	71.7	
Italy	129.1	119.8	118.6	118.2	106.8	
Japan	184.9	80.2	.	32.4	56.6	
Netherlands	54.6	55.0	59.1	56.5	48.0	
Sweden	85.5	80.8	80.7	80.7	78.0	
Switzerland	58.8	73.8	96.4	96.3	73.5	
United Kingdom	.	.	.	.	.	
United States	24.0	25.0	29.4	31.0	34.0	

[1] For explanation of figures see relevant country tables. [2] Converted at yearly average exchange rates. [3] In 1997 electronic cash only.

Table 7

Number of cards*

(1997 per 1,000 inhabitants)

	Cards with a cash function	**Cards with a debit/credit function**	**Cards with cheque guarantee function**	**Retailers' cards**
Australia	.	1,342	.	.
Belgium	1,116	1,116	468	140
Canada	1,590	577	.	4,112
France	514	472	.	.
Germany	.	1,038	508	61
Italy	301	426	16	.
Japan	2,243	1,945	.	480
Netherlands	1,535	162	26	.
Sweden	774	691	.	.
Switzerland	933	988	617	.
United Kingdom	1,641	1,271	903	298
United States	2,548	2,628	.	2,233

* For explanation of figures see relevant country tables.

Table 8

Relative importance of cashless payment instruments [1]

(percentage of total volume of cashless transactions)

	1993	1994	1995	1996	1997	1998
			Cheques			
Australia	.	50.2	47.0	44.6	41.4	36.4
Belgium	14.0	11.7	10.6	9.4	8.0	
Canada	58.7	52.8	46.9	41.0	36.1	
France	49.1	47.4	45.6	43.6	41.7	
Germany	8.1	7.9	7.0	6.4	5.7	
Italy [2]	37.2	34.0	32.8	30.5	28.0	
Japan	.	.	.	.	.	
Netherlands	11.1	8.5	5.9	4.2	3.0	
Sweden [5]	.	.	.	.	1.9	
Switzerland [3]	3.3	2.6	2.0	1.6	1.3	
United Kingdom [4]	43.0	40.2	36.7	33.1	30.5	
United States	79.6	78.1	76.5	74.8	73.2	
			Payment by cards			
Australia	.	23.8	25.2	30.8	34.2	38.6
Belgium	17.1	18.0	19.7	21.3	23.4	
Canada	31.1	35.3	40.0	44.8	48.8	
France	15.7	16.2	17.6	18.3	19.5	
Germany	2.6	3.1	3.6	4.2	4.1	
Italy [2]	4.1	5.2	6.6	8.6	11.2	
Japan	.	.	.	.	.	
Netherlands	3.1	6.1	11.3	15.1	18.2	
Sweden [5]	9.8	11.6	14.2	14.8	18.9	
Switzerland	13.8	16.2	18.4	20.7	22.8	
United Kingdom	21.0	23.3	25.9	28.9	31.1	
United States	17.5	18.7	20.1	21.5	23.0	
			Credit transfers			
Australia	.	21.6	23.1	19.8	19.6	19.1
Belgium	60.0	60.9	60.2	59.5	58.0	
Canada	5.2	6.4	7.4	8.1	8.4	
France	15.4	15.7	15.6	15.7	15.7	
Germany	45.6	48.7	48.8	49.2	48.2	
Italy [2]	44.6	46.8	45.9	42.6	41.6	
Japan	.	.	.	.	.	
Netherlands	61.3	59.8	56.6	54.0	51.7	
Sweden	84.5	82.3	79.4	78.5	72.1	
Switzerland [6]	80.1	78.1	76.3	74.4	72.3	
United Kingdom [7]	20.4	20.1	19.7	19.9	19.6	
United States	1.9	2.1	2.3	2.4	2.5	

[1] For explanation of figures see relevant country tables. In some cases the total may not sum to 100% because of other items. [2] The figures for the years 1993-1995 differ from those provided in the statistical annex of the Italian chapter as they are estimated for the whole system. [3] Postal cheques are not included because detailed figures are not published by the Postfinance. [4] Includes Town cheques. [5] Statistics on the volume and value of cheque payments are not available from 1993 onwards. The percentage figures for these years therefore do not include cheques. [6] All transfers at Postfinance included. [7] Paper-based and paperless (includes large-value: CHAPS).

