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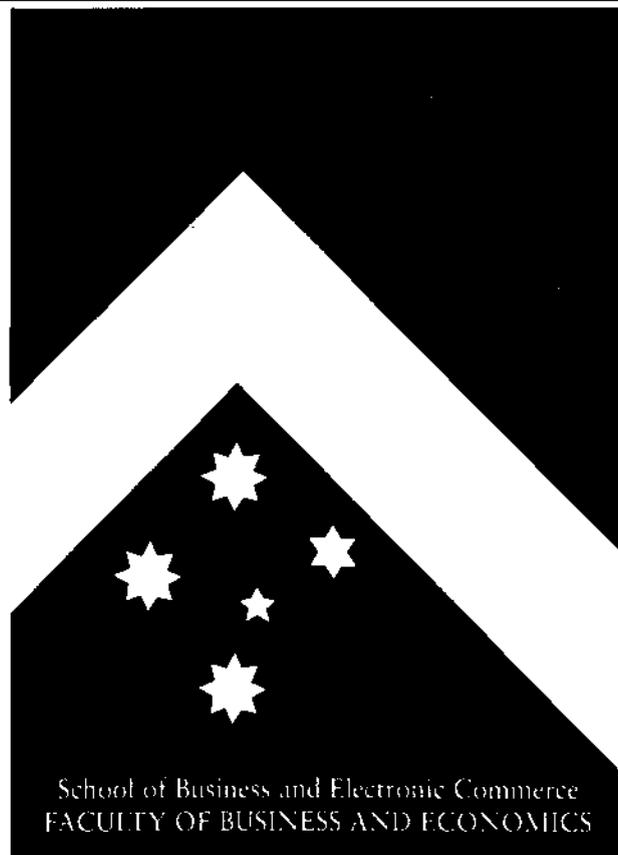
Working
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ECO 2/96

Smart Cards: Some
Social Implications

by
Michael John Crowley

ISBN 0909 170 76 2



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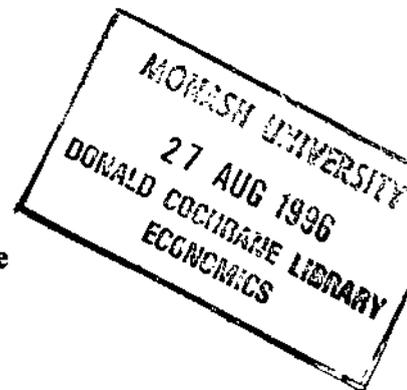
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Economics and Business Faculty
School of Business and Electronic Commerce**

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SMART CARDS: SOME SOCIAL IMPLICATIONS

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ABSTRACT

“This paper examines some of the social implications of Smartcard technology in the context of its role as a retail payment mechanism and explores some of the consequences in relation to what, in the future, may come to constitute money. It draws heavily on the research undertaken on behalf the Commission for the Future, by the School’s Centre of Electronic Commerce, and a truncated version of it appears as Chapter 6 of the Centre’s *Report* to the Commission.”

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MARCH 1995

1.0 WHAT THE PUBLIC SHOULD KNOW AND UNDERSTAND ABOUT MONEY

The average person has a fairly clear, albeit intuitive, perception of what money is and what purpose it serves. To understand more clearly the implications of what money might become in the future however, requires a more rigorous and less intuitive insight. The creation and issue of money in Australia has, in the post war period, been limited to the Reserve Bank of Australia and the Banks. Issue has been strictly regulated throughout this period, even though the nature of this regulation has changed in form and emphasis in response to changing circumstances. In particular, circumstances relating to increased competition in the market place and Australia's increasing integration with the world economy.

A thread of consistency which links the changing regulatory pattern has been a government concern that the public has available to it a safe and secure supply of money, the value of which is not unreasonably eroded by inflation. This has been achieved to some extent by government, largely through the agency of the Reserve Bank, limiting the amount of money on issue to avoid inflation and by ensuring that those issuing money, until now the Banks, are prudentially sound institutions.

The overwhelming issue when it comes to the potential for change in what constitutes money is the safety and security of the money supply. Essentially this is because technological developments are making possible the issue of money outside the traditional banking system, in an environment where no prudential regulation presently exists, and where, quite possibly, no system of prudential regulation is workable.

1.1 WHAT MONEY DOES

Money is a store of purchasing power universally used and generally accepted by the public in the settlement of economic transactions. It allows the purchase of goods and services and the settlement of financial transactions to proceed smoothly and with minimal effort and cost. Essential properties which money must have to carry out these tasks include public confidence that money will hold its value in terms of purchasing power and that the issuers of money are prudentially sound. In the public interest, the provision of money should also be at a reasonable cost: a cost which is clearly communicated and understood to avoid social tension.

1.2 WHAT MONEY IS IN AUSTRALIA AT PRESENT

In Australia the community uses currency notes and coin and transferable bank deposits to serve as money. Legislation intended for introduction this year will make possible the use of transferable deposits issued by certain non bank financial institutions as money. These institutions will remain within the system of prudential supervision presently exercised by the Reserve Bank. As such, they will be indistinguishable from banks in the role they play in the payment system. Moreover, they should be equally secure.

1.2.1 CURRENCY

Australian currency notes are issued by the Note Printing Branch of the Reserve Bank. Australian coin is issued by the Royal Australian Mint through the agency of the Reserve Bank. Both currency notes and coin are, by law, legal tender: currency must be accepted in exchange for the purchase of goods and services and for the settlement of debts.

When the public demand coin it is issued at face value and the revenue received in exchange, after deduction of the costs of producing the coin, is recorded in the Australian government's accounts as current income. This revenue can be described as direct seigniorage.

Currency notes are issued by the Reserve Bank to the public in exchange for bank deposits. These deposits are extinguished when the Banks settle with Reserve Bank through a transfer of income earning assets - from the Banks to the Reserve Bank.

The value of currency notes on issue is recorded as a liability in the Reserve Bank's balance sheet. No interest is paid to those holding the note issue. The matching asset in the Reserve Bank's balance sheet is gold and foreign exchange. Gold earns no interest and its value can fluctuate. Foreign exchange is interest earning and it consists of high quality, liquid assets including claims on foreign banks and bonds and securities issued by foreign governments. The profit earned on the Bank's gold and foreign exchange holdings, after deduction of production and operating expenses, and allowance for the Bank's capitalisation needs, is passed on to the Australian government as current revenue. This revenue can be described as indirect seigniorage.¹

¹ Crowley, M.J. *Seigniorage, Currency and Cash*. Monash University School of Business and Electronic Commerce. Working Paper Series, February 1994, ISBN 0 909170 64 9

The profit earned by the Reserve Bank is significant. Over the past decade the Bank's profits have on average far exceeded that of any licensed bank operating in Australia, and is approximately equivalent to 4% of Australian government revenue.²

Gold and foreign exchange held in the Bank's balance sheet is important for another reason. International markets regard it as the nation's foreign exchange reserves.