Table 8 (cont.)

	1993	1994	1995	1996	1997	1998
			Direct debits			
Australia	.	4.4	4.7	4.8	4.8	5.9
Belgium	8.9	9.4	9.4	9.7	9.8	
Canada	5.0	5.5	5.8	6.2	6.7	
France	10.6	11.2	11.3	11.8	12.1	
Germany	43.7	40.3	40.6	40.2	42.0	
Italy[2]	4.4	4.7	5.4	7.3	8.6	
Japan	.	.	.	.	.	
Netherlands	24.4	25.6	26.3	26.8	27.1	
Sweden	5.7	6.1	6.4	6.7	7.1	
Switzerland[8]	2.8	3.1	3.3	3.3	3.6	
United Kingdom	15.6	16.5	17.7	18.1	18.7	
United States	1.0	1.1	1.2	1.3	1.3	

[8] Without Postfinance direct debits. See footnote 3.

Table 9

Relative importance of cashless payment instruments[1]

(percentage of total value of cashless transactions)

	1993	1994	1995	1996	1997	1998
			Cheques			
Australia	55.1	33.7	30.9	28.5	28.0	12.3
Belgium	4.3	3.8	3.3	3.2	2.9	
Canada	98.8	98.7	98.1	97.2	97.1	
France	4.6	4.4	4.7	4.8	4.4	
Germany	2.3	2.3	2.1	1.8	1.6	
Italy[2]	5.4	4.5	4.5	3.6	3.2	
Japan	.	.	.	.	.	
Netherlands	0.1	0.1	0.1	0.1	0.0	
Sweden	.	.	.	.	.	
Switzerland[3]	0.1	0.1	0.1	0.1	.	
United Kingdom[4]	9.4	7.6	5.3	4.9	4.2	
United States	12.6	12.2	11.9	11.2	10.5	
			Payment by cards			
Australia	0.1	0.2	0.2	0.2	0.2	0.3
Belgium	0.1	0.1	0.1	0.2	0.2	
Canada	0.3	0.4	0.5	0.8	0.8	
France	0.2	0.2	0.2	0.2	0.2	
Germany	0.02	0.02	0.03	0.04	0.03	
Italy[2]	0.03	0.04	0.05	0.05	0.06	
Japan	.	.	.	.	.	
Netherlands	0.0	0.1	0.1	0.1	0.2	
Sweden	0.9	1.0	1.4	1.5	1.7	
Switzerland	.	.	.	.	0.1	
United Kingdom	0.2	0.2	0.2	0.3	0.3	
United States	0.1	0.1	0.2	0.2	0.2	
			Credit transfers			
Australia	44.3	64.3	67.4	69.4	70.0	85.4
Belgium	95.3	95.9	96.3	96.3	96.6	
Canada	0.7	0.7	1.0	1.5	1.5	
France	93.4	93.5	93.0	92.7	93.3	
Germany	95.7	95.7	95.8	95.7	95.9	
Italy[2]	93.2	94.2	94.1	95.0	95.4	
Japan	.	.	.	.	.	
Netherlands	98.7	98.8	98.6	98.7	98.8	
Sweden	95.8	96.2	95.7	95.6	95.8	
Switzerland[5]	99.9	99.8	99.8	99.8	99.8	
United Kingdom[6]	89.5	91.2	93.4	93.7	94.6	
United States	86.4	86.8	87.0	87.7	88.5	

[1] For explanation of figures see relevant country tables. In some cases the total may not sum to 100% because of other items. [2] The figures for the years 1993-1995 differ from those provided in the statistical annex of the Italian chapter as they are estimated for the whole system. [3] Postal cheques are not included because detailed figures are not published by the Postfinance. [4] Includes Town cheques. [5] All transfers at Postfinance included. [6] Paper-based and paperless (includes large-value: CHAPS).

Table 9 (cont.)

	1993	1994	1995	1996	1997	1998
			Direct debits			
Australia	0.5	1.8	1.5	1.9	1.8	2.0
Belgium	0.3	0.2	0.3	0.3	0.3	
Canada	0.2	0.2	0.3	0.5	0.6	
France	0.7	0.8	0.9	1.0	1.0	
Germany	2.0	2.0	2.1	2.5	2.5	
Italy[2]	0.2	0.2	0.2	0.2	0.3	
Japan	.	.	.	.	.	
Netherlands	1.1	1.1	1.2	1.1	1.0	
Sweden	3.3	2.8	2.9	2.9	2.5	
Switzerland[7]	.	0.1	0.1	0.1	0.1	
United Kingdom	1.0	1.0	1.0	1.1	1.0	
United States	0.9	0.9	0.9	0.9	0.8	

[7] Without Postfinance direct debits. See footnote 3.

Table 10a

Features of selected interbank funds transfer systems[1]

(figures relate to 1997)

	Type[2]	Owner/ Manager[3]	Number of participants	*of which direct*	Processing[4]	Settlement[5]	Membership[6]
Australia							
APCS (1998)	R	AS	68	12	M	N	O
BECS (1998)	R	AS	60	17	ACH	N	O
CECS	R	AS	.	.	ACH	N	O
HVCS:							
Austraclear (1998)	L	B	596	53	RTT	RTGS	O
S.W.I.F.T. PDS (1998)	L	AS	49	49	RTT	RTGS	O
RITS (1998)	L	CB	146	54	RTT	RTGS	O
Belgium							
ELLIPS	L	B+CB	122	22	RTT	RTGS	RM
Clearing House	L+R	B+CB	126	26	M	N	O
CEC	R	B+CB	122	26	ACH	N	O
Canada							
IIPS	L	B+AS	63	19	.	.[7]	RM
France							
SAGITTAIRE	L	CB	57	57	RTT	N	RM
CH Paris[8]	L+R	AS	388	30	M	N	RM
CH Provinces[9]	R	CB	380[10]	234[10]	M	N	O
SIT	R	CB+B/AS	316	22	RTT	N	RM
CREIC	R	CB	16	16	ACH	N	O
Card payments	R	B/AS	184	11	RTT	N	RM
TBF	L	CB	158	154	RTT	RTGS	O
SNP	L	B/AS	24	10	RTT	N	RM
Germany							
MAOBE[11]	R	CB	5,097	.	ACH	GS	O
DTA[11]	R	CB	5,097	.	ACH	GS	O
EIL-ZV	L	CB	2,947	.	RTT	RTGS	O
Platz. überweisungsverkehr[11,12]	L+R	CB	5,097	.	M	GS	O
Konvent. Abrechnung	L+R	CB	178	.	M	N	O
EAF 2	L	CB	68		RTT	N	RM
Italy							
Local clearing	R	CB	598	251	RTT[13]	N	O
Retail	R	CB[14]	897	211	ACH	N	O
ME[15]	L	CB	294	294	RTT	N	O
Ingrosso (ex SIPS)	L	CB[14]	858	187	RTT	N	O
BI-REL	L	CB	791	791	RTT	RTGS	O

[1] For additional information see relevant country chapters. [2] L = Large-value system, R = Retail system. [3] Owner/Manager: B= Banks, CB = Central Banks, AS = Payment Association. [4] Processing method: M = Manual, ACH = Automated Clearing House (off-line), RTT = Real-Time Transmission. [5] N = multilateral Netting, BN = Bilateral Netting, RTGS = Real-Time Gross Settlement, GS = other Gross Settlement. [6] O = Open membership (any bank can apply) or RM = Restricted Membership (subject to criteria). [7] Other (see Table 11, Footnote 7). [8] Clearing House in Paris. [9] Clearing Houses in the provinces. [10] All institutions on which cheques are drawn or at which bills of exchange are payable are bound by regulations to participate in the local clearing houses, through an agent in certain cases. [11] Number of accounts. [12] System was closed down end of May 1997.