When discussion is directed towards the notion of a *cashless society* it generally relates to a situation in which the public use money other than currency: that is, some other form of money has substituted for currency.

The implications of this are twofold. First, there would be a significant loss of seigniorage revenue and the Australian government might need to cut expenditure or increase taxation to compensate for the income loss. Second, the nation would suffer a severe decline in the level of its official foreign exchange reserves with possible international ramifications for the exchange rate.

Many would argue that Australia has already moved some considerable distance towards the *cashless society*. Wages are by and large no longer paid in currency. Australia's Electronic Funds Transfer Technology at Point of Sale infrastructure, Eftpos, is one of the most highly developed in the world,³ and now extends downwards to the smallest store and local hotel. Debit and credit cards are extensively used for retail transactions. Most of these transactions are now conducted electronically via interfacing computer systems.⁴ There is a proliferation of single purpose cards for the purchase of petrol and other commodities. Increasingly, for security and cost reasons, retailers are discouraging the use of currency and it would appear that the public is responding positively.

The empirical evidence does not support this argument. For 30 years, since the introduction of decimal currency in 1966, currency held by the public has remained remarkably constant at \$6.40 per \$100 of Final Private Consumption Expenditure. There is no evidence of a downward trend in the demand for currency at the present time, except that held by the Banks to facilitate transactions which has shown a marginal decline.⁵

2 Harper, I.R. & Leslie, P. 'Electronic Payments Systems and Their Economic Implications'. *Policy*. Autumn, 1995.

3 Crowley, p.12

4 Mair, P. 'Consumer Payment Cards'. *AIC Conference. Consumer Payments Systems*, Financial System Department, Reserve Bank of Australia. November, 1995

5 Crowley, pp.13-14

This suggests, for various reasons, that the transition to a *cashless society* will be gradual, as will be its impact on seigniorage and official foreign exchange reserves. In brief, if it occurs, it will be manageable.

1.2.2 BANK DEPOSITS

In value terms, transferable bank deposits presently account for the largest proportion of retail transactions. This form of money owes its monetary properties to two institutional features. First, legislative arrangements make possible the Banks' issue of debt in the form of deposit liabilities the ownership of which is readily transferable from one party to another.

Second, the Banks enjoy access to a clearing system which enables them to settle any trading imbalances between banks using prime liquid assets or inter bank lending. All instructions to a bank, by the owner of a bank deposit, to transfer its ownership to another party, must be collected and processed through another bank. This follows from banks having, legally, exclusive access to a *Clearing House* conducted by the Reserve Bank.

Given this institutional clearing arrangement, the net settlement position of the Banks as, a whole, must be zero at the end of any trading day. It is only when transactions are between the Banks and the Reserve Bank - for example when the public seek currency in exchange for bank deposits - that the Banks' net settlement position at the end of any trading day is not equal to zero. In this case they must settle with the Reserve Bank through a surrender of a government security or a Reserve Bank deposit.⁶

The above institutional and legislative arrangement, together with the present framework governing the operations of the financial system, allow the Banks to create and issue money by making loans or acquiring other assets. This is something which even the more educated members of the public find exceedingly difficult to grasp. Because it is germane to the discussion which follows, and absolutely essential to making sense of it, this needs to be explained at greater length.⁷

⁶ For a detailed discussion see:

Rankin, R.W. 'The Cash Market In Australia'. *Research Discussion Paper 9214*, Domestic Markets Department, Reserve Bank of Australia, December 1992.

⁷ For a detailed explanation see:

Crowley, M.J. & Tennant, J.K. *The Operation of the Banking System and the Creation of Inside Money*. Monash University School of Business and Electronic Commerce. Working Paper Series, March 1995. ISBN 0 909170 63 0

In the absence of formal mechanisms to exercise direct control over the rate of growth of bank deposits - a situation which currently exists, where indirect control is exercised through the impact of interest rates on the level of loans demanded by the public - the banking system can make loans by issuing a book entry, called deposits. In other words, as long as the banking system can profitably encourage people to borrow it can create and issue money to fund the borrowing. This is possible because of the closed institutional arrangements of the clearing system and the willingness of the Reserve Bank, through the purchase of liquid assets from the Banks, to provide the community with currency when it is asked to do so.

When attempting to explain to the public how this works, the usual response is along the lines that money must first be deposited with a bank before it can make a loan. This seems a widely held view and is hard to change. Many people are never able to bridge this intellectual hurdle.

What must be appreciated however, is that the public universally accept bank deposits as money and as such deposits issued by the banking system to settle loan contracts can be spent to buy goods and services. As long as borrowers want to borrow, subject to the Banks' lending criteria, the Banks can issue deposits which can then be used as money.

A simple balance sheet might make this clear. Having completed the necessary paperwork the associated book entries are recorded below. The customer is then provided with the means, a cheque book or debit card, to transfer ownership of the deposit (money) to another party in exchange for some economic transaction. Competition and the existence of the settlement clearing system between banks ensures the stability of the closed system.⁸

Customers' bank accounts	
Loan account \$40,000 DR	Customers' transferable (current) Accounts \$40,000 CR

⁸ *ibid.*, pp.13-14

Banks' balance sheet			
Assets		Liabilities	
Loans	\$40,000	Current Accounts (Money) issued	\$40,000

1.2.3 DEPOSITS OF OTHER FINANCIAL INSTITUTIONS

Deposits issued by non bank financial institutions may not, at present, in general be used by the public as money. This is due to the lack of institutional arrangements which allow the widespread and universal transfer of ownership of non bank deposits in exchange for goods and services and the settlement of debt.

Once non-banks are provided with access to the bank clearing system, provided they have the legislative authority to issue deposits the ownership of which is freely transferable between parties, they will be able to provide the community with money and create money by making loans. This could have inflationary consequences in a situation where loan demand is increased, say for instance by lending to members of the public who wish to borrow but previously were considered not a good risk by the Banks.⁹

The important issues to be noted at this point is that the increased supply of money and subsequently spending could be inflationary and the asset backing of the new money issued could be prudentially unsound. This however, is less likely to be the outcome in the official clearing system where the Reserve Bank would no doubt be at pains to apply identical prudential criteria to participating non-banks as they do for banks and exercise similar monetary policy management. In effect, the non-banks would become banks!

Of much greater concern would be a situation where non-banks, including persons and private organisations, could establish a closed institutional arrangement outside the official or regulated sectors of the payment system. On a small but increasing scale this is now taking place on a global basis with the advent of Electronic Money, Digidash, Cybermoney, Ecash and other similar innovations via Smartcards and the Internet.¹⁰

⁹ Crowley & Tennant, pp.14-16

¹⁰ Brown, R. *The Smartcard*. Post News, Somerset, UK, 1994

1.3 HOW OWNERSHIP OF MONEY IS TRANSFERRED BETWEEN PARTIES

It is important to distinguish between money and the mechanisms that enable transfer of its ownership. With the advent of computerised technology this has become less clear in the public and media perception. Recently, a large number of newspaper and magazine articles tend to treat money and its means of transfer as much the same thing: for instance Electronic Money, Digicash and Ecash. Without clarification, this misunderstanding could extend to Smartcards.