Table 10a (cont.)

	Degree of centralisation[16]	Pricing[17]	Closing time for same-day transactions[18]	Number of transactions (thousands)	Value of transactions (USD billions)[19]	Ratio of transactions value to GDP (at annual rate)
Australia						
APCS (1998)	D	F	NO	927,600	2,320	6.4
BECS (1998)	D	F	NO	633,600	955	2.6
CECS	D	F	NO	.	.	.
HVCS:						
Austraclear (1998)	C	V	16.25	400	.	.
S.W.I.F.T. PDS (1998)	C	V	16.30[24]	2,686	9,867	27.2
RITS (1998)	C	F	16.30[25]	52	754	2.1
Belgium						
ELLIPS	C	F	16.45	955	9,282	39.8
Clearing House	D	V	15.00	6,780	8.7	0.6
CEC	C	F	15.00	880,603	500	2.1
Canada						
IIPS	D	N	16.30	2,700	13,849	22.5
France						
SAGITTAIRE	C	F	13.00	4,746	20,103	14.80
CH Paris[8]	C	F	15.00	691,878	13,908	10.24
CH Provinces[9]	C	N	11.00	2,931,067	1,162	0.86
SIT	C	F	13.30	4,919,551	2,308	1.70
CREIC	C	F	NO	285,269	26	0.02
Card payments[23]	C	F	13.30	2,301,576	117	0.09
TBF	C	F	17.30	67	4,795	3.53
SNP	C	F	15.45	526	7,951	5.85
Germany						
MAOBE	D	V	NO	27,700	122	0.06
DTA	D	V	NO	2,217,200	2,412	1.20
EIL-ZV	D	F	15.00	10,600	18,635	9.25
Platz. überweisungs-verkehr[12,20]	D	N	12.00	600	1,103	0.55
Konvent. Abrechnung[21]	D	F	13.00	300	601	0.30
EAF/EAF 2	C	F	12.45	22,400	101,372	50.30
Italy						
Local clearing	D	V	13.00	217,577	1,504	1.3
Retail	C	F	NO[22]	710,609	1,051	0.9
ME[13]	C	V	15.30	1,452	14,809	12.9
Ingrosso (ex SIPS)	C	F	14.00	6,057	24,370	21.3
BI-REL	C	V	16.20	2,694	25,68	2.2

[13] Transactions can also be submitted on floppy disk. [14] System managed by the Interbank Society for Automation in the name and on behalf of the Banca d'Italia. [15] Electronic memoranda. [16] Geographical access to the system: C = Centralised (one processing centre only) or D = Decentralised. [17] Prices charged to participants: F = Full costs (including investments), V = Variable costs, S = Symbolic costs (below variable costs), N = No costs. [18] Closing time for same day transactions (NO = no same-day transactions). [19] Converted at yearly average exchange rates. [20] Decrease due to conversion requirement, resulting in a switch of previously paper-based payments to EIL-ZV and DTA. [21] Reporting change in 1995: number of delivery envelopes cleared instead of individual payments contained therein. [22] Except for the credit transfers entered before 12.00 which are settled on the same day. [23] These data are included in the SIT data. [24] Opening hours for Friday are extended until 17.00. [25] Closing time for bank participants is 17.15 Monday to Thursday and 17.45 on Friday.

Table 10b

Features of selected interbank funds transfer systems[1]

(figures relate to 1997)

	Type[2]	Owner/ Manager[3]	Number of participants	*of which direct*	Processing[4]	Settlement[5]	Membership[6]
Japan							
FEYCS	L	B	264	264	RTT	N	RM
BOJ-NET	L	CB	426	426	RTT	RTGS[7]	RM
Netherlands							
Interpay	R	B	72	72	ACH	N	O
TOP[8]	L	CB	124	124	RTT	RTGS	O
Sweden							
RIX	L	CB	130	27	RTT	RTGS	RM
Bank Giro System	R	B	23	23	ACH	N	O
Switzerland							
SIC	L+R	CB+B	221	221	RTT	RTGS	RM
DTA/LSV	R	B	163	163	ACH	GS	RM
United Kingdom							
CHAPS	L	B	422	17	RTGS[9]	N	RM
BACS	R	B	37,000	16	ACH	N	RM
Cheque/credit	R	B	613	13	M	N	RM
United States							
Fedwire	L	CB	9,967	9,967	RTT	RTGS	O
CHIPS	L	B	95	95	RTT	N	RM

[1] For additional information see relevant country chapters. [2] L = Large value system, R = Retail system. [3] Owner/Manager: B = Banks, CB = Central Banks. [4] Processing method: M = Manual, ACH = Automated Clearing House (off-line), RTT = Real-Time Transmission. [5] N = multilateral Netting, BN = Bilateral Netting, RTGS = Real-Time Gross Settlement, GS = other Gross Settlement. [6] O = Open membership (any bank can apply) or RM = Restricted Membership (subject to criteria). [7] The system has been designed to allow participants to enter funds transfer instructions continuously, in which case settlement takes place on the central bank's books immediately. It is, however, also used to settle on a net basis. [8] Merge of 8007 S.W.I.F.T. and the Central Bank FA System. [9] Changed to an RTGS system on 22 April 1996.

Table 10b (cont.)

	Degree of centralisation[10]	**Pricing**[11]	**Closing time for same-day transactions**[12]	**Number of transactions (thousands)**	**Value of transactions (USD billions)**	**Ratio of transactions value to GDP (at annual rate)**
Japan						
FEYCS	D	V[13]	13.45	10,434	85,656	20.4
BOJ-NET	D	V[13]	17.00	4,402	334,962	79.9
Netherlands						
Interpay	D	F	12.45	1,782,900	1,287	3.6
TOP[8]	C	V	16.30	3,096	13,815	38.3
Sweden						
RIX	C	F	17.00	326	10,743	47.0
Bank Giro System	C	F	NO	289,532	343	1.5
Switzerland						
SIC	C	F	16.15	121,006	31,561	123.7
DTA/LSV	C	F	NO	93,494	216	0.8
United Kingdom[14]						
CHAPS	D	F	15.45	16,535	59,031	45.9
BACS	C	F	NO	2,682,685	2,346	1.8
Cheque/credit	D	F	NO	2,238,548	2,325	1.8 [15]
United States						
Fedwire	C	F	18.30	89,500	288,420	35.6
CHIPS	C	F	16.30	58,900	362,187	44.7

[10] Geographical access to the system: C = Centralised (one processing centre only) or D = Decentralised. [11] Prices charged to participants: F = Full costs (including investments), V = Variable costs, S = Symbolic costs (below variable costs N = No costs. [12] Closing time for same-day transactions (NO = no same-day transactions). [13] Prices are set on the principle that institutions which are to benefit from on-line processing should pay the relevant charges. [14] Interbank figures only. [15] Excludes Northern Ireland.

Table 11

Operating hours of selected large-value interbank funds transfer systems[1]

(as of December 1997)