Money is the financial liability of the issuer. This is true of bank deposits and currency, and it will remain true if other issuers are allowed to issue money either within, or outside, the official retail payment system. By definition the official payment system covers issuers such as banks and non-banks who fall under the purview and prudential supervision of the monetary authority.

The safety of money in terms of its financial integrity must lie in the asset structure underlying its issue. Many members of the public would have difficulty understanding this essential point and, even if they did, lack the skills necessary to assess the financial strength of the assets underlying the monetary issue. *Money* and *cash* are deeply entrenched cultural terms long bedded in the public psyche and the very description of financial liabilities in these terms tends to imbue them with a prudential status they certainly might not deserve.

It is common to hear members of the public speaking of investing their money in shares, credit unions, mortgage companies and other investment outlets for their savings. Here there is a clear perception that the investments involve risk. When the public hold money in the form of currency or bank deposits there is no perception of risk. Currency is ultimately guaranteed by its issuer, the Australian government. Bank deposits are imbued with a similar status - even if government might not wish this to be the case - through the Reserve Bank's overall responsibility for the stability of the payment system.

In reality currency has its underlying value in the gold and foreign financial assets held against its issue in the balance sheet of the Reserve Bank. Bank deposits have their underlying value in the assets held in the Banks' balance sheets. Should the Reserve Bank make losses through a decline in the value of its assets the cost would be spread invisibly throughout the community through an adjustment in either government spending or taxation.

A similar situation has arisen recently with the financial collapse of various State Banks. No depositor lost money directly, the cost having been spread throughout the community, once again fairly invisibly. In the case of certain private banks recently going through a period of substantial losses the cost has also been widely spread: a loss in income to shareholders, higher costs to borrowers for loans, greater resort to fee income, and lower returns to depositors - not only to customers of the unprofitable banks, but also to customers of the profitable banks as competition lessened to enable a rebuilding of financial strength in those banks recording losses.¹¹

When the recent insolvency experience of non bank financial institutions is examined the impact is not spread invisibly or evenly throughout the community: losses have been borne directly by those owning the financial liabilities of the institutions concerned. Had these liabilities been money, that is had ownership of these liabilities been readily transferable throughout the community in exchange for goods and services, the impact would have been far more widely spread and the stability of the retail payment system threatened.

The point being made is that financial liabilities circulating in use as money have a far greater potential for widespread social impact and damage than other forms of financial liabilities used by the public for storing wealth. Any threat to the stability of the payment system would severely undermine the strength of the national economy.

1.3.1 CURRENCY

The transfer of ownership of currency is widely understood. It is embedded in the public consciousness almost from birth. Physical currency notes and coin are exchanged by hand or, in some cases, forwarded by mail. The use of currency is highly valued because of its convenience and anonymity and the certainty that it will be accepted universally in settlement of economic transactions.

It has its disadvantages, however. Issue and reissue is relatively expensive, it can be lost or stolen without any recourse for the owner, it is costly for retailers and banks to handle, it has an opportunity cost in terms of foregone income, it can be used for illegal activities including taxation evasion, it can be counterfeited and it can be costly to store safely.

¹¹ The following paper contains a detailed analysis of banking statistics for the period 1984 1994 and explores these issues at length: M.J. & Jeffs, C.M. *An Analytical Framework for Financial Institutions Management*. Monash University School of Business and Electronic Commerce, Working Paper Series, October 1994. ISBN 0 909170 65 7

Because of these disadvantages incentives exist to develop a private, social monetary alternative or substitute for currency. One which has all currency's advantages and more, and none of its disadvantages. The technology of the future can make, and is making, this possibility a reality in most ways except one: ensuring that privately issued money has the same prudential security as government issued money. Referring to this privately issued money as *cash* of one form or another is deceptive advertising and is misleading. Public consciousness should be drawn to this.

1.3.2 BANK DEPOSITS

1.3.2.1 Cheques

The traditional and most familiar means of transferring ownership of a bank deposit is by issuing a cheque in exchange for an economic transaction where the party receiving payment must lodge the cheque with a bank in order to have the change of ownership recorded. As discussed above, this is made possible by the Banks' clearing house system conducted by the Reserve Bank.

This method has one major shortcoming. The receiver of the cheque must, until clearance, bear the risk that the issuer actually owns a bank deposit and that payment will not be stopped. There is also the less apparent risk that the bank upon which the cheque is drawn is solvent.

Some non bank financial institutions will shortly be able to access the clearing house system, breaking the Banks' traditional monopoly of being able to issue financial liabilities which the public use as money. This will make these institutions virtually indistinguishable from banks and their liabilities will form part of the retail payment system.

Here again, the essential concern is the prudential soundness of the assets held by these institutions to back their issue of money. The public would expect that prudential regulation and supervision of the payment system by the Reserve Bank is extended to any new non bank entrants.¹²

¹² In Perspective Marketing Research. *Smartcard Consumer Survey*, Sydney, 1996.

1.3.2.1 Electronically

An increasing volume and value of retail transactions is being undertaken by transferring ownership of bank deposits using computer and other electronic technology to issue the necessary instruction and to record the change in ownership. A paper based system of instruction is being gradually replaced by electronic messaging.

The most widely used form of electronic messaging of instructions to transfer ownership of money in the form of bank deposits is known as Electronic Funds Transfer at Point of Sale , Eftpos. As the cost of technological hardware continues to fall this method of transfer is becoming much more widely spread and utilised. Moreover, in many important respects, its use is much more convenient in retail transactions than is the use of currency.

In this respect, Eftpos is an instrument which allows and encourages the public to substitute bank deposits for currency as their major form of money. This change in public preference is in large measure offset by the Banks' provision of currency issue from Automatic Teller Machines, ATMs, in an attempt to rationalise cost structures by moving away from the traditional and expensive use of branch networks. Both services may be viewed as an attempt by the Banks to push banking beyond the walls of banks and to pass the traditional costs of banking onto the community and the public.

Some of the advantages of Eftpos include less risk to merchants and retailers as the existence and ownership of a bank deposit can be verified before the goods are issued; ownership of the bank deposit is transferred to the seller immediately without the delay and inconvenience of having to have a cheque cleared; currency handling costs and associated security risks are lowered and the transaction, in general, is much less resource intensive.

A distinct disadvantage however, is that the use of magnetic stripe technology on plastic cards requires that the instruction, recording and messaging system must be continually in use or *on-line*. This is expensive for high volume, low value retail transactions, although it is more cost efficient than a cheque or currency based system.

Smartcard technology offers the potential for a less costly retail payment system. Smartcard technology also promises to provide a system which is much more secure and less prone to error, fraud and mechanical breakdown.

1.3.3 DEPOSITS OF OTHER FINANCIAL INSTITUTIONS

Eftpos and associated electronic networks provide a comprehensive systemic basis for the use of a wide, even bewildering, variety of plastic cards to transfer ownership of money in the form of bank deposits. Final settlement of these transactions between banks still however, takes place through the settlement clearing system conducted by the Reserve Bank. Cards issued by non bank institutions, and cheques for that matter, still involve transfer of ownership of a bank deposit, usually through the agency of a bank. This adds a further link in the chain of payment system risk. The public must be sure that the asset backing of the non bank deposit liabilities are sound, that the bank through which the non bank conducts its banking business is sound, and that the person on the other end of the transaction actually owns a non bank deposit.

As discussed previously, this will shortly change when some non-banks are allowed access to the official settlement clearing system conducted by the Reserve Bank.

1.3 THE SECURITY OF MONEY

A stable and secure payment system is essential to the smooth operation of a developed economy. Whatever the public use as money must have secure asset backing and traditionally governments have taken steps to regulate what financial liabilities may be used as money and what financial institutions can issue money. Currency, although some private issuers have been licensed to do so in various countries in the past, is now almost universally issued only by government. The issue of non government money, usually in the form of deposits and traditionally by licensed banks, has also been heavily regulated and supervised by governments. Often, the bank issue of money has been accompanied by government guarantee to ensure its universal acceptability. In all cases money has tended to have some form of *official* authorisation giving it public credence.

Technological developments in the future make possible the issue of money with no *official* authorisation, although the public may still give it credence simply because *money* has a deeply rooted and entrenched meaning in the public consciousness. To call something *money* or *cash* conjures up an immediate feeling of something secure and inviolable in its ability to be translated into purchasing power. That is, its command over goods and services.

Public education and understanding of the nature of money is necessary if change should lead to the provision of both *unofficial* and *official* money.

1.3.1 CURRENCY AND THE RESERVE BANK OF AUSTRALIA

The Australian public have very little conception of *cash* other than that issued as legal tender by the Australian government and guaranteed by government. By and large it has been institutionalised into our thinking that *currency* has value in itself. It is exceedingly rare to find someone who understands the creation and issue of currency and the true value of the debt which lies behind it. That is, that all money in a developed financial system is monetised debt, and is only as good as the debt that lies behind it. This is as true for money issued as currency by governments as it is for money issued as deposits by banks or, possibly in the future, non-banks.

The public in developing countries have no such perception. In many countries government currency is exchanged for other physical assets, in particular precious metals, as quickly as possible after receipt. Nor, from bitter experience, is there much trust in money issued as deposits by their banking system.

The truism that money is only as good as the debt it is issued upon is one that requires constant reinforcement if the Australian public is to cope with technological advance into the future that involves change in what society uses as money.

One obvious answer to this is that the present integrity of money should be maintained and that new forms of money should be brought within the umbrella of existing prudential regulation and control. In the future this may not be possible, nor might it be in the public interest. Advocates for allowing privately issued currency to compete with government issued currency have been around for a long period of time. The primary reason why this argument has been unacceptable to governments is the seigniorage income flowing from government control of the currency issue.

1.3.2 BANK DEPOSITS AND THE RESERVE BANK

In Australia banks generally are heavily regulated by the Reserve Bank. Although the current expression for this regulation is the milder euphemism of *prudential supervision* it is never the less regulation. Following greater integration with the global economy the Banks have received freedom to compete using interest rates and in selecting the composition of their asset portfolios. To this extent they have been deregulated. This relaxation of competitive controls has resulted in bank management becoming far more complex with an increased in risk of insolvency.

The trade off for interest rate and portfolio deregulation, following substantial failure of banks in many countries including Australia, has been the introduction of risk-weighted capital guidelines to ensure that should a bank fail there will always be sufficient assets in the bank's balance sheets to cover the value of its deposits. This is a different form of regulation designed to ensure that the money banks issue is prudentially sound. Indeed, owners of bank deposits, although these deposits are unsecured, are in Australia by law provided with first call on a bank's assets should it fail.

Although banks are subject to a broad range of regulatory and surveillance authorities, it is the Reserve Bank which is primarily responsible for ensuring they remain solvent. The degree and extent of supervision and control over the quality of a bank's assets continues to increase in line with the risk activities entered into by Banks. Capital requirements that the Banks must follow in Australia are internationally derived and are known as the BASLE guidelines. Prudential statements published at reasonably frequent intervals by the Reserve Bank ensure that new areas of risk are appropriately capitalised and that the deposits banks issue are covered by quality assets.¹³

Overall, the public in Australia can place a great deal of confidence in money issued by the Banks although it is frequently argued that banks are over regulated in regard to the level of risk they incur in their operations. This however, is essentially a matter of weighing the costs of regulation against the benefits of having a secure payment system.

1.3.2 DEPOSITS OF OTHER FINANCIAL INSTITUTIONS

Non bank financial institutions issuing deposits which may shortly, as a result of legislative change, become money are credit unions, building societies and, possibly, friendly societies. If these institutions are given access to the official settlement clearing system conducted by the Reserve Bank there is little doubt that they too will be risk monitored in the same way as banks.

At the present time these institutions, because they issue deposits which are a close substitute for bank deposits and currency, are closely monitored for solvency by the Australian Financial Institutions Commission which provides an umbrella coordinating State monitoring

¹³ Reserve Bank of Australia. *Prudential Supervision of Banks*. Prudential Statements, Sydney, June 1990.

Reserve Bank of Australia. *Prudential Statements*. Various, June 1990 to December 1995.

authorities. ¹⁴The Coalition government recently appointed to office has signalled an intention to bring these institutions under the prudential monitoring of the Reserve Bank.

Public perception and understanding of the relative risk associated with these non bank institutions is much greater than is the case with the Banks, and this has been reinforced by recent experience. It is fairly clear that the public does not, at present, regard the deposits issued by these institutions as money in the same way as they do currency or bank deposits. This perception may change as the mechanisms which allow deposits to be used as money are developed and introduced. It is important that the mechanisms used to transform these deposits into money not be allowed to camouflage from public view the essential reality that money issued is only as sound as the debt upon which it is based.

This becomes of prime importance if technology allows the creation and issue of money outside the official or regulated sector.

2.0 THE TECHNOLOGICAL FUTURE AND THE RETAIL PAYMENT SYSTEM

This chapter has until now focused on sketching an understanding of the retail payment system as it is now, and developing some understanding of what money is and the distinction between money and how its ownership is transferred between parties. The comprehension that all forms of money are monetised debt, which in Australia's case have until now enjoyed, in one form or another, official sanction, provides an essential foundation for insight into the future and what it might bring.