System	Gross (G) or net (N)	Opening-closing time for same-day value (local time)	Settlement finality (local time)	Cut-off for all third-party payment orders	Cut-off for international correspondents' payment orders	*Memo item: Standard money market hours (local time)*
Australia						
Austraclear (1998)	G	7.15-16.25[32]	9.15-16.25	16.25	16.25	
S.W.I.F.T. PDS (1998)	G	7.30-16.30[30,32]	9.15-16.30[30]	16.30[30]	16.30[30]	*(7.30-17.15)*
RITS (1998)	G	7.30-16.30[31,32]	7.30-16.30[31]	16.30	16.30	
Belgium						
ELLIPS	G	6.30-16.45	.	16.30	15.00	*(9.00-16.15)*
CEC	N	15.01-15.00[2]	15.15	15.00	15.00[3]	*(9.00-16.15)*
Clearing House	N	8.00-15.00	15.00	.	.[3]	*(9.00-16.15)*
Canada[4]						
IIPS	N[5]	8.00-16.30	noon[6]	16.30[7]	16.30[7]	
France						
SAGITTAIRE	N	8.00-13.00[8]	18.30	.	8.00[9]	*(8.15-17.00)*
TBF[10]	G	7.30-17.30	17.30	17.30	17.30	
SNP	N	7.30-15.45	16.15	15.45	15.45	
Germany						
Express electronic credit transfer system	G	8.15-15.00	8.15-15.00	(11)	8.00[9]	
Express (paper-based) local credit transfer system[12]	G	8.00-12.00	8.00-12.00	(11)	8.00[9]	*(9.30-13.00[13])*
EAF 2[14]	N	8.00-12.45	14.30[15]	(11)	8.00[9]	
Italy						
BI-REL	G	8.00-16.20	8.00-16.20	15.50	9.00[9]	*(8.45-16.30[16])*
Ingrosso (ex SIPS)	N	8.00-14.00	15.30	14.00	9.00[9]	
ME	N	8.00-15.30	15.30	15.30	9.00[9]	
Japan						
FEYCS	N	9.00-13.45	15.00	10.30[9]	10.30[9]	*(9.00-17.00)*
BOJ-NET	G[17]	9.00-17.00	9.00-17.00	14.00	n.a.	
Netherlands						
TOP[18]	G	8.00-16.30[20]	8.00-16.30	14.00[9,19]	14.00[9,19]	*(9.00-13.00)*
Sweden						
RIX	G	8.00-17.00	8.00-17.00	.[21]	8.00[9]	*(9.00-16.15)*
Switzerland						
SIC	G	18.00-16.15[22]	18.00-16.15[22]	15.00[22]	8.00[3]	*(9.00-16.00)*
United Kingdom						
CHAPS	G[23]	8.30-15.45	end of day	none	12.00	*(7.30-15.30[24])*
United States[6]						
Fedwire	G	00.30-18.30[25]	00.30-18.30	18.00	18.00	*(8.30-18.30[26])*
CHIPS	N	00.30-16.30	18.00[27]	16.30	16.30	
ECU clearing system	N	14.01-14.00[28]	15.45	none	none	*(TOM/NEXT[29])*

(footnotes next page)

Footnotes to Table 11

1 Some systems make no explicit distinction between large-value and retail transactions and may be used to settle interbank transfers relating to a variety of underlying transactions. Some systems may also accept payment orders for a number of value days. Money market hours indicated refer to the time period in which domestic interbank transactions are normally carried out. They therefore do not relate to particular interbank funds transfer systems.

2 The CEC transfer system operates round-the-clock, five days a week.

3 S.W.I.F.T. guideline.

4 Eastern time.

5 Settlement typically takes place on the basis of bilateral net positions. The net receiving bank in each pair creates a paper document called an inter-member debit voucher and delivers it to the net sending bank as part of the exchanges covered by the Automated Clearing and Settlement System (ACSS) operated by the Canadian Payments Association. Settlement may also take place on a gross basis or on an item-by-item basis, in each case over the ACSS.

6 Net settlement at noon the next day (retroactive to the business day).

7 Local time at the receiving IIPS point, or the beneficiary account point, whichever is earlier.

8 SAGITTAIRE's exchange day, i.e. the period during which orders are recorded by the Bank of France, begins at 8.00 and ends at 17.30. Orders sent after 17.30 are stored by S.W.I.F.T. and processed at the start of the next exchange day. SAGITTAIRE's accounting day starts at 13.00 on D - 1 and ends at 13.00 on D (transfers sent after 13.00 on D, regardless of whether they are processed during the same exchange day or at the start of the following exchange day, are only entered in the accounts on D + 1). The net positions of members are drawn up after the close of the accounting day.

9 S.W.I.F.T. guideline; in practice it may be later.

10 The TBF became operational on 27 October 1997.

11 This is subject to arrangements between the correspondent banks.

12 System was closed down end of May 1997

13 For settlement purposes it can be later.

14 Electronic netting system in Frankfurt for interbank transfers predominantly relating to international DM transactions.