2.1 SMARTCARDS

In terms of the retail payment system Smartcards are a more technologically advanced instrument for facilitating the transfer of money between parties with the added implication that institutions and persons other than banks and government can issue money that may not be as prudentially sound. This is the heart of the matter!

The advantage that Smartcards have over the existing technology of magnetic stripe plastic cards is that they do not require an on-line messaging system at the time the transaction takes

¹⁴ Council of Financial Supervisors. *Annual Report*. Printed by the Reserve Bank of Australia, Sydney. Various edn.

place. When the card is *loaded* chip technology allows the card to record the message that the holder has money in the form of a deposit liability - or a claim on some other service - created by the issuer.

Single purpose Smartcards are probably the most easily understood by the public at the present time. The cards record the fact that goods and services such as telephone calls, travel entitlements and toll charges have been purchased in advance. The card is in effect a record of receipt for money paid in advance for these goods and services. The card may be disposable after the good or service is fully used, or it may be *reloadable*. As the goods and services are progressively consumed, the card maintains a record of the outstanding balances of services yet to be consumed. At the same time, as the service is consumed, it is recorded on another device or terminal so that the issuer of the service is aware that the service has been consumed when the information is extracted or *downloaded*.

If the service is not consumed, or the card is lost, the issuer of the card, usually the service provider, generally retains ownership of the money used to purchase the card.

Universal Smartcards are those which provide the holder with access to a full range of goods and services through a wide network of outlets. This requires the use of money and the Smartcard becomes the mechanism for transferring ownership of money from one party to another. A simple example is useful to explain the underlying process involved. For simplicity it is assumed that a bank issues the Smartcard. Before the introduction of Smartcard technology it is assumed that the bank only issued current account deposits the ownership of which could be transferred either by the issue of a cheque or by on-line electronic signalling via Eftpos. The bank's initial balance sheet is shown below.¹⁵

Bank balance sheet			
Assets		Liabilities	
Loans	40,000	Customers current account deposits	\$50,000
other Assets	10,000		
Total	50,000		

¹⁵ For a detailed discussion of stored value and an elaboration on this section see:

Crowley, M.J. *Stored Value: An Analysis of its Institutional and Economic Implications*. Monash University School of Business and Electronic Commerce, Working Paper Series. December 1995, ISBN 0 909170 77 0

Smartcards are now introduced as another means of allowing transfer of ownership of bank deposits. Smartcards are issued to customers and information is recorded on the cards to the effect that the holders own a certain level of deposits with the bank the ownership of which can be transferred through the card. That is, the Smartcard is loaded: not with money, but with information. The bank will need to keep a record of how much access is given to deposits through the Smartcards at any point in time. It will therefore record this type of deposit in a separate account, say an account labelled like that shown below, where \$10,000 has been recorded on the Smartcards as accessible via their use:

Bank balance sheet			
Assets		Liabilities	
Loans	40,000	Customers current account deposits	\$40,000
other Assets	10,000	Deposits accessible through Smartcards	\$10,000
Total	50,000	Total	\$50,000

The advantages to the bank of this type of arrangement are considerable. First, access to bank deposits is off-line: transactions are recorded at the point of sale between the card and a device or terminal owned or rented by the merchant or retailer who may not clear the transactions through a bank for some days. Second, the deposit may never be claimed against if a certain type of Smartcard is used such as an electronic wallet. The deposit in effect becomes analogous to currency, circulating forever throughout the payment system, from party to party in exchange for economic transactions: it never need come home to roost. This would be of enormous advantage to the bank in terms of deposit stability and transaction costs.

The reloadable electronic purse and electronic wallet clearly offer the best long term alternative to using currency. The transition, gradual as it may be, will see currency diminish in use and importance as methods are developed to ensure the privacy and security of the electronic message system instructing transfer of ownership of money. The larger question is what will replace currency. Will it be bank deposits or the deposits of non bank financial institutions forming the official payment system which utilise the Reserve Bank's settlement clearing system and can be subjected to prudential regulation? If the Banks are reluctant to lead in the adoption of Smartcard technology because of their large investment in magnetic stripe technology it could lead to an erosion in their traditional hold over the issue of money and the importance of their role in the retail payment system. Or will it be the liabilities of an

emergent unofficial sector that provides the public with money? The answers to these questions are uncertain, although the evidence is that at least some trials are being undertaken where unofficial money is being issued using Smartcard technology.

2.2 COMPUTERS

What can be achieved using Smartcards can also be achieved using computers. The existence of the Internet and other electronic networks offers far greater opportunity and scope for unofficial persons and institutions to issue private money which is outside the government net of prudential supervision, regulation and governance. Electronic Money, Digicash, Cybermoney and Ecash are examples of some of these developments. The use of computers to transfer ownership of money can be readily integrated with that of electronic purses and wallets. However, because the brief for this report concerns mainly Smartcards this will receive little further treatment other than to suggest that Smartcards are the tip of the iceberg when it comes to predicting the retail payment system that could emerge in the future.

2.3 THE ADVENT OF NEW TYPES OF MONEY: BANK'S VERSUS BANKING

Banks have traditionally provided banking services including in particular the provision of money. The reasons for this are largely historical and founded in legislative measures to protect the public and ensure a stable payment system.

This global picture of banks and banking is rapidly changing with large industrial and commercial organisations, including in particular those in the communications industry, emerging to challenge the Banks in this, their traditional role. Legislative change to preserve the status quo has little chance of keeping pace with the rapid rate of technological change currently taking place: change generated and driven by the revolution in the communications and computer technology industries and the commercial opportunities this revolution has opened up.

Against the background and explanation outlined in the preceding sections of this chapter, the task now is to relate it to the concerns and views expressed by a selected range of interest groups who hopefully reflect the feelings, uncertainties and aspirations of the Australian public.

3.0 DETAILS OF VIEWS FROM DIFFERENT CONSTITUENCIES¹⁶

This section focuses on social issues concerned directly with the use of Smartcards as a mechanism for facilitating the transfer of ownership of money in undertaking retail transactions. In particular it is concerned with the views of consumers, the group or constituency upon which the ultimate impact of change in the retail payment system will fall. Other groups', or constituencies', interests ultimately relate in one way or another to the consumer. This group is the interconnecting hub which provides the spokes of the debate with a common core and meaning.

3.1 CONSUMERS

The following summary of consumers' views draws most heavily on the focus group discussions coordinated by InPerspective Marketing Research, as an adjunct to this Report.¹⁷

3.1.1 CONSUMERS GENERAL FEELINGS AND AWARENESS

In general, the reaction of consumers to the advent of the *cashless society* is that it is being imposed from above and that it is inevitable. They perceive it as being driven by forces beyond their control, forces which they find difficult to articulate: there is a common thread of being caught up in something they have little power to do anything about or change and from which they will receive relatively little benefit. A common feeling is manipulation; manipulation by banks, government, those having a vested interest in technology and business, retailers and merchants. The *Big Brother*¹⁸ of social control is driving change, the impact of which will see consumers forced to accept the cost.

Although consumers, at a fairly superficial level, find the concept of Smartcards or other stored value easy to comprehend, once explained, if the experience of the focus groups is broadly indicative, it is clear that consumers in general have very little awareness of the issues involved at the present time. Much education and guidance is required to enable them to make rational decisions.

¹⁶ This sections of the chapter dealing with the views of the constituencies draws upon the following :

Mills. *J. Notes of Interviews*. Commission for the Future, Smartcard Research. Centre for Electronic Commerce. Churchill, 1996.

with the exception of the consumer constituency which draws heavily on:

¹⁷ InPerspective Marketing Research. *Smartcard Consumer Survey*. Sydney, 1996.

¹⁸ *ibid.*, p.33

Consumers see little direct benefit for themselves in the *stored value* aspects of Smartcards. The present system of currency, Eftpos, cheques and debit and credit cards is believed, by them, to be adequate for their needs. There is an anticipation that the process is being driven by those who will benefit, in particular the scheme operators, the Banks and government. In this regard a certain native, intuitive instinct emerged - one which groups found difficult to articulate.

First, was the recognition that someone had to pay for the costs of Smartcard technology and that it would be the consumer through initial seduction. In the case of ATMs, Eftpos and debit and credit cards, substantial fees followed initial financial incentives to adopt their use, and financial disincentives were used as a means of directing use away from traditional banking methods. Deep distrust of a perceived past and future exploitation by banks emerged as a common theme.

Second, was a dawning realisation that if the Smartcards were lost: "who's making money on the lost money?" Extension of this line of discussion led to the further astute observation that:

" If everyone buys stored value cards, a lot of dollars are going into someone's coffers...who's getting the interest? There's money in it for someone. If they get a million dollars, they can play the short term money market.....*Someone is making a lot of money on this.*"¹⁹

Third, following on from the second point above, came the rather astonishing observation and conclusion that:

" If you're trying to get a cashless society....the government doesn't have to print money, so they should subsidise it. You should get it (stored value) for free - *because the government is saving money by not printing currency....and because cash is free.*"²⁰

From this third point it is fairly clear that consumers, and probably the wider public, have a very limited understanding of seigniorage and how it is generated. From the second point it seems that there is an intuitive grasp of the nature of a *float* underlying the issue of *stored value*, but that this is not linked up to the float, which underlies the issue of currency notes

¹⁹ *ibid.*, p.76

²⁰ *ibid.*, p.76

held in the Reserve Bank's balance sheet. And, most important, there seems to be no realisation whatsoever that should the stored value on the cards be issued by a non-bank which retains the float, then the stored value is only as good as the prudential soundness of the balance sheet of the issuer. If the issuer becomes insolvent the stored value has no value and consumers could suffer a loss of wealth as a result.

Sections 1 and 2 of this chapter of the Report have been written in an attempt to explain and develop for the consumer, and the broader public, a proper basis for understanding the institutional structure of the payment system. Without doing so, the focus group discussions make it clear that informed debate is not possible.

Possibly the most puzzling aspect in all this, is what conditioned consumer belief that government hopes to gain from a *cashless society* and that somehow it is the key instigator and driving force behind this initiative. What possible reason could government have in the elimination of currency when it benefits financially from its issue from the seigniorage generated by the Reserve Bank?

A possible answer lies in recent social change that many consumers, particularly older generations, can clearly recall. A relatively short time ago, it was generally the case that the public received wages and transfer payments such as pensions of one form or another in either currency or cheques. In the case of pension cheques, these were almost universally translated into currency at a bank. The advent of computer and electronic technology very rapidly revolutionised this traditional way of doing things and introduced more efficient means of making these payments. Efficiency gains largely accruing to those making the payments: that is, the employer.

Whole of Pay and other developments now mean that payments are almost universally directed to accounts with banks and other non bank financial institutions. Almost overnight, with little if any say in the matter, consumers became the captives of the Bank's, and suffered unavoidably the consequent burden of debit and credit taxes imposed by governments and fees imposed by those institutions receiving payment on consumers' behalf.

There is strong evidence to suggest that employers sense similar advantage in stored value mechanisms.

3.1.2 CONSUMERS EXPECTATIONS IN REGARD TO STORED VALUE ISSUERS AND PRUDENTIAL SUPERVISION AND REGULATION

A universal belief emerged from all focus group discussions that the issuers of stored value would be the Banks, and a universal consensus that existing systems of regulatory supervision and depositor protection governing banks should and would be extended to cover stored value schemes. Although little understanding or knowledge of what present arrangements exist, it is clear that consumers expect government protection of their interests in any emerging change in the retail payment system and its mechanisms.

There was no awareness that the emergence of stored value as one part of the payment system opened up opportunities for those scheme operators or issuers currently outside the banking system, or the potential possibility that an unregulated sector of the retail payment system might emerge. That such opportunities exist, and are currently being pursued with some vigour by those outside the banking system, should clearly be brought to the attention of consumers and participating merchants.

3.1.3 WHAT CONSUMERS WANT IN A STORED VALUE MECHANISM

It became clear in focus group discussions, based on the premise that stored value was inevitable and that consumers would have little say in whether or not it replaced a clearly preferred option of currency, that consumers know what they want. This clearly indicates a direction in which technology should develop. It is also clear that consumers have little faith in the direction that technology will take, without some form of controlled intervention. There existed a general belief that what the consumer will actually get is what best serves the interests of those who most benefit: merchants, banks, scheme operators and issuers. Again a sense of powerlessness and resignation emerged in focus group discussions.

Consumers want a Smartcard mechanism that is universal in acceptance, like currency; is reloadable rather than disposable; is cheap and easy to use and does not leave them captive to increased fees at a later date; provides greater security than currency, yet retains the anonymity of currency; can be used to singularly replace the multiplicity of cards currently in use; is a stand alone financial card or mechanism which does not incorporate any other personal information; provides an established link with existing elements of the electronic payments system network including Eftpos, credit cards and ATMs; and, is physically convenient in terms of portability. The closest thing that approaches this need at the present

time would seem to be the Mondex wallet; albeit, without the audit trail recently revealed in the Swindon trial.

3.2 THE REGULATORS VIEW

Because this chapter is largely concerned with issues relating to the retail payment system, per se - that is, changes to its institutional structure and operations including the impact on seigniorage and the prudential standing of those providing the community with money - discussion is largely focused on the Reserve Bank²¹ and, by implication, The Payments System Council.²² This section of the chapter draws on interviews with Reserve Bank staff, private bank representatives, academics with an interest in monetary matters and private and government groups committed to the protection of the public and consumer welfare.

3.2.1 THE RESERVE BANK OF AUSTRALIA.

As expected, the Reserve Bank is keeping a watching brief over Smartcards and their implications for change in the retail payment system. The Bank is well aware of the issues discussed in this chapter of the report, despite concerns that its position, so far, seems to be somewhat *laid back*. This report does not, on the evidence available to it, support this view.