15 Planned time for communication of completion (positive message) or non-completion (negative message) of settlement.

16 The money market may continue to operate beyond the standard hours according to the closing times of the clearing and settlement systems.

17 The system has been designed to allow participants to enter funds transfer instructions continuously, in which case settlement takes place on the central bank's books immediately. BOJ-NET, however, is also used to settle on a net basis.

18 Merge of 8007 S.W.I.F.T. and Central Bank FA System.

19 Interbank guilder transfers relating to international transactions are sent through the 8007 S.W.I.F.T. system which is operated by the Netherlands Bank; net settlement of these transactions takes place over the Central Bank TOP System.

20 The 8007 S.W.I.F.T. system is, for a given value day, also open on the previous business day.

21 Participants decide among themselves which cut-off times they will use for different types of third-party orders. Large-value payments can be made during any time of the day.

22 The system is open for input 24 hours a day. Settlement services are limited by the indicated opening and closing times. A value day starts at 18.00 local time on the previous business day and ends at 16.15 on the value day. Third-party payments may be entered for same-day settlement until 15.00. Between 15.00 (cut-off 1) and 16.00 (cut-off 2) only cover (bank-to-bank) payments are accepted for same-day settlement. From 16.00 to 16.15 transactions are restricted to the processing of lombard credits (collateralised loans from the Swiss National Bank at a penalty rate).

23 Changed to an RTGS system on 22 April 1996.

24 For same-day value: there are no standard money market hours but trading typically takes place between about 7.30 and 15.30. The market is most liquid in the morning. The Bank of England intervenes in the market as necessary between 9.45 and 15.30.

25 On 8 December 1997, the opening time for Fedwire will be changed to 00.30.

26 Trading occurs among dealers for funds on deposit at Federal Reserve Banks (i.e. federal funds) as early as 6.30.

[27] Payments over CHIPS become final on completion of settlement, which normally occurs between 16.30 and 17.00. Rules are designed to ensure that settlement takes place no later than 18.00.

[28] ECU payment orders can be sent (for up to 28 forward value days) through S.W.I.F.T. 24 hours a day, seven days a week. At 14.00 (GMT + 1) on each value day the netting computer calculates participants' net positions. Messages arriving after 14.00 are processed automatically for the next value day(s).

[29] There is no overnight market for ECU interbank loans. Day-to-day interbank ECU transactions are normally carried out in the Euro-markets on a TOMNEXT basis.

[30] Closing time Friday is 17.00.

[31] Closing time for bank participants is 17.15 Monday to Thursday and 17.45 on Friday.

[32] Opening time previously 7.00. As of 12 October 1998 opening time changed to 7.30.

Table 12

Features of selected securities settlement systems

(figures relate to 1997)

	Type[1]	Owner/ Manager[2]	Number of participants	*of which direct*	Settlement of cash leg[3]	Delivery[3]
Australia						
Austraclear (1998)	O	B,O	596	53	G	G
RITS (1998)	G	CB	146	54	G	G
CHESS (1997)	E	SE	.	.	N	N
Belgium						
NBB Clearing	G,O	CB	183	183	G	G
CIK	E,O	B	140	140	G	N
Canada						
SSS[4]	G,E,O	B,SE,O	90	90	N	G/N
DCS[5]	G	B,SE,O	70	70	N	G
France						
SATURNE	G,O	CB	322	322	N	GS
RELIT	B,G,O	B	248	248	N	GS
Germany						
DBC	G,E,O	SE	385		N/G	G
Italy						
Securities Settlement Procedures:						
Daily Procedure						
LDT	G,E,O	CB	281	281	N	N
CAT	G	CB	741	741	.[6]	G
Monte Titoli	E,O	Monte Titoli	426	.	.[6]	G
Japan						
JGB registrations	G	CB	449	449	G/N	G/N
JGB book-entry	G	CB	384	384	G/N	G/N
Netherlands						
NECIGEF	G+E+O	B+CB+SE	55	55	G	G
CB Clearing Institute	G+O	CB	85	85	N	N
Sweden						
VPC	G+E+O	B+O	57	57	G/N	G
OM	O	O	42	42	N	N
Switzerland						
SECOM	G,E,O	B	350	350	G	G
United Kingdom						
CGO	G+O	CB/SE	232	232	N	G
CMO	O	CB	88	88	N	G
CREST	E,O	B,SE,O	3,432	3,432	N	G
United States						
Fedwire	G	CB	8,281	8,281	G	G
DTC (NDFS)[7]	E,O	B,SE,O	558	558	N	G