The Reserve Bank's position would seem to be based on the premise that although the introduction of stored value mechanisms is inevitable, attempts to influence the direction at this early stage could lead to serious deleterious effects on the outcome, particularly innovations in technological development. Its position is essentially to wait and see what happens in the early stages of Smartcard trialing and development.

The Reserve Bank's view is that it will take time for the public to gain confidence in stored value cards and devices. Consumers will test out the cards and move slowly as they gain confidence. As they do, more value will be recorded on the cards. In the longer term, say 20 years, the Bank believes that stored value will replace currency. Stored value and currency will coexist for many years, with the first denominations of currency to go being coins and \$5 and \$10 notes.

21 Reserve Bank of Australia. *Functions and Operations*. 6th edn, Sydney, 1987.

22 Australian Payments System Council. *Annual Report*. Printed by the Reserve Bank of Australia. Sydney. Various edn.
Australian Payments System Council. *Stored Value Cards*. Information Paper, Australian Payments System Council. September, 1995.

The Reserve Bank believes stored value has the potential for being a viable monetary system. But the system must be secure against counterfeiting and mass fraud. If security is breached, then defences must be in place. The current banking system authorises transactions on-line and the bank security systems are built to a high level of security to prevent security breaches. The stored value systems are different in that the transactions are off-line, therefore the security is not directly under the control of a centralised security system. The Mondex system provides no trace of transactions. There are two keys on each card and it would require someone to penetrate both defences.

Over time there is the possibility of one world wide scheme with world wide operators likely to be Visa, Mastercard or Mondex. Small local schemes may not survive because of the need for a worldwide compatible scheme. The winner could be one of these or a combination of these. The alternative is one dominant scheme in each country. This could be a local scheme as in Singapore or a worldwide scheme.

In some countries, the central government has taken the initiative and established the scheme, for example Denmark and Singapore for stored value, and France for debit and credit cards. The schemes are built with controlling authorities in charge.

The Bank believes that at this trial stage it is too early for monetary authority intervention in Australia. In regard to seigniorage revenue foregone, this is not seen as a short term problem, but over the long term, the assets underlying the stored value may need to be subject to prudential supervision: the underlying asset base is referred to almost universally as the *float*. The float may also need to be *wound in* which suggests the possibility that scheme issuers may, in future, as stored value increasingly substitutes for currency, have to underwrite stored value on issue with Reserve Bank deposits. That is, stored value issuers may eventually be required to provide *cash* backing: deposits held in accounts with the Reserve Bank. Before this is done, however, discussions would be held with all parties. Other prudential standards and safeguards might also need to be established.

The Bank believes that amendment to various State and Federal Acts will be needed to cover unredeemed money on stored value cards. The principle is that no one should gain benefit from unused money in bank accounts. After 5 or six years the unclaimed money goes from the banks to government to be held in trust.

This view tends to suggest that the Reserve Bank has a rather narrowly focused view on the nature of currency substitution that might eventuate. Smartcards which take the form of

electronic purses fit neatly with this view. These purses are envisaged as being loaded with stored value which is circulating in a continuous flow between consumers, retailers and banks. That is, there is a clear audit trail which enables identification of dormant funds which could, correctly, be attributed to purse loss, damage or - in the case of disposable cards - failure to fully exhaust the value on the cards prior to throwing away.

The Smartcard which is likely to become most popular, and to hold greater value in the future - and the one most likely to become the dominant mechanism in substituting for currency - is the electronic wallet. In this case the circular flow could avoid the banks and leave no audit trail: value is transferred directly between wallets of consumers and consumers, retailers and retailers and consumers and retailers.

This *outstanding* store of value held outside the banking system would be analogous to the stock of currency outstanding in the community at the moment, where no trace exists on what part of it is lost, destroyed or dormant. In this case it may not be appropriate to transfer these funds to government from the banks to government to be held in trust.

In regard to consumers seeking to redeem stored value recorded on Smartcards, the Reserve Bank believes that all scheme operators will provide a redeem capability, thus this will not be a problem.

3.3 THE BANKS' VIEW

The Banks have, overall, a fairly uniform and consistent view of their attitudes towards stored value instruments, although there is evidence to suggest that attitudes differ in regard to stored value being a long term substitute for cash. One major bank regards stored value cards as just another payment instrument and consumers will have a choice of what they use. The bank does not intend stored value cards to be marketed as a cash substitute.

3.3.1 BANKS' ATTITUDE TOWARDS NON BANK ISSUERS

There is a strong feeling on the part of banks that the Reserve Bank does not understand the problems involved in its deliberate policy of non intervention in regard to non bank issuers. A belief exists that a Reserve Bank policy statement on seigniorage and the float is necessary, and that the Bank should implement supervision over non bank stored value issuers.

The level playing field argument is invoked in conjunction with a questioning as to whether or not consumers are adequately protected if the float underlying the stored value of non bank issuers is not as secure as that of the Banks. A general feeling is that the Reserve Bank is too relaxed about non-banks entering the retail payment system without application of the same prudential standards applying to official participants.

A major point of concern in the current trials is that some banks are acting as clearing bankers and agents for non bank issuers and that this is risky for the banks concerned. The Bank of South Australia is acting as clearing banker for the Transcard trial, and the Commonwealth Bank for the Quicklink trial. St George Bank is acting as agent for Transcard.

The Banks' objections are concerned only with universal stored value issuers such as Transcard and Quicklink, not single purpose issuers.

3.3.2 WHERE THE BANKS SEE ADVANTAGE IN STORED VALUE CARDS

Despite the controversial issue of issue of privacy, one bank interviewed saw a major benefit to the bank lying in the additional customer information that stored value instruments would generate, and the increased opportunity for establishing and strengthening customer bonding and relationships through loyalty schemes. There exists a strong preference for loading stored value on cards from bank accounts, through debit and credit cards, and a reluctance to have customers pay for loading using currency.

This could be due as much to the informational advantages involved, as to the desire to reduce the banking system's use of currency and, consequentially, its branch networks. One bank indicated *no need for cash* as the major benefit to customers of stored value cards, but in reality this is probably a major benefit to the bank rather than the customer.

The major perceived benefit accruing to the Banks was seen to be the float underlying stored value instruments. Clear recognition was given to the profit opportunities inherent in issuing stored value, on which no interest is payable, against the underlying asset backing which would earn interest. A second benefit is seen to lie in the advertising, merchant, transaction and issuance fees associated with stored value cards. An emphasis on the fee for service and user pay principle is evident. One bank indicated that it would be charging merchant fees but there is little doubt that fees to the consumer will also be introduced.

3.3.3 BANKS' PERCEPTIONS OF THE BENEFITS FOR CUSTOMERS

As was the case with consumers, the Banks' views on the benefits to consumers were vague and somewhat intangible. This is understandable as it is fairly difficult to articulate what stored value instruments can offer the consumer over and above that currently offered as part of the retail payment system: Eftpos, currency, debit cards and credit cards. Benefits suggested were consumer speed and convenience, no need for change, improved budgeting including control of children's spending, safety, security, loyalty awards, no need for currency and no dirty money.

3.3.4 BANKS' PREFERENCES FOR STANDARDS AND CODES OF CONDUCT

There is a perception in the banking industry that too many groups are looking at what to do about Smartcards in Australia. The Asian Pacific Smart Card Forum²³ is developing a Smartcard code of practice and this group represents a significant range of interests in the industry. Westpac and the Commonwealth Banks are showing some support for the Forum.

A strong belief prevails, however, that the existing Banking²⁴ and Electronic Funds Transfer Codes of Conduct,²⁵ with amendment, should satisfy to ensure sound and effective industry self regulation. The latter could be extended to include non bank issuers.

3.4 THE MERCHANT AND RETAILERS VIEW

Merchants and retailers trust the banking system and have no major concerns about Bank's as issuers of the stored value schemes. This is not necessarily the case with non bank issuers. Although there may be a risk of counterfeiting of the cards if this is carried out electronically then it is a bank risk. There is some concern that if the merchant or retailer loses or damages the transaction recording terminal, prior to unloading to a bank for value, then the merchant will have to bear the loss as the stored value system of retail payment is off-line. This is a significant issue.

Merchants and retailers believe that the move away from the use of currency does not necessarily cause bigger consumer spending and it does allow better budgeting. The security of many merchants and retailers will be enhanced by the elimination of currency. This is

23 Asia Pacific Smart Card Forum. *Smart Card Industry Code of Conduct: Working Paper (Initial Draft)*. The Warren Centre. Department of Industry Science and Technology, Sydney, 7 December, 1995.

24 *Code of Banking Practice*, November, 1993

25. *Electronic Funds Transfer Code of Conduct*. July, 1995.

especially relevant for late night merchants and retailers such as Food Plus and 7 Eleven. The cost of currency usage is high because of the cost of handling and securing currency against the risk of theft and pilfering. The security and possibly income of many merchants and retailers will be enhanced by the elimination of currency.

The success of the stored value schemes will depend on merchants and retailers taking it up. They will not do so if they are required to accommodate four or five different schemes. They want the stored value terminal to be linked with their existing Eftpos equipment for reconciliation purposes. The standards need to allow for this. The success of a stored value program for a merchant will depend on cost of introduction, including equipment and training; breadth and universality of use; low transaction costs, and an ability to link with existing Eftpos equipment. Reconciliation of transactions is important and linking of the equipment is necessary to ensure accurate entry and reconciliation.

Major issues for merchants and retailers are: the need to understand the requirements of their customers; allow customers to choose if they want to be taken off mailing lists; and ensure customer privacy in that as they do not want lists of their names sold. The latter would seem a fairly significant issue.

Eftpos created different fees structures, with the big stores owning the transactions and the Bank's paying the merchants and retailers fees. Small merchants and retailers, on the other hand, pay fees to the Banks. Fees are charged to merchants with the present Eftpos system. The charges are complex with some large merchants and retailers receiving fees from the Banks, whilst others pay fees to the Banks.

In some cases, again large merchants and retailers, the Eftpos terminals are owned by the merchant, whilst in other cases the terminals are owned by banks, and fees are charged to the merchant for the rental of the terminal. The fees are also at a lower rate for merchants and retailers with a higher volume of transactions, again providing advantage to the larger merchants and retailers.

A less complex and more equitable fee structure is seen as essential if merchants and retailers are to readily and widely accept the introduction of stored value.

4.0 INFORMATION RECEIVED FROM OTHER SOURCES

This chapter of the report draws on a wide range of references, including journals, academic reports and interviews. Information has been used selectively to narrow focus from the broader issues of Smartcard to that dealing with the specifics involved, the role of stored value as a potential innovation in the retail payment system.²⁶

In large measure attention has been directed towards stored value as a substitute for currency, but it will also clearly substitute for traditional devices - cheques, Eftpos, debit cards and credit cards - to transfer other components of money: in particular, bank deposits.

5.0 LINKS BETWEEN THIS AND OTHER CHAPTERS OF THE REPORT

This chapter has been used to draw attention to what is money and the need to exercise prudential supervision over the retail payment or monetary system - a task traditionally in the hands of the Reserve Bank of Australia. A sound payment system is essential to social welfare, economic health and protection of the public interest.

A central implication of stored value devices - which includes Smartcards, but which has far wider and possibly more important innovations, in particular computers and the Internet - is that in the future banking may not be solely the province of banks. Nor may the creation of money lie within the official or regulated sector of the financial system.

Although emphasis and discussion has been limited to constituencies selected as being most relevant to this chapter, and demarcation lines somewhat arbitrarily drawn to facilitate discussion, it is clear that many linkages exist between this issue and constituencies not explicitly discussed. Central are the matters of privacy, equity, employment, technological environment and security, consumer protection legislation, standards, codes of practice and cost. These are matters more appropriately discussed in other chapters.

6.0 RECOMMENDATIONS ON HOW MATTERS RAISED IN THIS CHAPTER ARE TO BE ADDRESSED

It was deemed essential in this chapter to address the underlying topics through a clearly focused discussion on the institutional creation of money; to make clear the notion of money

²⁶ A particularly useful reference is:

Chaun, D. & Schaumuller-bichl, I. (eds). *Smartcard 2000: the future of IC Cards*. North Holland, Amsterdam, 1989.

as monetised debt; and, to stress recognition that money is only as prudentially sound as the assets, that is debt, underlying its issue. In this regard public education, which this chapter has begun to address, is vital. This need became clear during the course of research when many of those interviewed -including those most directly involved in the Smartcard industry- demonstrated little understanding of monetary processes, and little appreciation of the difference between the various devices enabling the transfer of ownership of money and money itself.

7.0 LIST OF POSSIBLE ACTIONS

Public education in this regard should be continued, reinforced and extended so that informed debate based on a firm foundation of knowledge is possible.

8.0 CONCLUSION

Notwithstanding the view of some banks to the contrary, it is clear that the monetary authority responsible for monitoring developments in the retail payment system, the Reserve Bank of Australia, is well aware of the major problems. The possible impact on government revenue, seigniorage; the interest of non-banks in stored value and the consequent prudential ramifications; the eventual emergence of a single stored value system, possibly a worldwide one; and the perceived disadvantages claimed by the Banks in terms of a level playing field - are all matters which the Reserve bank clearly has under constant review.

It is also possible that the Reserve Bank, in adopting a wait and see approach in terms of developments, has a far deeper insight and understanding of the direction of technological change and innovation, and its potential for serving the wider public interest, than those representing traditional vested interests. Rapid change in the communications industries could clearly see the emergence of sectors having a major technological advantage over the Banks, in implementing change in retail payment systems.

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