[1] G = Government securities, E = Equity, O = Other. [2] B = Banks, CB = Central Banks, SE = Stock Exchange, O = Other. [3] G = Gross, N = Net. [4] The book-based system of The Canadian Depository for Securities Limited (CDS).

Table 12 (contd.)

	Delivery lag	Central Securities Depository	Cash Settlement Agent	Number of transactions (thousands)	Value of transactions (USD billions) [9]	Ratio of transactions value to GDP (at annual rate)
Australia						
Austraclear (1998)	T T+3[18]	Austraclear	CB+B+O	168	1,131 [20]	3.1 [20]
RITS (1998)	T T+3[18]	CB	CB+B+O	149	2,703	7.4
CHESS (1997)	T+5[19]	SE	CB+B	.	.	.
Belgium						
NBB Clearing	T+2/T+3[10]	NBB	NBB	200	2,801.4	11.94
CIK	T+3[11]	CIK	NBB	770,00	33.3	0.14
Canada						
SSS[4]	up to T+3	CDS	B[12]	}19,600[13]	}39,387[13]	63.9
DCS[5]	up to T+3	CDS	B[14]			
France						
SATURNE	T	Banque de France	CB	330	9,325	6.9
RELIT	T+3[15]	SICOVAM	CB	17,800	12,967	9.5
Germany						
DBC	T+0-40	DBC	CB	31,200	10,518	5.2
Italy						
Securities Settlement Procedures:						
Daily Procedure						
LDT	T+2/T+3 T+5[16]	CAT+ Monte Titoli	CB	.	24,698	21.6
CAT	T	CAT	.[6]	927.0	1,315	1.1
Monte Titoli	T	Monte Titoli	.[6]	.	78	0.1
Japan						
JGB registrations	T+3	CB	CB	1,177.5	28,258	6.7
JGB book-entry	T+3	CB	CB	701.6	29,912	7.1
Netherlands						
NECIGEF	T+3	NECIGEF	KAS-ASS	1,685	.	.
CB Clearing Institute	T,T+3	CB	CB	3	95.7	0.27
Sweden						
VPC	T+2,T+3[17]	VPC	CB	5,313	10,818	40.5
OM	T+3		CB	42,542	.	.
Switzerland						
SECOM	T+3	SEGA	CB	9,909	1,179	4.58
United Kingdom						
CGO	T,T+1	CB	CB	949.8	46,335	36.0
CMO	T	CB	CB	263.1	6,294	4.9
CREST	T+5	n.a.	B			
United States						
Fedwire	T,T+1	CB	CB	12,900	174,900	21.6
DTC (NDFS)[8]	T+3	DTC	DTC	151,000	62,000	7.6

[5] The real-time, on-line debt-clearing service of CDS, which commenced operation during August 1994. [6] Deliveries free of payments. [7] Same-day funds settlement. [9] Converted at yearly average exchange rate. [10] T+2 for Treasury bills; T+3 for bonds. [11] The seller retains the responsibility for delivering securities. [12] A single chartered bank. [13] Figures are for the twelve months ended 31 October 1997. [14] A single chartered bank, though not the same as for the SSS. [15] When processed by the "SLAB" system (special delivery service by bilateral agreements), the delivery occurs the same day. [16] T+2 for government bills; T+3 for government and corporate bonds; T+5 for equities, warrants and convertible bonds. [17] Same-day delivery and settlement is also possible under specific conditions. [18] T+3 is the market standard. Participants are able to agree on different arrangements. [19] Chess will operate on a T+3 basis from February 1999. [20] Estimates.